

**ATTACHMENT A**  
**TECHNICAL AREA (TA) - UNIT DESCRIPTIONS**

1

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1 **ATTACHMENT A**

2 This attachment contains TA-specific unit descriptions, including the dimensions, materials of  
3 construction, security procedures, and emergency equipment of each unit provided by the  
4 Permittees in their permit application.

5 **A.1 TA-3**

6 TA-3 is located in the northern portion of the Facility on South Mesa between Los Alamos  
7 Canyon on the north and Two Mile Canyon on the south. Sandia and Mortandad Canyons head  
8 on the east margin of TA-3 forming steep cliffs at the top of canyon walls.

9 **A.1.1 TA-3 Building 29**

10 TA-3-29, the Chemistry Metallurgy Research Building (CMR), was established in 1952 as a  
11 research facility (*see* Figure 13 in Permit Attachment N (*Figures*)). It is a three story structure  
12 containing offices, laboratories, and one permitted container storage unit located in the basement  
13 at TA-3 building 29 of Wing 9. The TA-3-29 permitted unit consists of a room (9010) and  
14 portions of two other rooms (9020 and 9030) where storage of hazardous and mixed waste  
15 occurs. The following provides a description of the permitted unit.

16 **A.1.2 TA-3-29 Room 9010**

17 Room 9010 measures 21 feet by 8 inches wide by 106 feet, 9 inches (in) long (*see* Figure 14 in  
18 Permit Attachment N (*Figures*)). The floor is concrete and is painted with an epoxy sealant.  
19 Waste storage takes place in the lower level portion of Room 9010 but may also take place in or  
20 near the two room enclosures 9010A and 9010B.

21 The northern enclosure is approximately 10 ft wide by 24 ft long; the southern enclosure  
22 measures approximately 17 ft wide by 54 ft long. The enclosures have ceilings, walls with  
23 windows, and doors for entry through airlocks; the enclosures are anchored to the floor. The  
24 wall to floor joints are sealed with grout. Floors and the lower six inches of the interior  
25 enclosure walls are coated with an epoxy sealant. Each enclosure includes emergency and  
26 communication equipment as well as ventilation, fire sprinkler, water, and electrical support  
27 functions connected to the main building systems. The enclosures are kept at negative pressure  
28 by exhaust fans ducted to the building's high-efficiency particulate air filters to provide  
29 radioactive material air-release protection.

30 **A.1.3 TA-3-29 Portion of Room 9020**

31 Room 9020 is approximately 27 feet wide by 141 feet long. The permitted container storage  
32 area measures 19 feet wide by 25 feet long (*see* Figure 14 in Permit Attachment N (*Figures*)) and  
33 is located in the northeast side of the room. The floor is concrete and painted with an epoxy  
34 sealant.

1    **A.1.4     TA-3-29 Portion of Room 9030**

2    Room 9030 is approximately 62 feet wide by 141 feet long. The permitted container storage  
3    area within Room 9030 measures approximately 30 feet long by 8 feet wide and is located in the  
4    southwest corner of the room. The floor is concrete and has been painted with an epoxy sealant.  
5    Hand trucks, dollies, or casters will be used to move waste containers from the loading area to  
6    the storage portions of the permitted unit. Should a spill occur during waste handling activities,  
7    management of the spill and residual material will be performed in accordance with Attachment  
8    D (*Contingency Plan*). Drums on dollies will be moved manually and a pallet jack will be used  
9    to move standard waste boxes.

10   **A.1.5     Security and Access**

11   Security at TA-3-29 is maintained with physical and administratively-controlled barriers. These  
12   barriers prevent the unknowing entry and minimize the possibility for unauthorized entry of  
13   persons or livestock into the areas. Eight-foot-high chain-link security fences with barbed wire at  
14   the top surround the entire perimeter of the building. Bilingual (*i.e.*, English and Spanish)  
15   warning signs are also posted at the entrances to each portion of the permitted unit within the  
16   building and can be seen from any approach to these locations. The legends on the signs indicate  
17   "Danger: Hazardous Waste Storage Area" and "Unauthorized Persons Keep Out." The signs are  
18   legible from a distance of at least 25 ft. There are four entry gates through the security fence at  
19   TA-3-29 (*see* Figure 5 in Permit Attachment N (*Figures*)). A fire access and shipping gate is  
20   located south of TA-3-29 and is routinely closed and locked. When the gate is opened for  
21   shipments of material or waste, personnel are present at the gate to restrict the entry and exit of  
22   unauthorized persons. One combined pedestrian and vehicular unmanned badge reader entry  
23   gate is located at the northwest corner of the TA-3-29 fence line. Another unmanned badge  
24   reader entry pedestrian gate is located at the southeast corner of the building's fence line. This  
25   gate is combined with a double vehicular gate which allows access from the parking area south  
26   of the building. Security personnel are present at each of these gates during operational hours to  
27   restrict the entry and exit of unauthorized persons. Outside doors to the main wings of TA-3-29  
28   are always locked. Access for visitors to the operational portion of the building is controlled  
29   through a manned security station in the east side lobby and another on the west side of the  
30   building. Roll-up doors to the building can only be opened from inside the building and are also  
31   locked; opening these doors must be coordinated with security personnel. The building site is  
32   patrolled by security personnel during nonoperational hours to ensure that the gates are locked  
33   and that unauthorized entry has not occurred.

34   **A.1.6     Emergency Equipment**

35   TA-3-29 is equipped with an audible alarm system to alert personnel to evacuate the area. The  
36   evacuation alarm system may be activated by facility personnel pushing one of the evacuation  
37   buttons located throughout TA-3-29. The building also contains a fire alarm system which may  
38   be activated by manual pull stations, heat and smoke detectors, and sprinkler system flow valves  
39   found throughout TA-3-29. Rooms 9010, 9020, and 9030 contain wet-pipe sprinkler systems  
40   that are equipped with fusible-link heads that actuate at 212 degrees Fahrenheit. Wing 9 of TA-

1 3-29 contains gamma alarms that monitor for the presence of gamma radioactive contamination.  
2 Continuous air monitors are utilized throughout TA-3-29 to detect airborne radioactive  
3 contamination and, when detected, sound an alarm. The building also has a public address  
4 system for announcing fires or evacuations. Telephones with paging capabilities are located  
5 throughout TA-3-29. Paging telephones are used to page on-site personnel and may be used in  
6 the event of an emergency to communicate the location and nature of hazardous conditions to  
7 personnel in the area. The alarm system is interrupted when the paging telephone system is  
8 activated to allow personnel to hear the announcement. Personnel working in Rooms 9010,  
9 9020, and 9030 can also use these phones to summons assistance from local emergency response  
10 teams in case of emergency. Rooms 9010, 9020, and 9030 are equipped with fire extinguishers  
11 and pull stations. Depending on the size of a fire and the fuel source, fire extinguishers may be  
12 used by on-site personnel. However, the Facility policy encourages immediate evacuation of the  
13 area and notification of appropriate emergency personnel. The fire alarm control panel  
14 continuously monitors all fire-suppression and detection systems and transmits signals to the  
15 Los Alamos County Fire Department through the Facility's central alarm system.

16 Fire hydrants installed according to National Fire Protection Association standards are located  
17 around the outside of TA-3-29. Water is supplied to the fire hydrants by a municipal water  
18 system through 8-in. pipes at an adequate volume and pressure (i.e., 200 gallons per minute and  
19 90 pounds per square inch static pressure) to supply a water hose in the event of a fire. Spill kits,  
20 which contain sorbent pillows, safety glasses, and gloves, are located at the south end of Room  
21 9010 in enclosures 9010a and 9010b. Trained personnel may use this equipment to mitigate  
22 small containable spills when they are certain their actions will not put themselves or others at  
23 risk. Available personnel decontamination equipment includes safety showers and emergency  
24 eyewashes in enclosures 9010a and 9010b.

25 Personnel working in Room 9020 have access to the eyewashes in enclosures 9010a and 9010b  
26 and a safety shower and emergency eyewash in Room 9030. The buddy system will always be  
27 employed when containers are actively managed in Rooms 9010, 9020, and 9030 to assure that  
28 safety showers and eyewashes can be reached in an emergency. Material Safety Data Sheets  
29 provide useful exposure information and are available in Rooms 9010, Room 9030, and outside  
30 Room 9130.

## 31 **A.2 TA-16**

32 This Section provides an overview of current facility operations and waste management practices  
33 for the permitted open burn (OB) units at TA-16. It includes the locations of the OB treatment  
34 units, descriptions of the units, and the current operational and waste management practices  
35 associated with them. The waste streams treated at these units are described in Table C-6 of  
36 Attachment C (*Waste Analysis Plan*).

37 TA-16 is located in the southwestern quadrant of the Facility at the west end of the Pajarito  
38 Plateau near the foothills of the Jemez Mountains (see Figure 15 in Attachment N (*Figures*)).  
39 The closest property not owned by the Permittees is at a distance greater than one mile from the  
40 permitted TA-16 OB units.

1 The TA-16 OB units (see Figure 16 in Attachment N (*Figures*)) are managed by the Permittees'  
2 high explosives engineering personnel who are responsible for the safe treatment, storage, and  
3 handling of high explosives (HE)-contaminated waste material generated by the HE production  
4 facilities.

#### 5 **A.2.1 TA-16-388 Flash Pad**

6 The TA-16-388 Flash Pad is comprised of a 22 by 22 ft concrete pad set on a 45-mil Hypalon  
7 liner that is six inches below the bottom of the pad, curved upwards to ground level on all four  
8 sides, and extends out two ft from the pad perimeter; the liner acts as secondary containment.

9 The base of the concrete pad is 12 inches thick. The pad is slanted down toward the back  
10 concrete wall providing secondary containment for spills and stormwater run-on and run-off.  
11 Inset one foot from the edge of the concrete pad along the two sides and back is a three foot high,  
12 eight inch thick, integrally-poured concrete wall.

13 The heat source for the flash pad consists of five ft long, forced-air, propane burners equipped  
14 with adjustable mounts. Burners are located around the pad and are used to burn the high  
15 explosives. To accommodate burning of wet explosives on the TA-16-388 Flash Pad, the  
16 propane burners can be adjusted appropriately to treat the waste. The configuration of the flash  
17 pad and the burners is shown in Figure 19 in Attachment N (*Figures*).

18 The movable steel supports on the pad are used to stage pieces of large HE-contaminated  
19 equipment to be treated at the unit. Steel pallets may be positioned in the middle of the flash pad  
20 and the materials to be treated are placed on the pallets.

21 Smaller metal items can be moved by hand. These items are positioned and treated in a steel tray  
22 which is lined on the bottom with sand and on the sides with firebrick.

23 After the unit cools for the appropriate amount of time as required in Permit Part 6, the items can  
24 be reoriented for additional treatment, if necessary.

25 Combustible materials are stacked on the steel trays and covered with a steel screen. The two  
26 burners are used to thoroughly ignite the material and may be turned off if the burn is self-  
27 sustaining.

28 A steel tray combined with a smaller steel tray is used to destroy HE contamination in small  
29 batches of water or oils. These wastes are received in small polyethylene jars packed in a  
30 secondary container. These liquids are placed in the smaller tray and the propane-fired burners  
31 are used to ignite combustible gases and apply heat until the liquids are consumed and the HE is  
32 destroyed.

33 Residues from the TA-16-399 HE Burn Tray that require further treatment are also treated at the  
34 Flash Pad. These waste types are placed in a tray that is set on an open frame and covered with a  
35 steel plate. This assembly shall be set in the middle of another tray.

1 **A.2.2 TA-16-399 HE Burn Tray**

2 The TA-16-399 HE Burn Tray is comprised of a four ft wide, 16 ft long steel tray supported by  
3 1.5-ft-high legs and lined with firebricks (*see* Figure 20 in Attachment N (*Figures*)). Explosives  
4 to be burned are packed in cardboard and wooden boxes and transported to the HE Burn Tray.  
5 Padding is placed on the tray and the explosives are removed from the boxes and set on the  
6 padding which is then dampened with kerosene. Electric matches (squibs) are then connected to  
7 the firing cables and a train of excelsior saturated with kerosene is run from the squibs to the  
8 padding for ignition.

9 **A.2.3 Operational and Waste Management Practices**

10 The TA-16 OB units are located within a secured area at which security is maintained through  
11 both administrative controls and physical barriers. Access to the area can only be gained through  
12 controlled entry stations by persons possessing appropriate security clearance and site-specific  
13 training. The access stations are controlled by high explosives engineering personnel or by 24  
14 hour badge and palm readers. In addition, entry into the permitted units is through an industrial  
15 fence with access granted through a controlled station. Security personnel inspect security  
16 fences on a regular basis and repairs are made as necessary. The locations of the security fence  
17 and access gates at TA-16 are shown on Figure 6 in Attachment N (*Figures*). Before treatment  
18 operations are conducted, non-authorized personnel are cleared from the permitted unit and a  
19 barrier is placed across the road to reduce the possibility of entry. Warning signs are posted near  
20 the entrance to the area and can be seen by personnel approaching the area. The legends on the  
21 signs indicate "Danger--Authorized Personnel Only" or "Danger--Unauthorized Personnel Keep  
22 Out." Warning signs are legible from a distance of 25 ft and are written in English and Spanish.

