

UNIFORM NETWORK CODE – OFFTAKE ARRANGEMENTS DOCUMENT

SECTION E

TELEMETRY, ETC

1 General

1.1 Introduction

1.1.1 This Section E sets out:

- (a) National Gas Transmission's requirements for telemetry in relation to NTS/LDZ Offtakes;
- (b) the upstream DNO's requirements for provision of daily reads in relation to LDZ/LDZ Offtakes.

1.1.2 In relation to a Bi-directional LDZ/LDZ Offtake, references in this Section E to the downstream Party and upstream DNO shall be construed in accordance with the relevant Supplemental Agreement.

1.2 Telemetry Facilities

1.2.1 In this Section E:

- (a) "**NTS Telemetry Facilities**" means
 - (i) in relation to an Offtake, telecommunications and other equipment to be installed at the Offtake for the purposes of receiving (as telemetry signals) measured data from Measurement Equipment and sending such data to National Gas Transmission and for the purpose of National Gas Transmission sending and receiving signals to and/or from equipment forming part of the National Gas Transmission Connection Facilities ("**NTS Physical Telemetry Facilities**"); and/or
 - (ii) an electronic link, such as a SCADA (Supervisory Control and Data Acquisition) link, between the DNO's gas control system and National Gas Transmission's gas control system for the purposes of sending measured data from the Measurement Equipment to National Gas Transmission (via the DNO's gas control system) and for the purposes of National Gas Transmission sending and receiving (via the DNO's gas control system) signals to and/or from equipment forming part of the National Gas Transmission Connection Facilities ("**NTS Electronic Telemetry Facilities**").
- (b) "**Telemetry Connection Facilities**" means the telemetry connection facilities to be provided by the DNO pursuant to paragraph 2.1; and where the DNO has installed telemetry facilities as provided in paragraph 2.2.2, includes such telemetry facilities;
- (c) "**telemetry boundary**" means the point up to which the DNO is responsible for providing telemetry signals, being (subject to any contrary provision of the Supplemental Agreement) the boundary of the area on which (as provided in Section B5.2) the NTS Telemetry Facilities are located, as further described in Annex E-1 and specified in the Supplemental Agreement;
- (d) "**point of telemetry**" means the particular feature or characteristic of an Individual Offtake Point, the Connection Facilities at an Offtake and the state, configuration or operation of such Connection Facilities, or the gas flowing or of flow of gas at an Offtake, which is to be subject to telemetry pursuant to this Section E; and
- (e) references to an Offtake are to a NTS/LDZ Offtake, except in paragraph 4 where such references are to an LDZ/LDZ Offtake at which Measurement Equipment is installed.

- 1.2.2 Subject to any contrary provision of the Supplemental Agreement, at each Offtake, the points of telemetry shall be as specified in Annex E-1 (as applicable to such Offtake).
- 1.2.3 Any variations (from what is provided in Annex E-1) in the points of telemetry in relation to an Offtake are set out in Appendix E to the relevant Supplemental Agreement.

2 Telemetry Facilities

2.1 DNO obligation to connect to NTS Telemetry Facilities

- 2.1.1 The Measurement Equipment installed or to be installed by the DNO pursuant to Section D shall be designed, installed, operated and maintained so as to provide telemetry signals in respect of the points of telemetry in accordance with this paragraph 2.
- 2.1.2 The DNO shall provide (and operate and maintain) such connection facilities (including cables, lines, ducts and other equipment) from the Measurement Equipment to the NTS Telemetry Facilities as are required to connect such facilities so as to enable the continuous and uninterrupted transmission of telemetry signals between them.
- 2.1.3 The DNO shall be responsible for providing such Telemetry Connection Facilities up to the telemetry boundary; and National Gas Transmission shall be responsible for making the final connection to the NTS Telemetry Facilities.
- 2.1.4 The Telemetry Connection Facilities shall comply with the resilience requirements specified in Annex E-2.
- 2.1.5 The DNO shall provide (by means of the Measurement Equipment and the connection facilities referred to in paragraph 2.1.2 to National Gas Transmission (at the telemetry boundary) telemetry signals on a continuous and uninterrupted basis in respect of the points of telemetry referred to in paragraph 1.2.2.
- 2.1.6 The Measurement Equipment and the Telemetry Connection Facilities shall be installed, maintained and operated in compliance with (and shall provide telemetry signals conforming to) the protocols, standards and other requirements set out in Annex E-3.

