

Measurement News



September

1995

Issue #73



Interference? Look again. This photo appeared in *Le Miroir des Sports*, 9 November 1922. It shows some of the action during the *Relaie Schnellmann*, a distance relay of 38 km through Paris, with teams of ten runners each covering distances from 2 to 5 kilometers. The winning time was 2:12:15. The rider on the left is apparently the course measurer, seemingly unmoved by the drama behind. Photo courtesy of Jean-Francois Delasalle.

MEASUREMENT NEWS

#73 - September 1995

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OLYMPIC MARATHON MEASURERS SOUGHT

Planning is under way for a group measurement of the 1996 Olympic Marathon course. At the December 1995 USATF Convention we will make a reconnaissance of the course, and obtain information to help in defining the route. Guide maps and data sheets will be prepared, and locations for calibration courses. **Jack Grosko**, Atlanta measurer, will have already measured the course for certification, and its dimensions will thus be pretty well known. The group measurement will serve as a "pre-validation" similar to others we have done for important races, although on a bigger scale.

Measurers are sought. When the 1984 Los Angeles Olympic course was measured, the measurers came at their own expense, and I heard of nobody who felt that it was money badly spent. This measurement will be the same. If you volunteer, figure on paying your own expenses. It is possible that some funding for hotel space may be found, but this is not guaranteed.

This search is not limited to the USA. Measurers from all countries are welcome. The exact form of the measurement is not known at this time. It will depend on the number of people who wish to participate. It may be necessary to limit the group to a manageable size.

Please write to Pete Riegel if you are interested. Because of the size of the potential response, a personal acknowledgement may not be sent to you. Instead, the progress of this exercise will be reported regularly in **Measurement News**.

THE USATF CONVENTION

You will see a preliminary schedule of the USATF Convention in this issue.

Note: Meetings of Road Running Technical Council take place:

Wednesday, November 29 - 8:30 PM to 11:00 PM

Thursday, November 30 - 8:00 PM - 11:00 PM

Be There!

CALIBRATION / CALIBRAGE DU JONES COMPTEUR :

Effets des variations du poids sur la bicyclette

Calibrage standard , en surcharge , en marchant , en patinant ...

Riding , walking , cycling and scootering calibration

par J.F DELASALLE (FRANCE)

Nous avons fait une expérience intéressante pour étudier l'influence du poids et des pressions exercées sur les pneus d'une bicyclette pendant l'étalonnage .

We has had an interesting experience in order to study the influence of weight and pressures on the bicycle during the calibration.

Il s'agissait d'étalonner le même jour (entre 14 h et 16 h avec une $T^{\circ} = 28^{\circ} C$) la bicyclette sur une base de 500 mètres dans les conditions successives suivantes :

The aim was to calibrate the bicycle at the same time (between 2 and 4 pm with $T^{\circ} = 28^{\circ} C$) on a 500 m calibration course in the following conditions in this order :

1. Normalement dans les conditions standard (poids du mesureur 80 kg)
Standard calibration (measurer weight = 80 kg)
2. Avec une surcharge de 20 kg sur la roue avant
With an extra weight of 20 kg on the front wheel
3. Avec une surcharge de 20 kg sur la roue arrière
With an extra weight of 20 kg on the back wheel
4. Avec une surcharge de 40 kg répartis en 20 kg à l'avant et 20 kg à l'arrière
With an extra weight of 40 kg (20kg on the front wheel and 20 kg on the back wheel)
5. En poussant la bicyclette en marchant à côté (soit avec 80 kg de moins sur le vélo)
Walking next to the bike (which means minus 80kg on the bike)
6. En avançant sur le vélo mais sans pédaler , en pratiquant la "patinette alternative" comme il peut parfois arriver de le faire dans les virages difficiles près des obstacles.
Without pedalling , practising scootering as it sometimes happens in the tough bends near obstacles.

Voici les resultats : rien de bien surprenant mais à méditer .

Here are the results : nothing surprising really but lots to think about.

Nombre de pulses pour 500 m (4 trajets) , moyenne des 4 , constante en pulses/km
Number of counts for 500 m (4 rides) , average , constante (counts/km)

1. Standard	5497.5498.5496.5497 = 5497	soit	11 004.994 counts/km	
2. + 20 kg avant	5555.5555.5554.5556 = 5555	soit	11 121.110 counts/km	+ 116
3. + 20 kg arrière	5498.5498.5498.5498 = 5498	soit	11 006.996 counts/km	+ 2
4. + 40 kg av/ar	5557.5553.5555.5555 = 5555	soit	11 121.110 counts/km	+ 116
5. marche	5400.5402.5398.5398 = 5399.5	soit	10 809.799 counts/km	- 195
6. scootering	5495.5496.5496.5497 = 5496	soit	11 002.992 counts/km	- 2
7. Standard	5498.5497.5498.5497 = 5497.5	soit	11 005.995 counts/km	+ 1



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July 11, 1995

Pete Riegel
3354 Kirkham Rd
Columbus, OH 43221

Dear Pete:

Greetings from Santa Barbara. Just a short note along with the solution to the *Die Hard* puzzle.

As you would agree, the recent seminar here in Santa Barbara on timing and course measurement went well. For me, course measurement proved to be the most enjoyable. Nothing beats the direct application of what one has read and/or seen. Overall, the entire weekend was a good experience.

To defuse the bomb, fill the five gallon jug with water. Next, pour three gallons of water from this jug into the three gallon jug. Empty three gallon jug. Pour the remaining water (2 gallons) from the five gallon jug into the three gallon jug. Refill the five gallon jug and then refill the three gallon jug (thus adding one gallon). The five gallon jug now has four gallons of water. Place on bomb. Viola, you're saved!!

Although I didn't solve the puzzle in 30 seconds, it is highly unlikely if not impossible to come up with the solution and apply it in 30 seconds. If the bomb will go off in 30 seconds, my recommendation is to run like the wind.

It was good to see you and Joan last week.

Sincerely,

Ryan Lamppa
USATF RRIC



July 13, 1995

Dear Jean-Francois,

Joan and I have just returned from Santa Barbara, California. I had fun at a measurement seminar. It was organized by Basil Honikman. I did not have to do any organization work.

After the seminar we drove 600 km north along the Pacific coast, from Los Angeles to San Francisco. Very beautiful.

Here is how the measurements looked. DS and RL are beginners. All the rest are experts. The course had many turns and parked cars.



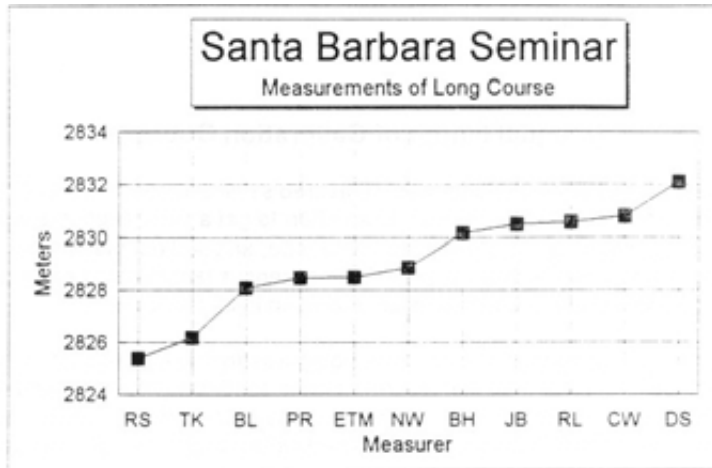
SHORT COURSE



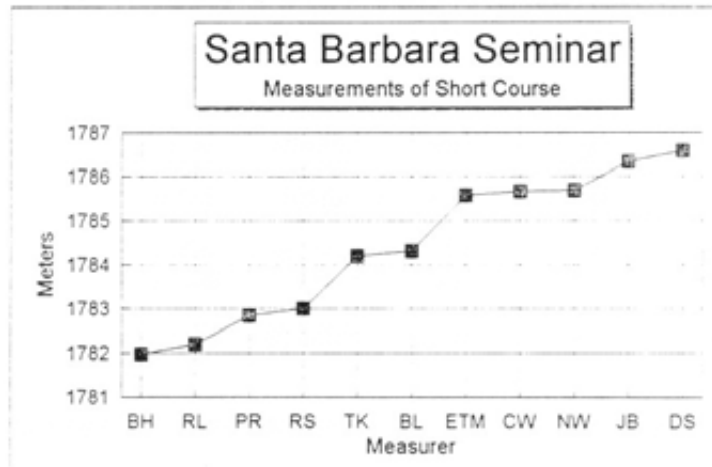
LONG COURSE

Best regards,
Pete

RS	2825.38
TK	2826.20
BL	2828.10
PR	2828.48
ETM	2828.50
NW	2828.87
BH	2830.16
JB	2830.50
RL	2830.58
CW	2830.81
DS	2832.10



BH	1781.97
RL	1782.19
PR	1782.84
RS	1783.00
TK	1784.20
BL	1784.30
ETM	1785.58
CW	1785.67
NW	1785.70
JB	1786.34
DS	1786.59



The Measurers

		Long Course Average Calibration Variation Counts	(Average for precal plus postcal)	Short Course Average Calibration Variation Counts	
BH	Basil Honikman	RS	0.75	RS	0.25
BL	Bob Letson	BL	1.50	TK	1.00
CW	Carl Wisser	TK	1.75	CW	1.50
DS	Dennis Scott	CW	2.00	BL	1.50
ETM	Tom McBrayer	JB	2.00	PR	1.50
JB	John Brennand	BH	2.00	NW	1.75
NW	Norrie Williamson	ETM	2.00	BH	2.00
PR	Pete Riegel	NW	2.50	ETM	2.00
RL	Ryan Lamppa	RL	2.50	RL	2.50
RS	Ron Scardera	PR	2.50	DS	3.50
TK	Tom Knight	DS	4.00		



Unequal length of Calibration Courses?

