

1. SCOPE

This document details the application of SOP 232 (Applicable to English Electric Type E7 11kV Air Circuit Breakers) issued by the Energy Networks Association.

2. ISSUE RECORD

This is a Reference document. The current version is held on the EN Document Library.

It is your responsibility to ensure you work to the current version.

Issue Date	Issue No.	Author	Amendment Details
October 2000	1	Esther Stewart	Initial Issue in New Format: 2 Page Document
11 th October 2018	2	Kevin Butter	Document corrected to reflect that the SOP is applied in SP Energy Networks North.

3. ISSUE AUTHORITY

Author	Owner	Issue Authority
Kevin Butter Lead Engineer Substations Group	Fraser Shaw Substations Manager	Fraser Ainslie Head of Engineering Design and Standards

4. REVIEW

This is a Reference document which has a 5 year retention period after which a reminder will be issued to review and extend retention or archive.

5. DISTRIBUTION

This document is not part of a Manual maintained by Document Control and does not have a maintained distribution list.

6. CONTENTS

1. SCOPE.....	1
2. ISSUE RECORD.....	1
3. ISSUE AUTHORITY	1
4. REVIEW	1
5. DISTRIBUTION.....	1
6. CONTENTS	2
7. SOP DETAILS	3
8. SOP HEADER	4

7. SOP DETAILS

EQUIPMENT TYPE:	English Electric Type E7 11kV Air Circuit Breaker (ACB)
ORIGINATING COMPANY:	National Power
DATE:	15 th May 1999
NUMBER INSTALLED IN ENERGY NETWORKS NORTH:	10 units. This circuit-breaker is only installed at two sites in SP Energy Networks: Glenlee Hydro St-011: 3 units (3 No. SPT) Tongland Generation-011: 7 units (5 No. SPT; 2 No. SPD)
NUMBER INSTALLED IN ENERGY NETWORKS SOUTH:	0
REASON:	An 11kV English Electric Air Circuit Breaker (ACB) Type E7 closed without any command whilst being racked out from the service position. This event happened after the circuit-breaker failed to close.
STATUS IN INITIATING COMPANY:	National Power have issued a SOP that states that in the event of a failure to close involving an E7 ACB, the defective unit shall be withdrawn from the service position after the switchgear has been made dead.
SPEN APPLICATION:	In the event that an English Electric Type E7 11kV ACB fails to close then the busbars and circuit shall be made dead before the circuit-breaker is withdrawn from the service position. The cam shaft bearings on the moving portion shall then be inspected to ensure there is no excessive wear and the circuit-breaker mechanism shall be proven to be working correctly with ACB in the withdrawn position.
ADDITIONAL INFORMATION:	(See NEDeR Reference: 1999/0463/00). A detailed investigation carried out by National Power has identified that the cam shaft bearings on the defective unit were badly worn. The bearings were renewed and the fault could not be re-created with the new bearings fitted. Similar wear was found on other Type E7 ACBs. (All English Electric Type E7 ACBs, regardless of rating, have the same cam and bearing part fitted). This type of circuit-breaker is widely used at Generation Sites and it is likely that the excessive wear on the cam shaft bearings may be related to the large number of circuit-breaker operations associated with Generation Station applications.
UPDATE:	N/A
REMEDIAL ACTION:	This SOP will be reviewed following the investigation into this incident or any other information arises.

8. SOP HEADER

Field Name	Field Value	Field Size
Name (SOPXXX) *	SOP 232 - English Electric Type E7 11kV circuit-breaker	61
The reason for the Operational Restriction *	CB closed when being withdrawn	30
Nature of the Operational Restriction *	If ACB fails to close it shall be withdrawn dead	50
Comments *	An E7 ACB closed whilst being racked out following a failure to close. In the event of a failure to close, the ACB shall be withdrawn from the service position with busbars and circuit dead	200
Restricted Access to Substation Flag *	Y <u>N</u>	1
SOP Impact Code * <i>(highlight or underline the appropriate code)</i>	0 Temporary/Impact under assessment <u>1 Very minor operational/network impact</u> 2 Moderate operational/network impact 3 Significant impact on system perf./measurable business costs 4 Inoperable without intervention 5 Inoperable – no cost effective solution/must be replaced	N/A
SOP component type * <i>(highlight or underline the appropriate code)</i>	01 Bushing only 02 Circuit Breaker 03 Fixed Portion only <u>04 Moving Portion only</u> 05 Switch 06 RMU 07 Transformer only 08 Tap Changer only 09 Transformer & Bushing 10 Transformer & Tap Changer	N/A
Search Criteria *	E7, E7 11KV OCB 33KV INC (INDOOR), ENGLISH ELECTRIC, CIRCUIT BREAKER	N/A

* This denotes a Mandatory Field