



Washington Metropolitan Area Transit Authority

**PREVENTIVE MAINTENANCE
INSPECTION**

for

**35kV AC
WESTINGHOUSE LOAD BREAK
INTERRUPTER SWITCH TYPE WLI
INSTALLED AT C99 TP
(for S&I SHOP DC POWER)
728/1090 DAY INSPECTION**

PMI



Washington Metropolitan Area Transit Authority

SYSTEMS MAINTENANCE BRANCH

PREVENTIVE MAINTENANCE INSTRUCTION (PMI)

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728/1090 DAY INSPECTION**

REVISION NUMBER _____

REVISION DATE 9/28/2012

APPROVALS:

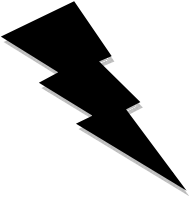
TSSM - POWER SUPERINTENDENT DATE

TIES - CENI DEPUTY CHIEF ENGINEER - POWER DATE

TSSM - GENERAL SUPERINTENDENT DATE

REVIEWED BY: E Rose

WARNING



Hazardous voltages and high speed moving parts may cause death, serious personal injury or equipment damage. Always follow Red Tag Procedures. De-energize the equipment before maintenance. Maintenance should be performed only by qualified personnel. Follow all safety instructions.

WARNING



Failure to maintain the equipment could result in death, serious injury or equipment failure, and can prevent successful functioning of the connected apparatus.

WARNING



Maintenance must be performed only by qualified persons as defined by the section “Qualified Person” in this procedure.

QUALIFIED PERSON

For the purpose of this Preventive Maintenance Inspection, a qualified person is person who is familiar with the installation, construction, operation, and maintenance of the equipment and the hazards involved. In addition, this person has the following qualifications:

1. Is trained and authorized to energize, de-energize, ground, tag and clear circuits and equipment in accordance with established procedures and safety practices.
2. Is trained in the proper care and use of protective equipment such as rubber gloves, hard hat, safety glasses and face shields and flash clothing in accordance with established safety practices.
3. Is trained in rendering first aid and CPR.
4. Is trained in the use and care of high voltage test equipment.

Suggested Reference Material for additional training purposes includes:

OSHA STANDARDS 29CFR 1910 Occupational Safety and Health Standards
1910 Subpart J General Environmental Controls - 1910.147 Lockout / Tagout
1910 Subpart R – Special Industries 1910.269 Electric Power Generation, Transmission and Distribution

- 1910.269 (a) General
- 1910.269 (b) Medical services and first aid
- 1910.269 (c) Job briefing
- 1910.269 (d) Lockout/Tagout
- 1910.269 (e) Enclosed spaces
- 1910.269 (h) Ladders, platforms, step bolts, and manhole steps
- 1910.269 (i) Hand and portable power tools
- 1910.269 (k) materials handling and storage
- 1910.269 (l) Working on or near exposed energized parts
- 1910.269 (m) Deenergizing lines and equipment for employee protection
- 1910.269 (n) Grounding for the protection of employees
- 1910.269 (o) Testing and test facilities
- 1910.269 (t) Underground electrical installations
- 1910.269 (u) Substations
- 1910.269 (x) Definitions
- 1910.269 Appendix E Reference Documents

SUGGESTED ADDITIONAL SAFETY REFERENCES MATERIAL

WMATA Metrorail Safety Rules and Procedures Handbook, SOP 28, SOP 39

ANSI/NFPA 70E – Standard for Electrical Safety In The Workplace, Article 130, Arc Flash Hazard Awareness, Analysis, Determination of Flash Protection Boundaries and Requirement for Personal Protection Equipment (PPE)

ANSI-C2/IEEE-C2 Section 43 - Minimum Approach Distance to Energized Parts

ASTM F496 - Standard Specification for In-Service Care of Insulating Gloves and Sleeves

ASTM F696 - Standard Specification for Leather Protectors for Rubber Insulating Gloves and Mittens

ASTM F855 - Standard Specification for Temporary Grounding Systems to Be Used on De-Energized Electrical Power Lines and Equipment

National Institute for Occupational Safety and Health (NIOSH), Electrical Safety Training Booklet, free down load at www.cdc.gov/niosh/docs/2002-123/2002-123a.html

SUGGESTED TECHNICAL REFERENCE MATERIAL

Westinghouse	Load Break Interrupter Switch Type WLI Installation, Operation and Maintenance Instruction Booklet
NETA	Maintenance Testing Specifications For Electrical Power Distribution Equipment
ANSI/IEEE Std. 100	IEEE Standard Dictionary of Electrical and Electronics Terms
ANSI/IEEE Std. 902	Guide for Maintenance, Operation and Safety of Industrial and Commercial Power Systems
ANSI/NFPA 70B	Recommended Practice for Electric Equipment Maintenance
ANSI/IEEE Std. 902	Guide for Maintenance, Operation and Safety of Industrial and Commercial Power Systems
NEMA B4	Guidelines for Inspection and Preventive Maintenance of Circuit Breakers in Commercial and Industrial Applications

