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NUREG-2216, "Standard Review Plan for Spent Fuel Transportation"

Comment On: NRC-2019-0132-0001

Standard Review Plan for Spent Fuel Transportation

Document: NRC-2019-0132-DRAFT-0002

Comment on FR Doc # 2019-17584

Submitter Information

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Organization: Nuclear Energy Institute

General Comment

See attached file(s)

Attachments

09-30-19_NRC_NEI Comments on NUREG 2216

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September 30, 2019

Office of Administration
ATTN: Program Management, Announcements and Editing Staff
Mail Stop: TWFN-7-A60M
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Comments on Draft NUREG-2216 "Standard Review Plan for Spent Fuel Transportation"
Docket ID NRC-2019-0132

Submitted via Regulations.gov

Project Number: 689

Dear Program Management, Announcements and Editing Staff:

The Nuclear Energy Institute (NEI)¹ appreciates the opportunity, as requested in an August 16, 2019 Federal Register Notice (84 FR 42024), to provide comments on the U.S. Nuclear Regulatory Commission's (NRC) Draft NUREG-2216 "Standard Review Plan for Spent Fuel Transportation." The draft NUREG provides guidance to NRC staff for reviewing an application for transportation package approval, which typically results in issuance of a certificate of compliance (CoC) or a letter amendment for a transportation package. The proposed SRP will replace NUREG-1609 "Standard Review Plan for Transportation Packages for Radioactive Material" and NUREG-1617 "Standard Review Plan for Transportation Packages for Spent Nuclear Fuel" as well as all Interim Staff Guidance used to enhance the subject NUREGs.

The proposed SRP is intended to assist NRC staff in its reviews by: providing a basis for uniform quality and consistent regulatory review for a CoC for a transportation package; presenting a basis for the review's scope; identifying approaches to meet regulatory requirements and suggesting possible evaluation findings that might be used in the safety evaluation report. Combining and updating two NUREGs and numerous Interim Staff Guides (ISGs) into a single regulatory tool to fulfil this purpose provides an outstanding opportunity for the

¹ NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

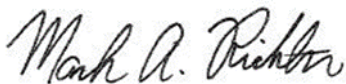
Nuclear Regulatory Commission to modernize its used spent fuel transportation review guidance to improve efficiency. This goal is best served if the consolidation is accomplished in a clear and unambiguous manner to assure a uniform basis of review is established.

To that end we offer the following three general comments:

- The specific information extracted from the 11 ISG documents referenced in the NUREG should be identified by location in the NUREG, as well as the content that has been included. This is necessary to assure continuity and consistency in NRC's review process.
- The NUREG utilizes adjective terms such as bounding, similar, substantially and appropriate without explanation. Use of undefined terms in review guidance is contrary to the NRC's "Principles of Good Regulation" which were developed to improve clarity, reduce potential ambiguities, and assure a uniform basis of review is established.
- Frequent use of general comments as part of the instructions to the reviewing staff create opportunities for technical and professional disagreement, absent clear and objective standards.

In the attachment to this letter we offer a number of detailed comments which identify specific opportunities to improve the Draft NUREG as recommended by our general comments. The list of detailed comments is not an all-encompassing list and the NRC is encouraged to identify additional opportunities to improve the Draft NUREG, consistent with our general comments. If you have any questions or require additional information, please contact me at 202-739-8106, mar@nei.org.

Sincerely,



Mark A. Richter

Attachment

c: Michael Layton, NMSS, NRC
Jeremy Smith, NMSS, NRC

Section	Page	Line(s)	Comments
2			Review design features that minimize internal load shift and resulting changes to centers of gravity
2			Review should include design features that facilitate repackaging or internal package repair (if necessary)
2			Review should include allowable statistical deviation in structural characteristics and accident evaluation ranges
2			Review should include viable corrective actions possible following a failure in structural integrity or inadvertent non-compliance
2			Bounding limits of structural stability should be identified and under what bounding conditions structural failure is possible
2			Means of verification of actual package characteristics versus drawings and specifications should be described
2	5	35	If not directly applicable to the package, what criteria should staff use in evaluating applicability of standards developed for "similar" design and materials?
2	6	2	In comparison to what criteria, should staff confirm applicability of standards developed for "similar" consequences of failure?
2	6	19-20	Under what bounding criteria and according to what evaluation process can NRC consider alternative guidance on a case-by-case basis?
2	7	22-23	If using properties and the weight of the fuel pellets, in addition to the cladding weight, provides "for more realistic results," under what conditions would use of other calculation inputs be acceptable?
2	7	28-29	What analysis is required to predict impacts on fuel and package integrity from failure in an intermediate support?
2	7	36	The description of critical aspects of package closure system should be added to refine meaning of what constitutes "sufficient detail."
2	11		Reproducibility over multiple tests with multiple packages to test should be required for "Evaluation by Test."
2	14		Vibration analysis should require reasonable harmonic phases of oscillation of the package and conveyance.
2	15	10	While ensuring that there is no loss or dispersal of radioactive contents resulting from hypothetical accidents, possible impacts to internal structures and their post-accident management should be documented.

