

## ArevaEPRDCPEm Resource

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**From:** WILLIFORD Dennis (AREVA) [Dennis.Williford@areva.com]  
**Sent:** Monday, April 29, 2013 5:27 PM  
**To:** Snyder, Amy  
**Cc:** Miernicki, Michael; ANDERSON Katherine (EXTERNAL AREVA); DELANO Karen (AREVA); LEIGHLITER John (AREVA); ROMINE Judy (AREVA); RYAN Tom (AREVA)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 547 (6499, 6359), FSAR Ch. 3 - NEW PHASE 4 RAI, Supplement 6 - Part 4 of 4  
**Attachments:** RAI 547 Supplement 6 Response US EPR DC Part\_4of4.pdf

Amy,  
Attached is Part 4 of 4 of the response to RAI No. 547, Question 03.07.02-78.

Sincerely,

***Dennis Williford, P.E.***  
***U.S. EPR Design Certification Licensing Manager***  
***AREVA NP Inc.***

7207 IBM Drive, Mail Code CLT 2B  
Charlotte, NC 28262  
Phone: 704-805-2223  
Email: [Dennis.Williford@areva.com](mailto:Dennis.Williford@areva.com)

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**From:** WILLIFORD Dennis (RS/NB)  
**Sent:** Monday, April 29, 2013 5:24 PM  
**To:** Amy.Snyder@nrc.gov  
**Cc:** Michael.Miernicki@nrc.gov; ANDERSON Katherine (External AREVA NP INC.); DELANO Karen (RS/NB); LEIGHLITER John (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 547 (6499, 6359), FSAR Ch. 3 - NEW PHASE 4 RAI, Supplement 6 - Part 3 of 4

Amy,  
Attached is Part 3 of 4 of the response to RAI No. 547, Question 03.07.02-78.

Sincerely,

***Dennis Williford, P.E.***  
***U.S. EPR Design Certification Licensing Manager***  
***AREVA NP Inc.***

7207 IBM Drive, Mail Code CLT 2B  
Charlotte, NC 28262  
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Email: [Dennis.Williford@areva.com](mailto:Dennis.Williford@areva.com)

---

**From:** WILLIFORD Dennis (RS/NB)  
**Sent:** Monday, April 29, 2013 5:22 PM  
**To:** [Amy.Snyder@nrc.gov](mailto:Amy.Snyder@nrc.gov)  
**Cc:** [Michael.Miernicki@nrc.gov](mailto:Michael.Miernicki@nrc.gov); ANDERSON Katherine (External AREVA NP INC.); DELANO Karen (RS/NB); LEIGHLITER John (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 547 (6499, 6359), FSAR Ch. 3 - NEW PHASE 4 RAI, Supplement 6 - Part 2 of 4

Amy,  
Attached is Part 2 of 4 of the response to RAI No. 547, Question 03.07.02-78.

Sincerely,

**Dennis Williford, P.E.**  
**U.S. EPR Design Certification Licensing Manager**  
**AREVA NP Inc.**

7207 IBM Drive, Mail Code CLT 2B  
Charlotte, NC 28262  
Phone: 704-805-2223  
Email: [Dennis.Williford@areva.com](mailto:Dennis.Williford@areva.com)

---

**From:** WILLIFORD Dennis (RS/NB)  
**Sent:** Monday, April 29, 2013 5:18 PM  
**To:** [Amy.Snyder@nrc.gov](mailto:Amy.Snyder@nrc.gov)  
**Cc:** [Michael.Miernicki@nrc.gov](mailto:Michael.Miernicki@nrc.gov); ANDERSON Katherine (External AREVA NP INC.); DELANO Karen (RS/NB); LEIGHLITER John (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 547 (6499, 6359), FSAR Ch. 3 - NEW PHASE 4 RAI, Supplement 6 - Part 1 of 4

Amy,

AREVA NP Inc. provided a schedule for a technically correct and complete response to the four questions in RAI No. 547 on July 11, 2012. On October 4, 2012, AREVA NP submitted Supplement 1 which provided a technically correct and complete final response to one (03.07.02-77) of the four remaining questions. On November 27, 2012, AREVA NP submitted Supplement 2 which changed the schedule for one of the three remaining questions. On November 29, 2012, AREVA NP submitted Supplement 3 which provided a technically correct and complete final response to one of the three remaining questions. On January 31, 2013, AREVA NP submitted Supplement 4 which provided a technically correct and complete final response to Question 03.06.01-14. On April 11, 2013, AREVA NP submitted Supplement 5 which provided a revised final response to Question 03.06.01-14 based on NRC staff feedback received during the ITAAC Public Meeting on April 4-5, 2013.

The attached file, "RAI 547 Supplement 6 Response US EPR DC – Part 1 of 4.pdf" provides a technically correct and complete final response to Question 03.07.02-78. Due to file size limitations, the remaining parts will be provided in three subsequent e-mails.

The following table indicates the respective pages in the response document, "RAI 547 Supplement 6 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question. Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to RAI 547, Question 03.07.02-78.

