

# ***STCP 19-7 Issue 003 CATO-TO Connections Operational Notification & Compliance Testing***

## ***STC Procedure Document Authorisation***

<b>Company</b>	<b>Name of Representative</b>	<b>Signature</b>	<b>Date</b>
The Company			
National Grid Electricity Transmission plc			
SP Transmission plc			
SHE Transmission plc			
Offshore Transmission Owners			
Competitively Appointed Transmission Owners			

## ***STC Procedure Change Control History***

Issue 001	15/04/2025	First issue STCP19-7 CATO-TO Connections Operational Notification & Compliance Testing – PM0136
Issue 002	26/11/2025	Issue 002 incorporating Competitively Appointed Transmission Owners to TO Lists on all Definitions – PM0151
Issue 003	12/02/2026	Issue 003 incorporating STCP Legal Text Rectifications January 2026 – PM0152

# 1 Introduction

## 1.1 Scope

- 1.1.1 To connect to the National Electricity Transmission System (NETS), a CATO must comply with the minimum technical, design and operational criteria and performance requirements set out or referred to in European Connection Conditions 6.1, 6.2, 6.3 and 6.4 as applicable to Type 2 Transmission Owners and in Planning Code 6.2 and/or 6.3 as detailed in the STC Section D Part One Section 2.2.6. This procedure outlines the responsibilities of The Company and the Pre-existing Transmission Owner (PTO) associated with checking Compliance.
- 1.1.2 Appendix A details the Compliance Process for CATOs including simulation and testing. This may be managed through the Operational Notification Panel (ONP).
- 1.1.3 Information relating to the CATO-TO Connection Project shall be exchanged in accordance with STC Schedule 3.
- 1.1.4 This procedure applies to The Company and each TO. For the purpose of this document, the TOs are:
- NGET
  - SPT;
  - SHE-T;
  - All Offshore Transmission Owners as appointed by the Authority. (For the avoidance of doubt, this includes Preferred Bidders);
  - All Competitively Appointed Transmission Owners as appointed by the Authority. (For the avoidance of doubt, this includes Preferred Bidders)
- 1.1.5 This procedure sets out the requirements for the exchange of information in respect of Compliance between The Company, the CATO and each PTO relating to the connection of a CATO to the National Electricity Transmission System.

## 1.2 Objectives

- 1.2.1 The objectives of this procedure are to specify:
- the responsibilities of Lead Parties in relation to Energisation Operational Notification (EON)/Permission to Load (PtL)/Final Operational Notification (FON) and Compliance Testing activities;
  - the requirements for exchange of information between Lead Parties related to EON/PtL/FONs and Compliance activities;
  - an outline structure for the organisation of data; and
  - the means of communication to be used across The Company – PTO – CATO interface.
- 1.2.2 This procedure includes the Lead Parties' responsibilities in respect of Compliance which involve or affect PTO Plant and/or Apparatus. This applies to all requests and data exchanges submitted by CATOs forming part of the NETS.
- 1.2.3 Appendix B contains a summary of responsibilities on Parties with respect to EON/PtL/FON and Compliance Testing.
- 1.2.4 For the avoidance of doubt the testing and energisation of PTO & CATO Plant and/or Apparatus is covered under STCP 19-4 Commissioning and Decommissioning.

## 2 Key Definitions

### 2.1 For the purposes of STCP 19-7 Operational Notification & Compliance Testing:

- 2.1.1 **Commissioning Panels** are the panels chaired by the PTO to manage and facilitate the commissioning and decommissioning of Plant and/or Apparatus.
- 2.1.2 **Compliance** means the Compliance of CATO equipment to the requirements of the STC, the Grid Interface Data File Structure agreement, and as per the procedure outlined in Appendix A7/8 of this STCP.
- 2.1.3 **Compliance Monitoring Statement** means a statement produced by The Company or the PTO (in accordance with Appendix A1 for each new CATO connection covering all areas of Compliance. The PTO and the connecting CATO are to produce their own Compliance Monitoring Statement.
- 2.1.4 **Compliance Testing** means the process validating CATO equipment for Compliance.
- 2.1.5 **Energisation Operational Notification (EON)** means a certificate issued by The Company to the CATO prior to energisation (see example in Appendix A3), as per the procedure outlined in the Compliance Process (Appendix A1).
- 2.1.6 **Final Operational Notification (FON)** means a certificate issued by The Company to the CATO (see example in Appendix A6) following successful completion of the Compliance process (Appendix A1).
- 2.1.7 **Pre-existing Transmission Owner (PTO)** means; as defined in Section J of the STC.
- 2.1.8 **Permission to Load (PtL)** means a certificate issued by The Company to the CATO prior to synchronisation (see example in Appendix A5), as per the procedure outlined in the Compliance Process(Appendix A1).
- 2.1.9 **Operational Notification Panel (ONP)** means a panel chaired by The Company comprising of the parties in 3.2.1 to ensure Compliance.
- 2.1.10 **Relevant Standards** means the NETS SQSS.
- 2.1.11 **Schedule of Unresolved Compliance Issues** means a register of outstanding Compliance issues attached to the PtL which require resolution prior to the issue of the FON.
- 2.1.12 **Certificate of Readiness (COR)** means a statement from a CATO indicating that CATO Equipment is ready to be energised or synchronised, as appropriate.
- 2.1.13 **Grid Interface Data File Structure (GIDFS)** means the file structure specified by The Company which will be used by the CATO to submit information demonstrating Compliance. The GIDFS is submitted by the CATO prior to issue of an EON/PtL/FON. (see example in Appendix A8).

## **3 Procedure**

### **3.1 Operational Notification Panel (ONP)**

3.1.1 The ONP's function is to assist the Compliance process. For the avoidance of doubt, the ONP's objectives do not remove a similar obligation placed on a Party, and where an objective of the ONP is not achieved, a similar obligation shall remain on the relevant Party, where one exists. The ONP does not preclude or replace direct discussions between the CATO and the PTO or the CATO and other relevant parties.

3.1.2 The ONP shall comprise technical, operational, and commercial representation from The Company and the CATO, and technical and operational representation from the PTO.

3.1.3 The objectives of the ONP may include :-

- to exchange Lead Parties' contact details with the relevant parties for Compliance issues;
- to provide the CATO with generic guidance about the Compliance process;
- to ensure that the process leading to the issue of an EON/PtL/FON is implemented as appropriate;
- to discuss / explain the technical requirements the CATO will have to meet in relation to the Relevant Standards, STC and other Codes, and enduring data and data submission requirements and to implement this process;
- to effect the exchange of the Safety Rules (in accordance with STC and Grid Code requirements) and make the CATO aware of the safety authorisation requirements as defined in STCP 09-1;
- to exchange the names of Safety Co-ordinators acting on behalf of the CATO and PTO (in accordance with STCP 09-1).
- to obtain confirmation that the Safety Co-ordinators acting on behalf of the CATO and PTO are authorised and competent pursuant to the requirements of STCP 09-1.
- to facilitate the exchange of technical and non-technical data between the CATO, The Company and the PTO relating to the Grid Connection;
- to establish a forum for the review of the GIDFS following submission by the CATO;
- to agree with the CATO the programme for checking the theoretical Compliance (in accordance with Appendix A1)
- to ensure the CATO submits the relevant documentation to demonstrate that their Plant and/or Apparatus is compliant to the STC, Relevant Standards and Other Codes, during the different stages of the project;
- to agree the connection requirements for the first energisation or synchronisation, and identify any issues or restrictions relating to the assets involved;
- to ensure that the programme of Compliance Testing and checks have been successfully completed to allow either energisation or synchronisation of the CATO Equipment to the system; and
- to provide a forum to progress any issue of non-Compliance that may arise;

3.1.4 The Company shall maintain notes of the meetings containing the actions, and the progress records. It may also receive progress reports from the Commissioning Panels as required. The ONP shall agree the schedule and nature of its meetings.

## **3.2 ONP Process**

3.2.1 An ONP is required following:

- The signing of a CATO Connection Schedule CTISS (see STCP 18-5 Appendix A) by the PTO (or PTOs when CATO connects to more than one PTO), the CATO and The Company

3.2.2 Each Lead Party must nominate a lead representative.

3.2.3 Any Lead Party may propose that an ONP is not required. If all Lead Parties agree that an ONP is not required, then any Compliance issues may be dealt with at any relevant Commissioning Panel(s).

3.2.4 If Lead Parties agree that an ONP is required, The Company shall organise a meeting between all parties The purpose of this meeting is:

- to discuss/agree the timescales for Compliance Testing; and
- to discuss / explain the Compliance process the CATO shall be required to meet for the connection requested and how this will be achieved.

3.2.5 When an ONP is required, The Company shall set up and act as chairperson for the ONP, provide a point of contact for Compliance issues and ensure the operational notification process is implemented.

3.2.6 Following the establishment of the ONP, all Parties shall exchange contact names and contact details.

3.2.7 In accordance with the STCP19-4, the CATO shall provide to the PTO the list of the names of Safety Co-ordinators, together with written confirmation that the Safety Co-ordinators acting on behalf of the CATO have been certified as authorised and competent by the CATO.

3.2.8 The PTO shall notify the ONP of any issues affecting the operational capability of PTO assets involved in Compliance Testing and checks, for establishing the CATO connection.

