Connection Facilities and Telemetry Arrangements

A paper by NGT for the CIWG, 7th July 2004

1. Background

NGT's original proposals for Connection Facilities and Telemetry arrangements at NTS/ DN Offtake Sites are set out in the document "Offtake Code Business Rules, January 2004". These were presented to the RAWG on 27th January 2004 and the CIWG on 28th January 2004.

This paper firstly describes the facilities and contractual arrangements currently in place at NTS offtake sites for both NTS direct connects and DNs. In the light of these arrangements and relevant developments during the Gas Distribution Network Sales consultation process (in particular the Roles and Responsibilities RIA and the Offtake Arrangements RIA) the original proposals for Connection Facilities and Telemetry arrangements at NTS/ DN Offtake Sites are reviewed. Finally, the current proposals for the treatment of Connection Facilities and Telemetry arrangements at NTS/ DN Offtake Sites are described.

2. Facilities and contractual arrangements at NTS Offtake Sites

The facilities at NTS offtake sites typically comprise:

- Land and buildings
- NTS upstream equipment (pipes, pig traps etc.)
- NTS block valves
- Filters
- Meters
- CV measurement equipment
- Heaters
- Slam shut valves
- Pressure reduction and flow control equipment
- Odorant plant and injection (DNs and certain direct connects only)
- Telemetry equipment

The arrangements at NTS direct connect offtake sites and NTS/ DN offtake sites are each considered in the sections below:

(1) NTS Direct Connect Offtake Sites

At NTS direct connect offtakes there are two types of arrangement:

Minimum Offtake Arrangement: This is the most common arrangement, and involves the downstream party (e.g. a power station operator) owning the land, buildings and all equipment downstream of the NTS block valves. This party also controls flows through the offtake. Transco (NTS) has a telemetry kiosk on site to transmit measurement data (provided by the site operator) to the Gas National Control Centre to facilitate operation of the NTS. The NTS on-site telemetry equipment also enables operation of the NTS Remotely Operable (block) Valves (ROVs).

Full Offtake Arrangement: Under this arrangement Transco owns the offtake site and all equipment including telemetry. Transco provides telemetered measurement data and flow control capability to the downstream operator.

Offtake site arrangements for NTS direct connects are covered contractually by ancillary agreements to the Network Code. These comprise Network Exit Agreements (NExAs), Storage Connection Agreements (SCAs) and Connected System Exit Point (CSEP) Agreements. Parties to the ancillary agreements are Transco and:

- the downstream operator only; or
- the relevant shipper(s); or
- both the downstream operator and the relevant shipper(s)

There are two generic forms of ancillary agreements, reflecting the full and minimum offtake arrangements described above.

The ancillary agreements describe the equipment owned by the parties and specify the demarcation point. The agreements deal with a number of other aspects including emergency arrangements, maintenance cooperation and establishing certain parameters that give effect to Network Code provisions.

(2) NTS/ DN Offtake sites

At NTS/ DN offtakes all the equipment is currently owned and operated by Transco. However, organisational responsibility divides at a demarcation point immediately downstream of the NTS block valves. NGT UK Transmission is responsible for equipment upstream of this point. NGT UK Distribution is responsible for equipment downstream of this point, and is usually responsible for the site land and buildings. Remote operation of equipment, in particular flow control, is conducted on behalf of UK Distribution by the Area Control Centres using on-site telemetry equipment. Telemetry signals are also provided to/ from the Gas National Control Centre to facilitate operation of the NTS, and allow operation of the NTS ROVs.

Currently there are no contractual arrangements in place relating to these sites because ownership resides with a single entity, Transco. It is proposed that in future the offtake site arrangements between NTS and all DNs (both IDNs and RDNs) will be addressed in the Offtake Code.

3. Offtake Arrangements development

NGT has reviewed its original proposals for Connection Facilities and Telemetry arrangements at NTS/ DN Offtake Sites in the light of developments arising through the recent consultation process, in particular the Roles and Responsibilities RIA and the Offtake arrangements RIA. NGT believes its original proposals remain appropriate because the NTS/ DN demarcation point remains the same. Thus the roles and responsibilities of the respective parties with respect to upstream and downstream equipment and with respect to flow control remain the same. In addition, the proposals are consistent with existing minimum offtake arrangements for NTS direct connects.

