Uniform Network Code Validation Rules

Version 2.6 DRAFT

Updates required as a result of Modification 0432 & 0434

Document Control

Version	Date	Reason for Change
2.6 DRAFT	10/06/2015	Updates to correct references & amendments to Section 5
2.5 DRAFT	29/04/2015	Updates following further analysis and discussions at Project Nexus workgroup & agreement on the read validation tolerances.
2.4 DRAFT	20/11/2013	Proposed updates for review at PN UNC
2.3 DRAFT	15/10/2013	Further updates following review
2.2 DRAFT	07/10/2013	Further updates following review at PN UNC on 30/09/2013
2.1 DRAFT	20 September 2013	Updates following Project Nexus requirements
2.0	20 January 2011	Clause 4 amended as a result of implementation of UNC0224, introduction and Document Control added.
1.0	05 July 2006	Rules established

Development of Rules

(a) Section M5.3.3 of the Transportation Principal Document (TPD) of the Uniform Network Code (UNC). specifies that:

"The "Uniform Network Code Validation Rules" (or "Validation Rules") are the rules and procedures contained in the document issued by the Transporters at the [Project Nexus Implementation Date] and so entitled and governed and amended in accordance with Section V12 unless the Authority shall upon application by any User made within one month after such notice, give Condition A11(18) Disapproval to the Transporters making any amendment in accordance with the provisions of Section V12."

(b) The requirement to publish the Uniform Network Code Validation Rules is specified in Section V12.1(b) of the TPD of the UNC. This section also provides for the document to be published and revised from time to time. The provision (TPD V12.2) reads :

"Each Document shall be kept up to date and published by the Transporters on the Joint Office of Gas Transporters' website."

(c) The Rules set out below meet the Transporters' obligation to prepare Guidelines, while the Document Control Section records changes which have been made to the Guidelines. The document is published on the Joint Office of Gas Transporters' website, www.gasgovernance.com.

(d) These Guidelines can only be modified in accordance with the requirements set out in paragraph 12 of Section V of the UNC Transportation Principal Document, which reads as follows:

CONTENTS

1   Introduction

This is the document referred to in Section M 5.3 of the Uniform Network Code Transportation Principal Document. It does not form part of the Uniform Network Code.

1.1   This document describes the validation rules which will be applied to non-daily (Class 3 and 4) and daily metered (Class 1 and 2) Supply Meter Point meter reads, read equipment, convertor readings and associated data before they are applied to User and Transporter systems. All parameterised values are subject to amendment in accordance with the procedures set out in Section M 5.3.3 of the Uniform Network Code – Transportation Principal Document. Any changes will be notified to Users.

1.2   These rules are the minimum requirement of validation that must be undertaken for readings applied by Users prior to submitting to the Transporter.

1.3   Reads from Class 1 daily metered Supply Meter Points will be validated by the Transporter in accordance with the relevant rules described herein.

1.4   Reads from Class 2, 3 & 4Supply Meter Points must be validated by the Users before submitting to the Transporter in accordance with the relevant rules described herein.

1.5   Reads that do not pass the validations described will be rejected by the Transporter with the relevant rejection reason

1.6   The validation described in this paper will be in addition to that used to determine that the data is in accordance with the file specification and system requirements.

1.7   The validation refers to cyclic and non-cyclic meter readings, including transfer readings, consumption adjustments and asset removal meter readings.

1.8   In addition to User validation, the Transporter will undertake a two step validation process for all reads and consumption adjustments received;

1.8.1 An initial tolerance check (Inner Tolerance) that can be overridden by the User. The override flag can be submitted with the read or on re-submission of the read following rejection.

1.8.2 The second test (Inner Tolerance) will be applied if the read or consumption adjustment passes the Inner Tolerance check. Where the read or consumption adjustment fails this test the read will be rejected and can not be overridden.

2. Meter Reading Validation

2.1 A completeness check to ensure all readings expected have been received, including Convertor readings where a Convertor is installed.

2.2 All meter readings will be subjected to a round the clock test to detect possible instances where a meter has made a complete revolution of the dials between readings. It will also check for negative consumptions if a meter reading follows an estimate.

