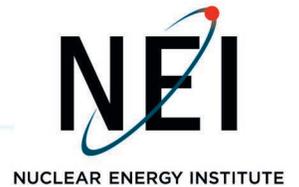


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June 17, 2022

Mr. John-Chau Nguyen
Division of Fuel Management
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: NEI Response to NRC's Acceptance Review of NEI 22-02 – Guidelines for Weather-Related Administrative Controls for Short Duration Outdoor Dry Cask Storage Operations – Request for Supplemental Information

Project Number: 689

Dear Mr. Nguyen:

The purpose of this letter is to submit responses to NRC's request for supplemental information (RSI) pertaining to a guidance document submitted by the Nuclear Energy Institute (NEI)¹, on behalf of its members, titled NEI 22-02, "Guidelines for Weather-Related Administrative Controls for Short Duration Outdoor Dry Cask Storage Operations." Attachment 1 to this letter is a revision to NEI 22-02, which has been prepared in response to the RSIs. Attachment 2 provides a brief explanation of the changes to NEI 22-02. We look forward to participating in a public meeting tentatively scheduled for July 18 to further discuss our responses as well as the purpose and scope of NEI 22-02, and ultimately facilitate the NRC's endorsement.

It is our understanding that the NRC staff's review of NEI's responses to the RSIs is covered by the partial fee waiver granted by the Chief Financial Officer (CFO) in her April 12, 2022, letter to NEI.² In that letter, the CFO partially granted NEI's fee waiver request "for the NRC's initial review of the activities required to supplement NEI 22-02 prior to docketing." We believe the revisions provided in Attachment 1 support the docketing and review of NEI 22-02 for endorsement by the NRC. Further, we believe that the staff's endorsement review of NEI 22-02 would meet the criteria for a fee exemption under 10 CFR 170.11(a)(1)(ii). We ask that NRC staff

¹ The Nuclear Energy Institute (NEI) is responsible for establishing unified policy on behalf of its members relating to matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect and engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations involved in the nuclear energy industry.

² Letter to R. McCullum (NEI) from C.K. Johnson (NRC), April 12, 2022 (ML22076A256).

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make this determination and communicate it to the CFO so that the fee waiver can be extended to cover the post-docketing endorsement review of NEI 22-02.

Please contact me or Mark Richter of my staff (mar@nei.org) with any comments or questions on the content of this letter.

Sincerely,

A handwritten signature in black ink, appearing to read "Rod McCullum". The signature is fluid and cursive, with a large initial "R" and "M".

Rod McCullum

Attachments

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Mr. Shana Helton, NRC/NMSS/DFM
Ms. Linda Howell, NRC/NMSS/DFM
NRC Document Control Desk



GUIDELINES FOR WEATHER-RELATED ADMINISTRATIVE CONTROLS FOR SHORT DURATION OUTDOOR DRY CASK STORAGE OPERATIONS

Prepared by the Nuclear Energy Institute
June 2022

Revision 1

Revision Table

Revision	Description of Changes	Date Modified	Responsible Person
1	Respond to NRC request for supplemental information	6/17/22	M. Richter

Acknowledgements

NEI 22-02 was developed by the Nuclear Energy Institute. NEI acknowledges and appreciates the contributions of NEI members and other organizations in providing input, reviewing and commenting on the document. Completion of NEI 22-02 would not have been possible without the support and commitment of the contributors noted below:

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Notice

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Foreword

This document provides guidance for licensees of Independent Spent Fuel Storage Installations (ISFSIs) to use for developing weather-related administrative controls applicable to short duration, outdoor dry cask storage (DCS) operations. This guidance does not apply to normal storage operations at the ISFSI. The purpose of the administrative controls to which this guidance applies is to provide reasonable assurance that severe weather is unlikely to occur during such operations. This document also provides guidance for administrative controls to address actions to be taken in response to changes in weather forecasts that may occur during short duration outdoor DCS operations.

This guidance provides a shared understanding of the principles guiding the development of appropriate measures that can be implemented by licensees to address the potential for severe weather during a DCS campaign. 10 CFR 72 CoC holders may use this guidance to develop the generic considerations for administrative controls to be used with their particular dry storage system (DSS) technologies. The document also provides resources and implementation guidance to help licensees develop the details of appropriate site-specific administrative controls that cannot be generically specified due to site-specific configurations or conditions.

