

ESR Supporting Procedure 0

Definitions and Index

SHEQ/HS/TCSESR/SP/000-2.0

DOCUMENT AUTHORISATION SHEET

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1 INDEX OF SAFETY RULES SUPPORTING PROCEDURES

SR SP No.	Document Title	Issue Number	Date
SR SP 000.	Index and Definitions	2.0	22/08/2014
SR SP 001.	Authorisation	3.0	22/08/2014
SR SP 002.	Operational Switching	2.0	22/08/2014
SR SP 003.	Earthing of HV Equipment	2.0	22/08/2014
SR SP 004.	Demarcation in Substations	2.0	22/08/2014
SR SP 005.	Movement of Long Objects and Vehicles	2.0	22/08/2014
SR SP 006.	Lost Safety Document / Lost Key Procedure	2.0	22/08/2014
SR SP 007.	Testing of HV Equipment	2.0	22/08/2014
SR SP 008.	Equipment Containing SF ₆	2.0	22/08/2014
SR SP 009.	Cable Systems	2.0	22/08/2014
SR SP 010.	Capacitors	2.0	22/08/2014
SR SP 011.	LV Systems	2.0	22/08/2014
SR SP 012.	HVSCC	2.0	22/08/2014
SR SP 013.	RISSP	2.0	22/08/2014

	Document Title	Issue Number	Date
	Transmission Capital Services (TCS) Electrical Safety Rules	2.0	22/08/2014

2 DEFINITIONS – SAFETY RULES

No.	Term	Definition
1.	Approved	<ul style="list-style-type: none"> • A written procedure sanctioned in writing by the Company • Tools and equipment sanctioned in writing by the Company
2.	Authorisation Officer	An individual who has been appointed in writing by a Director of the Company to recommend authorisation of an Authorised Person, Senior Authorised Person or Control Person under the Electrical Safety Rules
3.	Authorised Person	A Person who has been appointed by the Company to carry out operational and safety switching duties as specified in writing.
4.	Caution Notice	A notice in Approved form conveying a warning against interference, which <i>shall</i> be attached at all Points of Isolation . “CAUTION – DO NOT INTERFERE WITH THIS EQUIPMENT”
5.	Charged	At a voltage when Isolated from the System by induction or a retained charge due to capacitive effects.
6.	Circuit Identification	Colours or symbols used to identify circuits and other Equipment .
7.	(The) Company	Transmission Capital Services (TCS)
8.	Competent Person	A Person who has been appointed by a Senior Authorised Person or Authorisation Officer as having sufficient technical knowledge and/or experience to enable them to avoid Danger and who may be nominated to carry out duties specified in writing including the receipt and clearance of Safety Documents .
9.	Consent	Confirmation by the Control Person before commencement of a Switching Schedule or the issue of a Safety Document that safety precautions have been carried out on the correct Equipment and that procedures have been put in place to maintain these until the Safety Document is cancelled.
10.	Control Person	A Person who has been appointed by the Company to be responsible for controlling and co-ordinating safety activities necessary to achieve Safety from the System within and across defined boundaries.
11.	Control Room	Facilities for operational control of the System
12.	Danger	A risk to health or bodily injury.
13.	Danger Notice	A notice in Approved form used during works indicating that equipment is Live . “DANGER-LIVE EQUIPMENT”
14.	Dead	Not electrically Live or Charged .
15.	Discharge Device	An Approved device for discharging the remaining voltage of Charged Equipment .
16.	Earth	The conductive mass of earth, whose electrical potential at any point is conventionally taken as zero.

