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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judge
Peter B. Bloch

In the Matter of)	
)	
THE CURATORS OF)	Docket Nos. 70-00270-MLA
THE UNIVERSITY OF MISSOURI)	30-02278-MLA
)	
(Byproduct License)	Re: TRUMP-S Project
No. 24-00513-32;)	
Special Nuclear Materials)	ASLBP No. 90-613-02-MLA
License No. SNM-247))	

INTERVENORS' RESPONSE
TO LICENSEE'S WRITTEN PRESENTATION

In response to the request of the Presiding Officer, the Intervenors have consulted with the Individual Intervenors, and have consolidated their arguments into this document, as their joint response to Licensee's written presentation, filed pursuant to § 2.1233 of the regulations.¹

Intervenors protest emphatically the denial, on Thursday, December 20, 1990, of a one-week extension for the filing of this Response, due on December 24th. The order of December 19 resolved, for present purposes, subject to appellate review, a number of major issues in this litigation. It required Intervenors

¹ Unless otherwise noted, all citations to regulations are to Title 10 of the Code of Federal Regulations.

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to persuade their experts (in various locations, not including Columbia or St. Louis) to shift gears, and attempt to revise their testimony to fit the new ground rules, working through the week-end before Christmas. It prevented Intervenors' attorney from consulting adequately with them, to guide them in the questions to be addressed, and to review their conclusions in order to assimilate them into this Response. In football terms, it was comparable to a decision by the referee, on fourth down with ten seconds to play, moving the goal posts back 100 yards. The denial of any reasonable opportunity to respond within the new ground rules was arbitrary and capricious, and constitutes a denial of due process of law. This is no way to dispose of public safety.

THE FACTS

Since this proceeding commenced, the Licensee has attempted to patch up the holes in its application by filing a deluge of affidavits. Some are numbered, as high as fifteen, and others are not numbered. This Response will not recite all those affidavits. The Presiding Officer is presumably aware of them. Suffice it to say that, in Intervenors' view, most of them are entitled to no consideration here.

THE ISSUE

As Intervenors had anticipated (Written Presentation, p.12), each paper filed by the Licensee seeks to broaden the issues, not to narrow them. This turns the litigation process into an endless, ever-expanding morass.

Subpart L establishes a new procedure, quite different from the traditional Subpart G hearings. Subpart L is designed to provide "rules of procedure for the conduct of informal adjudicatory hearings in materials licensing proceedings. . . . [T]he presiding officer is to receive and make his or her determination based solely

upon a 'hearing file' compiled by the NRC staff, which need not be a party to the proceeding, and written presentations by the parties." 54 Fed. Reg. 8269, February 28, 1989.

In the traditional Subpart G proceeding, the Staff is a party, and the Intervenors are to present whatever contentions they seek to have litigated, including any specific issue of law or fact. § 2.714(b)(1) and (2). Subpart L is designed to be a much narrower, shorter, simpler proceeding, taking into account "the relative insignificance of many of the licensing actions involved." 52 Fed. Reg. 20089. The Intervenors do not present contentions of law or fact; they are to point out deficiencies or omissions in the application. § 2.1233(c). The Intervenors "must describe in detail any deficiency or omission in the license application," and give a detailed statement of reasons why any particular section or portion is deficient or why an omission is material. Section 2.1233(c). The sufficiency of the application is the focus of the Subpart L proceeding. Subpart L was deliberately drafted to provide a narrower, simpler proceeding, with a narrower, simpler focus than a Subpart G proceeding.

In short, Intervenors are to demonstrate wherein the application is deficient. Intervenors have done that. The Presiding Officer is to decide whether the application was deficient, basing his decision solely upon the "hearing file" compiled by the NRC Staff, and the written presentations of the parties. Subpart L does not authorize or direct the Presiding Officer to act as the NRC Staff, receive a multitude of affidavits which should have been part of the original application, if they have any bearing on the matter at all, and rule upon a new, revised application de novo.

This has nothing to do with the matter of "appropriate relief." It may be assumed, arguendo, that, if the evidence persuaded the Presiding Officer that the Licensee needs a second HEPA filter, capable of being tested in place, the Presiding Officer could order that this requirement be added to the license as a condition, and the license need not on that account be set aside. The Presiding Officer is given some discretion as to appropriate relief. But we are considering here, what is the issue, not what is appropriate relief. The issue is the sufficiency of what was in the application, not the sufficiency of what was omitted, but furnished after Intervenors filed their written presentation -- and not even submitted as an amendment to the application.

Subpart L, as interpreted by the Licensee, surpasses the imagination of Lewis Carroll. After running as fast as she could, until she was quite exhausted, Alice was at least able to keep in the same place. Intervenors, however, after filing motions and answers as fast as they could, until the filing space is quite exhausted, have fallen far behind the starting point. At the beginning Intervenors were challenging a 22 or 23 page application. Now, according to Licensee's interpretation of Subpart L, they must also challenge hundreds of pages of affidavits, which, by assembling bits and pieces, allegedly provide an emergency plan, one or more dose calculations, and perhaps some sort of safety evaluation, scattered here and there.

This proceeding clearly illustrates the massive confusion which ensues when a licensee attempts to plug the holes in its application by filing what it claims is a new emergency plan, a new dispersion model, a new dose calculation, and a variety of other new documentation. According to § 1233(c), Intervenors are to describe the deficiencies or omissions in the license application. Having done that, they

have been confronted with a plethora of additional affidavits, which should properly have been a part of the application, if they have any relevance. Intervenors have no opportunity to describe any deficiencies or omissions in those new affidavits until they present their rebuttal. This is directly in conflict with the structure and spirit of Subpart L. According to Subpart L, we are to litigate here the deficiencies and omissions in the application, not in the new gimmicks which the Licensee has devised.

When the Licensee, as is its custom, responds to Intervenors' challenge to these new supplements to the application, under the existing schedule Intervenors will not even be permitted to reply, to show that the Licensee's response is misleading and insufficient.² The procedure being followed by the Licensee, filing its basic documents in affidavit form after Intervenors have filed their initial Written Presentation, renders the hearing process nugatory, and prevents the Presiding Officer from obtaining an orderly, reasoned argument.

Significantly, the Licensee has not even filed an amended application, or asked for leave to file one. According to § 1233, we are to litigate the sufficiency of the original application.

However, because these new affidavits have not been stricken, Intervenors will address some of them below.

² The Presiding Officer has promised an opportunity to reply to "new information." Memorandum and Order of December 19, p.9. That ruling seems to foreclose any opportunity to explain that Licensee's presentation is misleading. Even the opportunity to reply to "new information" appears to emanate from the grace of the Presiding Officer, not from the regulation.

ARGUMENT

I. EACH OF THE TWO APPLICATIONS IS DEFICIENT ON ITS FACE

1. *There is no safety analysis*

The Licensee argues (p.16) that no safety analysis is needed. The Staff has told us that safety was not even considered in issuing the amendment. Clearly there was no evidence before the Staff which could support a finding of safety.

Both the statute and the rules require a finding of safety. See Intervenors' Written Presentation at page 15.

The Licensee has now filed a multitude of affidavits which are apparently supposed to persuade the Presiding Officer that the operation will be more or less safe. These affidavits are insufficient for that purpose, as will be shown below. However, more importantly, they are not properly a part of this proceeding. A showing of safety is to be made as a part of the application. A finding of safety is to be made as a part of the issuance of the license. This proceeding is only to determine the sufficiency of the application, not to usurp the authority and duties of the Staff in issuing licenses.

If in fact some showing of safety had been made in the application, and some finding of safety had been made by the Staff in issuing the license, then Intervenors would have had an opportunity to challenge that showing and that finding. The Presiding Officer in a Subpart L proceeding could examine that challenge, and accept it or reject it, depending on the written presentations. But here there was no such application, and there was no such finding. There is nothing for the Presiding Officer to accept. Each application must be denied. Only when the Licensee files amended applications, including a showing of safety, can safety be determined in the first instance as a part of the regulatory process.

If that had been done here, Intervenors would have had an opportunity to challenge that showing and that determination, in their Written Presentation. The Presiding Officer in a Subpart L proceeding could examine that challenge, and accept it or reject it, depending on the written presentation. But here there was no such showing, there was no such finding, and there was no opportunity to challenge such a finding. There is nothing for the Presiding Officer to accept. Each application must be denied.

2. *Twenty-five is more than two, and infinitely more than zero, and the Licensee will possess more than 2 curies of plutonium,*

As Intervenors pointed out at pages 15-16 of their Written Presentation, § 30.32(i) requires compliance with its terms for either (1) *any* americium 241 in unsealed form or (2) more than 2 curies sealed in glass. The Part 30 application we are supposedly litigating seeks authority for 25 curies of americium 241 in unsealed form. It does not even make a gesture in the direction of furnishing the required dosage calculation or emergency plan. The Part 30 application is totally deficient. Similarly, Intervenors pointed out (pp.16-17) that the Licensee will possess more than 2 curies of plutonium material, and has failed to comply with the requirements of § 70.22(i). The Part 70 application is totally deficient.

