

DRAFT Minutes

Meeting Name	NETS SQSS Sub-Synchronous Oscillations (SSO) Workgroup
Meeting Number	5
Date of Meeting	21 July 2015
Time	10:00 – 14:00
Location	National Grid House, Warwick and Teleconference

Attendees

Name	Role	Initials	Representing
Graham Stein	Chair	GS	-
Nick Martin	Secretary	NM	-
Bieshoy Awad	Member	BA	National Grid SO
Andrew Dixon	Member	AD	National Grid SO
Cornel Brozio	Member	CB	SPT
Alastair Frew	Member	AF	Scottish Power
John Reilly	Member	JR	EdF

Apologies

Name	Role	Initials	Representing
David Adam	Member	DA	SPT
Yash Audichya	Member	YA	SSE
Ankit Patel	Member	AP	SSE
Lorna Short	Member	LS	RWE
Mayure Daby	Authority	MD	Ofgem

1 Introductions & Apologies

GS opened the meeting by thanking all of those in attendance. The apologies were also noted.

2 Approval of Minutes

Further comments on the minutes of the previous meeting were invited. None were immediately forthcoming. Comments shall be accepted on both sets of meeting minutes up to two weeks after the circulation of these minutes. Both sets of minutes shall then be published onto the National Grid NETS SQSS Website.

3 Review of Actions

a) Actions From Previous Meeting:

Action	Description	Action Owner	Due Date
2.3	SHE Transmission to provide the literature they recommend to use as a basis for defining SSO. <i>Update: This action has not been discharged but is no longer required as the Workgroup has landed on an option. It can therefore be considered closed.</i>	YA	Closed
3.1	DA to draft a definition of SSO, attempting to include all of the options discussed to date and to share this definition with the Workgroup. <i>Update: This action has been superseded by the production of the Workgroup Report and can therefore be considered as completed and closed.</i>	DA	Closed
3.2	The Workgroup is to provide a view on the modification proposed to the original criteria. <i>Update: This action remains subject to Workgroup discussions.</i>	ALL	Next Meeting
4.0	AF and BA to discuss the wind farm incident identified during this meeting offline and BA to update the proposed text as necessary. <i>Update: This issue has been discussed offline and the Workgroup Report updated accordingly. This action can therefore be considered as completed and closed.</i>	AF / BA	Closed
4.1	BA to confirm the requirements on User(s) who wish to install monitoring equipment and / or protection and the implications of this on National Grid. <i>Update: This action was discussed but remains on-going. The Workgroup Report will be updated accordingly based upon any comments received.</i>	BA	Next Meeting
4.2	BA and NM to draft a first pass Workgroup Report and circulate to all Workgroup Members for comment by late April / early May 2015. <i>Update: A first draft Workgroup Report has been presented. This shall continue to be updated based upon any comments received.</i>	BA / NM	May 2015
4.3	NM to circulate a doodle poll to determine the most appropriate date for a Workgroup teleconference and / or meeting as required. <i>Update: This action has been completed and can therefore be closed.</i>	NM	Closed

4 Workgroup Report

BA presented a first draft Workgroup Report based upon the discussions that have been had to date. Initial views on this from all Workgroup Members proved to be favourable. Further comments on the Workgroup Report were invited by close of business on Wednesday 05 August 2015. All comments should be sent to BA (bieshoy.awad@nationalgrid.com) via email.

5 Discussion Items

BA gave a brief presentation to the Workgroup. He started with the definition of SSO previously agreed and noted that he had added extra components to the definition to account for wind farms and HVDC equipment. The Workgroup reiterated their support for the definition presented.

BA then moved on to present the definition of Unacceptable SSO previously discussed. AF stated that whilst he didn't have a problem with the definition proposed, he believed that making explicit reference to voltage, current or torque limits could cause a lot more trouble than it was worth! CB agreed and added that you would always be dealing with exceptions to the rule anyhow and this is why the Workgroup hasn't been able to determine any solid numbers to date. AF clarified that equipment will need to be designed to withstand initial high torques, voltages and currents that arise following a fault, so these are not deemed a major concern. AF added that the real concern is when oscillations are negatively damped yet continue to grow. However, the phrase: "significantly reduce the lifetime" covers this issue anyhow. GS therefore asked the Workgroup if there was a way to capture the sentiment of the second paragraph of the proposed definition and use this within the first paragraph. After much discussion, the following definition of Unacceptable SSO was agreed upon:

Unacceptable Sub-Synchronous Oscillations are Sub-Synchronous Oscillations with the relevant modes of oscillation having negative or insufficient overall damping such that the combined effect of the low damping and the magnitude of oscillation will significantly reduce the lifetime of generator shafts due to fatigue or result in the failure of any electrical component due to high voltages and / or currents.

