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March 12, 2002

Mr. James Bearzi
Mr. David Cobrain
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Hazardous Waste Bureau
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Santa Fe, New Mexico 87505-6303

Reference: Work Assignment No. Y515, 06082.350; State of New Mexico Environment Department, Santa Fe, New Mexico; General Permit Support Contract; Research and Permitting Support for the Los Alamos National Laboratory, Technical Review of the Los Alamos National Laboratory Technical Area 55 Part B Permit Applications, Task 8b Deliverable.

Dear Mr. Bearzi and Mr. Cobrain:

Enclosed please find the deliverable for the above referenced work assignment. This deliverable consists of the technical review comments of the Los Alamos National Laboratory (LANL) Technical Area 55 (TA-55) Part B Permit Application, dated January 2002, herein referred to as the application.

Due to the complexity of the site, the deliverable was formatted to follow the structure of the application. The application consists of information separated by the specific units (eight container storage areas, a storage tank system, cementation unit and vitrification unit) within TA-55. In addition, the application splits information specific to each of these units in Chapter 2 and Attachments F through J. Thus, both Chapter 2 and the attachments should be reviewed simultaneously. For the specific comments, applicable requirements have been also been provided. In parentheses after the application section or attachment reference are the applicable 40 CFR section numbers.

In general, the application was lacking in detail and was found to be severely deficient, as evidenced by the numerous comments. The application provided basic information that

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acknowledged the regulations, but did not provide sufficient technical detail to describe how the facility would operate in compliance especially under federal and state RCRA requirements. This lack of detail was particularly noted for the container storage areas.

In addition, the application referenced much of the technical information to other documents or sections of the General Part A or B Permit (General Permit). Since these documents were not included as part of this review, it was difficult to ascertain whether the technical information in the referenced document was sufficient and acceptable. The application also stated that the General Permit will act as an umbrella document and cover all issues not addressed in the application. The General Permit should be reviewed to ensure technical adequacy. It was also not clear whether the application, when combined with the General Permit, is a complete document. For example, it is not clear whether the overall waste analysis plan addressed waste transfer issues.

The application also lacks detail regarding corrective actions. The application has not provided information sufficient to comply with 20.4.1.900 NMAC (incorporating 40 CFR 270.14(d)(2) and (3)), however, this information is most likely contained in a referenced 1990 LANL SWMU Report. In addition, the application states that final assessment and remediation will be integrated and coordinated under corrective actions of the LANL Environmental Restoration Project (application Section 4.4), which would take the closure process outside of the permit. NMED may want to further investigate LANL's choice to close these areas as RCRA corrective action areas, rather than addressing them in the application. In seeking RCRA permitted status for these units, LANL should address their closure within the application rather than as corrective action under the LANL Environmental Restoration Project.

Attachments B.1.4.4 and B.2.4.4, Analytical Laboratory Selection and Analytical Methods, respectively, specifies that either LANL or a contractor will perform all qualitative and quantitative chemical analysis required to characterize mixed waste. NMED may wish to evaluate whether an independent laboratory rather than LANL should perform waste analysis.

The deliverable is formatted in Word and was emailed to both of you at James_Bearzi@nmenv.state.nm.us and David_Cobrain@nmenv.state.nm.us, respectively, on March 12, 2002.

If you have any questions, please call me at (303) 763-7188.

Sincerely,


June K. Dreith
Program Manager

Mr. James Bearzi and Mr. David Cobrain
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Enclosure

cc: Mr. Carl Will, NMED
Ms. Paige Walton, TechLaw
Mr. B. Jordan, TechLaw Central Files

TASK 8B DELIVERABLE

**TECHNICAL REVIEW COMMENTS ON THE LANL TA-55 PART B PERMIT
APPLICATION, DATED JANUARY 2002**

Submitted by:

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Submitted to:

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In response to:

Work Assignment No. Y513.06082.360

March 2002

**TECHNICAL REVIEW OF THE LANL TA-55 PART B PERMIT
APPLICATION, DATED JANUARY 2002**

GENERAL COMMENTS

1. While much of the application was by definition administratively complete, the application was absent of detail, especially in regard to the eight container storage areas. While the generic application of the regulations were provided, the application did not provide detail as to how specifically the container storage areas and the other waste handling/treatment activities would meet the regulations. The application was found to be technically deficient, as noted in the accompanying specific technical review comments. Revise the application to include details on how the container storage areas and the other waste handling/treatment activities (of the storage tank system, cementation unit and vitrification unit) will meet the regulations.
2. The application does not address the radiological components of the wastes. Radiological characterization is required for treatment, transportation and packaging of treated waste, disposal, decontamination, and verification for closure. The application should address these issues or provide adequate references to documents that do address the radiological components of the waste.
3. Attachments B.1 and B.2, the waste analysis plans for the cementation unit and vitrification unit, respectively, only provide information related to the waste analysis plan for the hazardous waste component of the mixed wastes and not the radiological component. The general waste characteristic information for TA-55, including chemical and physical analysis and waste analysis requirements pertaining to land disposal restrictions for each unit, are provided in the LANL General Part B Permit. Therefore, the technical adequacy can only be determined for the chemical components of the cementation and vitrification waste analysis plans. The LANL General Part B Permit should be reviewed to ensure that the information, when combined with the information contained in Attachments B.1 and B.2 of the TA-55 application, is technically adequate and meets all regulatory requirements.
4. The secondary containment areas in TA-55-4, rooms 401 and 434A, consist of 10-inch thick, steel reinforced concrete floors. While the concrete appears to have sufficient strength and thickness to prevent containment failure, it is not clear how the surface of the concrete will be decontaminated in the event of a system or tank failure. The overall decontamination plan was presented, however this plan does not address periodic decontamination of secondary containment systems in the event of a leak. The application also does not address whether the concrete floors have an epoxy (or similar) coating to aid in removal of contaminants and in prevention of contaminants from seeping into the concrete. The application should address these issues.

5. In the event that there is leak or spill from one of the storage tanks (e.g., storage tank system, cementation unit tank component and/or vitrification unit tank component), the tank must be removed from service until the requirements of 20.4.1.500 NMAC (incorporating 40 CFR 264.196) have been met. If major repairs are warranted, the tank system cannot be returned to service until certification by an independent, qualified, registered, professional engineer has been obtained demonstrating that the repaired system is capable of handling hazardous wastes without a release, for the intended life of the system. This certification must be submitted to NMED within seven days after returning the tank system to use. Revise the application to discuss repair issues for each of the tank systems and include a discussion of the certification of major repairs.

6. The application references the definition for a solid waste management unit (SWMU) in Section 4.0 of the application. However, not included in the discussion of a SWMU is a hazardous waste management unit (HWMU), which is a subset of SWMUs. If LANL intends to permit HWMUs, then closure of these units must be addressed in this application, not under general LANL corrective action. It should be noted that HWMUs have specific closure requirements and that it appears that the definition of a SWMU was applied inappropriately in the application as related to closure of HWMUs.

**TECHNICAL REVIEW OF THE LANL TA-55 PART B PERMIT
APPLICATION, DATED JANUARY 2002**

SPECIFIC COMMENTS

1. Section 2.1, Container Storage

The first paragraph refers to nine container storage areas; however, the application only addresses eight container storage areas. Revise the apparent typographical error or modify the application to include the ninth storage container area to be permitted.

2. Section 2.1.2, Storage Containers

- a) The application must discuss each type of waste container that will be used to store each type of waste at each container storage area. Revise the application to either strike vague descriptors such as the words “may be”, “may have” and “not limited to,” or modify the application to include all types of waste containers that will be used to store waste at the eight storage container areas.
- b) Several types of containers are mentioned in the application including “various small containers”. These various small containers are not described in Section 2.1.2 or anywhere else in the application. Revise the application to include a detailed description of all containers to be permitted for use for storage of any waste.
- c) For each type of container listed, the maximum number of each type of container allowed at each area should be provided. In addition, the type of waste placed in each container should also be provided. Revise the application to include this information.

3. Section 2.1.3, Minimum Aisle Space and Storage Configuration

- a) The requirements for aisle space as outlined in 20.4.1.500 NMAC (incorporating 40 CFR 264.35) state aisle space must be maintained that will allow the unobstructed movement of personnel, fire protection equipment, spill control equipment and decontamination equipment to any area of the facility in an emergency. The application indicates that for all storage locations, a minimum aisle space of two feet will be used. It is questionable whether an aisle space of two feet will be adequate to meet the above stated requirements. Typically an aisle space of three feet is used. Either provide adequate justification for the use of an aisle space of two feet in all storage locations within TA-55 or modify the aisle space to a minimum of three feet.

- b) A container layout figure for each of the eight storage locations within TA-55 must be provided. The figure must contain a layout of the storage location, location of each type of storage container, location of aisles, and containment systems. Revise the application to include container layout figures for each of the eight specific storage locations.
- c) The application states that large containers may be stacked to a maximum of two high, unless size and weight restrictions prohibit it for safety reasons. Revise the application to include a discussion of specific criteria and methods that will be used to determine the maximum stacking height for each type of container.

4. Section 2.1.5, Condition of Containers

- a) The application states that any waste container not in good condition will be overpacked or the waste will be repackaged in a container in good condition. The materials of the overpack container must be compatible with both the waste and the other container. In addition, the overpack container and/or new container must be compatible and resistant to environmental conditions (e.g., corrosion). Revise the application to include a discussion of this information.
- b) Containers must be shown to be free of surface contamination. Revise the application to discuss how containers will be examined or surveyed to determine if the outside surfaces are free of contamination.
- c) Container liners are not discussed, although it is mentioned in Section 2.1.2 that some drums may have liners. These liners are typically procured to a specification describing the functional requirements of fitting inside the drum, material thickness and tolerances, and quality controls and required testing. Also, a quality control program is established to ensure liners meet the specifications. Revise the application to discuss liners for all containers, requirements (including waste and container compatibility) and quality control procedures to ensure compliance with the requirements.

5. Section 2.1.6 Compatibility of Waste with Containers

The application states that only containers made of or lined with materials that will not react with wastes stored in them will be used. Revise the application to provide a discussion of the documentation of waste compatibility for each of the containers and liners to be used. In addition, discuss what types of waste will be used in each type of container.

6. Section 2.1.7, Management of Containers

- a) The application states that waste containers will be opened when waste is added or removed or if the container's contents require repackaging. The application does not discuss whether containers will be opened within a work enclosure that

provides confinement, preventing any release of waste constituents. A detailed description of the waste enclosure, including any special ventilation systems, waste containment systems and special handling requirements should be provided in the application. Revise the application to outline specific waste handling requirements for opening waste containers and the work enclosure area for each type of waste container and waste type.

- b) In addition to containers being closed, 20.4.1.500 NMAC (incorporating 40 CFR 264.1086(c)(ii)) also requires that the cover and closure devices form a continuous barrier over the container openings such that when the cover and closure devices are secured in the closed position, there are no visible holes, gaps or other open spaces into the interior of the container. Revise the application to clarify that in addition to containers being closed, the closing devices will be secured in a manner that there are no visible holes, gaps or other open spaces into the interior of the container.

7. Section 2.1.7.2, Labeling, Recording and Sampling System

- a) The application indicates that where necessary, a “Radioactive Material/Radioactive Waste” label will be attached to waste containers. Revise the application to include the specific criteria that is used to determine whether containers require radioactive labeling. Include whether the radioactive criteria applies to levels of activity of the waste inside the container and/or if it applies to an external radiological container readings.
- b) Revise the application to include a copy or example of the Waste Profile Form (WPF) that will accompany all wastes.