The north calibration course was measured several times. PR and ETM made the only measurement of the south side, in an effort to get a parallel course which was equal to the north baseline. They used the same tape, and laid out the same distance they had just obtained on the north course. The consensus length of the north calibration course was 303.40 meters, and this value was used in all calculations.

Normally the direction of calibration riding was to ride on the right i.e. to ride uphill on the north calibration course and downhill on the south course. Uphill and downhill calibration commonly produce unequal counts, because of the different load on the front wheel. However, if the two calibration courses differ in length, this will also produce different counts.

Pete Riegel and Norrie Williamson decided to see if a difference could be measured using bicycles. They did a series of "normal" 4 rides, and followed it by a series of 4 ridden in the opposite direction.

	North Side Uphill	South Side Downhill	South Side Uphill	North Side Downhill
Pete	3459.5 3460.5	3460.5 3462	3460.5 3460	3460.5 3460.5
Average	3460	3461.25	3460.25	3460.5
Avg North	3460.25			
Avg South	3460.75		South side exceeds north by 0.5 counts	
Avg Uphill	3460.125			
Avg Down	3460.875		Downhill exceeds uphill by 0.75 counts	
Norrie	3448.5 3448	3450 3450	3449.5 3449.5	3450 3449.5
Average	3448.25	3450	3449.5	3449.75
Avg North	3449			
Avg South	3449.75		South side exceeds north by 0.75 counts	
Avg Uphill	3448.875			
Avg Down	3449.875		Downhill exceeds uphill by 1 count	

From the above, it may be that the south calibration course is longer than the north course by 5 to 8 cm. Also, in accordance with theory, downhill calibration produces more counts than uphill calibration.

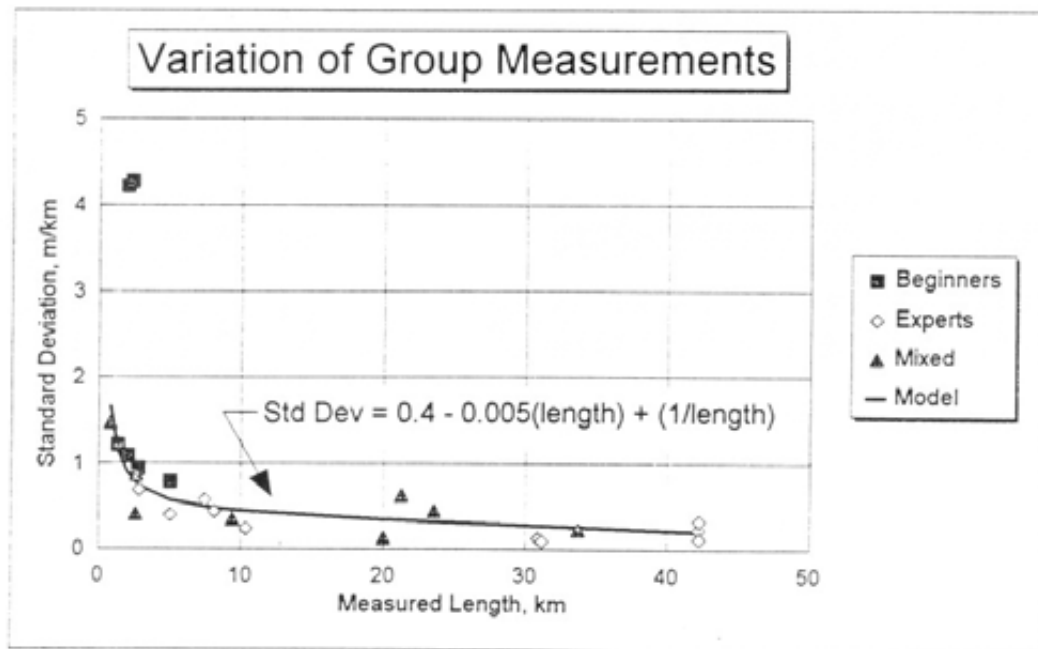
VARIATION OF MEASUREMENTS

Two measurements rarely agree exactly. We consider that two measurements that agree within 8 meters in 10,000 are OK, and we use the lesser of the two. This agreement represents a standard deviation of 4 meters, for two measurements (0.4 m/km). Standard deviation is a statistical means of measuring variation within a body of data.

I have collected a pile of results from group measurements performed over the years, all involving four or more measurements of the same course. Some results are from group measurements of actual courses, and some are from seminars, in which the participants all measure the same thing.

When we have a seminar, some are disappointed over what they see as their poor performance. While it is true that everybody can have a bad day, it is also true that the limit of 0.4 m/km is rather arbitrary, and may not fit the real world of course measurement. The degree of variation is strongly dependent on the nature of the course that is being measured. Typically, the longer measurements are those of real marathon courses, which have long, straight stretches with relatively few turns. At the seminars, however, the emphasis is on finding a safe course with little traffic, and sized so that all participants have ample time to do their measuring. As a result, the short seminar courses contain a higher number of turns. This shows up in the results.

I have been at several seminars where I've seen the people riding a good line, to my eye, yet when the calculations are done there is more difference than people like. Perhaps the statistically inclined reader may wish to derive further conclusions. If you are interested, contact Pete Riegel, and I'll send you a disk to play with.



Group Measurement Results - Statistical Summary

Category	City	Country	Year	Median Meters	Average Meters	High Meters	Low Meters	Std Dev Meters	Std Dev m/km	Number
Beginners	Allentown	USA	1995	1335.28	1335.69	1339.89	1333.25	1.625	1.217	26
Beginners	Montry	FRA	1990	1990.55	1991.11	2004.00	1973.30	8.406	4.223	20
Beginners	Penang	MAL	1991	2003.90	2004.55	2010.00	2000.30	2.190	1.093	20
Beginners	Mexico	MEX	1995	2283.11	2287.29	2316.79	2279.84	9.756	4.273	18
Beginners	Manaus	BRA	1995	2750.52	2752.25	2757.34	2749.37	2.586	0.940	12
Beginners	West Jefferson	USA	1992	5020.55	5020.75	5031.40	5016.00	3.954	0.788	12
Experts	Santa Barbara	USA	1995	2828.87	2829.06	2832.10	2825.38	1.936	0.684	11
Experts	West Jefferson	USA	1990	5018.81	5018.93	5023.29	5015.16	1.995	0.398	14
Experts	Phoenix	USA	1994	7417.74	7421.90	7431.08	7415.85	4.281	0.577	17
Experts	Seoul (IAAF)	KOR	1986	8135.20	8135.60	8143.10	8130.00	3.550	0.436	9
Experts	Corbie	FRA	1995	10338.98	10339.46	10343.67	10336.16	2.429	0.235	10
Experts	Los Angeles	USA	1983	30911.38	30911.02	30918.41	30905.55	3.862	0.125	13
Experts	Seoul (Koreans)	KOR	1986	31166.73	31166.14	31169.94	31162.69	2.827	0.091	13
Experts	Pittsburgh	USA	1988	42203.49	42203.43	42215.32	42191.41	9.787	0.232	4
Experts	Columbus	USA	1991	42253.42	42257.83	42282.60	42240.54	13.895	0.329	5
Experts	Houston	USA	1991	42254.35	42254.15	42259.80	42248.10	5.035	0.119	4
Mixed	Nice	FRA	1993	788.63	788.81	791.98	787.36	1.164	1.476	19
Mixed	Crystal Palace	GBR	1989	2592.87	2592.98	2594.43	2591.21	1.051	0.406	8
Mixed	Gap	FRA	1992	2639.87	2641.85	2648.38	2639.25	2.282	0.864	35
Mixed	Bobigny	FRA	1994	9368.87	9369.30	9376.78	9362.17	3.274	0.349	19
Mixed	Salouel	FRA	1991	19991.39	19992.46	19995.68	19988.75	2.661	0.133	7
Mixed	London	GBR	1991	21270.10	21274.45	21295.10	21262.50	13.303	0.625	4
Mixed	London	GBR	1994	23576.71	23577.37	23590.84	23565.23	10.569	0.448	4
Mixed	New York City	USA	1985	33734.39	33732.91	33742.70	33719.17	7.649	0.227	6

Columbus Marathon

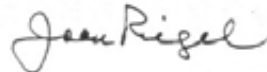
6660 Doubletree Ave., No. 8 • Columbus, OH 43229
TEL (614) 433-0395 • FAX (614) 433-0330

Dear MN --

RRTC members with access to the Internet may wish to visit yours truly via the Columbus Marathon web page:
URL:<http://www.columbuspages.com/marathon>

Sorry, I can't respond to e-mail. The office is not on-line.

Best regards,



AN INTERNET PAGE IN MN?

Your Editor has not yet sought entry to the Information Superhighway. However, other more enlightened souls have, and it may be of interest to those affixed to the Internet to have the addresses of others similarly connected.

Send me your internet address, and I will begin a regular page listing measurers and others involved in technical aspects of racing, along with their internet numbers. Any suggestions as to how best to do this are welcome, as I am woefully ignorant of how it works.

THE DIE HARD PUZZLE

Solutions to the puzzle were received in this order:

- 1) John White (under 30 sec)
- 2) Ryan Lamppa (see July 11 letter, with puzzle solution) (Not under 30 sec)
- 3) Norm Brand (under 10 seconds!) (Norm's solution involved dumping 2 gallons on the bomb, twice. I think one is supposed to put 4 gallons at once on the bomb, but what the heck, it's only a puzzle!)
- 4) Bernie Conway (2:50)

8-16-95

Pete,

MN renewal time - another good year...hope you and Joan have enjoyed health and happiness.

Re: Puzzle of the Month MN #72 - Blew myself up 2 or 3 times before I figured it out - but then I got to wondering, could it be done in 30 sec. And the real puzzle of the month was what would the volume of water at the fountain have to be to accomplish the task in 30 sec. BIG WATER!! It was fun though & I look forward to the movie.

On temperature corrections - I'm in line behind Bob Harrison. Most of the time it is superfluous at best.

