

Measurement News



March

1996

Issue #76



Last month readers saw Amy Morss' account of the measurement of the US Women's Olympic Marathon Trials course. Here is "Team Columbia." Left to right: Carol McLatchie, Betsy Hughes, Amy Morss, Elizabeth Longton. Photo courtesy of Amy Morss.

MEASUREMENT NEWS

#76 - March 1996

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OLYMPIC MARATHON MEASUREMENT ENTRIES ARE CLOSED

Issues of **Measurement News** beginning in September 1995 have solicited the interest of people who wish to participate in the May 25 & 26 measurement of the Olympic Marathon course in Atlanta. So far we have over 30 people who think they are coming.

Lacking a fairer way to select who shall come and who shall not, I decided to base it on interest only, since I cringe at the idea of trying to pick over the list to see who is more competent or deserving. The list is now frozen. Everyone has had enough time to decide. Anyone now expressing an interest will be put on the "B" list, in the order received, and may or may not be welcome, depending on how many finally commit.

I don't like to do this, but there are limits to the number of measurers that a single ride can include. The police must protect us, and we will be subject to tight riding discipline. Too large a group will be chaotic.

Here is how it will work: The marathon course and the racewalk courses will already be measured and certified by the end of May, we think. On Friday, May 24, measurers will arrive and find their own way to a hotel to be determined. We will meet for discussions and fellowship, and those without bikes will be taken to a bike shop to select their bikes and mount their counters. On Saturday, May 25, we will go to the Olympic Stadium area and lay down two parallel 500 meter calibration courses, so that we will have one-way traffic while calibrating. We will then proceed to the stadium, and measure the distance from the start to a reference point outside the stadium. We will then measure from the reference point to the finish line. This will be done for both the marathon and racewalk courses.

Upon the conclusion of the in-stadium measurements, we will begin at the reference point, and measure the Men's and Women's racewalk courses. Then we will recalibrate.

On Sunday, May 26, we will proceed to the stadium at the crack of dawn and get calibrated. With police escort we will ride in a long line, beginning at sunrise at the reference point and stopping enroute at each 5 km split point. We will terminate the ride at the reference point, and recalibrate the bikes.

Preprinted data sheets will be provided for calibration numbers, and for the measurement of the racewalk courses. Data on the marathon courses will be taken by data recorders who will meet us at the 5 km points. You will determine what your count is, and read it to the data recorder, and proceed to a point beyond the 5 km split. When the entire group has had counts recorded, we will take off for the next 5 km split location.

Riding will be done in a tightly disciplined manner. The speed of the measuring will be about 10 to 12 mph (16 to 20 kph). It may be slower on uphill, of which there are plenty. Measurers will be expected to maintain no more than a 5 second (80 to 100 feet, 20-30 m) gap from the rider ahead. This must be done to keep the queue manageable for the police. If we have 30 people riding at 12 mph, the line will be half a mile long, even with perfect riding discipline.

This measurement will NOT be a place to do your own thing. We will slow down at tight corners, to allow an accurate 30 cm passage around the corner curb, but we will NOT be offsetting at parked cars we may encounter. Instead, a note will be taken at each one that seems obstructive, and an allowance made later for its effect.

Jack Grosko, who will have finished his measurement work on the course, will be our guide. You will be given a copy of the course map and its restrictions, and Jack will correctly guide us around the course. We will have a truck following the group to pick up anyone with a problem. If you get a flat tire, or any malfunction (chain mishap, falling down) you will quickly move aside from the measurement line and be bypassed. You will be allowed reasonable time to catch up again with the group, which will not wait for you. If you can't rejoin, get in the truck.

At each data stop you will be asked for an opinion of your ride on the past segment. If you feel you did a good job, say "OK." If you had a bad swerve or other reason why you think your segment might not be good, say "not OK." If you do not speak English, the recorder will read your counter.

When we are done, an effort will be made to get copies of all data sheets for everybody to take home. I think we will be done by 1 PM on Sunday, but can't really tell at this point.

The measurements will be analyzed and a recommendation made to ACOG for any adjustments to be made to the course. I am hoping no adjustment will be needed. If it is needed, a turnaround point will be moved as required.

All measurers will be asked to do any calculations they choose, and send them to me. Narratives of any conclusions drawn will also be welcome. Inputs from all participants will be included in a final report to be mailed to everyone.

