California Environmental Protection Agency

AIR RESOURCES BOARD

AIR QUALITY SURVEILLANCE BRANCH

STANDARD OPERATING PROCEDURES

FOR

XONTECK MODEL 901 & 910PC CANISTER SAMPLERS

AQSB SOP 805

First Edition

MONITORING AND LABORATORY DIVISION

April 2015

California Environmental Protection Agency
AIR RESOURCES BOARD

Approval of Standard Operating Procedures (SOP)

Title: XONTECK MODEL 901 & 910PC CANISTER SAMPLERS

SOP: AQSB SOP 805, First Edition

Section: Operation and Data Support Section

Branch: Air Quality Surveillance Branch (AQSB)

Division: Monitoring and Laboratory Division (MLD)

Prepared by: Simon Cheung, Air Pollution Specialist

Approval: This SOP has been reviewed and approved by:

_____ _____
Reginald L. Smith, Manager Date
Operation and Data Support Section
Air Quality Surveillance Branch

_____ _____
Kenneth R. Stroud, Chief Date
Air Quality Surveillance Branch

TABLE OF CONTENTS
XONTECK MODEL 901 & 910PC CANISTER SAMPLERS

TABLE OF CONTENTS (Cont.)
XONTECK MODEL 901 & 910PC CANISTER SAMPLERS

1.0 GENERAL INFORMATION

1.1 Introduction:

This Standard Operating Procedure (SOP) describes procedures used by the California Air Resources Board (CARB) Air Quality Surveillance Branch (AQSB) to operate the Xonteck Model 901 Canister Sampler as well as the Xonteck (formerly R.M. Environmental) Model 910PC Canister Sampler to measure air toxics level by collecting a representative sample of ambient air over a 24 hour period for later laboratory analysis. Because of similarities, these two instruments will be collectively referred to as "the instrument" unless otherwise required. This procedure is designed to supplement the instruction manual by describing hardware or operating procedures as implemented by the AQSB. It is not the intent of this SOP to duplicate or replace the manufacturer's manual. A separate document is available for each instrument acceptance test procedure (ATP).

1.2 Principle of Operation:

The instrument design is based on the field proven Model 910A canister sampler that is widely used by local, state, and federal agencies. It is a computer-controlled, programmable sampler that is designed to collect volatile organic compounds in ambient air. The method is based on collection of whole air samples into 6-liter "SUMMA" electro-polished canisters as outlined in U.S. Environmental Protection Agency (U.S. EPA) T0-14/T0-15 Methods.

A diaphragm pump is used to pressurize the sample canister up to 15 psi for CARB requirement. A mass flow controller (MFC) maintains a constant flow into the canister over the desired sample period. When sampling is not taking place the sample canister is isolated from the rest of the sampling system by a pulsed, magnetically latched solenoid valve. The use of a pulsed solenoid valve eliminates the temperature rise and out-gassing of organic compounds from the valve seat materials that might occur in a normally energized valve. All materials (e.g. stainless steel, Teflon, and Viton) used in the sample path are non-reactive.

In addition, the instrument can be used with a Xonteck Model 912 Multi-Canister Sampling Adapter to route air samples into up to sixteen canisters. However, this SOP will primarily focus on the operation of a single canister.

Sampling can be initiated manually from the front panel for the purposes of manual sampling, troubleshooting, or to perform a "leak check" when connecting new canisters.

Scheduling for the sampler and optional multi-canister sampling adapter is controlled by the onboard computer. Sampling schedules can be entered through

the front panel keypad/touchscreen or from a remote computer via modem, RS-232, or UDP. [1] Remote control of the sampling schedule allows the schedule to be altered when episode days are predicted. A “Reschedule” function allows a sampling schedule to be repeated at a later date without re-entering the scheduling information.

Time, date, pre-purge delay, flow set point and rate, average flow, pump and canister pressure, beginning and end pressure for all samples, elapsed time, sampling schedule and power failure errors are displayed on the front panel display or on a remote computer via modem or UDP. A hard copy of the above parameters is printed on the front panel-mounted printer at the end of each sample period. A print-out of the schedule or sampling report can be requested from the front panel control or from a remote computer. For Model 901, labels of sampling reports can be printed on an optional Brother Label Printer.

System recovery from a power failure is automatic; the sample pump will turn on and the sixteen port valve in the Model 912 will automatically advance to the correct position when power is restored.

1.3 Instrument Specification & Comparison:

Note: The newer Xonteck Model 901 Sampler should replace the previous Model 910PC that is no longer in production. However, CARB still own and operate a few 910PC samplers in the field and in inventory.

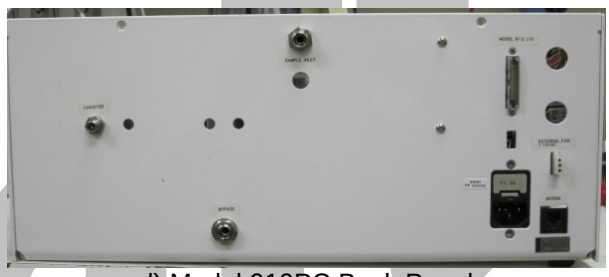
The Model 901 and Model 910PC are essentially equivalent in all analytical aspects. Both use the same underlying technologies and principles of operation. The specifications for both instruments are almost identical to one another. The major significant differences between the two are that the Model 901 has a color touch screen on the front and has additionally two Ethernet and one RS-232 ports on the back, whereas the Model 910PC has a LCD display w/ keypad and a modem port only.

[1] Front panel touchscreen, RS-232 and UDP ports, are features exclusive to Model 901 sampler only.

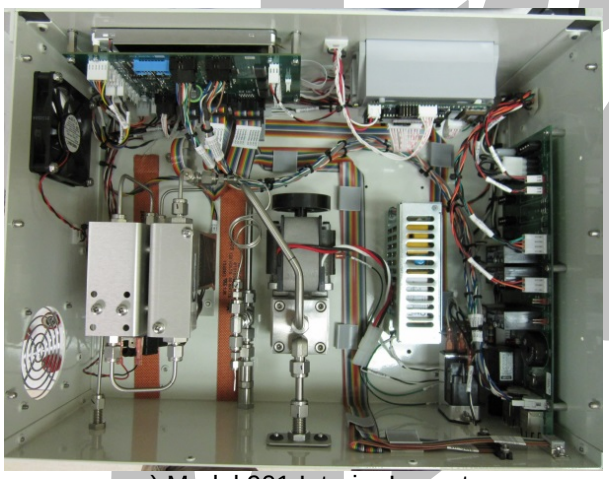
a) Model 901 Front Panel

b) Model 910PC Front Panel

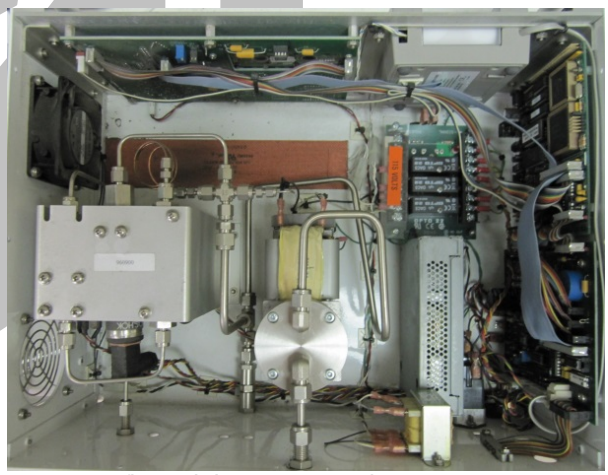
c) Model 901 Back Panel



d) Model 910PC Back Panel



e) Model 901 Interior Layout



f) Model 910PC Interior Layout

Figure 1.1 Model 901 & 910PC Samplers Comparison

Table 1.1 Physical Specification for the Instrument

	Model 901	**Model 910PC**
Sample Flow Control	Porter model 201 mass flow controller, customer specified, available with capacity of 0-20, 0-50, or 0-100 sccm [2]	
Display & Control	TFT color graphics, white LED backlighted, 5.7" diagonal touch screen	LCD, backlighted, 2 lines by 20 characters; numeric keypad and five function keys
Internal Sample Pump	Air Dimensions B161 diaphragm pump, SS single head, max vacuum 23.0" Hg, max pressure 29.2 psig, max flow 7.6 lpm	
Pressure Transducer	Stainless steel construction	
Canister Pressure	0-30 psig, 0.1 psig resolution	
Pump Pressure	0-30 psig range, 0.1 psig resolution	
Pressure Adjustment	Swagelok SS poppet check valve, 1/4" end connection, cracking pressure 3-50 psig, typically set to 25 psig	
Temperature Control	Honeywell RTD sensor near 100W silicone rubber heater (-40° to 150°C, 1°C resolution)	Integrated into PC circuit
Temperature Display	Enclosure temperature display on front panel display	
Connections	Inlet – 1/4" tube fitting Outlet – 1/8" tube fitting Bypass – 1/4" tube fitting	
Power	115VAC ±10%, 60Hz ±3 Hz, single phase, 3A max	
Dimension	7"(H) x 19"(W) x 13"(D)	7"(H) x 19"(W) x 15"(D)
Weight	~20 lbs	
Communication	RS-232, Ethernet, and 2400 baud internal modem	2400 baud internal modem
Printer	Panel mounted impact dot matrix, RS-232 interface	Panel mounted impact dot matrix, RS-485 interface

[2] The instrument is normally equipped with a 0-20 sccm range mass flow controller (MFC).