No.	Term	Definition
17.	Earthed	Connected to earth by means of an Earthing Device .
18.	Earthing Device	<p>A means of providing a connection between an electrical conductor and earth.</p> <ul style="list-style-type: none"> • Primary Earth - An Approved fixed or portable Earthing Device applied to an electrical conductor to protect against inadvertent energisation. Applied before the issue of, and at a position recorded in, a Safety Document.
	Earthing Device (cont'd)	<ul style="list-style-type: none"> • Drain Earth – An Approved fixed or portable Earthing Device applied to electrical equipment for the purpose of protection against induced voltages and Charged Equipment and management of circulating currents. Applied after the issue of a Safety Document.
19.	Equipment	Electrical or mechanical plant, apparatus, equipment and components of the System to which the Electrical Safety Rules apply
20.	Equipment Identification	The Nomenclature , name or code used to specifically identify the equipment to be operated or worked on
21.	General Safety	The provision and maintenance of safe access to and from the place of work, a safe place of work, a safe working environment, safe systems of work and the correct use of personal protective equipment which are not covered by these Electrical Safety Rules.
22.	Grid Code	Permits the development, maintenance and operation of an efficient, co-ordinated and economical system for the transmission of electricity. National Grid and users of its transmission system are required to comply with the Grid Code.
23.	High Voltage (HV)	A voltage >1000 Volts
24.	HV System Change Certificate. (HVSCC)	<p>A certificate used to notify contractors, TCS Staff, and NETSO when adding Plant or removing Equipment to/from the System, and changes in name or Nomenclature for existing circuits or Equipment.</p> <p>On the completion of Part 6 the changes defined in Part 3 become effective. The Control Person's copy of the document <i>shall</i> have printed names in Part 6, backed up with logged statements.</p>
25.	Isolated	Disconnected from associated Equipment by the operation of an Isolating Device to the isolating position or by physical separation which <i>shall</i> ensure the isolation gap cannot fail electrically.
26.	Isolating Device	A device for rendering Equipment Isolated .
27.	Keys	<ul style="list-style-type: none"> • Control Key - a key for operating the control lock of a Key Safe. • Safety Key - a key unique at the Location for locking an Isolation Device or Earthing Device. • Key Safe Key - a key unique at the Location for operating a lock, other than the control lock, on a Key Safe.

No.	Term	Definition
28.	Key Safe	A lockable device for the secure retention of Keys , links and fuses.
29.	Limitation of Access (LOA)	A Safety Document as shown in these Electrical Safety Rules, specifying the Equipment , the work to be carried out, the limits of the work and/or work area necessary to achieve Safety from the System when verbal instructions are not considered sufficient for that purpose, and where a Permit-to-Work or Sanction-for-Test is not applicable.
30.	Live	At a voltage by being connected to a source of electricity.
31.	Location	Any place at which work is carried out under the Transmission Capital Systems (TCS) Electrical Safety Rules.
32.	Locked	A condition of Equipment that cannot be altered without the operation of a secure fastening device.
33.	Low Voltage (LV)	A voltage up to and including 1000 Volts
34.	Method Statement	A logical sequence of exactly how a job is to be carried out in a safe manner and without risks to health. It includes all the risks identified in the Risk Assessment and the measures needed to control those risks.
35.	NETSO	National Electricity Transmission System Operator
36.	Nomenclature	The Approved numbering system used to allocate unique name, number and code identifying to HV Equipment on the Company's Transmission System .
37.	Operational Service	In service, under the operational control of the Control Person .
38.	Permit to Work (PTW)	A Safety Document as shown in these Electrical Safety Rules, specifying the Equipment , the work to be carried out and the limits of the work and the actions taken to achieve Safety from the System .
39.	Person	An individual recognised by The Company as having sufficient technical knowledge and/or experience to avoid Danger .
40.	Plant	Electrical and/or Mechanical items, which are not part of the System and disconnected from the System (i.e. not Equipment).
41.	Point(s) of Isolation	The point at which Equipment has been Isolated and where reasonably practicable Locked . Caution notices shall be attached at all Points of Isolation .
42.	Risk Assessment	As required by Regulation 3 of the Management of Health and Safety at Work Regulations 1999
43.	Record of Inter System Safety Precautions (RISSP)	A document conforming to OC8 of the Grid Code specifying the location of Isolation and/or Earthing points across System boundaries using different Safety Rules
44.	Safety Distance	The distance from the nearest High Voltage exposed conductor, or from an insulator supporting a High Voltage conductor, which <i>shall</i> be maintained to avoid Danger .
45.	Safety Documents	Permit to Work (PTW), Sanction for Test (SFT) and