3.2.9 The PTO shall be responsible for managing safety on the PTO side of the ownership boundary and where access to the CATO equipment is through the PTO's Transmission Site. The PTO shall provide guidance to the CATO on Safety From The System as defined in STCP 09-1

3.2.10 The PTO and the CATO shall exchange and agree Safety Rules (in accordance with STCP 09-1) in relation to a CATO Transmission Interface Site.

- 3.2.11 The PTO shall be responsible for managing their own transmission works, protection, substation control co-ordination, and determining co-ordination requirements across the ownership boundary to the CATO at the CATO Transmission Interface Site. Should the CATO fail to carry out any necessary co-ordination requirements identified by the PTO then the PTO shall report the matter to the ONP.
- 3.2.12 For each new grid connection or change to CATO Equipment, the PTO and The Company shall produce the relevant parts of a Compliance Monitoring Statement. This shall be produced in accordance with Appendix A1 and shall cover all areas of Compliance that need to be satisfied prior to issue of a Permission to Load (PtL) or FON (as appropriate). The PTO and The Company shall then provide The CATO with copies of the Compliance Monitoring Statement.
- 3.2.13 The CATO shall provide the technical and non-technical data and information set out in Appendix A1 and the relevant CATO Connection Schedule (STCP 18-5 Appendix A). The CATO shall forward the appropriate technical data and information to the PTO. For the avoidance of doubt the data provided to the PTO shall include, but not be limited to, any data required for design and development of their Transmission System (Data requirements are contained in, but not limited to STCPs 12-1 & 18-5), network models and dynamic models, and shall be provided in accordance with Appendix A1.
- 3.2.14 The PTO shall provide Site Responsibility Schedules (SRS) for the CATO Transmission Interface Site to the ONP (CATO & The Company) prior to either energisation or synchronisation of the CATO Equipment. The CATO shall provide the data required by the PTO for the SRS.
- 3.2.15 The PTO shall confirm that the Operational Metering signals (see STCP 04-3) are being passed on from the CATO to The Company.
- 3.2.16 In the case of a CATO Transmission Interface Site, the PTO shall provide Operation Diagrams for the site prior to either energisation or synchronisation of the CATO Equipment. The CATO shall provide the data required by the PTO for the Operation Diagram.
- 3.2.17 In the case of a CATO Transmission Interface Site, the PTO shall provide the data required by the CATO for the creation of an operation diagram to The Company. The CATO shall provide the Operational Diagram to the PTO and The Company prior to either energization or synchronization of the CATO's equipment.
- 3.2.18 The Company shall consider the NETS risks that may arise from the CATO Equipment being synchronised to the NETS, identify any contingency arrangements required, and advise the PTO and any other TO appropriately.
- 3.2.19 Prior to the EON and PtL being issued, The CATO shall share with the PTO the relevant parts of the technical data schedules for matters associated with the CATO Connection Schedule. This will include all updates to data requirements (see STCPs including but not limited to STCP12-1, STCP18-7), network models and dynamic models. If the relevant parts of the technical data schedules make reference to external documents, those external documents shall be provided to the PTO.
- 3.2.20 The Company shall ensure that the CATO or their representative will carry out such off-load Compliance Testing as required to ensure the CATO Equipment meets Compliance requirements.
- 3.2.21 The Company and PTO shall review Compliance Testing documentation (as applicable) and may witness off load tests, and/or checks on CATO Equipment as considered appropriate by The Company or the PTO, and report back to the ONP. The CATO shall forward to the PTO the results of tests relevant to the technical specification advised by the PTO in the GIDFS.
- 3.2.22 Completion of the 'Approved Signature' column in the Compliance Monitoring Statement in Appendix A1 can be electronic. i.e. it is sufficient for this to contain a date and the initials of the point of contact for The Company or the PTO.
- 3.2.23 The Company shall review any remaining Compliance aspects of the GIDFS and obtain resolution of any issues of non-compliance from the CATO to both The Company's satisfaction and, with respect of the items discussed in section 3.2, to the satisfaction of the PTO.

### **3.3 Agreement for Energisation, Permission to Load (PtL) and CATO Transmission Interface Site Specification (CTISS)**

- 3.3.1 On receipt of the Certificate of Readiness (COR) from a CATO, The Company shall request confirmation from the PTO that the PTO is satisfied that the CATO Equipment can be energised or synchronised as specified in the COR. The PTO's lead representative shall provide a letter of Authorisation to issue the EON or PtL, as appropriate, to The Company within 5 business days or where appropriate, provide The Company with reasons as to why the EON or PtL should not be released (see example of PTO agreement to Energisation in Appendix A2, and example of PTO agreement for PtL in Appendix A4). This letter is to confirm that any PTO construction works relating to the CATO Connection Schedule are commissioned and operational, and there are no issues outstanding prior to the issuing of the EON or PtL, as appropriate.
- 3.3.2 The PTO shall submit to The Company a CATO Transmission Interface Site Specification prior to the issue of an EON or PtL agreement. The PTO must create or revise (as appropriate) any CATO Transmission Interface Site Specification to reflect the information contained in the CATO Connection Schedule.

### **3.4 Energisation Operational Notification (EON) and Permission to Load (PtL)**

- 3.4.1 On receipt of the PTO agreement for EON or PtL, The Company shall follow the Appendix A process for issuance of an EON or PtL, to the CATO. A copy of the EON or PtL will be provided to the PTO. The PtL will include a Schedule of Unresolved Compliance Issues.
- 3.4.2 An EON shall be issued upon first energisation, a PtL must be issued in accordance with this section when the CATO first carries load. Where there is a significant period between Energisation of new Plant or Apparatus connected to a CATO Transmission Interface Site and the CATO transmitting load at that CATO Transmission Interface Site, The Company shall issue an EON to the CATO for site demand only (in the form contained in Appendix A3).

### **3.5 Compliance Assessment**

- 3.5.1 The CATO is required to undertake a compliance assessment in accordance with Appendix A of this procedure, which includes simulations and tests.

### **3.6 Final Operational Notification (FON)**

- 3.6.1 The CATO shall comply with the requirements of the STC and any site-specific technical conditions as set out in the CTISS (STCP 18-5 Appendix A1). The Company and PTO shall assess compliance as set out in the GIDFS App 8.

- 3.6.2 On successful completion of the compliance testing the CATO shall submit to the PTO and The Company:
- a final GIDFS
  - confirm that the CATO has valid control system model(s) as applicable;
  - ensure that the data in the GIDFS is the most up to date.
- 3.6.3 The CATO shall share with the PTO, the relevant parts of the technical data schedules for matters associated with the CATO Connection Schedule including all updates to data and network models. Wherever a CATO fails to provide any such documentation or notifications that the PTO may require, the PTO shall request such information from the CATO. Any failure to provide the required information should be reported to the Chair of the ONP.
- 3.6.4 When The Company is satisfied that the GIDFS is suitably complete, the CATO Equipment meets all the Compliance requirements and required control information has been received, The Company shall request confirmation, via email, from the PTO that it is in agreement with the proposal to release the FON or to provide The Company with reasons as to why they are unable to support the release of the FON.
- 3.6.5 Following confirmation from the PTO, The Company shall issue a FON to the CATO. A copy of the FON will be provided to the PTO.
- 3.6.6 The PTO shall update the CATO Transmission Interface Site Specification as appropriate and submit such a revised CATO Transmission Interface Site Specification to The Company

### **3.7 Compliance post FON**

Following the issue of a Final Operational Notification for a CATO's Plant and Apparatus there is a requirement for the Transmission Licensee in respect of that CATO Plant and Apparatus to continue to comply with the requirements of the STC, STCPs and also comply with the Site Specific Technical Conditions.

### **3.8 Grid Interface Data File Structure (GIDFS)**

- 3.8.1 To facilitate data sharing and organisation, all data provided by the CATO, PTO and The Company as part of the Operational Notification and Compliance process will be located within a common and standard GIDFS as specified in Appendix A8.
- 3.8.2 The GIDFS is intended only as an outline structure to provide a common and consistent primary level of organisation for data and reports. The Company and the PTO may agree sub structures to the GIDFS where deemed necessary to accommodate issues relating to particular CATO Transmission Interface Sites.
- 3.8.3 For the avoidance of doubt the GIDFS is limited to data relating to CATO-owned equipment and data provided by the CATO relating to boundary and interface responsibilities. The content of the GIDFS will depend upon specific relevant agreements and ownership boundaries.
- 3.8.4 The Lead Role (as marked in the GIDFS in Appendix A8) is the Party responsible for reviewing the data.
- 3.8.5 The documentation contained within the GIDFS is to be reviewed by the Party responsible for reviewing the data and written feedback is to be provided within 15 working days.

## Appendix A:

### CATO-TO COMPLIANCE PROCESSES

#### CCP.1 INTRODUCTION

CCP1.1 This Appendix A details the Compliance processes for CATOs with HVAC solutions. For a CATO with an HVDC solution the CATO is required to follow the compliance requirements of the Grid Code European Compliance Processes as applicable to HVDC Systems.

CCP.1.1 The CATO Compliance Process specifies the compliance process in relation to a CATO connecting to a PTO:

The process (leading to an Energisation Operational Notification) which must be followed by The Company, PTO and any CATO to demonstrate its compliance with the STC in relation to its Plant and Apparatus prior to the relevant Plant and Apparatus being energised.

