Good Industry Practice Safety Co-ordinator Training

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Background

This package has been developed by a group from Generators, DNOs & TLs and is based on the Grid Code Issue 3 revision 11 of 15th July 2005.
Users have the responsibility to provide competent individuals to carry out their company's Grid Code responsibilities. It is the Users' responsibility to interpret this guidance to meet their own company's requirements.

Glossary of Terms

These terms are for guidance only. Where applicable, refer to the Grid Code Glossary for the definitive description

- **DOA**: Delegation of Authority. A contractual agreement between two companies that allows one Control Person to delegate control of defined equipment to the Control Person of another company for establishing safety precautions. Referred to as an Agency Agreement or Operational Arrangements.
- **DNO:** Distribution Network Operator (formerly a Regional Electricity Company in England & Wales)
- **HV:** High Voltage. Typically above 1000 volts
- **OC8:** That part of the Grid Code defining RISSPs
- **OC8A & OC8B:** OC8A operates in England & Wales. OC8B operates in Scotland
- **PFW:** Permit for Work. A company specific safety document that controls work
- **RISSP:** Record of Inter System Safety Precautions
- **Safety Co-ordinator:** A suitably qualified and trained person, nominated by an appropriate officer of his / her employing company to be responsible for the co-ordination of safety precautions at their connection point as defined in OC8 of the Grid Code
- **Sanction:** A company specific safety document that allows testing & removal of earths
- **SRS:** Site Responsibility Schedule
- **STC:** The System Operator Transmission Code which defines arrangements with National Grid & the Scottish Transmission Owners
- **TL:** Transmission Licensee. One of, National Grid Electricity Transmission, SP Transmission Ltd or Scottish Hydro Electricity Transmission Ltd

Good Industry Practice Safety Co-ordinator Training

Recommended Minimum Standards for Training Safety Co-ordinators

This document has been produced as guidance for the training of Safety Co-Ordinators. It is the User's responsibility to interpret this guidance to meet their own company's requirements.

- It is recommended that a mentoring process be adopted throughout the training process and this document gives guidance to both the candidate and mentor on completing the objectives.

- **Assessment Summary.** This is a summary of the completed objectives, which should be signed by the appropriate Manager/Team Leader. It is a ready reference indicating that the specified objectives have been completed.

- **Objectives.** These are to be completed by the candidate and assessed by the appropriate trainer/mentor. On completion of each section the candidate shall complete a final assessment with the mentor and/or the appropriate officer who should then sign to register satisfactory completion of each objective.

Introduction

The role of the Safety Co-ordinator is a key function within the management of HV Safety at connection sites.
The individual nominated to this position should be of the right calibre and disposition, being able to discharge the responsibilities confidently and in a highly professional manner.

This document interprets and gives guidance on all aspects of the "appropriate training" along with required courses and procedures that are recommended to ensure compliance with these Minimum Standards.
The candidate must be able to demonstrate competence and be able to provide documented evidence of the training carried out.
The candidate's mentor (who should preferably be someone immediately available to the candidate, with the required knowledge and experience) and assessor will use these objectives to monitor the candidate's progress.

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Recommended Criteria

Appropriate training shall be given which will include the duties and responsibilities of the Safety Co-ordinator.
Candidates must be able to demonstrate knowledge and practical competence in the following areas:
Duties and responsibilities of the Safety Co-ordinator and relevant local procedures
The training should include a practical test in the implementation of the RISSP Procedure. A visit to a Transmission Licensee's control centre will give a fuller understanding of Safety Co-ordination across Control Boundaries.

Safety Co-ordinator Responsibilities.

Enacting the role of Safety Co-ordinator at the interface with a Transmission Licensee or other parties. This shall include the process of:

(i) Consulting with the TL Control Person who is enacting the role of TL Safety Co-ordinator to agree, initiate and record those actions necessary to establish and maintain safety precautions on Plant and Apparatus which is interconnected across the control boundary.

(ii) Operating the agreed procedure for recording inter-system safety precautions (RISSP procedure).

