



USATF MEASUREMENT SEMINAR

Scottsdale, Arizona

October 5, 2002



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By Pete Riegel & Mike Wickiser

The seminar was organized by Mike Wickiser, who put a notice in September *Measurement News* and *MNForum* notifying all that it would be held. Some interest had been expressed by measurers and others in Phoenix, and given the interest, it seemed a productive thing to do. Western Vice-Chairman Tom McBrayer, Arizona Certifier Gene Newman, and Ohio Certifier Pete Riegel came to help.

Tom LaBlonde, a Phoenix measurer and resident of Scottsdale, handled all the onsite planning and organization. He found a superlative venue at Gainey Ranch Community Center, located on quiet roads within a gated community, with the Community Center itself serving as a classroom. He designed the course and drew a map for students to follow. He arranged for dinner afterward. The seminar went well, thanks to his competence and planning.



Students and staff met at the Community Center at noon, and were given a brief orientation by Mike Wickiser, after which the group went to a nearby bike path and laid out parallel 875 foot calibration courses. We were trying for 1000 feet, but ran out of room when the path curved. One calibration course was laid out by a team using a 165 foot steel tape, and the other by a team using a 100 foot tape. After layout, each team checked the work of the other.

Because time was limited, and we did not wish to spend time on explanations of temperature correction, we decided to assume both courses were exactly 875 feet in subsequent calculations.

A group of four (Gary Grierson, Frank Cuda, Tom LaBlonde, Norm Janoff) calibrated their bikes, and, led by Tom LaBlonde, who knew the course, measured the circuit. During the ride, Janoff became separated from the others and aborted his ride. He rode again later when Pete Riegel led him around the course.



After the riding was done, all repaired to the Community Center to calculate, drink Gatorade and eat cookies, provided by LaBlonde. Calculated results were posted on a board and discussed by the group.



Results of calculations may be seen on following pages.

Noteworthy things that can be seen in the calculations:

- 1) The two measurements of the #1 calibration course differed by $\frac{3}{8}$ inch, which is acceptable. The two measurements of the #2 calibration course differed by $1\frac{3}{4}$ inches, which is not very good agreement. One team or the other likely made some taping mistakes, most likely in setting down the proper zero point.

- 2) On postcalibration, everybody either equaled or had less variation than on precalibration, indicating the effect of concentration on straight riding.
- 3) Tom LaBlonde, with his skinny, high-pressure tire had less calibration change than did the others, who were riding fat-tire mountain bikes.
- 4) Riegel improperly reported his final figure, because he had neglected to include the 1.001 Short Course Prevention Factor in his day's constant. Since he was assisting Janoff with his calculations, Janoff suffered the same error. These errors were caught and corrected later. Check, check, check! Mistakes are inevitable, and checking thoroughly will catch most of them.

What constitutes a "good" measurement? It's impossible to tell without checking the actual course, but good measurement generally has the following characteristics:

- 1) Low variation among the four precal and postcal rides. How low? 1 or 2 counts on a 300 m or 1000 foot course is OK. This level can be achieved with practice.
- 2) Low change of constant between precal and postcal. This is often outside the control of the measurer. If a long day is planned, an extra calibration at midday is a good idea.
- 3) Good agreement between the overall measurements of the course. Our course contained a high level of turns, and this tended to spread out the measurements. Nevertheless, four of the five measurements agreed pretty well. And the fifth rider was aware that he had not followed a tight line.

CONCLUSION

Given the short duration of the seminar, it can be deemed a success. All interested individuals gained "hands on" experience with in depth assistance from a highly experienced group of instructors. Gene Newman having recently been appointed Arizona certifier was available to establish familiarity with measurers in the Phoenix area.

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MEASUREMENT RESULTS - SATURDAY, OCTOBER 5, 2002

CALIBRATION COURSES

Two parallel courses were created.

#1 was laid out with a 165 foot steel tape and checked with a 100 foot steel tape.

#2 was laid out with a 100 foot steel tape and checked with a 165 foot steel tape

Temperature estimated at 90F

| | #1 | #2 | | |
|-------------------------------|------------------------|----------|-----------------|----------|
| Layout Measurement, feet | 875 | 875 | 874' 10 1/4 " = | 874.8542 |
| Check Measurement, feet | 874.9688 | 874.8542 | 874' 11 5/8 " = | 874.9688 |
| Average Measurement, feet | 874.9844 | 874.9271 | | |
| Temperature Correction factor | 1-((90-68)*0.00000645) | | | |
| | 1.000142 | | | |
| Corrected length, feet | 875.11 | 875.05 | | |
| Corrected Length, metres | 266.73 | 266.72 | | |

For the purposes of getting on with it, students were asked to use 875.00 feet as the calibration length.

