RECORD #206

TITLE: Boeing Company Request Concerning Depleted Uranium Counterweights

FICHE:

Carrier
Procedures

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

APR 14 1983

Mr. William E. Morgan
Chief, Radiation Health Protection
The Boeing Company
P.O. Box 3707 2T-04
Seattle, Washington 98124

Dear Mr. Morgan:

This is in response to your March 18, 1983 letter concerning the Boeing Company's proposal to apply a corrosion preventive compound to depleted uranium counterweights. You request an opinion concerning whether your proposal is exempt from licensing under 10 CFR 40.13(c)(5). The exemption in this paragraph does not authorize "...chemical, physical or metallurgy treatment or process of any substantial counterweight other than repairing or restoration of any plating or any undercovering." Based on our review of the information provided in your letter, your interpretation that the proposed procedure is permissible appears reasonable.

While it is possible for the Boeing Company to proceed with this new proposal under 10 CFR 40.13(c)(5), I should re-emphasize that the original proposal identified in your January 6, 1983 letter to me could have been pursued in licensing action with either the State of Washington or the NRC, as appropriate, if you had wished to use the more effective method of corrosion prevention.

I trust this is responsive to your inquiry.

Sincerely,

Guy H. Cunningham, III
Executive Legal Director

cc: J. Hickey

APR 06 1983

MEMORANDUM FOR: William J. Olmstead
Director and Chief Counsel
Regulations Division, ELD

FROM: John W. N. Hickey, Section Leader
Industrial Section
Material Licensing Branch
Division of Fuel Cycle and Material Safety

SUBJECT: BOEING COMPANY REQUEST CONCERNING DEPLETED URANIUM COUNTERWEIGHTS

As you requested in your memorandum dated April 1, 1983, I have reviewed the new proposal from Boeing concerning application of a corrosion preventative to uranium counterweights. I believe that the new proposal can be interpreted as "chemical treatment or processing" which is prohibited by 10 CFR Section 40.13(c) (5), and therefore this is a judgement call on our part. Since there will be no interaction with or alteration of the counterweights themselves, I conclude that there is a negligible health hazard and therefore we should approve the proposal as exempt.

I note that Boeing seems to be more concerned about avoiding a license than accomplishing their objective. I recommend that you remind them that they still have the option of applying to the State of Washington and/or NRC as appropriate if they wish to pursue the more effective method of corrosion prevention.

Sincerely,

Original Signed By
John W. N. Hickey

John W. N. Hickey, Section Leader
Industrial Section
Material Licensing Branch
Division of Fuel Cycle and
Material Safety

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

APR 1 1983

MEMORANDUM FOR: John Hickey, Section Leader
Industrial Section
Material Licensing Branch
Division of Fuel Cycle and Material Safety

FROM: William J. Olmstead
Director and Chief Counsel
Regulations Division
Office of the Executive Legal Director

SUBJECT: BOEING COMPANY REQUEST CONCERNING DEPLETED URANIUM COUNTERWEIGHTS

As you recall, we contacted you concerning a proposal by the Boeing Company to heat depleted uranium counterweights and coat with Cosmoline. As a result of conversations with you, Guy Cunningham sent a letter dated February 9, 1983 to W.E. Morgan of the Boeing Company informing him that the Boeing proposal would require licensing and could not be done pursuant to the general licensing provisions of 10 CFR 40.13.

As you can see from the attached letter from W. Morgan to Guy Cunningham dated March 18, 1983, Boeing is now proposing a different procedure which it believes is within the provisions of 10 CFR 40.13. We would like your opinion on the current Boeing request by April 15, 1983.

William J. Olmstead

William J. Olmstead
Director and Chief Counsel
Regulations Division
Office of the Executive Legal Director

THE BOEING COMPANY
Radiation Health Protection
P. O. Box 3707 2T-04
Seattle, Washington 98124

March 18, 1983
4-1635-83R-055

Guy H. Cunningham,III
Executive Legal Director
U.S. Nuclear Regulatory Commission
Washington D.C. 20555

Subject: APPLICATION OF CORROSION PREVENTATIVE COMPOUND TO DEPLETED URANIUM COUNTERWEIGHTS

References: a) Letter 4-1635-83R-0004, dated January 6, 1983, W. E. Morgan to G. W. Cunningham, III; Subject, Cosmoline Coating of Exempt Depleted Uranium Counterweights.

b) Letter, G. H. Cunningham, III, to W. E. Morgan, dated February 9, 1983.