However, the Presiding Officer has ruled, on December 19, 1990 (pp. 11-12) that §§ 30.32(i) and 70.22(i) are not applicable to these license amendments. Accordingly, Intervenors are foreclosed from filing rebuttal on the question of compliance with these sections. Intervenors respectfully record their disagreement, to preserve this point for review. Pursuant to F.R.E. 103, Intervenors, by way of preserving this point, offer to prove, by the testimony of the TRUMP-S Review Panel and Donald Wallace, that the various purported dose calculations do not

fulfill the requirements of these sections, that a realistic dose calculation conforming to the requirements of those two sections would exceed one rem offsite by many orders of magnitude, that the various representations of emergency "plans" do not fulfill the requirements of subsections (i)(3) and (4), and that the curie content of the material which the Licensee has requested under Part 70 exceeds two.

The Licensee's contention that those two sections are irrelevant, and its acceptance by the Presiding Officer, evoke the question: What regulations were in effect on April 5, 1990? At that time, NUREG 0767 was the controlling guide. It required that, where a license authorizes possession of more than .3 curies of americium 241, or more than .1 curie of plutonium 239, the licensee shall prepare and submit a Radiological Contingency Plan. See 46 Fed.Reg. 29712, 29714, June 3, 1981. The Part 30 license authorized possession exceeding the threshold limit by a factor of 80. The Part 70 license application reported plutonium exceeding the threshold by a factor of 7, and the Licensee has now admitted to an excess by a factor of 20. NUREG 0762, August 17, 1981, described in detail the contents of the required Radiological Contingency Plan. No such Radiological Contingency Plan applicable to either the americium 241 or the plutonium 239 was ever filed, as nearly as can be determined from the hearing file. Certainly Dr. Adam did not review one. Thus each application was fatally deficient on the day it was filed, and should have been rejected out of hand by the Staff.

If the University should now claim that its pre-TRUMP-S, Part 50 reactor emergency plan can pass for its required Radiological Contingency Plan for TRUMP-S, it should be noted that the Part 50 plan was not included in the application for review for suitability for Part 30 and Part 70 requirements and

TRUMP-S risks. It has been unevaluated for those purposes. If such an evaluation were performed, the plan would fail. But the point is that the University did not submit the plan, as required, with its applications, and the Staff did not evaluate it, as required. Nor did the University claim, in its written presentation, that its Part 50 plan constituted the Radiological Contingency Plan for the new alpha lab. The granting of the amendment was therefore illegal.

It is true that a previously submitted document need not be attached in its entirety to a new application, but may be referenced. But the Part 50 emergency plan was not even referenced. Reg. Guide 10.3, § 5, makes clear:

References to previously submitted information and documents should be clear and specific and should identify the pertinent information by date, page, and paragraph.

The only reference to emergency matters in the application is to a wholly deficient page of the indoctrination manual for new employees. No reference whatsoever is made to the Part 50 Emergency Plan, or to any alternative analysis meeting the regulatory requirements for a Radiological Contingency Plan. The Applicant has not amended its application to provide a Radiological Contingency Plan. The application remains fatally deficient.

- 3. The Licensee admits that its application failed to identify the isotopes contained in the special nuclear material requested, and understated the curie activity by a factor of approximately three*

Section 70.22(a)(4) requires that the application for a Part 70 license shall contain, among other things:

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.

Section 4.3 of Regulatory Guide 10.3 requires specifically that:

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.

The Licensee now admits that its special nuclear material will include plutonium 238 and 241, and americium 241. The Licensee now admits that its Part 70 license application understated the curie activity of the special nuclear material requested by more than 1.2 curies, a factor of approximately 3.

For these reasons the license application was fatally deficient. The application fails to identify the isotopes, fails to disclose the total curie activity, fails to disclose the presence of beta emitters and gamma emitters, and fails to inform the Staff or the public that this application is right on the threshold which would trigger the requirements of § 70.22(i), if applicable.

License Amendment No. 12, the Part 70 amendment at issue here, explicitly requires that the Licensee conduct its program in accordance with the statements, representations, and procedures contained in the application of February 20, 1990. That application explicitly states that the plutonium will have a maximum of 710 millicuries. The University is now experimenting not with plutonium which was erroneously licensed, but with plutonium for which it has no license at all.

This lawless conduct clearly has a direct bearing upon the various concerns of the Intervenors, especially the safety concerns and emergency procedure concerns. One must identify the isotopes and curies, and the beta emitters and the gamma emitters, and the isotopes which are decaying into gamma emitters, in order to design proper safety and emergency procedures.

The Licensee attempts to divert attention from its failure to identify the

isotopes by describing them as "trace levels" (p.24). This description might qualify the Licensee's staff to play the role of Humpty Dumpty in a campus theatrical: "When I use a word, it means just what I choose it to mean -- neither more nor less." But in the real world the phrase "trace level" could not describe an isotope which includes more than one per cent of the material's activity. See Declaration of Trump-S Review Panel, F . . . 1. To describe the isotope which contributes two-thirds of the curie activity as a "trace level" is simply nonsense. The fact is that the plutonium 241 contributes most of the curie activity of the special nuclear material requested, and also decays into the highly toxic americium 241.

The Staff has filed an interesting Response to Intervenors' motion for reconsideration of Memorandum and Order of November 1, 1990, dated December 5, 1990. The Staff contends that the University "properly omitted listing the trace amount of plutonium 241 and its daughter product, americium 241, since they are not significant dose contributors" (p.5). The Staff claims that "the Staff review of applications concerns only high energy isotopes which are significant dose contributors, even though the Staff is aware of trace contaminants and daughter products" (p.16).

If the response of the Staff is correct, and if the affidavit of John E. Glenn accompanying that response is correct, then the Staff is flouting the law and the regulations. As pointed out above, the regulations expressly require identification of the isotopes and the maximum allowable curies. The license amendment is expressly limited to the isotopes and curies identified in the application. If it is really true that the Staff has been flouting the regulations for years, that habit would not make this application sufficient, and would not expand the authority conferred by this license amendment. The Staff should be instructed to obey and

enforce the regulations.

However, it seems questionable whether the Staff representation is correct. The Staff Response and the affidavit of John Glenn raise interesting questions. If indeed "the Staff review of applications concerns only high energy isotopes which are significant dose contributors," how can the Staff begin to determine whether or not the requirements of §§ 30.22(i) and 70.22(i) are brought into play. Significantly, neither Dr. Glenn nor the Staff attorney address this question. What is the significance of the word "maximum" in Item 8 of NRC Form 374A if the Staff has no interest in finding out what the maximum is?

Both the Part 30 and the Part 70 license amendments involved in this litigation appear on NRC Form 374A, which specifies "Maximum amount that licensee may possess at any one time under this license." Obviously the Regulatory Guide requires specification of *maximum* curies, not one-third of the curies. This is borne out by looking at the NRC application forms. Form 313I, for byproduct material license, requires the applicant to set forth "*Maximum* number of millicuries and/or sealed sources and *maximum* activity per source which will be possessed at any one time." Form 313M, for medical materials license, requires the applicant to set forth "*Maximum* number of millicuries of each form." Form 313R, for sealed sources in radiography, requires the applicant to set forth "*Maximum* activity per source." The same requirement appears in Form 313T, for teletherapy materials. The fact that there is no printed form for application for a Part 70 license, if that is a fact, does not mean that anything goes. The Regulatory Guide requires identification of the total activity of the material requested. Even if the Staff wanted to do its job properly, it could not do so, if the applicant sets forth any number it feels like setting forth to identify the activity of the requested material,

bearing no identifiable relationship to the real activity.

If indeed the Staff is flouting the law, and the Administrative Law Judge is willing to let the Staff flout the law, then this extraordinary practice will have to be reviewed by the Court of Appeals. Before that is done, however, a proper record should be made, for review by that Court. We should not try to present a Staff practice of long standing to the Court of Appeals on the basis of an affidavit of the opinion of Staff practice held by a witness who has had only one year's experience in the national office, and whose knowledge, if any, of Staff practice over any meaningful period of time would presumably be limited to his experience in Region I. Staff practice should be an easy matter to establish in a proper hearing. Dr. Glenn should be called to testify at a hearing, and should be subpoenaed to bring with him copies of all applications for licenses or license amendments for authority to possess or use unsealed plutonium under Part 70, and all licenses and license amendments authorizing such possession or use, so that we can see whether the practice has really been as widely irresponsible as is claimed. If there are less than twenty such applications, then Dr. Glenn should be subpoenaed to bring with him the corresponding applications and licenses relating to other isotopes. He should be specifically subpoenaed to bring with him at least ten applications which understate the curie activity of the special nuclear material requested by a factor of 3. In this way we can make a proper record for the Court of Appeals.

The Presiding Officer has ruled that, prior to April 7, 1990, the beta and gamma emitting isotopes, and the trebled curie activity, "need not be disclosed." Memorandum and Order of December 19, 1990, at page 16. Intervenors respectfully preserve for appellate review their contention that the application was

fatally defective for this reason, and that the licensee is now using material for which it has no license at all.