On calibration rides - I'm with you. From personal experience I know it's easy to "bobble" a ride, so if you cut it to 2 rides and had to figure the .07% - you could have already made 4 rides especially if the first 2 were out of spec.

On Course Measurement Procedures - When it is time to do another printing will there be ample time for input from interested parties? One item that I wonder about changing is the requirement to get map and course description with split locations all down to 8 1/2 x 11. I measured the Music City Marathon earlier this year and I got it all reduced down to fit, but it literally takes a magnifying glass to read it.

That's it for now.

*Be well -
Pete Woods*



August 21, 1995

Bob Woods
3250 Pt. Pleasant Rd
Buchanan, TN 38222-3659

Dear Bob,

Thanks for the renewal. You're all set for another year.

As for temperature, I'm still stuck between two positions. On the one hand, temperature corrections on calibration courses very rarely make much difference. On the other, it's something that isn't terribly hard to do, and does lead to increased accuracy. I have been using them for years, and have not found the process to be overly burdensome. On the principle that "if it ain't broke, don't fix it" I'm not inclined to push for a change. The temperatures we ask for during measurements are rarely used, but getting the information is not hard (an **estimate** of temperature is plenty good enough), and in a few cases the information can answer a question the certifier may have, such as a strange change in calibration values, or a puzzling disagreement between two sets of measurements. If temperature changes a lot during the course of a measurement, even perfect riding can produce two measurements that do not agree well.

As for calibration rides, it's important to differentiate between the measurements we do ourselves and those that we review as certifiers. When I am using my home calibration course, located in the street in front of my house, and I'm using my personal bike, it is extremely rare for me to have a variation of more than 1 count for 1000 feet. When I am using a new calibration course, and a bike that has been provided by someone else, I am generally a bit more wobbly, and sometimes get a span of 2 or even 3 counts over the same distance. I rely on 4 rides to keep me honest.

Many times, at the conclusion of a tough measurement, I am tempted to cut short the postal to 2 rides, especially when I know that's all I really need. However, what holds me back is the idea that if I had to justify this to someone else, I couldn't think of any good reason why I shortcut the method. I think it's important that I follow the procedures exactly. After all, I'm asking others to do it. Taking a personal shortcut because I "know" I'm accurate is hypocritical. We should follow the procedure that we ask others to follow. There is no double standard.

When it is time to revise **Course Measurement Procedures** it will be announced in **Measurement News**, and ideas and suggestions will be solicited.

As for getting everything on one piece of paper, it can sometimes be tough, especially for a marathon course. I took a look at the Music City Marathon certificate. Yes, it's crowded. It could have been less crowded if the course map, with only the location of start & finish, occupied the back side of the certificate. The front side could have a half page devoted to a reduced certificate form, and the other half could contain the splits and course narrative.

For certification purposes, it is not necessary to include all the splits on the certificate itself. However, it's desirable if it can be done. One way to do this is to use a single-line style to show the streets. If the route is totally unrestricted this is OK. The certificate need only show the information relating to the specific distance that's certified. The splits do not have to be there. But it's highly desirable that they be there. The map used for the certificate may not be the same one that we give to the race director. The race director needs every detail he can get, and may welcome every explanation he can get.

We want things on one piece of paper because it simplifies filing and copying. That's the reason we have come to the one-piece-of-paper standard. The 13,000 courses we have on file fill seven file drawers so far. You can see what the effect of adding paper would be. Also, having things on one sheet eliminates the possibility of someone coupling the certificate with the wrong course map. This has happened in the past, when a course has been measured several times.

Although the race director may be initially well-supplied with information by the measurer, succeeding race directors may find that the files have been misplaced, and they sometimes ask us for a copy of the certificate. If the certificate does not include the split points, it's not a whole lot of help to the requestor.

We do have a few certificates that reside on more than one piece of paper. These are for courses that are insanely complicated, such as Walt Disney World Marathon, in Florida. Wayne Nicoll provides a good overall map, with locations of start and finish, for the basic certificate, but supplements it with detailed maps of each of the three sections of the complex through which the course passes. Very few marathon courses are so complicated, and few cannot, with care, be reduced to one piece of paper. Ron Scardera did a fine job of getting Disneyland Marathon on one piece of paper (see MN 71 - May 1995).

Before the one-piece-of-paper requirement certifiers were driven crazy by submissions that varied widely. Sometimes I would get 5 pieces of paper to describe a simple 10 km course. The map would be a big city map colored with magic marker, with separate sheets for the start and finish diagrams, and a pile of unclear supplementary sketches. This situation required simplification. The question was who should do the work? The answer we arrived at was to put the work on the measurer to give us a map we could reproduce easily. In almost every case we now have things on one piece of paper. The information is not always easily legible, but it is there when needed. If a validation is needed, the copy can be enlarged.

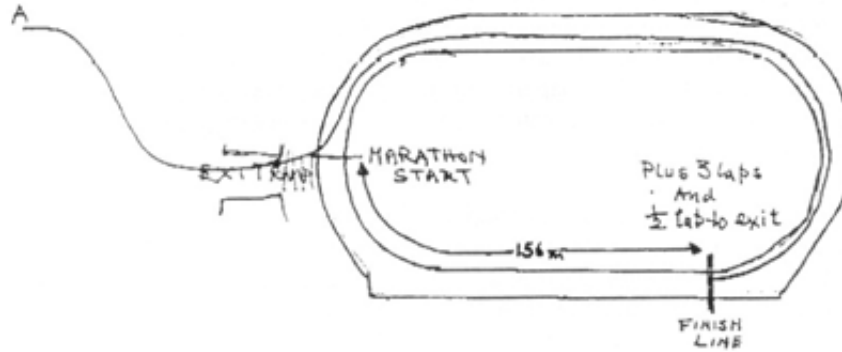
I fear relaxing this standard. I think it would lead to overproliferation of paper and increased error.

Best regards,

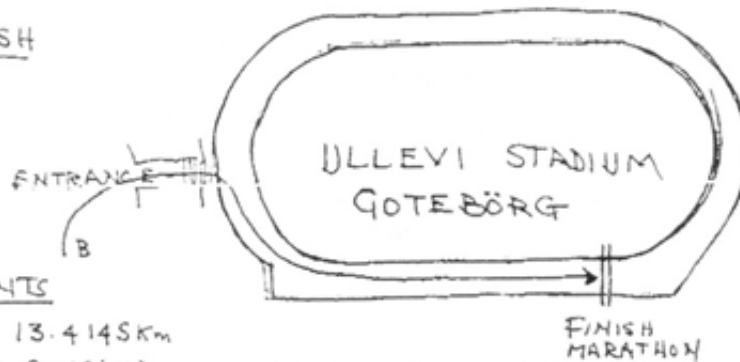
A handwritten signature in cursive script, appearing to read "Pete".

IAAF WORLD CHAMPIONSHIP MARATHON 1995

START



FINISH

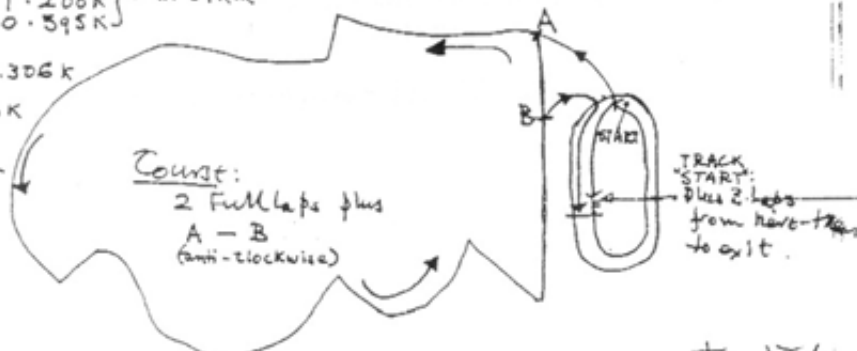


MEASUREMENTS

A - A = 13.4145 km
 START - A = 0.156 km
 1.200 km } = 1.751 km
 0.395 km
 B - FINISH = 0.306 km
 A - B = 0.106 km

Total: 42.196 km

N.B. Figures rounded-up.



Course:
 2 Full laps plus
 A - B
 (anti-clockwise)

All measurements except 3 x 400m on Track include S.C.P.F.

John Hill
 27.1.95

Athletics-Swedish official accepts blame for marathon blunder

By Mike Collett

GOTHENBURG, Aug 6 (Reuter) - Carl-Gustav Tollemar, the Swedish official responsible for Saturday's world championship women's marathon falling short by 400 metres, accepted the full blame on Sunday.

"It was all my fault, no one else is to blame," Tollemar told a news conference.

Tollemar, the competition director, looked close to tears as he said: "Months of hard work and organisation went in to the marathon, nevertheless we failed because of a technical error. It's my fault, no one else is to blame. It's a real disaster, at least for me, as competition director."

The mistake occurred when the field covered only three laps instead of four before leaving the Ullevi Stadium track and running out in to the city's streets.

Tollemar added: "What happened was a technical mistake. Although months of planning had gone into the race, many changes had to be made as well. But it is a mistake that should never have happened."

Both he and Paul Hardy of the International Amateur Athletic Federation (IAAF), said officials could not have rectified the problem towards the end of the race and averted the blunder by telling the runners to complete an extra lap when they returned to the stadium to finish the race.

They also rejected a claim that local officials failed to tell stadium stewards about the problem.

"No one knew until we watched the video of the race in the evening that the distance was short," Tollemar said. "The athletes were told to run three laps and they did."

"The course measurer following the runners in his control car did not even realise that something was wrong. The marathon director only became suspicious when the first three runners all clocked personal records."

Tollemar said the course measurer was the only person who knew the athletes should have run four laps. He did not realise they had only run three because he was sitting in the control vehicle outside the stadium waiting for the runners to emerge from the exit tunnel.

Tollemar offered his apologies to the athletes, saying: "I can only apologise to them because they did not have the competition in the marathon as they believed."

