

Instructions

Instructions for the Switching Supervisor

Document ID: [SDOK-515-54](#), revision: 4.0

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Team: [Elsikkerhet](#)

Responsible: [Jon Halvor Holtet](#)

Document owner: [Arnfinn Granheim](#)

Verified: 30.12.2022 by [Jon Halvor Holtet](#)

Approved: 30.12.2022 by [Arnfinn Granheim](#)

Planned review by: 30.12.2025

Keywords: EI-sikkerhet

Based on the Norwegian document SDOK-515-10

1 Governing policy and legislation

These Instructions for the Switching Supervisor are subject to [policy sikkerhet](#) (Safety Policy). They are a supplement to, and superceded by [FSE 2006](#) (Safety regulations related to the maintenance and operation of electrical installations) which is pursuant to the [Lov om tilsyn med elektriske anlegg og elektrisk utstyr](#) (Act relating to the Inspection of Electrical Installations and Electrical Equipment).

2 Purpose and validity

The purpose of these Instructions is to ensure a high level of safety during work on or in the vicinity of Statnett electrical installations and during their operation, by requiring adequate planning of all activities and the implementation of necessary safety practices to avoid any risk to life, health, or property.

These Instructions apply to all high voltage installations where Statnett has operational responsibility.

3 Intended audience

All Statnett employees and external personnel who are authorised Switching Supervisors on electrical installations where Statnett has operational responsibility, and personnel who are conducting tasks ordered by the Switching Supervisor, according to these Instructions.

4 Definitions

Switching Supervisor: Person appointed to have responsibility for ensuring that all necessary switching operations in high voltage installations are conducted safely.

Safety Supervisor HV (high voltage): Person appointed to have responsibility for electrical safety at the worksite.

Operations Manager HV (high voltage): Person appointed by the owner/manager to carry out and be responsible for the ongoing management and maintenance of the electrical installations.

5 Switching Supervisor

5.1 System Duty Officer at the Northern and Southern Regional Centres

5.1.1 Following applicable routines, a System Duty Officer is appointed at the relevant regional centre. The Primary Duty Officer also takes on the role of Switching Supervisor and has authority to conduct switching operations. The System Duty Officer may delegate switching tasks to another authorized Switching Supervisor.

5.2 Switching

5.2.1 The Switching Supervisor shall plan and normally conduct all switching operations himself/herself. For complex switching operations, a written switching plan should be

used, either in the form of previously defined lists of operations, or a dedicated switching plan for the operation concerned.

- 5.2.2 When switching operations take place at the local substation, all instructions and switching must be recorded in the duty journal. The Switching Supervisor must give each switching order as a spoken order, and the person carrying out the order must repeat it aloud and write it down before carrying it out. If the other party fails to repeat an order, the Switching Supervisor must ask that it be repeated. A switching order must comprise details of the function identification tag on the breaker and the word "IN" or "OUT". When the switching task has been completed, the person who has carried out the order must confirm this to the Switching Supervisor by stating the breaker's function identification tag and new position. Persons who perform switchings locally shall either have authorization "GP" in the security card database, have authorization Safety Supervisor HV for work on or in the vicinity of earthed and short-circuited installations for the substation, or have specific authorization from the Operations Manager HV to perform switchings associated with function testing, ref. section 5.2.4.
- 5.2.3 If it is not possible to operate a breaker from the control board or display, substation personnel must immediately contact the Switching Supervisor before continuing the switching operation, cf. section 5.4 Switching from an unsafe position and section 5.5 Non-interlocking operations.
- 5.2.4 The Switching Supervisor may delegate switching tasks associated with function testing of specified switches to personnel who have Safety Supervisor HV authorization or specific authorization from the Operations Manager HV. Both parties must note the breaker's function identification tag in writing. Cf. section 5.4 Switching from an unsafe position and section 5.5 Non-interlocking operations.

5.3 Switching and other measures in association with work on or in the vicinity of earthed and short-circuited installations

- 5.3.1 For operations not involving remote-controlled substations, the Switching Supervisor must plan all switching operations with the substation personnel, or the person appointed as Safety Supervisor HV, and ensure that all switching operations that are necessary before work can start, have been completed as specified in section 5.2.2.
- 5.3.2 The Switching Supervisor must ensure that disconnection and, if necessary, terminal earthing has been carried out.
- 5.3.2.1 When terminal earthing is performed by use of mobile earthing equipment, a Safety Supervisor HV must be appointed when established and dismantled. Local voltage testing with use of approved voltage tester is mandatory, and there must be two persons present. At least one of these persons must hold Safety Supervisor HV authorization (the Switching Supervisor must check this). For the other person, an access permit to the installation is required (ref. [Instructions for training/access/safety cards to Statnett's electrical installations](#)) and a relevant trade certificate or relevant approval for the task by the Directorate for Civil Protection is mandatory. If the Switching Supervisor carries out manual terminal earthing, this must be recorded and checked in the electronic duty journal. At a local level, the earthing equipment must be labelled with the words: "Manual terminal earthing – may only be removed by order from the Switching Supervisor". LfK must see to daily control of the manual terminal earthing.

