

Note: Please refer to WTSR-002 which clarifies the status and application of the WTSR.

GUIDANCE ON THE APPLICATION OF COMPANY 'A' WIND TURBINE SAFETY RULES – 3rd EDITION

INTRODUCTION

These guidance notes are intended to assist in the application of the 3rd Edition Wind Turbine Safety Rules, (subsequently referred to as the Wind Turbine Safety Rules, WTSR or simply The Rules). No attempt is made to offer additional guidance to a requirement which is thought to be self evident, further explanation is offered when it is thought to be helpful in the interpretation of a particular requirement.

This Guidance contains a complete copy of the Wind Turbine Safety Rules. References to page numbers, contained in the 'Contents' page, refer to the Rules themselves and not these guidance notes.

Managers who are responsible for the implementation of the Wind Turbine Safety Rules are advised that a satisfactory procedure should be adopted to enable amendments or revisions to be incorporated within copies of the Rules under their control.

In addition guidance has been included on:

- (i) Completion of Approved Written Procedures
- (ii) Training of Persons with designated responsibilities under the Rules

The guidance on the "Completion of Approved Written Procedures" appears as Addendums B1 and B2 which aim to identify the generally accepted good practice for their completion.

The Wind Turbine Safety Rules Support Procedure P6, "Procedure for Appointment of Persons", defines minimum standards for training. Guidance on the structure of a formal training programme to achieve these standards is contained in Addendum C1 of this Guidance.

Throughout the Wind Turbine Safety Rules the term "work or testing" has been used. Under H&S Law the term work includes testing but in order to clarify this point both terms have been adopted. The WTSR are in reality trying to emphasize the point that testing must be treated in the same way as work and therefore clarify that the same safety precautions are required for testing as are required for work. Hence to restate the point the Wind Turbine Safety Rules must be applied equally whether carrying out work or whether undertaking testing.

WIND TURBINE SAFETY RULES SUPPORT DOCUMENTATION

In addition to the Wind Turbine Safety Rules themselves, a number of supporting documents exist. This Guidance is, in its own right, one of those supporting documents.

The Wind Turbine Safety Rules are complimented by a number of Support Procedures, these are:

- | | |
|----|---|
| P1 | Procedure for Approval of General Provisions, Restoration of Motive Power (ROMP) and Other Procedures |
| P2 | Procedure for Approval of Tools, Equipment and Processes |
| P3 | Procedure for Objection on Safety Grounds |
| P4 | Procedure for the Addition of Plant and Apparatus to the System |
| P5 | Procedure for the Removal of Plant and Apparatus from the System |
| P6 | Procedure for Appointment of Persons |

The following illustration shows a diagrammatic representation of the relationship between these documents and the Wind Turbine Safety Rules.

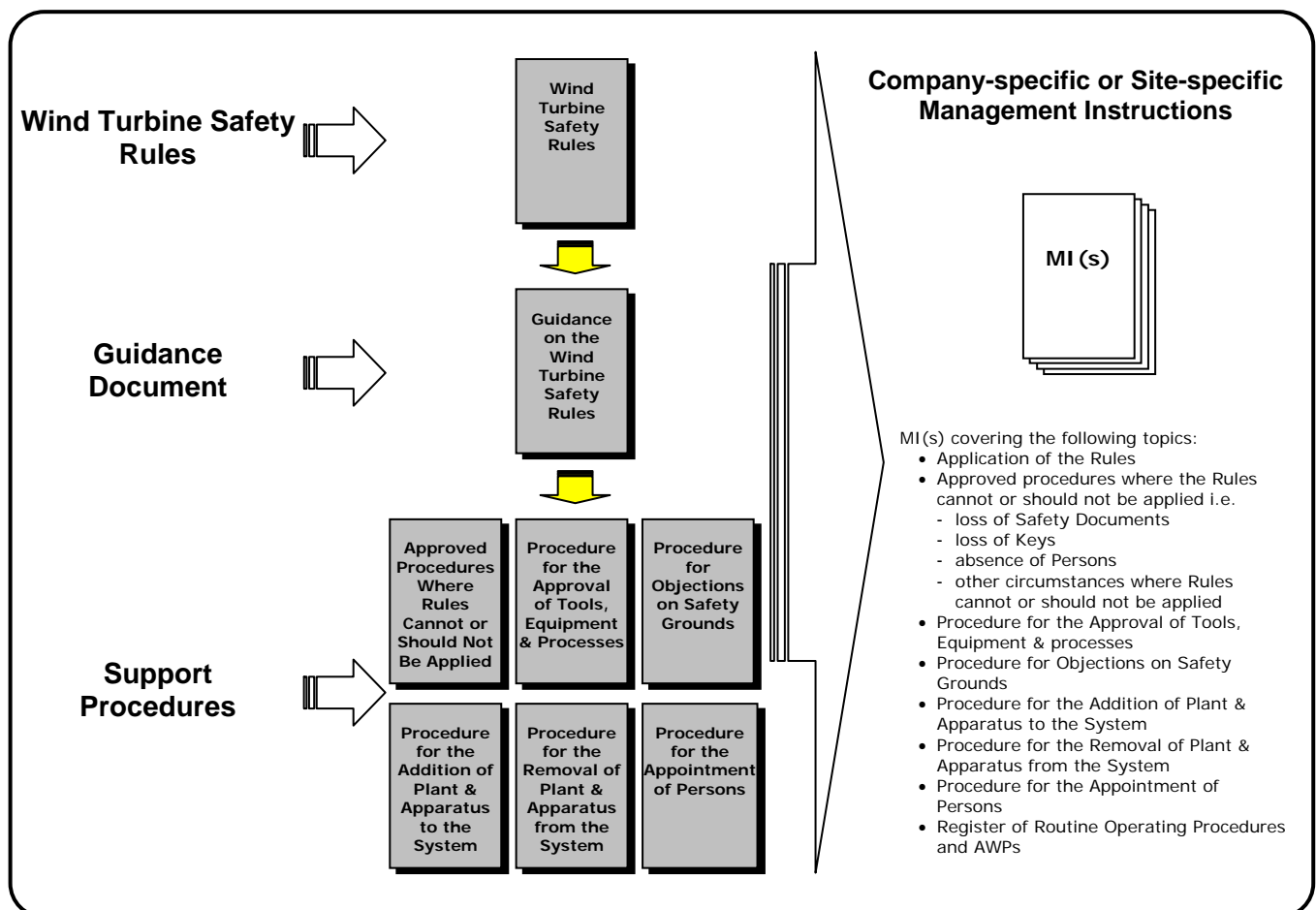


Diagram showing the relationship between Wind Turbine Safety Rules, the Wind Turbine Safety Rules Guidance Document, the Wind Turbine Safety Rules Support Procedures and Management Instructions

COMPANY 'A'
WIND TURBINE SAFETY RULES

Third Edition

Operative from (DAY) (MONTH) (YEAR)

Issued by COMPANY 'A'

I acknowledge receipt of this copy:

..... **(Signed)**

..... **(Print Name)**

..... **Date**

COMPANY 'A'
WIND TURBINE SAFETY RULES

Third Edition

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Issued by COMPANY 'A'

Issued to:

..... (Signed)

..... (Print Name)

..... Date

FOREWORD

Company 'A' Wind Turbine Safety Rules (the 'Rules') are provided to ensure that persons working on plant and low voltage 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 Rules is also given. This statement does NOT form part of the Rules but it is included for the general information of those persons concerned with the application of the Rules.

It is the duty of all persons who may be concerned with control of, and preparation and carrying out of work or testing on or adjacent to, the electro-mechanical system to which these 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 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 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.

GUIDANCE ON THE USE OF THE TERMS ‘SHALL’; ‘SHALL WHERE PRACTICABLE’ AND ‘SHALL WHERE REASONABLY PRACTICABLE’

The Wind Turbine Safety Rules are realistic in that the emphasis attached to the obligation to comply with any specific requirement does take account of the practical circumstances that can arise. It is therefore appropriate to give some explanation of the use of “shall”; “shall where practicable” and “shall where reasonably practicable” when these terms are used in the Rules.

Where “shall” is used with no other qualification this indicates a mandatory requirement to meet the obligation with no discretion permitted and no judgement to be made. For example Wind Turbine Safety Rule A2.3 (ii) states that “Caution Notices shall be affixed at all points of isolation”. Therefore, in all cases involving work or testing on or adjacent to Plant a Caution Notice must be attached to every point of isolation irrespective of the cost, time, trouble or effort in doing so.

Where the obligation is qualified only by the words “where practicable” a slightly less strict standard is imposed. It means that where it is possible to achieve the requirement in light of current knowledge and invention, but bearing in mind the hazards associated with the work or testing to be undertaken, then the requirement must be met. It is not possible to avoid meeting the requirement on the grounds of difficulty, inconvenience or cost. For example Wind Turbine Safety Rule A2.3 (ii) states that “When Isolating Devices are used they shall, where practicable, be immobilised and Locked”. The use of the term shall where practicable indicates the importance attached to meeting this requirement but at the same time recognises that there may be some circumstances where it might not be possible to provide any additional assurance of safety by immobilising or locking an Isolating Device. Examples of circumstances where it might not be possible to immobilise and lock an Isolating Device could occur if a length of electrical conductor, (or a length of pipework), has been physically removed to achieve the isolation or when the equipment to be worked on has been physically removed from its normal operating position.

When “shall where reasonably practicable” is used to qualify a requirement then a judgement must be made as to what is reasonable by taking into account the magnitude of the risk on one hand and the cost, time, trouble or effort necessary to avert that risk on the other hand. It is very important that when the use of the term “shall where reasonably practicable” introduces a measure of choice, clear instructions are given by Management to all persons under their control so that the judgement is made at an appropriate level and in a consistent manner.

An example of the application of “shall where reasonably practicable” can be found in Wind Turbine Safety Rule A3.3 which states “When Isolating Devices are used, they shall where reasonably practicable, be immobilised and Locked”. In some circumstances an isolation might be achieved by switchgear that does not incorporate a locking facility. Where a modification to incorporate such a locking facility can be implemented relatively simply and cheaply, then such a modification should be carried out, even if the risks were considered to be relatively low. In circumstances where the modifications were difficult and expensive and the risks were relatively low then it might not be seen as practicable to carry them out. However, in the latter case if the risks were medium or high then it almost certainly would be appropriate to carry out a suitable modification. In either case when fuses, links or other removable isolating devices are used they should be physically removed from the point at which the isolation was carried out and locked away wherever possible.

COMPANY ‘A’ WIND TURBINE SAFETY RULES

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POLICY, PHILOSOPHY AND PRINCIPLES OF THE WIND TURBINE SAFETY RULES

1. POLICY

1.1 The Health and Safety at Work etc. Act 1974, states:

It shall be the duty of every employer to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all his 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”

The COMPANY ‘A’ Health and Safety Policy, prepared and issued under Section 2(3) of the Health and Safety at Work etc. Act 1974, makes specific reference as follows:

COMPANY ‘A’ is committed to providing a clear and effective health and safety management system. In order to ensure the effective management of health and safety within COMPANY ‘A’, clear minimum health and safety management standards will be established and achieved. To facilitate the delivery of these minimum standards, processes and procedures will be developed and implemented. These Wind Turbine Safety Rules form a part of that health and safety management system.

All employees are responsible for:

- Co-operating with management and complying with their Health and Safety Management System, including these Wind Turbine 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’ are responsible for:

- Ensuring that the Wind Turbine Safety Rules are maintained and updated;
- Monitoring the effectiveness of the Wind Turbine Safety Rules as a part of the internal audit function.

NOTE: *The wording of the “POLICY” Section above is offered as an example. Each organisation should produce their own wording to reflect their individual Company Health and Safety Policy and satisfy their legal obligations.*

GUIDANCE ON 'POLICY'

The above wording does little more than state the legal requirements from Sections 2 and 7 of the Health & Safety at Work etc. Act 1974. The Wind Turbine Safety Rules document is offered only as a generic "model" set of safety rules. It is therefore left to individual organisations to integrate those rules into their own safety management system and thereby apply their own individual company H&S Policy.

The exact wording for the "Policy" section of the WTSR must be developed specifically by Company 'A' to adequately reflect their own individual company H&S Policy and in compliance with statutory duties. Company 'A' must do all that they think to be appropriate in order to demonstrate 'ownership' of their Wind Turbine Safety Rules.

Reference should also be made to the RenewableUK (formerly known as BWEA) Guidelines for Health and Safety in the Wind Energy Industry, which sets out the 'principles of successful health and safety management', including Policy, (see Section 5).

2. PHILOSOPHY

- 2.1 Wind Farms consist of items of low voltage 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.

GUIDANCE ON PHILOSOPHY 2.1

Company 'A' should decide what work or testing associated with any Wind Turbine Generator (WTG) would constitute "normal operation" such that it could be carried out safely in accordance with an appropriate Routine Operating Procedure by a Competent Technician. In all such cases a Competent Technician should be nominated to undertake such work or testing and appropriate Routine Operating Procedures should be written to ensure that a safe system of work is adopted. Competent Technicians should be provided with information, instruction, training and supervision and have suitable tools, work equipment and Personal Protective Equipment provided to them.

In general, work or testing described in Manufacturer's Service Manuals, or equivalent, will be either:

1. Work or testing that requires an Approved Written Procedures (AWPs) to enable it to be carried out safely under the Wind Turbine Safety Rules. Such AWP's will include clear and unambiguous cross-references to the maintenance procedure or work instruction, (contained within the Manufacturer's Service Manual), to which it applies – there will normally be no need to duplicate the details contained in the maintenance procedure or work instruction but the AWP must contain details of all the safety precautions necessary to achieve and maintain Safety From The System. The majority of all work or testing at Wind Farms will fall within this category.
2. Normal operation that can be carried out, without an AWP, by a Competent Technician following a Routine Operating Procedure and by correctly using suitable tools / work equipment and Personal Protective Equipment. Only a very small proportion of work or testing at Wind Farms will fall within this category.

The Routine Operating Procedure recognises that certain work activities can be undertaken quite safely, by someone who is competent, without resorting to the full rigors of an Approved Written Procedure. These work activities are in accordance with the design intent of the WTG manufacturer or supplier and should never involve any intrusive maintenance. Examples of "normal operation" might include: general cleaning of work areas, (e.g. floors), general housekeeping; visual inspections; routine start up / shutting down of WTGs; interrogation of a WTG using a diagnostic tool such as the "control box"; inspection of portable fire extinguishers.

Taking the example of cleaning; there is a clear distinction to be made between general cleaning, of floors for example, and the cleaning of specific items of Plant. For general cleaning of floors a Routine Operating Procedure might be considered appropriate but for the cleaning of specific items of Plant, (e.g. cleaning oil from a motor or gearbox), an Approved Written Procedure would be required.

Work or testing deemed to constitute "normal operation" should be considered very carefully by Company 'A' to ensure that activities which very obviously require to be undertaken under an Approved Written Procedure are not included as a Routine Operating Procedure. The point of concern here is that work or testing might be carried out under a Routine Operating Procedure when it would be inappropriate to do so.

The diagram below aims to show how every procedure from the Manufacturer's Service Manual is reviewed and an Approved Written Procedure is produced for the majority of work or testing. For all other work or testing, considered to be "normal operation", then a Routine Operating Procedure is required.

Each existing Service Manual Procedure is reviewed to see if it requires either an Approved Written Procedure or is classed as Normal Operation (Routine Operating Procedure)

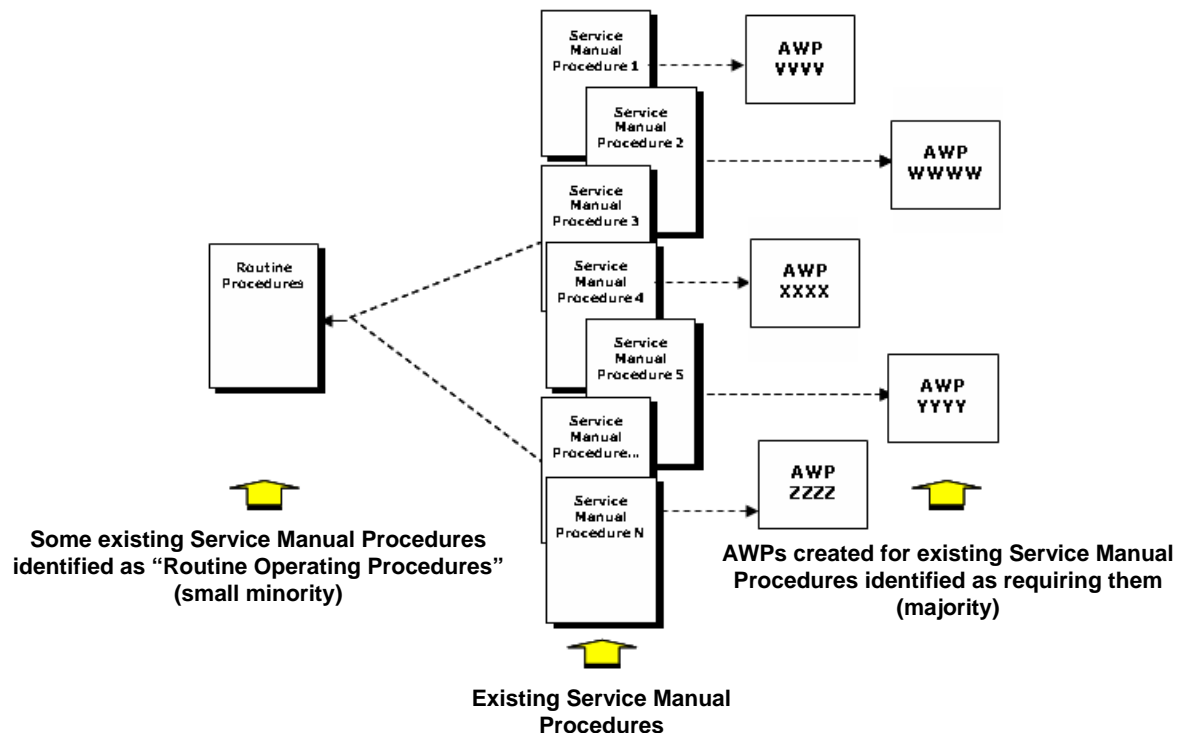


DIAGRAM SHOWING HOW EACH EXISTING SERVICE MANUAL PROCEDURE SHOULD BE REVIEWED BY COMPANY 'A' TO DECIDE WHETHER IT CAN BE CONSIDERED TO BE NORMAL OPERATION (ROUTINE OPERATING PROCEDURE) OR WHETHER IT REQUIRES AN APPROVED WRITTEN PROCEDURE

It should be noted that by far the MAJORITY of Service Manual Procedures will require an associated Approved Written Procedure to be produced.

To further explain the phrase "suitable tools / work equipment are correctly used". Under the terms of the Provision and Use of Work Equipment Regulations everything in the WTG is considered to be work equipment. Therefore to carry out any work activity on the WTG you must by definition be using work equipment. If you consider a typical routine operation to be a WTG shut down using the 'control box' then it is considered that this operation has been carried out by using work equipment.

It is possibly incorrect to use the phrase 'tools and work equipment' because tools in themselves constitute work equipment. However, taking again the example of WTG shut down, under certain circumstances it is necessary to use a spanner or screwdriver to open a panel door in order to access the 'control box'. In most technicians everyday vocabulary a screwdriver or spanner is considered to be a "tool" and therefore it was considered appropriate to retain both terms.

- 2.2 When work or testing other than operation has to be carried out affecting the plant and low voltage 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.

GUIDANCE ON PHILOSOPHY 2.2

Recognising that only a very small minority of work or testing will be considered to be of an operational nature the Wind Turbine Safety Rules have been written to specify the requirements that must be followed when the WTG is taken out of its normal operating condition for the majority of work or testing which will require safety precautions to be taken.

See also Guidance on Philosophy 2.1.

- 2.3 A typical Wind Farm consists of two distinct systems – the High Voltage (HV) infrastructure, (parts of which may lie within the wind turbine structure but are not subject to these Rules), and the wind turbines with their associated Plant and Low Voltage (LV) infrastructure, which are subject to these Rules. The boundary between these systems must be clearly defined in Management Instructions for each site and will typically be located between the LV isolator(s) and the associated wind turbine generator transformer.

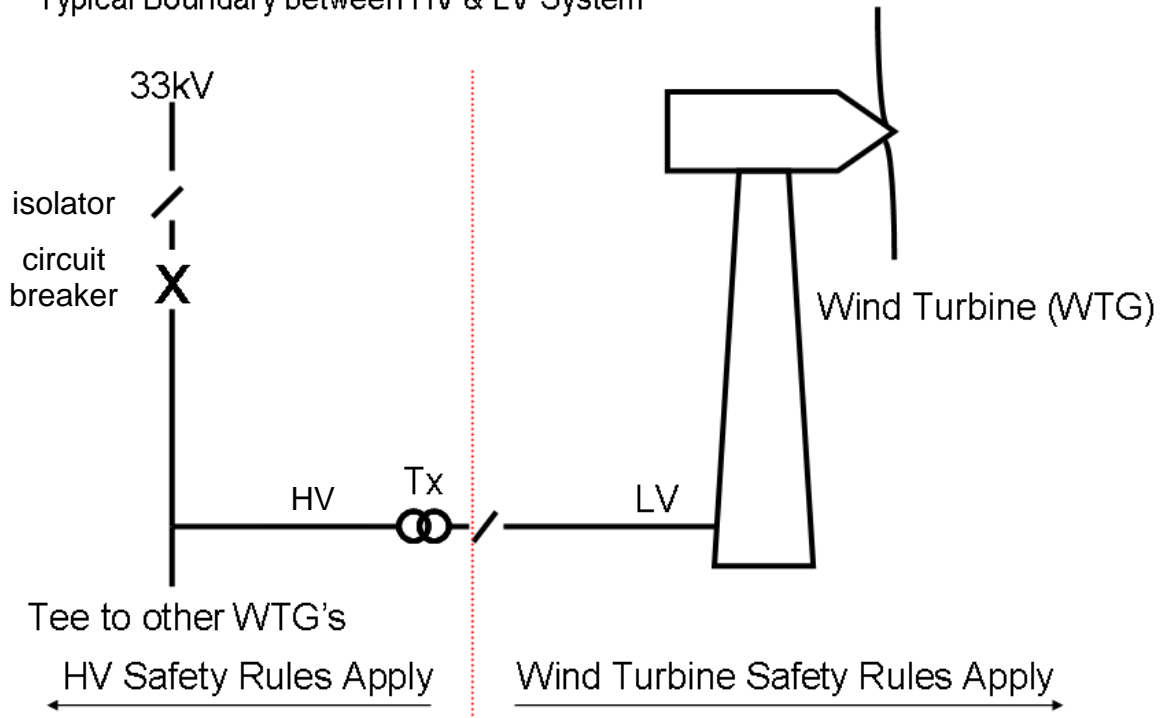
GUIDANCE ON PHILOSOPHY 2.3

Depending upon the individual design of the Wind Turbine Generator, the actual boundary between the HV infrastructure and Wind Turbine Plant and its associated LV infrastructure may lie either inside or outside of the physical structure of that Wind Turbine. Examples of these two arrangements are indicated diagrammatically below. However, the key requirement is that the boundary between the Wind Turbine Safety Rules and any associated HV Safety Rules must be clearly and unambiguously defined to make it absolutely clear which safety rules apply where.