4. Proposed Connection Facilities and Telemetry Arrangements

It is proposed that the business rules attached at Appendix 1 and Appendix 2 are used as the basis for drafting Offtake Code provisions relating to Connection Facilities and Telemetry arrangements at NTS/ DN Offtake Sites. Coverage of these rules is summarised below:

(1) Connection Facilities

- Ownership of land, equipment and buildings
- Equipment specification
- Rights granted by the Site Owner to the other party to:
  - retain, replace, remove and relocate its equipment and buildings
  - install new equipment and buildings
  - gain access to its equipment and buildings
- Ensuring equipment of both parties remains compatible
- Utility services provided by Site Owner to the other party
- Site security and safety rules

(2) Telemetry Arrangements

- If a System Operation Managed Service Agreement (SOMSA) between Transco and the DN is in place the DN will send the information to NTS via satellite link.
- On the expiry of the SOMSA NTS will have its own telemetry facilities at each Offtake Site and:
  - data will be provided by the DN via direct hard-wired links to the proposed NTS telemetry equipment within the Offtake Site and
  - NTS will have the capability to operate NTS owned block valves within the Offtake Site and, under certain circumstances, to take override control of the DN's pressure/ flow management equipment;
- The rules set out the equipment to be installed, the data to be transmitted, and the arrangements in the event of equipment failure.

Offtake Code Business Rules

2 Connection Facilities

This section describes the Connection Facilities located at or near the point of offtake from the NTS to the DN. It sets out the ownership of the land, equipment and buildings, the technical specification of equipment, and the rights and responsibilities of the parties in relation to the Connection Facilities. At each Offtake Site, the relevant DNCo or NTSCo is the designated Site Owner (in most cases this is DNCo), and the other party has rights to have its equipment located on the Site Owner's land. The detailed rules cover inter alia:

- Rights granted by the Site Owner to the other party to:
  - retain, replace, remove and relocate its equipment and buildings
  - install new equipment and buildings
  - gain access to its equipment and buildings
- Ensuring equipment of both parties remains compatible
- Utility services provided by Site Owner to the other party
- Site security and safety rules

2.1 Definitions

- Offtake is the agreed point at the inlet to DNCo's Connection Facilities (marked for each Offtake Site in the information recorded in the form specified in Annex 1) where gas passes from the NTS to a DN and at which Offtake Rights (as defined in section 8) apply.
- Connection Facilities are the facilities installed and operated by NTSCo and/or DNCo, located at or near an Offtake including equipment, land and buildings.
- Offtake Site is a location where Connection Facilities are located.
- Site Owner is the party designated as such in respect of an Offtake Site.

2.2 Description of Connection Facilities

- Specific information relating to Connection Facilities at each Offtake Site shall be recorded in the form set out in Annex 1.

2.3 Rights to retain existing Connection Facilities

- The Site Owner grants to the other party the right to retain Connection Facilities on the Site Owner's land in such places as they are located at the date of this agreement.

2.4 Obligation to maintain shelter and support for Connection Facilities

- Each Site Owner shall maintain any shelter and support provided in respect of the other party's Connection Facilities at the date of this Agreement or, if later, when relocated on the Site Owner's land.

2.5 Compatibility of Connection Facilities

- DNCo and NTSCo each warrant that its Connection Facilities are and will remain (subject to the modification process below) technically and operationally compatible with the other party's Connection Facilities.
- A party's Connection Facilities shall be deemed incompatible if modified so that the other party is required to operate its Connection Facilities in a different way involving additional cost, or is required to modify its own Connection Facilities.
- If a party breaches the compatibility warranty, it shall immediately notify the other party.
- Each party shall retain the right to disconnect the other party's system in the event of a material breach of the compatibility warranty.
- Either party shall be entitled upon reasonable notice to inspect the other party's Connection Facilities for the purposes of determining whether the Connection Facilities remain technically and operationally compatible.

2.6 Modification of Connection Facilities

- Should either party wish to modify its Connection Facilities, such that they become incompatible with the other party's Connection Facilities, then the party requiring the modification shall seek the written consent of the other party and shall bear the reasonable costs of both parties' modification works.