Dear Mr. Cunningham:

In response to your decision (Reference b) to the Boeing Company's proposal to heat depleted uranium counterweights and coat with Cosmoline (Reference a), we are submitting a revised proposal for your consideration. As detailed in the attached memo sent to Boeing Radiation Health Protection from 747 Engineering, the procedure involves a brush on coating of a corrosion preventative compound (MIL-C-16173) without any physical treatment (i.e., heating) of the weight. It is our opinion that this procedure is allowable under 10 CFR 40.13 (c) (5).

As it is imperative that corrosion prevention measures be implemented at the earliest possible date, we request a decision on the above procedure as soon as possible. If we do not hear from you within thirty (30) days, we will interpret this as your concurrence that the proposed procedure complies with Part 40. Please contact me on (206) 655-0500 if you need more information.

Sincerely,

WILLIAM E. MORGAN
Chief, Radiation Health Protection

LAP:pb
Attachment
cc: G. Sahaida, Boeing
Nancy Kirner, DSHS, Wash. State.

BOEING

747-ML-189E
March 16, 1983

To: W. E. Morgan 2T-04

cc: M. D. Sloan 76-52
R. P. Thierry 05-06
F. J. Thompson 07-09

Subject: Depleted Uranium Balance Weights - Corrosion Prevention

References: (a) Coordination Sheet STRU-B8561-C82-2903
(b) Coordination Sheet 4-1635-83R-0004
(c) Letter, G. H. Cunningham, III, N.R.C. to W. E. Morgan, The Boeing Company, dated February 9, 1983

In response to Reference (c), while we believe that our proposal to apply hot corrosion preventative compound (MIL-C-11796) to depleted uranium balance weights, does not violate Part 40 of N.R.C. Rules and Regulations, we withdraw the proposal.

However, an improvement in corrosion prevention is required and Engineering now proposes the application of corrosion preventative compound (MIL-C-16173) to depleted uranium balance weights in service. The procedure would be accomplished during operators scheduled maintenance programs.

We will require that the weights be corrosion free and finished per drawing (nickel and cadmium plated plus primer) prior to brush application of MIL-C-16173. Both MIL-C-16173 and weights will be at ambient temperature during application. Attachment holes will be filled with grease (MIL-G-23827) to eliminate water traps and cautionary markings on the weights will be kept legible.

No chemical interaction will occur between the corrosion preventative compound (MIL-C-16173) or the grease (MIL-G-23827) and the plating or paint. These compounds do not contain solvents or other agents which might soften paint.

We believe that this process, while not as effective in preventing corrosion as our previous proposal, will be a significant improvement and does not violate the intentions of Part 40 of N.R.C. Rules and Regulations.

Please convey our intentions to the regulatory agency for their concurrence.

Concurrence: G. Sahaida

M. Leinonen
E-8300 09-42
342-4141

Concurrence: for R. P. Thierry

BJMcC:NP:drv

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

February 9, 1983

Mr. William E. Morgan
Chief, Radiation Health Protection
The Boeing Company
Mail Stop 2T-04
Post Office Box 3707
Seattle, Washington 98124

Dear Mr. Morgan:

In reply to your letter of January 6, 1983, on the subject of cosmoline coating of depleted uranium counterweights, it is the licensing staff's view, in which I concur, that the processing proposed falls within the prohibition of 10 CFR 40.13(c)(5)(iv). That provision states clearly that the exemption from licensing in 10 CFR 40.13(c)(5) for depleted uranium counterweights does not authorize any treatment or processing of the counterweights except for repair or restoration of any existing plating or covering. This has been the regulatory position for over twenty years. See 25 FR 6427. Your proposal involves the processing of the counterweights to add a new coating of a different material. This is not repair or restoration. Your attention is called to the fact the exemption itself applies only to installation and removal of counterweights and related handling and storage.

Based on your description of the process, it is also the consensus that your proposal involves little occupational radiological health risk. See also 26 FR 7143. None-the-less, appropriate licenses are needed for your proposed procedure. If you intend to perform the work in your Washington plant you will need, (1) a license from the State of Washington authorizing the procedure for coating the counterweights in your possession, and (2) a license from the NRC to distribute the counterweights to exempt persons (i.e. the operators of the aircraft) after being coated (see 10 CFR 40.13(c)(5)(i) and 150.15(a)(6)).

If you have any questions regarding the NRC license, please call Mr. John Hickey at (301) 427-4228.

