

April 1, 2010

Mr. Pierre Saverot
Project Manager
Office of Nuclear Material Safety and Safeguards
Mail Stop: EBB-3D-02M
Nuclear Regulatory Commission
Executive Boulevard Building
603 Executive Boulevard
Rockville, Maryland 20852

RE: Docket No. 71-9342 and TAC No. L24365, Versa-Pac Revision 2 - List of Edits for Review – Adjusted Method

Dear Mr. Saverot,

Century Industries appreciates the hard work that has been provided by you and the staff at the NRC Licensing Office in the review of this Safety Analysis Report for the Versa-Pac Shipping Container. We have provided below a list of edits that will be included in revision 3 of the SAR, once the edits are approved for use in the Certificate of Compliance and inclusion into ADAMS.

Pages that have been edited or included: i, 1-1, 1-2, 1-5, 2-I, 2-ii, 2-1, 2-2, 2-4, 2-5, 2-6, 2-7, 2-8, 2-25, 3-1, 3-2, 6-i, 6-1, 6-4, 6-5, 6-11, 7-2, 8-3, NCT Report Page 3 & 7, Licensing Drawings, also corrected was Table 2-1 on page 2-22.

- 1. E-mail Dated 2-22-10:** Page 1-1 (Top of Page in bold) listed Rev. 0, April, 2009.
Edit: Title has been corrected to show the new date of Rev. 3, April, 2010 (Corrected Page 1-1 Attached).
- 2. E-mail Dated 2-23-10:** Page 1-2, 110 gallon version listed as UN1A2/Y400/S while Y409 is shown in Table 1-3.
Edit: Page 1-2 has been corrected to the original number, which now shows UN1A2/Y409/S the correct numbers. (Corrected Page 1-2 Attached).
- 3. E-mail Dated: 2-23-10:** Page 1-1, Payload cavity length for the VP-55 was 24-1/16” in the previous SAR (Rev.1), and 24 in Rev. 2 – no revision bar.
Edit: While conducting the SAR review we found that the 55 gallon inner container inside length was incorrectly listed as 24-1/16”, it should have been listed as 25-7/8”. This was an oversight in all previous revisions. Page 1-1 has been corrected in Rev. 3. (Corrected Page 1-1 Attached).

4. **E-mail Dated 2-24-10:** Page 1-5 said that auto-ignition temperatures greater than 580°F while page 3-2 states that melting point temperatures greater than 600°F. Which one is correct?

Edit: Page 1-5 has been corrected to show the higher temperature of 600°F, (Corrected Page 1-5 Attached).

5. **E-mail Dated 2-24-10:** Asked in RAI 3.3 to use 11.4 W throughout the application. Page 3-1 still had 10 W showing.

Edit: Page 3-1 has been corrected to show the proper 11.4 W in place of the 10 W. (Corrected Page 3-1 Attached).

6. **E-mail Dated 2-25-10:** “Contents shall not contain more than an A1 or A2 quantity as appropriate”. Page 1-5 and others. Then, later on, we specified that the “payload would be limited to normal form”. A contradiction since A1 is the activity of special form material permitted in a type A package.

Edit: Corrected page 1-5 by removing the following statement “These materials must not contain more than an A1 or A2 as appropriate”. This leaves the “ The A2 values are used as stated in 10 CFR 71 and are applied to the package since the payload is limited to normal form material”, which was previously added in revision 2. (Corrected Page 1-5 Attached).

We also corrected page 6-4 to read the same. (Corrected Page 6-4 Attached).

7. **E-mail Dated 2-25-10:** 1). The response to 2.2b speaks of vibration testing conducted but no report is provided, and also the results alluded to also seem to refer to “past experience”. You refer to the bolted closure through the lid but do not give the value of the prescribed torque, neither so you explain how that is unaffected by vibration.

