

VERITEK

Gas Downstream Reconciliation Performance Audit Final Report

For

Contact Energy Limited

The logo for Contact Energy Limited, featuring the word "Contact" in a red, cursive script font with a registered trademark symbol (®) at the end.

Prepared by Steve Woods – Veritek Ltd

Date of Audit: 9/07/14

Date Audit Report Complete: 05/12/14

Executive Summary

This Performance Audit was conducted at the request of the Gas Industry Company (GIC) in accordance with Rule 65 of the 2013 Amendment Version of the Gas (Downstream Reconciliation) Rules 2008.

The purpose of this audit is to assess the systems, processes and performance of Contact Energy (Contact) 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 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 summary of report findings in the table below shows that Contact's control environment is "effective" for 12 of the areas evaluated and "adequate" for five areas. There were no areas that were considered "not adequate".

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

- Some altitude discrepancies have led to the provision of incorrect consumption information to the allocation agent. Consumption information for eight ICPs with altitude figure errors of over 90m will be high by between 1.1% and 2.65%.
- 679 meter discrepancies exist between Contact's data and meter owners' data. Consumption information submitted to the allocation agent is incorrect for at least 21 ICPs.
- Monitoring of consumption vs allocation group does not occur routinely and there are approx. 300 ICPs with incorrect allocation groups recorded on the registry.
- Estimated TOU consumption information has been submitted to the allocation agent on a number of occasions Since April 2010. Contact's processes achieve compliance with the requirement to provide its "best estimate of consumption information"; however, the existence of estimated information is considered a matter of non-compliance.
- Some GAS040 files were not compliant during the transition from Gentrack to SAP.
- Contact's initial submission accuracy did not meet the 10% requirement for some gas gates for the period June 2012 to May 2013.
- The May 2014 energy quantities billed file was estimated during the transition from Gentrack to SAP.

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

- Validation of altitude figures should occur to identify outliers.
- Validation of meter pressure should occur on a monthly basis with meter owners. Where meter pressure discrepancies exist, the correct pressure should be confirmed by examining meter docketts or by conducting field visits.
- Monitoring of consumption vs allocation group should occur routinely.
- Joule-Thomson adjustment does not occur. I recommend Contact considers adjusting for the Joule-Thomson effect once network pressure populated in the gas registry by Distributors is confirmed as correct for each specific network, in line with the GIC recommendations.

Summary of Report Findings

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
ICP set up information	2.1	Adequate	Not compliant	Some time delays exist with the registry update systems and processes. Some altitude discrepancies have led to the provision of incorrect consumption information to the allocation agent.
Metering set up information	2.2	Adequate	Not compliant	Some pressure factor and meter dial discrepancies exist between Contact's and meter owners' records. Consumption information submitted to the allocation is incorrect for at least 21 ICPs. It is recommended that validation occurs on a monthly basis with meter owners to address this matter.
Billing factors	2.3	Effective	Compliant	Robust controls are in place for the management of billing factors.
Archiving of reading data	3.1	Effective	Compliant	Robust controls are in place for the security of meter reading data.
Meter interrogation requirements	3.2	Adequate	Not compliant	Monitoring of consumption vs allocation group does not occur routinely and there are approx. 300 ICPs with incorrect allocation groups recorded on the registry.

Meter reading targets	3.3	Effective	Compliant	Contact has sound controls in place for the management of meter reading.
Non TOU validation	3.4	Adequate	Compliant	Meters that have gone around the clock are not yet being adequately identified during validation.
Non TOU error correction	3.5	Effective	Compliant	Corrected consumption flows through to submission files as expected.
TOU validation	3.6	Effective	Compliant	Robust controls are in place for TOU validation.
Energy consumption calculation	4	Effective	Compliant	There is no manual intervention in this process, and it was “proved” from end to end using a spreadsheet based calculation tool.
TOU estimation and correction	5.1	Effective	Not compliant	<p>A “sign off” process is in place for any estimations or corrections, and the process used is robust.</p> <p>The existence of any estimated TOU consumption information up until June 2013 is considered a matter of non-compliance. This issue is addressed on a monthly basis and breach allegations are in existence in all cases.</p>
Provision of retailer consumption information	5.2	Adequate	Not compliant	Some GAS040 files were not compliant during the transition from Gentrack to SAP.
Initial submission accuracy	5.3	Effective	Not compliant	Contact uses daily average consumption from a previous period with an adjustment for temperature, or they use the average consumption for the particular billing class. Although compliance has not been achieved, the process is robust.