No.	Term	Definition
		Limitation of Access (LOA) are the Safety Documents used to control the work carried out on the System .
46.	Safety from the System	That condition which safeguards individuals working on or near to Equipment from the Dangers , which are inherent in a System .
47.	Sanction for Test (SFT)	A Safety Document as detailed in these Electrical Safety Rules, specifying the Equipment , and the testing/work to be carried out that may require the removal of Primary Earths and the actions taken to achieve Safety from the System .
48.	Senior Authorised Person (SAP)	An Authorised Person who has been appointed by the Company to carry out duties specified in writing including the preparation, issue and cancellation of Safety Documents .
49.	Site Responsibility Schedule (SRS)	The document specific to the site defining the boundary point of ownership, control and Safety Rules under which the Plant, Equipment, Apparatus, Structures, and associated Auxiliaries are managed.
50.	System Operator Transmission Operator Code (STC)	Defines the high-level relationship between the National Electricity Transmission System Operator (NETSO) and Transmission System Owner
51.	Supervision	<p>Local Supervision: Supervision by an individual, suitably authorised for the activity being supervised, who is continuously available at the Location where work is in progress and is able to attend the point of work as necessary to ensure the safe performance of the work.</p> <p>Personal Supervision: Supervision by an individual, suitably authorised for the activity being supervised, continually observing and in the presence of the individual(s) carrying out the work, with the ability to directly intervene, to ensure that individual(s) are not exposed to Danger.</p>
52.	Switching	The operation of circuit breakers, isolators, disconnectors, fuses or other methods of making or breaking an electrical circuit and/or the application and removal of Primary Earths .
53.	Switching Schedule	A schedule of the Switching operations required to ensure that equipment is Isolated, Earthed, Locked and identified prior to the issue of a Permit to Work or Sanction For Test and the steps required to return the Equipment to service.
54.	System	Items of Equipment used separately or in combination for the generation, transmission and distribution of electricity.
55.	Transmission Capital Services (TCS)	The Asset Managers for the OFTO projects owned by the OFTO
56.	Transmission Capital OFTO	Transmission Capital Offshore Transmission System Operator (OFTO); the owner of System and assets
57.	Working Party	Individuals working under the Personal Supervision of a Competent Person or Persons working under the

No.	Term	Definition
		Local Supervision of a Competent Person , including a Competent Person or Person working alone.
58.	Working Party Register	Register containing the name of each individual working on the HV System . Each individual must sign on and off of the register each day, recording the time.

3 ADDITIONAL ABBREVIATIONS AND DEFINITIONS

Terms printed in **Bold Type** are as defined in the **TCS** Electrical Safety Rules.

AIS	Air Insulated Switchgear
Al	Aluminium (Periodic Table)
CB	Circuit Breaker
CCT	Circuit
CSE	Cable Sealing End
CT	Current Transformer
Cu	Copper (Periodic Table)
CV	Curriculum Vitae
CVT	Capacitor Voltage Transformer
DMS	Document Management System
DS	Disconnecter
ES	Earth Switch
ESRs	TCS Electrical Safety Rules
GIS	Gas Insulated Switchgear
GTO	Gate Turn-Off Thyristor
HAM	High Accuracy Metering (instrument transformer)
HVSM	High Voltage Systems Manager
IGDD	Isolation Gas Density Dependent
IR	Insulation Resistance
MCB	Miniature Circuit Breaker
MOSFET	Metal Oxide Semi-conducting Field Effect Transistor
NETSO	National Electricity Transmission System Operator
OA	Carry out duties as prescribed by the <i>Operational Authorisation</i> level, notwithstanding the individual's <i>Authorisation</i> level as CP, AP, SAP or Control Person

OFTO	Offshore Transmission-system Owner
PPE	Personal Protective Equipment
ppm	Parts Per Million (by Volume)
POI	Point of Isolation
RAMS	Risk Assessment and Method Statement
RCD	Residual Current Device
RISSP	Record of Inter System Safety Precautions
ROMP	Restoration of Motive Power Supplies
RTU	Remote Tele-control Unit
SA	Surge Arrestor
SCADA	System Control and Data Acquisition
SSC	System Status Certificate
SRS	Site Responsibility Schedule
SRSPs	Safety Rules Supporting Procedures
STC	System-operator Transmission-system owner Code
STCP	STC Code procedures
STEL	Short Time Exposure Limit
SVL	Sheath Voltage Limiter
TCS	Transmission Capital Services Ltd (the Company)
TDR	Time Domain Reflectometry
TLR	Technical Limitation Record
TSC	Transmission Status Certificate
TWA	Time Weighted Average exposure
VT	Voltage Transformer
<i>Access Point Notice</i>	A notice in an Approved form defining access to and egress from a demarcated work area.
<i>Appointed Person</i>	An individual trained to establish and implement the safe system of work for the lifting operation, in accordance with current industry regulations and standards.
<i>Authorisation</i>	Formal appointment of an individual who has demonstrated an understanding and acceptance of the responsibilities set out in the TCS Electrical Safety Rules and associated Safety Rules Supporting Procedures
<i>Authorisation Panel</i>	A panel comprising High Voltage Systems Manager, Authorisation Officer, TCS Representative and appointed Safety, Health and Environment Advisor

<i>Bonding Connection</i>	An Approved form of connection applied at link boxes, joint bays or other points of work to provide an efficient connection to eliminate differences in potential and to carry any current that may arise during fault conditions.
<i>Cable Systems</i>	Equipment connected to the system associated with cables including, but not limited to, cables, link boxes, SVL's, joints, bonding connections, cable sealing ends, terminations, glands, cable insulating fluid systems.
<i>Capacitor Unit</i>	An assembly of one or more capacitor elements in the same container with terminals brought out by one or more bushings
<i>Capacitor Rack</i>	An individual framework containing <i>Capacitor Unit(s)</i> connected together
<i>Capacitor Stack</i>	An assembly of <i>Capacitor Rack(s)</i> connected together. If the Equipment consists of only one <i>Capacitor Rack</i> the term <i>Capacitor Stack</i> will also apply. A <i>Capacitor Stack</i> may contain <i>Capacitor Unit(s)</i> from one or more discrete components of the <i>Static Capacitor Bank</i> , e.g. the main and auxiliary capacitors, resistors and air cooled reactors
<i>Capacitor Bank</i>	An assembly of one or more <i>Capacitor Stack(s)</i> forming the Static Capacitor installation
<i>Certificate for Live LV Work (CLLVW)</i>	A Safety Document of a design shown in this Safety Rules Supporting Procedure specifying the LV Equipment , the work which is to be carried out Live and the precautions to be taken to achieve a safe system of work
<i>Commissioning</i>	The preparation for and energising of Equipment for the first time. This is a two-stage process consisting of Stage 1 Commissioning and Stage 2 Commissioning. Further information is available in STCP 19-4.
<i>Commissioning Engineer.</i>	An appropriately qualified engineer responsible for defining the arrangements for achieving Safety from the System , to manage the implementation of STCP19-4 requirements (including <i>Operations Diagrams</i>) and to confirm the adequacy of the health and safety file on completion.
<i>Compartment</i>	An enclosure, chamber, cubicle or cell designed to prevent uncontrolled access to Equipment having exposed HV conductors. This term does not apply to metal-clad switchgear spouts.
<i>Conductor</i>	A metallic item that conducts electrical energy
Control Person	The Control Person for the HV System as defined in the Site Responsibility Schedule . Where authorisations allow, this may be done by the <i>Local Control Person</i> .
<i>Control Transfer</i>	The documented process of transferring control of a System under a RISSP from one <i>Party</i> (the Implementer) to another <i>Party</i> (the Requester) for the purposes of safely managing a test of a cross boundary System to which a RISSP applies.
<i>Dangerous Energy Level</i>	An energy level contained within batteries that are part of the System or of low voltage systems in which currents are not inherently limited.
<i>Dangerous Potential</i>	A potential over 50V AC or 55V DC
<i>Designated Gas Zone Access Point Notice</i>	A notice identifying all required access points to the gas zone which require venting prior to access
<i>Discharge Stick</i>	An Approved device used for discharging a <i>Capacitor Unit</i> bushings to earth at a safe distance.
<i>Earthing System</i>	The combination of earth tape, rods, mats, and mesh at a specific Location (usually a substation). The <i>Earthing system</i> provides a low resistance path

	for the fault currents, and connects Equipment on the System that requires an earth connection (structures, earth switches, neutral points, surge arrestors etc.).
<i>Earthed Working</i>	The method of working where all Equipment and conductive materials which are exposed in the work area, are effectively bonded together and then connected to earth at the point of work.
<i>Field Equipment Earth</i>	Approved connection for bonding items of field or access equipment to earth.
<i>Gas Zone</i>	Discrete sections of SF ₆ Equipment which may comprise of one or more compartments and can be independently isolated and evacuated of SF ₆ A Gas Zone may comprise of:- <ul style="list-style-type: none"> • A single-phase enclosure • A single enclosure containing the three phases of an item of Equipment • Three single-phase enclosures of a common item of Equipment connected by inter-phase pipe work
<i>GTO</i>	Gate Turn-Off thyristor
<i>HV Compound</i>	A secured area that contains HV Equipment . This excludes areas that only contain over sailing conductors.
HV System Change Certificate. (HVSCC)	A certificate used to notify NETSO, contractors and TCS when adding <i>Plant</i> or removing Equipment to/from the System , and changes in name or Nomenclature for existing circuits or Equipment. On the completion of Part 6 the changes defined in Part 3 become effective. The <i>Local Control Person's</i> copy of the document <i>shall</i> be the definitive document. The <i>Control Person's</i> copy of the document <i>shall</i> have printed names in Part 6, backed up with logged statements.
<i>IGBT</i>	Insulated Gate Bi-polar Transistor
<i>IED</i>	Intelligent Electronic Device
<i>Implementing Safety Co-ordinator (ISC)</i>	The Control Person Implementing the <i>Safety Precautions</i> on their System , under their Safety Rules, to allow a connected cross-boundary System Party to work or test in a safe manner and achieve Safety from the System
<i>Impressed Voltage Conditions</i>	Conditions which could cause dangerous induced voltages or currents, differences in earth potential or voltage differences across any break in the conductive path.
<i>Keep Clear Overhead Live Equipment Notice</i>	A notice in an Approved form warning about Danger from Live overhead Equipment .
<i>Insulated Working</i>	The method of working where the person is insulated from contact with objects at different potentials.
Local Control Person	A Senior Authorised Person acting as the Control Person for LV and mechanical Equipment .
<i>Long Objects</i>	Any items above 0.6metres or items of equipment such as ladders, scaffold poles, ropes, temporary fencing, etc. which if not controlled during handling could infringe Safety Distances .
<i>MCB</i>	Miniature Circuit Breaker
<i>MOSFET</i>	Metal Oxide Semi-conducting Field Effect Transistor

<i>Non Company</i>	An individual who is not employed by TCS and is appointed to specified Operational <i>Authorisations</i> and Safety Rules Supporting Procedures to carry out their duties
<i>Occupier</i>	The person having control over the premises and who regulates and controls the work that is done there.
<i>Occupier's Representative</i>	The person identified by the <i>Occupier</i> who <i>shall</i> discharge the duties and responsibilities of the <i>Occupier</i> on the premises. On TCS Operational sites this will normally be the Asset Manager. On National Grid Operational sites this will normally be the Delivery Manager or Delivery Engineer. On third party operational sites it will be a representative of the party who regulates and controls the work that is done there.
<i>On or Near</i>	When exposed Live LV Equipment can be touched either directly or indirectly by means of some conducting object
<i>Operator</i>	An individual who has been trained and assessed to use specific types of <i>Vehicle</i> .
<i>Operations Diagram</i>	The series of TCS issued diagrams which define the following information: Sheet 1 S/S Single Line Diagram Sheet 2 S/S Technical Data Sheet Sheet 3 S/S Gas Zones Sheet 4 S/S Gas Zone Alarm Schedule
<i>Party (Parties)</i>	The administrator of a Safety Management System applied to a System Note: - This may not necessarily be the owner of the System , but an appointed contractor for the owner
<i>Physical Separation</i>	A gap of sufficient distance to allow HV Equipment to be tested and exclude Danger to Persons who would otherwise be affected by the test supplies whilst working on other HV Equipment within the same Isolated zone.
<i>Purged</i>	A condition of Equipment from which any dangerous contents have been removed
<i>Requesting Safety Co-ordinator (RSC)</i>	The Control Person Requesting the RISSP for undertaking work on their System in a safe manner, which relies upon the application of <i>Safety Precautions</i> of a connected <i>Party's System</i> under their Safety Rules, as well as <i>Safety Precautions</i> applied to his own System under his own Safety Rules to achieve Safety from the System . The Requester may also be the Implementer if both cross-boundary System Parties are undertaking work or testing which requires a RISSP
<i>Risk Management Hazard Zone</i>	An identified area where access is restricted from Equipment which may have a defect and may have the potential to cause harm
<i>Risk Management Hazard Zone Notice</i>	A notice that is attached to a yellow and black chain demarcating a <i>Risk Management Hazard Zone</i>
RISSP	Record of Inter-System Safety Precautions
RISSP-I	The RISSP completed by the Implementer
RISSP-R	The RISSP completed by the Requester
<i>Safety Observer</i>	A Person selected by a Senior Authorised Person and provided with instructions to assist in ensuring the safe movement of <i>Vehicles</i> or <i>Long Objects</i> within a defined area of usage.

<i>Safety Precautions</i>	Precautions applied / removed to achieve Safety from the System . Such means include, but are not limited to Safety Locking, Safety Keys, Key Safes, Key Safe Keys, Points of Isolation , Earthing, Earthing Devices , Disconnections and Isolations.
<i>Short- Circuiting Lead</i>	An Approved lead used for short-circuiting an individual <i>Capacitor Unit</i> . This can be a clip-on short used during the disconnection of a <i>Capacitor Unit</i> or a bolt-on short used during the removal.
S/S	Substation
<i>Structure</i>	A tower, gantry or other means of supporting or giving access to exposed HV conductors.
<i>Testing Area No Entry Notice</i>	A notice prohibiting entry to the testing area unless under the Personal Supervision of the holder of the Safety Document
<i>Technical Specialist</i>	Any individual within, or external to the Company with detailed specialist technical knowledge to assist when required in the safe installation, preparation for work, maintenance and removal of <i>Capacitor Unit(s)</i> .
<i>Testing Notice</i>	A notice reading "Test Area" in the form of red sleeves
<i>Transfer Potential</i>	A potential rise of an <i>Earthing system</i> caused by a current flowing to earth, transferred by means of a connected conductor (for example a metallic sheath or armour) into areas with little or no potential rise relative to the reference earth. This results in a potential difference occurring between the conductor and its surroundings.
<i>Vehicle</i>	Items of equipment including cars, vans, Mobile Elevated Work Platforms (MEWPs), lorry loaders, cranes, excavators or other motorised equipment.
<i>Vented Gas Zone Access Point Notice</i>	A notice identifying all required access points to the gas zone which have been vented and can now be entered in.
<i>Vented</i>	Having an outlet to the atmosphere so that pressure is equalised to atmospheric pressure

4 NOTES