The process (leading to a Permission to Load and Final Operational Notification) which must be followed by The Company, PTO and any CATO to demonstrate its compliance with the STC in relation to its Plant and Apparatus. This process shall be followed prior to and during the course of the relevant Plant and Apparatus being energised and operated by using the grid connection.

The process (leading to a Limited Operational Notification) which must be followed by The Company, PTO and each CATO where any of its Plant and/or Apparatus becomes unable to comply with relevant provisions of the STC, and where applicable with the Site Specific Technical Requirements. This process also includes changes or Modifications made to the CATO Plant and/or Apparatus. This process applies to such Plant and/or Apparatus after the Plant and/or Apparatus has become operational and until Disconnected from the Transmission System.

#### CCP.2 OBJECTIVE

CCP.2.1 The objective of this Appendix is to ensure that there is a clear and consistent process for demonstration of compliance by CATOs with the STC and Site-Specific Technical Requirements and will enable The Company and PTO to comply with its statutory and Transmission Licence obligations.

#### CCP.3 SCOPE

CCP.3.1 The Appendix applies to PTOs, The Company and to CATOs:

CCP.3.2 CATOs will become bound by this Appendix prior to them transmitting power on their System.

**CCP.4 CONNECTION PROCESS**

- CCP.4.1 The CATO Connection Agreement contains certain provisions relating to the procedure for connection to the National Electricity Transmission System, becoming operational and include provisions to be complied with by CATOs prior to and during the course of The Company notifying the CATO that it has the right to become operational. In addition to such provisions, this Appendix sets out in further detail the processes to be followed to demonstrate compliance.
- CCP.4.2 The provisions contained in CCP.5 to CCP.7 detail the process to be followed in order for the CATO's Plant and Apparatus to become operational. This process includes
- (i) for energisation an EON for the CATO's Plant and Apparatus
  - (ii) for operating by using the CATO Interface Point a PtL for;
    - a. CATOs in respect of their entire Transmission System;
  - (iii) for final certification of a FON.
- CCP.4.2.1 The provisions contained in CCP5 of this Appendix relate to the connection and energisation of CATO's Plant and Apparatus to the National Electricity Transmission.
- CCP.4.2.2 The provisions contained CCP6 and CCP7 of this Appendix provide the process for CATOs to demonstrate compliance with the STC and Site Specific Technical Requirements.
- CCP.4.2.3 The provisions contained in CCP9 of this Appendix detail the process to be followed when:
- (a) a CATO is unable to comply with any provisions of the STC and Site Specific Technical requirement; or,
  - (b) following any notification by a CATO of any change to its Plant and Apparatus ; or,
  - (c) a Modification to a CATO's and/or Apparatus.

**CCP.5 ENERGISATION OPERATIONAL NOTIFICATION**

- CCP.5.1 The following provisions apply in relation to the issue of an Energisation Operational Notification in respect of a CATO's Plant and Apparatus.
- CCP.5.1.1 Certain provisions relating to the connection and energisation of the CATO's Plant and Apparatus at the CATO Interface Point and.
- CCP.5.2 The items for submission prior to the issue of an Energisation Operational Notification are set out in the applicable sections of STC Section D, STCP18-5, STCP19-2 and STCP19-4.
- CCP.5.3 The items referred to in STCP18-5, STCP19-2 and STCP19-4 shall be submitted using the GIDFS.
- CCP.5.4 Not less than 28 days, or such shorter period as may be acceptable in The Company's and/or PTO's reasonable opinion, prior to the CATO wishing to energise its Plant and Apparatus for the first time, the CATO will submit to The Company and PTO a Certificate of Readiness to Energise High Voltage Equipment which specifies the items of Plant and Apparatus is ready to be energised in a form acceptable to The Company.
- CCP.5.5 If the relevant obligations under the provisions of the STC and/or CATO Connection Agreement and the conditions of CCP.5 of this Appendix have been completed to The Company's and PTO's reasonable satisfaction, then The Company shall issue an Energisation Operational Notification. Any dynamically controlled reactive

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compensation (including Statcoms or Static Var Compensators) shall not be Energised until the appropriate Permission to Load (PtL) has been issued in accordance with CCP.6 of this Appendix.

**CCP.6 CATO PERMISSION TO LOAD**

- CCP.6.1 In the case of a CATO using an HVAC solution the following requirements below apply. In the case of a CATO using an HVDC solution the requirements of the Grid Code ECP 6.3 will apply as applicable to HVDC Systems.
- CCP.6.2 The following provisions apply in relation to the issue of a Permission to Load (PtL) in respect of CATO's Plant and Apparatus.
- CCP.6.3 Not less than 28 days, or such shorter period as may be acceptable in The Company's reasonable opinion, prior to the CATO wishing to operate its Plant and Apparatus at the CATO Interface Point for the first time, the CATO will:
- i. submit to The Company and / or PTO a Notification of User's Intention to Operate; and
  - ii. submit to The Company and/or PTO the items referred to at CCP.6.4
- CCP.6.4 Items for submission prior to issue of the Permission to Load.
- CCP.6.4.1 Prior to the issue of an Permission to Load (PtL) in respect of the CATO's Plant and Apparatus at a CATO Interface Point, the CATO must submit to The Company and PTO to The Company's and PTO's satisfaction all data as required under STCP12-1 and STCP18-5:
- CCP.6.4.2 No CATO's Plant and Apparatus shall be operated by using the CATO Interface Point until the date specified by The Company and PTO in the Permission to Load (PtL).
- CCP.6.4.3 The Company and PTO shall assess the schedule of tests submitted by the CATO with the Notification of User's Intention to Operate under CCP.6.4.1 and shall determine whether such schedule has been completed to The Company's and PTO's satisfaction.
- CCP.6.4.4 When the requirements of CCP.6.4.1 and 6.4.3 have been met, The Company and PTO will notify the CATO that the Plant and Apparatus may (subject to the CATO having fulfilled the requirements of CCP.6.4.1 where that applies) be operated by using the CATO Interface Point through the issue of an Permission to Load (PtL).
- CCP.6.4.5.1 The Permission to Load will be time limited; the expiration date being specified at the time of issue. The Permission to Load (PtL) may be renewed by The Company and PTO for up to a maximum of 24 months from the date of the first issue of the Permission to Load (PtL). The Company and PTO may only issue an extension to a Permission to Load (PtL) beyond 24 months provided the CATO has applied for a derogation for any remaining Unresolved Issues to the Authority as detailed in CCP.10.
- CCP.6.4.5.2 The CATO must operate the Plant and Apparatus in accordance with the terms, arising from the Unresolved Issues, of the Permission to Load (PtL). Where practicable, The Company and PTO will discuss such terms with the CATO prior to including them in the Permission to Load (PtL).
- CCP.6.4.6 The CATO must resolve any Unresolved Issues prior to the commencement of the tests unless The Company and PTO agrees to a later resolution. The CATO must liaise with The Company and PTO in respect of such resolution.
- CCP.6.4.7 Not less than 28 days, or such shorter period as may be acceptable in The Company's and PTO's reasonable opinion, prior to the CATO wishing to commence tests required

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under CCP.7.8(e) and CCP.A.8 to be witnessed by The Company and/or PTO the CATO will notify The Company and / or PTO that the CATO as applicable is ready to commence such tests.

**CCP.7 FINAL OPERATIONAL NOTIFICATION**

Final Operational Notification in respect of Generators and HVDC System Owners

Final Operational Notification in respect of CATO's Plant and Apparatus

CCP.7.6 The following provisions apply in relation to the issue of a Final Operational Notification in respect of CATOs Plant and Apparatus with an HVAC solution. In the case of a CATO with and HVDC solution the requirements of Grid Code ECP.7 shall apply.

CCP.7.7 Prior to the issue of a Final Operational Notification the CATO must have addressed the Unresolved Issues to The Company's and PTO's satisfaction to demonstrate compliance with the relevant STC provisions.

CCP.7.8 Prior to the issue of a Final Operational Notification the CATO must submit to The Company and PTO to The Company's and PTO's satisfaction:

- (a) updated Planning Code data (both Standard Planning Data and Detailed Planning Data), with validated actual values and updated estimates for the future including Forecast Data items such as Demand;
- (b) any items required by CCP.5.2 and CCP.6.4 updated by the CATO as necessary;
- (c) evidence to The Company's and PTO's reasonable satisfaction that demonstrates that the models and/or parameters as required under PC.A.2.2, PC.A.2.3, PC.A.2.4, PC.A.2.5, PC.A.4 and PC.A.6 (as applicable), supplied to The Company and PTO provide a reasonable representation of the behaviour of the CATO's Plant and Apparatus;
- (d) copies of Manufacturer's Test Certificates or Equipment Certificates issued by an Authorised Certifier or equivalent where these are relied upon as part of the evidence of compliance;
- (e) results from the tests and simulations required in accordance with CCP.A.8 carried out by the CATO to demonstrate compliance with relevant STC requirements including any tests witnessed by The Company and PTO; and
- (f) the final Compliance Statement and a User Self Certification of Compliance signed by the CATO and a statement of any requirements that the CATO has identified that have not been met together with a copy of the derogation in respect of the same from the Authority.