Forward estimates	5.4	Effective	Compliant	The forward estimate process is based on sound theory.
Historic estimates	5.5	Effective	Compliant	Compliance was achieved for all of the scenarios provided during the audit.
Proportion of HE	5.6	Effective	Compliant	Reporting has been provided as required.
Billed vs consumption comparison	5.7	Effective	Not compliant	<p>On a long-term basis, Contact's billed information is slightly less 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.</p> <p>The May 2014 GAS070 file was estimated during the transition from Gentrack to SAP.</p>

Persons Involved in This Audit

Auditor:

Steve Woods
Veritek Limited

Contact personnel assisting in this audit were.

Name	Title
Bernie Cross	Energy Reconciliation Manager
KP Chiew	Senior Reconciliation Analyst
Joel Kisteria	Reconciliation Process Analyst
Campbell Wilson	Network Operations Analyst

Service providers assisting with processes within the audit scope:

Company	Processes
Wells Instrument and Electrical	Non TOU meter reading
Vector	TOU manual data collection (NGCM meters)

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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 2013 Amendment Version of the Gas (Downstream Reconciliation) Rules 2008.

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, -

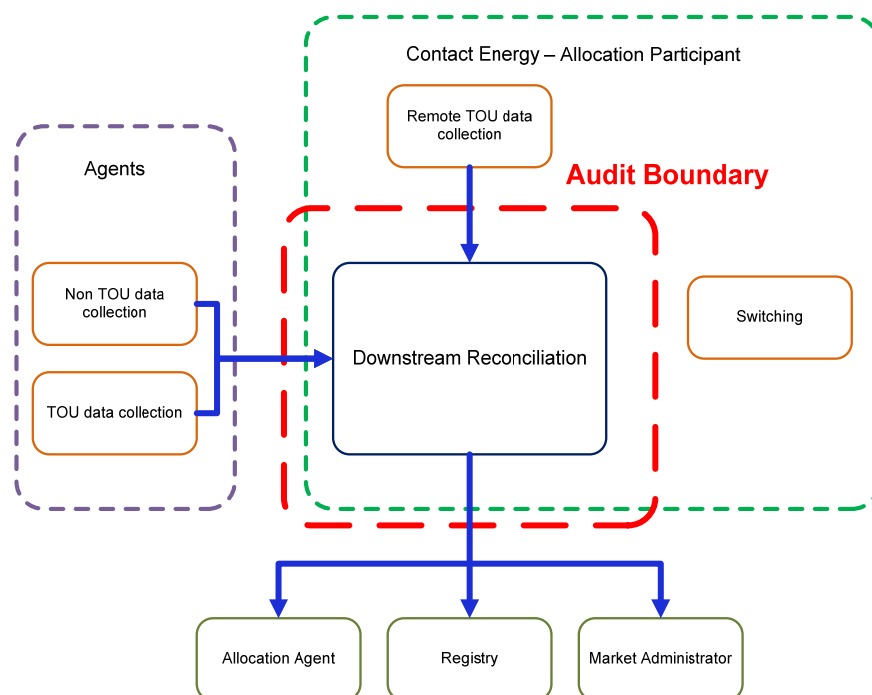
65.2.1 The performance of the allocation agent or that allocation participant in terms of compliance with these rules; and

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 Gas Industry Company.

The audit was carried out on July 9th 2014 at Contact's offices in Wellington.

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.



1.2 Audit Approach

As mentioned in Section 1.1 the purpose of this audit is to assess the performance of Contact 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 Contact 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 Contact'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-compliance has been evaluated.

