

MEASUREMENT NEWS



May

1988

Issue #29



RRTC Course Registrar John White (wearing cap) is the founder and president of Wolfpack Track Club of Columbus, Ohio. Pictured is part of the award ceremonies for their Jack Mortland Racewalk Invitational held April 17 on course OH88012PR. Mortland (left) publishes *Ohio Racewalker* and competed for the US in the 20 km walk at the 1964 Tokyo Olympic Games. Receiving the women's plaque for first place in the 10 km was top American walker Maryanne Torrellas (right), who turned in a marvelous time of 48:03.

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#29 - May 1988

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THANKS TO ELECTRIC CITY PRINTING

TAC/Indianapolis informed me that we were getting perilously low on measurement books, and the revised edition is just getting started. I contacted Electric City Printing, the original printer, and was given a very good price (about \$800) on 500 copies. I ordered the 500. The very next week Louise Hilliard called and said they'd found 600 copies in their storage area and would be willing to donate them free, since they had no further use for them. I naturally took them up on the offer and cancelled the order.

We now have enough measurement books to last us for the time we need to get the new book going. I want to say a loud and clear "thank you" to Louise and the folks at Electric City Printing. It's a clear and hefty benefit to RRTC and the measurement community, and they deserve our gratitude.

EDITORIAL POLICIES

Here are the standards I use to decide what is to be published in MN:

- 1) I consider all correspondence I receive as potential material.
- 2) If you do not want something published, just say so. It will not appear in MN. Lots of my correspondence never sees these pages, because it is private. Your wishes will be respected.
- 3) I try to publish little that is critical of any organization or person who is not a member of RRTC. This newsletter is not out to change the world, except as it relates to measurement. Ideas may be freely criticized - the motives and personalities of those who hold those ideas won't often see daylight here. Although we may differ mightily on a number of things, the exercise of common standards of manners and consideration should prevail.

Those of you who correspond know that you receive answers to your letters. I value the correspondence, since it helps me get the job done. I have no objection to discussing anything at all, but the above restrictions are necessary to keep things civilized. Some problems are best discussed privately.

If anyone feels that these editorial policies are deficient, or feels that I'm acting in a defective manner, please let me know. It's not MN's goal to make everybody mad, but to make everybody informed.

A HOMEWORK ASSIGNMENT FOR READERS

Measure any running track near your home and send me the data. Use a steel tape. Record the temperature. If it has a curb, measure once around the curb. If it has only a painted line, measure the overall length of the oval along the center line, and also the width at each end.

I will collect the dope you send and I will put in in MN for us to marvel at. Perhaps we will learn something.

ON CERTAINTY

"The public...demands certainties...but there are no certainties."
Henry Louis Mencken (1880-1958)

"There is no such thing as absolute certainty, but there is assurance
sufficient for the purposes of human life."
John Stuart Mill (1806-1873)

"...but in this world nothing is certain but death and taxes."
Benjamin Franklin (1706-1790)

Contributed by Joan Riegel.

MEASUREMENT BOOK REVISION AND REPRINT

We are down to our last few hundred copies of Course Measurement Procedures. The book will be revised to include what we have learned from experience with the last one. No changes to our basic procedures are envisioned. If you have any suggestions for additions/deletions/changes, please send them to Pete Riegel. Rewrite will begin in early May, with completion due sometime late this year.

LOEFFLER AND EDWARDS NOW FINAL SIGNATORIES

Wayne Nicoll has appointed Doug Loeffler (LA & MS) and Bob Edwards (PA) as Final signatories. Both can now approve courses without co-signature by Wayne. This reflects their high standard of work, and RRTC congratulates them.

HOW WE DID IN 1987

Somehow the possession of a computer and a long list of anything at all brings out the bean-counter in many of us. Your Editor is no exception. In this issue you'll see some numbers that are an attempt to show how we are doing. Here are some of the main numbers:

Most active certifier: Wayne Nicoll - 111 courses certified

Most active measurer: A. C. Linnerud with 48 courses measured

Measurers active in 1987: 278

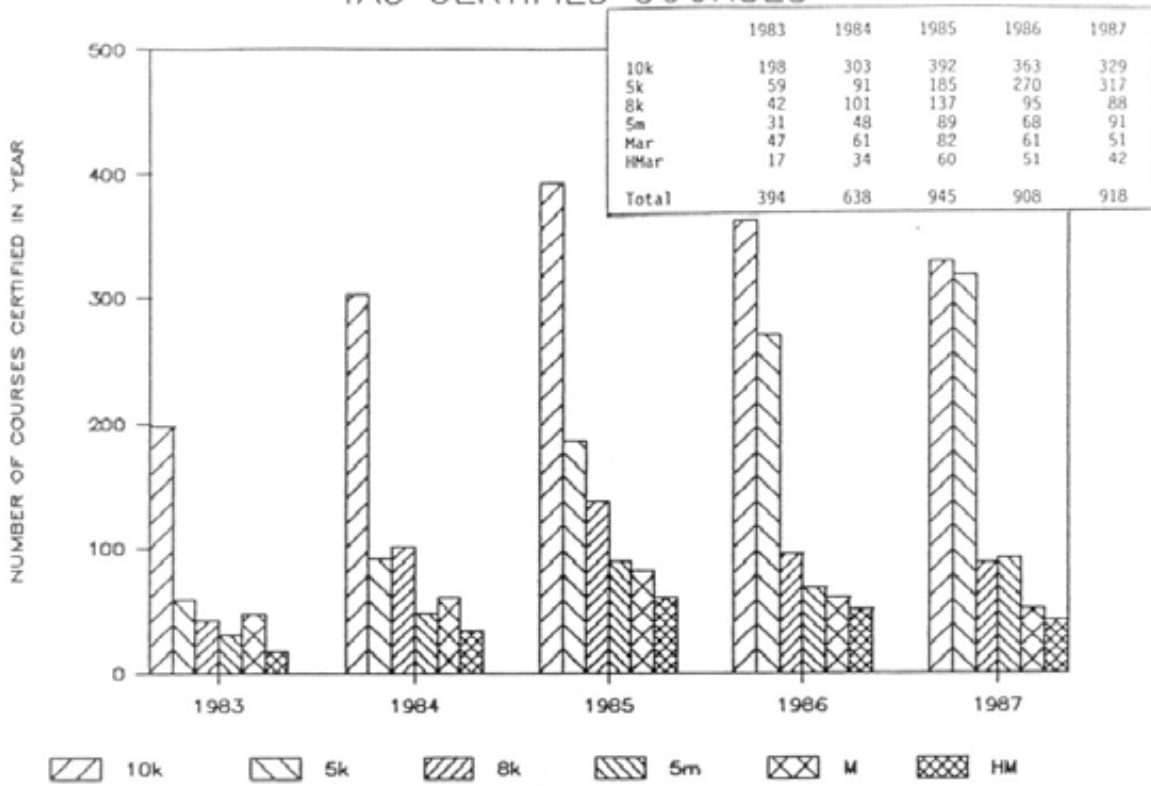
State with greatest number of active measurers: Texas with 19

Courses certified in 1987: 1111

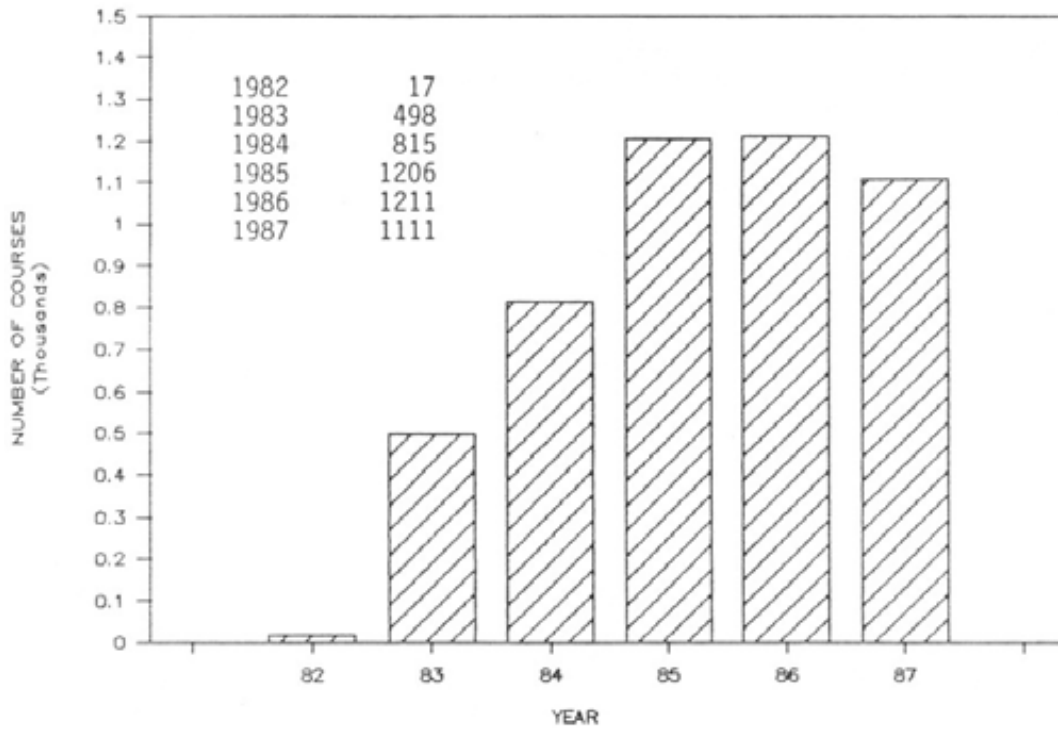
26 people measured 10 or more courses in 1987, accounting for half (561) of the courses certified this year.

Although the total number of courses is down from last year, there has been a slight increase in the number of "standard" courses (5k, 5M, 8k, 10k, Hmar, Mar). 10k, Hmar and Mar continue a decline begun in our peak year of 1985, but 5k and the deadly duo of 8k/5M continue to rise. The latter two distances have been fighting a seesaw battle over the years, with no clear preference yet evident, but a steady rise for both. Does this mean people are running shorter distances now? It's hard to say for sure, but it seems likely.