Table 1.2 Performance Specification for the Instrument

	Model 901	**Model 910PC**
Flow Controller Control Range	2% to 100% full scale, operation of the controller within 10% of the end points is not recommended	
Flow Rate Drift	Less than ±2% from the set point while the ambient temperature is held constant within ±1% in a temperature range between 20° to 30°C	
Flow Controller Accuracy & Linearity	±2% full scale.	
Flow Controller Repeatability	±0.5% full scale.	
Real Time Clock Accuracy	±1 minute per month.	
Flow Display Accuracy	±0.25% full scale.	
Pressure Transducer Accuracy	±1% full scale.	

1.4 Safety Precautions:

Note: It is highly recommended that operators should read the respective instruction manual to familiarize themselves with the instrument before operating the instrument.

Only properly trained personnel should perform the instrument installation, operation, calibration, testing, and maintenance.

As with all monitoring equipment, precautions should be taken when working around electricity, power tools and above ground elevations. To avoid electrical shock, prior to cleaning the analyzer or performing any maintenance on the instrument, place the MAIN power switch to the OFF position, and unplug the power cord.

Always use a three-prong, grounded plug on this analyzer.

Avoid the use of chemical agents which might damage instrument components.

Adhere to general safety precautions when using compressed gas cylinders (e.g., secure cylinders, vent exhaust flows).

1.5 Cautions:

The instrument is used to collect a representative ambient sample for analysis of chemical components that are in the ppb or sub-ppb concentration range. When the sampler is not running or not in use, every effort must be made to keep it clean and, if possible, in a clean environment. Cap the sample outlet line when the instrument is not in use, or connect the outlet line to a clean canister.

Each sampler must be clean and decontaminated from a variety of chemicals. Upon receipt, each sampler shall be tested for purity by analyzing the content of the air output from each unit for the presence of aromatic and halogenated hydrocarbons while “zero air” is sampled at the inlet. A gas chromatograph shall be used for the analysis. A list of these compounds and their limits of detection are furnished in the Appendix A.

2.0 INSTALLATION PROCEDURE

2.1 General Information:

The instrument is designed to be installed in an environmentally controlled environment. Normally the instrument should be mounted in a standard 19" instrument rack.

Before beginning installation of the sampler, please read the manufacturer's manual thoroughly to become familiar with the theory of operation, hardware, software and basic assembly of the instrument.

2.2 Physical Inspection:

The instrument is normally shipped with the following standard equipment when ordered by the Operation & Data Support Section (ODSS):

1. Power cord
2. Instruction manual

Upon receiving the instrument, confirm that the instrument is in good working order and check for damage. If any damage is observed, please contact your immediate supervisor. Prior to installation of the instrument, check the following:

1. Verify no apparent shipping damage.
2. Check the sampler for any scratched panel surfaces (new unit only) and broken buttons or connectors.
3. Check that all connectors are fully inserted.
4. Check that all mechanical connections are tight.
5. Remove the top cover to observe the interior, visual check the interior for loose or damaged components.

Within ten days after equipment delivery, the acceptance test shall be initiated. The acceptance test shall be performed accordingly to the ATP available for the instrument. The duration of the acceptance test shall be 8 days minimum and 60 days maximum.

2.3 Instrument Siting:

The instrument has no special siting requirement of any U.S. EPA designations. However, the general monitoring station siting requirements in the U.S. EPA Title 40, Code of Federal Regulations Part 58 (40 C.F.R. 58) Subpart G, should still be applicable. All field sampling criteria are dictated by the analytical laboratory methods.

2.4 Remote Computer Connection:

The instrument can be operated remotely using its internal modem and a personal computer. At the computer end any modem capable of 2400 baud communications can be used.

Both models have an internal modem with Telco interface via rear panel-mounted RJ-11 jack. In addition, the 901 has an additional RS-232 port and Ethernet RJ-45 interface for communication. However, the instrument is intended to be used in a standalone mode by CARB, thus details relating to this remote computer connection will not be covered in this manual.

For assistance in configuring the instrument for remote connection, please refer to the Xonteck instruction manual.

2.5 Operation Verification:

Prior to operating the instrument, ensure that the proper connections have been made. In summary, at most CARB monitoring locations this involves the following connections:

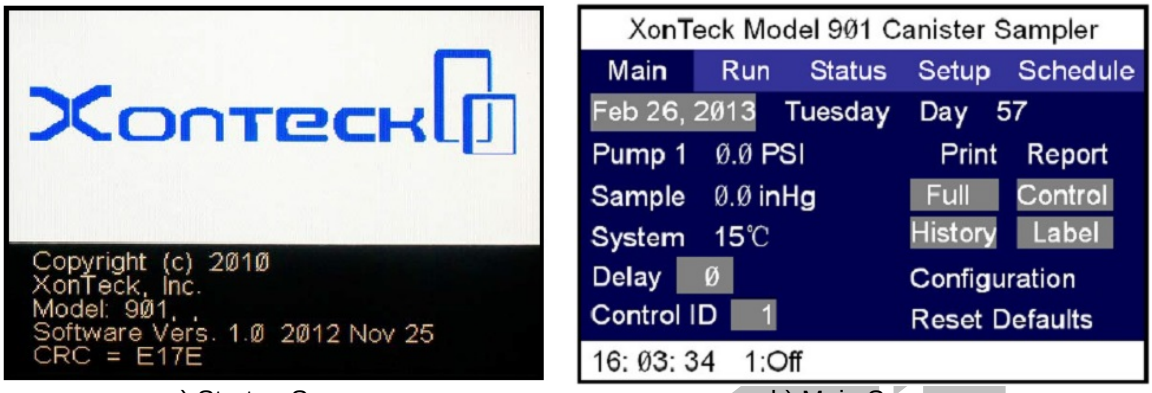
- Connect the sample inlet line from the probe to the inlet port on the rear panel.
- Connect the sample output from the output port on the rear panel to the sample canister.
- Connect the power cord to an appropriate power outlet.
- Uncap the sampler's exhaust vent.

After proper connections have been made, turn on the power switch.

For Model 901:

After the 901 is powered, it will display the Startup screen (figure 2.1a) for a few seconds. The startup screen will show the instrument model and the version of the software.

After startup screen, the Main screen (figure 2.1b) will automatically display. The Main screen should display the current date, pump pressure, sample pressure, system temperature, start delay (purge delay), and control ID of the sampler. In addition, the information line at the bottom of the screen will display current time, current state of channel and sub-channels. A clean Main screen without any error messages indicates the instrument is stabilized and ready for sampling.



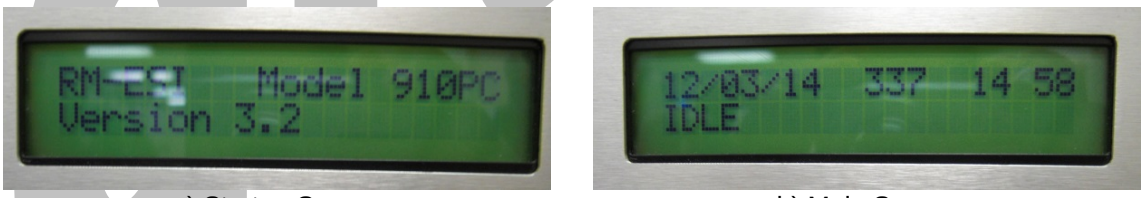
a) Startup Screen b) Main Screen

Figure 2.1 Screens for Model 901 Sampler while Operational

For Model 910PC:

After the 910PC is powered, it will display the Startup screen (figure 2.2a) for a few seconds. The startup screen will show the instrument model and the version of the software.

After startup screen, the Main screen (figure 2.2b) will display and show the current date (in both Gregorian and Julian calendars), current time, and system status. If the system encounters any error messages (e.g. power fail and flow error), it will display on this screen as well. A clean Main screen without any error messages indicates the instrument is stabilized and ready for sampling.



a) Startup Screen b) Main Screen

Figure 2.2 Screens for Model 910PC Sampler while Operational

Quick Navigation and System Checks:

Use the front panel display or keys to navigate through all screens. Verify all the system settings and parameters are configured properly. If available, print out a current control settings report via the front panel printer. For navigation and printing assistances, please refer to Section 3.2 of this SOP.

3.0 CONFIGURATION

3.1 General Information:

Both models of canister sampler are essentially equivalent in all functionalities; with both use the same underlying technologies and principles of operation, however, since the 901 is a newer model with an upgrade of touchscreen display, whereas the 910PC only has a LCD display w/ keypad and buttons, the navigation controls are slightly different. To avoid confusion, a brief instrument basic operating guide is provided below for each model.

3.2 Instrument Basics:

Note: For details of any specific features not covered in this SOP, please refer to the manufacturer instruction manual.

For Model 901

The 901 utilizes touchscreen to accept operation commands and variables, and display system information. After system startup, the main screen is displayed with current system status, e.g. current time, date, system pressures and temperature, and purge delay setting, etc. If a parameter or variable is selectable on the screen, it would be highlighted from the background. Navigation is made easy with touchscreen, as touching a button on the screen would typically display another selection screen or keypad that is used for selecting or entering values.

The default home screen is the Main screen, which can be displayed by selecting the Main tab at the top of the screen, along with tabs for the Run, Status, Setup, and Schedule screens. A brief description for each screen is provided below.