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1 INTRODUCTION

This document was prepared in response to NRC questions pertaining to spent nuclear fuel (SNF) dry storage system (DSS) and related auxiliary equipment designs for natural phenomena events involving severe weather (Reference 1). Of particular interest is the potential occurrence of a tornado during dry cask storage (DCS) operations occurring outdoors between the time the loaded SNF cask¹ is exposed to outdoor conditions and before it is in its storage location at the Independent Spent Fuel Storage Installation (ISFSI).

The activities of interest are short-duration DCS operations that are necessary to transfer the SNF to the ISFSI. These activities are performed outdoors and in equipment configurations for which deterministic tornado wind/missile analyses have not been performed. The types and durations of these activities, and the equipment involved, are defined by the combination of the DSS design and site-specific facility configuration and procedures. Section 2.1 defines and provides examples of short duration outdoor DCS operations. Section 3 provides implementation guidance.

DSS designs and operations are determined to be safe by NRC review and approval of the specific ISFSI license or DSS Certificate of Compliance (CoC) as described in the supporting NRC Safety Evaluation Report (SER). Safe storage of the SNF also depends on licensees using the DSS as described in the approved licensing basis and implementing site-specific administrative controls, as appropriate.

The topic of severe weather occurring during short duration outdoor DCS operations has not historically been addressed in the ISFSI or DSS FSAR, or the NRC's SER. Instead, most licensees rely on administrative controls to assure that these operations do not occur during times that severe weather is forecast. The multitude of equipment types and configurations that could be possible across the dozens of ISFSI sites in the United States make it infeasible to address every conceivable circumstance at every site.

This document will benefit ISFSI licensees and the NRC by aligning the expectations for severe weather-related administrative controls governing short duration outdoor DCS operations. This guidance provides the principles underpinning the site-specific measures that should be implemented by licensees to address the potential for severe weather during a DCS campaign. 10 CFR 72 CoC holders may use this guidance to develop the generic considerations for administrative controls to be used with their particular DSS technologies. The guidance also provides resources and implementation guidance to help licensees develop appropriate and consistent site-specific administrative controls that cannot be generically specified (i.e., because they depend on site-specific factors such as specific weather forecasting resources that may vary by geographic location, details of the loading campaign that vary by design of the system used, etc.). The topics of interest include:

- The types of severe weather to be considered,
- Severe weather forecast resources that should be consulted prior to initiating short duration outdoor DCS operations and during such operations, and
- Severe weather forecast conditions under which short duration outdoor DCS operations should not be conducted.

¹ As used in this document. "cask" means a fuel-loaded bare fuel cask, canister inside a transfer cask, or canister inside a storage cask.

This guidance provides a common set of practices acceptable to industry and the NRC for developing the appropriate site-specific procedures or instructions to be implemented at each site. This guidance does not supersede any requirements in an ISFSI specific license, a DSS CoC, or the associated FSARs. The licensing basis as described in those documents always governs.

Administrative controls also play a role in guiding licensee actions with respect to DSS operations, particularly with respect to natural phenomena. This guidance provides a shared understanding of the principles guiding the implementation of appropriate administrative control measures that can be implemented by licensees to address the potential for severe weather during a DCS campaign. The document also provides resources and implementation guidance to help licensees develop the details of appropriate site-specific administrative controls that cannot be generically specified due to site-specific configurations or conditions.

2 SCOPE OF THE GUIDANCE

This section summarizes what is meant by “short duration outdoor DCS activities” and the use of administrative controls by ISFSI licensees during those activities.

2.1 Short Duration Outdoor DCS Activities

This guidance is applicable to short-duration DCS operations conducted outdoors that are necessary at many sites to accomplish moving SNF from wet to dry storage. These activities occur between when the cask loaded with SNF leaves the indoor plant facility and when it is in its storage location at the ISFSI. In these locations and at several interim locations between the two, the DSS either is in an analyzed configuration for tornado missiles or can be placed in such a configuration without delay, but in controlled, deliberate manner, if necessary.

