

**Offshore Transmission Networks,  
Grid Code sub Group**

**Safety Co-ordination Working Group**

**Recommendations for the Application of  
Grid Code Safety Co-ordination to Offshore Electricity Transmission.**

**1     Background**

- 1.1     This paper has been established by the Offshore safety coordination sub group within demanding timescale, utilising two meetings and resultant dialogue within the group to establish these recommendations.  
The proposals are solely focused on facilitating the changes required to the Grid Code to enable arrangements to be in place for April 2008 for the Electricity industry's governance of Off Shore Transmission Networks. The impacts and implications on the STC have been noted, however this documents aim is to highlight where changes will be required with the STC rather than specifying proposals for change.
- 1.2     It would be reasonable to assume that the future energy generation of Great Britain will change significantly with the prospect of a large uptake of wind generation and in particular off shore configurations. The use of two operating codes namely, OC8A for England and Wales and OC8B for Scotland creates a scenario where significant duplication or further variations between the codes becomes problematic. The replication of changes to the codes or the confusion created by differing standards means that the consideration for potentially combining these should be made. Furthermore, the impact of off shore TO's may imply a supplementary document that supports OC8A and B; however this will only be necessary if it is physically substantial enough to justify it.
- 1.3     It is envisaged that the Safety Management responsibilities for current and future TO's are going to be challenging, however it shall remain the primary focus of all parties concerned that current standards of safety management associated with OC8 are maintained.
- 1.4     The proposals and considerations do not include the potential of how an off shore generation structure may operate if it was constructed in a format that establishes an interconnected system to one or more external systems.

## 2 Original Options

- 2.1 The original proposal considered four potential scenarios to establish a way of working that facilitates both the requirements for the proposals for large scale off shore generation and off shore transmission networks, while understanding the limitations of the timescale involved and the practicalities of significant changes to the OC8A and OC8B agreements.

A brief rationale for each option has been included to justify the process used to establish the most suitable approach.

### Option 1

Merge OC8A and OC8B including the appropriate changes to incorporate the off shore connections requirements.

There was agreement that the logic for a single OC8 held great merit, however although significant work has already been progressed in creating commonalities between the two documents, the step change of a proposal for a single document incorporating a process for the resolution of variations has yet to be tabled. It was also noted that the constraints within the Energy Act 2004 to deliver the off shore requirements do not allow for such a comprehensive review of the current process.

### Option 2

Amend OC8A and OC8B with identical changes to incorporate the off shore connection requirements.

This recommendation allows a best fit as it facilitates both documents to be modified accordingly without significant delay, while simultaneously allowing the concept of keeping the required changes as identical as possible, within the constraints of any variations between OC8A and OC8B, however this will also require an amalgamated management system between the guardians of the respective codes to maintain the commonality.

### Option 3

Amend OC8A and OC8B individually with changes to incorporate the off shore connection requirements.

It was felt that a policy that created a strategy of amending OC8A and OC8B individually with changes as and when the particular code requires alteration to incorporate the off shore connection requirements is likely to lead to a divergence between OC8A and OC8B in a direction that does not aide harmonisation. The potential of this route is likely to also cause confusion between the rules and prospective connectees and may create perceived advantages / disadvantages for using particular connection points.

### Option 4

Create OC8C to manage the off shore requirements for both connection to OC8A (England and Wales) and OC8B (Scotland).

The creation of OC8C to manage the off shore requirements for both connection to OC8A (England and Wales) and OC8B (Scotland) does not create a desirable solution. The creation of a third code would also fail to address the potential differences between OC8A and OC8B at connection points and still require OC8A and OC8B modification to facilitate OC8C.

- 2.2 Given the arguments stated above, Option 2 is the preferred direction as this is the recommendation that fulfils the criteria as a best fit as it allows both documents to be modified accordingly without significant delay, while

simultaneously allowing the concept of keeping the required changes as identical as possible, within the constraints of any variations between OC8A and OC8B. The subsequent recommendations and proposals within this document will focus on issues and considerations of implementing this objectivity.

