TA-16

State of New Mexico
ENVIRONMENT DEPARTMENT
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Telephone (505) 428-2500
Fax (505) 428-2567
www.nmenv.state.nm.us

GARY E. JOHNSON
GOVERNOR

PETER MAGGIORE
SECRETARY

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

July 2, 2002

Dr. John C. Browne, Director
Los Alamos National Laboratory
P.O. Box 1663, Mail Stop A100
Los Alamos, New Mexico 87545

Mr. Ralph Erickson, Area Manager
Department of Energy
Office of Los Alamos Site Operations
528 35th Street, Mail Stop A316
Los Alamos, New Mexico 87544

SUBJECT: SECOND NOTICE OF DEFICIENCY:
REVIEW OF LANL RESPONSE TO NOTICE OF DEFICIENCY;
TA-16 PART B APPLICATION REVISION 3.0,
JANUARY 31, 2000 (LA-UR-02-0890)
LOS ALAMOS NATIONAL LABORATORY (LANL)
EPA ID# NM 0890010515
HWB-LANL-00-002

Dear Dr. Browne and Mr. Erickson:

The New Mexico Environment Department (NMED) has reviewed the U. S. Department of Energy and Los Alamos National Laboratory's (Permittees) February 19, 2002 response to NMED's December 24, 2001 Notice of Deficiency (NOD) for the above-referenced Application (Application). This second NOD also includes review of the April 15, 2002 (SWRC:02-028) document regarding meteorological input to the CALPUFF modeling system (LANL, TA-16) submitted by Permittees.

Permittees informed NMED that the closure plan in the Draft Los Alamos National Laboratory Hazardous Waste Facility Permit Chapter 5, Technical Area 16 Conditions Attachment E.2, *Closure Plan for the Technical Area 16 Burn Ground Unit* dated June 2000 will be substituted for the closure plan in the Application. This second NOD therefore includes review and comment on the revised closure plan.

The above referenced documents have been reviewed for technical adequacy as required under NMAC 20.4.2.201.3.2, which includes, 40 CFR part 264, Subpart X, and are found to be

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deficient. The list of additional information required by NMED is included as Attachment A of this NOD.

Permittees shall respond to this NOD within 45 days of receipt of this letter. If the receipt is not signed, Permittees shall respond within 45 days of the date of this letter. Permittees' response shall consist of an electronic version in Microsoft Word 2000 or earlier version and three hard copies.

This NOD does not include comment on the building 88 (TA-16-88) container storage unit (CSU) because Permittees submitted notification to NMED by letter from the U. S. Department of Energy to NMED dated June 24, 2002 requesting the CSU not be included in the TA-16 Permit Chapter. Permittee will submit a revised application reflecting this change. The CSU will be closed prior to issuance of the Permit.

Closure of the CSU will be achieved by submitting affidavits to NMED, signed by the responsible parties, stating this unit was never used to store hazardous or mixed waste.

If you have questions regarding this letter, please contact Lee Winn of my staff at 505-428-2541.

Sincerely,

James P. Bearzi
Chief
Hazardous Waste Bureau

JPB:lw
cc: J. Kieling, NMED HWB
D. Cobrain, NMED HWB
C. Will, NMED HWB
P. Allen, NMED HWB
L. Winn, NMED HWB
A. Ortiz, NMED OGC
L. King, EPA, 6PD-N
J. Ellvinger, LANL ESH-19, MS K490
G. Bacigalupa, LANL ESH-19, MS K490
G. Turner, DOE LAAO, MS A316

File: Reading and LANL TA-16 2002

ATTACHMENT A
NOTICE OF DEFICIENCY:

RCRA PART B PERMIT APPLICATION
TA-16, JANUARY 2000, REVISION 3.0

LOS ALAMOS NATIONAL LABORATORY
EPA ID NO. NM0890010515

July 2, 2002

NMED December 24, 2001, NOD comment 1.a. and Permittee's February 2002 response

1. Currently, TA-16 uses propane burners to ignite waste, but diesel and wood were used in the past. Burning with diesel and wood occurred at lower temperatures potentially causing higher emissions than present practices. Revise the Closure Plan to specify that at closure the soil surrounding the open burn (OB) units shall be sampled for dioxins; furans; volatile organic compounds; semivolatile organic compounds, including PCBs; metals, including barium and cadmium; high explosives (HE), including degredation products such as toluene, xylene, nitrotoluenes, and nitrobenzenes; hydrocarbons; and perchlorate (EPA method 314.0).

