Issue 93 Digital Meeting Etiquette

- Welcome to the Issue 93 Workgroup meeting 5 – we'll start shortly
- No video please to conserve bandwidth
- Please stay on mute unless you need to talk – use IM if you can't break through
- Talk – pause – talk
- Lots of us are working remotely – be mindful of background noise and connection speeds

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Issue 93 - Metering Code of Practice Review

Meeting 5

26 November 2021

Meeting Agenda

Agenda Item	Lead
1. Welcome and Meeting objectives	Iain Nicoll (Chair)
2. Update on Subgroup sessions	Stanley Dikeocha (Lead Analyst)
3. Update on Redlining and prioritised aspects	Elexon Metering Team
4. AOB Items	Iain Nicoll (Chair)
5. Next steps & Meeting close	Stanley Dikeocha (Lead Analyst)

Meeting Objectives

Objectives for this meeting:

- Confirm new Change Proposals to be raised
- Recommend Subgroup for two aspects of Issue 93
- Confirm the schedule for the next Work group session

SUBGROUP SESSION UPDATES

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Aspect 17 – Minimum burden requirements and CT ratio vs circuit/agreed capacity

Background

- This aspect looked at the appropriateness of CT ratios, specifying a minimum burden in the CoPs and where the prevailing conditions outlined in the CoPs are outside of the limits specified in the CoPs, an overall accuracy limit should be specified.

Key points discussed

- What the current practices were;
- What the future developments were; and
- Potential solution to address the issues discussed.

Conclusion and next steps

- Elexon took a couple of actions to contact measurement transformer manufacturers and Meter Operator Agents (MOAs) to confirm the following:
  - impact on accuracy of measurement transformers if the working burdens are below (or above) the 25% to 100% burden rating;
  - Availability of products other than resistors, to add burden; and
  - What typical burden values are for test terminal blocks, fuses, links, Meters and other (non-Settlement) burden.

- Another meeting is required to finalise the discussions for this aspect.

Aspect 08 – Measuring elements on neutral and earth conductors

Background

This aspect looked at clarifying the wording for the number of measuring element required for Meters in the Section 5.3 of the CoPs. It also looked at if a statement which specifies the number of Current Transformers (CTs) and requirement for a voltage neutral transformer, should be added to Section 5.1 of the CoPs.

Key points discussed

- What the current practices were;
- What the future developments were; and
- Potential solution to address the issues discussed.

Conclusion and next steps

Elexon took an action to draft some redlining that will look at deleting the sentence in Section 5.3 that talks about “earth conductor”. Additionally, a footnote will be introduced in Section 5.1 of the CoPs to explain the application of neutral and earth conductors.

REDLINING AND ASPECT UPDATES

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CoP Consolidation – Thresholds and Requirements

Category	LV Whole Current	LV CT	HV CT up to 50 MVA	HV CT over 50 MVA
Main/Check	Main only	Main only	Main and Check	Main and Check
Active Energy Meter	As per Electricity Act (MID/MIR)	Class 1.0	Class 1.0 or Class 0.5S	Class 0.2S
Reactive Energy Meter	Class 3.0	Class 3.0	Class 2.0	Class 2.0
CT	N/A	Class 0.5s	Class 0.5S or Class 0.2S	Class 0.2S – separate CTs for Main & Check Meters
VT	N/A	N/A	Class 0.5	Class 0.2 – separate secondary winding for Main & Check Meters
CT/VT Cable Routing	N/A	N/A	Diverse routing should be used between CT/VTs and Meters where risk of cables being damaged	Diverse routing should be used between CT/VTs and Meters
Comms	Single	Single	Single or Duplicate	Duplicate

CoP Consolidation – Thresholds and Requirements

Q: What should the HV CT split be? Is 50MVA the right value?

Q: Should Reactive Energy Meters be more accurate? BS EN/IEC 62053-24 Static meters for fundamental component reactive energy has accuracy classes 0,5S, 1S, 1, 2 and 3.

Q: What should the Active Energy Meter and CT accuracy class be for the lower HV CT range?

Q: What should be the communications pathway requirements be for the lower HV CT range?

