

VERITEK

Gas Downstream Reconciliation Performance Audit Final Report

For

Mercury NZ Limited



Prepared by Tara Gannon – Veritek Ltd

Date of Audit: 11/05/17 - 12/05/17

Date Audit Report Complete: 30/08/17

Executive Summary

This Performance Audit was conducted at the request of the Gas Industry Company (GIC) in accordance with Rule 65 of the Gas (Downstream Reconciliation) Rules 2008 effective from 14 September 2015

The purpose of this audit is to assess the systems, processes and performance of Mercury NZ Limited (Mercury) in terms of compliance with these rules.

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: the commissioning and carrying out of performance audits and event audits, V3.0" which was published by GIC in June 2013.

The summary of report findings in the table below shows that Mercury's control environment is "effective" for 12 of the areas evaluated and "adequate" for five.

11 of the 17 areas evaluated were found to be compliant. Five breach allegations are made in relation to the remaining areas. They are summarised as follows:

- The registry was populated late for seven new connections resulting in submission information not being provided for the initial allocation and for one ICP submission information was not provided for the interim allocation.
- 1184 ICPs are likely to have had incorrect CV values applied, which were outside the threshold allowed by NZS 5259:2015.
- Best endeavours were not used to get meter readings at least once in a 12 month period.
- 15 ICPs did not have pressure corrections applied from the correct date, which resulted in some pressure factors outside the threshold allowed by NZS 5259:2015.
- Historic estimate is not calculated correctly for the switch in month, where an ICP has switched back to Mercury after being supplied by another retailer.

Summary of Report Findings

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
Transmission methodology and audit trails	1.5	Effective	Compliant	Reports were appropriately retained and had not been modified after submission. Audit trails were available.
ICP set up information	2.1	Effective	Not compliant	<p>The registry was populated late for seven new connections resulting in submission information not being provided for the initial allocation and for one ICP submission information was not provided for the interim allocation.</p> <p>Altitude data is managed in a compliant manner.</p>
Metering set up information	2.2	Effective	Compliant	<p>Mercury has robust validation processes for the identification of meter pressure discrepancies and changes.</p> <p>There is an issue with the revision process following correction of meter pressure, which is covered in Section 3.5.</p>

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
Billing factors	2.3	Adequate	Not compliant	<p>Temperature and calorific value is applied at billing class (regional) level, instead of by gas gate.</p> <p>Some ICPs have not been assigned the correct billing class for their region, resulting in incorrect temperature and CV values being applied.</p> <p>Some billing classes have not been assigned the correct gas type for the gas gates within the region, resulting in incorrect CV values being applied.</p> <p>This did not result in material errors for gas temperature, but did result in CV values applied being outside the maximum permissible error allowable under NZS 5259:2015 in some cases.</p>
Archiving of reading data	3.1	Effective	Compliant	Robust controls are in place for the archiving and security of meter reading data.
Meter interrogation requirements	3.2	Adequate	Compliant	Consumption reporting is monitored quarterly but I recommend this is changed to monthly to ensure the registry and meter reading cycles are updated as soon as practicable.
Meter reading targets	3.3	Adequate	Not compliant	Mercury's processes do not include the use of best endeavours to obtain meter readings at least once every 12 months.
Non TOU validation	3.4	Effective	Compliant	A robust validation process is in place before and after invoicing.

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
Non TOU error correction	3.5	Adequate	Not compliant	The error correction processes are robust, but not consistently applied for all meter pressure changes. Processes are not in place to identify stopped meters.
TOU validation	3.6			Not applicable to the scope of this audit.
Energy consumption calculation	4	Effective	Compliant	The conversion process was proved from end to end using a spreadsheet based calculation tool.
TOU estimation and correction	5.1			Not applicable to the scope of this audit.
Provision of retailer consumption information	5.2	Adequate	Compliant	The process for preparing consumption information files is compliant; however, some gas conversion and pressure correction issues exist. This has resulted in incorrect consumption information being submitted to the allocation agent.
Initial submission accuracy	5.3	Effective	Not compliant	Although compliance has not been achieved, the process is robust. Forward estimates are profiled to improve the accuracy of initial submissions.
Forward estimates	5.4	Effective	Compliant	Mercury's forward estimate process includes a "factoring" process, which involves the use of historic profile shapes.

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
Historic estimates	5.5	Effective	Not compliant	Compliance is confirmed for all scenarios tested, except where an ICP switches back to Mercury after switching out to another retailer.
Proportion of HE	5.6	Effective	Compliant	Reporting has been provided as required.
Billed vs consumption comparison	5.7	Effective	Compliant	On a long-term basis, Mercury's billed information is slightly lower than consumption information. Although these figures cannot be directly compared, they provide a useful indicator to ensure that under reporting of consumption information is not occurring.
Gas Trading Notifications	5.8	Effective	Compliant	Processes are in place to ensure that trading notifications are issued where required.

Persons Involved in This Audit

Auditor:

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Veritek Limited

Steve Woods
Veritek Limited

Mercury personnel assisting in this audit were.

Name	Title
Anurag Sharda	Energy Analyst
Barbara O'Connor	Connection Centre Manager
Chris Posa	Compliance and Process Improvement Coordinator
Deirdre Costello	Customer Data Analyst
Fiona Freeman	Billing & Payments Manager
Jiahua Chen	Energy Analyst
Matthew Opuariki	Billing & Payments Representative
Mokram Al-Zibaree	Validations Analyst – Team Leader
Rachel Fogl	Compliance and Process Improvement Coordinator
William Turner	Energy Analyst

Service providers assisting with processes within the audit scope:

Company	Processes
Wells Instrument and Electrical	Meter reading

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1. Pre-Audit and Operational Infrastructure Information

1.1 Scope of Audit

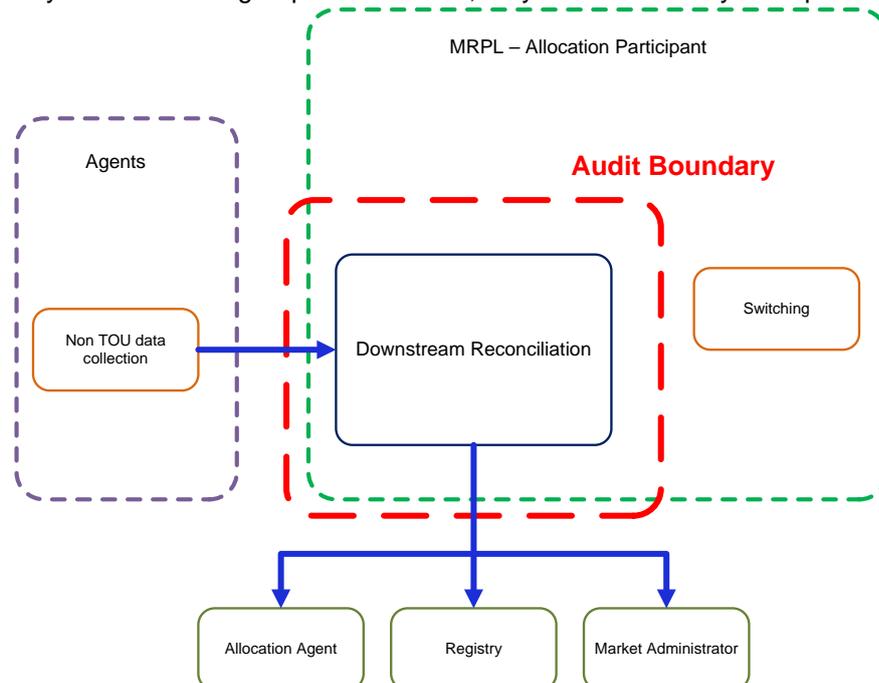
This Performance Audit was conducted at the request of the Gas Industry Company (GIC) in accordance with Rule 65 of the Gas (Downstream Reconciliation) Rules 2008 effective from 14 September 2015. Rule 65 is inserted below:

