USNWG on Taximeters

February 5, 2015

Web-Conference

Draft Summary

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# Carry-over items

## Proposal to add new requirements S.1.4.1. Multiple rate taximeters, S.1.4.1.1. Manual rate changes, and S.1.4.1.2. Automatic rate changes.

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| ***NIST Technical Advisor’s note:***  *Following the February 5, 2015 USNWG meeting, it was realized that the terminology; “multiple rate taximeter” used in the drafting of proposed changes to NIST Handbook 44 (HB44), Taximeters Code has been applied to devices that are currently being defined in HB44 Appendix D – Definitions using different terminology. Currently, taximeters that are capable of calculating passenger fares using more than one established rate are defined in Appendix D as “multiple‑tariff taximeters.”*  *To remedy this inadvertent substitution of an already existing term to define this type of device, editorial changes will hereafter replace “multiple rate taximeter” (or similar terminology) with the already established terminology “multiple‑tariff taximeter” in this document. In the interest of consistency, the terminology “multiple-tariff taximeter” will be used to describe this type of device in all subsequent documentation of the USNWG’s activities.* |

**Background:**

An initial proposal to add three new requirements that would regulate how and when changes are permitted to the rate applied for calculation of a fare was introduced to the USNWG in May 2014. The original proposal is shown below.

**S.1.4.1. Multiple-tariff taximeters – All rates in use for taximeters equipped to calculate fares at multiple rates must be included in the statement of rates as provided in UR.3.**

**S.1.4.1.1. Manual Rate Changes – Taximeters equipped with a means for changing the rate applied, that is not protected by a physical or other type of security seal shall be capable of manually applying rate changes of predetermined, flat rates only.**

**S.1.4.1.2. Automatic Rate Changes – Automatic rate changes may not occur between two consecutive drops and are permitted for differentials including:**

1. **trips that exceed a set distance;**
2. **trips that exceed a set time limit;**
3. **day/evening differentials;**
4. **specific days of the week; or**
5. **specific dates (e.g. holidays).**

**When a change in rate allowed under (a) and (b) occurs, the change must be identified and clearly displayed to the customer. Automatic rate changes allowed under (c), (d), and (e) above shall not occur after the meter has been set to register charges and before the meter has been cleared for that transaction (i.e., between fares).**

**(Added 20XX)**

Continuing to review and develop this item, it was considered again by the USNWG during its October 2014 meeting. During that meeting, the members identified a number of issues which would require additional work before the proposal could be fully supported by the work group.

Regarding the first of the three paragraphs in the set, the work group members recommended a revision during the October 2014 meeting that resulted in the proposed paragraph S.1.4.1. to be amended as follows:

**S.1.4.1. Multiple-tariff taximeters –** ~~All rates in use for taximeters equipped to calculate fares at multiple rates must be included in the statement of rates as provided in UR.3~~**A taximeter may utilize more than one rate to calculate fares. The rate or rate code that is currently in effect must be displayed on the taximeter.**

This revision was intended to address the concerns of some members in the USNWG believing that the original draft proposal was structured not in the form of a specification requirement but rather as a user requirement. Also, the work group did not consider it necessary to include the original wording of this proposal that specified that all rates used to calculate fares are to be included in the statement of rates as required under paragraph UR.3. in the Taximeters Code. This draft also emphasizes the need for the passenger to be furnished with information regarding any changes to the rate applied. The meeting participants agreed that it is sufficient to simply state that taximeters may use more than a single rate when calculating fare charges.

Considering the proposed new S.1.4.1.1. paragraph, the work group rejected the notion of requiring that manual changes to the rate applied be protected by sealing any access to that function. Some of the participants of that meeting pointed out that many existing taximeters are capable of a manual change to the rate without the need to remove a security seal.

