

MEASUREMENT NEWS



July

1994

Issue #66



The second USATF/IAAF International Measurement Seminar was held on May 20-22, 1994. People came from many places to participate. Left to right: Luciano Ramirez (Mexico), Don Shepan (NM), Rodolfo Martinez (Mexico), Marcial Tellez (Mexico, crouching), Doug Loeffler (FL), John Disley (Great Britain), Karen Wickiser (OH), Felix Cichocki (AZ), Mike Wickiser (OH), Bob Baumel (OK), Jean-Francois Delasalle (France), Tom McBrayer (TX), Andy Beach (TX), Dave Yaeger (Canada), Bob Letson (CA), Pete Riegel (OH).

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RRTC COURSE REGISTRAR MOVES UP IN THE WORLD

Joan Riegel, RRTC's course registrar, has been working for several years at the Columbus Marathon as Race Administrator. Things have changed. See below, from the Columbus Dispatch:

Riegel to direct Columbus Marathon

■ Joan Riegel has been named race director for the Columbus Marathon, stepping up from race administrator, which she has been since 1990. She replaces Doug Thurston, who resigned last month to join the Pacific Association of U.S.A. Track & Field in California.

ROOMMATE WANTED

Bob Harrison, MS and TN Certifier, is looking ahead to the USATF Convention. He seeks a non-snoring, non-smoking roommate, any sex, to share room expenses. Contact Bob at 3216 Herbert Dr - Montgomery, AL 36116. phone 205-281-0540.

WHERE IS THE COURSE?

Sometimes a race course begins in one state and finishes in another. Where should it be listed? Bob Harrison had an inquiry from a measurer who was going to lay out a course on the TN-KY border, and he asked Wayne Nicoll where the course should be listed. According to Bob, Wayne advised that the location of the finish line is where the course is. I would tend to agree with this, with certain exceptions: A race sponsor may prefer a different location, especially if their business is located in the same place. The measurer or race director may have a preference for a location. This is not an earth-shaking problem, but when in doubt, the course is where the finish line is.

LAYING OUT A NEW COURSE

Harold Tinsley wrote an article last year for Road Race Management concerning the things that need to be considered when laying out a new race course. He reprinted it in the May '94 Huntsville Track Club News as a partial response to runners who could not understand why Harold could not change the Rocket City Marathon course to accommodate their suggestions for "improvement." It's a good article. You'll see it elsewhere in this issue.

FROM HAROLD TINSLEY

COURSE LAYOUT: THE LITTLE DETAILS COUNT, TOO!

When I ran my first road race in 1971 there weren't many requirements for laying out a course. This was when races were timed with a stop watch (that had hands) along with a clipboard and a tic sheet, and a stack of finish cards that were passed out to identify finish place. There usually were less than fifty runners, no aid stations, no parade permit, little race equipment to setup, no media interest and no sponsor requirements to satisfy. All races were in mile distances measured with a car odometer. The metric distance was something they ran on the track in the Olympics that was a bit more than our 3 and 6 mile races, which were the most common distances back then.

The first 10K in our area was the Peachtree Road Race, and for some unknown reason, publicized as 6.1 miles. Peachtree was a big success, so 10K courses that were 6.1 miles, as the car drives, sprang up throughout the southeast. A lot of those early 10K races grew into big events during the running boom and the courses were eventually correctly measured and certified. They all grew considerably in length. A popular 10 mile race, where everyone got their PR, eventually was accurately measured and certified as a 15K race, and it had to be shortened less than a quarter mile in length! For those not aware, 15K is approximately 9.3 miles.

With the running boom came large numbers of participants, and that resulted in media exposure and the interest of sponsors and charities. Many races

moved from the quiet neighborhoods near schools, that had provided the parking and facilities, to a downtown location. This brought on the need for expansive facilities, course certification, race sanctioning, traffic control, aid stations, starting line banners, elaborate finish line setups, and all the things we now take for granted. Well almost! That is why I was shocked when I went to watch a race that had been heavily promoted as having \$25,000 in prizes for drawings that was expected to draw 2000 runners paying a \$15/\$20 entry fee which would be donated to a charitable cause. Supposedly the race had no age divisions or results scoring and may of the other things we now take for granted when we enter a race.

The race started on a curved two lane road. The winding out-and-back course locked in hundreds of mountain side homes. And the race finished in a narrow street just past an intersection with four-way stop signs. The 10K race was held in the mid August heat and humidity with the drawings and charitable cause attracting many of the less serious runners. If ever a race needed to publish an elevation profile this one should have.

I stood at the top of the second steep hill, just past two miles (there was no downhill following the first 300 foot hill) and watched more than 95% of the 713 (I counted them) runners walking (and that's no exaggeration). And it was painful watching them come back down, some even walking backwards. I am sure the post race injury percent was very high. That made me assess all the things one should consider before laying out a course.

There is a lot more to selecting a course location than being one you like, or think will attract runners, has adequate access to the start and finish facilities, and will please the sponsors.

Safety should be considered first, even if you plan to have the police control traffic. Staying away from busy roads and decreasing the number of major intersections limits the number of police and sentries you will need. This becomes an important budget considera-

tion if you have to pay for police protection. It also means having to recruit fewer sentries. Work with the police department to simplify their problems when you lay out the course rather than coercing their support when they had no input and are dissatisfied. Runners will train on the course prior to the race. If for no other reason stay away from busy streets and blind intersections for their safety.

A course that predominately turns right is not only safer, but can eliminate certification problems. When multi lane roads can't be completely blocked off, the police usually require the race to be run in the far right hand lane. This means that a left turn is across traffic that is behind and blind to the runner as the turn begins. It also means that running tangents is impossible. Certification requires measuring the shortest possible route, ie. turn-to-turn tangents. When that cannot be achieved, the route must be flagged or coned, these must be included as dimensioned drawings on the certification papers. This is an additional logistics problem that will most likely also require more sentries at those turns. It also complicates course measurement for the certification because the course to be measured must be set up as it will be run. Eliminating all left turns may not be possible, but proper planning may allow locating the left turns on low traffic residential streets where running the tangents is possible or at least controlling the turn is simpler and safer.

The race previously mentioned was certified, but only because the local runners demanded that it be certified when they heard that there was no intent for it to even be measured properly. In this case there would be no records set on a course this difficult and no appropriate results to verify the times. This example pretty much answers whether or not a course should be accurately measured and certified. Runners not only expect it, but they now demand it. This means having adequate maps available that are to scale for the area where you plan to locate the course. The maps not only aid course planning, but make it easier to develop the map and elevation

data required for the certification. U.S.G.S. topographic maps and topographic maps maintained by the city planning department are two of the best sources. They not only provide a scale map of the streets and roads, but include elevation grids from which elevation profiles can be constructed. Runners now frequently ask for elevation information or an elevation profile when requesting an entry form. This is very true for marathons and other long distance races.

Other than certification, what do runners want from a course. They will say scenic, but primarily they want to run a fast time. That means no major hills. Eliminating steep down hills reduces the recovery time following a race and lessens the possibility of joint injury. Steep up hills not only make for a slower race, but they are looked on as a negative draw for the race. You may get some of them to come once, but a lot won't return for a second dose of hill misery and no chance to run a PR. Few runners go to a race to enjoy the scenery, but they can be turned off if the course goes through dingy neighborhoods that make them feel unpleasant or unsafe.

A course with slight elevation changes is faster than a flat course. The elevation changes alter the running gait shifting the driving force in the muscle over a greater working area extending performance before fatigue sets in, and it allows some degree of relaxation on gentle down slopes. While a perfectly straight course may appear to be physically faster, turns break up monotony resulting in a psychologically faster run, and the turns also alter the running gait. Obviously, too many turns become a negative factor. Avoid stretches where the runner can see a long distance ahead. Watching the distance finish line grow ever so slowly and painfully closer can be as bad as the worst hill you've ever run in a race. I have run in some of these and thought to myself, "at least no hill ever lasted this long." Some of these were advertised as flat and fast, which physically they were, but after the race the runners were complaining about their slow times and how much it hurt. That is

the psychological factor.

A major consideration is what type of course to lay out: out-and-back, loop, or point-to-point? To have a record set on a point-to-point course with a start-to-finish separation greater than 30% requires that the wind direction and speed not aid the runners, and you must collect information to prove that the wind was not a factor. Elevation difference, start to finish, is also a factor you must avoid for record purposes. The logistics of getting the runners from finish to start, or vice versa, can be an added problem and/or race cost. Adequate facilities must also be available at both locations. You cannot get double duty from aid stations, sentries, timers, toilets, etc. on a point-to-point course. The loop course also has some of these problems. Almost without exception a point-to-point course has a greater impact on the budget. Yet there are times when a point-to-point course fits the circumstances upon which the race is being created. Boston wouldn't think of changing, but would they do it over with the hindsight they now have considering the changes that have taken place in marathoning since the days when a few dozen ran the race.

