Response to Public Comments on Draft Regulatory Guide (DG)-1381
"Control of Heavy Loads at Nuclear Facilities"
Proposed Regulatory Guide (RG) 1.244

On May 4, 2021, the NRC published a notice in the *Federal Register* (86 FR 23750) that Draft Regulatory Guide, DG-1381, a proposed new Regulatory Guide (RG) was available for public comment. The Public Comment period ended on July 5, 2021, after an extension of the initial public comment period published in the *Federal Register* (86 FR 28158). The NRC received comments from the individuals or organizations listed below.

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The NRC responses to each comment are provided in the table.

Comment No.	Section of DG-1381	Specific Comments	NRC Resolution
NEI-1	Background, Page 6	With the planned endorsement of applicable ASME Standards NOG-1, NML-1, and parts of BTH-1, the document does not emphasize the need to include requirements of related standards of the ASME B30 series (e.g., B30.1 through B30.33). NEI Recommendation: Include related standards as references to the regulatory guide.	The NRC staff disagrees with the comment. The staff considers the information in the ASME B30 series of standards and other standards related to handling system design and use as secondary references, as discussed in the subsection entitled "Documents Discussed in Staff Regulatory Guidance." Although the information contained in these standards may have applicability to handling system design and use, the application of these standards is limited or modified by the standards endorsed by this proposed regulatory guide in order to satisfy specific

			regulatory requirements under Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, "Domestic Licensing of Production and Utilization Facilities;" 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants;" and Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste." The staff made no change to the final RG as a result of this comment.
NEI-2	Background, Page 6	As stated in the draft guidance, "Compared to NUREG-0612 guidelines, the standard covers a broader scope in terms of the types of overhead handling systems and the safety significance of the load handling activities." It is unclear how additional devices that are considered "special" may use load tests/inspections in lieu of meeting material requirements. NEI Recommendation: Clarify how load tests/inspections may be used.	The NRC staff disagrees with the comment. Understanding the materials and fabrication methods is important in defining appropriate test methods and acceptance criteria for handling system components. The proposed RG endorses standards for design, fabrication, and testing of major handling system components (i.e., ASME Std. NOG-1 and ASME Std. BTH-1) and the endorsed ASME Std. NML-1 identifies secondary references for specific handling system components (e.g., ASME Std. B30.9, "Slings"). These standards and secondary references generally specify material requirements and post-fabrication testing. Therefore, clarification of how load test/inspections may be used for qualification of handling system components is not necessary. The staff made no change to the final RG as a result of this comment.
NEI-3	Background, Page 6	Some licensees may not wish to fully adopt ASME NML-1 due to the effort required to fully update Heavy Load Handling program procedures, general heavy load handling procedures, general lifting and rigging procedures, crane procedures, and specific component lift procedures to name a few. However, there are isolated aspects of the ASME NML-1 standard that could be of great benefit to the licensees. For example, a utility may wish to utilize only the requirements of ASME NML-1 for designing, fabricating, testing, maintaining, and operating a special lifting device to ASME BTH-1, as amended by the Draft Guidance. For example, an existing crane may perform the lift that falls under the existing NUREG-0612 Heavy Loads program; however, the special lifting device would be designed to the full	The NRC staff disagrees with the comment. Changes to the design and licensing basis of components is governed by the requirements of 10 CFR 50.59, "Changes, tests, and experiments." When a highly reliable handling system is selected as the means of providing appropriate protection against internal missiles, each component may be designed, fabricated, and tested to any approved method of evaluation approved by the NRC for the specified application. Therefore, an existing approved special lifting device may be replaced by another special lifting device using a method of evaluation approved for the specified