Question #	Start Page	End Page
RAI 547 — 03.07.02-78	2	54

This concludes the formal AREVA NP response to RAI 547, and there are no questions from this RAI for which AREVA NP has not provided responses.

Sincerely,

**Dennis Williford, P.E.**  
**U.S. EPR Design Certification Licensing Manager**  
**AREVA NP Inc.**

7207 IBM Drive, Mail Code CLT 2B  
Charlotte, NC 28262  
Phone: 704-805-2223  
Email: [Dennis.Williford@areva.com](mailto:Dennis.Williford@areva.com)

---

**From:** WILLIFORD Dennis (RS/NB)  
**Sent:** Thursday, April 11, 2013 6:44 PM  
**To:** [Amy.Snyder@nrc.gov](mailto:Amy.Snyder@nrc.gov)  
**Cc:** [Michael.Miernicki@nrc.gov](mailto:Michael.Miernicki@nrc.gov); DELANO Karen (RS/NB); LEIGHLITER John (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); WILLS Tiffany (CORP/QP); HONMA George (EXT); LENTZ Tony (External RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 547 (6499, 6359), FSAR Ch. 3 - NEW PHASE 4 RAI, Supplement 5

Amy,

AREVA NP Inc. provided a schedule for a technically correct and complete response to the four questions in RAI No. 547 on July 11, 2012. On October 4, 2012, AREVA NP submitted Supplement 1 which provided a technically correct and complete final response to one (03.07.02-77) of the four remaining questions. On November 27, 2012, AREVA NP submitted Supplement 2 which changed the schedule for one of the three remaining questions. On November 29, 2012, AREVA NP submitted Supplement 3 which provided a technically correct and complete final response to one of the three remaining questions. On January 31, 2013, AREVA NP submitted Supplement 4 which provided a technically correct and complete final response to Question 03.06.01-14.

The attached file, "RAI 547 Supplement 5 Response US EPR DC.pdf" provides a revised final response to Question 03.06.01-14 based on NRC staff feedback received during the ITAAC Public Meeting on April 4-5, 2013.

The following table indicates the respective pages in the response document, "RAI 547 Supplement 5 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question. Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to RAI 547, Question 03.06.01-14.

Question #	Start Page	End Page
RAI 547 — 03.06.01-14	2	18

The schedule for a technically correct and complete response to the remaining question is unchanged and is provided below.

Question #	Response Date
RAI 547 — 03.07.02-78	April 30, 2013

Sincerely,

**Dennis Williford, P.E.**  
**U.S. EPR Design Certification Licensing Manager**  
**AREVA NP Inc.**

7207 IBM Drive, Mail Code CLT 2B

Charlotte, NC 28262

Phone: 704-805-2223

Email: [Dennis.Williford@areva.com](mailto:Dennis.Williford@areva.com)

---

**From:** WILLIFORD Dennis (RS/NB)

**Sent:** Thursday, January 31, 2013 8:26 PM

**To:** [Amy.Snyder@nrc.gov](mailto:Amy.Snyder@nrc.gov)

**Cc:** [Michael.Miernicki@nrc.gov](mailto:Michael.Miernicki@nrc.gov); DELANO Karen (RS/NB); LEIGHLITER John (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); WILLS Tiffany (CORP/QP); WELLS Russell (RS/NB); VANCE Brian (RS/NB); GUCWA Len (External RS/NB)

**Subject:** Response to U.S. EPR Design Certification Application RAI No. 547 (6499, 6359), FSAR Ch. 3 - NEW PHASE 4 RAI, Supplement 4

Amy,

AREVA NP Inc. provided a schedule for a technically correct and complete response to the four questions in RAI No. 547 on July 11, 2012. On October 4, 2012, AREVA NP submitted Supplement 1 which provided a technically correct and complete final response to one (03.07.02-77) of the four remaining questions. On November 27, 2012, AREVA NP submitted Supplement 2 which changed the schedule for one of the three remaining questions. On November 29, 2012, AREVA NP submitted Supplement 3 which provided a technically correct and complete final response to one of the three remaining questions.

The attached file, "RAI 547 Supplement 4 Response US EPR DC.pdf" provides a technically correct and complete final response to one of the two remaining questions.

The following table indicates the respective pages in the response document, "RAI 547 Supplement 4 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question. Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to RAI 547, Question 03.06.01-14.

Question #	Start Page	End Page
RAI 547 — 03.06.01-14	2	22

The schedule for a technically correct and complete response to the remaining question is unchanged and is provided below.

Question #	Response Date
RAI 547 — 03.07.02-78	April 30, 2013

Sincerely,

**Dennis Williford, P.E.**  
**U.S. EPR Design Certification Licensing Manager**

**AREVA NP Inc.**

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Charlotte, NC 28262

Phone: 704-805-2223

Email: [Dennis.Williford@areva.com](mailto:Dennis.Williford@areva.com)**From:** WILLIFORD Dennis (RS/NB)**Sent:** Thursday, November 29, 2012 12:10 PM**To:** [Amy.Snyder@nrc.gov](mailto:Amy.Snyder@nrc.gov)**Cc:** BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); LEIGHLITER John (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB)**Subject:** Response to U.S. EPR Design Certification Application RAI No. 547 (6499, 6359), FSAR Ch. 3 - NEW PHASE 4 RAI, Supplement 3

Amy,

AREVA NP Inc. provided a schedule for a technically correct and complete response to the four questions in RAI No. 547 on July 11, 2012. On October 4, 2012, AREVA NP submitted Supplement 1 which provided a technically correct and complete final response to one (03.07.02-77) of the four remaining questions. On November 27, 2012, AREVA NP submitted Supplement 2 which changed the schedule for one of the three remaining questions.

