

ENERGYSOLUTIONS

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Ms. Cindy Bladey
Chief, Rules, Announcements, and Directives Branch
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

18

Subject: Response to NRC Request for Comments on Retrievalability, Cladding Integrity and Safe Handling of Spent Fuel at an Independent Spent Fuel Storage Installation and During Transportation

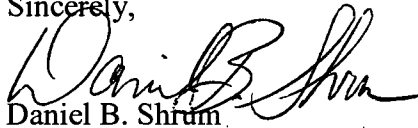
Reference: Docket ID NRC-2013-0004

Dear Ms. Bladey:

EnergySolutions hereby submits the comments contained in the attachment in response to the subject notice. We appreciate the opportunity to comment on the considerations related to potential changes to 10 CFR 71 and 72. In addition to the specific comments contained herein, we also concur with the comments provided by the Nuclear Energy Institute on behalf of the nuclear industry.

Thank you again for this opportunity to comment. Questions regarding these comments may be directed to me at (801) 649-2109 or dshrum@energysolutions.com.

Sincerely,



Daniel B. Shrum
Senior Vice President
Regulatory Affairs

Attachment

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Add= B. White (bhw)

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COMMENTS ON RETRIEVABILITY, CLADDING INTEGRITY AND SAFE HANDLING OF SPENT FUEL AT AN INDEPENDENT SPENT FUEL STORAGE INSTALLATION AND DURING TRANSPORTATION

EnergySolutions' comments in response to the NRC solicitation are divided into two categories. First we address the regulatory areas that NRC identified for evaluation in Section II of the *Federal Register* notice. We specifically address the first and last of the five areas below. Secondly, we provide our comments on the NRC document, *Request for Comment on Retrievability, Cladding Integrity and Safe Handling of Spent Fuel at an Independent Spent Fuel Storage Installation and During Transportation*.

REGULATORY AREAS IDENTIFIED FOR EVALUATION

1. Compatibility and integration of storage and transportation requirements – There are potential benefits to harmonizing 10 CFR Parts 71 and 72, e.g., the synchronization of fuel specifications in the 10 CFR 71 and 72 certificates of compliance (CoCs) for dual-purpose canister (DPC) systems. A common licensing approach used for DPCs is to first obtain NRC certification of the storage system, followed by NRC certification of the transportation system. This approach can result in inconsistencies between the fuel specifications in the Part 71 and Part 72 CoCs. For many fuel parameters, such as heat load and parameters that affect the external dose rates, these differences are accounted for through the use of extended cooling times for transportation. However, for certain fuel specifications, such as fuel loading configuration and physical characteristics of fuel and inserts, differences between the fuel specifications in the storage and transportation CoCs can unintentionally cause licensees to be unable to qualify certain fuel populations for both storage and transportation. Such conflicts could be avoided by harmonization of the two separate licensing actions.

While we are conceptually in favor of harmonization of these two regulatory regimes, possibly even to the point of contemporaneous certifications, we agree with the Nuclear Energy Institute that such harmonization is not yet ripe for consideration. The current regulatory approach, with separate and distinct licensing actions for storage and transportation, seems disjointed from the reality currently facing the industry. This reality is that virtually all fuel placed in dry storage will at some point require transportation. Furthermore, many storage systems will be located at stand-alone ISFSIs with no capability for fuel removal long before there is a disposal or consolidated storage option. Unfortunately, as described in detail in the comment letter from the Nuclear Energy Institute (NEI), there are several complications that should be addressed before harmonization can be addressed.

5. Regulating standalone ISFSIs – The currently available NRC regulations, guidance, and policy statements regarding spent fuel retrievability from storage containers omit a significant, necessary clarifying point with regard to the need for and timing of the availability of ISFSI site retrieval capability (confinement, canister opening/closing, assembly handling, etc.), particularly for those locations where there is no longer a spent fuel pool or other handling facility. Currently available technology for determining fuel

condition prior to canister loading (and in some cases, effecting fuel assembly repairs) combined with the capability to individually “can” degraded or questionable assemblies significantly reduces the potential need for having the handling capability already available. Consequently, there have been some historical inconsistencies in what, if any, capabilities have been required and/or provided. Consideration should be given to providing either more explicit guidance on the existing regulations or amending them to provide clarity in their application. To the extent such requirements are driven by the current policy of ready-retrievability, we believe the necessary relief can and should be provided by a revision of this policy (see below under Response to NRC Questions).

