



Spectra Energy Transmission - BC Pipeline and Field Services

Field Services Raw Gas Transmission Measurement Policy

Measurement Technical Services

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1 Purpose

This policy outlines the requirements for design, maintenance and operation of Receipt Point measurement facilities connected to Spectra Energy Transmission's Field Services RGT System. The requirements within the main body of this policy are supplemented through specifications included in the Appendix which are subject to occasional updating. It is the Receipt Point Operator's responsibility to ensure it is using the most recent version of this policy and supporting specifications.

2 Application

This policy applies to all measurement, pressure control and over-pressure protection facilities and equipment tying into Spectra Energy Transmission's Field Services RGT System, whether on a long term or temporary basis.

These policy requirements are the minimum standard necessary for SET to effectively execute its measurement, allocation and system integrity business processes on its RGT System as of the date of drafting this policy. The RGT System is federally regulated however in some cases, provincial regulatory requirements may dictate additional design, operational or maintenance needs. In such cases, it is the responsibility of the Receipt Point Operator to ensure the provincial requirements are being met.

3 Definitions

"Deactivation" means to close and lock the SET tie-in valve to prevent gas flow from a Receipt Point onto the SET RGT System.

"Downstream Tap" means any size physical tap into the piping between a Receipt Point meter and the SET pipeline that enables gas or hydrocarbon liquid to be removed from or injected into that piping.

"EFM" means Electronic Flow Measurement.

"GT&C" means the SET BC Pipeline and Field Services General Terms and Conditions, also known as the Pipeline Tariff.

"Inspection" means an inspection by SET of a Receipt Point to ensure it meets the requirements of this policy.

"Lateral Pipeline" means the pipeline constructed, owned, maintained and operated by the Receipt Point Owner that connects its Receipt Point to the SET Tie-in.

"Policy" means this document, the RGT Measurement Policy, referred to in the GT&C as Westcoast's Measurement Policy.

"Primary Measurement Device" means the metering element used to measure gas or liquid flow.

"Reactivation" means to unlock and open the SET tie-in valve to allow gas flow from a Receipt Point onto the SET pipeline.

"Receipt Point" within the context of this document means a metering facility measuring gas onto, and possibly off, an RGT system. A Receipt Point may be located at the SET Tie-in or it may be located at the Receipt Point Owner's central facility and connected to the SET Tie-in by means of a Lateral Pipeline. The facility may include, but is not necessarily

limited to, buildings, piping, primary, secondary and tertiary measurement devices, analyzers, gas sampling devices, modem, land line, radio, tower, antennae, utilities and other associated ancillary equipment.

“Receipt Point Operator” means the operator of a Receipt Point, which may be the Receipt Point Owner or an agent contracted by the Receipt Point Owner to operate the Receipt Point.

“Receipt Point Owner” means the owner of a Receipt Point.

“RGT System” means SET owned and operated raw gas gathering and transmission system.

“RTU” means remote terminal unit.

“Secondary Measurement Device” means the pressure and temperature measurement devices used for correction of flow to base conditions.

“SET” means Spectra Energy Transmission West, BC Pipeline and Field Services.

“TAP” means the physical connection, located on the SET right-of-way, of a Receipt Point Owner lateral to an RGT system.

“Tie-in” means the location at the edge of SET’s right-of-way where a Receipt Point or Lateral Pipeline ties into the RGT System; the point at which custody of gas is formally transferred to SET.

“Tertiary Measurement Device” means the electronic flow computer or chart recorder.

4 Standards

The following regulations and standards must be applied to the measurement of gas and liquid hydrocarbons at RGT Receipt Points:

- American Gas Association Reports No. 3, 5, 7, 8, 9, 11;
- Gas Processors Association (GPA) 2145, 2165, 2166, 2172, 2174, 2261, 2286;
- American Petroleum Institute (API) Manual of Petroleum Measurement Standards;
- Canadian Standards Association (CSA) Z662 latest revision;
- American Society for Testing and Materials (ASTM) D4407, D5504

The standards and regulatory requirements to be adhered to include, but are not necessarily limited to, the following:

1. Volume and energy shall be reported in SI units at standard base conditions of 101.325 kilopascals (kPa) and 15 degrees Celsius (°C).
2. Gas volumes shall be determined and reported to the nearest one tenth of a thousand cubic meters ($0.1 \times 10^3 \text{m}^3$). Hydrocarbon liquid volumes shall be determined and reported to the nearest one tenth of a cubic meter (0.1m^3).
3. All energy equivalents shall be determined and reported to the nearest gigajoule (GJ).
4. The preferred units of measure for temperature and pressure are SI but they may be reported in Imperial so long as the units are consistent once selected. For differential pressures reported in inches of water column, the reference temperature of the water column shall be 60°F.

5. Atmospheric pressure (P_a) shall be calculated using either of the following equations, based on the actual elevation of the meter above mean sea level as determined from the most recent applicable topographical maps published by the Department of Energy, Mines and Resources.
 - P_a (kPa) = $101.560 - (0.0113 \times \text{elevation in meters})$
 - P_a (psia) = $14.73 - (0.0005 \times \text{elevation in feet})$
6. Volumes of gas through orifice meters shall be determined in accordance with the Third Edition (1992), and amendments thereof, of AGA Report No. 3, "Orifice Metering of Natural Gas and Other Related Hydrocarbon Fluids", Part 3, "Natural Gas Applications".
7. Volumes of gas through velocity and positive displacement meters shall be determined in accordance with the Second Revision (1996), and amendments thereof, of AGA Report No. 7, "Measurement of Gas by Turbine Meters".
8. Gas compressibility factors shall be determined in accordance with the Second Edition (1992), and amendments thereof, of AGA Report No. 8, "Compressibility Factors of Natural Gas and Other Related Hydrocarbon Gases", Detail Characterization Method.
9. Volumes of hydrocarbon liquids measured through positive displacement, turbine and mass flow meters shall be determined in accordance with Chapters 12.2 and 20 of the API Manual of Petroleum Measurement Standards. Corrections to the volumes shall be made if:
 - The volumes are measured at temperatures other than 15°C. Correction to the corresponding volume at 15°C must be made by applying the temperature correction factor C_{T1} . As appropriate for the product being metered, tables 53A, 53B, 54A, and 54B in Chapter 11.1 of the API Manual of Petroleum Measurement Standards shall be used to determine this factor. For light hydrocarbons outside of the ranges stated in Chapter 11.1 (610.5 to 1075.0 kg/m³) Table 53 of ASTM-IP-API "Petroleum Measurement Tables for Light Hydrocarbons" can be used for densities between 500 and 653 kg/m³.
 - The volumes are measured at a pressure above the base pressure or above the liquid's equilibrium vapour pressure. Correction to base pressure or equilibrium pressure, whichever is greater, must be made by applying the pressure correction factor C_{p1} . However, no pressure correction factor is applied at measurement points immediately downstream of a separator where the vapour pressure is equal to the separator's operating pressure. For density ranges between 638.5 and 1074 kg/m³, the appropriate correction factors are provided in Chapter 11.2.1M of the API Manual of Petroleum Measurement Standards. For density ranges between 350 and 637 kg/m³, the appropriate correction factors are provided in Chapter 11.2.2M. For commercial natural gas liquids, the appropriate correction factors are provided in API Chapter 11, Addendum to Section 2, Part 2.
10. Heating values shall be determined in accordance with the current edition, and amendments thereof, of GPA 2172-96, "Calculation of Gross Heating Value, Relative Density, and Compressibility of Natural Gas Mixtures from Compositional Analysis".
11. Physical constants shall be based on Revision 2 (2000), and amendments thereof, of GPA Standard 2145-00, "Table of Physical Constants for Hydrocarbons and Other Compounds of interest to the Natural Gas Industry".

Refer to the GT&C, Articles 13 through 15 for other standards as related to contractual obligations. Where there is conflict or duplication of information between this policy and the GT&C, the GT&C is the governing standard.