ASPECT 05 – DE-ENERGISED CIRCUITS/FEEDERS

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Aspect_05 – De-energised circuits/feeders

Aspect (A_05) - The current requirements in relation to de-energised circuits/feeders are inconsistent between the CoPs and do not adopt best practice. This could result in estimated data unnecessarily entering Settlement.

Solution (A_05) - Requirement for Outstation to be interrogated when circuit de-energised

- Good practice for larger metering installations is to ensure that Metering Equipment remains operational so that it can be interrogated when a circuit/feeder is de-energised - this is not mandated by the BSC.
- e.g. If a single circuit on a multi-feeder site is de-energised for operational reasons, the Metering Equipment on that circuit can cease to operate.
  - This results in the data for that circuit having to be estimated, which in turn results in the whole multi-feeder Metering System being regarded as estimated, which can adversely affect the apparent Supplier SVA Settlement performance.
  - Manual workarounds adopted to amend the Meter Technical Details (MTD) to remove the temporarily de-energised feeder from the MTD.
  - This increases the risk of Settlement data error if not managed correctly when the circuit is actually re-energised and the removed circuit is not reintroduced to the MTD.
- CoP3 and CoP5 Appendix E states “Options for ensuring meters and displays can be read and remotely interrogated”. The word ‘options’ leaves the use open to interpretation. Either the approach should be mandatory, or removed, if it is not a BSC obligation. These are the only CoPs that has this Appendix whereas it could be applicable to any multi-circuit Metering System. The Appendix also constrains the consideration to ‘not normally maintained for a significant period’ which means it may not be applicable to a temporary circuit de-energisation.
- It should be reviewed whether there is justification for the BSC to require Metering Equipment at multi-feeder sites to be designed so that alternative sources of power to the Metering Equipment can ensure the data is maintained during circuit outages for maintenance, etc

Requirements for energisation of Outstations for remote interrogation purposes – CoPs 1 and 2

CoP1 (>100MVA):

“Outstations shall be fitted with an auxiliary terminal that provides for the Outstation’s energisation for remote interrogation purposes. The supply to the auxiliary terminal shall be free of switches and secure, and may be provided from the measurement VT as long as it is separate from the potential measurement circuits.”

CoP2 (<100MVA):

“Outstations, that are not exclusive to one circuit [CP1232], shall be fitted with an auxiliary terminal that provides for the Outstation’s energisation for remote interrogation purposes. The supply to the auxiliary terminal shall be free of switches and secure, and may be provided from the measurement VT as long as it is separate from the potential measurement circuits at source.”

“Where a measurement VT source is used and the Outstation System is storing data for more than one circuit, a VT selection relay scheme involving each circuit shall be provided.

Preferably the Outstation shall be able to continue all normal functions for a period of 120 hours after a supply failure. Outstations not providing this facility must in the event of a supply failure transmit an alarm signal to a manned point”

Q. What does ‘may be provided from the measurement VT as long as it is separate from the potential measurement circuits’ mean?

Q. How can the supply be ‘secure’ (what does this mean, stable (i.e. continuous) or not accessible to unauthorised personnel?) and be supplied from the measurement VT?

Q. What is ‘at source’ and why is it missing from CoP1? Was this deliberate (CP1051v3.0)? Should it be the same as in CoP2?

Note initial proposed wording under CP1051v3.0 vs what was actually implemented (above):

CoP1: ‘Outstations shall be fitted with an auxiliary terminal that provides for the Outstation’s energisation. The supply to the auxiliary terminal shall be free of switches, secure and continuously available’

CoP2: ‘Outstations shall be fitted with an auxiliary terminal that provides for the Outstation’s energisation. The supply to the auxiliary terminal shall be free of switches, secure and continuously available. If this is not possible, then the auxiliary supply may be provided from the measurement VT as long as it is separate from the potential measurement circuits’

Requirements for energisation of Outstations for remote interrogation purposes – CoPs 1 and 2 cont'd

BSCP601 'Metering Protocol Approval and Compliance Testing':

Test 052:

"For Meters with integral Outstations an auxiliary terminal provides for the Outstation's energisation for remote interrogation purposes (CoP1). For Meters with integral Outstations record whether an auxiliary terminal provides for the Outstation's energisation for remote interrogation purposes (CoP2)."