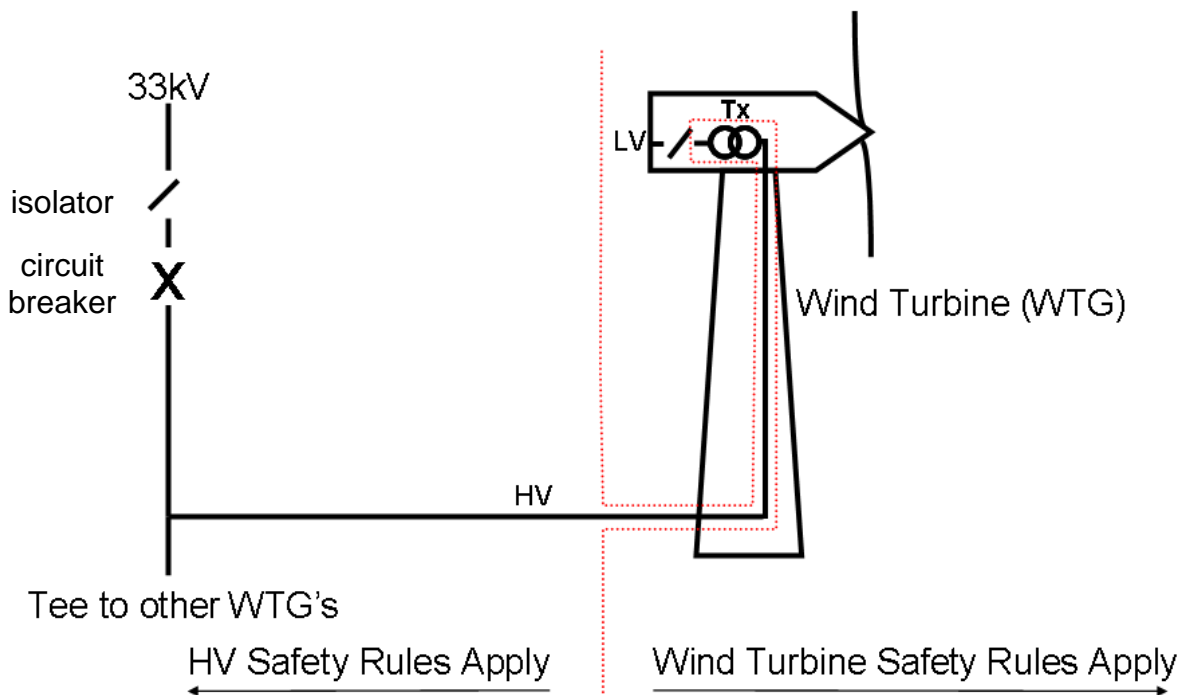
In defining the boundary points between Wind Turbine Safety Rules and HV Safety Rules Company 'A' must ensure that for each item of Plant or Apparatus only one set of Safety Rules apply. To clarify this point it must be absolutely clear which set of rules apply to each item of Plant and Apparatus at the defined boundary. If it is unclear which set of rules apply then this is potentially a very dangerous situation.

In addition to the obvious, (e.g. main power cables), Company 'A' must also consider the less obvious, (e.g. small power wiring, lighting circuits, control and instrumentation wiring, Uninterruptable Power Supply (UPS) systems, electrical protection wiring), each of which must have a defined boundary termination point clearly identified.

Typical Boundary between HV & LV System



EXAMPLE OF BOUNDARY WHERE TRANSFORMER IS LOCATED EXTERNAL TO THE WIND TURBINE GENERATOR



EXAMPLE OF BOUNDARY WHERE TRANSFORMER IS LOCATED INTERNAL TO THE WIND TURBINE GENERATOR

- 2.4 For the HV infrastructure, a comprehensive and robust set of HV Safety Rules must be implemented along the lines of electricity industry distribution or electrical & mechanical Safety Rules or their approved equivalent.

GUIDANCE ON PHILOSOPHY 2.4

It is the responsibility of the Wind Farm Asset Owner to ensure that robust HV Safety Rules are implemented that achieve a safe system of work.

It is imperative that the boundary between the Wind Turbine Safety Rules and the HV Safety Rules is clearly and unambiguously defined. See also Guidance on Philosophy 2.3.

Where the HV Safety Rules and Wind Turbine Safety Rules are being implemented by different organisations then the Wind Farm Asset Owner should ensure that all relevant stakeholders are made aware of their respective responsibilities. In these circumstances it will almost certainly be a requirement for the Asset Owner to ensure that both organisations are made aware of each others safety rules.

- 2.5 There are some key criteria relating to wind turbines & the associated Plant / LV infrastructure that allow the 'simpler' 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 who 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.

GUIDANCE ON PHILOSOPHY 2.5

The Wind Farm Asset Owner should ensure that the "competence" of persons working under the Wind Turbine Safety Rules can be adequately demonstrated. This could form a part of any "monitoring" requirements.

The requirements of the Wind Turbine Safety Rules do not address "Lone Working".

- 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 to restore motive power at key points. Conventional permit 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 Safety Rules still require the same standard of safety to be achieved at each and every step of such work or testing. In addition, the Wind Turbine Safety Rules have been developed to formalise best practice across the industry whilst building on the existing competencies of individuals.

GUIDANCE ON PHILOSOPHY 2.6

The fact that an overall work package can be split down into a number of smaller units is important in the context of Approved Written Procedures. A single Approved Written Procedure might cover the whole of the work or if the overall work package can be divided into smaller units then an Approved Written Procedure could be written for each unit. This has particular implications where it would be safe to return the WTG to normal operation between each “unit of work”, (e.g. during servicing work where it might be safe to return the WTG to normal operation overnight or during periods of bad weather).

Company ‘A’ must decide whether Approved Written Procedures are written to cover overall work packages or whether it is possible to break the overall work package down into smaller units and produce an individual Approved Written Procedure for each one of these. Where the second approach is adopted the Approved Written Procedure will be cancelled at the end of each job unit when a decision can be made as to whether to return the WTG to normal operation or start the next unit of work under a new Approved Written Procedure.

Where the overall work package is broken down into smaller units, with an individual Approved Written Procedure for each one, then the Authorising Engineer must ensure that the WTG will be returned to a safe operating condition on completion of each job unit.

- 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 carry out specified roles. On occasions, in common with other safe systems of work, a small number of people may be involved in implementing the Wind Turbine 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.

GUIDANCE ON PHILOSOPHY 2.7

The Wind Turbine Safety Rules would allow one person to undertake all of the designated roles. For example one individual could perform the three key duties of Operational Controller; Authorising Engineer and Authorised Technician.

Whilst this is permissible it is not always desirable. In the event that one person performs all three roles then there is very little possibility of that individual recognising when a mistake has been made. By dividing the roles and getting more persons involved then there is a significantly greater possibility of someone highlighting errors.

- 2.8 These Wind Turbine Safety Rules are based on a philosophy that the Rules should briefly and clearly specify those actions that must be implemented and identify those practices which should be followed, to establish conditions in which persons who have to carry out work or testing on the plant and low voltage apparatus will be safeguarded from the inherent dangers and to make them “safe from the system”.

GUIDANCE ON PHILOSOPHY 2.8

Significant efforts have been made to make the Wind Turbine Safety Rules as simple as possible. However, the Wind Turbine Safety Rules are not meant to be read by anyone who has not received specific training. No individual would be expected to simply pick up a copy of the rules, read them, understand them and apply them. Every person with a designated role under the Wind Turbine Safety Rules is subject to a formal appointment in writing by Company ‘A’, (in the case of Authorising Engineer and Authorised Technician this appointment follows a formal interview the purpose of which is to check understanding of the Wind Turbine Safety Rules). The requirements for training and appointment are outlined in some considerable detail in Wind Turbine Safety Rules Support Procedure – P6 “Procedure for Appointment of Persons”.

In setting out to produce the Wind Turbine Safety Rules there was a deliberate intent to bring across much of the traditional Electricity Supply Industry safety rules terminology, structure, formality and approach in an attempt to achieve the same standards on Wind Farms as for conventional generating plant.

- 2.9 Whenever work, (or testing), is carried out affecting plant and low voltage 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 low voltage apparatus, and this philosophy requires that the 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;

GUIDANCE ON PHILOSOPHY 2.9(i)

Examples of “inherent” Danger might include: electricity; rotating parts of machinery; pressurised systems such as hydraulic oil and accumulators; hazardous substances such as lubrication fluids.

- (ii) 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 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, but the Rules allocate responsibility for achieving safety from this type of danger.

GUIDANCE ON PHILOSOPHY 2.9(ii)

Examples of “environmental” Danger might include: the means of access to and from the place of work; the standard of housekeeping in the workplace area; the adequacy of lighting in the work area; ensuring that the technician is using the correct tools and work equipment in the proper manner. These “environmental” Dangers are considered as General Safety – see definition D8.

- 2.10 To carry out work, (or testing), affecting plant and low voltage 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 low voltage 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 low voltage apparatus on completion or termination of the work or testing to confirm that it is in a safe condition for return to service;

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.

- (v) restoration of the plant and low voltage apparatus to its normal operational condition within the system.

GUIDANCE ON PHILOSOPHY 2.10

Some of the requirements of 2.10 can be achieved by Company ‘A’ and/or Wind Farm Asset Owners introducing a formal work control or work management system.

- 2.11 To achieve safety within the stages specified above, these 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 low voltage apparatus;
 - (iii) either check that safe conditions have been established for work or testing on plant and low voltage apparatus which has been isolated from the system; or
 - (iv) implement the appropriate specialised procedures which will be applied when work or testing has to be done on plant and low voltage apparatus which remains energised; and
 - (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;
- (vii) and finally confirm that the procedure is complete when the work or testing is finished, (or terminated), before returning the plant / low voltage apparatus to an operational state and formally transferring control back to the Operational Controller;

This is achieved by following Approved Written Procedures containing detailed instruction for each step and having Signature Checkpoints at key points in the process.

GUIDANCE ON PHILOSOPHY 2.11

Company 'A' and/or Wind Farm Asset Owners should implement a proactive monitoring regime to confirm that the requirements specified in 2.11 are being met.

2.12 The 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 low voltage 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 low voltage apparatus;

and, in relation to the general dangers arising whenever work or testing is performed, the Rules are limited to

- (iii) identifying the person responsible for achieving safety from these general dangers.

- 2.13 The Rules will be supported by Management Instructions (MIs), Routine Operating Procedures and Approved Written Procedures that implement the Rules effectively & efficiently and ensure that the Rules are applied in a consistent manner throughout Company 'A'.

GUIDANCE ON PHILOSOPHY 2.13

Company 'A' should ensure that a robust set of Management Instructions are produced in support of the Wind Turbine Safety Rules.

It is fairly apparent that a Management Instruction should be produced for each of the Wind Turbine Safety Rules Support Procedures P1 to P6. In addition it is considered good practice to produce Management Instructions to cover "Implementation of the Company 'A' Wind Turbine Safety Rules", the purpose being to highlight how Company 'A' wish their Wind Turbine Safety Rules to be implemented, at the very least this should give a detailed explanation of the Company 'A' requirements for every occasion when the term Management Instruction is contained in the text of the Rules.

Company 'A' should also give consideration to producing Management Instructions for other matters associated with the Wind Turbine Safety Rules such as Excavation and safety precautions across the boundary with the HV Safety Rules.

- 2.14 An Approved Written Procedure shall be created for each work package by a person (normally the external service provider) with adequate expertise and knowledge of these Rules, the plant and the work or testing. Each Approved Written Procedure will then be reviewed, agreed & approved by the Authorising Engineer for the relevant Wind Farm.

GUIDANCE ON PHILOSOPHY 2.14

Approved Written Procedures do not always have to be written by an Authorising Engineer. It is often desirable for two or more persons to collaborate in the writing of Approved Written Procedures, typically this could be an Authorising Engineer and an Authorised Technician(s).

Any person(s) writing an Approved Written Procedure must have sufficient levels of skill, competence, experience, expertise etc. to enable them to fully understand the nature of the work or testing, the technical aspects of the WTG, the safety implications, knowledge of the Rules etc. The intention of paragraph 2.14 is simply to clarify that Approved Written Procedures must be written by a person(s) who is competent to do so, for example an electrical Approved Written Procedure would be written by a person with sufficient electrical expertise and a mechanical Approved Written Procedure by someone with sufficient mechanical expertise, in practice this might be the same person or two different persons. It is also important that the Authorising Engineer has a full grasp of all aspects relating to the work or testing before he/she gives formal approval to the Approved Written Procedure.

3. PRINCIPLES

3.1 To fulfil the requirements of the philosophy, the following principles have been adopted in formulating the Rules:

- (i) the Rules are concerned only with achieving safety for persons;

GUIDANCE ON PRINCIPLES 3.1(i)

Primarily the Wind Turbine Safety Rules are intended to implement a safe system of work for any individual engaged directly in work or testing on a Wind Farm. However, in achieving this safe system of work a positive benefit should be achieved for other persons, not directly engaged in the work or testing but who are associated with or in the vicinity of the Wind Farm, (e.g. members of the public, landowners, workers on adjacent premises)

- (ii) when work or testing is to be carried out on or adjacent to high voltage apparatus, HV Safety Rules, or an approved equivalent, shall be used;

GUIDANCE ON PRINCIPLES 3.1(ii)

The Wind Farm Asset Owner should ensure that an approved set of HV Safety Rules are being implemented.

Company 'A' should be made aware of the HV Safety Rules and understand who is responsible for their implementation. Equally those responsible for the application of the HV Safety Rules should be made aware of the Company 'A' Wind Turbine Safety Rules.

- (iii) in the case of low voltage apparatus, the primary means of achieving safety is, if practicable, by isolation from the system(s). If isolation is not reasonably practicable, safety is achieved by the application of specialised procedures as stated on the Approved Written Procedure;

GUIDANCE ON PRINCIPLES 3.1(iii)

In understanding the requirements of 3.1(iii) it must be emphasized that the requirements of the Electricity at Work Regulations 1989 must be met in full. In particular it must be understood that the requirements of Regulations 13 and 14 are "absolute".

To understand these requirements the whole of Wind Turbine Safety Rule A3 must be read in full.

Reference should also be made to 3.1(v) below which makes it clear that appropriate actions to maintain the effectiveness of primary means of achieving safety must be taken.

- (iv) when work or testing is to be carried out on mechanical plant, the primary means of achieving safety is 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);

GUIDANCE ON PRINCIPLES 3.1(iv)

It must be emphasized that unless it is essential for the completion of work or testing on mechanical plant the facility for the plant to be energised must not be used. Authorising Engineers must ensure that they do not allow motive power supplies to be restored during work or testing on plant unless it is considered essential to the completion of that work or testing.

When the Authorising Engineer does allow motive power supplies to be restored the Approved Written Procedure must state the exact circumstances and what must be done to maintain safety from the system during periods when the motive power is restored.

- (v) the fundamental means of protecting persons at work is the application and maintenance of the primary means of achieving safety specified in 3.1(ii), (iii) and (iv) supported by appropriate actions to maintain the effectiveness of the primary means, e.g. locking off isolating devices;

GUIDANCE ON PRINCIPLES 3.1(v)

If the Authorising Engineer decides that the methods for securing the points of isolation are inadequate then an Approved Written Procedure must not be produced.

Where the Authorising Engineer considers that the methods of securing points of isolation are not adequate to meet Wind Turbine Safety Rules or statutory requirements then due consideration should be given, by the Wind Farm Asset Owner, to modification of the installed Plant / Apparatus.

- (vi) the nomination of persons to carry out defined requirements under the Rules is formal, although part of their normal responsibilities;

GUIDANCE ON PRINCIPLES 3.1(vi)

No person should undertake any duties under the Wind Turbine Safety Rules unless they have been formally appointed in writing by an appropriate person from Company 'A'.

In addition the person being appointed must have accepted the appointment in writing and all appropriate documents should be signed. The person being appointed should retain a copy of the signed documentation.

Further information on the Appointment of Persons is contained in Wind Turbine Safety Rules Support Procedure P6. Local interpretation of this procedure should be contained in a Management Instruction.

- (vii) the application of the Rules shall ensure that a safe situation exists across all control area boundaries and operational interfaces (e.g. across the boundary with the HV system), be they totally or partially within the jurisdiction of Company 'A';

GUIDANCE ON PRINCIPLES 3.1(vii)

For guidance on defining boundaries between the Wind Turbine Safety Rules "System" and any adjoining HV "System" see under Philosophy paragraph 2.3. For the avoidance of doubt the boundary between these two "Systems" must be defined in a sufficient level of detail such that it is absolutely clear which rules apply and where.

It must be considered that in some circumstances, in order to achieve a safe system of work, safety precautions might be necessary under both the Wind Turbine Safety Rules and the associated Wind Farm HV Rules at the same time. To cover such situations Company 'A' should produce a Management Instruction outlining their procedures for application of safety precautions across the boundary between the Wind Turbine Safety Rules and the Approved HV Safety Rules.

- (viii) to achieve "safety from the system", that is, from dangers which may arise from the design functions of the plant and low voltage apparatus, each of the five stages referred to in the philosophy, paragraph 2.10, 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 / low voltage 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 / low voltage apparatus after confirming any limitations or restrictions and cancellation of the written procedure.

(b) 'Making Safe/Restoration of Plant and LV Apparatus' - which includes:

- before each phase of the work or testing commences, taking actions to make plant and low voltage 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 low voltage apparatus to an operational condition, record any limitations or restrictions, remove safety precautions to restore the plant and low voltage 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.

3.2 The above three functions cover separate responsibilities, which are distinct from each other and are treated distinctively in the Rules.

- 3.3 The 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.

GUIDANCE ON PRINCIPLES 3.3

See guidance under Wind Turbine Safety Rule C2.3.

GENERAL PROVISIONS

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 commences, it is the personal responsibility of the appropriate **Authorised Technician** or **Competent Technician** to satisfy him/herself that safety precautions are taken to establish **General Safety** at and in the vicinity of the work place. Subsequent to the commencement of work or testing, the **Authorised Technician** or **Competent Technician** in charge of the work or testing shall continue, to maintain conditions that ensure **General Safety**. This **Authorised Technician** or **Competent Technician** shall also ensure that conditions of other work areas are not adversely affected by the activities for which he/she is responsible. The discharging of responsibility for **General Safety** will be achieved as part of the normal pattern of management delegation and control by ensuring that all activities are in accordance with appropriate instructions and guidance.

GUIDANCE ON WTSR GENERAL PROVISION 1 (GP1)

The Authorised Technician who prints his/her name in Section 2 and subsequently signs the Signature Checkpoint in Section 3 of the Approved Written Procedure has taken responsibility for establishing and maintaining General Safety.

Company 'A' should give due consideration about how the responsibility for General Safety is transferred when work or testing under any given Approved Written Procedure is started by one Authorised Technician but is subsequently continued by a second Authorised Technician, (e.g. during formal 'Transfer' of an Approved Written Procedure). In particular Company 'A' might wish to implement a system to formally record the handing over of General Safety responsibility from one Authorised Technician to another.

Work or testing that extends beyond one working day, even when continued by the same Authorised Technician, will require that the establishment of General Safety is confirmed on each occasion. Once again Company 'A' might wish to implement a system to formally record the fact that General Safety is confirmed prior to the start of each working period.

Company 'A' should consider producing a suitable "checklist" to aid the Authorised Technician in the correct process for establishment of General Safety.

As a reminder to the Authorised Technician it is recommended that the requirement to "Establish General Safety" is highlighted on every Approved Written Procedure.

See also guidance under Wind Turbine Safety Rule C2.6.

For operational work or testing under a Routine Operating Procedure the Competent Technician becomes responsible for meeting the requirements of Wind Turbine Safety Rule General Provision 1. Company 'A' should detail the exact requirements of how the requirements of General Provision 1 are to be achieved for operational work or testing under a Routine Operating Procedure in a Management Instruction.

Company 'A' should consider producing a suitable "checklist" to aid the Competent Technician in the correct process for establishment of General Safety.

As a reminder to the Competent Technician it is recommended that the requirement to "Establish General Safety" is highlighted on every Routine Operating Procedure.

See also guidance under Wind Turbine Safety Rule C4.3

2. ADDITIONAL SAFETY RULES AND PROCEDURES

In addition to the Wind Turbine Safety Rules, other associated Rules & 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. Guidance documents should be complied with in accordance with **Management Instructions**.

GUIDANCE ON WTSR GENERAL PROVISION 2 (GP2)

Examples of additional safety rules and procedures might include:

- the Approved HV Safety Rules for the Wind Farm;
- the Distribution Network Operator Safety Rules;
- any Radiological Safety Rules;
- the Company 'A' Management Instructions;
- the Wind Farm Asset Owner rules and procedures;
- any other site specific rules and procedures.

Company 'A' should ensure that in the production of Approved Written Procedures or Routine Operating Procedures under the Wind Turbine Safety Rules due consideration is given to additional safety rules and procedures that might apply at the Wind Farm in question. It is absolutely essential that all the requirements are in harmony and that no conflicting requirements are inadvertently introduced to cause confusion.

3. SPECIAL INSTRUCTIONS

Work on or testing of **Plant** and **LV Apparatus** to which these 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.

GUIDANCE ON WTSR GENERAL PROVISION 3 (GP3)

This General Provision should not be seen as a vehicle for varying the Wind Turbine Safety Rules or a reason for not carrying out the specified requirements under the Rules. However, in those circumstances when it is impossible to apply the Rules or there are strong reasons, commercial or technical, for not applying the Rules, then Safety From The System can be achieved by carefully planned alternative procedures specified in an Approved instruction. Such instructions can be of a 'standing' nature or for use on one occasion only. Standing instructions should be periodically reviewed to ensure their continuing validity.

An example of where the Wind Turbine Safety Rules cannot be applied would be when compliance with Part B, "Procedures and Keys", cannot be achieved because of the loss of an Approved Written Procedure or associated Key(s). In these circumstances there should be a special instruction, written and Approved, to give details on the procedures to be followed which overcomes the problem of having lost the Approved Written Procedure or associated Key(s), but having due regard to maintaining Safety From The System and safeguarding the Authorised Technician and other members of the Working Party.

An example of where the Wind Turbine Safety Rules should not be applied might occur if certain electrical components, operating within the LV Apparatus, defined as being a part of the associated Wind Turbine Safety Rules System, were subject to High Voltage. In such circumstances there should be a special instruction, written and Approved, to give details on the safe procedures to be followed to ensure that Safety From The System is achieved and maintained prior to any work or testing of those HV components.

Further guidance is included in Wind Turbine Safety Rules Procedure P1, which must be implemented by a Management Instruction.

4. OBJECTIONS ON SAFETY GROUNDS

Any **Person** receiving instructions in the application of these Rules shall report to the **Person** issuing those instructions any objections on safety grounds 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**.

GUIDANCE ON WTSR GENERAL PROVISION 3 (GP3)

A procedure for dealing with any objections to instructions given in the application of the Wind Turbine Safety Rules is specified in Wind Turbine Safety Rules Procedure P3, which can be Approved and implemented as a Management Instruction.

The purpose of Wind Turbine Safety Rule GP4 is to safeguard any individual who has cause for concern when given an instruction under the Rules. If any individual feels that instructions issued either directly to them or to other persons are unsafe then that individual must be given proper recourse to raise such concerns. Any person raising concerns in relation to the Rules must be treated with respect whilst the matter is reviewed and resolved in a proper manner.

PART A THE BASIC SAFETY RULES

A1 APPLICATION OF THE RULES

- A1.1 The fundamental protection for persons working on or testing **Plant** and **LV Apparatus** from which **Danger** could arise if such work or testing were carried out with the **Plant** and **LV Apparatus** in its normal operating mode is the achievement of **Safety From The System**. **Safety From The System** shall be achieved by the fulfilment and maintenance of the safety precautions, procedures and responsibilities specified in these Rules and defined in an **Approved Written Procedure** for each work package. These Safety Rules shall be applied, therefore, to enable work on and testing of **Plant** and **LV Apparatus** to take place without **Danger** from the **System**.

GUIDANCE ON WTSR A1.1

In accordance with the Health & Safety at Work etc. Act 1974, the Wind Turbine Safety Rules are designed to achieve a safe system of work by achieving Safety From The System when they are applied to Plant and LV Apparatus associated with the business of the Wind Farm Asset Owner which has been made subject to these Rules by Company 'A' Management Instructions.

The fundamental principles of the Rules should be applied to all Plant and LV Apparatus for which the Wind Farm Asset Owner has a maintenance responsibility which falls within the defined Company 'A' Wind Turbine Safety Rules System. This System should be adequately defined in a Company 'A' Management Instruction.

The extent of the Plant and LV Apparatus to which the Rules are applied at each Wind Farm Location should be defined in a Company 'A' Management Instruction the details of which should be made clear to all Persons involved with work or testing on that site.

Prior to the commencement of any work or testing the Authorising Engineer should be provided with sufficient information to allow for an Approved Written Procedure to be produced to an adequate standard. This might require that the Authorising Engineer is directly involved in the planning stages of the work or testing to ensure a thorough understanding in order that an adequate assessment is made of the precautions necessary to achieve Safety From The System and System derived hazards. If contractors are to undertake the work or testing then an associated method statement and risk assessment should be provided which contains all relevant information.

A1.2 **Plant** and **LV Apparatus** shall be added to and removed from the **System** only in accordance with an **Approved** procedure, which will also determine when these Rules and/or associated Safety Rules shall apply, (see 1.4). Any **Approved Written Procedures** affected by those additions/removals shall also be reviewed & updated as necessary.

GUIDANCE ON WTSR A1.2

The procedure for the addition of Plant and Apparatus to the System is specified in Wind Turbine Safety Rules Procedure P4.

The procedure for the removal of Plant and Apparatus from the System is specified in Wind Turbine Safety Rules Procedure P5. In circumstances where certain items of Plant and / or LV Apparatus are to be removed from the System but where adjacent Plant and LV Apparatus is still subject to the Rules, whether this Plant and LV Apparatus is still in use or not, the boundaries of a safe working area encompassing only that equipment removed from the System, and therefore no longer subject to the Rules, should where reasonably practicable be clearly identified and marked.