35 kV AC WESTINGHOUSE NO-LOAD INTERRUPTER SWITCH TYPE WLI

1.0 INTRODUCTION

1. Prior to performing this PMI procedure conduct a job briefing outlining any safety concerns and potential hazards. Inform the MOC of procedure to be performed. Have on hand a copy of this procedure along with the required PMI Data Sheets, the required equipment listed in 3.0 of this procedure, a copy of the specific Manufacturer's Maintenance Manual 31-935, the electrical schematics and wiring diagrams of C99 TPSS.
2. This PMI is written for the two 34.5KV Westinghouse type WLI Load Interrupter Switches installed in the WMATA C99 TP for C99 S&I shop TB in a duplex switchgear assembly configuration. (Fig. 1, 2)
3. The C99 TPSS duplex switchgear configuration consist of two Westinghouse load Interrupter switches 35KV, type WLI with a common load side bus to feed Rectifier transformer # 3. Rectifier transformer breakers 11 and 12 supply 34.5KV to the two switches. Key interlocks A1, A3 and A4 are supplied to prevent paralleling the incoming sources, and to prevent opening the front door of each vertical section containing one of the two switches unless both rectifier transformer breakers and both switches are locked open.
4. C99 TP Westinghouse WLI switches are **NO-LOAD** switches, and are Kirk Key interlocked to each other and to the associated rectifier transformer breaker to prevent switches to be open under load and to prevent both switches from being closed at the same time. Under no circumstances both switches should be closed at the time to supply power to the rectifier #3 feeding the S&I shop TB.
5. Performance of this PMI will require a scheduled Red Tag power outage for C99TP Breakers 11, 12, 21, 22, 23 and the entire Alexandria S&I Shop TB Substation. Refer to the attached Alexandria Yard C99 TP single line drawing (Figure 1), to be used only for this preventive maintenance procedure.
6. The purpose of performing this PMI is to reduce hazards to life and property that can result from failure or malfunction of electrical systems and equipment. Effective PMI can aid in reducing unscheduled outages by identifying, through regular service intervals, equipment conditions and irregularities which can cause malfunctions or equipment failure.
7. PMI of the Westinghouse 34.5 kV AC load interrupter switch type WLI will include an inspection, cleaning, checking and an overall evaluation of the cubicle and the load break switch and associated components and high voltage fuses (if applicable). As necessary, adjustments should be made to insure operation and/or alignments are within manufacturer's stated tolerances.



Fig. 1 WESTINGHOUSE 34.5KV LOAD INTERRUPTER SWITCH TYPE WLI

Westinghouse 

WLI Load Interrupter Switchgear

Built on Order # **BA-58Q00CNL**
 Drawing # **CN-796A57A02**

Switch Style **4893A0IG06**

KV Rating		Ampere Rating	
Nominal	34.5	Continuous	600
Maximum	38.0	Interrupting	600
B.I.L.	150	Momentary	40,000
		Fault Close	30,000

**Westinghouse Electric Corp.
 Distribution Equipment Div.
 Cincinnati, Ohio U.S.A.**

Fig. 2 Westinghouse WLI Load Interrupter Switch

2.0 SAFETY

1. Read and understand these instructions before attempting any assembly, operation, or maintenance of the switch. Do not attempt to operate a connected WLI switch until the rectifier transformer breakers 11 and 12 have been open and rack out, and switches are disconnected from all electric power sources.
2. Do not attempt to close both WLI switches at the same time except as part of an interlock maintenance check when all power has been removed from the line and load sides of the switchgear.
3. All personnel shall follow all the accepted safety practices and procedures while performing this PMI and exercise appropriate caution. Warnings are included to alert the technician to tests and measurements that warrant special care and attention.
4. Ground leads or their equivalent should be attached to both sides of the switch. Make certain that safety grounds are properly in-place on both the jaw and hinge sides of the switch before working inside the switch cubicle or on the switch.
5. There are several interlocks on the switches. Under **NO** circumstances should they be made inoperative when the switch is *in service*, as they are designed to provide personnel protection as well as electric system operational integrity.
6. Never energize the switch without the arc chutes and barriers installed in place.
7. Make sure all safety interlocks are working properly prior to energizing.
8. Never install fuses with a rating greater than that listed on the switch nameplate.

CAUTION



All test equipment used must have been provided by WMATA and must carry current test certification.

CAUTION

DO NOT REMOVE COVERS OR OPEN DOORS OR WORK ON EQUIPMENT UNLESS POWER HAS BEEN TURNED OFF AND ALL CIRCUITS DE-ENERGIZED AND/OR PROPERLY DISCONNECTED/GROUNDED.

DISCONNECT, DE-ENERGIZE, LOCK-OUT AND PROPERLY GROUND CIRCUIT(S) BEFORE WORKING ON EQUIPMENT.

USE PROPER SAFETY PRECAUTIONS WHEN WORKING ON THIS EQUIPMENT.

SOME PROCEDURES REQUIRE WORK AROUND MOVING PARTS, e.g. OPERATING HANDLE, CHAIN AND SPROCKET, STORED ENERGY MECHANISM, etc. TO AVOID PERSONAL INJURY, EXTREME CAUTION MUST BE EXERCISED TO STAY CLEAR (HEAD, HANDS, ETC.) OF THE PATH OF THESE MOVING PARTS AND SWITCH CONTACTS WHILE PERFORMING THIS PMI.

3.0 EQUIPMENT

1. Switching suit with rubber gloves (with clean leather protectors)
2. Insulated fuse pullers
3. Digital multi meter
4. Flashlight
5. Specific Manufacturer's technical manual
6. Lint-free rags or cleaning wipes
7. Vacuum and non-conductive hose
8. Scotch-Brite pads / file
9. Cleaning solvent
10. Sand paper and paint
11. Micro-ohm meter
12. Lubricating grease, D50H15 or equivalent (R91-50-0015)
13. Contact grease, D50H47, Westinghouse Graphite grease 53701AN or equivalent (R91-50-0014)
14. Light machine oil/Spray lubricant
15. Standard hand tools and ruler
16. 2/0 AWG Trifurcated Safety Ground Sets (Two Sets)