CCP.7.9 The items referred to at CCP.7.8 shall be submitted by the CATO after successful completion of the tests required under CCP.7.8.

CCP.7.10 If the requirements of CCP.7.8 have been successfully met, The Company and / or PTO will notify the CATO that compliance with the relevant STC provisions has been demonstrated for the CATOs Plant and Apparatus as applicable through the issue of a Final Operational Notification.

CCP.7.11 If a Final Operational Notification cannot be issued because the requirements of CCP.7.8 have not been successfully met prior to the expiry of an Permission to Load (PtL), then

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the CATO and/or The Company and / or PTO shall apply to the Authority for a derogation. The provisions of CCP.10 shall then apply.

**CCP.8            COMPLIANCE REPEAT PLAN**

CCP.8.1            No later than 4 calendar years and 6 months after the issue of a Final Operational Notification, The Company and / or PTO will notify the CATO that confirmation of continued compliance with the requirements of the STC and/or the Bilateral Agreement.

CCP.8.2            No later than 5 calendar years after the issue of a Final Operational Notification, the CATO shall confirm that the Plant and/or Apparatus is fully compliant with the requirements of the STC and/or the Site Specific Technical Requirements. The confirmation of compliance will include:

- (a) a Compliance Statement and a User Self Certification of Compliance signed by the CATO and a statement of any requirements that the CATO has identified that have not been met together with a copy of the derogation in respect of the same from The Authority.
- (b) complete set of relevant data (as required under STCP 12-1), with validated actual values and updated estimates for the future including Forecast Data items such as Demand. Simulation Studies and results from tests detailed in Appendix CCP.A.3 – CCP.A.8 inclusive are not required as part of the Compliance Repeat Plan.

For the avoidance of doubt the CATO is responsible for ensuring that Plant and/or Apparatus (remains compliant with the relevant clauses of the STC and/or the Site Specific Technical Requirements and/or connection site conditions notified by The Company and PTO.

CCP.8.3            If the requirements of CCP.8.2 have been completed to The Company's and PTO's satisfaction, The Company will notify the CATO that compliance with the relevant STC provisions has been demonstrated for the CATOs, through the issue of a Final Operational Notification subject to a Compliance Repeat Plan (CCP.8) no later than 5 years from the date of issue.

CCP.8.4            If a Final Operational Notification cannot be issued because the requirements of CCP.8.2 have not been successfully met prior to 5 years from the date of issue of the Final Operational Notification, then The Company and PTO will issue the CATO (where licensed in respect of its activities) a Limited Operational Notification with respect to the Unresolved Issues. The provisions of CCP.9 shall then apply.

**CCP.9            POST FINAL OPERATIONAL NOTIFICATION**

Following the issue of a Final Operational Notification for a CATO's Plant and Apparatus there is a requirement for the Transmission Licensee in respect of that CATO Plant and Apparatus to comply with the requirements of the STC, STCPs and Site Specific Technical Conditions.

**CCP.10           PROCESSES RELATING TO DEROGATIONS**

CCP.10.1           Whilst the Authority is considering the application for a derogation, the Permission to Load (PtL) will be extended to remain in force until the Authority has notified The Company and PTO and the CATO of its decision.

CCP.10.2           If the Authority:

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- (a) grants a derogation in respect of the CATO's Plant and/or Apparatus, then The Company in co-ordination with the PTO shall issue a Final Operational Notification once all other Unresolved Issues are resolved; or
- (b) decides a derogation is not required in respect of the Plant and/or Apparatus then The Company in co-ordination with the PTO will reconsider the relevant Unresolved Issues and may issue a Final Operational Notification once all other Unresolved Issues are resolved; or
- (c) decides not to grant any derogation in respect of the Plant and/or Apparatus, then there will be no Operational Notification in place and The Company in co-ordination with the PTO and the CATO shall consider its rights pursuant to the STC.

CCP.10.3

Where a Permission to Load (PtL) is so conditional upon a derogation and such derogation includes any conditions (including any time limit to such derogation) the CATO will progress the resolution of any Unresolved Issues and / or progress and / or comply with any conditions upon such derogation and the provisions of CCP.6 to CCP.7.11 shall apply and shall be followed.

**APPENDIX 1**

**USER SELF CERTIFICATION OF COMPLIANCE (Interim/Final)**

<b>CATO's Plant and Apparatus</b>	[Name of CATO Interface Site]	<b>CATO:</b>	[Full CATO name]	<b>Maximum rating (MVA) of CATO Plant and Apparatus at CATO Interface Point:</b>	
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This CATO Self Certification of Compliance records the compliance by the CATO in respect of [NAME] CATO with the STC and the requirements of the CATO Connection Agreement dated [ ] with reference number [ ].

We have recorded our compliance against each requirement of the STC which applies to the CATO Plant and Apparatus, together with references to supporting evidence and a commentary where this is appropriate, and have provided this to The Company and PTO. A copy of the Compliance Statement is attached.

Supporting evidence, in the form of simulation results, test results, manufacturer's data and other documentation, is attached in the GIDFS.

The CATO hereby certifies that, to the best of its knowledge and acting in accordance with Good Industry Practice, the CATO's Plant and Apparatus is compliant with the STC and the CATO Connection Agreement in all aspects [with the following Unresolved Issues\*] [with the following derogation(s)\*\*]:

<b>European Connection Condition</b>	<b>Requirement</b>	<b>Ref:</b>	<b>Issue</b>
			eN

**Compliance certified by:**

Name:  
[PERSON]  
Signature:  
[PERSON]  
Date:

Title:  
[PERSON DESIGNATION]  
Of  
[User details]

\* Include for Interim CATO Self Certification of Compliance ahead of Permission to Load (PtL).  
 \*\* Include for final CATO Self Certification of Compliance ahead of Final Operational Notification where derogation(s) have been granted. If no derogation(s) required delete wording and Table.

### APPENDIX 3

#### SIMULATION STUDIES

##### CCP.A.3.1 SCOPE

CCP.A.3.1.1 This Appendix sets out the simulation studies required to be submitted to The Company and / or PTO to demonstrate compliance with the STC unless otherwise agreed with The Company and / or PTO. This Appendix should be read in conjunction with CCP.6 with regard to the submission of the reports to The Company and PTO. Where there is any inconsistency in the technical requirements in respect of which compliance is being demonstrated by simulation in this Appendix and ECC.6.3 and the CATO Connection Agreement, the provisions of the CATO Connection Agreement and ECC.6.3 prevail. The studies specified in this Appendix will normally be sufficient to demonstrate compliance. However, The Company and /or PTO may agree to an alternative set of studies proposed by the CATO provided The Company and/or PTO deem the alternative set of studies sufficient to demonstrate compliance with the STC and the CATO Connection Agreement. In the case of a CATO employing HVDC systems, simulation studies shall be in accordance with Appendix 3 of the European Compliance Processes of the Grid Code.

CCP.A.3.1.2 The CATO shall submit simulation studies in the form of a report to demonstrate compliance. In all cases the simulation studies must utilise models applicable to the CATO Plant and Apparatus with proposed or actual parameter settings. Reports shall be submitted in English with all diagrams and graphs plotted clearly with legible axes and scaling provided to ensure any variations in plotted values is clear. In all cases, the simulation studies must be presented over a sufficient time period to demonstrate compliance with all applicable requirements.

CCP.A.3.1.5 For CATO Plant and Apparatus the data must be supplied through a GIDFS (Appendices 8 and 9).

##### CCP.A.3.3 Reactive Capability across the Voltage Range

CCP.A.3.3.1 Where a reactive capability has been specified at the CATO Interface Point in the CATO Transmission Interface Site Specification, the CATO shall supply simulation studies to demonstrate the capability to meet the requirements of the CTISS by submission of a report containing load flow simulation study results to demonstrate operation at the required operating points.:

##### CCP.A.3.4 Voltage Control and Reactive Power Stability

CCP.A.3.4.1 Where a reactive and Voltage Control Capability has been specified at the CATO Interface Point in the CATO Transmission Interface Site Specification, the CATO shall supply simulation studies to demonstrate the capability to meet the requirements of the CTISS by submission of a report containing simulation study results. The Company shall provide guidance to the CATO with respect to the type of studies required.

##### CCP.A.3.5 Fault Ride Through and Fast Fault Current Injection

CCP.A.3.5.1 This section applies to CATO Plant and Apparatus to demonstrate Fault Ride Through and Fast Fault Current injection capability.

The CATO shall supply time series simulation study results to demonstrate the capability of the CATO Plant and Apparatus to meet ECC.6.3.15 and ECC.6.3.16 by submission of a report containing:

- (i) a time series simulation study of a 140ms three phase short circuit fault with a retained voltage as detailed in table A.3.5.1 below applied at the CATO Interface Point.
- (ii) a time series simulation study of 140ms unbalanced short circuit faults with a retained voltage as detailed in table 1 on the faulted phase(s) applied at the CATO Interface Point. The unbalanced faults to be simulated are:
  - 1. a phase-to-phase fault
  - 2. a two phase to earth fault
  - 3. a single phase to earth fault.

<b>CATO Plant and Apparatus</b>	Retained Voltage
<b>CATO Plant and Apparatus</b>	0%*

\*In the case of unbalanced faults note:-

- i) For phase to phase faults the minimum retained voltage will be 50%
- ii) For a two phase to earth fault, the fault impedance between phases shall be zero and the impedance between faulted phases and earth shall be sized to obtain the required retained voltage.

