Wind Turbine Safety Rules - Support Procedure P7

Company 'A' Wind Turbine Safety Rules Procedure Control and Management of Cross Boundary Safety Precautions between the Wind Turbine Safety Rules and other Safety Rules

4th Edition





G+ Global Offshore Wind Health & Safety Organisation

In partnership with



SUPPORT PROCEDURE P7 Company 'A' Wind Turbine Safety Rules Procedure Control and Management of Cross Boundary Safety Precautions between the Wind Turbine Safety Rules and other Safety Rules

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FOREWORD

The Company 'A' Wind Turbine Safety Rules (WTSR) clearly state that: 'When work or testing involves HV Apparatus, Approved HV Safety Rules shall be used'.

Effectively, this means that on any given Wind Farm Location at least two sets of Safety Rules will be in use:

- (i) Company 'A' Wind Turbine Safety Rules.
- (ii) HV Safety Rules, [these will either be the Company 'A' HV Safety Rules or a set of HV Safety Rules implemented by a third party, (e.g., specialist HV Contractor), which in either case will be the Approved HV Safety Rules as agreed by Company 'A' for use at its Wind Farm Location in accordance with WTSR A1.4]. And possibly also:
- (iii) Other Safety Rules that have a boundary with the WTSR.

In certain cases, in order for work or testing to be carried out safely, it will be necessary for two or more sets of Safety Rules to be implemented at the same time in order to achieve Safety from The System across a boundary.

Company 'A' Wind Turbine Safety Rules (4th Edition) 2021

Support Procedure P7

The Control and Management of Cross Boundary Safety Precautions Between the Wind Turbine Safety Rules and Other Safety Rules.

CHANGE LOG

| Rev | Modification | Issue Date | Page |
|-----|---|------------|------|
| 1 | New document | 2015 | - |
| 2 | Change Log added | Dec 2019 | 2 |
| 3 | Removal of RUK | Dec 2019 | All |
| 4 | Renaming to WTSR 4 th Edition 2021 | June 2021 | All |

1 SCOPE

This procedure should be followed whenever it is necessary to implement more than one set of Safety Rules simultaneously, at any given Wind Farm Location, in order to achieve Safety from The System. Credible scenarios covered within the scope of this procedure include:

- (i) Where isolation is required under the Boundary Safety Rules as part of the required safety precautions for work or testing under the Company 'A' WTSR.
- (ii) Where isolation is required under the Company 'A' WTSR as part of the required safety precautions for work or testing under the Boundary Safety Rules.

NOTE: While this WTSR Procedure P7 has been written to reflect requirements applicable under the Company 'A' WTSR it is important to recognise that an equivalent procedure will be required for the correct application of the Approved HV Safety Rules agreed by Company 'A' for use at its Wind Farm Locations, or any other set of Safety Rules applicable to Safety from the System.

2 **DEFINITIONS**

For the purposes of this procedure:

- **2.1** Management Instruction means a procedure for use at an individual Wind Farm Location or series of Wind Farm Locations, that documents additional elements of the Health and Safety Management systems of Company 'A' that are to be applied to meet specified requirements of the WTSR.
- **2.2** The 'Responsible Manager' means the Manager, appointed by Company 'A', who will have responsibility for the Plant and LV Apparatus whenever the Company 'A' Wind Turbine Safety Rules apply to it.
- **2.3** The 'Appointed Person' means the person appointed to be responsible for the application of the Boundary Safety Rules at the Wind Farm Location.
- **2.4** Boundary Safety Rules (BSR) are Safety Rules that are at a boundary with the Company 'A' Wind Turbine Safety Rules.