- Where the modification is made in order to comply with any legal requirement, then each party shall make all necessary changes and shall bear its own costs.
- Each party shall be responsible for the undertaking of any modification to its own Connection Facilities.
- Both parties shall co-operate with each other so that such modifications may be made in a timely manner.

2.7 Rights to replace or alter Connection Facilities

- The party that is not the Site Owner shall retain the right to replace or alter its Connection Facilities subject to the compatibility warranty, provided that the Site Owner will not be required to provide additional space or facilities.
- The reasonable costs incurred by the Site Owner in accommodating the replacement / alteration will be funded by the other party.
- The party that is not the Site Owner will give due consideration as to whether any replacement or alteration could reasonably be effected by locating Connection Facilities on its own property.

2.8 Relocation of Connection Facilities

- Where a Site Owner wishes the other party to relocate its Connection Facilities to another location which may be on the Site Owner's land, or the other party's land, or on a third party's land, then the Site Owner shall obtain the consent of the other party and shall bear all associated costs of such relocation.

2.9 NTSCo telemetry

- Where NTSCo is not the Site Owner, then it shall have the right to install, retain and use (at its own expense) at each Offtake Site referred to in Annex 1 at the date this agreement first applied to the Site Owner, a telemetry kiosk and associated equipment.
- DNCo shall provide a land area (not within the hazardous area of the Offtake Site) to accommodate a 3 metre x 3 metre Glass Reinforced Plastic kiosk on a suitable concrete base with 1 metre wide path around and vehicular access to a point as close as reasonably practicable to the land area provided, together with cabling routes and connection points with DNCo telemetry equipment and with any NTSCo valve control equipment.
- The telemetry arrangements are specified in more detail in Section 5 and Annex 4.
- Any capital costs necessarily incurred by DNCo so that utility services associated with NTSCo telemetry equipment can be provided under section 2.10 will be reimbursed by NTSCo, but NTSCo shall thereafter receive the utility services free of charge.

2.10 Utility services provided by the Site Owner to the other party

- The Site Owner shall provide the other party free of charge with the utility services reasonably required for the operation and maintenance of the other party's Connection Facilities within each Offtake Site.
- The utility services provided at each Offtake Site shall be recorded in the form set out in Annex 2.

2.11 Rights of access

- The Site Owner grants to the other party a right of access free of charge at all times for the purpose of the maintenance, inspection, testing, removal, operation, modification, replacement, installation or repair of any of the other party's Connection Facilities.

2.12 Site security and safety rules

- The Site Owner shall maintain and provide site security in relation to the other party's Connection Facilities within the Offtake Site to the same standard as the Site Owner provides in relation to its own Connection Facilities at that Offtake Site.
- Each Site Owner will develop site safety rules for its Offtake Sites in consultation with the other party.
- Each party shall abide by the site safety rules.
- Security breaches will be promptly reported by the Site Owner to the other party.

2.13 Non-interference

- Subject to the right of disconnection under section 2.5, each party agrees that it will not interfere in any way with the other party's Connection Facilities without consent, such consent being deemed given in emergency circumstances.

2.14 New Offtakes and other changes

- Any revisions to the information recorded in the form set out in Annex 1 or Annex 2 to accommodate the construction of new Offtakes, modifications, relocations, removals or alterations shall be made prior to the offtake of gas or change of mode of operation.
- The terms of this Agreement shall apply to each new Offtake from the date of commissioning of such Offtake.

[Note. If the DNCo wishes to have a new connection to the NTS, then this shall be treated by NTSCo in accordance with policies and processes established for NTS Supply Points and Connected System Exit Points as outlined in the latest Ten Year Statement or Licence Condition 4B Statement]

2.15 Decommissioning

- If the Site Owner wishes to cease use of an Offtake Site on a permanent basis, then the provisions of section 2.8 will apply with regard to the relocation of the other party's Connection Facilities.

