Response to Comments
Colorado Notice to Lessees (NTL) 2007-1

General Comments

The Bureau of Land Management (BLM) received one comment referencing the National Technology Transfer and Advancement Act (NTTAA), and suggesting that BLM accept industry standards (in whole) as required by the NTTAA, rather than developing independent standards. The NTTAA, Sec 12(d)(1) states:

> *"Except as provided in paragraph (3) of this subsection, all Federal agencies and departments shall use technical standards that are developed or adopted by voluntary consensus standards bodies, using such technical standards as a means to carry out policy objectives or activities determined by the agencies and departments."*

Paragraph (3) goes on to state:

> *"If compliance with paragraph (1) of this subsection is inconsistent with applicable law or otherwise impractical, a Federal agency or department may elect to use technical standards that are not developed or adopted by voluntary consensus standards bodies…"*

In developing the draft Notice to Lessees (NTL), BLM did adopt various industry voluntary consensus standards such as American Petroleum Institute Chapter 21, Section 1 (hereafter referred to as API 21.1) relating to electronic flow measurement, American Gas Association Report Number 3 (hereafter referred to as AGA 3), and American Gas Association Report Number 8 (hereafter referred to as AGA 8). The NTL does make various exceptions and additions to the requirements of API 21.1 because some of the provisions of API 21.1 are inconsistent with applicable law or with other BLM requirements such as Oil and Gas Onshore Order Number 5 (OO5).

Oil and Gas Onshore Order 5 (OO5) remains BLM's primary standard for gas measurement on Federal and Indian land. While the NTL is specific to Colorado and *electronic* flow measurement, OO5 has a national scope and applies to all forms of gas measurement. One of the premises in developing the draft NTL was to be consistent, where practical, with the requirements for chart recorders that are described in OO5. For example, OO5 requires a 3-point verification for chart recorders, whereas API 21.1.8.3 requires a 5-pont verification for electronic flow computers (EFC). In order to ensure that the requirements for EFCs are not more stringent than the requirements for chart recorders in OO5, BLM decided not to enforce the 5-point verification requirement in API 21.1.

As another example, OO5(III.C.19) requires chart recorders to be adjusted to "zero" error prior to placing the meter back into service. This is generally obtainable in a chart

recorder because the precision of the chart recorder is less than its accuracy. In other words, combining the effects of pen width, chart line width, and subjectivity in reading charts, the appearance of “zero” error is relatively easy to achieve. Given that the precision of the readout for a transmitters or transducers often exceeds its accuracy, obtaining “zero” error during a verification or calibration is often not possible or practical. API 21.1 does not provide a tolerance for verification; therefore, even if API 21.1 were adopted in whole and without exceptions, BLM would still enforce the “zero” error provision of OO5. The verification tolerances provided in paragraphs 9 and 13 actually benefit operators because they are more practical than the default requirements in OO5 as they would apply to EFCs.

BLM believes that we are in compliance with the NTTAA by adopting three different industry standards in the draft NTL. Exceptions and additions to the requirements of API 21.1 are necessary due to inconsistencies with applicable law and because they were otherwise impractical, as allowed by Section 12(d)(3) of the NTTAA. No changes were made based on this comment.

The Colorado State Office received a comment suggesting that BLM work with industry to review and revise existing standards and to participate in technical forums to achieve a common understanding of EFC measurement practices. We agree with this comment. Since 2004, BLM has been actively participating in the development of new API standards and revisions of existing standards, including API 22.1, 22.2, 22.4, 22.5, 21.1, 14.3, and the newly formed Committee on Petroleum Measurement and Allocation. Because no wording changes were suggested by the commenter and BLM is actively working to address this comment, no changes to the NTL were made.

One comment suggested that BLM develop a consistent national standard similar to OO5, which references industry standards. BLM agrees with this comment and is working towards this goal. However, the revision of a national standard such as OO5 is a long and tenuous endeavor. Several attempts at revising OO5 have been made since the early 1990’s, including the proposed 43 CFR 3100 revisions in 1998; none of which have been successful for one reason or another. Even under the best circumstances, the revision of OO5 is at least 3 years away. BLM feels strongly that the requirements in the draft NTL are long overdue and has developed the NTL process as a temporary solution until such time as OO5 is revised. BLM policy (WO IM 2006-233) requires that a consistent “model” NTL be proposed for each state wishing to develop an NTL for EFCs. This process has helped ensure national consistency between states.