3 GENERAL REQUIREMENTS FOR CROSS BOUNDARY ISOLATIONS

3.1 Defined Boundary Points

- **3.1.1** Where two (or more) sets of Safety Rules apply at any given Wind Farm Location, it will be necessary to clearly and accurately define the boundary points.
- **3.1.2** Boundary points shall be defined to ensure that every item of Plant or Apparatus, (HV and LV), at the Wind Farm Location is covered by Safety Rules, (unless such items have been specifically excluded from the Safety Rules under the terms of a Company 'A' Management Instruction which gives clear guidance on how work or testing on such items can be undertaken in a safe manner).
- **3.1.3** Boundary points shall be defined to ensure that only one set of Safety Rules applies to each item of Plant or Apparatus, (HV and LV), at the Wind Farm Location, (e.g., there must be no overlap, otherwise confusion will exist as to which set of Safety Rules are to be applied in any given circumstance, in the worst case scenario this could lead to work or testing on the BSR System under the Company 'A' WTSR).
- **3.1.4** The defined boundary points for each Wind Farm Location should be recorded in writing in a Company 'A' Management Instruction.
- **3.2** Where isolation is required under the Boundary Safety Rules as part of the required safety precautions for work or testing under The Company 'A' WTSR.
- **3.2.1** The Authorising Engineer, responsible for the preparation of the Approved Written Procedure (AWP), and the Appointed Person shall discuss the work or testing to be done and agree the safety precautions on the Boundary Safety Rules System that must be applied. See Appendix A for an example of AWP layout and wording. Appendix C shows a flow chart on how this is achieved.

NOTE: The exact requirements detailing how and in what sequence safety precautions on the Boundary Safety Rules System will be applied shall be subject to procedures contained in the Boundary Safety Rules.

- **3.2.2** The Authorising Engineer shall ensure that the AWP for the work or testing includes details of the agreed safety precautions on the Boundary Safety Rules System. The AWP shall also state that the application of safety precautions on the Boundary Safety Rules System shall be carried out by an Appointed Person which shall be witnessed in person by the Authorised Technician. The AWP shall have provision for the Appointed Person to sign against the points of isolation that they have applied.
- **3.2.3** The AWP shall also include clear instructions for the removal of the safety precautions on conclusion of the work or testing. The AWP shall clearly state that the removal of safety precautions on the Boundary Safety Rules System shall be carried out by the Appointed Person which shall be witnessed in person by the Authorised Technician. The AWP shall have provision for the Appointed Person to sign against the points of isolation that they have removed.
- **3.2.4** When the work or testing is to be carried out, the Authorised Technician shall first contact the Operational Controller and obtain Transfer of Control under the terms of the AWP. Once the Transfer of Control is complete the Authorised Technician shall contact the Appointed Person responsible for the Boundary Safety Rules System to discuss the Boundary Safety Rules safety precautions detailed in the AWP.

NOTE: At this stage if there is any doubt about the safety precautions or their adequacy, work or testing shall not proceed and an Authorising Engineer shall be contacted. If it is concluded that the current AWP is inadequate then the work or testing shall be cancelled and a revised AWP produced.

3.2.5 At the relevant point in applying the precautions stated on the AWP the Authorised Technician shall contact the Appointed Person and confirm the safety precautions that have so far been completed under the WTSR. The Authorised Technician shall then request the Appointed Person to apply the safety precautions on the Boundary Safety Rules System as stated on the AWP.

NOTE: It is essential that the sequence of applying points of isolation as stated in the AWP is followed precisely. Any variation in this sequence may result in Danger.

3.2.6 The Appointed Person shall then establish the safety precautions on the Boundary Safety Rules System as described in the AWP, which shall be witnessed in person by the Authorised Technician. Two unique locks shall be applied, dual locking (using an Approved multi-hasp locking device where necessary) and one Safety Key shall be retained in safe custody by each party. A Caution Notice shall be attached to the lock applied on behalf of the Authorised Technician. The Appointed Person shall initial or sign the AWP against each point of isolation that they apply on behalf of the Authorised Technician. The Authorised Technician shall sign each Signature Checkpoint in the normal manner, even when some of the safety precautions have been applied by an Appointed Person.

NOTE: A Company 'A' Management Instruction shall specify the procedures to be followed in order to achieve safe custody in accordance with WTSR B2.3.2.

3.2.7 All Safety Keys associated with the Boundary Safety Rules isolation shall be clearly identified. Those Safety Keys provided to the Authorised Technician shall be retained in safe custody for the duration of the work or testing.

