November 3, 2020

Office of Administration
Mail Stop: TWFN-7-A60M
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Re: Docket No. 72-1050; NRC-2016-0231; Federal Register v. 85, no. 90, Friday, May 8, 2020

Draft Environmental Impact Statement (DEIS) for Interim Storage Partners (ISP) Consolidated Interim Storage Facility (CISF) Project

Dear NRC Staff:

The Western Interstate Energy Board (WIEB) High-Level Radioactive Waste (HLRW) Committee appreciates the opportunity to offer comments on the draft EIS for the ISP spent nuclear fuel CISF application. WIEB is an organization of eleven Western states and two Canadian provinces which focuses on promoting energy policies developed through the cooperative efforts of WIEB's members in collaboration with the federal government. WIEB's HLRW Committee is composed of representatives from eleven Western states who have expertise in the realm of spent nuclear fuel and high-level radioactive waste (SNF/HLW) transportation. For over thirty years, the HLRW Committee has examined the issues that surround this topic, offering comments, developing policies, and interacting with federal, industry, tribal, and other state interests in this space. The HLRW Committee would now like to leverage this experience in offering comments on the DEIS for the ISP CISF project [hereinafter referred to as the ISP DEIS].

The Nuclear Regulatory Commission (NRC), lead agency in the development of the ISP DEIS, has consistently listed transportation in the scope of the environmental resources to be evaluated as a part of its National Environmental Policy Act (NEPA) review of the proposed major federal action of licensing ISP's proposed CISF.[1] The NRC also received dozens of public comments on the transportation impacts related to this licensing action during their scoping process – including from this group, the WIEB HLRW Committee.[2] The necessity of including transportation in the scope of the EIS for this project was well-captured by the HLRW Committee's scoping comments, excerpted here:

> "The SNF/HLW that ISP proposes to store at its CISF is scattered across the Nation. If ISP actually intends to store any of this material at its CISF, then it must first be transported there. The storage of SNF/HLW cannot proceed unless transportation actions are taken previously. Therefore, transportation is an action that is connected to the CISF application within the meaning of 40 CFR § 1508.25 (a)(1)(ii), and it must be included within the scope of the EIS for this application."[3]

[1] See, e.g., Federal Register v.82, no.18, Monday, January 30, 2017, pg. 8772.
[2] Environmental Impact Statement Scoping Process Summary Report: The ISP CISF Environmental Impact Statement Public Scoping Period, October 2019, ADAMS accession no. ML19161A150, pgs. B-21 - B-25.
[3] Letter from Western Interstate Energy Board High-Level Radioactive Waste Committee to NRC staff on Scoping of Environmental Impact Statement of Interim Storage Partners Consolidated Interim Storage Facility Project, October 18, 2018.

Accordingly, the NRC did include a minor transportation component in their ISP DEIS. Unfortunately, there are serious deficiencies in the transportation evaluation that raise doubts about the NRC's conclusions regarding the proposed action's effect on the environment and the public. First, the transportation evaluation is cursory, not taking into consideration key operational factors. Second, it depends on an existing guidance document that is outdated and inapplicable to the proposed action. Third, it makes implausible claims about the likely shipping schedule. Fourth, the transportation evaluation neglects to consider the effects of a lack of an on-site repackaging and handling facility. Lastly, it fails to consider worst-case scenarios such as the possibility of natural disasters, or sabotage and terrorism in transit.

1. The transportation evaluation in the ISP DEIS does not consider key operational factors.

In our comments on the scope of the EIS, the HLRW Committee encouraged the NRC to "consider all facets of a SNF/HLW transportation program that could influence the safety of the public and the environment." The HLRW Committee offered the following as some of the factors that should have been fully considered:

- an analysis of the effects of different transportation operating protocols on shipment safety;
- of the level of emergency preparedness along likely shipping routes;
- of requisite coordination and communication with affected states, tribes, and other important stakeholders;
- and, an analysis of the impact on shipment numbers and safety of using any of the variety of transportation casks that are licensed for use.

