UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
Before the Atomic Safety and Licensing Board

In the Matter of	)	Docket No. 72-1051
Holtec International	)	February 18, 2019
(HI-STORE Consolidated Interim Storage Facility)	)	
	)	

* * * * *

MOTION OF PETITIONERS DON'T WASTE MICHIGAN, *ET AL*. TO AMEND THEIR CONTENTIONS 4 AND 7 REGARDING HOLTEC'S DECISION TO HAVE NO DRY TRANSFER SYSTEM CAPABILITY AND HOLTEC'S POLICY OF RETURNING LEAKING, EXTERNALLY CONTAMINATED OR DEFECTIVE CASKS AND/OR CANISTERS TO ORIGINATING REACTOR SITES

I. INTRODUCTION

Pursuant to 10 C.F.R. §§ 2.309(c)(1), Don't Waste Michigan, Citizens' Environmental Coalition, Citizens for Alternatives to Chemical Contamination, Nuclear Energy Information Service, Public Citizen, San Luis Obispo Mothers for Peace, and Nuclear Issues Study Group (collectively, "Joint Petitioners" or "DWM, *et al*.") hereby move to amend Contention 4 and Contention 7 previously filed in Holtec International's ("Holtec's") revised licensing application proceeding to build and operate a centralized interim spent fuel storage facility ("CISF") in southeastern New Mexico. Joint Petitioners' amended contentions are based on new information in the case arising from recently-submitted Holtec responses to formal NRC Staff requests for additional information ("RAIs").

Background information regarding Petitioners' original contentions, changes to Holtec's license application, and the RAI responses is provided in § II, below. The amended contentions

are stated and supported in § III. In § IV, Petitioners demonstrate that they have good cause for filing their amended contentions after the original filing deadline.

II. BACKGROUND

A. Development of Holtec's License Application 2015-2018

Holtec applied for a license for the CISF on March 30, 2017. 83 Fed. Reg. at 32,919 (July 16, 2018). The original license application, designated "Revision 0," included a Safety Analysis Report, License Conditions, Financial Assurance and Project Life Cycle Cost Estimates, and an Environmental Report. However, the project was under development by Holtec for several years prior.

B. Joint Petitioners' Hearing Request

DWM *et al.* submitted a petition and hearing requests on September 14, 2018 challenging Holtec's license application on grounds which included the lack of an available DTS for purposes of addressing and remediating damaged, leaking or contaminated canisters; and inadequate disclosure and analysis of Holtec's proposed "return to sender" policy for defective or non-conforming SNF canisters. Petition of Don't Waste Michigan, Citizens' Environmental Coalition, Citizens for Alternatives to Chemical Contamination, Nuclear Energy Information Service, Public Citizen, Inc., San Luis Obispo Mothers for Peace and Nuclear Issues Study Group to Intervene and Request for an Adjudicatory Hearing (Sept. 14, 2018) ("DWM Petition"), Contentions 4 and 7.

1. Background of Contention 4

In Contention 4, the Joint Petitioners allege that Holtec proposes no mechanical means of dealing with the arrival of a leaking, cracked or externally contaminated cask at its facility except

to rely on a policy of "return to sender," *viz.*, to return leaking, damaged or contaminated casks to their points of origin. This policy does not appear in the Continued Storage GEIS and contradicts the GEIS assumption that the facility will have a major component called a "dry transfer system" ("DTS") as a technological means of remediating cask and canister problems that may present themselves during operations of the CISF.

In the "Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel: Final Report, Volume 1" ("Continued Storage GEIS"), the NRC found that there is no DTS capability anywhere in the United States, but presumes that a DTS will be necessary to the functioning of Holtec's delivery and storage operations. Holtec has no plans for a DTS, and further, has written no procedures for the project to deal with SNF cask and/or canister damage, fuel damage or leakage, or external contamination on casks or canisters. Holtec's resolution of such problems—which it insists are essentially impossible of occurrence—will be to implement a "return to sender" policy whereby problem canisters or casks will be temporarily stabilized or covered and transported cross-country to their points of origination.

2. Background of Contention 7

In the "HI-STORE CIS Safety Analysis Report," Rev. 0A (October 6, 2017), Holtec asserts:

> In order to uphold the HI-STORE philosophy of "Start Clean/Stay Clean" HP [health physics] personnel ensure that contamination levels on the canisters of incoming shipments meet site requirements. *Canisters exceeding the limits will be returned to the originating power plant for dispositioning.*

Id., § 3.1.4.6, p. 179/581 of .pdf. (Emphasis added).

Moreover, in its Environmental Report (both in versions ER-1 and ER-3), Holtec states:

The potential exposure pathways at the CIS Facility Site include: (1) direct exposure to

> radiation (neutrons and gamma rays) that is emitted from the storage casks, (2) exposure to radioactive material through ingestion of contaminated water or food, including plants and animals in the vicinity of the Site that may be used for subsistence, and (3) exposure to radioactive material through submersion or inhalation of airborne radionuclides. The evaluation of exposures from the first route requires consideration of the radiation source (*i.e.*, the canister contents).
>
> Exposures from the second and third routes require that some radioactive material escape from the casks and the proposed CIS Facility. *Given the CIS Facility start clean/stay clean philosophy (i.e., CIS Facility plans to reject and return canisters that have unacceptable external contamination), as well as the fact that no canisters would be opened at the proposed CIS Facility, and considering the engineered features of the canister/cask, there appears to be no viable mechanism by which significant radioactive materials would migrate off-site, or even away from the casks. Thus, while the latter two exposure routes are possible, radioactive material is unlikely to be available for ingestion or inhalation via those pathways during normal conditions,* and hence, there is no opportunity for impacts from these pathways (NRC 2001, page 4-46).

ER-1 § 4.12.2 at p. 214/543; ER-3 § 4.12.2 at 216/557 (November 2018) (Emphasis added).