Manuela Machado of Portugal led home the 32 finishers in what she believed to be a personal best of two hours 25 minutes 39 seconds. Even if she had run the extra 400 metres she would still have finished inside her record time of 2:27.42.

Anuta Catuna of Romania, who finished second in 2:26.25 was denied a national as well as a personal record, while bronze medallist Ornella Ferrara of Italy lost out on a personal record of 2:30.11.

American Linda Somers who finished seventh in 2:32.12, and Britain's Trudi Thomson, 22nd in 2:41.42 were similarly affected.

John Disley (who measured the course) wrote on August 8, two days after the event:

¹The Mike Collett story is basically correct except to say that **all** the marathon officials knew that the run out of stadium was nearly 4 laps and not nearly 3 laps. Unfortunately we went all on the lead vehicle and in our absence the Competitions Director had put out over the PA system that 3 laps would be run around the stadium. The girls duly obliged.

I have learnt (or relearnt) two lessons:

1) Never believe that track & field technical officials know enough about off-stadium events to make them competent to take charge.

2) Don't trust anyone else to do a job **unless** you have trained them yourself or worked with them before.

Although my paper-work/instructions were explicit I now know that I should have witnessed the whole start myself. Watched the runners **and then** sprinted for the lead car. I will, of course, do this for the men's race on Saturday but that won't give the girls back their missing 400 m.

I also think that at least one "International Technical Officer" (there were 9 here) should be expert on the road events. "



WAYNE B. NICOLI

Ragged Mountain Club
Potter Place, New Hampshire 03216
(603) 735-5721

July 9, 1995

Pete Riegel
3354 Kirkham Road
Columbus, OH 43221 - 1368

Hi Pete,

Here are my comments on Bob Harrison's suggestions for changes to the course measurement procedures.

Elimination of recording of time and temperature. His suggestion tends to make me think he is not doing a complete job of review of the measurer's application. One of the important factors affecting measurement results is the effect of temperature on the bicycle wheel and tire. The certifier should be checking to see that as the temperature rises or falls, the counts per kilometer will inversely fall or rise. It is an indicator that things are going right regarding that aspect of the measurement. If a measurer's data reflects a rise in temperature and a corresponding rise in counts per kilometer recorded on a second ride, then it would indicate a problem, such as sloppy, hurried riding, or possibly a slow leak in the front tire. The result may be a failure to have agreement on his two rides and if so, I feel a responsibility as a certifier to help determine why there was not agreement. For example, you may learn that the measurer encountered a thunderstorm before his second ride. He waited it out and rode while there was still water on the streets. His data could have reflected the same temperature but sharply increased counts per kilometer due to the storm water cooling the tires. My recommendation: No changes on the data sheets.

Elimination of the time and pavement temperatures while laying a calibration course. Whenever we can control one of the many variables affecting measurement, we should strive to do so. I suspect we are already experiencing considerable differences in calibration course lengths due to other factors such as the type and thickness of the steel in the tape, the tape length, and the tension applied to the tape. If you ignore temperature, you are exposed to even greater possibility of error. Also, you cannot use the handy charts prepared by Bob Baumel for determining the amount of adjustment to the course. To assume, as Bob H. has, that adding the 5.28' to a mile is taking care of all possible shortness created by bike wobble or other factors, is folly. One should not be looking for ways to allow shortness to the course. Slightly long courses rarely hurt an elite runner on a record performance and certainly provide an honest measurement to all other participants. I do not agree with the suggestion.

Use of the sum of the shortest splits (SOSS). I am not adverse to this but agree with Pete that it complicates rather than make things easier for the novice measurer.

Cheers,

A handwritten signature in cursive script that reads 'Wayne B. Nicoli'.

Wayne B. Nicoli

17 July 1995

Hugh Jones
19 Kelly Street
London NW1 8PG

Tel/fax +44 171-916 0356

Pete Riegel
3354 Kirkham Road
Columbus OH 43221-1368

Fax: +1 614-451 5610

Dear Pete,

Thanks for your letter and the July '95 Measurement News. I may yet cease to reply to the points made in each copy, but a continuing subscription is a good incentive.

I was particularly interested in the letter from Bob Harrison.

I agree that the temperature correction to a calibration course looks overly fussy. Under British conditions it's hard to see how it could make more than 20cm difference in a 1000m run. But I certainly agree with your reluctance to relinquish any part of a procedure which establishes the baseline of all other measurements we might make. *Any* precaution which safeguards the accuracy of this basic standard should be embraced.

It reminds me of the old SI definition of a metre that I learned at school: it's the length of a piece of metal lying idly in some research establishment in Paris under obsessively controlled conditions. I think that's been superseded by a certain number of wavelengths of something-or-other, but until we can define our calibration courses in a similarly high-tech way, I think we ought to maintain the obsessiveness.

As for maintaining a note of temperature at calibrations and during measurements, I think it can be useful - more for the measurer than the certifier. I am going to bore you with a lengthy excerpt from my most recent measurement report on the Poly Marathon certification exercise that I did under Mike Tomlin's watchful eye (the report itself is lengthy beyond belief):

"Mark Critchlow rode ahead, giving guidance on the line runners would take. I followed, measuring the shortest line compatible with Mark's advice. Mike Tomlin followed, measuring according to the same criteria. Mike, however, by bringing up the rear, was acting as a "shield" for me. His presence allowed me license to ride a tighter line than might otherwise have been possible. The line he rode might have been affected slightly by the impatience of the drivers from which he was "shielding" me.

"It was this circumstance which at first led us to ignore the small differential between Mike's measurement and my own. I was consistently locating mile points further down the road than Mike's measurements prescribed. Soon this differential became too great to be consigned to the possible (and marginal) differences in the lines we rode.

"The morning was rapidly heating up. After the delay at the 2 mile point, it was significantly hotter, and there was direct sunshine on to the road surface. My calibration had been done at 07.10 at 18C, with no direct sun to heat up the surface. It was clear that we were facing very different conditions than those under which I had calibrated, which would affect the measurement in the way we were observing. Mike's measurement, being done with a solid tyre, would depart far less from his working constant than mine was likely to.

"We agreed that I should re-calibrate after the measurement and note the change between the working constant and the finish constant. It was highly likely that the finish constant would be the more relevant standard by which the course should be measured, due to the extraordinary on-the-day conditions [I believe it was the hottest day of the year so far]. In the meantime Mike made his own observations but I continued to lay out the course according to my fallible working constant.

"When we reached the Stadium, my measurement indicated a finish line 51 counts (5.9 yards, = a) before the line across the track at the start of the home straight (the 90m line). Mike's measurement indicated a position 69 yards (= c) short of this point. The desired finish position was another 44.6 yards (= b) further than my measurement. This indicated that the start line would have to be moved forward by $a + b + a$ further element, c' , representing the findings of my post-measurement calibration. If our assumptions proved correct, this correcton, c' , would approximate to the distance c (69 yards) defined by Mike's solid-tyre measurement.

"My post-measurement calibration yielded a finish constant of 15168. This differed by the substantial margin of 25 counts/mile from the working constant I had used for the course measurement. At 2.9 yards/mile, the differential indicated a possible overrun of up to 76 yards (c').

"Mike had started his measurement by adjusting his apparant "shortfall" to the marks I defined for the early mile points. As the diverging trend of our measurements became apparant, when the discrepancy mounted to more than a few yards, he ceased to do this. His estimate of the overrun distance, c , is therefore likely to be underestimated by a few yards. I therefore have no hesitation in suggesting that the finish position needs to be moved forward by $a + b$ (= 50.5 yards), and the start line needs to be moved forward by $a + b + c'$ (= 126.5 yards).

"These adjustments would put the finish line in the desired location within the stadium and define a start not less than 26 miles 385 yards away from the finish according to the shortest running line possible along the route indicated by Mark Critchlow."

[CALIBRATIONS]

Pre-measurement at 07.10 on 10 July 1995, 500m steel tape measured course on Rotten Row cycle path, Hyde Park.

Start count	End count	Reading	
23000	27715.5	4715.5	
28000	32715.5	4715.5	
33000	37716	4716	
38000	42715	4715	Average: 4715.5 (@ 18C)

(x 2 =) 9431
(x 1.001 =) Working constant: 9440 (per km), & 15193 (per mile)

Post measurement at 14.40 on 10 July 1995, same venue

Start count	End count	Reading	
63000	67708	4708	
68000	72708	4708	
73000	77708	4708	
78000	82707	4707	
			Average: 4707.75 (@ 31C)
			(x 2 =) 9415.5

(x 1.001 =) Finish constant: 9425per km)
15168 (per mile)

Constant for the day: 9425/km, 15168/mile (see body of report).

The moral of this tale, for me, was not so much that temperatures should *always* be noted, but that they certainly should be if on pneumatic tyres. The corollary of course, is that I should leg it down to Halfords to get hold of a solid tyre at the double.

Mike tells me that he had a similar experience once, when he was doing a London Marathon measurement in your company.

To progress on to the number of rides: I agree that four rides is a lot, and the variation I usually get is no more than one or two counts per kilometre (ie about 0.02%). I think that this partly because I often cycle to my calibration course. Even if I drive, I park up on the far side of the Serpentine and cycle around - about two miles - before I start. If I was to do the first run "cold", then I am sure that four rides would yield a far more accurate count than just (the first) two.

I guess I am one of the foreigners having a laugh at your anti-metrics. Those "English Tapes" you talk about must have been brought over on the Mayflower. Metrication was something of an issue when I was in primary school back in the early 60s. In the road running world it always used to be 5 mile, 6 mile and 10 mile courses. There were only a couple of half marathons back then. No-one really took the measurements that seriously. Everyone knew that courses varied in difficulty of terrain, and I think generally accepted variations of length in the same spirit. They went out to run a particular race, not a specified distance. The "Maidenhead 10" was therefore generally known to really be the Maidenhead ten-and-a-bit.

With the boom in the early 1980s we instantly converted from 6 miles to 10km, although marathons were the main craze. In general, I can't remember running 10km races when the splits were ever given in miles. It seems so perverse to define a length and then break it up into completely unrelated parts. Likewise, I would never expect km splits in a 10 mile race.