The attached file, "RAI 547 Supplement 3 Response US EPR DC.pdf" provides a technically correct and complete final response to one of the three remaining questions.

The following table indicates the respective pages in the response document, "RAI 547 Supplement 3 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question. Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to RAI 547, Question 03.07.02-76.

Question #	Start Page	End Page
RAI 547 — 03.07.02-76	2	14

The schedule for a technically correct and complete response to the remaining 2 questions is unchanged and is provided below.

Question #	Response Date
RAI 547 — 03.06.01-14	January 31, 2013
RAI 547 — 03.07.02-78	April 30, 2013

Sincerely,

***Dennis Williford, P.E.******U.S. EPR Design Certification Licensing Manager*****AREVA NP Inc.**

7207 IBM Drive, Mail Code CLT 2B

Charlotte, NC 28262

---

**From:** WILLIFORD Dennis (RS/NB)  
**Sent:** Tuesday, November 27, 2012 12:40 PM  
**To:** [Amy.Snyder@nrc.gov](mailto:Amy.Snyder@nrc.gov)  
**Cc:** BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); LEIGHLITER John (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); WELLS Russell (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 547 (6499, 6359), FSAR Ch. 3 - NEW PHASE 4 RAI, Supplement 2

Amy,

AREVA NP Inc. provided a schedule for a technically correct and complete response to the four questions in RAI No. 547 on July 11, 2012. On October 4, 2012, AREVA NP submitted Supplement 1 which provided a technically correct and complete final response to one (03.07.02-77) of the four remaining questions.

The schedule for a technically correct and complete response to the 1 of the remaining 3 questions has been changed as provided below.

Question #	Response Date
RAI 547 — 03.06.01-14	January 31, 2013
RAI 547 — 03.07.02-76	November 29, 2012
RAI 547 — 03.07.02-78	April 30, 2013

Sincerely,

***Dennis Williford, P.E.***  
***U.S. EPR Design Certification Licensing Manager***  
***AREVA NP Inc.***

7207 IBM Drive, Mail Code CLT 2B  
Charlotte, NC 28262  
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Email: [Dennis.Williford@areva.com](mailto:Dennis.Williford@areva.com)

---

**From:** WILLIFORD Dennis (RS/NB)  
**Sent:** Wednesday, October 17, 2012 2:07 PM  
**To:** [Amy.Snyder@nrc.gov](mailto:Amy.Snyder@nrc.gov)  
**Cc:** [Michael.Miernicki@nrc.gov](mailto:Michael.Miernicki@nrc.gov); BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); LEIGHLITER John (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); GARDNER Darrell (RS/NB) ([Darrell.Gardner@areva.com](mailto:Darrell.Gardner@areva.com)); VANCE Brian (RS/NB); WELLS Russell (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 547 (6499, 6359), FSAR Ch. 3 - NEW PHASE 4 RAI, Question 03.06.01-14 - STATUS

Amy,

AREVA appreciates the initial comments received from NRC staff during our telecon on September 25<sup>th</sup>, the e-mail with additional comments received on September 27<sup>th</sup>, and the additional comments and status update on the review status of the DRAFT RAI 547 Question 03.06.01-14 response (submitted on August 17, 2012)

which were provided by Mike Miernicki on October 15<sup>th</sup>. We understand that the NRC staff needs additional time to complete their review and provide final comments on the Draft response. AREVA will provide a revised schedule for submittal of the final response to this question after receipt and evaluation of all NRC staff comments.

The schedule for a technically correct and complete final response to the other 2 questions remains unchanged as shown below.

Question #	Response Date
RAI 547 — 03.06.01-14	TBD
RAI 547 — 03.07.02-76	November 29, 2012
RAI 547 — 03.07.02-78	April 30, 2013

Sincerely,

***Dennis Williford, P.E.***  
***U.S. EPR Design Certification Licensing Manager***  
***AREVA NP Inc.***

7207 IBM Drive, Mail Code CLT 2B  
Charlotte, NC 28262  
Phone: 704-805-2223  
Email: [Dennis.Williford@areva.com](mailto:Dennis.Williford@areva.com)

---

**From:** RYAN Tom (RS/NB)  
**Sent:** Thursday, October 04, 2012 1:33 PM  
**To:** Tesfaye, Getachew  
**Cc:** BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); LEIGHLITER John (RS/NB); ROMINE Judy (RS/NB); WILLIFORD Dennis (RS/NB); ABAYAN Victor (EP/PE)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 547 (6499, 6359), FSAR Ch. 3 - NEW PHASE 4 RAI, Supplement 1

Getachew,

AREVA NP Inc. provided a schedule for a technically correct and complete response to the four questions in RAI No. 547 on July 11, 2012.