Also, Holtec states that if the "maximum reasonably foreseeable accident associated with SNF transport to the CIS Facility" occurred--the scenario is not disclosed--that "[i]f the accident occurred in an urban area, the estimated population radiation dose would be about 16,000 person-rem. If the accident occurred in a rural area, the estimated population radiation dose would be about 21 person-rem. Because these risks are for the entire population exposed during the accident, the risk to any single individual would be small. In an urban area or rural area, the radiation dose from the accident for the maximally exposed individual would be 34 rem; this is based on the individual being 1,100 feet downwind from the accident, where the maximum dose would occur (DOE 2008, Section 6.3.3.2)." ER-1 § 4.9.3 at 201/543; ER-3 § 4.9.3 at 203/557.

These admissions of the possibility of adverse effects presumably apply as well to the transportation corridors and deliveries of SNF and GTCC waste to Holtec. The presence of

external contamination on a rejected, damaged and/or leaking cask ordered and in transit back to its sender by directive of Holtec comprises an intentional act by Holtec and creates a "viable mechanism by which significant radioactive materials would migrate off-site."

C. Holtec's Responses to Petitioners' Hearing Requests

Holtec contends that Contention 4 amounts to an impermissible rule challenge, is unfounded, and that Joint Petitioners' claimed design differences between the CISF envisioned in the Continued Storage GEIS and Holtec's application do not negate the applicability of the GEIS to the application process. "Holtec International's Answer Opposing the Don't Waste Michigan, Citizens' Environmental Coalition, Citizens for Alternatives to Chemical Contamination, Nuclear Energy Information Service, Public Citizen, Inc., San Luis Obispo Mothers for Peace, and Nuclear Issues Study Group Petition to Intervene and Request for an Adjudicatory Hearing on Holtec International's HI-STORE Consolidated Interim Storage Facility Application" ("Holtec Answer") at pp. 44-45.

As for Contention 7, Holtec calls it an impermissible rule challenge and asserts that Joint Petitioners have not shown why shipment of defective canisters should be assumed. Holtec claims that "with respect to the potential for damage to canisters while en route, the Commission observed that it 'has determined generically that accidental canister breach is *not a credible scenario.*'" Holtec Answer at pp. 64-65.

D. New Information: Holtec's November 30, 2018 Responses to RAIs

On January 17, 2019, Attachment 1 to Holtec Letter 5025038, HI-STORE RAI Responses, Round 1 Part 2 ("Holtec RAI Responses") appeared in ADAMS. Petitioners DWM *et al.* timely sought expert guidance from Gordon Thompson, Ph.D., a mathematician with

engineering and physics credentials and considerable experience in analysis of NRC licensing proposals, who reviewed the RAI responses and provided the Declaration of Gordon Thompson, "Holtec Responses to Selected RAIs, and Wider Implications," February 12, 2019 ("Thompson Dec.," which accompanies this Motion along with Dr. Thompson's *curriculum vitae*). Some of Holtec's RAI responses are of particular concern to the DWM *et al.* Petitioners, and are addressed below.

1. Holtec RAI Response 9-3

In RAI 9-3, the NRC Staff asked Holtec to clarify the content in Section 9.2.2, "Operational Activities," (Page 9-7) of the HI-STORE Safety Analysis Report, stating that "Section 9.2.2 of the HI-STORE SAR should consistently address off-normal conditions, in addition to the normal, off-normal and accident conditions while on-site prior to, or during receipt inspection" and that "A normal, off-normal, or accident condition(s) that could challenge the integrity of the canister confinement while on-site prior to, or during, receipt inspection, should also be described in the HI-STORE SAR." Holtec RAI Responses at pp. 4-5/50.
In response, Holtec stated, "Section 9.2.2 has been revised to state that "no credible normal, off-normal or accident conditions" could challenge the integrity of the canister confinement integrity and result in a release of any radioactivity."

Dr. Thompson, Petitioners' expert, points out a serious inconsistency in what the Generic Environmental Impact Statement says compared to Holtec's conclusions concerning the prospects of accident conditions at the Holtec site:

> (VII-2) Holtec's Response to RAI 9-3 says that "no credible normal, off-normal or accident conditions could challenge the integrity of the canister confinement integrity and result in a release of any radioactivity". One could reasonably infer that this statement covers potential attacks. Thus, Holtec asserts that no credible event, whether accident or

attack or slow degradation of a canister boundary, could ever release any amount of radioactive material from an SNF canister at the proposed CISF.

This assertion is remarkably optimistic. In the context of accident or attack, this assertion is also inconsistent with statements in NRC's GEIS, as mentioned in paragraphs IV-2 and IV-4, above. The GEIS concedes that a credible accident or attack could release radioactive material, albeit with low probability.

Holtec makes an equivalent assertion in its ER (at Section 4.13.2). Then, the ER (at Section 4.13.3) makes a false claim that Holtec's assertion is consistent with NRC's GEIS and with NUREG-1864, which is cited in the GEIS (see paragraph IV-2, above).

The claim is false because Holtec says that the probability of a release is zero, while the GEIS says that this probability is low.

In the context of slow degradation of a canister boundary, Holtec's assertion is inconsistent with DOE's consideration, in the Yucca Mountain EIS, of a scenario involving loss of institutional control of an ISFSI after about 100 years of service (see paragraph III-3, above). That loss would eventually lead to failure of the boundary of each canister at the ISFSI, resulting in a release of radioactive material.

Thompson Dec. at p. 20/35. Holtec's insistence that there is zero potential accident or attack scenario that would result in a release of hazardous radioactivity lacks credibility and undermines the authority of Holtec's decisions to not have an on-site emergency response plan for radiological accidents and its determination not to have DTS capability.

