

**From:** Barela, Maximo [mailto:Maximo.Barela@nnsa.doe.gov]  
**Sent:** Wednesday, June 29, 2016 2:37 PM  
**To:** LONGMIRE, PAMELA X <Pamela.Longmire@nrc.gov>  
**Cc:** GARCIA SANTOS, NORMA G <Norma.Garcia-Santos@nrc.gov>  
**Subject:** [External\_Sender] RE: 435-B  
**Importance:** High

Pamela,

This was on my to-do list for today. However, I had to deal with other issues first. Sorry for the delay.

Please let me know if this meets the need.

R/Max  
505-845-5702

**From:** LONGMIRE, PAMELA X [mailto:Pamela.Longmire@nrc.gov]  
**Sent:** Wednesday, June 29, 2016 11:44 AM  
**To:** Barela, Maximo  
**Cc:** GARCIA SANTOS, NORMA G  
**Subject:** 435-B

Hello Maximo,

Please provide the ETA for your document delineating the action(s) NNSA is requesting regarding changes to the Model No. 435-B and subsequent SAR changes. For SAR changes, you must include section numbers, the type of change and the rationale for the change(s).

Sincerely,

*Pamela Longmire, Ph.D.*

Project Manager  
Office of Nuclear Material Safety & Safeguards  
Division of Spent Fuel Management  
Spent Fuel Licensing Branch  
11545 Rockville Pike  
Two White Flint North (TWFN), T-04B19  
Rockville, MD 20852

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**EMAIL PROPERTIES:**

Received: from HQPWMSMRS04.nrc.gov (172.17.48.13) by HQPWMSMRS04.nrc.gov (172.17.48.13) with Microsoft SMTP Server (TLS) id 15.0.1044.25 via Mailbox Transport; Wed, 29 Jun 2016 14:37:02 -0400

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Received-SPF: Pass (mail2.nrc.gov: domain of Maximo.Barela@nnsa.doe.gov designates 205.254.128.13 as permitted sender) identity=mailfrom; client-ip=205.254.128.13; receiver=mail2.nrc.gov; envelope-from="Maximo.Barela@nnsa.doe.gov"; x-sender="Maximo.Barela@nnsa.doe.gov"; x-conformance=spf\_only; x-record-type="v=spf1"

Received-SPF: None (mail2.nrc.gov: no sender authenticity information available from domain of postmaster@mailgate3.doe.gov) identity=helo; client-ip=205.254.128.13; receiver=mail2.nrc.gov; envelope-from="Maximo.Barela@nnsa.doe.gov"; x-sender="postmaster@mailgate3.doe.gov"; x-conformance=spf\_only

X-Ironport-ID: mail2

X-SBRS: 3.5

X-MID: 219835082

X-fn: Detailed Changes to 435-B SAR, Rev. 3 May 16.pdf, LANL 435-B SAR rev 3 list of changes Final 06-27-2016.docx

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Thread-Topic: RE: 435-B

Subject: [External\_Sender] RE: 435-B

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by mailgate3.doe.gov (Postfix) with ESMTPS id 2912097D10B;

Wed, 29 Jun 2016 14:36:56 -0400 (EDT)

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15.01.0528.017; Wed, 29 Jun 2016 18:36:52 +0000

From: "Barela, Maximo" <Maximo.Barela@nnsa.doe.gov>

To: "'LONGMIRE, PAMELA X'" <Pamela.Longmire@nrc.gov>

CC: "GARCIA SANTOS, NORMA G" <Norma.Garcia-Santos@nrc.gov>

Thread-Topic: 435-B

Thread-Index: AdH8K8vwDIH07dFITvGCofd0hORH1QACDUFw

Importance: high

X-Priority: 1

Disposition-Notification-To: "Barela, Maximo" <Maximo.Barela@nnsa.doe.gov>

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X-MS-Has-Attach: yes



X-MS-TNEF-Correlator:

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x-originating-ip: [206.197.198.20]

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Return-Path: Maximo.Barela@nnsa.doe.gov

