

May 15, 2001  
TN 01-0528

Mr. Claude Wiblin  
We-Manage, Inc.  
320 E. Forest Trail  
Brownsville, MD 21032  
November 10, 1998

Subject: Comments on Draft NUREG-1717

Dear Mr. Wiblin,

I was pleased to receive your call last Friday, and I am encouraged that my comments on NUREG-1717 will receive knowledgeable and sympathetic address. When I submitted my initial comments on 13 March 2000, my idea was to focus on the substantive issues and to avoid the distraction of including corrections of lesser importance. My original intent was to follow up with a short note detailing the latter and following more closely the structure of the draft. I will include them here.

Based on our conversation, I am enclosing copies of the following documents:

Report: Repair and Refurbishment of Aircraft Counterweights (Starmet CMI to Robins Air Force Base) (Dec. 1997/Jan. 1998)

Federal Register extract: 34 FR 14067 (9/5/1968) These Statements of Consideration explain that the revisions to 40.13 "eliminate the provision in the exemption for uranium in counterweights that the plating or other covering not be removed or penetrated..."

NMED Event Details for Item No. 990519

NMED Event Details for Item No. 940856

NMED Event Details for Item No. 970387

Daily Events Report: Event No. 37781

Boeing Company Request Concerning Depleted Uranium Counterweights

Concord Journal article "Starmet Corp. to sell South Carolina facility", 5/11/01

My letter of April 4, 2000 Subject: Docket No. PRM-40-28

I believe that the NRC would be remiss if it not take advantage of the fact that there is contamination and exposure information concerning aircraft counterweights available from the Air Force. The main point of contact for the C-141 refurbishment work was Dodd Hamlin, C-141 Systems Engineer at Warner Robins Air Force Base. The Radiological Safety Officer would also be a

P.O. BOX 4488 • OAK RIDGE, TN • 37831-4488  
PHONE: 865.483.1551 • FAX: 865.483.1530

(478) 926-2868

X 3007

potentially useful source of information about the contamination and exposure potential of depleted uranium counterweights.

3.17.1 Introduction. The first paragraph summarizing the development of the 40.13(c)(5) exemption is incomplete. It states that, "The present exemption... was established on December 29, 1962 (27 FR 12914). Actually a modification of importance to this assessment was published on September 5, 1968 (34 FR 14067) (copy attached). Until this change took effect, one of the conditions required for the exemption of a counterweight was "that the plating or other covering not be removed or penetrated..." The reason for this relief can be readily inferred. Over time, the plating that inhibits surface corrosion of counterweights is worn away, degraded, or compromised. Corroded counterweights must be removed and sent to an FAA licensed repair station for refurbishment. Once they have been documented as airworthy, they can be reinstalled. If the counterweights lost their exemption any time they required refinishing, the users would be required to obtain some kind of a license to retain them and send them off for repair. Eventually, every user would require a license, and the intent of the original exemption would be frustrated. The notice justifies the modification with the following statements: "The current limitation in the exemption to counterweights on which the plating or covering has not been removed or penetrated is no longer necessary, since (1) experience to date with thousands of counterweights in use over the past several years indicates that present manufacturing techniques provide adequate protection against oxidation of uranium, and (2) activities which would involve processing of uranium are expressly prohibited, except for processes which do not involve exposure hazards significantly different from those involved in handling an undamaged counterweight." The first contention is based on little more than wishful thinking. The Boeing Company, in its 1983 correspondence to NRC, explained that, "At each major aircraft overhaul (about 4 to 5 years), it was anticipated that over 20% of these weights would be corroded to where they required reprocessing." The fact that no significant refurbishing had been required over the first "several years" only means that there was inadequate experience to draw any meaningful conclusions - - and did not constitute a valid basis for evaluating "manufacturing techniques." The second contention simply reflects a complete lack of understanding of the refurbishing process, which involves the removal of residual plating by abrasive blasting, creating airborne particulate uranium oxides. As for the statement that, "The only published information on radiological impacts on the public from use of uranium counterweights in aircraft, rockets, projectiles, and missiles that could be found was in the first Federal Register notice from 1961 (26 FR 7143)," see the "Report: Repair and Refurbishment of Aircraft Counterweights" submitted by Starmet CMI to Robins Air Force Base and reported exposures of Air Force maintenance personnel from depleted uranium from counterweights

in the NMED database (Item Nos. 940856, 970387 & 990519). See "Use of Depleted Uranium Counterweights" in my letter on PRM-40-28 for an analysis of the Air Force personnel exposures.