When or if Onshore Order 5 is revised, BLM intends to rely on industry standards as much as possible per the NTTAA. However, even with BLM’s participation on standards development organizations such as API, it is unlikely that BLM will ever be able to accept an industry standard in whole, with no exceptions or additions. The goals, purposes, and limitations of industry standards are often very different from the goals, purposes, and limitations that BLM must adhere to. No changes to the draft NTL were made as a result of this comment.

We received one comment stating that the NTL is not necessary for BLM to carry out its mandated responsibility and is, therefore, unnecessary. The commenter argued that since BLM is currently carrying out gas accountability without the NTL, it must not be necessary. We do not agree with this statement and reject the comment. Without this NTL, BLM is unable to enforce[1] many deficiencies related to EFCs which makes it difficult or impossible for us to carry out our overall mandate to ensure that Federal and Indian gas is accurately measured and properly reported. The following bullet items give several examples of how our core responsibilities have been affected without the NTL:

- BLM was unable to enforce[1] requirements for on-site information, which inhibited our ability to verify the calculated flow rate and determine overall meter station uncertainty. Both of these functions are critical to our core mission regarding gas accountability for Federal and Indian leases;
- BLM was unable to enforce[1] any of the provisions of API 21.1, including calculation methodologies, reporting requirements, and calibration/verification procedures, all of which help ensure that gas is being accurately measured and properly reported on Federal and Indian leases;
- BLM was unable to enforce[1] low-flow cutoff standards which could have resulted in significant volumes of unreported gas being removed from Federal and Indian leases.

While it is true that BLM was able to accomplish some level of gas accountability prior to the implementation of the NTL, much of this was due to fortuitous and voluntary compliance with the standards in the NTL on the part of industry and the issuing of case-specific written orders by the local field offices.

BLM received one comment stating that this NTL would result in considerable unnecessary expense and would be unduly burdensome on industry. No further explanation as to what specific parts of the NTL would be burdensome or costly was given. We do not believe that the requirements of this NTL are either burdensome or costly and no changes to the NTL were made as a result of this comment. Our experience with other NTLs such as WY NTL 2004-1, which has been in place for over 3 years, has shown that compliance is relatively easy and places very little burden on industry. We are not aware of any wells or leases that were shut in or curtailed as a result of the implementation of WY NTL 2004-1, nor did the Wyoming BLM offices receive any significant complaints from industry during the implementation phase.

In fact, some of the provisions of the NTL are actually less restrictive and less burdensome than existing requirements. For example:

- Colorado's existing NTL for electronic flow measurement (NTL-CO-90-1) still requires individual approval for each electronic flow meter installed. This NTL

[1] Even without the NTL, BLM could enforce these requirements through the Written Order and variance approval process. However, this would be done on a case by case basis and would result in enormous inconsistencies from state to state and office to office. Throughout the development of the "model" NTL, from which this NTL is derived, industry expressed a strong desire for national consistency.

will make approval of EFCs complying with this NTL automatic, thereby significantly reducing the paperwork for both industry and BLM;

- Implementation of this NTL gives automatic approval for the use of the AGA Report No. 3 (1992) flow equation. Without this NTL, operators would have to request a meter-specific variance request to use anything besides the AGA Report No. 3 (1985) flow equation. Again, this represents a savings in time and paperwork.
- Implementation of this NTL provides consistent requirements with other states that have recently issued NTLs for EFCs including California, Montana, Utah, and Wyoming (the Wyoming NTL does have some minor differences that will be corrected in the near future). Consistency across field office and state office boundaries was one of the primary concerns of industry in the development of this, and other, NTLs.
- Strict adherence to Onshore Order 5 would require differential and static pressure transducers to operate in the outer 2/3 of their calibrated spans. This NTL provides the option of uncertainty based measurement which, in the vast majority of cases, is far less restrictive.
- API 21.1.8.3.1.4 requires the flowing temperature transducer to be calibrated if the "as found" value of flowing temperature is more than 0.5º from the reference standard. The NTL allows a difference of 2.0ºF.