The out-and-back course is the simplest from the logistics standpoint. Some runners like to double back and see the other runners in the race, but others do not like to double back. From this standpoint the loop course is the safest bet. An out-and-back course can increase or simplify traffic problems. It reduces the number of different intersections, does not enclose and block off an area, but traffic trying to cross an out-and-back course may be blocked for a longer period of time. However, it is much easier to provide alternate routes for traffic flow to bypass the race if you can get the support and publicity needed to alert the public. I prefer an out-and-back course so that some of the aid stations and other functions can get double duty to decrease the logistics. But, I add in a loop at the turnaround and different side loops going out and coming back for variety and I have found that the runners like this. This works out best if you can keep the loops relatively small and don't

fully close the side loops on themselves.

Many courses in the early years were planned only for a small number of runners. Along came the running boom and in many instances the facilities were overwhelmed, or the course and/or start couldn't handle the number of runners. Estimate as best as you can, but plan ahead and over plan to be on the safe side to allow for future growth. Is the area suitable for multiple starting lines with the runners converging down course? Check that the road surface is not too rough, pothole free, and doesn't have an objectionable crown that would bother the runners or possibly cause injury. Consider ahead how you will mark the course turns and identify the mile or kilometer locations. If it is to be a summer race, can you locate the course where there will be shade?

If your race is on Sunday or on a holiday that may come on Sunday some years, does it go by a church/s or conflict with church traffic. Is your race in an area of the country where a Sunday morning race would be looked upon unfavorably if the course was located in the same area as the churches. Don't forget there can be weddings and funerals at times you do not expect and for which you have no control over their schedule or even be aware that they will occur. Is your race going to inhibit shoppers from getting to businesses that may complain? Does your course and date and/or timing conflict with other events? It is best to plan your course in a location that avoids these problems than for you to try and schedule around or negotiate solutions after the fact.

Can you adjust the start so that it is opposite existing poles from which the starting line banner can be hung. A large banner on temporary stanchions in a high wind can result in a race day problem you don't need. TV cable companies, who are seeking to get more customers, are more willing to furnish bucket-lift trucks than the power or telephone companies whose business is implicit. In addition to using the bucket lift to put up the start banner and set up the finish, the bucket lift offers excellent visibility for the starter, especially if a VIP or sponsor, and one located down course from the

start is ideal to photograph the start.

Can you locate the finish off the street for safety and so that it can be set up early, not interfere with traffic, and so that you don't have to rush to take it down. Is there adequate space considering your race could grow to large proportions involving not only more runners but considerably more vehicles and equipment at the finish line. Plan your start/finish where there is adequate parking and easy access to the area, especially for those coming from out-of-town so you can give them simple directions.

If it is a big event, are there adequate hotels nearby? It is best if the runners can walk from the hotel to the start and back from the finish. You shouldn't have to provide portable toilets for those staying in hotels if they are close to the race. Are there restroom facilities already existing to reduce your portable toilet rental? Are there adequate facilities, not only for packet pick-up, medical, results processing and the awards ceremony, but for other pre and post race functions such as carbo supper, expo, clinic, banquet, etc. Even if you don't include these functions the first year you may wish to add them later when the race grows.

Facilities are far more important for a winter race than in other seasons. If you have limited facilities and temperature is not a problem, what will you do in case of rain? Renting tents and purchasing space blankets uses some of the race budget that could be spent elsewhere to produce a better event. Having water hookup at the start, finish and aid station locations simplifies logistics. For PA systems at the start and finish and the finish computers, find out if there is power hookup available. Plan your course to take advantage of having these necessary requirements already available.

For the purpose of photographs, the runners should face the sun as they start and finish to minimize shadows and produce good lighting for quality pictures. Sale of finish photographs can be a sizable race income if it is a large race. The pictures must not only be of good quality, but for them to really sell, the finish clock, banner and spectators must appear in the picture with the runner.

Plan your finish for this and demand that the photographer meet your requirements. The TV cameramen and print photographers should also be planned into the finish area and operation. They usually only want a few shots of the male and female winners and are off and gone to their next job location. Your course location as well as time may determine if they even show up.

What is the location of your course relative to hospital/s? It is best that the hospital be closer to the finish if that is an option. Does the course, and especially the finish, lend easy access to emergency vehicles? Will your race cause traffic tie ups that will hinder easy access by emergency vehicles getting to the runner and/or their route to the hospital/s.

Does your course cross railroad tracks or bridges that you cannot get full control over that could stop the race. It is best to avoid these if at all possible. Also avoid passing in front of a fire station if possible.

Try to determine ahead if your course location and the resulting traffic will upset the residents in the area. Placement of aid stations, which will always leave stray cups that don't get picked up, and portable toilets may not sit well with some fashionable neighborhoods or business areas.

Choose your course location to minimize your logistics and minimize traffic tie-ups that will irritate the public and/or businesses. However, be aware that almost every major race in this country is located downtown. This implies the race has importance to the city and it definitely is a draw to get runners to come from outside your area.

The key to having a course that is safe and race operations that work well is to plan ahead for these functions when the course layout is done. To see how it works this year and then change and recertify the course for next year's race is a major task that in most cases can be avoided if you think through everything and plan ahead. Consider that your race will grow and plan from the beginning for what you think the requirements will be some years into the future rather than your minimum needs the first year.

MORE ON THE LOGO

Positive response to the idea of a logo has been received. The majority of responses favor going along with the international logo now in use in Britain and France. Ray Vandersteen favors a use of the USATF logo with a box.

WHOLE LOT OF SHAKIN' GOIN' ON

Alan Jones recently completed an update to SEISMIC, his earthquake program that shows a wonderfully graphic depiction of earthquakes happening on your computer screen. There are maps of the whole world, and also of various areas of it (such as California and Japan) where there's lots of activity. Alan's latest update shows the January Northridge quake that devastated areas of Los Angeles. See the short article from the #1 issue of Seismic Sounds, a newsletter Alan sends to Seismic users. There are plenty of them - Alan lists over 30 colleges, schools, TV networks, government bureaus, and even a railroad. Alan has been mighty busy with Seismic since retiring from IBM.

Alan's program will be a central attraction at the Smithsonian Institution in Washington, D.C. - on a 10 x 10 foot screen in their plate tectonics exhibit.

Those interested in obtaining a copy of the program should contact Alan Jones - 3717 Wildwood Dr - Endwell, NY Phone & fax (evenings) 607-786-5866. phone (daytime) 607-777-2518.

ARE YOU BEING SERVED?

Some places are well-provided with certified courses, others less so. Brian Smith did a breakdown of the states to see which ones had the most courses per capita. Delaware topped the list with 258 certified courses per million inhabitants, or a course for every 3900 people.

Tom McBrayer had the same idea in his recent issue of Measure Up. He notes that Groveton, Texas, has more certified courses per capita than any place in the universe. Groveton has a population of 1286, and 3 certified courses - a course for each 429 people.

When Joe McDaniel (Editor, Oklahoma Runner) read this he quickly faxed to Tom the information that Helena, Oklahoma, population 710, has 3 certified race courses and a calibration course, or a course for every 237 people.

Can you top this?



PAUL W. HRONJAK
North Carolina Records Center
104 Copperstone Lane
Cary, NC 27511
(919)387-7160 - home
(919)467-2486 - work
(919)481-3818 - fax

May 9, 1994

Mr. Pete Riegel
3354 Kirkham Road
Columbus, Ohio 43221-1368

Dear Pete:

Please find enclosed my check for renewal of *Measurement News*.

I like the idea of having a logo and think the one which you suggested looks fine; however, I would suggest one addition. Perhaps we could add a box for the course number on any "slick" which would be used for race application forms or advertising. The box would be left off for patches, stickers, etc.

In reviewing the "Certifier Activity By Year" chart in the current issue, I am curious why there was such a drop in your activity during the 1989-1991 period. Any explanation or just one of those mysteries of life?

Good luck and keep up the good work.

Regards,

A handwritten signature in cursive script, appearing to read 'Paul'.



USA TRACK & FIELD



Peter S. Riegel
Chairman, Road Running Technical Council
3354 Kirkham Road
Columbus, OH 43221-1368

614-451-5617 (home)
614-424-4009 (work)
614-451-5610 (FAX, home)

May 12, 1994

Paul Hronjak - 104 Copperstone Lane - Cary, NC 27511

Dear Paul,

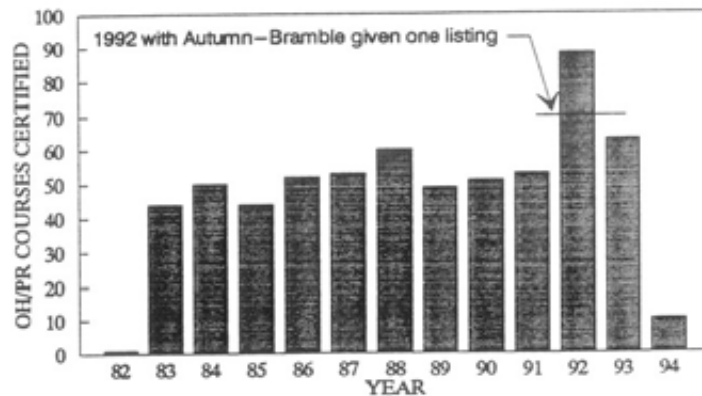
You are the first with a logo suggestion. That's a fine idea, putting the ID number inside the logo. I never envisioned patches or stickers using the logo, but it's certainly an area worth exploring.