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

1.3 General Compliance

1.3.1 Summary of Previous Audit

Contact provided a copy of their previous audit conducted in 2010 by Veritek Ltd. 14 of the 17 areas evaluated were found to be compliant. Three breach allegations were 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
Estimated TOU consumption information has been provided on a number of occasions from May 2009 to April 2010. Contact's processes achieve compliance with the requirement to provide its "best estimate of consumption information"; however, the existence of estimated information is considered a matter of non-compliance. This issue is addressed on a monthly basis and historic breach allegations are listed in Section 5.1.	30.3	5.1	Estimated TOU consumption information is still provided.
Consumption information is not systematically submitted to the allocation agent for ICPs that are vacant but still active, and where volume is measured. When these ICPs switch to another retailer, or a consumer is identified, then the consumption will be included in the allocation process. In some cases the time delay is greater than the due date for the final allocation, which will mean that not all of the consumption information will be included in the allocation process.	30, 31, 32 & 33	5.2	This matter is now resolved with the implementation of SAP.
Contact's initial submission accuracy did not meet the 15% requirement for all gas gates for the period October 2008 to June 2009.	37.2	5.3	The threshold has changed from 15% to 10% and non-compliance still exists

1.3.2 Breach Allegations

Contact has 34 alleged breaches recorded by the Market Administrator since April 2010. These are summarised as follows:

Nature of Breach	Rule	Quantity	Section in this Report
Switching Breaches		1,151	Not within audit scope 1,012 relate to the SAP go-live period
Submission of estimated TOU data	30	102	5.1
Initial vs final allocation variances	37.2	1,959	5.3
Incorrect submission information	26.2.1	2	5.2
One ICP missing from GAS040	26.2.1 & 33.4	1	5.2
Late interim submission files	26.2.3	1	5.2
Late trading notification	39.2.3	4	
Late GAR080 submission	40	1	5.7
Late annual reconciliation information	52	3	5.7

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

Breach Allegation	Rule	Section in this report
<p>Some altitude discrepancies have led to the provision of incorrect consumption information to the allocation agent.</p> <p>Consumption information for eight ICPs with altitude figure errors of over 90m will be high by between 1.1% and 2.65%.</p>	28.2	2.1.2
<p>679 meter discrepancies exist between Contact's data and meter owners' data.</p> <p>Consumption information submitted to the allocation is incorrect for at least 21 ICPs.</p>	28.2	2.2
<p>Monitoring of consumption vs allocation group does not occur routinely and there are approx. 300 ICPs with incorrect allocation groups recorded on the registry.</p>	29	3.2
<p>Estimated TOU consumption information has been provided on a number of occasions from April 2010 until June 2013. Contact's processes achieve compliance with the requirement to provide its "best estimate of consumption information"; however, the existence of estimated information is considered a matter of non-compliance. This issue was addressed on a monthly basis and historic breach allegations are listed in Section 5.1.</p>	30.3	5.1
<p>Some GAS040 files were not compliant during the transition from Gentrack to SAP.</p>	31.4	5.2
<p>Contact's initial submission accuracy did not meet the 10% requirement for some gas gates for the period June 2012 to May 2013.</p>	37.2	5.3
<p>The May 2014 energy quantities billed file was estimated during the transition from Gentrack to SAP.</p>	52.2.1	5.7

I have also made breach allegations against some distributors in relation to incorrect altitude figures on the registry. They are shown in the table below.

Breach Allegation	Participant Identifier	Rule(s)	Section in this report
Altitude figures incorrect for two ICPs.	NGCD	26.5.1 & 26.5.4	2.1.2
Altitude figures incorrect for five ICPs.	POCO	26.5.1 & 26.5.4	2.1.2
Altitude figure incorrect for one ICP.	UNLG	26.5.1 & 26.5.4	2.1.2

1.4 Provision of Information to the Auditor (Rule 69)

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

Information was provided by Contact 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 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 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. No comments were received; therefore I have not made any changes to the report.

1.6 Transmission Methodology and Audit Trails (Rule 28.4.1)

A complete audit trail was viewed for all data gathering, validation and processing functions. Compliance is confirmed with this rule.

