EID ~~appeal~~ response to appeal
befor EIB

BEFORE THE ENVIRONMENTAL IMPROVEMENT BOARD

RECEIVED
JAN 29 1990

IN THE MATTER OF APPEALS OF
HAZARDOUS WASTE FACILITY PERMIT
NO. 0890010515-1 ISSUED TO
LOS ALAMOS NATIONAL LABORATORY

RESPONSE OF THE ENVIRONMENTAL IMPROVEMENT DIVISION TO THE APPEALS OF THE LANL HAZARDOUS WASTE PERMIT

The United States Department of Energy ("DOE") and the Regents of the University of California ("the University") on December 20, 1989 filed a Petition For Limited Review with the Environmental Improvement Board ("EIB"). Ms. Barbara Jaramillo on December 12, 1989, and Ms. Joan Berde on December 8, 1989 also filed appeals. The EIB directed all parties who participated in the hearing below to file their responses to the appeals by January 29, 1990. The Environmental Improvement Division ("EID") has filed a Motion to Dismiss Appeals For Lack of Jurisdiction ("Motion to Dismiss") and supporting Memorandum.

I. THE EIB MUST DISMISS THESE APPEALS FOR LACK OF JURISDICTION

The EIB does not have jurisdiction to hear these appeals, and must dismiss the appeals. See EID's Motion to Dismiss Appeals For Lack of Jurisdiction and supporting Memorandum filed this same date.

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II. ALTERNATIVELY, IF THE EIB HAS JURISDICTION, A PUBLIC HEARING IS MANDATED ON THESE APPEALS

1. DOE and the University Have Presented New Evidence.

Alternatively, assuming the EIB has jurisdiction, HWMR-5 §902 mandates a public hearing to consider the new evidence presented in DOE's and the University's Petition For Limited Review. The EIB should stay its review of the appeals and remand to the EID for the public hearing on the fact questions raised in the appeals.

DOE and the University have presented new evidence in their Petition without complying with the requirements that new evidence was unavailable at the time of the proceedings below, and that the new evidence be submitted, examined and considered <u>only</u> pursuant to public hearing. HWMR-5, §902.G.2 in relevant part states:

> Any new evidence becoming available after the tentative decision by, or the hearing before the Director, may be presented at a hearing before the Board if such hearing is requested along with the request for review of the Director's decision. Otherwise, the Board shall consider only the evidence admitted in the record formed at the hearing before the Director or the evidence available to the Director at the time of his or her tentative decision.

The Petition submits several pages of alleged facts in the form of unsworn statements by the attorneys in support of DOE's and the University's allegations that the administrative record does not support the authority and feasibility of the conditions established in the permit. In summary, DOE and the University make the following factual allegations <u>in their Petition</u>:

a) That the radioactive emissions that may be released during the incineration of hazardous waste are "source, special nuclear, or byproduct material"

as defined by the Atomic Energy Act of 1954;

b) That monitoring for radioactive emissions during incineration of hazardous waste is the same as a substantive condition on the treatment of radioactive waste -- consideration of this issue requires facts which are not in the administrative record;

c) That the definition of "background" cannot be constant, and it does not indicate any particular type of radiation (alpha, beta or gamma) or any particular radioisotope;

d) That, in monitoring, it is difficult to determine: 1) if an increase in activity is due to instrument noise from the monitoring device or from an actual increase in radioactivity in the exhaust gas, and 2) at low levels of alpha radiation, interference from naturally occuring radon and thoron make it impossible to determine the actual amount of alpha radiation present due to incineration by the laboratory, particularly by continuous monitoring.

DOE and/or the University <u>in the administrative record</u> below (in summary) state the following concerning radioactivity in support of their permit application (<u>see</u> Exhibit A attached hereto for all of DOE's and the University's statements in the administrative record): All references to radioactivity are to the

burning of purely radioactive wastes or mixed wastes. Nowhere do DOE and the University discuss monitoring requirements for radioactivity at the stack or the difficulties regarding radon and thoron. There is one definition of background and that is in Appendix M to the RCRA Trial Burn Final Report for the Los Alamos Controlled Air Incinerator. Appendix M is the Quality Control Program/Quality Assurance Plan of Controls for Environmental Pollution, Inc., the lab doing the sampling and analyses for the trial burn. In the glossary, p. B-1, there is a definition of background very similar to that used by EID in the operating permit, Module V.F.9c. Because this is a document submitted by another laboratory, it is not possible to determine to what degree DOE and the University subscribed to that definition. Also, when radon and thoron are discussed in "A Review of the Report: High Efficiency Particulate Arrestors (HEPA Filter) in the Nuclear Industry," author, Joseph Goldfield, it is not in the context of monitoring difficulties. Except for these areas, none of the technical issues under appeal have ever been discussed by DOE and the University in the administrative record.

Thus, none of the alleged "facts" offered in the Petition were submitted to the administrative record. DOE and the University make no demonstration that the information stated in the Petition was unavailable at the time of the proceedings below, although they have the burden of doing so.

Upon information and belief, the information was available, DOE and the University failed to provide it, and they are

consequently estopped from submitting the information. Without such a demonstration the evidence cannot be considered by the EIB. DOE and the University have waived their right to submit the new evidence.

2. DOE and the University Have Waived Their Right to Present New Evidence.

DOE and the University waived their right to present the evidence they offer now in their Petition because they failed to offer it below. The administrative record clearly shows that there was extensive concern expressed about radioactive emissions from the incinerator during the incineration of hazardous waste <u>because</u> the incinerator is also intended for the incineration of radioactive waste. DOE and the University were put on notice of the concern and had the opportunity to present their own evidence. They chose not to offer any evidence, and were silent; in fact, they refused to testify concerning <u>any</u> issue at the public hearing. They risked nonsubmittal, and they lost. Therefore, they waived their right to present new evidence, and do not get a second chance to make their case.

HWMR-5, §902 prohibits the EIB from considering evidence outside of the administrative record, unless there is a public hearing on that evidence. Absent a hearing, the EIB must limit its review to the evidence in the administrative record, and may not consider in any way the unsworn assertions made by counsel for DOE and the University in their Petition. The factual assertions

constitute new evidence; the evidence could and should have been raised at the hearing below or following the hearing; DOE's and the University's failures to raise the evidence constitute waiver of the evidence. Given DOE's and the University's waiver of the evidence they seek to submit now, and the existence in the administrative record of evidence supporting the EID Director's conditions, see Exhibit 2 attached hereto for the information that was before the EID Director at the time of his decision, the EIB must affirm the EID Director's permit decision.

3. If the EIB Chooses to Consider the New Evidence, a Public Hearing Is Mandated, and Is Best Held Before EID.

Alternatively, without waiving its position that the existing record supports the authority for and appropriateness and feasibility of the permit conditions, EID asserts that a public hearing is mandated by HWMR-5, §902.G.2. If the EIB chooses to consider DOE's and the University's new evidence, there must be a public hearing allowing all parties a reasonable opportunity to submit written and oral evidence and arguments, to introduce exhibits, and to cross-examine persons who testify.

Such a public hearing would best be held in front of EID instead of in front of the EIB, and in that event EID requests the EIB to remand the appeals to EID for further proceedings. EIB review under HWMR-5, §902 is primarily designed to be an appellate review, as manifested by the standards for review. It is more appropriate for EID to hold an evidentiary hearing. The EIB lacks

the technical expertise to evaluate evidence presented at such a hearing.