Table A.3.5.1

For a CATO, the simulation study should be completed with the CATO Plant and Apparatus operating at the CATO Interface Capacity and maximum leading Reactive Power and the fault level at the CATO Interface Point as applicable at minimum or as otherwise agreed with The Company and / or PTO.

- (iii) time series simulation studies of balanced Supergrid voltage dips applied on the nearest point of the CATO Interface Point . The simulation studies should include:
  - 1. 50% retained voltage lasting 0.45 seconds
  - 2. 70% retained voltage lasting 0.81 seconds
  - 3. 80% retained voltage lasting 1.00 seconds
  - 4. 85% retained voltage lasting 180 seconds.

The simulation study should be completed with the CATO Plant and Apparatus operating at the CATO Interface Point Capacity and zero Reactive Power (as applicable) output (as relevant and as agreed with The Company and / or PTO).

- (iv) time series simulation studies of balanced Supergrid voltage dips applied on the nearest point of the National Electricity Transmission System operating at Supergrid voltage to the CATO Interface Point. The simulation studies should include:
  - 1. 30% retained voltage lasting 0.384 seconds
  - 2. 50% retained voltage lasting 0.71 seconds
  - 3. 80% retained voltage lasting 2.5 seconds
  - 4. 85% retained voltage lasting 180 seconds.

The simulation study should be completed with the CATO Plant and Apparatus operating at the CATO Interface Capacity (full Active Power and zero Reactive

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Power (as applicable) output) and the fault level at the Supergrid HV Connection Point at minimum or as otherwise agreed with The Company and PTO.

CCP.A.3.5.5 The studies detailed in CCP.A.3.5.1 should be repeated to demonstrate compliance during foreseeable running arrangements resulting from outages of major Plant and Apparatus. For these conditions, the Active Power transfer at the CATO Interface Point may be reduced to levels appropriate to the planned operating regime. The CATO shall consult with The Company and PTO on alternative running arrangements and agree with The Company and the PTO the running arrangements that will be studied prior to the CATO undertaking the studies. For the avoidance of doubt, compliance of CATO Plant and Apparatus with Fault Ride Through requirements remains the responsibility of the CATO under all operating conditions.

**APPENDIX 4**

**ONSITE SIGNAL PROVISION FOR WITNESSING TESTS**

CCP.A.4.1 During any tests witnessed on-site by The Company and / or PTO, the following signals shall be provided to The Company and / or PTO by the CATO in accordance with ECC.6.6.3.

CCP.A.4.3

	Each <b>CATO</b> at CATO Interface Point
CCP.A.4.3.1(a) Real Time on site.	<ul style="list-style-type: none"> <li>• Total Active Power (MW)</li> <li>• Total Reactive Power (MVAR)</li> <li>• Line-line Voltage (kV)</li> <li>• System Frequency (Hz)</li> </ul>
CCP.A.4.3.1(b) Real Time on site or Down-loadable	<ul style="list-style-type: none"> <li>• Injected voltage signal (per unit voltage) or test logic signal (Boolean) when appropriate</li> <li>• CATO Interface Point site voltage (kV) as applicable and as agreed with The Company and PTO.</li> <li>• The individual Reactive Power contributions from each Reactive Power source at the CATO Interface Site, as agreed with The Company and PTO.</li> <li>• Control system parameters as agreed with The Company and PTO as applicable.</li> </ul>

CCP.A.4.3.2 The Company and PTO accept that the signals specified in CCP.A.4.3.1(c) may have lower effective sample rates than those required in ECC.6.6.3 although any signals supplied for connection to The Company's and/or PTO's recording equipment which do not meet at least the sample rates detailed in ECC.6.6.3 should have the actual sample rates indicated to The Company and/ or PTO before testing commences.

CCP.A.4.3.3 For all The Company and / or PTO witnessed testing either;

- (i) the CATO shall provide to The Company and PTO all signals outlined in CCP.A.4.3.1 direct at the CATO Interface Point without any attenuation, delay or filtering which would result in the inability to fully demonstrate the objectives of the test, or identify any potential safety or plant instability issues, and with a signal update rate. Signal parameters as detailed in ECC.6.6.3.2 of the Grid Code would be considered appropriate for this purpose; or
- (ii) The CATO shall provide signals CCP.A.4.3.1(a) direct from one or more transducer(s) connected to current and voltage transformers for monitoring in real time on site; or,

CCP.A.4.3.4 Options CCP.A.4.3.3 (ii) and (iii) will only be available on condition that;

- (a) all signals outlined in CCP.A.4.3.1 are recorded and made available to The Company and PTO by the CATO from the CATO Plant and Apparatus control systems as a download once the testing has been completed; and
- (b) the full test results are provided by the CATO within 2 working days of the test date to The Company and PTO unless The Company and PTO agrees otherwise; and
- (c) all data is provided with an appropriate sample rate as agreed with The Company and PTO. Signal parameters and sampling would be considered appropriate if they are in accordance with ECC.6.6.3.3 of the Grid Code unless The Company and PTO agrees otherwise; and

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- (d) in The Company's and PTO's reasonable opinion, the solution does not unreasonably add a significant delay between tests or impede the volume of testing which can take place on the day.

CCP.A.4.3.5 In the case of where transducers connected to current and voltage transformers are installed (CCP.A.4. 3.3(ii) and (iii)), the transducers shall meet the following specification;

- (a) The transducer(s) shall be permanently installed to easily allow safe testing at any point in the future, and to avoid a requirement for recalibration of the current transformers and voltage transformers.
- (b) The transducer(s) should be directly connected to the metering quality current transformers and voltage transformers or similar.
- (c) The transducers shall either have a response time no greater than 50ms to reach 90% of output, or no greater than 300ms to reach 99.5%.

CCP.A.4.3.7 Testing not witnessed by The Company and / or PTO on-site

CCP.A.4.3.7.1.1 Where The Company and PTO has decided not to witness testing at the CATO Interface Site, the results shall be submitted to The Company and PTO in spreadsheet format with the signal data in columns arranged as follows. Signal data denoted by “#” is not essential but if not provided the column should remain in place but without values entered. Where two signal names are given in a column these are alternatives related to the type of plant under test.

CCP.A.4.3.7.1.2 Where The Company and PTO has requested additional signals to be recorded prior to the testing these signals shall be placed in columns to the right of the spreadsheet.

CCP.A.4.3.7.3.1 CATO Voltage Control & Reactive Capability (as applicable to the CATO)

	Col 1	Col 2	Col 3	Col 4			Col 7	Col 8
1	Time	Active Power	Reactive Power	Connection Point Voltage			Logic / Test Start #	CATO Reactive Power #
# Columns may be left blank but the column must still be included in the files								

CCP.A.4.3.8.1 Where test results are completed without the presence of The Company and PTO but are relied upon as evidence of compliance, they should be accompanied by a logsheet. This sheet should be legible, in English and detail the items as indicated below:

- Time and Date of test;
- Name of CATO;
- Name of Test engineer(s) and company name;

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Name of **CATO** representative(s) and company name;

Type of testing being undertaken e.g. Voltage Control;

Ambient conditions e.g. temperature,; and

Controller settings, e.g., voltage slope, voltage setpoint

CCP.A.4.3.8.2 For each test the following items should be recorded as relevant to the type of test being undertaken. Where there is uncertainty on the information to be recorded this should be discussed with The Company and PTO in advance of the test.

CCP.A.4.3.8.2 .1 Voltage Control and Reactive Capability Tests (as applicable)

Start time of each test step;

Active Power;

Reactive Power;

Connection voltage;

Voltage Control Setpoint, if applicable or changed;

Voltage Control Slope, if applicable or changed;

Grid transformer tap position, as applicable; and

CATO Interface Point voltage.

CCP.A.4.3.8.3 Material changes during the test period should be recorded e.g. changes to tap change positions.

## APPENDIX 7

### COMPLIANCE TESTING FOR CATO HVAC EQUIPMENT

#### CCP.A.7.1 SCOPE

CCP.A.7.1.1 This Appendix outlines the general testing requirements for CATOs in respect of HVAC Systems to demonstrate compliance with the relevant aspects of the STC, CTISS. For CATOs in respect of HVDC Systems, the CATO is required to follow the tests detailed in Appendix 7 of the European Compliance Processes of the Grid Code. The tests specified in this Appendix will normally be sufficient to demonstrate compliance however The Company and PTO may:

- i) agree an alternative set of tests provided The Company and PTO deem the alternative set of tests sufficient to demonstrate compliance with the STC, CATO Connection Agreement; and/or
- ii) require additional or alternative tests if information supplied to The Company and PTO during the compliance process suggests that the tests in this Appendix will not fully demonstrate compliance with the relevant section of the STC, CATO Connection Agreement; and/or
- iii) require additional tests if control functions to improve damping of power system oscillations and/or subsynchronous resonance torsional oscillations required by the CATO Connection Schedule or included in the control scheme and active; and/or
- iv) agree a reduced set of tests for subsequent CATO Plant and Apparatus following successful completion of the first CATO Plant and Apparatus tests in the case of an installation comprising of two or more CATO Interface Points which The Company and PTO reasonably considers to be identical.