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, 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 22/12/11 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. Contact has a robust set of validation processes and reports to identify and resolve discrepancies; which was demonstrated during the audit. The validation compares SAP data to registry data, and includes:

- Retailer

- Gas gate
- Network price category code
- Altitude- (checks for installations over 450 metres only)
- Status
- Meter owner
- Meter number
- Load shedding category including emergency contact details

The validation does not check allocation group and I recommend in Section 3.2 that this monitoring occurs on a monthly basis.

The event detail reports were examined for a two week period (03/03/14 to 14/03/14) prior to SAP go-live and a two week period (26/05/14 to 06/06/14) post go-live.

The table below summarises the registry population timeframes for status changes during these two periods.

Pre go-live				
Status	Total ICPs	Update greater than 5 days	Update greater than 20 days	Average update days
ACTC	231	96	27	11.3
ACTV	194	19	6	3.6
INACT	48	5	2	7.3

Post go-live				
Status	Total ICPs	Update greater than 5 days	Update greater than 20 days	Average update days
ACTC	135	20	12	5.5
ACTV	340	32	19	4
INACT	2	0	0	2

Consumption information is provided to the Allocation Agent even if the registry is not updated, as long as the information is set up in SAP. This minimises the risk or inaccuracy in the initial submission file due to late registry updates.

534 ICPs were changed to ACTV during the period examined, and 25 of these had registry update dates of more than 20 business days.

As reported in 2010, 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, and at this point the consumer hasn’t necessarily registered with a retailer. A number of customers do not sign into ICP’s until a “vacant disconnection” letter is sent. This is also seen with reconnections. SAP now prompts the call centre to check for dual supply with all new customers.

Additional to this there have been backlogs with loading information and the uploads to the registry are currently being done in a batch process. Contact is working on a solution so that registry updates will happen automatically.

2.1.2 Altitude Information

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

NZS 5259 Amendment No1 contains the following points, which affect the way altitude information should be managed:

1. The maximum permissible error is $\pm 1.0\%$ where the meter pressure is below 100kPa and $\pm 0.5\%$ where the meter pressure is greater than 100kPa.
2. The following note is also included “To minimise uncertainty due to altitude factor the aim should be to determine the altitude to within 10m where practicable.”

Contact 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, there are eight ICPs with incorrect altitudes recorded and the difference is more than 90m. All eight were found by looking for obvious outliers and these examples are in Rotorua where an altitude less than 200m will normally be incorrect.

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. I found four NGCD ICPs with a difference of more than 20m and two of these were also outside the 90m threshold.

Distributor	Total ICPs	ICPs checked	Quantity within 20m	Quantity within 90m
UNLG	33,092	74	74	74

NGCD	8,377	34	30	32
POCO	20,001	37	37	37
GNET	681	10	10	10
Total		155	151	153

A further evaluation was conducted of ICPs where the altitude figure was zero on the registry. This data appears to be less accurate than when a figure other than zero is populated. The results are shown in the table below. NGCD and GNET do not have any ICPs with zero populated. UNLG has 183 and a check of 20 found 19 were within 90m and four were within 20m. POCO has 69 ICPs with zero populated and a check of 30 found 25 were within 90m and 18 were within 20m.

Distributor	Total ICPs	ICPs with altitude of zero	ICPs checked	Quantity within 20m	Quantity within 90m
UNLG	33,092	183	20	4	19
NGCD	8,377	0	0	N/A	N/A
POCO	20,001	69	30	18	25
GNET	681	0	0	N/A	N/A
Total		252	50	22	44

I have considered whether distributors have breached any rules by populating the registry with inaccurate altitude information. Distributors have responsibility for populating the registry with altitude figures² and for maintaining the accuracy of this information. Distributors must also comply with rule 26.5 of the Gas (Downstream Reconciliation) Rules 2008, which requires them to ensure that any information on the registry is accurate and complete and supports compliance with NZS 5259. There are eight ICPs where the incorrect altitude has resulted in consumption information being high, and outside the threshold allowed by NZS 5259, by between 1.1% and 2.65%. I have alleged a breach of rules 26.5.1 and 26.5.4 by NGCD (2 ICPs), UNLG (1 ICP) and POCO (5 ICPs). Contact is not in breach of the same rules but is in breach of rule 28.2, which requires retailers to comply with NZS 5259 when converting volume to energy.