Appellants will not be harmed by a remand to EID for a public hearing. Due to the Congressional moratorium passed on or about August 1, 1989, DOE and the University are prohibited from burning any radioactive waste in the incinerator for which the hazardous waste permit applies. The moratorium extends for one year, or until EID's Air Quality Bureau's regulations on incineration of radioactive wastes are promulgated, whichever comes first. Further, upon information and belief, DOE and the University are also not burning any hazardous waste in the incinerator at this time. Thus, DOE, the University, Ms. Jaramillo and Ms. Berde will not be harmed by any delay from holding a public hearing on DOE's and the University's new evidence.

III. IF THE EIB PURSUES THE APPEALS, EID REQUESTS TEN ADDITIONAL DAYS IN WHICH TO FILE

Should the EIB pursue consideration of these appeals, EID hereby moves the EIB to permit EID a ten (10) day extension in which to file its substantive responses to the merits of the appeals.

IV. EIB EXTENSION OF TIME IN WHICH TO RULE ON THE APPEALS

Counsel for the EIB has requested from the parties and EID an extension in which to rule on the appeals. EID does not object to such an extension.

V. CONCLUSION

For the reasons stated above, the EIB should dismiss these appeals for lack of jurisdiction; alternatively, the EIB should without public hearing affirm the EID Director's permit on the basis of the administrative record, without consideration of DOE's and the University's new evidence; alternatively, the EIB should remand the appeals to EID for a public hearing to better develop the record for review. Additionally, if the EIB goes forward with these appeals, EID requests an extension of ten days in which to file its substantive responses to the merits of the appeals; and EID does not object to the EIB's extension of time in which to rule on the appeals.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing Response of the Environmental Improvement Division to the Appeals of the LANL Hazardous Waste Permit was mailed on this 29th day of January, 1990, to the following:

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Documents in the Administrative Record submitted by Los Alamos National Laboratory (LANL) that address the Issues under appeal.

Listed below are all the references referring to radioactivity in administrative record documents submitted by LANL. All citations are as outlined in "EID's submission in respect to EIB review of the Director's decision Los Alamos National Laboratory Hazardous Waste Facility Permit No. 0890010515-1 of January 10, 1990." None of the references to radioactivity cites any information regarding background levels or monitoring of radioactivity at the stack.

I.B. Permitting files: 1985 to May 9, 1989 (binder 1)

I.B.1. CAI Run Plan for Run 21 RCRA Final Burn received September 4, 1986, p. 7, section 5.2:

HSE-1 health physics personnel will monitor all samples (as possible) for presence of radioactive contamination prior to release.

I.B.2. DOE letter dated November 25, 1987, p. 4, paragraph 2:

<u>The system upgrade of the TA-50 Controlled Air Incinerator</u>. The incinerator, in addition to disposing of hazardous wastes, has burned transuranic (TRU) waste as a research and development operation. In converting to a production mode for TRU disposal it was decidded the facility needed to be modified to accommodate an increased radioactivity. Because this impacts hazardous waste operations, the permit application is modified to reflect these changes.

I.C. RCRA Part B Applications

I.C.1.a. Initial, May 1985, Volume I, p. 2-5:

Particular attention has been given to engineering for proper waste containment, resulting in a system that is safe for evaluating the incineration of hazardous chemicals and certain radioactive waste forms.

I.C.1.b. Initial, May 1985, Volume I, p. 4-5, section 4.2:

It is currently permitted to burn radioactive and PCB-contaminated materials... The incinerator and fuel gas treatment systems are capable of safely combusting a variety of hazardous wastes including low-level radioactive wastes and transuranic

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contaminated wastes. Since the incinerator is designed to combust materials contaminated with radioactivity, the incinerator is fitted with glove boxes that permit operation and maintenance of components that have the potential of becoming radioactively contaminated.

I.C.1.c. **Initial, May 1985, Volume I, p. 4-8:**

Since the incinerator is used for volume reduction of transuranic and low-level radioactive wastes, the ash, scrub solution and scrub filter cartridges are handled as suspect radioactive wastes. Thus, the ash is solidified by mixing with cement and the scrub solution is transferred to the TA-50 industrial (radioactive) waste treatment system for treatment. Since the incinerator is used for volume reduction of radioactive waste as described above, the ash is considered a hazardous waste (40 CFR section 261.3[c][2])(NMHWMR 201.A.2.c[2]) and is checked for radioactive contamination and handled appropriately.

I.C.1.d. **Initial, May 1985, Volume I, p. 9-11:**

Particular attention has been given to engineering for proper waste containment, resulting in a system that is safe for evaluating the incineration of hazardous chemicals and certain radioactive waste forms.

I.C.1.e. **Initial, May 1985, Volume I, p. 9-12. section 9.3.2.2.:**

All radioactive components will be decontaminated and disposed of according to appropriate regulations... A detailed description of decontamination produces upon closure is not possible at this time since the equipment may be contaminated with transuranic (TRU) and low-level radioactive wastes. Decommissioning will follow Laboratory guidelines and procedures for handling radio active contaminated equipment. Exact procedures are a function of the degree of contamination at the time of closure... Upon the decision to close the facility, the equipment and building will be surveyed to determine the nature and levels of both radioactive and hazardous chemical contamination... All materials generated from decontamination and demolition will be treated as radioactive wastes and disposed of in

accordance with DOE radioactive waste management guidelines.

I.C.1.f. **Initial, May 1985, Volume II, P. J-6:**

Production-scale CAI system at Los Alamos was originally designed for the demonstration of volume reduction of combustible solid radioactive wastes... Research studies which have been completed in the CAI unit have included the incineration of various radioactively contaminated solid wastes, liquid PCBs, and pentachlorophenol contaminated wood.

I.C.2.a. **Revision 2.0, January 1986, Volume I, p. 6, section 1.2.4:**

Particular attention has been given to engineering for proper waste containment, resulting in a system that is safe for evaluating the incineration of hazardous chemicals and certain radioactive waste forms. The liquid waste blowdown goes to the radioactive waste treatment facility. Samples will be collected as specified in the Incinerator Trial Burn Plan.

I.C.2.b. **Revision 2.0, January 1986, Volume I p. 2-4, section 2.1.2.2:**

Particular attention has been given to engineering for proper waste containment, resulting in a system that is safe for evaluating the incineration of hazardous chemicals and certain radioactive waste forms.

I.C.2.c. **Revision 2.0, January 1986, Volume I, p. 4-6, section 4.2:**

It si currently permitted to burn radioactive and PCB-contaminated materials... The incinerator and flue gas treatment systems are capable of safely combusting a variety of hazardous wastes including low-level radioactive wastes and transuranic contaminated wastes. Since the incinerator is designed to combust materials contaminated with radioactivity, the incinerator is fitted with glove boxes that permit operation and maintenance of components that have the potential of becoming radioactively contaminated.

