

Procedure for electrical safety during construction, demolition and removal of transmission lines and substation equipment

Approved by: Arnfinn Granheim

Document holder: Operations Manager

Based on the Norwegian document number 1667856 rev. 9

Document number: 1726642 rev. 9

Date: 01.01.2021

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1 Governing policy and legislation

This procedure is superseded by Statnett's Funksjonspolicy for elsikkerhet (Functional Policy for Electrical Safety) and Instructions for the Safety Supervisor HV, the FSE 2006 (Safety regulations related to the maintenance and operation of electrical installations) and the FEK (Regulations of electrical enterprises and qualifications to work on electrical installations and electrical equipment). Both sets of regulations are pursuant to the Act relating to the Inspection of Electrical installations and Electrical Equipment.

2 Purpose and Validity

The purpose of this procedure is to ensure a high level of safety for external personnel during the construction of new high-voltage transmission lines and substations as well as the demolition and removal of high-voltage transmission lines and substation equipment not connected to operational high-voltage installations, and where the work is **not** covered by provisions and regulations for work on or in the vicinity of live installations, cf. FSE 2006.

During construction: The procedure comes into force as soon as the mounting of transmission lines between masts and components begins, and when installation of busbar tubes begins.

During demolition: The procedure applies until all work on removing transmission lines between masts and components has been completed, and when all work on dismantling busbar tubes has been completed.

This procedure does not cover safety job analysis (SJA) or other necessary procedures.

This procedure does not apply if the contract stipulates that the contractor is responsible for electrical safety¹. In such circumstances, the Contractor must ensure an adequate standard of electrical safety in accordance with instructions/procedures stipulated by the Electrical Contractor (person in charge of electrical installation), including the authorisation and appointment of a Safety Supervisor.

3 Intended audience

- Project Managers
- Local Area Managers
- Persons authorized to take care of Local Area Manager's duties according to this procedure.
- External Safety Supervisors limited to work according to this procedure with a valid SJA

¹ If a contractor is responsible for electrical safety but this is not stipulated in a contract, the applicable template for an agreement between Statnett and a Contractor, concerning responsibility for electrical safety during all work involving construction, demolition and dismantling of electrical installations, must be used.

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4 Definitions

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 high-voltage electrical installations.

SJA: Safety Job Analysis

5 Practice

The following table specifies the requirements for projects along with given responsibilities. Steps 1 and 2 must be completed within plenty of time before work commences. The Project Manager may give authorisation to another person to take on the role of the Project Manager in accordance with this procedure. The Local Area Manager may give authorisation to another person to take on the role of the Local Area Manager in accordance with this procedure.

Step	Action	Who is in charge
1	<p>The Project Manager shall document to the Operations Manager that the Contractor has the necessary qualifications for constructing/demolishing the high voltage transmission line / substation. An electrical Contractor (person in charge of electrical installation) must be specified, according to Regulations of electrical enterprises and qualifications to work on electrical installations and electrical equipment (FEK). According to the same regulations, it shall be confirmed that the contractor has a sufficient number of electrical skilled workers in relevant electrical disciplines to perform or to directly follow up² unskilled workers.</p> <p>In addition, the Contractor must be registered in the Register of Electrical businesses at the Directorate for Civil Protection, the D-S-B.</p>	Project Manager
2	<p>The Project Manager must organise a meeting with the Local Area Manager to discuss the transmission line route and/or construction sites, in order to identify where a Safety Supervisor is required.</p> <p>A Safety Supervisor will be required to ensure electrical safety wherever there could be a possibility of an electrical installation becoming energised by:</p> <ul style="list-style-type: none"> - atmospheric conditions, such as lightning - flashover or contact with another installation 	Project Manager

² By "directly follow up" means that an electrical skilled worker shall be able to check the work done by the unskilled workers. An electrical skilled worker therefore has to be present at each work site.