Annex 1 Connection Facilities: Example

Name of the Connection Facility	-
Postal address of the Connection Facility	-
Ordnance Survey location of the Connection Facility	-
Owner of the site (the Site Owner)	NGT
Third parties with interests in the site	None
Site safety and access arrangements	As per Transco Safe Control of Operations Procedures Contact Telephone to gain access. ……
Map showing ownership boundaries, rights of access and position of the Offtake	YO/M/330/2 1 and 2
Pressure systems regulations responsibility boundary plan	BG/M/330/17
Offtake is part of a COMAH Site	Yes - All work must be carried out as per COMAH Safety Report …….
IPC Authorisation	All work must be carried out as per IPC Authorisation No…….
Security Fence	Yes
Connected to Feeders	Feeder No

Annex 2 Utility Services Provided to 3rd Parties: Example

Name of Third Party	
Cathodic Protection	1.Impressed current system provided from ground bed and transformer to all pipework within I/J 1/2 to I/J 4/5 See - Drawing No. YO/M/330/2
Electrical Supply Services Provided for:-	1.Valve Actuation to Valve No.'s ……. Volts /Amps / Supplied from Distribution Board No. 2.Supply to Meter Room…… Volts /Amps / Supplied from Distribution Board No. 3.Supply to Lighting columns…….Volts/ Amps Supplied from Distribution Board No. 4.Heating within instrument /control room …….. Volts/ Amps Supplied from Distribution Board No. 5.Supply to other areas Supplied from Distribution Board No. **See Attached**
Water Services	1.Water Supply for use on site to
Site Telecommunication Services	1.Access and use of Telephone No. . 2.Telephone line type – ISDN **See Attached**
Standby Power	1.Standby Generator will provide back up power for …….. 2.UPS system will provide back up for …**See Attached**…….
Site Drainage	
Welfare Facilities	
Other Utility Services	

Appendix 1

Electrical Information

Site :
Electrical Supply Services Provided for :-

1. Actuator Valve / Valve No. / Supply Details :-
No Electrical Actuators installed on site

2. Supply to Meter Room Details :-
Incoming supply details from the Regional Supply Authority…
240 volts, Single Phase & Neutral, 80 amps

3. Lighting Columns Circuit Details :-
Column Ref. F1/F2 – 240 volt , 10 amps (DB3/Cir.4)
Column Ref. F3/F4 – 240 volt , 10 amps (DB3/Cir.2)
Column Ref. F5 – 240 volt , 6 amps (DB3/Cir.5)

4. Combined E&I Control Room Heating :-
Circuit 1 – DB2/ Cir.2 – 240 volts, 16 amps
Circuit 2 – DB2/ Cir.3 – 240 volts, 16 amps

5. Other Area Supplies & Details :-
Distribution Board Ref.DB1 (Main Splitter Board)
Circuit 1 – Building Services Dist. Board Ref. DB2. 240 volts, 32 amps
Circuit 2 – Outside Services Dist. Board Ref, DB3. 240 volts, 32 amps
Circuit 3 – Instrumentation Dist. Board Ref. DB4. 240 volt, 32 amps
Circuit 4 – Package Boiler House. 240 volt, 32 amps. (Awaiting Commissioning)

Building Services Distribution Board Ref.DB2
Circuit 1 – 240/110 volt Transformer. 240 volt, 20 amps.
Circuit 4 – Cathodic Protection T.R. Unit. 240 volt, 16 amp.
Circuit 5 – Control Building 13A socket outlet. 240 volt, 16 amp.
Circuit 6 – Toilet Area Hot Water Heater. 240 volt, 16 amps.
Circuit 7 – Control Building Lighting. 240 volt, 6 amps.
Circuit 8 – Control Building Lighting. 240 volt, 6 amps.
Circuit 9 – Control Building Lighting. 240 volt, 6 amps.

Outside Services Distribution Board Ref.DB3
Circuit 1 – Water Bath Heater Area Lighting. 240 volts / 6 amps.
Circuit 3 – Regulator Building Lighting. 240 volt / 6 amps
Circuit 6 – Regulator Building Heating. 240 volts / 6 amp.
Circuit 7 – LGT System Ref.1 Raw Mains Dist. Board Ref.DB5
Circuit 8 – LGT System Ref.1A Raw Mains Dist. Board Ref.DB6

Instrumentation Distribution Board Ref.DB4
Circuit 1 – Transmitton UPS Unit. 240 volt, 10 amps
Circuit 2 – Instrumentation use 13A Socket Outlet. 240 volt, 16 amps.
Circuit 3 – Regional Telemetry P.S.U. 240 volts, 6 amps.
Circuit 4 – FWA “Tracker” Rack. 240 volts, 16 amps.

