

NOTE: THIS MEASUREMENT PROCEDURE IS STANDARD LANGUAGE ATTACHED TO ALL ETHYLENE AGREEMENTS. AS SUCH, SOME PROVISIONS MAY NOT APPLY. ANY EXCEPTION TO THIS LANGUAGE MUST BE IN THE BASE AGREEMENT.

EXHIBIT B
ENTERPRISE ETHYLENE MEASUREMENT PROCEDURES
REFRIGERATED AND NON-REFRIGERATED SYSTEMS

- 1) Acronyms and Definitions
 - a) **“Agreement”** means the agreement to which this Exhibit is attached.
 - b) **“Agreement Effective Date”** means the effective date of the Agreement.
 - c) **“API”** means American Petroleum Institute.
 - d) **“ASTM”** means ASTM International.
 - e) **“Customer”** means the customer (as defined in the Agreement), its affiliates, its designees, or its inspector.
 - f) **“Day”** means a period commencing at a local time on one calendar day agreed on by all Parties involved and ending at the same time on the next calendar day.
 - g) **“DB&B”** means double block and bleed.
 - h) **“Enterprise”** means the Enterprise Products Partners L.P. affiliate contracting in the Agreement.
 - i) **“Ethylene”** means ethylene meeting the Enterprise specification for ethylene.
 - j) **“Force Majeure”** is defined in the Agreement.
 - k) **“Flowing Day”** means a day during which Product actually flows.
 - l) **“GPA”** means GPA Midstream.
 - m) **“inspector”** means the contractor hired by and for a Party.
 - n) **“Independent Inspector”** means a mutually agreed to independent 3rd party inspector.
 - o) **“Meter Verification,” “Verify,” “Verified,”** and **“Verification”** apply to Coriolis meters and means the use of proprietary software to:
 - i) Provide in-process flow meter health verification by analyzing the meter components related to measurement performance; and
 - ii) Evaluate other physical Coriolis meter characteristics.
 - p) **“MMB”** means Enterprise Measurement and Material Balance.
 - q) **“MPMS”** means the API Manual of Petroleum Measurement Standards.
 - r) **“Party”** or **“Parties”** refers to Enterprise and/or the Customer, as the case may be.
 - s) **“Product”** means ethylene.
 - t) **“psia”** means pounds per square inch absolute.
 - u) **“psig”** means pounds per square inch gauge.
 - v) **“Requesting Party”** means the Party requesting the applicable data.
 - w) **“Sending Party”** means the Party providing the applicable data.
 - x) **“Standards”** means ASTM, GPA, and MPMS methods and standards.
- 2) Design and Installation
 - a) General
 - i) Enterprise’s intent is to design, operate, and maintain its custody transfer measurement facilities in a manner to meet or exceed the criteria set out in ASTM standards, GPA Midstream standards, and API MPMS standards (collectively,

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- “Standards”), relevant governmental regulations, MMB standards and Policies, Enterprise Engineering standards, and other relevant Enterprise policies and standards.
- ii) Enterprise reserves the right to implement any changes to these publications based on Enterprise’s cost-benefit analysis of the change, the ready availability of equipment necessary to make the change, or such other assessment as Enterprise, in its sole discretion, may deem appropriate.
- b) Minimum operating pressure
 - i) Non-refrigerated systems: The measuring facility shall be operated at a pressure greater than 1,100 psig. A backpressure control valve shall be installed at the outlet of the meter run to keep the metering pressure above 1,100 psig.
 - ii) Refrigerated systems: The measuring facility shall be operated with at a pressure greater than 50 psig. A backpressure control valve shall be installed at the outlet of the meter run to keep the metering pressure above the minimum required pressure.
 - c) All equipment employed in metering and sampling, and all equipment upstream and downstream of the measurement station that might affect quantity and/or quality determination, shall be approved as to the manufacturer, model, type, materials of construction, method of installation, and maintenance by MMB. Due consideration shall be given to the operating pressure, temperature, and other characteristics of the Product being measured.
 - d) Required Transmitters: the following transmitters are required:
 - i) Differential pressure for orifice plates
 - ii) Pressure transmitters:
 - (1) Pressure transmitters for custody measurement
 - (2) Pressure transmitters for Coriolis pressure compensation
 - (3) Pressure transmitter(s) downstream of the delivery block valve¹ (non-refrigerated systems)
 - iii) Temperature transmitters:
 - (1) Non-refrigerated systems: a temperature transmitter for custody measurement
 - (2) Refrigerated systems: Redundant temperature transmitters for custody measurement
 - (3) Temperature transmitters at the delivery point (refrigerated systems)
- 3) Flow Meters
- a) Measurement methods:
 - i) Non-refrigerated systems: Ethylene shall be measured by mass measurement procedures using either an orifice plate or dual Coriolis meter in series.
 - ii) Refrigerated systems: Ethylene shall be measured by mass measurement procedures using dual Coriolis meters in series.

