

EQUIPMENT COMMISSIONING & DECOMMISSIONING

This document is for internal and contract specific use only.

Disclaimer

NGG and NGET or their agents, servants or contractors do not accept any liability for any losses arising under or in connection with this information. This limit on liability applies to all and any claims in contract, tort (including negligence), misrepresentation (excluding fraudulent misrepresentation), breach of statutory duty or otherwise. This limit on liability does not exclude or restrict liability where prohibited by the law nor does it supersede the express terms of any related agreements."

TABLE OF CONTENTS

PURPOSE AND SCOPE.....	2
PART 1 – PROCEDURAL	3
1 RESPONSIBILITIES	3
2 HEALTH, SAFETY, ENVIRONMENTAL AND SECURITY (SHES)	11
3 COMMISSIONING CERTIFICATES	13
4 OPERATIONAL DATA	15
5 DOCUMENTATION.....	16
6 PROCEDURE FOR COMMISSIONING.....	18
7 PROCEDURE FOR DECOMMISSIONING	19
8 CONNECTION OF USER'S EQUIPMENT TO THE NATIONAL GRID SYSTEM	19
9 UNLICENSED WORK ON USER'S EQUIPMENT	21
10 UNLICENSED WORK ON EQUIPMENT NOT DIRECTLY CONNECTED TO THE NATIONAL GRID SYSTEM.....	21
11 SELF BUILD	21
12 CIVIL, STRUCTURAL AND BUILDING ENGINEERING	21
13 FORMS AND RECORDS.....	22
PART 2 - DEFINITIONS AND DOCUMENT HISTORY	23
14 DEFINITIONS.....	23
15 AMENDMENTS RECORD	27
16 IMPLEMENTATION	28
PART 3 – GUIDANCE NOTES AND APPENDICES	28
17 REFERENCES.....	28
APPENDIX A COMMISSIONING PANEL MEETING MODEL FORMAT AND DOCUMENTATION ...	29
APPENDIX B MODEL PRE-COMMISSIONING INSPECTION SCHEDULE	80
APPENDIX C (1) MODEL PRE-ENERGISATION INSPECTION SCHEDULE (SUBSTATION & OHL) ...	81
APPENDIX C (2) MODEL OHL CONFIRMATION OF NO INFRINGEMENT OF SAFETY CLEARANCE	84
APPENDIX D MODEL POST COMMISSIONING INSPECTION SCHEDULE	85
APPENDIX E COMMISSIONING SWITCHING PROGRAMME	86
APPENDIX F COMMISSIONING SWITCHING PROGRAMME FORMAT	88
APPENDIX G COMMISSIONING REPORT FRONT SHEET	92
APPENDIX H HV SYSTEM CHANGE CERTIFICATE (HVSCC)	93
APPENDIX I .1 EQUIPMENT ACCEPTANCE CERTIFICATE.....	98
APPENDIX I .2 ASSET TAKING OVER CERTIFICATE (ATOC).....	100
APPENDIX J COMMISSIONING CONTROL CONFIRMATION CERTIFICATE	102
APPENDIX K DEFECT REPORT	104
APPENDIX L DECOMMISSIONING REPORT	105
APPENDIX M NOTIFICATION OF CHANGE CERTIFICATE (NCC)	107
APPENDIX N PROVISION / MODIFICATION OF REMOTE OPERATION FACILITIES CERTIFICATE	108
APPENDIX O COMMISSIONING & DECOMMISSIONING CERTIFICATES REQUIREMENTS	110
APPENDIX P OPERATIONAL DATA REQUIREMENTS	112
APPENDIX Q - COMMISSIONING CERTIFICATE – CIRCULATION AT SEPTEMBER 2013.....	114
APPENDIX R COMMISSIONING RESPONSIBILITIES METRIC WHEN ETAM UNDERTAKE PC ROLE AND FOR ANCILLARY SYSTEMS	115
APPENDIX S OVERVIEW OF COMMISSIONING PROCESS	116
APPENDIX T COMMISSIONING FAMILIARISATION CONFIRMATION	119
APPENDIX U MODEL SUBSTATION COMMISSIONING DOCUMENTATION FILING ARRANGEMENTS	121
APPENDIX V MODEL OHL COMMISSIONING DOCUMENTATION FILING ARRANGEMENTS.....	125

PURPOSE AND SCOPE

Application

- a) This procedure defines National Grid requirements for the commissioning, decommissioning and recommissioning of all **Equipment** covered by the Electricity Transmission Licence including both overhead lines and cables, and auxiliary equipment. It also defines the commissioning / decommissioning / recommissioning requirements of unlicensed **Equipment** when undertaken by National Grid. Appendix S provides an overview of the licensed process.
- b) The procedure is formatted on the basis that the **Equipment** to be commissioned / decommissioned / recommissioned forms part of a capital investment delivered by Construction and ETAM Operations.
- c) The procedure therefore defines both the National Grid and Contractor tasks and responsibilities. When commissioning / decommissioning / recommissioning takes place under other circumstances (eg. following equipment fault and replacement), then the responsible managers must adhere to the principles of this document.
- d) TP106 defines a framework of requirement which will apply to the majority of investments. Where it is evident that TP106 does not provide a fully satisfactory framework (e.g. for stand-alone projects or equipment not directly connected to the main stream power system such as Oil Containment, Fire Protection, Compressors, LVAC Supplies, Cable Cooling System, Batteries etc.) then formally defined alternative arrangements specified by the Commissioning Panel (which may include alternative commissioning authorisation arrangements) may be defined and utilised.

It is recognised that for investments that fall into the category of single asset replacement or refurbishment/recondition (as defined in UKBP/TP236) then the full application of this TP may not provide the most cost efficient means of delivering that investment and hence the TP minimum requirements as defined in UKBP/TP236 may be applied.

These minimum requirements are defined for each type of single asset replacement or refurbishment/recondition investment and are presented as separate appendices in UKBP/TP236. e.g. Appendix B, CB Replacement (with CTs) & (without CTs).

Amendments to this procedure shall be reflected in UKBP/TP236 Appendices (if required) and may result in the re-issue of UKBP/TP236.

- e) Where there is more than one project being carried out at a single substation the following criteria shall be used to determine whether separate or combined Commissioning Panel(s) shall be held.
 - 1. If the projects are completely separate and there are no commissioning interfaces, separate Commissioning Panels should be held, a combined UKBP_TP153 Coordination meeting should be held.
 - 2. If the projects overlap, i.e. use of circuits/schemes one Commissioning Panel held with one being nominated as the lead project and providing the Chairman. The project manager/engineer of the other projects (not the lead) will retain responsibility for those aspects usually covered by the Chairman (i.e. signing part 1 of CCCC and the Commissioning Report for his own project). Each project will have its own appointed Commissioning Officer, each one shall attend the Commissioning Panel (in some instances these may be one of the same individual). A combined UKBP_TP153 meeting to be held.
 - 3. In the event that there is more than one project at a substation with the design for these projects carried out by one party, a single Commissioning Panel shall be held with a

Chairman and Commissioning Officer, having full responsibility for these projects. A combined UKBP_TP153 meeting will also be held.

- f) Appendix A (Commissioning Panel Meeting Model Format) forms the executive part of this procedure. This appendix is the cornerstone of UKBP_TP106 and links to all other requirements defined in the document.
- g) For simple or repetitive projects the Commissioning Panel may define an abridged version of Appendix A.

NB: In this procedure the term commissioning will usually be taken to include the requirements of commissioning, decommissioning and recommissioning.

Commissioning Objectives

To achieve satisfactory **Equipment** commissioning UKBP_TP106 targets five prime objectives.

- a) Statutory (primarily Health & Safety, and Environmental)
- b) Transmission **System** reliability (i.e. maintaining reliability during commissioning)
- c) Organisation (definition of tasks, responsibilities and timescales)
- d) Performance tests (i.e. testing regime that ensures satisfactory equipment commissioning)
- e) Contractual requirements

Commissioning Philosophy

To ensure that the National Grid **System** is commissioned to a standard which enables the objectives to be achieved, commissioning philosophy comprises:

- a) Process framework – UKBP_TP106 – thereby ensuring that commissioning is carried out with a demonstrable level of governance and associated audit trail.
- b) Requisite skills, knowledge and competency – UKBP_TP141 – thereby ensuring the quality and accuracy of the commissioning undertaken.

PART 1 – PROCEDURAL

1 RESPONSIBILITIES

During Site Installation Works:

For all work activities undertaken inside a CDM Controlled Area (CDM Zone) but outside National Grid's Safety Rules the Contractor/Principle Contractor shall be responsible for identifying and implementing their own Safety Management Procedure in controlling the potential of Impressed Voltage hazards.

Further information is available in the Transmission Procedure for Impressed Voltages and Methods of Control Management Guidance.

During Development and Detailed Design Stages:

During NDP 4.3 – Development and Sanction Stage, all potential Impressed Voltage hazards identified shall be fully assessed by the Principle Designer (Pre-Contract) to ensure that where reasonably practicable they can be eliminated, or mitigated strategies put in place.

Where Impressed Voltage hazards remain then these shall be added to the Hazards Register.

During NDP4.4 – Project Execution Stage, all Impressed Voltage hazards identified on the Hazard Register and all additional potential Impressed Voltage hazards identified shall be fully assessed by the Lead Contractor Design Approval Engineer (Principle Designer [Design & Build]) to ensure that where reasonably practicable they can be eliminated or mitigating strategies put in place.

Where Impressed Voltage hazards remain then these shall be added to the Hazards Register.

1.1 Commissioning Panel Chairman

The Commissioning Panel Chairman is the Project Manager / Project Engineer who will be authorised in accordance with UKBP_TP141. The Chairman has overall responsibility for ensuring that the **Equipment** is commissioned in accordance with the requirements of this procedure. Detailed terms of reference are given in Appendix A. Situations may arise whereby the Commissioning Panel Chairman simultaneously encompasses a number of contracts, e.g. Separate substations, cables and OHL.

The Commissioning Panel Chairman must be satisfied that site installation is complete to the point where commissioning may commence – through agreement with the Principal Contractor.