2.2 DNO entitlement to use telemetry facilities

- 2.2.1 Without prejudice to the requirements in Section B where the DNO is not the Site Owner, nothing in this Section E shall prevent the DNO from:
- (a) installing measurement equipment at an Offtake for points of telemetry in addition to those required pursuant to this Section E; and
 - (b) arranging and installing telemetry facilities for the transmission or other availability to itself (at its control room or otherwise) or any other person of telemetry signals from the Measurement Equipment;

provided that this does not interfere with the operation (as contemplated by this Section E) of the Measurement Equipment and NTS Telemetry Facilities or the transmission of telemetry signals between such equipment and facilities.

- 2.2.2 In particular (subject to the proviso in paragraph 2.2.1) the connection (to be provided by the DNO pursuant to paragraph 2.1.2) from the Measurement Equipment to the NTS Telemetry Facilities may be provided via telemetry facilities installed by the DNO.

2.3 Installation of NTS Telemetry Facilities

- 2.3.1 National Gas Transmission shall be entitled, at its expense, to install, operate and maintain at the Offtake the NTS Telemetry Facilities and to connect such facilities (via the Telemetry Connection Facilities) to the Measurement Equipment.
- 2.3.2 The DNO shall cooperate with National Gas Transmission in the commissioning and testing of the NTS Telemetry Facilities and the connection to the Telemetry Connection Facilities, and shall meet and discuss in good faith with National Gas Transmission and use all reasonable endeavours to agree matters pertaining to such installation and commissioning as National Gas Transmission may reasonably request.
- 2.3.3 National Gas Transmission shall be entitled to operate and use the NTS Telemetry Facilities for the purposes of transmitting telemetry signals between the Measurement Equipment and National Gas Transmission (at its control room or otherwise) or for such other purposes as it may decide.
- 2.3.4 It is the responsibility of National Gas Transmission (at its cost) to arrange satellite or other telecommunications services to enable the transmission of telemetry signals from the NTS Telemetry Facilities.
- 2.3.5 Where the NTS Telemetry Facilities in respect of an Offtake are NTS Electronic Telemetry Facilities, and the equipment (other than Telemetry Connection Facilities) provided by the DNO and utilised by such NTS Electronic Telemetry Facilities for the sending and receiving of signals to and from the Measurement Equipment and/or the National Gas Transmission Connection Facilities (“**Equipment**”) reaches the end of its service life, then National Gas Transmission may install NTS Physical Telemetry Facilities at the Offtake and connect such facilities (via the Telemetry Connection Facilities) to the Measurement Equipment. For the avoidance of doubt, the provisions of paragraph 2.3 shall apply to such NTS Physical Telemetry Facilities.

The equipment referred to above (the “**Equipment**”) will be deemed to have reached the end of its service life on the earliest of the following:

- (a) the date on which a Reasonable and Prudent Operator would choose to routinely replace the Equipment having regard to its age and condition; or
- (b) the date on which the Equipment fails and is beyond economic repair; or
- (c) on such date as otherwise agreed between National Gas Transmission and the DNO, such agreement not being unreasonably withheld.

2.4 Modifications of Telemetry Facilities

- 2.4.1 For the avoidance of doubt, Telemetry Connection Facilities and NTS Telemetry Facilities are Connection Facilities for the purposes of Section B.
- 2.4.2 The purposes referred to in Section B4.1.3 are the continued operation of the Telemetry Connection Facilities and NTS Telemetry Facilities in compliance with paragraphs 2.1.4, 2.1.5 and 2.1.6 above.