One comment suggested that BLM wait for the new version of API 21.1 to be published before pursuing the NTL, as the new API 21.1 should be out "in the near future" and may alter some of the existing requirements. As a participant on the API 21.1 working group, BLM fully appreciates the amount of work that has gone into the revision so far and the tremendous amount of work left to do.

It is the intent of BLM to initiate a revision of Onshore Order 5 once API 21.1 and other standards are finalized. A new Onshore Order 5 would supersede the NTLs and adopt much of the new industry standards. The Colorado State Office feels that it is appropriate and necessary to implement the NTL at this time and not base timeframes on the tentative completion dates of other documents. If significant changes to API 21.1 are finalized in the near future that would affect the provisions of the NTL, it would be relatively simple and quick process to issue an amended NTL in order to comply with the revised standard.

BLM received one comment objecting to the "picking and choosing" of parts of API 21.1 that will be enforced and stating that we should adopt it in whole. While BLM recognizes this comment and is actively working to address the concerns raised by the commenter, no changes to the NTL were made as a result.

To date, Colorado has not recognized or enforced any of the provisions of API 21.1. We feel that even without the revisions currently being developed, API 21.1 in its current form sets forth useful and necessary standards for EFCs. Unfortunately, API 21.1 contains several statements that: 1) exceed existing requirements for chart recorders under OO5; 2) conflict with existing laws, or; 3) do not adequately define violations for the purposes of enforcement. Therefore, nine specific additional requirements to API 21.1

have been included in this NTL. In addition, four of the provisions of API 21.1 will not be enforced by BLM. As a result, BLM will be able to enforce the remaining provisions. For the most part, the additional requirements are minor and should not represent a significant burden to the industry. We felt it was more beneficial to adopt the majority of API 21.1, with a few additional requirements, than to not adopt it all.

One comment objected to "BLM interference" into third party contracts, stating that some of the provisions of the NTL were in conflict with third party contracts that the commenter had entered into. The commenter asked that items which would require changes to existing contracts be dropped from the NTL. The commenter did not specify which provisions of the NTL were in conflict with their third party contracts.

BLM has no authority over third party contracts. Our only authority is over companies that operate on Federal and Indian leases. This authority is granted to BLM through the lease instrument which acts as a contract between BLM and the operator and which applies all applicable regulations to the operator. This NTL is authorized under 43 CFR 3261.2. BLM believes that all the provisions of this NTL are necessary to carry out our core mission of ensuring accurate measurement and proper reporting of gas produced and removed from Federal and Indian leases. We are aware that some of our requirements, both in this NTL and in Onshore Order 5 may be in conflict with some of the sales and transportation agreements that the operator has with third parties. We are also aware that some contracts are not "arms-length" in nature and often contain negotiated terms that do not necessarily represent good measurement practice. Conflicts between BLM requirements and third party contracts are outside of BLM's control. Because Federal and Indian oil and gas operators must comply with BLM requirements regardless of the provisions contained in other contracts, no changes to the NTL were made.

One comment proposed that an additional year be added to the timeframes for compliance for meters that flow more than 100 Mcf/day but less than 500 Mcf/day and also for meters flowing more than 500 Mcf/day. The rationale for the requested change was to allow the replacement or upgrade of meters into company's budget cycles.

BLM feels that the timeframes as written are reasonable in most cases. During the development of the "model" NTL that the Colorado State Office is implementing, increased timeframes for compliance from original versions (such as WY NTL 2004-1) were included to address industry concerns regarding budget and timing. The commenter did not provide any specific data to support longer timeframes, therefore, we did make any changes to the NTL as a result of the comment. As with all the requirements of the NTL, variances can be requested from the local field office if specific issues arise and the operator can justify the variance.

<u>Paragraph 4</u>

One comment objected to the information retention requirements in both Paragraphs 4 and 5, claiming them to be burdensome without any corresponding benefit that would improve the information available to BLM. The commenter then went on to state that the

electronic readout may not be able to display all the necessary data and that the data can be retrieved through an audit request.

