



THE ATHLETICS CONGRESS
OF THE USA

3354 Kirkham Road
Columbus, OH 43221

Road Running Technical Council
Peter S. Riegel, Chairman

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May 18, 1992

Dear Measurement Seminar Attendees:

It's all done but the homework, and I congratulate you on how well you did. This is a report of how things went. I used my own data to show you how to do everything you need to do to make the course come out right. If you will do the following, the right stuff will be burned into your brain:

Substitute your own data, and go through the same calculation I did, and experience the process. You will learn from it. Once you've done that, you will have gained just about everything I'd hoped to pump into you. Then start measuring race courses and send the data to me, and I'll pop the certificates back to you quickly. Remember to send the \$15 review fee, and all the paperwork the book asks for.

I want to thank the following people for their help:

Sue Daly, President, Columbus Roadrunners, for doing the organizational work, publicity, and the great lunch.

Mike Wickiser, Indiana TAC Certifier and IAAF Measurer, for helping with the instruction.

Joan Riegel, who responded to my panic call when I realized I had forgotten to bring the Jones Counters from home. She got them to West Jeff in plenty of time, so the seminar was not delayed.

Measuring mistakes are a part of the game, and I made two that I know of:

1) I blew the temperature correction on a calibration course. (Note: this is not a fatal error. If checking had revealed the calibration course to be, say, 299.5 meters, it would have only been necessary to use the correct value when calculating the constant, instead of using the 300 meters we all used. Fortunately, the error was negligible.)

2) I transposed a number on my initial count when measuring.

Review of the data revealed these mistakes, and they would not have affected a final determination of course length. This is one reason we measure twice, and check a lot. Mistakes are inevitable, and we can only do our best to minimize them.

I am sure each of you has some mistakes in your work. Don't worry about it. Use the mistakes to learn. I hope to see some courses from you coming to me soon.

Happy measuring!



SEMINAR ATTENDEES

Students

Denny Bennett 2216 Shadowood Circle Bellbrook, OH 45305-1849	DB...Identification initials in report 513-848-2204...Telephone number
Karen Wickiser 2939 Vincent Rd Silver Lake, OH 44224-2916	KW 216-929-1605
Ed Sturzinger 2504 Campbell St Sandusky, OH 44870	ES
Larry Kline 4151 Tacoma St Springfield, OH 45503	LK 513-390-0272
Mim Brierley 6118 Abbotsford Dr Dublin, OH 43017	MB 614-791-9320
Ron Hart 415 W Main St - Apt #5 Tipp City, OH 45371-1867	RH 513-667-9253
Kevin Rogers 270 Pasadena Ave Columbus, OH 43228	KR 614-878-0694
Ralph O'Neal 5144 N High St #109 Columbus, OH 43214	RO 614-436-0256
Sue Daly 3111 Rainier Ave Columbus, OH 43231	SD 614-890-1309
Wayne Ouellette 619 Oakhurst Ct Huron, OH 44839	WO
Greg Bachman 1517 Lafayette Dr Columbus, OH 43220	GB 614-451-9512

Instructors

Pete Riegel 3354 Kirkham Road Columbus, OH 43221	PR 614-451-5617
Mike Wickiser 2939 Vincent Rd Silver Lake, OH 44224-2916	did not measure course in 1992 216-929-1606

CALIBRATION COURSE LAYOUT & CHECK

Two 300 meter calibration courses were used. The first, on the west side of the road, already existed. Its length was checked by one team using a 100 foot tape. The second was laid out by another team using a 300 meter tape. Temperature was 76 F.

The west course measured out to nine 100 foot lengths plus 84.09 feet, or 984.09 feet. This converts to 299.95 meters.

Temperature correction factor: $1 + [(.00000645 \times (76-68))] = 1.0000516$

Corrected length was $299.95 \times 1.0000516 = 299.965$ meters. This checks well with the originally laid-out length of 300 meters done in 1990.

The east course had an uncorrected laid-out length of 300 meters. Its temperature-corrected length was: $300 \times 1.0000516 = 300.015$ meters.

NOTE: Pete blew it here. When he got ready to pound the nail, he lengthened the calibration course by 1.5 cm instead of shortening it by 1.5 cm, as was proper. It is fortunate that the temperature was not higher, or the error would have been larger. Pete was doing things in his head. By dumb luck, the error was insignificant. Note that since the mistake is known, it can be corrected. Mistakes are common, and afterthought can fix things.