The term Round the Clock (RTC) refers to the number of times the meter or convertor has gone "through the zero's" e.g has moved from 9999 to 0001. The use of this indicator and the reading will permit the volume of gas to be calculated as well as detecting any reversal of readings following an earlier erroneous reading. A detailed explanation of the logic is given in Appendix A.

2.3 Validation to ensure the read is equal to or greater than a previous actual reading, and for replacement reads, less than or greater than a subsequent actual read.

2.4 All readings supplied by Users, including reads received as an asset update and replacement reads, will be subject to tolerance checking as described below.

2.5 An inner Tolerance validation will be applied to all reads as described in Section 8

2.5.1 The User may 'override' the 'Inner Tolerance Check' by indicating as such when submitting the reading.

2.5.2 A further tolerance check (Outer Tolerance check) will be applied, a reading that breaches the Outer Tolerance check will be rejected by the Transporter.

2.5.3 Tolerance ranges will be based on the AQ band for a Supply Meter Point. Tolerance Ranges are shown in Section 8.

2.6 The tolerances will be applied using the previous Actual meter read, including an installation read, or an estimated transfer read

2.7 Where a Convertor is installed additional checks will be performed to ensure that the Convertor is reading meter pulses correctly. The following checks will be performed. The following will not be applied to a variable Pressure site.

2.7.1 Calculate;
(Convertor Corrected Volume / Meter Read Volume) / Meter Point Correction Factor

2.7.2 A Convertor Tolerance check will be applied on the 'Ratio' between the Convertor reads and meter reads:

Ratio = Vol 1 / Vol 2 / Meter Correction Factor

Where;
Vol 1 = Volume calculated using Convertor corrected reads
Vol 2 = Volume calculated using Convertor uncorrected reads, or meter reads if uncorrected reads are not available

2.7.3 The tolerance ranges are:

Class 1 & 2 meter points: 0.95 to 1.05
Class 3 & 4 meter points: 0.85 to 1.15

2.8 Reads sumitted as part of an asset update will be subject to read validations with the exception of installation reads.

2.9 Replacement reads will only be accepted if a read for the same date is recorded on UKLink.

2.10 For Class 1 & 2 meter points where an actual is received following an estimated transfer read the following will apply:

2.10.1 On receipt of the actual read it will be validated to ensure equal to or greater than the previous actual read.
- If yes, accept the actual read
- If no, reject
- 2.10.2 Where the actual read is equal to or greater than the previous actual read it will be accepted even if the energy is a negative following the estimated transfer read

3. Validation on Reads received as part of an Asset Update

3.1 The read submitted as the removal read will be validated against the 'Outer Tolerance' check. If the read fails the tolerance, the asset update will be rejected.

3.2 An asset removal will be rejected if actual reads exist after the effective date of the asset removal.

3.3 If the asset is recorded as 'Isolated', reads will not be accepted for a read date after the effective date of the asset update.

4. Class 1 DM Mandatory Supply Points

The following additional tests to those described herein will be performed by the Transporter.

4.1 A completeness test to ensure that all the readings expected have been received.

4.2 An instrument configuration test i.e. to ensure that the convertor and the meter reading are received where a convertor is fitted.

5.   Unique Sites

The meter read tolerance validation described in Section 8 will be performed on the portfolio of Supply Meter Points known as unique sites with the exception of NTS & LDZ Telemetered Supply Meter Points..

The Supply Meter Points that are currently known as unique sites are;

- All NTS sites including Direct Connect sites, Connected System Operator (CSO) sites and Shared Supply Meter Points
- NTS Interconnectors
- LDZ Telemetered sites
- LDZ Connected System Operator (CSO) sites
- LDZ sites with NTS Optional Rate and/or LDZ Optional Rate
- LDZ Shared Supply Meter Points
- LDZ Site with Specific Calorific Values (CV)
- LDZ Sites with any Special Metering Arrangements in place

6.   Consumption Adjustments

6.1   A Consumption Adjustment can be submitted for the following reasons;

   a. To replace the volume calculated from a meter reading for Class 1 and 2 Supply Meter Points

   b. To replace the consumption recorded where the meter is on 'Bypass'

   c. To replace the consumption recorded where there has been a confirmed theft of gas

   d. To replace the consumption recorded where there has been a Daily Read Error

   e. To replace the consumption recorded where there has been a fault on the asset

6.2   The period of the consumption adjustment must align to reads recorded on UKLink

6.3   The total corrected consumption for the period must be submitted.

6.4   Users must validate the Consumption Adjustment for prior to submitting to the Transporter.

6.5   Where a User submits a Consumption Adjustment the validations and tolerance ranges described under Section 8 will be applied.

