STCP 06-4 Issue 006 Contingency Arrangements

CM089 – Electricity System Restoration Standard
8 June 2023

STC Procedure Document Authorisation

Party	Name of Party Representative	Signature	Date
National Grid Electricity System Operator Ltd			
National Grid Electricity Transmission plc			
SP Transmission Ltd			
Scottish Hydro-Electric Transmission Ltd			
Offshore Transmission Owners			

STC Procedure Change Control History

Issue 1	23/12/2004	BETTA Go-Live version
Issue 2	04/07/2005	Issue 002 incorporating PA021
Issue 3	25/10/2005	Issue 003 incorporating PA034 & PA037
Issue 4	24/11/2009	Incorporating changes for Offshore Transmission
Issue 5	01/04/2019	Issue 005 Incorporating changes for National Grid Legal Separation
Issue 6	06/04/2022	Issue 006 Incorporating PM0123 changes
Issue 7	06/04/2023	Issue 007 Incorporating changes to facilitate the Electricity System Restoration Standard

1 Introduction

1.1 Scope

1.1.1 This procedure describes contingency arrangements required by NGESO and each TO to maintain the capability to monitor and operate the System following certain events. These events may include but are not limited to:

- an event that results in a Main Control Centre becoming unusable;
- the failure of telephony infrastructure;
- the loss of a Datalink between NGESO and TO;
- the failure of NGESO SCADA facilities; or
- the failure of TO SCADA facilities.

For the avoidance of doubt the above list is non-exhaustive and other events may require the contingency arrangements to be invoked.

1.1.2 This procedure applies to NGESO and each TO.

1.1.3 For the purposes of this document, the TOs are:

- NGET;
- SPT;
- SHETL;and
- All Offshore Transmission Licence holders as appointed by OFGEM

In the event that specific conditions or exceptions are made in the document relating to an Onshore TO or Offshore TO these will be prefixed appropriately.

1.1.4 This procedure applies to both operational and IS functions within both a TO and NGESO. This document does not cover any contingency arrangements that may be required under a System Restoration~~Black Start~~ condition (which are covered separately under STCP 6-1 System Restoration~~Black Start~~).

1.2 Objectives

1.2.1 The objective of this procedure is to specify the minimum Emergency Control Centre facilities for each party and the actions to be taken when communication routes (data and voice) fail.

2 Key Definitions

2.1 For the purposes of STCP06-4:

2.1.1 **SCADA** means Supervisory Control And Data Acquisition system i.e. the system used to monitor, operate and control a Transmission System (including outstations). Where the term NGESO SCADA is used this refers to a Supervisory Control And Data Acquisition system owned by NGESO and where the term TO SCADA is used this refers to a Supervisory Control And Data Acquisition system owned by a TO.

2.1.2 **Main Control Centre(s)** means the primary location(s) used by NGESO or a TO for the purpose of control and operation of a Transmission System.

2.1.3 **Emergency Control Centre** means an additional Control Centre at a remote location from the Main Control Centre(s), which can be used to control and operate the System if the Main Control Centre(s) becomes unusable.

2.1.4 **Complete Voice Communication Failure** means a concurrent failure of Control Telephony, PSTN, PTN and mobile voice communication systems.

2.1.5 **Datalink** means a communication system established between NGESO and a TO for the transfer of real time SCADA Data from that TO to NGESO.

2.1.6 **Event** is as defined in the Grid Code as at the Code Effective Date and for the purposes of this STCP only, not as defined in the STC.

3 General Requirements

3.1.1 To prevent the loss of a single control location precipitating the complete loss of control facilities and services, communication and SCADA facilities should [as far as practicable] be distributed across different site locations.

3.1.2 Each Party shall have in place contingency plans to cope with the events including those described in section 1. Each Party is responsible for preparing its own contingency plans which may include outsourcing services to other Transmission Licence holders on a permanent or temporary basis. Each TO shall make the relevant sections of their plans available to NGESO and inform NGESO of any modifications to the relevant sections of their plans. NGESO shall make the relevant sections of their plans available to the TO and inform the TO of any modifications to the relevant sections of their plans.