TAC CERTIFIED COURSES



TAC CERTIFIED COURSES BY YEAR



PEOPLE WHO MEASURED 10 OR MORE COURSES IN 1987

Linnerud	48	Recker	23	Wisser	13
Lucas	39	Sissala	19	Dewey	12
Scardera	39	D White	18	Knight	12
Brannen	36	McDowell	15	LeBlanc	12
Nicoll	36	Riegel	15	Lewis	12
McBrayer	35	Hubbard	14	Wight	12
Courtney	32	J Smith	14	Grass	10
Thurston	29	Marable	14	Morss	10
Lafarlette	28	Teschek	14		

NUMBER OF COURSES CERTIFIED IN 1987

Nicoll	111	McBrayer	36	DeHaye	10
Riegel	95	Hubbard	36	Vaitones	8
Grass	67	Knight	36	Cichocki	8
Baumel	66	Recker	34	Ferguson	6
Lucas	64	Lewis	33	Young	4
Thurston	61	Loeffler	22	Nelson	4
Linnerud	59	Wisser	19	Noel	3
Scardera	56	Renner	19	Katz	3
Brannen	48	Glauz	19	Wilson	2
Teschek	48	Reik	18	Benjamin	2
Honikman	43	Hansen	14	Hughes	1
Smith	42	Edwards	13	Christensen	1

Total courses certified in 1987 = 1111

ACTIVE MEASURERS IN STATES IN 1987

TX	19	IN	7	OR	3
CA	18	CO	6	WV	3
NY	17	AL	6	KY	2
OH	17	MN	6	NM	2
FL	15	IA	6	AK	2
IL	14	MA	6	DE	2
SC	14	VA	6	VT	2
GA	12	HI	6	ND	1
WA	9	UT	5	DC	1
NJ	9	KS	5	MT	1
TN	9	WI	5	ID	1
MI	8	AR	4	MS	0
PA	8	MD	4	LA	0
NC	8	NH	4	SD	0
CT	8	MO	4	NV	0
OK	7	NE	4	RI	0
AZ	7	ME	3		

Total active measurers = 278
(Some were active in more than one state)



The Athletics Congress of the USA

200 South Capitol Avenue, Suite 140, Indianapolis, Indiana 46225 (317) 638-9155
Cable Address: ATHCONGRASS IND • Telex 27-332

National Governing Body for Athletics in the United States

March 29, 1988

Kevin Lucas - 3050 Rambling Dr - Dallas, TX 75228

Dear Kevin,

I have been working up some numbers based on the course list generated in 1987, and will be putting it in next MN.

The data from Texas are especially encouraging. In particular the one I think reflects the most desirable characteristic is "number of active measurers". Largely through your personal efforts Texas last year had more working measurers than any other state.

This reflects a healthy state of affairs, and without your hard work it would not have happened. You have labored to educate measurers in Texas, and the numbers show it.

Please accept my congratulations and thanks for a fine effort.

Best regards,

xc: Baumel, Nicoll

NATIONAL OFFICERS President/Dr. LeRoy Walker, 1208 Red Oak Avenue, Durham, N.C. 27707 - Executive Vice-President/Frank E. Greenberg, 1715 PSFS Building, 12 South 12th Street, Philadelphia, Pa. 19107 - Vice-President/Wille Banks, 2323 Bentley - #305, Los Angeles, Calif. 90064 - Vice-President/Robert R. Bowman, 51 Chatsworth Court, Oakland, Calif. 94611 - Vice-President/Barbara Palm, 229 Mt. Hope Drive, Albany, N.Y. 12202 - Secretary/Dr. Neil C. Jackson, West Gym, SUNY-Binghamton, Binghamton, N.Y. 13901 - Treasurer/Steve Bosley, P.O. Box 9032, Boulder, Colo. 80301

PERCENTAGES OF TYPES OF COURSES

	1982	1983	1984	1985	1986	1987
Mar & HMar	11.1	12.2	12.0	11.6	8.9	8.4
Metric courses	61.1	72.9	73.7	70.1	75.4	73.4
Mile courses	27.8	14.3	13.7	17.7	15.4	18.2
Tracks	0.0	0.6	0.5	0.7	0.2	0.1
Total Courses	18	498	815	1206	1209	1111

The above chart was prepared because I have seen the percentage of metric courses in the US quoted at over 90 percent, and that looked fishy.

Whether the marathon and half-marathon are "metric" I leave to the reader, but the numbers above reflect the content of the course list through 1987.

PRE-1985 SHORT COURSES

In his letter of 16 March (see elsewhere this issue) Lennart Julin expresses astonishment at the fact that US records were accepted on short courses in spite of the fact that IAAF had made a rule in 1981 that courses must not be short. This deserves some explanation.

First, it is true that IAAF made such a rule. However, they did not have to live with its consequences. They kept no road records and validated no courses. Even today, 6 years later, there is still no IAAF records structure for road racing. It is coming, but it's not here yet.

In the US, at that time, we had a lot of certified courses, none of which had been laid down with an SCPF. Ken Young at that time was keeping US road "records" which were recognized by the running public as good ones. When he integrated his records within the TAC structure, it was felt that race directors deserved a time to become adjusted to the new measurement rules. Hence a three-year period was defined, in which the amount of shortness gradually declined. All pre-1983 courses were decertified in January of 1985, so that all presently certified US courses include the 0.1 percent SCPF.

In short, the interim period of allowing short courses was seen as a political necessity. It would have been possible to change things with one swift cut, but this would have made for many hard feelings. Even with the gradual change, there was a lot of initial resentment concerning the addition of the extra 0.1 percent.

Soon all record applications from the pre-1985 period will have been dealt with. At this time the rule will be amended - a "housekeeping" change - to eliminate references to the pre-1985 period.

GETTING BACK ON COURSE

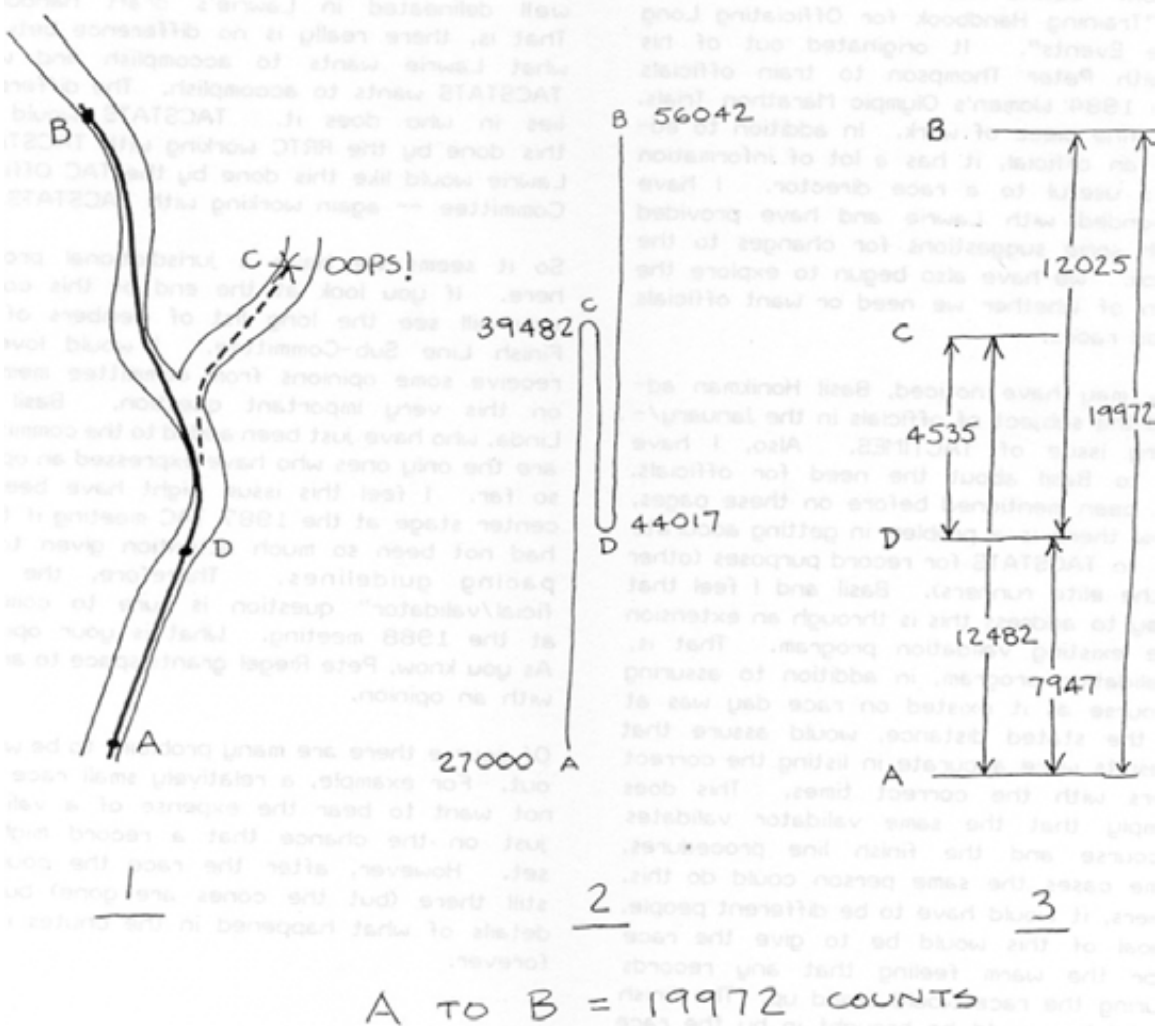
Has it happened to you? You're happily riding along the course from A to B, and you start daydreaming. First thing you know you have ridden up the wrong road, and you wind up stopped, puzzled and frustrated, at C. What do you do? A muttered obscenity is permissible, but then do not move your bike from where you stopped. Instead, carefully take a count from where you stopped, turn the bike around, and ride back to any point (D) that is on the proper route. Take another count, and resume riding the course.

When you are all done you can use the numbers to figure how much distance your off-course ride took, and the proper distance from A to B, as follows:

Diagram 1 shows the route

Diagram 2 shows the counts obtained

Diagram 3 shows how the total distance from A to B is calculated.



FINISH LINES	
TIME	PLACE
0:44:13	588

Finish Line Sub-Committee
 Alan Jones, Chairman
 3717 Wildwood Drive
 Endwell, NY 13870
 (607) 754-2339
 May 1988

ROAD RACE OFFICIALS

Dan Brannen has informed me of the work of the TAC National Athletics Officials Committee and in particular the contribution of Lawrie Robertson. Lawrie has written a draft manual called "Training Handbook for Officiating Long Distance Events". It originated out of his work with Peter Thompson to train officials for the 1984 Women's Olympic Marathon Trials. It is a fine piece of work. In addition to educating an official, it has a lot of information which is useful to a race director. I have corresponded with Lawrie and have provided him with some suggestions for changes to the handbook. We have also begun to explore the question of whether we need or want officials for road races.

As you may have noticed, Basil Honikman addressed the subject of officials in the January/February issue of TACTIMES. Also, I have talked to Basil about the need for officials. As has been mentioned before on these pages, we know there is a problem in getting accurate results to TACSTATS for record purposes (other than the elite runners). Basil and I feel that the way to address this is through an extension of the existing validation program. That is, the validation program, in addition to assuring the course as it existed on race day was at least the stated distance, would assure that the results were accurate in listing the correct finishers with the correct times. This does not imply that the same validator validates the course and the finish line procedures. In some cases the same person could do this. In others, it would have to be different people. The goal of this would be to give the race director the warm feeling that any records set during the race would stand up. The finish line validator would be brought in by the race

director just as the course validator is. The difference is that the finish line validator would have to be there on race day. (It is my opinion that a course validator should be there on race day, also, but that's a different subject.) The finish line validator's tasks are well delineated in Lawrie's draft handbook. That is, there really is no difference between what Lawrie wants to accomplish and what TACSTATS wants to accomplish. The difference lies in who does it. TACSTATS would like this done by the RRTC working with TACSTATS. Lawrie would like this done by the TAC Officials Committee -- again working with TACSTATS.

So it seems we have a jurisdictional problem here. If you look at the end of this column you will see the long list of members of the Finish Line Sub-Committee. I would love to receive some opinions from committee members on this very important question. Basil and Linda, who have just been added to the committee, are the only ones who have expressed an opinion so far. I feel this issue might have been at center stage at the 1987 TAC meeting if there had not been so much attention given to the pacing guidelines. Therefore, the "official/validator" question is sure to come up at the 1988 meeting. What is your opinion? As you know, Pete Riegel grants space to anyone with an opinion.

