

WP 04-HO1003

Revision 18

Waste Handling Hoist Operation

Technical Procedure

EFFECTIVE DATE: 10/19/09

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APPROVED FOR USE

Official Use Only

TABLE OF CONTENTS

INTRODUCTION	3
REFERENCES	3
PRECAUTIONS AND LIMITATIONS	4
PREREQUISITE ACTIONS	6
PERFORMANCE	7
1.0 HOIST START-UP	7
2.0 PREOPERATIONAL HOISTING TESTS	9
3.0 HOIST RESYNCHRONIZATION	19
4.0 PREOPERATIONAL ACTIVITIES/CONDITIONS	20
5.0 SEMIAUTOMATIC OPERATION	21
6.0 MINE MATERIALS HANDLING	21
7.0 WASTE HANDLING	23
8.0 WASTE HOIST COLLAR-TO-COLLAR TEST	24
9.0 HOIST SHUTDOWN	25
10.0 REVIEW	26
Attachment 1 - General Safety Precautions	27
Attachment 2 - Bell Signal System	29
Attachment 3 - Load List	30
Attachment 4 - Sample Waste Hoist Operator's Log Sheet	31
Attachment 5 - Waste Handling Shaft Manpower Report	33

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INTRODUCTION ¹

This procedure provides instructions for operating the Waste Handling Hoist (WHH) system under test, material transport, or personnel transport conditions, and control of Waste Hoist Operator's Log Sheet.

Performance of this procedure generates the following record(s), as applicable:

- Waste Hoist Operator's Log Sheet
- Attachment 5, Waste Handling Shaft Manpower Report

All records produced during the performance of this procedure are Resource Conservation and Recovery Act operating records and must be retained in accordance with the (Hoisting Operations) Records Inventory and Disposition Schedule (RIDS). Final disposition after facility closure will be in accordance with the RIDS. Record retention is automatically extended by any enforcement action involving these records.

REFERENCES

BASELINE DOCUMENTS

- DOE/WIPP-07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis*
- DOE/WIPP-07-3373, *Waste Isolation Pilot Plant Technical Safety Requirements*

REFERENCED DOCUMENTS

- Title 30 *Code of Federal Regulations* (CFR) Part 57, "Safety and Health Standards - Underground Metal and Nonmetal Mines"
- WP 04-AD3001, Facility Mode Compliance
- WP 04-IM1000, Issues Management Processing of WIPP Forms
- WP 13-QA3004, Nonconformance Report
- EA04IM1000-1-0, WIPP Form

PRECAUTIONS AND LIMITATIONS

The Technical Safety Requirements (TSRs) contain Limiting Conditions for Operation (LCOs) and Specific Administrative Controls (SACs) which provide specific preventative or mitigative limits and required actions for identified accident scenarios. Failure to comply with LCOs or SACs may constitute a violation and must be immediately reported to the Facility Shift Manager (FSM). The step affected by the LCO/SAC is followed by the LCO/SAC number in bold brackets (e.g. [**SAC X.X.X.X**]). Applicable LCO/SAC Surveillance Data Sheets SHALL be completed as required by WP 04-AD3001.

Listed below are the specific safety requirements that apply during performance of this procedure.

- Completion of the Preoperational Hoist Checks on the Waste Hoist Operator's Log Sheet and completion of the applicable SAC Data Sheet, per WP 04-AD3001, is required prior to entering Waste Handling Mode. [**SAC 5.1.1.1**]

NOTE

Levels four and five of the Hoist Tower are restricted access areas. An escort may be required for entry to these levels at the discretion of the Hoisting Operations Manager or Hoist Operator. Emergency egress is provided by ladder way. A key is **NOT** needed to exit the area via the ladder.

- All unauthorized personnel shall adhere to the following entry requirements when requesting access to the fourth and fifth levels:
 - Permission must be requested from Hoisting Operations Manager or the on-duty Hoist Operator located at the second level Hoist Control Room.
 - Appropriate information must be entered in the Key Logbook.
 - Access key must be obtained from the Hoist Operator.
 - Ladder way must be secured and door locked when leaving the restricted area.
 - Key must be returned to the Hoist Control Room.
 - All entries must be completed in the Key Logbook.
- The WHH Master Control Station (MCS) is furnished with a trip recorder, which is required to be operated at all times while the Hoist is operating.
- Handheld radios shall **NOT** be used inside the Hoist MCS because of the potential for interference with the operation of Hoist electronics. Signs to this effect are posted at **ALL** entrances to the MCS.

- The load capacity of the conveyance mandeck is 75 persons.
- The material deck capacity is 45 tons. The work deck, when installed on the conveyance, is 5 tons, reducing material deck maximum capacity to 40 tons.
- Mantrips will not be made in conjunction with remote-handled (RH) or contact-handled (CH) waste trips.
- The Facility Cask Transfer Car, Facility Cask, and Waste Canister, when hoisted together in their normal waste handling configuration, will require a dedicated trip. If the Waste Canister exceeds 3,220 pounds, the work deck **MUST NOT** be in place on the conveyance since this would constitute an overload for the Hoist.
- Conveyance doors must be closed during mantrips, and opened only when the conveyance has come to a full stop.
- The mine phone system must be monitored at all times by Hoist operating personnel who must be prepared to respond immediately to all emergency situations that may require hoisting or lowering services whenever personnel are underground.
- Shaft Tenders are required to be cognizant of the Hoist status and operating mode at all times through observation of local control station (LCS) status lights and maintenance of phone communications with Hoist Operator and opposite Shaft Tenders.
- The maximum number of round trips per eight-hour shift, during normal operation, is 15. If needed, additional trips must be authorized by the Operations Manager prior to exceeding 15 round trips.
- The Toplanders will notify the Hoisting Operations Manager when the Hoist has completed 12 cycles (round trips) per shift.
- Load Interrupter Switches (LIS) **SHALL NOT** be operated from CLOSED to OPEN with a connected load.
- Protective relays limit operation as follows:
 - A circuit breaker (CB) that has a flag displayed **SHALL NOT** be CLOSED.
 - Equipment being served by tripped CB **SHALL NOT** be energized.
 - Relay flags may be reset only after Maintenance or Engineering, and FSM concur.

- Additional precautions are contained in Attachment 1, General Safety Precautions.

