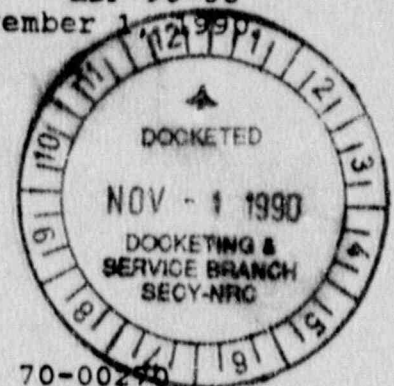


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LBP-90-38
November 1, 1990

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD
Before Administrative Judge
Peter B. Bloch



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

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MEMORANDUM AND ORDER
(Licensee's Partial Response Concerning Temporary Stay)

MEMORANDUM

On October 20, 1990, I issued a temporary stay of the University of Missouri's (Licensee's) use of plutonium, neptunium and americium in the TRUMP-S Project. The decision was issued, pursuant to 10 CFR §§ 2.1263 and 2.788, before Licensee responded to the filings that prompted my action. The ground for issuing the temporary stay was that the criteria for a stay had been met, including the likelihood (based on the available filings) that the Missouri Coalition for the Environment, the Mid-Missouri Nuclear Weapons Freeze, Inc., the Physicians for Social Responsibility/Mid-Missouri and several individual intervenors

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(collectively "Intervenors") would succeed on the merits of a variety of their allegations.¹

Now Licensee has responded in a thoughtful, well-documented way that causes me to reverse each of the determinations that they have addressed. Under the procedural regulations, Intervenors are prohibited from replying to Applicant's response. 10 CFR § 2.788(d) (applicable by inference to § 2.788(i)). They may, however, move for reconsideration of this decision within ten days on the ground that I have acted erroneously on the information that is before me. They may not submit new evidence with respect to the temporary stay. (They may request, by motion, to be permitted to make an additional filing with respect to their motion for a stay.)

Although many of the grounds for the temporary stay have been eroded, the stay will remain in effect until I receive and evaluate Licensee's response to my findings

¹The purpose of the stay was to protect the public safety from a possible risk during the time that Licensee is preparing its response. This seems to be the proper balance between apparent safety risks and an adverse impact on Licensee.

Obviously, in such a situation, there was no finding on the "merits" of the Intervenors' allegations. There could be no fair finding until Licensee had a reasonable chance to respond. However, these nuances of legal pleading are hard to convey accurately in press accounts and I am aware that, as a result, one effect of the issuance of the temporary stay was that the reputation of the University of Missouri suffered an undeserved adverse impact.

concerning the likelihood of success on the merits concerning the use of improperly tested HEPA filters.

Licensee's thoughtful response to the two principal issues of concern to me relieves me of any serious concern, at this time, concerning its competence or the competence of its investigators.

I. Curie Content of ²⁴¹Pu

In granting the temporary stay, I stated:²

10 CFR § 70.22(a)(4) requires that an application for a license include the name, amount, and specifications (including the chemical and physical form and, where applicable, isotopic content) of the special nuclear material. Regulatory Guide 10.3, which has suggestive force in this proceeding, requires in § 4.3:

. . . the special nuclear material requested should be identified by isotope; chemical or physical form; activity in curies, millicuries, or microcuries; and mass in grams. Specification of isotopes should include principal isotope and significant contaminants. [Emphasis added.]

The Declaration of the Trump-S Review Panel persuades me that Intervenor are likely to succeed on the merits of the following arguments:

- Licensee failed to disclose that there were other forms of plutonium present in its material other than just PU-239 and PU-240 and that those forms may contain curie amounts of other plutonium isotopes, not just millicuries or microcuries;

- The total curie content of plutonium possessed by Licensee, whether the source

²Memorandum and Order (Grant of Temporary Stay), LBP-90-35, NRC _____ ("Temporary Stay Order") (October 22, 1990), Slip op. at 8-9.

of the material be weapons grade plutonium or reactor grade plutonium, is substantially in excess of 2 curies;

• Licensee's personnel should have known that the curie content of its plutonium was far more than it disclosed and this casts doubt on their competence.'

I now find, based on the "Affidavit of Dr. J. Steven Morris Regarding Plutonium Content", October 29, 1990⁴ (Morris Affidavit), that these findings are no longer valid. The Trump-S Review Panel was relying on library research that led it to the apparently incorrect conclusion that Licensee had to be using either weapons grade plutonium or reactor grade plutonium and that the smallest amount of ²⁴¹Pu that could be present would be about five curies.⁵ By contrast, the Morris Affidavit provides a detailed analysis of the form of plutonium Licensee possesses, including "New Brunswick Laboratory Certified Reference Materials Certifi-

⁴Declaration of Trump-S Review Panel at 6-10.