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Training Objectives for Safety Co-ordinators

Candidate's Name:..... Designation: .....

Specific Area of Responsibility:.....

This objective should be formatted to reflect the specific requirements of the location.

ASSESSMENT OBJECTIVE SUMMARY			
Description	Reference	Manager/Team Leaders Assessment comments & Signature:	Date
Understanding and enacting the role of the Safety Co-ordinator implementing the RISSP procedure.	Site Responsibilities Schedule and Local Management Instructions Local procedures on Safety Co-ordination Across Control Boundaries. OC8.		

Recommendation for Nomination and Assessment.

I can confirm that Name: ..... has satisfactorily completed the appropriate objectives and has reached the required standard to be considered for appointment as Safety Co-ordinator.

Signed: ..... Manager/Team Leader Date: .....

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Training Objectives for Safety Co-ordinators

Objective: Enacting the role of Safety Co-ordinator

The candidate must be able to demonstrate a full understanding of and become completely conversant with all aspects of the Safety Co-ordinator duties and responsibilities.

CRITERIA FOR ASSESSMENT	EVIDENCE REFERENCE	ASSESSOR'S SIGNATURE	DATE
Responsibilities of the Safety Co-ordinator at the interface with TL / Third Parties			
Enacting the role of Safety Co-ordinator and implementing the RISSP procedure. Both as Implementing and Requesting Safety Co-ordinator. Explaining the differences between Control Person (Operations) and Control Person (Safety). **See Grid Code OC8 Interpretation Document. Appendix 1**			
Recommendation: A visit to a TL Control Centre Discussion on and understanding of the Safety Co-ordination process, procedures and documentation with the Safety Co-ordinators.			

Assessment Interview with regard to the Objective.

During this assessment the candidate has demonstrated a thorough understanding of the elements defining the role of a Safety Co-ordinator.

Confirmation of completion. .....(Signature) Mentor. Date .....

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Summary of Grid Code OC8 (RISSP process)

The TLs act as intermediaries carrying power between generators and customers. It follows that certain equipment must cross the control boundary between the TLs and the other companies. The Grid Code OC8 (A & B) specifies the methods of achieving and maintaining Safety when working on such equipment.

It requires that each piece of equipment connected to the system be under the control of someone who the GRID CODE describes as a SAFETY CO-ORDINATOR. The Grid Code OC8 does not apply when safety precautions are required solely between Users (for example where the boundary does not involve a TL interface).

It is a point of principle that for equipment which crosses a Control Boundary there can be only two SAFETY CO-ORDINATORS who interface with each other across that boundary. The Grid Code requires that when work is to be carried out on such equipment, TLs must use a document known as a RISSP.

The Grid Code does not require other companies to use a RISSP in their dealings with the TL but it specifies that a document shall be used which contains similarly numbered sections for containing similar information, so for practical purposes other companies must also use a RISSP.

