

August 26, 2010

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

Attn: Document Control Desk

Subject: Submission of a Request to Amend the U.S. Nuclear Regulatory Commission Certificate of Compliance No. 1031 for the NAC International MAGNASTOR<sup>®</sup> Cask System

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. 0, February 4, 2009
  2. MAGNASTOR Cask System Final Safety Analysis Report (FSAR), Revision 0, NAC International, February 2009

NAC International (NAC) hereby submits a request to amend Reference 1 as follows:

- Revise authorized contents to include PWR damaged fuel contained in damaged fuel cans that are placed in a Damaged Fuel (DF) Basket Assembly. This is required to accommodate fuel designated for dry storage at Duke McGuire, Duke Catawba and the Zion Station.
- Revise authorized contents to include PWR fuel assembly average burnup up to 70 GWd/MTU.
- Revise authorized contents to include PWR fuel assemblies with nonfuel hardware per the expanded definition in this application. This is required to accommodate hardware nomenclature for fuel designated for dry storage at the Zion Station.
- Revise authorized contents to include PWR fuel assemblies with up to five activated stainless steel fuel replacement rods at a maximum burnup/exposure of 32.5 GWd/MTU. This is required to accommodate fuel designated for dry storage at the Zion Station.
- Revise Paragraph 4.3.1(i), Appendix A, Technical Specifications, to clarify that the maximum design basis earthquake accelerations of 0.37g in the horizontal direction (without cask sliding) and 0.25g in the vertical direction at the ISFSI pad top surface do not result in cask tip-over.

The above changes are described and marked by revision bars on the Revision 10B changed pages to the Reference 2 FSAR. The Revision 10B changed pages enclosed with this submittal consist of a nonproprietary version and a NAC Proprietary Supplement provided in a separate sealed envelope bearing the label "NAC Proprietary Information."

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Also included with the NAC Proprietary Information is a Proprietary Information Affidavit executed by Thomas A. Danner, NAC Vice President, Engineering, in accordance with 10 CFR 2.390. The affidavit includes the description of the proprietary information being requested to be withheld from the public.

This submittal includes eight copies of:

- this transmittal letter
- Attachment 1 – List of Changes, MAGNASTOR FSAR, Revision 10B, and Technical Specifications, Appendix A and Appendix B
- Attachment 2 – List of Drawing Changes Completed via 10 CFR 72.48 Determination for the MAGNASTOR FSAR Provided as Part of Revision 10B – Nonproprietary
- Attachment 2 – List of Drawing Changes Completed via 10 CFR 72.48 Determination for the MAGNASTOR FSAR Provided as Part of Revision 10B – Proprietary Supplement (included in a separate sealed envelope labeled “NAC Proprietary Information”)
- MAGNASTOR FSAR, Revision 10B changed pages – Nonproprietary
- MAGNASTOR FSAR, Revision 10B changed pages Proprietary Supplement (included in a separate sealed envelope labeled “NAC Proprietary Information”)

One copy of:

- Proprietary Information Affidavit

The MAGNASTOR FSAR, Revision 10B changed pages incorporate the requested amendment. The MAGNASTOR FSAR, Revision 10B changed pages are based on MAGNASTOR FSAR, Revision 0, including Revision 0A, 0B and 0C updates. All changes incorporated into the MAGNASTOR FSAR, Revision 0A, 0B and 0C updates via the 10 CFR 72.48 Determination process are shown in ***bold italic*** lettering on the MAGNASTOR FSAR, Revision 10B changed pages. The MAGNASTOR FSAR, Revision 10B changed pages also include various information that was the subject of MAGNASTOR Amendment 1 and MAGNASTOR Amendment 2, both of which are ongoing licensing efforts. Including the Amendment 1 and Amendment 2 information was necessary for continuity. The **Amendment 1** information is identified on the MAGNASTOR FSAR, Revision 10B changed pages by **single underline**, and the **Amendment 2** information is identified by **double underline**.

MAGNASTOR Amendment 1 is in the final rulemaking process with the final rule effective date to be August 30, 2010. Amendment 2 is currently under technical review, which may result in changes to its content during the Request for Additional Information (RAI) process. Should any change to MAGNASTOR Amendment 2 affect the contents of MAGNASTOR Amendment 3, revised pages will be promptly provided in the form of a supplement(s) to this amendment request.

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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 10B pages. The included List of Effective Pages identifies the revision level of all pages in the Reference 2 FSAR with Revision 10B incorporated.

In order to better facilitate the review process, NAC is providing the Revision 10B changed pages as complete sections of the FSAR. Consequently, a number of Revision 10B pages with no revision bars are included. Upon final approval of this application, the Revision 10B changed pages will be reformatted and incorporated into the next revision of the MAGNASTOR FSAR.

This amendment request affects Chapters 1 through 13 of the Reference 2 FSAR; and the Technical Specifications Appendix A, Technical Specifications and Design Features for the MAGNASTOR SYSTEM; and Appendix B, Approved Contents for the MAGNASTOR SYSTEM. The amendment request also includes nine new license drawings depicting the design of the Damaged Fuel Can and the DF Basket Assembly. Two of the new license drawings are provided in nonproprietary and NAC Proprietary versions. The NAC Proprietary versions of these drawings are included in the NAC Proprietary Supplement in a separate sealed envelope. One revised license drawing, 71160-590, is included depicting the loaded MAGNASTOR Concrete Cask associated with the requested changes. This license drawing has been updated to include the damaged fuel concrete cask configurations. Attachment 2 to this transmittal letter lists the requested changes to drawing 71160-590.

Ten license drawings have been revised via 10 CFR 72.48 Determination and are referenced in this submittal. Changes to these drawings are listed in Attachment 2 to this transmittal letter. One of the 10 revised License Drawings (No. 71160-551) is also provided in nonproprietary and proprietary versions in the same manner described above. Changes to the NAC Proprietary version of this drawing are described in the NAC Proprietary Supplement to Attachment 2, which is provided in a separate sealed envelope marked "NAC Proprietary Information."

NAC is submitting this request for Amendment to Reference 1 in support of current and future MAGNASTOR System users. MAGNASTOR systems for Duke McGuire have already been delivered to the site for loading in accordance with established site schedules. Fabrication for Duke Catawba MAGNASTOR systems are already underway using the currently approved CoC and Amendment.

NAC has received a Letter of Intent from Energy Solutions to provide dry storage systems for the Zion Station subject to finalization of the asset sale agreement between Energy Solutions and Exelon. Additionally, press releases over the last few days have announced that the asset sale agreement will be executed on September 1, 2010. Based on that announcement, NAC anticipates that this amendment will be required by December 31, 2011 in order to support the Zion Project.

Due to the critical nature of this amendment in support of the above-referenced projects and clients, NAC requests that the NRC utilize the focused review process for this submittal.

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Approval of this amendment to Reference 1 and the issuance of the draft CoC/Safety Evaluation Report are requested by June 30, 2011. Applying the Direct Final Rulemaking process, the estimated/desired Direct Final Rule effective date is December 31, 2011.

If you have any comments or questions, please contact me on my direct line at 678-328-1274.

Sincerely,



Anthony L. Patko  
Director, Licensing  
Engineering

- Attachment 1: List of Changes, MAGNASTOR FSAR, Revision 10B and Technical Specifications, Appendix A and Appendix B
- Attachment 2: List of Drawing Changes Completed via 10 CFR 72.48 Determination for the MAGNASTOR FSAR Provided as Part of Revision 10B

Enclosures

**NAC INTERNATIONAL  
AFFIDAVIT PURSUANT TO 10 CFR 2.390**

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Thomas A. Danner (Affiant), Vice President, Engineering, of NAC International, hereinafter referred to as NAC, at 3930 East Jones Bridge Road, Norcross, Georgia 30092, being duly sworn, deposes and says that:

1. Affiant has reviewed the information described in Item 2 and is personally familiar with the trade secrets and privileged information contained therein, and is authorized to request its withholding.
2. The information to be withheld includes the following NAC Proprietary Information that is being provided to support the technical review of NAC's Request for an Amendment of Certificate of Compliance (CoC) No. 1031 for the NAC International MAGNASTOR<sup>®</sup> Cask System.
  - Attachment 2 – List of Drawing Changes Completed via 10 CFR 72.48 Determination for the MAGNASTOR FSAR Provided as Part of Revision 10B – Proprietary Supplement
  - MAGNASTOR FSAR, Revision 10B Changed Pages Proprietary Supplement
  - NAC International License Drawings
    - 71160-551, Revision 8P, - Fuel Tube Assembly, MAGNASTOR – 37 PWR
    - 71160-674, Revision 1P, - DF Corner Weldment, MAGNASTOR
    - 71160-675, Revision 1P, - DF Basket Assembly, 37 Assembly PWR, MAGNASTOR

NAC is the owner of the information contained in the above documents. Thus, all of the above identified information is considered NAC Proprietary Information.

3. NAC makes this application for withholding of proprietary information based upon the exemption from disclosure set forth in: the Freedom of Information Act (“FOIA”); 5 USC Sec. 552(b)(4) and the Trade Secrets Act; 18 USC Sec. 1905; and NRC Regulations 10 CFR Part 9.17(a)(4), 2.390(a)(4), and 2.390(b)(1) for “trade secrets and commercial financial information obtained from a person, and privileged or confidential” (Exemption 4). The information for which exemption from disclosure is herein sought is all “confidential commercial information,” and some portions may also qualify under the narrower definition of “trade secret,” within the meanings assigned to those terms for purposes of FOIA Exemption 4.
4. Examples of categories of information that fit into the definition of proprietary information are:
  - a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by competitors of NAC, without license from NAC, constitutes a competitive economic advantage over other companies.
  - b. Information that, if used by a competitor, would reduce their expenditure of resources or improve their competitive position in the design, manufacture, shipment, installation, assurance of quality or licensing of a similar product.
  - c. Information that reveals cost or price information, production capacities, budget levels or commercial strategies of NAC, its customers, or its suppliers.
  - d. Information that reveals aspects of past, present or future NAC customer-funded development plans and programs of potential commercial value to NAC.

**NAC INTERNATIONAL**  
**AFFIDAVIT PURSUANT TO 10 CFR 2.390 (continued)**

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- e. Information that discloses patentable subject matter for which it may be desirable to obtain patent protection.

The information that is sought to be withheld is considered to be proprietary for the reasons set forth in Items 4.a, 4.b, and 4.d.

5. The information to be withheld is being transmitted to the NRC in confidence.
6. The information sought to be withheld, including that compiled from many sources, is of a sort customarily held in confidence by NAC, and is, in fact, so held. This information has, to the best of my knowledge and belief, consistently been held in confidence by NAC. No public disclosure has been made, and it is not available in public sources. All disclosures to third parties, including any required transmittals to the NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary agreements, which provide for maintenance of the information in confidence. Its initial designation as proprietary information and the subsequent steps taken to prevent its unauthorized disclosure are as set forth in Items 7 and 8 following.
7. Initial approval of proprietary treatment of a document/information is made by the Vice President, Engineering, the Project Manager, the Licensing Specialist, or the Director, Licensing – the persons most likely to know the value and sensitivity of the information in relation to industry knowledge. Access to proprietary documents within NAC is limited via “controlled distribution” to individuals on a “need to know” basis. The procedure for external release of NAC proprietary documents typically requires the approval of the Project Manager based on a review of the documents for technical content, competitive effect and accuracy of the proprietary designation. Disclosures of proprietary documents outside of NAC are limited to regulatory agencies, customers and potential customers and their agents, suppliers, licensees and contractors with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary agreements.
8. NAC has invested a significant amount of time and money in the research, development, engineering and analytical costs to develop the information that is sought to be withheld as proprietary. This information is considered to be proprietary because it contains detailed descriptions of analytical approaches, methodologies, technical data and/or evaluation results not available elsewhere. The precise value of the expertise required to develop the proprietary information is difficult to quantify, but it is clearly substantial.
9. Public disclosure of the information to be withheld is likely to cause substantial harm to the competitive position of NAC, as the owner of the information, and reduce or eliminate the availability of profit-making opportunities. The proprietary information is part of NAC’s comprehensive spent fuel storage and transport technology base, and its commercial value extends beyond the original development cost to include the development of the expertise to determine and apply the appropriate

**NAC INTERNATIONAL  
AFFIDAVIT PURSUANT TO 10 CFR 2.390 (continued)**

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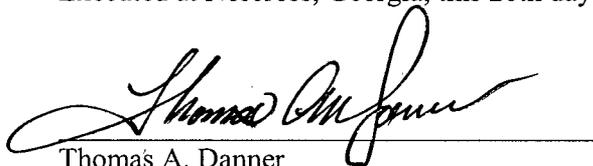
evaluation process. The value of this proprietary information and the competitive advantage that it provides to NAC would be lost if the information were disclosed to the public. Making such information available to other parties, including competitors, without their having to make similar investments of time, labor and money would provide competitors with an unfair advantage and deprive NAC of the opportunity to seek an adequate return on its large investment.

**STATE OF GEORGIA, COUNTY OF GWINNETT**

Mr. Thomas A. Danner, being duly sworn, deposes and says:

That he has read the foregoing affidavit and the matters stated herein are true and correct to the best of his knowledge, information and belief.

Executed at Norcross, Georgia, this 26th day of August 2010.



Thomas A. Danner  
Vice President, Engineering  
NAC International

Subscribed and sworn before me this 26<sup>th</sup> day of August, 2010.

  
Notary Public

**Attachment 1**

**List of Changes**

**MAGNASTOR FSAR, Revision 10B and**  
**Technical Specifications, Appendix A and Appendix B**

**August 2010**

**List of Changes,**  
**MAGNASTOR® FSAR, Revision 10B**  
**Technical Specifications, Appendix A and Appendix B**

Proposed Technical Specifications, Appendix A, Changes

Note: The Table of Contents, List of Figures and List of Tables are revised accordingly to reflect the proposed changes.