Main screen: Display current date, time, pump pressure, sample pressure, system temperature, start delay (purge delay), control ID, channel status (on/off). Set date and time, start delay, control ID. Provide access to configuration screen (for system settings and connection setup) and reset factory defaults. Print reports and labels. (See figure 2.1b)

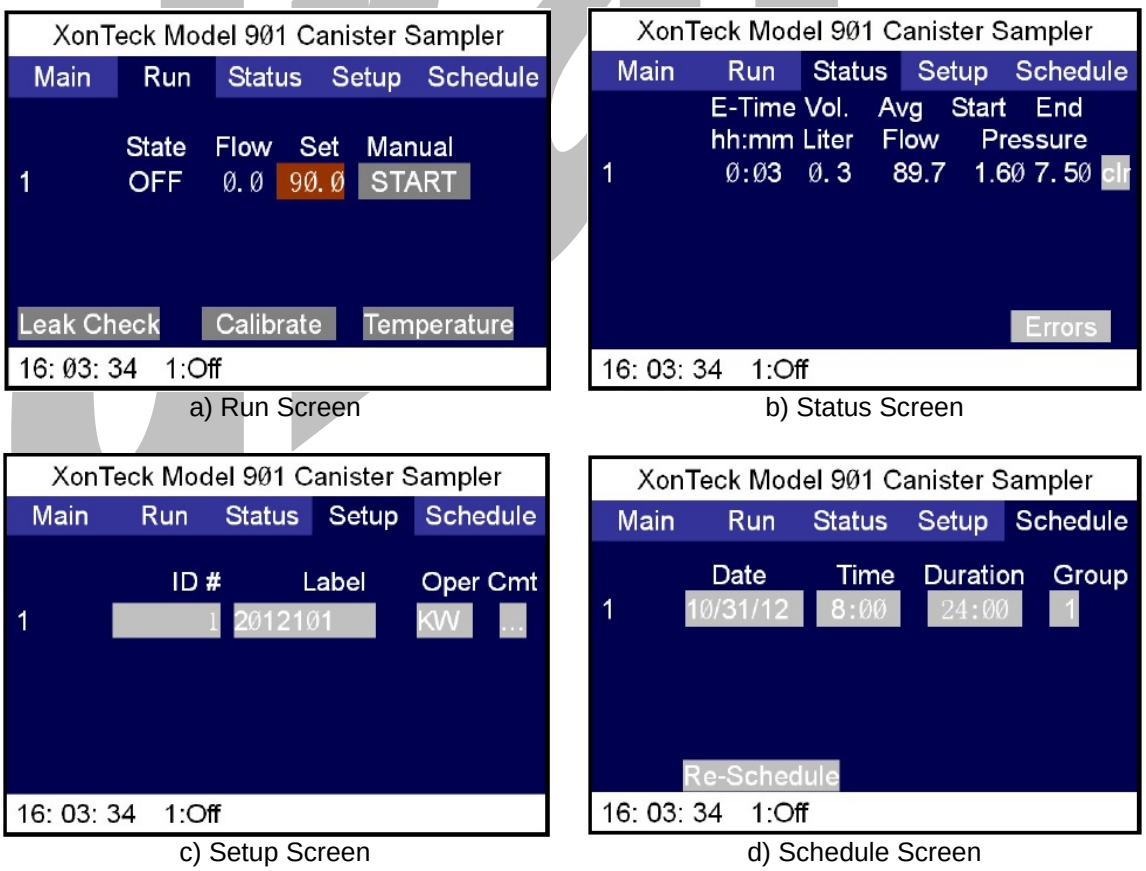
Run screen: Display basic operating information, i.e. current run state, channel flow rate, flow set point, etc. Provide access to flow settings, manual start, leak check, calibration and temperature settings. (See figure 3.1a)

Status screen: Display status of the sampling run. Allow users to view data, such as sampling elapsed duration, sampling volume, flow rate average, and canister initial and final pressures, for the last completed sampling event. Clear sampling data records. Provide access to see details of errors (e.g. flow error/power error) occurred during sampling event. (See figure 3.1b)

Setup screen: Display and allow users to enter information such as, unit ID number, sample label, operator name, and comment for sample identity. (See figure 3.1c)

Schedule screen: Display and allow users to schedule/set sampling events information such as, date, time, duration, and group number. Provide users access to the Re-Schedule screen to re-schedule sampling events. (See figure 3.1d)

And shown below are some screenshots for the Model 901 sampler menu system.



a) Run Screen b) Status Screen

c) Setup Screen d) Schedule Screen

Figure 3.1 Screens for Model 901 Sampler Menu System

For Model 910PC

The 910PC utilizes menu-driven software to accept operating parameters and display system information. System commands and variables are entered through the front panel keypad. System information is shown on the front panel display. Five “Function” keys are used to navigate through the system menu, increment or decrement numeric variables, branch to sub-menus, enter commands, and clear error messages; they are two “Arrow” keys, a “Select” key, an “Exit” key, and a “Clear” key, respectively. The numeric keypad is used to input numeric information. Please refer to figure 1.1b for details of the front panel interface.

A brief description for the functions of each key are listed below.

[ARROW]: To navigate thru different screens, to scroll thru different selection options, or to change a selected numeric item on unit at a time or the answer to a (Y/N) query.

[SELECT]: To enter the display screens, or to select the chosen item for modification.

[EXIT]: To exit a screen, equivalent to setting/entering the modified values when leaving the screen.

[CLEAR]: To clear an incorrect entry, to reset some error messages, or to restore the previous value.

And for the 910PC, there are total of eight different states in the menu. An overview of the 910PC menu and the operations diagram (Figure 3.2) are shown in the following pages.

These respective screens are:

Default screen:	Display time, date, power fail and flow error messages*. Set time, date and unit ID. Reset to Factory Defaults. Print reports. *Select the displayed error message to forward operator to a special screen where the affected channel and power fail (or flow error) duration is displayed
Pressure screen:	Display actual pump and current canister pressure.
Flow/Pre-Purge Delay screen:	Display actual flow and pre-purge delay. Set flow set point and pre-purge delay time.
Temperature screen:	Display actual system temperature.
Elapsed Time screen:	Display actual sample time, flow average and total volume for each channel. Reset elapsed times, flow averages and total volumes.
Schedule screen:	Input channel sample period date, start time and sample duration.
Leak Check / Manual Run screen:	Initiate manually timed sample run for the purposes of manual sampling, troubleshooting or for leak checking* (for the sampler and/or the connected canister). *Leak check or manual run cannot be started during a sample period.
Reschedule screen:	Allows existing schedule to be repeated at a later date without re-entering the schedule.

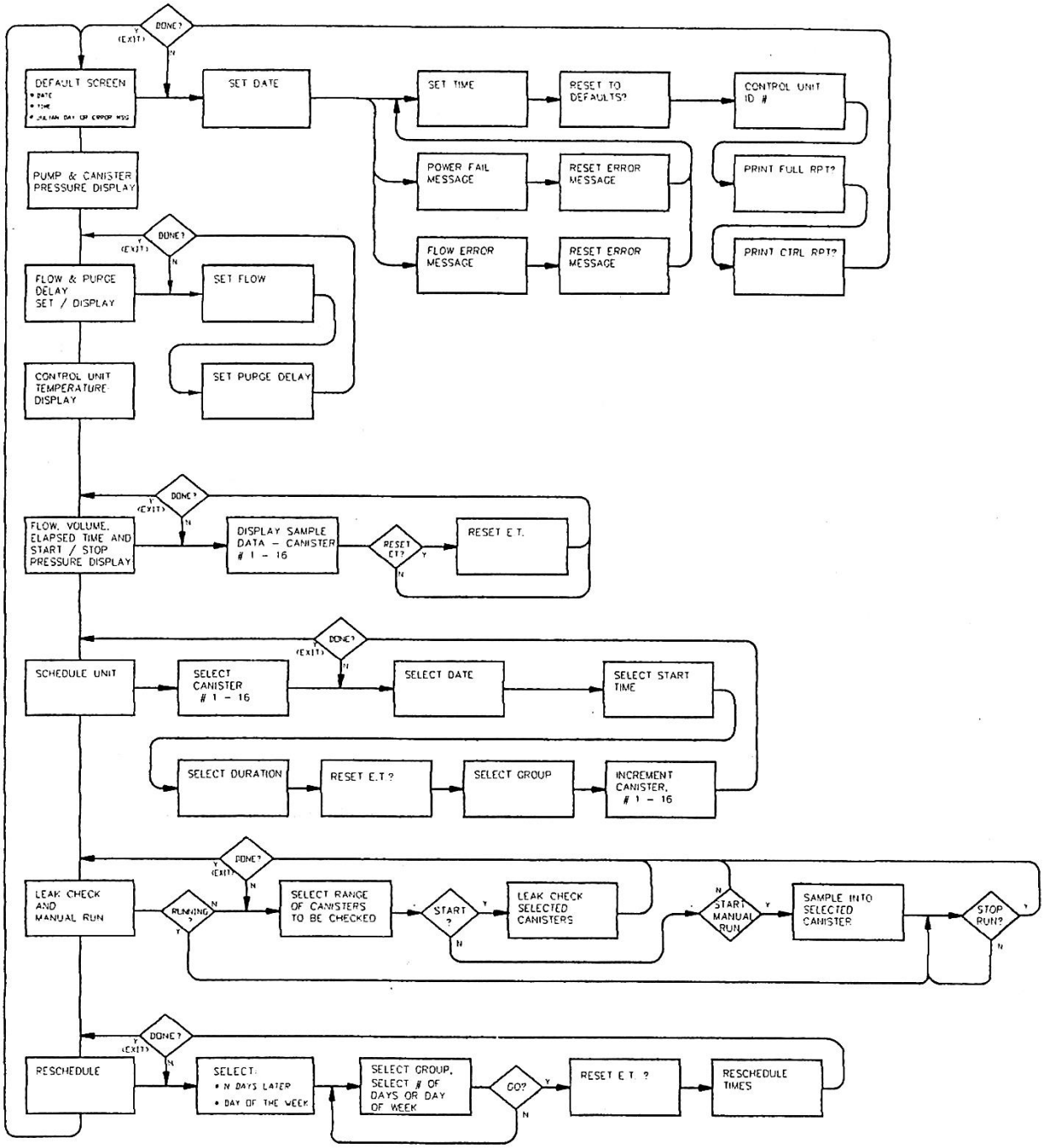


Figure 3.2 Operations Flow Diagram of Model 910PC Sampler

3.3 Instrument Configuration:

The nominal setting values shown below are what ODSS shop used to configure the instrument by default. However, ambient condition could vary significantly depending on site location, therefore, it is required for field staffs to verify, and re-configure if necessary, their instrument settings before using it for any sampling events.

