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Metering Dispensation D/557 – Heysham 1 Power Station

Imbalance Settlement Group

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Owner/author	**Mike Smith**	Purpose of paper	**Decision**
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Summary

EDF Energy Nuclear Generation (EDF) has applied for a lifetime Metering Dispensation (D/557) from Code of Practice (CoP) 1 Issue 3. EDF wishes to use capacitive voltage transformers (CVTs), instead of inductive VTs (as required by CoP1), for the generator transformer 1 and 2 circuits (for Generating Units 1 and 2), at Heysham 1 Power Station. The brand new CVTs are to replace failing CVTs, which are measuring Reactive Energy only. We invite the ISG to approve Metering Dispensation D/557 on a lifetime basis, subject to a condition.

1. BSC requirements.

1.1 Section L[1] of the Balancing and Settlement Code (BSC) requires all Metering Equipment to either:

- comply with the requirements set out in the relevant Code of Practice (CoP) at the time the Metering System is first registered for Settlement under the BSC (L3.2.2)[2]; or
- be the subject of, and comply with, a Metering Dispensation (L3.4).

1.2 Section L allows the Registrant of a Metering System to apply for a Metering Dispensation if, for financial or practical reasons, Metering Equipment will not or does not comply with some or all the requirements of a CoP.

1.3 The process for applying for a Metering Dispensation is set out in BSCP32[3].

2. Confidentiality

2.1 BSCP32 allows the Metering Dispensation applicant to request confidentiality via the application form (BSCP32/4.1).

2.1 In this case, the applicant has noted on the application form that the application itself is not confidential. However, the applicant has requested that we keep certain related documents (Attachments C and D) confidential because they are commercially sensitive.

3. Background to Metering Dispensation D/557

3.1 Heysham 1 Power Station (Heysham 1) was constructed in the 1970s and first began generation in 1983. The Metering Equipment was first registered under the Pooling and Settlement Agreement (P&SA) for England and Wales in the 1990s.

3.2 There are currently two 400kV generator circuit connections for Generating Units 1 (Unit 1) and 2 (Unit 2), via generator transformers 1 and 2 (Attachments C and D).

[1] 'Metering'
[2] Metering Equipment comprised in a Metering System registered under the Pooling and Settlement Agreement (P&SA), before the Go-Live Date, needed to comply with the version of the "Code of Practice" (as defined in and for the purposes of the P&SA) with which such Metering Equipment was, immediately before the Go-live Date, required to comply with, by virtue of the provisions of the P&SA (L3.2.3 (a)).
[3] 'Metering Dispensations'

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3.3 Active Energy Metering Equipment is installed on the lower voltage side (23kV) of the generator and unit transformers against the Alpha CoPs (1990-1993) and compensated for losses (generator transformer only) to the Commercial Interface on the higher voltage side (400kV) – no Metering Dispensation was/is required to do this under CoPE.

3.4 The Reactive Energy Metering Equipment is located on the higher voltage side (400kV) of the generator transformers and the Reactive Energy Meters are fed by capacitive voltage transformers (CVTs). The Reactive Energy Metering Equipment is compliant with CoP1[4] Issue 1 (1993-2006) and were deemed acceptable under paragraph 5.1.3.(i) at the time:

> *"5.1.3 Measurement Transformers Installed on Existing Circuits*
>
> *Where circuits, other than those newly installed, are to be metered to this Code of Practice and where the installed measurement transformers do not comply fully with clauses 5.1.1 & 5.1.2, then such measurement transformers may be used providing the following requirements and those in clause 4.2.1 are met.*
> *(i) Where subsequently a significant alteration to the primary plant (eg a switchgear change) is carried out, new measurement transformers as detailed in clauses 5.1.1 and 5.1.2, shall be provided."*

3.5 Following the issues identified with the Heysham 2 legacy CVTs, on the 400kV side of the generator transformer 7 and 8 circuits, in October 2022, a further issue was identified with the Heysham 1 legacy CVTs on the 400kV side of the generator transformer 1 and 2 circuits. Monitoring is currently in place and the CVTs will be disconnected at the next available opportunity in March 2023, for Unit 1, and July 2023, for Unit 2.

4. Metering Dispensation D/557 – Heysham 1 Power Station

4.1 EDF Energy Nuclear Generation (EDF) has applied for a lifetime Metering Dispensation from CoP1 Issue 3. This is to replace, on a like-for-like basis, the existing capacitive voltage transformers (CVTs), used for Reactive Energy Metering System (only), for the generator transformer 1 and 2 circuits, at Heysham 1 Power Station.

