

## Gallardy, Vivian

---

**From:** Garcia Santos, Norma  
**Sent:** Wednesday, February 08, 2017 12:51 PM  
**To:** 'Michael.Conroy@dot.gov'  
**Cc:** Tang, David; Diaz-Sanabria, Yoira; Tripathi, Bhasker  
**Subject:** Response: DOT Question Empty Weight of the LEUPA Package

Good afternoon Michael,

I consulted your question with one of the senior structural reviewers (the reviewer that performed the review of the LEUPA package is out until the end of February) about the need of limiting the empty weight of the LEUPA package. Please see the emails below for a complete "picture" of his response. I hope this helps. I will add these e-mails to the LEUPA's docket.

Thanks,

*Norma Garcia Santos*

Project Manager  
Division of Spent Fuel Management  
Office of Nuclear Material  
Safety and Safeguards  
U.S. Nuclear Regulatory Commission

Telephone No.: 301-415-6999

Email: [Norma.Garcia-Santos@nrc.gov](mailto:Norma.Garcia-Santos@nrc.gov)

---

**From:** Tang, David  
**Sent:** Wednesday, February 08, 2017 7:34 AM  
**To:** Garcia Santos, Norma <[Norma.Garcia-Santos@nrc.gov](mailto:Norma.Garcia-Santos@nrc.gov)>  
**Cc:** Diaz-Sanabria, Yoira <[Yoira.Diaz-Sanabria@nrc.gov](mailto:Yoira.Diaz-Sanabria@nrc.gov)>  
**Subject:** RE: Request: Structural Reviewer

Good morning Norma.

It goes either way for the 5-kg difference (less than about 0.5% of the gross weight) for shipping an empty packaging. This determination is based on sound engineering judgement in terms of free-drop response of the package weighing about 480 kg. I suspect that the mass difference was a typo in Rev. 1 of the CoC, dated November 26, 2016, in which both values appear. The key response to Mike's concern is the 50-kg maximum allowable U as content for the package.

David

---

**From:** Garcia Santos, Norma  
**Sent:** Tuesday, February 07, 2017 4:53 PM  
**To:** Tang, David <[David.Tang@nrc.gov](mailto:David.Tang@nrc.gov)>  
**Cc:** Diaz-Sanabria, Yoira <[Yoira.Diaz-Sanabria@nrc.gov](mailto:Yoira.Diaz-Sanabria@nrc.gov)>  
**Subject:** RE: Request: Structural Reviewer

Good afternoon David,

Please clarify the first item under the conclusions. In terms of the maximum allowable mass of an empty package. Should the maximum allowable mass of the empty LEUPA package be 430 kg or 435 kg? It was not clear from item number one in our conclusion, since it mentions 430 kg and 435 kg.

Thanks again for your prompt review,  
Norma

**From:** Tang, David  
**Sent:** Tuesday, February 07, 2017 3:34 PM  
**To:** Garcia Santos, Norma <[Norma.Garcia-Santos@nrc.gov](mailto:Norma.Garcia-Santos@nrc.gov)>  
**Cc:** Diaz-Sanabria, Yaira <[Yaira.Diaz-Sanabria@nrc.gov](mailto:Yaira.Diaz-Sanabria@nrc.gov)>; Tang, David <[David.Tang@nrc.gov](mailto:David.Tang@nrc.gov)>  
**Subject:** RE: Request: Structural Reviewer  
**Importance:** High

Norma,

Since there was no design or calculation changes for the Argentina Leupa CoC, Rev. 1, dated 11/26/2016, the previously reviewed safety report (SR), 0908-LE00-3BEIN-023-C, Rev. C, and Leupa Specification of Approval Tests for Type B(U) Package for Fissile Materials (Plans for Approval Tests or PATs), 0908-LE00-3BEIN-002, Rev. B, continue to apply to address the questions raised by Mike Conroy of DOT.

1. Table 2 of SR lists the component masses of the packaging. The item listed as "Packaging," which weighs 260 kg, should have been called "**External** (boldface added) Packaging, based on the SR bullet "f", Section 3.1, General Description of the packaging. In our use at the US, we call it overpack instead.
2. With the above nomenclature clarification, the last entry of the first column, Table 2, should read "Total Mass of Packaging," which appear to corroborate the SR depiction in Figure 12.1, Package Diagram, of Annex I.
3. Item 3, Section 4, Specimen to be Used for Tests, of the PATs states that, "[t]he mass of each bag is approximately 12.5 kg+/- 0.5 kg comparable to the simulated fissile material." The total mass of 50 kg for the four bags each inserted in one of the four inner cans constitute the total content of U subject to the tests for demonstrating the structural performance of the Leupa package. Given a total packaging mass of 430 kg of Table 2 of the SR, the gross mass is determined to be about 480 kg (430 + 50 = 480).
4. The 480 kg gross mass is also called out in paragraphs 6.2.5 and 6.2.9 of the PATs for Approval Tests.

On the basis of the above, the NRC staff has reasonable assurance to conclude that it's appropriate for the DOT to recommend the following:

1. The maximum allowable mass for an empty package transport is limited to 430 (435?) kg per paragraph 425, TS-R-1.
2. The maximum total content of U to be transported is limited to 50 kg per Section 5, Authorized Radioactive Contents of CoC, Rev. 1.

Please let me know if you need further clarification.