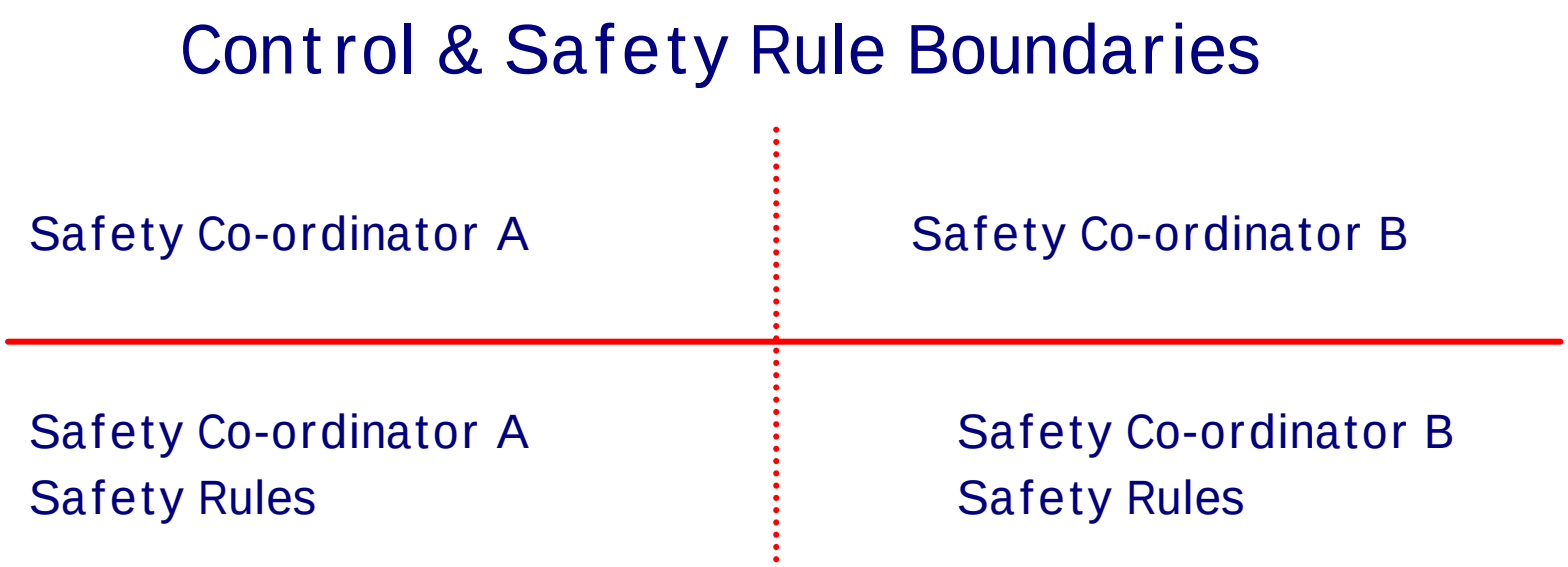
Safety Rules operated by each company specify that before work can be carried out on HV equipment, such equipment must be dead, isolated from the live System, earthed between the point of isolation and the point of work, and released for work by the issue of a safety document. Procedures must be in place to ensure that the safety precautions are not interfered with whilst the safety document is in force.

Proximity PFW

The presentation associated with the course describes the principles of a Proximity PFW. For example, where a RISSP is in force for the TL to maintain the Super Grid bus bar selector isolator and the DNO controls the bus bars, the Implementing RISSP from the DNO provides adequate safety precautions for the work on the Super Grid bus bar selector isolators.

Proximity PFWs are only issued where distances could be infringed to HV equipment not directly connected. For example a radio mast adjacent to a circuit within a sub station.

Summary of Grid Code OC8 (RISSP process)



The Control and Safety rule boundaries may be one and the same

Diagram 1

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Control & Safety Rule Boundaries (see Diagram 1)

Work is to be carried out on the part of the circuit under the control of SAFETY CO-ORDINATOR A.
As the circuit crosses a Control Boundary, SAFETY CO-ORDINATOR A is incapable of instructing all the Safety Precautions which must be taken to allow the work to start.

He must therefore communicate with SAFETY CO-ORDINATOR B and request him to provide Safety from the part of the System under the control of SAFETY CO-ORDINATOR B.

When carrying out this role SAFETY CO-ORDINATOR A becomes the REQUESTING SAFETY CO-ORDINATOR as defined in the Grid Code. SAFETY CO-ORDINATOR B must then coordinate the establishment of the agreed Safety Precautions and therefore becomes the IMPLEMENTING SAFETY CO-ORDINATOR as defined in the Grid Code.

The points to note here.

- There is no requirement for either of the SAFETY CO-ORDINATORS to know the details of the circuit beyond the boundary as the agreement is "to provide Safety'. The name and location of the circuit must be known, as this is required for effective discussion.

- The declaration which will eventually be made can therefore be taken as Authoritative.

- There is scope within the procedure for the two SAFETY CO-ORDINATORS to decide whether isolation only, or isolation and earthing are to be guaranteed across the boundary.

