CPC00603 - Impact Assessment of Draft Change Proposal DCP0005

Code of Practice 4 Review

TITLE

To highlight the almost total re-write of CoP4 and to reduce the length of the current title, BE suggest this document should be renamed as follows :

"Code of Practice for Lifetime Accuracy Verification of Settlement Metering Systems"

AMENDMENT RECORD

A number of references are made throughout this draft document to "Issue 5 Version 4.1 of CoP4". Prior to formal release, all of these must be amended to reflect the correct Issue and Version No.

1. SCOPE

1. BE do not consider Paragraph 2 references to BSCP06 and BSCP514 to be relevant here. The former is primarily a sealing document and the latter is primarily an operational document. BE suggests references to BSCP06 and BSCP514 should be deleted and that amended wording should stress the need for all Calibration failures to be rectified and re-checked or replaced to demonstrate compliance with CoP4 and the relevant Codes of Practice.

2. The Shell documents which preceded this draft included text which referred to non-half hourly (NHH) metering. BE believes some suitable wording should be reinstated here to make it clear NHH (per CoP 8 & 9) will be part of CoP4 scope, to explain the reasons for temporary exclusion of NHH from the next issue (e.g. pending completion of IMAG discussions) and, if possible, to indicate the likely timescale for rectification.

3. Like the current CoP4 and Shell documents which preceded this draft, BE believe the updated version should state the link to the Electricity Act :

   "Meters that are certified under the Electricity Act 1989 shall be calibrated in accordance with the Electricity Act 1989 and shall be deemed to meet this Code of Practice."

4. Also like the current CoP4 and Shell documents which preceded this draft, BE consider the updated version should state its relationship with the BSC Code :

   "This Code of Practice derives force from the Metering provisions (Section L) of the Code, to which reference should be made. It should also be read in conjunction with relevant BSC Procedures. In the event of any inconsistency between the provisions of this Code of Practice and the Code, the latter shall prevail."

3. REFERENCES

BE understands that the CoP4 Review Group recommended the addition of SI 1679 here and in appropriate sections of the document to cover CoP 6 & 7. This needs to be checked and confirmed.

4. DEFINITIONS AND INTERPRETATIONS

1. The Shell documents which preceded this draft included the following text to clarify the use of Code definitions with and without modification :

   "Definitions marked with an asterisk (*) are taken from the Code without modification. Definitions marked with a double asterisk (**) are based on Code definitions with slight modification, but do not infer any change of meaning."

   For clarity and for consistency with other Codes of Practice, BE consider these notes and the related asterisks should be reinstated.

2. Items 4.6 and 4.7 are missing from the numbering sequence. Providing none of the required definitions are missing here, Items 4.8 onwards should be corrected.

3. A number of defined terms are used here and in other parts of the document without the required capitalisation (e.g. “Commissioning” in the Foreword, “Compensation” in Item 4.4, “Standard” in Items 4.18, 4.22 & 4.23, “Meter” in 5.1.1, etc.). Instances have also been noted of the capitalised use of the undefined term “certificate” (e.g. in Section 5.1.2.1). These should all be checked and corrected.

4. Assuming the Standards referred to in 4.18, 4.20, 4.22 and 4.23 are all included in this document to reflect their use in the Calibration of Meters, BE suggest the words “and testing” should be deleted from 4.22 and 4.23.

5.1.1 Types of Calibration

1. Paragraph 3 is an unnecessary duplication of Paragraph 2 of the CoP4 Scope. One of these should be deleted and the comments made by BE above against Scope should also be applied to the text which is retained. If Paragraph 3 is retained, “laboratory” should be replaced by defined term “Accredited Laboratory”.

2. Paragraph 5 is unclear as to what is needed to confirm the calibration of the compensated meter. Provided that the meter has previously been calibrated then the compensation change could be confirmed through suitably robust QA, a prevailing load check, comparison to a commissioned meter (eg the Check meter if Main meter changed) or a commissioning test. This would for example allow a blank calibrated programmable meter to be installed on site and compensated from a program file without the need for a type B or C re-Calibration.

5.1.2.1 Type A Calibration

In Paragraph 1 CoP4 needs to clarify the relationship between relevant BS ENs and Appendix B test points and needs to state which takes precedence in the event of any conflict.