The display requirements in Paragraph 4 are available on virtually every make and model of EFC that BLM is aware of on Federal and Indian land; therefore the requirement to display the required information in Paragraph 4 should not be burdensome. The data requirements of Paragraph 4, in conjunction with the requirements of Paragraph 5, serve several purposes critical to BLM's core mission of ensuring that gas produced from Federal and Indian leases is accurately measured and properly reported:

- The on-site information allows BLM to independently calculate an instantaneous flow rate and compare it with the flow rate displayed on the EFC. Significant differences *may* indicate that the EFC has been programmed with erroneous set-up parameters or that there is a calculation error;

- The data shown on the display is raw and unedited, giving BLM a level of assurance that is not possible with data requested after-the-fact;

- Onsite data can be used by BLM to determine "normal" operating conditions that is used as one of the required calibration points;

- Onsite data allows the calculation of overall meter station uncertainty as required in Paragraph 15(b).

BLM cannot solely rely on audits to fulfill our mandated responsibilities for two reasons. First, numerous internal reviews from the Inspector General and General Accounting Office have historically found material weaknesses in our inspection and enforcement programs and have emphasized the need for "field verification" and "field presence". Second, given the limited number of inspection and enforcement staff, and multiple responsibilities that are assigned to them, the field verifications are a quick, easy, and efficient way to identify potential problems and prioritize audit workloads without relying on or waiting for industry assistance or involvement.

In summary, BLM does not believe the requirements of Paragraph 4 to be burdensome and feels that they are essential to BLM's core mission regarding production accountability. No changes to the NTL were made as a result of this comment.

BLM received one comment objecting to the requirement for an on-site display without any grandfather clauses. The commenter stated that retrofitting older meters without a display will be costly. BLM acknowledges that retrofitting existing meters without a display will require some expenditure by industry. To mitigate the impact of this expense, BLM included the timeframes for compliance listed on the first page of the NTL. These timeframes are tiered to allow longer times for low volume meters where the cash flow is presumably less. As discussed in previous paragraphs, it is nearly impossible for BLM to fulfill our core mission without having all the onsite information required in the NTL available to our inspection staff. The "grandfathering" of existing equipment would result

in our inability to perform field verifications and production accounting on those meters, which is inconsistent with our primary mission and Federal law. No changes to the NTL were made as a result of this comment.

Paragraph 5

Several comments stated that the meter software may not provide electronic readout of all the required information and requiring this information may result in costly replacement of many older EFCs. The commenter also stated concerns about updating the information every time a change is made, especially considering that it can be obtained through audit.

The necessity of having the information required by both Paragraphs 4 and 5 is discussed above, in response to the comment regarding Paragraph 4. In regards to the commenter's concern about meter software being able to provide electronic readout of all the required information, we want to emphasize that the onsite data requirements of Paragraph 5 do not have to be part of the display. For example, the meter run inside diameter is typically stamped on the flange or plate holder. As long as this value is readable and accessible, the requirement has been met. Likewise, the requirement for make, range, and model number of each transducer/transmitter will be met as long as the manufacturer's identification tag is readable and accessible on site. Other parameters, such as physical location of the static pressure tap, calibrated spans, orifice size, and specific gravity can be written on a data card and placed at an on-site location. No changes to the NTL were made as a result of this comment.

Several comments expressed concerns about maintaining the currency of the information required in Paragraph 5. We realize that maintaining current data on site can be an additional workload, especially as it relates to specific gravity since that value can change frequently. For this reason, the wording of Paragraph 5 is such that it is not a violation if the data is not current; it is only a violation if the data is not there. If, for example, it was discovered during an inspection that the specific gravity posted on site was not the most recent value, the BLM would not issue an Incident of Non Compliance. Instead, we would issue a Written Order to update the specific gravity to match the most recent gas analysis. A violation could be issued if the operator did not comply with the Written Order.

Additionally, the purpose of the on-site data is to check the displayed flow rate, given the on-site data available. Unless the specific gravity used in the EFC is significantly different from that displayed on-site, it is unlikely that the difference in calculated flow rate would be significant enough to result in a failed field verification. No changes to the NTL were made based on this comment.