But the isotopes and curies must be identified somewhere, somehow, so that they can be taken into account, for reasons other than determining whether §§ 30.32(i) and 70.22(i) come into play. When the application was filed, it misrepresented the curie content by wide margin, and nobody could have determined how many curies were really contained in the material requested, as the previous declaration of the TRUMP-S Review Panel pointed out. Now that the Licensee has at last furnished some of the information which should have been furnished in the application, it is possible to make a more accurate determination. As the TRUMP-S Review Panel offers to prove, a conservative estimate of the curie activity is in excess of 2 curies. Even the Licensee admits to approximately 2 curies, and the Presiding Officer has acknowledged more than 2 curies, in the Memorandum and Order of December 19, 1990, at note 21. What the Staff and the public need to know, obviously, is the maximum number of curies, not just one-third of the curies. Accurate assessment of the curies and isotopes is of vital importance, not merely to determine the applicability of the emergency planning regulations, but also to develop adequate safety and emergency response procedures. Further, without knowing the total curie activity, one cannot determine the applicability of other regulations, such as § 70.4(r).

4. The application fails to disclose the presence of plutonium 238 and 241 and Americium 241

This matter has been dealt with in the preceding paragraphs.

5. There is no certification under the Emergency Planning and Community Right-to-Know Act

As noted at page 19 of Intervenors' Written Presentation, both §§ 30.32(i) and 70.22(i) require that the application include a certification that the applicant has met its responsibilities under the Emergency Planning and Community Right-to-Know Act, in subparagraph (xiii) of each regulation. Because the Presiding Officer has ruled those provisions inapplicable, Intervenors are precluded from explaining here the misleading nature of the Licensee's response. However, Intervenors respectfully preserve this point for review.

The Licensee's false and vicious attack on the TRUMP-S Review Panel (pp.27-28) calls for a response. The Licensee reports that the Declaration of the TRUMP-S Review Panel "contends that Licensee has not informed the Columbia Fire Department as to the presence of the transuranics used in the TRUMP-S research. That contention, apparently based upon the Declaration of Henry Ottinger . . . is blatantly false." The Licensee has grossly misrepresented the testimony. At page 14 of the Declaration of the TRUMP-S Review Panel, Exhibit 1 accompanying Intervenors' Written Presentation, the Panel did not "contend" that the Licensee had not so informed the Fire Department, nor is there any need for the extraordinary powers of Sherlock Holmes to deduce that the declaration is "apparently based upon the Declaration of Henry Ottinger." What the Panel said was:

The declaration of Henry Ottinger -- a member of the Local Emergency Planning Commission created pursuant to that Act -- *indicates* that the University has not notified the LEPC of possession or plans for use of the transuranics.

In short, the Panel quite properly relied upon Mr. Ottinger's declaration, and qualified its position by expressly stating that it was relying upon Mr. Ottinger's report. If there is anything "blatantly false" here, it must be the Licensee's misrepresentation of the testimony.

Nor did the affidavit of Erman Call "discredit" (Licensee's Written Presentation at 28) Henry Ottinger's declaration that Mr. Call had informed Mr. Ottinger that the University "has not notified the LEPC of the possession or any plans for the use of the transuranics to be used in the TRUMP-S project, specifically the unsealed plutonium, neptunium, and americium." A careful reading of Mr. Call's affidavit finds no claim on the part of Mr. Call that the University had notified the LEPC of its possession and plans for use of these transuranics.

Nor does the affidavit of Walter Meyer contradict Mr. Ottinger. The Licensee cites (p.28) paragraphs 19, 20, and 32 of the Meyer affidavit, but no one of those paragraphs claims that any person informed the LEPC of the possession and use of these transuranics. The cited paragraphs of the affidavit, incidentally, contain a great deal of hearsay; they would be more meaningful if the fire department officials were to speak for themselves. The surfeit of hearsay is counterbalanced by an absence of dates; one infers that any superficial contact which the University may have made with the Columbia Fire Department was made after Mr. Ottinger's declaration was filed.

The most that can be said of the Meyer and Call affidavits is that they engender confusion as to what information was furnished to the Fire Department, and when. Notwithstanding the ruling that §§ 30.32(i) and 70.22(i) are inapplicable, this confusion bears upon the adequacy of emergency response planning, and should be resolved. This confusion can be resolved only by a hearing, at which the witnesses may be cross-examined.

6. HEPA filters don't count if they are not tested in place

This point was discussed at length in the motion for temporary stay and supporting papers, and in the Intervenors' Written Presentation at pp. 20-21 and

32-38. The Licensee has at last conceded (Written Presentation, p.50) that credit cannot be taken for the HEPA filter which cannot be tested in place, for purposes of safety analysis. This is a great step forward from the position of the Licensee at page 5 of Licensee's Response to Intervenors' application for temporary stay to preserve the status quo, dated August 23, 1990. The Licensee now rests its defense firmly and solely on the contention that a redundant HEPA filter is not needed, because the design meets the so-called "single failure criteria." This controversy relates to (1) sufficiency of the application, (2) adequacy of Staff review, and (3) adequacy of design in case of an accident, such as a fire (area of concern No. 1). In the interest of brevity, Intervenors will incorporate here by reference the discussion of HEPA filters relating to that area of concern, *infra*.

7. The applications contain no safety procedures

The Licensee contends (p.29) that the procedures need only be described, and need not be included in the application. However, these applications did not even contain descriptions adequate to enable a reviewer to determine that the procedures will be satisfactory. Section 70.22(a)(8) requires that the application contain proposed procedures, not descriptions.

8. The personnel are apparently not qualified

The Licensee's Response (p.31) on this point is confusing. Did the Licensee really understand, when it filed its application for the Part 70 license, that the Licensee was misleading the Staff and the public, by announcing that the special nuclear material requested would contain approximately one-third of the curie activity which it would actually contain? If so, the Presiding Officer should

consider whether some disciplinary action is in order. If not, there is a serious question whether the Licensee's personnel understood what they were doing.

9. There is no environmental report

As pointed out at page 24 of Intervenors' Written Presentation, an environmental report is clearly required if this facility constitutes a "plutonium processing and fuel fabrication plant" as defined in § 70.4. The Licensee claims (p.32) that its facility is not such a plant. The declaration of the TRUMP-S Review Panel (Ex. 20 accompanying this Response) demonstrates that the Licensee will have more than 2 curies of plutonium on hand. The Presiding Officer has now agreed. Memorandum and Order of December 19, 1990 at note 21. That is quite a bit, especially when one considers that a separate application for a license amendment would have to be filed to obtain authority to possess and use 1 microcurie. This is a million times the amount that can cause a significant likelihood of cancer. It is approximately 40 million maximum permissible body burdens. It is orders of magnitude greater than the threshold requiring decommissioning plans. Because this is a substantial amount, this is a § 70.4(r) fuel processing/scrap recovery R & D effort.

An environmental report is also required because this TRUMP-S project will result in a significant increase in the potential for radiological accidents. Section 51.60(b)(2)(v). Licensee argues (p.32) that experiments will be conducted only under the direction and supervision of authorized users, but, even if that turns out to be correct, that does not change the fact that the University will have inexperienced students and other personnel working with highly toxic, pyrophoric transuranics. With or without supervision, they present a hazard.

10. There is no decommissioning plan

At pages 25-27 of their Written Presentation, Intervenors pointed out that neither of the applications contains a decommissioning funding plan or certification of financial assurance for decommissioning as required by §§ 30.35, 70.25 and 70.22(a)(9).

The Licensee has advanced various arguments to the effect that its certification of financial assurance, filed without notice to Intervenors, was sufficient to constitute a certification, even though no Missouri official could constitutionally make such a commitment. Most of those arguments have been dealt with in the motions already filed. One argument presented more recently, in the December 6, 1990, Response to Intervenors motion for order admitting area of concern respecting financial assurance of decommissioning, at page 5, relies upon an extensive quotation from Regulatory Guide 3.66 (Task DG-3002). The certification filed by the Licensee does fulfill some of the requirements of that regulatory guide. However, the Licensee ignores the following:

The purpose of the statement of intent is to ensure that, early in the life of the licensed facility, government licensees make their funding bodies aware of decommissioning requirements and costs and the eventual need for funding.

There is no evidence that the University has made Missouri's General Assembly aware that the General Assembly is being committed to pony up nearly two million dollars, at some future year, to decommission this facility. Legislators interviewed by Intervenors have expressed complete ignorance of these decommissioning requirements and costs, and the eventual need for funding. They have expressed concern about a very tight budget. In the absence of proof that the University has made the General Assembly aware of the decommissioning requirements and costs and the eventual need for funding, the certification cannot be considered sufficient.

Beyond that, Intervenors pointed out in their written presentation: that a certification of financial assurance would not fulfill the requirements of the regulation. The full decommissioning plan is required. The Part 30 license authorizes 25,000 times the limit of unsealed americium which triggers this requirement, and the Part 70 license authorizes at least six or seven hundred times the threshold which triggers that requirement.

