

# WP 04-HO2002

Revision 2

## Salt Hoist Dynamic Lowering (AO)

Technical Procedure

EFFECTIVE DATE: 05/11/09

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APPROVED FOR USE

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## INTRODUCTION

The purpose of this procedure is to provide instructions for dynamic lowering of the Salt Hoist conveyance to evacuate personnel who may be stranded due to a utility power outage or similar incident.

Approval to conduct this process **SHALL** be obtained from the on duty "Crisis Manager." The Crisis Manager should obtain concurrence from Hoisting Operations management, Cognizant Engineering, Industrial Safety, and Quality Assurance personnel if possible. The Crisis Manager has final authority to implement this process.

No records are generated by the performance of this procedure.

## REFERENCES

### BASELINE DOCUMENTS

- Title 30 *Code of Federal Regulations* (CFR) 57, "Safety and Health Standards-Underground Metal and Nonmetal Mines"
- Salt Hoist: Electrical Equipment for D.O.E. Salt Hoist, General Electric Drawing GEK-237B9964
- WP 04-CO, Conduct of Operations
- WP 12-IS.01, Industrial Safety Program - Structure and Management
- WP 12-ER4907, Evacuation/Sheltering in Place

### REFERENCED DOCUMENTS

- WP 04-HO1002, Salt Handling Shaft Hoist Operation
- WP 04-AD3011, Equipment Tagout/Lockout
- WP 04-AD3012, Temporary Plant Modification Control

## PRECAUTIONS AND LIMITATIONS

- Emergency condition resulting in personnel being stranded on Salt Hoist conveyance, caused by the following:
  - Extended utility power outage
  - Loss of suitable SILCO Drive power or loss of SILCO Drive, and loss of motor generator (MG) Set Drive capability

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**NOTE**

This procedure is to be performed by Hoist Operations and Maintenance personnel under the direction of the Cognizant Engineer.

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**PERFORMANCE**

## 1.0 SYSTEM PREPARATION

1.1 Perform the following in accordance with WP 04-HO1002.

[ A ] Shut down hoist.

[ B ] Remove all control power, and converter and/or MG Set power.

1.2 Lockout and tagout power in accordance with WP 04-AD3011.

1.3 Ensure power has been removed.

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**NOTE**

Armature circuit connections **SHALL** conform to the Waste Isolation Pilot Plant (WIPP) Specification E-P-244, and all jumpers **SHALL** conform to WP 04-AD3012.

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1.4 Perform the following per Attachment 1:

- Configure switches
- Disconnect wires
- Install jumpers
- Perform adjustments

## 2.0 PRE-OPERATION CHECKS

2.1 Remove Lockout/Tagout from hoist power in accordance with WP 04-AD3011.

2.2 Reenergize hoist power in accordance with WP 04-HO1002, except for those sections pertaining to the SILCO Power Converter and/or MG Set.

2.3 Start up Salt Hoist in accordance with WP 04-HO1002.

2.4 Ensure the following conditions exist for safety circuit reset and loop circuit breaker closure:

- Hoist in MANUAL Control
- Speed Controller in NEUTRAL
- Armature Loop Voltage is ZERO (0) Volts

2.5 Press Safety Reset Pushbutton to reset power.

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**NOTE**

MXX (loop contactor control) Relay should energize.

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2.6 **IF** MXX Relay DOES NOT energize,  
**THEN** notify maintenance personnel and Cognizant Engineer.

2.7 Lift Lilly Overspeed Weights.

2.8 Verify the following:

- Hoist trips off-line
- Direct Current (DC) Loop contactors M1 and M2 remain energized
- Brakes remain set
- Lilly Overspeed Annunciator Light illuminates
- Alarm sounds on Master Control Station (MCS) Console

2.9 Silence the alarm.

2.10 Verify Lilly Overspeed Annunciator light remains flashing.

2.11 Ensure the following conditions exist for safety circuit reset and loop circuit breaker closure:

- Hoist in MANUAL Control
- Speed Controller in NEUTRAL
- Armature Loop Voltage is ZERO (0) Volts

2.12 Press Safety Reset Pushbutton to reset power.

2.13 Reset Annunciator.

2.14 Push in the Emergency Stop Pushbutton.

2.15 Verify the following occur:

- Hoist trips off-line
- DC Loop contactors M1 and M2 remain energized
- Brakes remain set
- Emergency Stop Pushbutton Indicator illuminates and flashes on Annunciator Panel
- Alarm sounds on MCS Console.