There are some exceptions I suppose. It can always be useful to include a 5 mile mark in a 10km race, and a 10km mark in a 10 mile race. There is always the possibility of setting unofficial pbs [prs] at these distances during the longer races. But for purposes of pace

calculation, surely you need the compatible units. Marathons and half-marathons don't divide any way, so I would have thought there's no logic to dictate a choice. I would have thought that these would be the subject of any dispute about using mile or kilometer splits. I am very well accustomed to running marathons measured in either unit, but the 26.2 milers usually also offer 5km splits.

I would disagree with Bob Baumele's accusation about "the stupidity of maintaining both systems". I think both the mile and the ten miles will continue to be run as classic distances. There are some big European races over 10 miles; in Switzerland, Belgium, Holland, and Scandinavia. In these races it makes sense to give mile splits only.

I loved the two pages 26/27 "Letter to a Certifier" and "Certifier's Reply", along with your painstakingly diplomatic comment, including the telling phrase: "your threat to sue over this depressed me".

I look forward to the next thought-provoking issue.

Yours,

A handwritten signature in black ink, appearing to read "Hugh". The signature is written in a cursive, slightly slanted style.



USA Track & Field

Road Running Technical Council
Michael Franke, Iowa Certifier

3824-51st Street
Des Moines, IA 50310
515-276-3140 (home)
July 18, 1995

Dear Pete,

With respect to Wight's request for reasons that can be used to sell the idea of metric splits, I think you and Baumel covered all there is: it's easier, and it makes sense both logically and from an international standpoint.

I believe what you said is right on the money. Education [from practical experience] is the key to acceptance. Why not, you said, start having races marked only in kilometers. Why not indeed!

Why not insist that all measurements of metric distances must include metric splits EVERY kilometer. While this might not solve the problem entirely, the race officials will then have the information to mark their course metrically. Additionally, it will send a clear message of exactly where our organization stands on this issue (if this is where we stand).

You said that it's usually a bad idea to give an order which will not be obeyed. I think you're quite right; we certainly don't want to do something that's going to cause an upheaval. But is this idea so unpopular that the measurers are going to revolt? There didn't seem to be much of a fuss in 1986 when Baumel said: "I will not approve certification of metric distance courses marked only in miles! All metric distances courses MUST include splits at every multiple of five kilometers."

If Baumel can use words which insist on splits every 5 km (and receive compliance), why not state that EVERY kilometer must be included. If we really want to change matters, a little prodding from time to time may be necessary.

Admittedly, such a rule would unquestionably create more work for the measurers. If a race director requested mile splits, in addition to obligatory km splits, I doubt if cheers would go up for the additional documentation necessary. However, this might give measurers extra incentive to persuade the director of the benefits of a course measured in kilometers only.

Waiting for the government to officially adopt metric distances into our way of life is an alternative to the RRTC taking action, but I think the wait is going to be a long one. If we truly want things to change, I think it calls for a decision on our part. If the metric distances are fundamentally a better method to split up the start from the finish (in metric distance races), then we would be doing the runners, and U.S. road running in general, a service. And if no one cares, or if mile splits are what the U.S. runners really want, we'd know in a couple of years.

Best regards,

Michael



Michael Franke - 3824-51st St - Des Moines, IA 50310

Dear Michael,

July 24, 1995

You've suggested that we could insist that all measurements of metric distances must include metric splits every kilometer. This makes me uneasy because it would be a fundamental alteration of the relationship we have had with the road running community. We could "recommend" that all races be measured metrically, for starters. But that's like all political resolutions - long on wind and short on meaning.

If we have to force people to do it our way, perhaps we lack a convincing argument why they should do so. Do American runners wish to have only metric splits in races? As a measurer I wish we used the metric system, since we currently work with **two** systems, and conversion back-and-forth from one to the other leads to confusion, error, and more work. At first we would probably have to lay out all the miles as well as all the kilometers, which would make the documentation of courses very paper-heavy.

US course certification has not historically relied on coercion to get the job done. Instead, we put forth our product, and it has been seen by the runners as a good thing. Races that wish to be successful now certify their courses, because they know runners want it. Except for USATF championship events, USATF has made no effort to force anyone to certify their course. We don't have to do this, because it's the general opinion that a race that's not certified must rely on something other than accuracy for its success. Runners interested in their times want accurate distances, and this desire is known to race directors.

As a runner, I can't say that I've ever had trouble pacing myself when guided only by miles, or guided only by kilometers. Both systems work, and we must question what US runners have to gain by a switch to metric. Americans think in miles. Regardless of what our present metric law may say, we use the English system here in everyday life. Would switching to the metric system in races be of genuine benefit to the runners, whose cars and roadways remain marked in miles? Americans have a feel for distances in miles, because that's all we've known all our lives.

Changing US road running courses to metric before the government makes the change universal would leave runners at a mental disadvantage, much as if France decided that their road race splits were to be marked in miles. The runners would not have a feel for the distance. It would impede, not help them.

As for uniformity, we already have it in the overall distances. An American 10 km course is the same length as a German one. Splits are not required at all for a course to be certified - only the overall distance is generally certified. Splits exist solely as an aid to the runner, to help in pacing. What is of most benefit to American runners - splits in miles or splits in kilometers? That's what we should concern ourselves with. What do the runners have to gain by a change?

Best regards,

24

PLEASE REPLY TO: PETER S. RIEGEL, CHAIR, ROAD RUNNING TECHNICAL COUNCIL
3354 KIRKHAM ROAD, COLUMBUS, OHIO 43221-1368
HOME PHONE 614/451/5617, FAX 614/451/5610

Bernard Conway,
67 Southwood Cres.,
London, Ontario,
N6J 1S8

Measurement News,
c/o Pete Riegel,
3354 Kirkham Rd.,
Columbus, Ohio,
43221-1368

Dear Pete & Measurement News Readers,

I also applaud Monica Bates' decision to have metric splits in her 5 km race. Who would ever accept using km splits in a 5 or 10 mile roadrace? So why accept mile splits in a 5 or 10 km roadrace?

I do not like the English/Metric Pace conversion chart that Jay Wight produced since it still stresses the pace of a metric distance race, 5 km, in 10 second intervals/mile. See Table #1.

Mile Pace	km Pace	2 km	3 km	4 km	5 km
4:30	2:47.8	5:35.5	8:23.3	11:11.1	13:58.9
4:40	2:54.0	5:48.0	8:42.0	11:35.9	14:29.9
4:50	3:00.2	6:00.4	9:00.6	12:00.8	15:01.0
etc.	CHART	NUMBER	ONE		

Bob Baumel's Metric Pacing Chart is an improvement since it at least stresses the pace and distance in values which shows the convenient relationship between these two in the metric system. See Table #2.

km Pace	Mile Pace	5 km	8 km	10 km	etc.
2:40	4:17	13:20	21:20	26:40	
2:50	4:34	14:10	22:40	28:20	
3:00	4:50	15:00	24:00	30:00	
3:10	5:06	15:50	25:20	31:40	
etc.	CHART	NUMBER	TWO		

Bob's table is convenient because it allows us to see in one table all the accepted distances and their times as well as giving us the km pace. The table may be convenient but as a runner I am more interested in time and would rather know what pace I would have to maintain to get this time for the distance I am racing. Since not all races are multiples of 5 km this would mean that as many as 3 charts would have to be prepared to cover all acceptable distances. See charts #3, 4, & 5 below to see what I mean.

5 km	10 km	15 km	20 km	25 km	50 km	km Pace
13:30	27:00	40:30	54:00	1:07:30	2:15:00	2:42
14:00	28:00	42:00	56:00	1:10:00	2:20:00	2:48
14:30	29:00	43:30	58:00	1:12:30	2:25:00	2:54
15:00	30:00	45:00	60:00	1:15:00	2:30:00	3:00
etc.	CHART	NUMBER	THREE			

8 km	12 km	km Pace		1/2 Marathon	Marathon	km Pace
lower times	lower times			lower times	lower times	
30:00	45:00	3:45.0		1:22:30	2:45:00	3:54.6
31:00	46:30	3:52.5		1:25:00	2:50:00	4:01.7
32:00	48:00	4:00.0		1:27:30	2:55:00	4:08.8
33:00	49:30	4:07.5		1:30:00	3:00:00	4:16.0
etc.				etc.	etc.	
CHART	NUMBER	FOUR		CHART	NUMBER	FIVE

Note: I realize that not all acceptable metric distances are listed (3 km and 30 km distances are missing). The other accepted distances may require their own charts or adapt the above charts. For Example the times can be found for the 3 km distance by dividing the 12 km by four. The 30 km could be found by then multiplying the time from the 3 km table by ten. The km Pace of course remains the same. I just didn't bother to do these here but as you can see the calculations are very easily done.

I believe runners would be more willing to accept metric splits if we make it convenient for them to be able to know what pace to run per km to get the time they want. This can be done by posting charts like those labelled #3, 4, and 5 above. I am sure some company which sells running shoes would be happy to make a plastic card with a much fuller table than the ones I have produced above. I have enclosed a plastic card from a company which has already produced a card in the manner referred to by Jay. Perhaps contacting them or a company such as Asics which is the major sponsor of IAAF to produce cards for runners and having them available at races would be a convenient method of converting runners to the metric system.

yours truly,

Bernie Conway



PUZZLE OF THE MONTH

Pete:

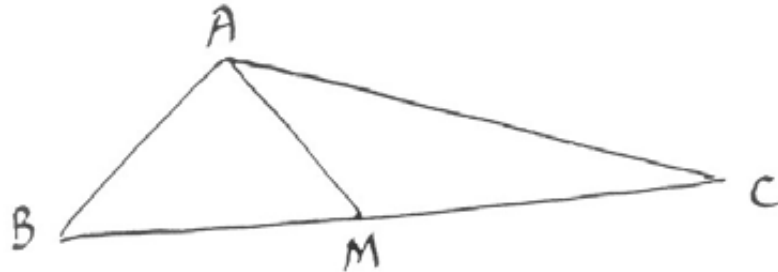
This problem may be of interest to you and some of your readers

It is from the 1975 (International) Annual High School Mathematics Examination

ABC is a triangle. M is the mid-point of BC

$$AB = 4 \quad AC = 8 \quad AM = 3$$

HOW LONG IS BC?