6.6   Where the Consumption Adjustment fails the validations it will be rejected by the Transporter.

7. Validation to Site Visit Reads (Check Reads)

7.1 Read validation & convertor tolerance checks will be applied over the 'Check Read Period'. The following will be treated as a 'Check Read' where derivable equipment is installed;

- Check Read following a Site Visit

- Installation read where in receipt of the first Check Read

- Shipper transfer reading

- Bypass reading

7.2 The daily average energy between the Check Read period (as defined in 7.1) will be calculated, the daily value will be used to validate against the SOQ for Class 1 and 2 and the AQ for Class 3 & 4. The SOQ/AQ will be the prevailing value for the date of the Site Visit.

7.3 A replacement read will be rejected where the read date falls within the Check Read period (as defined in 7.1)

7.4 The 'Round the Clock' indicator should be based on the latter of either the previous Check Read, installation read, bypass reading or the transfer read.

8. TOLERANCE RANGES

8.1 Tolerances Applicable to Class 1 and 2 Meter Points - Daily Read Received Following an Actual Read

Lower AQ Band (kWh)	Upper AQ Band (kWh)	Tolerances where read will be accepted	Tolerances where a Read will be Accepted if Submitted within Override Flag (Inner Tolerance)	Outer Tolerance Where Read will be Rejected (Market Breaker)
1	1	0% - 2,000,000% of SOQ	2,000,001% - 7,000,000 % of SOQ	>= 7,000,001% of SOQ
2	200	0% - 10,000% of SOQ	10,001% - 25,000 % of SOQ	>= 25,001% of SOQ
201	500	0% - 4,000% of SOQ	4,001% - 10,000 % of SOQ	>= 10,001% of SOQ
501	1,000	0% - 2,000% of SOQ	2,001% - 5,000 % of SOQ	>= 5,001% of SOQ
1,001	5,000	0% - 400% of SOQ	401% - 2,000 % of SOQ	>= 2,001% of SOQ
5,001	10,000	0% - 200% of SOQ	201% - 500 % of SOQ	>= 501% of SOQ
10,001	20,000	0% - 150% of SOQ	151% - 400 % of SOQ	>= 401% of SOQ
20,001	73,200	0% - 300% of SOQ	301% - 600 % of SOQ	>= 601% of SOQ
73,201	732,000	0% - 250% of SOQ	251% - 550 % of SOQ	>= 551% of SOQ
732,001	2,196,000	0% - 200% of SOQ	201% - 500 % of SOQ	>= 501% of SOQ
2,196,001	29,300,000	0% - 150% of SOQ	151% - 450 % of SOQ	>= 451% of SOQ
29,300,001	58,600,000	0% - 100% of SOQ	101% - 400 % of SOQ	>= 401% of SOQ
58,600,001	and above	0% - 100% of SOQ	101% - 350 % of SOQ	>= 351% of SOQ

