PROCEDURES AROUND WINDER MAINTENANCE

WINDING EQUIPMENT

WARD LEONARD, WINDERS

ELECTRICIAN DAILY (D)

1. Test operation of all overwinds trips and final limit switches.

    1.1 With “man/rock” levers in “rock” position, hoist must trip out when the skip is not more than 0,4 m above the tip.
    1.2 With “man/rock” levers in “man” position, hoist must trip out when skip is not more than 2,0 m above the bank.
    1.3 Underwind limit trip must be set to be on the point of operating when the overwind limit trip operates.
    1.4 Headgear final limit switches to trip hoist out when skip is 0,8 m above trip.

2. Check controller overspeeds gaps at full speed and end of wind. Full speeds gap on Lilly controllers to be not more than 0,8 mm. End of wind gap on Lilly controllers not more than 1,0 mm.

3. Test efficient operation of Dixon’s brake interlock device. With hoist in locked position, check that Driver cannot release brake or test efficient operation of signal interlocking device by manual release of brake , with hoist in locked position. Check that hoist will trip when brake lever has moved no more than 25 mm full on position.

4. Check for each faults on bell system.

5. Check operation of Phillips wrong direction device.

6. Visually inspect all drives and limit switches.

7. Check externally, headgear limit switches for security, wear and general condition. Check operation.

8. Check manually the slack rope devices.

9. Check manually bad coiling devices.

10. Check wrong direction interlock above and below bank.

11. Check earth leakage indicator.

12. Ensure satisfactory operation of Driver’s indicating lights and meters.

13. Check electrolyte level in liquid controllers.

14. Rectify all weakness and defects upon discovery. If they cannot be immediately rectified, note in the Driver’s LogBook and report them without delay, to the Engineer.

15. Record examination and sign the machinery logbook.

ELECTRICIAN WEEKLY (W)

1. Carry out daily schedule.

2. GENERAL – Enter examination in Driver’s LogBook.

    WARNING: DO NOT MEGGER ELECTRONIC CIRCUITRY

2.1 Megger test all motors and generator windings, safety circuits and control circuits.
2.2 Check all meters for correct operation.

3. Master controller

3.1 Open up and clean contacts faces, dress if necessary.
3.2 Check condition and security of pigtails and spring tensions.
3.3 Blow out.
3.4 Lightly lubricate mechanical parts.

4. Lilly Controllers

4.1 Clean all faces.
4.2 Check micro switches for operation.
4.3 Check all linkage bushes, pivots, pins nuts and bolts for condition and security.
4.4 Ensure security of all connections and clean all contacts.
4.5 Check oil level.
4.6 Lightly lubricate moving parts.
4.7 Check directional switches.

5. Potentiometers

5.1 Check condition of resistance's, sliders and wipers.
5.2 Check condition of cam rollers.
5.3 Check security of all bolts and nuts.
5.4 Ensure security of cables and connections.
5.5 Blow out.
5.6 Lubricate lightly mechanical parts.

6. Winder Motors

6.1 Check condition of commutator, brushes, springs and spring tension. Change brushes if necessary.
6.2 Check all connections for security.
6.3 Check commutators for feather edging.
6.4 Blow out.

7. Tacho Generators, Speed Control and Escort Devices

7.1 Check condition of brushes' replaces if necessary.
7.2 Check commutator for feather edging and general condition
7.3 Ensure security of cables and connections.
7.4 Blow out generator.
7.5 Check drives for condition and smooth running.

8. Bell Board

Check operation of relays and security of all connections.

9. Main Generator Set

9.1 Generators – Exciter
9.1.1 Check brushes for wear, replace if necessary.
9.1.2 Check conditions and tension of springs.

9.1.3 Check commentators for feather edging, flats grooving and burning.
9.1.4 Megger test safety circuit.
9.1.5 Ensure security of all connections.
9.1.6 Blow out units.

9.2 AC Slipring Motor

9.2.1 Check condition of brush gear and rings. Renew if necessary.
9.2.2 Check spring tension on brushes.
9.2.3 Ensure security of all connections.
9.2.4 Blow out.
9.2.5 Ensure satisfactory operation of short circuiting gear. Clean contacts and slightly smear faces with Vaseline: also lubricate turnings shaft.

9.3 Bearing Thermostats and Trip Switches

9.3.1 Check thermostat alarm manually.
9.3.2 Check gaps of bearing failure trip switches where fitted.

9.4 Flow Switches

9.4.1 Check security of switches and cable connections.
9.4.2 Ensure satisfactory operation of units.

10. Liquid Controller

10.1 Examine busbars for signs of overheating.
10.2 Examine dippers for corrosion of signs of burning.
10.3 Check condition of all fixed and moving contacts, dress or renew if necessary.
10.4 Lightly lubricate contact faces with petroleum jelly.
10.5 Check condition of insulators.
10.6 Ensure security of all cables and connections.
10.7 Top up as necessary.
10.8 Adjust strength of solution under operating conditions.

11 Filter Fans
11.1 Ensure security of all connections.
11.2 Blow out.

12 Voltage Transformer and Auxiliary Transformer

12.1 Check for oil leaks
12.2 Check fuses.
12.3 Check breathers.

13. AC Panel
13.1 Examine all contact faces, lightly dress where necessary with fine glass paper. Do not use abrasive on silver contacts.
13.2 Ensure security of all connections.