CCP.A.7.1.2 The CATO is responsible for carrying out the tests set out in and in accordance with this Appendix and the CATO retains the responsibility for the safety of personnel and plant during the test. The Company and PTO will witness all of the tests outlined or agreed in relation to this Appendix unless The Company and PTO decides and notifies the CATO otherwise. Reactive Capability tests if required, may be witnessed by The Company and PTO remotely from The Company and PTO control centres. For all on site at The Company and PTO witnessed tests, the CATO must ensure suitable representatives from the CATO are available on site for the entire testing period. In all cases and in addition to any recording of signals conducted by The Company and PTO, the CATO shall record all relevant test signals as outlined in CCP.A.4.

CCP.A.7.1.3 In addition to the dynamic signals supplied in CCP.A.4, the CATO shall inform The Company and PTO of the following information prior to the commencement of the tests and any changes to the following, if any values change during the tests:

- (i) All relevant transformer tap numbers.

CCP.A.7.1.4 The CATO shall submit a detailed schedule of tests to The Company and PTO in accordance with CP.6.3.1, and this Appendix.

CCP.A.7.1.5 Prior to the testing of CATO Plant and Apparatus, the CATO shall complete the Integral Equipment Tests procedure in accordance with OC.7.5.

CCP.A.7.1.6 Full CATO Plant and Apparatus testing as required by CCP.7.2 is to be completed as defined in CCP.A.7.2 through to CCP.A.7.5.

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### CCP.A.7.2 Reactive Capability Test (as applicable)

CCP.A.7.2.1      This section details the procedure for demonstrating the reactive capability of CATO Plant and Apparatus at the CATO Interface Point where a Reactive Capability has been specified in the CTISS. These tests should be scheduled at a time where the CATO Plant and Apparatus is operating at the CATO Interface Point Capacity.

CCP.A.7.2.2 The tests (as applicable) shall be performed by modifying the voltage set-point of the voltage control scheme of the CATO Plant and Apparatus at the CATO Interface Point by the amount necessary to demonstrate the required reactive range. This is to be conducted for the operating points and durations specified in CCP.A.7.2.5.

CCP.A.7.2.4 In the case where the Reactive Power metering point is not at the same location as the Reactive Power capability requirement, then an equivalent Reactive Power capability for the metering point shall be agreed between the CATO and The Company and PTO.

CCP.A.7.2.5 The following tests shall be completed if possible and as agreed with The Company and PTO as follows:

- (i) Operation at the CATO Interface Point Capacity and maximum continuous lagging Reactive Power for 60 minutes.
- (ii) Operation at the CATO Interface Point Capacity and maximum continuous leading Reactive Power for 60 minutes.
- (iii) Operation at 50% the CATO Interface Point Capacity and maximum continuous leading Reactive Power for 60 minutes.
- (iv) Operation at 50% the CATO Interface Point Capacity and maximum continuous lagging Reactive Power for 60 minutes.
- (v) Operation at the CATO Interface Point Capacity and maximum continuous leading Reactive Power for 60 minutes.
- (vi) Operation at the CATO Interface Point Capacity and maximum continuous lagging Reactive Power for 60 minutes.

It is acknowledged that the above tests will need to vary depending upon the Reactive Capability specified in the CTISS and the practicality of undertaking the tests which shall be agreed between the CATO, The Company and the PTO.

CCP.A.7.2.6 For the avoidance of doubt, lagging Reactive Power is the export of Reactive Power from the CATO Plant and Apparatus to the Total System and leading Reactive Power is the import of Reactive Power from the Total System to the CATO Plant and Apparatus.

CCP.A.7.3 Not used

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CCP.A.7.4 Voltage Control Tests (as applicable)

CCP.A.7.4.1 This section details the procedure for conducting voltage control tests on CATO Plant and Apparatus as applicable. These tests should be scheduled at a time when the CATO Plant and Apparatus is operating at the CATO Interface Point Capacity.

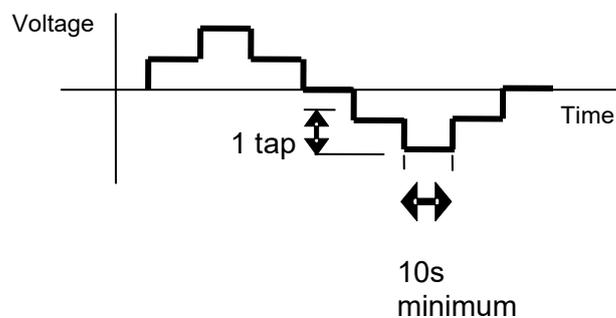
CCP.A.7.4.2 The voltage control system shall be perturbed with a series of step injections to the voltage set point of the CATO Plant and Apparatus as applicable .

CCP.A.7.4.3 For steps initiated using network tap changers (as appropriate) the CATO will need to coordinate with The Company and PTO. The time between transformer taps shall be at least 10 seconds as per CCP.A.7.4 Figure 1.

CCP.A.7.4.4 For a step injection into the CATO Plant and Apparatus voltage setpoint, steps of  $\pm 1\%$ ,  $\pm 2\%$  and  $\pm 4\%$  shall be applied to the voltage control system setpoint summing junction as applicable. The injection shall be maintained for 10 seconds as per CCP.A.7.4 Figure 2.

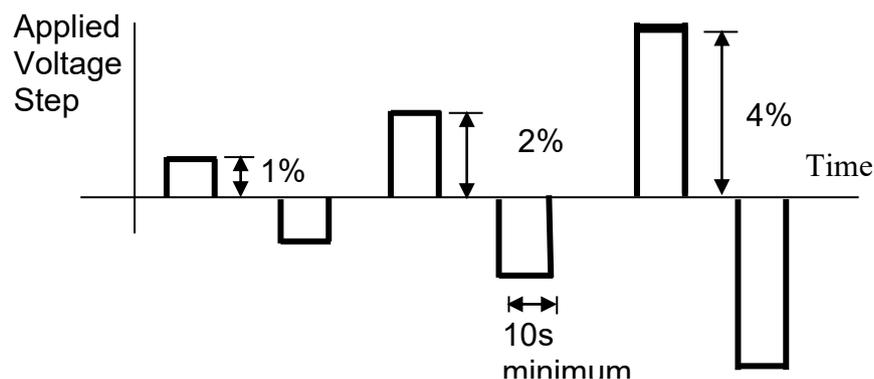
CCP.A.7.4.5 Where the voltage control system comprises of discretely switched plant and apparatus, additional tests will be required to demonstrate that its performance is in accordance with STC and CTISS requirements.

CCP.A.7.4.6 Tests to be completed:



CCP.A.7.4 Figure 1 – Transformer tap sequence for voltage control tests.

(ii)



CCP.A.7.4 Figure 2 – Step injection sequence for voltage control tests

**APPENDIX 8**

**ADDITIONAL SIMULATION STUDIES AND COMPLIANCE TESTING FOR HVAC CATO PLANT AND APPARATUS**

- CCP.A.8.1 Compliance testing for disconnection and reconnection of HVAC CATO's Plant and Apparatus
- CCP.A.8.1.1 CATOs are required to comply with applicable synchronising requirements at the CATO Interface Point in accordance with the requirements of the CTISS.
- CCP.A.8.1.2 The requirements for synchronising (where applicable) shall be pursuant to the requirements of the CATO Connection Schedule (CTISS) and ECC.6.2.3.10. Any requirements for testing (as applicable) shall be agreed with the CATO and carried out during the commissioning process.
- CCP.A.8.2 Compliance testing for operational metering at CATO Interface Points
- CCP.A.8.2.1 The requirements for operational metering shall be pursuant to the requirements of the STCP04-1, STCP04-2 and STCP 04-3,. Any applicable requirements for testing shall be agreed with the CATO and carried out during the commissioning process.
- CCP.A.8.3 Common Provisions on Compliance Simulations
- CCP.A.8.3.1 The Company and PTO shall be entitled to:-
- (a) Allow the CATO to carry out an alternative set of simulations (or equivalent information) provided that they demonstrate that the CATO's Plant and Apparatus is capable of satisfying the applicable requirements of the STC.
  - (b) Require the CATO to carry out additional or alternative simulations (or equivalent information) to those specified in CCP.A.8.5.1 where they would otherwise be insufficient to demonstrate compliance.
  - (c) The Company and PTO may check that the CATO complies with the requirements of the STC by carrying out its own compliance simulations based on the simulation reports, models and test measurements submitted under the STC.
- CCP.A.8.3.2 The Company and / or PTO will supply upon request to the CATO, data to enable the CATO to carry out the required simulations or supply the equivalent information required under the STC.
- CCP.A.8.6 Compliance monitoring at the CATO Interface Point
- CCP.A.8.6.1 To satisfy the requirements of the STC, CATOs shall ensure their Plant and Apparatus is equipped (where applicable), with the necessary equipment to measure the Active Power and Reactive Power, at each CATO Interface Point. The requirement for and time frame for compliance monitoring shall be agreed between The Company and PTO and the CATO for each CATO Interface Point.

