

WP 04-HO2003

Revision 4

Waste Hoist Dynamic Hoisting and Lowering

Technical Procedure

EFFECTIVE DATE: 08/23/04

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APPROVED FOR USE

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INTRODUCTION^{1,2}

The purpose of this procedure is to provide instructions for dynamic hoisting and lowering of the Waste 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, and 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

- Waste Hoist: Electrical Equipment for DOE Waste Hoist, General Electric Instructions GEK-95521
- 30 CFR Part 57, "Federal Metal and Non-Metal Mine Safety and Health Regulations"
- Plant Work Request Number 17034-R, Waste Hoist Dynamic Lowering Validation Test
- WP 12-IS.01, Industrial Safety Program - Structure and Management
- WP 12-ER4907, Evacuation/Sheltering in Place

REFERENCED DOCUMENTS

- WP 04-HO1003, Waste Handling Hoist Operation
- WP 04-AD3011, Equipment Tagout/Lockout
- WP 04-AD3012, Temporary Plant Modification Control

PRECAUTIONS AND LIMITATIONS

Emergency condition caused by the following:

- Utility power outage
- Loss of suitable SILCO Drive power
- Loss of SILCO Drive
- Conveyance situated between surface and underground in the Waste Shaft

NOTE

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

PERFORMANCE

1.0 SYSTEM PREPARATION

- 1.1 In accordance with WP 04-HO1003, perform the following:
 - 1.1.1 Shut down hoist.
 - 1.1.2 Remove all control power and converter power.
- 1.2 Lockout and tagout power in accordance with WP 04-AD3011.
- 1.3 Disconnect wires and install jumpers indicated in Attachment 1, Wire Disconnection and Jumper Installation, in accordance with WP 04-AD3012.

NOTE

Normal hoist power-up is accomplished in accordance with WP 04-HO1003, except for those sections pertaining to the SILCO Power Converter.

2.0 PREOPERATIONAL CHECKS

- 2.1 Remove Lockout/Tagout from hoist power in accordance with WP 04-AD3011.
- 2.2 Re-energize hoist power in accordance with WP-04AD3011.
- 2.3 Start up Waste Hoist in accordance with WP 04-HO1003.
- 2.4 Verify MXX relay energizes.
- 2.5 **IF** the MXX relay DOES NOT energize, **THEN** notify maintenance personnel and Cognizant Engineer.

NOTE

Upon performance of Step 2.6, the hoist should trip off-line, the Lilly overspeed annunciator lamp should illuminate, and the DC loop contactor should remain energized.

- 2.6 Lift Lilly overspeed weights.

- 2.7 Verify that the following occur:
 - 2.7.1 Hoist trips off-line.
 - 2.7.2 Lilly overspeed annunciator lamp illuminates.
 - 2.7.3 DC loop contactor remains energized.
- 2.8 Reset hoist and annunciator as follows:
 - 2.8.1 Reset Lilly overspeed alarm.
 - 2.8.2 Verify Lilly overspeed annunciator lamp goes off.
- 2.9 Press emergency stop push-button on the hoist operator console.
- 2.10 Verify that the following occur:
 - 2.10.1 Hoist trips off-line.
 - 2.10.2 Emergency stop annunciator lamp illuminates.
 - 2.10.3 DC loop contactor remains energized.
- 2.11 Reset hoist and annunciator as follows:
 - 2.11.1 Push in E-Stop push-button.
 - 2.11.2 Release E-Stop push-button.
 - 2.11.3 Ensure pressing alarm silence shuts OFF audible alarm.
 - 2.11.4 Press annunciator reset push-button to reset annunciator.
 - 2.11.5 Verify emergency stop annunciator lamp goes off.
- 2.12 Turn off motor field alternating current (AC) disconnect switch at the hoist control panel.
- 2.13 Verify that the following occur:
 - 2.13.1 Field loss annunciator lamp illuminates at approximately 36 amps, as indicated on panel meter.
 - 2.13.2 Motor field current drops to about zero amps.
 - 2.13.3 Hoist trips off-line.
 - 2.13.4 DC loop contactor remains energized.

