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PART II

Statutory Notifications (S. R. O.)

GOVERNMENT OF PAKISTAN
OIL AND GAS REGULATORY AUTHORITY

NOTIFICATION

Islamabad, the 27th February, 2019

S.R.O. 395(I)/2019.—In exercise of the powers conferred by Section 42 of the Oil and Gas Regulatory Authority Ordinance, 2002 (Ordinance No. XVII of 2002) the Oil and Gas Regulatory Authority is pleased to make the following regulations namely:—

1. **Short title and Commencement.**—(1) These Regulations may be called the OGRA Natural Gas Measurement (Technical Standards) Regulations, 2019.

(2) They shall come into force at once.

2. **Applicability.**—These regulations shall be applicable to all such licensees undertaking the regulated activity of transmission, distribution, and sale of natural gas.

661 (1—7)

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3. **Definitions.**—(1) In these regulations, unless there is anything repugnant in the subject or context,—

- (i) **“Accuracy of Meter”** is defined as the degree to which a meter correctly measures the volume of gas passing through it, determined by comparing the volume registered by the meter with that registered by the prover.
- (ii) **“Calibration”** refers to procedures or operations that establish the accuracy of the values indicated by a measuring device as compared to the values indicated by a calibration instrument that has accuracy traceable to a suitable measuring standard. Adjustments are made, if required, to the measuring device to make it comparable to the calibration instrument. Calibration may also refer to the procedure used to determine the volume of a prover.
- (iii) **“Correct meter”** means a meter that registers the amount of natural gas passing through it to an accuracy of $\pm 2\%$ or such other accuracy as the Authority may from time to time determine and the Authority may determine different accuracies for different types of meters.
- (iv) **“Meter”** means an instrument for measuring and indicating or recording the volume of natural gas that has passed through it.
- (v) **“Master meter”** refers to a meter of known accuracy that is connected in series with another meter for the purpose of checking the accuracy of the second meter.
- (vi) **“Measuring standard”** refers to a device used in calibration or proving that has a known value that is traceable to international reference standards.
- (vii) **“Prover”** refers to a device used for measuring the accuracy of gas meter registration.
- (viii) **“Proving”** refers to the procedures or operations whereby a prover volume is compared to an indicated meter volume.
- (ix) **“Registration”**, refers to the indicated volume of gas passed through a meter.

(2) The words and expressions used in these regulations, but not defined herein shall have the same meanings as are assigned to them in the Ordinance.

4. Compliance Compulsory

- (1) All such licensees, carrying out the regulated activity of transmission, distribution, and sale of natural gas, shall comply with the technical standards prescribed in these regulations.
- (2) The Authority in consultation with the licensees, may review, rescind, change, alter or vary any technical standard specified in these regulations.

5. **Accuracy of Gas Meters.**—The natural gas licensees are required to ensure that gas meters installed in their transmission and distribution system and at their consumers' premises measure correctly. The Licensees are required to ensure that accuracy of Diaphragm and Rotary type of gas meters installed at their consumers' premises in their Transmission / Distribution System should be within $\pm 2\%$.

6. **Initial Verification of accuracy of new gas meters.**—The licensees are required to ensure that accuracy of new gas meters is verified, before they are used in the field, as per the sampling frequency prescribed as under:

Table 6.1: %age of New Meters required to be verified before use

Sr. No.	Capacity of Gas Meter	%age of each batch required to be verified by the licensee
i	Meters having Minimum Capacity of 900 Ft ³ /Hr and above	100%
ii	Meters having Minimum Capacity of 400 Ft ³ /Hr or Maximum Capacity of 899 Ft ³ /Hr	10%
iii	Meters having Maximum Capacity of 399 Ft ³ /Hr and below	1%

7. **Periodical reverification of accuracy of gas meters.**—The accuracy of measurement devices may deviate over time, due to wear & tear, changes in operating conditions, and changes in ambient conditions, etc. The licensee shall conduct periodical reverification of accuracy of gas meters installed at the premises of various categories of consumers as per following schedule:

- (a) At least once in every 15 years for meters installed at the premises of domestic consumers.

- (b) At least once in every 05 years for meters installed at the premises of commercial consumers.
- (c) At least once in every 02 years for meters installed at the premises of industrial and all other category of consumers.

8. General Instructions on Inspection of Gas Meters:

- 8.1. The Authority may ask that calibration/proving of a meter be done at any time.
- 8.2. Any person duly authorized by the Authority may witness the inspection of gas meters at any time which may include but not limited to the verification and reverification of accuracy of gas meters, field calibration of measuring devices to check compliance of the Standards specified by the Authority in these regulations.
- 8.3. The licensee has to record and keep all the data pertaining to the tests performed on each meter, whether it is for the initial verification of accuracy, reverification or for any other reason. The information such as the reason behind the test, the meter reading when the meter was removed from the field to be tested, test date, the location where the test was done, the name of the inspector who performed the test, the test result, and any other information related to the testing method employed and the results obtained has to be recorded and kept by the licensee for two years.
- 8.4. The licensees have to keep the data pertaining to all gas meters, such as the type, meter identification number, their capacity, date of purchase, where it was installed, the date and the results of the tests they are subjected to. This data has to be kept for one year after it is sold, no longer operational or destroyed.
- 8.5. When a diaphragm or rotary meter is opened up to be repaired, it has to be adjusted so that the accuracy is within $\pm 2\%$.
- 8.6. Maintenance history of gas meters having capacity of 900 Ft³/Hr and above should be kept in record for a period of at least five years after it is no longer operational or destroyed.

