

Summary of Meeting and Actions

Meeting Name	E3C OC6.6 (Automatic LFDD) Working Group
Meeting No.	1
Date of Meeting	Thursday, 22 nd January 2009
Time	01:00pm – 3:30pm
Venue	Conference Room 8, National Grid House, Warwick

This note outlines the key action points from the first meeting of the E3C OC6.6 (Automatic LFDD) Working Group.

1) Apologies for Absence

Apologies were received from Barbara Vest (AEP).

2) Background - GB Transmission System Incident (27th May 2008)

National Grid discussed the background to the establishment of the Grid Code E3C OC6.6 (Automatic LFDD) Working Group i.e. GB Transmission System incident on 27th May 2008. The incident resulted in approximately 2GW of generation (direct connected and embedded) being disconnected from the grid within a matter of minutes.

This unsecured non-credible loss resulted in the frequency dropping below 48.8Hz before the system started to recover. The frequency drop instigated operation of stage one of the Low Frequency Demand Disconnection (LFDD) relays in NGET's Transmission Area.

The formal investigation and associated findings into the May 2008 incident were reported back to the Energy Emergency Executive Committee (E3C). The E3C made the following recommendations:

- Review LFDD scheme (OC6.6) in light of experience to ensure effectiveness of all LFDD disconnection stages and share best practice including on design approaches, demand restoration and control room awareness.

The data collected from the incident in terms of demand shedding through the relays and any other relevant information would be circulated to the Working Group.

Action: National Grid

3) Working Group Discussions

The Working Group noted that the current Grid Code obligations stated that the LFDD relays should enable load shedding of 60% of total peak demand (based on Annual ACS Conditions) in NGET's Transmission Area and 40% of total peak demand in SHETL's and SPT's Transmission Area.

The Working Group noted that the amount of demand shed was less than was expected. It was noted that this result may have been contributed to by two main issues:

- i) the percentage of demand lost is based on total peak demand, the incident took place on 27th May at approx 11:30am at which time the demand distribution may have been different to peak, leading to a different percentage load shed

and

- ii) the length of time the frequency dropped below 48.8 was very short (within the tolerance limits of the LFDD relays specified in the Grid Code) and therefore the relays may not all have operated.

The group agreed that it will be useful to understand the extent to which the percentage demand shed may vary across the year. Demand data is available to the DNOs for all half hour periods across the year. It was agreed that an analysis of the full data would be a significant undertaking and that the required information would be obtained by

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analysing a small number of appropriate time periods. National Grid will specify a limited number of periods considered adequate to represent the variation across the year and the DNOs will provide an analysis of the amount of load that would be shed at those times.

Action: National Grid and DNO Representatives

The Working Group noted that currently the scheme shed load in block sizes as and when the frequency dropped i.e. all the demand was lost at one point. Group members discussed the possibility of having staggered disconnection of the demand during stages 1 and 2 of the scheme, effectively increasing the number of stages. The Working Group queried whether there was sufficient tolerance in the relays settings to allow staggered disconnection.

The Working Group discussed how the scheme is implemented across the networks and agreed to identify any possible improvements, particularly in relation to:

- where a demand group included as part a LFDD scheme is supplied by a number of circuits, are there relays on each circuit and are all the relays at the same setting?

Action: DNO Representatives

- is the LFDD scheme interactive with other automatic demand restoration scheme e.g. Delayed Auto Reclose, Auto-close? If yes, what is the extent of the interaction and how many MWs are involved?

Action: DNO Representatives

The Working Group noted that it would be useful to ensure that all Control Centre staff had training/understanding of what action to undertake during a LFDD incident.

The Working Group noted that there were differences in the way that Control Centre staff were informed of a LFDD incident. Some Control Centre rooms have a frequency (of GB Transmission System) monitor on display (other Control Centres do not have the same facility). As a minimum it is considered that, any LFDD relay that trips will result in an alarm being activated in the control room.

The Working Group discussed the reliability and settings of the relays. The Working Group noted that the settings of the relays were in accordance with the Grid Code and were reviewed by Grid Code Consultation A/06 and E/06¹. The Working Group discussed the timing of the relays together with the timing of the overall scheme and noted that the Grid Code only currently specified the 'operational time' of the relay which excludes the operating time of the circuit breakers. National Grid will give further consideration to the relay timings and the requirements specified in the Grid Code.

Action: National Grid

It was acknowledged that National Grid had similar responsibilities regarding the Automatic LFDD Scheme (to that of the DNOs) for Non Embedded Customers. It was agreed that National Grid will review its LFDD relays obligations in accordance with the Working Group discussions e.g. reliability, timings, arrangements and report back to the group (in order to ensure consistency between the different User groups). It was also noted that NGET own a limited number of LFDD relays at National Grid / DNO sites and that these would also be included in this review.

Action: National Grid

4) Working Group Terms of Reference and Governance Arrangements

Members noted that the terms of reference would be reviewed/approved by the Grid Code Review Panel at its February 2009 meetings subject to members agreeing on the text.

¹ <https://www.nationalgrid.com/uk/Electricity/Codes/gridcode/consultationpapers/2006/>

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Members noted that the Working Group's findings and recommendations are to be presented to the E3C by June 2009. It was agreed that the Working Group should present their findings and recommendations to May's GCRP meetings.

The Working Group reviewed the draft terms of reference making suggestions. Revised terms of reference would be circulated for comment/approval by 28th January 2009.

Action: National Grid and All

5) Next Steps

- Update, circulate and approve Terms of Reference.
- Submitted Terms of Reference to February 2009 GCRP.
- Investigate interaction between LFDD relays and other automatic demand disconnection/restoration schemes.
- Investigate the LV running arrangements with the LFDD scheme i.e. is there any interaction?
- National Grid will identify the periods of the year for analysis of potential load shedding.
- DNOS will undertake the above analysis.
- National Grid will investigate the Grid Code obligations regarding relays operating times.

6) Next Meeting

- It was agreed that the next meeting of the Working Group would be scheduled for Thursday, 5th March 2009 commencing at 10am at National Grid House, Warwick.

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Appendix 1 – Working Group Attendance

Members Present:

Mark Perry	MP	Working Group Chairperson
Lilian Macleod	LM	Working Group Secretary
Darren Chan	DC	National Grid
Raj Nagarajan	RN	National Grid
Bridget Morgan	BM	Ofgem
John Blyth	JB	Scottish and Southern Electricity
Graham Brewster	GB	EON UK
Nigel Buckland	NB	Western Power Distribution
Ian Burgess	IB	EDF Energy
Alan Creighton	AC	CE Electric UK
Diyar Kadar	DK	Scottish Power
Guy Nicholson	GN	Senergy Econnect
Bob Wells	BW	Electricity North West

Apologies:

Barbara Vest	BV	AEP
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