23 **A.3 TA-50**

24 TA-50 is located at the northeast corner of the intersection of Pajarito Drive and Pecos Road, on  
25 the finger mesa bounded by Mortandad Canyon to the north and Two-Mile Canyon to the south  
26 (*see* Figure 21 in Attachment N (*Figures*)). The container storage units at TA-50 include the TA-  
27 50-69 Indoor unit (Rooms 102 and 103) and the TA-50-69 Outdoor unit.

28 The northern and eastern portions of TA-50 drain mainly to an unlined channel on the boundary  
29 between TA-50 and TA-35 (east of TA-50), although some flow diverges into a shallow channel  
30 running southward between TA-50-37 and TA-50-1.

31 Security at TA-50 is predominantly maintained with artificial barriers. These barriers prevent the  
32 unknowing entry and minimize the possibility for unauthorized entry of persons or livestock into  
33 the area.

34 An 8ft high chain-link security fence surrounds the entire perimeter of TA-50. Bilingual (*i.e.*,  
35 English and Spanish) warning signs are posted on the fences at approximately 50 to 75 foot  
36 intervals. Warning signs are also posted at the entrances to each area that will manage hazardous  
37 and mixed waste and are visible from any approach to these areas. The legends on the posted

1 signs indicate “Danger-Hazardous Waste Storage Area” and “Unauthorized Persons Keep Out.”  
2 Existing signs with a legend other than “Danger-Unauthorized Persons Keep Out” may be used if  
3 the legend on the sign indicates that only authorized personnel are allowed to enter the active  
4 portion, and that entry into the active portion can be dangerous. The signs are legible from a  
5 distance of 25 ft. Additionally, signs are posted at the entrance to each hazardous and mixed  
6 waste permitted unit to address requirements associated with entering and working in the area.

7 There are four entry gates into TA-50. Two entry gates are located north of TA-50-1. During  
8 normal business hours, the easternmost of these two gates may remain open to receive deliveries.  
9 After normal business hours, this gate is padlocked. The westernmost of these two gates is the  
10 main access gate and remains open during normal business hours for personal and government-  
11 owned passenger vehicles. After normal business hours, access through this gate is by badge-  
12 reader only. The third gate is a fire access and shipping gate which is located west of TA-50-69  
13 and is routinely kept closed and locked. When this gate is opened for shipments of materials or  
14 waste, facility personnel are present in the yard west of TA-50-69 to limit entry by unauthorized  
15 persons. When shipments are completed, the gate is re-closed and locked. A fourth gate to the  
16 south of TA-50-1 is locked except when authorized access is necessary.

17 TA-50-69 is located in the southwest quadrant of TA-50. The TA-50-69 Indoor unit was  
18 constructed in 1979 to house the Waste Characterization, Reduction, and Repackaging Facility  
19 (WCRRF). The primary purpose of WCRRF was to size reduce and repackage large transuranic  
20 contaminated metallic items (e.g., glove boxes, process equipment) into standard sized  
21 containers for transport to, and disposal at, the Waste Isolation Pilot Plant. The facility was first  
22 used to size reduce mixed transuranic waste in 1982. The original function of the WCRRF has  
23 since been expanded to include other activities related to hazardous and mixed waste  
24 management including waste characterization, transuranic and mixed transuranic waste  
25 prohibited item disposition and repackaging operations, and experimental process demonstration  
26 support.

27 TA-50-69 is a single-story building constructed in two phases. The original structure (45ft by 52  
28 ft) was built in 1979 to house the main process room (Room 102) and personnel change rooms.  
29 An unloading area (Room 103), a vehicle airlock entrance (Room 104), and a mezzanine over  
30 the western third of the main process room were added to the building in 1986.

31 The exterior walls of TA-50-69 are load-bearing and constructed of structural steel framing with  
32 a plastic veneer finish on polystyrene insulation and gypsum wallboard. The interior walls are  
33 similarly constructed. The epoxy-painted floor of the building is a reinforced concrete slab on  
34 compacted fill.

35 A forklift will be used to move containers stored at the permitted units at TA-50-69. Fiberglass-  
36 reinforced plywood boxes and palletized drums will be handled with a forklift equipped with  
37 tines. Individual drums of waste will be manipulated with a drum-grapple attachment on the  
38 forklift. Small containers may be handled manually or with a dolly. Inside TA-50-69 two cranes  
39 are available to move heavy objects.

1 TA-50 is patrolled by security personnel during non-operational hours to ensure that  
2 unauthorized entry has not occurred. The locations of the security fences and entry gates at TA-  
3 50 are shown on Figure 5 in Permit Attachment N (Figures).

4 TA-50-69 access is controlled through a centralized Operations Center located in TA-50-84. The  
5 Indoor permitted unit is always locked and access is gained by a badge reader. Doors to the  
6 building and transportainers are locked. Keys to these doors are distributed to designated  
7 personnel only. A chain is installed at the east end of the operations area and adjacent to TA-50-  
8 84 and is posted with the bilingual hazardous waste sign.

9 All personnel involved in waste management activities at the TA-50-69 indoor and outdoor  
10 permitted units have immediate access to an internal alarm or emergency communication device.  
11 In the event of an emergency, this communication equipment allows personnel to contact the  
12 operating group management, the Emergency Management and Response personnel, or the  
13 Central Alarm Station operator.

14 TA-50-69 is equipped with an audible alarm system to alert personnel to evacuate the area. The  
15 alarm system may be activated by one of the fire alarm pull stations located throughout the  
16 building. TA-50-69 also has a public address system for announcing fires or evacuations and  
17 telephones with paging capabilities. Paging telephones are used to page on-site personnel and  
18 may be used in the event of an emergency to communicate the location and nature of hazardous  
19 conditions to personnel in the area. The alarm system is interrupted when the paging telephone  
20 system is activated to allow personnel to hear the announcement. Personnel can also use these  
21 phones to summon assistance from local emergency response teams in case of an emergency.  
22 Personnel may carry pagers, two-way radios, or cellular telephones so they can contact, or be  
23 contacted by, on-site and the Facility emergency support personnel at all times.

24 TA-50-69 is equipped with fire extinguishers and fire suppression systems. Depending on the  
25 size of a fire and the fuel source, fire extinguishers may be used by on-site personnel. However,  
26 the Facility policy encourages immediate evacuation of the area and notification of appropriate  
27 emergency personnel. The fire alarm control panel continuously monitors all fire suppression  
28 and detection systems and transmits signals to the Los Alamos County Fire Department through  
29 the Facility's central alarm system.

30 A fire hydrant installed according to National Fire Protection Association standards is located  
31 approximately 55 feet west of TA-50-69. Water is supplied to the fire hydrant by a municipal  
32 water system through eight inch pipes at an adequate volume and pressure (*i.e.*, 200 gallons per  
33 minute and 90 pounds per square inch static pressure) to supply a water hose in the event of a  
34 fire.

35 TA-50-69 has an automatic wet-pipe sprinkler system in the main building and in the large glove  
36 box enclosure. The sprinkler system is heat-activated at 100°C (212°F). The TA-50-69 Outdoor  
37 permitted unit transportainers and weather protective structures are not equipped with automatic  
38 sprinkler systems; however, a fire extinguisher is located within 20 feet of the unit. Personnel

1 may use the fire alarm pull station at TA-50-69 in the event of a fire at both the Indoor and the  
2 Outdoor permitted units.

3 Two spill centers are located in TA-50-69 Room 102. They contain spill control equipment,  
4 personal protective equipment, and sorbents. Trained personnel may use this equipment to  
5 mitigate small containable spills when they are certain their actions will not put themselves or  
6 others at risk. Depending on the size and severity of the spill, EM&R provides additional spill  
7 control equipment and assistance upon request. Available personnel decontamination equipment  
8 includes safety showers and eye wash stations located in the TA-50-69 indoor permitted unit.

### 9 **A.3.1 TA-50-69 Indoor Permitted Unit**

10 The TA-50-69 Indoor permitted unit consists of Rooms 102 and 103 as shown in Figure 22 in  
11 Attachment N (*Figures*). Room 102, the main process room, measures approximately 45 feet  
12 wide and 52 feet long. Room 103, the unloading area, measures approximately 18 feet wide and  
13 19 feet long and is located adjacent to and southeast of Room 102. A 12 foot by 20-foot roll-up  
14 vehicle access door is located at the southernmost end of Room 103 separating the unloading  
15 area (Room 103) from the vehicle airlock entrance (Room 104). This design allows for  
16 unobstructed transport of oversized fiberglass-reinforced plywood boxes from outside the  
17 facility, through the vehicle airlock entrance, into the unloading area, and into the glove box  
18 cutting enclosure.

### 19 **A.3.2 TA-50-69 Outdoor Permitted Unit**

20 The TA-50-69 Outdoor permitted unit was constructed before 1980 and was first used to store  
21 mixed waste in 1982. It is located in the southwest corner of TA-50 (*see* Figure 22 in  
22 Attachment N (*Figures*)). The TA-50-69 Outdoor unit is comprised of an unlined and non-  
23 coated asphalt pad measuring 24 feet in width and 90 feet in length with an additional strip of  
24 asphalt added to the southeast end that measures 12 feet in width and 90 feet in length. The  
25 entire pad is approximately 4 inches thick and slopes gently (approximately one to five percent)  
26 from west to east and up to 2.5 percent toward the centerline. Transportainers and other weather  
27 protective structures (i.e., containers covered with tarps, containers inside SWBs) in the  
28 permitted unit provide weather protection for containers of various sizes. Painted lines are used  
29 to visually delineate the TA-50-69 Outdoor unit boundary. Drainage swales located in the  
30 vicinity divert storm water away from the pad. One drainage swale is located just south of the  
31 unit; between it and the material disposal area C. A second drainage swale is located on the west  
32 side of the permitted unit between Pecos Drive and the TA-50 fence line.

### 33 **A.4 TA-54**

34 TA-54 consists of 130 acres atop Mesita del Buey and is used for storage of hazardous and  
35 mixed waste generated throughout the Facility (*see* Figure 23 in Attachment N (*Figures*)). A  
36 principal mission of TA-54 is to manage the Facility waste safely and efficiently, consistent with  
37 federal and state regulations and U.S. Department of Energy (DOE) requirements. TA-54 has  
38 three separate areas where hazardous and mixed waste is stored; Area L, Area G, and TA-54

1 West (*see* Figure 24 in Attachment N (*Figures*)). There is one permitted unit at Area L, nine  
2 permitted units at Area G, and two permitted units at TA-54 West (*see* Attachment J (*Hazardous*  
3 *Waste Management Units*)).

4 Waste containers are transported to the permitted units at Areas L, G, and West by flatbed trucks,  
5 closed-box trucks, or trailers. The permitted units have design features that promote safe  
6 unloading and handling of waste containers from these trucks and trailers. Ramps are typically  
7 located at vehicle entrances to the dome structures at the Area L and Area G permitted units.  
8 Shed 31 at Area L and Shed 8 at Area G have sloped entryways for container-handling  
9 equipment. The storage domes have roll-up or roll-away vehicle access doors. The loading dock  
10 at TA-54 West allows access from the transport vehicles to the loading dock platform. These  
11 design features facilitate safe handling of containers in and out of the permitted units.

12 All waste containers at the TA-54 permitted units are handled in a manner that will not cause  
13 them to rupture or leak. Most containers are handled with forklifts (using drum grapplers, when  
14 appropriate) and are placed directly in the appropriate permitted unit. For larger containers,  
15 personnel can use a boom or, at TA-54 West and in portions of Area L, a bridge crane or mobile  
16 crane, respectively. At TA-54-412, waste containers (e.g., fiberglass reinforced plywood crates,  
17 drums, large boxes) are generally handled with forklifts, overhead cranes, or frictionless air  
18 pallets. Smaller containers are generally handled manually or with drum dollies. The use of  
19 proper handling equipment, appropriate to a container's size and weight, helps to prevent hazards  
20 while moving containers (e.g., when loading and unloading containers).A.6.1

#### 21 **A.4.1 AREA L**

22 The Area L permitted unit is the area within the fence and is comprised of several storage  
23 structures: dome 215; canopy and 216; concrete pad with canopy 32; concrete pads 35 and 36;  
24 storage sheds 68, 69, 70, 31; modular units 39 and 58 (*see* Figure 25 in Attachment N (*Figures*)).

25 The permitted unit stores containers of hazardous and mixed low level waste in solid and liquid  
26 form. Liquid wastes are stored primarily in structures that are designed for secondary  
27 containment; however, secondary containment pallets are also used. Secondary containment  
28 pallets are typically constructed of polyethylene or metal painted with a chemical-resistant  
29 coating. Polyethylene secondary containment pallets used at TA-54 are generally 50 inches  
30 long by 50 inches wide by 17 inches deep, with a designed capacity of 83 gallons. Currently,  
31 two sizes of metal secondary containment pallets are used at TA-54. One is 52 inches long by 52  
32 inches wide by 6.5 inches deep, with a designed capacity of 57 gallons; the other is 60 inches  
33 wide by 60 inches long by 6.5 inches deep, with a designed capacity of 77 gallons. The metal  
34 secondary containment pallets are coated with chemically-resistant urethane. The stressed- or  
35 tensioned-membrane fabric used on Storage Dome 215 and Canopy 216 at the aboveground  
36 permitted unit within the fence at Area L are similar. This fabric is coated with ultraviolet (UV)-  
37 stabilized plasticized polyvinyl chloride (PVC). It is fungus-resistant and certified flame-  
38 retardant (*i.e.*, self-extinguishing).

