1. SCOPE

This document details the application of SOP 413 (Applicable to Porcelain Post Insulators commissioned in Indoor 132kV substations up to approximately the 1970s) 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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Issue Date	Issue No.	Author	Amendment Details
October 2021	1	Ryan Miller	Initial issue

3. ISSUE AUTHORITY

Author	Owner	Issue Authority
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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

7. SOP DETAILS

EQUIPMENT TYPE	Porcelain Post Insulators commissioned in Indoor 132kV substations up to approximately the 1970s
ORIGINATING COMPANY	National Grid
DATE	23rd January 2020
NUMBER INSTALLED IN ENERGY NETWORKS NORTH	0
NUMBER INSTALLED IN ENERGY NETWORKS SOUTH	Post insulators of similar designs are installed at Rainhill, Frodsham and Wylfa 132kV indoor substations.
REASON	Instances of solid core support insulator failures.
STATUS IN INITIATING COMPANY	All manual switching at 132kV indoor substations to be undertaken by two operatives; one to undertake the switching activity and one to observe the equipment being operated and adjacent connected equipment to look for signs of damage and misalignment on the equipment being operated and on adjacent equipment or post insulators during operation.
SPEN APPLICATION	SOP 413 shall be applied to all SPEN 132kV disconnectors at Rainhill, Frodsham and Wylfa 132kV indoor substations as detailed below: • In accordance with PSSI 1, prior to carrying out the switching activity, the equipment shall be visually inspected to confirm the operational state and condition of the apparatus. • Two Authorised Persons shall be present in the switch hall at time of switching; one to carry out the switching activity and the other to observe the equipment being operated with the purpose of verifying the correct alignment of the disconnector and witnessing any damage caused to associated insulators during operation with ability to warn the operator, accordingly. • In accordance with PSSI 1, after carrying out the switching activity, the equipment shall be visually inspected to confirm the operational state and condition of the apparatus.
ADDITIONAL INFORMATION	A broken post insulator associated with the fixed contacts of a 132kV disconnector was found at Rainhill indoor substation. The insulator had completely fractured, allowing the 132kV busbar to become detached, but there was no resultant flashover or protection operation. The post insulator appears to have mechanically failed at a similar point to the post insulators which had fractured in National Grid.
UPDATE	N/A
REMEDIAL ACTION	The post insulator has been retrieved and will be examined by forensic experts to establish the root cause for the failure.

8. SOP HEADER

Field Name	Field Value	Field Size
Name (SOPXXX**)** *	**SOP413**	6
The reason for the Operational Restriction *	132kV post insulator failures	30
Nature of the Operational Restriction *	Cause not identified	50
Comments *	Manual switching to be undertaken by two operatives; one undertakes the switching activity and other one observes the equipment for damage and misalignment	200
Restricted Access to Substation Flag *	Y	1
SOP Impact Code * *(highlight or underline the appropriate code)*	0 Temporary/Impact under assessment 1 Very minor operational/network impact 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 * *(highlight or underline the appropriate code)*	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
Search Criteria *	Object Type of SE_DIS at the following substations: • Frodsham [GS-SJ5279/012-132] • Rainhill Grid [GS-SJ5109/001-132] • Wylfa [GS-SH3593/007-132]	N/A

* This denotes a Mandatory Field