### **3 Proposals**

3.1 There are three basic models which would incorporate all potential scenarios. These have been titled:

- DNO Connected
- Spoke Connected, either DNO or Transmission
- Transmission Connected

These will be referred to later as: S Connected, T Connected & D Connected. The diagrammatic layouts of these are attached as Appendix A for reference.

3.2 D Connected

- The off shore TO would connect into a DNO point with a voltage up to 132kV, in England and Wales and SP or SHEDL in Scotland. This section describes the connection arrangement and not the proposals for the codes. However, the shore based TO arrangement whether OC8 A or B will dictate the appropriate code.

3.3 S Connected

- The S connected is an offshore TO connection which connects to the shore via a platform owned by another TO or onto a DNO connection. The possibility of a number of TO connections is possible.
- The application of the principle for determining the coordinating TO for cross boundary safety documentation (RISSPS) will be the TO which owns the platform connecting to the on shore connection.

3.4 T Connected

- The T connected option, allows the off shore platform to connect directly to the TO, either NGET, SPD or SHETL.

### **4 Generic Issues**

4.1 Currently existing GB User connections use OC8A in England & Wales or OC8B in Scotland to interface with their existing TO.

- 4.2 Many of the current ways of working allow direct transfer of either OC8A or OC8B requirements to be managed without change to encompass the off shore requirements.
- 4.3 Wind Generator modules could use either OC8A or OC8B dependant upon what the connection points TO's version is. Currently the situation between NG & SP to use OC8A or OC8B respectively on interconnecting circuits has not created any difficulties in the management of RISSPs, however this practice should not be used as a benchmark for future agreements.
- 4.4 There maybe a situation where a party that operates under one code (currently in the case of NGET, SHETL or SPT) becomes an off shore TO and will connect to the corresponding code area connection i.e. OC8A to OC8B or visa versa. The scenario needs to be considered and the implications understood.
- 4.5 The use of more than one off shore platform and potentially more than one off shore TO may be easier managed by using the term Landing Platform, for the coordinating / land connected platform.
- 4.6 The location of the interface for offshore safety co-ordination has yet to be defined. This paper proposes that the interface should coincide with the ownership boundaries in the substation and the offshore platform

## **5 Additional Definitions**

- 5.1 The following terms may need to be defined in the relevant codes.  
Spoke connected  
Landing platform  
Platform or off shore platform

## **6 Recommendations**

For Either D, T or S Connected it is recommended that:

- 6.1 Any new TOs will use an existing format of Site Responsibility Schedules, preferably in a format to the current OC8 to the onshore connection.
- 6.2 Any Generators connected to an offshore TO must use the same format Site Responsibility Schedules as their Off Shore TO, to allow a continuity of information data.
- 6.3 Where multiple connections are made to an off shore connection there shall be a single coordinator who manages the OC8 requirements off shore to deliver full safety responsibility to the onshore connection
- 6.4 The RISSP procedure would need to be considered to ensure the viability of whether a cascade or linkage RISSP is the most effective form of establishing safety and whether consideration is required to have uniform safety management system for all Off Shore Users. The RISSP's in OC8A and OC8B should for continuity be identical; however currently OC8B does not have the same linkage facility as that of OC8A.

- 6.5 Circuit naming and nomenclature for HV equipment and generator connections needs to be defined and applied in accordance with OC11 and agreed for use, This will include generator Modules connecting directly to existing TO's or via any new TO agreements. It is understood that agreement from the current TO's to harmonise this process for future connections where practicable.
- 6.6 In the event of an off shore connection either between two off shore TO's or between the TO and the generator the OC8 (either A or B) and supporting documentation will be the same format to allow continuity to the on shore connection.
- 6.7 The only current TO group that discusses safety management issues is the Safety Standing Group a sub committee from the STC, off shore representation would need to be included in this group.
- 6.8 The STC will need amending to ensure relevant parts of the Grid Code become a requirement for the Off Shore TO.

