


Company Directive

ENGINEERING SPECIFICATION EE SPEC: 122/1

NGED Assessed Switchgear and Associated Plant for Use on the Distribution Network

Author: Anthony Smith

Implementation Date: June 2024

Approved by 
Carl Ketley-Lowe
Head of Engineering Policy

Date: 11th June 2024

| | |
|--------------------------|---|
| Target Staff Group | Primary Network Design, Engineering Design, Major Projects and Planners |
| Impact of Change | Green |
| Planned Assurance checks | Confirmation will be made via ongoing contract review meeting with suppliers. |

NOTE: The current version of this document is stored in the NGED Corporate Information Database. Any other copy in electronic or printed format may be out of date. Copyright © 2024 National Grid Electricity Distribution

IMPLEMENTATION PLAN

Introduction

This document provides a guide for the selection of switchgear and associated plant items for National Grid Electricity Distribution (NGED) Engineering Design and Field Operations Teams, Independent Connections Providers and other external providers contracted to NGED.

Main Changes

Document reviewed to verify equipment NoC's are to the correct revision.

Some apparatus added, others removed following various equipment assessments and discontinuations.

Impact of Changes

This document replaces any and all previous listings of switchgear approved or assessed for use in National Grid Electricity Distribution including those that have been issued by Western Power Distribution, Central Networks, East Midlands Electricity and Midlands Electricity (and any successor companies).

Implementation Actions

None.

Implementation Timetable

This revised document shall be implemented immediately.

REVISION HISTORY

| Document Revision & Review Table | | |
|----------------------------------|--|---------------|
| Date | Comments | Author |
| June 2024 | <p>Following items removed as not in production or NOC invalid</p> <ul style="list-style-type: none"> • 145kV UK Grid Solutions GL312 Live Tank SF6 CB • 145kV Siemens Energy 3AP1-FG Live Tank SF6 CB • 72.5kV GE S3C Disconnecter Mounted Line Earth switch (type STW) removed; an unsafe option. A free standing Line earth switch has to be used. • 36kV Schneider VOX • 36kV Schneider N38 N-Series PMCB • 12kV Schneider RN*c range of Ring Main Units • 12kV Cooper Bussmann 27ASL50CR5 ASL <p>Following items added as alternatives</p> <ul style="list-style-type: none"> • 145kV Siemens Energy 3AV1-FG Live Tank Clean Air CB • 145kV Lucy (Power Isolators) Rapier Disconnecter • 72.5kV Siemens Energy 3AV1-FG Live Tank Clean Air CB • 36kV Siemens 3AFO4 Live Tank Circuit Breaker • 36kV CO7 Technologies VOX (Dry nitrogen version only) • 36kV Siemens 8DJH36 Ring Main Unit • 36kV Schneider E-Series PMCB • 12kV Evolis Retrofit CB for YSF6 <ul style="list-style-type: none"> • Typographical edits • Updates to ENA NOC revisions • Updates to Manufacturer names | Anthony Smith |
| January 2019 | <ul style="list-style-type: none"> • New document | Anthony Smith |

Contents

| | |
|---|----|
| Categories for NGED Assessed Switchgear and Associated Plant | 6 |
| 1.0 Outdoor Compound Switchgear - 145kV | 7 |
| 1.1 145kV Outdoor GIS Circuit Breakers | 7 |
| 1.2 145kV Outdoor Disconnectors and Earthing Switches | 7 |
| 1.3 145kV Outdoor Instrument Transformers | 8 |
| 2.0 Indoor Switchgear - 145kV | 9 |
| 2.1 145kV GIS Switchboards | 9 |
| 3.0 Outdoor Compound Switchgear - 72.5kV | 10 |
| 3.1 72.5kV Outdoor GIS Circuit Breaker | 10 |
| 3.2 72.5kV Outdoor Disconnectors and Earthing Switches | 10 |
| 3.3 72.5kV Outdoor Fault Throwing Switch | 11 |
| 3.4 72.5kV Outdoor Instrument Transformers | 11 |
| 4.0 Indoor Switchgear - 72.5kV | 12 |
| 4.1 72.5kV GIS Switchboards | 12 |
| 5.0 Outdoor Compound Switchgear - 36kV | 13 |
| 5.1 36kV Outdoor Circuit Breaker | 13 |
| 5.2 36kV Outdoor Substation Compound Disconnectors | 13 |
| 5.3 36kV Outdoor Fault Throwing Switch | 14 |
| 5.4 36kV Outdoor Instrument Transformers | 14 |
| 5.5 36kV Outdoor Pole Mounted Circuit Breakers | 14 |
| 5.6 36kV Outdoor Pole Mounted Enclosed Switch Disconnectors and ABSDs | 15 |
| 6.0 Indoor Switchgear - 36kV | 16 |
| 6.1 36kV Indoor Switchboards | 16 |
| 6.2 36kV Indoor Secondary Ring Main Units | 16 |
| 7.0 Indoor Switchgear - 12kV | 17 |
| 7.1 12kV Indoor Switchboards | 17 |
| 7.2 12kV Indoor Retrofit Circuit Breakers (NGED use only) | 18 |
| 7.3 12kV Pole Mounted Circuit Breakers | 19 |
| 7.4 12kV Outdoor Pole Mounted Enclosed Switch Disconnectors and ABSDs | 19 |
| 7.5 12kV Outdoor Enclosed Secondary (Distribution) Ring Main & Extensible Equipment | 20 |
| 7.6 12kV Outdoor Pole Mounted Miscellaneous Fusegear | 21 |
| 8.0 400/230V Low Voltage Fuse Cabinets | 22 |
| 9.0 Transformers | 22 |
| APPENDIX A SUPERSEDED DOCUMENTATION | 23 |
| APPENDIX B RECORD OF COMMENT DURING CONSULTATION | 23 |
| APPENDIX C ASSOCIATED DOCUMENTATION | 23 |
| APPENDIX D POLICY IMPLEMENTATION | 23 |
| APPENDIX E POLICY IMPACT | 23 |
| APPENDIX F KEY WORDS | 23 |