Other discussions during the October 2014 meeting focused on the type of rate changes that are programmed in the taximeter which could occur automatically, without operator intervention. The USNWG seemed to believe that this type of rate change offers a smaller opportunity for fraudulent use since the programming would presumably be developed and installed by a licensed authority. The participants agreed to support the revised version of S.1.4.1.2. that had been amended to add a parameter (seen below under “c”) that includes rate changes for trips that exceed a threshold of a total monetary charge. That revision to the proposed new paragraph S.1.4.1.2. is shown below.

**S.1.4.1.2. Automatic Rate Changes – Automatic rate changes may not occur between two consecutive drops and are permitted for differentials including:**

1. **trips that exceed a set distance;**
2. **trips that exceed a set time limit;**
3. **trips that exceed a set monetary amount for fare charges:**
4. **day/evening differentials;**
5. **specific days of the week; or**
6. **specific dates (e.g. holidays).**

**When a change in rate allowed under (a), (b), and (c) occurs, the change must be identified and clearly displayed to the customer. Automatic rate changes allowed under (d), (e), and (f) shall not occur after the meter has been set to register charges and before the meter has been cleared for that transaction (i.e., between fares).**

**Discussion:**

During the USNWG meeting held on February 5, 2015, all three paragraphs included in this proposal were reviewed again by the group. During this meeting the work group acknowledged that proposed new paragraph S.1.4.1. is somewhat redundant to the existing paragraph S.1.5.1. that already requires that the rate being used to calculate charges must be displayed when the taximeter is set to register charges. While this was acknowledged, the group agreed that there is no harm done by stating again in the proposed new paragraph that the rate in use must be displayed.

During this meeting, the question was posed whether there is a need to develop a complimentary requirement to the proposed new S.1.4.1. that would address taximeters that use only one rate. Noting that the proposed new S.1.4.1. specifies that multiple-tariff taximeters must display the rate in use, Mr. Bill Fishman questioned if it is then necessary to draft a new requirement for taximeters using only a single rate? The participants recognized that the existing requirement, S.1.5.1. already addresses the need for single-tariff taximeters to display the rate in use and therefore no additional statements are needed.

The USNWG was asked to comment on a revision of the original proposal for a new paragraph S.1.4.1.1. that is shown below.

**S.1.4.1.1. Manual Rate Changes – Manual changes to the rate used in the calculation of fare shall be identified on the customer’s receipt in appropriate terms or symbols that clearly indicate the basis for the rate change. Any manual change to the rate shall produce a clear display of the resulting rate on the taximeter and shall also be recorded on the passenger’s receipt.**

In the work group’s discussions regarding the proposed requirement S.1.4.1.1., additional concerns were noted. Clarification may be necessary for whether the term “rate” refers to the monetary value of each distance/time interval or a selection made through controls on the taximeter. Additionally, Mr. Jesse Davis pointed out that the wording “…changes to the rate…” may be misinterpreted. He explained that one interpretations could be that this is an administrative change to the monetary values for rates included as part of the required statement of rates (see Taximeters Code, UR.3.). This wording may also be interpreted as a change in the rate selection (i.e., “rate A”, “rate B”, etc.) on a particular taximeter. A suggestion was made to use the phrase “rate selection” to more accurately describe the action of changing a rate in use by a particular taximeter to a different rate on that same device.

Another question was raised during the February 2015 meeting’s discussions with regard to the information that would be required on a passenger’s receipt. Ms. Joanne Rausen asked for clarification on what is meant by “…the basis of the rate change…” as used in the proposed new requirement, S.1.4.1.1. Ms. Rausen’s voiced concern that a typical printed receipt generated from a taximeter or taximeter system may not provide enough available space to include a full description of the reason for a change in the rate applied. The NIST Technical Advisor expressed the notion that the information on the receipt would not necessarily be in the form of a lengthy description, but may be represented by a rate “code” that is further defined on the required statement of rates. The description of all rates included on the statement of rates or “rate card” would include the basis for each rate applied. An example would be a rate established for use when a trip is confined to a specific geographic area. A change to this rate may then occur when that trip would continue into an area where a different rate has been established.

