

November 23, 2022

U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2738

Attn: Document Control Desk

Subject: MAGNASTOR Cask System Users CoC Amendment 12 Supplement and Intent to Adopt Letters

Docket No. 72-1031

- References:
1. U.S. Nuclear Regulatory Commission (NRC) Certificate of Compliance (CoC) No. 1031 for the NAC International MAGNASTOR Cask System, Amendment No. 9, December 7, 2020
 2. MAGNASTOR Cask System Final Safety Analysis Report (FSAR), Revision 12, NAC International, September 2021
 3. ED20220004, Submission of an Amendment Request for the NAC International MAGNASTOR Cask System Amendment No. 12, January 24, 2022
 4. ML22041A550, Teleconference for the Discussion of Amd. No. 12 and Potential Revision to Certificate of Compliance No. 1031 for the MAGNASTOR Storage System, February 24, 2022
 5. ED20220032, Supplement to NAC's Amendment Request for the NAC International MAGNASTOR® Cask System Amendment No. 12, March 18, 2022
 6. NRC Letter, Application for Amendment No. 12 to the Model No. MAGNASTOR Storage Cask – Request for Additional Information, April 12, 2022
 7. ED20220060, RAI Response to NAC's Amendment Request for the NAC International MAGANSTOR Cask System Amendment No. 12, April 18, 2022
 8. ED20220123, MAGNASTOR Cask System Users CoC Amendments 0 thru 9 Intent to Adopt Letters, August 4, 2022

NAC International (NAC) hereby submits a supplement to Reference 7. The changes request herein include those provisions necessary for general licensees to addresses NRC's Enforcement Guidance Memo (EGM) 22-001 issued on April 15, 2022. Reference 7 requested the changes being proposed to the Technical Specifications (TS) in Amendment 12 be included in Amendments 0 thru 9 via the issuance of a Certificate of Compliance (CoC) revision. Additionally, due to the timing of this request and the approval of Amendment 10 to the MAGNASTOR Cask System (effective date January 18th, 2023), NAC is requesting a revision to Amendment 10.

U.S. Nuclear Regulatory Commission
November 23, 2022
Page 2 of 3

Enclosure 3 contains FSAR changes, for the potential scenario of adverse weather events. These administrative controls were added to FSAR Chapter 9, which include actions that may be used prior to and during operations conducted outside. This will place important to safety structures, systems, and components in an analyzed condition should there be a severe weather hazard (e.g., weather advisory, warning, or watch) predicted or issued for the area. The changes to Chapter 9 are common to both the Proprietary and Non-Proprietary versions of the FSAR. In an effort to avoid a 10 CFR Part 72 backfit review, NAC is providing via Enclosure 1, herein, formal letters from all our current MAGNASTOR users which documents their intent to adopt the revised CoCs after they become effective in 10 CFR Part 72. The letters cover the following ISFSIs: Palo Verde, Duke-McGuire, Duke-Catawba, Kewaunee, TMI-1, and Zion.

Consistent with NAC administrative practice, this proposed FSAR revision is numbered to uniquely identify the applicable changed pages. Revision bars mark the FSAR text changes on the Revision 22E pages (Enclosure 2). The included List of Effective Pages (Enclosure 2) identifies the revision level of all pages in the Reference 2 FSAR with Revision 22E incorporated. Enclosure 1 contains the List of FSAR Changes. In order to better facilitate the review process, NAC is providing the Revision 22E changed page with appropriate backing pages. In accordance with NAC's administrative practices, upon final acceptance of this application, the changed pages will be reformatted and incorporated into the next revision of the MAGNASTOR FSAR.

If you have any comments or questions, please contact me at 678-328-1252.

Sincerely,

Heath M. Baldner Digitally signed by Heath M. Baldner
Date: 2022.11.23 13:57:06 -05'00'

Heath Baldner
Director, Licensing

Enclosures:

Enclosure 1 – MAGNASTOR Cask System Users Intent to Adopt Letters

Enclosure 2 – List of Changes for MAGNASTOR FSAR, Amendment 12 Supplement, Revision 22E

Enclosure 3 – MAGNASTOR, FSAR Changed Pages and LOEP, Amendment 12 Supplement, Revision 22E

Enclosure 1

MAGNASTOR Cask System Users

Intent to Adopt Letters

(Docket No 72-1031)

NAC International

November 2022



**Palo Verde
Nuclear Generating Station**
5871 S. Wintersburg Rd
Tonopah, AZ 85354

162-16772-DJB/KMW
October 14, 2022

Kurt Steger
NAC International
Atlanta Corporate Headquarters
3930 East Jones Bridge Road, Suite 200
Norcross, Georgia 30092

Reference: NRC Enforcement Guidance Memorandum (EGM) 22-001, "ENFORCEMENT DISCRETION FOR NONCOMPLIANCE OF TORNADO HAZARDS PROTECTION REQUIREMENTS AT INDEPENDENT SPENT FUEL STORAGE INSTALLATIONS" dated April 15, 2022

Subject: Request for NAC to Provide CoC Amendment in Support of Actions per EGM 22-001

Dear Kurt:

The NRC has issued the referenced EGM regarding tornado hazards protection compliance at Independent Spent Fuel Storage Installations (ISFSI). Additionally, NEI has issued recommended actions to be taken in response to the EGM.

This letter is to document the Palo Verde Generating Station (PVGS) request to NAC International (certificate holder for the UMS and MAGNASTOR systems used at PVGS) to submit a CoC amendment request, and adopt the amendment, if approved by the NRC to allow PVGS to utilize administrative controls to mitigate tornado hazards during periods of ISFSI handling operations.

We look forward to working with you and NEI for the final resolution of the EGM issues. Please contact me with any questions on this request.

Sincerely,

Buth, Donald
(Z07287)

Digitally signed by Buth,
Donald (Z07287)
Date: 2022.10.15 02:02:41
-07'00'

Don Buth
Nuclear Fuel Management

cc:	B. J. Hansen	7693
	D. Zimmerly	7693
	K. Whittemore	7693



526 South Church Street:
Mail Code EC08H
Charlotte, NC 28202
o: 704-382-6815

Oct. 13, 2022

Eric Shewbridge
NAC International
3930 East Jones Bridge Road, Suite 200
Norcross, GA 30092

Subject: Duke Energy Request Regarding Nuclear Regulatory Commission Enforcement Guidance Memorandum 22-001

Dear Mr. Shewbridge:

In accordance with Nuclear Regulatory Commission Enforcement Guidance Memorandum 22-001, Enforcement Discretion for Noncompliance of Tornado Hazards Protection Requirements at Independent Spent Fuel Storage Installations Action 3.b); Duke Energy requests NAC submit a Certificate of Compliance amendment request to NRC.