The specific types of these activities and ancillary equipment involved vary by DSS design and site facility infrastructure. For these reasons, neither a complete list of all activities and equipment nor a single bounding duration for these activities can be defined. Each licensee must individually determine what, if any, short duration outdoor DCS activities are conducted at its site and the time frames involved.

The overall goal of licensees conducting DCS operations is to move the cask to the ISFSI as expeditiously as possible considering safety, personnel dose, and time in an appropriate balance. Short duration outdoor DCS activities are performed continuously. That is, they continue until completed, i.e., have reached the point where the cask is at the ISFSI in its storage location in its analyzed storage configuration. During these activities, there are also periods where the DSS is in an analyzed condition temporarily (e.g., cask resting on the ground) to allow for shift changes, equipment adjustments, and other operational needs. Importantly, short duration outdoor DCS activities are used to transition from one analyzed configuration to another and are performed pursuant to utilities’ written procedures or instructions. These activities are conducted under the active control of DCS personnel from start to finish by the work crew and its supervision.

Because short duration outdoor DCS activities require coordination with other plant activities and personnel, there is site-wide awareness, including main control room and shift management personnel. Furthermore, as part of their normal duties, shift operations personnel are aware of changes to the weather forecast and site procedures or instructions are in place to respond based on the circumstances of the forecast change and the activities ongoing at the time. The response includes making appropriate

notifications and announcements to site personnel and ensuring appropriate actions for any ongoing outdoor activity, including DCS activities, are implemented.

Some examples of common short-duration outdoor activities are listed below. Others may exist that are unique to a particular site.

- Movement of cask with a motorized crawler, truck and trailer, air pads, rail carts, self-propelled modular transporter, or similar conveyance,
- Use of an outdoor facility to perform the transfer of the canister from the transfer cask to the storage cask,
- Removal of the transfer cask lid, insertion of the canister into the horizontal storage module (HSM), retraction of the transfer trailer with the HSM door uninstalled, and installation of the HSM door,
- Installation of a vertical storage cask lid after the canister has been downloaded from the transfer cask into the storage cask, and
- Use of a crane or other lifting device to lift or move the cask outside the plant facility or to support transfer of the canister from the transfer cask to the vertical storage cask or HSM.

ISFSI licensees responsible for the safety of the SNF have an obligation to determine if additional controls may be prudent for their particular sites. In doing so, ISFSI licensees use the best available and appropriate methods to provide reasonable assurance of adequate protection of public health and safety. This includes the use of administrative controls.

2.2 Licensing Basis and Administrative Controls

Dry storage systems (vertical and horizontal) and transfer casks are designed and analyzed for the severe weather events in accordance with 10 CFR 72.122(b). The DSS designer (i.e., CoC holder) determines the design criteria for the design and supporting analyses, including maximum wind speed and tornado missile size and mass using applicable regulatory guidance. Importantly, the DSSs and transfer casks are assumed to be fully configured for the related safety analyses. That is, lid installed and fully bolted in place. The location of the cask (on ground or situated on a transfer vehicle) may also be specified in the FSAR.

Certain short duration outdoor DCS operations and the ancillary equipment involved often are either not addressed in ISFSI or DSS FSAR at all or are addressed at a high level to allow the operational flexibility individual licensee's need. That is, the licensing basis in the FSAR often does not define in detail all scenarios where an SSC may be subject to severe weather events. Portable lifting devices such as boom cranes and cask transport vehicles (whether classified as important to safety or not) may not be designed or analyzed for high winds and/or tornado missiles because they are used intermittently and for short periods of time to lift and move the loaded cask and these devices are not operated during times when severe weather is forecast.²

² In cases where the lifting device is designed in accordance with ASME NOG-1, Section 4134(c) specifically states that the crane "will not be operational, but be secured" during tornado winds. This implies the ability to predict tornado winds.

Present day weather forecasting capability and technology in the United States is sufficiently sophisticated and accurate to enable ISFSI licensees to reliably determine with high confidence whether severe weather will occur in the windows of time required to conduct the various required short duration outdoor DCS activities at their sites. A forecast that predicts no severe weather for that window provides the basis for the licensee to consider tornadoes as non-credible events during that time. Thus, use of the administrative controls to prohibit the movement of casks to the ISFSI pad during severe weather give the utility reasonable assurance of adequate protection without having conducted tornado missile analyses during these short-term windows.

