

When all calculations are done and data verified this can be exported currently in Text/PDF format and will be available in an XML report format near future.

Sample Report Format XC-6000 Mercury Analysis

Report Time: 9/21/2010 5:09 PM **HgCalc Version:** 100921

Description

Description	Data	Unit
Run Data		
Total Stack Volume:	24,249,472	scm
Average Sample Concentration:	21.181	ug/scm
Percent Moisture:	8	%
Average Stack Temperature:	85.50	deg F
Average Probe Temperature:	85.50	deg F
Average Trap Temperature:	86.20	deg F
Average Barometric Pressure:	29.56	in Hg
Sampling Interval:	1	min
Total Time Elapsed:	3,960	min
Technician Name:	Technician #1	
Source Site Name:	Site #1	
XC-6000 Data File:	060 Demo HgCalc Sample File 4-20 2 day 18 hr.(33) 06-15-09.csv	
Trap Manufacturer:	Ohio Lumex	
Trap Analysis Source:	Ohio Lumex	
Trap Analysis Technician Name:	Technician #1	
Trap Analysis Data File:		
Trap Analysis Method:	Thermal Desorption	
Power Generated During Run:	MW	

Sample A

Trap ID:	28,930	
Section 1 Mass:	39.201	ug
Section 2 Mass:	0.062	ug
Section 2 Breakthrough:	0.16	%
Section 3 Spike Value:	10	ug
Section 3 Spike Recovery:	9.251	ug
Section 3 Spike Recovery Percentage:	92.51	%
Normalized Total Hg Mass:	42.442	ug
Total Sample Volume:	2,052	liters
Average Flow Rate:	0.50	L/m
Maximum Observed Vacuum:	21.80	in Hg
Sample Mercury Concentration:	20.683	ug/scm
Total Stack Mercury (Wet):	545,165,032	ug
Hourly Stack Mercury (Wet):	8,260,076	ug/hr
Breakthrough Penalty:	FALSE	
Spike Recovery Penalty:	FALSE	

Sample B

Trap ID:	28,941	
Section 1 Mass:	40.603	ug
Section 2 Mass:	0.079	u
Section 2 Breakthrough:	0.19	%
Section 3 Spike Value:	10	ug
Section 3 Spike Recovery:	9.061	ug
Section 3 Spike Recovery Percentage:	90.61	%
Normalized Total Hg Mass:	44.898	ug
Total Sample Volume:	2,071	liters
Average Flow Rate:	0.50	L/m
Maximum Observed Vacuum:	21.70	in Hg
Sample Mercury Concentration:	21.679	ug/scm
Total Stack Mercury (Wet):	571,417,721	ug
Hourly Stack Mercury (Wet):	8,657,844	ug/hr
Breakthrough Penalty:	FALSE	
Spike Recovery Penalty:	FALSE	
Paired Trap Agreement		
Relative Deviation:	2.35	%
Relative Deviation Penalty:	FALSE	

Logged Events

06/12/09 2:06:17 PM: Sample A: PRE-Leak Test PASSED at Maximum vacuum with Flow Rate 0 ccm (Max. allowed 20 ccm)

06/12/09 2:06:17 PM: Sample B: PRE-Leak Test PASSED at Maximum vacuum with Flow Rate 0 ccm (Max. allowed 20 ccm)

06/12/09 2:10:13 PM: Test START

06/12/09 2:11:12 PM: Start Data Logging (End of Baseline)

06/15/09 8:10:19 AM: Actual Sampling Time: 2d 18h 0m 0s

06/15/09 8:10:19 AM: Test END

06/15/09 8:12:18 AM: Sample A: POST-Leak Test PASSED at maximum observed vacuum at 21.8 inHg with Flow Rate of 0 ccm (Max. allowed 20 ccm)

06/15/09 8:12:18 AM: Maximum Observed Vacuum for A was 21.8 inHg

06/15/09 8:12:18 AM: Sample B: POST-Leak Test PASSED at maximum observed vacuum at 21.7 inHg with Flow Rate of 0 ccm (Max. allowed 20 ccm)

06/15/09 8:12:18 AM: Maximum Observed Vacuum for B was 21.7 inHg

Alarms Legend

A - Not Used
B - Not Used
C - Not Used
D - Current Loop failure for External FLOW Input
E - Current Loop failure for External MOISTURE Input
F - Modbus inactivity timeout
G - Unable to maintain proportional flow for A
H - Unable to maintain proportional flow for B
I - High Vac-A
J - High Vac-B
K - Not Used
L - Trap Temperature Out of Range
M - Probe Temperature Out of Range