- 65. Industry body to commission performance audits
 - 65.1 The industry body must arrange at regular intervals performance audits of the allocation agent and allocation participants.
 - 65.2 The purpose of a performance audit under this rule is to assess in relation to the allocation agent or an allocation participant, as the case may be, -
 - 65.2.1 The performance of the allocation agent or that allocation participant in terms of compliance with these rules; and
 - 65.2.2 The systems and processes of the allocation agent or that allocation participant that have been put in place to enable compliance with these rules.

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.

The audit was carried out on 11-12 May 2017 at Mercury’s offices in Auckland.

The scope of the audit includes “downstream reconciliation” only, as shown in the diagram below. Switching, metering ownership and data collection functions are not within the audit scope. Mercury only has allocation group 4 and 6 ICPs; they do not have any TOU processes or systems.



1.2 Audit Approach

As mentioned in Section 1.1, the purpose of this audit is to assess the performance of Mercury in terms of compliance with the rules, and the systems and processes that have been put in place to enable compliance with the rules.

This audit has examined the effectiveness of the controls Mercury has in place to achieve compliance, and where it has been considered appropriate sampling has been undertaken to determine compliance.

Where sampling has occurred, this has been conducted using the Auditing Standard 506 (AS-506) which was published by the Institute of Chartered Accountants of New Zealand. I have used my professional judgement to determine the audit method and to select sample sizes, with an objective of ensuring that the results are statistically significant.¹

Where calculations are performed by Mercury's systems, the algorithm has been checked by using one or two examples as a "sample". Multiple examples are not required because they will not introduce any different variables.

Where compliance is reliant on manual processes, manual data entry for example, the sample size has been increased to a magnitude that, in my judgement, ensures the result has statistical significance.

Where errors have been found or processes found not to be compliant the materiality of the error or non conformance has been evaluated.

¹ In statistics, a result is considered statistically significant if it is unlikely to have occurred by chance. (Wikipedia)

1.3 General Compliance

1.3.1 Summary of Previous Audit

Mercury provided a copy of their previous audit conducted in 2014 by Veritek Ltd. Eleven of the fifteen areas evaluated were found to be compliant. Four breach allegations are made in relation to the remaining areas. The resolution of these matters is summarised in the table below.

Breach Allegation	Rule	Section in this report	Resolution
Switching Breaches		Not within audit scope	There has been a significant decrease in the number of switching breaches from 513 last audit period, to 26 this audit period.
Initial vs final allocation variances	37.2	5.3	Non conformance still exists
Late submission	31	5.2	No late submissions were identified.
Incorrect pressure factors used	26.2.1, 26.3 & 28.2	2.2	Some incorrect pressure factors have been applied. This is discussed further in sections 2.2 Metering Set-up Information and 4. Energy Consumption Calculation.

1.3.2 Breach Allegations

Mercury has 512 alleged breaches recorded by the Market Administrator between May 2014 and April 2017. These are summarised as follows:

Nature of Breach	Rule	Quantity	Section in this Report
Switching Breaches		26	Not within audit scope
Initial vs final allocation variances	37.2	483	5.3
Incorrect conversion factors used	26.2.1 & 28.2	2	2.2 and 4

Nature of Breach	Rule	Quantity	Section in this Report
Incorrect allocation groups	29.2 & 29.3	1	3.2

As noted in the Summary of Report Findings, this audit has found six areas of non conformance. The following breach allegations are made in relation to these matters.

Breach Allegation	Rules	Section in this report
The registry was populated late for seven new connections resulting in submission information not being provided for the initial allocation and for one ICP submission information was not provided for the interim allocation.	28.3	2.1.1
1184 ICPs are likely to have had incorrect CV values applied, which were outside the threshold allowed by NZS 5259:2015.	26.2.1, 26.3 and 28.2	2.3.2
Best endeavours were not used to get meter readings at least once in a 12 month period.	26.4.3	3.3
15 ICPs did not have pressure corrections applied from the correct date, which resulted in some pressure factors outside the threshold allowed by NZS 5259:2015.	26.2.1, 26.3 and 28.2	3.5
Historic estimate is not calculated correctly for the switch in month, where an ICP has switched back to Mercury after being supplied by another retailer.	26.2.1 and 26.3	5.5

1.4 Provision of Information to the Auditor (Rule 69)

In conducting this audit, the auditor may request any information from Mercury, the allocation agent and any allocation participant.

Information was provided by Mercury in a timely manner in accordance with this rule.

Information was requested from metering equipment owners and was provided within the requested timeframe or a subsequent agreed timeframe by all parties. I consider that all parties have complied with the requirements of this rule.

1.5 Transmission Methodology and Audit Trails (Rule 28.4.1)

The audit trail was evaluated for all data gathering, validation and processing functions. This rule requires that "The consumption information supplied to the allocation agent in accordance with rules 29 to 40 is transferred in such a manner that it cannot be altered without leaving a detailed audit trail".

A sample of GAS040 (initial, interim, and final), GAS070, and GAS080 reports submitted on the Allocation Portal were checked against the original reports on Mercury's network. This check confirmed whether the original files were still available, and if they had been edited after the submission date and time. Compliance is confirmed.

1.6 Draft Audit Report Comments

A draft audit report was provided to the industry body (GIC), the allocation agent, and allocation participants that I considered had an interest in the report. In accordance with rule 70.3 of the 2015 Amendment Version of the Gas (Downstream Reconciliation) Rules 2008, those parties 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. The following responses were received.

Party	Response	Comments provided	Attached as appendix
Mercury Energy	Yes	Yes	Included in the audited party comments box for each non conformance and recommendation, with additional comments recorded in Appendix 2.
Contact Energy	Yes	Yes	Yes

The comments received were considered in accordance with rule 71.1, prior to preparing the final audit report. The following table records the changes that were made to the report after considering comments. In the appendix, we have recorded the reasons for not making changes after consideration of some comments.

Report Section	Change to Report
1.5	Removal of comments relating to a replaced GAS040 report being unavailable on the network. As this report was uploaded to the reconciliation portal in error, and replaced before the submission deadline, it was not necessary to retain it.
5.3	The report has been updated to confirm that the non conformance relates to some gas gates for the period February 2014 to January 2016, not January 2015.

2. Set-up and Maintenance of Information in Systems (Rule 28.2)

Every retailer must ensure the conversion of measured volume to volume at standard conditions and the conversion of volume at standard conditions to energy complies with NZS 5259:2015, for metering equipment installed at each consumer installation, for which the retailer is the responsible retailer.