Purpose

This document provides a guide for the selection of switchgear and associated plant items for National Grid Electricity Distribution (NGED) Engineering Design and Field Operations teams, Independent Connections Providers and other external providers contracted to NGED.

Scope

The switchgear and associated plant list in Schedule 1 of this document has been prepared by NGED and covers the provision of indoor and outdoor, three phase switchgear, at 12 kV, 27.5kV (rail), 36kV, 72.5 kV and 145 kV for continuous service at 50 Hertz, for use on the NGED 6.6kV, 11kV, 33kV, 66kV and 132kV distribution networks.

It supersedes all previous approved/assessed switchgear lists that have been issued by National Grid Electricity Distribution including those issued by Western Power Distribution, Central Networks, East Midlands Electricity and Midlands Electricity (and any successor company).

Switchgear and associated plant included in this list shall comply with the relevant International and British Standards (BS) and Energy Networks Association Technical Specifications (ENATS) listed.

The list only includes the switchgear currently in production, available in the market and assessed by NGED.

Requirements

The switchgear shall generally, except where varied by any related NGED technical specifications (Engineering Equipment Specification – EE SPEC) comply with the appropriate requirements of all relevant sections of the Energy Networks Association Technical Specifications ENATS 41-40 to 41-48 inclusive (formally ENATS 41-36) and ENATS 41-37; IEC 60694 and IEC 62271 and parts thereof.

It is NGED Policy that all new switchgear shall not utilise oil as an insulating or arc interrupting medium.

Switchgear and associated plant shall have been assessed by the ENA Switchgear Assessment Panel and hold a current Notice of Conformity. It shall also have been assessed by the NGED Engineering Policy Team and determined as suitable for use on the NGED network.

Categories for NGED Assessed Switchgear and Associated Plant

All items of NGED assessed switchgear and associated plant in this EE SPEC have been assigned particular assessment categories. The categories are defined below:

Category F Category F equipment has been Assessed by the NGED Engineering Policy Team and is available for purchase within NGED on a Framework Contract.

Category A Category A equipment has been Assessed by the NGED Engineering Policy Team and is available for purchase when Category F equipment is not suitable for use by virtue of ratings, need for equipment make/type diversity, for extension units to match existing units, or other significant factor.

Category S Category S equipment has been Assessed for use by the NGED Engineering Policy Team, but only for a specific contract or site.

Prior approval of the NGED Policy Team (Plant Engineer) will be required before equipment in this category can be considered for purchase, installation and use.

Prior to any Equipment being installed on the NGED network it shall have obtained an appropriate NGED Engineering Policy Team Assessment, which shall be either category “F”, “A” or “S”.

Switchgear and plant not on the NGED Assessed Switchgear and Associated Plant list may be considered for use on the NGED network subject to it having or working towards a valid ENA Notice of Conformity, and a robust NGED business justification for the NGED Policy Team completing the assessment work to allocate a “F”, “A” or “S” Assessment Category.

Any request for assessment should be made to the NGED Engineering Policy Manager.

Schedule - List of NGED Assessed Switchgear and Associated Plant

1.0 Outdoor Compound Switchgear - 145kV

1.1 145kV Outdoor GIS Circuit Breakers

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current | NGED Assessment Category | ENA Assessment | | |
|---|--|------------------|--|-------------------|--|--------------------------------|----------------|------|-------|
| | | | | | | | Type | No | Issue |
| 1 | UK Grid Solutions (GE Alstom) [Charleroi, USA] | DT1-145 F1 FK3-1 | 145kV dead tank outdoor SF6 circuit breaker [SCBC - 40kA @45ms; 31.5kA @135ms] | 2500A | 40kA | A | NOC | 1081 | 3.0 |
| 2 | Siemens | 3AP1-DT-1S | 145kV dead tank outdoor SF6 circuit breaker [* - 2500A with composite insulators] [SCBC - 40kA @45ms; 31.5kA @135ms] | 3150A [2500A]* | 40kA | A | NOC | 1131 | 2.0 |
| 3 | Siemens | 3AV1-FG Blue 145 | 145kV Live tank outdoor Clean Air circuit breaker [SCBC - 40kA @45ms; @ 31.5kA @120ms] | 3150A | 40kA | A | NOC | 1150 | 1.0 |