Duke Energy will adopt updated Certificate of Compliance in a timely fashion following NRC approval.

Sincerely,

Kevin Houston
Director, Fuel Management and Design, Nuclear Fuels Engineering

cc: M.L. Cameron (Duke Energy)
R.S. Edwards (Duke Energy)
P. Washington (Duke Energy)
N.E. Davis (Duke Energy)
C.G. Long (Duke Energy)
H. Baldner (NAC)

Dominion Energy Kewaunee, Inc.
N490 Hwy 42, Kewaunee, WI 54216
Web Address: www.dominionenergy.com



LIC-2022-001

June 14, 2022

NAC International
Wren Fowler
3930 East Jones Bridge Road, Suite 200
Peachtree Corners, GA 30092

Subject: Requested Actions Regarding NRC Enforcement Guidance Memorandum (EGM) 22-001, Enforcement Discretion for Noncompliance of Tornado Hazards Protection Requirements at Independent Spent Fuel Storage Installations

Ref: Kewaunee CR 2290

Dear Mr. Fowler,

On April 15, 2022, NRC Issued EGM 22-001 to provide guidance to Staff on the exercise of enforcement discretion when a specific or general licensee of an ISFSI does not comply with its design or licensing basis for protection against environmental conditions and natural phenomena.

Recent NRC inspections have concluded several licensees to be in noncompliance with their licensing basis during specific timeframes during ISFSI operations. This generally involves transport operations where a storage system is found to be in a configuration not explicitly evaluated by the CoC holder (cask lid removed during placement of a canister into an overpack, for example).

EGM 22-001 allows for enforcement discretion only if a licensee meets several conditions, one of which is (item #3.b) For a general license – within six months of the issuance date of this EGM, request the certificate holder for a spent fuel storage cask design to submit a CoC amendment request, and adopt the amendment, if approved by the NRC, through a Part 72.212 evaluation; or; (item #3.c) implement physical design modifications and/or perform evaluations or analysis that demonstrates that SSCs important to safety are designed to withstand the effects of natural phenomena, including tornadoes and tornado-generated missiles.

All spent nuclear fuel at Dominion Energy Kewaunee (DEK) is in dry storage at the ISFSI. Kewaunee Technical Specifications prohibit return of spent fuel to the spent fuel pool. DEK is a user of the NAC MAGNASTOR system under CoC 1031 Amendment 6. We request the

Dominion Energy Kewaunee, Inc.
N490 Hwy 42, Kewaunee, WI 54216

Web Address: www.dominionenergy.com



following conditions, which could affect DEK in the future, be considered by NAC during your evaluation of items 3.b and 3.c. of the EGM:

1. Future performance of required aging management inspections in support of CoC 1031 license renewal. It is anticipated that during performance of these inspections, MAGNASTOR casks may be placed in a configuration not yet specifically analyzed, e.g. with cask lid removed.
2. Future removal of MAGNASTOR canisters from their overpacks for transport off-site.
3. Possible removal of a MAGNASTOR canister from its overpack due to a beyond-design-basis event that breaches or otherwise renders inoperable an overpack (dry transfer).

Should NAC determine to submit a CoC amendment request (item #3.b), in order to allow sufficient time to incorporate resulting changes in a quality manner, we request that NAC work with NRC to provide its general licensees a maximum 180-day period after the effective date of the revised amendment during which we can complete incorporation of the revised amendment.

If you have any questions, please contact Mr. William Zipp at (920) 304-9729.

Sincerely,


Bradley J. M. Labon

ISFSI Site Director, Kewaunee Power Station

06-14-22
Date

RS-22-125

November 22, 2022

ATTN: Heath Baldner
NAC International Inc
Atlanta Corporate Headquarters
3930 East Jones Bridge Road, Suite 200
Norcross, GA 30092

Subject: Request to NAC International to Amend MAGNASTOR[®] CoC No. 1031 and FSAR

- References:
1. Amendment No. 9 to Certificate of Compliance No. 1031 for the MAGNASTOR[®] Cask System, Appendix A, Technical Specifications and Design Features for the MAGNASTOR[®] Cask System, dated December 7, 2020
 2. MAGNASTOR[®] Final Safety Analysis Report, Revision 12, Docket No. 72-1031, dated September 2021
 3. EGM 22-001, "Enforcement Guidance Memorandum 22-001, Enforcement Discretion for Noncompliance of Tornado Hazards Protection Requirements at Independent Spent Fuel Storage Installations," dated April 15, 2022

Constellation Energy Generation, LLC (CEG) requests NAC International Inc (NAC) to amend MAGNASTOR[®] certificate of compliance (CoC) No. 1031 (Reference 1) and the Final Safety Analysis Report (FSAR) (Reference 2) to address the issue specified in EGM 22-001, "Enforcement Discretion for Noncompliance of Tornado Hazards Protection Requirements at Independent Spent Fuel Storage Installations," (Reference 3). CEG intends to comply with EGM 22-001 action 3.b, "for a general licensee - within six months of the issuance date of this EGM, request the certificate holder for a spent fuel storage cask design to submit a CoC amendment request, and adopt the amendment, if approved by the NRC, through a Part 72.212 evaluation." Alternately, based on ongoing discussions with NRC concerning the use of administrative controls for short term outdoor activities, other actions may be taken as deemed appropriate by the NRC in order to comply with the requirements of the EGM.

CEG requests NAC to complete the technical and licensing actions needed to address the requirements of EGM-22-001 in a timely manner. A 90-day response with a plan for addressing this issue is requested.

CEG intends to implement the revised CoC for the MAGNASTOR® system, CoC No. 1031, and FSAR, at the Three Mile Island Nuclear Station, Unit 1, (TMI-1), after approval from the NRC has been received. Implementation will be completed in a timely fashion after approval.

If you have any questions concerning this letter, please contact Mr. Patrick Simpson at (630) 657-2823.

Respectfully,

Gullott,
David M.

