

WP 12-FP3003

Revision 9

Combustible Loading Controls for the Waste Handling Building and Underground

Management Control Procedure

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James McCormick
APPROVED FOR USE

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INTRODUCTION ^{1, 2, 3, 4, 5}

This document provides guidance and instructions for controlling the introduction, storage, and handling of ordinary combustibles, combustible/flammable liquids, and flammable and non-flammable compressed gas cylinders in the CONTACT-HANDLED (CH) BAY, REMOTE-HANDLED (RH) BAY, HOT CELL COMPLEX, SHAFT ACCESS AREA, OUTSIDE AREA (within 10 feet of the WASTE HANDLING BUILDING [WHB]), the UNDERGROUND (including the WASTE HOIST CONVEYANCE, WASTE SHAFT STATION, TRANSPORT PATH and DISPOSAL ROOM[S]) at the Waste Isolation Pilot Plant (WIPP). The required fire control measures are for the purpose of decreasing the possibility and consequences of fire to ensure protection of workers and the public.

This program implements requirements in compliance with the Documented Safety Analysis (DSA) and the Technical Safety Requirements (TSRs) for the WIPP. The DSA and TSRs require implementation of a control program for ensuring that combustible materials within the waste handling activity areas will not have sufficient energy for a fire to propagate. To ensure that the assumptions of DOE/WIPP-07-3372, and DOE/WIPP-07-3373 remain bounding, combustible loading is controlled in accordance with this procedure.

No records are generated by the performance of this procedure.

REFERENCES

BASELINE DOCUMENTS

- DOE Order 420.1B, *Facility Safety*
- DOE Order 440.1B, *Worker Protection Program for DOE (including the National Nuclear Security Administration) Federal and Contractor Employees*
- DOE-STD-1066-99, *Fire Protection Design Criteria*
- National Fire Protection Association (NFPA) Codes and Standards
- DOE/WIPP-07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis*
- DOE/WIPP-07-3373, *Waste Isolation Pilot Plant Technical Safety Requirements*
- WP 12-FP.01, WIPP Fire Protection Program
- WP 12-IS.01-2, Industrial Safety Program - Lockout/Tagout and Non-Electrical Energy Hazards

REFERENCED DOCUMENTS

- DOT-E-7607
- NFPA 30, *Flammable and Combustible Liquids Code*

- NFPA 55, *Standard for the Storage, Use, and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders, and Tanks*
- MP 5.16, Landlord Program
- WIPP-023, Fire Hazard Analysis for the Waste Isolation Pilot Plant, Carlsbad, NM (contact Nuclear Safety for current location)
- WP 04-AD3008, Shift Operating Logs
- WP 05-WH1101, CH Surface Transuranic Mixed Waste Handling Area Inspections
- WP 12-FP3001, Fire Protection Impairment
- WP 12-IH.02-4, WIPP Industrial Hygiene Program - Hazard Communication and Hazardous Materials Management Plan
- PM000028, Fire/Safety Inspection and Testing

PERFORMANCE

1.0 OPERATIONS MANAGERS

- 1.1 Support implementation of control of combustibles in the WHB and the disposal area of the underground per this procedure.
- 1.2 Implement compensatory measures as necessary per WP 12-FP3001, when fire protection systems are impaired in the WHB.
- 1.3 Ensure that daily inspections for combustible loading in the WHB are performed per WP 04-AD3008.
- 1.4 Promptly correct any deficiencies found in the performance of this procedure.
- 1.5 Contact the Fire Protection Engineer (FPE) as needed to support evaluation of potential deficiencies and determination of corrective actions.

2.0 FIRE PROTECTION ENGINEER

- 2.1 Ensure the effects of combustibles brought into the WHB do not present an unacceptable risk to the facility or personnel.
- 2.2 Ensure that the control of combustibles in the WHB and Underground is consistent with the documentation in WIPP-023.

- 2.3 Review modification work packages involving the WHB and the Underground for impact on combustible loading in the facility.
- 2.4 Jointly approve Designated Storage Areas for flammable liquids and non-flammable compressed gas cylinders with Industrial Safety and Hygiene (IS&H) and the Facility Shift Manager.
- 2.5 Provide guidance as Subject Matter Expert (SME) for guidance documents.

