

**1. SCOPE**

This document details the application of SOP 215 (applicable to fully shielded ABB Nitran LV Take-Off Chamber Fuse Cabinet) issued by the Energy Networks Association.

**2. ISSUE RECORD**

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

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<b>Issue Date</b>	<b>Issue No.</b>	<b>Author</b>	<b>Amendment Details</b>
October 2000	1	Esther Stewart	Initial issue in New Format: 2 Page Document
05/10/2018	2	Stephen Batten	Update following incident 31st August 2018
26/08/2019	3	Stephen Batten	LV authorisation requirement

**3. ISSUE AUTHORITY**

<b>Author</b>	<b>Owner</b>	<b>Issue Authority</b>
Stephen Batten Lead Engineer	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.

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**7. SOP DETAILS**

<b>EQUIPMENT TYPE</b>	<p>Fully shielded LV Take-Off Chambers (TOC) Fuse Cabinet manufactured between 1991 and 1998 by NI Transformers, EB Nitran, ABB Nitran and ABB Power T&amp;D.</p> <p>LV TOC above fitted with 4mm diameter insulated voltage test sockets for testing the top contacts of the transformer disconnecter.</p>
<b>ORIGINATING COMPANY</b>	SP Energy Networks
<b>DATE</b>	16 <sup>th</sup> September 1998
<b>NUMBER INSTALLED IN ENERGY NETWORKS NORTH</b>	1830
<b>NUMBER INSTALLED IN ENERGY NETWORKS SOUTH</b>	133
<b>REASON</b>	<p>Two operators received slight flash burns to their hands and wrists when a flashover occurred on an ABB Type C5SM fully shielded LV TOC whilst carrying out a phase rotation test. (see DIN 98/59).</p>
<b>STATUS IN INITIATING COMPANY</b>	<p>Restriction.</p> <p>Only personnel with OP-2 and WL-1 LV authorisations should access the ABB Nitran LV TOC Fuse Cabinet wearing full Live Working PPE inclusive of Approved FR coveralls, an Approved full-face visor and Approved rubber gloves.</p> <p>The insulated voltage test sockets fed from the top contacts (incoming side) of the transformer disconnecter shall NOT be used for live testing.</p>
<b>SPEN APPLICATION</b>	As detailed above.
<b>ADDITIONAL INFORMATION</b>	<p>A modification was introduced in 2000 (SWG-17-111) to permanently shroud the voltage test sockets on all ABB Power T&amp;D, ABB Nitran and NI Transformers, fully shielded LV TOC manufactured between 1991 and 1998.</p>
<b>UPDATE</b>	<p>A flashover occurred at Pollockshaws Road on 31/08/2018 when the LV TOC door was closing (INC-1025222). Initial inspection identified that the red phase small wiring connecting the test socket was dislodged by vibration and shorted to earth due to a tight fitting door. While further investigation is ongoing, it is suspected that the test sockets have since deteriorated further due to a combination of condition and ageing.</p> <p>Note OPSAF-16-380 documented that ENA SOP 380 was not applied in SPEN as SWG-17-111 detailed remedial works to cover the test sockets and prevent use.</p>

Following an assessment of possible causes to the substation fire at Holyrood Road West (INC 1028536) on 4<sup>th</sup> July 2019, the business determined that the degrading voltage test sockets shall be removed. Switchgear modification procedure SWG-17-111 was revised to remove the voltage test sockets in accordance with a new procedure OPSAF-11-101 – MSP 2.4.40 Approved Procedure - Removal of Voltage Test Sockets from SOP 215 LV Take-Off Chambers.

#### REMEDIAL ACTION

Only personnel with OP-2 and WL-1 LV authorisations should access the ABB Nitran LV TOC Fuse Cabinet wearing full Live Working PPE inclusive of Approved FR coveralls, an Approved full-face visor and Approved rubber gloves. Note in accordance with good practice, use the cabinet door as a shield when opening and closing the door.

Immediately following access, conduct a visual inspection of the test sockets to check the phase coloured socket plastic surrounds are intact with no signs of cracking or distortion. If the test socket surrounds are significantly degraded, withdraw from the cabinet and contact Control to request assistance. Assessment will be required for a HV isolation and an emergency LV outage to disconnect and remove the insulated voltage test sockets and associated bus wiring in accordance with OPSAF-11-101. In all cases the unit substation will require a shutdown and LWC issued.

SOP 215 label to be affixed to the door of each ABB Nitran LV TOC Fuse Cabinet.

**8. SOP HEADER**

Field Name	Field Value	Field Size
<b>Name (SOPXXX)</b> *	ABB Nitran LV TOC Fuse Cabinets SOP215	61
<b>The reason for the Operational Restriction</b> *	Flashover – Top test sockets	30
<b>Nature of the Operational Restriction</b> *	Access cabinet with full Live Working PPE	50
<b>Comments</b> *	Only personnel with OP-2 or WL-1 LV authorisation should access TOC (including opening door) wearing Approved coveralls, full-face visor and rubber gloves. Sockets shall not be used for live testing.	200
<b>Restricted Access to Substation Flag</b> *	Y	<b>N</b>
<b>SOP Impact Code</b> * <i>(highlight or underline the appropriate code)</i>	0 Temporary/Impact under assessment 1 Very minor operational/network impact <b>2 Moderate operational/network impact</b> 3 Significant impact on system perf./measurable business costs 4 Inoperable without intervention 5 Inoperable – no cost effective solution/must be replaced	N/A
<b>SOP component type</b> * <i>(highlight or underline the appropriate code)</i>	01 Bushing only 02 Circuit Breaker 03 Fixed Portion only 04 Moving Portion only 05 Switch 06 RMU 07 Transformer only 08 Tap Changer only 09 Transformer & Bushing 10 Transformer & Tap Changer	N/A
<b>Search Criteria</b> *	NI Transformers, EB Nitran, ABB Nitran, ABB Power T&D, LV Fuse Cabinet	N/A

\* This denotes a Mandatory Field