Assumed calibration length, metres = 875.00*0.3048 = **266.70 metres**

RAW MEASUREMENT DATA OBTAINED AT SEMINAR

| | Gary Grierson | Frank Cuda | Tom LaBlonde | Norm Janoff | Pete Riegel |
|-----------------|------------------|---------------|-----------------|----------------|----------------|
| Precalibration | 12313 | 15200 | 64800 | 1258 | 18300 |
| | 15354 | 18185 | 67815 | 4339 | 21341 |
| | 18394 | | 70828.5 | 7416 | 24381 |
| | 21434 | 18200 | 73843 | 10492 | 27422 |
| | 24473 | 21183.5 | 76857 | 13568.5 | 30461.5 |
| | | 24167 | | | |
| | | 27154 | | | |
| Begin Loop | 37000 | 39000 | 89000 | 84200 | 41900 |
| End Loop | 63763 | 65298 | 115503 | 111432 | 68650 |
| Postcalibration | 78856 | 76800 | 27500 | 23064 | 80130 |
| | 81896 | 79781.5 | 30515 | 26141 | 83171 |
| | 84935 | 82766 | 33529 | 29216.5 | 86213 |
| | 87975 | 85747 | 36543 | 32293 | 89255 |
| | 91015 | 88731 | 39556.5 | 35367.5 | 92297 |

CALCULATED VALUES

| | Gary Grierson | Frank Cuda | Tom LaBlonde | Norm Janoff | Pete Riegel |
|-----------------------------------|------------------|---------------|-----------------|----------------|----------------|
| Precal 1 | 3041 | 2985 | 3015 | 3081 | 3041 |
| Precal 2 | 3040 | 2983.5 | 3013.5 | 3077 | 3040 |
| Precal 3 | 3040 | 2983.5 | 3014.5 | 3076 | 3041 |
| Precal 4 | 3039 | 2987 | 3014 | 3076.5 | 3039.5 |
| Average | 3040 | 2984.75 | 3014.25 | 3077.625 | 3040.375 |
| Counts per metre | 11.39858 | 11.19141 | 11.30202 | 11.53965 | 11.39998 |
| Counts per metre x 1.001 | 11.40997 | 11.2026 | 11.31333 | 11.55119 | 11.41138 |
| Variation, counts/4 rides | 2 | 3.5 | 1.5 | 5 | 1.5 |
| Postcal 1 | 3040 | 2981.5 | 3015 | 3077 | 3041 |
| Postcal 2 | 3039 | 2984.5 | 3014 | 3075.5 | 3042 |
| Postcal 3 | 3040 | 2981 | 3014 | 3076.5 | 3042 |
| Postcal 4 | 3040 | 2984 | 3013.5 | 3074.5 | 3042 |
| Average | 3039.75 | 2982.75 | 3014.125 | 3075.875 | 3041.75 |
| Counts per metre | 11.39764 | 11.18391 | 11.30156 | 11.53309 | 11.40514 |
| Counts per metre x 1.001 | 11.40904 | 11.1951 | 11.31286 | 11.54462 | 11.41654 |
| Variation, counts/4 rides | 1 | 3.5 | 1.5 | 2.5 | 1 |
| Day's constant (larger), counts/m | 11.40997 | 11.2026 | 11.31333 | 11.55119 | 11.41654 |
| Average constant, counts/m | 11.4095 | 11.19885 | 11.31309 | 11.54791 | 11.41396 |
| Change in constant, counts/km | -0.9 | -7.5 | -0.5 | -6.6 | 5.2 |
| Counts obtained on course | 26763 | 26298 | 26503 | 27232 | 26750 |
| Metres by larger constant | 2345.6 | 2347.5 | 2342.6 | 2357.5 | 2343.1 |
| Metres by average constant | 2345.7 | 2348.3 | 2342.7 | 2358.2 | 2343.6 |
| Reported on Site, metres | 2345.6 | 2347.0 | 2342.6 | 2360.7 | 2345.4 |

