PR-NET-OSM-019

SYSTEM EMERGENCY PROCEDURES

OPERATIONAL SAFETY MANUAL - SECTION 2.9

Scottish & Southern Electricity Networks

	Name	Title
Author	N/A	Distribution SHE Team
Checked by	Peter Vujanic	Head of SHE Distribution
Approved by	Richard Gough	Designated Engineer

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1 Introduction

1.1 Emergency situations when they affect the **System** can result in or potentially result in a large-scale loss of supplies. Clear procedures are required in such situations to effectively restore supplies, to prevent large scale loss of supplies and to ensure safe and effective management of the **System**.

1.2 Good planning, preparation and procedures for a **System Emergency** can help employees respond effectively with a minimum of delay to ensure that appropriate actions are taken to minimise the risk to employees, customers, **Plant** and **Apparatus** and the environment.

1.3 This document defines the procedures for responding to a **System Emergency** to ensure timely restoration of supplies, to minimise network risk and to ensure safe and effective control of the **System**, in particular to ensure Safety from the **System** is maintained.

2 Scope

2.1 The scope of this document relates to a **System Emergency** affecting **SSEN-D**'s Distribution **Systems** including:

- Exceptional Weather
- Storms.
- Disaster Recovery Sites (Control Centres)
- Demand Control
- Black Start

2.2 This document does not repeat procedures in specific contingency plans for managing each **System Emergency** in 2.1.

2.3 This document specifically addresses the operational safety aspects for responding to a **System Emergency** rather than **General Safety** and general management aspects of emergency procedures, which are captured in other **SSEN-D** procedures.

2.4 It applies to all persons employed by or working on behalf of **SSEN-D**, in particular to employees who have to provide an immediate response to a **System Emergency**.

2.5 This document does not cover:

- Operational response for flooding events (see PR-NET-OSM-079 Operational Response to Flooding Events - Operational Safety Manual - Section 12.8)
- Non-operational response to emergencies

3 References

The documents detailed in Table 3.1 - Scottish and Southern Electricity Networks Documents, and Table 3.2 - External Documents, should be used in conjunction with this document.

Table 3.1 - Scottish and Southern Electricity Networks Documents

Reference	Title
PR-NET-OSM-006	SSEN Distribution Operational Safety Rules - Operational Safety Manual – Section 1.1
PR-NET-OSM-028	Switching Terminology and Approved Abbreviations - Operational Safety Manual - Section 4.4

Reference	Title
PR-NET-OSM-008	System Control Procedures - Operational Safety Manual - Section 2.1
PR-NET-OSM-079	Operational Response to Flooding Events - Operational Safety Manual - Section 12.8
PR-NET-OSM-020	Manual Reclosing of Circuits Post Trip, Sequence Operation and Lockout - Operational Safety Manual - Section 2.10
PR-NET-EPR-011	Response to Network System Emergencies
MA-NET-EPR-006	Storm Management Manual
PR-NET-EPR-016	Imported Staff for System Emergencies
PR-NET-EPR-002	Networks Procedure for Demand Control
PR-NET-EPR-001	Black Start Procedure
FO-NET-EPR-002	Control Room Checklist and Event Log
N/A	SSEN SHE Handbook (Held in Safety, Health and Wellbeing SharePoint Site)

Table 3.2 - External Documents

Reference	Title
Grid Code OC 1.5	Data Required by NGC in the Programming Phase, Control Phase and Post-Control Phase
Grid Code OC 6	Demand Control

4 Definitions

4.1 The words printed in bold text within this document are either headings or definitions. Definitions used within this **Approved** Procedure are defined within the list presented immediately below, or within section 2 of the **SSEN Distribution Operational Safety Rules**.

4.2 **Alert**

Companywide alert that is issued when an event, either forecast, in progress or has occurred, which requires **SSEN-D** to prepare for and/or respond to the impact on the **System**.

NOTE: Four levels of Alert are defined in Table 4.1 of PR-NET-EPR-011 being: Weather Warning; Yellow **Alert**; Red **Alert**; Deep Red **Alert**.