I.C.2.d. **Revision 2, January 1986, Volume I, p. 4-9, section 4.2.2:**

Since the incinerator is used for volume reduction of transuranic and low-level radioactive wastes; the ash, scrub solution and scrub filter cardridges are handled as suspect readioactive wastes. Ash is first checked to determine its radionuclide content. Ash that is classified as transuranic waste is solidified by mixing with cement and stored for proper disposal. Has that is classified as low-level radioactive waste is analyzed according to the procedures in section 3.0 to determine whether or not a hazardous waste, component is present. If the waste is also found to be a hazardous waste, it is handled as a mixed waste. Ash that is not found to be radioactive is analyzed according to the plan presented in Section 3.0. If the ash is hazardous waste, it is handled and disposed in accordance with the waste procedures presented in this document. The incinerator scrub solution is transferred to the TA-50 industrial (radioactive) waste treatment system via a closed piping system for treatment (a non-RCRA regulated activity). Thus, the incinerator is used for volume reduction of radioactive and hazardous waste as described above, and the ash is considered potentially to be hazardous waste (40 CFR 261.3,[c][2]) (NMHWMR 201.A.2.c.[2]) and is checked for radioactive and hazardous waste contamination and handled appropriately.

I.C.3.a. **Revision 3.0, January 1986 (revised November 1986), Volume I, page entitled, Lower-Burner-Combustion Air/Flowmeter Upgrade:**

A part of upgrade efforts in anticipation of production-level incineration of TRU and chemical wastes, we are removing the lower burner from the CAI and will be firing the lower chamber with the liquid injection burner, using natural gas or fuel oil during heatup or when incinerating solids.

I.C.3.b. **Revisions 3.0, January 1986 (revised November 1986), Volume I, page entitled, Vacuum Ash Removal System/Ash Removal Upgrade:**

However, this system was never intended for production-level incineration and presents a particular concern, both operationally and with regard to maintenance when, high volumes of TRU waste are being incinerated. "Clinkers" formed during incineration and noncombustibles (e.g.

nails) inadvertently fed to the system were often too heavy to be conveyed overhead and would require dismantling of the alpha-contaminated pipeline for their removal.

I.C.3.c. **Revision 3.0, January 1986 (revised November 1986), page entitled, Quench Column, Absorber and Piping Upgrade:**

However, for the anticipated production-level incineration of TRU and chemical wastes, these components present a substantial operational and safely concern... We feel that more reliable materials of construction are necessary in a system which will be operated for longer and more frequent intervals, and which will be highly contaminated with ^{239}Pu.

I.C.3.d. **Revision 3.0, January 1986 (revised November 1986), page entitled, Dual, Liquid Filter/Hydrocyclone and Blowdown Filter Upgrade:**

These filter element housings were located in a glovebox enclosure to reduce any radiological hazard (alpha activity resulting from incineration of TRU combustibles, i.e. ^{239}Pu)... In addition, the large volume of TRU-contaminated filter tubes generated by this system (and which required subsequent incineration) presented an undesirable waste handling and storage problem.

I.C.3.e. **Revision 3.0, January 1986 (revised November 1986), page entitled, HEPA Filter Plenum Upgrade:**

Although the offgas treatment system effectively removes particulate from the offgas streams radiological concerns arising from TRU incineration dectate the need for HEPA filtration... This system presented several problems from an operational and safety standpoint: 1) the lack of a backup HEPA filter plenum necessitated placing the CAI in an idle mode during filter changeout, 2) filter changeout was difficult to accomplish while maintaining an alpha seal on the plenum, because of the physical location of the plenum in the process (floor level), and 3) removal of the interior filter was difficult thereby presenting a radiological hazard. Relocation and use of individual filter enclosures will make filter changeout safer, less tedious, and will minimize the possibility of alpha release.

I.C.3.f. **Revision 3.0, January 1986 (revised November 1986) p. 4-6, section 4.2:**

It is currently permitted to burn radioactive and PCB-contaminated materials... Since the incinerator is designed to combust materials contaminated with radioactivity, the incinerator is fitted with glove boxes that permit operation and maintenance of components that have the potential of becoming radioactively contaminated.

I.C.3.g. **Revision 3.0, January 1986 (revised November 1986) p. 4-9 section 4.2.2:**

Since the incinerator is used for volume reduction of transuranic and low-level radioactive wastes, the ash, scrub solution and scrub filter cartridges are handled as suspect radioactive wastes. Ash is first checked to determine its radionuclide content. Ash that is classified as transuranic waste is solidified by mixing with cement and stored for proper disposal. Ash that is classified as low-level radioactive waste is analyzed according to the procedures in Section 3.0 to determine whether or not a hazardous waste component is present. If the waste is also found to be hazardous waste, it is handled as a mixed waste. Ash that is not found to be radioactive is analyzed according to the plan presented in Section 3.0. If the ash is hazardous waste, it is handled and disposed in accordance with the waste procedures presented in this document. Thus, the incinerator is used for volume reduction of radioactive and hazardous waste (40 CFR 261.3[c][2]) (NMHWMR 201.A.2.c.[2]) and is checked for radioactive and hazardous waste contamination and handled appropriately.

I.C.3.h. **Revision 3.0, January 1986 (revised November 1986), p. 6-15, section 6.5.2:**

Mon Hazardous liquids are then pumped to the Laboratory's industrial (radioactive) waste treatment plant.

I.C.3.i. **Revision 3.0, January 1986 (revised November 1986), p. 9-26, section 9.3.2:**

Particular attention has been given to engineering for proper waste containment, resulting in a system that is safe for evaluating the

incineration of hazardous chemicals and certain radioactive waste forms.

I.C.3.j. **Revision 3.0, January 1986 (revised November 1986), p. 9-27, section 9.3.2.2:**

The manner of disposal will depend on any residual radionuclide contamination as well as any residual hazardous waste contamination. All radioactive components will be decontaminated to the extent practicable and disposed of according to appropriate regulations... A detailed description of decontamination procedures upon closure is not possible at this time because the equipment may be contaminated with transuranic (TRU) and low-level radioactive wastes. Decommissioning will follow Laboratory guidelines and procedure for handling radioactive contaminated equipment. Exact procedures are a function of the degree of contamination at the time of closure... Upon the decision to close the facility, the equipment and building will be surveyed to determine the nature and levels of both radioactive and hazardous chemical contamination... All materials generated from decontamination and demolition will be treated as radioactive or mixed waste and disposed of in accordance with appropriate regulations.

I.C.3.k. **Revision 3.0, January 1986 (revised November 1986), Volume II, Appendix J. p. 2, section 2:**

The small production-scale CAI system at Los Alamos was originally designed for the demonstration of volume reduction of combustible solid radioactive wastes... Research studies which have been completed in the CAI unit have included the incineration of various radioactively contaminated solid wastes, liquids PCBs, and pentachlorophenol contaminated wood.

I.C.4.a. **Revision 4.0, November 1987, Volume I, p. 2-5, section 2.1.3.2:**

Particular attention has been given to engineering for proper waste containment, resulting in a system that is safe for evaluating the incineration of hazardous chemicals and certain radioactive waste forms.

I.C.4.b. **Revision 4.0, November 1987, Volume I, p. 4-7, section 4.2:**

The incinerator is currently permitted to burn radioactive and PCB-contaminated materials... The incinerator and flue gas treatment system are capable of safely combusting a variety of hazardous including low-level radioactive wastes and transuranic contaminated wastes. Since the incinerator is designed to combust materials contaminated with radioactivity, the incinerator is fitted with glove boxes that permit operation and maintenance of components that have the potential of becoming radioactively contaminated.