2. Holtec Response to RAI LA-1

Holtec's zero-possibility claim is belied further by other admissions in the RAI responses. In its response to RAI LA-1, Holtec asserts that it is adding a new Section 5.5.5.b.3 to Appendix A of the proposed Materials License which states that "loaded HI-STAR 190 casks containing canisters that do not pass the Krypton-85 test or helium leak test may be staged at the HI-STORE CISF prior to returning to the site of origin or other facility licensed to perform fuel loading procedures, provided the 10 CFR 72.104 limits for the site *[sic]*." Thus despite its blanket assertions that there are no credible scenarios for accident or attack in the transport and delivery of SNF to Holtec, the applicant grudgingly admits that non-conforming canisters posing radiation problems will be held indefinitely at the Holtec site until returned to sender or sent somewhere

where there is the technological means to unload canisters.

Regarding this new information as to how Holtec's "return-to-sender" policy would work, Dr. Thompson observes:

> Holtec's Response to RAI LA-1 says that an SNF canister arriving at the site, and found to be leaking, would be held onsite in a transportation cask for an indeterminate time period and then sent somewhere else.
>
> An underlying assumption is that the leakage would be small and the canister largely intact. That assumption allows Holtec to imagine a process in which the canister is received, tested, repackaged, stored, shipped, and received somewhere else without any difficulty. Yet, Holtec's ER (at Section 1.0) envisions receipt of 10,000 canisters of SNF at the proposed CISF. Holtec's assumption that none of these canisters exhibits substantial damage or leakage is highly optimistic.
>
> Holtec's position on this matter is troubling on two counts. First, the position reflects unwarranted optimism about canister damage, as mentioned above. Second, the position suggests that Holtec accepts no responsibility for what happens to SNF at any location other than the site of the proposed CISF. (Other ISFSIs using Holtec technology might be partial exceptions.)

Thompson Dec. at p. 26/35. Dr. Thompson points out that Holtec undercuts its unwarranted optimism because the Holtec SAR says (at § 18.14) that Holtec could deploy "a highly conductive sequestration canister with a gasketed lid that can be used to isolate a leaking [SNF] canister from the environment." Dr. Thompson adds,

> This statement suggests that Holtec does not believe its own assertion (see paragraph VII-2, above) that no credible event could ever release any amount of radioactive material from an SNF canister at the proposed CISF.
>
> A sequestration canister of the type described might be an appropriate element of a coherent, long-range plan for responding to foreseeable contingencies. Holtec has not articulated such a plan. The brief, casual mention of a sequestration canister suggests that Holtec is not serious about contingency planning.

Thompson Dec. at p. 26/35. Further, Dr. Thompson points out:

> Holtec's Response to RA[I] 17-12 says that Holtec's AMP [Aging Management Plan] would conduct inspections of SNF canisters and take corrective actions as necessary. A credible plan for taking such corrective actions should be a precondition for licensing the proposed CISF. Indeed, NRC should require – as a licensing precondition – the articulation of a credible, coherent, long-range plan for responding to foreseeable

> contingencies affecting the proposed CISF, including emergencies and slowly-developing situations.
>
> Holtec says little about its preparations for contingencies affecting the proposed CISF. Holtec has withheld the CISF Emergency Response Plan, contending that it is proprietary. I see no justification for withholding this Plan.

Thompson Dec. at p. 25/35.

Holtec's responses fuel several issues of fact. The corporation has now told the NRC that there absolutely are no canister delivery scenarios that would pose emergencies, and (incorrectly) that the GEIS supports the company's position that there are "no credible normal, off-normal or accident conditions that could challenge the integrity of the canister confinement integrity and result in a release of any radioactivity." But Holtec hedges its magical thinking by stating that it will hold and then return non-conforming or problematic canisters to the original reactor sites or divert them to another destination with "loading capability." "Loading capability" is code for a site that has a dry transfer system or other means of remediating leaky, contaminated or otherwise problematic SNF canisters. And then, even as it formulates aging management and emergency/ contingency plans in secret or in denial, Holtec suggests that it might use a special "sequestration canister."

Holtec's refusal to have DTS capability for at least the first century of operations, and its lack of public, consistent plans and policies for dealing with contingent events at the CISF site create multiple issues of fact for hearing.

III. REQUEST FOR LEAVE TO AMEND DWM'S *ET AL.*'S CONTENTIONS 4 AND 7

A. Applicable Standards

NRC regulation 10 C.F.R. § 2.309(c) allows a petitioner to amend its contentions if the presiding officer finds that the petitioner "has demonstrated good cause" by satisfying the

following factors: (i) the information on which the filing is based was not previously available; (ii) the information upon which the filing is based is materially different from information previously available; and (iii) the filing has been submitted in a timely fashion based on the availability of the subsequent information. An amended contention generally is considered timely if it is filed within 30 days of the date upon which the new information became available. *Shaw AREVA MOX Services* (Mixed Oxide Fuel Fabrication Facility), LBP-08-11, 67 NRC 460, 493 (2008) ("Many times, boards have selected 30 days as [the] specific presumptive time period" for timeliness of contentions filed after the initial deadline).

DWM *et al.* respectfully submit that permitting the amendment of a contention is appropriate where new information shows that material statements in a license application are false or incorrect, given the "importance" placed by the Commission on "completeness and accuracy of information submitted by applicants and licensees" and the Commission's demand for "[n]othing less than candor." *Randall C. Orem, D.O.*, CLI-93-14, 37 NRC 423, 427 (1993) (citing *Petition for Emergency and Remedial Action,* CLI-78-6, 7 N.R.C. 400, 18 (1978); *Hamlin Testing Laboratories, Inc.,* 2 AEC 423, 428 (1964), *aff'd,* 357 F.2d 632 (6th Cir. 1966); *Virginia Electric and Power Co.* (North Anna Power Station, Units 1 & 2), CLI-76-22, 4 N.R.C. 480 (1976), *aff'd*, 571 F.2d 1289 (4th Cir. 1978)).

B. Request for Leave to Amend Contentions

DWM *et al.* seek to amend the statements of their Contentions 4 and 7. The complete Contentions, with amendment wording italicized, are attached to this Motion and incorporated fully herein as though rewritten.