Of course there are many problems to be worked out. For example, a relatively small race might not want to bear the expense of a validator just on the chance that a record might be set. However, after the race the course is still there (but the cones are gone) but the details of what happened in the chutes is lost forever.

TIMING ACCURACY

In the same letter in which Dan Brannen brought up the issue of TAC officials, he mentioned his concern about timing devices and their accuracy. The following is my personal opinion and, again, I welcome the views of other committee members as well as other readers.

When I first began directing races (1971) I raised the question with Ted Corbitt about the accuracy of watches compared to the accuracy of courses. At that time I believe the course accuracy was close to what it is today (0.1%) but the timing accuracy of the then available mechanical watches was not nearly that good. I used to check them. The expensive ones that track & field officials used were fine. I'm talking about the \$15.00 ones you would pick up in a 5 & 10 (Remember them? The 5 & 10's that is -- not the watches.) However, with the advent of the electronic watch with a quartz crystal as the internal timekeeper, the accuracy is almost always in the range of 15 seconds/month or better. This is 0.5 seconds/day or 0.02 seconds per hour or 0.0017%. Therefore, our present timing accuracy is far better than our measuring accuracy. (All of this assumes that the timing device is used correctly.)

Dan asked about the timing accuracy of printing timers, computers, etc. I have checked a number of printing timers and they have all been within this same 0.5 seconds/day accuracy. Computers are another story. Almost all that I have checked are fine. This is because the ones I checked use the same crystal to drive their video circuits as drives the timing chip. The video frequency must be very close to a standard so these are tuned during manufacture. However, some computers don't need to generate this frequency. One brand (which I will not mention) has been reported to have its internal clock off by 3%. If you used it for timing a race, it would be off by about a minute in a 10 km race! The computer program I have written allows the user to check the internal timer and, if inaccurate, allows calibrating. It is known that if a crystal is off a certain amount, it will always be off this same amount (again within +/- 15 seconds/month). But, in spite of all these words, any race director should use a variety of timing devices and compare the results. This is only

prudent. Also, good agreement between different devices gives one the confidence that things are okay.

MISCELLANEOUS

I imagine those of you in the bifocal set were glad to see Pete go back to the 8.5 x 11 format so you could read my column.

If there are topics you'd like to see covered in the Finish Line corner, let me know. Better yet, provide some copy that I can use.

FINISH LINE SUB-COMMITTEE MEMBERS

John Boyle	Philip Lockwood
Mark Crook	Neil MacDonald
Jack Dowling	Fred McCormick
Christopher English	Jack Moran
Bill Grass	Sally & Wayne Nicoll
Linda and Basil Honikman	Rick Staback
Alan Jones	Allan Steinfeld
Walt Jorgensen	Fred Torres
A.C. Linnerud	Ken & Jen Young

Alan Jones, Chairman

2420 Glenwood
Anchorage, AK 99508
March 8, 1988

Peter S. Riegel, Chairman
TAC/RRTC
3354 Kirkham Road
Columbus, Ohio 43221

Dear Mr. Riegel,

It has been quite a while since I have written you and fortunately we have come a long way in Alaska with the help you gave me at that time. We now have a few measured and certified courses and the process to get one is much simplified.

I just received the March Measurement News and I guess I am a little surprised at the whole concept of "owning" a race course. Actually, I should say appalled. If we were talking about a special road or pathway built for the purpose of a race then I could deal with it. But, we are talking about a public right of way in general and literally a bunch of P.K nails and paint on that right of way. Certainly, there was the cost of making the course measurement and preparing the documentation but that does not reserve that piece of ground for the sole use of a race committee. If two races wanted to use the same course at the same time there would be a problem but that is what local government and permits are for. As far as Kevin Lucas' practice in Texas of issuing a new (second) certificate with a new I.D. code, it may be simple and straight forward to him but it just creates more paperwork and hassle later. It means the course list has multiple numbers for the same course and it is courses, not races we certify. It means record keepers have to keep track of and cross-reference additional numbers and it just plain helps to confuse runners. But of course it nets us a few more bucks for fees. Mr. Lucas' statement that a group owns a course by measuring it can't be taken seriously. If two groups measure the same course, do they each own half? Left or right side, or is it Tuesday, Thursday and Saturday, and Wednesday, Friday, and Sunday with the course closed on Mondays. If I shovel the snow off the sidewalk in front of my home, I don't have the right to control who uses that walk. And no certificate any snow removers group issues is going to give that right to me.

If TAC and the RRTC think a measurement certificate is ownership, I am sure I can arrange to sell a chunk of Denali National Park to any that would like a piece. Kidding aside, we should avoid erecting barriers to runners running on certified courses. Knowing that as a runner, it will cost me, all other things being equal, at least \$1,000.00 in airfare and lodging to run a certified marathon I don't want it to be that much more difficult to get races on certified courses here.

Another, for instance, if ownership of a measurement certificate controlled use of a course then most certified courses here in Alaska would not be certified. Most are based on a single calibration course. During the period that I contacted you when we could get no other calibration course certified, if the owner and the then TAC

certifier had refused to divulge the location of that course we would not have successfully certified our other race courses. We now have two calibration courses in the state and I as TAC State Record Keeper and Course Certifier consider them public resources to be shared. Having measured one and check measured and remarked the other, and not receive a penny for either, I can guarantee to you that the location of both will be public knowledge and use of either encouraged.

A course measurement and certification is something a race organization does out of self interest but, it must also be considered a donation for the good of the running community. If another race chooses to use that course, we should be pleased for the benefit it brings to the running community. Contrary to Mr. Lucas' statement, creating the myth of course ownership is what really opens the can of worms. TAC certified a course, using a particular starting point and a particular ending point over a given route. To say a runner that runs that course but did it under the wrong name and therefore it was not certified is a pile of bureaucratic bull. Certainly it would nice to hope that one race committee might contact another but TAC has no business requiring or even expecting. If a race organization becomes defunct, the course is still certified, a certificate still exists yet there is no one to contact. Mr. Lucas' "cut-n-dry" issue is cut and dry exactly the opposite of the way he sees it as far as I can tell.

Wayne Nicoll's comparison of course ownership to ownership of music or computer programs is a bit off the mark I believe. It has been repeatedly demonstrated in the computer industry the though the actual code in a program can be protected, you can not protect from a program the does the same thing. Witness the raft of Lotus 1-2-3 imitators and remember Lotus was copied from someone else anyway. His example, using a smart lawyer, did not create ownership of the course but ownership of the Race, an entirely different concept. We all have seen races change courses, even distances but if a race does that, it must be recertified on the new course. Barring construction or destruction, the old course is still certified and still exists.

We must not forget that the whole reason for all of this is so runners can run on accurate courses and not so race committees can engage in turf battles. I respectfully but very strongly disagree with Mr. Lucas' and Mr. Nicoll's positions and feel that in the long run their point of view will have a negative impact. Obviously, my point of view should keep the pot boiling as your letter in Measurement News would suggest. Personally, I'd dump the pot on the fire.

Sincerely,

Frederic Wilson

Frederic Wilson

ELEVATIONS

We ask for elevations in the course data submitted to us, and we use these elevations in determining the difference between a point-to-point course vs a loop course. We do not generally check these elevations, since we do not have access to all the topo maps.

I have seen very few "borderline" courses where elevation change alone makes a difference. In the original certification it is, perhaps, no problem. After all, the validator will check. But how? Using topo maps gives us only a general idea of the difference in elevation. If it suddenly became very important, how would we determine the value of the elevation difference? It could be done with a level survey, but that's pretty time-consuming and expensive. Does anybody have any idea how this might be approached in a validation situation?

SHARE YOUR TRICKS

You'll notice in this MN a one-page writeup of how to get back on course without losing your data. It's an example of a technical trick that you probably already know, but maybe didn't. If you have any tricks of your own, you are invited to put each one on a piece of 8 1/2 x 11 paper, and send it to MN. These techniques, if shared, will make better measurers out of all of us. Let's have some of those good ideas!

ORANGE BOWL MARATHON MEASUREMENT COMMENTARY

Dave Yaeger felt that the 214 m calibration course used in the Orange Bowl Marathon validation (see March MN) was a bit too short. He says "surely if AIMS feels that a validation is important then the old adage 'if it is worth doing, it is worth doing well' should come into play". I agree, Dave, and since I was the one who dropped the ball, I accept the admonishment. We had hoped to be able to use the full 1000 feet, but I took a chance and misjudged. The area near the finish was seemingly OK, but if I'd had the sense of a beetle I would have realized that the finish line would interfere with use of the full 1000 feet. I believe, however, that by presenting all the measurement results based on all the various constants we covered all the possibilities, and that the course did get shown correct.

REAR-TIRE FLATS

Dave got a rear-tire flat in the last 2 km of an 8 km measurement. He fixed the flat and recalibrated, and then did an experiment to see what effect a very soft rear tire had. He found it had no measureable effect. Tom Knight also has done experiments that show the same thing. A rear-tire flat can be fixed, and the ride can proceed without recalibration.

A

DISCOURSE on COURSE by David Toberisky MEASUREMENT

before



Nancy Colston 2

In the beginning, as our Victorian jock illustrates, race courses were measured manually, using a cumbersome and primitive measuring device known as The Wheel. Note the uncomfortable posture it required to operate.

after



Nowadays, with the aid of the modern and compact Jones Device, a patented tool that counts calibrated wheel revolutions, our NYRRC model rides in style. The Jones Device measures about one inch cubed, and sells for thirty dollars.*

Remember sitting through geometry class way back when, wondering why in the world you would need to know those awful axioms about triangles, circles, and such? Well, here's one axiom you would do well to reexamine: The shortest distance between two points is a straight line. Why is this important? Because it could help you to race just a bit faster.

The reason for this relates to the principle employed in measuring race courses. Bill Noel, NYRRC's course measurement maven, says a course is laid out by tracing "the shortest path available to the runner within a certain restricted area." The key phrases here are "shortest possible path" and "restricted area," and these points can be illustrated by using Central Park as an example.

Measured one meter from the curb, which is how courses were figured prior to 1983, when new guidelines went into effect, a complete circuit of the park is 6 miles and 33 yards. However, if you are geometrically wily and "run the tangents," meaning that you run a straight line between all points along that curvaceous road, you will cover roughly 150 fewer yards.

What about that "restricted area" business? For the most part you cannot run all tangents in a Central Park race,


because the course is restricted to the recreation lane, which is marked by those brightly colored cones you've seen. (Note, though, that the cones are not in place for the first half-mile or so of most races and are not used at all in mega-races like Haworth 10K and L'eggs Mini Marathon, because the entire roadway must be used to accommodate the runners). The course, then, is measured by the tangents within this limited area.

The point is, if you run all the tangents in the restricted area, you will cover the proper distance. If you leave the coned-off space, you may be cutting the course and subject to disqualification. If you swerve a bit going around a bend, you may add from a few feet to several yards to your run. You should be running a bit longer anyway, because of what Noel calls the "short course prevention factor." The SCPF is an additional piece of road tacked on so that a course can be certified and any records set validated by The Athletics Congress. The SCPF is one-tenth of one percent of the race distance, so a certified 10k should be 10 meters long, and a marathon should be an extra 42.195 meters. These added distances need not cause people to rewrite their training schedules, but they could be a great new excuse for a mediocre race, as in, "If it hadn't been for that

darn SCPF, I would have broken 40 minutes this time."