The participants of the February 2015 meeting also agreed that there is a need for consistency in the use of terms. This may involve developing new or amending existing definitions for terms including: “rate” and “drop.” It was noted by the work group that there is an existing definition for “subsequent distance or time intervals” in HB44 Appendix D. This definition is considered to be analogous to the frequently used terms “drop” or “money drop.”

Commenting on the draft of the proposed new S.1.4.1.2. requirement, Mr. Bill Fishman stated that the first sentence of the proposed language is not clearly understood and it should be stated so that it is better understood. The NIST Technical Advisor explained that this statement was intended to require that any change in the rate used for fare calculation must not occur during a time/distance interval (drop) measurement and should only occur at the conclusion of one interval and before the next interval begins. Mr. Nestor Guzman suggested replacing the phrase “…may not occur between two consecutive drops…” with the phrase “…may only occur once the current drop is completed…”

Additional concerns regarding S.1.4.1.2. were heard when Ms. Rausen questioned whether the last three itemized reasons for changes in rate (bullet points: d; e; and f) would take place as changes to a rate already being used during a trip or would these reasons for a change in rate more likely occur as the initial rate selection made at which the taximeter will calculate a fare. Ms. Rausen’s comments prompted consideration of whether or not the structure of the proposed S.1.4.1.2. should be revised so that the lead-in sentence would only apply to bullet points a, b, and c.

In an attempt to answer Ms. Rausen’s questions, the other participants of the February 2015 meeting were asked if they could provide examples of any regulatory jurisdictions where changes in rates, as described in bullet points d, e, and f would occur as automatic changes in the rate implemented during a single trip. No examples of this type of system operation were provided. Ms. Rausen added that in New York City, these changes to the calculation of a fare are not implemented as a change in the rate applied but are instead administered as extras charges in the form of a surcharge.

**Conclusion**:

At the February 2015 meeting, the work group agreed that the most recent revision for the proposed new paragraph S.1.4.1. (as shown above) would be supported by the group.

The members also agreed that further revision is needed to the proposal for new requirement S.1.4.1.1. Necessary changes identified for that proposed new requirement include clarifying the use of the term “rate” wherever used. This work may also consist of the development of appropriate definitions for “rate” and “drop.” The NIST Technical Advisor agreed to make additional changes to the draft of S.1.4.1.1. as well as developing a working draft for the definitions of “rate” and clarifying the terminology used for distance or time interval.

The USNWG recognized the need for further work on the revision of the proposed requirement; S.1.4.1.2. While the overall intent of this proposed new requirement is supported by the group, changes are needed to segregate the last three bulleted items from the first three. The group generally agreed that rates applied for: any change due to day/night differentials; specific days of the week; or specific calendar dates will most likely not occur as automatic rate changes that are implemented during a single trip but that they would instead be implemented as either a selection (automatic or manual) of rates included in a rate schedule or be assessed as extras charges.

The NIST Technical Advisor agree to draft definitions for the terms “rate” and “drop” (and possibly others) that are used in the HB44 Taximeters Code and frequently in the meetings of the USNWG. Also revised drafts of S.1.4.1.1. and S.1.4.1.2. will be presented to the USNWG for review at its next scheduled meeting.

## Proposal to amend existing requirement S.5. Provision for Security Seals

**Background:**

Two separate proposed changes to the existing Taximeters Code requirement S.5. Provision for Security Seals have been reviewed by the USNWG.

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| ***NIST Technical Advisor’s note:***  *For facilitating ease of reference to these two proposals within the following discussion, these proposals will be identified as proposal A, being the first in sequence to appear in this document and proposal B being the second.* |

The first proposal (proposal A) was considered by the National Conference on Weights and Measures (NCWM) in 2012 at which time the determination was made that the proposal was not sufficiently developed to be voted on. The NCWM’s recommendation was that the USNWG on Taximeters consider this proposed change (shown below) and develop it further as needed.