5.1.2.4 Calibration of Existing Installed CoP 1 & 2 Meters

BE have two MAJOR concerns relating to the bullet point :

First, the suggestion that none of the existing meters subjected to Type C Calibrations over the first 10 years will have to be adjusted. Regardless of whether Meters are new or old, CoP4 must require their adjustment and re-calibration whenever Calibrations reveal they are outside CoP limits. The words “without adjustment” have to be deleted here if CoP4 is to retain any legitimacy.

Second, BE accept this clause has been included to provide a 10-year “cut-over” for those CVA MOAs whose testing regimes would immediately be non-compliant with new CoP4 requirements. However, as written, “20% of each meter type over 10 years” represents a test rate of 2% per year which (i) is no better than the least onerous interpretation of the current CoP4, and (ii) will still leave all affected parties non-compliant at year 10. For CoP4 to retain any credibility, the wording must clearly define the test rate necessary to ensure full compliance is achieved by all MOAs within 10 years of the next CoP4 release.

5.1.3 Sealing

A number of existing makes and models of Meters are designed for rack mounting. As such they do not incorporate any provisions for the fitting of BSCP06/BSCP514 approved seals to ensure they are not tampered with after Calibration and before installation. Moreover, neither manufacturers nor Accredited Laboratories are on the Sealing Register. BE therefore suggest the addition of the following paragraph to cover these exceptions :

“Where seals approved by BSCP06/BSCP514 cannot be installed, Meters shall be fitted with tamper-evident frangible paper or metallic security seals immediately following Type A and (off-site) Type C Calibrations.”

5.1.4.1 Calibration Certificates

The list of information on Meter Calibration certificates should include “measurement uncertainties”.

5.1.4.2 Annual Calibration Report

1. BE note with concern that Appendix E has been described as a “suggested” format. Unless CoP4 defines firm requirements for all MOAs to report annual achievements in a consistent way, the data provided will be difficult for the BSCCo to interpret, and may seriously limit its potential value.

2. If the proposed annual MOA reports are to serve any useful purpose, BE consider the clauses should include the additional requirement for the BSCCo to supply annual summaries and analyses of the information they contain to the Panel. Such information should also be made more widely available, at the very least to inform MOAs of any poor accuracy/reliability trends relating to particular makes and models of Meters.

3. Please see further BE comments below against Appendix E.

5.1.4.3 Inspection of certificates, records & testing

1. CoP4 should state how Paragraph 1 requirements will apply where retrospective certificates are unavailable or where the company is no longer trading. In addition, BE suggests a time limit of say 30 years should apply.

2. Paragraph 2 contradicts statement in 5.1.4.1 regarding retention of certificates on CoPs 3,5,6 and 7.

5.1.4.5 Quality Assurance

1. BE do not consider it reasonable for this requirement be on the Registrant. The appointment by Registrants of Accredited MOAs should ensure the application of required quality processes.

2. Should BS EN 17025 be the preferred standard for calibration rather than BS EN ISO 9001? If so, Paragraph 2 and Section 3 should be amended accordingly.

5.2 Sample Calibrations

1. BE comments against 5.1.4.2 above also apply here.

2. Draft CoP4 Section 5.2 (b) refers to meters which were CoP compliant 5 years prior to the updated CoP4 effective date. BE suggests the BSCCo should provide a list of meters not requiring sampling.

3. BE disagrees strongly with the Section 5.2 proposal not to start sampling until 8 years after installation. For previously unproven meter makes and models this could mean there will be no track record of performance for some CoP1 & 2 meters (under a Type C Calibration regime) or for all CoP3, 5. 6 & 7 meters over this significant period. In the meantime hundreds or even thousands of additional badly performing meters may be brought into service before there is any evidence that there is a problem. Moreover, with the first CoP 3, 5, 6 & 7 periodic calibration regime not requiring completion until year 15, in the absence of any end-of-life test requirement, many of these meters could be removed from service without any lifetime accuracy measurement. This cannot be justified and should not be allowed to stand.

   To rectify this, BE urge Elexon to re-word Section 5.2 to require 2% of all such CoP 1 & 2 meters and 1% of such CoP 3, 5, 6 & 7 meters (minimum of 10-off and maximum of 50-off per type) to be sampled annually starting within 2 and 4 years respectively of commissioning.