Most importantly, the HLRW Committee encouraged the NRC to fully evaluate all reasonable modes and routes that could be used for SNF/HLW transportation to the ISP CISF.

Unfortunately, the ISP DEIS takes into account none of these factors. Instead, the transportation analysis ignores both operational details and alternatives that could have important effects on the NRC's conclusions about the proposed action's effects on the environment. Perhaps the most telling omission is that of an evaluation of the different transportation modes that could be used to move SNF/HLW to the CISF. The DEIS states that, "The following analysis of SNF transportation impacts focuses on the proposed use of rail transportation."[4] This follows from ISP's Environmental Report which forms part of their license application, and states that, "SNF would be transported to the CISF by rail."[5] However, the statement immediately preceding this pronouncement by ISP says, "The DOE [U.S. Department of Energy] or the SNF Title Holder(s) would be responsible for transporting spent nuclear fuel from existing commercial nuclear power reactor storage facilities to the CISF." DOE has made it abundantly clear, though, that under current law it is not allowed to move commercial SNF to a non-federally-owned CISF. As for the "SNF Title Holder(s)" being responsible for transporting the fuel, it is at least legally possible, but there appears to be no reason for the SNF title holders to take on this responsibility when the fuel is licensed to stay where it is for several decades. Even if the SNF title holders did take on SNF transportation, ISP has provided no substantiation for asserting that the title holders would primarily use rail. The only mention of other modal possibilities is a nod to the fact that some SNF might have to be transported by road or barge to the nearest rail access when there is none on site, but this hardly qualifies

[4] ISP DEIS, pg. 4-10.
[5] WCS Consolidated Interim Spent Fuel Storage Facility Environmental Report, Rev. 3, ADAMS accession no. ML20052E152, pg. 3-8.

as a full modal analysis. Instead, the NRC has adopted ISP's questionable assertions about who and how the SNF will be transported to the CISF without question.

The choice of transportation mode has ramifications throughout the transportation analysis. For example, in the DEIS part of the radiological impact of incident-free transportation of SNF is determined by calculating the accumulated radiological dose of a maximally exposed individual member of the public. This theoretical person "could receive a much higher dose from passing SNF shipments relative to other members of the public based on their close proximity to the rail track," a distance which for this calculation "is located 30 m [98 ft] from the rail track."[6] However, the calculation for the maximally exposed individual would likely require use of a distance much closer than 30 meters if it were based on analysis of a road used for trucks rather than one used for rail. This is so because people are much more likely to live close to a trucking road than a railroad. Modal choice also affects factors such as shipment numbers, packaging, and all considerations associated with the routes, including the vitally important factor of emergency preparedness. The NRC must take these factors into account in the final EIS in order to properly evaluate the possible effects of licensing the ISP CISF.

2. NUREG-2125 is an obsolete and inapplicable reference for an environmental impact analysis of the ISP CISF.

Interestingly, the NRC found that ISP's "consideration of accidents involving releases for canistered SNF to be excessively conservative" and therefore "conducted independent calculations as additional confirmation of the technical adequacy of the calculations and results that are most informative to the analysis of impacts."[7] In other words, the NRC substituted their own accident risk calculations for ISP's in the DEIS because ISP's were "inconsistent with prior results" and therefore "did not warrant detailed consideration." It seems strange for a regulatory agency to not actually evaluate the risk calculations of an applicant, but the NRC has already produced its own transportation risk analysis which it used instead in the ISP DEIS. The NRC used NUREG-2125, *Spent Fuel Transportation Risk Assessment*, as the basis for much of its evaluation of the possible radiological impacts of SNF transportation to the CISF.[8] However, NUREG-2125 is a deficient source to use for this analysis for various reasons. One overarching reason is that the most current iteration was prepared to validate a set of new analytical tools rather than support an environmental impact analysis of specific routes.