4.3 **Control Room Assistant**

A staff member who is delegated certain non-operational responsibilities by a **Control Engineer** during a **System Emergency**.

NOTE: Only persons who have current authorisation as **Control Engineer Shall** be permitted to perform the role of **Control Engineer** in a **System Emergency** – given the risks involved.

4.4 **System Emergency**

Event that has resulted in or has the potential to have a severe impact on the normal operation of the **System** and result in a large-scale loss of supplies.

4.5 **North East West South Aid Consortium (NEWSAC)**

Electricity industry agreement which governs the 'loan' of employees from Network Operators (Nos) to other NOs during a **System Emergency**.

4.6 **Operational Safety Rules (OSR)**

The **SSEN-D** Distribution set of rules, as read with related documents and procedures, that provide generic safe systems of work on the **System** therefore ensuring the health and safety of all who are liable to be affected by any **Danger** that might arise from the **System**.

5 General Principles

5.1 Regardless of a **System Emergency** being declared the safety and welfare of persons, including the public, **Shall** be paramount.

5.2 The **SSEN-D** management procedures detailed within PR-NET-EPR-011 and the **SSEN-D** SHE Handbook **Shall** be followed in conjunction with this Approved procedure.

5.3 All persons likely to be involved in a **System Emergency** response **Shall** be trained according to their roles and responsibilities.

6 Alert & Immediate Actions

6.1 In the event of a **System Emergency**, the NMC Manager, or designate, after liaising with the relevant Distribution Director, **Shall** issue and communicate the appropriate level of **Alert** (see Table 4.1 of PR-NET-EPR-011) for the affected parts of the **System**.

6.2 **Control Engineers Shall** familiarise themselves with the **Alert** condition and the specific actions to be taken for that **Alert** condition (see PR-NET-EPR-011).

6.3 Where there is advance warning of a **System Emergency**:

- any pending planned outages in the affected parts of the **High Voltage System Shall** be reviewed to assess possible impact on the **System** and postponed or cancelled where required
- any planned outages on the affected parts of the **High Voltage System** that are in progress should, where practicable, be halted and the affected part of the **High Voltage System** should be restored promptly

7 Exceptional Weather & Storms

7.1 In an exceptional weather event or storm there is greater likelihood of low **Conductors** or **Conductors** on the ground because of damage to overhead lines. Reports of low **Conductors** or **Conductors** on the ground that are received should be prioritised by the Customer Contact Centre or Region, as appropriate, and the relevant details notified to the **Control Engineer**.

7.2 Any **Conductor** that is grounded, broken, or hanging in trees **Shall** be treated as **Live** unless proved **Dead** in accordance with the **Operational Safety Rules (OSR).**

7.3 Faults and associated repairs to the **System** operating at 33kV and above, **Shall** be prioritised by the number of customers off supply to ensure the maximum number of supplies can be restored in the shortest time. The initial priority **Shall** be to restore supplies through **Switching**, deferring repairs if necessary.

7.4 The **Control Engineer Shall** consider the need to restore vulnerable customers and supplies ahead of other supplies.

7.5 In an exceptional weather event, the **Control Engineer Shall** check for any reports of low **Conductors** or **Conductors** on the ground prior to and during fault **Switching** operations in an area. Where reports indicate the presence of a low **Conductors** or **Conductors** on the ground then the **Control Engineer Shall** take steps to prevent the **Conductors** being made **Live** during fault **Switching** operations. Refer to PR-NET-OSM-020 Manual Reclosing of Circuits Post Trip, Sequence Operation and Lockout - Operational Safety Manual - Section 2.10 for details on the **Approved** response to low **Conductors**.

7.6 In exceptional weather events fault dispatch **Shall** be transferred from the Customer Contact Centre to the Region, where the number of faults becomes too high.

7.7 The **Control Engineer Shall** update the Customer Contact Centre or the Region, as appropriate, with details of new **High Voltage** faults and estimated restoration times for faults in progress. The **Control Engineer** may delegate this duty to suitably trained **Control Room Assistants**.

