

## Miller, Debra

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**From:** Slama, Chuck <Chuck.Slama@urencocom>  
**Sent:** Wednesday, December 11, 2013 4:25 PM  
**To:** Malliakos, Asimios  
**Cc:** Knowles, Timothy  
**Subject:** FW: Clarification Needs on the URENCO USA Responses to NRC Request for Additional Information  
**Attachments:** RAI 3.pdf; RAI 4.pdf; RAI 5.pdf; RAI 8.pdf; RAI 1 Environmental Report Pages.pdf; RAI 2.pdf

Asimios,

This email is the response to the 8 RAIs emailed previously, see original email below. As discussed in our phone calls and in an attempt to minimize confusion in many emails, I waited for the completion of all 8 responses prior to sending this email. Those with short answers are answered in the email text below. Otherwise, please see the supporting attachments.

The UUSA response and the attached files can be posted in ADAMS as publically available. Additionally, the telephone and mobile numbers listed for Timothy Knowles and me are URENCO USA numbers, not personal numbers, and do not need to be withheld.

Regards,

Charles (Chuck) James Slama  
Licensing Project Manager

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### Clarifications on RAI 1b response

1. The response to RAI 1b refers to the footnotes to Tables 4.2-2 through 4.2-4. There are no footnotes to the tables in ER Rev. 21 as discussed in the response. Please provide the footnotes. Contrary to the response which states that Table 4.2-4 does not exist, Table 4.2-4 does exist in ER Rev. 21. The title of Table 4.2-4 is "Radiological Latent Cancer Fatalities from Accidents during Transportation of Radioactive Materials" and appears out of order in the document (after Table 4.6-3).

### UUSA Response:

A review of ER Rev 21 by UUSA personnel noted that the footnotes do exist as discussed in the response to RAI 1b. It is believed that the reviewer may be looking at the Supplemental ER in error. Please see the attached pages from ER Rev 21 with the referenced tables and footnotes.

The response to RAI 1b referring specifically to UUSA ER Rev 21, not the Supplemental ER.

- a. The referenced footnotes exist in ER Rev 21; they do not exist in the Supplemental ER.
- b. Neither table 4.2-4 nor any table titled "Radiological Latent Cancer Fatalities from Accidents during Transportation of Radioactive Materials" exists in ER, Rev 21; table 4.2-3 exists with this title in the Supplemental ER.
- c. The final revision of the Supplemental ER will be corrected to change table number 4.6-3 to table number 4.2-2.

#### Clarifications on RAI 1c response

2. The Supplement ER and LPES report (LPES, 2013) do not provide an analysis for return transportation of the empty 48Y “heel” cylinders from UUSA to Port Hope and Metropolis. The LPES report (LPES, 2013) does note the potential radiation hazard near the “heel” cylinders, but does not provide a transportation analysis. The Supplement ER also does not include any impacts from transportation of “heels” cylinders. Please provide the analysis.

#### UUSA Response:

See attached response to RAI 2.

3. As noted in RAI 1a, an average of four 30B product cylinders is expected to be on an enriched product shipment. The LPES RADTRAN analysis (LPES, 2013) for product cylinders appears to use the external dose rate based on exposure to one cylinder, not four cylinders, thereby underestimating external exposure impacts to the public. Why was an external dose rate based on four cylinders not used? Also, the single cylinder dose rate at two meters was used in the analysis. Since the RADTRAN dose rate input used is for one meter from the vehicle, it would be more appropriate to use the one meter dose rate to be conservative (even though the sides of the cylinders will be back from the side edge of the vehicle) and thus not further underestimate the risks. There is also no discussion in either the Supplement ER or LPES report (LPES, 2013) as to the assumed package configuration on the transport vehicle. The accident risk analysis does consider the contents of four 30B product cylinders.

#### UUSA Response:

See attached response to RAI 3.

4. The LPES report (LPES, 2013) considers transportation of liquid radioactive waste. Please state what is the liquid waste considered in this analysis. State if this is referring to the additional solid waste from solidified wastewater which had previously been slated for treatment through evaporative processes (Supplement ER, Section 4.2.7). If this is the additional solid waste, The LPES report (LPES, 2013) only evaluates 4 “liquid waste” shipments rather than “approximately 20 additional truckloads of low level waste transported to Clive, Utah, annually” as stated in Section 4.2.7 of the Supplement ER.