Also, the risk analysis in NUREG-2125 no longer reflects current accident conditions. NUREG-2125 states that the average freight rail accident frequency is $1.32 * 10^{-7}$ per railcar mile based on U.S. Department of Transportation historic accident frequencies from 1991 to 2007.[9] However, the DOT Federal Railroad Administration (FRA) database reveals that from 2010 to 2018, the accident frequency is $3.4915 *10^{-6}$**,** or 26 times greater than the figure contained in NUREG-2125 and used by the ISP DEIS. Because few rail accidents involve passenger trains, it can be assumed that a more accurate freight accident frequency is $4.83 *10^{-6}$, or 36 times the NRC/DOT estimate (the number of freight train accidents per freight train mile). Using the ISP DEIS estimates suggests a mere three accidents over a 20-year period to the proposed CISF.

Another issue is that NUREG-2125 considers only mid burnup fuel, 45 GWd/MTU [gigawatt-days per metric ton of uranium] and not the higher burnup fuel, between 60 to 70 GWd/MTU, which is the

[6] Id. at 4-16 – 4-17.
[7] Id. at 4-18.
[8] Ibid.
[9] NUREG-2125, U.S. NRC, January 2014, ADAMS accession no. ML14031A232, pg. E-2.

increasing norm for commercial SNF. High burnup fuel contains more fission products, particularly the semi-volatile Cs-137, which could account for higher gamma doses to the population.

NUREG-2125 is also obsolete because of current industry practice. NUREG-2125 evaluated shipping up to 24-26 pressurized water reactor (PWR) assemblies in a single cask. Current industry practice, though, is to load waste packages with more assemblies (up to 37 PWR spent fuel assemblies in the case of the Holtec HI-STAR 190 XL) rather than 24-26 PWR in a cask. The significant increase in weight from these additional assemblies means that the new, untried railcars carrying the casks will perform differently from previously analyzed shipments. Also, the weight carried over a bridge is greater than earlier casks and raises issues about the infrastructure. The NRC also claims that a derailment would not result in a release from a transportation cask, but that assertion is not supported by the ISP or NRC references.

As a result of its reliance on outdated data, "scaling up" the risk numbers from NUREG-2125 and applying them to transportation to the ISP CISF is not a valid analytical approach.

Another deficiency of the ISP DEIS's reliance on NUREG-2125 is that the affected radiological region of influence analyzed in NUREG-2125 does not reflect the likely shipment routes of the proposed action. In numerous EISs, DOE has identified the radiological region of influence (ROI) as an area extending 800 meters on either side of the centerline of the transportation route. DOE codified this approach in 2002 in *A Resource Handbook on DOE Transportation Risk Assessment*. Using this standard and the 2010 Census, there are more than 9 million people living within the ROI of the shortest path routes from US nuclear power plants to the proposed ISP CISF. [10] In contrast, there are only almost one million residents within the ROI along the route between Maine Yankee and Deaf Smith. [11] The ISP DEIS should recognize that all of the residents within the ROI are part of the affected environment created by the proposed action. The ISP DEIS's use of a single route from Main Yankee to Deaf Smith, TX as a template for environmental impacts is inadequate.

[10] The calculation was performed using the QGIS software and data provided by the US Dept. of Transportation National Transportation Atlas Database.

[11] "The representative route selected from NUREG–2125 for the NRC staff's CISF analysis was rail transport from the Maine Yankee nuclear power plant to the town of Deaf Smith, Texas." ISP DEIS, pg. 4-13.

Figure 1: Route considered by the ISP DEIS

A thorough assessment of these routes is possible using freely available tools and data. The maps presented here were prepared using the opensource QGIS software and data from the National Transportation Atlas Database.