NOTE: A Company 'A' Management Instruction shall specify the procedures to be followed in order to achieve safe custody in accordance with WTSR B2.3.2.

In some cases, the Authorised Technician is issued with an Approved safety document which will confirm all safety precautions applied to the Boundary Safety Rules System. Where this safety document is signed by the Appointed Person then a further signature on the AWP is not required.

Where the safety document is issued to the Authorised Technician with a key, (which locks away the Safety Keys associated with the safety precautions applied to the BSR System), the control of BSR isolations will then be in accordance with Boundary Safety Rules Procedures and duplicate locking is not required. Under these circumstances, the Authorised Technician is not required to witness in person the application of the BSR isolation. However, in all such cases the AWP shall have provision for the Authorised Technician to record the unique identification number of the BSR safety document.

Where the Authorised Technician is issued with a safety document under the Boundary Safety Rules, there may be a requirement for a formal appointment under those Boundary Safety Rules.

- **3.2.8** On completion of the relevant work or testing described in the AWP, the Authorised Technician shall complete and sign the relevant 'Clearance' Signature Checkpoint section of the AWP. Appendix D shows a flow chart on how this is achieved.
- **3.2.9** The Authorised Technician and the Appointed Person shall both agree that the relevant safety precautions on the Boundary Safety Rules System can be removed. Once this has been agreed the Authorised Technician shall sign the 'Cancellation' Signature Checkpoint section of the AWP.
- **3.2.10** The Authorised Technician shall witness in person the removal of the safety precautions on the Boundary Safety Rules System by handing the appropriate Safety Key to the Appointed Person, who will remove the associated lock and Caution Notice. The Appointed Person shall initial or sign the AWP against each point of isolation that they remove on behalf of the Authorised Technician. See Appendix A for example of AWP layout and wording.

NOTE: The Authorised Technician can remove any safety precautions which have been applied under the terms of the AWP and which are under their direct control at any point that they consider to be appropriate, (as per the normal procedures for cancellation of an AWP).

Where a safety document, issued under the Boundary Safety Rules, requires the Authorised Technician to sign a clearance section before returning it to the Appointed Person for cancellation, the Authorised Technician is not required to witness in person the removal of the BSR isolation.

Where a safety document, issued under the Boundary Safety Rules, requires the Appointed Person to sign a cancellation section prior to the removal of safety precautions, there is no requirement for a duplicate signature on the AWP. However, the Appointed Person must confirm to the Authorised Technician that the Boundary Safety Rules System has been restored to its normal operational condition in accordance with a Company 'A' Management Instruction.

Where the Appointed Person who applied the BSR safety precautions is not the same individual removing them upon completion of the work or testing, the safe custody and transfer of the Safety Key(s) must be in line with the normal procedures for Safety Key(s), as laid down in the Boundary Safety Rules.

- **3.2.11** Once all points of isolation have been removed and the Boundary Safety Rules System has been restored to its normal operational condition by the Appointed Person, the Authorised Technician can return the Wind Turbine Generator to normal operation and enact Transfer of Control with the Operational Controller under the terms of the AWP in the usual manner.
- **3.3** Where isolation is required under the Company 'A' WTSR as a part of the required safety precautions for work or testing under the Approved HV Safety Rules or another set of Safety Rules.
- **3.3.1** The Authorising Engineer, when contacted by the Appointed Person, shall offer advice on cross boundary safety precautions relating to the WTSR, defined System. Following discussion, the Appointed Person and Authorising Engineer shall agree those safety precautions. The Authorising Engineer shall be responsible for recording any safety precautions relating to the WTSR defined System, as discussed and agreed with the Appointed Person, on an Approved Written Procedure (AWP) for 'Cross Boundary Isolation'. See Appendix B for example of AWP layout and wording, Appendix C shows a flow chart on how this is achieved.

3.3.2 When the Appointed Person requires an isolation to be carried out on the WTSR System, they shall contact the Authorised Technician and inform them of that requirement.

NOTE: Where the boundary is with an HV system the Appointed Person shall where practicable, isolate the HV system before the Authorised Technician isolates the LV System.