No one claims that these measurement procedures and the SCPF are unfair, though there is speculation that race times in Central Park are slower than those prior to 1983. Whether or not this is true, this is simply a rule runners must race by. Bob Glover, coach of Atalanta and mentor to others through his books and classes, feels that runners should be better informed so they won't unwittingly run that extra yardage. He points out that runners should realize their times in Central Park or on a winding course like the New York City Marathon are apt to be considerably slower than on other courses. "The curves in Central Park mean it's much harder for someone to run the specified race distance than on a course that is straight out and back." He suggests that runners keep their race times in perspective, considering that the shape of a course as well as the weather and terrain will affect one's performance.

To sum up today's lesson, run the tangents and don't go crazy comparing race results before you figure in all the variables. And remember to mind the cones and stay within that restricted area lest you cross a patrolling course marshal.

Class dismissed. 

*THE NYRRC sells over 300 a year.

DIPL.-ING. HELGE IBERT
BERATENDER INGENIEUR FÜR BAUWESEN VBI

WESTENDALLEE 100 D
D - 1000 BERLIN 19
TEL. (030) 304 08 71

March 11, 1988

Dipl.-Ing. Helge Ibert, Westendallee 100d, D-1000 Berlin 19

Peter Riegel
AIMS Technical Committee
3354 Kirkham Road
Columbus, OH 43221

U.S.A.

Dear Pete,

I admired your wonderful synopsis of the Orange Bowl Marathon validation results (with Lotus 1-2-3 graphics ...), and especially the very fine accordance of John Disley's and your figures (up to 20 miles). Seems you two measured the same course !

And, of course, I enjoyed the puzzle, and here are my answers to your questions (see also sketch below):

- 1) The minimum distance is 822.857 meters.
- 2) The docks should be located at the foot of the triangle's altitudes (heights ? ==> in German "Höhen");
- 3) "Why do you think your solution is shorter than any other ?"
Because AIMS Measurers always (or at least: mostly) find the shortest possible distance !

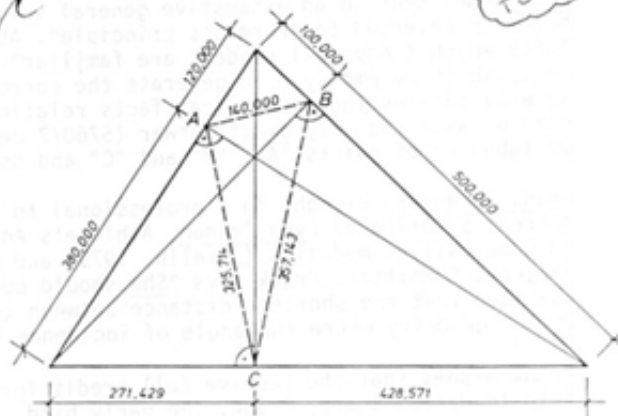
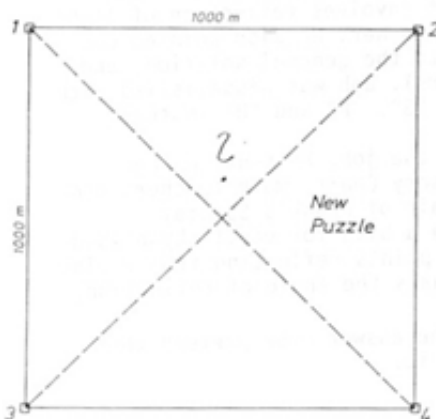
If you really want I'll give you another puzzle:

A contractor (maybe the same as yours) asks for the shortest possible routing of paths or roads to connect four houses which are located at the corners of a square with each side 1000 meter long. To make it quite clear: The two diagonals do not serve the purpose ...

Best regards,

Helge

SEND ANSWERS TO PETE



LAST MONTH'S PUZZLE

Never in the history of Measurement News has anything received such a prompt and voluminous response as last month's Puzzle Page. The outpouring of help to our nautical contractor was overwhelming.

The first, and correct, response came from Chris English, who used simultaneous equations to come up with the right answer. Because he already had a new car, and had no time to take a trip, he opted for the "other valuable prize", which, in this case, is the honor of appearing in this internationally-respected journal as the prime solver of last month's puzzle. Congratulations, Chris! I'll think of you while touring the wine country in my new Bentley.

Chris' solution was followed by Bob Edwards'. Although he preferred the automobile, it had already been pressed into use by your Editor, since it had been won but declined by Chris. Bob had one minor error in the location of point "A" but his answer was substantially correct.

Gordon Dugan used a graphical technique, and also a "practical" solution. He felt that any real, decent solution useful to a contractor should put the docks within the middle third of each side, and he submitted a solution which did it this way. He also submitted an "impractical" solution which came out to 828 meters, not far off the correct distance of 822.86. Pretty good for a graphical solution. He might have come closer but was feeling the aftereffects of taking 2nd place at the Saddle Road (Big Island, Hawaii) 100 km. After holding first place for 59 miles he was passed by a youngster of 45 (Gordon is 52 or so) and relegated to runner-up. Nice going, Gordon!

Gordon runs at noon with a math professor who gave him some copies from math texts that showed that the puzzle has been around for about 200 years, and is one on which many mathematicians have exercised themselves.

Brian Smith submitted a diagram showing the correct locations, but, satisfied that he had established the general principle, sent no numerical answer. He expressed a preference for a Lamborghini in his reply.

Helge Ibert not only correctly solved the puzzle, but submitted next month's puzzle. See his solution and be sure to sweat over next month's puzzle.

Bob BaumeI sent in an exhaustive general solution. He first tried calculus, but then reverted to "Fermat's principle". About this principle Bob says "with which I hope all readers are familiar". It involves reflection of light rays, which he employed to generate the correct answer. He also pointed out several interesting geometrical facts relating to the general solution, and came up with the only exact answer (5760/7 meters). Bob was dissatisfied with my labeling of points "A", "B" and "C" and used "S", "P" and "R" instead.

Frank Greenberg brought in a professional to do the job. He sent in the correct solution of Lynn Cannon, Athlete's Advisory Chair, math teacher, Pan Am Games silver medalist (javelin, 1979) and chair of Frank's Special Projects Committee. Frank says "She should be on a bike for you!!" Lynn used the idea that the shortest distance between two points reflecting from a line is the geometry where the angle of incidence equals the angle of reflection.

Frank wishes that she receive full credit for the answer - he prefers the trip to Paris. Sorry, Frank. The early bird got it.

Dave Yaeger initially investigated a solution involving the centroid of the triangle, and came up with 842.2 meters. He writes "I was then showing my brilliant solution to a colleague who proceeded to remark 'wouldn't the shortest distance be when two of the homes are located on either side of one of the points of the triangle?'. Dave went back to the drawing board and did a Lotus spreadsheet which, through successive approximations, got the correct answer of 822.9 meters. He looks forward to the trip to Paris.

Jim Lewis, like Frank Greenberg, passed on the solution to an expert. His math department colleague at University of Nebraska, Lincoln, and local measurer, Roger Weigand, provided two solutions to the problem involving lots of trigonometry and algebra, and both arriving at the correct solution. He also provided copy of the same math text as Gordon Dugan, that recognized the puzzle as "Fagnano's Problem", which dates back to 1775, and has been solved in many ways.

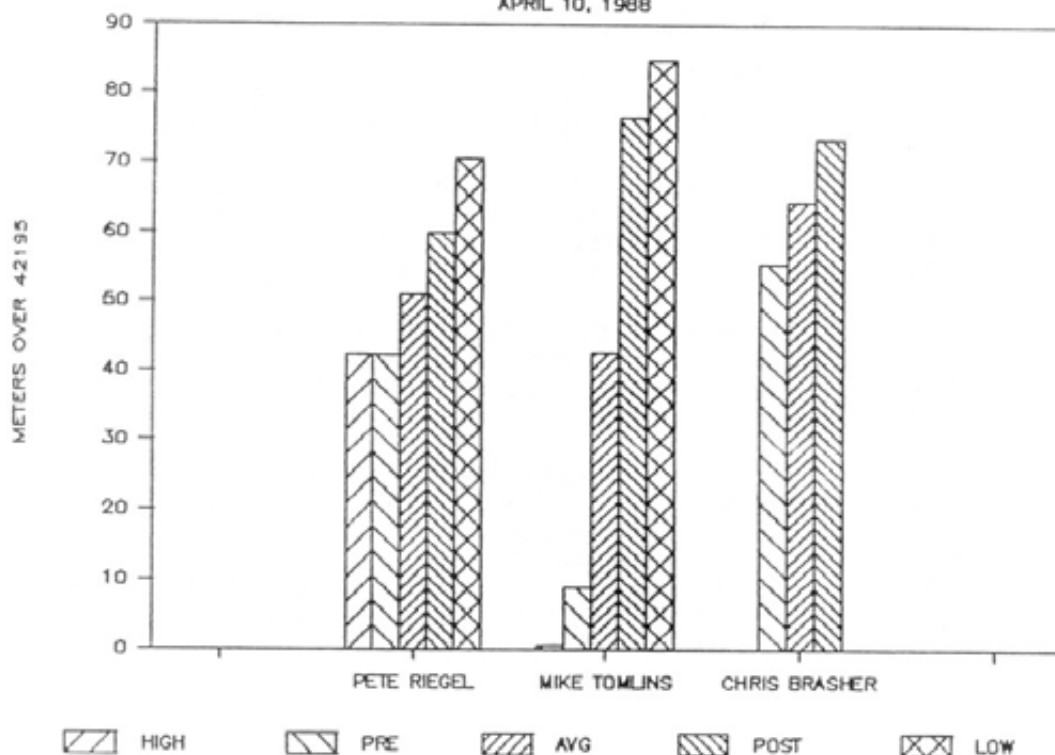
At the time I posed the problem I did not know of its antiquity. I saw it in a trade publication 30 years ago and won \$10 for solving it first among their readers. It stuck in my mind so I used it.

The responses were lots of fun to read, and all were worthy of publication, but there isn't space. Accordingly I used Helge's reply, since it was the best one using only one piece of paper. Next issue I will again reproduce the best solution that is received on one piece of paper.

As the months go by I will keep a running log of those who have solved every puzzle. He or she who survives the longest will be crowned champion.

LONDON MARATHON VALIDATION MEASUREMENT

APRIL 10, 1988



VALIDATION OF THE 1988 LONDON MARATHON

The course of the 1988 London Marathon was little changed from that of the 1987 race. The start and finish were adjusted a bit, but the route was essentially the same. Two small deviations were made from last year's course. Both of the differences were measured in 1987 in case we needed them, and I wrote to John Disley (London course director) earlier this year describing the effect of the adjustments on the placement of the start and finish. I told him the changes would make the course 5 meters longer. He used that information to set up the course for this year's race, with no additional bicycle measurements performed, since it had already been done.

HOW IT CAME OUT

The course checked out at 42243 meters, and 5 meters was then removed from the starts. This was perfect agreement with the measurement results of last year. The course after adjustment had a measured length of 42238 meters. The three measured distances agreed within 22 meters - very good.

I observed the race from the vehicle in front of the men, and it followed the measured route. I also started a watch at the start, and the finish times agreed with my watch. Some lead runners did shortcut onto the sidewalk at some points, but at other points were kept off the shortest line by crowds. I judge that no substantial effect on the distance resulted.