Where changes occur due to the addition or removal of Plant and / or LV Apparatus to or from the System then this might have an impact on the work content or the safety precautions associated with related Approved Written Procedures (AWPs). It is essential that all such AWP's are reviewed and updated as necessary.

Company 'A' should produce Management Instructions to give clear guidance on the application of Wind Turbine Safety Rules Support Procedures P4 and P5.

Company 'A' must give due regard to the Wind Farm Approved HV Safety Rules in their Management Instructions for Wind Turbine Safety Rules Support Procedures P4 and P5.

A1.3 **Approved Written Procedures** shall be reviewed and updated in line with **Management Instructions**.

GUIDANCE ON WTSR A1.3

Approved Written Procedures should be reviewed at regular intervals to be determined by Company 'A'. In addition if there is any reason to believe that an Approved Written Procedure is no longer valid then it should be immediately withdrawn and reviewed.

Company 'A' should clearly state their requirements for the review and update of Approved Written Procedures in a Management Instruction.

A1.4 When work or testing involves **HV Apparatus**, **Approved HV Safety Rules** shall be used.

GUIDANCE ON WTSR A1.4

The Wind Turbine Safety Rules are only applicable to Plant and LV Apparatus. All work or testing on or involving HV Apparatus and its associated System must be carried out using HV Safety Rules that have been Approved by the Wind Farm Asset Owner.

A2 SAFETY PRECAUTIONS FOR WORK OR TESTING ON OR ADJACENT TO PLANT

A2.1 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**.

GUIDANCE ON WTSR A2.1

Wind Turbine Safety Rule A2.1 is stating in the strongest possible terms that work or testing on or adjacent to Plant must be subject to the terms of an Approved Written Procedure.

Routine Operating Procedures must not be used for work or testing on Plant unless the Authorising Engineer considers it to be “normal operation”. In making this judgement the Authorising Engineer should take into account the guidance and instructions issued by the WTG manufacturer or supplier.

As a simple rule of thumb whenever safety precautions are required, such as isolation, locking and/or the display of a Caution Notice, then an Approved Written Procedure will be required for work or testing on Plant.

In the application of these Wind Turbine Safety Rules by far the majority of work or testing on Plant will require an Approved Written Procedure. Only a very small proportion of work or testing should ever be judged as “normal operation” and carried out under the terms of a Routine Operating Procedure. Company ‘A’ must ensure that proper consideration is given to all work or testing on Plant to ensure that an Approved Written Procedure is always produced when circumstances dictate.

A2.2 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 on an **Approved Written Procedure**.

GUIDANCE ON WTSR A2.2

When the Authorising Engineer decides that Safety From The System can be achieved by limiting the work or the work area then those limits must be clearly stated on an Approved Written Procedure. Examples of where limits to the work or work area might be sufficient to achieve Safety From The System might include activities such as painting or cleaning specified items of Plant.

Taking the example of cleaning; there is a clear distinction to be made between general cleaning, of floors for example, and the cleaning of specific items of Plant. For general cleaning of floors a Routine Operating Procedure might be considered appropriate but for the cleaning of specific items of Plant, (e.g. cleaning oil from a motor or gearbox), an Approved Written Procedure would be required.

A2.3 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;

GUIDANCE ON WTSR A2.3(i)

The requirement of A2.3(i) is twofold. Firstly the Approved Written Procedure, and any supporting documents, should state the exact items of Plant on which work or testing can take place in clear and unambiguous terms. Secondly the Plant itself should be identified in such a manner that the Authorised Technician is left in no doubt about the item on which he is allowed to work or test.

See also Guidance on WTSR A6.

- (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, including those necessary to make available essential testing supplies, may be removed or restored during the course of work or testing, provided **Safety From The System** is maintained, and the circumstances shall be defined in the **Approved Written Procedure**;

GUIDANCE ON WTSR A2.3(ii)

The term immobilised and locked refers to the security of the isolation. If the Authorising Engineer decides that the methods for securing the points of isolation are inadequate then an Approved Written Procedure must not be produced.

Where the Authorising Engineer considers that the methods of securing points of isolation are not adequate to meet Wind Turbine Safety Rules or statutory requirements then due consideration should be given, by the Wind Farm Asset Owner, to modification of the installed Plant / Apparatus.

Safety Keys used to lock points of isolation which may be removed during the course of the work or testing should be retained in the personal possession of the Authorised Technician holding the Approved Written Procedure. During any periods of restoration of motive power, when this is essential to completion of the work or testing, the Authorised Technician must, at all times, maintain Safety From The System by alternative methods which must be clearly stated on the Approved Written Procedure, for example by withdrawing persons to a safe area and / or the provision of physical barriers.

- (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;

GUIDANCE ON WTSR A2.3(iii)

When breaking into Plant for intrusive maintenance the contents could represent a hazard to persons. The intent of paragraph A2.3(iii) is to draw attention to the fact that the contents must be reduced to a suitable level in order to avoid **Danger**. It is not always necessary to completely empty the contents to make a system safe for work or testing, which is why the paragraph states “adjusted to a level which avoids **Danger**”.

This reducing of the level is normally referred to as “draining” and takes place via drain valves. In some circumstances the drain pipework systems are linked together forming a common drain, in other cases the drains are not interconnected. In circumstances where drain valves form part of a common interlinked drain system they must first be opened to reduce the contents to an acceptable level and then shut and locked in the closed position to prevent ingress of the working fluid back into the Isolated Plant via the drain line. In circumstances where drains are not interconnected they can be left open to atmosphere and it is common practice to lock them in the open position.

The requirement to adjust the contents of Plant to a level which avoids **Danger** and any requirement to lock a drain valve open or closed should be assessed by the Authorising Engineer and clearly stated on the Approved Written Procedure. It is for the Authorising Engineer to determine exactly what needs to be done based on the local circumstances in order to meet the requirements stated in the Wind Turbine Safety Rules.

- (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;

GUIDANCE ON WTSR A2.3(iv)

When Plant and / or Apparatus is to be Vented as part of achieving Safety From The System before the work or testing commences, the venting shall be carried out in a controlled manner to ensure that:

- There is no **Danger** to persons from any emissions being Vented.
- The venting process is completed and atmospheric pressure is established internally within the Plant / Apparatus being Vented.
- Precautions have been taken to maintain the established safe conditions during the work or testing.

The exact requirements for venting should be assessed by the Authorising Engineer and clearly stated on the Approved Written Procedure. It is for the Authorising Engineer to determine exactly what needs to be done based on the local circumstances in order to meet the requirements stated in the Wind Turbine Safety Rules.

- (v) where internal access is required, the **Plant** shall be **Purged** if the residue of contents could cause **Danger**;

GUIDANCE ON WTSR A2.3(v)

In deciding if the residue of contents could cause Danger, an Authorising Engineer, prior to the preparation / approval of an Approved Written Procedure, may need to consult a Selected Person. The Approved Written Procedure must specify any requirement for the Authorised Technician to obtain a Selected Person's Report immediately before the work or testing being carried out. The requirements from any Selected Person's Report must then be implemented by the Authorised Technician before the prescribed work or testing specified on the Approved Written Procedure can take place. The exact requirements for implementing safety precautions specified on a Selected Person's Report should be outlined in a Company 'A' Management Instruction.

If the work or testing is likely to disturb or otherwise affect any residue to create Danger, then such Danger must be dealt with by the safety precautions specified on the Approved Written Procedure, (note: account might need to be taken of Wind Turbine Safety Rule A9 – Confined Spaces).

When Plant and / or Apparatus is to be Purged, the purging shall be carried out in a controlled manner to ensure that:

- There is no Danger to persons from any emission during the purging process.
- The purging process is completed and normal atmospheric conditions exist internally within the Plant / Apparatus being Purged.
- Precautions have been taken to maintain the established safe conditions during the work or testing.

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

GUIDANCE ON WTSR A2.3(vi)

Some examples of circumstances where stored energy has to be dealt with in the actions specified under an Approved Written Procedure to achieve Safety From The System for work or testing on Plant are:

- The release of spring tension / compression.
- The release of pressure associated with hydraulic accumulators.

All necessary actions specified on the Approved Written Procedure to dissipate Stored Energy must be completed prior to the start of work or testing. In certain circumstances the specified actions might form an integral part of that work or testing in which case the sequence of events necessary to safely dissipate the Stored Energy must be clearly stated on the Approved Written Procedure.

Although Wind Turbine Safety Rule A2.3(vi) is written specifically for Plant applications the same requirements must be met for work or testing on LV Apparatus when some examples of stored energy include:

- The discharge of electrical capacitors.
- Electrical batteries.

A2.4 When work or testing is to be carried out on **Plant** it may, in certain circumstances, be essential to restore 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. When motive power is 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 restoring motive power supplies.

GUIDANCE ON WTSR A2.4

Restoration of motive power 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. In such circumstances the Approved Written Procedure must state the exact details which allow for the safe use of motive power supplies during the course of work or testing and how Safety From The System is to be maintained. Examples of such work might be gaining access to blade hub bolts, or the inspection of the gear teeth in a gearbox. Approved Written Procedures with restoration of motive power require a high standard of preparation and presentation. These Approved Written Procedures must state the way in which the persons concerned with the work or testing will be safeguarded from Danger during the period that motive power supplies are restored. This will enable the recipient of the Approved Written Procedure to discharge his responsibilities.

Safety Keys used to lock points of isolation which may be removed during the course of the work or testing should be retained in the personal possession of the Authorised Technician holding the Approved Written Procedure. During any periods of restoration of motive power, when this is essential to completion of the work or testing, the Authorised Technician must, at all times, maintain Safety From The System by alternative methods which must be clearly stated on the Approved Written Procedure, for example by withdrawing persons to a safe area and / or the provision of physical barriers. The method of dealing with hazards arising during periods of restoration of motive power shall be stated on the Approved Written Procedure.

In order to demonstrate that motive power supplies have been re-isolated, following any period of restoration, (and prior to the re-commencement of work or testing), it is strongly recommended that the Authorised Technician be required to initial against a Signature Checkpoint on the Approved Written Procedure to confirm that the Plant / LV Apparatus is once again Isolated and has therefore been returned to a safe condition.

It is not intended that an Approved Written Procedure with restoration of motive power supplies should routinely be used for proving tests on Plant and LV Apparatus following maintenance when all work or testing has been completed. Such tests would more usually be classed as “normal operation” and carried out in accordance with a Routine Operating Procedure after cancellation of the Approved Written Procedure.

A2.5 Only the work or testing specified on the **Approved Written Procedure** shall be carried out.

GUIDANCE ON WTSR A2.5

The Approved Written Procedure should clearly specify the work or testing that is allowed. The Authorised Technician must limit the work or testing to that which is specified on the Approved Written Procedure.

Any additional work or testing that might be identified, (during the course of the work or testing specified on the Approved Written Procedure), shall be referred to an Authorising Engineer who shall ensure that a further Approved Written Procedure is produced and Approved to take account of that additional work / testing. See Wind Turbine Safety Rule B2.2.7.

Under such circumstances all work or testing under the original Approved Written Procedure must stop until a new Approved Written Procedure is issued. The original Approved Written Procedure cannot be cancelled until a new Approved Written Procedure is issued to cover both the original and the additional work or testing. Once the safety precautions specified on the new Approved Written Procedure are put in place, and the Signature Checkpoint has been completed by the Authorising Engineer, then the original Approved Written Procedure can be cancelled. In these situations the circumstances surrounding the issue of a second Approved Written Procedure should be recorded in the clearance section of the original Approved Written Procedure.

A3 SAFETY PRECAUTIONS FOR WORK OR TESTING ON OR ADJACENT TO LOW VOLTAGE APPARATUS

A3.1 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**;

GUIDANCE ON WTSR A3.1(ii)

This Danger might be of particular significance when an Approved Written Procedure is written which allows for the removal of points of isolation during the course of work or testing. It is very easy to become so focussed on the job in hand that a technician believes he is working on Isolated LV Apparatus when in fact he/she himself/herself has removed the isolation.

The importance of applying a lock and Caution Notice to points of isolation cannot be overstated particularly in situations where the point of isolation is physically remote from the point of work.

- (iii) Inadequate precautions being taken under **Live** conditions;
- (iv) The uncontrolled release of stored energy in the **LV Apparatus**.

GUIDANCE ON WTSR A3.1(iv)

The requirements to contain or dissipate stored energy in a safe manner must be clearly stated on the Approved Written Procedure for work or testing on LV Apparatus. Some examples of stored energy include:

- The discharge of electrical capacitors.
- Electrical batteries.

A3.2 When work or testing is to be carried out on **LV Apparatus**, precautions shall be taken to achieve **Safety From The System**.

GUIDANCE ON WTSR A3.2

It should be noted that the requirements of A3.2 are mandatory. In achieving these requirements it is considered that Safety From The System will only be achieved if full compliance with the Electricity at Work Regulations 1989 is achieved.

A3.3 Where practicable, the **LV Apparatus** shall be **Isolated**. When **Isolating Devices** are used, they shall where reasonably practicable, be immobilised and **Locked**.

GUIDANCE ON WTSR A3.3

The requirements to isolate LV Apparatus must be considered in the terms of “shall where practicable”. Essentially this means that if it is possible to achieve an isolation in the light of current knowledge and invention then it must be done. If the Authorising Engineer decides that the means of isolation are inadequate then an Approved Written Procedure must not be produced.

Where it is not practicable to isolate, and where Danger may arise, work or testing on or near Live LV Apparatus, is only allowed provided all of the requirements stated in Rule A3.7 have been met.

The term immobilised and locked refers to the security of the isolation. If the Authorising Engineer decides that the methods for securing the points of isolation are inadequate then an Approved Written Procedure must not be produced. In making this judgement the Authorising Engineer must take into account the requirements specified in Regulation 13 of the Electricity at Work Regulations 1989 – these requirements are absolute.

Even in circumstances where the requirements of Rule A3.7 have been satisfied the requirement to immobilise and lock Isolating Devices is still strong, but by the use of the words “where reasonably practicable” some allowance is made for balancing the time, trouble and cost against the risk involved.

Where the Authorising Engineer considers that either the means of achieving an isolation or the methods of securing points of isolation are not adequate to meet Wind Turbine Safety Rules or statutory requirements then due consideration should be given, by the Wind Farm Asset Owner, to modification of the installed Plant / Apparatus.

A3.4 When work or testing is to be carried out on **LV Apparatus**, **Caution Notices** shall be affixed at all points of isolation.

GUIDANCE ON WTSR A3.4

The requirement to display a Caution Notice at all points of isolation is mandatory. If the Authorising Engineer decides that it is not possible to apply a Caution Notice to points of isolation then an Approved Written Procedure must not be produced.

Where the Authorising Engineer considers that it is not possible to apply a Caution Notice to points of isolation then due consideration should be given, by the Wind Farm Asset Owner, to modification of the installed Plant / Apparatus.

A3.5 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**.

GUIDANCE ON WTSR A3.5

Wind Turbine Safety Rule A3.5 is stating in the strongest possible terms that work or testing on or adjacent to LV Apparatus must be subject to the terms of an Approved Written Procedure.

Routine Operating Procedures must not be used for work or testing on LV Apparatus unless the Authorising Engineer considers it to be “normal operation”. In making this judgement the Authorising Engineer should take into account the guidance and instructions issued by the WTG manufacturer or supplier.

As a simple rule of thumb whenever safety precautions are required, such as isolation, locking and/or the display of a Caution Notice, then an Approved Written Procedure will be required for work or testing on LV Apparatus.

In the application of these Wind Turbine Safety Rules by far the majority of work or testing on LV Apparatus will require an Approved Written Procedure. Only a very small proportion of work or testing should ever be judged as “normal operation” and carried out under the terms of a Routine Operating Procedure. Company ‘A’ must ensure that proper consideration is given to all work or testing on LV Apparatus to ensure that an Approved Written Procedure is always produced when circumstances dictate.

A3.6 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.

GUIDANCE ON WTSR A3.6

The requirement of the first part of A3.6 is twofold. Firstly the Approved Written Procedure, and any supporting documents, should state the exact items of LV Apparatus on which work or testing can take place in clear and unambiguous terms. Secondly the LV Apparatus itself should be identified in such a manner that the Authorised Technician is left in no doubt about the item on which he is allowed to work or test.

See also Guidance on WTSR A6.

In addition the Approved Written Procedure should clearly specify the work or testing that is allowed. The Authorised Technician must limit the work or testing to that which is specified on the Approved Written Procedure.

Any additional work or testing that might be identified, (during the course of the work or testing specified on the Approved Written Procedure), shall be referred to an Authorising Engineer who shall ensure that a further Approved Written Procedure is produced and Approved to take account of that additional work / testing. See Wind Turbine Safety Rule B2.2.7.

Under such circumstances all work or testing under the original Approved Written Procedure must stop until a new Approved Written Procedure is issued. The original Approved Written Procedure cannot be cancelled until a new Approved Written Procedure is issued to cover both the original and the additional work or testing. Once the safety precautions specified on the new Approved Written Procedure are put in place, and the Signature Checkpoint has been completed by the Authorising Engineer, then the original Approved Written Procedure can be cancelled. In these situations the circumstances surrounding the issue of a second Approved Written Procedure should be recorded in the clearance section of the original Approved Written Procedure.

A3.7 The preferred method is to always 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; and
- (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.

GUIDANCE ON WTSR A3.7

Wind Turbine Safety Rule A3.7 is giving a very strong message that the preferred method is always to work or test with the LV Apparatus Isolated. Therefore the Authorising Engineer must have a very strong justification to produce an Approved Written Procedure that allows any element of Live work or testing. However, it is recognised that in some exceptional circumstance some element of Live work or testing can be justified. When this is the case it is essential that the Approved Written Procedure clearly states the precautions that will keep persons safe during such Live work or testing.

Application of Rule A3.7 is a direct requirement under Regulation 14 of the Electricity at Work Regulations 1989 – this requirement is absolute. Further guidance on meeting these requirements can be found by reference to the HSE document HS(R)25 “Memorandum of Guidance on the Electricity at Work Regulations 1989”.

The factors which would be considered in deciding whether it was justifiable for work or testing to proceed with the conductors Live would include the following:

- (a) when it is not practicable to carry out the work with the conductors dead, e.g. where for the purposes of testing or fault finding it is essential for the conductors to be Live;
- (b) the creation of other hazards, by making the conductor dead, such as to other users of the System;
- (c) the need to comply with other statutory requirements;
- (d) the level of risk involved in working Live and the effectiveness of the precautions available set against economic need to perform that work.

See also HSE document HSG85 Electricity at Work – safe working practices. This document contains detailed guidance on assessment procedures for safe working practices.

A3.8 The requirements of A3.7 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 A3.7 for **Live** work are fully justified.

GUIDANCE ON WTSR A3.8

There might be circumstances where the only possible way of determining the exact nature of a fault on LV Apparatus will involve some element of Live testing. In deciding whether Live testing is justified account should be taken of whether any “specialist” electrical test equipment is available in the market place that would enable the fault to be located with the LV Apparatus Isolated. When Live testing is found to be justifiable by applying the criteria laid down in Rule A3.7 and the fault is positively identified then all subsequent repair work should be carried out with the LV Apparatus Isolated unless Live working can be justified under the same criteria. In general the justification for carrying out Live repair work would be extremely rare.

To be absolutely clear Live testing is not justified simply because the correct test equipment is not available or because it might take more time to find a fault by testing on LV Apparatus that has been Isolated.

A3.9 When work or testing is to be carried out and it is not reasonably 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 will be 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 3.7.

GUIDANCE ON WTSR A3.9

In deciding the “safety precautions” reference should be made to Wind Turbine Safety Rules A3.12 and A3.13.

It is essential that the Approved Written Procedure clearly states all of the necessary precautions to be taken during the course of work or testing, particularly when part of that work or testing is carried out with the LV Apparatus not in an Isolated condition or when Live work or testing is justified.

The Approved Written Procedure should clearly state which elements of the work or testing must be carried out with the LV Apparatus Isolated and which elements of the work or testing may be carried out with the isolation removed. It should also be clearly stated on the Approved Written Procedure the exact circumstances as to when and why the LV Apparatus can be made Live, if this can be justified under Rule A3.7.

It should be clearly understood that work or testing which is undertaken on LV Apparatus that is sometimes fully Isolated, but on occasions is made Live, is potentially very hazardous and must be avoided if at all possible. In these circumstances it is very easy for the Authorised Technician, undertaking the work or testing, to become so focussed on the job in hand that he/she mistakes Live LV Apparatus for Isolated LV Apparatus. In such circumstances the Authorising Engineer must give consideration to the Authorised Technician being accompanied by another Authorised Technician. Any such requirements must be stated on the Approved Written Procedure.

A3.10 Where work or testing is to be carried out on **LV Apparatus** which is part of **High Voltage (HV) Apparatus** or on **LV Apparatus** which is in proximity to exposed **HV Apparatus** which may be **Live**, or become **Live**, **HV Safety Rules** or their **Approved** equivalent shall be used.

GUIDANCE ON WTSR A3.10

In certain circumstances work or testing on LV Apparatus, that is part of the Wind Turbine Safety Rules defined “System”, would require safety precautions to be taken on associated HV Apparatus. In such circumstances it would be usual for both an Approved Written Procedure and an associated safety document under the HV Safety Rules to be issued for the work or testing. One example of where this might be the case could be for work on cooling fans associated with HV Transformers, the cooling fans might be designated as part of the Wind Turbine Safety Rules “System” whilst the associated HV Transformer would be designated a part of the HV Safety Rules “System”.

Where these circumstances exist the Approved Written Procedure must clearly state that a safety document under the approved HV Safety Rules is required. The Authorised Technician must sign a Signature Checkpoint to confirm that an HV Safety Rules safety document has been obtained. It would be considered good practice for the Authorised Technician to record any details of the HV Safety Rules safety document on the Approved Written Procedure, (e.g. record any unique identification number of the HV Safety Rules safety document).

A3.11 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 must be provided with fused protection to safeguard persons from **Danger**.

GUIDANCE ON WTSR A3.11

The suitability of such test equipment should be considered within the context of Wind Turbine Safety Rules Procedure P2. Test Equipment for use on LV Apparatus must be formally “Approved” by Company ‘A’.

Company ‘A’ should refer to further guidance or standards as appropriate before making any formal approvals under Wind Turbine Safety Rules Support Procedure P2, (e.g. HSE Guidance Note “GS 38 – Electrical test equipment for use by electricians” is just one example of a suitable guidance document associated with LV Test Equipment).

A3.12 When work or testing is to be carried out on **Isolated LV Apparatus**:

- (i) **LV** isolation should 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**;

GUIDANCE ON WTSR A3.12(i)

All means of LV isolation should be “positive” and provide adequate physical separation or sufficient gap. Examples would include circuit breakers; isolators; fuses and links.

- (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** should be removed;

GUIDANCE ON WTSR A3.12(ii)

The term immobilised and locked refers to the security of the isolation. If the Authorising Engineer decides that the methods for securing the points of isolation are inadequate then an Approved Written Procedure must not be produced.

Where the Authorising Engineer considers that the methods of securing points of isolation are not adequate to meet Wind Turbine Safety Rules or statutory requirements then due consideration should be given, by the Wind Farm Asset Owner, to modification of the installed Plant / Apparatus.

Where fuses and/or links are removed to form the isolation Company ‘A’ should give consideration to how these points of isolation can be physically locked, (e.g. proprietary locking devices are readily available to fit most fuse holders).

In any event the fuses and/or links should be physically taken away from the point at which the isolation was carried out and either retained in the personal possession of the Authorised Technician or alternatively they could be locked away in a suitable cabinet and the key retained by the Authorised Technician.

The requirements for achieving and maintaining the security of LV Isolating Devices should be specified in Management Instructions.

On a final point, it is considered good practice to identify and label all fuses and/or links to ensure that they are correctly replaced in the same fuse holders from which they were 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;

GUIDANCE ON WTSR A3.12(iii)

It should be noted that some portable or hand held LV Apparatus might be excluded from the Wind Turbine Safety Rules "System". All such exclusions must be adequately defined in a Company 'A' Management Instruction which should clearly define the safe system of work to be adopted. The safe system of work for portable LV Apparatus excluded from the Wind Turbine Safety Rules "System" must achieve the same standards as those imposed by the Rules themselves.

Where the portable or hand held LV Apparatus is included in the Wind Turbine Safety Rules "System" then an Approved Written Procedure must be issued to state the required safety precautions to achieve Safety From The System.

