DROPLET MEASUREMENT TECHNOLOGIES, INC.
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PCASP Calibration Report

DMT Order Number:	080217	Client/Probe Owner:	UND
Date: 5/16/08		Model Number:	PCASP 100X
Work Performed by:	James Wiggins	Serial Number:	30013-1191-11
Other information:			

PRE-CALIBRATION BEFORE CLEANING

Preliminary Visual Inspection	
General Condition of the Exterior:	OK
General Condition of the Interior:	OK
Other information:	N/A

Working Status Of Probe Prior To Cleaning				
Condition and general appearance of the laser firing:	Bore sight is good and Laser Ref=7.62Vdc. No power Fluctuations.			
Vibrational sensitivity of the laser:	Good.			
Heater Status:	Power Rating (watts):		215	
	Voltage Rating (volts):		28	
	Calculated Heater Resistance R = V^2/P (ohms)		3.7Ω	
	Actual Measured Heater Resistance (ohms)		~~3.8~~ 4.0	
+5 V Power Supply:	5.00	VDC	200	mVAC noise
+15 V Power Supply:	15.02	VDC	50	mVAC noise
-15 V Power Supply:	-15.04	VDC	50	mVAC noise

INITIAL CALIBRATION PROCEDURES

A precision bead pre-calibration, using the DMT aerosol generator, was performed on the probe, the results of this pre-calibration are attached to this report.

Our technician's comments about this calibration are as follows:

The sample flow and the sheath flow were measured using pneumatic flow meters and the results are tabulated below. The probe was adjusted for the proper flow rate and the rates were measured and tabulated again.

Time of Measurement	Sample Flow in cc/sec	Sheath Flow in cc/sec
Before Adjustments	15	1
After Adjustments	15	1

Additional comments made by the technician performing this procedure are:

The reference voltage was measured to be 7.62 volts, in a properly operating probe, this voltage should be greater (in magnitude) than six (6) volts.

The signals GAIN1, GAIN3 and GAIN4 were measured and then adjusted to be within the manufacturer's specification. The results of these measurements are tabulated below.

Signal Name:	GAIN1 (mvolts) (Signal-3, Low Gain)			GAIN3 (mvolts) (Signal-2, Mid Gain)			GAIN4 (mvolts) (Signal-1, High Gain)		
	Low Peak	High Peak	Average	Low Peak	High Peak	Average	Low Peak	High Peak	Average
Before Adjustment	-96	96		-100	100		-150	150	
After Adjustment	-96	96		-100	100		-125	125	

Our technician's comments concerning this procedure are:

CLEANING

A thorough cleaning was performed on the probe, the following table summarizes the steps that were performed.

Electrical Contacts	
Contact Description	Status and/or Service Performed
Amphenol Connector	Checked - O.K.
Card Seating	Checked - O.K.
Card Edge Connectors	Checked - O.K.
Optical System Components	
Component Description	Status and/or Service Performed
Aspheric Collector	Cleaned
45 Degree Mirror	Cleaned
Parabolic Mirror	~~Cleaned~~ Inspected - O.K.
Laser Output	Cleaned

Additional comments made by the technician performing this procedure are:
The laser required a slight adjustment achieved through the crystal assembly Gimble screws. The inlet was also peaked during calibration.

ALIGNMENT

The reference voltage was measured and various adjustments were performed to make it come into specification. Laser Reference Voltage: 7.97

Using the DMT aerosol generator, the probe's inlet jets were adjusted to provide the strongest signal possible to the in coming aerosols.

The desiccant was replaced with fresh royal blue desiccant.

Our technician's comments concerning this procedure are:

CALIBRATION

A final calibration, using the DMT aerosol generator, was performed on the probe, the results of this final calibration are attached to this report.

Our technician's comments about this calibration are as follows:

The instrument only required cleaning of the optics, Adjustment of the crystal assembly, Increase of gain on Pre Amp, and slight adjustments to the bias offsets.

