

**THE PANEL  
OF  
THE BALANCING AND SETTLEMENT CODE**

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**SPECIFICATION  
FOR THE  
~~APPROVAL AND TESTING~~  
OF METERING EQUIPMENT PROTOCOLS**

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Version ~~23.0~~

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## 1. DEFINITIONS AND INTERPRETATION

1.1 In this Specification (including the Recitals and the Appendices), words and expressions shall have the meanings attributed to them in the Balancing and Settlement Code and the relevant Code of Practice.

The following definitions, which also apply, supplement or complement those in the Balancing and Settlement Code and relevant Code of Practice and are included for the purpose of clarification.

"Applicant"	means any person (not being the Panel) who makes an application to the Panel for <del>Compliancee</del> <u>Testing Protocol Approval</u> in accordance with the Specification.
"Code of Practice"	has the meaning ascribed to that term in the Balancing and Settlement Code.
<del>"Code of Practice Five"</del>	<del>means Code of Practice Five: Issue 6, version 2.00; dated Code Effective Date – Code of Practice for the Metering of Energy Transfers with a Maximum Demand of up to (and including) 1MW for Settlement purposes.</del>
<del>"Instation</del> <u>Instation</u> "	means a computer based system which sends data to, or receives data from Outstation Systems on a routine basis.
"Interrogation Unit"	means a Hand Held Unit "HHU" (also known as Local Interrogation Unit "LIU") or portable computer which can program Metering Equipment parameters and extract information from the Metering Equipment and store this for later retrieval.
"Metering Equipment"	has, for the purposes of this Specification, the meaning ascribed to that term in the Balancing and Settlement Code, but excluding voltage and current measurement transformers.
"Outstation"	has the meaning ascribed to that term in the Balancing and Settlement Code.
"Panel"	means the Panel established pursuant to Section B1.1.1 of the Balancing and Settlement Code.
"person"	includes any individual, company, corporation, firm, partnership, joint venture, association, committee, organisation or trust (in each case, whether or not

	having separate legal personality).
"Settlement"	has the meaning ascribed to that term in the Balancing and Settlement Code.
"Settlement Administration Agent"	has the meaning ascribed to that term in the Balancing and Settlement Code.
"Type Approval"	means the approval from the Electricity Meter Examination Service of the Office of Gas and Electricity Markets.
"Compliance Testing"	means the testing of Metering Equipment in accordance with <u>BSCP 601 this Specification</u> to determine whether it conforms with the relevant Code of Practice. <del>to obtain formal Compliance Testing approval from the Panel.</del>
<del>"Compliance Testing Agreement"</del>	<del>means the Agreement for carrying out Compliance Testing of Metering Equipment between (1) The Executive Committee and (2) The Director General of Electricity Supply dated [xx yyyyyy 1996] —, the "Test Laboratory".</del>
<del>"Compliance Testing Application"</del>	<del>means the "Application for Compliance Testing in accordance with Code of Practice" Form as set out in Appendix 'A1' of the Specification.</del>
<del>"Compliance Testing Application Number"</del>	<del>means the reference number allotted by the Panel Reference (on request by each Applicant) to each Applicant's Compliance Testing Application before submission to the Panel.</del>
<del>"Compliance Testing Fee"</del>	<del>means the fee charged by the Test Laboratory to the BSCCo on completion of Compliance Testing of item(s) of Metering Equipment to the relevant Code of Practice.</del>
<del>"Compliance Testing Report"</del>	<del>has the meaning ascribed to that term in [Clause 5.1] of the Compliance Testing Agreement.</del>
"UTC"	means Co-ordinated Universal Time based on atomic clocks as distinct from Greenwich Mean Time (GMT).

- 1.2 The headings in this Specification are for convenience only and shall not affect the interpretation of this Specification.
- 1.3 References in this Specification to a particular Clause, Schedule or Appendix shall be references to that clause in or schedule or appendix to this Specification unless otherwise stated.
- 1.4 Unless the context otherwise requires, words importing the singular number shall include the plural, and *vice versa*.
- 1.5 references to "**include**" or "**including**" shall be construed without limitation.
- 1.6 references to the "**Panel**" shall, where the context so admits, include any person who is nominated from time to time by notice to the Test Laboratory to act on its behalf for the purposes of this Specification.

