

# TEST REPORT

## Dual Fluid Test Program for Turbine Meter Calibrations

*Prepared for:*

Terasen Gas Inc.  
Measurement Technologies  
444 Okanagan Avenue East  
Penticton, B.C.  
V2A 3K3 - CANADA

*Prepared by:*

Metering Research Facility  
at  
Southwest Research Institute®  
6220 Culebra Road  
San Antonio, Texas 78238-5166

SwRI Project No. 10218  
MRF Report No. 03-67

January 2004

Approved:

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Eric Kelner, P.E.  
Group Leader – Flow Measurement



**SOUTHWEST RESEARCH INSTITUTE®**  
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DETROIT WASHINGTON, DC

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## Dual Fluid Test Program for Turbine Meter Calibrations

Terasen Gas, Inc.  
SwRI Project No. 10218

MRF Report No. 03-67  
Tested on Oct. 21 – Nov. 22, 2003

### Client Information:

|                                 |                                              |
|---------------------------------|----------------------------------------------|
| Company Name:                   | Terasen Gas, Inc. – Measurement Technologies |
| Address:                        | 444 Okanagan Avenue East                     |
| City, Providence:               | Penticton, B.C.                              |
| ZIP Code, Country:              | V2A 3K3 - Canada                             |
| Project Manager:                | Alan Conway                                  |
| Telephone No. / E-mail Address: | 250-490-5485 / alan.conway@terasen.com       |
| Logistical Contact:             | Robert Bertoia                               |
| Telephone No. / E-mail Address: | 250-488-0097 / robert.bertoia@terasen.com    |
| Technical Representative:       | Larry Fraser                                 |
| Telephone No. / E-mail Address: | 613-235-4988 / larryfraser@tht.net           |

### 4-inch Turbine Meter Information:

|                       |                                          |                                         |
|-----------------------|------------------------------------------|-----------------------------------------|
| Manufacturer:         | Instromet                                | Invensys                                |
| Meter Type:           | X Series Turbine Meter Single Rotor      | T-18 Mark II Turbine Meter Single Rotor |
| Size / Flange Rating: | 4-inch, ANSI 600#                        | 4-inch, ANSI 300#                       |
| Meter Serial No.:     | 72130                                    | 12291705                                |
| K-factor:             | HF pulse = 460.98 pulses/ft <sup>3</sup> | K = 32.1828 pulses/ft <sup>3</sup>      |

### 8-inch Turbine Meter Information:

|                       |                                        |                                         |
|-----------------------|----------------------------------------|-----------------------------------------|
| Manufacturer:         | Instromet                              | Invensys                                |
| Meter Type:           | X Series Turbine Meter Single Rotor    | T-60 Mark II Turbine Meter Single Rotor |
| Size / Flange Rating: | 8-inch, ANSI 600#                      | 8-inch, ANSI 300#                       |
| Meter Serial No.:     | 71219                                  | 12291706                                |
| K-factor:             | HF pulse = 46.5 pulses/ft <sup>3</sup> | K = 3.2421 pulses/ft <sup>3</sup>       |

### 12-inch Turbine Meter Information:

|                       |                                        |                                          |
|-----------------------|----------------------------------------|------------------------------------------|
| Manufacturer:         | Instromet                              | Invensys                                 |
| Meter Type:           | X Series Turbine Meter Single Rotor    | T-230 Mark II Turbine Meter Single Rotor |
| Size / Flange Rating: | 12-inch, ANSI 600#                     | 12-inch, ANSI 300#                       |
| Meter Serial No.:     | 69529                                  | 12291707                                 |
| K-factor:             | HF pulse = 18.0 pulses/ft <sup>3</sup> | K = 1.4612 pulses/ft <sup>3</sup>        |

### Test Conditions:

|                   |                        |                            |                        |
|-------------------|------------------------|----------------------------|------------------------|
| Gas:              | Natural Gas – LPL      | Carbon Dioxide – LPL       | Natural Gas – HPL      |
| Pressure (psia):  | 45, 115, 188 (nominal) | 45, 90, 115, 125 (nominal) | 232, 348, 464(nominal) |
| Temperature (°F): | 70 (nominal)           | 70 (nominal)               | 70 (nominal)           |

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P.O. Drawer 28510  
San Antonio, Texas 78228-0510

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Contact: Marybeth Nored  
Telephone: (210) 522-3905  
FAX No: (210) 522-2369

# Dual Fluid Test Program for Turbine Meter Calibrations

Terasen Gas, Inc.  
SwRI Project No. 10218

MRF Report No. 03-67  
Tested on Oct. 21 – Nov. 22, 2003

## Gas Composition:

### Low Pressure Loop – Natural Gas Tests:

| <i>Component</i>                             | <i>October 22, 2003<br/>8-inch Meter Test<br/>Mole Fraction (%)</i> | <i>October 23, 2003<br/>4-inch Meter Test<br/>Mole Fraction (%)</i> | <i>October 24, 2003<br/>12-inch Meter Test<br/>Mole Fraction (%)</i> |
|----------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|----------------------------------------------------------------------|
| Methane                                      | 93.7178                                                             | 93.5645                                                             | 93.5580                                                              |
| Ethane                                       | 3.2174                                                              | 3.9651                                                              | 3.9745                                                               |
| Carbon Dioxide                               | 1.0085                                                              | 1.0160                                                              | 1.0172                                                               |
| Nitrogen                                     | 1.1572                                                              | 0.7880                                                              | 0.7820                                                               |
| Propane                                      | 0.5657                                                              | 0.4771                                                              | 0.4768                                                               |
| Isobutane                                    | 0.0668                                                              | 0.0668                                                              | 0.0422                                                               |
| n-Butane                                     | 0.1248                                                              | 0.0738                                                              | 0.0734                                                               |
| Isopentane                                   | 0.0361                                                              | 0.0192                                                              | 0.0192                                                               |
| n-Pentane                                    | 0.0360                                                              | 0.0194                                                              | 0.0194                                                               |
| n-Hexane                                     | 0.0309                                                              | 0.0158                                                              | 0.0162                                                               |
| n-Heptane                                    | 0.0248                                                              | 0.0126                                                              | 0.0138                                                               |
| n-Octane                                     | 0.0140                                                              | 0.0060                                                              | 0.0075                                                               |
| n-Nonane                                     | <u>0.0000</u>                                                       | <u>0.0000</u>                                                       | <u>0.0000</u>                                                        |
| TOTAL                                        | 100.0000                                                            | 100.0000                                                            | 100.0000                                                             |
| Heat Content (BTU/ft <sup>3</sup> , dry)     | 1035.22                                                             | 1038.98                                                             | 1039.23                                                              |
| Density @ STP (lb/ft <sup>3</sup> )          | 0.046                                                               | 0.046                                                               | 0.046                                                                |
| Std. Conditions: T = 60 deg F, P = 14.73 psi |                                                                     |                                                                     |                                                                      |

### High Pressure Loop – Natural Gas Tests:

| <i>Component</i>                             | <i>October 28, 2003<br/>12-inch Meter Test<br/>Mole Fraction (%)</i> | <i>October 30, 2003<br/>8-inch Meter Test<br/>Mole Fraction (%)</i> | <i>November 3, 2003<br/>4-inch Meter Test<br/>Mole Fraction (%)</i> |
|----------------------------------------------|----------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|
| Methane                                      | 93.3140                                                              | 93.3163                                                             | 93.2470                                                             |
| Ethane                                       | 4.4019                                                               | 4.4096                                                              | 4.5238                                                              |
| Carbon Dioxide                               | 1.0120                                                               | 1.0110                                                              | 1.0298                                                              |
| Nitrogen                                     | 0.6809                                                               | 0.6815                                                              | 0.6590                                                              |
| Propane                                      | 0.4493                                                               | 0.4444                                                              | 0.4248                                                              |
| Isobutane                                    | 0.0337                                                               | 0.0329                                                              | 0.0288                                                              |
| n-Butane                                     | 0.0523                                                               | 0.0508                                                              | 0.0433                                                              |
| Isopentane                                   | 0.0143                                                               | 0.0138                                                              | 0.0113                                                              |
| n-Pentane                                    | 0.0136                                                               | 0.0132                                                              | 0.0108                                                              |
| n-Hexane                                     | 0.0121                                                               | 0.0116                                                              | 0.0094                                                              |
| n-Heptane                                    | 0.0101                                                               | 0.0092                                                              | 0.0079                                                              |
| n-Octane                                     | 0.0060                                                               | 0.0058                                                              | 0.0042                                                              |
| n-Nonane                                     | <u>0.0000</u>                                                        | <u>0.0000</u>                                                       | <u>0.0000</u>                                                       |
| TOTAL                                        | 100.0000                                                             | 100.0000                                                            | 100.0000                                                            |
| Heat Content (BTU/ft <sup>3</sup> , dry)     | 1041.72                                                              | 1041.62                                                             | 1041.59                                                             |
| Density @ STP (lb/ft <sup>3</sup> )          | 0.046                                                                | 0.046                                                               | 0.046                                                               |
| Std. Conditions: T = 60 deg F, P = 14.73 psi |                                                                      |                                                                     |                                                                     |

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# Dual Fluid Test Program for Turbine Meter Calibrations

Terasen Gas, Inc.  
SwRI Project No. 10218

MRF Report No. 03-67  
Tested on Oct. 21 – Nov. 22, 2003

## Gas Composition (Continued):

### Low Pressure Loop – Carbon Dioxide Tests:

| <i>Component</i>                             | <i>November 20, 2003<br/>8-inch Meter Test<br/>Mole Fraction (%)</i> | <i>November 20, 2003<br/>4-inch Meter Test<br/>Mole Fraction (%)</i> | <i>November 21, 2003<br/>12-inch Meter Test<br/>Mole Fraction (%)</i> |
|----------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------|
| Carbon Dioxide                               | 99.9040                                                              | 99.9080                                                              | 99.9060                                                               |
| Nitrogen                                     | 0.0890                                                               | 0.0850                                                               | 0.0940                                                                |
| Methane                                      | 0.0070                                                               | 0.0070                                                               | 0.0000                                                                |
| Ethane                                       | 0.0000                                                               | 0.0000                                                               | 0.0000                                                                |
| Propane                                      | 0.0000                                                               | 0.0000                                                               | 0.0000                                                                |
| Isobutane                                    | 0.0000                                                               | 0.0000                                                               | 0.0000                                                                |
| n-Butane                                     | 0.0000                                                               | 0.0000                                                               | 0.0000                                                                |
| Isopentane                                   | 0.0000                                                               | 0.0000                                                               | 0.0000                                                                |
| n-Pentane                                    | 0.0000                                                               | 0.0000                                                               | 0.0000                                                                |
| n-Hexane                                     | 0.0000                                                               | 0.0000                                                               | 0.0000                                                                |
| n-Heptane                                    | 0.0000                                                               | 0.0000                                                               | 0.0000                                                                |
| n-Octane                                     | 0.0000                                                               | 0.0000                                                               | 0.0000                                                                |
| n-Nonane                                     | <u>0.0000</u>                                                        | <u>0.0000</u>                                                        | <u>0.0000</u>                                                         |
| TOTAL                                        | 100.0000                                                             | 100.0000                                                             | 100.0000                                                              |
| Density @ STP (lb/ft <sup>3</sup> )          | 0.117                                                                | 0.117                                                                | 0.117                                                                 |
| Std. Conditions: T = 60 deg F, P = 14.73 psi |                                                                      |                                                                      |                                                                       |

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Terasen Gas, Inc.  
SwRI Project No. 10218

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Tested on Oct. 21 – Nov. 22, 2003

### Test Information:

1. Terasen Gas provided the six turbine meters and the flow conditioners. The meters were first installed in the Low Pressure Loop (LPL) at the Metering Research Facility. The two turbine meters in each size were tested in series. The Metering Research Facility provided the make-up piping.
2. The 4-inch diameter turbine meters were tested in the west leg of the LPL, while the 8-inch and 12-inch diameter turbine meters were tested in the middle leg of the LPL.
3. The installation for each turbine meter consisted of five pipe diameters upstream of the CPA Type A 50E plate flow conditioner, followed by eight pipe diameters between the flow conditioner and the meter. The installation included five pipe diameters downstream of the meter as well. Drawings of the meter installations for each meter size are shown on pages 7-8.
4. The meters were tested first in natural gas (composition shown on page 2). The 4-inch and 8-inch diameter meters were tested at 190, 115 and 45 psia. The 12-inch diameter meters were tested at 115 and 45 psia. The meters were then removed for the High Pressure Loop (HPL) testing.
5. The meters were installed in the HPL using the same pipe in the exact same configuration as the Low Pressure Loop installation. The meters were tested in natural gas (composition shown on page 2). All of the meters were tested in the West Header of the HPL. The 4-inch diameter meters were tested at 465, 345 and 230 psia. The 12-inch and 8-inch diameter meters were tested at a single pressure of 230 psia.
6. Following the tests in the HPL, the Low Pressure Loop compressor was modified for operating with carbon dioxide gas. The loop was filled with the carbon dioxide test gas. The sonic nozzles were calibrated using CO<sub>2</sub> over the test pressure range using the MRF Low Pressure Loop weigh tank system.
7. After the sonic nozzle calibrations in carbon dioxide, the meters were re-installed in the Low Pressure Loop for testing with carbon dioxide gas. The composition of the carbon dioxide test gas is shown on page 3 for each test date. The 4-inch diameter meters were tested at 125 and 90 psia in CO<sub>2</sub>. The 8-inch diameter meters were tested at 115 and 90 psia. The 12-inch diameter meters were tested at 115 and 45 psia.
8. Photographs of the meter installations in the Low Pressure Loop and High Pressure Loop are shown on pages 9-14.
9. Static pressure was measured at the meter. Gas temperature was measured nominally 2.4 pipe diameters downstream of the meter (except in the case of the Invensys 12-inch turbine meter, where the RTD was placed at 4.5 pipe diameters downstream due to piping limitations).
10. MRF pressure and temperature instrumentation was used for the flow calibration.
11. For each meter test, the meter rotor was calibrated against the MRF sonic nozzles using the discharge coefficients corresponding to each test fluid, in either the HPL or LPL.

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## Dual Fluid Test Program for Turbine Meter Calibrations

Terasen Gas, Inc.  
SwRI Project No. 10218

MRF Report No. 03-67  
Tested on Oct. 21 – Nov. 22, 2003

### Test Information (Continued):

12. This record of the dual fluid test program contains tables of test data corresponding to each meter's testing and graphs of measured K factor versus volumetric flow rate and measured K factor versus Reynolds number for each meter. The tabulated data headings are as follows. Note, uncertainty, U, is total uncertainty and reflects both bias and precision uncertainties.

p = flow static pressure

T = gas temperature

rho = gas density at flowing conditions

t = sampling time window for HPL data acquisition system

Pulses = number of pulses counted in time, t

K = rotor K factor measured by HPL

St = Strouhal number at the meter

ReD = pipe Reynolds number at the meter

Qv = HPL volumetric flow rate

mdot = sonic nozzle mass flow rate

% Error = meter error based upon the reference K-factor listed on page 1 and the MRF reference flow rate according to the sonic nozzles.

UK, UQv and Umd = total measurement uncertainty in indicated parameters

13. A discussion of the turbine meters performance in the two fluids is presented on page 6.

14. Witnesses for calibration test:

Name: Larry Fraser

Company: L. Fraser & Associates Consulting

Name: Robert Bertoia (CO<sub>2</sub> testing only)

Company: Terasen Gas, Inc.

Name: Kevin Ehman (CO<sub>2</sub> testing only)

Company: Terasen Gas, Inc.

Name: Paul Tang (CO<sub>2</sub> testing only)

Company: Terasen Gas, Inc.

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## Dual Fluid Test Program for Turbine Meter Calibrations

### Summary of Meter Performance

The objective of the dual fluid test program conducted by Terasen Gas, Inc. was to assess turbine flow meter performance over a large Reynolds number range in order to determine the effects of fluid density and Reynolds number on the accuracy of turbine meter calibrations. In general, natural gas turbine meter performance varies with flow rate and line pressure. As discussed in the current edition of AGA Report No. 7, two types of drag can influence the behavior of a turbine rotor:

- 1) Non-fluid drag in the rotor bearings and other meter mechanisms, which reflects the inertia and effective weight of the moving rotor. This type of drag is a function of the density of the gas.
- 2) Fluid drag on the rotor blades and hub, which is a function of Reynolds number.

Changes in flow rate at constant pressure alter the Reynolds number and affect the fluid drag, while changes in line pressure will alter the gas density and affect both types of drag.

In the dual fluid test program, turbine meters were calibrated using both natural gas and carbon dioxide. Many turbine meter users have their meters calibrated in natural gas, to accurately reproduce the expected drag effects and obtain a meter calibration that can be used directly in the field. Manufacturers often calibrate their meters using air, which is easily obtained and handled, but if the turbine meter is to be used in a fluid such as natural gas, the air calibrations require corrections for changes in density and Reynolds number associated with the change in gas. Carbon dioxide can be used to produce gas densities and Reynolds numbers similar to natural gas at field conditions, but at lower actual line pressures. This presents an advantage over standard air calibrations because the density and Reynolds number of carbon dioxide at relatively low pressures are similar to the density and Reynolds number of natural gas at higher pressures.

The test program included two turbine meter designs, the Instronet X-Series Single Rotor meter and the Invensys Mark II Single Rotor meter, and included three meter sizes (4-inch, 8-inch and 12-inch diameter). The graphs of the test data compare K factors (or calibration factors) obtained for each meter in natural gas and in carbon dioxide. In general, turbine meter calibration factors at low Reynolds numbers tend to increase with increasing density, and the data in the two test fluids exhibit this trend. For the 4-inch and 8-inch diameter meters, a direct comparison can be made of CO<sub>2</sub> data at 75 psig (6 bar) and natural gas data at 210 psig (15 bar), which have approximately the same density. In the majority of the tests, calibration data from the two gases agree to within 0.15%. The calibration factors in CO<sub>2</sub> are slightly higher; this may be attributed to the slightly higher actual density of the carbon dioxide in the 75-psig tests, as compared to the actual natural gas density in the 210-psig tests. Similarly, for the 12-inch diameter Instronet meter, the calibration factors for CO<sub>2</sub> at 30 psig and natural gas at 100 psig (conditions with similar gas densities) also agree to within 0.15%. The 12-inch diameter Invensys meter showed more scatter at low Reynolds numbers, due to the fact that these flows are at the extreme low end of the meter's range. However, above a Reynolds number of 250,000, the calibration factors in the two gases are in good agreement, to within 0.15% or better.

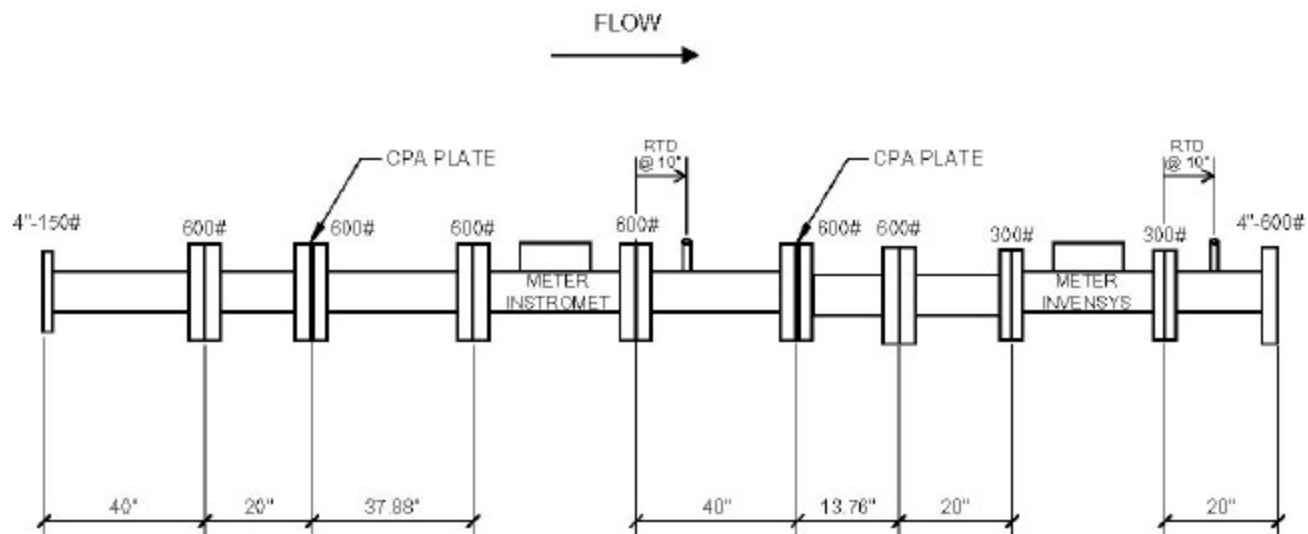
In summary, the calibrations of these turbine meters in carbon dioxide agreed with calibrations in natural gas at the same densities and Reynolds numbers, generally to within 0.15%. It can be concluded that turbine meters calibrated in carbon dioxide can be used in natural gas applications. Measurement errors associated strictly with the difference in calibration factor between a meter calibrated in carbon dioxide and the same meter calibrated in natural gas would be well within the maximum uncertainty allowed by American Gas Association Report No. 7, *Measurement of Natural Gas by Turbine Meters*, provided that densities and Reynolds numbers were matched between calibration and field conditions.

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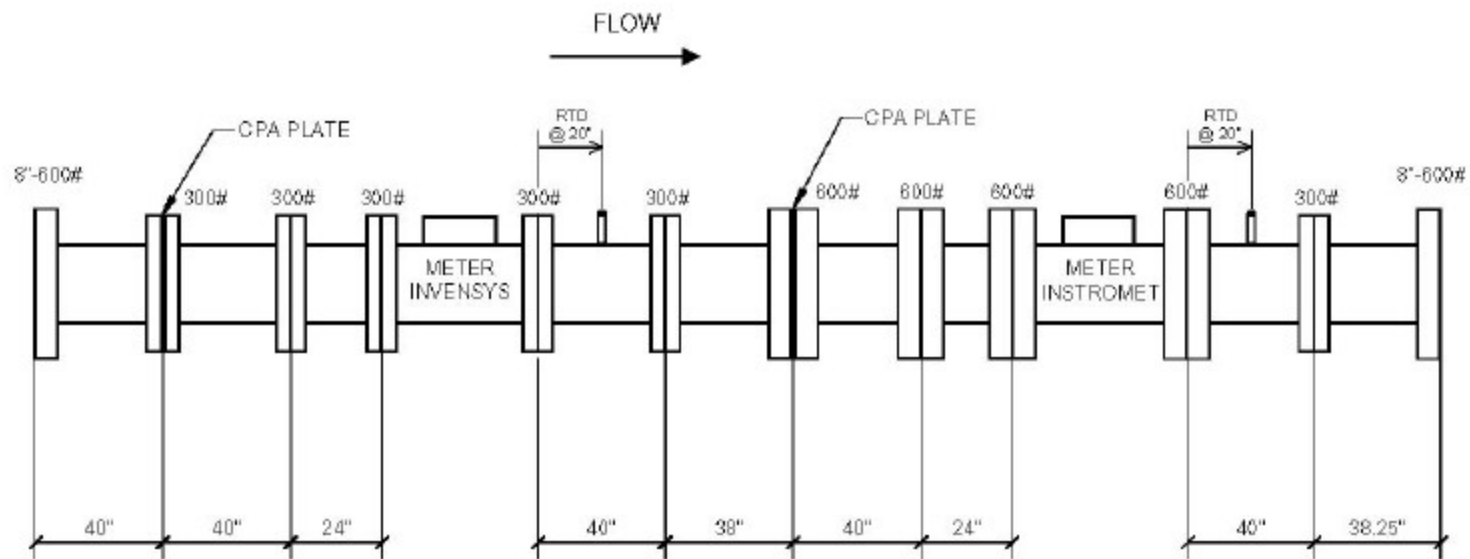
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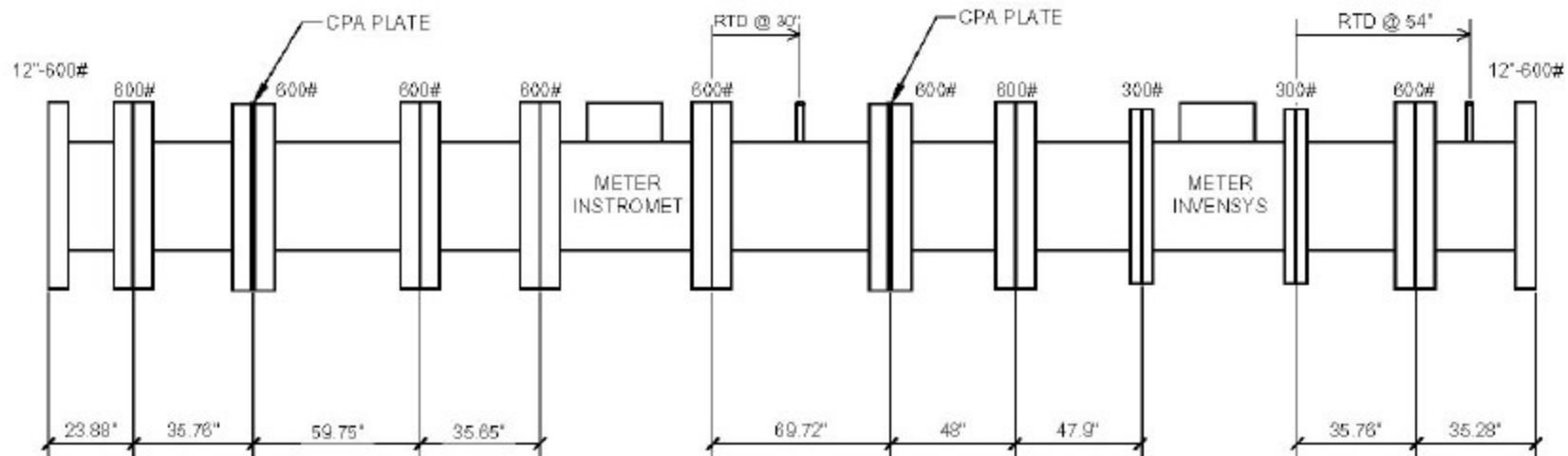
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|------------------------------|--------------------------------------------|-----------------|-------------------|
| CLIENT:                      | TERASEN GAS                                |                 |                   |
| JOB:                         | TESTING OF TURBINE METERS NATURAL GAS (4") |                 |                   |
| LOCATION:                    | LPL (WEST HEADER)                          |                 |                   |
| FLOW COND:                   | CPA PLATES-UPSTREAM OF BOTH METERS         |                 |                   |
| PRESSURE:                    | 30,100,173 PSIG                            | TEMPERATURE:    |                   |
| SwRI                         | Drawn                                      | DATE:           | SwRI PROJECT NO.: |
| CHECK:                       | By: ALX                                    | OCT. 20-27 2003 | 18.10218.01.300   |



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|------------------------------|--------------------------------------------|-----------------|-------------------|
| CLIENT:                      | TERASEN GAS                                |                 |                   |
| JOB:                         | TESTING OF TURBINE METERS NATURAL GAS (8") |                 |                   |
| LOCATION:                    | LPL (MIDDLE LEG)                           |                 |                   |
| FLOW COND:                   | CPA PLATES-UPSTREAM OF BOTH METERS         |                 |                   |
| PRESSURE:                    | 30,100,173 PSIG                            | TEMPERATURE:    |                   |
| SwRI                         | Drawn                                      | DATE:           | SwRI PROJECT NO.: |
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|------------------------------|------------------------------------|-----------------|-------------------|
| CLIENT:                      | TERASEN GAS                        |                 |                   |
| JOB:                         | TESTING OF 12" TURBINE METERS      |                 |                   |
| LOCATION:                    | LPL (MIDDLE LEG)                   |                 |                   |
| FLOW COND:                   | CPA PLATES-UPSTREAM OF BOTH METERS |                 |                   |
| PRESSURE:                    | 30,100,173 PSIG                    | TEMPERATURE:    | 70 DEG F          |
| SwRI                         | Drawn                              | DATE:           | SwRI PROJECT NO.: |
| CHECK:                       | By: ALX                            | OCT. 20-24 2003 | 18.10218.01.300   |



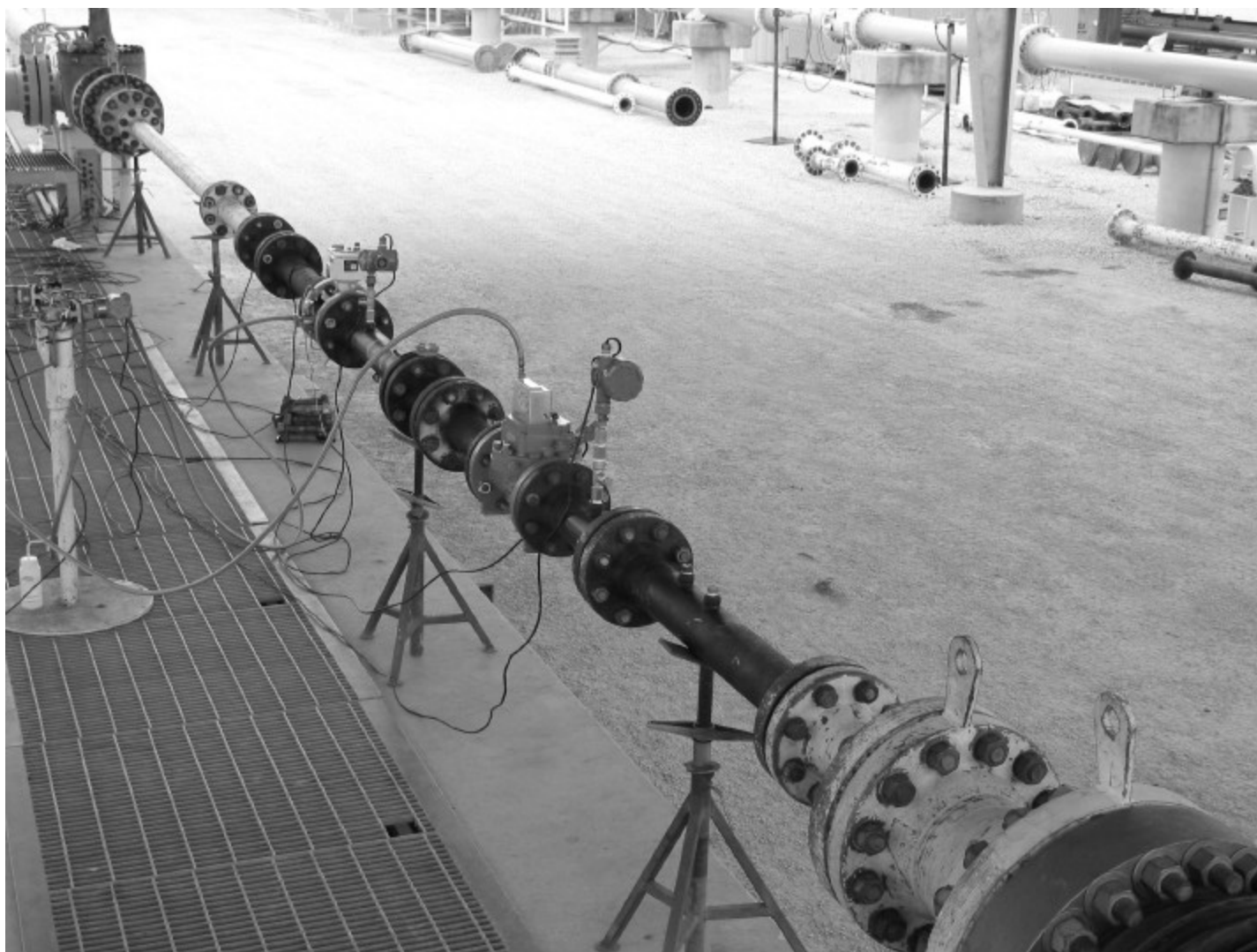
**MRF Low Pressure Loop Installation of 4-inch Turbine Meters – Looking Downstream**



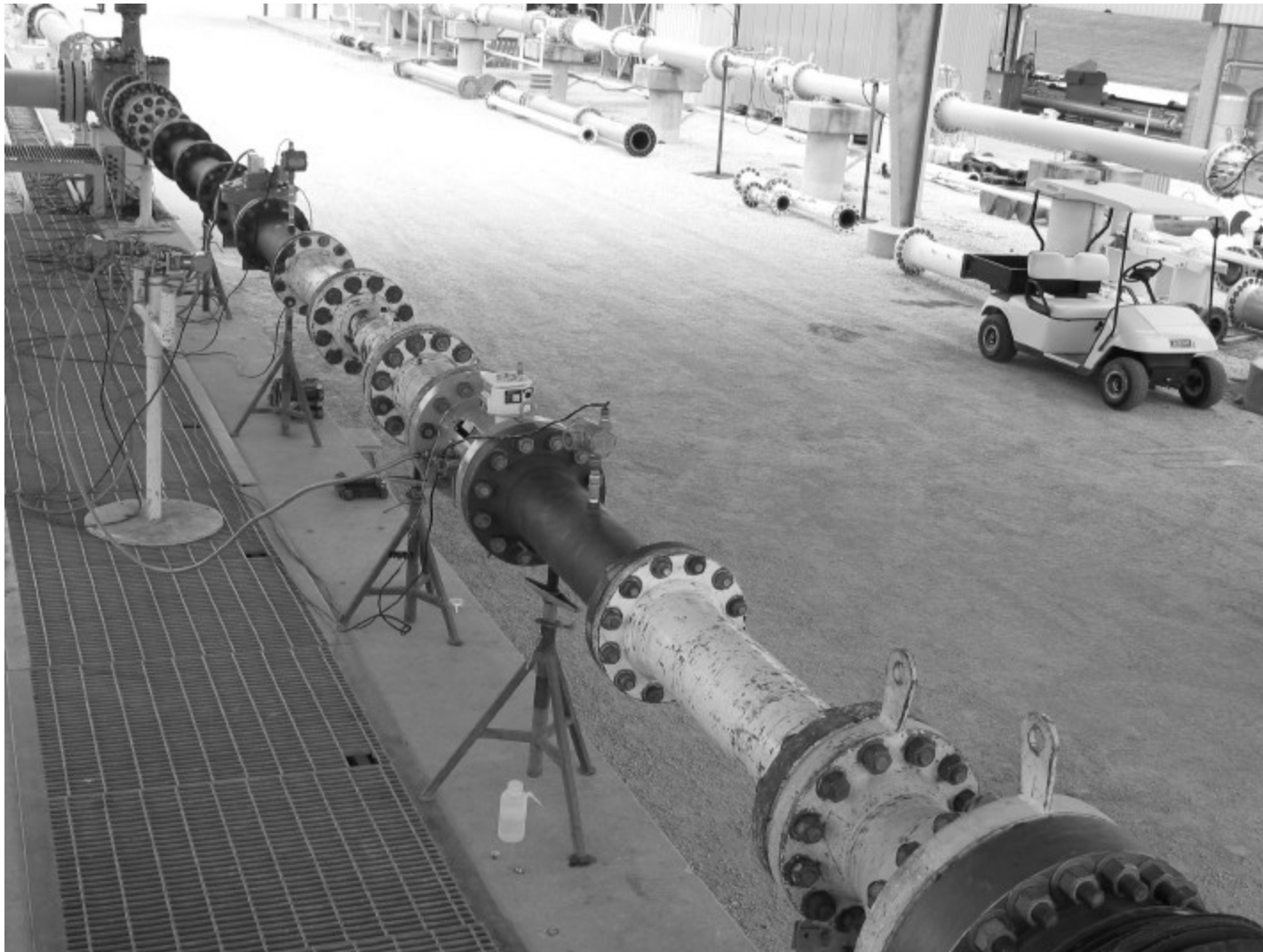
**MRF Low Pressure Loop Installation of 8-inch Turbine Meters – Looking Downstream**



**MRF Low Pressure Loop Installation of 12-inch Turbine Meters – Looking Downstream**



**MRF High Pressure Loop Installation of 4-inch Turbine Meters – Looking Upstream**

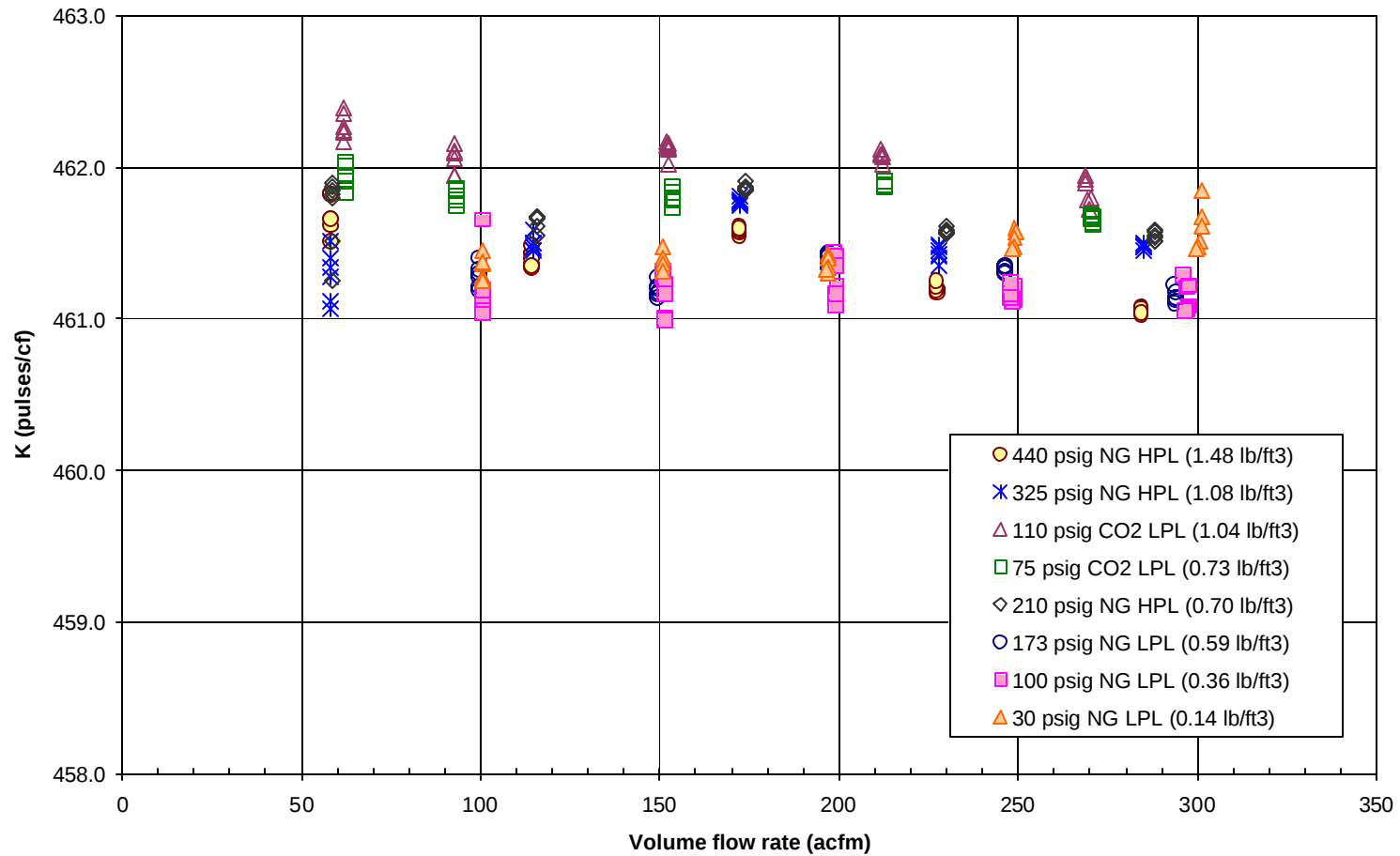


**MRF High Pressure Loop Installation of 8-inch Turbine Meters – Looking Upstream**

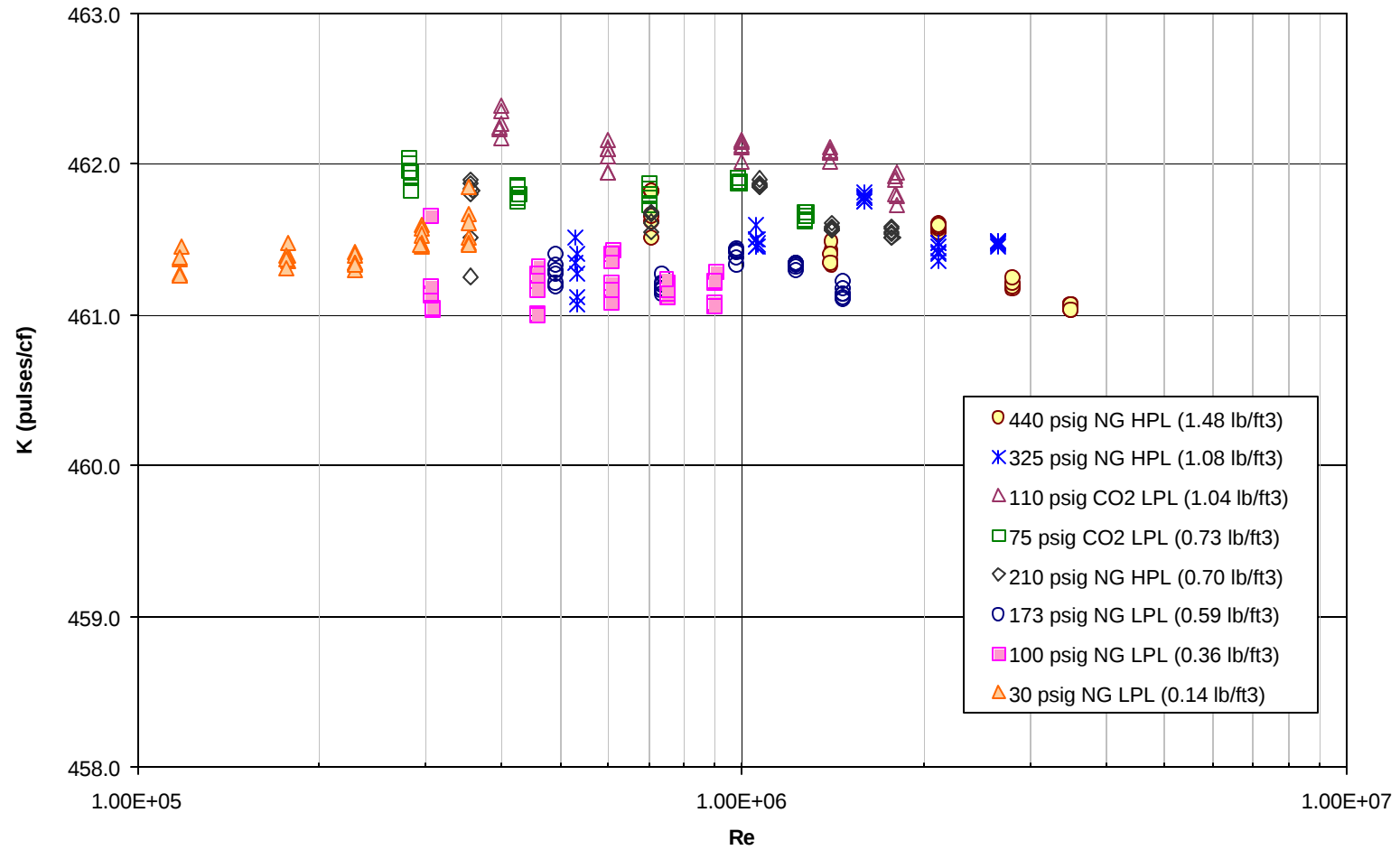


**MRF High Pressure Loop Installation of 12-inch Turbine Meters – Looking Upstream**

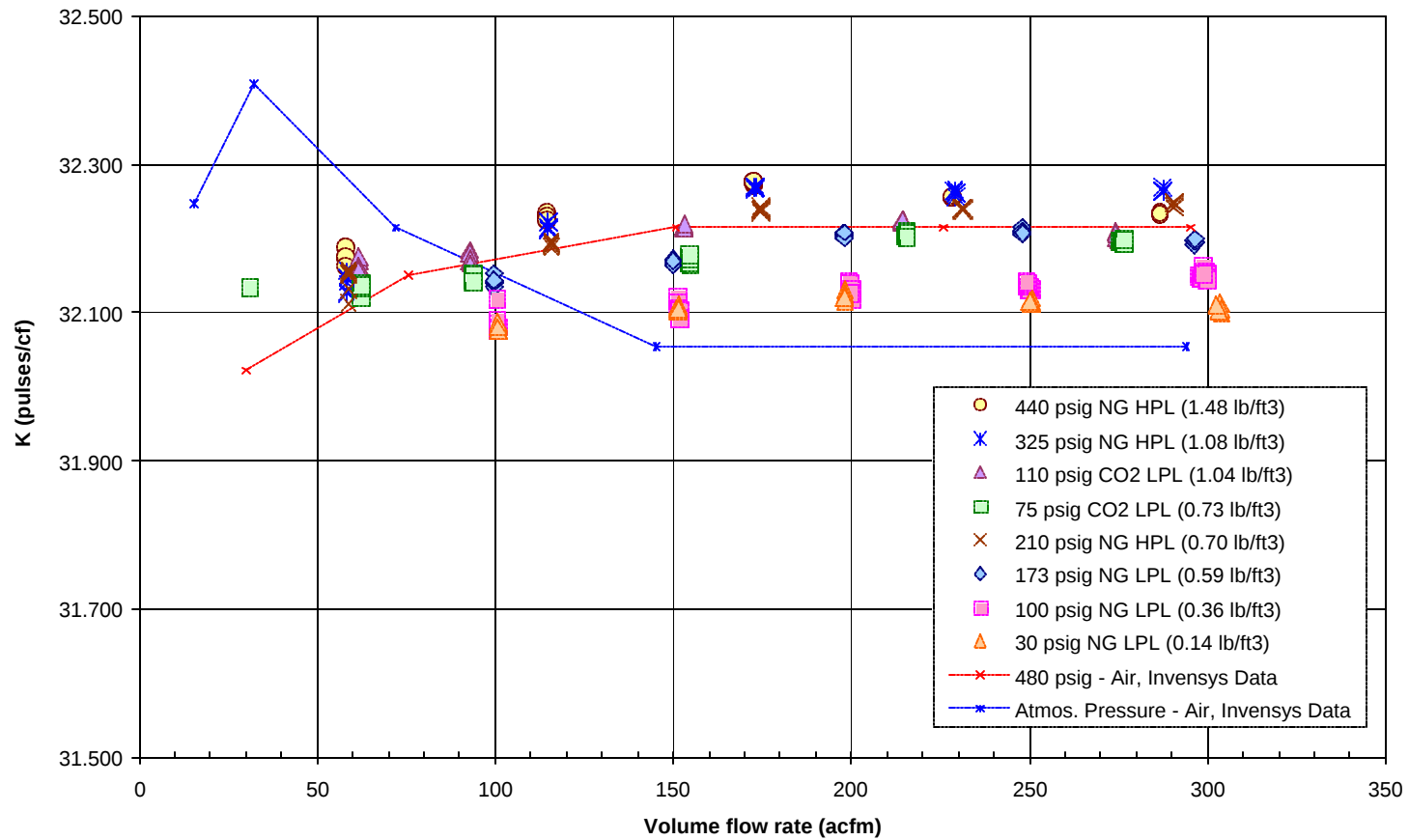
# **4-inch Instromet Turbine Meter** **Measured K-Factor vs. Volume Flow Rate**



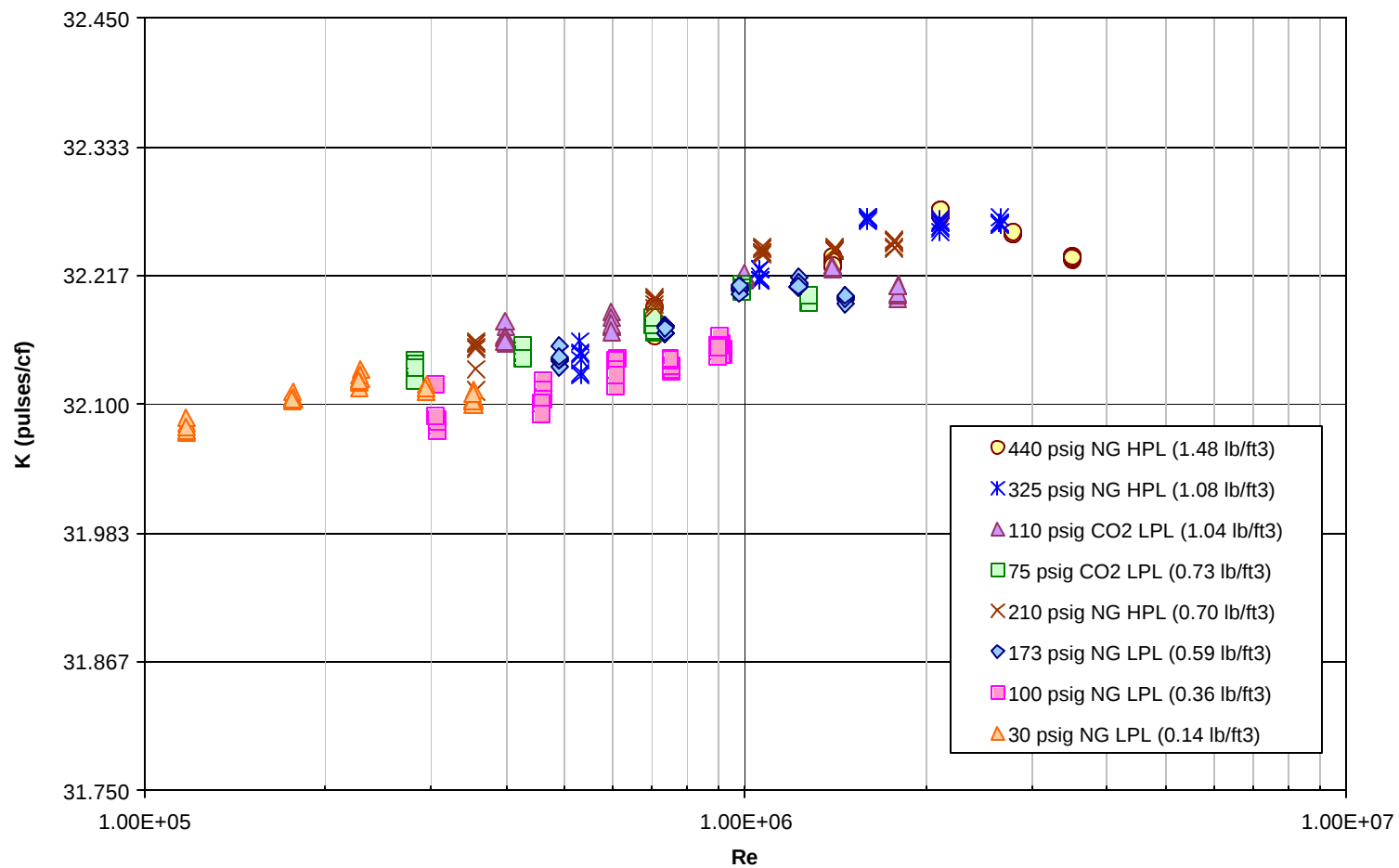
**4-inch Instronet Turbine Meter  
Measured K-Factor vs. Reynolds Number**



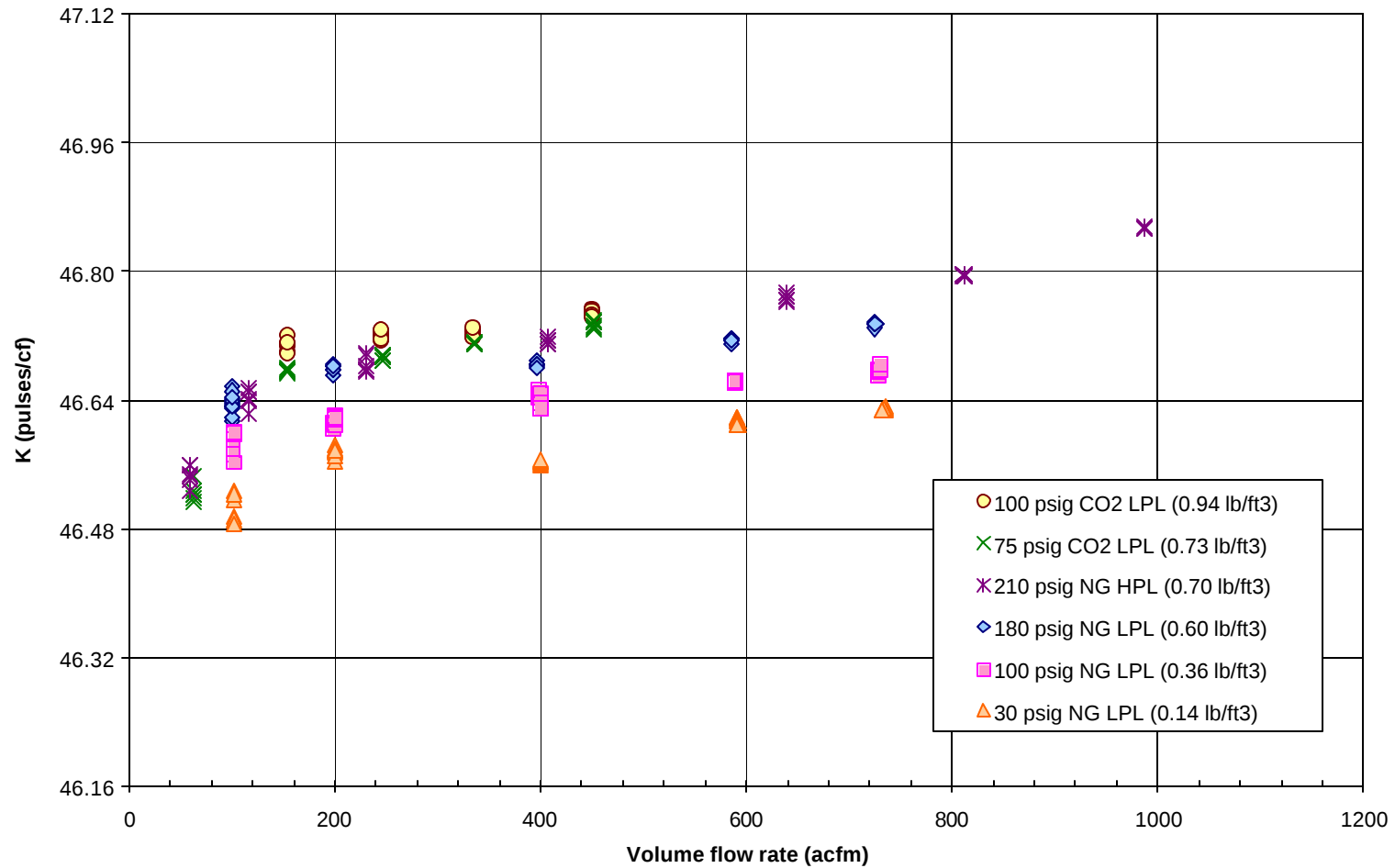
**4-inch Invensys Turbine Meter**  
**Measured K-Factor vs. Volume Flow Rate**  
**\*Including Manufacturer Data\***



