VERITEK

# Gas Downstream Reconciliation Major Change Audit Final Report

For

**OnGas**



# Prepared by Steve Woods – Veritek Ltd

**Date of Audit:**    23/02/16

**Date Audit Report Complete:**    23/03/16

# Executive Summary

This Performance Audit was conducted at the request of the Gas Industry Company (GIC) in accordance with rule 65.5 of the 2015 Amendment Version of the Gas (Downstream Reconciliation) Rules 2008. Rule 65.5 requires the GIC to arrange a performance audit of an allocation participant following notification by the allocation participant of the intention to make a change to any of its systems, processes or procedures that could reasonably be considered to be likely to have a major impact on the allocation agent's or allocation participant's compliance with these rules.

OnGas intends to replace its Kinetiq billing system with the Gentrack system and this is considered a "major change". Gentrack will perform the billing function and will also create files for submission to the allocation agent. Flow2E will continue to be used for the energy consumption calculation and some validation will still be performed in standalone spreadsheet based systems.

The purpose of a performance audit arranged under rule 65.5 shall be limited in scope to an audit of the impact of the proposed change on the allocation agent or allocation participant's systems, processes and procedures.

The audit was conducted in accordance with terms of reference prepared by the GIC, and in accordance with the "Guideline note for rules 65 to 75 and 80: the commissioning and carrying out of performance audits and event audits, V3.0" which was published by GIC in June 2013.

This audit confirms that the design of the Gentrack system is compliant with the rules. There are some process related matters that can only be tested post go live, during the next performance audit. There were three issues identified during production release testing. Manual workarounds have been established until a permanent solution is developed within Gentrack. I have recommended a peer review of the workarounds each time GAS040 and GAS050 files are created to ensure the data is correct. This matter is discussed further in Section 6.4.

OnGas has conducted appropriate user acceptance testing, including comparisons between the Gentrack test system outputs and the current systems to ensure the content of submission files is the same or similar.

The decision points in relation to go live appear to have appropriate foundation and the backup arrangements are secure, which will be the use of current systems if there are any issues.

# Persons Involved in This Audit

Auditor:

Steve Woods
**Veritek Limited**

OnGas personnel assisting in this audit were.