As for my seeming slump in 1989-1991, I don't recall just why my output dropped. I suspect it may simply have been due to decreased demand for Ohio certified courses during that period. I remember being pleased to see the number rise again in 1992, but then in 1993 it was back down in the 89-91 range. In my early years I had more states to deal with, and that explains the higher output in the early 1980's.

Over the years I see a slight upward trend in Ohio courses certified by me, but nothing dramatic.

Best regards,

Year	PR/OH Certified
1982	1
1983	44
1984	50
1985	44
1986	52
1987	53
1988	60
1989	49
1990	51
1991	53
1992	88
1993	63
1994	10



Note that one 1992 course, the Autumn-Bramble Multipurpose course, has 19 listings for the same 5 mile course, since virtually every conceivable split was certified.



Illinois Association USA Track & Field

- Road Racing
- Cross Country
- Track & Field
- Race Walking

111 W. Butterfield Rd. Elmhurst, IL 60126 • (708)833-7303 • FAX (708)833-5162

May 10, 1994

Peter S. Riegel
3354 Kirkham Rd.
Columbus, Ohio 43221

Dear Pete,

In reference to your suggestion in the May issue of Measurement News re a USATF-RRTC logo: why reinvent the wheel (ugh...too many years spent in Indiana !) when we already have a logo that everybody can identify with.

In addition, except for a few insiders, the "RRTC" label has very little identification value.

For whatever its worth, here's what we're using in Illinois.

Yours in Track & Field,

Ray Vandersteen





USA Track & Field

Road Running Technical Council
Bob Baumel, OK, SD Certifier

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

1994-05-08

Pete Riegel
3354 Kirkham Road
Columbus, OH 43221-1368

Dear Pete,

This letter contains an assortment of different items. First, some corrections on recent entries in the course list. Here are two Oklahoma listings (as you listed them):

50km	OK 94014 BB	A Edmond	Edmond Family Fitness	Wkend 0	5	K Hardwick
Cal	OK 94011 BB	A Oklahoma City	Stratfort Street	308.8 m	3	100 J Smith

The Edmond Family Fitness course (OK-94014-BB) has length 5 km – not 50 km; I suppose that Joan transposed digits and typed “50” instead of “05” (Also, note that “Edmond Family Fitness” run is not a likely name for an ultramarathon). The error in the Stratford Street cal course (OK-94011-BB) is more trivial: It’s just on “Stratford” (not “Stratfort”) Street.

I see that you did renew the Springbank courses measured by Bernie Conway. Currently, you have not explicitly expired any courses on the “FOREIGN” list. However, it would be trivial to do so: Aside from these now-renewed Springbank courses, there are only two other courses on the FOREIGN list dating to 1983 or earlier, namely:

Mar	BER83001 DK	A Hamilton	Bermuda	? ?	D Katz
Mar	CAN83001 GBD	A Montreal	QB Montreal	loop	G Duguay

Why not change their status codes to X, thereby applying the 10-year expiration policy to **all** USATF certified courses, instead of just the domestic ones?

Regarding a logo for certified courses (May MN, p 9), I like the idea of adopting the one already used by the British and French. I see no need to invent a new logo of our own. And use of a common logo internationally may help spread awareness of course accuracy among runners who race in more than one country. However, I think race flyers should **also** include the course number; therefore, I suggest adding a space for course number at the bottom of the logo.

Thanks for choosing my Redbud 10 km cert (OK-94012-BB) as “Map and Certificate of the Month” in May MN. I will have to make sure that Jim Smith and Ken Hardwick both receive copies of this item!

Finally, as I had not personally done any measuring since last October, and was feeling a bit rusty as the Phoenix seminar approaches, I decided to go out and remeasure a course just for fun. The course I remeasured was the Pioneer Woman 10 km, which we renewed earlier this year:

10km	OK 83102 BB	94A Ponca City	Pioneer Woman Run	0	1	B Baumel
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Results are on the enclosed sheet. The measured split positions were those actually painted on the road for a race last November (Admittedly, I’m the guy who painted them, based on the certificate descriptions). The results seem to justify my confidence in this course when applying for renewal. Not too bad for an eleven-year-old course!

Best regards,

Bob

Check of Pioneer Woman 10 km (OK-83102-BB), Ponca City OK
by Bob Baumel 94-05-01

Length of Calibration Course (OK-89038-BB) = 303.83 m
Measurements Computed using AVERAGE Constants WITHOUT 1.001 factor

Pre-Calibration (13:55, 18 °C):

Start	Finish	Counts
604566	607927	3361
607927	611288.5	3361.5
611288.5	614649.5	3361
614649.5	618010	3360.5

Working Constant: 11062.1071 counts/km

Post-Calibration (15:20, 21 °C):

844060	847421	3361
847421	850781	3360
850781	854142.5	3361.5
854142.5	857502.5	3360

Finish Constant: 11060.8729 counts/km

Constant for Day: 11061.4900 counts/km

Course Measurement (14:15-15:00, 18-20 °C):

	Counter Reading	Interval (counts)	Interval (meters)
Finish	667670		
9 km	678744	11074.0	1001.13
8 km	689830	11086.0	1002.22
7 km	700897	11067.0	1000.50
6 km	711964.5	11067.5	1000.54
5 km	723034.5	11070.0	1000.77
4 km	734120	11085.5	1002.17
3 km	745187	11067.0	1000.50
2 km	756263.5	11076.5	1001.36
1 km	767309.5	11046.0	998.60
Start	778401	11091.5	1002.71

Totals: 110731.0 10010.50

MAP OF THE MONTH BY RON PATE

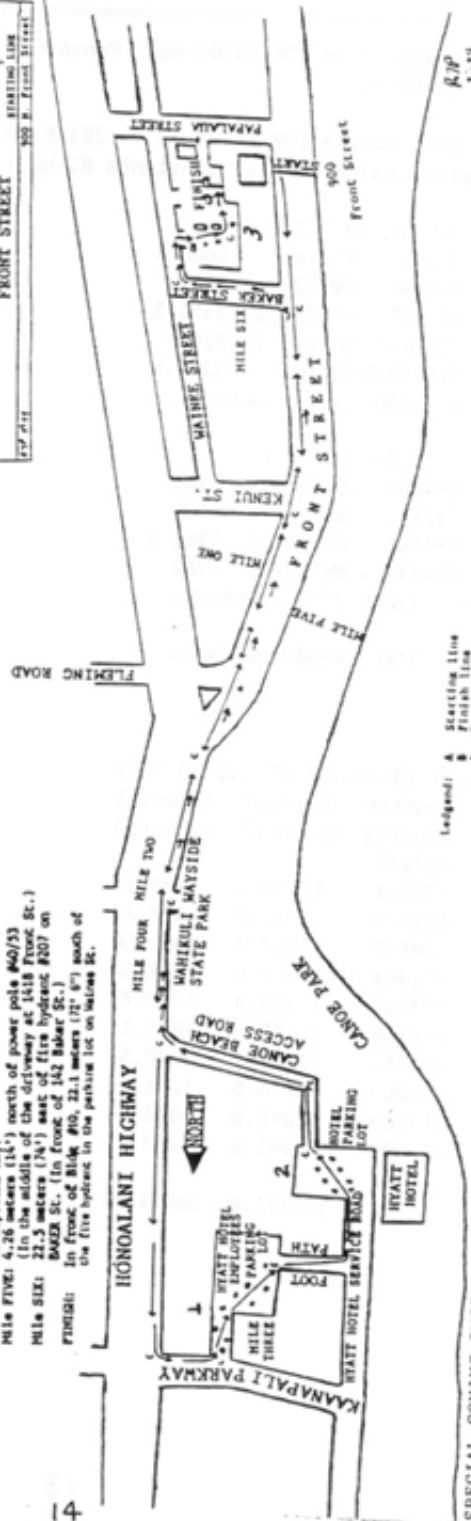


MAUI
ROCK N ROLL 10 K RUN
COURSE MAP

COURSE DESCRIPTION:

START: MAIN ENTRANCE DRIVEWAY OF THE HAWAII ROCK CAFE (900 Front Street, adjacent to the North end of this driveway.)
 Mile ONE: 10.234 meters (33'7") north of power pole #51 (in front of 1000 Front St.)
 Mile TWO: 5.1816 meters (17') north of power pole #47 (On Honolulu, they next Mahikuli Mayside State Park)
 Mile THREE: 22.5 meters (74') south of the north end of the Hyatt employees parking lot.
 5 KM: 4.4 meters (14'6") east of gate of Hyatt green house next to the foot path.
 Mile FOUR: 6.7 meters (22') south of power pole #48 on Honolulu and Hwy.
 Mile FIVE: 4.76 meters (16') north of power pole #40/53 (In the middle of the driveway at 1418 Front St.)
 Mile SIX: 22.5 meters (74') east of fire hydrant #207 on BAKER ST. (In front of 142 Baker St.)
 FINISH: In front of Blk #10, 22.1 meters (72' 9") south of the fire hydrant in the parking lot on Wainee St.