If required, suitably experienced staff within Asset Engineering can be authorised as CPC to carry out the role of Commissioning Panel Chair for EMI, PDSA type of work.

Also on projects where deadlines are tight and commercial pressures are significant, the role of CPC where possible should be separated from the role of Project Manager, to allow the commissioning activities to be conducted in a considered manner without the undue influence of other project related issues.

Ensure all documents required by Technical Data Process have been supplied and meet the standards as defined within UKBP_TP221 Data Assurance. Further, that all such documents have been created, supplied and validated within the required UKBP_TP221 timescales and loaded into National Grid's Electronic Collaboration Tool by the Project Engineer

Although many tasks will be discharged by Commissioning Officers and Commissioning Engineers, the Chairman is accountable; (i.e. ultimate responsibility) for ensuring the existence of a full and completed audit trail of all commissioning activities.

NB: Detailed responsibilities are defined in Appendix A.

1.2 Project Manager / Project Engineer

The Project Manager / Project Engineer is the Engineer nominated by Construction to manage an investment from sanction to closure. The Project Manager / Project Engineer will usually be the Commissioning Panel Chairman.

Project Engineer shall ensure all documents required by the Technical Data Process have been supplied and meet the standards as defined within UKBP_TP221 Data Assurance.

1.3 Commissioning Officer

The Commissioning Officer is an engineer with project design experience, from (or acting on behalf of) National Grid, who is authorised in accordance with UKBP_TP141 to discharge this role. Prime responsibilities are as follows.

- a) To confirm that the **Equipment** to be commissioned accords with the design specification defined in the DID (NDP Stage 4.4).
- b) To confirm the acceptability of design changes which occur during Commissioning.
- c) To verify that multi-function relays have been subject to satisfactory Type Registration / Factory Acceptance Test and to approve Commissioning Handbook 21 documentation prior to the setting sheet being issued.
- d) To confirm that Type Registration is available for use and that the 'Registration Confirmation' notification e mail has been received from the National Grid Type Registration Engineer with an appropriate EGI code ("U" or "R" not "P" pending EGI code status flag) OR 'Derogation Approval'. This is required to meet commissioning timescales (e.g. SCT sheets, application diagrams, settings guidance documents, **Equipment Technical Data Workbook**). NB: The Commissioning Officer is personally responsible on behalf of Asset Policy for confirming the acceptability of those requirements within the above brackets. **Reference to the technology specific Assurance Engineer may be required.**
- e) To confirm that, when a SCT procedure does not exist for an item of equipment, alternative test documentation is to an acceptable standard.
- f) To confirm that the commissioning programme stipulates all requirements as defined in the model commissioning programme in Commissioning Handbook 1.
- g) To approve all commissioning switching programmes.
- h) To identify installations that are non-standard and confirm the acceptability of the test documentation.
- i) To progress and sense check of all operational data (e.g. Protection, DAR, rating schedules, asset technical sheets etc).
- j) To chair commissioning working parties when projects involving complex **Equipment** require special consideration outside the Commissioning Panel.
- k) To undertake an assurance role that confirms that the equipment conforms to National Grid policy and procedures – and is fit to connect to the National Grid Transmission **system**.
- l) To ensure a contingency plan is prepared if the conventional busbar protection is replaced with a numerical protection, or the contingency plan is updated if the existing configuration is modified.
- m) To ensure settlement metering registration is achieved in line with UKBP_TP131.
- n) **Where a Transmission System Boundary Point is involved, to ensure that a copy of the Approval to Energise for the relevant circuit, has been received by NGET from Elexon prior to energisation of that circuit. The Commissioning Officer will receive confirmation of receipt from the Compliance & Notifications Manager.**
- o) **Where a Transmission System Boundary point is involved, to ensure that the requirements of the Connection Agreement and Grid Code Compliance Process TP130 have been met as required prior to energisation.**
- p) **Where it is required, provide a signed Certificate of Readiness to Energise to the Compliance & Notifications Manager as defined in UKBP_TP130.**

NB: Detailed responsibilities are defined in Appendix A.

1.4 Commissioning Engineer (National Grid)

The Commissioning Engineer (National Grid) is a Senior Authorised Person 2 for Basic & SAP1 for Advanced authorisations, nominated by **ETAM Operations** and authorised in accordance with UKBP_TP141 to undertake this role. Prime responsibilities are as follows.

- a) To define and implement the arrangements for achieving safety from the **System**
- b) To manage the implementation of NSI 33 (including Operations Diagrams)
- c) To confirm the adequacy of the health and safety file on completion.
- d) To provide the necessary access for commissioning.
- e) To review **Appendix T** – Commissioning Familiarisation Confirmation with the Commissioning Engineer (Supplier).
- f) To endorse the Commissioning Officer's confirmation of the commissioning programme.
- g) Ensure that prior to Commissioning commencing the SF6 Inventory for UKBP_TP106.18 has been supplied and is accurate. The SF6 Inventory shall be retained as part of the Commissioning Records, and ensure that the Data Template (form UKBP_TP221.01) reflects equipment being physically connected to the System so that all National Grid's affected Data Management Systems are updated to reflect the revised status of the Commissioned Equipment. This is to include all modifications to the SF6 Inventory.
- h) To ensure that, prior to any commissioning commencing, appropriate isolation is obtained for purposes of **system** security.
- i) To confirm that the commissioning results are acceptable.
- j) To define the extent of witnessing and commissioning hold points during *Stage 1* commissioning.
- k) To accept from the Commissioning Engineer (Supplier), or otherwise prepare, *Stage 2* commissioning switching programmes and commissioning method statements.
- l) To direct the Commissioning Team in the execution of *Stage 2* commissioning and accept the **Equipment** as commissioned.

NB: Detailed responsibilities are defined in Appendix A.

1.5 Commissioning Engineer (Supplier)

The Commissioning Engineer (Supplier) is an engineer, nominated by the **Contractor**, with Transmission **system** commissioning experience, and authorised in accordance with UKBP_TP141 to undertake this role. Prime responsibilities are as follows.

- a) To complete **Appendix T** – Commissioning Familiarisation Confirmation with the Commissioning Engineer (National Grid).
- b) To ensure that the commissioning programme is to the required standard as defined in Commissioning Handbook N°1 and updated as required.
- c) To manage and execute the commissioning programme, including completion of relevant certificates.

NB: When Stage 2 commissioning (i.e. energisation and on load tests) takes place at both ends of a feeder, a Commissioning Engineer (Supplier) will be required to be located at each circuit end.

- d) To check that, prior to any commissioning commencing, appropriate isolation is obtained for purposes of **system** security.
- e) To ensure that all commissioning documentation is complete, acceptable and signed.

f) That prior to Commissioning commencing the Commissioning Engineer (Supplier) shall ensure that the SF6 Inventory form UKBP_TP106.18 has been supplied to the Project Engineer and is accurate.

- g) To ensure that all commissioning accords with the requirement of this procedure.

NB: Detailed responsibilities are defined in Appendix A.

1.6 Assistant Commissioning Engineer

An Assistant Commissioning Engineer is either a National Grid or **Contractor** engineer under training, carrying out commissioning tasks under the 'local supervision' of an Authorised Commissioning Engineer (National Grid or Supplier). Specific requirements are as follows.

- a) The Authorised Commissioning Engineer will fully define the work to be undertaken - and will remain accountable for the work - including signing of all documentation.
- b) An Authorised Commissioning Engineer may only supervise the work of one Assistant and one Trainee Commissioning Engineer simultaneously.

1.7 Lead Commissioning Engineer (National Grid)

Where the scale of the work at one site requires a number of Commissioning Engineers (National Grid), a Lead Commissioning Engineer (National Grid) shall be appointed to co-ordinate and direct the activities of all.

1.8 Lead Commissioning Engineer (Supplier)

Where the scale of the work at one site requires a number of Commissioning Engineers (Supplier), a Lead Commissioning Engineer (Supplier) shall be appointed to co-ordinate and direct the work of all.

1.9 Commissioning Technician (National Grid) & Suppliers

Projects of a lesser complexity that impose lower risk to the electrical power system, can be commissioned by staff without the need for them to undertake a full commissioning authorisation assessment, as defined in UKBP_TP141. The staff carrying out these duties must be competent and suitably experienced 'Commissioning Technicians' in the required discipline and can be authorised as detailed in UKBP_TP141

1.10 Commissioning Operative (National Grid)

The Commissioning Operative (National Grid) shall be authorised under similar UKBP_TP141 governance as the Commissioning Technician in that it shall be by joint agreement of both the ETAM Delivery Manager (DM) and the associated Lead ACE.

The role is associated with the Network Output Measures (NOMs) single asset replacement project only and allows the Commissioning Engineer (National Grid) to delegate certain aspects of witnessing during commissioning. The activities that may be delegated are listed

for each single asset replacement in UKBP_TP236. These lists identify the absolute minimum requirement for CE (NGrid).

The extent of the delegated witnessing is likely to vary dependent upon the specific project, individual site circumstances or situations and personnel on site and is at the discretion of the CE (NGrid). However, the CE (NGrid) maintains ownership and responsibility for the delegated witnessing activity and shall sign or countersign all documents, SCTs etc associated with that work.

1.11 Commissioning Panel

The prime purpose of the Commissioning Panel is to assist and advise the Chairman to ensure that the commissioning process accords with National Grid policy and procedural requirements. Whilst the Chairman is required to lead the process, progress should be achieved through mutual agreement. The composition of the Commissioning Panel is defined in Appendix A, (Form UKBP_TP106.01) Section 1.

1.11 Commissioning Team

A team of suitably qualified and experienced engineers under the direction of the Commissioning Engineer (National Grid), with responsibility for carrying out Stage 2 commissioning requirements.

1.12 Asset Policy Manager

The Asset Policy Manager is responsible for the content of the suite of site commissioning test procedures (SCT procedures) and ensuring that they are prepared as part of Type Registration.

1.13 Information Delivery/Quality Manager (Business Assurance Systems – ETAM)

The Information Delivery/Quality Manager is responsible for defining the content of the Technical Data Workbooks (TDW) and for defining the data structures of National Grid's principle data systems shown within UKBP_TP169 Ellipse Data Structures.