The attached file, "RAI 547 Supplement 1 Response US EPR DC.pdf" provides a technically correct and complete final response to one of the four remaining questions.

The following table indicates the respective pages in the response document, "RAI 547 Supplement 1 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question. Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the responses to RAI 547 Question 03.07.02-77.

Question #	Start Page	End Page
RAI 547 — 03.07.02-77	2	2

The schedule for a technically correct and complete response to the remaining 3 questions is unchanged and is provided below.

Question #	Response Date
RAI 547 — 03.06.01-14	October 17, 2012
RAI 547 — 03.07.02-76	November 29, 2012
RAI 547 — 03.07.02-78	April 30, 2013

Sincerely,

**Tom Ryan for  
Dennis Williford, P.E.  
U.S. EPR Design Certification Licensing Manager  
AREVA NP Inc.**

7207 IBM Drive, Mail Code CLT 2B  
Charlotte, NC 28262  
Phone: 704-805-2223  
Email: [Dennis.Williford@areva.com](mailto:Dennis.Williford@areva.com)

---

**From:** WILLIFORD Dennis (RS/NB)  
**Sent:** Wednesday, July 11, 2012 2:52 PM  
**To:** [Getachew.Tesfaye@nrc.gov](mailto:Getachew.Tesfaye@nrc.gov)  
**Cc:** BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); [Michael.Miernicki@nrc.gov](mailto:Michael.Miernicki@nrc.gov); WELLS Russell (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 547 (6499, 6359), FSAR Ch. 3 - NEW PHASE 4 RAI

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 547 Response US EPR DC.pdf," provides a schedule since a technically correct and complete response to the four questions cannot be provided at this time.

The following table indicates the respective pages in the response document, "RAI 547 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 547 — 03.06.01-14	2	2
RAI 547 — 03.07.02-76	3	4
RAI 547 — 03.07.02-77	5	5
RAI 547 — 03.07.02-78	6	12

The schedule for a technically correct and complete response to these 4 questions is provided below.

Question #	Response Date
RAI 547 — 03.06.01-14	October 17, 2012



RAI 547 — 03.07.02-76	<b>November 29, 2012</b>
RAI 547 — 03.07.02-77	<b>November 14, 2012</b>
RAI 547 — 03.07.02-78	<b>April 30, 2013</b>

Sincerely,

***Dennis Williford, P.E.***  
***U.S. EPR Design Certification Licensing Manager***  
***AREVA NP Inc.***

7207 IBM Drive, Mail Code CLT 2B  
Charlotte, NC 28262  
Phone: 704-805-2223  
Email: [Dennis.Williford@areva.com](mailto:Dennis.Williford@areva.com)

---

**From:** Tesfaye, Getachew [<mailto:Getachew.Tesfaye@nrc.gov>]  
**Sent:** Friday, June 15, 2012 2:45 AM  
**To:** ZZ-DL-A-USEPR-DL  
**Cc:** Xu, Jim; Thomas, Brian; Miernicki, Michael; Clark, Phyllis; Segala, John; ArevaEPRDCPEm Resource  
**Subject:** U.S. EPR Design Certification Application RAI No. 547 (6499, 6359), FSAR Ch. 3 - NEW PHASE 4 RAI

Attached please find the subject request for additional information (RAI). A draft of the RAI was provided to you on May 17, 2012, and June 12, 2012, you informed us that the RAI is clear and no further clarification is needed. As a result, no change is made to the draft RAI. The schedule we have established for review of your application assumes technically correct and complete responses within 30 days of receipt of RAIs. For any RAIs that cannot be answered within 30 days, it is expected that a date for receipt of this information will be provided to the staff within the 30 day period so that the staff can assess how this information will impact the published schedule.

Thanks,  
Getachew Tesfaye  
Sr. Project Manager  
NRO/DNRL/LB1  
(301) 415-3361

**Hearing Identifier:** AREVA\_EPR\_DC\_RAIs  
**Email Number:** 4354

**Mail Envelope Properties** (554210743EFE354B8D5741BEB695E65612C066)

**Subject:** Response to U.S. EPR Design Certification Application RAI No. 547 (6499, 6359), FSAR Ch. 3 - NEW PHASE 4 RAI, Supplement 6 - Part 4 of 4  
**Sent Date:** 4/29/2013 5:26:31 PM  
**Received Date:** 4/29/2013 5:28:01 PM  
**From:** WILLIFORD Dennis (AREVA)