Compliance with this rule has been examined in relation to the set-up of ICP, metering and billing information. I have also considered the Gas (Downstream Reconciliation) Rules 2008 Billing factors guideline note v1.0 (Billing Factors Guideline) published by GIC on 30/11/2015 when examining the set up and maintenance of information.

2.1 ICP Set Up Information

2.1.1 New Connections Process

The process was examined for the connection and activation of new ICPs.

New connections are managed via the networks' portals. Progress notifications are automatically generated and the relevant details are loaded into SAP.

One of the main issues with the new connections process is that the physical connection is made at the property when the ICP is still at the "Ready" status. At this point the consumer hasn't always registered with a retailer, even though gas is being consumed. Because networks will create ICPs based on a request from the customer, the retailer is not always included in the communication process.

When an ICP is established in SAP for a proposed new connection a "proposed connection date" field is populated. Monitoring is in place to identify those ICPs where this date has passed without the receipt of a liveness notification. There is also monitoring of situations where a liveness notification has been provided but a meter docket has not been received. Customer identification and registration is managed by outbound calling to "register" the customer at the time the ICP is first established for the proposed new connection. This process includes appropriate steps to minimise the late notification to the registry and to ensure consumption information is provided to the allocation agent at the earliest opportunity.

Customers moving into properties with a status of ACTV are often only identified once the meter reading process has identified consumption.

Because of the potential delays with the registry update, for some ICPs where the status has changed to ACTC, consumption information has not been provided to the allocation agent for the initial allocation. I checked ten of 19 ICPs where the update to the registry was later than 20 business days, and found that submission of consumption information to the allocation agent occurred at the beginning of the following month for three of ten. For the remaining seven ICPs, submission information was not provided for the initial allocation and for one ICP, submission information was not provided for the interim allocation. Field notification was late for all ten ICPs checked.

The "Maintenance Breach History Report (RET breaches)" report was examined for the period July 2015 to March 2017. This report contained 680 ICPs where the initial registry update was later than two business days.

I also examined the event detail report for the period March 2016 to February 2017. The table below summarises the registry population timeframes for new connection status changes.

New Connections					
Status	Total ICPs	Update greater than 2 days	Update greater than 30 days	Average update days	Percentage compliant
ACTC	533	479	12	8.2	10%
ACTV	0	0	0	0	N/A

Non Conformance	Description	Audited party comment
<p>Regarding: Rule 28.3</p> <p>Control Rating: Effective</p>	The registry was populated late for seven new connections resulting in submission information not being provided for the initial allocation and for one ICP submission information was not provided for the interim allocation.	<p>Response: Investigating.</p> <p>Comments: We are in the process of investigating why the registry was populated late for seven new connections with the intention of improving our process so that we can avoid non conformances going forward.</p>

2.1.2 Altitude Information

It is a distributor's responsibility to populate the registry with correct altitude information to support compliance with NZS 5259:2015, and it is a retailer responsibility to comply with NZS 5259:2015 for the conversion of volume to energy.

NZS 5259:2015, which was published in November 2015, contains the following requirements regarding the way that altitude information should be managed.

1. The maximum permissible error is $\pm 1.0\%$ where the meter pressure is less than or equal to 100kPa, and $\pm 0.5\%$ where the meter pressure is greater than 100kPa.
2. The following note is also included "Altitude should be determined within 10m where practicable."

Mercury provided a registry list file and a sample of ICPs per distributor was checked against "google earth" data. The sample was selected by firstly looking for obvious outliers and then increasing the sample size through random selection. The "google earth" data is based on the "Shuttle Radar Topography Mission" (SRTM) results and a number of recent studies indicate an accuracy of $\pm 10\text{m}$ for altitude. An evaluation against this data is considered an appropriate test for "reasonableness".

Altitude figures within approximately 90m of the actual altitude will ensure an accuracy of $\pm 1.0\%$. As shown in the table below, all altitude data checked was accurate within 90m.

Point 2 above recommends altitude figures are determined to within 10m where practicable. An evaluation of altitude data on the registry was conducted to check whether this recommendation had been met. As noted above, the margin of error of the "google earth" data appears to be

approximately $\pm 10\text{m}$, therefore, to allow for this margin, I have checked that the registry data is within 20m of “google earth” data.

As shown in the table below the altitude data on the registry appears to be very accurate.

Distributor	Total ICPs	ICPs checked	Quantity within 20m	Quantity within 90m
UNLG	31,134	20	20	20
NGCD	4,256	20	20	20
POCO	9,127	20	20	20
GNET	1,226	20	20	20
Total	45,743	80	80	80

A further evaluation was conducted of ICPs where the altitude figure was zero on the registry. This data appears to be slightly less accurate than when a figure other than zero is populated. The results are shown in the table below. UNLG and GNET do not have any ICPs with zero populated. NGCD has three and a check of all three found all were within 20m. POCO has 11 ICPs with zero populated. Six were within 20m and all 11 were within 90m.

Distributor	Total ICPs	ICPs with altitude of zero	ICPs checked	Quantity within 20m	Quantity within 90m
UNLG	31,134	0	N/A	N/A	N/A
NGCD	4,256	3	3	3	3
POCO	9,127	11	11	6	11
GNET	1,226	0	N/A	N/A	N/A
Total	45,743	14	14	9	14

There were no altitude differences where the conversion factors are outside the allowable tolerances. Compliance is confirmed.

2.2 Metering Set-up Information

Mercury compares their metering fields against registry metering fields on a daily basis. If a discrepancy is identified, Mercury requires a metering docket or some other form of evidence to confirm the meter pressure before they make a change.

Revisions of consumption information only occur if incorrect invoices are reversed and re-billed with the correct meter pressure. Mercury advised that this occurs if there is a change of more than approx. 2 kPa; however, differences of more than approx. 1 kPa will result in errors outside the allowable threshold detailed in NZS 5259:2015. I checked the records of 40 recently identified and corrected discrepancies and found 15 examples where the difference was more than 1 kPa but less than 2 kPa, indicating that revisions were not conducted for these ICPs.

The use of incorrect meter pressure information has led to the submission of incorrect consumption information to the allocation agent. This is alleged as a breach of rules 26.2.1, 26.3 and 28.2 and is raised as non conformance in section **3.5 Non TOU Error Correction**.

2.3 Billing Factors

2.3.1 Temperature Information

For ICPs where the actual temperature is not measured NZS 5259:2015 states that temperature may be estimated and four methodologies are provided. These are listed below in order of decreasing preference.

- (a) Gas temperature records for the GMS location under flowing conditions. Historic records can be used if similarity is preserved.
- (b) Records of actual gas temperature in similar installations at similar locations over corresponding periods.
- (c) For compact installations directly connected to short risers and well shaded from direct sunlight, the average ground temperature at 300mm depth. NOTE – Reliable and relevant climatic temperature data may be used as a basis for estimating average 300mm ground temperatures. This may include published data.
- (d) For installations where the inlet pipes are exposed to ambient air conditions the temperature may be estimated from the mean temperature obtained at reliable and relevant weather recording stations. The installation should be shielded from direct sunlight.