1.2 145kV Outdoor Disconnectors and Earthing Switches

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current | NGED Assessment Category | ENA Assessment | | |
|---|------------------------------------|-------------|--|---------------|--|--------------------------------|----------------|------|-------|
| | | | | | | | Type | No | Issue |
| 1 | UK Grid Solutions (GE Alstom) | S3C | 1250A / 2000A Single break 145kV 40kA Disconnector Types S3C; S3C/T & S3C/B/T | 1250A | 31.5kA | A | NOC | 1068 | 3.0 |
| | | | | 2000A | 40kA | | | 1069 | 3.0 |
| 2 | UK Grid Solutions (GE Alstom) | STW | 145kV Type STW free standing earthing switch and Disconnector Mounted earthing switch type (/T/H) | - | 40kA | A | NOC | 1071 | 3.0 |
| 3 | Lucy Electric (Power Isolators) | Rapier | Rotating Post Double Break Disconnector and associated Line/Earth Switches | 2000A | 40kA | A | - | - | - |

1.3 145kV Outdoor Instrument Transformers

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current | NGED Assessment Category | ENA Assessment | | |
|----|--------------|-------------|--|----------------|--|--------------------------------|----------------|------|-------|
| | | | | | | | Type | No | Issue |
| 1 | Hitachi | IMB-145 | Current Transformer (hairpin type) | 1250A 2000A | 63kA / 40kA 1s/3 S | A | NOC | 1039 | 3.0 |
| 2 | Hitachi | CPB145 | Capacitor Voltage Transformer Rated voltage 132/ $\sqrt{3}$; secondary 110/ $\sqrt{3}$ | - | - | A | NOC | 1079 | 1.3 |
| 3 | Arteche | CA-145 | Current Transformer (bar primary type) | 2000A | 80kA / 40kA 1s/3 S | A | NOC | 1060 | 1.2 |
| 4 | Arteche | KA-145 | Combined metering transformer | 2000A | 80kA / 40kA 1s/3 S | A | NOC | 1061 | 2.2 |
| 5 | Pfiffner | JOF 145 | Current transformer | 2000A | - | A | NOC | 1127 | 2.0 |
| 6 | Pfiffner | ECF 145 | Capacitive voltage transformer | - | - | A | NOC | 1128 | 2.0 |
| 7 | Pfiffner | EJOF 145 | Combined metering transformer | - | - | A | NOC | 1129 | 2.0 |
| 8 | Pfiffner | EOF 145 | Inductive voltage transformer | - | - | A | NOC | 1132 | 2.0 |
| 9 | Trench | IVOKT 145 | HAM metering CTVT unit [Only units manufactured in France] | - | - | A | - | - | - |
| 10 | Trench | VEOT 145 | Wound voltage transformer [Only units manufactured in France] | - | - | A | | - | - |

2.0 Indoor Switchgear - 145kV

2.1 145kV GIS Switchboards

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current | NGED Assessment Category | ENA Assessment | | |
|---|--------------|-------------|-----------------------|---------------|--|--------------------------------|----------------|----|-------|
| | | | | | | | Type | No | Issue |
| - | - | - | - | - | - | - | - | - | - |

NOTE: No gas-insulated metal-enclosed 145kV switchgear is assessed for any new applications within NGED. [ST: SD1C]

3.0 Outdoor Compound Switchgear - 72.5kV

3.1 72.5kV Outdoor GIS Circuit Breaker

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current | NGED Assessment Category | ENA Assessment | | |
|---|--|-------------------|--|---------------|--|--------------------------------|----------------|------|-------|
| | | | | | | | Type | No | Issue |
| 1 | UK Grid Solutions (GE Alstom) [Charleroi, USA] | DT1-72.5 F1 FK3-1 | 72.5kV outdoor dead tank SF6 circuit breaker [SCBC - 40kA @45ms; 31.5kA @135ms] | 2500A | 40kA | A | NOC | 1105 | 1.1 |
| 2 | Siemens | 3AP1-DT 72.5 | 72.5kV outdoor dead tank SF6 circuit breaker [SCBC - 40kA @45ms; 31.5kA @135ms] | 3150A | 40kA | A | NOC | 1030 | 3.0 |
| 3 | Siemens | 3AV1-FG Blue 72.5 | 72.5kV Live tank outdoor Clean Air circuit breaker [SCBC - 40kA @45ms; @ 31.5kA @120ms – type dependant] | 2500A | 40kA | S | - | - | - |