There is, of course, a computer "best-fit" solution, but there are also at least two simple and elegant "pythagorean" solutions

Brian

EXACT SOLUTIONS
ONLY PLEASE.

1995 USAF ANNUAL CONVENTION
The Westin Peachtree Plaza - Atlanta, Georgia
SCHEDULE

TIME	COMMITTEE	TIME	COMMITTEE	TIME	COMMITTEE
12 p.m. - 11 p.m.	Monday, November 27 Registration National Office Press Office Convention Services Computer Workroom Storage Special Meetings	11 a.m. - 12:30 p.m.	Cultural Exchange	9 a.m. - 12 p.m.	USATF Opening Session
2:30 p.m. - 5:30 p.m.	USATF Executive Committee	1 p.m. - 5 p.m.	USATF Board of Directors	12 p.m. - 6 p.m.	Exhibits
6 p.m. - 7:30 p.m.	USATF Executive Committee Dinner	5 p.m. - 8 p.m.	Men's Track & Field Executive Committee	12:30 p.m. - 2 p.m.	USATF Meet Directors Association
7:30 p.m. - 9:30 p.m.	USATF Executive Committee	6 p.m. - 8 p.m.	Athletes Advisory Event Leaders	1 p.m. - 2 p.m.	U.S. Olympic Team Staff
	Tuesday, November 28 Registration National Office Press Office Convention Services Computer Workroom Storage Special Meetings	6 p.m. - 9 p.m.	Men's Long Distance Running Executive Committee	1 p.m. - 2:30 p.m.	U.S. Women's Track Coaches Association Advisory Committee
9 a.m. - 11 p.m.	Registration National Office Press Office Convention Services Computer Workroom Storage Special Meetings	6 p.m. - 10 p.m.	Athletics for the Disabled	1 p.m. - 3 p.m.	Men's Awards Subcommittee
9 a.m. - 10 a.m.	First-Timers Orientation	6 p.m. - 10:30 p.m.	Youth Athletics		Men's Long Distance Running Championships Subcommittee
9 a.m. - 11 a.m.	Men's Long Distance Running Executive Committee	6 p.m. - 11 p.m.	Officials		Youth Athletics Coaches Association
	Member Services		Men's Track & Field		International Composition
	Men's Track & Field Executive Committee		Women's Track & Field		Records
	Women's Track & Field Executive Committee		Race Walking		Budget & Finance
	Race Walking Executive Committee		Men's Long Distance Running		Law & Legislation
	Youth Athletics Executive Committee		Law & Legislation		Member Services
	Associations Executive Committee		Couching Education Executive Committee		Officials
	Officials Executive Committee		Men's Track & Field		Men's & Women's Standards Subcommittee
			Athletes Advisory		U.S. Women's Track Coaches Association
			Joint Men's & Women's Cross Country Seminar		Men's Development
			Youth Athletics Regional Coordinators		Men's Long Distance Running Executive Committee
			Wednesday, November 29		Race Walking National Team Subcommittee
			Registration		Associations
			National Office		Ultra Distance Subcommittee
			Press Office		USATF Authorized Reps
			Convention Services		Couching Education
			Computer Workroom		Race Walking Site Selection Subcommittee
			Storage		Men's Long Distance Running Round Table
			Special Meetings		
			Caucus Rooms		

1995 USA TF ANNUAL CONVENTION
The Westin Peachtree Plaza - Atlanta, Georgia
SCHEDULE

TIME	COMMITTEE
	Women's Sport Development Clinic
6:30 p.m. - 11 p.m.	Youth Athletics Communications
7 p.m. - 10 p.m.	Masters Track & Field
7 p.m. - 11 p.m.	Rules
6:30 p.m. - 8 p.m.	USA TF Meet Directors Association
8:30 p.m. - 11 p.m.	Athletes Advisory Men's Development Workshop/A Men's Development Workshop/B Men's Development Workshop/C Men's Development Workshop/D Road Running Technical Council Women's Marathon Subcommittee U.S. Women's Track Coaches Association Officials Equipment & Facilities Subcommittee
Thursday, November 30	
8:30 a.m. - 11 p.m.	Registration National Office Press Office Convention Services Computer Workroom Storage Special Meetings Exhibits
9 a.m. - 6 p.m.	Men's Long Distance Running Women's Long Distance Running Masters Track & Field Masters Long Distance Running Youth Athletics Athletes Advisory Women's Development

TIME	COMMITTEE
	Law & Legislation
	Rules
	Women's Cross Country Subcommittee Joint Site Selection Subcommittee Athlete Support Subcommittee
8:30 a.m. - 2 p.m.	Computer Workroom
8:30 a.m. - 9 p.m.	Sports Psychology Subcommittee Workshops
12 p.m. - 2 p.m.	Hall of Fame Luncheon
	Special Meetings
2 p.m. - 4 p.m.	Integrated Marketing Task Group
2:30 p.m. - 4:30 p.m.	Officials
2:30 p.m. - 5:30 p.m.	Joint Site Selection Subcommittee
2:30 p.m. - 6 p.m.	Women's Long Distance Running
	Race Walking Youth Athletics Law & Legislation Records Substance Abuse Education & Testing Men's Development Women's Development Sports Science Development Seminar U.S. Olympic Team Staff
3 p.m. - 6 p.m.	Hall of Fame Library Advisory Board
4:30 p.m. - 6 p.m.	Joint Masters Track & Field and Masters Long Distance Running High School Coaches Association
5 p.m. - 6:30 p.m.	Women's Special Development Clinic
7 p.m. - 11 p.m.	Joint Site Selection Subcommittee

TIME	COMMITTEE
	Sprint Development High School Clinic
8 p.m. - 9:30 p.m.	Officials Executive Committee
8 p.m. - 10 p.m.	Joint Men's & Women's Development
8 p.m. - 11 p.m.	Race Walking Associations Sports Medicine & Science Road Running Technical Council
Friday, December 1	
9 a.m. - 11 p.m.	Registration National Office Press Office Convention Services Computer Workroom Storage Special Meetings Exhibits
9 a.m. - 12 p.m.	Men's Track & Field Women's Track & Field Men's Long Distance Running Women's Long Distance Running Race Walking Masters Track & Field Youth Athletics Law & Legislation Rules National Sponsor Advisory Group Sprint Development High School Clinic
1 p.m. - 3 p.m.	Joint Men's and Women's Track & Field Joint Men's & Women's Long Distance Running

1995 USAIF ANNUAL CONVENTION
The Weston Peachtree Plaza - Atlanta, Georgia
SCHEDULE

TIME	COMMITTEE
	Law & Legislation
	Cultural Exchange
	Integrated Marketing Task Group
	Sponsor Support Advisory Task Group
	Race Walk Judging Seminar
	Athlets Advisory
	Associations Committee Zone Meetings
1 p.m. - 4 p.m.	Sprint Development High School Clinic
1:30 p.m. - 4 p.m.	Women's Long Distance Running
3:30 p.m. - 6 p.m.	Masters Track & Field
	Masters Long Distance Running
6 p.m. - 7 p.m.	Reception
7 p.m. - 7:777	Jesse Owens Banquet
	Saturday, December 2
	Registration
	National Office
	Press Office
	Convention Services
	Computer Workroom
	Storage
	Special Meetings
9 a.m. - 11:30 a.m.	Masters Track & Field
	Masters Long Distance Running
	Youth Athletics
	Joint Law & Legislation and Rules
	Athletics for the Disabled
	Junior Commission

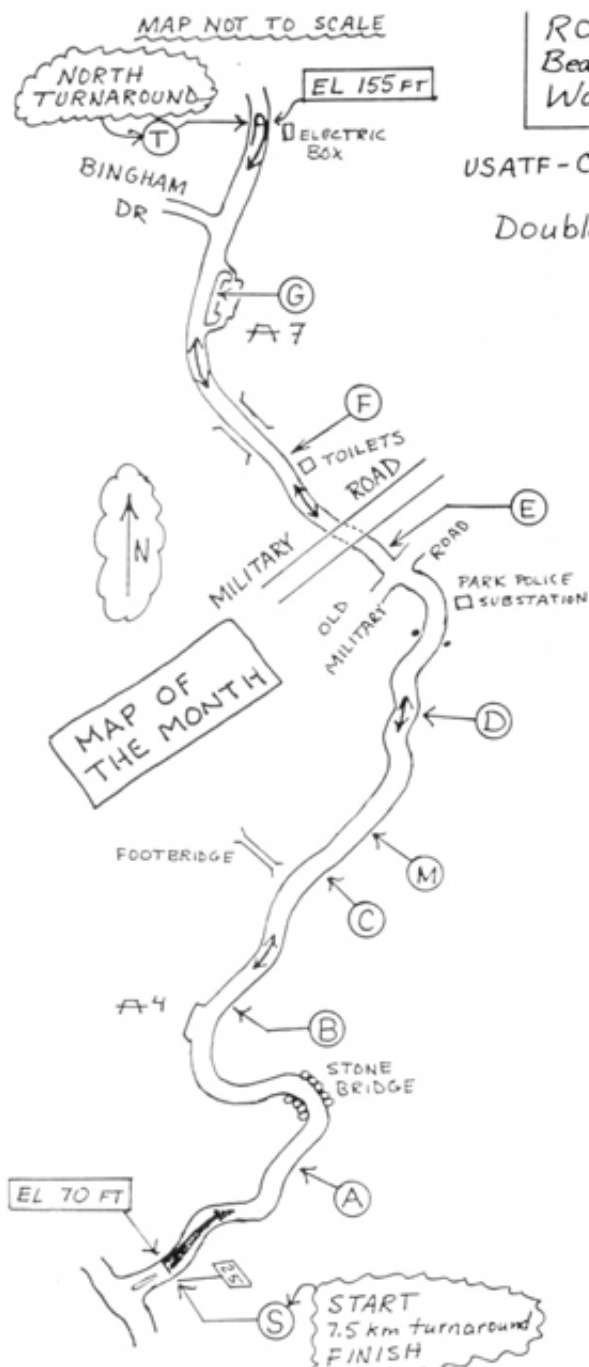
TIME	COMMITTEE
1 p.m. - 5 p.m.	USAIF Closing General Session
4 p.m. - 6 p.m.	Custodial (Food and Doping Hearing Panel)

Note: Meetings of Road Running Technical Council take place:

Wednesday, November 29 - 8:30 PM to 11:00 PM

Thursday, November 30 - 8:00 PM - 11:00 PM

Be There!