1.14 Contractor

The Contractor appointed by National Grid with responsibility for commissioning and decommissioning a specific site/route in accordance with the contract specification which will reference the requirements of this procedure. The Contractor will usually be required to produce a quality plan, which will include a Commissioning Programme to the requirements of Section 14 of this procedure. Specific responsibilities are usually as follows to:

- a) Comply with the National Grid Safety Rules and other relevant safety legislation.
- b) Provide an appropriate number of suitably authorised Commissioning Engineer (Supplier).
- c) Deliver within four days of the completion of the Stage 2 commissioning tests, or to other agreed timescales, a complete set of all documentation associated with the tests and inspections for which the Contractor is responsible, duly signed, to the Commissioning Panel Chairman.
- d) Comply with the requirements of this procedure.

1.15 Decommissioning Engineer (National Grid)

A Decommissioning Engineer (National Grid) shall be an authorised Commissioning Engineer (National Grid) in accordance with UKBP_TP141. A Decommissioning Engineer

(National Grid) will only be appointed when there are no associated commissioning requirements. When commissioning occurs all decommissioning activities shall be managed through the commissioning process. Terms of reference are as follows.

- a) To take responsibility for the decommissioning process in those instances where decommissioning does not form part of a capital project – see section 7.
- b) To call for and approve the decommissioning programme.
- c) To ensure that decommissioning is only undertaken by **Contractors** and National Grid authorised commissioning personnel, and that the number of such personnel are sufficient for the task in hand.
- d) To ensure that the decommissioned Equipment is not a hazard either to personnel or to the System and that clear notification is made of any residual dangers.
- e) To ensure that decommissioning activities are progressed in compliance with National Grid Safety Rules and other safety requirements as appropriate.
- f) To ensure that decommissioning is carried out in accordance with the appropriate certificates.
- g) To enlist the support of the **ETAM Operations Delivery Manager**, for the modification or withdrawal of Operational Data, static technical data and work management systems.
- h) The NG Decommissioning Engineer shall ensure that the Data Template (form UKBP_TP221.01) reflects equipment being physically disconnected from the System so that all National Grid's affected Data Management Systems are updated to reflect the revised status of the Decommissioned Equipment. This is to include all modifications to the SF6 Inventory.
- i) To manage all documentation and test schedules.
- j) To ensure that drawings and records are appropriately modified and the Health, Safety and Environmental File updated accordingly.

1.16 Network Access Planning Manager. (System Operation)

- a) The Network Access Planning Manager or his nominated representative is the System Operation representative on the Commissioning Panel, with responsibility both for agreeing all those aspects of commissioning which are pertinent to the ongoing security of the Transmission System, and for acting as the point of co-ordination for all matters relating to commissioning within System Operation.
- b) The Network Access Planning Manager, or his nominated representative, shall check and approve the content of Section One, Strategy of the Commissioning Switching Programme only, in line with System Operator responsibilities.
- c) The Transmission Network Control Centre Manager (TNCC), or his nominated representative, is responsible for agreeing all the aspects of commissioning which are pertinent to the ongoing security and control of the Transmission System, and for acting as the point of co-ordination for all matters relating to commissioning on the day.
- d) The Transmission Network Control Centre Manager (TNCC), or his nominated representative, is responsible for ensuring that the entire content of the Commissioning Switching Programme meets the strategy agreed by the System Operator.

- e) The Power System Manager, or his nominated representative, is responsible for implementing all approved Commissioning Switching Programmes in conjunction with the Commissioning Engineer (National Grid).

1.17 Electricity Transmission Asset Management **Transmission Network Control Centre (TNCC) – Planning**

The **Connection and Safety Team within TNCC** will nominate a Safety Controller to liaise with the HVSCC stages of commissioning for each investment. **TNCC** will provide guidance to the Commissioning Panel with regards to implementation of NSI 33 for the **HV system** and general **LOW VOLTAGE** safety management. NB: The **TNCC Control Person Safety (CPS)** does not manage **LV** site issues – this is managed by the SAP through the Commissioning Panel.

1.18 Occupier

As defined UKBP/TP137. ([See over page](#))

The Occupier, as controller of premises, has duties and responsibilities under both the Health and Safety at Work etc. Act 1974, and the Occupiers Liability Acts. The Occupier has responsibility for the overall management of the premises. For operational sites the role of Occupier will be undertaken by Maintenance Delivery Electricity. Certain aspects on a construction site relating to general safety will be discharged on ETAM's behalf by Construction.

1.19 User

This is defined as any company or organisation which has an interface with National Grid. Typically this will include Generation Companies, Distribution Network Operators (DNO), Non-embedded Customers and any other organisation with a User **System** directly connected to the National Grid Transmission **System**.

1.20 Specialist Test Engineer (Supplier)

An engineer with specialist knowledge tasked with testing a specialist item of equipment (e.g. multi-function relay) at a defined and limited location on the site. This engineer shall work under the 'local supervision' of a Commissioning Engineer (Supplier), who shall also sign and assume responsibility for all test documentation.

1.21 Construction Interface Engineer (National Grid)

The Construction Interface Engineer (National Grid) (ex Site Engineer) is responsible for undertaking both Client side power engineering, and civil, structural and building engineering tasks. See TP163, Site Installation for full definition of the role. Prime responsibilities include both acceptances of the commissioning programme and test results for the Construction Interface Engineer (National Grid) area of responsibility.

1.22 Construction Interface Engineer (Civil) (National Grid)

The Construction Interface Engineer (Civil) (National Grid) is responsible for undertaking Client side civil, structural and building engineering tasks. See TP163, Site Installation for full definition of the role. Prime responsibilities include acceptance of the commissioning programme and test results for the Construction Interface Engineer (Civil) (National Grid) area of responsibility.

2 HEALTH, SAFETY, ENVIRONMENTAL AND SECURITY (SHES)

2.1 Statutory / National Grid Documentation

Commissioning and decommissioning must be carried out with rigorous adherence to health, safety and environmental legislation. The Contractor will be responsible for providing all information for the Health, Safety, Environmental and Security Plans. Health and Safety management during commissioning /decommissioning is achieved in accordance with the following requirement.

- a) Health & Safety at Work Act - general safety
- b) National Grid Safety Rules - Safety from the system
- c) NSI 33 - The Addition/Removal of Equipment from the System
- d) Construction (Design and Management) Regulations 2015 - health and safety during construction as defined in UKBP_TP137

2.2 National Grid Safety Rules (4th Edition)

All commissioning work carried out on a National Grid operational site must be in accordance with the requirements of the National Grid Safety Rules and associated National Safety Instructions. The Commissioning Engineer (National Grid), as a SAP, will advise the Commissioning Panel on all matters relating to the Safety Rules.

2.3 CDM Regulations 2015

- a) The CDM 2015 Regulations are enacted through adherence to UKBP_TP137. These Regulations define commissioning/decommissioning as included activities.
- b) For all projects the Commissioning Panel shall be responsible for ensuring that all commissioning work satisfies the requirements of UKBP_TP137 or the application of appropriate derogations. Key requirements as defined in Appendix A of this document, comprise
 - (i) the transfer of all relevant requirements for managing SHES into the Construction Phase Health, Safety, Environmental & Security (SHES) Plan
 - (ii) being assured of the adequacy of the documentation for transfer into the CDM SHES File

2.4 Site (Weekly) SHESQ&P Meeting

- a) For some Contractors projects the Site (Weekly) Safety, Health, Environment, Quality and Progress (SHESQ&P) meeting as defined in TP163 Site Installation is responsible for ensuring that SHESQ requirements are considered, planned and enacted throughout both the site installation and commissioning phases.
- b) During the commissioning phase both the Commissioning Engineer (National Grid) and Commissioning Engineer (Supplier) will represent the Commissioning Panel on the SHESQ&P meeting – and will submit the commissioning programme (see model format in Commissioning Handbook N°1) to evaluate and progress the SHES aspects of commissioning.

2.5 Documentation for Managing SHES Hazards and Risk Reduction

- a) With reference to Stage 2 commissioning, both commissioning switching programmes and commissioning method statements must specify the required measures for managing SHES hazards and risk reduction.
- b) With reference to Stage 1 commissioning all SCT procedures, or other test procedures prepared in the absence of a SCT procedure, must specify the required measures for managing SHES hazards and risk reduction.
- c) Where necessary method statements defining measures for hazard elimination and risk reduction shall be prepared in support of the above.
- d) In preparing any of the above documentation, risk assessments must be carried out.

2.6 Addition/Removal of Equipment to / from the System

NSI 33 specifies the procedural requirements for the addition/ removal and renaming of **Equipment** to/from the **System**. A HV System Change Certificate (HVSCC) is issued for this purpose – see Appendix H. Where existing **Equipment** is directly replaced an (HVSCC) is not required.

Where a third party is required to sign on to a Site Responsibility Schedule, **where required** the third party shall also sign Part 4 of the HVSCC.

2.7 Earthing, LV and Mechanical Plant

NSI 33 also defines the requirement for the addition/removal of Earthing, **LV** and Mechanical Plant. This includes the procedure for managing safety across a temporary connection to the **System**. This covers, for example, the situation of test supplies (e.g. a feed from an a.c. distribution board or battery supply) in an operational site being extended to a CDM demarcation zone which is under the Contractors safety management system.

2.8 Notification of Change Certificate

This certificate is defined in, and reproduced from, Safety NSI 33. It shall be issued to notify both the **Contractor and National Grid Units** that the timescales for a HV System Change Certificate becoming effective have changed, to avoid re-issue of the HVSCC, see Appendix M (Form UKBP_TP106.12).

2.9 Site Security

A non-operational site becomes an operational site under the safety control of **ETAM Operations**, with the issue of Part 6 of the HV System Change Certificate; this necessitates the implementation of substation security and access standards, see NSI 33.