| Name | Title |
|---|---|
| Jonathan Baker | Senior Operational Analyst |

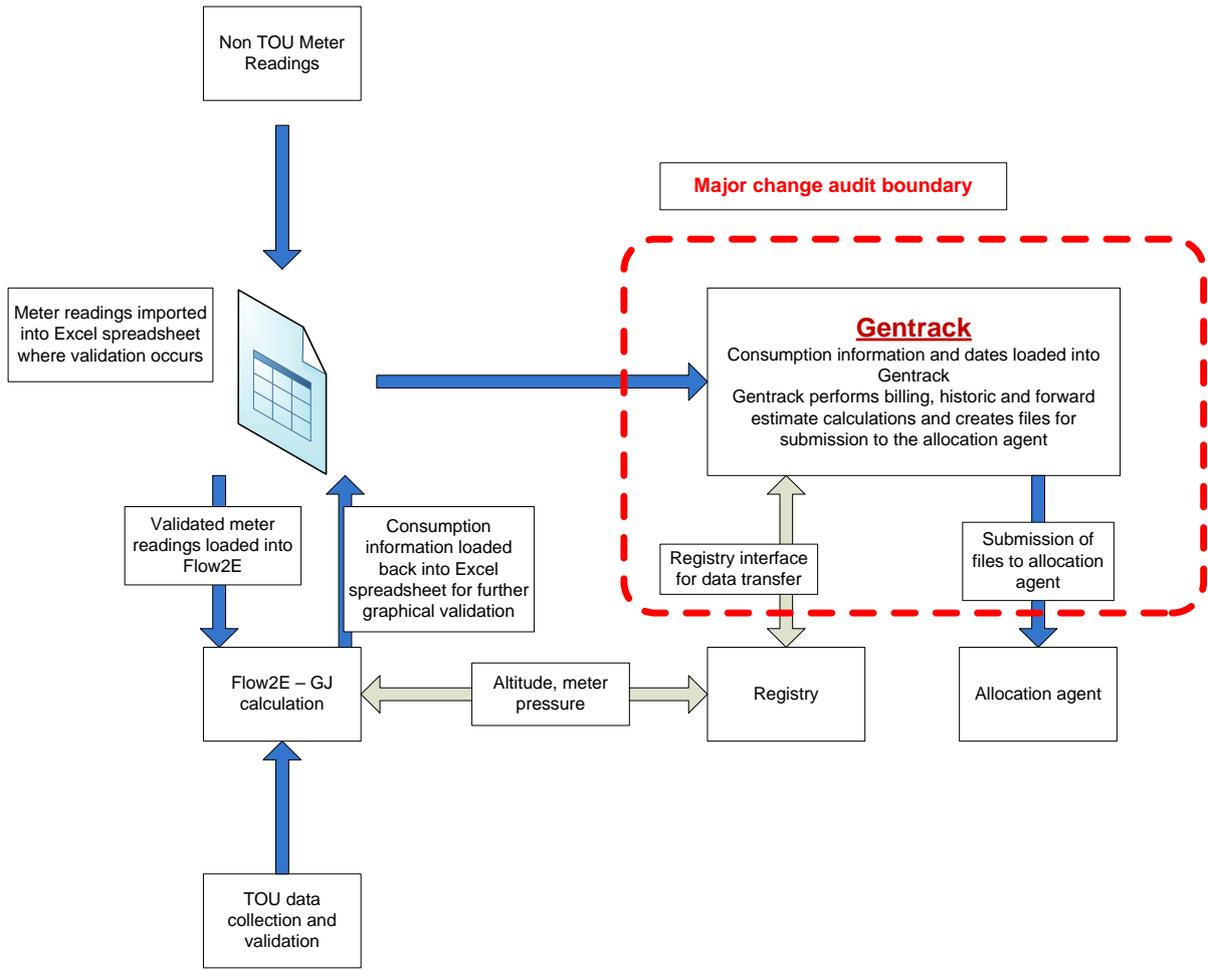# Contents

# 1.    Scope of Audit

This Performance Audit was conducted at the request of GIC in accordance with rule 65.5 of the 2015 Amendment Version of the Gas (Downstream Reconciliation) Rules 2008.  The rules relevant to this audit are inserted below.

65.4    If the allocation agent or an allocation participant intends to make a change to any of its systems, processes or procedures that could reasonably be considered to be likely to have a major impact on the allocation agent's or allocation participant's compliance with these rules, it must, at least 90 days before the change is to take place, advise the industry body of the proposed change.

65.5    Upon notification of a proposed change under rule 65.4, the industry body must arrange a performance audit of the allocation agent or allocation participant to be completed at least 30 days before the change is to take effect.

65.6    The purpose of a performance audit arranged under rule 65.5 shall be limited in scope to an audit of the impact of the proposed change on the allocation agent or allocation participant's systems, processes and procedures.

OnGas intends to replace its Kinetiq billing system with the Gentrack system and this is considered a "major change".  Gentrack will perform the billing function and will also create files for submission to the allocation agent.  Flow2E will continue to be used for the energy consumption calculation and some validation will still be performed in standalone spreadsheet based systems.

The audit was conducted in accordance with terms of reference prepared by the GIC, and in accordance with the "Guideline note for rules 65 to 75 and 80: the commissioning and carrying out of performance audits and event audits, V3.0" which was published by the GIC in June 2013.