- Page A1-1 – deleted definition of “Assembly Defect”; “Burnup” definition revised throughout; added “a)” & “b)”
- Page A1-2 – for “Damaged Fuel” definition, made SPENT NUCLEAR FUEL all caps; item 2, added “SNF” & “stainless steel or zirconium”; note after item 3.3, added “SNF”; note after item 4, capitalized BREACHED SPENT FUEL RODS & added “SPENT”; deleted old item 5 & added a new one to describe FUEL DEBRIS
- Page A1-3 – added definitions of “Damaged Fuel Can (DFC)” & “Fuel Debris”; deleted definition of “Intact Fuel (Assembly or Rod)”; for “Loading Operations,” changed to read: “end when the TSC is lowered into a CONCRETE CASK”; for “MAGNASTOR SYSTEM,” added “(MAGNASTOR)” and revised definition throughout
- Page A1-4 – added definition of “Nonfuel Hardware”
- Page A1-5 – added definition of “Spent Nuclear Fuel (SNF)”; deleted definition of “Standard Fuel”; revised “Storage Operations” definition throughout, for “Transportable Storage Canister (TSC) definition – revised throughout
- Page A1-6 – for “Undamaged Fuel” definition, changed “spent nuclear fuel” to “SNF” in two places; “Unloading Operations” definition revised throughout
- Pages A3-3 & A3-4 – LCO 3.1.1, Transportable Storage Canister (TSC) – revised throughout
- Page A3-12, SR 3.3.1.1 – revised “Frequency” text
- Page A4-1, 4.1.1 – added new Note after item d)
- Page A4-2, first line – added “carbon or stainless”
- Page A4-3, 4.3.1 – item d), changed “fuel tank” to “fuel tank(s)” & added “a total” to last line; item f), added new 2<sup>nd</sup> sentence; item i), added “without cask sliding” & deleted “or less than” in two places
- Page A4-4 – added “or for utilizing an external crane structure integral to a 10 CFR 50 licensed facility”
- Page A5-1, section 5.2 – item a., added new 2<sup>nd</sup> sentence; item c., added “including TRANSFER CASK movement operations”

## Proposed Technical Specifications, Appendix B, Changes

Note: The Table of Contents, List of Figures and List of Tables are revised accordingly to reflect the proposed changes.

- Page B1-1 – replaced former 1<sup>st</sup> sentence with a new paragraph describing MAGNASTOR SYSTEM allowable contents
- Page B2-1 – revised throughout
- Pages B2-2 & B2-3, Table B2-1 – revised throughout
- Pages B2-4 & B2-5, Table B2-1 – added two new pages to table to describe the TSC with DF Basket Assembly
- Page B2-6, Table B2-2 – revised “Max Assembly Average Burnup (MWd/MTU)” to 70,000; deleted “Peak Average Rod Burnup (MWd/MTU)”; deleted last bullet under table
- Page B2-7, Table B2-4 – revised throughout by Amendment No. 2 per the Note
- Page B2-9, Table B2-5 – revised table title and table column titles; added “SNF” to Note in four places
- Page B2-10, Table B2-7 – revised table title; Table B2-8, changed “(see Figure B2-1)” to “(see Figure B2-2)”
- Page B2-11, Figure B2-1 – added new figure to define PWR basket loading pattern orientation
- Page B2-12, Figure B2-2 – revised figure title and number & added note under figure
- Page B2-13, Figure B2-3 – added new figure to show DFC locations
- Page B2-14 & B2-15, Table B2-9 – revised throughout
- Page B2-16, Table B2-10 – revised table title and number
- Page B2-17, Table B2-11 – revised table title & footnote 1; table revised throughout by Amendment No. 2 per the Note
- Page B2-18, Table B2-12 – revised table title
- Page B2-19, Figure B2-4 – added new figure to define BWR basket loading pattern orientation
- Page B2-20, Figure B2-5 – added new figure to show BWR basket designated nonfuel locations
- Page B2-21, Figure B2-6 – revised figure number
- Page B2-22, Table B2-13 – added “SNF” to table title; Table B2-14 – added “SNF” to table title
- Pages B2-36 thru B2-40 in Table B2-16; pages B2-54 thru B2-58 in Table B2-18; pages B2-72 thru B2-76 in Table B2-20; and pages B2-90 thru B2-94 in Table B2-22 – added new data for 60 up to 70 GWd/MTU assembly average burnup

## MAGNASTOR FSAR Changes

Note: The List of Effective Pages and the Chapter Tables of Contents, Lists of Figures and Lists of Tables were revised as needed to incorporate the following changes.

### Chapter 1

- Page 1.1-1, Section 1.1 – added definition of “Nonfuel Hardware Burnup”; deleted “Peak Average Rod Burnup” definition; revised definition of “Concrete Cask”
- Page 1.1-2 – revised definition of “Contents”; for “Damaged Fuel”, added “(DF)”; for definition, item 2), added “stainless steel or zirconium”; item 3.3) added “SNF”
- Page 1.1-3 – added “SNF” to 1<sup>st</sup> Note on page; item 5), revised throughout; added definition of “Damaged Fuel Can (DFC)”
- Page 1.1-4 – deleted definition of “Intact Fuel (Assembly or Rod)”; revised definition of “MAGNASTOR” & added “SYSTEM”; added definition of “Nonfuel Hardware”
- Page 1.1-5 – added definition of “Spent Nuclear Fuel (SNF), Spent Fuel; changed “Trunnions” to “Lifting Trunnions”; 1<sup>st</sup> sentence of definition of “Closure Lid” revised throughout
- Page 1.1-6 – changed “spent nuclear fuel” to “SNF” in two places in “Undamaged Fuel” definition
- Page 1.2-1, Section 1.2, Introduction – 3<sup>rd</sup> paragraph revised throughout to provide comprehensive definition of MAGNASTOR allowed contents; changed “assure” to “ensure”; 4<sup>th</sup> paragraph revised throughout and split into two paragraphs (PWR and BWR)
- Page 1.2-2 – 1<sup>st</sup> paragraph, added new last sentence
- Page 1.3-1, Section 1.3.1 – 2<sup>nd</sup> paragraph, 3<sup>rd</sup> bullet – added “hydrostatic testing”
- Page 1.3-2 – 1<sup>st</sup> paragraph, 3<sup>rd</sup> sentence – added “TSC weldment”; 3<sup>rd</sup> paragraph, 5<sup>th</sup> sentence – revised throughout; last sentence – added “closure lid”
- Page 1.3-3, Section 1.3.1.2 – 2<sup>nd</sup> paragraph, 3<sup>rd</sup> sentence – changed “Following coating” to “Following plating of the structural components”; last sentence – added “and PWR damaged fuel cans”; last paragraph – revised throughout
- Page 1.3-4 – 1<sup>st</sup> paragraph, 1<sup>st</sup> sentence – revised throughout; added new last paragraph for PWR Fuel Basket section to describe damaged fuel cans in the damaged fuel basket assembly
- Page 1.3-6, Section 1.3.1.4 – 3<sup>rd</sup> paragraph, 1<sup>st</sup> sentence – added “or a bolted retaining ring”; 5<sup>th</sup> paragraph, 1<sup>st</sup> sentence – changed “may be” to “is”; 2<sup>nd</sup> sentence – deleted “auxiliary”
- Page 1.3-7, 1<sup>st</sup> full sentence – added “and disconnected”; added new Section 1.3.1.5, Damaged Fuel Can
- Page 1.3-8, 1<sup>st</sup> line, 1<sup>st</sup> full sentence – added “MAGNASTOR transfer cask”; 2<sup>nd</sup> paragraph, 3<sup>rd</sup> bullet – added “and damaged fuel cans (if applicable)”; 11<sup>th</sup> bullet – added “Vacuum”
- Page 1.3-9, last paragraph, last line – changed “CoC” to “Certificate of Compliance (CoC)”
- Page 1.3-13 – added new Figure 1.3-4, MAGNASTOR Damaged Fuel Can
- Page 1.3-14, Table 1.3-1 – fuel basket section revised throughout for DFC
- Page 1.4-1, Section 1.4 – revised throughout

## MAGNASTOR FSAR Changes (cont'd)

### Chapter 1 (cont'd)

- Page 1.5-1, Section 1.5, last paragraph – revised Part 72 column of table
- Page 1.8-1, Section 1.8 – updated list of License Drawings to include damaged fuel can and basket drawings

### Chapter 2

- Page 2-1 – revised 2<sup>nd</sup> sentence to include damaged PWR fuel assemblies
- Page 2.1-1, Section 2.1, 2<sup>nd</sup> paragraph – deleted “spent” & added “damaged fuel cans”
- Page 2.1-3, Table 2.1-2 – added “damaged fuel can” in two places in last column of first row
- Page 2.1-4, Table 2.1-2 – added “damaged fuel can” in 1<sup>st</sup> & last columns of last row
- Page 2.1-5, Table 2.1-2 – last column revised throughout
- Page 2.2-1, Section 2.2, 1<sup>st</sup> paragraph – made former 1<sup>st</sup> paragraph into two paragraphs by inserting detailed content description into paragraph one; new 3<sup>rd</sup> paragraph – revised throughout; 4<sup>th</sup> paragraph – revised last sentence; Section 2.2.1 – deleted last sentence of 1<sup>st</sup> paragraph
- Page 2.2-2, 1<sup>st</sup> full paragraph, first line – new paragraph (used to be part of paragraph 2, Section 2.2.1); added new 2<sup>nd</sup> & 5<sup>th</sup> sentences; 2<sup>nd</sup> full paragraph (used to be part of paragraph 2, Section 2.2.1) – revised throughout; last paragraph – revised 1<sup>st</sup> sentence & added new last sentence
- Page 2.2-6 – added new Figure 2.2-3, DF Basket Assembly Configuration for PWR Fuel with Damaged Fuel Can Locations
- Page 2.2-7, Table 2.2-1 – revised Max Assembly Average Burnup (MWd/MTU) line from “60,000” to “70,000”; deleted Peak Average Rod Burnup (MWd/MTU) line; revised 4<sup>th</sup> bullet throughout; deleted 1<sup>st</sup> sentence of 5<sup>th</sup> bullet
- Page 2.2-8, Table 2.2-2 – deleted Peak Average Rod Burnup (MWd/MTU) line
- Page 2.3-5, Section 2.3.5.2 – 1<sup>st</sup> paragraph, 2<sup>nd</sup> sentence – added reference to damaged fuel can
- Page 2.4-2, Section 2.4.2 – last paragraph, last bullet – added “or bolted retaining ring”
- Page 2.4-3, Section 2.4.4 – revised throughout
- Page 2.4-4, Section 2.4.6.1, 1<sup>st</sup> paragraph, 3<sup>rd</sup> sentence – changed “attracts” to “captures”; 6<sup>th</sup> sentence – changed “(registered trademark of AAR Advanced Structures)” to “(registered trademark of Ceredyne, Inc.)”
- Page 2.4-6, Section 2.4.10, 1<sup>st</sup> paragraph, 1<sup>st</sup> sentence – added “vacuum drying, cooling, helium backfill”
- Page 2.4-8, Table 2.4-1, 1<sup>st</sup> row – deleted duplicate listing of drawing “71160-584”; 2<sup>nd</sup> row – added damaged fuel can and basket drawing numbers to 2<sup>nd</sup> column

## MAGNASTOR FSAR Changes (cont'd)

### Chapter 3

- Page 3.2-1, Section 3.2.1 – revised throughout
- Pages 3.2-2 & 3.2-3, Table 3.2.1-1 – revised throughout & added notes 9, 10 & 11
- Pages 3.4-5 & 3.4-6, “Lift Lug Bolt” subsection – equations revised throughout
- Pages 3.4-39 thru 3.4-44 – added new Section 3.4.3.4, “Damaged Fuel Can Lift”
- Pages 3.5-16 thru 3.5-18 – added new Section 3.5.2.2, “PWR Fuel Basket with Damaged Fuel Cans” and renumbered subsequent section
- Page 3.5-19 – renumbered section
- Page 3.6-1, Section 3.6.1.2, subsection “Off-Normal Internal Pressure with Normal Handling – added new 4<sup>th</sup> sentence
- Pages 3.6-8 thru 3.6-10 – added new Section 3.6.2.2, “PWR Fuel Basket with Damaged Fuel Cans” and renumbered subsequent section
- Page 3.7-1, Section 3.7.1.1, 1<sup>st</sup> paragraph – added new 6<sup>th</sup> sentence
- Pages 3.7-9 thru 3.7-11 – added new Section 3.7.2.1.2, “PWR Basket with Damaged Fuel Cans – 24-inch End Drop” and renumbered subsequent section
- Pages 3.7-32 thru 3.7-36 – added new Section 3.7.2.1.4, “PWR Basket with Damaged Fuel Cans – Concrete Cask Tip-over”
- Pages 3.7-63 thru 3.7-66 – added new Figures 3.7.2-17 thru 3.7.2-24
- Page 3.7-81 – revised 2<sup>nd</sup> equation on page
- Pages 3.10.1-9 & 3.10.1-10 – added new Section 3.10.1.6, “Finite Element Models for PWR DF Basket”
- Pages 3.10.1-34 thru 3.10.1-40 – added new Figures 3.10.1-24 thru 3.10.1-30
- Pages 3.10.10-1 thru 3.10.10-8 – added new Section 3.10.10, “Structural Evaluation of the Damaged Fuel Can”