PREREQUISITE ACTIONS

NOTE

Checklists in Waste Hoist Operator's Logbook for Hoistman, Toplander, and Bottomlander need not be performed in numbered sequence.

- 1.0 Perform and complete requisite checks at the beginning of each operating day in accordance with Conduct of Shift Operations (these checks shall include inspection for deterioration).
- 2.0 Document the requisite checks using the Waste Hoist Operator's Log Sheet, and note the following:
 - Special instructions
 - Hoist system abnormalities
 - Maintenance performed
- 3.0 If a required inspection goes delinquent, perform the following:
 - 3.1 **GO TO** WP 13-QA3004, and generate a Nonconformance Report.
 - 3.2 Immediately notify the FSM and Site Environmental Compliance (SEC) of the delinquent inspection.
 - 3.3 Schedule and complete the inspection.
 - 3.4 Document the following in a letter to SEC within five working days:
 - The schedule for inspection
 - The reason(s) why the inspection was not performed
 - Any measures taken to offset the negative impacts resulting from not performing the inspection
 - Actions to prevent further delinquencies
 - 3.5 SEC, **GO TO** WP 04-IM1000 and determine if a Waste Isolation Pilot Plant (WIPP) Form (EA04IM1000-1-0) is required.
- 4.0 If discrepancies are observed during the performance of the Waste Hoist Operator's Log Sheet checklists, Hoist operations must be suspended until corrections have been made.

- 5.0 A Shaft Tender is required to be present at the collar and station whenever the Hoist is either in the SEMI-AUTOMATIC mode or **NOT** in a released condition.

PERFORMANCE

1.0 HOIST START-UP

- 1.1 Notify the CMRO (Central Monitoring Room Operator) prior to powering up/shutting down WHH.

NOTE

Under normal start-up conditions, the Waste Hoist Control Power AC and DC circuit breaker 31-H-010A at Power Panel 31P-MCC04/1 will be in the **ON** position.

- 1.2 Ensure the Waste Hoist Control Power AC and DC circuit breaker 31-H-010A at Power Panel 31P-MCC04/1 is **ON**.
- 1.3 Turn chart recorder to the Hour position.
- 1.4 Record date, time, and initial the chart paper.
- 1.5 Perform the following at the Control Cabinet:
- 1.5.1 Open left-hand side Control Cabinet door.
 - 1.5.2 Check that battery light-emitting diode (LED) indicator on Programmable Control 60 is **ON** and **NOT** flashing.
 - 1.5.3 **IF** battery LED indicator is flashing, **THEN** notify Hoisting Operations Manager; **AND** continue start-up and operations in accordance with manager's directions.
 - 1.5.4 Verify that fourth LED up from bottom on the NMFA card is **ON**.
 - 1.5.5 Momentarily depress Primary Brake Pump Start push button.
 - 1.5.6 Verify Primary Brake Pump Green indicator light illuminates.
 - 1.5.7 Momentarily depress Motor Blower Exc System Start push button on the Hoist Control Panel.
 - 1.5.8 Verify Motor Blower Exc System Green indicator light illuminates and NMFA card LED goes **OFF**.
 - 1.5.9 Close left-hand side Control Cabinet door.

NOTE

Operation of 13.8kV interrupter switches 31P-SW15/2A and 31P-SW15/2B is controlled by Hoisting Operations.

- 1.6 Ensure 13.8kV interrupter switch 31P-SW15/2A **OR** 31P-SW15/2B is **CLOSED**.

NOTE

Under normal start-up conditions, the AC Control Switch SCA on the Thyristor Converter Cabinet 31P-PC04/1 will be in the **CLOSED** position.

- 1.7 Ensure AC Control Switch SCA on the Thyristor Converter Cabinet 31P-PC04/1 is **CLOSED**.

WARNING

Closing a circuit breaker with a flag displayed could cause personnel injury or equipment damage.

- 1.8 Verify that NO protection relay flags are present prior to closing Breaker Control CB1 at 31P-SWG15/1.
- 1.9 **IF** protection relay flags are present, **DO NOT CLOSE** Breaker Control CB1
AND notify CMRO and Hoisting Operations Manager.
- 1.10 CLOSE Breaker Control CB1 Waste Hoist AC Breaker at 31P-SWG15/1.
- 1.11 Verify the following events occur:
- 1.11.1 13.8kV AC Circuit Breaker 31P-SWG15/1 closes.
 - 1.11.2 Red indicator light illuminates.
 - 1.11.3 Three White Bridge Power Phase lights on the AC Entry Panel illuminate.
- 1.12 Ensure the Thyristor Hoist Control Panel Circuit Breaker 31P-HP04/1 at Panel 31P-MCC04/1 is **ON**.
- 1.13 Verify all bridge fans are running.
- 1.13.1 Verify Converter Fault indicator light illuminates.

1.14 Perform the following at DC Breaker Panel 31P-HP04/1 CB1:

1.14.1 Turn DC circuit breaker CB1 **ON**.

1.14.2 Verify RED Converter Fault indicator light goes **OFF**.

2.0 PREOPERATIONAL HOISTING TESTS

CAUTION

Excessive rollback may be experienced if the Load Selector Switch is in the incorrect load position. The Load Selector Switch must be in the LIGHT position for loads under 10 tons, and in the HEAVY position for loads 10 tons and greater.

2.1 Ensure Load Selector HEAVY/LIGHT Switch is in correct position for load on conveyance.

2.2 Ensure the following normal start-up conditions:

2.2.1 Control location switch in Master Cont. Sta.

2.2.2 Manual Brake Controller Set/Rel. in SET.

2.2.3 Hoist Mode Selector Switch in MANUAL.

2.2.4 Hoist Transport Selector Personnel/Material Switch in MATERIAL.

2.2.5 Re-synchronizing Control Selector Switch in AUTO.

2.3 Hoist Operator, perform the following:

2.3.1 Release Emergency Stop (E-Stop) push button.

2.3.2 Press Dump Pressure Timer Reset push button.

2.3.3 Press the Safety Reset push button momentarily to close the Control Power Loop.

2.3.4 Verify Hoist Motor field amps reading increases from 50 amps (± 5) to 95 amps (± 5).

2.4 Hoist Operator, perform the following on Annunciator Panel and Control Consoles:

2.4.1 Press Annunciator Lamp Test push button.

2.4.2 Verify **ALL** indicators are operational.

- 2.4.3 Notify Hoisting Operations Manager of **ANY** abnormal conditions.