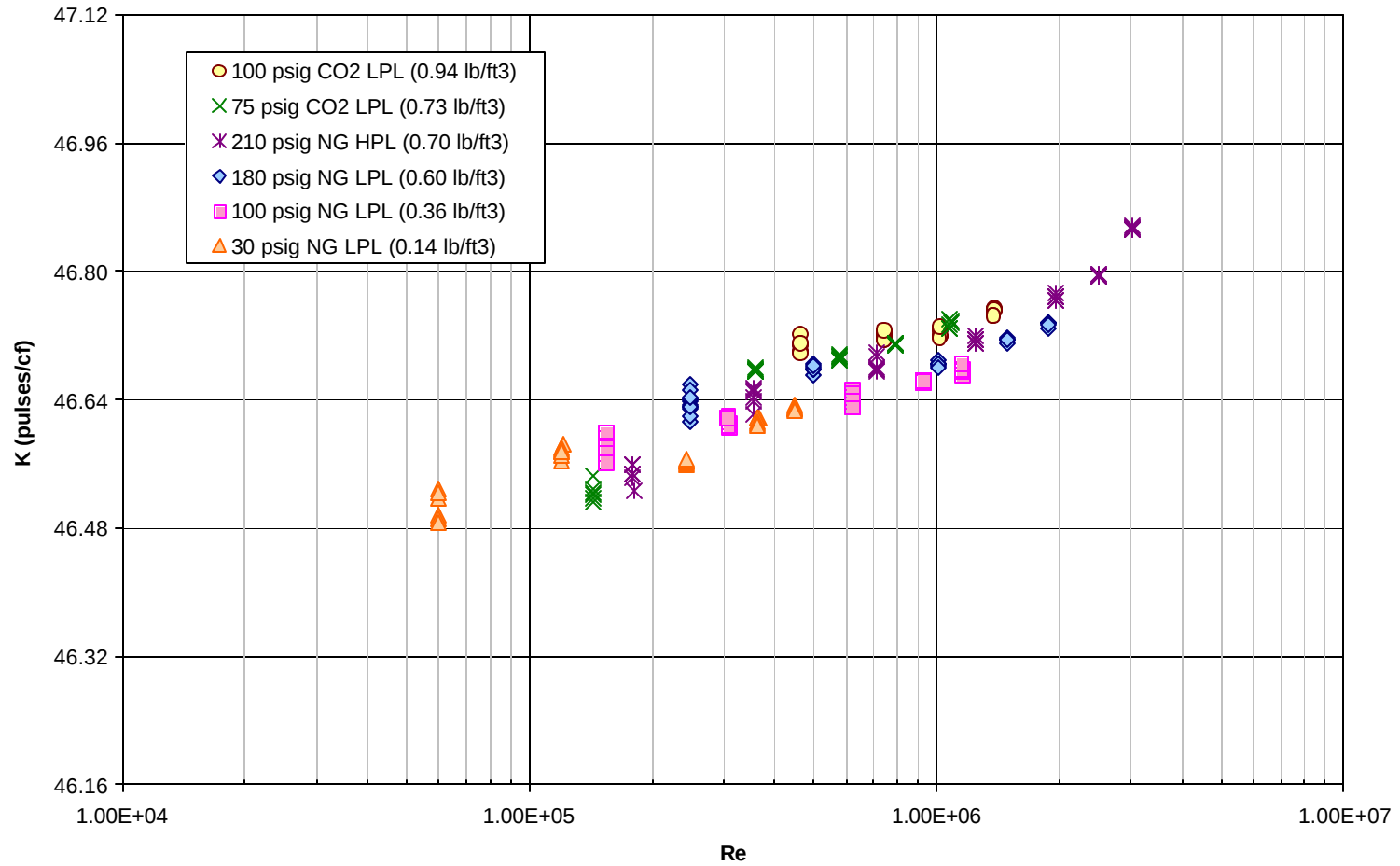
**4-inch Invensys Turbine Meter  
Measured K-Factor vs. Reynolds Number**



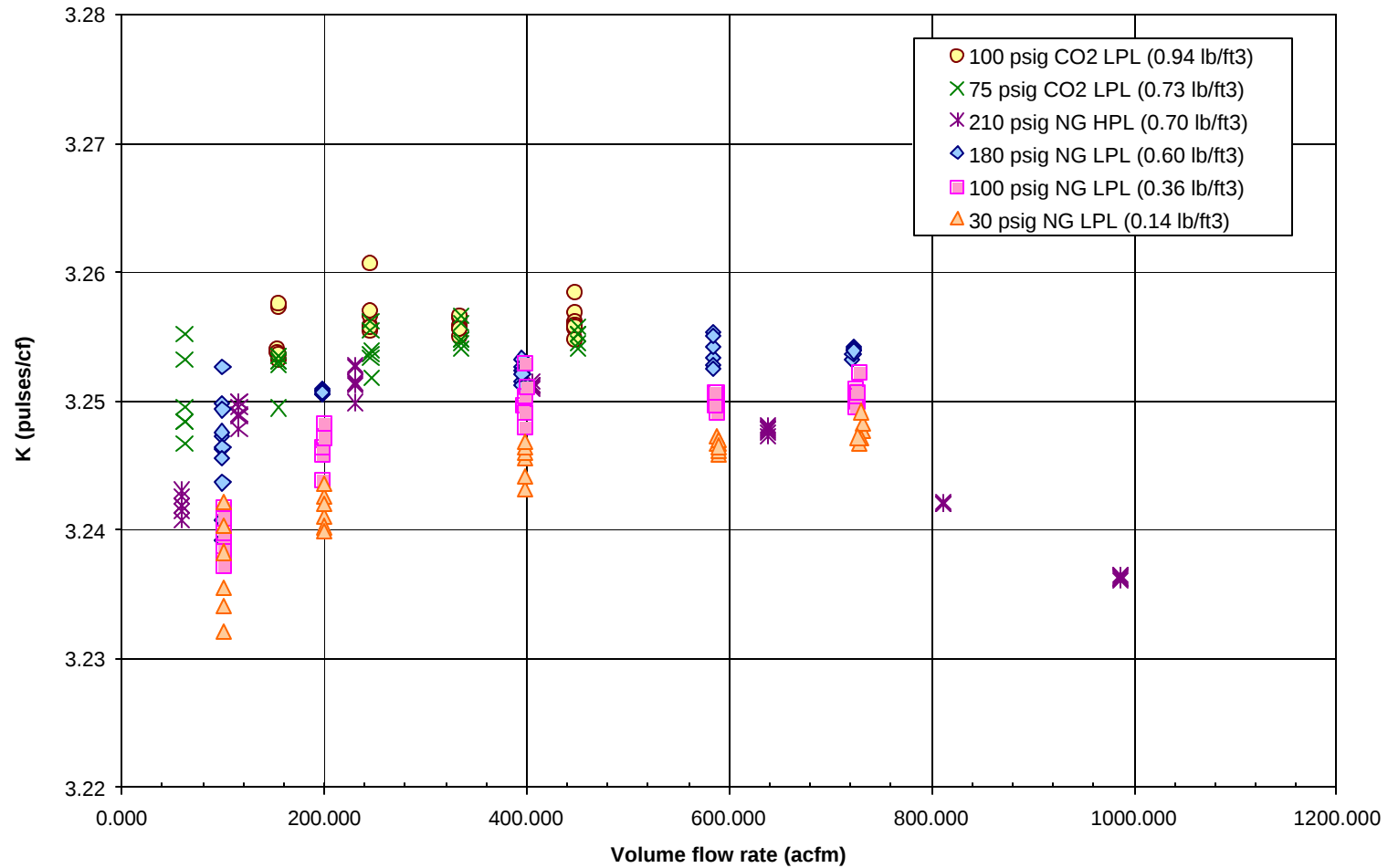
# **8-inch Instronet Turbine Meter Measured K-Factor vs. Volume Flow Rate**



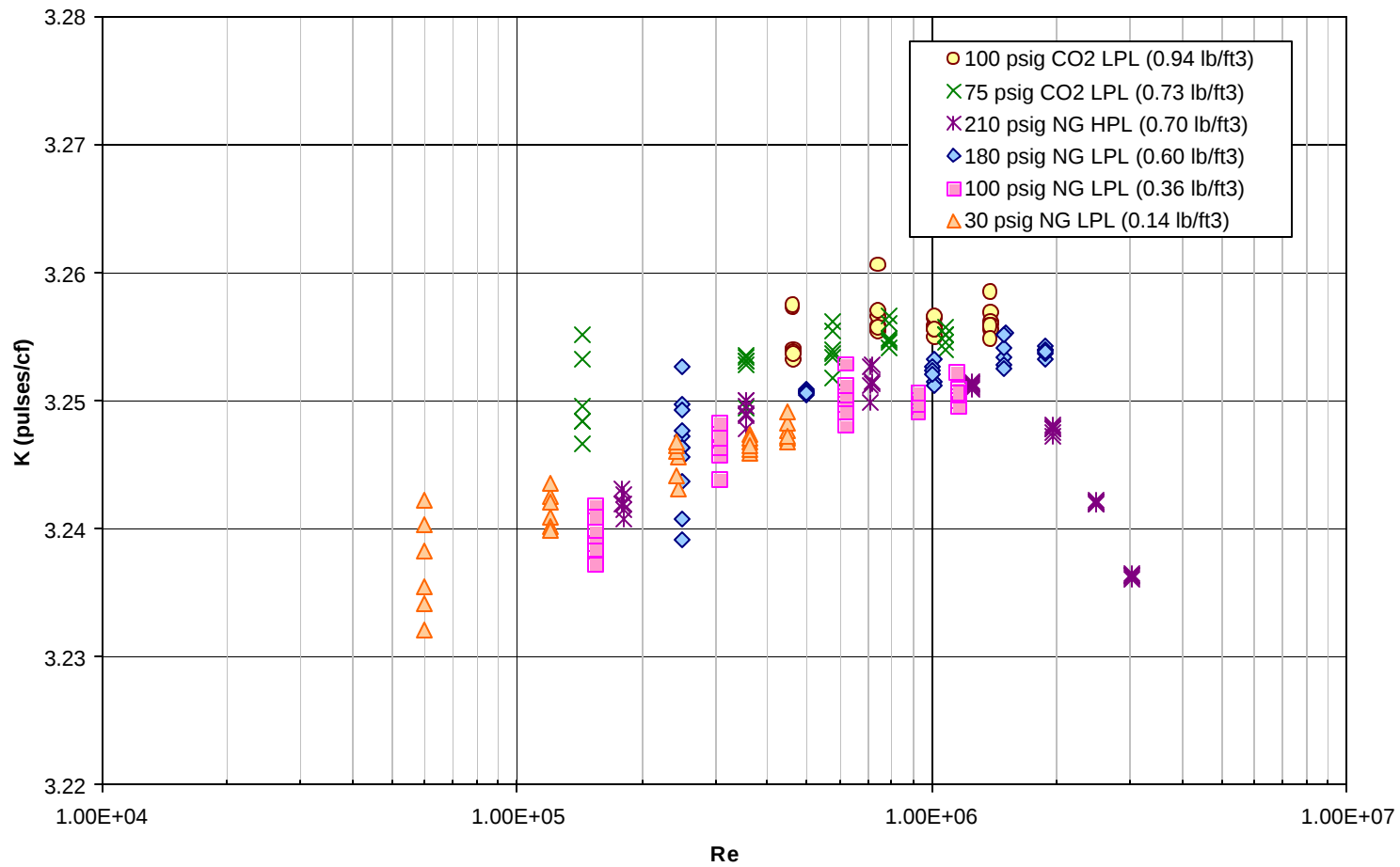
**8-inch Instronet Turbine Meter  
Measured K-Factor vs. Reynolds Number**



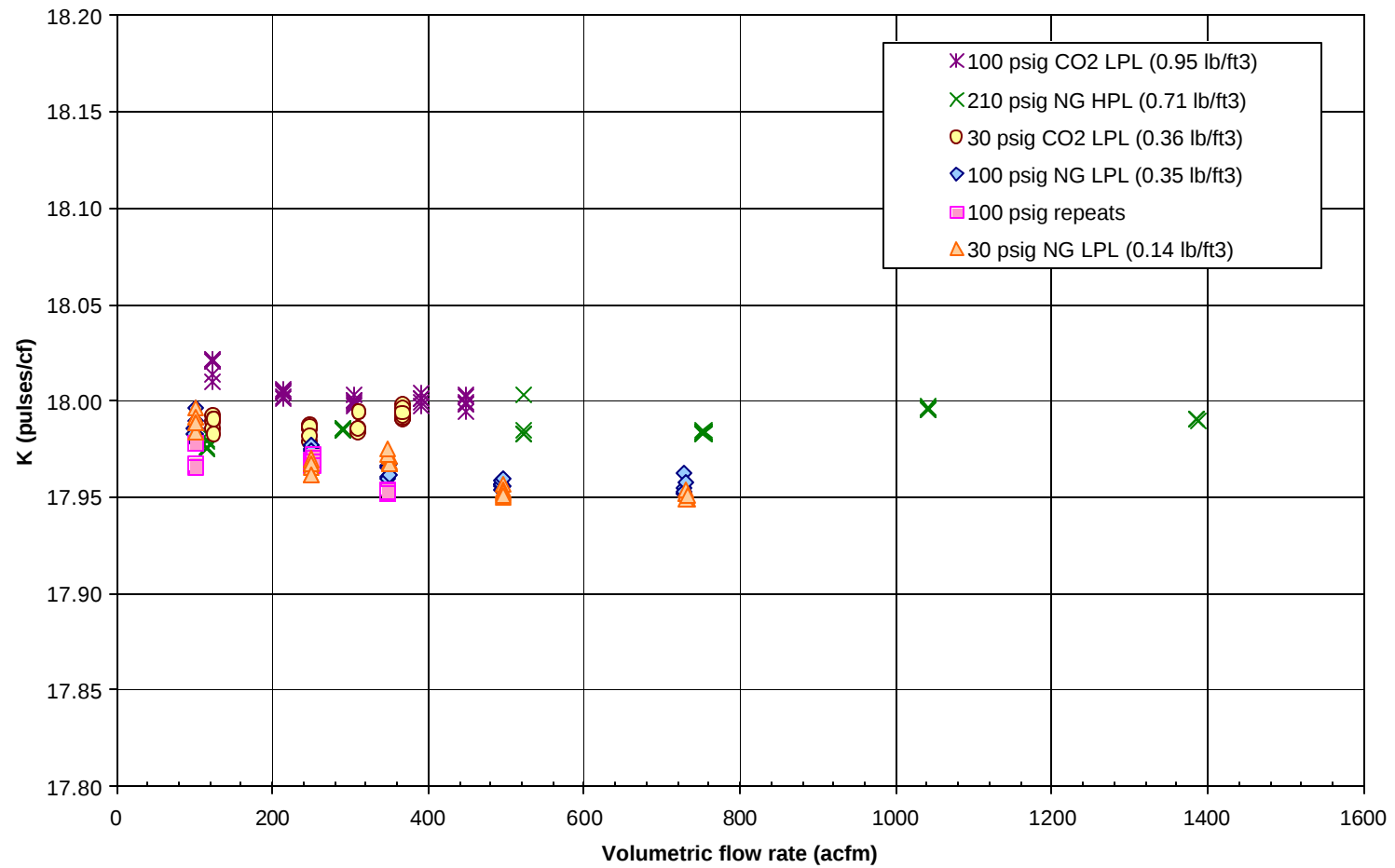
# **8-inch Invensys Turbine Meter Measured K-Factor vs. Volume Flow Rate**



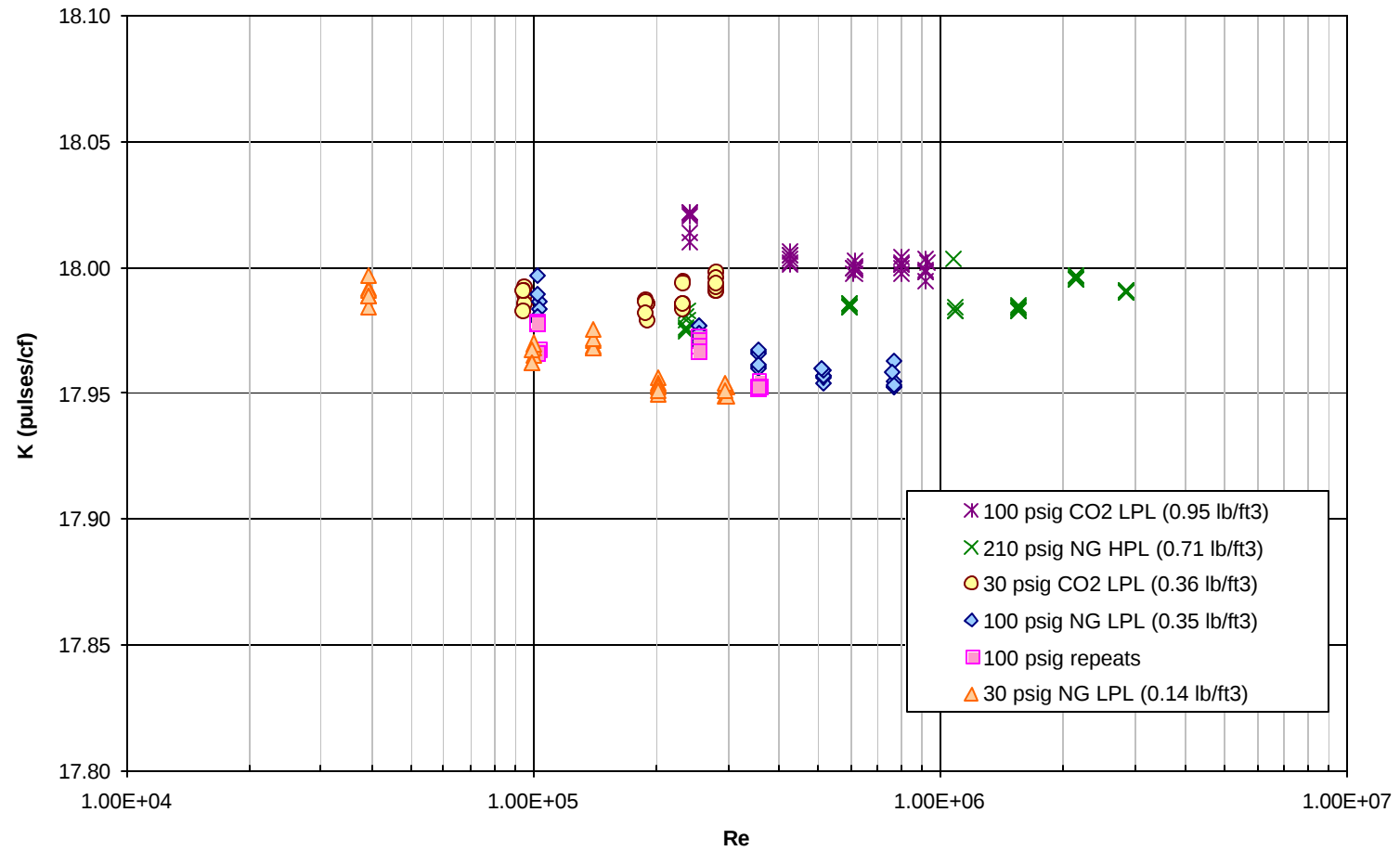
# **8-inch Invensys Turbine Meter Measured K-Factor vs. Reynolds Number**



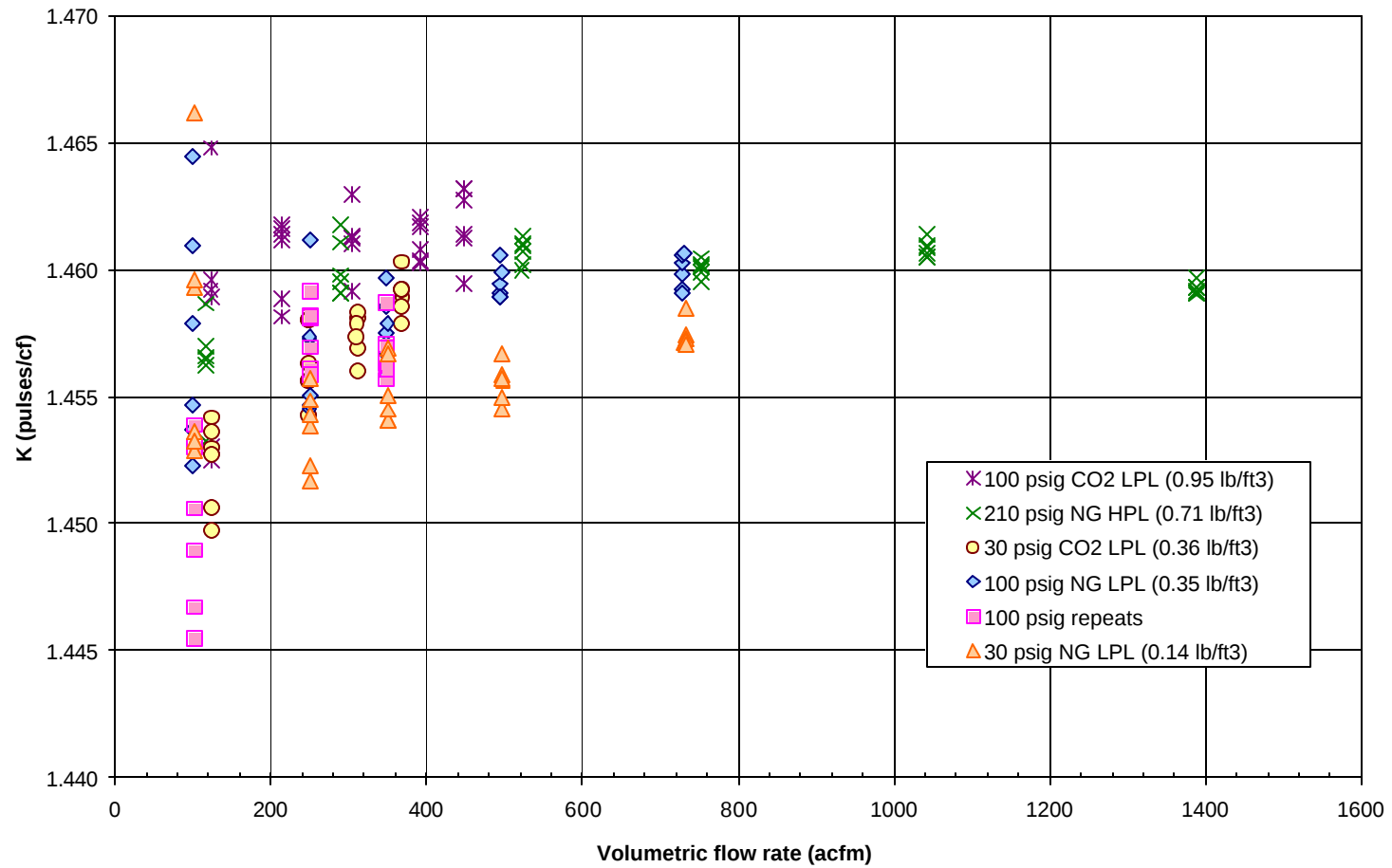
# **12-inch Instromet Turbine Meter** **Measured K-Factor vs. Volume Flow Rate**



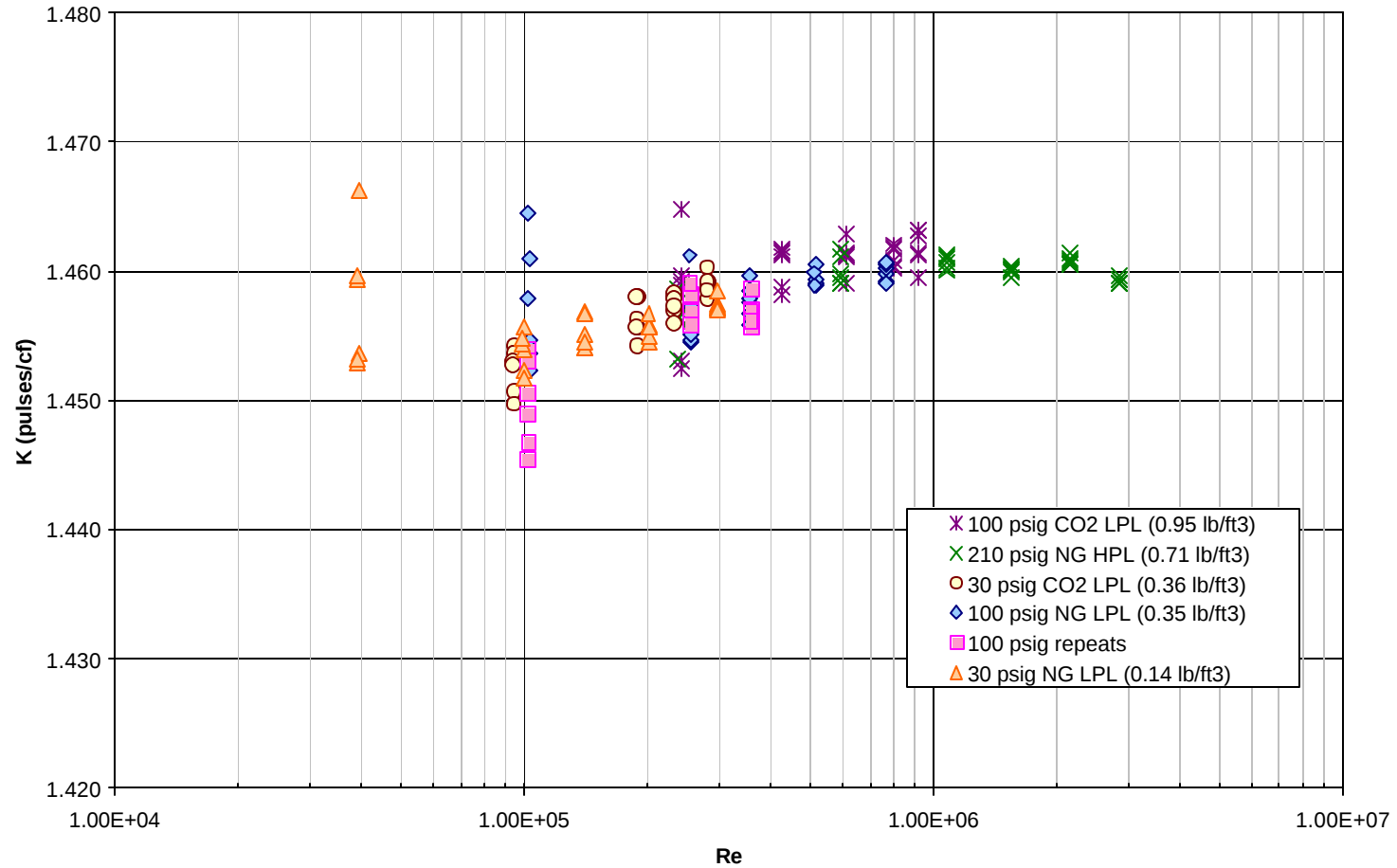
# 12-inch Instronet Turbine Meter Measured K-Factor vs. Reynolds Number



12-inch Invensys Turbine Meter  
Measured K-Factor vs. Volume Flow Rate



**12-inch Invensys Turbine Meter  
Measured K-Factor vs. Reynolds Number**



**4-inch Instronet Turbine Meter Serial No. 72130 – Low Pressure Loop Natural Gas Test**  
**Test Pressure = 190 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K (pulses/cf) | U <sub>K</sub> (%) | St      | ReD     | Q <sub>a</sub> (acfm) | UQ <sub>a</sub> (%) | mdot<br>(lbm/s) | U <sub>mdot</sub><br>(%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|------------------------------|-------|----------------|---------------|--------------------|---------|---------|-----------------------|---------------------|-----------------|--------------------------|--------------|
| F102203.103 | 31022 | 150231 | 190.1319 | 70.8846 | 0.5907                       | 90    | 203237         | 461.1383      | 0.1880             | 13.6772 | 1465277 | 293.819               | 0.16                | 2.8927          | 0.119                    | 0.034        |
| F102203.104 | 31022 | 150535 | 190.0549 | 70.8310 | 0.5905                       | 90    | 203262         | 461.1224      | 0.1880             | 13.6768 | 1465194 | 293.866               | 0.16                | 2.8923          | 0.119                    | 0.031        |
| F102203.105 | 31022 | 150751 | 189.9077 | 70.3196 | 0.5907                       | 90    | 203083         | 461.1089      | 0.1870             | 13.6764 | 1465533 | 293.615               | 0.16                | 2.8906          | 0.119                    | 0.028        |
| F102203.106 | 31022 | 151007 | 189.8104 | 70.1448 | 0.5906                       | 90    | 203113         | 461.2268      | 0.1880             | 13.6799 | 1465562 | 293.584               | 0.16                | 2.8898          | 0.119                    | 0.054        |
| F102203.107 | 31022 | 151251 | 189.7828 | 70.4281 | 0.5902                       | 90    | 203233         | 461.1418      | 0.1880             | 13.6773 | 1464970 | 293.811               | 0.16                | 2.8899          | 0.119                    | 0.035        |
| F102203.108 | 31022 | 151535 | 189.7410 | 70.5037 | 0.5899                       | 90    | 203305         | 461.1767      | 0.1870             | 13.6784 | 1464650 | 293.893               | 0.16                | 2.8896          | 0.119                    | 0.043        |
| F102203.109 | 31022 | 153438 | 189.8967 | 71.0010 | 0.5898                       | 90    | 170427         | 461.3169      | 0.1950             | 13.6825 | 1226181 | 246.291               | 0.168               | 2.4210          | 0.13                     | 0.073        |
| F102203.110 | 31022 | 153654 | 189.8799 | 71.0307 | 0.5897                       | 90    | 170424         | 461.3001      | 0.1940             | 13.682  | 1225962 | 246.295               | 0.168               | 2.4207          | 0.13                     | 0.069        |
| F102203.111 | 31022 | 153933 | 189.8490 | 71.0521 | 0.5896                       | 90    | 170444         | 461.3486      | 0.1950             | 13.6835 | 1225680 | 246.298               | 0.168               | 2.4202          | 0.13                     | 0.08         |
| F102203.112 | 31022 | 154150 | 189.8421 | 71.0984 | 0.5895                       | 90    | 170448         | 461.3455      | 0.1950             | 13.6834 | 1225465 | 246.306               | 0.168               | 2.4200          | 0.13                     | 0.079        |
| F102203.113 | 31022 | 154405 | 189.8374 | 71.2154 | 0.5893                       | 90    | 170477         | 461.3354      | 0.1940             | 13.6831 | 1225149 | 246.353               | 0.168               | 2.4198          | 0.13                     | 0.077        |
| F102203.114 | 31022 | 154621 | 189.8595 | 71.4616 | 0.5891                       | 90    | 170550         | 461.3483      | 0.1940             | 13.6835 | 1224686 | 246.452               | 0.168               | 2.4198          | 0.13                     | 0.08         |
| F102203.115 | 31022 | 155117 | 189.6772 | 70.8081 | 0.5893                       | 90    | 136298         | 461.3387      | 0.2140             | 13.6832 | 980129  | 196.96                | 0.191               | 1.9346          | 0.157                    | 0.078        |
| F102203.116 | 31022 | 155333 | 189.6915 | 70.9436 | 0.5892                       | 90    | 136346         | 461.4323      | 0.2140             | 13.686  | 979866  | 196.99                | 0.191               | 1.9345          | 0.158                    | 0.098        |
| F102203.117 | 31022 | 155613 | 189.6919 | 71.1786 | 0.5889                       | 90    | 136398         | 461.4149      | 0.2140             | 13.6854 | 979445  | 197.072               | 0.191               | 1.9344          | 0.158                    | 0.094        |
| F102203.118 | 31022 | 155829 | 189.7144 | 71.4359 | 0.5887                       | 90    | 136469         | 461.4426      | 0.2140             | 13.6863 | 979096  | 197.163               | 0.191               | 1.9345          | 0.157                    | 0.1          |
| F102203.119 | 31022 | 160045 | 189.7535 | 71.6527 | 0.5885                       | 90    | 136495         | 461.4239      | 0.2140             | 13.6857 | 978750  | 197.208               | 0.191               | 1.9344          | 0.158                    | 0.096        |
| F102203.120 | 31022 | 160301 | 189.7026 | 71.5910 | 0.5885                       | 90    | 136474         | 461.3794      | 0.2140             | 13.6844 | 978649  | 197.197               | 0.191               | 1.9340          | 0.157                    | 0.087        |
| F102203.121 | 31022 | 173646 | 188.1654 | 71.6959 | 0.5834                       | 90    | 103435         | 461.1779      | 0.1900             | 13.6784 | 735710  | 149.523               | 0.164               | 1.4539          | 0.123                    | 0.043        |
| F102203.122 | 31022 | 173902 | 188.0960 | 71.6044 | 0.5833                       | 90    | 103417         | 461.1415      | 0.1900             | 13.6773 | 735612  | 149.509               | 0.164               | 1.4535          | 0.123                    | 0.035        |
| F102203.123 | 31022 | 174118 | 188.0598 | 71.5398 | 0.5833                       | 90    | 103398         | 461.1621      | 0.1900             | 13.6779 | 735486  | 149.475               | 0.164               | 1.4531          | 0.124                    | 0.04         |
| F102203.124 | 31022 | 174334 | 188.0333 | 71.4098 | 0.5834                       | 90    | 103386         | 461.2735      | 0.1900             | 13.6813 | 735467  | 149.421               | 0.164               | 1.4528          | 0.124                    | 0.064        |
| F102203.125 | 31022 | 174550 | 187.9656 | 71.3920 | 0.5832                       | 90    | 103382         | 461.2151      | 0.1900             | 13.6795 | 735313  | 149.434               | 0.164               | 1.4524          | 0.123                    | 0.051        |
| F102203.126 | 31022 | 174806 | 187.9326 | 71.4366 | 0.5830                       | 90    | 103389         | 461.2005      | 0.1900             | 13.6791 | 735137  | 149.449               | 0.164               | 1.4522          | 0.124                    | 0.048        |
| F102203.127 | 31022 | 175102 | 188.3805 | 70.9649 | 0.5850                       | 90    | 68782          | 461.192       | 0.2220             | 13.6788 | 491097  | 99.426                | 0.199               | 0.9694          | 0.168                    | 0.046        |
| F102203.128 | 31022 | 175318 | 188.3517 | 70.7919 | 0.5851                       | 90    | 68767          | 461.2731      | 0.2220             | 13.6812 | 491138  | 99.387                | 0.199               | 0.9692          | 0.168                    | 0.064        |
| F102203.129 | 31022 | 175534 | 188.3931 | 70.9086 | 0.5851                       | 90    | 68791          | 461.4059      | 0.2220             | 13.6852 | 491069  | 99.393                | 0.199               | 0.9693          | 0.168                    | 0.092        |
| F102203.130 | 31022 | 175817 | 188.4257 | 71.2718 | 0.5848                       | 90    | 68823          | 461.3009      | 0.2220             | 13.6821 | 490846  | 99.462                | 0.199               | 0.9694          | 0.168                    | 0.07         |
| F102203.131 | 31022 | 180033 | 188.4400 | 71.5112 | 0.5845                       | 90    | 68864          | 461.332       | 0.2220             | 13.683  | 490715  | 99.515                | 0.199               | 0.9695          | 0.168                    | 0.076        |
| F102203.132 | 31022 | 180249 | 188.4456 | 71.7296 | 0.5843                       | 90    | 68877          | 461.2184      | 0.2210             | 13.6796 | 490554  | 99.558                | 0.199               | 0.9695          | 0.168                    | 0.052        |

**4-inch Instronet Turbine Meter Serial No. 72130 – Low Pressure Loop Natural Gas Test**  
**Test Pressure = 115 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K (pulses/cf) | U <sub>K</sub> (%) | St      | ReD    | Q <sub>u</sub> (acfm) | UQ <sub>u</sub> (%) | mdot<br>(lbm/s) | U <sub>mdot</sub><br>(%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|------------------------------|-------|----------------|---------------|--------------------|---------|--------|-----------------------|---------------------|-----------------|--------------------------|--------------|
| F102303.006 | 31023 | 65835  | 115.0807 | 70.8414 | 0.3538                       | 90    | 172159         | 461.2224      | 0.1940             | 13.6797 | 748814 | 248.845               | 0.169               | 1.4674          | 0.13                     | 0.053        |
| F102303.007 | 31023 | 70051  | 114.9445 | 70.2418 | 0.3538                       | 90    | 171916         | 461.1352      | 0.1940             | 13.6772 | 748623 | 248.54                | 0.169               | 1.4656          | 0.13                     | 0.034        |
| F102303.008 | 31023 | 70308  | 114.7729 | 69.3658 | 0.3539                       | 90    | 171624         | 461.1232      | 0.1940             | 13.6768 | 748610 | 248.125               | 0.169               | 1.4635          | 0.13                     | 0.031        |
| F102303.009 | 31023 | 70524  | 114.6043 | 68.6196 | 0.3539                       | 90    | 171393         | 461.1428      | 0.1940             | 13.6774 | 748486 | 247.78                | 0.169               | 1.4614          | 0.13                     | 0.035        |
| F102303.010 | 31023 | 70741  | 114.4446 | 68.1827 | 0.3537                       | 90    | 171285         | 461.1689      | 0.1940             | 13.6781 | 748105 | 247.61                | 0.169               | 1.4596          | 0.13                     | 0.041        |
| F102303.011 | 31023 | 71008  | 114.2970 | 67.8511 | 0.3535                       | 90    | 171244         | 461.243       | 0.1940             | 13.6803 | 747731 | 247.511               | 0.169               | 1.4581          | 0.13                     | 0.057        |
| F102303.012 | 31023 | 71459  | 116.3482 | 68.2691 | 0.3596                       | 90    | 137253         | 461.441       | 0.2140             | 13.6862 | 608951 | 198.296               | 0.192               | 1.1885          | 0.158                    | 0.1          |
| F102303.013 | 31023 | 71715  | 116.3511 | 69.2327 | 0.3589                       | 90    | 137529         | 461.4161      | 0.2140             | 13.6855 | 608101 | 198.706               | 0.192               | 1.1887          | 0.158                    | 0.095        |
| F102303.014 | 31023 | 71932  | 116.3670 | 70.1467 | 0.3583                       | 90    | 137767         | 461.3574      | 0.2140             | 13.6837 | 607308 | 199.075               | 0.192               | 1.1889          | 0.158                    | 0.082        |
| F102303.015 | 31023 | 72211  | 116.2994 | 70.2604 | 0.3580                       | 90    | 137753         | 461.222       | 0.2140             | 13.6797 | 606819 | 199.113               | 0.192               | 1.1881          | 0.158                    | 0.052        |
| F102303.016 | 31023 | 72428  | 116.1997 | 69.9802 | 0.3579                       | 90    | 137639         | 461.0914      | 0.2140             | 13.6758 | 606578 | 199.005               | 0.192               | 1.1871          | 0.158                    | 0.024        |
| F102303.017 | 31023 | 72644  | 116.0646 | 69.2853 | 0.3580                       | 90    | 137465         | 461.1674      | 0.2140             | 13.6781 | 606524 | 198.72                | 0.192               | 1.1857          | 0.158                    | 0.041        |
| F102303.018 | 31023 | 75834  | 115.4605 | 68.1580 | 0.3569                       | 90    | 104204         | 461.3269      | 0.1900             | 13.6828 | 459072 | 150.586               | 0.165               | 0.8957          | 0.124                    | 0.075        |
| F102303.019 | 31023 | 80113  | 115.4391 | 68.9277 | 0.3563                       | 90    | 104369         | 461.2811      | 0.1900             | 13.6815 | 458474 | 150.839               | 0.165               | 0.8957          | 0.124                    | 0.065        |
| F102303.020 | 31023 | 80330  | 115.4570 | 69.7107 | 0.3558                       | 90    | 104523         | 461.2332      | 0.1900             | 13.6801 | 457973 | 151.078               | 0.165               | 0.8958          | 0.124                    | 0.055        |
| F102303.021 | 31023 | 80546  | 115.4604 | 70.4688 | 0.3552                       | 90    | 104670         | 461.1696      | 0.1900             | 13.6782 | 457441 | 151.311               | 0.165               | 0.8959          | 0.124                    | 0.041        |
| F102303.022 | 31023 | 80802  | 115.4103 | 70.5343 | 0.3550                       | 90    | 104644         | 461.0118      | 0.1900             | 13.6735 | 457176 | 151.325               | 0.165               | 0.8955          | 0.124                    | 0.007        |
| F102303.023 | 31023 | 81019  | 115.3246 | 70.2766 | 0.3550                       | 90    | 104586         | 461.0022      | 0.1900             | 13.6732 | 457016 | 151.244               | 0.165               | 0.8948          | 0.124                    | 0.005        |
| F102303.024 | 31023 | 81344  | 115.6133 | 68.8660 | 0.3569                       | 90    | 69477          | 461.0448      | 0.2220             | 13.6745 | 305888 | 100.463               | 0.2                 | 0.5975          | 0.169                    | 0.014        |
| F102303.025 | 31023 | 81643  | 115.4558 | 68.1718 | 0.3569                       | 90    | 69383          | 461.0464      | 0.2220             | 13.6745 | 305822 | 100.327               | 0.2                 | 0.5967          | 0.168                    | 0.014        |
| F102303.026 | 31023 | 81900  | 115.3511 | 67.9188 | 0.3567                       | 90    | 69364          | 461.1348      | 0.2220             | 13.6771 | 305681 | 100.28                | 0.2                 | 0.5962          | 0.169                    | 0.034        |
| F102303.027 | 31023 | 82116  | 115.2737 | 67.8447 | 0.3565                       | 90    | 69361          | 461.1528      | 0.2220             | 13.6777 | 305533 | 100.272               | 0.2                 | 0.5958          | 0.169                    | 0.037        |
| F102303.028 | 31023 | 82333  | 115.1992 | 67.8166 | 0.3563                       | 90    | 69366          | 461.1953      | 0.2220             | 13.6789 | 305359 | 100.27                | 0.2                 | 0.5955          | 0.169                    | 0.047        |
| F102303.029 | 31023 | 82549  | 115.1882 | 68.1553 | 0.3560                       | 90    | 69488          | 461.6598      | 0.2220             | 13.6927 | 305184 | 100.345               | 0.2                 | 0.5955          | 0.168                    | 0.147        |
| F102303.037 | 31023 | 100423 | 115.8938 | 69.6244 | 0.3572                       | 90    | 204764         | 461.2939      | 0.1880             | 13.6819 | 900771 | 295.927               | 0.162               | 1.7618          | 0.119                    | 0.068        |
| F102303.038 | 31023 | 100703 | 115.9961 | 71.2881 | 0.3563                       | 90    | 205367         | 461.214       | 0.1870             | 13.6795 | 898978 | 296.85                | 0.161               | 1.7630          | 0.119                    | 0.051        |
| F102303.039 | 31023 | 100919 | 116.0781 | 72.2071 | 0.3559                       | 90    | 205688         | 461.2286      | 0.1870             | 13.6799 | 898026 | 297.305               | 0.161               | 1.7637          | 0.119                    | 0.054        |
| F102303.040 | 31023 | 101135 | 116.1290 | 72.6799 | 0.3558                       | 90    | 205745         | 461.0919      | 0.1870             | 13.6759 | 897405 | 297.475               | 0.161               | 1.7638          | 0.119                    | 0.024        |
| F102303.041 | 31023 | 101351 | 116.0980 | 72.2457 | 0.3560                       | 90    | 205485         | 461.0693      | 0.1870             | 13.6752 | 897472 | 297.114               | 0.161               | 1.7628          | 0.119                    | 0.019        |
| F102303.042 | 31023 | 101923 | 115.9035 | 70.7238 | 0.3564                       | 90    | 204799         | 461.0648      | 0.1870             | 13.6751 | 897873 | 296.125               | 0.161               | 1.7592          | 0.119                    | 0.018        |

**4-inch Instronet Turbine Meter Serial No. 72130 – Low Pressure Loop Natural Gas Test**  
**Test Pressure = 45 psia**

| <u>File</u> | <u>Date</u> | <u>Time</u> | <u>P (psia)</u> | <u>T (F)</u> | <u><math>\rho</math> (lb/ft<sup>3</sup>)</u> | <u>t (s)</u> | <u>Main Pulses</u> | <u>K (pulses/cf)</u> | <u>U<sub>k</sub> (%)</u> | <u>St</u> | <u>ReD</u> | <u>Q<sub>v</sub> (acfm)</u> | <u>UQ<sub>v</sub> (%)</u> | <u>mdot (lbm/s)</u> | <u>U<sub>m,dot</sub> (%)</u> | <u>Error (%)</u> |
|-------------|-------------|-------------|-----------------|--------------|----------------------------------------------|--------------|--------------------|----------------------|--------------------------|-----------|------------|-----------------------------|---------------------------|---------------------|------------------------------|------------------|
| F102303.043 | 31023       | 102723      | 45.9439         | 76.5697      | 0.1384                                       | 90           | 208677             | 461.8471             | 0.1930                   | 13.6983   | 353088     | 301.221                     | 0.169                     | 0.6946              | 0.123                        | 0.188            |
| F102303.044 | 31023       | 102939      | 45.9836         | 77.2076      | 0.1383                                       | 90           | 208733             | 461.6708             | 0.1930                   | 13.693    | 352833     | 301.417                     | 0.169                     | 0.6948              | 0.123                        | 0.15             |
| F102303.045 | 31023       | 103155      | 45.9887         | 77.0434      | 0.1384                                       | 90           | 208528             | 461.6165             | 0.1930                   | 13.6914   | 352768     | 301.156                     | 0.169                     | 0.6945              | 0.123                        | 0.138            |
| F102303.046 | 31023       | 103410      | 45.9765         | 76.6256      | 0.1384                                       | 90           | 208215             | 461.5154             | 0.1930                   | 13.6884   | 352739     | 300.77                      | 0.169                     | 0.6940              | 0.123                        | 0.116            |
| F102303.047 | 31023       | 103626      | 45.9505         | 76.0288      | 0.1385                                       | 90           | 207869             | 461.4742             | 0.1930                   | 13.6872   | 352727     | 300.297                     | 0.169                     | 0.6933              | 0.123                        | 0.107            |
| F102303.048 | 31023       | 103842      | 45.9175         | 75.4417      | 0.1386                                       | 90           | 207553             | 461.4694             | 0.1930                   | 13.6871   | 352668     | 299.844                     | 0.169                     | 0.6925              | 0.123                        | 0.106            |
| F102303.049 | 31023       | 110233      | 45.6701         | 72.1814      | 0.1387                                       | 90           | 172480             | 461.5963             | 0.2010                   | 13.6908   | 294818     | 249.107                     | 0.177                     | 0.5758              | 0.134                        | 0.134            |
| F102303.050 | 31023       | 110449      | 45.6480         | 72.2990      | 0.1386                                       | 90           | 172498             | 461.5748             | 0.2010                   | 13.6902   | 294602     | 249.144                     | 0.177                     | 0.5755              | 0.134                        | 0.129            |
| F102303.051 | 31023       | 110705      | 45.6218         | 72.1712      | 0.1386                                       | 90           | 172428             | 461.5323             | 0.2010                   | 13.6889   | 294473     | 249.066                     | 0.177                     | 0.5751              | 0.134                        | 0.12             |
| F102303.052 | 31023       | 110921      | 45.5845         | 71.6935      | 0.1386                                       | 90           | 172235             | 461.4721             | 0.2010                   | 13.6871   | 294439     | 248.82                      | 0.177                     | 0.5746              | 0.134                        | 0.107            |
| F102303.053 | 31023       | 111200      | 45.5345         | 71.1275      | 0.1386                                       | 90           | 172031             | 461.4575             | 0.2010                   | 13.6867   | 294378     | 248.533                     | 0.177                     | 0.5740              | 0.134                        | 0.104            |
| F102303.054 | 31023       | 111417      | 45.4931         | 70.7179      | 0.1386                                       | 90           | 171885             | 461.4644             | 0.2010                   | 13.6869   | 294283     | 248.318                     | 0.177                     | 0.5734              | 0.134                        | 0.105            |
| F102303.073 | 31023       | 151835      | 44.8001         | 70.9887      | 0.1365                                       | 90           | 136337             | 461.4225             | 0.221                    | 13.6857   | 229716     | 196.981                     | 0.2                       | 0.4481              | 0.163                        | 0.096            |
| F102303.074 | 31023       | 152051      | 44.7518         | 70.9303      | 0.1363                                       | 90           | 136315             | 461.4003             | 0.222                    | 13.685    | 229490     | 196.958                     | 0.2                       | 0.4476              | 0.163                        | 0.091            |
| F102303.075 | 31023       | 152350      | 44.6885         | 70.8430      | 0.1362                                       | 90           | 136286             | 461.344              | 0.221                    | 13.6833   | 229214     | 196.941                     | 0.2                       | 0.4470              | 0.163                        | 0.079            |
| F102303.076 | 31023       | 152606      | 44.6376         | 70.8594      | 0.1360                                       | 90           | 136274             | 461.299              | 0.221                    | 13.682    | 228941     | 196.942                     | 0.2                       | 0.4465              | 0.163                        | 0.069            |
| F102303.077 | 31023       | 152822      | 44.5678         | 70.6826      | 0.1359                                       | 90           | 136243             | 461.3437             | 0.222                    | 13.6833   | 228651     | 196.879                     | 0.201                     | 0.4458              | 0.163                        | 0.079            |
| F102303.078 | 31023       | 153037      | 44.5155         | 70.0658      | 0.1358                                       | 90           | 136077             | 461.3329             | 0.221                    | 13.683    | 228609     | 196.643                     | 0.201                     | 0.4452              | 0.163                        | 0.077            |
| F102303.061 | 31023       | 123642      | 45.3561         | 72.2140      | 0.1377                                       | 90           | 104392             | 461.3583             | 0.196                    | 13.6838   | 177308     | 150.847                     | 0.172                     | 0.3463              | 0.128                        | 0.082            |
| F102303.062 | 31023       | 123921      | 45.3340         | 72.3580      | 0.1376                                       | 90           | 104430             | 461.3986             | 0.196                    | 13.685    | 177180     | 150.889                     | 0.172                     | 0.3461              | 0.128                        | 0.091            |
| F102303.063 | 31023       | 124137      | 45.3241         | 72.6288      | 0.1375                                       | 90           | 104491             | 461.4816             | 0.196                    | 13.6874   | 177043     | 150.95                      | 0.172                     | 0.3460              | 0.128                        | 0.109            |
| F102303.064 | 31023       | 124353      | 45.3110         | 72.8677      | 0.1374                                       | 90           | 104510             | 461.3984             | 0.196                    | 13.685    | 176906     | 151.005                     | 0.172                     | 0.3459              | 0.128                        | 0.091            |
| F102303.065 | 31023       | 124625      | 45.2881         | 72.8986      | 0.1374                                       | 90           | 104506             | 461.3672             | 0.196                    | 13.684    | 176802     | 151.009                     | 0.172                     | 0.3457              | 0.128                        | 0.084            |
| F102303.066 | 31023       | 124846      | 45.2613         | 72.9345      | 0.1373                                       | 90           | 104500             | 461.3091             | 0.196                    | 13.6823   | 176687     | 151.019                     | 0.172                     | 0.3455              | 0.128                        | 0.071            |
| F102303.067 | 31023       | 125154      | 45.3804         | 73.1417      | 0.1376                                       | 90           | 69654              | 461.4539             | 0.229                    | 13.6866   | 117957     | 100.63                      | 0.208                     | 0.2307              | 0.173                        | 0.103            |
| F102303.068 | 31023       | 125410      | 45.3544         | 73.1489      | 0.1375                                       | 90           | 69624              | 461.2734             | 0.229                    | 13.6812   | 117882     | 100.626                     | 0.208                     | 0.2306              | 0.173                        | 0.064            |
| F102303.069 | 31023       | 125626      | 45.3298         | 73.1289      | 0.1374                                       | 90           | 69614              | 461.2639             | 0.229                    | 13.681    | 117813     | 100.613                     | 0.208                     | 0.2304              | 0.173                        | 0.062            |
| F102303.070 | 31023       | 125842      | 45.3013         | 73.0425      | 0.1374                                       | 90           | 69598              | 461.2584             | 0.228                    | 13.6808   | 117749     | 100.591                     | 0.208                     | 0.2303              | 0.173                        | 0.06             |
| F102303.071 | 31023       | 130058      | 45.2892         | 73.1386      | 0.1373                                       | 90           | 69614              | 461.3655             | 0.229                    | 13.684    | 117678     | 100.591                     | 0.208                     | 0.2302              | 0.173                        | 0.084            |
| F102303.072 | 31023       | 130314      | 45.2720         | 73.1652      | 0.1372                                       | 90           | 69614              | 461.3821             | 0.229                    | 13.6845   | 117618     | 100.588                     | 0.208                     | 0.2301              | 0.173                        | 0.087            |