Every participant, whether serving in a riding or administrative position, will be acknowledged as an official validator of the Olympic Marathon course, even if a mishap should prevent a successful ride. This is a team effort, not an elimination contest.

I am sorry to be so arbitrary, but this measurement will have to be tightly controlled to get it done before Atlanta traffic becomes severe. It would certainly be better if each of us could do the job at his own speed in his own way, but that cannot happen with 30 of us on the course. Many will wish to record their own data. This is OK, but only if it causes absolutely no delay to the queue. Data recorders will be used because that is faster than people fumbling for paper and delaying the queue. You may remember your count and write it down after you have had your count recorded and have moved ahead and are waiting to restart.

Follow-up mailings will be sent to all participants. Suggestions are still welcome.

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

SOUTH AFRICA IS ALIVE AND MEASURING WELL

The January issue of MN included a letter from **Pete Riegel** to **Phil Stewart**, which mentioned various countries that had excellent measurement procedures. One country was omitted, and it should not have been, as it has long had a history of excellence in sport. Here is an excerpt from a recent letter from **Norrie Williamson**:

"I must take you up on your response to Phil Stewart regarding the state of measurement world wide. (My return to UK should not be taken as loss of love for SA!! - you don't get off that easy!!)

Whilst we all know that South Africa was in political oblivion for many years until 1992, I must reiterate that in respect of Measurement we were fairly well developed. There were minor differences viz:

- a) Compulsory 800 m calibration
- b) Calibration must be set by chartered surveyor
- c) Shortest line being as close to kerb as runner can run, as opposed to 300 mm.
- d) All 4 calibration rides must be within .0008 of each other.

There was also a structure of training courses, examination (with some regions including examinable practical), and certification of course measurers. More experienced measurers were re-examined to become validators. In this regard I developed an Audio Visual presentation, (later put onto video).

The national rules required that all road races were pre measured and basic details submitted to the regional bodies. Organisers, (which had to be through clubs) were in fact fined if their courses were found to be short or excessively long. (Normally only checked if complaint or for validation if record set). Records require pre or post validation by an authorised national validator from another region.

This structure was developed around 1984/5 and was unashamedly based on both the USA and UK systems. It can be argued that it was as complete and strict as any other in the world at that time.

Of course, it was politically necessary for most international governing bodies to ignore South Africa. Speculation on the mis-measurement of courses provided a convenient way to ignore some of the world class performances being established, e.g. Mark Plaatjies, Sinque, and Mtolo's sub 2:09's, Temane and Sinque's 60:11 half marathon etc.

In 1991 John Disley opened correspondence with SA in anticipation of acceptance back into the International fold. As you know the administration of the time did little to take John's offer up, but it did open relationships between John, yourself and myself. Our sharing of information and a new administration keen to bring SA requirements in line with IAAF resulted in the new handbook, an insight into the USA certification of courses, and now John's visit to SA in March/April. As he acknowledges, he is not going there with a view to teaching existing measurers but rather to accredit some of them to IAAF standard. In essence the changes to protocol have been required, not so much to "correct" the previous methods, but rather in acceptance that there should be a "Universally recognisable and adopted" process for measurement that allows courses/records, (bests), in one country to be comparable to that of any other.

The reason for this detailed explanation of the SA situation is to record the standards that have and do exist in SA. This is important, not only to complete your response to Phil Stewart, but arguably more importantly, to protect the credibility of the athletes performing during the years of isolation.

The swiftness of SA coming into line with IAAF/UK/USA/French standards is a tribute to the support I received from John, Jean-Francois and most importantly yourself. Our frequent correspondence, the Measurement News and your willingness to share your resources gave me all the ammunition and information I required. Thank you again."

MIKE TOMLINS,
BAF/IAAF GRADE 1 MEASURER.

56 SQUIRES LANE,
FINCHLEY, LONDON, N3 2AP.

TEL/FAX: 0181 349 0234.

4th January 1996.

Dear *Pete*

I thought you might be interested in the enclosed article, written for the (New Scotland Yard) Comets Road Running Club house magazine by Rob Saines, with whom I worked when measuring their 10K road race promotion in Battersea Park last year. I had no idea that Rob was contemplating such an article and, indeed, I received a copy purely by chance just a few days ago via a third party.