## 2. SCOPE

This document describes the process and technical requirements to be followed for the testing of protocols for Settlement use as required by BSCP 601.

A protocol in the context of an Outstation, is the set of rules governing the communication of data between the Outstation and any other device connected to it. The protocol is usually designed and implemented by the manufacturer of the Outstation.

As described in BSCP 601, it is necessary to ensure that Settlement Instations are able to communicate appropriately with the various Outstations. This is achieved by the verification of the Instations function when compared with the protocol. There are a number of ways in which an Instation can be verified compliant with a protocol and this document describes the general requirements, test conditions and provides an example test procedure.

2.1 This Specification sets out:-

- (a) the technical requirements ~~of the Test Laboratory in order for it to carry out its obligations under the terms of the Compliance Testing Agreement;~~
- (b) the testing facilities to be provided ~~by the Test Laboratory;~~ and
- (c) the Test Procedures to be followed ~~by the Test Laboratory.~~

to determine the accuracy and functionality of items of Metering Equipment as conforming, or otherwise, to the requirements of the Balancing and Settlement Code ~~and Code of Practice Six.~~

2.2 This Specification supersedes the previous specification(s) and/or documentation in respect of Protocol Testing ~~dated 1<sup>st</sup> November 2000.~~

2.3 The Protocol Testing requirements as detailed in this Specification apply only to the communication parts of a Metering System and therefore satisfactory test results from this Protocol Testing do not constitute a compliant Metering System as required by the Balancing and Settlement Code, BSC Procedures and Codes of Practice.

### 3. REFERENCES

The following documents are referred to in the text:-

~~IEC 1334 4 41 Application Protocols: Distribution Line Message Specification.~~

~~BS EN 61036 AC Static Watthour Meters for Active Energy (Class 1 and 2)~~

~~BS EN 60521 Specification of Class 0.5, 1 and 2 Single Phase and Polyphase  
Single Rate and Multi Rate Watt hour meters.~~

~~BS EN 61107 Data Exchange for Meter Reading, Tariff and Load Control:  
Direct Local Exchange.~~

Balancing and Settlement Code Sections L, R and X.

~~BSCP 601 Balancing and Settlement Code Procedure 601  
'Metering Protocol Approval And Compliance Testing'~~

~~Code(s) of Practice As listed in the current Issue of the Synopsis of Codes of  
Practice.~~

## 4. TEST PROCEDURE

### 4.1 CONSTRAINTS

#### 4.2 Test Procedure

The following functions are required to be tested:

1. Data retrieval;
2. Outstation clock reset;
3. Outstation flag handling operations; and
4. Outstation password process (both correct and incorrect passwords)

#### 4.1.1 Test Schedule – Example

The following test schedule example is provided for information only. The actual tests to be used are dependant on the Code of Practice requirements that an Outstation is to be tested against. The proposed test schedule shall be agreed between the applicant and BSCCo prior to the commencement of any testing.

Record all relevant details:

##### a. Test Environment

- i. Date and time
- ii. Location
- iii. Parties present

##### b. Outstation details

- i. Serial number
- ii. Type reference
- iii. Make and model
- iv. Record whether Outstation has integral Meter
- v. Number and type of measured quantities available in the Outstation
- vi. Record energy flow direction capability (import and export)
- vii. Record any software and firmware versions.

##### c. Outstation Set up details

- i. Number of measured quantities and type configured
- ii. Record Meter constant and scale factor (e.g. MWh x 10)
- iii. Confirm Outstation time is set to GMT



iv. Set (using the manufacturer's software) and record each unique password for the level of access required.

**d. Instation details**

- i. Type, version and operating platform
- ii. Record any relevant module details
- iii. Configure the Instation with the passwords chosen in 1c. iv. above and ensure they are consistent with the level of access required.

4.1.2 Data retrieval

Connect the Outstation to a suitable supply and ensure that the Outstation contains at least 20 days of non-uniform<sup>1</sup> half hour period data.

Test 1.