Digitally signed by Gullott,
David M.
Date: 2022.11.22 12:21:44
-06'00'

David Gullott
Director Licensing
Constellation Energy Generation, LLC

cc: Heath Baldner – NAC International, hbaldner@nacintl.com
George Carver – NAC International, gcarver@nacintl.com
Eric Shewbridge – NAC International, eshewbridge@nacintl.com
Patrick R. Simpson, Constellation – Patrick.Simpson@Constellation.com
Jack Desando, Constellation – jack.desando@constellation.com

November 22, 2022

ZS-2022-046

Heath M. Baldner
Director of Licensing
NAC International Inc.
3930 East Jones Bridge Road, Suite 200
Peachtree Corners, GA 30092

Subject: Concurrence with NAC Actions to Address NRC EGM 22-001

References:

1. NAC Memo ED20220165, H. Baldner to E. Shewbridge, dated 11/17/2022, subject: "NUTUG Action Item for CoC Revisions and EGM 22-001.
2. NRC Enforcement Guidance Memorandum 22-001, Enforcement Discretion for Non Compliance of Tornado Hazards Protection Requirements at Independent Spent Fuel Storage Installations, April 15, 2022, ADAMS Accession No: ML22087A496 LTR.

Dear Mr. Baldner:

As requested of NUTUG members in Reference 1, Zion Solutions provides NAC the following information as it pertains to the operation of the Zion ISFSI in compliance with NRC EGM 22-001 (Reference 2):

- 1) Zion ISFSI Operations will comply with EGM 22-001 Step 3b.
- 2) Zion Solutions requests that NAC proceed with updates to the MAGNASTOR System FSAR as outlined in Reference 1 that will permit licensees/users to implement administrative controls to preclude conducting operations during periods of inclement weather.
- 3) Zion Solutions and/or subsequent Zion ISFSI license holders will adopt the related CoC revision once final rulemaking is complete.

I trust that foregoing response is satisfactory with NAC's request in Reference 1.

Respectfully,

Gerry van Noordennen

Gerard van Noordennen
Vice President Regulatory Affairs

Digitally signed by Gerry van Noordennen
DN: cn=Gerry van Noordennen, o=EnergySolutions, ou=Regulatory Affairs,
email=gpvannoordennen-ext@energysolutions.com, c=US
Date: 2022.11.22 13:00:24 -05'00'

ZionSolutions, LLC

ZS-2022-046

Page 2 of 2

cc: E. Shewbridge (NAC)

T. Eiler (ZS)

W. Szymczak (ZS)

K. Van Hoogen (ZS)

Record

Enclosure 2

List of Changes

for

**MAGNASTOR® FSAR
Amendment 12 Supplement
Revision 22E**

(Docket No 72-1031)

NAC International

November 2022

• **List of Changes for the MAGNASTOR® FSAR, Revision 22E**

Note: The List of Effective Pages and the Chapter Table of Contents, List of Figures, and List of Tables have been revised accordingly to reflect the list of changes detailed below.

Chapter 1

- No changes

Chapter 2

- No changes

Chapter 3

- No changes

Chapter 4

- No changes

Chapter 5

- No changes

Chapter 6

- No changes

Chapter 7

- No changes

Chapter 8

- No changes

Chapter 9

- Pages 9-2, added new paragraph where indicated.

Chapter 10

- No changes

Chapter 11

- No changes

Chapter 12

- No changes

Chapter 13

- No changes

Chapter 14

- No changes

Chapter 15

- No changes

Enclosure 3

FSAR Changed Pages and LOEP

for

**MAGNASTOR[®] FSAR
Amendment 12 Supplement
Revision 22E**

(Docket No 72-1031)

NAC International

November 2022

November 2022

Revision 22E

MAGNASTOR[®]

(Modular Advanced Generation
Nuclear All-purpose STORAGE)

FINAL SAFETY ANALYSIS REPORT

TMI Amendment 12
Supplement

Docket No. 72-1031



List of Effective Pages

Chapter 1

Page 1-i Revision 22A
Page 1-1 Revision 22A
Page 1.1-1 thru 1.1-2..... Revision 5
Page 1.1-3 thru 1.1-6..... Revision 22A
Page 1.2-1 thru 1.2-2..... Revision 22A
Page 1.3-1 thru 1.3-21..... Revision 22A
Page 1.4-1 thru 1.4-2..... Revision 22A
Page 1.5-1 Revision 22A
Page 1.6-1 Revision 9
Page 1.6-2 Revision 0
Page 1.7-1 Revision 0
Page 1.7-2 Revision 22A
Page 1.8-1 thru 1.8-2..... Revision 22A

41 drawings (see Section 1.8)

Chapter 2

Page 2-i thru 2-ii Revision 22A
Page 2-1 Revision 22A
Page 2.1-1 thru 2.1-2..... Revision 22A
Page 2.1-3 Revision 5
Page 2.1-4 thru 2.1-6..... Revision 22A
Page 2.2-1 thru 2.2-4..... Revision 22A
Page 2.2-5 thru 2.2-7..... Revision 11
Page 2.2-8 Revision 6
Page 2.2-9 Revision 22A
Page 2.3-1 thru 2.3-4..... Revision 0
Page 2.3-5 Revision 5
Page 2.3-6 Revision 0
Page 2.3-7 Revision 22A
Page 2.3-8 Revision 0
Page 2.4-1 thru 2.4-4..... Revision 22A
Page 2.4-5 Revision 0
Page 2.4-6 thru 2.4-8..... Revision 22A
Page 2.5-1 Revision 0
Page 2.6-1 Revision 0
Page 2.6-2 Revision 22A

Chapter 3

Page 3-i Revision 11
Page 3-ii Revision 22A
Page 3-iii Revision 9
Page 3-iv Revision 5

