

**NUCLEAR REGULATORY COMMISSION**

**10 CFR Part 40**

**[Docket No. PRM-40-28]**

**Donald A. Barbour, Philotechnics; Denial of Petition for Rulemaking**

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Denial of petition for rulemaking.

**SUMMARY:** The Nuclear Regulatory Commission (NRC) is denying a petition for rulemaking (PRM-40-28) submitted by Mr. Donald A. Barbour, Philotechnics. The petitioner requested that the NRC amend its regulations governing the domestic licensing of source material to provide clarity regarding the effective control of depleted uranium aircraft counterweights held under the exemption in 10 CFR 40.13(c)(5). The petitioner believes that this amendment should address a number of issues concerning the exemption, storage, and disposal of these devices.

**ADDRESSES:** Copies of the petition for rulemaking, the public comments received, and NRC's letter to the petitioner may be examined at the NRC Public Document Room, Public File Area Room O1F21, 11555 Rockville Pike, Rockville, MD. These documents also may be viewed and downloaded electronically via the rulemaking website at <http://ruleforum.inl.gov>. Address

questions about our rulemaking website to Carol Gallagher; (301) 415-5905; email [cag@nrc.gov](mailto:cag@nrc.gov).

The NRC maintains an Agencywide Document Access and Management System (ADAMS), which provides text and image files of NRC's public documents. These documents may be accessed through the NRC's Public Electronic Reading Room on the Internet at <http://www.nrc.gov/reading-rm/adams.html>. If you do not have access to ADAMS or if there are problems in accessing the documents located in ADAMS, contact the NRC Public Document Room (PDR) Reference staff at 1-800-397-4209, 301-415-4737, or by email to [pdr@nrc.gov](mailto:pdr@nrc.gov).

**FOR FURTHER INFORMATION CONTACT:** Gary C. Comfort, Jr., Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, telephone (301) 415-8106, e-mail [gcc1@nrc.gov](mailto:gcc1@nrc.gov).

**SUPPLEMENTARY INFORMATION:**

The Petition

On January 21, 2000 (65 FR 3394), the NRC published a notice of receipt of a petition for rulemaking filed by Donald A. Barbour, Philotechnics. The petitioner requested that the NRC amend its regulations to provide additional rules for the effective control of depleted uranium aircraft counterweights. The petitioner believes that this regulatory clarification should address a number of issues concerning the exemption, storage, and disposal of these devices.

The petitioner believes that the amendment should clarify at what point and under what circumstances, the licensing exemption in 10 CFR 40.13(c)(5) is no longer applicable to these devices; the length of time counterweights for which there is no demand or use may be stored

as exempt material; the regulations that apply to aircraft that have been removed from service which have depleted uranium counterweights that can be transferred to unlicensed parts dealers and salvage operators; and, the need for radiological surveillance of long-term aircraft storage parks and facilities where aircraft with depleted uranium counterweights are regularly stored for protracted periods under unmonitored conditions. Additionally, the petitioner believes that an immediate notification is necessary to advise those organizations that currently possess depleted uranium aircraft counterweights of their responsibilities to the public. The petitioner asserts that the aviation community is tightly regulated and law abiding and that there are extremely effective channels of communication between the industry and its primary regulator, the Federal Aviation Administration (FAA). The petitioner suggests that the NRC take advantage of this situation by encouraging the FAA to issue an appropriate advisory bulletin that informs the aviation community of its responsibilities for managing depleted uranium counterweights. The petitioner provided a summary of key points which he believes should be considered for incorporation in such a notification.

