Barometer Validation report

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Abstract:

The purpose of this experiment is to measure the pressure at Paso Robles altitude and compare with those of the same altitude from standard resources. We will connect the barometer to the LabPro that will record the pressure and send it to the logger pro program on our computer and graph the data.

Method:

The three main pieces of equipment used in this experiment is as follows: Barometer, LabPro, and the computer software Logger Pro 3. This equipment all connected properly will measure pressure data at Paso's altitude and then return for transfer of that data to the logger Pro software. By this transfer of data, we will be able to compare the measurements to that of standard pressures. With the comparison we will establish the accuracy of our readings.

Research:

According to our resources at www.weatherchannel.com, at the same time we took our measurements at 1:28 pm western standard time, the pressure here in Paso was 29.91 in/Hg. With this data we can find our resolution, precision and accuracy.

Data:

See next page

Conclusion:

The data as calculated by our barometer at the same altitude as our standard measurements were derived from, have shown an increase in pressure by small increments over a period of time. For this reason, we have found that the cause of this is due to the weather change from high to low pressures. The cause of these differential pressures can be related to the stormy weather that was moving into the low pressure in Paso Robles. But these pressures should be proportional to that of which we found from our source. We then converted from See next page in/Hg to kPa for more accurate readings.

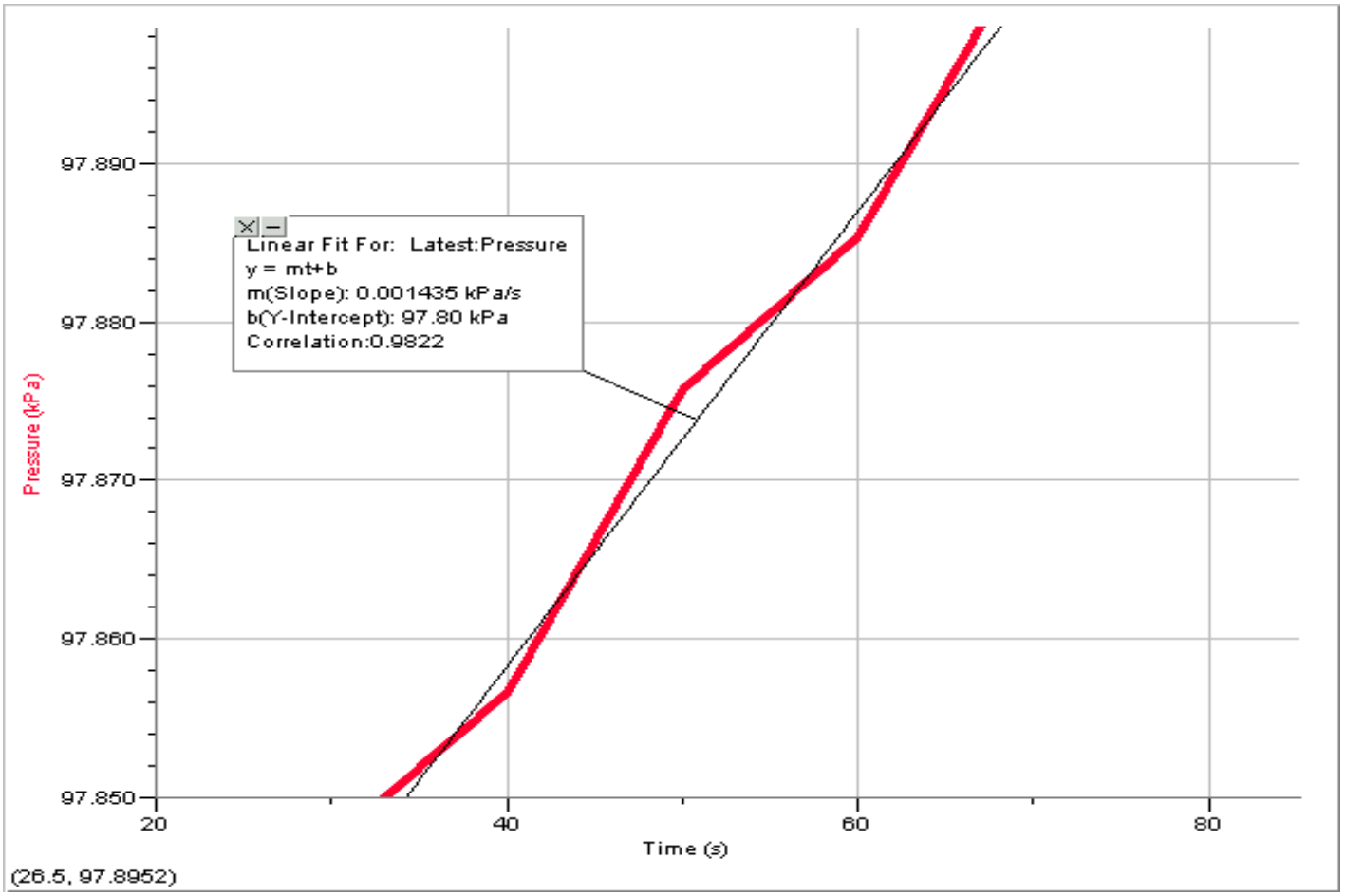
Resolution: 0.001 kPa

Precision: 0.026 kPa

$$\frac{29.91 \text{ in/Hg } (0.491 \text{ psi})}{0.1458 \text{ psi}} = 100.72 \text{ kPa}$$

Accuracy: 2.64 kPa

$$\frac{98.076 \text{ kPa} - 100.72 \text{ kPa}}{100.72 \text{ kPa}} = 0.026 \text{ kPa}$$


Linear Fit For: Latest:Pressure
y = mt+b
m(Slope): 0.001435 kPa/s
b(Y-Intercept): 97.80 kPa
Correlation:0.9822
Pressure (kPa)
97.890
97.880
97.870
97.860
97.850
20
40
60
80
Time (s)
(26.5, 97.8952)