		extent of ASME NML-1 and ASME BTH-1, as amended by the Draft Guidance. NEI Recommendation: Clarify in the guidance that this is an acceptable approach to implementation.	application, such as ASME BTH-1 as modified by the proposed regulatory position C.3 for special lifting devices. The staff made no change to the final RG as a result of this comment.
NEI-4	Background, Page 7	We recommend adding language to the draft guidance that is similar to that found in NRC RIS 2008-28. The applicable language from the RIS is copied below with amended text provided in brackets [ ]. • RIS 2008-28, Pg. 2 – "licensees may consider the guidelines of NEI-08-05 [change to ASME NML-1] as providing methods approved by the NRC for the specified applications when implementing the requirements of 10 CFR 50.59. With NRC staff clarifications and conditions noted in the safety evaluation [change "in the safety evaluation" to "herein"], licensees may use these guidelines to voluntarily establish a revised licensing basis for handling of [delete this phrase "reactor vessel heads and other"] heavy loads consistent with the provisions of 10 CFR 50.59." RIS 2008-28 Pg. 3, Backfit Discussion – "Licensees may choose to retain the facility's current licensing basis with respect to handling of heavy loads. However, licensees that choose to clarify the facility's licensing basis with respect to handling of heavy loads consistent with the industry initiative may find that NRC acceptance of the guidelines in NEI 08-05 [change to ASME NML-1] facilitates the associated changes to the safety analysis report. Pursuant to Paragraph (a)(2)(ii) of 10 CFR 50.59, a change from a method described in the safety analysis report to another method approved by the NRC for the intended application does not constitute a departure from a method of evaluation described in the safety analysis report." NEI Recommendation: Clarify that a licensee incorporating ASME NML-1 into their Heavy Load program can do so within the 10 CFR 50.59 process and that this change is considered a change in methodology that is approved by the NRC and is not a departure from a method of evaluation described in the safety analysis report.	The NRC staff partially agrees with the comment. Regulatory Guide 1.187, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments," endorses NEI 96-07, Revision 1 (ADAMS Accession No. ML003771157), as providing guidance generally acceptable for use as a means for complying with the requirements in 10 CFR 50.59, with certain clarifications. Section 4.2 of NEI 96-07, Rev. 1, discusses screening of changes to the safety analysis report to determine if the change affects design functions, including changes to methods of evaluation used to demonstrate design functions would be accomplished. Section 4.3.8 of NEI 96-07, Rev. 1, addresses changes that would not be considered a departure from a method of evaluation described in the safety analysis report, including use of a new methodology approved by the NRC for the intended application. The purpose of Regulatory Issue Summary (RIS) 2008-28 (NRC Agencywide Documents and Management System (ADAMS) Accession Number ML082460291) was to notify industry of guidelines approved by the NRC staff for evaluating changes to a facility's licensing basis related to reactor vessel head and other heavy load lifts. The Nuclear Energy Institute (NEI) developed these guidelines and issued them as NEI 08-05, "Industry Initiative on Control of Heavy Loads," Revision 0 (ADAMS Accession No. ML082180684). These guidelines included methods of evaluation to demonstrate that the design function of important to safety structures, systems, and components would not be adversely affected by handling system failures. The specific methods of evaluation described in NEI 08-05 were consequence analyses for postulated reactor vessel head drops and establishment of single-failure-proof equivalence for handling systems used for reactor vessel head lifts. In RIS 2008-28, the staff stated that these guidelines provided methods approved by the NRC for the

			specified applications when implementing the requirements of 10 CFR 50.59. Similarly, in Section B. of this RG, the NRC staff added a statement to indicate that implementation of a handling system controlled range of motion (i.e., conforming with Section 2-6.1(c)(1) of ASME Std. NML-1, including clarifications provided in proposed regulatory position C.1.a), or an enhanced reliability handling system (i.e., conforming with Section 2-6.1(c)(2) of ASME Std. NML-1 and using a crane designed to the Type I criteria of ASME Std. NOG-1, as specified in proposed regulatory position C.1.b (1)), provide a complete NRC approved method for evaluating the response of handling system structures and components to equipment failures and the effects of natural phenomena. Thus, implementation of either a controlled range of motion or an enhanced reliability handling system including a crane conforming to Type I criteria as defined in ASME NOG-1 would not constitute a "departure from a method of evaluation described in the safety analysis report," as defined in 10 CFR 50.59. However, the use of a highly reliable handling system using an alternate crane design (i.e., a crane based on regulatory position C.1.b.(2)) or engineering controls based on load drop consequence analyses conforming with Section 2-6.1(c)(3) of ASME Std. NML-1 provide general guidelines and lack a complete framework to evaluate the response of handling systems or other important-to-safety structures, systems, and components to handling system failures. Therefore, regulatory positions C.1.b.(2) and C.1.c do not establish an NRC approved method of evaluation. Rather, these regulatory positions provide guidance to applicants and licensees when alternative highly reliable crane designs or load drop analyses are relied upon to demonstrate that design functions would not be challenged by postulated handling system component failures or natural phenomena. Similar to the guidelines of NUREG-0612, ASME Std. NML-1 provides programmatic guidelines related to the development of procedures, training of personnel involved in material handling activities, maintenance, and design, fabrication, and testing of