3.2 72.5kV Outdoor Disconnectors and Earthing Switches

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current | NGED Assessment Category | ENA Assessment | | |
|---|------------------------------------|-------------|--|---------------|--|--------------------------------|----------------|------|-------|
| | | | | | | | Type | No | Issue |
| 1 | UK Grid Solutions (GE Alstom) | S3C | Disconnecter – rotating post double break [not to be used with Disconnecter Mounted Line Earth Switch] | 2000A | 40kA | A | NOC | 1117 | 1.0 |
| 2 | UK Grid Solutions (GE Alstom) | STA | Free standing earthing switch and Disconnecter mounted earthing switch (/T) | - | 40kA | A | NOC | 1115 | 1.0 |
| 3 | UK Grid Solutions (GE Alstom) | STW | Free standing Line Earth Switch (/T/H) only [Not for use when mounted direct to a disconnector unit] | - | 40kA | A | NOC | 1116 | 1.0 |
| 4 | MLE (Morris Line Engineering) | RDB | Disconnecter – rotating post double break | 2000A | 31.5kA | A | - | - | - |
| 5 | Lucy Electric (Power Isolators) | Rapier | Disconnecter – rotating post double break | 2000A | 40kA | A | - | - | - |

3.3 72.5kV Outdoor Fault Throwing Switch

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current | NGED Assessment Category | ENA Assessment | | |
|---|--------------|-------------|-----------------------|---------------|--|--------------------------------|----------------|----|-------|
| | | | | | | | Type | No | Issue |
| Fault throwers are not permitted for any installations– see CB Live Tank. | | | | | | | | | |

3.4 72.5kV Outdoor Instrument Transformers

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current | NGED Assessment Category | ENA Assessment | | |
|----|--------------|-------------|--|----------------|--|--------------------------------|----------------|------|-------|
| | | | | | | | Type | No | Issue |
| 1 | Hitachi | IMB-72 | Current Transformer (hairpin type) | 1600A 2000A | 63kA / 40kA 1S / 3S | A | NOC | 1038 | 2.1 |
| 2 | Hitachi | CPB72 | Capacitor Voltage Transformer Rated voltage 69/ $\sqrt{3}$;- secondary 110/ $\sqrt{3}$ | - | - | A | NOC | 1079 | 1.3 |
| 3 | Arteche | DDB-72 | Capacitor voltage transformer | - | - | A | - | - | - |
| 4 | Arteche | UTB-72 | Wound voltage transformer | - | - | A | - | - | - |
| 5 | Pfiffner | EOF 72 | Inductive voltage transformer | - | - | A | NOC | 1135 | 2.0 |
| 6 | Pfiffner | ECF 72 | Capacitive voltage transformer | - | - | A | NOC | 1136 | 2.0 |
| 7 | Pfiffner | JOF 72 | Current transformer | <4000A | <63kA 1 sec | A | NOC | 1133 | 2.0 |
| 8 | Pfiffner | EJOF 72 | Combined metering transformer | - | - | A | NOC | 1134 | 2.0 |
| 9 | Trench | IVOKT 72.5 | HAM metering CTVT unit [Only units manufactured in France] | 2000A | - | A | - | - | - |
| 10 | Trench | VEOT 72.5 | Wound voltage transformer [Only units manufactured in France] | - | - | A | - | - | - |

4.0 Indoor Switchgear - 72.5kV

4.1 72.5kV GIS Switchboards

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current | NGED Assessment Category | ENA Assessment | | |
|---|--------------|-------------|-----------------------|---------------|--|--------------------------------|----------------|----|-------|
| | | | | | | | Type | No | Issue |
| - | - | - | - | - | - | - | - | - | - |

NOTE: No gas-insulated metal-enclosed 72.5kV switchgear is assessed for any new application within NGED. [ST:SD1C]

5.0 Outdoor Compound Switchgear - 36kV

5.1 36kV Outdoor Circuit Breaker

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current | NGED Assessment Category | ENA Assessment | | |
|---|---------------------------------|-------------------------------|--|----------------|---------------------------------------|--------------------------|----------------|------|-------|
| | | | | | | | Type | No | Issue |
| 1 | Hawker Siddeley Switchgear Ltd. | Horizon | Outdoor Dead Tank - Vacuum in SF ₆ | 1250A | 25kA | F | NOC | 1034 | 2.1 |
| | | | | 2000A | 31.5kA | | - | - | - |
| 2 | Siemens | 3AF0151 -4EA40 - 2WA2+V12+V13 | Outdoor Live Tank - Vacuum in Nitrogen [NGED use only] | 1600A | 25kA | A | - | - | - |
| 3 | CO7 Technologies | VOX-SF6 Free | Outdoor Dead Tank - Vacuum in Nitrogen [NGED use only] | 1250A 2000A | 25kA / 31.5kA | S | - | - | - |