1    **A.4.1.1           Storage Dome 215**

2    Storage Dome 215 is 60 feet wide, approximately 266 feet long, and 26 feet high (*see* Figure 25  
3    in Attachment N (*Figures*)). It is an arch frame-supported stressed-membrane structure. The  
4    dome is of modular construction and uses light construction materials (*i.e.*, aluminum framework  
5    with membrane or fabric covering). It is equipped with 14 personnel doors and two roll-up  
6    doors. The dome's pad is equipped with a 6-inch-high, 8-inch-wide concrete ring wall that  
7    surrounds the perimeter of the dome, and the dome is anchored to the concrete ring wall with  
8    anchor bolts. A ramp is located at the vehicle entrance to the dome and allows vehicles and  
9    container handling equipment to pass safely over the ring wall. The ring wall and the ramp  
10   prevent run-on into the dome. Any liquid that might accumulate within the storage dome (e.g.,  
11   liquids resulting from fire-suppression activities) is contained within the ring-walled area.  
12   Liquid that may result from fire-suppression activities and that is in excess of the capacity inside  
13   the ring wall is collected in a double-walled holding tank connected to dome 215 by a double-  
14   walled pipe.

15   **A.4.1.2           Canopy 216**

16   Storage dome 216 is approximately 33 feet wide and 120 feet long (*see* Figure 25 in Attachment  
17   N (*Figures*)). This storage structure consists of a rigid aluminum frame that supports a tensioned  
18   membrane. A series of aluminum I-beam trusses spanning the width of the structure comprises  
19   the framework. The membrane is integrally connected to the frame to provide a fully-tensioned  
20   fit for the roof and one side of the structure. The membrane on the remaining three sides of the  
21   structure can be rolled down to provide further containment or protection from the weather. The  
22   canopy frame is anchored to a sloped asphaltic-concrete pad

23   **A.4.1.3           Storage Sheds 68, 69, and 70**

24   Storage sheds 68, 69, and 70 are prefabricated sheds constructed of steel (Safety Storage  
25   Building, Model 22) (*see* Figure 25 in Attachment N (*Figures*)). Each shed measures  
26   approximately 23 feet long, 9 feet wide and 8.5 feet high. Access to these storage sheds is  
27   obtained through one of three sets of double doors. Storage Shed 68 has three separate  
28   compartments with one door leading to each compartment. Storage Sheds 69 and 70 each have  
29   two separate compartments with one door leading to the smaller compartment and two doors  
30   leading to the larger compartment. The sheds are elevated by design which prevents run-on.  
31   Each shed is constructed with liquid-tight sumps to ensure containment of any potential leaks or  
32   spills and to prevent runoff. The floor of each shed consists of a metal grate that covers the sump  
33   areas. Containers are placed directly on the metal grates which prevent contact with liquids that  
34   may have accumulated in the sumps. The interior of each shed and sump is coated with  
35   chemically-resistant epoxy paint. The designed sump storage capacity of each shed is 750  
36   gallons, which exceeds the amount necessary to hold 10% of the total storage capacity of each  
37   shed (1,760 gallons).

1 Shed 68 has three separate compartments each having its own sump with individual capacities of  
2 250 gallons. Sheds 69 and 70 have two separate compartments, each having its own sump. One  
3 compartment consists of two thirds of the surface area (and capacity) of Sheds 69 and 70. The  
4 capacity of this compartment's sump is 500 gallons; the smaller compartment's sump capacity is  
5 250 gallons. The designed sump storage capacity of each shed is 750 gallons which exceeds the  
6 amount necessary to hold 10% of the total storage capacity of each shed (1,760 gallons).

#### 7 **A.4.1.4 Storage Shed 31**

8 Storage Shed 31 is a prefabricated shed constructed of steel. It measures approximately 14 feet  
9 long, 13 feet wide, and 8 feet high (*see* Figure 25 in Attachment N (*Figures*)). The shed sits on a  
10 concrete foundation that has a raised edge and is surrounded by asphalt that is sloped away from  
11 the shed to prevent run-on. The shed has three separate liquid-tight recessed sumps in the  
12 concrete foundation that are each covered with a steel grate. Containers are stored on the steel  
13 grates, which prevent contact with liquids that may have accumulated in the sumps. The sumps  
14 and the concrete foundation are coated with chemically-resistant paint. Two of the sumps are  
15 approximately 6 feet long by 4 feet wide; the third sump is approximately 7 feet long by 6 feet  
16 wide. All three sumps are 5 inches deep. The total capacity of the three sumps is approximately  
17 285 gallons, which exceeds the amount necessary to hold 10% of the total storage capacity of the  
18 shed (1,320 gallons). The total capacity of the three sumps is approximately 285 gallons, which  
19 exceeds the amount necessary to hold 10% of the total storage capacity of the shed (1,320  
20 gallons).

#### 21 **A.4.1.5 TA-54-32**

22 TA-54-32 (*see* Figure 25 in Attachment N (*Figures*)) consists of a concrete pad that is 116.5 feet  
23 long by 15.5 feet wide. The structure is covered by a 117.75 feet-long by 25.75 feet-wide  
24 canopy. The canopy provides protection from the weather. The concrete pad is bermed by a 1-  
25 foot-wide, 6- to 8-inch-high concrete curb. This curbed area is divided into six separate  
26 containment cells to segregate wastes with different hazard classes. The curb prevents run-on of  
27 storm water. Each containment cell consists of a recessed sump covered with grate flooring on  
28 which containers are stored; this prevents contact with liquids that may have accumulated in the  
29 sumps. The cells are separated by metal partitions above the flooring. The concrete sumps are  
30 treated with chemical-resistant epoxy filler-sealer and protective coating, providing an  
31 impervious seal to contain any potential leaks, spills, or accumulation of precipitation. Cells 1  
32 and 6 are approximately 26.5 feet long by 13.5 feet wide by 1 foot deep, with a sump capacity of  
33 2,675 gallons each. Cells 3 and 5 are approximately 16.8 feet long by 13.5 feet wide by 1 foot  
34 deep, with a sump capacity of 1,700 gallons each. Cells 2 and 4 are approximately 13.5 feet long  
35 by 11.2 feet wide by 1 foot deep, with a sump capacity of approximately 1,130 gallons each.  
36 These sump capacities exceed the amount necessary to hold 10% of the maximum storage  
37 capacity for TA-54-32.

1    **A.4.1.6           TA-54-35**

2    TA-54-35 (*see* Figure 25 in Attachment N (*Figures*)) consists of a concrete pad that measures  
3    31.5 feet long by 31.5 feet wide. The area is covered by a 136 ft-long, 48 feet-wide canopy that  
4    provides protection from the weather. The pad has a 6-inch-high concrete berm that prevents  
5    run-on and runoff of liquids. The bermed area has an elevated ramp on one side to allow access  
6    for equipment to move waste containers. The ramp also helps to prevent run-on of precipitation  
7    and runoff of any accumulated liquids. The bermed secondary containment area of the pad is  
8    approximately 29.5 feet long by 24.5 feet wide by 8 inches deep. Stored waste containers are  
9    elevated on pallets to prevent contact with any potential accumulated liquids. The secondary  
10   containment capacity of the bermed area is approximately 3,570 gallons, which exceeds the  
11   amount necessary to hold 10% of the maximum storage capacity for TA-54-35 (15,840 gallons)

12   **A.4.1.7           TA-54-36**

13   TA-54-36 (*see* Figure 25 in Attachment N (*Figures*)) is a 33-foot-long by 31.5-foot-wide  
14   concrete pad. It is covered by a 136 feet-long, 48 feet-wide canopy that provides protection from  
15   the weather. The pad is surrounded by a 1-foot-wide berm that varies from 6 inches to 1 ft in  
16   height. The berm prevents run-on and runoff of liquids. The bermed secondary containment area  
17   of the pad is approximately 30.5 feet long by 30 feet wide by 9 inches deep. The pad also  
18   contains a Perma-Con® structure. This structure is located, at the time of Permit issuance, at TA-  
19   54-36 but is authorized to be moved onto TA-54-32. The Perma-Con® is constructed of 4-foot-  
20   wide, 8- or 4-foot-long, 22-gauge stainless-steel panels that interlock in a self-supporting  
21   structural steel framework. The Perma-Con® system can be assembled into multiple  
22   configurations. The Perma-Con® is 28 feet wide by 28 feet long by 12 feet high. It is equipped  
23   with a 20-foot-long observation room that attaches to the main enclosure. The main enclosure  
24   has two personnel doors and an 8-foot-wide roll-up door. The floor in the main enclosure is the  
25   concrete pad covered with multiple layers of heavy duty plastic sheeting that are taped together  
26   and are extended approximately 1 foot up the sides of the Perma-Con®. The Perma-Con® has a  
27   tarp covering its roof to provide additional protection from the elements, thereby preventing the  
28   influx of precipitation, including melting snow. The secondary containment capacity of the  
29   bermed area is approximately 4,595 gallons, which exceeds the amount necessary to hold 10% of  
30   the maximum storage capacity for TA-54-36 (13,200 gallons).

31   **A.4.1.8           TA-54-58**

32   TA-54-58 (*see* Figure 25 in Attachment N (*Figures*)) is a pad that measures 33 ft long by 31.5 ft  
33   wide. It is covered by a 136 ft-long, 48 ft-wide canopy that provides protection from the  
34   weather. The pad has a 1-ft-wide berm that varies from 6 in to 1 ft in height. The berm prevents  
35   run-on and runoff of liquids. The bermed area has an elevated ramp on one side to allow access  
36   for equipment to move waste containers. The ramp also helps to prevent run-on of precipitation  
37   and runoff of any accumulated liquids. The bermed secondary containment area of the pad is  
38   approximately 30.5 ft long by 25 ft wide by 6 in deep. The secondary containment capacity of

1 the bermed area is approximately 2,850 gallons, which exceeds the amount necessary to hold  
2 10% of the maximum storage capacity for TA-54-58 (15,840 gallons).

### 3 **A.4.1.9 TA-54-39 and Containment Pad**

4 TA-54-39 measures 40 ft-long by 40 ft-wide (*see* Figure 25 in Attachment N (*Figures*)). It is a  
5 metal panel building set on a concrete foundation with a metal canopy attached to the south side  
6 of the building. The rectangular metal canopy measures 83 ft long by 46 ft wide. There are two  
7 areas associated with TA-54-39 that provide secondary containment. These areas include Room  
8 101, located inside the building, and a containment pad located at the south end of the building.  
9 Room 101 inside TA-54-39 has a 6-in-high concrete curb that surrounds the room. The  
10 containment pad at the south end of TA-54-39 consists of two sections. The pad is covered by a  
11 metal canopy, which provides protection from the weather. The eastern section of the  
12 containment pad is constructed of asphaltic concrete and measures 83 ft-long by 23 ft-wide. The  
13 western section of the containment pad is approximately 58 ft-long by 16 ft-wide and is  
14 surrounded by a 1-foot-high concrete curb, which prevents run-on and runoff of liquids. The  
15 secondary containment capacity for Room 101 is approximately 3,280 gallons, which exceeds  
16 the amount necessary to hold 10% of the maximum storage capacity of the room (9,900 gallons).  
17 The secondary containment capacity for the western section of the TA-54-39 containment pad is  
18 approximately 7,120 gallons, which exceeds the amount necessary to hold 10% of the maximum  
19 storage capacity of this section of the containment pad (15,180 gallons).A.6.3

### 20 **A.4.2 AREA G**

21 The permitted units at Area G are used to store containers of hazardous, mixed low level, and  
22 mixed transuranic wastes in solid and liquid form (*see* Figure 26 in Attachment N (*Figures*)).  
23 Liquid wastes are stored primarily in structures that are designed for secondary containment.  
24 However, secondary containment pallets are also used.

25 Secondary containment pallets are typically constructed of polyethylene or metal painted with a  
26 chemical-resistant coating Polyethylene secondary containment pallets used at TA-54 Area G  
27 are generally 50 in long by 50 in wide by 17 in deep with a designed capacity of 83 gallons.  
28 Two sizes of metal secondary containment pallets are typically used at TA-54 Area G. One size  
29 is 52 in long by 52 in wide by 6.5 in deep with a designed capacity of 57 gallons. The other is 60  
30 in long by 60 in wide by 6.5 in deep with a designed capacity of 77 gallons.