5 Facility Ownership and Operation

Receipt Points connecting to the RGT System are to be owned by the producers or shippers moving gas onto the RGT System, referred to as Receipt Point Owners. The Receipt Point Owner is responsible for the design, installation, operation and maintenance of all measurement equipment at its Receipt Point. Design, installation, operation and maintenance of the Receipt Point must adhere to the requirements stated in this Policy.

SET will assume the operation and maintenance of all moisture analyzers and related equipment required under this Policy. The Receipt Point Owner must enter into a standard Moisture Analyzer Maintenance Agreement with SET to cover such operation and maintenance. Other exceptions to the operational requirements under this Policy may be dictated by SET where necessary to ensure the integrity of its RGT System.

6 Auditing

SET or an independent agent acting on its behalf will perform Receipt Point audits when business circumstances warrant. Audits may take, but are not necessarily limited to, the following forms:

- Production Source: Includes audit of all measured well volumes, compositional analyses and associated production source groupings.
- Receipt Point: Includes audit of sampling methods and compositional analyses used in the gas and liquid volume determinations; maintenance, verification and calibration of primary, secondary and tertiary measurement devices; configuration of flow computers and volume calculations; liquid meter proofs.

Receipt Point Owners and Shippers have access to SET RGT allocation data as per the GT&C.

7 Records Retention

Receipt Point Owners must maintain all Receipt Point measurement records for a period of two years after the volume transaction has occurred. The records must include all data and information required to recalculate and verify hourly and daily quantities, which includes, but is not necessarily limited to:

- Hourly and daily historical records (includes charts if no EFM used)
- Event and alarm logs
- Calibrations
- Configuration and other changes affecting the meter operation

Receipt Point Operators with EFM devices that are polled for hourly and daily historical data or event logs by SET's SCADA system are not required to retain those specific records unless expressly requested to do so by SET during a SCADA outage. However, the Receipt Point Operator must still collect and retain the remaining records described above. The download period must be shorter than the storage capability of the EFM device to ensure no

data is lost. For example, if only 35 days of data can be stored in an EFM device, the Receipt Point Owner must perform a download within each 35 day period. If the EFM storage capability is longer than 35 days then the download intervals can be adjusted accordingly.

8 SET Inspection and Witnessing

A SET technician or approved contractor must perform an Inspection of new and reactivated Receipt Points and Lateral Pipelines to ensure adherence with this Policy prior to the Receipt Point Operator being allowed to flow gas onto the RGT System. Receipt Points that have not flowed gas onto the RGT System for six months or more must also have an Inspection performed before being allowed to flow. The Receipt Point Owner is responsible for ensuring the primary, secondary and tertiary measurement devices are calibrated and its Lateral Pipeline, if applicable, has been dried of water to 4 lbs/mmscf or less prior to the Inspection. The Inspection will include, but is not necessarily limited to:

- confirmation that piping arrangements and measurement devices match the Receipt Point Owner provided documentation, such as P&ID's, meter certificates, etc., that were approved for construction by SET's Measurement Technical Services;
- witnessing a verification of primary, secondary and tertiary measurement devices as performed by the Receipt Point Owner or its contracted agent;
- dew point readings and/or moisture analyzer inspection at the Receipt Point and Tie-in locations;
- confirmation of SCADA communication and/or functionality; and
- inspection and function test of pressure control and over-pressure protection systems.

SET's inspector shall forward to SET Measurement Technical Services an internal copy of all Inspection related documentation plus digital images of the site, the site elevation, legal location and any other pertinent information.

SET retains the right to witness and inspect any and all Receipt Point installation, testing, repair, calibration, or other maintenance and operation activities related to the requirements of this policy, performed by the Receipt Point Owner or its contracted agent. If requested, the Receipt Point operator shall provide SET with reasonable notice of the above activities such that SET may have a representative present.

SET may, from time to time, perform an inspection of the Receipt Point measurement, pressure control and overpressure protection equipment to assess compliance with this policy and ensure no unauthorized changes have been made. The inspection may include a review of Receipt Point Owner activities to ensure that its operation and maintenance of the Receipt Point are adhering with the requirements of this Policy. It is the Receipt Point Owner's responsibility to schedule a resource as requested by SET to assist in these inspections.

9 Non Compliance

Non compliance with the requirements of this Policy by the Receipt Point Owner or its contracted agent may result in the Receipt Point Owner being assessed penalties by SET as outlined in the GT&C and the RGT Receipt Point Compliance & Corrective Action Table in the Appendix.

10 Receipt Point Design

Design and installation of Receipt Point facilities are the responsibility of the Receipt Point Owner. The Receipt Point Owner must ensure that design and construction of its Receipt Point facilities adhere to the requirements of this Policy and supporting specifications in the Appendix.

10.1 General

General requirements for the design of all Receipt Point facilities are as follows:

1. The measurement of upstream gas and liquid hydrocarbons is not regulated by Industry Canada. However, in most cases SET requires that primary, secondary and tertiary measurement devices considered for use at RGT Receipt Points have a Notice of Approval from Measurement Canada (an agency of Industry Canada). All devices, firmware versions and/or software loads that are approved for use on SET RGT systems are listed in the Appendix.
2. Un-metered taps for return fuel gas, flaring, etc. must be located upstream of the Receipt Point meter.
3. The design and installation shall ensure that well fracturing components do not enter the RGT System. This includes, but is not necessarily limited to, water, chemicals, sands and particulates. Preventative measures may include dedicated specialized filtration, sand detection and shut down systems, or other controls as may be presented to and approved by SET.
4. The Receipt Point Owner must ensure that a Bureau of Mines approved chilled mirror type dew point tester meeting ASTM D1142 and/or GPA 2140 standards with a supply of chill gas is permanently installed, or readily available for use, at every Receipt Point. The specific model supplied must be manufacturer approved for sour gas application and have a pressure rating equal to or greater than the maximum allowable operating pressure of the Receipt Point.
5. If the Receipt Point Owner wishes to be allocated liquid hydrocarbons that are delivered in liquid phase to the McMahon or Fort Nelson portions of the RGT System, the Receipt Point must be equipped with liquid metering and the liquid re-injected downstream of the Receipt Point gas meter.
6. If liquid phase hydrocarbons are to be re-injected, a water-cut monitor must be installed on the liquid injection line with the capability of shutting down injection if the water content exceeds 0.5%, or some lower value if directed by SET.
7. The metering equipment must be properly housed within a heated and sufficiently sized building to enable proper access, operation, maintenance and emergency egress.
8. Receipt Points must have a communication link to SET's SCADA system, unless otherwise exempted in writing by SET Measurement Technical Services.
9. Pressure control and over-pressure protection devices must be used to ensure that gas and injected liquids are not, at any time, delivered to SET RGT systems in excess of the maximum pressures detailed in the GT&C.

10. The Receipt Point must be located within 30 metres of SET's right-of-way unless justification for locating elsewhere is provided by the Receipt Point Owner and approved by SET, in which case a Lost Gas Indemnity Agreement covering the Lateral Pipeline shall be required.
11. Lateral Pipelines must be designed to include a means to prevent contaminants from being pigged directly into the RGT System during initial commissioning and normal operation. At the receiving end of the lateral this may include, but is not necessarily limited to, installation of a separator, specialized filtration, a shut down system or other controls as may be presented to and approved by SET.

10.2 Downstream Taps

Gas returned, delivered or vented from taps downstream of the Receipt Point meter must be measured separately with equipment adhering to the requirements of this Policy unless otherwise allowed by the RGT Downstream Tap Specification in the Appendix.

10.2.1 Return Fuel

Receipt Points requiring raw fuel gas returned from a tap downstream of the Receipt Point meter must meter the returned fuel with equipment adhering to the requirements of Section 10.4 - Gas Measurement. Exceptions to this requirement may be granted by SET on an emergency basis only.