- When all Safety Precautions have been taken, the RISSP can be issued. The IMPLEMENTING SAFETY CO-ORDINATOR who completes a document known as a "RISSP I" initiates the process.

Completion of the RISSP
Part 1.1 of this document mentions the name of the circuit on side A (The Requesting side) of the boundary.
Part l.2.a states the isolation and how it has been achieved, and Part l.2.b states the earthing (if any) and how it has been achieved.

With this part completed, the IMPLEMENTING SAFETY CO-ORDINATOR dictates the information to the REQUESTING SAFETY CO-ORDINATOR who records it on a "RISSP R".
The REQUESTING SAFETY CO-ORDINATOR gives the IMPLEMENTING SAFETY CO-ORDINATOR a reference number.
Finally both SAFETY CO-ORDINATORS complete Part 1.3 of the document and the process is complete.
It is now incumbent on both SAFETY CO-ORDINATORS to record and maintain the safety precautions within their local safety management system, following which the REQUESTING SAFETY CO-ORDINATOR can consent to the issue of Safety documents.

Other considerations for a simple circuit

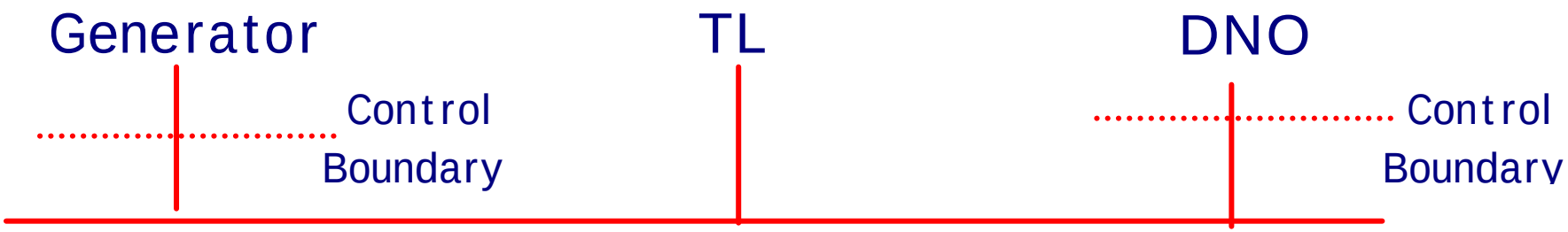
- If work is to be carried out on both sides of the control boundary, then each SAFETY CO-ORDINATOR enacts the role of REQUESTER and IMPLEMENTOR, separately and two sets of RISSPS are issued.

- If TESTING is to be carried out then control of the whole of the isolated zone passes to the recipient of the Requesting SAFETY CO-ORDINATOR who in turn passes it to the recipient of the Sanction. The IMPLEMENTING SAFETY CO-ORDINATOR must be informed of the intention to TEST, and there can be no question of two sets of RISSPS being in force at the same time.

- Whereas it is normally only desirable to quote on the RISSP the minimum number of earths, which are required for Safety the requirements of TESTING are such that all earths within the isolated zone must be quoted on the Sanction and hence are required on the IMPLEMENTING RISSP.

Summary of Grid Code OC8 (RISSP process)

Cascade of Safety Precautions



TL controlled Busbars

Generators rarely have to Cascade RISSPs as they do not control the Busbars.Ref.OC8.5.1.2

- The Same Principle as in the simple example i.e. only two Safety Co-ordinators interface at any boundary point.
- The TL requests precaution from one Safety Co-ordinator which are cascaded via an implementing RISSP to another.
- If all three parties are working at the same time there will be four RISSPs in place.

Diagram 2

More complex cases

There are two cases of cross boundary working commonly met, which pose complications.