**4-inch Instronet Turbine Meter Serial No. 72130 – Low Pressure Loop Carbon Dioxide Test**  
**Test Pressure = 130 psia**

| <u>File</u> | <u>Date</u> | <u>Time</u> | <u>P (psia)</u> | <u>T (F)</u> | <u>r (lb/ft<sup>3</sup>)</u> | <u>t (s)</u> | <u>Main<br/>Pulses</u> | <u>K (pulses/cf)</u> | <u>U<sub>k</sub> (%)</u> | <u>St</u> | <u>ReD</u> | <u>Q<sub>v</sub> (acfm)</u> | <u>UQ<sub>v</sub> (%)</u> | <u>mdot<br/>(lbm/s)</u> | <u>U<sub>mdot</sub><br/>(%)</u> | <u>Error<br/>(%)</u> |
|-------------|-------------|-------------|-----------------|--------------|------------------------------|--------------|------------------------|----------------------|--------------------------|-----------|------------|-----------------------------|---------------------------|-------------------------|---------------------------------|----------------------|
| F112103.000 | 31121       | 90039       | 129.8516        | 70.9060      | 1.0545                       | 90           | 187257                 | 461.7984             | 0.1770                   | 13.6968   | 1793771    | 270.33                      | 0.174                     | 4.7510                  | 0.136                           | 0.178                |
| F112103.001 | 31121       | 90255       | 129.7090        | 69.7162      | 1.0561                       | 90           | 186735                 | 461.726              | 0.1770                   | 13.6947   | 1795164    | 269.619                     | 0.174                     | 4.7456                  | 0.136                           | 0.162                |
| F112103.002 | 31121       | 90511       | 129.5483        | 68.7548      | 1.0570                       | 90           | 186368                 | 461.786              | 0.1760                   | 13.6965   | 1795701    | 269.054                     | 0.174                     | 4.7396                  | 0.136                           | 0.175                |
| F112103.003 | 31121       | 90728       | 129.4418        | 68.3488      | 1.0570                       | 90           | 186284                 | 461.9417             | 0.1770                   | 13.7011   | 1795546    | 268.842                     | 0.174                     | 4.7361                  | 0.136                           | 0.209                |
| F112103.004 | 31121       | 90944       | 129.3671        | 68.3249      | 1.0564                       | 90           | 186298                 | 461.9243             | 0.1760                   | 13.7006   | 1794830    | 268.872                     | 0.174                     | 4.7340                  | 0.136                           | 0.205                |
| F112103.005 | 31121       | 91200       | 129.2989        | 68.1896      | 1.0561                       | 90           | 186270                 | 461.9017             | 0.1760                   | 13.6999   | 1794593    | 268.845                     | 0.173                     | 4.7323                  | 0.136                           | 0.2                  |
| F112103.006 | 31121       | 94610       | 128.3422        | 70.0475      | 1.0436                       | 90           | 146890                 | 462.093              | 0.1540                   | 13.7056   | 1393680    | 211.92                      | 0.151                     | 3.6859                  | 0.105                           | 0.241                |
| F112103.007 | 31121       | 94826       | 128.3316        | 70.1592      | 1.0432                       | 90           | 146911                 | 462.0719             | 0.1540                   | 13.7049   | 1393227    | 211.96                      | 0.15                      | 3.6854                  | 0.105                           | 0.237                |
| F112103.008 | 31121       | 95042       | 128.3128        | 70.1401      | 1.0431                       | 90           | 146867                 | 462.0224             | 0.1540                   | 13.7035   | 1392846    | 211.919                     | 0.151                     | 3.6843                  | 0.105                           | 0.226                |
| F112103.009 | 31121       | 95259       | 128.2822        | 70.0446      | 1.0431                       | 90           | 146831                 | 462.0886             | 0.1530                   | 13.7054   | 1392468    | 211.837                     | 0.151                     | 3.6827                  | 0.105                           | 0.24                 |
| F112103.010 | 31121       | 95515       | 128.2621        | 70.0295      | 1.0429                       | 90           | 146822                 | 462.115              | 0.1540                   | 13.7062   | 1392155    | 211.812                     | 0.151                     | 3.6818                  | 0.105                           | 0.246                |
| F112103.011 | 31121       | 95732       | 128.2305        | 70.0225      | 1.0427                       | 90           | 146804                 | 462.0789             | 0.1540                   | 13.7051   | 1391772    | 211.802                     | 0.151                     | 3.6807                  | 0.105                           | 0.238                |
| F112103.012 | 31121       | 101858      | 127.2730        | 68.6390      | 1.0377                       | 90           | 105422                 | 462.1456             | 0.1720                   | 13.7071   | 996787     | 152.076                     | 0.169                     | 2.6301                  | 0.13                            | 0.253                |
| F112103.013 | 31121       | 102114      | 127.2516        | 68.8245      | 1.0371                       | 90           | 105485                 | 462.1634             | 0.1720                   | 13.7076   | 996458     | 152.161                     | 0.169                     | 2.6300                  | 0.13                            | 0.257                |
| F112103.014 | 31121       | 102331      | 127.2495        | 69.0114      | 1.0366                       | 90           | 105516                 | 462.1148             | 0.1720                   | 13.7062   | 996124     | 152.222                     | 0.169                     | 2.6299                  | 0.13                            | 0.246                |
| F112103.015 | 31121       | 102547      | 127.2439        | 69.1915      | 1.0362                       | 90           | 105562                 | 462.131              | 0.1720                   | 13.7067   | 995788     | 152.283                     | 0.169                     | 2.6298                  | 0.13                            | 0.25                 |
| F112103.016 | 31121       | 102803      | 127.2528        | 69.3760      | 1.0358                       | 90           | 105599                 | 462.153              | 0.1720                   | 13.7073   | 995458     | 152.329                     | 0.169                     | 2.6297                  | 0.13                            | 0.254                |
| F112103.017 | 31121       | 103020      | 127.2280        | 69.5460      | 1.0352                       | 90           | 105621                 | 462.0189             | 0.1720                   | 13.7034   | 995102     | 152.405                     | 0.169                     | 2.6295                  | 0.13                            | 0.225                |
| F112103.018 | 31121       | 104729      | 126.0090        | 69.8852      | 1.0240                       | 90           | 64238                  | 462.0984             | 0.1670                   | 13.7057   | 598275     | 92.676                      | 0.164                     | 1.5817                  | 0.124                           | 0.243                |
| F112103.019 | 31121       | 104946      | 126.0381        | 70.1574      | 1.0236                       | 90           | 64277                  | 462.1576             | 0.1680                   | 13.7075   | 598083     | 92.72                       | 0.165                     | 1.5819                  | 0.124                           | 0.255                |
| F112103.020 | 31121       | 105202      | 126.0625        | 70.3336      | 1.0234                       | 90           | 64280                  | 462.1081             | 0.1680                   | 13.706    | 597893     | 92.734                      | 0.165                     | 1.5818                  | 0.124                           | 0.245                |
| F112103.021 | 31121       | 105419      | 126.0087        | 70.4210      | 1.0228                       | 90           | 64289                  | 461.9413             | 0.1670                   | 13.7011   | 597726     | 92.781                      | 0.164                     | 1.5816                  | 0.124                           | 0.209                |
| F112103.022 | 31121       | 105635      | 125.9852        | 70.5130      | 1.0224                       | 90           | 64309                  | 461.946              | 0.1680                   | 13.7012   | 597579     | 92.809                      | 0.165                     | 1.5814                  | 0.124                           | 0.21                 |
| F112103.023 | 31121       | 105851      | 126.0136        | 70.5306      | 1.0226                       | 90           | 64297                  | 462.0544             | 0.1670                   | 13.7044   | 597427     | 92.77                       | 0.164                     | 1.5811                  | 0.124                           | 0.233                |
| F112103.024 | 31121       | 110454      | 126.1386        | 69.9908      | 1.0249                       | 90           | 42788                  | 462.393              | 0.2030                   | 13.7145   | 398515     | 61.691                      | 0.2                       | 1.0538                  | 0.169                           | 0.307                |
| F112103.025 | 31121       | 110710      | 126.0834        | 69.9628      | 1.0245                       | 90           | 42777                  | 462.1751             | 0.2030                   | 13.708    | 398461     | 61.704                      | 0.2                       | 1.0536                  | 0.169                           | 0.259                |
| F112103.026 | 31121       | 110926      | 126.0586        | 69.9197      | 1.0244                       | 90           | 42784                  | 462.349              | 0.2030                   | 13.7131   | 398361     | 61.691                      | 0.201                     | 1.0532                  | 0.169                           | 0.297                |
| F112103.027 | 31121       | 111142      | 126.0363        | 69.9726      | 1.0240                       | 90           | 42781                  | 462.2677             | 0.2040                   | 13.7107   | 398248     | 61.697                      | 0.2                       | 1.0530                  | 0.169                           | 0.279                |
| F112103.028 | 31121       | 111359      | 126.0193        | 70.0152      | 1.0238                       | 90           | 42781                  | 462.2448             | 0.2030                   | 13.7101   | 398147     | 61.7                        | 0.2                       | 1.0528                  | 0.169                           | 0.274                |
| F112103.029 | 31121       | 111615      | 125.9893        | 70.0806      | 1.0234                       | 90           | 42787                  | 462.2323             | 0.2030                   | 13.7097   | 398015     | 61.711                      | 0.2                       | 1.0526                  | 0.169                           | 0.272                |

**4-inch Instronet Turbine Meter Serial No. 72130 – Low Pressure Loop Carbon Dioxide Test  
Test Pressure = 90 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K (pulses/cf) | U <sub>K</sub> (%) | St      | ReD     | Q <sub>v</sub> (acfm) | UQ <sub>v</sub> (%) | mdot<br>(lbm/s) | U <sub>mdot</sub><br>(%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|------------------------------|-------|----------------|---------------|--------------------|---------|---------|-----------------------|---------------------|-----------------|--------------------------|--------------|
| F112003.070 | 31120 | 135928 | 92.7819  | 69.5029 | 0.7446                       | 90    | 186999         | 461.6677      | 0.1770             | 13.6929 | 1270457 | 270.034               | 0.175               | 3.3513          | 0.136                    | 0.149        |
| F112003.071 | 31120 | 140208 | 92.7655  | 69.7941 | 0.7440                       | 90    | 187127         | 461.6879      | 0.1770             | 13.6935 | 1269638 | 270.207               | 0.175               | 3.3507          | 0.136                    | 0.154        |
| F112003.072 | 31120 | 140447 | 92.7591  | 70.1278 | 0.7435                       | 90    | 187246         | 461.6669      | 0.1770             | 13.6929 | 1268808 | 270.391               | 0.175               | 3.3504          | 0.136                    | 0.149        |
| F112003.073 | 31120 | 140703 | 92.7571  | 70.4112 | 0.7430                       | 90    | 187329         | 461.6368      | 0.1770             | 13.692  | 1268066 | 270.529               | 0.175               | 3.3500          | 0.136                    | 0.142        |
| F112003.074 | 31120 | 140919 | 92.7472  | 70.5770 | 0.7427                       | 90    | 187380         | 461.6224      | 0.1770             | 13.6916 | 1267517 | 270.611               | 0.175               | 3.3495          | 0.136                    | 0.139        |
| F112003.075 | 31120 | 141134 | 92.7429  | 70.9093 | 0.7421                       | 90    | 187522         | 461.6838      | 0.1770             | 13.6934 | 1266657 | 270.78                | 0.175               | 3.3491          | 0.136                    | 0.153        |
| F112003.076 | 31120 | 143359 | 92.0001  | 70.9675 | 0.7358                       | 90    | 147189         | 461.8836      | 0.1540             | 13.6993 | 985355  | 212.447               | 0.152               | 2.6055          | 0.105                    | 0.196        |
| F112003.077 | 31120 | 143615 | 91.9671  | 70.9907 | 0.7355                       | 90    | 147191         | 461.8838      | 0.1540             | 13.6994 | 984917  | 212.45                | 0.152               | 2.6044          | 0.105                    | 0.196        |
| F112003.078 | 31120 | 143831 | 91.9501  | 71.0590 | 0.7353                       | 90    | 147209         | 461.8885      | 0.1540             | 13.6995 | 984586  | 212.474               | 0.152               | 2.6038          | 0.105                    | 0.197        |
| F112003.079 | 31120 | 144047 | 91.9398  | 71.1591 | 0.7350                       | 90    | 147231         | 461.9127      | 0.1540             | 13.7002 | 984196  | 212.495               | 0.152               | 2.6032          | 0.105                    | 0.202        |
| F112003.080 | 31120 | 144303 | 91.9258  | 71.1815 | 0.7349                       | 90    | 147231         | 461.9187      | 0.1540             | 13.7004 | 983944  | 212.492               | 0.152               | 2.6027          | 0.105                    | 0.204        |
| F112003.081 | 31120 | 144519 | 91.9065  | 71.2322 | 0.7347                       | 90    | 147229         | 461.8787      | 0.1540             | 13.6992 | 983615  | 212.507               | 0.152               | 2.6020          | 0.105                    | 0.195        |
| F112003.082 | 31120 | 144953 | 91.4038  | 72.8531 | 0.7280                       | 90    | 106352         | 461.7886      | 0.1720             | 13.6965 | 702349  | 153.536               | 0.17                | 1.8629          | 0.131                    | 0.175        |
| F112003.083 | 31120 | 145221 | 91.3668  | 72.6940 | 0.7279                       | 90    | 106293         | 461.7361      | 0.1730             | 13.695  | 702165  | 153.469               | 0.17                | 1.8619          | 0.131                    | 0.164        |
| F112003.084 | 31120 | 145437 | 91.3352  | 72.4268 | 0.7281                       | 90    | 106231         | 461.8019      | 0.1730             | 13.6969 | 702111  | 153.357               | 0.17                | 1.8610          | 0.131                    | 0.178        |
| F112003.085 | 31120 | 145716 | 91.3069  | 72.1604 | 0.7283                       | 90    | 106170         | 461.8802      | 0.1730             | 13.6992 | 702068  | 153.243               | 0.17                | 1.8600          | 0.131                    | 0.195        |
| F112003.086 | 31120 | 145932 | 91.2610  | 71.9979 | 0.7281                       | 90    | 106116         | 461.8062      | 0.1730             | 13.6971 | 701889  | 153.19                | 0.17                | 1.8591          | 0.131                    | 0.179        |
| F112003.087 | 31120 | 150147 | 91.2141  | 71.8335 | 0.7280                       | 90    | 106079         | 461.8412      | 0.1730             | 13.6981 | 701653  | 153.125               | 0.17                | 1.8579          | 0.131                    | 0.187        |
| F112003.088 | 31120 | 152235 | 91.2603  | 72.8731 | 0.7268                       | 90    | 64534          | 461.8101      | 0.1680             | 13.6972 | 425440  | 93.161                | 0.166               | 1.1285          | 0.124                    | 0.18         |
| F112003.089 | 31120 | 152502 | 91.2555  | 72.9025 | 0.7267                       | 90    | 64532          | 461.8667      | 0.1680             | 13.6988 | 425305  | 93.147                | 0.166               | 1.1282          | 0.125                    | 0.192        |
| F112003.090 | 31120 | 152718 | 91.2458  | 72.9851 | 0.7265                       | 90    | 64538          | 461.8561      | 0.1680             | 13.6985 | 425176  | 93.157                | 0.166               | 1.1280          | 0.124                    | 0.19         |
| F112003.091 | 31120 | 152934 | 91.2289  | 73.0516 | 0.7263                       | 90    | 64535          | 461.7864      | 0.1680             | 13.6965 | 425033  | 93.167                | 0.166               | 1.1277          | 0.125                    | 0.175        |
| F112003.092 | 31120 | 153150 | 91.2224  | 73.0678 | 0.7262                       | 90    | 64536          | 461.8634      | 0.1680             | 13.6987 | 424911  | 93.153                | 0.165               | 1.1274          | 0.124                    | 0.192        |
| F112003.093 | 31120 | 153406 | 91.1959  | 73.0661 | 0.7260                       | 90    | 64519          | 461.7563      | 0.1680             | 13.6956 | 424773  | 93.15                 | 0.165               | 1.1271          | 0.124                    | 0.168        |
| F112003.094 | 31120 | 153940 | 90.8250  | 72.9501 | 0.7231                       | 90    | 42960          | 461.8331      | 0.2030             | 13.6978 | 281724  | 62.014                | 0.201               | 0.7474          | 0.169                    | 0.185        |
| F112003.095 | 31120 | 154216 | 90.8115  | 72.8503 | 0.7231                       | 90    | 42961          | 461.9467      | 0.2040             | 13.7012 | 281724  | 62                    | 0.201               | 0.7472          | 0.169                    | 0.21         |
| F112003.096 | 31120 | 154454 | 90.8137  | 72.9067 | 0.7231                       | 90    | 42957          | 461.9146      | 0.2040             | 13.7003 | 281665  | 61.998                | 0.201               | 0.7471          | 0.169                    | 0.203        |
| F112003.097 | 31120 | 154832 | 90.8077  | 73.0219 | 0.7228                       | 90    | 42976          | 462.0443      | 0.2030             | 13.7041 | 281569  | 62.008                | 0.201               | 0.7470          | 0.169                    | 0.231        |
| F112003.098 | 31120 | 155047 | 90.8004  | 73.0915 | 0.7227                       | 90    | 42977          | 462.0088      | 0.2030             | 13.7031 | 281500  | 62.015                | 0.201               | 0.7469          | 0.169                    | 0.223        |
| F112003.099 | 31120 | 155319 | 90.7882  | 73.1739 | 0.7224                       | 90    | 42974          | 461.9586      | 0.2030             | 13.7016 | 281385  | 62.017                | 0.201               | 0.7467          | 0.169                    | 0.212        |

**4-inch Instromet Turbine Meter Serial No. 72130 – High Pressure Loop Natural Gas Test  
Test Pressure = 465 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K (pulses/cf) | U <sub>k</sub> (%) | St      | ReD     | Q <sub>v</sub> (acfm) | UQ <sub>v</sub> (%) | mdot<br>(lbm/s) | U <sub>mdot</sub><br>(%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|------------------------------|-------|----------------|---------------|--------------------|---------|---------|-----------------------|---------------------|-----------------|--------------------------|--------------|
| F110303.000 | 31103 | 80257  | 465.4584 | 70.4473 | 1.5066                       | 90    | 196593.4       | 461.03424     | 0.2520             | 13.6742 | 3495395 | 284.279               | 0.228               | 7.1382          | 0.197                    | 0.012        |
| F110303.001 | 31103 | 80523  | 465.4069 | 70.4439 | 1.5064                       | 90    | 196603         | 461.05774     | 0.2520             | 13.6749 | 3495046 | 284.278               | 0.228               | 7.1374          | 0.197                    | 0.017        |
| F110303.002 | 31103 | 80722  | 465.3789 | 70.4477 | 1.5063                       | 90    | 196611.2       | 461.07681     | 0.2520             | 13.6754 | 3494789 | 284.278               | 0.228               | 7.1369          | 0.197                    | 0.021        |
| F110303.003 | 31103 | 80920  | 465.3015 | 70.4540 | 1.5060                       | 90    | 196611.2       | 461.06808     | 0.2520             | 13.6752 | 3494192 | 284.284               | 0.228               | 7.1356          | 0.197                    | 0.019        |
| F110303.004 | 31103 | 81119  | 465.2896 | 70.4530 | 1.5060                       | 90    | 196607.8       | 461.07281     | 0.2520             | 13.6753 | 3494020 | 284.276               | 0.228               | 7.1353          | 0.197                    | 0.02         |
| F110303.005 | 31103 | 81317  | 465.2403 | 70.4457 | 1.5058                       | 90    | 196590.6       | 461.0401      | 0.2520             | 13.6743 | 3493690 | 284.271               | 0.228               | 7.1345          | 0.197                    | 0.013        |
| F110303.006 | 31103 | 82206  | 465.3372 | 70.4919 | 1.5060                       | 90    | 157155.4       | 461.19083     | 0.2870             | 13.6788 | 2792048 | 227.173               | 0.266               | 5.7021          | 0.24                     | 0.046        |
| F110303.007 | 31103 | 82529  | 465.2600 | 70.4837 | 1.5058                       | 90    | 157143.8       | 461.17386     | 0.2870             | 13.6783 | 2791570 | 227.165               | 0.266               | 5.7010          | 0.24                     | 0.042        |
| F110303.008 | 31103 | 82727  | 465.2188 | 70.4809 | 1.5056                       | 90    | 157145.4       | 461.1969      | 0.2870             | 13.679  | 2791242 | 227.156               | 0.266               | 5.7002          | 0.24                     | 0.047        |
| F110303.009 | 31103 | 82926  | 465.1256 | 70.4500 | 1.5054                       | 90    | 157133.7       | 461.19028     | 0.2870             | 13.6788 | 2790844 | 227.142               | 0.266               | 5.6991          | 0.24                     | 0.046        |
| F110303.010 | 31103 | 83136  | 465.1062 | 70.4316 | 1.5054                       | 90    | 157133.1       | 461.21448     | 0.2870             | 13.6795 | 2790764 | 227.129               | 0.266               | 5.6988          | 0.24                     | 0.051        |
| F110303.011 | 31103 | 83345  | 465.0566 | 70.3928 | 1.5054                       | 90    | 157131         | 461.25146     | 0.2870             | 13.6806 | 2790617 | 227.108               | 0.266               | 5.6981          | 0.24                     | 0.059        |
| F110303.012 | 31103 | 85240  | 464.3070 | 70.4131 | 1.5027                       | 90    | 119179.9       | 461.55164     | 0.2360             | 13.6895 | 2111698 | 172.144               | 0.21                | 4.3115          | 0.175                    | 0.124        |
| F110303.013 | 31103 | 85455  | 464.2205 | 70.4054 | 1.5025                       | 90    | 119183.5       | 461.58176     | 0.2360             | 13.6904 | 2111295 | 172.138               | 0.21                | 4.3105          | 0.175                    | 0.131        |
| F110303.014 | 31103 | 85818  | 464.1408 | 70.3638 | 1.5023                       | 90    | 119182.2       | 461.60785     | 0.2360             | 13.6912 | 2111123 | 172.126               | 0.21                | 4.3099          | 0.175                    | 0.136        |
| F110303.015 | 31103 | 90016  | 464.1191 | 70.3600 | 1.5023                       | 90    | 119171.9       | 461.57547     | 0.2360             | 13.6902 | 2111022 | 172.123               | 0.21                | 4.3096          | 0.175                    | 0.129        |
| F110303.016 | 31103 | 90235  | 464.0492 | 70.3540 | 1.5021                       | 90    | 119175.5       | 461.5896      | 0.2360             | 13.6906 | 2110751 | 172.123               | 0.21                | 4.3090          | 0.175                    | 0.132        |
| F110303.017 | 31103 | 90439  | 464.0392 | 70.3477 | 1.5021                       | 90    | 119173.7       | 461.599       | 0.2360             | 13.6909 | 2110683 | 172.117               | 0.21                | 4.3088          | 0.175                    | 0.134        |
| F110303.018 | 31103 | 91105  | 463.9383 | 70.4649 | 1.5013                       | 90    | 79151.95       | 461.36279     | 0.2850             | 13.6839 | 1401659 | 114.374               | 0.264               | 2.8618          | 0.238                    | 0.083        |
| F110303.019 | 31103 | 91304  | 463.9442 | 70.4979 | 1.5012                       | 90    | 79148.41       | 461.33759     | 0.2850             | 13.6832 | 1401516 | 114.375               | 0.264               | 2.8617          | 0.237                    | 0.078        |
| F110303.020 | 31103 | 91502  | 463.8931 | 70.4913 | 1.5010                       | 90    | 79161.69       | 461.43286     | 0.2850             | 13.686  | 1401343 | 114.371               | 0.264               | 2.8613          | 0.237                    | 0.098        |
| F110303.021 | 31103 | 91735  | 463.8162 | 70.4867 | 1.5008                       | 90    | 79170.05       | 461.48572     | 0.2850             | 13.6875 | 1401123 | 114.37                | 0.264               | 2.8608          | 0.238                    | 0.11         |
| F110303.022 | 31103 | 91934  | 463.7333 | 70.4683 | 1.5006                       | 90    | 79152.6        | 461.40558     | 0.2850             | 13.6852 | 1400913 | 114.364               | 0.264               | 2.8602          | 0.238                    | 0.092        |
| F110303.023 | 31103 | 92132  | 463.6281 | 70.4486 | 1.5003                       | 90    | 79139.02       | 461.35034     | 0.2850             | 13.6835 | 1400628 | 114.359               | 0.264               | 2.8595          | 0.237                    | 0.08         |
| F110303.024 | 31103 | 95053  | 462.5636 | 70.6651 | 1.4959                       | 90    | 40196.89       | 461.81982     | 0.2780             | 13.6975 | 708493  | 58.027                | 0.256               | 1.4467          | 0.229                    | 0.182        |
| F110303.025 | 31103 | 95251  | 462.4660 | 70.6327 | 1.4956                       | 90    | 40178.7        | 461.66425     | 0.2780             | 13.6928 | 708349  | 58.02                 | 0.256               | 1.4463          | 0.229                    | 0.148        |
| F110303.026 | 31103 | 95533  | 462.2793 | 70.6124 | 1.4951                       | 90    | 40171.38       | 461.6178      | 0.2780             | 13.6915 | 708061  | 58.015                | 0.256               | 1.4456          | 0.229                    | 0.138        |
| F110303.027 | 31103 | 95738  | 462.2124 | 70.6089 | 1.4948                       | 90    | 40188.94       | 461.82907     | 0.2780             | 13.6977 | 707954  | 58.014                | 0.256               | 1.4454          | 0.229                    | 0.184        |
| F110303.028 | 31103 | 95952  | 462.1080 | 70.5893 | 1.4945                       | 90    | 40170.1        | 461.66272     | 0.2780             | 13.6928 | 707770  | 58.008                | 0.256               | 1.4449          | 0.229                    | 0.148        |
| F110303.029 | 31103 | 100331 | 461.8995 | 70.6299 | 1.4937                       | 90    | 40154.59       | 461.51337     | 0.2780             | 13.6884 | 707299  | 58.004                | 0.256               | 1.4440          | 0.229                    | 0.116        |

**4-inch Instromet Turbine Meter Serial No. 72130 – High Pressure Loop Natural Gas Test**  
**Test Pressure = 345 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K (pulses/cf) | U <sub>K</sub> (%) | St      | ReD     | Q <sub>v</sub> (acfm) | U <sub>Q<sub>v</sub></sub> (%) | mdot<br>(lbm/s) | U <sub>mdot</sub><br>(%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|------------------------------|-------|----------------|---------------|--------------------|---------|---------|-----------------------|--------------------------------|-----------------|--------------------------|--------------|
| F110303.070 | 31103 | 151950 | 349.7383 | 69.2412 | 1.1162                       | 90    | 197353         | 461.47079     | 0.2550             | 13.6871 | 2646062 | 285.107               | 0.233                          | 5.3039          | 0.199                    | 0.106        |
| F110303.071 | 31103 | 152224 | 349.7498 | 69.1947 | 1.1163                       | 90    | 197353.5       | 461.49396     | 0.2550             | 13.6878 | 2646478 | 285.094               | 0.233                          | 5.3043          | 0.199                    | 0.111        |
| F110303.072 | 31103 | 152547 | 349.7616 | 69.1905 | 1.1164                       | 90    | 197362.8       | 461.49454     | 0.2550             | 13.6878 | 2646731 | 285.107               | 0.233                          | 5.3048          | 0.199                    | 0.112        |
| F110303.073 | 31103 | 152745 | 349.7494 | 69.2138 | 1.1163                       | 90    | 197360.7       | 461.45493     | 0.2550             | 13.6866 | 2646607 | 285.128               | 0.233                          | 5.3047          | 0.199                    | 0.103        |
| F110303.074 | 31103 | 152943 | 349.7437 | 69.2172 | 1.1163                       | 90    | 197373         | 461.47754     | 0.2550             | 13.6873 | 2646564 | 285.132               | 0.233                          | 5.3047          | 0.199                    | 0.108        |
| F110303.075 | 31103 | 153153 | 349.7081 | 69.2571 | 1.1160                       | 90    | 197395.9       | 461.47797     | 0.2550             | 13.6873 | 2646203 | 285.165               | 0.233                          | 5.3042          | 0.199                    | 0.108        |
| F110303.045 | 31103 | 123502 | 348.9506 | 69.8617 | 1.1120                       | 90    | 157846.8       | 461.35638     | 0.2910             | 13.6837 | 2107279 | 228.091               | 0.271                          | 4.2274          | 0.243                    | 0.082        |
| F110303.046 | 31103 | 123934 | 348.7043 | 69.7941 | 1.1114                       | 90    | 157796.4       | 461.40833     | 0.2900             | 13.6852 | 2105430 | 227.992               | 0.271                          | 4.2231          | 0.243                    | 0.093        |
| F110303.047 | 31103 | 124132 | 348.6333 | 69.7480 | 1.1113                       | 90    | 157771.5       | 461.42285     | 0.2910             | 13.6857 | 2104965 | 227.949               | 0.271                          | 4.2218          | 0.243                    | 0.096        |
| F110303.048 | 31103 | 124330 | 348.5422 | 69.6505 | 1.1112                       | 90    | 157758.7       | 461.48282     | 0.2900             | 13.6875 | 2104737 | 227.901               | 0.271                          | 4.2207          | 0.243                    | 0.109        |
| F110303.049 | 31103 | 124540 | 348.4829 | 69.5281 | 1.1113                       | 90    | 157719.7       | 461.47357     | 0.2910             | 13.6872 | 2104864 | 227.849               | 0.271                          | 4.2201          | 0.243                    | 0.107        |
| F110303.050 | 31103 | 124738 | 348.4512 | 69.4554 | 1.1114                       | 90    | 157689.3       | 461.44901     | 0.2910             | 13.6865 | 2104951 | 227.818               | 0.271                          | 4.2198          | 0.243                    | 0.102        |
| F110303.051 | 31103 | 130823 | 347.9590 | 69.1158 | 1.1106                       | 90    | 119502         | 461.80969     | 0.2390             | 13.6972 | 1593740 | 172.513               | 0.215                          | 3.1932          | 0.178                    | 0.18         |
| F110303.052 | 31103 | 131026 | 347.9282 | 69.0658 | 1.1106                       | 90    | 119479.7       | 461.77264     | 0.2390             | 13.6961 | 1593728 | 172.494               | 0.215                          | 3.1929          | 0.178                    | 0.172        |
| F110303.053 | 31103 | 131223 | 347.8932 | 69.0322 | 1.1106                       | 90    | 119469         | 461.7496      | 0.2390             | 13.6954 | 1593704 | 172.487               | 0.215                          | 3.1927          | 0.178                    | 0.167        |
| F110303.054 | 31103 | 131422 | 347.8671 | 68.9930 | 1.1106                       | 90    | 119469.7       | 461.7847      | 0.2390             | 13.6964 | 1593706 | 172.475               | 0.215                          | 3.1925          | 0.178                    | 0.175        |
| F110303.055 | 31103 | 131621 | 347.8557 | 68.9535 | 1.1106                       | 90    | 119458.9       | 461.77927     | 0.2390             | 13.6963 | 1593764 | 172.462               | 0.215                          | 3.1924          | 0.178                    | 0.173        |
| F110303.056 | 31103 | 131835 | 347.8341 | 68.9243 | 1.1106                       | 90    | 119451.4       | 461.75995     | 0.2390             | 13.6957 | 1593806 | 172.458               | 0.215                          | 3.1923          | 0.178                    | 0.169        |
| F110303.057 | 31103 | 132502 | 347.7668 | 69.3022 | 1.1095                       | 90    | 79366.2        | 461.47256     | 0.2890             | 13.6872 | 1057912 | 114.656               | 0.269                          | 2.1201          | 0.24                     | 0.107        |
| F110303.058 | 31103 | 132841 | 347.6534 | 69.4006 | 1.1088                       | 90    | 79368.58       | 461.45795     | 0.2890             | 13.6867 | 1057242 | 114.664               | 0.269                          | 2.1191          | 0.241                    | 0.104        |
| F110303.059 | 31103 | 133105 | 347.5377 | 69.4179 | 1.1084                       | 90    | 79371.23       | 461.50366     | 0.2890             | 13.6881 | 1056751 | 114.656               | 0.269                          | 2.1181          | 0.241                    | 0.114        |
| F110303.060 | 31103 | 133309 | 347.4756 | 69.4001 | 1.1083                       | 90    | 79363.52       | 461.49683     | 0.2890             | 13.6879 | 1056545 | 114.647               | 0.269                          | 2.1176          | 0.241                    | 0.112        |
| F110303.061 | 31103 | 133507 | 347.4182 | 69.3807 | 1.1081                       | 90    | 79374.03       | 461.59262     | 0.2890             | 13.6907 | 1056356 | 114.638               | 0.269                          | 2.1172          | 0.241                    | 0.133        |
| F110303.062 | 31103 | 133705 | 347.3567 | 69.4049 | 1.1078                       | 90    | 79349.65       | 461.45123     | 0.2890             | 13.6865 | 1056072 | 114.638               | 0.27                           | 2.1167          | 0.241                    | 0.102        |
| F110303.063 | 31103 | 135458 | 346.8176 | 70.9650 | 1.1021                       | 90    | 40330.03       | 461.06949     | 0.2820             | 13.6752 | 533243  | 58.314                | 0.262                          | 1.0712          | 0.232                    | 0.019        |
| F110303.064 | 31103 | 135717 | 346.5852 | 71.0659 | 1.1011                       | 90    | 40348.7        | 461.28101     | 0.2820             | 13.6815 | 532687  | 58.314                | 0.262                          | 1.0702          | 0.232                    | 0.065        |
| F110303.065 | 31103 | 135922 | 346.4210 | 71.1395 | 1.1004                       | 90    | 40335.03       | 461.12088     | 0.2820             | 13.6767 | 532292  | 58.314                | 0.262                          | 1.0695          | 0.232                    | 0.031        |
| F110303.066 | 31103 | 140132 | 346.2618 | 71.2238 | 1.0997                       | 90    | 40358.44       | 461.40601     | 0.2820             | 13.6852 | 531859  | 58.312                | 0.262                          | 1.0687          | 0.232                    | 0.092        |
| F110303.067 | 31103 | 140330 | 346.1657 | 71.3361 | 1.0991                       | 90    | 40355.8        | 461.34375     | 0.2820             | 13.6833 | 531526  | 58.316                | 0.262                          | 1.0682          | 0.232                    | 0.079        |
| F110303.068 | 31103 | 140528 | 346.0930 | 71.4323 | 1.0986                       | 90    | 40370.43       | 461.51852     | 0.2820             | 13.6885 | 531215  | 58.315                | 0.262                          | 1.0677          | 0.232                    | 0.117        |

**4-inch Instromet Turbine Meter Serial No. 72130 – High Pressure Loop Natural Gas Test  
Test Pressure = 230 psia**

| <u>File</u> | <u>Date</u> | <u>Time</u> | <u>P (psia)</u> | <u>T (F)</u> | <u><math>\rho</math> (lb/ft<sup>3</sup>)</u> | <u>t (s)</u> | <u>Main<br/>Pulses</u> | <u>K (pulses/cf)</u> | <u>U<sub>K</sub> (%)</u> | <u>St</u> | <u>ReD</u> | <u>Q<sub>v</sub> (acfm)</u> | <u>UQ<sub>v</sub> (%)</u> | <u>mdot<br/>(lbm/s)</u> | <u>U<sub>mdot</sub><br/>(%)</u> | <u>Error<br/>(%)</u> |
|-------------|-------------|-------------|-----------------|--------------|----------------------------------------------|--------------|------------------------|----------------------|--------------------------|-----------|------------|-----------------------------|---------------------------|-------------------------|---------------------------------|----------------------|
| F110303.076 | 31103       | 155746      | 232.8660        | 70.0482      | 0.7294                                       | 90           | 199384.8               | 461.51276            | 0.2670                   | 13.6883   | 1770542    | 288.016                     | 0.248                     | 3.5012                  | 0.206                           | 0.116                |
| F110303.077 | 31103       | 155950      | 232.8686        | 70.3234      | 0.7290                                       | 90           | 199438                 | 461.51529            | 0.2670                   | 13.6884   | 1769237    | 288.092                     | 0.248                     | 3.5001                  | 0.206                           | 0.116                |
| F110303.078 | 31103       | 160147      | 232.8231        | 70.4682      | 0.7286                                       | 90           | 199474.3               | 461.54852            | 0.2670                   | 13.6894   | 1768143    | 288.123                     | 0.248                     | 3.4987                  | 0.206                           | 0.123                |
| F110303.079 | 31103       | 160346      | 232.8235        | 70.5713      | 0.7284                                       | 90           | 199495.6               | 461.58572            | 0.2670                   | 13.6905   | 1767522    | 288.131                     | 0.248                     | 3.4981                  | 0.206                           | 0.131                |
| F110303.080 | 31103       | 160545      | 232.7898        | 70.6479      | 0.7282                                       | 90           | 199493.2               | 461.57263            | 0.2670                   | 13.6901   | 1766821    | 288.136                     | 0.248                     | 3.4971                  | 0.206                           | 0.129                |
| F110303.081 | 31103       | 160742      | 232.7287        | 70.6720      | 0.7280                                       | 90           | 199460.9               | 461.53455            | 0.2670                   | 13.689    | 1766057    | 288.113                     | 0.248                     | 3.4957                  | 0.206                           | 0.12                 |
| F110303.082 | 31103       | 161312      | 232.3964        | 70.6980      | 0.7269                                       | 90           | 159337.5               | 461.57074            | 0.3030                   | 13.6901   | 1408528    | 230.138                     | 0.287                     | 2.7880                  | 0.251                           | 0.128                |
| F110303.083 | 31103       | 161522      | 232.3484        | 70.6971      | 0.7267                                       | 90           | 159318.3               | 461.57932            | 0.3030                   | 13.6903   | 1408043    | 230.106                     | 0.287                     | 2.7870                  | 0.251                           | 0.13                 |
| F110303.084 | 31103       | 161720      | 232.2866        | 70.6409      | 0.7266                                       | 90           | 159290.7               | 461.6116             | 0.3040                   | 13.6913   | 1407614    | 230.05                      | 0.287                     | 2.7859                  | 0.252                           | 0.137                |
| F110303.085 | 31103       | 161918      | 232.2325        | 70.5967      | 0.7265                                       | 90           | 159242.4               | 461.56226            | 0.3030                   | 13.6898   | 1407236    | 230.005                     | 0.287                     | 2.7850                  | 0.251                           | 0.126                |
| F110303.086 | 31103       | 162117      | 232.1645        | 70.5204      | 0.7264                                       | 90           | 159202.7               | 461.56418            | 0.3030                   | 13.6899   | 1406859    | 229.947                     | 0.287                     | 2.7839                  | 0.251                           | 0.127                |
| F110303.087 | 31103       | 162315      | 232.0922        | 70.4291      | 0.7263                                       | 90           | 159168.4               | 461.58804            | 0.3040                   | 13.6906   | 1406513    | 229.885                     | 0.287                     | 2.7828                  | 0.251                           | 0.132                |
| F110303.088 | 31103       | 163905      | 232.1877        | 69.9727      | 0.7273                                       | 90           | 120585.1               | 461.87128            | 0.2510                   | 13.699    | 1067143    | 174.053                     | 0.23                      | 2.1098                  | 0.184                           | 0.193                |
| F110303.089 | 31103       | 164103      | 232.1551        | 69.9196      | 0.7273                                       | 90           | 120562.8               | 461.84482            | 0.2510                   | 13.6982   | 1067076    | 174.031                     | 0.23                      | 2.1095                  | 0.184                           | 0.188                |
| F110303.090 | 31103       | 164301      | 232.0792        | 69.8106      | 0.7272                                       | 90           | 120534.6               | 461.84763            | 0.2510                   | 13.6983   | 1066896    | 173.989                     | 0.23                      | 2.1088                  | 0.184                           | 0.188                |
| F110303.091 | 31103       | 164500      | 232.0455        | 69.7321      | 0.7272                                       | 90           | 120514.1               | 461.86508            | 0.251                    | 13.6988   | 1066840    | 173.953                     | 0.23                      | 2.1084                  | 0.184                           | 0.192                |
| F110303.092 | 31103       | 164710      | 232.0099        | 69.6209      | 0.7273                                       | 90           | 120486.6               | 461.86407            | 0.251                    | 13.6988   | 1066870    | 173.913                     | 0.23                      | 2.1081                  | 0.184                           | 0.192                |
| F110303.093 | 31103       | 164908      | 231.9629        | 69.5281      | 0.7273                                       | 90           | 120471                 | 461.90414            | 0.251                    | 13.7      | 1066786    | 173.876                     | 0.23                      | 2.1076                  | 0.184                           | 0.2                  |
| F110303.094 | 31103       | 165343      | 231.7399        | 69.7146      | 0.7263                                       | 90           | 80001.05               | 461.54565            | 0.301                    | 13.6893   | 707804     | 115.555                     | 0.285                     | 1.3988                  | 0.249                           | 0.123                |
| F110303.095 | 31103       | 165541      | 231.6948        | 69.7654      | 0.7261                                       | 90           | 80026.34               | 461.677              | 0.302                    | 13.6932   | 707550     | 115.559                     | 0.285                     | 1.3984                  | 0.249                           | 0.151                |
| F110303.096 | 31103       | 165740      | 231.6580        | 69.7851      | 0.7259                                       | 90           | 80026.07               | 461.67731            | 0.302                    | 13.6932   | 707383     | 115.558                     | 0.285                     | 1.3981                  | 0.25                            | 0.151                |
| F110303.097 | 31103       | 165950      | 231.5929        | 69.7926      | 0.7257                                       | 90           | 80013.55               | 461.61594            | 0.302                    | 13.6914   | 707155     | 115.556                     | 0.285                     | 1.3976                  | 0.249                           | 0.138                |
| F110303.098 | 31103       | 170148      | 231.5674        | 69.7956      | 0.7256                                       | 90           | 80018.3                | 461.66638            | 0.302                    | 13.6929   | 707034     | 115.55                      | 0.285                     | 1.3974                  | 0.249                           | 0.149                |
| F110303.099 | 31103       | 170410      | 231.5342        | 69.7992      | 0.7255                                       | 90           | 80018.44               | 461.66977            | 0.302                    | 13.693    | 706919     | 115.549                     | 0.285                     | 1.3972                  | 0.249                           | 0.15                 |
| F110303.100 | 31103       | 172417      | 230.6926        | 70.9565      | 0.7210                                       | 90           | 40722.82               | 461.82666            | 0.295                    | 13.6977   | 356805     | 58.785                      | 0.278                     | 0.7064                  | 0.241                           | 0.184                |
| F110303.101 | 31103       | 172651      | 230.3154        | 70.9479      | 0.7198                                       | 90           | 40673.09               | 461.25641            | 0.295                    | 13.6807   | 356234     | 58.786                      | 0.278                     | 0.7052                  | 0.241                           | 0.06                 |
| F110303.102 | 31103       | 172927      | 230.2423        | 70.9547      | 0.7195                                       | 90           | 40694.1                | 461.51791            | 0.295                    | 13.6885   | 356094     | 58.783                      | 0.278                     | 0.7050                  | 0.241                           | 0.117                |
| F110303.103 | 31103       | 173148      | 230.1686        | 70.9788      | 0.7193                                       | 90           | 40720.27               | 461.80194            | 0.295                    | 13.6969   | 355957     | 58.785                      | 0.278                     | 0.7047                  | 0.241                           | 0.178                |
| F110303.104 | 31103       | 173347      | 230.1191        | 70.9849      | 0.7191                                       | 90           | 40726.14               | 461.87701            | 0.295                    | 13.6992   | 355866     | 58.784                      | 0.278                     | 0.7045                  | 0.241                           | 0.195                |
| F110303.105 | 31103       | 173546      | 230.0770        | 70.9838      | 0.7190                                       | 90           | 40721.98               | 461.84393            | 0.295                    | 13.6982   | 355795     | 58.782                      | 0.278                     | 0.7044                  | 0.241                           | 0.187                |
| F110303.106 | 31103       | 173744      | 230.0506        | 70.9854      | 0.7189                                       | 90           | 40725.54               | 461.8924             | 0.295                    | 13.6996   | 355746     | 58.781                      | 0.278                     | 0.7043                  | 0.241                           | 0.198                |

**4-inch Invensys Turbine Meter Serial No. 12291705 – Low Pressure Loop Natural Gas Test**  
**Test Pressure = 190 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K (pulses/cf) | U <sub>k</sub> (%) | St      | ReD     | Q <sub>v</sub> (acfm) | UQ <sub>v</sub> (%) | mdot (lbm/s) | U <sub>mdot</sub> (%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|------------------------------|-------|----------------|---------------|--------------------|---------|---------|-----------------------|---------------------|--------------|-----------------------|--------------|
| F102203.103 | 31022 | 150231 | 188.4679 | 70.8062 | 0.5855                       | 90    | 14316          | 32.1959       | 0.1870             | 0.95492 | 1465715 | 296.435               | 0.16                | 2.8927       | 0.119                 | 0.041        |
| F102203.104 | 31022 | 150535 | 188.3888 | 70.7926 | 0.5853                       | 90    | 14319          | 32.1944       | 0.1880             | 0.95488 | 1465540 | 296.511               | 0.16                | 2.8923       | 0.119                 | 0.036        |
| F102203.105 | 31022 | 150751 | 188.2391 | 70.3260 | 0.5853                       | 90    | 14307          | 32.1912       | 0.1880             | 0.95478 | 1465777 | 296.292               | 0.16                | 2.8906       | 0.119                 | 0.026        |
| F102203.106 | 31022 | 151007 | 188.1508 | 70.1852 | 0.5852                       | 90    | 14309          | 32.1983       | 0.1880             | 0.95499 | 1465726 | 296.268               | 0.16                | 2.8898       | 0.119                 | 0.048        |
| F102203.107 | 31022 | 151251 | 188.1253 | 70.4398 | 0.5848                       | 90    | 14318          | 32.1959       | 0.1880             | 0.95492 | 1465200 | 296.477               | 0.16                | 2.8899       | 0.119                 | 0.041        |
| F102203.108 | 31022 | 151535 | 188.0701 | 70.4706 | 0.5846                       | 90    | 14323          | 32.1987       | 0.1880             | 0.95501 | 1464985 | 296.554               | 0.16                | 2.8896       | 0.119                 | 0.049        |
| F102203.109 | 31022 | 153438 | 188.7369 | 70.9816 | 0.5861                       | 90    | 11976          | 32.2150       | 0.1950             | 0.95549 | 1226368 | 247.835               | 0.168               | 2.4210       | 0.13                  | 0.1          |
| F102203.110 | 31022 | 153654 | 188.7206 | 71.0214 | 0.5860                       | 90    | 11974          | 32.2084       | 0.1950             | 0.95529 | 1226129 | 247.844               | 0.168               | 2.4207       | 0.13                  | 0.08         |
| F102203.111 | 31022 | 153933 | 188.6855 | 71.0449 | 0.5859                       | 90    | 11975          | 32.2098       | 0.1950             | 0.95533 | 1225845 | 247.854               | 0.168               | 2.4202       | 0.13                  | 0.084        |
| F102203.112 | 31022 | 154150 | 188.6698 | 71.0961 | 0.5858                       | 90    | 11976          | 32.2097       | 0.1950             | 0.95533 | 1225621 | 247.876               | 0.168               | 2.4200       | 0.13                  | 0.083        |
| F102203.113 | 31022 | 154405 | 188.6714 | 71.2346 | 0.5856                       | 90    | 11977          | 32.2058       | 0.1950             | 0.95522 | 1225262 | 247.926               | 0.168               | 2.4198       | 0.13                  | 0.072        |
| F102203.114 | 31022 | 154621 | 188.6915 | 71.4660 | 0.5854                       | 90    | 11982          | 32.2071       | 0.1940             | 0.95525 | 1224829 | 248.02                | 0.168               | 2.4198       | 0.13                  | 0.075        |
| F102203.115 | 31022 | 155117 | 188.9426 | 70.9123 | 0.5869                       | 90    | 9554           | 32.2027       | 0.2140             | 0.95512 | 980045  | 197.789               | 0.191               | 1.9346       | 0.157                 | 0.062        |
| F102203.116 | 31022 | 155333 | 188.9539 | 71.0393 | 0.5867                       | 90    | 9556           | 32.2046       | 0.2140             | 0.95518 | 979795  | 197.818               | 0.191               | 1.9345       | 0.158                 | 0.068        |
| F102203.117 | 31022 | 155613 | 188.9457 | 71.2689 | 0.5864                       | 90    | 9561           | 32.2068       | 0.2140             | 0.95525 | 979383  | 197.908               | 0.191               | 1.9344       | 0.158                 | 0.075        |
| F102203.118 | 31022 | 155829 | 188.9775 | 71.5548 | 0.5862                       | 90    | 9565           | 32.2052       | 0.2140             | 0.9552  | 978989  | 198.001               | 0.191               | 1.9345       | 0.157                 | 0.07         |
| F102203.119 | 31022 | 160045 | 188.9943 | 71.7789 | 0.5860                       | 90    | 9567           | 32.2002       | 0.2150             | 0.95505 | 978635  | 198.073               | 0.191               | 1.9344       | 0.158                 | 0.054        |
| F102203.120 | 31022 | 160301 | 188.9717 | 71.7082 | 0.5860                       | 90    | 9567           | 32.2076       | 0.2150             | 0.95527 | 978545  | 198.028               | 0.191               | 1.9340       | 0.157                 | 0.077        |
| F102203.121 | 31022 | 173646 | 187.7362 | 71.9718 | 0.5817                       | 90    | 7235           | 32.1643       | 0.1910             | 0.95398 | 735425  | 149.959               | 0.164               | 1.4539       | 0.123                 | -0.057       |
| F102203.122 | 31022 | 173902 | 187.6885 | 71.9043 | 0.5817                       | 90    | 7234           | 32.1651       | 0.1910             | 0.95401 | 735297  | 149.935               | 0.164               | 1.4535       | 0.123                 | -0.055       |
| F102203.123 | 31022 | 174118 | 187.6420 | 71.8247 | 0.5816                       | 90    | 7234           | 32.1716       | 0.1910             | 0.9542  | 735190  | 149.904               | 0.164               | 1.4531       | 0.124                 | -0.035       |
| F102203.124 | 31022 | 174334 | 187.5984 | 71.7041 | 0.5816                       | 90    | 7232           | 32.1706       | 0.1910             | 0.95417 | 735161  | 149.868               | 0.164               | 1.4528       | 0.124                 | -0.038       |
| F102203.125 | 31022 | 174550 | 187.5469 | 71.6385 | 0.5815                       | 90    | 7230           | 32.1649       | 0.1910             | 0.954   | 735061  | 149.853               | 0.164               | 1.4524       | 0.123                 | -0.056       |
| F102203.126 | 31022 | 174806 | 187.5075 | 71.6887 | 0.5814                       | 90    | 7232           | 32.1691       | 0.1910             | 0.95413 | 734879  | 149.875               | 0.164               | 1.4522       | 0.124                 | -0.043       |
| F102203.127 | 31022 | 175102 | 188.1750 | 71.3811 | 0.5839                       | 90    | 4802           | 32.1343       | 0.2230             | 0.95309 | 490787  | 99.624                | 0.199               | 0.9694       | 0.168                 | -0.151       |
| F102203.128 | 31022 | 175318 | 188.1588 | 71.2267 | 0.5840                       | 90    | 4801           | 32.1412       | 0.2230             | 0.9533  | 490812  | 99.581                | 0.199               | 0.9692       | 0.168                 | -0.129       |
| F102203.129 | 31022 | 175534 | 188.1881 | 71.3078 | 0.5840                       | 90    | 4803           | 32.1529       | 0.2230             | 0.95365 | 490772  | 99.587                | 0.199               | 0.9693       | 0.168                 | -0.093       |
| F102203.130 | 31022 | 175817 | 188.2246 | 71.6445 | 0.5837                       | 90    | 4804           | 32.1398       | 0.2220             | 0.95326 | 490569  | 99.648                | 0.199               | 0.9694       | 0.168                 | -0.134       |
| F102203.131 | 31022 | 180033 | 188.2642 | 71.8865 | 0.5835                       | 90    | 4806           | 32.1405       | 0.2230             | 0.95328 | 490436  | 99.687                | 0.199               | 0.9695       | 0.168                 | -0.132       |
| F102203.132 | 31022 | 180249 | 188.2778 | 72.0802 | 0.5833                       | 90    | 4808           | 32.1429       | 0.2230             | 0.95335 | 490293  | 99.721                | 0.199               | 0.9695       | 0.168                 | -0.124       |

