heating value of gas sold to customers shall be sent the commission each calendar month.

(5) The calorimeter equipment shall be maintained so as to give results within + or − 1%. Recording calorimeters used to test or control the production or mixing of gas or measure the heating value of purchased gas when therm rates are not applicable shall be tested with a gas of known heating value at least 3 times a year or when the accuracy is in question. Recording calorimeters used only with standby or peak shaving production plants shall be tested with a gas of known heating value at least 2 times a year. Non-recording calorimeter equipment such as the Junkers shall be tested with a gas of known heating value at least once a year or tested against another calorimeter of known accuracy at least once a year.

History: Cr. Register, February, 1959, No. 38, eff. 3-1-59; am. (5), Register, January, 1965, No. 109, eff. 2-1-65.

PSC 134.251 Use of recording calorimeter for therm billing. (1) In the application of gas rates based on the therm, a recording calorimeter shall be used to determine the heating value of the gas being distributed to utility customers. These calorimeters will be located as set forth in s. PSC 134.25 (2) and (3). They shall have such accuracy characteristics as to be able to measure the heating value of the gas to within + or − 2 B.t.u., shall be able to reproduce these readings to within + or − 2 B.t.u., and shall be able to hold their accuracy over an extended period of time. The instruments shall be installed in accordance with the manufacturer's recommendations.

(2) Each utility selling gas shall file with the commission a complete installation report stating the following information: location of calorimeter, kind of gas tested, type of scale, uniform or split scale range, date installed, publication number of manufacturer's applicable book of instructions, outline of the building, the location of the calorimeter or calorimeters within the building, the size, length, gas pressure, and general route of the gas sample pipe from the supply main to each calorimeter and location of all secondary equipment necessary for the operation of the recording calorimeter.

(3) (a) Each utility selling gas shall keep a chronological record of dates and results of tests and operations performed on the calorimeter to test and maintain accuracy.

(b) Twice every month the following tests shall be made:

1. Two days of each month shall be selected for the performance of an "as found" accuracy test, mechanical tests, adjustments, and an "as left" accuracy test of each recording calorimeter, and thereafter the specified accuracy tests, adjustments, and maintenance work shall be performed on the same days of each month insofar as practicable.

2. In making the accuracy tests on the calorimeter, the utility shall use reference natural gas which has been certified by the Institute of Gas Technology before cleaning parts or making any adjustments to either the tank unit or the recorder mechanism. The change from line gas to the certified gas should be made so as to have a continuous chart recording. The inlet pressure used should be the same for both calibration and subsequent operation.

3. If the "as found" accuracy test is within + or − 3 B.t.u., no adjustment will be required and the instrument may be returned to service. If the "as found" accuracy test is not within + or − 3 B.t.u., maintenance shall be performed to restore the accuracy of the instrument.

4. In order that adequate information concerning each cylinder of natural gas which is to be used for the semi-monthly check tests be available at all times, the following information shall be entered on a form or in a log book provided for the purpose and also on a label or tag securely attached to each cylinder in which the gas is stored:

(a) Institute of Gas Technology Cylinder Number.

(b) Institute of Gas Technology Certificate Number.

(c) Date cylinder was certified.

(d) Date cylinder was received by the utility.

(e) Heating value certified by Institute of Gas Technology.

(f) Basis of the heating value in (e) above.

(g) Heating value to be used in the semi-monthly accuracy tests. This heating value will not include any plus or minus values. For example, if the heating value is 1,000 + or − 0.9 B.t.u. per cubic foot, the heating value is 1,000 B.t.u. per cubic foot.

(h) Basis of the heating value in (g) above.

(5) The original chart records produced by the recording calorimeters shall be dated, labeled, and kept on file for 6 years. A copy of the daily average heating value of gas and the results of the semi-monthly "as found" and "as left" test shall be sent to the commission each calendar month.

(6) A gravitometer may be substituted for the calorimeter equipment required to control standby or peak shaving plants in subs. (1) and (5) provided the heat content of the standby or peak shaving gas produced does not directly affect the therm billing of the gas customer receiving it.

History: Cr. Register, January, 1965, No. 109, eff. 2-1-65; cr. (6), Register, July, 1983, No. 331, eff. 8-1-83.

PSC 134.26 Meter testing and testing equipment. (1) Each public utility giving gas service is responsible for the accuracy of equipment used to measure service to its customers and all gas supplied by the utility shall be metered unless specific exemption is obtained from the public service commission. The utility shall own and maintain the equipment and facilities necessary for accurately testing the various types and sizes of meters used by the utility for the measurement of gas, shall make the tests required by these rules, shall maintain the measuring devices, and maintain their accuracy; unless arrangements are made to have the work done by others who have properly equipped laboratories, are approved by the commission and arrangements are also made to have equipment and procedures checked by the public service commission. A test by the manufacturer of a metering device is not acceptable unless witnessed by a utility representative.