**S.5. Provision for Security Seals.** – Adequate provision shall be made to provide security for a taximeter. Security may be provided **~~either~~** by:

(a) Affixing security seals to the taximeter and to all other components required for service operation of a complete installation on a vehicle, so that no adjustments, alterations, or replacements affecting accuracy or indications of the device or the assembly can be made without mutilating the seal or seals; **~~or~~**

(b) Using a combination of security seals described in paragraph (a) and, in the case of a component that may be removed from a vehicle (e.g., slide mounting the taximeter), providing a physical or electronic link between components affecting accuracy or indications of the device to ensure that its performance is not affected and operation is permitted only with those components having the same unique properties**; or**

**(c) Using a combination of security seals described in paragraph (a) and, (b) and, in the case of a component that is electronic data affecting accuracy or indications of the taximeter, providing a unique electronic security seal on the electronic data that is encrypted and protected by an audited authentication and authorization mechanism, so that no adjustments, alterations, or replacements affecting the component can be made without the authentication and authorization. (Encryption algorithm for electronic seals must meet NIST AES ADVANCED ENCRYPTION STANDARD.)**

The sealing means shall be such that it is not necessary to disassemble or remove any part of the device or of the vehicle to apply or inspect the seals.

(Amended 1988, **~~and~~** 2000**, and 20XX**)

This proposal (A) along with a second proposal (B) to amend paragraph S.5. were reviewed by the USNWG during its October 2014 meeting. Proposal B, that includes an associated table defining appropriate methods of sealing is shown below.

**S.5. Provision for Security Seals.** – Adequate provision shall be made to provide security for a taximeter. Security may be provided either by:

(a) Affixing **physical** security seals to the taximeter and to all other components required for service operation of a complete installation on a vehicle, so that no adjustments, alterations, or replacements affecting accuracy or indications of the device or the assembly can be made without mutilating the seal or seals; **~~or~~**

(b) Using a combination of security seals described in paragraph (a) and, in the case of a component that may be removed from a vehicle (e.g., slide mounting the taximeter), providing a physical or electronic link between components affecting accuracy or indications of the device to ensure that its performance is not affected and operation is permitted only with those components having the same unique properties**; or**

**(c) For taximeters that are interfaced with enhanced software driven (POS) systems and that are capable of remote configuration, the sealing of calibration and configuration parameters shall be performed through the use of a physical seal that when removed may allow remote configuration. Any changes made after the removal of this physical seal must be recorded in an event logger.**

**(Added 20XX)**

The sealing means shall be such that it is not necessary to disassemble or remove any part of the device or of the vehicle to apply or inspect the seals.

(Amended 1988, **~~and~~** 2000, **and 20XX)**

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| ***Table S.5. Categories of Device and Methods of Sealing*** | |
| ***Categories of Device*** | ***Methods of Sealing*** |
| ***Category 1:  No remote configuration capability.*** | ***Seal by physical seal or a combination of physical seals and for components that may be removed from the vehicle, a physical or electronic link as described in (b) above.*** |
| ***Category 2:  Remote configuration capability, but access is controlled by physical hardware.***  ***The device shall clearly indicate that it is in the remote configuration mode and record such message if capable of printing in this mode.*** | ***The hardware enabling access for remote communication must be at the device and sealed using a physical seal and two event loggers: one for calibration parameters and one for configuration parameters.***  ***The event loggers are required in the device; they must include event counters (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter. A printed copy of the information must be available through the device. The event loggers shall have a capacity to retain records equal to 10 times the number of sealable parameters in the device, but not more than 1000 records are required.***  ***(Note: Does not require 1000 changes to be stored for each parameter.)*** |
| ***[Nonretroactive as of January 1, 20XX]***  **(Table added 20XX)** | |