It was discussed how that the term "insufficient" could cause problems due to its vagueness and that this could result in an infinite dialogue during Connection Applications. BA also queried what we would put into a User(s) Agreement (Appendix F). It was agreed that this would be resolved by including the phrase: "as determined by system studies." CB proposed including a short reasoning within the Workgroup Report with respect to why the Workgroup had landed on the definition of Unacceptable SSO that it had. GS added that the Workgroup could word the Industry Consultation questions to seek views on the best possible definition also. The Workgroup concluded that this was an acceptable definition but that it was likely to receive criticism for not being more specific. However, it was felt that this was not achievable at this time.

The Workgroup also had a lengthy discussion with respect to wind farms and the SSO incident that occurred in Texas. This included a discussion concerning crowbars; series compensated overhead lines; monitoring and protection...etc... GS subsequently asked the Workgroup if the proposed definition accounts for this wind farm related issue. The Workgroup believed that it did.

BA next led the Workgroup through a page-turn of the draft Workgroup Report summarising at a high-level what each section was attempting to achieve. BA began by explaining that the Workgroup Report states that the Workgroup is of the opinion that there is already a requirement to manage SSO, it's just that it is not currently very well defined. He continued that the Workgroup was simply trying to define / determine the logic that is currently applied. BA continued that a lot of reinforcement works are planned and that a lot of work is being done to manage SSO already and that User(s) simply wanted more assurance that their plant would not be subjected to SSO (i.e. the Workgroup is clarifying accountabilities rather than proposing new ones). BA also explained how the Workgroup believes that, where feasible and economic to do so, the majority of works will be done on the transmission system. However, this may not always be feasible, therefore, at times, works may be required to be done by Generators (i.e. filters, shaft redesign...etc...) BA continued by explaining what had been done for the Series Compensation and HVDC Link projects. BA concluded his summary of this part of the Workgroup Report by explaining that the Workgroup had agreed changes and additions to NETS SQSS Sections 2, 4, 5 and 7. BA also mentioned that the Workgroup Report currently proposes to support Grid Code Modification GC0077. However, the wording might need to be rephrased depending upon what the Grid Code Review Panel proposes in relation to GC0077.

AF clarified that the TOs are not directly bound by this part of the Grid Code, hence why this became an NETS SQSS issue. GS added that National Grid however needs to ensure that the content of the Grid Code is applied and discharges its obligations through the TOs under the SO-TO Code (STC). AF asked if the Workgroup was able to propose legal text for the Grid Code. GS responded that we can but that this will be subject to Grid Code Review Panel assessment and approval. It was agreed to include the Grid Code legal text within the Workgroup Report but to rename the title of Annex 3 to: "GC0077 Proposed Legal Text for the Grid Code." AF also queried if the Workgroup needs to demonstrate how it has dealt with the issues raised in the Grid Code Industry Consultation or whether the Workgroup would need to reissue GC0077 for Industry Consultation?

ACTION: GS to ask the Grid Code Review Panel whether or not Grid Code Modification GC0077 needs to be reissued for Industry Consultation alongside NETS SQSS: GSR018 Workgroup Report or to advise otherwise how best to proceed.

It was agreed that Paragraph 1.8 may need to be changed as a result of the discussions at the Grid Code Review Panel. BA agreed to update the Workgroup Report if necessary. It was also noted that there was a typo (incorrect paragraph numbers) in the Grid Code legal text proposals. BA agreed to correct these.

BA continued the page-turn through the Workgroup Report discussing Connect and Manage, the Connection and Use of System Code (CUSC), practical implementation, protection (and why the Workgroup doesn't advocate the use of this) and monitoring (and why the Workgroup believes this should be used). With respect to protection, it was further stressed that protection is not a means to meet Grid Code or NETS SQSS requirements. Throughout this exercise, a number of corrections to the Workgroup Report and a number of areas that required further comments from individuals were noted. These included but are not limited to:

- Check and update if necessary the dates quoted for transmission system reinforcements;
- CB to provide comment on "Issues for Transmission Licensees";
- AF and JR to provide comment on "Issues for Transmission System User(s)";
- Paragraph 4.31 – Reword this paragraph since SPT have not requested SSO monitoring equipment be fitted, rather SPT have fitted SSO monitoring equipment on EDF's site;
- Paragraph 4.41 – Change "electrical undamping characteristics" to "network impedance characteristics".