Page 3-v thru 3-vi..... Revision 9
Page 3-vii thru 3-ix Revision 22A
Page 3-1 Revision 0
Page 3.1-1 Revision 9
Page 3.1-2 Revision 0
Page 3.1-3 thru 3.1-6..... Revision 22A
Page 3.2-1 Revision 22A
Page 3.2-2 thru 3.2-6..... Revision 11
Page 3.2-7 Revision 22A
Page 3.3-1 Revision 0
Page 3.4-1 thru 3.4-2..... Revision 11
Page 3.4-3 Revision 6
Page 3.4-4 Revision 1
Page 3.4-5 Revision 5
Page 3.4-6 thru 3.4-14..... Revision 3
Page 3.4-15 Revision 9
Page 3.4-16 thru 3.4-42..... Revision 3
Page 3.4-43 thru 3.4-50..... Revision 9
Page 3.4-51 thru 3.4-54..... Revision 11
Page 3.4-55 thru 3.4-57..... Revision 9
Page 3.4-58 thru 3.4-64..... Revision 11
Page 3.5-1 Revision 22A
Page 3.5-2 thru 3.5-4..... Revision 9
Page 3.5-5 thru 3.5-14..... Revision 6
Page 3.5-15 Revision 11
Page 3.5-16 thru 3.5-26..... Revision 6
Page 3.5-27 Revision 11
Page 3.5-28 thru 3.5-30..... Revision 8
Page 3.6-1 thru 3.6-2..... Revision 5
Page 3.6-3 thru 3.6-4..... Revision 9
Page 3.6-5 thru 3.6-19..... Revision 6
Page 3.7-1 Revision 5
Page 3.7-2 thru 3.7-3..... Revision 9
Page 3.7-4 thru 3.7-10..... Revision 6
Page 3.7-11 Revision 11
Page 3.7-12 thru 3.7-56..... Revision 6
Page 3.7-57 thru 3.7-59..... Revision 11
Page 3.7-60 thru 3.7-61..... Revision 8
Page 3.7-62 thru 3.7-64..... Revision 6
Page 3.7-65 Revision 8
Page 3.7-66 Revision 6
Page 3.7-67 thru 3.7-68..... Revision 8
Page 3.7-69 Revision 6
Page 3.7-70 thru 3.7-72..... Revision 8

List of Effective Pages (cont'd)

Page 3.7-72 thru 3.7-81.....	Revision 6	Page 3.10.10-1 thru 3.10.10-8.....	Revision 5
Page 3.7-73 thru 3.7-79.....	Revision 6	Page 3.11-1 thru 3.11-9.....	Revision 22A
Page 3.7-80	Revision 8	Page 3.11-10 thru 3.11-28.....	Revision 11
Page 3.7-81	Revision 6	Page 3.11-29 thru 3.11-34.....	Revision 22A
Page 3.8-1 thru 3.8-10.....	Revision 0	Page 3.12-1 thru 3.12-2.....	Revision 22A
Page 3.9-1	Revision 0		
Page 3.9-2	Revision 1	<u>Chapter 4</u>	
Page 3.9-3	Revision 9	Page 4-i	Revision 9
Page 3.10-1	Revision 0	Page 4-ii	Revision 22A
Page 3.10.1-1	Revision 5	Page 4-iii	Revision 9
Page 3.10.1-2 thru 3.10.1-4.....	Revision 2	Page 4-iv	Revision 11
Page 3.10.1-5	Revision 1	Page 4-v	Revision 22A
Page 3.10.1-6 thru 3.10.1-32.....	Revision 5	Page 4-vi	Revision 11
Page 3.10.2-1 thru 3.10.2-26.....	Revision 4	Page 4-vii	Revision 22A
Page 3.10.3-1 thru 3.10.3-2.....	Revision 8	Page 4-1	Revision 0
Page 3.10.3-3	Revision 0	Page 4.1-1 thru 4.1-2.....	Revision 9
Page 3.10.3-4 thru 3.10.3-23.....	Revision 1	Page 4.1-3 thru 4.1-4.....	Revision 22A
Page 3.10.3-24	Revision 8	Page 4.1-5 thru 4.1-8.....	Revision 7
Page 3.10.3-25 thru 3.10.3-38.....	Revision 1	Page 4.2-1	Revision 0
Page 3.10.4-1 thru 3.10.4-2.....	Revision 1	Page 4.3-1	Revision 0
Page 3.10.4-3 thru 3.10.4-9.....	Revision 0	Page 4.4-1 thru 4.4-2.....	Revision 22A
Page 3.10.4-10	Revision 1	Page 4.4-3	Revision 5
Page 3.10.4-11 thru 3.10.4-14.....	Revision 0	Page 4.4-4 thru 4.4-7.....	Revision 8
Page 3.10.5-1	Revision 1	Page 4.4-8 thru 4.4-10.....	Revision 5
Page 3.10.5-2	Revision 2	Page 4.4-11 thru 4.4-20.....	Revision 7
Page 3.10.5-3 thru 3.10.5-4.....	Revision 11	Page 4.4-21 thru 4.4-22.....	Revision 9
Page 3.10.5-5 thru 3.10.5-9.....	Revision 9	Page 4.4-23 thru 4.4-25.....	Revision 7
Page 3.10.6-1 thru 3.10.6-2.....	Revision 5	Page 4.4-26 thru 4.4-27.....	Revision 8
Page 3.10.6-3	Revision 4	Page 4.4-28 thru 4.4-30.....	Revision 12
Page 3.10.6-4 thru 3.10.6-6.....	Revision 5	Page 4.4-31	Revision 7
Page 3.10.6-7 thru 3.10.6-10.....	Revision 4	Page 4.4-32	Revision 9
Page 3.10.6-11 thru 3.10.6-13.....	Revision 2	Page 4.4-33	Revision 12
Page 3.10.6.14 thru 3.10.6-16.....	Revision 4	Page 4.4-34 thru 4.4-35.....	Revision 8
Page 3.10.6-17 thru 3.10.6-18.....	Revision 2	Page 4.4-36	Revision 12
Page 3.10.6-19	Revision 4	Page 4.4-37 thru 4.4-62.....	Revision 7
Page 3.10.6-20 thru 3.10.6-21.....	Revision 2	Page 4.4-63	Revision 12
Page 3.10.6-22 thru 3.10.6-34.....	Revision 4	Page 4.4-64	Revision 8
Page 3.10.7-1 thru 3.10.7-2.....	Revision 0	Page 4.4-65	Revision 7
Page 3.10.8-1	Revision 4	Page 4.4-66 thru 4.4-70.....	Revision 12
Page 3.10.8-2	Revision 2	Page 4.4-71	Revision 7
Page 3.10.8-3 thru 3.10.8-8.....	Revision 0	Page 4.5-1	Revision 22A
Page 3.10.9-1	Revision 6	Page 4.5-2	Revision 11
Page 3.10.9-2	Revision 4	Page 4.5-3 thru 4.5-4.....	Revision 9
Page 3.10.9-3 thru 3.10.9-11.....	Revision 0	Page 4.6-1	Revision 22A