**Created By:** Dennis.Williford@areva.com

**Recipients:**

"Miernicki, Michael" <Michael.Miernicki@nrc.gov>

Tracking Status: None

"ANDERSON Katherine (EXTERNAL AREVA)" <katherine.anderson.ext@areva.com>

Tracking Status: None

"DELANO Karen (AREVA)" <Karen.Delano@areva.com>

Tracking Status: None

"LEIGHLITER John (AREVA)" <John.Leighliter@areva.com>

Tracking Status: None

"ROMINE Judy (AREVA)" <Judy.Romine@areva.com>

Tracking Status: None

"RYAN Tom (AREVA)" <Tom.Ryan@areva.com>

Tracking Status: None

"Snyder, Amy" <Amy.Snyder@nrc.gov>

Tracking Status: None

**Post Office:** FUSLYNCMX03.fdom.ad.corp

Files	Size	Date & Time
MESSAGE	19340	4/29/2013 5:28:01 PM
RAI 547 Supplement 6 Response US EPR DC Part_4of4.pdf		6288858

**Options**

**Priority:** Standard

**Return Notification:** No

**Reply Requested:** No

**Sensitivity:** Normal

**Expiration Date:**

**Recipients Received:**

Figure 3.8-110—Elastic Displacement for Soil Case 4u

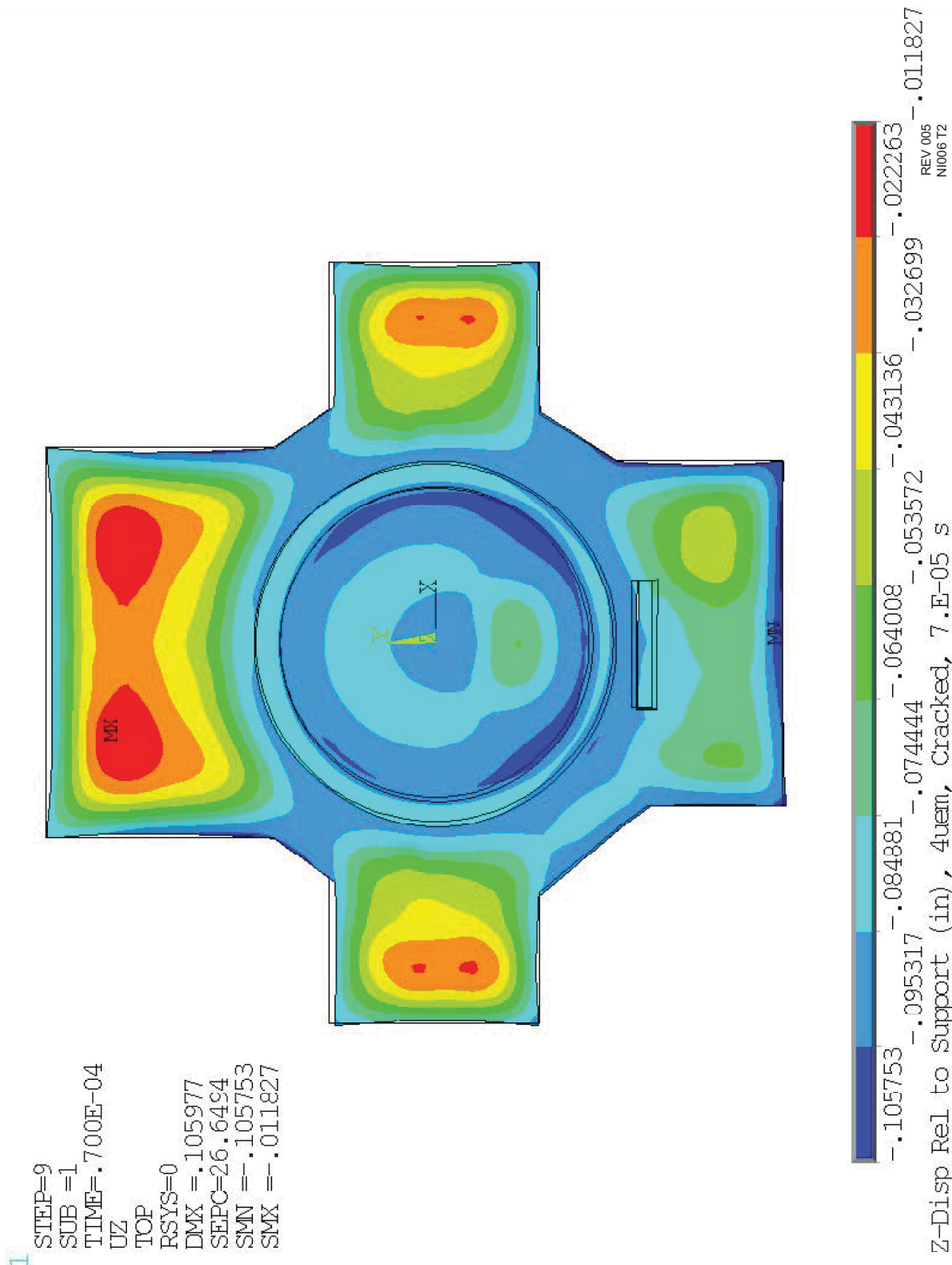


Figure 3.8-111—Elastic Displacement for Soil Case 5ae

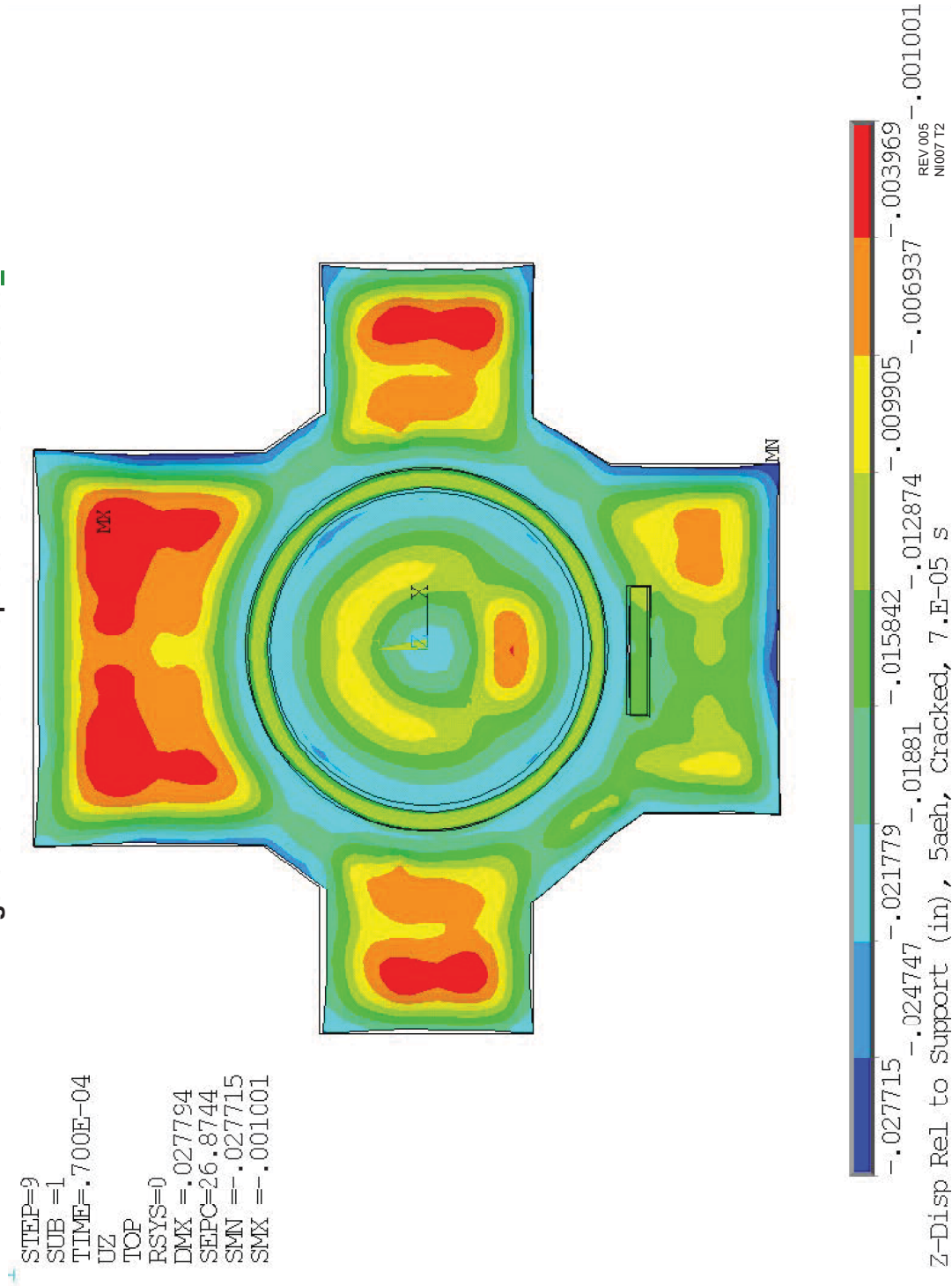
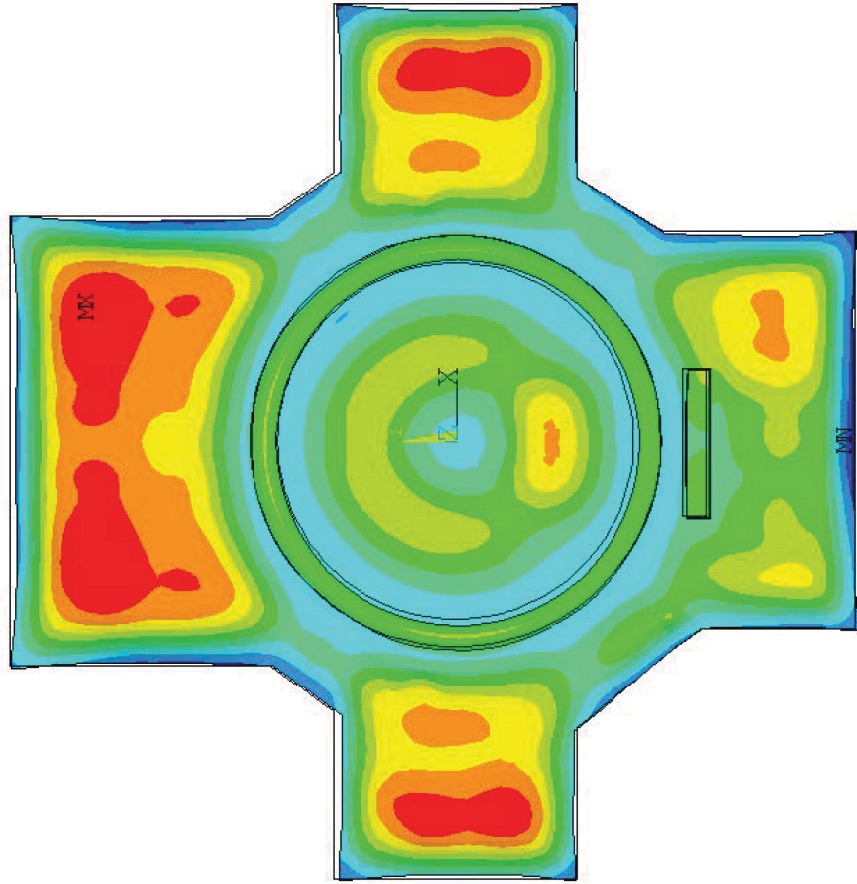