The Licensee's response is to incorporate by reference its Response to "Intervenors' Motion for Reconsideration of Memorandum and Order of October 15, 1990 (Motion for Order Concerning Documents)" and its related motion to strike (November 5, 1990). At footnote 4 of that document, the Licensee argues that §§ 30.35(a) and 70.25(a) were not applicable to these two license applications, because the Licensee received its licenses before July 27, 1990. But that is not what the regulation says. These regulations were adopted on June 27, 1988, and have been in effect ever since. They require that each applicant for a specific license for the threshold quantity of unsealed material submit the decommissioning funding plan. There is no escape from that. No other subsection of the regulation excuses the applicant from this requirement.

It is true that subparagraph (c)2 of each regulation provides that each holder of a specific license issued before July 27, 1990, shall submit, or on before July 27, 1990, either a decommissioning funding plan or a certification of financial assurance "in accordance with the criteria set forth in this section." By its terms, subsection (c) does not even allow the applicant to postpone compliance with subsection (a); it merely deals with those persons who obtained their licenses before June 27, 1988. However, if we assume that subsection (c) allows the Licensee here to *postpone* compliance with subsection (a) until July 27, 1990,

subsection (c) still does not *excuse* compliance with subsection (a). In short, there is no basis in the regulations for the Licensee's contention that it is somehow excused from compliance with subsection (a).

In fact, subsection (c) does not even postpone the requirement of filing the decommissioning funding plan (DFP) with the applicant. That the regulation means what it says is explicitly, repeatedly, stated in Regulatory Guide 3.66 (Task DG-3002):

Applicants for licenses on or after July 28, 1988, generally must provide financial assurance when their license is issued . . .

. . . NRC licensees under Part 30, 40, 70, or 72 may be required to: . . . demonstrate financial assurance immediately (i.e., applicants for an NRC license), or by July 27, 1990 (i.e., holders of NRC licenses issued before July 27, 1990) . . .

The decommissioning regulations establish different time schedules for submitting financial assurance, depending on whether a licensee was a holder of an NRC license issued before July 27, 1990, a holder of an NRC license issued on or after July 27, 1990, or an applicant for a new NRC license on or after July 27, 1988 . . .

Applicants for NRC licenses on or after July 27, 1988, are required to submit certification of financial assurance or a DFP when they are applying for the license . . .

Category A Licensees [defined to include the two licenses at issue here] . . . new applicants for Category A licenses must submit a DFP at the time of their license application.

Pages 1-1, 1-3, 1-6, 1-7, 1-8.

It is clear that each of the two applications at issue here recited, in the last paragraph of the text, that the University would submit a certification of financial assurance for decommissioning or a decommissioning funding plan on or before

July 27, 1990. On its face, therefore, the application was clearly deficient. Its rubber stamping by the Staff constitutes further evidence of the inadequate Staff review.

**EVEN IF THE APPLICATIONS HAD BEEN SUFFICIENT, THE STAFF
REVIEW WAS TOTALLY INADEQUATE**

It is true, as the Licensee says (p.14), that the applicant bears the burden of proof, and the NRC Staff is not on trial. However, where the Staff has simply rubber stamped an application, and required little or none of the documentation required by the regulations, the Judge is not required to embark on his own examination of all these matters *ab initio*. The Judge has the inherent authority to vacate the amendment and remand the matter to the Staff with directions to conduct a full review in accordance with the applicable regulation.

1. The Staff recorded no findings or supporting rationale

At page 27 of their Written Presentation the Intervenors pointed out that the Atomic Energy Act, the Administrative Procedure Act, and the applicable regulations require that findings be made respecting public safety and the common defense and security, and that the findings be explained. The Licensee argues (p.34) that there is no requirement that findings or supporting rationale be "recorded" or "written." Intervenors respectfully disagree. Some finding or rationale lurking in Dr. Adam's mind does not make a record reviewable in court.

The Licensee further argues that the hearing file demonstrates that it is not the NRC's standard practice to provide written findings or supporting rationale. The hearing file being what it is, Intervenors doubt that it demonstrates much of anything. Because it is obviously quite incomplete, it cannot easily demonstrate the

absence of anything. In any event, Intervenors were informed that it has been standard practice to provide findings and rationale, as required by law. They do not find that the hearing file demonstrates the contrary.

2. The Staff made no safety evaluation

At pages 27-28 of their Written Presentation Intervenors pointed out that the Staff made no safety evaluation of any sort. Without such an evaluation, the Staff had no basis for determining (mentally, not even in writing) that the applications met the governing criteria set forth in the regulations, and in § 53 of the AEA. The Licensee argues (p.34) that there is "no regulatory or statutory requirement that the NRC Staff issue a safety evaluation report." Intervenors disagree, but that is not the point. The point is that the Staff did not even mentally consider safety, whether or not such consideration would ultimately lead to a written report. Dr. Adam stated in his first affidavit that he gave no thought to the matter. How then could he possibly find that issuance of the license amendment would not constitute an unreasonable risk to the health and safety of the public, as is required by § 53 of the AEA? The Presiding Officer should not have to start at the beginning and do the initial safety evaluation himself. The matter should be remanded to the Staff, with directions to do its job.

3. The Staff did not recognize that 25 is more than 2, and a lot more than .3, and infinitely more than 0

As is shown by the zigzag course of affidavits from Dr. Adam, the Staff did not realize that the 25 curies of americium required the filing of an emergency plan, because that is more than 2. If we accept the afterthought of the Staff and the Licensee that §§ 30.32(i) and 70.22(i) were not in effect when the applications were granted by the Staff, then the threshold amount for the requirement of a

Radiological Contingency Plan was .3 curies of americium 241 and .1 curies of plutonium 239 (see above). The Staff appears to have been blissfully ignorant of both the old requirements and the new ones.

4. The Staff failed to flag the omission of plutonium 238 and 241 and americium 241, and the understatement of curie content

The Staff has now come forward with an affidavit to the effect that this failure was not an oversight. The Staff claims that it is standard practice to omit from the license application, and the license amendment, the isotopes which contribute two-thirds of the curie activity of the special nuclear material requested. Intervenors are skeptical that this really is the standard practice. If it is, the Staff should be promptly instructed to begin to uphold and enforce the statute and the regulations, which require identification of the isotopes and the maximum amount of curies. Meanwhile, the Staff might explain how, under its so-called standard practice, the Staff determines whether the total curie activity of the requested material will exceed the threshold of 2 curies, which triggers various requirements.

5. The Staff failed to review the obvious fundamentals

The various affidavits of Dr. Adam and Dr. Glenn make it clear that the Staff simply rubber stamps these applications. The Staff gave no thought to the requirement of a Radiological Contingency Plan, or to the regulation which was about to go into effect, requiring filing of an emergency plan. The Staff gave no thought to the regulation requiring a decommissioning funding plan. The Staff gave no thought to whether this program would be consistent with the health and safety of the public, or with the common defense and security, as required by the

statute and the regulations. The Staff gave no thought to what the total curie content of the plutonium might be.

The Staff simply did not require that the meaningful elements of an application be filed. In this Subpart L proceeding, Intervenors are to point out deficiencies and omissions from the application. Intervenors have done that. The Presiding Officer has no obligation to take over the role of the Staff, and start evaluating these matters *ab initio*. The Presiding Officer should vacate the license amendments and remand the matter to the Staff with directions to do its job.

III. EVEN IF EACH APPLICATION HAD APPEARED TO BE SUFFICIENT ON ITS FACE, AND IF THE STAFF REVIEW HAD APPEARED TO BE ADEQUATE, NEVERTHELESS, IN THE LIGHT OF THE EVIDENCE ADDUCED BY INTERVENORS, THE APPLICATIONS ARE NOT SUFFICIENT TO SUPPORT THE FINDINGS REQUIRED BY THE STATUTE AND THE REGULATIONS

As pointed out above, the Presiding Officer should not have to go into these matters in detail at this time. The applications should be remanded to the Staff, and completed and evaluated by the Staff, before we litigate these concerns. However, Intervenors will address the various areas of concern below.

Concern No. 1: The potential for an accident such as a fire

1. Safety procedures are inadequate

This point is made by Intervenors at pages 31-32 of their Written Presentation. The Licensee responds at page 48 that the Licensee has demonstrated many safeguards in design, construction and operating procedures.

Overruling virtually all of the recommendations of the independent consultant does not demonstrate a great concern for safety. Nor is a great concern

for safety demonstrated by slapping together belatedly a half-baked disaster plan which, as an experienced fire chief testifies, is really a plan for disaster. See Declaration of Donald W. Wallace, attached as Exhibit 21.

2. The HEPA filter exhaust system is inadequate

Until the Intervenors filed their request for temporary stay on August 20, 1990, the Licensee was still planning installation of the additional HEPA filter for the work with the plutonium and americium, having decided only that the experiments with neptunium could be safely done with the current ventilation system. See excerpts from Minutes of August 15, 1990, attached to Licensee's Exhibit 9 accompanying Licensee's Written Presentation. Dr. Morris's affidavit (Licensee's Ex.8, ¶ 8) states that Mr. Steppen's diagnosis of a "major design flaw" was unanimously rejected by himself and three others, all of whom lack Mr. Steppen's experience with alpha emitters. Dr. Morris implies that this decision was made prior to commencement of the experiments on the actinides. That implication is belied by the minutes of August 15, 1990, at which time the minutes report that the IUS concluded that it was safe to proceed with the neptunium only. None of the minutes reflect the alleged safety decision, or the alleged elaborate discussion, which Dr. Morris now claims occurred. If those events happened, wouldn't they be reported in the minutes? What qualifications did these people have to overrule Mr. Steppen?

