

Supplemental Public Comment 4

Newly Identified Mechanical Failure Mechanisms During DD41 Fuel Assembly Recovery

Palisades Nuclear Plant — Proposed DD41 Fuel Assembly Recovery

License Amendment Request: PNP 2026-052, September 30, 2026

Original LAR: ADAMS Accession No. ML26273A469

Second RAI Response: PNP 2026-055, October 8, 2026, ADAMS
Accession No. ML26281A333

Regulatory References: 10 CFR 50.92(c) and 10 CFR 50.91(a)(6)

Request to Accept Supplemental Comment After the Published Deadline

I respectfully request that the Nuclear Regulatory Commission (NRC) accept this fourth supplemental public comment concerning the preliminary No Significant Hazards Consideration (NSHC) determination for Holtec's proposed DD41 fuel assembly recovery, notwithstanding the expiration of the published comment period.

This supplemental comment is necessary because material new information concerning the mechanical integrity of the damaged DD41 fuel assembly was added to the NRC's public docket on October 9, 2026, after the public comment deadline.

The NRC's public notice, posted on October 7, provided less than 24 hours for meaningful public review and comment. The subsequent public availability of Holtec's response to the NRC's second RAI, dated October 8, deprived the public of a reasonable opportunity to evaluate and address this information during the established comment period.

The newly available information is directly relevant to the NRC's preliminary NSHC determination, particularly the finding under 10 CFR 50.92(c)(2) that the proposed recovery does not create the possibility of a new or different kind of accident.

It would be inconsistent with meaningful public participation to exclude comments addressing significant technical information that was not publicly available until after the comment period closed.

I therefore request that the NRC accept this supplemental comment, incorporate it into the licensing record, and address the concerns presented below before making its final NSHC determination or issuing the proposed amendment.

4.1 The Second RAI Identifies a Potential New Mechanical Failure Mechanism

The NRC's second RAI, transmitted to Holtec on October 7, 2026, raises a significant engineering concern regarding the existing deformation of fuel assembly DD41 and the potential for additional damage during placement into the FTC.

In RAI-3, the NRC staff observes that DD41 exhibits significant bowing and questions whether the FTC design can accommodate that deformation.

The NRC specifically identifies the possibility that installation of the FTC lid will force the bowed assembly into a straighter configuration, potentially causing additional damage to the assembly or its fuel rods.

This concern is fundamentally different from both the routine fuel-handling accident scenario upon which Holtec relies to support its preliminary NSHC determination and the established procedures for loading spent fuel assemblies into storage baskets and canisters described in Palisades FSAR Chapter 9, Sections 9.11.4 and 9.11.5.

Those provisions describe underwater handling and placement of fuel assemblies into designated storage systems, including Multi-Assembly Sealed Baskets (MSBs) and Multi-Purpose Canisters (MPCs), with engineered handling, shielding, and protective features.

They do not describe or establish an engineering basis for using a canister lid to mechanically straighten an already damaged and plastically deformed fuel assembly.

Unlike normal loading of fuel assemblies that conform to the storage system's dimensional and structural requirements, the proposed DD41 recovery may deliberately impose additional bending, axial tension, and compression on damaged fuel assembly components during closure of the FTC.

This introduces potential mechanical failure mechanisms that cannot be assumed to be addressed by the existing fuel-handling and spent-fuel storage licensing basis.

The distinction is supported by several provisions of the Palisades FSAR:

- Section 9.11.1 describes engineered interlocks, travel and load-limiting devices, and other protective measures intended to minimize fuel mishandling, equipment malfunction, fuel damage, and potential fission-product release.
- Section 9.11.4.1 describes underwater fuel handling and placement into established storage baskets and canisters, with water shielding maintained during handling.
- Sections 9.11.5 and 9.11.5.1.3 describe the established spent-fuel storage systems and their engineered baskets, canisters, and transfer equipment.

These descriptions establish the normal handling and storage arrangements, but do not demonstrate that mechanically straightening a damaged assembly during canister closure is an analyzed or approved operation.

The proposed recovery may impose mechanical forces on an already damaged and plastically deformed fuel assembly as part of the intended process of enclosing it within the FTC.

Potential failure mechanisms include additional deformation of structural components, damage to grid-to-guide-bar connections, distortion of spacer-grid cells, and possible damage to fuel rods or cladding.

These mechanisms are not simply consequences of dropping a fuel assembly. They may arise during the intended execution of the recovery procedure, even in the absence of lifting-equipment failure or a dropped load.

The NRC must therefore determine whether the proposed recovery introduces mechanical challenges and failure mechanisms that have not been adequately evaluated within the existing fuel-handling accident licensing basis.