Figure 3.8-112—Elastic Displacement for Soil Case 1n5a

1 STEP=9  
SUB =1  
TIME=.700E-04  
UZ  
TOP  
RSYS=0  
DMX =.038767  
SEPC=27.4383  
SMN =-.038563  
SMX =-.959E-03



Z-Disp Rel to Support (in) , 1n5aeh, Cracked, 7.E-05 s  
-.038563    -.034385    -.030207    -.026029    -.02185    -.017672    -.013494    -.009316    -.005138    -.959E-03  
REV 005  
N008 T2

[Next File](#)

Figure 3.8-113—Elastic Displacement for Soil Case 2sn4u

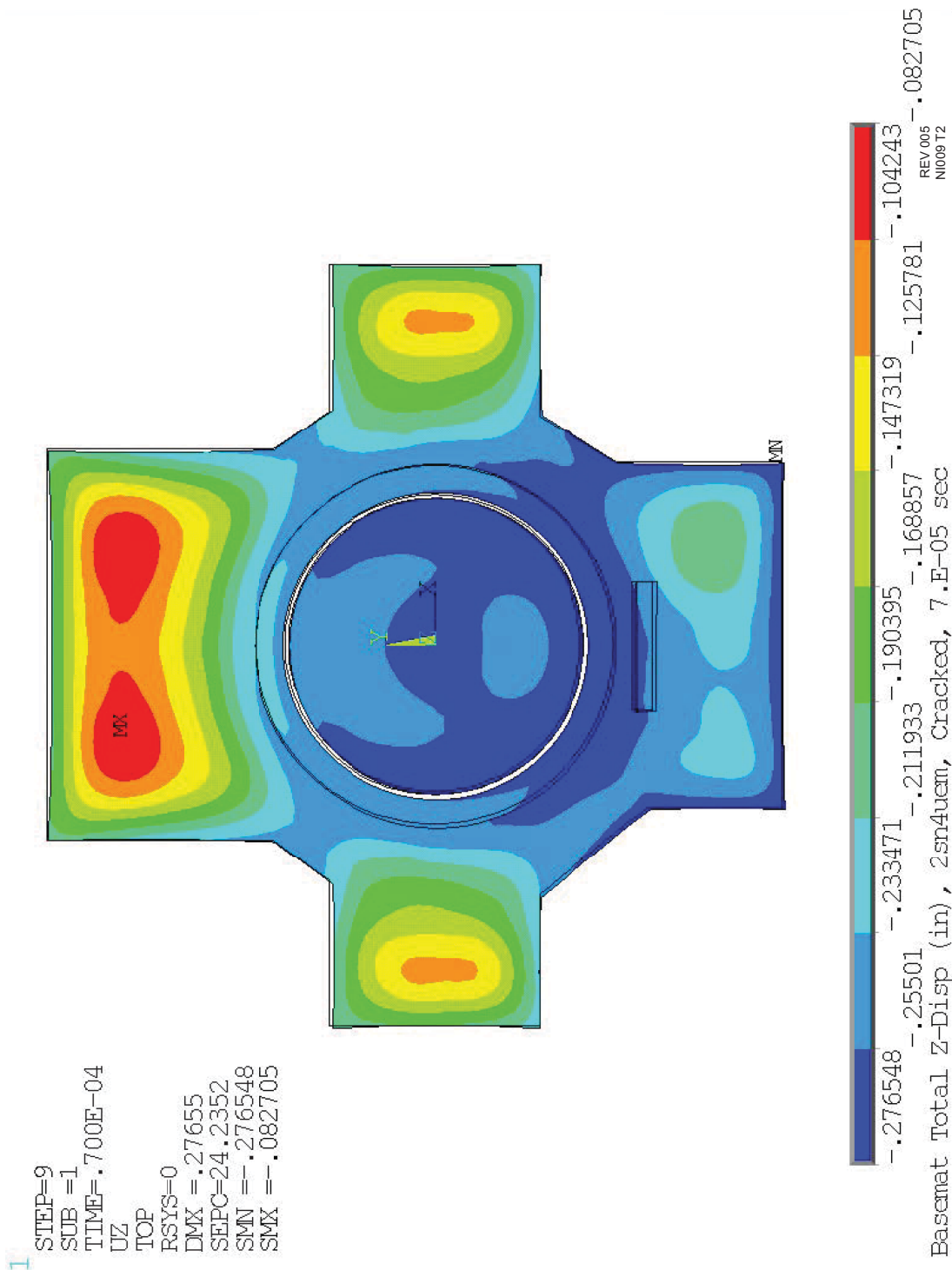


Figure 3.8-114—~~Deleted~~~~Elastic Displacement for Soil Case 2n3u~~

Figure 3.8-115—~~Deleted~~~~Elastic Displacement for Soil Case 3r3u~~

Figure 3.8-116—Deleted

Figure 3.8-117—Deleted

RAI 547  
Q. 03.07.02-78



Reactor coolant pump (RCP)	4'-11"	474 each
Pressurizer (PZR)	UJA23-019	639
Equipment hatch	64'-0"	154
Air lock	4'-11"; 64'-0"	61 each

### Foundation Stability

The Nuclear Island Common Basemat Structure is evaluated for stability against overturning, sliding, and floatation for the soil profiles used in establishing the certified plant design. The tendon gallery is used as a shear key. The minimum factors of safety for the Nuclear Island Common Basemat Structure are listed in Table 3E.1-39. The calculated factors of safety against overturning, sliding, and floatation satisfy the acceptance criteria.

The sliding and overturning factors are determined using load combination containing dead load (D), lateral earth pressure (H), SSE (E'), hydrostatic load (F) and buoyant force (Fb). It is conservatively assumed that the E' and Fb occur simultaneously. The floatation factor of safety is determined based on dead load (D) and buoyant force (Fb). The dead load used in the analysis includes 25 percent of the live load, which is consistent with the generation of dynamic soil pressure due to SSE.

RAI 547  
Q. 03.07.02-78

The maximum static and dynamic bearing pressure demands are reported in Table 3E.1-40. The static and dynamic bearing pressures were obtained from the SASSI analysis of the NI common basemat structure as described in Section 3.7.2. The maximum static bearing capacity demand corresponds to dead load of structure, equipment load, pool loads, 25% live load, and 75% precipitation