The diagram below shows the relationship between systems and it shows the audit boundary. Gentrack is replacing the Kinetiq system but all other systems and processes will remain the same.

```
┌──────────────────┐
│  Non TOU Meter   │
│    Readings      │
└──────────────────┘
         │
         ▼
```

**Major change audit boundary**

```
┌──────────────────┐        ┌────────────────────────────────────────┐
│ Meter readings   │        │              Gentrack                    │
│ imported into    │───────▶│ Consumption information and dates loaded │
│ Excel spreadsheet│        │            into Gentrack                 │
│ where validation │        │ Gentrack performs billing, historic and  │
│ occurs           │        │ forward estimate calculations and creates│
└──────────────────┘        │ files for submission to the allocation   │
                            │                agent                     │
                            └────────────────────────────────────────┘
```

```
┌──────────────────┐   ┌──────────────────┐     ┌──────────────┐   ┌──────────────────┐
│ Validated meter  │   │ Consumption      │     │ Registry     │   │ Submission of    │
│ readings loaded  │   │ information      │     │ interface    │   │ files to         │
│ into Flow2E      │   │ loaded back into │     │ for data     │   │ allocation agent │
└──────────────────┘   │ Excel spreadsheet│     │ transfer     │   └──────────────────┘
                       │ for further      │     └──────────────┘
                       │ graphical        │
                       │ validation       │
                       └──────────────────┘
```

```
┌──────────────────┐   ┌──────────────┐   ┌──────────────┐   ┌──────────────────┐
│ Flow2E – GJ      │◀─▶│ Altitude,    │◀─▶│ Registry     │   │ Allocation agent │
│ calculation      │   │ meter        │   └──────────────┘   └──────────────────┘
└──────────────────┘   │ pressure     │
         ▲             └──────────────┘
         │
┌──────────────────┐
│ TOU data         │
│ collection and   │
│ validation       │
└──────────────────┘
```

## 2.     General Compliance

I checked whether there were any breach allegations or outstanding items from OnGas's previous audit that were relevant to this audit.  I have determined that there are no items from either of these sources that have relevance.

## 3.     Audit Approach

The purpose of this audit is to determine whether OnGas will maintain their current level of compliance with the rules following the implementation of Gentrack.

The table below lists the items and documents evaluated during the audit.  Reliance is placed on OnGas's testing activities for some functions.

Many areas cannot be checked for compliance until after go-live, particularly those reliant on people and processes, such as timeliness of submission files.  I have concentrated on content of files and the accuracy of calculations.

| Item | Notes |
|------|-------|
| Implementation plan | • Review to understand the scope and ensure appropriate governance and controls are in place. |
| System configuration | • Document the system configuration to show the relationship between systems and to confirm which parts are within the audit scope. |
| Test plan | • Ensure all items critical to compliance are included in the test plan.<br>• Confirm the critical points to be tested prior to go-live<br>• Confirm the extent of "parallel running" of the test system against existing systems to enable calculations and file accuracy to be "proven" |
| Data migration plan | • Check the data migration plan and migration plan reporting to ensure discrepancies are identified and those critical to compliance are resolved |
| Meter reading/consumption history | • Confirm that an appropriate length of meter reading/consumption history will be migrated.<br>• Confirm that the last actual reading will be migrated if a reading has not been obtained during the period of history. |
| "Go live" decision | • Ensure all areas critical to compliance have passed testing prior to "go live". |

The Implementation Plan (PROD Deployment Plan) was finalised in October 2015 and a copy was provided to me.  I confirm that the plan includes appropriate details regarding governance and controls.

The system configuration is shown in Section 1.  The other items are discussed in subsequent sections.

## 2. Test Plan

OnGas provided a copy of the User Acceptance Test Plan. I evaluated this plan to ensure all items critical to compliance were included. The table below lists the critical areas and confirms whether they are within the scope of the audit and whether they are included in the test plan.