- (iv) **Safety Keys** shall be placed in a suitably labelled envelope and, along with any removable **Isolating Devices**, shall, (except in circumstances when the **LV Apparatus** is permitted to be made **Live**, see A3.9), be retained in safe custody by the **Authorised Technician** holding the **Approved Written Procedure**, preferably by retaining them in his personal possession;

GUIDANCE ON WTSR A3.12(iv)

All sensible precautions should be taken to reduce the risk of Safety Keys and removable Isolating Devices being lost, (e.g. keys placed in the top pockets of overalls can easily fall out). It is recommended that the Approved Written Procedure (AWP) is kept inside a plastic envelope or wallet in order to keep it clean and dry, the Safety Keys or removable Isolating Devices can then be kept together with the AWP.

The Safety Keys or removable Isolating Devices must be kept at the work place by the Authorised Technician such that they are under his/her control throughout the work or testing.

- (v) For ongoing work or testing, beyond one working day, secure retention of items taken into safe custody by the **Authorised Technician** shall be in accordance with **Management Instructions**;

GUIDANCE ON WTSR A3.12(v)

Company 'A' must produce a Management Instruction outlining how items are retained in safe custody during periods when work or testing is not actually in progress. For example Company 'A' might specify that the items are to be locked in a drawer or cabinet, the key to which is retained by the Authorised Technician.

- (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;

GUIDANCE ON WTSR A3.12(vi)

Isolating Devices and Safety Keys must be identified with the LV Apparatus with which they are associated. The details of how this is to be achieved should be specified in a Management Instruction, (e.g. attaching a luggage label suitably annotated with the identification of the Point of Isolation for the LV Apparatus).

- (vii) Where work or testing is to be continued by another **Authorised Technician**, the Transfer process shall be carried out in line with the requirements of Wind Turbine Safety Rule B2.3;

GUIDANCE ON WTSR A3.12(vii)

The exact requirements for Transfer of the Approved Written Procedure from one Authorised Technician to another, under the requirements of Wind Turbine Safety Rule B2.3, should be specified by Company 'A' in a Management Instruction.

- (viii) Where adjacent exposed **Live LV Apparatus** is present which gives rise to **Danger**, work or testing must only be done by an **Authorised Technician** 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 **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 A3.13 are relevant to the selection of Personal Protective Equipment. In addition consideration should be given to the **Authorised Technician** being accompanied by another **Authorised Technician** if his 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.

GUIDANCE ON WTSR A3.12(viii)

The term “exposed Live LV Apparatus” would include all exposed bare metal which is Live at Low Voltage, (this would include exposed Live LV conductors and terminals). In these circumstances the requirements of Regulation 14 of the Electricity at Work Regulations 1989 must be met, see HSE document HS(R)25 “Memorandum of Guidance on the Electricity at Work Regulations 1989”. See also HSE document HSG85, “Electricity at Work – safe working practices”, which contains detailed guidance on assessment procedures for safe working practices.

Serious accidents have occurred during work or testing on LV Apparatus when the wrong cover has been mistakenly removed, particularly at the rear of the switchgear, resulting in unexpected access to Live conductors. During such work or testing the Approved Written Procedure should specify a requirement for Danger Notices to be displayed on adjacent Live panels at the limits of the work area.

Any Authorised Technician carrying out work or testing adjacent to exposed Live LV Apparatus must be competent to undertake such tasks. It is incumbent on Company 'A' to clearly specify, in a Management Instruction, what training and competency assessment requirements need to be met by any Authorised Technician before carrying out work or testing adjacent to exposed Live LV Apparatus. No Authorised Technician should undertake work or testing adjacent to any exposed Live LV Apparatus unless they have been designated in writing by Company 'A' specifically to carry out these tasks.

The requirement for this work or testing to be carried out only by a specifically Appointed Authorised Technician should be indicated on the Approved Written Procedure.

Any Authorising Engineer producing an Approved Written Procedure for work or testing adjacent to any exposed Live LV Apparatus must have sufficient competence such that: he/she can understand the risks; can adequately make the justification; can understand and apply the statutory requirements; can specify adequate precautions in order to maintain Safety From The System.

Further guidance on "Accompaniment" can be found in the HSE document HS(R)25, "Memorandum of Guidance on the Electricity at Work Regulations 1989", (within that HSE document see guidance under Regulation 14). See also HSE document HSG85, "Electricity at Work – safe working practices", which also makes reference to "Accompaniment".

The term "render assistance" would include such things as: knowing how to disconnect the power supply; being capable of providing First Aid; knowing how to raise the alarm, summon help and who to contact in an emergency.

- (ix) Before work or testing commences the **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 he is to work or test is not **Live**. The instrument used should be tested immediately before and after use;

GUIDANCE ON WTSR A3.12(ix)

The suitability of such test equipment should be considered within the context of Wind Turbine Safety Rules Procedure P2. See also the Guidance under WTSR A3.11.

The requirement to test the instrument itself should only be by the use of a specialist "proving unit". Test instruments should never be tested at "System" voltage.

- (x) If work or testing is interrupted the **Authorised Technician** who is to continue the work or testing must first carry out the procedure in A3.12(ix) above.

GUIDANCE ON WTSR A3.12(x)

When an Authorised Technician has left the work or testing to attend to other matters he or she must test for dead before resuming work. Obviously a measure of common sense must be applied to this requirement but it is clear that resumption of work or testing following a lunch break or the resumption of work or testing following an overnight break would definitely require that the LV Apparatus must be tested to prove that it is not Live.

A3.13 When work or testing is to be carried out on **Live LV Apparatus**:

- (i) Subject to the criteria of clause A3.7(i); (ii) and (iii) being satisfied, work or testing may be done with the **LV Apparatus Live** only under the following conditions:

GUIDANCE ON WTSR A3.13(i)

In these circumstances the requirements of Regulation 14 of the Electricity at Work Regulations 1989 must be met, see HSE document HS(R)25 "Memorandum of Guidance on the Electricity at Work Regulations 1989". See also HSE document HSG85 Electricity at Work – safe working practices. This document contains detailed guidance on assessment procedures for safe working practices.

- 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 **Authorised Technician** how the requirements under this safety rule are to be met;

GUIDANCE ON WTSR A3.13(i)

It is absolutely essential that if work or testing on Live LV Apparatus can be justified then the Authorised Technician should be in no doubt that this is the case. The Approved Written Procedure must state in some detail what is allowed and what is not allowed.

Any Authorising Engineer producing an Approved Written Procedure for work or testing on Live LV Apparatus must have sufficient competence such that: he/she can understand the risks; can adequately make the justification; can understand and apply the statutory requirements; can specify adequate precautions in order to maintain Safety From The System.

- The work or testing shall only be done by an **Authorised Technician** who has completed an appropriate course of training as defined in **Management Instructions** and is **Appointed** for work or testing on **Live LV Apparatus**;

GUIDANCE ON WTSR A3.13(i)

Any Authorised Technician carrying out work or testing on Live LV Apparatus must be competent to undertake such tasks. It is incumbent on Company 'A' to clearly specify, in a Management Instruction, what training and competency assessment requirements need to be met by any Authorised Technician before carrying out work or testing on Live LV Apparatus. No Authorised Technician should undertake work or testing on Live LV Apparatus unless they have been designated in writing by Company 'A' specifically to carry out these tasks.

The requirement for this work or testing to be carried out only by a specifically Appointed Authorised Technician should be indicated on the Approved Written Procedure.

- The **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 etc.;

GUIDANCE ON WTSR A3.13(i)

This requirement is mandatory and for absolute clarity should be stated on the Approved Written Procedure as part of required safety precautions.

- 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;

GUIDANCE ON WTSR A3.13(i)

There is a requirement to ensure that the Authorised Technician carrying out work or testing on Live LV Apparatus is not exposed to additional hazards from accidental contact with adjacent earthed metal, (e.g. casings, cabinets, terminal boxes), or other conductors at a different electrical potential, (e.g. three phase conductors, busbars or terminals). The requirements to apply suitable insulation and/or screening to reduce the risk of accidental contact with hazardous conductors or earth must be clearly stated on the Approved Written Procedure, (e.g. it would be preferable to apply any such insulation or screening with the LV Apparatus fully Isolated).

- Where necessary to prevent injury, **Approved** insulated tools, insulating stands or mats, insulating gloves, and eye protection, faceshields, 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;

GUIDANCE ON WTSR A3.13(i)

The suitability of such equipment should be considered within the context of Wind Turbine Safety Rules Procedure P2.

The Approved Written Procedure must specify all necessary precautions to prevent injury, see Regulation 14(c) of the Electricity at Work Regulations 1989. In stating the necessary precautions the Authorising Engineer must take account of the fact that Personal Protective Equipment is considered as “last resort”.

- Only suitable test instruments and test probes should be used;

GUIDANCE ON WTSR A3.13(i)

The suitability of such test equipment should be considered within the context of Wind Turbine Safety Rules Procedure P2. Test Equipment for use on LV Apparatus must be formally “Approved” by Company ‘A’.

Company ‘A’ should refer to further guidance or standards as appropriate before making any formal approvals under Wind Turbine Safety Rules Support Procedure P2, (e.g. HSE Guidance Note “GS 38 – Electrical test equipment for use by electricians” is just one example of a suitable guidance document associated with LV Test Equipment).

- Consideration should be given to the **Authorised Technician** being accompanied by another **Authorised Technician(s)** if his/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;

GUIDANCE ON WTSR A3.13(i)

Further guidance on “Accompaniment” can be found in the HSE document HS(R)25 “Memorandum of Guidance on the Electricity at Work Regulations 1989”, (within that HSE document see guidance under Regulation 14). See also HSE document HSG85 “Electricity at Work – safe working practices”.

The term “render assistance” would include such things as: knowing how to disconnect the power supply; being capable of providing First Aid; knowing how to raise the alarm, summon help and who to contact in 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 which 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**;

GUIDANCE ON WTSR A3.13(i)

The requirements for avoiding Danger from flammable atmospheres during work or testing on Live LV Apparatus in any underground situation must be clearly stated on the Approved Written Procedure. Whilst it might appear improbable that a flammable atmosphere could exist on a Wind Farm these requirements must be given due consideration. Some examples of flammable atmosphere could arise from: naturally occurring phenomena, (e.g. methane); adjacent premises, (e.g. natural gas); the work process, (e.g. LPG cylinders).

A4 OPERATION OF PLANT AND LOW VOLTAGE APPARATUS

- A4.1 The operation of **Plant** and/or **LV Apparatus** to achieve **Safety From The System** shall never involve pre-arranged signals or the use of time intervals.

GUIDANCE ON WTSR A4

The Authorised Technician, responsible for work or testing under an Approved Written Procedure, must be satisfied that correct procedures have been followed to achieve Safety From The System. By far the best method is for the Authorised Technician to personally carry out the specified requirements or give Personal Supervision. Where this is not practicable and a second Authorised Technician is instructed to apply safety precautions then consideration should be given to that individual countersigning the Approved Written Procedure to confirm that the stated precautions have been correctly applied.

It should be noted that for work or testing under an Approved Written Procedure it will, in almost every case, be necessary to undertake some preliminary operational work or testing under the terms of a Routine Operating Procedure. One clear example of this is where the WTG needs to be selected to "local control" and "shut down" immediately prior to the work or testing under the Approved Written Procedure. In such cases it will not be necessary to apply the requirements of Wind Turbine Safety Rule C4.2 and where appropriate, any safety precautions that would otherwise have been stated on the Routine Operating Procedure should instead be included on the Approved Written Procedure.

A5 DEMARCATION OF WORK AREAS

- A5.1 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.

GUIDANCE ON WTSR A5

In general, the Authorising Engineer should consider the desirability of including in the Approved Written Procedure the requirement to post Danger Notices on operational Plant and LV Apparatus adjacent to the work area.

Serious accidents have occurred during work or testing on LV Apparatus when the wrong cover has been mistakenly removed, particularly at the rear of the switchgear, resulting in unexpected access to Live conductors. During such work or testing the Approved Written Procedure should specify a requirement for Danger Notices to be displayed on adjacent Live panels at the limits of the work area.

Physical barriers might be required to prevent access to items of Plant or LV Apparatus during periods when motive power is restored. The Approved Written Procedure must specify how persons are to be kept safe during periods when motive power is restored particularly if operations are undertaken with guards or covers removed.

A6 IDENTIFICATION OF PLANT AND LOW VOLTAGE APPARATUS

- A6.1 Work or testing shall only be permitted to start on **Plant** and/or **LV 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.

GUIDANCE ON WTSR A6

Company 'A' must ensure that suitable labels are attached to the WTG such that there can be no confusion as to the exact item of Plant or Apparatus on which the work or testing is going to take place.

It is also of paramount importance that all points of isolation are correctly labelled and identified such that the Authorised Technician is left in no doubt about the requirements to achieve Safety From The System stated on the Approved Written Procedure.

The terminology and wording used on Approved Written Procedures, and any supporting documents, must exactly match that on any identification labels.

It is important to remember that if the Authorised Technician removes any identification label, during the course of work or testing, then it should be replaced before the Approved Written Procedure is cleared. If this is not the case then the details should be recorded within the Clearance section of the Approved Written Procedure as an "exception".

A7 AUTOMATICALLY OR REMOTELY CONTROLLED PLANT AND LOW VOLTAGE APPARATUS

- A7.1 All **Plant** and **LV Apparatus** associated with any Wind Turbine shall be considered as automatically or remotely controlled. Control over the operation of Wind Turbine **Plant** and **LV 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 from the **Plant** and **LV Apparatus** which is being worked on.

GUIDANCE ON WTSR A7.1

Wind Turbine Generators can often be operated by persons located either on the Wind Farm but remote from the point of work or testing OR remote from the Wind Farm Location itself, (e.g. using laptop computers with appropriate 'dial up' facilities). In either case there is a potential for the persons operating the Plant / LV Apparatus to be unaware of any work or testing that is taking place.

- A7.2 When personnel are working on or testing **Plant** and/or **LV Apparatus** which has automatic or remote control features, the main **Danger** which could arise is from the operation of the **Plant** and/or **LV Apparatus** if these control features have not been **Isolated**. Where **Danger** could arise to personnel at work on or testing such **Plant** and **LV Apparatus** then all such automatic or local / remote operation shall be prevented whilst the work or testing is taking place.

GUIDANCE ON WTSR A7.2

During work or testing, persons shall be safeguarded from Danger that might arise if a WTG was subject to any operation that could be initiated either automatically, (as part of the normal design function of the WTG), or by manual intervention from a remote point and which is outside the direct control of the Authorised Technician in charge of the Working Party. The Approved Written Procedure must state all necessary precautions to isolate the WTG to prevent any automatic or remote operation.

One particular example of circumstances when the Working Party might be exposed to Danger from automatic or remote operation, unless adequate safety precautions are taken, is during any periods when motive power supplies are restored. See WTSR 7.5.

- A7.3 Where work or testing is to be carried out on automatically or remotely controlled **Plant** or **LV 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 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.

GUIDANCE ON WTSR A7.3

The means of preventing any remote operation of the Wind Turbine during work or testing shall be stated on the Approved Written Procedure. Wherever possible the means to prevent remote operation should be a unique 'key operated' switch, once operated the key should be retained at all times by the Authorised Technician who is the recipient of the Approved Written Procedure.

The use of the WTG “control box” to select the means of preventing remote operation is considered to be undesirable and unless no alternative could be implemented in light of current knowledge and invention would be in contravention of WTSR A7.3. If the Authorising Engineer decides that the methods for preventing automatic or remote operation are inadequate then an Approved Written Procedure must not be produced.

Where the Authorising Engineer considers that the methods of preventing automatic or remote operation are not adequate to meet Wind Turbine Safety Rules or statutory requirements then due consideration should be given, by the Wind Farm Asset Owner, to modification of the installed Plant / Apparatus.

A7.4 The requirements for achieving **Safety From The System** from all control features shall be specified in an **Approved Written Procedure**.

GUIDANCE ON WTSR A7.4

The Approved Written Procedure must specify how **Safety From The System** will be achieved from all automatic or remote control features of the WTG.

A7.5 If it is essential to restore motive power supplies in order to complete the work or testing on **Plant** and/or **LV Apparatus**, such that any automatic, remote or local control features would become operable, then the **Approved Written Procedure** shall specify the means of maintaining **Safety From The System** whilst those control features are operable.

GUIDANCE ON WTSR A7.5

The Approved Written Procedure must specify how **Safety From The System** is to be maintained during any periods when restoration of motive power is allowed.

A7.6 Work or testing on, or the making of adjustments to, the controlling features of Wind Turbine **Plant** or **LV Apparatus** whilst it is in the operating mode shall only be done by an **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 **Approved Written Procedure**. Before such work or testing commences, consultation shall take place between the **Authorised Technician** and the **Operational Controller**. No other work or testing shall be permitted on that **Plant** or **LV Apparatus** at the same time.

GUIDANCE ON WTSR A7.6

Any Authorised Technician carrying out work or testing on, or the making of adjustments to, the controlling features of WTG Plant or Apparatus must be competent to undertake such tasks. It is incumbent on Company ‘A’ to clearly specify, in a Management Instruction, what training and competency assessment requirements need to be met by any Authorised Technician before carrying out work or testing on, or the making of adjustments to, the controlling features of WTG Plant or Apparatus. No Authorised Technician should undertake work or testing on, or the making of adjustments to, the controlling features of WTG Plant or Apparatus unless they have been designated in writing by Company ‘A’ specifically to carry out these tasks.

The requirement for this work or testing to be carried out only by a specifically Appointed Authorised Technician should be indicated on the Approved Written Procedure.

The consultation between the Authorised Technician and the Operational Controller is required to ensure that the latter does not think that the Wind Turbine Generator has been returned to an operational state. There should be agreement about what to do in the event that any alarms are received or other abnormal events occur during such work or testing.

IT IS ABSOLUTELY ESSENTIAL THAT NO OTHER UNAUTHORISED THIRD PARTY CAN EXERT INFLUENCE OVER THE WTG DURING WORK OR TESTING ON, OR THE MAKING OF ADJUSTMENTS TO, THE CONTROLLING FEATURES OF WTG PLANT OR APPARATUS.

A7.7 When it is necessary to work or test on, or make adjustments to, the controlling features with those features operational but with the controlled **Plant** or **LV Apparatus** not in the operating mode, no other work or testing shall be permitted on that **Plant** or **LV Apparatus** at the same time.

GUIDANCE ON WTSR A7.7

In the circumstances described in WTSR A7.7 the Approved Written Procedure should take account of the position that any controlling features might be left in on completion of the work or testing that would cause the Wind Turbine Generator to become operational immediately when it were de-isolated. The Approved Written Procedure should specify the safe condition of controlling features that must be achieved prior to the de-isolation of associated Plant and LV Apparatus to prevent Danger to persons.

A8 EXCAVATION

A8.1 When work or testing at Wind Farm **Locations** involves excavation then it shall always be undertaken by following the requirements of **HV** Safety Rules.

GUIDANCE ON WTSR A8.1

It is incumbent on Company 'A' to ensure that any HV Safety Rules that are Approved under WTSR A1.4 do include a suitable procedure for excavation particularly in the context of underground cables and other services.

Further guidance can be obtained by reference to HSE document HSG47, "Avoiding Danger From Underground Services".

Any statutory requirements relating to excavation must be met, (e.g. Construction (Design & Management) Regulations 2007).

Reference should also be made to the RenewableUK (formerly known as BWEA) Guidelines for Health and Safety in the Wind Energy Industry, (in particular see Section 9.9 - Excavation).

A9 CONFINED SPACES

- A9.1 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, (as defined in the Confined Spaces Regulations 1997), then guidance on the precautions to be taken shall be defined in a **Management Instruction**.

GUIDANCE ON WTSR A9.1

Company 'A' should produce a Management Instruction specifying their detailed procedures for confined space working. It is suggested that areas of the Wind Farm and/or Wind Turbine Generators containing Plant and LV Apparatus, designated as part of the Wind Turbine Safety Rules "System", which are deemed to be confined spaces are highlighted in this Management Instruction.

The statutory requirements relating to confined spaces must be met, (e.g. Confined Spaces Regulations 1997). See HSE document L101, "Safe Work in Confined Spaces".

Reference should also be made to the RenewableUK (formerly known as BWEA) Guidelines for Health and Safety in the Wind Energy Industry.

- A9.2 In deciding whether there is a reasonably foreseeable specified risk account shall be taken of the nature of the work or testing itself.

GUIDANCE ON WTSR A9.2

Under normal circumstances access into a given area might not give rise to any reasonably foreseeable "specified risk", as defined in the Confined Spaces Regulations 1997. However, the nature of work or testing itself might give rise to a reasonably foreseeable "specified risk", for example if "Hot Work" was required or the use of hazardous substances was necessary.

- A9.3 The detail of the precautions that are required, associated with that work or testing, shall be specified in an **Approved Written Procedure**.

GUIDANCE ON WTSR A9.3

The Approved Written Procedure should specify all necessary precautions that must be taken either prior to or during any work or testing in a confined space.

In all such cases it is strongly recommended that the Approved Written Procedure specifies a requirement to obtain a Selected Person's Report. Any additional safety precautions highlighted by the Selected Person must be implemented by the Authorised Technician in accordance with procedures outlined in a Company 'A' Management Instruction, (see WTSR B2.1.2).

PART B PROCEDURES AND KEYS

B1 GENERAL

- B1.1 Part B of these Rules gives the procedures associated with **Approved Written Procedures** and **Keys**. **Persons** involved in these procedures must understand and enact their respective roles correctly.

GUIDANCE ON WTSR B1.1

Authorising Engineers and Authorised Technicians must have a thorough understanding of the processes in dealing with Approved Written Procedures and Keys. This understanding should be confirmed by Company 'A' as part of the formal appointment process, (authorisation), required under Wind Turbine Safety Rule Support Procedure P6.

- B1.2 The Rules concern themselves with the principles of achieving safety from the inherent **Dangers of Plant** and **LV Apparatus**. The detailed manner in which the objectives, responsibilities and requirements of Part B of the Rules are to be met shall be subject to **Management Instructions**.

GUIDANCE ON WTSR B1.2

Company 'A' must produce suitable Management Instructions outlining the exact requirements as to how compliance with Part B of the Wind Turbine Safety Rules is to be achieved.

It is fairly apparent that a Management Instruction should be produced for each of the Wind Turbine Safety Rules Support Procedures P1 to P6. In addition it is considered good practice to produce Management Instructions to cover "Implementation of the Company 'A' Wind Turbine Safety Rules", the purpose being to highlight how Company 'A' wish their Wind Turbine Safety Rules to be implemented, at the very least this should give a detailed explanation of the Company 'A' requirements for every occasion when the term Management Instruction is contained in the text of the Rules. Any Management Instruction produced to cover "Implementation of the Company 'A' Wind Turbine Safety Rules" could be used to specify the requirements for compliance with Part B.

- B1.3 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**.

GUIDANCE ON WTSR B1.3

It is important that Authorised Technicians fully understand the process of Transfer. This understanding should be confirmed by Company 'A' as part of the formal appointment process, (authorisation), required under Wind Turbine Safety Rule Support Procedure P6.

B2 APPROVED WRITTEN PROCEDURES

B2.1 PREPARATION

B2.1.1 Written procedures for all “work packages” will be created by a person with adequate expertise and knowledge of these Rules, the **Plant / LV Apparatus** and the work or testing itself. These written procedures will then be checked and **Approved** by the **Authorising Engineer**, for the relevant Wind Farm, as **Approved Written Procedures**. Each **Approved Written Procedure** shall include appropriate **Signature Checkpoints** at key points for the **Authorised Technician** to confirm that all safety precautions up to that point have been completed correctly.

GUIDANCE ON WTSR B2.1.1

It should be noted that for work or testing under an Approved Written Procedure it will, in almost every case, be necessary to undertake some preliminary operational work or testing under the terms of a Routine Operating Procedure. One clear example of this is where the WTG needs to be selected to “local control” and “shut down” immediately prior to the work or testing under the Approved Written Procedure. In such cases it will not be necessary to apply the requirements of Wind Turbine Safety Rule C4.2 and where appropriate, any safety precautions that would otherwise have been stated on the Routine Operating Procedure should instead be included on the Approved Written Procedure.

It is not sufficient to merely state the hazards associated with the work or testing, the Approved Written Procedure must specify all the positive precautions that need to be taken to achieve Safety From The System. Apart from isolations, additional precautions may include instructions: on the sequence or method of work or testing; on the avoidance of hazards from adjacent Plant and Apparatus; on how to deal with hazardous substances associated with the work or testing; on the wearing of Personal Protective Equipment; on the provision of a standard of ventilation; where any of these are necessary to achieve and maintain Safety From The System.