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	<p>- induction from another installation</p> <p>The Project Manager must identify any other installations belonging to other companies that could be affected by the planned project. If this is the case, the Project Manager must ensure that a meeting takes place between the other company and the Local Area Manager to agree on a plan for the situation. The Local Area Manager and the other company must ensure that electrical safety is maintained for both companies during the work.</p>	
3	<p>The Project Manager must propose candidates for Safety Supervisor, limited to work covered by this procedure, to the Local Area Manager. The Project Manager must document their professional qualifications and completed training courses.</p>	Project Manager
4	<p>In accordance with their own job instructions, the Local Area Manager must request a safety card for the Safety Supervisor.</p> <p>The card must be marked with the following restriction: "Safety Supervisor limited to work according to Procedure for electrical safety during construction, demolition and removal of transmission lines and substation equipment with a valid SJA".</p>	Local Area Manager
5	<p>For every defined site of work, a Safety Supervisor must be appointed in order to maintain a high standard of electrical safety.</p> <p>The Safety Supervisor must be present all the time.</p> <p>The Local Area Manager is responsible for appointing the Safety Supervisor.</p>	Local Area Manager
6	<p>For each work site and Safety Supervisor appointment, a SJA is required and must be signed by the Local Area Manager and the Safety Supervisor. The signed SJA is documentation that a Safety Supervisor has been appointed.</p> <p>A SJA must describe all relevant risk factors associated with electrical safety and specify steps to prevent accidents occurring. A SJA must state the area it applies to. For instance "from mast 10 to 15 on the transmission line Sima-Samnanger"</p> <p>The Safety Supervisor shall ensure that all the described measures are implemented.</p> <p>The Safety Supervisor must ensure that all the specified steps are enforced. Any work task involving electrical risk, or any situation that arises that is not covered by the SJA, must be stopped by the Safety Supervisor. The Safety Supervisor must then contact the Local Area Manager.</p>	Local Area Manager

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Confirmation of compliance

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

The position of Operations Manager includes authority to draw up and approve work procedures, guidelines and instructions in areas covered by Funksjonspolicy for elsikkerhet.

7 Enclosures and references

References:

- Funksjonspolicy for elsikkerhet (Functional policy for electrical safety – only in Norwegian) (SDOK-515-2)
- Instructions for the Safety Supervisor HV (doc.no. 1198675)
- Instructions for training/access/safety cards to Statnett's electrical installations (doc.no. 1251620 in IFS)
- Instruks for Leder for driftsområde i forhold til ivaretagelse og oppfølging av elsikkerhet (Instruction for the Local Area Manager according to ensure and follow-up within electrical safety – only in Norwegian) (doc.no. 1534622)
- Guidelines for expertise requirements when constructing Transmission lines (SDOK-171-25)
- Procedure for Safe Job Analysis (SJA) (doc.no. 1609273 in IFS)
- Vedlegg til Prosedyre for Sikker jobb-analyse (skjemaer) (Enclosures for Procedure for Job Safety Analysis (Forms – only in Norwegian) (doc.no. 1581771)
- Vedlegg til Prosedyre for Sikker jobb-analyse (Nettdrifts praktisering) (Enclosures for Procedure for Job Safety Analysis (Practice of the division System Operations, Asset Management and Markets – only in Norwegian) (doc.no. 1581770)
- Mal for avtale mellom Statnett og entreprenør i forhold til ivaretagelse av elsikkerhet under bygging, riving og demontering av elektriske anlegg (Template of an agreement between Statnett and Contractor concerning responsibility for electrical safety during construction, demolition and removal of electrical equipment – only in Norwegian) (doc.no. 2608215)
- Safety regulations related to the maintenance and operation of electrical installations (FSE 2006) (www.dsb.no)
- Forskrift om elektroforetak og kvalifikasjonskrav for arbeid knyttet til elektriske anlegg og elektrisk utstyr (FEK) (Regulations of electrical enterprises and qualifications to work on electrical installations and electrical equipment – only in Norwegian) (www.lovdatab.no)
- Lov om tilsyn med elektriske anlegg og utstyr (Act relating to the Inspection of Electrical Installations and Electrical Equipment – only in Norwegian) (www.lovdatab.no)

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8 Version Log

Valid as of	Revision classification (New/Updated/Vocabulary/None)	Description of important changes
01.01.2021	Updated	2: Added that the procedure is concerned to attend electrical safety for work performed by external personnel.