14. Ward Leonard Panel

14.1 Blow out panels carefully with low-pressure compressed air.
14.2 Examine all contact faces, lightly dress where necessary, using servisol or fine glass paper. Do not use abrasives on silver contacts.
14.3 Check for signs of overheating on all condensers, resistance's, rectifiers and transformers.
14.4 Ensure satisfactory operation of relays, timers and meters.
14.5 Check security of all connections and fuses.

15. Safety Circuit Panel

15.1 Ensure security of all connections
15.2 Ensure correct operation of flag indicators.

16. Auxiliary Pump Motors and Starters

16.1 Check motors for smooth running, overheating or vibration.
16.2 Check connections for security.
16.3 Check starter contacts, dress if necessary.
16.4 Check condition of oil. Oil tests analysis.

17. Auto/manual Change – over Switch

17.1 Check contacts and renews if necessary.

17.2 Check security of all cables and connections.

18. Fast Braking and Emergency Braking Solenoids

18.1 Check cable connections are secure.
18.2 Ensure satisfactory operation and lightly lubricate mechanism.
18.3 Clean contacts and check for satisfactory operation.
18.4 Check conversion on fast braking solenoid or thruster.

19. Driver's Instrument Panel

19.1 Ensure that all meters are in working order.
19.2 Check that all indicating lights are in working order. Replace as necessary,

20. Back out and Brake Interlock Switches

20.1 Clean all contacts and check for satisfactory operation.
20.2 Check all connections for security.
20.3 Blow out units.
20.4 Lightly lubricate moving parts.

21. Dixon's Locking Device or Signal Interlock Device

Check operation and condition of ratchet and pawl.
Lightly lubricate.

22. Check the brake solenoid mechanism for efficient operation, tightness of bolts and general condition. Lightly lubricate with Molyslip or equivalent.

23. Examine Ward Leonard controller "face plate", stone lightly, if necessary; blow out and clean with safety solvent.

24. Examine the right and finger contacts behind Ward Leonard, controller face plate.

25. Check servo mechanism oil pressure, oil level and lubricate links.

26. Check suicide controller and resistance. Check for satisfactory operation.

27. Clear Driver's LogBook and test run.

ELECTRICIAN TWICE WEEKLY (2W)

1. Carry out weekly schedule.
2. Check all safety devices and record results of test on form provided for drum winder.

ELECTRICIAN YEARLY (Y)

Assist Engineer with examination of hoist. Engineer to Arrange.

AC WINDERS

ELECTRCIAN DAILY (D)

1. Test operation of all overwinds trips and final limit switches.

1.1 With “Man/Rock” levers in “Rock” position, hoist must trip out when the skip is not more than 0,4 m above the trip.
1.2 With “Man/Rock” levers in “Man” position, hoist must trip out when skip is not more than 2,0 m above the bank.
1.3 Underwind limit trip must be set to be on the point of operating when the overwind limit trip operates.
1.4 Headgear final limit switches to trip hoist out when skip is 0.8 m above the trip.

3. Check controller overspeeds gaps at full speed and at end of wind. Full speed gap on Lilly controllers to be not more
than 0,8 mm. End of wind gap on Lilly controller not more than 1,0 mm.

3. Test efficient operation of Dixon’s Brake interlock device. With hoist in locked position check that driver cannot release brake. Test efficient operation of signal interlocking device by manual release brake. Test efficient operation of signal interlocking device may manual release of brake, with hoist in locked position. Check that hoist lever has moved no more than 25 mm from full on position.

4. Check of earth faults on bell system.

4. Check operation of Phillips wrong direction device.

5. Visually inspect all drives and limit switches.

6. Check, external, headgear limit switches for security, wear and general condition. Check operation.

7. Check manually the slack rope devices.

8. Check manually bad coiling devices.

9. Check wrong direction interlock above and below bank.

10. Check earth leakage indicator.

11. Ensure satisfactory operation of Driver’s indicating lights and meters.

12. Check electrolyte level in liquid controllers.

13. Rectify all weaknesses and defects upon discovery. If they cannot immediately rectified, note in the Driver’s Log Book and report them , without delay, to the Engineer.

14. Record examination and sign the machinery logbook.

ELECTRICIAN WEEKLY (W)

1. Daily Schedule

Carry out daily schedule.

2. General

Warning: DO NOT MEGGER TEST ELECTRONIC EQUIPMENT
Megger test all motor windings, safety circuits, control panel connections and Dixon’s Device.
3. Stator Reveres and Dynamic Braking Contractor

Lower arc chutes and remove deposits of carbon and copper.
Blow out arc chutes and panels

Examine all contacts and dress or renew as necessary. Smear faces with a light film of elvolube where suitable.
Check satisfactory operation of all interlocks and contractors.
Lightly lubricate all moving parts.
Ensure that all cables and connections are secure.
Tighten all nuts and bolts.
Check security of all split pins and springs.
Examine fuses, potential transformer, rectifiers, resistance's, flexible leads and buss bars for security and signs of overheating.
Check distance between contact surfaces. These are to be kept within limits.
Check spring tension of moving contacts.
Replace arc clutches and secure in position.