5.2 36kV Outdoor Substation Compound Disconnectors

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current | NGED Assessment Category | ENA Assessment | | |
|---|-----------------------------|-------------|--|-----------------|---------------------------------------|--------------------------|----------------|----|-------|
| | | | | | | | Type | No | Issue |
| 1 | MLE (Morris Line Equipment) | RDB | 36kV Disconnecter – Rotating Post Double Break [* - 400A or 630A interrupter heads] | up to 2000A* | 25kA / 31.5kA | A | - | - | - |
| 2 | MLE (Morris Line Equipment) | Type R | 36kV Outdoor Air Break Switch Disconnecter Fitted with interrupter heads* (CAT 0) [* Can only Break 400A or 630A with interrupter heads] | 800A* 1250A* | 25kA | A | - | - | - |
| 3 | Power Isolators (Lucy) | Rapier DSB | 36kV Double side break Disconnecter Fitted with interrupter heads (CAT 0) [* Can only Break 630A with interrupter heads] | 630A* | 25kA | A | - | - | - |

5.3 36kV Outdoor Fault Throwing Switch

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current | NGED Assessment Category | ENA Assessment | | |
|--|--------------|-------------|-----------------------|------------|---------------------------------------|--------------------------|----------------|----|-------|
| | | | | | | | Type | No | Issue |
| Fault throwers are not permitted for any installations – see CB Live Tank. | | | | | | | | | |

5.4 36kV Outdoor Instrument Transformers

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current | NGED Assessment Category | ENA Assessment | | |
|---|--------------|-------------|--------------------------|------------|---------------------------------------|--------------------------|----------------|----|-------|
| | | | | | | | Type | No | Issue |
| 1 | Transmag | “Trident” | Wound VT – oil insulated | - | - | F | - | - | - |

5.5 36kV Outdoor Pole Mounted Circuit Breakers

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current | NGED Assessment Category | ENA Assessment | | |
|---|--------------|-------------|--|------------|---------------------------------------|--------------------------|----------------|----|-------|
| | | | | | | | Type | No | Issue |
| 1 | Schneider | E-Series | 36kV Non SF6 Resin Pole Mounted Circuit Breaker (Vacuum Interrupter) | 800A | 16kA | F | - | - | - |

5.6 36kV Outdoor Pole Mounted Enclosed Switch Disconnectors and ABSDs

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current | NGED Assessment Category | ENA Assessment | | |
|---|-----------------------------|---------------|--|------------------------------------|---------------------------------------|--------------------------|----------------|------|-------|
| | | | | | | | Type | No | Issue |
| 1 | Nulec (Schneider) | RL38 R-Series | 36kV Outdoor Pole Mounted SF6 Sectionaliser | 630A | 16kA | F | NOC | 1102 | 1.1 |
| 2 | MLE (Morris Line Equipment) | MLS | 36kV Outdoor Pole Mounted Air Break Switch Disconnecter Manual independent spring assisted high level rod operated mechanism. Rated short-circuit making current 7.5kA [* Can only Break 400A with interrupter heads] | 630A* 800A* 1250A* 2000A* | 25kA | F | NOC | 1012 | 1.3 |
| 3 | MLE (Morris Line Equipment) | ML | 36kV overhead conductor connected three phase Air Break Switch Disconnecter (CAT0) Rated short-circuit making current 7.5kA [* Can only Break 400A with interrupter heads] | 630A* 800A* 1250A* 2000A | 25kA | F | NOC | 1012 | 1.3 |

6.0 Indoor Switchgear - 36kV

6.1 36kV Indoor Switchboards

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current | NGED Assessment Category | ENA Assessment | | |
|---|--------------|--|---|-------------------------|---------------------------------------|--------------------------|----------------|------|-------|
| | | | | | | | Type | No | Issue |
| 1 | Schneider | GHA 36-25-12 GHA 36-25-20 GHA 36-31-12 GHA 36-31-20 GHA 36-31-25 | 36kV indoor circuit breaker SF6 insulated vacuum interrupters [25kA or 31.5kA at both 45ms & 120ms DC Time Constant] | 1250 2000A | 25kA | F | NOC | 1072 | 3.0 |
| | | | | 1250A 2000A 2500A | 31.5kA | F | NOC | 1138 | 3.0 |
| 2 | Siemens | NXPlus 36 V1.0 | 36kV indoor circuit breaker SF6 insulated vacuum interrupters (single busbar) [31.5kA at both 45ms & 120 ms DC Time Constant] | 1250A 2000A | 31.5kA | F | NOC | 1033 | 5.0 |
| 3 | Schneider | WSA 36 | 36kV indoor circuit breaker SF6 insulated vacuum interrupters (single busbar) [45ms & 120ms DC Time Constant] | 1250A 2000A | 31.5kA | A | NOC | 1049 | 2.0 |
| 4 | Ormazabal | CPG.0.V CPG.0.L CPG.0.C | 36kV indoor circuit breaker SF6 insulated vacuum interrupters [25 or 31.5kA at both 45ms & 120ms DC Time Constant] | 1250A 2000A | 25kA | A | NOC | 1074 | 4.0 |
| | | | | | 31.5kA | | NOC | 1154 | 1.0 |

[Note: Item 4 – ICP supplied only]