**[Audit trails shall use the format set forth in Table S.5. Categories of Device and Methods of Sealing]\***

**[\*Nonretroactive as of January 1, 20XX]**

Many of the participants of the October 2014 meeting opposed the notion of allowing the metrological features of a taximeter to be protected solely by an electronic form of seal, and stated their preference for the existing requirement of a physical seal. Other participants of that meeting stated their belief that the evolution of most (if not all) types of commercial weighing and measuring devices is such that the use of electronic sealing of the device’s metrological features is preferable. While some of the meeting’s participants supported the use of a physical seal to provide confidence that any unauthorized tampering with the performance and configuration of a device has not taken place, others were more confident that electronic forms of security seals would provide a greater level of confidence that the features of the device are not changed without evidence or witness to that change.

Because agreement among the USNWG members was not achieved in October 2014, this item was addressed by the work group again during the February 2015 meeting.

**Discussion:**

The USNWG was provided with the following information during the February 2015 meeting. The existing requirement relative to the sealing of taximeters (S.5.) only provides for the use of a physical seal to protect metrological feature of the taximeters. While the existing requirement also refers to an “electronic link,” this form of electronic security is designed to prevent the use of a taximeter that has been certified for use in a particular vehicle to be used in any other vehicle.

When the USNWG was asked whether they would support the use of an electronic form of security seal, the work group indicated that they would agree to support the use of electronic sealing if a physical seal was also required. Proposal B, as shown in the “Background” section above includes this provision.

Mr. Bill Fishman pointed out that in some cases, taximeters are pre-programmed with a change in rates used for fare calculation that are not in use when the taximeter is initially installed but this change would automatically be activated at some point in the future. This is done at times to allow a change that is planned for (e.g., rate changes scheduled to occur at the beginning of a fiscal period) and will occur sometime after the installation of the taximeter.

Mr. Fishman also explained that currently, it is common practice for programming changes to taximeters to be made by connecting some type of device (e.g., USB memory stick, laptop computer) to the taximeter and downloading the programming change. Under the proposed amendment (proposal B) this practice would be prevented unless a physical security seal is broken. Mr. Fishman pointed out that the removal of a security seal prior to any changes being made is consistent with the design of existing taximeters and therefore this proposal does not represent a change in that respect. The change represented by the proposed amendment of S.5. is the explicit recognition of the ability to make programming changes through remote means.

Presumably, access for remote configuration would likely be enabled or disabled by some mechanism (e.g., a toggle switch or jumper) that can only be operated after the removal of a security seal.

Mr. Nestor Guzman asked for clarification of the portion of proposal B that is stated in the accompanying table which requires that “A printed copy of the information must be available through the device.” Mr. Guzman questioned what impact would the adoption of this proposal have on taximeters not equipped with a printer. This particular portion of the proposal refers to information required to be supplied through an event logger. The NIST Technical Advisor noted that some further revision (i.e., applying a non-retroactive status of the requirement) of this draft may be necessary and that this may be an area where that revision is needed. It was also pointed out that a proposed change to the Taximeters Code, which will be considered for adoption by the National Conference on Weights and Measures (NCWM) in July of 2015 will require that all taximeters be capable of generating a receipt. This proposed change would not affect taximeters manufactured and placed in service prior to the effective date of the requirement.

Mr. Guzman also pointed out that it would be important that when a device was placed in a configuration mode to enable remote changes, that the device not be permitted to be operated in a normal mode. He suggested that there should be a means to prevent the operation of that device until remote access and the changes made have been completed and the device is returned to normal operational mode.

The NIST Technical Advisor presented a revised draft of S.5. for the group’s review. This draft would include other peripheral equipment within a taximeter system as potential mechanisms that should be sealed. In addition, subparagraph “c” has been reworded to remove a previous reference to POS systems and is shown below. This draft would also include the unaltered table from proposal B (above).