Figure 2: All routes to ISP CISF

A comparison of the map of the single route used by NRC to scale-up its analysis for the entire program versus the map showing other possible rail routes to the facility reveals that the route chosen by NRC does not traverse states with similar rail characteristics. Thus, the route chosen does not provide a realistic appraisal of the impacts, since shipping routes have impacts that are highly specific to infrastructure, railroad transportation practices, and communities. Scaling up the impacts from a single route is inadequate to capture these unique, route-specific impacts.

The ISP DEIS was remiss in casually mentioning that the US Department of Energy or SNF title holders were responsible for the transportation of spent nuclear fuel to the proposed ISP CISF, then reporting that use of a single route from Main Yankee to Deaf Smith, TX should serve as a template for environmental impacts. Clearly, neither ISP nor the NRC chose to engage with the Association of American Railroads. If they had, the complexities of routing hazardous materials nationwide would have illuminated the oversight performed by the Federal Railroad Administration (FRA), the Pipeline and Hazardous Materials Safety Administration (PHMSA), and the Department of Homeland Security (DHS). The railroads have the responsibility to partner with local, state, and federal entities on hazardous materials-related issues,

including train routing and security.[12, 13] A single routing template does not represent the multitude of environmental differences between rural and urban routing.

In the final EIS, the NRC should not rely so heavily on the outdated NUREG-2125 and should provide a more realistic and thorough examination of the likely SNF transportation routes to the ISP CISF.

3. The proposed shipment schedule of SNF from storage sites to the CISF in the ISP DEIS is implausible.

The ISP DEIS states during operation of the CISF, approximately 200 canisters of SNF would be shipped per year, which would result in about one shipment every two days.[14] Each canister would need to have its own transportation cask, which are generally licensed for use with particular canister types.[15] There is no transportation cask that is currently licensed to transport every type of storage canister currently in use; instead, there are 17 different transportation cask designs. Further, none of the transportation casks currently licensed for use with modern-day storage canisters have actually been manufactured. So, transportation casks for the individual canister types would have to be manufactured, and enough would have to be available to support transportation of three canisters of various types per week.

Also, there would have to be enough railcars (assuming a mostly-rail transportation system) to support this shipment rate, and the railcars would have to be compliant with the Association of American Railroads (AAR) S-2043 standard.[16] As of now, there are no manufactured railcars that are compliant with this standard. DOE's Atlas railcar design is currently being tested to certify its compliance with S-2043, but this certification is not expected to be complete until 2022 at the earliest.[17] Assuming this schedule holds, enough Atlas railcars would have to be manufactured to support the three canister shipments per week schedule. Let's assume that all three canisters are being moved together from the same site, and that each round trip takes two weeks. That means that at least six of the DOE-designed Atlas railcars would be required to ship three canisters per week, since it would take about a week for empty railcars to return to the SNF storage sites to pick up more canisters. DOE's estimate is that each Atlas railcar will cost approximately $1.5 million in 2016 dollars.[18] Six railcars would thus cost about $9 million.

So, in order to support the suggested shipment schedule in the ISP DEIS, an unidentified/misidentified shipping entity would have to manufacture, purchase, and/or lease sufficient transportation casks and railcars, none of which currently exist, all of which are quite expensive. In addition, the transporting entity or entities would have to coordinate the shipment schedule with the origin site, the destination site,

[12] https://www.aar.org/article/freight-rail-hazmat-regulations
[13] https://public.railinc.com/sites/default/files/documents/OT-55.pdf
[14] ISP DEIS, pg. 2-21.
[15] The NRC grants a general license to its licensees to transport their SNF, or to deliver their SNF to a carrier for transport, provided (among other things) that the transport package has been approved in an NRC rulemaking. See 10 C.F.R. § 71.17. The requisite NRC approval is in the form of a certificate of compliance (a so-called "CoC"). A CoC will include package descriptions and related conditions for use, including a requirement to use the particular canister type (or types) described in the CoC application along with the approved overpack. See e.g., CoC No. 9373, Rev. 1, for the HI-STAR-190 system (NRC ADAMS No. ML18332A027). In effect, the descriptions and related conditions for use in the CoC are also conditions of the general license.
[16] Association of American Railroads, *Performance Specification for Trains Used to Carry High-Level Radioactive Material*, (S-2043), last revised September 2017.
[17] *Progress Update on DOE's Development and Testing of the Atlas Railcar*, National Transportation Stakeholder's Forum webinar, July 30, 2019.
[18] Id.