2.10 Impressed Voltage Condition

- a) The Commissioning Panel must ensure that all instances relating to impressed voltages that may endanger personnel are identified and logged. It must be assured that appropriate method statements and protective measures are defined prior to the commencement of any commissioning activities (eg. insulated working as defined in NSI 5 / the connection of overhead line downloads).

NB: Commissioning responsibilities cover the following.

- i) **The physical connection of HV equipment (via either a Permit for Work or a Commissioning Switching Programme) which has been made subject to**

National Grid Safety Rules via an HVSCC. Similar considerations shall also apply to the decommissioning or disconnection of HV equipment

- ii) The physical connecting together of HV equipment (via either a Permit for Work or a Commissioning Switching Programme) which has been subject to asset replacement following commencement of Stage 1 commissioning tests.
- b) The Commissioning Panel must specify the timing of when HV equipment, which is under the National Grid Safety Rules, is physically connected together. When this is to be achieved through a Permit for Work, the Principal Contractor's Representative undertaking the work must be notified of the timing – together with any safety requirements.
- c) Accountability for the above will reside with the Chairman of the Commissioning Panel – with responsibility for specialist advice residing with both the Commissioning Engineer (National Grid) and Commissioning Engineer (Supplier)

2.11 Decommissioning Requirements

- a) Decommissioning results in the **Equipment** being physically disconnected from the **System**. In those instances where the **Equipment** remains within **Safety Distance**, it is deemed as remaining part of the **System**, and therefore subject to the Safety Rules applicable to **HV Equipment**; this will necessitate the **Equipment** being retained both on the Operations Diagram and the Substation Control Point diagrams.
- b) The Decommissioning Report, see Appendix L (Form UKBP_TP106.11), provides notification that the **Equipment** is decommissioned, and confirms whether the **Equipment** either remains within **Safety Distance**, or is outside **Safety Distance** and declared as being removed from the **System**, through completion of a HV System Change Certificate.
- c) **The Project engineer shall ensure that the ADT UKBP-TP221.01 captures all assets to be Decommissioned; also any assets to be Electrically Disconnected from the system, but left in situ, are recorded.**
- d) **Also that the Asset Data Template ADT UKBP-TP221.01 reflects equipment being physically disconnected from the system, so that all National Grid's effected Data Management Systems are updated to reflect the revised status of the Decommissioned Equipment.**
- e) **The SF6 Inventory (UKBP_TP106.18) shall also indicate the volumes of SF6 removed from each Gas Zone, GIB or AIS SF6 insulated equipment prior to decommissioning. The SF6 Inventory (Appendix W) shall be completed and submitted to the Project Engineer, who shall ensure the SF6 Gas Inventory is complete and accurately reflects the decommissioned equipment. All SF6 Gas Inventory volumes shall be recorded in Kilograms and shall be entered to 2 decimal places e.g. (10.00Kg)**

3 COMMISSIONING CERTIFICATES

3.1 Equipment Acceptance Certificate

The Equipment Acceptance Certificate as shown in Appendix I (Form UKBP_TP106.08) is a two-part certificate serving the following purpose.

- a) Part 1 confirms both completion of the Stage 1 commissioning programme, and agreement to proceed to Stage 2, for the purpose of National Grid operating the **Equipment** to put into service.

- b) Part 2 confirms both completion of the Stage 2 commissioning programme and that the **Equipment** is now commissioned and available for operational service.

3.2 Commissioning Control Confirmation Certificate (CCCC)

The Chairman will ensure that the Commissioning Control Confirmation Certificate (Form UKBP_TP106.09) shall be completed. Its purpose is to provide documented confirmation that key tasks essential for safeguarding the security of the transmission systems have been discharged - see Appendix J. **It should be completed as work progresses.**

3.3 Defect Report

The Defect Report (Form UKBP_TP106.10), as shown in Appendix K, shall be initiated by **ETAM Operations** to notify the Project Manager / Project Engineer when **Equipment** defects occur during the warranty period. The Report shall be returned by the Project Manager / Project Engineer to **ETAM Operations** to notify the latter that the defect has been remedied.

3.4 Provision/Modification of Remote Operation Facilities Certificate

- a) This certificate (Form UKBP_TP106.13), as shown in Appendix N, shall be utilised both to confirm compatibility between Remote Operation Facilities at both the substation and **Electricity Network Control Centre (ENCC)**, and to co-ordinate the time of implementation. It shall be completed both on the initial commissioning of a Substation Control System (SCS), and for subsequent changes to the application software or database. The Commissioning Panel shall determine the date for completing the form. Completion shall simultaneously take place at both the Substation and the **ENCC**, with names being exchanged by telephone or fax etc.
- b) When a new SCS, which is to be controlled from the **TNCC** is being commissioned, both this certificate and the Equipment Acceptance Certificate must be issued. This certificate confirms compatibility between the SCS and the corresponding Equipment in the **TNCC**, whereas the Equipment Acceptance Certificate is solely concerned with the commissioning of a new/replacement SCS and its acceptance by the Commissioning Engineer (National Grid) into operational service. This certificate will therefore usually be completed in advance of the Equipment Acceptance Certificate.

3.5 Pressure Systems Safety Regulations 2000

The Pressure Systems and Safety Regulations 2000 require that the Contractor which provides the container shall also provide all relevant information. The information requirement is defined in the standard Written Schedules of Examination (WSE) format, available on Infonet. Prior to the issue of the EAC Stage 1, **or ATOC** the information shall be transferred to the WSE, the front sheet of which should be forwarded to both the **ETAM Operations Delivery Manager (i.e. the Occupier) and the Insurance Company Competent Person** for signature and the WSE fully completed. Also notify the Insurance Company for decommissioning assets. See **ETAM Operations** procedures for further details.

A gas tightness test is required on all new SF6 switchgear prior to commissioning and is to be included in the Gas Insulated Substation Commissioning Test sheets.

If there have been SF6 gas leaks on the equipment during installation or if there has been re work for gas tightness, the Commissioning Panel shall review whether SF6 cameras shall be used to provide an additional assurance check. These checks can provide baseline results for future checks.

3.6 Exceptions/Limitations

Where certificates have an entry for Exceptions/Limitations and this entry is utilised, the Project Manager / Project Engineer will be responsible for removing the exceptions and limitations and confirming the removal with all relevant parties.

3.7 Certificate Register

The following documentation will bear a unique number which shall be acquired by the Commissioning Panel Chairman and drawn from a register located on the intranet, managed by the Network Operation Centre.

a)	Commissioning Switching Programme	Form UKBP_TP106.05
b)	Commissioning Report	Form UKBP_TP106.06
c)	HV System Change Certificate (HVSCC)	Form UKBP_TP106.07
d)	Equipment Acceptance Certificate	Form UKBP_TP106.08
e)	Commissioning Control Confirmation Certificate	Form UKBP_TP106.09
f)	Defect Report	Form UKBP_TP106.10
g)	Decommissioning Report	Form UKBP_TP106.11
h)	Notification of Change Certificate (NCC)	Form UKBP_TP106.12
i)	Provision/Modification of Remote Operation Facilities Certificate	Form UKBP_TP106.13

3.8 Commissioning Certificate Circulation

A summary of the Commissioning Certificate Circulation list (Form UKBP_TP106.14) is shown in Appendix Q. This list will be considered to be a form, and therefore may be periodically updated without re-issue of this procedure.

4 OPERATIONAL DATA

4.1 An essential requirement of commissioning is the provision of operational data to relevant units within National Grid prior to the Equipment being commissioned. This requirement relates to:

- a) Relay Settings
- b) Thermal Rating Schedules
- c) Protection and DAR Schedules
- d) Asset Register Technical Data
- e) Operations Diagrams
- f) SF6 Gas Inventory**
- g) 300 Sheets
- h) Facility Schedules (or equivalent documentation)
- i) Site Responsibility Schedule
- j) Grid Code Compliance Data
- k) Settlement Metering Registration

- 4.2** The SF6 Inventory UKBP_TP106.18 shall be completed and shall indicate the installed volumes of SF6 in each Gas Zone, GIB or AIS SF6 Insulated Equipment prior to Commissioning.

The SF6 Inventory UKBP_TP106.18 shall be completed and submitted to the Project Engineer, who shall ensure the SF6 Gas Inventory is complete and accurately reflects the installed – Decommissioned Equipment.

- 4.3** Appendix P summarises these requirements together with the required timescales for completion. A pro forma for planning and scheduling these activities is provided in Appendix A (Form UKBP_TP106.01).

- 4.4** When instances arise of commissioning being the sole responsibility of ETAM Operations, the latter shall ensure that the above requirements are discharged, in accordance with this procedure. This will necessitate enlisting the assistance of the Capital Delivery Manager.

5 DOCUMENTATION

An essential commissioning requirement is the formal documentation of both the managerial process and the commissioning tests and inspections. This shall be achieved through the production of two distinct documents: the Commissioning Report and the Commissioning Technical Record. These should be populated as work progresses.

5.1 Commissioning Report

The Commissioning Report is a record of the management activities undertaken by the Commissioning Panel. It shall comprise of a copy of the Design Intent Document which includes the System Design Specification (SDS), Commissioning Panel minutes, the Commissioning Programme and any other documents or schedules utilised for managing the process. The contents shall be acquired as the work proceeds. The Commissioning Report shall be collated and retained by the Commissioning Panel Chairman or his nominated representative. On completion of the commissioning of each circuit/stage the Commissioning Panel Chairman must sign the Commissioning Report front sheet (Form UKBP_TP106.06), as required by Appendix G, which should then be inserted at the front of the Report.

5.2 Commissioning Technical Record

The Commissioning Technical Record will usually be collated and retained by the Commissioning Engineer (Supplier) and shall comprise of a copy of the DID, the completed SCT schedules, inspection reports, Commissioning Switching Programmes and Commissioning Method Statements. A list of contents should be produced. The Commissioning Technical Record shall be periodically audited by the Commissioning Engineer (National Grid) and on completion incorporated into the CDM Health and Safety File.

