

## Grid Code Generic Provisions Working Group

Notes of 6<sup>th</sup> meeting held at Brandon Hall, Coventry  
28 April 2003

### Attendance

Present

<u>Name</u>		<u>Company</u>
David Payne	(DP)	National Grid (Chairman)
Nasser Tleis	(NT)	National Grid
Steve Mortimer	(SM)	National Grid
Mark Horley	(MH)	National Grid
Mike Thorne	(MT)	National Grid
John Norbury	(JN)	Innogy
Joe Duddy	(JD)	RES
Dave Ward	(DW)	Magnox
John France	(JF)	Powergen
John Morris	(JM)	British Energy
Charlie Zhang	(CZ)	London Power Company
Hamish Dallachy	(HD)	Scottish Power
Bridget Morgan	(BM)	Ofgem (Observer)
Ham Hamza	(HH)	Innogy
Paul Newton	(PN)	PowerTech

Apologies for Absence

Francois Boulet	(FB)	RTE
James Glennie	(JG)	BWEA
Elaine Greig	(EG)	AMEC
Peter Lang	(PL)	Seeboard

### Minutes Of Last Meeting

1. The minutes of the last meeting were discussed. DW requested that the words "that was met" should be removed from minute 25. CZ stated that he had commented on 21st March to the effect that the connection conditions should be applied on a penetration level rather than by date.

### Actions From Last Meeting

2. Action 5/1 DP confirmed that the use of Power Park Module term in draft text had been clarified. Action Completed.
3. Action 5/2 MT advised that NGC believed that the Power Park Module definition was consistent with CUSC/BSC. Action complete.
4. Action 5/3 DP confirmed that the updated planning code had been re-circulated as discussed at the meeting. Action complete.

5. Action 5/4 DP confirmed that the draft text of BC1 had been updated in the light of comments received at the meeting and had been included in the pack of information circulated on 17 April. Action complete.
6. Action 5/5 MT reported that NGC believed that Maximum Export Level should be declared by the generator for each half hour taking into account the forecast wind speed. NGC accepted that short term fluctuations with wind speed within the half hour such as gusts or “holes” might not be forecast but believed the normal principle of working to declared PN should be followed.
7. JN felt that BC2 needed to change to offer guidance to the generators in respect of PN and MEL submissions and the requirement to follow these submissions. MT felt that the existing wording was adequate and to leave it as it is for the time being as there was no operating experience of large wind farms in the Balancing Mechanism. DW commented that for conventional plant MEL reflected availability rather than wind speed. MT added that PN was a forecast of what generators were expecting to output in order for the system operator to ensure secure operation of the system. In answer to a question from JD, MT explained that NGC expected a daily forecast submitted by 11am on the preceding day and then updates just prior to gate closure (ie 1 hour before real time). DW stated his view was that NGC was expecting a best “central estimate” where output might be equally above and below the declared PN which in turn would reflect the contracted trading position.
8. Bearing in mind the wind speed information tabled by Innogy, JN asked JD how accurate a forecast would be. JD felt that a day ahead forecast would be fairly speculative whilst 1 hour ahead would be good.
9. JN was concerned that the need to keep output at a level equal to or less than submitted PN would fetter the generators ability to make use of any e wind that became available within the gate-closure period. MT declared that NGC did not want to restrict wind generators unduly but needed good forecasts in order to operate the system securely. DW and MT agreed that enforcing PN and MEL submissions might need a different approach with wind generation but MT felt that experience with operating large wind farms was needed to be gained.
10. JN repeated that he believed that BC2 was too vague on what wind farms should do. As the Generator could control wind farm output down to PN, PN would be declared as the cap on output. MT corrected him that MEL capped output and DW added that NGC took the lower value of PN and MEL as expected output. CZ commented that there was no financial penalty on PN accuracy although NGC wrote to Generators who appeared not to follow PN. DW commented in Magnox the priority is the other way round. Station staff tell the traders their expected output profile, and the traders submit a PN to match this. The traders do not give the station staff a PN to follow. With only one hour gate-closure, and reasonably good communication between power stations and traders, this generally gives a close match between PN and output as required by the Grid Code. DW believed a similar approach should be acceptable for windfarms.
11. JD commented that average output over a half hour period should follow the PN output reasonably well. Output within that half hour could deviate significantly due to short term gusts/holes. MT commented that operational metering, used in assessment, was minute to minute rather than by the second. DW noted that the BC2 required users to submit planned forecast in line with expected output. JF

commented that the Grid Code already recognised intermittent power sources in the connection conditions.

12. As the discussions were becoming rather circular MT took an action to review the existing wording in BC2 on PN submission.