**4-inch Invensys Turbine Meter Serial No. 12291705 – Low Pressure Loop Natural Gas Test**  
**Test Pressure = 115 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K (pulses/cf) | U <sub>K</sub> (%) | St      | ReD    | Q <sub>v</sub> (acfm) | U <sub>Q<sub>v</sub></sub> (%) | mdot (lbm/s) | U <sub>mdot</sub> (%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|------------------------------|-------|----------------|---------------|--------------------|---------|--------|-----------------------|--------------------------------|--------------|-----------------------|--------------|
| F102303.006 | 31023 | 65835  | 114.3639 | 70.5951 | 0.3517                       | 90    | 12064          | 32.1313       | 0.1940             | 0.953   | 749157 | 250.307               | 0.169                          | 1.4674       | 0.13                  | -0.16        |
| F102303.007 | 31023 | 70051  | 114.2277 | 70.0205 | 0.3517                       | 90    | 12051          | 32.1341       | 0.1940             | 0.95309 | 748936 | 250.014               | 0.169                          | 1.4656       | 0.13                  | -0.151       |
| F102303.008 | 31023 | 70308  | 114.0606 | 69.1879 | 0.3518                       | 90    | 12031          | 32.1327       | 0.1940             | 0.95305 | 748872 | 249.61                | 0.169                          | 1.4635       | 0.13                  | -0.156       |
| F102303.009 | 31023 | 70524  | 113.8898 | 68.4545 | 0.3518                       | 90    | 12016          | 32.1356       | 0.1940             | 0.95313 | 748732 | 249.277               | 0.169                          | 1.4614       | 0.13                  | -0.147       |
| F102303.010 | 31023 | 70741  | 113.7311 | 68.0011 | 0.3516                       | 90    | 12009          | 32.1399       | 0.1940             | 0.95326 | 748372 | 249.098               | 0.169                          | 1.4596       | 0.13                  | -0.133       |
| F102303.011 | 31023 | 71008  | 113.5886 | 67.6907 | 0.3514                       | 90    | 12005          | 32.1419       | 0.1940             | 0.95332 | 747972 | 249                   | 0.169                          | 1.4581       | 0.13                  | -0.127       |
| F102303.012 | 31023 | 71459  | 115.8832 | 68.0312 | 0.3583                       | 90    | 9595           | 32.1424       | 0.2140             | 0.95334 | 609211 | 199.01                | 0.192                          | 1.1885       | 0.158                 | -0.125       |
| F102303.013 | 31023 | 71715  | 115.8871 | 68.9403 | 0.3577                       | 90    | 9613           | 32.1402       | 0.2140             | 0.95327 | 608413 | 199.397               | 0.192                          | 1.1887       | 0.158                 | -0.132       |
| F102303.014 | 31023 | 71932  | 115.9002 | 69.8185 | 0.3571                       | 90    | 9628           | 32.1321       | 0.2140             | 0.95303 | 607654 | 199.759               | 0.192                          | 1.1889       | 0.158                 | -0.157       |
| F102303.015 | 31023 | 72211  | 115.8318 | 69.9603 | 0.3568                       | 90    | 9629           | 32.1272       | 0.2140             | 0.95288 | 607137 | 199.81                | 0.192                          | 1.1881       | 0.158                 | -0.173       |
| F102303.016 | 31023 | 72428  | 115.7348 | 69.7517 | 0.3566                       | 90    | 9622           | 32.1174       | 0.2140             | 0.95259 | 606826 | 199.726               | 0.192                          | 1.1871       | 0.158                 | -0.203       |
| F102303.017 | 31023 | 72644  | 115.5988 | 69.0883 | 0.3567                       | 90    | 9612           | 32.1275       | 0.2140             | 0.95289 | 606741 | 199.455               | 0.192                          | 1.1857       | 0.158                 | -0.172       |
| F102303.018 | 31023 | 75834  | 115.1922 | 67.9506 | 0.3562                       | 90    | 7270           | 32.1227       | 0.1900             | 0.95275 | 459236 | 150.88                | 0.165                          | 0.8957       | 0.124                 | -0.187       |
| F102303.019 | 31023 | 80113  | 115.1737 | 68.6407 | 0.3557                       | 90    | 7279           | 32.1144       | 0.1910             | 0.9525  | 458696 | 151.106               | 0.165                          | 0.8957       | 0.124                 | -0.213       |
| F102303.020 | 31023 | 80330  | 115.1860 | 69.3736 | 0.3552                       | 90    | 7288           | 32.1050       | 0.1900             | 0.95223 | 458232 | 151.337               | 0.165                          | 0.8958       | 0.124                 | -0.242       |
| F102303.021 | 31023 | 80546  | 115.1918 | 70.0945 | 0.3547                       | 90    | 7298           | 32.1025       | 0.1900             | 0.95215 | 457727 | 151.556               | 0.165                          | 0.8959       | 0.124                 | -0.249       |
| F102303.022 | 31023 | 80802  | 115.1408 | 70.2077 | 0.3544                       | 90    | 7297           | 32.0918       | 0.1900             | 0.95183 | 457427 | 151.586               | 0.165                          | 0.8955       | 0.124                 | -0.283       |
| F102303.023 | 31023 | 81019  | 115.0570 | 70.0143 | 0.3543                       | 90    | 7294           | 32.0921       | 0.1900             | 0.95184 | 457220 | 151.522               | 0.165                          | 0.8948       | 0.124                 | -0.282       |
| F102303.024 | 31023 | 81344  | 115.4952 | 68.7161 | 0.3566                       | 90    | 4838           | 32.0810       | 0.2230             | 0.95151 | 305965 | 100.537               | 0.2                            | 0.5975       | 0.169                 | -0.316       |
| F102303.025 | 31023 | 81643  | 115.3365 | 68.0296 | 0.3566                       | 90    | 4831           | 32.0772       | 0.2230             | 0.9514  | 305896 | 100.404               | 0.2                            | 0.5967       | 0.168                 | -0.328       |
| F102303.026 | 31023 | 81900  | 115.2300 | 67.7508 | 0.3565                       | 90    | 4830           | 32.0866       | 0.2230             | 0.95168 | 305767 | 100.353               | 0.2                            | 0.5962       | 0.169                 | -0.299       |
| F102303.027 | 31023 | 82116  | 115.1544 | 67.6525 | 0.3563                       | 90    | 4829           | 32.0846       | 0.2230             | 0.95162 | 305631 | 100.339               | 0.2                            | 0.5958       | 0.169                 | -0.305       |
| F102303.028 | 31023 | 82333  | 115.0777 | 67.6359 | 0.3561                       | 90    | 4830           | 32.0906       | 0.2230             | 0.9518  | 305451 | 100.341               | 0.2                            | 0.5955       | 0.169                 | -0.287       |
| F102303.029 | 31023 | 82549  | 115.0716 | 67.9151 | 0.3558                       | 90    | 4837           | 32.1182       | 0.2230             | 0.95262 | 305306 | 100.4                 | 0.2                            | 0.5955       | 0.168                 | -0.201       |
| F102303.030 | 31023 | 84752  | 115.9284 | 66.8397 | 0.3593                       | 90    | 14353          | 32.1502       | 0.1870             | 0.95357 | 915397 | 297.624               | 0.161                          | 1.7824       | 0.119                 | -0.101       |
| F102303.031 | 31023 | 85047  | 115.8485 | 67.1907 | 0.3588                       | 90    | 14365          | 32.1486       | 0.1870             | 0.95352 | 914418 | 297.887               | 0.161                          | 1.7815       | 0.119                 | -0.106       |
| F102303.032 | 31023 | 85309  | 115.8214 | 67.5912 | 0.3584                       | 90    | 14376          | 32.1458       | 0.1870             | 0.95344 | 913655 | 298.141               | 0.161                          | 1.7811       | 0.119                 | -0.115       |
| F102303.033 | 31023 | 85525  | 115.8309 | 68.2124 | 0.3580                       | 90    | 14398          | 32.1557       | 0.1870             | 0.95373 | 912797 | 298.506               | 0.162                          | 1.7813       | 0.119                 | -0.084       |
| F102303.034 | 31023 | 85741  | 115.9413 | 69.6807 | 0.3573                       | 90    | 14436          | 32.1513       | 0.1870             | 0.9536  | 911358 | 299.335               | 0.161                          | 1.7827       | 0.119                 | -0.098       |
| F102303.035 | 31023 | 85958  | 116.0264 | 70.7387 | 0.3568                       | 90    | 14460          | 32.1459       | 0.1870             | 0.95344 | 910222 | 299.883               | 0.161                          | 1.7835       | 0.119                 | -0.115       |
| F102303.036 | 31023 | 100200 | 114.8639 | 69.0267 | 0.3544                       | 90    | 14386          | 32.1545       | 0.1870             | 0.95369 | 901725 | 298.268               | 0.161                          | 1.7618       | 0.119                 | -0.088       |
| F102303.037 | 31023 | 100423 | 114.8666 | 69.4329 | 0.3541                       | 90    | 14401          | 32.1628       | 0.1870             | 0.95394 | 901131 | 298.502               | 0.161                          | 1.7618       | 0.119                 | -0.062       |
| F102303.038 | 31023 | 100703 | 114.9647 | 71.0000 | 0.3533                       | 90    | 14440          | 32.1549       | 0.1870             | 0.9537  | 899475 | 299.384               | 0.161                          | 1.7630       | 0.119                 | -0.087       |
| F102303.039 | 31023 | 100919 | 115.0465 | 71.9427 | 0.3529                       | 90    | 14462          | 32.1533       | 0.1870             | 0.95366 | 898487 | 299.856               | 0.161                          | 1.7637       | 0.119                 | -0.092       |
| F102303.040 | 31023 | 101135 | 115.0968 | 72.4125 | 0.3527                       | 90    | 14468          | 32.1483       | 0.1870             | 0.95351 | 897870 | 300.026               | 0.161                          | 1.7638       | 0.119                 | -0.107       |
| F102303.041 | 31023 | 101351 | 115.0665 | 72.0666 | 0.3529                       | 90    | 14451          | 32.1440       | 0.1870             | 0.95338 | 897810 | 299.714               | 0.161                          | 1.7628       | 0.119                 | -0.121       |
| F102303.042 | 31023 | 101923 | 114.8782 | 70.5402 | 0.3534                       | 90    | 14406          | 32.1526       | 0.1870             | 0.95364 | 898219 | 298.701               | 0.161                          | 1.7592       | 0.119                 | -0.094       |

**4-inch Invensys Turbine Meter Serial No. 12291705 – Low Pressure Loop Natural Gas Test**  
**Test Pressure = 45 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $r$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K (pulses/cf) | U <sub>K</sub> (%) | St      | ReD    | Q <sub>v</sub> (acfm) | UQ <sub>v</sub> (%) | mdot (lbm/s) | U <sub>mdot</sub> (%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|---------------------------|-------|----------------|---------------|--------------------|---------|--------|-----------------------|---------------------|--------------|-----------------------|--------------|
| F102303.043 | 31023 | 102723 | 45.5180  | 75.9202 | 0.1372                    | 90    | 14628          | 32.1127       | 0.1940             | 0.95245 | 353466 | 303.68                | 0.169               | 0.6946       | 0.123                 | -0.218       |
| F102303.044 | 31023 | 102939 | 45.5579  | 76.6751 | 0.1372                    | 90    | 14635          | 32.1004       | 0.1930             | 0.95209 | 353144 | 303.942               | 0.169               | 0.6948       | 0.123                 | -0.256       |
| F102303.045 | 31023 | 103155 | 45.5624  | 76.6141 | 0.1372                    | 90    | 14627          | 32.1039       | 0.1930             | 0.95219 | 353020 | 303.743               | 0.169               | 0.6945       | 0.123                 | -0.245       |
| F102303.046 | 31023 | 103410 | 45.5516  | 76.2596 | 0.1372                    | 90    | 14609          | 32.1026       | 0.1930             | 0.95215 | 352956 | 303.382               | 0.169               | 0.6940       | 0.123                 | -0.249       |
| F102303.047 | 31023 | 103626 | 45.5277  | 75.7861 | 0.1373                    | 90    | 14589          | 32.1030       | 0.1940             | 0.95216 | 352874 | 302.963               | 0.169               | 0.6933       | 0.123                 | -0.248       |
| F102303.048 | 31023 | 103842 | 45.4951  | 75.2073 | 0.1373                    | 90    | 14570          | 32.1092       | 0.1930             | 0.95235 | 352810 | 302.509               | 0.169               | 0.6925       | 0.123                 | -0.229       |
| F102303.049 | 31023 | 110233 | 45.3775  | 72.1643 | 0.1378                    | 90    | 12079          | 32.1189       | 0.2010             | 0.95264 | 294831 | 250.714               | 0.177               | 0.5758       | 0.134                 | -0.199       |
| F102303.050 | 31023 | 110449 | 45.3554  | 72.2801 | 0.1377                    | 90    | 12078          | 32.1113       | 0.2010             | 0.95241 | 294616 | 250.753               | 0.177               | 0.5755       | 0.134                 | -0.222       |
| F102303.051 | 31023 | 110705 | 45.3293  | 72.1735 | 0.1377                    | 90    | 12075          | 32.1121       | 0.2010             | 0.95244 | 294477 | 250.684               | 0.177               | 0.5751       | 0.134                 | -0.22        |
| F102303.052 | 31023 | 110921 | 45.2927  | 71.7499 | 0.1377                    | 90    | 12065          | 32.1143       | 0.2010             | 0.9525  | 294417 | 250.46                | 0.177               | 0.5746       | 0.134                 | -0.213       |
| F102303.053 | 31023 | 111200 | 45.2435  | 71.2312 | 0.1376                    | 90    | 12051          | 32.1114       | 0.2010             | 0.95241 | 294334 | 250.192               | 0.177               | 0.5740       | 0.134                 | -0.222       |
| F102303.054 | 31023 | 111417 | 45.2022  | 70.8336 | 0.1376                    | 90    | 12042          | 32.1143       | 0.2010             | 0.9525  | 294233 | 249.982               | 0.177               | 0.5734       | 0.134                 | -0.213       |
| F102303.073 | 31023 | 151835 | 44.6172  | 72.2447 | 0.1356                    | 90    | 9556           | 32.1310       | 0.222              | 0.953   | 229251 | 198.272               | 0.2                 | 0.4481       | 0.163                 | -0.161       |
| F102303.074 | 31023 | 152051 | 44.5680  | 72.1953 | 0.1355                    | 90    | 9553           | 32.1231       | 0.222              | 0.95276 | 229021 | 198.258               | 0.2                 | 0.4476       | 0.163                 | -0.185       |
| F102303.075 | 31023 | 152350 | 44.5068  | 72.1269 | 0.1353                    | 90    | 9553           | 32.1262       | 0.222              | 0.95286 | 228739 | 198.239               | 0.2                 | 0.4470       | 0.163                 | -0.176       |
| F102303.076 | 31023 | 152606 | 44.4543  | 72.1287 | 0.1351                    | 90    | 9550           | 32.1154       | 0.221              | 0.95253 | 228472 | 198.243               | 0.2                 | 0.4465       | 0.163                 | -0.209       |
| F102303.077 | 31023 | 152822 | 44.3850  | 71.9910 | 0.1349                    | 90    | 9549           | 32.1202       | 0.222              | 0.95268 | 228168 | 198.193               | 0.201               | 0.4458       | 0.163                 | -0.195       |
| F102303.078 | 31023 | 153037 | 44.3311  | 71.4642 | 0.1349                    | 90    | 9540           | 32.1213       | 0.222              | 0.95271 | 228091 | 197.999               | 0.201               | 0.4452       | 0.163                 | -0.191       |
| F102303.061 | 31023 | 123642 | 45.2458  | 72.4020 | 0.1374                    | 90    | 7285           | 32.1055       | 0.197              | 0.95224 | 177255 | 151.272               | 0.172               | 0.3463       | 0.128                 | -0.24        |
| F102303.062 | 31023 | 123921 | 45.2253  | 72.4866 | 0.1373                    | 90    | 7286           | 32.1059       | 0.197              | 0.95225 | 177144 | 151.291               | 0.172               | 0.3461       | 0.128                 | -0.239       |
| F102303.063 | 31023 | 124137 | 45.2135  | 72.7312 | 0.1372                    | 90    | 7290           | 32.1107       | 0.197              | 0.9524  | 177015 | 151.351               | 0.172               | 0.3460       | 0.128                 | -0.224       |
| F102303.064 | 31023 | 124353 | 45.1983  | 72.9593 | 0.1371                    | 90    | 7291           | 32.1026       | 0.197              | 0.95215 | 176881 | 151.41                | 0.172               | 0.3459       | 0.128                 | -0.249       |
| F102303.065 | 31023 | 124625 | 45.1772  | 73.0116 | 0.1370                    | 90    | 7292           | 32.1060       | 0.197              | 0.95226 | 176771 | 151.415               | 0.172               | 0.3457       | 0.128                 | -0.239       |
| F102303.066 | 31023 | 124846 | 45.1524  | 73.0578 | 0.1369                    | 90    | 7292           | 32.1046       | 0.197              | 0.95221 | 176653 | 151.422               | 0.172               | 0.3455       | 0.128                 | -0.243       |
| F102303.067 | 31023 | 125154 | 45.3274  | 73.3061 | 0.1374                    | 90    | 4850           | 32.0831       | 0.23               | 0.95158 | 117926 | 100.78                | 0.208               | 0.2307       | 0.173                 | -0.31        |
| F102303.068 | 31023 | 125410 | 45.3037  | 73.3810 | 0.1373                    | 90    | 4849           | 32.0752       | 0.229              | 0.95134 | 117838 | 100.784               | 0.208               | 0.2306       | 0.173                 | -0.334       |
| F102303.069 | 31023 | 125626 | 45.2787  | 73.4057 | 0.1372                    | 90    | 4849           | 32.0761       | 0.229              | 0.95137 | 117761 | 100.781               | 0.208               | 0.2304       | 0.173                 | -0.332       |
| F102303.070 | 31023 | 125842 | 45.2537  | 73.3624 | 0.1371                    | 90    | 4848           | 32.0763       | 0.23               | 0.95137 | 117689 | 100.76                | 0.208               | 0.2303       | 0.173                 | -0.331       |
| F102303.071 | 31023 | 130058 | 45.2371  | 73.4441 | 0.1371                    | 90    | 4850           | 32.0873       | 0.23               | 0.9517  | 117620 | 100.767               | 0.208               | 0.2302       | 0.173                 | -0.297       |
| F102303.072 | 31023 | 130314 | 45.2199  | 73.4999 | 0.1370                    | 90    | 4849           | 32.0800       | 0.23               | 0.95148 | 117554 | 100.769               | 0.208               | 0.2301       | 0.173                 | -0.319       |

**4-inch Invensys Turbine Meter Serial No. 12291705 – Low Pressure Loop Carbon Dioxide Test  
Test Pressure = 125 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K (pulses/cf) | U <sub>k</sub> (%) | St      | ReD     | Q <sub>v</sub> (acfm) | UQ <sub>v</sub> (%) | mdot (lbm/s) | U <sub>mdot</sub> (%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|------------------------------|-------|----------------|---------------|--------------------|---------|---------|-----------------------|---------------------|--------------|-----------------------|--------------|
| F112103.000 | 31121 | 90039  | 127.3047 | 70.2520 | 1.0342                       | 90    | 13311          | 32.196        | 0.1760             | 0.95493 | 1795908 | 275.624               | 0.173               | 4.7510       | 0.136                 | 0.041        |
| F112103.001 | 31121 | 90255  | 127.1873 | 69.1949 | 1.0357                       | 90    | 13279          | 32.200        | 0.1770             | 0.95503 | 1796925 | 274.93                | 0.174               | 4.7456       | 0.136                 | 0.053        |
| F112103.002 | 31121 | 90511  | 127.0244 | 68.2695 | 1.0364                       | 90    | 13253          | 32.200        | 0.1760             | 0.95504 | 1797367 | 274.389               | 0.174               | 4.7396       | 0.136                 | 0.054        |
| F112103.003 | 31121 | 90728  | 126.9127 | 67.8459 | 1.0364                       | 90    | 13246          | 32.208        | 0.1770             | 0.95527 | 1797268 | 274.179               | 0.174               | 4.7361       | 0.136                 | 0.077        |
| F112103.004 | 31121 | 90944  | 126.8412 | 67.8053 | 1.0359                       | 90    | 13247          | 32.208        | 0.1770             | 0.95529 | 1796599 | 274.195               | 0.174               | 4.7340       | 0.136                 | 0.079        |
| F112103.005 | 31121 | 91200  | 126.7801 | 67.6811 | 1.0357                       | 90    | 13245          | 32.207        | 0.1760             | 0.95526 | 1796330 | 274.161               | 0.174               | 4.7323       | 0.136                 | 0.076        |
| F112103.006 | 31121 | 94610  | 126.8060 | 69.5936 | 1.0315                       | 90    | 10364          | 32.226        | 0.1540             | 0.9558  | 1394818 | 214.406               | 0.151               | 3.6859       | 0.105                 | 0.133        |
| F112103.007 | 31121 | 94826  | 126.8079 | 69.7243 | 1.0312                       | 90    | 10365          | 32.224        | 0.1540             | 0.95577 | 1394320 | 214.433               | 0.15                | 3.6854       | 0.105                 | 0.129        |
| F112103.008 | 31121 | 95042  | 126.7917 | 69.7023 | 1.0311                       | 90    | 10362          | 32.222        | 0.1540             | 0.9557  | 1393946 | 214.386               | 0.151               | 3.6843       | 0.105                 | 0.122        |
| F112103.009 | 31121 | 95259  | 126.7532 | 69.6082 | 1.0310                       | 90    | 10360          | 32.226        | 0.1540             | 0.95582 | 1393564 | 214.318               | 0.151               | 3.6827       | 0.105                 | 0.135        |
| F112103.010 | 31121 | 95515  | 126.7283 | 69.6053 | 1.0308                       | 90    | 10359          | 32.225        | 0.1540             | 0.95578 | 1393225 | 214.308               | 0.151               | 3.6818       | 0.105                 | 0.13         |
| F112103.011 | 31121 | 95732  | 126.7093 | 69.5906 | 1.0307                       | 90    | 10357          | 32.224        | 0.1540             | 0.95575 | 1392858 | 214.273               | 0.151               | 3.6807       | 0.105                 | 0.127        |
| F112103.012 | 31121 | 101858 | 126.5013 | 68.3801 | 1.0317                       | 90    | 7392           | 32.217        | 0.1730             | 0.95554 | 997247  | 152.964               | 0.169               | 2.6301       | 0.13                  | 0.105        |
| F112103.013 | 31121 | 102114 | 126.4883 | 68.5558 | 1.0311                       | 90    | 7395           | 32.215        | 0.1730             | 0.95548 | 996933  | 153.036               | 0.169               | 2.6300       | 0.13                  | 0.099        |
| F112103.014 | 31121 | 102331 | 126.4868 | 68.7295 | 1.0307                       | 90    | 7398           | 32.216        | 0.1730             | 0.95552 | 996620  | 153.092               | 0.169               | 2.6299       | 0.13                  | 0.103        |
| F112103.015 | 31121 | 102547 | 126.4805 | 68.8881 | 1.0303                       | 90    | 7400           | 32.213        | 0.1730             | 0.95543 | 996318  | 153.147               | 0.169               | 2.6298       | 0.13                  | 0.094        |
| F112103.016 | 31121 | 102803 | 126.4793 | 69.0705 | 1.0299                       | 90    | 7403           | 32.214        | 0.1730             | 0.95545 | 995991  | 153.205               | 0.169               | 2.6297       | 0.13                  | 0.096        |
| F112103.017 | 31121 | 103020 | 126.4732 | 69.2041 | 1.0295                       | 90    | 7406           | 32.218        | 0.1730             | 0.95559 | 995693  | 153.246               | 0.169               | 2.6295       | 0.13                  | 0.111        |
| F112103.018 | 31121 | 104729 | 125.7230 | 69.5070 | 1.0224                       | 90    | 4481           | 32.184        | 0.1690             | 0.95458 | 598650  | 92.82                 | 0.165               | 1.5817       | 0.124                 | 0.005        |
| F112103.019 | 31121 | 104946 | 125.7409 | 69.7932 | 1.0219                       | 90    | 4483           | 32.179        | 0.1690             | 0.95443 | 598444  | 92.876                | 0.165               | 1.5819       | 0.124                 | -0.011       |
| F112103.020 | 31121 | 105202 | 125.7493 | 69.9691 | 1.0216                       | 90    | 4483           | 32.170        | 0.1690             | 0.95415 | 598254  | 92.902                | 0.165               | 1.5818       | 0.124                 | -0.04        |
| F112103.021 | 31121 | 105419 | 125.7367 | 70.0738 | 1.0213                       | 90    | 4484           | 32.171        | 0.1690             | 0.95418 | 598069  | 92.921                | 0.165               | 1.5816       | 0.124                 | -0.037       |
| F112103.022 | 31121 | 105635 | 125.7351 | 70.1850 | 1.0210                       | 90    | 4485           | 32.173        | 0.1690             | 0.95424 | 597903  | 92.935                | 0.165               | 1.5814       | 0.124                 | -0.031       |
| F112103.023 | 31121 | 105851 | 125.7140 | 70.2006 | 1.0208                       | 90    | 4484           | 32.166        | 0.1690             | 0.95404 | 597755  | 92.934                | 0.164               | 1.5811       | 0.124                 | -0.052       |
| F112103.024 | 31121 | 110454 | 125.9834 | 69.7764 | 1.0240                       | 90    | 2978           | 32.156        | 0.2060             | 0.95373 | 398657  | 61.741                | 0.2                 | 1.0538       | 0.169                 | -0.084       |
| F112103.025 | 31121 | 110710 | 125.9666 | 69.7384 | 1.0240                       | 90    | 2979           | 32.171        | 0.2060             | 0.95417 | 398608  | 61.733                | 0.2                 | 1.0536       | 0.169                 | -0.038       |
| F112103.026 | 31121 | 110926 | 125.9383 | 69.7102 | 1.0238                       | 90    | 2979           | 32.175        | 0.2060             | 0.95432 | 398498  | 61.724                | 0.201               | 1.0532       | 0.169                 | -0.023       |
| F112103.027 | 31121 | 111142 | 125.9141 | 69.7459 | 1.0235                       | 90    | 2978           | 32.162        | 0.2060             | 0.95391 | 398397  | 61.729                | 0.2                 | 1.0530       | 0.169                 | -0.065       |
| F112103.028 | 31121 | 111359 | 125.9031 | 69.8046 | 1.0233                       | 90    | 2978           | 32.161        | 0.2060             | 0.95388 | 398285  | 61.731                | 0.2                 | 1.0528       | 0.169                 | -0.068       |
| F112103.029 | 31121 | 111615 | 125.8818 | 69.8734 | 1.0229                       | 90    | 2978           | 32.158        | 0.2060             | 0.95378 | 398150  | 61.738                | 0.2                 | 1.0526       | 0.169                 | -0.078       |

**4-inch Invensys Turbine Meter Serial No. 12291705 – Low Pressure Loop Carbon Dioxide Test**  
**Test Pressure = 90 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K (pulses/cf) | U <sub>K</sub> (%) | St      | ReD     | Q <sub>v</sub> (acfm) | UQ <sub>v</sub> (%) | mdot (lbm/s) | U <sub>mdot</sub> (%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|------------------------------|-------|----------------|---------------|--------------------|---------|---------|-----------------------|---------------------|--------------|-----------------------|--------------|
| F112003.069 | 31120 | 134953 | 91.1038  | 68.9125 | 0.7316                       | 90    | 13288          | 32.197        | 0.1770             | 0.95495 | 1273161 | 275.14                | 0.175               | 3.3549       | 0.136                 | 0.044        |
| F112003.070 | 31120 | 135928 | 90.9764  | 69.6003 | 0.7295                       | 90    | 13312          | 32.196        | 0.1770             | 0.95492 | 1270351 | 275.647               | 0.175               | 3.3513       | 0.136                 | 0.04         |
| F112003.071 | 31120 | 140208 | 90.9645  | 69.8836 | 0.7289                       | 90    | 13320          | 32.197        | 0.1770             | 0.95494 | 1269547 | 275.805               | 0.175               | 3.3507       | 0.136                 | 0.043        |
| F112003.072 | 31120 | 140447 | 90.9610  | 70.1898 | 0.7284                       | 90    | 13328          | 32.197        | 0.1770             | 0.95495 | 1268775 | 275.968               | 0.175               | 3.3504       | 0.136                 | 0.044        |
| F112003.073 | 31120 | 140703 | 90.9573  | 70.4785 | 0.7280                       | 90    | 13334          | 32.194        | 0.1770             | 0.95487 | 1268020 | 276.116               | 0.175               | 3.3500       | 0.136                 | 0.035        |
| F112003.074 | 31120 | 140919 | 90.9493  | 70.6664 | 0.7276                       | 90    | 13338          | 32.193        | 0.1770             | 0.95484 | 1267423 | 276.208               | 0.175               | 3.3495       | 0.136                 | 0.032        |
| F112003.075 | 31120 | 141134 | 90.9491  | 70.9573 | 0.7272                       | 90    | 13347          | 32.199        | 0.1770             | 0.95502 | 1266649 | 276.343               | 0.175               | 3.3491       | 0.136                 | 0.051        |
| F112003.076 | 31120 | 143359 | 90.9139  | 71.2808 | 0.7264                       | 90    | 10397          | 32.206        | 0.1550             | 0.95522 | 984886  | 215.219               | 0.152               | 2.6055       | 0.105                 | 0.072        |
| F112003.077 | 31120 | 143615 | 90.8815  | 71.3160 | 0.7260                       | 90    | 10397          | 32.205        | 0.1540             | 0.95518 | 984428  | 215.227               | 0.152               | 2.6044       | 0.105                 | 0.068        |
| F112003.078 | 31120 | 143831 | 90.8682  | 71.3920 | 0.7258                       | 90    | 10398          | 32.205        | 0.1550             | 0.95519 | 984084  | 215.246               | 0.152               | 2.6038       | 0.105                 | 0.069        |
| F112003.079 | 31120 | 144047 | 90.8536  | 71.4830 | 0.7256                       | 90    | 10401          | 32.210        | 0.1550             | 0.95534 | 983709  | 215.274               | 0.152               | 2.6032       | 0.105                 | 0.085        |
| F112003.080 | 31120 | 144303 | 90.8403  | 71.5231 | 0.7254                       | 90    | 10400          | 32.207        | 0.1550             | 0.95524 | 983429  | 215.277               | 0.152               | 2.6027       | 0.105                 | 0.074        |
| F112003.081 | 31120 | 144519 | 90.8233  | 71.5585 | 0.7252                       | 90    | 10399          | 32.203        | 0.1550             | 0.95513 | 983125  | 215.281               | 0.152               | 2.6020       | 0.105                 | 0.062        |
| F112003.082 | 31120 | 144953 | 90.8468  | 73.1408 | 0.7230                       | 90    | 7460           | 32.168        | 0.1730             | 0.9541  | 702029  | 154.604               | 0.17                | 1.8629       | 0.131                 | -0.046       |
| F112003.083 | 31120 | 145221 | 90.8148  | 73.0492 | 0.7229                       | 90    | 7457           | 32.167        | 0.1730             | 0.95405 | 701767  | 154.55                | 0.17                | 1.8619       | 0.131                 | -0.05        |
| F112003.084 | 31120 | 145437 | 90.7807  | 72.8475 | 0.7229                       | 90    | 7453           | 32.167        | 0.1730             | 0.95407 | 701636  | 154.464               | 0.17                | 1.8610       | 0.131                 | -0.048       |
| F112003.085 | 31120 | 145716 | 90.7495  | 72.6172 | 0.7230                       | 90    | 7450           | 32.175        | 0.1730             | 0.95429 | 701551  | 154.366               | 0.17                | 1.8600       | 0.131                 | -0.025       |
| F112003.086 | 31120 | 145932 | 90.7120  | 72.4479 | 0.7229                       | 90    | 7446           | 32.172        | 0.1730             | 0.95421 | 701380  | 154.296               | 0.17                | 1.8591       | 0.131                 | -0.034       |
| F112003.087 | 31120 | 150147 | 90.6642  | 72.2539 | 0.7228                       | 90    | 7444           | 32.179        | 0.1730             | 0.95441 | 701178  | 154.223               | 0.17                | 1.8579       | 0.131                 | -0.013       |
| F112003.088 | 31120 | 152235 | 91.0635  | 73.5386 | 0.7242                       | 90    | 4509           | 32.150        | 0.1690             | 0.95355 | 424974  | 93.5                  | 0.165               | 1.1285       | 0.124                 | -0.103       |
| F112003.089 | 31120 | 152502 | 91.0498  | 73.6041 | 0.7239                       | 90    | 4509           | 32.149        | 0.1690             | 0.95353 | 424814  | 93.502                | 0.166               | 1.1282       | 0.125                 | -0.105       |
| F112003.090 | 31120 | 152718 | 91.0444  | 73.6912 | 0.7238                       | 90    | 4509           | 32.147        | 0.1690             | 0.95346 | 424682  | 93.509                | 0.165               | 1.1280       | 0.124                 | -0.113       |
| F112003.091 | 31120 | 152934 | 91.0320  | 73.7596 | 0.7236                       | 90    | 4509           | 32.145        | 0.1690             | 0.9534  | 424537  | 93.515                | 0.166               | 1.1277       | 0.125                 | -0.118       |
| F112003.092 | 31120 | 153150 | 91.0200  | 73.7919 | 0.7234                       | 90    | 4510           | 32.154        | 0.1690             | 0.95367 | 424405  | 93.509                | 0.165               | 1.1274       | 0.124                 | -0.091       |
| F112003.093 | 31120 | 153406 | 90.9979  | 73.7868 | 0.7232                       | 90    | 4508           | 32.142        | 0.1690             | 0.95333 | 424269  | 93.501                | 0.165               | 1.1271       | 0.124                 | -0.126       |
| F112003.094 | 31120 | 153940 | 90.7359  | 73.9095 | 0.7209                       | 90    | 2997           | 32.121        | 0.2060             | 0.95271 | 281278  | 62.202                | 0.201               | 0.7474       | 0.169                 | -0.191       |
| F112003.095 | 31120 | 154216 | 90.7298  | 73.8999 | 0.7209                       | 90    | 2998           | 32.136        | 0.2060             | 0.95314 | 281235  | 62.194                | 0.201               | 0.7472       | 0.169                 | -0.146       |
| F112003.096 | 31120 | 154454 | 90.7266  | 73.9708 | 0.7207                       | 90    | 2998           | 32.134        | 0.2060             | 0.95307 | 281170  | 62.199                | 0.201               | 0.7471       | 0.169                 | -0.153       |
| F112003.097 | 31120 | 154832 | 90.7229  | 74.0721 | 0.7206                       | 90    | 2999           | 32.141        | 0.2060             | 0.95329 | 281081  | 62.205                | 0.201               | 0.7470       | 0.169                 | -0.13        |
| F112003.098 | 31120 | 155047 | 90.7178  | 74.1601 | 0.7204                       | 90    | 2999           | 32.137        | 0.2060             | 0.95318 | 281003  | 62.212                | 0.201               | 0.7469       | 0.169                 | -0.141       |
| F112003.099 | 31120 | 155319 | 90.7020  | 74.2457 | 0.7201                       | 90    | 2999           | 32.134        | 0.2060             | 0.9531  | 280887  | 62.218                | 0.201               | 0.7467       | 0.169                 | -0.15        |

**4-inch Invensys Turbine Meter Serial No. 12291705 – High Pressure Loop Natural Gas Test**  
**Test Pressure = 465 psia**

| File        | Date  | Time   | P(psia)  | T(F)    | $\rho$ (lb/ft <sup>3</sup> ) | t(s) | Main<br>Pulses | K(pulses/cf) | U <sub>K</sub> (%) | St      | ReD     | Q <sub>v</sub> (acfm) | UQ <sub>v</sub> (%) | mdot (lbm/s) | U <sub>mdot</sub> (%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|------------------------------|------|----------------|--------------|--------------------|---------|---------|-----------------------|---------------------|--------------|-----------------------|--------------|
| F110303.000 | 31103 | 80257  | 461.5390 | 70.1469 | 1.4941                       | 90   | 13858.55       | 32.2309      | 0.2520             | 0.95596 | 3498993 | 286.652               | 0.228               | 7.1382       | 0.197                 | 0.149        |
| F110303.001 | 31103 | 80523  | 461.4902 | 70.1544 | 1.4939                       | 90   | 13859.29       | 32.2320      | 0.2520             | 0.95599 | 3498589 | 286.657               | 0.228               | 7.1374       | 0.197                 | 0.153        |
| F110303.002 | 31103 | 80722  | 461.4570 | 70.1448 | 1.4938                       | 90   | 13860.24       | 32.2348      | 0.2520             | 0.95608 | 3498400 | 286.651               | 0.228               | 7.1369       | 0.197                 | 0.162        |
| F110303.003 | 31103 | 80920  | 461.3813 | 70.1458 | 1.4936                       | 90   | 13860.00       | 32.2342      | 0.2520             | 0.95606 | 3497828 | 286.653               | 0.228               | 7.1356       | 0.197                 | 0.16         |
| F110303.004 | 31103 | 81119  | 461.3623 | 70.1444 | 1.4935                       | 90   | 13858.93       | 32.2320      | 0.2520             | 0.95599 | 3497662 | 286.649               | 0.228               | 7.1353       | 0.197                 | 0.153        |
| F110303.005 | 31103 | 81317  | 461.3225 | 70.1483 | 1.4934                       | 90   | 13859.34       | 32.2334      | 0.2520             | 0.95603 | 3497272 | 286.646               | 0.228               | 7.1345       | 0.197                 | 0.157        |
| F110303.006 | 31103 | 82206  | 462.8413 | 70.2446 | 1.4983                       | 90   | 11048.08       | 32.2553      | 0.2870             | 0.95668 | 2794098 | 228.347               | 0.266               | 5.7021       | 0.24                  | 0.225        |
| F110303.007 | 31103 | 82529  | 462.7662 | 70.2325 | 1.4981                       | 90   | 11047.36       | 32.2548      | 0.2870             | 0.95667 | 2793635 | 228.335               | 0.266               | 5.7010       | 0.24                  | 0.224        |
| F110303.008 | 31103 | 82727  | 462.7231 | 70.2428 | 1.4979                       | 90   | 11047.17       | 32.2543      | 0.2870             | 0.95665 | 2793256 | 228.335               | 0.266               | 5.7002       | 0.24                  | 0.222        |
| F110303.009 | 31103 | 82926  | 462.6359 | 70.2350 | 1.4976                       | 90   | 11046.99       | 32.2544      | 0.2870             | 0.95666 | 2792763 | 228.331               | 0.266               | 5.6991       | 0.24                  | 0.222        |
| F110303.010 | 31103 | 83136  | 462.6112 | 70.2100 | 1.4976                       | 90   | 11046.27       | 32.2542      | 0.2870             | 0.95665 | 2792712 | 228.317               | 0.266               | 5.6988       | 0.24                  | 0.222        |
| F110303.011 | 31103 | 83345  | 462.5602 | 70.1811 | 1.4975                       | 90   | 11046.42       | 32.2568      | 0.2870             | 0.95673 | 2792527 | 228.302               | 0.266               | 5.6981       | 0.24                  | 0.23         |
| F110303.012 | 31103 | 85240  | 462.8793 | 70.2500 | 1.4984                       | 90   | 8356.86        | 32.2702      | 0.2360             | 0.95712 | 2112649 | 172.644               | 0.21                | 4.3115       | 0.175                 | 0.271        |
| F110303.013 | 31103 | 85455  | 462.7873 | 70.2227 | 1.4982                       | 90   | 8357.55        | 32.2750      | 0.2360             | 0.95727 | 2112306 | 172.632               | 0.21                | 4.3105       | 0.175                 | 0.287        |
| F110303.014 | 31103 | 85818  | 462.7211 | 70.1981 | 1.4980                       | 90   | 8357.59        | 32.2771      | 0.2360             | 0.95733 | 2112080 | 172.622               | 0.21                | 4.3099       | 0.175                 | 0.293        |
| F110303.015 | 31103 | 90016  | 462.6870 | 70.1782 | 1.4980                       | 90   | 8356.94        | 32.2754      | 0.2360             | 0.95728 | 2112030 | 172.617               | 0.21                | 4.3096       | 0.175                 | 0.288        |
| F110303.016 | 31103 | 90235  | 462.6279 | 70.1822 | 1.4978                       | 90   | 8357.13        | 32.2762      | 0.2360             | 0.9573  | 2111726 | 172.617               | 0.21                | 4.3090       | 0.175                 | 0.29         |
| F110303.017 | 31103 | 90439  | 462.6102 | 70.1611 | 1.4978                       | 90   | 8356.92        | 32.2771      | 0.2360             | 0.95733 | 2111704 | 172.608               | 0.21                | 4.3088       | 0.175                 | 0.293        |
| F110303.018 | 31103 | 91105  | 463.2984 | 70.3213 | 1.4996                       | 90   | 5535.16        | 32.2270      | 0.2850             | 0.95584 | 1402082 | 114.504               | 0.264               | 2.8618       | 0.238                 | 0.137        |
| F110303.019 | 31103 | 91304  | 463.3056 | 70.3701 | 1.4994                       | 90   | 5534.91        | 32.2241      | 0.2850             | 0.95576 | 1401907 | 114.509               | 0.264               | 2.8617       | 0.237                 | 0.128        |
| F110303.020 | 31103 | 91502  | 463.2570 | 70.3645 | 1.4993                       | 90   | 5535.82        | 32.2307      | 0.2850             | 0.95595 | 1401731 | 114.504               | 0.264               | 2.8613       | 0.237                 | 0.149        |
| F110303.021 | 31103 | 91735  | 463.1774 | 70.3418 | 1.4991                       | 90   | 5536.17        | 32.2343      | 0.2850             | 0.95606 | 1401547 | 114.499               | 0.264               | 2.8608       | 0.238                 | 0.16         |
| F110303.022 | 31103 | 91934  | 463.0964 | 70.3370 | 1.4989                       | 90   | 5535.14        | 32.2289      | 0.2850             | 0.9559  | 1401310 | 114.497               | 0.264               | 2.8602       | 0.238                 | 0.143        |
| F110303.023 | 31103 | 92132  | 462.9933 | 70.3064 | 1.4986                       | 90   | 5534.04        | 32.2251      | 0.2850             | 0.95579 | 1401046 | 114.487               | 0.264               | 2.8595       | 0.237                 | 0.132        |
| F110303.024 | 31103 | 95053  | 462.3962 | 70.6148 | 1.4955                       | 90   | 2802.35        | 32.1875      | 0.2780             | 0.95467 | 708561  | 58.042                | 0.256               | 1.4467       | 0.229                 | 0.015        |
| F110303.025 | 31103 | 95251  | 462.2918 | 70.5965 | 1.4952                       | 90   | 2801.08        | 32.1750      | 0.2780             | 0.9543  | 708404  | 58.038                | 0.256               | 1.4463       | 0.229                 | -0.024       |
| F110303.026 | 31103 | 95533  | 462.1072 | 70.5700 | 1.4946                       | 90   | 2800.61        | 32.1729      | 0.2780             | 0.95424 | 708122  | 58.033                | 0.256               | 1.4456       | 0.229                 | -0.031       |
| F110303.027 | 31103 | 95738  | 462.0556 | 70.5597 | 1.4945                       | 90   | 2801.74        | 32.1881      | 0.2780             | 0.95469 | 708020  | 58.028                | 0.256               | 1.4454       | 0.229                 | 0.016        |
| F110303.028 | 31103 | 95952  | 461.9537 | 70.5550 | 1.4941                       | 90   | 2800.45        | 32.1759      | 0.2780             | 0.95433 | 707821  | 58.024                | 0.256               | 1.4449       | 0.229                 | -0.021       |
| F110303.029 | 31103 | 100331 | 461.7323 | 70.6239 | 1.4931                       | 90   | 2799.37        | 32.1624      | 0.2780             | 0.95393 | 707323  | 58.026                | 0.256               | 1.4440       | 0.229                 | -0.063       |

**4-inch Invensys Turbine Meter Serial No. 12291705 – High Pressure Loop Natural Gas Test**  
**Test Pressure = 345 psia**

| <u>File</u> | <u>Date</u> | <u>Time</u> | <u>P (psia)</u> | <u>T (F)</u> | <u><math>\rho</math> (lb/ft<sup>3</sup>)</u> | <u>t (s)</u> | <u>Main<br/>Pulses</u> | <u>K (pulses/cf)</u> | <u>U<sub>K</sub> (%)</u> | <u>St</u> | <u>ReD</u> | <u>Q<sub>v</sub> (acfm)</u> | <u>UQ<sub>v</sub> (%)</u> | <u>mdot (lbm/s)</u> | <u>U<sub>mdot</sub> (%)</u> | <u>Error<br/>(%)</u> |
|-------------|-------------|-------------|-----------------|--------------|----------------------------------------------|--------------|------------------------|----------------------|--------------------------|-----------|------------|-----------------------------|---------------------------|---------------------|-----------------------------|----------------------|
| F110303.070 | 31103       | 151950      | 346.8181        | 69.0317      | 1.1069                                       | 90           | 13913.93               | 32.2647              | 0.2550                   | 0.95696   | 2647946    | 287.495                     | 0.233                     | 5.3039              | 0.199                       | 0.255                |
| F110303.071 | 31103       | 152224      | 346.8250        | 68.9806      | 1.1071                                       | 90           | 13912.77               | 32.2635              | 0.2550                   | 0.95693   | 2648382    | 287.482                     | 0.233                     | 5.3043              | 0.199                       | 0.251                |
| F110303.072 | 31103       | 152547      | 346.8356        | 68.9455      | 1.1072                                       | 90           | 13915.05               | 32.2694              | 0.2560                   | 0.9571    | 2648757    | 287.476                     | 0.233                     | 5.3048              | 0.199                       | 0.269                |
| F110303.073 | 31103       | 152745      | 346.8267        | 68.9940      | 1.1070                                       | 90           | 13913.94               | 32.2629              | 0.2550                   | 0.95691   | 2648532    | 287.512                     | 0.233                     | 5.3047              | 0.199                       | 0.249                |
| F110303.074 | 31103       | 152943      | 346.8189        | 68.9893      | 1.1070                                       | 90           | 13914.43               | 32.2640              | 0.2550                   | 0.95694   | 2648523    | 287.512                     | 0.233                     | 5.3047              | 0.199                       | 0.252                |
| F110303.075 | 31103       | 153153      | 346.7836        | 69.0307      | 1.1068                                       | 90           | 13916.24               | 32.2644              | 0.2560                   | 0.95695   | 2648154    | 287.546                     | 0.233                     | 5.3042              | 0.199                       | 0.253                |
| F110303.045 | 31103       | 123502      | 347.0845        | 69.7165      | 1.1061                                       | 90           | 11094.98               | 32.2569              | 0.2910                   | 0.95673   | 2108271    | 229.305                     | 0.271                     | 4.2274              | 0.243                       | 0.23                 |
| F110303.046 | 31103       | 123934      | 346.8405        | 69.6617      | 1.1055                                       | 90           | 11091.67               | 32.2603              | 0.2900                   | 0.95683   | 2106380    | 229.212                     | 0.271                     | 4.2231              | 0.243                       | 0.241                |
| F110303.047 | 31103       | 124132      | 346.7680        | 69.6207      | 1.1053                                       | 90           | 11090.05               | 32.2612              | 0.2900                   | 0.95686   | 2105900    | 229.172                     | 0.271                     | 4.2218              | 0.243                       | 0.244                |
| F110303.048 | 31103       | 124330      | 346.6820        | 69.5196      | 1.1053                                       | 90           | 11089.46               | 32.2670              | 0.2900                   | 0.95703   | 2105681    | 229.119                     | 0.271                     | 4.2207              | 0.243                       | 0.262                |
| F110303.049 | 31103       | 124540      | 346.6195        | 69.4140      | 1.1053                                       | 90           | 11086.74               | 32.2648              | 0.2910                   | 0.95697   | 2105757    | 229.078                     | 0.271                     | 4.2201              | 0.243                       | 0.255                |
| F110303.050 | 31103       | 124738      | 346.5907        | 69.3323      | 1.1054                                       | 90           | 11084.75               | 32.2645              | 0.2900                   | 0.95695   | 2105871    | 229.039                     | 0.271                     | 4.2198              | 0.243                       | 0.254                |
| F110303.051 | 31103       | 130823      | 346.8942        | 69.0344      | 1.1072                                       | 90           | 8375.94                | 32.2703              | 0.2390                   | 0.95713   | 1594165    | 173.037                     | 0.215                     | 3.1932              | 0.178                       | 0.272                |
| F110303.052 | 31103       | 131026      | 346.8607        | 68.9765      | 1.1073                                       | 90           | 8374.38                | 32.2680              | 0.2390                   | 0.95706   | 1594173    | 173.017                     | 0.215                     | 3.1929              | 0.178                       | 0.265                |
| F110303.053 | 31103       | 131223      | 346.8279        | 68.9519      | 1.1072                                       | 90           | 8373.57                | 32.2657              | 0.2390                   | 0.95699   | 1594128    | 173.013                     | 0.215                     | 3.1927              | 0.178                       | 0.258                |
| F110303.054 | 31103       | 131422      | 346.8035        | 68.8957      | 1.1073                                       | 90           | 8373.44                | 32.2689              | 0.2390                   | 0.95709   | 1594169    | 172.993                     | 0.215                     | 3.1925              | 0.178                       | 0.267                |
| F110303.055 | 31103       | 131621      | 346.7888        | 68.8579      | 1.1073                                       | 90           | 8373.03                | 32.2694              | 0.2390                   | 0.9571    | 1594224    | 172.982                     | 0.215                     | 3.1924              | 0.178                       | 0.269                |
| F110303.056 | 31103       | 131835      | 346.7673        | 68.8194      | 1.1073                                       | 90           | 8372.39                | 32.2682              | 0.2390                   | 0.95707   | 1594288    | 172.975                     | 0.215                     | 3.1923              | 0.178                       | 0.265                |
| F110303.057 | 31103       | 132502      | 347.2938        | 69.2527      | 1.1080                                       | 90           | 5547.46                | 32.2130              | 0.2880                   | 0.95543   | 1058058    | 114.808                     | 0.269                     | 2.1201              | 0.24                        | 0.094                |
| F110303.058 | 31103       | 132841      | 347.1783        | 69.3479      | 1.1074                                       | 90           | 5547.72                | 32.2126              | 0.2880                   | 0.95542   | 1057393    | 114.815                     | 0.269                     | 2.1191              | 0.241                       | 0.092                |
| F110303.059 | 31103       | 133105      | 347.0632        | 69.3520      | 1.1070                                       | 90           | 5548.93                | 32.2227              | 0.2890                   | 0.95572   | 1056924    | 114.804                     | 0.269                     | 2.1181              | 0.241                       | 0.124                |
| F110303.060 | 31103       | 133309      | 347.0006        | 69.3497      | 1.1068                                       | 90           | 5547.33                | 32.2149              | 0.2890                   | 0.95548   | 1056693    | 114.798                     | 0.269                     | 2.1176              | 0.241                       | 0.1                  |
| F110303.061 | 31103       | 133507      | 346.9447        | 69.3279      | 1.1066                                       | 90           | 5548.07                | 32.2220              | 0.2890                   | 0.95569   | 1056507    | 114.789                     | 0.269                     | 2.1172              | 0.241                       | 0.122                |
| F110303.062 | 31103       | 133705      | 346.8861        | 69.3543      | 1.1064                                       | 90           | 5546.32                | 32.2119              | 0.2880                   | 0.9554    | 1056219    | 114.788                     | 0.27                      | 2.1167              | 0.241                       | 0.09                 |
| F110303.063 | 31103       | 135458      | 346.6882        | 71.0374      | 1.1015                                       | 90           | 2811.66                | 32.1262              | 0.2820                   | 0.95285   | 533195     | 58.346                      | 0.262                     | 1.0712              | 0.232                       | -0.176               |
| F110303.064 | 31103       | 135717      | 346.4532        | 71.1646      | 1.1004                                       | 90           | 2813.06                | 32.1400              | 0.2820                   | 0.95326   | 532618     | 58.35                       | 0.262                     | 1.0702              | 0.232                       | -0.133               |
| F110303.065 | 31103       | 135922      | 346.2910        | 71.2436      | 1.0997                                       | 90           | 2812.12                | 32.1287              | 0.2820                   | 0.95293   | 532219     | 58.351                      | 0.262                     | 1.0695              | 0.232                       | -0.168               |
| F110303.066 | 31103       | 140132      | 346.1322        | 71.3558      | 1.0989                                       | 90           | 2813.82                | 32.1475              | 0.2820                   | 0.95348   | 531764     | 58.352                      | 0.262                     | 1.0687              | 0.232                       | -0.11                |
| F110303.067 | 31103       | 140330      | 346.0400        | 71.4441      | 1.0984                                       | 90           | 2813.68                | 32.1457              | 0.2820                   | 0.95343   | 531450     | 58.353                      | 0.262                     | 1.0682              | 0.232                       | -0.115               |
| F110303.068 | 31103       | 140528      | 345.9681        | 71.5543      | 1.0979                                       | 90           | 2814.70                | 32.1569              | 0.2820                   | 0.95377   | 531128     | 58.353                      | 0.262                     | 1.0677              | 0.232                       | -0.08                |