#### Public Comments on the Petition

The notice of receipt of the petition for rulemaking invited interested persons to submit comments. The comment period closed on April 5, 2000. The NRC received two comment letters from individuals (one of which was from the petitioner himself). Both comment letters supported the petition. The petitioner provided supplementary information in support of the petition including his interpretation of the regulatory background and more detailed descriptions of how counterweights are used in industry. Additionally, the petitioner's comments referenced data related to the potential mishandling of the counterweights. The other commenter provided

an example of the potential costs associated with mishandling the counterweights and suggested that distribution requirements should be added to the regulation. By letter dated February 14, 2001, Mr. Barbour provided another supplement to his petition. In this supplement, the petitioner suggested additional rulemaking to (1) specify that only counterweights manufactured from depleted uranium, and not natural uranium, should be covered under the exemption; and (2) clarify the scope of activities allowed to repair or restore counterweight platings or coverings under 10 CFR 40.13(c)(5)(iv).

### Reasons for Denial

The NRC is denying the petition because it has determined that current NRC regulations provide adequate clarity and effectively address the petitioner's concerns. The NRC believes that clarification of the regulations for aircraft counterweights, as originally requested by the petitioner, can be most efficiently accomplished through the issuance of guidance rather than through rulemaking.

The NRC issued a regulatory information summary, RIS-01-013, "10 CFR Part 40 Exemptions For Uranium Contained in Aircraft Counterweights," dated July 20, 2001, in response to the petitioner's request for an immediate notification to advise those organizations that currently possess depleted uranium aircraft counterweights of their regulatory responsibilities. This RIS reminds persons holding depleted uranium counterweights that the counterweights may not be modified under the exemption in 10 CFR 40.13(c)(5). The RIS also provides four acceptable alternatives to transfer the counterweights from the possessor's inventory: (1) return the counterweights to the manufacturer or other facility licensed to process source material; (2) transfer the counterweights to another organization that will also use devices as aircraft counterweights; (3) transfer the counterweights for disposal at a facility

licensed for disposal of radioactive material; or (4) transfer the counterweights to an unlicensed disposal facility that accepts exempt radioactive material.

The petitioner's primary concern in the original petition is that some persons holding the depleted counterweights may inappropriately accumulate and store the counterweights for lengthy periods of time. The petitioner is concerned that this activity will result in unnecessary exposures and that corrosion of the counterweights could occur resulting in additional pathways of exposure and unnecessary contamination. During resolution of the petition, the NRC evaluated (1) the regulatory history of the exemption, including the safety basis; (2) the current use of depleted uranium aircraft counterweights; and (3) the current language in the exemption.

As part of the evaluation of the petition, the NRC reviewed the regulatory history of the exemption for uranium counterweights. In 1960, the original exemption was implemented to only apply to the counterweight while installed in the aircraft and the counterweight impressed with the label reading "Caution - Radioactive Material - Uranium." This 1960 exemption specifically prohibited the chemical, physical, metallurgical or other treatment or processing of the counterweight and the installation or removal of the counterweight. In 1961, the exemption was expanded to include "stored or handled in connection with installation or removal of such counterweights from aircraft." The 1961 amendment also replaced the prohibition against modification of counterweights with the requirement that there be "no removal or penetration of the plating" on the counterweight. In 1969, the exemption was further amended, primarily to change the labeling requirement from "Caution - Radioactive Material - Uranium" to "Depleted Uranium." Also, as part of the 1969 amendment, the specific requirement that there be "no removal or penetration of the plating" on the counterweight was returned to the prohibition against the chemical, physical, or metallurgical treatment or processing of any such counterweights. Under the 1969 amendment, however, repair or restoration of the plating or

other covering was allowed. Finally, a new requirement was added that each counterweight was to be “durably and legibly labeled or marked” with the identification of the manufacturer and the statement “Unauthorized Alterations Prohibited.”