Mercury has chosen option (c) and uses a read to read daily average temperature in their calculations.

Temperature is set at billing class level. Each billing class is assigned to one region. The daily temperature data was sourced from NIWA in 2012 and contains 5 year daily average ground temperatures at a 300mm depth. To determine the nearest NIWA weather station, Mercury considered where the densest concentration of ICPs in a region were located. Mercury intends to renew the temperature information in 2017.

During the audit, I identified some ICPs which had been assigned to an incorrect billing class, based on their gas gate. My findings are summarised in the table below. In some cases, the billing class error had no impact on the temperature applied. Cases where the error resulted in a different temperature being applied are shaded pink below.

Correct Billing Class	Billing Class Applied									Grand Total
	GR01 (Resi Auckland Gas Area)	GR04 (Resi Rotorua Gas Area)	GR05 (Resi Taupo Gas Area)	GR09 (Resi Hamilton Gas Area)	GR12 (Resi Counties Gas Area)	GR13 (Resi Taranaki Gas Area)	GR15 (Resi Palmerston North Gas Area)	GR19 (Resi Waipa Gas Area)		
Avg Annual Temp	16.603	15.967	14.961	16.008	16.603	14.961	13.971	16.008		
GR15 (Resi Palmerston North Gas Area)	13.971		1	1		73				75
GR06 (Resi Wellington Gas area)	14.573	2		1		1	1			5
GR35 (Resi Electra Gas area)	14.573	1					15	1		17
GR13 (Resi Taranaki Gas Area)	14.961	1					1			2
GR03 (Resi Tauranga Gas Area)	15.967	3							1	4
GR04 (Resi Rotorua Gas Area)	15.967	1							1	2
GR09 (Resi Hamilton Gas Area)	16.008	4	2						1	7
GR19 (Resi Waipa Gas Area)	16.008	2			7					9
GR11 (Resi ThamesValley Gas Area)	16.355	2					1			3
GR01 (Resi Auckland Gas Area)	16.603				159					159
GR12 (Resi Counties Gas Area)	16.603	10								10
GR10 (Resi Whangarei Gas Area)	17.672	2								2
GR50 (Resi Wanganui Gas Area)	14.05*						1078	1		1079
Total with incorrect billing class		28	2	1	9	159	1153	18	4	1374
Total with incorrect billing class & temp		18	2	1	2	0	1153	18	3	1197

* Based on 20cm ground temperature data for Hawera as no 20cm or 30cm data is available for Wanganui

For the ICPs with an incorrect billing class, I compared the temperature factor that was applied, to the temperature factor that would have been applied had the billing class been correct. I found that none of the differences were outside the maximum permissible errors specified in NZS 5259:2015, as shown in the table below.

Bill Class	Count of ICPs with incorrect Bill Class	Temp Applied	Correct Temp	Applied Factor	Correct Factor	% Difference
GR01	3	16.603	14.573	0.994468	1.001484	0.70%
GR01	1	16.603	14.961	0.994468	1.000134	0.57%
GR01	4	16.603	15.967	0.994468	0.996655	0.22%
GR01	6	16.603	16.008	0.994468	0.996514	0.21%
GR01	2	16.603	16.355	0.994468	0.995321	0.09%
GR01	2	16.603	17.672	0.994468	0.990811	-0.37%
GR04	2	15.967	16.008	0.996655	0.996514	-0.01%
GR05	1	14.961	13.971	1.000134	1.003584	0.34%
GR09	1	16.008	13.971	0.996514	1.003584	0.70%
GR09	1	16.008	14.573	0.996514	1.001485	0.50%
GR13	73	14.961	13.971	1.000134	1.003584	0.34%
GR13	1	14.961	14.573	1.000134	1.001485	0.13%
GR13	1	14.961	16.355	1.000134	0.995321	-0.48%
GR13	1078	14.961	14.050	1.000134	1.003308	0.32%
GR15	16	13.971	14.573	1.003584	1.001485	-0.21%
GR15	1	13.971	14.961	1.003584	1.000134	-0.34%
GR15	1	13.971	14.050	1.003584	1.003308	-0.03%
GR19	1	16.008	14.573	0.996514	1.001485	0.50%
GR19	2	16.008	15.967	0.996514	0.996655	0.01%

Recommendation	Audited party comment
I recommend a review of consistency between billing class and gas gate, which also considers whether more billing classes should be added to ensure that gas conversion values are applied correctly.	<p>Response: We've identified the issue and have improved our process to ensure billing class and gas gate are set up correctly from the outset.</p> <p>Comments: Affected ICPs have been corrected going forward.</p>

Mercury provided a copy of the temperatures applied for each billing class during the audit. A sample of these temperatures for a selection of regions and months were reviewed against historic NIWA information and found to be reasonable.

Mercury does not apply the Joule Thomson effect adjustment because network pressure information on the registry is not considered accurate. NZS 5259:2015 states that correction for temperature drop due to Joule-Thomson effect of pressure reduction is applicable if temperature methodologies (b), (c) or (d) are used, provided the reduction is made in the same installation and immediately upstream of the GMS. "In other cases or for large pressure drops or high flow rates the actual temperature drop should be measured. For natural gas the temperature drop is about 0.5°C per 100kPa of pressure drop." This indicates that adjustment for the Joule-Thomson effect is desirable.

The Billing Factors Guideline contains the following expectations by GIC:

- Network owners ensure nominal operating pressures are correctly populated in the registry for all ICPs on their networks.
- Once network pressures are correctly populated, retailers ensure that they account for the Joule-Thomson effect by using the network pressure in the registry in their conversions of metered volumes to standard volume, particularly in situations where failure to do so will result in conversion errors greater than those allowed in Table 3 of NZS 5259:2015.

This also reinforces that adjustment for the Joule-Thomson effect is desirable. I recommend that Mercury adjusts for the Joule Thomson effect.

Recommendation	Audited party comment
Consider adjusting temperature to include the Joule Thomson effect.	<p>Response: Recommendation acknowledged.</p> <p>Comments: We will review further and consider the recommendation.</p>

2.3.2 Calorific Values

Gas calorific value (CV) data is sourced from the Open Access Transmission Information System (OATIS) and is loaded into SAP each business day. Specific Gravity (S.G.), carbon dioxide (CO₂), and Nitrogen (N₂) data is not loaded in SAP.

CV data for the previous day is normally available in OATIS by late morning each business day.

Responsibilities for loading the CV data are clear, and there is adequate cover if any staff who normally process CV data are unavailable. If the data is not loaded by 2.00pm, an automated email is sent to the whole billing and operations team for follow up. System controls prevent invoices being generated where CV data does not cover the entire billing period. Staff are also aware that reads cannot be invoiced until the following business day.

The daily download and import process was observed. There is no manual manipulation of the raw data file, and the import is checked to ensure that it completed successfully.

Like temperature, CV is set at billing class level. Each billing class is assigned to one region. I found two key issues with this:

- Some billing classes had incorrect gas types assigned
 - The Rotorua and Taupo billing classes were both assigned gas type R, but should have gas type B.
 - The Taranaki billing class was assigned gas type E, but Taranaki gas gates could have gas type E, M, N, O or P.
- Some ICPs had an incorrect billing class assigned, which resulted in an incorrect gas type being applied.