I must confess at feeling quite "chuffed" with the article, not only because after over twelve years of course measurement I am perceived as retaining my conscientious approach to the task, but, much more importantly, it is immensely gratifying to learn, just once in a while, that the efforts of the unsung fraternity of course measurers to assist the sport of road running, are really appreciated! To receive an unsolicited "pat on the back" such as this, (almost) makes up for all those times one is required to get up at the crack of dawn on a cold, miserable morning in order to practice one's "art"!

Happy New Year, and may the sun shine on all your 1996 measurements!

Warm regards,

Yours

Mike

MEASURE FOR MEASURE

This Sunday morning (20 August) I went to Battersea Park with Mike Tomlins. Who is Mike? He is a grade 1 BAF course measurer and Kevin Selby put me in touch with him. I booked him to come to the Park and do the biz for our 1 October course.

It was an education to watch him. He had attached to one of the front forks of his bicycle, what I thought was the type of 'mileometer' that you and I had on our bikes when we were kids. It was more sophisticated, however, and was activated much more precisely by a wheel attached to his spokes.

The gadget is calibrated not in miles or kilometres but in 'digits' These on their own are meaningless but Mike knows how many go to make up, for example, a kilometre. Mike had a solid tyre on the front and he explained that a change in temperature can considerably affect tubular tyre pressures sending measurements well adrift. To conform with the BAF rules and to check that all is well with the machinery, Mike has to ride a measured 500-metre strip - near his home address - before undertaking any official measurement. That, presumably, is what he was doing when I was dragging myself out of bed at 6am in order to meet him in the Park at 7.30am.

Our course will be one lap on the main Park road and then two longer laps going off it with the finish in Central Avenue. We rode around the main road - with Mike taking the direct line at all the corners - and he measured one lap. Then he measured one of the longer laps. Then he measured the distance from the finish down Central Avenue to the main Park road. After a couple of minutes with a calculator, we rode back around the course looking for the point where the start would be. Mike put a mark a mark on the spot.

He was so precise - no wonder he is a grade 1. As we rode around, we met a two-armed gate with one of its arms across the road and locked. The arm was obstructing the direct line. Mike rode up to it and stopped with his front wheel touching it. He dismounted, applied the front brake locking the wheel and lifted the bike. He carried it to the other side and set off again. To ride around the arm would have meant inaccuracy.

Having found the start, the rules dictated that he ride the whole course to finally confirm the distance. On the way he noted the kilometre points for me so that we would know where to hang out the signs. When we arrived at the finish he said he

was out by half a revolution of his front wheel. Amazing accuracy after 10k!

We now await our certificate.

As it happened, the day we chose to do the measuring was sunny and bright. The Park is attractive at any time but at 7.30am on a fine morning it was perfect. There were just a few people jogging, a couple more playing tennis and others out for an early morning stroll. It was so quiet and peaceful that I had to force myself to leave and throw myself back into the traffic. But it is not

always sunny and bright for Mike and his colleagues. I noticed he had some waterproofs in his saddlebag. They do this work all year round and in all weathers. And what do they ask for doing this for total strangers? Nothing but their expenses in getting to the venue - their petrol money.

As a final thought about Mike's dedication and professionalism, what did he do as soon as he arrived home from the Park? He rode four times up and down his 500-metre strip to confirm that his gadget was still accurate.

Rob

NORTH CAROLINA USA TRACK & FIELD

PAUL W. HRONJAK
North Carolina Records Center
104 Copperstone Lane
Cary, NC 27511
(919)387-7160

January 18, 1996

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

Re: Pacing Contest Presentation

Dear Pete:

I am writing to make two observations concerning the historical chart provided in the current *Measurement News* which shows the percent error recorded in RRTC pacing contests:

1. My name was left off of this chart. Since this was my first year attending the convention and taking part in the contest, this is understandable - if not forgivable. 😊
2. I disagree with your method of calculating the median and average values, as presented at the bottom of the chart. I am not a statistician nor a mathematician and cannot argue the point from that perspective. I would also agree with your method if we were dealing with an **unknown**. However, we are dealing with a known value and are determining the percent of error in arriving at that value. Since this is the case, I believe that it should be ignored if the error is a plus or a minus. The error is the difference between the known value and the value arrived at by pacing. If you are off by one meter, your mistake is one meter - regardless if you are one meter short or one meter long.