8.2 Tolerances Applicable to Class 3 and 4 Meter Points - Read Received Following an Actual Read

Lower AQ Band (kWh)	Upper AQ Band (kWh)	Tolerances where read will be accepted	Tolerances where a Read will be Accepted if Submitted within Override Flag (Inner Tolerance)	Outer Tolerance Where Read will be Rejected (Market Breaker)
1	1	0% - 2,000,000% of AQ/365 x no. of days	2,000,001% - 7,000,000 % of AQ/365 x no. of days	>= 7,000,001% of AQ/365 x no. of days
2	200	0% - 10,000% of AQ/365 x no. of days	10,001% - 25,000 % of AQ/365 x no. of days	>= 25,001% of AQ/365 x no. of days
201	500	0% - 4,000% of AQ/365 x no. of days	4,001% - 10,000 % of AQ/365 x no. of days	>= 10,001% of AQ/365 x no. of days
501	1,000	0% - 2,000% of AQ/365 x no. of days	2,001% - 5,000 % of AQ/365 x no. of days	>= 5,001% of AQ/365 x no. of days
1,001	5,000	0% - 400% of AQ/365 x no. of days	401% - 2,000 % of AQ/365 x no. of days	>= 2,001% of AQ/365 x no. of days
5,001	10,000	0% - 200% of AQ/365 x no. of days	201% - 500 % of AQ/365 x no. of days	>= 501% of AQ/365 x no. of days
10,001	20,000	0% - 150% of AQ/365 x no. of days	151% - 400 % of AQ/365 x no. of days	>= 401% of AQ/365 x no. of days
20,001	73,200	0% - 300% of AQ/365 x no. of days	301% - 600 % of AQ/365 x no. of days	>= 601% of AQ/365 x no. of days
73,201	732,000	0% - 250% of AQ/365 x no. of days	251% - 550 % of AQ/365 x no. of days	>= 551% of AQ/365 x no. of days
732,001	2,196,000	0% - 200% of AQ/365 x no. of days	201% - 500 % of AQ/365 x no. of days	>= 501% of AQ/365 x no. of days
2,196,001	29,300,000	0% - 150% of AQ/365 x no. of days	151% - 450 % of AQ/365 x no. of days	>= 451% of AQ/365 x no. of days
29,300,001	58,600,000	0% - 100% of AQ/365 x no. of days	101% - 400 % of AQ/365 x no. of days	>= 401% of AQ/365 x no. of days
58,600,001	and above	0% - 100% of AQ/365 x no. of days	101% - 350 % of AQ/365 x no. of days	>= 351% of AQ/365 x no. of days

APPENDIX A: 'ROUND THE CLOCK' INDICATORS

REQUIREMENTS AND DEFINITIONS

1. The term 'round the clock' will be used in a single context to denote that a meter or convertor has passed through all its zeros and will not necessarily imply that the meter or convertor has made a complete revolution of all its dials (i.e. more than 10,000 hundred cubic feet (hcf) on a four dial meter, 100,000 hcf on a five dial meter etc).

   The indicator is to be used for all meters and convertors but in the remainder of the text the term meter will be used for ease of understanding.

2. This means that in the circumstance for a meter reading in hcf;

2.1 Present Reading 6000

   Previous Reading 5000

   If the volume passing through the meter is 1,000hcf then the RTC indicator will be 0.

   If the volume passing through the meter is 1 1,000hcf (because the meter has made one complete revolution of all its dials) the RTC indicator will be 1. Here the meter has gone through the zero's once.

   If the volume passing through the meter is 21,000hcf (because the meter has made two complete revolutions of all its dials) the RTC indicator will be 2. Here the meter has gone through its zeros twice.

2.2 Present Reading 0999

   Previous Reading 9999

   If the volume passing through the meter is 1,000hcf then the RTC indicator will be 1 as the meter has gone through the zero's once.

   If the volume passing through the meter is 11,000hcf (because the meter has made one complete revolution of the dials) the RTC indicator will be 2 as the meter has gone through the zero's twice.

   If the volume passing through the meter is 21,000hcf (because the meter has made two complete revolutions of all the dials) the RTC indicator will be 3 as the meter has gone through the zero's three times.

3. All RTC indicators of 2 or above will be reported for investigation .

4. The test will also look for readings moving backwards because of a previous over-estimate.

4.1   Present Reading 9910 Actual

Previous Reading 0010 Estimate

If the present meter reading is lower than the previous meter reading this requires the meter to have passed backwards through the zero's the RTC indicator will be -1.

The previous estimate is clearly an over estimate if the test shows that a volume of -100hcf is more credible than a consumption of +9900hcf

4.2   Present Reading 5900 Actual Previous Reading 6000 Estimate

If the present meter reading is lower than the previous meter reading this does not require the meter to have passed backwards through the zero's the RTC indicator will be 0.

The previous estimate is clearly an over estimate if the test shows that a volume of -100hcf is more credible than a consumption of +9900hcf

NB: A customer reading will be treated as an actual reading for the purpose of this test. The negative consumption indicator will only be used if the previous reading is an estimate.