3.3.3 The Authorised Technician shall then inform the Appointed Person that he/she intends to apply the necessary safety precautions by completing the AWP for 'Cross Boundary Isolation'. The Appointed Person shall confirm that the Authorised Technician has a valid AWP that quotes the necessary cross boundary safety precautions, (as previously agreed with the Authorising Engineer).

NOTE: At this stage if there is any doubt about the safety precautions or their adequacy, work shall not proceed and an Authorising Engineer shall be contacted. If it is concluded that the current AWP is inadequate, the work or testing shall be cancelled and a revised AWP produced.

- **3.3.4** The Authorised Technician shall contact the Operational Controller and enact the Transfer of Control procedure under the terms of the AWP.
- **3.3.5** The Authorised Technician shall apply the safety precautions as stated on the 'Cross Boundary Isolation' AWP which shall be witnessed in person by the Appointed Person.
- **3.3.6** The Authorised Technician shall ensure that the safety precautions applied are exactly those as detailed on the AWP.
- **3.3.7** The Authorised Technician shall apply an Approved multi-hasp locking device, (if necessary), to each point of isolation and secure one lock and Caution Notice on behalf of him/herself. The Appointed Person shall provide a second lock and Caution Notice which shall be applied and secured by the Authorised Technician. The Safety Key to this second lock shall be identified by the Authorised Technician and returned to the Appointed Person.
- **3.3.8** The Authorised Technician shall place their Safety Key(s) in safe custody. The AWP shall be signed in Part 1 of the Surrender Record and then be placed in safe custody, along with the Safety Key. The AWP and Safety Key(s) shall remain in safe custody for the duration of the work or testing.

NOTE: A Company 'A' Management Instruction shall specify the procedures to be followed in order to achieve safe custody in accordance with WTSR B2.3.2.

- **3.3.9** When the Appointed Person requires the cross boundary isolation to be removed, on completion of all work and testing, they shall contact the Authorised Technician and request removal of all points of isolation on the WTSR System. The Appointed Person and the Authorised Technician shall agree upon the operational condition of the Wind Turbine Generator to be achieved following de-isolation. Appendix D shows a flow chart on how this is achieved.
- **3.3.10** The Authorised Technician shall remove the AWP from its place of safe custody and re-issue it to him/her as described in WTSR B 2.3.3 or 2.3.4 and sign Part 2 of the Surrender Record.
- **3.3.11** The Authorised Technician shall complete and sign the clearance and cancellation sections of the AWP respectively and then undertake the de-isolation and return the point(s) of isolation to the operational condition as previously agreed with the Appointed Person by removing only the precautions stated on the AWP. The Appointed Person shall issue his Safety Key(s) to the Authorised Technician for this purpose.

3.3.12 The Authorised Technician shall, using both their own Safety Key and the Safety Key provided by the Appointed Person, proceed to de-isolate the point(s) of isolation which shall be witnessed in person by the Appointed Person.

NOTE: Where the Appointed Person who witnesses the application of the safety precautions is not the same individual witnessing their removal, following completion of the work or testing, the safe custody and transfer of the Safety Key(s) must be in line with the normal procedures for Safety Key(s) as laid down in the Boundary Safety Rules.

- **3.3.13** The Authorised Technician shall then return the point of isolation to an operational state in accordance with instructions given in the AWP and agreed with the Appointed Person.
- **3.3.14** When the Wind Turbine Generator has been returned to its normal operational condition, the Authorised Technician shall contact the Operational Controller and enact Transfer of Control under the terms of the AWP in the usual manner.
- **3.4** Loss of Integrity of Safety Precautions
- **3.4.1** In any instance when there is reason to believe that any safety precautions may be ineffective, the relevant Appointed Person or Authorised Technician shall inform the other party without delay of that being the case and of the reasons why.
- **3.4.2** In the case of work being carried out under the WTSR the Authorised Technician shall immediately stop all work until the integrity of the safety precautions can be confirmed. If necessary, in the case of lost documents or keys, reference should be made to the Company 'A' Management Instruction for loss of a Safety Key, loss of an Approved Written Procedure or absence of an Authorised Technician, in compliance with WTSR B4.
- **3.4.3** In the case of work being carried out under the Boundary Safety Rules, the Appointed Person shall ensure that all work is stopped until the integrity of the safety precautions can be confirmed. If necessary, in the case of lost documents or keys, reference should be made to Boundary Safety Rules procedures for lost safety documents and keys.