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No.	Change	Page Number(s)
1	Change aluminum alloy temper to consistently be T6.	1.2-4, 1.2-5, 2.2-1, 2.2-6, 2.12.4-2, 2.12.4-4, 2.12.4-5, 3.1-3, 3.1-4
2	Delete Ra-226 and Ra-226Be contents.	1.2-9, 7.1-12
3	Add tack and intermittent welds to exemption from liquid penetrant examination.	DWG 1916-01-01-SAR, Sheet 1
4	Add flag note 53 callout to Item 11 (lower torispherical head) adjacent to List of Materials.	DWG 1916-01-01-SAR, Sheet 1
5	Change aluminum alloy temper to be T6 for Item 30.	DWG 1916-01-01-SAR, Sheet 2
6	Add bar to material description for Item 30.	DWG 1916-01-01-SAR, Sheet 2
7	Add flag note 53 for optional through hole in lower torispherical head for fabrication.	DWG 1916-01-01-SAR, Sheet 2
8	Add note 54 for aluminum alloy temper substitution.	DWG 1916-01-01-SAR, Sheet 2
9	Add flag note 55 for optional threading for vent/test port tool.	DWG 1916-01-01-SAR, Sheet 2
10	Correct intermittent weld callout in Detail AB and Detail T by moving weld length and spacing to right of symbol.	DWG 1916-01-01-SAR, Sheet 6
11	Add flag note 55 callout in Section M-M and Section N-N.	DWG 1916-01-01-SAR, Sheet 6
12	Change aluminum alloy temper to be T6 for Items 1-4.	DWG 1916-01-02-SAR, Sheet 1
13	Add bar to material description for Item 1.	DWG 1916-01-02-SAR, Sheet 1
14	Add note 13 for aluminum alloy temper substitution.	DWG 1916-01-02-SAR, Sheet 1
15	Clarify weld symbol for Item 5 shown in Section B-B.	DWG 1916-01-03-SAR, Sheet 2
16	Add note for aluminum alloy temper substitution.	2.2-6
17	Add tack and intermittent welds to exemption from liquid penetrant examination.	2.3-1, 8.1-1
18	Delete Ra-226 and Ra-226Be activity limits.	7.1-14
19	Delete Example 4 with sum of fractions including Ra-226 neutron source term.	7.5-2



The following changes were made to the 435-B application for which NNSA is requesting a revision to the CoC. The changes and their justification to the 435-B SAR Revision 3 are summarized in the list below. The Table illustrates in detail the location where all the changes proposed in SAR Revision 3 were incorporated into the SAR.

1. The temper specifications for aluminum alloy 6061 have been corrected. For some sizes and shapes of aluminum stock, the T651 temper for aluminum alloy 6061 is not available. The text in the SAR has been revised to consistently refer to 6061-T6. In the SAR drawings in Section 1.3.3, the tempers are changed to T6 with the option to use T651, T6510 or T6511. The mechanical properties of aluminum listed in Table 2.2-4 are unchanged and remain applicable.
2. Ra-226 has been deleted from the list of isotopes. This was done because a daughter isotope, Po-210, was inadvertently left out of the analysis. The result of this error is a very small reduction in the allowable amount of Ra-226 that may be shipped in the 435-B. Rather than delaying the current request to revise the CoC, Ra-226 has been deleted from the list of isotopes. The shielding analysis will be revised and Ra-226 added back to the SAR at a later date.
3. Several SAR drawings included a note that stated that all welds, excluding seal welds, will be subjected to liquid penetrant (LP) inspection. Tack welds and intermittent welds have been added to these notes. Liquid penetrant inspection of tack welds and intermittent welds is problematic. This is because the LP inspection results in indications at the weld starts and stops. These indications are non-relevant. However, they may result in large areas of pigmentation that may mask defects and therefore are unacceptable. For this reason, the statement has been revised to specify that seal, tack and intermittent welds are excluded from the requirement for LP inspection. These welds will be subjected to visual inspection (VT).
4. An optional center hole has been added to the lower torispherical head in order to facilitate fabrication. The optional hole is no larger than that currently in the upper torispherical head. If such a hole is used for fabrication, it must be patched, welded, and subjected to liquid penetrant and radiographic inspection.
5. Other changes to correct errors or facilitate manufacturing and operations.