4.2 Holtec's Response Acknowledges Additional Mechanical Deformation but Provides No Supporting Engineering Analysis

Holtec's response to RAI-3 states that the extent of plastic deformation and overall assembly alignment will be confirmed using cameras after DD41 is placed on the FTC pedestals and before the canister lid is lowered.

Holtec further states:

"Based on a review by our fuel vendor, the assembly is expected to straighten out without risk of fuel cladding failure inside the FTC."

This statement is particularly troubling because the publicly docketed response provides no supporting engineering calculations, material-property data, structural analyses, or documented acceptance criteria demonstrating that the damaged assembly can safely withstand the forces imposed during lid installation. The NRC should not accept this statement alone as sufficient.

The response also acknowledges that axial tension and compression may occur at grid-to-guide-bar welds as the guide bars straighten, potentially resulting in distortion of grid cells.

Holtec concludes that fuel rod failure cannot occur during lid lowering provided the rods remain within the envelope defined by the inner surface of the FTC lid.

However, the response does not establish the engineering basis for that conclusion.

In particular, it does not provide:

1. The measured or calculated magnitude and distribution of DD41's existing plastic deformation.
2. The material properties, remaining ductility, and structural condition of the damaged assembly components.
3. The forces, bending moments, axial loads, and local stresses expected during FTC lid installation.
4. The allowable loads and deformation limits for guide bars, grid-to-guide-bar welds, spacer grids, fuel rods, and cladding.
5. The engineering basis for concluding that additional grid-cell distortion cannot impose damaging loads on fuel rods.
6. The structural calculations, testing, or other technical evidence supporting the fuel vendor's conclusion.
7. Defined acceptance criteria and contingency actions if the assembly does not straighten as predicted or if unexpected resistance or deformation occurs.

The distinction between elastic deformation and plastic deformation is important.

Holtec acknowledges that DD41 has already experienced plastic deformation. An assertion that the assembly can subsequently be straightened without cladding failure requires an engineering evaluation of its actual damaged condition, remaining structural capacity, and the loads imposed by the proposed operation.

The publicly docketed response does not demonstrate that the fuel vendor's conclusion is supported by documented engineering analyses available for independent NRC review.

A vendor's assurance, without the underlying technical basis being provided for regulatory evaluation, is not a substitute for rigorous engineering review of a first-of-a-kind recovery involving damaged irradiated fuel.

4.3 The Proposed Recovery May Introduce Failure Mechanisms Not Addressed by Existing Accident Analyses

The NRC's preliminary NSHC determination concludes that the proposed DD41 recovery does not create the possibility of a new or different kind of accident because the radiological consequences remain bounded by existing fuel-handling accident analyses.

However, the second RAI identifies a distinct question: whether the proposed recovery introduces mechanical failure mechanisms not previously evaluated.

A fuel-handling accident involving a dropped assembly is not necessarily equivalent to an operation in which an already damaged and bowed assembly is mechanically constrained and forced toward a different configuration during canister closure.

Likewise, the existing FSAR descriptions of spent-fuel storage container loading do not establish that closure of a container may be used to impose structural straightening forces on a damaged assembly.

The potential for additional damage arising from normal execution of the recovery procedure must be evaluated independently of the consequences of a postulated dropped-fuel accident.

The fact that an existing accident analysis may bound the radiological consequences of fuel damage does not establish that the proposed operation cannot create a new or different accident mechanism.

The NRC should specifically determine whether forced straightening, structural loading of damaged components, distortion of grid cells, and possible fuel rod or cladding damage during FTC closure have been evaluated in the plant's existing licensing basis.

If these mechanisms have not previously been evaluated, the NRC must explain how the proposed amendment satisfies the second criterion of 10 CFR 50.92(c).

The identification of a new mechanical failure mechanism does not automatically establish the possibility of a new or different kind of accident under the regulation. Rather, the NRC must demonstrate, through documented engineering and accident evaluation, why the mechanism does not invalidate the proposed NSHC determination.

The second RAI establishes that the NRC itself recognized the significance of this question.

Holtec's publicly docketed response does not provide sufficient technical detail to demonstrate that the question has been resolved.

4.4 Radiological Monitoring and Stop-Work Criteria Do Not Replace Accident Prevention

Holtec's response states that contingency actions are addressed in the site's As Low As Reasonably Achievable (ALARA) plan, including water chemistry sampling, radiological measurements following lid installation, and stop-work criteria for adverse conditions.

These are appropriate elements of radiation protection and abnormal-condition response.

However, they do not establish that additional mechanical damage will be prevented during lid installation.

Water chemistry sampling and radiological measurements performed after the lid is lowered may identify evidence of fuel damage after it has occurred.

Such monitoring is not equivalent to demonstrating, before the operation, that the forces imposed on the damaged assembly will remain within acceptable structural and fuel-cladding limits.

