

1 SCOPE

This document details the procedures to be adopted prior to, during, and on completion of **Switching** operations, and details the manner in which **HV** and **LV Switching** shall be recorded in order to comply with the requirements of the ScottishPower Safety Rules (Electrical and Mechanical) 4th Edition. The scope of this document excludes single operations on **LV** cut-out fuses and **LV Switching** operations on substation auxiliary equipment such as motor supplies or DC protection unless a **Control Person** deems it a requirement.


2 ISSUE RECORD

This is a **Reference** document. The current version is held on the EN Document Library.

It is your responsibility to ensure you work to the current version.

Issue Date	Issue No.	Author	Amendment Details
March 2011	3	Geoff Ryan	Inclusion of Low Voltage Switching . Change from ROOF to SAFL. General revision.
March 2014	4	D McMenemy	Update to reflect enhanced requirements for application & removal of LV Control symbols, and removal of reference to Incident Controllers during switching. Document layout updated to reflect latest document template; changes to section numbers have occurred.
11/08/2016	5	John Geddes	Update to allow recording and reporting of Switching instructions by an Approved electronic device intended for the purpose 7.3.8 earth application via CB: requirement for precautions to be included in Switching schedule. 7.3.10 recording of protection

3 ISSUE AUTHORITY

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4 REVIEW

This is a **Reference** document which has a 5 year retention period after which a reminder will be issued to review and extend retention or archive.

The proposed revision date can be viewed in the Management Safety Procedures Document Index DOC-00-238.

DISTRIBUTION

This document is not part of a Manual maintained by Document Control and does not have a maintained distribution list.

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6 DEFINITIONS

Terms printed in bold type are as defined in the ScottishPower Safety Rules (Electrical and Mechanical) 4th Edition.

Terms printed in italics are as defined in the Definitions document (OPSAF-11-002) of the Management Safety Procedures.

7 RECORDING OF SWITCHING INSTRUCTIONS AND OPERATIONS

7.1 Format for the Recording of Switching Instructions

The record of instructions for issue, receipt and completion of **Switching** at all voltages shall comprise a statement of the **Switching** to be, or which has been, carried out detailing the actions to be taken and the time and date of their completion and shall be recorded by the **Person** completing the **Switching** on one of the following forms:

- A **Switching And Fault Log (SAFL)** [Appendix 1].
- A formal **Switching** schedule (for planned outages).
- an **Approved** electronic device
- An **Approved** Control Centre **Switching** log.

7.2 Preliminary Discussion

7.2.1 As a preliminary to the commencement of **Switching**, the **Authorised Person** responsible for carrying out the **Switching** shall identify himself to the **Control Person** involved. When communicating orally he shall confirm the identity of the **Control Person** for the intended job.

7.2.2 The **Authorised Person** and the **Control Person** shall discuss and agree the **Switching** requirements.

7.2.3 When an **Authorised Person** under training who holds OP-PS is to be involved in the **Switching** activity, this shall be clearly identified to the **Control Person** at the outset. The **Switching** instruction shall not be issued using an **Approved** electronic **Switching** device.

7.3 Switching Instructions – General

7.3.1 The **Authorised Person** shall take their **Switching** instruction (*SAFL*, paper copy of schedule or **Approved** electronic **Switching** device) with them for reference and updating during **Switching**.

7.3.2 Where an **Authorised Person** under training holding OP-PS is to carry out the **Switching**, this may only proceed when a *SAFL* or paper schedule is used and guidance on how this is performed is given in PSSI 1 section 9.9.

7.3.3 All **Switching** instructions shall be carried out in the sequence listed in the instruction.

7.3.4 At the **Apparatus Location** the **Authorised Person** shall check that the identification on the circuit or **Apparatus** matches the information on the **Switching** instruction.

7.3.5 A thorough visual check of all **Apparatus** shall be carried out both before and after any **Switching** action is carried out.