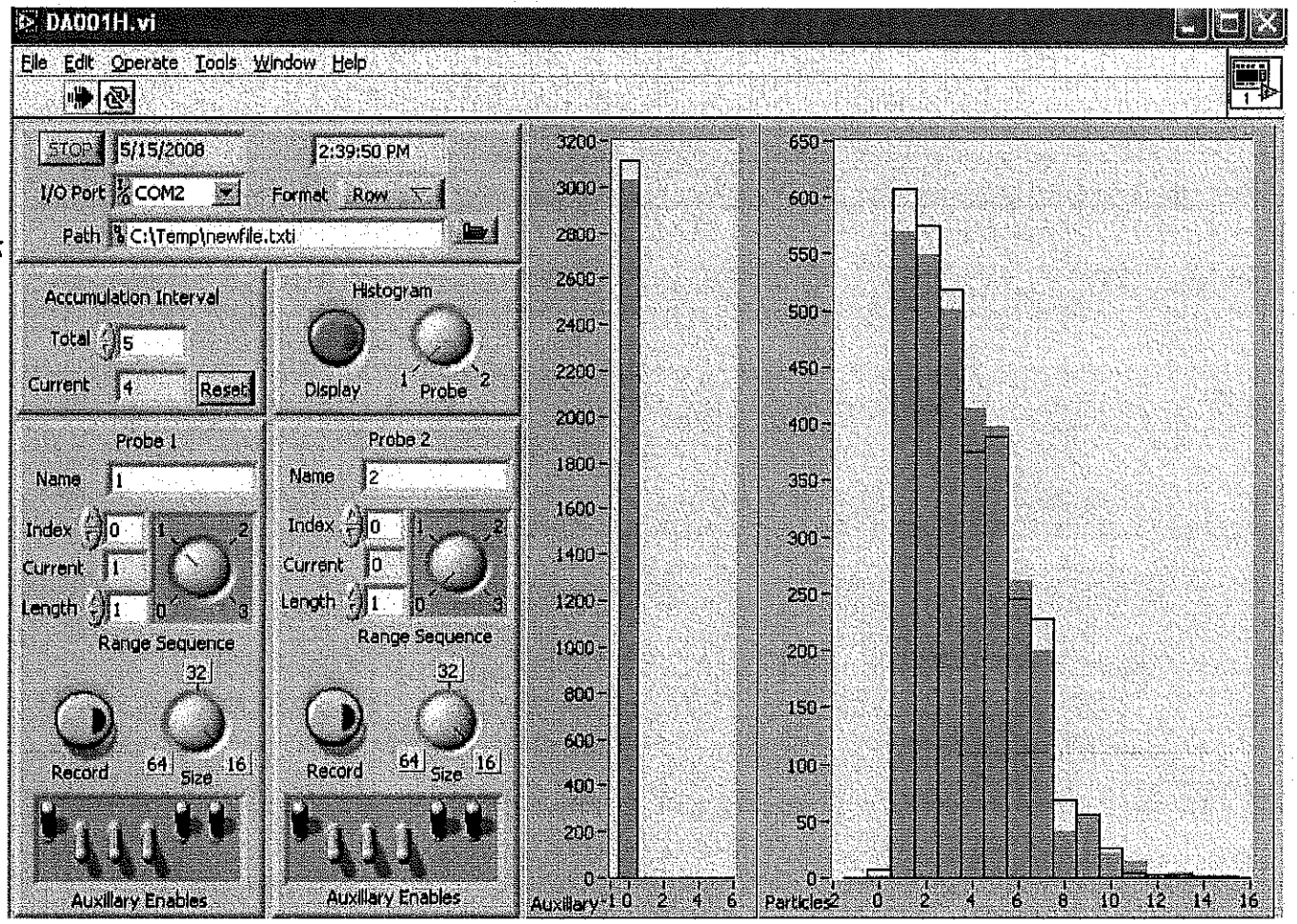
Additional comments made by our technician:

R_{27} initial value = 45 KΩ AFTER cal = 45 KΩ

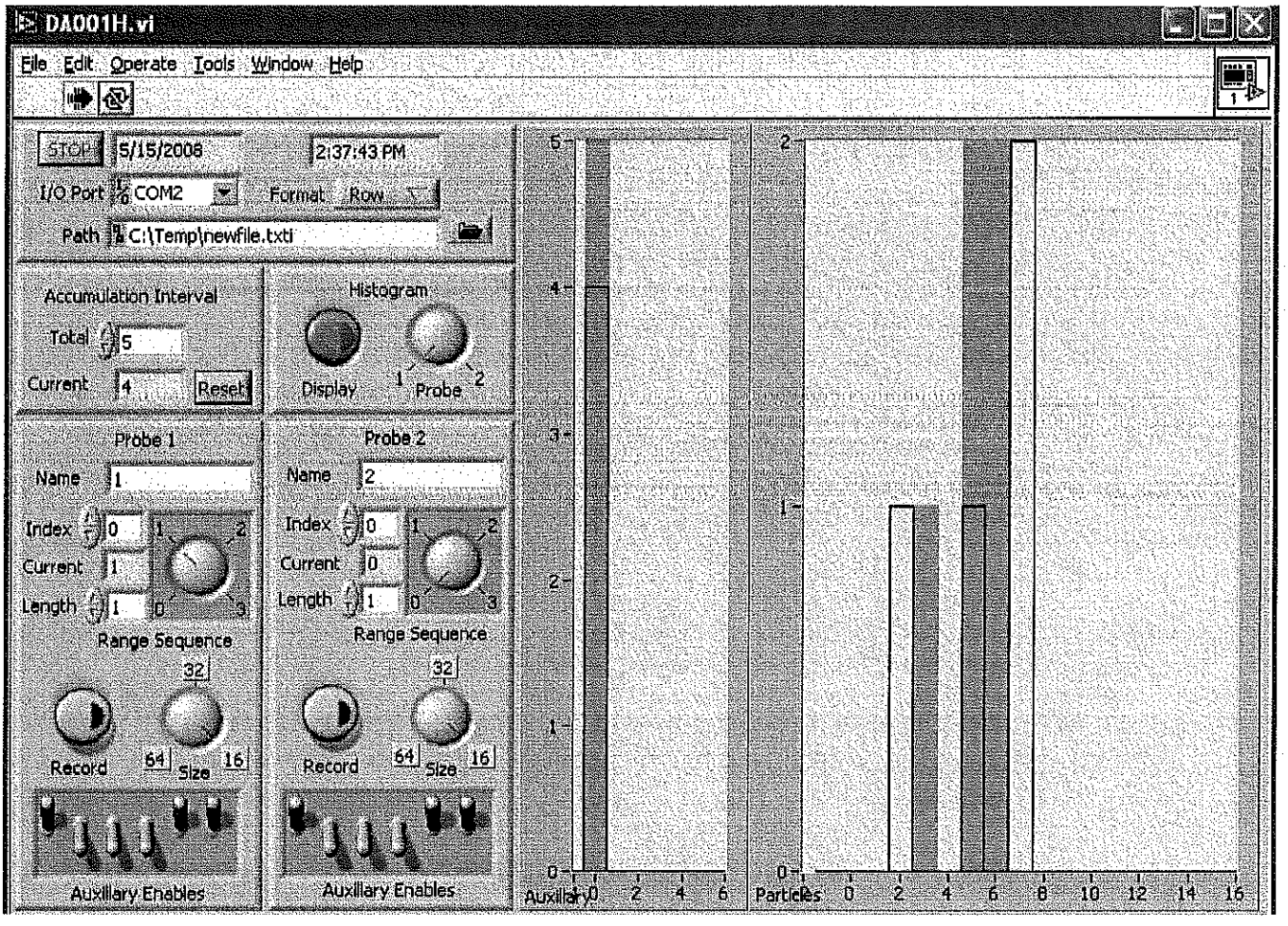
Baseline pre-cal: High = 3.16
Mid = 1.37
Low = 1.72