5.3 Site Commissioning Test Procedures

- a) Contractors will be required to select SCT procedures from the model SCTs agreed by Asset Policy at the time of Type Registration. Where a test requirement is not covered by an SCT procedure, the Contractor's or other specially prepared document may be used. In such instances the Commissioning Officer shall confirm that the test document is to an acceptable standard.
- b) On completion of the Stage 1 and 2 commissioning tests respectively, each test schedule shall be signed for as 'accepted' by the Commissioning Engineer (National Grid). If the tests were unwitnessed, the Commissioning Engineer (National Grid) shall check that all entries are complete, and that the results, following a cursory examination, appear correct before signing. The Commissioning Panel Chairman must be satisfied that all agreed test procedures relating to Stage 1 commissioning

tests are completed prior to Part 1 of the Equipment Acceptance Certificate being issued.

5.4 Commissioning Handbook

The Commissioning Handbooks specify model requirements for the commissioning of **Systems** or investments (whereas SCTs are primarily concerned with the commissioning of individual items of **Equipment**). The person preparing the Commissioning Programme must produce documentation either in accordance with the Commissioning Handbooks or to similar standards.

5.5 Commissioning Switching Programme

The commissioning strategy and methodology shall be agreed prior to production of the **Commissioning Switching Programme**. The **Commissioning Switching Programme** (see Section 14) shall conform to a uniform format and content, as defined both in Appendix E and in Appendix F. A model Commissioning Switching Programme which defines the required style, format and abbreviations is contained within Commissioning Handbook N°2. Timescales for preparing the Commissioning Switching Programme are specified in Appendix P.

- a) Since Stage 2 tests are associated with the in-service **System**, both Commissioning Switching Programmes (and Commissioning Method Statements within it) within it must be prepared by appropriately experienced personnel. **All Commissioning Switching Programmes are to be agreed with the Commissioning Officer prior to circulation for comment.**
- b) Situations may arise whereby it is necessary to modify the content of an approved *Commissioning Switching Programme* either immediately prior to, or during, implementation. This situation shall be managed as follows:
 - i) Prior to implementation, the Commissioning Panel Chairman shall obtain from the original signatories to the *Commissioning Switching Programme* the names, or titles, of those personnel nominated to make essential changes, and shall notify the Commissioning Engineer (National Grid) accordingly.
 - ii) Immediately prior to commencing the *Commissioning Switching Programme* the Commissioning Engineer shall declare to the **Control Person (Operation)**, by telephone, the names, or positions, of those nominated to make such changes, and these shall be recorded on all copies of the *Commissioning Switching Programme*.
 - iii) Should subsequent changes be required, the agreement to such changes and modification to the *Commissioning Switching Programme* shall be co-ordinated by the Commissioning Engineer (National Grid).

5.6 Commissioning Method Statements

- a) Commissioning Method statements shall generally adhere to the format and requirements of Commissioning Switching Programmes, excepting that the content and headings shall be at the discretion of the Commissioning Panel. The preparation and checking of Commissioning Method Statements shall accord with the requirements of Section 14.3. A separate Commissioning Method Statement should be prepared for each relevant stage of the work.
- b) The front sheet must be similar to that of a Commissioning Switching Programme, excepting that **System Operation** will not be a signatory. The comments in Section 14.5 on Commissioning Switching Programmes shall also apply to Commissioning Method Statements and discussed with the relevant Control Person.

5.7 Commissioning Programme

The Commissioning Programme (see Section 14.4) will be prepared by the **Contractor** and accepted by the Commissioning Panel. It shall comprise of both an indexed, comprehensive schedule of tests, inspections, and related test documents, and a plan which defines the timing and staging of such tests and inspections. The Commissioning Handbook provides a model of such requirements.

5.8 Inspections

The Pre-commissioning, Pre-energisation, and Post-commissioning inspections will be prepared by the **Contractor** prior to the inspection taking place. These inspections must be jointly executed by the Commissioning Engineer (Supplier) and the Commissioning Engineer (National Grid). The pre-commissioning inspection should comprise of a list of plant or **Equipment** to be inspected, to ascertain whether the work is complete, such that Off-load commissioning tests can commence without any concerns for health & safety or possible damage to plant or **Equipment**. Appendices B, C and D illustrate model pre-commissioning, pre-energisation and post-commissioning inspections respectively.

5.9 On Site Filing of Commissioning Documentation

Commissioning documentation shall be subject to a standard filing arrangement - this is defined in **Appendix U for Substations and Appendix V for OHL**. Management and stewardship of the documentation shall reside with the Commissioning Engineer (Supplier).

6 PROCEDURE FOR COMMISSIONING

6.1 Establishing the Commissioning Panel

- a) The inaugural meeting should be called just after completion of the Design Intent Document (**NDP Stage 4.4**) (note – some projects may require a meeting prior to 'Authority to Proceed') or this meeting should be called within three months of contract release (note – some projects may require meeting prior to contract release), ideally after the Design Intent Document is completed.
- b) At the first meeting, consideration must be given to the preparation of the Work Co-ordination Document. See UKBP_TP153.

6.2 Model Format for Commissioning Panel Meeting

Appendix A (Form UKBP_TP106.01) stipulates the Commissioning Panel Meeting Model format for directing the commissioning process. This shall be utilised at the first meeting of the Commissioning Panel, thereby forming the basis of subsequent meetings. Formal minutes of all Commissioning Panel meetings shall be prepared and circulated. It is to be noted that Appendix A addresses the minimum subject matter and is not intended to stifle wider debate, nor the recording of conclusions arising from that debate. The content of Appendix A generally reflects the recommendations of Panels of Inquiry.

6.3 Operational Notification Procedure

In those instances where a User is being connected, requiring Operational Notification in compliance with the Supplemental Agreement, the Commissioning Panel Chairman shall liaise with National Grid's representative from **ETAM (Investment Delivery)** with responsibility for New Connections approval. Activities pertinent to the Commissioning Panel relating to Operational Notification are identified in Section 20 of Appendix A (Form UKBP_TP106.01).

6.4 Final Meeting of Commissioning Panel

The final meeting of the Commissioning Panel should ideally be held after the **Equipment** is commissioned. This meeting must ensure that any outstanding matters are addressed. The commissioning Technical Record, drawings and any other documentation required for CDM purposes shall be then reviewed prior to passing to the stewardship of **ETAM Operations**. The Commissioning Panel Chairman must then sign the Commissioning Report front sheet (Form UKBP_TP106.02) (see Appendix G), to formally signify that all commissioning requirements are complete, which shall then be placed at the beginning of the **Commissioning Report**.

6.5 Commissioning Responsibilities for ETAM for Ancillary Systems

The commissioning responsibilities when ETAM undertake the Principal Contract's role and those for ancillary systems are shown in Appendix R.

7 PROCEDURE FOR DECOMMISSIONING

If, unusually, an investment requires **Equipment** decommissioning without any associated commissioning, then the precise organisational arrangements and responsibilities, although based on the principles within this procedure, shall be agreed between the Project Manager / Project Engineer and the Commissioning Panel and formally recorded.

Where the **Equipment** to be decommissioned does not form part of a capital project but is the sole responsibility of **ETAM Operations**, the Decommissioning Engineer will be responsible for the Decommissioning Process, i.e. there is no requirement to form a decommissioning panel - see Section 1.16.

7.1 Specific Requirements for Decommissioning

- a) Decommissioning certificates as defined in Section 2.11 shall be issued.

When decommissioned **Equipment** is to be dismantled or demolished, all circuit identification must be removed including, in the case of overhead lines, circuit colour or symbol plates, danger plates, property and telephone plates and flag stick fittings. However, the tower number plates shall be left in situ and dismantled with the tower.

- b) When decommissioned **Equipment** is to be left in situ, and remains subject to the National Grid Safety Rules for **HV Equipment**, it shall be identified by appropriate nomenclature. This nomenclature will be agreed with the **ETAM Operational Support (TNCC) Representative in conjunction with System Operations and shown on the Operation Diagram and operational data update**. In addition, in the case of an overhead line, the ETAM **TNCC** shall allocate circuit colour or symbol plates and flagstick fittings, as appropriate, to a decommissioned circuit.

8 CONNECTION OF USER'S EQUIPMENT TO THE NATIONAL GRID SYSTEM

When User's Equipment is to be connected to the National Grid System a Joint Commissioning Panel should be convened which should be separate to that for the licensed work. The User or User's agent should preferably provide the Chairman of this Commissioning Panel. National Grid representation should comprise of the Commissioning Engineer (National Grid), Network Access Planning Manager, **TNCC** Development Engineer, the Commissioning Panel Chairman and the Commissioning Officer, for the licensed work.

The requirements of safety document NSI 33 and the Grid Code (Operational Code and Connection Code Appendix 1) must be followed with regard to the management of the connection point between National Grid's and the User's Equipment.

The responsibility of National Grid representatives on the Joint Commissioning Panel is primarily to endorse the Joint Commissioning Programme from the viewpoint of protecting the National Grid System.

The Joint Commissioning Panel shall review the contents of Technical **Appendix F3, F4 and F5 of the Bilateral Connection Agreement to highlight all required special** cross party tripping, Intertripping and de-load schemes. These shall be carefully considered in the Commissioning Programme and their full 'on load' end to end operation witnessed by National Grid Commissioning Engineer and recorded on a jointly signed schedule to register compliance against the **Bilateral Connection Agreement** requirement. For the avoidance of doubt User Tripping, Intertripping and de-load systems will always be checked regardless of the operational voltage level.

The User's design proposals for Tripping, Intertripping and de-load system shall have been based to the National Grid Design Assurance Engineer for agreement prior to the commencement of commissioning.