I reviewed the impact that incorrect assignment of CV would have on the gas conversion process, by comparing the CV applied to the CV which should have been applied for ICPs connected to the gas gate. The errors are divided into two sections: where the error is caused by an incorrect gas type assigned to the billing class; and where the error is caused by an incorrect billing class assigned to the ICP. Any difference greater than $\pm 0.5\%$ is considered material. Material differences are shaded pink, and differences very close to the materiality threshold are shaded yellow.

Bill Class and Gate	Count of ICPs	Gas Type Applied	Correct Gas Type	Applied Avg CV*	Correct Avg CV*	% Difference
Incorrect gas type assigned to billing class						
GR04 (Rotorua)	385	R	B	39.78395313	39.8748125	0.23%
GR13 (Taranaki - Eltham)	29	E	N	40.75736719	40.75736719	0.00%
GR13 (Taranaki - Hawera)	296	E	P	40.75736719	40.7573125	0.00%
GR13 (Taranaki - Inglewood)	52	E	N	40.75736719	40.75736719	0.00%
GR13 (Taranaki - Kaponga)	4	E	N	40.75736719	40.75736719	0.00%
GR13 (Taranaki - Manaia)	28	E	P	40.75736719	40.7573125	0.00%

Bill Class and Gate	Count of ICPs	Gas Type Applied	Correct Gas Type	Applied Avg CV*	Correct Avg CV*	% Difference
GR13 (Taranaki - Oakura)	40	E	M	40.75736719	39.40517188	-3.43%
GR13 (Taranaki - Okato)	8	E	M	40.75736719	39.40517188	-3.43%
GR13 (Taranaki - Opunake)	27	E	M	40.75736719	39.40517188	-3.43%
GR13 (Taranaki - Patea)	15	E	O	40.75736719	40.94951563	0.47%
GR13 (Taranaki - Pungarehu No 1)	1	E	M	40.75736719	39.40517188	-3.43%
GR13 (Taranaki - Pungarehu No 2)	2	E	M	40.75736719	39.40517188	-3.43%
GR13 (Taranaki - Stratford)	81	E	N	40.75736719	40.75736719	0.00%
GR13 (Taranaki - Waverley)	3	E	O	40.75736719	40.94951563	0.47%
GR05 (Taupo)	125	R	B	39.78395313	39.8748125	0.23%
Incorrect billing class assigned to ICP						
GR01 and GR12	4	X	B	39.78395313	39.8748125	0.23%
GR01 and GR12	8	X	R	39.78395313	39.78395313	0.00%
GR01 and GR12	3	X	T	39.78395313	40.82611719	2.55%
GR01 and GR12	1	X	E	39.78395313	40.75736719	2.39%
GR04, GR05, GR09 and GR19	4	R	T	39.78395313	40.82611719	2.55%
GR04, GR05, GR09 and GR19	1	R	B	39.78395313	39.8748125	0.23%
GR04, GR05, GR09 and GR19	1	R	T	39.78395313	40.82611719	2.55%
GR13	74	E	T	40.75736719	40.82611719	0.17%
GR13	1078	E	O	40.75736719	40.94951563	0.47%
GR13	1	E	R	40.75736719	39.78395313	-2.45%
GR15	1	T	E	40.82611719	40.75736719	-0.17%
GR15	1	T	O	40.82611719	40.94951563	0.30%
Total	2273					
Total material or likely to be material	1184					

*128 days average between 31/12/16 to 10/5/17

A recommendation is raised under section **2.3.1 Temperature information** to review consistency between billing class and gas gate, and consider whether more billing classes should be added to ensure that gas conversion values are applied correctly.

A non conformance for applying incorrect CV values is raised below. Because CV is applied for each read period, it is not possible to confirm every instance of non conformance. Comparing average CV over a three month period gives a reasonable indication of how likely an ICP is to be affected by a material error.

Non Conformance	Description	Audited party comment
<p>Regarding: 26.2.1, 26.3 and 28.2</p> <p>Control Rating: Adequate</p>	<p>1184 ICPs are likely to have had incorrect CV values applied, which were outside the threshold allowed by NZS 5259:2015.</p>	<p>Response: We've identified the issue and have improved our process to ensure billing class and gas gate are set up correctly from the outset.</p> <p>Comments: Affected ICPs have been corrected going forward.</p>

The accuracy of the SAP information was confirmed by comparing an OATIS file with CV data for all gas types available in SAP for a 128 day period. For billing classes where the correct CV had been assigned for the gas type, the data matched exactly.

3. Meter Reading and Validation

3.1 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 Mercury securely archives data for a period in excess of 30 months.

3.2 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.

Mercury only has allocation group 6 and 4 ICPs. Mercury monitors consumption reporting quarterly to identify ICPs with potentially incorrect allocation groups, and if it is determined the consumption is likely to remain at the reported level the allocation group is changed. The most recent report was run in March 2017 and the registry was updated on 27/04/17. Whilst compliance is confirmed, I recommend Mercury runs this reporting on a monthly basis to ensure the registry and the meter reading cycle is updated as soon as practicable.

Recommendation	Audited party comment
Monitor consumption reporting on a monthly basis to ensure allocation groups are correctly recorded.	<p>Response: Recommendation acknowledged.</p> <p>Comments: We will review further and consider the recommendation.</p>

3.3 Meter Reading Requirements (Rules 29.4.3, 29.5 & 40.2)

All consumer installations with non-TOU meters must have register readings recorded at least once every 12 months unless exceptional circumstances prevent such an interrogation despite the best endeavours of the retailer.

Mercury provided a copy of some GAS080 reports for January and February 2017, along with a list of 50 ICPs not read within the last 12 months. The records in SAP were checked for ten installations and I found that for seven ICPs outbound calls had been made in March or April 2016, and for three ICPs there had not been any attempt to contact the customer or to resolve the meter reading issue.

Whilst there were circumstances preventing meter readings from being obtained, I consider that Mercury has not used “best endeavours” to get meter readings on a 12 monthly basis.

Non Conformance	Description	Audited party comment
<p>Regarding: 26.4.3</p> <p>Control Rating: Adequate</p>	Best endeavours not used to get meter readings at least once in a 12 month period	<p>Response: Processes improved</p> <p>Comments: We have implemented new processes to ensure that best endeavour requirements are being met.</p>

The table below shows the GAS080 results.

Target	Reading Percentage January 2017	Reading Percentage February 2017
Rolling 4 months (target 90%)	97.94%	97.89%
12 months (target 100%)	99.77%	99.75%

The 12 month percentage for January 2017 equates to missed meter readings for 82 ICPs, but the ICP level list only contains 50 ICPs. I recommend Mercury reviews the accuracy of their reporting and amends it if necessary.

Recommendation	Audited party comment
Review the accuracy of the GAS080 report and adjust if necessary	<p>Response: Recommendation acknowledged.</p> <p>Comments: We will review further and consider the recommendation.</p>

Mercury achieved compliance with rule 40.2, which is the requirement to report the number and percentage of validated register readings obtained in accordance with rules 29.4.3 and 29.5.

3.4 Non TOU Validation

Meter reading validation occurs at multiple levels.

