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## Bulletin 94-02: Corrosion Problems in Certain Stainless Steel Packagings Used to Transport Uranium Hexafluoride

NRCB 94-02

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS  
WASHINGTON, D.C. 20555

November 14, 1994

NRC BULLETIN 94-02: CORROSION PROBLEMS IN CERTAIN STAINLESS STEEL PACKAGINGS USED TO TRANSPORT URANIUM HEXAFLUORIDE

### Addressees

For Action - Registered users of Model Nos. NCI-21PF-1 and GE-21PF-1 uranium hexafluoride transportation packages

For Information - None

### Purpose

The U.S. Nuclear Regulatory Commission is issuing this bulletin to:  
(1) notify addressees that some uranium hexafluoride transportation packagings manufactured with a phenolic foam high in chlorides have exhibited pitting and corrosion problems; (2) advise addressees that uranium hexafluoride packagings with the high-chloride foam do not conform to the applicable NRC Certificate of Compliance; (3) remind addressees that packagings that are not in accordance with the NRC Certificate of Compliance, or that are in an impaired physical condition, are not authorized for transport under the general license provisions of 10 CFR 71.12; and (4) require addressees to reply in writing regarding whether or not they intend to discontinue use of the packagings with the high-chloride foam that are not in accordance with the NRC Certificate of Compliance.

### Description of Circumstances

Some packagings used for transport of uranium hexafluoride have experienced varying degrees of pitting and corrosion of the stainless steel shells caused by a high concentration of chlorides present in the foam used to construct the packagings. These packagings were manufactured using a high-chloride phenolic foam that does not conform to the phenolic foam specifically authorized by the applicable NRC Certificate of Compliance.

The packagings fabricated with the high-chloride foam were manufactured during the period June 1, 1986, through November 30, 1991, by Nuclear Containers,

Inc., (NCI) of Elizabethton, Tennessee. The affected packagings are: (1) Model No. GE-21PF-1 (NRC Certificate of Compliance No. 4909), all units fabricated after June 1, 1986; and (2) Model No. NCI-21PF-1 (NRC Certificate of Compliance No. 9234), all units fabricated during the period June 1, 1986, to November 30, 1991, that have NCI serial Nos. 1 through 486, and 487A and 488A. These packagings do not conform to the NRC Certificate of Compliance

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and are not authorized for transport under the general license provisions of 10 CFR 71.12.

Packagings manufactured after November 30, 1991, by Nuclear Containers, Inc., use a foam that has a lower concentration of chlorides. Although the low-chloride foam is not in accordance with the NRC Certificate of Compliance, there are no known safety problems with packagings manufactured with low-chloride foam, and there have been no instances of pitting or corrosion. The mechanical and thermal properties of the low-chloride foam are believed to be similar to those of foam that conforms to the NRC Certificate of Compliance. NRC Certificate of Compliance No. 9234 has been amended to authorize continued use, for one year, of packagings made with low-chloride foam. The one-year period is to allow time for an applicant to submit, for NRC review and approval, an application that shows that packagings fabricated with low-chloride foam meet the requirements of 10 CFR Part 71.

#### Discussion

Defects observed in the stainless steel shells of packagings manufactured with high-chloride foam range from a few pinholes to hundreds of holes. Stress corrosion cracking has been reported in at least one of these packagings. Since the pitting is initiated on the foam side of the stainless steel shells, the presence and severity of the corrosion is not readily determined by visual inspection. The pitting of the foam side of the shell has been reported to be 50 to 100 times more severe than the pitting of the outer surface. There appear to be no known, effective means of repairing these packagings nor of stopping the corrosion process. Defects in the stainless steel shell caused by corrosion could reduce the effectiveness of the packaging under accident conditions.

Since the packagings with the high-chloride foam are not in conformance with the NRC Certificate of Compliance, and since the corrosion could reduce the effectiveness of the packaging under accident conditions, use of packagings fabricated with high-chloride foam is not authorized under the general license provisions of 10 CFR 71.12.

#### Required Response

Within 30 days of the date of this bulletin, each action addressee is required to submit a response indicating whether or not the addressee intends to discontinue use of the following packagings: (1) Model No. GE-21PF-1 packagings that were fabricated by Nuclear Containers, Inc., after June 1, 1986; and (2) Model No. NCI-21PF-1 packagings that were fabricated by Nuclear Containers, Inc., during the period June 1, 1986, to November 30, 1991, that have NCI serial Nos. 1 through 486, and 487A and 488A.

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Address the required written responses to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555, under oath or affirmation under the provisions of Section 182a, Atomic Energy Act of 1954, as amended. In addition, submit a copy to the appropriate Regional Administrator.

Paperwork Reduction Act Statement

The response requirements contained in this bulletin affect fewer than ten respondents. Therefore, Office of Management and Budget approval is not required pursuant to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.)

If you have any questions about this matter, please contact one of the technical contacts listed below or the appropriate regional office.

ORIG /S/'D BY E WILLIAM BRACH

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