Gas Downstream Reconciliation Performance Audit Final Report

For

Mighty River Power Limited

Prepared by Steve Woods – Veritek Ltd

Date of Audit: 23/11/10 & 24/11/10

Date Audit Report Complete: 12/04/11

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.

The purpose of this audit is to assess the systems, processes and performance of Mighty River Power Limited (MRPL) 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, V2.0" which was published by the GIC in October 2010.

The summary of report findings in the table below shows that MRPL's control environment is "effective" for eleven of the areas evaluated and "adequate" for the other four. There were no areas that were considered "not adequate".

Twelve of the fifteen areas evaluated were found to be compliant. Two breach allegations are made in relation to the remaining areas. They are summarised as follows:

- The use of incorrect meter pressure information has led to the submission of incorrect consumption information to the allocation agent. In some cases, the consumption information has been incorrect for a period greater than the due date for the final allocation, which will mean that some consumption information may not be included in the allocation process. As part of the resolution of this matter, I recommend that validation of meter pressure and meter dials be conducted on a monthly basis with meter owners. I also recommend that the switching rules be amended to include meter pressure and meter dials as registry fields that are maintained by meter owners.
- MRPL's initial submission accuracy did not meet the 15% requirement for all gas gates for the period October 2008 to September 2009.

At the November 2009 Retailer's Forum the issue of "consistency of application of gas billing factors" was discussed. It was agreed that this forum would draft a guideline to assist with addressing this issue. Contact Energy produced a draft guideline and I recommend that this draft guideline be further developed into a "Guideline note" to assist participants with compliance with the rules, and to ensure the consistent application of the relevant factors.

The issue of incorrect data in relation to meter pressure has now been identified in a number of performance audits. I recommend that this matter be raised at an industry wide level, with the following objectives:

- Determine the extent of meter pressure inaccuracy, by conducting meter pressure field checks and comparing these results to meter dockets, meter owner's databases and retailer's databases. This recommendation was also made during the 2009 event audit for the Greater Auckland gas gate.

- Identify initiatives to improve the current accuracy of meter pressure data.
- Improve validation processes to ensure further meter pressure errors are not introduced.

Summary of Report Findings

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
ICP set up information	2.1	Adequate	Compliant	Some time delays exist with the registry update systems and processes. A recommendation is made in relation to 1,442 ICPs where the altitude is recorded as zero, and may be inaccurate.
Metering set up information	2.2	Adequate	Not compliant	Some meter pressure and meter dial discrepancies exist between MRPL's and meter owners' records. It is recommended that validation is conducted 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	Effective	Compliant	Monitoring of consumption greater than 250GJ occurs on a monthly basis and allocation groups are changed as required.
Meter reading targets	3.3	Effective	Compliant	Meter reading occurs monthly for all ICPs. Meter reading attainment processes are robust.

Non TOU validation	3.4	Effective	Compliant	A robust validation process is in place before and after invoicing.
Non TOU error correction	3.5	Adequate	Not compliant	The error correction processes are robust, but are not applied in all cases.
TOU validation	3.6			Not applicable to the scope of this audit.
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			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 meter pressure and meter dial discrepancies exist between MRPL's and meter owners' records. This has resulted in incorrect consumption information being submitted to the allocation agent.
Initial submission accuracy	5.3	Effective	Not compliant	MRPL's estimate process includes a "factoring" process, which involves the use of historic profile shapes. Although compliance has not been achieved, the process is robust.
Forward estimates	5.4	Effective	Compliant	MRPL's forward estimate process includes a "factoring" process, which involves the use of historic profile shapes.

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	Compliant	On a long-term basis, MRPL's billed information is slightly higher 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.

Persons Involved in This Audit

Auditor:

Steve Woods
Veritek Limited

MRPL personnel assisting in this audit were.

Name	Title
Ken Leong	Compliance and Process Improvement Co-ordinator
Teuila Laika	Connection Centre Coordinator
Barbara O'Connor	Connections Centre Manager
Matt Suter	Technical Data Set-up Manager
Noriyo Yoshida	Customer Data Manager
Phillipa Huckstep	Customer Data Analyst
Brian Gribble	Billing and Payments Representative
Doreen Singh	Billing and Payments Representative
Mokaram Al-Zibaree	Validations Analyst - Team Leader
Roight Thomas	Compliance and Process Improvement Co-ordinator
Ranjesh Kumar	Pricing Operations Manager

Service providers assisting with processes within the audit scope:

Company	Processes
Datacol	Meter reading
Wells Instrument and Electrical	Meter reading

Contents

1. Pre-Audit and Operational Infrastructure Information

1.1 Scope of Audit

This Performance Audit was conducted at the request of the GIC in accordance with rule 65 of the Gas (Downstream Reconciliation) Rules 2008. 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, -

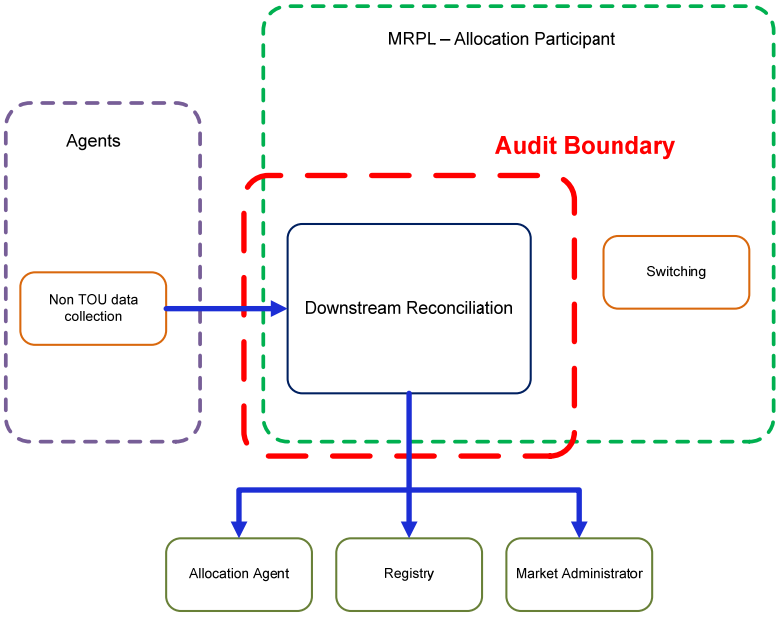
65.2.1 The performance of the allocation agent or that allocation participant in terms of compliance with these rules; and

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, V2.0" which was published by the GIC in October 2010.

The audit was carried out on November 23rd and 24th 2010 at MRPL'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. MRPL only has allocation group 4 and 6 ICPs, therefore 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 MRPL 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 MRPL 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 MRPL'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 considered statistically significant if it is unlikely to have occurred by chance. (Wikipedia)

1.3 General Compliance

This is MRPL's first performance audit under rule 65; therefore, there is not a previous audit report for review.

An event audit was conducted in 2009 for the Greater Auckland and Tawa A gas gates. The relevant finding of these audits, which has been further examined during this performance audit, is that pressure factors were incorrect for six ICPs.

MRPL has 41 alleged breaches recorded by the Market Administrator since October 2008. These are summarised as follows:

Nature of Breach	Rule	Quantity	Section in this Report
Switching Breaches		20	Not within audit scope
Initial vs final allocation variances more than 15 %	37.2	12	5.3
Late submission	31	2	5.2
Incorrect pressure factors used	28.2	1	2.2
Late trading notification	39.2.3	4	
Late submission of quantities billed files	52	1	5.7

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

Breach Allegation	Rules	Sections in this report
The use of incorrect meter pressure information has led to the submission of incorrect consumption information to the allocation agent.	26.2.1, 26.3 & 28.2	2.2, 3.5 & 5.2
MRPL's initial submission accuracy did not meet the 15% requirement for all gas gates for the period October 2008 to September 2009.	37.2	5.3

1.4 Provision of Information to the Auditor (Rule 69)

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

Information was provided by MRPL 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. The following party responded.

Party	Response	Comments provided	Attached as appendix
Powerco	Yes	Yes	Yes

The comments received were considered in accordance with rule 71.1, prior to preparing the final audit report. As a result, I have made some changes to the audit report.

Powerco indicated a desire to better understand some of the issues raised in this report, and the lack of conclusions in relation to the accuracy of meter pressure information in distributor's records was specifically mentioned. I have made a recommendation in Section 6 that this matter is addressed at an industry wide level.

1.6 Transmission Methodology and Audit Trails (Rule 28.4.1)

All meter reading data is transmitted to MRPL in a secure manner; either by FTP or text files with a checksum. 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 5259:2004, for metering equipment installed at each consumer installation, for which the retailer is the responsible retailer.