10.2.2 Existing Downstream Taps

Existing downstream taps that are not metered shall be plugged if 33.4 mm (NPS 1) or smaller in outside diameter and plugged and welded if larger than 33.4 mm in outside diameter. Exceptions to this requirement, for the depressurization of small pipe segments, may be granted upon review by SET.

10.2.3 Dual Flow Receipt Points

If production at a Receipt Point is capable of flowing into more than one gathering system, the Receipt Point must be equipped with a SET approved meter and EFM device that is dedicated only to measuring the flow of gas onto the RGT system. Exceptions to this requirement are outlined in Section 13 - Temporary Production to SET.

10.3 Measurement Equipment

The Receipt Point Owner must ensure that all measurement equipment ordered for its Receipt Point meets the requirements outlined in this policy. Equipment specifications to be adhered to are included in the Appendix.

The Receipt Point Owner must forward a copy of the applicable following documentation to SET Measurement Technical Services for review and approval prior to being allowed to flow into SET's RGT system:

1. equipment manufacturer/fabricator inspection, testing and calibration certificates;
2. third party calibration certificates; and
3. if requested, Measurement Canada Notice of Approvals.

10.4 Gas Measurement

Design of Receipt Point gas measurement systems must adhere to the requirements in this section and the equipment specifications the Appendix.

Gas measurement requirements are based on the Canadian Electricity and Gas Inspection Act and Regulations, Measurement Canada standards and the business needs of SET.

10.4.1 Primary Measurement Device

Primary metering devices approved for measurement of gas volumes at Receipt Points are the dual chamber orifice meter and ultrasonic meter. Refer to the [RGT Orifice Meter Specification](#) and [RGT Ultrasonic Meter Specification](#) in the Appendix for approved primary measurement devices and related specifications to which Receipt Point Owners must adhere.

Alternate primary measurement devices may be considered and approved by SET upon application by the Receipt Point Owner.

10.4.2 EFM Secondary & Tertiary Devices

All new Receipt Points must have Electronic Flow Measurement (EFM). Secondary and tertiary metering devices approved for measurement of gas volumes at Receipt Points are pressure and temperature transmitters and pulse generators combined with an electronic flow computer. Refer to the [RGT EFM Device Specification](#) in the Appendix for approved EFM devices, firmware, software and related specifications to which Receipt Point Owners must adhere. Devices must be used with the SET specified software versions.

Additional requirements are as follows:

- Access to the EFM device that allows for configuration changes or any other type of “write” functionality must be password protected.
- The EFM device’s control functionality must not be used for any plant related controls. Control logic shall be limited to non-essential functions related to the measurement system such as run switching.
- The EFM device outputs may be used for monitoring up to four points but in no case shall those outputs be used for any plant related controls.

10.4.3 Chart Recorders

Dry flow recorders, full scallop recorders, and mechanical integrators for volume measurement must only be used as backup devices, except where they are grandfathered from earlier policy versions. Upon request by a Receipt Point Owner, SET may grant a short-term approval for use in a temporary installation until EFM devices can be installed as required by this Policy. If such approval is granted, the following requirements apply:

- Recording and integrating devices must have a Measurement Canada Notice of Approval.
- Dry flow recorders by Dri-Flo II (formerly American), Barton or Foxboro are acceptable.

- Chart cycles shall not exceed 8 days.
- For automatic type of chart changers, the Mullins type changer is acceptable.
- A separate temperature recorder must be utilized if intermingling of the temperature trace will occur with those of the pressure and differential traces on a 3-pen chart recorder.
- Mercury filled chart recorders are not permitted at Receipt Points delivering to SET.

10.4.4 Moisture Analyzers

Refer to the RGT H2O Analyzer Specification in the Appendix for approved moisture analyzers and related specifications (RTU included) to which Receipt Point Owners must adhere.

Receipt Points on the following systems and pipelines must include a moisture analyzer and RTU for monitoring the water vapour content of gas flowing into the SET system on a real time basis.

- Grizzly Valley portion of the RGT System – all pipelines
- Fort Nelson portion of the RGT System – the Ekwan, Junior, Sahteneh, Sierra-Sahteneh, Sierra, Sierra Loop, 12" Maxhamish, 24" Maxhamish Loop and Beaver River pipelines
- McMahon portion of the RGT System – the South Peace pipelines

The moisture analyzer installation must include a SET standard RTU configured to automatically close the Receipt Point isolation valve if the water vapour content of gas flowing into the SET system exceeds the limits listed in the RGT H2O Analyzer Specification in the Appendix. The moisture analyzer RTU must provide data feeds to SET's SCADA system and allow remote valve control as outlined in the related equipment specification.

SET may dictate additional requirements for the installation and operation of moisture analyzers where necessary to ensure the integrity of the RGT System.

10.4.5 Gas Sampling

Refer to the RGT Gas and Liquid Sampling Equipment Specification in the Appendix for approved gas sampling equipment and related specifications to which Receipt Point Owners must adhere.

All Receipt Points must have at least two gas sample taps located within the meter building, upstream of the gas meter run, and located such that samples are taken from a fully developed flowing stream.

Sampling equipment used for the collection of gas samples must comply with the latest revision of API Chapter 14.1 - "Collecting and Handling of Natural Gas Samples for Custody Transfer" or GPA 2166 – "Obtaining Natural Gas Samples for Analysis by Gas Chromatography".

10.5 Liquid Measurement and Injection

Liquid measurement requirements are based on API standards, the Canadian Weights and Measures Act and Regulations, the Drilling and Production Regulations of the

Petroleum and Natural Gas Act of British Columbia, the Oil and Gas Conservation Regulations of Alberta and the business needs of SET. Measurement Canada approval of equipment, facilities or calculation methods is not required for liquid hydrocarbon metering.

Design of Receipt Point liquid hydrocarbon measurement and injection systems must adhere to the requirements in this section, and where referred to, the related specifications in the Appendix.

The plant allocation of residue gas and liquid products is based on Receipt Point gas and liquid measurement as defined in Section 8 "Plant Allocation" of the SET Shipper Handbook. Acceptance of injected liquid hydrocarbons for delivery onto the McMahan, Fort Nelson, Aitken Creek and Dawson portions of the RGT System will be at SET's sole discretion and, if accepted, accounted for based on the following:

1. If SET approved liquid metering is installed at the Receipt Point, and routine liquid analyses are submitted in accordance with the requirements of this policy, data from the liquid meter and analyses will be used in the plant allocation to account for liquids injected at the Receipt Point.
2. If SET approved liquid metering is NOT installed, or routine liquid analyses are NOT submitted in accordance with the requirements of this policy, liquids injected at the Receipt Point will NOT be accounted for in the plant allocation.

If a Receipt Point Owner has hydrocarbon liquids present but is refused or chooses not to inject those liquids for delivery on the McMahan, Fort Nelson, Aitken Creek and Dawson portions of the RGT System, the liquids must be stored, trucked, or handled otherwise at the sole expense of the Receipt Point Owner.

10.5.1 Primary Measurement Device

Refer to the *RGT Liquid Meter Specification* in the Appendix for additional liquid meter and installation specifications to which Receipt Point Owners must adhere.

Properly sized and installed turbine, positive displacement or mass flow meters are acceptable for the measurement of liquid hydrocarbons re-injected into the McMahan or Fort Nelson portions of the RGT System. Meters must have a specified uncertainty of +/- 1.0%, or better if required by a regulatory authority, and undergo a factory calibration to prove the accuracy specification applies over the full flow range the meter is expected to experience in service and to determine the meter's K factor for that flow range. A copy of the calibration certificate must be provided to SET's inspector if so requested by SET.

10.5.2 EFM Secondary & Tertiary Devices

Refer to the *RGT EFM Device Specification* in the Appendix for approved EFM devices, firmware, software and related specifications to which Receipt Point Owners must adhere.