START AND FINISH DETAIL MAP



- Legend:
- Starting line
 - Finish line
 - Traffic Control
 - Officer
 - Course Parabola
 - Cone

SPECIAL CONING INSTRUCTIONS:

- 1- Off Kaanapali Parkway Entrance to Hyatt Hotel parking lot: place cones across parking lot (it will free of cars) to foot path -- direct tangent for SPR.
- 2- Off Hyatt Hotel service road through entry to Hotel parking lot: Cones across parking areas to Canoe Beach access road -- direct tangent for SPR. (Parking lot will be free of cars).
3. Off Wainee ST at Service entrance: Cones will be placed directly adjacent to concrete planters 6 out to 15 feet to finish line; direct tangent for SPR.

NOTE: MAP IS NOT TO SCALE

Pete: You may be interested in some of your course data from Measurement News, May 94, ranked by the size of each states population

CERTIFIED IN 1993		PER MILLION	ACTIVE MEASURERS 1993		PER MILLION	TOTAL CERTIFIED COURSES		PER MILLION
NH	34	30.7	NH	0	7.0	DE	172	258.2
DC	15	24.7	ME	0	5.6	DC	117	192.8
DE	10	15.0	VT	0	5.5	OK	579	184.1
OK	47	14.9	KS	11	4.4	NH	167	150.6
ME	16	13.0	DC	0	0.0	ME	131	106.7
MT	10	12.7	SD	0	0.0	SC	335	96.1
KS	30	12.1	CO	9	7.9	NC	566	85.4
RI	10	10.0	AR	6	6.6	CO	256	77.7
CO	29	8.8	SC	0	0.0	KS	182	73.5
NJ	62	8.0	AL	10	6.6	VT	41	72.9
VT	4	7.1	OK	7	7.7	AK	38	69.1
AL	22	6.9	MA	13	13.3	NE	103	65.3
SC	22	6.6	RI	0	0.0	MT	48	61.0
OH	68	6.6	NM	2	2.0	OR	168	59.1
IL	72	6.6	OR	5	5.5	CT	185	56.3
CT	20	6.1	CT	6	6.6	OH	381	55.1
MA	37	6.1	NV	1	1.1	WA	259	54.4
TX	100	5.9	UT	1	1.1	NJ	389	50.6
UT	10	5.8	DE	1	1.1	GA	322	49.7
NC	32	4.8	GA	10	1.1	HI	54	48.7
GA	30	4.6	FL	20	1.1	FL	610	47.2
NE	7	4.4	IA	4	1.4	UT	81	47.0
MI	40	4.4	MT	1	1.1	MN	200	45.7
FL	56	4.4	NE	2	2.2	RI	44	43.8
PA	50	4.2	MD	6	6.6	TX	735	43.3
IA	11	4.0	IN	7	7.7	MA	252	41.9
OR	11	3.9	OH	14	1.4	AL	169	41.8
AR	9	3.8	MS	3	3.3	IL	476	41.6
WA	18	3.7	TN	6	6.6	CA	1197	40.2
TN	18	3.7	NJ	9	9.9	AZ	144	39.3
NY	62	3.4	NY	21	1.1	IA	107	38.5
NV	4	3.3	KY	4	1.1	NM	55	36.3
SD	2	2.9	PA	13	1.1	SD	24	34.5
MD	14	2.9	TX	18	1.1	VA	203	32.8
IN	16	2.9	VA	6	1.0	PA	382	32.2
CA	86	2.9	WA	4	0.8	TN	155	31.8
VA	17	2.7	NC	5	0.8	MI	295	31.7
NM	4	2.6	MI	7	0.8	MD	145	30.3
MS	5	1.9	LA	3	0.7	IN	163	29.4
KY	7	1.9	CA	21	0.7	AR	66	29.4
MN	7	1.6	WV	1	0.6	KY	105	28.5
AZ	5	1.4	MO	3	0.6	NY	478	26.6
LA	6	1.4	MN	2	0.5	NV	31	25.8
MO	7	1.4	AZ	2	0.5	WV	40	22.3
WV	1	0.6	IL	6	0.5	MO	100	19.5
						WI	93	19.0
						MS	46	17.9
						ND	10	15.7
						LA	42	10.0
						ID	10	9.9
						WY	3	6.6

The 1990 census figures were used

Brian

BRIAN SMITH, CERTIFIER, SOUTH CAROLINA

May 4, 1994

FROM TOM MCBRAYER'S
NEWSLETTER
"MEASURE UP"

It Was Fine in Phoenix

It was also hot and 16 measurers from around the world gathered at the Resort Suites in Scottsdale to test their abilities and swap techniques, and, the underlying reason for the seminar, to get acquainted.

From France, **Jean Francois DeLaSalle** and **Floryse**. An M.D. by profession, J-F has, in the space of four years, brought the French measurers up to speed, including a "how to do it" video.

From Great Britain, **John** and **Sylvia Disley**. Both are Olympic medal winners (1952) and still lean and mean. John plays an important role in the London marathon and is the Reebok distributor for Great Britain.

Medco gave us **Rudolfo Martinez**, an official with the Mexico City marathon and the national sports federation. Rudolpho is planning a two-day measurement class in conjunction with the July marathon. Rudolfo was accompanied by two measurers from Monterrey.

Dave Yaeger came from Canada — a pleasure to finally meet.

From the U.S. came **Andy Beach** (Dallas), **Mike and Karen Wickiser** (Ohio), **Don Shepan** (New Mexico), **Bob Baumel** (Oklahoma), **Bob Letson**, (California), **Doug Loeffler** (Florida), **Felix Cichocki** (Arizona), and **yours truly** (Houston).

Felix and Mary Ann Cichock, our hosts, had done all the advance work: reservations, layout of the road and cal courses, plus arrangements at the favorite local restaurants.

Working in teams of two, the cal course was taped; then the road course was ridden first as a validation measurement, then as "tight" as possible. (Read: pedals should be scrapping the curbs.) Two additional exercises came at the end of the day:

1. **Tape comparison:** How accurate is your steel tape? Nineteen tapes were compared using a standard pull. Preliminary conclusion: avoid the fiberglass, plastic tapes. Your 30m/100 ft Lufkin, Sears Craftsman, Stanley are OK.
2. **Eyeball offset:** How accurate are you when you move your bike from one side of the street to the other. Result: not very. Best bet, use an expansion crack, crosswalk stripe.

FROM ALAN JONES'
NEWSLETTER
"SEISMIC SOUNDS"

Northridge

On January 17, I was still lounging in bed at 7:33 when my daughter Kendra called from Long Beach, California. In a shaking voice she said, "Dad, we just had a BIG earthquake. It lasted for 45 seconds!" I immediately called our lab where I knew that graduate student, David Salzberg, would be and told him about the event. He exclaimed, "The paper needs changing!" and hung up. Later I found out that he got the new paper on with one minute to spare.

I turned on *CBS This Morning* and watched the beginning of their coverage but did not see Seismic being used. About an hour after the event, my contact, Mark Kramer, called from his home. He had arrived home late the night before from Europe where he was covering President Clinton's trip. He told me that those in the studio couldn't get the program going. I called the studio and walked them through what to do and they exclaimed, "There's a big circle down on the coast!" It had just come in on the pager from the USGS at NEIC via USGS Menlo Park. I hung up the phone and went into my living room to see Seismic on my TV with the mislocated epicenter near Malibu. Shortly after this Chris Scholz, Lamont-Doherty Earth Observatory, arrived to provide commentary and better data came in which located the event farther north. As the day went on about 25 after shocks were added which allowed Chris to explain to Connie Chung how the after shock distribution outlines the fracture region.

How many clicks make a marathon?

By LARRY L. HAMILTON
Special Correspondent

One of the reasons Columbia won the bid to host the 1995 women's marathon national championships and the 1996 Olympic trials was the site selection committee was persuaded the proposed course was safe, fast and would be accurately measured.

Even veteran runners might not realize how complicated that can be. Developing a championship race course is a complex undertaking. The first course proposed is seldom the course used, and that has been the case with the Carolina Marathon Association's initial proposal.