¹ Note: monitoring the differential pressure across block valves, strainer(s) and other equipment is necessary to assure the differential pressure does not exceed 300 psi, as differential pressures above 300 psi could initiate autodecomposition.

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- b) Flow meters shall be installed in accordance with the MPMS, the Liquid Measurement Policy, MMB Standards, and Enterprise Engineering standards.
- c) Bi-directional flow through the meter is not allowed unless approved by MMB. Otherwise, bi-directional flow is accomplished by valving.
- d) Where delivery is required to be continuous and it is impractical to shut down in the event of a meter failure, an installed parallel meter run, complete with all the associated equipment, shall be provided and be symmetrical with the initial meter run.
- e) Orifice Plates
 - i) Orifice plates shall be concentric, square-edged, flange-tapped with the following requirements:
 - (1) Orifice meter runs shall be constructed, installed, maintained, and operated in accordance with MPMS Chapter 14.3, and shall include straightening vanes and/or a flow conditioner(s) and, if necessary, pulsation dampening equipment.
 - (2) Dual-chamber orifice fitting with flange taps (Daniel™ Senior Fitting™ or equivalent) shall be used.
 - (3) Orifice plate eccentricity tolerance and installation parameters shall be determined using a 0.75 Beta ratio. However, the orifice meter shall be sized for a Beta ratio of 0.20 to 0.65 for normal operations.
 - (4) The orifice fitting shall be inspected and witnessed by Enterprise's representative prior to shipment to ensure compliance with MPMS Chapter 14.3 and this Exhibit.
 - (5) An Enterprise approved flow conditioner shall be installed. The physical location of the flow conditioner and the unobstructed upstream and downstream piping shall be in strict compliance with MPMS Chapter 14.3 or as specified by the manufacturer.
 - (6) The meter shall be designed, installed, operated, and maintained to provide measurements within +/- 1.00% accuracy.
- f) Coriolis meters
 - i) Coriolis meters shall be installed in accordance with MPMS Chapter 14.9 and Chapter 5.6. In addition:
 - ii) Each Coriolis meter run shall contain dual Coriolis meters in series.
 - iii) One of the meters shall be designated meter "A"; the other, meter "B". Meter A shall be the custody meter; Meter B shall be the check (reference meter).
 - iv) The Coriolis meters shall be installed with sufficient valving to allow for the bypass of either meter during maintenance periods.
 - v) If the Ethylene mass measured by the two meters differs by more than 0.35% (on a daily basis), the Enterprise technician shall troubleshoot both meters to determine what action to take.
 - (1) The Enterprise technician may perform a zero calibration or such other action as he deems necessary.