4. Transformers

Inspect for oil leaks, check oil levels and top up if necessary.
Check for signs of overheating.
Ensure cable and glands are secure.
Examine insulators on series transformer and clean.
Check condition of silica gel. (Crystals must be blue. If red they must be replaced and dried in oven.)

5. 500 Volts Ac. Auxiliary Contact and Safety Circuit Panels

Remove arc chutes.
Blow out units.
Clean and examine all contacts. Dress or renew where necessary.
Ensure security of all connections.
Examine relays, transformers, and resistance's, rectifiers and buss bars for security and signs of overheating.
Check all fuses and meters.
Lightly lubricate all moving parts.
Clean panel with low pressure compressed air.

Master Controller

Check satisfactory operation and condition of mechanism and lightly oil-moving parts.
Examine, clean and dress contacts and ensures security of all connections.
Blow out unit.

6. Back out and Brake interlock Switches

Clean all contacts and check for satisfactory operation.
Check security of all connections.
Blow out units.
Lightly lubricate moving parts.

7. Dixon's locking Device

Check operation and condition of ratchet and pawl.
Lightly lubricate.

8. Auxiliary and main Brake solenoids.

Check cable connections are secure.
Ensure satisfactory operation and lightly lubricate mechanism.

Clean contacts where fitted.

9. Lilly Controllers

Clean all surfaces.
Check micro switches for satisfactory operation.
Check all linkages, bushes, pivots, pins, and nuts and bolts for condition and security.
Clean all contacts and ensure lightness of all connections.
Check oil and lightly lubricant all moving parts.
Check directional switches.

10. AC Slipring Motor

Check coupling for condition, security and alignment.
Blow out motor and brushgear.
Check condition of brushgear and rings, renew brushes if necessary.
Ensure security of all connections and check spring pressure on brushes.
Check security of cable and speed transmitter motor.
Examine drive for wear and lightly lubricate where necessary.
Ensure security of guard overdrive.

11. Servo Control Gear

Ensure security of all bolts ,nuts, pins and split pins.
Clean unit and lubricate.
Check security and satisfactory operation of solenoids.
Check motor coupling for condition, security and alignment.

12. Liquid Controller

Examine bus bars for security and signs of overheating.
Ensure that cables, glands and connections are secure.
Examine all chains for wear and security.
Lightly lubricate chains and moving parts.

13. All Auxiliary Pump Motors

Check coupling for condition, security and alignment.
Check motor for smooth running.
Ensure security of connections and blow out motor.
Check starting contractors.

14. Resistance Grids and Creep Switch

Blow out the units.
Check for security of connections and signs of overheating.
Ensure satisfactory operation of creep switch.

15. Bearing thermostat and Trip Switches

Check thermostat alarm manually.
Checks gaps of bearing failure trip switches.

16. Limit Switches

Ensure security and satisfactory operation of all limits.
Lightly lubricate all rollers and moving parts.

17. Bell Board

Blow out panel.
Ensure security of all components and connections.
Clean all contacts and check satisfactory operation of all relays, timer meter and indicating lights.
Replace as necessary.

Check the brake solenoid mechanism for efficient operation, tightness of bolts and general condition.
Lightly lubricate with Molyslip or equivalent.

18. Examine master controller, blow out, and clean with safety solvent. Check for smooth operation.

19. Check servomechanism oil pressure, oil level and lubricate links.

20. Check and clean dynamic braking and equipment. Check for satisfactory operation.

21. Check driver's logbook and test run.

ELECTRICIAN TWICE WEEKLY (2W).

1. Carry out weekly schedule.
2. Check all safety devices and record results of tests on form provided. Drum winder.

ELECTRICIAN SPECIAL (S).

Liquid Controller

1. Wash out tanks.
2. Change dippers, insulated bases and tubes. Engineer to arrange.

ELECTRICIAN YEARLY (Y)

Assist Engineer with examination of hoist. Engineer to arrange.

RECTIFIER AND THYRISTOR WINDERS

ELECTRICAIN DAILY (D)

1. Test operation of all overwinds trips and final limit switches.

    1.1 With “man/Rock” levers in “Rock” position, hoist must trip out when the skip is not more than 0,4 m above the tip.

    1.2 With “man/Rock” levers in “man” position, hoist must trip out when skip is not more than 2,0 m above the bank.

    1.3 Underwind limit trip must be set to be on the point of operating when the overwind limit trip operates.

    1.4 Headgear final limit switches to trip hoist out when skip is 0,8 m above the trip.

2. Check controller overspeeds gaps at full speed and at end of wind. Full speed gap on Lilly controllers to be not more than 0,8 mm. End of wind gap on Lilly controllers not more than 1,0 mm.

3. Test efficient operation of Dixon’s brake interlock device. With hoist in locked position, check that the driver cannot release brake, or test efficient operation of signal interlocking device by manual release of brake, with hoist in locked position. Check that hoist will trip when brake lever has moved no more than 25 mm from full on position.