Ensure the Outstation clock is set to GMT  
Using manufacturer's software, collect at least 48 half hour periods of data.  
Using the Instation, collect the same periods of data.  
Compare the two sets of data and identify any inconsistencies.  
Record results

Test 2.

Repeat Test 1.  
Compare the Instation results from both tests for any inconsistencies.  
Record results.

Note: This test is designed to ensure that repeated data collection does not corrupt any data.

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<sup>1</sup> Period data may be populated by any means providing it enables data retrieval to be differentiated.

### 4.1.3 Passwords

#### Test 3.

Configure the Instation with an incorrect access level password (i.e. Level 1 for read only access).

Repeat Test 1.

Confirm that access was prohibited.

Record results.

#### Test 4.

Configure the Instation with the correct access password.

Repeat Test 1.

Confirm that access was granted

Record results.

#### Test 5.

Using incorrect and correct Level 2 access passwords (i.e. read and write access)

Repeat Tests 3 and 4

Record Results

### 4.1.4 Time re-set

#### Test 6.

Set the Outstation clock to GMT minus 10 minutes (using manufacturer's software)

Perform an Instation data retrieval

Record the Outstation time

Record results

**Note:** The Instation is expected to correct the Outstation time.

#### Test 7.

Set the Outstation clock to GMT minus 22 minutes

Perform an Instation data retrieval

Record the Outstation time

Record results

**Note:** The Instation is not expected to correct the Outstation time.

#### 4.1.5 Flags

##### Test 8.

Ensure that the Outstation is set to GMT

During a single half hour period, disconnect the supply from the Outstation for approximately 10 minutes then re-connect the supply.

During the following half hour period, collect data from the Outstation.

Ensure that the Instation reports that, the half hour period where supply was disconnected is flagged and that the following half hour period is not flagged.

Record results.

4.1.2 Note: Test 8 should be repeated, where possible, for all flag conditions.

#### ~~— CONSTRAINTS~~

##### ~~4.3.1 Applicable Codes~~

~~The following clauses refer to the Test Procedure solely for Compliance Testing to the requirements of Code of Practice Five and not to any other Code of Practice referenced in the Balancing and Settlement Code.~~

##### ~~4.3.2 Timetable~~

~~— 4.1.2.1 For each Compliance Testing Application the Test Laboratory shall complete all Compliance Testing within 40 Business Days of receipt of approval from the Panel, subject to the requirements of Clauses 1.(iii), 1.(vii) and 1.(x) of Appendix 'A' — "Application Procedure for Compliance Testing in Accordance with Code of Practice".~~

#### ~~4.1.3 — TEST CONDITIONS~~

~~—~~

#### ~~4.1.4 — SAMPLES FOR TESTING~~

~~—~~

#### ~~4.1.5 TESTING~~

~~Notes: (1) References contained within {} are to Clauses in Code of Practice Five.~~

~~(2) Reference numbers in the right hand margin are to be used for test cross references purposes.~~

#### ~~4.3.7 General Test Conditions~~

~~Before testing the metering accuracy requirements in Clause 4.2 below, the following conditions shall be maintained:~~

~~(a) the meter shall be tested in its case with the cover in position and all parts intended to be earthed shall be earthed;~~

~~(b) seals need not be applied to any sealing points during testing;~~

~~(c) before any test is made, the circuits and instrumentation shall have been energised for sufficient time to reach thermal stability;~~

~~(d) for polyphase Meters, the phase sequence shall be as marked on the diagram of connections and voltages and currents shall be substantially balanced (see Table 18 of BS EN 61036 for details);~~

~~(e) reference conditions shall be in accordance with Table 19 of BS EN 61036;~~

~~(f) in all cases taking into account the additional percentage error due to change of influence quantities in accordance with Table 14 of BS EN 61036; and~~

~~(g) where a meter has both Import and Export functionality, then the Active Import Energy flow is deemed to be from the extreme left hand terminal<sup>2</sup> (Red phase in) to the adjacent load terminal on the same phase (Red phase out).~~

~~(Initial tests to be agreed with each Accredited Data Collector)~~

<sup>2</sup>Viewed from the front of the meter, as though reading the display.