Edit: The vibration testing is conducted on the outer drum component by the drum manufacturer and results are provided in their UN test certificate. The past experience referred to in response and in the Section 2.6.5 is taken directly from manufacturing test reports which have been assembled by the drum manufacturers over a period of time and experience from the product history. The prescribed torque of 60 ft/lb. is listed in Section 7.0 paragraph 7.1.3 and has been added to Section 2 paragraph 2.6.5. The bolts once torqued are locked into place by use of the locking washers. (Corrected Page 2-8 Attached).

8. **E-mail Dated 2-25-10:** 2). The report which responds to 2.3 doesn't say anything about which model was used for the compression test or which tests it was subjected to previously.

Edit: Test Report for the NCT Evaluation Test Series (compression and penetration) lists the 55 gallon version test package number 10553 under paragraph 4.0 as the test item used for both compression and penetration. The package was previously utilized in the 55-gallon test series reported in 2.12.4 Century Industries Test Report for the 55 gallon Versa-Pac Shipping Container (Shallow Angle Drops). (Corrected NCT Report Page 3 Attached)

9. Email Dated 2-25-10: 3). 2.4 talks about “measurable damage” with not a measurement in sight.

Edit: There was no noticeable damage to any of the impact surface point. Paragraph 10.2 in the test report should have read “resulted in un-measurable damage to the package impact area”. Paragraph 10.2 has now been corrected as required. (Corrected NCT Report Page 7 Attached).

10. E-mail Date 2-25-10: 4). 2.5 says the density of the foam will be 6 pcf but I can’t find that number anywhere in chapter 1 nor the drawings.

Edit: Page 1-2 has been adjusted to include the 6 pcf rating in the 6th paragraph of Section 1.2.1 and the licensing drawings have also been adjusted showing the 6pcf adjacent to items “IB & IC” as appropriate. (Corrected Page 1-2 Attached).

11. E-mail Dated 2-26-10: Please mention that corrosion inspection shall be noticed in pre-shipping.

Edit: Added Paragraph d to 8.2.3.1 on page 8-3 to include corrosion inspection of the outer surfaces to the prior to each use requirements. (Corrected Page 8-3 Attached).

12. E-mail Dated 3-1-10: Noticed again on page 2-1 “the 55gallon Versa-Pac consists of a 15” x 26” inner height containment area..” while page 3-1 states “the 55 gallon Versa-Pac consists of a 15” ID x 28” payload cavity”.

Edit: Both pages 2-1 and 3-1 have been corrected to show the correct inside payload length of 25-7/8”. (Corrected Pages 2-1 & 3-1 Attached).

13. E-mail Dated 3-5-10: Sec. 1.1 shows 6 lb. instead of 6 pcf.

Edit: Revised page 1-2 to show the correction from 6 lb. to 6 pcf. (Corrected Page 1-2 Attached)

14. E-mail Dated 3-8-10: “The overall nominal dimensions of the 55 gallon package are 23-1/16” OD x 34-3/4” in height” (Page 2-1 April Rev. 3, 3rd paragraph).

“The overall nominal dimensions of the 55 gallon Versa-Pac Shipping container are 23” OD x 34-1/2” in height “. (Page 3-1, April, 2010, Rev. 3, Section 3.11. 2nd paragraph).

Do you see the QA problem we face here?

Also, are the new dimensions correctly reflected in the drawings?

Edit: Both of the dimensions are shown on Drawing VP-55-LD-1 and correctly referenced, with the 34-3/4” in height measurement the height of the package to the top of the bolt ring and the 34-1/2” in height measurement being the height of the package without the bolt ring in place.

In order to clarify what the actual measurements, in both Section listed refer to, the pages were corrected to provide a more defined definition of the measurements.(Corrected Pages 2-1 & 3-1 Attached).

15. E-mail Dated 3-9-10: In addition to the revised Page 3-1 you sent to me with an accurate of the dimension without the bolt ring in place (we are making progress here in clarifications of measurements!), staff involved in the thermal review requests the following edits for Rev. 3:

I Page 7-2: Section Loading of Contents: “The user should verify that no freestanding liquids or other volatile compounds are present in the containment area prior to loading and contents: Please replace “and” by “of” in the statement above (a typo error).

