PHILOTECHNICS

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OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

Secretary, U.S. Nuclear Regulatory Commission
ATTN: Rulemakings and Adjudications Staff
Washington, D.C. 20555

Reference: Docket No. PRM-40-28

Subject: Comments on Proposed Rulemaking

Dear Sirs,

I am submitting these supplementary comments on the proposed rulemaking. I hope you will find them worthy of your consideration even though the period for mandatory address has expired.

Any revision of 10 CFR 40.13(c)(5) should incorporate the following changes to the description of the exempted material and to the operations on the counterweights which users are allowed to perform by 40.13(c)(5)(iv).

10 CFR 40.13(c)(5) extends the exemption of 40.13(c) to "Uranium contained in counterweights installed in aircraft, rockets, projectiles, and missiles....." As NUREG-1717 observes, "The exemption does not specify the type of uranium that can be used; however, depleted uranium (DU) appears to be the only type of uranium that has been used in counterweights." (One would hope.) (Reference: NUREG-1717, ¶3.17.2, p. 3-247) Even though 40.13(c)5)(ii) requires the counterweights to be impressed with the legend "DEPLETED URANIUM", the obvious intent of the exemption can be clarified by inserting the word "depleted" so that 40.13(c)(5) reads "Depleted uranium contained in counterweights installed in aircraft, rockets, projectiles, and missiles....."

10 CFR 40.13(c)(5)(iv) provides that "The exemption contained in this paragraph shall not be deemed to authorize the chemical, physical, or metallurgical treatment or processing of any such counterweights other than repair or restoration of any plating or other covering." This paragraph appears to be based upon a lack of understanding of the maintenance operations that are actually performed on aircraft counterweights. Depleted uranium aircraft counterweights are first plated and are subsequently painted. In some cases, an aluminum shield is also added to encase the part. The reason for the application of these barriers is to prevent the contact of oxygen with the

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Template = SECY-067

SECY-02

depleted uranium surface to retard corrosion of the counterweight. When an aluminum shield is present, it can be removed (destructively) to expose the counterweight for surface restoration. It is important to understand that there is a major difference between painting a counterweight and repairing its plating. Painting of counterweights by users is properly permitted. Airworthy counterweights are normally painted to conform to carriers liveries and aircraft color schemes. Counterweights that have developed exposed surface areas are also painted, as a temporary measure, to fix radioactive contamination and to retard further corrosion until the plating can be refurbished. The inclosed extract from the Lockheed Martin L-1011 Structural Repair Manual provides such temporary painting instructions for maintenance personnel. (Manufacturers of the Boeing 747 Classic and the McDonnell Douglas DC-10 provide similar instructions.)

Restoration of the plating is entirely another matter. The entire depleted uranium surface must be exposed and cleaned. Plating restoration cannot be performed on locally exposed areas of the counterweight surface. The enclosed brochure from a commercial company licensed by the Federal Aviation Administration as a Repair Station for depleted uranium aircraft counterweight refurbishment illustrates the plating restoration process by a series of photographs. The incoming counterweight is first stripped of all remaining plating and paint by abrasive blasting, cleaned by dipping in acid, and then completely replated. Restoring the plating thus includes a combination of chemical, physical and metallurgical treatments that generate spend abrasive blasting grit contaminated with depleted uranium oxide and metal particulates, contaminated acid solutions and sludges, and (over time) contaminated plating wastes. It is difficult to believe that NRC would actually approve of these processes being performed by an organization that was not a specific licensee in spite of the current wording of 40.13(c)(5)(iv). While no instances of non-licensees performing plating restoration operations are known, the wording of this subparagraph should clearly be changed to restrict permitted treatments to removal and installation of aluminum shields and to painting, either for cosmetic purposes or to temporarily fix surface contamination until the part can be refurbished by a licensed facility. Suggested wording for 40.13(c)(5)(iv) is "The exemption contained in this paragraph shall not be deemed to authorize the chemical, physical, or metallurgical treatment or processing of any such counterweights other than the removal or installation of aluminum shields (if applicable) or the application of paint."

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Your consideration of these comments is appreciated. If you have any questions about the material presented above, feel free to contact me for additional information.

Sincerely,

Donald A. Barbour
Manager, Aviation Programs

Inclosures a/s

cc: Gary Comfort, NMSS
Catherine Mattsen, NMSS

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HEALTH & SAFETY FACTS

✓ Depleted uranium (DU) and tungsten are both toxic heavy metals but are isolated by protective counterweight platings and coatings.