### 31 **A.4.2.1 Pad 9**

32 The 4 to 6 in thick asphalt pad is approximately 570 feet long and 275 feet wide (*see* Figure 27 in  
33 Attachment N (*Figures*)). Transuranic Waste Inspectable Storage Project (TWISP) domes 229,  
34 230, 231, and 232 are located on Pad 9 at the east end of Area G. Each dome is approximately  
35 246 ft long, and 88 ft by 7 inches wide and consist of a rigid aluminum frame that supports a  
36 tensioned membrane. A series of aluminum I-beam trusses spanning the width of the structures  
37 comprise the dome framework. The membrane material is a polyester fabric coated with UV-

1 stabilized plasticized PVC. The material is fungus-resistant and fire-retardant (i.e., self-  
2 extinguishing). The membrane is integrally connected to the frame to provide a fully tensioned  
3 fit. Each dome is equipped with personnel doors and a roll-up door for vehicle access and is  
4 anchored to a concrete ring-wall with anchor bolts. The interior floor perimeter of each dome is  
5 surrounded with a minimum 6-inch-high, 6-inch-wide asphalt curb. Under Pad 9 is a fire water  
6 collection system that collects water from Domes 232, 231, and Dome 226 on Pad 1 and  
7 transports it to a sump system in Dome 229 at the south end of Pad 9. The system is not intended  
8 for, nor was it designed to provide, secondary containment of liquid waste releases. It was  
9 designed to provide an augmented fire water collection capability to prevent fire water running  
10 off the pad if any fire suppression activities exceeded the capacity contained in the upstream  
11 domes. Dome 226 has two drain inlets at the south end of the dome and Domes 231 and 232  
12 have three drain inlets apiece in the southeast portion of the domes. All drains are connected and  
13 drain to a collection pipe line that runs down the east side of Pad 9. The line terminates in the  
14 collection sump in the east end of Dome 229. The floor of Dome 230 is designed for secondary  
15 containment of liquids. The asphalt pad floor is sloped (1%) towards a concrete sump at the east  
16 end of the dome. The asphalt floor and curbs in Dome 230 are lined with a double layer of 40  
17 mil high-density polyethylene (HDPE), and the sump is lined with a single layer of 40 mil  
18 HDPE, creating an impervious layer to contain any liquids that might accumulate. The secondary  
19 containment capacity for Dome 230, which includes the sump and curbed area, is approximately  
20 48,255 gallons which exceeds the amount necessary to hold 10% of the total storage capacity of  
21 the dome (330,000 gallons). The TWISP domes on Pad 9 are unheated; the storage of waste  
22 within the transportainers and modular structures is for the purpose of temperature equilibration  
23 of the waste for characterization procedures (i.e., real-time radiography and headspace gas  
24 sampling associated with the transuranic waste characterization program).

#### 25 **A.4.2.2 Pad 1**

26 The 4 to 6 inch thick asphalt pad is approximately 358 feet long and 213 feet wide. TA-54-412  
27 and storage dome 226 are located on the pad in the northeastern portion of Area G (see Figure 28  
28 in Attachment N (*Figures*)).

29 TA-54-412 (see Figure 28 in Attachment N (*Figures*)) is a one story building that is  
30 approximately 220 feet long by 60 feet wide (13,200 ft<sup>2</sup>). It consists of two structures, an  
31 internal primary confinement structure that houses the DVRS processing operations and an  
32 external secondary confinement structure which surrounds the primary confinement structure.  
33 The external secondary confinement structure (hereinafter referred to as “building”) provides  
34 protection from the elements and a temperature-controlled space for the internal structures and  
35 associated process equipment. A 16 ft by 16 ft roll-up vehicle-access door is located on the  
36 north end of the building. The roll-up vehicle access door opens to the secondary confinement  
37 structure area and serves as a pass-through for moving DVRS feed-stock waste into the primary  
38 confinement structure. There is also vehicle access on the south end of the building for removal  
39 of compacted waste from DVRS operations. The concrete slab provides a structural foundation  
40 for the building and the shearer and baler system and provides a direct working surface for  
41 movement of fiberglass reinforced plywood boxes and processing equipment. The concrete slab

1 is above grade to direct potential run-on away from the building. The floor in the building is  
2 sloped to a sump that has a grating cover to provide traction and a level working surface. The  
3 sump is treated with chemical-resistant epoxy filler-sealer and protective coating.

4 The primary confinement structure is housed entirely within the building and consists of five  
5 interconnected enclosures or cells. The system is approximately 150 feet long by 50 feet wide  
6 by 16 feet high and sits directly on the sealed concrete floor. The primary confinement structure  
7 is constructed of 6-inch-thick, two-hour fire-rated sandwich panels made of 16-gauge steel and  
8 gypsum wallboard measuring 40 feet wide by 4 or 8 feet long. The structure interlocks in a self-  
9 supporting steel framework that can be assembled into multiple configurations. The primary  
10 confinement structure has five cells each of which is used for a specific function of the DVRS  
11 process. The cells are equipped with both personnel and large roll-up doors so that personnel,  
12 equipment, and material can access the structure and move from one cell to the next. A cell is  
13 used to sort and segregate transuranic and mixed transuranic waste and contains various tools  
14 used to dismantle the fiberglass reinforced plywood boxes. Other cells are used for  
15 decontamination and packaging and a final cell contains the shearer and baler used to compact  
16 waste items. The shearing and baling process takes place within a tightly sealed compartment.  
17 Waste containers that need to be dismantled are processed using circular saws, reciprocating  
18 saws, hammers, pry bars, and other tools, as needed. Waste containers are moved with trucks,  
19 forklifts, air pallets, and hand dollies. The primary and secondary confinement structures are  
20 built to meet criteria specified in DOE-STD-1020-92, "*Natural Phenomena Hazards Design and*  
21 *Evaluation Criteria for DOE Facilities*" (DOE, 1992) for Performance Criteria 2 structures.  
22 Performance Criteria 2 structures include active fire suppression, emergency communications,  
23 and confinement systems that provide important safety functions related to emergency handling  
24 or hazard recovery and are designed to protect the health and safety of workers and visitors  
25 during active operations. The building contains fire protection piping and heating, ventilation,  
26 and air conditioning ducting and is a two-hour code-compliant fire-rated building. Panels in the  
27 primary confinement structure are the same material as the two-hour fire-rated wall construction  
28 with additional supports. A dry-pipe fire-protection system provides coverage for the primary  
29 confinement structure. A water collection area in the south end of the building provides for  
30 containment of any potential leaks, spills, or accumulated water resulting from the activation of  
31 the fire protection system.

32 Dome 226 is approximately 286 feet long and 88 feet 7 inches wide (*see* Figure 28 in  
33 Attachment N (*Figures*)). The design and materials of construction for Dome 226 are the same  
34 as for other domes at TA-54. The dome is equipped with personnel doors and a roll-up door for  
35 vehicle access. It is anchored to the concrete ring wall with anchor bolts. The interior floor  
36 perimeter of Dome 226 is surrounded with a minimum 6-inch-high, 6-inch-wide asphalt curb.  
37 The asphalt pad is sloped 1 to 1.5% towards one end to allow any accumulated liquids to be  
38 contained within the curbed area at the southern end of the dome. At the southern end of the  
39 dome is a drain connecting to the recessed sump in Pad 9's Dome 229. This fire protection drain  
40 system consists of a 10" line running southeast from Dome 226 with secondary connecting  
41 drains from Domes 232 and 231. The purpose of this drain system is to provide additional fire  
42 water collection capacity in the event of an emergency.

1    **A.4.2.3        Pad 3**

2    The 4 inch thick asphalt pad 3 is approximately 339 feet long and 50 feet wide. Storage Dome  
3    48, located at the eastern end of pad 3, is 285 feet long and 50 feet wide and has a peak height of  
4    24 feet (*see* Figure 29 in Attachment N (*Figures*)). The design and materials of construction for  
5    dome 48 are the same as the other domes at TA-54. The dome is equipped with a double-panel  
6    rolling door at the south end of the dome and eight personnel doors located approximately every  
7    80 feet along the dome's length mainly to allow for adequate access both by vehicles and  
8    personnel. The interior perimeter of the dome is surrounded by a 6-inch-high, 8-inch-wide  
9    asphalt curb which helps prevent run-on into, and runoff from, the dome. An asphalt ramp  
10   located at the vehicle entrance allows vehicles and container handling equipment to pass safely  
11   over the curb. The dome is anchored to Pad 3 with standard drift pins.

12   **A.4.2.4        Pad 10 (former Pads 2 and 4)**

13   Pad 10 is constructed at the location of former Pads 2 and 4. The asphalt pad measures  
14   approximately 350 feet long by 250 feet wide and is constructed of asphalt (*see* Figure 30 in  
15   Attachment N (*Figures*)). The transuranic waste characterization facilities and container storage  
16   area are located on this pad. The transuranic waste characterization facilities consist of mobile  
17   and modular units equipped with instruments and equipment for waste characterization and  
18   repackaging. The transuranic waste characterization facilities include the following: drum-  
19   loading or receiving unit(s); equilibration units(s); gas mobile characterization unit(s); mobile  
20   repack units; and nondestructive radioassay unit(s). External containment is provided by the  
21   trailers and transportainers because waste characterization activities take place inside the  
22   structures. The characterization provided by the non-destructive assay radioactivity monitoring  
23   techniques described does not involve opening the waste containers. Activities at Pad 10 include  
24   the following:

25   **TA 54-0498, LANL HENC**

26   The Canberra Facility High Efficiency Neutron Counter (HENC) is designed to provide a  
27   passive neutron and gamma measurement of transuranic waste drums in 55-gal containers. The  
28   trailer housing the HENC is Structure #498. The HENC supported the Facility's TWCP and  
29   Project 2010 and subsequently CCP operations beginning in 2004 to the present.

30   **TA 54-0365, Office Building, Formerly MTGS**

31   TA 54-0365 formerly housed the Mobile Tomographic Gamma System (MTGS). The MTGS  
32   was a gamma assay system prototype developed by the Permittees. The instrument was salvaged  
33   in 2007 and the trailer in which it was housed (Structure #365) was converted to office space.

34   **TA 54-0439, FRAM**

1 The Fixed-Energy Response Function Analysis with Multiple Efficiency (FRAM) is a single  
2 high purity germanium detector with FRAM software to evaluate the isotopic composition of  
3 waste drums from gamma measurements. Two systems were housed in trailer TA54-0439. The  
4 system was manually integrated with the Facility's HENC and the MTGS to quantify neutron  
5 and gamma signals into plutonium mass. The FRAM detectors were moved to TA54-0438 in  
6 2008 to prepare the TA54-0439 trailer for removal from Pad 10.

7 **TA 54-0483, Source Storage**

8 Trailer TA54-0483 serves as a storage repository for calibration sources needed by the NDA  
9 systems.

10 **TA 54-0497, RTR2**

11 The Real-Time Radiography (RTR) system #2 is designed to provide X-ray examination of the  
12 contents of a waste drum. The unit, RTR2, has been located on Pad 10 in support of the  
13 Department of Energy Carlsbad Central Characterization Project (CCP) operations.

14 **TA 54-0506, MCS HENC**

15 The Canberra MCS High Efficiency Neutron Counter (HENC) is functionally identical to the  
16 Permittees' HENC and provides passive neutron and gamma assays of 55-gal waste drums.

17 **TA54-1059, Storage**

18 TA54-1059 has been used to store miscellaneous NDA equipment, such as turn-tables,  
19 equipment stands, etc.

20 **TA54-0545, Storage**

21 Heated transportainer for transuranic and mixed transuranic waste storage prior to  
22 characterization

23 **TA54-0546, Storage**

24 Heated transportainer for transuranic and mixed transuranic waste storage prior to  
25 characterization.

1 **Pad 10 asphalt**

2 Pad 10 is primarily used for storage of feed stock empty drums for the transuranic waste  
3 characterization activities. Additionally, storage of oversized mixed wastes in transportainers  
4 and metal boxes can occur on the pad.

5 **A.4.3 Pad 5**

6 This asphalt pad consists of former pads 5, 7, and 8, located on the south-central portion of Area  
7 G, has two domes and eight sheds (*see* Figure 31 in Attachment N (*Figures*)) associated with it.  
8 Former Pad 5 is approximately 500 feet long, 65 feet-wide, and 4 inches thick. It is sloped  
9 approximately 2% from north to south. Former Pad 8 is approximately 150 feet long, 95 feet-  
10 wide, and 3 inches thick. It is sloped approximately 1% from west to east. Former Pad 7 is  
11 approximately 200 feet long, 64 feet-wide, and 4 inches thick. It is sloped approximately 1%  
12 from west to east.

13 **A.4.3.1 Dome 49**

14 Storage dome 49, located on former Pad 5, is 440 feet long and 60 feet wide and has a peak  
15 height of approximately 26 feet (*see* Figure 31 in Attachment N (*Figures*)). The design and  
16 materials of construction for Dome 49 are the same as the other domes at TA-54. The dome is  
17 equipped with a double-panel rolling door at the north end of the dome and six personnel doors  
18 to allow for adequate access both by vehicles and by personnel. The interior perimeter of the  
19 dome is surrounded by a 6-inch-high, 8-inch-wide asphalt curb which helps prevent run-on into  
20 and runoff from the dome. An asphalt ramp located at the vehicle entrance to Dome 49 allows  
21 vehicles and container handling equipment to pass safely over the curb. The dome is anchored to  
22 Pad 5 with standard drift pins.