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- (2) If the Enterprise technician determines the custody meter should be pulled, the check meter shall serve as the custody meter while the original custody meter is out of service.
 - vi) Where parallel meter runs exist, sufficient valving shall be installed to allow for the isolation of a particular meter run.
 - vii) Coriolis meters will be installed with adequate instrumentation to allow for the implementation of pressure compensation.
 - viii) Any valve, vent, drain, or branch in the direct flow path of the two meters shall be isolated by methods that allow positive verification of isolation (e.g., DB&B valves).
- 4) Density determination
- a) Orifice meters: Ethylene density shall be determined using the equation of state specified in MPMS Chapter 11.3.2.1 for Ethylene, with all calculations being performed by the flow computer.
 - b) Coriolis meters: Coriolis meters measure mass directly.
- 5) Pressure Transmitters
- a) Pressure transmitters must exhibit a discrimination of 1.0 psig or better.
 - b) Non-refrigerated systems: Pressure transmitters shall be verified at the end device at the time of meter proving when proving locally, and once a month when proving remotely, using a reference gauge. The variation between the end device reading and the reference gauge must not exceed 3.0 psig.
 - c) Refrigerated systems: Redundant pressure transmitters shall be installed wherever pressure measurement is required, and shall be ex-situ verified at the time of meter installation and when the redundant pressure transmitters differ by more than 3.0 psig.
- 6) Temperature Transmitters
- a) Temperature transmitters must exhibit a discrimination of 0.1°F or better.
 - b) Non-refrigerated systems: Temperature transmitters shall be verified at the end device at the time of meter calibration using a certified thermometer or a precision electronic temperature device. The variation between the end device reading and the certified thermometer or precision electronic temperature device must not exceed 0.2°F.
 - c) Refrigerated systems: Redundant temperature transmitters shall be installed wherever temperature measurement is required, and shall be ex-situ calibrated at the time of meter installation and when the redundant temperature transmitters differ by more than 1.0°F.
- 7) Flow Computers
- a) Unless otherwise approved by MMB, all Ethylene metering systems shall have an MMB approved flow computer.
 - b) Flow computers shall be:
 - i) Used to calculate the quantity of Ethylene metered.
 - ii) Installed and operated to comply with the Enterprise standards in effect at the time of installation, and the MPMS Chapter 21.
 - iii) Capable of accepting a variety of signals, including, but not limited to, pulses from the flow meter, and signals from the pressure and temperature transmitters.

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- iv) Convert, as required, and totalize these signals into flow weighted pressure, flow weighted temperature, and mass.
- c) Security shall be implemented on the flow computer to prevent access from unauthorized personnel.
- 8) Meter Security and Sealing
 - a) Where required by contract or governmental regulation, or site-specific situations, measurement systems shall be designed to facilitate sealing all components that can directly affect quantity and quality determination.
 - b) Site specific sealing requirements shall be determined by Enterprise operations personnel upon start up and may require additional seal points.
 - c) Enterprise operations personnel shall determine who is authorized to remove Enterprise locks and seals.
 - d) Enterprise considers the unauthorized removal of or tampering with measurement and security devices as sufficient justification to suspend transfer operations until the purpose and effect of such actions are determined and resolved.
- 9) Ticketing
 - a) General:
 - i) Enterprise shall:
 - (1) Provide the Customer with a ticket at the end of batch; and
 - (2) Provide a ticket when generated or the commencement of the next business Day;
 - ii) The batch may be closed on either quantity or time, depending on the Agreement. For a batch closed on time, the batch shall be closed at the start of Day on the first Day of the next period of time (e.g., month) as determined by Enterprise or as agreed to by the Parties.
 - iii) Unless provided for by separate agreement, an unfinished batch shall be closed out at the beginning of the first Day of the calendar month.
 - b) The ticket shall:
 - i) Identify the Product;
 - ii) State the total mass measured in pounds;
 - iii) Show the pounds of Product;
 - c) Ticket support documentation shall be produced and retained by the measuring Party in accordance with industry standards and the audit provisions of this Exhibit. The measuring Party shall not refuse any reasonable request from the non-measuring Party to receive copies of the supporting documentation. The copies of the supporting documentation shall be provided within 10 business Days following any such request.
- 10) Calibrations, Verifications, and Tolerances
 - a) The Customer's witness signature does not constitute the approval of the use of out-of-tolerance equipment but does attest to the validity of the calibration report.
 - b) If the Customer's representative is not available, a copy of the testing report will, upon request, be provided to the Customer's representative.
 - c) Calibration and Verification Intervals