Table 3.1 Standard AQSB Instrument Configuration Table

Parameter	**Nominal Value**	**Range**
Date	Current Date	N/A
Time	Current PST time	± 1 mins
Canister Number	1	1 – 16 (default 1)
Canister Initial Vacuum	27 inHg	± 2 inHg
Canister Final Pressure	13 psi	± 3 psi
Flow Rate Set Point	8 ccm	± 1 ccm
Flow Range Max Scale	20 ccm	Available 20/50/100 ccm
Purge Delay	30 mins	Fixed
Sampling Duration	24 hrs	Fixed
Group Number	1	1 – 9 (default 1)
Rescheduling	6 days	6 – 12
Sample Temp (°C)	Ambient Temp	Ambient ± 10°
Slope *	1.0	0.9 to 1.1
Offset *	0.0	-1.0 to 1.0

* Instrument specific. Please refer to the calibration section of the appropriate user manual.

4.0 SAMPLING PROCEDURE

4.1 General Information:

The Xonteck canister sampler is typically operated on a twelve-day sampling schedule as specified by the CARB's air toxics program. For special projects, the sampling frequency may vary. The typical sampling duration is 24 hours, from 0001 to 2359 hours PST, after a 30 minutes purge delay. Special sampling may require varied time schedules and other than the 0001 hour starting time.

During the sampling, site operators should complete the required entries on the Monthly Quality Control Maintenance Check Sheet (See Appendix B). Include the site name, station number, technician name, agency, scheduled sampling date and sampler property number. Monitor and record all the sampling flow status, i.e. flow rate, canister pressure (before & after), sampling time, etc. Verify if any maintenance schedule item is due.

This section of SOP covers the steps required for pre-sampling configuration, programming a sample run, using the reschedule menu, and retrieving the sampling report for each model of instrument.

4.2 Pre-sampling Configuration:

Note: It is important that the sampling date, time, duration, and group number are entered correctly in order to set up a sampling event. Please remember to SET in the new values to activate the event schedule before exiting the screen.

For Model 901

1. Turn on the front panel power switch. The display will flash the manufacturer's name, equipment model number and the system version number. Then the Main screen will display.

2. From the Main screen touch the Date button to display the Date screen, then select the current month. To change Day, Year and Time, touch each button to display a number keypad on the same screen.

3. From the Main screen touch the Delay button to set the purge delay time. Valid entries are 0 to 60 minutes. Default is set at 30 minutes.

4. From the main screen touch the Control ID button to set the Control ID. The Control ID number is for remote access and instrument identification on report sheet. Valid entries are 1 to 99.

5. From the main screen touch the Configuration button to enter the Settings screen. This screen allows users to view some faults conditions, the firmware version, code CRC value, and to set RS-232 and Ethernet parameters. If you do not want or know how to change these values, leave them at default.

6. Select the Run tab on top to get to the Run screen. Touch the Set button to update the flow rate set point to 8 ccm.

7. At this point you may choose a manual sampling run by hitting the manual START button on screen, or go to the Schedule screen to schedule an automatic sampling event. For scheduling, see next section (Section 4.3) for details.

For Model 910PC

1. Turn on the front panel power switch. The display will flash the manufacturer's name, equipment model number and they system version number. Then the Default screen will display.

2. From the Default screen press the [SELECT] key, the date will be underlined. If the date is correctly shown, press the [⇨] to move forward, otherwise, press [SELECT] to change the date. The date will begin flashing. Enter the correct date (MM/DD/YY), and then press [EXIT] to set the value.

3. The time will be underlined. If the time is correct as shown, press the [⇨] key, otherwise press [SELECT] to change the time. The time will begin flashing. Enter the correct time (hh:mm), then press [EXIT]. (CARB policy is to use PST time zone.)

4. Next, the screen will prompt for "Reset to Default?" N (normally No would be the correct response. A Yes response will clear and reset all schedules and functions to their default value.) To reset, press [SELECT], the N will begin flashing. Touch [⇨] to change the N to Y, and then press [EXIT] to move on.

5. "Control Unit ID #" This is the station number that will be printed on the reports. If it is correctly shown, press the [⇨] key to move on, otherwise press [SELECT] to correct. The number will begin flashing. Enter the correct number and press [EXIT].

6. "Print Full Report? N" (This will request a full report of all control settings, schedule and completed run info to be printed.) If a full report is not desired, press [⇨] to move forward. Otherwise, press [SELECT] and change the N to Y, then press [EXIT].

7. "Print Control Report? N" (This is similar to the previous prompt, except this one prints only the control settings and schedule info.) Select either Yes or No. And press [EXIT] when done with the settings.

8. Navigate to Flow & Purge Delay Set /Display screen, press [SELECT] to enter and change the flow rate set point. The flow rate set point will begin flashing. Enter 8 ccm as the flow rate using the front keypad, then press [EXIT].

9. The Set Purge Delay Time will be underlined. If the time is correct as shown, press the [⇨] key, otherwise press [SELECT] to change the time. The time will begin flashing. Enter the correct time (30 minutes), and then press [EXIT].

10. At this point you may choose to manual run the sampler by navigating to the Leak Check & Manual Run screen to initiate a manual run, OR go to the Schedule screen to schedule an automatic sampling event. For scheduling, see next section (Section 4.3) for details.

For Canister Connection & Handling

1. Obtain a clean evacuated SUMMA canister from the AQSB Laboratory, and connect the canister to the sampler's outlet port using 1/8" tube. Leave the canister valve closed and tighten up all the connection fittings.

2. Perform an instrument leak check to verify the integrity of the setup before any sampling. For details, please refer to Section 7.2 of this SOP.

3. Before actual sampling, i.e. the pre-purge phase, open the canister valve completely (by turning it counterclockwise until the "grip" is completely loosened), and record the initial canister pressure from both the canister pressure gauge and the sampler screen to the Monthly QC Maintenance Check Sheet.

4. Initiate a manual run or wait for the scheduled run. When sampling is completed, close the canister valve first. Review the sampler screen for any errors. Record the final canister pressure from the gauge and the sampler to the Monthly QC Check Sheet.

4.3 Programing Sampling Event:

Note: The instrument can operate under only 1 channel or sub-channel at a given time. If a sampling event is scheduled that overlaps with another scheduled event, a warning would be displayed, and the new scheduled event is not saved.

For Model 901

To schedule a sampling event:

1. Go to the Schedule screen by selecting the Schedule tab from the Main screen.

2. To set a date for a sampling event, select the Date button on the screen to display the Schedule Date screen. Enter the month, day, and year values using the displayed keypad.

3. To set a time to begin a sampling event, select the Time button on the screen to display the Start Time screen. Enter the time (in 24-hrs format 00:00) using the displayed keypad.

4. To set duration for a sampling event, select the Duration button on the screen to display the Duration Schedule screen. Enter the duration (in 24-hrs format hh:mm) using the displayed keypad.

5. The default group number is set to “1”. This group number is used during re-scheduling to re-schedule a selection of channels or sub-channels for sampling events based on their group.

6. After a sampling event is successfully scheduled, a green Set button will show up on the same screen. Press the Set button to active the event schedule. And a window will prompt users to clear the data record from the last sampling event. Select (Yes) to clear previous record.

To re-schedule sampling events:

Note: Make sure there are scheduled sampling events on the screen and pick the group of sampling events for re-scheduling. Refer to previous steps on how to schedule an event.

1. From the Schedule screen, select the Re-Schedule button,

2. A new Re-Schedule screen will display. Set the group number in the Re-Schedule screen to the group of interest, or leave the default setting.

3. Set a specific number of days later, or select a specified day of every week to re-start the sampling event.

4. Select the Go button to save and activate the re-schedule.

5. Select the Done button to cancel or exit the Re-Schedule screen.

For Model 910PC

To schedule a sampling event:

1. Use the [ARROW] key to navigate to the Schedule screen. The Schedule screen should display the current scheduled canister number and the scheduled start date. Press the [SELECT] key to enter the setting mode. Any active item will be underlined.

2. In the setting mode, the screen will prompt users to choose a canister number for the schedule sampling event. If the default value is channel “1”, leave it as-is and press the [⇨] key to continue. Otherwise, change it to “1”.

3. Next it will ask users to set the sampling start date. Press [SELECT] and then enter the month, date, and year values using the front panel keypad. Press [EXIT] to save the entry. When done, press the [⇨] key to move on if it does not do already.

4. Next it will ask users to set the sampling start time. Press [SELECT] and enter the time (in 24-hrs format hh:mm) using the keypad. Press [EXIT] to save the entry.

5. The screen will then ask users to set the sampling duration time. Press [SELECT] and enter the duration (in 24-hrs format hh:mm) using the keypad. Press [EXIT] to save the entry.

6. Next it will ask users to choose a canister group number for this sampling event. This number is used during re-scheduling for re-scheduling a selection of channels or sub-channels based on their group. The default value is group number “1”. Leave it as-is and press the [⇨] key to continue. Otherwise, change it to “1”.

7. When all sampling schedule information is updated, press the [EXIT] key to leave the Schedule screen to set the new schedule.

To re-schedule sampling events:

Note: Make sure there are scheduled sampling events on the screen and select the correct group of sampling events for re-scheduling.