MEASUREMENT OF THE COURSE

The calibration courses were then ready for use. All measurers rode on the right side of the road, which produced one-way riding on the calibration rides. This eliminated the confusion that can come when riders meet head-on and both want to adhere to the proper line.

After calibrating, all measurers then went to the start and measured the course, stopping at all intermediate points and taking counts. While riding, the rule of the road was that the rider who was legally riding (on the right) had right-of-way. This tended to reduce confusion over who should stop and yield.

Pete observed some riders who were far from the proper line, and he called out to them to tighten up. When all had finished with their measurements, the group went to the shelter house to calculate. Pete and Mike assisted those who were having trouble figuring things out. When all the final distances were reported it was seen that about half the measurements would have passed a validation check.

After lunch, Pete asked everybody to take another ride (with no further calibrations), and try to ride really tight this time. On the second ride, measurers were asked to lay out their own idea of where the one-mile split should be. These points were marked on the pavement, and a photograph taken of each measurer standing by his mark. Every measurer improved on his second ride, and all but one of the second rides would have passed a check.

WEST JEFFERSON MEASUREMENT SEMINAR - MAY 17, 1992

ANALYSIS OF PETE RIEGEL'S DATA

Calibrations were done on twin 300 meter calibration courses.

Observed Interval
count count

64390
67675 3285
70960 3285
74244.5 3284.5
77529.5 3285

Precalibration - 10:50 AM - 80F

} NICE TIGHT GROUP - GOOD CALIBRATING

avg cal ride = 3284.875 counts per 300 meters
divided by 0.3 = 10949.58 counts per kilometer
times 1.001 = 10960.53 counts per kilometer - working constant
times 1.609344 = 17639.27 counts per mile - working constant

Observed Interval
count count

45050
48335 3285
51620.5 3285.5
54905.5 3285
58191 3285.5

Postcalibration - 11:40 AM - 82 F

} TIGHT GROUP

avg cal ride = 3285.25 counts per 300 meters
divided by 0.3 = 10950.83 counts per kilometer
times 1.001 = 10961.78 counts per kilometer - final constant
times 1.609344 = 17641.28 counts per mile - final constant

The larger constant is official for the day. The larger constant is:

10961.78 counts per kilometer - constant for the day
17641.28 counts per mile - constant for the day
10.96178 counts per meter - constant for the day

Measurement Data

Point	Observed count	Interval count	Interval meters
Start	84000		
1 km	95035	11035	1006.68
1 mi	101480	6445	587.95
2 km	106018	4538	413.98
3 km	116991	10973	1001.02
Turn	119404	2413	220.13
Tel. Pole	119654	250	22.81
Turn	119903	249	22.72
4 km	128319	8416	767.76
Finish	139441	11122	1014.62

OBTAINED USING
10.96178 C/m,
FROM PREVIOUS
PAGE

We have established the reference distance from the turn to the pole as being 22.7 To 22.8 Meters.

Let's look at the measured splits now. Using the distances obtained above, we have: (omitting turn-to-T.Pole & T.Pole-to-turn)

Point	Interval meters
Start	
1 km	1006.68
1 mi	587.95
2 km	413.98
3 km	1001.02
Turn	220.13
4 km	767.76
Finish	1014.62
Total	5012.14

Our course is 12.14 meters oversize. We will remove 6.07 meters from the turnaround, which will shorten 3k-to-turn by 6.07 meters, and will shorten turn-to-4 km by 6.07 meters. Finally, we will adjust the splits.

After moving the turnaround we have:

point	Original interval meters	First adjust-ment meters	Adjusted interval meters	Distance from start	Desired distance from start	Required split adjust-ment
Start						
1 km	1006.68	0	1006.68	1006.68	1000	-6.68
1 mi	587.95	0	587.95	1594.63	1609.34	14.71
2 km	413.98	0	413.98	2008.61	2000	-8.61
3 km	1001.02	0	1001.02	3009.64	3000	-9.64
Turn	220.13	-6.07	214.06	3223.70		
4 km	767.76	-6.07	761.69	3985.38	4000	14.62
Finish	1014.62	0	1014.62	5000.00	5000	0.00
Total	5012.14		5000			

1 MILE = 1609.34 m

HOW THE 1 MILE SPLIT CAME OUT:

	Meters ahead of 1990	Feet ahead of 1990
PR	0.90	3.0
KW	0.55	1.8
1990 average	0.00	0.0
GB	-0.47	-1.5
LK	-0.54	-1.8
KR	-0.66	-2.2
SD	-1.05	-3.4
RO	-1.42	-4.7
RH	-2.20	-7.2
ES	-2.57	-8.4
MB	-3.73	-12.2
DB	-4.75	-15.6
WO	-7.74	-25.4

HOW THE OVERALL MEASUREMENT CAME OUT:

	First measure- ment	Second measure- ment
KW	5016	5011
PR	5013.3*	5012.1
RO	5016.3	5012.2
GB	5017.9	5012.5
SD	5027.2	5014.6
RH	5018.2	5015.4
ES	5020.9	5015.7
LK	5018.4	5015.8
KR	5017.5	5016.8
DB	5038	5018
MB	5023.9	5018.5
WO	5029.3	5026.4

* = done in 1990

This same course was used in 1990 as a test course for evaluating 14 of the best of the US measurers. In 1990 the following measurements were obtained:

Average measured length.....5013.9 meters
 High.....5018.3
 Low.....5010.2

The 1990 measurements probably reflect an accurate picture of the true length of the course.

It is heartening to see that almost all participants obtained a second measurement within the 1990 span, indicating a good second ride. With more practice, all should be able to routinely produce consistent, tight rides.

Knowledge of the course to be measured is one of the best aids to getting a good ride. The participants had had only a single orientation ride before they measured, and had not had the principle of the shortest possible route (SPR) hammered into them. Familiarity with both produced better riding.

PETE'S ORIGINAL DATA

34

Went Jeff
300 mi

5-17-92
10:50 A

80 Z

PRECAL

64390
67675
70960
74244.5
77529.5

NOTE
TRANSPPOSITION
DISCOVERED &
CORRECTED
LATER

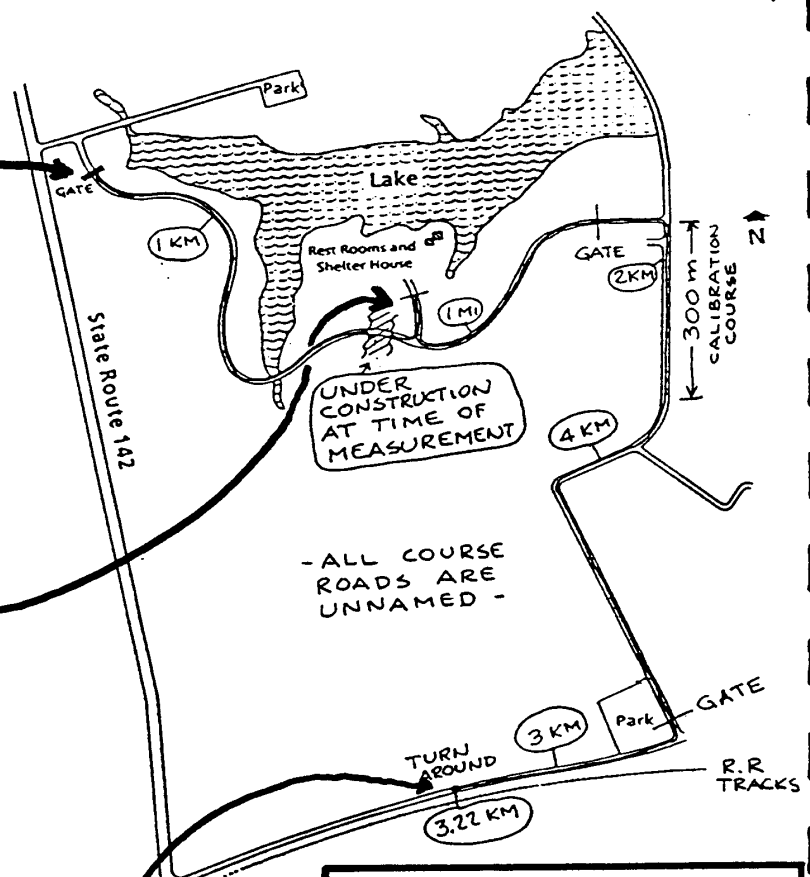
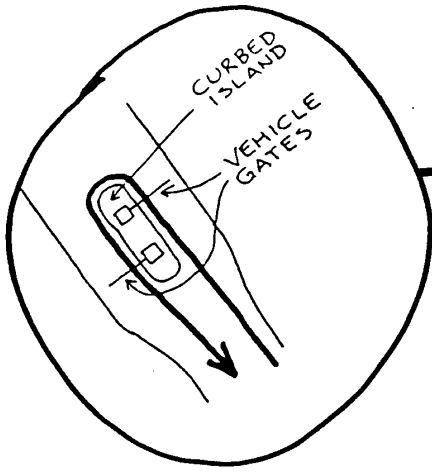
MEASUREMENT