Reference may also be made to other documents, such as Management Instructions or service manuals, but the documents in question must be available to the Authorised Technician carrying out the work. If copies are not held by the Authorised Technician it may be necessary for copies of such documents to be issued to him/her when the work is planned.

Although it is not absolutely essential for the Authorising Engineer to prepare the Approved Written Procedure in person he/she should be directly involved in the process. It must be clearly understood that the Authorising Engineer is responsible for all aspects associated with achieving Safety From The System, confirmation of his/her satisfaction is implicit within the requirement for every Approved Written Procedure to be formally “Approved”.

Company ‘A’ should specify the details of how the formal “approval” of Approved Written Procedures can be confirmed in an auditable manner. Authorised Technicians, Operational Controllers and Wind Farm Asset Owners should be readily able to confirm that an Approved Written Procedure has been formally “Approved” and determine the name of the Authorising Engineer.

B2.1.2 The **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.

GUIDANCE ON WTSR B2.1.2

Any requirement to obtain a Selected Person's Report must be stated on the Approved Written Procedure. The way in which any additional precautions, highlighted by the Selected Person, are implemented either prior to or during the work or testing should be specified in a Company 'A' Management Instruction.

Consultation between the Authorising Engineer and a Selected Person might be necessary during the preparation of an Approved Written Procedure. It is the responsibility of the Authorising Engineer to ensure that such consultation takes place where the circumstances warrant it, for example where the work or testing involved the use of hazardous substances.

B2.1.3 Where appropriate the **Approved Written Procedure** shall state any requirements to provide **Personal Supervision** and specify the type of person who shall provide it.

GUIDANCE ON WTSR B2.1.3

In certain circumstances, perhaps due to the complexity or specialist nature of the work or testing, the Authorising Engineer may wish to specify requirements for all or part of that work or testing to be given Personal Supervision. In which case the Approved Written Procedure should specify exactly which parts of the work or testing are to be given Personal Supervision and who should provide it.

Any requirement to provide Personal Supervision must be stated on the Approved Written Procedure. If no requirement to provide Personal Supervision is specified on the Approved Written Procedure then the Authorising Engineer is only required to provide Immediate Supervision.

B2.2 IMPLEMENTATION

- B2.2.1 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 Rules shall be used.

GUIDANCE ON WTSR B2.2.1

The Authorising Engineer must ensure that the allowable work or testing is clearly stated on the Approved Written Procedure. The Authorised Technician must ensure that only the specified work or testing is carried out.

A pro-forma showing the recommended layout for Approved Written Procedures is provided as WTSR B5. Company 'A' may decide to modify the layout to suit their own requirements but the wording and sequence of the layout must be retained. For example Company 'A' might wish to add in a section at the front of their Approved Written Procedures to record the details of the approving Authorising Engineer.

- B2.2.2 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**.

GUIDANCE ON WTSR B2.2.2

The intent of WTSR B2.2.2 is to ensure that the Authorised Technician does actually have a copy of the Approved Written Procedure in his/her possession before the start of work or testing. This Approved Written Procedure would normally be a "paper" copy to facilitate signing of Signature Checkpoints, (if Company 'A' wished to implement an "electronic" system for the issue and use of Approved Written Procedures then the detailed requirements must be stated in a Management Instruction).

The detailed requirements of how Company 'A' ensure that Authorised Technicians are issued with a copy of the Approved Written Procedure must be specified in a Management Instruction.

- B2.2.3 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 / LV Apparatus**.

GUIDANCE ON WTSR B2.2.3

It should be noted that for work or testing under an Approved Written Procedure it will, in almost every case, be necessary to undertake some preliminary operational work or testing under the terms of a Routine Operating Procedure. One clear example of this is where the WTG needs to be selected to "local control" and "shut down" immediately prior to the work or testing under the Approved Written Procedure. In such cases it will not be necessary to apply the requirements of Wind Turbine Safety Rule C4.2 and where appropriate, any safety precautions that would otherwise have been stated on the Routine Operating Procedure should instead be included on the Approved Written Procedure.

See also Guidance under WTSR C2.2.

B2.2.4 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. Any **Safety Keys** from locks used to secure isolations shall be personally retained by the **Authorised Technician** in charge of the **Working Party**.

GUIDANCE ON WTSR B2.2.4

The Authorised Technician responsible for the application of safety precautions in accordance with the Approved Written Procedure should complete and sign each Signature Checkpoint. This should not preclude another person physically applying safety precautions under Personal Supervision of the Authorised Technician. The Authorised Technician in these circumstances is still personally responsible for ensuring that the precautions have been taken and are satisfactorily Isolated, Locked and Caution Notices applied, as required, before completing and signing the record.

Envelopes containing Safety Keys or other removable Isolating Devices must be labelled with details of the isolation, the safety precaution they secure, and of the relevant Approved Written Procedure with which they are associated.

Where two or more Approved Written Procedures are to be in force simultaneously on the same Wind Turbine, they should be held by the same Authorised Technician. In addition, any point of isolation that is common to more than one Approved Written Procedure must be secured with a separate safety lock for each Approved Written Procedure and the Safety Keys placed in separate envelopes, labelled as above. This is to minimise the risk of such safety precautions being inadvertently removed at the conclusion of one Approved Written Procedure and endangering personnel still working under the outstanding Approved Written Procedure. The requirements of Rules A7.6 and B2.2.6 must be met at all times.

B2.2.5 An **Approved Written Procedure** shall be implemented, signed at each **Signature Checkpoint**, cleared, cancelled and, where appropriate, transferred by an **Authorised Technician**.

GUIDANCE ON WTSR B2.2.5

It is important that Authorised Technicians fully understand the processes described in WTSR B2.2.5. This understanding should be confirmed by Company 'A' as part of the formal appointment process, (authorisation), required under Wind Turbine Safety Rule Support Procedure P6.

B2.2.6 When an **Approved Written Procedure** is in force for work or testing on any items of **Plant / LV Apparatus** then no other **Approved Written Procedure** shall be implemented on those same items of **Plant / LV Apparatus** at the same time.

GUIDANCE ON WTSR B2.2.6

Company 'A' should provide an interpretation of the meaning of WTSR B2.2.6 in a Management Instruction.

In essence the purpose of this Rule is to ensure that work or testing is not carried out in parallel in circumstances where the safety precautions stated on one Approved Written Procedure would be in conflict with those stated on another. However, in some situations it might be perfectly safe for two jobs to be undertaken in parallel and in which case Company 'A' must set down their criteria, for allowing such parallel work or testing to take place, in a Management Instruction as previously stated.

The one key factor is that no work or testing activity must be carried out in parallel with another if there are conflicting safety precautions or conflicting requirements in the application of these Wind Turbine Safety Rules. Particular care must be exercised in circumstances when an Approved Written Procedure allows the restoration of motive power supplies.

B2.2.7 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 the **Authorising Engineer**. The **Authorising Engineer** shall arrange to prepare a new **Approved Written Procedure** in accordance with rule B2.1 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 B2.3. Work or testing shall then continue by implementing the new **Approved Written Procedure**.

GUIDANCE ON WTSR B2.2.7

The Approved Written Procedure should clearly specify the work or testing that is allowed. The Authorising Engineer must limit the work or testing to that which is specified on the Approved Written Procedure.

Any additional work or testing that might be identified, (during the course of the work or testing specified on the Approved Written Procedure), shall be referred to an Authorising Engineer who shall ensure that a further Approved Written Procedure is produced and Approved to take account of that additional work or testing.

Under such circumstances all work or testing under the original Approved Written Procedure must stop until a new Approved Written Procedure is issued. The original Approved Written Procedure cannot be cancelled until a new Approved Written Procedure is issued to cover both the original and the additional work or testing. Once the safety precautions specified on the new Approved Written Procedure are put in place, and the Signature Checkpoint has been completed by the Authorised Technician, then the original Approved Written Procedure can be cancelled. In these situations the circumstances surrounding the issue of a second Approved Written Procedure should be recorded in the Clearance Section of the original Approved Written Procedure.

B2.2.8 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.

GUIDANCE ON WTSR B2.2.8

Where the Approved Written Procedure identifies a need to obtain a Selected Person's Report then the Authorised Technician must ensure that one is requested prior to the start of work or testing. The Authorised Technician shall obtain a copy of the Selected Person's Report and ensure that they understand and implement the precautions stated on it.

The Authorised Technician must not allow the work or testing to proceed until any additional precautions stated on the Selected Person's Report have been implemented. The exact details of how the requirements from any Selected Person's Report are implemented must be clarified in a Management Instruction. This Management Instruction might indicate a requirement for the Authorised Technician to formally record and sign to confirm that the additional precautions stated on the Selected Person's Report have been implemented.

B2.3 TRANSFER

B2.3.1 Each **Approved Written Procedure** includes a **Transfer Record**. The purpose of the **Transfer 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**.

GUIDANCE ON WTSR B2.3.1

The Transfer procedure is a process which ensures that a written record exists when work or testing under an Approved Written Procedure extends beyond one work period, (e.g. work or testing might stop at the end of one day and resume the next), or when the work or testing is transferred from one Authorised Technician to another. When work is transferred from one Authorised Technician to another then this would normally be carried out face-to-face, however the Transfer process does allow for the Transfer without a face-to-face meeting.

It should be noted that the Transfer process is used whenever work or testing under an Approved Written Procedure is to continue into a new work period even when it is anticipated that the same Authorised Technician will continue that work or testing.

B2.3.2 The **Approved Written Procedure**, together with any associated documents, **Keys** and appropriate items, shall be retained in safe custody 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 1 of the **Transfer Record** shall be completed by the **Authorised Technician**.

GUIDANCE ON WTSR B2.3.2

In addition to providing a written record the Transfer process ensures that an Approved Written Procedure is kept in a safe place whilst no work or testing is actually taking place. The Authorised Technician must not leave the Wind Farm Location without signing Part 1 of the Transfer Record and placing the Approved Written Procedure in safe custody. The means of achieving safe custody for Approved Written Procedures, associated documents, keys and other items must be specified in a Company 'A' Management Instruction but however safe custody is achieved the Approved Written Procedure must remain on site at all times.

B2.3.3 When the work or testing is to be resumed by the same **Authorised Technician** he / she shall first remove the **Approved Written Procedure** from safe custody and complete Part 2 of the **Transfer 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, confirm and initial all **Signature Checkpoints** prior to continuing the work or testing.

GUIDANCE ON WTSR B2.3.3

In cases where the work or testing is to be resumed by the same Authorised Technician then the Transfer Record provides a confirmation of the progress of that work or testing from day to day. In most cases it would be expected that the Authorised Technician would, as a matter of course, confirm the safety precautions prior to resumption of work. However, when the Authorised Technician suspects that a problem might have occurred he would be formally required to record the confirmation, (e.g. he/she might initial against the safety precautions on the Approved Written Procedure to indicate that he/she has confirmed them).

B2.3.4 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 recipient **Authorised Technician** shall sign Part 1 of the **Transfer Record** and the intended recipient shall then sign Part 2. Where a face-to-face transfer is not reasonably practicable the **Authorised Technician** signing Part 2 of the **Transfer Record** shall personally review all of the safety precautions, confirm and initial all **Signature Checkpoints** prior to continuing the work or testing.

GUIDANCE ON WTSR B2.3.4

Whilst the preferred method of Transfer of work or testing from one Authorised Technician to another involves a face-to-face meeting this will not always be possible. Where the face-to-face meeting does not take place the Authorised Technician, signing Part 2 of the Transfer Record, should treat everything with caution and must satisfy him/herself that all safety precautions have been taken, that he/she has control over those points of isolation, (e.g. by taking possession of Safety Keys), and that they fully understand the current circumstances in regard to progress of the work or testing. No Authorised Technician should sign on to the Transfer Record of an Approved Written Procedure where there are any doubts or concerns over matters of safety.

Where no face-to-face Transfer takes place it is a mandatory requirement for the new Authorised Technician to personally review all of the previously applied safety precautions and initial against all Signature Checkpoints to confirm that this has been done.

It is important that any face-to-face meeting associated with the Transfer process includes a thorough review of the Approved Written Procedure and associated safety precautions, the isolations applied, the means of ensuring isolations remain in place, the hand over of keys, documents etc. and an explanation of the progress of the work or testing.

B2.3.5 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** against an appropriate **Signature Checkpoint**. The requirements of Rules B2.3.2; B2.3.3 and B2.3.4 shall be followed as appropriate.

GUIDANCE ON WTSR B2.3.5

If the Authorised Technician needs to temporarily discontinue work or testing for some reason then that requirement should be clearly stated on the Approved Written Procedure. The Authorising Engineer should ensure that an appropriate Signature Checkpoint is included at that point on that Approved Written Procedure.

Examples of where work or testing might need to be temporarily discontinued could be:

- to allow specialist Non Destructive Testing to occur at some point during the work activity to ensure the standard of repairs prior to re-assembly of the Wind Turbine.
- When an item of Plant or Apparatus might need to go off site for repair and where no replacement is immediately available.

B2.3.6 The **Operational Controller** shall be informed at the start and end of each work period of the operational state of the **Plant / LV Apparatus** and shall be immediately informed of the details of any transfers of **Approved Written Procedures** to new **Authorised Technicians**.

GUIDANCE ON WTSR B2.3.6

The Operational Controller should be made aware of the status of Plant and Apparatus at the end of any working period, (e.g. the Authorised Technician should inform the Operation Controller of the progress of any work or testing at the end of each working day and before leaving site). The details of this process should be set down in a Management Instruction which should also contain details of the information that needs to be recorded. At the very least Company 'A' should require that Authorised Technicians inform Operational Controllers of their presence on and off site at the beginning and end of the working day.

It will not be possible to enact a formal Transfer Of Control in these circumstances because the Approved Written Procedure cannot be cleared and cancelled and the WTG cannot be returned to "normal operation".

In circumstances when the work or testing is to be discontinued by one Authorised Technician and continued by another then it will be necessary to immediately inform the Operational Controller such that the Transfer Of Control process can be enacted with the new Authorised Technician.

B2.4 CLEARANCE AND CANCELLATION

B2.4.1 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 **LV 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.

GUIDANCE ON WTSR B2.4.1

The Authorised Technician signing the Clearance Signature Checkpoint must be the current recipient. If the work or testing has extended beyond one working day then Section 2 of the Transfer Record must be completed before the Authorised Technician can sign the Clearance Signature Checkpoint.

In signing the Clearance Signature Checkpoint the Authorised Technician is in effect making a declaration as to whether the work or testing is complete and whether the Wind Turbine is in a state such that it can be returned to its normal operational condition or whether there are any restrictions to normal operation. In the case of the former, (i.e. all work or testing complete and no restrictions to normal operation), then the Authorised Technician should record “N/A” or “NIL” in the allocated space above his/her signature. If the work or testing is not complete or there are restrictions to returning the Wind Turbine to its normal operational condition then the Authorised Technician should record the exact details in the allocated space above his/her signature.

It should be noted that in certain circumstances, such as routine servicing, the overall work programme can often be split down into a number of discreet packages. At the end of each of these discreet packages the Wind Turbine status is often such that it can be safely returned to normal operation. Having reached such a stage in the overall work programme the Authorised Technician can complete the Clearance Signature Checkpoint by recording the status of the job and making a clear statement that the Wind Turbine is in a safe condition to be returned to normal operation. The requirements of Rule B2.4.2 can now be met.

In the circumstances described in the paragraph above the work or testing can only be resumed when the requirements of a new Approved Written Procedure are applied in order to complete the remainder of the work programme. See also Guidance on Philosophy 2.6.

B2.4.2 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.

GUIDANCE ON WTSR B2.4.2

In addition to ensuring that all items are accounted for the Authorised Technician must also take account of any information recorded in the Clearance section of the Approved Written Procedure before completing the Cancellation Signature Checkpoint. If there are any restrictions to the operational condition of the Wind Turbine then the Authorised Technician must inform the Operational Controller of the details.

If the Authorised Technician believes that there are circumstances where the return of a Wind Turbine to its operational condition could present a Danger to persons then he/she should not sign the Cancellation Signature Checkpoint or de-isolate or remove the safety precautions. The Authorising Engineer and Operational Controller should be informed of the circumstances.

The Authorised Technician must only sign the Cancellation Signature Checkpoint of the Approved Written Procedure if he/she is entirely satisfied that any remaining points of isolation can be safely removed.

B2.4.3 The **Authorised Technician** shall then enact the **Transfer Of Control** procedure to return **Operational Control** of the Wind Turbine Generator **Plant** and/or **LV 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 **LV Apparatus**.

GUIDANCE ON WTSR B2.4.3

Once the WTG is fully operational then the Authorised Technician must enact the Transfer Of Control procedure with the Operational Controller. Any relevant information concerning the Approved Written Procedure, the operational status of the WTG etc. must be passed to the Operational Controller.

It should be noted that on completion of work or testing under an Approved Written Procedure it will, in almost every case, be necessary to undertake some final operational work or testing under the terms of a Routine Operating Procedure. One clear example of this is where the WTG needs to be returned to service following “start up”, immediately after Cancellation of the Approved Written Procedure and following removal of all remaining points of isolation. In such cases it will not be necessary to apply the requirements of Wind Turbine Safety Rule C4.2 and where appropriate, any safety precautions that would otherwise have been stated on the Routine Operating Procedure should instead be included on the Approved Written Procedure.

B2.4.4 The completed **Approved Written Procedure** together with any **Selected Person’s** Report and other associated documents shall be retained in accordance with **Management Instructions**.

GUIDANCE ON WTSR B2.4.4

Company ‘A’ must produce a Management Instruction to specify how and for what time period the completed Approved Written Procedure, and associated documents, should be retained. In making this judgement due consideration should be given to the Limitations Act 1980.

B3 ROUTINE OPERATING PROCEDURES

B3.1 **Routine Operating Procedures**, for operational work or testing, shall only be used with the full knowledge and agreement of Company ‘A’.

GUIDANCE ON WTSR B3.1

Company ‘A’ must only allow operational work or testing to take place under a Routine Operating Procedure with their full knowledge and agreement.

Company ‘A’ should specify the exact requirements for an Authorising Engineer to agree that an Approved Written Procedure is not required. See Guidance on WTSR C3.2.

Only when they are completely satisfied that all reasonable steps have been taken to ensure that the operational work or testing can be undertaken safely without an Approved Written Procedure should Company 'A' give their agreement to the use of a Routine Operating Procedure. The point of concern here is that work or testing might be carried out under a Routine Operating Procedure when it would be inappropriate to do so.

It should be noted that for work or testing under an Approved Written Procedure it will, in almost every case, be necessary to undertake some preliminary operational work or testing under the terms of a Routine Operating Procedure. One clear example of this is where the WTG needs to be selected to "local control" and "shut down" immediately prior to the work or testing under the Approved Written Procedure. In such cases it will not be necessary to apply the requirements of Wind Turbine Safety Rule C4.2 and where appropriate, any safety precautions that would otherwise have been stated on the Routine Operating Procedure should instead be included on the Approved Written Procedure.

A similar process to that described in the paragraph above will be applied following Cancellation of an Approved Written Procedure and removal of remaining safety precautions when the WTG is returned to service following "start up".

B3.2 An **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**.

GUIDANCE ON WTSR B3.2

See Guidance on WTSR C3.2.

B3.3 The form of any **Routine Operating Procedure** shall be determined by Company 'A' and detailed in a **Management Instruction**.

GUIDANCE ON WTSR B3.3

The interpretation of the requirement for a Routine Operating Procedure to be "written" must be decided by Company 'A' and the details highlighted in a Management Instruction.

The pro-forma to be used by Company 'A' for any bespoke Routine Operating Procedure should be included in a Management Instruction.

See also the Guidance for Definition D22 – Routine Operating Procedure.

B3.4 Operational work or testing under a **Routine Operating Procedure** shall only take place with consent from the **Operational Controller**.

GUIDANCE ON WTSR B3.4

It should be noted that for work or testing under an Approved Written Procedure it will, in almost every case, be necessary to undertake some preliminary operational work or testing under the terms of a Routine Operating Procedure. One clear example of this is where the WTG needs to be selected to “local control” and “shut down” immediately prior to the work or testing under the Approved Written Procedure. In such cases it will not be necessary to apply the requirements of Wind Turbine Safety Rule C4.2 and where appropriate, any safety precautions that would otherwise have been stated on the Routine Operating Procedure should instead be included on the Approved Written Procedure.

A similar process to that described in the paragraph above will be applied following Cancellation of an Approved Written Procedure and removal of remaining safety precautions when the WTG is returned to service following “start up”.

In both of the cases specified above the Transfer Of Control process under the Approved Written Procedure will satisfy the requirements of WTSR B3.4

See Guidance on WTSR C4.2

B4 LOSS OF SAFETY KEY / APPROVED WRITTEN PROCEDURE OR ABSENCE OF AN AUTHORISED TECHNICIAN

B4.1 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**.

GUIDANCE ON WTSR B4.1

Normally these Management Instructions would constitute an Approved procedure as defined under General Provision 3 (GP3) of the Wind Turbine Safety Rules, (see also Wind Turbine Safety Rules Support Procedure P1). Any of the circumstance described in Rule B4.1 will mean that the requirements of Part B of the Wind Turbine Safety Rules cannot be met and therefore an Approved GP3 procedure must be produced.

B5 EXAMPLE OF AN APPROVED WRITTEN PROCEDURE PRO-FORMA

GUIDANCE ON WTSR B5

See Addendum B1 and B2.

COMPANY 'A'	WIND TURBINE SAFETY RULES		AWP No.
	APPROVED WRITTEN PROCEDURE		

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:	
1.5	Date Of Work:	

2.0 Transfer Of Control (Release):

Step	Detail		
2.1	Time:	Operational Controller	Print Name:
2.2	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:						
3.?	Precautions: I certify that the precautions listed in steps 3.1 to 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. Signature Checkpoint: Time: Date:						
3.?							
3.?							
3.?	Restoration of Motive Power Supplies: * The following motive power supplies may be restored: For the following essential work / testing:						
	Remove						
	Re-apply						
3.?							
3.?	End of Work / Testing						

3.?	Clearance: 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.
	All gear, tools and loose equipment have been removed.
	All guards, covers and access doors have been replaced.
	The Wind Turbine Generator is in a safe condition to be returned to service.
	Except for the following limitations or restrictions:**
Signature Checkpoint: Time: Date:	

4.0 Return To Service:

Step	Operation
4.1	Cancellation: 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. Signature Checkpoint: Time: Date:
4.2	POI Removal:

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 AWP is now cancelled and all Points of Isolation have been removed. I have confirmed any limitations or restrictions on returning the Plant / Apparatus to its normal operational condition. Signature Checkpoint: Time: Date:

6.0 Transfer Record:

Part 1			Part 2	
Authorised Technician surrendering this AWP	Time / Date	Comments: Indicate the point in the work / testing programme reached	Authorised Technician receiving this AWP	Time / Date

* Delete this Step if Not Applicable

** Record N/A or NIL if Not Applicable

ADDENDUM B1

COMPANY 'A' WIND TURBINE SAFETY RULES

Guidance on Completion of Approved Written Procedures

1 GENERAL CONSIDERATIONS

1.1 Legibility

The details entered on any Approved Written Procedure must be clear and legible.

1.2 Abbreviations

Any use of abbreviations must be restricted to those which are Approved by Company 'A' and listed in a Management Instruction.

1.3 Plant and Apparatus Identification

The Authorising Engineer, before approving any Written Procedure, must ensure that there is no inconsistency between the identification recorded on the Written Procedure and that appearing on the Plant / Apparatus itself.

The Authorised Technician, implementing the requirements of an Approved Written Procedure, must verify that there is no inconsistency between the identification recorded on the Approved Written Procedure and that appearing on the Plant / Apparatus itself.

1.4 Correctness of Entries

The Authorising Engineer, before approving any Written Procedure, must ensure that all the requirements of the Wind Turbine Safety Rules have been met, in particular the Authorising Engineer must, as part of the checks required under Rule B2.1.1 and enacting his duties under Rule C3, ensure that all entries are correct.

The Authorised Technician, implementing the requirements of an Approved Written Procedure, must fulfil the precise requirements of each section and indicate that all instructions have been carried out correctly before signing to confirm at each Signature Checkpoint. In the Clearance section, the full details of any exceptions are required or 'N/A' or 'NIL' must be recorded as appropriate, (see guidance under Rule B2.4.1).

1.5 Additions and Alterations

In implementing the requirements of an Approved Written Procedure the Authorised Technician is not allowed to change or alter those requirements or implement any additional requirements. If the Authorised Technician has any concerns over the contents of the Approved Written Procedure, the General Provision 4 procedure for 'Objections on Safety Grounds' should be followed.