			systems and components that are not directly relied upon to perform design functions. Appendix A to ASME Std. NML-1 provides a matrix addressing conformance of the elements of the standard with guidelines from NUREG-0612. The staff explained in Section B of the RG that this conformance matrix may serve as an aid in evaluating a transition to ASME Std. NML-1 as the licensing basis for control of heavy loads. In many cases, the conformance matrix indicates the guidelines of ASME Std. NML-1 are identical or more conservative than the equivalent guidelines in NUREG-0612, and, therefore, do not adversely affect design functions. The staff made clarifying changes to Section B of the RG as a result of this comment.
NEI-5	Background, Page 7	Using the License Amendment Request process to adopt NML-1 to a currently licensed facility will not be efficient. The draft guidance alludes to the use of the 10 CFR 50.59 process as a means to adopt the new standard. NEI Recommendation: Considering reinforcing that using the 10 CFR 50.59 process is an acceptable means to modify a station's licensing basis from NUREG-0612 to NML-1 as provided by NML-1 Nonmandatory Appendices A and B.	The NRC staff partially agrees with the comment. As documented in the response to Comment NEI-4, the staff described those regulatory positions that are considered NRC approved methods of evaluation to simplify voluntary adoption through the 10 CFR 50.59 change process in Section B of the RG. The staff made clarifying changes to Section B of the RG as a result of this comment.
NEI-6	Background, Page 7	For stations whose licensing bases reference NUREG-0612, Phase I, please clarify that any Phase I commitments that are NOT requirements under ASME NML-1 can be removed from the station's licensing basis as provided by NML-1 Nonmandatory Appendix B, Paragraph B-2. NEI Recommendation: Provide clarity as described.	The staff partially agrees with the comment. The requirements of 10 CFR 50.59 define the process to change a facility's licensing basis. Guidance on implementing changes to a facility licensing basis pursuant to 10 CFR 50.59 are provided in RG 1.187, which discusses changes that may be implemented without prior NRC approval. Consistent with the response to NEI-4, the staff revised Section B of the RG to indicate those regulatory positions that are considered NRC approved methods of evaluation to simplify voluntary adoption through the 10 CFR 50.59 change process. The staff made no change to the final RG as a result of this comment.
NEI-7	Background, Page 7	For stations whose licensing bases reference NUREG-0612, Phase II, please clarify that any Phase II commitments that are NOT requirements under ASME NML-1 can be removed from the station's licensing basis as	The staff partially agrees with the comment.