7.3.6 The time and date when each **Switching** action is carried out shall be recorded on the **Switching** instruction as soon as reasonably practicable after it has been completed. This shall be recorded before the next **Switching** item is carried out.

7.3.7 When the operation includes the closure of an overhead line earth switch, the **Circuit Identification** shall where practicable be recorded.

- 7.3.8 When a circuit breaker is to be closed to apply an earth to **HV Apparatus** and a precaution is required to prevent electrical tripping of the circuit breaker (e.g. by removal of the associated tripping links) then items shall be included on the **Switching** schedule or *SAFL* to record the application and removal of the precaution.
- 7.3.9 When **Switching** involves the operation of **LV** fuses or links in a link box or pillar which is marked with its ENID (Energy Networks Identity Number) this shall be recorded as part of the **Location** as it will enable accurate identification of the **Apparatus** if it is required to update the network diagram.
- 7.3.10 When it is required to alter to protection settings during a series of switching operations, e.g. inhibiting the auto-reclose facility on a circuit breaker during *HV Rubber Glove Working*, items shall be included on the **Switching** schedule or *SAFL* to record this alteration, and the restoration to normal operation.
- 7.3.11 *SAFL*, **Switching** schedules and **Approved** electronic **Switching** devices may use abbreviations as dictated by the control system or those listed in OPSAF-11-031 (MSP 4.6) **Safety Documents**. While there is nothing to prevent the **Authorised Person** from using unapproved abbreviations when completing *SAFL*'s, this practice is discouraged as it may lead to them using the same unapproved terms within **Safety Documents**.
- 7.3.12 There is a requirement in PSS1 1 section 9.8 for "**HV Switching** instructions to be given directly to the **Authorised Person** who is about to carry out the operation except for application of **Portable Earths** when the operation may be carried out by the **Authorised Person** receiving the instruction or by a **Person** acting under his **Personal Supervision**." In this circumstance there is no requirement for a separate *SAFL* to be completed by the second **Authorised Person** who is applying the **Portable Earths** under **Personal Supervision**. When two or more **Authorised Persons** are on site together for **HV Switching** outside the terms of PSS1 1 section 9.8 they will need to receive instructions directly from the **Control Person** but may use the same **Switching** schedule or *SAFL*, but not an **Approved** electronic **Switching** device, to record their actions.

When two or more **Authorised Persons** are on site for **LV Switching** it is acceptable for one **Person** to receive the instruction from the **Control Person** and to provide **Personal Supervision** to another **Authorised Person** carrying out the **Switching** action. In this circumstance there is no requirement for a separate *SAFL* to be completed by the second **Authorised Person**.

7.4 Changes to Switching Instructions

- 7.4.1 When **Switching** instructions have been issued on a *SAFL* or **Approved** electronic **Switching** device but it is not possible or desirable for them to be completed the situation shall be handled in accordance with PSS1 1 section 10.13.
- 7.4.2 When a pre-prepared paper **Switching** schedule is being used and it is discovered that the content or order of the schedule will need to be changed, the **Control Person** shall first consider whether it is reasonably practicable for the **Switching** to be halted in order for a revised schedule to be prepared and approved. Where this is not reasonably practicable the **Control Person** shall decide upon one of the following options:
- i) Minor alterations to an item (or items):
The **Control Person** shall instruct the change and the **Authorised Person(s)** shall hand-amend all existing paper schedules in the field.
 - ii) Significant but manageable changes to the schedule:
The **Control Person** shall instruct the cancellation of one (or more) items on all paper schedules in the field and issue new instructions to be recorded on a *SAFL* in accordance with section 7.6 of this document. Following completion of the new items, the **Control Person** shall instruct a return to the schedule.

- iii) Significant changes to the schedule rendering it unmanageable:

The **Control Person** shall instruct the cancellation of the remainder of the schedule and all further instructions shall be issued via a *SAFL* in accordance with section 7.6 of this document.