The blue line, laid down by John with some help, was well-placed and served as an excellent guide to the runners. It's painted using a special washable paint. John stayed up all night Thursday before the race seeing that it got put down right. After the race a wash/rinse crew rolled along and removed it.

MEASUREMENT PROCEDURE

John Disley picked me up and we went to Greenwich, where we met with Richard Smith and Mike Tomlins. Richard and I laid down a 400 meter calibration course in Greenwich Park, which Mike and I used to calibrate the bikes.

Just as we were starting the measurement Chris Brasher (London race director) arrived, having been delayed. There was no time for him to calibrate. He used a front wheel identical to the one provided for me by John - a Sure-Trak urethane non-pneumatic tire. Mike used a standard pneumatic tire.

The measurement proceeded smoothly, with data being taken at all multiples of 5k and 5 miles, plus the halfway point and the first mile. At the conclusion of the measurement we recalibrated the bikes on the 800 meter calibration course on The Mall.

In the afternoon the start lines were adjusted. Recalibration on the Greenwich 400 meters showed that Chris' bike had the same calibration change as Pete's. This information was used to estimate a reasonable constant for Chris' ride of the main race course, assuming that his tire behaved like mine. Since this pre-measurement calibration constant is only an estimate, Chris' ride cannot be considered as "official" but it nonetheless should have been quite good, since the tires are virtually identical.

ROTTERDAM

After the London Marathon the reports of the 2:06:50 at Rotterdam began to filter in. Ted Paulin, head of AIMS Technical Committee was in London to hear the news. He is arranging for a course remeasurement and post-race validation with Mario Kadiks, Rotterdam director.

SOME TRICKS FROM LONDON

How do you pour enough water at aid stations for 25000 runners? At London, you don't. Instead, the water is prepackaged in small waterproof boxes, and delivered to the aid stations by Unigate, a London Milk company. About half a million boxes of water were distributed along the course. The volunteers at the aid stations poked straws into the boxes through special holes. The resulting package is easy to hold and easy to drink from without spilling.

Readers wishing to learn more about how to paint a removable blue line may contact Wilson & Scott (card below) who have it all worked out.

OLYMPIC TRIALS CHECK MEASUREMENTS

Dan Brannen organized a pre-race remeasurement of the New Jersey Waterfront Marathon course before the US men's trials, and Sally Nicoll did the same for the women's course at Pittsburgh (using an all-woman measuring team). Look for reports of these measurements in next MN. Early reports show both went well.



Wilson & Scott (HIGHWAYS) Ltd.
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P.O. Box 29, CHERTSEY, Surrey KT16 9HF
Telephone: Egham (0784) 39394



Stephen D. Scott
Joint Managing Director
Home: 0252 636443

Pete Riegel
3354 Kirkham Road
Columbus, OH 43221
U S A

Stockholm, 16 March 1988

Dear Pete,

I must admit I feel guilty. I have been receiving MN for a couple of years now, but I haven't actively contributed to its contents. If there is any legitimate reason for that it is that my interest in the sport of track and field athletics isn't limited to road course measurements or even long distance running which means that the time available is very limited.

However, I really enjoy reading MN which probably is the only forum in the world for discussions and exchange of knowledge in this area of our sport. By this letter I would like to present my opinion on a couple of questions of principle character that have been regularly debated in the columns of MN.

1. Validation before or after?

There seem to be two schools of "validation" procedures:

* The "AIMS" procedure where the course should be checked before the race carefully by an expert who during the race observes that the measured course is followed. If a "record" (note that there -still? - are no official world records in road running) is achieved no further measurement is demanded.

* The "TAC" procedure where anyone could measure the course before (and through a report to a certifier get it approved) but where an expert will check the course afterwards in case of an important record.

During the Congress in Rome last autumn the IAAF approved a new rule saying that all international championship road races - as well as all other road races directly sanctioned by IAAF (like the major international marathons) - should be checked before the race by an IAAF approved expert measurer.

I fully agree with this procedure as I think it is of extreme importance to all the runners (not only those very few world record setters) that whatever performance they would achieve in a major international road race doesn't risk ending up as "worthless" in a "short course" supplement.

I don't think it is sufficient that organisers of such races (to which foreign runners are invited) just in case of a world record would "risk" independent checking of the course length. What about national records set abroad? Who could demand a validation for that? And what about the un-countable number of personal records of importance for national statistical lists?

The only way to create a situation that gives the runners a reasonable guarantee (that the course is sufficiently long) is to demand "expert" checking in advance! Numerous examples - even from recent time (see John Disley's report on the World Championship course 1987 in the March issue of MN!) - have proved that it is not sufficient to rely on the race organisers to create courses of correct length.

Please note that what I am talking about is the international type of road races. I.e. races that have a (more or less) good economy and that try to attract runners from other countries. They should have no problem to afford bringing in an independent expert to check the course. When it comes down to races of a national type I agree that the TAC procedure is a practical solution that gives a reasonable "security" for the runners.

It could also be noted that neither measurement in advance nor measurement afterwards guarantee that the course configuration available to the runners on race day is measured. The solution to that problem is that the measurer has followed the race in progress. Normal video-recordings could be of help but could not give answers to all questions.

This strengthens the value of the "AIMS" procedure where following the race is a part of the procedure. For a validation afterwards it is normally practically impossible to find an expert measurer who out of pure luck followed the race from the lead vehicle.

However, I have nothing against having a procedure of post-validation also implemented if (when) official world records are introduced for road running.

2. Could a course that turned out slightly short on validation still be regarded as acceptable?

Before I discuss this special problem I think I should say a little about the fundamental principles that govern the sport of track and field athletics (of which road running is a part).

One of those principles is: "Always be on the safe side". That principle has governed e.g. the rules for rounding off measurements of performances achieved (next slower time unit, next shorter length unit), the rules for weights of throwing implements (definite minimums) and the rules for allowable inclination (definite maximums) of running tracks and throwing fields. These rules have the character of definitions.

In the rules for the throwing implements it is said that when "supplied for competition" the implements should be 5-25 grams overweight. The objective is to create a safety margin to avoid -when the implement is checked afterwards for a record throw - the risk that it turns out ever-so slightly underweight because it has been e.g. scratched when landing on the ground.

The logical parallel to our "short course prevention factor" is obvious. We put in that to avoid that the course upon a remeasurement could be found short. The size of the SCPF should depend on the skill of the measurer, the method used and the problems encountered (parked cars, road works, traffic, change in temperature and calibration, etc) during the measurement.

The 1:1000 SCPF is usually a suitable choice for a good measurement by a skilled measurer using the bicycle method. But it should not be regarded as more than a recommendation based on experience. If e.g. there is a larger variation than 1:1000 in the calibration figure during the measurement it is obvious that the situation has to be analyzed further.

Because the SCPF should be just what it says - i.e. a "short course prevention factor" - it must be large enough to really prevent the possibility to get a competent measurement of the course that is shorter than the prescribed figure for the competition (e.g. 42195 m for the marathon).

If we go back to the international rules they say that "the length of the course must not be less than the official distance for the event". We will never know the "real" length of the course but as the line along which the measurement should be made is defined as the "shortest possible route" no correct measurement could turn out a value lower than "real" length. All deviations from the SPR will - by definition! - create a higher value!

The reason that we never will know the "real" length is that we are only human beings unable to perfectly follow the true SPR. Skilled measurers will however deviate so little that by adding on a quite small SCPF we can be fairly certain that the rule "not less than the official distance" is adhered to.

However there are two ways to create a measured value lower than the "real" length despite using an accurate calibration course as "yard-stick". One is to measure "something completely different" (i.e. a line that is not available to the runners during the race), one is to do a sloppy calibration but a prudent measurement. Both these "solutions" however are quite easy to discover and are such that they never have to be considered when a competent measurer does the job.

A set of calibration runs should always be very compact (i.e. a variation of more than two counts is unacceptable, a variation of more than one count should be considered "irritating") to be used as the basis for a measurement. The main problem is the change that could take place between pre- and post-calibration. More than two-three counts has a too large influence on the precision of the measurement. To just take the average is not necessarily a good solution when we consider what the rules demand ("not less than the official distance").

It should also be noted that - unless there is not the slightest variation within and between the pre- and post-calibration - the validation will not give "one" length but rather an interval based on the extremes in the calibration-values. This interval must be small (see paragraph above) for the validation measurement to provide any kind of "conclusive" evidence. For a validation to "prove" a course length to be legitimate the interval should be completely on the "long side" of the intended distance.

If the intended distance falls within the interval there is a possibility that the course is short. Such a possibility can't be ignored! One way to get out of this problem is to make another validation measurement to shrink the interval to get the "intended distance" out of it on either side.

In MN the hypothetical question "What should be done with a course that turns out 1 m short on validation?" has been discussed. I think that question is incorrectly formulated as the result of any measurement is an interval - not an exact value. What probably is meant is that the mid-point of the interval (= the average of the values calculated from pre- and post-calibration) falls 1 m below the intended distance. If so my answer to the question is of course that the course is NOT acceptable!

I find it illogical to put in any kind of negative tolerance anywhere in the procedure. It is in disagreement with the fundamental principle in our sport "Always be on the safe side", just as the strange national rule 185 reprinted in MN March 88 p 30. (It astounds me to see that in the USA courses shorter than the prescribed distance were accepted up until Jan 1, 1985 although the international (IAAF) rules already on Apr 1, 1981 elucidated on the matter of (the non-acceptability of) negative tolerances!!!)

Please also notice that there is nothing "unfair" about the rule as long as it is applied to every race. There is no logical difference between saying that 42174m is an absolute minimum for a marathon and saying that 42195 is the minimum but a negative tolerance of 0.05 % is accepted! Now our rules say that the absolute minimum is 42195m and we have to adjust to that.

That means that when we are laying out a course we should create a route that definitely is not shorter than 42195m. We should act with the knowledge that we will get "hanged" if a validation measurement gives proof that the course might be short. I.e. creates an interval that stretches below 42195m. Obviously the original measurer then didn't include a sufficiently large SCPF when laying out the course.

Just like the shot putter that brings along an implement he thinks is weighing "exactly" 7260 grams but which turns out to be 7259 grams on a high-precision gauge. That shot is illegal and performances achieved with it are not acceptable for record lists or statistics! Had the implement originally been in the range 7265-7285 grams that would never have happened.

I.e. if you are too parsimonious when determining what SCPF to add to the course-length you measured you should understand that you are playing with fire and that you could get burned! The official length of the event is a definite minimum without room for any extra allowances - and that every measurer must be aware of!

This is one reason why I think it is important that the responsible measurer of a race course always is officially listed by name so the personal responsibility is understood. You should do your work in such a way that you would welcome anyone who wanted to check the measurement! The SCPF should make you feel comfortable - otherwise it is not a SCPF at all!

I also think it is important to realise that the SCPF is not there to cover up for negligence and mistakes in the measurement - it is there to take care of the limitations built into the method. If you "waste" the SCPF on a sloppy execution of the measurement there is a very large risk that the course would turn out short when checked by a careful measurer.

