

G5/5 Working group

Meeting Name: G5 Review Workgroup

Date: 9 November 2017

Time: 10:30 – 16:00

Location: ENA, London

Attendees:

Attendee		Affiliation
Xiaoyao Zhou (Chair)	XZ	National Grid
Forooz Ghassemi	FGh	National Grid
Simon Scarbro	SS	WPD
Andrew Oliver	AO	TNEI
Steve Mould	SM	UKPN
Gary Cotter	GC	Dong Energy
Davor Vujatovic	DV	VANDA Engineering
John Reilly	JR	EDF
Ahmed Shafiu	AS	Siemens
Frank Griffith	FGr	ABB
Roshan Bhattarai	RB	Northern Powergrid
Patrick Osakue	PO	SSEN
Alireza Mousavi	AM	ABB
Sarath Wijesinghe	SW	RWE
Wayne Turtill	WT	Gambica
Mike Thong	MT	Fairford
Sarah Foster	SF	SONI
David Crawley (Acting Secretary)	DC	ENA
By teleconference:		
Neil McClymont	NMcC	ENW
David Spillett	DS	ENA

Apologies:

David Lyon
 Dr Abram Perdana
 Nigel Shore
 Ben Gomersall

The purpose of these notes is to capture the main actions and discussion topics rather than to provide a complete record of the meeting.

Agenda Item

1 Welcome/update

The Chairman welcomed members to the meeting. DS updated members on changed governance arrangements for this project. In future, governance will be provided by the Distribution Code Review Panel (DCRP). All prior work will remain on the National Grid website but from this meeting onwards, documents will be posted on the DCRP website.

The link to the DCRP web page for the group is:

<http://www.dcode.org.uk/current-areas-of-work/dc-0036.html>

The Chairman and Technical Secretary of the group remain unchanged.

2 Review Terms of Reference

The current ToR had been included in the meeting document pack. Agreed that XZ and DS will review these in the light of the change of governance arrangements.

Action: XZ and DS

3/4 Introduction to the meeting, today's tasks

Agreed that the purpose of this meeting is to:

- a. Review of sub-workgroup activities
- b. Presentation/discussion on sub-workgroup proposals
- c. Approval of sub-workgroup proposal
- d. Plan for next steps

5 Presentation: Stage 1 and 2 assessments – SS

SS tabled two documents dated 8/11/17 and gave an updated presentation on Stages 1 and 2 which included a summary of work done by the Stages 1 and 2 sub-WG since the last full meeting.

A background document, and a worked examples document prepared by the sub-WG were available.

The principles of previous drafts had been retained but the section had been completely rewritten and now contained a route to compliance. A possible replacement for ETR 122 was being considered, perhaps as an Annex to G5.

Some important changes were:

- Some bases of acceptance;
- Changes to the reference impedance value (reduced);

- Both THDi and skin effect are now taken into account.

In summary, the section in the current draft was similar to G5/4-1 and the background to the content had been fully documented.

Following discussion, the following actions were agreed:

- Consider whether standard data collection forms can be included in G5;
Action: SS and Stages 1 & 2 sub-WG
- Examine the need to provide more guidance on the interpretation of test specifications to identify the presence of AFE, 6-pulse converters and/or passive filters.
Action: SS/FGr

6 Seeking approval of Stage 1 and 2 proposal

Subject to some further marginal work above, members agreed the proposals for Stages 1 and 2.

If there are any further comments on the draft, these should be sent to David Spillett before the end of November.

Action: All members

7 Presentation: assessment and limits of resonant plant - DV

It was intended that consideration of resonant plant will form a short section in G5.

DV gave a presentation on the work of the sub-WG. In discussion, it was agreed that assessment Stages 1 and 2 was intended to be a relatively fast process and that DNOs may not necessarily be aware of resonant plant.

It was agreed that:

- For stage 1, a different way of processing for resonant plant may be required. This could include simple data collection on any PFC equipment installed;
Action: Resonant plant Sub-WG
- Guidance on non-linear equipment can be given in G5 but not linked to Stages 1 and 2, eg in an Annex.
Action: Resonant plant Sub-WG

8 Seeking approval of resonant plant proposal

Agreed to proceed as above.

9 Presentation: Stage 3 assessment – FGh

FGh gave a presentation on the work of the Stage 3 sub-WG. This had been slightly amended from the version circulated to members. He outlined the main changes proposed from the requirements in G5/4-1, in particular the proposed method of harmonic headroom apportionment. A background document, already circulated to members, explained the principles and gave practical examples. In the proposed method emission data from the customer was not required.

Items raised in discussion included:

How to treat concurrent connections;

The number of nodes to be taken into account and the number of measurements needed (agreed that this could be included in the companion technical background document/Annex);

Use of a typical limit table versus loci.

An amendment had been proposed by a combination of sub-WG members which had not yet been circulated to the group. This included two proposals:

- Proposal A1 – initial screening for 33kV and below to determine whether or not to take into account remote nodes;
- Proposal A2 – allowing Network Operators to delegate the performance of assessments and the setting of limits under Stage 3 to third-parties or the connectee themselves. This would be in line with provisions in EREC G97.

FGh will circulate this amendment to members for comment.

Action: FGh

10 Seeking approval of Stage 3 proposal

FGh will update the text of the Stage 3 draft.

Action: FGh

Members were asked to let David Spillett have their comments on the current text (first circulated on 24 October) by the end of November, with a copy to FGh. The standard IEC comments template (sent with these action notes) should be used if possible.

Action: All members

11 Presentation and discussion: harmonic above 50 – AS

AS gave a presentation of the work done by the sub-WG. This had included a review of the requirements in existing standards for limits and measurement equipment.

The sub-WG had examined reports of actual emissions from various types of equipment. Some new technologies eg PWM had been found to emit at very high order harmonic frequencies. Information on models for transforms and cables had also been collected.

Noted that a recommendation to consider harmonic orders up to 50 is already in place. the benefits and costs of considering harmonic orders higher than 50 is still to be discussed.

Noted that a summary of conclusions is given in Section 5 of the report.

The Sub-WG has been tasked with making a clear proposal for G5/5.

Action: Harmonics over 50th Sub-WG

12 Planning the next step of the project and timeline

All members were asked to review all parts of the current draft text of G5. Comments should be sent to David Spillett by the end of November 2017.

Action: All members

Comments had already been received from SS and from Nigel Shore (ABB). FGh had spoken to Nigel Shore regarding his comments and will produce a written response.

Action: FGh

DS proposed the following timeline:

End February 2018	Public consultation legal text available
End March 2018	Review comments from public consultation and record responses
End April 2018	Produce Report to Authority
Early May 2018	Publish G5/5

FGh will send DS a progress report for DCRP, taking into account today's meeting and including the proposed next steps, future timeline and challenges outstanding.

Action: FGh

It is proposed to hold the next meeting in the second week of January. DS will circulate a doodle poll to members for this purpose.

Action: DS

13 AOB

SM will send details of the UKPN/NPL HENA (Harmonic effect on network equipment) project to DC for onward circulation to members for information and response.

Action: SM/DC