⁵Attachment to a letter to me from Maurice Axelrad, October 30, 1990. I find that Mr. Morris is qualified as an expert witness with respect to his testimony by reason of his education and professional experience. Morris Affidavit at 1-2.

'I have no opinion concerning whether the TRUMP-S Review Panel should have known that other forms of plutonium were available. I have some sympathy for their plight because in this litigation they had no formal discovery rights -- that is, no right to obtain answers to their questions from the Licensee. I have no reason to doubt their sincerity nor their general expertise -- although their specific knowledge concerning the availability of alternative isotopic compositions of plutonium does seem to be in some doubt at this time.

cate of Analysis, CRM 127 (Attachment 1⁶), a similar analysis by the National Bureau of Standards of a predecessor form of this same material (Attachment 1B), a 1982 analysis of this same special nuclear material by the Los Alamos National Laboratory (Attachment 7) and a calculation deriving the amount of ²⁴¹PU in September 1990 from the Los Alamos analysis (Attachment 6).

At the present time, it appears likely that Licensee can succeed on the merits of each of the following arguments:

- The plutonium that the Licensee has received is a single 5 gram lot of New Brunswick Laboratory (NBL) Certified Reference Material (CRM) 127.
- A conservative estimate of the total curie content of the 10 gms of plutonium that Licensee is authorized to possess -- including 1.21 curies of ²⁴¹PU⁶ -- is 1.992 curies.⁷

⁶All Attachments are to the Morris Affidavit.

⁷Morris Affidavit at 3.

⁸The possession of ²⁴¹PU is not expressly authorized in the license amendment.

⁹The amount is derived from the Los Alamos analysis (Attachment 7), adjusted according to Licensee's estimate (Attachment 6) and summarized in Morris Affidavit, Table 1, at 6 -- adjusted by subtracting alpha activity attributed to Americium. (If the americium is included the total curie content is 1.992, which is still less than 2. However, I find that it is not necessary to include the americium in computing the amount of plutonium.)

I note also that the Statement of Considerations to 10 CFR Parts 30, 40, and 70, "Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees," April 7, 1989, 54 Fed. Reg. 14051 at 14052 states that the table of quantities in Part 30 "includes all alpha emitters listed on

- The biological effectiveness of 1.21 curies of ²⁴¹Pu is the same as .0242 curies, or 24.25 millicuries, of an equivalently effective alpha-emitter.¹⁰
- Although it would have been preferable to disclose this quantity of material as a significant contaminant under the regulations, since it is equivalent to a millicurie quantity of an alpha emitter, this omission is not fatal to the application.¹¹ I shall authorize the Staff of the Nuclear Regulatory Commission to amend SNM-247 to permit the possession of this material and shall

any license for which the quantity to theoretically deliver a 1-rem effective dose equivalent would be less than 2 curies." It therefore appears that the NRC did not intend to include ²⁴¹Pu, which is a beta emitter, in the 2 curies of plutonium listed in the regulations as the threshold for emergency planning.

¹⁰Morris Affidavit at Finding 29, p. 12 (citing 10 CFR Part 71, Table A-2. The derivation of millicurie is my own.

¹¹Regulatory Guide 10.3, "Guide for the Preparation of Applications for Special Nuclear Material Licenses of Less Than Critical Mass Quantities," Section 4.3 provides:

. . . the special nuclear material requested should be identified by isotope; chemical or physical form; activity in curies, millicuries, or microcuries; and mass in grams. Specification of isotopes should include principal isotope and significant contaminants. Major dose-contributing contaminants present or expected to build up are of particular interest." [Emphasis added.]

Note that the Nuclear Material Transaction Report through which Licensee received the special nuclear material from Rockwell International Corp. disclosed that it contained trace amounts of Pu-241 and Pu-240. Morris Affidavit, Attachment 3.

Note also that Intervenors have stated on several occasions that Licensee has permission to possess .7 curies of plutonium. That does not appear to be the case. Their permission is to possess 10 gms of "Plutonium-239/Plutonium-240" in accordance with its application and three specified letters. SNM-247, Amendment No. 12, Docket 070-00270 (March 19, 1990). I find that they can also possess the associated ²⁴¹Pu.

consider the license application to be amended to contain this new information until Staff has had an opportunity to act.