8. Section 2.1.8, Containment Systems

- a) The application states that LANL databases may be used initially to verify the absence or presence of free liquids in containers. The application should provide the methodologies that will be used in addition to acceptable knowledge (AK) to determine the presence and amount of or absence of free liquids. Revise the application to include these methodologies.
- b) The containment requirements as outlined in 20.4.1.500 NMAC (incorporating 40 CFR 264.175(b)(1)) are not addressed in the application. Specifically, the application must discuss the underlying base of the containment systems, and demonstrate that the base will be free of cracks or gaps and will be sufficiently impervious to contain leaks, spills and accumulated precipitation until the collected material is detected and removed. Revise the application to discuss the base of the containment systems and to demonstrate compliance with the appropriate regulation.

- c) The application should provide calculations showing the requirements for secondary containment at each storage container area. The calculations should demonstrate the amount of liquid and needed containment requirements. Revise the application to include containment calculations.
 - d) The description of secondary containment should also include a calculation of the surface area and the quantities of liquid that would cover the area for each container storage area. Revise the application to include this calculation.
 - e) The application states that accumulated liquids will be removed from containment areas. However, 20.4.1.500 NMAC (incorporating 40 CFR 264.175(b)(5)) specifically states that spilled and leaked waste and all accumulated liquids must be removed in a timely manner to prevent overflow of the collection system. Revise the application to state that all accumulated liquids will be removed in a timely manner to prevent overflow of the collection system.
 - f) Provide a discussion that demonstrates how containers will be kept from contact with any potentially accumulated liquids.
9. Section 2.1.10. Special Requirements for Ignitable, Reactive and Incompatible Wastes
- a) The application should include engineering drawings or other data that show the storage location for containers of ignitable and/or reactive wastes and which demonstrate that the containers are located 50 feet from the facility's property boundary. Revise the application to include this figure(s).
 - b) The application states ignitable and reactive waste containers are protected from the possibility of accidental ignition or reaction. Revise the application to include a discussion of these specific policies. Precautions to be taken should include prevention of ignition, spontaneous ignition and radiant heat.
 - c) The application should also describe all processes that will be used to prevent reactions that may: generate extreme heat or pressure, fire explosions or violent reactions; produce uncontrolled flammable fumes, dust or gases in sufficient quantities to threaten human health or the environment; produce uncontrolled flammable fumes, dust or gases in sufficient quantities to pose a risk of fire or explosions; damage the structural integrity of the facility; and be a threat to human health or the environment. Revise the application to include a discussion of these preventative processes.
 - d) Under 20.4.1.500 NMAC (incorporating 40 CFR 246.1101(a)(3)), the application must ensure the management of incompatible wastes within a storage area where secondary containment systems will be used and show that the presence of incompatible wastes will not cause the secondary containment system to leak, corrode or fail. Revise the application to discuss safeguards that are in-place to

ensure the compatibility of incompatible wastes with the secondary containment systems.

10. Section 2.1.11, Closure

Refer to specific comments on Attachment F.1 of the application.

11. Section 2.2, Storage Tank System

- a) The application indicates types of wastes that “may” be stored in the tank system. The application must include all types of wastes to be permitted for the tank system. Either remove the word “may” or revise the application to include a discussion of all the specific types of wastes to be permitted for the tank system.
- b) More detailed information on the storage tank system was provided in Attachment H of the application. Refer also to comments related to Attachment H.

12. Section 2.2.2, Containment Systems

- a) The application must include calculations to show that the external liner system is designed to contain 100% of the capacity of the largest tank within its boundary. Revise the application to include these calculations.
- b) The reinforced concrete floor that will serve as the containment system must be demonstrated to be free of cracks or gaps. Provide this information.
- c) Revise the application to include a statement that the containment system is designed to completely surround the tanks.

13. Section 2.2.4, Special Requirements for Ignitable, Reactive and Incompatible Wastes

In the event that ignitable or reactive waste is stored in any part of the storage tank system, the following must be either provided or demonstrated. Revise the application to address these issues:

- Provide the operating pressure and temperature of tanks;
- Demonstrate that waste is treated, rendered or mixed before or immediately after placement in the tank systems so that it no longer is ignitable or reactive;
- Demonstrate that the wastes are not placed in the same tank system unless there is compliance with 20.4.1.500 NMAC (incorporating 40 CFR 264.17(b));
- Demonstrate that the waste is stored or treated in a manner such that it protects against ignition or reaction;
- Demonstrate that the requirements for the maintenance of protective distances between waste management areas and any public ways, streets, alleys or adjoining property lines can be built upon;

- Provide procedures assuring that hazardous waste will not be placed in a tank that previously held an incompatible waste or material unless it has been decontaminated or unless precautions have been taken per 20.4.1.500 NMAC (incorporating 40 CFR 264.17(b)) to prevent reactions; and/or
- Indicate whether the tank system is used solely for emergencies.

14. Section 2.2.5, Closure

Refer to the specific comments on the Storage Tank Closure Plan, Attachment F.2.

15. Section 2.2.6, Control of Runoff

- a) The prevention of runoff from the storage tank system is based upon the assumption that the secondary containment system is sufficient to contain 100 percent of the volume of the largest tank. Provide calculations demonstrating that each secondary containment system is sufficient to contain 100 percent of the volume of the largest tank within the containment.
- b) The application states that any accumulated liquids will be removed as soon as possible. Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.193(b)(3)), all hazardous wastes and/or accumulated liquids must be removed from the secondary containment system within 24 hours to prevent harm to human health and the environment. If adequate information is provided to the Secretary (NMED) that removal of released waste or accumulated liquids cannot be accomplished within 24 hours, then the liquids and waste may be removed in as timely a manner as possible. Either revise the application to state that accumulated wastes and liquids will be removed within 24 hours or provide adequate justification as to why removal of liquids cannot be accomplished within 24 hours.

16. Section 2.3, Miscellaneous Unit – Cementation Unit

More detailed information on the cementation unit was provided in Attachment I of the application. Refer also to specific comments related to Attachment I.

17. Section 2.3.2, Containment Systems

- a) The application must include calculations to show that the external liner system is designed to contain 100% of the capacity of the largest tank within its boundary. Revise the application to include these calculations.
- b) The reinforced concrete floor that is designated as the containment system must be demonstrated to be free of cracks or gaps. Provide this information.
- c) Revise the application to include a statement that the containment system is designed to completely surround the cementation unit.

18. Section 2.3.4, Special Requirements for Ignitable, Reactive and Incompatible Wastes

- a) In the event that ignitable or reactive waste is stored in any part of the storage tank system, the following must be either provided or demonstrated. Revise the application to address these issues:
- Provide the operating pressure and temperature of tanks;
 - Demonstrate that waste is treated, rendered or mixed before or immediately after placement in the tank systems so that it no longer is ignitable or reactive;
 - Demonstrate that the wastes are not placed in the same tank system unless 20.4.1.500 NMAC (incorporating 40 CFR 264.17(b)) is complied with;
 - Demonstrate that the waste is stored or treated in a manner such that it protects against ignition or reaction;
 - Demonstrate that the requirements for the maintenance of protective distances between waste management areas and any public ways, streets, alleys or adjoining property lines can be built upon;
 - Provide procedures assuring that hazardous waste will not be placed in a tank that previously held an incompatible waste or material unless it has been decontaminated or unless precautions have been taken per 20.4.1.500 NMAC (incorporating 40 CFR 264.17(b)) to prevent reactions; and/or
 - Indicate whether the tank system is used solely for emergencies.
- b) In addition, the containment system for the cementation unit is the same system to be used to the storage tanks. The application must address the potential for incompatible wastes commingling as a result of a leak or spill from either the storage tanks and/or the cementation unit.

19. Section 2.3.5, Closure

Refer to specific comments on the Cementation Unit Closure Plan, Attachment F.3.

20. Section 2.3.6, Control of Runoff

- a) The prevention of runoff from the cementation unit is based upon the assumption that the secondary containment system is sufficient to contain 100 percent of the volume of the largest tank. Provide calculations demonstrating that each secondary containment system is sufficient to contain 100 percent of the volume of the largest tank within the containment.
- b) The containment system for the cementation unit is also the same containment system to be used for the storage tank system. In the unlikely event that a leak occurs in both the storage tank system and the cementation unit, the containment system will have to be sufficient to contain liquids from both units. Provide a discussion of how the containment system will handle a leak in both the storage tank system and the cementation unit.

- c) The application states that any accumulated liquids will be removed as soon as possible. Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.193(b)(3)), all hazardous wastes and/or accumulated liquids must be removed from the secondary containment system within 24 hours to prevent harm to human health and the environment. If adequate information is provided to the Secretary (NMED) that removal of released waste or accumulated liquids cannot be accomplished within 24 hours, then the liquids and waste may be removed in as timely a manner as possible. Either revise the application to state that accumulated wastes and liquids will be removed within 24 hours or provide adequate justification as to why removal of liquids cannot be accomplished within 24 hours.

21. Section 2.4, Miscellaneous Unit – Vitrification Unit

More detailed information on the storage tank system was provided in Attachment J of the application. Refer to specific comments related to Attachment J.

22. Section 2.4.2, Containment Systems

- a) The application must include calculations to show that the external liner system is designed to contain 100% of the capacity of the largest tank within its boundary. Revise the application to include these calculations.
- b) The reinforced concrete floor that will serve as the containment system must be demonstrated to be free of cracks or gaps. Provide this information.
- c) Revise the application to include a statement that the containment system is designed to completely surround the vitrification unit.

23. Section 2.4.4, Special Requirements for Ignitable, Reactive and Incompatible Wastes

While reactive, ignitable and incompatible wastes will not be treated in vitrification unit, itself, the containment unit to be used by the vitrification unit is the same as that to be used for the storage tanks and cementation unit, which may be used to store or treat reactive, ignitable and incompatible wastes. The application must address the potential for the vitrification unit to come into contact with these wastes as a result of a leak, rupture, spill, etc. from either a storage tank or the cementation unit. Revise the application to include this discussion.

24. Section 2.4.5, Closure

Refer to specific comments on the Vitrification Unit Closure Plan, Attachment F.4.

25. Section 2.4.6, Control of Runoff

- a) The prevention of runoff from the vitrification unit is based upon the assumption that the secondary containment system is sufficient to contain 100 percent of the volume of the largest tank. Provide calculations demonstrating that each secondary containment system is sufficient to contain 100 percent of the volume of the largest tank within the containment.
- b) The containment system for the vitrification unit is also the same containment system to be used for the storage tank system. In the unlikely event that a leak occurs in both the storage tank system and the vitrification unit, the containment system will have to be sufficient to contain liquids from both units. Provide a discussion of how the containment system will handle a leak in both the storage tank system and the vitrification unit.
- c) The application states that any accumulated liquids will be removed as soon as possible. Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.193(b)(3)), all hazardous wastes and/or accumulated liquids must be removed from the secondary containment system within 24 hours to prevent harm to human health and the environment. If adequate information is provided to the Secretary (NMED) that removal of released waste or accumulated liquids cannot be accomplished within 24 hours, then the liquids and waste may be removed in as timely a manner as possible. Either revise the application to state that accumulated wastes and liquids will be removed within 24 hours or provide adequate justification as to why removal of liquids cannot be accomplished within 24 hours.