### Chapter 4

- Page 4.1-1, Section 4.1, 1<sup>st</sup> paragraph, 2<sup>nd</sup> sentence – added “including fuel contained in damaged fuel cans”; 3<sup>rd</sup> paragraph, 1<sup>st</sup> sentence – revised throughout; last paragraph – revised the 1<sup>st</sup> sentence & added new 2<sup>nd</sup> sentence
- Page 4.1-2, 1<sup>st</sup> partial paragraph – added new sentence, “Damaged fuel ... License Drawing 71160-675”); added “Both” to 2<sup>nd</sup> full sentence on page; added “The” to 5<sup>th</sup> sentence; added new last sentence
- Page 4.1-3, 2<sup>nd</sup> full paragraph – added new 4<sup>th</sup> sentence; added new last paragraph
- Page 4.1-4, Figure 4.1-1 – revised figure title
- Page 4.4-1, Section 4.4.1, 2<sup>nd</sup> paragraph, 1<sup>st</sup> sentence – added “(and the damaged fuel cans, as applicable)”; 3<sup>rd</sup> sentence – added “or the damaged fuel cans”; added new 5<sup>th</sup> sentence; added new 13<sup>th</sup> sentence

## MAGNASTOR FSAR Changes (cont'd)

### Chapter 4 (cont'd)

- Page 4.4-3 – added new next-to-last-paragraph in section; Section 4.4.1.1, 1<sup>st</sup> paragraph, 4<sup>th</sup> bullet – added “(including damaged fuel cans, as applicable)”
- Page 4.4-8, 1<sup>st</sup> full paragraph – added new sentences 4 – 7; last paragraph, added new 4<sup>th</sup> sentence
- Page 4.4-10, 2<sup>nd</sup> full paragraph, 3<sup>rd</sup> sentence – revised throughout; added new 4<sup>th</sup> sentence; Heat Generation subsection, 1<sup>st</sup> paragraph – added new last sentence
- Page 4.4-11 – added new paragraph to describe the DF basket assembly analyses
- Page 4.4-16 – added new last paragraph to address DF basket assembly
- Page 4.4-17 – added new first paragraph, items 1, 2 & 3, to address DF basket assembly model modifications
- Page 4.4-18 – 2<sup>nd</sup> full paragraph, last line – added “i.e., with and without neutron absorber”
- Page 4.4-22, 4<sup>th</sup> bullet, 2<sup>nd</sup> & 3<sup>rd</sup> sentences – changed “Regions” to “Zones” in both sentences
- Pages 4.4-27 & 4.4-28 – added new subsection, “Evaluation of TSC Loaded with DF Basket Assembly”
- Pages 4.4-29 & 4.4-30 – added new subsection, “Normal Conditions of Storage – PWR Configuration with DF Basket Assembly”
- Pages 4.4-30 & 4.4-31 – last sentence on page 4.4-30 that continues on page 4.4-31 – added “(including damaged fuel cans, as applicable)”
- Page 4.4-32, Section 4.4.4, subsection, “Maximum Internal Pressure for the TSC Containing PWR Fuel,” 1<sup>st</sup> paragraph – added two new sentences to end of paragraph
- Page 4.4-33, first line – deleted “conservatively”; 2<sup>nd</sup> full paragraph, 4<sup>th</sup> sentence – revised throughout
- Page 4.4-34, 1<sup>st</sup> full paragraph – revised throughout; last paragraph, 3<sup>rd</sup> sentence – changed “114 psig” to “119 psig” and “201 psig” to “226 psig”
- Page 4.4-57 – added new Figure 4.4-22
- Page 4.5-1, Section 4.5, 2<sup>nd</sup> paragraph – added two new sentences to end of paragraph
- Page 4.5-2, subsection “Off-Normal Event TSC Internal Pressures,” last sentence – added “119 psig for the damaged fuel PWR system”
- Page 4.6-1, Section 4.6 – added new last paragraph
- Page 4.6-4 – revised table throughout

### Chapter 5

- Page 5-1, 2<sup>nd</sup> paragraph – made into two paragraphs & both are revised throughout
- Page 5-2, 1<sup>st</sup> full paragraph (used to be 3<sup>rd</sup> paragraph) – revised last sentence
- Page 5.1-1, Section 5.1 – added new 3<sup>rd</sup> paragraph for clarity

## MAGNASTOR FSAR Changes (cont'd)

### Chapter 5 (cont'd)

- Page 5.1-2 – added Section number 5.1.1.1 & section title
- Page 5.1-3 – added new Section 5.1.1.2, “Damaged PWR Fuel Dose Rates”
- Page 5.1-4 – added Section number 5.1.2.1 & section title; added new Section 5.1.2.2, “Damaged PWR Fuel Dose Rates”
- Page 5.1-5 – continuation of new Section 5.1.2.2
- Page 5.1-9 – revised Table 5.1.3-4 that was added via the 10 CFR 72.48 process
- Page 5.1-10 – revised one line of table & note c
- Page 5.1-11 – added new Tables 5.1.3-7 & 5.1.3-8
- Page 5.2-1, Section 5.2, 4<sup>th</sup> paragraph, 1<sup>st</sup> sentence – changed “average burnup of 60 GWd/MTU peak average rod” to “average burnup of 70 GWd/MTU for PWR systems and 60 GWd/MTU for the BWR system”; last paragraph – deleted last two sentences
- Page 5.2-2, 4<sup>th</sup> paragraph, 1<sup>st</sup> bullet – revised throughout
- Page 5.2-3, 2<sup>nd</sup> paragraph – revised throughout; 3<sup>rd</sup> paragraph (made into two paragraphs) – revised throughout
- Page 5.2-4 – continuation of revised paragraph; added new 1<sup>st</sup> full paragraph
- Page 5.2-5 – added new paragraph to end of Section 5.2.2
- Page 5.2-8, Table 5.2.3-4 – revised throughout
- Page 5.3-1, Section 5.3, 1<sup>st</sup> paragraph, 1<sup>st</sup> sentence – changed “(60 GWd/MTU)” to “(60 GWd/MTU BWR, 70 GWd/MTU PWR)”
- Page 5.3-4, Figure 5.3.1-3 – revised to add data points 65 and 70 for the burnup (GWd/MTU) curves for the PWR – 14B Hybrid – Fuel Midplane and the PWR – 14B Hybrid – Fuel Average; added explanatory note
- Page 5.3-5, Figure 5.3.1-4 – revised to add data points 65 and 70 for the burnup (GWd/MTU) curves for the PWR – 14B Hybrid – Fuel Midplane and the PWR – 14B Hybrid – Fuel Average; added explanatory note
- Page 5.8.2-3, 2<sup>nd</sup> full paragraph, 1<sup>st</sup> sentence – changed “(up to 60 GWd/MTU assembly average)” to “(up to 70 GWd/MTU assembly average)”
- Page 5.8.2-7, Figure 5.8.2-8 – figure title revised & new figure inserted
- Page 5.8.3-1, Section 5.8.3 – revised throughout
- Page 5.8.3-3, Section 5.8.3.3 – deleted “Undamaged Fuel” from section title; Section 5.8.3.3.1 – revised 1<sup>st</sup> row of table; Section 5.8.3.3.2 – revised 1<sup>st</sup> row of table
- Page 5.8.3-4, Section 5.8.3.5, 2<sup>nd</sup> paragraph, last sentence – revised throughout
- Page 5.8.3-8, Figures 5.8.3-3 & 5.8.3-4 – new figures inserted
- Page 5.8.3-17, Figure 5.8.3-17 – new figure inserted
- Page 5.8.3-18, Figure 5.8.3-18 – new figure inserted
- Page 5.8.5-1, Section 5.8.5, 1<sup>st</sup> bullet/paragraph – added new 2<sup>nd</sup> sentence

## MAGNASTOR FSAR Changes (cont'd)

### Chapter 5 (cont'd)

- Page 5.8.5-2, Section 5.8.5.1 – added two sentences to end of paragraph; Section 5.8.5.2.1, 3<sup>rd</sup> paragraph, 2<sup>nd</sup> sentence – changed “0.5 year” to “0.6 year”
- Page 5.8.5-4, Section 5.8.5.2.3 – revised two rows of table, the max. dose rate columns
- Page 5.8.6-1, Section 5.8.6 – revised section title; 2<sup>nd</sup> paragraph – revised throughout; 4<sup>th</sup> paragraph, 2<sup>nd</sup> sentence – changed “0.7 years” to “0.9 year”; added new 5<sup>th</sup> paragraph
- Page 5.8.6-2 – continuation of new paragraph; added new last paragraph
- Page 5.8.6-3, Figure 5.8.6-1 – added new figure
- Page 5.8.6-4, Figure 5.8.6-2 – added new figure
- Page 5.8.6-6, Table 5.8.6-3 – added new table & note
- Page 5.8.6-7, Table 5.8.6-4 – added new table
- Page 5.8.6-8, Table 5.8.6-5 – added new table
- Page 5.8.7-4, Table 5.8.7-1 – revised throughout
- Page 5.8.8-1, Section 5.8.8.2 – added “Undamaged Fuel Basket” to section title; Section 5.8.8.3 – added “Undamaged Fuel Basket” to section title; added new Section 5.8.8.5
- Pages 5.8.8-78 thru 5.8.8-85 – added new Figure 5.8.8-11
- Page 5.8.8-86 thru 5.8.8-97 – added new Figure 5.8.8-12
- Pages 5.8.9-31 thru 5.8.9-35, Table 5.8.9-6 – added 60 thru 70 GWd/MTU assembly average burnup to table
- Pages 5.8.9-44 thru 5.8.9-48, Table 5.8.9-7 – added 60 thru 70 GWd/MTU assembly average burnup to table
- Pages 5.8.9-57 thru 5.8.9-61, Table 5.8.9-8 – added 60 thru 70 GWd/MTU assembly average burnup to table
- Pages 5.8.9-70 thru 5.8.9-74, Table 5.8.9-9 – added 60 thru 70 GWd/MTU assembly average burnup to table
- Pages 5.8.12-1 thru 5.8.12-3 – added new Section 5.8.12, “PWR Damaged Fuel”
- Pages 5.8.12-4 thru 5.8.12-9 – added new Figures 5.8.12-1 thru 5.8.12-10
- Pages 5.8.12-10 & 5.8.12-11 – added new Tables 5.8.12-1 thru 5.8.12-3
- Pages 5.8.13-1 thru 5.8.13-3 – added new Section 5.8.13, “Nonfuel Hardware Components – Neutron Sources, Reconstituted Assemblies, and Hafnium Flux Reduction Assemblies”
- Pages 5.8.13-4 & 5.8.13-5 – added new Figures 5.8.13-1 thru 5.8.13-3
- Page 5.8.13-6 – added new Table 5.8.13-1

Chapter 6

- Page 6.1-1, Section 6.1.1, 1<sup>st</sup> paragraph made into 2 paragraphs; 1<sup>st</sup> paragraph – revised throughout to clarify contents
- Page 6.1-2, 1<sup>st</sup> partial paragraph – original last sentence made into two sentences & revised throughout; added one new sentence
- Page 6.1-3; 1<sup>st</sup> full paragraph, 1<sup>st</sup> sentence – added “Table 6.1.1-6”; added Section 6.1.1.1 number & title; 1<sup>st</sup> paragraph, 2<sup>nd</sup> sentence – changed “0.9372” to “0.9376” and “Section 6.7.5” to “Section 6.5.2”
- Pages 6.1-4 & 6.1-5 – added new Section 6.1.1.2, “Damaged PWR Fuel Criticality Results”
- Page 6.1-7 – added new Figure 6.1.1-2
- Page 6.1-9, Table 6.1.1-2 – revised table title
- Page 6.1-12, Table 6.1.1-5 – added Note
- Page 6.1-13 – added new Table 6.1.1-6
- Page 6.2-1, Section 6.2.1, 2<sup>nd</sup> paragraph – revised throughout; added new 3<sup>rd</sup> paragraph
- Page 6.3-1, Section 6.3.1, last paragraph – revised throughout
- Page 6.3-2 – continuation of paragraph from previous page – revised throughout; Section 6.3.2, 5<sup>th</sup> bullet – changed “boron IFBAs” to “gadolinium or boron IFBAs”
- Page 6.4-3, Section 6.4.3.1 – added “Undamaged” to section title
- Page 6.4-5, 1<sup>st</sup> full sentence – changed “0.9372” to “0.9376”; Section 6.4.3.2 – added “Undamaged” to section title & decapitalized “and”
- Page 6.4-6, 4<sup>th</sup> paragraph, last sentence – changed “0.9372” to “0.9376”
- Pages 6.4-6 & 6.4-7 – added new Section 6.4.3.3, “Damaged PWR 37-Assembly Reactivity Result Summary and Enrichment Limits”
- Page 6.4-9, Table 6.4.3-2 – revised table title
- Page 6.4-12 – added new Table 6.4.3-5
- Page 6.7.1-1, Section 6.7.1, 1<sup>st</sup> paragraph – added new last sentence; 3<sup>rd</sup> paragraph, last sentence – added “A cross-section of”
- Page 6.7.2-3 – added new subsection titled “Axial Blankets”
- Page 6.7.3-1, Section 6.7.3.1, 3<sup>rd</sup> paragraph – added item “f.”; 4<sup>th</sup> paragraph – added “for geometry changes and in the subsection ‘Instrument Tube Insert’ for the fill of both guide and instrument tubes”
- Page 6.7.3-5, 2<sup>nd</sup> full paragraph, last line – changed “(0.9372)” to “(0.9376)”
- Page 6.7.3-6 – added new subsection titled “Instrument Tube Insert”; Section 6.7.3.2, 2<sup>nd</sup> sentence – changed “0.9372” to “0.9376”
- Pages 6.7.8-1 thru 6.7.8-7 – added new Section 6.7.8, “PWR Damaged Fuel Criticality Evaluation”
- Page 6.7.8-8 – added new Figure 6.7.8-1
- Pages 6.7.8-9 thru 6.7.8-30 – added new Figure 6.7.8-2

## MAGNASTOR FSAR Changes (cont'd)

### Chapter 6 (cont'd)

- Pages 6.7.8-31 thru 6.7.8-53 – added new Figure 6.7.8-3
- Pages 6.7.8-54 thru 6.7.8-76 – added new Figure 6.7.8-4
- Pages 6.7.8-77 thru 6.7.8-80 – added new Figures 6.7.8-5 thru 6.7.8-8
- Pages 6.7.8-81 thru 6.7.8-90 – added new Tables 6.7.8-1 thru 6.7.8-10