6.2 36kV Indoor Secondary Ring Main Units

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current | NGED Assessment Category | ENA Assessment | | |
|---|--------------|-------------------------------------|--|------------|---------------------------------------|--------------------------|----------------|------|-------|
| | | | | | | | Type | No | Issue |
| 5 | Siemens | 8DJH36 [Type RLR or RRL only] | 36kV indoor RMU circuit breaker SF6 insulated vacuum interrupters [20kA at 45ms DC Time Constant] [NGED use only. Not for any metering use] | 630A | 20kA | S | NOC | 1142 | 1.0 |

7.0 Indoor Switchgear - 12kV

7.1 12kV Indoor Switchboards

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current (kA) | NGED Assessment Category | ENA Assessment | | |
|---|----------------------------|-------------|---|------------------------|---|--------------------------|----------------|------|------------|
| | | | | | | | Type | No | Issue |
| 1 | Hawker Siddeley Switchgear | Quantum | Circuit Breaker (Fixed Pattern) Magnetic actuator operated vacuum circuit breaker with integral three position disconnecter / earthing switch. Air insulated busbars. | 630A 1250A 2000A | 25kA [45ms D.C. component 30.8/30.8/31.3%] | F | NOC | 1140 | 2.0 +A1 |
| 2 | Hawker Siddeley Switchgear | Eclipse | Circuit Breaker (Fixed Pattern) Magnetic actuator operated vacuum circuit breaker with integral three position disconnecter / earthing switch. Air insulated busbars. [NGED use only to extend existing installations] | 630A 1250A 2000A | 25kA | A | NOC | 1024 | 5.0 |
| 3 | Schneider | Genie Evo | Circuit Breaker (Fixed Pattern) 630A feeder; 1250A incomer with fixed VT (removable primary fuses) & top and bottom entry cable compartment; 630A & 1250A Bus-section & 'riser' | 630A 1250A 2000A | 25kA [45ms D.C. component –27%] | F | NOC | 1032 | 7.0 |

7.2 12kV Indoor Retrofit Circuit Breakers (NGED use only)

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current (kA) | NGED Assessment Category | ENA Assessment | | |
|---|----------------------------|-------------|---|---------------------------|--|--------------------------|----------------|------|-------|
| | | | | | | | Type | No | Issue |
| 1 | Hawker Siddeley Switchgear | SWR 12/25 | 12kV Indoor moving portion. For replacement of OCB in SWS type C4X/D4X legacy housing/ back part with <ul style="list-style-type: none"> busbars arranged vertically ('High' type) busbars arranged horizontally ('Low' type) [Rated normal current and rated short-circuit breaking current in use will be restricted by the fixed portion] | 400/630A 800A 1250A | 25kA [45ms time constant] [Earthing adaptor equivalent to 13.1kA break /33kA make] | F | NOC | 1112 | 1 |
| 2 | Hawker Siddeley Switchgear | BSR 12/25 | 12kV Indoor moving portion For replacement of OCB and VCB in Brush type VSI, VTD & VMV (D) legacy housing/ back part. [Rated normal current and rated short-circuit breaking current in use will be restricted by the fixed portion] | 400/630A 800A 1250A | 25kA; [45ms time constant] | F | NOC | 1137 | 2 |
| 3 | Siemens | LMT-SION | 12kV Indoor moving portion for use with Reyrolle LMT fixed portion. Refer to ENA NoC for specific application. [Rated normal current and rated short-circuit breaking current in use will be restricted by the fixed portion] | 630A 1250A 2000A | 20kA; (630A) 25kA; (1250A & 2000A) [45ms time constant] | S | NOC | 1103 | 3 |
| 4 | Schneider | YSF6-Evolis | 12kV Indoor moving portion For replacement of YSF6 CB in Schneider/Yorkshire Electric YSF6 legacy housing. [Rated normal current and rated short-circuit breaking current in use will be restricted by the fixed portion] | 630A 1250A | 25kA [45ms time constant] | S | - | - | - |

7.3 12kV Pole Mounted Circuit Breakers

| | Manufacturer | Designation | Equipment Description | I (normal) (A) | 3 Second Short Time Withstand Current (kA) | NGED Assessment Category | ENA Assessment | | |
|---|-------------------|-------------|--|-------------------|---|--------------------------------|----------------|------|-------|
| | | | | | | | Type | No | Issue |
| 1 | Nulec (Schneider) | U-Series | 12kV Non SF6 Resin Pole Mounted Circuit Breaker (Vacuum Interrupter) | 630 | 12.5kA | F | NOC | 1100 | 1 |