NOTE

The alarm on the Annunciator will sound when the Control Power Loop is opened.

- 2.5 Hoist Operator, perform the following to conduct a Static Test of the E-Stop push button at the MCS:
- 2.5.1 Press E-Stop push button.
 - 2.5.2 Verify the following occurs:
 - [A] Loop contactor opens.
 - [B] Red indicator light illuminates.
 - [C] Annunciator alarm sounds.
 - [D] E-Stop push button light on Annunciator Panel flashes.
 - 2.5.3 Silence the Annunciator alarm.
 - 2.5.4 Verify E-Stop push button light on Annunciator Panel remains flashing.
 - 2.5.5 Release E-Stop push button.
 - 2.5.6 Press Safety Reset push button to reset power.
- 2.6 Hoist Operator, perform the following to conduct a Static Brake Test:
- 2.6.1 Verify Shaft Gates Closed indicator light is **ON**.

NOTE

Car permissive/COMM Loss bypass switch must be held in BYPASS position in order to apply hoist or lowering power, until the LCS in the Man Cage is operational.

- 2.6.2 Place the car permissive/COMM Loss bypass switch in BYPASS, AND reset Annunciator.
- 2.6.3 Momentarily apply 2,000 amps of power as indicated on the static power convertor ammeter in the HOIST direction.
- 2.6.4 Verify the conveyance does **NOT** move by observing the red hand on the Selsyn unit dial indicator.

- 2.7 Verify no indication of alarms.
- 2.8 Hoist Operator, perform the following while Hoist Transport Selector Switch is still in MATERIAL:
 - 2.8.1 Verify operability of bell signals to collar.
 - 2.8.2 Verify operation of mine phone from MCS to collar.
- 2.9 Toplander, perform the following:
 - 2.9.1 Verify collar is clear of obstructions.
 - 2.9.2 Hoist and spot the man-cage at the collar.
- 2.10 Toplander, perform the following:
 - 2.10.1 Ensure the conveyance is empty of personnel and material and then notify the Hoistman.
 - 2.10.2 Turn the LCS in the man-cage **ON**.
 - 2.10.3 Verify communications with Hoist Operator.
 - 2.10.4 Perform Waste Shaft Collar daily check in accordance with the Waste Hoist Operator's Log Sheet.
 - 2.10.5 Release the conveyance.

NOTE

The conveyance must be positioned 4 to 6 feet below the collar **BEFORE** Hoist Transport Selector Personnel/Material Switch can be placed in PERSONNEL.

NOTE

Steps 2.11 through 2.33 are performed by the Hoist Operator.

- 2.11 Position conveyance 4 to 6 feet below the collar.
- 2.12 Place Hoist Transport Selector Personnel/Material Switch in PERSONNEL.

NOTE

To test Brake Dump Valve, Step 2.13.1 through Step 2.13.6 **MUST** be completed in less than 7.5 seconds; otherwise, the Hoist will trip out on "Brake Pressure Below 1,200 psi While On Standby Pump." **[SAC 5.1.1.1]**

2.13 Perform the following:

2.13.1 Place the Manual Brake Controller Set/Rel. in RELEASE.

2.13.2 Press the Brake Dump Valve Test push button.

2.13.3 While holding the Brake Dump Valve Test push button, move the controller a small distance from neutral, in the lowering direction, to provide a slow movement of the conveyance.

2.13.4 Verify the following occurs:

[A] Brakes set after approximately one second.

[B] Static Power Converter Amp meter reaches 2,000 amps.

2.13.5 Return the controller to NEUTRAL.

2.13.6 Release the Brake Dump Valve Test push button.

2.13.7 Verify the following occurs:

[A] Loop contactor opens.

[B] Red indicator light illuminates.

[C] Normal Emergency Braking Not Available light illuminates **AND** flashes.

[D] Annunciator alarm sounds.

2.13.8 Silence the Annunciator alarm.

2.13.9 Verify Normal Emergency Braking Not Available light remains flashing.

2.13.10 Press the Brake Dump Pressure Timer Reset push button.

2.13.11 Place the Manual Brake Controller Set/Rel. in SET.

2.13.12 Press Safety Reset push button.

NOTE

Step 2.14.1 through Step 2.14.6 **MUST** be completed in less than 7.5 seconds; otherwise the Hoist will trip out on "Brake Pressure Below 1,200 psi While On Standby Pump." **[SAC 5.1.1.1]**

- 2.14 Perform the following to conduct an Emergency Brake Valve Test:
- 2.14.1 Place the Manual Brake Controller Set/Rel. in RELEASE.
 - 2.14.2 Press the Emergency Brake Valve Test push button and wait approximately two seconds.
 - 2.14.3 While holding the Emergency Brake Valve Test push button, move the controller a small distance from neutral, in the lowering direction.
 - 2.14.4 Verify the following occurs:
 - [A] Brakes remain set.
 - [B] Static Power Converter Amp meter reaches 2,000 amps.
 - 2.14.5 Return the controller to NEUTRAL.
 - 2.14.6 Release the Emergency Brake Valve Test push button.
- 2.15 Perform the following to conduct an Overtravel Test (Raise):
- 2.15.1 Place Hoist Transport Selector Personnel/Material Switch in PERSONNEL.
 - 2.15.2 Hoist slowly to the PERSONNEL mode Lilly Overtravel indicator on the Selsyn unit dial indicator.
 - 2.15.3 Verify the following occurs:
 - [A] Loop contactor opens.
 - [B] Red indicator light illuminates.
 - [C] Brakes Set light illuminates.
 - [D] Overtravel Annunciator indicator illuminates **AND** flashes.
 - [E] Annunciator alarm sounds.
 - 2.15.4 Silence the Annunciator alarm.
 - 2.15.5 Verify Overtravel Annunciator light remains flashing.