Before Mr. Steppen became an inconvenience, he was highly regarded by the University, and his advice was eagerly sought. See Minutes of Isotope Use Subcommittee, May 16 and June 6, 1990, Intervenors' Ex. 19 accompanying Written Presentation of October 15, 1990, at pages 349, 350. Now he is dismissed as merely a health physicist. Ex. 8 at ¶ 10. What is a "health physicist"? Isn't Mr.

Steppen supposed to be qualified to opine on the facilities needed protect the employees? If not, on whom is the Licensee relying for the expertise to overrule him? On Dr. Langhorst, a health physicist? Or on Dr. Morris, a chemist?

The minutes reflect the real reason for scrapping the planned installation of a second HEPA filter, capable of being tested in place. As of August 15, 1990, it had been learned that this change would require a license amendment, "and scheduling of the installation [is] contingent on obtaining an additional license amendment." Minutes of August 15, 1990, attached to Licensee's Ex. 9. The temporary stay request was filed on August 20. It seems apparent that the decision not to correct the "major design flaw" was the result of fear of delay, not of some safety determination.

Dr. Morris states in the same paragraph 8 that the Staff concluded that the additional filter would offer no significant improvement in safety, and rejected Mr. Steppen's suggestion "on the basis that multiple failures are required before a condition would be generated that could possibly cause the back flow." No such thorough discussion, analysis, and decision is reported in the minutes of the IUS Subcommittee. If there had been such a discussion, it presumably would have been based upon the Licensee's then understanding that five simultaneous failures would be required before the back flow problem would arise (see Morris Affidavit of August 23, 1990, accompanying Licensee's Response to "Intervenors' Application for Temporary Stay to Preserve the Status Quo," at ¶ 10).

The independent consultant (Mr. Steppen) retained by the Licensee has apparently refused to back away from his observation that the lack of redundancy in HEPA filter protection along the pathway of back-flow into the alpha laboratory constitutes a "major design flaw." The Licensee has filed no affidavit from Mr.

Steppen, although the Licensee's affiants purport to quote Mr. Steppen liberally. This is extraordinarily strange. It must be remembered that Mr. Steppen is the Licensee's expert, not the Intervenors' expert. The absence of any statement from Mr. Steppen, coupled with the free and easy purported quotations from him, emphasize the need for a hearing at which the views of the Licensee's independent expert can be brought forth.

Mr. Steppen being apparently unwilling to present the testimony which the Licensee wanted, the Licensee searched for, and found, a witness who would say that "the redundancy provided by the additional filter proposed by Mr. Steppen is not necessary," and that "it is my opinion that the argon glovebox ventilation system represents a reasonable 'state-of-the-art' system and meets the requirements of the program as presented." Eschen Affidavit, Licensee's Exhibit 7 accompanying Written Presentation, pp. 4 and 6. Even this witness, however, was apparently unwilling to state that the absence of the redundant HEPA filter conforms to generally accepted safety engineering standards in the nuclear industry.

Mr. Eschen, at the same time, has brought the Licensee forward quite a bit. In his affidavit of August 23, 1990, accompanying Licensee's Response to "Intervenors' Application for Temporary Stay to Preserve the Status Quo," at ¶ 10, Dr. Morris concluded that the anticipated back-flow problem could occur only in the event of five simultaneous failures of monitored systems, one with an alarm. Mr. Eschen has reduced that number considerably, noting that the back-flow problem would result from two simultaneous failures. See Eschen Affidavit at ¶ 7. The University is learning.

Mr. Eschen defends the absence of the redundant HEPA filter by proclaiming that designing for two simultaneous failures "is not a normal design

requirement for safety systems *under the single failure criteria.*" ¶ 7. Maybe not. A rose is a rose, and a circle is a circle, and a circular sentence brings us back to the point of beginning.

What is the "single failure criteria [sic]"? Mr. Eschen assumes that this is a criterion which governs here. He appears to rely for this assumption on DOE Order 6430.1A, § 1300-3.3. (It is remarkable that the Licensee relies upon a DOE Order which the Licensee has consistently argued is not applicable here.) That DOE Order does indeed require, as a minimum for all DOE nuclear and explosive programs, wherever located, appropriate redundancy in safety systems that might be needed in case of a design basis accident, and further requires that the design shall consider diversity to minimize the possibility of concurrent common-mode failures of redundant items. But that Order does not validate this design, because (1) the "single failure" criterion does not conform to this design, (2) in any event, the NRC, unlike DOE, has rejected the "single failure" standard in favor of defense in depth, and (3) this design violates generally accepted standards of safety design.

1. There are several reasons why this design does not meet the DOE standard. First, that standard includes multiple failures resulting from a single occurrence. See DOE Order 6430.1A at page 26; 10 C.F.R. Part 50, App. A, under Definitions and Explanations. A single occurrence, such as a fire, could destroy the first HEPA filter, and the resulting smoke could clog the second bank of filters, resulting in backflow into the lab, without filtration by any HEPA filter tested in place.

Second, as long-time ACRS member David Okrent explains, the

single failure criterion states that, if safety equipment is required to terminate an abnormal change in power or flow to cope with an accident such as a loss of coolant accident, the safety equipment will perform adequately even if one failure occurs in some component of the safety system, such

as a pump involved, in addition to the failure which initiated the event.

Nuclear Reactor Safety: On the History of the Regulatory Process (U.Wis. 1981) p. 73. Thus, if one occurrence causes the pressurization resulting in backflow to the lab, the safety equipment (HEPA filters) must perform adequately even if one of them fails independently. The single failure criterion assumes an accident which requires proper functioning of safety systems to prevent a radioactive release, and then requires that no single failure of a component of the safety system can prevent the safety system from performing its function. To meet this standard, the Licensee must take credit for both filters in the first bank, and one of them cannot be tested in place.

Third, the Order emphasizes (as did Mr. Steppen) the impropriety of combining the two exhaust systems (glovebox and lab) before the glovebox exhaust has passed through two HEPA filters capable of being tested in place. Airflow systems are to be designed to provide at all times a continuous pattern toward areas of higher contamination, and so that cross contamination will not occur in case of a localized release of material. § 1550-99.0.1.

2. The DOE Order sets forth minimal standards, which have proved inadequate, as we can see from a quick survey of the DOE plants which are now shut down. The NRC has rejected the "single failure" criterion in favor of "defense in depth." When the Licensee quoted (Langhorst affidavit, Ex.2 p.14) from NUREG 0885, Issue 4, NRC Policy and Planning Guidance, 1985, the Licensee neglected to quote the immediately preceding sentence:

The Commission continues to believe in emergency backup systems, containment integrity and emergency planning as essential parts of the defense-in-depth philosophy.

Page 6, ¶ 7. It may be noteworthy that the most recent Issue of the Policy and Planning Guidance, Issue 6, 1987, has scrapped the sentence quoted by the Licensee, but reiterates the sentence quoted above, and elsewhere reiterates the NRC's commitment to defense-in-depth. NUREG 0885, Issue 6, pp. 21, 39. NUREG 1140, much relied upon by the Licensee, recognizes the "NRC's philosophy of defense-in-depth" at page 112. In short, even if the DOE would not require the backup, or redundant, HEPA filter, capable of being tested in place, the NRC does. See Declaration of Review Panel, Exhibit 20.

3. Under no circumstances does the NRC approve safety design which falls markedly below generally accepted safety design standards. Here we will have students experimenting with unsealed transuranics, in the middle of a city. This is folly, pure and simple. When dealing with the extremely dangerous radioactive materials which we are dealing with in this case, even in a remote desert location, standard engineering practices would require designing for at least two simultaneous failures. See Declaration of TRUMP-S Review Panel, Ex. 20 accompanying this Response. If the proponents are sufficiently misguided as to locate such an enterprise in the middle of a densely populated city of 60,000, good engineering practice would require design to protect against at least three simultaneous failures. *Idem.* This is obviously the view of the University's independent consultant, Mr. Steppen, who correctly describes this as a major design flaw. Dr. Plotkin and Mr. Pulido state emphatically that Mr. Steppen is correct, that good engineering practices in these circumstances require design for at least multiple failures, and require the redundant HEPA filter, capable of being tested in place. This testimony is not disputed. The artfully drafted affidavit of Mr. Eschen does not dispute this point, simply assuming that some sort of "single

failure criteria" is the governing standard here. Even Mr. Eschen did not say that this design meets the requirements of standard engineering practices for the design of a nuclear facility experimenting with transuranics in the middle of a city, using student trainees. No affidavit filed by the Licensee would support a contention that, for experiments with unsealed transuranics in the center of a city, the design need not take into account the possibility of multiple failures. If any expert had offered that opinion, clearly a hearing would have been required at which he could be questioned.

