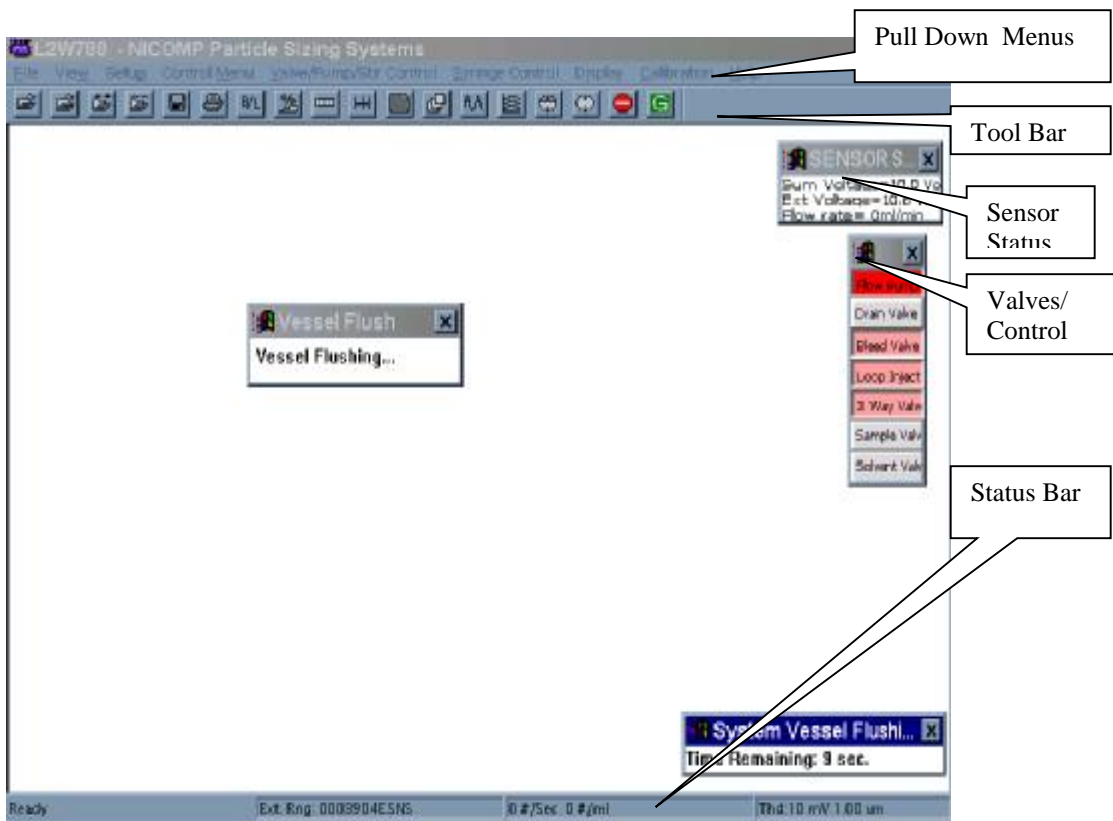


## AccuSizer 780 APS Count Standard Procedure: READ INSTRUCTIONS BEFORE TESTING

The procedure is written for the use of this Count Standard on the AccuSizer 780 APS. Refer to the documentation/instructions of your system for additional operating instructions.



### Procedure:


1. Turn the instrument on and allow the instrument to warm up for ½ hour.
2. Install a 1 ml sample loop and a 2.5 ml syringe for this test. The loop and Syringe should be cleaned by flushing extensively with filtered, low particulate water.
3. Start Software.
4. Verify that the reported sensor voltage (in the sensor status window) is within 10% of the maximum observed voltage. If not, remove the sensor and clean as per instructions.
5. Read the menu file labeled "contstd2.rcp". The menu file is included on a diskette and can be copied into the PSS software directory or can be read from the diskette.

Note: If the diskette contains no information or is unreadable, refer to the Control Set up Screen Capture included and copy the operating parameters.

6. Set the Data Directory and File Name by clicking on <Browse> From the Control Setup menu that appears and click <OK>.

Note: at this time the user may choose to save the new menu file onto their computer hard drive for easy access in the future.

7. Set the system for Sample Pump Automatic Fill in the Setup pull down menu. Set Loop Valve Tare Volume to 1ml.

8. Begin a flush of the instrument using the  button on the tool bar. The system is ready for manual component flushing when the user/software observes 4 consecutive counts of 200#/ml or less on the status bar.

9. Open the sip tube that is included in the kit and replace the current sip tube on the instrument (BLUE fitting on the loop valve assembly). This may require removing the back cover from the instrument, if so simply leave the back cover off and snake the new sip tube around to the front/side of the unit.

10. Make the sample 50mL+ of very clean water (0.2 um filtered water) and insert sip tube.

11. From the Valves/Control window click on sample valve- this starts the peristaltic pump and the clean water sample is drawn into the system. This step requires that “sample pump automatic fill” is checked in the Setup menu.

12. While sample valve is on Click on and off the Loop Inject 10 times allowing 3 seconds on and 3 seconds off. This allows the clean water to flush through the loop valve assembly and the sample loop.