Edit: Page 7-2 typo has been corrected to read “of instead of “and”. (Corrected Page 7-2 Attached).

II: Still difficult to read the drawings in pdf (not your fault): please make sure that the air gap size (55 gallon version is 5/8” and 1” in the 110 gallon version) is in the drawings.

Edit: We have added a detail to both the 55 and 110 gallon drawings VP-55-LD-2 and VP-110-LD-2 which show the correct air gap for each of the package versions. (Corrected Drawings Attached).

III: Given the revised packaging materials in Table 1-4 and the required melting point greater than 66 F, the applicant must change “may” with “shall” in Section 3.2.1 “ Payloads that are unstable or decompose at temperatures below 600 F that further pressurize the containment shall not be shipped I the Versa-Pac.”

Edit: Section 3.2.1 has been altered to read “shall” instead of “may” as required. (Corrected Page 3-2 Attached).

IV: Add 3 key sentences “decay heat for the payload is limited to 11.4 W total for both the VP-55 and VP-110 models”, “The payload is a stable solid with both the auto-ignition temperature and the melting point greater than 600°F”; “the allowable temperature limits for the payload of Versa-Pac package are 500°F for NCT and 600°F for HAC”.

Edit: Item 1: We have change the wording in 3.1.2 to read “models” instead of “packages” as required. (Corrected Page 3-1 Attached).

Item 2 & 3: We have added both statements to Section 3.1.2 at the bottom of the paragraph as required. (Corrected Page 3-2 Attached).

V: Please confirm new numbers for drawings to be referenced in CoC.

Response: To confirm the drawing number to be referenced in the CoC, please find:

The 55 gallon numbers will be: VP-55-LD-1 Revision 3 & VP-55-LD-2 Revision 5.
The 110 gallon numbers will be: VP-110-LD-1 Revision 3 & VP-110-LD-2 Revision 4.
(Corrected Drawings Attached).

16. E-mail Dated 3-9-10: Please do not forget to insert a typical fabrication sequence in the final SAR, Section 2.3.

Follow-up Response: Fabrication sequence was added to 2.3.1 in Revision 2. (Corrected Pages 2-4 & 2-5 Attached).

17. E-mail Dated 3-25-10: Item 1: No need to mention the TAC No. on the SAR Front Page.

Follow-up Response: The TAC Number has been removed. (Corrected Page i Attached).

Item 2: Please have April 2010 as the date Rev. 3 on all pages to account for the potential criticality edits not coming in before March 31.

Follow-up Response: All pages have been corrected to show the April, 2010 date for Revision 3.

Item 3: Section 1.2.1: Verify that UN/1A2/Y409 is put in for the VP-110 version, not Y400... Verify corrected OD and ID dimensions both in the text and the drawings.

Follow-up Response: Section 1.2.1 has been verified and is attached. OD and ID dimensions in text and drawings have been verified. (Corrected Page 1-2 Attached)

Item 4: Section 1.2.2: Need to clearly indicate that Table 1-4 is binding. The CoC will reference this table and only 3 packaging material. Other materials e.g. polyethylene, polypropylene, PVC, Teflon, ect...are not “allowed” as currently written (one could assume they are de facto allowed) unless their temperature os below 580F. Needs to be clarified or rewritten. Also 580 or 600F?

Follow-up Response: Section 1.2.2 has been clarified and expanded as needed. (Corrected Page 1-5 Attached).

Item 5: Table of contents of Chapter 2 shows that Appendix 2.12.1 “Mactec report on material compatibility“ is on page 2-21. However, the Appendix is really on page 2-25...! Correct page numbers in Table of contents. Correct also page 2-219 before pages 2-30 and 2-31! Verify correct numbering from table of contents to the text of the SAR in all chapters.

Follow-up Response The page adjustments have been made and other page to table of contents numbering verified. (Corrected Pages 2-i, 2-ii and 2-25 Attached).

Item 6: Section 2.1.1: This was previously discussed, but verify the proper write up of all dimensions and explain with an additional sentence what they refer to. “IH” is not defined in the 5th paragraph referring to the 110 gallon version (21” ID x 32-3/4” IH??) and also not defined in the glossary. If you use IH for “ inner Height”, this should have been also put in the 2nd para relating to the 55 gallon version...