the inspectors, the regulators, and the rail/truck/barge carriers, at a minimum. Also, transportation operations would have to run perfectly – no delays caused by weather, wildfires, large public events, loss of requisite personnel, accidents or other emergencies, equipment damage or failure, or any of the other myriad things that can affect a transportation schedule. In the alternative, the shipping entity would have to have contingency plans or more of the necessary transportation casks, railcars, and other requisite equipment in order to maintain the shipment schedule when complications inevitably arose.

None of these complicating factors are addressed in the ISP DEIS, which strains the credulity of the suggested shipment schedule past believability. And if this shipment timeframe is indeed not plausible, as we have shown, then the NRC's analysis of the transportation impacts is not plausible either. For instance, the ISP DEIS says, "Because the [radiological] dose estimates were presented for single shipments and for each kilometer traveled and for each hour of transportation, the NRC staff scaled the results by these variables (e.g., number of shipments, distance, and time) to generate estimates that were applicable to the proposed CISF project."[19] If the number of shipments and time variables are indeed inaccurate, then the radiological dose estimates must be inaccurate as well. Since possible radiological impacts form the bulk of the NRC's analysis of the transportation effects of licensing the ISP CISF, this inaccurate scaling brings into question the NRC's entire conclusion about the proposed action's effects on the environment. The NRC must do a more thorough evaluation in the final EIS that takes into account the complicating factors that would affect the SNF shipment schedule to the ISP CISF in order to provide a realistic appraisal of this proposed action.

4. The ISP DEIS does not evaluate the impacts of the absence of an emergency waste handling facility at the CISF site.

In section 2.2.1.3.1, *Construction*, the ISP DEIS discusses the construction of a cask-handling building, where transportation casks would be received and unloaded and where the canisters would be transferred to storage overpacks and transport vehicles."[20] However, the facility construction does not include mention of a SNF pool to be used for SNF repair and repackaging in the event of cask or canister failure. Also, there is no discussion of emergency operations actions in the event of canister degradation during receipt of fuel, during storage, or even for accidents that might occur during cask transfer or defueling to a repository. In the GAO report *Nuclear Waste Management: Key Attributes, Challenges, and Costs for the Yucca Mountain Repository and Two Potential Alternatives*, experts looked at the implications of dry cask systems over time and provided the following:

> Over time, the storage systems may degrade and institutional controls may be disrupted, which could result in increased risk of radioactive exposure to humans or the environment. For example, according to several experts on dry cask systems, the vents on the casks—which allow for passive cooling—must be periodically inspected to ensure no debris clogs them, particularly during the first several decades when the spent nuclear fuel is thermally hot. If the vents become clogged, the temperature in the canister could rise, which could impact the life of the dry cask storage system. Over a longer time frame, concrete on the exterior casks could degrade, requiring more active maintenance. [21]

As suggested by the GAO report, the ageing and degrading of SNF canisters are an immediate concern that could impact safety and overall operations at the site as well as the transportation schedule. Some of

[19] ISP DEIS, pg. 4-12.
[20] Id. at 2-9.
[21] GAO-10-48

the SNF canisters proposed for shipment to the ISP CISF have already been stored for decades. As fuel rods age they are subject to corrosion, damage of the cladding, and the potential for explosive levels of hydrogen to build up inside the canisters. As canisters are stored at the CISF, they too are subject to the same degradation. The ISP facility has no way to handle these degraded canisters or fuel, and the NRC did not include any of these potential impacts to facility operations, safety, or shipments in its analysis. In the final EIS, the NRC must include the impacts associated with expected outcomes of not having an onsite waste handling facility for emergency operations at the CISF. Not only is this necessary for a proper evaluation of the environmental impacts of the proposed action, but the inadequate waste handling facility and proposed operations will also impact the ultimate choice of repository design/location.