ISFSI licensees also recognize that routine DCS operations conducted outdoors sometimes involve DSS components in an unanalyzed configuration for short time segments. These operations do not require detailed tornado missile analysis due to the low risk associated with them, the extremely low probability of them being disrupted by severe weather during these short time periods, and the further risk reduction provided by administrative controls. This also provides needed operational flexibility and avoids the significant burden that analyzing each and every operational configuration would impose. Thus, for short duration outdoor DCS activities and component configurations where the licensing basis is silent, it is prudent for ISFSI licensees to have appropriate site-specific administrative controls in place to address the potential for severe weather.

For licensees operating ISFSIs under a Part 72 general license, this guidance recommends that the CoC holders include in the DSS FSARs the generic considerations for developing severe weather administrative controls that apply to the DSS technology designs they own. Upon receipt of the approved DSS FSAR change from the CoC holder, a general licensee should review and implement the generic change, as applicable to its site. Guidance for how each of these entities should develop their respective considerations and detailed procedures or instructions is provided in Section 3.4.

3 GUIDANCE

This section describes the resources and principles for licensees to review existing administrative controls and develop or revise DCS-related severe weather administrative controls, as necessary to address this guidance. There are both proactive and reactive elements to such administrative controls involving:

- Actively checking for severe weather alerts before and during short term outdoor DCS operations, and
- Reacting to severe weather alerts received outside of the active checks (e.g., notification from the control room of a severe weather alert for the site).

3.1 Resources

In the United States, the National Weather Service (NWS) is an agency under the National Oceanic and Atmospheric Administration (NOAA), within the Department of Commerce. The NWS manages a hazardous weather outlook program and severe weather alert system that should be used as the resource for addressing severe weather before and during short duration outdoor DCS operations. Licensees should use the NWS's hazardous weather outlook information unless another resource for the site is already used or can be justified as providing equivalent information in terms of timeliness and accuracy.

NWS weather forecasting is highly accurate and reliable in the near-term windows of time associated with planning short duration outdoor DCS activities. The NWS's hazardous weather outlook program includes three classifications of severe weather alerts: watch, warning, and advisory. The NWS defines over 40 weather watches, warnings, and advisories.³ Those that apply to this guidance are listed in Section 3.3.

From the NWS web page, a link is available for active alerts (www.weather.gov/alerts). On that page, the user will find several useful links to determine if a severe weather alert is in effect for the site or if severe weather is forecast for the upcoming time periods of interest, including:

- Warnings by State
- Latest Warnings
- Thunderstorm/Tornado Outlook
- Hurricanes

Licensees should also use available on-site meteorological data and can also use one of several mobile phone and internet-based applications (e.g., the Weather Channel) to augment the NWS forecast resources and allow receipt of severe weather notifications in real time for the site area. However, mobile phone applications should be considered defense-in-depth and not a replacement for written procedures or instructions.

3.2 Use of Severe Weather Alerts to Guide Decision-making

The overarching principle for this guidance is: short duration outdoor DCS activities are to be avoided if certain watches or warnings are in effect or expected for the geographic area that includes the site. Severe weather advisories should be considered as reasons to avoid certain DCS operations by ISFSI licensees, case-specifically, based on the particular circumstances of the advisory, as discussed further below.

“Avoiding” short duration outdoor DCS operations means not conducting these activities until the severe weather alert is no longer in effect for the site and for the expected duration of the activities. Whether a severe weather alert is in effect before or during short duration outdoor DCS activities, the intent of ISFSI licensee response actions is fundamentally the same – to ensure the cask is placed in an analyzed configuration. Such actions should reflect the specific circumstances and timing of the potential change to the weather forecast as well as the current status of the short duration outdoor DCS operation. Response actions may involve any of the following, depending on the severity and timing of the pending weather situation:

- Keeping the cask in a suitable structure,
- Returning the cask to a suitable structure,
- Completing the placement of the fully configured cask in its storage location at the ISFSI,

³ Watch/Warning/Advisory Definitions (weather.gov)

- Placing the cask in an analyzed configuration at or near its then-current location, or
- Other action deemed appropriate by the licensee.

