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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judge
Peter B. Bloch

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In the Matter of)
THE CURATORS OF)
THE UNIVERSITY OF MISSOURI)
(Byproduct License)
No. 24-00513-32;)
Special Nuclear Materials)
License No. SNM-247))

Docket Nos. 70-00270
30-02278-MLA
RE: TRUMP-S Project
ASLBP No. 90-613-02-MLA

LICENSEE'S MOTION FOR PARTIAL RECONSIDERATION OF
"MEMORANDUM AND ORDER (LICENSEE'S PARTIAL
RESPONSE CONCERNING TEMPORARY STAY)"

In the Memorandum and Order (Licensee's Partial Response Regarding Temporary Stay) LBP-90-38 (Nov. 1, 1990), the Presiding Officer authorized the NRC Staff to amend Licensee's NRC License No. SNM-247 so that Licensee "may possess up to 1.21 curies of ²⁴¹Pu as part of the 10 grams of plutonium they are authorized to possess under SNM-247." LBP-90-38, slip op. at 13. On November 15, 1990, the Presiding Officer issued a Memorandum and Order (Clarification of LBP-90-38) (the "Clarification Order") which deleted the authorization and reflected that the NRC Staff has the authority, under appropriate circumstances, to amend NRC License No. SNM-247 to permit the possession of this material.

In reaching the decision in LBP-90-38, the Presiding Officer acknowledged that Licensee is licensed to possess 10

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grams of Pu-239/Pu-240 (Id. at 5); that associated with such 10 grams of plutonium is Pu-241 conservatively calculated as 1.21 curies (Id.); that, since the Pu-241 is a beta-emitter, the biological effectiveness of 1.21 curies of Pu-241 is the same as .0242 curies of an equivalently effective alpha-emitter (Id. at 6); and that, being licensed to possess the Pu-239/Pu-240, Licensee "can also possess the associated ²⁴¹Pu" (Id. at 6 n.11). 1/ Nevertheless, the Presiding Officer stated that "it would have been preferable to disclose this quantity of [²⁴¹Pu] as a significant contaminant under the regulations" (Id. at 6). He also states that he considers the failure of Licensee to disclose the presence of the Pu-241 in its application as a mistake, although he acknowledges that "it is a mistake without any serious safety significance" (Id. at 7).

Licensee's position is that its license to possess 10 grams of Pu-239/Pu-240 already includes authorization to possess trace contaminants, such as Pu-241, and that no amendment to the license regarding Pu-241 is either necessary or warranted.

For the reasons stated below, Licensee disagrees with the Presiding Officer's statements that "it would have been preferable" to disclose the Pu-241 on the application, and that failure to disclose this material was "a mistake." Accordingly,

1/ In the Clarification Order, the Presiding Officer deleted the last sentence of footnote 11 on page 6.

Licensee requests that the Presiding Officer withdraw such statements from LBP-90-38.

Argument

Licensee's Submittal in Accordance with "Memorandum (Memorandum of Conference Call of October 19, 1990)" ("Licensee's October 30 Submittal") (Oct. 30, 1990), included the Affidavit of Dr. J. Steven Morris Regarding Plutonium Content ("Morris Plutonium Affidavit") (Oct. 29, 1990).

Section 70.22(a)(4) of the NRC regulations states that a license application shall contain, "The name, amount, and specifications (including the chemical and physical form and, where applicable, isotopic content) of the special nuclear material the applicant proposes to use or produce" (Emphasis added). As pointed out in Licensee's October 30 Submittal and the Morris Plutonium Affidavit, Section 4.3 of NRC Regulatory Guide 10.3 ("RG 10.3") provides the following guidance pertaining to the description of isotopic composition in an application:

... Specification of isotope should include principal isotope and significant contaminants. Major dose-contributing contaminants present or expected to build up are of particular interest. (Emphasis added).

This guidance was followed in determining which isotopes to identify (by weight and curie content) on the license application. Thus, on the application, the requested authorization was for Pu-239 and Pu-240, which combined had a mass

of 10 grams (to two significant figures) and which combined had a curie content of 710 millicuries (to two significant figures).