2. In the last paragraph of page five of the NOD response, the Permittees state that the EPA report concluded in Chapter 7 that it would be prudent to assume that all the chlorine in aluminized propellant (AP)-based explosives will be released to the environment as hydrochloric acid (HCl). However the study states that 98% to 99% of the chlorine in the test burns was found to convert to HCl. Submit information recalculating the emission factors for halogens to account for the study's concentrations and revise Appendix B, Table 10, and the comparison of 2000 emissions with screening action levels (SAL's) and ecological screening levels (ESL's) if necessary.

3. Submit the evaluation requested in Comment No. 2 above for 2001 emissions data.

4. Submit revised information for pages 10 through 12 of the NOD response, the list entitled Detonation Potential by Waste Stream, to specifically specify the HE components, for example RDX and HMX, and all other constituents present in each specified waste stream and include the percentages of each constituent in each waste stream.

December 24, 2001, NOD comment 1.b. and Permittee's February 2002 response

5. Page six, paragraph two, of the NOD response states, "If decontamination to these cleanup levels is not achievable, LANL may propose an alternate demonstration of decontamination as circumstances indicate." If Permittee proposes an alternate

demonstration of decontamination, Permittees must submit a permit modification request.

6. Page six, paragraph two, of response 1.b, the NOD response states, "If the TA-16 Burn Ground Unit (or portion thereof) cannot be clean closed, LANL will provide a written post-closure plan." Permittees shall remove or decontaminate all hazardous waste and hazardous waste residues at closure of OB units. Post-closure care is not an option.

December 24, 2001, NOD comment 1.c. and Permittee's February 2002 response

7. Regarding explosive-bearing liquid waste streams, page ten, paragraph one of the NOD response states, "Through pre-filtering HE-contaminated water prior to treatment at the HE Wastewater Treatment Facility (HEWTF) at TA-16, suspended Class A HE Particles can be captured and removed." OB is a treatment of last resort, to be used only when all other options are unavailable and only for wastes that cannot be diverted to other technologies. Submit an assessment of other treatment methods to minimize amounts of all solvents that are open burned, for example options for pre-filtering the HE-contaminated spent solvent waste and replacing the solvent with some other nonhazardous liquid.

December 24, 2001, NOD comment 2 and Permittee's February 2002 response

8. The NOD response does not conclusively demonstrate that there are no better treatment methods with less risk of deposition than OB. Permittees' discussions with other waste management personnel and the citation of the 1994 Radian study is not an adequate response. NMED believes there are other more recent sources. Submit an assessment of literature on alternative technologies and on the feasibility of each method related to relevant waste streams. Include an assessment of Permittees' own literature, for example Stephen J. Buelow, *Research and Development for Alternatives to Open Burning/Open Detonation of Waste Propellants, Explosives and Pyrotechnics: Alkaline Hydrolysis and Supercritical Water Oxidation of M31A1E1* (Los Alamos National Laboratory for CERL, undated).

December 24, 2001, NOD comment 3 and Permittee's February 2002 response

9. The HE that accumulates in the sandfilter and treated there is not discharged through the NPDES-permitted outfall and therefore is not subject to the 20.4.1 NMAC §§ 264.1(g)(6) and 270.1(c)(2)(v) exemption. Therefore, these units may not be removed from the Application.

December 24, 2001, NOD comment 4 and Permittee's February 2002 response

10. Update the Storm Water Pollution Prevention Plan (SWPPP) map (Merrick Site Plan, 1/7/00) to indicate the location of the E257 stormwater monitoring station.

11. The stormwater monitoring requirements under the SWPPP are quarterly grab samples for ammonia, Mg, COD, total recoverable Cd, Pb, Hg, Se, Ag and free CN. In addition, based on review of the included solid waste management unit (SWMU) data, stormwater monitoring under the Watershed Monitoring Program should also include total Ba, Zn, Cu, and a complete HE suite. Existing stormwater data should be included as an appendix to the SWPPP and updated annually as more stormwater data becomes available.