Baseline AFTER Cal: High = 6.82
Mid = 1.37
Low = 1.73

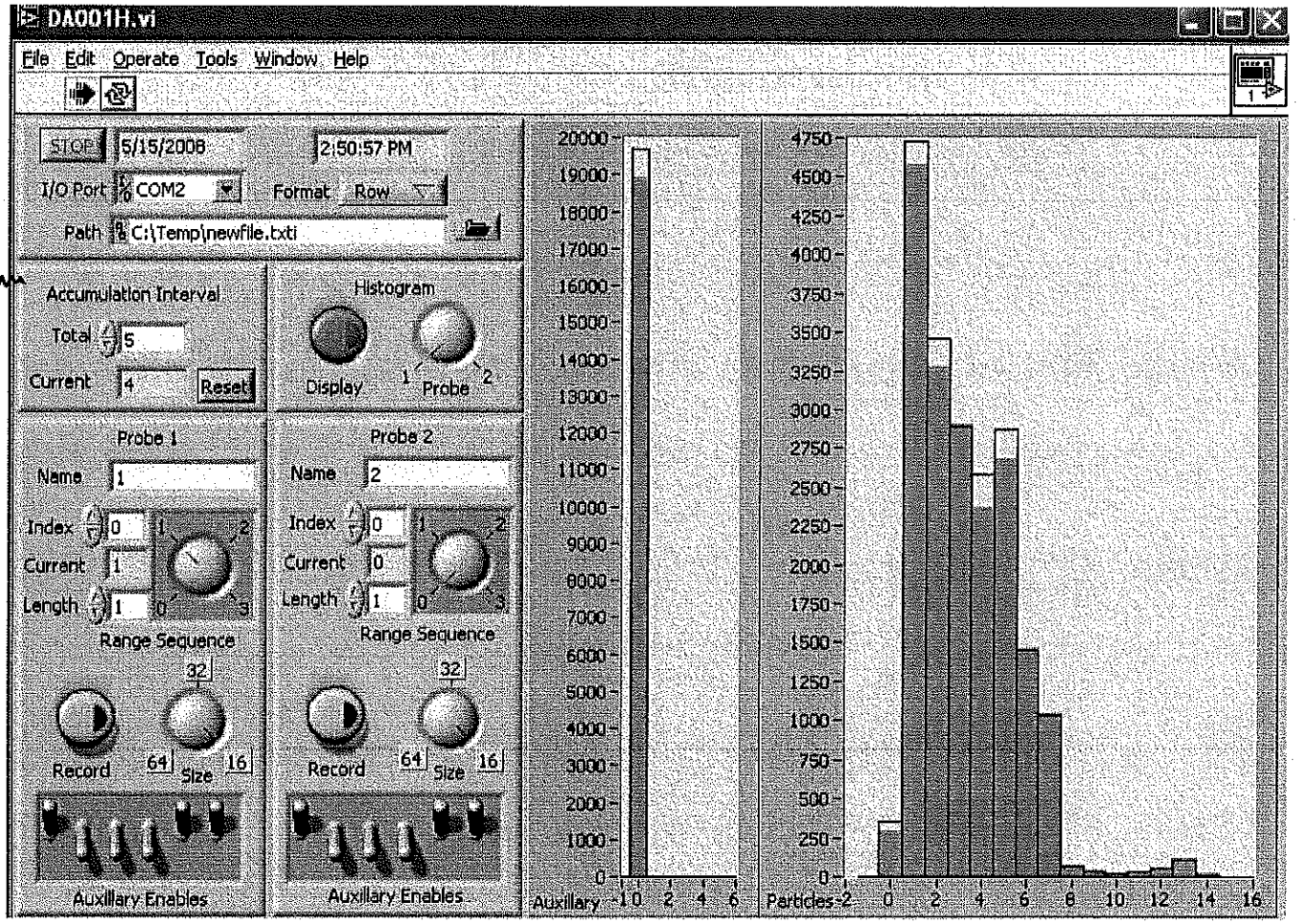
Pre Cal Ambient Dist.