As previously acknowledged, the dose contribution of the Pu-241 isotope is about 3% of the Pu-239 and Pu-240 contribution. See Affidavit of Dr. Susan M. Langhorst Regarding NUREG-1140 and Intervenors' Dispersion Concentrations (Licensee's Exhibit 2) at Attachment 3, Table 3-1. That dose is negligible in the context of the Pu-239 and Pu-240. See Morris Plutonium Affidavit at §§ 32-33. The Pu-241 is interspersed within the Pu-239/Pu-240 sample, and cannot be separated from it. The protective actions taken for the Pu-239/Pu-240 would simultaneously protect from the small dose contamination of the Pu-241. Therefore, as explained in the Morris Plutonium Affidavit, the Pu-241 is neither a principal isotope nor a significant contaminant. Accordingly, Pu-241 was not listed on the application, and it was not listed in the license amendment issued by the NRC. This is in full accord with the regulation, regulatory guidance and NRC practice. Since it is a commonly acknowledged fact that no radioactive material is 100% pure, every license issued by the NRC is deemed to incorporate within its authorization the possession of trace contaminants, whether associated isotopes of the same elements or daughter products.

Not including Pu-241 in the license amendment request was not a mistake but the preferable action of a knowledgeable applicant following the NRC Regulations and RG 10.3. Both the knowledgeable applicant and the NRC Staff reviewer would know that

there is Pu-241 present in the sample and that it is intimately mixed with the Pu-239 and Pu-240. They would also know that trace levels of Pu-241, which is a beta-emitter, could not significantly contribute to the dose equivalent of the Pu-239 and Pu-240. The radiation protective actions that the applicant would have to take because of the concentrations present of Pu-239 and Pu-240 could not be affected by the known presence of trace quantities of Pu-241, since these are not separable doses. As noted above, protective actions for Pu-239 and Pu-240 would simultaneously protect from the small dose contribution of Pu-241.

Under these circumstances it would not be reasonable to expect an applicant to provide information on the application which is not required by NRC regulations and has no radiological or regulatory significance. To require an applicant to do so would be wholly contrary -- without any perceivable benefit -- to the guidance of RG 10.3 which requests only that significant contaminants be listed. Moreover it would impose upon an applicant -- without any perceivable benefit -- costly and time-consuming research and sophisticated calculations (of the type performed by Licensee for the Morris Plutonium Affidavit) solely to provide precise numerical estimates that have no value to anyone.

If the Presiding Officer believes that it was "preferable" that Licensee do so in this instance and that it was a "mistake" not to do so, where does one draw the line? Should an applicant also calculate and identify Pu-242 and other isotopes of

plutonium? Should an applicant also calculate and identify Am-241 and other daughter products? 2/ Surely the answer is no, since in the presence of these concentrations of Pu-239 and Pu-240, these other plutonium isotopes and daughter products are not "significant contaminants" because they are not "major dose-contributing contaminants." But, neither is Pu-241.

The Intervenors originally misrepresented the ratio of Pu-241 to Pu-239/Pu-240 in Licensee's licensed limit of 10 grams of plutonium by stating that there "had to be" a minimum of 5-120 curies of Pu-241 to .07 curies of Pu-239/Pu-240. They soon corrected the .07 curies of Pu-239/Pu-240 to .7 curies. They have already, without blinking an eye and without even acknowledging their previous error, "corrected" their fictitious 5-120 curies of Pu-239/Pu-240 to 1.21 curies. See Intervenors' November 12 Motion at 2. But they are still proclaiming that such 1.21 curies of Pu-241 is a significant amount of plutonium, whose omission from the issued license amendment justifies setting the amendment aside. 3/ Id.

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- 2/ As could be expected, Intervenors have argued that Am-241 should also have been identified. See "Intervenors' Motion for Reconsideration", (Intervenors' November 12 Motion) (undated, served by Federal Express on November 12, 1990). Licensee is filing a separate response to that motion.
- 3/ They have now made a new error, improperly claiming that Licensee has concluded that the total curie activity of the licensed material is 1.994 curies. See "Licensee's Opposition To Intervenors' Motion For Order Recommending Formal Hearing, Or In The Alternative Requiring Oral Presentations And Motion To Strike Intervenors' Motion" at 7-9 (Nov. 15, 1990).