4. Check for earth faults on bell system.

5. Check operation of Phillips wrong direction device.

6. Visually inspect all drives and limit switches.

7. Check, externally, headgear limit switches for security, wear and general condition. Check operation.

8. Check manually the slack rope device.

9. Check manually bad coiling devices.

10. Check wrong direction interlock above and below bank.

11. Check earth leakage indicator.

12. Ensure satisfactory operation of Driver’s indicating lights and meters.

13. Check electrolyte level in liquid controllers.

14. Rectify all weaknesses and defects upon discovery. If they cannot be immediately rectified, note in the Driver’s
Logbook and report them, without delay, to the Engineer.

15. Record examination and sign the Machinery Logbook.

ELECTRICIAN WEEKLY (W)

1. Carry out daily schedule.

2. General

   Enter examination in Driver's Logbook.

   Warning : DO NOT MEGGER TEST ELECTRONIC CIRCUITS

   2.1 Megger test all motor and generator windings, safety circuits and control circuits.
   2.2 Check all meters for correct operation.

3. Master Controller

   3.1 Open up and clean contacts faces; dress if necessary.
   3.2 Check condition and security of pigtails and spring tensions.
   3.3 Blow out.
   3.4 Lightly lubricate mechanical parts.

4. Lilly Controllers

   4.1 Clean all faces.
   4.2 Check micro switches for operation.
   4.3 Check all linkage, bushes, pivots, pins, and nuts and bolts for condition and security.
   4.4 Ensure security of all connections and clean all contacts.
   4.5 Check oil level.
   4.6 Lightly lubricate moving parts.
   4.7 Check directional switches.

5. Potentiometers

   5.1 Check condition of resistance's, sliders and wipers.
   5.2 Check condition of cam rollers.
   5.3 Check for security of all bolts and nuts.
   5.4 Ensure security of cables and connections.
   5.5 Blow out.
   5.6 Lubricate lightly mechanical parts.

6. Winder Motors

   6.1 Check condition of commutator, brushes, springs and spring tension. Change if necessary.
   6.2 Check all connections for security.
   6.3 Check commentators for feather edging.
   6.4 Blow out.

7. Tacho Generators, Speed Control and Escort Devices

   7.1 Check condition of brushes. Replace if necessary.
   7.2 Check commutator for feather edging and general condition.
   7.3 Ensure security of cables and connections.
   7.4 Blow out generator.
   7.5 Check drives for condition and smooth running.

8. Bell Board

Check operation of relays and security of all connections.

9. Auxiliary M.G Sets

9.1 Check brushes for wear, replace if necessary.
9.2 Check for brush contact pressure.
9.3 Check commutators for feather edging flats, grooving and burning.
9.4 Megger test machines.

Warning; DO NOT MEGGER ELECTRONIC CIRCUITRY

9.5 Ensure security of all connections.
9.6 Blow out all units.

10. Main Converter Transformer

10.1 Check oil level.
10.2 Check silica breather.
10.3 Check Bucholz relay.

11. Filter fans

11.1 Ensure security of all connections.
11.2 Blow out.

12. Voltage Transformer and Auxiliary Transformer
12.1 Check for oil leaks.
12.2 Check fuses.
12.3 Check breathers.

13. AC panel

13.1 Examine all contact faces; lightly dress where necessary with fine glass paper. Do not use abrasives on silver contacts.

13.2 Ensure security of all connections.

14 . Control Panels

14.1 Blow out panels carefully with low-pressure compressed air.
14.2 Examine all contact faces, lightly dress where necessary, using servisol or fine glass paper. Do not use abrasives on silver contacts.
14.3 Check for signs of overheating on all condensers, resistance's, rectifiers and transformers.
14.4 Ensure satisfactory operation of relays, timers and meters.
14.5 Check security of all connections and fuses.

15. Safety Circuit Panel.

15.1 Ensure security of all connections.
15.2 Ensure correct operation of flat indicators.

16. Auxiliary Pump Motors and Starters

16.1 Check motors for smooth running, overheating or vibration.
16.2 Check connections for security.

16.3 Check starter contacts, dress if necessary.
16.4 Check condition of oil.

17. Auto / manual over switch

17.1 Check contacts and dress if necessary.
17.2 Check security of all cables and connections.

18. Fast braking and emergency Braking Solenoids.

18.1 Check cable connections are secure.
18.2 Ensure satisfactory operation and lightly lubricate mechanism.
18.3 Clean contacts.
18.4 Check conversion on fast braking solenoid or thruster.

19. Driver's Instrument Panel.

19.1 Ensure that all meters are in working order.
19.2 Check that all indicating lights are in working order. Replace if necessary.

20. Back out Brake Interlock Switches.

20.1 Clean all contacts and check for satisfactory operation.
20.2 Check all connections for security.
20.3 Blow out units.
20.4 Lightly moving parts.

21. Dixon's Locking Device or Signal Interlock Device.

21.1 Check operation and condition of ratchet and pawl.
21.2 Lightly lubricate

22. Check the brake solenoid mechanism for efficient operation, tightness of bolts and general condition. Lightly lubricate with Molyslip or equivalent.