**A1: EXAMPLE OF COMPLIANCE MONITORING STATEMENT**

An example of a Compliance Monitoring Statement spreadsheet is available on the STC website

<https://www.nationalgrideso.com/codes/system-operator-transmission-owner-code?code-documents>

**A2: EXAMPLE OF TO AGREEMENT FOR ENERGISATION**

National Grid Electricity  
 System Operator Ltd

National Grid House

Faraday House, Warwick Technology Park Gallows Hill Warwick CV34 6DA

Ref Ref Date

Contact  
 Telephone no

Dear XXXXXX

**[CATO]– Agreement for Energisation**

[PTO], [CATO] and The Company are parties to a CATO-TO Connection Schedule dated *[date]* in respect of *[CATO]* (“the Site”) which facilitates the connection of the Site to the National Electricity Transmission System

The Company has received a Certificate of Readiness (COR) from the CATO, and has asked the PTO for confirmation that the CATO Equipment can be energised as specified in the COR attached to this letter.

[PTO] hereby confirms its agreement, that The Company may issue an Energisation Notice consistent with the attached COR.

Should you require any further information please contact *[[PTO]*, telephone *[telephone number]*.

*[PTO]*

Before Synchronisation (PtL):								
Special Automatic Facilities (e.g. intertrip)	CTISS	2.3	Y					
Site Specific Technical, BCA App FS, evidence of compliance - System Monitoring	.CTISS	2.7	Y					
Before Final Operational Notification:								
Compliance Tests on Demands (harmonics, flicker etc)	E.	2.8	Y					

**A3: EXAMPLE OF ENERGISATION OPERATIONAL NOTIFICATION**

Date: [ ]

Our Ref: [ ]

Your Ref:

National Grid Electricity System Operator Ltd (“The Company”)  
For the Attention of [ ]  
Faraday House,  
Warwick Technology Park  
Gallows Hill  
Warwick  
CV34 6DA

Tel No: 01926-65####  
Fax No: 01926-65####  
Mobile: #####  
[#####@nationalgrid.com](mailto:#####@nationalgrid.com)

Company Secretary

[ ]

[ ]

[ ]

[ ]

[ ]

**[power station] – Energisation of [xxx ]**

Dear XXXXXX

**[COMPANY NAME] – ENERGISATION OF [PROJECT NAME] FOR THE PURPOSES OF  
TAKING DEMAND FOR COMMISSIONING PURPOSES - EFFECTIVE ON AND FROM  
[TODAY’S DATE]**

“The Company” and [Company Name] (the “CATO”) are parties to a [...] CATO-TO Connection Schedule with reference [Reference] dated [Date], as amended from time to time, (“the Agreement”) and TO-CATO Construction Project with reference [Agreement Reference] dated [Agreement Date], as amended from time to time, (“the Construction Programme”) providing for connection to and use of the National Electricity Transmission System at [Connection Site] substation.

By submission of a Certificate of Readiness to energise High Voltage Equipment dated [check date] the CATO notified The Company of its readiness to connect and energise certain of its CATO’s Equipment at [CATO Transmission Interface Site] [known as and] as identified in such notification on [Today’s Date].

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The Company confirms pursuant to the TO-CATO Construction Programme with effect on and from [Today's Date] the CATO's Equipment identified in the Certificate of Readiness to energise High Voltage Equipment shall become Operational for the sole purpose of transmitting load. Such right is without prejudice to the exercise of any rights that The Company may have under the STC.

Please note that this notification by The Company does not give the CATO any right to import or export at the CATO Interface Point and therefore the CATO's Equipment shall not become Operational pursuant to the provisions of the TO-CATO Construction Programme until The Company has issued an Permission to Load in respect of [Project Name].

Terms defined in the STC, CATO-TO Connection Schedule [and the TO-CATO Construction Programme] have the same meaning in this letter.

Should you require any further information regarding this matter please contact [Contract Compliance Manager Name] by telephone on 01926 65[Ext number].



**A5: EXAMPLE OF PERMISSION TO LOAD DOCUMENT**

Date: [ ]

Our Ref: [ ]

Your Ref: National Grid Electricity  
System Operator Ltd

For the Attention of [ ]

Faraday House, National Grid  
House Warwick Technology  
Park Gallows Hill Warwick  
CV34 6DA

Company Secretary

[ ]

[ ]

[ ]

[ ]

[ ]

Tel No: 01926-65##### Fax No: 01926-  
65##### Mobile: #####  
#####@[nationalgrid.com](mailto:#####@nationalgrid.com)

**[PROJECT NAME] CATO – PERMISSION TO LOAD**

**EFFECTIVE FROM [TODAY’S DATE] TO [FUTURE DATE]**

National Grid Electricity System Operator Ltd (“The Company”) and [Company Name] (the “CATO”) are parties to a CATO-TO Connection Schedule with reference [Agreement Reference] dated [Agreement Date], as amended from time to time to facilitate connection to and use the National Electricity Transmission System at [the CATO Transmission Interface Site].

The CATO has notified The Company of its intention to transmit load [Project Name] on or after [today’s date]. [ Under the provisions of the CATO-TO Construction Programme, The Company is required to notify the CATO that the deliverables outlined in the CATO-TO Connection Schedule have been complied with and that [Project Name] CATO at the at [CATO Transmission Interface Site] can therefore become Operational (an “Operational Notification”).

There are a number of matters which are unresolved at present which must be resolved before The Company can issue a Final Operational Notification (FON) in respect of [ ] CATO. The current situation is summarised in the attached Schedule of Unresolved Issues. The unresolved matters do not however prevent The Company from issuing an Permission to Load (PtL).

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The Company therefore confirms the issue of an PtL effective from [today's date] to [future date] (the "Term") subject to the condition that significant progress be made towards the resolution of the unresolved issues within the timescales listed in the schedule during the Term. On completion of the Term, The Company will decide whether to issue an ION extension for a fixed period or a FON.

[This PtL may be reviewed and reissued pursuant to Clause 7.x of the Construction Agreement in respect of [ ] CATO becoming Operational power transmission level above xxxMW.]

This PtL is issued without prejudice to the exercise of any rights The Company may have under the System Operator Transmission Owner Code or the provisions of the TO-CATO Construction Programme.

Terms defined in the STC, CATO-TO Connection Schedule and the TO-CATO Construction Programme] have the same meaning in this letter.

Should you require any further information regarding this matter, or the attached schedule, please contact Contract Compliance Manager Name], telephone 01926 65[ext number ].

**A6 Schedule of Unresolved Compliance Issues**

[ ] Connection Site\Site of Connection

**Schedule of Unresolved Compliance Issues in respect of [CATO ]**

**as at [date ]**

<b>Item</b>	<b>STC* Ref</b>	<b>Issue – Brief Description</b>	<b>Programme to resolve, including expected end date</b>	<b>Contact The Company/PTO/CATO</b>
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				

**A7: EXAMPLE OF FINAL OPERATIONAL NOTIFICATION**

Date: [ ]

Our Ref: [ ]

Your Ref: National Grid Electricity  
System Operator Ltd  
National Grid House  
For the Attention of [ ]

Warwick Technology Park Gallows Hill  
Warwick CV34 6DA

Company Secretary

[ ]

Tel No: 01926-65##### Fax No: 01926-65#####

[ ]

Mobile: #####

[ ]

#####@[nationalgrid.com](mailto:#####@nationalgrid.com)

[ ]

[ ]

Dear XXXXXX

**[PROJECT NAME] CATO – FINAL OPERATIONAL NOTIFICATION  
EFFECTIVE FROM [TODAY’S DATE]**

Electricity System Operator Ltd (“The Company”) and [Company Name] are parties to a CATO-TO Connection Schedule with reference [Agreement Reference] dated [Agreement Date], as amended from time to time, providing for connection to and use of the National Electricity Transmission System at [the CATO Transmission Interface Site].

On [PtL issued date] The Company issued an Permission to Load (“PtL”) in respect of [CATO Project Name] which was to remain in effect until [ check date] (the “Term”). [The PtL was subsequently extended on [[date] [and [insert subsequent dates]]] to remain in effect until [date] (the “Extended Term”).] The Unresolved Issues associated with the PtL were set out in the schedule attached to the PtL [extension]. The PtL [extension] was issued subject to the condition that significant progress be made towards the resolution of the Unresolved Issues and on completion of the [Term/Extended Term], The Company would decide whether to issue [a further PtL]/[an PtL] [extension] for a fixed period or a Final Operational Notification (“FON”).

The Company is pleased to confirm that these issues have now progressed to the point where this FON for [Project Name] CATO can be issued with effect from [today’s date].

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Terms defined in the STC, CATO-TO Connection Schedule [and the Construction Agreement] have the same meaning in this letter.

I should like to take this opportunity to wish every success to your CATO in its future operation.

Should you require any further information regarding this matter please contact [Compliance Account Manager Name], on 01926 65 [ext number].

## **A8: GRID INTERFACE DATA FILE STRUCTURE (GIDFS)**

The GIDFS is intended as an outline structure to provide a common and consistent primary level of organisation for data and reports. Further sub structures are added where necessary to accommodate issues relating to particular connection sites.

The GIDFS should be limited to data relating to CATO owned equipment and data provided by the CATO relating to boundary and interface responsibilities. The populated data will vary depending upon the CATO-TO Connection Schedule and ownership boundaries.

The GIDFS has five main sections

- Part A: Agreements
- Part 1: Safety & System Operation
- Part 2: Connection Technical data
- Part 3: Generation Technical Data
- Part 4: General data requirements in accordance with STCP 12-1

‘Agreements’ contains all the legal agreements and statements and all the connection process and registration documents essential to the Operational Notification and Compliance process, but which are not requirements of the STC or TISS.