12. To aid in determining potential releases from the Burn Ground, Permittees should install a stormwater gaging station upgradient of the Burn Ground (one already exists below the Burn Ground) and determine the concentration of contaminants from the Burn Ground.

December 24, 2001, NOD comment 5 and Permittee's February 2002 response

The following four comments are given for clarification:

13. The Permittees indicate in the response that the most likely source of groundwater contamination is from the TA-16-260 outfall. However, the RCRA Facility Investigation (RFI) Report for the 260 Outfall, Potential Release Site 16-021(c) (September 1998, LA-UR-98-4101), indicates that there is an increasing involvement of alluvial waters with the surface water system downgradient from the Burn Ground. This conclusion is based on the increase in barium and RDX contamination levels downgradient from the Burn Ground. Volatile organic compounds, barium (at 5-10,000 ppm), and HE have been detected in the Canyon de Valle alluvial system downgradient from the Burn Ground. Permittees have not demonstrated that the Burn Ground is not contributing to groundwater contamination.

14. Possible historic Burn Ground surface contamination may be mobilizing and impacting Fish Ladder Seep surface and subsurface systems. Contaminants detected at the Fish Ladder Seep include HMX, at a maximum of 7.6 μg/L; RDX, at a maximum of 2.7 μg/L; and TCE, at a maximum of 0.3 μg/L. The extent of surface and subsurface contamination from the Burn Ground is not known.

15. The well number R-25 is upgradient from the Burn Ground. Furthermore, NMED notified the Permittees by letter dated September 9, 2000, that NMED will not accept sampling results from R-25 because of defective installation of the well. Therefore, the Permittees shall not depend on sampling data from this well to support their conclusions.

21. For clarity, submit an example calculation illustrating how the emitted quantities of barium and cadmium listed in Table 13 were determined.

APPENDIX G - DEPOSITION MODELING FOR THE TA-16 BURN GROUND

22. Submit a topographic map or plot of the modeling domain in Appendix G.

Methods

23. Methods section, first paragraph, states that the hand calculation performed for screening purposes assumed that deposition occurred over a circle with a radius of one kilometer (km) centered on the source. No support is provided for this assumption. Revise Appendix G to show that all significant deposition from OB operations at TA-16 occurs within a one km radius of the source. Show that the point of maximum deposition occurs within a one km radius of the source by including the one km radius circle and labeling the overall maximum impact points on Figures 1 and 2.

24. Methods section, first paragraph, last sentence, states "This value will serve as a screening value to compare to the final results of the modeling." It is not clear what value this sentence refers to, for example whether the sentence refers to the value of 0.01 mg/kg or to a value calculated as described in the first paragraph. Submit information to clearly identify the value that will serve as a screening value. Furthermore, revise the Application to describe how the amount of toxic pollutants released per year that was used in calculating the screening value was determined.

25. Methods section, second paragraph, states that the Permittees performed the air modeling analysis over a three km by three km domain. It is not clear why the modeling domain was limited to a three km by three km square rather than a larger area as suggested in EPA's Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities (HHRAP). Revise Appendix G to support the use of the three km by three km grid. Show that significant impacts did not occur at points located above the source elevation and beyond the three km by three km grid. Furthermore, demonstrate that the maximum impact locations for all existing and potential receptor populations occurred within the modeled area.

26. Methods section, third paragraph, states that the air concentration and deposition are directly proportional to the emission rate and thus a unit emission rate can be used in the air modeling analysis. This information is referenced to EPA's *Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities*, which describes dispersion modeling using the ISCST3 model. Because Permittees used the CALPUFF model in the deposition analysis of the Burn Ground, the reference should be changed to the appropriate section of the CALPUFF User's Guide.

27. Methods section, last paragraph, states that PM_{10}, toluene, and NO were used to represent all the constituents emitted from OB operations at TA-16. No support for this approach is provided. In addressing the impacts from OB units, EPA and NMED require that that all emitted constituents be considered rather than a limited number of surrogates. Revise the screening analysis presented in Appendix G to address all emitted constituents and to compare the resulting soil concentrations to the appropriate constituent-specific soil action levels.