23. Examine Ward Leonard Controller "Face Plate ", stone lightly if necessary, blow out, and clean with safety
solvent.

24. Examine the ring and finger contacts behind Ward Leonard controller face plate.

25. Check servomechanism oil pressure, oil level and lubricate links where applicable.

26. Check suicide controller and resistance. Check for satisfactory operation where applicable.

27. Clear Driver's Logbook and test run.

28. Rectifier Units.

28.1 Check load sharing between units or cubicles.
28.2 Check excitation amps mercury arc converters.
28.3 Overload relays.
28.4 High vacuum Tore Note Max. 0,01
28.5 Pre vacuum Hg Note Max. 15 mm.
28.6 Excitation failure relays.

28.7 Anode reactors.
28.8 Cooling fans.
28.9 Connections
28.10 Heaters

29. Main DC. Breakers

29.1 Check main contacts, remove beads of copper.
29.2 Check arc chutes, remove carbon and copper deposits.
29.3 Check mechanism, clean and lubricate where necessary.

30. Winder Motor Field Control

30.1 Check panel connections.
30.2 Check field overload relay.

31. Winder Control (where applicable)

31.1 Check cathode current of electronic tubes.
31.2 Check bias current of magnetic amplifiers.
31.3 Check amplifier power supplies.

ELECTRICIAN TWICE WEEKLY (2W)

1. Carry out weekly schedule.

2. Check all safety devices and record results of tests on form provided for drum winder.

ELECTRICIAN YEARLY (Y)

Assist engineer with examination of hoist. Engineer to arrange.

AUTOMATIC ROCK WINDER

ELECTRICIAN DAILY (D)

1. At the beginning of the shift, inspect the entries in the Winding Engine Driver's Logbook. After examination, countersign the logbook in accordance with Regulation 16.78.2.

2. Change the tachograph-recording sheet (at 07:00am).

3. Carefully examine all external parts of the motor.

4. Test operation of all overwinds trips and final limit switches.

4.1 With "Man/rock" levers in "Rock" position, hoist must trip out when the skip is 450 mm above tip.
4.2 With "Man/rock levers in "Man" position hoist must trip out when skip is 17,4 metres above bank.
4.3 Underwind limit trip must be set to be on the point of operating when the overwind limit trip operates.
4.4 Cam operated final limit switches to trip hoist out when skip is 0,9 m above the tip.

5. Check left hand and right hand overspeed gaps, at full speed and at the end of the wind, for both forward and reverse winds. Full speeds gap 2mm at 3000 m/min. End of gap, 2 mm with collar at top of cam.

6. Ensure correct operation of accelerating coils and cams.

7. Test efficient operation of Dixon's brake interlock device. With hoist in locked position, check that it cannot release brake. (Any future modification to a back up device must be tested for efficient operation within the limits laid down).

8. Test operation of Phillips wrong way deceives.

9. Check the cam unlatches mechanism for efficient operation, tightness of bolts and general condition. Lightly oil plunger.

10. Check the brake over travel switches and alarms for satisfactory operation.

11. Test emergency trip button for satisfactory operation.

12. Ensure satisfactory operation of the fast/slow braking solenoids.

13. Ensure satisfactory operation of neutral device timer.

14. Examine suicide contractor and resistance. Check for satisfactory operation.

15. Visually inspect all drivers; and M.L.S switches.

16. Test tripping battery voltage

17. Test bell signals for clear signal. Adjust if necessary.

18. Check manually the slack rope devices.

19. Check manually bad coiling devices.

20. Test that all alarms operate satisfactorily.

21. Ensure that skip electronic device on skip and indicating lights operate satisfactorily.

22. Report any adverse conditions to the Engineer.

ELECTRICIAN WEEKLY (W)

1. Daily schedule

    1.1 Carry out daily schedule.

2. General

    NOTE: Keep Megger away from electronic gear.

    2.1 Megger test motor windings, safety circuits, control panel connections and Dixon's device. Record.
    2.2 Check all meters for correct operation.

3. Master Controller

3.1 Open up and clean contact faces, dress if necessary.
3.2 Inspect condition and security of pigtails and spring tensions.
3.3 Blow out.
3.4 Lightly lubricate mechanical parts.

4. Back out switch

4.1 Clean contacts and ensure satisfactory operation.
4.2 Ensure security of all connections.
4.3 Lightly lubricate moving parts.

5. Brake interlock switch

5.1 Clean all contacts and ensure satisfactory operation.
5.2 Ensure security of all connections
5.3 Lightly lubricate moving parts.

6. Controllers

6.1 Clean all brass surfaces with Servisol
6.2 Check micro switches for operation.
6.3 Inspect all linkage, brushes, pivots, pins, and nuts and bolts for condition and security.
6.4 Ensure security off all connections.
6.5 Check oil level.
6.6 Check oil pump for operation.

7. Ward Leonard Controller

7.1 Examine controller faceplate. Stone lightly, if necessary, blow out clean with safety solvent.
7.2 Examine ring and finger contacts behind faceplate. Clean if necessary.
7.3 Ensure free operation of all mechanical parts.
7.4 Ensure security of all connections.

8. Long and short range Multiple Limit Switches

8.1 Clean silver tipped contacts.
8.2 Ensure security of all connections.
8.3 Blow out.
8.4 Lightly lubricate mechanical parts.