- 2.15.6 Ensure the following conditions exist for safety circuit reset and loop circuit breaker closure:
- [A] Hoist Control in MANUAL
 - [B] Speed Controller in NEUTRAL
 - [C] Manual Brake Controller Set/Rel. in SET
 - [D] Static Power Converter Voltage is approximately **ZERO** (0) volts (-25 to +25 volts)
- 2.15.7 Place Hoist Transport Selector Personnel/Material Switch in MATERIAL.
- 2.15.8 Press Safety Reset push button.
- 2.15.9 Verify Overtravel Annunciator light goes **OFF**.
- 2.16 Perform the following:
- 2.16.1 Place Manual Brake Controller Set/Rel. In RELEASE.
 - 2.16.2 Hoist and stop conveyance material deck at collar level.
 - 2.16.3 Verify Conveyance Resynch light illuminates.
 - 2.16.4 Hoist slowly to the MATERIAL mode Lilly Overtravel indicator on the Resynch unit dial indicator.
 - 2.16.5 Verify the following occurs:
 - [A] Loop contactor opens.
 - [B] Red indicator light illuminates.
 - [C] Brakes Set light illuminates.
 - [D] Overtravel Annunciator indicator illuminates **AND** flashes.
 - [E] Annunciator alarm sounds.
 - 2.16.6 Silence the Annunciator alarm.
 - 2.16.7 Verify Overtravel Annunciator light remains flashing.

- 2.16.8 Ensure the following conditions exist for safety circuit reset and loop circuit breaker closure:
- [A] Hoist Control in MANUAL
 - [B] Speed Controller in NEUTRAL
 - [C] Manual Brake Controller Set/Rel. in SET
 - [D] Static Power Converter Voltage is approximately **ZERO** (0) volts (-25 to +25 volts)
- 2.17 Perform the following to conduct Raise Overtravel Test:
- 2.17.1 Press Safety Reset push button while holding Overtravel Backout Switch in RAISE O.T. TEST.
- 2.17.2 Place the Manual Brake Controller Set/Rel. in RELEASE.
- 2.17.3 Hoist to Magnetic Overtravel position, as indicated on Selsyn unit dial indicator.
- 2.17.4 Verify the following occurs.
- [A] Loop contactor opens.
 - [B] Red indicator light illuminates.
 - [C] Brakes Set light illuminates.
 - [D] Overtravel Annunciator indicator illuminates **AND** flashes.
 - [E] Annunciator alarm sounds.
- 2.17.5 Silence the Annunciator alarm.
- 2.17.6 Verify Overtravel Annunciator light remains flashing.
- 2.18 Perform the following to conduct Backout of Raise and Overspeed Test:
- 2.18.1 Place the Manual Brake Controller Set/Rel. in SET.
- 2.18.2 Place Overtravel Backout Switch in B.O. OF RAISE.
- 2.18.3 Press Safety Reset push button while holding Overtravel Backout Switch in B.O. OF RAISE.
- 2.18.4 Verify hoisting power cannot be applied.

- 2.18.5 Place the Manual Brake Controller Set/Rel. in RELEASE.
- 2.18.6 Place Programmer Bypass Defeat Switch in DEFEAT.
- 2.18.7 Press Annunciator Reset push button.
- 2.18.8 Lower away from the overtravel position with controller in full lower position until Hoist overspeeds.

NOTE

Conveyance will be in the retard zone and the speed limit will trip at a slow speed (125 to 200 feet per minute [fpm]).

- 2.18.9 Verify proper function of the Hoist overspeed as follows:
 - [A] Loop contactor opens.
 - [B] Red indicator light illuminates.
 - [C] Brakes Set light illuminates.
 - [D] Overspeed light illuminates **AND** flashes.
 - [E] Annunciator alarm sounds.
- 2.18.10 Release Overtravel Backout Switch.
- 2.18.11 Silence the Annunciator alarm.
- 2.18.12 Place the Manual Brake Controller Set/Rel. in SET.
- 2.18.13 Press Brake Dump Pressure Timer Reset push button.
- 2.18.14 Place Programmer Bypass Defeat Switch in NORMAL.
- 2.18.15 Press Safety Reset push button.
- 2.18.16 Place the Manual Brake Controller Set/Rel. in RELEASE.
- 2.19 Clear the Programmer Bypassed Fault initiated by the Overspeed Test by returning material deck to the collar.

NOTE

The conveyance is to be empty of personnel and materials during the first complete trip of the shift.

- 2.20 Verify conveyance is at collar level by observing Conveyance At Collar light illuminates.

- 2.21 Perform the following to conduct a Shaft Trip:
- 2.21.1 Lower conveyance through shaft while observing Static Power Converter ammeter for indications of a shaft obstruction.
 - 2.21.2 Verify maximum Hoist speed does **NOT** exceed 510 fpm on Hoist Speed FT/MIN indicator.
 - 2.21.3 Conduct a Regulated Stop Test as follows:
 - [A] Center Manual Speed Controller lever.
 - [B] Verify smooth decrease in speed.
 - [C] Verify Brakes Set light illuminates when conveyance comes to a stop.
 - 2.21.4 Resume normal Hoist speed in lowering direction.
- 2.22 Verify the following as conveyance material deck approaches station:
- 2.22.1 Conveyance In Position For Chairing light illuminates approximately 5 feet above station and remains **ON**.
 - 2.22.2 Conveyance At Storage Level light illuminates, then goes out as conveyance passes station.
- 2.23 Place Hoist Transport Selector Personnel/Material Switch in PERSONNEL.
- 2.24 Verify Conveyance Carries Personnel light illuminates.
- 2.25 Verify the following lights turn **OFF**:
- 2.25.1 Conveyance In Position For Chairing.
 - 2.25.2 Conveyance Carries Material.
- 2.26 Lower conveyance personnel deck to storage level.
- 2.27 Verify Conveyance At Storage Level light illuminates, then goes out when conveyance passes storage level.
- 2.28 Perform the following to conduct Overtravel Test (Lower):
- 2.28.1 Lower conveyance to the Lilly Overtravel indicator on the Selsyn unit dial indicator.