4 SAFETY DURING SWITCHING OPERATIONS

- **4.1** Company 'A' is responsible for managing any risks associated with 'Switching' operations at its Wind Farm Locations.
- **4.2** Where this WTSR Procedure P7 requires that an Authorised Technician witnesses in person the application and/or the removal of any BSR isolation then Company 'A' shall ensure that the individual concerned is not exposed to any risk as a result of associated Boundary Safety Rules 'Switching' operations.
- **4.3** Where this WTSR Procedure P7 requires that an Appointed Person witnesses in person the application and/or the removal of any LV isolation then Company 'A' shall ensure that the individual concerned is not exposed to any risk as a result of associated LV 'Switching' operations.

APPENDIX A EXAMPLE OF AN APPROVED WRITTEN PROCEDURE WHERE ISOLATION IS REQUIRED UNDER THE BOUNDARY SAFETY RULES AS PART OF THE REQUIRED SAFETY PRECAUTIONS FOR WORK OR TESTING UNDER THE COMPANY 'A' WTSR

PRIOR TO THE WORK

| | POINT(s) OF ISOLATION (APPLICATION) |
|-----|---|
| 3.3 | The Authorised Technician shall personally witness the Authorised Person for the BSR System who will open the BSR circuit breaker line isolator 'XYZ', located within Wind Turbine 'ABC', and cause it to remain Isolated by application of two unique locks (one of which shall be supplied by the Authorised Technician, this lock shall have a Caution Notice attached, and the associated Safety Key shall be retained by them). The other Safety Key shall be retained in safe custody by the Authorised Person. |
| | PRECAUTIONS (APPLICATION): |
| 3.4 | I certify that I have applied the safety precautions listed in Section 3.3. |
| | Signed being an Authorised Person under the BSR |
| | Time: Date: |
| | I certify that the safety precautions listed in Section 3.3 have been established to provide Safety from The System in respect of the work identified in "Work to be Done" at the start of this Approved Written Procedure. |
| | Signature Checkpoint: Time: |
| | |
| | |

ON COMPLETION OF THE WORK

Г

| | 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. |
| 3.? | 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: |

| | CANCELLATION: |
|-----|--|
| 4.1 | 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: |
| | POINT(s) OF ISOLATION (REMOVAL) |
| 4.2 | The Authorised Technician shall personally witness the Authorised Person who shall remove locks and associated Caution Notices from the BSR circuit breaker line isolator 'XYZ', located within Wind Turbine 'ABC', using the two Safety Keys, one provided by each party. If it is required to return the BSR System to an operational condition then HV Switching can be carried out by the Authorised Person in accordance with BSR procedures. |
| | PRECAUTIONS (REMOVAL): |
| | I certify that I have removed the safety precautions listed in Section 4.2. |
| 4.3 | Signed being an Authorised Person under the BSR |
| | Time: Date: |

For illustration purposes only, the exact wording on the Approved Written Procedure shall be determined by the appropriate Authorising Engineer.

APPENDIX B EXAMPLE OF AN APPROVED WRITTEN PROCEDURE WHERE ISOLATION IS REQUIRED UNDER THE COMPANY 'A' WTSR AS A PART OF THE REQUIRED SAFETY PRECAUTIONS FOR WORK OR TESTING UNDER THE APPROVED HV SAFETY RULES OR ANOTHER SET OF SAFETY RULES