RESPONSES TO NRC QUESTIONS

Acceptance of Spent Fuel by a Future Disposal or Reprocessing Facility

Question 1. Should an enhanced regulatory framework assume the licensee receiving spent fuel for disposal will be able to site and design a repository for direct disposal of these high capacity canisters without repackaging?

The regulatory framework in 10 CFR 71 and 72 should make no assumptions regarding the potential for direct disposal of the fuel being stored or transported. The U.S. Department of Energy (DOE) is considering a range of disposal options (e.g., repository in various geologies and deep bore hole). How the selection of a final site might affect disposal packaging cannot be predicted. It is possible that repackaging of some or all of currently-used canisters would be necessary in order to comply with site-specific and/or geology-specific waste acceptance criteria.

These considerations involve repository performance or operations, not the safety of storage or transportation. However, it is no less likely that little if any of the canisters would require repackaging. It simply is not and cannot be known.

It is not appropriate to address these factors in the regulatory framework of Part 71 or 72 for several reasons:

- It is impossible to know what disposal criteria to apply and attempting to make any assumptions would be unduly speculative
- Disposal criteria are not relevant to the safe storage and transportation of spent fuel
- Expecting Part 50 licensees to accept responsibility for satisfying disposal criteria would impose an unreasonable regulatory burden

Question 2. Should an enhanced regulatory framework assume the repository licensee will be able to handle and repackage potentially degraded/damaged fuel on large production scales?

Yes, it is reasonable to assume that a repository will be able to manage degraded and/or damaged fuel on a large scale. Technologies to do so exist today. There is no basis for assuming any particular standard for the receipt by DOE of the fuel; DOE is obligated to have the capability for handling and repackaging any waste subject to 10 CFR Part 961. As stated in the answer to the first question, no additional regulatory requirements should be imposed upon 10 CFR 50 and 72



licensees for support of future, unknown decision related to the operation of a repository.

Question 3. What effects, if any, would a canister-based retrievability policy have on a future reprocessing facility?

It is neither reasonable nor possible to speculate on the policies and procedures of a reprocessing facility. As with a repository, it is reasonable to assume that a reprocessing facility will have the ability to manage a full spectrum of fuel types and conditions given that the technology to do so currently exists.

Question 4. What other factors, such as cost, dose or time, should be considered?

An important factor involves considering the implications of this question on permanently shutdown reactor sites. The costs to design, construct, test, and operate a site-specific fuel assembly-level retrievability facility at each of the shutdown sites is very large. Additional costs would be needed for maintenance, surveillance testing and perhaps, some level of an aging management program suitable for a few centuries of onsite storage. There is no health and safety basis for such a facility, which is the overriding consideration.

Spent Fuel Retrievability During Storage

Question. The NRC would like external stakeholders to provide an assessment of (1) whether ready-retrieval of individual spent fuel assemblies during storage should be maintained, or (2) whether retrievability should be canister-based.

EnergySolutions encourages the NRC to revise its current policy regarding retrievability to focus on the ability to retrieve spent fuel from an ISFSI site, not fuel assemblies from a canister. Such an approach would be not only more risk-informed, but also would be more prudent, protective of human health and safety, and fully consistent with the original legislative intent.¹

Retrievability is important in order to protect against a storage facility becoming a *de facto* disposal site. This should not be interpreted to require removal of spent fuel from a dry storage system, either as fuel assemblies or canisters. This is particularly true in the case of stand-alone ISFSIs, the population of which is likely to increase long before there is an alternative location for disposal or consolidated storage of spent fuel. From a public health and safety or worker dose perspective, it is difficult to conceive of a case where on-site removal and repackaging would be preferable to transportation to a facility designed to handle fuel.