List of Effective Pages (cont'd)

Page 4.6-2	Revision 12	Page 5-x	Revision 22A
Page 4.6-3 thru 4.6-4.....	Revision 7	Page 5-xi thru 5-xiv	Revision 11
Page 4.7-1	Revision 0	Page 5-xv	Revision 22A
Page 4.7-2	Revision 22A	Page 5-1 thru 5-2.....	Revision 22A
Page 4.8-1	Revision 0	Page 5.1-1 thru 5.1-3.....	Revision 7
Page 4.8.1-1 thru 4.8.1-10.....	Revision 0	Page 5.1-4 thru 5.1-6.....	Revision 8
Page 4.8.2-1 thru 4.8.2-8.....	Revision 0	Page 5.1-7 thru 5.1-8.....	Revision 5
Page 4.8.3-1 thru 4.8.3-2.....	Revision 0	Page 5.1-9 thru 5.1-10.....	Revision 8
Page 4.8.3-3 thru 4.8.3-4.....	Revision 1	Page 5.1-11 thru 5.1-12.....	Revision 5
Page 4.8.3-5	Revision 0	Page 5.2-1 thru 5.2-12.....	Revision 5
Page 4.8.3-6 thru 4.8.3-9.....	Revision 1	Page 5.3-1 thru 5.3-2.....	Revision 5
Page 4.9-1	Revision 9	Page 5.3-3	Revision 0
Page 4.9.1-1	Revision 10	Page 5.3-4 thru 5.3-5.....	Revision 1
Page 4.9.2-1 thru 4.9.2-3.....	Revision 10	Page 5.3-6	Revision 0
Page 4.9.2-4	Revision 12	Page 5.4-1 thru 5.4-5.....	Revision 0
Page 4.9.3-1	Revision 8	Page 5.5-1	Revision 0
Page 4.9.3-2	Revision 10	Page 5.5-2 thru 5.5-3.....	Revision 8
Page 4.9.3-3	Revision 3	Page 5.5-4 thru 5.5-5.....	Revision 5
Page 4.9.4-1	Revision 8	Page 5.5-6	Revision 0
Page 4.10-1	Revision 9	Page 5.5-7 thru 5.5-10.....	Revision 1
Page 4.10.1-1 thru 4.10.1-2.....	Revision 11	Page 5.5-11 thru 5.5-13.....	Revision 0
Page 4.10.1-3	Revision 12	Page 5.5-14	Revision 8
Page 4.10.1-4 thru 4.10.1-5.....	Revision 9	Page 5.5-15	Revision 1
Page 4.10.2-1	Revision 9	Page 5.5-16 thru 5.5-20.....	Revision 5
Page 4.10.2-2 thru 4.10.2-5.....	Revision 12	Page 5.6-1 thru 5.6-2.....	Revision 0
Page 4.11-1	Revision 11	Page 5.6-3	Revision 1
Page 4.11.1-1 thru 4.11.1-8.....	Revision 11	Page 5.6-4	Revision 8
Page 4.11.2-1 thru 4.11.2-2.....	Revision 12	Page 5.6-5 thru 5.6-6.....	Revision 5
Page 4.11.3-1	Revision 12	Page 5.6-7	Revision 1
Page 4.11.4-1 thru 4.11.4-2.....	Revision 12	Page 5.6-8	Revision 5
Page 4.11.4-3 thru 4.11.4-20.....	Revision 11	Page 5.6-9	Revision 1
Page 4.11.4-21 thru 4.11.4-22.....	Revision 12	Page 5.6-10 thru 5.6-13.....	Revision 0
Page 4.12-1	Revision 22A	Page 5.7-1 thru 5.7-2.....	Revision 0
Page 4.12.1-1 thru 4.12.1-3.....	Revision 22A	Page 5.7-3	Revision 22A
Page 4.12.2-1 thru 4.12.2-2.....	Revision 22A	Page 5.8-1	Revision 0
Page 4.12.3-1	Revision 22A	Page 5.8.1-1 thru 5.8.1-4.....	Revision 0
Page 4.12.4-1 thru 4.12.4-5.....	Revision 22A	Page 5.8.2-1	Revision 0
		Page 5.8.2-2 thru 5.8.2-5.....	Revision 1
<u>Chapter 5</u>		Page 5.8.2-6	Revision 0
Page 5-i	Revision 7	Page 5.8.2-7 thru 5.8.2-13.....	Revision 1
Page 5-ii thru 5-xv	Revision 11	Page 5.8.3-1	Revision 5
Page 5-iii	Revision 22A	Page 5.8.3-2	Revision 1
Page 5-iv thru 5-ix	Revision 11	Page 5.8.3-3	Revision 5
Page 5-ii thru 5-xv	Revision 11	Page 5.8.3-4	Revision 8

List of Effective Pages (cont'd)