### Chapter 7

- Page 7.1-5 – inserted revised Figure 7.1-1

### Chapter 8

- Page 8.1-1, Section 8.1, list following 1<sup>st</sup> paragraph – added lifting lug information
- Page 8.3-9 – added new Table 8.3-15 and renumbered subsequent tables
- Pages 8.3-10 thru 8.3-17 – revised table numbers for Tables 8.3-16 thru 8.3-33

### Chapter 9

- Page 9.1-1, Section 9.1, 3<sup>rd</sup> paragraph – added two new sentences to end of paragraph
- Page 9.1-2, Section 9.1.1, item 7 Note – added “Appendix A” & “(not applicable to the stainless steel MTC2 design)”
- Page 9.1-3, item 8 Note – added “optional”; item 15 – added new 2<sup>nd</sup> & 3<sup>rd</sup> Notes
- Page 9.1-4, item 16 – added “(and DFC, as applicable)” and changed “identification” to “identifications”; item 20 – added Caution text
- Page 9.1-5, item 28 – revised throughout; item 29 Note, 1<sup>st</sup> sentence – changed “completion” to “initiation”; 3<sup>rd</sup> sentence – revised throughout; item 33 – removed “female” from 1<sup>st</sup> & 2<sup>nd</sup> sentences
- Page 9.1-6 – reversed items 45 & 46; new item 46 – added “and allows venting of gases from the cavity”
- Page 9.1-7 – item 50 – added new Note; item 52 – added two more sentences to end of Note
- Page 9.1-8, item 59, 1<sup>st</sup> Note – added “or equivalent annulus cooling/flush system”; 3<sup>rd</sup> Note, 1<sup>st</sup> sentence – changed “7 bar, gauge,” to “103 psig”; 3<sup>rd</sup> sentence – deleted “of Step 59.c”
- Page 9.1-9, item 60c. – changed “100 (+5,-0) psig” to “90 (+5,-0) psig”; item 69 – made 1<sup>st</sup> sentence into two sentences & revised 1<sup>st</sup> sentence throughout; added new last sentence; Note, 1<sup>st</sup> sentence – deleted “or completing the helium backfill if the annulus circulating water cooling system is not used”
- Page 9.1-10, continuation of Note – 1<sup>st</sup> partial sentence & 2<sup>nd</sup> sentence – revised throughout; added two new sentences for clarity; item 71 – added new 1<sup>st</sup> Note

## MAGNASTOR FSAR Changes (cont'd)

### Chapter 9 (cont'd)

- Page 9.1-15, subsection “Flat-bed Transport Vehicle Loaded with the Closed Concrete Cask”, item 17 – added new Note
- Page 9.1-18, Table 9.1-2 – revised throughout
- Page 9.2-1, Section 9.2 – item 3 – added new Note; item 6 – added new Note
- Page 9.2-2, last paragraph – last two sentences revised throughout
- Page 9.3-1, Section 9.3, item 12 – added new Note
- Page 9.3-2, item 17 Note – added “or equivalent annulus cooling/flush system”

### Chapter 10

- Page 10.1-2, item i), 1<sup>st</sup> line – changed “fuel basket and basket supports” to “fuel baskets, DFCs and basket supports”
- Page 10.1-5 – added Section 10.1.2.4, “Load Testing of Damaged Fuel Can (DFC)”
- Page 10.1-22, Section 10.1.8, 2<sup>nd</sup> sentence – added “system”
- Page 10.2-3, Table 10.2-1 – changed the frequency for the visual inspection of the MTC1 transfer cask

### Chapter 11

- Page 11.3-2, 1<sup>st</sup> paragraph – added new last sentence
- Page 11.3-3, last paragraph – added new last sentence

### Chapter 12

- Page 12.1-2 – added new 1<sup>st</sup> paragraph
- Page 12.1-3, Section 12.1.2.3 – added new 3<sup>rd</sup> paragraph
- Page 12.2-2, Section 12.2.1.3, 1<sup>st</sup> paragraph, 3<sup>rd</sup> sentence – changed “201 psig (PWR)” to “226 psig (PWR)”
- Page 12.2-7 – added 1<sup>st</sup> full new paragraph
- Page 12.2-8, Section 12.2.7.3 – added new 3<sup>rd</sup> paragraph
- Page 12.2-20, Section 12.2.13.3 – added new 2<sup>nd</sup> paragraph

## MAGNASTOR FSAR Changes (cont'd)

### Chapter 13

In accordance with the proposed Appendix A and Appendix B Technical Specification changes, Appendix C, Technical Specification Bases for the MAGNASTOR SYSTEM, Chapter 13 of the MAGNASTOR FSAR (including the Table of Contents), is being revised as follows:

- Page 13C-1, Section 1.0, 1<sup>st</sup> paragraph – added “and the approved contents provided in Appendix B”
- Page 13C-2, Section 2.1, BACKGROUND – added new 1<sup>st</sup> paragraph to describe system contents; 2<sup>nd</sup> paragraph, 1<sup>st</sup> sentence – revised to capitalize definitions used; 2<sup>nd</sup> sentence – changed “fuel” to “SNF”; last paragraph – changed “Table 2-1 and 2-8” to “Tables B2-1 through B2-24”; APPLICABLE SAFETY ANALYSES – changed “fuel” to “SNF” in two places
- Page 13C-3, APPROVED CONTENTS – added “2.1.1”; 1<sup>st</sup> paragraph, 1<sup>st</sup>, 2<sup>nd</sup> & 3<sup>rd</sup> sentences – changed “fuel” to “SNF” in each sentence; 3<sup>rd</sup> sentence – changed “Tables 2-2 through 2-7 and Tables 2-9 through 2-12” to “Tables B2-2 through B2-8 and Tables B2-10 through B2-24”; added new Section 2.1.2; APPROVED CONTENT LIMITS AND VIOLATIONS, 1<sup>st</sup> paragraph – changed “fuel” to “SNF” in four places; 2<sup>nd</sup> paragraph, 1<sup>st</sup> sentence – added “Operations Center”
- Page 13C-12, LCO, 2<sup>nd</sup> paragraph, 1<sup>st</sup> sentence – revised throughout; 2<sup>nd</sup> sentence – changed “these Tables” to “Table 1.B and 1D”; last sentence – changed “second and fourth Tables of Section 1 limits” to “Table 1.B and 1D values for maximum transfer time limits”
- Page 13C-17, ACTIONS – added “AND”
- Page 13C-19, Section 3.2.1, BACKGROUND, 1<sup>st</sup> paragraph – capitalized “NONFUEL HARDWARE”; APPLICABLE SAFETY ANALYSIS – changed “fuel” to “SNF” in two places; LCO, 1<sup>st</sup> paragraph – changed “fuel” to “SNF”; 2<sup>nd</sup> paragraph – changed “fuel” to “SNF”
- Page 13C-20, APPLICABILITY – changed “fuel” to “SNF”; ACTIONS, 2<sup>nd</sup> paragraph – changed “fuel” to “SNF”; added “AND”; SURVEILLANCE REQUIREMENTS – CHANGED “fuel” to “SNF” & deleted “requiring boron credit”
- Page 13C-21, SURVEILLANCE REQUIREMENTS, last paragraph – changed “fuel” to “SNF” in two places
- Page 13C-23, ACTIONS, A.1 – changed “fuel” to “SNF” in four places; added “AND”; A.2 – changed “fuel” to “SNF”
- Page 13C-24, SURVEILLANCE REQUIREMENTS – changed “beginning” to “commencement”

**Attachment 2**

**List of Drawing Changes**

**Completed via 10 CFR 72.48 Determination**

**for the MAGNASTOR<sup>®</sup> FSAR**

**Provided as Part of Revision 10B**

**(Nonproprietary)**

**Note:** Changes for Revision 6 of License Drawing 71160-590, Loaded Concrete Cask, MAGNASTOR, which is being submitted for NRC review and approval, are included on Page 24 of this document.

**Drawing 71160-551, Fuel Tube Assembly, MAGNASTOR – 37 PWR, Revision 8NP**

**Sheet 1:**

1. Revised BOM to change specification for Item 12 (Mounting Boss) to: “See note 11”, was “See note 4”; and description is “BAR/PLATE”, WAS “BAR”.
2. Items 3 and 4 changed the description to “BAR”, was “ROUND COLD FINISHED BAR”.
3. Added delta note 8 as follows: “OPTIONAL HOLES CONFIGURATION.”
4. Zone E-5 & E-2, graphically show the optional holes configuration associated with delta note 8 symbol and graphically show the preexisting center hole.
5. Section A-A, Zone C-7, is (.313) NOMINAL, was (5/16) NOMINAL and is (.125) NOMINAL, was (1/8) NOMINAL.
6. Revised dimension of pin slot, Zone F-5, is (3.4) TYP, was (3.5) TYP.
7. Added delta note 9 as follows: “Dimension is 3.4 where pin is shown and 3.8 for slot with no pin.” Added delta note 9 symbol in Zone F-5.
8. Added note 11 as follows “MATERIAL TO BE ASME SA695 TYPE B, GRADE 40, ASME SA696, GRADE C OR ASME SA516, GRADE 70.”
9. Zone D-7, removed items 3 & 4 identification balloons.
10. Revised zone box callout in zone F4, to sheet 3, C6; was sheet 2, A4.
11. B.O.M., changed name of Item 3 to “CONNECTOR PIN”; was “CONNECTOR PIN – A.”
12. Added delta note 13 to read as follows: “Minimum tube wall thickness in area of corner bend and tube flat to flat section is 0.281.”
13. Zone E-6, added: “See Detail H-H” & Sheet zone box for “SH3 / C2” and “SH3 / E2.”
14. Zone A-5, revised note 11 as follows: “Material to be ASME SA695 Type B, Grade 40, ASME SA696, Grade C, ASME SA516, Grade 70, or ASME SA36 with a minimum ultimate strength of 62 ksi and yield strength of 39 ksi”; was “Material to be ASME SA695 Type B, Grade 40, ASME SA696, Grade C, or ASME SA516, Grade 70.”
15. Zone B-8, deleted note 3, was previously: “APPLY COMMERCIAL GRADE ELECTROLESS NICKEL COATING FOR MILD SERVICE CONDITIONS TO TUBE WELDMENTS PRIOR TO ASSEMBLING WITH NEUTRON ABSORBER. ACCEPTANCE TESTING REQUIRED, ON LOT BASIS, TO VERIFY APPROPRIATE APPEARANCE AND ADHESION”.
16. Changed delta note 1 to read: GAS TUNGSTEN ARC PROCESS WITH COVER GAS, NO FILLER MATERIAL REQUIRED. MELT WELD POST INTO FUEL TUBE WELD POST RECESS; was: “GTAW, NO FILLER MATERIAL REQUIRED.”
17. Zone C/D-5/6, deleted plug weld callout and replace dwith "MELT."
18. Zone B-6, deleted “(As-Welded Condition)” from the Section A-A description.

**Sheet 2:**

1. Section B-B, zone F-7, defined outside tube size as a reference dimension (9.76) TYP dimension, was 9.77±.02 TYP.
2. Detail F-F, zone B-7, changed dimension and tolerances of pin pocket to 0.48±.02; was 0.470+.007/-0.000. Added “Pin Configuration” wording to Detail F-F label.

**Drawing 71160-551, Fuel Tube Assembly, MAGNASTOR – 37 PWR, Revision 8NP  
(cont'd)**

3. Zone F5-F6, added Detail G-G view boundary to the upper right hand corner of the tube in Section B-B.
4. Relocated Detail E-E from sheet 2, Zone B-2, to sheet 3, Zone A/B-5/4 so that all pin configurations can be shown on same sheet, and relocated Section-D-D from page 2, Zone B-4, to sheet 3, Zone C-6.
5. Zones E-5 & A-2/3, removed scale for Detail G-G; was “scale: 3/1”.

**Sheet 3:**

1. Show relocated Section D-D and Detail E-E (from page 2).
2. Added delta note 13 callout symbol in zone B-4.
3. Zones A-5, removed scale for Detail E-E; was “scale: 3/1”.

**Drawing 71160-561, Structure, Weldment, Concrete Cask, MAGNASTOR, Revision 6**

**Sheet 1:**

1. Revised B.O.M to add Assembly 92, which includes the same components as Assembly 99, less Item 1 replaced by Item 40, as follows:
  - Item 40 named “Shell”
    - Quantity : 1 for assembly 92
    - Material: CARBON STEEL, Spec.: ASTM 36
    - Description: 3 PLATE
2. Moved identification balloon of Assembly 99 with associated delta note 8 callout from Zone D7 to Zone F5 and added identification balloon for Assembly 92 called “LINER WELDMENT” with delta note 8 callout.
3. Revised B.O.M to add Assembly 91, which includes items 39, 42, 43, 44, 45, 46, 47 and 48 as follows:

**Drawing 71160-561, Structure, Weldment, Concrete Cask, MAGNASTOR, Revision 6**  
**(cont'd)**

ASSY 91	ITEM	NAME	MATERIAL	SPEC.	DRAWING NO.	DESCRIPTION
A/R	39	CONCRETE		COML		SEE NOTE 10
1	42	LID BOTTOM	CARBON STEEL	ASTM A36		1/4 PLATE
1	43	LID RING	CARBON STEEL	ASTM A36		1/4 PLATE/BAR
1	44	LID TOP	CARBON STEEL	ASTM A36		3/4 PLATE
1	45	CENTER SUPPORT	CARBON STEEL	ASTM A36		2 BAR
8	46	LID NELSON STUD	COML	COML		
1	47	INTERMEDIARY RING	CARBON STEEL	ASTM A36		1/4 PLATE
1	48	BOTTOM RING	CARBON STEEL	ASTM A36		1/4 PLATE/BAR

(Item 39 was used before for Assembly 93 and Items 42 through 48 are new.)