At source, the handheld data input devices perform a localised validation, to ensure that the reading is within expected high-low parameters. These parameters are set as a “high/low” limit, based on an agreed setting with Mercury.

Readings that fail this initial validation must be re-entered, and if the second reading is the same, it will be accepted; if it is different (indicating an error with the first reading) then it must be re-entered. Once the same reading has been entered twice consecutively, it will be accepted.

The second level of validation occurs when the data reaches Mercury. A “master data” validation is conducted which ensures that the reading relates to the correct ICP, meter and register. A file “pre check” is also conducted and only files with a date within one month of the current date are accepted. This check also identifies obvious corruption of the data.

A validation is also conducted to ensure readings are within an acceptable range, the validation process contains a graphical tool that enables the current reading to be viewed in relation to historic consumption. Overall, this validation process is considered very robust.

The next level of validation occurs during the “billing validation” process. This process checks for high dollar amounts in addition to short and long billing periods.

Meter readings are not edited during these processes. If a reading fails validation and an incorrect meter reading is suspected, then a check reading is performed.

3.5 Non TOU Error Correction

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.

The allocation process uses billed consumption as an input. If billed consumption has been corrected after an error occurs, the revised consumption will be submitted. I reviewed a sample of corrections, which confirmed this process, and that the revised data flowed through to revisions.

Mercury does not consistently rebill from the effective date of the change for all corrections. Typically, Mercury will only rebill pressure changes over 2 kPa, although differences of 1 kPa will result in errors outside the allowable threshold detailed in NZS 5259. I checked the records of 40 recently identified and corrected discrepancies and found 15 examples where the difference was more than 1 kPa but less than 2 kPa, indicating that revisions were not conducted for these ICPs.

The use of incorrect meter pressure information has led to the submission of incorrect consumption information to the allocation agent. This is alleged as a breach of rules 26.2.1, 26.3 and 28.2.

Non Conformance	Description	Audited party comment
<p>Regarding: 26.2.1, 26.3 and 28.2</p> <p>Control Rating: Adequate</p>	<p>15 ICPs did not have pressure corrections applied from the correct date, which resulted in some pressure factors outside the threshold allowed by NZS 5259:2015.</p>	<p>Response: Reviewing process.</p> <p>Comments: We are currently reviewing our gas pressure process.</p>

Mercury does not currently review meters with zero gas consumption to identify stopped meters.

Recommendation	Audited party comment
Conduct analysis of meters with zero consumption to identify potential stopped meters, and take appropriate action where necessary.	<p>Response: Process now in place.</p> <p>Comments: We have now implemented a stopped meter process.</p>

3.6 TOU Validation

Mercury does not supply any TOU customers.

4. Energy Consumption Calculation (Rule 28.2)

To evaluate this calculation a spreadsheet was prepared which converts volume between meter readings to volume at standard conditions and then to energy consumption.

The relevant information for 32 invoices was entered into the spreadsheet and the resulting energy value was compared to that calculated by SAP. The sample covered corrections and range of gas types, pressure, temperature and altitude values. A large sample was selected because values for some of the individual factors were not visible, and only the combined conversion factor, and total kWh, could be viewed.

This comparison confirmed the accuracy of the SAP calculation and compliance with NZS 5259:2015 for the pressure, altitude, temperature, compressibility and calorific value, where the correct CV is applied for the gas gate. A non conformance relating to incorrect application of CV is raised in section **2.3.2 Calorific Values**. Incorrect application of temperature is raised in section **2.3.1 Temperature Information**, but the temperature issues were not found to be material.

5. Estimation and Submission Information

5.1 TOU Estimation and Correction (Rule 30.3)

Mercury does not supply any TOU customers.

5.2 Provision of Retailer Consumption Information (Rules 30 to 33)

Mercury's compliance with rules 30 to 33 was examined by a "walk through" of their processes and controls to confirm compliance.

A GAS040 file for March 2017 was examined and data for two gas gates was compared to the data in Mercury's system at ICP level; the totals matched, which confirms compliance. This also proves that Mercury's consumption information provided to the allocation agent is calculated at ICP level and then aggregated.

The matter of vacant consumption was also examined. When an ICP is vacant but still active (ACTV on the registry), meter reading still occurs and any volume recorded is converted into validated consumption and is then included in the allocation process, even though this consumption is not billed. A sample of active-vacant ICPs were checked, and I confirmed that consumption is included in the GAS040 report.

I also reviewed a sample of inactive ICPs where consumption was found, and confirmed that the consumption is included in the GAS040 report.

The process for preparing submission is compliant, however, some calorific value and pressure correction issues have resulted in incorrect consumption information being submitted to the allocation agent. These issues are discussed in sections **2.3.2 Calorific Values** and **3.5 Non TOU error correction**.

5.3 Initial Submission Accuracy (Rule 37.2)

Final allocations are complete for months through to January 2016. Rule 37.2 requires that the accuracy of consumption information, for allocation groups 3 to 6, for initial allocation must be within a certain percentage of error published by the industry body.

Mercury did not meet this requirement for some gas gates during the 25 month period shown. The results are summarised in the table below.

Month	Total Gas Gates	Number Within 10%	% Compliant	Within ±10% or < 200 GJ	% Compliant or immaterial
Feb-14	67	37	55.2%	67	100.0%
Mar-14	67	52	77.6%	67	100.0%
Apr-14	66	40	60.6%	66	100.0%
May-14	66	37	56.1%	66	100.0%
Jun-14	66	37	56.1%	63	95.5%
Jul-14	66	47	71.2%	66	100.0%
Aug-14	66	50	75.8%	66	100.0%
Sep-14	66	41	62.1%	66	100.0%
Oct-14	65	43	66.2%	65	100.0%
Nov-14	65	30	46.2%	65	100.0%
Dec-14	65	37	56.9%	65	100.0%
Jan-15	65	26	40.0%	64	98.5%
Feb-15	65	32	49.2%	65	100.0%
Mar-15	66	38	57.6%	66	100.0%
Apr-15	66	27	40.9%	66	100.0%
May-15	67	29	43.3%	65	97.0%
Jun-15	67	37	55.2%	66	98.5%
Jul-15	64	39	60.9%	62	96.9%
Aug-15	64	40	62.5%	63	98.4%

Month	Total Gas Gates	Number Within 10%	% Compliant	Within ±10% or < 200 GJ	% Compliant or immaterial
Sep-15	64	35	54.7%	63	98.4%
Oct-15	64	19	29.7%	61	95.3%
Nov-15	64	46	71.9%	64	100.0%
Dec-15	64	34	53.1%	64	100.0%
Jan -16	63	36	57.1%	63	100.0%

The table below shows the difference between consumption information for initial and final submissions at an aggregated level for all gas gates. The consumption information submitted to the allocation agent for the initial allocation is within 10% of the consumption information submitted for the final allocation for all months reviewed except January 2015.