IV. DEMONSTRATION OF GOOD CAUSE FOR LATE FILING

Petitioners satisfy the three-prong test for good cause to file amended contentions based on new information, as follows:

(i) The information upon which the filing is based was not previously available

The Holtec responses to the NRC Requests for Additional Information were not available until January 17, 2019.

(ii) The information upon which the filing is based is materially different than information previously available

The RAI responses comprise new information and/or put existing information in a new context. Holtec's responses state facts and conclusions Holtec has not asserted in the ER or SAR, nor in the Answer to DWM *et al.'*s Petition to Intervene. Moreover, Joint Petitioners' expert has synthesized the additional facts, conclusions and or disclosures of Holtec to supplement Petitioners' analysis of flaws in the project, *i.e.*, Holtec's new facts give rise to new expert assessment.

Holtec's RAI 9-3 response asserts in unequivocal language that there is no potential for an accident or attack that would cause a radiation release on the Holtec site. This contradicts language in the Continued Storage GEIS that admits a small possibility for such releases. Holtec's Response to RAI LA-1 assumes that at worst an arriving SNF canister would be leaking only small amounts with the canister mostly intact, and in circumstances that would allow the canister to be monitored and received, tested, repackaged, stored, shipped, and received somewhere else without any difficulty. To assume that no canisters will exhibit substantial damage or leakage during a 20-year transportation and delivery effort is unrealistic, according to Joint Petitioners' expert witness, Gordon Thompson..

(iii) The filing has been submitted in a timely fashion based

on the availability of the subsequent information

The amended contention is being filed within 30 days of Petitioners' having learned of the issuance of the Holtec RAI responses and therefore is timely. *Shaw AREVA MOX Services,* 67 N.R.C. at 493.

IV. CONCLUSION

For the foregoing reasons, the ASLB should grant the request of Petitioner DWM *et al.* to amend their Contentions 4 and 7.

Respectfully submitted,

__/signed electronically by/__
Terry J. Lodge
316 N. Michigan St., Suite 520
Toledo, OH 43604-5627
(419) 205-7084
tjlodge50@yahoo.com
Counsel for Don't Waste Michigan, *et al.*

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
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In the Matter of	)	
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CERTIFICATE OF SERVICE

I hereby certify that on February 18, 2019, the foregoing MOTION BY PETITIONERS DON'T WASTE MICHIGAN, *ET AL*. TO AMEND THEIR CONTENTIONS 4 AND 7 REGARDING HOLTEC'S DECISION TO HAVE NO DRY TRANSFER SYSTEM CAPABILITY AND ITS INTENDED POLICY OF RETURNING LEAKING, EXTERNALLY CONTAMINATED OR DEFECTIVE CASKS AND/OR CANISTERS TO ORIGINATING REACTOR SITES was deposited by me in the NRC's Electronic Information Exchange System.

___/signed electronically by/__
Terry J. Lodge
Counsel for DWM *et al.,* Petitioners

JOINT PETITIONERS' AMENDED CONTENTIONS 4 AND 7

(NOTE: amended contention wording appears in boldface type below)

Contention 4: Holtec Does Not Qualify For Continued Storage GEIS Presumptions

Holtec has defined a site-specific spent nuclear fuel storage facility that does not qualify for the exclusions from NEPA scrutiny conferred by the Waste Storage GEIS. Consequently, severe accident mitigation during transportation to and from the Holtec CISF and at the CISF, and SNF and GTCC storage and management operations at the CISF site, may not be treated as generic issues and excused from consideration within the EIS.

Holtec has created an issue of fact by claiming that its over-optimistic conclusion that there are no credible challenges to canister confinement integrity capable of causing radioactivity release is consistent with the GEIS.

Basis for the Contention

The "Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel: Final Report, Volume 1"[1] ("Continued Storage GEIS") allows an applicant to bypass NEPA analysis of certain aspects of a nuclear waste storage proposal. Here, it is unlikely that severe accident mitigation can be treated as a generic issue within Holtec's transportation plan, or in facility operations at the Holtec site in New Mexico, because the Holtec proposal departs significantly from the Continued Storage GEIS parameters and consequently is site-specific.

1. The CISF Is Not Legally Authorized

First, while there is no admission of the fact within the ER, neither 10 C.F.R. Part 72 nor the NWPA legally authorize the Holtec CISF. The NWPA authorizes either an independent spent fuel storage installation ("ISFSI") only at a reactor site, 42 U.S.C. § 10152, or a monitored retrievable storage facility ("MRS") operated by the U.S. DOE, 42 U.S.C. § 10161. The Holtec

[1]Located at https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr2157/v1/

CISF is neither, and for that reason alone, is not covered by the Continued Storage GEIS.[2]

2. The Holtec CISF Departs from Assumptions in the GEIS

Without waiving the above objection, Petitioners urge that Holtec proposes no means of dealing with the arrival of a leaky, cracked or externally contaminated cask at its facility except to rely on a policy of "return to sender," *viz.*, to return leaking, damaged or contaminated casks to their points of origin.[3] This policy does not appear in the Continued Storage GEIS and contradicts the GEIS assumption that the facility will have as a component a dry transfer system ("DTS") as a technologically protective means of addressing cask problems at some point during facility operations.[4] The Continued Storage GEIS finds that there is no DTS capability anywhere in the United States, including at all of the nuclear plant sites from which spent nuclear fuel shipments to Holtec will originate.[5] The Chief Executive Officer of Holtec, Dr. Kris Singh, has admitted that "It is my personal belief, it is not practical to repair a canister if it were damaged."[6] Thus there will be leaking and damaged and externally contaminated casks being returned to

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[2]CEQ regulations require the Draft Environmental Impact Statement to "list all Federal permits, licenses, and other entitlements which must be obtained in implementing the proposal. If it is uncertain whether a Federal permit, license, or other entitlement is necessary, the draft environmental impact statement shall so indicate." 40 C.F.R. § 1502.25(b).