Sincerely,



A. Lennart Julin
Gästrikvegatan 14
S-113 34 STOCKHOLM
SWEDEN

DIPL.-ING. HELGE IBERT
BERATENDER INGENIEUR FÜR BAUWESEN VBI

WESTENDALLEE 100 D
D - 1000 BERLIN 19
TEL. (030) 304 08 71

February 29, 1988

Dipl.-Ing. Helge Ibert, Westendallee 100d, D-1000 Berlin 19

Mr Peter Riegel
AIMS Technical Committee
3354 Kirkham Road
Columbus, OH 43221

U.S.A.

Dear Pete,

Back in (cold) Old Germany I would like to thank you for having the good idea of arranging our meeting in sunny Miami and inviting me to attend.

As to our discussions let me try to sum up my opinion of some points:

Short Race Courses

If any qualified measurer finds a course short by one meter or more, the course is is short because

The shortest measurement is next to the truth

and no course can be longer than the shortest (correct) measurement.

Short Cal Courses

I don't like Cal Courses being shorter than about 1/50 of the total length to be measured, because a deviation of only 1 count produces a difference of 4 or 5 meters (in 42.2 km) if the Cal Course is 1000 meters long, but already 14 to 15 meters if the Cal Course is only 1000 feet long.

Measurement Procedures in Germany

As I said before, the officials of the German Track and Field Association (DLV) obviously are not very interested in road races, but in fact the DLV Rules contain at least some regulations concerning road race measurement:

- Courses must not be shorter than advertised (especially: Marathon courses must not be shorter than 42.195 meters and not longer than 42.245 meters)
- The shortest possible line is to be measured (rule valid since 1981).
- A Measurement Certificate and a scaled map has to be sent to the DLV before race day [but I suppose there is nobody to check the paperwork].

Not long ago a new »AG Strassenlauf« (= Working Group Road Races) has been established by people like Günter Mielke and Peter Christ. I'll try to collaborate in our field of interest.

Best regards,



c: John Disley

THE ATHLETICS CONGRESS
OF THE USA

Road Running Technical Committee
Peter S. Riegel, Chairman

3354 Kirkham Road
Columbus, OH 43221
614-451-5617 (home)
614-424-4009 (office)
telex 245454 Battelle

April 26, 1988

Helge Ibert - Westendallee 100 D - D-1000 Berlin 19 - GERMANY
A. Lennart Julin - Gastrikegatan 14 - S-113 34 Stockholm, SWEDEN

Dear Helge & Lennart,

I am writing to you to clarify my views on the subject of a negative allowance on validation measurements.

First, I believe if a course measures out to 9999 for 10 km, the course is probably slightly short. I agree with you there. I also recognize, as you do, that measurement is not exact. An error band surrounds each one. Plus or minus 5 meters in 10k is a reasonable number for the error band, using bicycles.

The conduct of a road race is a complex interaction between racers, race director, timers, measurers, and the sporting fans. We are not playing a measurement game that stands alone, all by itself. We exist to support the whole sport. We like our measuring, but there are other players too.

Very few races happen perfectly. There are always small things that mar the conduct of even the best races. When records-keepers review the conduct of any race, they have to use judgment to decide when a "record" is really a record, and decide when things are good enough. The procedures for deciding whether a course is adequate for record purposes are not yet cast in stone. We are all working on them, to achieve a system that serves the sport in the best possible way.

When we validate a course, we are attempting to prove something. What are we attempting to prove? We have two choices:

- 1) We can seek proof that the course is at least the nominal distance.
- 2) We can seek proof that the course is short. This is the approach taken by TAC. The record will not be accepted if the course is shown to be short. We consider the course accurate until the remeasurement proves it short.

We would need to get a measurement of 10005 meters or more to be sure a course is longer than 10 km. We would need to get a measurement of 9995 or less to prove the course is short. A measurement falling in-between merely shows that the course is reasonably accurate. An inconclusive measurement should not decertify a course. Maybe we can do it, but should we?

Should we shoot down a 10 km course that measures out to 10001 because it is not proven at least the distance? I think not. It is better to give the benefit of the doubt. We should use 9995 as the level at which we decide the course is short.

An additional benefit of using 9995 is that it truly settles the argument. The course is short. 9998 or 9999 does not provide this certainty. Educated technical people - and others with good intuition - know this.

I respect the effort that an athlete makes in running a world best time. It should not be denied based on a small technicality. After all, it is not something the athlete can easily repeat.

I also respect the work that a race director does in organizing an event. He too should not be penalized with over-strict interpretations of rules.

It is possible to measure courses shorter than the SPR. Results of calibration rides in the 1984 Olympic Marathon course measurement clearly show this. Look for this in the next MN. Using a rough calibration course will make the measured value come out lower. Using a smooth calibration course will make the number larger. Until we know how to deal with this we should give the benefit of the doubt.

Because of the SCPF, a measurer who is careless can still lay down a course that is OK. Where an expert might get a "true" length of 10010 meters, the amateur may get only 10001. He was sloppy, but the course is still OK. Our goal is to judge the course itself, not the quality of the measurer who laid it down.

The bicycle SCPF of 0.1 percent is big enough to cover any careful measurement. No SCPF can cover all sloppiness, unless it is so large as to make races ridiculously long. We do not need to change the SCPF.

Several years ago Bob Letson said there were three types of courses: short, accurate, and long. He also thought records should be accepted on accurate and long courses. I agree with this. Using the nominal distance as the cutoff level makes no measurement sense at all. It can be done, of course, but it is purely arbitrary and leads to confusion and complexity when different tools are used to measure.

If I used an EDM to lay out the Fifth Avenue Mile I could add 10 centimeters as a SCPF and be sure the course was truly not short. But about half the time a bike measurement would indicate a shorter length. Should we have to worry about this? Better to set the rejection level where there is no doubt.

On the other hand, if an EDM was used to check a bike-measured mile, and it measured out 10 centimeters short, I would have no trouble accepting that the course was short. It is certainty I want. I do not want to see a course that is known to be short be acceptable.

If you two and I measured a marathon course (Rotterdam again?) we would get three different numbers, but they would all be pretty close. We would probably all use the same calibration course, which might or might not reflect the character of the race course surface. If our measurements were 42190, 42200 and 42185 we might have a hard time deciding what it meant. If they were 42170, 42185 and 42180 I believe we would be able to say the course was short and still sleep well that night.



MEASURING SHORTER THAN THE SHORTEST POSSIBLE ROUTE

In the 1984 Olympic Marathon measurement 8 separate calibration courses were used. Each was electronically measured, and for this discussion will be considered as absolutely accurate. The first cal course (0) was ridden four times and the last (7) was ridden twice. All the others (2 through 6) were ridden once. 13 riders performed this operation.

The calibration courses were located about every 5km along the course.

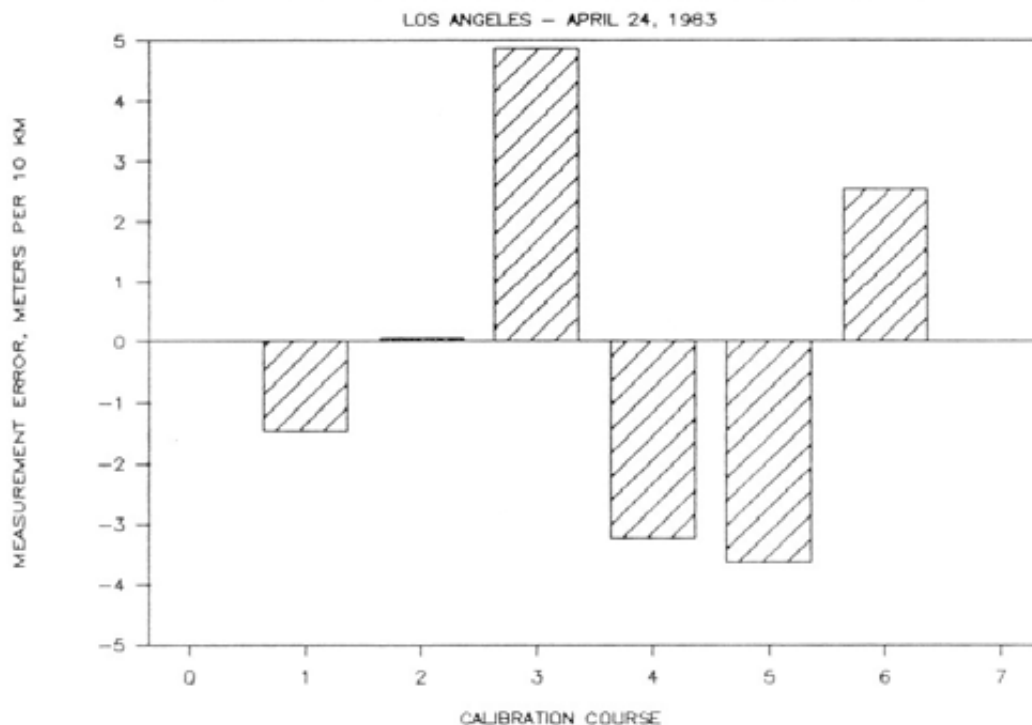
In addition to providing extra accuracy beyond what would normally be obtained, the calibration courses were used to get an idea of the accuracy of bicycle measurement, as follows:

- Course 1 was bike-measured using 0 and 2 as calibration courses.
- Course 2 was bike-measured using 1 and 3 as calibration courses.
- Course 3 was bike-measured using 2 and 4 as calibration courses.
- Course 4 was bike-measured using 3 and 5 as calibration courses.
- Course 5 was bike-measured using 4 and 6 as calibration courses.
- Course 6 was bike-measured using 5 and 7 as calibration courses.

In spite of the fact that each and every course was absolutely straight, and all the riders were experienced, it was seen that errors in measuring occurred that were, in some cases, greater than expected. Some of the courses measured out to less than their true distance, and others measured out to more. From the results, it is seen that a course can measure out to less than its true distance.

Why? The only variables in this exercise were time, weather and road conditions. These variables will be encountered by every rider, no matter how skilled. They represent the real world in which we measure.