		provided by NML-1 Nonmandatory Appendix B, Paragraph B-2. NEI Recommendation: Provide clarity as described.	The requirements of 10 CFR 50.59 define the process to change a facility's licensing basis. Guidance on implementing changes to a facility licensing basis pursuant to 10 CFR 50.59 are provided in RG 1.187, which discusses changes that may be implemented without prior NRC approval. Consistent with the response to NEI-4, the staff revised Section B of the RG to indicate those regulatory positions that are considered NRC approved methods of evaluation to simplify voluntary adoption through the 10 CFR 50.59 change process. The staff made no change to the final RG as a result of this comment.
NEI-8	C.1, Page 10	Hydraulic gantry cranes per ASME B30.1 are commonly used for rigging and lifting activities at NPPs (e.g., turbine rotor replacements, generator stator replacements, upending transformers in haul paths, etc.). ASME B30.1 has very similar requirements to ASME B30.2, and both ASME standards require testing certification. ASME B30.1 is not discussed or referenced in the NML-1 list. NEI Recommendation: Add related standards as references to the proposed regulatory guide.	The staff partially agrees with the comment. Section 1-2, "Scope," of ASME Std. NML-1 lists telescopic hydraulic gantry systems and strand jack systems as types of overhead handling systems covered by ASME Std. B30.1 as handling systems within the scope of the standard. However, the staff considers the level of detail in the ASME B30 series of standards with respect to design is generally insufficient to serve as an NRC approved method of evaluation for the design of a highly reliable handling system. The NRC staff provided guidance in Regulatory Position C.1.b.(2) supporting an NRC staff review of this type of handling system when the associated lift is a nuclear safety critical lift. Lifts other than nuclear safety critical lifts do not require a highly reliable handling system and may be performed with appropriate consideration of risk management and seismic qualification requirements applicable to lifts in the specific plant area. The staff modified the RG to clarify that standards cited in Section 2.1 of ASME Std. NML-1 may be referenced in developing proposed handling systems for nuclear safety critical lifts under Regulatory Position C.1.b.(2).
NEI-9	C.1.a (1) 1st bullet, Page 10	There are no safety factors described to the margin for tipping including if the tip over is due to a seismic event. NEI Recommendation: Add clarification on how safety factors are considered.	The staff partially agrees with the comment. Margin is inherent in the criterion for consideration of tipping. The intent of the criterion is to consider the effect of a tipping load when tipping of less than 45 degrees on average from its lifted

			orientation would result in the load being unstable. The staff does not consider the risk of seismic action on a suspended load to be significant relative to tipping. However, the staff noted a need to clarify that the crane used for nuclear safety critical lifts under the provisions of ASME Std. NML, Section 2-6.1(c)(1) must meet the design criterion for a Type II crane specified in ASME Std. NOG-1 or otherwise be seismically qualified under load. The staff modified the RG to clarify the need for a seismically qualified overhead crane to preclude loss of support for the crane during a seismic event.
NEI-10	C.1.a(1) 2nd bullet, Page 10	It is not clear how redundancy and separation can be considered for the exclusion of components from within the range of motion. NEI Recommendation: Clarify how redundancy and separation can be used.	The staff disagrees with the comment. The regulatory position applies to nuclear safety critical lifts, which are defined in ASME Std. NML-1 as lifts where uncontrolled motion of the load can result in the loss of an essential safety function. With respect to credit of controlled ranges of motion, the method of protection for essential safety functions may credit redundancy and separation when two or more trains of equipment can each independently perform or support performance of an essential safety function. The criterion for determining a redundant train has adequate separation is when essential components of that train are outside the range of potential direct impacts from uncontrolled load motion following a single lifting system component, impact from credible tipping of the load, and either outside the range of or not affected by the indirect consequences of the failure of other components that are within the zone of direct impact due to uncontrolled load motion. Thus, the staff considers the definition of a nuclear safety critical lift combined with the cited regulatory guidance provides sufficient information regarding how redundancy and separation may be considered. The staff made no change to the final RG as a result of this comment.
NEI-11	C.1.b (2), Page 10	For lifts using an alternative lifting scheme, reference is made to ASME NML-1, Section 4-1.1. It is unclear how the use of Mobile Cranes meets ASME NML-1, Section 4-1.2. Also, it is unclear how the use of an Engineering Temporary Lift Assembly meets ASME NML-1, Section 4-1.3.	The staff partially agrees with the comment. The staff considers the use of mobile cranes and engineered temporary lift assemblies (ELTAs) as necessary for infrequent major component replacement (e.g., steam generator