Further comments with respect to the Workgroup Report included CB wishing to propose some new / revised wording for Paragraphs 4.64.1, 4.64.2 and 4.64.3. In addition, BA queried his use of Figure 1, concerned that it is an illustrative diagram only, and asked whether it would be better to use a real example. Whilst the Workgroup could provide access to real examples, the Workgroup was of the opinion that for illustrative purposes this diagram was what was needed and therefore proposed to keep it as is. It was also discussed how that the section of the Workgroup Report concerning the Grid Code may need to be rephrased following the discussions at today's meeting. This is also true for the section titled: Assessment Against Grid Code Objectives.

BA also discussed the section of the Workgroup Report titled: Relevant Commercial Processes. He provided a general overview and how this applies to SSO. He indicated that feedback with respect to this had been requested from National Grid's Commercial Department but that he expected no significant comments to be received. This section also included details with respect to Connect and Manage, which enables National Grid to operate the transmission system in a safe way.

Finally, with respect to the Assessment Against NETS SQSS Objectives, GS believes that there is more to say here. He believes we can confidently imply the Workgroup's findings / proposals assist the first three of the four objectives. BA will update the Workgroup Report accordingly. NM was also asked to check with Ofgem the number of days until implementation following a positive decision by the Authority.

Following the page-turn of the Workgroup Report, it was agreed that all Workgroup Members, including those unable to attend this meeting, would have a further two weeks to provide comment on the Workgroup Report. BA shall then update the Workgroup Report accordingly.

ACTION: All comments with respect to the Workgroup Report should be submitted to BA (bieshoy.awad@nationalgrid.com) by close of business on Wednesday 05 August 2015 at the very latest. BA shall then update the Workgroup Report accordingly.

In addition, it was discussed how GS would ask the NETS SQSS Review Panel how best to release GSR018 for Industry Consultation as quickly as possible. Furthermore, GS shall also ask the Grid Code Review Panel whether Grid Code Modification GC0077 requires recirculation for Industry Consultation alongside GSR018.

ACTION: GS to seek guidance from the NETS SQSS Review Panel and Grid Code Review Panel with respect to releasing GSR018 for Industry Consultation as quickly as possible and recirculating GC0077 for Industry Consultation alongside GSR018 respectively.

6 Any Other Business

None

7 Next Meeting

The Workgroup also agreed that assuming there were no significant changes required as a result of any comments received; the next Workgroup Meeting would be via teleconference and would be used to sign-off the Workgroup Report for submission to the NETS SQSS Review Panel.

ACTION: NM to arrange a teleconference for 14:00 on Wednesday 23 September 2015 at which the Workgroup would hope to sign-off the Workgroup Report for submission to the NETS SQSS Review Panel.

8 Summary of Actions

a) On-Going Actions:

Action	Description	Action Owner	Due Date
3.2	The Workgroup is to provide a view on the modification proposed to the original criteria. <i>Update: This action remains subject to Workgroup discussions.</i>	ALL	Next Meeting
4.1	BA to confirm the requirements on User(s) who wish to install monitoring equipment and / or protection and the implications of this on National Grid. <i>Update: This action was discussed but remains on-going. The Workgroup Report will be updated accordingly based upon any comments received.</i>	BA	Next Meeting
4.2	BA and NM to draft a first pass Workgroup Report and circulate to all Workgroup Members for comment by late April / early May 2015. <i>Update: A first draft Workgroup Report has been presented. This shall continue to be updated based upon any comments received.</i>	BA / NM	May 2015

Otherwise all actions from previous meetings have been previously discussed and / or closed.

b) New Actions:

Action	Description	Action Owner	Due Date
5.0	GS to ask the Grid Code Review Panel whether or not Grid Code Modification GC0077 needs to be reissued for Industry Consultation alongside NETS SQSS: GSR018 Workgroup Report or to advise otherwise how best to proceed.	GS	23/09/2015
5.1	All comments with respect to the Workgroup Report should be submitted to BA (bieshoy.awad@nationalgrid.com) by close of business on Wednesday 05 August 2015 at the very latest. BA shall then update the Workgroup Report accordingly.	ALL	05/08/2015
5.2	GS to seek guidance from the NETS SQSS Review Panel and Grid Code Review Panel with respect to releasing GSR018 for Industry Consultation as quickly as possible and recirculating GC0077 for Industry Consultation alongside GSR018 respectively.	GS	23/09/2015
5.3	NM to arrange a teleconference for 14:00 on Wednesday 23 September 2015 at which the Workgroup would hope to sign-off the Workgroup Report for submission to the NETS SQSS Review Panel. <i>Update: This action has been completed and can therefore be closed.</i>	NM	ASAP