3			Differing rates of heat increase in the hypothetical accident conditions should be reviewed.
3			Bounding limits of thermal failure should be identified. Under what bounding conditions is thermal failure possible?
4			Bounding limits of containment failure should be identified. Under what bounding conditions is containment failure possible?
4			Review should include identification of how fuel cladding failure can be determined if it does not include containment loss - post accident.
5	6	16	What are the "hypothetical accident conditions" called for in the review?
5	9	45-46	What is a "reasonable number of appropriate locations?"
5	15	4	What defines "accurately determined?"
6			Criticality evaluations should include atypical fuel configurations resulting from post-accident compromised internal supports.
6	23	13-15	"... time limit of the validity ... possible use of the package to transport SNF that has been in dry storage for an extended time." This is incorrect. As discussed on Page 6A-5, the time limit would be driven by the credited cooling time, whether the fuel has been in dry storage or in wet storage during this time is irrelevant. If anything, concerns with validity in extended storage would be related to storage after the transport.
6	29	RW-859	In some recent application (not for burnup credit), NRC staff indicated the expectation that the latest data source, GW-859, should be used instead of RW-859. It appears that no such preference exists here. If that is in fact the case, it should be stated more clearly that both are equally acceptable for the purpose here.
7	2	34-35	What defines reasonable technical basis?
7	2	40-41	What defines substantially altered?
7	11	19-33	The paragraph addresses the properties of the aluminum matrix material, but makes no mention of fiber or precipitates mechanical properties along with the aluminum that create the composite. If it is precipitation hardened, then that should be stated.
8			Procedures should address corrective actions following unanticipated or deviant loading/unloading condition/situation.
9	1	13	Is adequacy left to the judgement of the reviewer?
10			Quality Assurance should ensure that risk is communicated and information made available to first responders following an accident should be reviewed.

A	A-3	24-30	The text describes the comparisons that are to be performed against the GBC-32, but provides no acceptance criteria other than they should not deviate "substantially." This leaves the judgement on the comparison wide open to the interpretation of the staff. It is understood that quantitative criteria would be difficult to specify, but maybe some simple examples of acceptable systems may be helpful.
A	A-16	34-35	"... not a trivial process and has the potential for errors. The reviewer should verify". The calculations are performed under an NRC approved QA program and should not contain errors. Hence the reviewer should not, and not be categorically encouraged to, verify the analyses in order to hunt for errors, unless results give indication something may be incorrect.
A	A-17	5-9	"To ensure the accuracy of the code ...", "... capable of accurately ...". Assurance of accuracy seems in conflict with the expectation of reasonable assurance of an adequate level of safety, and may prompt the NRC staff to request details and evaluations that could go way past that expectation. The text should be adjusted accordingly.
A	A-18	41-44	"These Local effects ..." The sentence states that a one-dimensional depletion code is used, which is not necessarily the case. Please clarify.
A	A-19	17-18	To more clearly state this as an expectation (rather than a fact), maybe change to "... factors below/above 1.0 should be conservatively set to ..."
A	A-25	14-27	The sentences addressing MCNP added to the end of this paragraph may be better placed at the beginning of same paragraph.
A	A-30	23-24	Credit for soluble boron to address consequences of a potential misloading accident are now limited to storage (10CFR72) applications, while the original ISG-8 Rev. 3 did not contain any such restriction. For general unloading conditions, a requirement in the CoC should be sufficient to assure the appropriate soluble boron level is present. Note that 71.55(b) should still be satisfied, since as long as the CoC requirements (limitation of content) are met, the system will be subcritical when flooded with plain water. The soluble boron only protects against an assumed violation of the CoC content limitations. Under accident conditions, where flooding of the package is to be assumed (which obviously cannot assume borated water), the double contingency principal should be applicable, which would exclude the assumption of concurrent and independent accidents (flooding and misloading). Hence this requirement should be revised accordingly. Note that to our knowledge, transport packages have been approved using soluble boron for the misloading accident condition.