All new Receipt Points must have Electronic Flow Measurement (EFM) to which the liquid meter must be connected for volumetric calculation. EFM devices and the related specifications that are acceptable for the measurement of liquid volumes at Receipt Points are outlined in the supporting specification. Procurement, installation and configuration of EFM devices must conform to these requirements and use SET specified software versions.

Additional requirements are as follows:

- The EFM device must be capable of calculating liquid flow based on the type of liquid meter installed and applicable API standards.
- The EFM device must be capable of establishing a complete audit trail and reporting raw data and volumes on an hourly and daily basis.
- Access to EFM devices must be password protected.
- The EFM device's control functionality must not be used for any plant related controls. Control logic shall be limited to non-essential functions related to the measurement system such as run switching.
- The EFM outputs may be used for monitoring of up to four points but in no case shall those outputs be used for any plant related controls.

10.5.3 Liquid Injection Location

Liquid hydrocarbons injected for delivery on the McMahon, Fort Nelson, Aitken Creek and Dawson portions of the RGT System must be injected downstream of the Receipt Point dry gas meter.

10.5.4 Water Cut Monitoring

Refer to the *RGT H2O Cut Monitor Specification* in the Appendix for approved water cut monitors and related requirements to which Receipt Point Owners must adhere.

All Receipt Points that inject liquid hydrocarbons for delivery on the McMahon, Fort Nelson, Aitken Creek and Dawson portions of the RGT System, regardless of whether the liquids are being metered or not, must be equipped with a water cut monitor to continuously monitor the percentage of water in the injected liquid stream. The monitor installation must include a SET standard control RTU configured to automatically close an isolation valve on the SET injection stream if the water content exceeds the limits listed in the *RGT H2O Cut Monitor Specification* in the Appendix. Upon isolation, off specification liquid hydrocarbons may be diverted to holding tanks or some other process area, but must not be injected into the SET system. The water cut monitor RTU must provide data feeds to SET's SCADA system and allow remote isolation valve control as outlined in the related equipment specification.

SET may dictate additional requirements for the installation and operation of water cut monitors where necessary to ensure the integrity of the RGT System.

The Receipt Point Operator must provide written notification to SET Volume Accounting and submit a Receipt Point Change Form to SET Measurement Technical Services as soon as possible anytime it ceases or resumes routine injection of liquid hydrocarbons at its Receipt Point.

10.5.5 Liquid Sampling

Refer to the *RGT Gas and Liquid Sampling Equipment Specification* in the Appendix for approved liquid sampling equipment and related specifications to which Receipt Point Owners must adhere.

All Receipt Points that inject liquid hydrocarbons for delivery on the McMahon, Fort Nelson, Aitken Creek and Dawson portions of the RGT System must have at least one liquid sampling tap located within the meter building, upstream of the liquid meter run, and located such that samples are taken from a fully developed flowing stream.

10.6 Communications

Remote communication enables Receipt Point measurement data to be polled through SET's SCADA system on an as needed basis. Refer to the [RGT Communications Specification](#) in the Appendix for communications equipment and specifications to which Receipt Point Owners must adhere.

All Receipt Points must have a remote communications link installed between the EFM/RTU devices and the nearest SET communications hub, unless otherwise indicated in writing by SET Measurement Technical Services. Except where grandfathered from earlier policy versions, exemptions will only be considered for Receipt Points where the cost of installing remote communications cannot be justified, and the design flow rate, contract demand, or daily flow on any day does not exceed:

1. 56.7 E3M3 (2 mmscfd) on the Fort St. John portion of the RGT System; or
2. 141.6 E3M3 (5 mmscfd) on the Fort Nelson portion of the RGT System.

In these cases, EFM data must be reported as described in [Section 11.8 - Reporting and Notifications](#). If at any time the contract demand or daily flow for an exempted Receipt Point exceeds the above limits, the exemption is no longer valid and a communication link must be installed to provide SET with timely measurement data.

Receipt Points defined in Section 10.4.4 as requiring a moisture analyzer must have a communication link with SET's SCADA system and will not be considered for exemptions.

10.7 Pressure Control and Overpressure Protection

All Receipt Points must include gas and liquid pressure control and overpressure protection systems to ensure protection of SET pipelines and facilities. The design and installation of these systems must meet or exceed the requirements of the latest revision of Canadian Standards Association (CSA) Z662 and this Policy's supporting specification, whether located at the Receipt Point or TAP location. Refer to the [RGT Pressure Control and Overpressure Protection Specification](#) in the Appendix for allowable system designs and related requirements to which Receipt Point Owners must adhere.

10.8 Supplied Pressure Indication

For SET Gas Control monitoring purposes, all new and reactivated Receipt Points must provide a live pressure signal that is sourced from downstream of the pressure control device that has been designated for protection of the RGT System. If the Receipt Point meter is located downstream of the designated pressure control device then the SET EFM provides the necessary pressure signal. However, if the designated pressure control device is located downstream of the Receipt Point meter, then an additional live pressure signal must be sourced from downstream of the designated pressure control device and provided to the SET standard control RTU for remote monitoring purposes.

10.9 SET Remote Isolation

All new and reactivated Receipt Points must include an emergency isolation valve and a SET standard control RTU that provides SET Gas Control the ability to remotely isolate the Receipt Point facility from the RGT System. SET, at its own discretion and without the need of assistance from the Receipt Point Operator, must have the ability to quickly isolate Receipt Points from the RGT System in the event of an emergency.

The emergency isolation functionality may be added to or shared with a valve designated for pressure control or overpressure protection of the RGT System or a valve being used for automated SET isolation due to off specification gas quality. Signals for the isolation valve's open/close status must be provided to the SET standard control RTU.

11 Receipt Point Operation

Receipt Point Owners are responsible for operating and maintaining their Receipt Points in adherence with the requirements of this Policy.

11.1 Receipt Point Changes

Changes to Receipt Point gas or liquid measurement, pressure control and overpressure protection systems must be requested from SET in writing using the SET Receipt Point Change Form. The Receipt Point Owner and Receipt Point Operator must NOT make any changes to its measurement, pressure control or overpressure protection systems without prior written approval of SET.

SET must be notified of Receipt Point deactivations and reactivations using the SET Receipt Point Change Form.

11.2 Gas Contract Hour and Clock Settings

All Receipt Point gas and liquid measurement devices must be configured with a gas day start time equivalent to 09:00 Central Standard Time (CST).

EFM/Chart clocks must always be set to Standard Time. Preferably, they will be set to either Pacific Standard Time (PST) or Mountain Standard Time (MST) with the 09:00 CST equivalent contract start time set as follows:

1. If clock set to PST, contract start time will be set to 07:00 PST.
2. If clock set to MST, contract start time will be set to 08:00 MST.

Once the time zone and clock are set and the device configured to a 09:00 CST "equivalent" contract start time, the device time zone, clock and start time settings are NOT to be changed throughout the year to account for Daylight Savings Time. The Receipt Point Owner must ensure that the clock time remains set to Standard Time in the initial configured time zone.

Refer to the RGT Clock Settings Specification in the Appendix for an explanation of setting clocks during Daylight Savings Time.

11.3 Time Sync Requirements

Clock time within Receipt Point Owner operated measurement devices must remain accurate on a daily basis to +/- 1 minute.

SET will perform a daily time sync on all EFM devices that are polled through SET's SCADA system. The Receipt Point Owner must NOT time sync these devices. SET's SCADA system will time sync these EFM devices to a reference standard that is converted according to the time zone configured within each device. SET's SCADA system must have the correct time zone configuration from the EFM device for the time sync to function correctly. If the Receipt Point Owner intends to change the time zone configuration within its EFM device, it must immediately notify SET as described in [Section 11.8.4 - Notifications](#).