As part of the evaluation of the regulatory history, the NRC also reviewed the health and safety basis used during the initial implementation of the existing regulation. The original implementation was based upon calculations that indicated that exposures from installation and storage would be less than 10 percent of the limits in 10 CFR Part 20, with most of the exposure impacting the hands of the workers. This conclusion was based on a radiation dose rate at the surface of the counterweight of 1.3 millisievert per hour (mSv/hr) (130 millirems per hour [mrem/hr]) of beta and gamma radiation, of which the gamma component contribute only 0.03 mSv/hr (2.7 mrem/hr). Film badge studies from wrist bands of assembly line personnel verified that the exposures were low, with readings not exceeding 2 mSv (200 mrem) for a two-month period. Based upon reviews of reported incidents in the Nuclear Material Events Database (NMED), the NRC has no reason to believe that individuals are being significantly impacted by the use of aircraft counterweights under the exemption. In NUREG-1717, “Systematic Radiological Assessment of Exemptions for Source and Byproduct Material,” June 2001, a more recent analyses of the exemption was made. This document evaluated the use of counterweights under expected routine uses (including maintenance, flight operations, and storage) and accidents and misuse (including fires and loss of counterweights). The calculated range of exposures for routine operations ranged from a maximum of 0.9 millisievert per year (mSv/yr) (90 millirem per year [mrem/yr]) for maintenance workers to 0.01 mSv/yr (1 mrem/yr) or less for flight crew and warehouse workers (resulting from storage of the counterweights). Potential accident scenarios were calculated to result in exposures of 0.8 mSv/yr (80 mrem/yr) or less to individuals. Because these calculated exposures are within the limits of 10 CFR

Part 20 and are expected to impact a minimal number of individuals, NRC does not believe that the use of uranium counterweights under the current exemption have, or will, result in a significant impact to public health and safety or the environment.

NRC's review has also indicated that depleted uranium counterweights are no longer being introduced into new aircraft. Furthermore, existing depleted uranium counterweights are generally being replaced, when replacement is needed, with counterweights made from tungsten. As a result, the number of depleted uranium counterweights in aircraft is diminishing, thus further reducing the need to revise the regulation because the number of individuals potentially being impacted should also decrease as time passes.

The current language for the exemption in 10 CFR 40.13(c)(5) includes "uranium contained in counterweights installed in aircraft, rockets, projectiles, and missiles, or stored or handled in connection with installation or removal of such counterweights..." Based upon a review of the actual language and the regulatory history, it is clear that the exemption applies to storage only to the extent that the storage is in connection with the planned installation or recent removal from the aircraft. As such, the exemption does not include long-term storage unless it can be clearly shown that such storage is related to an intent to reuse the counterweight and that the counterweight continues to be maintained (i.e., the plating and labeling remain intact).

Similarly, if an aircraft containing depleted uranium counterweights is permanently removed from service, the counterweights should be removed from the former aircraft within a reasonable time period. The definition of an aircraft according to FAA regulations found in 14 CFR 1.1 is "a device that is used or intended to be used for flight in the air." Therefore, if there is no clear intention to continue to use the aircraft for flight, the counterweights would no longer be considered "installed in the aircraft" under the exemption in 10 CFR 40.13(c)(5).

Instead, the counterweight would be considered “stored” on the former aircraft. A counterweight stored on a former aircraft would be held with conditions similar to those conditions that apply to counterweights stored in connection with installation or removal (i.e., long-term storage is not permitted in the former aircraft under the exemption). Should an aircraft be held for possible future use, but not operated for a lengthy period of time, the holder should maintain the aircraft per its FAA maintenance plan, including a periodic inspection of the counterweights to ensure the counterweights remain in proper condition (i.e., the plating and labeling remain intact).

In cases where the counterweights are no longer planned to be used or specifically licensed, the counterweights may still be covered under the exemption during a reasonable period while arrangements are made to properly transfer the counterweights, as long as the counterweights continue to be maintained in proper condition (i.e., the counterweights plating and labeling remain intact). The period of storage allows holders of the counterweights to: (1) determine the future use of the counterweights; (2) decide on appropriate transfer or disposal alternatives if they are no longer to be used; and (3) accumulate several counterweights, within a reasonable time frame, in order to permit a more economical one-time disposal. The exemption also applies to persons temporarily holding the material during transit or if the material is mistakenly sent to a recycle or scrap yard, if the counterweight is properly maintained and transferred within a reasonable period of time using an option listed in RIS-01-013.