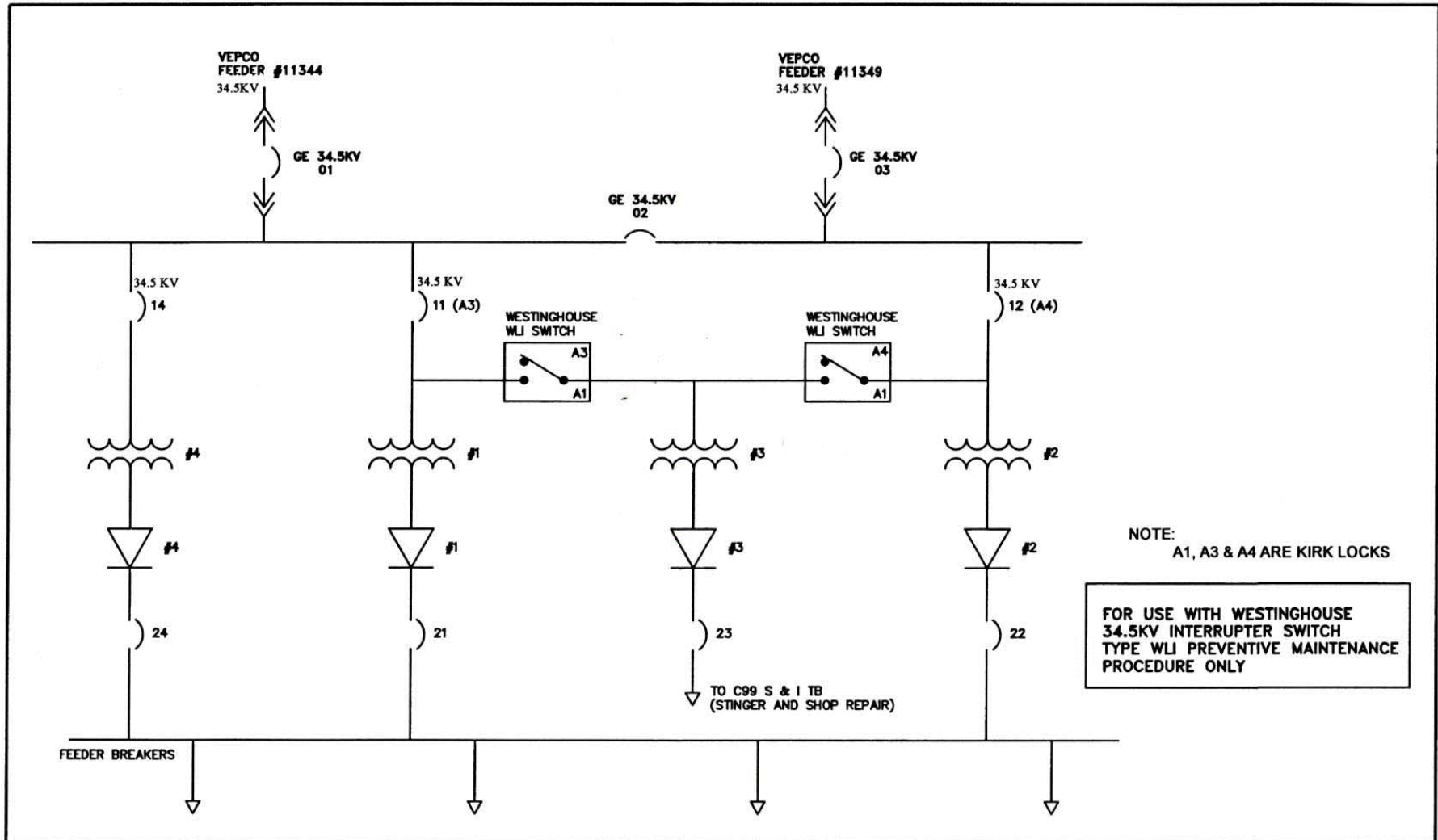
18. 2/0 AWG Safety Grounding Jumpers (Two Sets)
19. PMI calibration stickers
20. High Voltage Gloves

4.0 SWITCHGEAR DE-ENERGIZATION

Prior to beginning the PMI, switching procedure and operational verification listed below should be performed. Complete the PMI Data Sheet tabulation as you progress through this procedure.

The switches are **NO LOAD** switches, both rectifier transformer breakers must be open and racked out; key interlocks are provided so that both interrupter switches must be open and locked before either enclosure door can be open. These built-in features are designed to reduce hazards and to provide proper operating sequences. Proper operation of these interlocks is essential for safety and their proper operation should be verified during the execution of this PMI. **Both load interrupter switches MUST be maintained under the same red tag outage.** (SEE C99 TP SUBSTATION ONE-LINE)

1. Verify that both incoming breakers are closed, the tie breaker open, all rectifier transformer breakers are closed, all rectifiers are running, all cathode breakers closed, all feeder breakers closed, and only one (1) Load Interrupter Switch is closed (Same switch will be closed back after the maintenance is completed).
2. Request permission from MOC and the yard tower to start the red tag switching.
3. Coordinate the switching with Alexandria S&I Shop CMNT Supervisor.
4. De-energize and rack out Rectifier Transformer Breakers # 11 and 12, remove Kirk Keys and insert into correspondent locks A3 and A4 on the Load Interrupter Switches (Fig. 3A, B, C, locks are marked with permanent marker).
5. Rack out cathode breakers 21, 22, and 23.
6. Turn and unlock A3 or A4 lock on the **“closed” interrupter switch** and pull the handle to the “open” position.
7. Turn the A1 key to lock both Interrupter switches to the “open” position.
8. Verify that rectifier transformer breaker # 14 is closed and all track feeder breakers are closed.
9. Proceed with the PMI after red tag has been issued.