OLYMPIC MARATHON CALIBRATION DATA



1984 LOS ANGELES OLYMPIC MARATHON CALIBRATION DATA

MEASURED LENGTHS, METERS

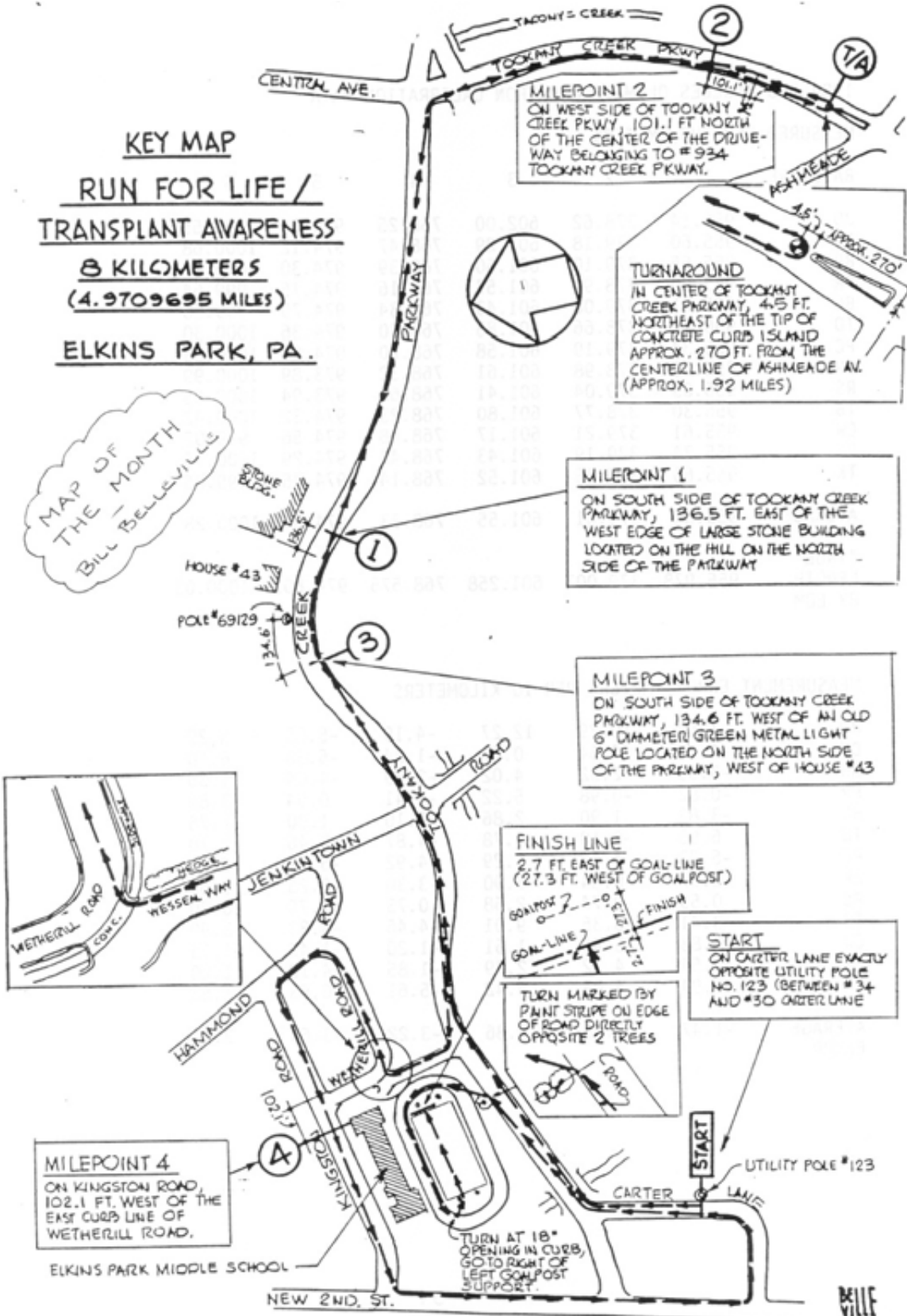
BASELINE	1	2	3	4	5	6
JD	956.14	378.62	602.00	768.25	974.14	1000.55
DK	955.60	379.18	601.29	768.47	974.12	1000.68
BB	955.65	379.10	601.50	768.39	974.30	1000.16
PR	955.90	378.97	601.57	768.16	974.75	999.64
BL	955.61	379.08	601.43	768.34	974.79	999.86
TD	956.64	378.66	601.85	768.20	974.36	1000.30
PC	955.34	379.19	601.58	768.20	974.20	1000.53
WR	955.72	378.98	601.61	768.32	973.89	1000.99
RS	956.03	379.04	601.41	768.63	973.94	1000.65
TB	956.30	378.77	601.80	768.23	974.32	1000.42
CW	955.61	379.21	601.17	768.48	974.56	999.92
PS	955.74	379.19	601.43	768.43	974.29	1000.15
TK	955.60	379.16	601.52	768.14	974.75	999.85
AVERAGE	955.84	379.01	601.55	768.33	974.34	1000.28
"TRUE" LENGTH BY EDM	955.978	379.007	601.258	768.575	974.693	1000.03

MEASUREMENT ERROR, METERS PER 10 KILOMETERS

JD	1.64	-10.29	12.27	-4.19	-5.65	5.20
DK	-4.01	4.64	0.57	-1.34	-5.88	6.50
BB	-3.39	2.32	4.02	-2.39	-4.04	1.30
PR	-0.82	-0.98	5.22	-5.41	0.54	-3.86
BL	-3.83	1.90	2.86	-3.10	1.00	-1.75
TD	6.95	-9.10	9.78	-4.87	-3.46	2.70
PC	-6.73	4.72	5.29	-4.92	-5.07	5.00
WR	-2.67	-0.84	5.90	-3.30	-8.25	9.60
RS	0.59	0.74	2.58	0.73	-7.75	6.20
TB	3.41	-6.36	9.01	-4.46	-3.83	3.90
CW	-3.83	5.46	-1.51	-1.20	-1.42	-1.13
PS	-2.54	4.72	2.79	-1.85	-4.12	1.20
TK	-3.94	4.04	4.42	-5.61	0.63	-1.83
AVERAGE ERROR	-1.47	0.08	4.86	-3.22	-3.64	2.54

KEY MAP
RUN FOR LIFE /
TRANSPLANT AWARENESS
8 KILOMETERS
(4.9709695 MILES)
ELKINS PARK, PA.

MAP OF THE MONTH
 THE MONTH
 Bill Belleville



MILEPOINT 2
 ON WEST SIDE OF TOOKANY CREEK PKWY, 101.1 FT NORTH OF THE CENTER OF THE DRIVEWAY BELONGING TO # 934 TOOKANY CREEK PKWY.

TURNAROUND
 IN CENTER OF TOOKANY CREEK PARKWAY, 4.5 FT. NORTHEAST OF THE TIP OF CONCRETE CURB ISLAND APPROX. 270 FT. FROM THE CENTERLINE OF ASHMEADE AV. (APPROX. 1.92 MILES)

MILEPOINT 1
 ON SOUTH SIDE OF TOOKANY CREEK PARKWAY, 136.5 FT. EAST OF THE WEST EDGE OF LARGE STONE BUILDING LOCATED ON THE HILL ON THE NORTH SIDE OF THE PARKWAY

MILEPOINT 3
 ON SOUTH SIDE OF TOOKANY CREEK PARKWAY, 134.6 FT. WEST OF AN OLD 6" DIAMETER GREEN METAL LIGHT POLE LOCATED ON THE NORTH SIDE OF THE PARKWAY, WEST OF HOUSE #43

FINISH LINE
 2.7 FT. EAST OF GOAL-LINE (27.3 FT. WEST OF GOALPOST)

START
 ON CARTER LANE EXACTLY OPPOSITE UTILITY POLE NO. 123 (BETWEEN # 34 AND #30 CARTER LANE)

MILEPOINT 4
 ON KINGSTON ROAD, 102.1 FT. WEST OF THE EAST CURB LINE OF WETHERILL ROAD.

TURN MARKED BY PAINT STRIPE ON EDGE OF ROAD DIRECTLY OPPOSITE 2 TREES

TURN AT 18° OPENING IN CURB, GO TO RIGHT OF LEFT GOALPOST SUPPORT.

5429 Wooddale Ave.
Edina, MN 55424
March 3, 1988

Pete Riegel

Dear Pete:

I'd say I blanched when I read the part of your letter implying that my letter to Sally Nicoll could have ended up in MN, but I've been running indoors all winter (when I've been able to run) so that "blanching" is hardly any reaction at all. I didn't send you a copy of my letter with publication in mind, but, on the other hand, if the new regime is going to be overly picky about accepting and rejecting records, it ought to be a matter for public discussion somewhere and sometime.

On the other hand, I am picky myself as to how a record-bearing course should stand up under validation. If I had a vote, I'd cast it with those who want to invalidate marks run on a course that is measured any distance short of what was advertised, provided the calibration course can be shown to be correct. There is always going to be some error in measurement, but it will always be on the long side unless the calibration course is short. Any validation that comes up short does "prove" the course to be short. (Although I do remember measuring Twin Cities one year with some guy who consistently beat both my marks and Rick Recker's, and I've always wondered whether he calibrated his bike correctly).

Back on the first hand, I've never understood, if a course could be proved long enough after the fact, why records set on it should not be accepted if it hadn't been certified ahead of time. Although I wouldn't want to run on a course that hadn't been measured ahead of time, and although I agree that the course ought to be certified ahead of time (especially if it's advertised as such), the paperwork doesn't change the length of the course.

I guess you've put me in a mood to shoot off my mouth.

Thanks for your invitation to write something on finish lines, but, given the level of your readership, the only things I can think of that could be of interest have to do with the computer programs I use (and sell), and I wouldn't want to come on as pushing my product. Well, now that I've said that, there is something. Last year I thought I was doing pretty good when I was able to get complete results in the next day's paper for a 4,000-finisher 10K that used 7 finish lines. However, the race director was unhappy because I wasn't able to identify age/group winners who had vanished into the toll booths until a few hours after the race. So I wrote the directors of a number of races of similar size and asked them how long it took them to get age/group results. I got quite a few responses, and may be able to make something out of them, at least after a few phone calls. Would you (or Alan, who I think is doing a very good job running that column) be interested in an article that surveys how big races handle their finish lines?

Keep up the good work, Pete. I don't always agree with you, but I feel I always know where you're coming from. You're a straight shooter.

Best,


Jack

THE ATHLETICS CONGRESS
OF THE USA

Road Running Technical Committee
Peter S. Riegel, Chairman

3354 Kirkham Road
Columbus, OH 43221
614-451-5617 (home)
614-424-4009 (office)
telex 245454 Battelle

March 11, 1988

Jack Moran - 5429 Wooddale Ave - Edina, MN 55424

Dear Jack,

I think something from you on any area of your experience would be of interest to the readers, and if you'll send it, I'll print it.

The problem with accepting "records" run on uncertified courses is twofold:

- 1) It discourages certification of courses.
- 2) It would force us to treat seriously any "record" application that comes in with no probability that the course is OK. We would be swamped with short-course applications, and would not be able to validate them all.

Due to variation in the surface texture of calibration courses, it is possible to get a measurement that is shorter than the true length. We found this out when 13 of us rode 8 calibration courses in succession during the measurement of the 1984 Olympic Marathon course in LA. Although all 8 calibration courses were electronically measured, and thus practically perfect in distance, some of them measured out to almost 5 meters in 10 km shorter than their "true" distance, based on the calibration course immediately preceding and following the one in question.

A writeup of this will appear in next MN.

We have to live with variation. The rule requires that we "show" the course to be short or accept the record. Alan Jones' letter in last MN explains it pretty well, I think.

Once somebody has gone to all the trouble to follow our rules regarding certification, timing, sanctions etc, and has done all the work of organizing the race, and the runner has done something virtually unrepeatable, I think it behooves us to take a stance where we give the benefit of the doubt. There's no perfect answer that is fair to everybody, so we have to seek what's reasonable.

I'm looking forward to your submission. Best regards,



March 7, 1988

Peter Riegel
Chairman RRTC

Dear Peter Riegel and Fellow RRTC People:

I don't think the word "shows", as it is used in TAC Rule 185.3, can objectively be interpreted to mean "proves, clearly demonstrates" (see the 1988 January/February issue of TACTIMES, page 12). Where the TAC book 1987-1988 Competitive Rules intends something other than a literal interpretation of a measurement, it doesn't use the word, "shows". This is how the first sentence of Rule 133.2, describing measurement-for-certification, reads:

"Courses meet certification standards if the measurements demonstrate that the course is at least the stated distance"


Note that the word "demonstrate", not "show", is used. To make it clear that "demonstrate" means something other than "show", the next sentence reads:

"In order to insure that a course is not short, the measurement must include the addition of 1/1000 of the stated race distance."