2.16 Silence the alarm.

2.17 Verify Emergency Stop Pushbutton Annunciator light remains flashing.

2.18 Release the Emergency Stop Pushbutton.

2.19 Ensure the following conditions exist for safety circuit reset and loop circuit breaker closure:

- Hoist in MANUAL Control
- Speed Controller in NEUTRAL
- Armature Loop Voltage is ZERO (0) Volts

2.20 Press Safety Reset Pushbutton to reset power.

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**NOTE**

The motor field current will drop to approximately 50 Amps.

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2.21 OPEN Motor Field alternating current (AC) Disconnect Switch 38P-SW04/2.

2.22 Verify the following occur:

- Hoist trips off-line
- Motor Field Loss Annunciator Light illuminates and flashes on Annunciator Panel
- Alarm sounds on MCS Console
- DC Loop contactors M1 and M2 drop out

2.23 Silence the alarm.

- 2.24 Verify Motor Field Loss Annunciator Light remains flashing.
- 2.25 CLOSE Motor Field AC Disconnect Switch 38P-SW04/2.
- 2.26 Ensure the following conditions exist for safety circuit reset and loop circuit breaker closure:
- Hoist in MANUAL Control
  - Speed Controller in NEUTRAL
  - Armature Loop Voltage is ZERO (0) Volts
- 2.27 Press Safety Reset Pushbutton to reset power.
- 2.28 Activate the Slack Rope Switch.
- 2.29 Verify the following occur:
- Hoist trips off-line
  - DC Loop contactors M1 and M2 remain energized
  - Brakes remain set
  - Slack Rope Indicator illuminates and flashes on Annunciator Panel
  - Alarm sounds on MCS Console
- 2.30 Silence the alarm.
- 2.31 Verify Slack Rope Annunciator Light remains flashing.
- 2.32 Release the Slack Rope Switch.
- 2.33 Ensure the following conditions exist for safety circuit reset and loop circuit breaker closure:
- Hoist in MANUAL Control
  - Speed Controller in NEUTRAL
  - Armature Loop Voltage is ZERO (0) Volts
- 2.34 Press Safety Reset pushbutton to reset power.
- 2.35 Hoist Operator notify Bottomlander that conveyance is going to be lowered.

**WARNING**

Great care should be exercised when performing Steps 3.1 through 3.3. If any indication of a potential problem occurs, **IMMEDIATELY** stop the hoist AND notify the Cognizant Engineer.

**3.0 DYNAMIC LOWERING OPERATION****NOTE**

Performance of Step 3.1 should result in brake release and a rope speed of approximately 30 to 60 feet per minute.

- 3.1 Move the Hoist Control lever from the NEUTRAL position in the LOWER direction.
- 3.2 Verify the following occur:
  - Brakes release.
  - Rope speed approximates 30 to 60 feet per minute.
- 3.3 **IF** no abnormal indications occur,  
**THEN** continue lowering conveyance to Station.
- 3.4 Stop conveyance as close as possible to the Station and disembark personnel.

**4.0 SYSTEM RESTORATION**

- 4.1 Deenergize control power and hoist power to hoist auxiliary equipment in accordance with WP 04-HO1002.
- 4.2 Lockout and tagout power in accordance with WP 04-AD3011.
- 4.3 Ensure power has been removed.
- 4.4 Remove jumpers and reconnect wires per actions delineated in Attachment 2, Wire Reconnection and Jumper Removal.

