



PUBLIC HEARING FOR THE PROPOSED

Notice To Lessee/Operators of Onshore Federal
Oil and Gas Leases Within the Jurisdiction of the
Wyoming State Office
(NTL 2003-1)

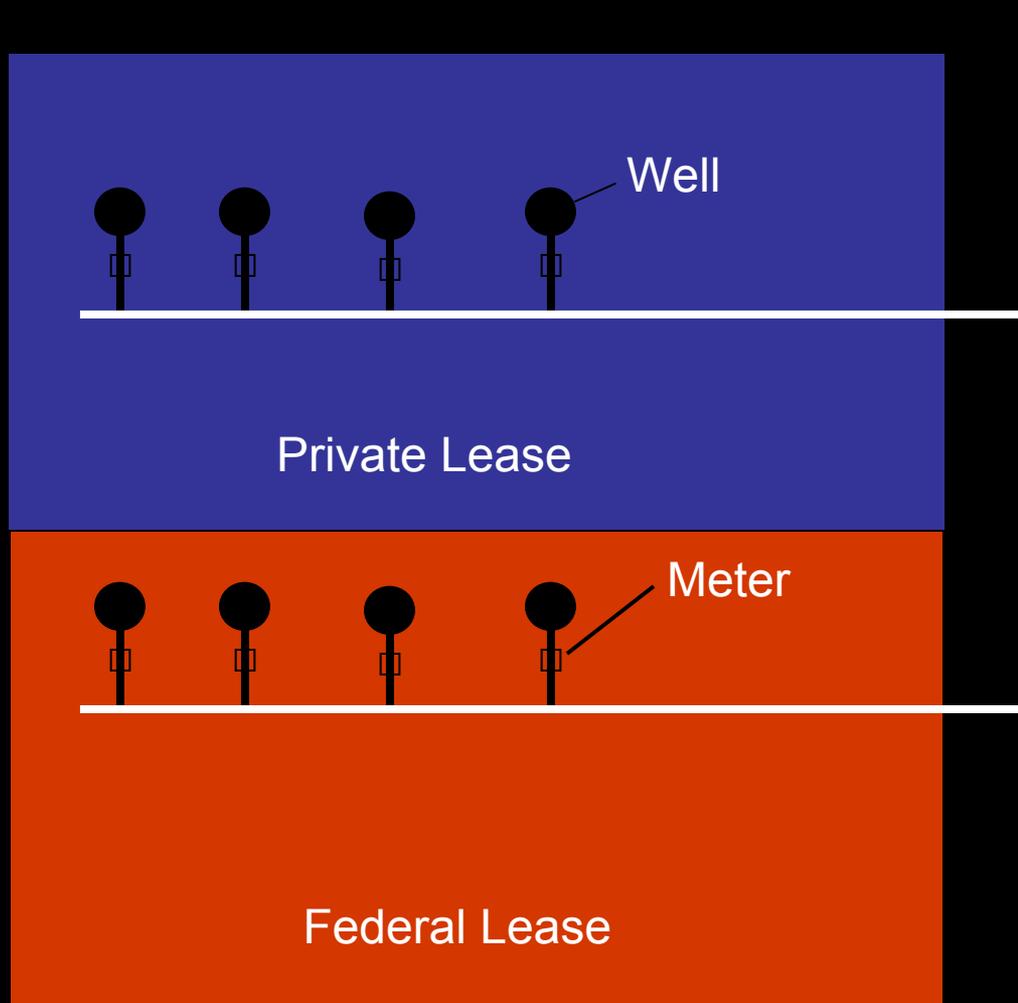
Standards for the Use of Electronic Flow Computers Used
On Differential Type Flow Meters For Gas Measurement

What Meters Will be Affected by This NTL?