1. Use the [ARROW] key to navigate to the Reschedule screen. The Reschedule screen should display the options of “N Days Later” or “Day of the Week”. Press [SELECT] key to enter the setting mode. Any active item will be underlined.

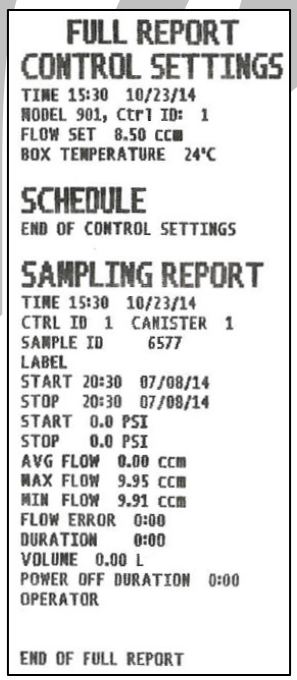
2. Select “N Days Later” using the [ARROW] key, press [SELECT]. Enter the number of days you want the sampler to run again. The default setting for CARB sampling schedule is 6 days later. If it is not shown correctly, change it using the front keypad. Press [EXIT] to save the entry.

   Note: For the “Day of the Week” option, instead of specifying the number of days, one might decide to re-run the sampling on specific day of the week. However, this option is rarely used by CARB practice.

3. When all the re-scheduling information is updated, press the [EXIT] key to leave the Reschedule screen to set the reschedule.

4.4 Retrieving Sampling Report:

Field personnel have the primary responsibility for retrieving and recording the sample run information and forwarding this information to the appropriate MLD laboratory. Sampling information is record on sample printout and will accompany the sampled media to the laboratory (see figure 4.1 below).



FULL REPORT
CONTROL SETTINGS
TIME 15:30 10/23/14
MODEL 901, Ctrl ID: 1
FLOW SET 8.50 ccm
BOX TEMPERATURE 24°C

SCHEDULE
END OF CONTROL SETTINGS

SAMPLING REPORT
TIME 15:30 10/23/14
CTRL ID 1 CANISTER 1
SAMPLE ID 6577
LABEL
START 20:30 07/08/14
STOP 20:30 07/08/14
START 0.0 PSI
STOP 0.0 PSI
AVG FLOW 0.00 ccm
MAX FLOW 9.95 ccm
MIN FLOW 9.91 ccm
FLOW ERROR 0:00
DURATION 0:00
VOLUME 0.00 L
POWER OFF DURATION 0:00
OPERATOR

END OF FULL REPORT

Figure 4.1 Sample Run Printout

For Model 901

The front panel is configured with a panel printer for report printing. To print the sampling report, first go to the Main screen. On the Main screen there are four buttons or options for printing. They are:

- [Full] – Allow users to print the current system control setting and sampling report for the last sampling event.
- [Control] – Allow users to print the current system control setting only.
- [History] – Allow users to select and print historic sampling reports.
- [Label] – Allow users to print label sticker on an optional label printer.

Select the report type and touch the corresponding button to print the chosen report.

For Model 910PC

The front panel is configured with a panel printer for report printing. To print the sampling report, use the [ARROW] key to navigate to the Default screen and press the [SELECT] key to enter. Use the [ARROW] key again to navigate to the "Print Full Report" or "Print Control Report" option depending on what you want. Press the [SELECT] key to print the chosen report. When done, press the [EXIT] key to leave.

5.0 CALIBRATION INFORMATION

5.1 General Information:

A calibration is a procedure for aligning, checking, or adjusting the output of an instrument to a known "true" standard. To ensure the quality of the data provided by the Xonteck canister sampler, the sampler must be calibrated prior to use, after any new installation, after any major maintenance, after every six months of use, or if the initial flow meter reading falls outside the average initial flow meter reading tolerance limits.

This section of SOP provides a list of the necessary equipment and the calibration procedure to calibrate canister samplers. The Xonteck 901 sampler has a built-in calibration feature that makes flow rate correction straightforward. But for the 910PC sampler, it does not provide any built-in calibration function, and require manual adjustment to correct the final flow rate.

Sampler mass flow controller (MFC) can be calibrated separately in the shop, however, the details won't be covered in this SOP. For more information please refer to the Porter Instrument Co., INC. Tech & User's Manual, Section 6 – Calibration. This particular manual should be included within the sampler documentations. If not, it can be requested from the manufacturer.

Note: This section is intended to detail AQSB's calibration procedure and does not significantly deviate from the manufacturer's instruction manual. Please read the procedures outlined in this document and examine the instruction manual before attempting to perform a calibration.

5.2 Calibration Overview:

Flow calibration is performed either in field or in shop, and a sticker is affixed to the sampler to denote the required flow set point, which is altitude dependent. The overall calibration process involves with using a certified reference mass flow meter to perform a multi-point flow measurement for the sampler.

Prior to calibration, the operator should check the displayed flow rate with the flow set point through a flow audit. If the flow is not at the set point, the operator is required to re-adjust the flow controller and record the calibration made for the instrument on the instrument monthly check sheet and the instrument calibration report (See Appendices).

5.3 Calibration Apparatus:

1. Certified/Reference mass flow meter (a.k.a. Transfer Standard)
2. Zero Air Source
3. 1/4” and 1/8” Teflon tubing for air flow connections
4. Calibration report form (Appendix C)

5.4 Calibration Procedure:

For Model 901

Model 901 has a built-in calibration feature for easy flow calibration. To begin calibration touch the Run tab to go to the Run screen (see figure 3.1a). Then touch the Calibrate button on the Run screen to display the “Audit & Calibration” screen. This screen allows users to audit and calibrate the channel flow rates. Auditing is performed to observe any flow drift, while calibration is performed to correct the flow drift.

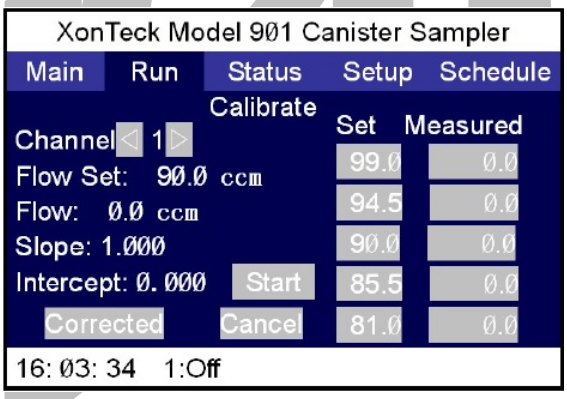


Figure 5.1 Audit and Calibration Screen

Audit the channel flow rates

The user can audit the channel flow rates to check if the flow controller has drifted from its previous calibration and determine if the flow controller need to be calibrated again. To audit the channel flow rate, a previous successful flow calibration has to be made.

To audit the channel flow rates, follow the procedure below:

1. Attach a reference flow meter to the “Output” fitting on the back panel.

2. Set the sampling flow rate (default Channel 1) to be audited in the Flow Set screen.

3. Select the START button to run the pump and open the channel valve.

4. Go to the Run screen and select the Calibrate button on the screen to bring up the Audit and Calibration screen.

5. Turn the Corrected button on, as its color will turn green, to enter the flow audit mode.

6. The flow audit screen will display 5 flow set points to be audited. To change the flow set points, select each set point to display the number keypad.

7. For CARB practices begin with a midpoint value of 8 ccm as the flow set point, since this is the typical flow rate CARB staffs have used in the past. With increment / decrement of 1 ccm from the midpoint value, the five set points are 6, 7, 8, 9, and 10 ccm respectively.

8. Record the Slope and Intercept calculated from last calibration.

9. Select Start button to begin the flow audit. The sampler will start flowing.

10. When the flow stabilizes, select the Next button and enter the flow reading observed on the reference flow meter for the first set point.

11. When ready to measure the second set point, select the Next button and wait for the flow to stabilize.

12. When the flow stabilizes, select the Next button and enter the flow reading observed on the reference flow meter for the second set point.

13. Repeat the above operation to measure the third, fourth, and fifth set points.

14. After the five set points are measured, the 901 will calculate and display a new Slope and Intercept.

15. Compare the new Slope and Intercept with the old Slope and Intercept calculated from last calibration to determine if the 901 need to be calibrated again. (A drift less than 5% can be acceptable, and a new calibration is not necessary.)

16. Document all these values to the sampler’s calibration report.

17. Select the Exit button to exit the flow audit screen.

Calibrate the channel flow rates

Note: If operators made any mistake during the audit/calibration process, please select the Abort button to stop the procedure and start over.

If the channel flow rates audit results in a drift more than 5%, a new calibration is required. To calibrate the channel flow rates, follow the procedure below.

1. Attach a reference flow meter to the “Output” fitting on the back panel.

2. Set the sampling flow rate to be calibrated in the Flow Set screen.

3. Select the START button to run the pump and open the channel valve.

4. Select the Calibrate button on the Run screen to display the Audit and Calibration screen.

5. Turn the Corrected button off, as its color will turn grey, to enter flow calibration mode.

6. The flow calibration screen will display 5 flow set points to be calibrated. To change flow set points, select each set point to display the number keypad.

7. Select Start button to start the flow calibration.

8. When the flow is stable, select the Next button and enter the flow reading observed on the reference flow meter for the first set point.

9. Then calibrate the second set point. When the flow is stable, select the Next button and enter the flow reading observed on the reference flow meter for the second set point.

10. Repeat the above operation to calibrate for the third, fourth and fifth set points.

11. After the five set points are calibrated, the 901 will calculate and display a new Slope and Intercept for the new calibration.