One comment questioned the need for displaying the specific gravity on-site when all calculations are performed off-site. The commenter went on to state that only the flow extension and temperature are used from the EFC on-site, and all other data is maintained in an off-site database. We realize that off-site calculations are relatively common and are allowed by API 21.1. However, even if off-site calculations are performed to derive final

volumes, the information required by Paragraph 5 is still required at the meter. The values displayed on location do not necessarily have to be final settlement values. There is no violation if an inspector finds a significant discrepancy between the displayed flow rate and the flow rate calculated manually; it simply indicates that more research into the issue is warranted.

In most situations, BLM inspectors would have no indication of whether calculations were being done on-site or off-site, and would have no way of verifying where the calculations were being done even if it was indicated. For this reason, we felt that we must apply consistent requirements to all EFCs and no changes to the NTL were made as a result of this comment.

Paragraph 6

BLM received one comment objecting to the required 6-year retention of data, stating that it was left over from the days of chart recorders and should not apply to EFCs. The comment went on to say that the 6-year data retention requirement is very costly. The commenter also made the observation that FERC only requires data retention for 3 years.

Federal oil and gas lessees and operators have a statutory requirement to retain data for at least 6 years because of Section 103(b) of the Federal Oil and Gas Royalty Management Act of 1982 (FOGRMA) which states:

> *"Records required by the Secretary with respect to oil and gas leases from Federal or Indian lands…shall be maintained for 6 years after the records are generated…"*

To change this requirement would require a legislative amendment to FOGRMA, which is well beyond the scope and authority of this NTL. No changes were made as a result of this comment.

Paragraph 7

BLM received one comment asking that information submitted to BLM under this Paragraph be held as confidential.

BLM generally holds data received by oil and gas operators as confidential under § 552(b)(4) and (9) of the Freedom of Information Act. Section 552(b)(4) exempts "trade secrets and commercial or financial information obtained from a person as privileged or confidential", and Section 552(b)(9) exempts "geological and geophysical information and data, including maps, concerning wells". If the operator believes data requested under Paragraph 7 is confidential, each page should be clearly marked with the words "Proprietary and Confidential". However, BLM cannot guarantee that the data will remain confidential if the determination of confidentiality under the above-referenced paragraphs is challenged and overturned.

Paragraph 8

BLM received two comments objecting to the requirement to verify the static pressure transducer at 100% of span. The commenters stated that their company policy only calls for calibration at line pressure and this requirement will force their calibrators to carry high-pressure nitrogen bottles.

The requirement in Paragraph 8 to perform a verification at 100% of span is also required by API 21.1.8.3.1.3. Because verification at 100% of span is standard industry practice and as the commenters did not provide any justification, other than cost savings, to use line pressure in lieu of 100% of span, we reject this comment.

BLM received one comment stating that the determination of a "normal operating point" with a fluctuating well is impossible and that the verification points required by API 21.1 should be adequate. While the requirement of performing a verification at the normal point is still necessary for fluctuating flows, we agree that defining the normal point is open for interpretation. It could be that the verification points required by API 21.1 would be adequate in these cases, or there could be other options such as using the average values of static and differential pressure from a recent volume statement as the normal points. In any case, we believe this is a training issue both internally and with industry and is not cause for a wording change in the NTL, as the requirement to perform a normal point verification is still necessary regardless of the type of flow being measured. No changes to the NTL were made as a result of this comment.

Paragraph 10

One comment suggested allowing a range for the "as left" verification at the normal operating point, in order to contend with meter fluctuation.

BLM realizes that the "normal operating point" can sometimes be subjective, especially on fluctuating wells such as those associated with a plunger lift. For these wells, the determination of the "normal point" will be widely interpreted, allowing for the fluctuation requested by the commenter. While BLM agrees with the commenter, we feel that it is a training and implementation issue which does not require a wording change in the NTL. Therefore, no changes were made as a result of this comment.

Paragraph 11

BLM received a comment stating that the required 48-hour timeframe for equipment replacement could be burdensome if the failure occurred over a weekend or holiday. The commenter suggested that a three-day time frame would be more practical.