4. If it is intended that ongoing programmes of type B and C calibrations which achieve higher rates than those required by sampling will remove the need for separate sample calibrations (as implied by the Example) , this should be clearly stated.

5. Please clarify the requirements in the event of changes to CoPs, such as has just happened under CoP 1 and 2 when all existing meter approvals become invalid. Draft CoP4 wording suggests that all meter types would immediately require sample calibration even though they are not really new.

5.3 Measurement Transformers

Sample Calibrations are not required for measurement transformers. Please amend "…initial Calibration, periodic Calibration and sample Calibration for…" to read "…initial Calibration and periodic Calibration for…".

5.3.1 Initial Calibration

In Paragraph 1, please amend "New measurement transformers shall…" by "Measurement transformers installed after the CoP4 effective date shall…"

5.3.3 (Measurement Transformer) Records

1. This section should (i) clearly state that existing certificates are acceptable without measurement uncertainties*, and (ii) include references to the use of National Measurement Transformer error statement where records are missing.

2. In addition, the requirement for measurement uncertainties to be provided should be qualified by "wherever practicable" to recognise that not all MOAs are responsible for specifying, ordering or approving measurement transformers. In such cases they have no control over whether such information is supplied and should not be non-compliant because it is missing. BE would also point out that (i) there is no track record of problems to justify making this a mandatory (potential TAA non-compliance) issue, and (ii) manufacturer/test house Measurement transformer test results will always be limited by being done without installed burdens.

3. Manufacturers have not had any input into proposed CoP4 changes, may be unaware of its forthcoming issue and may not be able to achieve these requirements.

(* Elexon have previously agreed uncertainty measurements may not be available for existing equipment but have stated that where certificates do not include statements of measurement uncertainties covering all test points Parties will need to provide supporting evidence. It is unclear just what evidence could be provided.)

5.4 Voltage Failure Alarm

1. BE believe this Section should clearly cover checks of both voltage failure detection and of the correct operation of remote voltage failure alarms for (i) meters with discrete external relays and (ii) meters with integral sensors/contacts.

   As written, Paragraph 1 only covers the former (although the distinction between detection and alarms is not at all clear and should be corrected). A new paragraph should be added to cover the latter.

2. BE do not consider Paragraph 3 references to BSCP06 and BSCP514 to be relevant here. The former is primarily a sealing document and the latter is primarily an operational document. BE suggests references to BSCP06 and BSCP514 should be deleted and that amended wording should stress the need for all failures of voltage failure alarm checks to be rectified and re-checked to demonstrate compliance with CoP4 and the relevant Codes of Practice.

5.5.1 Commissioning Tests

As worded, the introductory sentence implies that all the listed tests are always required. Since this is not necessarily the case, BE suggest it should be amended to read "Commissioning tests on site shall be performed to confirm and record the following as appropriate :"

5.5.2 Sealing

Please amend "…in accordance with the requirements of any relevant BSC Procedure " to read either "…in accordance with the requirements of BSCP06" (if this covers CoP1, 2, 3, 5, 6 & 7 meters) or "…in accordance with the requirements of the relevant BSC Procedure".

5.5.3 Records

1. Paragraph 2 of the Shell documents which preceded this draft had "as required" at the end of the sentence. As now drafted, the BSCCo will get MOA reports every time following every meter equipment change. Assuming this was not the intention, the original wording should be reinstated.

2. For clarity, listed minimum commissioning information from "Site name" to "Results of inspections, tests and observations" inclusive should be inset.

5.6 Proving

Please amend "…in accordance with any relevant BSC Procedure " to read "…in accordance with the relevant BSC Procedures".

7.1.1.1/7.2.1.1 Temperature variations should be factored into uncertainty budgets. Please remove last sentence.

7.1.1.2 Please amend "Reference Standard Current…" to read "Save as it is necessary to meet the accuracy requirement of this Code of Practice, Reference Standard Current…".

7.1.2.2 "Parties will apply to …." should read "Parties may apply to ….". In addition, to assist MOAs, please reinstate earlier Shell text which suggested applications for extensions of Calibration intervals could include evidence of either negligible or predictable deviations from previous Calibrations.