NOTE:
A1, A3 & A4 ARE KIRK LOCKS

FOR USE WITH WESTINGHOUSE
34.5KV INTERRUPTER SWITCH
TYPE WLI PREVENTIVE MAINTENANCE
PROCEDURE ONLY

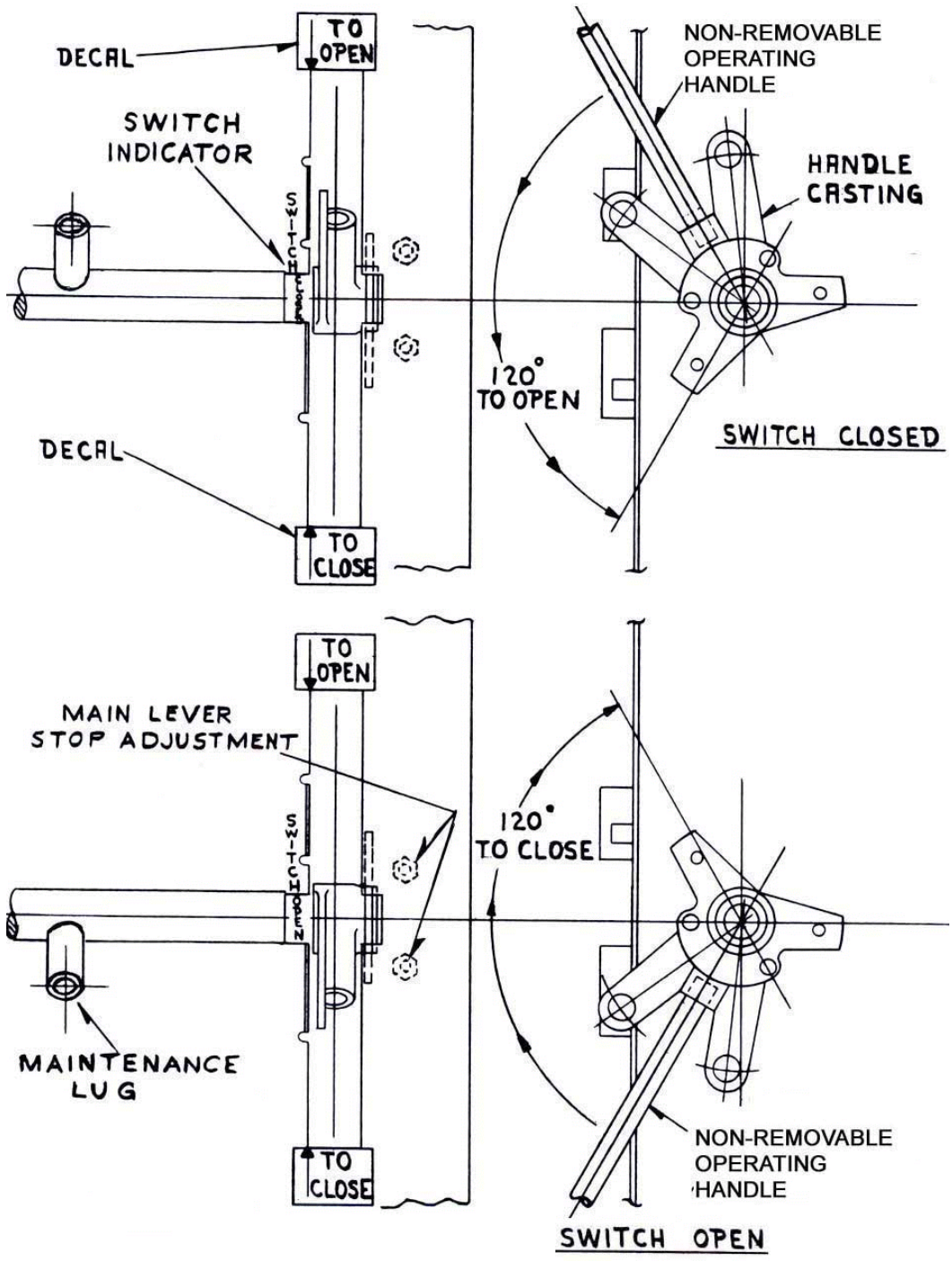
DESIGNED <u>M. QUATTARA</u> 11/01 DRAWN <u>B. HOOKER</u> 11/01 CHECKED <u>W. VLJMAS</u> 11/01 APPROVED _____ 01/01	<table border="1"> <thead> <tr> <th>REVISION NUMBER</th> <th>DESCRIPTION</th> <th>DATE</th> <th>BY</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	REVISION NUMBER	DESCRIPTION	DATE	BY	DESCRIPTION																					WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY OFFICE OF CHIEF ENGINEER APPROVED _____	TITLE NONE DRAWING NO. _____ SHEET NO. _____
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Fig. 3A WLI SWITCH IN OPEN POSITION
(With non removable operating handle)



Fig. 3B WLI SWITCH IN CLOSED POSITION
(with removable slow close handle on the left)



WESTINGHOUSE WLI LOAD INTERRUPTER SWITCH
 Fig. 4 SWITCH OPERATION

5.0 SWITCH GROUNDING, MECHANISM

The main blade mechanism is operated by a compression spring charged manually by rod connected to the switch shaft. To close the switch, a non-removable handle is extended and then rotated through an angle of 120°. This charges the compression spring and as the spring lever goes over toggle, the energy is transferred to the switch shaft which snaps the switch closed. (Fig. 4)

(Fig. 4, 5 and 6) On opening of the switch, the main blades open first which shunts the current through the spring loaded flicker blades. Further travel of the main blades causes the flicker blades to snap out of their contacts fingers arcs are drawn within the De-ion arc chute.

After opening the switches and before opening doors, use viewing window to insure that all three switch blades are disengaged. If necessary, use a flashlight to verify all three contacts are open. Hot stick (34.5 KV AC) and Install grounds on the hinge side of the OPEN load interrupter switch. NOTE: You may also install additional grounds on the fuses (if provided) in the lower compartment which are in series with the disconnect switch and on the jaw side of the OPEN switch, at your discretion.