**ACTION 6/1 – National Grid.**

13. Action 5/6 DP confirmed that BC3 drafting had been developed to include DC interconnectors as recommended by the HVDC working group and had been included in the pack of information circulated on 17 April. Action complete.
14. Action 5/7 DP confirmed that an electronic copy of performance chart diagram had been circulated. Action complete.
15. Action 5/8. Maximum Export Limit and Physical Notifications for windfarms had been discussed under 5/5. Action complete.
16. Action 5/9 DP reported that four working group members had commented on draft text discussed at the last meeting. Action complete.
17. Action 4/7 BM was not present at the last meeting so had not reported on her action. BM confirmed that the DTI have issued a consultation document making reference to bilateral agreements. She commented that this was only expected to cover the interim period and that a joint DC/GC working group was expected to develop a long term solution. Action complete.

**Grid Code Changes**

18. DP reported that National Grid had circulated drafts of the Connection Conditions, Planning Code, Operating Codes and Balancing Codes as well as updated Glossary and Definitions prior to the meeting.

**Glossary and Definitions**

19. DW commented that the Power Park Module should probably be included in the Power Station definition.
20. HH asked how a Power Park Module connected to the system by a DC converter would be handled and what performance requirements would be expected. MH commented that it would be treated as a Power Park Module, however for data provision, the DC Converter would dominate. MH agreed to check that the drafting across the codes made this clear. CZ stated that as Generating Unit, Power Park Module and DC Converter were treated at the same level in the latest draft, it would be desirable to eliminate or minimise any overlapping of the scope of the three definitions. Alternatively the definition of Generating Unit could be enhanced with the addition of Synchronous.

**ACTION 6/2 – National Grid**

21. There was concern expressed that Generating Units might still be catching Power Park Units. MH felt this was clear in the Connection conditions but agreed that other codes should be checked.

**ACTION 6/3 – National Grid**

22. DW questioned the specific use of “Non-synchronous” in Power Park Modules. NT stated that for the foreseeable future Power Park Modules were not expected to consist of synchronous machines but if the situation changed the code could be amended if necessary.
23. HH commented on the readability of the wording of “Import Useable”. MH stated that this was the legally recommended drafting.
24. JN questioned the MW rating definitions for a wind farm on the basis that the wind farm output can vary from second to second. JD felt it was adequate. It was considered that the 10-minute average output would be representative of Registered Capacity and that MEL would relate to the 1-minute average output, this being the equivalent value seen by operational metering

#### Planning Code

25. JD identified a number of typographic errors for NGC to correct. JD also raised comments on power/tip speed curves and starting/running parameters that NGC agreed to review.

**ACTION 6/4 – National Grid**

#### Connection Condition Issues

26. JD raised the inability of some fixed speed generators not to vary output with frequency. NT stated that based on previous information from JD, he did not expect CC.6.3.3 compliance to be an issue. JD agreed to investigate further and supply some information..

**Action 6/5 – JD**

27. JD commented that control at a windfarm might be by discrete switching of turbines or by discrete switching of shunt reactive compensation.
28. JD was concerned that it was not possible to meet CC6.3.15 parts (a) and (b) together as one solution to fault ride through was to disconnect the turbine for a few seconds. In the context of fixed speed machines NT put forward that fault ride through was not a problem however retaining voltage stability may require additional reactive compensation to be installed within the windfarm. JD believed that a wind turbine would speed up by 4% in 140ms for a fault at its terminals causing complete loss of voltage. However SM stated that in his studies of remote transmission faults a value lower than 1% had been seen. Inertia constants of wind turbines appear to be in the same order of traditional plant i.e. 3-7MWs/MVA.
29. HH queried the meaning of “no deliberate action” in CC6.3.15. After some discussion NGC agreed to revisit the wording in order to clarify what was meant. Both HH and JD said that the current proposed solutions offered by manufacturers at a high cost would not be fully compliant with the requirements.
30. CZ expressed his support for the latest drafting on reactive power requirements. CZ also believed that CC.6.3.6 should reflect power factor control. Also in CC.6.3.7 CZ expressed the view that control should be on a unit rather than module basis. JD disagreed with this view stating that the current drafting gave maximum flexibility to the developer. CZ suggested a change to the introduction date from 01 January 2006 to 01 January 2007 as he felt that this would be more in line with the penetration level concept. CZ also repeated his view that there

would be no need for the requirement on windfarms to deliver frequency response services in the short to medium term, given the nature of wind turbine operation, the planned nuclear station decommissioning and the commissioning of new HVDC Interconnectors.

31. CZ questioned the suitability of 140ms in CC.6.3.15. NGC explained this was consistent with the total fault clearance time at all ends of a circuit.
32. DW suggested that for clarity the provision of a manned control point should be explicit rather than implicit in the Grid Code. As there was no dissension NGC will add this to the drafting.
33. National Grid to consider wording in the light of the comments raised.  
**ACTION 6/6** – National Grid
34. JM raised a question on DNO's use of G59 to test generators which requires them to trip above 51Hz while NGC wants continuous operation up to 52Hz as per CC.6.3.12. NT responded that this question was raised a few months ago in discussions with Mr Mike Kay, DCRP chairman, and and National Grid understands that the Grid Code 52Hz requirement does align with the DNO requirement which should not be based on G59/1 (*Post meeting note; This was confirmed by the e-mail dated 01/05/03 from Mike Kay to the GPWG chairman*).