In any section of an Approved Written Procedure where information is completed by the Authorised Technician, a line should be drawn through the remaining blank spaces prior to the relevant Signature Checkpoint being signed, to prevent unauthorised "additions" being subsequently entered.

In the event that the Authorised Technician makes a mistake when completing an entry on an Approved Written Procedure then he or she should simply cross out the incorrect entry, initial and date against the crossing out and then proceed to enter the correct wording. The Authorised Technician should never attempt to "overwrite" incorrect entries or use correction fluid.

In accordance with Rule B2.2.8, the Authorised Technician is required to implement any additional precautions stated on any Selected Person's Report before allowing the work or testing to proceed. The details of how this requirement is to be met must be outlined in Management Instructions. See also Guidance on WTSR 2.2.8.

1.6 Numbering

The Authorising Engineer should give each Written Procedure a unique number at the time when it is Approved. The details of the numbering system to be used for each Wind Farm Location should be specified in a Management Instruction.

1.7 Use of Continuation Sheets

If the space available in any section of the Approved Written Procedure is insufficient to record the information required, a continuation sheet may be used. A continuation sheet should be identified as belonging with its associated Approved Written Procedure, be completed and signed by the Authorised Technician, and be physically attached to that Approved Written Procedure.

1.8 Safety Keys associated with Approved Written Procedures

Safety Keys and/or other removable Isolating Devices, associated with Approved Written Procedures, should be retained in safe custody in line with a Management Instruction.

1.9 Completion by Persons under Training

Where Written Procedures are prepared by persons training to become Authorising Engineers, as part of a training exercise, safeguards should be specified in Management Instructions to ensure that these training documents cannot be mistaken for Approved Written Procedures.

The final stages of training for an Authorised Technician may allow for that individual to complete sections of Approved Written Procedures under the Personal Supervision of the Authorised Technician responsible for the training of that person. It must be emphasised, however, that the responsibility for signing any Signature Checkpoint remains with the Authorised Technician and only he / she must sign it.

ADDENDUM B2

GUIDANCE FOR COMPLETION OF APPROVED WRITTEN PROCEDURE DOCUMENTS

Advice for the completion of all sections of an AWP is given on the following pages.

COMPANY IDENTIFICATION / LOGO.	COMPANY 'A'	WIND TURBINE SAFETY RULES APPROVED WRITTEN PROCEDURE	AWP No.	UNIQUE REFERENCE NUMBER SPECIFIC TO THE WIND FARM LOCATION.
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IDENTIFICATION OF THE PARTS TO BE WORKED ON (E.G. GEARBOX; GENERATOR; HYDRAULIC OIL SYSTEM).

E.G. WORK INSTRUCTIONS: METHOD STATEMENTS: RISK ASSESSMENTS.

1.0 Work Details:

Step	Detail	WTG No.
1.1	Wind Farm Location:	
1.2	Plant / Apparatus Identification:	
1.3	Work / Testing To Be Done:	
1.4	Associated Documents:	
1.5	Date Of Work:	

UNIQUE IDENTIFICATION OF WIND TURBINE TO BE WORKED ON.

DETAIL OF THE WORK OR TESTING TO BE DONE (E.G. REMOVE / REPLACE GEARBOX: REMOVE / REPLACE YAW MOTOR).

THE AUTHORISED TECHNICIAN MUST OBTAIN TRANSFER OF CONTROL FROM THE OPERATIONAL CONTROLLER BEFORE ANY OF THE CONDITIONS STATED IN SECTION 3 CAN BE IMPLEMENTED.

2.0 Transfer Of Control (Release):

Step	Detail
2.1	<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;">Time:</div> <div style="width: 30%;">Operational Controller</div> <div style="width: 35%;">Print Name:</div> </div>
2.2	<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;">Authorised Technician</div> <div style="width: 40%;">Print Name:</div> </div>

NAME OF OPERATIONAL CONTROLLER WHO ENACTS THE TRANSFER OF CONTROL TO THE AUTHORISED TECHNICIAN.

CLEARLY AND UNAMBIGUOUSLY RECORD ALL POINTS OF ISOLATION THAT MUST BE APPLIED .

PRECAUTIONS SIGNATURE CHECKPOINT MUST FOLLOW EACH SEQUENCE OF STEPS PRECEDING IT TO IMPLEMENT SAFETY PRECAUTIONS. THE AUTHORISED TECHNICIAN MUST SIGN; TIME AND DATE THE SIGNATURE CHECKPOINT.

3.0 Establish Safety Precautions:

Step	Operation																
3.1	Establish Local Control of the Wind Turbine																
3.2	Establish General Safety																
3.?	<div style="border: 1px solid black; padding: 2px;"> INSERT NUMBER DEPENDANT ON THE NUMBER OF STEPS PRECEDING THIS BOX. </div>																
3.?	POI Application:																
3.?	Precautions: I certify that the precautions listed in steps 3.1 to 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. Signature Checkpoint: Time: Date:																
3.?																	
3.?																	
3.?	Restoration of Motive Power Supplies: * The following motive power supplies may be restored: For the following essential work / testing: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 15%;">Remove</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td>Re-apply</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Remove								Re-apply							
Remove																	
Re-apply																	
3.?																	
3.?																	
3.?	End of Work / Testing																

ADD STEPS AND NUMBER ACCORDINGLY. EACH STEP LEADING UP TO THE POINT OF ISOLATION MUST BE DESCRIBED CLEARLY AND UNAMBIGUOUSLY.

DEPENDING ON THE SEQUENCE OF WORK THERE MAY BE ONE OR MORE SECTIONS OF POI APPLICATIONS FOLLOWED BY A PRECAUTIONS SIGNATURE CHECKPOINT.

A RESTORATION OF MOTIVE POWER SUPPLIES SECTION MIGHT BE NEEDED ON ONE OR MORE OCCASIONS DEPENDING ON THE SEQUENCE OF WORK / TESTING. IF NO RESTORATION OF MOTIVE POWER IS REQUIRED THEN THIS SECTION SHOULD BE DELETED OR OMITTED FROM THE AWP.

DETAILS OF THE POWER SUPPLIES THAT CAN BE RESTORED AND THE REASONS, (E.G. DETAIL OF THE WORK / TESTING – WHICH COULD REFER TO A WORK INSTRUCTION OR METHOD STATEMENT QUOTED IN SECTION 1.4), SHOULD BE RECORDED. THE SAFETY PRECAUTIONS NEEDED TO MAINTAIN SAFETY FROM THE SYSTEM DURING PERIODS OF RESTORATION OF MOTIVE POWER MUST ALSO BE INCLUDED. THE AUTHORISED TECHNICIAN SHOULD INITIAL IN THE APPROPRIATE BOX ON EVERY OCCASION THAT ISOLATIONS ARE REMOVED AND RE-APPLIED.

THE LAST ENTRY IN SECTION 3 OF THE AWP MUST BE TO CONFIRM THAT ALL WORK / TESTING HAS COME TO AN END.

WHEN WORK OR TESTING UNDER THE AWP IS COMPLETED, (OR IS BEING DISCONTINUED), THEN THE AUTHORISED TECHNICIAN MUST COMPLETE A 'CLEARANCE' SIGNATURE CHECKPOINT. IF THERE ARE ANY REASONS WHY THE WIND TURBINE CANNOT BE RETURNED TO ITS FULL OPERATIONAL CONDITION THEN THEY SHOULD BE RECORDED IN BLOCK CAPITALS UNDER EXCEPTIONS. IF THE WIND TURBINE CAN BE RETURNED TO ITS FULL OPERATIONAL CONDITION THEN N/A OR NIL MUST BE RECORDED UNDER EXCEPTIONS.

3.?	Clearance: 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.
	All gear, tools and loose equipment have been removed.
	All guards, covers and access doors have been replaced.
	The Wind Turbine Generator is in a safe condition to be returned to service.
	Except for the following limitations or restrictions:**
Signature Checkpoint: Time: Date:	

4.0 Return To Service:

THE AUTHORISED TECHNICIAN MUST COMPLETE A 'CANCELLATION' SECTION TO CONFIRM THAT ALL WORK / TESTING UNDER THE AWP HAS BEEN COMPLETED AND, TAKING INTO ACCOUNT ANY EXCEPTIONS RECORDED IN THE 'CLEARANCE' SECTION, CONFIRM THAT IT IS SAFE TO REMOVE ALL REMAINING POINTS OF ISOLATION. THE WIND TURBINE WILL THEN BE DE-ISOLATED AND RETURNED TO SERVICE. THE OPERATIONAL CONTROLLER WILL THEN BE INFORMED.

Step	Operation
4.1	Cancellation: 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. Signature Checkpoint: Time: Date:
4.2	POI Removal:

THE APPROVED WRITTEN PROCEDURE SHOULD SPECIFY THE REMAINING POINTS OF ISOLATION THAT CAN NOW BE REMOVED. ANY REQUIREMENTS AS TO THE SEQUENCE OR THE ORDER OF REMOVAL MUST BE SPECIFIED

5.0 Transfer Of Control (Return):

THE AUTHORISED TECHNICIAN MUST TRANSFER OPERATIONAL CONTROL OF THE WIND TURBINE BACK TO THE OPERATIONAL CONTROLLER ON COMPLETION (OR DISCONTINUATION) OF THE WORK / TESTING AND INFORM HIM / HER OF ANY RESTRICTIONS TO THE NORMAL OPERATING CONDITION.

Step	Detail
5.1	I have informed the Operational Controller (PRINT NAME) that the work or testing is complete, this AWP is now cancelled and all Points of Isolation have been removed. I have confirmed any limitations or restrictions on returning the Plant / Apparatus to its normal operational condition. Signature Checkpoint: Time: Date:

6.0 Transfer Record:

EACH AWP MUST INCLUDE A 'TRANSFER RECORD' SECTION WITH AT LEAST THREE BLANK LINES, (ALLOWING THREE TRANSFERS TO BE RECORDED). MORE COMPLEX AWPS, WHERE THE WORK / TESTING IS CARRIED OUT OVER SEVERAL WORK PERIODS MUST INCLUDE SUFFICIENT BLANK LINES TO ENABLE ALL TRANSFERS TO BE RECORDED.

THE AUTHORISED TECHNICIAN SURRENDERING THE AWP AT THE END OF EACH PERIOD OF WORK / TESTING MUST RECORD SUFFICIENT INFORMATION TO INDICATE THE PROGRESS OF THE PROGRAMME OF WORK / TESTING THAT HAS BEEN COMPLETED.

Part 1			Part 2	
Authorised Technician surrendering this AWP	Time / Date	Comments: Indicate the point in the work / testing programme reached	Authorised Technician receiving this AWP	Time / Date

THE RECEIVING AUTHORISED TECHNICIAN MUST ENTER HIS / HER NAME IN BLOCK CAPITALS AND THEN SIGN; TIME AND DATE PART 2 OF THE 'TRANSFER RECORD'.

* Delete this Step if Not Applicable
** Record N/A or NIL if Not Applicable

EACH PAGE OF THE AWP MUST INCLUDE THE PAGE NUMBER AND THE NUMBER OF PAGES.

PART C RESPONSIBILITIES OF PERSONS

C1 GENERAL

C1.1 It is the duty of all **Persons** who may be concerned with work or testing on **Plant** and **LV Apparatus** to which these Wind Turbine Safety Rules apply to implement the Rules and have regard to the supporting mandatory and guidance documents.

GUIDANCE ON WTSR C1.1

As stated, all Persons who are Appointed to undertake duties under the Wind Turbine Safety Rules must carry out their duties diligently. In addition to the Rules themselves the requirements specified under Company 'A' Management Instructions must be met.

Company 'A' must ensure that Persons are made aware of their duties and responsibilities, (e.g. proper training and supervision). Correct implementation of the Rules should be monitored through suitable audit programmes.

C1.2 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.

GUIDANCE ON WTSR C1.2

Any individual may be Appointed for as many or as few responsibilities under the Rules as dictated by Company 'A' when following their Management Instruction to take account of Wind Turbine Safety Rules Support Procedure P6. Company 'A' must implement steps to ensure that Persons being Appointed are competent to undertake the duties concerned.

It is possible for an individual to have an extremely limited appointment under the Rules but they must still be competent to undertake those designated duties and be absolutely clear about what they are allowed to do and what they are not allowed to do.

C1.3 The written Certificate of Authorisation or Nomination given to **Persons** included in Part C of the Rules shall indicate the extent of their role in implementing the Safety Rules.

GUIDANCE ON WTSR C1.3

All Persons with designated responsibilities under the Wind Turbine Safety Rules should be formally Appointed in writing before undertaking any of those duties.

Procedures for the formal appointment of Persons should be in accordance with Company 'A' Management Instructions to take account of Wind Turbine Safety Rules Support Procedure P6.

It is of fundamental importance that the written certificate of appointment clearly states what the individual concerned is allowed to do and lists any restrictions, exclusions or limitations. For example, no person must be allowed to undertake any work or testing in connection with WTSR A3.12(viii); A3.13(i) and/or A7.6 unless they have been specifically Appointed in writing to do so.

C1.4 **Persons** involved in achieving **Safety From The System** to allow work or testing to commence on **Plant** and **LV Apparatus**, and its subsequent restoration to service, will be concerned in separate identifiable areas of responsibility. Broadly these are:

(i) 'Safety Co-ordination' - which includes:

- before work or testing commences, a formal release of **Plant** / **LV 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** / **LV Apparatus** after confirming any limitations or restrictions and cancellation of the written procedure.

(ii) 'Making Safe/Restoration of **Plant** and **LV Apparatus**' - which includes:

- before each phase of the work or testing commences, taking actions to make **Plant** and **LV 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 **LV Apparatus** to an operational condition, record any limitations or restrictions, remove safety precautions to restore the **Plant** and **LV 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.

C2 AUTHORISED TECHNICIANS

C2.1 **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.

GUIDANCE ON WTSR C2.1

At each Wind Farm Location, a list of Authorised Technicians showing the responsibilities for which they are nominated should be produced. In order that an Authorised Technician can carry out work or testing under a particular Approved Written Procedure, he / she **MUST** also be technically competent to perform that work or testing. In order that this can be demonstrated that individual should be nominated, in writing, as a Competent Technician.

The appointment of Persons to undertake duties as Authorised Technicians does not remove from them, or from any other persons, any responsibilities they may have for general supervisory or managerial duties.

With respect to contractor's staff:

- it is the contractor's responsibility to make recommendations to Company 'A' of suitable Persons for appointment as Competent Technicians, (with a request for any of those Persons to be subsequently Appointed as Authorised Technicians, taking into account whether those individuals have sufficient technical knowledge and/or experience to be able to carry out the contract work or testing safely under an Approved Written Procedure);
- the contractor should provide any information and any evidence of training, qualifications, skills and competency as might reasonably be requested by Company 'A';
- it is the responsibility of the appropriate Manager of Company 'A' to assess and confirm the basis of any recommendations from the contractor to a standard deemed to be acceptable to Company 'A', (these standards should be stipulated in a Company 'A' Management Instruction);
- once satisfied that the request made by the contractor meets the Company 'A' standards then the appropriate Company 'A' Manager should ensure that these recommended contractor's staff are made familiar with the relevant sections of the Wind Turbine Safety Rules and associated local procedures / Management Instructions and make necessary arrangements for their formal appointment under the requirements of Wind Turbine Safety Rules Procedure P6. (R. v Swan Hunter Shipbuilders Ltd. and Telemeter Installations Ltd. [1981] refers).

C2.1.1 **Authorised Technicians** shall comply with these Safety Rules when carrying out work or testing under an **Approved Written Procedure**.

GUIDANCE ON WTSR C2.1.1

Once appointed it is the responsibility of the Authorised Technician to comply with the requirements of the Company 'A' Wind Turbine Safety Rules. However, Company 'A' and/or the Wind Farm Asset Owner should establish an adequate support process through normal management functions, (e.g. work management / planning; Transfer Of Control; instruction / supervision; monitoring / audit; refresher training;).

C2.1.2 **Authorised Technicians** shall use safe methods of work or testing, safe means of access and Personal Protective Equipment, which is provided for their safety.

GUIDANCE ON WTSR C2.1.2

The Authorised Technician must ensure that both he/she and all other Persons in the Working Party follow all of the Company 'A' requirements for General Safety.

C2.1.3 **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**;

GUIDANCE ON WTSR C2.1.3(i)

The Authorised Technician must ensure that he/she clearly understands everything in relation to the Approved Written Procedure. If the Authorised Technician is in any doubt then he/she must not proceed with the work or testing.

If the Approved Written Procedure requires a Selected Person's Report to be obtained then the Authorised Technician must not proceed with the work or testing until the appropriate document is available. The requirements stated in any Selected Person's Report must be implemented by the Authorised Technician in line with Company 'A' 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**.

GUIDANCE ON WTSR C2.1.3(ii)

The Authorised Technician must ensure that both he/she and all members of the Working Party follow all the requirements specified on the Approved Written Procedure, (and any requirements of a Selected Persons Report where applicable). The Authorised Technician must work within all specified limits and must never exceed the work or testing stated on the Approved Written Procedure.

C2.2 Prior to commencing work or testing and upon completion of work or testing the **Authorised Technician** shall carry out the 'Transfer Of Control' process as follows:

GUIDANCE ON WTSR C2.2

The Transfer of Control process is pivotal in ensuring that Company 'A' and/or the Wind Farm Asset Owner can demonstrate that it exercises managerial control over its Wind Farm Locations. Due to its potential complexity the exact details of how Transfer Of Control is to be enacted should be detailed in Management Instructions.

- i. On arrival at the Wind Farm **Location**, the **Authorised Technician** shall contact the **Operational Controller** and report the presence of the **Working Party** on site, giving their name & the names of all other persons in the **Working Party**, the reason for the visit and the approximate duration of the stay;

GUIDANCE ON WTSR C2.2(i)

The Authorised Technician must report his/her presence on site to the Operational Controller at the earliest possible opportunity. Company 'A' must ensure that adequate communication links are available between the Operational Controller and each Wind Farm Location.

- ii. The **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 relevant **Authorising Engineer**;

GUIDANCE ON WTSR C2.2(ii)

Company 'A' must put in place a suitably robust system such that the Operational Controller can confirm that the Approved Written Procedure is valid. This process might be linked to a suitable work management / control system.

If the Operational Controller is not satisfied that the work or testing will be carried out under a valid Approved Written Procedure then Transfer Of Control must not take place.

- iii. On confirmation of a valid **Approved Written Procedure**, the **Authorised Technician** shall request **Transfer of Control**, i.e. that the Wind Turbine(s) be released into his/her **Operational Control**. The **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**;

GUIDANCE ON WTSR C2.2(iii)

Once the Approved Written Procedure has been validated, to a standard acceptable to Company 'A', then the Operational Controller can agree to Transfer Of Control. The details to be recorded should be formal, (the exact nature of what details and how the information is to be recorded must be outlined in a Management Instruction).

The Authorised Technician must complete Section 2 "Transfer Of Control (Release)" on the Approved Written Procedure.

- iv. On completion of the work or testing described in the **Approved Written Procedure**, the **Authorised Technician** shall warn all members of the **Working Party** to withdraw from and & not to return to the work area, and clear / cancel the **Approved Written Procedure**;

GUIDANCE ON WTSR C2.2(iv)

The Authorised Technician must confirm that all work or testing detailed on the Approved Written Procedure is complete. All members of the Working Party must be informed of this fact by the Authorised Technician.

The Authorised Technician Must then complete the Clearance and Cancellation sections of the Approved Written Procedure and return the WTG to it normal operating condition.

- v. The **Authorised Technician** shall then inform the **Operational Controller** of the completion of the work or testing, together with any limitations / restrictions on the **Plant / 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**;

GUIDANCE ON WTSR C2.2(v)

When satisfied that the WTG is operating normally then the Authorised Technician must enact Transfer Of Control with the Operational Controller. All relevant information must be given by the Authorised Technician to the Operational Controller, (the exact nature of what details and how the information is to be recorded must be outlined in a Management Instruction). The Authorised Technician must inform the Operational Controller of any restrictions or limitations to the operational condition of the WTG.

The Authorised Technician must complete Section 5 “Transfer Of Control (Return)” on the Approved Written Procedure.

- 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 **Authorised Technician** shall then carry out the requirements of step (v) for all of the completed **Approved Written Procedures**.

GUIDANCE ON WTSR C2.2(vi)

In circumstances where the Authorised Technician is to undertake several jobs on one WTG under several different Approved Written Procedures then the Operational Controller might be requested to enact a single Transfer Of Control for all of the proposed work or testing. If this is agreed then the Authorised Technician must complete all of the work or testing under the first Approved Written Procedure before moving on to the next.

On completion of the first job the Clearance Section of the associated Approved Written Procedure must be completed and the Authorised Technician must record, as an exception, the fact that further work is to continue under the next Approved Written Procedure. The Cancellation Section of the first Approved Written Procedure may then be completed and the Authorised Technician must decide whether to deisolate any remaining Points of Isolation or retain the Safety Keys for the work or testing under the next Approved Written Procedure. Work may now continue under the next Approved Written Procedure.

When work or testing under the last Approved Written Procedure is complete then the Authorised Technician must complete the Clearance and Cancellation Sections and must now remove all remaining Points of Isolation and return the WTG to its normal operating condition. The Authorised Technician must now enact Transfer Of Control with the Operational Controller, see WTSR C2.2(v).

At this point the Authorised Technician must complete Section 5 “Transfer Of Control (Return)” on all of the Approved Written Procedures worked under.

C2.3 Following **Transfer Of Control** the **Authorised Technician** is then responsible for the release of **Plant / 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 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 **Authorised Technicians** to carry out the necessary operations to establish safety precautions which achieve **Safety From The System** under an **Approved Written Procedure** for **LV Apparatus** or **Plant**, and obtaining confirmation that each instruction has been carried out;

- (iv) setting the **Working Party** to work.

GUIDANCE ON WTSR C2.3(i) to (iv)

Company 'A' must produce Management Instructions to outline how they wish the requirements of WTSR C2.3 to be met.

Once the Authorised Technician has formally enacted the Transfer Of Control procedure he / she is then responsible for that Wind Turbine. It is the Authorised Technician who subsequently implements the requirements under the Approved Written Procedure and agrees when the work or testing can start with other members of the Working Party. It is only possible for one Authorised Technician to implement the requirements of an Approved Written Procedure, if the Working Party consists of two or more Authorised Technicians then they must agree, in advance, which of them is to be responsible for the work / testing. Whichever Authorised Technician subsequently signs the Signature Checkpoints is deemed to be responsible. The responsible Authorised Technician can instruct other Authorised Technicians as per Rule C2.3(iii).

The process of setting the Working Party to work will include giving instructions in relation to the Approved Written Procedure and General Safety. In addition the Authorised Technician must ensure that everyone knows exactly what their job is and what is expected of them.

The Authorised Technician must not allow any of the work or testing to start until all of the safety precautions stated on the Approved Written Procedure are in place to his/her satisfaction and the appropriate Signature Checkpoint(s) have been completed.

C2.4 The **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;

GUIDANCE ON WTSR C2.4(i)

The Management Instruction referred to in this Rule should outline the details of Company 'A' requirements to achieve safe custody.

- (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 **Authorised Technician** understand the conditions, instructions or limits specified on the **Approved Written Procedure**;

GUIDANCE ON WTSR C2.4(ii)

Any requirement to provide Personal Supervision must be stated on the Approved Written Procedure. If no requirement to provide Personal Supervision is specified on the Approved Written Procedure then the Authorising Engineer is only required to provide Immediate Supervision. See also WTSR B2.1.3.

When providing Immediate Supervision the Authorised Technician may leave the Working Party, providing he/she remains at the Wind Farm Location, but only if he/she decides that it is safe to do so. The Authorised Technician must then decide at what points in the work or testing, or after what interval of time they then return to the Working Party to provide Personal Supervision.

- (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 **Authorising Engineer**. The **Authorising Engineer** shall take steps to remove hazards that could give rise to **Danger**, where necessary by producing a new **Approved Written Procedure**.

GUIDANCE ON WTSR C2.4(iii)

During the course of the work or testing if any hazard arises that was unforeseen the job must immediately cease. The Authorised Technician must ensure that all Persons are warned to stop work or testing and if necessary removed from the immediate area. The Authorised Technician must then ensure that the Operational Controller and the Authorising Engineer are immediately informed. The Authorising Engineer must then decide upon an appropriate course to action which avoids Danger to Persons.

C2.5 When participating in the procedure for the Transfer of an **Approved Written Procedure**, ensuring that:

GUIDANCE ON WTSR C2.5

Company 'A' should give strong consideration to providing further guidance on the application of WTSR C2.5 by giving more details in a Management Instruction. See WTSR B1.2.

