

off-site

06 August 1996

Oak Ridge National Laboratory  
Mail Stop 6102, Building 4500-S  
P.O. Box 2008  
Oak Ridge, TN 37831-6102

Attention: Ms. Pat A. Scofield  
Research Staff Member  
Exposure Assessment Group

Reference: Your FAXed letter to Tony Carpenito dated 1 August 96, and  
his return Fax to you dated 8/1/96.

Subject: Dose Equivalent Estimates Arising From Recycle/Re-melt of DU Counterweights.

Dear Ms. Scofield:

This mailing is intended to provide some supplemental information requested by you in our telephone conversation last week;

As described in Tony Carpenito's return FAX, NMI's records and discussions with the Foundry department Foreman have indicated that we have not used recycled counterweight material in any of our production melts in more than a year (12 to 18 months). Prior to that time, DU counterweights made up less than 1% of our total melts.

As an accepted tool in demonstrating compliance with the emission and off-site dose (equivalent) requirements of the EPAs NESHAPs and the NRC (Title 10 CFR Part 20), NMI has used the EPA's COMPLY code, and CAP88-PC program to conservatively assess the potential dose to a theoretical member of the public. In general, these estimates are equal to or less than 1 mrem per year.

Because of the relatively restricted use of site-specific data, and the generally greater level of conservatism inherent in COMPLY, I believe that the CAP88-PC output, again using conservative exposure, solubility, and particle size distribution assumptions, is probably more reasonably representative. In the short table below, I have listed the results of this application by calendar year. Prior to 1993, NESHAPs did not require development of this data, and so earlier data has not been compiled in this format (although facility emissions were monitored, the then-applicable NRC limit of 100 mrem was so high as to not require more rigorous evaluation of that data). If your interest extends through earlier years, I suggest use of 0.01 mrem/yr as a conservative estimate of the dose equivalent to a theoretical maximally-exposed off-site receptor, arising from counterweight material recycle.

<u>Calendar Year</u>	<u>Calculated Gross Off-site Dose Equivalent</u>	<u>Estimated Counterweight Recycle Off-site Dose Equivalent</u>
1995	0.26 mrem/yr	<< 0.003 mrem/yr*
1994	0.69 mrem/yr	< 0.007 mrem/yr
1993	0.72 mrem/yr	< 0.007 mrem/yr

\* For calendar year 1995, little or no counterweight recycle occurred, so using 1% to estimate the projected off-site dose equivalent to a theoretical receptor is probably only useful as a gross upper bound.

DU counterweights are produced using DU metal with relatively high impurity values. Additionally, the weights are plated with nickel, cadmium, and sometimes chromium. Direct remelting of the weights into shielding products has not been successful, and the costs associated with stripping the weights for recycling makes their use cost prohibitive. Therefore, NMI now routinely disposes of the weights at licensed facilities.

NMI appreciates your interest; we look forward to hearing from you regarding the data and its significance. If you have any questions or comments, please direct them to me; I can be reached during normal office hours at (508)369-5410 x 348, or by FAX at (508)287-0478.

Sincerely,

Eric B. Andersen  
Senior Health Physicist

cc: F. J. Vumbaco  
A. Carpenito

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