12. Select the Save button to save the new calibration. Record the new values.

13. Select the Exit button to exit the flow calibration screen.

For Model 910PC

The 910PC doesn't have a built-in calibration function like the 901 does, but users can perform a flow rate audit for the sampler with a reference transfer standard, and then determine whether they should manually adjust the sampling flow rate, i.e. by adding an offset to the flow set point, to achieve the desired flow rate

Flow rate audit and adjustment

The flow rate audit and adjustment process is relatively simple.

1. Attach a reference flow meter to the "Output" fitting on the back panel.

2. The flow audit requires 5 flow set points to be audited. For CARB practices begin with a midpoint value of 8 ccm as the flow set point, since this is the typical flow rate CARB staffs have used in the past. With increment / decrement of 1 ccm from the midpoint value, the five set points are 6, 7, 8, 9, and 10 ccm respectively.

3. Set the sampling flow rate to the midpoint value (i.e. 8 ccm) in the Flow & Purge Set/Display screen.

4. Move to the Leak Check & Manual Run screen to initiate a manual run to activate the pump and open the channel valve. The sampler will start flowing.

5. When the flow is stable, record the flow reading observed on the reference flow meter for this set point to the sampler's calibration report.

6. Stop the sampler flow, and repeat the above operation to measure the remaining flow set points. Record the observed values from the reference flow meter.

7. After the five set points are measured, one might use the CARB's calibration report (Appendix C) to calculate the linear regression against these points in order to obtain the new regression slope and intercept.

8. Compare the new Slope and Intercept with the old Slope and Intercept from the last flow rate audit in order to determine if the flow set point need to be adjusted. (A drift less than 5% can be acceptable, and adjustment is not required.)

9. If adjustment is needed, back calculate the required flow set point in order to achieve the desired true flow, using the newly-found regression Slope and Intercept.

6.0 ROUTINE SERVICE CHECKS

6.1 General Information:

The following routine service checks are to be performed in accordance with the maintenance schedule listed below. Perform the routine service checks at least at the prescribed intervals or more if necessary. The AQSB Monthly Quality Control Check Sheet (Appendix B) should be completed EACH RUN and submitted monthly to the station operator's supervisor. The station operator must keep a copy of the Monthly Quality Control Check Sheet in the air monitoring station.

System check each of the operating conditions as listed in Section 2.5 Operation Verification each run. Leak check and mass flow meter calibration check (for model 901 only) may be performed more frequently but should be performed at least at the prescribed intervals.

If the operating efficiency of the instrument decreases or a malfunction occurs, the instrument shall be returned to the Instrument Lab in Sacramento for repair.

6.2 Maintenance Schedule:

Table 6.1 Maintenance Schedule for the Instrument

	Each Run	Monthly	Semi-Annual	Annual	As Req.
Instrument Operation Verification	X				
Perform Instrument Leak Check	X				
Check Sampler Pump Maximum Pressure		X			
Perform Flow Rate Calibration Check			X		
Clean / Replace Probe and Check Residence Time				X	
Perform Instrument Purity Test					X
Return Instrument to Instrument Lab (Sac) for Cleaning and Complete Inspection					X

6.3 Each Run:

Perform instrument operation verification. Refer to Section 2.5 Operation Verification. Check for any signs of problem. Check instrument front panel display for any error message/status.

Perform sampler system leak check. Refer to procedure in Section 7.2.

6.4 Monthly Checks:

Check sampler pump maximum pressure. Refer to procedure in Section 7.3.

6.5 Semi-Annual Checks:

For model 901 sampler, perform the flow rate calibration check. Refer to procedure in Section 7.4.

6.6 Annual Checks:

Clean or replace the sampling probe. Check the residence time from sample flow. Residence time can be calculated using the instrument calibration report (Appendix C) during semi-annual flow rate calibration check.

6.7 As-Required:

In the event of any required testing, after major repair, or reaching a maintenance interval (e.g. 24 months of field use), the purity test (a.k.a. zero air check) shall be performed for the instrument to maintain valid certification.

Due to the nature of the test (with the use of humidified zero air for the blank sample and the use of certified blend of VOCs for the challenge sample), the test shall be performed in the Sacramento shop. For details about the test procedure, please refer to procedure in Section 7.5.

If the purity test failed to meet the purity requirement, the sampler must be cleaned according to the cleaning procedure approved by ODSS, as described in Section 7.6. A repeat analysis shall be performed thereafter the sampler is cleaned.

7.0 MAINTENANCE PROCEDURES

7.1 General Information:

The Xonteck 901/910PC Sampler is designed to operate unattended for long periods of time and other than routine checks required in Section 6 of this manual, the instrument requires little maintenance. However, maintenance requirements vary from instrument to instrument, thus operators should refer to the instrument operating manual to become familiar with maintenance requirements.

Corrective maintenance is any scheduled maintenance activity that becomes necessary due to system malfunctions. Examples are pump replacement, orifice cleaning and flow meter controller calibration.

If station operator cannot repair an instrument using procedures stated in the instrument manual, please contact the ODSS's Instrument Laboratory for help.

7.2 Instrument Leak Check Procedure:

Note: Xonteck recommends that a leak check shall be performed every time before running a sampling event.

The instrument contains a built-in automatic leak check feature that can allow users to leak check the connection between the sampler and canister before running sample events.

For Model 901

To perform a leak check (with a canister):

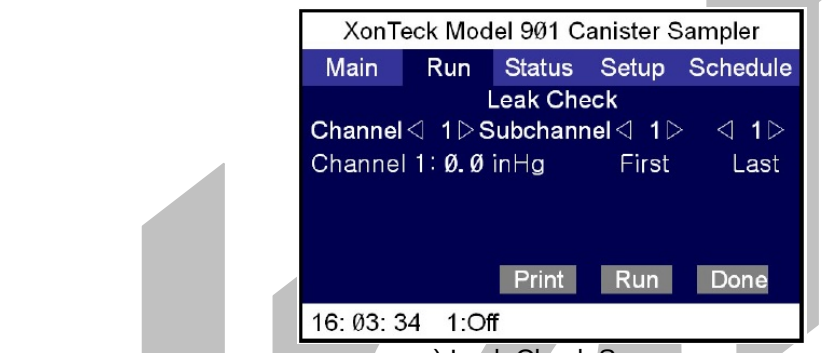
1. Connect a canister to the sampler "output" fitting located on the back panel.
2. Make sure that the valve on the canister is closed.
3. Verify that the sampler "inlet" and "bypass" fittings on the back are not capped/blocked.
4. Go the Run screen by selecting the "Run" tab from the Main screen.
5. Select the "Leak Check" button on the Run screen. A Leak Check screen should display.

6. On the screen (see Figure 7.1a), select the “Run” button to run a leak check. The sampler might take a minute to complete the leak check.

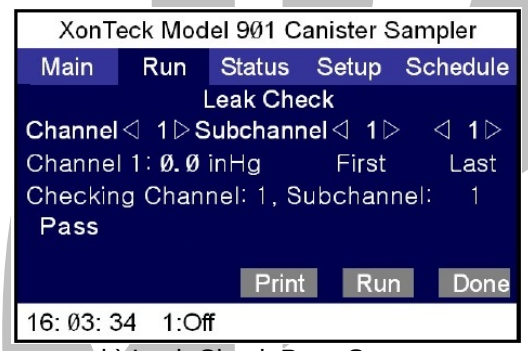
7. When the leak check finishes, the screen might display either pass or fail for result. (Figure 7.1b or Figure 7.1c).

8. To print the leak check report, select the “Print” button.

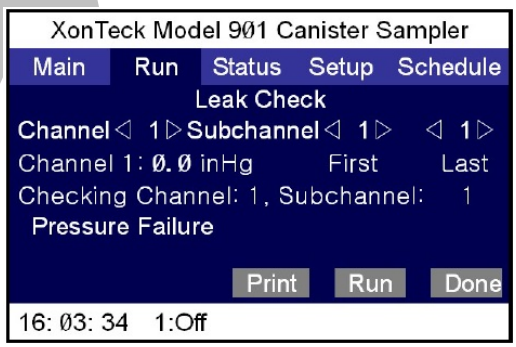
To stop the leak check in the middle of process, select the “Abort” button and confirm your action.



a) Leak Check Screen



b) Leak Check Pass Screen



c) Leak Check Fail Screen

Figure 7.1 Instrument Leak Check Screen and its Possible Results

<u>For Model 910PC</u>

To perform a leak check (with a canister):

1. Connect a canister to the sampler “output” fitting located on the back panel.

2. Make sure that the valve on the canister is closed.

3. Verify that the sampler “inlet” and “bypass” fittings on the back are not capped/blocked.

4. Use the [ARROW] key to navigate to the “Leak Check / Manual Run” screen. Then press the [SELECT] key to enter. The active item is now underlined.

5. The default displayed item is the “Leak Check” initiation mode. Please note that in this screen the “Manual Run” mode can also be accessed using the [ARROW] key.

6. Hit [SELECT] to activate the leak check. The selected item will “flash” to indicate that it has been selected and changes can be made.

7. Use the [ARROW] key to choose Yes (Y).

8. Press the [EXIT] key to initiate the leak check. (Modified value is only accepted/set when [EXIT] is pressed.)

9. The sampler might take a minute to complete the leak check. After the leak check completes, the sampler should display ether pass or fail for the result.

To stop the leak check in the middle of process, repeat steps 6 to 8 above, except in step 7 choose No (N) instead.

Note: To perform a leak check on the sampler only, repeat the above steps except capping the “output” fitting instead.

7.3 Sampler Pump Maximum Pressure Check Procedure:

Note: For instrument operation details, please refer to the Section 7.2 Instrument Leak Check Procedure.

