PAC DN Presentation

PAC Action 0808 – Offtake Measurement Error Notification Process and Reporting

14th September 2020

Classification: Approved for Publication

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UNC Obligations

Under the Transportation Principle Document (TPD) Section V – General TPD Section V12.1 (d) and referenced in Offtake Arrangements Document (OAD) Section D3.1.5 The Measurement Error Notifications Guidelines of which is a UNC related document.

The OAD sets out rights and obligations between the Transporters in relation to the connections between, and the planning, maintenance and operation of, their respective Systems, and the implementation of certain provisions of the TPD.

Offtake Point (OAD Section A 2.1.1)

An "Individual Offtake Point" is an Individual System Point which is the point of connection between:

(a) the NTS and an LDZ; or (b) two LDZs which are not comprised in the same Distribution Network; comprising a single pipe at which gas can flow from the NTS into the LDZ or (as the case may be) from one of such LDZs to the other.

These Offtake points are specified in the relevant Supplement Agreement

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Meter Validation

Section 3 of the Offtake Arrangements Document under the UNC states:-

3.1.3 Any validation of Measurement Equipment shall be carried out:

(i) by the **downstream Party**; GDN

(ii) in accordance with the provisions of … the Validation Procedures;

3.2.1 The downstream Party shall carry out validation:

(a) of the Measurement Equipment installed at an Offtake, no less frequently than once every **12 months**;

3.4.2 The downstream Party shall provide the Validation Report to the upstream Party: UKT

(i) no later than **14 days** after the completion of any Routine Validation

3.1.4 The upstream Party UKT shall be entitled, but shall not be obliged, at its own cost to attend and witness any validation carried out by the downstream Party in accordance with this paragraph 3.

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Other Controls

- Planning
- Annual maintenance schedule as agreed with NTS
  - Pre & Post flow checks
  - Non Routine operation
  - Maintenance & spread sheet checks
- Audit process
- Agree between Ofgem and DN's to provide consistent approach
  - Annual metering inspection by an external body (SGS) contracted to Ofgem (sites selected at random)
- RRP Reporting
- Ofgem RIIO-1 targets of <0.1% of Throughput (GWh)
  - Provide Ofgem with the Volume of Offtake Meter Error (GWh) and Throughput (GWh) to establish DN performance to targets

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Offtake Meters

The perceived premise is that all Offtakes are of Large Volumes however in reality some of these sites flow significantly lower levels of gas than large volume sites.

Additionally some Exit sites flow substantially higher volumes than the lower offtakes.

- As part of Ofgem's RIIO-1 consultation some DN's proposed to include a replacement programme of Orifice Meters (detailed later in this presentation).
- These plans were agreed by Ofgem and during RIIO-1 and into RIIO-2 all the DN's have a programme of continued replacement.
- Cadent recently shared a presentation with PAC (Nov 2019) regarding their plans for RIIO-2.
- DN's currently provide the audit reporting schedules to JO/PAC for visibility however is this still required by PAC?

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Meter Types

Orifice Plate Meter

Common meter for natural gas measurement.

Pressure tappings measure changes in differential pressure across the orifice plate

Turbine Meter

Flow rate ≈ ∫ (Speed of turbine)

k factors correct measured flow rate to validated figures

The k factor is dependant on the make, model and size of meter

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Ultrasonic (USM) Meters

At a glance

- **Highly efficient ultrasonic transducers providing long-term stability, reliable measurement**
- **Low maintenance due to intelligent self-diagnostics**
- **Compact, robust design with a wide application range**
- **Integrated log book and data logger**
- **Direct path layout with a large measuring range 1:120**
- **Virtually immune to pressure regulator noise**
- **Ultrasonic transducers can be exchanged under operating pressure**

The compact design with integrated cable routing means that the measuring system is durable, failsafe, low-maintenance, and has long-term stability.

The USM features extensive diagnostics options to allow detection of malfunctions even before the measurement is affected.

Types having 2, 4 or 4 + 1 measuring paths enable a variety of process applications.