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- i) Coriolis meters:
 - (1) Factory calibrated prior to being placed in service.
 - (2) Field Verified at least every 90 Flowing Days, as well as before and after any repair or maintenance. If operational or weather warrant, the 90 Flowing Days may be extended to 120 Flowing Days.
 - (3) If the 2 Coriolis meters (in series) measure the Ethylene are within 0.35%, the Verification period may be extended to 180 Flowing Days.
 - (4) Should a Coriolis meter fail the Verification process, the Enterprise technician shall troubleshoot the meter to determine what action(s) to take.
 - ii) Orifice meters and transducers:
 - (1) Orifice meters shall be calibrated and verified:
 - (a) When initially placed in service
 - (b) Every 31 Flowing Days
 - (c) If operational or weather warrant, the 31 Flowing Days may be extended to 45 Flowing Days
 - (2) Orifice meter run transducers shall be calibrated and verified as provided in Enterprise measurement procedures. If the calibration and verification results in a change in mass determination greater than 1%, then 1/2 of the mass measured since the previous calibration and verification shall be corrected by straightforward application of a correcting factor to the quantities recorded for the period.
 - d) Special tests:
 - i) A Party may request a special calibration of measurement equipment. In the event a Party desires a special test, the other Party shall give the Requesting Party at least 72 hours' advance notice, and both Parties shall cooperate to schedule a mutually agreeable date and time for the test. If the measuring equipment tests result in a change in mass measurement of less than 0.5% for Coriolis meters or less than 1.0% for orifice meters, or if an inspection of the primary measurement equipment indicates no problems, the Requesting Party shall pay the costs of the special test including any labor and transportation costs pertaining thereto.
 - ii) If the measuring equipment tests result in a change in mass measurement greater than the above limits, or if an inspection of the primary measurement equipment indicates a problem, the measuring Party shall pay such costs and perform the corrections as provided in this Exhibit.
 - iii) If, during a special test, the change in mass measurement is less than the above limits, all prior recordings and electronic flow computer data shall be considered accurate for quantity determination.
- 11) Ticket Corrections
- a) The measurement technician shall record all required corrections to measured mass and describe the findings, method of repair, and calculations used in making the correction on the meter inspection report, and, if requested, within 2 business days provide the Customer with a copy of the meter inspection report.

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- b) A correction ticket for the amount of correction shall be issued, provided, however, no ticket correction shall exceed the lesser of the number of Flowing Days since the previous calibration or verification, or if date of malfunction can be determined, the number of Flowing Days since the since the malfunction and the current calibration date.
 - c) If the Customer's representative is not present during the calibration, verification, or Verification, Enterprise shall, if requested by the Customer, within 2 business days:
 - i) Notify the Customer of the findings
 - ii) (Coriolis meters) Provide the Customer with a meter verification report stating:
 - (1) Findings
 - (2) Method of repair (if any)
 - (3) Calculations used in making any correction
 - iii) Provide the Customer with a correction ticket for the amount corrected
- 12) Custody Measurement Station Failure
- a) If a failure occurs on a custody measurement station or the station is out of service while Product is being delivered, then the quantity shall be determined or estimated by one of the following methods and in the order stated:
 - i) By using the data recorded by any check measurement equipment that was accurately registering;
 - ii) By correcting the error if the percentage error can be ascertained by calibrations, tests, or mathematical calculations;
 - iii) When multiple meter runs exist in series, by calculation using the registration of such meter run equipment; provided that they are measuring Ethylene from upstream and downstream headers in common with the faulty metering equipment, are not controlled by separate regulators, and are accurately registering;
 - iv) By using historical pipeline gain/loss;
 - v) By estimating the quantity, based upon deliveries made during periods of similar conditions when the meter was registering accurately; or
 - vi) By using such other method as the Parties may agree.
- 13) Composite Sampling
- a) Composite sampling is not required for Ethylene.
- 14) On-line Analyzer
- a) On-line analyzers are installed to determine if the Ethylene meets the Enterprise specification per the appropriate Enterprise approved test methods.
 - i) Non-refrigerated systems: Installation is discretionary, as determined by MMB and Enterprise Quality Assurance.
 - ii) Refrigerated systems: Installation is required.
 - b) The sample probe shall be located at a point where the flowing stream is well mixed and homogenous. The probe tip, or sampling point shall be located within the center 1/3 of the pipe diameter.
- 15) Witnessing
- a) Calibrations and verifications

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- i) Each Party agrees to allow the other Party to witness all calibrations and verifications of measurement equipment under this Agreement.
- ii) For scheduled measurement facility testing, if requested by the non-measuring party, the measuring Party agrees to provide the other Party 72 hours' advance notice.
- iii) A Customer's witness signature does not constitute the approval of the use of out-of-tolerance equipment but does attest to the validity of the report.

16) Use of Inspector

- a) Without limiting either Party's rights to witness the other Party's measurement activities (as described below), the non-measuring Party may, at its own cost, hire and appoint an inspector to witness meter provings and sampling.