At the November 2009 Retailer's Forum the issue of "consistency of application of gas billing factors" was discussed. It was agreed that this forum would draft a guideline to assist with addressing this issue. Contact Energy produced a draft guideline and I recommend that this draft guideline be further developed into a "Guideline note" to assist participants with compliance with the rules, and to ensure the consistent application of the relevant factors.

Compliance with this rule has been examined in relation to the set-up of ICP, metering and billing 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. MRPL has a robust set of validation processes and reports to identify and resolve discrepancies. These were demonstrated during the audit. The validation compares SAP data to registry data, and includes:

- Retailer
- Allocation group
- Gas gate
- Altitude
- Network price category code
- Status
- Meter owner

The event detail report was checked and it was found that 168 ICPs had their status changed to ACTC during the period September 13th to 24th 2010. The registry was updated more than five business days after the actual event date for 65 of the 168 ICPs, and for 12 of these the registry was updated more than 20 business days after the actual event date. Most of these were changes from ACTV to ACTC and were not "new connections". Customers that move into properties with a status of ACTV are often only identified once the meter reading process has identified consumption. The average days from the actual event date to until the registry was updated was 8 days. Consumption information will not be provided to the allocation agent until the registry is updated, which means that for some ICPs where the status has changed to ACTC, consumption information will not be provided to the allocation agent for the initial allocation.

When an ICP is established in MRPL's system 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 livening notification. There is also monitoring of situations where a livening 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.

As an additional validation measure, the monthly meter lease invoicing process identifies any meters that have been installed on ICPs that MRPL does not have recorded as active.

152 ICPs were changed to ACTV during the same period, and one of these had a registry update duration of more than 20 business days. Forward estimates would have been calculated for this ICP until the registry was updated.

2.1.2 Altitude Information

It is a distributor responsibility to populate the registry with current and accurate altitude information and MRPL uses these figures.

NZS 5259:2004 Amendment No1, which was published in November 2009, contains two changes, which affect the way that altitude information should be managed.

1. The maximum permissible error has been reduced from ± 1.5% to ± 1.0% where the meter pressure is below 100kPa and ±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."

MRPL provided a registry list file and a random sample of ICPs per distributor was checked against "google earth" data. The "google earth" data is based on the "Shuttle Radar Topography Mission" (SRTM) results and a number of recent studies indicate an accuracy of ± 10m for altitude. An evaluation against this data is considered an appropriate test for "reasonableness". The requirement in point 1 above has been met for all ICPs examined. Altitude figures that are within approximately 90m of the actual altitude will ensure an accuracy of ± 1.0%. 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 ± 10m, 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. UNLG, NGCD and POCO all have only one ICP where the altitude figure differs by more than 20m.

Distributor	Total ICPs	ICPs checked	Quantity within 20m
UNLG	33,455	20	19
NGCD	5,211	20	19
POCO	5,067	20	19
GNET	1	1	1

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.

Distributor	Total ICPs	ICPs with altitude of zero	ICPs checked	Quantity within 20m
UNLG	33,455	586	20	8
NGCD	5,211	6	6	2
POCO	5,067	850	20	6
GNET	1	0	0	0

I have considered whether distributors have potentially breached any rules by populating the registry with inaccurate altitude information. Distributors have responsibility for populating the registry with altitude figures[2] and for maintaining the accuracy of this information. Nevertheless, rule 28.2 requires retailers to comply with NZS 5259:2004, which includes the altitude accuracy requirements mentioned above. I recommend that MRPL liaise with distributors to determine whether many of the ICPs with an altitude of zero should have more accurate figures populated. MRPL should keep GIC informed of progress in relation to this matter, and if improvements are not made to the accuracy of this data, MRPL should consider alleging a breach of the relevant Gas (Switching Arrangements) Rules 2008.

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

Vector changed some of their altitude information on the registry in July 2010 in order to comply with the NZS 5259:2004 Amendment No1. MRPL's registry validation process identified these changes, however due to a system limitation only 200 of 2,000 changes were made automatically. The remaining 1,800 were checked to determine if "re-billing" needed to occur because of the change. It was determined that the change was within the allowable error tolerance of ± 1% as outlined in Table 3 of NZS 5259:2004, so the changes were made later than July 2010 and changes were not made to historical data.

2.2 Metering Set-up Information

The event audits mentioned in Section 1.3 identified some meter pressure discrepancies. MRPL then conducted some further analysis for all gas gates and identified 348 ICPs where the meter pressure did not match that provided by the meter owner.

The discrepancies identified are shown in the table below.