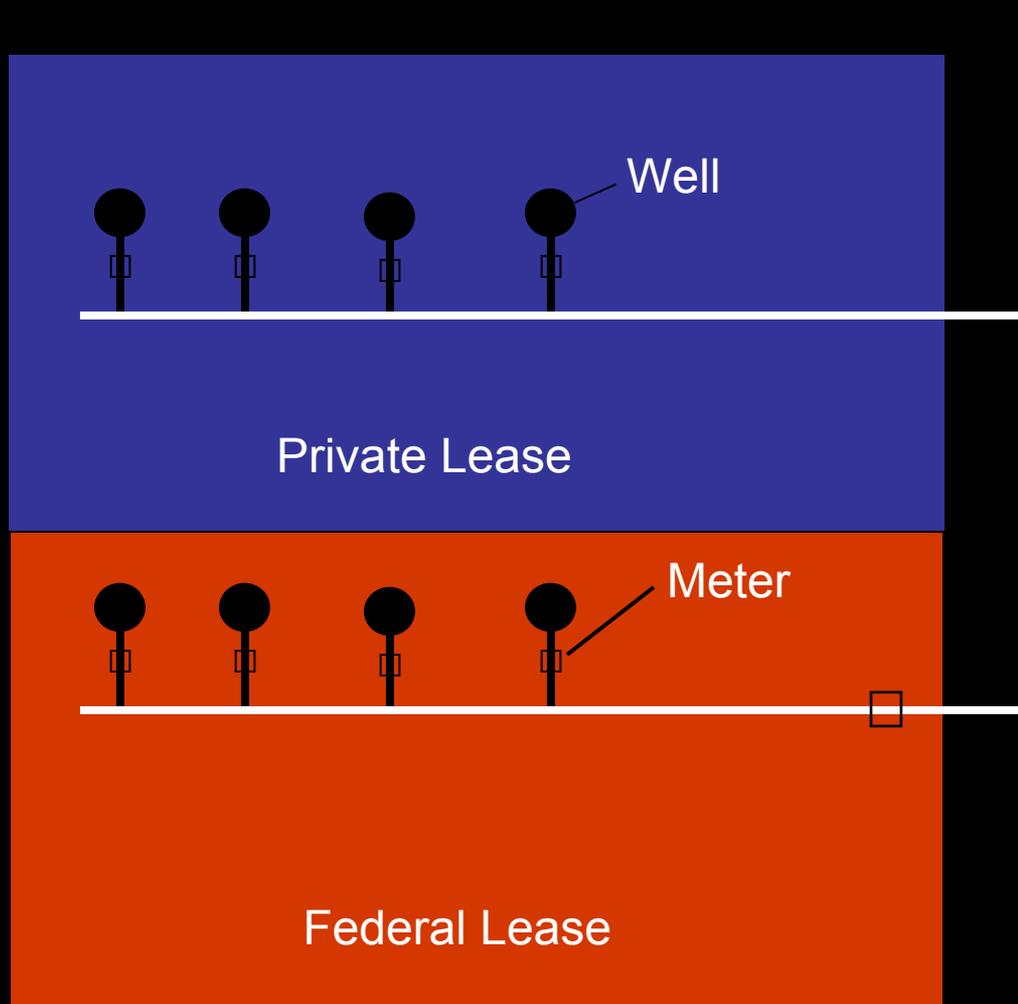
“Point of Measurement”

The last meter measuring gas produced from a federal lease or agreement prior to the gas leaving the lease or agreement, unless off-lease measurement has been approved. It is the meter from which production volume is reported to Minerals Management Service.