(2) Each public utility giving gas service shall own and maintain, except as provided in sub. (1), an industry-approved meter prover of a ca-

pacity of not less than 5 cubic feet. The meter prover shall be complete with all accessories needed for accurate meter testing, shall be suitably located for meter testing, and shall be protected from drafts and excessive temperature changes. The equipment shall be maintained in good condition and correct adjustment and be capable of determining the accuracy of service meters to within one-half of one per cent. When the meter prover is used to test temperature-compensating meters, there shall be present a temperature-indicating device to accurately determine the temperature of the prover to within + or − 1° Fahrenheit.

(3) Each public utility giving gas service through turbine or rotary displacement type meters shall a) own and maintain, except as provided in sub. (1), a flow or volumetric meter of suitable capacity, together with necessary accessories, and it shall maintain such equipment in proper adjustment so that it will be capable of determining the accuracy of turbine or rotary displacement type meters to within one-half of one percent; or b) have a record of tests of each turbine or rotary displacement type meter made by an acceptable laboratory or by a manufacturer witnessed by a representative of the utility. The record should show that the test included a check of the recording device.

(4) Each public utility giving gas service through orifice type meters shall own and maintain, except as provided in sub. (1), instruments for checking the diameter of the orifice, a water column for testing the pressure differential recorder, and a mercury column or a dead weight gauge tester for testing the static pressure recorder so that the utility will be capable of determining the accuracy of these orifices and recorders to within one-half of one per cent.

(5) All instruments and equipment used for testing of meters shall be maintained in good condition and correct adjustment and be capable of determining the accuracy of service meters to within one-half of one percent and shall be checked at least once each 3 years against a standard.

(6) A rotary displacement type meter, when used as a standard for testing other service meters, shall be given a differential test every 6 months. An original differential test record of the standard meter shall be established and all future differential test results shall be recorded and compared with the original test record. When the test differential pressure differs from the original test record by more than 25% at approximately 25% of the capacity of the meter, the meter shall be cleaned and/or repaired. All associated electrical equipment shall be tested before each series of tests. Associated pressure and temperature correction equipment shall be tested every 6 months.

(7) A diaphragm-type meter shall not be used as a standard for testing other service meters.

History: Cr. Register, February, 1959, No. 38, eff. 3-1-59; am. (2), Register, January, 1965, No. 109, eff. 2-1-65; am. (3) and (5), cr. (6) and (7), Register, April, 1969, No. 160, eff. 5-1-69.

PSC 134.27 Meter accuracies. All meters shall be set as close to 100% accurate as possible. Diaphragm meters shall be considered correct for service if the results of the multiple tests called for agree within 1% and no test shows an error of more than 1% fast or slow. Turbine and rotary displacement type meters shall be considered correct for service when tested at approximately 10% of rated flow with accuracy between 2% slow and 2% fast, and at approximately 100% flow with accuracy between 1% slow and 1% fast and in the case of turbine type meters, have a

spin test time equal to or greater than that on file with the commission under s. PSC 134.28 (6). In orifice type meters, the deviations in the diameter of the orifice shall not exceed the following:

PRACTICAL TOLERANCES FOR ORIFICE DIAMETERS

Orifice Size	Tolerance Plus or Minus	Orifice Size	Tolerance Plus or Minus
.2500	.0003"	1.2500	.0014"
.3750	.0005"	1.5000	.0017"
.5000	.0006"	1.7500	.0020"
.6250	.0008"	2.000 to 5.000	.0025"
.7500	.0009"	over 5.000	.0005" per inch of diameter
.8750	.0010"		
1.0000	.0012"		

In orifice type meters the sharpness of the orifice edge shall be maintained in such a condition that the upstream edge of the orifice shall not appreciably reflect a beam of light when viewed without magnification. No meter which is mechanically defective shall be placed in service or allowed to remain in service after such defect has been discovered. The inlet and outlet of diaphragm type meters shall be capped when not connected in service.

History: Cr. Register, February, 1959, No. 38, eff. 3-1-59; am. intro par. Register, November, 1962, No. 83, eff. 12-1-62; am. intro par., Register, April, 1969, No. 160, eff. 5-1-69.

PSC 134.28 Meter testing. (1) Each meter test of a diaphragm type meter with a capacity of 2,400 cubic feet per hour or less shall consist of one proving at a rate of flow one-fifth or less of the rated capacity of that meter and one proving at a rate of flow at or greater than the rated capacity of the meter. The capacity of the meter for test purposes shall be the capacity at one-half inch water column differential pressure.

(2) Each meter test of a diaphragm type meter having a capacity greater than 2,400 cubic feet per hour shall consist of one proving at a rate of flow one-fifth or less of the rated capacity of that meter and one proving at a rate of flow not less than 2,500 cubic feet per hour, but not less than twice the minimum test flow. The capacity of the meter for test purposes shall be the capacity at one-half inch water column differential pressure.

(3) Rotary meters shall be tested at 2 loads with the minimum load at 10% of rating by the use of a portable or volumetric meter or other approved proving devices, or be given a differential test. In the latter case an original test record shall be set up immediately after installation; future differential test results shall be recorded and compared with the original test record.

(4) A test of an orifice meter shall consist of tests of the recording gauges, and the removal, inspection and measurement of the orifice.