ROCK CREEK PARK 15K
 Beach Drive, Rock Creek Park
 Washington, DC

USATF-Certified Course # DC95015RT

Double Out and Back Course

	KILOMETER POINTS			
	↑	↓	↑	↓
T		3.75		11.25
G		4	11	
F	3			12
E		5	15	
D	2			13
C		6	9	
B	1			14
A		7	8	
S	0	7.5		15

Timing Locations, South to North

- S - Even with "Speed Limit 25" sign, 103 ft N of gate, 18' N of end of div. island
- A - 62 ft S of lightpole (LP) # 130; ~230 yds before stone bridge
- B - 112 ft past N end, picnic area #4 on W side; 81 ft N of LP on left
- C - 67 ft N of footbridge, W side
- M - (1-mile point, T/A for RPYL) 65 ft S of LP # 142
- D - 22 ft N of LP # 147; 336 yds south of barricade S of police substation
- E - 76 ft N of centerline, Old Military Rd; 6 ft N of storm drain, E side
- F - 122 y N of N exit, picnic area #6; 23 ft N of N edge, toilets on E side
- G - 23 ft N of LP # 196, middle of Picnic Area #7 parking
- T - 112 yds N of centerline, Bingham Dr; at N edge of electric box on E side; 83 ft N of "Speed Limit 5" sign

Measured using entire width of roadway. At turnarounds, place cone in center of road, runners go around cone

Measured 4/22/95 by R Thurston

Paul Oerth
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August 13, 1995

Peter Riegel
3354 Kirkham
Columbus, OH 43221
(614) 451-5617
Measurement News Editor

Dear Pete,

As you will see from the totals below the sale of JONES/OERTH Counters had been falling for the first three years; but, obviously, '95 will reverse that trend. I wonder how many of the individuals who have gotten counters have any idea of the precision that must go into the construction of each one. Of course we purchase both the digital counters and the sprocket gears. We have had no problems with the digital counters themselves except for a constantly increasing price. The sprocket gears have been a problem with the hole size. Fortunately that can be handled with extra washers. The latest batch does have small (proper) size holes. I'm going to order an extra thousand of the gears to be sure of having a good supply in case the present manufacturer stops making them. For most applications they would already be considered relics. But now let's take a look at the really challenging part of the job of producing the finished product: the shaft grinding, the machining of the connectors, and the final assembly.

The digital counters come with a round shaft. That has to be ground to a square shaft. It is a hand operation requiring patience and precision. The heat generated by the grinding can destroy the counter. A fine spray of water would solve the heat problem, but if the water got into the counter that too would destroy the mechanism. It's an art really, which my son, Karl, has perfected.

The connector is made on the lathe in three operations the most critical of which is the hole drilling. The tolerance is $+0.001$, -0.000 . Fortunately the machine lathe we were able to purchase can produce precision work. Originally the lathe probably

cost about \$40,000 with all the tools that came with it. We were able to buy it for \$1,500. If we had to have the connectors made in a shop the JO Counters would be more expensive. There is another operation to mill off a lip that is on the digital counter when it comes to us. We purchased an excellent milling machine at the same time we bought the lathe. Now lets look at the most difficult part of the job: final assembly.

The material of the digital counter is DELRIN, therefore, the connector had to be made from DELRIN. Delrin casts nicely, and it machines nicely; but, it does not bond nicely to any other material, or to another delrin part. After much research mostly on the part of my son, Stephen, we found one Epoxy glue that would be "somewhat" effective. We got that information from the delrin manufacturer: DuPont. Great care is required during the gluing operation to insure that none of the glue gets on the counter shaft as that causes severe binding: totally unacceptable. So, OK, Karl developed his gluing technique to avoid that problem. Great, we started turning out our first JONES/OERTH COUNTERS. Problem, the gluing bond didn't always hold: bummer! Solution, hot glue applied with a hot glue gun on the outside of the connection. That solved the problem of the joint holding; but, it was difficult to apply while maintaining the aesthetic quality of the finished product. Once again, Karl, developed the art of application.

Of course this is a business. It's not a very profitable business, but it is a business. It involves book keeping, shipping, correspondence, and taxes. Is it worth it? You bet it is. As long as there is a need for counters we will be the suppliers.

Here is some data on the counter business by year:

Year	5 Digit	6 Digit	Total
1992	116	146	262
1993	130	101	231
1994	93	40	133
1995	26	105	<u>131</u>
Grand total to date:			757

Best Regards,

Paul

Paul Oerth

PS I SAW THE SOLUTION TO THE WATER PROBLEM ALMOST AS FAST AS I READ IT. LET'S SAY 20 SECONDS TO SOLVE



July 1, 1995

George Tillson - 5120 Wiborn Rd - Shortsville, NY 14548

Dear George,

Thank you for sending the correspondence and commentary concerning the YMCA Mountain Goat 3 km race. I read it with great interest, especially the article by Rick Cleary. I would like to clear up some erroneous impressions some people seem to have, and I am asking you to pass this letter on to Dave Beach, Dave Oja, and Rick Cleary.

The use of a measuring wheel is no great sin, if it is used only to locate split points, as may have been the case. A measuring wheel properly used is accurate. I had a request from someone in New York a couple of months ago for a copy of the certificate for the YMCA 3000, which I sent. I noted at the time that the reference for the start line was weak, being only "4.9 feet west" of an unnamed light pole, as well as being 79.2 feet west of the Mountain Goat 10 Mile start. I looked up the Mountain Goat, and found that its start is located 28.12 feet east of light pole 2281. If it's the same light pole, the numbers don't add up, unless the "4.9" is supposed to be "49." Only William Hughes, the original measurer, can answer this question.

If this is the course used for the Mountain Goat 3000, and if it was set up correctly on race day, the course was likely OK. However, if whoever used the measuring wheel went beyond laying out splits, and established a start or finish different from what was certified, I have no way of knowing whether the course was proper or not.

The Penultimate Lap, Cleary's column from the STC Newsletter, contains some errors, some committed in an attempt at humor, one hopes. It also raised a warning flag in front of me.

There is no need for anyone to pay \$250 to Niagara Association, or to anyone else, to get a course certified. Measurement is a do-it-yourself process, and always has been. Anyone who wishes can get the book, read it, measure the course, and send it to their state certifier (that's Amy Morss - see the enclosed list) with a \$25 review fee. If the work is OK, the certificate is issued. If the course needs further work, the certifier will let the measurer know what's needed. The only fee involved is the \$25, which helps the certifiers fund their operation, and gets them to the national convention. There is no other fee for certification. This fee has remained constant since 1984.

It may be that Niagara Association charges \$250 to both measure and certify the course. I don't know. As long as the customer knows he has the option to do it himself, I see no problem with this. If Niagara Association is not telling them they have the do-it-yourself option, they should.

Many certifiers charge a fee when it is their personal behind on the bicycle seat. Certifiers are not volunteer measurers, unless they choose to be.

People desiring certification should contact me, or any member of the Road Running Technical Council directly. Certification does not flow through the local association. Measuring is not hard to do, although one is likely to get tied in knots on the first course one does. But if one perseveres, it becomes easy. Many people read the book and get it right the first time out.

Still, some race directors are busy, and don't have the time to do it themselves. In these cases they can pay someone to do it. The price has no limit - it is whatever is mutually agreed upon. Anyone who thinks the price is exorbitant is free to do it himself. The certifier is somewhat like a plumbing inspector - he looks at the work, and issues a certificate if it looks OK. Few people would expect the inspector to do the work. Hire a plumber and pay his price, or do it yourself.

The measurement methods do not change every few years to extort money from people. The last change was made in 1983. It involved the addition of a 1/1000 "short course prevention factor (SCPF)" to be added to each course when it is laid out. This was necessary because re-measurements showed too many courses were short. The SCPF has largely eliminated short certified courses.

No substantial changes to the measurement process have been made since 1983, nor are any contemplated. The system is working, and there is no need to fiddle with it. It is in uniform use all over the world. It produces accurate courses.

I enclose a writeup of how certification works. I urge those who are unhappy to read it.

Best regards,



THE PENULTIMATE LAP

By Rick Cleary

What constitutes a Certified (or certifiable race course)?

- a) It doesn't start and finish at the same spot.
 - b) It's been measured 4 times with a metric measuring wheel.
 - c) Marked every 400 meters.
 - d) Measured 3 feet from the curb and used the appropriate tangents
- Or
- e) Do all of the above, then have to have the blessing and pay \$250.00 to Niagara USTAF



The Mountain Goat 3000 meter course is the most accurate 3000 meter road course in Upstate NY! This course was certified many years ago....I don't remember any earthquakes or drastic alterations to the course. All we did was just mark it better to make for a faster race! USTAF changes their measuring procedures every few years in order for them to demand a recertification and the organizers having to pay \$250.00 for the privilege of having their blessing. Sounds like a neat money making venture to me!

COURSE MEASUREMENT AND CERTIFICATION

USATF conducts a program of course certification. This is done to give a "seal of approval" to courses that meet USATF's standards for course layout. While any course may (or may not) be accurate, only USATF certified courses have been approved as accurate by the Road Running Technical Council of USATF.