Distributors have corrected the registry for the eight ICPs mentioned above and Contact has corrected the altitude factors in SAP. Contact intends to make the appropriate adjustments to the relevant revision files.

I recommend that Contact liaises with distributors to determine whether many of the ICPs with an altitude of zero should have more accurate figures populated.

² Gas (Switching Arrangements) Rules 2008, Part A, ICP parameters maintained by Distributors and rules 41 and 58.

2.2 Metering Set-up Information

The data in SAP was compared to that of meter owners for all Contact ICPs, to check the accuracy of meter pressure, dials and multipliers. The discrepancies are shown in the table below. Approx 85% of the meter pressure discrepancies are differences of 1 kPa or less, and will have a minimal effect on the accuracy of consumption information.

Meter Owner	Total ICPs	Meter Pressure Discrepancies	Meter Dial Discrepancies
NGC	54,192	641	105
Powerco	6,221	223	295
Gas Net	858	34	13
Nova	355	8	6
Total Discrepancies		679	419

I obtained meter docket or other records for 46 ICPs where discrepancies were found. The meter owner's data was incorrect for 4 ICPs and correct for 42 ICPs. Contact's data was incorrect for 44 ICPs and correct for 2 ICPs. This has caused consumption information submitted to the allocation agent to be incorrect by more than $\pm 1.1\%$ for 21 ICPs. Both Contact and the meter owner were incorrect for two ICPs. Whilst this is a small sample size, it is sufficient to draw the following conclusions:

- There is no "database of record" for meter pressure.
- Contact will need to confirm meter pressure in every instance where there is a discrepancy, either by checking meter dockets or by conducting field checks.
- Contact needs to conduct a monthly check of meter pressure to identify and resolve discrepancies.

Meter Owner	Total Records Checked	Meter Owner Data Incorrect	Contact Data Incorrect
NGC	18	0	18
Powerco	9	0	9
Gas Net	15	0	15
Nova	4	4	2
Total Discrepancies		4	44

2.3 Billing Factors

2.3.1 Temperature Information

For ICPs where the actual temperature is not measured NZS 5259 states that temperature may be estimated and four methodologies are provided. These are listed below in order of decreasing preference, and with Contact's comments on the practicability of each option:

- (a) Temperature records of the station under flowing conditions. Historical records can be used if similarity is preserved.

Comment: Would only be appropriate where a corrector with a live temperature feed had been installed at the site for some time but had subsequently been removed and the usage remained reasonably similar to the historic usage.

- (b) Records of actual gas temperature in similar installations over similar periods at similar locations may serve to estimate the value of gas temperature in the installation.

Comment: Unlikely to be a practical option.

- (c) For compact installations directly connected to short risers and well shaded from direct sunlight, where the temperature of the gas is in the vicinity of ground temperature, the temperature may be estimated from 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. For installations with seasonal use only, the data for the relevant season or seasons should be used.

Comment: Reflective of the configuration at the majority of GMS installations as the riser pipe is generally quite short, and a practical option given NIWA has many stations recording such information in areas where gas is supplied.

- (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. For installations with seasonal use only, the data for the relevant season or season should be used. The installation should be shielded from direct sunlight.

Comment: Not reflective of the configuration at the majority of GMS installations as the riser pipe is generally quite short.

Contact has chosen option (c) and uses a read to read daily average temperature in their calculations. The daily temperature data was sourced from NIWA in 2011 and contains daily average ground temperatures at a 300mm depth

Option (c) seems to be the most logical choice because, as mentioned above, it matches the majority of GMS installations.

Contact does not apply the Joule-Thomson effect adjustment because network pressure information on the registry is not considered accurate. NZS 5259 states "...correction may be made for the temperature drop due to pressure reduction if this reduction is made in the same installation and immediately upstream of the GMS. The temperature drop is about 0.5° per 100kPa of pressure drop. For large pressure drops or high flow rates it is recommended that the actual temperature drop be measured." 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.