- 2.28.2 Verify the following occurs:
- [A] Loop contactor opens.
 - [B] Red indicator light illuminates.
 - [C] Brakes Set light illuminates.
 - [D] Overtravel Annunciator light illuminates **AND** flashes.
 - [E] Annunciator alarm sounds.
- 2.28.3 Silence the Annunciator alarm.
- 2.28.4 Verify Overtravel Annunciator light remains flashing.
- 2.29 Ensure the following conditions exist for safety circuit reset and loop circuit breaker closure:
- 2.29.1 Hoist Control in MANUAL
 - 2.29.2 Speed Controller in NEUTRAL
 - 2.29.3 Manual Brake Controller Set/Rel. in SET
 - 2.29.4 Static Power Converter Voltage is approximately **ZERO** (0) volts (-25 to +25 volts)
- 2.30 Perform the following to conduct Lower Overtravel Test:
- 2.30.1 Change Overtravel Backout Switch to LOWER OVERTRAVEL TEST.
 - 2.30.2 Press Safety Reset push button while holding Overtravel Backout Switch in LOWER OVERTRAVEL TEST.
 - 2.30.3 Place the Manual Brake Controller Set/Rel. in RELEASE.
 - 2.30.4 Lower conveyance to Magnetic Overtravel indicator on Selsyn unit dial indicator.
 - 2.30.5 Verify the following occurs:
 - [A] Loop contactor opens.
 - [B] Red indicator light illuminates.
 - [C] Brakes Set light illuminates.

[D] Overtravel Lowering Annunciator indicator illuminates **AND** flashes.

[E] Annunciator alarm sounds.

2.30.6 Silence the Annunciator alarm.

2.30.7 Verify Overtravel Lowering Annunciator light remains flashing.

2.30.8 Place the Manual Brake Controller Set/Rel. in SET.

2.30.9 Press Safety Reset push button while holding Overtravel Backout Switch in B.O. OF LOWER.

2.30.10 Verify lowering power cannot be applied.

2.30.11 Place the Manual Brake Controller Set/Rel. in RELEASE.

2.30.12 Hoist away from the overtravel condition.

2.30.13 Hold the Overtravel Backout Switch in B.O. OF LOWER position until conveyance is out of the overtravel zone.

NOTE

The Programmer Bypassed Defeat Keyed switch may be used at this time to return the conveyance to the collar at the normal speed prior to resynchronization. This function is provided for use only after test runs have assured that no obstructions exist in the shaft and no E-Stops have occurred which could cause unrecognized rope slippage.

2.31 Center manual Speed controller.

2.32 Place Program Defeat Switch in Defeat for normal speed to collar.

2.33 Reset Annunciator.

3.0 HOIST RESYNCHRONIZATION

3.1 Hoist conveyance to the Collar.

3.2 Hoist Operator, ensure status of following lights:

3.2.1 Conveyance At Collar - **ON**

3.2.2 Conveyance In Position To Synchronize - **ON**

NOTE

Normal position of Resynch Control Manual/Auto Switch is AUTO. Hoist will resynchronize automatically in AUTO position.

- 3.3 Resynchronize the Hoist as follows:
 - 3.3.1 **IF** Resynch Control Switch is in MANUAL, **THEN** press Manual Sync push button.
 - 3.3.2 Verify Conveyance Synchronized light illuminates.
 - 3.3.3 Place Programmer Bypass Defeat Switch to NORMAL.
 - 3.4 Park the conveyance in RELEASED position, to ensure access by personnel is prevented.
 - 3.5 Sign the Waste Hoist Operator's Log Sheet upon satisfactory completion of the preoperational hoist checks and tests above.
-

NOTE

After documentation of the Preoperational Hoist Checks in the Waste Hoist Operator's Log Sheet, Hoist will be in operational condition.

[SAC 5.1.1.1]

4.0 PREOPERATIONAL ACTIVITIES/CONDITIONS

- 4.1 Bottomlander, at the earliest opportunity, perform the daily Waste Shaft Station inspection in accordance with the Waste Hoist Operator's Log Sheet prior to and during hoisting plant normal operations.
- 4.2 Hoist Operator or designee, complete the **Surveillance Data Sheet**, EA04AD3001-SR38, for **SAC 5.1.1.1** as found in WP 04-AD3001.
- 4.3 Forward the completed Surveillance Data Sheet and all associated documentation to the CMRO for review and approval.
- 4.4 Hoist Operator, notify CMRO that "Preoperational checks on the Waste Hoist are completed, the brakes are IN SERVICE and set as designed, and the hoist motor is IN SERVICE. The Waste Hoist is staffed and ready for waste handling."

5.0 SEMIAUTOMATIC OPERATION

5.1 Hoist Operator, perform the following for semiautomatic operation after spotting the conveyance at the collar:

- 5.1.1 Ensure Transport Selector Switch is in agreement with the position of the man deck **OR** materials deck, whichever is at the collar.
- 5.1.2 Place Control Location Switch to LEV STA & CONV.
- 5.1.3 Place Hoist Mode Selector Switch in SEMI-AUTOMATIC.
- 5.1.4 Ensure the Resynchronizing Control Selector in AUTO.
- 5.1.5 Inform the top and bottom Shaft Tenders of conveyance and control status.

WARNING

To assure safety of personnel, if a trip has been completed with the Hoist in MANUAL mode, a "Spotting Signal" (one bell) is required from the Hoist Operator. This signal indicates that the conveyance will **NOT** be moved again until another signal is received. The shaft safety gates **MUST NOT** be opened until this signal is received.

6.0 MINE MATERIALS HANDLING

CAUTION

To avoid damage to the hoisting system, total payload of the conveyance must NEVER exceed 45 tons. Payload with the 5-ton work deck installed is 40 tons.

- 6.1 Shaft Tender, request the Materials Handling function from the Hoist Operator at the MCS.
- 6.2 Hoist Operator, position the materials deck at the Station level.

CAUTION

To avoid damage to the hoisting system, the Load Selector Switch must be switched to HEAVY if load weighs 10 tons or greater and speed reduced to no more than 300 fpm. The hoist motor SHALL be allowed 11.5 minutes rest, after a trip with the Load Selector Switch in the HEAVY position.

- 6.3 Shaft Tender, inform Hoist Operator if load intended for conveyance is known to exceed 10 tons.

WARNING

To assure safety of personnel and the WHH, hazardous, flammable, or pressurized materials shall **NOT** be transported on the conveyance in conjunction with mantrips, or in conjunction with transuranic waste on the WHH.

- 6.4 Place materials on the conveyance according to size and other considerations.
- 6.5 Secure all loads to flatcar, or material deck of the conveyance, using an approved method (straps, netting, etc.), before moving conveyance.