load. The maximum static and dynamic bearing pressure demands are reported for the edge and corners of the basemat. The edge pressure was obtained by averaging the bearing pressures over an edge strip consisting of five rows of the finite element model (not including the corners). The corner pressures were obtained by averaging bearing pressures over a corner grid of 6x6 element.~~The static and dynamic bearing pressures for the Nuclear Island Common Basemat Structure are listed in Table 3E.1-40.~~

### Design Criteria

Sections 3.8.1.2, 3.8.2.2, 3.8.3.2, 3.8.4.2, and 3.8.5.2 describe codes, standards, and specifications applicable to the design of the RCB (Concrete), RCB (Steel), RB internal structures, RSB, and NI foundation basemat, respectively.

A global ANSYS Finite Element Model (FEM) (addressed in Sections 3.8.1.4.1, 3.8.3.4.1, 3.8.4.4.2, and 3.8.5.4.2) is developed and loaded with various independent loads and load combinations per the applicable codes and standards and solved to produce forces and moments throughout the structure. Sections 3.8.1.3, 3.8.2.3, 3.8.3.3, 3.8.4.3, and 3.8.5.3 describe loads and loading combinations applicable to the



**Table 3E.1-40—Maximum Static and Dynamic Bearing Pressures for the NI Common Basemat Structure**

Analysis Case	Static [ksf] (Dead Load) Edge	Dynamic [ksf] (Seismic <del>±</del> <sup>plus</sup> Dead Load)	
		Corner	Edge
<del>1n2ue</del>	<del>23.1</del>		<del>30.3</del>
1n2ues-cr	23.1	<u>38.0</u>	30.2
<del>1n5ae</del>	<del>18.9</del>		<del>31.4</del>
1n5aeh-cr	18.9	<u>58.1</u>	27.1
<del>2sn4ue</del>	<del>21.9</del>		<del>30.1</del>
2sn4uem-cr	21.9	<u>46.0</u>	30.5
<del>4ue</del>	<del>22.9</del>		<del>31.9</del>
4uem-cr	22.9	<u>56.2</u>	30.0
<del>5ae</del>	<del>21.1</del>		<del>26.9</del>
5aeh-cr	21.1	<u>58.5</u>	26.8
<del>hfbe</del>	<del>18.8</del>		<del>24.1</del>
hfbe-cr	18.8	<u>32.0</u>	22.2
<del>hflb</del>	<del>18.9</del>		<del>23.9</del>
hflb-cr	18.9	<u>31.0</u>	23.6
<del>hfub</del>	<del>18.4</del>		<del>23.4</del>
hfub-cr	18.4	<u>32.2</u>	22.5
<del>Maximum</del>	<del>23.1</del>		<del>31.9</del>

**Notes:**

1. Analysis cases indicated with “-cr” represent the cracked case.

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