This also reinforces that adjustment for the Joule-Thomson effect is desirable.

I recommend that Contact adjusts for the Joule-Thomson effect once network pressures are confirmed as correct.

2.3.2 Calorific Values

Gas composition data is sourced from the Open Access Transmission Information System (OATIS) and is loaded into SAP. The accuracy of the SAP information was checked by comparing an OATIS file with the contents of SAP for a recent period. In all cases the information in SAP was correct.

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

Some data provided by Contact's meter reading contractor was checked and it was found that the readings matched the data in SAP. This proves the end-to-end process. This data is transmitted via FTP, which ensures its security and integrity.

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.

Contact provided a report showing ICPs with annual consumption over 250GJ with an allocation group of 6. This report appears to contain some errors, but even when I remove the obvious errors there are 237 ICPs that should be in allocation group 4. 234 of these were already on a monthly meter reading cycle and the remaining three were recent switches in, therefore the issue is incorrect allocation groups rather than incorrect meter reading requirements. I recommend Contact monitors reporting on a monthly basis to ensure allocation groups are correct.

The registry shows 69 TOU ICPs but Contact only has 13. Therefore 56 ICPs have the incorrect allocation group populated on the registry.

3.3 Meter Reading Targets (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.

Contact provided a copy of the GAS080 reports for March, April and May 2014, along with a list of 179 ICPs not read within the last 12 months. The records in SAP were checked for a selection of ten of the 179 installations and it was found that “exceptional circumstances” existed in all cases.

The table below shows the GAS080 results.

Target	Reading Percentage May 2014	Reading Percentage April 2014	Reading Percentage March 2014
Rolling 4 months (target 90%)	96.90%	96.86%	97.67%
12 months (target 100%)	99.58%	99.46%	99.51%

Contact adds the installation to the “high priority read” process if no read has been obtained at 270 days and it is expected that meter readers will make outbound calls and visit the premise as required to obtain meter readings.

Contact achieved compliance with Rule 40.2, which is the requirement to report the number and percentage of validated register readings obtained in accordance with rule 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 Contact. The settings are contained in Wells system (Mitre), as a plus or minus percentage, based on the previous read performed by Wells, and stored in Mitre.

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 Contact. This validation looks for obvious file errors or file corruption and invalid metering information.

The next level of validation occurs during the “billing validation” process. The same criteria are used in SAP as was set up in Gentrack. Each bill produced is subject to approximately 40 individual validation checks. Bills that fail validation end up on an “exceptions” list and any issues are investigated and resolved prior to sending the final bill.

Meter readings are not edited during this process. If a reading fails validation and an incorrect meter reading is suspected then a check reading will be performed.

Meters that have gone around the clock are not being adequately identified during validation since the introduction of SAP and are being dealt with manually at submission level.

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.

Sometimes errors can be corrected by “scaling” in situations where an incorrect multiplier or factor was used. In other cases the error correction involves estimation, for example if a meter is stopped.

I checked compliance by conducting a walkthrough of SAP functionality for correction resulting from stopped meters because no examples were available to examine. I confirmed that if meters are stopped and are removed at an estimated reading to cater for the period the meter was stopped, this consumption flows through to billing and submission correctly.

I examined an example where a meter pressure was corrected and confirmed the new pressure was applied to the period the meter was installed, leading to correct submission information.

3.6 TOU Validation

Contact's TOU data is collected through GSM/CDMA communications units. Master Link is the software that is used to transfer this data into the Master Link database. Manual downloads are only conducted if there is an equipment failure and data cannot be obtained automatically. Clock synchronisation occurs in the field and is checked as part of the periodic accuracy checks. Event information is collected and reviewed to highlight any issues.