13. Press <ESC> to shut all valves.

14. From the Valves/Control window click on Drain Valve then Flow Pump.

15. Flush the sensor in this manner until the user observes 4 consecutive concentration counts of 10#/mL or less on the status bar.

16. From the Valves/Control window click on 3-Way Valve to add the primary dilution chamber to the flushing flow path.

17. Flush in this manner until the user observes 4 consecutive concentration counts of 20#/mL or less on the status bar.

Note: If counts do not steadily decrease in number and stay above the target of 20/mL a system cleaning may be required- refer to the manual for instruction.

18. From the Valves/Control window click on the Loop Inject to add the sample loop to the flushing flow path (the Drain valve, flow pump and 3-way valve are already on).

19. Flush in this manner until the user observes 4 consecutive concentration counts of 20#/ml or less on the status bar.
20. Press <ESC> to shut all valves.
21. From the Syringe Control pull down menu choose Water Vessel Flush. This will activate the syringe to push clean water into the primary dilution chamber and to the sensor. This is the last component to be cleaned.
22. Allow the syringe to flush until counts are less than 20#/ml as observed by the user on the status bar.
23. Repeat Steps 18-20.
24. Prepare the count standard for immediate use.
  - a. Mix the bottle by inverting 25 times
  - b. Sonicate the sample by placing the bottle in a sonic bath for 30 seconds
  - c. Place sample bottle on stir plate and set stir speed at approx 150 rpm.

NOTE: if the sample rests for more than 60 seconds before measurement commences prepare the sample again.

25. Place sample sip tube into the stirring count standard and allow the sample to stir for 30 seconds. Do not allow the sip tube to sit on the bottom of the bottle or in the vortex.
26. Click Go from the tool bar to start the measurement.
27. Ensure the Data file is saved to the computer for analysis.

### **Analyzing the Data**

28. Read the data file just created.
29. Select the user defined peak from the display pull down menu. A window will appear at the bottom of the screen displaying data on the full range of the distribution.
30. Place the mouse cursor over the graph and click. This produces a cross hair on the graph, use the cursor <left> and <right> keys on the keyboard to move the cross hair to the first Lower Channel Size as defined by the attached Certificate of Analysis and press <Enter>. Position of the cross hair is displayed on the status bar.
31. Then move the cross hair to the Upper Channel Size as defined by the attached Certificate of Analysis and press <Enter>.
32. The software places a vertical black line on each side of the peak indicating the range of the sizes you wish to examine. The window at the bottom of the screen now contains

information about this range. Ensure the range is correct and record the “mean diameter” and the “# of Particles in Range”. Repeat this for each peak in the count standard.

33. The software allows 3 User Defined Peaks to be defined and can be printed by choosing “Cumulative Table” from the print menu.

34. To calculate the concentration of particles in #/ml in each peak, multiply the # of particles in range by the dilution factor and divide by the aliquot size (loop volume) in ml.

E.G. (# of particles = 769830 X Dilution Factor 1.31) / 1 ml injection. Results in 1,008,477#/ml

35. Compare the mean and total counts obtained for each peak with the expected results and range as defined by the Certificate of Analysis. The mean size should agree within 5% and counts should fall within the defined range.

The number of particles reported by your AccuSizer 780 APS should fall within the ranges defined on the Certificate of Analysis provided that the sample was prepared in accordance with the instructions provided and the instrument has been cleaned properly and operated within the suggested parameters. If your results do not fall within the range defined by the Certificate of Analysis please check these parameters and repeat the test.

Do not rely on the exact counts in the bottle after the liquid level has reached below 50% of the original bottle volume as the statistical confidence of the counts will be below acceptable values.

The nature of sampling is by definition a statistical process. Factors such as stirring speed, sample sip tube location, and sample volume have an influence on the spatial distribution of the particles within the bottle, which determines the particles that are actually sampled/counted.

## Menu Parameters

**System Menu** [X]

Menu File: C:\PSS Software\CW788\contstd2.rcp

Data Directory: C:\data\02 data\count standard\ Browse

File Name: 041102.700

Caption: cnt Standard Lot 34A02154

Data Collection Time	60	Sec.	Minimum Ext. Voltage	0	V
Number Channels	512		Minimum Sum. Voltage	0	V
Diluent Flow Rate	60	ml/min	Sample Line Number	0	
Target Concentration	2500	Part./ml	<input type="radio"/> EXT Mode; Min. Diameter	1	um
# of Samples	1		<input checked="" type="radio"/> Sum Mode; Min. Diameter	0.5	um
Time Between Samples	10	Min.	Sample Calculation		
Background Threshold	5	Part./Sec.	<input type="radio"/> Mass Fraction	<input type="radio"/> Volume Fraction	
			<input type="radio"/> PPM/PPB	<input checked="" type="radio"/> None	

Automatic Data Save  Save ASCII File Browse

Save Data File (Binary) File Name: C:\ascii.0

Injection Loop Volume	1	ml	Vessel Flush Time:	30	Sec.
Syringe Volume	2.5	ml	2nd-Stage Mixer Volume	10	ml
<input checked="" type="checkbox"/> Automatic 2nd Stage Dilution Factor			Sample Flow Time	11	Sec.
Initial 2nd-Stage Dilution Factor	30				

Cancel OK