As a minimum, the contingency plans for NGESO and each TO shall~~ould~~ include:

- The location of the Main Control Centre; and
- the location of the Emergency Control Centre; and
- the estimated time to evacuate or transfer control facilities to the Emergency Control Centre which shall be at least within 3 hours of the evacuation.

3.1.3 NGESO and each TO shall review their own contingency plans annually and re-issue to all affected Parties if any changes are made.

3.1.4 NGESO and each TO shall establish and maintain their own Emergency Control Centre facilities and arrangements.

3.1.5 Each Party shall have available, as a minimum requirement, the following systems at their Emergency Control Centre:

- a duplicated SCADA system for indications and alarms;
- a real time data transfer facility between the TO and NGESO;
- IS systems to support the control room which shall include external e-mail facilities;
- paper systems and documentation for the key processes;
- a telecommunication system with a minimum of one PSTN ex-directory line and one unique number on a private telephone network; and
- a fax machine capable of operating on both the~~a~~ PTN and the PSTN

3.1.6 Where a duplicated SCADA system for indications and alarms and/or a real time data transfer facility between a TO and NGESO is not made available, agreed contingency processes shall be agreed and put in place. Where facilities do not comply with these arrangements, then a contingency methodology agreed between the TO and NGESO should be put in place.

3.1.7 Each Party shall ensure the following:

- that their Emergency Control Centre facilities are available;

- that evacuation procedures from the Main Control Centre are in place and contingency arrangements where required are in place;
- that evacuation procedures are tested annually through exercises that involve evacuating the Main Control Centre and the occupation of the Emergency Control Centre;
- that they provide to other relevant Parties up to date details of their contingency plans including location of their Emergency Control Centre;
- where Emergency Control Centres are normally unstaffed, that they are checked on a routine basis to ensure all facilities are functional;
- that all equipment that may be used during a Main Control Centre evacuation and any automatic changeover systems shall be routinely tested where relevant;
- that facilities at the Emergency Control Centre are maintained in a state of continuous readiness;
- that supporting documentation at the Main Control Centre(s) and Emergency Control Centre is up to date;
- that appropriate call-in arrangements for operational IS staff are in place; and
- that any changes to the contingency arrangements are notified as soon as reasonably practicable to all relevant Parties.

4 Evacuation of Main Control Centre Location

4.1.1 Where an evacuation of a Main Control Centre is, or has been, necessary, the evacuating Party shall give appropriate notifications (as described in section 4.1.2) as soon as reasonably practicable to NGESO and other TOs as appropriate. NGESO shall be responsible for any notification to Users, where appropriate, that a Party has evacuated their Main Control Centre. The evacuating Party shall notify their Duty Manager through local evacuation processes.

4.1.2 On establishment of an Emergency Control Centre, each Party shall (as appropriate):

- provide notice of change to control location along with confirmation of new telephone and fax numbers to NGESO, other affected TO(s) and relevant Users as appropriate;
- implement post evacuation short term holding phase using appropriate resource at nominated site until Emergency Control Centre established;
- implement post evacuation established phase at Emergency Control Centre; and
- maintain normal operations utilising Emergency Control Centre and contingency procedures.

5 Telephony Infrastructure Contingency

5.1 Voice Communication failure

5.1.1 In the event of a Complete Voice Communication Failure between NGESO and a TO or TOs:

- If a TO becomes aware that the communication failure also prevents NGESO from communicating with Users in the TO's area, the TO shall notify Users as and when appropriate. The TO shall record which Users it has notified of the communication failure and shall forward such record to NGESO when communications have been restored.

- NGESO and each TO shall use alternative means of communication including e-mail wherever possible. Relaying messages through another TO should also be considered where appropriate.
- NGESO or the TO responsible for the failed voice communication system shall contact their service provider in order to repair the voice communication system in accordance with STCP 04-5 Operational Telephony.
- The responsible party for the failed voice communication system shall advise NGESO and TO(s) of the expected restoration time and provide updates where appropriate.
- All planned Operational Switching work on the National Electricity Transmission System affected by the voice communications failure shall be suspended until advised that communications have been restored. The TO may continue to issue switching instructions for Operational Switching, Isolation and Earthing on plant that has been released under a Transmission Status Certificate (TSC) in accordance with STCP 01-1 Operational Switching.