De-energize all AC and DC control power to the high voltage interrupter switch enclosure by opening control power disconnect switches and/or removing control power fuses, and verify that any and all potential back feed sources (motors, generators, control/potential/power transformers, cubicle heater supplies, etc.) have been properly isolated and safely grounded

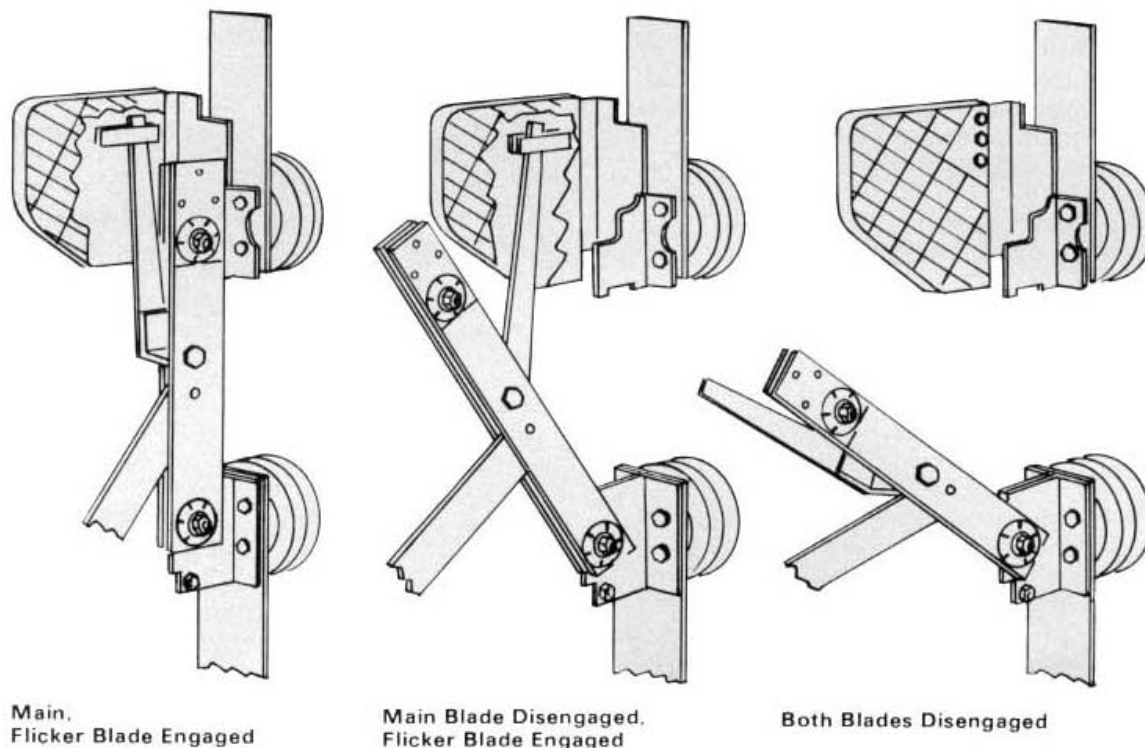


Fig. 5 SWITCH MECHANISM

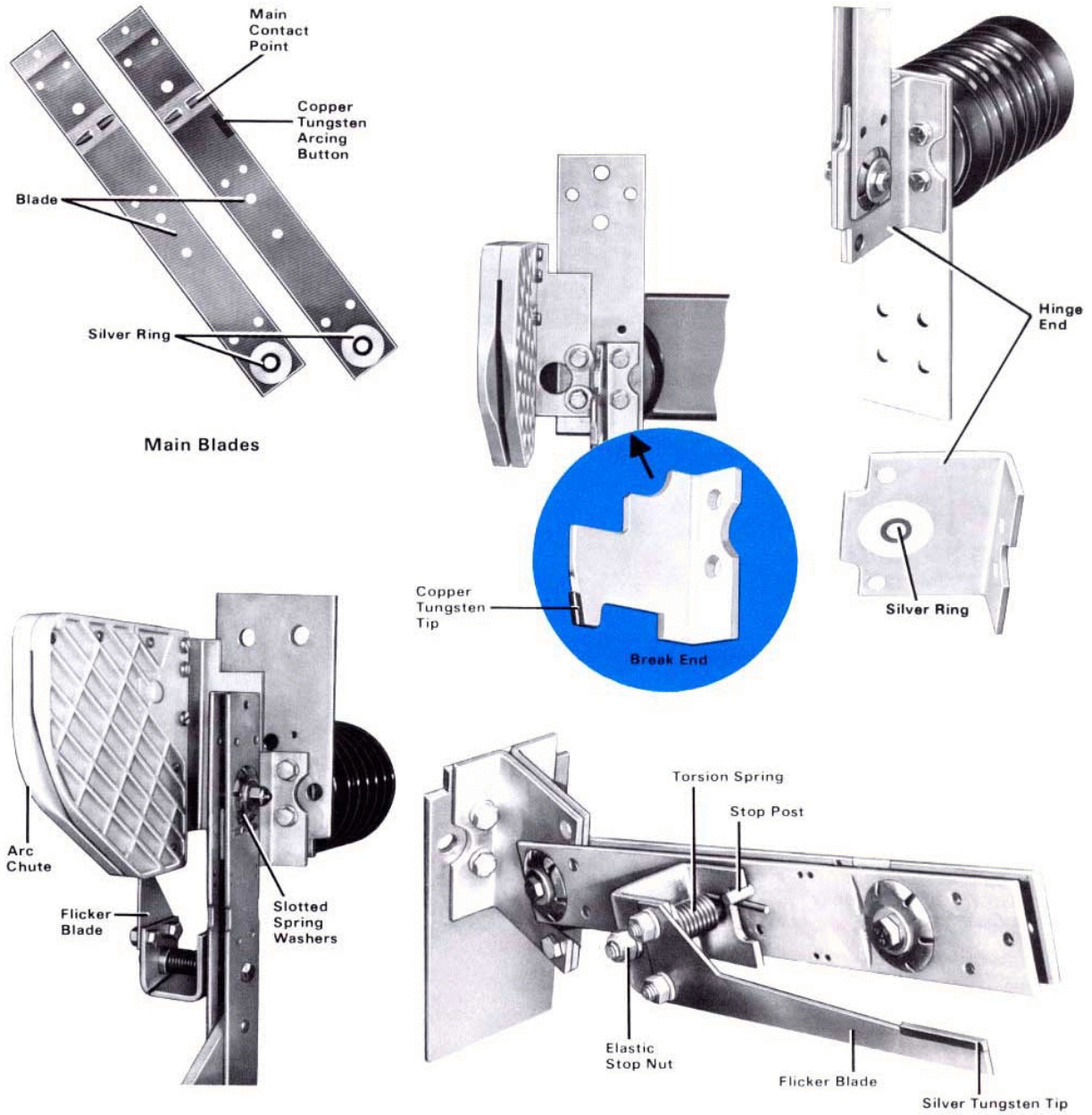


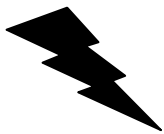
Fig. 6 WLI CONTACTS ASSEMBLY

6.0 CUBICLE PROCEDURE

1. Open BOTH switch compartments, Re-verify that all required grounds have been installed. Thoroughly clean the interior of all compartments, including all interior devices, current carrying components, switch operating arms, insulators, barrier boards, cubicle heaters, instruments, etc. of all dust, dirt and particles.
2. Inspect switches internally and externally for any sign of rust or corrosion. Any rust or corrosion shall be eliminated at once by sanding and touch up painting, unless the condition is severe or extensive enough to justify taking out a FSR number.
3. Check buses, Cables and connections for evidence of overheating or weakening of the insulation.
4. Inspect for loose hardware and any sign of loose/missing electrical and mechanical connections in and around the cubicle. Check anchor and structural nuts and bolts, tighten as necessary. Inspect for damaged, bent, or twisted door and compartment covers. Inspect door handles, locking bars and mechanism. Check any door interlocks, including keyed interlocks and associated locking bolts, and other mechanical mating parts for positive operation (visual check).
5. Check to see that all heaters are energized and operating.
6. Report any conditions which appear unsafe.

7.0 NO-LOAD BREAK SWITCH ASSEMBLY (Fig. 5, 6)

WARNING

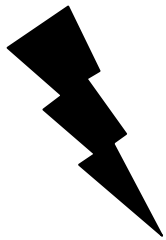


AFTER OPENING OPERATION WAIT AT LEAST 30 SECONDS BEFORE CLOSING SWITCH. THIS ALLOWS BLADE VIBRATIONS TO DAMPEN AND DIMINISHES DAMAGING OF THE CHUTES

1. Verify that all insulators and other insulation (e.g., barrier boards, operating mechanism connecting links), and all insulated and current carrying parts have been thoroughly cleaned of all dust, dirt, soot, grease and particles. Carefully examine the insulators and other insulation for treeing, tracking, cracks and discoloration. Pay special attention to areas where the bus and/or conductor passes through an insulator or is near a barrier.