**4-inch Invensys Turbine Meter Serial No. 12291705 – High Pressure Loop Natural Gas Test**  
**Test Pressure = 230 psia**

| <u>File</u> | <u>Date</u> | <u>Time</u> | <u>P (psia)</u> | <u>T (F)</u> | <u>r (lb/ft<sup>3</sup>)</u> | <u>t (s)</u> | <u>Main<br/>Pulses</u> | <u>K (pulses/cf)</u> | <u>U<sub>K</sub> (%)</u> | <u>St</u> | <u>ReD</u> | <u>Q<sub>v</sub> (acfm)</u> | <u>UQ<sub>v</sub> (%)</u> | <u>mdot (lbm/s)</u> | <u>U<sub>mdot</sub> (%)</u> | <u>Error<br/>(%)</u> |
|-------------|-------------|-------------|-----------------|--------------|------------------------------|--------------|------------------------|----------------------|--------------------------|-----------|------------|-----------------------------|---------------------------|---------------------|-----------------------------|----------------------|
| F110303.076 | 31103       | 155746      | 230.9055        | 69.8609      | 0.7233                       | 90           | 14046.25               | 32.2426              | 0.2670                   | 0.95631   | 1771458    | 290.429                     | 0.248                     | 3.5012              | 0.206                       | 0.186                |
| F110303.077 | 31103       | 155950      | 230.9066        | 70.1441      | 0.7229                       | 90           | 14049.68               | 32.2413              | 0.2680                   | 0.95627   | 1770129    | 290.511                     | 0.248                     | 3.5001              | 0.206                       | 0.182                |
| F110303.078 | 31103       | 160147      | 230.8630        | 70.2668      | 0.7226                       | 90           | 14052.86               | 32.2468              | 0.2670                   | 0.95643   | 1769094    | 290.528                     | 0.248                     | 3.4987              | 0.206                       | 0.199                |
| F110303.079 | 31103       | 160346      | 230.8636        | 70.3715      | 0.7224                       | 90           | 14054.23               | 32.2490              | 0.2680                   | 0.9565    | 1768469    | 290.536                     | 0.248                     | 3.4981              | 0.206                       | 0.206                |
| F110303.080 | 31103       | 160545      | 230.8308        | 70.4633      | 0.7222                       | 90           | 14054.20               | 32.2475              | 0.2680                   | 0.95645   | 1767725    | 290.549                     | 0.248                     | 3.4971              | 0.206                       | 0.201                |
| F110303.081 | 31103       | 160742      | 230.7706        | 70.4891      | 0.7219                       | 90           | 14053.15               | 32.2475              | 0.2680                   | 0.95645   | 1766956    | 290.526                     | 0.248                     | 3.4957              | 0.206                       | 0.201                |
| F110303.082 | 31103       | 161312      | 231.1487        | 70.5741      | 0.7230                       | 90           | 11188.20               | 32.2388              | 0.3030                   | 0.95619   | 1409000    | 231.361                     | 0.287                     | 2.7880              | 0.251                       | 0.174                |
| F110303.083 | 31103       | 161522      | 231.1018        | 70.5771      | 0.7229                       | 90           | 11187.14               | 32.2401              | 0.3040                   | 0.95623   | 1408507    | 231.33                      | 0.287                     | 2.7870              | 0.251                       | 0.178                |
| F110303.084 | 31103       | 161720      | 231.0380        | 70.5288      | 0.7227                       | 90           | 11185.38               | 32.2419              | 0.3040                   | 0.95629   | 1408061    | 231.28                      | 0.287                     | 2.7859              | 0.252                       | 0.184                |
| F110303.085 | 31103       | 161918      | 230.9870        | 70.4927      | 0.7226                       | 90           | 11182.06               | 32.2386              | 0.3030                   | 0.95619   | 1407664    | 231.236                     | 0.287                     | 2.7850              | 0.251                       | 0.173                |
| F110303.086 | 31103       | 162117      | 230.9185        | 70.4048      | 0.7225                       | 90           | 11179.54               | 32.2401              | 0.3030                   | 0.95623   | 1407313    | 231.172                     | 0.287                     | 2.7839              | 0.251                       | 0.178                |
| F110303.087 | 31103       | 162315      | 230.8467        | 70.3391      | 0.7224                       | 90           | 11177.01               | 32.2398              | 0.3030                   | 0.95622   | 1406911    | 231.123                     | 0.287                     | 2.7828              | 0.251                       | 0.177                |
| F110303.088 | 31103       | 163905      | 231.4719        | 69.9487      | 0.7250                       | 90           | 8443.19                | 32.2381              | 0.2510                   | 0.95617   | 1067270    | 174.6                       | 0.23                      | 2.1098              | 0.184                       | 0.172                |
| F110303.089 | 31103       | 164103      | 231.4408        | 69.9130      | 0.7250                       | 90           | 8441.73                | 32.2357              | 0.2510                   | 0.9561    | 1067175    | 174.583                     | 0.23                      | 2.1095              | 0.184                       | 0.164                |
| F110303.090 | 31103       | 164301      | 231.3676        | 69.7965      | 0.7249                       | 90           | 8439.84                | 32.2371              | 0.2510                   | 0.95614   | 1067007    | 174.537                     | 0.23                      | 2.1088              | 0.184                       | 0.169                |
| F110303.091 | 31103       | 164500      | 231.3313        | 69.6862      | 0.7250                       | 90           | 8438.60                | 32.2408              | 0.251                    | 0.95625   | 1067004    | 174.491                     | 0.23                      | 2.1084              | 0.184                       | 0.18                 |
| F110303.092 | 31103       | 164710      | 231.2973        | 69.5855      | 0.7250                       | 90           | 8436.81                | 32.2408              | 0.251                    | 0.95625   | 1067016    | 174.454                     | 0.23                      | 2.1081              | 0.184                       | 0.18                 |
| F110303.093 | 31103       | 164908      | 231.2495        | 69.4888      | 0.7250                       | 90           | 8435.49                | 32.2429              | 0.251                    | 0.95631   | 1066939    | 174.416                     | 0.23                      | 2.1076              | 0.184                       | 0.187                |
| F110303.094 | 31103       | 165343      | 231.4211        | 69.6799      | 0.7253                       | 90           | 5586.73                | 32.1878              | 0.301                    | 0.95468   | 707868     | 115.711                     | 0.285                     | 1.3988              | 0.249                       | 0.015                |
| F110303.095 | 31103       | 165541      | 231.3775        | 69.7627      | 0.7250                       | 90           | 5588.43                | 32.1946              | 0.302                    | 0.95488   | 707579     | 115.722                     | 0.285                     | 1.3984              | 0.249                       | 0.037                |
| F110303.096 | 31103       | 165740      | 231.3384        | 69.7607      | 0.7249                       | 90           | 5588.61                | 32.1969              | 0.303                    | 0.95495   | 707436     | 115.717                     | 0.285                     | 1.3981              | 0.25                        | 0.044                |
| F110303.097 | 31103       | 165950      | 231.2755        | 69.7963      | 0.7247                       | 90           | 5587.69                | 32.1908              | 0.302                    | 0.95477   | 707177     | 115.72                      | 0.285                     | 1.3976              | 0.249                       | 0.025                |
| F110303.098 | 31103       | 170148      | 231.2479        | 69.7919      | 0.7246                       | 90           | 5587.95                | 32.1940              | 0.302                    | 0.95487   | 707064     | 115.714                     | 0.285                     | 1.3974              | 0.249                       | 0.035                |
| F110303.099 | 31103       | 170410      | 231.2158        | 69.7986      | 0.7245                       | 90           | 5587.94                | 32.1941              | 0.302                    | 0.95487   | 706945     | 115.714                     | 0.285                     | 1.3972              | 0.249                       | 0.035                |
| F110303.100 | 31103       | 172417      | 230.6051        | 71.0090      | 0.7206                       | 90           | 2836.85                | 32.1558              | 0.295                    | 0.95373   | 356780     | 58.815                      | 0.278                     | 0.7064              | 0.241                       | -0.084               |
| F110303.101 | 31103       | 172651      | 230.2261        | 71.0036      | 0.7194                       | 90           | 2833.11                | 32.1124              | 0.296                    | 0.95245   | 356207     | 58.816                      | 0.278                     | 0.7052              | 0.241                       | -0.219               |
| F110303.102 | 31103       | 172927      | 230.1536        | 71.0038      | 0.7192                       | 90           | 2834.63                | 32.1319              | 0.295                    | 0.95302   | 356070     | 58.813                      | 0.278                     | 0.7050              | 0.241                       | -0.158               |
| F110303.103 | 31103       | 173148      | 230.0801        | 71.0440      | 0.7189                       | 90           | 2836.46                | 32.1506              | 0.295                    | 0.95358   | 355925     | 58.816                      | 0.278                     | 0.7047              | 0.241                       | -0.1                 |
| F110303.104 | 31103       | 173347      | 230.0301        | 71.0553      | 0.7187                       | 90           | 2836.81                | 32.1548              | 0.295                    | 0.9537    | 355830     | 58.816                      | 0.278                     | 0.7045              | 0.241                       | -0.087               |
| F110303.105 | 31103       | 173546      | 229.9901        | 71.0579      | 0.7186                       | 90           | 2836.50                | 32.1523              | 0.295                    | 0.95363   | 355758     | 58.814                      | 0.278                     | 0.7044              | 0.241                       | -0.095               |
| F110303.106 | 31103       | 173744      | 229.9628        | 71.0451      | 0.7185                       | 90           | 2836.82                | 32.1573              | 0.295                    | 0.95378   | 355716     | 58.811                      | 0.278                     | 0.7043              | 0.241                       | -0.079               |

**8-inch Instronet Turbine Meter Serial No. 71219 – Low Pressure Loop Natural Gas Test**  
**Test Pressure = 190 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K (pulses/cf) | U <sub>K</sub> (%) | St      | ReD     | Q <sub>v</sub> (acfm) | U <sub>Q<sub>v</sub></sub> (%) | mdot<br>(lbm/s) | U <sub>m-dot</sub> (%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|------------------------------|-------|----------------|---------------|--------------------|---------|---------|-----------------------|--------------------------------|-----------------|------------------------|--------------|
| F102203.000 | 31022 | 53712  | 194.6213 | 69.4501 | 0.6075                       | 90    | 50811          | 46.7350       | 0.1730             | 10.7984 | 1875659 | 724.81                | 0.143                          | 7.3389          | 0.094                  | 0.505        |
| F102203.001 | 31022 | 53941  | 194.4933 | 69.6337 | 0.6069                       | 90    | 50830          | 46.7292       | 0.1730             | 10.7971 | 1874131 | 725.171               | 0.143                          | 7.3349          | 0.094                  | 0.493        |
| F102203.002 | 31022 | 54221  | 194.4318 | 69.7799 | 0.6065                       | 90    | 50843          | 46.7349       | 0.1730             | 10.7984 | 1872786 | 725.268               | 0.143                          | 7.3312          | 0.094                  | 0.505        |
| F102203.003 | 31022 | 54437  | 194.4130 | 69.9212 | 0.6063                       | 90    | 50852          | 46.7370       | 0.1730             | 10.7989 | 1871893 | 725.363               | 0.143                          | 7.3294          | 0.094                  | 0.51         |
| F102203.004 | 31022 | 54653  | 194.3458 | 69.9840 | 0.6060                       | 90    | 50852          | 46.7349       | 0.1730             | 10.7984 | 1870899 | 725.397               | 0.143                          | 7.3261          | 0.094                  | 0.505        |
| F102203.005 | 31022 | 54909  | 194.2778 | 70.0526 | 0.6057                       | 90    | 50855          | 46.7342       | 0.1730             | 10.7982 | 1869900 | 725.451               | 0.143                          | 7.3229          | 0.094                  | 0.504        |
| F102203.006 | 31022 | 55712  | 192.7843 | 70.3142 | 0.6005                       | 90    | 41057          | 46.7146       | 0.1840             | 10.7937 | 1497134 | 585.927               | 0.156                          | 5.8646          | 0.114                  | 0.462        |
| F102203.007 | 31022 | 55928  | 192.6054 | 70.1012 | 0.6002                       | 90    | 41062          | 46.7172       | 0.1840             | 10.7943 | 1496999 | 585.966               | 0.156                          | 5.8620          | 0.113                  | 0.467        |
| F102203.008 | 31022 | 60144  | 192.4335 | 69.9726 | 0.5998                       | 90    | 41065          | 46.7160       | 0.1840             | 10.794  | 1496504 | 586.024               | 0.156                          | 5.8587          | 0.114                  | 0.464        |
| F102203.009 | 31022 | 60400  | 192.2809 | 69.8669 | 0.5995                       | 90    | 41064          | 46.7156       | 0.1840             | 10.7939 | 1495862 | 586.014               | 0.156                          | 5.8552          | 0.113                  | 0.464        |
| F102203.010 | 31022 | 60616  | 192.1228 | 69.7861 | 0.5991                       | 90    | 41065          | 46.7099       | 0.1840             | 10.7926 | 1495283 | 586.1                 | 0.156                          | 5.8520          | 0.113                  | 0.451        |
| F102203.011 | 31022 | 60833  | 192.0225 | 69.7502 | 0.5988                       | 90    | 41068          | 46.7143       | 0.1840             | 10.7936 | 1494661 | 586.087               | 0.156                          | 5.8492          | 0.113                  | 0.461        |
| F102203.012 | 31022 | 61323  | 191.5976 | 69.7754 | 0.5974                       | 90    | 27732          | 46.6849       | 0.2090             | 10.7868 | 1007596 | 396.017               | 0.185                          | 3.9431          | 0.151                  | 0.398        |
| F102203.013 | 31022 | 61538  | 191.4047 | 69.5984 | 0.5970                       | 90    | 27728          | 46.6834       | 0.2090             | 10.7865 | 1007112 | 395.973               | 0.185                          | 3.9400          | 0.151                  | 0.394        |
| F102203.014 | 31022 | 61818  | 191.2842 | 69.5851 | 0.5966                       | 90    | 27731          | 46.6895       | 0.2090             | 10.7879 | 1006499 | 395.963               | 0.185                          | 3.9375          | 0.151                  | 0.408        |
| F102203.015 | 31022 | 62034  | 191.1730 | 69.5864 | 0.5963                       | 90    | 27733          | 46.6854       | 0.2090             | 10.787  | 1006059 | 396.026               | 0.185                          | 3.9358          | 0.151                  | 0.399        |
| F102203.016 | 31022 | 62250  | 191.0674 | 69.5730 | 0.5960                       | 90    | 27734          | 46.6844       | 0.2090             | 10.7867 | 1005608 | 396.05                | 0.185                          | 3.9339          | 0.151                  | 0.396        |
| F102203.017 | 31022 | 62506  | 190.9836 | 69.6010 | 0.5957                       | 90    | 27734          | 46.6798       | 0.2090             | 10.7857 | 1005161 | 396.089               | 0.185                          | 3.9323          | 0.151                  | 0.387        |
| F102203.018 | 31022 | 64643  | 188.8522 | 69.3728 | 0.5891                       | 90    | 13888          | 46.6849       | 0.2140             | 10.7868 | 498047  | 198.323               | 0.191                          | 1.9473          | 0.158                  | 0.398        |
| F102203.019 | 31022 | 64859  | 188.6871 | 69.2744 | 0.5887                       | 90    | 13884          | 46.6712       | 0.2140             | 10.7837 | 497790  | 198.324               | 0.191                          | 1.9459          | 0.158                  | 0.368        |
| F102203.020 | 31022 | 65115  | 188.5375 | 69.1928 | 0.5883                       | 90    | 13885          | 46.6768       | 0.2140             | 10.785  | 497516  | 198.314               | 0.191                          | 1.9446          | 0.158                  | 0.38         |
| F102203.021 | 31022 | 65331  | 188.4154 | 69.1497 | 0.5880                       | 90    | 13885          | 46.6814       | 0.2140             | 10.786  | 497222  | 198.295               | 0.191                          | 1.9433          | 0.158                  | 0.39         |
| F102203.022 | 31022 | 65548  | 188.2776 | 69.1269 | 0.5876                       | 90    | 13885          | 46.6786       | 0.2140             | 10.7854 | 496926  | 198.306               | 0.191                          | 1.9420          | 0.157                  | 0.384        |
| F102203.023 | 31022 | 65804  | 188.1460 | 69.0936 | 0.5872                       | 90    | 13886          | 46.6827       | 0.2140             | 10.7863 | 496628  | 198.303               | 0.191                          | 1.9407          | 0.158                  | 0.393        |
| F102203.091 | 31022 | 130923 | 188.6036 | 70.6301 | 0.5861                       | 90    | 6977           | 46.6583       | 0.222              | 10.7807 | 249002  | 99.689                | 0.199                          | 0.9738          | 0.168                  | 0.34         |
| F102203.092 | 31022 | 131150 | 188.6645 | 71.1883 | 0.5856                       | 90    | 6985           | 46.6515       | 0.222              | 10.7791 | 248898  | 99.818                | 0.199                          | 0.9743          | 0.168                  | 0.326        |
| F102203.093 | 31022 | 131406 | 188.6969 | 71.5144 | 0.5853                       | 90    | 6988           | 46.6375       | 0.222              | 10.7759 | 248827  | 99.891                | 0.199                          | 0.9745          | 0.168                  | 0.296        |
| F102203.094 | 31022 | 131622 | 188.7384 | 71.7833 | 0.5851                       | 90    | 6992           | 46.6407       | 0.222              | 10.7766 | 248759  | 99.941                | 0.199                          | 0.9747          | 0.168                  | 0.303        |
| F102203.095 | 31022 | 131902 | 188.7655 | 72.0445 | 0.5849                       | 90    | 6994           | 46.6339       | 0.222              | 10.7751 | 248666  | 99.984                | 0.199                          | 0.9747          | 0.168                  | 0.288        |
| F102203.096 | 31022 | 132118 | 188.7687 | 72.1828 | 0.5847                       | 90    | 6995           | 46.6314       | 0.223              | 10.7745 | 248593  | 100.004               | 0.199                          | 0.9746          | 0.168                  | 0.283        |
| F102203.097 | 31022 | 132934 | 188.7240 | 72.3942 | 0.5843                       | 90    | 6996           | 46.6292       | 0.222              | 10.774  | 248393  | 100.023               | 0.199                          | 0.9741          | 0.168                  | 0.278        |
| F102203.098 | 31022 | 133150 | 188.6904 | 72.3940 | 0.5842                       | 90    | 6997           | 46.6395       | 0.222              | 10.7764 | 248329  | 100.015               | 0.199                          | 0.9739          | 0.168                  | 0.3          |
| F102203.099 | 31022 | 133406 | 188.6052 | 72.3075 | 0.5841                       | 90    | 6992           | 46.6136       | 0.222              | 10.7704 | 248254  | 99.999                | 0.199                          | 0.9734          | 0.168                  | 0.244        |
| F102203.100 | 31022 | 133622 | 188.5070 | 71.9639 | 0.5842                       | 90    | 6987           | 46.6185       | 0.222              | 10.7715 | 248229  | 99.917                | 0.199                          | 0.9728          | 0.168                  | 0.255        |
| F102203.101 | 31022 | 133838 | 188.4061 | 71.7339 | 0.5841                       | 90    | 6986           | 46.6319       | 0.222              | 10.7746 | 248195  | 99.874                | 0.199                          | 0.9723          | 0.168                  | 0.284        |
| F102203.102 | 31022 | 134054 | 188.3957 | 71.8831 | 0.5839                       | 90    | 6990           | 46.6430       | 0.222              | 10.7772 | 248130  | 99.908                | 0.199                          | 0.9723          | 0.168                  | 0.308        |

**8-inch Instromet Turbine Meter Serial No. 71219 – Low Pressure Loop Natural Gas Test**  
**Test Pressure = 115 psia**

| <u>File</u> | <u>Date</u> | <u>Time</u> | <u>P (psia)</u> | <u>T (F)</u> | <u><math>\rho</math> (lb/ft<sup>3</sup>)</u> | <u>t (s)</u> | <u>Main Pulses</u> | <u>K (pulses/cf)</u> | <u>U<sub>k</sub> (%)</u> | <u>St</u> | <u>ReD</u> | <u>Q<sub>v</sub> (acfm)</u> | <u>UQ<sub>v</sub> (%)</u> | <u>mdot (lbm/s)</u> | <u>U<sub>mdot</sub> (%)</u> | <u>Error (%)</u> |
|-------------|-------------|-------------|-----------------|--------------|----------------------------------------------|--------------|--------------------|----------------------|--------------------------|-----------|------------|-----------------------------|---------------------------|---------------------|-----------------------------|------------------|
| F102203.030 | 31022       | 75845       | 119.2973        | 70.0558      | 0.3680                                       | 90           | 50983              | 46.6758              | 0.1720                   | 10.7847   | 1148857    | 728.186                     | 0.144                     | 4.4660              | 0.094                       | 0.378            |
| F102203.031 | 31022       | 80101       | 119.1436        | 69.4416      | 0.3680                                       | 90           | 50949              | 46.6727              | 0.1720                   | 10.784    | 1149222    | 727.749                     | 0.144                     | 4.4630              | 0.094                       | 0.371            |
| F102203.032 | 31022       | 80352       | 119.0003        | 69.0428      | 0.3678                                       | 90           | 50942              | 46.6771              | 0.1720                   | 10.785    | 1149221    | 727.58                      | 0.144                     | 4.4601              | 0.094                       | 0.381            |
| F102203.033 | 31022       | 80608       | 118.9081        | 68.7779      | 0.3677                                       | 90           | 50933              | 46.6792              | 0.1720                   | 10.7855   | 1149183    | 727.419                     | 0.144                     | 4.4580              | 0.094                       | 0.385            |
| F102203.034 | 31022       | 80840       | 118.9082        | 69.7267      | 0.3670                                       | 90           | 51044              | 46.6788              | 0.1720                   | 10.7854   | 1147756    | 729.01                      | 0.144                     | 4.4592              | 0.094                       | 0.385            |
| F102203.035 | 31022       | 81102       | 118.9796        | 70.5459      | 0.3666                                       | 90           | 51115              | 46.6850              | 0.1720                   | 10.7869   | 1146518    | 729.928                     | 0.144                     | 4.4603              | 0.094                       | 0.398            |
| F102203.036 | 31022       | 81612       | 118.3193        | 69.8612      | 0.3651                                       | 90           | 41226              | 46.6649              | 0.1830                   | 10.7822   | 922219     | 588.965                     | 0.157                     | 3.5835              | 0.114                       | 0.355            |
| F102203.037 | 31022       | 81840       | 118.2604        | 69.6114      | 0.3651                                       | 90           | 41213              | 46.6642              | 0.1840                   | 10.7821   | 922312     | 588.788                     | 0.157                     | 3.5824              | 0.114                       | 0.353            |
| F102203.038 | 31022       | 82056       | 118.1820        | 69.2067      | 0.3651                                       | 90           | 41183              | 46.6641              | 0.1840                   | 10.782    | 922387     | 588.362                     | 0.157                     | 3.5804              | 0.114                       | 0.353            |
| F102203.039 | 31022       | 82313       | 118.0371        | 68.6761      | 0.3651                                       | 90           | 41151              | 46.6632              | 0.1840                   | 10.7818   | 922318     | 587.915                     | 0.157                     | 3.5770              | 0.114                       | 0.351            |
| F102203.040 | 31022       | 82529       | 117.9193        | 68.2132      | 0.3650                                       | 90           | 41127              | 46.6623              | 0.1840                   | 10.7816   | 922431     | 587.584                     | 0.157                     | 3.5747              | 0.114                       | 0.349            |
| F102203.041 | 31022       | 82746       | 117.8220        | 67.9330      | 0.3649                                       | 90           | 41116              | 46.6639              | 0.1840                   | 10.782    | 922321     | 587.406                     | 0.157                     | 3.5727              | 0.114                       | 0.353            |
| F102203.042 | 31022       | 83437       | 116.8445        | 67.7630      | 0.3620                                       | 90           | 27778              | 46.6445              | 0.2090                   | 10.7775   | 618575     | 397.018                     | 0.186                     | 2.3952              | 0.151                       | 0.311            |
| F102203.043 | 31022       | 83654       | 116.8825        | 68.5793      | 0.3615                                       | 90           | 27832              | 46.6530              | 0.2090                   | 10.7795   | 618037     | 397.716                     | 0.186                     | 2.3963              | 0.151                       | 0.329            |
| F102203.044 | 31022       | 83910       | 116.9893        | 69.7386      | 0.3610                                       | 90           | 27886              | 46.6488              | 0.2090                   | 10.7785   | 617271     | 398.524                     | 0.186                     | 2.3978              | 0.151                       | 0.32             |
| F102203.045 | 31022       | 84127       | 117.0702        | 70.5619      | 0.3607                                       | 90           | 27918              | 46.6382              | 0.2090                   | 10.776    | 616717     | 399.072                     | 0.186                     | 2.3988              | 0.151                       | 0.297            |
| F102203.046 | 31022       | 84406       | 117.0829        | 70.6518      | 0.3606                                       | 90           | 27907              | 46.6309              | 0.2090                   | 10.7744   | 616437     | 398.977                     | 0.186                     | 2.3981              | 0.151                       | 0.281            |
| F102203.047 | 31022       | 84622       | 117.0455        | 70.2425      | 0.3608                                       | 90           | 27875              | 46.6307              | 0.2090                   | 10.7743   | 616442     | 398.521                     | 0.186                     | 2.3965              | 0.151                       | 0.281            |
| F102203.048 | 31022       | 92226       | 115.9451        | 67.6156      | 0.3593                                       | 90           | 13866              | 46.6054              | 0.2140                   | 10.7685   | 306812     | 198.346                     | 0.192                     | 1.1876              | 0.158                       | 0.227            |
| F102203.049 | 31022       | 92442       | 115.8790        | 67.6026      | 0.3591                                       | 90           | 13871              | 46.6124              | 0.2140                   | 10.7701   | 306714     | 198.388                     | 0.192                     | 1.1872              | 0.158                       | 0.242            |
| F102203.050 | 31022       | 92659       | 115.8580        | 67.8557      | 0.3588                                       | 90           | 13879              | 46.6097              | 0.2140                   | 10.7695   | 306571     | 198.514                     | 0.192                     | 1.1872              | 0.158                       | 0.236            |
| F102203.051 | 31022       | 92915       | 115.8483        | 68.0931      | 0.3586                                       | 90           | 13891              | 46.6208              | 0.2140                   | 10.772    | 306475     | 198.638                     | 0.192                     | 1.1872              | 0.158                       | 0.26             |
| F102203.052 | 31022       | 93143       | 115.9532        | 69.1621      | 0.3582                                       | 90           | 13921              | 46.6180              | 0.2130                   | 10.7714   | 306248     | 199.079                     | 0.192                     | 1.1884              | 0.158                       | 0.254            |
| F102203.053 | 31022       | 93427       | 116.0553        | 70.2373      | 0.3577                                       | 90           | 13951              | 46.6187              | 0.2140                   | 10.7715   | 305987     | 199.505                     | 0.192                     | 1.1895              | 0.158                       | 0.255            |
| F102203.054 | 31022       | 95506       | 115.5163        | 69.0862      | 0.3569                                       | 90           | 7009               | 46.5813              | 0.2220                   | 10.7629   | 153770     | 100.312                     | 0.2                       | 0.5966              | 0.168                       | 0.175            |
| F102203.055 | 31022       | 95722       | 115.4842        | 69.1634      | 0.3567                                       | 90           | 7009               | 46.5739              | 0.2220                   | 10.7612   | 153708     | 100.328                     | 0.2                       | 0.5965              | 0.168                       | 0.159            |
| F102203.056 | 31022       | 95938       | 115.5694        | 69.6803      | 0.3566                                       | 90           | 7018               | 46.5923              | 0.2220                   | 10.7655   | 153673     | 100.417                     | 0.2                       | 0.5968              | 0.169                       | 0.199            |
| F102203.057 | 31022       | 100155      | 115.6296        | 70.3150      | 0.3563                                       | 90           | 7028               | 46.5994              | 0.2220                   | 10.7671   | 153597     | 100.545                     | 0.2                       | 0.5971              | 0.169                       | 0.214            |
| F102203.058 | 31022       | 100411      | 115.7154        | 70.9089      | 0.3562                                       | 90           | 7035               | 46.6005              | 0.2220                   | 10.7674   | 153532     | 100.643                     | 0.2                       | 0.5975              | 0.169                       | 0.216            |
| F102203.059 | 31022       | 100628      | 115.7507        | 71.4074      | 0.3559                                       | 90           | 7036               | 46.5632              | 0.2220                   | 10.7587   | 153449     | 100.738                     | 0.2                       | 0.5976              | 0.169                       | 0.136            |

**8-inch Instronet Turbine Meter Serial No. 71219 – Low Pressure Loop Natural Gas Test  
Test Pressure = 45 psia**

| <u>File</u> | <u>Date</u> | <u>Time</u> | <u>P (psia)</u> | <u>T (F)</u> | <u><math>\rho</math> (lb/ft<sup>3</sup>)</u> | <u>t (s)</u> | <u>Main<br/>Pulses</u> | <u>K (pulses/cf)</u> | <u>U<sub>K</sub> (%)</u> | <u>St</u> | <u>ReD</u> | <u>Q<sub>v</sub> (acfm)</u> | <u>UQ<sub>v</sub> (%)</u> | <u>mdot<br/>(lbm/s)</u> | <u>U<sub>mdot</sub> (%)</u> | <u>Error<br/>(%)</u> |
|-------------|-------------|-------------|-----------------|--------------|----------------------------------------------|--------------|------------------------|----------------------|--------------------------|-----------|------------|-----------------------------|---------------------------|-------------------------|-----------------------------|----------------------|
| F102203.060 | 31022       | 102820      | 46.9856         | 74.2560      | 0.1423                                       | 90           | 51451                  | 46.6309              | 0.1780                   | 10.7744   | 448377     | 735.579                     | 0.151                     | 1.7449                  | 0.098                       | 0.281                |
| F102203.061 | 31022       | 103036      | 46.9755         | 73.9262      | 0.1424                                       | 90           | 51409                  | 46.6328              | 0.1780                   | 10.7748   | 448429     | 734.948                     | 0.151                     | 1.7442                  | 0.097                       | 0.286                |
| F102203.062 | 31022       | 103252      | 46.9571         | 73.6011      | 0.1424                                       | 90           | 51366                  | 46.6282              | 0.1780                   | 10.7737   | 448435     | 734.406                     | 0.151                     | 1.7433                  | 0.098                       | 0.276                |
| F102203.063 | 31022       | 103508      | 46.9216         | 73.0548      | 0.1425                                       | 90           | 51309                  | 46.6287              | 0.1780                   | 10.7739   | 448486     | 733.582                     | 0.151                     | 1.7419                  | 0.098                       | 0.277                |
| F102203.064 | 31022       | 103724      | 46.8783         | 72.2167      | 0.1426                                       | 90           | 51227                  | 46.6285              | 0.1780                   | 10.7738   | 448686     | 732.413                     | 0.151                     | 1.7403                  | 0.098                       | 0.276                |
| F102203.065 | 31022       | 103940      | 46.8282         | 71.3420      | 0.1427                                       | 90           | 51144                  | 46.6269              | 0.1780                   | 10.7734   | 448900     | 731.253                     | 0.151                     | 1.7387                  | 0.098                       | 0.273                |
| F102203.066 | 31022       | 104713      | 46.9720         | 70.2507      | 0.1434                                       | 90           | 41267                  | 46.6177              | 0.1900                   | 10.7713   | 364814     | 590.148                     | 0.165                     | 1.4105                  | 0.118                       | 0.253                |
| F102203.067 | 31022       | 104929      | 46.9690         | 70.6979      | 0.1433                                       | 90           | 41307                  | 46.6181              | 0.1890                   | 10.7714   | 364570     | 590.714                     | 0.165                     | 1.4106                  | 0.118                       | 0.254                |
| F102203.068 | 31022       | 105213      | 46.9650         | 71.2477      | 0.1431                                       | 90           | 41350                  | 46.6163              | 0.1900                   | 10.771    | 364221     | 591.353                     | 0.165                     | 1.4105                  | 0.118                       | 0.25                 |
| F102203.069 | 31022       | 105429      | 46.9572         | 71.5994      | 0.1430                                       | 90           | 41375                  | 46.6135              | 0.1900                   | 10.7704   | 363958     | 591.745                     | 0.165                     | 1.4103                  | 0.118                       | 0.244                |
| F102203.070 | 31022       | 105645      | 46.9337         | 71.4839      | 0.1430                                       | 90           | 41363                  | 46.6104              | 0.1900                   | 10.7696   | 363845     | 591.614                     | 0.165                     | 1.4096                  | 0.118                       | 0.237                |
| F102203.071 | 31022       | 105901      | 46.8980         | 71.0816      | 0.1430                                       | 90           | 41329                  | 46.6092              | 0.1900                   | 10.7693   | 363797     | 591.143                     | 0.165                     | 1.4085                  | 0.118                       | 0.235                |
| F102203.072 | 31022       | 110243      | 46.3810         | 71.0681      | 0.1414                                       | 90           | 27902                  | 46.5589              | 0.2160                   | 10.7577   | 243167     | 399.522                     | 0.194                     | 0.9414                  | 0.156                       | 0.127                |
| F102203.073 | 31022       | 110459      | 46.3436         | 70.7932      | 0.1413                                       | 90           | 27889                  | 46.5628              | 0.2160                   | 10.7586   | 243081     | 399.303                     | 0.194                     | 0.9406                  | 0.157                       | 0.135                |
| F102203.074 | 31022       | 110715      | 46.3339         | 71.1614      | 0.1412                                       | 90           | 27906                  | 46.5610              | 0.2160                   | 10.7582   | 242870     | 399.562                     | 0.194                     | 0.9404                  | 0.157                       | 0.131                |
| F102203.075 | 31022       | 110930      | 46.3216         | 71.4363      | 0.1411                                       | 90           | 27921                  | 46.5642              | 0.2160                   | 10.759    | 242690     | 399.749                     | 0.195                     | 0.9401                  | 0.157                       | 0.138                |
| F102203.076 | 31022       | 111146      | 46.3096         | 71.6884      | 0.1410                                       | 90           | 27929                  | 46.5640              | 0.2160                   | 10.7589   | 242480     | 399.865                     | 0.194                     | 0.9397                  | 0.157                       | 0.138                |
| F102203.077 | 31022       | 111402      | 46.3026         | 71.9454      | 0.1409                                       | 90           | 27942                  | 46.5654              | 0.2150                   | 10.7592   | 242328     | 400.04                      | 0.194                     | 0.9395                  | 0.156                       | 0.141                |
| F102203.078 | 31022       | 114122      | 46.0263         | 72.5285      | 0.1399                                       | 90           | 14000                  | 46.5847              | 0.2210                   | 10.7637   | 120395     | 200.352                     | 0.2                       | 0.4672                  | 0.163                       | 0.182                |
| F102203.079 | 31022       | 114358      | 46.0164         | 72.8713      | 0.1398                                       | 90           | 14006                  | 46.5798              | 0.2210                   | 10.7626   | 120287     | 200.459                     | 0.2                       | 0.4670                  | 0.163                       | 0.172                |
| F102203.080 | 31022       | 114619      | 45.9934         | 72.9054      | 0.1397                                       | 90           | 14005                  | 46.5780              | 0.2210                   | 10.7621   | 120209     | 200.452                     | 0.2                       | 0.4667                  | 0.163                       | 0.168                |
| F102203.081 | 31022       | 114843      | 45.9566         | 72.7000      | 0.1396                                       | 90           | 13997                  | 46.5757              | 0.2210                   | 10.7616   | 120138     | 200.348                     | 0.2                       | 0.4663                  | 0.163                       | 0.163                |
| F102203.082 | 31022       | 115058      | 45.9177         | 72.4303      | 0.1396                                       | 90           | 13985                  | 46.5643              | 0.2210                   | 10.759    | 120078     | 200.225                     | 0.2                       | 0.4659                  | 0.163                       | 0.138                |
| F102203.083 | 31022       | 115342      | 45.8717         | 72.0746      | 0.1396                                       | 90           | 13976                  | 46.5702              | 0.2210                   | 10.7603   | 120017     | 200.071                     | 0.2                       | 0.4654                  | 0.163                       | 0.151                |
| F102203.084 | 31022       | 115558      | 45.8397         | 71.8656      | 0.1395                                       | 90           | 13971                  | 46.5766              | 0.2210                   | 10.7618   | 119963     | 199.972                     | 0.2                       | 0.4650                  | 0.163                       | 0.165                |
| F102203.085 | 31022       | 121314      | 45.5706         | 73.6778      | 0.1382                                       | 90           | 7051                   | 46.4954              | 0.2290                   | 10.7431   | 59907      | 101.1                       | 0.208                     | 0.2329                  | 0.173                       | -0.01                |
| F102203.086 | 31022       | 121530      | 45.5353         | 73.4842      | 0.1382                                       | 90           | 7047                   | 46.4918              | 0.2290                   | 10.7422   | 59872      | 101.05                      | 0.208                     | 0.2327                  | 0.173                       | -0.018               |
| F102203.087 | 31022       | 121745      | 45.5035         | 73.3534      | 0.1381                                       | 90           | 7044                   | 46.4869              | 0.2290                   | 10.7411   | 59838      | 101.018                     | 0.208                     | 0.2325                  | 0.173                       | -0.028               |
| F102203.088 | 31022       | 122001      | 45.4894         | 73.3770      | 0.1380                                       | 90           | 7050                   | 46.5277              | 0.2290                   | 10.7505   | 59813      | 101.015                     | 0.208                     | 0.2324                  | 0.173                       | 0.06                 |
| F102203.089 | 31022       | 122217      | 45.4816         | 73.6214      | 0.1380                                       | 90           | 7051                   | 46.5168              | 0.2290                   | 10.748    | 59774      | 101.053                     | 0.208                     | 0.2323                  | 0.173                       | 0.036                |
| F102203.090 | 31022       | 122433      | 45.4778         | 73.8930      | 0.1379                                       | 90           | 7055                   | 46.5237              | 0.229                    | 10.7496   | 59736      | 101.095                     | 0.208                     | 0.2323                  | 0.173                       | 0.051                |

**8-inch Instronet Turbine Meter Serial No. 71219 – Low Pressure Loop Carbon Dioxide Test**  
**Test Pressure = 115 psia**

| <u>File</u> | <u>Date</u> | <u>Time</u> | <u>P (psia)</u> | <u>T (F)</u> | <u><math>\rho</math> (lb/ft<sup>3</sup>)</u> | <u>t (s)</u> | <u>Main<br/>Pulses</u> | <u>K (pulses/cf)</u> | <u>U<sub>K</sub> (%)</u> | <u>St</u> | <u>ReD</u> | <u>Q<sub>v</sub> (acfm)</u> | <u>UQ<sub>v</sub> (%)</u> | <u>mdot (lbm/s)</u> | <u>U<sub>m-dot</sub> (%)</u> | <u>Error<br/>(%)</u> |
|-------------|-------------|-------------|-----------------|--------------|----------------------------------------------|--------------|------------------------|----------------------|--------------------------|-----------|------------|-----------------------------|---------------------------|---------------------|------------------------------|----------------------|
| F112003.000 | 31120       | 64831       | 118.9221        | 69.1057      | 0.9653                                       | 90           | 31504                  | 46.7536              | 0.1470                   | 10.8027   | 1381310    | 449.22                      | 0.144                     | 7.227398            | 0.095                        | 0.545                |
| F112003.001 | 31120       | 65112       | 118.8367        | 68.9037      | 0.9650                                       | 90           | 31492                  | 46.7513              | 0.1470                   | 10.8022   | 1380886    | 449.072                     | 0.144                     | 7.222776            | 0.095                        | 0.54                 |
| F112003.002 | 31120       | 65328       | 118.7842        | 68.9563      | 0.9645                                       | 90           | 31497                  | 46.7515              | 0.1470                   | 10.8022   | 1380183    | 449.14                      | 0.144                     | 7.219695            | 0.094                        | 0.541                |
| F112003.003 | 31120       | 65544       | 118.7541        | 69.1142      | 0.9639                                       | 90           | 31507                  | 46.7519              | 0.1470                   | 10.8023   | 1379412    | 449.28                      | 0.144                     | 7.217508            | 0.095                        | 0.542                |
| F112003.004 | 31120       | 65800       | 118.7141        | 69.2145      | 0.9633                                       | 90           | 31508                  | 46.7456              | 0.1470                   | 10.8009   | 1378629    | 449.354                     | 0.144                     | 7.214573            | 0.094                        | 0.528                |
| F112003.005 | 31120       | 70016       | 118.6610        | 69.1850      | 0.9629                                       | 90           | 31504                  | 46.7443              | 0.1470                   | 10.8006   | 1378005    | 449.31                      | 0.144                     | 7.210938            | 0.095                        | 0.525                |
| F112003.006 | 31120       | 70555       | 117.2796        | 68.1713      | 0.9533                                       | 90           | 23426                  | 46.7190              | 0.1610                   | 10.7947   | 1016728    | 334.283                     | 0.158                     | 5.311261            | 0.115                        | 0.471                |
| F112003.007 | 31120       | 70811       | 117.1549        | 67.6913      | 0.9533                                       | 90           | 23411                  | 46.7264              | 0.1610                   | 10.7964   | 1016660    | 334.015                     | 0.158                     | 5.306708            | 0.115                        | 0.487                |
| F112003.008 | 31120       | 71028       | 117.0034        | 67.5558      | 0.9522                                       | 90           | 23414                  | 46.7201              | 0.1610                   | 10.795    | 1016085    | 334.103                     | 0.158                     | 5.302493            | 0.115                        | 0.473                |
| F112003.009 | 31120       | 71244       | 116.9101        | 67.4701      | 0.9516                                       | 90           | 23421                  | 46.7284              | 0.1610                   | 10.7969   | 1015699    | 334.144                     | 0.158                     | 5.299706            | 0.115                        | 0.491                |
| F112003.010 | 31120       | 71500       | 116.8068        | 67.4746      | 0.9507                                       | 90           | 23428                  | 46.7178              | 0.1610                   | 10.7944   | 1015279    | 334.32                      | 0.158                     | 5.297525            | 0.115                        | 0.468                |
| F112003.011 | 31120       | 71716       | 116.7427        | 67.4698      | 0.9502                                       | 90           | 23438                  | 46.7309              | 0.1610                   | 10.7975   | 1014865    | 334.368                     | 0.158                     | 5.295305            | 0.115                        | 0.497                |
| F112003.012 | 31120       | 72425       | 116.5414        | 67.8348      | 0.9477                                       | 90           | 17187                  | 46.7217              | 0.1890                   | 10.7953   | 741967     | 245.239                     | 0.186                     | 3.873663            | 0.152                        | 0.477                |
| F112003.013 | 31120       | 72641       | 116.4464        | 67.6750      | 0.9472                                       | 90           | 17184                  | 46.7251              | 0.1890                   | 10.7961   | 741608     | 245.179                     | 0.186                     | 3.870757            | 0.152                        | 0.484                |
| F112003.014 | 31120       | 72857       | 116.3578        | 67.5789      | 0.9467                                       | 90           | 17182                  | 46.7187              | 0.1890                   | 10.7946   | 741309     | 245.184                     | 0.186                     | 3.868571            | 0.152                        | 0.47                 |
| F112003.015 | 31120       | 73113       | 116.2651        | 67.4079      | 0.9463                                       | 90           | 17178                  | 46.7148              | 0.1890                   | 10.7937   | 741069     | 245.147                     | 0.186                     | 3.866221            | 0.152                        | 0.462                |
| F112003.016 | 31120       | 73330       | 116.1950        | 67.3103      | 0.9459                                       | 90           | 17175                  | 46.7156              | 0.1890                   | 10.7939   | 740739     | 245.1                       | 0.186                     | 3.863867            | 0.152                        | 0.464                |
| F112003.017 | 31120       | 73557       | 116.1214        | 67.2324      | 0.9454                                       | 90           | 17178                  | 46.7276              | 0.1890                   | 10.7967   | 740411     | 245.08                      | 0.186                     | 3.861646            | 0.152                        | 0.489                |
| F112003.018 | 31120       | 80243       | 115.6194        | 67.7128      | 0.9401                                       | 90           | 10784                  | 46.7072              | 0.1730                   | 10.792    | 462072     | 153.924                     | 0.17                      | 2.411789            | 0.13                         | 0.445                |
| F112003.019 | 31120       | 80459       | 115.5565        | 67.6222      | 0.9398                                       | 90           | 10781                  | 46.7007              | 0.1730                   | 10.7905   | 461906     | 153.902                     | 0.17                      | 2.410558            | 0.13                         | 0.432                |
| F112003.020 | 31120       | 80715       | 115.5578        | 67.6223      | 0.9398                                       | 90           | 10782                  | 46.7211              | 0.1730                   | 10.7952   | 461753     | 153.849                     | 0.17                      | 2.409756            | 0.13                         | 0.475                |
| F112003.021 | 31120       | 80932       | 115.4945        | 67.6561      | 0.9392                                       | 90           | 10783                  | 46.7102              | 0.1730                   | 10.7927   | 461580     | 153.899                     | 0.17                      | 2.40898             | 0.13                         | 0.452                |
| F112003.022 | 31120       | 81159       | 115.4533        | 67.7951      | 0.9385                                       | 90           | 10785                  | 46.6976              | 0.1730                   | 10.7898   | 461373     | 153.969                     | 0.17                      | 2.40844             | 0.13                         | 0.425                |
| F112003.023 | 31120       | 81416       | 115.4523        | 67.8275      | 0.9385                                       | 90           | 10785                  | 46.7112              | 0.1730                   | 10.7929   | 461177     | 153.925                     | 0.17                      | 2.407548            | 0.13                         | 0.454                |

**8-inch Instronet Turbine Meter Serial No. 71219 – Low Pressure Loop Carbon Dioxide Test**  
**Test Pressure = 90 psia**

| <u>File</u> | <u>Date</u> | <u>Time</u> | <u>P (psia)</u> | <u>T (F)</u> | <u><math>\rho</math> (lb/ft<sup>3</sup>)</u> | <u>t (s)</u> | <u>Main</u><br><u>Pulses</u> | <u>K (pulses/cf)</u> | <u>U<sub>K</sub> (%)</u> | <u>St</u> | <u>ReD</u> | <u>Q<sub>v</sub> (acfm)</u> | <u>UQ<sub>v</sub> (%)</u> | <u>mdot (lbm/s)</u> | <u>U<sub>m-dot</sub> (%)</u> | <u>Error</u><br><u>(%)</u> |
|-------------|-------------|-------------|-----------------|--------------|----------------------------------------------|--------------|------------------------------|----------------------|--------------------------|-----------|------------|-----------------------------|---------------------------|---------------------|------------------------------|----------------------------|
| F112003.039 | 31120       | 100736      | 93.4115         | 69.2805      | 0.7502                                       | 90           | 31670                        | 46.7377              | 0.1470                   | 10.799    | 1080533    | 451.741                     | 0.145                     | 5.648401            | 0.095                        | 0.511                      |
| F112003.040 | 31120       | 100952      | 93.4422         | 69.4715      | 0.7502                                       | 90           | 31671                        | 46.7363              | 0.1470                   | 10.7987   | 1080182    | 451.769                     | 0.145                     | 5.64837             | 0.095                        | 0.508                      |
| F112003.041 | 31120       | 101208      | 93.4611         | 69.6405      | 0.7501                                       | 90           | 31669                        | 46.7289              | 0.1480                   | 10.797    | 1079822    | 451.812                     | 0.145                     | 5.648078            | 0.095                        | 0.492                      |
| F112003.042 | 31120       | 101424      | 93.4949         | 69.7066      | 0.7502                                       | 90           | 31667                        | 46.7398              | 0.1480                   | 10.7995   | 1079633    | 451.678                     | 0.145                     | 5.647719            | 0.095                        | 0.516                      |
| F112003.043 | 31120       | 101640      | 93.5037         | 69.8614      | 0.7501                                       | 90           | 31665                        | 46.7301              | 0.1470                   | 10.7973   | 1079262    | 451.743                     | 0.145                     | 5.647235            | 0.095                        | 0.495                      |
| F112003.044 | 31120       | 101856      | 93.5079         | 69.8723      | 0.7501                                       | 90           | 31660                        | 46.7325              | 0.1470                   | 10.7978   | 1079041    | 451.648                     | 0.145                     | 5.646181            | 0.095                        | 0.5                        |
| F112003.045 | 31120       | 102411      | 91.9207         | 69.5774      | 0.7373                                       | 90           | 23578                        | 46.7110              | 0.1620                   | 10.7929   | 790753     | 336.509                     | 0.159                     | 4.135374            | 0.116                        | 0.454                      |
| F112003.046 | 31120       | 102627      | 91.9003         | 69.5104      | 0.7373                                       | 90           | 23573                        | 46.7088              | 0.1620                   | 10.7924   | 790642     | 336.453                     | 0.159                     | 4.134324            | 0.116                        | 0.449                      |
| F112003.047 | 31120       | 102855      | 91.8581         | 69.5003      | 0.7369                                       | 90           | 23571                        | 46.7106              | 0.1620                   | 10.7928   | 790200     | 336.412                     | 0.159                     | 4.131935            | 0.116                        | 0.453                      |
| F112003.048 | 31120       | 103111      | 91.8338         | 69.5366      | 0.7367                                       | 90           | 23571                        | 46.7104              | 0.1620                   | 10.7927   | 789878     | 336.413                     | 0.159                     | 4.130499            | 0.116                        | 0.453                      |
| F112003.049 | 31120       | 103410      | 91.8028         | 69.4097      | 0.7366                                       | 90           | 23564                        | 46.7114              | 0.1620                   | 10.793    | 789731     | 336.306                     | 0.159                     | 4.128853            | 0.116                        | 0.455                      |
| F112003.050 | 31120       | 103648      | 91.7746         | 69.3666      | 0.7365                                       | 90           | 23561                        | 46.7090              | 0.1620                   | 10.7924   | 789550     | 336.281                     | 0.159                     | 4.127602            | 0.116                        | 0.449                      |
| F112003.051 | 31120       | 104019      | 91.3697         | 69.5348      | 0.7328                                       | 90           | 17256                        | 46.6892              | 0.1900                   | 10.7878   | 575508     | 246.396                     | 0.187                     | 3.009428            | 0.152                        | 0.407                      |
| F112003.052 | 31120       | 104235      | 91.3300         | 69.2342      | 0.7330                                       | 90           | 17246                        | 46.6927              | 0.1900                   | 10.7886   | 575528     | 246.234                     | 0.187                     | 3.008019            | 0.152                        | 0.414                      |
| F112003.053 | 31120       | 104451      | 91.3068         | 69.1751      | 0.7329                                       | 90           | 17244                        | 46.6970              | 0.1900                   | 10.7896   | 575387     | 246.183                     | 0.187                     | 3.00698             | 0.152                        | 0.424                      |
| F112003.054 | 31120       | 104707      | 91.2761         | 69.2122      | 0.7326                                       | 90           | 17244                        | 46.6891              | 0.1890                   | 10.7878   | 575203     | 246.225                     | 0.187                     | 3.006204            | 0.152                        | 0.407                      |
| F112003.055 | 31120       | 104934      | 91.2669         | 69.3083      | 0.7323                                       | 90           | 17248                        | 46.6950              | 0.1900                   | 10.7892   | 574995     | 246.251                     | 0.187                     | 3.005596            | 0.152                        | 0.419                      |
| F112003.056 | 31120       | 105218      | 91.2483         | 69.4363      | 0.7320                                       | 90           | 17251                        | 46.6930              | 0.1900                   | 10.7887   | 574720     | 246.304                     | 0.187                     | 3.004794            | 0.152                        | 0.415                      |
| F112003.057 | 31120       | 111205      | 90.7739         | 69.5411      | 0.7279                                       | 90           | 10810                        | 46.6801              | 0.1730                   | 10.7857   | 358161     | 154.384                     | 0.17                      | 1.872854            | 0.131                        | 0.387                      |
| F112003.058 | 31120       | 111421      | 90.7574         | 69.5948      | 0.7276                                       | 90           | 10811                        | 46.6782              | 0.1730                   | 10.7853   | 358069     | 154.405                     | 0.17                      | 1.872542            | 0.131                        | 0.383                      |
| F112003.059 | 31120       | 111637      | 90.7531         | 69.6959      | 0.7275                                       | 90           | 10811                        | 46.6744              | 0.1730                   | 10.7844   | 357944     | 154.417                     | 0.17                      | 1.8722              | 0.131                        | 0.375                      |
| F112003.060 | 31120       | 111853      | 90.7108         | 69.6592      | 0.7272                                       | 90           | 10811                        | 46.6754              | 0.1730                   | 10.7846   | 357814     | 154.414                     | 0.17                      | 1.871402            | 0.131                        | 0.377                      |
| F112003.061 | 31120       | 112109      | 90.6876         | 69.5929      | 0.7271                                       | 90           | 10809                        | 46.6755              | 0.1730                   | 10.7847   | 357742     | 154.385                     | 0.17                      | 1.870818            | 0.131                        | 0.377                      |
| F112003.062 | 31120       | 112353      | 90.6579         | 69.6423      | 0.7267                                       | 90           | 10810                        | 46.6770              | 0.1730                   | 10.785    | 357576     | 154.394                     | 0.17                      | 1.8701              | 0.131                        | 0.381                      |
| F112003.063 | 31120       | 113802      | 90.1662         | 69.0251      | 0.7236                                       | 90           | 4331                         | 46.5216              | 0.2050                   | 10.7491   | 143270     | 62.064                      | 0.202                     | 0.748509            | 0.169                        | 0.046                      |
| F112003.064 | 31120       | 114018      | 90.1169         | 68.7851      | 0.7236                                       | 90           | 4329                         | 46.5179              | 0.2050                   | 10.7483   | 143265     | 62.041                      | 0.202                     | 0.748179            | 0.169                        | 0.039                      |
| F112003.065 | 31120       | 114234      | 90.1201         | 68.8578      | 0.7235                                       | 90           | 4330                         | 46.5231              | 0.2050                   | 10.7495   | 143248     | 62.048                      | 0.202                     | 0.74818             | 0.169                        | 0.05                       |
| F112003.066 | 31120       | 114450      | 90.1188         | 69.0206      | 0.7232                                       | 90           | 4332                         | 46.5281              | 0.2050                   | 10.7506   | 143208     | 62.07                       | 0.202                     | 0.748177            | 0.169                        | 0.06                       |
| F112003.067 | 31120       | 114706      | 90.1438         | 69.2295      | 0.7231                                       | 90           | 4332                         | 46.5136              | 0.2050                   | 10.7473   | 143180     | 62.089                      | 0.202                     | 0.748293            | 0.17                         | 0.029                      |
| F112003.068 | 31120       | 114922      | 90.1497         | 69.4643      | 0.7228                                       | 90           | 4337                         | 46.5454              | 0.2050                   | 10.7546   | 143130     | 62.119                      | 0.202                     | 0.748324            | 0.169                        | 0.098                      |