At page 52 of the Licensee's Written Presentation, the Licensee's attorney states that the affidavits of Mr. Eschen and Dr. Morris demonstrate that the argon glovebox ventilation system satisfies standard industrial practice for nuclear facilities. But only the attorney makes this representation, and he is not qualified as an expert on ventilation systems. Intervenors have not found this representation in either affidavit. If it were found in an affidavit of Dr. Morris, there would be substantial question about the experience on which he would base such an opinion.

2A. Other recommendations of Mr. Steppen

The affidavit of Dr. Morris regarding Mr. Steppen's suggestions and comments, Licensee's Exhibit 8 accompanying Written Presentation, reveals that many other recommendations of Mr. Steppen were overruled.

Mr. Steppen noted that the plexiglass windows in the gloveboxes are flexible, and could be sucked in and lose containment in the case of negative pressure. The Licensee declined to make any modification.

Mr. Steppen recommended that boxes of sand be placed in the argon and air gloveboxes for use to smother a fire. The recommendation was rejected.

Mr. Steppen suggested that the Licensee consider using leaded gloves to

lower the gamma dose when working with americium. Dr. Morris tells us that the consensus is that leaded gloves will not be used.

Mr. Steppen recommended that glove port covers not be used. The Licensee rejected that suggestion.

Mr. Steppen suggested using a smoke source to map airflow patterns in the room. The Licensee rejected that suggestion.

Except with respect to the most insignificant details, Mr. Steppen's recommendations were rejected. This pattern is further evidence of the Licensee's downgrading of safety considerations.

3. Response measures

The adequacy of response measures will be considered with respect to area of concern No. 4 below.

4. Dr. Morris' "Summary of accident analysis" is totally invalid

Some of the shortcomings of this document are listed at pages 38-40 of Intervenors' Written Presentation. Licensee has protested at length, but the "Summary" still does not appear to be a summary of anything. Licensee refers us to paragraphs 7-13 of Licensee's Exhibit 3, but Intervenors have been unable to locate there any explanation of what this document is a summary of. Nor have the other points made by Intervenors or the Review Panel been answered. Additional information indicates that the appropriate release fraction should be a great deal higher than the one originally posited by the Review Panel. See Declaration of Review Panel attached as Exhibit 20.

5. NUREG 1140 offers no refuge for MURR

At pages 40-41 of their Written Presentation Intervenors pointed out some

of the reasons why NUREG 1140 does not support Licensee's contentions relating to safety. Dr. Langhorst (Licensee's Ex.2) has responded at length. The Review Panel explains (Ex. 20 accompanying this Response) wherein her response falls short. Because of the necessity to have the Panel revise its Declaration at the last minute, the Panel's views cannot be summarized here. The reader is referred to the accompanying declaration.

6. An accident could result in concentrations exceeding NRC criteria, for miles around the laboratory

As pointed out at pages 42-43 of Intervenors' Written Presentation, a real dispersion model, demonstrating what would be likely to happen in the event of a fire at the alpha lab, would contaminate the city for considerable distances. In response, Licensee has filed one or more purported calculations, designed to show that, in the event of a fire, concentrations in populated areas would not exceed the threshold concentration which would impose additional emergency planning requirements on the Licensee (assuming applicability of §§ 30.32(i) and 70.22(i)). See Langhorst Affidavit, Licensee's Ex.2.

The Licensee's calculations are based on invalid assumptions. Because of the fundamental change made by the Presiding Officer, at the last minute, in the ground rules, that issue is not to be addressed here. Intervenors offer to prove by the testimony of the Review Panel that the Licensee's calculations do not comport in any way with the requirements of the regulation. The Panel would testify that (1) the materials are packaged in materials with a low melting temperature, and are not even packaged during the experiments; (2) the chemical or physical form would not lead to a lower release fraction than shown in § 30.72, which assumes metal slowly oxidizing; (3) the solubility of this material would not reduce the dose

received; (4) the facility design and plan to close the exhaust system would result in larger release fractions, and the glass window will break, providing a ready pathway; and (5) all factors relating to this facility, especially those noted by Captain Wallace, lead to higher dose estimates.

One factor is especially noteworthy respecting the Licensee's calculations: Licensee concentrates on plutonium. Licensee does not like to engage in calculations of americium concentrations, for good reason. But 25 curies of americium are authorized. These are far more dangerous than ten grams of plutonium. The Presiding Officer has an obligation to face up to them.

In response to Licensee's criticism of the Review Panel's previous calculations, and to Licensee's purported calculations, the Review Panel has now submitted graphs and Tables showing concentrations at various points, based on various assumed release fractions, and based separately on the licensed possession limit, the licensed in-process limit, and the Licensee's asserted normal process quantity.

All of these variations show concentrations in the City, in the range where Intervenors live and work, which are unacceptable to Intervenors. As John Gofman has pointed out:

. . . the human epidemiological reality-check leaves no doubt that exposure of people to ionizing radiation, even at the lowest possible doses and dose-rates, results in excess fatal cancer. . . . ionizing radiation may be the single, most important carcinogen to which humans are actually exposed. . . . Human evidence shows conclusively that no threshold exists with respect to induction of cancer by the lowest conceivable doses and dose-rates of low-LET ionizing radiation. There is no safe dose or dose-rate. . . . the cancer-hazard per dose-unit is more severe at LOW doses than at intermediate and high doses. . . . we prove beyond reasonable doubt that no safe dose or dose-rate exists with respect to radiogenic cancer.

Gofman, Radiation-Induced Cancer from Low-Dose Exposure (Committee for Nuclear Responsibility, 1990), pp. 25-15, 3-1, 1-4. As is demonstrated most recently by BEIR V (National Academy Press 1990), the independent scientific community has been for years, and is still, moving slowly and steadily towards Gofman's long-held positions on the degree of risk from low-level radiation.

Accordingly, the imposition of risk of even low-level exposure on a city of 60,000 people is not acceptable. If this kind of experimentation on unsealed transuranics is to be done (a mistake), it should clearly not be done in the middle of town, and without even the redundant HEPA filter, the absence of which the University's own consultant characterizes as a "major design flaw." This clearly violates the ALARA rule of § 20.1(c).

Licensee attempts to justify its accident scenario by arguing that anticipated concentrations at certain points would be less than the threshold level for the requirement of *additional* emergency planning, set forth in §§ 30.32(i) and 70.22(i). Licensee's reliance on those sections is ironic, in light of its vigorous, and thus far successful, contention that those sections are not applicable to this proceeding. Be that as it may, that threshold is not relevant to this point. The question is whether a fire would result in unacceptable concentrations, not whether those concentrations would require additional emergency planning.

Concentrations which are at the moment acceptable to the NRC and ANSI (not to Intervenors or to the public) are found elsewhere. The Review Panel has demonstrated graphically that those concentrations will be exceeded in the event of a fire on any assumptions which may be made, if the dispersion model is calculated correctly. Those concentrations will be exceeded by up to several orders of magnitude.

The last-minute ruling which changed the ground rules has made it impossible to summarize those findings here. The reader is referred to the Declaration of the Review Panel (Ex.20).

7. Reliability of testimony of Dr. Morris

This matter was dealt with by Intervenors in their Written Presentation at pages 43-47. The Licensee's response (pp.62-66) does nothing to reassure the reader that Dr. Morris' testimony will not again be misleading.

The Licensee rejects the common understanding that an independent expert witness might be less partisan than an employee of the company or University which is seeking to make a profit. It is, of course, true that an outside expert can be bought and paid for. But at least he has the option to decline to present the testimony desired. The absence of affidavits from Mr. Steppen is noteworthy. That is why outside experts are generally given greater credibility in litigation than are employees of the company which is litigating.

Concern No. 2: Adequacy of equipment and site

The Licensee contends that it meets all requirements of 10 CFR Part 20 with respect to "restricted areas" and "unrestricted areas." The fact remains, however, that this experimental program is taking place in the middle of a city. In the event of an accident, a population of 60,000 people (more on a fall Saturday afternoon) would be potentially exposed to contamination. A great deal of additional information is needed, beyond that disclosed in the application, or even in the affidavits filed in this proceeding.

1. We are not told what is combustible in the lab, what is the size and distribution of combustibles, and what are the fire and smoke characteristics of the combustibles.

2. Captain Wallace was able to find no evidence that the alpha lab or the MURR basement has fire sprinklers or other automatic fire suppression equipment. See Exhibit 21. Nor have the Intervenors been able to find any such evidence. The alpha lab thus fails a fundamental requirement of the basic NFPA codes. Further, Mr. Wallace found no reference to training of lab personnel in selection and proper use of fire extinguishers, or extinguishers designed for Class A fires (ordinary combustibles).

3. The Licensee apparently does not realize, or at any rate does not acknowledge, that placing the alpha lab in a concrete box below ground was a very bad idea. As Captain Wallace points out, "basement fires are among the most dangerous and difficult fires known." He emphasizes that "extremely high temperatures, inefficient combustion and consequent dense smoke with high levels of carbon monoxide rising through the only access points are hallmarks of basement fires." The various papers submitted by the University appear to assume, erroneously, that the dense smoke will exit through the stack, notwithstanding the closure of the stack by the dampers. In fact, the glass window and the rubber gaskets on the doors would fail under fire conditions, and the avenue of escape for the radioactive smoke would be through the doors and stairway to the rest of the building, or via the freight elevator shaft. It will be necessary somehow to ventilate the intense heat and dense smoke normally encountered in basement fires, and there is no emergency plan for that ventilation. As Captain Wallace says, "an

unsprinklered basement is a *very* poor location for a process involving radioactive materials."