Page 5.8.3-5	Revision 5	Page 5.8.12-3	Revision 11
Page 5.8.3-6 thru 5.8.3-17.....	Revision 1	Page 5.8.12-4 thru 5.8.12-16.....	Revision 5
Page 5.8.3-18 thru 5.8.3-19.....	Revision 5	Page 5.8.13-1	Revision 5
Page 5.8.3-20 thru 5.8.3-23.....	Revision 1	Page 5.8.13-2 thru 5.8.13-3.....	Revision 11
Page 5.8.3-24 thru 5.8.3-31.....	Revision 5	Page 5.8.13-4 thru 5.8.13-6.....	Revision 5
Page 5.8.3-32	Revision 8	Page 5.9-1	Revision 7
Page 5.8.3-33	Revision 5	Page 5.9.1-1	Revision 7
Page 5.8.4-1	Revision 5	Page 5.9.2-1	Revision 7
Page 5.8.4-2	Revision 7	Page 5.9.3-1 thru 5.9.3-5.....	Revision 7
Page 5.8.4-3 thru 5.8.4-17.....	Revision 0	Page 5.9.4-1 thru 5.9.4-2.....	Revision 7
Page 5.8.4-18 thru 5.8.4-29.....	Revision 9	Page 5.9.5-1 thru 5.9.5-2.....	Revision 7
Page 5.8.4-30	Revision 0	Page 5.9.6-1 thru 5.9.6-4.....	Revision 7
Page 5.8.5-1	Revision 5	Page 5.9.7-1 thru 5.9.7-23.....	Revision 7
Page 5.8.5-2 thru 5.8.5-3.....	Revision 7	Page 5.9.8-1	Revision 7
Page 5.8.5-4	Revision 8	Page 5.9.8-2 thru 5.9.8-28.....	Revision 9
Page 5.8.5-5 thru 5.8.5-6.....	Revision 5	Page 5.9.9-1 thru 5.9.9-6.....	Revision 7
Page 5.8.5-7	Revision 0	Page 5.10-1	Revision 7
Page 5.8.5-8 thru 5.8.5-9.....	Revision 8	Page 5.10.1-1	Revision 7
Page 5.8.6-1	Revision 7	Page 5.10.2-1	Revision 7
Page 5.8.6-2 thru 5.8.6-6.....	Revision 5	Page 5.10.3-1 thru 5.10.3-3.....	Revision 7
Page 5.8.6-7	Revision 7	Page 5.10.4-1	Revision 7
Page 5.8.7-1 thru 5.8.7-2.....	Revision 7	Page 5.10.5-1 thru 5.10.5-4.....	Revision 7
Page 5.8.7-3	Revision 0	Page 5.10.6-1	Revision 7
Page 5.8.7-4	Revision 8	Page 5.10.6-2 thru 5.10.6-25.....	Revision 9
Page 5.8.7-5	Revision 7	Page 5.11.1-1 thru 5.11.1-3.....	Revision 9
Page 5.8.8-1	Revision 8	Page 5.11.1-4	Revision 11
Page 5.8.8-2 thru 5.8.8-4.....	Revision 0	Page 5.11.1-5	Revision 9
Page 5.8.8-5 thru 5.8.8-12.....	Revision 1	Page 5.11.1-6	Revision 11
Page 5.8.8-13 thru 5.8.8-23.....	Revision 0	Page 5.11.2-1	Revision 9
Page 5.8.8-24 thru 5.8.8-34.....	Revision 1	Page 5.11.3-1 thru 5.11.3-4.....	Revision 9
Page 5.8.8-35 thru 5.8.8-56.....	Revision 0	Page 5.11.4-1 thru 5.11.4-3.....	Revision 9
Page 5.8.8-57 thru 5.8.8-65.....	Revision 5	Page 5.11.4-4	Revision 11
Page 5.8.8-66 thru 5.8.8-79.....	Revision 8	Page 5.11.4-5 thru 5.11.4-6.....	Revision 9
Page 5.8.8-80 thru 5.8.8-115.....	Revision 5	Page 5.11.4-7	Revision 11
Page 5.8.9-1	Revision 7	Page 5.11.4-8	Revision 9
Page 5.8.9-2	Revision 0	Page 5.11.5-1 thru 5.11.5-2.....	Revision 9
Page 5.8.9-3 thru 5.8.9-54.....	Revision 9	Page 5.11.6-1	Revision 9
Page 5.8.9-55	Revision 1	Page 5.11.7-1 thru 5.11.7-2.....	Revision 9
Page 5.8.9-56	Revision 7	Page 5.11.8-1 thru 5.11.8-2.....	Revision 9
Page 5.8.9-57 thru 5.8.9-69.....	Revision 9	Page 5.11.8-3	Revision 11
Page 5.8.10-1 thru 5.8.10-5.....	Revision 0	Page 5.11.8-4 thru 5.11.8-6.....	Revision 9
Page 5.8.11-1 thru 5.8.11-3.....	Revision 1	Page 5.11.8-7	Revision 11
Page 5.8.12-1	Revision 8	Page 5.11.8-8 thru 5.11.8-11.....	Revision 9
Page 5.8.12-2	Revision 5	Page 5.11.9-1	Revision 9

List of Effective Pages (cont'd)