Receipt Point Owner chart clocks and EFM devices that are not polled by SET's SCADA system must have their clock settings updated by the Receipt Point Owner. Time sync of non-SET polled EFM devices should be made to a recognized reference time standard.

11.4 Sampling and Analysis Requirements

Accurate gas and liquid compositional data is integral to accurate measurement and allocations. This section details the requirements for compositional sampling, laboratory analysis, laboratory requirements, and reporting of gas and liquid samples from production sources, wells and receipt points.

11.4.1 Analytical Laboratory Requirements

To meet the requirements of this Policy and have SET accept and use the results of gas and liquid hydrocarbon analyses, sample collection and laboratory analysis must be performed only by SET approved laboratories.

Laboratories must be capable of performing the specific analytical procedures described in [Sections - 11.4.2 to 11.4.4](#) and have a documented quality control system that includes, but is not necessarily limited to, policies, sampling and analytical procedures and specific quality control and calibration methods. Documentation must also include:

- certification of gravimetrically prepared calibration standards;
- the quality control program used to obtain control samples for monitoring the method accuracy and precision, including duplicates, blanks and control samples;
- the quality control program used for ensuring uncontaminated sample containers are used to obtain samples; and
- the quality control process used to validate the test results.

Laboratories must be able to provide any or all documentation as described above when so requested by SET.

Refer to the [RGT Analytical Laboratory Specification](#) in the Appendix for analysis reporting requirements and the list of SET approved laboratories.

11.4.2 Gas Sampling and Analysis

Sampling equipment and procedures used for the collection of gas samples must comply with the latest revision of API Chapter 14.1 - "Collecting and Handling of

Natural Gas Samples for Custody Transfer” or GPA 2166 – “Obtaining Natural Gas Samples for Analysis by Gas Chromatography” and the RGT Gas and Liquid Sampling Equipment Specification in the Appendix. Of note:

- samples must be taken from a fully developed, flowing stream to minimize the possibility of an unrepresentative sample from a stratified stream;
- the evacuated cylinder method is preferred for collecting gas samples, followed by the purge and fill method; and
- the purge and fill method is preferred for samples collected in a Tedlar bag.

The method of analysis for all gas samples representing streams that are delivered to SET Field Services raw gas gathering systems must meet the latest revision of GPA 2286 - “Tentative Method of Extended Analysis for Natural Gas and Similar Gaseous Mixtures by Temperature Programmed Gas Chromatography”. Samples must be analyzed on an air free and H₂S free basis to determine mole fractions for He, H₂, N₂, CO₂, C₁, C₂, C₃, iC₄, nC₄, iC₅, nC₅, C₆ and C₇+

In all cases, the relative density (on a solely moisture free basis and on a moisture and acid gas free basis), O₂ content, moisture and acid gas free gross heating value (in MJ/m³ @ 15°C and 101.325 kPa), molecular mass and gross heating value as per AGA Report #5 need also be determined.

The H₂S content for each sample is to be determined as described in the following section. The resulting H₂S content is to be added to the above gas analyses and normalized. The H₂S mole fraction and equivalent g/m³ are to be included in the Standard Gas Analysis report.

11.4.3 Determining H₂S Content in Gas Stream

The analytical method to be used for determining the H₂S content in a gas stream is dependent on the concentration of hydrogen sulfide in the stream. If the H₂S content is not known, estimate it using a length of stain tube as per the latest revision of GPA Standard 2377 – “Test for Hydrogen Sulfide and Carbon Dioxide in Natural Gas Using Length of Stain Tubes”. The following methods must then be used to accurately determine the H₂S content of a gas stream from a well or Receipt Point.

H ₂ S Concentration	Required Sampling and Analytical Methods	Standard (Latest Revision)
</= 1500 ppm (2100 mg/m ³)	<ul style="list-style-type: none"> • Tedlar Bag Sample for Laboratory Analysis using Gas Chromatography With Sulfur Selective Detection, <u>AND</u> • On-Site Length of Stain Tube to Confirm Lab Results 	ASTM D5504 GPA 2377
1500–5000 ppm	<ul style="list-style-type: none"> • On-Site Tutweiler, <u>AND</u> • On-Site Length of Stain Tube to Confirm Tutweiler Results 	GPA C-1 GPA 2377
> 5000 ppm	<ul style="list-style-type: none"> • On-Site Tutweiler, <u>AND</u> • Sample cylinder for Laboratory Analysis to Confirm Tutweiler Results 	GPA C-1

Notes:

- Tedlar bag samples must be taken using the purge and fill method.
- Tedlar bag samples must be analyzed as soon as possible. If not analyzed within 72 hours of being taken, the sample must be discarded and replaced.

Once the H₂S content is determined, it shall be included with the Standard Gas Analysis report or reported on its own, as appropriate. If the analyzed content is less than 4 ppm (6 mg/m³) the stream will be deemed to have no H₂S.

11.4.4 Liquid Hydrocarbon Sampling and Analysis

Sampling equipment and procedures used for the collection of liquid hydrocarbon samples must comply with the latest revision of GPA 2174 – “Obtaining Liquid Hydrocarbon Samples for Analysis by Gas Chromatography” and the *RGT Gas and Liquid Sampling Equipment Specification* in the Appendix. Of note:

- samples must be taken from a fully developed, flowing stream to minimize the possibility of an unrepresentative sample from a stratified stream;
- to analyze for composition, the liquid displacement or floating piston methods are preferred for collecting liquid samples, followed by the vapour displacement or evacuated cylinder methods; and
- to analyze for water and sediment content, the evacuated cylinder method is preferred for collecting liquid samples, followed by the vapour displacement or floating piston methods. The fluid displacement method is not recommended for samples being analyzed for water and sediment content because of possible contamination of the sample from the displacement fluid.

Where possible, liquid hydrocarbon samples should be accompanied by a companion gas phase sample taken at the same time, for comparison of the equilibrium K-plots to ensure the results demonstrate compatibility of the liquid and gas phases.

The method of analysis for liquid hydrocarbon samples must meet the latest revision of GPA 2186 – “Method for the Extended Analysis of Hydrocarbon Liquid Mixtures Containing Nitrogen and Carbon Dioxide by Temperature Programmed Gas Chromatography”. Samples must be analyzed to determine volume fractions for N₂, CO₂, C₁, C₂, C₃, iC₄, nC₄, iC₅, nC₅, C₆ and C₇+

Separate determination of sediment and free water is required as part of the liquid analysis. If the water fraction is not determined by an on-line analyzer, the contents of the sample shall be tested as per the latest revision of API Chapter 10.3 (ANSI/ASTM D 4007) – “Standard Test Method for Water and Sediment in Crude Oil by the Centrifuge Method (Laboratory Procedure)”. On-site tests of spot samples shall be tested as per the latest revision of API Chapter 10.4 (ANSI/ASTM D 96) – “Determination of Water and/or Sediment in Crude Oil by the Centrifuge Method (Field Procedure)”.

11.5 Sampling Frequencies

Timely sampling and analysis of pipeline fluids is essential to ensure accurate measurement and allocations. This section outlines the sampling location and frequency requirements for production source and Receipt Point sampling and analysis.

11.5.1 Production Source and Well Sampling

The Receipt Point Owner or Production Source Owner must contract an approved analytical laboratory to collect and analyze representative samples of the following flow streams:

- gas stream from each well upstream of the Receipt Point;
- liquid stream from each well upstream of the Receipt Point; and
- gas stream from each source treated as a battery-only site for allocation purposes.

The frequencies at which these gas and liquid streams must be sampled and analyzed are as follows:

- prior to initial start up;
- prior to the restarting of production if the well has been shut in for six months or more;
- once the production flow has stabilized but in any case within the first month following initial start up or the restarting of a well shut in for six months or more; and
- at least once every two years after the first month following the initial start up or the restarting of a well shut in for six months or more.
- Notwithstanding the foregoing, wells flowing through Receipt Points onto the Grizzly Valley portion of the RGT System must be sampled semi-annually.