4. Captain Wallace points out that the papers submitted by the Licensee inadequately describe the dry (floodable) fire main system.

5. Captain Wallace explains the shortcomings of the Licensee's inadequate understanding of airflow in buildings. He points out that pressure increases with temperature. Since the volume of the confining structure (the lab on the basement) does not increase, the fire gases *will* find an avenue of escape. Under normal fire conditions the gases in a room will increase by three times or more. However, in a concrete basement the expansion factor will be higher, because of higher temperatures. Without ventilation, nobody could do anything about the fire. No human being, even encased in fire fighter protective clothing, can tolerate ambient temperatures which are present in a fully involved ordinary room fire. A fire in an unsprinklered basement with the ventilation system shut down and with dampers and fire doors closed will be untenable. The fire will have to be allowed to burn itself out or ventilation will have to be accomplished. There are no alternatives to these two choices.

Concern No. 3: Adequacy of administrative controls

The Licensee argues that the Topaz scandal has no relevance. But it is clearly relevant to administrative controls, and demonstrates a history of laxity.

Concern No. 4: Adequacy of emergency plans

As a result of the Presiding Officer's ruling of December 19, 1990, Intervenors must assume, arguendo, that §§ 30.32(i) and 70.22(i) are not applicable here, and therefore the Licensee was not required to submit a plan to provide

supplemental emergency measures, as prescribed in those regulations. By way of preserving that contention for review, Intervenors respectfully state that they disagree, and, pursuant to F.R.E. 103, offer to prove by the testimony of the TRUMP-S Review Panel and of Captain Wallace that the emergency plan filed by the Licensee fails to fulfill any of the requirements of §§ 30.32(i)(3), and (4), and the corresponding provisions of § 70.22(i). The Part 50 emergency plan does not even deal with the alpha lab. The Panel would testify that the emergency plan fails every requirement of the regulation, including but not limited to the following failures: (1) the facility description fails in many ways, including failure to furnish dimensions to scale of the basement, to show the true combustibles, and to identify clearly the location of the fire-fighting equipment; (2) to identify types of accidents or analyze them; (e) to classify accidents at the alpha lab as alerts or site area emergencies; (4) to demonstrate adequate alpha detection equipment, or even smoke detectors in some areas of the basement; (5) to show what would be done to mitigate consequences of a fire, claiming that this is to be decided later; (6) to show how releases of transuranics will be detected, or to show backup emergency geiger counters which detect alpha particles; (7) to identify who is responsible to do what in the event of a fire; (8) to describe a means and commitment to notify the fire department when necessary; (9) to describe the types of information to be given to offsite response organizations; (10) to describe adequate training to fight a fire which the Licensee asserts is not credible; (11) to describe how the facility will be restored to safe use after an accident, how the Licensee would cope with re-entry, avoid material being tracked out, and dispose of water contaminated with transuranics; and (12) the "plan" was not submitted to the LEPC 60 days before

submitting it to the NRC, and if the "plan" is anything more than the reactor plan, it has never been submitted to the NRC. The following comments are based on the understanding that this issue has been ruled against the Intervenors.

As pointed out above (see page 8, *supra*), the Applicant was required to file, as a part of the application, a Radiological Contingency Plan, explaining plans for dealing with a contingency involving the TRUMP-S experimentation in the alpha lab. The Applicant filed none.

Belatedly, after Intervenors had filed their papers, the Licensee has filed some affidavits and some written procedures, and argues that, if you add them all up, and attach them to the reactor emergency plan which was last revised before anybody thought of the TRUMP-S experiment or the alpha lab, there is some sort of emergency plan here. This argument fails for at least three reasons.

First, it is too late. As pointed out above (see p. 8, *supra*), the Radiological Contingency Plan is to be filed as a part of the application, and reviewed by the Staff. Its inadequacies are to be pointed out by the Intervenors in presenting their initial written presentation. It is not to be created for the first time in the middle of a hearing, so that the Judge must do the initial evaluation job of the Staff, and the Intervenors have no opportunity to point its deficiencies except as a part of their rebuttal, when they will have no opportunity to the Licensee's response.

Second, what is the plan? The regulations call for a plan, not a multitude of affidavits scattered among a file cabinet of motions, responses, and other documents filed in the hearing. One who wants to examine the sufficiency of a Radiological Contingency Plan (whether NRC Staff, Judge, citizen, intervenor, or somebody else) should be able to go to the plan and examine it. He should not

be expected to rummage through all the files of this litigation, attempting to extract bits and pieces which the Licensee now belatedly relies upon.

Third, what the Licensee has presented is not a sufficient contingency plan at all. As stated by Captain Wallace, it is not so much a disaster plan as a plan for a disaster. In essence, Walter Meyer's "plan" in the event of a fire at the alpha lab is to call the fire department, and when the firemen arrive discuss the matter with them, and see what they can figure out. Mr. Meyer's statement (¶ 51 of his Affidavit of October 29, 1990, accompanying Licensee's Submittal in accordance with Memorandum (Memorandum of Conference Call of October 19, 1990)) is categorically wrong. It is directly in conflict with all of the principles of the National Fire Protection Association, as set forth in NFPA 801 and 802. See especially NFPA 801, §§ 2-2.4.1, 2-3.3.3, 2-7.1.1, 2-7.1.2, 2-8.2, 3-2.1, 3-2.1.1 (Steppen's concern), 3-4.1 (single story, without basements), 4-2.3, 5-4.3, 5-4.5(a), 5-4.6, 6-3.3 (automatic fire extinguishing systems), and 6-3.4; NFPA 802 §§ 3-1, 3-2, 3-3.1, 3-3.2 (prefire planning), 3-5.2 (procedures established in advance), 3-5.5 (promptly call fire department), 3-5.6, 3-5.7, 3-5.8, 3-6.3, 3-6.4, 3-6.6 (all construction should be non-combustible); 3-7.1, 3-7.2, 3-11.2 (automatic sprinklers), 3-11.3 (collection and disposal of water), 3-11.5, 3-14, 3-15. These universally accepted principles leave no room for debate. Before the fire, not after it has started, one must decide what the firemen will be expected to do if americium is burning, what they will be expected to do if plutonium is burning, and what they will be expected to do if neptunium is burning. Whatever they will do, the special clothing, equipment, if any, and supplies, if any, must be on hand in advance. The firemen must be trained in their use.

The University's failure to understand what a real contingency plan must achieve is vividly emphasized by the panic which followed Mr. Ottinger's report that he had been told by Battalion Chief Erman Call that, in the event of a fire involving radioactive materials, the procedure was "not to fight the fire." Chief Call was simply stating what any competent fire chief would state. As Mr. Wallace points out: "I know of no fire officer who would knowingly lead or send his crew into a fire where radioactive materials were burning or being directly exposed to fire conditions." There can be no doubt that Chief Call made this statement, as any competent Fire Chief would. It is confirmed not only by common sense, but also by two witnesses. See Exhibits 22 and 23. An oral hearing would be useful, to find out who has helped Chief Call to "recollect" so many things that were not said, in his conversations with Mr. Ottinger. See Exhibit 22.

What Chief Call told Mr. Ottinger was true, and was sound. This is the policy of the Los Angeles Fire Department, and apparently all other fire departments. Indeed, no protective clothing *exists* which is designed to protect firefighters from both fire conditions and radioactive hazards. See Declaration of Captain Wallace, Exhibit 21. "In short, fire departments are not equipped to fight fires in facilities with severe radiation hazards." *Idem*.

Thus the University's plan to call the firemen out to the scene and decide how to fight the fire is no plan at all. Nobody will fight the fire, if radioactive materials are involved. The University needs a plan, not a plan to make a plan.

Captain Wallace points out other deficiencies in the University's belated attempt to present a plan.

1. The separation of the "plan" into on-site (FEP) and off-site (SEP) elements is poorly planned and unnecessarily complicated. The "Emergency Class"

and "Action Levels" in the Emergency Plan are inadequate for effective Fire Department response. There are no instructions for notification of the Fire Department in any FEP but No. 3. The Fire Department should be called on *every* fire and on most emergency medical incidents beyond simple first aid needs. The lack of recognition of these needs in the planning documents discloses "a plan for disaster rather than a disaster plan.

2. The planning documents fail to deal with the possibility that radiological assessment of the area may reveal radioactive contamination above the limits any sensible Incident Commander would order his crews to approach.

3. The Meyer affidavit does not deal with the possibility that radioactive materials might become airborne. There is much boasting of monitoring and assessment capability. But if this monitoring and assessment shows a positive radioactive reading, who will do what? Mr. Meyer says the University personnel will talk to the Fire Department personnel and figure out how the Fire Department will fight the fire. That is not a plan, and furthermore it is not supported by Battalion Chief Call's affidavit. The fact is that the Fire Department would not fight the fire in those circumstances. Captain Wallace says, when he reads Meyer's affidavit, "I am reading puffery, not planning."

