

**From:** Garcia Santos, Norma  
**Sent:** Friday, February 03, 2017 6:53 AM  
**To:** 'Conroy, Michael (PHMSA)' <Michael.Conroy@dot.gov>  
**Cc:** McKirgan, John <John.McKirgan@nrc.gov>  
**Subject:** LEUPA - Conditions - URGENT

Michael,

I will need to get back to the reviewers to confirm if they did confirmatory analyses using 430 kg. The point that I was trying to make was that the maximum weight of the empty package per the SAR is 430 kg. I also looked that the max. weight of the content in the certificate (50 kg), which does not align with a maximum weight of the package (packaging and contents) of 435 kg. (Bottom line, I agree with your comment that this is confusing.) In term of the comment of limiting the plastic content, the applicant needs to provide an analysis to justify plastic content and the staff will review it and make a determination in this regard. My understanding from the staff's SER is that this information was not provided.

The concurrence package is with my supervisor for his signature, which is the last signature. I added the certificate that we agreed upon over the phone and not the last one that has the 435 kg weight that I received in January 2017. Since, the applicant points out that the design of the package was not modified (apparently since its last official submittal to DOT), then, I would recommend to proceed and issue the revalidation recommendation, unless, you have a different view. (I am copying John for his awareness and because he has the package with him for his concurrence.)

Thanks for your patience during this process.

Norma

**From:** Conroy, Michael (PHMSA) [<mailto:Michael.Conroy@dot.gov>]  
**Sent:** Thursday, February 02, 2017 5:06 PM  
**To:** Garcia Santos, Norma  
**Subject:** [External\_Sender] FW: FW: FW: LEUPA - Conditions - URGENT

Norma- Here is what I just sent Edlow.  
I can't tell what values they used in their tests/analyses.  
Did you do confirmatory calculations based on 430 kg?

**From:** Conroy, Michael (PHMSA)  
**Sent:** Thursday, February 02, 2017 5:05 PM  
**To:** 'Marilena Conde' <[mconde@edlow.com](mailto:mconde@edlow.com)>  
**Subject:** RE: FW: FW: LEUPA - Conditions - URGENT

**"The new certificate only introduces a minor modification in the wording where the mass of the empty package is informed. It was noted to us that it was not clear if the informed mass belonged to an empty package or if it included the load. The design of the packaging was not modified."**

Previously the certificate said the package was 430 kg. Now it says that is the empty mass and the maximum allowable total mass is now 435 kg.

I can't tell what mass was used for all of the tests and analyses, but I do see some references to values in the range of 430-438 kg for the empty with maybe an additional 50 kg for contents. (If that is correct, then you'd have 480 kg loaded, not 435 kg, so I am confused.)

Can you please get clarification on the following?:

- Maximum mass of empty packaging
- Maximum mass of contents
- Total package mass that was used in tests or assumed in analyses (may be multiple values)

**From:** Marilena Conde [<mailto:mconde@edlow.com>]  
**Sent:** Wednesday, January 11, 2017 11:00 AM  
**To:** Conroy, Michael (PHMSA) <[Michael.Conroy@dot.gov](mailto:Michael.Conroy@dot.gov)>  
**Subject:** FW: FW: FW: LEUPA - Conditions - URGENT  
**Importance:** High

Good morning Michael,

Does this new email warrant a conference call? I can organize it if you and Gloria agree.  
Best regards,

***Marilena Conde***  
***Vice President***  
***Marketing and Administration***  
***EDLOW INTERNATIONAL COMPANY***  
***Tel: 202-483-4959***  
***Cell: 703-944-7949***  
***email: [mconde@edlow.com](mailto:mconde@edlow.com)***

**From:** Roberto Barrios [<mailto:Barrios@invap.com.ar>]  
**Sent:** Wednesday, January 11, 2017 10:55 AM  
**To:** Marilena Conde; Ana Arosa  
**Cc:** Jose Ausas; Matias Gonzalo Marquez  
**Subject:** Re: FW: FW: LEUPA - Conditions - URGENT

Dear Marilena:

Below you can read our answers in red:

However, I am troubled by the introduction of a new revision of the Argentine certificate. Your request was to revalidate the previous version. I now have to consider if the changes in this revision impact the review NRC has done.