2.5 Failure of Telemetry Facilities

- 2.5.1 Where the DNO or National Gas Transmission believes or becomes aware that any of the Telemetry Connection Facilities or NTS Telemetry Facilities has failed or is failing to function properly, that Party shall immediately notify the other Party, and the further provisions of this paragraph 2.5 shall apply.
- 2.5.2 The DNO shall:
- (a) promptly on (and in any event within 10 minutes of) despatch by the DNO or receipt from National Gas Transmission (as the case may be) of the notice in paragraph 2.5.1 above, inspect (by means of remote interrogation or testing from its control centre or by such other method as the Parties shall agree) the Telemetry Connection Facilities to ascertain whether these are functioning properly;

- (b) promptly following such inspection, inform National Gas Transmission whether the Telemetry Connection Facilities are functioning properly; and
- (c) where a failure or error in the functioning of the Telemetry Connection Facilities has been identified pursuant to paragraph (a) above, within 24 hours of such failure or error having been identified:
 - (i) rectify such failure or error; or
 - (ii) where rectification pursuant to paragraph (i) above is not practicable by the DNO, acting as a Reasonable and Prudent Operator, submit to National Gas Transmission proposals for initiating the rectification of such failure or error, and ensure that such rectification is effected as soon as reasonably practicable.

2.5.3 Notwithstanding paragraph 2.5.2(c), for so long as any failure or error continues in the functioning of the Telemetry Connection Facilities or the NTS Telemetry Facilities:

- (a) the Parties shall consult as to and keep under review the situation; and
- (b) subject to paragraph 2.5.4, the DNO shall take such steps as are reasonably practicable and as National Gas Transmission may reasonably require for the purposes of the provision (in operational timescales, and without prejudice to paragraph 2.6) of the relevant measured data to National Gas Transmission.

2.5.4 In the case of a failure or error in the functioning of the NTS Telemetry Facilities, the DNO shall not be required to continue to take steps under paragraph 2.5.3(b) if National Gas Transmission does not (and after notice from the DNO continues not to) act as a Reasonable and Prudent Operator to rectify the failure or error.

2.6 Arrangements for data provision in case of failure

2.6.1 In the case of any failure of the Telemetry Connection Facilities, measured data will be provided to National Gas Transmission by the means and at the times provided in or pursuant to Section M.

3 Not used

4 Daily Read Requirement

4.1 General

4.1.1 "**Daily Read Facilities**" means facilities by means of which measured data from Measurement Equipment can be captured and recorded and periodically transmitted to or retrieved by a Party.

4.1.2 At a LDZ/LDZ Offtake at which Measurement Equipment is installed, the downstream Party shall:

- (a) provide, install (in connection with its Measurement Equipment), maintain and operate Daily Read Facilities, complying with the requirements in Annex E-4, for the purposes of sending to the upstream Party measured data as provided in Annex E-4; and
- (b) obtain by means of the Daily Read Facilities measured data at the times and intervals specified in Annex E-4.

4.1.3 The upstream Party shall be entitled at its cost to install and maintain (as Connection Facilities) separate Daily Read Facilities enabling it directly to obtain measured data from the Measurement Equipment, provided that the installation and operation of such Daily Read Facilities does not interfere with the operation of the Measurement Equipment or the downstream Party's Daily Read Facilities.