3.0 MAINTENANCE MANAGERS

- 3.1 Ensure work packages include instructions to minimize the accumulation of combustibles and to allow the dispensing, handling, and storage of combustible materials.
- 3.2 Maintain proper storage of combustible materials during work activities and at the end of each shift.
- 3.3 Ensure work packages include instructions for the storage, use, and transport of flammable and non-flammable compressed gas cylinders.

4.0 OPERATIONS

- 4.1 Maintain awareness of the requirements of this procedure when performing landlord duties for the WHB and UNDERGROUND.
- 4.2 Report potential combustible loading noncompliance issues to the Facility Shift Manager, the FPE, and Nuclear Safety.
- 4.3 Direct questions regarding combustible loading issues to the Fire Protection Engineer.

5.0 LCO REQUIRED COMBUSTIBLE MATERIAL CONTROLS

- 5.1 Ensure the following LCO requirements are adhered to:
 - Liquid-fueled vehicles/equipment SHALL be prohibited in the CH BAY during WASTE HANDLING and WASTE STORAGE. **[LCO 3.3.2]**
 - Liquid-fueled vehicle/equipment SHALL be prohibited in the SHAFT ACCESS AREA during WASTE HANDLING and WASTE STORAGE. Liquid-fueled vehicles/equipment can be used to download equipment, materials, and supplies from the Conveyance Loading Room when WASTE is stored in the Facility Cask Loading Room (FCLR). **[LCO 3.3.3]**

- Propane-powered vehicles/equipment SHALL be prohibited in the CH BAY, RH BAY SHAFT ACCESS AREA, and UNDERGROUND at all times. Handheld propane-powered equipment (i.e., propane cylinder \leq 15 ounces) can be used for maintenance activities in the SHAFT ACCESS AREA when no WASTE is present. Propane cylinders are considered equipment for the purpose of this LCO. **[LCO 3.3.4]**
 - The lube truck SHALL be prohibited in the DISPOSAL ROOM(S) and the VEHICLE EXCLUSION ZONE at all times. **[LCO 3.3.5]**
- 5.2 No flammable gas/liquid or flammable compressed gas cylinders shall be used in the DISPOSAL PATH during WASTE HANDLING OPERATIONS.
- 5.3 No construction work involving flammable gas cylinders at Bulkhead 309 during WASTE HANDLING OPERATIONS.
- 5.4 The RH 41-ton waste handling forklift with WASTE and a loaded CH WASTE transporter must maintain at least 100 ft separation between each other during transport of WASTE in the DISPOSAL PATH. This separation distance does not apply if either waste handling vehicle becomes disabled while loaded with WASTE and it is necessary to move the other vehicle past the disabled vehicle. If this occurs, a FIRE WATCH is required to move a vehicle loaded with WASTE past another vehicle loaded with WASTE.
- The TRANSPORT PATH SHALL be established prior to WASTE movement. The VEHICLE EXCLUSION ZONE SHALL be established to escort the WASTE through the TRANSPORT PATH with the leading and lagging escort. The VEHICLE EXCLUSION ZONE SHALL be maintained from the S-400/E-140 intersection to the DISPOSAL ROOM entrance. WASTE SHALL be moved in a VEHICLE EXCLUSION ZONE. Non-WASTE handling vehicles/equipment SHALL be prohibited in the VEHICLE EXCLUSION ZONE. Only one liquid-fueled vehicle shall be in the VEHICLE EXCLUSION ZONE. These controls apply during the WASTE HANDLING MODE. Liquid-fueled vehicles/equipment and non-WASTE handling equipment may enter the VEHICLE EXCLUSION ZONE to repair or replace disable WASTE HANDLING EQUIPMENT. **[LCO 3.3.6]**
 - Only WASTE HANDLING EQUIPMENT selected for WASTE HANDLING ACTIVITIES may approach the WASTE FACE during emplacement. Liquid-fueled vehicles/equipment used for retrieval SHALL be limited to one WASTE HANDLING EQUIPMENT and one liquid-fueled non-WASTE Handling vehicle/equipment at the WASTE FACE. Non-WASTE handling vehicle/equipment supporting emplacement activities SHALL be \geq 25 feet from the WASTE FACE and liquid-fueled WASTE HANDLING EQUIPMENT emplacing WASTE shall be ATTENDED. These controls apply to the WASTE HANDLING