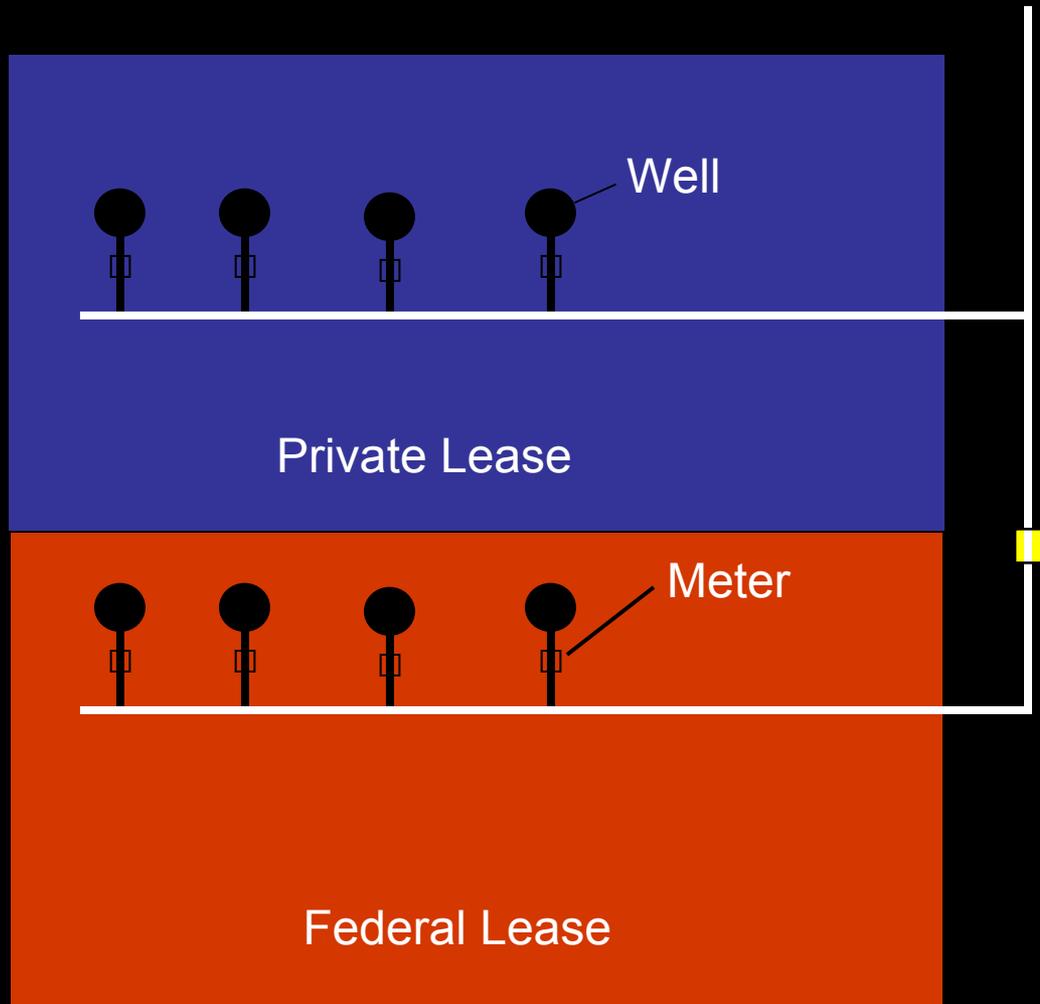
Point of Measurement – Example 1



Point of Measurement – Example 2



Point of Measurement – Example 3



Existing Requirements for Gas Measurement

- **43 CFR 3162.7-3** “All gas production shall be measured by orifice meters or other methods acceptable to the authorized officer...pursuant to methods and procedures prescribed in applicable orders and notices.”
- **Onshore Order 5 (OO5)**
 - Orifice meters + chart recorders automatically approved
 - AGA Report 3 (1985)
 - Anything else: NTL or meter-specific variance
- **NTL (1995) Rock Springs District**, Electronic Flow Computers
- **NTL 96-01, Casper District**, low-flow
- **Meter-specific Variances**

Why A New NTL?

- EFC variances a huge workload
- AGA 1992 calculation requires a variance
- Technology progression since 1989 (OO5)
- Standardize EFC requirements
- Calibration standards and low-flow cut
- Establish overall measurement uncertainty standards

What Are The Goals of the NTL?

- Accurate measurement & proper reporting
- BLM assurance of accurate measurement & proper reporting
- Blanket approval for EFCs
- Blanket approval for AGA 1992 calculations for EFCs

What Are The Limitations of the NTL?

- Not a comprehensive rulemaking for gas measurement
- Cannot exceed or change the intent of OO5
- EFC requirements \approx chart requirements

NTL SUMMARY

“The requirements of this NTL supercede and replace all existing local NTL’s and variances addressing EFC installation and approval.”

Rationale:

- Consistent EFCs requirements

NTL SUMMARY

“All EFCs already installed and operating prior to this notice shall be subject to all of the new provisions listed below. Existing EFCs shall be granted a one-year grace period, from the issuance of this standard, to bring those EFC’s into compliance.”

Rationale:

- Accurate measurement & proper reporting needed for all “Points of Measurement”

NTL SUMMARY

“Other Standards Incorporated by Reference

1. Onshore Oil and Gas Order 5, *Measurement of Gas on Federal and Indian Oil and Gas Leases*, remains in full force and effect, except as specified below:.....”