The way that you have done this would lead one to believe that the average percent of error is much lower than it actually is. If we add the percentages of error in this year's contest, without using plus and minus signs, the average (including my result) comes out to be 2.48 percent. In my opinion, this is much more representative of the actual results than the 0.66 which you calculate. The two participants who missed by over 10% should not nearly cancel each other out.

At the same time, a listing of all 19 answers (without

signs) gives us a median of 1.16% - again, more representative, in my opinion.

One thing I learned from this exercise is that I'm glad that we have Jones/Oerth counters! I would hate to try to keep track of wheel revolutions in my head. It was hard enough to keep track of steps at the much lower turn-over rate! Congratulations to the winners. Their performances were awesome.

Best regards,



Pete Riegel - 3354 Kirkham Rd - Columbus, OH 43221
Phone: (614) 451-5617 FAX: (614) 451-5610
E-mail: Riegelpete@aol.com

Dear Paul,

January 21, 1996

As you can well imagine I am deeply grieved to learn of the great personal distress that my carelessness has caused you, and I can only express my heartfelt wish that some day the wound will heal. Toward that end I have sent you a revised copy of the historical record, so that you may see that your name is now permanently enshrined in its proper place. I hope to see many additions to your data as conventions cause us to continue to strive for pacing accuracy.

With regard to the method of calculating the median, I must admit that I can find no firm ground to stand upon. I believe that it is usual for the positive and negative values to be retained when calculating such things, but must admit that your proposal carries good arguments.

I am reminded from recent reading that in the British Navy of the early 19th century, the rules were clear and rigorously enforced, but overlying them was **The Immemorial Custom of the Service**. It is to this concept that I retreat. In our analyses of the pacing data, since its first year in the vanished long-ago days of 1987, we have presented the averages and medians in the same way. It may not be right, but it conforms to our accustomed use.

I will post your letter in the next **Measurement News**, in the hope that someone more statistically enlightened than I am may better address the subject.