7.8 In exceptional weather events, where **Control Engineers** are dealing with a large volume of **High Voltage System** faults, then normal control of the **System** at suitable locations should be transferred from the control centre to appropriately authorised Regional staff by implementing SCP 2 or SCP 3 in accordance with PR-NET-OSM-008 System Control Procedures - Operational Safety Manual - Section 2.1.

7.9 In order to manage the volume of faults, the **Control Engineer** may decide to transfer control of an agreed part of the **High Voltage System** to a suitably authorised Local Controller.

7.10 **System** Control **Shall** be applied in such a way to ensure that only one person is in control of any part of the **System** at any one point in time.

7.11 Where necessary, the priority for the **Control Engineer** overnight **Shall** be to prioritise Switching to identify fault locations, restore supplies to customers and to isolate fault locations ready for the following day.

7.12 In the event of lightning activity, then work on overhead line repairs **Shall** stop and the **Control Engineer** informed. All staff should remain on the ground until the lightning has cleared the area.

7.13 All other procedures for exceptional weather events (see MA-NET-EPR-006) **Shall** be followed.

8 Operational Requirements for Imported Staff

8.1 Staff imported under the **NEWSAC** mutual aid agreement **Shall** be briefed by a suitably **Authorised Person** with respect to **SSEN-D** Operational Procedures that apply to isolation, earthing and issue/cancellation of **Safety Documents** (see PR-NET-EPR-016) prior to carrying out any **Switching** operations or work on the **SSEN-D System**.

8.2 Any imported staff who are required to receive a **Safety Document** or are required to carry out **Switching Shall** have their authorisations validated and, if deemed suitable, **Shall** be issued with a temporary Competence / Authorisation Certificate (see Appendix A) and operational keys by an appropriate Authorisation Officer from **SSEN-D**.

8.3 The Authorisation Officer **Shall** record and maintain a record of the temporary Competence / Authorisation Certificates and operational keys issued to imported staff.

8.4 In a **System Emergency**, imported staff may apply their own Safety Locks to **SSEN-D Plant** and **Apparatus**.

8.5 Imported staff may use their own Company Approved notices, i.e. **Caution Notice** and **Danger Notice**, when operating on the **SSEN-D System** under a **NEWSAC** mutual aid agreement.

8.6 Imported staff may use their own operational tools and equipment, e.g. voltage testing devices, providing these are **Approved** by their own Company.

8.7 Imported staff may use their own Company **Approved Safety Documents** for initiating work on the **High Voltage System** under a **NEWSAC** mutual aid agreement.

8.8 Imported staff **Shall** not be temporarily authorised under NOP 3 or 4.

8.9 All other procedures for imported staff in PR-NET-EPR-016 **Shall** be followed.

9 Disaster Recovery Sites (Control Centres)

9.1 In the event that a Control Centre needs to be evacuated or there is a failure of the Network Management System at a Control Centre then normal control of the **System** should be transferred to the **Approved** contingency control site.

9.2 If the **Approved** contingency control site is not available or there is excessive demand on centralised control then control of the **System** should be transferred to appropriately Authorised Regional staff by implementing SCP 2 in accordance with PR-NET-OSM-008 System Control Procedures - Operational Safety Manual - Section 2.1.

9.3 In the event that there is a complete failure of the Network Management System and there is excessive demand at the Control Centre then normal control of the **System** should be transferred to appropriately authorised Regional staff.

10 Demand Control

10.1 In the case of demand disconnections, the Control Centre Manager should contact the Head of Corporate Affairs Networks and the Head of External Relations who will then liaise with National Grid ESO communications team to activate the roll-out of the industry agreed Grid Code OC6 messaging.

10.2 Instructions from National Grid ESO **Shall** be implemented without delay and confirmed within 5 minutes together with estimates of the load reduced or connected. Actual values must be confirmed the following day in accordance with Grid Code OC1.5.

10.3 Restoration of demand following operation of the Low Frequency Demand Disconnection (LFDD) scheme **Shall** not commence until associated instructions have been received from National Grid ESO.