26. Section 4.1, TA-55 General SWMU Descriptions

- a) In addition to the information provided in the application, for each solid waste management unit (SWMU) listed in Section 4.1 (including Subsections 4.1.1 and 4.1.2), materials of construction, engineering drawings (if available) and the quantity and/or volumes of waste placed in each SWMU should be contained in the application. Revise the application to include this information for each SWMU discussed in Section 4.1.
- b) Pursuant to 20.4.1.900 NMAC (incorporating 40 CFR 270.14(d)(v)), the specification of all wastes, to the extent possible, that were/are managed at each unit must be provided. Revise the application to include a discussion to the extent possible of all the specific types of wastes that were handled at each of the SWMUs.

27. Section 4.2, Releases

- a) The application must identify all releases that may have occurred from all of the SWMUs identified in Section 4.1 of the application or provide justification that no release occurred from a particular SWMU. Releases may include spills, leaks, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching,

dumping or disposing to the environment. In addition, the date of the release, type of waste released, quantity or volume released, nature of release, and groundwater monitoring and other analytical data available to describe the nature and extent of release should be provided. Other data may include physical evidence of distressed vegetation or soil contamination, historical evidence of releases, state, federal or local enforcement actions, public complaints and any other information showing migration of a release. Revise the application to include this information.

- b) The incinerator complex, SWMU 42.001(a), was shut down due to operational problems. Discuss whether these operational problems (e.g., system failures, startup or shutdown releases, and/or filtration breakthrough) resulted in releases of contaminants to the atmosphere. Also discuss the waste feed system and any potential releases associated with it.
- c) The discussion of SWMU Nos. 42.001(b) and (c) does not address whether there were any leaks from the underground drainlines or the tanks, which could have led to contamination of surface soils, subsurface soils and potentially groundwater and the environment. Revise the application to address potential leaks from the underground drainlines and tanks.
- d) The sumps, pumps and tanks associated with SWMU 55-008 are not addressed as having any releases. Provide a discussion of potential releases from these systems. Also include a discussion of the drains and drainlines and potential leaks.
- e) Provide a discussion of whether there were any releases from the concrete enclosure, SWMU 55-009.
- f) The application does not address releases from any of the active hazardous/mixed waste units. Revise the application to discuss whether there have been any releases from these active units.

28. Section 4.3, Characterization of Release

Information related to the characterization of releases is referenced to documents not provided with the application: the 1990 LANL SWMU Report and the RFI Work Plan for Operable Unit 1129. However, the application states that at a minimum, the corrective process will include investigations to verify whether or not a release has occurred. However, for a RCRA Part B Permit, characterization of releases must include the following types of available information concerning prior or current releases:

- Date of the release;
- Type of waste or constituent released;
- Quantity or volume released;

- Nature of the release: (e.g., spill, overflow, ruptured tank or pipe, construction failure, etc.); and
- Groundwater monitoring and other analytical data available to describe nature and extent of release; or
- Physical evidence of distressed vegetation or soil contamination; or
- Historical evidence of releases such as tanker truck accidents; or
- Any state, local or federal enforcement action that may address releases; or
- Any public citizen complaints about the facility that could indicate a release; or
- Any information showing the migration of the release.

Revise the application to include, at a minimum, the above-listed information.

29. Section 4.4, Corrective Actions

The application states that corrective action will be conducted in accordance with approved NMED and LANL ER corrective action activities and that the corrective action will generally follow the Resource Conservation and Recovery Act (RCRA) Facility Investigation/Corrective Measures Study (RFI/CMS) process. However, 20.4.1.500 NMAC (incorporating 40 CFR 264.101 and 264 Subpart S) requires that the application specify corrective actions and how they will be implemented for each solid waste management unit. For RCRA permitted status, LANL should address the closure and corrective action of these units in the application rather than under the corrective action program of the LANL ER Project. Revise the application to identify corrective actions, including a schedule of compliance for the corrective actions. The corrective actions must include implementation beyond area boundaries where necessary to protect human health and the environment.

30. Attachment A.1, TA-55 General Description

The description of the facility should briefly describe the processes involved in the generation of hazardous and mixed wastes. Revise the application to include this discussion as part of the general facility description.

31. Attachment B.1.2, Description of Waste

- a) The application uses several vague descriptors (e.g., primarily, generally, and typically) as to the source of waste, type of waste and components of the waste. The application must discuss all waste streams that will be treated at the cementation unit, and Table B.1-1 should reflect all the waste streams and waste descriptions. Revise the application accordingly.
- b) The waste analysis plan does not address the radiological component of the waste. The radioactivity of the waste is critical in determining health and safety measures, packing, labeling and transportation requirements, and decontamination

and verification processes. Revise the application to include a description of the radiological components of the waste.

32. Attachment B.1.3.1, Proposed Analytical Parameters and Methods

Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.13(b)(2)), the application must include all of the test methods that will be used for the chosen parameters and not just methods that may be used. These parameters should be for both hazardous and radiological components. Revise the application to include all the test methods that will be used for the chosen parameters.

33. Attachment B.1.3.2, Criteria and Rationale for Parameter Selection

The application indicates that acceptable knowledge (AK) will be used for waste characterization where possible. AK is acceptable only when adequate documentation/data from the process generator is available which shows consistency of the waste streams. However, where there is variability in waste streams, sampling must occur on a regular basis. A schedule of the frequency of sampling and sampling methods (pursuant to 20.4.1.500 NMAC, incorporating 40 CFR 264.13(b)(3) and (4)) must be included in the waste analysis plan, as well as a specific decision-making process that describes when AK is acceptable and when sampling should be conducted. Revise the application to include this information.

34. Attachment B.1.4, Characterization Procedures

The application indicates that most of the waste characterization will be based on AK. However, there is no decision tree to indicate when AK will not meet characterization requirements and when sampling is required, and the frequency at which sampling will be conducted. Also, the application must address how often sampling of waste streams will be conducted to ensure that the waste streams are consistent and AK is applicable. Revise the application accordingly.

35. Attachment B.1.4.1, Characterization Procedures for Waste to be Treated

The application must include a decision tree indicating how it will be determined that AK is sufficient to define waste streams and specifically when sampling will be required. In addition, if sampling is necessary, the frequency and analytical parameters must be clearly identified. The sampling methods to be used to obtain a representative sampling of each waste stream and the appropriateness of these methods must also be provided. If LANL-specific protocol is to be used for sample collection, preservation, QA/QC and health and safety issues, then either this information must be contained within the application or a specific reference to the protocol to be followed must be provided in the application. Revise the application to include this information.

36. B.1.4.2, Characterization Procedures for Treated Waste

The characterization processes to be used on the treated waste are referenced to the “LANL Transuranic Waste Certification Plan”, the “Waste Isolation Pilot Plant (WIPP) Waste Analysis Plan” permit conditions, and LANL-specific protocol. The LANL-specific protocol to be used for sampling techniques should be either included in the application or specifically referenced (document and/or protocol number) so that the applicability and appropriateness of the methods can be determined. Revise the application to include this information on the LANL-specific protocols.

37. Attachment B.1.4.5, Reevaluation Frequencies

The application is vague as to how waste stream verification will be conducted and when waste stream verification will be conducted for non-routinely generated wastes. No decision criteria are provided for the frequency of reevaluation of non-routinely generated wastes. Revise the application to discuss how and when waste stream verification for non-routinely generated wastes will be conducted. Also provide a decision tree outlining when and how reevaluation for non-routinely generated wastes will be done.

38. Attachment B.2.1, Facility Description

This section, combined with other facility information provided throughout the application, meets the requirements for administrative completeness.

39. Attachment B.2.2, Description of Waste

The waste analysis plan does not address the radiological component of the waste. The radioactivity of the waste is critical in determining health and safety measures, packing, labeling and transportation requirements, and decontamination and verification processes. Revise the application to include a description of the radiological components of the waste.

40. Attachment B.2.3.2, Criteria and Rationale for Parameter Selection

The application indicates that AK will be used for waste characterization where possible. AK is acceptable only when adequate documentation/data from the process generator is available which shows consistency of the waste streams. However, where there is variability in waste streams, sampling must occur on a regular basis. A schedule of the frequency of sampling and sampling methods (pursuant to 20.4.1.500 NMAC, incorporating 40 CFR 264.13(b)(3) and (4)) must be included in the waste analysis plan as well as a specific decision-making process for when AK is acceptable and when sampling should be conducted. Radiological screening of samples to determine whether health and safety issues are a concern should also be provided for as part of characterization. Revise the application to address these issues.

41. Attachment B.2.4.1, Characterization Procedures for Waste to be Treated

The sampling methods to be used to obtain a representative sampling of each waste stream and the appropriateness of these methods must be provided. Sample collection frequency must also be discussed. If LANL-specific protocol is to be used for sample collection, preservation, QA/QC and health and safety issues, then a specific reference to the protocol to be followed must be provided in the application. Revise the application to include this information.

42. B.2.4.2, Characterization Procedures for Treated Waste

The characterization processes to be used on the treated waste are referenced to the “LANL Transuranic Waste Certification Plan”, the “Waste Isolation Pilot Plant (WIPP) Waste Analysis Plan” permit conditions, and LANL-specific protocol. The LANL-specific protocol to be used for sampling techniques should be specifically referenced so that the applicability and appropriateness of the methods can be determined. Revise the application to include these references.

43. Attachment B.2.4.5, Reevaluation Frequencies

The application is vague as to how waste stream verification will be conducted and when waste stream verification will be conducted for non-routinely generated wastes. No decision criteria are provided for the frequency of reevaluation of non-routinely generated wastes. Revise the application to discuss how and when waste stream verification for non-routinely generated wastes will be conducted. Also provide a decision tree outlining when and how reevaluation for non-routinely generated wastes will be done.

44. Attachment D, Personnel Training Plan

The application states that the Personnel Training Plan is addressed in the “Los Alamos National Laboratory (LANL) General Part B Permit Application”, Revision 1.0. The Personnel Training Plan as contained in the “LANL General Part B Permit Application” should be reviewed to ensure that applicable requirements outlined in 20.4.1.900 NMAC (incorporating 40 CFR 270.14(b)(12)) and 20.4.1.500 NMAC (incorporating 40 CFR 264.16) have been met.

45. Attachment E, Contingency Plan

This section only meets the requirements of a contingency plan for emergency equipment requirements, as listed in 20.4.1.500 NMAC (incorporating 40 CFR 264.52(e)). The application states that the contingency plan is addressed in the “LANL General Part B Permit Application”, Revision 1.0. The contingency plan as contained in the “LANL General Part B Permit Application” should be reviewed to ensure the contingency plan requirements outlined in 20.4.1.900 NMAC (incorporating 40 CFR 270.14(b)(7)) and 20.4.1.500 NMAC (incorporating 40 CFR 264.50 through 264.56 and 264.52(b)) are met.

46. Attachment F.1.1.2, Partial and Final Closure Activities

Discuss which structure(s) within the container storage area may be left in service during closure activities.

47. Attachment F.1.1.9, Survey Plat and Post-Closure Requirements

- a) Any criteria used to demonstrate compliance for closure that is not permitted in this application will require a permit modification. Revise the application to indicate that the requirements for a permit modification pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.112(c)), will be followed in the event that an amendment to the closure plan is warranted.
- b) In the event that clean closure cannot be obtained, a survey plat and post-closure plan will be required. Indicate that if clean closure is not obtained, the requirements of 20.4.1.5 NMAC (incorporating 40 CFR 264.117 through 264.120), including those for submission of a survey plat and post-closure plan, will be met.