5.1.2 In the event of Complete Voice Communication Failure between TOs:

- NGESO should be informed immediately by each TO involved.
- The TOs shall use alternative means of communications wherever possible, including e-mail. Relaying messages through NGESO should be considered.
- The TO responsible for the failed voice communication system shall contact their service provider in order to repair the voice communication system in accordance with STCP 04-5: Provision of Control Telephony.
- The TO responsible for the failed voice communication system shall advise NGESO and other affected TOs of the expected restoration time and provide updates as appropriate.
- Following liaison between the TO and NGESO, consideration shall be given to suspending all planned Operational Switching work on TO circuits that may have an effect on an adjacent TO System, until advised that the voice communication system has been restored.

5.1.3 In the event of a partial voice communication failure, which the TO has deemed to be having a significant impact within its area but which does not affect voice communications between that TO and NGESO or that TO and another TO:

- If possible, the affected TO should inform NGESO immediately, and if appropriate the other TO.
- The affected TO shall use reasonable endeavours to re-establish voice communications using all available means, including mobile phones and radio systems where installed.
- NGESO shall be responsible for notifying any relevant Users connected to the National Electricity Transmission System of the relevant TO of the communications failure where appropriate.
- The affected TO shall contact their voice communication service provider and request that voice communications are restored as soon as possible.
- The affected TO shall advise NGESO of the expected restoration time of the voice communication system and provide updates as appropriate.
- Following liaison between the TO and NGESO, consideration shall be given to suspending planned Operational Switching on TO circuits until communications are restored.

5.2 Voice Communication restoration

5.2.1 On the restoration of voice communication in the circumstances set out in section 5.1:

- The party responsible for the failed communications network shall inform NGESO and/or the TO(s) of such a restoration of the voice communications service immediately following such restoration.
- The TO shall inform NGESO of all Users who were notified of the telephony failure under section 5.1.1. NGESO shall inform these Users of the return to service of the telephony systems.
- NGESO and TO(s) shall update each other on any Events on the National Electricity Transmission System, which occurred during the communications failure.
- NGESO and TO(s) shall discuss any planned work that has been required to be postponed and make arrangements to reschedule as appropriate.
- NGESO or the affected TO shall prepare a report on the failure. Such report is to be prepared in accordance with STCP 03-1: Post Event Reporting.

5.3 TO to NGESO Datalink Failure and NGESO SCADA Failure.

5.3.1 In the event of a complete failure of the Datalink between NGESO and one or more TOs:

- NGESO shall inform the TO(s) of the failure of the Datalink.
- Each affected TO shall advise NGESO on an ongoing basis of the configuration of that TO's Transmission System and any significant Operations and Events through telephone communication. NGESO may request the TO(s) to supply certain analogue data items via telephone on a regular basis. These analogue data items may include, but are not limited to:
    - MW data;
    - MVAr data; and
    - other voltage data.

  Upon a request from NGESO to the TO(s) to provide such analogue data, the TO(s) shall provide such data to NGESO as soon as reasonably practicable.
- Following liaison between the TO and NGESO, consideration shall be given to suspending planned Operational Switching on TO circuits until the Datalink is restored. The TO may continue to issue switching instructions for operational switching, Isolation and Earthing on plant that has been released under a TSC in accordance with STCP 01-1 Operational Switching.
- NGESO or the TO responsible for the failed Datalink equipment shall investigate and restore the Datalink as soon as possible.
- NGESO or the TO responsible for the failed Datalink shall advise other Parties, as appropriate, of the expected restoration time for the Datalink and associated equipment and provide updates as appropriate.

5.3.2 In the event of complete failure of NGESO SCADA system:

- NGESO shall inform the TOs as soon as reasonably practicable of the loss of the NGESO SCADA system.
- Each TO shall advise NGESO on an ongoing basis of the configuration of that TO's Transmission System and any significant Operations and Events through telephone communication. NGESO may request the TOs to supply certain analogue data items via telephone on a regular basis. These analogue data items may include, but are not limited to:
    - MW data,
    - MVAr data; and,

- Other voltage Data.

Upon a request from NGESO to the TO(s) to provide such analogue data, the TO(s) shall provide such data to NGESO as soon as reasonably practicable.