[3]"In order to uphold the HI-STORE philosophy of "Start Clean/Stay Clean" HP [health physics] personnel ensure that contamination levels on the canisters of incoming shipments meet site requirements. *Canisters exceeding the limits will be returned to the originating power plant for dispositioning*." HI-STORE CIS Safety Analysis Report, Revision 0A (October 6, 2017), § 3.1.4.6, p. 179/581 of .pdf. (Emphasis added).

[4]From "Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel," NUREG-2157 ("Continued Storage GEIS") p. 1-16: "A DTS will be built at each ISFSI location during the long-term storage time frame to facilitate spent fuel transfer and handling."

[5]*Id.* at p. 2-20.

[6]https://youtu.be/euaFZt0YPi4

sender.

On January 17, 2019, Attachment 1 to Holtec Letter 5025038, HI-STORE RAI Responses, Round 1 Part 2 ("Holtec RAI Responses") appeared in ADAMS. In RAI 9-3, the NRC Staff asked Holtec to clarify the content in Section 9.2.2, "Operational Activities," (Page 9-7) of the HI-STORE Safety Analysis Report, stating that "Section 9.2.2 of the HI-STORE SAR should consistently address off-normal conditions, in addition to the normal, off-normal and accident conditions while on-site prior to, or during receipt inspection" and that "A normal, off-normal, or accident condition(s) that could challenge the integrity of the canister confinement while on-site prior to, or during, receipt inspection, should also be described in the HI-STORE SAR." Holtec RAI Responses at pp. 4-5/50.

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> **This assertion is remarkably optimistic. In the context of accident or attack, this assertion is also inconsistent with statements in NRC's GEIS, as mentioned in paragraphs IV-2 and IV-4, above. The GEIS concedes that a credible accident or attack could release radioactive material, albeit with low probability.**
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The claim is false because Holtec says that the probability of a release is zero, while the GEIS says that this probability is low.

In the context of slow degradation of a canister boundary, Holtec's assertion is inconsistent with DOE's consideration, in the Yucca Mountain EIS, of a scenario involving loss of institutional control of an ISFSI after about 100 years of service (see paragraph III-3, above). That loss would eventually lead to failure of the boundary of each canister at the ISFSI, resulting in a release of radioactive material.

Declaration of Gordon Thompson, "Holtec Responses to Selected RAIs, and Wider Implications," February 12, 2019 ("Thompson Dec.") p. 20/35. Holtec's insistence that there is zero potential accident or attack scenario that would result in a release lacks credibility and undermines the authority of Holtec's decisions to not have an on-site emergency response plan for radiological accidents and its determination not to have DTS capability.

The size of the Holtec CISF SNF volume is up to four times the anticipated volume discussed in the Continued Storage GEIS. The Continued Storage GEIS "assumes that the nuclear power industry could develop an away-from-reactor ISFSI that would store up to 40,000 MTU of spent fuel from various nuclear power plant sites using existing technologies." *Id*. at p. 2-18. The Holtec CISF projects storage of 173,600 metric tons. ER at p. 13/543 of .pdf. The risks of serious accident are accordingly expanded.

The NRC's "GEIS Rule," 10 C.F.R. § 51.23(b) states that applicants "are not required to discuss the environmental impacts of spent nuclear fuel storage in a reactor facility storage pool or an ISFSI for the period following the term of the reactor operating license, reactor combined license, or ISFSI license." However, the issues of whether there

should be a "return to sender" policy and DTS capability during the operations and license period of the Holtec facility pose environmental impacts, both positive and negative, during the term of the license for Holtec, so pursuant to 10 C.F.R. § 51.23(c), they fall within the scope of NEPA and the obligation for the NRC Staff to produce an Environmental Impact Statement which includes investigation, analysis and discussion of these features.

3. Holtec Agrees That Its Project Is Site-Specific

Holtec admits in the Environmental Report as follows:

> This ER constitutes a site-specific analysis of the proposed CIS Facility at the southeastern New Mexico Site in Lea County. This ER incorporates relevant information and analyses from NUREG-2157 as appropriate, for purposes of completeness. For example, for most resources analyzed in Chapter 4 of this ER, there is a high-level comparison of the site-specific impact conclusions presented in this ER to the generic impact conclusions contained in NUREG-2157.

ER at p. 16/543 of .pdf.

The Holtec proposal is admitted by Holtec to be site-specific. The transportation procedures for the project exclude access to or availability of a dry transfer system in the event of SNF cask damage, fuel damage or leakage, or external contamination. Holtec intends to implement a "return to sender" policy in the event a leaky, damaged or externally contaminated cask arrives at the CISF. These represent serious departures from presumed operational practices that are the foundation of the GEIS, especially considering the possibility that known leaky, damaged or externally contaminated casks will be returned to their points of origin, potentially inviting or causing serious accident scenarios or other health impacts or environmental contamination.

4. The Holtec CISF Falls Outside of NRC Regulations Extending the GEIS Exemption

By 10 C.F.R. § 51.23(a), "the Commission has generically determined that the environmental impacts of continued storage of spent nuclear fuel beyond the licensed life for operation of a reactor are those impacts identified in NUREG–2157," and by § 51.23(b), "[t]he environmental reports described in . . . § 51.61are not required to discuss the environmental impacts of spent nuclear fuel storage in a reactor facility storage pool or an ISFSI for the period following the term of the reactor operating license, reactor combined license, or ISFSI license." Because the Holtec CISF does not qualify under NRC regulations as an ISFSI, Holtec may be required to discuss the environmental impacts far more fully than it has done in the Environmental Report.

Contention No. 7: The 'Start Clean/Stay Clean' Policy Is Unlawful and Directly Causes a Public Health Threat

Holtec's "HI-STORE philosophy" of "Start Clean/Stay Clean," whereby incoming shipments of canisters that are contaminated, leaking or otherwise compromised will be returned to the originating power plant for dispositioning, is illegal under NRC regulations and the Atomic Energy Act. It is unlawful to knowingly ship containers with radiation on exposed or external surfaces. Once delivered to the site, leaky and/or contaminated canisters must remain at Holtec–but Holtec expressly intends to return such canisters to their points of origin. Leaking or otherwise compromised shipping containers would likewise present an immediate danger to the corridor communities through which they would travel back to their nuclear power plant site of origin, likely violating numerous additional NRC and DOT regulations.