		NEI Recommendation: Add clarification on the use of mobile cranes and engineering temporary lift assemblies.	replacements) or useful for operations outside of nuclear power plant structures for more frequent maintenance operations (e.g., operations supporting removal and reinstallation of service water pumps through intake structure roofs). However, these types of lifting devices do not include standards that ensure an inherently stable structure is present to support an overhead lift and prevent toppling. Therefore, ASME Std. NML-1 restricts the use of mobile cranes and ELTAs to standard and special lifts unless the potential consequences of component and structural failures are shown to not impair essential safety functions. The cited regulatory position applies to nuclear safety critical lifts using lifting system designs that conform with the critical lift guidelines of Section 4-1.1 of ASME Std. NML-1, which permits only crane designs considered single-failure-proof. The staff believes the definition of a nuclear safety critical lift combined with the cited regulatory guidance provides sufficient information regarding the use of mobile cranes and ETLAs. The staff made no change to the final RG as a result of this comment.
NEI-12	C.1.b (2) 2nd bullet, Page 10	Please provide examples for the second bullet, like examples provided in the first bullet: • outside of nuclear power plant structures (e.g., operations related to an independent spent fuel storage facility), • involves an infrequent major component replacement (please provide examples here), or… NEI Recommendation: Similar to the first bullet, consider adding examples for the second bullet.	The staff agrees with the comment. Infrequent major component replacement refers to large components whose handling is not described in the facility safety analysis report section addressing refueling activities. The staff added the above description to the final RG as a result of this comment.
NEI-13	C.1.b (2) (a), Page 11	Currently NML-1 is the only consensus standard that addresses Engineered Temporary Lift Assemblies (ETLA). It is not clear if the use of an ETLA is permitted if the remaining items b through g are met. It is not clear if the term “applicable national consensus standard(s)” includes all such standards or only the ones endorsed by the NRC. NEI Recommendation: Add clarify on the use of ETLA and national consensus standards.	The NRC partially agrees with the comment. As discussed for Comment No. NEI-11, regulatory position C.1.b(2) applies to nuclear safety critical lifts using lifting system designs that conform with the critical lift guidelines of Section 4-1.1 of ASME Std. NML-1, which permits only lifting system designs considered single-failure-proof (i.e., a highly reliable handling system). ETLAs, in general, have not been accepted as single-failure-proof or highly reliable.

			The staff made no change to the final RG as a result of this comment.
NEI-14	C.1.b (2) (b) & (g), Page 11	It is unclear if quality assurance means meeting either ASME NQA-1 or 10 CFR 50 Appendix B. Also, it is unclear how NOG-1 Section 6170 or equivalent applies. NEI Recommendation: Add clarity on the use of qualify control measures.	The NRC staff partially agrees with the comment. The staff's intent for regulatory position C.1.b(2) is to identify the staff information needs for evaluation of new and previously unapproved handling systems. Therefore, quality assurance means that information necessary to address the regulatory requirements in Appendix A to 10 CFR Part 50, GDC-1, "Quality standards and records," (Part 50 and Part 52 licenses) or 10 CFR 72.24, "Contents of application: Technical information," (Part 72 licenses). For both, the requirements relate to quality standards applied to the design, fabrication, construction, and testing of important to safety portions of heavy load handling systems. This is a reduction in scope relative to the requirements of 10 CFR Part 50, Appendix B and ASME NQA-1, but guidance developed for these requirements may assist in developing an appropriate program. The components important to safety are established based on the design function, so the staff cannot predetermine those components that should be subject to these quality assurance measures. The staff made no change to the final RG as a result of this comment.
NEI-15	C.1.b (2) (c) & (d), Page 11	As described, it is unclear how "conservative design criteria" is applied. NEI Recommendation: Add clarity on the use of conservative design criteria.	The NRC staff agrees with the comment. As stated in the response to Comment No. NEI-14, the staff's intent for regulatory position C.1.b(2) is to identify the staff information needs for evaluation of new and previously unapproved handling systems. Therefore, conservative design criteria means that information necessary to address the regulatory requirements in Appendix A to 10 CFR Part 50, GDC-1, "Quality standards and records," (Part 50 and Part 52 licenses) or 10 CFR 72.24, "Contents of application: Technical information," (Part 72 licenses). For both requirements, the requirements relate to quality standards applied to the design of important to safety portions of heavy load handling systems. The staff identified national standards that may be used to establish design criteria.