- 4.1.4 The Parties shall cooperate to the extent necessary in the installation, maintenance and operation of the Daily Read Facilities to be installed under this paragraph 4.1.
- 4.1.5 In relation to any LDZ/LDZ Offtake, where the Supplemental Agreement provides for telemetry facilities to be installed at an LDZ/LDZ Offtake, and such telemetry facilities are installed:
- (a) the requirements of this paragraph 4 shall not apply;
 - (b) instead, paragraph 2 (and paragraph 1, mutatis mutandis, but not Annex E-1) shall apply as if references to National Gas Transmission were to the upstream Party, the DNO were to the downstream Party, and an NTS/LDZ Offtake were to the LDZ/LDZ Offtake; and
 - (c) the downstream Party shall be entitled, after giving notice to and consulting with the upstream Party, to replace such telemetry facilities with Daily Read Facilities (in which case paragraphs (a) and (b) shall cease to apply).

4.2 Sending measured data

- 4.2.1 The downstream Party shall provide to the upstream Party measured data at the times and intervals specified in Annex E-4 by the means provided in or pursuant to Section M.

4.3 Failure of Daily Read Facilities

- 4.3.1 If the downstream Party believes or becomes aware that any part of the Daily Read Facilities has failed or is failing to function properly:
- (a) the downstream Party shall inspect the Daily Read Facilities to ascertain whether they are functioning properly;
 - (b) where it identifies any failure or error in the functioning of the Daily Read Facilities, the downstream Party shall:
 - (i) rectify such failure or error as soon as reasonably practicable, and
 - (ii) if the failure or error prevents or is likely to prevent the downstream Party from providing measured data to the upstream Party at times and otherwise in accordance with paragraph 4.2, inform the upstream Party of such failure or error and keep the upstream Party informed as to the progress in rectifying such failure or error.
- 4.3.2 In the case of any failure of the Daily Read Facilities, measured data will be provided to the upstream Party as provided in or pursuant to Section M.

ANNEX E-1

Points of Telemetry
(Paragraph 1.2.2)

In this Annex E-1:

- (a) a Minimum Requirement is a requirement applicable in relation to any Offtake;
- (b) a Site-Specific Option is a requirement applicable (in accordance with paragraph (c) below) in relation to certain Offtakes;
- (c) Site-Specific Options are applicable where so provided under 'Comments' or where agreed between the Parties.
- (d) Information may be provided under 'Comments' in relation to Minimum Requirements and/or Site-Specific Options.

Part 1 – Analogues

Point Name	Minimum Requirement	Site Specific Option	Comments
Feeder/Inlet pressure	Yes		
Outlet Pressure	Yes		
Instantaneous Volume Flow	Yes		
Instantaneous Energy Flow	Yes		
Outlet Gas Temperature		Yes	Where fitted
Calorific Value	Yes		
Relative Density	Yes		
Nitrogen	Yes		Except Tracker-only sites
Carbon Dioxide	Yes		Except Tracker-only sites
Wobbe	Yes		Except Tracker-only sites
24 Hour Average CV	Yes		
24 Hour Average RD	Yes		
Orifice Standby Differential Pressure		Yes	OPDn (Orifice differential pressure x, where x is a numerical identity) only where fitted
Orifice Meter 'In Use' Differential Pressure		Yes	METER_DPn (meter differential pressure x, where x is a numerical identity) only where fitted

Flow Meter Temperature		Yes	Where fitted
Compressibility		Yes	Where fitted
Filter Differential Pressure		Yes	Where fitted

Part 2 – Digitals

Point Name	Minimum Requirement	Site Specific Option	Comments
Power	Yes		Mains/Phase Fail
Charger	Yes		
Site UPS		Yes	Where fitted
Gas Quality System UPS	Yes		
Gas Quality System Alarm	Yes		SYSTEMn (system x, where x is a numerical identity)
Generator Alarm		Yes	Where fitted
Generator Available		Yes	Where fitted
Generator Bypass		Yes	Where fitted
Generator Trip		Yes	Where fitted
Generator Running		Yes	Where fitted
Generator Status		Yes	Where fitted
Barrier		Yes	Where fitted
Local Comms Link Status		Yes	Where fitted
RTU Fault		Yes	Where fitted
Watchdog		Yes	Where fitted; Includes Computer alarm
Filter		Yes	Where fitted
Maintenance Key		Yes	Where fitted
Intruder		Yes	Where fitted
Metering Alarm	Yes		MTR_SUSP (meter suspect)
Meter Stream Change		Yes	Where fitted
Meter Valve Position		Yes	Where fitted

