



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

February 21, 2020

Mr. Gerard van Noordennen  
Senior Vice President Regulatory Affairs  
ZionSolutions, LLC  
101 Shiloh Boulevard  
Zion, IL 60099

SUBJECT: APPLICATION FOR EXEMPTION FOR ZION INDEPENDENT SPENT FUEL  
STORAGE INSTALLATION – REQUEST FOR ADDITIONAL INFORMATION

Dear Mr. van Noordennen:

By letter dated December 30, 2019 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML20003D845), as resubmitted on January 30, 2020 (ADAMS Accession No. ML20035E402), ZionSolutions LLC requested an exemption pursuant to Title 10 of the *Code of Federal Regulations* 72.7, for the Zion Nuclear Station to be able to use two exceptions to the American Society of Mechanical Engineers, Boiler and Pressure Vessel Code for the storage of spent fuel in its independent spent fuel storage installation using the MAGNASTOR® storage cask.

In connection with our review, we need the information identified in the enclosure to this letter. Please provide your response within 3 weeks from the date of this letter.

Please reference Docket No. 72-1037 and Enterprise Project Identifier No. L-2020-LLE-0000 in future correspondence related to this request. If you have any questions regarding this matter, please contact me at 301-415-6577.

Sincerely,

**/RA/ D. Doyle for**

Bernard White, Senior Project Manager  
Storage and Transportation Licensing Branch  
Division of Fuel Management  
Office of Nuclear Material Safety  
and Safeguards

Docket No. 72-1037  
EPID No. L-2020-LLE-0000

Enclosure:  
Request for Additional Information

SUBJECT: APPLICATION FOR EXEMPTION FOR ZIONSOLUTIONS INDEPENDENT SPENT  
FUEL STORAGE INSTALLATION – REQUEST FOR ADDITIONAL INFORMATION

DATED: February 21, 2020

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J. Hickman, NMSS

**ADAMS Accession No.: ML20050D504**

**\* via email**

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DATE	2/18/2020	2/18/2020	2/18/2020	2/20/2020	2/21/2020

**OFFICIAL AGENCY RECORD**

**Request for Additional Information Related to  
Exemption Request for Zion  
Independent Spent Fuel Storage Installation  
Docket No. 72-1037**

By letter dated December 30, 2019 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML20003D845), as resubmitted on January 30, 2020 (ADAMS Accession No. ML20035E402), ZionSolutions LLC requested an exemption pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 72.7, for the Zion Nuclear Station to be able to use two exceptions to the American Society of Mechanical Engineers, Boiler and Pressure Vessel Code for the storage of spent fuel in the independent spent fuel storage installation at Zion using the MAGNASTOR® storage cask. This request for additional information identifies information needed by the U.S. Nuclear Regulatory Commission (NRC) staff in connection with its review of the application. The NRC staff used NUREG-1536, "Standard Review Plan for Spent Fuel Dry Storage Systems at a General License Facility — Final Report," in its review of the application.

Each question describes information needed by the staff for it to complete its review of the application and to determine whether the applicant has demonstrated compliance with regulatory requirements.

**Materials Review**

1. Provide additional information that demonstrates that the tested material in the NAC International (NAC) assessment of Charpy V-Notch (CVN) specimen orientation is representative of the subject basket assembly plates.

The NAC assessment in Enclosure 5, Report ID 71160-WP-020, Revision 2, "NAC International Assessment of Longitudinal Versus Transverse Charpy Impact Testing for A537 and A517 Materials," of the effects of CVN specimen orientation states that it used plate material from past and existing projects that are representative of the materials that are the subject of the requested exemption. However, for some of the subject basket assembly components, information on the steel grade is not available in the design drawings.

The staff notes that variations in CVN properties with respect to plate orientation are typically due to chemistry and microstructural features that may be unique to the steel grade and heat treatment. As a result, provide the following information and justify that it supports the representative nature of the NAC assessment:

- a. The American Society of Mechanical Engineers specification and grades of all procured plates for which the carbon steel grade is not defined in the drawings (e.g., drive pins and spacers in Drawing Nos. 71160-575 (Basket Assembly) and 71160-675 (DF {Damaged Fuel} Basket Assembly)).
- b. Clarify whether the NAC assessment tested A516 or A517 steels. The staff notes that the title of the assessment includes "...A537 and A517 Materials", while the provided tables of data include only A537 and A516 steels.

This information is needed to demonstrate compliance with 10 CFR 72.122(a) and (b), 10 CFR 72.124(a), and 10 CFR 72.154.

Enclosure

2. Provide details on the Kobe Steel data in the NAC assessment of CVN specimen orientation that demonstrate that the data is relevant to the behavior of the basket assembly plates.

In support of the assessment of the effects of CVN specimen orientation, the exemption request provided Figure 1 from a Kobe Steel report.

It is unclear to the staff what materials were tested to generate the data in Figure 1 and thus whether that data supports the analysis of the basket assembly subcomponents. As a result, provide either the referenced Kobe Steel report or information on the material specification, grade, heat treatment, and thickness of the plates that were tested to generate the data.

This information is needed to demonstrate compliance with 10 CFR 72.122(a) and (b), 10 CFR 72.124(a), and 10 CFR 72.154.

3. Provide details on the ultrasonic re-examination of plates and justify that the results can be used to characterize the effects of normalizing of the subject basket assembly plates.

In support of the analysis of the implications of performing flaw examinations prior the normalizing treatment, some plates were re-examined after normalizing.

It is unclear to the staff the extent to which steel plates were re-examined and if those plates are relevant to the subject basket assembly material. As a result, provide the quantity of examined plates, the approximate size/surface area examined, and the plates' material specification, grade, and thickness. Justify that these sampling conditions adequately support the conclusion that normalizing does not introduce additional defects in the material.

This information is needed to demonstrate compliance with 10 CFR 72.122(a) and (b), 10 CFR 72.124(a), and 10 CFR 72.154.