I.C.4.c. **Revision 4.0, November 1987, Volume I, p. 4-11, section 4.2.2:**

Since the incinerator is used for volume reduction of transuranic and low-level radioactive wastes, the ash, scrub solution and scrub filter bags are handled as suspect radioactive waste. Ash is first checked to determine its radionuclide content. Ash that is classified as transuranic waste is solidified by mixing with cement, calcium sulfate, or other DOE-approved immobilizing media, and stored for proper disposal. Ash that is classified as low-level radioactive waste is analyzed according to the procedures in Section 3.0 to determine whether or not a hazardous waste, component is present. If the waste is also found to be a hazardous waste, it is handled as a mixed waste. Ash that is not found to be radioactive is analyzed according to the plan presented in Section 3.0. If the ash is hazardous waste, it is handled and disposed in accordance with the waste procedures presented in this document. Thus, the incinerator is used for volume reduction of radioactive and hazardous waste as described above, and the ash is considered potentially to be hazardous waste [40 CFR 261.3(c)(2)] (NMHWRM 201.A.2.c.(2) and is checked for radioactive and hazardous waste contamination and handled appropriately.

I.C.4.d. **Revision 4.0, November 1987, Volume I, p. 9-29, section 9.3.2.1:**

Particular attention has been given to engineering for proper waste containment, resulting in a system that is safe for evaluating the incineration of hazardous chemicals and certain readioactive waste forms.

I.C.4.e. Revision 4.0, November 1987, Volume 1, p. 9-29, section 9.3.2.3.:

The incinerator and the flue gas treatment systems are capable of safely combusting a variety of hazardous wastes including low-level radioactive wastes and transuranic wastes.

I.C.4.f. Revision 4.0, November 1987, Volume I, p. 9-30, section 9.3.2.4:

The manner of disposal will depend on any residual radionuclide contamination as well as any residual hazardous waste contamination. All radioactive components will be decontaminated to the extent practibable and disposed of according to appropriate regulations... A detailed description of decontamination procedures for the incinerator upon clousre is not possible a this time because the equipment may be contaminated with transuranic (TRU) and low-level radioactive wastes. Decommissioning will follow Laboratory guidelines and procedures for handling radioactive contaminated equipment... Upon the decision to close the facility, the equipment and building will be surveyed to determine the nature and levels of both radioactive and hazardous chemical contamination.

I.D. RCRA Trial Burn Documents

I.D.1. Response to EPA/NMEID comments of September 13, 1985 on the Los Alamos National Laboratory TA-50 Incinerator Trial Burn Plan, submitted May 1985 (binder 3).

I.D.1.a. Comment 26 and Response.

Comment 26:

Los Alamos needs a full schedule for the final closure (procedures and the schedule).

Response:

Since the incinerator will be contaminated by radionuclides, clousre procedures will have to be developed that take the radiation hazard into account. Thus, these procedures will be developed after the radiation hazard has been determined.

I.D.1.b. **Comment 41 and Response.**

Comment 41:

Page 4-8, LANL need to provide information on the "(radioactive) waste treatment system" located at buildign TA-50.

Response:

Section 4.2.2 has been revised to clarify the role of the radioactive waste treatment system as it relates to the incinerator operations.

I.D.1.c. **Comment 42 and Response.**

Comment 42:

Page 4-8. LANL need to note that the ash will also need to be analyzed and treated if necessary, as a hazardous waste.

Response:

The incinerator will be analyzed for both radioactive and hazardous constituents. The final disposition of the ash will depend on the result of the analyses as discussed in Section 4.2.2.

I.D.3. **RCRA Trial Burn Final Report for the Los Alamos Controlled Air Incinerator, Volumes I and II, March 1987 (binder 4 and 5):**

I.D.3.a **Volume I, Appendix G. HEPA Filter Specifications, High Efficiency Particulate Air Filters. (paragraphs numbered consecutively throughout the article)**

I.D.3.a.1. **Page 1, paragraph 1:**

High efficiency particulate air (HEPA) filters, once known as absolute filters, were originally developed as the particulate attenuation state of a chemical, biological, radiological (CBR) filtration adsorber unit for use by the U.S. Armed Services. In the late 1940's the U.S. Atomic Energy Commission (AEC) adopted tehm for use for the containment of airborne radioactive particulates in

the exhaust ventilation system of experimental reactors, nuclear laboratories, and nuclear processing plants.

I.D.3.a.2. **Page 1, paragraph 2:**

On adoption of absolute filters by the ACE, Oak Ridge National Laboratory was assigned the study and developement program to optimize HEPA filtration design for nuclear service. The results of this on-going program have been published in "Design, Construction, and Testing of High-Efficiency Air Filtration Systems for Nuclear Application", USAEC Report ORNL/NSIC-65, and later under the Energy Research and Development Administration (ERDA) as the "Nuclear Air Cleaning Handbook", ERDA-76-21. The Second Edition of ERDA-76-21 (excerpt attached) was the nuclear industry standard at the time of design and construction of the Los Alamos Treatment Development Facility (TDF).

I.D.3.a.3. **Page 1, paragraph 3:**

The purpsoe of a nuclear air cleaning system is to provide protection of the public, plant operating pesonnel, and the environment from airborne radioactive particles and gases which are, or could be, generated or released from operations conducted in a nuclear reactor, fuel fabrication or processing plant, radiochemical operaion, laboratory, or other nuclear operation.

I.D.3.a.4. **Page 1, paragraph 4:**

In nuclear process off-gas cleaning applications, the HEPA filters are generally proceded in the process line by scrubbers, cyclones, and/or common air filters, which extend the operating life of the HEPA filters, but the HEPA filters are used as the final barrier between a process or contained space in which radioactive particles could be generated and the point of release to the atmosphere (the facility stack).

I.D.3.a.5. **Pages 1-2, paragraph 5:**

Not all of these applciations require the performance and construction of filters used in nuclear service.

I.D.3.a.6. **Pages 2, paragraph 6:**

In the 1960's, the American Association for Contamination Control convened a committee to write specification standards for HEPA filters, (IES CS-IT) which resulted in these grades of HEPA filters, i.e., Industrial, Nuclear, and Laminar Flow. The Nuclear Grade specification has been futher refined into a Military Specification, Mil-F-51068D, Filter, Particulate, High Efficiency, Fire Resistant.

I.D.3.a.7. **Page 2, paragraph 7:**

High efficiency filtration theory and the significance of particle size is subject to considerable misunderstanding both within and without the nuclear industry.

I.D.3.a.8. **Pages 2-3, paragraph 8:**

At operating conditions recommended for nuclear grade HEPA filters, calculations indicated a particle diameter of from 0.09 to 1.0 microns as the most difficult to filter... Nuclear grade HEPA filters must demonstrate a removal efficiency of not less than 99.97% of 0.3 micron particles.

I.D.3.a.9. **page 3, paragraph 9:**

The HEPA filters received at Los alamos are routinely purchased by the Laboratory's Materials Management and Transportation (MAT) Division according to current Department of Energy (DOE) and Nuclear Regulatory Commission (NRC) Nuclear Grade specifications... Facilities and processes involving plutonium or other transuranic isotopes have a minimum of double HEPA

filtrations; that is, two filter banks in series, each in-situ tested to meet the 99.97% minimum removal efficiency requirement.