7.2.1.1 "Reference Standards…" should read "Transfer Standards…"

7.2.2.2 To assist MOAs, please reinstate earlier Shell text which suggested applications for extensions of Calibration intervals could include evidence of either negligible or predictable deviations from previous Calibrations.

7.3.1.1 For consistency should include reference to uncertainty and to the effect of temperature variation on uncertainty budget.

7.3.2.3 Comments regarding reinstatement of earlier Shell text as for 7.1.2.2 above apply.

7.4.2 BE do not consider it reasonable to require MOAs to obtain calibration records of all Standards held by external Accredited Laboratories to which they send meters for Calibration.

7.4.3 Please amend the reference to the "current UKAS directive" to read "UKAS directive M3003".

8 Calibration Equipment for Measurement Transformers

Paragraph 2 combines explicit requirements for accreditation/conformance with standards with the subjective concept of "confidence". BE does not consider the latter to be necessary or helpful.

8.1.2 This text does not appear to be relevant to "Records". BE suggest it should be relocated to Section 8 and subsequent Item numbering amended accordingly. It should be noted however that where the MOA is not be the "Purchaser", it may be unreasonable for the MOA to be held responsible for any non-compliance arising.

8.1.3 It is not clear whether this requirement will be retrospective, but if so, third party policies on record retention may raise immediate non-compliances. In addition, BE Comment 1 on 5.1.4.3 above also applies here.

APPENDIX A – Calibration Period Table

1. The contents of the "By Year 5" column against CoP1 & 2 are unclear. The Shell documents which preceded this draft showed "Either" and "Or" with separate horizontal and diagonal arrows pointing respectively to the "Type C only" and the "Type B + C" options. Alternatively, BE suggest new text "no test" should read "no type B Cal" and "or B and" should read "or type B & C Cals".

2. Under Paragraph 2, "…are twice that for…" should read "…are twice those for…"

3. A new paragraph should be added (with cross-reference in Paragraph 4 of Section 5.1.1) to cover PARh meters.

4. BE understand that in response to the final Shell review, Elexon agreed to add some words to encourage MOAs to apply ongoing programmes of calibration and to avoid delaying work to near the end of permitted periods. Additional text should now be added to cover this.

APPENDIX B Tables B1 – B4 : Calibration Test Points

1. The use of Section numbering B1, B2 & B3 and Table numbering B1, B2, B3 and B4 is confusing. BE suggest Section numbering should be retained and Tables B1, B2, B3 & B4 should be identified as B1.1, B1.2, B2.1 and B3.1 respectively. Related CoP 4 cross-references will need to be amended accordingly.

2. The use of "C" in Tables B1 – B4 may cause confusion as "C" is also used in Appendix A where it refers to type C Calibration. To avoid the same problem, the selected replacement letter should not be either A or B.

3. Tables B1, B3 and B4 need to clarify whether "overload" tests are optional or mandatory.

4. The number of test points required by Table B2 seems excessive (and represents a significant proportion of the test points required by Type C Calibrations). If this remains unchanged it is less likely that MOAs will choose to use type B Calibrations. Moreover there is no evidence that the current reduced number of tests has led to less accurate data in Settlements.

5. Given Reactive meter accuracy limits are stated in Appendix C Table C3 in terms of 0.5 Inductive or Capacitive, why are test points for Reactive meters defined in Tables B1 – B4 in terms of 0.866 Inductive and Capacitive. Test points and associated accuracy limits should be specified on the same basis.

6. Please clarify which of the Appendix B Tables apply to PARh meters.

APPENDIX C Tables C1 - C3 : Measured Error Limits

1. For consistency with Table B2 (which requires testing at 1% current), the lowest current rating for Transformer Operated Meters in Table C1 should be defined as "0.01 I_n".

2. Although not previously referred to throughout this draft CoP4, references are made in Tables C1 and C3 to "Direct Connected Meters". If these are relevant to CoP4, other Sections and Tables should refer to them. If not, they should be deleted.

3. Please clarify which of the Appendix C Tables apply to PARh meters.

4. If Table C limits were derived from BS EN Standards, these should be referenced here & added to Section 3.

5. Accuracy limits in Tables C1 – C3 are defined by meter classes for the test points in Tables B1 – B4 which are defined by Codes of Practice. For clarity BE suggest both sets of tables should be based on CoPs.