3.3 Implementation

The following NWS alerts are within the scope of this guidance, requiring administrative controls for short duration outdoor DCS operations if the site location is within the alert area:

- Severe thunderstorm watch or warning

Note: At some ISFSI sites, thunderstorm watches are declared so frequently during certain times of the year that including this alert as something that should always be avoided as part of its severe weather administrative controls may not be practical. Licensees at those facilities may consider whether and how to address thunderstorm watches on a case-specific basis, based on their experience and the nature of the short duration operations under consideration.

- Tornado watch or warning
- Winter storm, blizzard, or ice storm watch or warning
- High wind watch or warning
- Extreme wind warning
- Tropical storm watch or warning
- Hurricane watch or warning

Licensees should create administrative controls to implement this guidance in the form of new or revised DCS procedures or instructions if existing procedures or instructions do not sufficiently address applicable aspects of this guidance. Such procedures or instructions should be consistent with plant protocols and input from the DSS designer, as necessary, for compensatory actions. Furthermore, existing protocols for plant-wide actions required in the event a severe weather alert is declared should be reviewed and revised, if necessary, to appropriately consider DCS activities in progress at the time. This provides a “two-way” set of administrative controls for the affected activities.

The procedures or instructions should require a check for active severe weather alerts in effect for the site area before outdoor DCS activities commence. The expectation is that unless the weather forecast is acceptable for the entire duration of short-duration outdoor activities, such activities will not commence. Even though near-term weather forecasts are highly reliable, the procedures or instructions should also include checking the future radar projections for the plant site. Outdoor activities should be prohibited if licensee independently determines that severe weather is likely at any time over the expected duration of the outdoor activity. Lastly, the responsible personnel should also decide if a severe weather advisory (as opposed to one of the watches or warnings listed above) or other weather forecast information (e.g., temperature, wind, etc.) should prohibit such operations based on the particular circumstances of that advisory or other forecast information.

Depending on the expected duration of the DCS activity, the procedures or instructions should include additional checks of the weather forecast one or more times during the activity. Licensees should decide if, and how frequently, additional weather forecast checks should be performed and include that frequency in procedures or instructions. These formal forecast checks should be recorded and maintained with the documentation for the DCS campaign. Licensees may also wish to consider, as a defense-in-depth measure, having designated DCS personnel download an application to a mobile device that will provide immediate notification of severe weather affecting the site in real time.

Lastly, the procedures or instructions for implementing the administrative controls should include guidance at a level of detail sufficient for specific actions to be taken if the weather forecast changes. Such information could come from a planned check of the forecast, notification from the plant control room, an alert from a mobile device application, or other source. Information not verified to have come from the NWS or other source approved by the site and specified in procedures or instructions should be validated. Sections 3.4 and 3.5 provide additional details for CoC holders and general licensees to implement this guidance. Specific license ISFSI sites and sites operating ISFSIs under both a specific and a general license should combine these details in an appropriate manner to develop the administrative controls for those sites.

3.4 Generic Implementation Guidance for CoC Holders

Once this guidance is endorsed by the NRC, CoC holder actions to implement it will not require NRC approval in the form of a ISFSI license or DSS CoC amendment. CoC holders should develop a change to the DSS FSAR Operations chapter, reviewed under the provisions of 10 CFR 72.48, that addresses this guidance. This guidance may be considered an NRC-approved approach to developing weather-related administrative controls. This approach to administrative controls is not a “method of evaluation” (MOE) as defined in NEI 12-04 because it does not meet the MOE definition. Rather, revisions to the administrative controls would be reviewed as a modification to the “method of performing or controlling a design function.” If the 10 CFR 72.48 screening process determines the revision to the administrative controls is a change, (i.e., has an adverse effect) a 10 CFR 72.48 evaluation would be performed.