9. Potentiometers

Note: make no adjustments in position control cubicle.

9.1 Check conditions of resistance's, sliders and wipers.
9.2 Check condition of cam rollers.
9.3 Ensure security of all bolts and nuts.
9.4 Lightly lubricate mechanical parts.

10. Cam detaching device

10.1 Ensure security of all nuts and bolts.
10.2 Clean plunger.

10.3 Lightly lubricate mechanical parts.

11. Motors

11.1 Blow out motors.
11.2 Check condition of commutators, brushes, spring, spring tension. Change if, necessary.
11.3 Check commutators for feather edging.
11.4 Ensure security of all connections.

12. Tacho Generator

12.1 Check condition of brushes, replace if necessary.
12.2 Check commutator for feather edging.
12.3 Ensure security of cables and connections.
12.3 Blow out generator.

13. Servo unit

13.1 Blow out motors and check for smooth running, overheating and vibration.
13.2 Ensure that mounting bolts are secure.
13.3 Inspect cables for security and condition.
13.4 Open starter and check casually.
13.5 Inspect condition of linkage and pins.
13.6 Dress, clean and renew faceplate segments as required.
13.7 Test emergency trip solenoid for satisfactory operation.

14. Bell Board

14.1 Check operation of relays and security of all connections.
14.2 Test for earth faults.

15. Main Generator St.

15.1 Generators and Exciters

14.1.1 Blow out units.
14.1.2 Check brushes for wear, replace if necessary.
14.1.3 Examine condition and tension of springs.
14.1.4 Check commutators for feather edging.
14.1.5 Megger test main generates. If readings are below 5 MO, then wash main generator commutators with safety solvent.
14.1.6 Ensure security of all connections.
14.1.7 Megger teat bearing insulation.

15.2 Sync Motors

15.2.1 Check conditions of brushes and renews where necessary.
15.2.2 Check for security of all connections.
15.2.3 Blow out.
15.2.4 Reverse polarity once per month.

15.3 Sync Motor Exciter

15.3.1 Check brushes for wear; replace if necessary.
15.3.2 Examine condition and tension of springs.
15.3.3 Check commutators for feather edging.
15.3.4 Check condition of resistance's
15.3.5 Ensure security of all connections
15.3.6 Blow out.

15.4 Filter Fan

15.4.1 Ensure security of all connections.

15.4.2 Blow out.

15. Bearing Thermostat and Trip Switches.

15.1 Test alarm manually.
15.2 Check trip switch gaps.
15.3 Ensure security of all connections

16. Flow Switches

16.1 Ensure security of all connections.
16.2 Ensure satisfactory operation.

17. Voltage Transformer and auxiliary Transformer

17.1 Inspect for oil leaks
17.2 Check fuses.

18. AC Panel

18.1 Examine all contact faces; lightly dress where necessary with fine emery.
18.2 Ensure security of all connections.

19. Ward Leonard Panel

19.1 Blow out.
19.2 Examine all contact faces' slightly dress where necessary; using fine energy.
19.3 Check regulator motor for smooth running.
19.4 Inspect for signs of overheating on all condensers, resistance's , rectifiers and transformers.
19.5 Ensure security of all connections.

20. Safety circuit Panel.

20.1 Ensure correct operation of flag indicators.
20.2 Ensure security of all connections.
20.3 Test all safety devices for satisfactory operation.
20.4 Change battery on skip electronic device.

21. Cubicles (Control, Field and AC).

21.1 Blow out .
21.2 Examine all contact faces, lightly dress where necessary, using fine energy.
21.3 Ensure security of all connections.

23. Brake Oil Pump Motors and Starters

21.1 Inspect motors for smooth running, overheating or vibration.
21.2 Ensure security of all connections.
21.3 Blow out motors.

22. Bearing Circulation Oil Pumps and Starters.

22.1 Inspect motors for smooth running, overheating of vibration.
22.2 Ensure security of all connections.
22.3 Blow out motors.

23. Bearing Cooling Water Pump and Starter.

23.1 Inspect motor for smooth running, overheating or vibration.
23.2 Ensure security of all connections.
23.3 Blow out.

24. Servo Motor

24.1 Inspect motor for smooth running, overheating or vibration.
24.2 Ensure security of all connections.
24.3 Check starter contacts, dress if necessary.
24.4 Blow out.
24.5 Check servo times. 16 seconds deceleration and 11 seconds acceleration.

25. Auto / manual Change over Switch

25.1 Check contacts and dress if necessary.
25.2 Ensure security of all cables and connections.

28 Directional Switches

28.1 Ensure satisfactory operation.
28.2 Clean contacts.
28.3 Ensure security of connections and lightly gears.

29. OCB's/VCB's (one per week in rotation)

29.1 Isolate and rack out.
29.2 Lower tank and check condition of oil. Report condition to Foreman.
29.3 Clean and dress contacts as required.
29.4 Clean contacts and ensure satisfactory operation.
29.5 Check all cables and connections for condition and security.
29.6 Blow out.
29.7 Inspect all auxiliary contacts for condition.

30. Driver's Instrument Panel.

30.1 ensure that all indicating lights are in working order.