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What is a Measurement Error

Offtake Meter Errors result from:-

- Any “fault” which results in a systematic bias to the measured quantities e.g.:-
  - Orifice Plates - contamination, mis-alignment, incorrect plate dimensions, damage, incorrect direction, transmitter faults
  - Turbines – bearing wear, friction, incorrect K factors, transmitter faults, there is a small loss of accuracy at the lower end of the measurement scale (<20%)
  - USM - incorrect K factors, measuring path failure, detector head contamination
  - Flow Computer - incorrect variables and/or configuration (viscosity, isentropic, density correction)
  - Instrument drift
  - Incorrect calibration of test equipment

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Measurement Error Reporting

A *Meter Error Repor*t (MER) <50 GWh or *Significant Meter Error Report* (SMER) >50 GWh is raised when an error has been identified:-

- Triggered by a variety of mechanisms such as:
  - Meter validation results
  - Alarms detected by control systems
  - Procedural errors identified by site staff
- Reconciliation required if error is >0.1%
  - Otherwise a null error
- SMER Independent Expert Assessment
  - All errors >50 GWh are assessed by 2 independent experts
  - An Offtake Arrangement Committee will be held to discuss the error

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Notification of Error Process

The high level process of notifying a Meter Error

- DN identifies and analyses the error and a draft MER is created:
- Notification to Joint Office (JO) and Industry
- MER including calculations sent to National Grid NTS
- NG Measurement Assurance Group validate MER
- NTS sign the MER off (Director level)
- NTS notifies the DN and submits MER to Xoserve for invoicing
- DN send final MER to JO
- Xoserve processes invoice and updates JO
- JO closes the error