- 5.3.3 The Switching Supervisor is responsible for providing **labelling** on all disconnectors, circuit breakers, and/or disconnecting circuit breakers (DCBs), and terminal earthing affected by switching orders. Labelling must be performed at regional control centres and all places in the substation control room from where switching operations may be carried out (on screen, control/selecter switches etc.). In addition, motor fuses that are disconnected as protection against reconnection/disconnection (cf. section 5.3.4) must be labelled. Persons who perform labelling shall have authorization "GP" for the substation.
- 5.3.4 The Switching Supervisor is responsible for **preventing** reconnection by blocking all disconnectors and DCBs that could become energized, either by removing motor fuses (these must be labelled, cf. section 5.3.3), or shutting off the supply of compressed air, or locking service devices, or blocking the operating mechanism. In a similar manner, terminal earthing must be blocked against disconnection. When locking DCB switches these must be physically locked in the disconnected position by means of a lock or splint. Persons who perform preventing reconnection shall have authorization "GP" for the substation.
- 5.3.5 The Switching Supervisor is responsible for ensuring terminal earthing and disconnectors are **inspected** (visually), and for obtaining feedback on the inspection. When preparing for inspection of DCBs, the Switching Supervisor must order the person conducting the inspection to check for normal SF6-pressure at all three breaker poles. If the pressure is too low in one or more of the breaker poles, the breaker is **not** to be considered disconnected (ref.5.3.2.1). Persons who perform inspection shall have authorization "GP" for the substation.
- 5.3.6 The Switching Supervisor is responsible for verbally appointing a Safety Supervisor HV to carry out the work. When appointing a Safety Supervisor HV, the Switching Supervisor must inform the Safety Supervisor HV of all safety measures that have been implemented (disconnection, labelling, safeguards against reconnection, terminal earthing).
- 5.3.7 The Switching Supervisor is responsible for ensuring that a log is kept of all connections, messages and appointments that are related to the task.
- 5.3.7.1 The Switching Supervisor must record the number of portable earthing devices the Safety Supervisor intends to use in connection with the work.
- 5.3.7.2 The Safety Supervisor must state the number of portable earthing devices that have been removed. The Switching Supervisor must then check that this tallies with the number recorded when the Switching Supervisor was appointed.
- 5.3.8 The Switching Supervisor is responsible for ensuring that all safety measures (implemented by the Switching Supervisor) are reversed when the Safety Supervisor HV has declared the operation completed and has issued notification that the installation will be reenergised. Persons who perform reversal of safety measures locally in the substation (labelling, prevention, inspection) shall have authorization "GP" for the substation.
- 5.3.9 The Switching Supervisor is responsible for ensuring that the installation is reenergised in a suitable manner, without any risk to persons or property.

5.4 Switching from an unsafe position.

- 5.4.1 Switches must be deenergised on both sides during all switching operations carried out from a position where the pressure increase, should a short circuit or switch failure occur, could cause injury¹. The same applies to work involving outdoor circuit breakers. Voltage tests should be carried out to check that the switches are deenergised. The same requirements apply to voltage testing equipment, voltage tests and test personell as those given in 5.3.2.
- 5.4.2 Two people must always be present during this type of switching work. At least one of these must have Safety Supervisor HV authorization or specific authorization for the task from the Operations Manager HV. For the other person, an access permit (ref. [Instructions for training/access/safety cards to Statnett's electrical installations](#)) for the installation and have a relevant trade certificate or relevant approval for the task by the Directorate for Civil Protection is mandatory.
- 5.4.3 The Switching Supervisor must check that the correct order of switching operations and corresponding function identification tags has been noted by the person carrying out the switching order.

5.5 Non- interlocking² operations

- 5.5.1 If non-interlocked operations with energised components are necessary, a detailed description made locally is required to explain how this is to be carried out.
- 5.5.2 These detailed instructions must be sent by the relevant Local Area Manager or person he has authorised for approval.
- 5.5.3 Approved instructions must be sent to the Switching Supervisor by email.

