**Hydrocarbon Analyzer Calibration Procedure**

The intent of this procedure is to specify the steps to be followed when calibrating the hydrocarbon analyzers used in the gasoline spill test facility.  This procedure shall be followed each day that the hydrocarbon analyzers are used.

1.            Turn on the hydrocarbon analyzers and sample pumps.

2.            Verify that the compressed air cylinder valve is open.  Verify that the cylinder pressure is at least 200 psig.  If the cylinder pressure is below 200 psig, replace the cylinder with a new one.

3.            Set compressed air pressure regulator to 25 psi.

4.            Verify that the hydrogen gas cylinder valve is open.  Verify that the cylinder pressure is at least 200 psig.  If the cylinder pressure is below 200 psig, replace the cylinder with a new one.

5.            Set the hydrogen pressure regulator to 35 psi.

6.            Verify that the hydrogen and compressed air pressures within the analyzers are correct.  The correct values are specified on the information plate on the side of each analyzer.  The actual values are checked by depressing the push button on the analyzer.  Adjust the pressures as necessary using the screw located near the appropriate push button.

7.            Verify that the hydrocarbon analyzer flames are lit by using a reflective surface held in front of the FID collector tube.  Condensation will form on the surface if the burner is lit.  If the burner is not lit, hold the “Ignite/Run” toggle switch (on the front panel) in the “Ignite” position until the burner is lit.

8.            Verify that the heater tapes are turned on.

9.            Wait 30 minutes for the system to heat up.

10.         Turn on the calibration gas cylinder (nom. 10% butane by volume).  Verify that the cylinder pressure is at least 50 psig.  If the cylinder pressure is below 50 psig, replace the cylinder with a new one.  Set the regulator to 20 psi.  Note the value of the calibration gas concentration for later use (ref.: step 24).

11.         Turn the SAMPLE / CAL. valve to the CAL position.

12.         Verify that the Analyzer Flow rate is exactly 35.

13.         Verify back pressure regulator is set at 2 psi, (regulator stem is locked and should not need any adjustment).

14.         Set the Back Pressure Flow Rate to between 50 to 200 scc/min.

15.         Verify that the HC analyzer gain selector is set to “Medium”.

Verify that the output voltage from the analyzer is 2 0.2 vdc (see Note below).  Adjust the “Analyzer Splitter Valve” as necessary to obtain 2 0.2 vdc.  Record the actual voltage from each HC analyzer for later use (ref.: step 24).

Note:     An output voltage of 2 +/- 0.2 VDC corresponds to a calibration gas concentration of 10% butane.  If a calibration gas with a different butane concentration is used, the output voltage must be scaled accordingly.

17.         Allow the analyzers to stabilize for at least 10 minutes.

18.         From the computer monitor, verify that the values in the “READING” column for HC 1-4 are approximately equal to the calibration gas concentration.  If the readings are near “0”, the FID may have experienced a flame out.  Manually re-ignite the flame in the appropriate hydrocarbon analyzer.

19.         In the ChartView screen, click on the “stop” icon (black square at the top left of the display).  Then click on the “setup” label above the toolbar.  Select “channels and alarms.”

20.         Highlight the “UNITS” chamber for HC1.

21.         Click on “CHOOSE UNITS”

22.         Click on the drop-down menu arrow.

23.         Select “mx+b”

24.         Verify that the value for “Offset” is zero.  Adjust if necessary.  Adjust the value for “Scale Factor” to a value that will cause HC1 to read the calibration gas value 0.2 percentage points (see NOTE).  Click on “OK” to accept the changes in the calibration data.

               NOTE:   Click on the “FID Calibration” icon on the desktop.  Enter the value of the calibration gas concentration (step 10) in cell D1.  Enter the voltage readings from HC analyzers 1 through 4 (step 16) into cells B3 through B6, respectively.  The corresponding values for the Scale Factors are shown in cells C3 through C6, respectively.

25.         Click on the “run” icon (black triangle at the top left of the display).  When the readings have stabilized, verify that the reading for HC1 is correct.

26.         If the reading for HC1 is not correct, repeat steps 24 - 25.  If the reading for analyzer HC1 is correct, repeat steps 24 – 26 for analyzers HC2, HC3 and HC4 until all of the HC analyzers are reading correctly.

27.         Turn the “SAMLPE / CAL” valve to the “SAMPLE” position.  Wait for the analyzers to stabilize.  Check the readings for HC1, 2, 3 & 4.  Verify that all of the HC analyzers read 0 0.1.

28.         Turn the “SAMLPE / CAL” valve to the “CAL” position.  Wait for the analyzers to stabilize.  Check the readings for HC1, 2, 3 & 4.  Verify that all of the HC analyzers read the calibration gas concentration 0.2%.  If the readings are within 0.2% of the specified calibration gas concentration, the analyzers are calibrated.  Turn off the calibration gas cylinder, turn the SAMPLE / CAL. valve to the SAMPLE position, and turn on the sample pumps.