Month	Initial Submission All Gas Gates (GJ)	Final Submission All Gas Gates (GJ)	Percentage Variation
Feb-14	43,790	44,245	1.0%
Mar-14	52,663	53,500	1.6%
Apr-14	59,904	58,655	-2.1%
May-14	93,023	95,182	2.3%
Jun-14	122,246	116,748	-4.7%
Jul-14	146,912	150,881	2.6%
Aug-14	135,121	140,636	3.9%
Sep-14	109,293	108,180	-1.0%
Oct-14	91,540	89,394	-2.4%
Nov-14	72,119	73,959	2.5%
Dec-14	58,929	59,848	1.5%
Jan-15	49,275	44,754	-10.1%
Feb-15	46,232	44,575	-3.7%
Mar-15	54,856	53,670	-2.2%
Apr-15	63,246	67,180	5.9%
May-15	97,721	105,722	7.6%
Jun-15	130,605	133,445	2.1%
Jul-15	150,835	152,473	1.1%
Aug-15	136,225	140,148	2.8%
Sep-15	110,931	114,637	3.2%
Oct-15	89,447	84,197	-6.2%
Nov-15	70,317	69,219	-1.6%
Dec-15	56,672	55,991	-1.2%
Jan -16	46,685	44,403	-5.1%

Non Conformance	Description	Audited party comment
<p>Regarding: Rule 37.2</p> <p>Control Rating: Effective</p>	<p>The initial submission accuracy did not meet the required accuracy percentage for some gas gates for the period February 2014 to January 2016.</p>	<p>Response: Acknowledged.</p> <p>Comments: This is within expected variation taking in to consideration late and back dated switching activity.</p>

Mercury monitors variances in submissions at total and gas gate level, and has the ability to drill down to ICP level. This reporting showed the variances reported relate primarily to seasonal loads. Submissions are also checked against trading notifications to ensure that all gates required are included, and aggregation fields are checked against the registry.

5.4 Forward Estimates (Rules 34 & 36)

Mercury’s forward estimates are based on historic daily average consumption, profiled to reflect the season.

The historic daily average consumption is estimated using one of the following methods, in decreasing order of preference:

- 12 months of validated meter reading history, which occurred within the last 24 months;
- At least 2 validated actual meter readings for the meter;
- Average consumption for the customer price plan and meter type;
- Average consumption for the customer price plan billing group and meter type; or
- Consumption for the average customer at the gas gate, profiled to reflect the season.

The profiling process ensures that the over estimation or under estimation of submission information is minimised during “shoulder” months. This is supported by the findings in section 5.3, which showed that for most months reviewed Mercury was consistent with the initial submission accuracy requirements.

5.5 Historic Estimates (Rules 34 & 35)

To assist with determining compliance of the historic estimate processes, Mercury was supplied with a list of scenarios. For each scenario, a manual calculation was performed using the relevant seasonal adjustment shape file, and this was compared to the calculation performed in Mercury’s system. This test also proves that the correct shape file is used in each case.

Test	Scenario	Test Expectation	Result
a	ICP becomes Active part way through a month	Consumption is only calculated for the Active portion of the month.	Compliant
b	ICP becomes Inactive part way through a month.	Consumption is only calculated for the Active portion of the month.	Has not occurred with consumption

Test	Scenario	Test Expectation	Result
c	ICP's become Inactive then Active within a month.	Consumption is only calculated for the Active portion of the month.	Has not occurred
d	ICP switches in part way through a month	Consumption is calculated to include the 1st day of responsibility.	Not compliant for all scenarios
e	ICP switches out part way through a month	Consumption is calculated to include the last day of responsibility.	Compliant
f	ICP switches out then back in within a month	Consumption is calculated for each day of responsibility.	Has not occurred
g	Continuous ICP with a read during the month	Consumption is calculated assuming the readings are valid until the end of the day	Compliant
h	Continuous ICP without a read during the month	Consumption is calculated assuming the readings are valid until the end of the day	Compliant
i	Rollover Reads	Consumption is calculated correctly in the instance of meter rollovers.	Compliant

Compliance is confirmed for all scenarios tested, except where an ICP switches back to Mercury after switching out to another retailer. In these cases, the SADS calculation does not include the second (or subsequent) switch in date. For any site that switches in, we expect part of the period's consumption to be apportioned to this opening read date. While Mercury will still capture all consumption that occurred during the period of supply, it may not be recorded within the correct consumption period. This is recorded as non conformance.

Non Conformance	Description	Audited party comment
<p>Regarding: Rules 26.2.1 and 26.3</p> <p>Control Rating: Effective</p>	Historic estimate is not calculated correctly for the switch in month, where an ICP has switched back to Mercury after being supplied by another retailer.	<p>Response: Investigating.</p> <p>Comments: We have identified this to be caused by a system issue. We are currently investigating solutions so that we can rectify the issue as soon as possible.</p>

5.6 Proportion of Historic Estimates (Rule 40.1)

This rule requires retailers to report to the allocation agent the proportion of historic estimates contained within the consumption information for the previous initial, interim and final allocations.

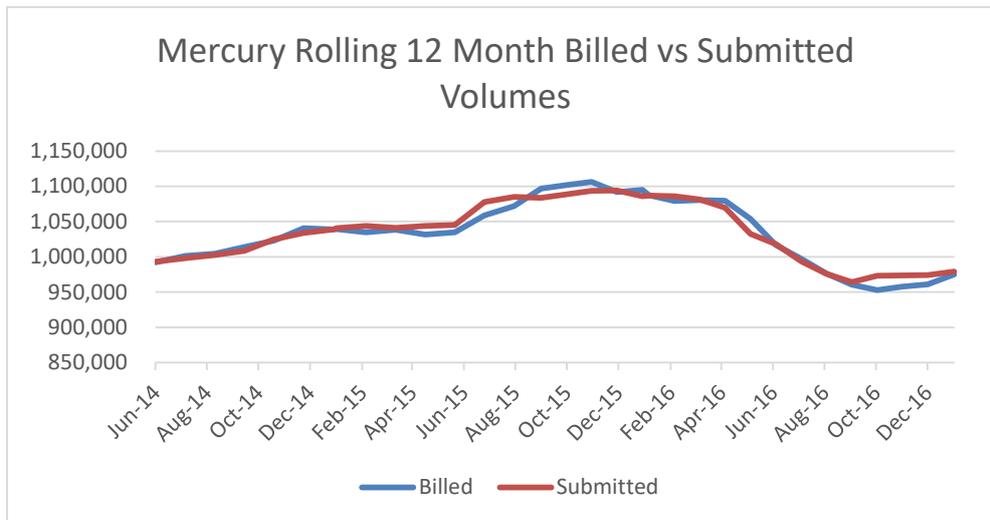
A GAS040 file was examined and compared to the data in Mercury's system at ICP level; the totals matched, which confirms compliance. This also proves that Mercury's consumption information provided to the allocation agent is calculated at ICP level and then aggregated.

5.7 Billed vs Consumption Comparison (Rule 52)

The content of the GAS070 files was proved by selecting four gas gates and checking the bills in SAP for all ICPs at those gates, against the total in the GAS070 file for February 2014. This confirmed the accuracy of the data.

The chart below shows a comparison between rolling annual quantities billed and rolling annual consumption information submitted to the allocation agent for a 32-month period. Although the figures cannot be directly compared, as the submitted data is normalised, they can provide a useful indicator of whether under or over reporting of consumption is occurring.