| Function | Within Audit Scope | Included in Test Plan? | Comments |
|---|---|---|---|
| ICP setup - altitude | ✘ | N/A | Altitude data is populated and maintained in Flow2E, not in Gentrack. This process will remain the same. |
| ICP setup – new connections | ✔ | ✔ | ICP set-up and status changes are included in the test plan |
| Metering setup – meter pressure | ✘ | N/A | Meter pressure is populated and maintained in Flow2E, not in Gentrack. This process will remain the same. |
| Billing factors – temperature | ✘ | N/A | Temperature data is populated and maintained in Flow2E, not in Gentrack. This process will remain the same. |
| Billing factors – Calorific Values | ✘ | N/A | OnGas will continue to source data from OATIS and will not change this process. CV data is contained in Flow2E, not in Gentrack |
| Meter reading and validation | ✔ | ✔ | Most validation functions remain unchanged. The production of the GAS080 file is within scope. |
| Energy consumption calculation | ✘ | N/A | This will still be conducted in Flow2E, not in Gentrack |
| Estimation and correction | ✔ | ✔ | The estimation and correction function is largely conducted in the Excel spreadsheet and in Flow2E. Reverse and rebill processes are within the scope, but are largely process related. This audit confirms Gentrack has the capability to reverse and re-bill using corrected figures from Flow2E |
| Provision of consumption information | ✔ | ✔ | The content and format of GAS040 and GAS050 files is confirmed as correct. The GAS050 file was checked during testing to ensure all ICPs were included. Historic estimate calculations were checked and confirmed during testing and during my audit to ensure they are accurate. A comparison was conducted between the GAS040 output of the test system and the current spreadsheet based system. The |

| | | | | |
|---|---|---|---|---|
| | | | only differences relate to differing forward estimate methodologies.<br><br>Testing confirmed that if Gentrack has the incorrect status (for example INACT or ACTV) the record is still included in the GAS040 file. |
| Energy quantities billed | ✓ | ✓ | The accuracy of the GAS070 file was confirmed in the test system at ICP level by comparing some records against invoices in Gentrack. |

## 3.    Data Migration

Billing has been conducted in Gentrack since October 2015. OnGas read all meters in the last week of September 2015 and conducted a "straight line" estimate (in the spreadsheet based system) out to the end of the month based on historic consumption. Therefore all ICPs started on October 1$^{st}$ 2015 in Gentrack based on a permanent estimate. Whilst this process is not strictly compliant with the rules it eliminates the pitfalls associated with running two systems until the end of the revision cycle. The estimated portion for the last week of September will not be revised, which is the part of the process that does not comply. During the audit a calculation was conducted, which showed the submission for September 2015 for nonTOU consumption was over reported by 0.8%. This means the October consumption will be low by the same quantity. The issue is the apportionment of consumption between September and October, not the quantity of consumption. As mentioned above, the creation of permanent estimates does not strictly comply with the rules. Specifically rule 36.1 which states: *"A retailer may only use a forward estimate to calculate the consumption information for a consumer installation in allocation groups 3 to 6 where it is not possible to calculate that consumption information using a historical estimate"*. I have not alleged a rule breach because these estimates were created in systems which are excluded from the scope of this audit. The scope of this audit is limited to the implementation of Gentrack.

## 4.    Backup Plans

OnGas will retain the capability to create submission files out of their existing systems. If there are any issues with the Gentrack system during or post "go-live" the relevant files will still be created and provided to the allocation agent.

## 5.    Proceed Decision

The deployment plan contains a section called "Decision Points" which has a number of outcomes to be met prior to the decision to proceed, including the completion of data migration and the completion of user acceptance testing.

# 6. Evaluation of Compliance

## 6.1 Set-up and Maintenance of Information in Systems (Rule 28.2)

Gentrack has a registry interface to ensure the registry is updated with changes in Gentrack and that Gentrack is updated with registry changes. Some registry information is provided as a notification and is not automatically updated. Validation between Gentrack and the registry occurs and any exceptions appear in a "queue" to be resolved.

The data contained in Gentrack that is relevant to this audit is start and end dates for ICP statuses, which is part of the automated update process. When metering and distributor related fields change, these are updated in Ongas's systems manually based on the registry notification files. Compliance of manual processes can only be confirmed during the next performance audit; however the validation processes should identify any discrepancies.

Meter pressure, altitude, temperature and calorific value information is contained in Flow2E, not in Gentrack, therefore the processes for the management of this data is outside the scope of this audit.