Once the data has been collected, it is then validated in an Oracle database prior to being loaded into SAP for use in submission files to the allocation agent. This validation includes:

- Corrected values against values calculated from uncorrected values
- Consecutive zeros above a certain threshold
- Missing or incomplete data
- Consecutive identical non-zero values
- Check of event information
- Temperature above a certain threshold
- Pressure validation

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 some ICPs was entered into the spreadsheet and the resulting energy value was compared to that calculated by SAP. This comparison confirmed the accuracy of the SAP calculation and confirmed compliance with NZS 5259.

The small sample size for this comparison is considered appropriate because the calculation being evaluated is conducted entirely within the SAP system, with no manual intervention. Therefore, the only opportunity for error is if the incorrect factors are present within the system.

Contact adjusts for compressibility using the NX19 formula for all ICPs, TOU and NTOU, where the pressure is above 50kPA. I checked this calculation using a spreadsheet based tool and confirm the result is accurate and compliant with NZS 5259.

5. Estimation and Submission Information

5.1 TOU Estimation and Correction (Rule 30.3)

This rule requires that retailers must provide the best estimate of consumption information to the Allocation agent in situations where actual data is not available.

In these situations, Contact uses the consumption and profile from similar time periods to create estimates, which are appropriately identified. I checked three examples where data was missing and in all cases, data from a period with similar consumption and a similar profile was used as a basis for the estimate. The estimation process requires approval from the relevant account manager, who checks that the site was operating in the same manner as the period used as the basis for the estimation.

Contact's processes achieve compliance with the requirement to provide its "best estimate of consumption information".

The existence of any estimated TOU consumption information up until June 2013 is considered a matter of non-compliance. This issue is addressed on a monthly basis and the historic breach allegations are recorded in Section 1.3.2.

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

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

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

ICPs that are vacant but still active (ACTV on the registry) are still included in the meter reading process. Submission now occurs from readings and is not reliant on billing as it was in Gentrack. I confirmed that vacant consumption is included in submission files by checking some examples.

Meters that have gone around the clock are not being adequately identified during validation at this level and are being dealt with manually at submission level. The June 2014 file had 49 ICPs with implausible reads. The incorrect HE proportion of consumption information was removed, effectively resulting in an estimate of zero for the relevant period in the most recent month. The revision files will be correct because the implausible reads will be corrected in SAP and the relevant consumption information will automatically flow through to the correct files. Contact Energy is working on this matter to ensure validation processes are improved.

I checked the process for preparing GAS040 files for the period when Contact implemented their SAP system. The following points summarise the findings from this examination:

- The April 2014 submission was from legacy systems using readings up until April 17th and then forward estimates for the rest of the month. The April file had approx. 4% HE compared to a normal month (March 2014) which had 31% HE.
- May 2014 initial submission was calculated from the average of the last four years for May. The day 13 file was calculated by SAP but had to have implausible readings manually replaced with zero value FE records. The implausible readings are mainly meters which have “clocked” and this is not being identified during validation. An appropriate audit trail is present for these adjustments and the raw file is still available.
- June 2014 files were calculated in SAP with the implausible readings manually replaced with zero value FE records.
- Revisions for the periods prior to May 2014 will be from legacy systems. Meter readings from SAP will not be considered by this process even if they are present. This may mean higher levels of FE in these files than expected. These revisions will be conducted in SAP once they are confirmed as 100% accurate.

Although some of the practices do not achieve compliance with the rules, Contact appears to have appropriate processes and controls in place to ensure the consumption information provided to the allocation agent is as accurate as possible. I allege a breach of rule 31.4.

5.3 Initial Submission Accuracy (Rule 37.2)

Final allocations were examined for the months June 2012 to May 2013. 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. The published percentage for the months analysed is 10%.

Contact did not meet this requirement for a number of gas gates during the 12 month period shown. The results are summarised in the table below.

Month	Total Gas Gates	Number Within 10%	% Compliant
June 2012	76	32	42%
July 2012	76	54	71%
August 2012	76	42	55%
September 2012	76	48	63%
October 2012	76	45	59%
November 2012	76	44	58%
December 2012	78	19	24%
January 2013	78	40	51%
February 2013	78	54	69%
March 2013	78	22	28%
April 2013	78	50	64%
May 2013	79	44	56%

The following table shows the difference between consumption information for initial and final submissions at an aggregated level for all gas gates.