Comparison between Rolling Annual Submitted Volumes and Gas Supplied



The table below shows a comparison between quantities billed and consumption information submitted to the allocation agent for a three year period. The consumption information is higher than quantities billed by 0.17%. This minor difference can be explained by the fact that the revision and normalisation processes for billed data are different to those for consumption data, the billed data, and the consumption data contains some initial and interim submission information for the most recent months, which will include a higher proportion of estimated data. Although these figures cannot be directly compared, they provide a useful indicator to ensure that under reporting of consumption information is not occurring.

Year ending	Billed	Consumption	Percentage Difference
Jan-15	1,039,141	1,040,899	0.17%
Jan-16	1,087,231	1,087,023	-0.02%
Jan-17	975,300	978,995	0.38%
Total	3,101,672	3,106,917	0.17%

5.8 Gas Trading Notifications (Rule 39)

A retailer must give notice to the Allocation Agent where they commence or cease to supply gas under a supplementary agreement to a transmission services agreement, or amend information required to be provided under the supplementary agreement under rule 39.2.

Mercury does not have any supplementary agreements and is not required to submit any gas trading notifications under this rule. Mercury staff are aware of the gas trading notification requirements.

5.9 Bay of Plenty Event Audit

In March 2016, Langford Consulting completed an event audit of unusually large amounts of UFG at Greater Tauranga and Greater Mt Maunganui. As part of each participant audit, billed and submitted data for each group 4 ICP connected to MMU08001, PPA33201 or TRG07701 is compared to identify potential sources of UFG.

Mercury supplied one group 4 ICP connected to PPA33201, and one ICP connected to TRG07701 from January 2014. The Tauranga ICP switched out in April 2014.

I did not find any material differences between the billed and submitted consumption, and note that both ICPs had very low consumption.

No issues with the data reported for Bay of Plenty were identified.

6. Recommendations

As a result of this performance audit I recommend the following:

- A review of consistency between billing class and gas gate, which also considers whether more billing classes should be added to ensure that gas conversion values are applied correctly.
- Consider adjusting temperature to include the Joule Thompson effect.
- Monitor consumption reporting on a monthly basis to ensure allocation groups are correctly recorded.
- Review the accuracy of the GAS080 report and adjust if necessary
- Conduct analysis of meters with zero consumption to identify potential stopped meters, and take appropriate action where necessary.

Appendix 1 – Control Rating Definitions

Control Rating	Definition
Control environment is not adequate	<p>Operating controls designed to mitigate key risks are not applied, or are ineffective, or do not exist.</p> <p>Controls designed to ensure compliance are not applied, or are ineffective, or do not exist.</p> <p>Efficiency/effectiveness of many key processes requires improvement.</p>
Control environment is adequate	<p>Operating controls designed to mitigate key risks are not consistently applied, or are not fully effective.</p> <p>Controls designed to ensure compliance are not consistently applied, or are not fully effective.</p> <p>Efficiency/effectiveness of some key processes requires improvement.</p>
Control environment is effective	<p>Isolated exceptions identified when testing the effectiveness of operating controls to mitigate key risks.</p> <p>Isolated exceptions identified when testing the effectiveness of controls to ensure compliance.</p> <p>Isolated exceptions where efficiency/effectiveness of key processes could be enhanced.</p>

Appendix 2 – Response to Mercury Comments

Mercury has reviewed this report, their comments are contained in the audited party comment box for each non conformance and recommendation. Two additional comments were provided, and are detailed below:

Section	Comment	Response
Executive Summary	11 of the 17 areas evaluated were found to be compliant. Five breach allegations are made in relation to the remaining areas.” Presumably it should be updated to “12 of the 17”.	Wording remains 11 of 17. The executive summary had already been updated to reflect the non conformance being removed from section 1.5.
1.5 non conformance box	This appears to have been included in the report in error. Refer 1.5 of summary of report findings on page 3. We advised the auditors that as the file was not used by the allocation agent due to it being uploaded into the gas portal in error, we believe that this should be removed from the audit report. They agreed, confirmed compliance and advised that the non conformance would be removed from the report.	I agree, this was an oversight and has been removed.

Appendix 3 – Response to Contact Energy Comments

Section	Comment	Response
Executive Summary	Final bullet point relating to Historic Estimates – is it possible to quantify the number of affected ICPs for this non-compliance to provide some context for this report. While the issue will be investigated fully and addressed via a breach investigation it is worth being able to also quantify if the issue is likely to have also impacted rule 37.2 submission accuracy and any possible previous settlement of these rule 37.2 breaches.	The number of ICPs affected was unable to be confirmed. The audit confirmed that all consumption will be reported, but one day of consumption may not be recorded in the correct period.
1.6	Table at end of this section refers to GAS050 not GAS040 as describe in the text above – please confirm which file type this issue relates to.	The point related to the GAS040, but the non conformance has now been removed. As this report was uploaded to the reconciliation portal in error, and replaced before the submission deadline, it was not necessary to retain it.
2.3.1	<p>Given that Mercury has chosen not to apply Joule Thomson Effect as a factor then the assessment of the incorrect temperatures being applied should also consider that additional error of not applying Joule Thomson Effect. Please consider reassessing the impact of these incorrect temperatures to include Joule Thomson Effect in line with NZS 5259.</p> <p>Mercury’s statement regarding the accuracy of network pressures on the registry is at odds with Contact Energy’s view and also a number of other retailers who currently apply Joules Thomson Effect. Is the auditor able to clarify if Mercury’s concerns relate across a significant population of ICPs across a number of networks or distributors, or specific ICP’s / regions? The correct application of Joules Thomson Effect by all retailers does reduce UFG across the industry, so if a retailer still has concerns regarding the accuracy of this registry information then these current concerns will have been raised with the relevant distributor and the auditor will have sighted this correspondence.</p> <p>Finally – was the auditor able to determine that Mercury’s systems can apply Joule Thomson Effect factor once Mercury’s concerns around network pressure accuracy has been addressed or whether their systems require further changes.</p>	<p>Where a different region’s temperature was applied in error, I found the differences were below the materiality limit. I believe that when the Joule Thomson effect is taken into account the differences are still likely to be immaterial.</p> <p>The accuracy of distributor network pressures will be reviewed as part of the upcoming distributor audits. I did see evidence that registry discrepancies are queried with other participants, including distributors, during the audit.</p> <p>Whether Mercury’s system can apply the Joule Thomson Effect was not assessed.</p>

Section	Comment	Response
5.3	Table at end of this section refers to Feb 2014 to Jan 2015 – however the table relates to Feb 2014 to Jan 2016.	The report has been updated to confirm that the non conformance relates to some gas gates for the period February 2014 to January 2016, not January 2015.
5.5	<p>Can the auditor confirm if the failure to meet the 12 month read requirements has impacted the calculation of historical estimates.</p> <p>Additionally can the auditor confirm the control rating for this section is deemed 'effective' given the system issue around switched back ICPs.</p>	<p>The failure to meet the 12 month read requirements for all ICPs has not impacted on historic estimate calculations, forward estimate is calculated where a read is not obtained.</p> <p>I believe the assessment of effective but not compliant is fair. The exception is isolated and all other scenarios tested were calculated correctly. All consumption was still reported, but a small portion was recorded in the wrong period.</p>