4. Revised B.O.M to add Items 49 and 50 to Assembly 98 and to add Assembly 90, which has the same components as Assembly 98 (including Items 49 and 50), plus Item 41 as follows:
  - Item 41 named "Inlet Shield Bar", Quantity : 68,  
Material: CARBON STEEL., Spec.: ASTM A36, Description: 3 DIA BAR
  - Item 49 named "Dowel Pin", Quantity : 5,  
Material: ST. STL., Spec.: COML.
  - Item 50 named "Cover", Quantity : 1,  
Material: 304 St. Stl., Spec.: ASTM A240, Description: 1/4 PLATE.
5. Revised B.O.M to change description of the following items:
  - Item 1, Shell, description is "1 3/4 PLATE", was "PLATE"
  - Item 3, Pedestal Plate, description is "2 PLATE", was "PLATE"
  - Item 4, 5 & 6, Center Plate, description is "1 PLATE", was "PLATE"
  - Item 7, Inlet Top, description is "2 PLATE", was "PLATE"
  - Item 20, Outlet Plate, description is "1/4 PLATE", was "PLATE"
  - Item 21, Lid Base, description is "3/4 PLATE" was "PLATE"
  - Item 26, Embedment Plate, description is "2 PLATE", was "PLATE"
  - Item 27, Base Plate, description is "2 PLATE", was "PLATE"
  - Item 28, Top Plate, description is "2 PLATE", was "PLATE"
  - Item 29, Mounting Plate, description is "2 PLATE", was "PLATE"

**Drawing 71160-561, Structure, Weldment, Concrete Cask, MAGNASTOR, Revision 6**  
**(cont'd)**

- Item 30, Lift Lug, description is "2 PLATE", was "PLATE"
- Item 32, Spacer, description is "2 PLATE", was "PLATE"
- Item 37, Gusset, description is "1/2 BAR/PLATE", was "BAR/PLATE"
- 6. Revised B.O.M. to delete Item 33, added (DELETED), was Cover Plate, Carbon Steel, ASTM A36, Plate.
- 7. Revised B.O.M. to delete Item 38, added (DELETED), was Top Shell, Carbon Steel, ASTM A36, Plate; showed Item 1 and 40 as a continuously single shell to top flange. Zone D7/8, removed identification balloon for Item 38.
- 8. Zone D8, removed "(1/4) nominal" referenced dimension for Top Shell, Item 38.
- 9. Zone A7, removed "(1-3/4) nominal" referenced dimension for Shell (Liner), Item 1; Zone E8, removed "(1/2) nominal" referenced dimension of gusset, Item 37.
- 10. Zone B6, added identification balloon 40 next to 1 as a component of Assembly 92.
- 11. Added delta note 11 as follows: "FOR SEGMENTED CASK CONFIGURATION, MAKE ASSEMBLY 99 BY TWO PIECES. ITEM 1 OF THE UPPER SEGMENT MAY BE 1-3/4 OR 1/4 THICK."
- 12. Added delta note 12 as follows: "SIZE AND LOCATION OF SCREEN TAPPED HOLES ARE DICTATED BY THE SCREEN CONFIGURATION."
- 13. Zone B8, specified that (218.8) dimension is for assembly 99; added (211.8) -92 dimension for assembly 92.
- 14. Zone C8, specified that (198.6) dimension is for assembly 99; added delta note 11 symbol.
- 15. Zone D-8, removed (3.0) TYP dimension and added (23.2) TYP, which will give the location of the stands, regardless the liner configuration.
- 16. Revised note 10 as follows: "CONCRETE DENSITY SHALL BE 140 PCF MINIMUM", was "CONCRETE DENSITY SHALL BE 145 PCF AVERAGE WITH NO SINGLE MEASURED DENSITY BEING LESS THAN 142 PCF."
- 17. Zone F6, removed the 6x 1/2-13 UNC-2B holes callout in the top flange.
- 18. Zone D7, top flange diameter is (Ø91.0) -99, was (Ø91.0); added (Ø93.5) -92 for assembly 92.
- 19. B.O.M. revised to change the quantity of Item 32 from 2 to 1, (Assembly 95).
- 20. Revised delta note 9 to change post load test inspection to NDE, was MT.
- 21. B.O.M., added item 51 as follows: Assy 99 Qty "8", Name "Inside Gusset", Material "Carbon Steel", Spec "ASTM A36", Description "1/4 Plate".
- 22. Zones D-8 to D-7, graphically added inside gusset & item 51 identification balloon.
- 23. B.O.M., Added item 52 as follows: ASSY 91 Qty "A/R", Name "Spacer", Material "Carbon Steel", Spec "ASTM A36", Description "Bar".
- 24. Zone A-6, Revised Delta Note 1 to read as follows: "Item 10 (Stand) shall be cut to provide a clearance around items 12 and 13. The top sides of the cutouts may be chamfered."

**Drawing 71160-561, Structure, Weldment, Concrete Cask, MAGNASTOR, Revision 6**  
**(cont'd)**

25. BOM, Added new Item 56, ASSY 89 Quantity 1, Name: Outlet Top Plate, Material: Carbon Steel, Spec ASTM A36, Description: ½ Plate. Change Item 20 BOM quantity to 26. Added item 19 (quantity 1) and item 20 (quantity 1) to BOM for ASSY 89.
26. BOM, Added new Item 53, ASSY 88 Quantity: 3, Name: Lifting Boss, Material: Carbon Steel, Spec: ASTM A36, Description: Ø2 Bar/Plate.
27. BOM, Added new Item 54, ASSY 88 Quantity: 3, Name: 5/8-11 UNC-2A X 1 long full thread Bolt, Material: Stainless Steel, Spec: Coml.
28. BOM, Added new Item 55, ASSY 88 Quantity: 3, Name: Washer, Material: Stainless Steel, Spec: Coml. Added item quantities (for items 39, 42-48) to ASSY 88 just like ASSY 91.
29. Sheet 1 of 5, Zone C-5, Revised Delta note 8 to read as follows: “PREPARE ALL SURFACES THAT WILL REMAIN EXPOSED AFTER FINAL CONCRETE PLACEMENT (SEE DRAWING 71160-562) IN ACCORDANCE WITH SSPC-SP1. APPLY HEAT RESISTANT COATING TO ALL PREPARED SURFACES PER MANUFACTURERS APPLICATION INSTRUCTIONS. WRAP COATING OVER ALL EDGES TO ENSURE COMPLETE COVERAGE” was “PREPARE ALL SURFACES THAT WILL REMAIN EXPOSED AFTER FINAL CONCRETE PLACEMENT (SEE DRAWING 71160-562) IN ACCORDANCE WITH SSPC-SP1. NEAR WHITE METAL BLAST CLEAN PER SSPC-SP10. APPLY KEELER & LONG HEAT PROOF SILICONE ENAMEL NO. 1448 (GREY) TO ALL PREPARED SURFACES PER MANUFACTURERS APPLICATION INSTRUCTIONS. WRAP COATING OVER ALL EDGES TO ENSURE COMPLETE COVERAGE.
30. BOM, Deleted items 54 & 55.
31. BOM, Item 52, Assembly 88, added Quantity: AR. Revised description to Plate/Bar.
32. BOM, Item 20 is quantity two for Assy 96 and added one for Assy 89; was quantity one for Assy 96.
33. BOM, Item 19, Added quantity two for Assy 89.

**Sheet 2:**

1. Item 41 (Inlet Shield Bars) added to Section A-A Zone A8 and View C-C Zone E4. Zone D7, updated main view to show the inlet shield bars.
2. Zone A8, removed “(2) nominal” referenced dimension for Inlet Top, Item 7.
3. Zone A6, removed “(1) nominal” referenced dimension for Corner Plate, Item 5. Zone A5, removed “(2) nominal” referenced dimension for Pedestal Plate, Item 3.
4. Zone A8/E1, changed opening to (4.5), was (4.4); and Zone A-5 to (10.0), was (9.9).
5. Zone C7 & E1, added delta note 12 callout to tapped hole in Item 3 for air inlet screens.
6. Zone B7, added identification balloon for Assembly 90 called “BOTTOM WELDMENT (with additional shielding)”. Added delta note 8 symbol to assembly.
7. Added Cover and Dowel Pin, Item 49 and 50, and associated identification bubbles, (Zones C8 & B7). Also, showed Item 50 graphically in views C-C and G-G.

**Drawing 71160-561, Structure, Weldment, Concrete Cask, MAGNASTOR, Revision 6**  
**(cont'd)**

8. Section G-G, deleted chamfers from the end of items 12 and 13 and moved item 9 to be flush with the ends of items 12 and 13. Changed weld on outside and backside item 9 to 12/13 with (1/4) partial penetration groove weld. Showed fillet weld between Item 9 and Item 7. Section C-C, Zone F2, showed a second leader positioned between item 9 and 7 for the three side 5/8 fillet weld, was one leader pointing to the fillet weld between Items 13 and item 7.
9. Zone F4, height of Items 9, 12 and 13 is (4.5), was (4.4).
10. Zone D-7, Removed hole shown on cutaway section of base weldment.

**Sheet 3:**

1. Zone B5, removed "(3/4) nominal" referenced dimension for Lid Base, Item 21.
2. Zone F1/F2, removed "(1/4) nominal" referenced dimension for Outlet Plate, Items 20.
3. Zone F7 and D7, removed callouts for hole sizes.
4. Zone B6/B7, added reference dimension (Ø79.0).
5. Changed name of assembly 93 to "Lid Assembly", was "Lid Weldment."
6. Added Assembly 89 (Alternate Outlet Weldment) showing items 19, 20 and 56 and changed outlet thickness to (4.3).
7. Removed graphic of Assy 89. Added Assembly 89 (Alternate Outlet Weldment) callout below Assy 96 callout. Zone E2, Added Item 56 next to Item 20, and added one Item 20 callout in Zone E1.
8. Changed dimension (4.3) (changed by DCR(L) 71160-561-5B) giving the overall thickness to (3.5), dimensioning the inside opening.

**Sheet 4:**

1. Removed the center spacer, Item 32 from Assembly 95, in both (standard and alternate) configurations.
2. Zone F1, revised dimension for Item 27 to (11.7), was (13.1). Zone F4, removed redundant dimension for Item 27, was (13.1).
3. Zone E1, revised dimension to (10.0), was (11.0).
4. Zone E3, revised dimension to (80.0), was (72.7).
5. Zone E4 assembly 95 and Zone E-7 assembly 94, revised hole location to (4.0), was (3.8). Revised width of Items 26 of Assembly 95 both configurations, Zones E4 and B4, to (8.0), was (7.6). Also, revised width of Item 30, Assembly 94, to (8.0), was (7.6).
6. Zone C2, revised dimension to (11.7), was (11.4).
7. Zone B3, revised dimension to (10.0), was (9.6).
8. Zone D8, added side view of assembly 94.
9. Assembly 94, changed groove weld between items 30 and 32 to 3/8 fillet two sides, was 1/4 bevel weld all around and relocate the weld symbol from top view to side view. Moved weld callout between Items 30 & 29 from top view (Zone E8) to side view (Zone D8).

**Drawing 71160-561, Structure, Weldment, Concrete Cask, MAGNASTOR, Revision 6 (cont'd)**

10. Assembly 95, changed groove weld between items 26 and 32 to 3/8 fillet two sides. Relocated the weld symbol from Zone E5 to F3.
11. Zone D-2, removed "BOTH END" from the tail, and removed redundant weld symbol (bevel flush) from Zone F5.
12. Zone E1, F4, F7, D7, C3, C4 and C2, Assemblies 94 and 95, removed "(2) nominal" referenced dimension for Item 26 (Embedment Plate), Item 27 (Base Plate), Item 28 (Top Plate), Item 29 (Mounting Plate) and Item 30 (Lift Lug).
13. Assembly 94, moved identification balloon for Item 32 from top view (Zone F7) to side view (Zone D8).
14. Assembly 95 (Standard Configuration), moved identification balloon for Item 32 from top view (Zone F5) to side view (Zone F4).

**Sheet 5:**

1. Sheet 5 and Assembly 91 added and associated section E-E. Attached delta note 8 symbol to Assembly 91.
2. Zone D-2 and D-3, Revised Section E-E to show Item 52 (Spacer). Added callout for "seal weld typ".
3. Added Assembly 88 under Assembly 91 (Alternate Lid Assembly); added item 53, with a 60.0 inch diameter bolt circle separated by  $120^{\circ}+5^{\circ}$  degrees, 3 times.
4. Section E-E, Added items 53, 54 and 55 as appropriate.
5. Section E-E, Deleted items 54 and 55.
6. Zone D5, Deleted dimension 60.0 inch diameter bolt circle.
7. Zone D2 & D3, Removed callout for "seal weld typ."

**Drawing 71160-562, Reinforcing Bar and Concrete Placement, Concrete Cask, MAGNASTOR, Revision 5**

**Sheet 1:**

1. Revised B.O.M to remove Assembly 98 and its components as follows:
  - Removed Item 10 named "LID WELDMENT"  
Quantity: 1, drawing number 71160-561-93
  - Removed Quantity: A/R of Item 4 "CONCRETE", for Assembly 98 only.
2. Zone D-2, removed graphic of Assembly 98 (Lid Assembly).
3. Revised B.O.M. to change quantity of Item 7 in Assembly 99 to 4, was 1.