- The failure of Licensee to disclose the presence of 1.21 curies of ²⁴¹PU -- the equivalent in biological effectiveness of alpha radiation equal to .0242 curies -- in the licensed amount of plutonium does not cast doubt on its competence or on the competence of its personnel. Although I consider this to be a mistake, it is a mistake without any serious safety significance.

II. Emergency Planning

In granting the temporary stay, I stated:¹²

Intervenors correctly point out that Licensee's possession of 25 curies of Americium requires them to conduct an evaluation or to have an applicable emergency plan. The Declaration of the Trump-S Review Panel at 17-22 persuades me that Intervenors are likely to succeed on the merits of the following arguments:

- the only analysis of potential release fractions provided to me so far by Licensee is a "summary" of a study that does not exist and that does not provide adequate assurance of safety to the public;
- the assumptions in the "summary" are not conservative;
- emergency action is likely to be needed beyond 1 mile from the Alpha Laboratory;¹³
- the local fire department may respond to a fire but would not fight it.¹⁴

¹²Temporary Stay Order, Slip op. at 7-8.

¹³Declaration of Trump-S Review Panel at Table III, p. 21b; attached ANSI/ANS15.16 (1982), "Emergency Classes."

¹⁴Declaration of Henry Ottinger, Exhibit 2.

With respect to my finding concerning 25 curies of americium, Licensee now states that 10 CFR § 30.32(i) was not applicable to Licensee's application because the license was granted before the effective date of the regulation, April 7, 1990.¹⁵ At this time, I am not prepared to accept the conclusion that the section is not applicable in this proceeding; this question seems to me to require briefing.¹⁶

It is clear that the application did not need to show compliance with this section prior to the time it was granted. However, this proceeding is now pending and it is my responsibility to review the adequacy of the licensing application at this time. It is general practice at the NRC to permit Applicant to amend its application papers to remedy defects that may be disclosed during the pendency of a proceeding, thus creating a dynamic licensing environment. During this period of adjudication, it seems to me that Licensee also ought to show compliance to new regulations effective during the pendency of the proceeding. However, this is a point on which I am not aware of precedent, so I

¹⁵4 Fed. Reg. 14051 (April 7, 1989). Letter of October 30, 1990 at Footnote 1, pp. 3-4.

¹⁶Although Licensee's letter of October 30, 1990, was not labeled as a response to any pleading, I consider it to be a response to my order and to the pleadings that prompted it. Hence, a reply is out of order and Mr. Green's letter of October 31, 1990, which is a reply, cannot be considered in this proceeding. He may resubmit some of the material, if appropriate, as a motion for reconsideration of this Order or as a specially permitted reply to Applicant's response to the written filing.

will request Licensee to brief this point as part of its response to Intervenor's Written Filing. Intervenor may respond 10 business days after receiving Licensee's document.

Despite this difficulty concerning Licensee's legal position, I nevertheless have resolved my doubts concerning the adequacy of its emergency planning.¹⁷ To begin with, let me state that I am satisfied that the Columbia Fire Department will respond to a fire at the Alpha Laboratory and will take appropriate action.

The Affidavit of Henry Ottinger, which was the basis for this portion of my opinion granting a temporary stay, is a hearsay report of a conversation with Erman L. Call, Battalion Chief for the Columbia Fire Department. Mr. Call now states, by Affidavit of 10/24/90, that he disagrees with Mr. Ottinger's interpretation of his remarks. Regardless, Mr. Call's own affidavit is direct testimony and is entitled to greater weight.

Mr. Call states that "the Columbia Fire Department would perform fire duties in response to an alarm at the

¹⁷Because I am satisfied with the emergency planning at this stage of the proceeding, the evaluation of risk is not relevant. At this point, however, nothing has been submitted that would change my findings concerning the likelihood that Intervenor could succeed on the merits of their claim that Applicant's evaluation of risk is inadequate.

MURR [Missouri University Research Reactor]."¹⁸ He then states that:

Such firefighting would continue until such time as the crews encountered radiation levels that the Incident Commander determined might subject the crew to unacceptable radiation doses.

* * *

The current MURR Emergency Plan (page 12, 5.0.1 Protective Actions for All Classes) shows the acceptable radiation doses and whether anyone from the Columbia Fire Department would be subjected to that maximum would be at the judgment of the Incident Commander based on the conditions at the time.¹⁹

This affidavit therefore raises the possibility that conditions could exist in which a particular crew might avoid a radioactively "hot" area. In this sense, they might temporarily interrupt or redirect their fire-fighting activity. If their activity were interrupted, they would then resume their duties as soon as feasible -- just as they might do in an ordinary fire when affected by smoke or great heat. To my mind, this shows careful planning with the lives of the fire-fighters as an important consideration. Nothing Intervenor's have said indicates that this is a defect in the emergency plan.