2. Check the main blades contact pieces and the leading edges of the flicker blades for arc erosion (Fig.6). Inspect buses and other current carrying parts for discoloration or other evidence of overheating. Inspect arc chute sides and replace them if they are damaged. Check flicker blade contacts. If damage is less than half of the contacting surfaces, use a few light strokes of a fine file to clean up the arcing contacts. **Warning:** Do not attempt to file out the flicker arcing contacts pit marks, DO NOT USE abrasive material for cleaning (small bits of abrasive material may cause the contacts to overheat or even weld during fault).
3. Open and close the switch several time to clean the main contact. **Warning:** DO NOT FILE the main current currying contacts. The main blade and hinge assembly together with the breaker jaw should be replaced if evidence of excessive burning over half of the contacting surfaces.
4. Check the engagement of the flicker blades by closing the switch. Main and flicker blades should be in proper alignment with the jaws and arc chute openings respectively. Replace worn or damaged parts of the flicker blade assembly.

WARNING



DURING A SLOW CLOSE OR OPEN OPERATION, THE MECHANISM OPERATING SPRING IS BEING CHARGED AND WILL TEND TO RETURN THE SWITCH TO ITS INITIAL POSITION. THEREFORE, CARE MUST BE EXERCISED TO HOLD THE MAINTENANCE HANDLE FIRMLY UNTIL THE SPRING ENERGY IS DISCHARGED AND THE SWITCH IS RETURNED TO ITS INITIAL POSITION TO AVOID BODILY INJURY.

5. Slowly open the switch. The flickers should remain engaged in their contact fingers while the main breaker is open. When the main blades clear the break jaw, they will hit a stop on the flicker blade brackets and start the flicker blades out of their contact fingers. The blade will then nap open from the forces in their charged torsion springs.
6. Close and Open the de-energized switch at least three times to check the performance of the operating mechanism.

8.0 NO-LOAD BREAK SWITCH ASSEMBLY ALIGNMENT PROCEDURE (Fig. 5, 6, 7)

(The following alignments are not required if the above inspection is satisfactory, check alignment after replacing any part)

1. Insulator Alignment

All three lower insulators should be loosened and moved to the center line of the mounting holes in the support channel which is part of the switch frame.

All three Upper insulators should be placed vertically above the lower insulators on their support channel.