Thanks.

David

---

**From:** Garcia Santos, Norma  
**Sent:** Tuesday, February 07, 2017 9:53 AM

**To:** Tang, David <David.Tang@nrc.gov>  
**Subject:** RE: Request: Structural Reviewer

Good morning David,

The DOT question is if the weight of the empty package should be limited to 430 kg or not, given that the Certificate of the Competent Authority received in 2017 mentions 430 kg and 435 kg. (See the attached item for the e-mail thread...there were also phone call between DOT and me on the same topics in the e-mails.) I am also sending a copy of the responses to RAI "No. 1"...FYI: page 12 includes a diagram of the package.

Please send me an e-mail with your rationale.

Have a nice day.

Norma

**From:** Tang, David  
**Sent:** Tuesday, February 07, 2017 9:15 AM  
**To:** Garcia Santos, Norma <Norma.Garcia-Santos@nrc.gov>  
**Cc:** Tang, David <David.Tang@nrc.gov>  
**Subject:** RE: Request: Structural Reviewer  
**Importance:** High

Norma,

Where is the RAI 2 question by Bob and the corresponding response? I could not locate them in the links.

BTW, what is the complete DOT question posted to you?

Thanks,

David

**From:** Garcia Santos, Norma  
**Sent:** Monday, February 06, 2017 2:45 PM  
**To:** Tang, David <David.Tang@nrc.gov>  
**Subject:** FW: Request: Structural Reviewer

Hi David,

These are the documents that I reviewed related to the LEUPA package that can help with DOT's question. (these documents are located in the G:\drive at G:\SFST\Garcia\Casework NGS\DOT Revalidations\LEUPA-Revalidation\LEUPA - Docket N° 71-3090 - NRC RAIs Responses\LEUPA RAI Responses No 2\DOCS RAI 2:

004 0908-LE00-3BEIN-017-C	Operation Manual	4. DESCRIPTION OF PACKAGE	The LEUPA package approx. .... mass (loa
0908-LE00-3BEIN-023-C	Safety Report	Table 2: Subset Dimensions	Total Mass of Packag
0908-LE01-3BEIN-026-B	Analysis of the LEUPA Package – Impact Test	6.1 Description of the Package	According to the APL of approximately 437



0908-LE02-3BEIN-002-B	SPECIFICATION OF APPROVAL TESTS FOR TYPE B(U) PACKAGES FOR FISSILE MATERIALS	6.2 FREE DROP, PURSUANT TO PARAGRAPH 722 A)	See No. 5 and 9 of S
-----------------------	--	---	----------------------

I think the item highlighted in yellow is the basis for Bob's conclusion in its SER.

Thanks Davis,  
Norma

**From:** Diaz-Sanabria, Yaira  
**Sent:** Monday, February 06, 2017 2:30 PM  
**To:** Tang, David <David.Tang@nrc.gov>  
**Cc:** Garcia Santos, Norma <Norma.Garcia-Santos@nrc.gov>  
**Subject:** FW: Request: Structural Reviewer

Please take a look at the question.

**From:** Garcia Santos, Norma  
**Sent:** Monday, February 06, 2017 1:48 PM  
**To:** Diaz-Sanabria, Yaira <Yaira.Diaz-Sanabria@nrc.gov>  
**Subject:** Request: Structural Reviewer

Good afternoon Yaira,

I noticed that Bob is out until 2/25/17. Bob was the structural reviewer for the LEPA package. I want to know if a structural reviewer can assist on a question from DOT related to the LEUPA package. The applicant sent a revised Certificate in January and it mentions the following:

height and 532 mm diameter. The total mass of model LEUPA package, as empty, is of approximately 430 Kg, with the maximum allowable total mass of model LEUPA package being of 435 Kg. See diagram in Annex 1.

Here is the link to the new Certificate, if you want to see the entire document (This is the only document that I received with that change. I also received an e-mail from DOT with some explanatory text.):  
[Open ADAMS P8 Document \(Enclosure: Revised Argentinian Competent Authority Certificate \[1/10/2017, E-Mail from M. Conroy/DOT to N. Garcia-Santos/DSFM re: Certificate Conditions Recommendations and Applicant's Comments\].\)](#)

The certificate that the applicant sent in its RAI response in November 2016 did not include the 435 kg weight. The question from DOT is if DOT should limit the weight of the empty package (or not) to 430 kg, since the previous certificate that the applicant submitted only included a maximum weight of the empty package of 430 kg. In order to answer DOT's question, I need to verify Bob's assumptions considered for approving the package. By looking at Bob's SER, paragraph 722, (see [http://fusion.nrc.gov/nmss/team/sfst/sfst-licensing/10\\_cfr\\_71/trans\\_leupa\\_reval/Shared%20Documents/LEUPA\\_SER\\_2015.doc](http://fusion.nrc.gov/nmss/team/sfst/sfst-licensing/10_cfr_71/trans_leupa_reval/Shared%20Documents/LEUPA_SER_2015.doc)) it appears that the applicant's assumption was that the total mass of the package (packaging and contents) was 480 kg (packaging = 430 kg and contents = 50 kg).

I need confirmation from a structural reviewer. I can provide additional information (because I already did some research to confirm the response to DOT's question) to the person and it should not take a lot of time, since I am not asking for a "re-review."

Thanks in advance.  
Norma