48. Attachment F.1.2, Closure Procedures

The application states that if necessary, the closure plan will be modified and that the modified closure plan will be submitted to the NMED for review and approval. Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.112(c)), a written notification of or request for a permit modification to authorize a change in operating plans, facility design or the approved closure plan must be submitted to NMED. In addition, the requirements for a permit modification, also outlined in 40 CFR 264.112(c), must be met. Revise the application to address the written notification requirement.

49. Attachment F.1.2.1, Estimate of Maximum Waste in Storage

The application should also provide an estimate of the maximum inventory for each type of waste and within what types of containers that waste is contained. In addition, the application should include a discussion of how much waste and the type of wastes that are located at each of the eight container storage areas. Revise the application to include for each storage location, the maximum quantity of waste, waste type, maximum capacity based on area and the maximum number of containers by container type.

50. Attachment F.1.2.3, Removal of Waste

- a) According to 20.4.1.500 NMAC (incorporating 40 CFR 264.442(b)(3)), the types(s) 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.

- b) The application states that appropriate shipping papers will be used. Revise the application to include a copy of a uniform manifest and copies of all other shipping papers that will be used.

51. Attachment F.1.2.4, Closure Procedures and Decontamination

- a) As outlined in 20.4.1.500 NMAC (incorporating 40 CFR 264.112(b)(4)) a detailed description for the closure of each container storage area 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. Revise the application to provide detailed descriptions of the closure procedures and decontamination techniques for each container storage area.
- b) The application does not address methods for sampling and testing surrounding soils and removing contaminated soils during either partial closure or closure. Revise the application to address surrounding soils and soil that may underlie container storage areas, particularly the outdoor storage pad.
- c) The application states that all sampling will be done in accordance with Quality Assurance/Quality Control (QA/QC) procedures. Revise the application to include these QA/QC procedures.
- d) The schedule for closure activities for the container storage unit is presented in Table F.1-1. However, the schedule does not appear to allow for the sampling, analysis and potential removal of contaminated soils surrounding the container storage areas. It is not apparent that the schedule allows time for proper data validation, time to treat wastes, time for additional leaching tests for the asphalt or adequate time for transporting wastes to disposal sites, if warranted. In addition some structures in the container storage area may be left in service during partial closure. Revise the schedule to be comprehensive of all potential activities for closure and partial closure.
- e) The application states that personal protective equipment (PPE) requirements will be determined by the LANL (the Health Physics Operations and Industrial Hygiene and Safety Groups). The application should include a discussion of the potential PPE needed at each container storage area and a detailed discussion of the radiation and chemical monitoring equipment and monitoring requirements that could be used at each container storage area. Revise the application to include a discussion of PPE, for both radiological and chemical contamination, and the types of monitoring equipment/instruments that may be employed for radiological and chemical monitoring/characterization. The application should

also discuss how these monitoring instruments would be used (e.g., scanning percent) to determine the presence of contamination and hot spots.

- f) The application states that all workers will have proper training and medical monitoring. Reference the appropriate section(s) of the application that discuss the training requirements and medical monitoring requirements for workers.
- g) 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 soils surrounding the container storage areas are free of contamination or exhibit acceptable levels of contamination. 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.
- h) The application states that each storage structure will be inspected for any cracks or conditions that would potentially lead to loss of decontamination liquids. If any are found, appropriate remedial actions (repairs, maintenance or replacement) will be conducted. It is unclear whether the cracks, etc., will be monitored for contamination prior to sealing or other treatment. Contamination could be sealed within a crack of a structure. Revise the application to discuss how these flaws in storage structures will be monitored to ensure no contamination has migrated into the flaw prior to remedial action.

52. Attachment F.1.2.4.1, Indoor Storage Area

- a) The application states that a wash water solution will be used in the decontamination of portable equipment. Discuss what will comprise the wash solution and discuss the appropriateness of this solution for organics, inorganics and radionuclides.
- b) The description of portable equipment also includes wooden pallets. The use of a wash water solution on wood, which is known to absorb water, could result in additional contamination of the pallet. Discuss mitigative measures that will be used to ensure the pallets do not absorb any potentially contaminated wash water, becoming contaminated by the decontamination procedure.
- c) The application states that a portable berm may be used to collect and contain wash water. Discuss what alternate methods may be used, if the portable berm is not used, for containment of wash water.
- d) The application indicates that wash water will be allowed to accumulate in the bottom of recessed areas (e.g., sumps), where the water will be removed and tested for potential contamination. The application does not discuss how the recessed area where the wash water was allowed to collect will be decontaminated

if the results from the wash water indicate contamination. Revise the application to discuss how the entire recessed area will be decontaminated and verified.

- e) Sumps are often connected to a central drainage system. Include in the application a discussion of how drain lines connected to sumps and other recessed areas will be addressed.
- f) The application infers that the decontamination procedures are only for loose contamination and that any item that is shown to have fixed contamination will be removed and disposed of properly. Clarify the application accordingly.
- g) As the wash water will only be analyzed for hazardous constituents, how will it be determined that there is no fixed radiological contamination? Revise the application to address radiological contamination and decontamination.

53. Attachment F.1.2.4.2, Vault

The application must contain a description of all measures of decontamination (i.e., decontamination measures will be initiated to accomplish chemical decontamination, as well as to satisfy ALARA requirements for mixed waste in accordance with applicable DOE Orders) that will be applied in decontaminating the vault. Revise the application to include a detailed description of the alternative decontamination measures.

54. Attachment F.1.2.4.3, Outdoor Storage Pad

- a) The application states that decontamination procedures similar to those described in application Section F.1.2.4.1 may be used for asphalt-covered storage areas. It is not clear what other procedures may be used in lieu of those listed in application Section F.1.2.4.1, or as described in this section. It is also unclear what deviations from the procedure may be applied. Revise the application to include a discussion of all procedures that will be used to decontaminate the asphalt-covered storage areas.
- b) The application states that a wash water solution will be used in the decontamination of equipment. Discuss what will comprise the wash solution and discuss the appropriateness of this solution for organics, inorganics and radionuclides.
- c) If decontamination verification of asphalt cannot be determined, the application indicates that the material will be removed from the site. If the asphalt is removed, sampling of the soil underlying the removed asphalt must be conducted in accordance with 20.4.1.500 NMAC (incorporating 40 CFR 264.112 (b)(4)). In addition, all contaminated underlying soil must also be removed and verification sampling conducted. Revise the application to include a discussion of sampling the underlying soils, removal methods for any contaminated soils, and verification procedures for the remaining soils.

- d) 20.4.1.500 NMAC (incorporating 40 CFR 264.112(b)(4)) requires that all surrounding soils be sampled and tested for potential contamination. The application does not discuss how soils surrounding the asphalt-covered storage locations will be sampled, how many samples will be taken, what sampling methods will be applied and how contaminated soils will be removed. Revise the application to discuss these issues regarding surrounding soils.
- e) The application states that additional testing may be used to determine if leaching of contaminants from the asphalt is contributing to elevated readings in the wash water. Revise the application to include what sampling and analytical methods will be used to determine if leaching from the asphalt is the source of contamination in the wash water.
- f) The application states that if verification cannot be demonstrated, an alternative demonstration of decontamination will be used. Provide, discuss and justify the alternative demonstration of decontamination.
- g) The application states that the final option is to remediate the asphalt-covered storage location as part of LANL's corrective actions. This statement removes the closure process of the asphalt-covered areas outside the scope of the application. The application must address corrective action in accordance with 20.4.1.500 NMAC (incorporating 40 CFR 264.101). Revise the application to include a discussion of closure for the asphalt-covered areas.

55. Attachment F.1.2.5, Decontamination Equipment

The application discusses cleaning of equipment, but neither this section of the application nor Section F.1.4.2.1 discusses how the 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.

56. Attachment F.1.2.6, Decontamination Verification

- a) Sampling and analysis will be used to demonstrate that hazardous constituents are not present above regulatory limits after closure. However, the application does not address radiological decontamination or acceptable levels of radiological contamination for closure. Revise the application to include a discussion of radiological decontamination verification.
- b) The application should provide a listing of expected contaminants (parameters) that may be present at each container storage area. Revise the application to include a listing of potential contaminants at each container storage area.

- c) The significance of increase in contaminated wash down waters is to be determined using statistical methods defined in SW-846. The specific statistical methods that are to be applied should be discussed and provided in the application. Revise the application to include the specific statistical methods that will be used to determine if wash down waters show a significant increase in analytical parameters when compared to clean wash water solutions. Also, define numerically a significant increase.
- d) The practice 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 discuss how hot spots will be detected and verified decontaminated to acceptable levels.
- e) Decontamination verification for radionuclides should also include swipe analyses of structures or other equipment that are to be left on-site per NRC Regulatory Guide 1.86 to verify that radioactive contamination has been adequately removed and that there are no remaining hot spots of unacceptable level. Revise the application to include the use of swipes, and discuss how many swipes will be taken, the amount of coverage of the item requiring swiped, and the method of analysis.
- f) In addition, surveying, using appropriate radiation instruments, should be conducted in areas where radiological contamination may have been present. If the radiological contaminants exist as fixed contamination, analysis of the wash down water will not indicate the presence of potential fixed radiological contamination. Revise the application to provide for surveying of each container storage area where radiological contamination is a suspected contaminant to verify that no fixed contamination above acceptable levels remains and that there are no unacceptable hot spots.
- g) Decontamination verification for hazardous waste residues should also be verified using swipe analysis, similar to that as outlined in the above comment. Revise the application to include swipe sampling and analysis for hazardous waste residues. The discussion should include how many swipes will be taken, percent surface coverage and the method of analysis.
- h) 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.
- i) The application does not discuss soils under or around the container storage area, in particularly the outdoor pad, that are to be decontaminated. 20.4.1.500 NMAC

(incorporating 40 CFR 264.112(b)(4)) requires that the application include methods for sampling and testing surrounding soils and verification of these soils to closure performance standards. Revise the application to include the methods for sampling and testing surrounding soils at each container storage area.

57. Attachment F.1.3, Sampling and Analytical Procedures

The application states that sampling and analysis will be conducted in accordance with procedures outlined in SW-846 or other approved procedures or methods. Revise the application to include references for all proposed procedures and methods that will be used. Revise Tables F.1-1, F.1-5 and F.1-6, as necessary.

58. Attachment F.1.3.1, Soil and Sediment Sampling

- a) Discuss when soil and/or sediment sampling is appropriate and required as well as criteria that will be used to determine when soil and/or sediment sampling will be conducted.
- b) The soil sample protocol does not appear to address how many samples will be taken and how soil sample locations will be determined. Revise the application to include this information.

59. Attachment F.1.3.2, Liquid Sampling

Samples of used wash water are to be collected and analyzed to determine when a structure or piece of equipment is deemed sufficiently decontaminated. However, this method appears to lead to uncertainty, as contamination can become diluted in a wash volume. Include a discussion regarding the frequency of analysis of the used wash water and provide the minimum and maximum surface area that will be cleaned using one volume of wash water.

60. Attachment F.1.3.4, Sampling Handling and Documentation

- a) The application states that sample container surfaces will be screened for radiological contamination and decontaminated if necessary. Provide the methodology and proposed instrumentation for screening of samples. Also provide the criteria for determining if decontamination is necessary.
- b) Discuss special labeling and shipping requirements for radiological samples.