‘Safety and System Operation’ contains all documents that relate to safety across the ownership boundary and the operational interface of the CATOs equipment.

‘Connection Technical Data’ contains STCP 12-1 data and all other documents relating the capability, performance and protection of the connection site equipment and complete details of the connection site metering facilities and communications.

‘Generation Technical Data’ contains STCP 12-1 and all other documents relating to the capability, performance and protection of the CATO’s equipment (where applicable). It includes results of all studies & tests needed to confirm generation performance compliance.

STCP 12-1 also contains all other data. All data submitted must be self-contained submissions and not reference other parts of the GIDFS. Any additional requirements for data will be discussed and agreed between The Company, PTO and CATO. The applicable schedules of the Grid Code Data Registration Code will be used for this purpose.

**A9: EXAMPLE GIDFS STRUCTURE**

<b>Grid Interface Data Library - Outline Structure</b>	Lead Role	Indicative Data Sharing	
		PTO	CATO
<b>Part A: Agreements</b>			
A.1 (STCP 18-5) Signed CATO-TO Connection Schedules	THE COMPANY	#	
A.2 Commissioning & Test Programmes			
Connection Site Commissioning & Test Programme	THE COMPANY	#	#
CATO Commissioning Program	THE COMPANY	#	#
A.3 Certificates of Readiness	THE COMPANY	#	#
A.4 Outage Registration Details (ENAMS/EGAMA)	THE COMPANY	#	
<b>Part 1: Safety &amp; System Operation</b>			
1.1 Interface Agreements	TO	#	#
1.2 Safety Rules	TO	#	#
1.3 Local Switching Procedures	TO	#	#
1.4 Earthing	TO	#	#
1.5 Site Responsibility Schedules	TO	#	#
1.6 Operational and Gas Zone Diagrams	TO	#	#
1.7 Site Common Drawings	TO	#	#
1.8 Operational Telephony	TO	#	#
1.9 Local Safety Procedures	TO		#
1.10 Safety Co-ordinators	TO		#
1.11 RISSP	TO	#	#
1.12 Telephone Numbers for Joint System Incidents	THE COMPANY	#	#
1.13 Contact Details (fax, tel, email)	THE COMPANY	#	#
1.14 Restoration Plan (incl. wider contribution to wider System Restoration if applicable)	TO	#	#
1.15 Maintenance Standards	TO	#	#

<b>Part 2: Connection Technical Data</b>			
2.1 CATO System Data			
2.1.1 CATO System Configuration Data			
CATO System Layout & Single Line Diagram	TO	#	#
Reactive Compensation (as applicable)	TO	#	#
Substation Infrastructure	TO	#	#
Circuit Parameters	TO	#	#
Transformer Data	TO	#	#
Switchgear Data	TO	#	#
2.1.2 Protection Systems			
CATO System protection and settings	TO	#	#
CATO System Auto Reclose facilities & settings	TO	#	#
CATO System protection and settings	TO	#	#
Circuit Breaker Fail	TO	#	#
	TO	#	#
System Fault Clearance Times	TO	#	#
	TO	#	#
2.1.3 User System Studies (if required)	TO	#	#
2.2 Protection Settings Reports			
2.2.1 Protection Discrimination Review	TO	#	#
2.2.2 Protection of Interconnecting Connections	TO	#	#
2.3 Special Automatic Facilities	TO	#	#
2.4 Operational Metering	TO	#	#
2.6 Operational Communications	THE COMPANY		
2.7 Performance Monitoring			
2.7.2 Fault Recorder	TO	#	#
2.7.3 Dynamic System Monitor (if required)	TO	#	#
2.7.4 Power Quality Monitor (if required)	TO	#	#
2.8 Power Quality Test Results (if required)	TO	#	#
<b>Part 3: CATO Technical Data</b>			
3.1 CATO Technical Data			
3.1.2 Controls System Details	THE COMPANY	#	#
3.1.3CATO Model	THE COMPANY	#	#
3.1.4 Power Quality - Harmonic Assessment Information	THE COMPANY	#	#
3.1.5 Islanding Protection Schemes	THE COMPANY	#	#

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3.6 Compliance Tests & Evidence (as applicable)			
3.6.1 Reactive Capability as applicable	THE COMPANY	#	#
3.6.2 Voltage Control as applicable	THE COMPANY	#	#
3.6.4 Fault Ride Through	THE COMPANY	#	#
3.7 Compliance Simulation Studies			
3.7.1 Model Verification	THE COMPANY	#	#
3.7.2 Reactive Capability & Voltage Range as applicable	THE COMPANY	#	#
3.7.3 Voltage Control & Stability	THE COMPANY	#	#
3.7.4 Fault Ride Through	THE COMPANY	#	#
3.8 Site Specific Technical Data & Compliance			
3.8.1 Special Automatic Facilities	THE COMPANY	#	#

**GIDFS Content Guidance**

In general all submissions should be in the following file formats.

- Specifications, Statements, Agreements and Technical Reports in PDF format
- Signed Documents in scanned PDF format.
- Test result data points in XLS format (e.g. Excel ®)
- Performance Charts/Plots PDF and/or XLS format.
- Drawings in PDF or DWG for

## ***Appendix B: Register of Responsibilities on Parties***

### **B.1 Responsibilities on the ONP**

- The ONP have no specific responsibilities, rather are a tool to assist other parties in fulfilling their responsibilities. The objectives of the ONP are listed in section 3.1 of this procedure.

### **B.2 Responsibilities on The Company**

- Nominate a Lead Compliance Representative
- Supply Compliance Monitoring Template for CATO to complete
- Ensure that the CATO submits all data in accordance with GIDFS for which The Company is responsible for.
- Assess data necessary for system operational purposes, including dynamic modelling where appropriate
- Undertake testing necessary solely for operational purposes alone, e.g. voltage control and reactive capability.
- Confirm compliance against system operator aspects only.

### **B.3 Responsibilities on PTO**

- Nominate a lead PTO Representative
- Identify issues affecting the connection capacity of PTO assets involved in Compliance Testing.
- Manage Safety on the TO side of the connection boundary
- Confirm to The Company when Safety Rules have been exchanged
- Review PTO elements of the GIDFS within 15 working days, providing written feedback.
- Produce the Part 2 of the GIDFS (see Appendix A1),
- Manage transmission works, co-ordinate works with the CATO
- Provide SRS and Operational Diagrams
- Submit technical specification of requirements to The Company

### **B.4 Responsibilities on CATO**

- Submission of data in accordance with STCP 12-1
- Details of Protection arrangements and settings
- Copies of all safety rules and local safety instructions applicable at the CATO Transmission Interface Site.
- Procedures for isolation and earthing
- Safety in accordance with STCP 09-1
- Information to enable the preparations of Site Responsibility Schedules
- Operation diagrams for high voltage apparatus at the CATO Transmission Interface Site.
- Proposed name of the CATO Transmission Interface Site, which shall not be the same or confusingly similar to any other transmission site or User site

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- Written confirmation that safety coordinators acting on behalf of the CATO are authorised and competent to the requirements of the Grid Code OC8
- Such RISSP prefixes pursuant to the requirements of OC8, such RISSP prefixes should be circulated utilising a proforma in accordance with OC8
- List joint telephone numbers for joint system incidents
- List of managers that have been duly authorised to sign Site Responsibility Schedules on behalf of the CATO
- Information to enable preparation of the CATO Transmission Interface Site drawings
- List of persons appointed by the CATO to undertake operational duties on the CATO system and the issue and receive operational messages and instructions in relation to the CATOs system and an appointed persons or persons responsible for maintenance and testing of the CATO plant and apparatus.
- Submit all data in accordance with the GIDFS

## **Appendix C: Abbreviations & Definitions**

### ***Abbreviations***

CUSC Connection and Use of System Code  
CATO Competitively Appointed Transmission Owners  
COR Certificate of Readiness  
DNO Distribution Network Operator  
EON Energisation Operational Notification  
FON Final Operational Notification  
GIDFS Grid Interface Data File Structure  
PtL Permission to Load  
PTO Pre-existing Transmission Owner  
SOC Statement of Completeness  
STC System Operator Transmission Owner Code  
TO Transmission Owner

### **Definitions**

#### **STC definitions used:**

Agreement for Energisation  
Agreement for Permission to Load  
Apparatus  
Competitively Appointed Transmission Owners  
Connection  
Connection Site  
Connection Site Specification  
National Electricity Transmission System (NETS)  
Permission to Load  
NGET  
Other Codes  
Party  
Plant  
Power Station  
Pre-existing Transmission Owner (PTO)  
Restoration Plan  
Safety Rules  
SHET  
SPT  
System Restoration  
Site Responsibility Schedule (SRS)  
The Company  
Transmission System

#### **CUSC definitions used:**

Bilateral Agreement  
Bilateral Connection Agreement  
Construction Agreement  
Operational Notification

#### **Grid Code definitions used:**

Operation Diagrams  
Transmission Site  
Statement of Readiness

#### **Definition used from other STCPs:**

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Affected TO  
PTO

As defined in STCP 18-5: CATO-TO Connections  
As defined in STCP 18-5: CATO- TO Connections.