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TECHNICAL SPECIFICATION ADDENDUM

DOCUMENT TITLE	Circuit Breaker Fail Protection
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This Technical Specification shall be read in conjunction with the following amendments:

Check appropriate boxes below

Addition	X	Replacement		Deletion	
AMENDMENTS					
Pending the formal review and re-issue of this specification (currently status amber) Designers / Users should ensure that protection functions are not enhanced beyond NGTS requirement and that duplicate circuit breaker fail backtripping functionality is not provided. Reference Bramford incident 22/06/05					
Date Effective From	01/08/06				

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Date			01/08/06



National Grid

National Grid
Technical
Specification

**Circuit Breaker Fail
Protection**

NGTS 3.24.39
Issue 1
September 2000

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CIRCUIT BREAKER FAIL PROTECTION

FOREWORD

This Specification defines National Grid's technical requirements for Circuit Breaker Fail Protection.

1 SCOPE

This Specification describes the functional and performance requirements and the facilities to be provided for Circuit Breaker Fail Protection at 400 kV and 275 kV substations.

2 REFERENCES

IEC 255-1-00	-	All-or-nothing Electrical Relays
IEC 255-3	-	Electrical Relays – Single Input Energising Quantity Measuring Relays with Dependent or Independent Time
IEC 255-6	-	Electrical Relays – Measuring Relays and Protection Equipment
IEC 255-22-3	-	Electrical Relays – Electrical Disturbance Tests for Measuring Relays and Protection Equipment – Radiated Electromagnetic Field Disturbance Tests
NGTS 1	-	Overview – National Grid System
NGTS 3.24.4	-	Hardware Platform

3 FUNCTIONAL REQUIREMENTS

General

- 3.1** Circuit breaker fail protection shall cause cessation of fault current within 300 ms of inception of the original fault whose detection initiated tripping of the failed circuit breaker.
- 3.2** The functionality shall be implemented in accordance with the Hardware Platform specification, NGTS 3.24.4.

Circuit Breaker Fail Detectors

- 3.3** Circuit breaker fail detector(s) shall be enabled when the protected circuit breaker has been called upon to trip by operation of its associated protection systems.
- 3.4** The detector(s) shall not operate if the circuit breaker fails to open during a routine switching operation or automatic switching sequence unless such failure coincides with or precipitates the development of a system fault, resulting in the operation of its associated protection systems.
- 3.5** A detector shall comprise the following:
- (a) A current check element to check if current is still flowing in any phase of the circuit breaker following circuit breaker trip initiation.
 - (b) A timing element to delay tripping until the circuit breaker has had adequate time for normal extinction of fault current.

Informative: Acceptable arrangements of the current check element and timing element to form a detector are shown in Figures 3 and 4.