23 **A.4.3.2 Dome 224**

24 Storage Dome 224, located on former pad 8, is approximately 110 feet long and 60 feet wide,  
25 with a peak height of 26 feet (*see* Figure 31 in Attachment N (*Figures*)). The design and  
26 materials of construction for dome 224 are the same as other domes at TA-54. This dome is  
27 anchored to Pad 8 with anchor bolts. It is equipped with a single-panel roll-up door at the north  
28 end and four personnel doors to allow adequate access by vehicles and by personnel. A 1-foot,  
29 8-inch wide by 2-feet, 4-inch deep concrete ring wall surrounds the interior of dome 224. A  
30 high-density polyethylene (HDPE) liner exists below the asphaltic pad within the dome. Storage  
31 sheds 144, 145, 146, and 177 are prefabricated sheds constructed of steel. Each shed measures 6  
32 feet long, 5 feet-wide, and 9 feet high. Access to each shed is obtained through a single door.  
33 The sheds are elevated by design, which prevents run-on and each shed is constructed with a  
34 liquid-tight sump to ensure containment of any potential leaks or spills and to prevent runoff.  
35 The floor of each shed is constructed of steel and has a metal grate that covers the entire sump  
36 area. Containers are placed directly on the metal grates, which prevent contact with liquids that  
37 may have accumulated in the sumps. The designed sump storage capacity of each shed is 120

1 gallons which exceeds the amount necessary to hold 10% of the total storage capacity of each  
2 shed (330 gallons).

3 Storage sheds 1027, 1028, 1029, and 1041 are equipped with three sets of double doors on one  
4 side of the shed for ease of access. Sheds 1027, 1028, 1030, and 1041 contain a single  
5 compartment and sump within each shed (*see* Figure 31 in Attachment N (*Figures*)). The  
6 designed storage capacity of each sump is 750 gallons which exceeds the amount necessary to  
7 hold 10% of the total capacity of each shed (1,760 gallons).

#### 8 **A.4.4 Pad 6**

9 This permitted asphalt pad, approximately 633 ft long, 99 ft wide and 4 inches thick, is sloped  
10 approximately 1.2% from west to east and is located in the north-central portion of Area G.  
11 Storage domes 153 and 283 are located on Pad 6 (*see* Figure 32 in Attachment N (*Figures*)) and  
12 the design and materials of construction for domes 153 and 283 are the same as the other domes  
13 at TA-54.

##### 14 **A.4.4.1 Dome 153**

15 Dome 153 is approximately 326 ft long and 60 ft wide, with a peak height of 26 ft (*see* Figure 32  
16 in Attachment N (*Figures*)). A double-panel rolling door is located at the west end of the dome  
17 and 10 personnel doors are located approximately every 40 to 125 ft along the dome's length.

##### 18 **A.4.4.2 Dome 283**

19 Dome 283 is approximately 250 ft long and 60 ft wide with a peak height of 26 ft (*see* Figure 32  
20 in Attachment N (*Figures*)). A double-panel rolling door is located at the east end of the dome  
21 and 10 personnel doors are located approximately every 50 ft along the dome's length. These  
22 accesses allow adequate traffic flow of vehicles and personnel into and out of the dome. An  
23 asphalt ramp is located at the vehicle entrance of each dome to allow vehicles and container-  
24 handling equipment to pass safely over the curb. Domes 153 and 283 are anchored to Pad 6 with  
25 standard drift pins.

#### 26 **A.4.5 Storage Shed 8**

27 Storage shed 8 is located in the north-central portion of Area G (*see* Figure 33 in Attachment N  
28 (*Figures*)). The shed is 40 ft long and 16 ft wide and has a 14-ft-high galvanized steel roof that  
29 slopes to the north. The siding of Shed 8 is constructed of galvanized steel and the foundation is  
30 constructed of concrete. Two overhead doors and one personnel door on the south side of the  
31 shed allow both vehicles and personnel to access the shed.

#### 32 **A.4.6 TA-54-33**

33 TA-54-33 is located in the north-central portion of Area G and consists of a dome attached to a  
34 concrete-block building (*see* Figure 34 in Attachment N (*Figures*)). This permitted unit is used

1 for waste storage and potential or future waste characterization activities. The dome and  
2 building are located on a concrete foundation surrounded by an asphalt pad. The concrete  
3 foundation is 8 inches thick and overlies 6 inches of base course. The concrete-block building  
4 attached to the dome is approximately 40 ft long and 34 ft wide. The dome is 157 ft long and 50  
5 ft wide with a peak height of 24 ft. A double-panel rolling door is located at the west end of the  
6 dome for vehicle access. A single-panel rolling door is located at the southeast end of the dome  
7 for container-handling access. Two personnel doors are located approximately 40 ft apart along  
8 the north wall of the dome. Two additional personnel doors are located in the concrete-block  
9 building; one on the west side, and one on the east side. In addition, two overhead doors are  
10 located on the north side of the building to allow free movement of personnel and container-  
11 handling equipment between the building and the dome.

12 The design and materials of construction for the TA-54-33 dome are the same as the other domes  
13 at TA-54. The dome's aluminum frame is directly connected to the building which extends  
14 approximately 5 ft into the dome. Inside the dome the concrete foundation is sloped to a 6-inch-  
15 wide centralized concrete drainage trench that is covered with 12-inch-wide steel grating. The  
16 trench slopes toward a steel sump located at the east end of the dome. Two additional trenches,  
17 located in Rooms 100A and 100B, are perpendicular to and feed into the main trench. A floor  
18 drain in Room 105 connects with the trench in Room 100A.

19 The steel sump is located within a concrete basin that has 8-inch-thick walls, a 9-inch-thick base  
20 and measures approximately 15 ft long by 7 ft wide by 6 ft deep. The sump is approximately 14  
21 ft long by 6.5 ft wide by 5 ft deep and has a capacity of 3,473 gallons. A primary holding tank  
22 associated with the sump is located in a concrete basin that is 15 ft long by 12 ft wide by 5.5 ft  
23 deep and has a capacity of approximately 7,405 gallons. A secondary holding tank associated  
24 with the sump is located in a separate concrete basin that is 12 ft long by 12 ft wide by 5.5 ft  
25 deep and has a capacity of approximately 5,924 gallons. These basins have the capacity to  
26 contain any spills or leaks resulting from a potential overflow or breach of the holding tanks.

#### 27 **A.4.7 Pad 11**

28 This asphalt pad is approximately 4 inches thick, measures approximately 478 ft long by 137 ft  
29 wide, and is sloped approximately 1 to 2% to the southeast. Storage dome 375 is located on the  
30 western portion of pad 11 and is used for storage of hazardous, mixed low level, and mixed  
31 transuranic waste. It measures approximately 300 ft long by 100 ft wide (*see* Figure 35 in  
32 Attachment N (*Figures*)). The building is an aluminum A-frame truss design that is anchored to  
33 a concrete ring wall. The dome is of modular construction utilizing a membrane or fabric  
34 covering. It is equipped with 14 personnel doors and two roll-up doors, one each at the east and  
35 west ends of the building. Ramped entrances allow for safe movement of container handling  
36 equipment and vehicle access.

#### 37 **A.5 TA-54 West Permitted Units**

38 The two permitted units at TA-54 West include the indoor low bay and the high bay at TA-54-38  
39 and the outdoor storage pad which surrounds the north, east, and south sides of TA-54-38 and the

1 loading dock at TA-54-38. The permitted units at TA-54 West are used to store solid mixed low  
2 level and mixed transuranic waste (*see* Figure 36 in Attachment N (*Figures*)).

### 3 **A.5.1 TA-54 West Building (RANT)**

4 TA-54-38 is a building constructed of 36-ft-high pre-cast concrete panel walls topped by pre-  
5 stressed double-T concrete roof sections. Its foundation consists of a 6-inch reinforced concrete  
6 slab on compacted fill. The building is divided into several offices and houses the Indoor  
7 permitted unit which includes the low bay and the high bay (*see* Figure 36 in Attachment N  
8 (*Figures*)). The low bay is approximately 40 ft-wide and 34 ft long. An 8 ft-wide by 12 ft-high  
9 roll-up door is located at the east end and opens to an outdoor loading dock. A second 8-ft-wide  
10 by 12-ft-high roll-up door is located in the southeast corner and opens into the high bay. The  
11 walls and floor of the low bay are coated with industrial grade enamel paint. The high bay,  
12 approximately 40 ft wide and 80 ft long, is used for loading transuranic and mixed transuranic  
13 waste into Transuranic Package Transporter-II containers. It is equipped with 14-ft-wide by  
14 18-ft-high roll-up doors on the east and west ends to allow convenient, indoor loading of the  
15 tractor-trailers that transport shipments of waste to the Waste Isolation Pilot Plant. The high bay  
16 floor is not painted and slopes at an angle of 1.5 degrees toward a central trench (which is 5  
17 inches wide, 6 inches deep and 50 ft long) and a sump. The entire length of the trench is  
18 covered with a metal grate and is designed to hold precipitation and snow melt from tractor-  
19 trailers.

### 20 **A.5.2 TA-54 West Outdoor Pad**

21 The outdoor permitted asphalt pad (which is approximately 4 inches thick and slopes toward the  
22 curbed edges to allow for storm water runoff (*see* Figure 36 in Attachment N (*Figures*))) consists  
23 of the loading dock at TA-54-38 and the storage pad located on the north, east, and south sides of  
24 TA-54-38. The loading dock is 16 ft wide by 38 ft, 10 inches long and is covered by a metal  
25 awning. The loading dock is constructed of 6-inch cast-in-place concrete and is located  
26 approximately 4 inches above grade. The boundary of the storage pad is delineated by the fence  
27 surrounding the pad and the approximate dimensions of the pad are shown on Figure X. Mobile  
28 radioassay trailers and storage sheds for supplies and equipment are also stored on the pad at the  
29 outdoor permitted unit (*see* Figure 36 in Attachment N (*Figures*)).

### 30 **A.5.3 Security and Access Control**

31 The permitted units at TA-54 are provided security by both their locations on top of Mesita del  
32 Buey and by 8-foot industrial chain-link fences topped by razor wire or barbed wire. Additional  
33 security is provided by a system of facility access controls to ensure that only authorized  
34 personnel are granted access. These access controls also ensure that all facility personnel can be  
35 identified and located in an emergency. Depending on national security conditions a guard  
36 station will be manned west of the TA-54 timed vehicle-access control gate. Guard stations  
37 control public access on Pajarito Road east and west of TA-54; only properly identified Facility  
38 employees or individuals under their escort will have access to TA-54. During times of low  
39 national security, any access to the TA-54 administrative area for Areas L and G is limited by a

1 timed vehicle-access control gate on the entrance road to TA-54. This gate is open during  
2 normal working hours from 6:00 a.m. to 6:30 p.m., Monday through Friday (except holidays).  
3 Gate hours are subject to change. Access to TA-54 West is by a manually operated gate on the  
4 west side of the facility. The gate is also open during normal working hours. Access to any part  
5 of TA-54 before or after normal working hours or on weekends requires approval of the  
6 appropriate Group Leader or Facility Manager at TA-54. TA-54 is patrolled by security  
7 personnel during non-operational hours to ensure that the gates are locked and that unauthorized  
8 entry has not occurred. Anyone entering the fenced Area L and Area G waste management areas  
9 from the TA-54 administrative area is "badged in" before proceeding. Badging in is the process  
10 of identifying the person, assessing his or her security and training status using DOE security  
11 badges, and determining the need for an escort. Authorized personnel may enter the fenced  
12 portions of Areas L and G only after negotiating additional access controls in the form of walk-  
13 through turnstiles and motorized vehicle gates. Each turnstile and vehicle gate is equipped with  
14 a badge reader to ensure authorized access only. Resident personnel are required to badge in  
15 upon arrival and prior to leaving TA-54. Non-resident personnel and visitors are required to  
16 badge or sign in and out at an access control point at the facility operations center. Depending  
17 on their level of training, non-resident personnel may be required to be escorted in order to  
18 access TA-54 Areas L and G and TA-54 West. Access to the Area L, Area G, and TA-54 West  
19 permitted units requires additional controls. Bilingual (i.e., English and Spanish) warning signs  
20 are posted on the fence at 50- to 75-ft intervals, are legible from a distance of 25 ft, and can be  
21 seen from any approach to this area. The legends on the signs indicate "Danger—Hazardous  
22 Waste Storage Area" and "Unauthorized Persons Keep Out." The security fence is inspected by  
23 on-site personnel and repairs are made as necessary. The locations of the security fence, entry  
24 gates, and entry stations are shown on Figures 8, 9, and 10 in Attachment N (*Figures*).