I.D.3.a.10. **Page 3, paragraph 10:**

Additional environmental protection from volatile radioisotopes, such as radioiodine, and organic vapors is provided by the activated carbon adsorption bed. A final HEPA filter is the downstream bed screen.

I.D.3.a.11. **Page 3, paragraph 11:**

Chapter 4.3.3, Radioactive Plant Emissions Under Normal Operations, of the Final Safety Analysis Report (FSAR) for the Transuranic Contaminated Solid Waste Treatment Development Facility (LA-7971-MS, July 1979) (copy attached) contains an evaluation of the particle removal efficiencies by the variable throat venturi scrubber.

I.D.3.b. **Volume I, Appendix G, HEPA Filter Specifications, Nuclear air Cleaning Handbook, Design, Construction, and Testing of High-efficiency Air Cleaning Systems for Nuclear Application. (paragraphs numbered anew on each page):**

I.D.3.b.1. **Page 1, paragraph 1:**

A nuclear air cleaning system is provided to protect the public and plan operating personnel from airborne radioactive particles and gases which are, or could be, generated or released from operations conducted in a nuclear reactor, fuel fabrication or processing plan, radiochemical operation, laboratory, or other nuclear operation... The component almost univerally included in such systems is the hich-efficiency particulate air (HEPA) filter. This type of filter may be supplemented by common air filters, bag filters, cyclones, scrubbers, or other devices used in more conventional

applications but is nearly always employed by the nuclear air or gas cleaning system as the final barrier between a contained space (in which radioactive particultates could be generated) and the point of release to the atmosphere (i.e., the stack) or to an environmentally controlled space of the facility.

I.D.3.b.2. **Page 1, paragraph 2:**

The prevention of even extremely low concentrations of airborne contamination is fundamental to the safe opeation of a nuclear facility... Although protection of the health and safety of the public and of plant personnel is the primary consideration, the high costs of decontamination and the possiblility of shutdown of the facility in the event of an accidental airborne release of radioactive material are also important considerations.

I.d.3.b.3 **Page 1, paragraph 3:**

Radioactive substances tend to deposit or "plate out" on ducts, components, and other exposed surfaces and, in time, become sources of persistent ionizing radiation... These problems are of particular concern in power reactors and fuel reprocessing facilities because of their petential for releasing large amounts of radioactive material in the event of a system malfunction or upset.

I.D.3.b.4. **Page 1, paragraph 4:**

Much of the information pertinent to the design, construction, and testing of very-high-efficiency air and gas cleaning systems for nuclear applications is contained in limited-distribution topical reports, technical papers, and job specifications that are often not readily available to designers... The handbook summarizes findings from the literature and air cleaning practices at labortories, production facilities, power and

research reactors, and radiochemical and fuel reprocessing facilities. The judgments and recommendations presented reflect the experience of users and conditions that exist in operating systems where airborne radioactive materialis being successfully controlled on a day-to-day basis, oftern in situations where personnel have had to live with, or adapt to, serious deficencies in design or construction.

I.D.3.b.5. **Page 2, paragraph 5:**

... The functional design of nuclear air cleaning systems is covered in Safety Monograph No. 17 of the International Atomic Energy Agency (IAEA),[2] in various Regulatory Guides of the Nuclear Regulatory Commission (NRC),[3-5] and in the ERDA Manuar.[6]... Gas adsorption theory of interst to the nuclear industry is covered best in the proceedings of the biennial AEC (now ERDA) Air Cleaning Conferences.

I.D.3.b.6. **Page 2, paragraph 6:**

The design of nuclear air cleaning systems is complicated by the extremely high collection efficiencies required to meet the maximum permissible concentration (MPC) calues that have been established for radioactive substances in air.[1]... The situation is quite different in nuclear systems because of the complete insensitivity of man to the presence of radioactivity, even at levels that represent an immediate danger to life, and because of possible long-term effects of exposures even at low levels. The lowest threshold limit values (TLV)[12] specified for most chemical contaminants in air are at least two orders of magnitude higher than the MPC of any radioactive material.

I.D.3.b.7. **Page 2, paragraph 7:**

Similarly, the iodine adsorption units used in nuclear air and gas cleaning

service must also exhibit collection (i.e., decontamination) efficiencies substantially greater than adsorption units used in fume and oder control and most toxic or noxious gas control applications.

I.D.3.b.8. **Pages 2-3, paragraph 8:**

If airborne radioactive material is released from the system, there is the possiblity of seriously contaminating occupied spaces of the plant, as occured in the St. Laurent fuel meltdown incident in France, or of contaminating the surrounding countryside, as occurred in the Windscale reactor incident in England several years ago... In addition, the deposition and "plate out" of radioactive particulate matter and gases in and on ductwork, housings (i.e., equipment casings), filters, and other air cleaning system components limits access, obstructs maintenance, and increases the cost of operation. The designer must appreciate these substantial differences between nuclear and conventional air cleaning systems. Concentration of radiotoxic materials in the air cannot be maintained below statutory limits[1] if the design or layout of the system, or selection or installation of components is deficient. Some operations in the past have relied to some extent on dilution of airborne radioactive wastes with large volumes of air, followed by dispersal in the atmosphere. This practive is no longer acceptable in view of recent "as low as reasonably achievable" (ALARA) regulations, and heavy emphasis must be placed on positive removal of radioactive particlates, fumes, and gases by means of well-designed and-maintained filtration and adsorption systems.

I.D.3.b.9. **Page 3, paragraph 9:**

Also, since filters are collectors of radioactive (or potentially radioactive (or potentially radioactive) dust, they

can contain substantially greater concerntrations of radioactive material than the air of the contained space served by the system.

I.D.3.b.10. **Page 3, paragraph 10:**

Although lack of ventilation system flexiblity may create no problems in nuclear reactors and other facilities that have a fixed function, in radiochemical operations and particularly in laboratories and experimental facilities wehre changes is almost standared procedrue, provision for future system modification at the time of original system design can pay for itself many times over. The rebuilding of radioacvtively contaminated ducts and air cleaning systems is costly and hazardous, at best, and can be even more costly and hazardous when some provision for flexibility has not been left in the original design. because of the radioacticity problem, the costs of modifying or rebuilding a nuclear plant exhaust or air cleanup system may run five to ten times the cost of similar worked carried out in a nonradioactive system.

I.d.3.b.11. **Page 3, paragraph 12:**

He cannot be expected to build a system having the special features and requirements of a nuclear air cleaning system unless the design details and specifications clearly define them.

I.D.3.b.12. **Page 4, paragraph 14:**

A survey by the Harvard Air Cleaning Laboratory showed that operation and maintenance accounted for more than 85% of the total cost of owning a nuclear air cleaning system, based on 20-year amortization.[18]

I.D.3.b.13. **Pages 5-6, paragraph 16:**

The previous issue of the handbook[20] has

provided background information for a growing family of national standards covering air and gas cleaning systems for nuclear applications; the new issue will hopefully assist designers and engineers in using and interpreting those standards. It is also hoped that the volume will provide a rationale for the engineer, the manager, and the designer to justify the more costly, but necessary, features that a nuclear air cleaning system demands.