LGT 1 Raw Mains Distribution Board Ref.DB5
Circuit 1 – LGT Bay Floodlight. 240 volt, 2 amps
Circuit 2 – LGT NIJEX Cabinet Light. 240 volt, 1 amp.
Circuit 3 – LGT NIJEX Cabinet Heater. 240 volt, 1 amp.

LGT 1A Raw Mains Distribution Board Ref.DB6
Circuit 1 – LGT Bay Floodlight. 240 volt, 2 amps
Circuit 2 – LGT NIJEX Cabinet Light. 240 volt, 1 amp.
Circuit 3 – LGT NIJEX Cabinet Heater. 240 volt, 1 amp.

Standby Power

1. Generators
No site "fixed" standby generator yet. A standby supply generator is installed on the site for the "Package Boiler House" only but, is not yet commissioned.

A portable generator inlet socket is available to supply the Instrumentation Distribution Board Ref. DB4, (see circuit description above). The generator is not available on the site.

2. UPS systems provide supply back up to :-
- Transmitton Telemetry Unit
- Telecoms ISDN Line socket outlet
- LGT SCIM Panel Ref.1
- LGT SCIM Panel Ref.1A
- Tracker PRU Cabinet Heater
- Tracker E6 Cabinet Heater
- Tracker Control Rack
- Regional Telemetry

Offtake Code Business Rules

5 Telemetry

This section sets out details relating to the exchange of the telemetered electronic information between DNCos and NTSCo in real time.

Access to real-time data relating to gas flowing at each Offtake is required by NTSCo to operate the NTS in a safe and efficient manner. Elements of this data may also be used for Network Code purposes. The measurements at each Offtake Site are made by DNCo.

If a System Operation Managed Service Agreement (SOMSA) between Transco and the DNCo is in place the DNCo will send the information to NTSCo via satellite link.

On the expiry of the SOMSA NTSCo will have its own telemetry facilities at each Offtake Site and:

- data will be provided by DNCo via direct hard-wired links to the proposed NTSCo telemetry equipment within the Offtake Site and
- NTSCo will have the capability to operate NTSCo owned block valves within the Offtake Site and, under certain circumstances, to take override control of the DNCos pressure/ flow management equipment;

This section sets out the equipment to be installed, the data to be transmitted, and the arrangements in the event of equipment failure.

5.1 Measurements to be made and data to be transmitted

- The measurements to be made and data to be transmitted in respect of each Offtake Site will be recorded in the form set out in Annex 4.

5.2 Communication interface for duration of SOMSA

- For so long as a System Operation Managed Service Agreement (SOMSA) between NTSCo and DNCo is in force DNCo shall provide the data signals recorded in the form set out Annex4 via satellite link in a form specified by NTSCo.
- DNCo will provide suitable equipment to transmit the data to NTSCo's satellite link for onward transmission to NTSCo's control system, with appropriate back up arrangements.

5.3 Installation and commissioning of new NTSCo telemetry equipment

- DNCo grants NTSCo the right to make connections at NTSCo's expense between NTSCo telemetry equipment and any NTSCo valve control equipment, and between NTSCo telemetry equipment and DNCo telemetry equipment by the installation of cables laid in ducts within the Offtake Site.
- At NTSCo's request DNCo shall at its own expense provide a module within DNCos telemetry unit to facilitate override control of flow and pressure control valves by NTSCo in accordance with section 9.3
- The parties shall cooperate in the commissioning of NTSCo telemetry equipment
- At NTSCo's request, the parties will meet, discuss an agree details relating to the installation and commissioning of NTSCo telemetry equipment and the associated connections

5.4 Communication interface following expiry of SOMSA

- DNCo shall provide site signals to NTSCo of type, quality and quantity as recorded in the form set out in Annex 4 via an Ethernet or serial (RS232) data link utilising standard Modbus protocol.
- Telecommunications for the transfer of telemetry data to NTSCo control centres will normally be via NTSCo satellite equipment. DNCo will provide a back up ISDN circuit and [240 volt 16 Amp 50 Hz A/C] electrical supply as specified sections 2.9 and 2.10

5.4 General obligations relating to telemetry

- DNCo shall maintain all existing DNCo owned measurement and telemetry facilities at each Offtake Site such that they provide the means of conveying the electronic data signals recorded in the form set out in Annex 4 on a continuous basis.
- Where discrete inputs are necessary for analogues and states (e.g. on/off) these are to be presented as 4 – 20mA and volt free contact respectively.