#### 25 **A.5.4 Emergency Equipment**

26 Emergency equipment is located throughout TA-54 and includes internal communications, alarm  
27 systems, fire alarms, spill kits, and decontamination equipment. Area L is equipped with an  
28 audible alarm system to alert personnel of a fire or the need to evacuate the area. This alarm can  
29 be activated by pulling a fire alarm or by pushing the evacuation alarm button. These alarms are  
30 located throughout Area L and are connected to the Los Alamos County Fire Department  
31 (LACFD) through the Facility's central alarm system at all times. In addition to the alarms there  
32 are numerous telephones located in and around the structures within Area L. These telephones  
33 ensure that personnel can contact on-site and Facility emergency personnel at all times. Many of  
34 these telephones also serve as emergency paging phones so that information can be announced  
35 throughout the area. Windsocks are also located at strategic locations to indicate wind direction  
36 and strength. Fire control equipment at Area L includes fire extinguishers (e.g., ABC-rated,  
37 water, carbon dioxide, dry chemical), a dry-pipe sprinkler system, and dry chemical systems.  
38 The fire extinguishers are available at or near most structures within Area L for use by on-site  
39 personnel depending on the size and fuel source of a fire. Dome 215 has an automatic dry-pipe  
40 sprinkler system that is heat activated in the event of a fire. Storage sheds 68, 69, and 70 have  
41 dry chemical systems. Fire hydrants are located near TA-54-37 and the southeast corner of TA-  
42 54-62. Personal decontamination equipment at Area L includes emergency eyewash stations and

1 showers. This equipment is for use by personnel in emergencies involving chemical or  
2 radiological materials. These stations are generally located near or inside structures where waste  
3 is being handled. Emergency shower and eyewash stations are located at or near TA-54-39, TA-  
4 54-31, TA-54-215, TA-54-216, and TA-54-35. Waste characterization documentation and  
5 MSDS are also available in the event of a chemical exposure. There are several spill kits  
6 available at Area L to mitigate small containable spills. These kits typically contain sorbents,  
7 neutralizers, PPE, and other equipment essential for containment of small spills. In addition to  
8 the spill kits, shovels for cleanup are stored in TA-54-46. Oversized drums and sorbents are also  
9 stored at various locations throughout Area L. For larger spills or other unusual hazardous  
10 situations, a variety of equipment is available to emergency personnel. This equipment includes  
11 forklifts, self-propelled loaders, and other heavy equipment from Area G.

12 Area G is equipped with an audible alarm system to alert personnel of a fire or the need to  
13 evacuate the area. The alarms can be activated by pulling a fire alarm or by pushing the  
14 evacuation alarm button. Fire alarms, evacuation alarms, and strobe lights are in place at  
15 strategic locations to alert personnel of emergency conditions. These alarms are located  
16 throughout Area G and are connected to the LACFD through the Facility's central alarm system  
17 at all times. Personnel working in Area G also carry pagers, cellular telephones, or two-way  
18 radios. Emergency paging telephones are in place so that information can be announced  
19 throughout the area. This equipment ensures that personnel can contact on-site and Facility  
20 emergency personnel at all times. Windsocks are at strategic locations to indicate wind direction  
21 and strength. PPE and emergency equipment supplies are stored at various locations throughout  
22 Area G. In addition, essential information for emergency personnel is located at the main gate to  
23 Area G in the event of an emergency after normal working hours or if Area G personnel are  
24 unavailable. There are different types of monitoring equipment located at the Area G CSUs that  
25 are used to qualitatively and quantitatively evaluate airborne contaminants. Alarms and strobe  
26 lights warn personnel when airborne concentrations exceed preset limits. Fire control equipment  
27 is located throughout Area G. This equipment includes ABC-rated, water and carbon dioxide  
28 fire extinguishers, dry-chemical fire suppression systems, fire blankets, and several fire hydrants.  
29 Trained personnel can use the fire extinguishers and fire blankets to extinguish small, non-  
30 chemical fires. For larger fires, security personnel and the LACFD are alerted. Eyewash  
31 stations, showers, and other first aid and decontamination equipment are maintained at various  
32 locations within Area G. They are for use by personnel in emergencies involving chemical or  
33 radiological materials. Waste characterization documentation and MSDSs are available in the  
34 event of a chemical exposure. First aid equipment can be used to treat injuries until trained  
35 medical personnel arrive at the scene. Spill control equipment is maintained at various structures  
36 within Area G. Trained personnel use this equipment to mitigate small, containable spills if they  
37 know what has been spilled and are sure their actions will not put themselves or others at risk.  
38 PPE is also maintained at various structures within Area G and is available for use during routine  
39 and non-routine operations to protect personnel from exposure to chemical and radiological  
40 contaminants. Warning tapes and barricades are used to post areas and prevent unauthorized  
41 entry into restricted areas. Heavy equipment is also available at Area G to move heavy objects.

1 TA-54-38 at TA-54 West is equipped with an audible alarm system to alert personnel of fire or  
2 the need to evacuate the area. Fire alarm pull stations are located throughout the building and  
3 can be activated in the event of a fire. Strobe lights mounted at the fire alarms and at TA-54-34,  
4 just north of TA-54-38, flash upon activation of the fire alarms to visually alert personnel. The  
5 alarm system can also be activated by using evacuation alarm buttons located near the entrances  
6 to the building. Upon activation of the evacuation alarm system, horns sound to alert personnel  
7 of emergency conditions. The building's manual fire alarm pull stations at TA-54 West are  
8 connected to the LACFD through the Facility's central alarm system at all times. The evacuation  
9 alarm system is a local system that notifies occupants in TA-54-38 and TA-54-34 of a local  
10 emergency. Additionally, a roll-up door between the high and low bays has heat sensitive links  
11 attached to a safety chain that melt at a certain temperature and cause the door to close.

12 TA-54-38 is also equipped with telephones to provide adequate communication and to summon  
13 external emergency assistance, if necessary. Paging telephones are located throughout the  
14 building and are used to contact on-site personnel. Paging telephones are also used in the event  
15 of an emergency to communicate the nature and location of hazardous conditions to personnel in  
16 the area. The alarm system is interrupted when the paging telephone system is activated to allow  
17 personnel to hear the announcement. Additionally, an emergency telephone is located outside  
18 the main entry area. Personnel working within the building can also use these telephones to  
19 summon assistance from local emergency response teams in case of emergency.

20 Fire control equipment is available for use within TA-54-38 and at the outdoor permitted unit.  
21 Portable ABC-rated fire extinguishers are located in the high bay, low bay, and at the outdoor  
22 permitted unit. The fire extinguisher located by the east personnel entrance door in the low bay  
23 can also be used at the loading dock. Depending on the size of the fire and the fuel source, fire  
24 extinguishers can be used by on-site personnel. TA-54-38 is equipped with a smoke-activated  
25 dry-pipe sprinkler system in the low bay and with heat-activated dry-pipe fire suppression  
26 systems in the high bay and at the loading dock. A fire hydrant installed according to National  
27 Fire Protection Association standards is located approximately 220 ft west of TA-54-38 near the  
28 west entrance to TA-54 West.

29 A portable chemical spill center is maintained within TA-54-38. It contains sorbents and PPE.  
30 Personnel working anywhere within the building have access to this spill center. Trained  
31 personnel use this equipment to mitigate small containable spills when they are certain their  
32 actions will not put themselves or others at risk. Personnel decontamination equipment available  
33 includes a safety shower and eyewash located in the high bay and a safety shower and eyewash  
34 on the loading dock.

#### 35 **A.5.5 Preventing Run-on and Runoff**

36 At TA-54, controlling run-on and runoff at the locations where waste management operations  
37 regularly occur is accomplished by appropriate contouring of surface areas and the use of control  
38 structures such as drainage channels, berms, and culverts. Canopies, dome structures, and other  
39 buildings are used to eliminate or minimize contact between run-on and waste containers. In  
40 addition, all stored waste containers are elevated or are placed in areas with sloped floors and

1 sumps to provide protection from liquids that could be introduced through fire-suppression  
2 activities. Existing operational controls include inspecting run-on and runoff controls in  
3 accordance with Attachment E (*Inspection Plan*) and maintaining the structural run-on and  
4 runoff controls, as necessary. Run-on and runoff management methods specific to the Area L,  
5 Area G, and TA-54 West permitted units are discussed below.

#### 6 **A.5.5.1 Area L**

7 The Area L permitted unit is maintained so that structural and operational controls divert storm  
8 water to a single outfall. These include asphalt channels, a 12-inch corrugated pipe storm drain to  
9 convey storm water to a single outfall at the northeast corner of Area L, and a contoured paved  
10 surface to direct storm water to the conveyances. Snow removal is performed to minimize run-  
11 on and runoff.

#### 12 **A.5.5.2 Area G**

13 In certain drainage areas at Area G, structures are maintained to efficiently channel storm water  
14 to the ephemeral streams draining the mesa. These structures include asphalt and concrete  
15 drainage channels, a weir, riprap-lined channels, retention dam, berms, and culverts. Roads and  
16 drive pads are configured, by grading and paving, to carry storm water away from the areas of  
17 active vehicular and loading operations. Silt fences and other erosion control structures are  
18 maintained throughout the drainage areas in locations prone to erosion or affected by heavy  
19 runoff during storm events.

#### 20 **A.5.5.3 TA-54 West**

21 The foundation at TA-54-38 is above grade to prevent run-on of storm water. Storm drains and  
22 trenches are maintained to collect any precipitation or snowmelt that may enter the Facility  
23 through the loading bays. The outdoor permitted unit is maintained to be sloped away from TA-  
24 54-38 towards the edges of the pad allowing storm water to flow to the edges of the pad. All  
25 containers of waste stored at the TA-54 West permitted units are located in areas with sloped  
26 floors and sumps or are elevated by design, on dollies, or on pallets. This prevents the containers  
27 from coming into contact with liquids. Positive surface drainage throughout TA-54 West directs  
28 potential run-on away from the TA-54 West permitted units. A drainage swale and curbing  
29 direct storm water runoff toward an outfall on the northeast side of the storage pad.

#### 30 **A.6 TA-55**

31 TA-55 is located in the north central portion of Los Alamos National Laboratory on a mesa  
32 between a branch of Mortandad Canyon on the north and Two Mile Canyon on the south (*see*  
33 *Figure 37 in Attachment N (Figures)*). TA-55 is a plutonium processing facility, which began  
34 operating in 1978. Hazardous and mixed waste container storage at TA-55 is conducted at seven  
35 permitted units. These permitted units are identified as B40, B05, K13, B45, the Vault, the  
36 Container Storage Pad, and TA-55-185. The B05, B45, and TA-55-185 permitted units will be

1 used to store containers with only non-liquid bearing waste (i.e., solid form). These permitted  
2 units all reside in a building; therefore, run-on and run-off from storm events are not applicable.  
3 In the event of a water leak from facility systems, the TA-55-4 basement has sumps to contain  
4 the liquid.

#### 5 **A.6.1 B40**

6 The B40 permitted unit is used to store containers of hazardous and mixed waste that may  
7 contain liquids. B40 is located in the southwest section of the TA-55-4 basement, as shown on  
8 Figure 38 in Attachment N (*Figures*). The permitted unit is L-shaped and has long dimensions  
9 of 61.5 by 55 feet (ft). The maximum storage capacity of this unit is 21,500 gallons (gal), the  
10 equivalent of 391 55-gal drums. The types of waste containers holding hazardous or mixed  
11 waste that are stored in B40 include 5-, 10-, 12-, 15-, 30-, 55-, and 85-gal drums; large waste  
12 boxes; special order waste boxes; and standard waste boxes (SWB).

#### 13 **A.6.2 B05**

14 The B05 permitted unit is used to store containers of hazardous and mixed waste that do not  
15 contain liquids. B05 is located in the southwest section of the TA-55-4 basement, as shown in  
16 Figure 39 in Attachment N (*Figures*). The permitted unit is rectangular shaped and is 26 ft long  
17 by 10 ft wide. The maximum storage capacity of this unit is 3,600 gal, the equivalent of 66 55-  
18 gal drums. The types of waste containers holding hazardous or mixed waste that will be stored  
19 in B05 include 30-, 55-, and 85-gal drums, large waste boxes; and SWBs.

#### 20 **A.6.3 K13**

21 The K13 permitted unit is used to store containers of hazardous and mixed waste that may  
22 contain liquids. K13 is located in the northwest section of the TA-55-4 basement, as shown on  
23 Figure 40 in Attachment N (*Figures*). The permitted unit is rectangular shaped and is 16 ft long  
24 by 13 ft wide. The maximum storage capacity of this unit is 2,500 gal, the equivalent of 46 55-  
25 gal drums. The types of waste containers holding hazardous or mixed waste that will be stored  
26 in K13 include 0.25-, 0.5-, 0.75- 1-, 2-, 4-, and 6-liter/quart containers; 5-, 10-, 12-, and 15-gal  
27 containers; 30-, 55-, and 85-gal drums; and large waste boxes.

#### 28 **A.6.4 B45**

29 The B45 permitted unit is used to store containers of hazardous and mixed waste that do not  
30 contain liquids. B45 is located in the northeast section of the TA-55-4 basement, as shown on  
31 Figure 41 in Attachment N (*Figures*). The permitted unit is rectangular shaped and is 45 ft long  
32 by 17.5 ft wide. The maximum storage capacity of this unit is 11,000 gal, the equivalent of 200  
33 55-gal drums. The types of waste containers holding hazardous or mixed waste that will be  
34 stored in B45 include 5-, 10-, 12-, and 15-gal containers; 55- and 85-gal drums; large waste  
35 boxes; and SWBs.

#### 1    **A.6.5     Vault**

2    The Vault permitted unit is used to store containers of mixed waste that may contain liquids.  
3    The Vault is located along the eastern wall of the basement at TA-55-4, as shown on Figure 42 in  
4    Attachment N (*Figures*) and is approximately 79.5 ft long by 50.5 ft wide. The maximum  
5    storage capacity of this unit is 4,000 gal, the equivalent of approximately 73 55-gal drums. The  
6    types of waste containers holding mixed waste that will be stored in the Vault include 0.25-, 0.5-,  
7    0.75-, 1-, 2-, 4-, and 6-liter/quart containers; and 5-, 10-, 12-, 15-, 30- and 55-gal drums.