The DSS FSAR change should apply this guidance to the DSS designs described in that FSAR and provide the appropriate instructions to general licensees using the DSS design so that general licensees may develop site-specific implementing procedures or instructions. Deviations from this guidance by the CoC holder should be identified, justified, and specifically considered in the 10 CFR 72.48 review of the FSAR change. The generic guidance should, at a minimum, define the “analyzed configurations” relative to tornado wind and missile design, and direct the licensees to develop an engineering evaluation⁴ addressing severe weather administrative controls. CoC holders should also assist licensees in developing the engineering evaluation to the extent necessary to ensure a reasonable level of consistency across licensees.

3.5 Specific Implementation Guidance for General Licensees

General licensees should use the DSS FSAR information developed by the CoC holder described above to create the site-specific severe weather engineering evaluation and detailed implementing procedures or

⁴ In this context, “engineering evaluation” means a technical report developed by the licensee that documents the site-specific considerations (e.g., location and estimated durations of outdoor dry cask storage activities) and applies the analyzed cask configurations (and estimated times required to achieve those configurations) to establish the technical bases for the site-specific implementing procedures.

instructions. The engineering evaluation and procedures or instructions should be briefly summarized in the site's 10 CFR 72.212 Report section required by 10 CFR 72.212(b)(6) with appropriate references to the engineering evaluation and procedures or instructions. The engineering evaluation should include the following:

- a. The type of activity, configuration, and equipment being used in handling operations that may be exposed to severe weather conditions.
- b. The location and estimated duration of each short-duration outdoor activity when the SNF cask and associated equipment are in an unanalyzed configuration.
- c. Site-specific characteristics that could affect the duration of handling operations that may be exposed to severe weather conditions.
- d. The use of operating experience from previous handling operations.
- e. The definition of "analyzed configuration" as determined by the CoC holder.
- f. The time frames required to move the cask to an analyzed configuration.
- g. The site structures available to temporarily place the cask during severe weather.

The procedures or instructions implementing the administrative controls should be developed with compensatory actions based on the engineering evaluation. The procedures or instructions should include a clear definition of roles and responsibilities and lines of communication (i.e., within the DCS work crew and between the DCS shift supervision and the plant control room). Compensatory actions to be taken as part of the administrative controls if the weather forecast changes during short-duration outdoor activities should be specified in the procedures or instructions. Such compensatory actions should be clear, detailed, and specifically tied to the location and configuration of the SNF cask and associated equipment to avoid delays and confusion during implementation. Deviations from the CoC holder generic instructions in the DSS FSAR require review pursuant to 10 CFR 72.48 as a potential change to a method of performing or controlling a design function.

Implementing procedures or instructions should contain specific steps to document the satisfactory execution of the weather forecast check before and, if required, periodic checks during the outdoor activity. DCS shift supervisory personnel should be involved in determining the satisfactory execution of the weather forecast check(s).

Compensatory actions should be taken without delay, in a controlled, deliberate manner considering the concomitant need to provide for personnel safety. Once the SNF cask is in an analyzed configuration, it may remain in that configuration for the time necessary for the weather to clear and DCS operations to safely resume. The need for additional qualified personnel to implement the compensatory actions should be considered, along with providing the necessary training.

Malfunctions and unexpected delays during short-duration outdoor activities can and do occur. However, they are infrequent and the likelihood of a malfunction or delay occurring at the same time as an unexpected occurrence of severe weather is so low, it should be considered non-credible. Such malfunctions and delays are outside the scope of this guidance and should be handled on a case-specific basis and within the site's corrective action program, at the licensee's discretion.

4 REFERENCES

- 1) NRC Enforcement Guidance Memorandum 22-001, “Enforcement Discretion for Noncompliance of Tornado Hazards Protection Requirements at Independent Spent Fuel Storage Installations,” April 15, 2022.
- 2) Title 10, *Code of Federal Regulations* (10 CFR), Part 72, “Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste,” U.S. Nuclear Regulatory Commission.
- 3) NUREG-2215, “Standard Review Plan for Spent Fuel Dry Storage Systems and Facilities,” U.S. Nuclear Regulatory Commission.
- 4) NRC Regulatory Guide 1.76, “Design Basis Tornado and Tornado Missiles for Nuclear Power Plants,” Revision 1, U.S. Nuclear Regulatory Commission.