BLM is aware that there may be special circumstances where the 48-hour timeframe is unworkable. This could be due to a holiday or weekend, or the unavailability of parts or work crews. In these instances, the operator should work with the local BLM office in requesting a variance to the 48-hour requirement. No changes to the NTL were made as a

result of this comment because we believe that 48 hours is reasonable in the vast majority of cases.

Paragraph 13

BLM received a comment stating that the required 48-hour timeframe for equipment replacement could be burdensome if the failure occurred over a weekend or holiday. The commenter suggested that a three-day time frame would be more practical.

See the response to the identical comment received on Paragraph 11. No changes to the NTL were made as a result of this comment.

One comment disagreed with the requirement to replace temperature transducers/ transmitters within 48 hours if the “as left” readings are not within 2ºF of the test device. The commenter argued that they should have the option of adjusting the equipment to eliminate the error.

We believe that the commenter has mis-interpreted this requirement. By specifying the “as left” readings in this Paragraph, it is implied that attempts to adjust the transducer/transmitter to within 2ºF of the test device have already been made, but the effort failed. This would indicate there is a problem with the transducer/transmitter and it needs to be replaced. No changes to the NTL were made as a result of this comment.

Paragraph 15

BLM received several comments stating that the uncertainty requirement in this paragraph is unprecedented and not addressed in OO5 or API standards.

While we agree that operating and uncertainty limits are not explicitly addressed by API standards, we do not agree that they are unprecedented and not addressed in OO5. In fact, OO5, III.C.4 and III.C.5, both require that differential and static pens operate in the outer 2/3 of the chart. These requirements in OO5 establish operating limits and set a precedent for BLM to enforce operating limits. Paragraph 15(a) of the NTL is virtually the same as the OO5 requirements.

BLM recognizes that most EFCs perform better than chart recorders and an expanded operating range is usually justified as a result. In order to quantify the expanded operating range, BLM performed an uncertainty analysis of chart recorders and orifice plates operating at the minimum limits allowed by OO5. It was determined that such a meter would have an overall measurement uncertainty of ±3%. This level of uncertainty then became the performance standard for EFCs in Paragraph 15(b), as an alternative to the outer 2/3 requirement in Paragraph 15(a). Because OO5 was used as the basis for both Paragraphs 15(a) and 15(b), we disagree with the comment and we made no changes as a result of the comment.

One comment argued that the term uncertainty can be confused with inaccuracy, and that meter stations not meeting the uncertainty specification in Paragraph 15(b) may be misconstrued to be reading inaccurately. We understand the point being made by the commenter, and agree that confusion does exist with the terminology. Uncertainty, as used in the NTL, is the statistical range of inaccuracy that *may* be occurring in a meter. It is also true that a meter operating with a high degree of uncertainty may not have any inaccuracy. However, the high degree of uncertainty increases the *probability* or *risk* of inaccuracy. We do not believe wording changes in the NTL would clarify the difference between uncertainty and inaccuracy (and no wording changes were suggested by the commenter). Clarifying the meaning of uncertainty and inaccuracy will be an ongoing educational effort among both BLM and industry. No changes were made as a result of this comment.

One comment stated that the process of determining uncertainty assumes that each of the elements of uncertainty act in the same direction, which results in the calculated uncertainty being overstated. We do not agree with this statement. The root-sum-square statistical method described in API 14.3.1 (1991) and used by BLM to determine uncertainty does, in fact, assume that some sources of uncertainty will be offsetting.

For example, assume that a measurement system consists of only two components A and B. The uncertainty of component A is assumed to be ±5% and the uncertainty of component B is assumed to be ±2%. If the offsetting effects were not taken into consideration, the total uncertainty of the measurement system would be ±7% (the algebraic sum of the two components). However, the root-sum-square method, employed by BLM, gives the following result:

$$U_{system} = \sqrt{U_A^2 + U_B^2} = \sqrt{5^2 + 2^2} = \pm 5.39\%$$

where:

U_{system} = uncertainty of the measurement system (%)
U_A = uncertainty of component A (%)
U_B = uncertainty of component B (%)

Note: all uncertainties are 2-sigma, or at a 95% confidence level

This method of calculation results in an overall uncertainty significantly less than the algebraic sum of the uncertainties of the individual components because it assumes that some degree of offsetting of uncertainties is probable. No changes were made as a result of this comment.