Designing and measuring a race course are two different but related tasks and each has its own challenges. Course design involves picking the location of the start, the finish and the path runners will follow from start to finish. First a route for the race is selected and generally agreed upon by all parties involved, which is no small task. There are many parties with differing concerns.

The first group to be persuaded was the USA Track and Field site selection committee. The committee looks at the course from years of experience as runners and race managers, with an understanding of the logistics required for quality television coverage.

Some of the other parties with a stake in the route are the municipalities of Columbia, West Columbia, Cayce and Forest Acres; the University of South Carolina; Fort Jackson; businesses along the route; and corporate contributors.

Because of the television coverage, local governments want to show their "best" side and corporations involved in Olympic sponsorship want and deserve appropriate recognition.

Charlotte is hosting the Men's Olympic Trials the week after the Women's Trials. The start and finish points were identified early as being in the vicinity of Charlotte's NationsBank Plaza because NationsBank is

a \$40 million contributor to the 1996 Olympics.

The start and finish of the Women's Trials in Columbia will be in the vicinity of NationsBank Plaza on Main Street, and the course will provide at least two opportunities for television viewers to see the runners go by the State Capitol.

Among the safety considerations in the course design are making sure there is plenty of room and good visibility for the lead vehicles and flat bed trucks with camera crews, media representatives and technical observers.

Once the route is decided, the course is

MARATHON

FROM PAGE B

measured. Course measurement requires the precision of an engineer and the ability to ride a bicycle slowly in a very straight line.

Almost every distance runner and fan thinks the length of a marathon is 26 miles and 385 yards, or 26.2 miles rounded. But actually the International Amateur Athletic Federation Official Handbook states the official marathon distance as 42.195 kilometers. The hardy souls who measure road race courses in accordance with the USA Track and Field Running Technical Council's requirements think about it in terms of clicks on their Jones Counter.

The Jones Counter is a mechanical device that can be easily mounted on the axle of a bicycle and is used to measure distance by means of so many "clicks" per mile. A small window shows the numbers as the wheel turns similar to the odometer on a car. The easiest way to understand the length of a click is to think of it as about 10 centimeters. There are a lot of centimeters in 42.165 kilometers.

Everyone who runs in road races also knows that runners save steps and lower their time by running on the inside of turns. But are they still

running the full distance of the race. After 26.2 miles who carries about a few inches, feet or meters either way?

Many runners and most race officials take it seriously that's for sure. For groups such as running clubs that put on races on their own or solicit corporate financial partnerships to put on a race, the credibility of the event begins with an accurate course measurement.

Part of the concern for accurate measurement has to do with record-setting performances. There is a financial impact for the runners who set the records in terms of endorsement or sponsorship contracts.

For runners who race regularly, accuracy is important because their finish time tells them how their training is progressing.

Hills are also important in terms of records. Measurers must identify elevations of the start, finish, highest and lowest points on the course. A course may be certified as accurately measured but still not be record quality if it violates USA Track and Field standards on how much downhill is allowable.

The measurer rides the course twice, taking the shortest path that might be available to runners. In the case of a long course like the marathon, two measurers will ride the

course with two separately calibrated Jones Counters.

The two measurements must be within .08 percent of agreement or the measurement ride is done again. This amounts to about eight meters (25 feet) for a 10K (6.2 miles) race.

USA Track and Field provides guidelines for turns and changes in surfaces. For example, turns on city streets are measured within 30 centimeters (about 12 inches) of the curb. There are 14 categories of road surface and the certification record shows what percent of each type comprises the course and where each type is located on the course.

When finished, the measurer completes the four-page application for course certification and attaches the detailed course map. The application is then reviewed by a state USA Track and Field official and by national officials. In the event a national record is set on the course, the Road Running Technical Council will send a validation team of experts to remeasure the course.

When the elite women runners come to Columbia for the Marathon Championship the USA Track and Field certification will assure them that everything has been done to make the race an Olympic quality experience right down to the last centimeter.

BY
ANDY
MILROY

Why keep records?

Over recent years there has been some debate about records and record keeping, and it occurred to me that it might be useful to put forward, in a coherent and structured way, the viewpoint as a long time record keeper.

According to research in to the origins and development of recordkeeping, the concept of the record as an absolute best performance never before achieved, is relatively new. In Ancient Times and the Middle Ages more attention was focussed on the number of times a particular person had won an event, or performed a feat, than on the actual time or distance achieved. With increasing sophistication in terms of the ability of people to measure both distance and time, then direct meaningful comparisons could be made for the first time. Thus it was not really until the nineteenth century that the modern concept of a record evolved.

What is a record? A record should be the best substantiated performance for a specific event. In our modern ever-changing world, records have become a commonplace item for media consumption. Records are claimed and proclaimed daily and seldom is a note of caution sounded. However if records are to have any meaning there have to be criteria for acceptance, and careful checking of documentary evidence meeting that criteria before marks can be recognised. Such a procedure can be time-consuming, it can even be fruitless if race organisers are unwilling to co-operate, but without it 'records' can be exploited by the unscrupulous, the laudible and the forgetful.

Who suffers if records are accepted by acclamation i.e. there isn't a records procedure? Usually it is the legitimate performer. Such marks get squeezed out by the less substantial, but more impressive sounding marks.

Record procedures aren't thought up by one awkward, officious individual, they evolve over a period of time in response to the changing level of sophistication in the running community. As far as Ultrarunning is concerned, track record procedures were modelled on those used for standard long distance track running for 10 miles and the Hour etc from the nineteenth century onwards. When the British Road Runners Club took over the ratification of such records back in the 1950s, they gradually added one or two modifications to those standard procedures. (The Ultra Marathon Race Handbook produced by the IAU is a further development in this ongoing process.)

A case in point is leaving the track during a race. Apart from the one off 24 hour track race in 1953, track races in the early period of the revival of ultrarunning in the 50s and 60s had only extended up to 100 miles. Prior to the 1973 24 hour event held in the United Kingdom, (which effectively marked the rebirth of the event in modern times), the RRC

decided that it was permissible to leave the track in such an event. However, in those days ultrarunners were isolated within their own national communities and there was limited communication between them.

In Italy, in April 1974, Andrea Morelli ran 227,400km to break the then Italian 24 hour record after 23 hours. He then collapsed on the track. The IAAF rule whereby a runner cannot leave the track was strictly followed. Morelli was placed on a stretcher, examined medically and left for an hour until the 24 hours had expired. (I imagine this was due not to the callousness of the officials but to Morelli's fear that he would be disqualified if he left the track.) He was then rushed to hospital suffering from dangerously low blood pressure. The RRC, hearing of this, incorporated the leaving of the track in their rules, stating that a runner did not have to be on the track at the finish of a race in order to be classified in the results, quoting the Italian race as evidence.

The underlying reasoning behind all record procedures is to ensure that the mark before being ratified is proven beyond doubt. Recordkeepers have to be professional sceptics, demanding proof that each requirement has been carried through correctly. Each proof has to be scrutinised and approved by experienced people. (Obviously with improving, changing systems - use of computers, bar code readers etc - the methods for recording that proof are being updated, but the basic proofs remain the same.) With such a system there are going to be innocent casualties. Runners may have legitimately surpassed a world or national best, but due to organisational errors, laps were not recorded properly or stop times not taken, the mark is not verifiable. This is very frustrating of course, some might say tragic, for the runners concerned, but what is the alternative?

If there is a problem with the lap recording, do we say forget it, thus ignoring the need for proof that the distance claimed was covered by the runner? If the track or road course cannot be proven to be at least the distance claimed then do we credit a runner with a record for a distance he or she may not have covered in the time stated? If no stopped times were taken, with what time do we credit the runner?

On the track a recorder may be well away from the start/finish line, or not be concentrating, so a recorded lap split could be two or three seconds off either way. How do we know the exact time? The answer is that we cannot, unless we have a stopped time taken at the start/finish line (or the point where the part lap completes the distance.) With Age group records we are more flexible, but in doing so we devalue those records somewhat. If our world and national records are not kept to best standards we can achieve, then there is a

grave danger that our sport will be regarded by outsiders as being undeserving of proper recognition.

(* For age group records the lap times recorded at the end of the lap in which the record distance was covered plus one second can be used. The reason for this leniency is that it is much more likely for an age group record to be overlooked than an absolute mark.)

Whose responsibility is it to ensure that a record is verifiable? That is a matter for some debate, but to my mind, the bulk of the responsibility must lie with the runner. The runner is really the only person who knows what kind of shape he or she is in. If the runner is in record breaking shape, and they have their eye on a particular mark, it is their responsibility to select a race that has the reputation of providing the crucial ingredients - accurate course, accurate timing, reliable lap scoring.

Even more important, it is essential that the runner knows and understands the record requirements, and checks with the race directors that these will be met. Such runners should also have a clear idea of the record they want to beat, and should make sure that the race director knows the record they are aiming for and that they are in the form necessary to break that mark. Ideally the runner's handler should also be aware of the requirements, and should discreetly monitor the situation, as a double safety check.