The new certificate only introduces a minor modification in the wording where the mass of the empty package is informed. It was noted to us that it was not clear if the informed mass belonged to an empty package or if it included the load. The design of the packaging was not modified.

What do they mean by, “the documentation we will send you promptly”?

After received any suggested modification probably we will issue new versions of the documents to include the modifications of the wording and correcting minor inconsistencies.

Also, while I appreciate that INVAP disagrees with NRC’s evaluation of plastic contents, I do not think NRC is going to change their minds at this point.

We are confident that the design of the package properly analysis the effect of the plastic content in the LEUPA package. Both criticality calculations and thermal verifications support this. Also, we are aware that the ES3100, being a similar package, allows a limited content of plastic. If NRC still considers that plastic content shall be prohibited, they can show that limitation in the certificate.

Best regards

Roberto

>>> Marilena Conde <[mconde@edlow.com](mailto:mconde@edlow.com)> 10/01/2017 18:01 >>>  
Hola Roberto,

Here is Michael Conroy’s response below. I will try to see if we can organize a conference call with Gloria as well. When would everyone be available for the call? Let me know and I can check with DOT and NRC.

Thank you and best regards,

***Marilena Conde***  
***Vice President***  
***Marketing and Administration***  
***EDLOW INTERNATIONAL COMPANY***  
***Tel: 202-483-4959***  
***Cell: 703-944-7949***  
***email: [mconde@edlow.com](mailto:mconde@edlow.com)***

**From:** Conroy, Michael (PHMSA) [<mailto:Michael.Conroy@dot.gov>]  
**Sent:** Tuesday, January 10, 2017 3:14 PM  
**To:** Marilena Conde  
**Subject:** RE: FW: LEUPA - Conditions - URGENT

Marilena-

Thank you for the response. I have forwarded it on to Norma.

However, I am troubled by the introduction of a new revision of the Argentine certificate. Your request was to revalidate the previous version. I now have to consider if the changes in this revision impact the review NRC has done.

What do they mean by, “the documentation we will send you promptly”?

Also, while I appreciate that INVAP disagrees with NRC’s evaluation of plastic contents, I do not think NRC is going to change their minds at this point.

**From:** Marilena Conde [<mailto:mconde@edlow.com>]  
**Sent:** Tuesday, January 10, 2017 2:59 PM  
**To:** Conroy, Michael (PHMSA) <[Michael.Conroy@dot.gov](mailto:Michael.Conroy@dot.gov)>  
**Subject:** FW: FW: LEUPA - Conditions - URGENT  
**Importance:** High

Hello Michael,

He has included the new certificate for the LEUPA cask.  
Best regards,

***Marilena Conde***  
***Vice President***  
***Marketing and Administration***  
***EDLOW INTERNATIONAL COMPANY***  
***Tel: 202-483-4959***  
***Cell: 703-944-7949***  
***email: [mconde@edlow.com](mailto:mconde@edlow.com)***

**From:** Roberto Barrios [<mailto:Barrios@invap.com.ar>]  
**Sent:** Tuesday, January 10, 2017 2:52 PM  
**To:** Marilena Conde  
**Cc:** Ana Arosa; Jose Ausas; Matias Gonzalo Marquez  
**Subject:** Re: FW: LEUPA - Conditions - URGENT

Sorry now the certificate is attached  
>>> Roberto Barrios 10/01/2017 16:49 >>>  
Dear Marilena:

First of all we hope a Happy New Year for you and your colleges.

1. About the questions of DOT-NRC received, please note that we have an important part of our technicians on vacation up to January 23. With the group that is now working we prepare that required answers written in red in point 2.

2) Replying to the questions you sent in December, we have the following comments:

Model No. LEUPA package with the following conditions:

1. Plastic moderating material is prohibited for air shipment.

Our criticality calculations, which include plastic for wrapping, have verified that the maximum allowed quantity of material will not become critical in any of the considered scenarios. We consider that plastic material can be included in the package, provided that its mass is lower than the one used in the criticality analysis.