Attachment 2

NEI Response to NRC's Request for Supplemental Information re: NEI 22-02

June 17, 2022

Page 1

RSI 1: Procedures

NEI 22-02 has been revised to:

- Recommend that CoC holders add to the cask FSAR pursuant to 10 CFR 72.48 the generic severe weather design information necessary to implement this guidance consistently for a given DSS technology (e.g., the "analyzed configurations"). General licensees would then use this generic information added to the DSS FSAR to create an engineering evaluation¹ with the site-specific details of their Dry Cask Storage (DCS) severe weather response strategy. This engineering evaluation would serve as the technical basis for the detailed implementing procedures. The implementing procedures would be subject to review under the licensees' 10 CFR 72.48 process. Licensees will also summarize this engineering evaluation in their 212 Report pursuant to 10 CFR 72.212(b)(6).
- Recommend that, based on a site-specific engineering evaluation, the licensee's implementing procedures include a maximum time limit to check the weather before outdoor activities begin. In addition, a frequency for subsequent checks of the weather forecast during the outdoor activities (if necessary, based on the activity duration) will be specified. These values will be based on site-specific considerations considering the CoC holder's input and the guidance. The procedures will also include appropriate compensatory actions should severe weather arise unexpectedly during the conduct of short-term outdoor DCS operations.
- Recommend that roles and responsibilities, although site-specific, be clearly specified by the licensees (i.e., between DCS shift supervision and the control room).

Revision 1 to NEI 22-02 does not include all of the additional information requested in RSI 1.a and 1.b. Specifically, the requests that NEI 22-02 provide guidance on conducting a broadly scoped review of the design basis of "all structures, systems, and components (SSCs) that are part of the dry cask storages [sic] (DCSs) that could be exceeded by adverse weather conditions" are considered beyond the scope of NEI 22-02. The design bases of dry storage systems (DSS) currently in use have been previously reviewed and approved by the NRC as documented in the NRC Safety Evaluation Reports and the FSARs for the DSSs, including those related to severe weather phenomena. NEI is not proposing guidance that would direct licensees or CoC holders to conduct a broad reanalysis of their NRC-approved design bases.

Similarly, RSI 1.d requests that NEI 22-02 provide "specific actions taken for different levels of severity of weather conditions as part of administrative controls." The primary objective of NEI 22-02 is to provide guidance to prevent the conduct of short-duration outdoor DCS operations during severe weather.

¹ In this context, "engineering evaluation" means a technical report developed by the licensee that documents the site-specific considerations (e.g., location and estimated durations of outdoor dry cask storage activities) and applies the analyzed cask configurations (and estimated times required to achieve those configurations) to establish the technical bases for the site-specific implementing procedures.

Attachment 2

NEI Response to NRC's Request for Supplemental Information re: NEI 22-02

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NEI 22-02 is not proposing a "graded response" to weather conditions that may be encountered during short-duration outdoor operations. This is unnecessary because commencement of short-duration outdoor DCS operations would be prohibited if severe weather is predicted over the entire expected duration of those activities. Severe weather arising during the conduct of short duration outdoor activities would be unexpected and unlikely, given the attention being paid to the weather forecast before and during these activities. However, licensees' administrative controls would include defense-in-depth provisions for such a situation. Outdoor DCS activities involving spent fuel would be suspended, and the DSS would be placed in an analyzed configuration or inside a site building if the weather forecast changes to predict severe weather before the activity is expected to be complete. Therefore, NEI-22-02 was not modified in response to RSI 1.d.

RSI 2: Weather Resources

NEI 22-02 has been revised to:

- Address the use of relevant onsite meteorological data in addition to the NWS sources.
- Recommend that, in addition to checking for active severe weather alerts, licensees look at future radar projections provided by reliable weather apps for severe weather predicted to approach the site within the window of time needed to conduct short-duration outdoor operations.
- Recommend that checks of the weather forecast as it relates to short-duration outdoor DCS operations be conducted by DCS implementation personnel, as directed in the DCS procedures. This recommendation clarifies that involvement of the control room operators should be limited to two contexts: 1) if the control room becomes aware of a severe weather alert for the site and informs DCS personnel (as well as other site personnel) to take action; or 2) if DCS personnel are required to shut down DCS outdoor operations due to unexpected severe weather and inform the control room of that decision.

