

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.

Response:

Similar to the response provided for RAI #3, UUSA has based their analysis of transportation impacts for shipment of wastes on the impact to the driver situated at a location approximately 2 meters from the waste drums. This approach is consistent with that followed during the initial evaluation of the facility prior to construction. We believe the 2013 RADTRAN analysis included 4 shipments of liquid waste and 23 shipments of solidified waste, as stated in the LPES report.

Based on a previous calculation (Framatome ANP 32-2400525) conducted in 2003 to evaluate the impact of waste shipments on the driver and the general public, it was determined that the Transportation Doses from Incident-free Single-Container Shipment was five orders of magnitude greater for the driver than the general public. An excerpt of Table 6.4 from the calculation is presented below. The direct radiation surrounding each container of waste is also several orders of magnitude less than the direct radiation from feed, product, and DUF cylinders. Therefore the shipment of waste is an overall small contributor to the transportation impacts associated with the proposed action. The exposure to the driver will be bounding for the exposure to the general public.

Table 6.4 - Transportation Doses from Incident-free Single-Container Shipment (Excerpt of Full Table from Framatome ANP Calc No. 32-2400525-00)

Facility	Description	2m Dose Rate on Package Side (mrem/hr)	Cab Dose Rate (mrem/hr)	Average Pop. Density along Route (people/mile)	Distance (km)	Dose to the General Public (person-rem)	Dose to 10 Onlookers (person-rem)	Dose to 2 Drivers (person-rem)	Dose to 2 Garage Personnel (person-rem)
Barnwell Disposal Site Barnwell, SC	Waste (Drum)	1.286E-03	1.286E-03	88.8	2,319	9.53E-10	6.43E-07	9.6 1 E-05	4.29E-07
Envirocare of Utah Clive, UT	Waste (Drum)	1.286E-03	1.286E-03	24.0	1,635	1.82E-10	6.43E-07	6.78E-05	4.29E-07
GTS Duratek Oak Ridge, TN	Waste (Drum)	1.286E-03	1.286E-03	91.7	1,992	8.46E-10	6.43E-07	8.26E-05	4.29E-07