MODE. Liquid-fueled vehicles/equipment and non-WASTE handling equipment may be < 25 feet from the WASTE FACE to conduct ground control, install chain link and brattice, and install panel closure/substantial isolation barrier. **[LCO 3.3.7]**

- Liquid-fueled vehicle/equipment in the DISPOSAL ROOM SHALL be \geq 25 feet from the WASTE FACE during DISPOSAL MODE. Liquid-fueled vehicles/equipment may be < 25 feet from the WASTE FACE to conduct ground control, install chain link and brattice, and install panel closure/substantial isolation barrier. **[LCO 3.3.8]**
- Absorbent material SHALL encircle the stationary liquid-fueled maintenance equipment. Absorbent material SHALL be sized to confine a fuel spill from liquid-fueled equipment used for maintenance and liquid-fueled vehicles unloading RH shipping containers shall be ATTENDED. This applies at all times in the RH Bay. **[LCO 3.4.1]**
- A STATIC WASTE FACE SHALL be protected by a bulkhead installed, or chain link/brattice, or absorbent material placed along the bottom edge. This applies at all times in the UNDERGROUND. **[LCO 3.4.2]**

6.0 LCO COMPRESSED GAS CYLINDER CONTROLS

6.1 Compressed gas cylinder controls are as follows **[LCO 3.6.1]**:

- Compressed gas cylinders SHALL be stored in designated storage areas when not in use.
- Compressed gas cylinders in storage SHALL be secured.
- Compressed gas cylinder valve SHALL be closed and valve cap installed or valve protected by a guard.
- Designated storage areas for non-flammable compressed gas cylinders SHALL be \geq 25 feet from WASTE.
- Designated storage areas for flammable compressed gas cylinders SHALL be \geq 100 feet from WASTE.
- These controls apply at all times in the PROCESS AREAS.
- Compressed gas cylinders stored \geq 100 feet from WASTE and cylinders used for life safety, and handheld cylinders used for monitoring of volatile organics are excluded from the requirements of this LCO. P-10 gas may be stored < 25 feet from WASTE.

- 6.2 Compressed gas cylinder controls are as follows [**LCO 3.6.2**]:
- Compressed gas cylinders SHALL be secured during use.
 - Use of flammable compressed gas will be controlled by a Hot Work Permit.
 - Flammable compressed gas cylinders SHALL be ATTENDED while in use.
 - These controls apply at all times and in all PROCESS AREAS.
 - Compressed gas cylinders stored ≥ 100 feet from WASTE and cylinders used for life safety, and handheld cylinders used for monitoring of volatile organics are excluded from the requirements of this LCO.

- 6.3 Compressed gas cylinder controls are as follows [**LCO 3.6.3**]:
- Compressed gas cylinders SHALL be secured during transport.
 - Compressed gas cylinders SHALL have valve closed and valve cap installed during transport.
 - Controls apply during WASTE HANDLING, WASTE STORAGE, and DISPOSAL Modes.
 - Controls apply in all PROCESS AREAS except in the OUTSIDE AREA when > 25 feet from WASTE.
 - Handheld cylinders used for monitoring of volatile organics are excluded from the requirements of this LCO.

7.0 DAILY INSPECTION REQUIREMENTS

- 7.1 No combustible materials SHALL be stored or staged within 10 feet of the WHB exterior.
- 7.2 Combustible materials SHALL not accumulate in the WHB or UNDERGROUND.
- 7.3 No combustible materials SHALL be stored or staged within 15 feet of the common RH/CH wall of the WHB.
- 7.4 No combustible materials SHALL be stored or staged on the 2nd floor of the WHB within 10 feet of the North wall.
- 7.5 At least 18 inches vertical clearance SHALL be maintained between the top of storage and sprinkler head deflectors.