4.2 The existing CVTs at Heysham 1 are located at the Defined Metering Point, within the National Grid Electricity Transmission (NGET) substation but, are class 0.5, with a single secondary winding feeding both the main and check Reactive Energy Meters, on each circuit.

4.3 The proposed replacement CVTs are brand new Trench TCVT 420, supplied from NGET stock, and to class 0.5, with a single secondary winding, as are the original CVTs.

4.4 CoP1 Issue 3 requires inductive VTs to class 0.2, per circuit, with a dedicated secondary winding for the main Reactive Energy Meter and a second secondary winding for the check Reactive Energy Meter (and any other non-Settlement burden).

4.5 EDF has been unable to procure wire wound class 0.2 VTs at short notice (current timescales are approximately a year to procure, manufacture and install (subject to station outage)). However, it has secured replacement CVTs for the Unit 1 and 2 Reactive Energy Meters.

4.6 The next scheduled outage on Unit 1 commences on 19 March 2023 with a return to service scheduled for 1 April 2023 and the Unit 2 scheduled outage commences on 17 July 2023. Any delay in installation of the replacement CVT would require waiting for the next scheduled outage (circa 12 months plus). To plan an outage to specifically carry out these works would be commercially unviable.

4.7 EDF is seeking a lifetime Metering Dispensation because current timescales to procure, manufacture and install an inductive (wire wound), class 0.2 VT (subject to station outage), could be up to 18 months. This would give an estimated installation date of a brand new, inductive, class 0.2 VT, of 2023/2024.

4.8 The end of generation date for Heysham 1 is March 2024. This may change and possibly be extended for a further three years (subject to approval) however, given the cost and timeframes involved it is not considered to be financially viable to procure new inductive VTs.

[4] 'Code of Practice for the metering of circuits with a rated capacity exceeding 100MVA for Settlement purposes'

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5. MDRG comments

5.1 We circulated the Metering Dispensation application and its attachments to the Metering Dispensation Review Group (MDRG) for comments (Attachments A - D).

5.2 Two out of four MDRG members responded. The MDRG members supports the application on the following bases:

- CoP1 accuracy limits for Reactive Power measurement are maintained at the DMP and, even with a three year extension, the closure date of the station makes procurement and installation of new CoP compliant [VTs] difficult to justify commercially. Periodic testing on a 3 yearly interval should the station life be extended is recommended; and
- Accuracy will be maintained at the DMP.

6. NETSO comments

6.1 We circulated the Metering Dispensation application and its attachments to the National Electricity System Operator (NETSO) for comments (Attachments A - D).

6.2 The NETSO has no objection to the Metering Dispensation application as long as Reactive Energy accuracy will be maintained within CoP1 limits at the DMP and a suitable periodic testing arrangement has been prepared. The NETSO also suggests EDF conduct a complete accuracy assessment to [confirm if they can] maintain the Reactive Energy accuracy.

7. Elexon's view

7.1 Elexon supports this lifetime, site specific Metering Dispensation application as Reactive Energy accuracy will be maintained for the Generator Transformer 1 and 2 Metering Sub-Systems, within CoP1 limits, at the DMP.

7.2 We recommend the Metering Dispensation is approved subject to periodic testing of the new CVTs at three year intervals, if the Generating Units are still operational at the time, during suitable outages, until the relevant Metering Sub-Systems are de-registered at the end of Heysham 1 Power Station's life.

7.3 We also recommend EDF confirms Reactive Energy overall accuracy will be maintained within CoP1 limits at the DMP.

8. Recommendation

8.1 We invite the ISG to:

a) **APPROVE** Metering Dispensation D/557 from CoP1, to use capacitive voltage transformers (CVTs) for the generator transformer 1 and 2 Reactive Energy Meters at Heysham Power 1 Station, on a lifetime basis, subject to EDF Energy Nuclear Generation:

- confirming Reactive Energy overall accuracy will be maintained within CoP1 limits at the DMP;
- carrying out periodic calibrations of the CVTs, at suitable outages, every three years to ensure accuracy is maintained within CoP1 limits (if the Generating Units are still operational at the time); and
- reporting to the ISG (via Elexon) if either CVT is found to be outside the limits of the relevant standard for CVTs.

Attachments

Attachment A – Metering Dispensation application D/557 – Heysham 1 Power Station

Attachment B – Appendix 3 – Capacitor voltage transformer (CVT) calibration certificates

Attachment C (CONFIDENTIAL) – Appendix 1 – Heysham 1 PS single line diagram (SLD) for the Capacity Market

Attachment D (CONFIDENTIAL) – Appendix 2 – Heysham 1 PS NGET Operational Diagram

For more information, please contact:

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