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Schedule of Site
Commissioning Tests
SCT 20.9
Issue 3
April 2000

**Busbar Protection
(High Impedance,
Differential Current
Balance)**

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(NGC Legal Services. November 1999)

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Registered in
England and Wales
No. 2366977

Published by:

The National Grid Company plc
Kelvin Avenue
Leatherhead
Surrey KT22 7ST

Unless this document is printed on grey paper, it will not be controlled (updated automatically). If printed from an electronic master (eg intranet), this document will be valid on the day of printing only.

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THE NATIONAL GRID COMPANY plc

SCHEDULE OF SITE COMMISSIONING TESTS

BUSBAR PROTECTION (HIGH IMPEDANCE, DIFFERENTIAL CURRENT BALANCE)

(This SCT is designed to cover installations of busbar protection at new substations and the refurbishment, or addition of a new bay, at existing substations, by utilising the relevant sections)

1 GENERAL DATA

Station:

Contractor:

Contractor's Number:

NGC Contract Number:

NOTE: All tests contained within this SCT are to be carried out in accordance the corresponding sections contained within SCT 0.1 - Guidance Notes for Site Commissioning Tests on Protection, Measuring, Control, Alarm and Indication Equipment.

(i) High Impedance Relay Data: -

for each check and discriminating zone, complete the table in **APPENDIX A**.

(ii) High Impedance Relay Resistor Data (where fitted): -

for each check and discriminating zone, complete the table in **APPENDIX B**.

(iii) Voltage Limiting Device Data

Zone (eg M1, R2, Check.)						
Manufacturer						
Type						
*Constants - K						
- B						

* where $V = KI^B$

(iv) Supervision Relay Data

Zone (eg M1, R2, Check.)						
Manufacturer						
Type						
Serial Numbers - R						
- Y						
- B						
Range						
Setting						

Setting Resistor Data

Man. Ref. Number						
Resistance (ohms)	S	S	S	S	S	S

(v) Supervision Relay Timer Data

Zone (eg M1, R2, Check.)						
Manufacturer						
Type						
Serial Numbers - R						
- Y						
- B						
Range						
Setting						

(vi) Trip Supply Volts D.C.

(vii) CT Ratio

(viii) CT Tap in use

(ix) Protection Setting Data

Zone (eg M1, R2, Check.)						
Recommended Voltage setting (V _s)	V	V	V	V	V	V
Required Highest Primary Operating Current	A	A	A	A	A	A
Recommended operating current in >secondary> terms	A	A	A	A	A	A

Setting Resistor Data (Long Shunt)

Man. Ref. Number						
Resistance (ohms)	S	S	S	S	S	S

If a combination of resistors are used then give details of arrangement (ie 2 in parallel)

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2 OFF-LOAD TESTS

2.1 Calibrated Test Equipment

	Manufacturer and Type	Serial No	Date Last Calibrated	Date Next Calibration Due
Ohmmeter or Multimeter				
Voltmeter or Multimeter				
Ammeter or Multimeter				
Milli Ammeter or Multimeter				
Timer				
Others (state function)				

2.2 Wiring

(i) Insulation (see SCT 20.4.1)

(ii) Check of inter relay and cubicle wiring to:

Circuit Diagram Number

Wiring Diagram Number

(iii) Check of secondary wiring and multicore cabling (see SCT 21)

(iv) Resistance checks

(a) Measure CT and lead resistance and record on a lead resistance diagram (see SCT 20.4.2).

Note: The following Resistance checks are to be carried out at recommended settings or at >all in- settings if recommended settings are not available.

- (b) Measure and record the overall resistance of each High Impedance Relay, including the associated Stabilising Resistor and Short-shunt Resistor, if fitted (or impedance at 20 V and 50 Hz where relay circuit includes a series capacitor):-

for each check and discriminating zone, complete the table in **APPENDIX C**.

- (c) Measure and record each Supervision Relay and its Setting Resistor overall resistance.

Zone (eg M1, R2, Check.)						
Resistance (ohms) - R	S	S	S	S	S	S
- Y	S	S	S	S	S	S
- B	S	S	S	S	S	S

- (d) Measure and record each Protection Setting Resistor (Long Shunt) resistance.

Zone (eg M1, R2, Check.)						
Resistance (ohms) - R	S	S	S	S	S	S
- Y	S	S	S	S	S	S
- B	S	S	S	S	S	S

- (v) For all disconnector auxiliary switches in CT circuits and 110 V (nominal) D.C. circuits.

- (a) Check continuity

- (b) Check auxiliary switch sequence of operation conforms to NGTS 3.2.2.

- (vi) Check correct connection and operation of all CT shorting and earthing disconnector auxiliary switches.

2.3 Mechanical Inspection

- (i) Check proper mounting and proper access of the equipment within the panel

- (ii) Check fuses for correctness to Standard and for rating