2. The acceptance criteria for components in drawing Nos. 0908-LE01-3AEIN-015-A, 0908-LE01-3AEIN-017-A, 0908-LE01-3AEIN-018-A, and 0908-LE01-3AEIN-019-A, as described in the "Acceptance criteria table," document No. 0908-LE00-3BEIN-026-B, "Inspection and Maintenance Manual," are modified as follows:

"There must not be any signs of corrosion, and their identification should be read clearly. Fixing welds should not be cracked."

This modification is accepted and may be included in the documentation we will send you promptly.

3. In addition to the operation steps described in document No. 0908-LE00-3BEIN-017, "Operation Manual," Section 7.2.8, "Transport of Empty Package," for shipments of empty packages, the package user shall confirm that the empty package meets the limits for internal non fixed contamination specified in TS-R-1, 2009 Edition, paragraph 425(c) for empty packagings.

This modification is accepted and may be included in the documentation we will send you promptly.

4. In addition to the operation steps described in document No. 0908-LE00-3BEIN-017, "Operation Manual," Section 7.2.7, "Transport," Step 1.f, for shipments of loaded packages, the package user shall verify that the transport index (TI) does not exceed 10.

This modification is under consideration and may be included in the documentation we will send you promptly.

5. In addition to the operation steps described in document No. 0908-LE00-3BEIN-017, "Operation Manual," Section 7.2.2, "Loading of Fissile Substances in Inner Cans," shall confirm per TS-R-1, paragraph 506, that in addition to the radioactive and fissile properties, any other dangerous properties of the contents of the package, such as explosiveness, flammability, pyrophoricity, chemical toxicity and corrosiveness, shall be taken into account.

a. For uranium metal powder, pieces, and/or grains:

i. Prior and during shipment, the size of uranium metal must be above a critical size to prevent pyrophoricity, in the unintended presence of moisture or oxygen.

Uranium metal powder, pieces and/or grains size can be limited to reduce surface area. Which would be the critical size you propose for these forms?

ii. In each inner can, uranium metal powder, pieces, and/or grains must be shipped in a vacuum dry and inert atmosphere, to prevent the presence of flammable gas prior or during shipment.

Can design appropriate to transport Uranium metal in powder, pieces and/or grains in inert atmosphere is not provided with the documentation attached to the certificate. We would like to highlight that up to

20% enriched Uranium metal can be transported. If you consider that the shipped Uranium metal should be restricted even more, we can analyze your opinion.

b. Plastic in any form, potentially producing flammable gas (e.g., hydrogen) and/or water vapor by thermolysis and/or radiolysis, is prohibited for shipment. – This condition is similar to the one related to criticality safety.

During our thermal analysis, the LEUPA packaging was heated up to 800°C and kept at that temperature for more than the required time. After this test, plastic wraps were visually inspected and no damage to it was observed. We consider that this test is proof that no flammable gases are generated in accidental conditions. We would like a justification for your limitation on the plastic content.

c. Besides proposed condition 5.a., for shipments including uranium metal powder, pieces, and/or grains, the “container of the inner containers” as shown in document No. 908-LE01-3AEIN-10-A, “Packaging Main Body,” must be maintained in a vacuum dry and inert atmosphere to prevent the presence of oxygen or flammable gas during shipment.

Some clarification is required; it is not clear for us if this condition applies to any content of only to Uranium metal powder, pieces and/or grains. We think that this atmosphere is not necessary when transporting non-pyrophoric material.

## **NEW CERTIFICATE**

As the reported weight of the empty package (packaging) was unclear in the original certificate, ARN issued a modified certificate named RA/0103/B(U)F-96 (Version Original-Adenda 1). Attached you will find a copy of this certificate in Spanish and in English. The modified documentation for the attached certificate are issued, however this last round of questions may require modifications to this documentation and would have to be reissued. These modifications can be done upon mutual agreements on those corrections

Please note that just in case it is necessary we are available to have a telephone conference with the NRC-DOT technicians.

Best regards

Roberto