**8-inch Instromet Turbine Meter Serial No. 71219 – High Pressure Loop Natural Gas Test**  
**Test Pressure = 230 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K (pulses/cf) | U <sub>K</sub> (%) | St      | ReD     | Q <sub>v</sub> (acfm) | U <sub>Q<sub>v</sub></sub> (%) | mdot (lbm/s) | U <sub>mdot</sub> (%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|------------------------------|-------|----------------|---------------|--------------------|---------|---------|-----------------------|--------------------------------|--------------|-----------------------|--------------|
| F103003.000 | 31030 | 85845  | 230.9149 | 70.6168 | 0.7222                       | 90    | 69328          | 46.8532       | 0.3120             | 10.8257 | 3026590 | 986.453               | 0.296                          | 11.872927    | 0.262                 | 0.76         |
| F103003.001 | 31030 | 90120  | 230.8959 | 70.6023 | 0.7221                       | 90    | 69326          | 46.85434      | 0.3120             | 10.826  | 3026360 | 986.407               | 0.296                          | 11.871731    | 0.262                 | 0.762        |
| F103003.002 | 31030 | 90330  | 230.8871 | 70.6082 | 0.7221                       | 90    | 69324          | 46.85256      | 0.3130             | 10.8256 | 3026184 | 986.41                | 0.296                          | 11.871142    | 0.262                 | 0.758        |
| F103003.003 | 31030 | 90528  | 230.8807 | 70.5805 | 0.7221                       | 90    | 69322          | 46.85593      | 0.3130             | 10.8264 | 3026132 | 986.32                | 0.296                          | 11.870419    | 0.262                 | 0.765        |
| F103003.004 | 31030 | 90727  | 230.8619 | 70.5778 | 0.7220                       | 90    | 69320          | 46.85436      | 0.3120             | 10.826  | 3025890 | 986.315               | 0.296                          | 11.869393    | 0.262                 | 0.762        |
| F103003.005 | 31030 | 90925  | 230.8566 | 70.5616 | 0.7221                       | 90    | 69314          | 46.85273      | 0.3120             | 10.8256 | 3025841 | 986.263               | 0.296                          | 11.868895    | 0.262                 | 0.759        |
| F103003.006 | 31030 | 93644  | 231.3669 | 70.4316 | 0.7239                       | 90    | 56948          | 46.79383      | 0.2350             | 10.812  | 2495866 | 811.325               | 0.213                          | 9.788666     | 0.162                 | 0.632        |
| F103003.007 | 31030 | 93905  | 231.3765 | 70.4290 | 0.7239                       | 90    | 56948          | 46.79501      | 0.2350             | 10.8123 | 2495966 | 811.316               | 0.213                          | 9.789028     | 0.162                 | 0.634        |
| F103003.008 | 31030 | 94119  | 231.3615 | 70.4232 | 0.7239                       | 90    | 56947          | 46.79457      | 0.2350             | 10.8122 | 2495806 | 811.3                 | 0.213                          | 9.788296     | 0.162                 | 0.633        |
| F103003.009 | 31030 | 94503  | 231.3185 | 70.4158 | 0.7238                       | 90    | 56945          | 46.79384      | 0.2350             | 10.812  | 2495404 | 811.295               | 0.213                          | 9.786564     | 0.162                 | 0.632        |
| F103003.010 | 31030 | 94707  | 231.3094 | 70.4167 | 0.7238                       | 90    | 56947          | 46.79546      | 0.2350             | 10.8124 | 2495284 | 811.283               | 0.213                          | 9.786096     | 0.162                 | 0.635        |
| F103003.011 | 31030 | 94905  | 231.3088 | 70.4190 | 0.7237                       | 90    | 56946          | 46.79672      | 0.2350             | 10.8127 | 2495185 | 811.259               | 0.213                          | 9.78574      | 0.162                 | 0.638        |
| F103003.012 | 31030 | 101037 | 230.4650 | 70.3517 | 0.7211                       | 90    | 44819          | 46.77271      | 0.2530             | 10.8071 | 1958113 | 638.826               | 0.232                          | 7.677874     | 0.186                 | 0.586        |
| F103003.013 | 31030 | 101235 | 230.4716 | 70.3281 | 0.7212                       | 90    | 44815          | 46.7695       | 0.2520             | 10.8064 | 1958294 | 638.812               | 0.232                          | 7.678308     | 0.186                 | 0.58         |
| F103003.014 | 31030 | 101433 | 230.4662 | 70.3139 | 0.7212                       | 90    | 44813          | 46.76891      | 0.2520             | 10.8063 | 1958274 | 638.787               | 0.232                          | 7.678054     | 0.186                 | 0.578        |
| F103003.015 | 31030 | 101647 | 230.4491 | 70.3069 | 0.7211                       | 90    | 44807          | 46.76313      | 0.2520             | 10.8049 | 1958163 | 638.782               | 0.232                          | 7.677523     | 0.186                 | 0.566        |
| F103003.016 | 31030 | 101906 | 230.4457 | 70.3015 | 0.7211                       | 90    | 44808          | 46.76507      | 0.2530             | 10.8054 | 1958141 | 638.772               | 0.232                          | 7.677369     | 0.186                 | 0.57         |
| F103003.017 | 31030 | 102110 | 230.4721 | 70.2913 | 0.7212                       | 90    | 44811          | 46.7693       | 0.2520             | 10.8063 | 1958381 | 638.752               | 0.232                          | 7.678208     | 0.186                 | 0.579        |
| F103003.018 | 31030 | 103923 | 230.7426 | 70.3504 | 0.7220                       | 90    | 28474          | 46.71469      | 0.2360             | 10.7937 | 1247048 | 406.348               | 0.214                          | 4.889892     | 0.164                 | 0.462        |
| F103003.019 | 31030 | 104122 | 230.7528 | 70.3157 | 0.7221                       | 90    | 28469          | 46.71078      | 0.2360             | 10.7928 | 1247174 | 406.32                | 0.214                          | 4.890129     | 0.164                 | 0.453        |
| F103003.020 | 31030 | 104335 | 230.7349 | 70.2951 | 0.7221                       | 90    | 28470          | 46.7139       | 0.2360             | 10.7935 | 1247134 | 406.307               | 0.214                          | 4.889808     | 0.164                 | 0.46         |
| F103003.021 | 31030 | 104555 | 230.6923 | 70.2725 | 0.7220                       | 90    | 28467          | 46.70977      | 0.2360             | 10.7926 | 1246954 | 406.29                | 0.214                          | 4.888908     | 0.164                 | 0.451        |
| F103003.022 | 31030 | 104759 | 230.6918 | 70.2468 | 0.7220                       | 90    | 28471          | 46.71896      | 0.2360             | 10.7947 | 1247032 | 406.275               | 0.214                          | 4.88902      | 0.164                 | 0.471        |
| F103003.023 | 31030 | 105009 | 230.6998 | 70.2251 | 0.7221                       | 90    | 28467          | 46.7139       | 0.2360             | 10.7935 | 1247117 | 406.256               | 0.214                          | 4.889191     | 0.164                 | 0.46         |
| F103003.024 | 31030 | 110925 | 231.6477 | 70.4001 | 0.7249                       | 90    | 16191          | 46.67852      | 0.3030             | 10.7854 | 712332  | 231.239               | 0.287                          | 2.793688     | 0.251                 | 0.384        |
| F103003.025 | 31030 | 111124 | 231.6847 | 70.4145 | 0.7250                       | 90    | 16196          | 46.69476      | 0.3030             | 10.7891 | 712385  | 231.231               | 0.286                          | 2.793966     | 0.251                 | 0.419        |
| F103003.026 | 31030 | 111349 | 231.8369 | 70.3959 | 0.7255                       | 90    | 16190          | 46.68143      | 0.3030             | 10.786  | 712861  | 231.217               | 0.287                          | 2.795803     | 0.251                 | 0.39         |
| F103003.027 | 31030 | 111553 | 231.9030 | 70.3960 | 0.7257                       | 90    | 16195          | 46.69804      | 0.3040             | 10.7899 | 713016  | 231.201               | 0.286                          | 2.796432     | 0.251                 | 0.426        |
| F103003.028 | 31030 | 111751 | 231.9032 | 70.3867 | 0.7257                       | 90    | 16187          | 46.67819      | 0.3030             | 10.7853 | 712975  | 231.18                | 0.286                          | 2.796232     | 0.251                 | 0.383        |
| F103003.029 | 31030 | 111950 | 230.8202 | 70.2446 | 0.7224                       | 90    | 16188          | 46.6754       | 0.3090             | 10.7846 | 710118  | 231.22                | 0.292                          | 2.784065     | 0.255                 | 0.377        |
| F103003.030 | 31030 | 113631 | 230.6422 | 70.7659 | 0.7211                       | 90    | 8121           | 46.62285      | 0.3020             | 10.7725 | 355681  | 116.126               | 0.285                          | 1.395571     | 0.249                 | 0.264        |
| F103003.031 | 31030 | 113830 | 230.5114 | 70.7781 | 0.7206                       | 90    | 8124           | 46.63909      | 0.3020             | 10.7763 | 355443  | 116.12                | 0.285                          | 1.394642     | 0.249                 | 0.299        |
| F103003.032 | 31030 | 114039 | 230.4338 | 70.7827 | 0.7204                       | 90    | 8123           | 46.64173      | 0.3020             | 10.7769 | 355289  | 116.111               | 0.285                          | 1.394036     | 0.249                 | 0.305        |
| F103003.033 | 31030 | 114238 | 230.3817 | 70.7824 | 0.7202                       | 90    | 8124           | 46.64986      | 0.3020             | 10.7787 | 355189  | 116.105               | 0.285                          | 1.393634     | 0.249                 | 0.322        |
| F103003.034 | 31030 | 114436 | 230.3416 | 70.7695 | 0.7201                       | 90    | 8125           | 46.65502      | 0.3020             | 10.7799 | 355112  | 116.095               | 0.285                          | 1.393299     | 0.249                 | 0.333        |
| F103003.035 | 31030 | 114635 | 230.2999 | 70.7561 | 0.7200                       | 90    | 8123           | 46.65125      | 0.3020             | 10.7791 | 355043  | 116.087               | 0.285                          | 1.392991     | 0.249                 | 0.325        |
| F103003.036 | 31030 | 131129 | 230.7018 | 71.3743 | 0.7203                       | 90    | 4106           | 46.52721      | 0.2950             | 10.7504 | 179830  | 58.83                 | 0.278                          | 0.706263     | 0.241                 | 0.059        |
| F103003.037 | 31030 | 131333 | 230.6390 | 71.5302 | 0.7199                       | 90    | 4108           | 46.54182      | 0.2950             | 10.7538 | 179717  | 58.843                | 0.278                          | 0.705984     | 0.241                 | 0.09         |
| F103003.038 | 31030 | 131532 | 230.5913 | 71.6302 | 0.7196                       | 90    | 4109           | 46.54749      | 0.2950             | 10.7551 | 179621  | 58.846                | 0.278                          | 0.705715     | 0.241                 | 0.102        |
| F103003.039 | 31030 | 131730 | 230.5378 | 71.7116 | 0.7193                       | 90    | 4110           | 46.56026      | 0.2950             | 10.758  | 179538  | 58.851                | 0.278                          | 0.705476     | 0.241                 | 0.13         |
| F103003.040 | 31030 | 131940 | 230.4851 | 71.7458 | 0.7190                       | 90    | 4110           | 46.55877      | 0.2950             | 10.7577 | 179474  | 58.851                | 0.278                          | 0.705259     | 0.241                 | 0.126        |
| F103003.041 | 31030 | 132138 | 230.4471 | 71.8106 | 0.7188                       | 90    | 4109           | 46.54633      | 0.2950             | 10.7548 | 179410  | 58.853                | 0.278                          | 0.705074     | 0.241                 | 0.1          |

**8-inch Invensys Turbine Meter Serial No. 12291706 – Low Pressure Loop Natural Gas Test**  
**Test Pressure = 190 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K<br>(pulses/cf) | U <sub>K</sub> (%) | St      | ReD     | Q <sub>v</sub> (acfm) | UQ <sub>v</sub> (%) | mdot<br>(lbm/s) | U <sub>mdot</sub> (%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|------------------------------|-------|----------------|------------------|--------------------|---------|---------|-----------------------|---------------------|-----------------|-----------------------|--------------|
| F102203.000 | 31022 | 53712  | 195.3835 | 69.4817 | 0.6099                       | 90    | 3523.00        | 3.2532           | 0.1750             | 0.75168 | 1875413 | 721.952               | 0.143               | 7.3389          | 0.094                 | 0.343        |
| F102203.001 | 31022 | 53941  | 195.2786 | 69.6863 | 0.6093                       | 90    | 3525.00        | 3.2537           | 0.1750             | 0.75179 | 1873818 | 722.253               | 0.143               | 7.3349          | 0.094                 | 0.358        |
| F102203.002 | 31022 | 54221  | 195.2099 | 69.8443 | 0.6089                       | 90    | 3526.00        | 3.2540           | 0.1750             | 0.75186 | 1872441 | 722.394               | 0.143               | 7.3312          | 0.094                 | 0.367        |
| F102203.003 | 31022 | 54437  | 195.1796 | 69.9917 | 0.6086                       | 90    | 3527.00        | 3.2543           | 0.1750             | 0.75192 | 1871533 | 722.542               | 0.143               | 7.3294          | 0.094                 | 0.375        |
| F102203.004 | 31022 | 54653  | 195.1117 | 70.0620 | 0.6083                       | 90    | 3527.00        | 3.2540           | 0.1750             | 0.75187 | 1870517 | 722.588               | 0.143               | 7.3261          | 0.094                 | 0.368        |
| F102203.005 | 31022 | 54909  | 195.0399 | 70.1121 | 0.6080                       | 90    | 3527.00        | 3.2539           | 0.1750             | 0.75183 | 1869573 | 722.628               | 0.143               | 7.3229          | 0.094                 | 0.363        |
| F102203.006 | 31022 | 55712  | 193.2944 | 70.2529 | 0.6023                       | 90    | 2853.00        | 3.2554           | 0.1870             | 0.75218 | 1497197 | 584.264               | 0.156               | 5.8646          | 0.114                 | 0.41         |
| F102203.007 | 31022 | 55928  | 193.1006 | 70.1026 | 0.6018                       | 90    | 2852.00        | 3.2534           | 0.1870             | 0.75171 | 1496917 | 584.424               | 0.156               | 5.8620          | 0.113                 | 0.347        |
| F102203.008 | 31022 | 60144  | 192.9364 | 69.9924 | 0.6014                       | 90    | 2853.00        | 3.2542           | 0.1870             | 0.7519  | 1496377 | 584.479               | 0.156               | 5.8587          | 0.114                 | 0.373        |
| F102203.009 | 31022 | 60400  | 192.7721 | 69.8950 | 0.6010                       | 90    | 2852.00        | 3.2528           | 0.1870             | 0.75159 | 1495717 | 584.514               | 0.156               | 5.8552          | 0.113                 | 0.331        |
| F102203.010 | 31022 | 60616  | 192.6381 | 69.8106 | 0.6007                       | 90    | 2854.00        | 3.2551           | 0.1880             | 0.75211 | 1495144 | 584.519               | 0.156               | 5.8520          | 0.113                 | 0.401        |
| F102203.011 | 31022 | 60833  | 192.5154 | 69.7720 | 0.6004                       | 90    | 2852.00        | 3.2525           | 0.1870             | 0.75152 | 1494531 | 584.572               | 0.156               | 5.8492          | 0.113                 | 0.321        |
| F102203.012 | 31022 | 61323  | 191.8198 | 69.7321 | 0.5982                       | 90    | 1929.00        | 3.2515           | 0.2150             | 0.75128 | 1007640 | 395.510               | 0.185               | 3.9431          | 0.151                 | 0.29         |
| F102203.013 | 31022 | 61538  | 191.6394 | 69.6238 | 0.5977                       | 90    | 1930.00        | 3.2533           | 0.2150             | 0.7517  | 1007047 | 395.495               | 0.185               | 3.9400          | 0.151                 | 0.346        |
| F102203.014 | 31022 | 61818  | 191.5077 | 69.6540 | 0.5973                       | 90    | 1929.00        | 3.2512           | 0.2150             | 0.75121 | 1006366 | 395.545               | 0.185               | 3.9375          | 0.151                 | 0.281        |
| F102203.015 | 31022 | 62034  | 191.4014 | 69.6184 | 0.5970                       | 90    | 1930.00        | 3.2527           | 0.2150             | 0.75156 | 1005984 | 395.567               | 0.185               | 3.9358          | 0.151                 | 0.327        |
| F102203.016 | 31022 | 62250  | 191.2969 | 69.6253 | 0.5966                       | 90    | 1930.00        | 3.2524           | 0.2150             | 0.75149 | 1005501 | 395.605               | 0.185               | 3.9339          | 0.151                 | 0.318        |
| F102203.017 | 31022 | 62506  | 191.2120 | 69.6401 | 0.5963                       | 90    | 1930.00        | 3.2522           | 0.2160             | 0.75143 | 1005075 | 395.635               | 0.185               | 3.9323          | 0.151                 | 0.31         |
| F102203.018 | 31022 | 64643  | 188.8974 | 69.5024 | 0.5891                       | 90    | 967.00         | 3.2505           | 0.2380             | 0.75105 | 497943  | 198.327               | 0.191               | 1.9473          | 0.158                 | 0.26         |
| F102203.019 | 31022 | 64859  | 188.7581 | 69.4280 | 0.5887                       | 90    | 967.00         | 3.2508           | 0.2380             | 0.75112 | 497665  | 198.310               | 0.191               | 1.9459          | 0.158                 | 0.268        |
| F102203.020 | 31022 | 65115  | 188.6057 | 69.3431 | 0.5884                       | 90    | 967.00         | 3.2509           | 0.2380             | 0.75115 | 497395  | 198.302               | 0.191               | 1.9446          | 0.158                 | 0.272        |
| F102203.021 | 31022 | 65331  | 188.4675 | 69.3284 | 0.5879                       | 90    | 967.00         | 3.2508           | 0.2380             | 0.75111 | 497079  | 198.312               | 0.191               | 1.9433          | 0.158                 | 0.267        |
| F102203.022 | 31022 | 65548  | 188.3306 | 69.3099 | 0.5875                       | 90    | 967.00         | 3.2506           | 0.2380             | 0.75106 | 496780  | 198.324               | 0.191               | 1.9420          | 0.157                 | 0.261        |
| F102203.023 | 31022 | 65804  | 188.1915 | 69.2540 | 0.5871                       | 90    | 967.00         | 3.2506           | 0.2380             | 0.75108 | 496500  | 198.320               | 0.191               | 1.9407          | 0.158                 | 0.263        |
| F102203.091 | 31022 | 130923 | 188.6040 | 69.0582 | 0.5880                       | 90    | 484.00         | 3.2473           | 0.303              | 0.75031 | 249620  | 99.365                | 0.199               | 0.9738          | 0.168                 | 0.16         |
| F102203.092 | 31022 | 131150 | 188.6695 | 69.6295 | 0.5875                       | 90    | 485.00         | 3.2498           | 0.303              | 0.75089 | 249509  | 99.494                | 0.199               | 0.9743          | 0.168                 | 0.237        |
| F102203.093 | 31022 | 131406 | 188.7104 | 69.9455 | 0.5873                       | 90    | 485.00         | 3.2476           | 0.303              | 0.75039 | 249441  | 99.560                | 0.199               | 0.9745          | 0.168                 | 0.171        |
| F102203.094 | 31022 | 131622 | 188.7543 | 70.1719 | 0.5871                       | 90    | 485.00         | 3.2463           | 0.303              | 0.75008 | 249389  | 99.600                | 0.199               | 0.9747          | 0.168                 | 0.13         |
| F102203.096 | 31022 | 132118 | 188.7759 | 71.3079 | 0.5858                       | 90    | 485.00         | 3.2392           | 0.303              | 0.74843 | 248935  | 99.820                | 0.199               | 0.9746          | 0.168                 | -0.09        |
| F102203.097 | 31022 | 132934 | 188.7398 | 71.4248 | 0.5856                       | 90    | 487.00         | 3.2527           | 0.302              | 0.75156 | 248770  | 99.815                | 0.199               | 0.9741          | 0.168                 | 0.327        |
| F102203.098 | 31022 | 133150 | 188.7049 | 71.4038 | 0.5855                       | 90    | 486.00         | 3.2464           | 0.303              | 0.7501  | 248714  | 99.803                | 0.199               | 0.9739          | 0.168                 | 0.132        |
| F102203.099 | 31022 | 133406 | 188.6325 | 71.2609 | 0.5854                       | 90    | 485.00         | 3.2408           | 0.303              | 0.74881 | 248661  | 99.769                | 0.199               | 0.9734          | 0.168                 | -0.039       |
| F102203.100 | 31022 | 133622 | 188.5146 | 70.8396 | 0.5856                       | 90    | 485.00         | 3.2437           | 0.303              | 0.74947 | 248667  | 99.681                | 0.199               | 0.9728          | 0.168                 | 0.048        |
| F102203.101 | 31022 | 133838 | 188.4253 | 70.5604 | 0.5856                       | 90    | 485.00         | 3.2456           | 0.303              | 0.74992 | 248653  | 99.622                | 0.199               | 0.9723          | 0.168                 | 0.108        |
| F102203.102 | 31022 | 134054 | 188.4203 | 71.0040 | 0.5851                       | 90    | 486.00         | 3.2493           | 0.303              | 0.75078 | 248472  | 99.713                | 0.199               | 0.9723          | 0.168                 | 0.223        |

**8-inch Invensys Turbine Meter Serial No. 12291706 – Low Pressure Loop Natural Gas Test**  
**Test Pressure = 115 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K<br>(pulses/cf) | U <sub>k</sub> (%) | St      | ReD     | Q <sub>v</sub> (acfm) | UQ <sub>v</sub> (%) | mdot<br>(lbm/s) | U <sub>mdot</sub> (%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|------------------------------|-------|----------------|------------------|--------------------|---------|---------|-----------------------|---------------------|-----------------|-----------------------|--------------|
| F102203.030 | 31022 | 75845  | 119.7677 | 69.9414 | 0.3695                       | 90    | 3535.00        | 3.2501           | 0.1740             | 0.75095 | 1149019 | 725.112               | 0.144               | 4.4660          | 0.094                 | 0.246        |
| F102203.031 | 31022 | 80101  | 119.6220 | 69.3064 | 0.3696                       | 90    | 3532.00        | 3.2496           | 0.1750             | 0.75085 | 1149422 | 724.593               | 0.144               | 4.4630          | 0.094                 | 0.233        |
| F102203.032 | 31022 | 80352  | 119.4756 | 68.9499 | 0.3694                       | 90    | 3533.00        | 3.2510           | 0.1740             | 0.75116 | 1149343 | 724.502               | 0.144               | 4.4601          | 0.094                 | 0.274        |
| F102203.033 | 31022 | 80608  | 119.3712 | 68.6858 | 0.3692                       | 90    | 3532.00        | 3.2504           | 0.1750             | 0.75103 | 1149305 | 724.416               | 0.144               | 4.4580          | 0.094                 | 0.257        |
| F102203.034 | 31022 | 80840  | 119.3918 | 69.8581 | 0.3684                       | 90    | 3541.00        | 3.2507           | 0.1750             | 0.7511  | 1147464 | 726.199               | 0.144               | 4.4592          | 0.094                 | 0.266        |
| F102203.035 | 31022 | 81102  | 119.4408 | 70.7048 | 0.3680                       | 90    | 3548.00        | 3.2522           | 0.1740             | 0.75145 | 1146179 | 727.294               | 0.144               | 4.4603          | 0.094                 | 0.313        |
| F102203.036 | 31022 | 81612  | 118.6266 | 69.7947 | 0.3661                       | 90    | 2863.00        | 3.2497           | 0.1870             | 0.75086 | 922292  | 587.336               | 0.157               | 3.5835          | 0.114                 | 0.235        |
| F102203.037 | 31022 | 81840  | 118.5723 | 69.6168 | 0.3660                       | 90    | 2862.00        | 3.2492           | 0.1870             | 0.75075 | 922278  | 587.22                | 0.157               | 3.5824          | 0.114                 | 0.219        |
| F102203.038 | 31022 | 82056  | 118.4858 | 69.1350 | 0.3661                       | 90    | 2861.00        | 3.2507           | 0.1870             | 0.7511  | 922469  | 586.743               | 0.157               | 3.5804          | 0.114                 | 0.266        |
| F102203.039 | 31022 | 82313  | 118.3403 | 68.5605 | 0.3661                       | 90    | 2858.00        | 3.2501           | 0.1870             | 0.75095 | 922464  | 586.247               | 0.157               | 3.5770          | 0.114                 | 0.245        |
| F102203.040 | 31022 | 82529  | 118.2311 | 68.1091 | 0.3661                       | 90    | 2856.00        | 3.2498           | 0.1870             | 0.75088 | 922560  | 585.886               | 0.157               | 3.5747          | 0.114                 | 0.237        |
| F102203.041 | 31022 | 82746  | 118.1269 | 67.8085 | 0.3660                       | 90    | 2856.00        | 3.2507           | 0.1870             | 0.7511  | 922480  | 585.717               | 0.157               | 3.5727          | 0.114                 | 0.266        |
| F102203.042 | 31022 | 83437  | 116.9764 | 67.7366 | 0.3624                       | 90    | 1933.00        | 3.2498           | 0.2150             | 0.75088 | 618594  | 396.541               | 0.186               | 2.3952          | 0.151                 | 0.236        |
| F102203.043 | 31022 | 83654  | 117.0287 | 68.7956 | 0.3618                       | 90    | 1939.00        | 3.2529           | 0.2160             | 0.75161 | 617814  | 397.384               | 0.186               | 2.3963          | 0.151                 | 0.334        |
| F102203.044 | 31022 | 83910  | 117.1252 | 70.0515 | 0.3612                       | 90    | 1942.00        | 3.2505           | 0.2150             | 0.75104 | 616953  | 398.303               | 0.186               | 2.3978          | 0.151                 | 0.258        |
| F102203.045 | 31022 | 84127  | 117.2148 | 70.8818 | 0.3609                       | 90    | 1945.00        | 3.2512           | 0.2150             | 0.75121 | 616393  | 398.826               | 0.186               | 2.3988          | 0.151                 | 0.281        |
| F102203.046 | 31022 | 84406  | 117.2282 | 70.7993 | 0.3610                       | 90    | 1942.00        | 3.2481           | 0.2150             | 0.75049 | 616283  | 398.592               | 0.186               | 2.3981          | 0.151                 | 0.185        |
| F102203.047 | 31022 | 84622  | 117.1791 | 70.2374 | 0.3612                       | 90    | 1940.00        | 3.2491           | 0.2150             | 0.75073 | 616440  | 398.055               | 0.186               | 2.3965          | 0.151                 | 0.217        |
| F102203.048 | 31022 | 92226  | 115.9832 | 67.1931 | 0.3597                       | 90    | 964.00         | 3.2440           | 0.2380             | 0.74954 | 307020  | 198.112               | 0.192               | 1.1876          | 0.158                 | 0.057        |
| F102203.049 | 31022 | 92442  | 115.9173 | 67.3004 | 0.3594                       | 90    | 965.00         | 3.2459           | 0.2380             | 0.74998 | 306862  | 198.201               | 0.192               | 1.1872          | 0.158                 | 0.116        |
| F102203.050 | 31022 | 92659  | 115.8936 | 67.6517 | 0.3591                       | 90    | 966.00         | 3.2465           | 0.2380             | 0.75011 | 306671  | 198.371               | 0.192               | 1.1872          | 0.158                 | 0.134        |
| F102203.051 | 31022 | 92915  | 115.8863 | 67.9602 | 0.3588                       | 90    | 967.00         | 3.2474           | 0.2370             | 0.75033 | 306539  | 198.519               | 0.192               | 1.1872          | 0.158                 | 0.163        |
| F102203.052 | 31022 | 93143  | 115.9891 | 69.3218 | 0.3582                       | 90    | 970.00         | 3.2483           | 0.2370             | 0.75053 | 306169  | 199.08                | 0.192               | 1.1884          | 0.158                 | 0.191        |
| F102203.053 | 31022 | 93427  | 116.0956 | 70.5535 | 0.3576                       | 90    | 972.00         | 3.2471           | 0.2370             | 0.75027 | 305831  | 199.561               | 0.192               | 1.1895          | 0.158                 | 0.155        |
| F102203.054 | 31022 | 95506  | 115.5259 | 68.7787 | 0.3571                       | 90    | 487.00         | 3.2388           | 0.3020             | 0.74835 | 153846  | 100.242               | 0.2                 | 0.5966          | 0.168                 | -0.101       |
| F102203.055 | 31022 | 95722  | 115.4987 | 68.8756 | 0.3570                       | 90    | 487.00         | 3.2383           | 0.3020             | 0.74824 | 153779  | 100.257               | 0.2                 | 0.5965          | 0.168                 | -0.116       |
| F102203.056 | 31022 | 95938  | 115.5737 | 69.6911 | 0.3566                       | 90    | 488.00         | 3.2399           | 0.3020             | 0.74859 | 153670  | 100.415               | 0.2                 | 0.5968          | 0.169                 | -0.069       |
| F102203.057 | 31022 | 100155 | 115.6431 | 70.4585 | 0.3563                       | 90    | 489.00         | 3.2418           | 0.3020             | 0.74904 | 153561  | 100.562               | 0.2                 | 0.5971          | 0.169                 | -0.01        |
| F102203.058 | 31022 | 100411 | 115.7139 | 71.2026 | 0.3560                       | 90    | 489.00         | 3.2373           | 0.3020             | 0.74799 | 153460  | 100.703               | 0.2                 | 0.5975          | 0.169                 | -0.15        |
| F102203.059 | 31022 | 100628 | 115.7616 | 71.7272 | 0.3557                       | 90    | 490.00         | 3.2410           | 0.3010             | 0.74885 | 153370  | 100.792               | 0.2                 | 0.5976          | 0.169                 | -0.034       |

**8-inch Invensys Turbine Meter Serial No. 12291706 – Low Pressure Loop Natural Gas Test**  
**Test Pressure = 45 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K<br>(pulses/cf) | U <sub>K</sub> (%) | St      | ReD    | Q <sub>v</sub> (acfm) | UQ <sub>v</sub> (%) | mdot<br>(lbm/s) | U <sub>mdot</sub> (%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|------------------------------|-------|----------------|------------------|--------------------|---------|--------|-----------------------|---------------------|-----------------|-----------------------|--------------|
| F102203.060 | 31022 | 102820 | 47.1781  | 74.1486 | 0.1429                       | 90    | 3568.00        | 3.2477           | 0.1800             | 0.75041 | 448449 | 732.408               | 0.151               | 1.7449          | 0.098                 | 0.174        |
| F102203.061 | 31022 | 103036 | 47.1688  | 73.7529 | 0.1430                       | 90    | 3565.00        | 3.2483           | 0.1800             | 0.75053 | 448548 | 731.675               | 0.151               | 1.7442          | 0.097                 | 0.19         |
| F102203.062 | 31022 | 103252 | 47.1498  | 73.3647 | 0.1431                       | 90    | 3563.00        | 3.2492           | 0.1800             | 0.75075 | 448601 | 731.053               | 0.151               | 1.7433          | 0.098                 | 0.219        |
| F102203.063 | 31022 | 103508 | 47.1150  | 72.7219 | 0.1432                       | 90    | 3556.00        | 3.2471           | 0.1800             | 0.75027 | 448722 | 730.085               | 0.151               | 1.7419          | 0.098                 | 0.155        |
| F102203.064 | 31022 | 103724 | 47.0698  | 71.7310 | 0.1433                       | 90    | 3549.00        | 3.2467           | 0.1800             | 0.75018 | 449034 | 728.731               | 0.151               | 1.7403          | 0.098                 | 0.143        |
| F102203.065 | 31022 | 103940 | 47.0189  | 70.7184 | 0.1434                       | 90    | 3543.00        | 3.2472           | 0.1800             | 0.75029 | 449349 | 727.393               | 0.151               | 1.7387          | 0.098                 | 0.158        |
| F102203.066 | 31022 | 104713 | 47.0978  | 69.7306 | 0.1439                       | 90    | 2864.00        | 3.2473           | 0.1930             | 0.75032 | 365120 | 587.971               | 0.165               | 1.4105          | 0.118                 | 0.161        |
| F102203.067 | 31022 | 104929 | 47.0942  | 70.3141 | 0.1438                       | 90    | 2867.00        | 3.2467           | 0.1930             | 0.75017 | 364795 | 588.697               | 0.165               | 1.4106          | 0.118                 | 0.142        |
| F102203.068 | 31022 | 105213 | 47.0906  | 70.9786 | 0.1436                       | 90    | 2871.00        | 3.2470           | 0.1930             | 0.75025 | 364377 | 589.459               | 0.165               | 1.4105          | 0.118                 | 0.152        |
| F102203.069 | 31022 | 105429 | 47.0827  | 71.3528 | 0.1434                       | 90    | 2872.00        | 3.2459           | 0.1930             | 0.74998 | 364101 | 589.876               | 0.165               | 1.4103          | 0.118                 | 0.117        |
| F102203.070 | 31022 | 105645 | 47.0598  | 71.1335 | 0.1434                       | 90    | 2871.00        | 3.2462           | 0.1930             | 0.75005 | 364049 | 589.62                | 0.165               | 1.4096          | 0.118                 | 0.125        |
| F102203.071 | 31022 | 105901 | 47.0227  | 70.5367 | 0.1435                       | 90    | 2868.00        | 3.2465           | 0.1930             | 0.75012 | 364116 | 588.946               | 0.165               | 1.4085          | 0.118                 | 0.135        |
| F102203.072 | 31022 | 110243 | 46.4393  | 70.5010 | 0.1417                       | 90    | 1939.00        | 3.2432           | 0.2220             | 0.74935 | 243390 | 398.581               | 0.194               | 0.9414          | 0.156                 | 0.033        |
| F102203.073 | 31022 | 110459 | 46.4021  | 70.1295 | 0.1417                       | 90    | 1939.00        | 3.2456           | 0.2220             | 0.74991 | 243343 | 398.286               | 0.195               | 0.9406          | 0.157                 | 0.107        |
| F102203.074 | 31022 | 110715 | 46.3921  | 70.6439 | 0.1415                       | 90    | 1940.00        | 3.2442           | 0.2220             | 0.74959 | 243073 | 398.66                | 0.195               | 0.9404          | 0.157                 | 0.065        |
| F102203.075 | 31022 | 110930 | 46.3798  | 70.9248 | 0.1414                       | 90    | 1942.00        | 3.2460           | 0.2220             | 0.75001 | 242890 | 398.851               | 0.195               | 0.9401          | 0.157                 | 0.12         |
| F102203.076 | 31022 | 111146 | 46.3676  | 71.2164 | 0.1413                       | 90    | 1943.00        | 3.2465           | 0.2220             | 0.75011 | 242665 | 398.999               | 0.194               | 0.9397          | 0.157                 | 0.134        |
| F102203.077 | 31022 | 111402 | 46.3607  | 71.4630 | 0.1412                       | 90    | 1944.00        | 3.2468           | 0.2220             | 0.75019 | 242517 | 399.164               | 0.194               | 0.9395          | 0.156                 | 0.145        |
| F102203.078 | 31022 | 114122 | 46.0409  | 71.9020 | 0.1401                       | 90    | 973.00         | 3.2426           | 0.2440             | 0.74922 | 120517 | 200.047               | 0.2                 | 0.4672          | 0.163                 | 0.015        |
| F102203.079 | 31022 | 114358 | 46.0303  | 72.2135 | 0.1400                       | 90    | 973.00         | 3.2410           | 0.2440             | 0.74885 | 120415 | 200.145               | 0.2                 | 0.4670          | 0.163                 | -0.034       |
| F102203.081 | 31022 | 114843 | 45.9700  | 71.9066 | 0.1399                       | 90    | 972.00         | 3.2403           | 0.2440             | 0.74868 | 120292 | 199.984               | 0.2                 | 0.4663          | 0.163                 | -0.057       |
| F102203.082 | 31022 | 115058 | 45.9312  | 71.4908 | 0.1399                       | 90    | 971.00         | 3.2398           | 0.2440             | 0.74859 | 120261 | 199.804               | 0.2                 | 0.4659          | 0.163                 | -0.07        |
| F102203.083 | 31022 | 115342 | 45.8863  | 70.9465 | 0.1399                       | 90    | 971.00         | 3.2436           | 0.2440             | 0.74945 | 120237 | 199.573               | 0.2                 | 0.4654          | 0.163                 | 0.046        |
| F102203.084 | 31022 | 115558 | 45.8531  | 70.6973 | 0.1399                       | 90    | 970.00         | 3.2420           | 0.2440             | 0.74909 | 120190 | 199.463               | 0.2                 | 0.4650          | 0.163                 | -0.002       |
| F102203.085 | 31022 | 121314 | 45.5746  | 72.5742 | 0.1385                       | 90    | 490.00         | 3.2383           | 0.3070             | 0.74822 | 60014  | 100.877               | 0.208               | 0.2329          | 0.173                 | -0.118       |
| F102203.086 | 31022 | 121530 | 45.5370  | 72.2180 | 0.1385                       | 90    | 489.00         | 3.2341           | 0.3070             | 0.74726 | 59995  | 100.801               | 0.208               | 0.2327          | 0.173                 | -0.247       |
| F102203.087 | 31022 | 121745 | 45.5055  | 72.0220 | 0.1385                       | 90    | 490.00         | 3.2422           | 0.3060             | 0.74913 | 59967  | 100.755               | 0.208               | 0.2325          | 0.173                 | 0.002        |
| F102203.088 | 31022 | 122001 | 45.4918  | 72.0818 | 0.1384                       | 90    | 489.00         | 3.2355           | 0.3070             | 0.74757 | 59939  | 100.759               | 0.208               | 0.2324          | 0.173                 | -0.205       |
| F102203.089 | 31022 | 122217 | 45.4845  | 72.4182 | 0.1383                       | 90    | 490.00         | 3.2403           | 0.3070             | 0.74869 | 59890  | 100.814               | 0.208               | 0.2323          | 0.173                 | -0.055       |
| F102203.090 | 31022 | 122433 | 45.4803  | 72.7260 | 0.1382                       | 90    | 489.00         | 3.2321           | 0.307              | 0.74679 | 59849  | 100.864               | 0.208               | 0.2323          | 0.173                 | -0.309       |

**8-inch Invensys Turbine Meter Serial No. 12291706 – Low Pressure Loop Carbon Dioxide Test**  
**Test Pressure = 115 psia**

| File        | Date  | Time  | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K (pulses/cf) | U <sub>K</sub> (%) | St      | ReD     | Q <sub>V</sub> (acfm) | U <sub>Q<sub>V</sub></sub> (%) | mdot<br>(lbm/s) | U <sub>mdot</sub> (%) | Error<br>(%) |
|-------------|-------|-------|----------|---------|------------------------------|-------|----------------|---------------|--------------------|---------|---------|-----------------------|--------------------------------|-----------------|-----------------------|--------------|
| F112003.000 | 31120 | 64831 | 119.3973 | 69.5355 | 0.9689                       | 90    | 2187.00        | 3.25693       | 0.1530             | 0.75253 | 1380679 | 447.661               | 0.144                          | 7.2288          | 0.095                 | 0.457        |
| F112003.000 | 31120 | 64831 | 119.3973 | 69.5355 | 0.9685                       | 90    | 2187.00        | 3.25614       | 0.1540             | 0.75235 | 1380311 | 447.769               | 0.144                          | 7.2274          | 0.095                 | 0.433        |
| F112003.001 | 31120 | 65112 | 119.3166 | 69.3199 | 0.9682                       | 90    | 2186.00        | 3.25597       | 0.1540             | 0.75231 | 1379917 | 447.588               | 0.144                          | 7.2228          | 0.095                 | 0.428        |
| F112003.002 | 31120 | 65328 | 119.2665 | 69.3665 | 0.9677                       | 90    | 2186.00        | 3.25559       | 0.1540             | 0.75223 | 1379228 | 447.640               | 0.144                          | 7.2197          | 0.094                 | 0.416        |
| F112003.003 | 31120 | 65544 | 119.2318 | 69.5409 | 0.9670                       | 90    | 2187.00        | 3.25583       | 0.1540             | 0.75228 | 1378422 | 447.812               | 0.144                          | 7.2175          | 0.095                 | 0.423        |
| F112003.004 | 31120 | 65800 | 119.1943 | 69.6203 | 0.9665                       | 90    | 2189.00        | 3.25849       | 0.1540             | 0.75289 | 1377686 | 447.856               | 0.144                          | 7.2146          | 0.094                 | 0.505        |
| F112003.005 | 31120 | 70016 | 119.1438 | 69.5363 | 0.9663                       | 90    | 2186.00        | 3.25482       | 0.1540             | 0.75205 | 1377184 | 447.747               | 0.144                          | 7.2109          | 0.095                 | 0.392        |
| F112003.006 | 31120 | 70555 | 117.5492 | 68.2719 | 0.9554                       | 90    | 1629.00        | 3.25585       | 0.1730             | 0.75229 | 1016547 | 333.553               | 0.158                          | 5.3113          | 0.115                 | 0.424        |
| F112003.007 | 31120 | 70811 | 117.4072 | 67.9253 | 0.9549                       | 90    | 1628.00        | 3.25501       | 0.1720             | 0.75209 | 1016258 | 333.435               | 0.158                          | 5.3067          | 0.115                 | 0.398        |
| F112003.008 | 31120 | 71028 | 117.2683 | 67.9126 | 0.9538                       | 90    | 1629.00        | 3.25564       | 0.1720             | 0.75224 | 1015479 | 333.575               | 0.158                          | 5.3025          | 0.115                 | 0.418        |
| F112003.009 | 31120 | 71244 | 117.1640 | 67.8935 | 0.9529                       | 90    | 1630.00        | 3.25645       | 0.1720             | 0.75242 | 1014983 | 333.696               | 0.158                          | 5.2997          | 0.115                 | 0.443        |
| F112003.010 | 31120 | 71500 | 117.0775 | 67.9774 | 0.9520                       | 90    | 1631.00        | 3.25667       | 0.1720             | 0.75247 | 1014431 | 333.879               | 0.158                          | 5.2975          | 0.115                 | 0.449        |
| F112003.011 | 31120 | 71716 | 116.9999 | 67.9937 | 0.9513                       | 90    | 1631.00        | 3.25565       | 0.1720             | 0.75224 | 1013983 | 333.983               | 0.158                          | 5.2953          | 0.115                 | 0.418        |
| F112003.012 | 31120 | 72425 | 116.6785 | 68.5045 | 0.9475                       | 90    | 1198.00        | 3.2559        | 0.2070             | 0.7523  | 741151  | 245.299               | 0.186                          | 3.8737          | 0.152                 | 0.426        |
| F112003.013 | 31120 | 72641 | 116.5781 | 68.3371 | 0.9470                       | 90    | 1198.00        | 3.2566        | 0.2070             | 0.75246 | 740801  | 245.245               | 0.186                          | 3.8708          | 0.152                 | 0.447        |
| F112003.014 | 31120 | 72857 | 116.5019 | 68.2247 | 0.9466                       | 90    | 1198.00        | 3.25702       | 0.2070             | 0.75255 | 740522  | 245.214               | 0.186                          | 3.8686          | 0.152                 | 0.46         |
| F112003.015 | 31120 | 73113 | 116.4208 | 68.0395 | 0.9463                       | 90    | 1199.00        | 3.26066       | 0.2060             | 0.7534  | 740299  | 245.144               | 0.186                          | 3.8662          | 0.152                 | 0.573        |
| F112003.016 | 31120 | 73330 | 116.3307 | 67.9198 | 0.9458                       | 90    | 1197.00        | 3.25542       | 0.2060             | 0.75219 | 739996  | 245.129               | 0.186                          | 3.8639          | 0.152                 | 0.411        |
| F112003.017 | 31120 | 73557 | 116.2606 | 67.8522 | 0.9453                       | 90    | 1197.00        | 3.25572       | 0.2060             | 0.75226 | 739655  | 245.107               | 0.186                          | 3.8616          | 0.152                 | 0.42         |
| F112003.018 | 31120 | 80243 | 115.6800 | 68.4964 | 0.9390                       | 90    | 752.00         | 3.25321       | 0.2180             | 0.75167 | 461480  | 154.104               | 0.17                           | 2.4118          | 0.13                  | 0.343        |
| F112003.019 | 31120 | 80459 | 115.6268 | 68.3915 | 0.9388                       | 90    | 752.00         | 3.25406       | 0.2180             | 0.75187 | 461324  | 154.064               | 0.17                           | 2.4106          | 0.13                  | 0.369        |
| F112003.020 | 31120 | 80715 | 115.5870 | 68.4101 | 0.9384                       | 90    | 752.00         | 3.25383       | 0.2180             | 0.75182 | 461158  | 154.075               | 0.17                           | 2.4098          | 0.13                  | 0.362        |
| F112003.021 | 31120 | 80932 | 115.5566 | 68.4600 | 0.9380                       | 90    | 752.00         | 3.25363       | 0.2180             | 0.75177 | 460973  | 154.085               | 0.17                           | 2.4090          | 0.13                  | 0.356        |
| F112003.022 | 31120 | 81159 | 115.5414 | 68.5887 | 0.9377                       | 90    | 753.00         | 3.25731       | 0.2170             | 0.75262 | 460773  | 154.115               | 0.17                           | 2.4084          | 0.13                  | 0.469        |
| F112003.023 | 31120 | 81416 | 115.5102 | 68.5944 | 0.9374                       | 90    | 753.00         | 3.25756       | 0.2180             | 0.75268 | 460599  | 154.103               | 0.17                           | 2.4075          | 0.13                  | 0.477        |

**8-inch Invensys Turbine Meter Serial No. 12291706 – Low Pressure Loop Carbon Dioxide Test**  
**Test Pressure = 90 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K (pulses/cf) | U <sub>k</sub> (%) | St      | ReD     | Q <sub>v</sub> (acfm) | UQ <sub>v</sub> (%) | mdot<br>(lbm/s) | U <sub>mdot</sub> (%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|------------------------------|-------|----------------|---------------|--------------------|---------|---------|-----------------------|---------------------|-----------------|-----------------------|--------------|
| F112003.039 | 31120 | 100736 | 93.7816  | 69.5464 | 0.7529                       | 90    | 2198.00        | 3.25523       | 0.1540             | 0.75214 | 1080038 | 450.147               | 0.145               | 5.6484          | 0.095                 | 0.405        |
| F112003.040 | 31120 | 100952 | 93.8167  | 69.7327 | 0.7529                       | 90    | 2198.00        | 3.25523       | 0.1540             | 0.75214 | 1079696 | 450.148               | 0.145               | 5.6484          | 0.095                 | 0.405        |
| F112003.041 | 31120 | 101208 | 93.8450  | 69.8601 | 0.7529                       | 90    | 2197.00        | 3.25405       | 0.1540             | 0.75187 | 1079410 | 450.106               | 0.145               | 5.6481          | 0.095                 | 0.369        |
| F112003.042 | 31120 | 101424 | 93.8651  | 69.9268 | 0.7530                       | 90    | 2197.00        | 3.25452       | 0.1540             | 0.75198 | 1079221 | 450.041               | 0.145               | 5.6477          | 0.095                 | 0.383        |
| F112003.043 | 31120 | 101640 | 93.8779  | 70.0625 | 0.7529                       | 90    | 2198.00        | 3.2558        | 0.1540             | 0.75227 | 1078884 | 450.069               | 0.145               | 5.6472          | 0.095                 | 0.423        |
| F112003.044 | 31120 | 101856 | 93.8824  | 70.0515 | 0.7529                       | 90    | 2197.00        | 3.25516       | 0.1540             | 0.75213 | 1078702 | 449.952               | 0.145               | 5.6462          | 0.095                 | 0.403        |
| F112003.045 | 31120 | 102411 | 92.1232  | 69.6365 | 0.7389                       | 90    | 1640.00        | 3.25605       | 0.1730             | 0.75233 | 790669  | 335.785               | 0.159               | 4.1354          | 0.116                 | 0.43         |
| F112003.046 | 31120 | 102627 | 92.1062  | 69.5860 | 0.7389                       | 90    | 1640.00        | 3.25661       | 0.1730             | 0.75246 | 790535  | 335.728               | 0.159               | 4.1343          | 0.116                 | 0.448        |
| F112003.047 | 31120 | 102855 | 92.0590  | 69.5916 | 0.7385                       | 90    | 1639.00        | 3.25474       | 0.1730             | 0.75203 | 790073  | 335.716               | 0.159               | 4.1319          | 0.116                 | 0.39         |
| F112003.048 | 31120 | 103111 | 92.0360  | 69.6179 | 0.7382                       | 90    | 1639.00        | 3.25484       | 0.1730             | 0.75205 | 789764  | 335.705               | 0.159               | 4.1305          | 0.116                 | 0.393        |
| F112003.049 | 31120 | 103410 | 92.0067  | 69.4660 | 0.7382                       | 90    | 1638.00        | 3.25413       | 0.1730             | 0.75189 | 789650  | 335.574               | 0.159               | 4.1289          | 0.116                 | 0.371        |
| F112003.050 | 31120 | 103648 | 91.9828  | 69.4196 | 0.7381                       | 90    | 1638.00        | 3.25456       | 0.1730             | 0.75199 | 789473  | 335.529               | 0.159               | 4.1276          | 0.116                 | 0.384        |
| F112003.051 | 31120 | 104019 | 91.4837  | 69.5065 | 0.7338                       | 90    | 1201.00        | 3.25392       | 0.2070             | 0.75184 | 575533  | 246.063               | 0.187               | 3.0094          | 0.152                 | 0.364        |
| F112003.052 | 31120 | 104235 | 91.4402  | 69.1780 | 0.7340                       | 90    | 1200.00        | 3.25339       | 0.2070             | 0.75172 | 575579  | 245.897               | 0.187               | 3.0080          | 0.152                 | 0.348        |
| F112003.053 | 31120 | 104451 | 91.4138  | 69.1570 | 0.7338                       | 90    | 1200.00        | 3.25369       | 0.2070             | 0.75178 | 575401  | 245.875               | 0.187               | 3.0070          | 0.152                 | 0.357        |
| F112003.054 | 31120 | 104707 | 91.3922  | 69.1991 | 0.7335                       | 90    | 1201.00        | 3.25615       | 0.2070             | 0.75235 | 575213  | 245.894               | 0.187               | 3.0062          | 0.152                 | 0.433        |
| F112003.055 | 31120 | 104934 | 91.3747  | 69.2969 | 0.7332                       | 90    | 1201.00        | 3.25549       | 0.2070             | 0.7522  | 575003  | 245.944               | 0.187               | 3.0056          | 0.152                 | 0.413        |
| F112003.056 | 31120 | 105218 | 91.3565  | 69.4683 | 0.7328                       | 90    | 1200.00        | 3.25179       | 0.2070             | 0.75135 | 574686  | 246.018               | 0.187               | 3.0048          | 0.152                 | 0.299        |
| F112003.057 | 31120 | 111205 | 90.8178  | 69.5047 | 0.7283                       | 90    | 753.00         | 3.25352       | 0.2180             | 0.75175 | 358182  | 154.295               | 0.17                | 1.8729          | 0.131                 | 0.352        |
| F112003.058 | 31120 | 111421 | 90.8064  | 69.5749 | 0.7281                       | 90    | 753.00         | 3.25315       | 0.2180             | 0.75166 | 358080  | 154.312               | 0.17                | 1.8725          | 0.131                 | 0.341        |
| F112003.059 | 31120 | 111637 | 90.7951  | 69.6489 | 0.7279                       | 90    | 753.00         | 3.25281       | 0.2180             | 0.75158 | 357971  | 154.328               | 0.17                | 1.8722          | 0.131                 | 0.33         |
| F112003.060 | 31120 | 111853 | 90.7603  | 69.6225 | 0.7276                       | 90    | 753.00         | 3.25309       | 0.2180             | 0.75165 | 357835  | 154.315               | 0.17                | 1.8714          | 0.131                 | 0.339        |
| F112003.061 | 31120 | 112109 | 90.7345  | 69.5292 | 0.7276                       | 90    | 752.00         | 3.24947       | 0.2180             | 0.75081 | 357779  | 154.282               | 0.17                | 1.8708          | 0.131                 | 0.227        |
| F112003.062 | 31120 | 112353 | 90.7028  | 69.5837 | 0.7272                       | 90    | 753.00         | 3.25348       | 0.2180             | 0.75174 | 357610  | 154.296               | 0.17                | 1.8701          | 0.131                 | 0.351        |
| F112003.063 | 31120 | 113802 | 90.1721  | 68.4013 | 0.7246                       | 90    | 302.00         | 3.24846       | 0.3890             | 0.75058 | 143420  | 61.978                | 0.202               | 0.7485          | 0.169                 | 0.196        |
| F112003.064 | 31120 | 114018 | 90.1303  | 68.2246 | 0.7245                       | 90    | 302.00         | 3.24955       | 0.3890             | 0.75083 | 143399  | 61.957                | 0.202               | 0.7482          | 0.169                 | 0.23         |
| F112003.065 | 31120 | 114234 | 90.1345  | 68.4130 | 0.7243                       | 90    | 302.00         | 3.2484        | 0.3890             | 0.75056 | 143354  | 61.979                | 0.202               | 0.7482          | 0.169                 | 0.194        |
| F112003.066 | 31120 | 114450 | 90.1359  | 68.6679 | 0.7239                       | 90    | 302.00         | 3.24671       | 0.3890             | 0.75017 | 143293  | 62.012                | 0.202               | 0.7482          | 0.169                 | 0.142        |
| F112003.067 | 31120 | 114706 | 90.1515  | 69.0057 | 0.7235                       | 90    | 303.00         | 3.25521       | 0.3880             | 0.75214 | 143234  | 62.054                | 0.202               | 0.7483          | 0.17                  | 0.404        |
| F112003.068 | 31120 | 114922 | 90.1601  | 69.3258 | 0.7231                       | 90    | 303.00         | 3.25319       | 0.3880             | 0.75167 | 143163  | 62.093                | 0.202               | 0.7483          | 0.169                 | 0.342        |