Similarly, stop-work criteria are effective only to the extent that adverse conditions can be detected before unacceptable damage occurs.

The NRC should establish what measurable parameters will be monitored during lid installation, what limits will require termination of the evolution, and whether those limits provide adequate warning before structural or fuel-cladding damage can occur.

These questions require specific engineering analysis, procedural controls, and independent verification.

They cannot be resolved solely through post-operation radiological monitoring.

4.5 The New Information Undermines the Basis for an Abbreviated License Amendment Review

This new information reinforces the overriding concern expressed in my original Comment 1.

The DD41 recovery is not simply a variation of routine fuel handling governed by existing procedures and bounded by an existing accident analysis.

It involves an already damaged and plastically deformed fuel assembly, specialized recovery equipment, nonstandard lifting and transfer operations, and now an acknowledged possibility of additional structural deformation during FTC closure.

It is also significantly different from the established loading of spent fuel into storage baskets and canisters described in FSAR Chapter 9. Those operations involve engineered storage systems and defined handling arrangements, not the use of canister closure to straighten an already damaged assembly.

The NRC's second RAI demonstrates that significant technical questions concerning the recovery's mechanical effects remained under review after the original amendment request was submitted.

The subsequent response relies substantially on a fuel-vendor conclusion regarding the ability of the assembly to straighten without cladding failure, without providing the underlying engineering analysis in the publicly docketed response.

This does not provide an adequate publicly demonstrated technical basis for concluding that the recovery introduces no significant hazards consideration.

I therefore question whether the NRC can reasonably finalize its preliminary NSHC determination without first obtaining and independently evaluating the supporting engineering analyses.

The identification of these potential failure mechanisms also weighs strongly against continued exigent processing.

The NRC should employ the normal license amendment review and public notice procedures, allowing sufficient time to obtain the engineering documentation, evaluate the mechanical failure mechanisms, assess the adequacy of proposed controls, and provide the public with a meaningful opportunity to review and comment on the technical basis for the amendment.

An expedited restart schedule should not dictate the time available for resolving significant engineering questions concerning damaged irradiated fuel.

4.6 Requested NRC Action

In light of the newly docketed second RAI response, I request that the NRC:

1. Accept this supplemental comment notwithstanding the expiration of the original public comment period, because the relevant technical information became publicly available only after the deadline.
2. Reconsider its preliminary NSHC determination, particularly the finding under 10 CFR 50.92(c)(2) concerning the possibility of a new or different kind of accident.
3. Require Holtec to submit the fuel vendor's documented engineering evaluation supporting the conclusion that DD41 can be straightened during FTC lid installation without fuel rod or cladding failure.

4. Require sufficient structural analysis, material-property information, loading evaluations, and acceptance criteria to demonstrate the adequacy of the proposed operation.
5. Independently evaluate the potential for additional damage to guide bars, welds, spacer grids, fuel rods, and cladding during FTC closure.
6. Verify that recovery-specific procedures include adequate monitoring, hold points, stop-work criteria, and contingency measures to prevent unacceptable mechanical damage.
7. Determine whether the proposed recovery introduces failure mechanisms or accident scenarios not adequately addressed by the existing licensing basis, including the normal fuel-handling and spent-fuel storage operations described in FSAR Chapter 9.
8. Discontinue exigent processing and use the normal license amendment review process, including a meaningful public comment period, before making a final determination.

Comment 4 Conclusion

The NRC's second RAI identifies a significant mechanical concern that was not adequately addressed in the information available to the public during the original comment period.

Holtec acknowledges that lowering the FTC lid may impose axial tension and compression on already damaged fuel assembly components and may distort grid cells.

Its assurance that the assembly can straighten without fuel-cladding failure rests on a fuel-vendor review for which the publicly docketed response provides no supporting engineering calculations or technical data.

The proposed recovery is materially different from routine fuel handling, from a conventional dropped-fuel accident, and from the established spent-fuel container loading operations described in FSAR Chapter 9.

The possibility of additional structural deformation and fuel damage during the intended recovery operation raises a legitimate question whether the proposed amendment introduces failure mechanisms not previously evaluated under the existing licensing basis.

This concern cannot be dismissed solely because the radiological consequences of a postulated accident are calculated to remain within regulatory limits.

The NRC must establish that the proposed recovery is supported by adequate engineering, that its potential failure mechanisms have been independently evaluated, and that the controls intended to prevent additional fuel damage are demonstrably effective.

The newly available information further demonstrates why this unprecedented recovery should not be approved through an abbreviated regulatory process.

I respectfully request that the NRC accept this supplemental comment, obtain and independently review the supporting engineering documentation, reconsider its preliminary NSHC determination, and provide the time and public participation appropriate to the normal license amendment review process before authorizing the DD41 recovery.

Respectfully submitted,

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