- (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; that all associated documents, **Keys** and other items are accounted for and then completing Part 1 of the **Transfer Record** before placing it in safe custody in line with **Management Instructions**;

GUIDANCE ON WTSR C2.5(i)

If at the end of any period of work or testing the job is not complete then the Authorised Technician must ensure that all members of the Working Party are informed that they must stop what they are doing and leave the area. The Authorised Technician should ensure that the work area is left in a clean and tidy condition and then complete Part 1 of the Transfer Record. The Authorised Technician must then place the Approved Written Procedure in safe custody by following Company 'A' 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; that all associated documents, **Keys** and other items are accounted for and then completing Part 1 of the **Transfer Record** before transferring it face-to-face to a new **Authorised Technician**;

GUIDANCE ON WTSR C2.5(ii)

If the Authorised Technician in charge of the Working Party wishes to leave site then the Approved Written Procedure must first be transferred to another Authorised Technician. All members of the Working Party should be informed that they must stop what they are doing and of the reason for the Transfer to the new Authorised Technician. The first Authorised Technician must then complete Part 1 of the Transfer Record and discuss the work or testing with the intended recipient.

- (iii) when resuming work or testing under an **Approved Written Procedure** as the original recipient completing Part 2 of the **Transfer Record**;

GUIDANCE ON WTSR C2.5(iii)

Following on from WTSR C2.5(ii). When satisfied with their understanding the new Authorised Technician must then complete Part 2 of the Approved Written Procedure and he/she may then instruct the Working Party to resume the work or testing.

- (iv) when resuming work or testing under an **Approved Written Procedure** as a new recipient completing Part 2 of the **Transfer 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;

GUIDANCE ON WTSR C2.5(iv)

Whilst a face to face Transfer is the preferred option this will not always be possible. In circumstances where a face to face Transfer has not taken place then the new Authorised Technician must be satisfied that they fully understand all of the contents of the Approved Written Procedure and are fully in the picture as to the current status of the work or testing. The new Authorised Technician must confirm that Part 1 of the Transfer Record has been correctly completed by the previous Authorised Technician. When satisfied the new Authorised Technician should complete Part 2 of the Transfer Record.

At this point the new Authorised Technician should confirm that all Points of Isolation quoted on the Approved Written Procedure are in place and that he/she is in possession of the necessary Safety Key(s) and/or removable Isolating Device(s). The new Authorised Technician should then countersign against the original Signature Checkpoint(s). The work or testing may now resume.

- (v) the **Operational Controller** is informed at the start and end of each work period to confirm the current state of the **Plant / LV Apparatus**;

GUIDANCE ON WTSR C2.5(v)

The Operational Controller must be informed of the current status of the work or testing on every occasion when a Working Party leaves the Wind Farm Location and again on each occasion when they return to resume the work or testing.

It will not be possible to enact a formal Transfer Of Control in these circumstances because the Approved Written Procedure cannot be cleared and cancelled and the WTG cannot be returned to “normal operation”.

- (vi) the **Operational Controller** is immediately informed of the details of any transfers of **Approved Written Procedures** to new **Authorised Technicians**.

GUIDANCE ON WTSR C2.5(vi)

The Operational Controller must be informed on each occasion when Approved Written Procedures are subject to Transfer from one Authorised Technician to another.

- C2.6 Before setting a **Working Party** to work, **Authorised Technicians** 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.

GUIDANCE ON WTSR C2.6

Company ‘A’ must ensure that sufficient importance is attached to the requirement to establish and maintain General Safety. Company ‘A’ may wish to confirm that the requirements of WTSR C2.6 are being met by implementing a formal system whereby a checklist is completed and signed by the Authorised Technician.

Company ‘A’ must also ensure that General Safety is given proper consideration when work or testing is resumed following Transfer of an Approved Written Procedure, even in circumstances where the work or testing is continued by the same Authorised Technician.

Authorised Technicians should have sufficient levels of competence to understand the requirements associated with establishing and maintaining General Safety, this would normally result from their previous training and experience. Company ‘A’ should not nominate any Person as a Competent Technician unless they are satisfied on this point.

Authorised Technicians have responsibilities under Wind Turbine Safety Rules General Provision 1 for establishing General Safety requirements before putting themselves and / or their Working Party to work including:

- establishing that a safe means of access and egress is available
- ensuring that the place of work is safe for the work or testing to progress
- ensuring that appropriate tools and equipment are available
- ensuring that any necessary Personal Protective Equipment is available
- ensuring that a safe method of work is available

In the event that any requirements relating to General Safety are deemed to be deficient by the Authorised Technician then he / she must have specific authority to either rectify the situation directly (e.g. authorise the erection of a scaffold or other safe means of access), or stop the work / testing from proceeding until the deficiencies have been rectified.

All aspects associated with General Safety must be correctly implemented / used and maintained for the duration of the work or testing. In the event that circumstances change then the Authorised Technician must stop the work or testing until the deficiencies have been rectified.

C2.7 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 Rules;

GUIDANCE ON WTSR C2.7(i)

The way in which Company 'A' require Part B of the Wind Turbine Safety Rules to be implemented must be specified in a Management Instruction. See WTSR B1.2.

- (ii) carrying out the instructions contained in the **Approved Written Procedure** to apply safety precautions. Signing a record, that these actions have been carried out, at the relevant **Signature Checkpoint**;

GUIDANCE ON WTSR C2.7(ii)

The Authorised Technician must follow the instructions contained in the Approved Written Procedure and sign each Signature Checkpoint to confirm that the stated requirements have been met.

- (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;

GUIDANCE ON WTSR C2.7(iii)

The Authorised Technician must maintain the safety precautions applied under WTSR C2.7(ii). Normally this would be achieved by the Authorised Technician retaining the Safety Key(s) or removable Isolating Device(s) in his/her personal possession.

- (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;

GUIDANCE ON WTSR C2.7(iv)

Normally this would be achieved by the Authorised Technician retaining the Approved Written Procedure in his/her personal possession at the point of work or testing. Company 'A' must provide further guidance on WTSR C2.7(iv) as appropriate, (e.g. the Approved Written Procedure could be placed in a zip top plastic wallet along with any Safety Key(s) and/or removable Isolating Device(s), these wallets are in some cases lockable to prevent removal of the contents).

- (v) meeting any requirements specified on the **Approved Written Procedure** to provide **Personal Supervision** of other persons in the **Working Party**.

GUIDANCE ON WTSR C2.7(v)

Any requirements to provide Personal Supervision as stated on the Approved Written Procedure must be followed by the Authorised Technician. If no requirement to provide Personal Supervision is specified on the Approved Written Procedure then the Authorising Engineer is only required to provide Immediate Supervision. See also WTSR B2.1.3.

When providing Immediate Supervision the Authorised Technician may leave the Working Party, providing he/she remains at the Wind Farm Location, but only if he/she decides that it is safe to do so. The Authorised Technician must then decide at what points in the work or testing, or after what interval of time they then return to the Working Party to provide Personal Supervision.

C2.8 When implementing the requirements of an **Approved Written Procedure** for work or testing which allows for the restoration of motive power supplies:

GUIDANCE ON WTSR C2.8

These same requirements should be applied by any Authorised Technician who is specifically Appointed for work / testing under Rule A3.12(viii) adjacent to Live LV Apparatus, under Rule A3.13(i) for work / testing on Live LV Apparatus or under Rule A7.6 for making of adjustments to, the controlling features of Wind Turbine Plant or Apparatus whilst it is in the operating mode.

- (i) meeting the requirements of Part B of these Rules;

GUIDANCE ON WTSR C2.8(i)

The way in which Company 'A' require Part B of the Wind Turbine Safety Rules to be implemented must be specified in a Management Instruction. See WTSR B1.2.

- (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;

GUIDANCE ON WTSR C2.8(ii)

In this case it is a mandatory requirement for the Authorised Technician to provide Personal Supervision to all parts of the work or testing that require restoration of motive power supplies.

- (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 whilst at the same time maintaining **Safety From The System**;

GUIDANCE ON WTSR C2.8(iii)

The Authorised Technician must give clear instructions for the removal and re-application of safety precautions during any period of restoration of motive power supplies. It is always preferable for the Authorised Technician to personally remove and re-apply safety precautions or for it to be done under his/her Personal Supervision. If this is not possible, (e.g. where the work or testing requiring restoration is taking place in the nacelle but the Point of Isolation is physically located at the base of the tower), then the Authorised Technician must ensure that he is satisfied as to how any restoration of motive power supplies and the subsequent re-application of safety precautions will be controlled. These requirements should also be stated on the Approved Written Procedure.

Where the Authorising Engineer considers that the methods of removal and re-application of safety precautions during any period of restoration of motive power supplies are not adequate to meet Wind Turbine Safety Rules or statutory requirements then due consideration should be given, by the Wind Farm Asset Owner, to modification of the installed Plant / Apparatus.

The Approved Written Procedure must specify how Safety From The System is to be maintained during any periods when motive power supplies are restored.

- (iv) implementing procedures to ensure that **Safety From The System**, and safety from any test equipment, is maintained as dictated by the test programme.

GUIDANCE ON WTSR C2.8(iv)

When testing is being carried out under an Approved Written Procedure that allows for restoration of motive power supplies then the Approved Written Procedure must specify how Safety From The System and safety from any test equipment is to be maintained during any periods when motive power supplies are restored.

C2.9 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** and **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 exceptions noted in the clearance section of the **Approved Written Procedure**.

GUIDANCE ON WTSR C2.9

See Guidance under WTSR B2.4.1.

C2.10 When cancelling an **Approved Written Procedure**:

GUIDANCE ON WTSR C2.10

See Guidance under WTSR B2.4.2.

- (i) satisfying himself that the requirements of the clearance section of the **Approved Written Procedure** have been correctly implemented;

GUIDANCE ON WTSR C2.10(i)

The Authorised Technician must take account of any “exceptions” recorded in the Approved Written Procedure Clearance Section. As a general rule of thumb, if there are any “exceptions” noted it will usually mean that the WTG cannot be safely deisolated and returned to “normal operation”.

- (ii) checking that all the items associated with the **Approved Written Procedure** are accounted for;

GUIDANCE ON WTSR C2.10(ii)

The Authorised Technician must ensure that he/she is in possession of all items such as Safety Key(s), removable Isolating Device(s), copy of any associated Selected Person's Report etc. If any items are missing then this will normally involve the implementation of a Wind Turbine Safety Rules General Provision 3 (GP3) Procedure – see WTSR B4.

- (iii) satisfying himself as to the operational state of the **Plant** and **LV Apparatus**;

GUIDANCE ON WTSR C2.10(iii)

The Authorised Technician must ensure that he/she fully understands the implication of removing all remaining Points of Isolation. There have been cases where Persons have been injured during the removal of safety precautions, (when the WTG is in an unsafe condition). The Authorised Technician must ensure that all controlling features of the WTG are in a position such that they will not cause Danger when the remaining Points of Isolation are removed.

It should be noted that in some cases the Points of Isolation might need to be removed in a particular sequence. This should be noted in Section 4 of the Approved Written Procedure.

- (iv) confirming that it is safe to remove all of the remaining Points of Isolation.

GUIDANCE ON WTSR C2.10(iv)

When the Authorised Technician is satisfied as to the above points, (WTSR C2.10(i) to (iii)), then he/she should sign the Cancellation Signature Checkpoint and then remove all remaining Points of Isolation specified on the Approved Written Procedure.

C3 AUTHORISING ENGINEER

C3.1 **Authorising Engineers** shall have some or all of the following responsibilities within the limits imposed by their Certificate of Authorisation.

C3.1.1 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

GUIDANCE ON WTSR C3.1.1(i)

The Authorising Engineer must ensure that the safety precautions stated on the Approved Written Procedure are adequate to achieve Safety From The System throughout the work or testing.

- (ii) all the appropriate **Signature Checkpoints**; and

GUIDANCE ON WTSR C3.1.1(ii)

The Authorising Engineer must ensure that the application of all safety precautions is covered by an associated Signature Checkpoint.

- (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.

GUIDANCE ON WTSR C3.1.1(iii)

The Authorising Engineer should go to great lengths to ensure that when the requirements stated on the Approved Written Procedure are followed then Safety From The System will be achieved and maintained throughout the work or testing. This requirement becomes particularly important during any periods of restoration of motive power supplies.

The Authorising Engineer must understand that the Authorised Technician is not required to make any judgement as to how Safety From The System is to be achieved and maintained. The Authorised Technician is only required to follow the stated requirements on the Approved Written Procedure – this should guarantee Safety From The System for both him/her and the Working Party.

C3.1.2 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;

GUIDANCE ON WTSR C3.1.2(i)

The Authorising Engineer must ensure that all requirements to vent and purge the Plant and/or Apparatus are clearly stated on the Approved Written Procedure. In deciding on these requirements reference must be made to Wind Turbine Safety Rules Definitions D21 and D31 and WTSR A2.3(iv) and WTSR A2.3(v).

The Authorising Engineer must ensure that all requirements to adjust the contents of Plant and LV Apparatus to a level that avoids Danger are clearly stated on the Approved Written Procedure.

When breaking into Plant for intrusive maintenance the contents could represent a hazard to persons. The intent of WTSR A2.3(iii) is to draw attention to the fact that the contents must be reduced to a suitable level in order to avoid Danger. It is not always necessary to completely empty the contents to make a system safe to work on which is why the paragraph states “adjusted to a level which avoids Danger”.

This reducing of the level is normally referred to as “draining” and takes place via drain valves. In some circumstances the drain pipework systems are linked together forming a common drain, in other cases the drains are not interconnected. In circumstances where drain valves form part of a common interlinked drain system they must first be opened to reduce the contents to an acceptable level and then shut and locked in the closed position to prevent ingress of the working fluid back into the Isolated Plant via the drain line. In circumstances where drains are not interconnected they can be left open to atmosphere and it is common practice to lock them in the open position.

The requirement to adjust the contents of Plant to a level which avoids Danger and any requirement to lock a drain valve open or closed should be assessed by the Authorising Engineer and clearly stated on the AWP. It is for the Authorising Engineer to determine exactly what needs to be done based on the local circumstances in order to meet the requirements stated in the WTSR.

- (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**;

GUIDANCE ON WTSR C3.1.2(ii)

The Authorising Engineer must decide if a Selected Person's Report is required for the work or testing, if so this must be clearly stated on the Approved Written Procedure.

Company 'A' Management Instructions should clearly specify how any requirements specified by the Selected Person are actually implemented in practice. For clarity the Authorising Engineer may wish to confirm the Company 'A' Management Instruction requirements on the Approved Written Procedure.

- (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;

GUIDANCE ON WTSR C3.1.2(iii)

The Authorising Engineer must ensure that all requirements for the restoration of motive power supplies are clearly stated on the Approved Written Procedure. It is only permissible to specify restoration of motive power supplies in circumstances where this is absolutely essential to the completion of the work or testing.

The Authorising Engineer must specify on the Approved Written Procedure how Safety From The System will be maintained during all periods of work or testing when motive power supplies are restored.

The Authorising Engineer should also specify any other precautions such as the required sequence for the removal and re-application of Points of Isolation.

The Authorising Engineer must ensure that the exact Points of Isolation, (that can be removed / re-applied), are stated on the Approved Written Procedure. The exact purpose for allowing the restoration of motive power supplies should also be stated.

- (iv) **Safety From The System** will be achieved and maintained when the specified requirements are correctly implemented;

GUIDANCE ON WTSR C3.1.2(iv)

By giving formal Approval to the Approved Written Procedure the Authorising Engineer is confirming the requirement of WTSR C3.1.2(iv).

- (v) it states any requirements to provide **Personal Supervision** and specifies the type of person who shall provide it;

GUIDANCE ON WTSR C3.1.2(v)

The Authorising Engineer must ensure that any requirements for work or testing that require Personal Supervision are quoted on the Approved Written Procedure. The Authorising Engineer must also specify who is to provide the Personal Supervision, (e.g. Authorising Engineer, Selected Person, Technical Specialist, Other).

Work or testing during restoration of motive power supplies must be given by the Authorised Technician, see WTSR C2.8(ii). The Authorising Engineer may decide to confirm this requirement on the Approved Written Procedure.

- (vi) the specified requirements are clear and unambiguous.

GUIDANCE ON WTSR C3.1.2(vi)

The Authorising Engineer should ensure that requirements stated on the Approved Written Procedure are clear and unambiguous. It must be remembered that the Authorised Technician will be required to follow the requirements stated on the Approved Written Procedure without any need for reference, consultation or clarification.

C3.2 An **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**.

GUIDANCE ON WTSR C3.2

The exact requirements for agreement of an Authorising Engineer must be specified in a Management Instruction. Essentially the Authorising Engineer is simply agreeing that the work or testing is considered to be “normal operation” and can therefore safely be carried out without an Approved Written Procedure.

Company ‘A’ might decide that every Routine Operating Procedure needs to be formally documented and “Approved” by an Authorising Engineer. However, if that is the case then the Routine Operating Procedure effectively becomes an Approved Written Procedure.

Alternatively, Company ‘A’ might decide that the Authorising Engineer simply designates various operational work or testing activities from the Manufacturer’s Service Manual as Routine Operating Procedures, (e.g. a list could be produced backed up by a statement from an Authorising Engineer along the lines of: “The following procedures from the Manufacturer’s Service Manual are designated as operational work or testing and may be carried out as Routine Operating Procedures without the need for an Approved Written Procedure:”).

It should be noted that for work or testing under an Approved Written Procedure it will, in almost every case, be necessary to undertake some preliminary operational work or testing under the terms of a Routine Operating Procedure. One clear example of this is where the WTG needs to be selected to “local control” and “shut down” immediately prior to the work or testing under the Approved Written Procedure. In such cases it will not be necessary to apply the requirements of Wind Turbine Safety Rule C4.2 and where appropriate, any safety precautions that would otherwise have been stated on the Routine Operating Procedure should instead be included on the Approved Written Procedure.

C4 COMPETENT TECHNICIAN

C4.1 Competent Technicians shall have the responsibilities listed below. When undertaking agreed routine operation and maintenance work or testing on Wind Turbine Generator **Plant / LV Apparatus**, by following an appropriate **Routine Operating Procedure** and using suitable tools / work equipment, without an **Approved Written Procedure** they must ensure that these responsibilities, which form part of the Safety Rules, are correctly implemented.

GUIDANCE ON WTSR C4.1

At each Wind Farm Location, a list of Competent Technicians showing the responsibilities for which they are nominated should be produced. In order that a Competent Technician can carry out work or testing under a particular Routine Operating Procedure, he / she **MUST** also be technically competent to perform that work or testing. In order that this can be demonstrated the individual concerned should be nominated, in writing, as a Competent Technician.

The appointment of Persons to undertake duties as Competent Technicians does not remove from them, or from any other persons, any responsibilities they may have for general supervisory or managerial duties.

With respect to contractor's staff:

- it is the contractor's responsibility to make recommendations to Company 'A' of suitable Persons for appointment as Competent Technicians, taking into account whether those individuals have sufficient technical knowledge and/or experience to be able to carry out the contract work or testing safely under Routine Operating Procedures;
- the contractor should provide any information and any evidence of training, qualifications, skills and competency as might reasonably be requested by Company 'A';
- it is the responsibility of the appropriate Manager of Company 'A' to assess and confirm the basis of any recommendations from the contractor to a standard deemed to be acceptable to Company 'A', (these standards should be stipulated in a Company 'A' Management Instruction);

- once satisfied that the request made by the contractor meets the Company 'A' standards then the appropriate Company 'A' Manager should ensure that these recommended contractor's staff are made familiar with the relevant sections of the Wind Turbine Safety Rules and associated local procedures / Management Instructions and make necessary arrangements for their formal appointment under the requirements of Wind Turbine Safety Rules Procedure P6. (R. v Swan Hunter Shipbuilders Ltd. and Telemeter Installations Ltd. [1981] refers).

C4.1.1 **Competent Technicians** shall comply with these Safety Rules when carrying out any operational work or testing under a **Routine Operating Procedure**.

GUIDANCE ON WTSR C4.1.1

Once appointed it is the responsibility of the Competent Technician to comply with the requirements of the Company 'A' Wind Turbine Safety Rules. However, Company 'A' and/or the Wind Farm Asset Owner should establish an adequate support process through normal management functions, (e.g. work management / planning; Transfer Of Control; instruction / supervision; monitoring / audit; refresher training).

C4.1.2 **Competent Technicians** shall use safe methods of work, safe means of access and Personal Protective Equipment, which is provided for their safety.

GUIDANCE ON WTSR C4.1.2

The Competent Technician must ensure that both he/she and all other Persons in the Working Party follow all of the Company 'A' requirements for General Safety.

C4.1.3 **Competent Technicians** shall ensure that the **Routine Operating Procedure** is being used with the full knowledge and agreement of Company 'A'.

GUIDANCE ON WTSR C4.1.3

Any Routine Operating Procedure must only be used with the full knowledge and agreement of Company 'A'. It is the responsibility of Company 'A' to ensure that an Authorising Engineer has agreed that the operational work or testing concerned does not require an Approved Written Procedure. Equally Company 'A' must be satisfied that they are happy for this work or testing to proceed as a Routine Operating Procedure.

The point of concern here is that work or testing might be carried out under a Routine Operating Procedure when it would be inappropriate to do so.

C4.1.4 **Competent Technicians** shall follow the safety requirements defined on the **Routine Operating Procedure**.

GUIDANCE ON WTSR C4.1.4

Competent Technicians must follow any safety instructions stated on the Routine Operating Procedure.

C4.2 Prior to undertaking any work or testing under a **Routine Operating Procedure** the **Competent Technician** shall obtain the consent of the **Operational Controller** as follows:

GUIDANCE ON WTSR C4.2

The process of obtaining consent from the Operational Controller is pivotal in ensuring that Company 'A' and/or the Wind Farm Asset Owner can demonstrate that it exercises managerial control over its Wind Farm Locations. Due to its potential complexity the exact details of how the process of "consent" is to be enacted should be detailed in Management Instructions.

The exact meaning of the term "consent" will need to be amplified and explained in Company 'A' Management Instructions.

Company 'A' might wish to apply the full rigors of the Transfer Of Control process to the term "consent". In which case their Routine Operating Procedures will almost certainly have to be bespoke and will have to incorporate a formal Transfer Of Control (Release) and (Return) section, (see WTSR B5 – AWP Pro-forma; Section 2 and 5).

Alternatively Company 'A' might wish to apply some less formal process to the term "consent", (e.g. the Competent Technician telephones a central control room, agrees the Routine Operating Procedure with the Operational Controller who simply records the agreement in a log book).

Whatever requirements Company 'A' decide to impose on the term "consent" it is strongly recommended that a formal documented record is made of the Operational Controllers agreement to work or testing under the Routine Operating Procedure.

It should be noted that for work or testing under an Approved Written Procedure it will, in almost every case, be necessary to undertake some preliminary operational work or testing under the terms of a Routine Operating Procedure. One clear example of this is where the WTG needs to be selected to "local control" and "shut down" immediately prior to the work or testing under the Approved Written Procedure. In such cases it will not be necessary to apply the requirements of Wind Turbine Safety Rule C4.2 and where appropriate, any safety precautions that would otherwise have been stated on the Routine Operating Procedure should instead be included on the Approved Written Procedure.

- i. On arrival at the Wind Farm **Location**, the **Competent Technician** shall contact the **Operational Controller** and report their presence. The **Competent Technician** will give their name, the names of all other persons in attendance, the reason for the visit and the approximate duration of the stay;

GUIDANCE ON WTSR C4.2(i)

The Competent Technician must report his/her presence on site to the Operational Controller at the earliest possible opportunity. Company 'A' must ensure that adequate communication links are available between the Operational Controller and each Wind Farm Location.

- 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**;

GUIDANCE ON WTSR C4.2(ii)

Company 'A' must put in place a suitably robust system such that the Operational Controller can confirm that the Routine Operating Procedure is valid. This process might be linked to a suitable work management / control system.

If the Operational Controller is not satisfied that the work or testing will be carried out under a valid Routine Operating Procedure then they must withhold their consent and the work or testing must not take place.

- iii. On confirmation of a valid **Routine Operating Procedure**, the **Competent Technician** shall request consent 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**;

GUIDANCE ON WTSR C4.2(iii)

Once the Routine Operating Procedure has been validated, to a standard acceptable to Company 'A', then the Operational Controller can give consent to the agreed work or testing.

It is recommended that the details to be recorded at the time of consent should be formal. However, the exact nature of what details and how the information is to be recorded must be outlined in a Company 'A' Management Instruction.

- 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 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**;

GUIDANCE ON WTSR C4.2(iv)

The Competent Technician must confirm that all work or testing detailed on the Routine Operating Procedure is complete. All members of the Working Party must be informed of this fact by the Competent Technician.