31. Test run

ELECTRICIAN SPECIAL (SI)

1. Assist the Winder Office Inspector with the examination on the hoist. This examination will not replace the normal weekly examination.

NOTE: Several items of equipment not mentioned elsewhere (e.g. Motor Air Gaps) are examining during this examination.

2. Thermostats and Trip Switches

During this examination thermostat bulbs are to be disconnected for bearings and tested for operation by immersion in hot oil.

ELECTRICAIN SPECIAL (S2)

Assist the engineer with the yearly examination.

MAN WINDER

ELECTIRCIAN DAILY (D)

1. At the beginning of the shift, inspect the entries in the Winding Engine Driver's Logbook. After examination, countersign the logbook (mine and Works Reg. 16.78.2

2. Change the tachograph recording sheet (7.00 am).

3. Carefully examine all external parts of the motor.

4. Test operation of all Lilly overwinds trips and final limit switches.

    4.1 Underwind limit trip must be set to shadow by 150 mm to 300 mm the man overwind limit trip.

5. Ensure satisfactory operation of the backing out switch.

6. Check R.H and L.H. Lilly overspeed gaps, at full speed and at end of the wind, for both forward and reverse winds. Full speed gap 2mm at 914 m/min. End of wind gap 2mm with roller on top of cam.

7. Check correct operation of accelerating coils and cams.

    7.1 Test efficient operation of Dixon's brake interlock device. Without hoist in locked position, check that the driver cannot release brake.
    7.2 Test efficient operation of back up device to Dixon's device by manual release of brake locking mechanism, with hoist still in locked position. Check that hoist will trip when brake lever has moved on more than 26 mm from full position.

8. Check brake over travel switches and alarms for satisfactory operation.

9. Check satisfactory operation of neural device timer.

10. Ensure satisfactory operation of emergency trip button.

11. Test bell signals for clear signals. Adjust if necessary.

12. Test that all audible alarms operate satisfactory.

13. Examine suicide contractor and resistance. Check for satisfactory operation.

14. Visually inspect all Driver's and M.L.S switches.

15. Manually check slack rope devices.

16. Manually check bad coiling devices.

17. Report any defects to Engineer or foreman.

ELECTRICIAN WEEKLY (W)

1. Daily Schedule

    1.1 Carry out daily schedule.

2. General

    2.1 Check all meters for correct operation.

3. Master Controller

    3.1 Open up and clean contact faces dress, if necessary.
    3.2 Check condition and security of pigtails and spring tensions.
    3.3 Blow out.
    3.4 Lightly lubricate mechanical parts.

4. Back out Switch

    4.1. Clean contacts and check for security.
    4.2. Inspect all connections for security.
    4.3. Lightly lubricate moving parts.

5. Brake Interlock Switch

    5.1 Clean contacts and check satisfactory operation.
    5.2 Inspect all connections for security.
    5.3 Lightly lubricate moving parts.

6. Lilly Controller

    6.1 Clean all brass surfaces with Brasso.
    6.2 Inspect and, if necessary, dress contact faces.
    6.3 Inspect all linkage, brushes, pivot pins, nuts and bolts for condition and security.
    6.4 Ensure security of all connections.
    6.5 Clean Perspex cover.

7. Ward Leonard Controller

    7.1 Examine controller faceplate. Stone lightly if necessary, blow out, clean with safety solvent.
    7.2 Examine ring and finger contacts. Clean if necessary.
    7.3 Ensure free operation of all mechanical parts.
    7.4 Ensure security of all connections.

8. L.H. and R.H Long range. Limit Switches

    8.1 Clean silver tipped contacts.
    8.2 Ensure security of all connections.
    8.3 Blow out.
    8.4 Lightly lubricate mechanical parts.

9. Motor.

9.1 Check condition of commutator brushes, spring and spring tension, and change if necessary.
9.2 Check commutator for feather edging.
9.3 Inspect all connections and busbars for security.
9.4 Blow out the motor.

10. Bell Boards

10.1 test operations of relays and security of all connections.
10.2 Check for earth faults.

11. Main Generator Set

11.1 Generator and Exciter

11.1.1 Check brushes for wear, replace if necessary.
11.1.2 Check condition and tension of springs.
11.1.3 Check commutators for feather edging.
11.1.4 Ensure security of all connections and busbars.
11.1.5 Blow out units.

11.2 Induction Slip rings Motor.

11.2.1 Check condition of brushgear rings and brushes, if necessary. Check spring tensions.
11.2.2 Check condition of rotor short-circuiting gear.
11.2.3 Check for security of all busboys and connections.
11.2.4 Blow out the motor.

12. Bearing Thermostats and Trip Switches.

12.1 Test alarm manually.
12.2 Check trip switch gaps.
12.3 Ensure security of all connections.

13. Flow Switches

13.1 Ensure security of all connections.
13.2 Ensure satisfactory operation.

14. Liquid Controller

14.1 Examine dippers for signs of burning.
14.2 Inspect condition of all fixed and moving contacts, dress or renew if necessary.
14.3 Lightly lubricate with petroleum jelly.
14.4 Inspect for leaks, check electrolyte lever, top up if necessary. Adjust strength of solution under operation conditions.
14.5 Check condition of insulators and busbars.
14.6 Ensure security of all cables and connections.
14.7 Inspect for sludge at bottom of through, internally and externally. Clean if necessary.