✓ Well maintained counterweights are completely safe to store and handle.

✓ Refurbishment insures the integrity of the protective coatings and prevents the release of toxic particles through corrosion.

✓ DU in aircraft counterweights is determined by the NRC to be an "unimportant quantity" and is exempted from regulation. Unauthorized alteration by users is prohibited.

✓ DOT establishes standards for packaging, labeling and shipping DU in 49 CFR. (Shipping guidance available on request.)

STARMET
Metallurgical Excellence

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Concord, MA 01742
Tel: (978) 369-5410
Fax: (978) 369-4045
Corporate Headquarters

STARMET
Metallurgical Excellence

Starmet CMI
(Repair Station)
P.O. Box 1366, Hwy. 80 (Mailing)
365 Metal Drive (Shipping)
Barnwell, SC 29812
Tel: (803) 259-2321
Fax: (803) 259-3622
General Inquiries & Administration
Shipping Instructions
Part Number Identification

STARMET
Metallurgical Excellence

Starmet CMI
681 Emory Valley Road, Suite B
Oak Ridge, TN 37830
Tel: (423) 220-8300
Fax: (423) 220-8301
Contracts and technical assistance

COU
REF

For the:

Starmet CMI operates the only FAA licensed repair station in the U.S. for refurbishment of depleted uranium (DU) and tungsten aircraft counterweights.

FAA License No. M61R928J
Joint Aviation Authorities Approved

South Carolina Radioactive Material License No. 322

WE SIMPLIFY HANDLING AND USE

- Quick turnaround:
expedited processing on request

- Minimize contact handling:
batch ship option - we identify parts on receipt

- Volume discounts for quantity shipments

- Reduce inventories:
CMI offers storage with overnight delivery to meet your repair schedules

- Replacement of irreparable parts from float inventory at no extra charge (subject to availability)

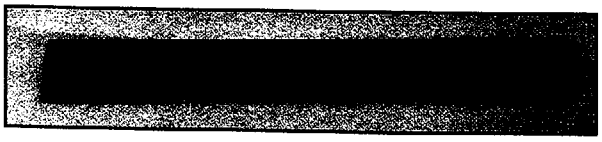
- Technical and shipping assistance

Corroded part as received

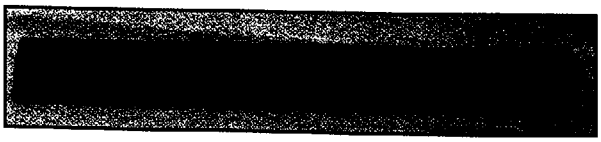
Abrasive blasted and acid dipped

Nickel plated

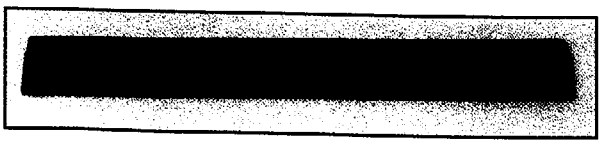
Cadmium plated



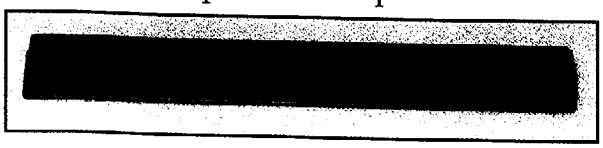
Chromate flashed



Dents fared and sanded



Part primed and painted



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5. Depleted Uranium Balance Weights

A. General

The balance weights installed on the elevators and rudder are made from depleted uranium. Each elevator has a series of incremental weights while the rudder has a large counterweight at its tip.

The weights are cast to shape, machined, drilled and cadmium plated at a facility licensed by the United States Nuclear Regulatory Commission (NRC). Any of the foregoing operations can only be performed in such a licensed facility.

The weights are coated with a phosphate ester resistant epoxy primer at Lockheed prior to installation. The latest configuration has an additional white high gloss polyurethane enamel top coat.

Handling of undamaged depleted uranium counterbalance weights does not require use of protective gloves or clothing.

WARNING:

- DEPLETED URANIUM IS A HIGH DENSITY MATERIAL WITH A NEGLIGIBLE AMOUNT OF RESIDUAL RADIATION. HOWEVER, GRINDING, DRILLING, SANDING, FILING, OR MACHINING OF ANY DEPLETED URANIUM SURFACE BY ANYONE NOT HOLDING AN NRC LICENSE IS PROHIBITED BY GOVERNMENT REGULATION.