5.5 Resilience of telemetry equipment

- The availability of DNCo telemetry equipment will be better than 99.95% per year on average, and the mean time between failure shall not be less than 80505 Hrs.

5.6 Failure of telemetry equipment

- In the event that either party suspects the failure of telemetry equipment at an Offtake Site:
    - The party shall notify the other party immediately;
    - DNCo shall immediately check the proper working order of its telemetry equipment
    - DNCo shall rectify any identified faults with its telemetry equipment as soon as reasonably practicable. In situations where it is not practicable for DNCo, acting as a Reasonable and Prudent Operator, to rectify such failure within 24 hours of the fault being identified, DNCo shall submit its plans to NTSCo for rectifying the fault within the next 24 hours;
    - DNCo shall cease, or where this is not possible for safety reasons, minimise the flow of gas through the relevant Offtake whilst the failure or error exists.
    - Where NTSCo informs DNCo that the safe operation of the NTS is compromised whilst telemetry is not properly functioning, DNCo shall cease flow through the Offtake.

Offtake Code Business Rules

Annex 4 Telemetry Specifications: Example

This annex provides details of data to be provided from [Offtake Site] to NTSCo via telemetry.

Common across all sites

Analogues

Name	Description
CV1_TRACK	24 HR AVERAGE CV
DVOL1	DAILY METERED VOLUME
F1	INLET FLOW
HVOL1	METERED HOURLY VOL.
INTG1	INTEGRATOR
INTG_LGTA	LGT SYS INTG FLOW A
INTG_LGTB	LGT SYS INTG FLOW B
LGT_CONCEN	LGT CONCENTRATION
P1	INLET PRESSURE
P5	OUTLET PRESSURE
SG1_TRACK	24 HR AVERAGE SG
T1	OUTLET TEMPERATURE

States

Name	Description
CHGR1	BATT.CHARGER FAIL
FILT1	HI FILT DIFF. PRES
LGT_ODORNT	UNDER ODOURISATION
LGT_PSU	POWER SUPPLY ALARM
LGT_PUMPA	PUMP A FAIL ALARM
LGT_PUMPB	PUMP B FAIL ALARM
LGT_TANK	TANK LOW LEVEL ALARM
MAINS1	240VAC SUPPLY FAILED
MTCE1	MAINT. KEY OPERATED
MTR_SUSP1	METERING HEALTH

Site name

Analogues

Name	Description
CV_TR1	INST TRACKER CV
DVOL2	DAILY METERED VOL.2
DVOL3	
DVOL5	
EF1	INST. ENERGY FLW RAT
F2	7 BAR INST. FLOW
F3	38 BAR INST. FLOW
FLT_DP1	FILTER DP1
HVOL2	METERED HOURLY VOL.2
INTG2	INTEGRATOR 1
INTG3	INTG TOTAL FLOW
INTG_EF1	ENERGY INTEGRATO
P2	INLET PRESSURE
P4	
SG_TR1	SPECIFIC GRAVITY
T2	38BAR GAS TEMP.

States

Name	Description
GASQ_COM	GAS QUALITY COMMON
GEN_STAT	GENERATOR STATUS
HTR_EXCH1	BURST DISC ALARM
HTR_LVL1	12 HR RESPONSE
HTR_LVL2	4 HR RESPONSE
I_STATUS1	VAL LST PNT STATUS1
LGT_COM	LGT COMMON
PRES1	OUTLET PRESS 1 HI/LO
RMT_MTCE	REMOTE DIAL IN
SS1	SLAM SHUT 1 OPERATED
SS2	SLAM SHUT 2 OPERATED
SS3	SLAM SHUT 3 OPERATED
SS4	SLAM SHUT 4 OPERATED
STATUS1	
SYS_TRACK1	CV SYSTEM ALARM
TRCV_N_VLD	TRACKER CV NOT VALID
T_ALM1	GAS TEMP. 1 LOW
UPS_TRACK1	TRACKER UPS ALARM
V01	
V02	
V03	
V04	