**8-inch Invensys Turbine Meter Serial No. 12291706 – High Pressure Loop Natural Gas Test**  
**Test Pressure = 230 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K (pulses/cf) | U <sub>K</sub> (%) | St      | ReD     | Q <sub>v</sub> (acfm) | U <sub>Q<sub>v</sub></sub> (%) | mdot (lbm/s) | U <sub>mdot</sub> (%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|------------------------------|-------|----------------|---------------|--------------------|---------|---------|-----------------------|--------------------------------|--------------|-----------------------|--------------|
| F103003.000 | 31030 | 85845  | 230.7929 | 70.5891 | 0.7218                       | 90    | 4790.74        | 3.2361        | 0.3120             | 0.74772 | 3026763 | 986.934               | 0.296                          | 11.8729      | 0.262                 | -0.185       |
| F103003.001 | 31030 | 90120  | 230.7770 | 70.5692 | 0.7218                       | 90    | 4790.59        | 3.2362        | 0.3120             | 0.74775 | 3026557 | 986.863               | 0.296                          | 11.8717      | 0.262                 | -0.181       |
| F103003.002 | 31030 | 90330  | 230.7679 | 70.5600 | 0.7218                       | 90    | 4790.81        | 3.2365        | 0.3120             | 0.74781 | 3026452 | 986.836               | 0.296                          | 11.8711      | 0.262                 | -0.173       |
| F103003.003 | 31030 | 90528  | 230.7606 | 70.5496 | 0.7218                       | 90    | 4790.50        | 3.2364        | 0.3120             | 0.7478  | 3026319 | 986.786               | 0.296                          | 11.8704      | 0.262                 | -0.175       |
| F103003.004 | 31030 | 90727  | 230.7436 | 70.5430 | 0.7217                       | 90    | 4790.18        | 3.2363        | 0.3120             | 0.74776 | 3026095 | 986.765               | 0.296                          | 11.8694      | 0.262                 | -0.179       |
| F103003.005 | 31030 | 90925  | 230.7388 | 70.5302 | 0.7217                       | 90    | 4789.95        | 3.2363        | 0.3120             | 0.74776 | 3026029 | 986.718               | 0.296                          | 11.8689      | 0.262                 | -0.179       |
| F103003.006 | 31030 | 93644  | 231.2932 | 70.3642 | 0.7238                       | 90    | 3946.31        | 3.2421        | 0.2350             | 0.7491  | 2496149 | 811.476               | 0.213                          | 9.7887       | 0.162                 | -0.001       |
| F103003.007 | 31030 | 93905  | 231.3002 | 70.3694 | 0.7238                       | 90    | 3946.30        | 3.2420        | 0.2350             | 0.74909 | 2496219 | 811.490               | 0.213                          | 9.7890       | 0.162                 | -0.003       |
| F103003.008 | 31030 | 94119  | 231.2887 | 70.3685 | 0.7237                       | 90    | 3946.27        | 3.2421        | 0.2350             | 0.7491  | 2496039 | 811.470               | 0.213                          | 9.7883       | 0.162                 | -0.001       |
| F103003.009 | 31030 | 94503  | 231.2444 | 70.3612 | 0.7236                       | 90    | 3946.23        | 3.2420        | 0.2350             | 0.74909 | 2495637 | 811.470               | 0.213                          | 9.7866       | 0.162                 | -0.002       |
| F103003.010 | 31030 | 94707  | 231.2349 | 70.3584 | 0.7236                       | 90    | 3946.10        | 3.2420        | 0.2350             | 0.74909 | 2495532 | 811.453               | 0.213                          | 9.7861       | 0.162                 | -0.003       |
| F103003.011 | 31030 | 94905  | 231.2321 | 70.3677 | 0.7236                       | 90    | 3946.28        | 3.2422        | 0.2350             | 0.74912 | 2495405 | 811.449               | 0.213                          | 9.7857       | 0.162                 | 0.002        |
| F103003.012 | 31030 | 101037 | 230.4272 | 70.2444 | 0.7212                       | 90    | 3112.27        | 3.2481        | 0.2530             | 0.75049 | 1958448 | 638.789               | 0.232                          | 7.6779       | 0.186                 | 0.185        |
| F103003.013 | 31030 | 101235 | 230.4351 | 70.2228 | 0.7212                       | 90    | 3112.04        | 3.2479        | 0.2520             | 0.75046 | 1958623 | 638.774               | 0.232                          | 7.6783       | 0.186                 | 0.18         |
| F103003.014 | 31030 | 101433 | 230.4286 | 70.2011 | 0.7212                       | 90    | 3111.72        | 3.2478        | 0.2520             | 0.75042 | 1958625 | 638.742               | 0.232                          | 7.6781       | 0.186                 | 0.175        |
| F103003.015 | 31030 | 101647 | 230.4104 | 70.2086 | 0.7212                       | 90    | 3111.30        | 3.2472        | 0.2520             | 0.75029 | 1958471 | 638.760               | 0.232                          | 7.6775       | 0.186                 | 0.158        |
| F103003.016 | 31030 | 101906 | 230.4063 | 70.1943 | 0.7212                       | 90    | 3111.50        | 3.2475        | 0.2530             | 0.75036 | 1958477 | 638.740               | 0.232                          | 7.6774       | 0.186                 | 0.168        |
| F103003.017 | 31030 | 102110 | 230.4331 | 70.1868 | 0.7213                       | 90    | 3111.72        | 3.2479        | 0.2520             | 0.75044 | 1958707 | 638.722               | 0.232                          | 7.6782       | 0.186                 | 0.178        |
| F103003.018 | 31030 | 103923 | 230.7385 | 70.1862 | 0.7223                       | 90    | 1981.05        | 3.2512        | 0.2360             | 0.75122 | 1247367 | 406.215               | 0.214                          | 4.8899       | 0.164                 | 0.282        |
| F103003.019 | 31030 | 104122 | 230.7490 | 70.1544 | 0.7223                       | 90    | 1980.76        | 3.2510        | 0.2360             | 0.75116 | 1247487 | 406.188               | 0.214                          | 4.8901       | 0.164                 | 0.274        |
| F103003.020 | 31030 | 104335 | 230.7299 | 70.1175 | 0.7223                       | 90    | 1980.82        | 3.2513        | 0.2360             | 0.75123 | 1247479 | 406.163               | 0.214                          | 4.8898       | 0.164                 | 0.283        |
| F103003.021 | 31030 | 104555 | 230.6859 | 70.0842 | 0.7223                       | 90    | 1980.59        | 3.2511        | 0.2360             | 0.75118 | 1247320 | 406.140               | 0.214                          | 4.8889       | 0.164                 | 0.277        |
| F103003.022 | 31030 | 104759 | 230.6888 | 70.0649 | 0.7223                       | 90    | 1980.81        | 3.2516        | 0.2360             | 0.75129 | 1247386 | 406.124               | 0.214                          | 4.8890       | 0.164                 | 0.292        |
| F103003.023 | 31030 | 105009 | 230.6953 | 70.0462 | 0.7223                       | 90    | 1980.57        | 3.2513        | 0.2360             | 0.75123 | 1247465 | 406.110               | 0.214                          | 4.8892       | 0.164                 | 0.283        |
| F103003.024 | 31030 | 110925 | 231.6587 | 70.1970 | 0.7252                       | 90    | 1127.16        | 3.2512        | 0.3030             | 0.75121 | 712556  | 231.128               | 0.287                          | 2.7937       | 0.251                 | 0.28         |
| F103003.025 | 31030 | 111124 | 231.6928 | 70.1931 | 0.7253                       | 90    | 1127.60        | 3.2527        | 0.3030             | 0.75155 | 712629  | 231.114               | 0.286                          | 2.7940       | 0.251                 | 0.326        |
| F103003.026 | 31030 | 111349 | 231.8523 | 70.1959 | 0.7259                       | 90    | 1127.14        | 3.2515        | 0.3030             | 0.75127 | 713081  | 231.103               | 0.287                          | 2.7958       | 0.251                 | 0.289        |
| F103003.027 | 31030 | 111553 | 231.9153 | 70.1875 | 0.7261                       | 90    | 1127.53        | 3.2528        | 0.3030             | 0.75159 | 713246  | 231.086               | 0.286                          | 2.7964       | 0.251                 | 0.331        |
| F103003.028 | 31030 | 111751 | 231.9079 | 70.1705 | 0.7261                       | 90    | 1126.95        | 3.2514        | 0.3030             | 0.75126 | 713214  | 231.069               | 0.286                          | 2.7962       | 0.251                 | 0.287        |
| F103003.029 | 31030 | 111950 | 230.8364 | 69.9907 | 0.7229                       | 90    | 1126.47        | 3.2499        | 0.3090             | 0.75091 | 710397  | 231.079               | 0.292                          | 2.7841       | 0.255                 | 0.24         |
| F103003.030 | 31030 | 113631 | 230.6621 | 70.4866 | 0.7216                       | 90    | 565.35         | 3.2478        | 0.3020             | 0.75042 | 355835  | 116.047               | 0.285                          | 1.3956       | 0.249                 | 0.176        |
| F103003.031 | 31030 | 113830 | 230.5300 | 70.4798 | 0.7211                       | 90    | 565.49         | 3.2489        | 0.3020             | 0.75067 | 355607  | 116.037               | 0.285                          | 1.3946       | 0.249                 | 0.209        |
| F103003.032 | 31030 | 114039 | 230.4493 | 70.5023 | 0.7208                       | 90    | 565.48         | 3.2489        | 0.3020             | 0.75069 | 355443  | 116.034               | 0.285                          | 1.3940       | 0.249                 | 0.211        |
| F103003.033 | 31030 | 114238 | 230.3974 | 70.4858 | 0.7207                       | 90    | 565.54         | 3.2496        | 0.3020             | 0.75084 | 355352  | 116.024               | 0.285                          | 1.3936       | 0.249                 | 0.231        |
| F103003.034 | 31030 | 114436 | 230.3575 | 70.4593 | 0.7206                       | 90    | 565.55         | 3.2500        | 0.3020             | 0.75093 | 355283  | 116.010               | 0.285                          | 1.3933       | 0.249                 | 0.244        |
| F103003.035 | 31030 | 114635 | 230.3191 | 70.4301 | 0.7205                       | 90    | 565.49         | 3.2500        | 0.3020             | 0.75093 | 355222  | 115.997               | 0.285                          | 1.3930       | 0.249                 | 0.243        |
| F103003.036 | 31030 | 131129 | 230.7200 | 70.8549 | 0.7212                       | 90    | 285.64         | 3.2407        | 0.2950             | 0.74878 | 179974  | 58.761                | 0.278                          | 0.7063       | 0.241                 | -0.043       |
| F103003.037 | 31030 | 131333 | 230.6632 | 70.9653 | 0.7208                       | 90    | 285.74         | 3.2415        | 0.2950             | 0.74897 | 179874  | 58.767                | 0.278                          | 0.7060       | 0.241                 | -0.019       |
| F103003.038 | 31030 | 131532 | 230.6072 | 71.0516 | 0.7205                       | 90    | 285.86         | 3.2427        | 0.2950             | 0.74924 | 179782  | 58.770                | 0.278                          | 0.7057       | 0.241                 | 0.017        |
| F103003.039 | 31030 | 131730 | 230.5560 | 71.1127 | 0.7202                       | 90    | 285.80         | 3.2419        | 0.2950             | 0.74907 | 179704  | 58.771                | 0.278                          | 0.7055       | 0.241                 | -0.005       |
| F103003.040 | 31030 | 131940 | 230.5032 | 71.1685 | 0.7200                       | 90    | 285.91         | 3.2431        | 0.2950             | 0.74933 | 179635  | 58.774                | 0.278                          | 0.7053       | 0.241                 | 0.03         |
| F103003.041 | 31030 | 132138 | 230.4646 | 71.2051 | 0.7198                       | 90    | 285.81         | 3.2419        | 0.2950             | 0.74906 | 179578  | 58.773                | 0.278                          | 0.7051       | 0.241                 | -0.006       |

**12-inch Instronet Turbine Meter Serial No. 69529 – Low Pressure Loop Natural Gas Test**  
**Test Pressure = 115 psia**

| File        | Date  | Time   | P (psia) | T (F)    | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K<br>(pulses/cf) | U <sub>K</sub> (%) | St      | ReD    | Q <sub>v</sub> (acfm) | U <sub>Q<sub>v</sub></sub> (%) | mdot (lbm/s) | U <sub>mdot</sub> (%) | Error (%) |
|-------------|-------|--------|----------|----------|------------------------------|-------|----------------|------------------|--------------------|---------|--------|-----------------------|--------------------------------|--------------|-----------------------|-----------|
| F102403.000 | 31024 | 65050  | 119.0892 | 69.82269 | 0.366799                     | 90    | 19619          | 17.952           | 0.1730             | 13.8822 | 768083 | 728.563               | 0.144                          | 4.453932     | 0.094                 | -0.265    |
| F102403.001 | 31024 | 65316  | 118.8015 | 68.93757 | 0.366548                     | 90    | 19596          | 17.952           | 0.1720             | 13.8821 | 767773 | 727.713               | 0.144                          | 4.445694     | 0.094                 | -0.266    |
| F102403.002 | 31024 | 65532  | 118.5937 | 68.65002 | 0.366111                     | 90    | 19594          | 17.954           | 0.1730             | 13.8839 | 767050 | 727.544               | 0.144                          | 4.439359     | 0.094                 | -0.253    |
| F102403.003 | 31024 | 65749  | 118.4117 | 68.6089  | 0.365569                     | 90    | 19600          | 17.953           | 0.1720             | 13.8831 | 766261 | 727.813               | 0.144                          | 4.434431     | 0.094                 | -0.259    |
| F102403.004 | 31024 | 70005  | 118.3411 | 69.05992 | 0.365017                     | 90    | 19629          | 17.963           | 0.1730             | 13.8904 | 765280 | 728.504               | 0.144                          | 4.431936     | 0.094                 | -0.207    |
| F102403.005 | 31024 | 70221  | 118.3258 | 70.23628 | 0.364108                     | 90    | 19666          | 17.958           | 0.1720             | 13.8868 | 763571 | 730.068               | 0.144                          | 4.430399     | 0.094                 | -0.233    |
| F102403.006 | 31024 | 71002  | 117.2623 | 69.13003 | 0.36158                      | 90    | 13333          | 17.956           | 0.1910             | 13.8852 | 515108 | 495.023               | 0.166                          | 2.983172     | 0.126                 | -0.244    |
| F102403.007 | 31024 | 71218  | 117.0574 | 68.40714 | 0.361462                     | 90    | 13315          | 17.954           | 0.1920             | 13.8834 | 514922 | 494.42                | 0.166                          | 2.978569     | 0.126                 | -0.257    |
| F102403.008 | 31024 | 71435  | 116.8998 | 68.20374 | 0.361115                     | 90    | 13314          | 17.957           | 0.1910             | 13.8855 | 514484 | 494.305               | 0.166                          | 2.97502      | 0.126                 | -0.242    |
| F102403.009 | 31024 | 71651  | 116.7701 | 68.21552 | 0.360698                     | 90    | 13317          | 17.957           | 0.1910             | 13.8858 | 513993 | 494.408               | 0.166                          | 2.972204     | 0.126                 | -0.24     |
| F102403.010 | 31024 | 71919  | 116.6462 | 68.27692 | 0.360265                     | 90    | 13322          | 17.959           | 0.1910             | 13.8873 | 513467 | 494.54                | 0.166                          | 2.969423     | 0.126                 | -0.229    |
| F102403.011 | 31024 | 72135  | 116.6684 | 69.63277 | 0.359354                     | 90    | 13358          | 17.960           | 0.1910             | 13.8879 | 512411 | 495.855               | 0.166                          | 2.969795     | 0.126                 | -0.225    |
| F102403.012 | 31024 | 74222  | 115.3375 | 68.35944 | 0.356098                     | 90    | 9377           | 17.960           | 0.1790             | 13.8885 | 357198 | 348.062               | 0.151                          | 2.065735     | 0.105                 | -0.22     |
| F102403.013 | 31024 | 74506  | 115.1567 | 68.2785  | 0.355588                     | 90    | 9378           | 17.960           | 0.1780             | 13.8883 | 356783 | 348.104               | 0.151                          | 2.063029     | 0.105                 | -0.222    |
| F102403.014 | 31024 | 74722  | 115.0445 | 68.31051 | 0.355211                     | 90    | 9383           | 17.967           | 0.1790             | 13.8933 | 356453 | 348.166               | 0.151                          | 2.061208     | 0.105                 | -0.186    |
| F102403.015 | 31024 | 74939  | 115.0561 | 69.54572 | 0.35437                      | 90    | 9406           | 17.966           | 0.1780             | 13.8927 | 355786 | 349.034               | 0.151                          | 2.061448     | 0.105                 | -0.19     |
| F102403.016 | 31024 | 75155  | 115.0396 | 70.43722 | 0.353686                     | 90    | 9423           | 17.968           | 0.1780             | 13.894  | 355199 | 349.631               | 0.151                          | 2.060996     | 0.105                 | -0.181    |
| F102403.017 | 31024 | 75411  | 114.9766 | 70.69594 | 0.353307                     | 90    | 9423           | 17.962           | 0.1780             | 13.8895 | 354790 | 349.746               | 0.151                          | 2.059464     | 0.105                 | -0.213    |
| F102403.018 | 31024 | 80338  | 115.1814 | 68.67867 | 0.355378                     | 90    | 6724           | 17.972           | 0.1950             | 13.8973 | 255330 | 249.428               | 0.169                          | 1.477356     | 0.13                  | -0.157    |
| F102403.019 | 31024 | 80554  | 115.0511 | 68.61084 | 0.355021                     | 90    | 6723           | 17.969           | 0.1950             | 13.8954 | 255102 | 249.427               | 0.169                          | 1.47586      | 0.13                  | -0.171    |
| F102403.020 | 31024 | 80833  | 114.9074 | 68.56643 | 0.354602                     | 90    | 6725           | 17.975           | 0.1950             | 13.8997 | 254819 | 249.423               | 0.169                          | 1.474098     | 0.13                  | -0.14     |
| F102403.021 | 31024 | 81050  | 114.783  | 68.51968 | 0.354246                     | 90    | 6726           | 17.977           | 0.1950             | 13.9014 | 254591 | 249.429               | 0.169                          | 1.472651     | 0.13                  | -0.127    |
| F102403.022 | 31024 | 81306  | 114.8002 | 69.57816 | 0.353549                     | 90    | 6740           | 17.977           | 0.1950             | 13.9012 | 254190 | 249.953               | 0.169                          | 1.472843     | 0.13                  | -0.129    |
| F102403.023 | 31024 | 81522  | 114.7979 | 70.43649 | 0.352936                     | 90    | 6750           | 17.974           | 0.1950             | 13.8989 | 253817 | 250.365               | 0.169                          | 1.472711     | 0.13                  | -0.146    |
| F102403.024 | 31024 | 83545  | 115.1118 | 68.38621 | 0.355373                     | 90    | 2709           | 17.986           | 0.2250             | 13.9084 | 102834 | 100.411               | 0.2                            | 0.594721     | 0.169                 | -0.077    |
| F102403.025 | 31024 | 83802  | 114.9661 | 68.22828 | 0.355028                     | 90    | 2708           | 17.983           | 0.2250             | 13.9062 | 102740 | 100.39                | 0.2                            | 0.594019     | 0.169                 | -0.093    |
| F102403.026 | 31024 | 84034  | 114.9494 | 68.7875  | 0.354579                     | 90    | 2713           | 17.996           | 0.2250             | 13.9164 | 102632 | 100.501               | 0.2                            | 0.593927     | 0.168                 | -0.02     |
| F102403.027 | 31024 | 84255  | 114.9247 | 69.47459 | 0.354014                     | 90    | 2716           | 17.989           | 0.2250             | 13.911  | 102509 | 100.652               | 0.2                            | 0.59387      | 0.169                 | -0.059    |
| F102403.028 | 31024 | 84535  | 114.8539 | 69.91605 | 0.35348                      | 90    | 2717           | 17.979           | 0.2250             | 13.9032 | 102377 | 100.745               | 0.2                            | 0.593523     | 0.168                 | -0.115    |
| F102403.029 | 31024 | 84751  | 114.7448 | 69.90187 | 0.353149                     | 90    | 2717           | 17.980           | 0.2250             | 13.9039 | 102280 | 100.74                | 0.2                            | 0.592938     | 0.169                 | -0.11     |
| F102403.030 | 31024 | 104652 | 115.6469 | 67.86819 | 0.357416                     | 90    | 9343           | 17.953           | 0.1790             | 13.8825 | 357651 | 346.951               | 0.151                          | 2.066766     | 0.105                 | -0.263    |
| F102403.031 | 31024 | 104908 | 115.5167 | 67.86359 | 0.357011                     | 90    | 9346           | 17.953           | 0.1780             | 13.8829 | 357356 | 347.053               | 0.151                          | 2.065026     | 0.105                 | -0.261    |
| F102403.032 | 31024 | 105124 | 115.4002 | 67.99442 | 0.356555                     | 90    | 9352           | 17.955           | 0.1780             | 13.8841 | 357027 | 347.245               | 0.151                          | 2.063534     | 0.105                 | -0.252    |
| F102403.033 | 31024 | 105341 | 115.3024 | 68.20677 | 0.356096                     | 90    | 9356           | 17.952           | 0.1780             | 13.8823 | 356647 | 347.44                | 0.151                          | 2.062032     | 0.105                 | -0.265    |
| F102403.034 | 31024 | 105557 | 115.2243 | 68.4398  | 0.355681                     | 90    | 9361           | 17.952           | 0.1790             | 13.8821 | 356295 | 347.629               | 0.151                          | 2.06075      | 0.105                 | -0.266    |
| F102403.035 | 31024 | 105814 | 115.1448 | 68.77207 | 0.355195                     | 90    | 9368           | 17.953           | 0.1780             | 13.8826 | 355872 | 347.876               | 0.151                          | 2.059395     | 0.105                 | -0.262    |
| F102403.036 | 31024 | 110140 | 115.1535 | 68.84827 | 0.355165                     | 90    | 6714           | 17.967           | 0.1950             | 13.8936 | 254798 | 249.125               | 0.169                          | 1.474673     | 0.13                  | -0.184    |
| F102403.037 | 31024 | 110423 | 115.1933 | 70.05915 | 0.354429                     | 90    | 6730           | 17.969           | 0.1950             | 13.8954 | 254346 | 249.685               | 0.169                          | 1.474929     | 0.13                  | -0.171    |
| F102403.038 | 31024 | 110640 | 115.2263 | 71.02085 | 0.353849                     | 90    | 6743           | 17.972           | 0.1950             | 13.8979 | 253983 | 250.124               | 0.169                          | 1.475102     | 0.13                  | -0.153    |
| F102403.039 | 31024 | 110856 | 115.2464 | 71.84901 | 0.353328                     | 90    | 6752           | 17.971           | 0.1950             | 13.8968 | 253630 | 250.477               | 0.169                          | 1.475009     | 0.13                  | -0.161    |
| F102403.040 | 31024 | 111113 | 115.223  | 72.39005 | 0.352876                     | 90    | 6757           | 17.969           | 0.1940             | 13.8951 | 253305 | 250.693               | 0.169                          | 1.474391     | 0.13                  | -0.173    |
| F102403.041 | 31024 | 111329 | 115.145  | 72.14864 | 0.352803                     | 90    | 6751           | 17.966           | 0.1950             | 13.8932 | 253160 | 250.504               | 0.169                          | 1.472971     | 0.13                  | -0.186    |
| F102403.042 | 31024 | 113328 | 115.1449 | 69.79633 | 0.354463                     | 90    | 2704           | 17.968           | 0.2250             | 13.8942 | 102255 | 100.328               | 0.2                            | 0.59271      | 0.169                 | -0.179    |
| F102403.043 | 31024 | 113550 | 115.0884 | 70.06374 | 0.354097                     | 90    | 2705           | 17.966           | 0.2250             | 13.8931 | 102152 | 100.373               | 0.2                            | 0.592363     | 0.169                 | -0.187    |
| F102403.044 | 31024 | 113806 | 115.0228 | 70.30598 | 0.35372                      | 90    | 2706           | 17.966           | 0.2250             | 13.8927 | 102045 | 100.413               | 0.2                            | 0.59197      | 0.169                 | -0.19     |
| F102403.045 | 31024 | 114023 | 115.0467 | 70.89088 | 0.353378                     | 90    | 2711           | 17.979           | 0.2250             | 13.9027 | 101965 | 100.526               | 0.2                            | 0.592063     | 0.169                 | -0.118    |
| F102403.046 | 31024 | 114239 | 115.0683 | 71.69016 | 0.352883                     | 90    | 2715           | 17.978           | 0.2250             | 13.9023 | 101845 | 100.678               | 0.2                            | 0.592124     | 0.168                 | -0.121    |
| F102403.047 | 31024 | 114456 | 115.0946 | 72.3419  | 0.352507                     | 90    | 2718           | 17.978           | 0.2250             | 13.9021 | 101744 | 100.79                | 0.2                            | 0.592155     | 0.169                 | -0.123    |

**12-inch Instronet Turbine Meter Serial No. 69529 – Low Pressure Loop Natural Gas Test**  
**Test Pressure = 45 psia**

| File        | Date  | Time   | P (psia) | T (F)    | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K<br>(pulses/cf) | U <sub>k</sub> (%) | St      | ReD    | Q <sub>v</sub> (acfm) | UQ <sub>v</sub> (%) | mdot (lbm/s) | U <sub>m-dot</sub> (%) | Error (%) |
|-------------|-------|--------|----------|----------|------------------------------|-------|----------------|------------------|--------------------|---------|--------|-----------------------|---------------------|--------------|------------------------|-----------|
| F102403.048 | 31024 | 125726 | 46.51461 | 73.40048 | 0.14083                      | 90    | 19727          | 17.949           | 0.1780             | 13.8798 | 296560 | 732.702               | 0.152               | 1.719768     | 0.098                  | -0.283    |
| F102403.049 | 31024 | 130005 | 46.43588 | 72.2811  | 0.140892                     | 90    | 19688          | 17.949           | 0.1780             | 13.8795 | 296651 | 731.268               | 0.152               | 1.717168     | 0.098                  | -0.285    |
| F102403.050 | 31024 | 130244 | 46.37061 | 71.48976 | 0.140909                     | 90    | 19667          | 17.952           | 0.1780             | 13.8824 | 296691 | 730.335               | 0.152               | 1.715185     | 0.098                  | -0.264    |
| F102403.051 | 31024 | 130500 | 46.33961 | 71.85712 | 0.140715                     | 90    | 19685          | 17.952           | 0.1780             | 13.8823 | 296379 | 731.01                | 0.151               | 1.714401     | 0.098                  | -0.265    |
| F102403.052 | 31024 | 130716 | 46.3017  | 72.08566 | 0.140538                     | 90    | 19698          | 17.954           | 0.1780             | 13.8838 | 296061 | 731.415               | 0.151               | 1.713195     | 0.098                  | -0.254    |
| F102403.053 | 31024 | 130932 | 46.263   | 72.31144 | 0.140359                     | 90    | 19706          | 17.951           | 0.1780             | 13.8816 | 295743 | 731.829               | 0.152               | 1.71198      | 0.098                  | -0.27     |
| F102403.054 | 31024 | 131502 | 46.457   | 72.365   | 0.14094                      | 90    | 13397          | 17.956           | 0.1980             | 13.8853 | 201817 | 497.394               | 0.174               | 1.168378     | 0.13                   | -0.243    |
| F102403.055 | 31024 | 131718 | 46.41718 | 72.20338 | 0.140864                     | 90    | 13391          | 17.954           | 0.1980             | 13.8834 | 201700 | 497.241               | 0.174               | 1.167391     | 0.13                   | -0.257    |
| F102403.056 | 31024 | 131934 | 46.37688 | 71.97704 | 0.140803                     | 90    | 13384          | 17.953           | 0.1980             | 13.8827 | 201590 | 497.005               | 0.174               | 1.166327     | 0.13                   | -0.262    |
| F102403.057 | 31024 | 132150 | 46.32662 | 71.5332  | 0.140771                     | 90    | 13372          | 17.952           | 0.1980             | 13.8824 | 201515 | 496.571               | 0.174               | 1.165044     | 0.13                   | -0.264    |
| F102403.058 | 31024 | 132406 | 46.26969 | 70.99783 | 0.140742                     | 90    | 13357          | 17.950           | 0.1980             | 13.8804 | 201453 | 496.086               | 0.174               | 1.163668     | 0.13                   | -0.279    |
| F102403.059 | 31024 | 132645 | 46.20678 | 70.50484 | 0.140686                     | 90    | 13346          | 17.951           | 0.1980             | 13.8812 | 201357 | 495.649               | 0.174               | 1.162177     | 0.13                   | -0.273    |
| F102403.060 | 31024 | 134602 | 45.99299 | 72.51786 | 0.139496                     | 90    | 9436           | 17.971           | 0.1840             | 13.8968 | 140545 | 350.044               | 0.158               | 0.81383      | 0.108                  | -0.161    |
| F102403.061 | 31024 | 134818 | 45.94076 | 72.08509 | 0.139453                     | 90    | 9426           | 17.968           | 0.1850             | 13.8942 | 140477 | 349.737               | 0.158               | 0.812863     | 0.108                  | -0.179    |
| F102403.062 | 31024 | 135034 | 45.88891 | 71.61857 | 0.13942                      | 90    | 9418           | 17.969           | 0.1840             | 13.895  | 140425 | 349.422               | 0.158               | 0.811942     | 0.108                  | -0.174    |
| F102403.063 | 31024 | 135250 | 45.83936 | 71.26488 | 0.139364                     | 90    | 9411           | 17.968           | 0.1850             | 13.8942 | 140352 | 349.181               | 0.158               | 0.811052     | 0.108                  | -0.179    |
| F102403.064 | 31024 | 135506 | 45.7895  | 71.02881 | 0.139274                     | 90    | 9409           | 17.972           | 0.1840             | 13.8974 | 140254 | 349.027               | 0.158               | 0.810175     | 0.108                  | -0.156    |
| F102403.065 | 31024 | 135722 | 45.74667 | 70.94266 | 0.139168                     | 90    | 9409           | 17.975           | 0.1840             | 13.9    | 140142 | 348.962               | 0.158               | 0.809409     | 0.108                  | -0.138    |
| F102403.066 | 31024 | 140100 | 45.55804 | 72.21887 | 0.138252                     | 90    | 6751           | 17.968           | 0.2020             | 13.8942 | 99726  | 250.487               | 0.177               | 0.577171     | 0.134                  | -0.18     |
| F102403.067 | 31024 | 140316 | 45.53524 | 72.63839 | 0.138071                     | 90    | 6755           | 17.965           | 0.2010             | 13.8921 | 99602  | 250.672               | 0.177               | 0.576842     | 0.134                  | -0.194    |
| F102403.068 | 31024 | 140532 | 45.51224 | 72.98233 | 0.137911                     | 90    | 6761           | 17.970           | 0.2010             | 13.8959 | 99492  | 250.827               | 0.177               | 0.576529     | 0.134                  | -0.167    |
| F102403.069 | 31024 | 140748 | 45.49219 | 73.26527 | 0.137775                     | 90    | 6763           | 17.968           | 0.2010             | 13.8941 | 99391  | 250.934               | 0.177               | 0.576205     | 0.134                  | -0.18     |
| F102403.070 | 31024 | 141004 | 45.45383 | 73.23943 | 0.137665                     | 90    | 6760           | 17.962           | 0.2010             | 13.8898 | 99303  | 250.9                 | 0.177               | 0.575666     | 0.134                  | -0.211    |
| F102403.071 | 31024 | 141220 | 45.40796 | 72.96814 | 0.137597                     | 90    | 6756           | 17.962           | 0.2010             | 13.8898 | 99239  | 250.751               | 0.177               | 0.575043     | 0.134                  | -0.211    |
| F102403.072 | 31024 | 142834 | 44.85424 | 74.38496 | 0.13554                      | 90    | 2731           | 17.992           | 0.2320             | 13.9129 | 39361  | 101.193               | 0.209               | 0.228595     | 0.174                  | -0.045    |
| F102403.073 | 31024 | 143101 | 44.82766 | 74.65464 | 0.135389                     | 90    | 2731           | 17.984           | 0.2320             | 13.9069 | 39317  | 101.237               | 0.209               | 0.22844      | 0.174                  | -0.088    |
| F102403.074 | 31024 | 143317 | 44.79335 | 74.75991 | 0.135257                     | 90    | 2733           | 17.997           | 0.2320             | 13.9166 | 39274  | 101.241               | 0.209               | 0.228227     | 0.174                  | -0.019    |
| F102403.075 | 31024 | 143549 | 44.74335 | 74.62958 | 0.135139                     | 90    | 2731           | 17.991           | 0.2320             | 13.9124 | 39231  | 101.198               | 0.209               | 0.227929     | 0.173                  | -0.049    |
| F102403.076 | 31024 | 143810 | 44.6851  | 74.49328 | 0.134997                     | 90    | 2730           | 17.989           | 0.2310             | 13.9105 | 39190  | 101.174               | 0.209               | 0.227637     | 0.174                  | -0.062    |
| F102403.077 | 31024 | 144026 | 44.64246 | 74.3775  | 0.134898                     | 90    | 2729           | 17.989           | 0.2320             | 13.9106 | 39154  | 101.136               | 0.209               | 0.227384     | 0.174                  | -0.062    |

**12-inch Instromet Turbine Meter Serial No. 69529 – Low Pressure Loop Carbon Dioxide Test**  
**Test Pressure = 115 psia**

| File        | Date  | Time   | P (psia) | T (F)    | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K (pulses/cf) | U <sub>K</sub> (%) | St      | ReD    | Q <sub>L</sub> (acfm) | U <sub>Q</sub> (%) | mdot (lbm/s) | U <sub>mdot</sub> (%) | Error (%) |
|-------------|-------|--------|----------|----------|------------------------------|-------|----------------|---------------|--------------------|---------|--------|-----------------------|--------------------|--------------|-----------------------|-----------|
| F112103.030 | 31121 | 131906 | 119.3621 | 69.28124 | 0.968722                     | 90    | 12085          | 18.002        | 0.1470             | 13.9207 | 922947 | 447.544               | 0.144              | 7.225763     | 0.095                 | 0.011     |
| F112103.031 | 31121 | 132158 | 119.3837 | 69.59801 | 0.968231                     | 90    | 12088          | 17.998        | 0.1470             | 13.9176 | 922439 | 447.756               | 0.144              | 7.225513     | 0.095                 | -0.012    |
| F112103.032 | 31121 | 132414 | 119.3701 | 69.69571 | 0.967908                     | 90    | 12090          | 17.998        | 0.1470             | 13.9176 | 922133 | 447.827               | 0.144              | 7.224257     | 0.095                 | -0.011    |
| F112103.033 | 31121 | 132631 | 119.3839 | 69.82918 | 0.967741                     | 90    | 12092          | 17.999        | 0.1470             | 13.9184 | 921879 | 447.878               | 0.144              | 7.223834     | 0.095                 | -0.006    |
| F112103.034 | 31121 | 132847 | 119.3862 | 69.9458  | 0.967513                     | 90    | 12091          | 17.995        | 0.1470             | 13.9151 | 921628 | 447.947               | 0.144              | 7.223238     | 0.095                 | -0.029    |
| F112103.035 | 31121 | 133104 | 119.3999 | 69.99901 | 0.967516                     | 90    | 12095          | 18.003        | 0.1470             | 13.9218 | 921409 | 447.878               | 0.144              | 7.222151     | 0.095                 | 0.019     |
| F112103.036 | 31121 | 133642 | 118.9062 | 70.51994 | 0.962223                     | 90    | 10572          | 18.001        | 0.1550             | 13.9199 | 800433 | 391.535               | 0.151              | 6.279067     | 0.106                 | 0.005     |
| F112103.037 | 31121 | 133858 | 118.9671 | 70.76261 | 0.962228                     | 90    | 10576          | 18.004        | 0.1550             | 13.9224 | 800277 | 391.612               | 0.151              | 6.28034      | 0.106                 | 0.023     |
| F112103.038 | 31121 | 134115 | 118.9884 | 70.98542 | 0.961939                     | 90    | 10578          | 18.001        | 0.1550             | 13.9201 | 800031 | 391.751               | 0.151              | 6.280684     | 0.106                 | 0.007     |
| F112103.039 | 31121 | 134331 | 118.9914 | 70.98902 | 0.961957                     | 90    | 10577          | 18.002        | 0.1550             | 13.9204 | 799949 | 391.706               | 0.152              | 6.280074     | 0.106                 | 0.009     |
| F112103.040 | 31121 | 134548 | 118.9937 | 71.04018 | 0.961869                     | 90    | 10576          | 18.000        | 0.1550             | 13.9188 | 799827 | 391.715               | 0.151              | 6.279638     | 0.106                 | -0.003    |
| F112103.041 | 31121 | 134804 | 118.9915 | 71.04495 | 0.961841                     | 90    | 10574          | 17.997        | 0.1550             | 13.9171 | 799744 | 391.689               | 0.152              | 6.279037     | 0.106                 | -0.015    |
| F112103.042 | 31121 | 140334 | 117.2879 | 70.49541 | 0.948559                     | 90    | 8217           | 18.003        | 0.1690             | 13.9214 | 613304 | 304.285               | 0.166              | 4.810541     | 0.126                 | 0.016     |
| F112103.043 | 31121 | 140550 | 117.2548 | 70.38216 | 0.948514                     | 90    | 8214           | 18.001        | 0.1690             | 13.9197 | 613240 | 304.211               | 0.166              | 4.809144     | 0.126                 | 0.004     |
| F112103.044 | 31121 | 140806 | 117.2171 | 70.27483 | 0.948417                     | 90    | 8212           | 17.999        | 0.1690             | 13.9181 | 613206 | 304.172               | 0.166              | 4.808027     | 0.126                 | -0.008    |
| F112103.045 | 31121 | 141023 | 117.2003 | 70.26406 | 0.948297                     | 90    | 8211           | 17.997        | 0.1690             | 13.9172 | 613103 | 304.154               | 0.166              | 4.807135     | 0.126                 | -0.014    |
| F112103.046 | 31121 | 141239 | 117.1683 | 70.24155 | 0.948072                     | 90    | 8212           | 18.000        | 0.1690             | 13.9189 | 612983 | 304.155               | 0.166              | 4.806014     | 0.126                 | -0.002    |
| F112103.047 | 31121 | 141455 | 117.1496 | 70.25054 | 0.947895                     | 90    | 8212           | 18.000        | 0.1690             | 13.9191 | 612852 | 304.15                | 0.166              | 4.805047     | 0.126                 | -0.001    |
| F112103.048 | 31121 | 143205 | 116.4254 | 70.60905 | 0.941023                     | 90    | 5786           | 18.005        | 0.1550             | 13.923  | 428316 | 214.237               | 0.151              | 3.360034     | 0.105                 | 0.028     |
| F112103.049 | 31121 | 143449 | 116.416  | 70.68024 | 0.940797                     | 90    | 5787           | 18.007        | 0.1550             | 13.9242 | 428201 | 214.256               | 0.151              | 3.35952      | 0.105                 | 0.036     |
| F112103.050 | 31121 | 143706 | 116.4081 | 70.75333 | 0.940581                     | 90    | 5787           | 18.004        | 0.1540             | 13.922  | 428118 | 214.289               | 0.151              | 3.359271     | 0.105                 | 0.021     |
| F112103.051 | 31121 | 143922 | 116.4219 | 70.85055 | 0.940497                     | 90    | 5786           | 18.002        | 0.1540             | 13.9206 | 427983 | 214.274               | 0.151              | 3.358741     | 0.105                 | 0.01      |
| F112103.052 | 31121 | 144138 | 116.426  | 70.96941 | 0.940288                     | 90    | 5788           | 18.005        | 0.1550             | 13.9228 | 427886 | 214.315               | 0.151              | 3.35863      | 0.105                 | 0.026     |
| F112103.053 | 31121 | 144418 | 116.4224 | 71.05998 | 0.940073                     | 90    | 5788           | 18.001        | 0.1540             | 13.9202 | 427802 | 214.354               | 0.151              | 3.358467     | 0.105                 | 0.008     |
| F112103.054 | 31121 | 145205 | 115.3828 | 71.9216  | 0.929546                     | 90    | 3317           | 18.010        | 0.1960             | 13.9267 | 241981 | 122.785               | 0.192              | 1.90224      | 0.158                 | 0.054     |
| F112103.055 | 31121 | 145445 | 115.3979 | 72.02987 | 0.929455                     | 90    | 3319           | 18.022        | 0.1970             | 13.9361 | 241897 | 122.776               | 0.192              | 1.901919     | 0.158                 | 0.122     |
| F112103.056 | 31121 | 145701 | 115.3964 | 72.12005 | 0.92926                      | 90    | 3319           | 18.020        | 0.1960             | 13.9349 | 241833 | 122.788               | 0.192              | 1.901693     | 0.158                 | 0.113     |
| F112103.057 | 31121 | 145917 | 115.3987 | 72.30956 | 0.928897                     | 90    | 3320           | 18.022        | 0.1960             | 13.9361 | 241716 | 122.814               | 0.192              | 1.901356     | 0.158                 | 0.121     |
| F112103.058 | 31121 | 150133 | 115.3933 | 72.56314 | 0.928341                     | 90    | 3320           | 18.014        | 0.1970             | 13.9298 | 241581 | 122.869               | 0.192              | 1.901074     | 0.158                 | 0.076     |
| F112103.059 | 31121 | 150349 | 115.4185 | 72.76512 | 0.928146                     | 90    | 3322           | 18.021        | 0.1960             | 13.9352 | 241502 | 122.895               | 0.192              | 1.901081     | 0.158                 | 0.115     |

**12-inch Instromet Turbine Meter Serial No. 69529 – Low Pressure Loop Carbon Dioxide Test**  
**Test Pressure = 45 psia**

| <u>File</u> | <u>Date</u> | <u>Time</u> | <u>P (psia)</u> | <u>T (F)</u> | <u><math>\rho</math> (lb/ft<sup>3</sup>)</u> | <u>t (s)</u> | <u>Main Pulses</u> | <u>K (pulses/cf)</u> | <u>U<sub>K</sub> (%)</u> | <u>St</u> | <u>ReD</u> | <u>Q<sub>v</sub> (acfm)</u> | <u>UO<sub>v</sub> (%)</u> | <u>mdot (lbm/s)</u> | <u>U<sub>mdot</sub> (%)</u> | <u>Error (%)</u> |
|-------------|-------------|-------------|-----------------|--------------|----------------------------------------------|--------------|--------------------|----------------------|--------------------------|-----------|------------|-----------------------------|---------------------------|---------------------|-----------------------------|------------------|
| F112103.060 | 31121       | 154128      | 45.61627        | 75.9006      | 0.354921                                     | 90           | 8394               | 17.995               | 0.1770                   | 13.915    | 233033     | 310.982                     | 0.174                     | 1.839566            | 0.13                        | -0.03            |
| F112103.061 | 31121       | 154353      | 45.5854         | 75.92491     | 0.35466                                      | 90           | 8391               | 17.994               | 0.1770                   | 13.9146   | 232777     | 310.881                     | 0.174                     | 1.837616            | 0.13                        | -0.033           |
| F112103.062 | 31121       | 154610      | 45.56272        | 75.74538     | 0.354606                                     | 90           | 8382               | 17.986               | 0.1770                   | 13.9081   | 232671     | 310.69                      | 0.174                     | 1.836211            | 0.13                        | -0.079           |
| F112103.063 | 31121       | 154826      | 45.49976        | 75.22766     | 0.35447                                      | 90           | 8372               | 17.985               | 0.1770                   | 13.9076   | 232524     | 310.332                     | 0.174                     | 1.833389            | 0.13                        | -0.083           |
| F112103.064 | 31121       | 155042      | 45.43446        | 74.45993     | 0.35449                                      | 90           | 8357               | 17.983               | 0.1770                   | 13.9064   | 232452     | 309.804                     | 0.174                     | 1.83037             | 0.13                        | -0.092           |
| F112103.065 | 31121       | 155258      | 45.38752        | 73.76843     | 0.354602                                     | 90           | 8346               | 17.985               | 0.1770                   | 13.9079   | 232475     | 309.362                     | 0.174                     | 1.828339            | 0.13                        | -0.081           |
| F112103.066 | 31121       | 160652      | 46.17028        | 74.00824     | 0.360651                                     | 90           | 9933               | 17.998               | 0.1680                   | 13.9177   | 281076     | 367.928                     | 0.165                     | 2.21156             | 0.118                       | -0.011           |
| F112103.067 | 31121       | 160908      | 46.12172        | 73.88946     | 0.36035                                      | 90           | 9929               | 17.996               | 0.1680                   | 13.916    | 280822     | 367.825                     | 0.165                     | 2.209093            | 0.118                       | -0.023           |
| F112103.068 | 31121       | 161124      | 46.05828        | 73.37748     | 0.360211                                     | 90           | 9916               | 17.991               | 0.1680                   | 13.9118   | 280681     | 367.453                     | 0.165                     | 2.206013            | 0.118                       | -0.053           |
| F112103.069 | 31121       | 161340      | 45.99925        | 72.85244     | 0.360117                                     | 90           | 9906               | 17.991               | 0.1680                   | 13.9122   | 280575     | 367.072                     | 0.165                     | 2.203147            | 0.118                       | -0.05            |
| F112103.070 | 31121       | 161556      | 45.93988        | 72.23014     | 0.360089                                     | 90           | 9895               | 17.992               | 0.1680                   | 13.9131   | 280529     | 366.64                      | 0.165                     | 2.200385            | 0.118                       | -0.043           |
| F112103.071 | 31121       | 161812      | 45.8842         | 71.76579     | 0.359977                                     | 90           | 9887               | 17.994               | 0.1680                   | 13.9144   | 280418     | 366.31                      | 0.165                     | 2.197724            | 0.118                       | -0.034           |
| F112103.072 | 31121       | 162135      | 45.94625        | 72.5609      | 0.359903                                     | 90           | 6688               | 17.979               | 0.1970                   | 13.9031   | 189538     | 247.991                     | 0.195                     | 1.487543            | 0.157                       | -0.116           |
| F112103.073 | 31121       | 162351      | 45.9165         | 72.65892     | 0.359596                                     | 90           | 6692               | 17.986               | 0.1980                   | 13.9081   | 189389     | 248.049                     | 0.195                     | 1.486626            | 0.157                       | -0.08            |
| F112103.074 | 31121       | 162608      | 45.90373        | 73.22331     | 0.359092                                     | 90           | 6699               | 17.986               | 0.1970                   | 13.9083   | 189132     | 248.305                     | 0.195                     | 1.486074            | 0.157                       | -0.078           |
| F112103.075 | 31121       | 162823      | 45.88037        | 73.54504     | 0.358677                                     | 90           | 6703               | 17.987               | 0.1980                   | 13.9092   | 188907     | 248.436                     | 0.195                     | 1.48514             | 0.157                       | -0.071           |
| F112103.076 | 31121       | 163117      | 45.8507         | 73.8726      | 0.358209                                     | 90           | 6707               | 17.987               | 0.1970                   | 13.9087   | 188672     | 248.594                     | 0.195                     | 1.484138            | 0.157                       | -0.075           |
| F112103.077 | 31121       | 163333      | 45.82948        | 74.06206     | 0.357906                                     | 90           | 6707               | 17.982               | 0.1980                   | 13.9054   | 188496     | 248.654                     | 0.195                     | 1.483243            | 0.157                       | -0.099           |
| F112103.078 | 31121       | 164734      | 45.87289        | 72.40819     | 0.359428                                     | 90           | 3347               | 17.989               | 0.2040                   | 13.9107   | 94702      | 124.038                     | 0.2                       | 0.743046            | 0.163                       | -0.061           |
| F112103.079 | 31121       | 164951      | 45.8719         | 72.98849     | 0.359006                                     | 90           | 3350               | 17.985               | 0.2050                   | 13.9079   | 94599      | 124.174                     | 0.2                       | 0.742988            | 0.163                       | -0.081           |
| F112103.080 | 31121       | 165207      | 45.8656         | 73.41905     | 0.358649                                     | 90           | 3354               | 17.992               | 0.2040                   | 13.9131   | 94511      | 124.276                     | 0.2                       | 0.74286             | 0.163                       | -0.044           |
| F112103.081 | 31121       | 165423      | 45.84814        | 73.7573      | 0.35827                                      | 90           | 3356               | 17.991               | 0.2040                   | 13.9122   | 94418      | 124.358                     | 0.2                       | 0.742564            | 0.163                       | -0.05            |
| F112103.082 | 31121       | 165639      | 45.82681        | 74.06572     | 0.357882                                     | 90           | 3358               | 17.991               | 0.2040                   | 13.912    | 94323      | 124.434                     | 0.2                       | 0.742213            | 0.163                       | -0.051           |
| F112103.083 | 31121       | 165855      | 45.8036         | 74.2915      | 0.357538                                     | 90           | 3358               | 17.983               | 0.2040                   | 13.9059   | 94237      | 124.489                     | 0.2                       | 0.741827            | 0.163                       | -0.096           |