Results

28. Permittees use a default value of 0.02 meters per second (m/s) for a deposition velocity that can be applied in converting air concentrations to dry deposition fluxes. The value is referenced to two documents authored by the California Air Resources Board (CARB). For calculating dry deposition fluxes for gases, EPA's HHRAP Appendix B, Table B-1-1, recommends a value three centimeters per second (0.03 m/s). The value recommended in the HHRAP should be used in lieu of the value suggested in the CARB documents.

29. According to the air concentration output file, concentration.out, the overall maximum air concentration calculated by CALPUFF was 4.5×10^{-8} grams per cubic meter (g/m^3), not 4.5×10^{-8} grams per cubic centimeter (g/cm^3) reported in the text. Revise the text to correct the typographic error and to indicate that this value represents an average over the entire modeled time period (i.e., an annual average) and to identify the location where it occurred in relation to the location of the Burn Ground units.

Estimating Soil Concentrations

30. Revise the Application to include a sample calculation detailing how the conversion values presented in Table 2 for CALPUFF modeling results were calculated.

31. The screening analysis states that CALPUFF-derived values for the maximum soil concentration could be compared to soil screening action levels. While identified in other sections of text, the source of the soil screening action levels is not identified in Appendix G (or in Appendix B). For clarity, revise Appendix G and Appendix B to identify the source of the soil action levels used in the screening analysis.

32. The Permittees use the CALPUFF air dispersion model to generate deposition fluxes for use in the screening analysis. As noted in Appendix G, the CALPUFF model employs sophisticated algorithms for calculating dry deposition flux and for estimating impacts in areas of complex terrain and complex wind fields. According to the input file, calpuff.inp, the Permittees configured the CALPUFF model to model emissions from the OB operations at TA-16 as a point source (i.e., as a stack). No

discussion is provided in support of this approach. Revise Appendix G to justify the use of the CALPUFF point source algorithm in the analysis of deposition from the OB operations at TA-16. Demonstrate that this approach adequately represents the actual burning process, for example similarity in plume rise and fireball temperature, and guarantees conservative results compared to the results that would be achieved from use of CALPUFF's area source algorithm or other air dispersion models suitable for application to OB operations, for example OBODM.

33. While electronic and hard copies of the CALMET and CALPUFF input files (calmet.inp and calpuff.inp), were provided, no discussion of the input values or the settings of the flags in the input files was included. Such information is needed to determine if the input files adequately reflect conditions and OB operations at TA-16, including the characteristics of the constituents emitted as a result of treatment. Revise the material describing the air modeling analysis to include a discussion of the input values used in both calmet.inp and calpuff.inp. In addition, describe why the input flags were set as shown in the copies of these files. For example, the description provided for calpuff.inp should address:

- Group 2 flags;
- Chemical parameter values from Group 7;
- Use of the default values for the resistances in Group 9; and
- Use of the default value specified for surface roughness in Group 12.

34. Submit information to include discussions of the environmental setting, surrounding land use, potential exposure pathways, and the complex wind field in support of the modeling input values.

35. Provide electronic copies of all input and ancillary files needed to repeat the air modeling analysis performed for the TA-16 Burn Ground units. These should include all model-ready meteorological and terrain files.

Chapter 5 - Technical Area 16 Conditions, June 2000 Draft
Attachment E.2 - DRAFT Closure Plan for the Technical Area 16 Burn Ground Unit

Permittees directed that the above-referenced Closure Plan replaces the Closure Plan in Attachment F.2 of the Application. NMED provides the following comments on the substituted closure plan:

36. Attachment E.2.2.1, Estimate of Maximum Waste in Storage

Revise the Application to include an estimate of the maximum inventory for each type of waste to be treated during the active life of the unit.

37. Attachment E.2.2.2, Removal of Waste

According to 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.112(b)(3)), the types of off-site hazardous waste management facilities to be used must be identified. Revise the Application to discuss what types of waste will go to which specific off-site facility.