**Drawing 71160-562, Reinforcing Bar and Concrete Placement, Concrete Cask,  
MAGNASTOR, Revision 5 (cont'd)**

4. B.O.M., changed quantity of Items 14 and 15 to A/R, was 4.
5. Added to B.O.M, Item 25, "INLET SCREEN RETAINER", St. Stl., ASTM A240, 18 GA. SHEET, Qty. A/R for Assembly 99 and 95, which could be used to install the screen (Item 13) to the Concrete Cask. Item 13 is changed to A/R for Assembly 99, was none.
6. Revised B.O.M to add Assembly 95, which includes the same components as Assembly 99 except Item 8 is replaced by Item 24 and Item 11 is replaced by Item 23 as follows:
  - Item 23 named "LINER WELDMENT", drawing number 71160-561-92, Quantity: 1
  - Item 24 named "BOTTOM WELDMENT", drawing number 71160-561-90, Quantity: 1
  - Items 2 and 5 are not required, (there is no inner rebar cage for this configuration).
7. Zone E2/E3, graphically shows Item 25, Inlet Screen Retainer, with delta note 13 attached.
8. Revised B.O.M. Item 8 name to "BOTTOM WELDMENT", was BASE WELDMENT.
9. Added delta note 12 as follows: "INNER REBAR CAGE IS OPTIONAL."
10. Added delta note 13 as follows: "REPRESENTATIVE CONFIGURATION ONLY."
11. Added delta note 12 symbol to Item 2 and 5 (B.O.M., Zone B-4).
12. Added delta note 13 symbol to Assembly 96 (Zone C7) and 97 (Zone E7).
13. Revised note 9 as follows: "FOR STANDARD CASK ASSEMBLY, USE LIFT ANCHOR 71160-561-95 (STANDARD CONFIGURATION), AND FOR SEGMENTED CASK ASSEMBLY, USE LIFT LUG 71160-561-94 AND LIFT ANCHOR 71160-561-95 (ALTERNATE CONFIGURATION) WITH 71160-561-31 (LIFT LUG BOLT)." Was "FOR THE STANDARD CASK ASSEMBLY, 71160-561-95 SHOULD BE USED. IF SEGMENTED CASK ASSEMBLY, USE 71160-561 ASSEMBLIES 95 & 94 (ALT. CONFIG.) WITH ITEM 31."
14. Zone B-6, Added Delta note 14 to read as follows: "NAMEPLATE LOCATION SHALL BE AS DIRECTED BY OWNER."
15. Zone B-6, added Delta note 15 to read as follows: "ITEM 19 WASHER IS OPTIONAL."  
Added delta note 15 symbol to item 19.
16. Added note 16 to read as follows: "Construction aids consisting of 1/2 inch and 3/4 inch rebar, steel bar support chairs, and steel slab bolsters may be used to position the outer rebar cage, lift anchors and outlet vents."
17. Revised note 16 to read as follows: "Construction aids and concrete shrinkage crack prevention aids consisting of rebar, steel bar support chairs, steel slab bolsters and welded wire reinforcement may be used to position the outer rebar cage, lift anchor and outlet vent and inhibit concrete surface shrinkage cracking."

**Sheet 2:**

1. Added assembly identification balloon 95 named "CONCRETE CASK", Zone D7.
2. Zone C3, added identification balloon for Item 24 and Zone F4; added identification balloon for Item 23.
3. Zone A6, added identification balloon for Items 13 & 25.

**Drawing 71160-562, Reinforcing Bar and Concrete Placement, Concrete Cask, MAGNASTOR, Revision 5 (cont'd)**

4. Zone E3, graphically updated the lift anchor to reflect the removed center spacer (changes shown on drawing #71160-561 Rev.4).
5. Zone E5, specified that (225.3) dimension is for assembly 99 and added (218.3) -95 dimension for assembly 95.
6. Zone F4 & F2, graphically showed the outer vents openings.
7. Zone F4 & F2, graphically showed the liner as an outer continuously single shell to top flange.
8. Zone F5, added Item 7 bubble callout to Section C-C.
9. Zone A-3/4, changed Cask No. on nameplate from "XX-VCC-YY" to "XX-CC-YY".
10. Sheet 2, Zone A-3/4, changed "EMPTY WEIGHT: XXX, XXX LBS / XXX, XXX KG." to "EMPTY SYSTEM WEIGHT: XXX, XXX LBS, EMPTY CASK WEIGHT: XXX, XXX LBS".
11. Added a note callout pointing to cask number to read as follows, "AT CUSTOMER'S REQUEST, THE USE OF A DIFFERENT FORMAT FOR THE CASK NUMBER MAY BE IMPLEMENTED".

**Drawing 71160-571, Details, Neutron Absorber, Retainer, MAGNASTOR – 37 PWR, Revision 6**

1. Revised BOM to add Items 5 & 6 as follows:
  - "PLATE", Material: Aluminum, Specification: COML  
Description: SHEET, Quantity: no quantity
2. Added delta note 2 as follows: "OPTIONAL TWO HOLES IN LIEU OF EXISTING HOLE, TO BE IN LINE WITH WELD POST HOLES, TYP 4 SIDES AT BOTH ENDS."
3. Zone C4, dimension is (10.0 TYP) -2,-5 / (6.5) -4,-6; was (10.0 TYP) and added (10.0) -2,-5 / (6.5) -4,-6 referenced dimension at the other end in Zone D7.
4. For Items 2, 4, 5 and 6, Zone C7, added (5.3) and Zone C4, (5.5) dimensions to show the location of the new optional diameter holes added.
5. Items 1 thru 6, added delta note symbol 2 to show the placement of the optional holes.
6. Items 1 and 3, Zone D6 and D3, added (6.0) dimensions to show the location of the new optional holes added.
7. Zone C5-C6, added Items 6 to the 172.3 length dimension and Item 5 to 165.3 length dimension.
8. Added delta note 3 as follows: "INTERMEDIATE POSITION OF SLOTTED HOLE IS AT 10.0 TYPICAL AS DIMENSIONED FOR ITEM 2."
9. Added delta note 4 as follows: "TOLERANCE THICKNESS IS APPLICABLE ONLY TO THE NEUTRON ABSORBERS, ITEMS 2 AND 4."

**Drawing 71160-571, Details, Neutron Absorber, Retainer, MAGNASTOR – 37 PWR, Revision 6 (cont'd)**

10. Zone D4 and F4, added delta note symbol 3 to dimensions from start holes to first set of holes.
11. Zone B6, Added Item 5, identified by bubble for Item 5, PLATE.
12. Zone B6, Added Item 6, identified by bubble for Item 6, PLATE.
13. Added delta note 4 symbol in Zone C8 for the material thickness.
14. Changed dimension shown neutron absorber plate thickness to  $0.125 \pm 0.006$ ; was  $0.125 \pm 0.005$ .
15. Changed "Next Assembly" to 71160-551; was 71160-575.
16. Zone F4, dimension is (10.0 TYP) -1 / (6.5) -3; was (10.0 TYP) and added (10.0) -1 / (6.5) -3 referenced dimension at the other end in Zone F6.
17. Zone E4 and C4, graphically show the optional center hole which was previously missing.
18. Deleted delta note 4 and added "(DELETED)". Was "TOLERANCE THICKNESS IS APPLICABLE ONLY TO THE NEUTRON ABSORBERS, ITEMS 2 AND 4."
19. Zone D8, Changed the thickness dimension for the neutron absorber sheets (Items 2 and 4) to  $0.125 + 0.016 / -0.006$  and the aluminum plates (Item 5 and 6) to (0.125); was  $0.125 \pm 0.006$ .
20. Zone B8, Removed delta 4 symbol.

**Drawing 71160-574, Basket Support Weldments, MAGNASTOR – 37 PWR, Revision 5**

Sheet 1:

1. Zones F-2, F-6, E-2 & E-6, added chamfer to edge of corner weldments at top and bottom of basket ends to prevent basket from flaring outward during fabrication.
2. Revised note 2 as follows "MATERIAL TO BE ASME SA695 TYPE B, GRADE 40; ASME SA696, GRADE C; OR ASME SA516, GRADE 70"; was "MATERIAL TO BE ASME SA695 TYPE B, GRADE 40 OR ASME SA696, GRADE C."  
(This change affects the material specification for item 1.)
3. Revised B.O.M. to change description of Item 1 to "BAR/PLATE", was "BAR".
4. Added new note 4 as follows: "SIDE SUPPORT ITEMS 6, 7 AND 12 MAY BE FABRICATED AS A CONTINUOUS SINGLE PIECE.", was delta note 4 "(DELETED)".
5. Zone D8, increased boss hole opening in Items 2 and 3 to  $(\text{Ø}1.8)$  TYP, dia was  $(\text{Ø}1.5)$  TYP.
6. The itemized number 2 changed in DCR(L) 71160-574-3A: "Zones F-3, F6, D-6 & D-3, revised geometry to add chamfer and 2 X 45° TYP (4) dimension," applies to Sheet 1 and not Sheet 2 as listed in DCR(L) 71160-574-3A. Changed Sheet 1 accordingly.
7. Zone A-8, deleted note 1, was: "APPLY COMMERCIAL GRADE ELECTROLESS NICKEL COATING FOR MILD SERVICE CONDITIONS TO ASSEMBLIES 99 THRU 96. ACCEPTANCE TESTING REQUIRED, ON LOT BASIS, TO VERIFY APPROPRIATE APPEARANCE AND ADHESION".

**Drawing 71160-574, Basket Support Weldments, MAGNASTOR – 37 PWR, Revision 4 (cont'd)**

**Sheet 2:**

1. Assemblies 96 and 97, increased boss hole opening to (Ø1.8) THRU TYP, was (Ø1.5) TYP. (Dimension is called out in Zone E4.)

**Drawing 71160-575, Basket Assembly, MAGNASTOR – 37 PWR, Revision 9**

**Sheet 1:**

1. Deleted delta note 1, added (DELETED), was “TUBE AND DEVELOPED CELL OPENINGS TO BE GAGED AFTER FINAL ASSEMBLY. GAGE TO BE 8.75 INCHES SQUARE X 12 FEET LONG. WEIGHT LESS THAN OR EQUAL TO 200 LBS. INSERTION/REMOVAL FORCE NOT TO EXCEED 50 LBS.”
2. Revised note 2, second sentence as follows: “NO CONTINUOUS GAPS GREATER THAN 0.02 MAY EXCEED 24” IN LENGTH”; was “NO CONTINUOUS GAPS GREATER THAN 1/64 SHALL EXCEED 24” IN LENGTH.”
3. Added note 6 as follows: “MATERIAL TO BE ASME SA739 Gr. B22.”
4. Added note 7 as follows: “COMMERCIAL GRADE ELECTROLESS NICKEL COAT FOR MILD SERVICE CONDITIONS. ACCEPTANCE TEST ON LOT BASIS, TO VERIFY APPROPRIATE APPEARANCE AND ADHESION.”
5. Revised B.O.M. as follows:
  - Items 16 (Spacer), material is “CARBON STEEL”, was “304 ST. STL.”; specification is “SEE NOTE 6 AND 7”, was “ASTM A276”.
  - Item 15 (Drive Pin), material is “CARBON STEEL”, was “ST. STL.”; specification is “SEE NOTE 6 AND 7”, was “COML”.
6. Zone D8, relocated pointing of Item 17 toward the end connector pin assembly.
7. Added Item 20 to BOM as follows, quantity – “A/R” for Assy 98 & 99; name – “SHIM”; material – “SEE NOTE 4”; Spec – “SEE NOTE 4”; description – “SEE NOTE 4”. Added delta symbol 4 to item 20.
8. Zone B8, changed standard note 4 to delta note 4; added second sentence as follows: “SHIM MATERIAL MAY BE ANY 300 SERIES STAINLESS STEEL.”
9. B.O.M., changed the Item 19 (WASHER) Specification to “ASME SA240/SA479”, was “ASTM A240/A276”.
10. Zones D1, F1, D7 & F7, revised basket geometry to show the increased chamfer on the end of Items 11 & 12 (CORNER SUPPORT WELDMENT).
11. B.O.M., Add columns for assemblies 94, 95 & 96.