**S.5. Provision for Security Seals.** – Adequate provision shall be made to provide security for a taximeter **and all other components in a taximeter system that are necessary to complete a transaction**. Security may be provided either by:

(a) …; **~~or~~**

(b) …**; or**

(c) **The use of a physical seal that when broken, may permit remote configuration of metrological parameters. Any changes occurring to these parameters through remote configuration must be recorded in an event logger.**

**(Added 20XX)**

The sealing means shall be such that it is not necessary to disassemble or remove any part of the device or of the vehicle to apply or inspect the seals.

(Amended 1988, **~~and~~** 2000, **and 20XX)**

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| ***Table S.5. Categories of Device and Methods of Sealing*** | |
| ***Categories of Device*** | ***Methods of Sealing*** |
| ***Category 1:  No remote configuration capability.*** | ***Seal by physical seal or a combination of physical seals and for components that may be removed from the vehicle, a physical or electronic link as described in (b) above.*** |
| ***Category 2:  Remote configuration capability, but access is controlled by physical hardware.***  ***The device shall clearly indicate that it is in the remote configuration mode and record such message if capable of printing in this mode.*** | ***The hardware enabling access for remote communication must be at the device and sealed using a physical seal and two event loggers: one for calibration parameters and one for configuration parameters.***  ***The event loggers are required in the device; they must include event counters (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter. A printed copy of the information must be available through the device. The event loggers shall have a capacity to retain records equal to 10 times the number of sealable parameters in the device, but not more than 1000 records are required.***  ***(Note: Does not require 1000 changes to be stored for each parameter.)*** |
| ***[Nonretroactive as of January 1, 20XX]***  **(Table added 20XX)** | |

**[Audit trails shall use the format set forth in Table S.5. Categories of Device and Methods of Sealing]\***

**[\*Nonretroactive as of January 1, 20XX]**

**Conclusion:**

The USNWG did not support the first proposal presented (proposal A) and were opposed to a requirement that would permit an option to use an electronic seal as a replacement for a physical seal. The participants of the February 2015 meeting did not indicate support for any provision that does not include a physical seal.

While the work group generally agreed with the most recent draft revision (shown directly above), there were several points made during this meeting that need to be addressed and which provided evidence that further development of this proposal is needed. The NIST Technical Advisor agreed to revise this proposal with consideration to the comments heard during this meeting. This revision will be presented to the USNWG at a future meeting.

# New Items:

## Proposed changes to S.3.3. Control for Extras Mechanism

**Background:**

During the October 2014 USNWG meeting, a discussion regarding changes to the HB44 Taximeters Code paragraph; S.3.2. took place and concluded with the work group agreeing to propose that S.3.2. be deleted. The participants of that meeting stated their belief that the types of control mechanisms mentioned in the requirement are no longer found in use and therefore recommended this paragraph be deleted because it was obsolete. The work group generally agrees that these types of mechanical controls have been replaced by electronic controls on taximeters used in the current marketplace.

The work group was then questioned whether a similar requirement that follows S.3.2. should also be deleted.

**S.3.3. Control for Extras Mechanism.** – The knob, handle, or other means provided to actuate the extras mechanism shall be inoperable whenever the taximeter is cleared.

This paragraph, S.3.3. uses the terms “knob” and “handle” to describe the means on a taximeter by which extras charges are applied and the work group was asked to consider if there was a need to retain it as part of the HB44 Taximeters Code. Most members expressed the belief that while there is some specific language in S.3.3. that is outdated, there may possibly be some value in retaining this paragraph. The USNWG agreed to consider the relevance of S.3.3. at its next meeting.

**Discussion:**

This item was presented to the USNWG during the February 2015 meeting and the participants were asked to provide comment regarding the elimination of both S.3.2. and S.3.3. Mr. Jimmy Cassidy expressed concerns about the possibility that some older devices may still be in service for which both of these requirements would be applicable.

Most participants however, agreed that it is unlikely that any older, mechanical taximeters are still in use and Mr. Martin Grindley added that it is his belief that those taximeters would not be compatible with use on today’s motor vehicles. He stated his belief that the distance measuring mechanisms on currently used vehicles would not be able to be used with older, mechanical type taximeters.