I.D.3.b.14 **Pages 7-11, Terms and Phrases (20 total):**

activation analysis. A method for identifying and quantitatively measuring chemical elements in a sample. Atoms in the sample are first made radioactive by bombardment with neutrons, charged particles, or other nuclear radiation; they then give off characteristic nuclear radiation by which they can be identified and their relative abundance can be determined.

adsorber. A device for removing gases or vapors from air by means of preferential physical condensation and retention of molecules on a solid surface. Adsorbers used in nuclear applications are often impregnated with chemicals to increase their activity for organic radioactive iodine compounds.

containment (containment vessel or building). A gastight enclosure around a nuclear reactor or other nuclear facility designed to prevent fission products from escaping to the atmosphere.

contamination. Any unwanted material in the air, in process fluids, or on surfaces. For the purposes of this handbook, contamination is usually assumed to be radioactive.

criticality. The state of sustaining a chain reaction, as in a nuclear reactor. When fissionable materials are handled

or processed, they must be kept in a subcritical geometry, configuration, or mass to avoid accidental criticality.

dose. The amount of ionizing radiation energy absorbed per unit mass of irradiated material at a specific location. In the human body it is measured in rems; in inanimate bodies it is measured in rads.

hot. Highly radioactive.

ionizing radiation. Any radiation (alpha, beta, or gamma) that directly or indirectly displaces electrons from the outer domains of atoms.

isotope. One of several forms of nuclides of the same chemical element that have the same number of protons in the nucleus and therefore have the same chemical properties, but have differing numbers of neutrons and differing nuclear properties.

maximum permissible dose. The dose of ionizing radiation which competent authorities have established as the maximum that can be absorbed without risk to human health.

nuclear reactor. An apparatus in which a chain reaction of fissionable material is initiated and controlled.

particle, particulate. A minute piece of solid matter having measurable dimensions. Also a radioactive particle (alpha, beta) which can liberate ionizing radiation or (neutron) which can initiate a nuclear transformation.

rad. Radiation absorbed dose, the basic unit of ionizing radiation. One rad is equal to the absorption of 100 ergs of radiation energy per gram of matter.

radiation. The propagation of energy through matter or space in the form of electromagnetic waves or fast-moving particles (alpha and beta particles,

neutrons, etc). Gamma rays are electromagnetic radiation in which the energy is propagated in "packets" called photons.

radioactivity. The spontaneious decay or disintegration of an unstable atomic nucleus accompanied by the emission of radiation.

rem. reontgen equivalent man. The unit of absorbed radiation dose in rads multiplied by the relative biological effectiveness of radiation.

shielding. A mass of absorbing material placed around a radioactive source to reduce ionizing radiation to levels not hazardous to personnel.

specific radioactivity. radioactivity per unit weight of a material.

spill. Accidential release of radioactive or other contaminating materials.

treatment. The process of removing all or a part of one or more chemical components, particulate components, or radionuclides from an off-gas stream.

I.D.3.c. **Volume I, Appendix G. HEPA Filter Specifications, Flanders: Air Filtration Products. (paragraph numbered anew on each page)**

I.D.3.c.1. **Page 1.15, paragraph 2:**

Before this time the uses for the absolute filters were largely for radioactive containment... It was no accident that HEPA filters used to "contain" radioactivity were selected as the best and simplest means of controlling harmful airborne contaminants.

I.D.3.c.2. **Page 8, paragraph 4:**

This, in trun, led to a re-evaluation of the filter test procedures for filters

used for radioactive containment. Prior to the advent of commercial nuclear power stations, most of these filters were used either by the U.S. weapons program or in the field of nuclear research. The U.S. Department of Energy (formerly, The Atomic Energy Commission) operates, through perime contractors, several filter test facilities equipped with Q 107 Penetrometers. Hepa filters purchased for weapons and nuclear research facilities are retested en route to these plants.

I.d.3.c.3. **Page 10, paragraph 1:**

The most stringent factory tests for hepa filters have resulted from the requirments of both the nuclear industry and the operators of laminar flow clean rooms... Consequently, it is not surprising that the nuclear industry and those industries requireing liminar flow clean rooms also require verification of inservice performance of both Nuclear Grade and Laminar Flow Grade Hepa Filters and their supporting frameworks.

I.D.3.c.4. **Page 10, paragraph 6:**

Hepa filters installed in nuclear air cleaning systems are required to be tested in-service following each filter change and in certain cases, periodically during the life of the filters... The in-place test is frequently called an efficiency test, but the standard, Testing of Nuclear Air Cleaning Systems, ANSI/ASME N510-1980, states;

I.D.3.c.5. **Page 14, paragraph 3:**

As in the testing of nuclear systems in-place, a uniform challenge is required.

I.D.3.c.6. **Page 15, paragraph 6:**

The breakthrough on VLSI^{tm} filtration is certain to have far-reaching effects in both the nuclear and clean room

industries in years to come.

I.D.3.d. **Volume I, Appendix G: HEPA Filter Specifications, Excerpt:FSAP for the Treatment Development Facility, LA-7971-MS, July 1979, (paragraphs numbered anew on each page)**

I.D.3.d.1. **Page 4-26, paragraph 2:**

Radioactive emissions from the Zones 2 and 3 filter systems will be small fraction of that from the incineration offgas cleanup train filters (Zone 1).

I.D.3.d.2. **Page 4-26, paragraph 3:**

The incineration of 100 lbs of design matrix wastes per hour at a level of 100 nCi/g will contain 4540 Ci of transuranics... At the design offgas rate of 30900 ft^3/h, some 200 g of ash containg 20 Ci of transuranics would be carried over into the offgas treatment train.

I.D.3.d.3. **Page 4-28, paragraph 2:**

Using the middle value of 96.13% particulate removal efficiency for the venturi scrubber (normal operating pressure drop is 50"), and assuming no allowance for partuclate removal in the quench chamber, liquid-gas separator, packed column scrubber, demister or ash or roughing filters, 7.74 g of ash containing 0.77 Ci of transurarics is expected to impinge on the HEPA filters... The stack flow rate is 746,950 SCFH or $2.12 \times 10^4 m^3/hr$ yielding a plutonium concentration in the effluent of 3.14×10^{-18} Ci/m , well below the DOEM 0524 limit of 6×10^{-14} Ci/m for soluble plutonium. Additionally, plutonium incinerated at 2300 F is most probably in the oxide form and insoluble except in acid digestion. Therefore, the DOEM chapter 0524 limit of 10^{-12} Ci/m is considered to be the applicable standard.

I.D.3.e. **Volume II, Appendix I, Trial Burn Plan,**

Section D: Process Information, p. 2., paragraph 1:

Research studies which have been completed in the CAI unit have included the incineration of various radioactively contaminated solid wastes, liquid PCBs, and pentachlorophenol contaminated wood.

I.D.3.f. **Volume II, Appendix M, Analytical Laboratory QA/QC Plan, Controls for Environmetnal Pollution, Inc. Quality Control Program/Quality Assurance Plan.**

I.D.3.f.1. **Page 3, section 2.2.(g):**

(g) standardizing all radioactive quality control solutions; and

I.D.3.f.2. **Pages 3-4, section 4.1 Radiochemistry:**

4.1. Radiochemistry

(e) Radioactive quality control solutions will be calibrated as requried.