NOTE

Step 6.6 through Step 6.8 notes apply only to the heavy duty (> 5-ton) flatcar. Safety features of the WHH (photo cells and reflectors) will not allow the WHH to operate when using the light-duty (< 5-ton) flatcar, until it is positioned and latched in place.

- 6.6 Toplander, **WHEN** downloading material using the flatcar, perform the following:
- 6.6.1 Notify Bottomlander that the material is secure and flatcar is pinned.

NOTE

The Hoist Operator will not place the Hoist into semi-automatic operation, or move the hoist in the MANUAL mode, until notification is received from the Toplander.

- 6.6.2 Verify with Hoist Operator that the load is secured and flatcar is pinned and ready to send.

6.7 Bottomlander, **WHEN** uploading material using the flatcar, notify the Toplander that the material is secured and the flatcar is pinned.

NOTE

The Hoist Operator will not place the Hoist into semi-automatic operation, or move the Hoist in the MANUAL mode, until notification is received from the Toplander.

6.8 Toplander, verify with Hoist Operator that the load is secured and the flatcar is pinned and ready to send.

NOTE

Verification that the load is secured and the flatcar is pinned must be documented using Attachment 5.

6.9 Document that the load is secured and the flatcar is pinned on Attachment 5.

7.0 WASTE HANDLING

CAUTION

To avoid overloading the hoisting system, the work deck **MUST NOT** be placed on the conveyance when hoisting with the loaded RH transfer car and cask when RH TRU Waste Canister exceeds 3,220 pounds.

NOTE

Waste Handling Operations personnel will provide directions for the shipment of an RH transfer car and CH pallets to the underground or from the underground to the surface.

NOTE

The Shaft Tender will approve entry of loads onto the waste shaft conveyance through control of the waste shaft gates.

NOTE

The maximum WHH payload capacity is 45 tons with work deck removed. The heaviest loads routinely handled on the WHH are those payloads and equipment comprising RH waste handling.

7.1 Shaft Tender and Waste Handling Personnel, calculate payload from weight per item listed in Attachment 3, Load List.

- 7.2 Perform the following:
- 7.2.1 Verify the equipment/payload does **NOT** exceed the maximum Waste Hoist Payload capacity.
 - 7.2.2 Document the weight of the RH TRU Waste Canister on Attachment 5.
- 7.3 **WHEN** the Facility Cask Transfer Car, Facility Cask, and Waste Canisters are hoisted together in their normal waste handling configuration, **THEN** make a dedicated trip for those items.
- 7.4 Perform actions contained in Section 6.0 when handling waste shipments.

8.0 WASTE HOIST COLLAR-TO-COLLAR TEST

WARNING

To assure safety of personnel, movement of the Hoist during performance of Step 8.1 **SHALL** be directed by the Cognizant Engineer **OR** the Maintenance Department through the on-duty Shaft Tender. All Hoist accelerations and decelerations **SHALL** be smooth and gradual, and stops without bounces, to assure consistent readings throughout this test.

NOTE

Collar-to-collar test is performed on a weekly, or as-required basis.

- 8.1 Hoist Operator, verify the following:
- 8.1.1 Conveyance located at the Collar
 - 8.1.2 Hoist resynchronized per Section 3.0
 - 8.1.3 Programmer resynchronized
 - 8.1.4 Transport Selector Personnel/Material Switch in MATERIAL

NOTE

The desired descent rate is 200 to 250 fpm with gradual acceleration and deceleration.

- 8.2 Hoist Operator, when directed by the Toplander, lower conveyance to mid-shaft (approximately 1,075 feet) without stopping along the way.

- 8.3 **IF** the conveyance is stopped prior to reaching the mid-shaft point,
THEN repeat Step 8.1 and Step 8.2.
- 8.3.1 Stop the Hoist at mid-shaft in MANUAL until informed of the following:
- [A] Level marks have been installed on Hoist ropes.
 - [B] Hoisting of conveyance is required.
- 8.3.2 **WHEN** directed by Toplander,
THEN accelerate the Hoist gradually to less than 120 fpm hoisting.

NOTE

Performance of Step 8.3.3 will require approximately 4½ turns of the Red Pointer on the Selsyn unit dial indicator.

- 8.3.3 **WHEN** the Hoist rope level marks have passed over the wheel assembly Hoist drum and are approaching the collar on the counterweight side,
THEN perform the following:
- [A] Decelerate to approximately 30 fpm.
 - [B] Stop when directed by Toplander.
 - [C] Maintain the Hoist at that point on OPERATOR HOLD until measurements are taken and recorded.
- 8.4 Return Hoist to service.
- 9.0 HOIST SHUTDOWN
- 9.1 Shaft Tender, turn the LCS in the man-cage **OFF**, prior to releasing the conveyance at end of shift.
- 9.2 Toplander release conveyance.
- 9.3 Hoist Operator, perform the following:
- 9.3.1 Position conveyance 4 - 6 feet below collar or as directed by Engineering or Hoisting Manager.
 - 9.3.2 Notify CMRO of intention to shut down WHH.
 - 9.3.3 Place Motor Drive Controller in NEUTRAL.
 - 9.3.4 Place the Manual Brake Controller Set/Rel. in SET.

- 9.3.5 Depress E-Stop push button to open loop and silence alarm.

NOTE

Brake push button selected is dependent upon whether Primary or Secondary system is in use.

- 9.3.6 Depress the Primary Brake Pump Stop **OR** Secondary Brake Pump Stop.
- 9.3.7 Depress Motor Blower Exc System Stop push button on the Hoist Control Panel.
- 9.3.8 Press red **OFF** push button to trip the DC Breaker.
- 9.3.9 Turn Trip Recorder **OFF**.
- 9.3.10 Reset Annunciator.

NOTE

Performance of Step 9.4 is required only for maintenance or planned power outage purposes.

- 9.4 Hoist Operator, perform the following:
- 9.4.1 Set AC Control Switch SCA on the Thyristor Converter Cabinet in OPEN.
- 9.4.2 Verify Green Indicator light at 31P-SWG15/1 AC Breaker illuminates.
- 9.4.3 Place Waste Hoist Control Power AC and DC Breaker 31-H-010A at 31P-MCC04/1 in **OFF**.
- 9.4.4 Place Thyristor Hoist Control Panel Breaker 31P-HP04/1 at Panel 31P-MCC04/1 in **OFF**.