The Competent Technician must inform the Operational Controller of any restrictions or limitations to the operational condition of the WTG.

It is recommended that the details to be recorded at the time of completion should be formal. However, the exact nature of what details and how the information is to be recorded must be outlined in a Company 'A' Management Instruction.

- 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 of the completed **Routine Operating Procedures**.

GUIDANCE ON WTSR C4.2(v)

In circumstances where the Competent Technician is to undertake several jobs on one WTG under several different Routine Operating Procedures then the Operational Controller might be requested to give consent for all of the proposed operational work or testing. The Company 'A' requirements to record details of this transaction must then be carried out.

If consent for work or testing under more than one Routine Operating Procedure is agreed then the Competent Technician must complete all of the work or testing under the first Routine Operating Procedure before moving on to the next.

When work or testing under the last Routine Operating Procedure is complete then the Competent Technician must return the WTG to its normal operating condition. The Competent Technician must confirm to the Operational Controller that all work or testing detailed on the Routine Operating Procedure is complete. The Company 'A' requirements to record details of this transaction must then be carried out.

C4.3 Before setting a **Working Party** to work, **Competent Technicians** 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.

GUIDANCE ON WTSR C4.3

Company 'A' must ensure that sufficient importance is attached to the requirement to establish and maintain General Safety. Company 'A' may wish to confirm that the requirements of WTSR C4.3 are being met by implementing a formal system whereby a checklist is completed and signed by the Competent Technician.

Competent Technicians should have sufficient levels of competence to understand the requirements associated with establishing and maintaining General Safety, this would normally result from their previous training and experience. Company 'A' should not nominate any Person as a Competent Technician unless they are satisfied on this point.

Competent Technicians have responsibilities under WTSR C4.3 for establishing General Safety requirements before putting themselves and / or their Working Party to work including:

- establishing that a safe means of access and egress is available
- ensuring that the place of work is safe for the work or testing to progress
- ensuring that appropriate tools and equipment are available
- ensuring that any necessary Personal Protective Equipment is available
- ensuring that a safe method of work is available

In the event that any requirements relating to General Safety are deemed to be deficient by the Competent Technician then he / she must have specific authority to either rectify the situation directly (e.g. authorise the erection of a scaffold or other safe means of access), or stop the work / testing from proceeding until the deficiencies have been rectified.

All aspects associated with General Safety must be correctly implemented / used and maintained for the duration of the work or testing. In the event that circumstances change then the Competent Technician must stop the work or testing until the deficiencies have been rectified.

C4.4 **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.

GUIDANCE ON WTSR C4.4

The Competent Technician must follow all of the requirements specified under the Routine Operating Procedure to ensure that Safety From The System is achieved.

Because the work or testing under a Routine Operating Procedure is deemed to be of an operational nature then these requirements will almost by definition be fairly straightforward. If complex precautions to achieve Safety From The System are required then it is almost certain that the work or testing is not of a routine operational nature and therefore an Approved Written Procedure would be required.

C4.5 **Competent Technicians** shall always provide **Personal Supervision** to agreed operational work or testing that is being carried out under a **Routine Operating Procedure**.

GUIDANCE ON WTSR C4.5

It is a mandatory requirement for all operational work or testing under a Routine Operating Procedure to be carried out by the Competent Technician in person or under his/her Personal Supervision.

C4.6 **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 **Authorising Engineer**. The **Authorising Engineer** shall then take steps to remove hazards that could give rise to **Danger**, where necessary by producing an **Approved Written Procedure**.

GUIDANCE ON WTSR C4.6

During the course of the work or testing if any hazard arises that was unforeseen the job must immediately cease. The Competent Technician must ensure that all Persons are warned to stop work or testing and if necessary removed from the immediate area. The Competent Technician must then ensure that the Operational Controller and the Authorising Engineer are immediately informed. The Authorising Engineer must then decide upon an appropriate course of action which avoids Danger to Persons.

C4.7 **Competent Technicians** shall, on finishing the agreed operational work or testing under a **Routine Operating Procedure**, ensure that: all persons in the **Working Party** have been withdrawn from, and warned not to continue work on, the **Plant** and **LV Apparatus** concerned; 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.

GUIDANCE ON WTSR C4.7

In essence the Competent Technician is required to carry out the same checks that an Authorised Technician would confirm in the Clearance Section of an Approved Written Procedure. See Guidance under WTSR B2.4.1.

The requirement for the Competent Technician to ensure that all other Persons are warned that the operational work or testing is complete are also specified in WTSR C4.2(iv).

It is the responsibility of the Competent Technician to ensure that the WTG is safe to be returned to its normal operating condition.

C5 OPERATIONAL CONTROLLER

C5.1 The **Operational Controller** is responsible for the **Transfer Of Control** of the Wind Turbine Generator **Plant** and/or **LV Apparatus**, as appropriate, to either another **Operational Controller** or an **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 **Authorised Technician** the requirements of Rule C2.2 shall be followed.

GUIDANCE ON WTSR C5.1

See guidance under WTSR C2.2.

Company 'A' should specify the identity, extent of responsibility and sphere of operation of each Operational Controller. Control boundaries for each Wind Farm should be clearly delineated.

Within the framework set out in the Rules, Company 'A' have the freedom to allocate Operational Controller responsibilities in a manner appropriate to local circumstances. For instance they may nominate members of their own staff to be Operational Controllers for specified Wind Farm Locations. Alternatively, some or all Operational Controller responsibilities could be vested in a single individual at any one time, such as a contract 'Service Provider', for example.

If required, Management Instructions could give Operational Controllers authority to delegate some or all of the operational control functions for particular areas of the Plant / LV Apparatus to other Persons, (but those other Persons must have been appointed by Company 'A' to act in the capacity as Operational Controllers). Management Instructions should specify the detail of how and when it would be appropriate to delegate and the procedures to be adopted. This process would require the delegating Operational Controller to make a judgement as to whether it was appropriate to delegate the Operational Controller responsibilities based on circumstances pertaining at the time.

Another possibility would be to nominate several Persons to act as Operational Controllers to cover the whole of a Wind Farm portfolio, such that the Persons would discharge their duties, either independently or jointly, as specified in a Management Instruction. Each Person enacting the Operational Controller function in this way would need full knowledge of the actions of other Operational Controllers.

For any given Wind Farm Location, a full record of the operational state of the Plant / LV Apparatus and the Approved Written Procedures in force should be available and there should be a procedure to record any consultation between Operational Controllers of adjacent spheres of operation.

In deciding the manner in which to operate the Operational Controller function, consideration should be given to the experience of the staff involved and local preferences in respect of the consultation between the Authorised Technician and the Operational Controller during Transfer Of Control.

Company 'A' should adopt a method for the Operational Controller to record Transfer Of Control, (and other details relating to the Approved Written Procedure, the work or testing etc.), that is suitable for its own particular circumstances. Possible means of satisfying this requirement might include the Operational Controller recording information in a log book, or on a separate register. A basic record would comprise the Wind Farm Location, WTG number, Approved Written Procedure reference number, work / testing to be done and/or any work instruction reference number, date & time of the Transfer of Control and the names of the Authorised Technician and the Operational Controller. Electronic or hard-copy records are acceptable but, in either case, processes must be established that are sufficiently robust to ensure that records are retained for the purposes of maintaining an audit trail.

C5.2 The **Operational Controller** is responsible for giving consent to a **Competent Technician** 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 consent for work or testing under a **Routine Operating Procedure** has the necessary authority to carry it out and the requirements of Rule C4.2 shall be followed.

GUIDANCE ON WTSR C5.2

See guidance under WTSR C4.2.

Where appropriate the guidance given under WTSR C5.1 will also apply, (e.g. an Operational Controller might enact Transfer Of Control under WTSR C5.1 and delegate those duties to an Operational Controller based at the Wind Farm Location). This second Operational Controller may then give consent to a Competent Technician for agreed routine operation and maintenance work or testing to be carried out under a Routine Operating Procedure.

C6 SELECTED PERSONS

C6.1 A **Selected Person** is responsible for using his 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 **LV Apparatus** which has otherwise been made safe.

GUIDANCE ON WTSR C6.1

Company 'A' must ensure that any Person being appointed as a Selected Person does in fact have the technical knowledge and competence required. It is strongly recommended that some form of technical assessment is carried out by Company 'A' prior to making any such appointment.

- C6.2 If, prior to the commencement of work (or testing) or during the progress of work (or testing), it is considered necessary, by an **Authorising Engineer**, to carry out a check on **Plant** and **LV Apparatus** or working areas for hazards, the **Selected Person** shall carry out any tests and examinations he considers 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.

GUIDANCE ON WTSR C6.2

The names of Selected Persons and the hazards and the Wind Farm Locations for which they have been appointed to make recommendations should be made available to all Authorised Technicians who may need to consult them under the terms of an Approved Written Procedure.

COMPANY 'A' WIND TURBINE SAFETY RULES

Guidance on Training and Assessment of Authorised and Nominated Persons

1. INTRODUCTION

Wind Turbine Safety Rules Support Procedure P6 "Procedure for Appointment of Persons" incorporates the minimum theoretical and practical standards for the training of Authorised and Nominated Persons.

The following gives guidance as to how these minimum standards may be achieved.

2. GUIDANCE

- 2.1 A schedule of training objectives specific to the proposed duties of the trainee should be developed from the minimum standards.
- 2.2 A formal programme of training should ensure that, for each training objective, the candidate is given instruction and appropriate practical training by a person who has sufficiently detailed knowledge and experience of the subject matter.
- 2.3 The candidate should receive instruction relevant to each model of Wind Turbine Generator for which they are being appointed. For instance, when training a prospective Authorised Technician in isolation techniques, it is important that the candidate learns to use all relevant isolating devices and becomes familiar with their practical application for the Wind Turbine Generator model concerned. If a common methodology can be applied to several similar items of Plant / LV Apparatus or to similar Wind Turbine Generator models, the training should, as a minimum, cover representative examples.
- 2.4 On completion of the training for each objective, a formal assessment of the candidate's competence should be made. This may be achieved by oral or written questioning, interactive media training, or, where appropriate, by practical tests. This objective should then be 'signed off' by the assessor, who must be competent to make the assessment, (e.g. Authorising Engineer and/or technical specialist), and by the trainee.
- 2.5 The training objective should record details of the training received, persons involved in the training, and persons involved in assessment. Persons responsible for making assessments should sign the record and endorse it with any relevant comments. Preferably, training and assessment would not be carried out by the same person.
- 2.6 One suitable means of incorporating the above requirements into a training programme would be to create a series of checklists where entries could be made against each separate objective in respect of training and assessment. For the more extensive training programmes, the training could be broken down into a series of modules, with a nominated trainer for each module. A suitable checklist format is included in this guidance.
- 2.7 Consideration should be given to providing the candidate with a mentor to assist in his / her progress through the training. This mentor can then be requested to 'sign off' the training programme and make a recommendation for progression to an interview.

- 2.8 Training for Authorising Engineers and Authorised Technicians should cover the requirements of the Wind Turbine Safety Rules in detail, and aim to promote an understanding of:
- (a) isolation and other precautions which need to be applied to enable work or testing to be carried out safely on electrical and mechanical equipment.
 - (b) procedures for maintaining the security of safety precautions applied, the formal granting of authority for work / testing to be carried out, and ensuring that safety standards are maintained when different working groups are involved in the same job;
 - (c) the responsibilities of all persons involved in the process.

Also included should be discussions of findings from Wind Turbine Safety Rules audits, common problem areas, analysis of sample Approved Written Procedures and specific case studies.

The training should end with a questionnaire, to enable each candidate to assess his / her current depth of knowledge of the content of the Rules.

- 2.9 Prior to attending an Authorisation Interview for appointment as Authorised Technician or Authorising Engineer, the candidate should have completed a satisfactory 'mock' interview.

3. CONTINUING ASSESSMENT OF COMPETENCE

There is a requirement for the appropriate Manager nominated to manage the application of the Rules within Company 'A' to ensure that all Persons appointed under Wind Turbine Safety Rules Support Procedure P6 are assessed for continuing competence on a regular basis and that the results are formally recorded.

3.1 Authorised Technicians and Authorising Engineers

Authorised Technicians and Authorising Engineers should be assessed annually to ensure their continued knowledge, understanding and competence in the practical application of the Wind Turbine Safety Rules, Management Instructions and support documentation.

Inter-active media assessment programmes may be used to provide an effective means of assessing procedural knowledge, and can be used to support line managers in confirming continued levels of competence.

The Persons line manager should provide written confirmation of continuing competence in the practical application of the Rules and supporting procedures.

The process of re-assessment can be utilised to identify the requirement for refresher training.

4. REFRESHER TRAINING

- 4.1 Competent Technicians, Authorised Technicians, Authorising Engineers, Operational Controllers and Selected Persons should be provided with refresher training at periods to be determined by the appropriate Manager within Company 'A'. In accordance with Wind Turbine Safety Rules Support Procedure P6, all Persons appointed under the Rules are required to attend refresher training. The object of this refresher training is to re-emphasise the importance of adhering to the provisions of the Rules, thereby ensuring that consistently high standards are maintained across Company 'A'.

The refresher training should cover the subject matter in greater depth through active participation, and will include sessions on audit findings and case studies to highlight weaknesses that can develop through poor custom and practice.

The training should end with a questionnaire, to enable each candidate to assess his / her own level of knowledge of the content of the Rules and provide evidence to the Persons line manager of continuing competence.

5. AUTHORISATION AND NOMINATION FORMS

Suggested layouts for Authorisation & Nomination forms are included in Wind Turbine Safety Rules Support Procedure P6. It should be noted that:

- (a) Although the examples of Nomination Certificates include more than one nomination, (e.g. Selected Person, Operational Controller and Competent Technician), on the same form, organisations can use separate forms if they find this easier to manage.
- (b) Electronic records are acceptable provided that:
 - security systems are in place to prevent unauthorised access, interference and / or abuse
 - they are fully auditable
 - they are accessible for viewing by all relevant persons who may have justification in requiring to have sight of them

The following pages contain examples of:

1. a generic training programme matrix
2. typical contents of a training matrix for the electrical system of a Wind Turbine

1. **EXAMPLE OF GENERIC TRAINING MATRIX**

COMPANY 'A' WIND TURBINE SAFETY RULES

WIND FARM LOCATION:

TRAINING PROGRAMME FOR AUTHORISATION/NOMINATION AS:

TRAINING OBJECTIVE NO:

TRAINEE DETAILS

NAME:

DESIGNATION:

Scope of Training	Objective	Trainee Details	Assessment	Comments
Area where theoretical / practical expertise is to be gained (which may include reference to legislation, Company 'A' Management Instructions and procedures, local site based systems and/or specific activities associated with work / testing on Plant / Apparatus).	Level of knowledge that has to be achieved or task where practical competence needs to be demonstrated.	Confirmation that training has been carried out including all relevant details (e.g. name(s) of trainer(s), period of training, date of completion and signature to confirm completion).	Date of assessment, name and signature of assessor.	Result of assessment and any relevant comments from the assessor.

2. EXAMPLE TRAINING MATRIX FOR A WIND TURBINE ELECTRICAL SYSTEM:

Low Voltage Electrical System for Wind Turbine Manufacturer / Model:

CRITERIA FOR ASSESSMENT	EVIDENCE REFERENCE	ASSESSOR	DATE
<p>List relevant training course(s) attended.</p> <p><i>Include for example:</i></p> <ul style="list-style-type: none"> • Wind Turbine Safety Rules Training Course • Electrical Awareness Training Course • Wind Turbine Manufacturers Training Course 	<p>For example:</p> <p>Attendance record(s) / course assessment.</p>		
<p>Demonstrate understanding of Wind Turbine Safety Rules and Legislative requirements.</p> <p><i>Include criteria for example:</i></p> <ul style="list-style-type: none"> • Principles of Rule A3 • Electricity at Work Regulations • Understanding of principles associated with Live work / testing 	<p>For example:</p> <p>Course assessment / questioning.</p>		
<p>Demonstration of the correct operation of the following LV Switchgear types for isolation purposes.</p> <p><i>Include the range of LV Switchgear specific to the Wind Farm Location, for example:</i></p> <ul style="list-style-type: none"> • LV Circuit Breaker / Isolator(s) • Others (e.g. miniature circuit breakers; fuses; links) • Requirements for Personal Protective Equipment <p>Demonstration of an understanding of the Wind Turbine LV electrical layout and interconnection, including circuit breakers, isolators, miniature circuit breakers, fuses etc.</p> <p><i>Include criteria as appropriate, for example:</i></p> <ul style="list-style-type: none"> • Single line diagrams and general description of the systems • Control and Protection Systems • Normal and abnormal operating conditions – emergency switching. • Arrangements for Electrical / Mechanical interlocks • Interface with HV Systems / System Boundaries (HV to LV) 	<p>For example:</p> <p>Reference to completion of training exercises.</p> <p>For example:</p> <p>Reference to completion of training exercises.</p>		
<p>Demonstration of the correct use of the Approved Voltage Detection instruments.</p> <p><i>Include criteria for example:</i></p> <ul style="list-style-type: none"> • Correct use of Test Instruments and Proving Unit • Principle of Prove – Test – Prove • Knowledge of when to test to ensure LV Apparatus is not Live 	<p>For example:</p> <p>Reference to completion of training exercises.</p>		

PART D DEFINITIONS

- D1 Apparatus** - All **LV** 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.
- D2 Appointed** – Designated in writing by Company 'A'.
- D3 Approved**
- (i) In the case of an **Approved Written Procedure** means sanctioned for use by the **Authorising Engineer**;
 - (ii) In all other cases means sanctioned for use by Company 'A'.
- D4 Approved Written Procedure** - An **Approved** procedure written in a format indicated in these rules specifying the **Plant / LV Apparatus** on which work or testing can take place, without **Danger**, by an **Authorised Technician** following the precautions stated to achieve **Safety From The System**.
- Authorised Technician** – see **Persons**.
- Authorising Engineer** - see **Persons**.
- D5 Caution Notice** - A notice in **Approved** form conveying a warning against interference.
- Competent Technician** – see **Persons**.
- D6 Danger** - A risk to health, or of bodily injury.
- D7 Danger Notice** - A notice in **Approved** form reading 'Danger'.
- D8 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.
- D9 High Voltage (HV)** - A voltage exceeding 1000 volts alternating current or 1500 volts direct current.
- Immediate Supervision** - see **Supervision**.
- D10 Isolated** - Disconnected from associated **Plant** and/or **LV Apparatus** by an **Isolating Device(s)** in the isolating position, or by adequate physical separation or sufficient gap.
- D11 Isolating Device** - A device for rendering **Plant** and **LV Apparatus Isolated**.
- D12 Key** - see **Safety Key**.
- D13 Live** - Electrically charged.

- D14 Location** - Any place at which work or testing under the Company 'A' Wind Turbine Safety Rules is carried out.
- D15 Locked** - A condition of **Plant** and/or **LV Apparatus** that cannot be altered without the operation of a locking device which is of a standard acceptable to the **Authorising Engineer** in charge of the **Location**.
- D16 Low Voltage (LV)** - A voltage not exceeding 1000 volts alternating current or 1500V direct current.
- D17 Management Instruction (MI)** – A procedure for use at an individual Wind Farm **Location** or series of Wind Farm **Locations**, that documents the Health & Safety Management Systems of Company 'A' that are to be applied to meet specified requirements.
- D18 Operational Control** – control over the operational condition of Wind Farm **Plant / LV Apparatus** that forms a part of the defined Company 'A' Wind Turbine Safety Rules **System**.

Operational Controller - see **Persons**.

Personal Supervision - see **Supervision**.

- D19 Persons**, being one of the following:

- (i) **Authorising Engineer** - A **Person** who has sufficient technical knowledge and/or experience to enable him to avoid **Danger** and who has been **Appointed** by an appropriate officer of Company 'A' to carry out duties specified in writing, including the approval of **Approved Written Procedures**.
- (ii) **Authorised Technician** - A **Competent Technician**, who has sufficient technical knowledge and/or experience to enable him to avoid **Danger** and who has been **Appointed** by an appropriate 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 & 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**.

- (iii) **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 Wind Turbine **Plant** / **LV Apparatus** by following appropriate **Routine Operating Procedures** and using suitable tools / work equipment.
- (iv) **Operational Controller** - A **Person** who has been **Appointed** by an appropriate officer of Company 'A' to be responsible for
 - the **Operational Control** of Wind Farm **Plant** and **LV Apparatus**;
 - enacting the process of **Transfer of Control**, in circumstances defined in these Safety Rules and/or **Management Instructions**;
 - giving consent to allow work or testing under a **Routine Operating Procedure**;
 - controlling and co-ordinating safety activities necessary to achieve **Safety From The System**.
- (v) **Selected Person** - A **Person** qualified by technical knowledge and experience and **Appointed** by an appropriate officer of Company 'A' to carry out tests and examinations and make recommendations regarding additional special precautions to be taken to safeguard persons.

D20 Plant - Fixed and movable items, other than **LV Apparatus**, for which Company 'A' has a maintenance responsibility.

D21 Purged - A condition of **Plant** and/or **LV Apparatus** from which any dangerous contents have been scavenged.

D22 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.

GUIDANCE ON D22 - ROUTINE OPERATING PROCEDURE

It is a requirement for a Routine Operating Procedure to be produced in writing.

In some circumstances all that will be required is a documented copy of the Wind Turbine Generator (WTG) Manufacturer's Service Manual, Operating Manual, Operating Instructions, Handbook etc. Such documentation should be available for reference by a Competent Technician if required.

In other cases a bespoke "one off" Routine Operating Procedure will be required, particularly in situations where the operational work or testing is not adequately covered by the Manufacturers Service Manual. In such cases this documentation must be made available for reference to the Competent Technician. Where Company 'A' produce bespoke Routine Operating Procedures then they must produce an appropriate pro-forma the details of which must be recorded in a Management Instruction in accordance with WTSR B3.3.

In all cases operational work or testing will require an appropriate Method Statement and/or Risk Assessment as appropriate to the Company 'A' safety management system.

Company 'A' must assess and implement their own individual requirements for Routine Operating Procedures. The use of Routine Operating Procedures should be integrated into any Company 'A' Work Control or Work Management system.

It should be noted that for work or testing under an Approved Written Procedure it will, in almost every case, be necessary to undertake some preliminary operational work or testing under the terms of a Routine Operating Procedure. One clear example of this is where the WTG needs to be selected to "local control" and "shut down" immediately prior to the work or testing under the Approved Written Procedure. In such cases it will not be necessary to apply the requirements of Wind Turbine Safety Rule C4.2 and where appropriate, any safety precautions that would otherwise have been stated on the Routine Operating Procedure should instead be included on the Approved Written Procedure.

D23 Safety From The System - That condition which safeguards persons working on or testing **Plant** and/or **LV Apparatus** from the **Dangers** that are inherent in the **System**.

D24 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**.

Selected Person - see **Persons**.

D25 Signature Checkpoint - A point in an **Approved Written Procedure** at which an **Authorised Technician** signs to confirm that the actions / conditions specified at that stage in the procedure have been achieved / satisfied.

D26 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.

D27 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.

D28 System - Items of **Plant** and **LV Apparatus**, which are used separately or in combination in any process associated with the business of Company 'A'.

D29 Transfer Of Control - The handing over of **Operational Control** of any specified part, (or whole), of a Wind Farm by a **Operational Controller**, currently having the responsibility for **Operational Control**, to either another **Operational Controller** or to an **Authorised Technician**.

- D30 Transfer Record** - A section of an **Approved Written Procedure** of a format shown in these Rules used to record the progress of work or testing & transfer of an **Approved Written Procedure**.
- D31 Vented** - Having an outlet open to the atmosphere, and so arranged that pressure can equalise to atmospheric pressure.
- D32 Working Party** - Persons working under the **Supervision** of an **Authorised Technician** or a **Competent Technician** including an **Authorised Technician** or a **Competent Technician** working alone.

APPENDIX 1 – WIND TURBINE SAFETY RULES SUPPORT PROCEDURES

The following documents have been produced in support of the Wind Turbine Safety Rules. Company 'A' should take account of these procedures when implementing the Rules and in the production of their Management Instructions.

No further guidance is given in relation to these supporting procedures.

- P1 'Procedure for Approval of General Provisions (GP3) Special Instructions and Other Procedures'.
- P2 'Procedure for Approval of Tools, Equipment and Processes'.
- P3 'Procedure for Objections on Safety Grounds'.
- P4 'Procedure for the Addition of Plant and Apparatus to the System'.
- P5 'Procedure for the Removal of Plant and Apparatus from the System'.
- P6 'Procedure for Appointment of Persons'.