- DEPLETED URANIUM OXIDE, YELLOW AND BLACK CORROSION PARTICLES, IS TOXIC.

- ALTERATION OF DEPLETED URANIUM MATERIAL BY MECHANICAL METHODS IS PROHIBITED BECAUSE FINELY DIVIDED URANIUM PARTICLES SUCH AS MIGHT CONSEQUENTLY BE PRODUCED AND INGESTED POSE THE SAME HEALTH HAZARD COMMON TO ALL HEAVY METALS (I.E. LEAD AND CADMIUM).

- HANDLING OF OXIDIZED COUNTERBALANCE WEIGHTS SHOULD BE HELD TO A MINIMUM TO PREVENT BROADCASTING OXIDE TO SURROUNDING PERSONNEL AND WORK AREAS.

- EATING AND SMOKING IN IMMEDIATE WORK AREA IS FORBIDDEN WHILE PERFORMING REPAIR WORK.

- PERSONNEL PERFORMING WORK ON OXIDIZED DEPLETED URANIUM WEIGHTS MUST WEAR DISPOSABLE PROTECTIVE GLOVES AND CLOTHES.

- DISPOSE OF ALL POTENTIALLY CONTAMINATED PROTECTIVE CLOTHING PER LOCAL STATE OR FEDERAL REGULATIONS REGARDING RADIOACTIVE CONTAMINATED MATERIALS.

- PERSONNAL HANDLING OXIDIXED DEPLETED URANIUM MUST THOROUGHLY WASH PRIOR TO EATING, SMOKING, ETC.

B. Repair of Depleted Uranium Counterbalances

Each counterbalance weight is a mass of depleted uranium with an exterior thin cadmium plating, and covered with chromate inhibited epoxy primer. A white corrosion residue, known as cadmium oxide can form over the cadmium plating surface. Repair as follows:

(1) Remove loose particles from counterbalance surface with clean lint-free cloths and LCM32-1086A petroleum base cleaner.

(2) Wipe surface dry with clean, lint-free cloths. Do not allow cleaner to air dry.

(3) Apply LCM37-1035A phosphate ester resistant epoxy primer coating to unpainted surfaces in accordance with Maintenance Manual 20-51-09. Apply C-37-1348 white high-gloss polyurethane enamel coating (LAC Color No. 1078A) to primer coated surface in accordance with Maintenance Manual 20-51-10.

CAUTION: REPAIR COUNTERWEIGHTS DISPLAYING YELLOW AND BLACK CORROSION PRODUCTS IN ACCORDANCE WITH PARAGRAPH C OR D.

(4) Solvent clean, epoxy prime and polyurethane topcoat scratch or gouge damages where black corrosion is not evident.

NOTE: A corrosion preventive coating such as LPS-3 (LPS Research Laboratories Inc., 2050 Cotner Ave., Los Angeles, CA 90025, or equivalent) is recommended for additional protection. A periodic reapplication will provide optimum protection.

C. Interim Repair of Depleted Uranium Counterweights Displaying Yellow and Black Corrosion Products Between the Weights and/or at the Attaching Bolts

The weights must be removed from the aircraft.

NOTE: It is permissible to press out bolts which are locked in the counterweight due to corrosion.

When it is not possible to replace depleted uranium counterweights that exhibit black and yellow corrosion products, repair as follows until the affected balance weight can be replaced:

CAUTION: DO NOT DIP WIPER CLOTH INTO SOLVENT SINCE OVER SATURATION MAY CAUSE DRIPPING OF CONTAMINATED SOLVENT.

(1) Solvent clean the damaged/corroded area with lint free cloths and 1,1,1 Trichloroethane (MIL-T-81533) or equivalent, taking care to remove all loose corrosion products and dirt. A solidly attached thin black oxide film need not be removed. Dispose of contaminated cloths to prevent exposure to toxic uranium oxide.

(2) Spray or brush two coats of FR primer, LCM 37-1035, on cleaned areas.

NOTE: For the most durable interim repair omit step (3) and proceed to step (4), then encapsulate entire assembled stack of weights with brush coat of sealant, PR-1422 Class A-2, or equivalent.

(3) Spray or brush one coat of white topcoat, C-37-1348, on primed areas.

NOTE: A color other than white may be applied to an interim repair to denote that counterbalance weight should be replaced at earliest convenience.

