What is claimed is:

1. A method for operating a flowmeter diagnostic tool comprising:

calculating a standard deviation of the flowmeter sensor assembly flow rate (σ);

determining the number of samples used to calculate σ;

determine the sampling duration;

calculating a meter-specific factor (MSF), wherein the MSF comprises a sampling rate for total prove time measurements.

calculating an estimated total prove time (TPT) necessary to pass a predetermined repeatability requirement using the MSF and the σ;

interfacing the diagnostic tool with a flowmeter sensor assembly;

inputting a base prover volume (BPV) into the diagnostic tool;

inputting a desired number of passes per run into the diagnostic tool;

receiving flowmeter data;

~~calculating an estimated total prove time (TPT) necessary to pass a predetermined repeatability requirement;~~

calculating an estimated minimum number of runs needed to achieve the calculated TPT~~;~~

~~calculating a standard deviation of the flowmeter sensor assembly flow rate (σ);~~

~~determining the number of samples used to calculate σ;~~

~~calculating a meter-specific factor (MSF)~~.

2. A method for operating a flowmeter diagnostic tool comprising:

calculating a standard deviation of the flowmeter sensor assembly flow rate (σ);

determining the number of samples used to calculate σ;

calculating a meter-specific factor (MSF), wherein the MSF comprises a sampling rate for total prove time measurements;

calculating an estimated total prove time (TPT) necessary to pass a predetermined repeatability requirement using the MSF and the σ;

interfacing the diagnostic tool with a flowmeter sensor assembly;

inputting a maximum number of allowed runs into the diagnostic tool;

inputting a desired number of passes per run into the diagnostic tool;

receiving flowmeter data;

~~calculating an estimated total prove time (TPT) necessary to pass a predetermined repeatability requirement;~~

calculating an estimated minimum base prover volume (BPV)~~;~~

~~calculating a standard deviation of the flowmeter sensor assembly flow rate (σ);~~

~~determining the number of samples used to calculate σ;~~

~~calculating a meter-specific factor (MSF)~~.

3. The methods of claims 1 and 2, wherein the MSF comprises a sampling rate for the TPT calculation.

4. The methods of claim 3, wherein the MSF is calculated by dividing the number of samples used to calculate σ by a sample collection duration.

5. A diagnostic tool for configuring a flowmeter system comprising:

electronics configured to interface with a flowmeter (5) and receive flowmeter data;

a user interface with the electronics configured to accept a user input, wherein the input comprises at least one of a base prover volume (BPV), a desired number of passes per run, and maximum number of allowed runs; and

a processing system (303) configured to run a proving routine (315), wherein the proving routine (315) is configured to at least one of calculate an estimated total prove time (TPT) necessary to pass a predetermined repeatability requirement, calculate an estimated minimum number of runs needed to achieve the calculated TPT, and calculate an estimated minimum base prover volume (BPV),

calculating a standard deviation of the flowmeter sensor assembly flow rate (σ);

determining the number of samples used to calculate σ;

calculating a meter-specific factor (MSF)<u>, wherein the MSF comprises a sampling rate for total prove time measurements</u>.

6. The diagnostic tool of claim 5, wherein the MSF comprises a sampling rate for the TPT calculation.

7. The diagnostic tool of claim 6, wherein the MSF is calculated by dividing the number of samples used to calculate σ by a sample collection duration.

8. The diagnostic tool of claim 5, wherein the electronics comprise meter electronics (20) for the flowmeter (5).

9. The diagnostic tool of claim 5, wherein calculating the TPT comprises utilizing an uncertainty coverage factor.

10. The diagnostic tool of claim 5, wherein calculating the estimated minimum number of runs needed to achieve the calculated TPT comprises utilizing a measured flow rate and a BPV.