Where two or more solution gas wells that are not each individually metered commingle upstream of a Receipt Point, and the maximum daily production at the point of commingling is less than $56.7 \cdot 10^3 \text{ m}^3$ per day (2.0 mmscfd), spot samples of the commingled stream at the frequencies required above may be used in lieu of samples from each solution gas well.

Where two or more solution gas wells that are not each individually metered commingle upstream of a Receipt Point, and the maximum daily production at the point of commingling is equal to or greater than $56.7 \cdot 10^3 \text{ m}^3$ per day (2.0 mmscfd), spot samples of the commingled stream at the frequencies required above may be used in lieu of samples from each solution gas well if SET agrees that the Receipt Point Owner has demonstrated the commingled gas stream meets and continues to meet the stability requirements specified in SET's Production Source Grouping Policy. If the Receipt Point Owner has not demonstrated stability then a proportional sampler set to a maximum sampling period of 60 days must be installed at the point of commingling.

The Receipt Point Owner must ensure that laboratory reports for each required analysis are sent to SET's Volume Accounting in the format specified in the RGT Analytical Laboratory Specification in the Appendix.

11.5.2 Receipt Point Sampling

The Receipt Point Owner must contract an approved analytical laboratory to obtain and analyze representative samples of the following flow streams, as applicable:

- gas stream at the Receipt Point sales meter; and
- liquid stream at the Receipt Point liquid meter.

The frequencies at which these gas and liquid streams must be sampled and analyzed are to be determined as outlined in the RGT Receipt Point Sampling Frequency Specification in the Appendix. The addition of new production sources to a Receipt Point automatically necessitates the need for a new Receipt Point sample as well as a review of the sampling frequency outlined in this section.

The Receipt Point Owner must ensure that laboratory reports for each required analysis are sent to SET's Volume Accounting department in the format specified in the RGT Analytical Laboratory Specification in the Appendix.

11.6 Updating Receipt Point Compositions

The Receipt Point Owner must ensure that the latest gas and hydrocarbon liquid compositional data is being used for volume calculations at its Receipt Point. To do so, the Receipt Point Owner must update the EFM device or chart volume calculation method as soon as practically possible with results from the latest Receipt Point samples as required in Section 11.5.2 - Receipt Point Sampling.

11.6.1 Gas Composition

A full gas analysis, including H₂S, must be used in accordance with the Detail Characterization Method described in AGA Report No. 8, 1992. Pertinent values for the gas composition to C₇+, or higher if available, shall be used.

EFM Receipt Point gas composition may be determined through one of the following methods:

- Receipt Point gas sampling. The EFM device must be updated upon the arrival of each sample's laboratory analysis report as specified in Section 11.5.2 - Receipt Point Sampling. If, however, the real gas specific gravity of the new sample has not changed by more than +/- 4% from the current value within the flow computer, the EFM device does not need to be updated;
- Installation of a proportional sampler. Utilization of this method must be applied for by the Receipt Point Owner and approved by SET Measurement Technical Services in writing prior to being implemented. The sampler must be set proportional to flow with a composite collection time not exceeding 31 days. The EFM device must be updated upon the arrival of each composite sample's laboratory analysis report. The Receipt Point Owner will use the previous month's laboratory analysis for the current month's volume calculations; or
- With prior written consent from SET Measurement Technical Services, installation of a standard 10 component gas chromatograph with H₂S capability and repeatability of at least +/- 1 Btu in 1000 against a reference gas blended to reflect the Receipt Point's commingled stream. A live serial output from the gas chromatograph must be fed directly to the Receipt Point flow computer.

Receipt Point gas composition for chart sites must be determined through Receipt Point sampling. Daily chart volumes are to be calculated using the latest laboratory analysis report for the Receipt Point sample required in Section 11.5.2 - Receipt Point Sampling.

11.6.2 Liquid Composition

Receipt Points measuring injected liquid hydrocarbons must have their EFM devices updated with the condensate density and sediment and water factors stated on the

laboratory analysis report from the latest Receipt Point liquid sample required in Section 11.5.2 - Receipt Point Sampling.

Non-EFM sites must also use the latest liquid hydrocarbon compositional analysis to calculate liquid volumes.

11.7 Moisture Content Monitoring

The Receipt Point Owner is responsible to ensure that the water vapour content of its gas meets the GT&C specifications. For Receipt Points where an on-line moisture analyzer is not required, the Receipt Point Owner must take and report a manual dew point reading using a Bureau of Mines approved chilled mirror type dew point tester meeting ASTM D1142 and/or GPA 2140 standards. Receipt Point Owners must use a licensed journeyman instrument mechanic or electrician, or equivalent, trained in the proper use of dew point testers meeting ASTM D1142 and/or GPA 2140 standards to perform the testing. SET reserves the right to witness the taking of dew point readings.

Dew point readings must be taken at least once per month and reported to SET as per Section 11.8 - Reporting and Notifications.

11.8 Reporting and Notifications

Following are the specific reports and notifications that must be submitted to SET by the Receipt Point Owner.

11.8.1 EFM Reporting

The required EFM reports and frequencies for reporting each are listed in the table below. The Receipt Point Owner is responsible for ensuring the required reports are submitted for sites which do not have a communication link with SET's SCADA system. Reports must be submitted in a format conforming to Section 11.8.3 – Reporting Formats to SET Volume Accounting.

Where a communication link does exist between SET's SCADA system and the Receipt Point EFM device, volume reports will be polled by SET electronically eliminating the need for report submission. Further information on the content of each report can be found in the RGT EFM Data Storage and Reporting Specification in the Appendix.

Report Name	Download Frequency
Gas Meter Report	<ul style="list-style-type: none"> • Upon request by SET, and • Whenever flow parameters are changed.
Daily Gas Volume Report	<ul style="list-style-type: none"> • Upon request by SET <p><u>Note:</u> For sites with communication, the Daily Gas Volume Report data is brought in through the daily poll.</p>

Report Name	Download Frequency
Monthly Gas Volume Report	<ul style="list-style-type: none"> Monthly <p><u>Note:</u> For sites with communication, the daily poll of the Daily Gas Volume Report replaces the need for this report.</p>
Liquid Meter Report	<ul style="list-style-type: none"> Upon request by SET, and Whenever flow parameters are changed.
Daily Liquid Volume Report	<ul style="list-style-type: none"> Upon request by SET <p><u>Note:</u> For sites with communication, the Daily Liquid Volume Report data is brought in through the daily poll.</p>
Monthly Liquid Volume Report	<ul style="list-style-type: none"> Monthly <p><u>Note:</u> For sites with communication, the daily poll of the Daily Liquid Volume Report replaces the need for this report.</p>
Alarm Report	<ul style="list-style-type: none"> Monthly <p><u>Note:</u> To be stored by the Receipt Point Owner and submitted to SET upon request.</p>
Event Log	<ul style="list-style-type: none"> Monthly <p><u>Note:</u> To be stored by the Receipt Point Owner and submitted to SET upon request.</p>

11.8.2 Chart Reporting

The Receipt Point Owner is responsible for ensuring its measurement charts are integrated based on the calculation methods described in Section 4 – Standards. The resultant chart reports must be submitted to SET prior to the 8th business day of each month in a format conforming to Section 11.8.3 – Reporting Formats.

Additional general requirements for the use of charts are as follows:

- the use of L-10 or L-10-100 square root charts with 24 hour, either 7 day, or 8 day rotation are recommended. This type of chart allows for a metric coefficient and/or imperial coefficient for use in the calculation of a volume from the same chart in 10³M³ or mmcf;
- charts shall be calibrated to gauge pressure and shall have the actual elevation of the meter station marked on the chart report that is submitted to SET;
- the accuracy of chart recorders shall be verified at least once every month or at an interval of no greater than once every three months upon agreement between both parties; and
- to maintain maximum accuracy, chart recorders shall be operated within 20-90% of the range springs for temperature, static pressure and differential pressure.