Sincerely yours,

Guy H. Cunningham, III
Executive Legal Director

cc: John Hickey, FCML ✓
G. Wayne Kerr, OSP

THE BOEING COMPANY
MAIL STOP 2T-04
P. O. Box 3707
Seattle, Washington 98124

4-1635-83R-0004

January 6, 1983

GUY H. CUNNINGHAM
Executive Legal Director
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: COSMOLINE COATING OF EXEMPT DEPLETED URANIUM COUNTERWEIGHTS.

Dear Mr. Cunningham:

The Boeing Company proposes to apply an additional protective coating of Cosmoline *(MIL-C-11796)* to undamaged Depleted Uranium Counterweights. Although it is our opinion that this process does not represent a chemical, physical, or metallurgical treatment of these Weights as prohibited by 10 CFR 40.13(5)(iv), we are seeking your concurrence in this regard.

The Counterweights in question are Exempt items manufactured by NL INDUSTRIES of Albany, New York, under NRC Specific License #SMB-179, for use on the Boeing Model 747 Aircraft. Attached you will find a copy of a memo sent to Boeing Radiation Health Protection by 747 Engineering, explaining the need for the additional coating and how it will be accomplished.

We do not believe that this procedure presents a significant radiological hazard to the personnel who will handle the Weights. Only corrosion-free Weights with non-violated platings will be coated. Based on the anticipated average processing of one Shipset *(maximum of 31 Weights)* per month, we estimate that the Whole Body Dose to the individual handling the Weights would be less than five percent of the Annual Non-Occupational Limit. The calculated Maximum Possible Dose to the Hands of an individual treating a Shipset of Weights is in the order of 350 mRad. However, based on past personnel monitoring of Boeing employees who install the Weights, we know that the dose to the Hands will be far less. In a study conducted in 1978, only two measurable readings of 50 mRem and 100 mRem were recorded on Finger Rings issued over an eight month period to thirty-seven employees who regularly handled Depleted Uranium Counterweights. Although we do not anticipate measurable readings, the individuals involved will be monitored with Film Badges and Finger Rings.

We request your agreement that the above procedure is within the requirements of Part 40 as soon as possible, as time is of the essence. If we do not hear from you within thirty (30) days, we will interprete it as your agreement that the proposed action is in compliance with the regulations and that we may proceed as planned. Please contact me on (206) 655-0500 if you have any questions.

Sincerely,

W.E. Morgan

WILLIAM E. MORGAN
Chief, Radiation Health Protection

LAP:gw
attachment
cc: R.E. Cunningham, NRC
G. Sahaida, Boeing

BOEING

JAN 4 1983

COORDINATION SHEET

TO: W. Morgan

NO. STRU-B8561-C82-2903

cc: M. Slone
F. Thompson

DATE: December 22, 1982

SUBJECT: Depleted Uranium Balance Weights

REFERENCE: Meeting, Morgan, Sahaida, et.al.

The 747 airplane program has utilized D.U. weights for mass balance of outboard elevator and upper rudder assemblies of the first 550 aircraft built. This equates to approximately 12,000 cast parts and a total mass of D.U. in excess of 200 tons. Depending upon model, each aircraft has either 21 or 31 weights. At each major aircraft overhaul (about four to five years) one can anticipate that over 20 percent of these weights will be corroded to where they require reprocessing.

Engineering considers this condition to present an unnecessary maintenance burden on the 747 operators. Aside from the high corrosion incident rate, the weights are extremely difficult to transport and there is only one recognized reprocessing source in the world.

Engineering proposes to retrofit the weights by adding a coat of corrosion preventative compound* over the existing finish. We intend to require that the weights be (1) corrosion free, (2) properly nickel and cadmium plated and painted, (3) heated to 150-160° F. (4) dipped in MIL-C-11796 at the same temperature and (5) cooled to ambient. When the weights are reinstalled on the airplane, we intend to fill the attachment holes with MIL-G-23827 grease. Cautionary markings on the weights will be kept free of corrosion preventative compound.

We question that this additional process in any way violates the conditions of Part 40 of the NRC rules and regulations. There will be no deterioration of the plating due to heating the weights. Thermal coefficients of expansion for uranium and nickel are essentially the same. There will be no chemical interaction between the corrosion preventative compound (MIL-C-11796) or the grease (MIL-G-23827) and the plating or paint. These compounds do not contain solvents or other agents which might soften paint. The corrosion preventive compound and the grease can both be removed with MEK or Toluene and neither will affect the plating or paint on the weights.

Please convey our intentions to the applicable regulatory agency for their concurrence.

* *MIL-C-11796*

Prepared by _____
D.M. Rosema

Approved by _____ 12/22/82
R.P. Thierry

Concurrence:
_____ 12/22/82
G. Sahaida