38. Attachment E.2.2.3, Closure Procedure and Decontamination

a) As outlined in 20.4.1.500 NMAC (incorporating 40 C.F.R. § 264.112(b)(4)) a detailed description for the closure must include the steps needed to remove or decontaminate all hazardous waste residues and contaminated containment system components, equipment, structures, and soils during partial and final closure, including, but not limited to, procedures for cleaning equipment and removing contaminated soils, methods for sampling and testing surrounding soils, and criteria for determining the extent of decontamination required to satisfy the closure performance standard. The Application does not address methods for sampling and testing surrounding soils and removing contaminated soils during either closure of the unit or closure of the TA. Permittees shall revise the Application to provide a less detailed sampling and analysis plan (SAP) with an emphasis on the overall goals and approaches for site characterization. A more detailed SAP shall be provided at the time of closure. Permittees shall include the following information, at a minimum, in the SAP submitted at the time of closure:

    a. Unit history and description, identifying, at a minimum, the following:

        i. constituents of concern, determined by all hazardous and radioactive constituents stored or treated at the unit, by category of constituent subject to the same sampling methodology;

        ii. spills or other releases of hazardous and radioactive constituents during operation of the unit; and

        iii. visible staining, cracks, sumps, and other unit-specific conditions indicating potential release locations.

    b. Proposed decontamination procedures;

    c. Proposed sample locations, including indoor surfaces, outdoor surfaces, for example asphalt or concrete pads, and soils;

    d. Sample methods and procedures;

    e. Analytes; and

f. Detection limits.

b) The schedule for closure activities for the Burn Ground Unit is presented in Table E.1-1. It is not apparent that the schedule allows time for proper data validation, time to treat wastes, or adequate time for transporting wastes to disposal sites, if warranted.

c) The Application states that all workers will have proper training and medical monitoring. Reference where in the Application the training requirements and medical monitoring requirements for workers are discussed.

d) The Application discusses how a baseline (or background) level for the wash water solutions will be determined. However, there is no discussion of how background levels for soils will be determined. As part of closure, it must be demonstrated that all hazardous waste and hazardous waste residues be removed or decontaminated from soils surrounding the Burn Ground Units. Revise the Application to include a discussion of where background soil samples will be taken, how many samples will be taken, and the analytical methods.

e) The Application states that a wash water solution will be used in the decontamination of any equipment and structures. Revise the Application to discuss what will comprise the wash solution and discuss the appropriateness of this solution for organics, inorganics, and radionuclides.

f) The use of a wash water solution may be appropriate for loose contamination, but will not remove fixed contamination. Revise the Application to discuss how portable equipment, storage structure walls, and floors will be decontaminated for fixed contamination.

39. Attachment E.2.2.4, Decontamination Equipment

a) The Application states that a wash water solution will be used in the decontamination of equipment. Revise the Application to discuss what will comprise the wash solution and discuss the appropriateness of this solution for organics and inorganics.

b) The Application states that equipment rinsate blanks will be collected and analyzed in accordance with ER SOPs. Revise the Application to include what specific SOPs will be used.

c) The Application discusses cleaning of equipment, but neither this section of the Application nor Section E.2.2.5, discusses how the decontamination of equipment used during decontamination procedures of other equipment will be verified. Revise the Application to include procedures for the verification of decontamination of equipment and how levels of residual contamination will be determined.

40. Attachment E.2.2.5, Decontamination Verification

a) The Application states that a "sufficient sampling and analysis will be required to demonstrate" decontamination. The Application should provide the method for determining how "sufficient" numbers of samples will be determined. Revise the Application to include a discussion of how the number of verification samples for the Burn Ground Units will be determined.

b) The Application should provide a listing of expected contaminants (parameters) that may be present at the Burn Ground Units. Revise the Application to include a listing of potential contaminants at the Burn Ground Units.

c) The Application states that methods from SW-846 will be used for the confirmation testing. At a minimum, for constituents not included in SW-846 methods, the sample method for each type of constituent (e.g., organics, and metals) must be provided in the Application. Revise the Application to include a listing of the sample methods to be used for each type/group of constituent present and for each medium to be sampled at the Burn Ground Units not included in SW-846.

d) The use of testing wash water for determination of decontamination can result in significant dilution of constituents. This method also does not allow for the detection of potential hot spots. Revise the Application to discuss the potential uncertainties associated with this method of decontamination verification and should also discuss how hot spots will have been detected and verified decontaminated to acceptable levels.

e) Decontamination verification for hazardous waste residues may require swipe analysis and will be determined at the time of closure.

f) The Application does not discuss how surrounding soils will be sampled to ensure that no cross contamination as a result of decontamination activities have occurred. Revise the Application to include a discussion of how soils around areas to be decontaminated will be sampled and verified for potential cross contamination as a result of decontamination procedures.