When the race has finished, the pending 'record' set, it now becomes the race director's responsibility to send all the necessary documentation to the appropriate recordkeeper. I suspect people would be very surprised at the number of 'records' which were never ratified because this link in the chain was broken. The exhausted race director struggles to get out the results, puts the documentation to one side ready to send off, and then gets distracted. The documentation gets buried, moved, mislaid and then lost.

Again, I would say it is the runner's responsibility to check up and ensure that the necessary documentation has been sent. (That should be done tactfully reasonably soon after the race - perhaps a week or so later.) Remember race directors are the life blood of the sport. (Take a race director to dinner today - as Nick Marshall used to say!)

Aggrieved runners are probably thinking now that they have enough to do, running fast and hard enough to set a record, so why should they be responsible for all this checking, before, during and after the 'record'? The answer to that is, who benefits most from holding the record? (True, the race director gets reflected glory, and an enhanced reputation for his event, but this is compensated for by the shared

responsibility he or she has for ensuring the documentation is dispatched to the correct person.

This article was written to illuminate the processes and problems associated with recordkeeping. The keys to successful record keeping are knowledgeable runners, officials and race directors. Once all three groups understand the requirements necessary, many problems can be avoided or resolved even if they do occur.

A case in point is the recent 50 mile performance on the track by Hilary Walker. Careful examination of her lap sheets after the race revealed that an error had been made and she had been credited with an additional lap by mistake. Fortunately both Hilary and the race organisers had a good understanding of record requirements and of potential pitfalls. She had sensibly run additional laps on completing her 50 miles. The race officials had taken the additional precaution of timing her at the marked 50 mile point on the succeeding lap as well (6:12:11), which was still a world 50 mile track best. Knowledge and understanding of the record process meant that additional precautions had been taken, and thus Hilary's performance, suitably modified, was saved.

In part, the IAU publication, the Ultra Marathon Race Handbook was developed to create this kind of awareness in all those associated with the sport of Ultrarunning. The reasoning behind the rules and advice was spelt out carefully in the Handbook for this reason.

Records are the cutting edge of the sport, and naturally attract much of the media attention. To many people record requirements seem irrelevant to their own personal performances. This is not true. ALL runners benefit from the development of such record requirements. The properly certified road course, the accurate lap recording, the use of stop watches will not just operate for and benefit the elite runners in the race, all the runners will have their performances monitored and guaranteed in the same way. If we allow the cutting edge of our sport to become dull and blunt, by downgrading record criteria, everyone will suffer in the end.

"Zeando"
Swannington
Norfolk
NR9 5NW

Tel.(0603) 860244

10 May 1994

Dear Pete,

Thanks for the latest edition of MN - it always makes interesting reading, even to a foreigner!

I have always been unhappy with the use of averages (Either mean or median) in measuring.

If our calibration course was circular, we would be bound at times to cycle either side of that circle. In these circumstances it would be reasonable and sensible to take an average reading.

However, we calibrate in a straight line, and it is impossible to cycle shorter than the shortest line between two points. The smallest reading is therefore the most accurate. (The 'wobbling' necessary to stay on board our cycle will still probably result in a line less straight than a runner can run - hence our use of the SCPF)

To take the mean of our four rides therefore takes us further away from the truth.

To relate this argument to your example of a mass measure of an olympic marathon course, I would assume the following:

1. Only experienced measurers with proven competence would be invited.
2. Each would warm up their tyres thoroughly before starting their runs.
3. They would all use the same calibration run.
4. Their counter readings and calculations would be checked by a second person.
5. Before measuring each section the precise path to be measured would be agreed.

These precautions would eliminate all the variables except for riding skill, and the measurer with the lowest reading would be the most accurate. All the others would be inaccurate to varying degrees.

I would therefore prefer to take the sum of the shortest splits, and, in your example, would add 41.lm.

If we take the median in each case, how would you explain to the half of the riders, who got lower readings, where they went wrong!

Having stuck my neck out, I now await your eloquent destruction of my logic!

My Regards, nevertheless,



Roger Gibbons

USA TRACK & FIELD



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Roger Gibbons - "Zeando", Swannington, Norfolk NR9 5NW - GREAT BRITAIN

Dear Roger,

June 1, 1994

I understand the logic in your letter of 10 May, but I would like to put forth some statements and assumptions that support the status quo.

1) A person's truest calibration ride is the one with the least counts, and similarly for the race course, assuming the corners are not cut within the 30 cm limit. However - the fundamental assumption is that a person will measure as he calibrates. Wobbly calibration = wobbly measurement = decent answer.

2) In the US two measurements are required to complete a job, and the shorter one is official. An extra 1/1000 is incorporated into every course, as protection against shortness. If a record is set, a top-notch measurer is sent to check the course. He does not use the 1/1000. If he finds the course short of the nominal distance, the record falls. Whether the course is actually short we will never know for sure - this is the only test we can give it in a practical sense.

We have no way of knowing the truth. However, using our methodology, we establish a strong probability that the course will survive any remeasurement by an expert. With only two measurements I would be inclined in some cases toward use of sum-of-shortest-splits (SOSS), but not when we have a lot.

I would not add so much to the course as you, since use of the median provides adequate protection against expert remeasurement. Note that if the expert was good enough to match the SOSS value in the example it would not be sufficient to shoot down a course based on the median. The course would survive. There is such a thing as making a course too long due to excessive zeal to eliminate all uncertainty.

In the US, we have had hundreds of courses checked. Only 2 or 3 percent of the courses originally laid out by an expert failed, using our standard procedure. To improve this we would have to increase the size of the safety factor, which many, myself included, think is a bad idea. It makes most courses way too long, in return for only a minimal improvement in the failure rate.

Although we will never agree on the exact length of the course, we can agree that a given course is almost certainly not short of its nominal distance. There is certainly room for disagreement, and I don't think your suggestion is at all out of line.

We have now got some real data from our Phoenix exercise. 16 people made individual measurements of both a calibration course and a race course. Thus we have completely independent measurements of the race course. You will see some numbers in next MN. Also, we checked 20 tapes against one another and found to our satisfaction that all agree within small limits, except for the two fiberglass tapes, which were way off.

Thanks for the info on the British courses. Impressive!

Best regards, Peter

SOME PHOENIX RESULTS

ESTIMATING THE OFFSET

In this exercise, a steel tape was laid down opposite a mark on a curb, about 12 meters from the mark. Measurers estimated when they were opposite the mark, and read the tape.

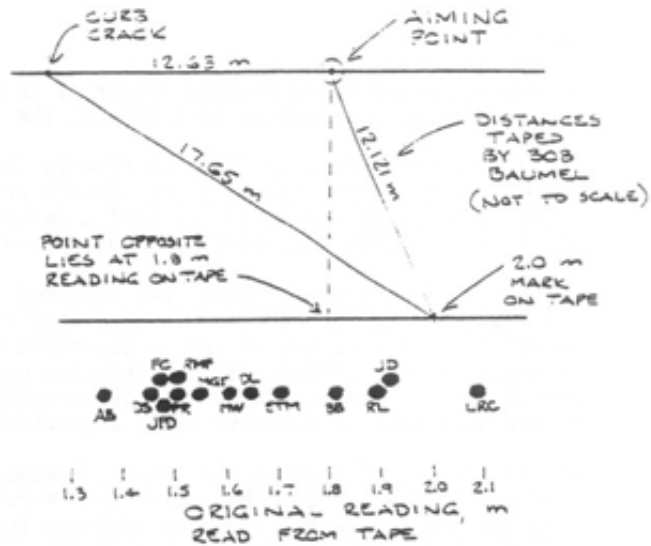
Correct offset = 1.80 meters, established by Bob Baumei using steel tape triangulation (after making his estimate).

Note: Negative values indicate that the measurer chose a position to the left of the correct mark.

