

TRANSMISSION OPERATION DIAGRAMS AND TECHNICAL DATA SCHEDULES

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PURPOSE AND SCOPE

This Transmission Procedure specifies the need and scope of responsibilities for the preparation, validation and circulation of the following Operation Diagrams.

- (a) Sheet 1 Substation Busbar Operation Diagram.
- (b) Sheet 2 Substation Technical Data Schedules.
- (c) Sheet 3 Substation Gas Zone Diagrams.
- (d) Sheet 4 Substation Gas Zone Alarm Schedules.
- (e) Sheet 5 Substation Oversailing Hazard Schedule.
- (f) National Routes Operation Diagrams.
- (g) Overhead Line Oversailing Hazards Schedule.

NOTES:

All the above are collectively referred to as "Operation Diagrams" for the purpose of this document.

In addition, the management of Over Head Line Technical Data (overhead line colour-plate data) is defined.

This Transmission Procedure specifies the consistent approach to be adopted for the production and updating of the above operational / safety data.

The information displayed on the Operation Diagrams is a factual statement, effective from a specific date, regarding the status of the equipment and facilities at the location concerned.

The Grid Code and the System Operator – Transmission Owner Code procedures (STCP) define the technical interface requirements between National Grid and other Users of the National Electricity Transmission System and specifies the minimum technical, design and operational criteria which must be complied with by National Grid and Users connected to, or seeking connection with, the National Electricity Transmission system. National Grid and User's responsibilities for the provision of Operations Diagrams at connection sites is specified in Connection Conditions CC.7.4 and Appendix 2 (Parts 1 and 2) of the Grid Code and STCP 19-4 section 3.2.4.

PART 1 – PROCEDURAL

1 MANAGEMENT OF OPERATION DIAGRAMS

The actions necessary to ensure the timely availability of the Operation Diagrams to all concerned parties are illustrated in Appendix A1 in flow chart format.

2 PROCEDURE FOR PREPARATION AND ISSUE

This is described in the flow chart in Appendix A1 or A2. The process starts at least 12 weeks prior to the change.

At National Grid sites where there is a Connection Point to a Third Party, or a Third Party site controlled by National Grid, the Delivery Manager shall ensure the Third Party is requested to provide an Operation Diagram for the HV Equipment on the Third Party side of the Connection Point. This will enable a composite Operation Diagram for the site to be prepared by the Delivery Engineer (DE). The extent of the equipment to be included on each diagram shall be agreed by the Network Operations Centre (NOC) and Network Operations (NO), taking into consideration Safety/Operational and Power Network Analysis (PNA) requirements

In cases where National Grid requires an Operation Diagram showing Third Party equipment that is not on the National Grid site, the extent of such equipment shall be agreed between the appropriate representatives of NO, NOC and DE. Examples of this are where the internal configuration of a Power Station is needed to decide what metering National Grid require, for building Integrated Electricity Management System (IEMS) displays or for PNA modelling purposes.

Equipment of this nature, which is outside of a substation perimeter, shall be included in a separate third party drawing.

Where new HV Equipment is to be installed, or existing HV Equipment modified by a Third Party under a Construction Agreement, then the time scales given in the Grid Code Connection Conditions will apply to the preparation and issue of the relevant Operation Diagrams.

At Third Party sites where there is a connection to National Grid equipment, the NOC Technical Assistant (TA) will co-ordinate the request, receipt and distribution of Third Party Operation Diagrams. In addition to the normal circulation within National Grid, the TA will issue Operation Diagrams to Third Parties, i.e. Power Stations and Distribution Network Operators (DNO). At Embedded sites, Scotland and Offshore this will be handled by the relevant Network Operations Data co-ordinator Offshore or Scottish data.

Operation Diagram revision changes can become effective on the enactment of a High Voltage System Changes Certificate (HVSCC). When this is the case, the HVSCC number is placed in the modifications box against the Operative date which can then be referenced to identify when the HV equipment on National Grid substation or cable / overhead line circuit becomes effective.