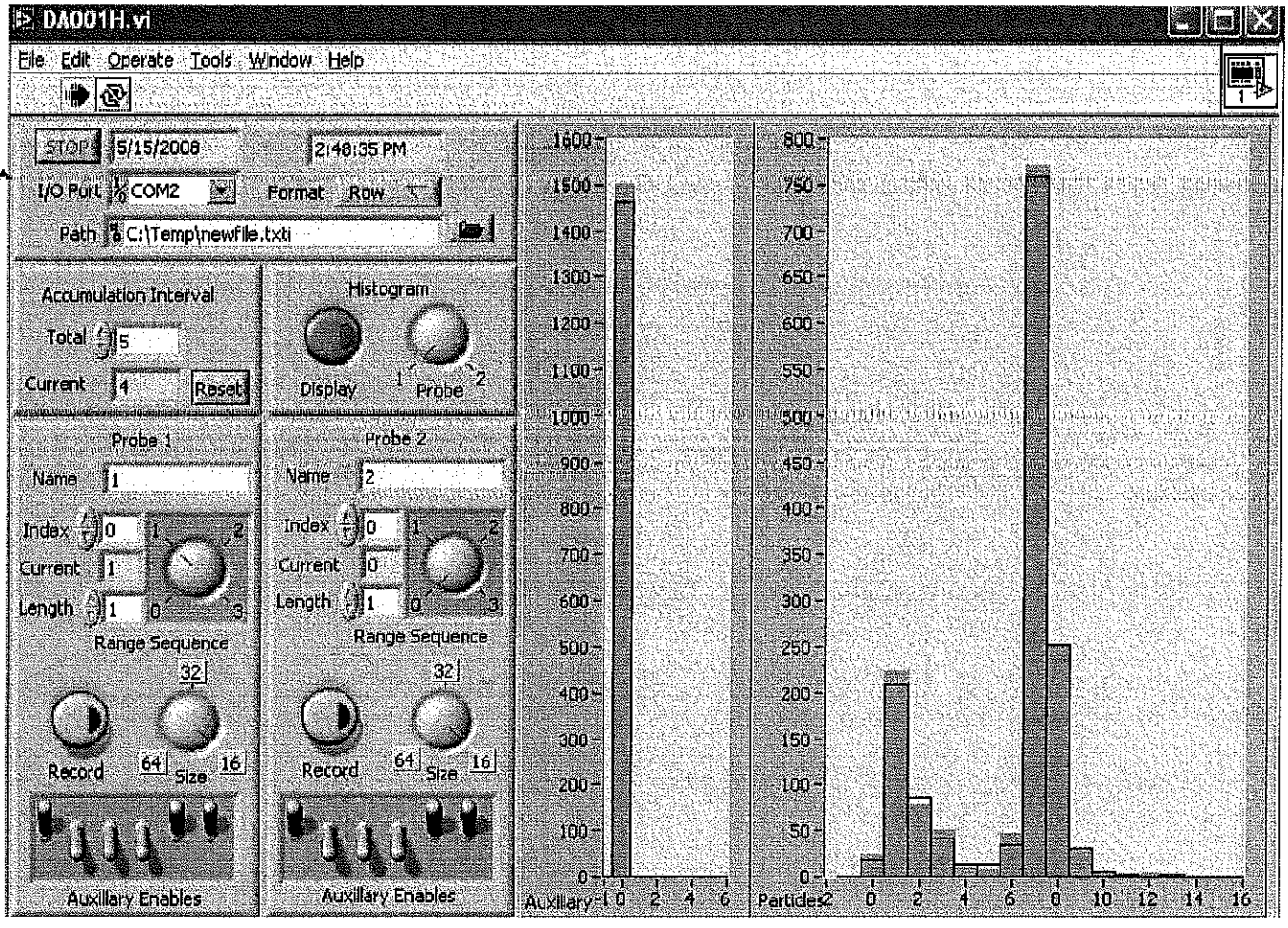
Pre Cal Oct

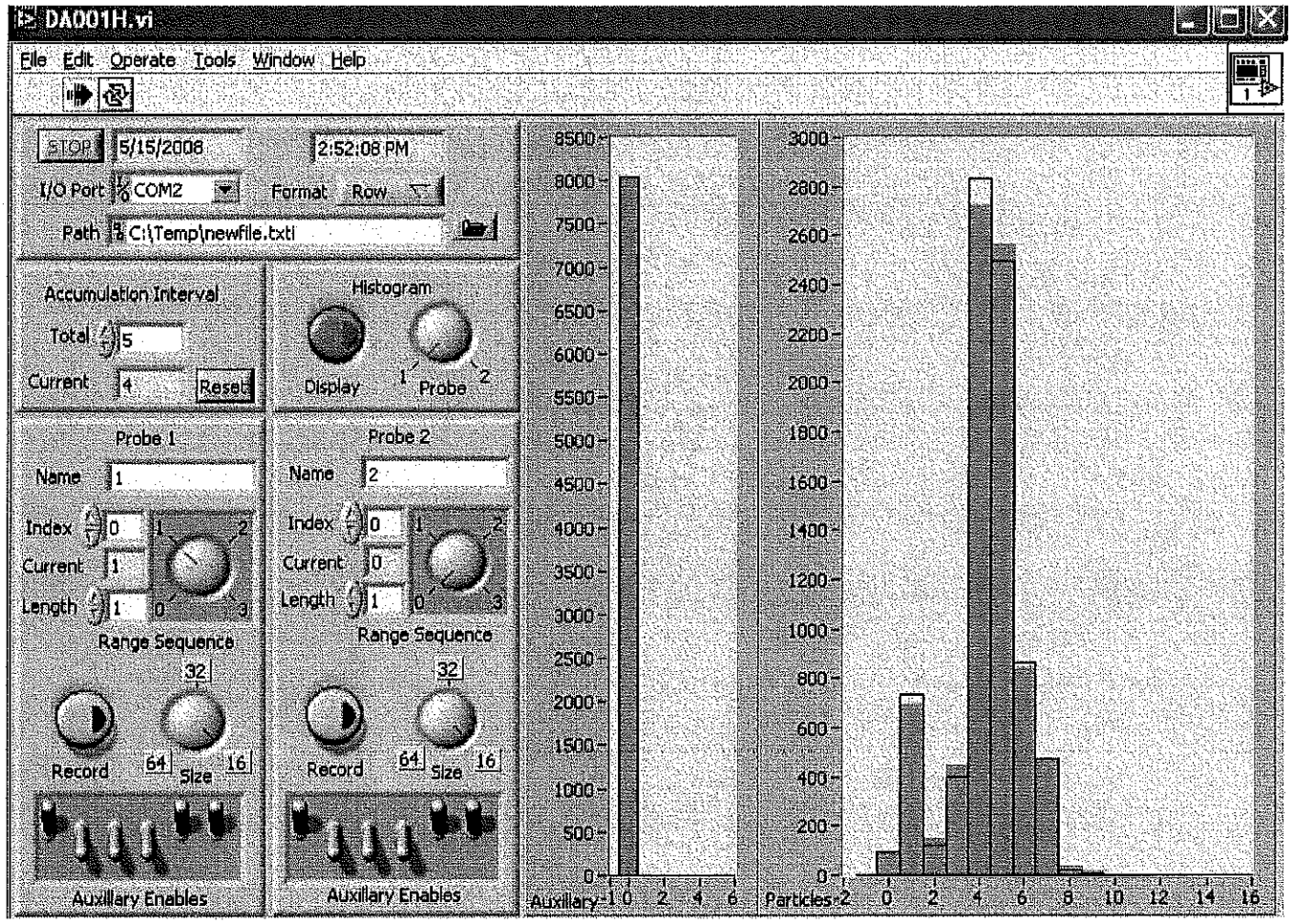