Holtec's refusal to publicize emergency and contingency plans, as well as its insistence that there is zero potential accident or attack scenario that would result in a radiation release (and hence no need for dry transfer storage capability) reflects a lack of a national policy for handling and disposal of SNF and Holtec's misperception as to the role of a CISF in national policy. The applicant's non-credible positions on these matters takes them outside the coverage and shield of the Continued Storage GEIS and requires them to be scrutinized under NEPA and addressed in the Environmental Impact Statement.

Basis for the Contention

By 10 C.F.R. § 72.108, "The proposed ISFSI . . . must be evaluated with respect to the potential impact on the environment of the transportation of spent fuel, high-level radioactive

waste, or reactor-related GTCC waste within the region." NRC regulations mandate investigation of environmental effects of the act of transporting the SNF-filled canisters, whether they are being delivered to the Holtec CISF or returned to the point of origin.

At the CISF, Holtec intends to implement a policy of rejecting and returning canisters that have unacceptable external radioactive contamination or structural damage. The proposed practice will create potential exposure routes that pose radioactive contamination threats to the public, nuclear workers, and the environment.

Holtec's "return to sender" policy is embodied in FSAR § 3.1.4.6: "In order to uphold the HI-STORE philosophy of "Start Clean/Stay Clean" HP personnel ensure that contamination levels on the canisters of incoming shipments meet site requirements. Canisters exceeding the limits will be returned to the originating power plant for dispositioning."

Holtec's policy creates the preconditions for offsite radiation accidents and environmental contamination incidents, threatening public health and safety:

> The potential exposure pathways at the CIS Facility Site include: (1) direct exposure to radiation (neutrons and gamma rays) that is emitted from the storage casks, (2) exposure to radioactive material through ingestion of contaminated water or food, including plants and animals in the vicinity of the Site that may be used for subsistence, and (3) exposure to radioactive material through submersion or inhalation of airborne radionuclides. The evaluation of exposures from the first route requires consideration of the radiation source (*i.e*., the canister contents).
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> Exposures from the second and third routes require that some radioactive material escape from the casks and the proposed CIS Facility. *Given the CIS Facility start clean/stay clean philosophy (i.e., CIS Facility plans to reject and return canisters that have unacceptable external contamination), as well as the fact that no canisters would be opened at the proposed CIS Facility, and considering the engineered features of the canister/cask, there appears to be no viable mechanism by which significant radioactive materials would migrate off-site, or even away from the casks.* Thus, while the latter two exposure routes are possible, radioactive material is unlikely to be available for ingestion or inhalation via those pathways during normal conditions, and hence, there is no opportunity for impacts from these pathways (NRC 2001, page 4-46).

ER p. 214/543. (Emphasis added).

By not having dry transfer system capability at the Holtec CISF to ameliorate damaged SNF or GTCC casks, and maintaining, instead, a policy of shipping such casks back to the point of origin, Holtec's policy creates a "viable mechanism by which significant radioactive materials would migrate off-site....".

Holtec's claims that there is effectively zero-possibility of accidental or intentional radiation releases at the facility site, as outlined in Joint Petitioners' Contention 4 above, is belied by another Holtec admission in the RAI responses. In its response to RAI LA-1, Holtec asserts that it is adding a new Section 5.5.5.b.3 to Appendix A of the proposed Materials License which states that "loaded HI-STAR 190 casks containing canisters that do not pass the Krypton-85 test or helium leak test may be staged at the HI-STORE CISF prior to returning to the site of origin or other facility licensed to perform fuel loading procedures, provided the 10 CFR 72.104 limits for the site [sic]." Thus despite its broad assertion that there are no credible scenarios for accident or attack in the transport and delivery of SNF to Holtec, the applicant grudgingly admits that nonconforming canisters posing radiation problems will be held indefinitely at the Holtec site until returned to sender or sent somewhere where there is the technological means to unload canisters.

Regarding this new information as to how Holtec's "return-to-sender" policy would work, Joint Petitioners' expert Dr. Gordon Thompson observes:

> **Holtec's Response to RAI LA-1 says that an SNF canister arriving at the site, and found to be leaking, would be held onsite in a transportation cask for an indeterminate time period and then sent somewhere else.**
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> **An underlying assumption is that the leakage would be small and the canister largely intact. That assumption allows Holtec to imagine a process in which the canister is received, tested, repackaged, stored, shipped, and received somewhere else without any difficulty. Yet, Holtec's ER (at Section 1.0) envisions receipt of 10,000 canisters of SNF at the proposed CISF. Holtec's assumption that**

none of these canisters exhibits substantial damage or leakage is highly optimistic.

Holtec's position on this matter is troubling on two counts. First, the position reflects unwarranted optimism about canister damage, as mentioned above. Second, the position suggests that Holtec accepts no responsibility for what happens to SNF at any location other than the site of the proposed CISF. (Other ISFSIs using Holtec technology might be partial exceptions.)