- 7.6 Combustible waste is collected in metal containers and provided with lids (except for office cans).
- 7.7 Designated storage areas are identified with appropriate signage.
- 7.8 No storage of solvent or flammable liquids is allowed in the WASTE HOIST TOWER.
- 7.9 Used oil-hydraulic fluid shall be removed from the WASTE HOIST TOWER after hoist maintenance.
- 7.10 Flammable liquids SHALL NOT be stored in an ACTIVE DISPOSAL ROOM.
- 7.11 No flammable liquid SHALL be used in an ACTIVE DISPOSAL ROOM without a FIRE WATCH being posted.
- 7.12 No flammable liquids SHALL be stored in the DISPOSAL PATH.
- 7.13 Combustible materials SHALL NOT be stored in personnel access corridors, electrical or mechanical rooms, on or under stairways, or other egress paths.
- 7.14 Flammable and combustible liquids shall be stored in flammable liquid storage cabinets when not in use except for the following:
- Each TRUDOCK in the CH BAY may have \leq one gallon of denatured alcohol contained in an approved safety can.
 - One approved safety can containing \leq one gallon of denatured alcohol may be in the RH BAY.
- 7.15 5 megawatt (MW) or less fuel packages require a minimum of 10 feet separation from other fuel packages, WASTE containers, and/or building equipment to prevent the spread of fire.
- 7.16 Each pallet of fiberboard or polyethylene slip sheets are 7.4 MW fuel packages and a separation distance of 15 feet is required from other combustibles, radiological material, and stored CH WASTE.
- 7.17 No more than three (3) pallets of slip sheets may be stored in the CH BAY. Pallets of slip sheets must NOT be stacked.

8.0 ALL PERSONNEL

- 8.1 Dispense, handle, and store flammable and combustible materials according to the program requirements of this procedure.
- 8.2 Comply with work package and manufacturer's instructions relating to the safe use of combustible materials in the CH BAY, RH BAY, HOT CELL COMPLEX, SHAFT ACCESS AREA, UNDERGROUND, and OUTSIDE AREA.
- 8.3 Remove flammable and combustible materials from the work area upon completion, or interruption, of a work activity, and store or dispose of properly.
- 8.4 Comply with DSA in accordance with DOE/WIPP-07-3372.
- 8.5 Comply with TSRs in accordance with DOE/WIPP-07-3373.

9.0 GENERAL PROGRAM REQUIREMENTS

- 9.1 The combustible loading controls required by this procedure shall be consistent with the requirements of-DOE/WIPP-07-3372, DOE/WIPP-07-3373, WIPP-023, and WP 12-FP.01.
- 9.2 Combustible materials are limited to the quantity required for current needs and are separated from ignition sources.
- 9.3 Storage of new and used oil is limited to only the quantity necessary to support operations in the underground. The amount of oil is inventoried quarterly by the Hazardous Material Representative.
- 9.4 Permanent changes in combustible loading and equipment operational characteristics will have appropriate work control documents.
- 9.5 Noncombustible or fire retardant materials shall be used whenever possible.
- 9.6 Office furniture, wall and floor coverings, and partitions shall comply with DOE-STD-1066-99 for flame spread and smoke development ratings.
- 9.7 Hot work shall be performed with a Hot Work Permit.
- 9.8 The governing reference document for the storage and handling of flammable and combustible liquids shall be NFPA 30, *Flammable and Combustible Liquids Code*.
- 9.9 Solvents and flammable liquids shall be placed in a designated flammable cabinet storage location after each use.

- 9.10 Placement of flammable storage cabinets shall be subject to requirements of WP 12-IH.02-4.
- 9.11 The governing reference documents for the storage and handling of compressed and liquefied gases shall be NFPA 55, *Standard for the Storage, Use, and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders, and Tanks*.
- 9.12 All containers used to store or transport combustible/flammable liquids are listed as approved containers.
- 9.13 Ordinary combustibles such as rags, paper, office supplies, or toiletries shall not be placed in flammable storage cabinets.
- 9.14 Limit routine commodities (e.g., office and janitorial supplies) to those materials and quantities necessary to support normal work activities.
- 9.15 Whenever practical, unpack equipment prior to entry into the WHB. When unpacking inside the WHB, remove and properly dispose of combustible packing material, pallets, and shipping containers as soon as possible.

10.0 FACILITY INSPECTIONS

- 10.1 Facility Operations and Underground Operations, perform daily inspections and complete the WHB Inspection Logsheet per WP 04-AD3008.
- 10.2 Inspect TRUDOCKs for combustibles each shift prior to Waste Handling Activities per WP 05-WH1101.
- 10.3 Emergency Services perform inspection of the WHB per PM000028.

Attachment 1 - Definitions

Aerosol: A product that is dispensed from an aerosol container by a propellant.