The sampler pump maximum pressure check is essentially a system leak check. The overall procedure is almost identical to the leak check procedure described in Section 7.2 that is applicable to this check as well. The only difference is that instead of choosing the “Leak Check” mode, select the “Manual Run” mode.

The key steps include:
1. Cap the sampler outlet fitting and perform a manual run.
2. Allow the output pressure to come up to full pump pressure (approx. 25 psi).
3. Stop the manual run and observe that the output pressure remains the same for one hour or more. The output pressure should drop no more than 0.5 psi/hour.

7.4 Mass Flow Calibration Check Procedure:

For Model 901, please see the calibration procedure for Model 901 sampler in Section 5.4 Calibration Procedure.

For Model 910PC, flow rate verification and manual adjustment to the flow rate setting are performed to "tune" the sampler in order to achieve the desired sampling flow rate. For details please see the calibration procedure for Model 910PC sampler in Section 5.4 Calibration Procedure.

7.5 Purity Test Procedure:

Note: It is highly recommended to have the sampler purity test performed in the shop whereas the testing apparatus are readily available. If testing equipment is not available at the monitoring site, please contact ODSS to schedule an instrument exchange. ODSS would send out a clean unit and the returned unit will be tested (and cleaned if necessary) in the Sacramento shop.

For the purity test, the sampler is configured to fill a blank 6L "SUMMA" canister using a zero air generator or a grade 5 Nitrogen cylinder. The sampled canister is then analyzed by the CARB's Organics Laboratory Section (OLS) using MLD Methods 58 and 66, and the contents captured in the canister are compared to the detection limits, as specified in Appendix A, to determine the cleanliness of the sampler.

Apparatus for Purity Testing

1. Zero air generator (API 701) or Grade 5 Nitrogen (clean air source)
2. Flow calibration system (Environics 9100)
3. Teflon tubing, 1/4" and 1/8" O.D.
4. Connection tee
5. Air Flow Meter (Optional)
6. Hydrometer (Optional)

Purity Testing Steps

1. Obtain a clean evacuated SUMMA canister from the AQSB Laboratory, and connect the canister to the testing equipment as shown in figure 7.2.

2. Activate the zero air generator and the Environics 9100 instrument. Set in a proper air flow rate for the 9100 machine. For CARB practices the clean air source is typically set to output approximately 10 lpm of air.

3. A tee is connected to provide a split stream of air to a hydrometer for flow quality control (e.g. dew point check). This split can also serve as a vent for excessive air flow to minimize pressurization of the Xonteck sampler inlet. (Note: this step is OPTIONAL but recommended. If a hydrometer is used, please limit its incoming flow rate to no greater than 1 lpm.)

4. Activate the Xonteck sampler and configure the sampling rate and duration time. For details on how to initiate and configure the sampler, see this manual Section 5 Sampling Procedure.

5. Fill the canister using the sampler with the zero air source. The canister should be filled to approximately 13 psi in 24 hours with the sampling flow rate of 8 ccm.

6. Send the canister back to the lab for cleanliness analysis. If the unit passes this test, it indicates the sampler is clean and does not require any cleaning treatment. However, if it fails the cleanliness test, please follow the sampler cleaning procedure outlined in next section (Section 7.6).

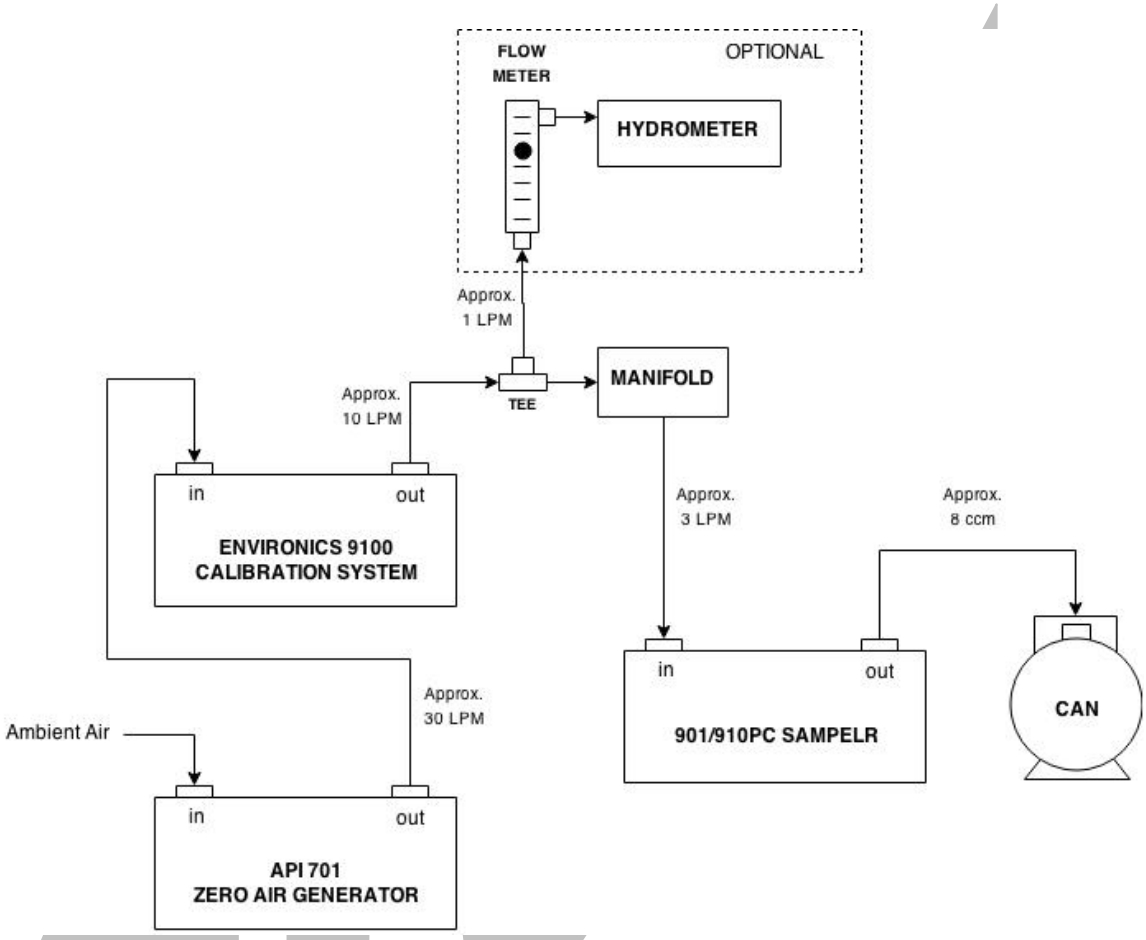


Figure 7.2 Purity Testing Equipment Setup Diagram

7.6 Instrument Cleaning Procedure:

Each sampler must be clean and decontaminated from a variety of chemicals. Throughout periodic usage of the instrument contaminants can get trapped in and accumulated inside the sampler. When samples are collect using the contaminated instrument, analysis results can be greatly jeopardized, especially when the contaminant detection of limit is on the scale of ppb (parts per billion). Therefore, it is important to make sure the sampling instrument is clean and compliant with the purity requirement.

There are two ways to clean the sampler and its parts, and they are written below.

Apparatus for Sampler Cleaning

1. Zero air generator (API 701) or Grade 5 Nitrogen (clean air source)
2. Bubbler
3. Teflon tubing, 1/4” and 1/8” O.D.
4. Bubble meter or flow indicator
5. Connection tee
6. Deionized water

Sampler Cleaning Steps

1. Follow the flow schematic diagram (figure 7.3), connect the bubbler, flow meter, connection tee and clean air source using Teflon tubing. Fill the bubbler approximately 3/4 full with deionized water and secure to instrument rack. Connect bubbler inlet (B) to the connection tee output (A); this line should end approximately 1” from the bottom of the bubbler. Then, connect bubbler output (C) to the sample input of the 901/910PC sampler. (See diagram for complete flow schematic).

2. Activate the clean air source and set to an output of approximately 6 lpm of air. Provide a vent from the clean air source to allow bypassing excessive air flow and reduce pressurization of the 901/910PC sampler inlet. For the clean air source setup, you may refer to same setup described in Section 7.5.

3. Activate the sampler to manual mode, set the sampler to a flow rate of approximately 18 ccm (about ninety percent capacity of the MFC) and operate the sampler for 72 hours continuously. This will allow humidified zero air from the bubbler to purge the sample lines inside the sampler.

4. After the 72 hours, disconnect the bubbler output (C) and connect the sampler inlet directly to the connection tee output (A).

5. Operate the sampler in manual mode again, set the sampler to a flow rate of approximately 18 ccm and run the sampler for additional 24 hours allowing dry zero air from the clean air source to purge the sample lines inside the sampler.

6. Once steps 1 through 5 are completed, repeat the purity test procedure as outlined in the previous section and check for the results.