#### 8    **A.6.6     Container Storage Pad**

9    The Container Storage Pad is used to store containers of hazardous and mixed waste that may  
10   contain liquids. The pad is located outside and south southwest of TA-55-4, as shown on Figure  
11   44 in Attachment N (*Figures*). It was installed in the mid-1980s and is constructed of asphaltic-  
12   concrete with a variable thickness of 4 to 6 inches (in.). The Container Storage Pad permitted  
13   unit is shaped like a trapezoid and measures 102 ft, 86 ft, 156 ft, and 105 ft. It also includes a  
14   rectangular strip measuring 70 ft by 10 ft on the southeast side. The pad is sloped, is elevated 2  
15   to 4 in. above ground level, and has a culvert beneath the pad running from the northwest side to  
16   the southeast corner to minimize run-on of precipitation. The storage capacity of this area is  
17   135,000 gal, the equivalent of approximately 2,455 55-gal drums. The types of waste containers  
18   holding hazardous or mixed waste that will be stored on the container storage pad include 0.25-,  
19   0.5-, 0.75-, 1-, 2-, 4-, and 6-liter/quart containers; 30-, 55-, and 85-gal drums; SWBs; large waste  
20   boxes; and 5-, 10-, 12-, and 15-gal containers.

#### 21   **A.6.7     TA-55-185**

22   TA-55-185 is used to store containers of hazardous and mixed waste that do not contain liquids.  
23   TA-55-185 is located west of TA-55-4, as shown on Figure 45 in Attachment N (*Figures*). The  
24   building was constructed in 1991 and consists of a steel frame with fiberglass insulation, metal  
25   walls, and a concrete floor. The TA-55-185 permitted unit will be approximately 60 ft long by  
26   40 ft wide, and will have a maximum storage capacity of 30,000 gal, the equivalent of 546 55-gal  
27   drums. The types of waste containers holding hazardous or mixed waste that will be stored at  
28   TA-55-185 include 30-, 55-, and 85-gal drums; large waste boxes; and SWBs.

#### 29   **A.6.8     Storage Tank System**

30   There is one storage tank unit at TA-55 that is comprised of two tank components, the evaporator  
31   glovebox tank and the stabilization unit pencil tanks. The two tank components share a common  
32   piping and pumping system.

33   The evaporator glovebox tank was constructed in 1986. The stabilization unit pencil tanks were  
34   constructed in 1985, installed from 1987-88, and were considered existing tanks until new  
35   components were installed in 1996. These new components were determined to be a major, non-  
36   routine modification; therefore, the stabilization unit pencil tanks are subject to the new tank

1 system regulations and are addressed as new tanks in accordance with the requirements of 40  
2 CFR § 264.192, which is incorporated herein by reference.

3 The TA-55 storage tank unit is located at TA-55, Building 4, in Room 401 and has a maximum  
4 capacity of 560 Liters (L) (137 gallons [gal]). The storage tank system consists of two  
5 components, with six tanks, that are used to store evaporator bottoms solutions prior to  
6 stabilization.

7 Liquid waste comes primarily from the evaporator as evaporator bottoms in approximately 25-L  
8 batches. Unrecyclable evaporator distillate waste (corrosive only) is also cemented when the  
9 low-level acid waste line to the TA-50 Radioactive Liquid Waste Treatment Facility is closed.  
10 Liquid waste generated from a source other than the evaporator (such as C-AAC analytical  
11 residues) is transferred to the Cementation Unit glovebox in plastic bottles up to 2L in volume  
12 via the trolley system.

13 The evaporator bottoms solutions are initially stored in the evaporator glovebox tank component,  
14 where they are sampled for radionuclides, oxides, and metals. They remain in the evaporator  
15 glovebox tank component until the radionuclide content is known. If the sampling results show  
16 radionuclide concentrations below the discard limit, the solutions are transferred to the  
17 stabilization unit pencil tanks component for storage pending the remaining analytical results.  
18 Upon completion of the remaining analyses, the solutions are transferred directly to the  
19 stabilization unit for treatment. If the sampling results show concentrations above the discard  
20 limit, the solutions are recirculated. Figure 46 in Attachment N (*Figures*) provides a general  
21 arrangement diagram and a process flow diagram for the TA-55 storage tank system.

22 The storage tank unit is connected to three main piping systems, which include the solution feed,  
23 ventilation, and vacuum piping systems. Each tank component has a separate header that  
24 connects to each of the piping systems. The wet-vacuum piping system is used for all transfers;  
25 and the vent-piping system is used to break vacuum. The wet-vacuum and vent-piping systems  
26 use vacuum traps to capture carryover liquid and prevent contamination of the lines downstream.  
27 One vacuum pump serves the storage tank system for liquid transfers and for vacuum sparging.  
28 The following attachment subsections provide descriptions of each of the tank system  
29 components and associated ancillary equipment.

#### 30 **A.6.8.1 Evaporator Glovebox Tank Component**

31 The evaporator glovebox tank component is located in the northwest corner of TA-55-4, Room  
32 401. It is approximately 8 feet (ft) high, 4-ft wide, and 13-ft long and consists of two welded-  
33 steel trays, eight glass columns, and associated ancillary equipment. The overall capacity of the  
34 evaporator glovebox tank component is approximately 270 L (71 gal). The evaporator glovebox  
35 tank component is fabricated from 0.1875-inch (in.), 316 stainless steel with a 2B finish  
36 conforming to the American Society for Testing and Materials (ASTM) "A240-Standard  
37 Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet  
38 and Strip for Pressure Vessels," hereinafter referred to as ASTM A240 (ASTM, 1998). The

1 lower half of the tank is fabricated with additional layers of materials welded to the outside of  
2 the 0.1875-in.-thick stainless-steel enclosure. These materials consist of 0.25-in.-thick lead  
3 shielding, conforming to ASTM “B29-Standard Specification for Refined Lead” (ASTM,  
4 1997a), and an outer layer of 0.0625-in. 316 stainless steel cladding. The tank component is of  
5 welded construction with all welds blended, ground, and polished to blend with adjacent  
6 material. All joints are vacuum tight.

7 The support frame and legs of the evaporator glovebox tank component are constructed of  
8 carbon steel and conform to ASTM “A36-Standard Specification for Structural Steel for  
9 Welding” (ASTM, 1987). The support frame is bolted to the base of the tank component for  
10 stabilization. In addition, the legs of the tank component are bolted to the support frame and  
11 secured to the 10-in.-thick concrete floor of Room 401 with anchor bolts. The 10-in.-thick  
12 concrete floor was constructed to conform to the reinforced concrete building code requirements  
13 of the American Concrete Institute (ACI) “318-71-Building Code Requirements for Structural  
14 Concrete and Commentary,” hereinafter referred to as ACI 318-71 (ACI, 1995). The reinforcing  
15 steel was detailed and fabricated in accordance with ACI “315-Details and Detailing of Concrete  
16 Reinforcement,” hereinafter referred to as ACI 315 (ACI, 1992). The design construction and  
17 tolerance of the framework around the concrete is in accordance with ACI “347-Guide to  
18 Formwork for Concrete,” hereinafter referred to as ACI 347 (ACI, 1994). Figure H-3 shows the  
19 dimensions of the evaporator glovebox tank component and its support structure.

20 The window portions of the evaporator glovebox tank component are constructed of 0.25-in.  
21 leaded glass, laminated on both sides with 0.125-in. clear glass, and installed with a neoprene  
22 gasket. Additionally, each window is backed with 0.25-in. safety glass installed with a neoprene  
23 gasket/seal that provides airtight containment. The dual glass configuration is secured to the  
24 tank component with a welded frame consisting of a 0.25-in.-thick lead shielding and a 0.0625-  
25 in. 316 stainless steel cladding similar to the additional layers of materials welded to the outside  
26 of the lower half of the tank component. The welded window frames are bolted to the tank  
27 component. Replacement windows and gaskets, if and when needed, shall be made of the same  
28 or similar materials.

29 The glove portions of the evaporator glovebox tank component are constructed of neoprene and  
30 Hypalon<sup>®</sup>. Each glove is tested for material continuity by the manufacturer before acceptance  
31 and installation in the evaporator glovebox tank component. Each glove is selected for its  
32 resistance to nitric acid. Replacement gloves, when needed, are made of the same or similar  
33 materials.

34 The evaporator bottoms solutions are vacuum-transferred from the steel trays to the glass  
35 columns. Each glass column is individually filled and visually monitored during transfer from  
36 the steel trays to a glass column. To prevent overflow, the evaporator bottoms are automatically  
37 directed to a vacuum trap when the maximum capacity of a column is reached. The maximum  
38 capacity of the vacuum trap is approximately 5.5 L. The glass columns and the vacuum trap are  
39 constructed of PYREX<sup>®</sup> glass, manufactured by Corning, with stainless steel end plates.  
40 Replacement parts for the columns and vacuum trap will be of the same or similar materials.

1 The glass columns are equipped with a vacuum sparging system designed to homogeneously mix  
2 the evaporator bottoms prior to sampling or transfer.

3 The piping associated with the evaporator glovebox tank component includes the transfer line  
4 from the evaporator, the wet-vacuum line, the lean-residue transfer line, and the ventilation lines  
5 entering and exiting the evaporator glovebox tank component. Figures H-4 and H-5 provide a  
6 legend and a piping and instrumentation diagram for the evaporator glovebox tank component.  
7 All piping and associated valves are constructed of single-walled, 316 stainless steel. The  
8 transfer line from the evaporator is 1.0-in. pipe, the wet-vacuum line and the lean-residue  
9 transfer line are 0.75-in. pipe, and the ventilation lines are 2.0-in. pipe. Pipe diameters may  
10 change in the event that a portion of the piping requires replacement. The evaporator glovebox  
11 tank component's ancillary equipment is supported by a steel channel Uni-strut® support frame.  
12 The Uni-strut® support frame is secured to the concrete ceiling with anchor bolts and provides  
13 the component's ancillary equipment with support and protection against physical damage and  
14 excessive stress that could potentially result from settlement, vibration, expansion, or  
15 contraction. Replacement supports are made of the same or similar materials.

16 The evaporator glovebox tank component does not operate under pressure; therefore, excessive  
17 stress due to expansion and contraction is not anticipated.

18 A helium leak-test using a mass spectrometer was performed on the evaporator glovebox tank  
19 component upon fabrication at Silver Engineering and again after it was installed and made  
20 operational at its present location in TA-55-4, Room 401. Because secondary containment is  
21 provided for this tank, the requirements in 40 CFR § 264.193(i), incorporated herein by  
22 reference, are not applicable.

#### 23 **A.6.8.2 Stabilization Unit Pencil Tanks Component**

24 The stabilization unit pencil tanks component consists of five vertical tanks located  
25 perpendicular to the west wall of TA-55-4 in Room 401. Each of the pencil tanks has a working  
26 capacity of 50 L (13 gal), an outside diameter of 6.625 in., a straight side height of 10 ft, a wall  
27 thickness of 0.28 in., and a conical bottom. The pencil tanks are constructed of 316 stainless  
28 steel. The stainless steel materials are corrosion-resistant and are compatible with the liquid  
29 waste stored in the tanks. The vent trap and the vacuum trap operating within the stabilization  
30 unit pencil tanks component have an outside diameter of 6.625 in. The vent trap has a straight  
31 side height of 9 in. and a maximum capacity of approximately 4 L. The vacuum trap has a  
32 straight side height of 37 in., a conical bottom, and a maximum capacity of approximately 17 L.  
33 The vent trap and the vacuum trap are constructed of 316 stainless steel for corrosion resistance  
34 and materials compatibility with the waste. All of the pencil tanks were designed in accordance  
35 with the standards applicable at the time of construction, including American Society of  
36 Mechanical Engineers (ASME) "Boiler and Pressure Vessel Code" (BPVC) (ASME, 1998),  
37 hereinafter referred to as ASME BPVC, Section VIII, Division 1. The pencil tanks are installed  
38 such that, if necessary, they can be replaced.

1    **A.6.8.3           Ancillary Equipment**

2    The piping associated with the stabilization unit pencil tanks component includes the  
3    header/manifold, vacuum manifold, and lower manifold for the stabilization unit pencil tanks  
4    component; the vent trap, vent line, and drain line; the transfer line from the evaporator glovebox  
5    tank component to the stabilization unit pencil tanks component header/manifold; and the  
6    transfer line from the lower manifold to the stabilization unit. All inter-tank piping and transfer  
7    piping is single-walled 0.75-in., Schedule 40, stainless steel pipe. All tank-to-piping  
8    connections are flanged.

9    The stabilization unit pencil tanks component is equipped with a vacuum trap that is designed to  
10   collect any mists or carryover liquid that might accumulate in the vacuum or vent lines. The  
11   vacuum trap is equipped with a sight glass for local level indication and is normally empty. Each  
12   stabilization unit pencil tank is equipped with three sight glasses located on the side of each tank  
13   for overfill protection.