The NRC recognizes that some counterweights have been inappropriately sent to scrap yards or recyclers in the past. As the petitioner points out, a review of data in NMED indicates that alarms have been set off at scrap yards. The current exemption does not expressly prohibit transfers to any persons, including scrap yards or recyclers. However, the physical,



metallurgical, or chemical modification of the counterweight is prohibited; therefore, counterweights should not be sent to locations where, in all likelihood, they will be altered or modified. Further, the detection and recovery of counterweights inappropriately sent to scrap yards or recyclers can lead to additional costs for the transferor or recipient. Although the NRC could amend the existing exemption to prohibit transfers to recyclers or scrap yards, the NRC does not believe that such an amendment would significantly reduce the number of these inappropriate transfers. The current regulation requires that counterweights held under this exemption must be labeled "Unauthorized Alterations Prohibited." The NRC believes that persons who have inappropriately transferred counterweights to a recycle or scrap yard, despite the existing labeling on the counterweight, may not be aware of the prohibitions listed in the exemption itself. If a regulation requiring reporting of transfers were implemented, the transfer report might make it easier to identify the transferor so that appropriate action to retrieve the counterweight could be taken. However, the NRC believes that if someone were aware of these reporting requirements, they would likely be cognizant that the transfer to a recycler or a scrap yard is not allowed to begin with.

During resolution of the petition, the NRC considered additional options for rulemaking that might clarify the intent of this regulation and increase control over the use of depleted uranium aircraft counterweights. The NRC considered two types of rulemaking actions: (1) specific licensing and (2) development of a general license specifically applicable to aircraft counterweights. In both cases, the NRC's analysis concluded that any benefits of the action were small compared to the costs and potential impacts associated with the action.

In the case of specific licensing, the costs to the industry and government would involve development and review of applications, and inspection of the new licensees. Because the NRC has no evidence to indicate that public health and safety is significantly impacted under

the current exemption, the NRC believes the costs to implement specific licensing would outweigh the benefits of licensing. Additionally, should counterweights be required to be held under a specific license, disposal alternatives would be reduced to disposal in a low-level waste site which would further increase the regulatory burden and costs related to this action.

Although implementation of a general license would presumably add additional requirements to those found in the existing exemption, the general license would be less burdensome to both holders of the counterweights and the government than a specific license. However, the NRC believes that the costs related to regulatory development and implementation are still believed to outweigh any benefits that might be achieved by the creation of a general license. As with specific licensing, the options for disposal could be limited to low-level waste facilities, thus increasing the regulatory burden and costs for disposal. Although the NRC could develop a general license which allows some of the same disposal/transfer options that are currently available, State regulations and/or the licenses of disposal facilities may preempt the utilization of those options.

The NRC determined that modifying the exemption in 10 CFR 40.13(c)(5) or increasing the regulatory structure (through a new general license or specifically licensing the holders), pursuant to the petitioner's request would add little, if any, additional benefits to the protection of public health and safety. Therefore, the NRC is denying the petitioner's request that the exemption in 10 CFR 40.13(c)(5) be amended to clarify the requirements for storage. However, the NRC believes that most of the petitioner's apparent goals can be better achieved by publication of guidance in the form of a new RIS. The purpose of the guidance would be to clarify the intent of the existing regulations related to storage of depleted uranium aircraft counterweights. The NRC would issue the guidance to known holders of aircraft

counterweights and other agencies and organizations that may have occasion to be interested in counterweights.

In a supplement to this petition (February 2001), the petitioner suggested that 10 CFR 40.13(c)(5) should be amended to clarify that only counterweights manufactured from depleted uranium, and not natural uranium, are covered under the exemption. Currently 10 CFR 40.13(c)(5) begins “Uranium contained in....” The petitioner identifies an apparent inconsistency with the labeling requirements in 10 CFR 40.13(c)(5)(ii) that require the counterweight to be impressed with “Depleted Uranium.” As a result, the petitioner states that the exemption should be more specific to begin the exemption with “Depleted uranium contained in....”