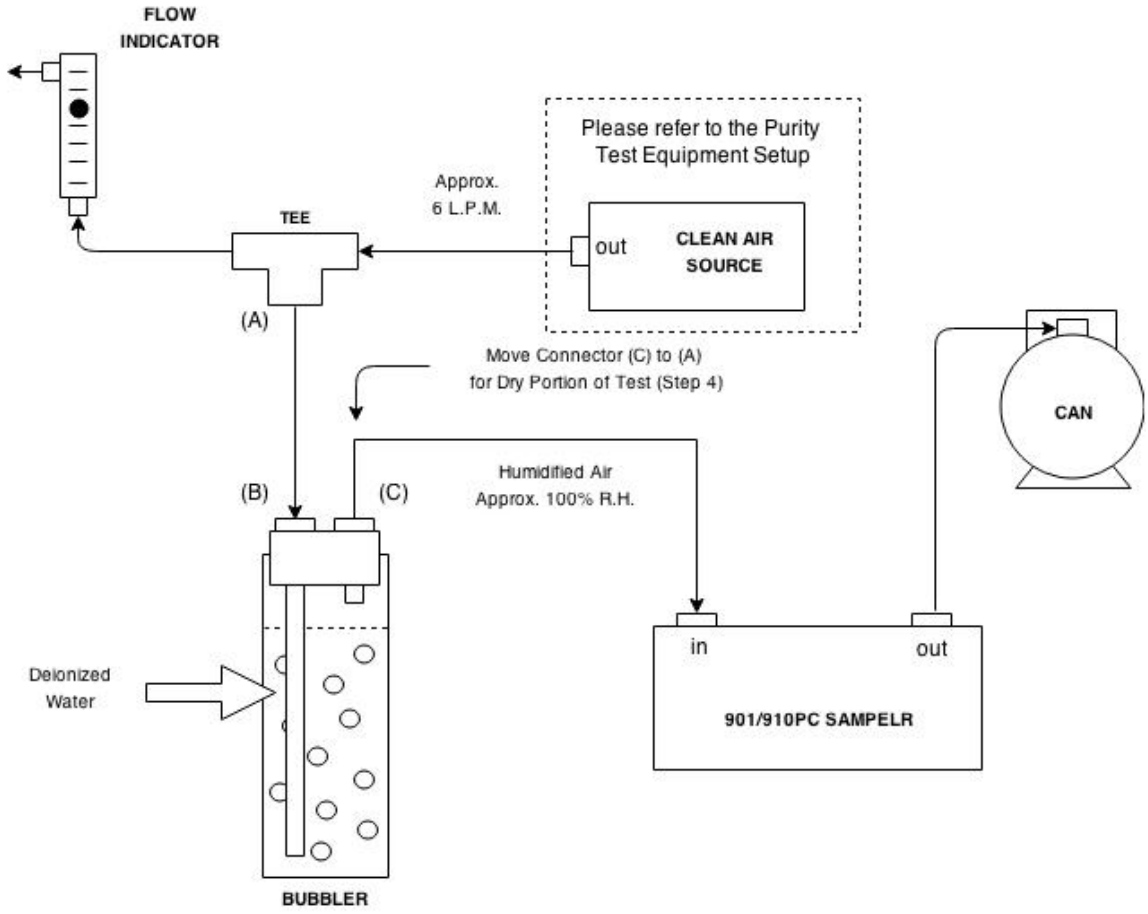


Figure 7.3 Sampler Cleaning w/ Flow Schematic Diagram

Apparatus for Parts Cleaning

1. Ultrasonic cleaner
2. Zero air generator (API 701) or Grade 5 Nitrogen (clean air source)
3. Standard liquid detergent
4. Acetone-free absolute methanol
5. Tap water
6. Deionized water
7. Laboratory oven

Parts Cleaning Steps

For all stainless steel fittings and parts that contact with the sample, the following ultrasonic cleaning technique is found to be most effective.

a. The ultrasonic cleaning steps are listed below in the order of application:

    1. Thoroughly wash parts using a standard liquid detergent.
    2. Three rinses using tap water.
    3. Three rinses using distilled deionized water.
    4. Three rinses with acetone-free absolute methanol.
    5. Bake-out in an oven at 200°C for 12-16 hours.

b. If the sampler is equipped with a pump that has a stainless steel bellows assembly, the following procedure should be used to clean the pump parts that contact the sample:

    1. Three flushes with 100 ml acetone-free absolute methanol.
    2. Disassemble parts and blow dry with zero air.
    3. Reassemble pump and purge pump for 4-6 hours with dry zero air.
    4. If the application of the cleaning procedures outlined above does not sufficiently clean the pump, those pump parts should be cleaned in an ultrasonic cleaner using the procedure mentioned in the previous Step A.

8.0 TROUBLESHOOTING

8.1 General Information:

The manufacturer's instruction manual contains information pertaining to troubleshooting and should be your first source of information. Should instrument malfunctions occur and troubleshooting is required to determine the problem, operators should refer to the Xonteck instruction manual.

Space is provided on the Monthly Quality Control Check Sheet for recording malfunctions, causes, fixes and actions taken to prevent recurrence.

APPENDIX A
LIST OF AIR TOXICS COMPOUNDS AND THEIR LIMITS OF DETECTION

CARB Analysis Method	Compound	Limit of Detection (ppb)
MLD058 Cryogenic Trap Pre-concentration Capillary GC/MS	1,3-Butadiene	0.04
	CH3Br	0.03
	DCM	0.10
	$CHCl_3$	0.02
	TCEA	0.01
	CCl_4	0.02
	Benzene	0.05
	TCE	0.02
	c-Dclprpne	0.10
	t-Dclprpne	0.10
	Toluene	0.20
	Perc	0.01
	Et-Benzene	0.20
	m/p-Xylene	0.20
	Styrene	0.10
	o-Xylene	0.10
	p-DCBenzene	0.30
	o-DCBenzene	0.30
MLD066 Sorbent Trap Pre-concentration Capillary GC/MS	Acrolein	0.30
	Acetone	0.30
	Acetonitrile	0.30
	Acrylonitrile	0.30

Note:
If compounds are detected in the canisters above detection limits, the sampler is deemed to have failed the laboratory purity check and the sampler cleaning procedure shall be used to clean the sampler per ODSS standard procedure. A repeat analysis shall be performed after the sampler is cleaned.

APPENDIX B

AQSB MONTHLY QUALITY CONTROL MAINTENANCE CHECK SHEET 805

XONTECK 901/910PC TOXICS SAMPLER

Location: _____ Month/Year: _____
Station Number: _____ Technician: _____
Property Number: _____ Agency: _____

Sample Date	Can. ID Number	Elapsed Time	Start Vacuum		Sampler Flow		End Pressure		Back Pressure
			Canister	Sampler	Meter	Set Pt.	Canister	Sampler	

OPERATOR INSTRUCTIONS:

1. Each Run: Verify system operation. Check for any signs of problem. Perform system leak check. Record the sampling information.

2. Monthly: Check the pump maximum pressure. Date Checked: _____

3. Semi-Annual: Calibrate mass flow meter (901 only). Last Cal. Date: _____
Meter Reading Slope: _____ Intercept: _____

*For 910PC, reassess the flow offset that correct the final flow rate.

4. Annual: Replace or clean probe and determine residence time.
Maintenance Date: _____ Residence Time: _____

5. As Required: Return sampler to Instrument Lab for purity check and cleaning.
Date last cleaned: _____

Date	Comments or Maintenance Performed

Reviewed by: _____ Date: _____

AQSB QC Form 805 (04/15)

APPENDIX C

AQSB *SAMPLER/INSTRUMENT* CALIBRATION REPORT 805

XONTECK 901/910PC TOXICS SAMPLER

CALIBRATION REPORT:

ID Information:

Station Name:	San Jose
Site Number:	43-382
Station Address:	158 Jackson
Agency:	BAAQMD

Instrument:

Make:	Xontech
Model Number:	901/910PC
Property Number:	20005367
Serial Number:	NA
Back Pressure (psig):	22.4

Calibration:

"As Is"	X
"Final"	
Calibration Date:	04/15/15
Report Date:	04/15/15
Previous Cal. Date:	NA

Calibration Results:

Pollutant:		Toxics
Instrument Range (ccm):		0-10
Sample Period (hours):		24
"As Is" Air Flow Set Point Display:		9.0
"As Is" Transfer Standard Display:		8.8
"As Is" True Air Flow (Sccm)		8.8
Final Canister Pressure, Calculated (psig):		16.4
Final Air Flow Set Point Display:		9.0
Final Air Flow Setting:		9.00
Final Transfer Standard Display:		8.8
Final True Air Flow (sccm):		8.8
	Slope:	0.9830
Display Best Fit Line	Intercept:	-0.1000
	Correlation:	0.9995
True Flow % Deviation from Previous Cal.:		2.4%

Meteorology:

Temperature (degC):	32.0
Atm. Press. (mmHg):	763.0
Elevation (feet):	14

Previous Calibration Information:

Slope:	0.9861
Intercept:	-0.2199
Flow Rate (sccm):	8.6

Air Flow Transfer Standard:

Make & Model:	Tylan 4/1
Property Number:	20004517
Serial Number:	NA
Certification Date:	05/01/14
Expiration Date:	05/01/15

Transfer Standard Equation:

		(x)	(m)		(b)	
0 - 20 ccm MFM:	Standard Air Flow =	Display	1.0000	+/-	0.0000	SCCM
0 - 10 lpm MFM:	Standard Air Flow =	Display	0.9920	+/-	-0.0070	SLPM

CALIBRATION DATA:

Calibration Data (Transfer Standard):

Set Point (x):	Sampler Display:	Transfer Standard Display:	True Flow (y) SCCM	Graph Values
6.0	5.87	5.76	5.8	5.8
7.0	6.88	6.80	6.8	6.8
8.0	7.88	7.78	7.8	7.8
9.0	8.91	8.81	8.8	8.7
10.0	9.89	9.67	9.7	9.7

Probe Data:

Total Length (feet):	33.1
Calc. Lenth (meters):	10.1
Inside Dia. (in):	0.19
Calc. Dia. (mm):	4.76
Air Flow Display:	1.3
Air Flow (slpm):	1.3
Residence Time (s):	8.4

Leak Test:

Initial Time:	NA	Final Time:	NA
Initial Pressure (psig):	Pass	Final Pressure (psig):	Pass

Comments:	Automated leak check passed. Startup Cal, replaced leaking instrument.		
Calibrated by:			Checked by:

AQSB Calibration Report 805 (04/15)