61. Attachment F.2.1.2, Partial and Final Closure Activities

Discuss which structure(s) within the storage tank system area may be left in service during closure activities.

62. Attachment F.2.1.9, Survey Plat and Post-Closure Requirements

- a) Any criteria used to demonstrate compliance for closure that is not permitted in this application will require a permit modification. Revise the application to indicate that the requirements for a permit modification pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.112(c)), will be followed in the event that an amendment to the closure plan is warranted.
- b) In the event that clean closure cannot be obtained, a survey plat and post-closure plan will be required. Indicate that if clean closure is not obtained, the requirements of 20.4.1.5 NMAC (incorporating 40 CFR 264.117 through 264.120), including those for submission of a survey plat and post-closure plan, will be met.

63. Attachment F.2.2, Closure Procedures

The application states that, if necessary, the closure plan will be modified and that the modified closure plan will be submitted to the NMED for review and approval. Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.112(c)), a written notification of or request for a permit modification to authorize a change in operating plans, facility design or the approved closure plan must be submitted to NMED. In addition, the requirements for a permit modification, also outlined in 40 CFR 264.112(c), must be met. Revise the application to address the written notification requirement.

64. Attachment F.2.2.1, Estimate of Maximum Waste in Storage

The application should also provide an estimate of the maximum inventory for each type of waste and within what components of the storage tank system that waste is contained. Revise the application to include for each component of the storage tank system, the maximum quantity of waste, waste type, maximum capacity.

65. Attachment F.2.2.3, Removal of Waste

- a) The application must address the requirements in 20.4.1.500 NMAC (incorporating 40 CFR 264.112(b)(4)), which states a detailed plan of how waste is to be removed shall be submitted. Revise the application to include a detailed discussion of how waste will be removed from each of the components of the storage tank system.
- b) The application must also address how removed waste will be handled. Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.442(b)(3)), the types(s) of off-site hazardous waste management facilities to be used must be identified. Revise the application to discuss what will be done with removed waste and if waste is to be shipped to an off-site location, what types of waste will go to which specific off-site facility.

- c) If waste is to be transported, appropriate shipping papers must be used. Revise the application to include a copy of a uniform manifest and copies of all other shipping papers that will be used.

66. Attachment F.2.2.4, Closure Procedures and Decontamination

- a) Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.112(b)(3) and (4)) a detailed description for the closure of each component of the storage tank system 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. Subsections F.2.2.4.1 through F.2.2.4.3 do not provide information to fulfill the requirements. Revise the application to adequately address the requirements for closure, decontamination and verification.
- b) The application states that all sampling will be done in accordance with Quality Assurance/Quality Control (QA/QC) procedures, however, the procedures are not provided. Revise the application to include these QA/QC procedures.
- a) The schedule for closure activities for the storage tank system is presented in Table F.2-1. However, 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. In addition, some structures in the storage tank system area may be left in service during partial closure. Revise the schedule to be comprehensive of all potential activities for closure and partial closure.
- b) The application states that personal protective equipment (PPE) requirements will be determined by the LANL (the Health Physics Operations and Industrial Hygiene and Safety Groups). The application should include a discussion of the potential PPE needed at each container storage area and a detailed discussion of the radiation and chemical monitoring equipment and monitoring requirements that could be used at each container storage area. Revise the application to include a discussion of PPE, for both radiological and chemical contamination, and the types of monitoring equipment/instruments that may be employed for radiological and chemical monitoring/characterization. The application should also discuss how these monitoring instruments would be used (e.g., scanning percent) to determine the presence of contamination and hot spots.
- c) The application states that all workers will have proper training and medical monitoring. Reference the appropriate portions of the application that discuss the training requirements and medical monitoring requirements for workers.

67. Section F.2.2.4.1, Storage Tank System Components

- a) Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.112(b)(4)), a detailed description of all the steps needed to remove all hazardous waste residue and contaminated containment system components, equipment and structures must be provided. The application does not delineate how the storage tank system will be disassembled, broken down into containerizable pieces and managed. Revise the application to include a detailed discussion of all the steps for removing all hazardous waste residue and contaminated containment system components, equipment and structures of the storage tank system.
- b) Provide the regulations that will be applicable for managing the containerized components of the storage tank system.

68. Section F.2.2.4.2, Ancillary Equipment

- a) The application states that ancillary equipment will be either decontaminated, decommissioned or dismantled depending on anticipated disposition or use after closure. Clarify whether this statement means that certain pieces of ancillary equipment may be decontaminated for future use.
- b) Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.112(b)(4)), a detailed description of all the steps needed to remove all hazardous waste residue and contaminated containment system components, equipment and structures must be provided. The application does not delineate how ancillary equipment will be disassembled, broken down into containerizable pieces and managed. Revise the application to include a detailed discussion of all the steps for removing all hazardous and radiological waste residue and contaminated ancillary equipment components of the storage tank system.
- c) Provide the regulations that will be applicable for managing the containerized ancillary equipment components.
- d) Sampling and analysis will be used to demonstrate that hazardous constituents are not present above regulatory limits after closure. However, the application does not address radiological decontamination or acceptable levels of radiological contamination for closure. Revise the application to include a discussion of radiological decontamination verification.
- e) The application should provide a listing of expected contaminants (parameters) that may be present in the ancillary equipment. Revise the application to include a listing of potential contaminants in the ancillary equipment.
- f) The practice 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

discuss how hot spots will be detected and verified decontaminated to acceptable levels.

- g) Decontamination verification for radionuclides should also include swipe analyses of structures or other equipment that are to be left on-site per NRC Regulatory Guide 1.86 to verify that radioactive contamination has been adequately removed and that there are no remaining hot spots of unacceptable level. Revise the application to include the use of swipes, and discuss how many swipes will be taken, the amount of coverage of the item requiring swiped, and the method of analysis.
- h) Decontamination verification for hazardous waste residues should also be verified using swipe analysis, similar to that as outlined in the above comment. Revise the application to include swipe sampling and analysis for hazardous waste residues. The discussion should include how many swipes will be taken, percent surface coverage and the method of analysis.
- i) The application states that the wash cycles will continue until equipment has been cleaned to established levels. Provide the methodology for determining the prescribed established levels and provide these levels. Include contaminant-specific levels where applicable.

69. Section F.2.2.4.3, Areas Adjacent to the Storage Tank System

- a) Random swipes are to be taken from the area adjacent to the storage tank system. Revise the application to include how many swipes will be taken, what percentages of area will be swiped and the size of the swipe samples. Also, indicate that swipes will be taken for both hazardous and radiological constituents.
- b) Clarify whether swipes will be taken of secondary containment systems.
- c) The application states that swipes will be taken of sumps and drains. Discuss how the extent of contamination (e.g., to the trap or past the trap into the drain system) will be determined. If the swipe analysis indicates the potential for contamination, discuss how sumps and drains past the trap will be sampled. Also, if drains are found to be contaminated, discuss how drain systems will either be removed or decontaminated. Also, for any decontaminated drain system, soils surrounding the drain system must be sampled to ensure that soils have not been contaminated as a result of drain leakages. Revise the application to address these issues.
- d) The application indicates that drains will be washed down. Clarify how a drain is washed down and clarify how wash water will be prevented from entering the drain lines.

- e) The application states that the wash cycles will continue until equipment has been cleaned to established levels. Provide the methodology for determining the prescribed established levels and provide these levels. Include contaminant-specific levels where applicable.

70. Attachment F.2.2.5, Decontamination Equipment

The application discusses cleaning of equipment, but it does not discuss 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.

71. Attachment F.2.2.6, Decontamination Verification

- a) Sampling and analysis will be used to demonstrate that hazardous constituents are not present above regulatory limits after closure. However, the application does not address radiological decontamination or acceptable levels of radiological contamination for closure. Revise the application to include a discussion of radiological decontamination verification.
- b) The application should provide a listing of expected contaminants (parameters) that may be present within the storage tank system. Revise the application to include a listing of potential contaminants within the storage tank system.
- c) The significance of increased constituent concentrations in contaminated wash down waters is to be determined using statistical methods defined in SW-846. The specific statistical methods that are to be applied should be discussed and provided in the application. Revise the application to include the specific statistical methods that will be used to determine if wash down waters show a significant increase in analytical parameters when compared to clean wash water solutions. Also, define numerically a significant increase.
- d) The practice 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 discuss how hot spots will be detected and verified decontaminated to acceptable levels.
- e) Decontamination verification for radionuclides should also include swipe analyses of structures or other equipment that are to be left on-site per NRC Regulatory Guide 1.86 to verify radioactive contamination has been adequately removed and that there are no remaining hot spots of unacceptable level. Revise the application to include the use of swipes of ancillary equipment, and discuss how many swipes

will be taken, the amount of coverage of the item requiring swiped, and the method of analysis.

- f) In addition, surveying, using appropriate radiation instruments, should be conducted in areas where radiological contamination may have been present. If the radiological contaminants exist as fixed contamination, analysis of the wash down water will not indicate the presence of potential fixed radiological contamination. Revise the application to provide for surveying ancillary equipment and adjacent areas where radiological contamination is a suspected contaminant to verify that no fixed contamination above acceptable levels remains and that there are no unacceptable hot spots.
- g) Decontamination verification for hazardous waste residues should also be verified using swipe analysis, similar to that as outlined in the above comment. Revise the application to include swipe sampling of ancillary equipment and analysis for hazardous waste residues. The discussion should include how many swipes will be taken, percent surface coverage and the method of analysis.
- h) The application states that an alternative demonstration of decontamination may be proposed and justified at the time of closure. Using an alternative method from that outlined in the application for demonstrating decontamination would constitute a modification of the closure plan. The modified closure plan, outlining the alternative demonstration of decontamination must be submitted to the NMED for review and approval. Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.112(c)), a written notification of or request for a permit modification to authorize a change in operating plans, facility design or the approved closure plan must be submitted to NMED. In addition, the requirements for a permit modification, also outlined in 40 CFR 264.112(c), must be met. Revise the application to address the written notification requirement.

72. Attachment F.2.3.2, Liquid Sampling

Samples of used wash water are to be collected and analyzed to determine when a structure or piece of equipment is deemed sufficiently decontaminated. However, this method appears to lead to uncertainty, as contamination can become diluted in a wash volume. Include a discussion regarding the frequency of analysis of the used wash water and provide the minimum and maximum surface area that will be cleaned using one volume of wash water.

73. Attachment F.2.3.4, Sampling Handling and Documentation

- a) The application states that sample container surfaces will be screened for radiological contamination and decontaminated if necessary. Provide the methodology and proposed instrumentation for screening of samples. Also provide the criteria for determining if decontamination is necessary.

- b) Discuss special labeling and shipping requirements for radiological samples.

74. Attachment F.3.1.2, Partial and Final Closure Activities

Discuss which structure(s) within the cementation unit may be left in service during closure activities.

75. Attachment F.3.1.9, Survey Plat and Post-Closure Requirements

- a) Any criteria used to demonstrate compliance that is not permitted in this application will require a permit modification. Revise the application to indicate that the requirements for a permit modification pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.112(c)), will be followed in the event that an amendment to the closure plan is warranted.
- b) In the event that clean closure cannot be obtained, a survey plat and post-closure plan will be required. Indicate that if clean closure is not obtained, the requirements of 20.4.1.5 NMAC (incorporating 40 CFR 264.117 through 264.120), including those for submission of a survey plat and post-closure plan, will be met.