#### Operating Code 2

35. MT explained that Power Park module matrix had been amended as discussed at a previous meeting and the performance chart for a Power Park Module was now corrected to be at connection point. No comments.

#### Operating Code 5

36. No comments.

#### Operating Code 7

37. MH explained that DC Converter Station owner had been added in scope. Also references to Generating Unit had been extended to Power Park Modules and DC Converters. No comments.

#### Operating Code 10

38. MH explained that OC10 had been amended in line with OC7. No comments.

#### Operating Code 11

39. MH explained that DC Converter Station owner had been added in scope. No comments.

#### Operating Code 12

40. MH explained that DC Converter Station owner had been added in scope. No comments.

#### Balancing Code 1

41. MT explained that Power Park module matrix had been amended as discussed at previous meeting. no comments.

#### Balancing Code 2

42. MT outlined minor updates to previous wording. In relation to BC.2.5.4.(c) JN referred to the earlier discussions under Actions from the Last Meeting, concerning lack of guidance to wind farm operators on PN following. There was a brief discussion on account balancing which is outside the scope of this working group. CZ pointed out that in addition to imbalance charges, Non-Delivery charges under the BSC would be an extra risk on wind farms due to the nature of wind, if a BOA is given for the wind farms to be ready for frequency response. DW believed this was an incorrect interpretation of the rules.

#### Balancing Code 3

43. MT explained that the recommendations of the HVDC Working Group had now been fully incorporated leading to many changes adding DC Converter Station operator where only Generator had been referenced.

#### Grid Code Review Panel Paper

44. JN, supported by other parties at the meeting, requested that NGC made it clear in the paper that there was no unanimity amongst the Working Group members on two key issues, namely the current inability of operators to procure plant which met the proposed fault ride-through requirements and operation at 52Hz. NT acknowledged that this was the case but pointed out that the paper was from NGC who felt it provided a reasonable compromise between the needs of the system operator and the developer. The paper would, however, mention the lack of unanimity.
45. HH felt that the paper should also reflect how NGC had adopted some of the clauses. For example, despite lengthy comments on draft proposals for the Var requirement, NGC had adopted a particular option without making it clear to the members through their responses to the comments.
46. JN felt the proposals were actually new requirements and, since the current Grid Code obligations on non-synchronous generators were perfectly clear, the use of “clarify” in the Background was an inappropriate use of words. An example quoted was the ‘fault ride through’ requirement. NT disagreed and said this reflected views expressed to NGC by various parties. DW said that it was not clear to him how the current Grid Code, which is based on synchronous generation, would be applied to medium and large non-synchronous generating stations.
47. JD made a large number of detailed comments through the paper which were noted by NGC. They included a desire for clear references to manufacturers, known projects and overseas standards to be explicitly stated.
48. DP agreed to review the paper in the light of these comments.

**ACTION 6/7** – National Grid

49. NT stated that the final proposals represent a reasonable compromise between the security and stability needs of the transmission network and the physical capabilities of non-synchronous generation technologies. During the industry consultation, NGC would proactively seek the views and comments of all interested parties. DP stated that differing views of any party and unresolved issues arising from the public consultation would be included in the final report to OFGEM.

### **Work Plan**

50. DP outlined progress against the work plan noting that progress was on target. DP asked for comments on any of the issues relating to the paper or code drafting by the end of the weekend (i.e. end of 5<sup>th</sup> May) to give NGC the chance of including it..

**ACTION 6/8 – All**

51. DP outlined the future work plan as follows:

- Comments to National Grid as soon as possible, preferably by end of Friday. 2<sup>nd</sup> May, or by the latest 9am on Tuesday 6<sup>th</sup> May 2003.
- National Grid to submit Grid Code Review Panel Paper on 8 May 2003.
- Grid Code Review Panel Meeting 22 May 2003.

### **Any Other Business**

52. None
53. DP stated that this was expected to be the final meeting of the GPWG and closed the meeting thanking all members for their contributions.

### **Summary of Actions**

<b>No.</b>	<b>Name</b>	<b>Action</b>
6/1	NGC	Review the text of BC2 with respect to PN following.
6/2	NGC	Clarify Grid Code text with respect to Power Park Modules connected via a DC converter
6/3	NGC	Review Grid Code text with respect to Generating Units/Power Park Units.
6/4	NGC	Review typo errors and references to power/tip speed curves etc in the Planning Code.
6/5	NGC	Consider the text of CC in the light of comments received.
6/6	JD	Variation of power output with frequency
6/7	NGC	NGC to review GCRP paper
6/8	All	Comments on paper and code drafting