Console Info

Flow Input Type: External
Conversion (LO): Zero - 4 mA = 0 Kscfm
Conversion (HI): Span - 20 mA = 432 Kscfm
Console Name: 060 - Apex Demo

Console ID: XC6KEPC060
DAC Board ID: 3036-3020-2D20-4170
Dry Gas Meter-A ID/Gamma: 8002458 / 0.9769

Dry Gas Meter-B ID/Gamma: 8003171 / 0.9877

DGM cm3/Pulse: 0.5
Software-Firmware Ver: 90122-99

NOTE: We appreciate any thoughts or feedback on this application and strive to continue developing innovative products for our customers.

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The HgCalc application can be used to import XC6000 sample run data then enter trap analysis data and the application will calculate total mercury mass, hourly and total mercury emissions as specified in 40CFR part 75.

The software will also verify QA/QC specifications regarding section 2 breakthrough, relative deviation, and section 3 spike recovery as shown in Appendix K table K-1

The application opens as seen in the screenshot below:

The screenshot shows the HgCalc software interface with the following data:


Sample A			Sample B		
Trap ID	28930		Trap ID	28941	
Section 1 Hg Mass (M1), incl. plug	39,201	ng	Section 1 Hg Mass (M1), incl. plug	40,603	ng
Section 2 Hg Mass (M2)	62	ng	Section 2 Hg Mass (M2)	79	ng
Section 2 Breakthrough (%B)	0.16	percent	Section 2 Breakthrough (%B)	0.19	percent
Section 3 Spike Value (Ms)	10,000	ng	Section 3 Spike Value (Ms)	10,000	ng
Section 3 Spike Recovery (M3)	9,251	ng	Section 3 Spike Recovery (M3)	9,061	ng
Section 3 Recovery Percentage (%R)	92.51	percent	Section 3 Recovery Percentage (%R)	90.61	percent
Normalized Total Hg Mass (M*)	42,442	ng	Normalized Total Hg Mass (M*)	44,898	ng
Total Sample Volume (Vt)	2,052	liters	Total Sample Volume (Vt)	2,071	liters
Sample Mercury Concentration (C)	20.683	ug/scm	Sample Mercury Concentration (C)	21.679	ug/scm
Total Stack Mercury (Wet)	307,228,193	ug	Total Stack Mercury (Wet)	322,022,917	ug
Hourly Stack Mercury (Wet)	4,654,973	ug/hr	Hourly Stack Mercury (Wet)	4,879,135	ug/hr

Trap Data		Run Data	
Trap Manufacturer	STLS	Stack Volume	482,603,500 scf
Trap Analysis Source	STLS	Average Mercury Concentration	21.181 ug/scm
Trap Analysis Technician Name	Technician # 1	Percent Moisture	8.000
Trap Analysis Method	Thermal Desorption	Relative Deviation (RD)	2.35%

Messages

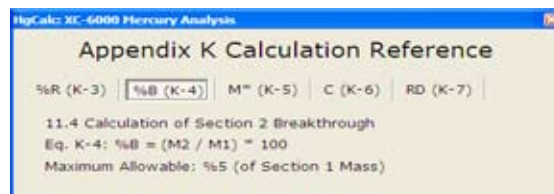
[16:42:13][Parser] Run data loaded from: \\tsclient\O\RALPH Hart\HgCalc\100921\Sample Run Data\050 Demo HgCalc Sample File 4-20 2 day 18 hr.(33) 06-15-09.csv

Run Data	
Technician Name	Terry Tester
Source Site Name	Apex Big Stack # 1
Total Sampling Duration	2 days 18 hours 0 minutes

Once the application is installed on your computer and you have sample and analysis data, double click the Icon  on the desktop. Under the **Help** option are 3 options:

Hgcalc.ico

1 Appendix K table K-1 calculation formulas



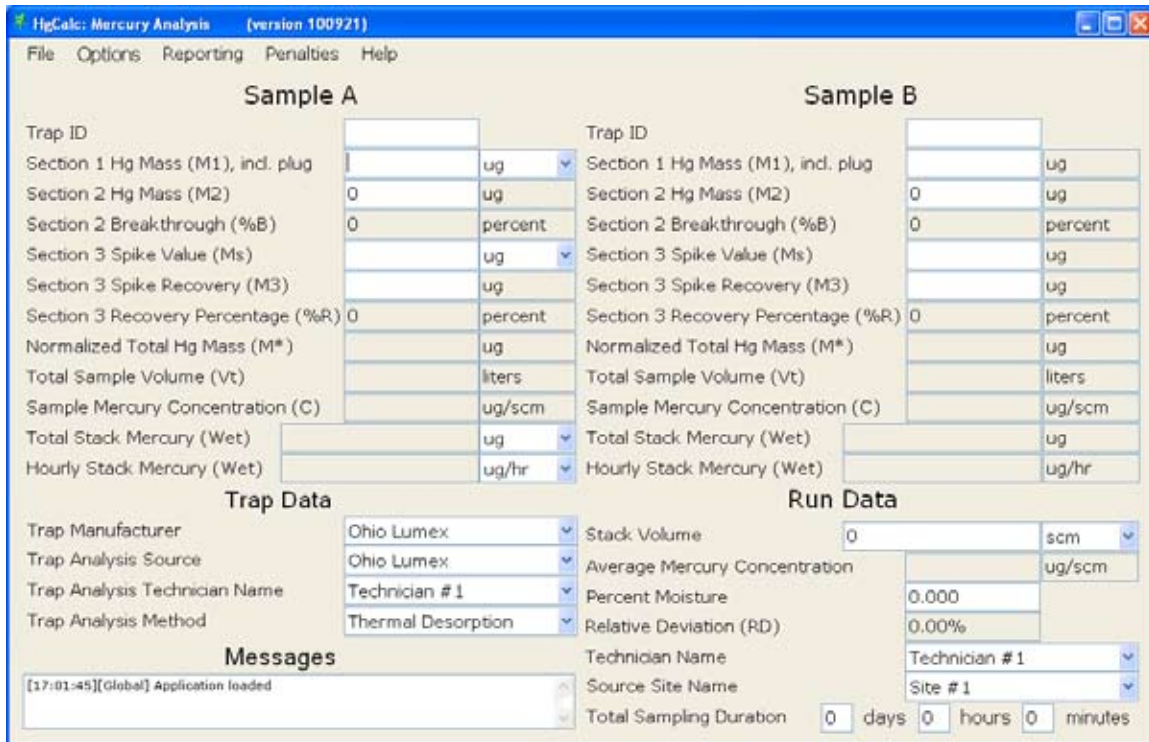
2 A Link to EPA Appendix K text (when internet access is available)

3 A link to Apex Instruments Website (when internet access is available)

Below is a sample HgCalc screenshot for a 1 hour proportional run on an XC6000

The .csv data was imported by clicking on the **File** option, selecting **Import XC6000 Data**, then selecting **Data from source file on Computer/Network**.

Lab data for each trap section 1, 2, section 3 (Initial Trap Spike) & spike recovered from section 3 analysis is then entered.



The screenshot shows the HgCalc: Mercury Analysis (version 100921) interface. It is divided into several sections:

- Sample A and Sample B:** Each has a table for data entry. Fields include Trap ID, Section 1 Hg Mass (M1), Section 2 Hg Mass (M2), Section 2 Breakthrough (%B), Section 3 Spike Value (Ms), Section 3 Spike Recovery (M3), Section 3 Recovery Percentage (%R), Normalized Total Hg Mass (M*), Total Sample Volume (Vt), Sample Mercury Concentration (C), Total Stack Mercury (Wet), and Hourly Stack Mercury (Wet). Units are specified for each field.
- Trap Data:** Includes Trap Manufacturer (Ohio Lumex), Trap Analysis Source (Ohio Lumex), Trap Analysis Technician Name (Technician #1), and Trap Analysis Method (Thermal Desorption).
- Run Data:** Includes Stack Volume (0 scm), Average Mercury Concentration, Percent Moisture (0.000), Relative Deviation (RD) (0.00%), Technician Name (Technician #1), Source Site Name (Site #1), and Total Sampling Duration (0 days, 0 hours, 0 minutes).
- Messages:** A log area showing "[17:01:45][Global] Application loaded".

Total Stack Volume is shown under Run Data field this was recorded by the XC6000 if 4-20 external flow was connected or Modbus interface was connected and flow data was supplied by the DAHS.

NOTE: Moisture will have to be added back into volume to calculate total output for hourly unless permit states otherwise. Trap sample volumes were measured based on a dry and volume is corrected for pressure & temperature. The moisture will be imported from XC6000 data either real value or default value entered in profile setup.