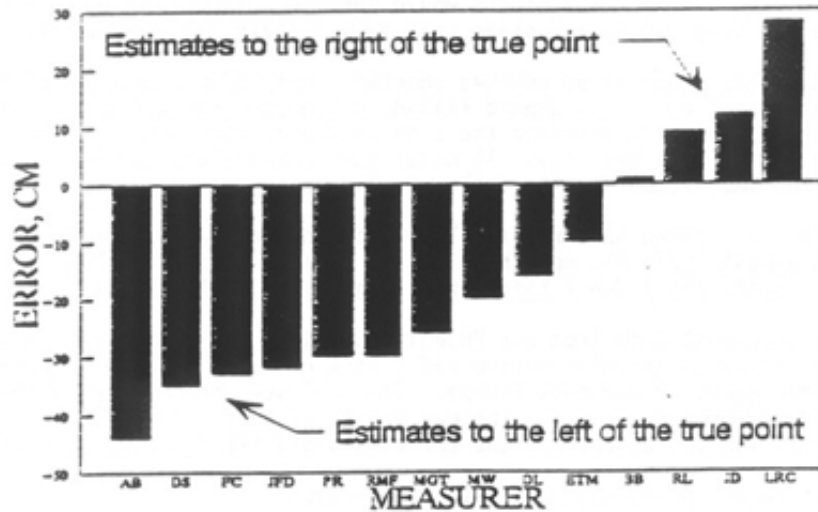
Measurer	Estimate Meters	Error Cm	Order of Accuracy
BB	1.81	1	1
RL	1.89	9	2
ETM	1.7	-10	3
JD	1.92	12	4
DL	1.64	-16	5
MW	1.6	-20	6
MGT	1.54	-26	7
LRC	2.08	28	8
RMF	1.5	-30	9
PR	1.5	-30	9
JFD	1.48	-32	11
FC	1.47	-33	12
DS	1.45	-35	13
AB	1.36	-44	14

When this exercise was done, the point opposite was unknown. Bob Baumei taped the triangle shown, using the 2 meter mark on the tape as an arbitrary reference point. Later, he and Pete Riegel worked out the offset shown. The tape read by the estimators read from left to right.

Did Pete and Bob get their numbers right?



ESTIMATING OFFSET

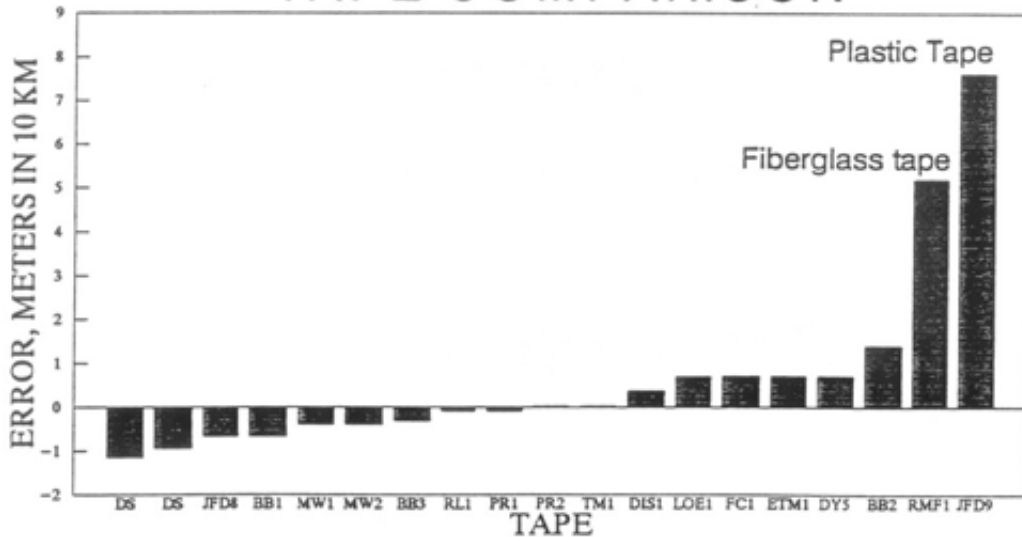


COMPARISON OF MEASUREMENTS – STANDARD RIDE – Using 332.139 m cal course



	S/F to S/F	S/F to Ref 1	Ref1 to Ref 2	Ref2 to S/F	Total Length	
AB	2960.07	1030.74	1549.49	1882.89	7423.18	
BB	2958.63	1030.44	1549.65	1882.43	7421.15	
DL	2957.78	1030.05	1548.01	1881.81	7417.64	
DS	2958.33	1030.06	1548.32	1881.05	7417.76	
DY	2958.20	1030.37	1549.04	1882.38	7419.98	
ETM	2959.90	1030.49	1550.76	1883.74	7424.88	
FC	2958.25	1030.22	1548.22	1881.09	7417.78	
JD	2957.13	1029.30	1548.11	1881.35	7415.89	Note: Box
JFD	2959.49	1030.11	1548.81	1881.25	7419.65	Indicates
KW			1551.21	1884.53	7425.97	Median
LRC	2960.48	1030.52	1551.51	1883.28	7425.80	
MGT	2963.74	1030.26	1551.90	1885.22	7431.12	
MW	2959.99	1030.93	1550.59	1882.87	7424.38	
PR	2959.43	1030.44	1548.98	1881.88	7420.73	
RL1	2957.83	1030.15	1548.08	1881.10	7417.15	
RL2	2959.45	1030.41	1548.77	1881.85	7420.47	
RMF	2962.50	1031.47	1552.22	1883.10	7429.29	
Average	2959.45	1030.37	1549.63	1882.46	7421.93	Sum of Shortest
High	2963.74	1031.47	1552.22	1885.22	7431.12	Splits
Low	2957.13	1029.30	1548.01	1881.05	7415.89	7415.49
Std Dev	1.68	0.45	1.40	1.20	4.28	Sum of
Std Dev, m/km	0.57	0.44	0.90	0.64	0.58	Medians
Median	2959.44	1030.39	1549.04	1882.38	7420.73	7421.25

TAPE COMPARISON



COMPARISON OF STEEL TAPES

Fixed end holder: Tom McBrayer
 Scale end reader: Dave Yaeger
 Scale operator: Doug Loeffler

Either 100 feet or 30 m was held at the fixed end. The reading after tensioning was recorded.

Tape Number	Tape Type	Reading at Fixed End	Scale End	Tension Pounds	Length meters	mm over Avg	Inches over Avg	Inches per 100 ft over Avg	Measure - ment		Error meters in 10 km
									obtained for 30 m Target	obtained for 100 ft Target	
RMF1	fiberglass	30	1.038	10	28.962	-15.08	-0.59	-0.62	30.016	100.052	5.21 Out of spec
JFD9	plastic	30	1.045	10	28.955	-22.08	-0.87	-0.91	30.023	100.076	7.63 Out of spec
ETM1	steel	30	1.025	10	28.975	-2.08	-0.08	-0.09	30.002	100.007	0.72
DIS1	steel	30	1.024	10	28.976	-1.08	-0.04	-0.04	30.001	100.004	0.37
LOE1	steel	100	4.9375	10	28.975	-2.03	-0.08	-0.08	30.002	100.007	0.70
DS	surv chain		95.08	10	28.980	3.30	0.13	0.14	29.997	99.989	-1.14 Out of spec
DS	steel	100	4.9219	10	28.980	2.73	0.11	0.11	29.997	99.991	-0.94 Out of spec
JFD8	steel	30	1.021	11	28.979	1.92	0.08	0.08	29.998	99.993	-0.66
BB1	steel	30	1.021	11	28.979	1.92	0.08	0.08	29.998	99.993	-0.66
BB2	steel	30	1.027	10	28.973	-4.08	-0.16	-0.17	30.004	100.014	1.41 Out of spec
BB3	steel	30	1.022	10	28.978	0.92	0.04	0.04	29.999	99.997	-0.32
TM1	steel	30	1.023	10	28.977	-0.08	-0.00	-0.00	30.000	100.000	0.03
FC1	steel	30	1.025	10	28.975	-2.08	-0.08	-0.09	30.002	100.007	0.72
RL1	steel	100	4.93	10	28.977	0.26	0.01	0.01	30.000	99.999	-0.09
MW1	steel	100	4.9271	10	28.978	1.14	0.05	0.05	29.999	99.996	-0.39
MW2	steel	100	4.9271	10	28.978	1.14	0.05	0.05	29.999	99.996	-0.39
DY5	steel	30	1.025	10	28.975	-2.08	-0.08	-0.09	30.002	100.007	0.72
PR1	Nylon/steel	100	4.93	4.5	28.977	0.26	0.01	0.01	30.000	99.999	-0.09
PR2	steel	30	1.023	10	28.977	-0.08	-0.00	-0.00	30.000	100.000	0.03

Excluding Fiberglass & Plastic

	Length meters	mm over Avg		Inches per 100 ft over Avg	Error meters in 10 km
		Avg	Std Dev		
Average	28.9771	-0.00	1.94	0.081	0.671
Std Dev	0.0019	1.94	3.30	0.137	1.408
High	28.9804	3.30	-4.08	-0.169	-1.140
Low	28.9730	-4.08	-0.169	-1.140	-1.140

US Government specification for steel tapes mandates maximum error of 0.1 inch in 100 feet. This is an error of 1 part in 12000, or 0.83 meters in 10 km. If the average is taken as accurate, three steel tapes are out of spec, but not by an amount which affects bicycle measurements. The two non-steel tapes are off enough to affect bicycle measurements.