5.6 Work in the vicinity of a high voltage installation (not live working)

- 5.6.1 The Local Area Manager, or other person granted this authority, must appoint a Safety Supervisor HV for work in the vicinity of a live installation.
- 5.6.2 The Safety Supervisor HV is responsible for all safety measures at the work site.
- 5.6.3 The Switching Supervisor must not make any test switchings subsequent to a power outage, without first informing the Safety Supervisor HV.

5.7 Live working

- 5.7.1 Detailed work procedures must be prepared for live working. These procedures must be approved by the Operations Manager. The presence of approved procedures is to be checked by the Switching Supervisor.

¹ Indoor installations that fail to meet the requirements in FEF 2006 §4-7 and § 4-9 with guidelines. Documentation that FEF 2006 § 4-7 and § 4-9 requirements have been met is mandatory if the requirement regarding deenergised switches is not applicable.

² Entails removing mechanical locking or other construction-type safety locking set up to prevent undesirable situations developing in connection with switching operations in a high voltage installation.

- 5.7.2 The Switching Supervisor must ensure that auto-reclose is blocked at both ends of the line, and that automatic connection and disconnection of reactive devices connected to bus bars at both ends of the line is blocked.
- 5.7.3 Test switchings following a power outage are not permitted until the Safety Supervisor HV has been informed.
- 5.7.4 The Switching Supervisor must notify the Safety Supervisor before doing manual switching work on associated busbars at each end of the line. Generators and reactive devices with automatic connection and disconnection functions connected to busbars at both ends of the line can be synchronized to the grid or disconnected from the grid.
- 5.7.5 The Switching Supervisor should appoint a Safety Supervisor HV for the operation in accordance with [Instructions for the Safety Supervisor HV in case of Live working](#).
- 5.7.6 The HV Safety Supervisor is responsible for all safety measures at the work site.
- 5.7.7 The Switching Supervisor is responsible for ensuring that the safety measures mentioned in sections 5.6.2, 5.6.3 and 5.6.4 are reversed or dismantled following notification from the Safety Supervisor HV that live working has ceased.

5.8 Notification of an earth fault on the grid

- 5.8.1 The Switching Supervisor must notify the Safety Supervisor HV if an earth fault is registered on the grid.

5.9 Notification of lightning activity on the grid

- 5.9.1 The Switching Supervisor must notify the Safety Supervisor HV if lightning is registered on the grid.

5.10 Notification of pressure drop in secured SF6- and DCB switches

- 5.10.1 The Switching Supervisor must report to the Safety Supervisor if a pressure drop is registered in secured SF6- and DCB switches.

6 Abstinance from intoxicants

The person appointed as Switching Supervisor must agree to refrain from consuming alcohol or other intoxicants during the 8 hours prior to starting work.

7 Confirmation of compliance

Responsibility for checking compliance with instructions lies with the document holder and approving body.

The position of Operations Manager HV includes authority to draw up and approve work procedures, guidelines and instructions in areas covered by electrical safety in accordance with [policy sikkerhet](#) (Safety Policy – Norwegian document only).

8 Enclosures and references

References:

- [Policy sikkerhet](#) (Safety Policy – Norwegian document only) (SDOK-856-6)
- [Instructions for the Safety Supervisor HV](#) (SDOK-515-55)
- [Instruction for training/access/safety cards to Statnett's electrical installations](#) (SDOK-515-60)
- [Instructions for the Safety Supervisor HV in case of Live working](#) (SDOK-515-59)
- [Instruks for stedfortreder for driftsleder/driftsansvarlig](#) (Instruction regarding deputy Operations Manager – Norwegian document only) (SDOK-515-21)
- [Electrical safety procedural works](#) (SDOK-515-73)
- [Safety regulations related to the maintenance and operation of electrical installations](#) (FSE 2006) (www.dsb.no)
- [Lov om tilsyn med elektriske anlegg og elektrisk utstyr](#) (Act relating to the Inspection of Electrical Installations and Electrical Equipment – only in Norwegian) (www.lovdatab.no)

9 Version log

Valid as of	Revision classification (New/Updated/Vocabulary/None)	Description of important changes
01.01.2023	Updated	Changed reference from Functional Policy Electrical Safety to Safety Policy. 5.3.2.1: Added dismantled together with established, and added that LfK must see to daily control of the manual terminal earthing. 8: Changed reference from separately procedures to procedural works.

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Revision log SDOK-515-54:

Revision	Approved	Approved by	Description
4.0	Show changes 30.12.2022	Arnfinn Granheim	See the version log
3.0	Show changes 29.12.2021	Arnfinn Granheim	See the version log
2.0	Show changes 29.12.2021	Arnfinn Granheim	See the version log
1.0	Show changes 08.12.2021	Arnfinn Granheim	Migrated from IFS#1198606