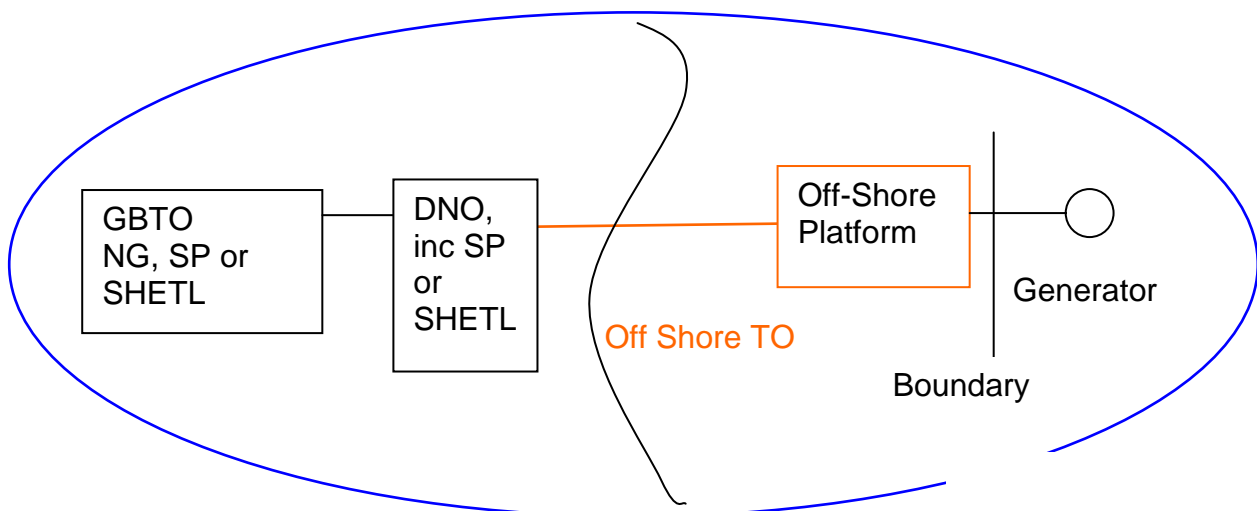
## 7 **Conclusion**

- 7.1 The merits and disadvantages of each have been considered and the proposal is that option 2.2 fulfils the criteria as a best fit. The amending OC8A and OC8B with identical changes (within the constraints of any variations already in existence between OC8A and OC8B) to incorporate the off shore connection requirements.
- 7.2 Amending OC8A and OC8B with identical changes to incorporate the off shore connection requirements would ensure a continuity between the two codes for all off shore connections. The aim of "identical" when referring to "Amending OC8A and OC8B with identical changes to incorporate the off shore connection requirements" is a significant target and it is anticipated that it may not be achievable in all cases due to the subtle differences of OC8A and OC8B. However it should be the aim that any differences generated will effectively achieve the same results.  
These proposals have not considered if or where existing differences between the codes may conflict with a single off shore strategy.
- 7.3 It is understood that some new issues will be created by the off shore requirements. These will include how new TO's rules are going to become approved and also new connector's rules approval will similarly be affected and what responsibilities will be required for connectors being established on DNO connections.
- 7.4 The RISSP coding issue regarding the naming of a new connections code for RISSPing will possibly be best referred to the Grid code / STC for an effective resolution.
- 7.5 The OC8 (A or B) of the off shore connector will align with the on shore TO.

The Working Group agreed that the use of two versions of OC8 will facilitate offshore safety co-ordination at the ownership boundaries. However the development of a single code should be an objective and it was agreed that a commencement of informal dialogue between the current TO's with the aim of making recommendations to the STC Committee on the feasibility of this methodology would be a suitable starting point, however this would be negated by any formal recommendation for the combining the documents