(4) Assemble weights using faying surface sealant, PR-1422 Class A-2, or equivalent, on all surfaces in contact with support structure or other weights. Install all fasteners through weights wet with sealant, PR-1422 Class A-2, or equivalent.

NOTE: For additional protection of assembled weights with topcoat per Step (3) an additional topcoat may be applied and/or a corrosion preventive coating of LPS-3.

(5) Dispose of all rags, gloves, etc., that come in contact with the uranium oxide, and carefully wash hands.

CAUTION:
- WEIGHT ASSEMBLIES REPAIRED WITH THESE PROCEDURES SHOULD BE INSPECTED AT NEXT "C" CHECK, AND AGAIN AFTER 5000 ADDITIONAL FLIGHT HOURS. IF THERE ARE NO INDICATIONS OF FURTHER DEGRADATION OR LOOSENESS, THE WEIGHTS MAY BE CONSIDERED SERVICEABLE AS LONG AS NORMAL INSPECTION FINDS NO CAUSE FOR REJECTION.
- THESE PROCEDURES SHOULD BE CONSIDERED ONLY AS INTERIM METHODS OF PROTECTION UNTIL THE COUNTERWEIGHTS CAN BE REMOVED AND REPLACED.

Depleted uranium balance weights that are either damaged or surplus should be wrapped in metal foil and packaged and shipped in accordance with Code of Federal Regulations Title 49 - Transportation Chapter 1 Parts 173.389 through 173.393. Ship to the N. L. Industries, Bearings Division Albany Plant, 1130 Central Avenue, New York 12205. The shipping container shall be tightly-lidded and labeled in accordance with ICC regulations.

D. Interim Repair of Depleted Uranium Counterweight Assemblies Displaying Yellow and Black Corrosion Products, But Not Between the Weights and/or at the Attaching Bolts.

CAUTION: DO NOT DIP WIPER CLOTH INTO SOLVENT SINCE OVER SATURATION MAY CAUSE DRIPPING OF CONTAMINATED SOLVENT.

(1) Solvent clean the damaged/corroded area in place with lint free cloths and 1,1,1 Trichloroethane (MIL-T-81533) or equivalent, taking care to remove all loose corrosion products and dirt. A solidly attached thin black oxide film need not be removed. Dispose of

contaminated cloths to prevent exposure to toxic uranium oxide.

(2) Spray or brush two coats of FR primer, LCM 37-1035, on cleaned areas.

(3) Encapsulate entire weight assembly with brush coat of sealant, PR-1422 Class A-2, or equivalent.

(4) Dispose of all rags, gloves, etc., that come in contact with the uranium oxide, and carefully wash hands.

CAUTION:

- WEIGHT ASSEMBLIES REPAIRED WITH THESE PROCEDURES SHOULD BE INSPECTED AT NEXT "C" CHECK, AND AGAIN AFTER 500 ADDITIONAL FLIGHT HOURS. IF THERE ARE NO INDICATIONS OF FURTHER DEGRADATION OR LOOSENESS, THE WEIGHTS MAY BE CONSIDERED SERVICEABLE AS LONG AS NORMAL INSPECTION FINDS NO CAUSE FOR REJECTION.

- THESE PROCEDURES SHOULD BE CONSIDERED ONLY AS INTERIM METHODS OF PROTECTION UNTIL THE COUNTERWEIGHTS CAN BE REMOVED AND REPLACED.

E. Materials

The following materials are required to repair depleted uranium counterbalance weights:

(1) Phosphate ester resistant epoxy primer coating, LCM37-1035A (Deft Inc., Chemical Coatings Div., 17451 Von Karman, Irvine, CA., 92664, Part No. 02-GN-42, or equivalent).

(2) Petroleum base cleaner, LCM32-1086A (TEC Manufacturing Co., 524 South Monterey Pass Road, Monterey Park, CA., 91754, Part No. 934-66, or equivalent).

(3) White high gloss polyurethane coating, thinner and catalyst, C-37-1348 (Sterling Lacquer Mfg. Co., 3150 Brannon Ave., St. Louis, MO., 63139, Part No. U1315 Thinner, U1635 White High Gloss Polyurethane Coating, U1636 Catalyst, or equivalent).

(4) Clean disposable lint-free cloths.

(5) Disposable rubber or polyethylene gloves. Disposable plastic laboratory gloves are acceptable.

(6) Disposable outer clothing.

(7) Disposable approved container (1 US quart capacity).

(8) Sealant, PR1422 Class A-2 (Products Research Corp., Burbank, California, or equivalent).