I also have received the "Affidavit of Walter A. Meyer, Jr. Regarding Emergency Planning," October 29, 1990 (Meyer Affidavit), and I have studied it with great care. I am

¹⁸Affidavit at Exhibit A.

¹⁹Id.

convinced that he is qualified by reason of experience and education to testify concerning the adequacy of the emergency plan for the work on TRUMP-S in the Alpha Laboratory.

I am convinced by the Meyer Affidavit that Licensee is likely to succeed on the merits of each of the following allegations:

- The MURR Facility Emergency Plan has been approved by the NRC and applies to all activities within the MURR Facility, including the Alpha Laboratory in the basement of the MURR Facility.²⁰
- The Columbia Fire Department (CFD) would fight fires involving radioactive materials at the MURR facility, including the Alpha Laboratory. The CFD participates in biennial training of its personnel at the MURR Facility. Six firemen from the two fire companies that would respond to the MURR Facility underwent an orientation tour of the Alpha Laboratory and associated facilities. The CFD also has participated in drills at MURR that involved radioactive materials as part of the drill scenario.²¹
- The emergency plan calls for extensive coordination during an incident between trained professionals working for the MURR Facility and the fire-fighters who might respond.²²
- Features of the Alpha Laboratory have been designed to minimize the effects of a fire.²³

²⁰Meyer Affidavit at 3.

²¹Meyer Affidavit at 7.

²²Id at 7-8.

²³Id. at 8.

- Fire detection and fighting equipment is contained in the Alpha Laboratory and nearby.²⁴
- The MURR Facility employs Control Room operators who work 24 hours a day and are prepared to respond, even at times that there are no personnel in the Alpha Laboratory, to alarms in the control room at MURR that indicate emergency conditions in the Alpha Laboratory.²⁵
- There are plans to deal with severe fires in the Alpha Laboratory.²⁶
- The CFD would use the same procedures at the Alpha Laboratory that they generally apply to fires involving hazardous, chemical, or other types of radioactive material. This is adequate.²⁷
- Generally, appropriate detection, fire fighting and decontamination procedures have been adopted.²⁸

III. Effect on Stay Motion and on Written Presentation

The purpose of this Memorandum is to address issues related to the temporary stay that I granted. Because the procedures on the request for a stay and the written presentation are different, findings in this decision concerning "likelihood of success on the merits" are not conclusions

²⁴Id. at 8-10.

²⁵Meyer Affidavit at 14.

²⁶Id. at 15.

²⁷Id. at 16.

²⁸Meyer Affidavit, passim.

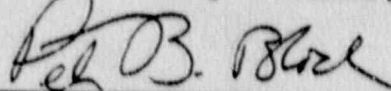
that affect the determination of the issues raised by the Intervenor's written presentation.²⁹

ORDER

For all the foregoing reasons and upon consideration of the entire record in this matter, it is, this 1st day of November 1990, ORDERED, that:

1. Findings in the accompanying Memorandum supersede those in LBP-90-35, ___ NRC ___ (Temporary Stay Order), October 22, 1990.
2. The Staff of the Nuclear Regulatory Commission is authorized to amend the license of the Curators of the University of Missouri so that they 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. Should the Staff decide that it is not appropriate to issue such an amendment, it may file a statement of its reasons within 15 business days of the date of issuance of this Order.
3. The temporary stay I issued on October 20, 1990 shall continue in effect.
4. Parties may file a request for reconsideration of this Memorandum and Order within ten business days of the date of issuance of this Memorandum and Order.

Respectfully ORDERED,



Peter B. Bloch
Presiding Officer

Bethesda, Maryland

²⁹Since I am authorized to determine the outcome of this case based on the written filings, Intervenor's motion for Summary Disposition, October 25, 1990, seems irrelevant. The Motion for Other relief, contained in the same document, merits a response.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of

THE UNIVERSITY OF MISSOURI

Docket No. (s) 70-270/30-2278-MLA

(Special Nuclear Materials Lic. 247
Byproduct Mat. Lic. 24-00513-32)

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing LBP 90-38 M&D (LIC. PARTIAL..) have been served upon the following persons by U.S. mail, first class, except as otherwise noted and in accordance with the requirements of 10 CFR Sec. 2.712.

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Washington, DC 20555

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Administrative Judge
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Docket No. (s) 70-270/30-2278-MLA
LBP 90-3B M&D (LIC. PARTIAL..)

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A. Bert Davis
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Dated at Rockville, Md. this
1 day of November 1990

Betty Henderson

Office of the Secretary of the Commission