It should be recognized that no opposition was received regarding the proposed deletion of paragraph S.3.2., even though that proposal had been published and distributed as early as September 2012 when the agenda for the first meeting of the USNWG was published. That proposal was also included in the October 2014 meeting agenda and summary, and all of these documents are posted on the NIST USNWG on Taximeters website. While these measures are intended to distribute this information as widely as possible, it would be impossible to completely rule out the possibility that mechanical taximeters may be used in some isolated areas.

It should also be recognized that, similar to any proposed change to HB44, this would be reviewed by various groups and committees prior to being voted on by the NCWM. It could be expected that if there is evidence that these requirement will still apply to devices that are still in use, then the proposals would not be adopted.

**Conclusion:**

The participants of the February 2015 meeting agreed that the work group will support a proposal to delete both S.3.2. and S.3.3. existing requirements. This proposal will be drafted and submitted to the regional weights and measures associations prior to the next cycle of HB44 revision (August-September 2015).

## Proposal to amend existing requirement UR.1. Inflation of Vehicle Tires

**Background:**

A proposal was introduces in August 2011 to amend paragraph UR.1. Inflation of Vehicle Tires in the HB44 Taximeters Code as follows.

**UR.1. Inflation of Vehicle Tires.** – The operational tire pressure of passenger vehicles and truck tires shall be posted in the vehicle and shall be maintained at the posted pressure. **The required tire size shall also be posted in the vehicle.**

(Amended 1977 **and 20XX**)

A review of that proposal produced additional comments which suggested that tire size is equally important as tire pressure when establishing test conditions for taximeters. This proposed change would amend the existing requirement; UR.1. Inflation of Vehicle Tires, to state that the tire size for the vehicle (as specified by the vehicle manufacturer) would also be required to be posted in the vehicle. This language would be added to further specify that tire size, in addition to tire pressure is critical to determining a measured distance. Any change to the circumference of the tires would affect the accuracy of a measurement of distance traveled.

Prior to the February 2015 USNWG meeting, Mr. Viktor Gruber submitted additional changes for consideration by the USNWG to this proposal along with recommended changes to another requirement (N.1.3.2.) in the Taximeters Code that also pertains to vehicle tire pressure. These most recent recommended changes are shown below.

**UR.1. Inflation of Vehicle Tires.** - ~~The operational tire pressure of passenger vehicles and truck tires shall be posted in the vehicle and shall be maintained at the posted pressure.~~**The tire size and cold-tire pressure shall be maintained at the posted manufacturer’s specifications for the vehicle. Posted cold tire pressure may be used to determine operational tire pressure.**

**Amended 201X**

**N.1.3.2. Tire Pressure.** – At the completion of test run or runs, the tires of the vehicle under test shall be checked to determine that the tire pressure is that operating tire pressure ~~posted in the vehicle~~. If not, the tire pressure should be adjusted to the ~~posted~~**vehicle manufacturer’s prescribed operational** tire pressure and further tests may be conducted to determine the **accuracy and performance of the taximeter**. ~~operating characteristics of the odometer.~~

(Amended 1977 **and 201X**)

**Discussion:**

At the USNWG’s February 2015 meeting, the participants were asked to review and comment on these latest proposed changes to both UR.1. and N.1.3.2.

The work group generally agreed that there must be some standard used to compare “as found” and/or “as tested” conditions on the tires of the vehicle associated with the taximeter being evaluated. While all members agreed that there must be a standard, there was a difference of opinion on whether that standard should be the posted cold-tire pressure or the vehicle manufacturer’s specified operating pressure for the tires on the vehicle.