Rationale:

- OO5 applies to EFCs, except:
- Waives requirements specific to chart recorders
- Rewords requirements to apply to EFCs
- Allow AGA 1992 flow calculations

NTL SUMMARY

Other Standards Incorporated by Reference (con't)

2. “EFCs shall be installed, operated, and maintained in accordance with the portions of API Chapter 21, Section 1, 1993, that apply to differential types of flow meters. In addition, Paragraphs 4, 5, 6, 8, 9, and 12, of this NTL supercede or amend sections of API 21.1, as noted at the end of each paragraph listed.”

Rationale:

- API 21.1 is an excellent standard for EFCs
- BLM has never recognized or adopted API 21.1
- Most of 21.1 is adopted
- Recognize limitations in this NTL

NTL SUMMARY

Other Standards Incorporated by Reference (con't)

3. “All flowrate calculations shall be made in accordance with either AGA Report Number 3 (API Chapter 14, Section 3), 1985, or AGA Report Number 3 (API Chapter 14, Section 3, Part 3), 1992. Super-compressibility shall be determined in accordance with AGA Report Number 3 (1985 or 1992), or AGA-8/NX-19.”

Rationale:

- AGA 1992 not currently allowed
- AGA 1992 = accurate measurement
- This would allow blanket approval to use the 1992 calculations for EFCs
- AGA 1992 not a requirement

NTL SUMMARY

Informational Requirements

4. “For each meter, the EFC shall display the current instantaneous values of flowing (static) pressure, differential pressure, flowing temperature, and flow rate. The units of measure for each variable shall also be displayed. The display shall be readable without the need for data collection units, laptop computers, or any special equipment, shall be on-site, and shall be in a location that is accessible to BLM (Note: This supercedes API 21.1.5.1.1.3)”

Rationale:

- Necessary for BLM to perform independent inspections
- Displayed data is unedited
- API 21.1.5.1.1 allows a display or data collection unit

NTL SUMMARY

Informational Requirements (con't)

5. “The following information must be maintained onsite and be accessible to BLM personnel without the need for data collection units, laptop computers, or any special equipment (Note: This supercedes API 21.1.5.1.1.2):
 - Meter run inside diameter;
 - Orifice plate size;
 - Make, range, and model number of each transducer/transmitter;
 - Calibrated span of each transducer/transmitter;
 - The physical location of the flowing (static) pressure (upstream or downstream);
 - A unique meter identification number; and,
 - Specific gravity”

Rationale:

- Necessary for BLM to verify accuracy and proper reporting
- Does not have to be part of the display
- Same as API 21.1 except for pressure tap location

NTL SUMMARY

Informational Requirements (con't)

6. “All records required by API 21.1.6, shall be retained for at least 6 years, and shall be made available to BLM upon request (Note: This supercedes API 21.1.6.8).”

Rationale:

- FOGRMA requires 6-year retention of data
- API 21.1.6.8 specifies two-year data retention

NTL SUMMARY

Informational Requirements (con't)

7. “Upon request, the operator shall submit all technical documentation pertaining to the EFCs that are installed. This includes installation instructions, calibration procedures, software and algorithm details, and technical specifications. “

Rationale:

- Manufacturer’s manual and specifications
- Required to ensure accuracy

NTL SUMMARY

Verification and Calibration

8. “As found” readings for the differential pressure and static pressure transducers/transmitters shall be recorded at 0% and 100% of calibrated span, and at one point that represents the normal operating pressure of each transducer/transmitter (Note: This supercedes API 21.1.8.3.1.2 and .3).”

Rationale:

- Minimum requirements = charts
- Applies to verification, not calibration
- OK to exceed minimum requirements

NTL SUMMARY

Verification and Calibration (con't)

9. “If any of the “as found” readings required in Paragraph 8 are off by more than the transducer/transmitter specification for accuracy, expressed in units of measure (inches or water column or psi)*, that transducer/transmitter shall be calibrated in accordance with the manufacturers specifications. (Note: This amends API 21.1.1.8.3).”

10. “If either transducer/transmitter required calibration, then prior to returning a meter to service, “as left” readings for those transducers/transmitters shall be recorded at 0% and 100% of calibrated span, and at one point that represents the normal operating pressure of each transducer/transmitter.”