Thompson Dec. at p. 26/35. Dr. Thompson points out that Holtec undercuts its unwarranted optimism because the Holtec Safety Analysis Report says (at § 18.14) that Holtec is considering deployment of "a highly conductive sequestration canister with a gasketed lid that can be used to isolate a leaking [SNF] canister from the environment." Dr. Thompson adds,

> **This statement suggests that Holtec does not believe its own assertion (see paragraph VII-2, above) that no credible event could ever release any amount of radioactive material from an SNF canister at the proposed CISF.**
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> **A sequestration canister of the type described might be an appropriate element of a coherent, long-range plan for responding to foreseeable contingencies. Holtec has not articulated such a plan. The brief, casual mention of a sequestration canister suggests that Holtec is not serious about contingency planning.**

Thompson Dec. at p. 26/35. Further, Dr. Thompson points out:

> **Holtec's Response to RA[I] 17-12 says that Holtec's AMP would conduct inspections of SNF canisters and take corrective actions as necessary. A credible plan for taking such corrective actions should be a precondition for licensing the proposed CISF. Indeed, NRC should require – as a licensing precondition – the articulation of a credible, coherent, long-range plan for responding to foreseeable contingencies affecting the proposed CISF, including emergencies and slowly-developing situations.**
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> **Holtec says little about its preparations for contingencies affecting the proposed CISF. Holtec has withheld the CISF Emergency Response Plan, contending that it is proprietary. I see no justification for withholding this Plan.**

Thompson Dec. at p. 25/35.

The larger issue, according to Dr. Thompson, is the lack of a national policy regarding how to handle and dispose of Spent Nuclear Fuel that prioritizes safety,

coordinated response, and flexibly anticipates unforeseen problems throughout the transportation, storage, repackaging and permanent disposal continuum:

(III-4) NRC's GEIS discusses the role of a Dry Transfer System (DTS) or equivalent capability to repackage SNF. As part of that discussion, the GEIS says:[7]

> **"Although there are no dry transfer systems (DTSs) at U.S. nuclear power plant sites today, the potential need for a DTS, or facility with equivalent capability, to enable retrieval of spent fuel from dry casks for inspection or repackaging will increase as the duration and quantity of fuel in dry storage increases. A DTS would enhance management of spent fuel inspection and repackaging at all ISFSI sites and provide additional flexibility at all dry storage sites by enabling repackaging without the need to return the spent fuel to a pool. A DTS would also help reduce risks associated with unplanned events or unforeseen conditions and facilitate storage reconfiguration to meet future storage, transport, or disposal requirements (Carlsen and Raap 2012)."**

(III-5) NRC's GEIS acknowledges that SNF could be damaged prior to entry into storage, or during storage. The GEIS discusses that issue in connection with the provision of a capability to repackage SNF, saying, in part:[8]

> **"As stated in Section 2.1.4, one reason DTSs may be needed in the future is to reduce risks associated with unplanned events (*e.g.*, the need to repackage spent fuel that becomes damaged or that becomes susceptible to damage while in dry cask storage). The NRC defines damaged spent fuel as any fuel rod or fuel assembly that can no longer fulfill its fuel-specific or system-related functions (NRC 2007). These functions include criticality safety, radiation shielding, confinement, and retrievability of the fuel. Appendix B of this GEIS describes spent fuel degradation mechanisms that could occur during continued storage. These include a mechanism (*i.e.*, hydride reorientation) in which high-burnup spent fuel cladding can become less ductile (more brittle) over time as cladding temperatures decrease. Taking actions (*e.g.*, repackaging or providing supplemental structural support) can reduce risks posed by damaged fuel by maintaining fuel-specific or system-related safety functions."**
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> **A similar statement could be made in regard to damage to SNF containers.**

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[7]NRC, 2014, Section 2.1.4.

[8]NRC, 2014, Section 2.2.2.1.

NRC's GEIS acknowledges that the DTS design it describes, to illustrate present or anticipated capability to repackage SNF, "does not have the capability to handle damaged spent fuel." Nevertheless, says the GEIS, "international experience provides a broad understanding of the technical feasibility of various methods for handling damaged fuel".[9] In other words, the GEIS does not identify any available design of a DTS or equivalent system that could repackage SNF in the event of damage to SNF and/or an SNF container.

(III-6) NRC's GEIS discusses the establishment of a DTS or equivalent system at an away-from-reactor ISFSI, such as the proposed CISF. In that context, the GEIS says:[10]

> **"Should storage at an away-from-reactor ISFSI continue for a long enough time for bare fuel handling to be required for inspection or maintenance, then a DTS could be constructed at the facility."**

A differing perspective is evident in a 2012 report, prepared at Idaho National Laboratory (INL), that is cited in NRC's GEIS. The INL report discusses, among other matters, the establishment of a DTS or equivalent system at an ISFSI, such as the proposed CISF, where SNF from across the United States would be "consolidated". In that context, the INL report says:[11]

> **"Recommendation 2: A repackaging and remediation capability should be integrated into the design of future facilities where UNF [used nuclear fuel = SNF] will be consolidated.**
>
> > **"A key objective is to ensure that UNF is transported to its final destination, or a destination with the necessary repackaging capabilities, before the need for repackaging arises. Although presently small, the likelihood of the need for a DTS to enable retrieval of UNF for inspection or repackaging will increase as the duration and quantity of fuel in dry storage increases. Stored fuel will eventually require remediation and/or repackaging for transport. Any large-scale repackaging operations that may eventually be necessary can be more safely and effectively conducted at a consolidated facility."**

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[9]NRC, 2014, Section 2.2.2.1.

[10]NRC, 2014, Section 2.2.1.4.

[11]Carlsen and Raap, 2012, page 24.

While the GEIS envisions the establishment of a DTS at a consolidated-storage ISFSI as a potential future requirement, the INL report says that a DTS or equivalent system should be "integrated into the design" of such an ISFSI. Thus, the INL report goes beyond the GEIS by calling for design of a DTS during the design of a consolidated storage ISFSI. Neither document, however, calls for pro-active deployment of a DTS. Here, I use the term "pro-active deployment" to mean that licensing preconditions for receipt of SNF at a consolidated-storage ISFSI would include the establishment at the site of a DTS or equivalent system, and the successful testing of that capability using actual damaged SNF.

Several factors, additional to those discussed in the GEIS and the INL report, call for pro-active deployment of a DTS at a consolidated-storage ISFSI. These additional factors include:

(I) storage of comparatively aged SNF at the site;

(ii) likely receipt at the site of damaged SNF assemblies and/or damaged SNF containers;

(iii) likely occurrence, at the site, of damage to SNF assemblies and/or SNF containers; and

(iv) the substantial lead time required to design, construct, and successfully test a DTS or equivalent system that could repackage SNF, including damaged SNF.