			The staff modified the RG to provide examples of acceptable design standards.
NEI-16	C.1.b (2) (e), Page 11	Providing redundancy may prove to be difficult in some situations. The use of higher design margins or administrative controls (similar to those allowed for Single-Failure-Proof-Equivalency per NEI 08-05) would be beneficial. Higher safety factors should also be considered in lieu of redundancy. Design criteria specified in the applicable national consensus standards should be referenced. NEI Recommendation: Add clarity on the use of safety factors and applicable national consensus standards.	The NRC staff partially agrees with the comment. The staff listed redundancy for mechanical components subject to fatigue or wear. As stated in Section A of the RG, the RG positions are not regulations, and compliance with RG positions is not required. Design solutions that differ from those set forth in the RG could be acceptable if supported by a suitable basis. The staff made no change to the final RG as a result of this comment.
NEI-17	C.1.b (3), Page 11	It is unclear if the attachment point referenced in this statement refers to a fixed attachment point on the load being lifted (such as a reactor head or steam generator) or the attachment points on the lifting device. ASME BTH-1 does not address attachment points on the load. NEI Recommendation: Add clarity.	The NRC staff agrees with the comment. The staff changed the term “load attachment points” to “lifting attachment” as defined in ASME Std. BTH 1. The staff also clarified that the lifting attachment be designed to satisfy regulatory position C.3.c. to meet Design Category B criteria for two independent load paths and Design Category C for single load path configurations. The staff modified the RG to specify “lifting attachment” and referenced a definition of this term as a result of this comment.
NEI-18	C.1.b (4), Page 11	The use restrictions described in NML-1 Section 5-1.2.1 require a D/d ratio of 25:1. While appropriate for wire rope slings, this D/d ratio is very restrictive for synthetic slings. For example, using a shackle to connect a round sling to a load attachment point. It is unclear how to apply guidance of other ASME standards for standard lifting/rigging components. NEI Recommendation: Add clarification to allow for the use of other applicable standards in additional to NML-1.	The NRC staff agrees with the comment. The staff intent in limiting the usage of slings is to avoid scenarios where the slings may be cut by a single rigging error, as indicated by operating experience where large, non-cylindrical components cut slings used in a basket configuration when edge protection was not properly positioned. To address this concern as well as the intent of the comments, the staff will modify regulatory position C.1.b (4) to endorse Section 5-1.2.1 of ASME Std. NML-1 for all slings types and clarify that the intent is for slings to be used in a straight line between lifting attachment points, such as shackles connected to a load attachment, or to be used in a basket configuration around large cylindrical portions of the load that provide a D/d of 25:1 or greater to avoid the potential for sling damage. Section 5-2, “Other Rigging Equipment,” of ASME Std. NML-1 refers to ASME B30.9, “Slings” and ASME B30.26, “Rigging

			Hardware," for off-the-shelf hardware used in these applications, and Section 5-1.2.1 of ASME Std. NML-1 specifies doubled load ratings for non-redundant load paths. Note that this regulatory position is limited to nuclear safety critical lifts that credit an enhanced reliability handling system to prevent a challenge to an essential safety function through uncontrolled load motion. The staff clarified the use of slings as part of highly reliable handling systems.
NEI-19	C.2 (b), Page 12	Unclear what should be done in cases where the NOG-1 load combinations are different than the facility design basis load combinations. NEI Recommendation: Add clarity.	The NRC staff disagrees with the comment. The staff considers the ASME Std. NOG-1 load combinations to be flexible enough to accommodate the facility design basis load combinations for external events. The load combinations associated with the handling system itself are part of the change that the licensee must evaluate pursuant to the applicable change regulation. As stated in Section A of the RG, the RG positions are not regulations, and compliance with RG positions is not required. Design solutions that differ from those set forth in the RG are acceptable if supported by a suitable basis. The staff made no change to the final RG as a result of this comment.
NEI-20	C.3, Page 12	The draft regulatory guidance does not refer to ANSI N14.6. This ANSI standard is embodied into NUREG-0612 5.1.1(4). NEI Recommendation: Confirm that by endorsing NML-1 and BTH-1, the intent of the draft regulatory guidance is to eliminate usage of ANSI N14.6 for stations that transition to NML-1 and BTH-1.	The NRC staff agrees with the comment. The staff described in Section B of the RG that the endorsement, in part, of ASME NML-1 and BTH-1 is intended to replace the design, maintenance, and testing guidance for special lifting devices contained in ANSI/ANS N14.6. The staff added the above description to Section B of the RG as a result of this comment.
NEI-21	C.3, Page 12	In Chapter 1 of ASME BTH-1, it states: "Lifting devices designed to this Standard shall comply with ASME B30.20, Below-the-Hook Lifting Devices. ASME B30.20 includes provisions that apply to the marking, construction, installation, inspection, testing, maintenance, and operation of below-the-hook lifting devices." Therefore, ASME BTH-1 is not a replacement for B30.20, but rather, ASME BTH-1 supplements the requirements of ANSI B30.20. NEI Recommendation: Add this clarification to the RG to ensure compliance with the ASME B30.20 standard.	The NRC staff partially agrees with the comment. Section 5-1.1 of ASME Std. NML-1 provides for compliance with ASME B30.20 for standard and special lifts. In addition, Section 5-1.2 of ASME Std. NML-1 provides for inspection of special lifting devices used for critical lifts under the provision of ASME B30.20, and establishes additional load test and continuing compliance testing guidelines beyond those specified in ASME B30.20.