#### UUSA Response

See attached response to RAI 4.

5. Section 4.2.6.4 of the Supplement ER states that 60 fifty-five gallon drums per shipment are assumed in order to estimate that 19 to 23 low-level waste shipments will be needed annually. The LPES RADTRAN analysis (LPES, 2013) assumes only 8 drums per shipment for the solid waste shipments and only 4 drums for the “liquid waste” shipments. Why did the analysis only consider 8 or 4 drums per shipment when the Supplement ER assumed 60 per shipment? In addition the external dose rate used is for only one drum (instead of 60) at a distance of 2 meters rather than 1 meter. In this case, the drums would be fairly close to the side of the vehicle and the 1 m dose rate would be more appropriate. If the radionuclide inventory per drum as input to RADTRAN is truly representative, then the accident risk impacts will be notably underestimated if there are 60 drums per shipment. Explain why the external doses used were for one drum instead of 60 drums and why for 2 meters instead of 1 meter.

UUSA Response:

See attached response to RAI 5.

6. Section 4.2.6.1 of the Supplement ER anticipates a range of up to 1,365 feed shipments per year, but the updated tables for the Supplement ER peak year analyzed in the supporting transportation report only consider 1,259 shipments (LPES, 2013). Please explain discrepancy.

UUSA Response:

Preceding the last round of transportation impact modeling, a review of the feed shipment inputs was performed. Based on current information from URENCO logistics for the annual feed shipments through full facility capacity of 10 MSWU, the maximum number of annual feed shipments (one 48Y cylinder per truck) is 1,259. This maximum rate was predicted to occur in the years 2020 and 2021. The RADTRAN run performed in 2013 used a maximum feed shipment rate of 1,259 on an annual basis. The Supplemental ER text which contains the reference to 1,365 feed shipments will be amended to correct the basis for the evaluation of potential impacts.

7. Section 4.2.6.2 of the Supplement ER suggests that approximately 220 enriched product shipments would occur annually. The supporting transportation report, (LPES, 2013), lists and analyzes 235 shipments for a peak year which is then bounding. Please clarify which is the correct number of shipments the 235 or the 220 shipments. Also, to avoid any confusion, include the number of shipments considered in the result tables.

UUSA Response:

The number of shipments considered in the LPES result tables is up to 235 annually, each carrying 4 cylinders per shipment. The underlying purpose for the modeling run in 2013, as reported in LPES 2013, was to correct a previous under accounting error in modeling for the number of shipments of product represented in the Supplemental ER. The model output previously did not account for the 220 shipments of product cylinders, but rather modeled impact from 59 shipments annually. During the course of reviewing the plans by URENCO logistics department, it was determined that there would be one year in the projection through full scale which would involve up to 235 annual shipments of product cylinders. Therefore, to be conservative and bounding, the LPES 2013 model run includes impacts from 235 annual shipments of 4 cylinders each of product.

8. The new radiological latent cancer fatality impacts provided in the LPES report (LPES, 2013) and in the updated Table 4.2-2 for the "CREW", "OFF LINK" and "ON LINK" do not appear to be from the results in the RADTRAN output provided with the RAI 1c response. It is not clear as to why the impacts for shipments of the same number of tails cylinders to Paducah are about twice the values for shipment of tails cylinders to Hobbs, but the distance to Paducah is about 90 times the distance to Hobbs. Please provide clarifications.

UUSA Response:

See attached response to RAI 8.

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**From:** Timothy Knowles  
**Sent:** Friday, September 13, 2013 8:15 AM  
**To:** 'Malliakos, Asimios'

**Cc:** Raddatz, Michael; Chuck Slama

**Subject:** RE: Clarification Needs on the URENCO USA Responses to NRC Request for Additional Information

Asimios,

We will start working on the questions that you have provided.

Regards,

Tim Knowles

Licensing and Performance Assessment Manager

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**From:** Malliakos, Asimios [<mailto:Asimios.Malliakos@nrc.gov>]

**Sent:** Friday, September 13, 2013 7:42 AM

**To:** Timothy Knowles

**Cc:** Raddatz, Michael; Chuck Slama

**Subject:** Clarification Needs on the URENCO USA Responses to NRC Request for Additional Information

Tim,

The discussion and questions below are in reference to the transportation analysis responses to RAI 1b and RAI 1c from the URENCO USA (UUSA) "Response to NRC Request for Additional Information on License Amendment Request (LAR) 12-10 Capacity Expansion of UUSA Facility (TAC L34193)", dated July 8, 2013 and the UUSA "Response to NRC Request for Additional Information on License Amendment for Capacity Expansion of URENCO USA Facility (TAC NO. L34227)" dated August 14, 2013. Please respond to the clarifications below.