Non HVSCC related revision changes can also take place, as listed below. When this is the case, a calendar date will be referenced in the modification box.

- a) Updates to equipment operational status, e.g. asset replacement or sequential operation of a Disconnecter, or errors corrected. The Operative date will refer to an agreed calendar date the changes will occur. In the case of errors or retrospective amendments, the Operative date will be the calendar date when the error was identified.
- b) When the Emergency Operation Diagram change process has been used. The date reference will be the date the emergency change took place.
- c) Changes to Third Party HV equipment shown on a National Grid Operation Diagram. The Operative date will refer to an agreed calendar date the changes will occur. In the case of errors or retrospective amendments, the Operative date will be the calendar date when the error was identified.

It is not permissible for the operative date to be recorded as “Immediate”, “On Issue” or anything similar. It is acceptable that during the drafting stage the date is listed as “To be advised”.

In these instances, the timescales identified in A1 should also be followed to allow adequate time for Diagram comment and circulation. The NOC TA and Diagram Originator will agree when it is to be formally issued. The TA will then raise a Commissioning Record Change within Transmission Outage and Generator Availability (TOGA) and on the pre-agreed date the Diagram will be formally brought in force by an NOC Control Person Safety (CP S) with all appropriate parties. A Diagram is NOT in force until this process has been followed.

If there is any confusion as to whether a Diagram is in force, the Control of Modifications Information Catalogue (COMIC) will be referenced to confirm the current issue.

<http://ecm.nationalgrid.com/livelink/livelink.exe?func=comic.ComicMainForm>

Where work comprises a series of stages with different Operative Dates, a separate set of single line stage by stage diagrams should be prepared to assist the management of the overall process. It is helpful to divide the project into major stages with each stage containing three or four minor stages. Careful and detailed planning by the TP106 Commissioning Panel is required to ensure the timely issue of the Operation Diagrams in these cases.

The process and time scale described for the emergency Operation Diagrams change process may, in exceptional circumstances, be reduced with the mutual agreement of Electricity National Control Centre (ENCC), NOC, site and any affected Third Parties. This process will be launched with the agreement of all parties.

Any complex stage by stage project that requires an emergency change to the Operation Diagrams will be assessed by the chairman of the Commissioning Panel to identify the impact to any remaining stages of work. They will also assess the impact on any other on-going projects. This will be carried out before the emergency change process is invoked.

Any non project related emergency changes required will be raised via the DE or nominated OHL Engineer and co-ordinated through the NOC to identify any impact on ongoing projects. This process is shown in the flow diagram in Appendix A2. A modified Operation Diagram is required, together with faxed authorisations from the DE preparing the Operation Diagram,

the NOC, ENCC, the DE and any Third Parties affected. The modification box must be accurately amended.

If the emergency process is invoked in relation to project work, it must be an agenda item at the next Commissioning Panel meeting to ensure that lessons can be learnt for future scheme development projects.

Once an emergency change has taken place a formal re-issue of the Operation Diagram is required before any additional emergency changes can be invoked.

Decommissioning an entire substation; when an entire substation is decommissioned the relevant Operation Diagrams must be withdrawn. The Operation Diagram Requisition Form (UKBP/TP119.01) will be completed and a standard Operation Diagram revision will take place as normal with the words “Decommissioned” across the diagram. The diagram will then be removed from use for reference against HV equipment. It will be stored in COMIC for future reference to the decommissioned assets on site.

Authorisation of Operation Diagrams electronically. At locations there is the facility to authorise Operation Diagrams electronically. When this facility is used, care must be taken to ensure that times scales can be adequately met.

Recipients of serviced sets of Operation diagrams are on a list held by the Technical Assistant at the NOC.