The Joint Commissioning Programme will consist of Stage 1 and Stage 2 commissioning requirements, and should comprise of the following:

- a) All required stage 1 interface testing including associated documentation.
 - b) Commissioning Method Statements and/or Commissioning Switching Programmes associated with the connecting and testing of protection, control and ancillary **Systems**, i.e. busbar protection, circuit breaker fail, synchronising, interlocking etc.
 - c) Commissioning test documentation associated with Operational Metering and Indications (local and remote), Control Telephony, **System** Monitoring and Ancillary Services.
 - d) Pre-energisation inspection similar to that shown in Appendix C of this document.
 - e) Commissioning Switching Programme for connecting the User's **Equipment** to the **HV Transmission System**. The format should, as far as is practicable, adhere to the principles of section 5.5 and the requirements of Appendix E of this document. In particular the section on 'Initial Conditions' should confirm that all protection settings associated with the User/National Grid interface have been correctly applied. In addition the following shall apply.
 - (i) When a Commissioning Switching Programme is being prepared to connect a User's **Equipment** to the National Grid **System**, it is recommended that the Front Sheet is approved by the User, the Commissioning Engineer (National Grid), Commissioning Officer, **Transmission Network Control Centre (TNCC) and Network Access Planning Manager**.
 - (ii) When executing a Commissioning Switching Programme (or Commissioning Method Statement), each party who has a defined task within the switching programme must record when that task has been completed, to ensure the existence of an audit trail.
- NB: Grid Code compliance requirements must be addressed prior to commencing the Commissioning Switching Programme.
- f) A Post-commissioning inspection, similar to that shown in Appendix D of this document should be undertaken.

9 UNLICENSED WORK ON USER'S EQUIPMENT

When National Grid undertake unlicensed work on User connected Equipment, a clear distinction must be made between the Commissioning responsibilities relating to the unlicensed work, and those relating to any associated licensed work, (such distinctions should include the correct allocation of costs).

The requirements of safety document NSI 33 and the Grid Code OC8 must be followed with regard to the management of the connection point between National Grid's and the User's Equipment.

The Commissioning Panel for the User's Equipment should preferably be separate from the Commissioning Panel for any associated licensed work. Excepting where contractual conditions state otherwise, the User or User's agent should chair the Commissioning Panel.

If not already clearly defined in the contract specification the User or User's agent should be requested to clearly define the terms of reference and scope of work (i.e. Section 2 of Appendix A - Form UKBP_TP106.01), at the first Commissioning Panel meeting (or earlier) with reference to the responsibilities that National Grid are requested to discharge. In the absence of comparable documentation, Appendix A (Form UKBP_TP106.01) of this document may be offered as the basis for a Commissioning Panel agenda.

10 UNLICENSED WORK ON EQUIPMENT NOT DIRECTLY CONNECTED TO THE NATIONAL GRID SYSTEM

Section 9 shall apply with the term client replacing 'User or User's agent'. Where National Grid provides the Commissioning Panel Chairman, this procedure, as far as practicable, shall be employed; in such instances the responsible managers will agree the required roles.

11 SELF BUILD

The requirements for self-build are defined in TP155.

12 CIVIL, STRUCTURAL AND BUILDING ENGINEERING

Civil, structural and building engineering (**CSBE**) comprise the following.

- a) Access roads
- b) Footpaths
- c) Drainage *
- d) Oil containment works *
- e) Fencing
- f) Site security *
- g) Surfacing
- h) Ducts and trenches
- i) Buildings
- j) Site and building services (including electricity and telecommunications services) *
- k) Foundations
- l) Piling works
- m) Earthworks
- n) Ground improvement/stabilisation
- o) Plant support structures
- p) Holding down systems
- q) Fire protection and control *

- r) Acoustic enclosures *
- s) Site lighting *
- t) Landscaping
- u) Enabling infrastructure (operational and non-operational) - e.g. retaining structures, bridges, culverts etc.

Commissioning is concerned with confirmation of satisfactory performance by subjecting **Equipment** to performance tests. With reference to CSBE, this usually involves those items in the above list against which a * is placed.

The responsibility for confirming the satisfactory inspection and commissioning of the above shall reside with the Construction Interface Engineer (National Grid) and Construction Interface Engineer (Civil)(National Grid) respectively in accordance with their areas of responsibility.

The Objective of this issue of UKBP_TP106 is to:

- a) Ensure and confirm that civil, structural and building engineering equipment to be commissioned has been subject to a design compliance audit.
- b) Confirm that responsibility for overseeing the satisfactory commissioning of civil, structural and building engineering resides with the Commissioning Panel Chairman.
- c) Prepare a Standard spreadsheet of all items to be Commissioned and categorise as follows
 - ◆ Critical for plant and equipment installation to commence
 - ◆ Critical for Stage 1 Commissioning to commence
 - ◆ Critical for Stage 2 Commissioning to commence.

The Construction Interface Engineer (National Grid) and Construction Interface Engineer (Civil) (National Grid) shall be responsible for ensuring that there is a documented audit trail with reference to a commissioning programme and completed test documentation.

When the commissioning of civil, structural and building engineering does not include any associated power system equipment, then alternative requirements to those defined in this document may be used - but which must be based upon the concepts and principles enshrined in this document.

13 FORMS AND RECORDS

All records of the commissioning and decommissioning processes, including the Commissioning Technical Record, should be transferred to the Site Occupier for entry into the Health, Safety and Environmental File by the Commissioning Panel Chairman, and appropriately indexed and filed.

UKBP_TP106.01	Commissioning Panel Minutes and Log
UKBP_TP106.02	Model Pre-Commissioning Inspection Schedule
UKBP_TP106.03 (1)	Model Pre-Energisation Inspection Schedule (Substations and OHL))
UKBP_TP106.03 (2)	Model OHL Confirmation of No Infringement of Safety Clearance
UKBP_TP106.04	Model Post Commissioning Inspection Schedule

UKBP_TP106.05	Commissioning Switching Programme
UKBP_TP106.06	Commissioning Report
UKBP_TP106.06a	Commissioning Report Front Sheet
UKBP_TP106.07	HV System Change Certificate
UKBP_TP106.08	Equipment Acceptance Certificate & Asset Taking Over Certificate
UKBP_TP106.09	Commissioning Control Confirmation Certificate
UKBP_TP106.10	Defect Report
UKBP_TP106.11	Decommissioning Report
UKBP_TP106.12	Notification of Change Certificate
UKBP_TP106.13	Provision/Mod of Remote Operation Facilities Certificate
UKBP_TP106.14	Commissioning Certificate Circulation
UKBP_TP106.15	Commissioning Familiarisation Confirmation
UKBP_TP106.16	Model Substation Commissioning Documentation Filing
UKBP_TP106.17	Model OHL Commissioning Documentation Filing
UKBP_TP106.18	SF6 Gas Inventory

PART 2 - DEFINITIONS AND DOCUMENT HISTORY

14 DEFINITIONS

14.1 Commissioned

Commissioned Equipment is that which has satisfactorily completed PART 2 of the Equipment Acceptance Certificate.

14.2 Work Co-ordination Document

The requirements of a Work Co-ordination Document are defined in UKBP_TP153. The purpose of the document is to define the sequence of installation and commissioning work for projects with multi-site/multi-stage activities, or projects which interface with ETAM Operations maintenance work. Integral to specifying the sequence of work is the requirement to define the associated Safety Rule documentation and points of isolation.

Where the work is predominantly project related (the usual situation) the Work Coordination document should be prepared by the Project Manager/Project Engineer supported by a team with representation from ETAM Operations, Market Operation, the ETAM Operational Support (TNCC) Representative and each commissioning panel. Where the work is predominantly maintenance related, the Work Coordination document shall be prepared by ETAM Operations.

14.3 Commissioning Method Statement

A Commissioning Method Statement is an approved step-by-step procedure defining Stage 2 commissioning requirement, which must be rigorously adhered to without deviation (unless

jointly agreed by the Commissioning Engineer (Supplier) and Commissioning Engineer (National Grid).

14.4 Commissioning Programme

The Commissioning Programme shall form part of the Site Quality Plan and accord with the model in Commissioning Handbook N°1. It should consist of:

a) Commissioning Plan

A plan which defines timing and staging of the commissioning activities.

NB: The timing/staging plan must take account of the requirement of safety document UK NSI 33 (Addition/Removal of **Equipment** to/from the **System**). **HV System** change requirements must take place prior to completion of Stage 1 commissioning.

b) Commissioning Schedule

An approved series of inspections, tests and switching operations which verify that the **Equipment** is suitable for operational service, comprising of:

i) Stage 1

- Pre-commissioning Inspection Schedule
- Off-load Commissioning Tests Schedule
- Pre-energisation Inspection Schedule

ii) Stage 2

- Commissioning Method Statements
- Commissioning Switching Programmes
- Post-Commissioning Inspection Schedule

NB: Commissioning method statements and commissioning switching programmes will specify both the method of connecting the **Equipment** to be commissioned to the **System**, and the On-load commissioning tests to prove both the connections and the **Equipment**.

Civil, structural and building engineering requirements should be contained in a separate commissioning programme.

14.5 Commissioning Switching Programme

A *Commissioning Switching Programme* is an approved procedure which defines the strategy and methodology for Stage 2 energisation and commissioning of all new HV equipment, covered by TP106. All such programmes must be rigorously adhered to, without deviation, unless such deviations are jointly agreed by the , **Commissioning Engineer (Supplier)**, **Commissioning Engineer (National Grid)** and **System Operation**.

The **Commissioning Switching Programme** is a two part document prepared and issued by the Transmission Owner. Part 1 (Strategy) describes the overall commissioning strategy and identifies the limits of the Commissioning Switching Programme. Part 2 (Operations) details the sequence of operations required to energise, load, and facilitate the commissioning of Plant and / or Apparatus. Part 1 (Strategy) will be approved by System Operation. Part 1

(Strategy) and Part 2 (Operations) will both be approved by the Transmission Owner and any affected User.

The Commissioning Switching Programme specifies the step by step process of how new **HV equipment** is to be energised and placed on load, and identifies the operational switching necessary to allow the required commissioning tests to be carried out. A commissioning switching programme may make reference to a *Commissioning Method Statement* within it.

For all works not covered by TP106, it is good practice to have a commissioning switching programme, or approved method statement when energising new equipment for the first time, however simple, as this will ensure safe and secure commissioning. However, if it is deemed by the ETAM responsible for such work that the above are not required, then the following criteria as a minimum should be addressed:

- a) the commissioning **strategy and** methodology must be risk assessed
- b) the new equipment is adequately protected by a fast acting protection
- c) all personnel must be clear of the new equipment prior to energisation.
- d) all automatic switching equipment and automatic insulator washing equipment should be switched out of service

TNCC may **request** confirmation from the responsible ETAM prior to energisation of new equipment, that the above criteria have been addressed.