Where *Field Control* has already been established, the *Field Control Person* shall speak to the *Distribution Control Person* at the Control Centre and agree an appropriate course of action – this may involve relinquishing *Field Control*.

- 7.4.3 In addition to communicating with the **Control Person** while **Switching**, the **Authorised Person** shall ensure that the **Control Person** at the Control Centre is provided with adequate information to keep the **System** diagram up to date. This is particularly important when *Field Control* has been issued.

7.5 Switching Instructions – Pre-Prepared Switching Schedule

- 7.5.1 Where reasonably practicable all **Authorised Persons** involved in **Switching** shall be in possession of a copy of the **Switching** schedule or **Approved** electronic device. Where this is not reasonably practicable the **Control Person** may agree to issue instructions to an **Authorised Person** who shall record them on a *SAFL* document as described in section 7.6.

- 7.5.2 Where an **Authorised Person** who is to undertake **Switching** is in possession of a paper copy of the **Switching** schedule, the **Control Person** and the **Authorised Person** shall confirm that the “S” numbers on their copies are the same. If the “S” numbers are not the same then, where reasonably practicable, **Switching** shall be suspended until the **Authorised Person** is in possession of a valid copy of the **Switching** schedule. Where this is not reasonably practicable, the **Control Person** may agree to issue instructions to the **Authorised Person** who shall record them on a *SAFL* document as described in section 7.6.

- 7.5.3 If the “S” numbers are the same the **Control Person** may issue **Switching** instructions to the **Authorised Person** by referring clearly to the item numbers on the schedule. Examples:

- i) Item 8 only, issued at 10.45hrs.
- ii) Items 2, 3, and 4, issued at 09.30hrs.
- iii) Items 3 to 15 inclusive, issued at 13.15hrs.

The **Authorised Person** shall clearly repeat the item numbers and time of issue back to the **Control Person** who shall clearly confirm that these are correct. There is no requirement to read out the details of each item.

- 7.5.4 Instructions may be issued as individual items or in “blocks”, for example:

In circumstances where *Field Control* is not to be established:

- i) **Switching** items to configure the network (such as moving a normal split point, establishing backfeeds, disabling protection or automation schemes) and all **Switching** to establish **Points of Isolation**.
- ii) All **Switching** to apply **Primary Earths**.
- iii) Issue of **Safety Documents**.

In circumstances where *Field Control* is to be established:

- i) All initial **Switching** items to configure the network (such as moving a normal split point, establishing backfeeds, disabling protection or automation schemes) and may include **Switching** to establish **Points of Isolation**.
- ii) Handover to *Field Control*.

- 7.5.5 When a pre-prepared **Switching** schedule contains associated **LV Switching** to establish **Points of Isolation** then this **Switching** shall be detailed in full. When **LV Switching** is required to move split points or establish **LV** backfeeds, it is acceptable for the statement

“Establish LV backfeeds” to be used as an item on the schedule. The detail of the actual **LV Switching** undertaken shall be recorded on a separate *SAFL* by the **Authorised Person** undertaking the actions and does not need to be reported in detail to the *Distribution Control Person* other than to confirm a time/date when the **LV backfeeds** were established.

7.6 HV Switching Instructions when Pre-Prepared Switching Schedule is not available– Use of Switching And Fault Log (SAFL)

7.6.1 The **Control Person** shall give the **Authorised Person** a brief overview of the purpose of the **Switching** and shall confirm the Job Title, Job Reference Number and Date which the **Authorised Person** shall enter on the top line of the *SAFL*. The *SAFL* shall be completed legibly as this is the permanent record of the operations.

7.6.2 The **Control Person** shall then issue the first instruction to the **Authorised Person**, the format being:

- i) Item number.
- ii) **Location.**
- iii) **Circuit/Apparatus Identification.**
- iv) Action, which shall include the application of Safety Locks and the posting of **Caution Notices.**

7.6.3 When the **Authorised Person** has recorded the first item, he shall repeat the entire line back to the **Control Person** who shall clearly confirm that it is correct.