15. Ward Leonard. Panel Control Cubicle.

15.1 Blow out.

15.2 Examine all contact faces, lightly sandpaper if necessary.
15.3 Inspect for signs of overheating on all condensers and resistance's.
15.4 Ensure security of all connections.
15.5 Check fuses.

16. Pump Switch Board.

16.1 Examine all contact faces, lightly sandpaper if necessary.
16.2 Ensure security of all connections.

17. Rectifiers and Transformers.

17.1 Ensure security of all connections.

18. Safety Cubicle.

18.1 Ensure correct operation of flag indicators.
18.2 Ensure security of all connections.
18.3 Check fuses.

19. AC Panel

19.1 Examine all contact faces, lightly sandpaper if necessary.
19.2 Ensure security of all connections.
19.3 Check fuses.

20. Brake Oil Pump Motors.

20.1 Check motors for smooth running and overheating.
20.2 Ensure security of all connections.
20.3 Blow out.

21. Cooling Fan

21.1 Ensure smooth running of motor.
21.2 Ensure security of all connections.
21.3 Test operation of alarm system where applicable.
21.4 Check starter contacts, dress or renew as required.

22. Driver's Instrument Panel.

22.1 Ensure that all indicating lights are in order.

23. Test run

ELECTRICIAN SPECIAL (S1)

1. Assist the Winder Inspector with examination of hoist. This examination will replace the normal weekly examination.

NOTE: Several items of equipment not mentioned elsewhere (e.g. motor gear gaps) are examined during this examination.

ELECTRICIAN SPECIAL (S2)

1. Assist the Engineer in his yearly examination

SMALL HOISTS (ROCK HOIST)

ELECTRICIAN DAILY (D)

1. At the beginning of the shift inspect the entries in the Winding Engine Driver's Logbook. After the examination countersign the Logbook in accordance with Regulation 16.78.2.

2. Carefully examine all external parts of the motor. Regulation 16.

2. Test the operation of the overwind trip and check the underwind gap. Check the overspeed gap at full speed at the end
of the wind for both forward and reverse winds.

4. Ensure satisfactory operation of the backing out switch.

5. Test emergency trip button for satisfactory operation.

6. Test all other tripping devices.

7. Test all audible alarms.

8. Check bell signals. Adjust if necessary.

9. Test emergency brake thruster for satisfactory operation.

10. Visually inspect all Driver's lights, indicators, switches and meters.

11. Ensure that all safety guards and rails are in position.

12. Report any defects to the Foreman.

ELECTRICIAN WEEKLY (W)

1. Carry out daily schedule.

2. General

    2.1 Megger test motor windings, safety circuits and control panel connections.
    2.2 Check all meters for satisfactory operation.

3. Master Controller

    3.1 Open up and clean with safety solvent.
    3.2 Ensure security of all connections.
    3.3 Clean all contacts and check for satisfactory operation.
    3.4 Lightly lubricate moving parts.

4. Overspeed Device

    4.1 Clean all brass surfaces with Servol.
    4.2 Test switches for satisfactory operation.
    4.3 Clean all contacts and ensure security of all connections.

4.4 Inspect all linkage, brushes, rivets, pins nuts, and bolts, for condition and security.
4.5 Lightly lubricate moving parts.

5. Motor
   5.1 Blow out motor and brushgear.
   5.2 Check conditions of brushgear rings and renews brushes if necessary.
   5.3 Check condition of glands and earthing.
   5.4 Ensure security of rotor connections.
   5.5 Examine bearings for smooth running and overheating.

6. Liquid Starter

   6.1 Examine contacts for signs of overheating.
   6.2 Ensure security of mounting and connections and cleanliness of insulators.

7. Stator Reverses, dynamic Braking and Timer Contractor Panels.

   7.1 Blow out all chutes and panels.
   7.2 Examine contacts and dress or renew as necessary.
   7.3 Ensure security of all connections.
   7.4 Test all interlocks for satisfactory operation.
   7.5 Ensure security of glands and earthing.
   7.6 Ensure satisfactory operation of timer, relays and meters.
   7.7 Examines resistance's, fuses and busbars for security and signs of overheating.
   7.8 Ensure security of split pins, nuts, bolts, springs.
   7.9 Lightly lubricate all moving parts.

8. Back Out Switch

   8.1 Clean contacts and test for satisfactory operation.
   8.2 Ensure security of all connections.
   8.3 Lightly lubricate moving parts.

9. Bell Board.

   9.1 Blow out panel.
   9.2 Ensure security of all connections.
   9.3 Clean contacts and ensure satisfactory operation of all relays, timer, meter and indicating lights.

10. Drivers instrument Panel.

   10.1 Check that all meters are in working order.
   10.2 Test indicating lights. Replace if necessary.

11. Pump, Brake Oil Pump Motors and Starters.

   11.1 Inspect motors for rough running overheating or vibration.
   11.2 Ensure security of all connections.
   11.3 Check starter contacts. Renew if necessary.
   11.4 Blow out motors.