- NGESO shall advise the TOs on the expected restoration time of the NGESO SCADA and provide updates as appropriate.
- Following liaison between the TO and NGESO, consideration shall be given to suspending planned Operational Switching until NGESO SCADA is restored. The TO may continue to issue switching instructions for Operational Switching, Isolation and Earthing on plant that has been released under a TSC in accordance with STCP 01-1 Operational Switching.
- NGESO shall take action to ensure the NGESO SCADA shall be restored as soon as possible following failure.
- NGESO shall be responsible for any communication of the NGESO SCADA failure to Users where operationally necessary.

5.3.3 On restoration of the TO-NGESO Datalink or NGESO SCADA the following actions shall be taken:

- NGESO shall inform the TO(s) immediately of such restoration.
- NGESO and each TO shall update each other of any Events on the System that occurred during the Datalink or NGESO SCADA failure.
- NGESO and the TO(s) shall discuss any planned work that has been required to be postponed and make arrangements to reschedule as appropriate in accordance with STCP 01-1: Operational Switching.
- NGESO or the TO responsible for the failed Datalink equipment shall prepare a report on the failure. Such report is to be prepared in accordance with STCP 03-1: Post Event Reporting.
- NGESO shall prepare a report on the failure of NGESO SCADA system. Such report is to be prepared in accordance with STCP 03-1: Post Event Reporting.

5.4 Total or Partial TO SCADA Failure or Significant Outstation Failures.

5.4.1 In the event of a total or partial TO SCADA failure which the TO has deemed as having a significant effect on its Transmission System the TO:

- shall advise NGESO of the TO SCADA failures;
- shall implement their contingency plans that were prepared in accordance with section 3.1.2;
- initially suspend all planned Operational Switching work on the TO's Transmission System in accordance with STCP 01-1: Operational Switching;
- shall advise NGESO on the expected restoration times for the TO SCADA/outstations and provide updates where necessary;
- shall investigate and repair the TO SCADA facilities as soon as possible;
- shall decide, following discussions with NGESO, if contingency staffing of substations, strategically important to the System, is required to ensure control of the National Electricity Transmission System is maintained;
- may decide to staff additional operational facilities (including outstations), where available, to give alternative arrangements to complete switching duties in the event of TO SCADA failure; and

- where appropriate, and in the event of a total SCADA failure, the TO may decide to evacuate to their Emergency Control Centre. In this event the procedures described in STCP 06-3 System Incident Management should be followed.

5.4.2 Users shall be notified of the TO SCADA failures by NGESO and shall be requested to supply relevant information to the appropriate Party.

5.4.3 On restoration of TO SCADA Facilities or outstation facilities, the following actions shall be taken:

- The TO shall inform the NGESO and the other TO immediately of such restoration.
- All Users informed in section 5.4.2 shall be notified of the return to service of the TO SCADA systems by NGESO.
- Where the Emergency Control Centre has been utilised, NGESO/TO shall complete a controlled return to the Main Control Centre notifying all Users when control has been re-established there.
- NGESO and TOs shall update each other on any Events on the System during the TO SCADA or outstation failure.
- NGESO and TOs shall discuss any postponed planned work and make arrangements to reschedule as appropriate.
- The TO shall prepare a report on the failure. Such report is to be prepared in accordance with STCP 03-1: Post Event Reporting.

Appendix A: Flow Diagram

Note that the Process Diagrams shown in this Appendix A are for information only. In the event of any contradiction between the process represented in this Appendix and the process described elsewhere in this STCP, then the text elsewhere in this STCP shall prevail.

STCP 06-4 Contingency Arrangements - Telephony Infrastructure
Page 1
Users
SO
TO
TO
Is the voice communication failure between SO and the TO(s)?
Yes
No
Does failure prevent SO from communicating with Users in TO's area?
Users notified , as appropriate
No
Yes
TO advises other TO and Users
Is the voice communication failure between the TO(s)?
Yes
Both TOs advise SO
No
Is impact significant within TO's licensed area?
End
No
Yes
TO informs SO and other TO immediately
Other TO informed
TO uses all available systems e.g mobile phones and radio systems
SO & TO consider suspending all planned Operational work on affected TO circuits that may affect adjacent TO's system
SO & TO consider suspending all planned Operational Switching work on all TO circuits
All planned Operational Switching work suspended on GB Transmission System, except where in accordance with a TSC
SO and TO use alternative means of communciation
TOs use alternative means of communciation
Responsible party contacts service provider to repair the system (see STCP 4.5)
Responsible party contacts service provider to repair the system (see STCP 4.5)
Responsible party advises SO and the other TO of expected restoration time
Responsible party advises SO and other TO, or both TO's if SO responsible party, of expected restoration time
Go to B