7.6.4 When the **Control Person** has confirmed the item has been recorded correctly, he shall issue any further items, one at a time. The **Authorised Person** shall then repeat back each instruction clearly, the **Control Person** confirming that they are correct. If there are more operations than can be accommodated on one *SAFL*, multiple forms shall be used, each one being numbered consecutively.

7.6.5 When all **Switching** items have been issued and written down, the **Authorised Person** shall read back to the **Control Person** all the items issued to ensure nothing has been missed out and that the items are in the correct order.

7.6.6 The **Authorised Person** shall then complete the “Instructed by” and “Instructed to/Completed by” sections on the *SAFL* and shall record:

- i) Instructed by: The **Control Person’s** name (who issued the instruction).
- ii) Instructed to: **Authorised Person’s** name (them self).
- iii) Instructed Time/Date (to be confirmed with the **Control Person**).

7.6.7 The **Authorised Person** may then undertake the **Switching** actions, recording the Completion Time/Date after each action is complete.

7.6.8 When all the actions have been completed and recorded, the **Authorised Person** shall contact the **Control Person** to provide confirmation of the completed **Switching**/operations. This shall be recorded on the *SAFL* together with the “Confirmed Time/Date” which will be instructed by the **Control Person**.

7.7 HV Switching Instructions when Pre-Prepared Switching Schedule is not available– Use of Approved electronic Switching device

7.7.1 The **Control Person** and the **Authorised Person** shall initially discuss the purpose of the required **Switching** and agree what **Switching** is to be instructed. The **Control Person** shall send the agreed **Switching** instruction to the **Authorised Person’s Approved** electronic **Switching** device, the **Authorised Person** shall review the instructions and confirm acceptance.

7.7.2 The **Authorised Person** may then undertake the **Switching** actions, confirming the completion time/date after each action is complete.

7.8 Recording of LV Only Switching – Use of Switching And Fault Log (SAFL)

7.8.1 The **Control Person** for the **LV System** is the **Authorised Person** responsible for undertaking the **Switching** themselves or issuing instructions to other **Authorised Persons**. This **Control Person** is referred to below as “the **Authorised Person in Charge**”.

7.8.2 In all cases where a sequence of **LV Switching** is not included in a pre-prepared **Switching** schedule, the **Switching** shall be recorded on a **SAFL**. The **SAFL** is completed as follows:

- i) The “Job Title” will be the address/**Location** and brief details of the job (or fault).
- ii) The “Job Ref No.” will be a reference number for the job (if any).
- iii) “Name” is the **Authorised Person** in Charge of the work.
- iv) “Date” is the start date.
- v) “Page: _ of _” is used to record the number of sheets required to complete the job or fault.
- vi) When the **SAFL** is used as an **LV** fault log, details of the “Circuit Source”, “Circuit Name”, and “Status” are recorded on the first few lines of the form (see Appendix 2).
- vii) “Item No.” is the Action Number.
- viii) “**Location**” is the address or substation name (number) e.g. “Outside 25 Grange Road”, or “Link Box Corner of Smith St/Jones St”, or “Baker St S/S (02/4266/17)”.
- ix) “**Circuit/Apparatus Identification**” is the circuit or **Apparatus** name e.g. “Park Street Feeder” or “**LV** cable between Baker St S/S and Jones St S/S.”
- x) “Action” is the action or operation e.g. “Remove fuses and post **Caution Notice**” or “Cut Cable Cores and post **Caution Notice**” or “Replace Links”.
- xi) “Instructed by” is only used when the **Authorised Person** in Charge instructs another **Authorised Person** to undertake any **Switching** or other actions.
- xii) “Instructed to/Completed by” is filled in by the **Authorised Person** in Charge when either they, or another **Authorised Person**, complete any **Switching** or other actions. “Confirmed to” is used when any changes to the **LV** running arrangement are applied and the operational diagram is updated. It is necessary to record changes to running arrangements as soon as reasonably practicable after the changes are made.
- xiii) Under fault conditions, if the job is to be handed over to another **Authorised Person** in Charge before it is complete, then the “**LV FAULTS**” section at the bottom of the page shall be completed.