10.0 REVIEW

- 10.1 Hoisting Operations Manager, perform the following:
- 10.1.1 Review Waste Hoist Operator's Log Sheet for completeness.
- 10.1.2 Sign the Log Sheet as an indication of review approval and validation.

Attachment 1 - General Safety Precautions

The following safety precautions **SHALL** remain in effect during **ALL** operations of the WHH:

- **ONLY** authorized personnel **SHALL** be in the Hoist Control Room, with the exception of designated Hoist operating and maintenance personnel and their management. Authorization may be obtained from the Hoisting Operations Manager or his management supervisors.
- Each individual in the shaft or underground is subject to the provisions of the underground accountability system. A check-in/check-out system is maintained on the surface. Personnel underground are required to carry a positive means of identification.
- Smoking is prohibited in the conveyance and within 25 feet of the shaft.
- **NO** eating, drinking, or possession of open food or beverage containers are permitted on normal mantrips.
- During shift changes, a qualified Hoist Operator **SHALL** be in charge of each mantrip. After checking the conveyance for safety and verifying that the doors and gates are properly closed, the Hoist Operator will allow people to board. A qualified Operator **SHALL** also open the gates and doors before personnel disembark from the conveyance.
- Conveyance doors **SHALL** remain closed during mantrips and **SHALL NOT** be opened until the conveyance has come to a complete and full **STOP**. A STOP BELL must be received or given before the shaft gates are opened if Hoist is in MANUAL mode.
- Materials and supplies other than small hand tools are **NOT** allowed on the man deck during scheduled mantrips. Any items or materials being transported through the shaft **SHALL** be secured or placed so they will **NOT** strike the sides of the shaft, counterweight, or guide ropes.
- When semiautomatic hoisting is used, a qualified Hoist Operator **SHALL** be readily available at or near the hoisting device.
- When the Hoist is operated manually, a qualified Hoist Operator **SHALL** remain within hearing of the telephone or signaling device at all times while any personnel are underground.
- The conveyance **SHALL** be placed in a RELEASED condition and hoisted or lowered a suitable distance to prevent personnel from boarding/loading the conveyance when it is **NOT** in use.

Attachment 1 - General Safety Precautions

- Only qualified personnel familiar with the posted signal system **SHALL** be responsible for giving or receiving signals for conveyances or mantrips when personnel or material are being transported.
- Hoist Operator **SHALL** accept hoisting instructions only from the regular signal system unless it is out of order. In that event, or in an emergency, the Hoist Operator **SHALL** accept instructions directing conveyance movement only from the Hoisting Operations Manager, Hoisting management personnel, or their designated representative. Signal system signs **SHALL** be posted at **ALL** control stations where signals can be given or received.
- Hoist Operator **SHALL** be informed when personnel are working in the shaft or compartments affected by hoisting operations.
- "Men Working In Shaft" signs **SHALL** be posted at **ALL** devices controlling hoisting operations that may cause personnel endangerment. These signs **SHALL** also be posted when work on the Hoist is in progress which requires the Hoist to be located at a station to prevent inadvertent boarding.
- Shaft inspections and repair work **SHALL** be performed from substantial platforms equipped with bonnets or other overhead protections.
- Hoist **SHALL** be retested following **ALL** maintenance activities relating to the operation of the Hoist to meet 30 CFR Part 57 requirements.
- **IF** it is found or suspected that **ANY** part of the shaft or hoisting equipment is **NOT** functioning properly, the Hoist **SHALL NOT** be used until the malfunction has been repaired or adjustments made.
- Before hoisting personnel, and to ensure that the hoisting compartments are clear, conveyances **SHALL** be operated empty at least one round trip after any of the following:
 - Any hoist or shaft repairs, or related equipment repairs that might restrict or obstruct conveyance clearance
 - Any oversize or overweight material or equipment trips that might restrict or obstruct conveyance clearance
 - Hoist remaining idle for one shift or longer

Attachment 2 - Bell Signal System

Movements of the WHH are normally directed by the use of a Bell Signal System. Bell system actuators are located at the stations where personnel and materials have access to the shaft, at the MCS, and a bell cord extends through the shaft which may be used from any point in the shaft if the conveyance is not in motion.

A voice system, the mine pager phone, is utilized to call a conveyance to a certain level or station. At WIPP, the Shaft Tender uses the mine phone system to the Hoist Operator instead of a "Call Bell" system.

Waste Handling Shaft Signals

BELL SEQUENCE	INSTRUCTION/MEANING
STATION SIGNALS	
1-2 Bells	Collar
1-3 Bells	Station
COMMAND SIGNALS	
1 Bell	Stop immediately if in motion
2 Bells	Lower normal - materials
3 Bells	Hoist normal - materials
3-1 Bells	Hoist slow - men/materials
3-2 Bells	Lower slow - men/materials
2-1-2 Bells	Release conveyance. The conveyance must be released after personnel or materials are clear and station gates are closed.
1-2-3-1 Bells	Collar - men aboard
1-3-3-2 Bells	Station - men aboard
7 Bells	Danger signal - When followed by a station signal, calls conveyance to that station.

If a signal is given incorrectly, the Hoistman will reject that signal by ringing back a single bell.

When the Hoist is operated in the Manual mode and a trip has just been completed, the Hoist Operator is required to give a one bell signal, which tells the Shaft Tender that the conveyance has been spotted and will **NOT** be moved again until another signal has been received.

Attachment 3 - Load List

The heaviest loads that will be routinely handled on the WHH are those equipment and payloads comprising RH waste handling and are here listed with their weights for comparison with the maximum WHH payload capacity of 45 tons.

ITEM	WEIGHT LB/(TONS)
Facility Cask Transfer Car	9,400 (4.7)
Facility Cask (Empty)	67,380 (33.7)
Overpacked RH TRU Waste Canister (Max. Wt.)	10,000 (5)
Standard RH TRU Waste Canister (Max. Wt.)	8,000 (4)

Official Use Only

Attachment 4 - Sample Waste Hoist Operator's Log Sheet

DATE: _____

NIGHT SHIFT

I have read and noted all entries made by the previous shift hoistman and all special instructions.