Cladding Integrity

Question 1. Should the spent fuel cladding continue to be protected from degradation that leads to gross rupture, or otherwise confine the spent fuel, during storage such that it will not pose operational safety problems with respect to its removal from storage? In particular, provide any explanatory information discussing the additional cost, dose, and

¹ We refer the NRC to the discussion of legislative intent contained in the NEI comment letter in response to the FR notice, with which we fully concur.

effort required to repackage potentially damaged fuel over canned spent fuel, if the prohibition against gross deformation to the cladding were removed and the spent fuel required repackaging (whether by DOE or storage licensees).

Consideration should be given to a risk-informed, performance-based regulatory framework that develops specific criteria or guidance for the extent to which fuel cladding contributes to providing criticality control, confinement and shielding. In other words, consideration should only be given to those elements that contribute to protecting public health and safety, and not to issues associated with the receipt and management of the fuel by DOE, as described above in the answers to questions two through four.

Question 2. Should each high burnup spent fuel assembly be canned to ensure individual fuel assembly retrievability? Additionally, should spent fuel assemblies classified as damaged prior to loading continue to be individually canned prior to placement in a storage cask? In particular, NRC is interested in gathering input on the additional cost, dose, and effort required to place individual fuel assemblies in a damaged fuel can during storage cask loading. Comparison of the upfront cost, dose, and effort to can all high burnup fuel assemblies against the cost, dose, and effort to repackage potentially damaged fuel at a repository or prior to transport to a repository, may factor into NRC's retrievability policy decision making process.

As addressed in our answers above, the issues associated with the receipt of the fuel should not drive the regulatory framework for storage and transportation. There currently is no basis for assuming that high burnup fuel should be treated as if it were damaged. It is reasonable to continue to individually can assemblies classified as damaged.

There is no health and safety basis for incurring the additional costs and worker dose to individually can high fuel burnup fuel, regardless of potential retrievability issues. It could however, be reasonable to consider this approach if it could be shown to be significantly cheaper to do so than the costs associated with retrieving the fuel, *if* DOE wishes to pay the additional costs. These costs should be agreed to and paid by DOE in advance, and not subject to lengthy court cases for cost recovery. This approach, however, addresses ease of operation for a repository or reprocessing facility, not health and safety, and thus need not be a part of the regulatory regime.

Transportation Retrievability

Question 1. The NRC would like external stakeholders to comment on (a) whether retrievability should be extended to transportation packages after normal conditions of transportation (similar to the storage requirements), or (b) is it acceptable for high burnup spent fuel to degrade such that damaged fuel may have to be handled when the package is opened? Extending retrievability to transportation may be important if the U.S. were to move to consolidated interim storage, and if the NRC were to maintain its current definition of assembly-based retrievability during storage.

Requirements for retrievability (i.e. individual assemblies are able to be retrieved using "normal means") should not be extended to transportation packages after

normal conditions of transportation.² This question appears to presume (over conservatively, absent supporting data) that high burnup fuel will degrade during non-accident transportation conditions. Additionally it appears to presume that repository or reprocessing licensees would employ “normal means” to handle individual assemblies upon receipt. Neither presumption should be considered in licensing storage and transportation systems.

The notion that a reprocessing plant or a repository would have a limited capability to handle a wide variety of canister and fuel conditions is unreasonable. The notion of imposing such elaborate capabilities at each reactor site seems equally unreasonable.

Question 2. If it is acceptable for the fuel to degrade, should the package application for a certificate of compliance provide a description of the design and operations of any facilities and methods necessary to handle the damaged fuel (at the facility that will open the package)?

It is not appropriate to regulate the storage and transportation of fuel based on the concerns of the facility that may receive the fuel. The more appropriate point of application of such requirements would be in the regulatory framework applied to the disposal or reprocessing facility (e.g. 10 CFR 60, 63, or future reprocessing licensing, 10 CFR 7X).

² Indeed, as described above, we propose that the NRC revise its policy regarding retrievability to refocus on canister retrievability, not retrievability of individual fuel assemblies.