76. Attachment F.3.2, Closure Procedures

The application states that if necessary, the closure plan will be modified and that the modified closure plan will be submitted to the NMED for review and approval. Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.112(c)), a written notification of or request for a permit modification to authorize a change in operating plans, facility design or the approved closure plan must be submitted to NMED. In addition, the requirements for a permit modification, also outlined in 40 CFR 264.112(c), must be met. Revise the application to address the written notification requirement.

77. Attachment F.3.2.1, Estimate of Maximum Waste in Storage

The application should also provide an estimate of the maximum inventory for each type of waste and within what components of the cementation unit that waste is contained. Revise the application to include for each component of the cementation unit, the maximum quantity of waste, waste type, and maximum capacity.

78. Attachment F.3.2.2, Description of Waste

The description of the waste includes several generalities, such as “typically”, “generally” and “may”. Revise the application to remove these generalities or discuss all of the waste streams and waste types that will be treated in the cementation unit.

79. Attachment F.2.2.3, Removal of Waste

- a) The application must address the requirements in 20.4.1.500 NMAC (incorporating 40 CFR 264.112(b)(4)), which requires submittal of a detailed plan for waste removal. Revise the application to include a detailed discussion of how waste will be removed from each of the components of the cementation unit.
- b) The application must also address how removed waste will be handled. Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.442(b)(3)), the types(s) of off-site hazardous waste management facilities to be used must be identified. Revise the application to discuss the management and disposal of removed waste. If waste will be shipped to an off-site location, describe the types of waste that will go to each specific off-site facility.
- c) If waste is to be transported, appropriate shipping papers must be used. Revise the application to include a copy of a uniform manifest and copies of all other shipping papers that will be used.

80. Attachment F.3.2.4, Closure Procedures and Decontamination

This section does not meet the requirements for administrative completeness. As outlined in 20.4.1.500 NMAC (incorporating 40 CFR 264.112(b)(3) and (4)) a detailed description for the closure of each SWMU 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. Subsections F.3.2.4.1 through F.3.2.4.3 do not provide information to fulfill the requirements.

81. Attachment F.3.2.4.1, Cementation Unit and Glove Box

- a) The application states that the cementation unit equipment and glove box will be either decontaminated, decommissioned or dismantled depending on anticipated disposition or use after closure. Clarify whether this statement means that certain pieces of equipment may be decontaminated for future use.
- b) Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.112(b)(4)), a detailed description of all the steps needed to remove all hazardous waste residue and contaminated containment system components, equipment and structures must be provided. The application does not delineate how equipment/pieces of the cementation unit will be disassembled, broken down into container-sized pieces and managed. Revise the application to include a detailed discussion of all the steps for removing all hazardous waste residue and contaminated equipment components of the cementation unit and glove box.
- c) Provide the regulations that will be applicable for managing the containerized components and removed waste.

- d) Sampling and analysis will be used to demonstrate that hazardous constituents are not present above regulatory limits after closure. However, the application does not address radiological decontamination or acceptable levels of radiological contamination for closure. Revise the application to include a discussion of radiological decontamination verification.
- e) The application should provide a listing of expected contaminants (parameters) that may be present in the cementation unit equipment and glove box. Revise the application to include a listing of potential contaminants in the cementation unit equipment and glove box.
- f) The practice 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 discuss how hot spots will be detected and verified decontaminated to acceptable levels.
- g) Decontamination verification for radionuclides should also include swipe analyses of structures or other equipment that are to be left on-site per NRC Regulatory Guide 1.86 to verify that radioactive contamination has been adequately removed and that there are no remaining hot spots of unacceptable level. Revise the application to include the use of swipes, and discuss how many swipes will be taken, the amount of coverage of the item requiring swiped, and the method of analysis.
- h) Decontamination verification for hazardous waste residues should also be verified using swipe analysis, similar to that as outlined in the above comment. Revise the application to include swipe sampling and analysis for hazardous waste residues. The discussion should include how many swipes will be taken, percent surface coverage and the method of analysis.
- i) The application states that the wash cycles will continue until equipment has been cleaned to established levels. Provide the methodology for determining the prescribed established levels and provide these levels. Include contaminant-specific levels where applicable.

82. Section F.3.2.4.2, Cementation Unit Ancillary Equipment

- a) The application states that ancillary equipment will be either decontaminated, decommissioned or dismantled depending on anticipated disposition or use after closure. Clarify whether this statement means that certain pieces of ancillary equipment may be decontaminated for future use.

- b) Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.112(b)(4)), a detailed description of all the steps needed to remove all hazardous waste residue and contaminated containment system components, equipment and structures must be provided. The application does not delineate how ancillary equipment will be disassembled, broken down into containerizable pieces and managed. Revise the application to include a detailed discussion of all the steps for removing all hazardous waste residue and contaminated ancillary equipment components of the cementation unit.
- c) Provide the regulations that will be applicable for managing the containerized ancillary equipment components.
- d) Sampling and analysis will be used to demonstrate that hazardous constituents are not present above regulatory limits after closure. However, the application does not address radiological decontamination or acceptable levels of radiological contamination for closure. Revise the application to include a discussion of radiological decontamination verification.
- e) The application should provide a listing of expected contaminants (parameters) that may be present in the ancillary equipment. Revise the application to include a listing of potential contaminants in the ancillary equipment.
- f) The practice 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 discuss how hot spots will be detected and verified decontaminated to acceptable levels.
- g) Decontamination verification for radionuclides should also include swipe analyses of structures or other equipment that are to be left on-site per NRC Regulatory Guide 1.86 to verify that radioactive contamination has been adequately removed and that there are no remaining hot spots of unacceptable level. Revise the application to discuss how many swipes will be taken, the amount of coverage of the item requiring swiped, and the method of analysis.
- h) The application states that the wash cycles will continue until equipment has been cleaned to established levels. Provide the methodology for determining the prescribed established levels and provide these levels. Include contaminant-specific levels where applicable.

83. Attachment F.3.2.4.3, Areas Adjacent to the Cementation Unit Glove Box

- a) Random swipes are to be taken from the area adjacent to the cementation unit glove box. Revise the application to include how many swipes will be taken, what percentages of area will be swiped and the size of the swipe samples. Also

indicate that swipes will be taken for both hazardous and radiological constituents.

- b) Clarify whether swipes will be taken of secondary containment systems other than the floor.
- c) Revise the application to address any cracks or fractures in the floors and walls prior to decontamination activities.
- d) The application states that the wash cycles will continue until equipment has been cleaned to established levels. Provide the methodology for determining the prescribed established levels and provide these levels. Include contaminant-specific levels where applicable.

84. Attachment F.3.2.5, Decontamination Equipment

The application discussed cleaning of equipment, but the application does not discuss 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.

85. Attachment F.3.2.6, Decontamination Verification

- a) Sampling and analysis will be used to demonstrate that hazardous constituents are not present above regulatory limits after closure. However, the application does not address radiological decontamination or acceptable levels of radiological contamination for closure. Revise the application to include a discussion of radiological decontamination verification. Also provide the regulatory limits for the hazardous constituents.
- b) The application should provide a listing of expected contaminants (parameters) that may be present within the cementation unit. Revise the application to include a listing of potential contaminants within the cementation unit.
- c) The significance of increased constituent concentrations in contaminated wash down waters is to be determined using statistical methods defined in SW-846. The specific statistical methods that are to be applied should be discussed and provided in the application. Revise the application to include the specific statistical methods that will be used to determine if wash down waters show a significant increase in analytical parameters when compared to clean wash water solutions. Also, define numerically a significant increase.
- d) The practice 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 discuss how hot spots will be detected and verified decontaminated to acceptable levels.

- e) Decontamination verification for radionuclides should also include swipe analyses of structures or other equipment that are to be left on-site per NRC Regulatory Guide 1.86 to verify that radioactive contamination has been adequately removed and that there are no remaining hot spots of unacceptable level. Revise the application to include the use of swipes and discuss how many swipes will be taken, the amount of coverage of the item requiring swiped, and the method of analysis.
- f) In addition, surveying, using appropriate radiation instruments, should be conducted in areas where radiological contamination may have been present. If the radiological contaminants exist as fixed contamination, analysis of the wash down water will not indicate the presence of potential fixed radiological contamination. Revise the application to provide for surveying equipment and adjacent areas where radiological contamination is a suspected contaminant to verify that no fixed contamination above acceptable levels remains and that there are no unacceptable hot spots.
- g) Decontamination verification for hazardous waste residues should also be verified using swipe analysis, similar to that as outlined in the above comment. Revise the application to include swipe sampling of ancillary equipment and analysis for hazardous waste residues. The discussion should include how many swipes will be taken, percent surface coverage and the method of analysis.
- h) The application states that an alternative demonstration of decontamination may be proposed and justified at the time of closure. Using an alternative method from that outlined in the application for demonstrating decontamination would constitute a modification of the closure plan. The modified closure plan, outlining the alternative demonstration of decontamination, must be submitted to the NMED for review and approval. Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.112(c)), a written notification of or request for a permit modification to authorize a change in operating plans, facility design or the approved closure plan must be submitted to NMED. In addition, the requirements for a permit modification, also outlined in 40 CFR 264.112(c), must be met. Revise the application to discuss the written notification requirement.

86. Attachment F.3.3.2, Liquid Sampling

Samples of used wash water are to be collected and analyzed to determine when a structure or piece of equipment is deemed sufficiently decontaminated. However, this method appears to lead to uncertainty, as contamination can become diluted in a wash volume. Include a discussion regarding the frequency of analysis of the used wash water

and provide the minimum and maximum surface area that will be cleaned using one volume of wash water.

87. Attachment F.3.3.4, Sampling Handling and Documentation

- a) The application states that sample container surfaces will be screened for radiological contamination and decontaminated if necessary. Provide the methodology and proposed instrumentation for screening of samples. Also provide the criteria for determining if decontamination is necessary.
- b) Discuss special labeling and shipping requirements for radiological samples.

88. Attachment F.4.1.2, Partial and Final Closure Activities

Discuss which structures within the vitrification unit may be left in service during closure activities.

89. Attachment F.4.1.9, Survey Plat and Post-Closure Requirements

- a) Any criteria used to demonstrate compliance that is not permitted in this application will require a permit modification. Revise the application to indicate that the requirements for a permit modification pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.112(c)), will be followed in the event that an amendment to the closure plan is warranted.
- b) In the event that clean closure cannot be obtained, a survey plat and post-closure plan will be required. Indicate that if clean closure is not obtained, the requirements of 20.4.1.5 NMAC (incorporating 40 CFR 264.117 through 264.120), including those for submission of a survey plat and post-closure plan, will be met.

90. Attachment F.4.2, Closure Procedures

The application states that, if necessary, the closure plan will be modified and that the modified closure plan will be submitted to the NMED for review and approval. Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.112(c)), a written notification of or request for a permit modification to authorize a change in operating plans, facility design or the approved closure plan must be submitted to NMED. In addition, the requirements for a permit modification, also outlined in 40 CFR 264.112(c), must be met. Revise the application to discuss the written notification requirement.

91. Attachment F.4.2.1, Estimate of Maximum Waste in Storage

The application should also provide an estimate of the maximum inventory for each type of waste and within what components of the vitrification unit that waste is contained.

Revise the application to include for each component of the vitrification unit, the maximum quantity of waste, waste type, maximum capacity.