PreCal
1.992μm
Gen.



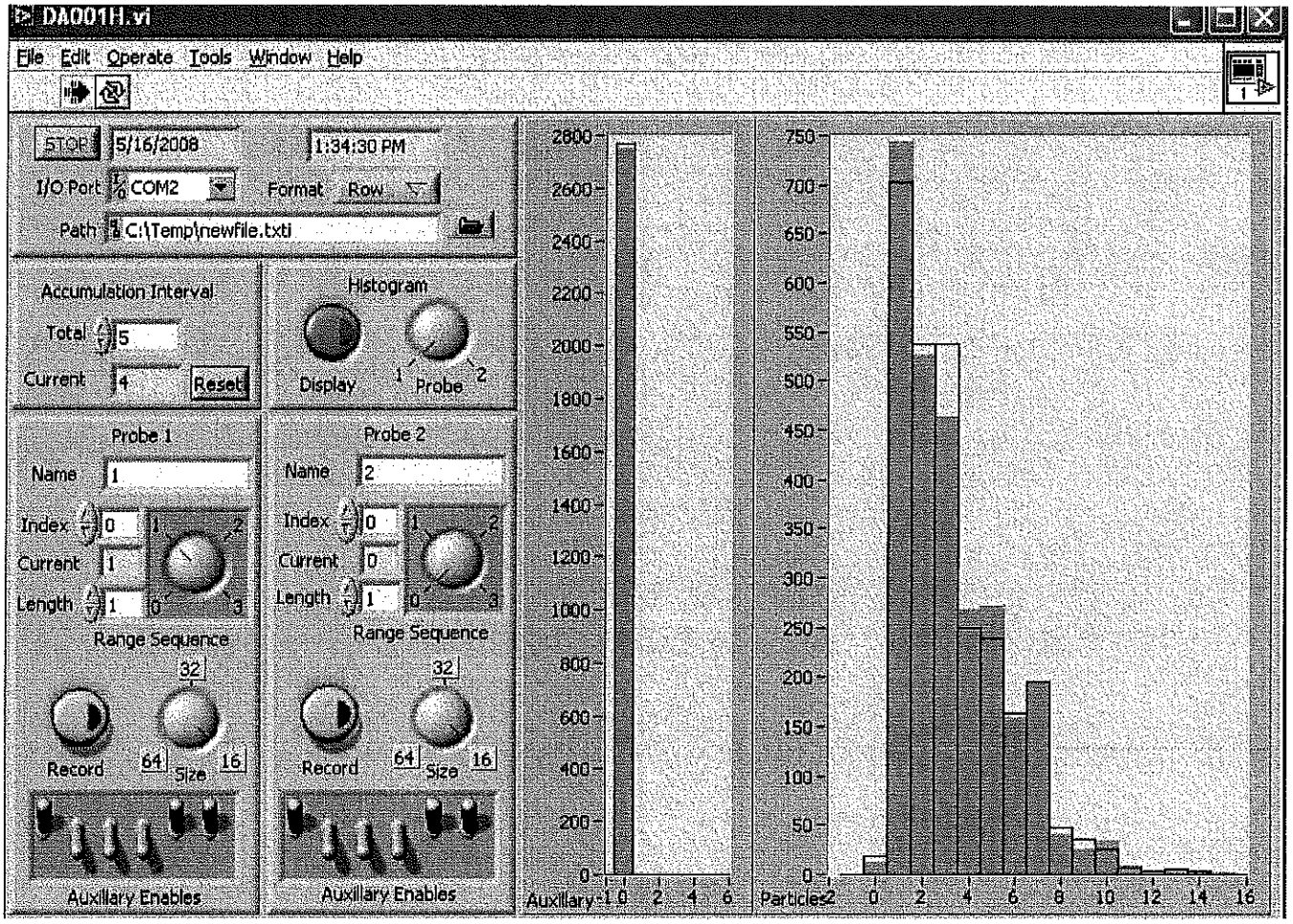
PreCal
.43μm
Gen.