7.8.3 Where the **Authorised Person** who has assumed control of the **LV System** (the **Authorised Person in Charge**) is to issue a **Switching** instruction to another **Authorised Person**, they shall check that the **Authorised Person** receiving the instruction is authorised to carry out the activity. Both **Authorised Persons** shall keep a record of the instruction on their own copy of a **SAFL**.

7.8.4 The **Switching** instructions shall then be managed in accordance with Paragraphs 7.6.1 to 7.6.8 inclusive.

7.9 Real-time Updating of Operational Diagrams

7.9.1 The responsibility for maintaining an up-to-date **HV System** diagram rests with the **System Control Person** in the central control room.

7.9.2 The responsibility for updating the **LV System** diagram rests with the **Authorised Person** in the field who assumes control responsibilities when operating on the **LV System**. When any Changes are made to the running arrangements of the **LV System** the **System** diagram shall be updated in real-time as soon as is reasonably practicable.

8 ENERGISATION OF HV AND LV APPARATUS

8.1 Visual Inspection

Before carrying out **Switching** that involves the energisation of **HV** or **LV Apparatus**, the **Authorised Person** shall, where practicable, visually check that the **Apparatus** is complete and clear of all obstructions and loose equipment.

8.2 Control of Working Party

The **Authorised Person** in Charge shall ensure that any **Persons** known to be working on the **LV Apparatus** have been warned to stop work and stand clear until the energisation is complete (see OPSAF-10-012 PSSI 12).

8.3 Confirmation of Load

After energising the **Apparatus**, the **Authorised Person** shall, where practicable, confirm from meters and indications that the circuits involved are taking load in a satisfactory manner.

9 RECORDING OF RELAY INDICATIONS AND ANNUNCIATOR ALARMS UNDER HV FAULT CONDITIONS

When circuit breakers trip under fault conditions, the associated relay indications and annunciator alarms shall be recorded and the information retained until such time as any investigation has been concluded. Where a substation logbook has been provided, this shall be used for recording purposes.

10 SUBSTATION LOGBOOKS

Substation logbooks shall be used to provide a dated and time sequenced record of all visits to substations, together with identities of **Persons** entering, brief details of the purpose of each visit and any actions taken, where such actions are considered to be of operational significance. A detailed record of multiple **HV** and associated **LV Switching** operations need not be replicated in the substation logbook but an entry referring to the **Switching** schedule or **SAFL** shall be made:

e.g. “**Switching** to Schedule No. S3442” or “**Switching** to **SAFL** 106405-h”.

For **Switching** associated with **LV** faults, a detailed record of the replacement of blown fuses shall be made in the logbook.

No page, blank or otherwise, shall be removed from a substation logbook and no substation logbook shall be removed from a substation without the prior consent of the Network Manager.

11 RETENTION OF RECORDS

Records of **HV** and **LV Switching** shall be retained for a minimum period of two years as prescribed below:

- i) Control Logs by the **Control Person** at the appropriate Control Centre. When an **Approved** electronic device has been used the information will be retained on the Control log.
- ii) **SAFL** by the **Authorised Person**.
- iii) Substation logbooks by the appropriate District Manager.

APPENDIX 1 (Cont'd)

Guidance on Completion of the Switching And Fault Log (SAFL)

For full guidance on **HV Switching**, reference should be made to both PSSI 1 and OPSAF-11-010 (MSP 1.8).

- PSSI 1 details the procedures to be adopted when carrying out **HV Switching**.
- OPSAF-11-010 (MSP 1.8) details the procedures to be adopted prior to, during and on completion of **HV Switching** and the manner in which **HV Switching** shall be recorded.

The *SAFL* shall be used by **Authorised Persons** receiving **Switching** instructions and by *Field Control Persons* issuing **Switching** instructions when a formal **Switching** schedule is not available. The undernoted guidance should be applied.