Meter Owner	Total ICPs	Meter Pressure Discrepancies	Meter Dial Discrepancies
NGC	11,206	106	262
Powerco	2,227	82	9
Gas Net	1	1	0
Nova	713	11	12
Contact	29,175	148	6,278
	Total Discrepancies	**348**	**6,561**

The 348 meter pressure discrepancies have resulted in the under reporting of consumption information to the allocation agent of 863 GJ from October 2009 to October 2010. I estimate that there is a further 594 GJ that relates to the period prior to October 2009. This estimate is based on the following assumptions:

- MRPL was the retailer continuously for the period
- The consumption was consistent with the October 2009 to October 2010 consumption
- All relevant billing factors remained the same

MRPL updated their records for most of the ICPs from 19/11/2010 and the remainder were updated on 16/12/10. Although submission accuracy will be achieved from this date, there has not been any

historic submission of consumption information. The net effect is that total consumption information for the 348 ICPs has been under reported by approximately 1,457GJ. MRPL's customer billing was based on the same information, therefore there was no benefit to MRPL resulting from the under reporting of consumption information.

For 13 ICPs, MRPL verified the meter pressure through field visits or by checking meter dockets. For 2 of the 13, the meter pressure originally notified by the meter owner was incorrect. This sample size is too small to draw any conclusions; however, I recommend that meter dockets be checked for the other 335 ICPs to confirm that the correct data is being used.

The main cause of the incorrect meter pressure figures appears to be data entry at the time of set-up. MRPL had a limited number of options for meter pressure in a "drop down" menu and sometimes an incorrect one was selected. It was also assumed by some staff that all NGC meters should be set up as 2.75kPa. This was an incorrect assumption and this practice ceased on 18/11/10. The data entry issues appear to be resolved; however, it is still recommended that a meter pressure validation is conducted on a monthly basis with meter owners.

The invoices for a sample of 18 ICPs were checked where meter dial discrepancies exist and there does not appear to have been an effect on consumption information. The meter reading processes are designed to identify meter dial discrepancies that could affect meter reading accuracy. If the meter reader's hand held device is expecting more digits than the number of dials, then the reading is entered as normal and notification is made in the "readers notes" field for investigation. If the hand held is expecting fewer digits than the number of dials, then the reading is entered into the "readers notes" field and once again an investigation is conducted. Although this "safety net" appears to be robust, I recommend that meter dials validation be conducted on a monthly basis with meter owners. I also recommend that the GIC consider whether it is more appropriate for this information to be contained on the registry.

I recommend that meter owners be required to undergo performance audits to ensure the processes for recording and reporting metering set-up information are robust.

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.

2.3 Billing Factors

2.3.1 Temperature Information

For ICPs where the actual temperature is not measured NZS 5259: 2004 states that temperature may be estimated and four methodologies are provided. These are listed below in order of decreasing preference.

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

(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.

(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.

(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.

MRPL 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 2008 and contains daily average ground temperatures at a 300mm depth.

MRPL does not apply the Joule Thompson effect adjustment because network pressure information on the registry is not considered accurate. NZS 5259:2004 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 0.5º 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 Thompson effect is desirable. I recommend that distributors be required to populate this information accurately on the registry for use by retailers.

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 November 2010. In all cases, the information was correct.

The process was also observed for the daily downloading of this data. Whilst this process includes a manual step, the personnel involved appear to be following well-defined instructions. If the data is not loaded by 2.00pm each day, an automated email is sent to a particular workgroup.

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

Some data provided by MRPL'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, or as a text file with a checksum, 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.

MRPL only has allocation group 6 and 4 ICPs. Reporting is monitored to identify ICPs that have actual consumption above 250GJ, and if it is determined that the consumption is likely to remain at this level the allocation group is changed from 6 to 4. The most recent report was checked, which contained two allocation group 6 ICPs with historic consumption above 250GJ. These were immediately changed to allocation group 4.

MRPL reads all ICPs monthly, so allocation group changes do not result in a change of meter reading frequency.

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.

MRPL provided a copy of the GAS080 report for October 2010, along with a list of 17 ICPs not read within the last 12 months. The records in SAP were checked for a selection of ten of the 17 installations and it was found that "exceptional circumstances" existed in all cases.

The table below shows the GAS080 results.

Target	Reading Percentage (GAS080)
Rolling 4 months (target 90%)	99.57%
12 months (target 100%)	99.94%

MRPL 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 MRPL.

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 MRPL. 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. The quality of meter reading appears to be of a high standard, with an error rate of approximately 0.04%.

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.