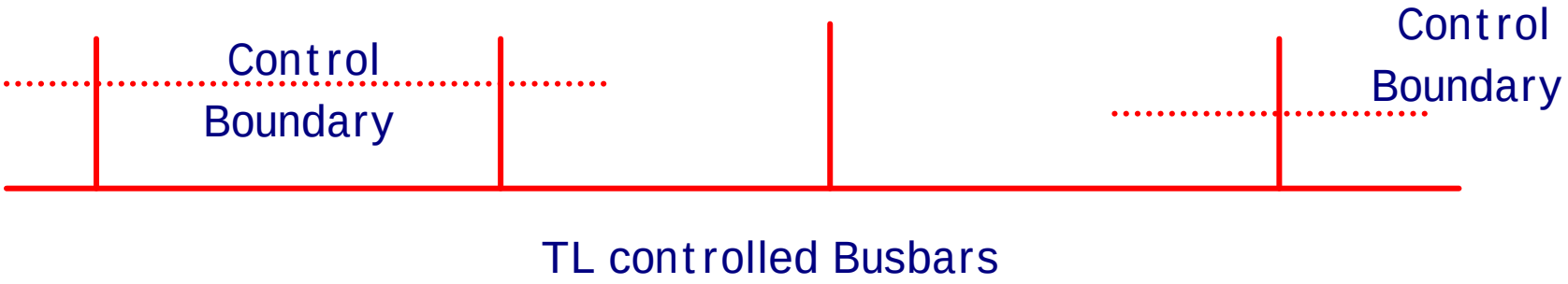
Cascade of Safety Precautions (see Diagram 2)

Generator / TL / DNO
(See diagram 2)
In this case, the busbars are owned by the TL, and the infeeds to these busbars come from circuits owned by generators and Distribution Network Operator.
The philosophy applied is exactly as before. At any boundary only two SAFETY CO-ORDINATORS are involved.
Therefore assuming the generator is acting as REQUESTING SAFETY CO-ORDINATOR, he will ask the TL Safety Co-ordinator to provide Safety at the boundary. In addition to taking his own precautions, the TL Safety Co-ordinator will act as another REQUESTING SAFETY CO-ORDINATOR to request the DNO to establish Safety Precautions on the DNO system.

When these are complete The TL Safety Co-ordinator obtains a RISSP from the DNO and records the details obtained along with the precautions established on TL system to the RISSP, which he then gives to the Generator.
Thus if all three parties are working at the same time, there could be four RISSPS in existence. It is necessary to ensure that procedures are in place to keep track of all this documentation, although in practice most of this work falls on the TL Safety Co-ordinator, as the central party.

Summary of Grid Code OC8 (RISSP process)

Linkage of Safety Precautions **Ref. OC8.5.1.3**



- When the TL are acting as an Implementing Safety Co -ordinator for work on Unit 1 they inform the Generator Safety Co-ordinator that safety can only be guaranteed if safety is maintained on his own Unit 2 Circuit.
- The Generator Safety Co-ordinator may not have a Busbar diagram available

Diagram 3

Linkage of Safety Precautions (see Diagram 3)

UNIT 1 UNIT 2 TL / DNO

This *case* is of particular interest to generators. When a generator wishes to work on the busbar isolator of unit 1, he will request Safety from the TL Safety Co-ordinator. As part of the process of acting as an IMPLEMENTING SAFETY CO-ORDINATOR, the TL Safety Co-ordinator must inform the Generator Safety Co-ordinator of the fact that safety can only be given if the generator achieves Safety on some of his own equipment i.e. Unit 2.

This information is recorded on the RISSP in Part 1.1 as precautions to be maintained on the REQUESTING SAFETY CO-ORDINATOR'S system. It should be noted that the Generator Safety Co-ordinator may not have a busbar diagram available to him, and for certain outages even the diagram may not give the required information.

Change of Precautions

Under certain complex outage situations it may become necessary to change the details which are recorded on a RISSP. It is not allowable to actually change a RISSP once it has been issued, but allowing the issue of a second RISSP followed by cancellation of the first RISSP caters for the possibility, provided that the first RISSP is not associated with testing.

Such a procedure allows work to continue uninterrupted under existing safety documents provided that none of the safety precautions quoted on such safety documents are invalidated.