11.8.3 Reporting Formats

Where a communication link does not exist between SET's SCADA system and the Receipt Point, measurement data reports must be submitted to SET through one of the following formats, in order of SET preference:

1. SET shall be given user access to the Receipt Point Owner's remote computer host for the purpose of electronic transfer of data from one or more Receipt Points. This may require some development on both ends of the system.
2. The chart report, EFM Daily Volume Report and EFM Monthly Volume Report may be produced in an Excel format and transferred to SET Volume Accounting by electronic mail. The Meter Report, Alarm Report and Event Log may be transferred by electronic mail in the file format defined by the EFM device.
3. The EFM Daily Volume Report, Monthly Volume Report, Meter Report, Alarm Report and Event Log may be printed in the format as defined by the EFM device and faxed to SET Volume Accounting. The chart report as defined by the chart processor may also be faxed. Faxed formats will only be accepted if formats 1 or 2 above cannot be achieved.

11.8.4 Notifications

The Receipt Point Owner must notify SET by the following business day when any of the events listed below occur:

Event	Notification Method
Orifice Plate Size Change	<ul style="list-style-type: none"> • Record in SET's Measurement Data Collection System (MDCS) and • Email to mvt@spectraenergy.com
Verification or Calibration of a Measurement Device	<ul style="list-style-type: none"> • Record in SET's Measurement Data Collection System (MDCS)
AGA Parameter Change in an EFM Device	<ul style="list-style-type: none"> • Email to mts@spectraenergy.com and • Email to mvt@spectraenergy.com
EFM Hardware or Firmware Replacement (must be a "like for like" replacement)	<ul style="list-style-type: none"> • Submit Receipt Point Change Form to mts@spectraenergy.com
Clock, Contract Hour or Time Zone Change in EFM Device	<ul style="list-style-type: none"> • Email to mvt@spectraenergy.com and • Email to wpl_scada_vcr@spectraenergy.com
Ceasing or Restarting Liquid Hydrocarbon Injection	<ul style="list-style-type: none"> • Submit Receipt Point Change Form to mts@spectraenergy.com and • Email to clgyalloc@spectraenergy.com

11.8.5 Contact Information

The general SET address and fax information for reporting and notifications required within this Policy are as follows:

Team Leader, Measurement Data

Spectra Energy Transmission
#2600, 425 – 1st Street S.W.
Calgary, AB T2P 3L8

Fax: 403-699-1998

Email: mvt@spectraenergy.com for volume reporting, notifications and issues
clgyalloc@spectraenergy.com for allocation notifications and issues

Manager, Measurement Technical Services

Spectra Energy Transmission
#2600, 425 – 1st Street S.W.
Calgary, AB T2P 3L8

Fax: 403-699-1998

Email: mts@spectraenergy.com for technical notifications and issues

Fort St. John Gas Control

Spectra Energy Transmission

Phone: 1-800-665-8338

Email: fsjgascont@spectraenergy.com

11.9 Equipment Maintenance

The Receipt Point Owner must perform the maintenance described in this section and as outlined in the supporting specifications. SET may specify additional requirements at any time in its sole discretion by updating the specifications. It is the Receipt Point Owner's responsibility to ensure it is using the most recent specifications.

SET retains the right to witness and inspect all Receipt Point maintenance and operation activities related to requirements of this policy and performed by the Receipt Point Owner or its contracted agent. If requested, the Receipt Point operator shall provide SET with reasonable notice of its maintenance schedule in order that SET may have a representative present.

11.9.1 Orifice Meters

Orifice meters must have their orifice plates removed, cleaned, inspected and replaced, if necessary, at the interval listed in the *RGT Maintenance Frequency Specification* in the Appendix. The Receipt Point Owner must use SET's Measurement Data Collection System (MDCS) in performing and documenting its orifice plate checks.

Orifice meter runs must be removed, cleaned and inspected by a third party inspection service at the interval listed in the *RGT Maintenance Frequency Specification* in the Appendix. The inspection is to be based on the AGA 3 Report in effect when the meter was initially installed. The third party inspection service must provide an inspection certificate indicating whether the meter passed or failed. Upon

request, The Receipt Point Owner is to provide a copy of the inspection certificate to SET.

11.9.2 Ultrasonic Meters

Ultrasonic meters must have a routine inspection performed at the interval listed in the RGT Maintenance Frequency Specification in the Appendix. The inspection is to include running and reviewing the results of a maintenance log. Upon request, the Receipt Point Owner is to provide a copy of the maintenance logs to SET.

Ultrasonic meter runs must be removed and sent for recalibration at a Measurement Canada recognized calibration facility at the interval listed in the RGT Maintenance Frequency Specification in the Appendix. The calibration documentation must include a certificate of calibration plus meter configuration and performance logs taken during the calibration. The Receipt Point Owner is to provide a copy of the calibration certificate and related documentation to SET.

11.9.3 EFM Devices & Transmitters

EFM devices, transducers and transmitters must be verified as a loop, on-site, at the intervals listed in the RGT Maintenance Frequency Specification in the Appendix.

Single point verifications are to be performed at conditions representative of normal flow rates. Multiple point verifications are to be performed over the full range of each pressure and temperature device. The Receipt Point Owner must follow the requirements of the RGT EFM Verification Specification in the Appendix, including the use of SET's Measurement Data Collection System (MDCS), in performing its EFM verifications.

If either type of verification fails, the causative transmitter must be calibrated over its full range with the resulting "As Left" errors being left as close to zero as possible. If a transmitter cannot be calibrated or maintain its calibration within the acceptable tolerance then it must be replaced.

Calibrations shall conform to recognized industry practices in accordance with the manufacturers recommended procedures and those guidelines specified herein.

At the time of installation, and at the interval listed in the RGT Maintenance Frequency Specification thereafter, the EFM device must have testing performed on its alarm settings.

11.9.4 Chart Recorders

Chart recorders must be verified at a single point, representing normal flowing conditions, at the interval listed in the RGT Maintenance Frequency Specification in the Appendix. The Receipt Point Owner must use SET's Measurement Data Collection System (MDCS) in performing its single point chart recorder verifications.

Chart recorders must be calibrated at multiple points over their spring ranges at the interval listed in the RGT Maintenance Frequency Specification in the Appendix. The Receipt Point Owner must use SET's Measurement Data Collection System (MDCS) in performing its multipoint chart recorder calibration.

11.9.5 Moisture Analyzers

Moisture analyzers required for use on the RGT systems must be operated and maintained by SET. The Receipt Point Owner must enter into a Moisture Analyzer Maintenance Agreement with SET to cover such operation and maintenance.

11.9.6 Manual Dew Points

At sites without moisture analyzers a Bureau of Mines approved chilled mirror type dew point tester must be used to determine the Receipt Point gas water vapour dew point at the interval listed in the RGT Maintenance Frequency Specification in the Appendix. The Receipt Point Owner must use SET's Measurement Data Collection System (MDCS) in performing and documenting its water vapour dew points.

11.9.7 Liquid Meters

Hydrocarbon liquid meters must be proved and have their EFM device updated with the new meter factor at the interval listed in the RGT Maintenance Frequency Specification in the Appendix. All proving equipment and procedures used to prove positive displacement, turbine and mass flow meters must meet the requirements of the API Manual of Petroleum Measurement Standards Chapter 4 latest edition.

The Receipt Point Owner is responsible for all aspects of proving and must follow the requirements of the RGT Liquid Meter Proving Specification in the Appendix in performing its meter proofs. The Receipt Point Owner must retain its proving report for a period of two years after the proof.

11.9.8 Water Cut Monitors

Hydrocarbon water cut monitors must be verified and calibrated, if necessary, at the interval listed in the RGT Maintenance Frequency Specification in the Appendix. The Receipt Point Owner is to provide a copy of the verification certificate to SET Measurement Technical Services.