(III-7) The United States lacks a coherent national strategy for managing SNF.[12] A UK based team of researchers has described that lack in the following terms:[13]

> **"Examples of countries without any current long-term vision or plan include Germany and the USA. These countries have (in the past) had plans, but for various reasons, mainly political, the plans have been disrupted and spent fuel management is now much more reactive, responding to external factors rather than based on a well-defined vision or strategy."**

One manifestation of the United States' lack of a coherent SNF strategy is the lack of standardization of SNF containers. In 1992, the US Secretary of Energy promised the rapid development of a standardized container for SNF assemblies. In 2005, DOE announced that most of the SNF sent to the proposed Yucca Mountain repository would be delivered to the site "in standard canisters which are then placed in a waste package for emplacement, without handling individual fuel canisters". That arrangement would replace a previously-envisioned process in which SNF would be re-packaged after delivery to Yucca Mountain.[14]

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[12]Thompson, 2008.

[13]Hambley *et al*, 2016, Section 4.

[14]Thompson, 2006, Section V.

Neither promise was fulfilled. There is no standardization of SNF containers. Table III-1 illustrates the extent to which present SNF containers are non-standardized and are incompatible with the disposal packages that were proposed for emplacement in the Yucca Mountain repository.

Most containers used for dry storage of SNF in the United States are similar to the two examples described in Table III-1. A typical SNF container has a comparatively large capacity for holding SNF assemblies, and a thin wall. Clearly, these containers were designed to minimize licensees' short-term expenditures on SNF storage. They were not designed to:

(i) maximize container lifetime;

(ii) be highly robust during transportation or storage;

(iii) facilitate monitoring of container integrity or the condition of SNF inside a container; or

(iv) be suitable for direct emplacement in a repository.

A coherent national strategy for managing SNF would strive to correct and/or offset these deficiencies in design. The strategy would take a long-term approach to all aspects of SNF management, including each phase of storage, transport, and disposal. An important expression of that approach would be the early establishment of capability to repackage SNF, including damaged SNF. That capability could be provided by a DTS or equivalent system.

If a coherent national strategy included the establishment of a consolidated-storage ISFSI, the strategy would also include the pro-active deployment of a DTS or equivalent system at that ISFSI. Successful testing of that DTS or equivalent system, using actual damaged SNF, would be a licensing precondition for receipt of SNF at the ISFSI.

As stated above, a coherent national strategy for managing SNF would take a long-term approach to all aspects of SNF management. In that context, the "long term" for an ISFSI could extend for centuries. Every ISFSI would be designed with that temporal perspective in mind. The design of an ISFSI would involve balanced consideration of three types of risk: (I) program risks; (ii) radiological risks; and (iii) proliferation risks. Among the program risks would be the potential for the ISFSI to become a "repository by default". In a 2018 report, I have discussed these design considerations in the context of storing SNF at the Pickering site in Ontario.[15]

Thompson Dec. at pp. 7-11/35.

An agency conducting a NEPA process must examine both the probability of a given harm occurring and the consequences of that harm if it does occur. "Only if the harm in question

[15]Thompson, 2018.

is so "remote and speculative" as to reduce the effective probability of its occurrence to zero may the agency dispense with the consequences portion of the analysis." *State of New York v. Nuclear Regulatory Com'n*, 681 F.3d 471, 482 (D.C. Cir. 2012).

"Structures, systems, and components important to safety must be designed to accommodate the effects of, and to be compatible with, site characteristics and environmental conditions associated with normal operation, maintenance, and testing of the ISFSI or MRS and to withstand postulated accidents." 10 C.F.R. 72.122(b). The Commission will issue a license under 10 C.F.R. Part 72 upon determining "that the application for a license meets the standards and requirements of the Act and the regulations of the Commission, and upon finding that "[t]he applicant's proposed operating procedures to protect health and to minimize danger to life or property are adequate." 10 C.F.R. § 72.40(a)(5). The Commission further must find that "[t]here is reasonable assurance that . . . [t]he activities authorized by the license can be conducted without endangering the health and safety of the public." 10 C.F.R. § 72.40(a)(13).

Moreover, 10 C.F.R. § 72.98 directs that:

> (b) The potential regional impact due to the construction, operation or decommissioning of the ISFSI or MRS must be identified. The extent of regional impacts must be determined on the basis of potential measurable effects on the population or the environment from ISFSI or MRS activities.
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> (c) Those regions identified pursuant to paragraphs (a) and (b) of this section must be investigated as appropriate with respect to . . . (3) Any special characteristics that may influence the potential consequences of a release of radioactive material during the operational lifetime of the ISFSI or MRS.

The ER lacks analysis of the potential regional impacts on population or environment given the distinct prospect of the occasional arrival of damaged, externally contaminated or leaking SNF casks and their return shipment, unrepaired and continuing to leak or show the potential for deterioration and radiological accident and above permissible dose rates to workers and passers-

by or nearby residents while en route to their points of origin. The “special characteristic” of the Holtec CISF that may influence consequences of a release of radioactive material is that there will be no means of technologically containing a leak, repackaging or otherwise remediating cask damage and possible emissions of radioactive materials from casks, contrary to the policy guidance implicit in the assumption of the Continued Storage GEIS that an interim storage facility will have such capabilities. Radiation shielding of an externally contaminated shipping container could also be required, and could be provided by a DTS, until a replacement cask could be utilized, also requiring a DTS. The “return to sender” policy of Holtec does not protect public health or adequately minimize danger to life or property. There is no reasonable assurance that the management of SNF and GTCC once delivered to the Holtec CISF and found to be in leaking, externally contaminated or damaged casks, followed by the return transport of leaking, contaminated or damaged casks to the point of origin, can be conducted without endangering the health and safety of the public.