Many runners prefer to run only on certified courses, since in this way they can be sure that their performances are true ones - they don't get false confidence generated by a PR on a short course, but instead know that their effort is measured to an accurate standard.

How can you tell if a course is certified? Each certified course has a unique course ID number. USATF is encouraging race directors to use this number in their race advertising material. Unfortunately, many race directors believe that if their courses are "accurate" to **their** standards, they are then "certified". USATF has no copyright on the word "certified" but "USATF Certified" means something very specific. It means the race director took the time and trouble to comply with the rigorous standards required to obtain USATF certification for his course.

USATF is not likely to sue anyone for abuse of the word "certified", but every runner knows what the word **really** means. When someone says the course is "certified" he is implying it's USATF Certified. If you are truly concerned as to the certification status of the course, ask the race director to show you a copy of his USATF Measurement Certificate. Ask for the course ID number. If they can't come up with it, suspect their course and ask some hard questions.

Do not confuse "USATF Sanctioned" with "USATF Certified". Sanctioning relates to the conduct of the race and has nothing to do with course accuracy. Some race directors believe that if they obtain a USATF sanction, this means their course is USATF Certified. **Not so.** Look for the course ID number!

False advertising of USATF Certification status is not uncommon. In many cases the person is unaware of what he's doing, and may just be copying a race entry form from years back. In other cases it's deliberate, because race directors know that runners like certified courses. Unfortunately it's the runners who are cheated. Record performances have been lost because of inaccurate statements about certification.

USATF has no quarrel with races that have non-certified courses. There are plenty of good races around that are run on uncertified courses. Runners in these races know it's their relative performance that counts in these races, or the uplift they may get from running on an unusually pretty course. It's **false claims** that cheat the runners.

Race directors who have taken the time and trouble to certify their courses deserve the thanks of the runners. Give a runner an honest course and he can use his own watch to time himself. If the course is of unknown accuracy, so is the performance.

Some running magazines periodically publish lists of local USATF Certified courses. Another source of certified course lists is **Measurement News** (see below). **Measurement News** maintains a complete list of all courses currently certified in the United States. A list of certified courses for any state is available for \$2.00. Also, a map of any USATF certified course is available for \$2.00.

How does a course get certified? The measurer reads how it is done in the book **Course Measurement Procedures**. He then follows the instructions, fills in the paperwork, and sends the information (and up to \$25 reviewing fee) off to his regional certifier. If he has done everything right, the certifier will approve the course, and it will then be "USATF Certified". If he has made a mistake, the certifier will tell him how to fix it.

The measurement book is available from:

USATF Book Order Dept.
P. O. Box 120
Indianapolis, IN 46206 \$4.00, postpaid

Each state has a regional certifier. He will help new measurers with advice, and may help you to locate an experienced professional measurer should you choose to hire it done. A list of regional certifiers may be obtained by sending a stamped, self-addressed envelope to Pete Riegel (below)

A race course is measured using a bicycle equipped with a special device called a "Jones Counter" after its inventor, Alan Jones. A Jones counter may be obtained from:

Paul Oerth
2455 Union St - Apt 412
San Francisco, CA 94123
US orders \$50 postpaid (Prices are for a five-digit counter. Add \$10 if a
Foreign Orders \$55 plus postage six-digit counter is desired)

Note that these prices will increase by \$5.00 in January 1, 1996

The Jones Counter is the **only** presently acceptable device used with a bicycle. Electronic odometers are not precise enough for the job. Those interested in keeping abreast of certification, recently certified courses, measurement techniques, and the doings of the Road Running Technical Council of USATF may wish to subscribe to **Measurement News**, published bimonthly by:

Pete Riegel (address below) - \$15 per year

People having further questions concerning certification should contact the Chairman of USATF Road Running Technical Council:

Pete Riegel
3354 Kirkham Road
Columbus, OH 43221 614-451-5617 (phone) 614-451-5610 (fax)

MEASURING A RACE COURSE WITH A BICYCLE

Almost all modern road racing courses are measured using calibrated bicycles. The bicycle is used because it is fast, and it's accurate enough to do the job. It can be looked at as a human-powered, fast-moving measuring wheel.

Where does calibration come in? Simple. In order to use a wheel to measure, you have to know how far you go each time it turns. This is done by riding the bicycle along an accurate known distance, counting the wheel revolutions, and using arithmetic to figure out the distance covered in each revolution.

Although the basic concept is simple, the procedure is somewhat more complicated. The hardest part - keeping track of revolutions - is solved by mounting a **Jones Counter** (named after inventor Alan Jones) on the front bike wheel. The counter records 20 "counts" each time the wheel revolves one revolution. Thus one count - for a standard size bike - is about 1/15000 mile or 1/10 meter or 4 inches.

To calibrate, the rider uses a steel tape to lay out a calibration course - some straight distance greater than 1000 feet or 300 meters. The bike is ridden on the calibration course and the number of "counts" required to cover the distance is noted. Then arithmetic is used to calculate how many counts are required to cover one kilometer or mile. This number is called the "constant".

With the constant known, the measurer starts at one end of the race course and rides until he has covered enough counts to make up the full distance. He then adds a safety factor to assure that the course isn't short. For a numerical example:

- 1) The measurer lays out a 500 meter calibration course with a steel tape.
- 2) He rides the bike over the calibration course and gets 4800 counts for 500 meters.
- 3) He calculates his constant at $2 \times 4800 = 9600$ counts per kilometer.
- 4) Since he wants a 10 kilometer race course, he rides his bike until he has covered 96000 counts, at which point he has covered 10 kilometers.
- 5) He adds 10 more meters to the course as a short-course prevention.

The above is greatly simplified. The exact procedure is spelled out in a book, **Course Measurement Procedures**, which is available from:

USATF - Book Order Dept - PO Box 120 - Indianapolis, IN 46206

Price of the book is \$4.00 (US) postpaid.

The USATF procedures have been adopted by AIMS and IAAF, and are in use worldwide.

31 July 1995

To: Peter S. Riegel, Chair
Road Running Technical Council

From: James E. Fields, Ph.D.
PO Box 5275 - Vancouver, WA 98668
email: jfields@efn.org

Subject: Road Course Certification Criteria

Your advice is needed concerning criteria for selection as a national certifier/measurer of road courses and for the actual measurement and certification process.

After my recent retirement from university administration, it was suggested that I resume some of the athletics volunteer service I gave for decades to USATF predecessors. My coaching and officiating experience were at national level but expressed need has been to find sponsors, primarily for racewalking, and to measure good courses. I have done both for 34 years and events included national championships plus USA Olympic Trials.

A review of 1995 USATF rules and regulations prompts questions:

1. How can I qualify to serve as a course certifier and measurer mentioned in Regulation 15 (p. 204 of 1995 USATF Directory)?
2. Is the Road Running Technical Council (Directory p. 100, 204) that you chair the same as Road Running Technical Committee named on Course Measurement Certificate (Directory p. 342)?
3. The certificate shown on p. 342 provides check-off for three measuring methods: bicycle, steel tape, and electronic distance meter. However, the "Course Measurement Procedures" booklet I received today from USATF states that EDM is not suitable for measuring road race courses although it can be used for calibration. Can you please clarify this?
4. What is your current official position on measuring courses with a measuring wheel (illustrated by attachment)? Neither the certificate nor the procedures booklet mentions a wheel, even to explain omission after being in previous rulebooks.

The procedures booklet states that a bicycle is the superior measuring method because of speed and accuracy, but wheels were proven more than 30 years ago to be more accurate than bicycles although IAAF rules limited speed to 5 kilometers per hour. I prefer accuracy to speed, a view shared by public works department engineers who use measuring wheels.

copies: Jim Bean, Bev LaBeck, Bill Roe, Carl Sniffen



James E. Fields, Ph.D.
PO Box 5275
Vancouver, WA 98668

Dear Dr. Fields,

August 4, 1995

Thank you for the well-expressed questions in your letter of 31 July. I'll attempt to answer them:

- 1) You can qualify as a measurer simply by just doing it. I enclose information to get you started. As for becoming a certifier, that's tougher. Certifiers are picked from among the better measurers, and are people who will respond quickly and accurately to submitted data. They are the people who check what is submitted by measurers. If the data and calculations look OK, a certificate is issued. If something is wrong, they tell the measurer what needs to be done to correct it. We have one certifier per state, and do not intend to increase the number, since the work volume is easily handled by one person. Certifiers who do not do their jobs properly have been replaced, but otherwise remain in place forever.
- 2) RRTC became a Council several years ago, for administrative reasons which I do not clearly understand. It does not affect what we do. My prime concern at the time was that whatever USATF decided to call us began with "C," since we are known within USATF as "RRTC."
- 3) Recent course certificates reflect the name change. The certificate shown on page 342 of the 1995 USATF Directory is obsolete. EDM is generally unsuited for measuring road courses because it cannot measure around curves, and more conventional means must be used on the turns. Since calibration courses are straight, EDM is quite suitable.
- 4) The current position concerning measuring wheels is that we permit their use but do not encourage it. We permit **any** means of measurement that is accurate enough to do the job.

The calibrated bicycle has proven to be a suitable tool for measuring road courses. It is the worldwide standard method. Note the use of the word "calibrated." Many people who use measuring wheels will simply go out and measure, taking the accuracy of the wheel at face value. Many municipal engineers do the same. When people calibrate a walking wheel, they generally read it only to the nearest foot, even though by using the peripheral divisions they could get the calibration to the nearest 1/10 foot. Or they will hand the wheel to a high school athlete with instructions to "jog around the course" and get a measurement. I have examples too horrible to relate. Accuracy with a wheel or bike is a function of both the inherent accuracy of the wheel and the skill of the user. That is why we insist that the instrument be calibrated and used by the same person.

Until you try a calibrated bicycle, you will not appreciate the power of the method. Read the enclosed material. I'll be happy to correspond further on the subject, should you desire to do so.

Best regards,