14.6 Decommissioned

Equipment which has been removed from the Transmission **System** and is no longer available for operational service. This will entail physical disconnection from the **System**. The Site Responsibility Schedule will be amended where appropriate to place the **Equipment** under the control of **ETAM Operations**, together with updating of the asset and work management systems.

14.7 Joint Commissioning Programme

A programme which specifies the commissioning requirements for the interface connections between National Grid and a User.

14.8 National Grid Safety Rule (Definitions)

The following terms, as used in this procedure, are shown in bold, and are defined in the *National Grid Safety Rules*.

- a) **Equipment.**
- b) **System.**
- c) **High Voltage (HV).**
- d) **Low Voltage (LV).**
- e) **Live.**
- f) **Safety Distance.**
- g) **Control Person Safety (CPS).**

14.9 Off-Load Commissioning Tests

Commissioning tests which are performed on plant or **Equipment** disconnected from the in-service **System**, and which are carried out in accordance with a test programme agreed by the Commissioning Panel.

NB: To enable these tests to be carried out it may be necessary to connect an item of **Equipment** to an ancillary in-service **System**, such as a site air **System**, hydraulic **System**, LV **System**, or d.c. **System**. Testing of the satisfactory working of the **Equipment** in conjunction with the ancillary **System** will be considered as part of the *Off-load commissioning tests* of the **Equipment** (i.e. not *On-load commissioning test* of the ancillary **System**).

14.10 On-Load Commissioning Tests

Commissioning tests which are performed with the **Equipment** connected to the in-service **System**, and which are carried out in accordance with an approved *Commissioning Switching Programme* or *Commissioning Method Statement*.

14.11 Recommissioning

The repeat commissioning of **Equipment** which has previously been commissioned, for the purpose of verifying its satisfactory performance when interfaced with new or replacement **Equipment**. The requirements for recommissioning are generally identical to those of commissioning, and within this document the term commissioning will be taken to include recommissioning.

14.12 Stage 1 Commissioning

Stage 1 commissioning comprises those Off-load inspections and tests defined in Section 14.4 which are carried out on new or replacement **Equipment** to demonstrate that the **Equipment** is fit for connecting to the in-service **System**, and ready for Stage 2 commissioning. At the discretion of the Commissioning Panel these tests may be carried out by the Contractor without being witnessed by National Grid personnel (see Attachment I of Appendix A). Finalisation of *Stage 1 commissioning* is signified by completion of PART 1 of the Equipment Acceptance Certificate. See Appendix I.

NB: Stage 1 commissioning does not include Factory Acceptance Tests.

14.13 Stage 2 Commissioning

Stage 2 commissioning comprises of, (a) the documented method for connecting new or replacement **Equipment** to the in-service **System** (i.e. *Commissioning Switching Programme* or *Commissioning Method Statement*) (b) the associated *On-load commissioning* tests which demonstrate that both the new/replacement **Equipment** and its interface with the in-service **System** is satisfactorily commissioned; and (c) the On-load inspection of the **Equipment**. The execution of all *Stage 2 commissioning* must be directed by a Commissioning Engineer (National Grid). Finalisation of *Stage 2 commissioning* is signified by completion of Part 2 of the Equipment Acceptance Certificate.

NB:

- a) Examples of Stage 2 commissioning are the connecting of **HV Equipment**, **LV** supplies and d.c. supplies to the in-service **System**, or the connecting of new circuitry to busbar protection, interlocking investments, circuit breaker fail protection, SCS **Systems** etc, or on-load modifications or tests associated with protection/control hardware or software.

- b) When making connections, or applying test **Equipment**, during Stage 2 tests consideration should be given to avoidance of errors by requiring these actions to be witnessed and confirmed. The latter must always be carried out where trip circuitry is involved.

14.14 Impressed Voltage

Conditions which could cause dangerous induced voltages or currents, differences in earth potential, or voltage differences across any break in conductive path – see NSI 5.

14.15 Operation Diagrams

The series of National Grid issued diagrams, specified in UKBP_TP119, which define the following information.

Sheet 1	Substation Busbar Single Line Diagram
Sheet 2	Technical Data Sheet
Sheet 3	Gas Zones
Sheet 4	Gas Zone Alarm Schedule
Sheet 5	Oversailing Conductors
Routes	National Routes Diagram (Sheets 1 to 25)
OHL	Technical Data Schedule (OHL Colours Database)
Routes Oversailing Conductors Schedule	

14.16 Livelink

External web based application for storing, sharing and distributing information.

14.17 Design Intent Document (DID)

The DID summarises the project design and is defined in TP188.

15 AMENDMENTS RECORD

Issue	Date	Summary of Changes / Reasons	Author(s)	Approved By (Inc. Job Title)
		See Issue 10 for previous comments		
11	Sept 2014	Revised in line with comments and organisational restructure. Asset Taking Over Certificate and SF6 Inventory. Changes to TP130 Connection of User's Equipment.	Kevin Cunningham	Ian Cartwright
12	April 2016	CDM & Impressed Voltage additions to Part 1, section1. Minor changes from user group meetings. Changes to CSP format and approval process, Appendix E & F	Kevin Cunningham	Ian Cartwright

16 IMPLEMENTATION

16.1 Audience Awareness and Training Requirements

Audience	Purpose Compliance (C) / Awareness (A)	Training Needs N/A / Informal / Workshop / Formal Course	Training Target Date	Notification Method Memo / letter / fax / email/ team brief / other (specify)
Capital Delivery	C	Annual Rollout	May, 2016	Cascade
Contractors	C	Annual Rollout	May, 2016	Cascade
Consultants	C	Annual Rollout	May, 2016	Cascade
ETAM	C	Annual Rollout	May, 2016	Lead Ace

16.2 Procedure Review Date

16.2 Five years from publication date.

16.2

PART 3 – GUIDANCE NOTES AND APPENDICES

16.2

17 REFERENCES

16.2

The National Grid Safety Rules

16.2

NSI 33: The Addition/Removal of Equipment to/from the System

16.2

The Construction (Design and Management) Regulations 2007

16.2

TP137: The Implementation of the Construction (Design and Management) Regulations

Pressure System Safety Regulations 2000

Site Commissioning Tests

Other documents listed in Appendices O and P (i.e. UKBP-TP107, UKBP_TP119, UKBP_TP124, UKBP_TP128, UKBP_TP130, UKBP_TP131, and UKBP_TP136)

UKBP_TP135 – Management of Drawings

Grid Code OC8 Operating Code and Safety Co-ordination

UKBP_TP153 – Coordination of HV System Stage by Stage Connections for Construction and Maintenance.

UKBP_TP141 – Authorisation Process for Commissioning, Settings and Design Engineers

UKBP_TP163 – Contingency plans in case of failure of numerical busbar protections

UKBP_TP199 - Operation & Management of the CPM Livelihood System

UKBP_TP202 – Auditing by Technical Assurance

APPENDIX A COMMISSIONING PANEL MEETING MODEL FORMAT AND DOCUMENTATION

COMMISSIONING PANEL MEETING

Model Format and Documentation

Commissioning Panel Minutes and Log

Meeting No : **Date:**

Project Title :

Project Number :

Substation :

Circuit(s) :

Date of Meeting :

Location of Meeting :

Commissioning Panel Membership	Members Names	Member Attendance
(a) Chairman :		
(b) Lead Commissioning Engineer (National Grid):		
(c) Commissioning Engineers (National Grid) :		
(d) Commissioning Officer :		
(e) Project Manager / Project Engineer (Supplier):		
(f) Lead Commissioning Engineer (Supplier) :		
(g) Commissioning Engineers (Supplier) :		
(h) Network Access Planning (System Operation) Representative :		
(i) ETAM Operational Support (TNCC) Rep. :		
(j) Site Manager (Supplier) :		
(k) CDM Coordinator *		
(l) Construction Interface Engineer (National Grid)		
(m) Construction Interface Engineer (Civil)(National Grid)		

- NB:**
- (1) Attach the 'ATTACHMENTS' A to E to the Log.
 - (2) In the following sections add to or delete the (a), (b) list as appropriate.
 - (3) All entries in the minutes and Log shall be made by the Chairman.
 - (4) Lead Commissioning Engineer only required when two or more Commissioning Engineers are required on site.
 - (5) Add others to the Commissioning Panel as appropriate.
 - (*) Open invitation to attend the meeting.

National Grid

Record of Commissioning Personnel and Qualifications

NAMES				DATES		CERTIFICATE	
Chairman	Commissioning Officer	Commissioning Engineer (National Grid) (1)	Commissioning Engineer (Supplier) (1)	Appointed	Role Transferred	Level of Authorisation Held	Date of Expiry

(1) Where a Lead Commissioning Engineer is appointed, state 'Lead' under the name

UKBP_TP106.01

Page 3 of 51

AGENDA

- A1 Terms of Reference
- A2 Scope of Work
- A3 Commissioning Personnel Qualifications
- A4 Commissioning Programme Content
- A5 Commissioning Programme Responsibilities
- A6 Commissioning Certificates
- A7 Power **System** Considerations
- A8 Drawing Control and Quality
- A9 Operational Data
- A10 Commissioning Documentation
- A11 Health, Safety, Environmental & Security
- A12 Training Requirements
- A13 Abnormal Running Arrangements
- A14 Safeguarding of Operational **Equipment**
- A15 Safeguarding of Commissioned **Equipment**
- A16 Non Standard Installations
- A17 Overlap Tests
- A18 De-commissioning
- A19 Temporary **Equipment**
- A20 Grid Code Compliance
- A21 Maintenance Requirements
- A22 Co-ordination and Interfacing Arrangements
- A23 Errors/Defects and Outstanding Work
- A24 Design Changes
- A25 Multi-function Relay Quality Management
- A26 Commissioning Working Parties
- A27 Civil, Structural and Building Engineering
- A28 Other Considerations
- A29 Future Meetings
- A30 Lessons Learned
- Attachment A Commissioning Programme Responsibilities Schedule
- Attachment B Commissioning & Decommissioning Certificates – Progress Schedule
- Attachment C Operational Data – Progress Schedule
- Attachment D Errors/Defect/Exception/Limitation Schedule
- Attachment E Site Design Change Record
- Attachment F Overhead Line Requirements
- Attachment G Cable Requirements
- Attachment H Responsibilities Summary Schedule
- Attachment I Witnessing Requirement