Changes to consumption information can only occur if changes have been made to billing information. In most situations, MRPL adopts a "reverse and rebill" process to correct billing and therefore consumption information. This process was examined and as long as the "reverse and rebill" process is used, consumption information for prior consumption periods is included in the revision process and provided to the allocation agent.

As noted in Section 2.2, MRPL has not adopted the "reverse and rebill" process for 348 ICPs where meter pressure discrepancies existed, so although submission accuracy will be achieved from the date the changes were made, there has not been any historic submission of consumption information. The net effect is that total consumption information for the 348 ICPs has been under reported by 863GJ for the thirteen-month period. A breach allegation is made in Section 2.2 in relation to this matter.

3.6 TOU Validation

MRPL does not have 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 an ICP 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.

5. Estimation and Submission Information

5.1 TOU Estimation and Correction (Rule 30.3)

MRPL does not have any TOU customers.

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

MRPL'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 October 2010 was examined and compared to the data in MRPL's system at ICP level; the totals matched, which confirms compliance. This also proves that MRPL'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 that is recorded is converted into validated consumption and is then included in the allocation process, even though this consumption is not billed.

As noted in Section 2.2, there were 348 meter pressure discrepancies that have resulted in the under reporting of consumption information to the allocation agent of 863 GJ from October 2009 to October 2010. There is a further 594 GJ that relates to the period prior to October 2009. MRPL has updated their records for the 348 ICPs, so although submission accuracy will be achieved from the date of the change, there has not been any historic submission of consumption information. A breach allegation is made in Section 2.2 in relation to this matter.

5.3 Initial Submission Accuracy (Rule 37.2)

Final allocations are complete for the months October 2008 to September 2009. 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 15%.

MRPL 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 15%	% Compliant
October 2008	37	22	60%
November 2008	37	23	62%
December 2008	38	25	66%
January 2009	40	21	53%
February 2009	40	24	60%
March 2009	40	27	68%
April 2009	43	27	63%
May 2009	43	17	40%
June 2009	44	15	59%
July 2009	45	36	80%
August 2009	45	25	56%
September 2009	45	32	71%

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
October 2008	78,361	75,598	3.7%
November 2008	64,342	61,102	5.3%
December 2008	52,363	51,875	0.9%
January 2009	44,699	44,260	1.0%
February 2009	41,578	41,677	-0.2%
March 2009	53,318	56,493	-5.6%
April 2009	64,945	68,047	-4.6%
May 2009	112,927	133,224	-15.2%
June 2009	150,235	164,803	-8.8%
July 2009	165,997	167,421	-0.9%
August 2009	144,830	132,165	9.6%
September 2009	109,894	107,368	2.4%

The tables above show that the consumption information submitted to the allocation agent for the initial submission was reasonably accurate for most months. In May and June 2009, which were unseasonably cold months, MRPL under estimated for the initial submission. In August 2009 MRPL over estimated for the initial submission.

5.4 Forward Estimates (Rules 34 & 36)

MRPL's forward estimates are based on either:

- Historic readings
- Historic daily average consumption
- Average consumption based on ANSIC code

MRPL's forward estimate process also includes a "factoring" process, which involves the use of the average of the previous two-year's profile shape. This ensures that the over estimation or under estimation of submission information is minimised during "shoulder" months.

5.5 Historic Estimates (Rules 34 & 35)

To assist with determining compliance of the historic estimate processes, MRPL 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 MRPL's system. Compliance is confirmed for all scenarios. This test also proves that the correct shape file is used in each case.

Test	Scenario	Test Expectation	Result
A	ICPs become inactive part way through a month.	Consumption is only calculated for the Active portion of the month.	Compliant
B	ICPs become active then inactive within a month.	Consumption is only calculated for the Active portion of the month.	Has not occurred
C	ICPs become inactive, then active, then inactive again within a month.	Consumption is only calculated for the Active portion of the month.	Has not occurred
E	ICPs start on the 1st day of a month.	Consumption is calculated to include the 1st day of responsibility.	Compliant
F	ICPs end on the last day of the month.	Consumption is calculated to include the last day of responsibility.	Compliant
G	ICPs start part way through a month.	Consumption is calculated to include the 1st day of responsibility.	Compliant
H	ICPs end part way through a month.	Consumption is calculated to include the last day of responsibility.	Compliant
I & J	ICP's are lost and won back in a month.	Consumption is calculated for each day of responsibility.	Has not occurred
N	ICPs start on 1st and end on last day of month.	Consumption is calculated for each day of responsibility.	Has not occurred
O	Rollover reads	Consumption is calculated correctly in the instance of meter rollovers.	Compliant

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 MRPL's system at ICP level; the totals matched, which confirms compliance. This also proves that MRPL'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 those gates, against the total in the GAS070 files. This confirmed the accuracy of the data. The GAR080 return files were examined for the months October 2009 to August 2010. The table below shows that MRPL's consumption information that is submitted to the allocation agent is lower than the billed information by 1.0% for the 12-month period ending August 2010. This discrepancy can be explained by the fact that the revision process for billed data is different to that for consumption data.