92. Attachment F.4.2.3, Removal of Waste

- a) The application must address the requirements in 20.4.1.500 NMAC (incorporating 40 CFR 264.112(b)(4)), which requires the submittal of a detailed plan for waste removal. Revise the application to include a detailed discussion of how waste will be removed from each of the components of the vitrification unit.
- b) The application must also address how removed waste will be handled. Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.442(b)(3)), the types(s) of off-site hazardous waste management facilities to be used must be identified. Revise the application to discuss the management and disposal of removed waste. If waste will be shipped to an off-site location, describe the types of waste that will go to each specific off-site facility.
- c) If waste is to be transported, appropriate shipping papers must be used. Revise the application to include a copy of a uniform manifest and copies of all other shipping papers that will be used.

93. Attachment F.4.2.4, Closure Procedures and Decontamination

This section does not meet the requirements for administrative completeness. As outlined in 20.4.1.500 NMAC (incorporating 40 CFR 264.112(b)(3) and (4)) a detailed description for the closure of each SWMU 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. Subsections F.4.2.4.1 through F.4.2.4.3 do not provide information to fulfill the requirements.

94. Attachment F.4.2.4.1, Vitrification Unit and Glove Box

- a) The application states that the vitrification unit equipment and glove box will be either decontaminated, decommissioned or dismantled depending on anticipated disposition or use after closure. Clarify whether this statement means that certain pieces of equipment may be decontaminated for future use.
- b) Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.112(b)(4)), a detailed description of all the steps needed to remove all hazardous waste residue and contaminated containment system components, equipment and structures must be provided. The application does not delineate how equipment/pieces of the cementation unit will be disassembled, broken down into containerizable pieces and managed. Revise the application to include a detailed discussion of all the

steps for removing all hazardous waste residue and contaminated equipment components of the cementation unit and glove box.

- c) Provide the regulations that will be applicable for managing the containerized components and removed waste.
- d) Sampling and analysis will be used to demonstrate that hazardous constituents are not present above regulatory limits after closure. However, the application does not address radiological decontamination or acceptable levels of radiological contamination for closure. Revise the application to include a discussion of radiological decontamination verification.
- e) The application should provide a listing of expected contaminants (parameters) that may be present in the vitrification unit equipment and glove box. Revise the application to include a listing of potential contaminants in the vitrification unit equipment and glove box.
- f) The practice 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 discuss how hot spots will be detected and verified decontaminated to acceptable levels.
- g) Decontamination verification for radionuclides should also include swipe analyses of structures or other equipment that are to be left on-site per NRC Regulatory Guide 1.86 to verify that radioactive contamination has been adequately removed and that there are no remaining hot spots of unacceptable level. Revise the application to include the use of swipes, and discuss how many swipes will be taken, the amount of coverage of the item requiring swiped, and the method of analysis.
- h) Decontamination verification for hazardous waste residues should also be verified using swipe analysis, similar to that as outlined in the above comment. Revise the application to include swipe sampling and analysis for hazardous waste residues. The discussion should include how many swipes will be taken, percent surface coverage and the method of analysis.
- i) The application states that the wash cycles will continue until equipment has been cleaned to established levels. Provide the methodology for determining the prescribed established levels and provide these levels. Include contaminant-specific levels where applicable.

95. Section F.4.2.4.2, Vitrification Unit Ancillary Equipment

- a) The application states that vitrification unit ancillary equipment will be either decontaminated, decommissioned or dismantled depending on anticipated disposition or use after closure. Clarify whether this statement means that certain pieces of ancillary equipment may be decontaminated for future use.
- b) Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.112(b)(4)), a detailed description of all the steps needed to remove all hazardous waste residue and contaminated containment system components, equipment and structures must be provided. The application does not delineate how vitrification unit ancillary equipment will be disassembled, broken down into containerizable pieces and managed. Revise the application to include a detailed discussion of all the steps for removing all hazardous waste residue and contaminated ancillary equipment components of the vitrification unit.
- c) Provide the regulations that will be applicable for managing the containerized ancillary equipment components.
- d) Sampling and analysis will be used to demonstrate that hazardous constituents are not present above regulatory limits after closure. However, the application does not address radiological decontamination or acceptable levels of radiological contamination for closure. Revise the application to include a discussion of radiological decontamination verification.
- e) The application should provide a listing of expected contaminants (parameters) that may be present in the vitrification unit. Revise the application to include a listing of potential contaminants in the vitrification unit.
- f) The practice 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 discuss how hot spots will be detected and verified decontaminated to acceptable levels.
- g) Decontamination verification for radionuclides should also include swipe analyses of structures or other equipment that are to be left on-site per NRC Regulatory Guide 1.86 to verify that radioactive contamination has been adequately removed and that there are no remaining hot spots of unacceptable level. Revise the application to discuss how many swipes will be taken, the amount of coverage of the item requiring swiped, and the method of analysis.
- h) The application states that the wash cycles will continue until equipment has been cleaned to established levels. Provide the methodology for determining the prescribed established levels and provide these levels. Include contaminant-specific levels where applicable.

96. Attachment F.4.2.4.3, Areas Adjacent to the Vitrification Unit Glove Box

- a) Random swipes are to be taken from the area adjacent to the vitrification unit glove box. Revise the application to include how many swipes will be taken, what percentages of area will be swiped and the size of the swipe samples. Also indicate that swipes will be taken for both hazardous and radiological constituents.
- b) Clarify whether swipes will be taken of secondary containment systems other than the floor.
- c) Revise the application to address any cracks or fractures in the floors and walls prior to decontamination activities.
- d) The application states that the wash cycles will continue until equipment has been cleaned to established levels. Provide the methodology for determining the prescribed established levels and provide these levels. Include contaminant-specific levels where applicable.

97. Attachment F.4.2.5, Decontamination Equipment

The application discussed cleaning of equipment, but the application does not discuss how the 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.

98. Attachment F.4.2.6, Decontamination Verification

- a) Sampling and analysis will be used to demonstrate that hazardous constituents are not present above regulatory limits after closure. However, the application does not address radiological decontamination or acceptable levels of radiological contamination for closure. Revise the application to include a discussion of radiological decontamination verification. Also provide the regulatory limits for the hazardous constituents.
- b) The application should provide a listing of expected contaminants (parameters) that may be present within the vitrification unit. Revise the application to include a listing of potential contaminants within the vitrification unit.
- c) The significance of increased constituent concentrations in contaminated wash down waters is to be determined using statistical methods defined in SW-846. The specific statistical methods that are to be applied should be discussed and provided in the application. Revise the application to include the specific statistical methods that will be used to determine if wash down waters show a

significant increase in analytical parameters when compared to clean wash water solutions. Also, define numerically a significant increase.

- d) The practice 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 discuss how hot spots will be detected and verified decontaminated to acceptable levels.
- e) Decontamination verification for radionuclides should also include swipe analyses of structures or other equipment that are to be left on-site per NRC Regulatory Guide 1.86 to verify that radioactive contamination has been adequately removed and that there are no remaining hot spots of unacceptable level. Revise the application to include the use of swipes and discuss how many swipes will be taken, the amount of coverage of the item requiring swiped, and the method of analysis.
- f) In addition, surveying, using appropriate radiation instruments, should be conducted in areas where radiological contamination may have been present. If the radiological contaminants exist as fixed contamination, analysis of the wash down water will not indicate the presence of potential fixed radiological contamination. Revise the application to provide for surveying equipment and adjacent areas where radiological contamination is a suspected contaminant to verify that no fixed contamination above acceptable levels remains and that there are no unacceptable hot spots.
- g) Decontamination verification for hazardous waste residues should also be verified using swipe analysis, similar to that as outlined in the above comment. Revise the application to include swipe sampling of ancillary equipment and analysis for hazardous waste residues. The discussion should include how many swipes will be taken, percent surface coverage and the method of analysis.
- h) The application states that an alternative demonstration of decontamination may be proposed and justified at the time of closure. Using an alternative method from that outlined in the application for demonstrating decontamination would constitute a modification of the closure plan. The modified closure plan, outlining the alternative demonstration of decontamination must be submitted to the NMED for review and approval. Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.112(c)), a written notification of or request for a permit modification to authorize a change in operating plans, facility design or the approved closure plan must be submitted to NMED. In addition, the requirements for a permit modification, also outlined in 40 CFR 264.112(c), must be met. Revise the application to discuss the written notification requirement.

99. Attachment F.4.3.2, Liquid Sampling

Samples of used wash water are to be collected and analyzed to determine when a structure or piece of equipment is deemed sufficiently decontaminated. However, this method appears to lead to uncertainty, as contamination can become diluted in a wash volume. Include a discussion regarding the frequency of analysis of the used wash water and provide the minimum and maximum surface area that will be cleaned using one volume of wash water.

100. Attachment F.4.3.4, Sampling Handling and Documentation

- a) The application states that sample container surfaces will be screened for radiological contamination and decontaminated if necessary. Provide the methodology and proposed instrumentation for screening of samples. Also provide the criteria for determining if decontamination is necessary.
- b) Discuss special labeling and shipping requirements for radiological samples.

101. Attachment G, Container Storage

The application does not provide engineering drawings or figures for each container storage area showing container layout, including waste placement by waste container type and locations of aisles. In addition, drawings must demonstrate locations of containment systems and flow of liquids to collection areas. Revise the application to include these drawing for each container storage area.

102. Attachment G.1, Container Storage at TA-55

It is not clear that all types of waste containers to be used for storage of hazardous and/or mixed waste have been identified. The application must identify all waste containers to be permitted for storage at each of the eight container storage locations. Either revise the application to remove the term “but are not limited to” or revise the application to indicate all the types of waste containers that will be used at each storage location.

103. Attachment G.2, Containment Systems

- a) For containers bearing liquid wastes, the application does not provide the dimensions for containment systems and how many containers by container type the containment systems are designed for. In addition, the calculations of the capacity of the containment system relative to waste containers must be provided. Revise the application accordingly.
- b) For containers that will not contain liquid wastes, the application must provide the test procedures and results or other documentation for demonstrating that containers do not contain free liquids. The application must also identify each specific type of waste that will be permitted for storage at each of the container storage areas. Revise the application accordingly.

- c) The application implies that since wastes to be stored at TA-55-4, B05, B45 and TA-55-185 will not contain liquids, secondary containment requirements are not required. While the secondary containment requirements outlined in 20.4.1.900 NMAC (incorporating 40 CFR 270.15(a)) are not applicable, the requirements of 20.4.1.900 NMAC (incorporating 40 CFR 270.15(b)), must be met. This includes demonstrating how the storage areas are designed to drain and remove liquids and how containers will be kept from contact with liquids. Revise the application to address these issues.
- d) The application implies that wastes to be stored at TA-55-4, B05, B45 and TA-55-185 include but are not limited to cemented, mixed heterogeneous and vitrified wastes. Revise the application to include all wastes to be permitted for storage at TA-55-4, B05, B45 and TA-55-185.