Requirements for energisation of Outstations for remote interrogation purposes – CoPs 3 and 5

CoPs 3 (<10MVA) and 5 (<1MW), Section 5 ‘Metering Equipment Criteria’:

“For each circuit, other than one which is permanently disconnected, the voltage supply to any Meters, Displays and Outstations shall be connected such that it is normally energised to facilitate reading of the Meter Register(s) and Local and Remote Interrogation of the Outstation. (see Appendix E).

Where an Outstation is storing data for more than one circuit and the Outstation power supply is from these circuits then a voltage selection relay scheme using each circuit involved shall be provided.”

Requirements for energisation of Outstations for remote interrogation purposes – CoPs 3 and 5 (Appendix E)

Appendix E 'Options for ensuring Meters and Displays can be read and remotely interrogated' [Assumes Meters have integral Outstations?]

"This Appendix sets out the options for complying with the requirements set out in clause 5 for certain types of supply where the voltage supply to the Metering Equipment would not normally be maintained for significant periods e.g. those used for standby and those where the customer's restricted period load is controlled by the main incoming switchgear.

1. Connection of Metering Equipment to the Live Side of the Supply
For new supplies the most practical solution would be to arrange for the Metering Equipment to be connected to the incoming side of the main switchgear so that it is normally energised even when the switchgear is open.

2. Install Separate Meters and Displays/Outstations
Installation of separate Meters and Displays/Outstations would enable the latter to be connected to a normally energised supply. This would facilitate Local and Remote Interrogation and reading on a routine basis. The Meters would need to be provided with a permanent Meter Register to meet the requirements of clause 5.3.

3. Combined Meters, Displays and Outstations with Separate Auxiliary Supply Facilities
Integrated products could be utilised which have separate input terminals to energise the data storage and display functions which could be connected to a normally energised supply, whilst the voltage supply to the Meter is from the relevant circuit.

4. Combined Meters, Displays and Outstations Supplied via a Voltage Relay Selection Scheme
With this option the integrated equipment would be connected to an appropriate single phase voltage supply via a voltage relay selection scheme such that whilst this circuit was de-energised it would receive its voltage supply only, from the adjacent circuit. However, when this circuit was energised it would be fed with both voltage and current from the measured circuit. This arrangement is shown in Figure 2 overleaf and is only suitable for use with CT operated Metering Systems."

Requirements for energisation of Outstations for remote interrogation purposes – CoPs 3, 5 (+ 10) cont'd

CoP3 – Section 5.5 'Outstation'

"If not integral, the Outstation System supply shall either be from a secure supply or from a measurement VT, with separate fusing for each Outstation."

CoP5 – Section 5.5 'Outstation'

"If not integral with the Meter, a separately fused supply shall be provided for each Outstation."

CoP10 – Section 5.5 'Outstation'

"If not integral with the Meter, a separately fused supply shall be provided for each Outstation."

Obligation to obtain Meter readings (linked to Outstation interrogation, where integral?)

CoP1 - Section 5.3 'Meters'
"All Meters shall include a non-volatile Meter Register of cumulative energy for each measured quantity. The Meter Register(s) shall not roll-over more than once within the normal Meter reading cycle."
"For Meters using electronic displays due account shall be taken of the obligations of the Central Data Collection Agent (CDCA) or other Data Collectors to obtain Meter readings."

CoP2 - Section 5.3 'Meters'
"All Meters shall include a non-volatile Meter Register of cumulative energy for each measured quantity. The Meter Register(s) shall not roll-over more than once within the normal Meter reading cycle."
"For Meters using electronic displays due account shall be given to the obligations of the Central Data Collection Agent (CDCA) or other Data Collectors to obtain Meter readings. For example, where a Metering System is employed on multiple circuits, a Voltage Selector Relay or other similar method should be used to maintain the Meter display in the event of a circuit being de-energised where this is reasonably practical."

CoP3 – Section 5.3 'Meters'
"All Meters shall include a non-volatile Meter Register of cumulative energy for each measured quantity (see 4.1.1). The Meter Register(s) shall not roll-over more than once within the normal Meter reading cycle."
"For Meters using electronic displays due account shall be taken of the obligations of the Central Data Collector Agent (CDCA) or other Data Collectors to obtain Meter readings, even when the circuit is de-energised."

CoP5 – Section 5.3 'Meters'
"All Meters shall include a non-volatile Meter Register of cumulative energy for each measured quantity (see 4.1.1). The Meter Register(s) shall not roll-over more than once within the normal Meter reading cycle."