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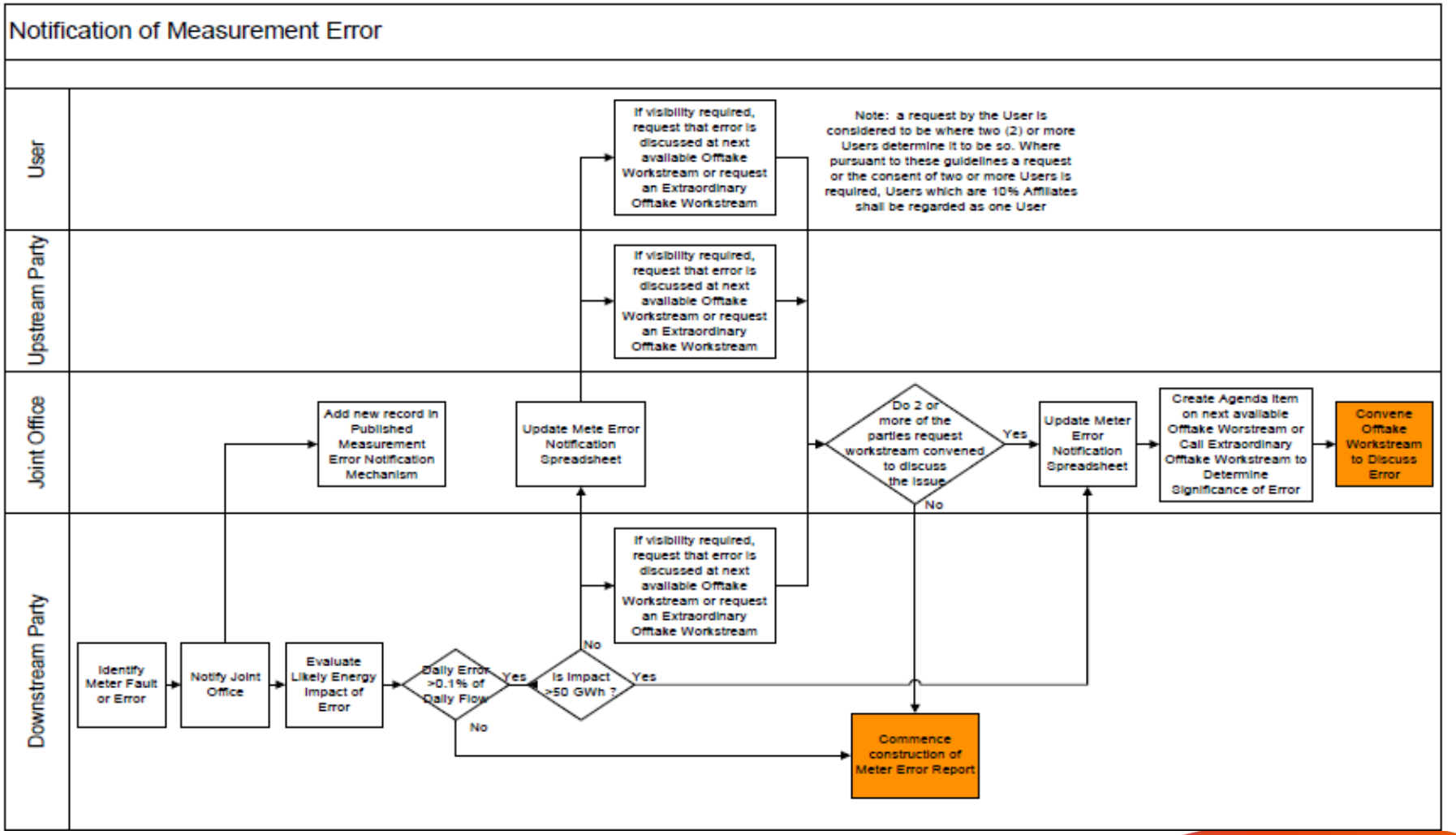
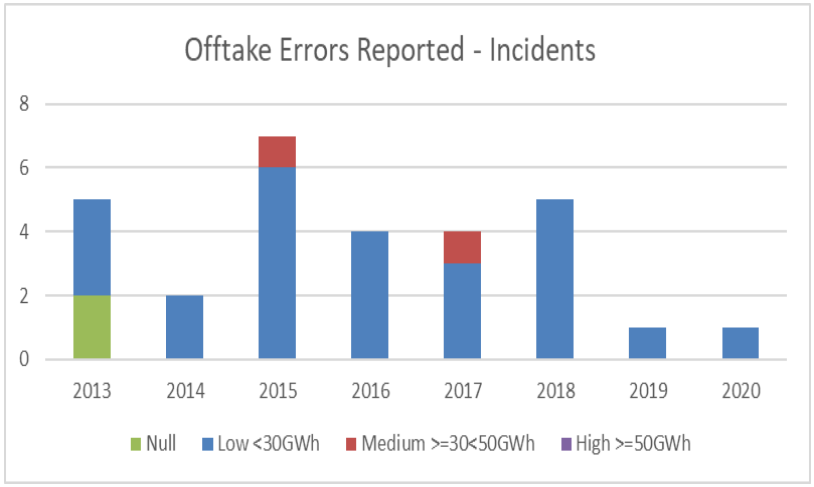
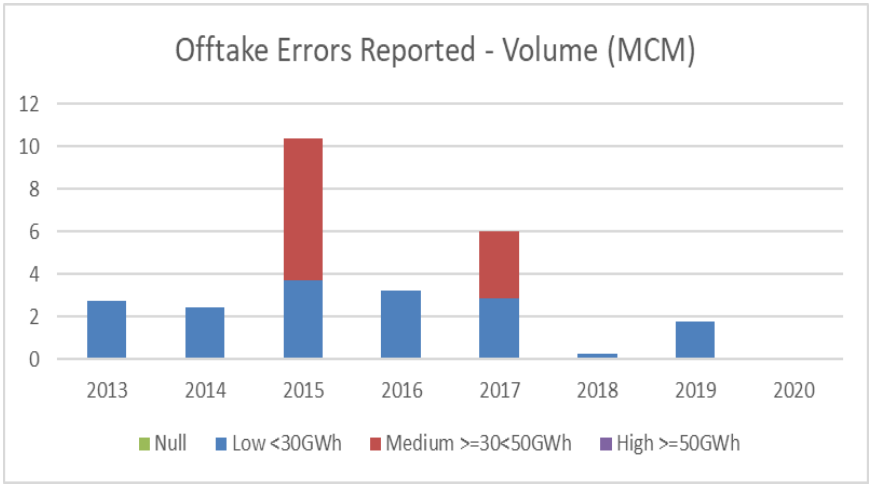
Error Process Flow



Offtake Reporting Statistics

With the robust maintenance and audit processes in place in addition to each Networks ability to quickly identify unusual activity, and the ongoing replacement of older Meter Types the number and volume of Offtake Errors reported is expected to reduce.





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