Our Ref:

Your Ref:

Date: January 2007

To: All Recipients of the Serviced Grid Code

Regulatory Frameworks
Electricity Codes

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Dear Sir/Madam

THE SERVICED GRID CODE – ISSUE 3 REVISION 19

Revision 19 of Issue 3 of the Grid Code has been approved by the Authority for implementation on **1st January 2007**.

I have enclosed the replacement pages that incorporate the agreed changes necessary to update the Grid Code Issue 3 to Revision 19 standard.

The enclosed note provides a brief summary of the changes made to the text.

Yours faithfully

L Macleod
Electricity Codes

THE GRID CODE – ISSUE 3 REVISION 19

INCLUSION OF REVISED PAGES

Title Page			
Connection Conditions	**CC**	**-**	**Pages 59 to 61**
Revisions		-	**Page 21**

NOTE: See Page 1 of the Revisions section of the Grid Code for details of how the revisions are indicated on the pages.

NATIONAL GRID ELECTRICITY TRANSMISSION PLC

THE GRID CODE – ISSUE 3 REVISION 19

SUMMARY OF CHANGES

The changes arise from the implementation of modifications proposed in the following Consultation Paper:

- **A/06** – Grid Code Changes to Appendix 5 of the Connection Conditions – Technical Requirements for Low Frequency Relays

THE GRID CODE

Issue 3

Revision 19
1st January 2007

THIS DOCUMENT IS ISSUED BY:-

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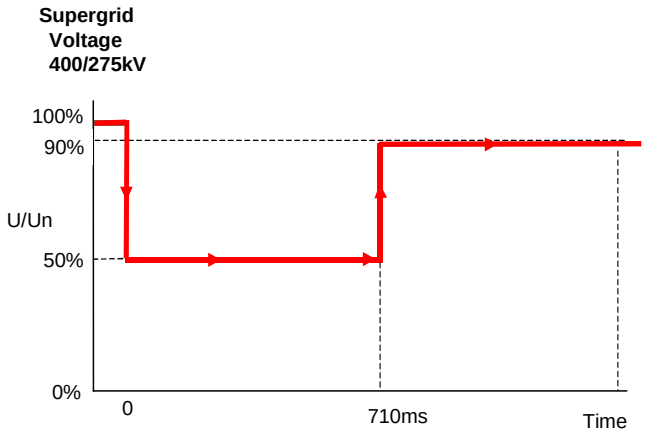
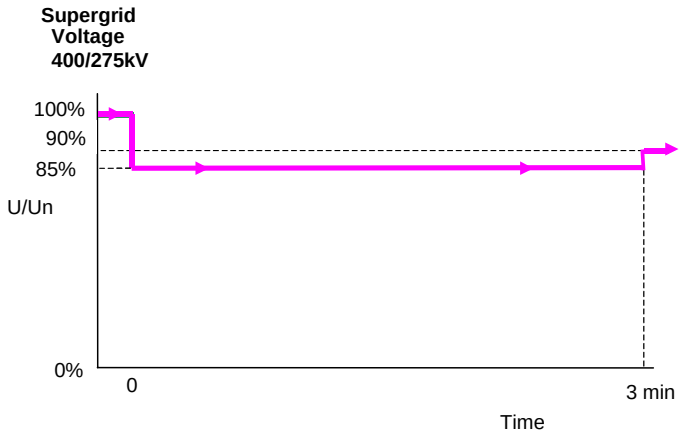


50% retained voltage, 710ms duration

Figure CC.A.4.3(b)



85% retained voltage, 3 minutes duration

Figure CC.A.4.3(c)

APPENDIX 5

TECHNICAL REQUIREMENTS
LOW FREQUENCY RELAYS FOR THE AUTOMATIC
DISCONNECTION OF SUPPLIES AT LOW **FREQUENCY**

CC.A.5.1 **LOW FREQUENCY RELAYS**

CC.A.5.1.1 The **Low Frequency Relays** to be used shall be in accordance with the requirements of the **Bilateral Agreement**. They should have a setting range of 47.0 to 50Hz and be suitable for operation from a nominal AC input of 63.5, 110 or 240V. The following general parameters on the requirements of approved **Low Frequency Relays** for automatic installations is given as an indication, without prejudice to the provisions that may be included in a **Bilateral Agreement**:

(a)	**Frequency** settings:	47-50Hz in steps of 0.05Hz or better, preferably 0.01Hz;
(b)	Operating time:	Between 100 and 150ms dependent on measurement period setting;
(c)	Voltage lock-out:	Selectable within a range of 55 to 90% of nominal voltage;
(d)	Facility stages:	One or two stages of **Frequency** operation;
(e)	Output contacts:	Two output contacts per stage to be capable of repetitively making and breaking for 1000 operations:
(f)	Accuracy	0.01 Hz maximum error under reference environmental and system voltage conditions. 0.05 Hz maximum error at 8% of total harmonic distortion **Electromagnetic Compatibility Level**.

CC.A.5.2 **LOW FREQUENCY RELAY** VOLTAGE SUPPLIES

CC.A.5.2.1 It is essential that the voltage supply to the **Low Frequency Relays** shall be derived from the primary **System** at the supply point concerned so that the **Frequency** of the **Low Frequency Relays** input voltage is the same as that of the primary **System**. This requires either:

(a) the use of a secure supply obtained from voltage transformers directly associated with the grid transformer(s) concerned, the supply being obtained where necessary via a suitable automatic voltage selection scheme; or

(b) the use of the substation 240V phase-to-neutral selected auxiliary supply, provided that this supply is always derived at the supply point concerned and is never derived from a standby

supply **Generating Unit** or from another part of the **User System**.

CC.A.5.3 SCHEME REQUIREMENTS

CC.A.5.3.1 The tripping facility should be engineered in accordance with the following reliability considerations:

(a) Dependability

Failure to trip at any one particular **Demand** shedding point would not harm the overall operation of the scheme. However, many failures would have the effect of reducing the amount of **Demand** under low **Frequency** control. An overall reasonable minimum requirement for the dependability of the **Demand** shedding scheme is 96%, ie. the average probability of failure of each **Demand** shedding point should be less than 4%. Thus the **Demand** under low **Frequency** control will not be reduced by more than 4% due to relay failure.

(b) Outages

Low **Frequency Demand** shedding schemes will be engineered such that the amount of **Demand** under control is as specified by **NGET** and is not reduced unacceptably during equipment outage or maintenance conditions.

CC.A.5.4 **LOW FREQUENCY RELAY** TESTING

CC.A.5.4.1 **Low Frequency Relays** installed and commissioned after 1st January 2007 shall be type tested in accordance with and comply with the functional test requirements for **Frequency Protection** contained in Energy Networks Association Technical Specification 48-6-5 Issue 1 dated 2005 "ENA Protection Assessment Functional Test Requirements – Voltage and Frequency Protection".

For the avoidance of doubt, **Low Frequency Relays** installed and commissioned before 1st January 2007 shall comply with the version of CC.A.5.1.1 applicable at the time such **Low Frequency Relays** were commissioned.

< End of CC >

CC	2	CC.3.4 amended
	26	CC.6.4.4 amended
OC1	5	OC1.6.1 (a) amended

Revision 19 Effective Date: 1 January 2007

CODE	PAGE	CLAUSE
CC	60	CC.A.5.1.1 amended
	61	CC.A.5.4 inserted