**12-inch Instronet Turbine Meter Serial No. 69529 – High Pressure Loop Natural Gas Test**  
**Test Pressure = 230 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K<br>(pulses/cf) | U <sub>K</sub> (%) | St      | ReD     | Q <sub>v</sub> (acfm) | UQ <sub>v</sub> (%) | mdot (lbm/s) | U <sub>mdot</sub> (%) | Error (%) |
|-------------|-------|--------|----------|---------|------------------------------|-------|----------------|------------------|--------------------|---------|---------|-----------------------|---------------------|--------------|-----------------------|-----------|
| F102803.000 | 31028 | 84824  | 231.5896 | 71.2999 | 0.7235                       | 90    | 37438.00       | 17.990           | 0.2640             | 13.9115 | 2847630 | 1387.357              | 0.245               | 16.728       | 0.203                 | -0.055    |
| F102803.001 | 31028 | 85127  | 231.5754 | 71.0944 | 0.7237                       | 90    | 37421.60       | 17.990           | 0.2650             | 13.9117 | 2848310 | 1386.727              | 0.245               | 16.727       | 0.203                 | -0.054    |
| F102803.002 | 31028 | 85332  | 231.5980 | 71.0069 | 0.7239                       | 90    | 37416.28       | 17.991           | 0.2640             | 13.9121 | 2849012 | 1386.488              | 0.245               | 16.729       | 0.203                 | -0.050    |
| F102803.003 | 31028 | 85530  | 231.6039 | 70.9389 | 0.7241                       | 90    | 37409.53       | 17.990           | 0.2640             | 13.9117 | 2849356 | 1386.286              | 0.245               | 16.729       | 0.203                 | -0.054    |
| F102803.004 | 31028 | 85807  | 231.5997 | 70.8928 | 0.7241                       | 90    | 37407.30       | 17.991           | 0.2640             | 13.9119 | 2849573 | 1386.183              | 0.245               | 16.729       | 0.203                 | -0.052    |
| F102803.005 | 31028 | 90027  | 231.6204 | 70.8655 | 0.7242                       | 90    | 37405.25       | 17.990           | 0.2640             | 13.9116 | 2850012 | 1386.132              | 0.245               | 16.731       | 0.203                 | -0.054    |
| F102803.006 | 31028 | 91947  | 232.7134 | 70.7438 | 0.7279                       | 90    | 28112.60       | 17.996           | 0.3010             | 13.9161 | 2152420 | 1041.437              | 0.284               | 12.635       | 0.248                 | -0.022    |
| F102803.007 | 31028 | 92217  | 232.7002 | 70.7588 | 0.7279                       | 90    | 28111.37       | 17.995           | 0.3010             | 13.9154 | 2152197 | 1041.446              | 0.284               | 12.634       | 0.248                 | -0.027    |
| F102803.008 | 31028 | 92541  | 232.6672 | 70.7520 | 0.7278                       | 90    | 28110.51       | 17.995           | 0.3010             | 13.9157 | 2151833 | 1041.392              | 0.284               | 12.632       | 0.248                 | -0.025    |
| F102803.009 | 31028 | 92739  | 232.6573 | 70.7257 | 0.7278                       | 90    | 28110.28       | 17.997           | 0.3010             | 13.9167 | 2151766 | 1041.304              | 0.284               | 12.631       | 0.248                 | -0.018    |
| F102803.010 | 31028 | 92954  | 232.6400 | 70.7245 | 0.7277                       | 90    | 28108.90       | 17.997           | 0.3010             | 13.9165 | 2151541 | 1041.269              | 0.284               | 12.629       | 0.248                 | -0.019    |
| F102803.011 | 31028 | 93214  | 232.6331 | 70.7056 | 0.7277                       | 90    | 28107.03       | 17.995           | 0.3010             | 13.9156 | 2151502 | 1041.269              | 0.284               | 12.629       | 0.248                 | -0.026    |
| F102803.012 | 31028 | 100143 | 230.9802 | 70.4908 | 0.7227                       | 90    | 20320.74       | 17.985           | 0.2410             | 13.9073 | 1546461 | 753.261               | 0.22                | 9.073        | 0.171                 | -0.085    |
| F102803.013 | 31028 | 100341 | 230.9827 | 70.4860 | 0.7227                       | 90    | 20319.36       | 17.984           | 0.2410             | 13.9065 | 1546497 | 753.257               | 0.22                | 9.073        | 0.171                 | -0.091    |
| F102803.014 | 31028 | 100540 | 231.0045 | 70.4866 | 0.7228                       | 90    | 20319.81       | 17.984           | 0.2420             | 13.9070 | 1546616 | 753.245               | 0.22                | 9.074        | 0.171                 | -0.088    |
| F102803.015 | 31028 | 100738 | 230.9752 | 70.4987 | 0.7226                       | 90    | 20320.55       | 17.984           | 0.2420             | 13.9070 | 1546400 | 753.270               | 0.22                | 9.072        | 0.171                 | -0.087    |
| F102803.016 | 31028 | 101020 | 230.9721 | 70.4991 | 0.7226                       | 90    | 20317.83       | 17.982           | 0.2420             | 13.9056 | 1546327 | 753.245               | 0.22                | 9.072        | 0.171                 | -0.097    |
| F102803.017 | 31028 | 101235 | 230.9454 | 70.4987 | 0.7225                       | 90    | 20318.30       | 17.983           | 0.2420             | 13.9058 | 1546165 | 753.252               | 0.22                | 9.071        | 0.171                 | -0.096    |
| F102803.018 | 31028 | 102049 | 231.9872 | 70.5881 | 0.7258                       | 90    | 14110.76       | 18.003           | 0.2790             | 13.9216 | 1077112 | 522.529               | 0.26                | 6.321        | 0.221                 | 0.017     |
| F102803.019 | 31028 | 102428 | 232.9420 | 70.5377 | 0.7290                       | 90    | 14091.71       | 17.983           | 0.2780             | 13.9058 | 1081545 | 522.418               | 0.26                | 6.347        | 0.221                 | -0.096    |
| F102803.020 | 31028 | 102632 | 232.9391 | 70.5214 | 0.7290                       | 90    | 14090.98       | 17.983           | 0.2780             | 13.9060 | 1081530 | 522.384               | 0.26                | 6.347        | 0.221                 | -0.095    |
| F102803.021 | 31028 | 102830 | 232.9705 | 70.4895 | 0.7291                       | 90    | 14091.16       | 17.984           | 0.2780             | 13.9071 | 1081727 | 522.346               | 0.26                | 6.348        | 0.221                 | -0.086    |
| F102803.022 | 31028 | 103028 | 232.9601 | 70.4569 | 0.7291                       | 90    | 14088.86       | 17.983           | 0.2780             | 13.9060 | 1081727 | 522.305               | 0.26                | 6.347        | 0.221                 | -0.095    |
| F102803.023 | 31028 | 103226 | 232.9686 | 70.4340 | 0.7292                       | 90    | 14087.73       | 17.983           | 0.2780             | 13.9058 | 1081785 | 522.270               | 0.26                | 6.347        | 0.220                 | -0.096    |
| F102803.024 | 31028 | 105403 | 230.8009 | 70.5426 | 0.7220                       | 90    | 7826.97        | 17.986           | 0.2680             | 13.9080 | 595066  | 290.120               | 0.248               | 3.491        | 0.206                 | -0.080    |
| F102803.025 | 31028 | 105636 | 230.7440 | 70.5192 | 0.7219                       | 90    | 7826.08        | 17.985           | 0.2670             | 13.9075 | 594923  | 290.098               | 0.248               | 3.490        | 0.206                 | -0.084    |
| F102803.026 | 31028 | 105835 | 230.7328 | 70.4955 | 0.7219                       | 90    | 7825.29        | 17.984           | 0.2670             | 13.9071 | 594902  | 290.076               | 0.248               | 3.490        | 0.206                 | -0.086    |
| F102803.027 | 31028 | 110045 | 230.7279 | 70.4682 | 0.7219                       | 90    | 7824.48        | 17.984           | 0.2670             | 13.9071 | 594887  | 290.046               | 0.248               | 3.490        | 0.206                 | -0.086    |
| F102803.028 | 31028 | 110322 | 230.6455 | 70.4289 | 0.7217                       | 90    | 7823.37        | 17.984           | 0.2670             | 13.9071 | 594675  | 290.005               | 0.248               | 3.488        | 0.206                 | -0.086    |
| F102803.029 | 31028 | 110541 | 230.6362 | 70.3972 | 0.7217                       | 90    | 7822.99        | 17.985           | 0.2680             | 13.9078 | 594662  | 289.976               | 0.248               | 3.488        | 0.206                 | -0.081    |
| F102803.030 | 31028 | 112224 | 230.9556 | 71.0209 | 0.7218                       | 90    | 3131.45        | 17.979           | 0.3020             | 13.9031 | 237904  | 116.113               | 0.285               | 1.397        | 0.249                 | -0.115    |
| F102803.031 | 31028 | 112422 | 230.9020 | 71.0483 | 0.7216                       | 90    | 3131.93        | 17.983           | 0.3020             | 13.9059 | 237814  | 116.108               | 0.285               | 1.396        | 0.249                 | -0.095    |
| F102803.032 | 31028 | 112659 | 230.7888 | 71.0585 | 0.7212                       | 90    | 3130.36        | 17.975           | 0.3010             | 13.8997 | 237673  | 116.101               | 0.285               | 1.396        | 0.249                 | -0.140    |
| F102803.033 | 31028 | 113038 | 230.6612 | 71.0643 | 0.7208                       | 90    | 3130.78        | 17.980           | 0.3010             | 13.9039 | 237497  | 116.082               | 0.285               | 1.395        | 0.249                 | -0.110    |
| F102803.034 | 31028 | 113257 | 230.5832 | 71.0545 | 0.7206                       | 90    | 3129.55        | 17.976           | 0.3010             | 13.9005 | 237390  | 116.065               | 0.285               | 1.394        | 0.249                 | -0.134    |
| F102803.035 | 31028 | 113502 | 230.4889 | 71.0471 | 0.7203                       | 90    | 3129.23        | 17.975           | 0.3020             | 13.9002 | 237279  | 116.055               | 0.285               | 1.393        | 0.249                 | -0.136    |

**12-inch Invensys Turbine Meter Serial No. 12291707 – Low Pressure Loop Natural Gas Test**  
**Test Pressure = 115 psia**

| File        | Date  | Time   | P (psia) | T (F)    | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main Pulses | K (pulses/cf) | U <sub>K</sub> (%) | St      | ReD    | Q <sub>v</sub> (acfm) | U <sub>Q<sub>v</sub></sub> (%) | mdot (lbm/s) | U <sub>mdot</sub> (%) | Error (%) |
|-------------|-------|--------|----------|----------|------------------------------|-------|-------------|---------------|--------------------|---------|--------|-----------------------|--------------------------------|--------------|-----------------------|-----------|
| F102403.000 | 31024 | 65050  | 119.026  | 69.64846 | 0.366729                     | 90    | 1595        | 1.45922       | 0.1830             | 1.12839 | 768302 | 728.702               | 0.144                          | 4.453932     | 0.094                 | -0.136    |
| F102403.001 | 31024 | 65316  | 118.7384 | 68.81581 | 0.366439                     | 90    | 1594        | 1.45985       | 0.1830             | 1.12888 | 767928 | 727.929               | 0.144                          | 4.445694     | 0.094                 | -0.092    |
| F102403.002 | 31024 | 65532  | 118.527  | 68.49668 | 0.366014                     | 90    | 1594        | 1.46024       | 0.1840             | 1.12918 | 767244 | 727.737               | 0.144                          | 4.439359     | 0.094                 | -0.066    |
| F102403.003 | 31024 | 65749  | 118.3607 | 68.41342 | 0.365552                     | 90    | 1593        | 1.4591        | 0.1830             | 1.1283  | 766506 | 727.846               | 0.144                          | 4.434431     | 0.094                 | -0.144    |
| F102403.004 | 31024 | 70005  | 118.2726 | 68.75998 | 0.365021                     | 90    | 1596        | 1.46055       | 0.1840             | 1.12942 | 765654 | 728.495               | 0.144                          | 4.431936     | 0.094                 | -0.045    |
| F102403.005 | 31024 | 70221  | 118.2557 | 69.75211 | 0.364242                     | 90    | 1599        | 1.46067       | 0.1830             | 1.12952 | 764169 | 729.8                 | 0.144                          | 4.430399     | 0.094                 | -0.036    |
| F102403.006 | 31024 | 71002  | 117.2254 | 68.83908 | 0.361675                     | 90    | 1083        | 1.4589        | 0.2130             | 1.12815 | 515351 | 494.893               | 0.166                          | 2.983172     | 0.126                 | -0.157    |
| F102403.007 | 31024 | 71218  | 117.03   | 68.24023 | 0.361498                     | 90    | 1082        | 1.45909       | 0.2120             | 1.1283  | 515061 | 494.371               | 0.166                          | 2.978569     | 0.126                 | -0.144    |
| F102403.008 | 31024 | 71435  | 116.8676 | 68.01865 | 0.361148                     | 90    | 1082        | 1.45942       | 0.2120             | 1.12855 | 514639 | 494.26                | 0.166                          | 2.97502      | 0.126                 | -0.122    |
| F102403.009 | 31024 | 71651  | 116.7377 | 68.00133 | 0.360752                     | 90    | 1083        | 1.46055       | 0.2120             | 1.12942 | 514172 | 494.335               | 0.166                          | 2.972204     | 0.126                 | -0.045    |
| F102403.010 | 31024 | 71919  | 116.6124 | 68.01599 | 0.360347                     | 90    | 1082        | 1.45893       | 0.2120             | 1.12817 | 513685 | 494.427               | 0.166                          | 2.969423     | 0.126                 | -0.155    |
| F102403.011 | 31024 | 72135  | 116.6371 | 69.11732 | 0.359628                     | 90    | 1085        | 1.45987       | 0.2120             | 1.1289  | 512837 | 495.478               | 0.166                          | 2.969795     | 0.126                 | -0.091    |
| F102403.012 | 31024 | 74222  | 115.3195 | 68.2195  | 0.356141                     | 90    | 762         | 1.45969       | 0.2210             | 1.12876 | 357279 | 348.019               | 0.151                          | 2.065735     | 0.105                 | -0.103    |
| F102403.013 | 31024 | 74506  | 115.1442 | 68.09238 | 0.355682                     | 90    | 760         | 1.45589       | 0.2210             | 1.12582 | 356890 | 348.013               | 0.151                          | 2.063029     | 0.105                 | -0.364    |
| F102403.014 | 31024 | 74722  | 115.0281 | 68.10848 | 0.355304                     | 90    | 761         | 1.45754       | 0.2210             | 1.1271  | 356570 | 348.075               | 0.151                          | 2.061208     | 0.105                 | -0.25     |
| F102403.015 | 31024 | 74939  | 115.0416 | 69.05706 | 0.354671                     | 90    | 762         | 1.45669       | 0.2210             | 1.12644 | 356066 | 348.737               | 0.151                          | 2.061448     | 0.105                 | -0.309    |
| F102403.016 | 31024 | 75155  | 115.0271 | 69.77998 | 0.354112                     | 90    | 764         | 1.45853       | 0.2210             | 1.12786 | 355574 | 349.211               | 0.151                          | 2.060996     | 0.105                 | -0.183    |
| F102403.017 | 31024 | 75411  | 114.9608 | 70.07741 | 0.353694                     | 90    | 764         | 1.45789       | 0.2210             | 1.12737 | 355142 | 349.363               | 0.151                          | 2.059464     | 0.105                 | -0.227    |
| F102403.018 | 31024 | 80338  | 115.1709 | 68.45988 | 0.355501                     | 90    | 544         | 1.45449       | 0.2670             | 1.12474 | 255420 | 249.342               | 0.169                          | 1.477356     | 0.13                  | -0.459    |
| F102403.019 | 31024 | 80554  | 115.0428 | 68.3622  | 0.355172                     | 90    | 545         | 1.45729       | 0.2670             | 1.12691 | 255205 | 249.321               | 0.169                          | 1.47586      | 0.13                  | -0.267    |
| F102403.020 | 31024 | 80833  | 114.8938 | 68.28688 | 0.354758                     | 90    | 544         | 1.45466       | 0.2670             | 1.12487 | 254934 | 249.314               | 0.169                          | 1.474098     | 0.13                  | -0.447    |
| F102403.021 | 31024 | 81050  | 114.7748 | 68.24683 | 0.354414                     | 90    | 545         | 1.45735       | 0.2670             | 1.12695 | 254703 | 249.311               | 0.169                          | 1.472651     | 0.13                  | -0.263    |
| F102403.022 | 31024 | 81306  | 114.7886 | 69.02998 | 0.353901                     | 90    | 545         | 1.45505       | 0.2670             | 1.12517 | 254415 | 249.704               | 0.169                          | 1.472843     | 0.13                  | -0.421    |
| F102403.023 | 31024 | 81522  | 114.7866 | 69.70636 | 0.353416                     | 90    | 548         | 1.46119       | 0.2670             | 1.12992 | 254115 | 250.025               | 0.169                          | 1.472711     | 0.13                  | -0.001    |
| F102403.024 | 31024 | 83545  | 115.1002 | 68.24029 | 0.35544                      | 90    | 220         | 1.46094       | 0.5060             | 1.12973 | 102858 | 100.392               | 0.2                            | 0.594721     | 0.169                 | -0.017    |
| F102403.025 | 31024 | 83802  | 114.9548 | 68.07353 | 0.355103                     | 90    | 219         | 1.45464       | 0.5080             | 1.12485 | 102766 | 100.368               | 0.2                            | 0.594019     | 0.169                 | -0.449    |
| F102403.026 | 31024 | 84034  | 114.9361 | 68.39687 | 0.354815                     | 90    | 219         | 1.45369       | 0.5080             | 1.12412 | 102697 | 100.434               | 0.2                            | 0.593927     | 0.168                 | -0.514    |
| F102403.027 | 31024 | 84255  | 114.9223 | 68.85535 | 0.354446                     | 90    | 219         | 1.45231       | 0.5080             | 1.12305 | 102611 | 100.529               | 0.2                            | 0.59387      | 0.169                 | -0.608    |
| F102403.028 | 31024 | 84535  | 114.8524 | 69.2037  | 0.353979                     | 90    | 220         | 1.45788       | 0.5060             | 1.12736 | 102495 | 100.603               | 0.2                            | 0.593523     | 0.168                 | -0.228    |
| F102403.029 | 31024 | 84751  | 114.7424 | 69.22984 | 0.353616                     | 90    | 221         | 1.46444       | 0.5040             | 1.13244 | 102390 | 100.607               | 0.2                            | 0.592938     | 0.169                 | 0.222     |
| F102403.030 | 31024 | 104652 | 115.6288 | 68.2399  | 0.357093                     | 90    | 759         | 1.4571        | 0.2210             | 1.12676 | 357437 | 347.265               | 0.151                          | 2.066766     | 0.105                 | -0.281    |
| F102403.031 | 31024 | 104908 | 115.4992 | 68.18697 | 0.356724                     | 90    | 760         | 1.45874       | 0.2210             | 1.12802 | 357171 | 347.332               | 0.151                          | 2.065026     | 0.105                 | -0.168    |
| F102403.032 | 31024 | 105124 | 115.3898 | 68.23871 | 0.356348                     | 90    | 759         | 1.45634       | 0.2220             | 1.12616 | 356886 | 347.448               | 0.151                          | 2.063534     | 0.105                 | -0.333    |
| F102403.033 | 31024 | 105341 | 115.2905 | 68.37872 | 0.355936                     | 90    | 759         | 1.45571       | 0.2220             | 1.12568 | 356549 | 347.596               | 0.151                          | 2.062032     | 0.105                 | -0.376    |
| F102403.034 | 31024 | 105557 | 115.2093 | 68.5564  | 0.355551                     | 90    | 760         | 1.45696       | 0.2210             | 1.12665 | 356228 | 347.756               | 0.151                          | 2.06075      | 0.105                 | -0.29     |
| F102403.035 | 31024 | 105814 | 115.129  | 68.81082 | 0.355118                     | 90    | 760         | 1.45614       | 0.2210             | 1.12602 | 355850 | 347.951               | 0.151                          | 2.059395     | 0.105                 | -0.346    |
| F102403.036 | 31024 | 110140 | 115.1482 | 68.92867 | 0.355091                     | 90    | 545         | 1.45814       | 0.2670             | 1.12756 | 254765 | 249.176               | 0.169                          | 1.474673     | 0.13                  | -0.21     |
| F102403.037 | 31024 | 110423 | 115.1768 | 69.85799 | 0.35452                      | 90    | 546         | 1.45821       | 0.2670             | 1.12762 | 254428 | 249.621               | 0.169                          | 1.474929     | 0.13                  | -0.205    |
| F102403.038 | 31024 | 110640 | 115.2156 | 70.68224 | 0.354055                     | 90    | 546         | 1.45613       | 0.2670             | 1.126   | 254121 | 249.978               | 0.169                          | 1.475102     | 0.13                  | -0.347    |
| F102403.039 | 31024 | 110856 | 115.2326 | 71.41274 | 0.353592                     | 90    | 547         | 1.45698       | 0.2670             | 1.12666 | 253807 | 250.29                | 0.169                          | 1.475009     | 0.13                  | -0.289    |
| F102403.040 | 31024 | 111113 | 115.2156 | 71.91993 | 0.353183                     | 90    | 547         | 1.4559        | 0.2670             | 1.12583 | 253495 | 250.475               | 0.169                          | 1.474391     | 0.13                  | -0.363    |
| F102403.041 | 31024 | 111329 | 115.136  | 71.8384  | 0.352993                     | 90    | 548         | 1.45918       | 0.2660             | 1.12837 | 253286 | 250.369               | 0.169                          | 1.472971     | 0.13                  | -0.138    |
| F102403.042 | 31024 | 113328 | 115.1434 | 70.23916 | 0.354145                     | 90    | 219         | 1.45392       | 0.5080             | 1.12429 | 102182 | 100.418               | 0.2                            | 0.59271      | 0.169                 | -0.498    |
| F102403.043 | 31024 | 113550 | 115.0799 | 70.43887 | 0.353805                     | 90    | 218         | 1.44674       | 0.5090             | 1.11874 | 102090 | 100.456               | 0.2                            | 0.592363     | 0.169                 | -0.99     |
| F102403.044 | 31024 | 113806 | 115.014  | 70.58872 | 0.353493                     | 90    | 219         | 1.45306       | 0.5080             | 1.12363 | 101999 | 100.478               | 0.2                            | 0.59197      | 0.169                 | -0.557    |
| F102403.045 | 31024 | 114023 | 115.04   | 70.94181 | 0.353321                     | 90    | 218         | 1.44549       | 0.5100             | 1.11778 | 101957 | 100.542               | 0.2                            | 0.592063     | 0.169                 | -1.075    |
| F102403.046 | 31024 | 114239 | 115.066  | 71.52377 | 0.352993                     | 90    | 219         | 1.45062       | 0.5080             | 1.12175 | 101872 | 100.646               | 0.2                            | 0.592124     | 0.168                 | -0.724    |
| F102403.047 | 31024 | 114456 | 115.0841 | 72.14165 | 0.352615                     | 90    | 219         | 1.44899       | 0.5080             | 1.12049 | 101776 | 100.759               | 0.2                            | 0.592155     | 0.169                 | -0.835    |

**12-inch Invensys Turbine Meter Serial No. 12291707 – Low Pressure Loop Natural Gas Test**  
**Test Pressure = 45 psia**

| File        | Date  | Time   | P(psia)  | T(F)     | $\rho$ (lb/ft <sup>3</sup> ) | t(s) | Main<br>Pulses | K (pulses/cf) | U <sub>K</sub> (%) | St      | ReD    | Q <sub>v</sub> (acfm) | UQ <sub>v</sub> (%) | mdot (lbm/s) | U <sub>mdot</sub> (%) | Error<br>(%) |
|-------------|-------|--------|----------|----------|------------------------------|------|----------------|---------------|--------------------|---------|--------|-----------------------|---------------------|--------------|-----------------------|--------------|
| F102403.048 | 31024 | 125726 | 46.48782 | 73.80357 | 0.140639                     | 90   | 1604           | 1.45747       | 0.1890             | 1.12704 | 296368 | 733.694               | 0.152               | 1.719768     | 0.098                 | -0.256       |
| F102403.049 | 31024 | 130005 | 46.41001 | 72.79739 | 0.140674                     | 90   | 1601           | 1.4573        | 0.1890             | 1.12691 | 296403 | 732.405               | 0.152               | 1.717168     | 0.098                 | -0.267       |
| F102403.050 | 31024 | 130244 | 46.3439  | 72.05843 | 0.140674                     | 90   | 1599           | 1.45716       | 0.1890             | 1.1268  | 296417 | 731.559               | 0.152               | 1.715185     | 0.098                 | -0.276       |
| F102403.051 | 31024 | 130500 | 46.31432 | 72.27177 | 0.140526                     | 90   | 1600           | 1.4572        | 0.1890             | 1.12684 | 296180 | 731.996               | 0.151               | 1.714401     | 0.098                 | -0.273       |
| F102403.052 | 31024 | 130716 | 46.2751  | 72.39695 | 0.140373                     | 90   | 1602           | 1.45847       | 0.1890             | 1.12781 | 295912 | 732.276               | 0.151               | 1.713195     | 0.098                 | -0.187       |
| F102403.053 | 31024 | 130932 | 46.23676 | 72.51508 | 0.140224                     | 90   | 1601           | 1.45704       | 0.1890             | 1.12671 | 295646 | 732.534               | 0.152               | 1.71198      | 0.098                 | -0.284       |
| F102403.054 | 31024 | 131502 | 46.44325 | 72.66319 | 0.140817                     | 90   | 1087           | 1.45566       | 0.2180             | 1.12564 | 201719 | 497.828               | 0.174               | 1.168378     | 0.13                  | -0.379       |
| F102403.055 | 31024 | 131718 | 46.40516 | 72.60962 | 0.140718                     | 90   | 1086           | 1.45452       | 0.2180             | 1.12476 | 201567 | 497.759               | 0.174               | 1.167391     | 0.13                  | -0.457       |
| F102403.056 | 31024 | 131934 | 46.36408 | 72.44698 | 0.140636                     | 90   | 1086           | 1.455         | 0.2180             | 1.12514 | 201437 | 497.593               | 0.174               | 1.166327     | 0.13                  | -0.424       |
| F102403.057 | 31024 | 132150 | 46.31271 | 72.13577 | 0.140565                     | 90   | 1086           | 1.45587       | 0.2180             | 1.1258  | 201318 | 497.297               | 0.174               | 1.165044     | 0.13                  | -0.365       |
| F102403.058 | 31024 | 132406 | 46.25716 | 71.70713 | 0.140511                     | 90   | 1085           | 1.45569       | 0.2180             | 1.12567 | 201221 | 496.9                 | 0.174               | 1.163668     | 0.13                  | -0.377       |
| F102403.059 | 31024 | 132645 | 46.19363 | 71.29886 | 0.14043                      | 90   | 1085           | 1.45672       | 0.2180             | 1.12646 | 201097 | 496.551               | 0.174               | 1.162177     | 0.13                  | -0.307       |
| F102403.060 | 31024 | 134602 | 45.98581 | 73.13034 | 0.13931                      | 90   | 766            | 1.45692       | 0.2260             | 1.12662 | 140406 | 350.511               | 0.158               | 0.81383      | 0.108                 | -0.293       |
| F102403.061 | 31024 | 134818 | 45.93363 | 72.81816 | 0.139234                     | 90   | 764            | 1.45405       | 0.2260             | 1.1244  | 140310 | 350.285               | 0.158               | 0.812863     | 0.108                 | -0.489       |
| F102403.062 | 31024 | 135034 | 45.88187 | 72.45596 | 0.139174                     | 90   | 764            | 1.45507       | 0.2260             | 1.12519 | 140234 | 350.04                | 0.158               | 0.811942     | 0.108                 | -0.419       |
| F102403.063 | 31024 | 135250 | 45.83186 | 72.13924 | 0.139106                     | 90   | 763            | 1.45405       | 0.2260             | 1.1244  | 140153 | 349.827               | 0.158               | 0.811052     | 0.108                 | -0.489       |
| F102403.064 | 31024 | 135506 | 45.78223 | 71.98137 | 0.138997                     | 90   | 763            | 1.45448       | 0.2260             | 1.12473 | 140037 | 349.723               | 0.158               | 0.810175     | 0.108                 | -0.46        |
| F102403.065 | 31024 | 135722 | 45.73919 | 71.87605 | 0.138896                     | 90   | 764            | 1.4567        | 0.2260             | 1.12645 | 139930 | 349.648               | 0.158               | 0.809409     | 0.108                 | -0.308       |
| F102403.066 | 31024 | 140100 | 45.55308 | 72.8579  | 0.138067                     | 90   | 547            | 1.45388       | 0.2720             | 1.12427 | 99623  | 250.822               | 0.177               | 0.577171     | 0.134                 | -0.501       |
| F102403.067 | 31024 | 140316 | 45.53107 | 73.20347 | 0.137908                     | 90   | 548            | 1.4557        | 0.2710             | 1.12567 | 99511  | 250.968               | 0.177               | 0.576842     | 0.134                 | -0.377       |
| F102403.068 | 31024 | 140532 | 45.50856 | 73.50036 | 0.137762                     | 90   | 547            | 1.45229       | 0.2710             | 1.12304 | 99409  | 251.097               | 0.177               | 0.576529     | 0.134                 | -0.61        |
| F102403.069 | 31024 | 140748 | 45.48751 | 73.77715 | 0.137625                     | 90   | 547            | 1.45166       | 0.2710             | 1.12255 | 99309  | 251.206               | 0.177               | 0.576205     | 0.134                 | -0.653       |
| F102403.070 | 31024 | 141004 | 45.4492  | 73.81944 | 0.137497                     | 90   | 548            | 1.45433       | 0.2710             | 1.12461 | 99209  | 251.205               | 0.177               | 0.575666     | 0.134                 | -0.47        |
| F102403.071 | 31024 | 141220 | 45.40368 | 73.66764 | 0.137399                     | 90   | 548            | 1.45486       | 0.2710             | 1.12503 | 99127  | 251.112               | 0.177               | 0.575043     | 0.134                 | -0.434       |
| F102403.072 | 31024 | 142834 | 44.85652 | 75.26029 | 0.13532                      | 90   | 221            | 1.4536        | 0.5070             | 1.12405 | 39306  | 101.358               | 0.209               | 0.228595     | 0.174                 | -0.52        |
| F102403.073 | 31024 | 143101 | 44.83121 | 75.51594 | 0.135177                     | 90   | 223            | 1.4662        | 0.5030             | 1.13379 | 39263  | 101.396               | 0.209               | 0.22844      | 0.174                 | 0.342        |
| F102403.074 | 31024 | 143317 | 44.79374 | 75.68081 | 0.135021                     | 90   | 222            | 1.4593        | 0.5050             | 1.12846 | 39216  | 101.418               | 0.209               | 0.228227     | 0.174                 | -0.13        |
| F102403.075 | 31024 | 143549 | 44.74142 | 75.68504 | 0.134861                     | 90   | 221            | 1.4529        | 0.5070             | 1.12351 | 39165  | 101.406               | 0.209               | 0.227929     | 0.173                 | -0.568       |
| F102403.076 | 31024 | 143810 | 44.68591 | 75.65331 | 0.134701                     | 90   | 222            | 1.45961       | 0.5050             | 1.1287  | 39117  | 101.397               | 0.209               | 0.227637     | 0.174                 | -0.109       |
| F102403.077 | 31024 | 144026 | 44.64101 | 75.64063 | 0.134568                     | 90   | 221            | 1.45322       | 0.5070             | 1.12376 | 39074  | 101.384               | 0.209               | 0.227384     | 0.174                 | -0.546       |

**12-inch Invensys Turbine Meter Serial No. 12291707 – Low Pressure Loop Carbon Dioxide Test**  
**Test Pressure = 115 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K (pulses/cf) | U <sub>K</sub> (%) | St      | ReD    | Q <sub>v</sub> (acfm) | U <sub>Q<sub>v</sub></sub> (%) | mdot (lbm/s) | U <sub>mdot</sub> (%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|------------------------------|-------|----------------|---------------|--------------------|---------|--------|-----------------------|--------------------------------|--------------|-----------------------|--------------|
| F112103.030 | 31121 | 131906 | 119.2925 | 69.1141 | 0.9685                       | 90    | 980            | 1.45946       | 0.1790             | 1.12858 | 923201 | 447.653               | 0.144                          | 7.225763     | 0.095                 | -0.119       |
| F112103.031 | 31121 | 132158 | 119.3069 | 69.4105 | 0.9680                       | 90    | 983            | 1.46321       | 0.1790             | 1.13148 | 922724 | 447.873               | 0.144                          | 7.225513     | 0.095                 | 0.138        |
| F112103.032 | 31121 | 132414 | 119.3185 | 69.5461 | 0.9678                       | 90    | 983            | 1.46318       | 0.1790             | 1.13146 | 922360 | 447.883               | 0.144                          | 7.224257     | 0.095                 | 0.135        |
| F112103.033 | 31121 | 132631 | 119.3276 | 69.6950 | 0.9675                       | 90    | 982            | 1.46142       | 0.1790             | 1.13009 | 922082 | 447.967               | 0.144                          | 7.223834     | 0.095                 | 0.015        |
| F112103.034 | 31121 | 132847 | 119.3288 | 69.7833 | 0.9674                       | 90    | 982            | 1.46127       | 0.1790             | 1.12998 | 921874 | 448.013               | 0.144                          | 7.223238     | 0.095                 | 0.005        |
| F112103.035 | 31121 | 133104 | 119.3340 | 69.8733 | 0.9672                       | 90    | 983            | 1.46275       | 0.1790             | 1.13113 | 921600 | 448.013               | 0.144                          | 7.222151     | 0.095                 | 0.106        |
| F112103.036 | 31121 | 133642 | 118.8589 | 70.3560 | 0.9622                       | 90    | 858            | 1.46083       | 0.1930             | 1.12964 | 800647 | 391.558               | 0.151                          | 6.279067     | 0.106                 | -0.025       |
| F112103.037 | 31121 | 133858 | 118.9017 | 70.5923 | 0.9620                       | 90    | 858            | 1.46033       | 0.1930             | 1.12925 | 800501 | 391.692               | 0.151                          | 6.28034      | 0.106                 | -0.059       |
| F112103.038 | 31121 | 134115 | 118.9335 | 70.7966 | 0.9619                       | 90    | 859            | 1.46171       | 0.1930             | 1.13032 | 800278 | 391.779               | 0.151                          | 6.280684     | 0.106                 | 0.035        |
| F112103.039 | 31121 | 134331 | 118.9437 | 70.8320 | 0.9619                       | 90    | 859            | 1.46187       | 0.1930             | 1.13044 | 800154 | 391.736               | 0.152                          | 6.280074     | 0.106                 | 0.046        |
| F112103.040 | 31121 | 134548 | 118.9544 | 70.8768 | 0.9619                       | 90    | 858            | 1.46026       | 0.1930             | 1.1292  | 800040 | 391.71                | 0.151                          | 6.279638     | 0.106                 | -0.064       |
| F112103.041 | 31121 | 134804 | 118.9514 | 70.8725 | 0.9619                       | 90    | 859            | 1.46208       | 0.1930             | 1.13061 | 799969 | 391.679               | 0.152                          | 6.279037     | 0.106                 | 0.06         |
| F112103.042 | 31121 | 140334 | 117.2530 | 70.5407 | 0.9482                       | 90    | 668            | 1.46294       | 0.2250             | 1.13127 | 613260 | 304.41                | 0.166                          | 4.810541     | 0.126                 | 0.119        |
| F112103.043 | 31121 | 140550 | 117.2207 | 70.4464 | 0.9481                       | 90    | 667            | 1.46105       | 0.2260             | 1.12981 | 613177 | 304.347               | 0.166                          | 4.809144     | 0.126                 | -0.01        |
| F112103.044 | 31121 | 140806 | 117.1917 | 70.3696 | 0.9480                       | 90    | 667            | 1.46126       | 0.2260             | 1.12997 | 613112 | 304.304               | 0.166                          | 4.808027     | 0.126                 | 0.004        |
| F112103.045 | 31121 | 141023 | 117.1661 | 70.3408 | 0.9478                       | 90    | 667            | 1.46129       | 0.2260             | 1.12999 | 613027 | 304.298               | 0.166                          | 4.807135     | 0.126                 | 0.006        |
| F112103.046 | 31121 | 141239 | 117.1411 | 70.3248 | 0.9477                       | 90    | 667            | 1.46135       | 0.2260             | 1.13004 | 612901 | 304.284               | 0.166                          | 4.806014     | 0.126                 | 0.01         |
| F112103.047 | 31121 | 141455 | 117.1198 | 70.3418 | 0.9475                       | 90    | 666            | 1.45912       | 0.2260             | 1.12832 | 612762 | 304.292               | 0.166                          | 4.805047     | 0.126                 | -0.142       |
| F112103.048 | 31121 | 143205 | 116.4108 | 70.7413 | 0.9406                       | 90    | 469            | 1.45883       | 0.2630             | 1.12809 | 428224 | 214.327               | 0.151                          | 3.360034     | 0.105                 | -0.162       |
| F112103.049 | 31121 | 143449 | 116.4044 | 70.8359 | 0.9404                       | 90    | 470            | 1.46178       | 0.2630             | 1.13037 | 428092 | 214.351               | 0.151                          | 3.35952      | 0.105                 | 0.04         |
| F112103.050 | 31121 | 143706 | 116.4040 | 70.9271 | 0.9402                       | 90    | 470            | 1.46159       | 0.2620             | 1.13023 | 427997 | 214.378               | 0.151                          | 3.359271     | 0.105                 | 0.027        |
| F112103.051 | 31121 | 143922 | 116.3981 | 71.0242 | 0.9399                       | 90    | 470            | 1.46143       | 0.2620             | 1.13011 | 427862 | 214.401               | 0.151                          | 3.358741     | 0.105                 | 0.016        |
| F112103.052 | 31121 | 144138 | 116.4118 | 71.1503 | 0.9398                       | 90    | 469            | 1.45815       | 0.2630             | 1.12757 | 427760 | 214.427               | 0.151                          | 3.35863      | 0.105                 | -0.209       |
| F112103.053 | 31121 | 144418 | 116.4249 | 71.2476 | 0.9397                       | 90    | 470            | 1.46119       | 0.2620             | 1.12992 | 427672 | 214.437               | 0.151                          | 3.358467     | 0.105                 | 0            |
| F112103.054 | 31121 | 145205 | 115.3839 | 72.2276 | 0.9289                       | 90    | 269            | 1.45959       | 0.4190             | 1.12868 | 241860 | 122.865               | 0.192                          | 1.90224      | 0.158                 | -0.11        |
| F112103.055 | 31121 | 145445 | 115.3925 | 72.4102 | 0.9286                       | 90    | 270            | 1.4648        | 0.4180             | 1.13271 | 241748 | 122.884               | 0.192                          | 1.901919     | 0.158                 | 0.246        |
| F112103.056 | 31121 | 145701 | 115.3938 | 72.5281 | 0.9284                       | 90    | 269            | 1.45919       | 0.4190             | 1.12837 | 241673 | 122.899               | 0.192                          | 1.901693     | 0.158                 | -0.138       |
| F112103.057 | 31121 | 145917 | 115.3973 | 72.7050 | 0.9281                       | 90    | 269            | 1.45893       | 0.4190             | 1.12817 | 241561 | 122.921               | 0.192                          | 1.901356     | 0.158                 | -0.155       |
| F112103.058 | 31121 | 150133 | 115.4032 | 72.9483 | 0.9276                       | 90    | 268            | 1.45304       | 0.4210             | 1.12361 | 241430 | 122.961               | 0.192                          | 1.901074     | 0.158                 | -0.559       |
| F112103.059 | 31121 | 150349 | 115.4185 | 73.1749 | 0.9273                       | 90    | 268            | 1.45252       | 0.4200             | 1.12322 | 241342 | 123.004               | 0.192                          | 1.901081     | 0.158                 | -0.594       |

**12-inch Invensys Turbine Meter Serial No. 12291707 – Low Pressure Loop Carbon Dioxide Test**  
**Test Pressure = 45 psia**

| File        | Date  | Time   | P (psia) | T (F)   | $\rho$ (lb/ft <sup>3</sup> ) | t (s) | Main<br>Pulses | K (pulses/cf) | U <sub>K</sub> (%) | St      | ReD    | Q <sub>v</sub> (acfm) | U <sub>Q<sub>v</sub></sub> (%) | mdot (lbm/s) | U <sub>mdot</sub> (%) | Error<br>(%) |
|-------------|-------|--------|----------|---------|------------------------------|-------|----------------|---------------|--------------------|---------|--------|-----------------------|--------------------------------|--------------|-----------------------|--------------|
| F112103.060 | 31121 | 154128 | 45.6085  | 76.4432 | 0.3545                       | 90    | 681            | 1.45808       | 0.2300             | 1.12751 | 232813 | 311.368               | 0.174                          | 1.839566     | 0.13                  | -0.213       |
| F112103.061 | 31121 | 154353 | 45.5756  | 76.5142 | 0.3542                       | 90    | 681            | 1.45835       | 0.2300             | 1.12773 | 232538 | 311.31                | 0.174                          | 1.837616     | 0.13                  | -0.195       |
| F112103.062 | 31121 | 154610 | 45.5538  | 76.4048 | 0.3541                       | 90    | 680            | 1.45693       | 0.2300             | 1.12663 | 232405 | 311.156               | 0.174                          | 1.836211     | 0.13                  | -0.292       |
| F112103.063 | 31121 | 154826 | 45.4929  | 76.0717 | 0.3538                       | 90    | 679            | 1.456         | 0.2300             | 1.12591 | 232182 | 310.897               | 0.174                          | 1.833389     | 0.13                  | -0.356       |
| F112103.064 | 31121 | 155042 | 45.4257  | 75.5008 | 0.3537                       | 90    | 679            | 1.45786       | 0.2300             | 1.12734 | 232031 | 310.502               | 0.174                          | 1.83037      | 0.13                  | -0.229       |
| F112103.065 | 31121 | 155258 | 45.3819  | 74.9971 | 0.3537                       | 90    | 678            | 1.45735       | 0.2300             | 1.12695 | 231977 | 310.153               | 0.174                          | 1.828339     | 0.13                  | -0.264       |
| F112103.066 | 31121 | 160652 | 46.1566  | 74.9937 | 0.3598                       | 90    | 807            | 1.45895       | 0.2090             | 1.12819 | 280594 | 368.758               | 0.165                          | 2.21156      | 0.118                 | -0.154       |
| F112103.067 | 31121 | 160908 | 46.1073  | 74.9216 | 0.3595                       | 90    | 807            | 1.4592        | 0.2080             | 1.12838 | 280317 | 368.694               | 0.165                          | 2.209093     | 0.118                 | -0.137       |
| F112103.068 | 31121 | 161124 | 46.0455  | 74.5525 | 0.3593                       | 90    | 807            | 1.46031       | 0.2090             | 1.12924 | 280107 | 368.414               | 0.165                          | 2.206013     | 0.118                 | -0.061       |
| F112103.069 | 31121 | 161340 | 45.9861  | 74.1338 | 0.3591                       | 90    | 805            | 1.45788       | 0.2090             | 1.12736 | 279948 | 368.113               | 0.165                          | 2.203147     | 0.118                 | -0.227       |
| F112103.070 | 31121 | 161556 | 45.9262  | 73.6295 | 0.3590                       | 90    | 805            | 1.45924       | 0.2090             | 1.12841 | 279843 | 367.772               | 0.165                          | 2.200385     | 0.118                 | -0.134       |
| F112103.071 | 31121 | 161812 | 45.8701  | 73.2188 | 0.3588                       | 90    | 804            | 1.45856       | 0.2090             | 1.12789 | 279706 | 367.485               | 0.165                          | 2.197724     | 0.118                 | -0.18        |
| F112103.072 | 31121 | 162135 | 45.9407  | 73.9240 | 0.3589                       | 90    | 543            | 1.45561       | 0.2700             | 1.1256  | 189087 | 248.693               | 0.195                          | 1.487543     | 0.157                 | -0.383       |
| F112103.073 | 31121 | 162351 | 45.9133  | 74.0122 | 0.3586                       | 90    | 544            | 1.45805       | 0.2700             | 1.12749 | 188942 | 248.734               | 0.195                          | 1.486626     | 0.157                 | -0.215       |
| F112103.074 | 31121 | 162608 | 45.8985  | 74.4199 | 0.3582                       | 90    | 543            | 1.45426       | 0.2700             | 1.12456 | 188738 | 248.924               | 0.195                          | 1.486074     | 0.157                 | -0.475       |
| F112103.075 | 31121 | 162823 | 45.8739  | 74.6735 | 0.3578                       | 90    | 544            | 1.45633       | 0.2690             | 1.12616 | 188536 | 249.028               | 0.195                          | 1.48514      | 0.157                 | -0.333       |
| F112103.076 | 31121 | 163117 | 45.8480  | 74.9656 | 0.3574                       | 90    | 544            | 1.45564       | 0.2690             | 1.12562 | 188313 | 249.146               | 0.195                          | 1.484138     | 0.157                 | -0.381       |
| F112103.077 | 31121 | 163333 | 45.8249  | 75.1173 | 0.3571                       | 90    | 545            | 1.45801       | 0.2690             | 1.12746 | 188150 | 249.198               | 0.195                          | 1.483243     | 0.157                 | -0.218       |
| F112103.078 | 31121 | 164734 | 45.8729  | 74.4538 | 0.3580                       | 90    | 271            | 1.45065       | 0.4210             | 1.12176 | 94364  | 124.542               | 0.2                            | 0.743046     | 0.163                 | -0.722       |
| F112103.079 | 31121 | 164951 | 45.8711  | 74.7973 | 0.3577                       | 90    | 271            | 1.44972       | 0.4210             | 1.12105 | 94301  | 124.622               | 0.2                            | 0.742988     | 0.163                 | -0.786       |
| F112103.080 | 31121 | 165207 | 45.8644  | 75.1138 | 0.3574                       | 90    | 272            | 1.45419       | 0.4200             | 1.1245  | 94233  | 124.697               | 0.2                            | 0.74286      | 0.163                 | -0.48        |
| F112103.081 | 31121 | 165423 | 45.8474  | 75.3173 | 0.3572                       | 90    | 272            | 1.45363       | 0.4200             | 1.12408 | 94162  | 124.745               | 0.2                            | 0.742564     | 0.163                 | -0.518       |
| F112103.082 | 31121 | 165639 | 45.8260  | 75.5402 | 0.3568                       | 90    | 272            | 1.45299       | 0.4190             | 1.12358 | 94081  | 124.8                 | 0.2                            | 0.742213     | 0.163                 | -0.562       |
| F112103.083 | 31121 | 165855 | 45.8027  | 75.6405 | 0.3566                       | 90    | 272            | 1.45271       | 0.4200             | 1.12336 | 94015  | 124.824               | 0.2                            | 0.741827     | 0.163                 | -0.581       |

**12-inch Invensys Turbine Meter Serial No. 12291707 – High Pressure Loop Natural Gas Test**  
**Test Pressure = 230 psia**

| <u>File</u> | <u>Date</u> | <u>Time</u> | <u>P (psia)</u> | <u>T (F)</u> | <u><math>\rho</math> (lb/ft<sup>3</sup>)</u> | <u>t (s)</u> | <u>Main Pulses</u> | <u>K (pulses/cf)</u> | <u>U<sub>K</sub> (%)</u> | <u>St</u> | <u>ReD</u> | <u>Q<sub>v</sub> (acfm)</u> | <u>UQ<sub>v</sub> (%)</u> | <u>mdot (lbm/s)</u> | <u>U<sub>mdot</sub> (%)</u> | <u>Error (%)</u> |
|-------------|-------------|-------------|-----------------|--------------|----------------------------------------------|--------------|--------------------|----------------------|--------------------------|-----------|------------|-----------------------------|---------------------------|---------------------|-----------------------------|------------------|
| F102803.000 | 31028       | 84824       | 231.2019        | 71.0157      | 0.7226                                       | 90           | 3040.354           | 1.45933              | 0.2640                   | 1.12848   | 2849012    | 1388.925                    | 0.245                     | 16.728189           | 0.203                       | -0.128           |
| F102803.001 | 31028       | 85127       | 231.1963        | 70.8351      | 0.7229                                       | 90           | 3039.734           | 1.45968              | 0.2650                   | 1.12875   | 2849580    | 1388.315                    | 0.245                     | 16.726841           | 0.203                       | -0.104           |
| F102803.002 | 31028       | 85332       | 231.2152        | 70.7578      | 0.7231                                       | 90           | 3038.618           | 1.45934              | 0.2650                   | 1.12849   | 2850239    | 1388.128                    | 0.245                     | 16.728737           | 0.203                       | -0.128           |
| F102803.003 | 31028       | 85530       | 231.2184        | 70.7021      | 0.7232                                       | 90           | 3037.686           | 1.45905              | 0.2640                   | 1.12826   | 2850530    | 1387.978                    | 0.245                     | 16.729012           | 0.203                       | -0.147           |
| F102803.004 | 31028       | 85807       | 231.2140        | 70.6560      | 0.7232                                       | 90           | 3037.451           | 1.45904              | 0.2650                   | 1.12826   | 2850747    | 1387.876                    | 0.245                     | 16.72908            | 0.203                       | -0.148           |
| F102803.005 | 31028       | 90027       | 231.2436        | 70.6393      | 0.7233                                       | 90           | 3037.47            | 1.45913              | 0.2640                   | 1.12832   | 2851135    | 1387.802                    | 0.245                     | 16.730986           | 0.203                       | -0.142           |
| F102803.006 | 31028       | 91947       | 232.5065        | 70.5652      | 0.7275                                       | 90           | 2282.769           | 1.4605               | 0.3010                   | 1.12939   | 2153068    | 1042                        | 0.284                     | 12.634974           | 0.248                       | -0.048           |
| F102803.007 | 31028       | 92217       | 232.4904        | 70.5734      | 0.7275                                       | 90           | 2284.145           | 1.46137              | 0.3010                   | 1.13006   | 2152868    | 1042.007                    | 0.284                     | 12.633939           | 0.248                       | 0.012            |
| F102803.008 | 31028       | 92541       | 232.4565        | 70.5828      | 0.7274                                       | 90           | 2283.426           | 1.46093              | 0.3010                   | 1.12972   | 2152450    | 1041.994                    | 0.284                     | 12.631622           | 0.248                       | -0.018           |
| F102803.009 | 31028       | 92739       | 232.4459        | 70.5784      | 0.7273                                       | 90           | 2282.875           | 1.46063              | 0.3010                   | 1.12949   | 2152311    | 1041.958                    | 0.284                     | 12.630702           | 0.248                       | -0.039           |
| F102803.010 | 31028       | 92954       | 232.4284        | 70.5697      | 0.7273                                       | 90           | 2283.117           | 1.46086              | 0.3010                   | 1.12966   | 2152110    | 1041.906                    | 0.284                     | 12.629331           | 0.248                       | -0.023           |
| F102803.011 | 31028       | 93214       | 232.4229        | 70.5606      | 0.7272                                       | 90           | 2282.567           | 1.46049              | 0.3000                   | 1.12937   | 2152039    | 1041.922                    | 0.284                     | 12.628812           | 0.248                       | -0.049           |
| F102803.012 | 31028       | 100143      | 230.8882        | 70.3706      | 0.7226                                       | 90           | 1650.423           | 1.46046              | 0.2420                   | 1.12936   | 1546766    | 753.379                     | 0.22                      | 9.072632            | 0.171                       | -0.05            |
| F102803.013 | 31028       | 100341      | 230.8867        | 70.3643      | 0.7226                                       | 90           | 1650.125           | 1.46019              | 0.2420                   | 1.12914   | 1546806    | 753.386                     | 0.22                      | 9.072778            | 0.171                       | -0.069           |
| F102803.014 | 31028       | 100540      | 230.9058        | 70.3575      | 0.7226                                       | 90           | 1649.98            | 1.46009              | 0.2420                   | 1.12906   | 1546944    | 753.371                     | 0.22                      | 9.073509            | 0.171                       | -0.076           |
| F102803.015 | 31028       | 100738      | 230.8780        | 70.3627      | 0.7225                                       | 90           | 1650.015           | 1.4601               | 0.2420                   | 1.12908   | 1546744    | 753.38                      | 0.22                      | 9.072383            | 0.171                       | -0.075           |
| F102803.016 | 31028       | 101020      | 230.8734        | 70.3745      | 0.7225                                       | 90           | 1649.779           | 1.45989              | 0.2420                   | 1.12892   | 1546644    | 753.379                     | 0.22                      | 9.071953            | 0.171                       | -0.089           |
| F102803.017 | 31028       | 101235      | 230.8506        | 70.3805      | 0.7224                                       | 90           | 1649.348           | 1.4595               | 0.2410                   | 1.12861   | 1546465    | 753.383                     | 0.22                      | 9.070969            | 0.171                       | -0.116           |
| F102803.018 | 31028       | 102049      | 231.9559        | 70.4658      | 0.7259                                       | 90           | 1145.028           | 1.46105              | 0.2790                   | 1.12981   | 1077321    | 522.467                     | 0.26                      | 6.320786            | 0.221                       | -0.01            |
| F102803.019 | 31028       | 102428      | 232.9063        | 70.4243      | 0.7290                                       | 90           | 1144.181           | 1.46023              | 0.2780                   | 1.12918   | 1081740    | 522.375                     | 0.26                      | 6.346996            | 0.221                       | -0.066           |
| F102803.020 | 31028       | 102632      | 232.9022        | 70.4125      | 0.7290                                       | 90           | 1144.526           | 1.46074              | 0.2790                   | 1.12957   | 1081718    | 522.349                     | 0.26                      | 6.346751            | 0.221                       | -0.031           |
| F102803.021 | 31028       | 102830      | 232.9363        | 70.3840      | 0.7292                                       | 90           | 1144.593           | 1.46094              | 0.2790                   | 1.12973   | 1081908    | 522.309                     | 0.26                      | 6.347611            | 0.221                       | -0.018           |
| F102803.022 | 31028       | 103028      | 232.9251        | 70.3527      | 0.7292                                       | 90           | 1144.799           | 1.46131              | 0.2780                   | 1.13001   | 1081906    | 522.271                     | 0.26                      | 6.347281            | 0.221                       | 0.008            |
| F102803.023 | 31028       | 103226      | 232.9322        | 70.3259      | 0.7293                                       | 90           | 1143.703           | 1.46001              | 0.2780                   | 1.12901   | 1081971    | 522.235                     | 0.26                      | 6.347406            | 0.22                        | -0.081           |
| F102803.024 | 31028       | 105403      | 230.8023        | 70.4461      | 0.7222                                       | 90           | 634.84             | 1.4591               | 0.2670                   | 1.12831   | 595156     | 290.059                     | 0.248                     | 3.491287            | 0.206                       | -0.143           |
| F102803.025 | 31028       | 105636      | 230.7501        | 70.4335      | 0.7220                                       | 90           | 635.088            | 1.45979              | 0.2680                   | 1.12883   | 595002     | 290.037                     | 0.248                     | 3.490297            | 0.206                       | -0.097           |
| F102803.026 | 31028       | 105835      | 230.7400        | 70.4121      | 0.7220                                       | 90           | 635.898            | 1.46176              | 0.2680                   | 1.13036   | 594979     | 290.015                     | 0.248                     | 3.490039            | 0.206                       | 0.038            |
| F102803.027 | 31028       | 110045      | 230.7337        | 70.3897      | 0.7221                                       | 90           | 635.54             | 1.46106              | 0.2670                   | 1.12982   | 594960     | 289.99                      | 0.248                     | 3.489803            | 0.206                       | -0.01            |
| F102803.028 | 31028       | 110322      | 230.6519        | 70.3698      | 0.7218                                       | 90           | 634.815            | 1.45955              | 0.2680                   | 1.12865   | 594729     | 289.96                      | 0.248                     | 3.488309            | 0.206                       | -0.113           |
| F102803.029 | 31028       | 110541      | 230.6432        | 70.3454      | 0.7218                                       | 90           | 634.546            | 1.45905              | 0.2670                   | 1.12827   | 594710     | 289.935                     | 0.248                     | 3.488064            | 0.206                       | -0.147           |
| F102803.030 | 31028       | 112224      | 230.9792        | 70.9458      | 0.7220                                       | 90           | 253.624            | 1.45657              | 0.3020                   | 1.12635   | 237932     | 116.083                     | 0.285                     | 1.39686             | 0.249                       | -0.317           |
| F102803.031 | 31028       | 112422      | 230.9221        | 70.9784      | 0.7218                                       | 90           | 253.694            | 1.457                | 0.3020                   | 1.12668   | 237839     | 116.08                      | 0.285                     | 1.396381            | 0.249                       | -0.287           |
| F102803.032 | 31028       | 112659      | 230.8122        | 71.0074      | 0.7214                                       | 90           | 253.975            | 1.45867              | 0.3020                   | 1.12797   | 237691     | 116.076                     | 0.285                     | 1.395558            | 0.249                       | -0.173           |
| F102803.033 | 31028       | 113038      | 230.6834        | 71.0194      | 0.7209                                       | 90           | 253.556            | 1.45647              | 0.3020                   | 1.12627   | 237513     | 116.06                      | 0.285                     | 1.394516            | 0.249                       | -0.324           |
| F102803.034 | 31028       | 113257      | 230.6029        | 71.0242      | 0.7207                                       | 90           | 253.489            | 1.45624              | 0.3010                   | 1.12609   | 237400     | 116.047                     | 0.285                     | 1.393852            | 0.249                       | -0.339           |
| F102803.035 | 31028       | 113502      | 230.5072        | 71.0186      | 0.7204                                       | 90           | 252.946            | 1.45323              | 0.3020                   | 1.12376   | 237289     | 116.039                     | 0.285                     | 1.39317             | 0.249                       | -0.546           |