Page 5.11.10-1 thru 5.11.10-3.....	Revision 9	Page 6.5-2	Revision 0
Page 5.11.10-4	Revision 11	Page 6.5-3 thru 6.5-4.....	Revision 11
Page 5.11.10-5 thru 5.11.10-10....	Revision 9	Page 6.5-5 thru 6.5-6.....	Revision 0
Page 5.11.11-1 thru 5.11.11-41....	Revision 9	Page 6.5-7 thru 6.5-8.....	Revision 11
Page 5.12-1	Revision 11	Page 6.6-1	Revision 0
Page 5.12.1-1	Revision 11	Page 6.7-1	Revision 0
Page 5.12.2-1 thru 5.12.2-3.....	Revision 11	Page 6.7.1-1 thru 6.7.1-2.....	Revision 5
Page 5.12.3-1	Revision 11	Page 6.7.1-3	Revision 0
Page 5.12.4-1 thru 5.12.4-8.....	Revision 11	Page 6.7.1-4	Revision 2
Page 5.12.5-1 thru 5.12.5-3.....	Revision 11	Page 6.7.1-5 thru 6.7.1-37.....	Revision 0
Page 5.12.6-1 thru 5.1.6-4.....	Revision 11	Page 6.7.2-1	Revision 11
Page 5.12.7-1 thru 5.1.7-4.....	Revision 11	Page 6.7.2-2	Revision 0
Page 5.12.8-1	Revision 11	Page 6.7.2-3 thru 6.7.2-4.....	Revision 5
Page 5.12.9-1	Revision 11	Page 6.7.2-5	Revision 11
Page 5.12.10-1	Revision 11	Page 6.7.3-1 thru 6.7.3-22.....	Revision 5
Page 5.12.11-1	Revision 11	Page 6.7.3-23 thru 6.7.3-25.....	Revision 11
Page 5.13-1	Revision 22A	Page 6.7.3-26 thru 6.7.3-27.....	Revision 5
Page 5.13.1-1 thru 5.13.1-5.....	Revision 22A	Page 6.7.4-1 thru 6.7.4-2.....	Revision 7
Page 5.13.2-1 thru 5.13.2-2.....	Revision 22A	Page 6.7.4-3	Revision 0
Page 5.13.3-1 thru 5.13.3-6.....	Revision 22A	Page 6.7.4-4	Revision 2
<u>Chapter 6</u>		Page 6.7.4-5 thru 6.7.4-44.....	Revision 0
Page 6-i thru 6-iv	Revision 22A	Page 6.7.5-1	Revision 7
Page 6-v	Revision 11	Page 6.7.5-2 thru 6.7.5-7.....	Revision 0
Page 6-vi	Revision 22A	Page 6.7.6-1	Revision 7
Page 6-1	Revision 22A	Page 6.7.6-2 thru 6.7.6-3.....	Revision 2
Page 6.1-1 thru 6.1-14.....	Revision 22A	Page 6.7.6-4	Revision 7
Page 6.2-1	Revision 5	Page 6.7.6-5 thru 6.7.6-6.....	Revision 2
Page 6.2-2	Revision 0	Page 6.7.6-7	Revision 7
Page 6.2-3	Revision 11	Page 6.7.6-8 thru 6.7.6-22.....	Revision 2
Page 6.2-4 thru 6.2-5.....	Revision 0	Page 6.7.6-23 thru 6.7.6-24.....	Revision 7
Page 6.3-1	Revision 5	Page 6.7.6-25 thru 6.7.6-27.....	Revision 2
Page 6.3-2	Revision 6	Page 6.7.6-28	Revision 7
Page 6.3-3	Revision 5	Page 6.7.7-1 thru 6.7.7-34.....	Revision 11
Page 6.3-4 thru 6.3-8.....	Revision 0	Page 6.7.8-1 thru 6.7.8-3.....	Revision 5
Page 6.3-9	Revision 2	Page 6.7.8-4	Revision 7
Page 6.4-1	Revision 0	Page 6.7.8-5 thru 6.7.8-6.....	Revision 5
Page 6.4-2	Revision 2	Page 6.7.8-7 thru 6.7.8-93.....	Revision 11
Page 6.4-3 thru 6.4-7.....	Revision 5	Page 6.8-1	Revision 22A
Page 6.4-8 thru 6.4-9.....	Revision 11	Page 6.8.1-1 thru 6.8.1-2.....	Revision 22A
Page 6.4-10	Revision 5	Page 6.8.2-1 thru 6.8.2-2.....	Revision 22A
Page 6.4-11	Revision 7	Page 6.8.3-1 thru 6.8.3-8.....	Revision 22A
Page 6.4-12	Revision 11	Page 6.8.4-1 thru 6.8.4-2.....	Revision 22A
Page 6.5-1	Revision 11		

List of Effective Pages (cont'd)

Chapter 7

Page 7-i Revision 22A
Page 7-1 Revision 22A
Page 7.1-1 thru 7.1-7..... Revision 22A
Page 7.2-1 thru 7.2-2..... Revision 22A
Page 7.3-1 Revision 22A
Page 7.4-1 Revision 0

Chapter 8

Page 8-i thru 8-ii Revision 22A
Page 8-1 Revision 0
Page 8.1-1 Revision 11
Page 8.1-2 thru 8.1-4..... Revision 22A
Page 8.2-1 Revision 1
Page 8.3-1 Revision 22A
Page 8.3-2 thru 8.3-6..... Revision 1
Page 8.3-7 Revision 11
Page 8.3-8 Revision 1
Page 8.3-9 thru 8.3-14..... Revision 5
Page 8.3-15 thru 8.3-17..... Revision 11
Page 8.3-18 Revision 22A
Page 8.4-1 Revision 22A
Page 8.5-1 Revision 1
Page 8.5-2 thru 8.5-3..... Revision 12
Page 8.6-1 Revision 1
Page 8.6-2 thru 8.6-3..... Revision 8
Page 8.7-1 Revision 2
Page 8.7-2 Revision 0
Page 8.8-1 Revision 2
Page 8.8-2 Revision 3
Page 8.8-3 Revision 0
Page 8.8-4 Revision 3
Page 8.9-1 Revision 22A
Page 8.10-1 thru 8.10-8..... Revision 22A
Page 8.11-1 thru 8.11-2..... Revision 0
Page 8.11-3 Revision 8
Page 8.12-1 thru 8.12-2..... Revision 0
Page 8.12-3 Revision 22A
Page 8.13-1 Revision 8
Page 8.13-2 thru 8.13-6..... Revision 0
Page 8.13-7 Revision 8
Page 8.13-8 Revision 6
Page 8.13-9 Revision 8
Page 8.13-10 thru 8.13-17..... Revision 6

Page 8.13-18 thru 8.13-40..... Revision 8

Chapter 9

Page 9-i Revision 22A
Page 9-1 Revision 2
Page 9-2 Revision 22E
Page 9.1-1 thru 9.1-3..... Revision 9
Page 9.1-4 thru 9.1-6..... Revision 10
Page 9.1-7 thru 9.1-8..... Revision 9
Page 9.1-9 thru 9.1-11..... Revision 10
Page 9.1-12 thru 9.1-21..... Revision 9
Page 9.1-19 thru 9.1-21..... Revision 11
Page 9.2-1 thru 9.2-2..... Revision 9
Page 9.3-1 thru 9.3-3..... Revision 9
Page 9.4-1 Revision 9
Page 9.4-2 thru 9.4-14..... Revision 11
Page 9.5-1 thru 9.5-2..... Revision 9
Page 9.6-1 thru 9.6-3..... Revision 11
Page 9.7-1 thru 9.7-15..... Revision 22A

Chapter 10

Page 10-i Revision 9
Page 10-1 Revision 0
Page 10.1-1 Revision 5
Page 10.1-2 Revision 6
Page 10.1-3 thru 10.1-4..... Revision 2
Page 10.1-5 thru 10.1-7..... Revision 22A
Page 10.1.8 thru 10.1-13..... Revision 9
Page 10.1-14 Revision 11
Page 10.1-15 thru 10.1-23..... Revision 9
Page 10.2-1 thru 10.2-3..... Revision 9
Page 10.3-1 Revision 0
Page 10.3-2 Revision 1

Chapter 11

Page 11-i Revision 0
Page 11-1 Revision 22A
Page 11.1-1 thru 11.1-2..... Revision 22A
Page 11.2-1 Revision 0
Page 11.3-1 thru 11.3-3..... Revision 22A
Page 11.3-4 thru 11.3-6..... Revision 0
Page 11.4-1 Revision 0
Page 11.5-1 Revision 0

List of Effective Pages (cont'd)