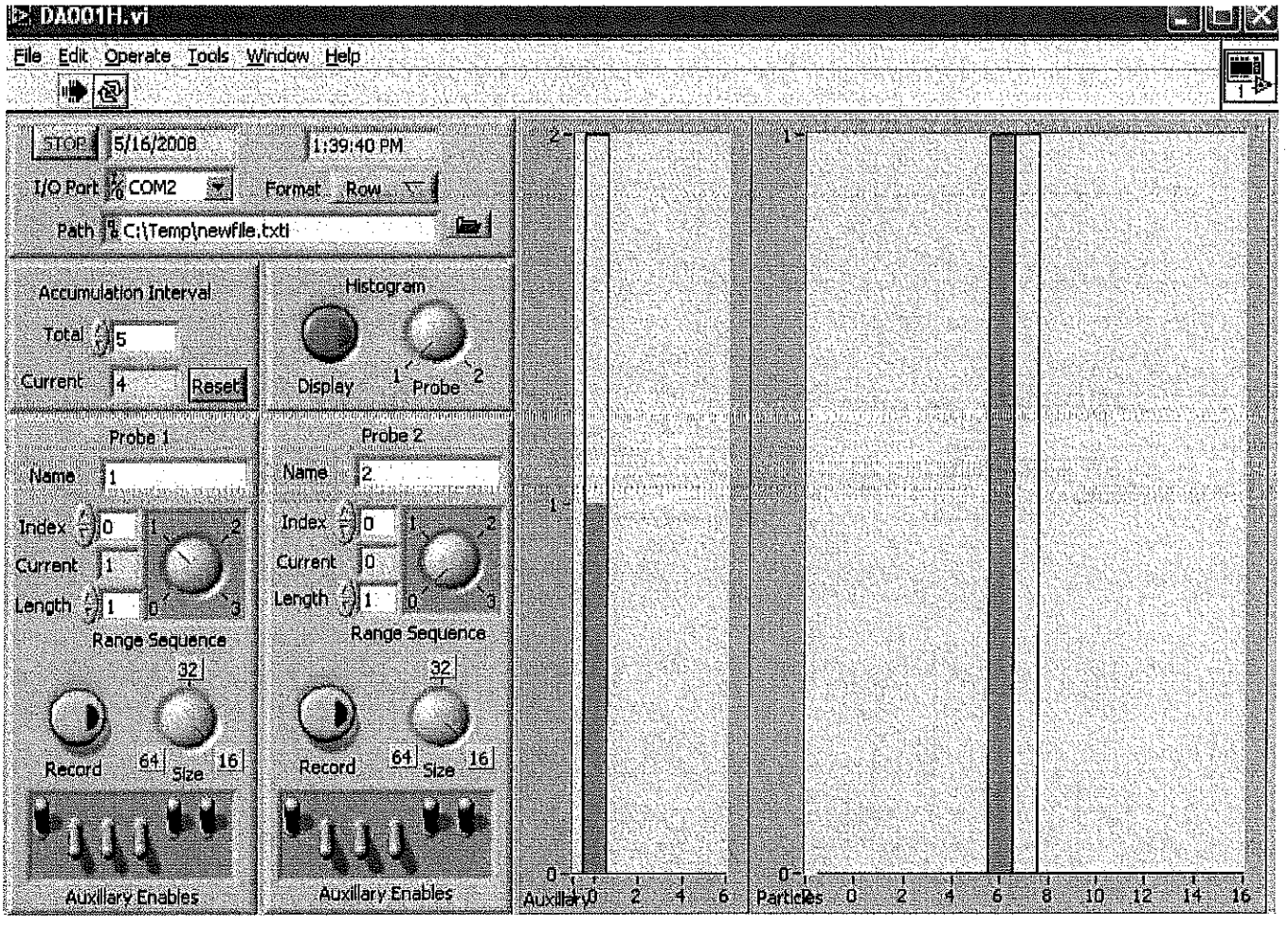


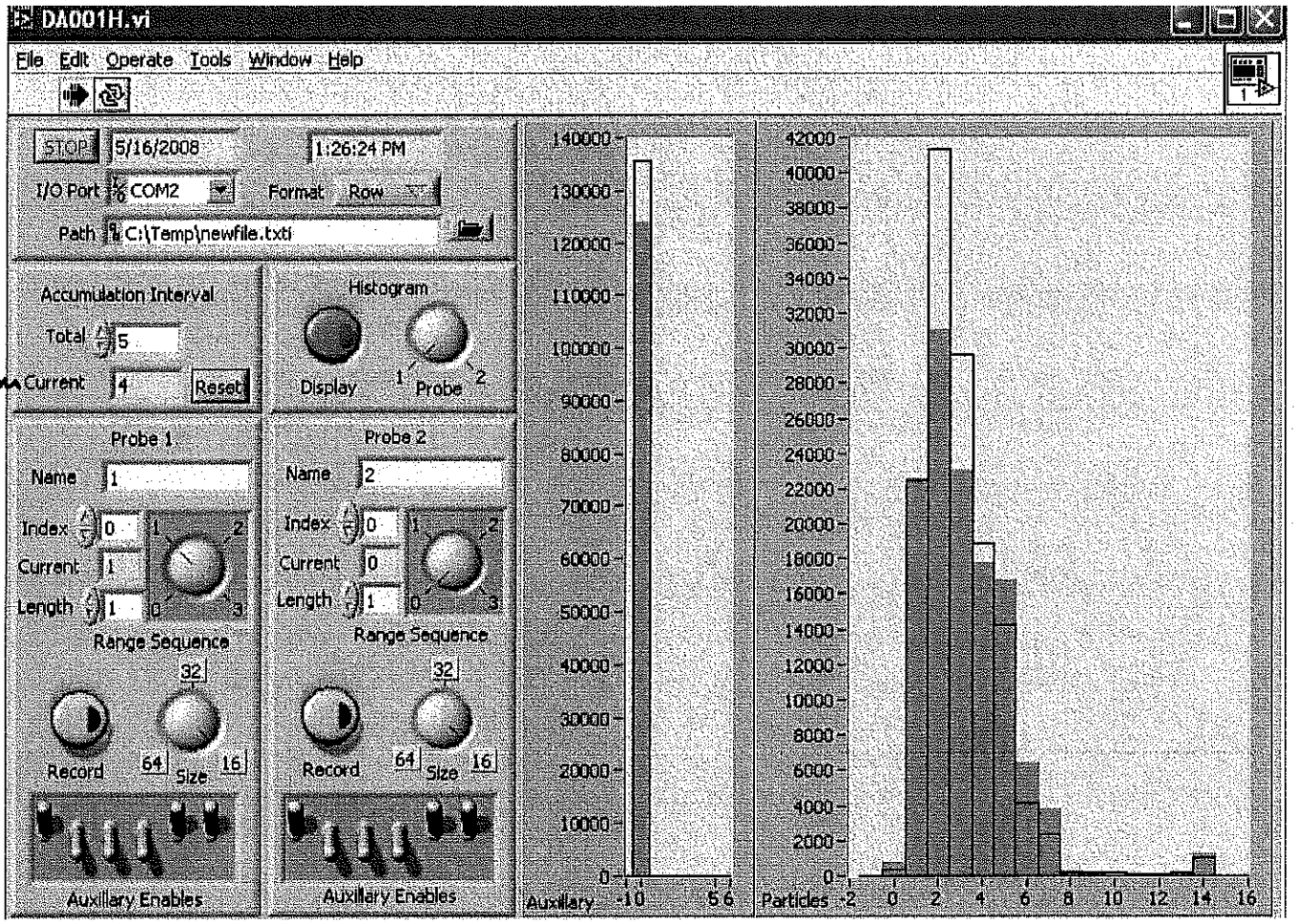
PreCal
222nm
Gen.

Post Cal Ambient Dist.

