Guide To Transmission Equipment Maintenance

In Respect of Outturn Availability Connection Assets within Northern Ireland (v3)

NIE Networks
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Contents

1. BACKGROUND

This document is a high level guide to the processes and procedures used by Northern Ireland Electricity Networks (NIE Networks) in relation to the maintenance of transmission outturn availability connection assets[1].

As Transmission Asset Owner (TAO) within NI, NIE Networks ensures the maintenance of a safe, secure, reliable, economical and efficient transmission system in accordance with its obligations.

The arrangements governing the interactions and respective roles of the Transmission System Operator (TSO), namely SONI, and the TAO in respect to the maintenance of transmission system are further detailed in the Transmission Interface Arrangements (TIA).

2. SCOPE

2.1 Substations

As all of the conventional generating plants in Northern Ireland have been deemed to be outturn available all of the time, the impact in Northern Ireland (NI) is limited to the assets detailed in Appendix A.

2.2 Work Type

The decision paper limits the scope of the works, which count toward the five days per annum, as annual maintenance. This has been interpreted by both TSOs and TAOs within the Single Electricity Market (SEM) as being either routine maintenance or corrective maintenance, but specifically not fault maintenance.

2.2.1 Routine Maintenance

Routine maintenance is planned at predetermined intervals according to policy, to ensure the asset remains in serviceable condition and reduce the likelihood of equipment degradation which could lead to failure. Appendix B details many of these Routine Maintenance tasks, as well as providing typical durations and frequencies.

2.2.2 Corrective Maintenance

Corrective Maintenance may consist of repair, restoration or replacement of equipment before functional failure. Corrective maintenance requirements are identified through regular inspections and can be divided into three types:

1. Non Urgent — Deferred until next routine outage.
2. Urgent — Outage required within the current outage season.
3. Emergency — Immediate outage required.

Appendix B details many of these Corrective Maintenance tasks, as well as providing typical durations where possible.

2.2.3 Fault Maintenance

Fault Maintenance includes activities arising from unexpected equipment failure in service.

[1] As defined by the SEM Committee Decision Paper SEM-15-071, the SEM Committee Addendum Paper (22/12/15) and the Eirgrid / SONI Implementation Approach Paper – “Process for the Calculation of Outturn Availability”.

APPENDIX A - OUTTURN AVAILABILITY CONNECTION ASSETS WITHIN NORTHERN IRELAND

Killymallaght Main Substation

The transmission system bounded by and including Disconnectors MR6 and MR7, towards and including Slieve Kirk Substation and the associated 110kV circuit.

The transmission system bounded by and including Disconnectors MR16 and MR17, towards Killymallaght Main 33kV switchboard.

Omagh Main Substation

The transmission system bounded by and including Disconnectors 7M4, 6M8 and CX56, toward and including all transmission system assets at Magherakeel Main Substation and the associated 110kV circuit.

Rasharkin Main Substation

The transmission system bounded by and including Disconnectors MU13, MU14 and MU16 towards Rasharkin Main 33kV switchboard.

The transmission system bounded by and including Disconnectors MU18, MU19 and MU21 towards and including Brockaghboy Substation and the associated 110kV circuit

Gort Main Substation

The transmission system bounded by and including Disconnectors MT13, MT14 and MT16 towards Gort Main 33kV switchboard.

Tremoge Main Substation

The transmission system bounded by and including Disconnectors MV13, MV14 and MV16 towards Tremoge Main 33kV Switchboard.

Dromore Main substation

The transmission system bounded by and including Disconnectors MW8, MW9 and MW11 towards Drumquin Main substation and the associated 110kv circuit.

Drumquin Main substation

The transmission system bounded by and including Disconnectors MX8, MX9 and MX11 towards Drumquin Main 33kV switchboard.

APPENDIX B – STANDARD MAINTENANCE TASKS

Routine / Corrective Maintenance (RM / CM)	Category	Item	Task	Typical Duration (Calendar Days)	Target Frequency
RM	Station	110kV Disconnector	Maintenance	1	6 Years
RM	Station	110kV Earth Switch	Maintenance	1	6 Years
RM	Station	110kV CT	Maintenance & Test	1	3 Years
RM	Station	110kV CVT	Maintenance & Test	1	3 Years
RM	Station	Surge Arrestors	Maintenance & Test	1	3 Years
RM	Station	110kV SF6 Circuit Breaker	Minor Maintenance & Test	3	3 Years
RM	Station	110kV SF6 Circuit Breaker	Major Maintenance & Test	5	18 Years*
CM	Station	110kV SF6 Circuit Breaker	SF6 Top Up	1	A/R
CM	Station	110kV SF6 Circuit Breaker	SF6 Leak Repair	N/S	A/R
RM	Station	110/33kV Transformer	Minor Maintenance & Test	4	3 Years*
RM	Station	110/33kV Transformer	Major Maintenance & Test	8	6 Years*
CM	Station		Hot Spot Repair	N/S	A/R
CM	Station		Earthing Repairs	N/S	A/R
CM	Station		Plant Painting	N/S	A/R
RM	Cable	110kV Cable Sealing End	Maintenance	1	3 Years
CM	Cable	110kV Cable Sealing End	Repair	N/S	A/R
RM	Cable	110kV XLPE Cable	Sheath Test	1	3 Years
CM	Cable	110kV XLPE Cable	Locate & Repair Sheath Fault	N/S	A/R
CM	Cable	110kV XLPE Cable	Link Box Repair	N/S	A/R
RM	Line	110kV AP1 Line	Climb Patrols & Fibre Condition Assessment	15	10 Years
CM	Line	110kV AP1 Line	Plumb Poles	N/S	A/R
CM	Line	110kV AP1 Line	Sag Checks / Re Sag	N/S	A/R
CM	Line	110kV AP1 Line	Corrosion Testing	N/S	A/R
CM	Line	110kV AP1 Line	Conductor Sampling	N/S	A/R
CM	Line	110kV AP1 Line	Hot Spot Repair	N/S	A/R
CM	Line	110kV AP1 Line	Fibre Testing / Repair	N/S	A/R
RM	Protection	110kV Line	Trip & Megger Test	1	3 Years
RM	Protection	110/33kV Transformer	Trip & Megger Test	1	3 Years

Notes	
N/S	Non Standard
A/R	As Required
*	Also driven by number of operations
This is not an exhaustive list of all maintenance tasks.	