A1 Commissioning Panel Terms of Reference

- (a) To ensure that the commissioning activities comply with all relevant statutory safety and environmental requirements with particular reference to the Construction (Design and Management) Regulations 2007 and National Grid (or customer's) Safety Rules.
- (b) To take all necessary steps to ensure that the commissioning activities do not jeopardise transmission system reliability.
- (c) To confirm that the **Equipment** to be commissioned accords with National Grid's design specification and to ensure that the design change control arrangements are enacted.
- (d) To agree both the **Contractor's proposed commissioning methodology and the inspections and tests which comprise the Contractor's** proposed Commissioning Programme.
- (e) To ensure that the required commissioning tests are witnessed and that all test documentation is completed and 'accepted' by National Grid.
- (f) To ensure that the required commissioning and decommissioning certificates are completed.
- (g) To ensure that operational data is prepared and disseminated within National Grid to the required timescales.
- (h) To ensure the collation and control of drawings, test results and **Equipment** manuals for handing to the Occupier – **ETAM Operations** for entry into the Site Health, Safety and Environmental File.
- (i) To ensure the preparation of Coordination of HV System Stage by Stage Connections for Construction and Maintenance for projects with interrelated or interfacing activities.
- (j) To ensure that, whenever there is a change of commissioning personnel, there is a formal record of both the engineers concerned and that an adequate transfer of tasks, information and responsibilities has taken place.
- (k) To ensure that when the commissioning of outstanding items of equipment take place (i.e. following at a later time than the commissioning of the major items of equipment) that the full and formal requirements of TP106 are applied. This will require re-signing of Appendix J in each and every instance.

Task	Responsible	Required Date	Actual Date
A2 Scope of Work			
1. The scope of the work was defined with reference to the following documents: (a) (b)	C/O	Prior to Stage 1 starting	
2. Coordination of Installation During Project Delivery programme was defined with reference to the following documents: (a) (b)	Chairman	Prior to Stage 1 starting	
3. Confirm that a Type Registered Solution is available for use and the 'Registration Confirmed' notification E Mail has been received from Nat Grid Type Reg Engineer with an appropriate EGI code OR 'derogation Approved'. Ensure that any restrictions to the use of equipment are identified and recorded. At the inaugural CPM, review and confirm that the Asset Data Template (ADT UKBP/TP221.01) has been produced and Assured by Capital Delivery Technical Data Assurance. List below any items without type registration and manage their resolution within the ongoing CPM log for that project.	C/O Chairman Chairman C/O	Prior to Stage 1 starting At the inaugural CPM Inaugural CPM	
A3 Commissioning Personnel and Qualifications			
1. Confirmation that the 'Record of Commissioning Personnel and Qualifications' is complete including signatures.	Chairman	Prior to Stage 1 starting	
2. Confirm that the Commissioning Familiarisation Confirmation review is complete when required. Appendix T	Chairman	Prior to Stage 1 Starting	
A4 Commissioning Programme Content			
1. Appendix J, Commissioning Control Confirmation Certificate (CCCC) fully completed.	Chairman	After Stage 2 completion	
UKBP_TP106.01			

Task	Responsible	Required Date	Actual Date
2. Confirmation that test requirements for changes to CT ratios and metering indication at TNCC and ENCC are included in the commissioning programme.	C/O	Prior to Stage 1 starting	
3 Confirmation of any existing plant or protection TLs which may have an impact on the commissioning programme, including details of any rectification proposals.	Chairman	Prior to Stage 1 starting	
A5 Commissioning Programme Responsibilities			
1. Attachment A confirmed as complete.	Chairman	Prior to Stage 1 starting	
2. Summary of witnessing as defined in Quality Plan. (a) (b)	Chairman	Prior to Stage 1 starting	
3. Confirmation that witnessing hold points are recorded in commissioning programme.	C/E (National Grid)	Prior to Stage 1 starting	
A6 Commissioning Certificate			
1. Attachment B confirmed as complete.	Chairman	Prior to Stage 1	
A7 Power System Considerations			
1. Power system outages/risk of trip comprise the following: (a) (b)	Chairman	N/A	
A8 Drawing Quality and Control			
1. Final Assured drawings available to ETAM Operations , to gain familiarity, at least 4 weeks before stage 1 commissioning or associated outage commencing. (a) (b)	Chairman	Prior to Stage 1 starting	
2. Confirmation that stewardship of site control copy is allocated to the following: (a) (b)	Chairman	Prior to Stage 1 starting	

Task	Responsible	Required Date	Actual Date
3. Confirmation that as-installed drawings have been received for the following circuit/stage & IDMS record updated: (a) (b)	Chairman	After Stage 2 completion	
A9 Operational Data			
1. Confirmation that Attachment C is complete.	Chairman	Prior to Stage 2 starting	
A10 Commissioning Documentation			
1. Confirmation that responsibility for the commissioning report is allocated to the following: (a) (b)	Chairman	Prior to Stage 1 starting	
2. Confirmation that responsibility for the collation of the commissioning technical record is allocated to the following [usually the Commissioning Engineer (Supplier): (a) (b)	Chairman	Prior to Stage 1 starting	
3. Confirm that the filing of commissioning documentation accords with the requirements of Appendix U or V	C/E (Supplier) & C/E (National Grid)	Immediately after commencement of Stage 1	
A11 Health, Safety, Environmental & Security			
1. Confirmation from the Principal Contractor that site installation is complete to the point where commissioning may commence. CPC must be assured that Commissioning Quality Plan is prepared.	Chairman	Prior to pre-commissioning inspection commencing	
2. The following risk assessments/method statements have been prepared and included in (or referenced for commissioning by) the Construction Phase Health, Safety, Environmental & Security Plan: (a) (b)	Chairman PC	Prior to implementation	

Task	Responsible	Required Date	Actual Date
3 Confirmation that: (a) All instances (encompassed by stage 1 and 2 commissioning) of when impressed voltage may endanger personnel having been identified and attached to these minutes. (b) Appropriate Method Statement with Protective Measure for managing impressed voltages have been defined (with a particular focus on HV cables)	Chairman, C/E (National Grid), C/E (Supplier) & C/O Chairman, C/E (National Grid), C/E (Supplier) & C/O	Prior to Stage 1 Starting Prior to Implementation	
(c) When the work is to be undertaken by the principal contractor/site manager that the latter has been suitably apprised of the requirements of the method statement	Chairman	Prior to Implementation	
4. Written schedules of examination for the following shall be transferred to the WSE, which should be forwarded to both the ETAM Operations Delivery Manager (i.e. the Occupier) and the Insurance Company Competent Person for signature and the WSE fully completed and filed on site. Also notify the Insurance Company for decommissioning assets. (a) (b)	Chairman PC	Prior to the issue of the EAC Stage 1 or ATOC	
5. (a) Confirmation that the Health, Safety, Environmental & Security File contents are acceptable and forwarded to the occupier.	C/E (National Grid)	After Stage 2 completion	
(b) On completion the SHES file shall be confirmed and recorded in the log as acceptable by CE (Nat Grid) and forwarded to the Occupier.	C/E (Supplier)	After Stage 2 completion	
6. The documentation for extending LV, earthing and mechanical supplies is summarised as follows and confirmed as being included in the Health, Safety, Environmental & Security Plan. (a) (b)	Chairman PC	Prior to implementation	

Task	Responsible	Required Date	Actual Date
7. Requirements relating to the SHESQ&P meeting are summarised as follows.	C/E (National Grid) C/E (Supplier)		
A12 Training Requirement			
1. Confirmation that adequate training of Commissioning Engineers (National Grid) Commissioning Engineers (Supplier) Commissioning Officers has been undertaken/planned as follows:	Chairman	Prior to Stage 1 starting	
(a)			
(b)			
A13 Abnormal Running Arrangements			
1. Confirmation that abnormal running arrangements have been agreed and comprise the following:	C/E (National Grid) C/O	Prior to implementation	
(a)			
(b)			
2. Complex Earthing For three ended circuits guidance is required from TNCC on the sequence of earth switch closure.	C/E (National Grid)	At Inaugural Commissioning Meeting	
A14 Safeguarding of Operational Equipment (In Service Equipment)			
1. Confirmation that the method of identifying/safeguarding/screening operational equipment has been explained to all Contractors and relevant National Grid personnel, and comprises the following,	C/E (National Grid) PC	Prior to Stage 1 starting	
(a)			
(b)			
A15 Safeguarding of Commissioned Equipment			
1. Confirmation that the method of identifying/safeguarding/screening equipment which has completed Stage 1 commissioning has been explained to all Contractors and relevant National Grid personnel, and comprises the following.	C/E (National Grid) PC	Prior to Stage 1 starting	
(a)			
(b)			

Task		Responsible	Required Date	Actual Date
A16 Non Standard Installation				
1.	Installations that do not accord with TSs / NGTSS comprise the following: (a) (b)	C/O	Prior to Stage 1 starting	
2.	Commissioning arrangements for non-standard installations comprise the following: (a) (b)	C/O	Prior to Stage 1 starting	
3.	Maintenance requirements for non-standard installations comprise the following: (a) (b)	C/E (National Grid) C/O	Prior to Stage 1 starting	
A17 Overlap Tests				
1.	Overlap tests comprise the following: (a) (b)	C/E (National Grid)	Prior to Stage 1 starting	
A18	Decommissioning			
1.	Decommissioning requirements agreed and comprise the following: (a) (b)	C/E (National Grid)	Prior to decomm starting	
A19	Temporary Equipment			
1.	Type, installation and commissioning programme requirements comprise the following: (a) (b)	C/O	Prior to Stage 1 starting	