THE AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION

ACCREDITED PROFICIENCY TESTING PROVIDER

A2LA has accredited

HN PROFICIENCY TESTING, INC.
Indianapolis, IN

for technical competence as a

Proficiency Testing Provider

The accreditation covers the specific proficiency testing sample/artifact types listed on the agreed scope of accreditation. This provider meets the requirements of ILAC Guide 13:2000 Guidelines for the Requirements for the Competence of Providers of Proficiency Testing Schemes (comprising ISO Guide 43-1:1997 as well as relevant elements of ISO/IEC 17025:1999 applicable to characterization, homogeneity and stability testing of proficiency testing materials as well as relevant ISO-9000 series requirements).

Presented this 23rd day of August 2006

AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION
CORPORATE SEAL 1978 DISTRICT OF COLUMBIA
A2LA

President
For the Accreditation Council
Certificate Number 1966.01
Valid to August 31, 2010

For samples to which this accreditation applies,
please refer to the Proficiency Testing Provider's Scope of Accreditation.

SCOPE OF ACCREDITATION TO ILAC GUIDE 13: 2000

HN PROFICIENCY TESTING INC.
10219 Coral Reef Way
Indianapolis, IN 46256
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PROFICIENCY TESTING PROVIDER

Valid To: August 31, 2010 Certificate Number: 1966.01

This Proficiency Testing Provider has been found to meet the requirements of ILAC Guide 13: 2000 "Guidelines for the Requirements for the Competence of Providers of Proficiency Testing Schemes" (based on ISO/IEC Guide 43-1:1997, relevant elements of ISO/IEC 17025:1999, and relevant ISO 9000 requirements). Therefore, in recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this provider to offer the following proficiency testing programs:

I. Gage Blocks.

This program involves the measurement of steel gage block lengths in the range 0 – 4 inches. Reference values are obtained by mechanical comparison and associated reference uncertainties[1] are typically on the order of (2.5 + 0.8L) μin, where L is the nominal length of the gage block in inches. This program is suitable for participants who measure gage blocks by mechanical comparison, whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

II. Long Gage Blocks.

This program involves the measurement of steel gage block lengths in the range 8 – 20 inches. Reference values are obtained by mechanical comparison and associated reference uncertainties[1] are typically on the order of (3 + 1L) μin, where L is the nominal length of the gage block in inches. This program is suitable for participants who measure long gage blocks by mechanical comparison, whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

III. Hand Gages (Micrometers, Calipers and Indicators).

This program involves the measurement of deviations in the gages listed. Reference values are obtained by comparison to reference artifacts such as gage blocks and associated reference uncertainties[1] are typically primarily limited by the resolution of the gages. This program is suitable for participants who calibrate such gages, whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

IV. Plain Ring Gages.

This program involves the measurement of the inside diameter of plain ring gages in the range 0.25 – 4 inches. Reference values are obtained by mechanical comparison and associated reference uncertainties[1] are typically on the order of 10 – 20 μin. This program is suitable for
participants who measure plain ring gages by mechanical comparison or similar methods, whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

V. Thread Plug Gages.

This program involves the measurement of the major diameter and pitch diameter of thread plug gages in the range 0.08 – 1.5 inches. Reference values are obtained by mechanical measurement including the 3-wire method for the pitch diameter. The associated reference uncertainties[1] are typically on the order of 30 – 50 μin. This program is suitable for participants who measure thread plug gages using similar methods, whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

VI. Thread Wires.

This program involves the measurement of the effective diameter of thread wires in the range 0.01 – 0.1 inches and calculation of the corresponding wire constants. Reference values are obtained by mechanical comparison. The associated reference uncertainties[1] are typically on the order of 5 μin. This program is suitable for participants who measure thread wires using similar methods, whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

VII. CMM Measurement.

This program involves the measurement of locations, diameters and angles of an artifact (a cast iron engine block) with the approximate dimensions 350x250x150 mm. Reference values are obtained by CMM measurement. The associated reference uncertainties[1] are typically on the order of 2 – 3 μm. This program is suitable for participants who measure machined work pieces using CMMs, whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

VIII. Digital Multimeter.

This program involves sourcing and measuring:

DC Volts (50 mV – 750V);
DC Current (80 mA – 1A);
DC Resistance (1 kΩ – 10 MΩ);
AC Volts (1V – 500V @ 100 Hz – 50 kHz);
AC Current (1 A @ 1 kHz).

The associated reference uncertainties[1] are on the order of:

0.9 μV – 5.5 mV DC;
0.004 mA – 0.12 mA DC;
9 mΩ – 0.8 kΩ;
0.1 mV – 50 mV AC;
0.3 mA AC.