Aerosol Container: A metal can, up to a maximum size of 33.8 fl oz (1000 ml), or a glass or plastic bottle, up to a maximum size of 4 fl oz (118 ml), that is designed and intended to dispense an aerosol.

Aerosol Propellant: The liquified or compressed gas that expels the content from an aerosol container when the valve is actuated. A propellant is considered flammable if it forms a flammable mixture with air or if a flame is self-propagating in a mixture of the propellant and air.

Approved: Acceptable to the Authority Having Jurisdiction (AHJ). At WIPP this can include the FPE and/or the U.S. Department of Energy (DOE) representative responsible for the fire safety program, or other recognized AHJ.

Combustible Material: A material that, in the form in which it is used and under conditions anticipated, will ignite, burn, support combustion, or release flammable vapors when subjected to fire or heat. Wood, paper, rubber, and plastics are examples of combustible materials.

Combustible Liquid: Liquids having a flash point at or above 100°F (37.8°C). Combustible liquids are classified as Class II, IIIA, and IIIB.

Compressed Gas: Any material or mixture having, when in its container, an absolute pressure exceeding 40 pounds per square inch (psi) absolute (psia) at 70°F or, regardless of the pressure at 70°F, having an absolute pressure exceeding 104 psia at 130°F.

Compressed Gas Cylinders: Any portable pressure vessel of 1,000 lb water capacity or less designed to contain a gas or liquid that is authorized for use at gauge pressures over 40 psi at 70°F by the U. S. Department of Transportation (DOT) or Transport Canada (T.C.). Aerosol containers, pressurized fire suppression agent containers, and cylinders covered by DOT Exemption (DOT-E-7607) shall be excluded from compressed gas cylinder requirements.

Controlled Storage Area: Areas where exposed (e.g, noncontainerized) Class A combustible material (wood, paper, cardboard, cloth) has been designated for temporary staging. These areas are not used to store oils, paints, solvents, and other combustible or flammable liquids, except in approved cabinets. Areas shall be indicated with barriers and appropriate signage.

Attachment 1 - Definitions

Designated Storage Area: Areas for the storage of flammable/combustible materials such as storage cabinets and areas for the Storage of flammable or non-flammable compressed gas cylinders which have been approved by the FPE and IS&H. Approved areas shall be designated with appropriate signage.

Flammable Liquid: Liquids having a flash point below 100°F (37.8°C), and a vapor pressure not exceeding 40 psia at 100°F (37.8°C), are known as a Class I liquids.

Flammable Storage Cabinet: A storage cabinet that is approved and listed for its intended use.

Fuel Packages: A continuous amount of combustible material which will burn until the fuel is consumed. A fuel package with 5 MW or less of maximum energy release rate kept at a distance of 10 feet will have a heat flux of approximately 10 kW/m². A heat flux of 10 kW/m² is accepted as a critical heat flux that will not ignite exposed combustible material.

5 MW	Fuel packages requiring a 10 foot separation
14	Empty stacked wooden pallets
5	Wood - 4 feet x 4 feet x 7 feet wooden crates
4 1/8	Gallons of flammable/combustible liquid
1	5-gallon container set of epoxy paint
2 ft ³	Plastic material (non-fire retardant)
134 ft ²	Trash Bags
1	Pallet of HEPA filters 4 feet high

Incidental Use: The routine use of material required for essential activities such as maintenance, personnel protection, and operations. The allowable quantity of material for incidental usage would be limited to the amount needed for one work shift. Any quantity exceeding the amount needed for one work shift shall be stored in accordance with this procedure.

Listed: Equipment, materials, or services included in a list published by an organization acceptable to the authority having jurisdiction and concerned with evaluation of products or services that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services and whose listing states either that the equipment, material, or service meets identified standards or has been tested and found suitable for a specified purpose. This is typically Underwriters Laboratory (UL) and/or Factory Mutual (FM).

Attachment 1 - Definitions

PROCESS AREA(S): As defined by the TSR are the CH BAY, RH BAY, HOT CELL COMPLEX, OUTSIDE AREA, UNDERGROUND, and SHAFT ACCESS AREA.

Safety Can: A container of not over five gallons capacity that is designed to safely relieve internal pressure when exposed to heat and has a spring-closing lid and spout cover.

Storage: Material is considered to be in storage if it is not actively being used to support work. All storage of materials in areas covered by the scope of this procedure shall meet the requirements contained herein.