11.9.9 Pressure Control & Overpressure Protection Systems

Receipt Point pressure control and overpressure protection systems must be maintained to the requirements of the most recent edition of Canadian Standards Association (CSA) Z662 Section 10.6.5 as well as the requirements of this Policy. The Receipt Point Owner is to perform the required maintenance listed in the RGT Pressure Control and Overpressure Protection Specification at the interval indicated in the RGT Maintenance Frequency Specification, both located in the Appendix. The Receipt Point Owner must complete the SET PC/OPP Calibration and Inspection Report and forward it to SET Measurement Technical Services by October 1 of each calendar year.

11.9.10 Receipt Point Inspection

SET may, from time to time, perform an inspection of the Receipt Point measurement, pressure control and overpressure protection equipment to assess compliance with this policy.

12 Calibration Test Equipment

Test equipment used for calibration of gas and liquid measurement devices must have a resolution better than or equal to its specified uncertainty, and a range that is greater than or equal to the device being calibrated. All test equipment used for the calibration of gas and liquid measurement devices must meet the following requirements.

12.1 Uncertainty Requirements

The uncertainty requirements for calibration test equipment are as follows:

12.1.1 Laboratory Test Equipment

Laboratory calibration equipment must have a manufacturer specified uncertainty that is less than or equal to one half of that specified for the transducer, transmitter or associated device being calibrated. Laboratory conditions are defined as any calibration facility that provides a controlled environment in which to calibrate a transducer, transmitter or associated device.

12.1.2 Field Test Equipment

Field calibration equipment must have a manufacturer specified uncertainty that is no greater than that specified for the transducer, transmitter or associated device being calibrated and must be operated in a temperature controlled environment. Field calibration equipment operated in an uncontrolled environment must be temperature compensated.

12.2 Certification

Laboratory and field calibration equipment must be certified by a recognized standards laboratory prior to initial use and re-certified annually thereafter. The Receipt Point Owner shall forward a copy of the certification to SET upon request.

12.3 Pressure Source

A dry pressure source, such as nitrogen, shall be used for the calibration of pressure measurement devices.

13 Temporary Production to SET

A Receipt Point owner/operator that normally flows to a non-SET gathering system may request temporary access to the RGT System for short-term or emergency production needs. Production to the RGT System is considered short-term or emergency if the following criteria are met:

1. the Receipt Point does not have a sales gas meter that is dedicated solely to SET flow;
2. there is no Firm Contract for moving the gas on the RGT System. All flow must be Interruptible;
3. gas moved on the RGT System must not exceed 15 days in total per calendar year, unless otherwise agreed to by SET;
4. the Receipt Point has pressure control and overpressure protection systems in place that meet SET requirements;
5. gas is not able to flow to the RGT System and a non-SET gathering system simultaneously. Specifically, there must be isolation valves on piping to the RGT

System and non-SET gathering system that will remain locked until such time as gas flow is requested;

6. the SET isolation valve is normally shut and locked with a SET lock; and
7. the Receipt Point has a SET Lost Gas Indemnity Agreement (LGIA) in place if metering takes place more than 30 metres from the RGT System right-of-way.

13.1 Inspection Requirements

The Receipt Point Owner shall ensure SET measurement and gas quality requirements are met prior to flowing into the RGT System. This includes ensuring that foreign material does not adversely affect the measurement with special note to clogging of the sensing lines.

Before allowing gas to flow onto the RGT System, a SET representative will inspect the Receipt Point and either witness or perform a manual dew point reading to ensure the water content of the temporary production gas does not exceed 65 mg/m³ (4 lbs/mmscf).

13.2 Measurement Operating Procedures

Appropriate operating procedures must be in place for managing the flow and volume measurement between the RGT System and non-SET gathering system. Refer to the *Gas Control Procedure for Diverting Third Party Production onto SET System* available from SET Fort St. John Gas Control.

As part of the procedure to switch flow to and from the RGT System, the Receipt Point Owner must give notification to SET Fort St. John Gas Control. SET Operations will witness and perform its necessary procedures to switch between the RGT System and non-SET gathering systems. SET will, as a minimum, unlock and open the isolation valve to allow gas to flow into the RGT System, and close and lock the isolation valve when flow to SET is no longer required. All responses will be processed within 72 hours from time of notification.

13.3 Measurement Facilities Compliance

The design, installation and operation of gas and liquid measurement systems at Receipt Points requesting temporary access to the RGT System for short-term or emergency purposes must adhere to the requirements of *Section 10 - Receipt Point Design* except as otherwise stated in this section. In some cases, exemptions may be granted upon review by SET.

The Receipt Point Owner's last EFM device verification cannot be older than one month, otherwise a re-verification will be required prior to any temporary production being allowed to flow onto the RGT System.

The sales gas and liquid metering systems must be inspected and approved by a SET representative prior to any temporary production being allowed to flow onto the RGT System. SET must also be granted the right and opportunity to witness any calibration, verification, and other inspection of the Receipt Point.

13.3.1 EFM Requirements

A single EFM device and transmitters may be used if the device can be configured with a separate meter record for SET. The SET meter record shall be maintained in such a way as to allow the operator to enable flow calculation in the EFM device when gas is flowing to the RGT System. The operator will be responsible for enabling and disabling the SET flow record.

If a separate SET meter record cannot be configured and maintained as described above, then the Receipt Point Owner must use one of the following options:

- A single EFM device with separate transmitters for SET measurement that are used as input to a dedicated meter run configured in the EFM device for SET measurement only. When temporary production is switched to SET, the SET meter run in the EFM device is to be enabled. When temporary production is switched away from SET, the SET meter run in the EFM device must be disabled to turn off flow calculations. If this is not possible, then tubing to the SET transmitters shall be configured to allow the operator to open the tubing as required to enable the SET flow sensing on the meter run and similarly will be shut-in once flow is switched back to the non-SET gathering system.
- A separate EFM device and transmitters for SET measurement. When temporary production is switched to the RGT System, the SET EFM device is to be enabled. When temporary production is switched away from the RGT System, the SET EFM device is to be disabled.

13.3.2 Communication & Reporting Requirements

If the RP has EFM installed but it does not communicate with SET's SCADA system, then the volume data from the EFM device will be treated as a manual meter. The exception to this would be if the Receipt Point Owner has its own SCADA system that continuously monitors the RP volumes through the EFM devices. In this case, SET will accept daily updates through phone or email to SET Fort St. John Gas Control. Daily update requirements are as follows:

- Reporting Requirement During the Gas Day - A four hour update of the receipt point volume to current time, predicted 24-hour volume, current flow, current pressure, current H₂S and current CO₂ values. The four hour update is only required as data changes.
- Reporting Requirement After the Gas Day - The Receipt Point Owner will provide the actual 24 hour volume and average daily pressure.
- The EFM device must store as a minimum, the values required to provide the information for reporting. Further, the minimum data storage requirements for measurement are as follows:
 1. Hourly Volume Total;
 2. Hourly Average Static Pressure;
 3. Hourly Average Temperature;
 4. Hourly Average Differential Pressure;
 5. Daily snapshot of Specific Gravity;
 6. Daily snapshot of H₂S; and
 7. Daily snapshot of CO₂.

13.4 Business Process Compliance

Receipt Point Owners producing to the RGT System for short-term or emergency purposes must adhere to the business requirements of this Policy as well as other SET processes including, but not necessarily limited to, the following:

1. Nominations;
2. Production Accounting;
3. Shipper Balancing;
4. Receipt Point Owner Responsibilities;
5. Production Source Grouping, including gas well analyses;
6. RGT Reliability; and
7. Installation of liquid metering for credit of free liquids.

14 Revision Control

Revision Tracking	
Date Created	2006
Last Updated	01/03/2015
Revision	4.0