7.4 12kV Outdoor Pole Mounted Enclosed Switch Disconnectors and ABSDs

| | Manufacturer | Designation | Equipment Description | I (normal) (A) | 3 Second Short Time Withstand Current (kA) | NGED Assessment Category | ENA Assessment | | |
|---|-----------------------------|---------------|--|-------------------------|---|--------------------------------|----------------|------|-------|
| | | | | | | | Type | No | Issue |
| 1 | Nulec (Schneider) | RL27 R Series | 12kV Outdoor pole mounted SF6 switch disconnector [Not for use post December 2025] | 630 | 16kA | F | NOC | 1102 | 1 |
| 1 | Morris Line Equipment (MLE) | - | 12kV Outdoor pole mounted Air Break Switch Disconnecter Independent Manual Spring Assisted High Level rod operated mechanism. Fitted with 400 amp interrupter heads (CAT 0) Rated short-circuit making current 10kA pk | 630A load 400A break | 16kA | F | - | - | - |
| 2 | Allied Insulators | - | 12kV Outdoor pole mounted Air Break Switch Disconnecter Independent Manual Spring Assisted High Level rod operated Mechanism. Fitted with 400 amp interrupter heads (CAT 0) Rated short-circuit making current 10kA pk. | 630A load 400A break | 16kA | F | - | - | - |
| 3 | Morris Line Equipment (MLE) | - | 12kV Outdoor pole mounted Air Break Switch Disconnecter Dependent Manual high level rod operated mechanism with arcing horns. (CAT 2) Rated short-circuit making current 3kA pk. | 630A load 20A break | 16kA | F | - | - | - |
| 4 | Allied Insulators | - | 12kV Outdoor pole mounted Air Break Switch Disconnecter Dependent Manual high level rod operated mechanism with arcing horn. (CAT 2) Rated Short-Circuit Making Current 3kA pk | 630A load 20A break | 16kA | F | - | - | - |

7.5 12kV Outdoor Enclosed Secondary (Distribution) Ring Main & Extensible Equipment

| | Manufacturer | Designation | Equipment Description | I (normal) (A) | 3 Second Short Time Withstand Current (kA) | NGED Assessment Category | ENA Assessment | | |
|----|--------------|-------------|---|-------------------|---|--------------------------------|----------------|------|-------|
| | | | | | | | Type | No | Issue |
| 1 | Lucy | SABRE VRN2A | 12kV Outdoor RMU [630A ring switches / 250A circuit breaker] | 250 630 | 20kA 3 sec. 95kV | F | NOC | 1041 | 2 |
| | Lucy | VRN6A | 12kV Outdoor RMU [630A ring switches / 630A circuit breaker] | 250 630 | 20kA 3 sec. 95kV | F | NOC | 1041 | 2 |
| 2 | Schneider | RN2d | 12kV Outdoor RMU 200A SF6 CB (95 kV BIL) | 630 | 21kA | F | NOC | 1130 | 2 |
| 3 | Schneider | RN6d | 12kV Outdoor RMU 630A SF6 CB (95 kV BIL) | 630 | 21kA | F | NOC | 1130 | 2 |
| 6 | Schneider | MU2 | 12kV Air Insulated Metering Unit (75kV BIL) | 200 630 | 16kA | F | - | - | - |
| 7 | Schneider | CE2 | 12kV Outdoor extensible SF6 switch disconnecter (95kV BIL) | 200 | 20kA | F | NOC | 1085 | 1 |
| 8 | Schneider | CE6 | 12kV Outdoor extensible SF6 switch disconnecter (95kV BIL) | 630 | 20kA | F | NOC | 1085 | 1 |
| 9 | Schneider | CE6-B9 | 12kV Outdoor extensible SF6 bus-section circuit breaker | 630 | 20kA | F | NOC | 1085 | 1 |
| 10 | Schneider | CN2 | 12kV Outdoor non-extensible SF6 circuit breaker (75kV BIL) | 200 | 20kA | F | NOC | 1085 | 1 |
| 11 | Schneider | SE6 | 12kV Outdoor extensible SF6 switch disconnecter (95kV BIL) | 630 | 20kA | F | NOC | 1086 | 1.1 |
| 12 | Schneider | SE6-B1 | 12kV Outdoor extensible SF6 bus-section switch disconnecter | 630 | 20kA | F | NOC | 1086 | 1.1 |
| 13 | Schneider | SE6-E1 | 12kV Outdoor extensible SF6 busbar earth switch (95kV BIL) | 630 | 20kA | F | NOC | 1086 | 1.1 |

[Note: Units shall be NGED variants and ordered using relevant NGED E5 and Manufacturer codes as per NGED Materials Suppliers List.]

7.6 12kV Outdoor Pole Mounted Miscellaneous Fusegear

| | Manufacturer | Designation | Equipment Description | I (normal) | 3 Second Short Time Withstand Current (kA) | NGED Assessment Category | ENA Assessment | | |
|---|----------------------|------------------------|---|------------|--|--------------------------|----------------|----|-------|
| | | | | | | | Type | No | Issue |
| 1 | Cooper Power Systems | Type L Cut-out L9COP1A | 27kV Pole mounted Dropout Expulsion Fuse to NEMA standard. Including: 100 amp fuse holder LDCA00A 300 amp link LDC300A. | Up to 300A | 10kA | A | - | - | - |
| 2 | S&C Electric | TripSaverII | 15kV NEMA Fuse Cutout Mounted Single Phase Recloser | 200A | 6.3kA | F | - | - | - |
| 3 | ABB | Autolink | 27kV Automatic Sectionalising Link for use in NEMA standard 27kV cut-out (single phase unit) | Up to 200A | 6kA | S | - | - | - |