I tested the hoist brakes at _____ (time) and report as follows: _____

I have tested the overwinds at _____ (time), and report as follows: _____

I made the following trial trips and report as follows (give time) _____

The working condition of the hoist including brakes, clutches, and their interlocks; and depth indicator; and all safety devices and fittings; as follows: _____

The working condition of the signaling equipment was as follows: _____

Hoistman _____ Reviewed by: _____

DAY SHIFT

I have read and noted all entries made by the previous shift hoistman and all special instructions.

I tested the hoist brakes at _____ (time) and report as follows: _____

I have tested the overwinds at _____ (time), and report as follows: _____

I made the following trial trips and report as follows (give time) _____

The working condition of the hoist including brakes, clutches, and their interlocks; and depth indicator; and all safety devices and fittings; as follows: _____

The working condition of the signaling equipment was as follows: _____

Hoistman _____ Reviewed by: _____

MID SHIFT

I have read and noted all entries made by the previous shift hoistman and all special instructions.

I tested the hoist brakes at _____ (time) and report as follows: _____

I have tested the overwinds at _____ (time), and report as follows: _____

I made the following trial trips and report as follows (give time) _____

The working condition of the hoist including brakes, clutches, and their interlocks; and depth indicator; and all safety devices and fittings; as follows: _____

The working condition of the signaling equipment was as follows: _____

Hoistman _____ Reviewed by: _____

Waste Hoist Inspection	TIME	COMMENTARY
1 Examination of Work Area	<input type="checkbox"/>	_____
2 Disc Brake Paths - Clean	<input type="checkbox"/>	_____
3 Hoist Bearings - Lube Level	<input type="checkbox"/>	_____
4 Brake Reservoir - Oil Level	<input type="checkbox"/>	_____
5 Hydraulic Pipes - Leaks	<input type="checkbox"/>	_____
6 Brake Drain Lines	<input type="checkbox"/>	_____
7 Brake Drain Collector	<input type="checkbox"/>	_____
8 Motor Shaft Ground Brushes	<input type="checkbox"/>	_____
9 Lilly Controller	<input type="checkbox"/>	_____
10 Brake Maint. Valves - Locked	<input type="checkbox"/>	_____
11 Notified CMR - Hoist Operable	<input type="checkbox"/>	_____

Comments: _____

Hoistman _____ Time _____

Waste Collar Inspection	TIME	COMMENTARY
1 Examination of Work Area	<input type="checkbox"/>	_____
2 Mine Phone - Functional	<input type="checkbox"/>	_____
3 Bells - Functional	<input type="checkbox"/>	_____
4 Hst. Rope Cappsels-Cage & Cntrwght	<input type="checkbox"/>	_____
5 Fixed Guides - Cage	<input type="checkbox"/>	_____
6 Fixed Guides - Cntrwght	<input type="checkbox"/>	_____
7 Rope Shoes - Cage (8 Ea.)	<input type="checkbox"/>	_____
8 Trolley Phone - Functional	<input type="checkbox"/>	_____
9 Track Limits (-2 - 3 Ea.)	<input type="checkbox"/>	_____

Comments: _____

Toplander _____ Time _____

Waste Station Inspection	TIME	COMMENTARY
1 Examination of Work Area	<input type="checkbox"/>	_____
2 Control Panel - Lights	<input type="checkbox"/>	_____
3 Mine Phone - Functional	<input type="checkbox"/>	_____
4 Bells - Functional	<input type="checkbox"/>	_____
5 Rope Shoes Cntrwght	<input type="checkbox"/>	_____
6 Tail Rope Cappsels-Cage & Cntrwght	<input type="checkbox"/>	_____
7 Chairs Proper Function	<input type="checkbox"/>	_____
8 Chairs Physical Conditions	<input type="checkbox"/>	_____
9 Fixed Guides Cage & Cntrwght	<input type="checkbox"/>	_____

Comments: _____

Bottomlander _____ Time _____

Waste Hoist Inspection	TIME	COMMENTARY
1 Examination of Work Area	<input type="checkbox"/>	_____
2 Disc Brake Paths - Clean	<input type="checkbox"/>	_____
3 Hoist Bearings - Lube Level	<input type="checkbox"/>	_____
4 Brake Reservoir - Oil Level	<input type="checkbox"/>	_____
5 Hydraulic Pipes - Leaks	<input type="checkbox"/>	_____
6 Brake Drain Lines	<input type="checkbox"/>	_____
7 Brake Drain Collector	<input type="checkbox"/>	_____
8 Motor Shaft Ground Brushes	<input type="checkbox"/>	_____
9 Lilly Controller	<input type="checkbox"/>	_____
10 Brake Maint. Valves - Locked	<input type="checkbox"/>	_____
11 Notified CMR - Hoist Operable	<input type="checkbox"/>	_____

Comments: _____

Hoistman _____ Time _____

Waste Collar Inspection	TIME	COMMENTARY
1 Examination of Work Area	<input type="checkbox"/>	_____
2 Mine Phone - Functional	<input type="checkbox"/>	_____
3 Bells - Functional	<input type="checkbox"/>	_____
4 Hst. Rope Cappsels-Cage & Cntrwght	<input type="checkbox"/>	_____
5 Fixed Guides - Cage	<input type="checkbox"/>	_____
6 Fixed Guides - Cntrwght	<input type="checkbox"/>	_____
7 Rope Shoes - Cage (8 Ea.)	<input type="checkbox"/>	_____
8 Trolley Phone - Functional	<input type="checkbox"/>	_____
9 Track Limits (-2 - 3 Ea.)	<input type="checkbox"/>	_____

Comments: _____

Toplander _____ Time _____

Waste Station Inspection	TIME	COMMENTARY
1 Examination of Work Area	<input type="checkbox"/>	_____
2 Control Panel - Lights	<input type="checkbox"/>	_____
3 Mine Phone - Functional	<input type="checkbox"/>	_____
4 Bells - Functional	<input type="checkbox"/>	_____
5 Rope Shoes Cntrwght	<input type="checkbox"/>	_____
6 Tail Rope Cappsels-Cage & Cntrwght	<input type="checkbox"/>	_____
7 Chairs Proper Function	<input type="checkbox"/>	_____
8 Chairs Physical Conditions	<input type="checkbox"/>	_____
9 Fixed Guides Cage & Cntrwght	<input type="checkbox"/>	_____

Comments: _____

Bottomlander _____ Time _____

SPECIAL INSTRUCTIONS
Requires Time, Date, & Authorized Signatures