"For Meters using electronic displays due account shall be taken of the obligations to obtain Meter Readings, even when the circuit is de-energised."

CoP10 – Section 5.3 'Meter'
Derived from CoP5 but nothing about Meters including a non-volatile Meter Register of cumulative energy for each measured quantity; the Meter Register(s) not rolling-over more than once within the normal Meter reading cycle; or, for Meters using electronic displays, due account being taken of the obligations to obtain Meter Readings, (or even when the circuit is de-energised).

BSCP601 test

Test 026: Confirm that the Meter includes a non-volatile Meter register of cumulative energy for each Measured Quantity. [Test applies to CoPs 1, 2, 3, 5 and 10]

Impact of de-energised circuits on Settlement

Q. If a circuit is actually de-energised (i.e. it is not a Metering Equipment fault) then normally this will not impact Settlement, assuming data is correctly estimated to zero. For multi-feeder sites under the same MSID is this an issue with the estimation process if the whole MSID is then treated as estimated data and not actuals?

Q. If a circuit (under a different MSID) is actually de-energised (i.e. it is not a Metering Equipment fault) but is embedded in a private network and differenced off the Boundary Point MSID then should the BP MSID data be treated as Actuals or Estimated?

What do we want to see?

Q. Should all the CoPs (going forward) require circuits to have Outstations (integral or separate) that can be read remotely even when a circuit is de-energised or should it only apply to larger site single circuits and multi-feeders sites (e.g. CoPs 1, 2 and 3), on a risk basis?

Q. Should Meter displays be able to be read on all circuits or only CoPs 1, 2, 3 and 5? Why and how is this practically achievable in each situation? What about CoP10?

Q. Do the estimation methods (CVA and SVA) need to be modified so that data related to a genuinely de-energised circuit (under a single MSID comprising multiple circuits) is not treated as Estimated?

Q. Do the estimation methods (CVA and SVA) need to be modified so that data related to a genuinely de-energised circuit (as part of a single or multi-feeder site, which is embedded in a private network and differenced off the Boundary Point MSID) is not treated as Estimated?

ASPECT 07 – CONSIDERATION OF DMP VS AMP

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Consideration of DMP vs AMP

- Created concept of “AMP not at DMP Metering Dispensation”
  - “An AMP not at DMP only” Metering Dispensation shall be deemed as such where the only deviation from the relevant CoP is the location of the Metering Equipment.
- Created separate process for processing Metering Dispensations where the only deviation from the CoP is for location of Metering Equipment
  - Where AMP is not located at DMP but Overall Accuracy limits are met and no compensation has been applied then a Metering Dispensation will not be required
  - Where AMP is not located at DMP and compensation has been applied to meet Overall Accuracy limits then BSCCo will process the application, send the compensation figures to ELVA for validation and, if compensation deemed accurate, BSCCo will approve Metering Dispensation as opposed to committee approval.
  - This would make D/380 redundant

Consideration of DMP vs AMP – Key Discussions

- Should applicant have to notify BSCCo of Metering Systems where the AMP is not located at the DMP? Is it appropriate for these Metering Systems to not be subject to the Metering Dispensation process?

- Should BSCCo be required to notify BSC Panel delegated committees of applications that Elexon have approved (similar to current process for approved Compliance and Protocol Approvals)?

- Is a change to BSCP32 sufficient to achieve the objectives of this change or should the CoPs be clarified to make clear that a Metering Dispensation will not be required where the AMP is located away from the DMP (and no compensation has been applied)?

AOB ITEMS

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AOB Items

- Section L 3.5.4 - limits of accuracy
- 98-F ‘Mandate the number of Outstation channels to be used for data storage for Settlement purposes’
- Subgroup required for the following aspects:
  - A_03 ‘Duplicate communications paths for Metering Equipment within CoPs 1 and 2; and
  - A_13 ‘Security of using public IP addresses for Communications to Metering Systems’.

NEXT STEPS

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Next steps

- Subject to the WG's decision, Elexon to progress the new CPs
- Elexon to arrange the next WG session
- Subject to the WG's confirmation, Elexon to arrange new subgroup sessions

MEETING CLOSE

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THANK YOU

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