17) Data Exchange

- a) Data Access
 - i) The Requesting Party may have access to the Sending Party's electronic measurement equipment for the purpose of acquiring the data listed below.
 - ii) The Requesting Party will only have access to such electronic measurement data in a format reasonably established by the Sending Party, and such access shall not interfere with the operation of the Sending Party's facilities.
 - iii) The Requesting Party recognizes the data acquired from any electronic equipment is "raw" data, subject to further refinement, correction, and/or interpretation.
 - iv) The Sending Party has no obligation to provide data to the Requesting Party during times of maintenance, repair, or other activities by the Sending Party that interrupt operations, or due to events of Force Majeure.
 - v) The Sending Party has no obligation to advise the Requesting Party of any such interruptions, or otherwise to verify the integrity of such data at any time.
 - vi) The Sending Party shall make necessary connections to its electronic measurement equipment to provide the Requesting Party with the following categories of data:
 - (1) Pressure;
 - (2) Temperature;
 - (3) Instantaneous flow;
 - (4) Total flow today;
 - (5) Valve status and permissives; and
 - (6) Such other data as the Parties may agree to in writing.
 - vii) Data transfer will occur via a serial data link between the Parties. The Requesting Party shall be responsible for the data and communications beyond this connection.

18) Audit Rights

- a) Each Party and its duly authorized representatives shall have access (as provided below) to the measurement records and other documents maintained by the other Party which relate to the measurement, composition, or handling of the Products being delivered under the Agreement.

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- b) Each Party shall have the right to audit such records once a year at any reasonable time or times within 24 months of the rendition of any statement or invoice forming the basis of such claim.
- c) Neither Party shall make claim on the other for any adjustment after the 24 month period.
- d) The Party requesting the audit must give the other Party at least 30 Days' written notice.
- e) No audit may cover a period that has previously been audited.

19) Presumed Correct

- a) Except in the case of manifest error, fraud, or as provided in "Dispute," the Enterprise's results shall be presumed correct and binding on both Parties.

20) Disputes

- a) Quantity Measurement:
 - i) If both the Enterprise measurement facility and the Customer measurement facility are installed, operated, and maintained according to their respective measurement standard, and the difference in measurement of quantity is less than or equal to an absolute value of 0.50% for Coriolis meters and 1.0% for orifice meters, Enterprise's measurement shall be deemed correct.
 - ii) If the difference is more than the above limits, the Parties shall resolve the disputes as provided in (b) below.
- b) Other Measurement Disputes and Dispute Resolution
 - i) If there is any other dispute, controversy, or claim arising out of or relating to this Exhibit (a "Measurement Dispute"), the Parties shall attempt to settle such Measurement Dispute by negotiation between executives who have authority to settle the Measurement Dispute.
 - ii) A Party shall deliver to the other Party a written notice (a "Notice of Measurement Dispute") to commence this process of mutual discussions.
 - iii) Within 15 Days of the delivery of Notice of Measurement Dispute, the receiving Party shall submit to the other Party a written response.
 - iv) The Notice of Measurement Dispute and the response must include:
 - (1) A statement of the respective Party's position
 - (2) A summary of the facts
 - (3) Arguments supporting its position
 - (4) Name and title of the executive who will represent that Party
 - (5) Name and title of any other individual who will accompany the executive.
 - v) Within 30 Days following delivery of a Notice of Measurement Dispute, the executives of both Parties shall meet at a mutually acceptable time and place in Houston, TX and thereafter as often as they reasonably deem necessary, to attempt to resolve the Measurement Dispute.
 - vi) All information disclosed and positions taken during the negotiations and any mediation will be treated as confidential, and as compromise and settlement information for the purposes of any applicable rules of evidence.

21) Conflicts

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- a) To the extent there is any conflict or inconsistency between the Agreement and this Exhibit, the provisions of the Agreement will control.

22) Right to Change

- a) Enterprise reserves, in its sole discretion, the right from time to time, as it deems necessary, to make:
 - i) Non-substantive changes to this Exhibit; and
 - ii) Changes to this Exhibit driven by industry practice, governmental regulations, or the reasonable operational requirements of Enterprise.
- b) Where multiple analytical test methods are allowed, Enterprise reserves, in its sole discretion, the right from time to time, as it deems necessary, to change the approved analytical test method.
- c) Any change to this Exhibit or the approved analytical test method must be made on a non-discriminatory basis to similarly situated Customers.



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Revision History		
R16	Oct 2023	General clean-up of document.