Delegation of Authority (DOA)

A contractual agreement between two companies that allows one Control Person to delegate control of defined equipment to the Control Person of another company for establishing safety precautions. Referred to as an Agency Agreement or Operational Arrangements.

Following the completion of this switching, the SAFETY CO-ORDINATOR in receipt of the DOA will formally report the completion of the agreed Switching. The SAFETY CO-ORDINATOR who delegated control must then formally enact the role of the REQUESTING or IMPLEMENTING SAFETY CO-ORDINATOR as appropriate, even if this means an apparent duplication of effort. It would be easy to confuse the two roles in this case so great care must be taken.

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Suggested Course Structure for Training Safety Co-ordinators

Sessions	Objective	Structure	Requirements	Duration
Session 1 Introduction	Welcome and introduce speaker Location Safety Requirements Round the table introduction of attendees Objectives of the day. Distribute required handouts	General discussion	Power point slide notes Safety Co-odinator Minimum Standards Introduction Document.	15 minutes
Session 2 Safety Co-ordinator training	To ensure each delegate fully understands the additional responsibilities when enacting the role of Safety Co-ordinator. Understanding the minimum standards required as Safety Co-ordinators.	Power Point Presentation First ten slides cover definitions and the minimum standards. Going through the introduction to minimum standards document with the attendees.	Power point presentation To be paused as required to discuss additional notes. Safety Co-odinator Minimum Standards Introduction Document.	30 minutes
Session 3 Control and Safety Rule Boundaries	Understanding the Site Responsibilities schedule, its layout and what it contains. Each member to utilize copies of their own schedules.	Continue with Power point presentation. Slides 11 to 17.	Copies of a Site Responsibilities Schedule.	30 minutes
Coffee				

Good Industry Practice Safety Co-ordinator Training

Suggested Course Structure for Training Safety Co-ordinators

Sessions	Objective	Structure	Requirements	Duration
Session 4 RISSP Procedure	To fully understand how to implement and manage the RISSP Procedure in different scenarios.	Power point presentation Slides 18 to 57.	Power Point and OC 8 guidance from the Minimum Standards document. Grid Code OC8 Document for reference.	1 hour
Lunch				
Session 5 RISSP Procedure continued	To ensure each course member is comfortable enacting the role of Safety Co-ordinator, uses the correct trigger phrases and follows the correct procedure.	Role-play through the RISSP process.	Blank RISSP Documents and case studies. The examples in the Minimum Standards Document will suffice, (define local examples as these are better).	1 hour
Tea				
Session 6 When things go wrong	Covering past near misses and understanding what went wrong.	Power Point & Discussion Slides 58 to end and discussion.	Power Point presentation and other near miss details. Recent ones are preferable.	1 hour
	End of Course Questionnaire	Question Paper	Question Papers	1 hour
Summary of Day	Any questions answered and anomalies clarified.	Discussion	Course evaluation Paper.	15 minutes
Dispersal				

Good Industry Practice Safety Co-ordinator Training

Suggested Assessment Questions for Safety Co-ordinators

1 What is the definition of a Safety Co-ordinator?

2 Name the four types of Boundary

3 List the responsibilities of the Safety Co-ordinator Role?

4 What is the purpose of the Site Responsibility Schedule?

5 What is the purpose of Grid Code OC8?

6 What is the purpose of a RISSP?

7 There is a RISSP I & RISSP R. What does the I & the R mean?

8 There can be more than two Safety Co-odinators interfacing across a Control Boundary. True/False

9 Who provides the RISSP reference number?

10 Where are Safety Precautions required under a RISSP recorded?

11 Who is responsible for establishing and maintaining Safety Precautions?

12 Where should the RISSP be kept?

13 When can the Safety Precautions be removed?

14 Explain what RISSP linkage is.

15 Other than National Grid who are Transmission Licensees?

16 When safety is required for proximity work on another party's system how then is safety managed? The proximity work is on a non cross boundary circuit.