The details of the changes to the 435-B SAR are listed in the following table.

<b>Changes to 435-B Safety Analysis Report</b>		
<b>Change Location</b>	<b>Change Description</b>	<b>Justification</b>
Page 1.2-4, Section 1.2.1.4, second paragraph, first line	Change from "ASTM B209, 6061-T651" to "ASTM B209, 6061-T6"	This change better aligns the 6061 aluminum alloy description with the ASTM specifications and temper designations.
Page 1.2-4, Section 1.2.1.5, first paragraph, third line	Change from "ASTM B209 or B221, 6061-T651" to "ASTM B209 or B221, 6061-T6"	This change better aligns the 6061 aluminum alloy description with the ASTM specifications and temper designations.
Page 1.2-5, Section 1.2.1.5, first paragraph, last line	Change from "ASTM B308, 6061-T651" to "ASTM B308, 6061-T6"	This change better aligns the 6061 aluminum alloy description with the ASTM specifications and temper designations.

Page 1.2-9, Table 1.2-1, first paragraph, Rows 5 and 6	Delete 2 rows with "Ra-226 (no Be)" and "Ra-226Be"	Ra-226 has been deleted from the SAR and will be added back when the shielding analysis is revised to include the Po-210 daughter isotope.
Page 1.2-9, Table 1.2-1, footnote 5	Change list of Ra-226 impurities to "Not used".	Ra-226 has been deleted from the SAR and will be added back when the shielding analysis is revised to include the Po-210 daughter isotope.
Section 1.3.3, Drawing No. 1916-01-01-SAR, Sheet 1, Note 9	Change from "excluding seal welds" to "excluding seal, tack and intermittent welds"	Tack welds and intermittent welds should not be subjected to LP inspection.
Section 1.3.3, Drawing No. 1916-01-01-SAR, Sheet 2, Flag Note 53	New Flag Note 53 has been added to allow an optional center hole in the lower torispherical head to facilitate manufacturing.	The optional hole added to the lower torispherical head is no larger than that currently in the upper torispherical head. The hole must be patched, welded and subjected to LP and RT inspection.
Section 1.3.3, Drawing No. 1916-01-01-SAR, Sheet 2, Note 54	New note 54 has been added to allow for alloy 6061 temper options.	This change better aligns the 6061 aluminum alloy description with the ASTM specifications and temper designations.
Section 1.3.3, Drawing No. 1916-01-01-SAR, Sheet 3, Flag Note 55	New Flag Note 55 has been added to allow for the vent and test port to be threaded.	The option to thread the vent and test port holes will facilitate testing of the transport package.
Section 1.3.3, Drawing No. 1916-01-01-SAR, Sheet 1, List of Materials, Item 11	Flag Note 53 has been added to allow an optional center hole in the lower torispherical head to facilitate manufacturing.	The optional hole added to the lower torispherical head is no larger than that currently in the upper torispherical head. The hole must be patched, welded and subjected to LP and RT inspection.
Section 1.3.3, Drawing No. 1916-01-01-SAR, Sheet 2, List of Materials, Item 30	Description changed from "Plate" to "Plate or Bar". Specification changed from "6061-T651" to "6061-T6"	The item description was expanded to align with the ASTM material specifications. The material specification was changed to better align with the ASTM specifications and temper designations
Section 1.3.3, Drawing No. 1916-01-01-SAR, Sheet 6, zone D5 and C6	Weld symbols corrected.	Weld symbols corrected to conform with AWS A2.4.
Section 1.3.3, Drawing No. 1916-01-01-SAR, Sheet 6, Section M-M and Section N-N	New Flag Note 55 added to allow for the vent and test port to be threaded.	The option to thread the vent and test port holes will facilitate testing of the transport package.
Section 1.3.3, Drawing No. 1916-01-02-SAR, Sheet 1 Note 13	Note 13 added.	This change better aligns the 6061 aluminum alloy description with the ASTM specifications and temper designations.