The point was made that while the existing UR.1. Inflation of Vehicle Tires requires that the operational tire pressure must be posted in the vehicle, it is unlikely that the information found posted in the vehicle will be the operational tire pressure but will instead be the specified cold-tire pressure. Mr. Gruber pointed out that the definition for “operating tire pressure” is already present in HB44 Appendix D and that this term refers to the tire pressure reading that will be seen after the vehicle has been driven a minimum of 5 miles. He also stated that in most (if not all) vehicle owner’s manuals, a statement is made that the operational tire pressure can be expected to be 3-4 p.s.i. above the designated cold-tire pressure.

Other members of the work group brought up the following points.

To measure the cold-tire pressure, it is necessary that the measurement be taken before the vehicle has been driven or when the vehicle has been parked for a sufficient period of time to establish temperature equilibrium in the tires. Mr. Stan Toy noted that test courses used would often be shorter than the 5 miles specified as the minimum travel distance needed to achieve “operating pressure” as defined in HB44.

The work group also noted that in many cases, when a taxi arrives at the test site there is no means of determining how far the vehicle had been driven prior to arriving at the test site. It is not reasonable then to believe that a cold-tire pressure could be measured at that time and some field officials may therefore assume that the tire pressure is at the operational pressure when the vehicle arrives on site.

A suggestion made during the February 2015 meeting was that it may be more practical to measure the tire pressure at the time that the taximeter is being tested and then require that tire pressure to be maintained. This would presumably establish a standard tire pressure for that vehicle which (when maintained) would facilitate the accurate performance of the taximeter. A recommendation that would facilitate this poicy would be to specify that the “as-tested” tire pressure be posted in the vehicle.

The comment was made during the February 2015 meeting that some jurisdictions would not prohibit a taxi operator/owner to install aftermarket tires (and wheels) that differ in size from the vehicle manufacturer’s specifications for that vehicle model. The size of the tires on the vehicle may therefore not correspond with what may be posted in a vehicle and would presumably have significant effects on the accuracy of the taximeter.

Mr. Gruber stated that posting the “as tested” tire pressure could not be considered as a standard because this tire pressure value would apply only to that particular vehicle. The only way to conduct a test based upon a standard would be to require that only manufacturer’s specified equipment (i.e., tires and wheels) are permitted to be used on the vehicle and, that the pressure measured during the testing must be compared to the manufacturer’s posted cold-tire pressure.

**Conclusion:**

There was no agreement among the participants of the February 2015 meeting. The comments heard during this meeting will be considered in the further development of this proposal. This item will be placed on the agenda of a future meeting.

# Additional Items

## GPS Subcommitte activities

Mr. Bill Fishman (GPS Subcommittee Chair) provided the work group with an update of the recent GPS Subcommittee web-meeting. He explained that because there was a recent change in the membership to the subcommittee, the meeting that was held in November 2014 served as an orientation of the new members to the subcommittee’s work. No technical issues were discussed at that time.

Mr. Fishman also informed the work group that he participated in a panel discussion during the NCWM interim meeting in January 2015. This discussion focused primarily on the use of GPS and smartphone apps and how some weights and measures jurisdictions are approaching regulation of transportation services using these technologies. A few other members of the USNWG also participated in this discussion.

The work group was also informed that the USNWG is actively seeking the participation of some transportation service providers that are reportedly using GPS and cellular telephone software applications. At this time, the work group has not been able to acquire the desired level of participation from these types of companies.

The scheduling of a next meeting of the subcommittee will be done in the near future.

## Proposed HB44 Changes Submitted to NCWM

The NIST Technical Advisor informed that work group that all (6) of the proposals developed by the USNWG and submitted to the NCWM for approval have been assigned a voting status for the NCWM’s Annual Meeting in July, 2015. As voting items on the agenda of that meeting, these proposals will be approved or rejected at that time.

When these proposals were considered by the Southern Weights and Measures Association (SWMA), a few minor changes to two of the proposals were recommended by the SWMA. The USNWG was presented the SWMA recommended changes and asked for their comments. The changes were generally considered to be editorial in nature and the work group did not voice any opposition to them.

# Attendance

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| --- | --- | --- |
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