

From: Timothy Johnson
To: Lee Cheney
Date: 5/22/06 10:01AM
Subject: My reply to NRC re: LES GAS killing people in Eunice

There are about 2.5 kilograms of uranium hexafluoride gas present in a depleted uranium storage cylinder at 70 F. This is because the uranium hexafluoride solid and gaseous phases are in equilibrium. The increased amount of sublimation that takes place in a 48Y cylinder storage cylinder between 70 F and 160 F cylinder shell temperatures is only about 10 kilograms, which is a small fraction of the total 12,500 kilograms in the cylinder. This increase in gaseous uranium hexafluoride causes a slight increase in pressure. However, as stated in our previous email, the pressure in the cylinder will still remain subatmospheric and, therefore, well below the 400 psig design pressure for the cylinder. Therefore, the principal safety concern is not with a small amount of increased gas, but in determining if the uranium hexafluoride can change phase into a liquid and expand such that the cylinder ruptures. This concern is addressed during the process of filling the cylinder. The cylinders are filled to a weight limit established in accordance with American National Standards Institute N14.1, "American National Standard for Nuclear Materials - Uranium Hexafluoride - Packaging for Transport," such that if the temperature was to rise to 250 F and all the uranium hexafluoride were to become liquid, the cylinder would not rupture.

>>> "Lee Cheney" <lee_cheney@leaco.net> 04/21/06 5:52 PM >>>

Dear Tim,

Interesting reply.... My concern wasn't, and isn't, with LES waste that turns to "liquid", it is with LES waste that turns to GAS. You said, "Based on our reviews, the expected maximum temperatures in cylinders in an outdoor, uncovered, storage environment in New Mexico are unlikely to exceed 160F." At about 133F LES waste will turn to GAS... if there is a container breach it's the GAS that could kill the people in Eunice, not the liquid. If you think the inside of those containers will not reach 133F during New Mexico summers you're dreaming.

Lee

----- Original Message -----

From: "Timothy Johnson" <TCJ@nrc.gov>

To: <lee_cheney@leaco.net>

Sent: Friday, April 21, 2006 11:58 AM

Subject: Re: Thank you

This is in response to your email dated March 6, 2006, and your discussion with me at the mandatory hearing where you expressed a concern that depleted uranium cylinders stored outdoors could reach temperatures up to 225F and could cause safety problems. We evaluated this concern and discussed this with LES. The concern is that if the cylinder heats up sufficiently it could cause the uranium hexafluoride to become a liquid and cause the cylinder to rupture.

Based on our reviews, the expected maximum temperatures in cylinders in an outdoor, uncovered, storage environment in New Mexico are unlikely to exceed 160F. At this temperature, the temperatures and pressures inside the cylinder would not be sufficient to cause the uranium hexafluoride to become a liquid. We also evaluated the internal cylinder conditions if the temperature was to reach 225F, and again this temperature would be insufficient to cause the uranium hexafluoride to liquefy.

Note that cylinders are limited to the total amount of uranium hexafluoride by weight that can be placed in the cylinders as required under American

National Standards Institute N14.1, "American National Standard for Nuclear Materials - Uranium Hexafluoride - Packaging for Transport." At the cylinder limits, there is sufficient volume in the cylinder to allow all the uranium hexafluoride to be a liquid at 250F with a 5 percent free space. Therefore, outdoor storage conditions will not cause the uranium hexafluoride to become a liquid and cause the cylinder to rupture.

>>> "Lee Cheney" <lee_cheney@leaco.net> 03/06/06 10:11 PM >>>
Dear Timothy,

Thank you again for letting me bend your ear at the NRC-LES hearing tonight. I would appreciate it if you would go to www.CNIC.ws and on the first page read the paragraph about the New Mexico heat problem that will cause the UBC's to reach temperatures that will cause the DUF6 to turn to gas in the summer. I was going to say a few words to the ASLB tonight but my back was killing me and I had to go home early so I would appreciate it if there is any way you can ask the ASLB to refuse to issue LES an operating license unless this UBC heat problem is adequately dealt with by LES to the satisfaction of the NRC. Thank you for being here. Have a good and safe trip back home.
Lee

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Version: 7.1.385 / Virus Database: 268.4.5/321 - Release Date: 4/21/06

Mail Envelope Properties (4471C449.F0C : 10 : 35166)

Subject: My reply to NRC re: LES GAS killing people in Eunice
Creation Date: 5/22/06 10:01AM
From: Timothy Johnson

Created By: TCJ@nrc.gov

Recipients

leaco.net

lee_cheney (Lee Cheney)

Post Office**Route**

leaco.net

Files	Size	Date & Time
MESSAGE	7691	05/22/06 10:01AM

Options

Expiration Date: None
Priority: Standard
Reply Requested: No
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Concealed Subject: No
Security: Standard