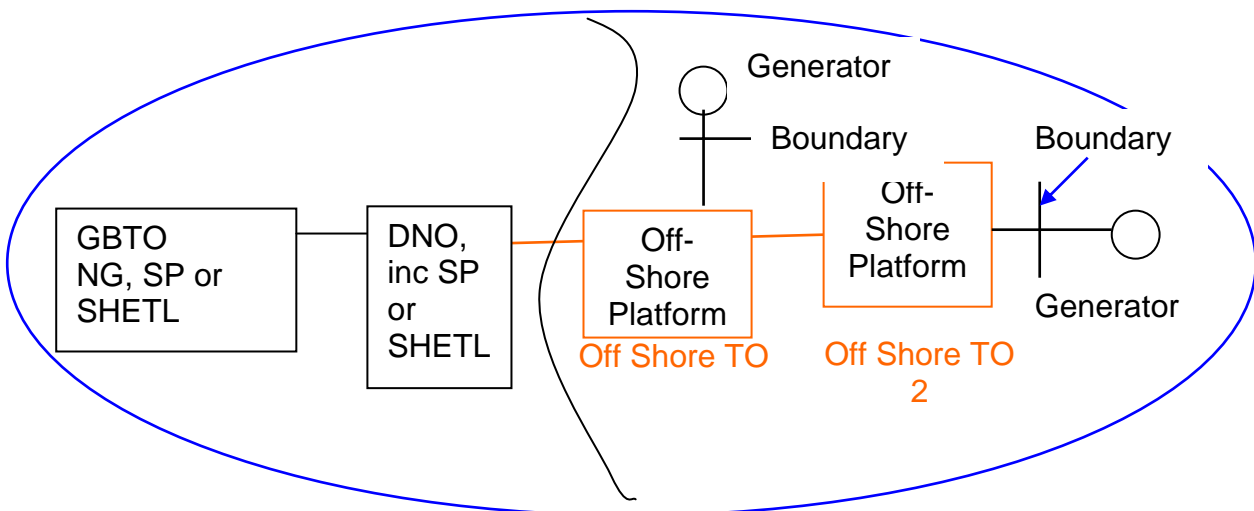
## Appendix A

### D Connected



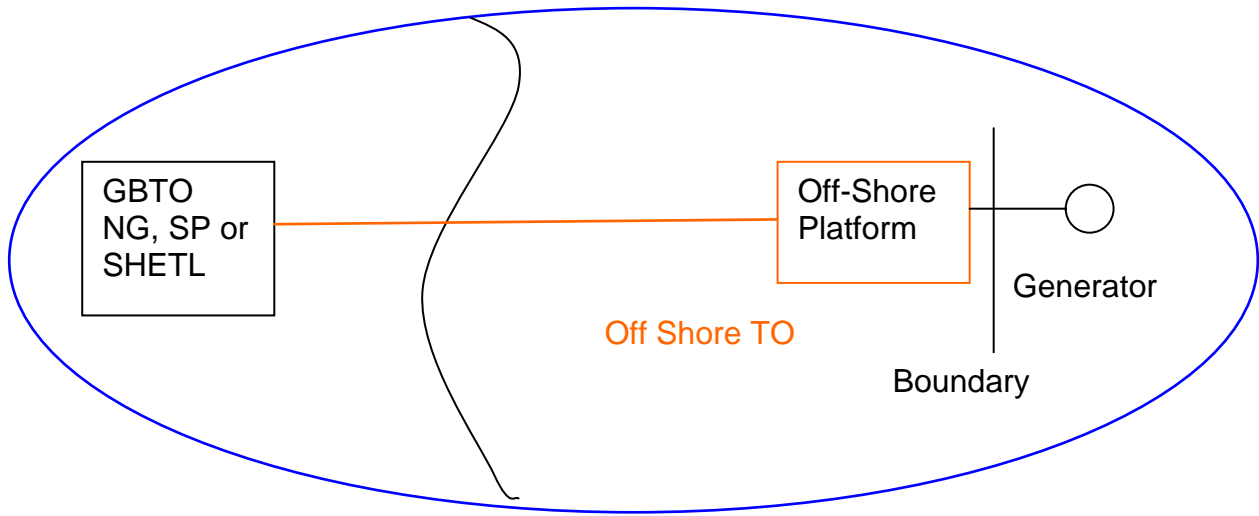
- The off shore TO would connect into a DNO, SP or SHETL with a connection voltage up to 132kV.

### S Connected



- The S connected is an offshore TO connection which connects to the shore via a platform owned by another TO. The possibility of a number of TO connections is possible.
- The application of the principle for determining the lead TO for cross boundary safety documentation (RISSPS) will be the TO which owns the platform connecting to the on shore connection.

T Connected



- The T connected, allows the off shore platform to connect directly to the TO.