Follow-up Response: Section 2.1.1 has been corrected to show the proper description for “IH” and added to the glossary. (Corrected Pages 2-1 & 2-2 Attached).

Item 7: Section 2.2.2: What is RTV? This is not defined previously and is not found in the glossary either.

Follow-up Response: Section 2.2.2 the term RTV refers to the type of caulking (Silicone) that is utilized and the definition has been clarified in Section 2.2.2. (Corrected Page 2-4 Attached).

Item 8: Section 2-6, para “Evaluation by Test”: There is no mention of the shallow angle test in September 09 as requested during the RSI process... while the test is reported in Section 2.7.3.8.

Follow-up Response: Section 2-6 has been corrected to show both the September 09 Shallow Angle Testing and the December, 09 Penetration and Stacking Reports. (Corrected Page 2-6 Attached).

Item 9: Section 2.6.1.1: Clarify the sentence “ at the maximum temperature of the payload, the bounding maximum pressure developed is 9.8 psig...: where as Table 3-1 shows 0 psig.

Follow-up Response: Clarification has been added to Section 2.6.1.1. (Corrected Page 2-7 Attached)

Item 10: Section 3.1.1: As already said, you need to specify what dimensions you are referring to. As an example, “the overall nominal dimensions of the package are 30-7/16” OD x 42-1/2” in height” which is stated in Section 3.1.1., 3rd para, is contradictory with what one can read in Section 2.1.1 i.e. “the overall nominal dimensions of the 110-gallon package are 30-7/16” OD x 42-3/4” in height. Is it 42-3/4” of 42-1/2”??

Follow-up Response: The dimensions given have been clarified by adding the definition of the measurement to the appropriate Section. (Corrected Page 3-1 Attached).

Item 11: Section 3.1.2: 11.4 W not 10 W, as already mentioned.

Follow-up Response: Section 3.1.2 has been corrected. (Corrected Page 3-1 Attached)

Item 12: Chapter 6. SAR Table of Contents shows that the Montgomery Report “ Validation of Scale 4a-PC” is on 6-73. However, the specific table of contents for Section 6 (page 6-i) does not mention that report. Further, page 6-73 shows calculation results for section 6-9-1 but not the Montgomery report... Section 6 ends with page 6-106. I believe this reference report should start there after page 6-106.

Follow-up Response: Chapter 6 Table of contents has been corrected. (Corrected Page 6-i Attached).

Item 13: Section 6, page 6-1. Review and rewrite the next to last para on packaging materials (see above) and refer to Table 1-4 for the 600F limit. Not all materials are allowed, as currently stated.

Follow-up Response: Added Clarification statement to Section 6, paragraph 6-1. (Corrected Page 6-1 Attached).

Item 14: Section 6.2, 3rd para: same comment on packaging materials.

Follow-up Response: Section 6.2, 3rd paragraph Added clarification statement. (Corrected Pages 6-4 & 6-5 Attached).

Item 15: Section 6.3.1: Typo on “Versa-PAK”!! Second Typo in same sentence “can conservatively represent” and not “can conservative represent”....

Follow-up Response: Typographical errors corrected in Section 6.3.1. (Corrected Page 6-6 Attached).

Item 16: Section 6.5.2 state that “results are detailed in Section 6.6.2”. However, section 6.6.2 only presents HAC results...while we are talking about NCT results in Section 6.5!!! Please clarify...and expand.

Follow-up Response: Added a clarification statement that the HAC calculations are bounding and explained in 6.6.2. (Corrected Page 6-11 Attached).

Additional Edit:

Table 2-1 was corrected to coincide with Section 3, Table 3-1 regarding the psig change from 25 to 15.

Please let me know if there are any additional areas that you may have noticed that need to be edited or you need any additional information.

Best regards,

Mike

William M. (Mike) Arnold
Phone: 423-646-1864
E-mail: CenturyIndWMA@aol.com