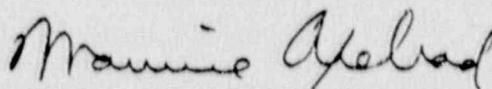
Intervenors are clearly and completely wrong. The significance of the Pu-241 cannot be assessed by considering only the absolute amount of curies. If Licensee had 100 grams of Plutonium standard CRM-127 it would also have 12 curies of Pu-241 within that 100 gram standard, but the 12 curies of Pu-241 would still not be dose significant compared to the concentration of Pu-239 and Pu-240 in the 100 gram standard.

Intervenors' error is that they persist in viewing the Pu-241 as if it were a distinct radiation source, rather than interspersed within the Pu-239/Pu-240 standard. Obviously, if the 1.21 curies of Pu-241 were present as the sole radioactive material in a sample, the Pu-241 would be radiologically and regulatorily "significant." Protective measures would have to be adhered to in its possession and use, and a license would be needed. But that same amount interspersed in 10 grams of Pu-239/Pu-240 has no radiological and regulatory significance whatsoever (except that it can be calculated). It cannot be separated out; it does not contribute to hazard; it requires no additional precautions. Scientists understand this principle. NRC regulatory guidance acknowledges this principle in Section 4.3 of RG 10.3.

Licensee respectfully requests that the Presiding Officer reconsider the portions of his decision regarding Pu-241

4/ cited above by Licensee so as not to cast a cloud, not only on Licensee, but on the countless number of other licenses issued by the NRC that do not list the plutonium isotopes and daughter products that are not "significant contaminants" because they are not "major dose contributing-contaminants."

Respectfully submitted,



Maurice Axelrad
David W. Jenkins

OF COUNSEL:

Robert L. Ross, General Counsel
Phillip Hoskins, Counsel
Office of the General Counsel
University of Missouri
227 University Hall
Columbia, MO 65211

(314) 882-3211

Newman & Holtzinger, P.C.
Suite 1000
1615 L Street, N.W.
Washington, D.C. 20036

(202) 955-6600

Counsel for
THE CURATORS OF THE
UNIVERSITY OF MISSOURI

Date: November 16, 1990

4/ As noted above, Licensee is responding separately to Intervenor's arguments regarding Am-241. Licensee's response will show that notwithstanding Intervenor's mistaken claims regarding the alleged gamma-emitting dangers of <0.07 curies of Am-241, the Am-241 is not a significant dose-contributor within the Pu-239/Pu-240 standard. Intervenor's purposely refer to the Am-241 as if it were a distinct radiation source. Either they fail to understand very basic scientific principles or they are being purposely obtuse.

UNITED STATES OF AMERICA
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Special Nuclear Materials)	
License No. SNM-247))	

CERTIFICATE OF SERVICE

I hereby certify that copies of "Licensee's Motion For Partial Reconsideration Of 'Memorandum And Order (Licensee's Partial Response concerning Temporary Stay)'" were served upon the following persons by deposit in the United States mail, postage prepaid and properly addressed on the date shown below:

The Honorable Peter B. Bloch
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

The Honorable Gustave A. Linenberger, Jr.
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attn: Chief, Docketing & Service Section
(Original plus two copies)

Colleen Woodhead, Esq.
Office of the General Counsel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Lewis C. Green, Esq.
Green, Hennings & Henry
314 North Broadway, Suite 1830
St. Louis, Missouri 63102

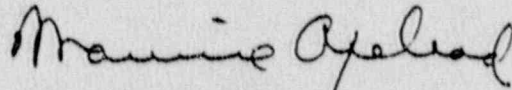
Missouri Coalition for the Environment
c/o Mr. Henry Ottinger
511 Westwood Avenue
Columbia, Missouri 65203

Mid-Missouri Nuclear Weapons Freeze, Inc.
c/o Mr. Mark Haim, Director
804-C East Broadway
Columbia, Missouri 65201

Physicians for Social Responsibility/
Mid-Missouri Chapter
c/o Robert L. Blake, M.D.
M-228 UMC Health Sciences Center
University of Missouri at Columbia
Columbia, Missouri 65212

Betty K. Wilson, Esq.
Oliver, Walker, Carlton, Wilson
Market Square Office Building
P.O. Box 977
Columbia, Missouri 65205

Dated this 16th day of November, 1990.



Maurice Axelrad
Newman & Holtzinger, P.C.
Suite 1000
1615 L Street, N.W.
Washington, D.C. 20036
(202) 955-6600

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