5.   The test to detect whether a meter has made more than one complete revolution of its dials will be applied only to 4 dial meters or where the previous reading is an estimate. For meters with 5 or more dials the reading will assumed to have gone forward unless the previous reading is an estimate.

Appendix B: Calculated Gas Card Readings

Note: The following is the obligation of the Users. The Transporter will not be required to carry out the following checks from readings taken from Gas Cards.

1.1   The following refers to the calculation of a **Calculated Gas Card Reading** which (subject to compliance with section M5.13) can be used as an 'Opening Meter Reading' upon Supply Point Transfer.

1.2.   Calculated Gas Card Readings will be subject to the same tests as detailed in Section 3, Cyclic Meter Readings.

2   **<u>Formula</u>**

2.1   The Calculated Gas Card Reading shall be calculated in the same units as the Gas Card Reading from the Gas Card and will be calculated using the following formula:

$$(((c - b) / (b - a)) * (y - x)) + y$$

where:

a is the Accumulative Daily Value for first date in the Applicable Sequence.
b is the Accumulative Daily Value for last date in the Applicable Sequence.
c is the Accumulative Daily Value for the Supply Point Registration Date.
x is the First Reading in the Applicable Sequence.
y is the Last Reading in the Applicable Sequence.

2.2   No Calculated Gas Card Reading shall be calculated where **a** = **b** or where **x = y**.

2.3   For Metric calculation (M3) the Calculated Gas Card Reading shall be in the Range 00000.10 to 99999.90. [Note: The least significant digit is always zero].

2.4   For Imperial calculation (Cubic Feet) the Calculated Gas Card Reading shall be in the Range 0000.01 to 9999.99.

2.5   The First Reading and Last Reading must be taken from a date within the six month period prior to the Supply Point Registration Date.

3   **<u>Definitions</u>**

3.1   **Accumulative Daily Value**
         The value used to provide a seasonal adjustment factor within the formula. Values for the relevant date within the 'Applicable Sequence' are determined using the table in Appendix C.

3.2 Applicable Sequence
The sequence of actual Gas Card Readings used to generate the Calculated Gas Card Reading (by execution of the formula).

3.3 Calculated Gas Card Reading
As defined in Uniform Network Code – Transportation Principal Document Section M1.4.3(h).

3.4 Gas Card Reading
As defined in Uniform Network Code – Transportation Principal Document Section M1.4.3(f).

3.5 First Reading
The first of the actual Gas Card Readings taken within the six month period prior to the Supply Point Registration Date.

3.6 Last Reading
The last of the second, third, fourth or fifth actual Gas Card Readings taken prior to the Supply Point Registration Date within the six month period prior to the Supply Point Registration Date.

3.7 Supply Point Registration Date
As defined in Uniform Network Code – Transportation Principal Document G1.1.5

CALCULATED GAS CARD READINGS

1 The following table is used to determine the 'Accumulative Daily Value' for application within the formula

Table 4:

Month	Date	Seasonal Factor	Seasonal Factor / 100	Accumulative Daily Value
January	01/01/04	13.80	0.138	0.138 = 0.138 + 0
	02/01/04		0.138	0.276 = 0.138 + 0.138
	03/01/04		0.138	0.414 = 0.276 + 0.138
			"	"
February	01/02/04	13.60	0.136	4.414 = 4.278 + 0.136
	02/02/04		0.136	4.55 = 4.414 + 0.136
	03/02/04		0.136	4.686 = 4.55 + 0.136
			"	"
March	01/03/04	12.20	0.122	8.344 = 8.222 + 0.122
	02/03/04		0.122	8.466 = 8.344 + 0.122
	03/03/04		0.122	8.588 = 8.466 + 0.122
			"	"
April	01/04/04	09.80	0.098	12.102
May	01/05/04	07.10	0.071	15.015
June	01/06/04	04.20	0.042	17.187
July	01/07/04	02.40	0.024	18.429
August	01/08/04	02.40	0.024	19.173
September	01/09/04	04.20	0.042	19.935
October	01/10/04	07.30	0.073	21.226
November	01/11/04	10.30	0.103	3.519
December	01/12/04	12.70	0.127	26.633
January	01/01/05	13.80	0.138	30.581
January	01/01/06	13.80	0.138	60.888
January	01/01/07	13.80	0.138	91.195
January	01/01/08	13.80	0.138	121.502
January	01/01/09	13.80	0.138	151.945
January	01/01/10	13.80	0.138	182.252
January	01/01/11	13.80	0.138	212.559
January	01/01/12	13.80	0.138	242.866
January	01/01/13	13.80	0.138	273.309
January	01/01/14	13.80	0.138	303.616
January	01/01/15	13.80	0.138	333.923
January	01/01/16	13.80	0.138	364.230
January	01/01/17	13.80	0.138	394.673
January	01/01/18	13.80	0.138	424.980
January	01/01/19	13.80	0.138	455.287
January	01/01/20	13.80	0.138	485.594
January	01/01/21	13.80	0.138	516.037
January	01/01/22	13.80	0.138	546.344
January	01/01/23	13.80	0.138	576.651
January	01/01/24	13.80	0.138	606.958