Section 1.3.3, Drawing No. 1916-01-02-SAR, Sheet 1, List of Materials, Item 1	Description changed from "Plate" to "Plate or Bar".	The item description was expanded to align with the ASTM material specifications.
Section 1.3.3, Drawing No. 1916-01-02-SAR, Sheet 1, List of Materials, Items 1 through 4	Specification changed from "6061-T651" to "6061-T6"	This change better aligns the 6061 aluminum alloy description with the ASTM specifications and temper designations
Section 1.3.3, Drawing No. 1916-01-03-SAR, Sheet 2 Section BB, Zone D4-D5	Clarify Weld Symbol for Item 5.	This change clarifies the intended fabrication.
Page 2.2-1, Section 2.2, fourth line	Change from "fabricated from 6061-T651" to "fabricated from 6061-T6"	This change better aligns the 6061 aluminum alloy description with the ASTM specifications and temper designations
Page 2.2-6, Table 2.2-4	Change Table title from "Properties of 6061-T651 Aluminum" to "Properties of 6061-T6 Aluminum"	This change better aligns the 6061 aluminum alloy description with the ASTM specifications and temper designations
Page 2.2-6, Table 2.2-4, first column	Change from "ASTM B209 6061-T651" to "ASTM B209 6061-T6"	This change better aligns the 6061 aluminum alloy description with the ASTM specifications and temper designations
Page 2.2-6, Table 2.2-4	Add footnote 5	This change better aligns the 6061 aluminum alloy description with the ASTM specifications and temper designations
Page 2.3-1, Section 2.3.2, second paragraph, seventh line	Change from "except seal welds" to "except seal, tack and intermittent welds"	Tack welds and intermittent welds should not be subjected to LP inspection.
Page 2.12.4-2, Section 2.12.4.2.3, sixth paragraph, two places	Change from "6061-T6 or T651" to "6061-T6"	This change better aligns the 6061 aluminum alloy description with the ASTM specifications and temper designations
Page 2.12.4-4, Section 2.12.4.2.3.3, first paragraph and first bullet that follows.	Change from "6061-T651" to "6061-T6"	This change better aligns the 6061 aluminum alloy description with the ASTM specifications and temper designations
Page 2.12.4-5, first line	Change from "6061-T651" to "6061-T6"	This change better aligns the 6061 aluminum alloy description with the ASTM specifications and temper designations
Page 3.1-3, second paragraph, ninth line	Change from "ASTM B209, 6061-T651" to "ASTM B209, 6061-T6"	This change better aligns the 6061 aluminum alloy description with the ASTM specifications and temper designations

Page 3.1-4, second paragraph, third line	Change from “ASTM B209, 6061-T651” to “ASTM B209, 6061-T6”	This change better aligns the 6061 aluminum alloy description with the ASTM specifications and temper designations
Page 7.1-12, Table 7.1-1	Delete 2 rows with Ra-226. Delete footnote 1.	Ra-226 has been deleted from the SAR and will be added back when the shielding analysis is revised to include the Po-210 daughter isotope.
Page 7.1-12, Table 7.1-2	Delete row with Ra-226. Delete footnote 3.	Ra-226 has been deleted from the SAR and will be added back when the shielding analysis is revised to include the Po-210 daughter isotope.
Page 7.1-14, Table 7.1-5	Delete 2 rows with Ra-226.	Ra-226 has been deleted from the SAR and will be added back when the shielding analysis is revised to include the Po-210 impurity.
Page 7.5-2, Section 7.5.1	Delete Example 4. This example included Ra-226.	Ra-226 has been deleted from the SAR and will be added back when the shielding analysis is revised to include the Po-210 daughter isotope.
Page 8.1-1, Section 8.1.2, ninth line	Change from “except seal welds” to “except seal, tack and intermittent welds”	Tack welds and intermittent welds should not be subjected to LP inspection.