2. Main Blade Alignment (Fig. 7)

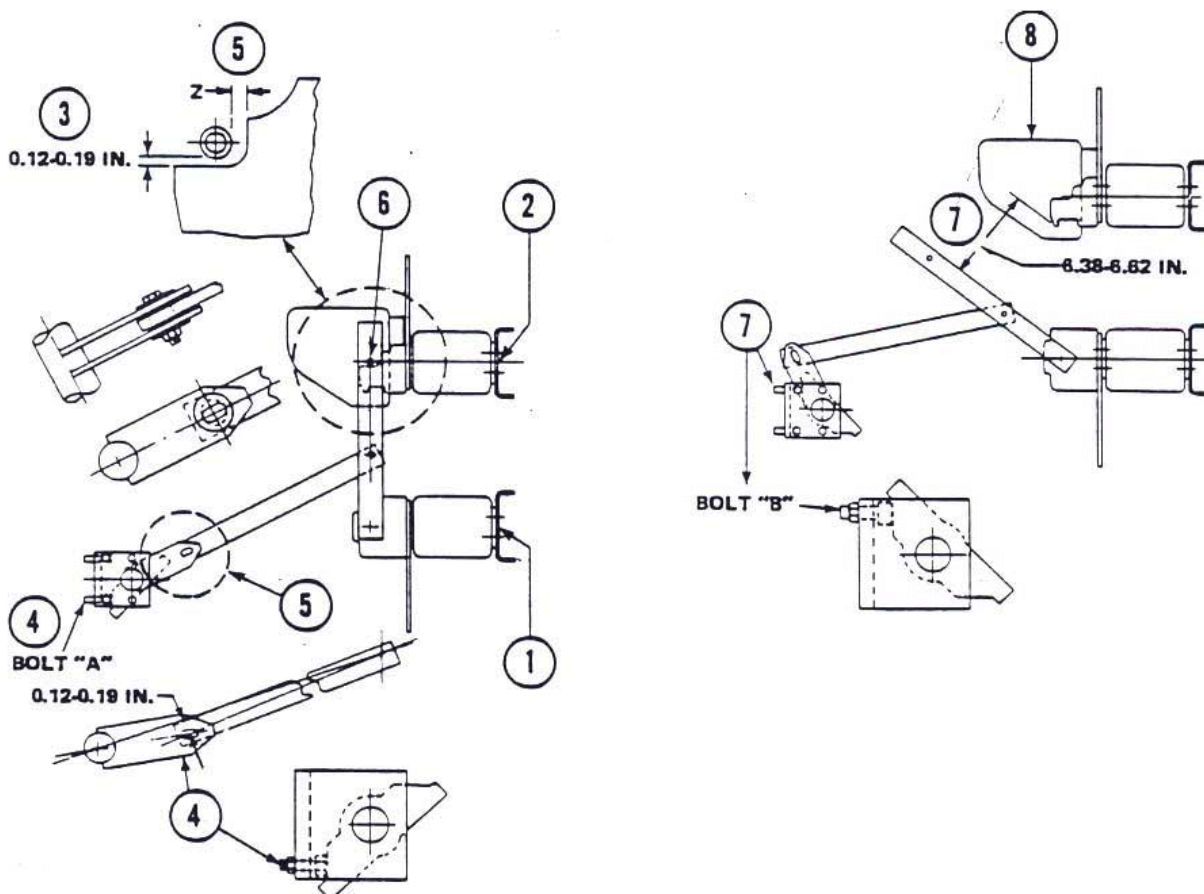
Loosen the four hinge terminal bolts on the top of the lower insulator. Loosen the two break jaw terminal bolts on top of the upper insulators. Slowly close the switch and hold it in the close position with the maintenance handle. Tighten up the bolts on both the hinge and jaw terminals. The upper spacer of the main blades should rest from 0.12 to 0.19 inch above the bottom of the depressions in the angular switch jaw.

3. Open Gap Adjustment (Fig. 7,)

With the switch in open position, the distance between the nearest point of the jaw to the main blades should be 6.38 to 6.62 inches. The upper bolt (Fig. 7, *), bolt "B" on the front of L-shaped bearing support bracket adjust the open gap distance.

4. Flicker Blades and Arc Chute Adjustment (Fig. 6)

Loosen the two arc chute mounting bolt of each pole. Adjust the arc chute so that its opening is parallel to the main blade. Slowly close the switch and check that the flicker blade is in line with the arc chute opening.



- 1 Lower insulators to be on center line of channel slots.
- 2 Upper insulators to be vertically above lower insulators.
- 3 Adjust upper insulators to give gap setting shown.
- 4 Set lower bolt, Bolt "A" to give overtoggle dimension shown.
- 5 Set dimension "Z" to 0.25 inch by extending drive rods.
Tighten clamping hardware to 35-40 ft.lbs.
- 6 Break jaw contact bolt must not turn with the switch in closed position. It can turn in open position.
- 7 Set open gap to dimensions shown by adjusting bolt "B".
- 8 Align arc chute with flicker blade.

Fig. 7 ALIGNMENT AND INSPECTION GUIDE

9 TESTING

Contact Resistance Testing

1. CLOSE the switch and use a micro-ohm meter to measure the contact resistance of each phase between the line and load terminal pads. Record readings on the Contact Resistance Tests PMI Data Sheet. If the values seem high (over 100 to 150 micro-ohms), visually check the blade wipe to insure proper contact. Open and close the switch a few times and recheck the contact resistance. If the values continue to be high, note in the Remarks section of the Data Sheet and take out a FSR as contact adjustments may be required, which is outside the scope of this PMI. Also note any readings greater than 25% of the lowest recorded resistance.

10. GENERAL SWITCH MAINTENANCE AND LUBRICATION

1. After completing the Inspection, Adjustments and Tests above, the switch and mechanism should again be thoroughly inspected to verify that there are no loose nuts or bolts, wiring, or damaged parts. All bearing, cam, roller and latch surfaces should be visually rechecked for evidence of damage or excessive wear.
2. Recheck the insulation (porcelain, barriers, glass reinforced plastic, etc.) to insure that their surfaces are clean and are not damaged.
3. The switch requires only moderate lubrication. The recommended lubrication details are itemized below:

Recommended Lubrication	
Main contacts	Wipe clean and apply a light coat of contact grease, D50H47 or equivalent , wipe off excess grease.
Contact portions between the blade and hinge, break jaw including arcing tip	DO NOT LUBRICATE.
Mechanism parts, bearing plates and points, sliding surfaces, pins, etc.	If grease has become oxidized (hardened or darkened), wipe clean and apply a light coat of white lubrication grease (D50H15).
Operating mechanism	Lubricate very sparingly with light machine oil, if necessary.