An historical review of this issue indicates that the exemption was originally meant to apply to counterweights manufactured from both natural uranium and depleted uranium. On July 18, 1969 (34 FR 12107), a proposed rule was published in the Federal Register proposing to modify the regulation to require that the counterweights be impressed with the word “Uranium” rather than “Caution - Radioactive Material - Uranium, “ as was required before the 1969 amendment. However, when the final rule was published on September 5, 1969 (34 FR 14067), the regulation required the counterweight to be impressed with the words “Depleted Uranium,” as exists in the current regulation. No explanation for this change was mentioned in the Federal Register notice or Commission papers related to this action. The presumption is that this change was made because most, if not all, aircraft counterweights were and have been made of depleted uranium. The cost of depleted uranium is significantly less than the cost of natural uranium. While the NRC believes that the modification in 1969 effectively limits the exemption to include only depleted uranium counterweights because of the new labeling requirement, the NRC also believes the generic use of the word uranium at the start of the

exemption is still necessary because footnote 2 to 10 CFR 40.13(c)(5) grandfathers counterweights properly labeled and made before June 30, 1969. These counterweights may have included a small number of natural uranium counterweights. The NRC is denying this issue in the petition to allow for the possibility that there are some counterweights still in existence that were made from natural uranium prior to 1969.

The petitioner also requested that the NRC modify its regulations in 10 CFR 40.13(c)(5)(iv) to better delineate the scope of activities allowed as part of the repair or restoration of the plating or covering of an aircraft counterweight. The petitioner is concerned that some activities could impact the depleted uranium within the counterweight. The paragraph in question states “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 any other covering.” The intent of this paragraph is to delineate the scope of activities allowed under the exemption. Although the counterweight may be modified to restore or repair the plating or covering around the counterweight, the depleted uranium within the counterweight cannot be altered at any time under the exemption, even as part of restoration or repair of the plating or other covering. As a result, actions such as chemical baths, sanding of oxidized depleted uranium, or electroplating, each of which would likely result in modification of the depleted uranium counterweight itself, are not permitted under the exemption. However, repainting or placing a new covering over the counterweight (to the extent it does not interact with the depleted uranium in the counterweight) is permitted under the exemption as long as the impressings and other required markings remain legible as required under 10 CFR 40.13(c)(5)(ii) and (iii). The NRC is denying this issue in the petition because it has been determined that the existing regulation conforms with the petitioner’s request and does not require additional clarification through rulemaking. However,

the NRC believes that it may be worthwhile to provide additional guidance related to this aspect of the exemption. Therefore, the NRC plans to address this issue in the proposed RIS by clarifying the intent of the existing regulations related to the restoration and repair of depleted uranium counterweights.

In conclusion, no new information has been provided by the petitioner to support the petitioner's request that additional rulemaking is necessary at this time. Existing NRC regulations provide the basis for reasonable assurance that the common defense and security and public health and safety are adequately protected. Additional rulemaking would impose unnecessary regulatory burden and does not appear to be warranted. However, NRC does believe that some additional clarification, as originally requested by the petitioner, can be provided through guidance. Therefore, the NRC plans to issue a regulatory information summary which will provide clarification of the existing exemption as related to (1) long-term storage of the counterweights and (2) restoration and repair of the counterweights.

For the reasons cited in this document, the NRC denies this petition.

Dated at Rockville, Maryland, this \_\_\_\_\_ day of \_\_\_\_\_, 2004.

For the Nuclear Regulatory Commission.

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Luis A. Reyes,  
Executive Director.

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Dated at Rockville, Maryland, this \_\_\_\_\_ day of \_\_\_\_\_, 2004.

For the Nuclear Regulatory Commission.

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Luis A. Reyes,  
Executive Director.

**ML042380228**

\*see previous concurrence

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