Chapter 12

Page 12-i Revision 22A
Page 12-1 Revision 22A
Page 12.1-1 Revision 11
Page 12.1-2 thru 12.1-9..... Revision 22A
Page 12.2-1 Revision 0
Page 12.2-2 Revision 1
Page 12.2-3 Revision 0
Page 12.2-4 Revision 11
Page 12.2-5 Revision 4
Page 12.2-6 Revision 0
Page 12.2-7 Revision 5
Page 12.2-8 thru 12.2-20..... Revision 11
Page 12.3-1 thru 12.3-2..... Revision 0

Chapter 13

Page 13-i Revision 0
Page 13-1 Revision 0
Page 13A-i Revision 0
Page 13A-1..... Revision 0
Page 13B-i..... Revision 0
Page 13B-1..... Revision 0
Page 13C-i..... Revision 1
Page 13C-1 thru 13C-3 Revision 5
Page 13C-4 thru 13C-9 Revision 0
Page 13C-10..... Revision 7
Page 13C-11 thru 13C-13 Revision 9
Page 13C-14..... Revision 1
Page 13C-15 thru 13C-16 Revision 7
Page 13C-17 thru 13C-18 Revision 9
Page 13C-19 thru 13C-21 Revision 5
Page 13C-22..... Revision 1
Page 13C-23 thru 13C-24 Revision 5
Page 13C-25 thru 13C-27 Revision 2

Chapter 14

Page 14-i Revision 0
Page 14-1 Revision 22A
Page 14-2 Revision 0
Page 14.1-1 Revision 22A
Page 14.1-2 thru 14.1-0..... Revision 0
Page 14.1-7 Revision 22A
Page 14.2-1 Revision 22A

Chapter 15

Page 15-i Revision 0
Page 15-1 Revision 22A
Page 15.1-1 Revision 0
Page 15.2-1 thru 15.2-2..... Revision 22A
Page 15.2-3 thru 15.2-4..... Revision 0
Page 15.3-1 Revision 0

9 OPERATING PROCEDURES

This chapter provides general procedural guidance for the loading, unloading, and recovery of MAGNASTOR®. System user personnel shall use this information to prepare the detailed, site-specific procedures for loading, handling, storing, and unloading MAGNASTOR. Users may add, delete, or change the sequence of specific steps of the procedures to accommodate site-specific requirements provided that the general order of the tasks associated with TSC closure and storage is preserved and that the specific requirements for fastener torque values, temperature limits for operations, and other defined values in the procedure are also met. Specific optional operational sequences are identified herein to facilitate the fuel loading operations.

All facility-specific procedures prepared by users must fully comply with the MAGNASTOR Certificate of Compliance (CoC) and Technical Specifications, including the approved contents and design features.

Equipment and operating requirements will be established by the user prior to implementation. Refer to Table 9.1-1 for a listing of the major auxiliary equipment generally required by the user to load and close or to open and unload the system. MAGNASTOR provides effective shielding for operations personnel; however, the licensee/user may utilize supplemental shielding to further reduce operator radiation exposure. The planned location, type, and possible interactions of the temporary supplemental shielding with MAGNASTOR shall be appropriately evaluated by the licensee/user. MAGNASTOR, when operated by properly trained personnel in accordance with the generic procedures provided herein, will meet As Low As Reasonably Achievable (ALARA) guidance for personnel exposure control.

MAGNASTOR's design features minimize the potential for contamination of the TSC during fuel loading, canister preparation, and transfer. The TSC is loaded in the spent fuel pool, but the external surfaces of the canister are protected from contact with the contaminated pool water by clean water maintained in the annulus between the transfer cask and the TSC. For purposes of the operating procedures, clean water is defined as demineralized, processed, or filtered pool water, or any water external to the spent fuel pool that has water chemistry compatible for use in the spent fuel pool. During loading and/or cooling operations, the exterior surfaces of the TSC shell, bottom and closure lid can be exposed to spent fuel pool water, which may be contaminated. The smooth exterior surfaces of the TSC shell, bottom and closure lid can be readily decontaminated. Therefore, the TSC external surfaces are expected to be essentially free of removable contamination during long-term storage operations.

Tables in Chapter 3 provide the handling weights for the major components of MAGNASTOR and the loads to be lifted during various phases of the loading and unloading operations.

Licensees/users must perform appropriate reviews and evaluations to ensure that the lifted loads do not exceed rated load limits of user-supplied lifting equipment and comply with the facility's heavy-load program.

Additional details and guidance on the operations of the MAGNASTOR System are provided in the MAGNASTOR Operations Manual, Document No. 71160-P-02, (or equivalent site-specific manuals prepared for individual Licensees/Users), including more detailed step-by-step operating procedures, and identification of Contingency Events and proposed corrective actions to ensure that FSAR and Technical Specification limits are not exceeded. Section 9.1 of this chapter includes several example contingency events and corrective actions which are addressed in notes and caution statements. Guidance applicable to specific loading patterns and equipment configurations are included in the MAGNASTOR Operations Manual or equivalent site-specific manual prepared for individual Licensees/Users. The Operations Manual also contains additional information on the system design description, characteristics, ancillary equipment design and functions, and operational figures of the ancillary systems.

At the option of the MAGNASTOR user and prior to the beginning of ISFSI handling operations, as defined below, general licensees may implement administrative controls to preclude conducting operations during periods of adverse weather. The administrative controls shall include at a minimum; establishing safe condition and forecast, as defined below where there are no adverse weather warnings, watches, and advisories for the oncoming 8 hours. Additionally, the administrative controls shall include compensatory measures to place important to safety structures, systems, and components in an analyzed condition if the safe condition and forecast can no longer be met.

- ISFSI Handling Operations – All activities (including aging management inspections) associated with the lifting, placement, and movement of a loaded transportable storage canister, vertical concrete cask, or other structures, systems, and components important to safety.
- Safe Condition and Forecast – A safe condition and forecast is considered to be the absence of tornado and severe thunderstorm watches, tornado and severe thunderstorm warnings, hazardous weather outlook indicating a moderate or high risk of severe thunderstorms or where the predicted wind speeds would qualify for a severe thunderstorm watch (58 mph or greater) for the oncoming 8 hours. Weather forecasts will be accessed from the NOAA Weather Forecast Office nearest to each ISFSI.