5. The ISP DEIS fails to consider the possible effects of terrorism, sabotage, or natural disasters on transportation.

The United States is currently experiencing a high level of unrest in urban areas. The SNF shipments to the ISP CISF will be clearly marked in extremely visible containers traversing major urban areas for a long time. They will be impossible to conceal and easily targeted. However, the ISP DEIS never mentions the possible effects of terrorist or sabotage attacks on these shipments. This is a glaring and dramatic omission.

One can only assume that with ISP's casual reference that transportation will be handled by DOE or SNF title holders, that they and by extension the NRC have washed their hands of any responsibilities in this area. Both entities may even assume that the railroads have the responsibility to prepare for and respond to man-caused incidents or natural disasters. Indeed, freight railroads have safety as a top priority and have developed a robust system to continue to play their part in the national supply chain. Being placed in the position of having to prioritize freight shipments during an incident or natural disaster could remove the transportation of spent nuclear fuel from the railroad's top priorities. Further, the ISP DEIS does not mention what the environmental ramifications would be in the case of transportation service interruption owing to environmental and infrastructure damage as the result of man-caused incidents or natural disasters.

At pg. 8-6, the ISP DEIS states: "At this time, the safety analysis has not identified any credible accidents [EITHER at the CISF or during transportation of the waste]. Therefore, this EIS will not estimate the costs of an accident specific to this proposed CISF," and "the NRC staff has not attempted to directly quantify the economic cost of any particular hypothetical accident in this EIS." The NRC may find this easy write-off of the possibility of accidents or incidents to be supported by their modeling, but the HLRW Committee does not find this credible nor comforting. The public deserves a more thorough analysis of what the effects of these possible incidents or accidents might be.

Further, the ISP DEIS fails to evaluate the possible impacts of transportation terrorist or sabotage events. NEPA case law for the United States Court of Appeals (USCA) for the Ninth Circuit requires impact evaluation for SNF shipments originating at reactor sites in, or shipments traversing, AZ, CA, ID, NV, OR, and WA; and, shipments from NM to NV traversing AZ, CA, and NV, would require sabotage evaluation.[22] This is the reason that DOE was required to address sabotage in the 2008 FSEIS for the Yucca Mountain repository application.[23] Fortunately, the railroads have a long history of development of

[22] See, e.g., San Luis Obispo Mothers for Peace v. Nuclear Regulatory Comm'n, 449 F.3d 1016, 1035 (9th Cir. 2006).

[23] EIS-0250-S1: Final Supplemental Environmental Impact Statement, Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada -

an "industry-wide security plan"[24] and a security protocol *en route*[25] in order to detect and prevent illicit activities such as sabotage and terrorism. However, this does not relieve the NRC of considering the possible environmental effects of a transportation terrorist or sabotage event in the final EIS for the ISP CISF.

In conclusion, the HLRW Committee strongly urges the NRC to revisit its transportation evaluation for the ISP DEIS and remedy the flaws identified in these comments. Only a thorough and true analysis of the potential impacts of licensing this facility can adequately inform decision-making and prepare all involved to protect the public from the environmental impacts of this major federal action. The HLRW Committee would be pleased to answer any questions or participate in future dialogue with NRC about these comments, or about SNF/HLW transportation in general.

Sincerely,

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https://www.energy.gov/nepa/downloads/eis-0250-s1-final-supplemental-environmental-impact-statement

[24] https://www.aar.org/article/freight-rail-physical-cybersecurity

[25] https://railroads.dot.gov/elibrary/federal-railroad-administration-issues-emergency-order-prevent-unintended-hazardous