10.4 Under severe **System Emergency** conditions, National Grid ESO may instruct **SSEN-D** to disconnect demand immediately, regardless of system frequency. Such disconnections **Shall** be completed by **SSEN-D** without delay.

10.5 All other procedures in PR-NET-EPR-002 **Shall** be followed.

11 Black Start

The procedures in PR-NET-EPR-001 **Shall** be followed.

12 General Responsibilities

12.1 In the event of a **System Emergency**, the Control Centre Manager, or designate, **Shall**:

- Predict the volume of **System** faults that could be expected for the **System Emergency**
- Issue the **Alert** for a **System Emergency** in accordance with PR-NET-EPR-011. Where required this **Shall** be copied to **NEWSAC** partners
- Ensure the relevant business continuity plan (BCP) for the NMC is followed:

PLN-NET-EPR-031	NMC Distribution South BCP
PLN-NET-EPR-040	NMC Distribution North BCP

- Implement the relevant contingency plan for the specific **System Emergency** event declared
- Ensure there are sufficient Control Centre resources (**Control Engineers** and Co-ordinators) to respond to the **System Emergency**
- Liaise with the Director of Customer Operations to co-ordinate the response to a **System Emergency**
- Be responsible for liaising with the National Grid Electricity System Operator (ESO), where the status of the **System** and the response to the **System** affects the operation and management of the Transmission **System**
- Provide regular updates to the Networks **Alert** Team including:
  - weather updates
  - number of **High Voltage** faults and customers affected (to date and outstanding)
  - estimated number of outstanding **Low Voltage** faults
  - an overview of the main areas affected and fault causes
- Make **SSEN-D** Telecoms and IT functions aware of the **Alert** and confirm that they prepared to mobilise sufficient resources to deal with any technical problems which may adversely affect supply restoration
- Ensure that there is continuity of control of faults / repairs during changes of **Control Engineer** to prevent **Danger**
- Request the mobilisation of sufficient and suitably located field staff to investigate reports of low **Conductors** and to carry out **Switching** and repairs to the **High Voltage System**
- When instructed by the Silver Commander, assign the Control Room Lead role to one of the persons nominated in Emergency Planning and Response Silver Command Structure This assignment **Shall** be communicated to the Silver Command Team and other Control Centre staff. The nominated Control Room Lead **Shall** follow the checklist and update the event log in FO-NET-EPR-002
- Be responsible for simulation and testing of these Emergency Procedures and for maintaining records of such

12.2 In the event of a **System Emergency** the Control Engineer **Shall**:

- Check that any person to be issued with **Switching** instructions has the appropriate level of **SSEN-D** Competency / Authorisation including valid temporary Competency / Authorisation Certificates for imported staff
- Ensure that the activities of **Work Parties** do not overlap

12.3 In the event of a **System Emergency** persons who are required to operate and undertake work on the **System**, or part thereof, **Shall**:

- Have a thorough understanding of the work and ensure on site risks are suitably assessed and appropriate control measures put in place before, during and after all activities

- Ensure that at all times during the work (or associated testing) **General Safety** arrangements are maintained and that other work areas are not adversely affected by the activities for which they are responsible
- Report to the **Control Engineer**, without unnecessary delay, any emergency **Switching**, where carried out and explain the circumstances necessitating such **Switching** at that time

13 Revision History

No	Overview of Amendments	Previous Document	Revision	Authorisation
01	New document created	TBC	1.00	Richard Gough
02				

Appendix A Temporary Authorisation/Competency Certificate

Scottish & Southern Electricity Networks

Temporary Authorisation / Competency Certificate

Issued To:	

I hereby extend the authorisation / competency as issued by:

……

To work on Scottish and Southern Electricity Networks Distribution.

It is agreed that the holder may work to their own Company's Safety Rules and Approved Procedures.

This temporary certificate will be cancelled immediately upon the expiry date below, or when the holder leaves the Scottish and Southern Energy Networks Distribution licence area.

ISSUER

Signed:	
Title:	
Valid From:	
Valid To:	

RECIPIENT

Signed:	
Date:	

Notes / Exceptions: