EI 3606

# Wind turbine system safety rules

Edition: First | Version 1

SafetyOn

G+ Global Offshore Wind
Health & Safety
Organisation

In partnership with

energy institute

# WIND TURBINE SYSTEM SAFETY RULES

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Status of the wind turbine system safety rules (WTSSR)

G+ and SafetyOn supported by the Energy Institute considers that the WTSSR, when implemented correctly and appropriately, will:

– represent industry good practice for safeguarding employees from the inherent dangers that exist from installed electrical and mechanical equipment in wind turbines;

– assist in the development and application of safe systems of work in a consistent manner, and

– provide a robust approach to demonstrating legal compliance with relevant health and safety regulations.

In order to ensure that the WTSSR are implemented correctly and appropriately and are suitable for any set of circumstances, G+ and SafetyOn strongly advise that, prior to the implementation or revision of the WTSSR into an organisation's own health and safety management systems, the WTSSR and all the supporting guidance are fully taken into account by a competent person.

It is essential that the final structure, content and format of any rules applied which incorporate any part of the WTSSR are overseen and signed off by a suitable professionally qualified competent person who is familiar not only with the WTSSR but also with their practical application taking into account site and turbine specific arrangements and all other relevant circumstances.

Attention is also drawn to the disclaimer below.

Disclaimer

The contents of this publication are intended for information and general guidance only, do not constitute advice, are not exhaustive and do not indicate any specific course of action. Detailed professional advice should be obtained before taking or refraining from action in relation to any of the contents of this guide, or the relevance or applicability of the information herein.

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# FOREWORD

[Company A] wind turbine system safety rules (the 'safety rules') are provided to ensure that persons working on plant and apparatus to which these safety rules apply are safeguarded from hazards arising from the electro-mechanical system.

The safety rules, which are mandatory, are made up of general provisions and basic safety rules together with sections dealing with procedures for approved written procedures and keys, responsibilities of persons and definitions. They are supported by other mandatory and guidance documents.

The statement setting out the policy, philosophy and principles approved by [Company A] as the basis for the safety rules is also given. This statement does not form part of the safety rules but it is included for the general information of those persons concerned with the application of the safety rules.

It is the duty of all persons who may be concerned with control of, and preparation and carrying out of work on or adjacent to, the electro-mechanical system to which these safety rules apply to make themselves thoroughly familiar with those aspects of the safety rules and support documents appropriate to their particular activities. In addition to any specific responsibilities and requirements imposed by the safety rules all persons have a general duty to be conversant with, and have due regard to, statutory requirements relating to and governing any activities with which they have an involvement.

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# DEFINED TERMS

### SHALL

Where 'shall' is used in these safety rules with no qualification, this indicates a mandatory requirement with no discretion permitted and no judgement to be made.

### SHALL, WHERE PRACTICABLE

Where 'shall' is qualified only by the word 'practicable', a slightly less strict standard is imposed. It means that where it is possible to achieve in the light of current knowledge and invention but bearing in mind the hazards associated with work to be undertaken, then the requirement must be met. One is not allowed to avoid the requirement on the grounds of difficulty, inconvenience or cost.

### SHALL, WHERE REASONABLY PRACTICABLE

When 'shall where reasonably practicable' is used to qualify a requirement then a judgement must be made as to what is reasonable, taking into account the magnitude of the risk on the one hand and the cost, time and trouble, or effort necessary for averting the risk on the other hand.

# 1 DEFINITIONS AND ABBREVIATIONS

The following terms have been bolded throughout the documents:

**Apparatus** – All equipment in which electrical **conductors** are used, supported, or of which they may form a part, and for which [Company A] has a maintenance responsibility.
Note: When the term **'low voltage apparatus'** is used in these safety rules, it refers to **low voltage** only. Similarly, when the term **'high voltage apparatus'** is used, it refers to **high voltage** only. Lastly, when the term **'apparatus'** is used alone, it refers to both **low voltage and high voltage**.

**Appointed** – Designated in writing by [Company A].

**Approved**

(i) In the case of an **approved written procedure** means sanctioned for use by an appropriate **authorising engineer**.

(ii) In all other cases means sanctioned for use by [Company A].

**Approved written procedure (AWP)** – An **approved** procedure written in a format indicated in these safety rules specifying the **plant/LV apparatus** on which work or testing can take place, without **danger**, by a **level one authorised technician** following the precautions stated to achieve **safety from the system**.

**Authorised technician** – see **Persons**

**Authorising engineer** – see **Persons**

**Authorisation officer** – The person **appointed** by the responsible manager of [Company A]. This person shall be conversant with the compliance requirements of the local laws and regulations. In addition, this person shall be technically competent to be able to assess a **person's** nominations or authorisations under these safety rules.

**Caution notice** – A notice in **approved** form conveying a warning against interference.

**Competent technician** – see **Persons**

**Conductor** – An electrical **conductor** arranged to be electrically connected to a **system**.

**Danger** – A risk to health or of bodily injury.

**Danger notice** – A notice in **approved** form reading '**danger**'.

**Dead**

(i) **LV** – Not electrically **'live'** or 'charged'.

(ii) **HV** – At or about zero voltage and disconnected from any **live system**.

**Earthing**

(i) **Earth** – The conductive mass of the **earth**, whose electric potential at any point is conventionally taken as zero.

(ii) **Earthed** – Connected to **earth** through switchgear with an adequately rated **earthing** capacity or by **approved earthing** leads.

(iii) **Circuit main earth** – **Earthing** equipment of **approved** type applied during the process of obtaining **safety from the system** under the direction of an **HV approved written procedure**.

(iv) **Additional earth** – **Earthing** equipment of **approved** type, applied as directed by an **HV approved written procedure**, for example an **additional earth** applied at a point of work.

**Emergency switching** – The deliberate **switching** off of **plant and apparatus** to remove or prevent a dangerous condition that poses an immediate hazard to people. It is not intended for normal operation or maintenance but is specifically reserved for urgent situations where the continued power supply presents an immediate **danger** to human life.

**Exception** – A limitation or restriction affecting the safe operational condition of **plant** and/or **apparatus** that could be a **danger** to persons or integrity of the wind turbine.

**General safety** – The provision of safe access to and from the place of work, a safe place of work, safe methods of work and the use of correct work equipment and personal protective equipment.

**High voltage (HV)** – A voltage exceeding 1 000 volts alternating current or 1 500 volts direct current. Note: The voltage levels provided are based on the Electricity Safety, Quality and Continuity Regulations 2002. These levels can be updated and adopted to local laws and regulations and by ensuring that the **persons** receive relevant education and training required.

**HV approved written procedure** – An **approved** procedure written in a format indicated in these safety rules specifying the **apparatus** on which work or testing can take place, without **danger**, by a **level two authorised technician** following the precautions stated to achieve **safety from the system**.

**Impressed voltage** – A collective term for the following conditions:

(i) induced voltages in **dead conductors** arising from the close proximity of electrically charged **conductors**;

(ii) environmental conditions that emit an electric charge, e.g. lightning;

(iii) trapped charge where **conductors** have not been fully discharged, and

(iv) micro shock, including static charge.

**Isolated (isolation)** – Disconnected from associated **plant** and/or **apparatus** by an **isolating device(s)** in the **isolating** position, or by adequate physical separation or sufficient gap.

**Isolating device** – A device for rendering **plant** and **apparatus isolated**.

**Key** – see **Safety key**

**Live** – Electrically charged.

**Location** – Any place at which work or testing under [Company A] safety rules is carried out

**Locked** – A condition of **plant** and/or **apparatus** that cannot be altered without the operation of a locking device which is of a standard acceptable to the appropriate **authorising engineer** in charge of the **location**.

**Low voltage (LV)** – A voltage not exceeding 1 000 volts alternating current or 1 500 volts direct current.

Note: The voltage levels provided are based on the Electricity Safety, Quality and Continuity Regulations 2002. These levels can be updated and adopted to local laws and regulations and by ensuring that the **persons** receive relevant education and training required.

**Management instruction** (**MI**) – A procedure for use at an individual wind farm **location** or series of wind farm **locations**, that documents additional elements of the health and safety management systems of [Company A] that are to be applied to meet specified requirements of these safety rules.

**Operational control** – Control over the operational condition of wind farm **plant/apparatus** that forms a part of the **system** subject to these safety rules as defined by [Company A].

**Operational controller** – A person who has been **appointed** by the **authorisation officer** of [Company A] to be responsible for:

(i) **The operational control** of wind farm **plant** and **apparatus**.

(ii) Enacting the process of **transfer of control**, in circumstances defined in these safety rules and/or **management instructions**.

(iii) Controlling and co-ordinating safety activities necessary to achieve **safety from the system**.

**Persons**, being one of the following:

(i) **Competent technician** – A person, **appointed** by [Company A], who by virtue of their training, knowledge and experience, is deemed to be competent to perform routine operation and maintenance work or testing on **plant** and **LV apparatus** by following appropriate **routine operating procedures** and using suitable tools/work equipment.

(ii) **Level one authorising engineer** – A person who has sufficient technical knowledge and/or experience of **plant** and **LV apparatus** to enable them to avoid **danger** and who has been **appointed** by the **authorisation officer** of [Company A] to carry out duties specified in writing, including the approval of **approved written procedures**.

(iii) **Level two authorising engineer** – A **level one authorising engineer** who has sufficient technical knowledge and/or experience of **plant** and **apparatus** to enable them to avoid **danger** and who has been **appointed** by the **authorisation officer** of [Company A] to carry out duties specified in writing, including the approval of **HV approved written procedures**.

(iv) **Level one authorised technician** – A **competent technician**, who has sufficient technical knowledge and/or experience of **plant** and **LV apparatus** to enable them to avoid **danger** and who has been **appointed** by the **authorisation officer** of [Company A] to be responsible for:

- Enacting the process of **transfer of control**, in circumstances defined in these safety rules and/or **management instructions**.
- Achieving **general safety** prior to the commencement of work or testing and maintaining those conditions for the duration of the work or testing.
- Implementing and confirming safety precautions during the work or testing in compliance with **approved written procedures**.
- Setting **working parties** to work and supervising certain associated safety rules procedures.
- The transfer, clearance and cancellation of **approved written procedures**.

(v) **Level two authorised technician** – A **level two authorised technician** who has sufficient technical knowledge and/or experience of **plant and apparatus** to enable them to avoid **danger** and who has been **appointed** by the **authorisation officer** of [Company A] to be responsible for:

- Enacting the process of **transfer of control**, in circumstances defined in these safety rules and/or **management instructions**.
- Achieving **general safety** prior to the commencement of work or testing and maintaining those conditions for the duration of the work or testing.
- Implementing and confirming safety precautions during the work or testing in compliance with an **HV approved written procedures**.
- Setting **working parties** to work and supervising certain associated safety rules procedures.
- The transfer, clearance and cancellation of **HV approved written procedures**.

**Plant** – Fixed and movable items, other than **apparatus**, for which [Company A] has a maintenance responsibility.

**Pre task brief** – A document completed before any work is carried out, considering all elements of site **general safety** have been applied. Also, it ensures that all members of the work party have been involved with the process and signed to confirm their understanding of the requirements of the safe system of work. This document does not necessarily need to be called a **pre task brief** as long as it meets the aforementioned requirements.

**Purged** – A condition of **plant** from which any dangerous contents have been scavenged.

**Restoration of motive power supplies** – A condition where power supplies are reinstated to allow motion or functional testing of **plant** and **LV apparatus.** This is intended to cater only for those situations when it is absolutely essential that such power supplies are made available in order to facilitate completion of the work or testing.

**Routine operating procedure** – A written procedure, for use with the full knowledge and agreement of [Company A], that defines operational work or testing, which is of a regular or routine nature, that may be carried out on **plant** and/or **LV apparatus** by a suitably trained **competent technician** without an **approved written procedure**. It shall define the safety requirements whose application shall be within the capability of the **competent technician** who is to carry out the routine work or testing.

**Safety distance** – The distance from the nearest **HV** exposed **conductor** not **earthed** or from an insulator supporting an **HV conductor,** which must be maintained to avoid **danger.**

**Safety documents** – Elements of an **HV approved written procedure** which may be one of the following:

(i) **Permit to work** – Section of an **HV approved written procedure** which defines **HV apparatus** which has been made safe to work on and the work which is to be carried out.

(ii) **Sanction for test** – Section of an **HV approved written procedure** that states which **HV apparatus** has been made safe for the testing and the conditions under which the testing is to be carried out, which may require the removal of **circuit main earth**. Only minor works associated with the testing are permitted, e.g. removal of covers and disconnection of lugged terminations.

**Safety from the system** – That condition which safeguards persons working on or testing **plant** and/or **apparatus** from the **dangers** that are inherent in the **system**.

**Safety key** – A key unique at the **location** capable of operating a lock which will cause an **isolating device**, vent or drain to be **locked**.

**Safety lock** – A mechanical lock which has one unique key to operate it, applied to an **isolating device** or **earthing** equipment (such as a disconnect switch, **circuit main earth**, valve, etc.) to physically secure it in the safe position, preventing inadvertent operation during work or testing.

**Selected person** – A person qualified by technical knowledge and experience of **plant** and **LV/HV apparatus** and **appointed** by the **authorisation officer** of [Company A] to carry out tests and examinations and make recommendations regarding additional special precautions to be taken to safeguard persons.

**Signature checkpoint** – A point in an appropriate **approved written procedure** at which an appropriate **authorised technician** signs to confirm that the actions/conditions specified at that stage in the procedure have been achieved/satisfied.

**Stored energy** – Is energy that remains within the **system** where its release has the potential to cause harm which could be a **danger** to persons.

**Supervision**, being one of the following:

(i) **Immediate supervision** – **Supervision** by a **person** who is continuously available at the **location** where work or testing is in progress and who attends the work area as is necessary for the safe performance of the work or testing.

(ii) **Personal supervision** – **Supervision** by a **person** such that the supervising **person** is at all times during the course of the work or testing in the presence of the person being supervised.

**Surrender record** – A section of an appropriate **approved written procedure** of a format shown in these safety rules used to record the progress of work or testing and transfer.

**Switching** – The operation of circuit breakers, disconnectors, **isolators** or other methods of making or breaking an electrical circuit, and/or the application and removal of fuses.

**System** – Items of **plant** and **apparatus,** which are used separately or in combination in any process associated with the business of [Company A].

**Transfer of control** – The handing over of **operational control** of any specified part, (or whole), of a wind farm by an **operational controller**, currently having the responsibility for **operational control**, to either another **operational controller** or to an appropriate **authorised technician** or to a **competent technician**.

**Vented** – Having an outlet open to the atmosphere and so arranged that pressure can equalise to atmospheric pressure.

**Working party** – Persons working under the **supervision** of an appropriate **authorised technician** or a **competent technician** including an appropriate **authorised technician** or a **competent technician** working alone

Abbreviations:

- AWP – Approved written procedure
- HV – High voltage
- LV – Low voltage
- MI – Management instruction
- MS 001 – Method statement
- No. – Number
- POI – Point of isolation
- RA 001 – Risk assessment
- ROP – Routine operating procedure
- WTG – Wind turbine generator
- WTSSR – Wind turbine system safety rules

# 2 POLICY, PHILOSOPHY AND PRINCIPLES OF THE WIND TURBINE SYSTEM SAFETY RULES

## 2.1 POLICY

The wording of the 'POLICY' section is offered as an example.

Each organisation should produce their own wording to reflect their individual company health and safety policy and satisfy their local legal obligations.

[Company A] considers it a duty, to ensure in accordance with all applicable laws and legislation, so far as is reasonably practicable, the health, safety and welfare at work of all employees. In particular the provision and maintenance of **plant** and **systems** of work that are, so far as is reasonably practicable, safe and without risks to health.

Under our policy statement, [Company A] is dedicated to:

– Promote a healthy and safe work environment that engages and empowers employees in health, safety and environmental matters.
– Ensure prevention of injuries and ill health in the work force and our surroundings.
– Establish health, safety, security and social requirements and ensure that partners, suppliers and contractors work in accordance with them.

All employees are responsible for:

– Co-operating with management and complying with the [Company A] health and safety management system, including these wind turbine system safety rules.
– Taking reasonable care of their own health and safety at work, and that of others who may be affected by their acts or omissions.
– Reporting shortcomings in health and safety arrangements and any situation at work which presents serious and imminent **danger** to the health and safety of any individual.

[Company A] is responsible for:

– Ensuring that the wind turbine system safety rules are maintained and updated.
– Monitoring the effectiveness of the wind turbine system safety rules as a part of the internal audit function.

## 2.2 PHILOSOPHY

**2.2.1** Wind farms consist of items of electrical **apparatus** and mechanical **plant**, interconnected to form electro-mechanical **systems**. These **systems**, because of their electrical and mechanical characteristics, contain inherent **dangers**. The **systems** are designed so that when they are in their normal operating mode, they may be operated without **danger** if appropriate routine procedures and suitable tools/work equipment are correctly used.

When a **competent technician** is carrying out operational work or testing with the **system** in its normal operating mode, then this shall be done in accordance with **routine operating procedures**.

**2.2.2** When work other than operation has to be carried out affecting the **plant** and **apparatus** and it is necessary to change from the normal operating mode or depart from **routine operating procedures**, it is necessary to specify rules to achieve safety from the inherent **dangers**.

**2.2.3** A typical wind farm consists of two distinct **systems** – the **high voltage** site infrastructure which is not subject to these safety rules, and the wind turbines with their associated **plant** and electrical infrastructure, (which may comprise **low voltage** (**LV**) and **high voltage (HV) apparatus**, which are subject to these safety rules. The boundary between these **systems** must be clearly defined in **management instructions** for each site.

**2.2.4** For the site **HV** infrastructure, a comprehensive and robust set of **HV** safety rules must be implemented along the lines of electricity industry distribution or electrical and mechanical safety rules or their **approved** equivalent.

**2.2.5** There are some key criteria relating to wind turbines and the associated **plant**/electrical infrastructure that allow the more concise set of safety rules described in this document to be applied:

- Wind turbines are relatively simple **systems** with each turbine on any particular site being a near-identical copy of its neighbours.
- **Persons** have been trained to a high degree of competence on those types of turbines and follow a set of task instructions normally issued by the manufacturer.
- **Persons** generally work in small groups (usually in pairs) on, often, remote sites and under such circumstances the most practicable approach is for them to apply any safety precautions themselves as part of the work package.
- Work or testing on any one turbine is localised in its nature and can generally be carried out with no effect on others on the wind farm.

**2.2.6** A further aspect taken into consideration in developing these safety rules is the fact that a typical work package on a wind turbine consists of a number of smaller packages of work or testing, each potentially requiring slightly different safety precautions or, in some instances, the need for **restoration of motive power** at key points. Conventional permits for work systems have generally been developed for use on relatively complex **systems** and their use, while possible, does not lend itself to the types of work or testing involved on wind turbines. However, it should be emphasised that the wind turbine system safety rules still require the same standard of safety to be achieved at each and every step of such work or testing. In addition, these safety rules have been developed to formalise best practice across the industry while building on the existing competencies of individuals.

**2.2.7** It should be noted that the application of any safe system of work normally involves a number of designated individuals, each of whom carries out a specified role. On occasions, in common with other safe systems of work, a small number of people may be involved in implementing these safety rules on a single job and this means that one person may fulfil a number of roles – although extreme care must be taken to ensure that each is fulfilled correctly.

**2.2.8** These safety rules are based on a philosophy that the rule sets should concisely and clearly specify those actions that must be implemented and identify those practices which should be followed, in order to establish conditions in which persons who have to carry out work or testing on the **plant** and **apparatus** will be safeguarded from the inherent **dangers** and to provide them '**safety from the system**'.

**2.2.9** Whenever work (or testing) is carried out affecting **plant** and **apparatus** which is part of the **system**, two types of **danger** may arise:

(i) The first type is **danger** inherent in the **system** arising from the design function of the **plant** and **apparatus**, and this philosophy requires that the safety rules, when implemented, will achieve the safety of persons at work from these inherent **dangers** at the commencement and during all phases of the course of work or testing.

(iii) The second type is **danger** arising from the environment at and in the vicinity of the work point and not associated with the **system**. These safety rules are not designed to specify the means of establishing safety from the second type of **danger**, which may arise whenever work or testing is done, for example from methods of work or testing or means of access; however, the safety rules allocate responsibility for achieving safety from this type of **danger**. [Company A] shall also carry out a suitable and sufficient risk assessment, issue instructions and allocate responsibility for dealing with these **dangers**.

**2.2.10** To carry out work (or testing) affecting **plant** and **apparatus** within a **system**, the procedure to be observed for each phase of the work or testing may be divided into the following stages:

(i) Making available the **plant** and **apparatus** concerned for the work or testing required.

(ii) Establishment of conditions to safeguard persons from the inherent **dangers** of the **system**.

(iii) Execution of the work or testing required.

(iv) Clearance of the **plant** and **apparatus** on completion or termination of the work or testing to confirm that it is in a safe condition for return to service.

(v) Restoration of the **plant** and **apparatus** to its normal operational condition within the **system**.

Note: Stages (i) to (iv) may be repeated a number of times during any package of work or testing – depending on the complexity of the work or testing.

**2.2.11** To achieve safety within the stages specified above, these safety rules require **approved**

**written procedures** to be put in place and followed for each work package that, for each phase of the work or testing, describe how an **authorised technician** shall:

(i) transfer control from the **operational controller**;

(ii) establish safe conditions for persons to work or test on the **plant** and **apparatus**;

(iii) either check that safe conditions have been established for work or testing on **plant** and **apparatus** which has been **isolated** from the **system**; or implement the appropriate specialised procedures which will be applied when work or testing has to be done on **plant** and **apparatus** which remains energised;

(v) then confirm in writing that it is safe for the commencement of work or testing;

(vi) supervise safety during the course of the work or testing, and

(vii) confirm that the procedure is complete when the work or testing is finished (or terminated) before returning the **plant/apparatus** to an operational state and formally transferring control back to the **operational controller**.

This is achieved by following **approved written procedures** containing detailed instructions for each step and having **signature checkpoints** at key points in the process.

**2.2.12** The safety rules for achieving the safety of persons at work from the inherent **dangers** of the **system** are limited, therefore, to specifying in an **approved written procedure**:

(i) The actions necessary to ensure safety during each of the stages above in which **dangers** may arise from the design function of the **plant** and **apparatus**.

(ii) The responsibilities of **persons** for ensuring safety during each of the stages above from **dangers** which may arise from the design function of the **plant** and **apparatus**, and, in relation to the general **danger** arising whenever work or testing is performed, the safety rules are limited to identifying the **person** responsible for achieving safety from these general **dangers**.

**2.2.13** The safety rules will be supported by **management instructions**, **routine operating procedures** and **approved written procedures** that implement the safety rules effectively and efficiently and ensure that the safety rules are applied in a consistent manner throughout [Company A].

**2.2.14** An **approved written procedure** shall be created for each work package by a person with adequate expertise and knowledge of these safety rules, the **plant/apparatus** and the work or testing. Each **approved written procedure** will then be reviewed, agreed and **approved** by the **authorising engineer** for the relevant wind farm.

## 2.3 PRINCIPLES

**2.3.1** To fulfil the requirements of the philosophy, the following principles have been adopted in formulating the safety rules:

(i) The safety rules are concerned only with achieving safety for persons.

(ii) When work or testing is to be carried out on **HV apparatus**, the primary means of achieving safety shall be by **isolation** from the **system** followed by **earthing**, except when **earthing** may be removed to facilitate testing under the conditions of an **HV approved written procedure** with **sanction for test**. For these exceptions, the means of achieving safety is by the application of specialised procedures as stated on the **HV approved written procedure**.

(iii) In the case of **low voltage apparatus**, the primary means of achieving safety shall, where practicable, be **isolation** from the **system(s)**. If **isolation** is not practicable, safety is achieved by the application of specialised procedures as stated on the **approved written procedure**.

(iv) When work or testing is to be carried out on **plant**, the primary means of achieving safety shall be by **isolation** from the **system(s)** followed by draining venting, purging and the containment/dissipation of **stored energy**, as appropriate, except when the work or testing requires the **plant** to be energised. For these exceptions the means of achieving safety is by the application of specialised procedures as stated on the **approved written procedure**.

(v) The fundamental means of protecting persons at work is the application and maintenance of the primary means of achieving safety, as specified in 2.3.1(ii), (iii) and (iv), supported by appropriate actions to maintain the effectiveness of these primary means, e.g. locking off **isolating devices**.

(vi) The nomination of persons to carry out defined requirements under the safety rules is formal, although part of their normal responsibilities.

(vii) The application of the safety rules shall ensure that a safe situation exists across all control area boundaries and operational interfaces (e.g. across the boundary with the site **high voltage system**), be they totally or partially within the jurisdiction of [Company A].

(viii) To achieve '**safety from the system**', that is, from **dangers** which may arise from the design functions of the **plant** and **apparatus**, each of the five stages referred to in the philosophy will involve one or more of the following functions:

(a) 'Safety co-ordination' – which includes:

– Before work or testing commences, a formal release of **plant/apparatus** after ensuring that written procedures are in place instructing the precautions necessary to allow the work or testing to be carried out safely.

– When work or testing is finished, a formal return of **plant apparatus** after confirming any limitations or restrictions and cancellation of the written procedure.

(b) 'Making safe/restoration of **plant** or **apparatus**' – which includes:

– Before each phase of the work or testing commences, taking actions to make **plant** and **apparatus** safe for work or testing and confirming such actions in writing.

– When work or testing is finished, taking actions to ensure that it is safe

to return the **plant** and **apparatus** to an operational condition, record any limitations or restrictions, remove safety precautions to restore the **plant** and **apparatus** to service and confirm such actions in writing.

(c) 'Work or testing' – which includes:

– After confirmation that work or testing can proceed, execution of the required work or testing to its completion or termination.

**2.3.2** The above three functions cover separate responsibilities, which are distinct from each other and are treated separately in the safety rules.

**2.3.3** The safety rules do not state the number of persons necessary to discharge the three functions. However, where more than one member of a work party is able to carry out the role of **authorised technician**, then it must be clear to all parties who is performing that role for the duration of each work period.

## 2.4 GENERAL PROVISIONS

### 2.4.1 General safety

In addition to the requirements for establishing **safety from the system**, the safety of persons at work shall also be achieved by maintaining at all times **general safety** at and in the vicinity of the place of work.

Before work or testing starts, it is the personal responsibility of the appropriate **authorised technician** or **competent technician** to satisfy themselves that safety precautions are taken to establish **general safety** at and in the vicinity of the workplace.

After work or testing has begun, it is the personal responsibility of all members of the **working party** to ensure that actions are taken to maintain **general safety** at and in the vicinity of the work area and to stop work or testing if an unsafe situation arises. The **working party** shall also ensure that conditions of other work areas are not adversely affected by the activities for which they are responsible.

The discharging of responsibility for **general safety** will be achieved and controlled by ensuring that all activities are in accordance with appropriate instructions and guidance.

### 2.4.2 Additional safety rules and procedures

In addition to these safety rules, other associated rule sets and procedures issued by [Company A] (e.g. **management instructions**, electrical & mechanical or distribution safety rules) or any other authorities and the requirements of supporting mandatory documents shall be complied with.

Safety precautions required across control boundaries shall be carried out and documented in accordance with **management instructions**.

The safety rules shall be limited to single-end feed wind turbine **systems** only.

The safety rules boundary between these safety rules and the wind farm's **high voltage** 'site network' safe system of work shall be established at each wind farm.

### 2.4.3 Special instructions

Work on or testing of **plant** and **apparatus** to which these safety rules cannot be applied, or for special reasons should not be applied, shall be carried out in an **approved** manner which shall be confirmed in writing.

### 2.4.4 Objections on safety reasons

Any person receiving instructions in the application of these safety rules shall report to the person issuing those instructions any objections on safety reasons to carrying them out. Any such objections shall then be dealt with in an **approved** manner, which is described in a **management instruction** for that wind farm **location**.

### 2.4.5 Reporting of accidents and dangerous occurrences

**Persons** shall comply with [Company A] procedures for the statutory reporting of accidents and dangerous occurrences in accordance with [Company A] procedures.

# PART A
# THE BASIC SAFETY RULES

## A.1 APPLICATION OF THE SAFETY RULES

**A.1.1** The fundamental protection for persons working on or testing **plant** and **apparatus** from which **danger** could arise if such work or testing were carried out with the **plant** and **apparatus** in its normal operating mode is the achievement of **safety from the system**. This shall be achieved by the fulfilment and maintenance of the safety precautions, procedures and responsibilities specified in these safety rules and defined in a relevant **approved written procedure** for each work package. These safety rules shall be applied, therefore, to enable work on and testing of **plant** and **apparatus** to take place without **danger** from the **system**.

**A.1.2** **Plant** and **apparatus** shall be added to and removed from the **system** only in accordance with an **approved** procedure, which will also determine when these safety rules and/or associated safety rules shall apply (see rule A.1.4). Any **approved written procedures** affected by those additions/removals shall also be reviewed and updated as necessary.

**A.1.3** All **approved written procedures** shall be reviewed and updated in line with **management instructions**.

**A.1.4** When work or testing involves **HV apparatus** that is not included in the wind turbine system safety rules, safety rules inclusion certificate and, therefore, not subject to these safety rules, then other **approved HV** safety rules shall be used.

**A.1.5** There shall, where reasonably practicable, be available up-to-date drawings and records for the electrical installation.

## A.2 SAFETY PRECAUTIONS FOR WORK OR TESTING ON OR ADJACENT TO PLANT

**A.2.1** When work or testing is to be carried out on or adjacent to **plant** then that work or testing shall be carried out under an **approved written procedure**.

**A.2.2** When work or testing is to be carried out on or adjacent to **plant** and the means of achieving **safety from the system** is by limiting the work or testing or the work area, instructions clearly defining the limits shall be stated in an **approved written procedure**.

**A.2.3** Before work or testing is to be carried out on **plant** under an **approved written procedure:**

(i) The **plant** on which the work or testing is to take place shall be clearly defined.

(ii) Except where the means of achieving **safety from the system** is by limiting the work (or testing) or the work area, the **plant** shall be **isolated**. When **isolating devices** are used they shall, where practicable, be immobilised and **locked**. **Caution notices** shall be affixed at all points of **isolation**. **Isolations** which need to be removed in order for further work or testing to take place shall be defined in the **approved written procedure**.

(iii) The contents of the **plant** shall be adjusted to a level which avoids **danger** and where

drains could give rise to **danger** they shall be **locked** in the appropriate position.

(iv) Where **danger** could arise from pressurisation, the **plant** shall be **vented,** and where vents could give rise to **danger**, they shall be **locked** in the appropriate position to achieve **safety from the system**.

(v) Where internal access is required, the **plant** shall be **purged** if the residue of contents could cause **danger**.

(vi) Where **danger** could arise from the release of **stored energy**, action shall be taken to contain or dissipate this energy safely.

**A.2.4** When work or testing is to be carried out on **plant** it may, in certain circumstances, be essential for the **restoration of motive power supplies**. All such work or testing shall be carried out in an **approved** manner under an **approved written procedure** which shall specify the circumstances and the method of dealing with hazards arising during periods of **restoration of motive power supply**. When **restoration of motive power supplies** is implemented, the requirements, specified in the **approved written procedure**, shall ensure that **safety from the system** is maintained prior to and after removing the **isolation** that allows this restoration to take place. Those actions shall include the requirement to notify all personnel in the vicinity prior to **restoration of motive power supplies**.

**A.2.5** Only the work or testing specified on the **approved written procedure** shall be carried out.

## A.3 SAFETY PRECAUTIONS FOR WORK OR TESTING ON OR ADJACENT TO LV APPARATUS

**A.3.1** The main **dangers** to personnel working on or testing **LV apparatus** are electric shock or burns arising from:

(i) The possibility of personnel mistaking that part of **LV apparatus** on which it is unsafe to work or test without special precautions, for that which is **isolated** and on which it is safe to work or test.

(ii) The possibility of the **LV apparatus** being worked on accidentally or inadvertently being made **live**.

(iii) Inadequate precautions being taken under **live** conditions.

(iv) The uncontrolled release of **stored energy** in the **LV apparatus**.

**A.3.2** When work or testing is to be carried out on **LV apparatus**, precautions shall be taken to achieve **safety from the system**.

**A.3.3** Where practicable, the **LV apparatus** shall be **isolated**. When **isolating devices** are used, they shall, where practicable, be immobilised and **locked**.

**A.3.4** When work or testing is to be carried out on **LV apparatus**, **caution notices** shall be affixed at all points of **isolation**.

**A.3.5** When work or testing is to be carried out on or adjacent to **LV apparatus** then that work or testing shall be carried out under an **approved written procedure**.

**A.3.6** The **LV apparatus** on which the work or testing is to take place shall be clearly defined and

only the work or testing specified on the **approved written procedure** shall be carried out.

**A.3.7** The preferred method is always to work or test on or near **LV apparatus** which has been **isolated**. This will not always be practicable but no person shall be engaged in any work or testing on or so near any exposed **live LV apparatus** that **danger** may arise unless:

(i) it is unreasonable in all the circumstances for it to be **dead**;

(ii) it is reasonable in all the circumstances to be at work on or near it while it is **live**, and

(iii) suitable precautions (including where necessary, the provision of suitable protective equipment) are taken to prevent injury.

**A.3.8** The requirements of rule A.3.7 shall be met to justify **live** testing. Even though **live** testing may be justifiable, it does not follow that there will necessarily be justification for subsequent repair work to be carried out **live**. Any subsequent repair work shall be carried out with the **LV apparatus isolated** unless all the criteria listed in rule A.3.7 for **live** work are fully met.

**A.3.9** When work or testing is to be carried out on **LV apparatus** it may, in certain circumstances, be essential to restore electrical supplies. All such work or testing shall be carried out in an **approved** manner under an **approved written procedure** which shall specify the circumstances and the method of dealing with hazards arising during periods of restoration of electrical supplies. When electrical supplies are to be restored, the requirements, specified in the **approved written procedure**, shall ensure that **safety from the system** is maintained prior to and after removing the **isolation** that allows this restoration to take place. Those actions shall include the requirement to notify all personnel in the vicinity prior to **restoration of motive power supplies**.

**A.3.10** When work or testing is to be carried out and it is not practicable to **isolate** the **LV apparatus** to remove hazards which could give rise to **danger**, or if, during the course of work or testing, it is necessary to remove such **isolations**, the work or testing shall be done under an **approved written procedure**, which shall specify the method of dealing with those hazards. This shall include the conditions under which the work or testing is to take place and the safety precautions necessary to prevent injury, including the circumstances and precautions for any **live** work or testing justified under rule A.3.7.

**A.3.11** Where work or testing is to be carried out on **LV apparatus** which is part of **HV apparatus** or on **LV apparatus** which is in proximity to exposed **HV apparatus** which may be **live**, these safety rules, or their equivalent **approved HV** safety rules, shall be used, depending on the boundary between the **systems** as clearly defined in the **management instruction** required by rule A.2.3.

**A.3.12** When work or testing on **LV apparatus** requires portable instruments to be used for voltage or resistance measurements on circuits not otherwise adequately fused, the instruments or leads shall be provided with fused protection or other suitable in-built protective devices to safeguard persons from **danger**.

**A.3.13** When work or testing is to be carried out on **isolated LV apparatus**:

(i) **Isolation** shall be by the withdrawal of fuse links or other **isolating devices**. Time switches, float switches, thermostats, sequence switching devices or similar automatic switching devices are not **isolating devices**.

(ii) When **isolating devices** are used, they shall, where reasonably practicable, be

immobilised and **locked**. If this is not reasonably practicable, the fuse links or other **isolating devices** shall be removed.

(iii) Where work or testing is to be done on portable or hand-held **LV apparatus**, **isolation** may be achieved by the removal of the plug from the socket outlet provided that the plug remains in sight of the **person** doing the work or testing or the plug has a lockable device applied to it which prevents it being inserted into a socket outlet.

(iv) **Safety keys** from locks used to secure **isolations** along with any removable **isolating devices** shall be retained and controlled in accordance with [Company A] **management instructions. Management instructions** should make provision for circumstances when the **LV apparatus** is permitted to be made **live** (see rule A.3.10), and safety keys should be retained in safe custody by the **level one authorised technician** holding the **approved written procedure**, preferably by retaining them in their personal possession.

(v) For ongoing work or testing, beyond one working day, secure retention of items taken into safe custody by the **level one authorised technician** shall be in accordance with **management instructions**.

(vi) In order to facilitate the handing over of **isolating devices** and **safety keys** they must be readily identifiable with the **approved written procedure** and with the **LV apparatus** with which they are associated.

(vii) Where work or testing is to be continued by another **level one authorised technician**, the surrender shall be carried out in line with the requirements of rule B.2.3.

(viii) Where adjacent exposed **live LV apparatus** is present which gives rise to **danger**, work or testing shall only be done by a **level one authorised technician,** as a minimum, who has completed an appropriate course of training as defined in **management instructions** and is **appointed** for work or testing adjacent to exposed **live LV apparatus**. The **danger** associated with any adjacent exposed **live LV apparatus** shall be highlighted in the **approved written procedure**. The **level one authorised technician** shall:

- Where practicable, screen off any adjacent exposed or unprotected **LV apparatus** which may be considered to be **live**.
- Where necessary to prevent injury use **approved** insulated tools, stands, mats, insulating gloves or other personal protective equipment as appropriate, and remove metallic objects from the hands and wrists. The considerations of rule A.3.14 are relevant to the selection of personal protective equipment. In addition, consideration should be given to the **level one authorised technician** being accompanied by another **authorised technician** if their presence could contribute significantly to ensuring that injury is prevented. Any accompanying **authorised technician** should be trained to recognise **danger** and if necessary to render assistance in the event of an emergency.

(ix) Before work or testing commences the **level one authorised technician** who is to do the work or testing shall check, by means of an **approved** voltage testing device that the **LV apparatus** on which they are to work or test is **dead.** The instrument used shall be tested in accordance with [Company A]'s **approved** procedures using an **approved** proving unit immediately before and after use.

(x) If work or testing is interrupted the **level one authorised technician** who is to continue the work or testing must first carry out the procedure in rule A.3.13(ix).

**A.3.14** When work or testing is to be carried out on **live LV apparatus**:

(i) Subject to the criteria of clauses rule A.3.7(i), (ii) and (iii) being satisfied, work or testing may be done with the **LV apparatus live** only under the following conditions:

- The fact that the work or testing is to be carried out on **live LV apparatus** shall be highlighted in the **approved written procedure** which shall specify to the **level one authorised technician** how the requirements under these safety rules are to be met.
- The work or testing shall only be done by a **level one authorised technician** who has completed an appropriate course of training as defined in a **management instruction** and is **appointed** for work or testing on **live LV apparatus**.
- The **level one authorised technician** who is to do the work or testing shall first remove any metallic objects such as wristwatch, rings, wristlets, cufflinks, pendants and other items of personal jewellery and any metallic pocket contents, etc.
- All adjacent metal which is electrically bonded to **earth** or **conductors** which are at a different potential to that on which work or testing is to be carried out must be screened with insulating material to avoid **danger**. The material used for screening must be of sufficient strength to withstand an accidental blow from a tool without tearing or otherwise ceasing to be effective.
- Where necessary to prevent injury, **approved** insulated tools, insulating stands or mats, insulating gloves, eye protection, face shields and protective coveralls, as appropriate, must be used. When considering the extent of personal protective equipment to be used, due account should be taken of the fault level of the circuit concerned and the potential **danger** from arcing.
- Only **approved** test instruments and test probes shall be used.
- Consideration shall be given to the **level one authorised technician** being accompanied by another **authorised technician(s)** if their presence could contribute significantly to ensuring that injury is prevented. Any accompanying **authorised technician** should be trained to recognise **danger** and if necessary to render assistance in the event of an emergency.
- Before commencing work or testing in ducting, trenches or underground distribution boxes, where there is a foreseeable possibility of the presence of gas that might be inadvertently ignited by electric sparks, a **selected person's** report shall be obtained. Prior to the commencement of work or testing any additional precautions, specified by the **selected person's** report, that are necessary to remove or prevent **danger**, shall be implemented in accordance with **management instructions**.

## A.4 SAFETY PRECAUTIONS FOR WORK OR TESTING ON OR ADJACENT TO HV APPARATUS

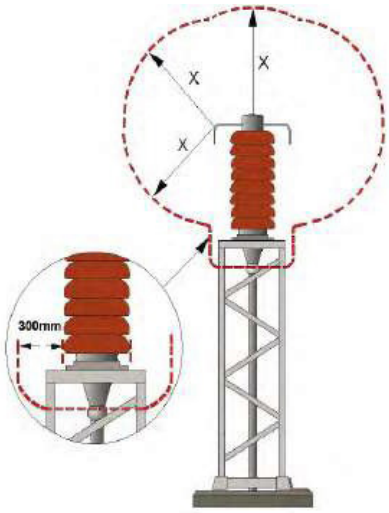
**A.4.1** The **safety distances** (designated 'X' in Table 1 and Figure 1) shall be maintained at the respective **system** voltages between any part of a person or object and the nearest exposed **live HV conductor**.

**A.4.2** A distance of 300 mm shall also be maintained, at all **system** voltages, from the portion of insulators supporting **live HV conductors** which is outside the appropriate **safety distance** from the **conductors**.

**Table 1: Safety distances (alternating current voltages only)**

| Nominal system voltage (phase to phase) | Safety distance 'X' From live HV conductors |
|---|---|
| Up to and including 33 kV | 0,8 m |
| Exceeding 33 kV but not exceeding 66 kV | 1,0 m |

**Figure 1: Distances in air and zones for working procedures**




**Safety distance 'X' (From live high voltage conductors)**

**A.4.3** All **HV apparatus**, including those that are damaged or have faulted, shall be treated as **live** unless they have been made safe in accordance with rule A.4.6.

**A.4.4** Access to or work on equipment containing dielectric gas shall be carried out in accordance with an **approved** procedure.

**A.4.5** When work is to be carried out on or adjacent to **HV apparatus**, a **level two authorising engineer** shall assess the means of achieving **safety from the system**. When the means of achieving **safety from the system** is by limiting the work or the work area, safety precautions and instructions clearly defining the limits shall be stated in an **HV approved written procedure.**

**A.4.6** No person shall undertake work or testing on or within the **safety distance** of an exposed **conductor** or on any part of an **HV system** unless such parts of the **system** are:

(i) Disconnected from all sources of supply.

(ii) **Isolated** and all practicable steps taken to lock off from all points of supply, including voltage and auxiliary transformers, common neutral **earthing** equipment and other sources from which the **apparatus** and **conductors** may become **live**, and **caution notices** shall be fixed at all points of **isolation**.

(iii) Connected to **earth** by **approved** means at all points of disconnection of **HV** supply from the **system** or between such points and the point(s) of work.

(iv) Where work or testing is to be done on busbars and busbar connections of multi-panel switchgear then **circuit main earths** of an **approved** type shall be applied at a panel, other than that at which work is to be undertaken, on the **isolated** section of busbars.

(v) Screened where necessary to prevent **danger** and **danger notices** attached to **apparatus** containing **live conductors** at the limits of the work zone.

(vi) Demarcated by **danger notices** which shall be attached on or adjacent to **apparatus** containing **live conductors** at the limits of the zone of work.

(vii) Identified at the point of work by **approved** means. This shall include instruction on how access is to be obtained and clear instruction on adjacent **apparatus**, including other parts of a multi-panel switchgear, that shall not be accessed by the **working party**.

(viii) Released for work and the measures taken under this rule are formally communicated to the **working party**, using an **approved** procedure detailed in an **HV approved written procedure.** Where work or testing is to be done on busbars and busbar connections of multi-panel switchgear then the **level two authorised technician** shall provide **personal supervision** for the removal of cover plates and shall, where practicable, ensure that each busbar or busbar connection in the working area is **dead** by means of testing with an **approved** voltage testing device.

**A.4.7** No operation of **HV apparatus** shall be initiated except with the sanction of the **level twoauthorising engineer** or when there is a requirement to carry out **emergency switching**. **Emergency switching** and the circumstances in which it is permissible is determined in [Company A]'s **management instructions**.

**A.4.8** **Safety locks** shall, where practicable, be used to immobilise and lock all switchgear isolations at points where the circuit on which work is to be carried out could be energised. The **keys** for such locks shall be retained in accordance with a **management instruction**.

**A.4.9** When the circuit on which work is to be carried out is controlled only by fuses or links, the fuses, links (and carriers) shall be removed and retained in accordance with a **management instruction**. This may include safe custody of the fuses and links by the **person** in charge of the work. Where such removal is not practicable, **HV approved written procedures** to ensure safety shall be followed.

**A.4.10** **Caution notices** shall be fixed at all points of **isolation and earthing**.

**A.4.11** When **HV apparatus** is to be discharged and **earthed** in accordance with rule A.4.6(iii):

(i) The **HV apparatus** and **conductors** shall be checked at the position or panel that the **circuit main earth** is to be applied by means of an **approved** voltage testing device or other **approved** means to verify the absence of system voltage prior to the application of a **circuit main earth**.

(ii) A circuit breaker or **earthing** switch provided for the purpose of making the **earthing** connection shall, where practicable be used as the primary application of **circuit main earth**. After closing, the circuit breaker or **earthing** switch shall, where practicable be **locked** in the **earthed** position and a **caution notice** applied, so that it remains inoperative while it is the **circuit main earth**.

(iii) The first **circuit main earth** applied to, and the last **circuit main earth** removed from a circuit shall, where practicable, be achieved using a circuit breaker or **earthing** switch provided for that purpose.

(iv) Completed **earthing** operations shall be recorded on the **HV approved written procedure**.

**A.4.12** **Earthing** leads and associated clamps shall be of an **approved** type and of an adequate rated capacity for their duty at the point of application.

**A.4.13** The general procedure to be followed when using **earthing** leads shall be as follows:

(i) Shall be adequately maintained and always examined immediately prior to use.

(ii) The circuit shall be verified that it is not **live** by means of an **approved** voltage testing device or other **approved** means.

(iii) **Earthing** leads shall be connected, using an **approved** device, to **earth** before being connected to the phase **conductors**. Care shall be taken to ensure that good contact is made and that **earthing** leads are clearly visible.

(iv) All phases shall be **earthed**, even if work is to be carried out only on one phase.

(v) **Earthing** leads shall not be applied in any cell or compartment in which there is any exposed metal **live** at **HV** which may be a source of **danger**.

(vi) When **earthing** leads are being removed each one shall be disconnected from its phase **conductor** by means of an **approved** device before it is removed from the **earth** connection.

(vii) For the purpose of **earthing** on spout contacts of metal-enclosed switchgear, only **approved** devices shall be used. The insertion of the hand or any tool into contact spouts for this purpose is forbidden.

**A.4.14** No **HV earthing** switch shall be operated or **circuit main earth** connected or disconnected except with the consent of the **level two authorising engineer** under instruction given in the form of an **HV approved written procedure**.

**A.4.15** Achieving **safety from the system** by the operation of **HV apparatus**:

(i) Shall only be carried out by a **level two authorised technician** or by a **level one authorised technician** acting under the **personal supervision** of a **level two authorised technician**.

(ii) Shall only be carried out with the authority of the **level two authorising engineer** issued in the form of an **HV approved written procedure**.

(iii) Shall only be carried out when instructions in the form of an **HV approved written procedure** are available at the point of **switching**.

(iv) Shall, where reasonably practicable, be planned and completed in accordance with the following hierarchy:

– remotely via remote control facilities;

– remotely on site via control panels in a different room to the switchgear being operated;

- remotely via a control panel in the same room as the switchgear being operated;
- remotely via an **approved** umbilical device or similar, or
- via the operating facilities on the switchgear following a suitable and sufficient risk assessment.

(v) Shall be visually inspected immediately before any **switching** operation to check its condition is satisfactory. The switch to be operated shall be visually checked to ensure that it is in the expected position prior to operating.

(vi) Shall be visually checked following an intended operation to ensure the anticipated position has been achieved and it has operated fully and correctly.

(vii) Shall be reported immediately to the **level two authorising engineer** if the switchgear shows signs of distress and it shall be examined before a decision is made about further operation.

(viii) Shall be operated by a **level two authorised technician** or a **level one authorised technician** under the **personal supervision** of a **level two authorised technician** wearing **approved** personal protective equipment.

(ix) Shall never involve pre-arranged signals or the use of time intervals.

**A.4.16** The work area shall be defined clearly and, where necessary, protected physically to prevent **danger** to persons in the work area from **system** hazards adjacent to the work area.

**A.4.17** Work or testing shall only be permitted to start on **HV apparatus** that is readily identifiable, or has fixed to it a means of identification, which will remain effective throughout the course of the work or testing.

**A.4.18** All **HV apparatus** associated with any wind turbines shall be considered to be automatically or remotely controlled. Control over the operation of wind turbine **HV apparatus** can either be by local (on site) or remote (off site) means. The means of control over 'local', on site, operation may be physically remote of the **HV apparatus** that is being worked on. When personnel are working on or testing **HV apparatus** that has automatic or remote control features, the main **danger** that could arise is from the operation of the **HV apparatus** if these control features have not been **isolated**. Where **danger** could arise to personnel at work on or testing of **HV apparatus**, then all such automatic or local/remote operation shall be prevented while the work or testing is taking place.

**A.4.19** Where work or testing is to be carried out on automatically or remotely controlled **HV apparatus**, the precautions taken to achieve **safety from the system** shall cause all automatic or remote control features to be **isolated.** This requirement shall also include any local control features. Where reasonably practicable, all such **isolations** shall be **locked** and remain so for the duration of the work or testing. **Caution notices** shall be affixed at all points of **isolation**.

**A.4.20** The requirements for achieving **safety from the system** from all control features shall be specified in an appropriate **HV approved written procedure**.

**A.4.21** Where testing is to be done which requires removal of **circuit main earths** at the point of work, the **HV approved written procedure** shall state how this is to be carried out. A **sanction for test** section shall be included in the **HV approved written procedure.**

**A.4.22** If it is essential to carry out **restoration of motive power supplies** in order to complete the work or testing on **HV apparatus**, such that any automatic, remote or local control features would become operable, then the **HV approved written procedure** shall specify the means of maintaining **safety from the system** while those control features are operable.

**A.4.23** Work or testing on, or the making of adjustments to, the controlling features of wind turbine **HV apparatus** while it is in the operating mode shall only be done by a **level two authorised technician** who has completed an appropriate course of training as defined in **management instructions**, and is **appointed** for that purpose. The requirements to achieve and maintain **safety from the system** shall be specified in an appropriate **HV approved written procedure**. Before such work or testing commences, consultation shall take place between the **level two authorised technician** and the **operational controller**. No other work or testing shall be permitted on that **HV apparatus** at the same time.

**A.4.24** When it is necessary to work or test on, or make adjustments to, the controlling features with those features operational but with the controlled **HV apparatus** not in the operating mode, no other work or testing shall be permitted on that **HV apparatus** at the same time.

## A.5 OPERATION OF PLANT AND APPARATUS

**A.5.1** The operation of **plant** and/or **apparatus** to achieve **safety from the system** shall never involve pre-arranged signals or the use of time intervals.

## A.6 DEMARCATION OF WORK AREAS

**A.6.1** The work area shall be defined clearly and, where necessary, protected physically to prevent **danger** to persons in the work area from **system** hazards adjacent to the work area.

## A.7 IDENTIFICATION OF PLANT AND APPARATUS

**A.7.1** Work or testing shall only be permitted to start on **plant** and/or **apparatus** that is readily identifiable, or has fixed to it a means of identification, which will remain effective throughout the course of the work or testing.

## A.8 AUTOMATICALLY OR REMOTELY CONTROLLED PLANT AND APPARATUS

**A.8.1** Before work is carried out on remotely or automatically controlled equipment, all remote control and automatic features shall, where practicable be **isolated** and where reasonably practicable immobilised and **locked**. A **caution notice** shall be affixed.

**A.8.2** While such work is in progress no work shall be carried out on the controlling **system** or **apparatus**.

**A.8.3** Work on a related control system shall be carried out with the full knowledge of a **level two authorising engineer** and be sanctioned by the issue of an appropriate **approved written procedure**.

## A.9 EXCAVATION

**A.9.1** When work or testing at wind farm **locations** involves excavation then it shall always be undertaken by following the requirements of 'site network' **HV** safety rules.

## A.10 CONFINED SPACES

**A.10.1** When work or testing at wind farm **locations** requires access to a confined space in which, by virtue of its enclosed nature, there arises a reasonably foreseeable specified risk (e.g. as defined in the Confined Spaces Regulations 1997) then guidance on the precautions to be taken shall be defined in a **management instruction**.

**A.10.2** In deciding whether there is a reasonably foreseeable specified risk account shall be taken of the nature of the work or testing itself.

**A.10.3** The detail of the precautions that are required in association with that work or testing, shall be specified in an **approved written procedure**.

# PART B
# PROCEDURES AND KEYS

## B.1 GENERAL

**B.1.1** Part B of these safety rules gives the procedures associated with **approved written procedures** and **keys**. **Persons** involved in these procedures must understand and enact their respective roles correctly.

**B.1.2** The safety rules concern themselves with the principles of achieving safety from the inherent **dangers** of **plant** and **apparatus**. The detailed manner in which the objectives, responsibilities and requirements of Part B of the safety rules are to be met shall be subject to **management instructions**.

**B.1.3** Included in Part B is a process for the transfer of work or testing being carried out under an **approved written procedure**. This will apply, for instance, when work or testing continues into a new day, and/or is to be continued by a new **authorised technician**.

**B.1.4** Clauses within these safety rules detailing requirements to be enacted by all **authorised technicians** when operating under an **approved written procedure** will state 'the **authorised technician** shall**…**'.

**B.1.5** Clauses within these safety rules detailing requirements to be enacted under an **approved written procedure** that requires interaction with **LV apparatus** to ensure **safety from the system** will state 'the **level one authorised technician** shall**…**'.

**B.1.6** Clauses with these safety rules detailing requirements to be enacted under an **HV approved written procedure** that requires interaction with **HV apparatus** to ensure **safety from the system** will state 'the **level two authorised technician** shall**…**'.

## B.2 APPROVED WRITTEN PROCEDURES

### B.2.1 Preparation

*B.2.1.1*

Written procedures for all 'work packages' will be created by a person with adequate expertise and knowledge of these safety rules, the **plant/apparatus,** and the work or testing itself. These written procedures shall then be checked and **approved** by an appropriate **authorising engineer**, for the relevant wind farm. Each **approved written procedure** shall include appropriate **signature checkpoints** at key points for the appropriate **authorised technician** to confirm that all safety precautions up to that point have been completed correctly.

*B.2.1.2*

When **HV approved written procedures** are used to achieve **safety from the system** for work or testing on **HV apparatus**, then the **HV apparatus** to be worked on or tested:

(i) Shall be disconnected from all sources of supply.

(ii) Shall be **isolated** which shall, where practicable be **locked** off. **Caution notices**

shall be applied to all points of **isolation**.

(iii) Shall, where practicable be proven **dead** by **approved** means prior to carrying out **earthing**.

(iv) Shall be connected to **earth** by an **approved** means.

(v) Shall be screened where necessary to prevent direct contact with adjacent **live** parts.

(vi) Where **danger** could arise from the release of **stored energy**, the **stored energy** shall be contained or safely dissipated.

(vii) When **danger** from **impressed voltages** or inadvertent back feed could arise during the course of the work or testing, **additional earths** shall be applied at points on the **system** as specified within the **HV approved written procedure**.

(viii) Shall be identified at the point of work.

(ix) Shall be released for work. Measures taken shall be formally communicated to the **working party**, which shall involve the use of appropriate **safety document** sections of the **HV approved written procedure**.

*B.2.1.3*

An **approved written procedure** shall identify all foreseeable circumstances when a **selected person's** report is required in order to identify any additional precautions to remove or prevent **danger**. **Management instructions** shall specify how the requirements of the **selected person's** report, including any additional precautions, will be implemented before the work or testing is allowed to proceed.

*B.2.1.4*

Where appropriate the **approved written procedure** shall state any requirements to provide **personal supervision,** and specify the type of **person** who shall provide it.

### B.2.2 Implementation

*B.2.2.1*

Work or testing under the authority of an **approved written procedure** shall be limited to that specified in that procedure, and only **approved written procedures** that meet the criteria defined in these safety rules shall be used.

*B.2.2.2*

Before work or testing can take place, the **authorised technician** shall be issued with a copy of the **approved written procedure** in accordance with **management instructions**.

*B.2.2.3*

Before any work or testing can take place under an **approved written procedure**, the **authorised technician** shall enact the **transfer of control** procedure with the appropriate **operational controller** to release **operational control** of the specified wind turbine generator **plant/apparatus**.

*B.2.2.4*

A **pre task brief** register shall be populated by each member of a **working party** to ensure work area limits, the location of all adjacent **live apparatus** and the safety precautions taken to achieve **safety from the system** are all fully understood.

*B.2.2.5*

Immediately after the **authorised technician** has obtained the **working party** signatures on the **pre task brief** and before any work is carried out the **authorised technician** shall identify in an **approved** manner where and how access is to be made.

*B.2.2.6*

When the work or testing is to be carried out, an **authorised technician** shall implement the safety precautions described in the **approved written procedure** step-by-step.

*B.2.2.7*

Any **safety keys** from locks used to secure **isolations** shall be retained and controlled in accordance with the procedure detailed in specific [Company A] **management instructions.**

*B.2.2.8*

An **approved written procedure** shall be implemented, signed at each **signature checkpoint**, cleared, cancelled and, where appropriate, transferred by an **authorised technician** of the correct authorisation level for that particular **approved written procedure**.

*B.2.2.9*

If access requires the removal of covers or barriers, under an **HV approved written procedure**, these shall be removed under the **personal supervision** of the **level two authorised technician**, who shall not leave the work **location** and shall not allow work to commence until satisfied that no further access is required to complete the work. Action shall, where practicable, then be taken by the **level two authorised technician** to ensure that each connection in the working area is **dead** by means of testing with an **approved** voltage testing device.

*B.2.2.10*

When an **approved written procedure** is in force for work or testing on any items of **plant/apparatus** then no other **approved written procedure** shall be implemented on those same items of **plant/apparatus** at the same time.

*B.2.2.11*

When, during the implementation of an **approved written procedure**, it is identified that additional work or testing, not included in the **approved written procedure,** is necessary, then such work or testing shall be documented and notified to an **authorising engineer** of the correct authorisation level for that particular **approved written procedure.** The **authorising engineer** shall arrange to prepare a new **approved written procedure** in accordance with rule B.2.1 to include the additional work or testing. The remaining work or testing under the original **approved written procedure** shall be terminated under the provisions of rule B.2.3. Work or testing shall then continue by implementing the new **approved written procedure**.

*B.2.2.12*

Where a **selected person's** report identifies any additional precautions required to be taken during the course of work or testing, to avoid **system** derived hazards, then these requirements shall be followed by the **authorised technician**. **Management instructions** shall specify how the requirements of the **selected person's** report, including any additional precautions, will be implemented before the work or testing is allowed to proceed.

### B.2.3 Transfer

*B.2.3.1*

Each **approved written procedure** includes a **surrender record**. The purpose of the **surrender record** is to record the progress of work or testing, that is to be continued beyond one working period, or the point at which that **approved written procedure** is transferred to a new **authorised technician**.

*B.2.3.2*

The **approved written procedure**, together with any associated documents, **keys** and appropriate items, shall be retained in accordance with **management instructions** during periods when no work or testing is taking place. **Management instructions** shall specify the procedures to be followed in order to achieve **safe custody**. Before being placed in **safe custody**, Part One of the **surrender record** shall be completed by the **authorised technician**. If an **HV approved written procedure** requires the need for the testing of **HV apparatus** under a **sanction for test** section, this part of the **HV approved written procedure** shall be completed prior to the transfer process being undertaken.

*B.2.3.3*

When the work or testing is to be resumed by the same **authorised technician,** they shall first remove the **approved written procedure** from **safe custody** and complete Part Two of the **surrender record**. The **authorised technician** may now resume the work or testing provided that there are no reasons to believe that the work area/safety precautions may have been tampered with or altered. When there is reason to suspect that the work area/safety precautions may have been tampered with or altered, then the **authorised technician** shall personally review all of the safety precautions, and confirm all **signature checkpoints** prior to continuing the work or testing.

*B.2.3.4*

Where the work or testing is to be continued by a different **authorised technician**, the transfer process shall, where reasonably practicable be carried out face-to-face between the two **authorised technicians,** and include all associated documents, **keys** and appropriate items. The current **authorised technician** shall sign Part One of the **surrender record,** and the intended recipient shall then sign Part Two. The **authorised technician** signing Part Two of the **surrender record** shall personally review all of the safety precautions.

*B.2.3.5*

If for any reason it is found necessary to temporarily discontinue work or testing, then this shall be indicated in the **approved written procedure** and those reasons shall be recorded by the **authorised technician**. This process shall be described in a **management instruction**. The requirements of safety rules clauses B.2.3.2, B.2.3.3 and B.2.3.4 shall be followed as appropriate.

*B.2.3.6*

The **operational controller** shall be informed at the start and end of each work period of the operational state of the **plant/apparatus** and shall be immediately informed of the details of any transfers of **approved written procedures** to new **authorised technicians**.

### B.2.4 Clearance and cancellation

*B.2.4.1*

When work or testing has been completed, or when the remaining programme of work or testing is to be cancelled, the **authorised technician** shall complete a CLEARANCE **signature checkpoint** to certify:

(i) That all persons working or testing under the **approved written procedure** have been withdrawn from and warned not to continue work or testing on the **plant** and/or **apparatus** described in the **approved written procedure**.

(ii) Whether or not the work site has been cleared of all tools, gear and loose material.

(iii) Whether or not all guards and access doors have been replaced.

(iv) That the wind turbine generator is in a safe condition to be returned to service.

Note and report any **exception** to the **operational controller** and the appropriate **authorising engineer** in accordance with a **management instruction**.

*B.2.4.2*

The **authorised technician** shall then ensure that all associated documents, **keys** and appropriate items are accounted for and that it is safe to remove all remaining points of **isolation** before completing a CANCELLATION **signature checkpoint**. The **authorised technician** shall now remove any remaining points of **isolation** and return the wind turbine generator to an operational condition.

*B.2.4.3*

The **authorised technician** shall then enact the **transfer of control** procedure to return **operational control** of the wind turbine generator **plant** and/or **apparatus** to the **operational controller**, notifying them of the completion of work or testing, the cancellation of the **approved written procedure** and of any limitations or restrictions affecting the operational condition of the **plant** and/or **apparatus**.

*B.2.4.4*

The completed **approved written procedure** together with any **selected person's** report and other associated documents shall be retained in accordance with the **management instructions**.

## B.3 ROUTINE OPERATING PROCEDURES

**B.3.1** **Routine operating procedures**, for operational work or testing on **plant/LV apparatus**, shall only be used with the full knowledge and agreement of [Company A].

**B.3.2** A **level one authorising engineer** shall agree that the operational work or testing can be carried out without an **approved written procedure** by following a **routine operating procedure**. The nature of this agreement shall be confirmed in a **management instruction**.

**B.3.3** The form of any **routine operating procedure** shall be determined by [Company A] and detailed in a **management instruction**.

**B.3.4** Operational work or testing under a **routine operating procedure** shall only take place with **transfer of control** from the **operational controller**.

## B.4 LOSS OF SAFETY KEY/APPROVED WRITTEN PROCEDURE OR ABSENCE OF AN AUTHORISED TECHNICIAN

**B.4.1** Each wind farm shall have **management instructions** describing the procedure to be followed in the event of the loss of a **safety key,** loss of an active **approved written procedure** and absence of an **authorised technician** in receipt of an **approved written procedure**.

## B.5 EXAMPLE OF APPROVED WRITTEN PROCEDURES

### B.5.1 Wind turbine system safety rules (WTSSR) approved written procedure (AWP) suggested format

| | | |
|---|---|---|
| [COMPANY A] | **WIND TURBINE SYSTEM SAFETY RULES APPROVED WRITTEN PROCEDURE** | **WTSSR AWP No.** WTSSR AWP 001 |
| | | **Date:** DD/MM/YYYY |
| | | **Rev:** 01 |
| Approving level one authorising engineer: | | Date: (DD/MM/YYYY) |

**1.0 Work details:**

| Step | Detail | |
|---|---|---|
| 1.1 | Wind farm location: | WTG no. _____ |
| 1.2 | Plant/apparatus identification: | |
| 1.3 | Work/testing to be done: | |
| 1.4 | Associated documents:<br>– | |
| 1.5 | Date of work: | |

**2.0 Transfer of control (release):**

| Step | Detail | | |
|---|---|---|---|
| 2.1 | Time: | Operational controller | Print name: |
| 2.2 | Level one authorised technician | | Print name: |

**3.0 Establish safety precautions:**

| Step | Operation |
|---|---|
| 3.1 | Establish local control of the wind turbine |
| 3.2 | Establish general safety |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3.3 | **POI application:** | | | | | | | |
| | POI application | | | | | Time | | Sign |
| | POI application | | | | | Time | | Sign |
| 3.4 | Precautions:<br>I certify that the precautions listed in steps 3.1 to 3.3 above have been completed which establish both general safety and safety from the system in order to carry out the work/testing specified in step 1.3.<br><br>Signature checkpoint: …… Time: …… Date: …… | | | | | | | |
| 3.5 | Carry out the work/testing | | | | | | | |
| 3.6 | Restoration of motive power supplies*: YES/NO<br>The following motive power supplies may be restored: .....<br>For the following essential work/testing: ..... | | | | | | | |
| | Remove | | | | | | | |
| | Re-apply | | | | | | | |
| 3.7 | End of work/testing | | | | | | | |
| 3.8 | POI removal: | | | | Time: | | Sign: | |
| | POI removal: | | | | Time: | | Sign: | |
| 3.9 | Clearance:<br><br>I certify that the work or testing under this AWP is now complete and all persons in my working party have been withdrawn and warned that it is no longer safe to continue working or testing on the plant/apparatus.<br><br>All gear, tools and loose equipment have been removed.<br><br>All guards covers and access doors have been replaced.<br><br>The wind turbine generator is in a safe condition to be returned to service.<br><br>Except for the following limitations or restrictions: **<br>……<br>……<br><br>Signature checkpoint: …… Time: …… Date: …… | | | | | | | |

**4.0 Return to service:**

| Step | Operation |
|---|---|
| 4.1 | Cancellation:<br>I certify that all items issued under this AWP have been accounted for and that it is safe to remove all remaining points of isolation. The operational controller will be informed of the completion of work/testing under this AWP and of any restrictions on returning the plant/apparatus to its normal operational condition.<br><br>Signature checkpoint: …… Time: …… Date: …… |

| | |
|---|---|
| 4.2 | POI removal: (if required) |

**5.0 Transfer of control (return):**

| Step | Detail |
|---|---|
| 5.1 | I have informed the operational controller …… (PRINT NAME) that the work or testing is complete, this WTSSR AWP is now cancelled and all points of isolation and earthing have been removed. I have confirmed any limitations or restrictions on returning the plant/apparatus to its normal operational condition.<br><br>Signature checkpoint: …… Time: …… Date: …… |

**6.0 Surrender record:**

| **Part one** | | | **Part two** | |
|---|---|---|---|---|
| Level one authorised technician surrendering this AWP | Time/ date | Comments:<br><br>Indicate the point in the work/ testing programme reached | Level one authorised technician receiving this AWP | Time/ date |
| | | | | |
| | | | | |

* Delete this step if not applicable

****** Record N/A or NIL if not applicable

### B.5.2 WTSSR HV AWP suggested format

| [COMPANY A] | **WIND TURBINE SYSTEM SAFETY RULES**<br>**HV APPROVED WRITTEN PROCEDURE** | **WTSSR HV AWP No.**<br>WTSSR HV AWP 001 |
|---|---|---|
| | | **Date:** DD/MM/YYYY |
| | | **Rev:** 01 |
| Approving level two authorising engineer: | | Date: (DD/MM/YYYY) |

**1.0 Work details:**

| Step | Detail | |
|---|---|---|
| 1.1 | Wind farm location: | WTG no. _____ |
| 1.2 | Plant/apparatus identification: | |
| 1.3 | Work/testing to be done: | |
| 1.4 | Associated documents (example below):<br>• MS 001<br>• RA 001<br>• High voltage switching procedure HV-001<br>• Isolating and earthing HV procedure HV-002<br>• HV testing procedure HV-003 | |
| 1.5 | Date of work: | |

**2.0 Transfer of control (release):**

| Step | Detail | | |
|---|---|---|---|
| 2.1 | Time: | Operational controller | Print name: |
| 2.2 | Level two authorised technician | | Print name: |

**3.0 Establish safety precautions:**

| Step | Operation | | | | | |
|---|---|---|---|---|---|---|
| 3.1 | Establish local control of the wind turbine/HV apparatus | | | | | |
| 3.2 | Establish general safety | | | | | |
| 3.3 | **POI application:** (this also includes the earthing requirements as part of the safety precautions required to achieve safety from the system) | | | | | |
| | Step | Location | Equipment identity | Operation | Time | |
| | 1 | | | | | |
| | 2 | | | | | |
| | 3 | | | | | |

<table>
<tr><td>3.4</td><td><u>Permit to work</u><br>I certify that the precautions listed in steps 3.1 to 3.3 above have been completed which establish both general safety and safety from the system in order to carry out the work/testing specified in step 3.5.<br><br>Signature checkpoint: …… Time: …….. Date: ……</td></tr>
<tr><td>3.5</td><td>Transformer replacement: carry out work as per MS 001, section 123</td></tr>
<tr><td>3.6</td><td>I certify that all persons in my working party have been withdrawn and warned that it is no longer safe to continue working or testing on the plant/apparatus.<br>All gear, tools and loose equipment have been removed. It is now safe to carry out work or testing specified in step 3.7.<br><br>Signature checkpoint: …… Time: …….. Date: ……</td></tr>
<tr><td>3.7</td><td>Transformer protection testing: carry out work as per HV - 003, section 234</td></tr>
<tr><td>3.8</td><td><u>Sanction for test</u><br>The following circuit main earth(s) applied during step 3.3 may be removed and re-applied as deemed appropriate in accordance with isolating and earthing HV procedure HV-002 during course of this testing process:<br>• Turbine number, switchgear make and model, panel number, item (write these details)<br>For the following essential work/testing:<br>• Description of testing (write these details)<br>All persons in my working party have been advised of the following precautions required to maintain safety from the system during this test:<br>• Testing precautions (write these details)<br><br>Signature checkpoint: …… Time: …….. Date: ……
<table>
<tr><td>Remove (write description)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Re-apply (write description)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
The operational state of the plant/apparatus is the same as established by the safety precautions completed in steps 3.1 to 3.3, except for the following exceptions**:<br>……<br>……<br>……<br><br>Signature checkpoint: …… Time: …….. Date: ……</td></tr>
<tr><td>3.9</td><td>End of work/testing</td></tr>
</table>

| | |
|---|---|
| 3.10 | Clearance:<br><br>I certify that the work or testing under this WTSSR HV AWP is now complete and all persons in my working party have been withdrawn and warned that it is no longer safe to continue working or testing on the plant/apparatus.<br><br>All gear, tools and loose equipment have been removed.<br><br>All guards, covers and access doors have been replaced.<br><br>The wind turbine generator/HV apparatus is in a safe condition to be returned to service. Except for the following limitations or restrictions**:<br><br>……<br><br>……<br><br>……<br><br>Signature checkpoint: …… Time: …… Date: …… |

**4.0 Return to service:**

| Step | Operation | | | | | |
|---|---|---|---|---|---|---|
| 4.1 | Cancellation:<br><br>I certify that all items issued under this WTSSR HV AWP have been accounted for and that it is safe to remove all remaining points of isolation and earthing. The operational controller will be informed of the completion of work/testing under this WTSSR HV AWP and of any restrictions on returning the plant/ apparatus to its normal operational condition.<br><br>Signature checkpoint: …… Time: …… Date: …… | | | | | |
| 4.2 | **POI removal:** (this also includes the earthing applied as part of the safety precautions to achieve safety from the system in step 3.3) | | | | | |
| | Step | Location | Equipment identity | Operation | Time | Sign |
| | 1 | | | | | |
| | 2 | | | | | |
| | 3 | | | | | |

## 5.0 Transfer of control (return):

| Step | Detail |
|---|---|
| 5.1 | I have informed the operational controller …… (PRINT NAME) that the work or testing is complete, this WTSSR HV AWP is now cancelled and all points of isolation and earthing have been removed. I have confirmed any limitations or restrictions on returning the plant/apparatus to its normal operational condition.<br><br>Signature checkpoint: …… Time: …… Date: …… |

## 6.0 Surrender record:

**NOTE!** The HV AWP cannot be surrendered if the sanction for test section of the task has been initiated but not completed. In such cases, the work/testing shall be completed, the work/testing area shall be secured and made safe, and safety from the system must be achieved before surrendering the HV AWP.

| **Part one** | | | **Part two** | |
|---|---|---|---|---|
| Level two authorised technician surrendering this HV AWP | Time/ date | Comments:<br><br>Indicate the point in the work/ testing programme reached | Level two authorised technician receiving this HV AWP | Time/ date |
| | | | | |
| | | | | |

****** Record N/A or NIL if not applicable

### B.5.3 WTSSR routine operating procedures (ROPs) suggested format

| [COMPANY A] | **WIND TURBINE SYSTEM SAFETY RULES ROUTINE OPERATING PROCEDURE** | **WTSSR ROP No.** WTSSR ROP 001 |
|---|---|---|
| | | **Date:** DD/MM/YYYY |
| | | **Rev:** 01 |
| Level one approving authorising engineer: | | Date: (DD/MM/YYYY) |

**1.0 Work details:**

| Step | Detail | |
|---|---|---|
| 1.1 | Wind farm location: | WTG no. _____ |
| 1.2 | Plant/apparatus identification: | |
| 1.3 | Work/testing to be done: | |
| 1.4 | Associated documents:<br>– | |
| 1.5 | Date of work: | |

**2.0 Transfer of control (release):**

| Step | Detail | | |
|---|---|---|---|
| 2.1 | Time: | Operational controller | Print name: |
| 2.2 | Competent technician | | Print name: |

**3.0 Steps to be taken*:**

| Step | Operation |
|---|---|
| 3.1 | Establish local control of the wind turbine |
| 3.2 | Establish general safety |
| 3.?* | |
| 3.?* | |
| 3.?* | |
| 3.?* | Or provide details of [Company A] service manual procedure*: |
| 3.?* | Or provide details of [Company A] procedure*: |
| 3.?* | Or provide details of method statement*: |
| 3.? | End of work/testing |

| | |
|---|---|
| 3.? | Clearance:<br><br>I certify that the work or testing under this ROP is now complete and all persons in my working party have been withdrawn and warned that it is no longer safe to continue working or testing on the plant/LV apparatus.<br>All gear, tools and loose equipment have been removed.<br><br>The wind turbine generator is in a safe condition to be returned to service, if applicable.<br><br>Signature checkpoint: …… Time: …….. Date: …… |

**4.0 Transfer of control (return):**

| Step | Detail |
|---|---|
| 4.1 | I have informed the operational controller …… (PRINT NAME) that the work or testing is complete, and this ROP is now cancelled.<br><br>Signature checkpoint: …… Time: …….. Date: …… |

* Delete this step if not applicable

# PART C
# RESPONSIBILITIES OF PERSONS

## C.1 GENERAL

**C.1.1** It is the duty of all **persons** who may be concerned with work or testing on **plant** and **apparatus** to which these safety rules apply to implement the safety rules and have regard to the supporting mandatory and guidance documents.

**C.1.2** The responsibilities placed upon **persons** for the successful implementation of the safety rules may include all or only part of those detailed in this section, depending upon the role of the individual.

**C.1.3** The written certificate of authorisation or nomination given to **persons** included in Part C of the safety rules shall indicate the extent of their role in implementing the safety rules.

**C.1.4** **Persons** involved in achieving **safety from the system** to allow work or testing to commence on **plant** and **apparatus,** and its subsequent restoration to service, will have separate identifiable areas of responsibility. Broadly, these are:

(i) 'Safety co-ordination' – which includes:
- Before work or testing commences, a formal release of **plant/apparatus** after ensuring that written procedures are in place instructing the precautions necessary to allow the work or testing to be carried out safely.
- When work or testing is finished, a formal return of **plant/apparatus** after confirming any limitations or restrictions and cancellation of the **approved written procedure**.

(ii) 'Making safe/restoration of **plant** and **apparatus**' – which includes:
- Before each phase of the work or testing commences, taking actions to make **plant** and **apparatus** safe for work or testing and confirming such actions in writing along with a formal method of putting a **working party** to work.
- When work or testing is finished, taking actions to ensure that it is safe to return the **plant** and **apparatus** to an operational condition, record any limitations or restrictions, remove safety precautions to restore the **plant** and **apparatus** to service and confirm such actions in writing.

(iii) 'Work or testing' – which includes:
- After confirmation that work or testing can proceed, execution of the required work or testing to its completion or termination.

## C.2 LEVEL ONE AUTHORISED TECHNICIAN

**C.2.1** **Level one authorised technicians** shall have the responsibilities listed below. They must ensure that these responsibilities, which form part of the safety rules, are implemented within the limits imposed by their certificate of authorisation.

**C.2.2** **Level one authorised technicians** shall comply with these safety rules when carrying out

work or testing under an **approved written procedure**.

**C.2.3** **Level one authorised technicians** shall use safe methods of work or testing, safe means of access and use of personal protective equipment, which is provided for their safety.

**C.2.4** **Level one authorised technicians**, when working under an **approved written procedure** or when in charge of additional **working parties** under an **approved written procedure**, shall:

(i) Understand the contents and any subsequent actions arising from those contents. This shall also apply to any requirement to implement additional precautions from a **selected person's report** in line with **management instructions**.

(ii) During the course of the work or testing adhere to, and instruct others under their charge to adhere to, any conditions, instructions or limits specified in the **approved written procedure**. This shall also apply to any requirement to implement additional precautions from a **selected person's** report in line with **management instructions**.

**C.2.5** Prior to commencing work or testing and upon completion of work or testing the **level one authorised technician** shall carry out the **transfer of control** process, as follows:

(i) On arrival at the wind farm **location,** the **level one authorised technician** shall contact the **operational controller** and report the presence of the **working party** on site, giving their name and the names of all other persons in the **working party,** the reason for the visit and the approximate duration of their stay.

(ii) The **level one authorised technician** shall then inform the **operational controller** of the **approved written procedure** under which the work or testing is to take place and quote its reference number. This reference number shall be then cross-checked by the **operational controller** against a list of **approved written procedures** for that wind farm **location**. Any proposed work or testing that does not carry a valid reference shall result in any request for **transfer of control** being denied by the **operational controller** with the matter then being referred to the appropriate **authorising engineer**.

(iii) On confirmation of a valid **approved written procedure,** the **level one authorised technician** shall request **transfer of control,** i.e. that the wind turbine(s) be released into their **operational control**. The **level one authorised technician** shall then become responsible for the operational state of the wind turbine(s). The **transfer of control** process will be recorded by both parties in accordance with **management instructions**.

(iv) On completion of the work or testing described in the **approved written procedure,** the **level one authorised technician** shall warn all members of the **working party** to withdraw from and not to return to the work area, and shall clear/cancel the **approved written procedure**.

(v) The **level one authorised technician** shall then inform the **operational controller** of the completion of the work or testing, together with any limitations/restrictions on the **plant** or **LV apparatus** and any changes to the operational condition of the **system** concerned. The **transfer of control** process shall then be carried out for the operational state of the wind turbine(s) to be returned to the **operational controller**. The **transfer of control** process will be recorded by both parties in accordance with **management instructions**.

(vi) If work or testing under more than one **approved written procedure** is planned, then steps (ii), (iii) and (iv) shall be repeated as necessary. When all work or testing

at the **location** is completed, the **level one authorised technician** shall then carry out the requirements of step (v) for all of the completed **approved written procedures**.

**C.2.6** Following **transfer of control,** the **level one authorised technician** is then responsible for the **plant** or **LV apparatus** for work or testing in line with procedures that shall be specified in **management instructions**. These procedures shall include the process of:

(i) Meeting the requirements of Part B of these safety rules.

(ii) Ensuring that all safety precautions that achieve **safety from the system** are completed in line with the **approved written procedure**.

(iii) Instructing other **level one authorised technicians** to carry out the necessary operations to establish safety precautions which achieve **safety from the system** under an **approved written procedure** for **plant** or **LV apparatus**, and obtaining confirmation that each instruction has been carried out.

(iv) Setting the **working party** to work.

**C.2.7** The **level one authorised technician** shall also be responsible for:

(i) Retaining the **approved written procedure** and associated documents and **keys** in safe custody, and correctly implementing the requirements of any **management instruction** to achieve this.

(ii) When in charge of work or testing, provide **immediate supervision**. Alternatively provide **personal supervision** as stipulated in the **approved written procedure**. During the course of the work or testing, decide whether the work or testing being given **immediate supervision** shall be given **personal supervision**, depending whether those persons working or testing to the requirements of the **level one authorised technician** understand the conditions, instructions or limits specified on the **approved written procedure**.

(iii) Warning all persons as quickly as possible to withdraw from and not to continue work or testing, on the **plant** and **LV apparatus** concerned, until further notice if, during the course of work or testing a hazard which could give rise to **danger** arises or is suspected. This situation shall be reported immediately to the **operational controller** and the **level one authorising engineer**. The **level one authorising engineer** shall take steps to remove hazards that could give rise to **danger**, where necessary by producing a new **approved written procedure**.

**C.2.8** When participating in the procedure for the transfer of an **approved written procedure**, ensuring that:

(i) All persons working under the **approved written procedure** have been withdrawn from and warned not to continue with work or testing on the **plant** and **LV apparatus** concerned. All associated documents, **keys** and other items are accounted for and then completing Part One of the **surrender record** before placing it in safe custody in line with **management instructions**.

(ii) All persons working under the **approved written procedure** have been withdrawn from and warned not to continue with work or testing on the **plant** and **LV apparatus** concerned. All associated documents, **keys** and other items are accounted for and then completing Part One of the **surrender record** before transferring it face-to-face to a new **level one authorised technician**.

(iii) When resuming work or testing under an **approved written procedure** as the original recipient completing Part Two of the **surrender record**.

(iv) When resuming work or testing under an **approved written procedure** as a new recipient completing Part Two of the **surrender record**. When a face-to-face transfer has not occurred, personally reviewing all of the safety precautions, confirming and initialling all **signature checkpoints** prior to continuing with the work or testing.

(v) The **operational controller** is informed at the start and end of each work period to confirm the current state of the **plant** and **LV apparatus**;

(vi) The **operational controller** is immediately informed of the details of any transfers of **approved written procedures** to a new **level one authorised technician**.

**C.2.9** Before setting a **working party** to work a **level one authorised technician** shall be responsible for implementing the necessary measures to establish **general safety** at and in the vicinity of the workplace, and ensuring that those measures are maintained throughout the work or testing.

**C.2.10** When implementing the requirements of an **approved written procedure** to achieve **safety from the system**, correctly implementing the specified procedures before each package of work or testing commences. These shall include:

(i) Meeting the requirements of Part B of these safety rules.

(ii) Carrying out the instructions contained in the **approved written procedure** to apply safety precautions. Signing a record to confirm that these actions have been carried out, at the relevant **signature checkpoint**.

(iii) Implementing the necessary procedures to ensure that the safety precautions established to achieve **safety from the system** are maintained during the period that the **approved written procedure** will be in force.

(iv) Retaining the **approved written procedure** and associated documents, **keys** and other items in **safe custody**, at the point of work or testing, until it is cancelled.

(v) Meeting any requirements specified on the **approved written procedure** to provide **personal supervision** of other persons in the **working party**.

**C.2.11** When implementing the requirements of an **approved written procedure** for work or testing which allows for the **restoration of motive power supplies**:

(i) Meeting the requirements of Part B of these safety rules.

(ii) Providing **personal supervision** during the work or testing which allows for the **restoration of motive power supplies** and being responsible for all matters of safety concerned with such work or testing.

(iii) Giving instructions for the removal and re-application of those safety precautions, as stated on the **approved written procedure**, which may be disturbed during the course of the work or testing, while at the same time maintaining **safety from the system**.

(iv) Implementing procedures to ensure that **safety from the system**, and safety from any test equipment, is maintained, as dictated by the test programme.

**C.2.12** When clearing an **approved written procedure**, only doing so after all persons working under it have been withdrawn from, and warned not to work or test on, the **plant** or **LV apparatus** concerned. Where appropriate, they shall ensure that all tools, gear and loose

material have been removed, guards and access doors replaced, the work site left tidy, the wind turbine generator is in a safe condition to be returned to service and the appropriate **exception** is noted in the clearance section of the **approved written procedure**.

**C.2.13** When cancelling an **approved written procedure**:

(i) Satisfying themselves that the requirements of the clearance section of the **approved written procedure** have been correctly implemented.

(ii) Checking that all the items associated with the **approved written procedure** are accounted for.

(iii) Satisfying themselves as to the operational state of the **plant** and **LV apparatus**.

(iv) Confirming that it is safe to remove all of the remaining points of **isolation**.

## C.3 LEVEL TWO AUTHORISED TECHNICIAN

**C.3.1** **Level two authorised technicians** shall have the responsibilities listed below. They must ensure that these responsibilities, which form part of the safety rules, are implemented within the limits imposed by their certificate of authorisation.

**C.3.2** **Level two authorised technicians** shall comply with these safety rules when carrying out work or testing under an **HV approved written procedure**.

**C.3.3** **Level two authorised technicians** shall use safe methods of work or testing, safe means of access and use of personal protective equipment, which is provided for their safety.

**C.3.4** **Level two authorised technicians**, when working under an **HV approved written procedure** or when in charge of additional **working parties** under an **HV approved written procedure**, shall:

(i) Understand the contents and any subsequent actions arising from those contents. This shall also apply to any requirement to implement additional precautions from a **selected person's report** in line with **management instructions**.

(ii) During the course of the work or testing adhere to, and instruct others under their charge to adhere to, any conditions, instructions or limits specified in the **HV approved written procedure**. This shall also apply to any requirement to implement additional precautions from a **selected person's** report in line with **management instructions**.

**C.3.5** Prior to commencing work or testing and upon completion of work or testing the **level two authorised technician** shall carry out the **transfer of control** process, as follows:

(i) On arrival at the wind farm **location,** the **level two authorised technician** shall contact the **operational controller** and report the presence of the **working party** on site, giving their name and the names of all other persons in the **working party,** the reason for the visit and the approximate duration of their stay.

(ii) The **level two authorised technician** shall then inform the **operational controller** of the **HV approved written procedure** under which the work or testing is to take place and quote its reference number. This reference number shall be then cross-checked by the **operational controller** against a list of **HV approved written**

**procedures** for that wind farm **location**. Any proposed work or testing that does not carry a valid reference shall result in any request for **transfer of control** being denied by the **operational controller** with the matter then being referred to the appropriate **authorising engineer**.

(iii) On confirmation of a valid **HV approved written procedure,** the **level two authorised technician** shall request **transfer of control,** i.e. that the wind turbine(s) be released into their **operational control.** The **level two authorised technician** shall then become responsible for the operational state of the wind turbine(s). The **transfer of control** process will be recorded by both parties in accordance with **management instructions**.

(iv) On completion of the work or testing described in the **HV approved written Procedure,** the **level two authorised technician** shall warn all members of the **working party** to withdraw from and not to return to the work area and shall clear/ cancel the **HV approved written procedure**.

(v) The **level two authorised technician** shall then inform the **operational controller** of the completion of the work or testing, together with any limitations/restrictions on the **plant** or **apparatus** and any changes to the operational condition of the **system** concerned. The **transfer of control** process shall then be carried out for the operational state of the wind turbine(s) to be returned to the **operational controller**. The **transfer of control** process will be recorded by both parties in accordance with **management instructions**.

(vi) If work under more than one **HV approved written procedure** is planned, then steps (ii), (iii) and (iv) shall be repeated as necessary. When all work at the **location** is completed, the **level two authorised technician** shall then carry out the requirements of step (v) for all of the completed **HV approved written procedures**.

**C.3.6** Following **transfer of control,** the **level two authorised technician** is then responsible for the **plant** or **apparatus** for work or testing in line with procedures that shall be specified in **management instructions**. These procedures shall include the process of:

(i) Meeting the requirements of Part B of these safety rules.

(ii) Ensuring that all safety precautions that achieve **safety from the system** are completed in line with the **HV approved written procedure**.

(iii) Setting the **working party** to work.

**C.3.7** The **level two authorised technician** shall also be responsible for:

(i) Retaining the **HV approved written procedure** and associated documents and **keys** in safe custody and correctly implementing the requirements of any **management instruction** to achieve this.

(ii) When in charge of work or testing, provide **immediate supervision**. Alternatively provide **personal supervision** as stipulated in the **HV approved written procedure**. During the course of the work or testing, decide whether the work or testing being given **immediate supervision** shall be given **personal supervision**, depending whether those persons working or testing to the requirements of the **level two authorised technician** understand the conditions, instructions or limits specified on the **HV approved written procedure**.

(iii) Warning all persons as quickly as possible to withdraw from and not to continue work or testing, on the **plant** and **apparatus** concerned, until further notice if, during the course of work or testing a hazard which could give rise to **danger** arises or is suspected. This situation shall be reported immediately to the **operational**

**controller** and the **level two authorising engineer**. The **level two authorising engineer** shall take steps to remove hazards that could give rise to **danger**, where necessary by producing a new **HV approved written procedure**.

**C.3.8** When participating in the procedure for the transfer of an **HV approved written procedure**, ensuring that:

(i) All persons working under the **HV approved written procedure** have been withdrawn from and warned not to continue with work or testing on the **plant** and **apparatus** concerned. All associated documents, **keys** and other items are accounted for and then completing Part One of the **surrender record** before placing it in safe custody in line with **management instructions**.

(ii) All persons working under the **HV approved written procedure** have been withdrawn from and warned not to continue with work or testing on the **plant** and **apparatus** concerned. All associated documents, **keys** and other items are accounted for and then completing Part One of the **surrender record** before transferring it face-to-face to a new **level two authorised technician**.

(iii) When resuming work or testing under an **HV approved written procedure** as the original recipient completing Part Two of the **surrender record**.

(iv) When resuming work or testing under an **HV approved written procedure** as a new recipient completing Part Two of the **surrender record**. When a face-to-face transfer has not occurred, personally reviewing all of the safety precautions, confirming and initialling all **signature checkpoints** prior to continuing with the work or testing.

(v) The **operational controller** is informed at the start and end of each work period to confirm the current state of the **plant** and **apparatus**;

(vi) The **operational controller** is immediately informed of the details of any transfers of **HV approved written procedures** to a new **level two authorised technician**.

**C.3.9** Before setting a **working party** to work a **level two authorised technician** shall be responsible for implementing the necessary measures to establish **general safety** at and in the vicinity of the workplace and ensuring that those measures are maintained throughout the work or testing.

**C.3.10** When implementing the requirements of an **HV approved written procedure** to achieve **safety from the system**, correctly implementing the specified procedures before each package of work or testing commences. These shall include:

(i) Meeting the requirements of Part B of these safety rules.

(ii) Carrying out the instructions contained in the **HV approved written procedure** to apply safety precautions. Signing a record to confirm that these actions have been carried out, at the relevant **signature checkpoint**.

(iii) Implementing the necessary procedures to ensure that the safety precautions established to achieve **safety from the system** are maintained during the period that the **HV approved written procedure** will be in force.

(iv) Fully explaining the contents of the **HV approved written procedure** to the **working party** and ensuring that all members understand the nature and extent of the work or testing to be done and the safety precautions to be taken.

(v) Retaining the **HV approved written procedure** and associated documents, **keys** and other items in **safe custody**, at the point of work or testing, until it is cancelled.

(vi) Meeting any requirements specified on the **HV approved written procedure** to provide **personal supervision** of other persons in the **working party**.

**C.3.11** When implementing the requirements of an **HV approved written procedure** for work or testing which allows for the **restoration of motive power supplies** in accordance with rule A.4.22:

(i) Meeting the requirements of Part B of these safety rules.

(ii) Providing **personal supervision** during the work or testing which allows for the **restoration of motive power supplies** and being responsible for all matters of safety concerned with such work or testing.

(iii) Giving instructions for the removal and re-application of those safety precautions, as stated on the **HV approved written procedure**, which may be disturbed during the course of the work or testing, while at the same time maintaining **safety from the system**.

(iv) Implementing procedures to ensure that **safety from the system**, and safety from any test equipment, is maintained, as dictated by the test programme.

**C.3.12** When leading a **working party** responsible for work or testing under an **HV approved written procedure** the **level two authorised technician** is responsible for all of the following:

(i) Being present during the testing, being responsible for co-ordinating all testing operations on the **isolated** equipment and for ensuring safety during the tests. Such tests may include the use of test supplies.

(ii) Carrying out the temporary removal and re-application of **circuit main earths** and **additional earths** as necessary and as specified in the **HV approved written procedure**.

**C.3.13** When implementing the requirements of an **HV approved written procedure** with **sanction for test**, the **level two authorised technician** shall ensure they are:

(i) Meeting the requirements of Part B of these safety rules.

(ii) Conducting testing themselves in strict adherence and accordance with the approved procedure referenced in the **HV approved procedure** for the task.

(iii) Providing **personal supervision** during testing and being responsible for all matters of safety concerned with such testing.

(iv) Ensuring that, once a **sanction for test** has been initiated, it is fully completed, the testing/work area is secured and made safe, and **safety from the system** has been re-established before surrendering, if required, the **HV approved written procedure**.

(v) Implementing procedures to ensure that **safety from the system**, and from any test equipment, is maintained as dictated by the test programme.

(vi) Ensuring that no other **safety document** is issued or remains in force on **plant** and **HV apparatus** while an **HV approved written procedure** with **sanction for test** is in force.

**C.3.14** When clearing an **HV approved written procedure**, only doing so after all persons working under it have been withdrawn from, and warned not to work or test on, the **plant** or **apparatus** concerned. Where appropriate, they shall ensure that all tools, gear and loose material have been removed, guards and access doors replaced, the work site left tidy, the Wind Turbine Generator is in a safe condition to be returned to service and the appropriate **exception** is noted in the clearance section of the **HV approved written procedure**.

**C.3.15** When cancelling an **HV approved written procedure:**

(i) Satisfying themselves that the requirements of the clearance section of the **HV approved written procedure** have been correctly implemented.

(ii) Checking that all the items associated with the **HV approved written procedure** are accounted for.

(iii) Satisfying themselves as to the operational state of the **plant** and **apparatus**.

(iv) Confirming that it is safe to remove all of the remaining points of **isolation**.

## C.4 LEVEL ONE AUTHORISING ENGINEER

**C.4.1** **Level one authorising engineers** shall have some or all of the following responsibilities within the limits imposed by their certificate of authorisation.

**C.4.2** The formal approval of **approved written procedures**, having confirmed that they include:

(i) all the necessary requirements to establish safety precautions which achieve **safety from the system**; together with

(ii) all the appropriate **signature checkpoints**, and

(iii) clear guidelines on how **safety from the system** will be maintained at all stages of the work or testing from start through to completion.

**C.4.3** Prior to the approval of an **approved written procedure**, confirming that:

(i) It states whether **plant** and **LV apparatus** shall be **vented, purged** and its contents adjusted to a level which avoids **danger**, and any action to be taken to contain or dissipate **stored energy**.

(ii) It states all the foreseeable circumstances when it is necessary to call upon a **selected person** to provide a report specifying any additional precautions to be taken to remove or prevent **danger,** which shall then be implemented in accordance with **management instructions**.

(iii) It states under what conditions the safety precautions applied are to be removed during the course of work or testing and, where appropriate, specifying the manner in which they may be removed and re-applied such that **safety from the system** is maintained.

(iv) **Safety from the system** will be achieved and maintained when the specified requirements are correctly implemented.

(v) It states any requirements to provide **personal supervision** and specifies the type of

**person** who shall provide it.

(vi) The specified requirements are clear and unambiguous.

**C.4.4** A **level one authorising engineer** shall agree to operational work or testing that can be carried out without an **approved written procedure** by following a **routine operating procedure**. The nature of this agreement shall be confirmed in a **management instruction**.

## C.5 LEVEL TWO AUTHORISING ENGINEER

**C.5.1** **Level two authorising engineers** shall have some or all of the following responsibilities within the limits imposed by their certificate of authorisation.

**C.5.2** The formal approval of **HV approved written procedures**, having confirmed that they include:

(i) all the necessary requirements to establish safety precautions which achieve **safety from the system**; together with

(ii) all the appropriate **signature checkpoints**, and

(iii) clear guidelines on how **safety from the system** will be maintained at all stages of the work or testing from start through to completion.

**C.5.3** Prior to the approval of an **HV approved written procedure**, confirming that:

(i) It states whether **plant** and **apparatus** shall be **vented, purged** and its contents adjusted to a level which avoids **danger**, and any action to be taken to contain or dissipate **stored energy**.

(ii) It states all the foreseeable circumstances when it is necessary to call upon a **selected person** to provide a report specifying any additional precautions to be taken to remove or prevent **danger,** which shall then be implemented in accordance with **management instructions**.

(iii) It states under what conditions the safety precautions applied are to be removed during the course of work or testing and, where appropriate, specifying the manner in which they may be removed and re-applied such that **safety from the system** is maintained.

(iv) **Safety from the system** will be achieved and maintained when the specified requirements are correctly implemented.

(v) It states any requirements to provide **personal supervision** and specifies the type of **person** who shall provide it.

(vi) The specified requirements are clear and unambiguous.

**C.5.4** In addition to the responsibilities listed above, a **level two authorising engineer** shall have the additional responsibilities:

(i) Authorising **HV switching** and application of **circuit main earths** and **additional earths** to achieve **safety from the system** in the form of an **HV approved written procedure**.

(ii) Before approving an **HV approved written procedure**, ensure that the necessary operations to obtain **safety from the system** are contained in the procedure.

(iii) Coordinate safety precautions across a control boundary with other **HV** safety rules

in accordance with [Company A]'s **management instructions**.

**C.5.5** During the production of an **HV approved written procedure,** the following items shall be additionally considered and included beyond those in an **approved written procedure**:

(i) Sufficient planning of sequence of work to ensure that no other **safety document** is issued to work on **plant** and **HV apparatus** when an **HV approved written procedure** with **sanction for test** is in force.

(ii) Compilation of an appropriate **HV switching** programme.

(iii) Specification of a sufficient number of **additional earths** along with the safety precautions required to achieve **safety from the system**.

(iv) Identification of pre-**switching** checks required to ensure safe **apparatus** operation.

(v) Consideration of the need to eliminate back feed.

(vi) Specification of **additional earths** when **circuit main earths** are not visible or located close to the point of work.

(vii) Specification of actions to contain or dissipate **stored energy**.

(viii) Specification of additional necessary precautions.

(ix) Identification of demarcated work zones.

(x) Specification of correct testing for **dead** procedures.

(xi) Inclusion of an appropriate **safety document** section within the **HV approved written procedure**.

## C.6 COMPETENT TECHNICIAN

**C.6.1** **Competent technicians** shall have the responsibilities listed below. When undertaking agreed routine operation and maintenance work or testing on wind turbine generator **plant** and **LV apparatus,** by following an appropriate **routine operating procedure** and using suitable tools/work equipment, without an **approved written procedure** they shall ensure that these responsibilities, which form part of the safety rules, are correctly implemented.

**C.6.2** **Competent technicians** shall comply with these safety rules when carrying out any operational work or testing under a **routine operating procedure**.

**C.6.3** **Competent technicians** shall use safe methods of work, safe means of access and personal protective equipment, which is provided for their safety.

**C.6.4** **Competent technicians** shall ensure that the **routine operating procedure** is being used with the full knowledge and agreement of [Company A].

**C.6.5** **Competent technicians** shall follow the safety requirements defined in the **routine operating procedure**.

**C.6.6** Prior to undertaking any work or testing under a **routine operating procedure** the **competent technician** shall obtain the **transfer of control** from the **operational controller** as follows:

(i) On arrival at the wind farm **location**, the **competent technician** shall contact the **operational controller** and report their presence. The **competent technician** shall give their name, the names of all other persons in attendance, the reason for the visit and the approximate duration of their stay.

(ii) The **competent technician** shall then inform the **operational controller** of the **routine operating procedure** under which the operational work or testing is to take place and quote its reference number. This reference number shall be cross-checked by the **operational controller** against a list of **routine operating procedures** for that wind farm **location**.

Any **routine operating procedure** that does not carry a valid reference shall result in any request to undertake the proposed operational work or testing being denied by the **operational controller** with the matter then being referred to the relevant **authorising engineer**.

(iii) On confirmation of a valid **routine operating procedure**, the **competent technician** shall request **transfer of control** from the **operational controller** that the agreed operational work or testing be allowed to continue. This consent from the **operational controller** shall be recorded in accordance with **management instructions**.

(iv) When the operational work or testing described in the **routine operating procedure** is completed, the **competent technician** shall warn all other persons to withdraw from and not to return to the work area. The **competent technician** shall then inform the **operational controller** that the agreed work or testing is complete and advise of any changes to the operational condition of the **system** concerned. The completion of the operational work or testing described in the **routine operating procedure** shall be recorded in accordance with **management instructions**.

(v) If operational work or testing under more than one **routine operating procedure** is planned, then steps (ii) and (iii) shall be repeated as necessary. When all the agreed operational work or testing at the **location** is finished, the **competent technician** shall then carry out the requirements of step (iv) for all the completed **routine operating procedures**.

**C.6.7** Before setting a **working party** to work, **competent technicians** shall obtain the **working party** signatures on the **pre task brief**, and shall be responsible for implementing the necessary measures to establish **general safety** at and in the vicinity of the workplace, and ensuring that those measures are maintained throughout the work or testing.

**C.6.8** **Competent technicians** shall have responsibility for ensuring that all safety precautions, specified on the **routine operating procedure**, that achieve **safety from the system**, are completed before the operational work or testing is allowed to start.

**C.6.9** **Competent technicians** shall always provide **personal supervision** to agreed operational work or testing that is being carried out under a **routine operating procedure**.

**C.6.10** **Competent technicians** shall warn all persons as quickly as possible to withdraw from and not to continue with the **routine operating procedure**, on the **plant** and **LV apparatus** concerned, until further notice if during the course of the agreed work or testing a hazard which could give rise to **danger** arises or is suspected. This situation shall be reported immediately to the **operational controller** and the **level one authorising engineer**. The **level one authorising engineer** shall then take steps to remove hazards that could give rise

to **danger**, where necessary by producing an **approved written procedure**.

**C.6.11** **Competent technicians** shall, on finishing the agreed operational work or testing under a **routine operating procedure**, ensure that:

(i) all persons in the **working party** have been withdrawn from, and warned not to continue work on, the **plant** and **LV apparatus** concerned, and

(ii) all tools, gear and loose material have been removed from the work area and that the work site is left in a clean and tidy condition.

## C.7 OPERATIONAL CONTROLLER

**C.7.1** The **operational controller** is responsible for the **transfer of control** of the wind turbine generator **plant** and/or **apparatus,** as appropriate, to either another **operational controller** or an appropriate **authorised technician** after first establishing that the **person** requesting the **transfer of control** has the necessary authority to receive it. For **transfer of control** between the **operational controller** and the appropriate **authorised technician** the requirements of rule C.2.5 or C.3.5 (whichever is applicable) shall **be followed**.

**C.7.2** The **operational controller** is responsible for giving **transfer of control** to a **competent technician** so that agreed routine operation and maintenance work or testing can be carried out after first confirming that a [Company A] **routine operating procedure** is in existence. The **operational controller** shall ensure that the **person** requesting **transfer of control** for work or testing under a **routine operating procedure** has the necessary authority to carry it out and the requirements of rule C.6.6 shall be followed.

## C.8 SELECTED PERSONS

**C.8.1** A **selected person** is responsible for using their appropriate technical knowledge and experience for making a report and recommendations to overcome hazards which may prevent work or testing being performed safely on **plant** and **apparatus** which has otherwise been made safe.

**C.8.2** If, prior to the commencement of work (or testing) or during the progress of work (or testing), it is considered necessary, by an appropriate **authorising engineer**, to carry out a check on **plant** and **apparatus** or working areas for hazards, the **selected person** shall carry out any tests and examinations they consider necessary. A written report shall be prepared by the **selected person** who will be responsible for ensuring that its recommendations, when implemented, will ensure safe working conditions relating to the hazards.

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