APPENDIX C   CALCULATED GAS CARD READINGS

1   The following table is used to determine the 'Accumulative Daily Value' for application within the formula

Table 4:

Month	Date	Seasonal Factor	Seasonal Factor / 100	Accumulative Daily Value
January	01/01/04	13.80	0.138	0.138 = 0.138 + 0
	02/01/04		0.138	0.276 = 0.138 + 0.138
	03/01/04		0.138	0.414 = 0.276 + 0.138
			"	"
February	01/02/04	13.60	0.136	4.414 = 4.278 + 0.136
	02/02/04		0.136	4.55 = 4.414 + 0.136
	03/02/04		0.136	4.686 = 4.55 + 0.136
			"	"
March	01/03/04	12.20	0.122	8.344 = 8.222 + 0.122
	02/03/04		0.122	8.466 = 8.344 + 0.122
	03/03/04		0.122	8.588 = 8.466 + 0.122
			"	"
April	01/04/04	09.80	0.098	12.102
May	01/05/04	07.10	0.071	15.015
June	01/06/04	04.20	0.042	17.187
July	01/07/04	02.40	0.024	18.429
August	01/08/04	02.40	0.024	19.173
September	01/09/04	04.20	0.042	19.935
October	01/10/04	07.30	0.073	21.226

November	01/11/04	10.30	0.103	23.519
December	01/12/04	12.70	0.127	26.633
January	01/01/05	13.80	0.138	30.581
January	01/01/06	13.80	0.138	60.888
January	01/01/07	13.80	0.138	91.195
January	01/01/08	13.80	0.138	121.502
January	01/01/09	13.80	0.138	151.945
January	01/01/10	13.80	0.138	182.252
January	01/01/11	13.80	0.138	212.559
January	01/01/12	13.80	0.138	242.866
January	01/01/13	13.80	0.138	273.309
January	01/01/14	13.80	0.138	303.616
January	01/01/15	13.80	0.138	333.923
January	01/01/16	13.80	0.138	364.230
January	01/01/17	13.80	0.138	394.673
January	01/01/18	13.80	0.138	424.980
January	01/01/19	13.80	0.138	455.287
January	01/01/20	13.80	0.138	485.594
January	01/01/21	13.80	0.138	516.037
January	01/01/22	13.80	0.138	546.344
January	01/01/23	13.80	0.138	576.651
January	01/01/24	13.80	0.138	606.958

Appendix C: Meter Reading Agency HHT (On Site) Validation

Note: The following is the obligation of the Users. The Transporter will not be required to carry out the following checks.

1   Validation for this input will be performed at the time of data capture on the HHT.

2   The meter reading will be checked to ensure that it is within a specified range either side of an estimated reading. This is known as an Inner Tolerance Range (ITR). The estimated reading will be calculated using the consumption history and the AQ of the meter.

3   If the meter reading input is outside the ITR, the meter reader will be required to re-input the meter serial number. If this number is that on the HHT (the correct meter) then they will be required to re-input the reading. This confirms the accuracy of the first reading or corrects an error on the first attempted input. If the meter number differs a meter exchange will be initiated. Similar checks are to be performed on convertor readings.

4   A check will be made on the number of digits for a meter reading i.e. six digits must be input for a six dial meter. No alteration to the number of dials can be made on the HHT. Any anomalies discovered will be reported as they generally signify meter exchanges.