RSI 3: Duration

NEI 22-02 has been revised to:

- Add most of the suggested checklist for use by licensees "as appropriate" and recommend that CoC holders include in the FSAR that licensees estimate the durations for the activities. Additional items have been added to the list beyond those suggested in the RSI to further clarify the guidance for CoC holders and licensees.
- Address malfunctions and delays as being outside the scope of the guidance because they are very unlikely to occur at the same time as unexpected severe weather. Malfunctions and delays will be

Attachment 2

NEI Response to NRC's Request for Supplemental Information re: NEI 22-02

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addressed on a case-by-case basis when they occur (in the corrective action program (CAP), as appropriate), based on the judgment of the licensee.

- Recommend that estimated durations for DCS outdoor activities be included in the licensee's site-specific engineering evaluation that documents the site's DCS severe weather response strategy and forms the technical basis for implementing procedures.

RSI 4: Compensatory Measures

NEI 22-02 has been revised to add language addressing the list of things to be considered by CoC holders and licensees when developing the administrative controls and compensatory actions. The additional language is directed toward returning the DSS to an analyzed configuration or moving the cask into a site building. Other "compensatory measures" should be determined by the licensee based on the equipment involved, time available, and the location of the cask during the short duration outdoor DCS activity.

RSI 5: Licensing and Inspection

NEI 22-02 has been revised to:

- Recommend that CoC holders add a reference to the NEI 22-02 guidance and any additional DSS design-specific information to the FSARs for each affected DSS technology for licensees to develop their engineering evaluation and implementing procedures for the administrative controls.
- Recommend that CoC holders include the guidance for administrative controls in the Operations chapter of the FSAR, including a summary of "analyzed configurations."
- Include new subsections 3.4 and 3.5 for CoC holders and licensees, respectively, to clarify the roles and responsibilities of these two entities in implementing the guidance.

Revision 1 to NEI 22-02 does not fully embrace all the changes recommended in RSI 5. Specifically, RSI 5 requests that NEI 22-02 provide guidance "on how licensees and/or CoC holders can add weather-related administrative controls to the technical specifications, final safety analysis report (format and content), and/or 72.212 report, as applicable for licensing and inspection activities." RSI-5 goes on to state "that having administrative controls may not be sufficient or recommended to address unanalyzed configurations that could potentially place the DCS in a nonconforming or degraded condition. Therefore, the staff needs additional justification or information on how licensees and/or CoC holders can add weather-related administrative controls to the technical specification, final safety analysis report, and/or 72.212 report, as applicable, which could be generically implemented."

Attachment 2

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NEI has revised NEI 22-02 to include complementary implementation guidance for CoC holders and general licensees. This guidance recommends that, once NEI 22-02 is endorsed by the NRC, CoC holders use the 10 CFR 72.48 change process to enhance existing DSS FSAR information by applying this guidance to specific DSS designs, including defining "analyzed configurations." In turn, NEI 22-02 then recommends that general licensees develop an engineering evaluation that documents the site's DCS severe weather response strategy and forms the technical basis for site-specific implementation procedures. This engineering evaluation will be summarized in the 10 CFR 72.212 Report section required by 10 CFR 72.212(b)(6). No licensing actions are necessary on the part of either the CoC holder or licensee to implement this guidance.

NEI 22-02 is not intended to address situations that involve "nonconforming or degraded" conditions. Rather, NEI 22-02 is intended to provide uniform generic guidance to industry on developing administrative controls to address situations where DSS are in conditions or configurations that were not analyzed for severe weather as part of the DSS design approval by NRC. This occurs during short-duration outdoor operations that involve moving fuel from a site building to the ISFSI pad, where it is placed in its final configuration. NEI does not consider the existence of temporary unanalyzed configurations during short-duration outdoor operations to be a "nonconforming or degraded" condition. To the extent that a nonconforming or degraded condition is discovered during outdoor DCS operations, that condition will be addressed via the licensee's CAP. Thus, the portion of this request dealing with nonconforming or degraded conditions is beyond the scope of NEI 22-02.