Start 84000
~~48000~~
1K 95035
1M 01480
2K 06018
3K 16991
TA 19404

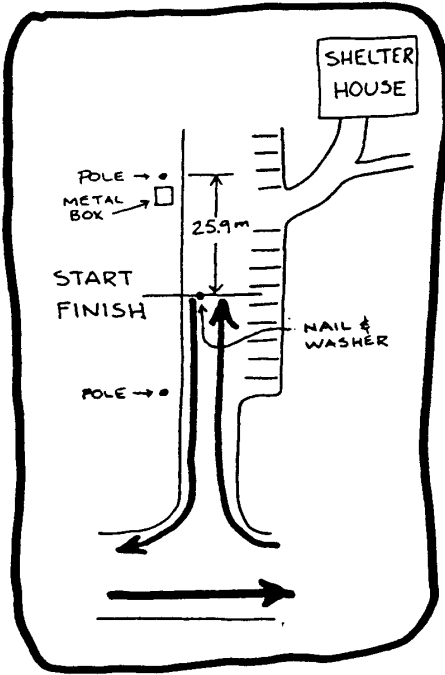
TA 19404
Pole 19654
TA 19903
4K 28319
Finish 39441

POST-CAL

Recal 11:00
45050
48335
51620.5
54905.5
58191

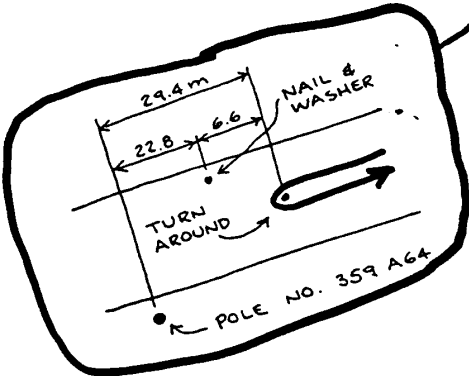


- ALL COURSE ROADS ARE UNNAMED -



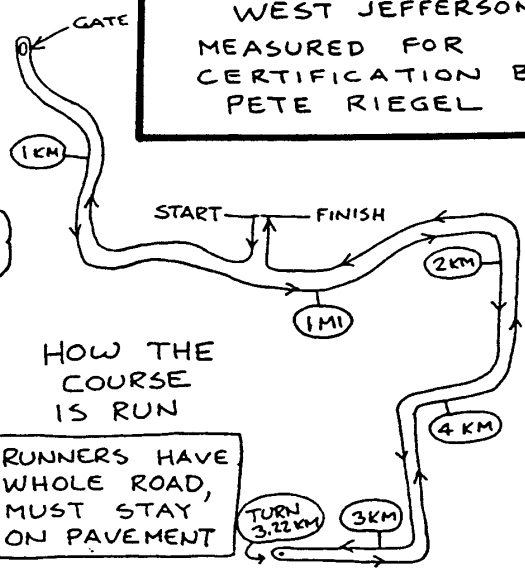
IAAF 5 KM TEST COURSE
WEST JEFFERSON, OH
MEASURED FOR CERTIFICATION BY PETE RIEGEL