## 6.2 Meter Reading and Validation

### 6.2.1 Meter Read History

As mentioned in Section 3, permanent estimates were created for all ICPs as at the end of September 2015. This eliminates the need to create consumption information from two different systems at the time of go live. Meter reading history is contained in the spreadsheet based systems and will continue to be available for future calculations if any corrections are required.

### 6.2.2 Archiving of Register Reading Data (Rule 28.4.2)

Retailers are required to keep register reading data for a period of 30 months. Data was examined during the audit and it is confirmed that OnGas securely archives data for a period in excess of 30 months. This data is stored in the spreadsheet based systems.

### 6.2.3 Retailer to Ensure Certain Metering Interrogation Requirements are Met (Rule 29)

This rule requires that for consumer installations where the actual or expected consumption is greater than 10TJ, a TOU meter will be installed and the installation will be assigned to allocation group 1 or 2. For consumer installations where the actual or expected consumption is between 250GJ and 10TJ a non-TOU meter will be installed and the installation will be assigned to allocation group 4.

OnGas conducts analysis of consumption on a monthly basis to ensure ICPs are in the correct allocation groups. This reporting was out of Kinetiq and will be generated by Gentrack. The checks will continue to be conducted manually. Allocation groups are currently correct.

### 6.2.4 Meter Reading Requirements (Rules 29.4.3, 29.5 & 40.2)

The GAS080 file was tested, which confirmed the content and format is correct.

### 6.2.5 Non TOU Validation and Correction

The estimation and correction function is largely conducted in the Excel spreadsheet and in Flow2E. Reverse and rebill processes are within the scope, but are largely process related. This audit confirms Gentrack has the capability to reverse and re-bill using corrected figures from Flow2E.

The validation process is described below and is the same as reported in OnGas's last performance audit:

- The readings are imported into a spreadsheet through a "vlookup" function. A volume calculation then occurs and this volume is manually compared to the volume from the previous month. If the volume appears to be different by a margin that is considered too large, then the volume is compared to the same month of the previous year, if this data is available. If the volume is still questionable, the matter is referred to the account manager to determine if the customer's operation was different for the month.

- The meter reading data is then loaded into Flow2E where the volume to energy calculation occurs. The energy figures are then loaded into Gentrack, where billing occurs.

- Gentrack billing validation includes a check that the invoice total is within ± 10% of the average of the previous three invoices.

- Meter readings are not over written during this process, the original reading is retained even if it is not used. In most instances when a reading fails validation and an incorrect meter reading is suspected then a check reading will be performed.

The process for error correction was examined to ensure that consumption information for prior consumption periods is included in the revision process and provided to the allocation agent. If a meter reading is revised or replaced in the spreadsheet, there is an audit trail and the revised consumption is changed in Gentrack using the reverse and rebill process, which automatically flows through to the next revision file for the particular month.

Correction processes have a number of manual steps so full compliance can only be checked when some examples are available during the next performance audit.

### 6.2.6 TOU Validation and Correction

TOU data is provided by OnGas's TOU data collection agents as emailed text file attachments. These files are saved into a "received files" directory in Wellington and are also provided to the Flow2E system for the energy calculation. Some data is collected via telemetry using "Masterlink" software and some is downloaded manually.

The following checks are conducted in Flow2E:

- Missing data is checked by confirming the total number of hours in each file

- Temperature and pressure are checked to ensure they are within pre-defined limits.

- Volume is compared to pressure.

- Uncorrected values are corrected for pressure and temperature factors and the results compared to the corrected values.

- Invalid dates and times

Register reads are collected each month and a volume comparison will be conducted in Gentrack against the data in the TOU files.

The data is then viewed graphically to check it against previous months. Gentrack billing validation includes a check that the invoice total is within ± 10% of the average of the previous three invoices.

The energy and dollar figures are checked against previous months. This check is repeated by the account manager for each ICP to ensure the energy and dollar amounts match those expected based on previous periods.

Most of the TOU validation, estimation and correction activities are conducted in other systems, not in Gentrack.