STCP 06-4 Contingency Arrangements - Telephony Infrastructure
Page 2
Users
SO
TO
TO
B
System Repaired
Upon Restoration of voice communication responsible Party informs SO (if SO not responsible Party) and other TO.
TO advise SO of all Users notified of the telephony failure
SO advised
Users notified as appropriate
SO/TO update each other on any events on the system which occurred during the communications failure
SO/TO discuss any postponed planned works and reschedule
SO and/or TO obtain report on failure and follow processes set out in Post-Event Reporting STCP 3-1 Post Event Reporting
End

STCP 06-4 TO SCADA or Significant Outstation Failures
Page 1
Users
SO
TO
Complete TO SCADA failure/ outstation failure
Does failure have a significant effect on TOs system?
No
Yes
End
SO advised
Users notified
SO notify Users of SCADA failure
SO advised
TO advises SO
SO/TO liaison
TO considers evacuating Emergency Control Centre
Exchange of Details (in accordance with STCP 6-3)
Evacuation of Control Centre?
No
TO implements contingency plan
TO suspends all planned Operational Switching work
TO advises SO on expected restoration time for SCADA/oustation
SO advised
TO provides SO with update
SO/TO liaison
Is contingency manning of the substations required?
Yes
Contingency manning of strategic sub-stations
No
TO staffs additional facilities to complete switching duties
Service Restored
Users informed
SO advises Users of Return to Service
TO advises SO and other TOs once SCADA is restored
Users notified
TO completes a controlled return to main Control Centre, if applicable
SO/TO advise of any events that occurred during the failure
SO/TO discuss any postponed planned work, and reschedule
SO/TO obtains reports on failure of SCADA
(see Post Event Reporting STCP 3-1)

STCP 06-4 TO to SO Datalink Failure and SO SCADA Failure
Page 1
Users
SO
TO
Is there a complete failure of the datalink?
Yes
No
SO inform TO of failure
Is there a complete failure of SO's SCADA system?
No
End
Yes
SO inform TO of failure
TOs informed
Users informed
SO inform Users of failure (where operationally necessary)
SO requests configuration of network and any significant operations and events via telephone (SO may also request analogue data)
TOs advise SO on configuration of network and any significant operations and events via telephone (TOs provide analogue data where requested)
SO receives analogue data where requested by SO
SO/TO liaison
Planned Operational Switching suspended (where necessary)
TO continues to issue switching instructions for isolation & earthing on plant released via a TSC
SO or responsible party investigates fault and advises relevant party of expected restoration date
Datalink/SCADA facilities restored
SO informs TO(s)
TO(s) informed
SO/TO advise of any events that occurred during the failure
SO/TO discuss any postponed planned work, and reschedule
For SCADA:
SO reports on failure (see Post Event Reporting STCP 3-1)
For Datalink:
Responsible party reports on failure (see Post Event Reporting STCP 3-1)

Appendix B: Abbreviations & Definitions

Abbreviations

IS	Information Systems
PSTN	Public Service Telephone Network
PTN	Private Telephone Network
SCADA	Supervisory Control And Data Acquisition system
SHETL	Scottish Hydro Electric Transmission Ltd
SPT	SP Transmission Ltd
STCP	System Operator –Transmission Owner Code Procedure
TO	Transmission Owner
TSC	Transmission Status Certificate

Definitions

STC definitions used:
Code Effective Date
Earthing
National Electricity Transmission System
Isolation
NGESO
NGET
Party
System
System Restoration
Transmission System
User

Grid Code definitions used:
~~Black Start~~
Control Centre
Event
Operation
Operational Switching

Definition used from other STCPs:
Transmission Status Certificate STCP 01-1: Operational Switching