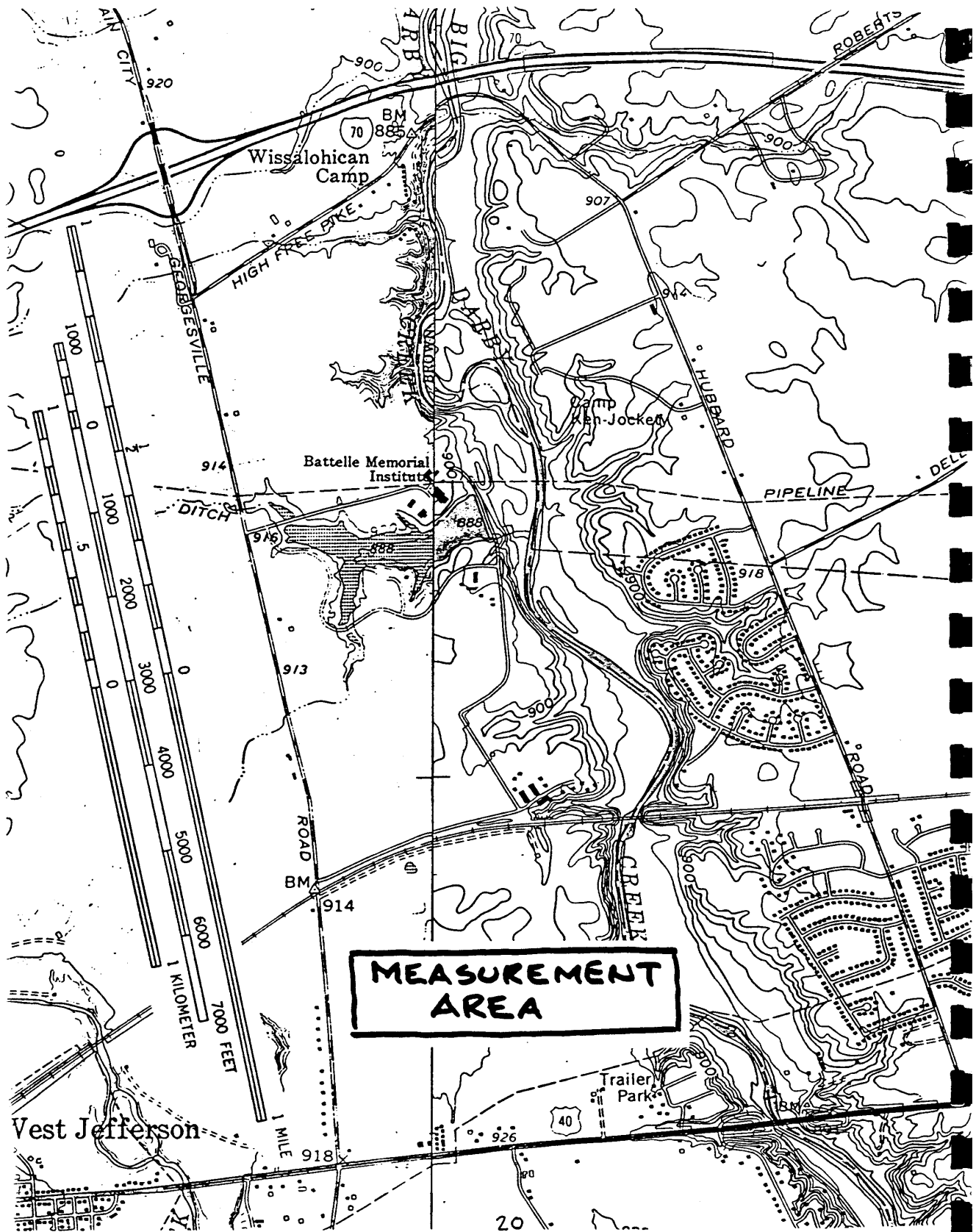
THIS MAP WAS DONE IN 1990



HOW THE COURSE IS RUN

- RUNNERS HAVE WHOLE ROAD, MUST STAY ON PAVEMENT





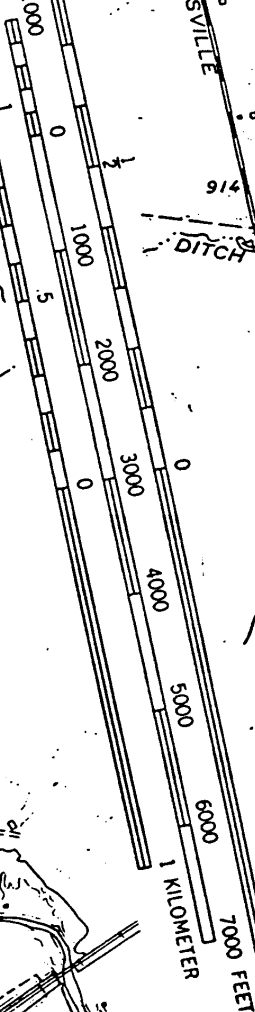
**MEASUREMENT
AREA**

Wissalohican
Camp

Battelle Memorial
Institute

Camp
Ken-Jockey

Trailer
Park



West Jefferson

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