BLM received several comments objecting to the requirement to maintain the differential pressure in the outer 2/3 of calibrated span as it applies to older low volume leases, many producing less than 100 Mcf/day.

We believe the commenters have mis-interpreted the requirements of Paragraph 15. First, Paragraph 15 offers two options as to the lower operating limits of differential pressure: either the outer 2/3 of calibrated span or a differential pressure that will result in an overall meter station uncertainty of ±3%, or better, whichever is less restrictive. In virtually every case we have analyzed, the ±3% uncertainty option is by far the less restrictive option. While the lower limit for differential pressure under this option depends on the equipment being used, it is typically in the range of 5% to 10% of calibrated span rather than 33% of span as in the option described by Paragraph 15(a).

Second, Paragraph 15 only applies to meters measuring more than 100 Mcf/day on a monthly basis, and then only to the majority of the flowing period. Since one of the comments stated that much of the concern is for leases producing less than 100 Mcf/day, these meters would automatically be exempt from either requirement in Paragraph 15.

One comment expressed concern that there are no industry accepted methods with which to calculate uncertainty and that the determination of meter uncertainty is subjective. We do not agree with this comment regarding the lack of industry methods to calculate uncertainty. On the contrary, API 14.3.1 includes an entire 11-page section (1.12) on recommended methods for calculating overall measurement uncertainty, including several sample calculations.

We do agree that there is some level of subjectivity in calculating uncertainty, as there is with most calculations. For this reason, BLM had an uncertainty calculator developed that not only allows a quick calculation of uncertainty at the field level, but also provides a consistent and objective means for the calculation. The uncertainty calculator uses the methods described in API 14.3.1.12 as its basis and also includes comprehensive installation effects research conducted by a multitude of flow labs as well as statistical analyses of ambient temperature changes in selected cities across the U.S. The calculator has been available for free public downloading (www.ceesi.com) and review since May, 2007, comes with complete documentation of the methods and calculations used, and is continuously open for comment. To date, very few comments specific to the calculation methodology have been received from industry and for those comments that have been received, changes to the calculator have been made to address concerns. In summary, we believe that the calculation of uncertainty has a sound technical basis and provides a practical alternative to assigning arbitrary operational limits to differential and static pressure transducers. Therefore, no changes were made based on the comment.

One comment expressed a concern that Paragraph 15 is highly restrictive which would add to operating costs and recommended that the requirement be dropped altogether. We do not feel that the uncertainty requirement is overly restrictive when compared to existing industry standards. For example, current requirements in API 21.1.8.1 state that:

> *"the electronic flow measurement system (flow computer and transducers) shall be capable of a performance uncertainty…of ±1% of flow over the expected range of operating temperatures and pressures for the installation."*

To demonstrate the restrictiveness of the NTL requirement versus the API requirement, we ran two tests, one using a self-contained EFC with differential and static pressure transducers rated at ±0.20% of calibrated span, and one using differential and static pressure transducers rated at ±0.05% of calibrated span. The results of the test are as follows:

DP/SP Transducer Reference Accuracy (% of span)	Minimum allowable DP or SP reading (% of span)	
	Colorado NTL (3% overall measurement uncertainty)	API 21.1.8.6 (1% for flow computer & transducers)
0.20	11	46
0.05	3	15

From the above table, it is clear that this NTL is far less restrictive than existing requirements under API 21.1. For example, the EFC with transducers having a reference accuracy of ±0.20% of span can operate down to 11% of span and still meet the NTL, Paragraph 15(b), requirement for ±3% overall measurement uncertainty. The same EFC could only operate down to 46% of span according to the API 21.1 requirement.

In summary, we do not believe that Paragraph 15(b) is overly restrictive. We feel that using overall measurement uncertainty as a performance-based requirement results in a consistent, objective, and fair method by which all measurement systems can be regulated. Therefore, no changes were made as a result of this comment.