Ragged Mountain Club
Potter Place, NH 03216
Tel & Fax 603-735-5721

28 April 1994

Peter S. Riegel
3354 Kirkham Road
Columbus, OH 43321-1368

Dear Pete,

I attended the Crescent City Classic 10K road race this April for the fourth year in a row. Each year my duties have included collecting as much information as possible on the wind conditions during the race. The race is a flat, point to point course with the start and finish about 7 kilometers apart. As we have provided in Rule 185.5, records can be accepted on a course where the drop requirement is met and where the start and finish are more than 30% of the race distance apart, if it can be shown there was not a significant tailwind.

The first three years, in addition to checking the National Weather Service report, I mounted red engineer tape streamers on poles along the course and photographed the streamers from the press truck. I was never satisfied with the streamers, due to their tendency to blow erratically and to become wet and entangled. After reviewing the video tape of the 1993 Bay To Breakers 12K race (also a point to point course) I noted the many helium filled balloons along the course were excellent wind indicators. I decided I would try using balloons as wind indicators on the course.

At a recent family birthday I experimented with a portable helium filled tank which is sold in Toys'R Us stores. The tank comes with thirty 9" latex balloons and ribbon cords. I learned I could efficiently fill and tie the balloons. Since I was flying from NH to New Orleans, I made arrangements for the race technical director to purchase the tank and balloon kit, which sells for about \$18.00.

The evening before the race a weather front was passing through, bringing high winds and rain. We decided to mount the balloons starting at 5 AM. To speed up the operation, I filled and tied the ribbon streamers on the balloons that evening. A single streamer was not long enough so I purchased and substituted yarn for many of the balloons. At 4:30 AM we moved the balloons to a sedan and placed them in the back seat. I had tied the streamers loosely together so removing them from the car at each stop was somewhat annoying, since the streamers had to be untangled and the balloons kept from interfering with the driver. I recommend freeing all the balloons from each other and devising a means of restricting their movement into the front seat area of the vehicle before beginning the mounting operation.

I chose street signs as the balloon locations so I could later determine the locations on the course from my photographs. The photos reveal that the balloons had lost much of their buoyancy by the time the race started. A tightly filled balloon with a taut ribbon line is an excellent wind indicator. The photos I have of the partially deflated balloons are indicating wind direction but they are not so convincing. I recommend the balloons be filled immediately before starting the mounting operation.

Some of the balloons met the same fate as the streamers of the past. They became entangled with poles and signs and could not be accepted. I recommend that the balloons be mounted to an object with 360 degree clearance immediately above the object. A step ladder is essential to mount the balloons high enough to avoid removal by spectators.

I also recommend a larger, tougher balloon be used. At the time of purchase there are several other types and sizes of balloons available. I would suggest at least a 12" size balloon. It would create a greater upward pull, better counteracting the weight of the extra length ribbon or yarn attached. I am not sure of the maximum helium capacity of the tank. Obviously if it will fill approximately 30 9" balloons, it will fill fewer 12" balloons.

If invited back again next year, I intend to employ basically the same procedure, incorporating the changes I have suggested above. One might question the value of this exercise. I have been able to certify for three of the past four years that there was no significant tailwind at the Crescent City Classic 10K, which permitted immediate submission of a records application. Personally I felt greatly rewarded for my efforts when William Sigei of Kenya set a pending World Record of 27:24 in the 1994 event.

Sincerely,



Wayne B. Nicoll
VC East, RRTC

LENGTH OF THE OLYMPIC MARATHON

Last month's example of a set of measurements that might result from a group measurement of the Olympic Marathon course generated diverse opinions as to how much should be added. Jean-Francois Delasalle favored a scheme which discarded all values more than .0005 percent from the median, and took a mid-range of what was left. Tadeusz Dziekonski favored discarding everything beyond .0002 percent of the average, and averaging the remaining measurements. Dieter Damm took the same approach, except he chose one standard deviation as his limit. Roger Gibbons preferred sum-of-shortest-splits. Pete Riegel prefers the sum-of-median-splits.

Recommended additions to the course were:

JFD	18.2 meters
TD	16.5
DD	16.5
RG	41.1
PR	16.8

Note that all approaches recommended discarding the high measured values as being unreliable. Also, all approaches except SOSS give virtually the same result.

ONLY IN AMERICA

Once upon a time, an American paper company and the Japanese decided to have a competitive boat race on the Columbia River. Both teams practiced long and hard to reach their peak performance. On the big day, they both felt as ready as they could be.

The Japanese won by a mile!

Afterwards, the American team became very discouraged by the loss, and morale sagged. Corporate management decided that the reason for the crushing defeat had to be found. A continuous "measurable improvement team" was set up to investigate the problem and to recommend appropriate corrective action. Their conclusion:

The problem was that the Japanese team had eight people rowing and one person steering, whereas the American team had one person rowing and eight people steering. The American corporate steering committee immediately hired a consulting firm to do a study on the management and labor time and spent millions of dollars, the consulting firm concluded that too many people were steering and not enough rowing.

To prevent losing to the Japanese again next year, the team's management structure was totally reorganized to four steering managers, three area steering managers, one staff steering manager and a new performance system for the person rowing the boat to give more incentive to work harder. "We must give him empowerment and enrichment. That ought to do it."

The next year: the Japanese won by two miles!

Humiliated, the American corporation, laid off the rower for poor performance, sold all the paddles, canceled all capital investments for new equipment, halted development of a new canoe, gave a "high performance" award to the consulting firm, and distributed the money saved as bonuses to the senior executives.

Dieter Damm
 Adolph-Kolping-Str.10
 D-65719 Hofheim am Taunus
 Tel. + Fax: [49] (0)6192 27175

To Peter Riegel
 3354 Kirkham Road
 Columbus Ohio 43221-1368
 USA
 Fax: 001 614 451 5610

Dear Pete,

Since last year I'm an enthusiastic reader of MN. It's very interesting for me to hear from the problems with measurements in your area. Here in Europe we have not the same system, but I hope we can establish someone like yours. Last year I measured the courses for the IAAF World Championships in Stuttgart alone, only accompanied by one unexperienced local measurer. But the courses were well measured by professional surveyors and I serve more as a validator for their measurement. Behind find my answer to your question for the Olympic Marathon. I would add 16.5 meters to make the course correct. My corrected average is near the median and is the result of the elimination of the values which are outside of the standard deviation, four in every split. I hope you understand my not so good english,

Kind regards

Dieter

1	6210,9	12482,2	23484,1	42177,2	-17,8
2	6213,6	12488,6	23482,7	42184,9	-10,1
3	6214,1	12489,9	23488,7	42192,7	-2,3
4	6215,2	12491,4	23468,8	42175,4	-19,6
5	6212,7	12501,0	23475,2	42188,9	-6,1
6	6215,4	12498,2	23475,8	42189,4	-5,6
7	6222,1	12491,0	23462,4	42175,5	-19,5
8	6213,0	12480,7	23472,3	42166,0	-29,0
9	6210,8	12489,2	23475,2	42175,2	-19,8
10	6213,5	12488,8	23475,9	42178,2	-16,8
11	6213,3	12485,1	23466,6	42165,0	-30,0
12	6212,1	12485,8	23496,0	42193,9	-1,1
13	6219,8	12485,6	23470,7	42176,1	-18,9
14	6213,6	12486,9	23476,5	42177,0	-18,0
15	6213,9	12490,6	23483,2	42187,7	-7,3
Average	6214,3	12489,0	23476,9	42180,2	-14,8
Std Dev	2,93	5,15	8,48	8,66	
High	6222,1	12501,0	23496,0	42193,9	
Low	6210,8	12480,7	23462,4	42165,0	
Median	6213,6	12488,8	23475,8	42178,2	-16,8
Corr Av	6213,7	12488,4	23476,4	42178,5	-16,5

to: Dieter Damm - Adolph-Kolping-Str. 10 - D-65719 Hofheim am
Taunus - GERMANY
FAX & phone: 49 0 6192 27175

from: Pete Riegel - USA - FAX 614-451-5617 May 30, 1994

Dear Dieter,

Thank you for the Olympic Marathon numbers. I have also had a suggestion from Jean-Francois Delasalle. His suggestion is similar, but uses the median value. The measurements far from the median are discarded. It is complicated to explain. He would add 18.2 metres. So we have:

DD = 16.5
PR = 16.8
JFD = 18.2

There is not much difference. I do not think we will ever achieve a perfect agreement about what is best. But, when we are done we will agree that the course is not less than 42195 metres.

I understand your English. No problem. I have no German at all. I have a little Spanish, but it is not good. When I write in Spanish I have the same problem as you.

I am very grateful for your letter, and I hope you will write more.

The Olympic Marathon numbers were fiction. I invented them. In Phoenix we had 16 people measure the same course. You will see some of the results in the next MN. Very interesting.

Joan and I are traveling to Berlin on 16 June and returning on 23 June. We will be visiting with Helge & Anna Ibert. I was thinking of also traveling to Frankfurt to see a friend, but decided to go to Dresden instead, by train. Frankfurt is too far. Too much flying in airplanes.

Thank you for writing.

Best regards,