- 2.14 Turn on field power AC disconnect switch.
- 2.15 Reset hoist and annunciator as follows:
 - 2.15.1 Reset the field loss alarm.
 - 2.15.2 Verify field loss annunciator lamp goes off.
- 2.16 Alert Toplander that conveyance is going to be raised.
- 2.17 Hoist conveyance in accordance with WP 04-HO1003.
- 2.18 Stop conveyance personnel deck as close as possible to the collar, as directed by Toplander.
- 2.19 Perform the following to lower the conveyance to the underground storage level:
 - 2.19.1 Remove pins in car stop operators at collar and station.
 - 2.19.2 Remove forks from a 13-ton forklift.
 - 2.19.3 Place hoist mode switch to MATERIAL.
 - 2.19.4 Spot material deck as close as possible to the collar.
 - 2.19.5 Drive 13-ton forklift onto the conveyance.
- 2.20 Lower the conveyance in accordance with WP 04-HO1003.
- 2.21 **IF** the following actions DO NOT occur,
THEN notify maintenance personnel and Cognizant Engineer:
 - 2.21.1 Brakes release.
 - 2.21.2 Rope speed indicates approximately 90 ft per minute.
- 2.22 Stop hoist with conveyance just above underground storage station.
- 2.23 Extend chairs.
- 2.24 Slowly lower conveyance onto the chairs and allow the weight of conveyance and forklift to fully retract chairing shock absorbers and stop the conveyance.

- 2.25 When conveyance is at underground storage station level, unload the forklift as follows:

NOTE

The conveyance may rise several inches during performance of Step 2.25.1.

- 2.25.1 Slowly drive the front wheels of 13-ton forklift off the conveyance.
- 2.25.2 Manually block the Gate Limit Switches CLOSED.
- 2.25.3 Verify all personnel are clear of conveyance and shaft.
- 2.25.4 Operate the hoist in the downward direction until the conveyance again rests fully on the chairs with the shock absorbers fully retracted.
- 2.26 Place approximately three inches of wooden material under the forklift in the path of both rear wheels abutting the conveyance material deck.

NOTE

Performance of Step 2.27 may result in up to 6.25-inch upward movement of the conveyance.

- 2.27 Slowly drive the forklift until the rear wheels completely leave the conveyance.
- 2.28 Drive the forklift completely off the conveyance and out onto the station.
- 2.29 Close shaft gates.
- 2.30 Load personnel onto personnel deck.
- 2.31 Bottomlander signal Hoist Operator using bell/voice signals to hoist conveyance.
- 2.32 Hoist Operator, perform the following:
- 2.32.1 Hoist conveyance from station.
- 2.32.2 Stop conveyance personnel deck as close as possible to the collar as directed by the Toplander.
- 2.32.3 **IF** conveyance requires additional lowering/raising, **THEN** repeat Steps 2.19 through 2.32 using a 13-ton forklift for each trip.

3.0 SYSTEM RESTORATION

- 3.1 De-energize control power and hoist power to hoist auxiliary equipment in accordance with WP 04-HO1003.
- 3.2 Lockout and tagout power in accordance with WP 04-AD3011.
- 3.3 Verify blocks installed on gate limit switches per Step 2.25.2 are removed.

NOTE

Lifted leads are to be reinstalled in accordance with WP 04-AD3012.

- 3.4 Remove jumpers and reconnect wires per actions delineated in Attachment 2, Wire Reconnection and Jumper Removal.
- 3.5 Reinstall car stop pins.
- 3.6 Return to normal hoist operation in accordance with WP 04-HO1003.
- 3.7 Note performance of this procedure in WP 04-HO1003, Attachment 4.

Attachment 1 - Wire Disconnection and Jumper Installation

Lead and Switch Requirements					
√	GE DWG 237B6688		ACTION	LOCATION	PURPOSE
	J/LL	SHEET #			
	LL20	1W	Disconnect 1W63	SRX Relay contact	Allows brakes to be applied with hoist speed greater than 5% of full speed.
	LL21	1Q	Disconnect 1Q15D	MXX Relay contact	This contact to be used with J30 below.
	LL22	1W	Disconnect 1B21B	M1 contact at Line 09	Disconnects M1 contactor contacts from control power seal-in circuit.
	LL23	1Q	Disconnect 1Q41D	MXE normally OPEN contacts	Contacts to be used for MXE seal-in circuit with J33 below.
	LL24	1Q	Disconnect 1Q47C	MXE normally OPEN contacts	Contacts to be used for MXE seal-in circuit with J34 below.
	LL25	1M	Disconnect 1M75L	M1 Auxiliary contacts	Allows placement of MXE contacts in series with M1 auxiliary contacts with J33 and J34 below.
	J20	1D	Install Jumper	1B21B to 1D53F	Torque proving TPX1
	J21	1J	Install Jumper	1B21B to 1J22K	AC bridge power ACBKR
	J22	1J	Install Jumper	1B21B to 1J30K	AC bridge power UV ACBKPUV
	J23	1M	Install Jumper	1M23E to 1M23G	Failure to decelerate FDEC
	J24	1M	Install Jumper	1M49D to 1M49E	Regulator malfunction RMX
	J25	1M	Install Jumper	1M49M to 1M62D	Power converter fault PCFLT

