

January 18, 2013

MEMORANDUM TO: Anthony H. Hsia, Deputy Director
Division of Spent Fuel Storage and Transportation, NMSS

FROM: Pierre Saverot, Project Manager **/RA/**
Licensing Branch
Division of Spent Fuel Storage and Transportation, NMSS

SUBJECT: SUMMARY OF JANUARY 7, 2013, MEETING WITH CENTURY
INDUSTRIES

Background

Century Industries will submit soon an amendment request for the Model No. Versa-Pac package. The objectives of this pre-application meeting were to (i) understand the technical basis for the current limit on the quantity of plastic packaging material and (ii) define acceptance criteria for eliminating this limit from the Certificate of Compliance (CoC) conditions. The meeting was noticed on December 21, 2012 (ML12356A435). The meeting attendance list and the presentation slides are provided as Enclosure Nos. 1 and 2, respectively.

Discussion

The Model No. Versa-Pac package, a drum-style Type AF package, is used to transport a variety of uranium oxides, uranyl nitrate crystals, uranyl fluorides, uranyl carbonates, uranium metal or uranium alloys, as well as TRISO fuel. Contents may be pre-packaged in polyethylene, polytetrafluoroethylene, aluminum, carbon steel, aluminum trihydrate, borax, perlite, paper labels, plastic tape, plastic bags, and plastic bottles are also authorized as packing materials but the hydrogenous packing material load in the form of paper and plastics is currently limited to a total of 200 grams per package.

The applicant explained that (i) this CoC condition severely limits the use of the package (a 2 liter poly bottle exceeds the 200 gram limit), and (ii) the maximum calculated weighted payload temperature of 360.4°F is well below the auto-ignition temperatures of 424~474°F for paper (660-986°F for plastics). The applicant said that plastics with an auto-ignition temperature greater than 660°F will not auto-ignite under a weighted package vessel temperature of 360.4°F under an hypothetical accident conditions (HAC) fire, and that auto-ignition is still very unlikely for papers due to their negligible weight when compared with the allowed payloads. The applicant stated that, since contents are stable solids with melting points above 600°F, (i) there is no melting of the radioactive contents at the HAC maximum temperature of payload of 552°F, and (ii) the potential melting of the packaging hydrogenous material will be limited and its impact negligible.

The planned amendment request for eliminating the 200 gram limit on hydrogenous packing material load in the form of paper and plastics will justify that auto-ignition is not a significant safety concern during transportation, and that pressure increase due to the melting of packaging materials during an HAC fire will not result in rupturing the containment.

Staff provided several comments as follows: (i) it might be wise to still keep a bounding value for plastics, possibly based on the criticality condition for hydrogen density greater than 0.141g/cm^3 because contents are not well defined; (ii) contents could potentially be better defined with air void spaces between bottles being filled; (iii) the applicant should look at the effect of pressure buildup on the structural analysis of the package; (iv) the impact of toxic and corrosive gases on cavity materials and the seals must be evaluated even if staff recognizes that containment is not an issue in a Type AF package; (v) the applicant will need to demonstrate by calculation why auto-ignition is not a credible event (the current statement on the thermal protection of the package is insufficient), and why there is no safety concern with an unlimited amount of plastics; and (vi) the calculations should consider a range (small to large) of plastic and paper quantities with the available oxygen.

Staff said that generic statements on a “negligible pressure increase” or on the “unlikelihood of auto-ignition” will not be accepted and that a rigorous justification of all assumptions is required for this amendment request to have any assurance of success. The applicant indicated that a submittal will be made within 90 days. The applicant also shared its plan for a Type B package application, based largely on the current design of the Model No. Versa-Pac package supplemented with an insert. Staff said that, although Type A contents can be shipped in a Type B package, it is best to keep both package designs entirely separate due to leak test requirements and Type B marking requirements.

Staff made no regulatory commitments during the meeting.

Docket No. 71-9342

TAC No. L24707

Enclosure 1: Meeting Attendees

Enclosure 2: Presentation

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Distribution: Attendees, M. Rahimi, D. Pstrak, M. Lombard

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**Meeting Between Century Industries and the
Nuclear Regulatory Commission
January 7, 2013
Meeting Attendees**

NRC/NMSS/SFST

Pierre Saverot	301-492-3408	pierre.saverot@nrc.gov
Christian Araguas	301-415-33637	christian.araguas@nrc.gov
John Vera	301-492-3372	john.vera@nrc.gov
Neil Day	301-492-3335	neil.day@nrc.gov
Gordon Curran	301-415-1247	Gordon.Curran@nrc.gov
Michele Sampson	301-492-3292	michele.sampson@nrc.gov
Joe Borowski	301-492-3563	joseph.borowski@nrc.gov
JoAnn Ireland	301-492-3309	joann.ireland@nrc.gov

Century Industries

William Arnold	423-646-1864	CenturyIndWMA@aol.com
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TLI

Andy Langston	910-233-4529	Alangston@TLIUSA.com
Peter Vescovi	803-451-4362	Pvescovi@TLIUSA.com