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

Month	Billed (GJ)	Consumption (GJ)	% Difference
October 2009	1,146,035	1,130,653	-1.3%
November 2009	1,161,397	1,145,145	-1.4%
December 2009	1,168,235	1,160,674	-0.7%
January 2010	1,173,620	1,168,808	-0.4%
February 2010	1,178,307	1,173,953	-0.4%
March 2010	1,180,446	1,176,964	-0.3%
April 2010	1,162,678	1,174,732	1.0%
May 2010	1,138,012	1,145,996	0.7%
June 2010	1,116,894	1,119,168	0.2%
July 2010	1,123,881	1,114,692	-0.8%
August 2010	1,139,428	1,128,541	-1.0%

6. Recommendations

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

- 1,442 ICPs have "zero" populated in the registry altitude field. I recommend that MRPL liaises with distributors in relation to this matter to determine whether many of these ICPs should have more accurate figures populated. MRPL should keep GIC informed of progress in relation to this matter, and if improvements are not made to the accuracy of this data, MRPL should consider alleging a breach of the relevant Gas (Switching Arrangements) Rules 2008.
- 348 meter pressure discrepancies were found between MRPL's and meter owners' records. Meter dockets were examined for 13 ICPs and it was found that for 2 of the 13 ICPs, the meter pressure originally notified by the meter owner was incorrect. This sample size is too small to draw any conclusions; however, I recommend that meter dockets be checked for the other 335 ICPs to confirm that the correct data is being used. I recommend that validation occurs on a monthly basis with meter owners to address this matter.
- 6,561 meter dial discrepancies were found between MRPL's and meter owners' records. I recommend that validation occurs on a monthly basis with meter owners to address this matter.

An additional general recommendation is made in relation to billing factors. At the November 2009 Retailer's Forum the issue of "consistency of application of gas billing factors" was discussed. It was agreed that this forum would draft a guideline to assist with addressing this issue. Contact Energy produced a draft guideline and I recommend that this draft guideline be further developed into a "Guideline note" to assist participants with compliance with the rules, and to ensure the consistent application of the relevant factors.

Three recommendations are made in relation to the setup and maintenance of information:

- That meter owners be required to undergo performance audits to ensure the processes for recording and reporting metering set-up information are robust.
- That the switching rules be amended to include meter pressure and meter dials as registry fields that are maintained by meter owners.
- That the switching rules be amended to include an accuracy requirement for altitude information populated by distributors.

The issue of incorrect data in relation to meter pressure has now been identified in a number of performance audits. I recommend that this matter be raised at an industry wide level, with the following objectives:

- Determine the extent of meter pressure inaccuracy, by conducting meter pressure field checks and comparing these results to meter dockets, meter owner's databases and retailer's databases. This recommendation was also made during the 2009 event audit for the Greater Auckland gas gate.

- Identify initiatives to improve the current accuracy of meter pressure data.
- Improve validation processes to ensure further meter pressure errors are not introduced.

Appendix 1 – Control Rating Definitions

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

Appendix 2 – Powerco Comments

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15 March 2011

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[Sent by email to: steve.woods@xtra.co.nz]

POWERCO

Dear Steve,

Gas Downstream Reconciliation Performance Audit Draft Report for Mighty River Power

1. Thank you for the opportunity to comment on the '*Gas Downstream Reconciliation Performance Audit Draft Report for Mighty River Power*'.

2. We are keen to understand the practical issues identified in the report in more detail. The report highlights that in some cases sample sizes of data are not sufficient to draw conclusions and we would wish to investigate these areas in more detail (methodology, materiality etc).

3. Powerco looks forward to working with the Gas Industry Company to better understand the issues raised in this audit. We take our responsibilities as a prudent network operator very seriously and as a result seek to understand and resolve issues as we become aware of them.

Yours sincerely,

Charlotte Littlewood

Charlotte Littlewood
Regulatory Manager
Powerco