In summary, if we try to combine all of the papers filed by the University and pretend that they are supposed to add up to a contingency plan, the plan is dreadfully deficient. It is, as Captain Wallace says, a plan for disaster.

*Concern No. 5: The need for an environmental impact statement
or environmental assessment*

As previously noted Intervenors maintain their position that the so-called "categorical exemption" is invalid, and preserve that point for appellate review.

In addition, Intervenors maintain their argument that this TRUMP-S project does not fall within the category for exemption, because it is a plutonium fuel fabrication and processing facility, as defined in the research and development clause of § 70.4(r). This is the same process which was previously scheduled to take place at Rockwell, and was determined to be a "plutonium processing and fuel fabrication plant" under Part 70. The TRUMP-S experiments are research and development for the extraction of scrap plutonium and other actinides to be used as fuel in reactors. It is therefore a research and development project into preparation of fuel material, and also recovery of scrap material, and storage associated with both.

The Commission has not defined what quantity of plutonium is "unsubstantial" for purposes of exemption from this requirement. However, Intervenors maintain their position that 10 grams of plutonium, with an activity of 2 curies, is not unsubstantial. Anybody who might be exposed to this material would not consider it unsubstantial. The Licensee's effort to equate substantiality with "criticality" has no reasonable basis. The threshold requirement for decommissioning measures would appear to be the best guide to what is "unsubstantial."

Concern No. 7: The role of Rockwell

The dominant role being played by Rockwell, leading to the sacrifice of safety precautions, is outlined at pages 52-53 of Intervenors' Written Presentation. The Licensee responds (pp.88-82) that on paper the Licensee "remains in charge." That is true on paper, but that is beside the point. The point is that Rockwell is calling the shots.

Concern No. 6: Common defense and security

At pages 53-55 of their Written Presentation Intervenors explained why they believe that the exclusion of this concern was erroneous, pointing out that § 57(c)(2), 42 USC § 2077(c)(2), requires the NRC to determine whether the license amendment "would be inimical to the common defense and security." Section 103 of the Act, 42 USC § 2133, requires the same finding with respect to commercial licenses. The Court of Appeals for the District of Columbia has recently reminded the NRC that the Act means what it says. The Commission must make "specific findings" on this point. *Nuclear Information and Resource Service v. United States Nuclear Regulatory Commission*, No. 89-1381, decided November 2, 1990, slip opinion at p. 9. The reasoning of that decision is equally applicable here. The Presiding Officer should not turn his back on the governing statute.

AREAS OF INFORMATION
AND FURTHER QUESTIONS TO BE EXPLORED

At pages 55-59 of their Written Presentation, Intervenors identified areas of information and further questions to be explored at a hearing. A deluge of papers have been filed in the ensuing months. They suggest further questions which should be explored, as well.

Area No. 1: Isotopic and curie content of plutonium

As suggested above, Dr. Glenn and Dr. Adam should be called, and subpoenaed to bring with them all applications and license amendments for unsealed plutonium in the last twenty years, in order to determine whether it is true that the NRC Staff has been flouting the statute and the regulations throughout the years, in failing to require identification of the isotopes and total curies allowed to the Licensee. They should be specifically subpoenaed to bring

every Part 70 application which understates the true curie activity of the special nuclear material requested by 50% or more.

Dr. Adam should also be called to explain what he knew when he rubber stamped the Part 70 application. Did he really know that the special nuclear material contained plutonium 241, plutonium 242, and americium 241? Did he know how much of each? If so, where did he get that information?

Did he know how many curies each of these isotopes would contain? If so, where did he get that information?

Did he know whether the special nuclear material which the University planned to possess was to be weapons-grade, or reactor-grade, or something else? If so, where did he get that information?

Was he aware that, by April 7, 1990, the Licensee would be required to file an emergency plan if it was licensed to possess 2 curies of americium or plutonium? If so, did he attempt to determine whether either license amendment would authorize as much as 2 curies? Did he make any such determination respecting the Part 70 license? What information was available to him on which to base such a determination? Did he at any time prior to April 7, 1990, orally or in writing, discuss the emergency planning requirements with any representative of the Licensee. If so, with whom, and when, and what was said?

Was he aware of the regulation requiring the filing of a Radiological Contingency Plan for each of the applications? Did he take any action to enforce that requirement? Did he discuss that requirement at any time with any person representing the Licensee?

When did Dr. Adam learn of the mistake in his affidavit of July 26, 1990? How and from whom did he learn of this error? What steps did he take, when, to remedy this error?

Area No. 2: Testing in place

In addition to the questions posed at 56-57 of Intervenors' Written Presentation, Mr. Eschen should be called to explain what really is his position. Is he aware that the NRC, unlike DOE, requires protection in depth? Is he aware that protection in depth requires protection against multiple failures, not just a single failure? Does he understand that even DOE Order 6430.1A requires that every possible avenue which might be taken by the exhaust from a nuclear facility, before the exhaust reaches a human being, must be protected by at least two HEPA filters capable of being tested in place?

Does he have any opinion on the question whether good engineering practices require protection against two simultaneous failures, or three, for experiments with unsealed transuranics, with the participation of students, taking place in the center of a city with a population of 60,000? In his opinion, is the "single failure criteria" sufficient for these circumstances?

The Licensee's staff should be asked, at what time was the decision reached to proceed with the plutonium and americium experiments without the additional HEPA filter which had been ordered? Dr. Morris should be questioned about the discussions which he claims took place on this subject, and who expressed what opinion, and what was the basis for the conclusion that the additional HEPA filter was not required.

Area No. 3: Experience and training of staff

This subject was dealt with page 58 of Intervenors' Written Presentation.

Area No. 4: Safety analysis

The Seehars and Hochrainer report initially relied upon by Dr. Morris remains a mystery. Dr. Morris should be subpoenaed to bring with him all papers he has which he claims constitute an abstract or a part of the report, or the entire report, or a translation of the report, and all documents evidencing his receipt of any of them, and the identity of the translator and date of translation.

Area No. 5: Decommissioning

James T. McGill should further be asked whether the Licensee has notified Missouri's General Assembly that the Licensee has committed the General Assembly to produce nearly two million dollars at some future date for decommissioning purposes. If so, when, and how did he notify the General Assembly?

Area No. 6: Steppen recommendations

The Licensee has admitted that it has rejected many of Mr. Steppen's recommendations. The Licensee's staff should be called to justify its rejection of those recommendations.

REQUEST FOR HEARING

Intervenors renew their request for an opportunity for oral presentations, including testimony, and an opportunity to cross examine, and to propose questions for the Presiding Officer to pose to the witnesses, and that the Presiding Officer subpoena the witnesses. Intervenors further renew their request that the Presiding Officer recommend to the Commission, pursuant to § 2.1209(k), that Intervenors be permitted to cross-examine. All of the deluge of papers filed in this case since October 15 emphasize the need for cross-examination to bring out the facts.

CONCLUSION

The people who are using these highly toxic transuranics still do not understand that, unsealed, they are infinitely more dangerous than the sealed materials they have previously dealt with. They don't realize that these quantities are of such magnitude that they exceed the thresholds for various requirements by factors of 600 or 25,000, or more.

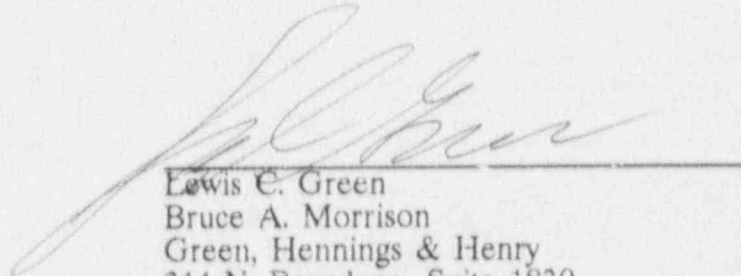
It is now clear that they don't even have a license to possess the plutonium on which they are experimenting, but they have not voluntarily terminated their activities. They are willfully proceeding with unlicensed experiments.

When they filed their application, they either did not know, or did not care, that they were required to present a safety analysis, a decommissioning funding plan, a Radiological Contingency Plan, and an emergency plan. They still have no decommissioning funding plan. They have now presented two, or three, or four contradictory sets of calculations. None of them provides a competent safety analysis, and none constitutes a safety analysis report. They are now presenting affidavits which they claim can be somehow added up to constitute an emergency plan, but what it adds up to is a plan for disaster. Even though all these facts have been pointed out to them, they are proceeding to conduct these experiments in the middle of the city without a buffer zone.

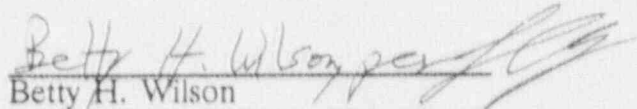
The Presiding Officer has the responsibility to protect the public. The license amendments should be denied forthwith.

For all the foregoing reasons, the license amendments should be set aside.

Respectfully submitted,




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I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.


Lewis C. Green

Executed at St. Louis, Missouri, this 24th day of December, 1990.