9. Accuracy of Provers and Calibration Equipments.—(1) Provers and other instruments used for calibration of measurement devices must be tested for accuracy prior to first being used, immediately following any repairs or alterations being conducted on them, and periodically, in accordance with the following schedule:

- (i) Portable provers such as Transfer Provers and Stationary provers such as Bell Provers must be calibrated after every three years using Calibration Equipments having accuracy traceable to National Institute of Standards and Technology (NIST) or equivalent International Standard.
- (ii) Calibration instruments such as deadweight testers and electronic testers must be tested for accuracy annually against instruments having accuracy traceable to international standards.
- (iii) Master meters such as Dry Test Meters and Wet Test Meters must be proved annually using a calibrated prover. The fluid used to prove the master meter must have properties similar to the fluids measured by the meters it will be used to prove. The master meter must be proved at flow rates that are comparable to the conditions it will be used for.
- (iv) Gas measurement devices such as pressure gauges, thermometers, manometers, pressure/temperature recorders, Electronic Volume Correctors (EVCs), calorific value (CV) meters, gas chromatographs, and Flow Computers must be calibrated, using calibration equipments having accuracy traceable to international standards, as per following schedule:

Table 9.1: Frequency of Calibration of Measurement Devices

Sr. No.	Measuring Device	Frequency of Calibration
a.	Pressure Gauge, Thermometer, Manometer, Pressure/Temperature recorders	At least once in a year
b.	CV meters, Gas chromatographs, Flow Computers	At least once in a quarter
c.	EVCs	At least once in every two years

(2) The measurement accuracy of the proving or calibrating device must be better than the accuracy of the device being proved or calibrated. However, accuracy of the devices used to test measuring devices must be within $\pm 1\%$ (*i.e.* margin of error must not exceed 1%).

(3) The testing and calibrating devices used by natural gas licensees have to be traceable to the NIST or Equivalent International Standards.

(4) The Authority's representative may check the accuracy of calibration equipments as well as the operating methods in matters of meter proving and calibration of other measuring devices.

(5) The procedures to be followed for the accuracy tests must take into consideration the actual operational conditions the device will encounter in the field.

10. Applicable Standards for Provers and other Calibration Instruments.—Installation, testing, operation, maintenance and calibration of Bell Provers & Transfer Provers; and Field Testing/Proving of gas meters shall be performed in accordance with the latest published recommendations of the American Gas Association in AGA Gas Measurement Manual; Meter Proving: Part No. 12 and AGA Report No. 6: 'Field Proving of Gas Meters Using Transfer Methods' prepared by Transmission Measurement Committee.

11. Applicable Standards for Different Metering Systems

11.1 Orifice Metering Systems: Design, installation, operation, testing/inspection of orifice metering systems and gas volume calculation / gas flow computation shall be in accordance with the latest published recommendations of the American Gas Association in AGA Gas Measurement Manual; Orifice Meters: Part No. Three and AGA Report No. 3: Orifice Metering of Natural Gas and other related Hydrocarbon Fluids.

11.2 Gas Turbine Metering: Installation specifications, calibration, testing, operation and maintenance procedures of Gas Turbine Meters and computations used in the calculation of flow shall be in accordance with the latest published recommendations of the American Gas Association in AGA Gas Measurement Manual (Revised); Gas Turbine Metering: Part No. 4, and AGA Report #7: Measurement of Natural Gas by Turbine Meters.

11.3 Diaphragm and Rotary Metering Systems: Design, installation, testing and operation of the diaphragm and rotary metering systems shall be according to the provisions of the latest edition of the ANSI B109.1; ANSI B109.2; ANSI B109.3 and AGA Gas Measurement Manual (Revised); Displacement Measurement: Part No. 2.

11.4 Ultrasonic Metering Systems: Design, installation and calibration of ultrasonic metering systems shall be according to the provisions of the latest edition of AGA Report No. 9: Measurement of Gas by Multipath Ultrasonic Meters.

- 11.5 Correction for deviation from the Ideal Gas Laws *i.e.* computation of compressibility factors, super compressibility factors, and densities shall be based on equations published in the latest edition of the AGA Transmission Measurement Committee Report No. 8: Compressibility Factors of Natural Gas and Other Related Hydrocarbon Gases.
12. **Other Applicable Standards:**
- 12.1 Installation, operation & maintenance of Chart Recorders; Chart Calculations and Fixed Pressure Factor Metering shall be carried out in accordance with the latest published recommendations of the American Gas Association in AGA Gas Measurement Manual (Revised); Auxiliary Devices: Part No. 6, and Measurement Calculations and Data Gathering: Part No. 7, respectively.
- 12.2 Electronic Flow Computers, transducers & transmitters; and Electronic Correctors e.g. Electronic Volume Correctors shall be installed, tested, configured, calibrated, operated and maintained in accordance with the latest published recommendations of the American Gas Association in AGA Gas Measurement Manual; Part No. 8 and Part No. 15 respectively.
- 12.3 Design of Meter & Regulator Stations; Pressure Regulation & Flow Control; and Noise Abatement at Gas Measurement & Control Stations shall be in accordance with the latest published recommendations of the American Gas Association in AGA Gas Measurement Manual; Part No. 9 and Part No. 10, respectively.
- 12.4 Measurement of gas properties shall be carried out in accordance with the latest published recommendations of the American Gas Association in AGA Gas Measurement Manual; Measurement of Gas Properties: Part No. 11 / GPA or ASTM Standards.
- 12.5 Meter repair and selection shall be carried out in accordance with the latest published recommendations of the American Gas Association in AGA Gas Measurement Manual (Revised); Meter Repair and Selection: Part No. 14.

[F. No. OGRA-5-6(1)/2018-PR.]

MUHAMMAD ASAD LATIF,
Secretary.