The concept behind the certification/validation measurement procedures described in the TAC rulebook seems to be this: No road running record from a race after January 1, 1985 will have been run on a course that is, in fact, less than the stated distance. That's the satisfyingly simple concept-- the athlete, in running the record, ran a distance no shorter than the distance the record is for. What the rule book, and I think we record-admirers, really want is courses that are almost certainly at least the stated distance, not courses that could possibly be as long as the stated distance. That's why the rule book demands that all certified courses (and I assume that records can only be run on certified courses) be measured according to procedures that "demonstrate" that the courses are at least the stated distance, that is, procedures which must "include an addition of 1/1000 of the stated distance".

When doing "remeasurements" (validation measurements), it is accepted practice (or should be) to eliminate all factors known to cause measurements to suggest courses to be shorter than they actually are-- temperatures which are warmer during measuring than during calibration, a calibration course which is lumpier than the race course, a calibration course which has better traction than the race course, and uphill calibration rides. If the literal interpretation of two remeasurements free of the long-course-producing factors listed above indicates a distance less than the stated distance, and one of the measurements was performed by someone known to be familiar with proper measurement procedures and the other measurement supervised by him, it may not have been proven that the course is less than the stated distance (although the evidence is pretty strong) but it has been demonstrated that the measurements for certification were incorrectly done, that the course should never have been certified in the first place, and is, therefore, unacceptable for records. We can say that there never were any measurements that demonstrated that the the course was at least the stated distance.

Sincerely yours,


David Reik
930 W. Blvd.
Hartford, CT 06105
Home: (203) 236-9160
Work: (203) 240-0408

Dear Chairman Riegel:

Of course, I'd be flattered if you printed my whole letter, but here's an alternative:

THE ESSENCE OF DAVID REIK'S WISDOM ON THE VALIDATION CONTROVERSY: Where the rule book means anything other than a literal interpretation of a measurement, when it means "prove" rather than "indicate" or "suggest", it doesn't use the word "show", it uses the word "demonstrate" (see Rule 133.2). What the rule book, and I think we record admirers, really want are not courses that might be at least the stated distance, but courses that almost certainly are.

THE ATHLETICS CONGRESS
OF THE USA

Road Running Technical Committee
Peter S. Riegel, Chairman

3354 Kirkham Road
Columbus, OH 43221
614-451-5617 (home)
614-424-4009 (office)
telex 245454 Battelle

March 15, 1988

David Reik - 930 W. Blvd - Hartford, CT 06105

Dear David,

Thanks for your words of wisdom on the validation controversy. Maybe I'll use the whole letter, maybe just the alternative. In any case, here's my view:

As I see it, the records system must serve the interests of all parties, and not just the very pure views of records-keepers. A runner who runs an unrepeatable effort on a certified course should not have a fine run invalidated for a tiny amount of shortness in the remeasurement or other small technicality.

The race director who has obtained an RRTC certificate should have some confidence that it has some weight. It ought to be considered as valid until it's shown that it's not valid. Showing that the original measurement was marginally done is not enough. It is the course itself that we measure during the validation process, not the quality of its layout.

Alan Jones put it well in last MN - the kind of proof you seem to be after would require that the course measure out to 10005 for 10k. That would truly show it isn't short. I don't think most of us think that's a great idea.

Runners and race directors are not mere data-providers for the amusement of records-keepers. They are hard-working human beings, and if we are to have fun at the game we must see that all parties get a fair shake. We have already forced organizers to add 10 meters to their 10k's. I think some bending in the opposite direction is appropriate when the shoe is on the other foot.

As for validators using heroic analytical techniques to somehow use only the proper calibration courses that reflect the character of the race course, that's a nice idea, but how is it done? I don't know how I could do it any way but by personal assessment, and that's not very precise. To ask a validator to do anything beyond a straight competent measurement puts more burden on him than can be reasonably borne. We have a standard technique that is reasonable. We should be able to use it and live with the results we get, and use them in a way that leaves everybody feeling that justice has been done.

The calibration rides on the 1984 Olympic Marathon ride, done by 13 people, showed that as much as 5 meters per 10k error was gotten riding EDM measured calibration courses (each cal course "measured" based on rides immediately preceding and following on adjacent cal courses).

A compromise will be reached. Even TACSTATS is in accord with this.



THE ATHLETICS CONGRESS
OF THE USA

Road Running Technical Committee
Bob Baumel, Vice-Chairman West

129 Warwick Road
Ponca City, OK 74601
405-765-0050 (home)
405-767-5792 (work)

1988-03-13

William D. Glauz
11600 Minor Drive
Kansas City, MO 64114

Dear Bill,

I have various comments on your letter of Feb 28 and the accompanying calibration course certification. First, the problem you raised about information requested on the certificate but not in the application form (for certifying a calibration course) doesn't strike me as a cause for great concern. Of greater importance, however, the fact that your measurer hired a surveyor to EDM-measure a short calibration course, and that you wrote a certificate for this short cal course, suggests that you may not be adequately familiar with the present guidelines (such as they are) for use of short cal courses.

First, I'll discuss the questions in your letter. Regarding the fact that the certificate has spaces for four elevations, while the application form for a cal course asks for only one elevation, most certifiers fill out the certificate just as you did: they put the one known altitude in the first of the four spaces, and leave the other three spaces blank.

In theory, cal courses are supposed to be level. This isn't always true, but sloping cal courses rarely cause much error in race course measurements (at least when measurers ride the cal course equal numbers of times in *both directions*). Should measurers be required to supply complete elevation data for cal courses? I think not. First, because non-level cal courses are not a major source of inaccuracy. And secondly because the drop limit specified by Rule 185.5 for road-racing records is relevant only to *race* courses.

As for difference between measurements, it's nice to have this information, but for EDM measurements by surveyors, it's no great loss if we don't get it. Successive measurements by an EDM almost always agree to within a centimeter or so. In discussing the accuracy of EDM measurements, the real question is not the difference between successive measurements, but whether the instrument has been properly *calibrated* recently.

By the way, have you noticed that question 14 of the Application for Certification of Calibration Course requests "a copy of the original field notes from the measurement." If the measurers had complied with this request, you'd have a complete record of every measurement the surveyors made, so you'd know the exact differences between measurements. Unfortunately, we often don't get these field notes, perhaps because the application form is filled out not by the surveyors themselves, but by the person who hired the surveyors (and is not filled out until long after the surveyors have finished their job).

In cases where you do get the surveyors' field notes, you have enough information to solve another problem mentioned in your letter: You can see if any conversions were made between feet and meters, so you can check for errors in such conversions.

You should realize that conversions between feet and meters are not, by any means, necessary for measuring metric distances. Every EDM I've seen has a switch for displaying measurements in either meters or feet. Most surveyors in this country will probably unthinkingly measure in feet even when requested to lay out a metric distance. But the smarter ones may realize that they can just flip the switch to the metric side, and get all readings directly in meters.

My own measuring is totally metric. For taping, I use only tapes graduated in meters. When I use an EDM, I set the switch for metric readout. After making every effort to work entirely in metric, I would not take kindly to any request to state my measurements in feet as well as meters. Converting my data into feet would serve no purpose, and I would refuse to do so.

I suppose you could ask measurers to report EDM measurements in both meters and feet, but only in cases where the measurer actually did conversions between English and metric units (as when measuring in feet for a metric-distance course). Of course, this won't help you catch errors in all the crazy internal conversions *within* the English system, as in your example of a $\frac{1}{2}$ mile course erroneously measured to 2620 feet. (I also know of a case in California where an EDM-measured "half-mile" was laid out at 2540 instead of 2640 feet.) Getting the surveyors' field notes would probably give you the best chance of catching all these mistakes.

Now let's turn to general philosophy about short calibration courses. When Pete Riegel first approved use of these shorties in the Jan 87 issue of *Measurement News*, the emphasis was clearly to encourage **on-site** calibration courses — in cases where measurers must travel long distances from their home turf to measure race courses. Pete clearly sensed that using a short cal course might not be *quite* as accurate as using a full-sized one (other things being equal). But he wrote: "it seems likely that even a short calibration course, laid out on the racecourse itself, will yield better measurement results than one that is far away."

To encourage measurers to lay out cal courses at the site of the race course, Pete decided to allow cal courses that were short (as short as 300 meters), that could be quickly taped by the measurers (only one taping required along with a bike check), and that did not require any formal certification procedure. Among the specific points Pete listed:

- 3) The bike may not be transported in any vehicle from the time the measurement process is started. It must be ridden throughout the entire process. This assures that the cal course will be nearby the race course.
- 5) The cal course should not be certified for re-use. It's used only for the local course where it is. We don't want others to use these shorties for remote measurements. Keep it in your personal notes but do not broadcast the existence of the cal course.

More recently, in the Nov 87 issue of *Measurement News*, Wayne Nicoll listed some guidelines on use of short cal courses. Wayne referred to these courses generically as "1000-foot" courses, which annoys me greatly (as every one of these courses that I've laid out has been an even metric distance, usually 300 meters). But most of Wayne's statements do represent current RRTC policy, such as it is, on short cal courses. (That policy will become better formulated when the new version of the *Course Measurement* manual is completed.) Among Wayne's statements:

- 1) The calibration course must be laid in the proximity of the race course start or finish.
- 2) The calibrated bicycle cannot be transported by vehicle from the calibration course to the start of the race course measurement.
- 5) It is not necessary to complete any paperwork, however, you may want to document the location of the end points of your course for future use. A certification code number will not be issued. On question 7 of the race course application simply note that you laid a [short] course at the site.

Still more recently, in the latest *Measurement News* (Mar 88), there was an exchange of letters on short cal courses between Bob Edwards and Pete Riegel (pages 9-10). I tend to agree with Bob that the certifier ought to see *some* paperwork on measurement of the cal course (although not a map since no certificate will be written for the cal course), but I think Pete's right that a measurement using an on-site short cal course ought to take less time (even including taping of the cal course) than a measurement using an existing remote full-sized cal course.

Since the whole idea of the short cal course was to allow cal courses that could be quickly taped at the race course site during a measurement done far from home, we never really expected anybody to hire a surveyor to EDM one of these shorties! Your Fort Leonard Wood course is the first example I've seen of an EDM'd short cal course. Assuming that the measurers were setting up this cal course in their home territory, and intended to use it for many race course measurements, they really should have laid out a full-sized (800 or 1000 meter) course.

Present policy seems to be that we don't write certifications for short cal courses. But I don't recommend that you try *undoing* your certificate for the Fort Leonard Wood course.

The guidelines discussed here are certainly subject to change. If we ever decided that short cal courses always give just as accurate measurements as longer ones, we'd surely start treating short cal courses just like any other cal course. (In effect, we'd have just reduced the minimum length for a cal course.) We already have many examples of measurements using short cal courses that were indistinguishable from measurements using longer cal courses. But all these cases involved experienced measurers. It seems likely that *novice* measurers won't be as accurate using a short cal course as a full-sized one. The nice thing about restricting short cal courses to use at the race course site, in cases where the measurer must travel to reach the race course site, is that it automatically limits their use to experienced measurers. Nobody measures a course far from home until he has already measured a bunch of courses closer to home!

Best regards,
Bob
Bob Baumel