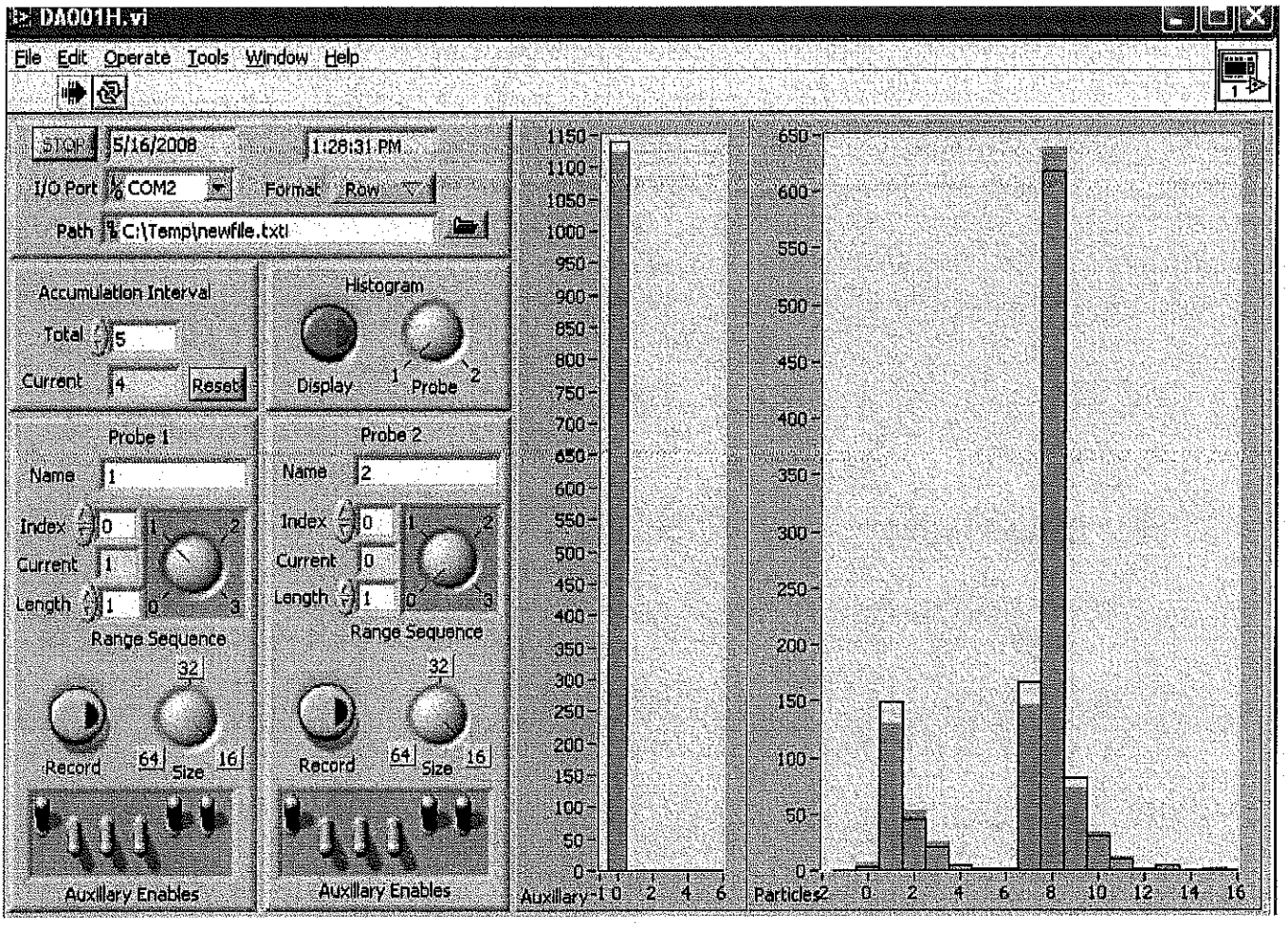


Post Cal Oct.



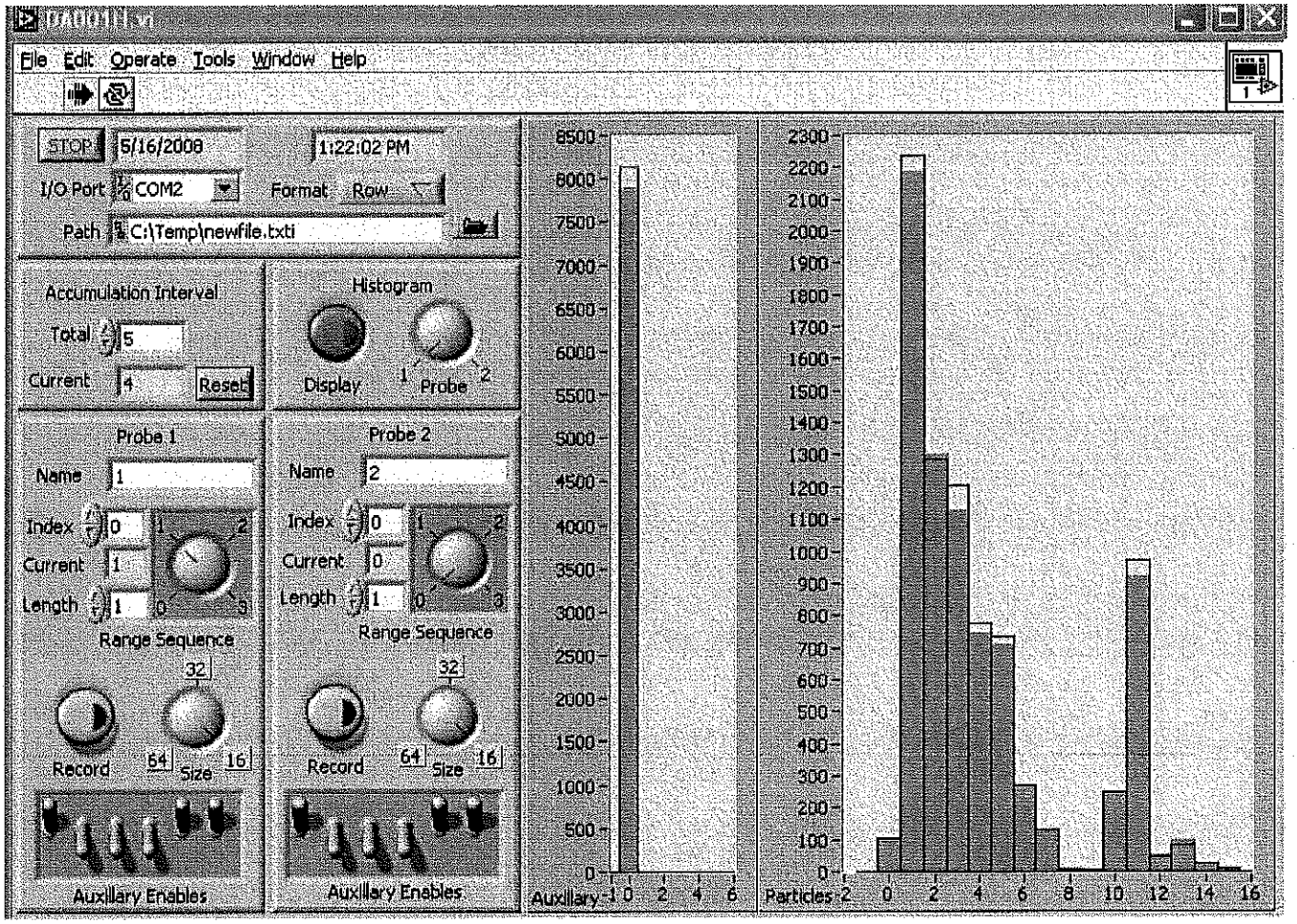


Post CAL 1.992 µm Gen.



Post CAL .43µm Gen

Post Cal .93μm Gen.



Post Cal 222μm Gen.