NTL SUMMARY

11. “If any of the “as left” readings required in Paragraph 10 are off by more than the transducer/transmitter specification for accuracy, expressed in units of measure (inches of water column or psi)*, the transducer/transmitter shall be repaired or replaced within 48 hours.”

NTL SUMMARY

Example of Paragraphs 9, 10, and 11:

You are verifying the calibration of a differential pressure transducer on an EFC that has a calibrated span of 0-50". The manufacturer's specifications for this transducer state an overall accuracy of $\pm 0.2\%$ of span. What is the allowable difference between the transducer and the test instrumentation at 0%, 100% and one point in the normal operating range?

Answer. The accuracy of the transducer, stated in inches, is 0.2% of 50", or 0.1". Therefore, the allowable tolerance at all 3 test points is ± 0.1 ". The transducer must be calibrated per manufacturer specification if the result of any of the 3 test points exceed ± 0.1 ".

NTL SUMMARY

Example of Paragraphs 9, 10, and 11 (con't)

The calibrator applies the following pressures to obtain “as found” readings:

<u>Required test point</u>	<u>Test instrument</u>	<u>EFC (as found)</u>
0%	0.0”	0.0”
100%	50.0”	49.9”
“normal”	27.0”	27.2”

Does this transducer require calibration?

Answer: Yes. The transducer must be calibrated per the manufacturer’s specifications because the “normal” point is off by more than the allowable 0.1”.

NTL SUMMARY

Example of Paragraphs 9, 10, and 11 (con't)

Despite repeated calibration attempts by the calibrator, the “as left” reading at the normal operating point does not change (i.e., it stays at 27.2” while 27.0” are applied by the test instrument). Is this good enough?

Answer. No. The transducer must be repaired or replaced within 48 hours, in order to bring the “as left” reading to within ± 0.1 ” of the test instrument at all points required.

NTL SUMMARY

Rationale:

- OO5 requires “zero error” prior to the completion of calibration
- This NTL adopts flexibility
- This NTL allows 48 hours compliance instead of “prior to completion of calibration as required by OO5
- Defines “unacceptable difference” specified by API

NTL SUMMARY

Verification and Calibration (con't)

12. “An ‘as found’ reading for the temperature transducer/transmitter shall be obtained near the normal flowing temperature of the gas (Note: This amends API 21.1.8.3.1.4)”
13. “If the ‘as left’ readings for the temperature transducer/transmitter are not within 0.5°F of the test thermometer, the temperature transducer/transmitter shall be replaced within 48 hours.”

Rationale:

- No BLM requirements for temperature calibration
- Adopting the minimal requirements of API 21.1
- API 21.1 refers to the “fluid’s temperature”, instead of “normal flowing temperature”

NTL SUMMARY

Verification and Calibration (con't)

14. If, during a calibration, transmitter/transducer errors result in a flow rate error greater than 2% at the normal flowing conditions tested, the volume shall be corrected in addition to adjusting the transducers/transmitters to the standards specified in Paragraphs 11 and 13.. ...

Rationale:

- This is a modification of OO5 to match applicable sections of this NTL

NTL SUMMARY

Other

15. “For meters measuring more than 100 Mcf per day on a monthly basis, the EFC shall be installed, operated, and maintained to achieve an overall measurement uncertainty of $\pm 3\%$, or better, of true flowrate. The calculation of uncertainty shall be done in accordance with AGA Report 3, Part 1, 1991, or other method that has been approved by the authorized officer. BLM may prescribe operating limits to implement this requirement.”

Rationale:

- This meets the intent of OO5
- Chart recorder in compliance with OO5 = $\pm 3\%$.
- Low-flow (<100 Mcf/day) exemptions in OO5 eliminate uncertainty requirements
- BLM is developing an “uncertainty calculator”

NTL SUMMARY

Other Requirements (con't)

16. “Unless otherwise approved by BLM, the low flow cutoff shall not be set higher than the manufacturer’s basic uncertainty specification for the differential pressure transducer/transmitter, expressed in inches of water column.”

Rationale:

- Low-flow cutoff eliminates false flow caused by transmitter drift
- DP transmitter should not drift outside its accuracy specification