			The staff made no change to the final RG as a result of this comment.
NEI-22	General Comment	ASME NUM-1, Rules for Construction of Cranes, Monorails, and Hoists (With Bridge or Trolley or Hoist of the Underhung Type). NUM-1 – Type I (Type 1A and 1B) lifting devices are allowed in NML-1 -2019. These devices are regularly used at nuclear plants inside containment and other areas of the power block to perform heavy load lifts. NEI Recommendation: Consider including as part of this endorsement	The NRC staff partially agrees with the comment. The staff modified the RG to identify national consensus standards identified within Section 1-2, "Scope," of ASME Std. NML-1, which included ASME Std. NUM-1, as an acceptable consensus standard cited under Regulatory Position C.1.b (2) for application to nuclear safety critical lifts. The staff finds ASME Std. NUM-1 not yet sufficiently clear to define an acceptable method of evaluation for an enhanced reliability handling system. In addition, the staff notes that ASME Std. NML-1 references application of NUM-1 to cranes used for other lift classifications. The staff modified the RG to indicate national consensus standards identified within Section 1-2, "Scope," of ASME Std. NML-1 as acceptable consensus standard cited under Regulatory Position C.1.b (2) for application to nuclear safety critical lifts.
NEI-23	General Comment	The DG does not clearly describe how the guides, codes, and standards do, or do not, apply to lifts of spent fuel casks outside of the Part 50 facility. This would include devices like cask crawlers, mobile cranes, and canister/cask transfer facilities. NEI Recommendation: Clarify how ISFSI license or CoC holders should consider how to apply the codes and standards.	The NRC staff partially agrees with the comment. For existing dry storage and multi-purpose cask systems, the guidance of NUREG-0612 and NUREG-0554 is often specifically identified in Technical Specifications included with the license. The requirements of 10 CFR 72.48 apply to changes to the safety analysis report. Licensees are responsible for evaluating desired changes under those requirements. The intent of this RG is to endorse national consensus standards to replace NRC developed guidance. Implementation may require an amendment to the ISFSI license or the General License Certificate of Compliance. The staff made no change to the final RG as a result of this comment.
NEI-24	General Comment	ASME-NML-1 Sect. 2-6.1(c)(1), (2), & (3) contains guidance crediting the range of motion, specific requirements for enhanced handling system reliability, and postulated load drop requirements. The draft RG should consider additional administrative measures, other measures and controls for cases where range of motion cannot be qualified, use of control of motion when enhance handling system reliability requirements cannot be met, or when postulated load drop analyses will be	The NRC staff disagrees with the comment. Administrative measures alone do not provide appropriate protection from the potential effects of handling system component failures. As stated in Section A of the RG, the RG positions are not regulations, and compliance with RG positions is not required.