8.0 400/230V Low Voltage Fuse Cabinets

| | Manufacturer | Designation | Equipment Description | I (normal) (A) | 3 Second Short Time Withstand Current (kA) | NGED Assessment Category | ENA Assessment | | |
|---|--------------|---------------------|--------------------------------|-------------------|---|--------------------------------|----------------|----------------------|-------------------|
| | | | | | | | Type | No | Issue |
| 1 | Lucy | AccuLock | Transformer mounted LV cabinet | 1600 | | A | NOC | 1083 1087 | 1.1 1.1 |
| 2 | Schneider | Shielded LV Cabinet | Transformer mounted LV cabinet | 1600 | | F | NOC | 1054 1056 1058 | 3.1 3.1 3.1 |

9.0 Transformers

NGED Assessed Manufacturers of power transformers are:

| Manufacturer | Voltage | | | | | | | | | | |
|---------------|---------|--------|--------|-----------|-------|-------|----------|-------|------------------------|------------------------|------------------------------|
| | 132/66 | 132/33 | 132/11 | 132/11/11 | 66/33 | 66/11 | 66/11/11 | 33/11 | 11/0.400/0.230 (GM) | 11/0.400/0.230 (PM) | 11/0.400/0.230 (Padmount) |
| Hitachi | X | X | X | X | | | | | | X | |
| Brush | X | X | X | X | X | X | | X | | | |
| Green Transfo | | | | | | | | | X | | |
| Kyte | | | | | | | | | X | X | X |
| Schneider | | | | | | | | | X | X | |
| Siemens | X | X | X | X | | | | | | | |
| SGB | X | X | X | X | | | | | | | |
| Winder | | | | | X | X | | X | | | |

APPENDIX A

SUPERSEDED DOCUMENTATION

This document supersedes EE SPEC: 122/0 dated January 2019 which has now been withdrawn.

This document replaces any and all previous listings of switchgear assessed or approved for use in National Grid Electricity Distribution including those that have been issued by Central Networks, East Midlands Electricity and Midlands Electricity (and any successor companies).

APPENDIX B

RECORD OF COMMENT DURING CONSULTATION

No comments requested as update of document only.

APPENDIX C

ASSOCIATED DOCUMENTATION

Current versions of:-

| | |
|-------------|--|
| EE SPEC 1 | Continuous Maximum Rated (CMR) System Transformers for use on systems up to 132kV |
| EE SPEC 2 | 12kV Cable Connected Outdoor Extensible & Non-Extensible Secondary Switchgear & Metering Units |
| EE SPEC 5 | 11kV Distribution Transformers |
| EE SPEC 8 | Emergency Rated System Transformers - 66/11.5kV and 33/11.5kV Delta/Star and Star/Star connected |
| EE SPEC 10 | 12kV & 36kV Outdoor Overhead Conductor Connected Switchgear and Voltage Transformers |
| EE SPEC 11 | Auto Reclosing Links for the Overhead 11kV Network |
| EE SPEC 13 | 12kV & 36kV Pole Mounted Circuit Breakers & Pole Mounted Enclosed Switch Disconnectors |
| EE SPEC 16 | LV Distribution Fuseboards |
| EE SPEC 28 | Low Voltage Intake Metering Panels |
| EE SPEC 170 | 145kV Outdoor Dead Tank Circuit Breakers |
| EE SPEC 171 | 145kV Outdoor Live Tank Circuit Breakers |
| EE SPEC 173 | 145kV Disconnectors and Earthing Switches |
| EE SPEC 174 | 145kV Outdoor Structure Mounted Instrument Transformers |
| EE SPEC 175 | 72.5kV Outdoor Dead Tank Circuit Breakers |
| EE SPEC 176 | 72.5kV Outdoor Live Tank Circuit Breakers |
| EE SPEC 178 | 72.5kV Disconnectors and Earthing Switches |
| EE SPEC 179 | 72.5kV Outdoor Structure Mounted Instrument Transformers |
| EE SPEC 180 | 36kV Outdoor Dead Tank Circuit Breakers |
| EE SPEC 182 | 36kV Indoor Primary Circuit Breakers |
| EE SPEC 182 | 36kV Outdoor Structure Mounted Instrument Transformers |
| EE SPEC 185 | 12kV Indoor Circuit Breakers |
| EE SPEC 195 | 27.5kV Outdoor Live Tank Circuit Breaker for Rail Traction Supplies |
| ST: SD1C | Selection and Application of NGED Assessed Switchgear for Use on the Distribution Network |

APPENDIX D

POLICY IMPLEMENTATION

This specification is implemented on issue. There is no retrospective action required as a result of the issue of this document.

APPENDIX E

POLICY IMPACT

This document is relevant to all staff involved with the specification, purchase, design, and installation of new switchgear and associated plant.

APPENDIX F

KEY WORDS

Assessed; Assessed Switchgear; Circuit Breaker; Disconnector; Instrument Transformer; VT; CT