I.D.3.f.3. **Page 5, section 4.5 Nuclear Measurements Instrumetnation:**

4.5 Nuclear Measurements Instrumentation

(a) All nuclear measurements instrumentation and equipment shall be on a maintenance program, as appropriate for the nature and frequency of usage.

(b) Backgrounds on proportional counters and alpha spectrometers will be conducted with every twenty-five samples. Backgrounds for gamma spectrometry are determined automatically for all samples analyzed (computerized program).

(c) Insturmentation calibrations of proportional counters, gamma spectrometers and liquid scintillation systems shall be counducted on a weekly basis. Alpha spectometers shall be calibrated on a quarterly basis. Less frequently used instruments will be calibrated prior to use. Standards used are to be traceable to National Bureau

of Standards, when available.

(d) Self-absorption curves will be conducted on a quarterly basis.

I.D.3.f.4. **Page 8, section 5.2.1. Radiochemistry:**

5.2.1. Radiochemistry

(a) All Radiochemistry personnel shall follow approved methods by the Environmental Protection Agency, Environmental Measurements Laboratory or other methods approved by management to meet client specifications or regulatory requirements.

I.D.3.f.5. **Page 10, section 5.2.5. Nuclear Measurements:**

5.2.5. Nuclear Measurements

(a) All Nuclear Measurement personnel shall follow the Standard Operating Procedure Manual for each instrument.

(c) Backgrounds on proportional counters and alpha spectrometers will be conducted with every twenty-ive samples. Backgrounds for gamma spectrometry are determined automatically for all samples analyzed (computerized program). Standard traceable to National Bureau of Standards, when available, will be run on a weekly basis, or as appropriate for the instruement.

I.D.3.f.6 **Page 10, section 5.4. Quality Assurance Audits:**

CEP-QA-85 Quality Assurance Audit, Nuclear Measurements.

I.D.3.f.7. **Page 11, section 6.1. Radiochemistry:**

(a) All analytical records and quarterly reports shall be retained as permanent record in accordance with CEP administrative requirements.

(b) Records and reports shall be formated as directed by CEP clients.

I.D.3.f.8. **Pages 11-12, section 6.5. Nuclear Measurements:**

(a) Quality Assurance records shall consist of all logs, reports, results, difeciency reports and the like which are generated in the course of carrying out requirements of all Quality Assurance Plan.

(b) All such records shall be retained as permanent record in accordance with CEP's administrative requirements.

I.D.3.f.9. **Page 12, section 8.1. Quality Assurance Plan and Standard Operating Procedures:**

The draft of the completed Qualtiy Assurance Plan and Standard Operating Procedure for Radiochemistry, Inorganic Chemistry, Organic Chemistry, Microbiology and Nuclear Measurements shall be distributed for review comment and approval as follows:

President	1 Copy	(For review and comment)
All Labortory Managerial Positions	1 Copy	(For review and comment)
Director of Quality Control	1 Copy	(For approval)

I.D.3.f.10. **Page B-1, Glossary:**

Background- Radiation present when there is no source under the detector usually expressed as counts per minute.

I.D.3.f.11. **QA Manual Checklist:**

CEP-QA-A	Radiation Control Manual for LAboratory Personnel
CEP-QA-6	Standard Operating Procedure Inventory of Radioactive Material
CEP-QA-9	Radionuclide Issuance Procedure

CEP-QA-14	Nuclear Measurements Instrument Loading and Unloading Procedure
CEP-QA-45	Quality Assurance Standard Operating Procedure for the Calibration of Wide Beta Systems
CEP-QA-46	Quality Assurance Standard Operating Procedure for Determining Efficiencies of Detectors for Wide Beta II and Low Beta II Systems
CEP-QA-47	Quality Assurance Standard Operating Procedure for Calibration of Low Beta II Systems.
CEP-QA-56	Procedures for Analytical Performance of Radioanalytical Lab
CEP-QA-58	Importance of Quality Control in Radioanalytical Laboratory
CEP-QA-81	Quality Assurance Audit, Radiochemistry
CEP-QA-85	Quality Assuracne Audit, Nuclear Measurements
CEP-QA-89	Standard Operating Procedure Review of Radiochemical Data

II.A. **Permitting files: May 10, 1989 through 5 p.m., August 24, 1989 (includes written comments received on draft permit) (2 volumes, binders 7&8)**

II.A.1. **Response to Mr. Michael Horan's 5/31 letter to NMEID Re: Los Alamos Controlled Air Radioactive Waste Incinerator RCRA Operating Permit #NM0890010505-1**

II.A.1.a. **Item #1 - HEPA Filters, paragraph 1-2,5.**

The Carbon Bed Adsorber was originally installed in the CAI offgas treatment line as part of a research project to study the fate of various fission activation products during incineration.

Its primary purpose at that time was for capture of Iodine 131 that might pass through the upstream offgas treatment components. It is not now, nor has it ever been, intended to serve as a filter or control device for PU-238, PU-239, PU-240, or any other particulates in the offgas stream. The sole reason this component has been retained in the present incinerator design configuration is that due to offgas duct piping constraints between the primary HEPA filter banks and the Carbon Bed, EPA Method 5 isokinetic sampling associated with the RCRA Trial Burn could only be made in the ductwork downstream of the Carbon Bed.

The primary filtration device for removal of radioactive particulates in the offgas stream is the High Efficiency Particulate Air (HEPA) filters, located upstream of the Carbon Bed. These are nuclear grade filters which are factory tested and certified to have a minimum particle capture efficiency of not less that 99.97 percent of 0.3 micron particles. All HEPA filters are further tested by DPE prior to installation at the site to certify 99.97% capture efficiency. Following installation, leak testing is performed across the filter bank to ensure adequate installation and filter performance. Three HEPA filter banks are located in series in the process, for tripley staged filtration of the offgas.

HEPA filters in current usage at the CAI are the industry standard, non-regenerable type. Regenerable HEPA filters are available, but as yet are not approved for nuclear service. HEPAs removed from service are assayed to determine whether they contain transuranic (TRU) or low level radioactive contamination. Low level contaminated filters are placed into contained storage pending disposal at a mixed waste disposal site. TRU contaminated filters are placed into contained storage pending certification and disposal at WIPP.

II.A.2. **COMMENTS OF THE DEPARTMENT OF ENERGY AND THE REGENTS OF THE UNIVERSITY OF CALIFORNIA ON DRAFT PERMIT NUMBER 0890010515-1 TO OPERATE HAZARDOUS WASTE FACILITIES, BEFORE THE NEW MEXICO ENVIRONMENTAL IMPROVEMENT DIVISION-JULY 18, 1989.**

II.A.2.a **ATTACHMENT J.**

Attachment J, in its present form, covers matters

which are outside the jurisdiction of EID and should be deleted from the permit. Section 74-4-3H NMSA 1978 states that source, special nuclear or by-product material as defined in the Atomic Energy Act are not solid wastes and therefore cannot be hazardous wastes. Such materials may not be regulated by EID under the Hazardous Waste Act. Throughout Attachment J there are references to procedures, equipment, and personnel which are specifically and solely related to the proper control and management of radioactive materials. Clearly, these matters are improperly included in the hazardous waste permit and should be deleted. In lieu of the hazardous waste permit and should be deleted. In lieu of the present Attachment J, the Laboratory has prepared a substitute Attachment (Exhibit 4) which addresses incinerator operational safety with regard to hazardous wastes. LANL requests that this document be substituted for Attachment J in the draft permit.