PRIOR TO THE WORK

| Step | Operation |
|------|---|
| 3.1 | Establish Local Control of the Wind Turbine. |
| 3.2 | Establish General Safety |
| 3.3 | Authorised Person to isolate HV system (where practical) |
| 3.3 | The Appointed Person shall personally witness the Authorised Technician who shall implement the precautions detailed in steps 3.4 to 3.5 below. The Appointed Person shall apply an additional Safety Lock and Caution Notice (or equivalent) as required by the Approved BSR System. |
| 3.4 | POI Application: LV system |
| 3.5 | POI Application: LV system |
| 3.6 | Precautions: |
| | I certify that the precautions listed in steps 3.1 to 3.5 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.?. |
| | Signature Checkpoint: Time: Date: |
| 3.7 | This AWP will remain in Safe Custody and no work will be undertaken on the Plant/ Apparatus detailed in 1.? until confirmation has been received from the Appointed Person that the precautions detailed in steps 3.1 to 3.5 are no longer required. |
| 3.8 | |

ON COMPLETION OF THE WORK

| 3.? | | |
|-----|--|--|
| | I have received confirmation from (Appointed Person) that the precautions detailed in steps 3.1 to 3.5 are no longer required. | |
| 3.? | Signature Checkpoint: Time: | |
| | Signature Checkpoint: Time: | |
| 3.? | End of Work/Testing | |

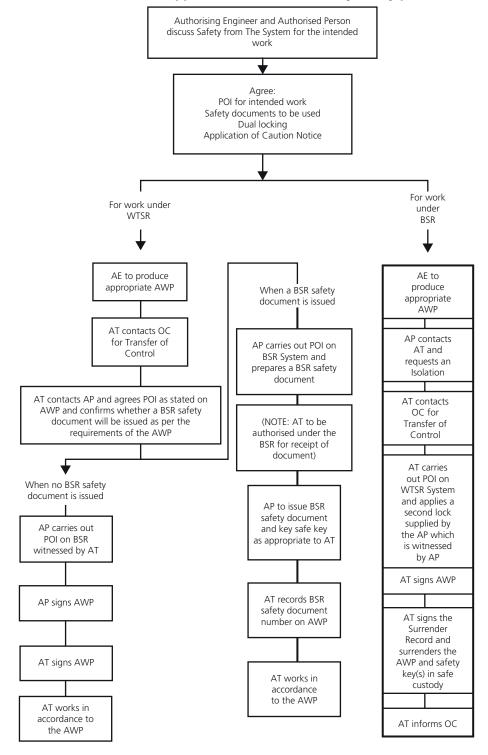
| | Clearance: | |
|-----|---|--|
| | I certify that the work or testing under this AWP is now complete and all persons in my Working Party have been withdrawn and warned that it is no longer safe to continue working or testing on the Plant/Apparatus. | |
| | All gear, tools and loose equipment have been removed. | |
| 3.? | 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: | |

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: | |
| 4.2 | POI Removal: | |
| 4.3 | POI Removal: | |

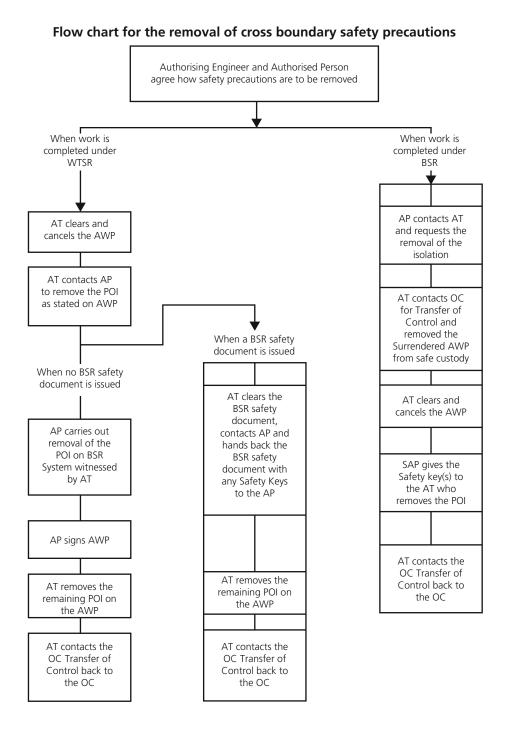
For illustration purposes only, the exact wording on the Approved Written Procedure shall be determined by the appropriate Authorising Engineer.

APPENDIX C



Flow chart for the application of cross boundary safety precautions

APPENDIX D





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