**3.17.2 Description of Exempt Items.** The third sentence asserts that counterweights are used to "provide air resistance." Increasing air resistance is not usually an aircraft design objective. Besides, the counterweights are located internally to the overall structure, in a cavity, where they are shielded from the air stream. This sentence should read, "They are used to facilitate hydraulic adjustments during flight."

**3.17.2.2 Other Aircraft.** "Jet Star" is actually spelled "Jetstar".

**3.17.2.4 Production Information.** This paragraph states that, "Nuclear Metals, Inc. is the only refurbishing facility in the United States." Nuclear Metals reorganized effective October 1, 1997 and changed its name to Starmet. It had previously moved its counterweight refurbishing operations to its subsidiary Carolina Metals, Inc. in Barnwell, SC. The new name for this division is Starmet CMI. On 2 May 2001, Starmet stockholders approved a commitment to sell their South Carolina facility by 30 June 2001. By the time this draft is published as a final NUREG, there will most likely be no refurbishing facility for depleted uranium counterweights in the United States. Suggest this sentence be stricken or changed to reflect actual developments. (See attached news article.)

**3.17.4.1 Transport and Distribution.** Nuclear Metals, Inc. was located in Concord (not "Copland") MA.

**3.17.4.3.2 Recycle Operations.** "It is not believed that any DU counterweights have entered the recycle stream and all estimated doses are hypothetical." This is a bad assumption. A search of the NMED database reveals at least 19 instances of counterweights (or probable counterweights) being detected at scrap yards. Of course, only a fraction of the inbound counterweights will be detected, and only a fraction of the detections will be reported. That counterweights would be directed to scrap yards is a reasonable expectation because they are associated with relatively high value aluminum scrap. A recent documented instance of this disposal was reported on NRC's Daily Events Report for February 27, 2001. Shipments of aluminum scrap to a foundry in Ohio contained depleted uranium counterweights. Before they were detected by portal monitors, about 118,000 lbs. of aluminum ingots and de-ox cones were contaminated (see Event No. 37781 attached). Last year

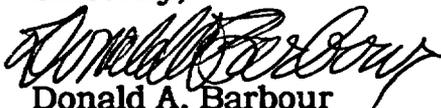
a depleted uranium counterweight from a U.S. Navy A-7 Corsair attack plane was located in a foundry in Japan and was believed to have been inadvertently included in a scrap shipment.

**3.17.4.4.1 Aircraft Accident Involving Fire.** Many aircraft crashes result in fires. Why rely on hypothetical crash scenarios when real data exist? On October 4, 1992, a Boeing 474 operated by El Al crashed near Amsterdam. The depleted uranium counterweights were damaged, and there was widespread public concern about radiological exposures. There was a parliamentary inquiry and report. A Korean Airlines 747 crashed near London in December 1999. There have been others, both commercial and military. I suggest that the real world effects of airplane crashes involving DU be surveyed.

**3.17.4.4.2 Loss of Depleted Uranium Counterweights.** "...it is assumed that no one would unknowingly use a counterweight for personal requirements." A common personnel use of counterweights is to cut one and use it for a bucking bar to set rivets. The reviewer also has knowledge of diversion of counterweights to make racing car trim weights and tractor ballast.

Thanks for your consideration of these supplementary comments. Please let me know if I can provide you with any additional information.

Sincerely,



Donald A. Barbour  
Manager, Aviation Programs

Enclosures a/s

cc. Catherine Mattsen