The artifact is an Agilent 34401, a 6½ digit DMM. This program is suitable for participants who source and measure these electrical quantities and/or calibrate multimeters, whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

IX. Temperature Simulation/Process Calibrators.

This program involves sourcing electrical signals to simulate thermocouple types J (-200°C to 725°C), K (-200°C to 1100°C) and T (-200°C to 400°C), as well as 3-wire RTDs (-180°C to 750°C). In addition this program involves sourcing voltage (80mV to 24 V), current (4mA to 20 mA) and resistance (50 Ohms to 700 Ohms). The artifact is a Fluke 724. The associated reference uncertainties[1] are typically on the order of 0.07°C to 0.15°C for the temperature simulations and primarily limited by the resolution of the artifact for the pure electrical measurements. This program is suitable for participants who calibrate temperature-indicating devices by electrical simulation and process calibrators, whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

X. Plain Plug Gages.

This program involves the measurement of the outside diameter of plain plug gages in the range 0.1 – 4 inches. Reference values are obtained by mechanical comparison and associated reference uncertainties[1] are typically on the order of 18 – 30 μin. This program is suitable for participants who measure plain plug gages by mechanical comparison or similar methods, whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

XI. Optical 2D Measurement.

This program involves the measurement of locations, inside and outside diameters and angles of a steel artifact with the approximate dimensions 150x100x35 mm. Reference values are obtained by CMM measurement. The associated reference uncertainties[1] are typically on the order of 2 – 3 μm. This program is suitable for participants who measure machined work pieces using Optical CMMs or optical comparators, whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

XII. Dimensional Testing.

This program involves the measurement of distances, locations and inside and outside diameters of a steel artifact with the approximate dimensions 150x100x35 mm. Reference values are obtained by CMM measurement. The associated reference uncertainties[1] are typically on the order of 2 – 3 μm. This program is suitable for participants who measure machined work pieces using hand gages such as micrometers, calipers, height gages and indicators, whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

XIII. RF Power Sensor Calibration.

This program involves the determination of the calibration factor for a RF Power Sensor calibrated at 1 mW input power, referenced to 50 MHz at 1 mW. Calibration factors are to be determined in the range 10 MHz to 18 GHz. Reference uncertainties[1] are typically on the order of 1.5%. This program is suitable for participants who calibrate RF power sensors and whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

XIV. Microwave Attenuator Calibration.

This program involves the measurement of the attenuation characteristics of a set of microwave attenuators with type N connectors. The measuring range is -3 dB to -20 dB at 300 MHz to 18 GHz. Reference uncertainties[1] are typically on the order of 0.03 dB – 0.05 dB. This program is suitable for participants who calibrate microwave attenuators or measure microwave attenuation, whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

XV. Micrometer Master Rod Calibration.

This program involves the measurement of the length of a set of micrometer master rods in the range 1 – 12 inches. Reference values are obtained by mechanical comparison and associated reference uncertainties[1] are typically on the order of 25 – 75 µin. This program is suitable for participants who calibrate micrometer master rods or similar artifacts by mechanical comparison or similar methods, whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

XVI. Mass Measurement.

This program involves the measurement of the mass of a set of standard weights. The measuring range is 1 g to 500 g. Reference uncertainties[1] are typically on the order of 1.7 µg to 26 µg. This program is suitable for participants who measure or calibrate mass, whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

XVII. Torque Wrench Calibration.

This program involves the calibration of a set of torque wrenches. The measuring range is 15 in-lb to 100 ft-lb. Reference uncertainties[1] are typically on the order of 0.3% of reading. This program is suitable for participants who calibrate torque wrenches, whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

XVIII. Tachometer (frequency) Calibration.

This program involves the calibration of a combination mechanical/optical tachometer in the range up to 95,000 RPM (optical) and up to 20,000 RPM (mechanical). Reference uncertainties[1] are primarily limited by the resolution of the instrument (0.1 or 1 RPM depending on test point). This program is suitable for participants who calibrate tachometers optically or mechanically or source frequency, whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

IXX. Combination Vacuum and Pressure Gage Calibration.

This program involves the calibration of a combination vacuum/pressure gage. The measuring range is -14 psi to +15 psi. Reference uncertainties[1] are primarily limited by the resolution of the instrument (0.02 psi). This program is suitable for participants who calibrate vacuum and/or pressure gages, whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

XX. Pressure Gage Calibration.

This program involves the calibration of a pressure gage . The measuring range is 75 psi to 750 psi. Reference uncertainties[1] are primarily limited by the resolution of the instrument (0.1 psi). This program is suitable for participants who calibrate pressure gages, whose uncertainties are not significantly smaller than the typical reference uncertainties, and who calculate their uncertainties per the method of the ISO GUM.

[1] Reference values are obtained in accordance with A2LA's traceability policy. The typical reference uncertainties listed refer to the uncertainty quoted by the reference laboratories used by the proficiency testing provider. Weighted averages of participant values may be used as reference values in test reports resulting in considerably lower uncertainties. Reference uncertainties are calculated per the ISO *Guide to the Expression of Uncertainty in Measurement* (GUM) and are given as expanded uncertainties at the 95% level of confidence.

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