Month	Initial Submission All Gas Gates (GJ)	Final Submission All Gas Gates (GJ)	Percentage Variation
Jun-12	275,444	289,957	5.0%
Jul-12	297,488	291,588	-2.02%
Aug-12	298,720	277,727	-7.56%
Sep-12	283,042	273,698	-3.41%
Oct-12	250,820	248,013	-1.13%
Nov-12	218,314	215,056	-1.51%
Dec-12	178,827	164,320	-8.83%
Jan-13	153,740	148,203	-3.74%
Feb-13	137,899	135,076	-2.09%
Mar-13	165,462	152,028	-8.84%
Apr-13	156,561	153,029	-2.31%
May-13	216,275	225,330	4.02%

The table above show that at an aggregate level, the consumption information submitted to the allocation agent for the initial allocation is within 10% of the consumption information submitted for the final allocation.

5.4 Forward Estimates (Rules 34 & 36)

The rules do not prescribe how forward estimates are to be calculated. Contact's forward estimate process is based on the following theory:

- Daily average consumption with temperature adjustment from an average at the same time the previous year, or if this isn't available then;
- Daily average consumption from the previous read to read period with temperature adjustment, or if this isn't available then;
- The average daily consumption for the particular billing class

5.5 Historic Estimates (Rules 34 & 35)

To assist with determining compliance of the historic estimate processes, Contact was supplied with a list of scenarios during the SAP implementation testing phase. For each scenario, a manual calculation was performed using the relevant seasonal adjustment shape file, and this was compared to the calculation performed in Contact's system. Compliance is confirmed for all scenarios. During this audit, the historic estimate calculation in SAP was compared to a manual calculation to further confirm compliance.

As mentioned in Section 5.2, some GAS040 files were created from estimated data at an aggregate level and some data was adjusted at an aggregate level to replace consumption based on implausible readings caused by meters "clocking" with a forward estimate of zero. Whilst the resulting files appear to be based on sound assumptions, the process is not compliant with the requirements of rules 35 and 36. Rule 35 describes the process for calculating consumption information when meter readings are available and rule 36 allows forward estimates to be calculated only when historic estimates cannot be calculated.

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 Contact's system at ICP level; the totals matched which confirms compliance. This also proves that Contact'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 some gas gates and checking the bills in SAP for all ICPs at that gate, against the total in the GAS070 files. This confirmed the accuracy of the data.

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 lower than quantities billed by 0.53%. 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 contain 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.

A summary of the billed vs consumption information is contained in the table below.

Year ending	Billed	Consumption	Percentage Difference
April 2012	3,597,521	3,553,002	-1.24%
April 2013	3,420,769	3,411,276	-0.28%
April 2014	3,266,215	3,265,653	-0.02%
Total	10,284,505	10,229,931	-0.53%

I checked the process for preparing GAS070 files for the period when Contact implemented their SAP system. The following points summarise the findings from this examination:

- The April 2014 file was from legacy systems.
- The May 2014 file was based on May 2013 and was not based on actual invoices.
- The June 2014 file was from SAP

Although some of the practices do not achieve compliance with the rules, Contact appears to have appropriate processes and controls in place to ensure the quantities billed information provided to the allocation agent is as accurate as possible. Rule 52.3.2 requires that GAS070 files are prepared from information sourced from financial records, which was not the case for the May 2014 file. There is no revision process for GAS070 files as there is for GAS040 and GAS050 files, so this information is not able to be revised even though accurate information is now available. I allege a breach of rule 52.2.1.

6. Recommendations

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

- Validation of altitude figures should occur to identify outliers.
- Validation of meter pressure should occur on a monthly basis with meter owners. Where meter pressure discrepancies exist, the correct pressure should be confirmed by examining meter docket or by conducting field visits.
- Monitoring of consumption vs allocation group should occur routinely.
- Joule-Thomson adjustment does not occur. I recommend Contact considers adjusting for the Joule-Thomson effect once network pressure populated in the registry by distributors is confirmed as correct for each specific network, in line with the GIC recommendations.

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>