Attachment 1 - Wire Disconnection and Jumper Installation

Lead and Switch Requirements					
√	GE DWG 237B6688		ACTION	LOCATION	PURPOSE
	J/LL	SHEET #			
	J26	1M	Install Jumper	1M62G to 1M62H	Reverse direction REVDIR
	J27	1P	Install Jumper	1P27H to 1P27K	Power converter PCANN
	J28	1Q	Install Jumper	1B21B to 1Q15D	Hold main contactor IN
	J29	1Q	Install Jumper	1Q39G to 1Q47 K	Hold main contactor IN
	J30	1Q/1W	Install Jumper	MXX contact (from which <u>wire</u> 1Q15D was disconnected with LL21) to <u>wire</u> 1W10E on Sheet 1W, which was disconnected with LL22.	This makes the MXX relay contacts the seal-in circuit for the hoisting/lowering and brake control circuitry.
	J31	GE DWG 237B6019 SHEET 501AE	Install Power Jumper	<u>Wires</u> P1 and N2	Install per Attachment 3
	J33	1M	Install Jumper	M1 <u>contacts</u> , disconnected with LL25, to one side of MXE <u>contacts</u> disconnected with LL23.	New MXE seal-in circuit.
	J34	1M	Install Jumper	<u>Wire</u> 1M75L to other side of MXE <u>contacts</u> disconnected with LL24	New MXE seal-in circuit.
	N/A	1S	Switch in MANUAL	Hoist Mode Selector Switch in MANUAL	N/A

Attachment 2 - Wire Reconnection and Jumper Removal

Lead and Switch Requirements					
√	GE DWG 237B6688		ACTION	LOCATION	PURPOSE
	J/LL	SHEET #			
	LL20	1W	Reconnect 1W63	SRX Relay contact	Prevents brakes from being applied with hoist speed greater than 5% of full speed.
	LL21	1Q	Reconnect 1Q15D	MXX Relay contact	This contact to be used with J30 below.
	LL22	1W	Reconnect 1B21B	M1 contact at Line 09	Reconnects M1 contactor contacts from control power seal-in circuit.
	LL23	1Q	Reconnect 1Q41D	MXE normally OPEN contacts	Contacts to be used for MXE seal-in circuit with J33 below.
	LL24	1Q	Reconnect 1Q47C	MXE normally OPEN contacts	Contacts to be used for MXE seal-in circuit with J34 below.
	LL25	1M	Reconnect 1M75L	M1 Auxiliary contacts	Was used with M1 auxiliary contacts with J33 and J34 below.
	J20	1D	Remove Jumper	1B21B to 1D53F	Torque proving TPX1
	J21	1J	Remove Jumper	1B21B to 1J22K	AC bridge power ACBKR
	J22	1J	Remove Jumper	1B21B to 1J30K	AC bridge power UV ACBKPUV
	J23	1M	Remove Jumper	1M23E to 1M23G	Failure to decelerate FDEC
	J24	1M	Remove Jumper	1M49D to 1M49E	Regulator malfunction RMX
	J25	1M	Remove Jumper	1M49M to 1M62D	Power converter fault PCFLT

Attachment 2 - Wire Reconnection and Jumper Removal

Lead and Switch Requirements					
√	GE DWG 237B6688		ACTION	LOCATION	PURPOSE
	J/LL	SHEET #			
	J26	1M	Remove Jumper	1M62G to 1M62H	Reverse direction REVDIR
	J27	1P	Remove Jumper	1P27H to 1P27K	Power converter PCANN
	J28	1Q	Remove Jumper	1B21B to 1Q15D	Held main contactor IN
	J29	1Q	Remove Jumper	1Q39G to 1Q47 K	Held main contactor IN
	J30	1Q/1W	Remove Jumper	MXX contact (from which <u>wire</u> 1Q15D was disconnected with LL21) to <u>wire</u> 1W10E on Sheet 1W, which was disconnected with LL22.	This makes the MXX relay contacts the seal-in circuit for the hoisting/lowering and brake control circuitry.
	J31	GE DWG 237B6019 SHEET 501AE	Remove Power Jumper	<u>Wires</u> P1 and N2	Remove per Attachment 3
	J33	1M	Remove Jumper	M1 <u>contacts</u> , disconnected with LL25, to one side of MXE <u>contacts</u> disconnected with LL23.	Was new MXE seal-in circuit.
	J34	1M	Remove Jumper	Wire 1M75L to other side of MXE contacts disconnected with LL24	Was new MXE seal-in circuit.
	N/A	1S	Switch in MANUAL	Hoist Mode Selector Switch in MANUAL	N/A

Attachment 3 - Wire Location Diagram