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Status Local/Remote		Yes	Where fitted
Pressure Override Alarm		Yes	Where fitted
CV Not Valid		Yes	Where fitted
CV Not Attributable		Yes	Where fitted
Outstation Comms Status		Yes	Scada Link Telemetry only
Comms Routing Status		Yes	Scada Link Telemetry only
Valve position of all remotely operable valves		Yes	Valves operated by National Gas Transmission and Distribution Networks for inlet isolation to be provided where control facilities are necessary but no NTS Physical Telemetry Facilities exist

Part 3 – Valve Monitoring/Control

Point Name	Minimum Requirement	Site Specific Option	Comments
Control function for remotely operable valves operated by National Gas Transmission		Yes	To be provided where control facilities are necessary but no NTS Physical Telemetry Facilities exist

Part 4 – Integrators

Point Name	Minimum Requirement	Site Specific Option	Comments
Offtake Volume Integrator	Yes		
Offtake Energy Integrator		Yes	Where fitted
Fuel Gas for Pre-heater Volume Integrator		Yes	Where fitted
Fuel Gas for Pre-heater Energy Integrator		Yes	Where fitted

ANNEX E-2

Resilience of Telemetry Connection Facilities

(Paragraph 2.1.4)

1. Telemetry Connection Facilities are to comply with the resilience requirements specified in the statement (prevailing at the time of installation of such facilities) issued by National Gas Transmission under paragraph 2.
2. National Gas Transmission will, after consultation with each DNO, prepare and from time to time review and update a statement of the resilience requirements for Telemetry Connection Facilities consistent with paragraph 3.
3. The statement will provide for the design, operation and maintenance of Telemetry Connection Facilities as described in BS IEC 61511 and with:
 - (a) availability between 99.5% and 99.95%;
 - (b) reliability in excess of 13,000 hours in respect of Mean Time Between Failures;
 - (c) capability of detecting and communicating certain failures; and
 - (d) battery back-up for at least 8 hours.

ANNEX E-3

Compatibility Requirements

(Paragraph 2.1.6)

1. Telemetry Connection Facilities are to comply with the protocols, standards and other requirements specified in the statement (prevailing at the time of installation of such facilities) issued by National Gas Transmission under paragraph 2.
2. National Gas Transmission will, after consultation with each DNO, prepare and from time to time review and update a statement of the protocols, standards and other requirements for Telemetry Connection Facilities consistent with paragraph 3.
3. The statement will provide for the Telemetry Connection Facilities to be capable of supporting the 'Modbus Variant' protocol to allow communications with the Front End Processor devices of National Gas Transmission's control systems (as described in the Offtake Communications Document).

Annex E-4

Daily Read Facilities

(Paragraphs 4.1.2 and 4.2.1)

Part 1 - Specifications

The Daily Read Facilities shall:

- (a) be compatible with the Measurement Equipment installed at the Offtake;
- (b) capture the prescribed information; and
- (c) capture the information on Site at least every 4 minutes for transmission every 24 hours in an electronic format with at least 1-month's information archived on Site.

Part 2A – Data Transfer from Metered Connections with Daily Read Equipment Installed

Point	Minimum Requirement?	Comments
Daily Calorific Value	Yes	Where measured.
	No	Where DCV from alternative place is used.
24 hour relative density	Yes	
24 hr integrated volume	Yes	

Part 2B – Data to be provided every 24 hours by the Downstream Party

Point	Minimum Requirement?	Comments
Daily Calorific Value	Yes	From measurement equipment of alternative place.
24 hour integrated volume	Yes	From measurement equipment.