		required. NEI Recommendation: Consider clarifying and including where administrative measures, other measures, and controls can be used to support the guidance.	Design solutions that differ from those set forth in the RG are acceptable if supported by a suitable basis. The staff made no change to the final RG as a result of this comment.
Duerr-1	Discussion, Page 5; C.1.b (3), Page 11; and C.3, Page 12	ASME BTH-1-2020 defines the term “lifting attachment” as “a load supporting device, such as a lifting lug, padeye, trunnion or similar appurtenance that is attached to the lifted load, is designed for use with the specific load to which it is attached, and either (a) remains attached to the load, or (b) is removed and not reused.” It is suggested that the term “lifting attachment,” as opposed to the present term “load lifting attachment” be used here and elsewhere throughout this guide to provide improved clarity and consistency with ASME BTH-1.	The NRC staff agrees with the comment. The staff changed the term “load attachment points” to “lifting attachment” as defined in ASME Std. BTH 1. The staff also clarified that the lifting attachment be designed to satisfy regulatory position C.3.c. to meet Design Category B criteria for two independent load paths and Design Category C for single load path configurations. The staff modified the RG to specify “lifting attachment” and referenced a definition of this term as a result of this comment.
Duerr-2	General Comment	The current edition of ASME BTH-1 is 2020, issued on June 11, 2021.	The staff agrees with the comment. The staff retained the reference to ASME Std. BTH–1–2017 because it is referenced by ASME Std. NML–1–2019. The staff made no change to the final RG as a result of this comment.
Slingmax	C.1.b (4), Page 11	This document intends to endorse the use of ASME standards NML-1, NOG-1, and BTH-1 by applicants and licensees for both nuclear power plant operations as well as independent storage of spent nuclear fuel. Of particular concern with this change is the following section of NML-1: (b) Synthetic slings may be used only if one of the following applies: (1) The tensioned slings remain in a straight line between their end bearing points. (2) The tensioned legs wrap around a curved surface with a minimum D/d ratio of 25:1, where D is the diameter of the curved surface and d is the nominal body diameter of the sling. Synthetic slings have been safely and successfully used in critical lifts in the nuclear industry for decades. In fact, the nuclear industry has been the catalyst for many of the safety related innovations that Slingmax has introduced over the years, including: • The independent load-bearing paths of a Twin-Path® Sling	The NRC staff agrees with the comment. The staff intent in limiting the usage of slings is to avoid scenarios where the slings may be cut by a single rigging error, as indicated by operating experience where large, non-cylindrical components cut slings used in a basket configuration when edge protection was not properly positioned. To address this concern as well as the intent of the comment, the staff will modify regulatory position C.1.b (4) to endorse Section 5-1.2.1 of ASME Std. NML-1 for all slings types and clarify that the intent is for slings to be used in a straight line between lifting attachment points, such as shackles connected to a lifting attachment, or to be used in a basket configuration around large cylindrical portions of the load that provide a D/d of 25:1 or greater to avoid the potential for sling damage. Note that this regulatory position is limited to nuclear safety critical lifts that credit an enhanced reliability handling

		• Check-Fast® inspection system • Smart Sling® Electronic monitoring system This change will severely restrict operations by requiring operators to revert back to heavy, inefficient steel rigging. We believe this is detrimental to the industry for several reasons: First, all slings are susceptible to cutting on edges and should be protected from cutting regardless of the sling material used. All riggers should be in the practice of protecting slings from cutting on edges at all times. In fact, we have performed testing where both synthetic and steel slings were rigged over an edge, and the steel wire slings failed at a similar load to the synthetic sling. Prohibiting synthetic slings from these types of lifts will not enhance safety and may in fact decrease safety because of the false sense of security when using steel rigging on edges. If there is an intention to reduce the possibility of slings cutting on edges, any prohibition should be universal, and engineered cut protection should be included in the consideration. Additionally, if there is an intention to avoid rigging around edges, a 25:1 D/d is far beyond what is needed to accomplish that goal.	system to prevent a challenge to an essential safety function through uncontrolled load motion. The staff clarified the use of slings as part of highly reliable handling systems.