## 6.3    Energy Consumption Calculation (Rule 28.2)

The energy consumption calculation will still be conducted in Flow2E, not in Gentrack, therefore this area is not within the scope of the audit.

## 6.4    Provision of Retailer Consumption Information (Rules 30 to 33)

The content and format of GAS040 and GAS050 files was confirmed as correct through user acceptance testing. The files were checked to ensure all ICPs were included. The GAS050 file was not including all ICPs during the testing phase but this matter is now resolved.

A comparison was conducted between the GAS040 output of the test system and the current spreadsheet based system. The only differences related to differing forward estimate methodologies.

Testing confirmed that if Gentrack has the incorrect status (for example INACT or ACTV) the record is still included in the GAS040 file.

Production Release Testing identified three further issues, which are briefly described below:

1. The GAS050 file includes six "non-allocated" ICPs which are not required to be in the file

2. The GAS040 file includes consumption for one CNG meter (downstream of the main meter) and one ICP where the customer has finalised.

3. The GAS040 excludes one ICP that should be included.

OnGas has a manual workaround for these three points, where the files can be adjusted manually. The process includes an audit trail where both versions of the file are kept. There is also a peer review process where the files are checked by another person before they are sent. The manual

workaround is only expected to be in place for a short period while Gentrack changes are made to ensure the files are correct and automated.

### 6.4.1 Forward Estimates (Rules 34 & 36)

The rules do not prescribe how forward estimates are to be calculated. Forward estimates were previously calculated as a "flat" projection of the actual consumption (historic estimate) for the month. Gentrack has a different methodology, which is based on consumption from the same period in the previous year, or consumption from the last read period. The most suitable figure will be used from these two scenarios based on certain selection criteria built into Gentrack. If consumption information is not available for the previous year, the most recent read period is used and if no consumption history is available, the daily average for the register is used.

### 6.4.2 Historic Estimates (Rules 34 & 35)

Historic estimate calculations were checked and confirmed during testing and during my audit to ensure they are accurate.

## 6.5 Provision of Quantities Billed Files (Rule 52)

The accuracy of the GAS070 file was confirmed in the test system at ICP level by comparing some records against invoices in Gentrack.

# 7.    Conclusions

This audit confirms that the design of the Gentrack system is compliant with the rules.  There are some process related matters that can only be tested post go live, during the next performance audit. There were three issues identified during production release testing.  Manual workarounds have been established until a permanent solution is developed within Gentrack.  I have recommended a peer review of the workarounds each time GAS040 and GAS050 files are created to ensure the data is correct.

OnGas has conducted appropriate user acceptance testing, including comparisons between the Gentrack test system outputs and the current systems to ensure the content of submission files is the same or similar.

The decision points in relation to go live appear to have appropriate foundation and the backup arrangements are secure, which will be the use of current systems if there are any issues.

# 8. Draft Audit Report Circulation and Comments

Subject to rule 72, the auditor must give a copy of the draft audit report to:

- The person or persons that are the subject of the audit;

- The allocation agent, if the allocation agent is not the subject of the audit;

- Any other allocation participant which the auditor considers has an interest in the report; and

- The industry body.

Rule 72 states:
*"In providing a draft audit report or final audit report, the auditor must provide a complete version to the industry body.*
*However, at the discretion of the auditor, the versions of the draft audit report and the final audit report provided to any other person or published under these rules may exclude any confidential information obtained in the conduct of the audit."*

The draft audit report was provided to OnGas, the allocation agent and GIC. I considered whether any other allocation participants had an interest in the report and concluded that they did not, for the following reasons:

- The report concludes that the functionality of the system will support compliance

- The main area which can impact on other participants during a system change of this nature is switching and switching is excluded from the scope of the audit.

In accordance with rule 70.3 of the Gas (Downstream Reconciliation) Rules 2008, the parties listed above were given an opportunity to comment on the draft audit report and indicate whether they would like their comments attached as an appendix to the final audit report. I received responses from GIC and OnGas, indicating they did not have any comments to make.