

**NETS SQSS Review Panel – Modification Proposal**  
**Treatment of Sub-Synchronous Oscillations (SSO) in the NETS SQSS**

**Date Raised: 02 APRIL 2014**

A Panel Paper by Graham Stein

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**Summary**

The Modification Proposal entitled "Treatment of Sub-Synchronous Oscillations (SSO) in the NETS SQSS" was raised on the 4<sup>th</sup> December 2013. The proposal was prompted by discussions at the Grid Code Review Panel which themselves had been initiated by the submission of the Grid Code Review Panel Paper: "Suppression of Sub-Synchronous Resonance from Series Compensators" (pp13/54)<sup>1</sup> by EdF Energy.

The Modification Proposal recommended that an Expert group should be convened to consider the need to incorporate Sub-Synchronous Resonance and Sub-Synchronous Torsional Interaction considerations in the NETS SQSS and to develop high level proposals for the NETS SQSS Review Panel to consider. The proposals were to include the relevant Terms of Reference if it is deemed necessary to convene a Workgroup.

The Expert Group met by teleconference on the 17<sup>th</sup> February 2014 and concluded that it was necessary to form a Workgroup in order to fully capture the need case for provisions relating to Sub-Synchronous Oscillations to be incorporated within the NETS SQSS and to determine how these should be appropriately defined.

**Parties Impacted**

**High**

N/A

**Medium**

Transmission Licensees

Owners of Synchronous Generators

Owners of HVDC Convertors

**Low**

N/A

**Description & Background**

A brief technical description of Sub-Synchronous Resonance and Sub-Synchronous Torsional Interaction is provided in the Grid Code Review Panel Paper pp13/54. Further background is also provided in the Grid Code Consultation: GC040: Information Required to Evaluate Sub-Synchronous Resonance<sup>2</sup>.

The Expert group described above debated how best to capture SSO related requirements in the NETS SQSS and focussed on whether it was helpful to use the current requirements relating to stability as a comparator or baseline for SSO related requirements. The group concluded that stability requirements were a useful baseline, but that careful consideration was required with respect to new SSO provisions.

<sup>1</sup> <http://www2.nationalgrid.com/UK/Industry-information/Electricity-codes/Grid-code/Panel-information/Meetings/2013/18-September-2013/>

<sup>2</sup> See GC0040 at <http://www.nationalgrid.com/uk/Electricity/Codes/gridcode/consultationpapers/>

Members had a healthy discussion and it was clear that there were a variety of opinions on how best to articulate the relevant issues and progress these appropriately. There was a consensus amongst the group that there was a strong case to take the discussion forward in a formal Workgroup.

### **Proposed Solution**

An NETS SQSS Workgroup should be convened to evaluate the case for including provisions relating to Sub-Synchronous Oscillations in the NETS SQSS.

The Workgroup will consider how best to capture the relevant phenomena and how to define the circumstances (i.e. the secured events and operating conditions) for which conditions must meet certain criteria to be deemed 'acceptable'. The Workgroup is asked to consider defining these for the phenomena of Sub-Synchronous Resonance (SSR), Sub-Synchronous Torsional Interaction (SSTI) and Sub-Synchronous Control Interaction (SSCI). Alternative or further definitions may be required.

### **Assessment Against SQSS Objectives**

**(i) facilitate the planning, development and maintenance of an efficient, coordinated and economical system of electricity transmission, and the operation of that system in an efficient, economic and coordinated manner;**

*Clarification of SSR and SSTI related design and operating criteria may promote consistency and efficiency of network design.*

**(ii) ensure an appropriate level of security and quality of supply and safe operation of the National Electricity Transmission System;**

N/A

**(iii) facilitate effective competition in the generation and supply of electricity, and (so far as consistent therewith) facilitating such competition in the distribution of electricity; and**

*Inclusion of SSR and SSTI related design and operating criteria in the NETS SQSS will offer additional assurance and transparency to User's.*

**(iv) facilitate electricity Transmission Licensees to comply with their obligations under EU law.**

N/A

### **Impact & Assessment**

#### ***Impact on the NETS SQSS***

Various.

#### ***Impact on the National Electricity Transmission System (NETS)***

Transparency of the design and operational criteria applied to manage SSR and SSTI risks.

***Impact on greenhouse gas emissions***

N/A

***Impact on relevant computer systems***

N/A

***Impact on core industry documents***

NETS SQSS developments may interact with related proposals for the Grid Code.

***Impact on other industry documents***

N/A

**Supporting Documentation**

Have you attached any supporting documentation: [YES/NO]

If Yes, please provide the title of the attachment: Draft Workgroup Terms of Reference

**Recommendation**

The NETS SQSS Review Panel is invited to:

Establish a Workgroup in accordance with the attached draft Terms of Reference.

**Document Guidance**

This document is used to raise a Modification Proposal at the SQSS Review Panel. Incomplete forms will not be processed and the Proposer may be asked to clarify any information that is not clear.

Guidance has been provided in square brackets within the document but please contact the SQSS Review Panel Secretary: Nick Martin ([nick.martin@nationalgrid.com](mailto:nick.martin@nationalgrid.com)) if you have any queries.