3 RESPONSIBILITIES

Within this procedure the following people have responsibilities which may be delegated within their Management Units. A brief summary of the responsibilities are as follows;

3.1 Project Development Team

- Agree the numbering and nomenclature, alarms and legends shown on Operation Diagrams

3.2 NOC Manager – Asset Management, Planning and Networks Performance

- Agree the extent of equipment included on Operation Diagrams
- Agree to the instigation of the emergency change process
- Ensure Operation Diagrams are processed

3.3 ENCC Transmission Despatch Engineer – Network Operations

- Agree to the instigation of emergency change process

3.4 Operational Issues Manager – Network Operations

- Agree the extent of equipment included on Operation Diagrams

3.5 Commissioning Panel Chairman – Construction / Alliance

- Produces and issues Operation Diagrams in a timely manner
- Agree to the instigation of emergency change process

3.6 Delivery Manager / Delivery Engineer – Maintenance Delivery Electricity

- Ensures Third Parties are requested to provide details of HV equipment at Connection sites and composite drawings are provided
- Agree the extent of equipment included on Operation Diagrams
- Approve Operation Diagrams for issue
- Agree to the instigation of emergency change process

3.7 Data Co-ordinator Scotland/Offshore – Network Operations

- Co-ordinates the request, receipt and distribution of Operation Diagrams for Scotland, Offshore and embedded sites.

3.8 Project Manager for the defined project – Asset Management / Construction / Alliance

4 AUTHORISATION OF OPERATION DIAGRAMS

For National Grid, the issue of Operation Diagrams will be authorised by the Asset Management Delivery Engineer (DE) or Delivery Manager (DM) for the Complex, or the nominated Overhead Line Delivery Engineer (DE) for the route. They shall ensure the responsibility is delegated to appropriately authorised individuals for their planned absences.

5 FORMS AND RECORDS

The Operation Diagram Requisition Form (UKBP/TP 119.01).shall be used for the production and modification of all Operation Diagrams covered by this Transmission Procedure. The Proforma for the Emergency Change Process will be used under emergency conditions (Form UKBP/TP 119.02).

PART 2 - DEFINITIONS AND DOCUMENT HISTORY

6 DEFINITIONS

6.1 Substation Operation Diagram (Sheet 1)

This Operation Diagram represents the substation circuit layout and interconnections in a single line diagram and provides definitive reference for the purposes of operational and safety switching in compliance with the requirements of the Grid Code CC.7.4.

6.2 Operative Date

This is the date when the changes to the HV equipment shown on the Operation Diagram become effective.

6.3 Connection Site

A Transmission Site or User Site is defined within the Grid Code.

6.4 Commissioning Panel

Defined in TP 106 and STCP19-4.

6.5 Occupier

The person having control over the premises and who regulates and controls the work that is done there. Reference TP 137.

6.6 Occupiers Representative

The person identified by the Occupier who will discharge the duties and responsibilities of the Occupier on the premises.

7 AMENDMENTS RECORD

Issue	Date	Summary of Changes / Reasons	Author(s)	Approved By (Inc. Job Title)
1	January 1999	New document	David Stevens Project Management	Transmission General Manager
2	February 2008	Updated to reflect new process	Steven Cole Network Operation Centre	Simon Thornton Planning (Electricity) Manager
3	September 2011	Incorporates Engineering Bulletin 08/2011-the requirement for the Final Operation Diagram to be produced 5 weeks in advance of required date System Operator – Transmission Code procedure referenced Responsibilities defined Links to forms included General update of the document Example of an entry in the new Overhead Line database is included	Steve Cole Mark Jones Network Operation Centre	Simon Thornton Planning and Network Performance Manager
4	August 2012	Update to clarify non HVSCC driven changes	Terry O'Sullivan Network Operation Centre	Simon Thornton Planning and Network Performance Manager

8 IMPLEMENTATION

8.1 Audience Awareness

Audience	Purpose Compliance (C) / Awareness (A)	Notification Method Memo / letter / fax / email / team brief / other (specify)
AM – MDE	Compliance	e-mail
ENI	Compliance	e-mail
Construction	Compliance	e-mail
Network Operations	Compliance	e-mail
Network Operations Centre	Compliance	e-mail
Alliance	Compliance	e-mail