14   The stabilization unit pencil tanks component is erected upon a 10-in.-thick concrete floor in  
15   TA-55-4, Room 401. The 10-in.-thick concrete floor provides a foundation that will maintain  
16   the load of the tank component when full. The concrete floor and ceiling were constructed to  
17   conform to the building code requirements of ACI 318-71 for reinforced concrete (ACI, 1995).  
18   The reinforcing steel was detailed and fabricated in accordance with ACI 315 (ACI, 1992). The  
19   design, construction, and tolerance of the framework around the concrete is in accordance with  
20   ACI 347 (ACI, 1994). The stabilization unit pencil tanks component and its ancillary equipment  
21   are elevated and supported by a steel channel, Uni-strut<sup>®</sup> support frame. The Uni-strut<sup>®</sup> support  
22   frame is secured to the concrete floor with anchor bolts and provides the ancillary equipment  
23   with support and protection against physical damage and excessive stress due to settlement and  
24   vibration.

25   In accordance with 40 CFR § 264.192(a), incorporated herein by reference, a written assessment  
26   has been prepared attesting that the stabilization unit pencil tanks component has sufficient  
27   structural integrity and is acceptable for handling mixed waste. The written assessment was  
28   reviewed and certified by an independent, qualified, registered professional engineer.

29    **A.6.8.4           Secondary Containment**

30   The storage tank unit is located at TA-55-4, inside Room 401. This room has a floor and walls  
31   that completely surround the tank system and serve as secondary containment, therefore, the  
32   secondary containment meets the requirements of 40 CFR § 264.193(1)(iv), incorporated herein  
33   by reference, for an external liner system. The walls and floor of Room 401 prevent the  
34   migration of wastes or accumulated liquids to any soil, groundwater, or surface water and are  
35   capable of collecting releases and accumulated liquids until the material is removed. Because  
36   the storage tank system and secondary containment are inside a building, run-on or precipitation  
37   will not affect the containment capacity. The capacity of the containment area is sufficient to  
38   contain 100 percent of the capacity of the largest liquid-bearing tank within its boundary.

1 The floor of Room 401 consists of 10-in.-thick reinforced concrete slab that is compatible with  
2 the wastes stored in the storage tank system and will effectively prevent migration of waste. The  
3 concrete in Room 401 is sealed with an epoxy or similar coating to aid in decontamination  
4 should a spill occur. In addition, tertiary containment is provided by the floor of the basement  
5 level of TA-55-4, which also consists of 10 in. of concrete. The construction joints in the floor  
6 slab and exterior walls are all constructed with chemical-resistant water stops in place. The  
7 conduit piping penetrating the floor of the room is secured with rubber boots, bushings, and  
8 flanges. All penetrations (i.e., holes for conduit) in the floor have been sealed to prevent liquids  
9 from entering the penetrations.

10 Additional leak detection will be provided by continuous air monitors (CAM) at various  
11 locations throughout Room 401. CAMs will detect any airborne alpha contamination that would  
12 be present if a leak were to occur at any point in the system. Additionally, radiological control  
13 technicians periodically monitor for radioactive contamination and would detect any leaks during  
14 monitoring.

#### 15 **A.6.9 Stabilization Unit**

16 The stabilization unit treats homogeneous liquid and solid mixed waste generated primarily from  
17 R&D and processing and recovery operations at TA-55 and at the Chemistry and Metallurgy  
18 Research Building at TA-3. The liquid wastes (Summary Category Group L1000) generally  
19 consist of evaporator bottoms solutions and laboratory solutions that may exhibit the hazardous  
20 characteristics of corrosivity and toxicity for metals (including arsenic, barium, cadmium,  
21 chromium, lead, mercury, and silver), as defined in 40 CFR §§ 261.22 and 261.24, respectively.  
22 The homogeneous solid process wastes (Summary Category Group S3000) generally consist of  
23 process residue from the evaporator, process leached solids, filter cake, and other miscellaneous  
24 solids. This waste stream typically exhibits the hazardous characteristics of toxic metals. These  
25 waste streams are mixed with cement in 55-gallon drums and allowed to cure into a non-  
26 corrosive solid matrix.

27 The stabilization unit is located in Glovebox GB-454 along the west wall of TA-55-4, Room  
28 401. The unit has been in operation since 1991 and has a maximum capacity of 568 liters (L)  
29 (approximately 150 gallons [gal]). It consists of a pH adjustment column, a vacuum trap, two  
30 motor-driven mixers, four impellers, associated support structures, a glovebox, and piping.

31 The pH column has a straight side height of 5 feet (ft) and an outside diameter of 6.66 inches  
32 (in.). The maximum capacity of the column is approximately 27 L. The column is raised above  
33 the glovebox floor approximately 3 in. by three steel legs and is secured to one wall of the  
34 glovebox with a steel bracket that binds the column approximately 3 ft up from the base of the  
35 column. The vacuum trap associated with the column has a straight side height of 2 ft and an  
36 inside diameter of 6 in. The maximum capacity of the vacuum trap is approximately 11 L. The  
37 pH column and the vacuum trap are constructed of PYREX® glass with stainless steel end plates  
38 similar to the glass columns in the evaporator glovebox tank component. The glass and stainless  
39 steel materials are corrosion-resistant and compatible with the waste received in the column.  
40 The pH column is used to adjust the pH of approximately 5 L of waste to ensure compatibility

1 with the cement used for solidification. A compressed-air line enters the glovebox and is  
2 connected to two pressurized air tanks outside of the glovebox. The compressed-air line is used  
3 for remote valve operation.

4 The two mixers within the unit are high-flow, gear-driven, fixed-mount mixers. All couplings,  
5 shafts, and impellers are constructed of 316 stainless steel. The shafts are 5 ft long. Two  
6 impellers are mounted to each shaft. Each impeller has a diameter of approximately 11 in. The  
7 mixers are driven by 3.5-horsepower motors encased within the mixer housing. The mixer  
8 housing is approximately 2.5 ft long. The maximum weight of each mixer is 225 pounds. Each  
9 mixer is mounted on steel plates and supported by two steel guides on either side of each mixer.  
10 Each guide is bolted to a 6-in. steel flange at either end and is secured to the glovebox floor and  
11 ceiling. Each motor is mounted to a center screw drive that allows the mixers to be  
12 independently raised and lowered within the glovebox.

13 The glovebox is constructed of a section of 0.75 in. lead between two sections of approximately  
14 0.188-in.-thick low-carbon grade, 316 stainless steel. The floor of the glovebox contains two  
15 circular openings with removable covers that allow the shafts and impellers of each mixer to be  
16 lowered into drums attached beneath the glovebox.

17 During stabilization operations, two 55-gal steel drums are positioned under the glovebox  
18 directly under the openings in the floor of the glovebox. A "bag-out" bag extends from the  
19 glovebox into each drum between the drum and the drum liner. This liner is fastened at the  
20 bottom of the glovebox with an elastic cord and clamped into place to prevent hazardous  
21 constituents from escaping the confinement of the glovebox and the drums during treatment  
22 operations. The cement and the waste to be solidified are transferred into the drums and  
23 homogeneously mixed inside the drums. Each drum is positioned on a steel platform/scale that  
24 is secured in a steel track. The platform allows the drums to be safely and easily removed from  
25 the unit after the cement has hardened.

26 The majority of the piping associated with the stabilization unit is 316 stainless steel. Tygon<sup>®</sup>  
27 tubing is used to transfer sodium hydroxide and the contents of the pH column to the drums. The  
28 cement is transferred into the glovebox and drums from a hopper/screw feeder through rubber  
29 tubing.

30 The homogeneous solid process wastes generated at TA-55 is delivered to the Cementation Unit  
31 in a closed container from the generator glovebox through a trolley system. The generator is  
32 instructed to size reduce the waste to minus 8 mesh. The Stabilization Unit personnel confirm  
33 this and do the size reduction if necessary. The particulate waste is poured into the waste drum  
34 just before or during the addition of cement to the drum and homogeneously mixed with the  
35 cement paste.

36 The stabilization unit is located in a vacuum-pressurized glovebox at TA-55-4 inside Room 401.  
37 Room 401 provides secondary containment for the stabilization unit. The floor of the room is  
38 recessed approximately 2.5 in. The room itself is approximately 60 ft long by 75 ft wide. The  
39 capacity of the secondary containment area is greater than 100 percent of the volume of waste

1 that is treated in the stabilization unit at any one time. The entire floor is constructed of a 10-in.-  
2 thick reinforced concrete slab. Eight continuous air monitors installed at various locations  
3 throughout TA-55-4, Room 401 detect any airborne alpha contamination that would be present if  
4 a leak were to occur resulting in a release outside of glovebox GB-454.

5 The stabilization unit is located within a negative pressure glovebox that is connected to the TA-  
6 55-4 facility ventilation system. The high-efficiency particulate air filters on the glovebox are on  
7 the air intake side of the ventilation and are designed to prevent escape of contamination from  
8 the glovebox in the event of a power failure. TA-55-4 is equipped with a backup generator that  
9 re-establishes power to all vital systems, providing exhaust to the glovebox. The unit is a batch  
10 waste treatment system. If a power failure occurs, all operations cease inside the glovebox until  
11 power is restored. In addition, the glovebox is located within three succeeding greater pressure  
12 zones. These zones are (in order of increasing pressure) the glovebox, Room 401, and the main  
13 corridor outside of Room 401. These pressure zones are designed to create airflow into Room  
14 401 and the glovebox and limit the potential for hazardous constituents to migrate to the  
15 atmosphere. Figure 47 in Permit Attachment N (*Figures*) provides a general arrangement  
16 diagram and a process flow diagram for the TA-55 stabilization unit.

#### 17 **A.6.10 Security and Access Control**

18 Security at TA-55 is maintained with both manmade and natural barriers. These barriers prevent  
19 the unknowing entry and minimize the possibility for unauthorized entry of persons or livestock  
20 into TA-55. Two 12-foot (ft) high chain-link security fences with razor wire at the top surround  
21 the entire perimeter of TA-55. Three entry gates allow access to TA-55. One entry gate is  
22 located at the main entrance to TA-55 on the southeast side of the facility, one entry gate is  
23 located on the road to TA-48 at the northwest end of TA-55, and one entry gate is located at the  
24 northeast corner of TA-55 (for access to TA-55, Building 28 [TA-55-28] only). An entry station  
25 is located adjacent to the entry gate at the main entrance to the facility. The entry station is  
26 manned 24 hours a day by security personnel. Unescorted access to TA-55 is granted only to  
27 persons possessing appropriate security clearance and meeting specific training requirements.

28 TA-55 is patrolled by security personnel during both operational and nonoperational hours to  
29 ensure that the gates are locked and that unauthorized entry has not occurred. The entire length  
30 of both security fences is also inspected several times each day by on-site security personnel.  
31 The locations of the security fences, entry gates, and entry stations are shown on Figure 11 in  
32 Attachment N (*Figures*).

33 In addition to the fence and entry gates, cliffs and canyons surrounding TA-55 provide natural  
34 barriers to discourage unauthorized entry.

35 Warning signs are posted on the perimeter fences at approximately 40 to 110-ft intervals and can  
36 be seen from any approach to TA-55. Warning signs are also posted at each access to the waste  
37 management units in sufficient numbers to be seen from any approach. The legends on the signs  
38 are bilingual (i.e., English and Spanish) and indicate “No Trespassing by Order of the United  
39 States Department of Energy.” The signs are legible from a distance of 25 ft.

1 **A.6.11 Emergency Equipment**

2 Buildings at TA-55 are equipped with multiple audible and visual safety-alarm systems to alert  
3 personnel in the event of an emergency and to evacuate the area. These alarm systems are  
4 located both inside and outside buildings at TA-55 and are monitored and controlled by the  
5 facility monitor and control system (FMCS). The FMCS is in operation 24 hours a day and is  
6 located in the Operations Center at TA-55-4 with access through TA-55-3. Specific FMCS  
7 alarm systems at TA-55 are discussed below.

8 A TA-55 computer system monitors the smoke and heat sensors, fire-alarm pull boxes, and drop  
9 box push-button alarms located throughout TA-55. Fire-alarm pull boxes and/or drop box push-  
10 button alarms are located in the vicinity of the waste management units addressed in this permit  
11 application. Fire-alarm pull boxes may be used by personnel to activate a local fire alarm when a  
12 fire or other emergency is discovered. Fire-alarm pull boxes are located in TA-55-4, Room 401,  
13 and throughout the basement in the vicinity of the container storage management units. The  
14 equipment includes portable eyewash stations and safety showers. Eyewash stations and safety  
15 showers are located in Room 401 and throughout the basement of TA-55-4. Eyewash stations  
16 are also located on the Container Storage Pad and outside on the south side of TA-55-4 near TA-  
17 55-185. Safety showers are readily available in the following locations: TA-55-4, Room 401; in  
18 the basement of TA-55-4; on the Container Storage Pad; and outside on the south side of TA-55-  
19 4. TA-55-185 is equipped with a portable safety shower prior to wastes being managed there.  
20 Material Safety Data Sheets (MSDS) provide useful exposure information and are available in  
21 Room 401 and in the basement of TA-55-4. The MSDS will also be located in TA-55-185 prior  
22 to wastes being managed there.