4. Operate the switch a few times to be sure that opening and closing operations are crisp and snappy. Verify that there is no excessive binding or friction, and that the switch moves to the fully opened and fully closed position.

11. RESTORATION TO NORMAL SERVICE

WARNING



AFTER OPENING OPERATION WAIT AT LEAST 30 SECONDS BEFORE CLOSING SWITCH. THIS ALLOWS BLADE VIBRATIONS TO DAMPEN AND DIMINISHES DAMAGING OF THE CHUTES

1. Remove all installed grounds. Verify that all arc chutes, barriers and panels are properly in place. Restore all AC and DC control power to the cubicle (if applicable).
2. Perform an operational test to verify that ALL interlocks function properly. Perform the operational steps that would be “normal” to safely and properly **OPEN** and **CLOSE** the switch, and verify that the interlocks force the proper sequence of operation.
3. Notify the MOC that the PMI is complete and the station is ready to be normalized. Clear all Red Tags and remove all block tags.
4. Notify the Alexandria Yard Tower Supervisor and the S&I Shop CMNT-Supervisor that shop power is ready to be restored and request a “Shop Power” announcement. **Do not proceed further until the “Shop Power” announcement has been made and clearance to proceed has been given by the Tower Supervisor, the CMNT-Supervisor and the MOC.**
5. Close the switch that was initially closed in section 4.0, leave the other switch open.
6. Rack cathode breakers 21, 22 and 23 in the connect position.
7. Rack rectifier transformer breakers 11 and 12 in connected position and close the breakers. Verify that cathode breakers 21, 22, and 23 are closed and 750 VDC is being supplied by all three (4) rectifiers.
8. Notify the MOC, Alexandria Yard Tower Supervisor and Shady Grove CMNT Supervisor that 750 VDC Shop Power has been restored to normal.

12 PMI DATA SHEET

Fill in all “fill-in-the-blanks” data and answer all questions on PMI Data Sheet.

Note discrepancies in Remarks if adjustments or minor repairs did not correct the deficiency.



PMI CHECK SHEET

WESTINGHOUSE TYPE WLI 34.5KV LOAD INTERRUPTER SWITCHES: C99TP

NOTE: Place a check mark () in appropriate column. If checkmark is placed in "No" column, note as comment in Remarks. Date: _____

GENERAL ITEMS:			
1.0	Job Briefing Conducted, MOC Informed of Procedure, Instruction Manuals, Drawings and Schematics Available.	Yes _____ No _____	
2.0	Safety and Operations Requirements Reviewed, Safety Equipment and PPE Available and Being Used.	Yes _____ No _____	
3.0	Tools and Materials Available.	Yes _____ No _____	
4.0	Outage Coordinated with MOC, RTRA, CMNT. Breakers 11, 12, 21, 22, 23 De-energized, racked out Tested and Grounded.	Yes _____ No _____	
PMI INSPECTION ITEMS :		BREAKER 11 SWITCH	BREAKER 12 SWITCH
Record Switch Serial Number		Serial #: _____	Serial #: _____
Record Switch Nameplate Rating (Volts, Continuous Amps)		kV _____	kV _____
		Amps _____	Amps _____
7.0 (If Applicable)		Manuf. _____	Manuf. _____
Record Fuse Nameplate Ratings:		Model/Class _____	Model/Class _____
Do Switch Nameplate Ratings Match		kV _____	kV _____
Fuse Nameplate Ratings?	Yes _____ No _____	Continuous Amps _____	Continuous Amps _____
Do Spare Fuses' Ratings Match The Switch?	Yes _____ No _____	Interrupting Amps _____	Interrupting Amps _____
Are All Fuses Same Manufacturer?	Yes _____ No _____		
Number of Spare Fuses: _____			
6.0-10.0	Performed Inspection, Cleaning, Contact Checks & Operational Checks	Yes _____ No _____	Yes _____ No _____
9.0	Switch Alignment	Yes _____ No _____	Yes _____ No _____
10.0	Cubicle, Switchgear Inspection Performed	Yes _____ No _____	Yes _____ No _____
10.0	Switch Contact Resistance Tested. Results Recorded On Test Record	Yes _____ No _____	Yes _____ No _____
11.0	General Switch Maintenance, Lubrication and Interlock Checks Completed	Yes _____ No _____	Yes _____ No _____
12.0	All Substation Equipment Restored to Normal Service.	Yes _____ No _____	Yes _____ No _____
13.0	All Maintenance Data Recorded on PMI Check Sheet,	Yes _____ No _____	Yes _____ No _____

REMARKS _____

TECHNICIANS: _____ CALLS: _____ DATE: _____

SUPERVISOR: _____ CALLS: _____ DATE: _____



**PMI DATA SHEET
NO-LOAD INTERRUPTER SWITCH
CONTACT RESISTANCE TEST**

NOTES: Fill in all relevant data fields, below. If the equipment fails a specific test, note as comment in remarks.
Perform contact resistance test.

LOCATION:		DATE:			CUBICLE MANUFACTURER:		
EQUIPMENT TYPE:		VOLTAGE RATING (KV):			AMPS:		
MODEL NO:		SERIAL NO:			VEPCO FEEDER NO:		
WMATA Cubicle Designation	Serial Number	<u>Contact Resistance Test</u> (Micro-ohms)			<u>Contact Resistance Test</u> (Micro-ohms)		
		AØ	BØ	CØ	AØ	BØ	CØ

REMARKS _____

TECHNICIANS: _____ CALLS: _____ DATE: _____
 SUPERVISOR: _____ CALLS: _____ DATE: _____