104. Attachment G.3, Special Requirements for Ignitable, Reactive and Incompatible Wastes

- a) The application must include engineering drawings or other data that will demonstrate the containers of ignitable or reactive waste are located 50 feet from the facility's property boundary. Revise the application to include this figure(s).
- b) Provide specific policies that are in place to ensure that precautions are taken to include prevention of ignition, spontaneous ignition and radiant heat.
- c) The requirements for incompatible waste outlined in 20.4.1.500 NMAC (incorporating 40 CFR 264.177(c)) are not addressed. A storage container with incompatible hazardous waste must be separated from other materials or be protected from other materials by means of a berm, dike, wall or other device. Revise the application to clarify that incompatible wastes will be separated and segregated from other wastes and/or materials by means of a berm, dike, wall or other specific means.
- d) The application should also describe all processes that will be used to prevent reactions that may: generate extreme heat or pressure, fire explosions or violent reactions; produce uncontrolled flammable fumes, dust or gases in sufficient quantities to threaten human health or the environment; produce uncontrolled flammable fumes, dust or gases in sufficient quantities to pose a risk of fire or explosions; damage the structural integrity of the facility; and be a threat to human health or the environment. Revise the application to include a discussion of these preventative processes.
- e) Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 246.1101(a)(3)) the application must ensure the management of incompatible wastes within a storage area where secondary containment systems will be used and show that the presence of incompatible wastes will not cause the secondary containment system

to leak, corrode or fail. Revise the application to discuss safeguards that are in-place to ensure the compatibility of incompatible wastes with the secondary containment systems.

105. Attachment G.4, Air Emission Standards for Containers

The application refers to containers meeting the U.S. DOT specifications of 49 CFR Part 178. Revise the application to include a description the specific specifications in 49 CFR 178 and the criteria for determining compliance with these specifications for each type of container to be used for storage at each area.

106. Attachment H.1, Design, Construction, Materials and Operation

- a) Provide the criteria that will be used to determine whether wastes will go through stabilization in the cementation unit or will be sent through the vitrification unit.
- b) Provide the radionuclide discard limit that will be used to determine if wastes will be transferred to the cementation unit pencil tank or the pencil tanks.
- c) If sample analysis indicates that concentrations are above the discard limit, the solutions will be re-circulated. It is not clear how they will be re-circulated and what the re-circulation process does to lower concentrations (i.e., dilution into other solutions). Provide a discussion of the re-circulation process and how this process will affect radionuclide concentrations in solutions.

107. Attachment H.3, Secondary Containment

- a) Information must be included in the application that demonstrates, using calculations, that the external liner system is designed to contain 100% of the capacity of the largest tank within its boundary. Revise the application to include these calculations.
- b) The application is not clear whether the floor, which will act as the secondary containment system, is sloped to allow collection of liquids. Discuss this issue.
- c) The reinforced concrete floor that will serve as the containment system must be demonstrated to be free of cracks or gaps. Provide this information.
- d) Revise the application to include a statement that the containment system is designed to completely surround the storage tank system.
- e) The application states that any accumulated liquids will be removed as soon as possible. Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.193(b)(3)), all hazardous wastes and/or accumulated liquids must be removed from the secondary containment system within 24 hours to prevent harm to human health and the environment. If adequate information is provided to the Secretary

(NMED that removal of released waste or accumulated liquids cannot be accomplished within 24 hours, then the liquids and waste may be removed in as timely a manner as possible. Either revise the application to state that accumulated wastes and liquids will be removed within 24 hours or provide adequate justification as to why removal of liquids cannot be accomplished within 24 hours.

108. Attachment H.4, Special Requirements for Ignitable, Reactive and Incompatible Wastes

In the event that ignitable or reactive waste is stored in any part of the storage tank system, the following must be either provided or demonstrated. Revise the application to address these issues:

- Provide the operating pressure and temperature of tanks;
- Demonstrate that waste is treated, rendered or mixed before or immediately after placement in the tank systems so that it no longer is ignitable or reactive;
- Demonstrate that the wastes are not placed in the same tank system unless there is compliance with 20.4.1.500 NMAC (incorporating 40 CFR 264.17(b));
- Demonstrate that the waste is stored or treated in a manner such that it protects against ignition or reaction;
- Demonstrate that the requirements for the maintenance of protective distances between waste management areas and any public ways, streets, alleys or adjoining property lines can be built upon;
- Provide procedures assuring that hazardous waste will not be placed in a tank that previously held an incompatible waste or material unless it has been decontaminated or unless precautions have been taken per 20.4.1.500 NMAC (incorporating 40 CFR 264.17(b)) to prevent reactions; and/or
- Indicate whether the tank system is used solely for emergencies.

109. Attachment I.3.3, Protection of the Atmosphere

The cementation unit has a system of negative pressure zones and high-efficiency particulate filters (HEPA) that are designed to work together to prevent releases of contaminants to the atmosphere. Attachment K.3.4 of the application states that backup generators are available at TA-55 in the event of a power outage. However, it appears that there is no immediately available backup system for the cementation unit. The application must address how releases to the atmosphere will be prevented in the event of a power outage, causing a temporary shutdown of the negative pressure zones and HEPAs. In addition, the application must address how long the system will be shutdown until the backup generators can be put online with the cementation unit. Revise the application to address these issues.

110. Attachment I.4, Special Requirements for Ignitable, Reactive and Incompatible Wastes

In the event that ignitable or reactive waste is stored in any part of the cementation unit, the following must be either provided or demonstrated. Revise the application to address these issues.

- Provide the operating pressure and temperature of system and associated tanks;
- Demonstrate that waste is treated, rendered or mixed before or immediately after placement in the system so that it no longer is ignitable or reactive;
- Demonstrate that the wastes are not placed in the same system unless there is compliance with 20.4.1.500 NMAC (incorporating 40 CFR 264.17(b));
- Demonstrate that the waste is stored or treated in a manner such that it protects against ignition or reaction;
- Demonstrate that the requirements for the maintenance of protective distances between waste management areas and any public ways, streets, alleys or adjoining property lines can be built upon;
- Provide procedures assuring that hazardous waste will not be placed in a system that previously held an incompatible waste or material unless it has been decontaminated or unless precautions have been taken per 20.4.1.500 NMAC (incorporating 40 CFR 264.17(b)) to prevent reactions; and/or
- Indicate whether the system is used solely for emergencies.

111. Attachment J.1.4, Off-Gas System

- a) This section describes a caustic scrubber column for cleaning the off-gas. The rationale for the choice of a caustic scrubber was not provided. Identify and provide measured or estimated concentrations of all contaminants in the off-gas that are to be controlled by the caustic scrubber column. Also provide the scrubber's design removal efficiency and the outlet concentrations for each contaminant.
- b) The description of the scrubber is incomplete in that it does not identify the type or size of the packing nor the concentration of caustic (or pH) of the scrubber solution. Provide this information.
- c) The second paragraph indicates that the off-gas will be cooled by a quencher before entering the scrubber. This quencher is not described and the temperature to which the gas will be cooled is not given. Provide a description of the quencher and indicate the design outlet temperature.
- d) The scrubber is stated to exhaust to the building wet/dry vacuum system. This system is not described. Provide a brief description of this system, oriented towards its ability to control any contaminants remaining in the scrubber exhaust.
- e) Once the off-gas system has been constructed, a performance evaluation must be completed to determine the effectiveness of the system. The evaluation must

include a determination of the actual control efficiency of the scrubber, emission rates and whether any additional controls to supplement the efficiency of the scrubber are required.

- f) As it is unlikely that a 100% control efficiency for mercury can be obtained, measurements of the actual control efficiency must be made. Also, the amount of mercury that is actually vaporized should be determined. Include these in the performance evaluation.
- g) In addition, provide a detailed plan for how the performance evaluation will be conducted, including how and where within the system samples will be taken, how these samples will be evaluated and against what performance criteria and the specific constituents that will be monitored.
- h) During startup and shutdown of the system, waste must not be fed into the vitrification unit unless it is demonstrated that the off-gas system is operating within the conditions specified in the application. Revise the application to discuss startup and shut down procedures.
- i) Discuss monitoring that will be conducted to ensure continued operational effectiveness of the off-gas system.

112. Attachment J.1.5, Glove Box

The application states that a small cooling system for the glove box will be used if necessary to maintain temperatures within specification. This cooling system is not addressed in any of the supporting engineering information provided with the application. Revise the application to include a description and design of the cooling system, operating conditions and the location of the cooling system in the glove box.

113. Attachment J.2, Vitrification Unit Demonstration of Treatment Effectiveness

The application states that the facility will implement appropriate waste management options for mercury in the scrubber solution. Provide these waste management options.

114. Attachment J.3.3, Protection of the Atmosphere

- a) The vitrification unit has a system of negative pressure zones and high-efficiency particulate filters that are designed to work together to prevent releases of contaminants to the atmosphere. Attachment K.3.4 of the application states that backup generators are available at TA-55 in the event of a power outage. However, it appears that there is no immediately available backup system for the vitrification unit to ensure there will be no downtime in the operation of the off-gas system. The application must address how releases to the atmosphere will be prevented in the event of a power outage, causing a temporary shutdown of the negative pressure zones and the off-gas system. In addition, the application must

address how long the system will be shut down until the backup generators can be put online with the vitrification unit. Revise the application to address these issues.

- b) This section describes the fugitive emission prevention system. It does not appear that a fan in the off-gas system is used and that the building wet/dry vacuum system provides the suction to move the gas. Provide that the system will keep the off-gas system at a pressure below that of the glove box.
- c) It appears that cascaded levels of negative pressure are being used to collect fugitive emissions. Provide whether the facility glove box exhaust system will control what is collected.
- d) The HEPA filter on the glove box will not control NO_x emissions that might get into the glove box. Discuss whether NO_x will be controlled and if NO_x will be vented to the atmosphere.

115. Attachment J.4, Special Requirements for Ignitable, Reactive or Incompatible Wastes

This section does not meet the requirements for administrative completeness. While no ignitable, reactive or incompatible wastes will be treated in the vitrification unit, the unit is located in the same room and utilizing the same secondary containment system as the storage tanks, which may be used for ignitable, reactive and/or incompatible wastes. Therefore, the application must address the potential for contact of these wastes with the vitrification unit and associated waste streams in the event of a leak of either ignitable, reactive or incompatible waste from either the storage tank system or cementation unit.

116. Attachment K.2.4, Aisle Space Requirements

The requirements for aisle space as outlined in 20.4.1.500 NMAC (incorporating 40 CFR 264.35) state that aisle space must be maintained that will allow the unobstructed movement of personnel, fire protection equipment, spill control equipment and decontamination equipment to any area of the facility in an emergency. It is not apparent that the proposed aisle space meets this requirement. Revise the application to indicate that a minimum aisle space of three feet will be used, or provide adequate justification for the use of the smaller aisles space.

117. Attachment K.3.4, Mitigating Effects of Power Outages

The application indicates that in the event of a power outage, portable generators are available. This statement allows that there is no immediate backup generator system that would kick-in in the event of a power outage. This is especially a concern for the off-gas system of the vitrification unit. Provide a discussion regarding the prevention of process upsets and system failures in the vitrification unit off-gas system in the event of a power failure.

118. Attachment K.3.6, Preventing Releases to the Atmosphere

As discussed in previous comments, a performance evaluation/demonstration of the effectiveness of the vitrification system's off-gas unit must be provided to demonstrate that there will be no releases of either hazardous or radiological constituents to the atmosphere. Include a reference to the vitrification off-gas system performance evaluation.

119. Attachment K.4.1, Hazardous Waste Report (Biennial Report)

Pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.75), the biennial report must cover activities during the previous calendar year, only. The application indicates that more than one calendar year may be covered by the report. While some activities may bleed over into more than one year, the report should focus on one calendar year. Clarify that the report will primarily address only the previous calendar year.