APPENDIX D Tables D1 – D4 : Measurement Uncertainties

1. BE note that in Tables D2 and D4, "Measurements at other than unity/zero power factor" carry the same uncertainty values as those for "Measurements at unity/zero power factor". Given that uncertainty levels below unity are higher in Tables D1 and D3, please confirm the source and validity of D2 & D4 values.

2. Please clarify which of the Appendix D Tables apply to PARh meters.

3. BE consider it would be helpful if CoP4 included guidance on the application of discrete measurement transformer and meter uncertainties to calculate metering system overall uncertainties.

4. In Tables D1 – D4, "test equipment" should read "Calibration equipment".

5. As for Tables C1 – C3 above, levels of measurement uncertainty should be based on CoPs.

6. BE believes there is some confusion in Tables D1 – D4 titles which (a) removes a significant distinction between Type B and C Calibrations, and (b) implies a fixed link between uncertainties and the location of the Calibration. The former needs to be clarified to ensure there is some incentive to perform type B calibrations and the latter should allow location to be determined by Calibration equipment accuracy. In time this may allow laboratory levels of uncertainty to be achieved on-site. To this end BE propose the following titles :

   Table D1 : Active Meters (Type A and C Calibrations)
   Table D2 : Active Meters (Type B Calibrations)
   Table D3 : Reactive Meters (Type A and C Calibrations)
   Table D4 : Reactive Meters (Type B Calibrations)

APPENDIX E

1. The title as written could refer to any records and as such is most unhelpful. BE suggest it should be amended to read "CALIBRATION REPORT FORMAT", and the CoP4 Contents should be amended accordingly.

2. Appendix E as presented here was not included in the Shell documents which preceded this draft and has not been considered by the CoP4 Review Group. At first glance, not only does it raise a number of questions (e.g. why have Parts A & B been introduced, what does average age (max and min) mean, what information is expected under reasons for outside limits, for which test point should measured accuracy be reported, are

combined or separate statistics required for type B & C calibration, etc.), but it also raises a number of issues in terms of layout and content.

3. To address these concerns, BE have prepared an alternative Appendix E for consideration and a draft copy of this is attached.

APPENDIX F

1. Bearing in mind Appendix F is being provided for guidance only the "minimum requirements" text in F1 Paragraph 3 should be amended to remove this apparent obligation for commissioning scope to include all the listed activities.

2. Similarly, the F1 Paragraph 3 text "….which shall include these requirements." should be amended to read "….which may include these requirements as appropriate."

3. In F1.1 the text "….and record the following:" should read "….and record the following as appropriate:"

4. In Paragraph 2 of F1.2, "F1.2.1 to F1.2.5" should be amended to read "F1.2.1 to F1.2.6".

5. F1.2.8 : For SVA, tests can be carried out after the load is more than 10% of full load. However, for CVA prevailing load tests may not be possible when the circuit is first energised as there may be no load. To address this, wording for CVA should be amended to recognise the tests may only be carried out when first energised and carrying sufficient load for the tests to provide meaningful results.

   As a general comment in this context, BE is concerned there appears to be a conflict in the required sequence of activities on new CVA sites. According to the relevant BSCPs, Commissioning needs to be carried out before Proving Tests and these both should be completed before the system is energised. As indicated above, this is unachievable in practice.

6. F2 : The reference to "5.5.4" should read "5.5.3".

GENERAL

1. Use of the term "new" in the context of meter makes & models (e.g. Sections 5, 5.2, etc.) is open to misinterpretation at a later date. BE suggests these requirements should be linked instead to meter types registered for the first time after the release date of the latest CoP4 issue.

2. Subscripts 2 and 3 at the end of Page 23 appear to be very similar. Unless these very slight distinctions are really necessary, BE suggest the "fist registered" option should apply. Related text should be amended accordingly.

   BE consider the requirements which apply here to Calibration equipment for Meters, should also apply to other Certificates.

3. The term "test house" is used in various places throughout the Draft CoP4 (e.g. 4.21, 5.1.1, etc.). BE suggest this either needs to be a defined term in Section 3, or it should be removed in favour of defined term Accredited Laboratory.