(5) Temperature-compensated gas displacement meters when tested shall be proved to a base temperature of 60° Fahrenheit.

(6) Turbine-type meters shall be tested at 2 loads with the minimum load at 10% of rating by the use of a portable or volumetric meter or other approved proving devices, or be given a turbine blade, rotor and gear assembly spin test, either by manual or velocity rotation. Before a particular type turbine meter can be used, the manufacturer must file with and be accepted by the commission a minimum coasting time which

will satisfactorily indicate the operating condition of the internal metering mechanism. For the spin test method a test record shall be set up; and the original and subsequent spin test results shall be recorded and compared with the specified minimum coasting time as filed with the commission for that type meter.

History: Cr. Register, February, 1959, No. 38, eff. 3-1-59; am. (3), Register, November, 1962, No. 83, eff. 12-1-62; cr. (5), Register, January, 1965, No. 109, eff. 2-1-65; cr. (6), Register, April, 1969, No 160, eff. 5-1-69.

PSC 134.29 Installation test. No meter shall be used to meter gas consumption for billing purposes unless it was tested and found correct, as defined in s. PSC 134.27 not longer than 15 months previous to its use. The first test on a meter or a retest after a major overhaul shall include a check of the registering device and linkages.

History: Cr. Register, February, 1959, No. 38, eff. 3-1-59; am. Register, April, 1969, No. 160, eff. 5-1-69.

PSC 134.30 Periodic testing and maintenance. Each utility shall test its meters according to the following schedule except as provided in s. PSC 134.26 (1). Where pressure regulators, volume corrective devices, or other measuring devices are used on the service or used in conjunction with the meters, they shall be tested on the same schedule as the meters.

(1) All diaphragm meters that are measuring dry gas and have non-absorptive type diaphragms or were rediaphragmed since the introduction of dry gas shall be due for removal from service, tested, adjusted, repaired if necessary, and retested if reused, every 144 months if the meter capacity is 2,400 cubic feet per hour or less at ½-inch water column and every 48 months if the capacity is greater than 2,400 cubic feet. Meters shall be tested during the calendar year in which said 144th or 48th month falls.

(2) All diaphragm meters that are measuring dry gas that do not have non-absorptive-type diaphragms and have not been rediaphragmed since the introduction of dry gas shall be removed from service, tested, adjusted, re-diaphragmed and retested within 48 months of the introduction of dry gas if the meter capacity is 2,400 cubic feet per hour at ½-inch water column and within 24 months if the capacity is greater than 2,400 cubic feet.

(3) All diaphragm meters that measure other than dry gas shall be removed from service, tested, adjusted, repaired, if necessary, and retested if reused every 96 months if the meter capacity is 2,400 cubic feet per hour or less at ½-inch water column and every 48 months if the capacity is greater than 2,400 cubic feet.

(4) Rotary meters having a capacity of 15,000 cubic feet per hour or less at 4 oz. water column pressure shall be given a differential test at least once every 48 months and once every 24 months if the capacity is greater than 15,000 cubic feet. When the differential differs from the original test record by more than 50%, the meter shall be cleaned and/or repaired.

(5) Orifice meters shall have their differential and static recording gauges tested at least once each month, the diameter and condition of the orifice checked at least once a year. The specific gravity of the gas shall be checked as required in s. PSC 134.21 (4), and any temperature recording devices tested annually.

(6) Turbine meters shall be given an inspection and spin test at least once every 12 months. When the coasting time is equal to or less than the specified minimum coasting time as on file with the commission, the meter shall be cleaned and/or repaired.

History: Cr. Register, February, 1959, No. 38, eff. 3-1-59; am. (4), Register, November, 1962, No. 83, eff. 12-1-62; am. (1), Register, January, 1965, No. 109, eff. 2-1-65; am. (4) and cr. (6), Register, April, 1969, No. 160, eff. 5-1-69.

PSC 134.31 Request and referee tests. (1) Each utility furnishing gas service shall make a test of the accuracy of any gas meter upon request of the customer, provided the customer does not request such test more frequently than once in 6 months. A report giving the results of each request test shall be made to the customer and the complete, original record shall be kept on file in the office of the utility.

(2) Any gas meter may be tested by a commission inspector upon written application of the customer. For such test, a fee shall be forwarded to the commission by the customer with the application. The amount of this fee shall be refunded to the customer by the utility if the meter is found to be more than 3% fast. The amount of the fee that is to be remitted for such tests shall be $2 for each consumption meter that has a rated capacity not exceeding 1,000 cubic feet per hour; for larger consumption meters, demand meters, etc., the test fee shall be the actual expense of the test.

(3) All request and referee meter tests shall include an inspection of the meter index by removing the index from the meter body. The dials, gears and all other parts of the index shall be visually inspected for wear, misalignment or other mechanical defects which would affect the accuracy of the meter on a continuing or sporadic basis. Any defects affecting the meter's accuracy shall be noted and evaluated in the report of the test.

History: Cr. Register, February, 1959, No. 38, eff. 3-1-59; cr. (3), Register, July, 1983, No. 331, eff. 8-1-83.