**NOTE**

Pringle Switches **SHALL** operate freely without binding.

- 4.5 **WHEN** the hoist has been returned to normal configuration,  
**THEN** check operation of Pringle Switches.

- 4.6 Remove Lockout/Tagout from hoist power in accordance with WP 04-AD3011.
- 4.7 Reenergize hoist power.
- 4.8 Readjust R2 on Regulator Malfunction Detector for 1.6 VDC read at TP22.
- 4.9 Perform normal startup of hoist in accordance with WP 04-HO1002.
- 4.10 Perform functional retest of hoist in accordance with WP 04-HO1002.

Attachment 1 - Wire Disconnection and Jumper Installation  
Lead and Switch Requirements

<b>GE DRAWING #237B9964</b>	
<b>SHEET No.</b>	<b>ACTION DESCRIPTION</b>
1AB	Lift wire 1AB45J from MAUX coil.
1AB/1B	Jumper MAUX coil to MXX coil.
1B	Jumper 1AB11B to 1B19L at TB2 in bottom of F02 control panel.
1B	Jumper TPX1 contacts in the BR coil circuit (Wires 1AB11B and 1B53F).
1H	Lift wire 1H63F on SRX relay.
1J	Hoist Mode Switch in MANUAL position.
1T	Jumper PWR CONV COOLING AIR XFMR OT/OIL LEVEL contacts (Wires 1T33D and 1T33K).
1U	Jumper ACBKR contacts (Wires 1AB11B and 1U10F); Jumper SMS contacts (Wires 1U41C and 1U41E); Jumper ACBPUV contacts (Wires 1U49E and 1U49G).
4F	Turn R2 fully CLOCKWISE (disables Regulator Malfunction Alarm/Trip).
4U	<b>NOTE:</b> This must be done with electronic "pin grabber" connectors due to the size of the pins and close proximity of adjacent pins.  Jumper terminal pins 66, 68, 78, and 80 on NSW Module in Slot 2G to DCOM (upper circuit board cage).
6B	Jumper wires 6B11B and 6B15C together at MXX relay contacts.
6C	<b>NOTE:</b> Four 500 MCM cables will be used for these jumpers.  Jumper Armature Circuit cables 6C08H and 6C36E in accordance with Figures 1 and 2.
Isolation Switches SW1 and SW2 - both OPEN.	

Attachment 2 - Wire Reconnection and Jumper Removal

Lead and Switch Requirements

<b>GE DRAWING #237B9964</b>	
<b>SHEET No.</b>	<b>ACTION DESCRIPTION</b>
1AB	Replace wire 1AB45J on MAUX coil.
1AB/1B	Remove jumper MAUX coil from MXX coil.
1B	Remove jumper from 1AB11B to 1B19L at TB2 in bottom of F02 control panel.
1B	Remove jumper from TPX1 contacts in the BR coil circuit (Wires 1AB11B and 1B53F).
1H	Replace wire 1H63F on SRX relay.
1J	Hoist Mode Switch in MANUAL position.
1T	Remove jumper from PWR CONV COOLING AIR XFMR OT/OIL LEVEL contacts (Wires 1T33D and 1T33K).
1U	Remove jumper from ACBKR contacts (Wires 1AB11B and 1U10F); Remove jumper from SMS contacts (Wires 1U41C and 1U41E); Remove jumper from ACBPUV contacts (Wires 1U49E and 1U49G).
4F	Readjust R2 for 1.6 vDC at TP22.
4U	Remove jumpers on terminal pins 66, 68, 78, and 80 on NSWA Module in Slot 2G to DCOM (upper circuit board cage).
6B	Remove jumper from wires 6B11B and 6B15C at MXX relay contacts.
6C	Remove the four 500 MCM jumper cables from Armature Circuit cables 6C08H and 6C36E in accordance with Figures 1 and 2.
Isolation Switches SW1 and SW2 - per operational lineup for Hoisting Mode.	

Attachment 3 - Wire Location Diagram