**Drawing 71160-575, Basket Assembly, MAGNASTOR – 37 PWR, Revision 9 (cont'd)**

12. B.O.M., Revised to add Assembly 96 identified by Item 23 with its components Items 21 & 22, "CONNECTOR PIN WASHER ASSEMBLY", QTY "A/R" for Assemblies 99 and 98, Drawing No. 71160-575-96, which includes following components:
  - Item 21, Qty "1", Named "CONNECTOR PIN WASHER", Material "CARBON STEEL", Spec "SEE NOTE 7 & 8", Description "BAR".
  - Item 22, Qty "2", Named "PIN", Material "CARBON STEEL", Spec "SEE NOTE 7 & 9", Description "BAR."
13. B.O.M., Revised to add Assembly 95 identified by Item 26 with its components Items 24 & 25, "ALTERNATE CONNECTOR PIN ASSEMBLY - A" QTY "A/R" for Assemblies 99 and 98, Drawing No. 71160-575-95 which includes the following components:
  - Item 24 Qty "1", Name "DRIVE PIN", Material "304 ST. STL.", Spec "ASME SA240/SA479", Description "BAR/PLATE".
  - Item 25 to read as follows: Assy 95 Qty "1", Name "SPACER", Material "304 ST. STL.", Spec "ASME SA240/SA479", Description "BAR/PLATE".
14. B.O.M., Revised to add Assembly 94 identified by Item 27 with its components Items 15 & 16, "ALTERNATE CONNECTOR PIN ASSEMBLY –B", Qty "A/R" for Assy 99 & 98, Drawing No. "71160-575-94"., which includes the following components:
  - Item 15, Qty "1", Named "DRIVE PIN", Material "CARBON STEEL", Spec "SEE NOTE 6 & 7", Description "BAR".
  - Item 16, Qty "1", Named "SPACER", Material "CARBON STEEL", Spec "SEE NOTE 6 & 7", Description "Ø3/4 BAR."
15. B.O.M., Item 17, Revised quantity for Assemblies 99 & 98 to A/R, was 64.
16. Zone A8, Revised delta note 3 to read as follows: "ASSY – 94 AND 97 CAN BE FABRICATED AS ONE PIECE"; WAS "ASSY –97 CAN BE FABRICATED AS ONE PIECE."
17. Zone B8, Added note 8 to read as follows: "MATERIAL TO BE ASME SA537 CLASS 1".
18. Zone B8, Added note 9 to read as follows: "MATERIAL TO BE ANY ASME BAR".
19. Zone C8, Added delta note 10 to read as follows: "SPACER (ITEM 25) MAY BE MADE BY MULTIPLE PIECES".
20. Zone C8, Added delta note 11 to read as follows: "AT THE OPTION OF THE FABRICATOR CONNECTOR PIN ASSEMBLY (ASSY 97) COMBINED WITH CONNECTOR PIN WASHER ASSEMBLY (ASSY 96) OR ALTERNATE CONNECTOR PIN ASSEMBLY -A (ASSY 95) MAY BE USED. THE TOTAL QUANTITY OF EACH SELECTED CONNECTOR IS 64 PER BASKET. BOTH OPTIONS TO BE USED WITH THE "AS SHOWN" CONFIGURATION PER DRAWING No. 71160-551, DETAIL H-H."
21. Zone A6, Added delta note 12 to read as follows: "CONNECTOR PIN ASSEMBLY (ASSY 94) TO BE USED WITH ALTERNATIVE TUBE CONFIGURATION PER DRAWING No. 71160-551, Detail H-H. THE TOTAL QUANTITY OF EACH SELECTED CONNECTOR IS 64 PER BASKET. "

**Drawing 71160-575, Basket Assembly, MAGNASTOR – 37 PWR, Revision 9 (cont'd)**

22. Zone A5, Added assembly 94 drawing label to read as follows: “ASSY 94, ALTERNATE CONNECTOR PIN ASSEMBLY – B”, for alternate tube configuration, and add delta note 3 symbol.
23. Zone A5, Moved drawing detail for assembly 97 to Zone B5.
24. Zone B5, Revised dimension to (4.31) ASSY-97 / (4.56) ASSY-94, was (4.0).
25. Zone B6, Revised dimension to (2.69) ASSY-97 / (3.00) ASSY-94, was (3.0).
26. Zone F1 and D8, Added balloons to identify placement of items 23, 26 & 27 beside item 17.
27. Changed note 6 to: “Material specification may be any ASME carbon steel material with an ultimate strength, yield strength and elastic modulus equal to or greater than ASME SA537 class 1.” Was: “Material to be ASME SA739 Gr. B22.”
28. Zone B-8, deleted note 7; was previously: “COMMERICAL GRADE ELECTROLESS NICKEL COAT FOR MILD SERVICE CONDITIONS. ACCEPTANCE TEST ON LOT BASIS, TO VERIFY APPROPRIATE APPEARANCE AND ADHESION.”
29. Removed references to note 7 from the Bill of Materials.

**Sheet 2:**

1. Updated graphic of Section B-B to reflect the current retainer configuration.
2. Zone D8 and E5, deleted delta note 1 symbol followed by “TYP.”
3. Zone A3, Revised view label to: “SECTION B-B, TURNED 45° CW / CONNECTOR PIN ASSEMBLY CONFIGURATION”; was “SECTION B-B”; and added delta note 11 symbol.
4. Zone A3, Section B-B, Updated graphic image to show option representing “CONNECTOR PIN ASSEMBLY” (Item 17) and “CONNECTOR PIN WASHER ASSEMBLY” (item 23) configuration.
5. Zone B4, E3 & F6, Added balloon for item 23.
6. Zone F6, Added balloon for item 26 & 27.
7. Zone F3, Added local top view for section B-B.
8. Zone E3/E4, Added “See Detail E-E for Alternate Connector Pin Assembly Configuration”.
9. Zone D1/E1, Added Detail View E-E, to show the option of an Alternate Connector Pin Assembly Configuration, (Item 26) configuration and label as follows: “DETAIL E-E, ALTERNATE CONNECTOR PIN ASSEMBLY -A CONFIGURATION, BOTH ENDS” and added delta note 11 symbol.
10. Zone B1/C1, Added Detail View E-E, to show the option of an Alternate Connector Pin Assembly Configuration, (Item 27) with an Alternate Tube, and labeled as follows: “DETAIL E-E, ALTERNATE CONNECTOR PIN ASSEMBLY –B FOR ALTERNATE TUBE CONFIGURATION, BOTH ENDS” and added delta note 12 symbol.

**Drawing 71160-575, Basket Assembly, MAGNASTOR – 37 PWR, Revision 9 (cont'd)**

**Sheet 3:**

1. Zone E3, revised note: “OPTIONAL: NEUTRON ABSORBER MAY BE REPLACED WITH ALUMINUM SHEET ITEMS 5 AND 6, DRAWING NUMBER 71160-571. THESE 2 PLACES TYPICAL 8 LOCATIONS.”; was “OPTIONAL: NEUTRON ABSORBER MAY BE REMOVED OR REPLACED WITH ALUMINUM SHEET. THESE 2 PLACES TYPICAL 8 LOCATIONS.”

**Sheet 4:**

1. Zone D6, Added assembly 95 drawing and label as follows: “ALTERNATE CONNECTOR PIN ASSEMBLY -A”. Added delta note 10 symbol next to item balloon 25.
2. Zone B6, Added assembly 96 drawing and label as follows: “CONNECTOR PIN WASHER ASSEMBLY.”
3. Zone B1, Removed Proprietary Information callout.

**Drawing 71160-581, Shell Weldment, Canister, MAGNASTOR, Revision 3**

**Sheet 1:**

1. Revised B.O.M to change description of the following items:
  - Item 1, Shell, description is “1/2 PLATE”, was “PLATE”
  - Item 2, Shell, description is “1/2 PLATE”, was “PLATE”
  - Item 3, Bottom, description is “2-3/4 PLATE”, was “PLATE”
2. Zone C7, removed weld callout for anti-rotation lugs.
3. Zone C8, added note 10, “MATERIAL TO BE DUAL CERTIFIED 304 AND 304L ST. STL.”

**Sheets 1 and 2:**

1. Changed drawing title (in the Title Block) to “Shell Weldment, TSC, MAGNASTOR” instead of “Shell Weldment, Canister, MAGNASTOR”.
2. Sheet 1, Zone F8, & Sheet 2, Zone C7, removed weld size specification for lift lugs.
3. Sheet 1 & 2, Zone C6, removed (1/2) nominal referenced dimensions for shell thickness.
4. Sheet 1 & 2, Zone F1, removed (2-3/4) nominal referenced dimension for the bottom of the shell weldment.

**Sheet 2:**

1. Sheet 2, Zone 2B, revised bottom thickness dimension to “(2.8)”, was “(2-3/4) Nominal.”

**Drawing 71160-584, Details, Canister, MAGNASTOR, Revision 5**

**Sheet 1:**

1. Revised drawing title to “Details, TSC, MAGNASTOR”, was “Details, Canister, MAGNASTOR”.
2. Revised B.O.M. to add Assembly 98, the composite lid assembly comprised of a 5” thick carbon steel shield plate and a 4” thick stainless steel closure lid. The two components are bolted together prior to welding of the lid to the canister shell. Also added Item 11 (CLOSURE RING), which can be used with the composite closure lid assembly, as detailed in License Drawing No. 71160-585.

Revised B.O.M. as follows:

ASSY 98	ITEM	NAME	MATERIAL	SPEC.	DRAWING NO.	DESCRIPTION
1	2	NIPPLE	ST. STL.	COML		QUICK CONNECT COUPLING
1	3	SEAL		COML		
1	6	CLOSURE LID	304/304L ST. STL.	ASME SA240/SA182		PLATE/FORGING
1	7	SHIELD PLATE	CARBON STEEL	ASTM A36		PLATE
10	8	BOLT	ST. STL.	SA193, GRADE B6		HEX 1-1/2-6 UNC- 2A X 6 LG.
10	9	WASHER	ST. STL.	COML		1-1/2 N SERIES
2	10	PORT EXTENSION	304 ST. STL.	COML		PLATE/BAR
	11	CLOSURE RING	304/304L ST. STL.	ASME SA479/SA240		BAR/PLATE
2	12	SHIELD COLLAR	CARBON STEEL	ASTM A36		PLATE/BAR

3. Added delta note 6 as follows: “ITEM 7 (SHIELD PLATE) & ITEM 12 (SHIELD COLLAR) ONLY. COMMERCIAL GRADE ELECTROLESS NICKEL COAT FOR MILD SERVICE CONDITIONS. ACCEPTANCE TESTING REQUIRED, ON LOT BASIS, TO VERIFY APPROPRIATE APPEARANCE AND ADHESION.”
4. Added delta note 7 as follows: “ITEMS 5 AND 11 MAY BE MADE UP FROM MULTIPLE SECTIONS.”
5. Added delta note 6 symbol pointing to Item 7 (SHIELD PLATE) and Item 12 (SHIELD COLLAR) in the B.O.M.
6. Added delta note 8 as follows: “MATERIAL TO BE DUAL CERTIFIED 304 AND 304L ST. STL.”
7. Added delta note 8 symbol pointing to Item 5 (CLOSURE RING) and Item 11 (CLOSURE RING) in the B.O.M.
8. Added delta note 9 as follows: “FOR ITEMS 1 & 6 (CLOSURE LID), THE SA182 AND SA336 FORGING MATERIAL SHALL BE PROCURED WITH A REDUCED CARBON CONTENT.” Added delta note 9 symbol pointing to Item 1 (CLOSURE LID) and Item 6 (CLOSURE LID) in the B.O.M.

**Drawing 71160-584, Details, Canister, MAGNASTOR, Revision 5 (cont'd)**

9. Added delta note 10 as follows: "THE 304L ST. STL. MATERIAL SHALL HAVE YIELD AND ULTIMATE STRENGTHS EQUAL TO, OR GREATER THAN, THOSE OF 304 ST. STL." Added delta note 10 symbol pointing to Item 1 (CLOSURE LID) and Item 6 (CLOSURE LID) in the B.O.M.
10. Zone E7, changed the lid outer diameter dimension to 70.8", was 70.7".
11. Zone C6, changed the threaded hole callout to a reference item and changed the hole depth to 2.25", was 3.25".
12. Zone E3, changed the inner diameter of the closure ring (Item 5) to 69.1", was 69.2".
13. Zone E2, changed the outer diameter of the closure ring (Item 5) to 70.6", was 70.7".
14. B.O.M., revised Item 1 (CLOSURE LID) material to "304/304L ST. STL.", was "304 ST. STL."; and specification to "ASME SA240/SA336", was "ASME SA240/SA182".
15. B.O.M., revised Item 5 (CLOSURE RING) material to "304/304L ST. STL.", was "304 ST. STL."; specification to "ASME SA479/SA240", was "ASME SA276"; and description to "BAR/PLATE", was "BAR".
16. Delta Note 3, revised to: "TSC IDENTIFICATION INFO: LOCATED APPROX. AS SHOWN. "TSC-XXX-YYY" WHERE XXX IS INDICATED ON THE PURCHASE ORDER FOR A PARTICULAR PROJECT CODE AND THE YYY IS A SEQUENTIAL SERIES OF NUMBERS STARTING WITH 001. "CALCULATED MAXIMUM LOADED CANISTER WEIGHT = ZZZ,ZZZ lbs." WHERE ZZZ,ZZZ IS INDICATED ON THE PURCHASE ORDER. DIRECTLY BELOW THIS NUMBER IS AN OPEN AREA FOR EACH CUSTOMER TO ADD ANY REQUIRED INFORMATION THEY CHOOSE." was "TSC IDENTIFICATION INFO: LOCATED APPROX. AS SHOWN. " TSC-XXX-YYY" WHERE XXX IS INDICATED ON THE PURCHASE ORDER FOR A PARTICULAR PROJECT CODE AND THE YYY IS A SEQUENTIAL SERIES OF NUMBERS STARTING WITH 001. "CALCULATED EMPTY CANISTER WEIGHT = ZZ,ZZZ lbs." WHERE ZZ,ZZZ IS INDICATED ON THE PURCHASE ORDER. DIRECTLY BELOW THIS NUMBER IS AN OPEN AREA FOR EACH CUSTOMER TO ADD ANY REQUIRED INFORMATION THEY CHOOSE."
17. Zone D5/6, revised note shown on the closure lid to: "TSC - XXX - YYY CALCULATED MAXIMUM LOADED CANISTER WEIGHT = ZZZ,ZZZ lbs. (OPEN FIELD FOR CUSTOMER IDENTIFICATION)" was "TSC -XXX - YYY CALCULATED EMPTY CANISTER WEIGHT = ZZ,ZZZ lbs. (OPEN FIELD FOR CUSTOMER IDENTIFICATION)".
18. Zone C7, graphically added chamfer to the inner diameter of the closure lid weld relief for the closure ring/closure lid weld.
19. Sheet 1 and Sheet 2, Zone B2, added delta note 7 symbol on the field of the drawing close to Items 5 & 11, respectively.
20. Added Sheet 2, and on Sheet 2 – graphically added Assembly 98 "CLOSURE LID ASSEMBLY" and Item 11 "CLOSURE RING".
21. Deleted Delta Note 6. Was: "ITEM 7 (SHIELD PLATE) AND ITEM 12 (SHIELD COLLAR) ONLY. COMMERCIAL GRADE ELECTROLESS NICKEL COAT FOR MILD SERVICE CONDITIONS. ACCEPTANCE TESTING REQUIRED, ON LOT BASIS, TO VERIFY APPROPRIATE APPEARANCE AND ADHESION."