Clarifications on RAI 1b response

1. The response to RAI 1b refers to the footnotes to Tables 4.2-2 through 4.2-4. There are no footnotes to the tables in ER Rev. 21 as discussed in the response. Please provide the footnotes. Contrary to the response which states that Table 4.2-4 does not exist, Table 4.2-4 does exist in ER Rev. 21. The title of Table 4.2-4 is "Radiological Latent Cancer Fatalities from Accidents during Transportation of Radioactive Materials" and appears out of order in the document (after Table 4.6-3).

Clarifications on RAI 1c response

2. The Supplement ER and LPES report (LPES, 2013) do not provide an analysis for return transportation of the empty 48Y "heel" cylinders from UUSA to Port Hope and Metropolis. The LPES report (LPES, 2013) does note the potential radiation hazard near the "heel" cylinders, but does not provide a transportation analysis. The Supplement ER also does not include any impacts from transportation of "heels" cylinders. Please provide the analysis.
3. As noted in RAI 1a, an average of four 30B product cylinders is expected to be on an enriched product shipment. The LPES RADTRAN analysis (LPES, 2013) for product cylinders appears to use the external dose rate based on exposure to one cylinder, not four cylinders, thereby underestimating external exposure impacts to the public. Why was an external dose rate based on four cylinders not used? Also, the single cylinder dose rate at two meters was used in the analysis. Since the RADTRAN dose rate input used is for one meter from the vehicle, it would be more appropriate to use the one

meter dose rate to be conservative (even though the sides of the cylinders will be back from the side edge of the vehicle) and thus not further underestimate the risks. There is also no discussion in either the Supplement ER or LPES report (LPES, 2013) as to the assumed package configuration on the transport vehicle. The accident risk analysis does consider the contents of four 30B product cylinders.

4. The LPES report (LPES, 2013) considers transportation of liquid radioactive waste. Please state what is the liquid waste considered in this analysis. State if this is referring to the additional solid waste from solidified wastewater which had previously been slated for treatment through evaporative processes (Supplement ER, Section 4.2.7). If this is the additional solid waste, The LPES report (LPES, 2013) only evaluates 4 “liquid waste” shipments rather than “approximately 20 additional truckloads of low level waste transported to Clive, Utah, annually” as stated in Section 4.2.7 of the Supplement ER.
5. Section 4.2.6.4 of the Supplement ER states that 60 fifty-five gallon drums per shipment are assumed in order to estimate that 19 to 23 low-level waste shipments will be needed annually. The LPES RADTRAN analysis (LPES, 2013) assumes only 8 drums per shipment for the solid waste shipments and only 4 drums for the “liquid waste” shipments. Why did the analysis only consider 8 or 4 drums per shipment when the Supplement ER assumed 60 per shipment? In addition the external dose rate used is for only one drum (instead of 60) at a distance of 2 meters rather than 1 meter. In this case, the drums would be fairly close to the side of the vehicle and the 1 m dose rate would be more appropriate. If the radionuclide inventory per drum as input to RADTRAN is truly representative, then the accident risk impacts will be notably underestimated if there are 60 drums per shipment. Explain why the external doses used were for one drum instead of 60 drums and why for 2 meters instead of 1 meter.
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7. Section 4.2.6.2 of the Supplement ER suggests that approximately 220 enriched product shipments would occur annually. The supporting transportation report, (LPES, 2013), lists and analyzes 235 shipments for a peak year which is then bounding. Please clarify which is the correct number of shipments the 235 or the 220 shipments. Also, to avoid any confusion, include the number of shipments considered in the result tables.
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Reference:

(LPES, 2013), LPES, Inc. Engineering and Planning, “Risk Assessment for the Transport of Radioactive Materials for the Proposed URENCO USA Facility Capacity Expansion Lea County, New Mexico,” August 2013.

**Can your response be posted in ADAMS as publicly available?**

Thank you

Asimios Malliakos

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