II.A.3. **Supplementary Comments of the Department of Energy and the University of California on Draft Permit #NM0890010515-1**

II.A.3.a. **Introduction p.1, paragraph 2.**

Concerns dealing with the treatment of radioactive or mixed waste are not relevant to this proceeding and may not be considered by EID unless they directly relate to the storage or treatment of chemical wastes.

II.A.3.b. **P.2, Section 3, Paragraphs 1-2.**

Exceptions are the TRU contaminated PCBs and other TRU waste, the scintillation vial (pseudocumene or 1,2,4-trimethylbenzene) waste, and some materials contaminated with methanol (upon which the interim status request was based).

Ashes qualifying as TRU waste were sent to TA-55, where they were solidified along with evaporator bottoms from TA-55 processing operations. These materials are currently sorted with other TUR wastes at TA-54, pending ultimate disposal (at WIPP or a similar facility). Non-TRU ashes, whether resulting from radioactive or non-radioactive real or simulated waste incineration, have been handled as low level or potential mixed waste. Consequently, these ashes have been sent to the mixed waste landfill at Area G. No ash has

been disposed of at that site since the last operation of the CAI for scintillation vial destruction in the Spring of 1987.

II.A.3.c. **P.6, Section 6, Paragraphs 1-2.**

The radioactive constituents in mixed wastes have no known or demonstrable effect on efficiency of chemical destruction.

Damage of impairment of the incinerator due to exposure to radioactivity is not a valid concern. Although conditions of high neutron flux or gamma energy (such as in a reactor environment) can cause materials damage (such as embrittlement of metals), the CAI will not see appreciable levels of this type of radioactivity. The plutonium contaminating the radioactive and mixed waste emits primarily alpha activity, which is not a materials concern.

II.A.3.d. **P.7, Section 12, Paragraph 2.**

At no time did LANL decide, nor was it necessary, to suspend chemical operations due to some other alleged system damage, not was the decision to return to burning primarily TRU waste in the CAI a result of such corrosion damage.

II.A.4. **A Review of the Report: High Efficiency Particulate Arrestors (HEPA Filters) in the Nuclear Industry. Author: Joseph Goldfield, Consulting Engineering; Reviewer: Ronald C. Scripsick, Industrial Hygiene Group, HSE-5, Health, Safety, and Environment Division, LANL; Review Date: August 17, 1989 (submitted with Supplemental Comments)**

II.A.4.a. **"Radon and Thoron Daughters," p.**

Because plutonium activity levels were so low on the second and third stage samples, radon and thoron activity was allowed to decay away before making the plutonium activity measurements. The radon and thoron activity is associated with a naturally occurring gas and is not associated with plutonium processing.

II.A.5. **Operational Evaluation of the High Flow Alternative Filter Test System, R.C. Scripsick, R.L. Smitherman, and S.A. McNabb, 19th DOE/NRC Nuclear Air Cleaning Conference (submitted with**

Supplementary Comments

II.A.5.a. **IV. Summary, last page**

The HFATS provides the capability of measuring worst case filter penetration and readily determining penetration in terms of physical factors of concern (i.e. mass, radioactivity, etc.).

Listed below are the comments regarding radioactivity and the Los Alamos National Laboratory which were before the Director when he made the decision to issue the operating permit.

III.A.2. **Post-hearing Materials; Permitting-files: Date of Director's Decision, November 8, 1989.**

III.A.2.a. **Memorandum: Summary of issues regarding the operating permit for hazardous waste units at Los Alamos National Laboratory, November 8, 1989.**

IIIA.2.a.1. **Hazardous waste units and wastes handled at LANL, paragraph 3, p.2.**

Additionally the incinerator is burning mixed wastes under interim status and it permitted to burn strictly radioactive wastes and PCBs.

III.A.2.a.2. **Changes to the draft permit, paragraph 5, p.3.**

A majority of people were concerned that the number of parameters being monitored were too low and that radioactivity was not being monitored. The monitoring requirements have been increased so that the waste feed must be monitored for radioactivity (permit paragraph V.C.3) and the exhaust at the stack must be monitored for radioactivity and total hydrocarbons (permit paragraphs V.E.9. and 10.).

III.A.2.a.3. **Concerns regarding incineration, paragraph 3, p.4.**

A major concern is that the very small particulates will entrain metals (and radionuclides) and carry then for considerable distances.

III.A.2.a.4. **Concerns regarding incineration, paragraph 11, p.5.**

The last major concern is incinerator failure or malfunction. The incinerator is monitored for the following operating parameters: pressure drop across the venturi scrubber; pressure drop across the HEPA filter banks; operating temperatures; flow rate and pH of the effluent control system solution; the flow rate and carbon monoxide and oxygen concentrations in the combustion air; total hydrocarbons in exhaust gas; radioactivity of the exhaust gas. If the incinerator cannot maintain any one of these parameters at the required level, the incinerator automatically shuts down.

III.A.2.b. **Responses to comments on the Draft Hazardous Waste**

EXHIBIT
2

Permit for Los Alamos National Laboratory.

II.A.2.b.1. **Comment 14, p. 4.**

Comment: Numerous people (pp.94-96, 143, 286, 290, 329, 356-357, 405, 511; three letters) questioned that monitoring of only a few parameters would be sufficient to ensure that no noxious emissions occurred. **Repsonse:** The permit requires continuous monitoring of carbon monoxide in the exhaust gas, temperatures and oxygen levels in the combustion chambers and pressure drops and flow rates in the exhaust scrubber system. (Permit Module I.E.1-8.). These parameters were monitored and demonstrated in the trial burn as those ensuring the required destruction and removal efficiency (DRE). **Permit modification:** The EID has added a requirement for monitoring of total hydrocarbons and radioactivity in the exhaust (Permit Module V.E.9. and 10) and radioactivity in the waste feed (Permit Module V.C.3.) to address the public concerns over these parameters.

III.A.2.b.2. **Comment 16, p.5.**

Comments: concern (p. 533) was expressed that the filters on the incinerator do not stop all particles and gases. **Response:** This is partially correct in that gases pass through filters, but particles are retained. The LANL incinerator has nuclear-grade HEPA filters to remove fine particulates and radionuclides and a venturi scrubber to remove the larger particulates; the absorber columns remove the acidic gases. Additionally, the LANL incinerator exceeds the EPA standards for emissions of particle removal (Final Report, Lab, Job No. LJ 10309/KA-035, Controlled Air Incinerator Upgrade, TA-50 Kaiser engineers, Inc., August 16, 1989). **Permit modification:** None.

III.A.2.b.3. **Comment 27, p.8.**

Comment: The separation of radioactivity issues from the permit was questioned by the majority of those at the hearing (p. 50 and throughout the hearing record; two letters, 248 people wrote or signed a petition). **Response:** Radioactive wastes are not subject to the regulations (HWMR-5, Pt. II, 40 CFR section 261.4(a)(4). EID's situation regarding mixed wastes is outlined in the EID July 18, 1989 Statement. The EID does recognize public concern over the potential release of radioactive

materials and has added additional monitoring to the Permit. **Permit modification:** Monitoring for radioactivity was added to the operating requirements for the incinerator (Permit Module V.F.9.).