## **Drawing 71160-584, Details, Canister, MAGNASTOR, Revision 5 (cont'd)**

22. Revised delta note 10 to: "For Items 1 & 6 (closure lid), material yield and ultimate strengths shall be equal to, or greater than, those of SA240 Type 304 St. Stl."; was "The 304L St. Stl. material shall have yield and ultimate strengths equal to, or greater than, those of 304 St. Stl."
23. Revised delta note 9 to: "For Items 1 & 6 (closure lid), the 304 St. Stl. material shall be procured with a reduced carbon content." was "For Items 1 & 6 (closure lid), the SA182 and SA336 forging material shall be procured with a reduced carbon content."
24. Item 5, Zone E2, Revised outside diameter to ( $\text{\O}70.5$  O.D.); was ( $\text{\O}70.6$ ).
25. Deleted Delta Note 5, Add "(Deleted)"; was "LIQUID PENETRANT EXAMINED PER ASME SECTION V, ARTICLE 1 AND 6. ACCEPTANCE PER SECTION III, NB-5350."
26. Zone C8, Deleted Delta 5 symbol.
27. Note 4, Revised the word "ARTICLE"; to "ARTICLES" in the first sentence.
28. Revised Delta Note 2 as follows: "OPTIONAL ALIGNMENT INDICATION."; was "ALIGNMENT MARK, LOCATE APPROX. AS SHOWN".
29. B.O.M., Items 7 & 12, Deleted Delta 6 symbol.
30. Delta Note 3, Deleted "CALCULATED MAXIMUM LOADED CANISTER WEIGHT = ZZZ,ZZZ lbs." WHERE ZZZ,ZZZ IS INDICATED ON THE PURCHASE ORDER." from note.
31. Sheets 1 & 2, Zone D5, Deleted "CALCULATED MAXIMUM LOADED CANISTER WEIGHT = ZZZ,ZZZ lbs." from closure lid graphics.

### **Sheet 2:**

1. Item 11, Zone E2, Revised outside diameter to ( $\text{\O} 70.5$  O.D.; was ( $\text{\O} 70.6$  O.D.).
2. Zone C8, Deleted Delta 5 symbol.
3. Zone D7/D8, Added an all around (1/4) groove symbol weld with a fillet on the arrow side for items 10 & 6.
4. Deleted scale and weight callout in title block.
5. Updated title block on drawing.

## **Drawing 71160-585, TSC Assembly, MAGNASTOR, Revision 7**

### **Sheet 1:**

1. Revised B.O.M. to add components for the canister with the composite closure lid assembly comprised of a 5" thick carbon steel shield plate bolted to a 4" thick stainless steel closure lid as follows:
  - Added Assembly 93, items required similar with Assembly 99, except that Item 5 "CLOSURE LID ASSEMBLY" drawing #71160-584-99 (one required) is being replaced by Item 17 "CLOSURE LID ASSEMBLY" drawing # 71160-584-98, (one required) and Item 16 "CLOSURE RING" drawing #71160-584-5 is quantity A/R, possibly being replaced by Item 18 "CLOSURE RING" drawing # 71160-584-11, quantity A/R, for the optional configuration.

**Drawing 71160-585, TSC Assembly, MAGNASTOR, Revision 7 (cont'd)**

- Added Assembly 92, items required similar with Assembly 98, except that Item 5 "CLOSURE LID ASSEMBLY" drawing #71160-584-99 (one required) is being replaced by Item 17 "CLOSURE LID ASSEMBLY" drawing # 71160-584-98, (one required) and Item 16 "CLOSURE RING" drawing #71160-584-5 is quantity A/R, possibly being replaced by Item 18 "CLOSURE RING" drawing # 71160-584-11, quantity A/R, for the optional configuration.
- 2. Added Assemblies 92 & 93 to graphic on sheet 1 as follows:
  - TSC ASSEMBLY – 37 PWR and in Zone A-5, added Detail A-A (optional configuration of Assembly 92 & 93 only).
- 3. B.O.M., changed Material and Description for Item 8 (Port Cover) to "304/304L ST. STL.", was "304 ST. STL."; and "1/2 PLATE", was "PLATE", respectively.
- 4. Zone C8, added delta note 7 as follows: "MATERIAL TO BE DUAL CERTIFIED 304 AND 304L ST. STL."; added delta note 7 symbol to Item 8 (PORT COVER) in the B.O.M.
- 5. Sheet 1 and Sheet 2, Zone E7, revised note shown on lid to: "TSC – XXX – YYY calculated MAXIMUM LOADED canister weight = ZZZ,ZZZ lbs. (open field for customer identification)"; was "TSC –XXX – YYY calculated empty canister weight = ZZ,ZZZ lbs. (open field for customer identification)".
- 6. Zones D7 & E7, Deleted "CALCULATED MAXIMUM LOADED CANISTER WEIGHT = ZZZ,ZZZ lbs." from closure lid graphic.
- 7. Zones E4/F4 & E5/F5, Graphically updated break out section geometry.
- 8. Zones B5 & B6, Reversed direction of the field weld symbol.

**Sheet 2:**

- 1. Zone A5, removed thickness dimension for the port cover (Item 8), was "(1/2) NOMINAL TYP."
- 2. Zone A7, added an identification balloon for the composite closure lid assembly (Item 17) to the Detail A-A view showing the weld configuration of the smaller closure ring (Item 16).
- 3. Zone E5, removed extra dimension for port diameter.
- 4. Zone B/C6, removed weld callout and the delta note 4 symbol for the port cover welds. Moved the delta note 3 symbol near the graphic depicting the welds for the port covers.
- 5. Zone B7, revised closure ring detail as follows: added chamfers to the lower corners of the closure ring and moved the closure ring's inner diameter weld and weld relief from the closure ring to the closure lid by removing the chamfer from the upper edge of the closure ring's inner diameter and adding a weld relief chamfer to closure lid.
- 6. Zones D7 & E7, Deleted "CALCULATED MAXIMUM LOADED CANISTER WEIGHT = ZZZ,ZZZ lbs." from closure lid graphic.
- 7. Zones E4/F4 & E5/F5, Graphically updated break out section geometry.

**Drawing 71160-585, TSC Assembly, MAGNASTOR, Revision 7 (cont'd)**

8. Zone B7, Reversed the field weld symbol.
9. Zone B6, Added (1/8) bevel weld callout with field and all round symbol.
10. Zone B5, Relocated Delta 3 symbol to Zone B6 and add Delta 4 symbol.

**Drawing 71160-590, Loaded Concrete Cask, MAGNASTOR, Revision 5**

Sheet 1:

1. Deleted delta note 1, was: "Apply one circular layer of seal tape on the top surface of the VCC before installing the Lid Assembly." Revised B.O.M. to delete Item 13 (Seal Tape). Removed delta 1 symbol from the field of the drawings—on Sheet 1, Zone B5; on Sheet 2, Zones F5 and F8.
2. Revised Bill of Materials to change call-back of Item 8 from drawing 71160-561 as follows: Material is "Carbon Steel.", Spec. is "ASTM A36" and Description is "Plate".
3. Revised Bill of Materials to delete Items 12 (Cover) and 14 (Tab), and added (DELETED).
4. Item 15 drawing number revised to 71160-561-93, was 71160-562-98.
5. Revised Bill of Materials to add Assemblies 93 and 92 as follows:

ASSY 92	ASSY 93	ITEM	NAME	MATERIAL	SPEC.	DRAWING NO.	DESCRIPTION
1	1	1	CONCRETE CASK ASSEMBLY			71160-562-99	
A/R	A/R	6	LIFT LUG BOLT			71160-561-31	
A/R	A/R	7	LIFT LUG			71160-561-94	
A/R	A/R	8	COVER PLATE	Carbon Steel	ASTM A36		PLATE
A/R	A/R	9	COVER PLATE BOLT	ST. STL.	COML		
A/R	A/R	10	UPPER SEGMENT BOLT	ST. STL.	COML		
A/R	A/R	11	WASHER	ST. STL.	COML		
1	1	15	LID ASSEMBLY			71160-561-93	
A/R	A/R	16	CONCRETE CASK UPPER SEGMENT			71160-562-99	
6	6	17	LID BOLT	ST. STL.	COML		
6	6	18	WASHER	ST. STL.	COML		
A/R	A/R	21	LIFT ANCHOR			71160-561-95	
1		22	TSC ASSEMBLY			71160-585-92	
	1	25	TSC ASSEMBLY			71160-585-93	

**Drawing 71160-590, Loaded Concrete Cask, MAGNASTOR, Revision 5 (cont'd)**

6. Revised Bill of Materials to add Assemblies 91 and 90 as follows:

ASSY 90	ASSY 91	ITEM	NAME	MATERIAL	SPEC.	DRAWING NO.	DESCRIPTION
	1	3	TSC ASSEMBLY			71160-585-98	
6	6	17	LID BOLT	ST. STL.	COML		
6	6	18	WASHER	ST. STL.	COML		
A/R	A/R	21	LIFT ANCHOR			71160-561-95	
1		22	TSC ASSEMBLY			71160-585-92	
1	1	23	ALTERNATE LID ASSEMBLY			71160-561-91	
1	1	24	CONCRETE CASK ASSEMBLY			71160-562-95	

7. Added identification balloon for Assembly 90 through 93 to graphic on sheet 1 as follows:

- 93 - LOADED CONCRETE CASK – 37 PWR
- 92 - LOADED CONCRETE CASK – 37 PWR
- 91 - LOADED CONCRETE CASK – 37 PWR
- 90 - LOADED CONCRETE CASK – 37 PWR

8. Added delta note 3 as follows: “ITEMS 6 AND 7 ARE USED FOR HANDLING ONLY AND ARE REPLACED BY ITEMS 8, 9, 11 AND 13 FOR STORAGE.”

9. Zone D8, added delta note 3 symbol.

10. Added delta note 4 as follows: “PREPARE ALL EXPOSED SURFACES IN ACCORDANCE WITH SSPC-SP1. NEAR-WHITE BLAST CLEAN PER SSPC-SP10. APPLY KEELER AND LONG HEAT PROOF SILICONE ENAMEL No. 1448 (GREY) TO ALL PREPARED SURFACES PER MANUFACTURERS APPLICATION INSTRUCTIONS.” Added delta note 4 symbol to B.O.M. next to Item 8, (Cover Plate).

11. Zone E8, deleted identification balloon for Item 13 (Seal Tape).

12. Revised Bill of Material as follows:



**Drawing 71160-590, Loaded Concrete Cask, MAGNASTOR, Revision 5 (cont'd)**

6. Zone A5, removed identification bubbles 12 and 14 from Detail B-B.
7. Zone F5, added delta note symbol 3 to bubbles 6 & 7.
8. Zone E3/E4, showed the shell of standard configuration as a continuously single shell to top flange.
9. Section A-A, Updated graphics to show representative height of rebar and standoffs.
11. Revised section view of chamfer shown on Sections A-A in Zone B3 and Section C-C Zone B6 & B8 to correctly show extension of chamfer to bottom of base plate weldment.
12. Zones E7, E6, E4 and E3, deleted holes from top of standoff.
13. Zones E4 to E3, Graphically added Inside Gusset.
14. Zones F4 & F8, removed identification balloon for Item 13.
15. Revised all identification balloons to match new Bill of Material changes.
16. Zone D5, Revised dimensions as follows: is (225.3) -99, 98, 97; was (225.3) -99 THRU 92; and revised short Concrete Cask configurations as follows: is (218.3) -96; was (218.3) -91 & 90
17. Zone D8, Revised dimensions as follows: is (225.3) -99, 98, 97; was (225.3) -99 THRU 92 / (218.3) -91 & 90.

The following NAC License Drawing is included in the MAGNASTOR, Revision 10B submittal for review and approval by the NRC:

**Drawing 71160-590, Loaded Concrete Cask, MAGNASTOR, Revision 6**

**Sheet 1:**

1. Revised Bill of Materials to add Assemblies 95 and 94 and Item 20 “DF TSC Assembly” for the damaged fuel concrete cask configurations, as follows:

ASSY 94	ASSY 95	ITEM	NAME	MATERIAL	SPEC.	DRAWING No.	DESCRIPTION
	1	1	CONCRETE CASK ASSEMBLY			71160-562-99	
	A/R	2	LIFT LUG BOLT			71160-561-31	
	A/R	3	LIFT LUG			71160-561-94	
	A/R	4	COVER PLATE	Carbon Steel	ASTM A36		PLATE
	A/R	5	COVER PLATE BOLT	ST. STL.	COML		
	A/R	6	UPPER SEGMENT BOLT	ST. STL.	COML		
	A/R	7	WASHER	ST. STL.	COML		
	1	8	LID ASSEMBLY			71160-561-93	
	A/R	9	CONCRETE CASK UPPER SEGMENT			71160-562-99	
6	6	10	LID BOLT	ST. STL.	COML		
6	6	11	WASHER	ST. STL.	COML		
2	2	12	LIFT ANCHOR			71160-561-95	
1		18	CONCRETE CASK ASSEMBLY			71160-562-95	
1		19	ALTERNATE LID ASSEMBLY			SEE NOTE 9	
1	1	20	DF TSC ASSEMBLY			SEE NOTE 10	

2. Added identification balloon for Assembly 95 & 94 to graphic on sheet 1 as follows:
  - 95 - LOADED CONCRETE CASK – 37 PWR
  - 94 - LOADED CONCRETE CASK – 37 PWR
3. Added note 10 as follows, “Can be one of the 71160-685 damaged fuel TSC assemblies.”

**Sheet 2:**

1. Zone C2, Section A-A (Standard Configuration), added identification balloon for Item 20.
2. Zone C6, Section C-C (Segmented Configuration), added identification balloon for Item 20.
3. Zone D5, Revised the standard Concrete Cask configuration dimensions to add assemblies 94 and 95 as follows: is (225.3) -99, 98, 97, 95 / (218.3) -96, 94; was (225.3) -99, 98, 97 / (218.3) -96.
4. Zone D8, Revised Segmented Concrete Cask dimensions to add assembly 95 as follows: is (225.3) -99, 98, 97, 95; was (225.3) -99, 98, 97.