- As best practice, use only **Approved** abbreviations as detailed in OPSAF-11-031 (MSP 4.6) and the Safety Rules Handbook.
- Where a job requires more than one page, the pages shall be numbered consecutively.
- Insert:
 - Job Title; Job Ref No. (if any); Name; Date; Page No.
 - Item No. – start a new line for each item of **Switching**/operation.
 - **Location** – the name of the substation or geographic **Location** where **Switching**/operations is to be undertaken.
 - **Circuit/Apparatus Identification** – the name or number which uniquely identifies the circuit or **Apparatus**.
 - Action – the required action or operation including reference to application of Safety Locks and **Caution Notices**.
 - Instructed by – the name of the **Control Person** (if any) instructing the action.
 - Instructed to – the name of the **Authorised Person** (if any) receiving the instruction.
 - Instructed Time / Date – as agreed with the **Control Person** (if any).
 - Completed by – the name of the **Authorised Person** completing the action.
 - Completed Time / Date – the time and date the action was completed.
 - Confirmed to – the name of the **Person** the **Switching** was confirmed to (if any).
 - Confirmed Time / Date – the time and date the action was confirmed.
- **LV** Faults – when used as an **LV** fault log, this section is used if the job is not complete and is to be handed on to another **Authorised Person**.

APPENDIX 2 – EXAMPLE OF COMPLETED SAFL

SWITCHING AND FAULT LOG		JOB TITLE: <i>Damaged cable O/S Z1 Grange Rd, Morton</i>		JOB REF NO. <i>INCD-251834-h</i>		NAME: <i>B Smith</i>		DATE: <i>4/4/11</i>	
								PAGE: <i>1 of 1</i>	
Item No.	Location	Circuit / Apparatus Identification	Action	Instructed by	Instructed to / Completed by	Confirmed to			
				Instructed Time / Date	Completed Time / Date	Confirmed Time / Date			
	<i>CIRCUIT SOURCE</i>	<i>CIRCUIT NAME</i>	<i>STATUS</i>						
	<i>Grange Rd North S/S 05/2711/15</i>	<i>Grange Rd South</i>	<i>Fuses found blown. Circuit not Live</i>						
	<i>Binns Rd S/S 05/2698/21</i>	<i>Grange Rd North</i>	<i>Fuses found blown. Circuit not Live</i>						
	<i>Link Box C/O Grange Rd And Link Rd</i>	<i>Grange Rd North East</i>	<i>Links out (NOP) Circuit not Live</i>						
	<i>ACTIONS</i>								
<i>1</i>	<i>O/S 19 Grange Rd</i>	<i>Cable cores cut & proved not Live Towards damage</i>	<i>Caution Notice Posted</i>		<i>B Smith 05.20</i>				
<i>2</i>	<i>O/S Z1 Grange Rd</i>	<i>Cable cores cut & proved not Live Towards damage</i>	<i>Caution Notice Posted</i>		<i>B Smith 06.15</i>				
<i>3</i>	<i>Grange Rd North S/S 05/2711/15</i>	<i>Grange Rd South</i>	<i>Fuses replaced</i>		<i>B Smith 06.32</i>				
<i>4</i>	<i>Binns Rd S/S 05/2698/21</i>	<i>Grange Rd North</i>	<i>Fuses replaced</i>		<i>B Smith 06.47</i>				
<i>5</i>	<i>Link Box C/O Grange Rd And Link Rd</i>	<i>Grange Rd North East</i>	<i>Links replaced (low volts reported)</i>		<i>B Smith 07.04</i>	<i>LV Dispatcher</i>	<i>07.15</i>		
LV FAULTS		Job Complete? <i>Y/N</i> (If no complete details).	Job handed over to: <i>R Jones</i>	Date: <i>4/4/11</i>	Time: <i>08.30</i>	Copy passed on? <i>Y/N</i>			