Best regards,



FROM
TOM KNIGHT

CONSUMER CORNER

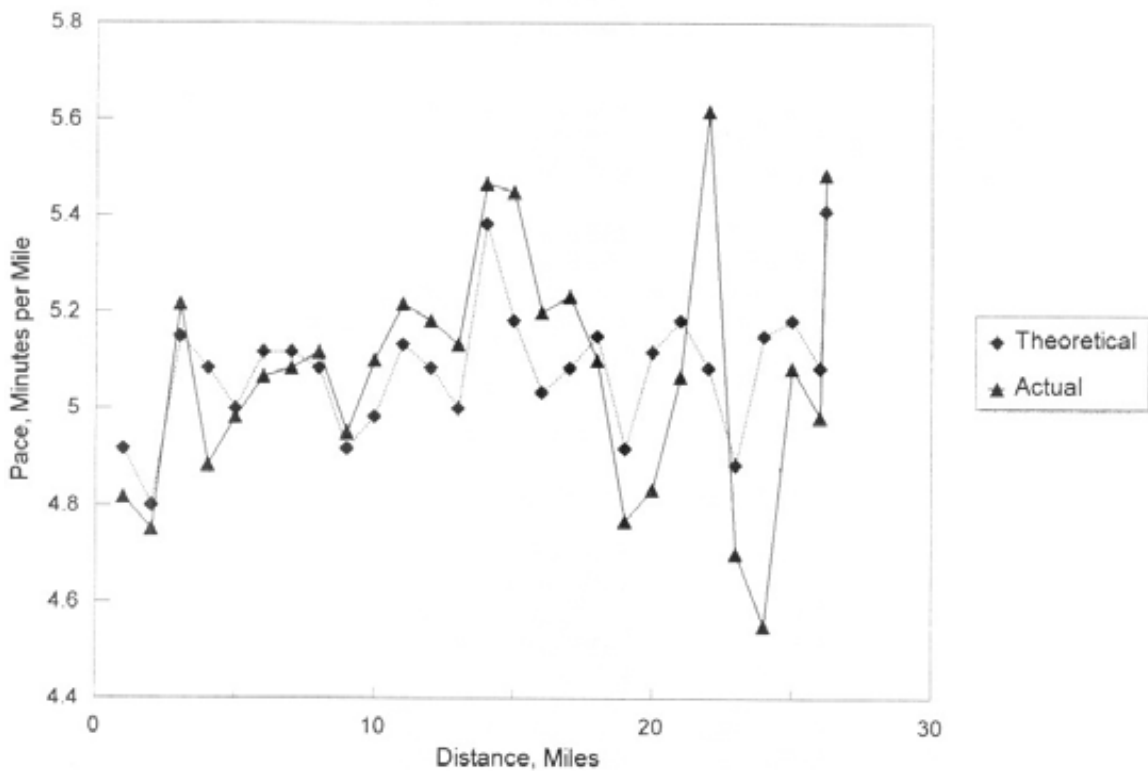
Measurer matches map's scale

- **PRODUCT:** Map Mate
 - **DESCRIPTION:** A handheld electronic map measurer weighing just under two ounces. The housing is high-impact plastic and the liquid-crystal display is coated to minimize sunlight reflection. Powered by a lithium battery.
 - **PRO:** The scale on Map Mate is completely adjustable: You can, with the push of a button, program it to match a map's scale to the nearest one-thousandth. It has four memory positions for quick recall of commonly used scales. Map Mate calculates distance in both kilometers and miles and also estimates the time required to travel that distance by one of four speed references: walking, jogging, bicycling or driving.
 - **CON:** The measuring wheel is relatively large compared to other mechanical map measuring devices I have used, making it more challenging to be absolutely precise, especially if the trail or road features sharp curves. Since there is no arrow or point of reference dictating where to begin and end your measurement, the process is made doubly difficult. To illustrate, I had three people measure a trail with a confirmed length of 9.7 miles. Using the Map Mate, one measured the trail at 11.3 miles, the second at 9.9 miles and the third at 9.2 miles. To be fair, once each of them became practiced at the use of the Map Mate, they consistently measured distances within a few tenths of the known mileage, though never exactly on.
 - **COMMENTS:** Although the Map Mate is not a perfect device, it is a major improvement over mechanical map measuring systems that require you to peer at a needle resting over a variety of scales to determine, to the best of your ability, the actual distance. No more charts, calculations and as-the-crow-flies distance estimation. With the Map Mate in hand, you can simplify traveling decisions by determining (give or take a few tenths of a mile) how far to the next town, the next campground, the next rest break.
 - **SUGGESTED RETAIL:** \$29.95
 - **COMPANY:** Stapleford International, 757 Cayuga Street, Lewiston, NY 14092; 416/322-7555
- MICHAEL HODGSON

If you have a question or comment about Consumer Corner items, or a suggestion of a product you would like to see reviewed you can write Michael Hodgson c/o Venture Section, San Jose Mercury News, 750 Ridder Park Drive, San Jose 95190; or fax (408) 920-5244; or e-mail mjhodgson@aol.com.

US Men's Olympic Marathon Trials

Charlotte, NC



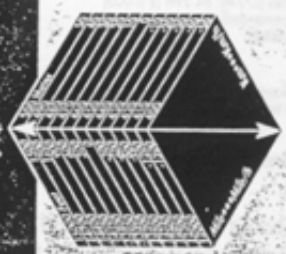
Before the Men's trials I sent Doug Thurston a chart of even-effort time and pace based on the course profile, info supplied by Doug. The chart was based on the idea that 1 meter of drop is worth 4 meters of length.

Doug recently sent me a copy of how the actual splits came out, for whoever was the leader at the time.

Above you can see how it came out.



INSTRUCTION MANUAL
 MODE D'EMPLOI
 BEDIENUNGSANLEITUNG
 MANUAL DE INSTRUCCIONES
 取扱説明書
 ISTRUZIONI PER L'USO
 BEDIENINGSHANDLEIDING



CAT EYE
 CYCLOCOMPUTER
 CC-AT 100
 WITH ALTIMETER FUNCTION

FROM WICKISER
 MICE

INSTRUCTION MANUAL

Introduction

Thank you for purchasing CAT EYE CYCLOCOMPUTER Model CC-AT100. As well as cyclocomputer function, this model has altimeter function, which measures altitude and atmospheric temperature, by sensing the changes of the atmospheric pressure with the pressure sensor. When cycling in a hilly area with a mountain bike, it gives the current altitude (above sea level) and altitude gain/loss in a meter resolution. For night viewing, the EL (electro-luminescent) function backlights the screen in addition to functions for the bicycling activity. It can be used on its own as an independent altimeter for mountain climbing. The features are as follows:

Altimeter Functions:

- Measures current altitude (above sea level), altitude gain/loss, total altitude gain in a temperature-compensated 1 meter resolution.
- Measures atmospheric temperature.
- Can reset altitude gain/loss alone.
- Great choice of usage, with two types of measuring modes.
- Can be used for activities other than bicycling, with accessory parts.

Cyclocomputer Functions:

- Maximum speed
- Total distance
- Elapsed time
- Average speed
- Trip distance
- Clock time
- Can reset maximum speed, average speed, trip distance, elapsed time.

Aspects of Main Unit:

- The EL (electro-luminescent) backlit screen enables you to read the computer screen even at night.
- Any data stored in memory (total distance, total altitude gain, wheel circumference etc.) will not be lost with an all clear operation or by changing the battery.
- Before operating, thoroughly familiarize yourself with this manual so that you understand the functions completely. Please keep this manual, along with the warranty card, for future reference.



Fig. 1

2. Cycling Mode (Bicycle Symbol on) (Fig. 3)

When using this unit on a bicycle, switch on the bicycle symbol in the way, the change of the pressure will have an influence on the altitude data only when the unit perceives the speed signal, regardless of start/stop. Thus, the altitude data will not be affected even if pressure changes occur while bicycle is stopped (Fig. 4).

Note: If the pressure changes while riding, the altitude data will give an error.

3. Continuous Measuring Mode (Bicycle Symbol; off)

When using this unit on its own apart from a bicycle, for taking off, switch off the bicycle symbol in the way, the altitude data is always influenced by the change of the pressure (Fig. 3).

- In this mode, if the Auto (Automatic start/stop) function is on, the elapsed time cannot be measured, switch off the BT symbol and operate with the S5 button in each counting (Refer to "Auto Function", page 11).

Note: As the pressure changes constantly, the altitude data will give an error to some extent.

4. How to Switch on/off the Bicycle Symbol

To switch on/off the bicycle symbol, first display the sub-measuring altitude gain/loss and total altitude gain, with the operation of the Mode button, and press the Set button. Then press the Set button again, and the bicycle symbol will be switched on/off.

5. How to Correct the Current Altitude

As pressure changes constantly, due to various weather conditions. As such, while riding, it is exceptionally correct the altitude. It is recommended to make corrections whenever a reliable value (such as map or peak point) is available.

Note: The basic measurement of the altimeter is based on the pressure of your house, public facilities, etc., and will be useful information for construction.

How to Correct the Altitude
 First display the current mode showing "dB" with the operation of the Mode button. Press the Set button when the speed is zero, and it turns to the correction mode (Fig. 6). The figure indicates with each point of the S5 button, and decreases with each point of the Mode button. To increase/decrease the number rapidly, hold down the button. Adjust the figure to the correct altitude, and press the Set button to complete the operation.

HOW TO USE AS AN ALTIMETER

1. Altimeter Function

This unit, based with a pressure sensor, measures the altitude by using atmospheric pressure. It is calculated by using the "correlation between altitude and pressure" of ICAO (ICAO based on the International Standard Atmosphere of ICAO International Civil Aviation Organization). Generally, a conventional barometer sensor is affected by temperature and pressure, but this unit is temperature compensated every 20 seconds and records 1 meter resolution. Also, with a conventional altimeter, altitude data of the same sensor varies from time to time because it is affected by the change of the pressure. However, the CAT EYE CC-AT100 is not affected by pressure changes when not cycling. There are two types of altitude measurement unit in the altimeter: barometric altitude and geoid altitude. The current altitude data may give an incorrect value temporarily, such as an error if it is brought from outside to outside, or when the energy saving function is selected. This is not an error of the barometric altitude, but a result of the geoid altitude. The altitude difference between barometric altitude and geoid altitude is called a correction value. It will quickly adjust to and return to normal.

The Correlation Between Altitude and Pressure
 The highest barometric gain, the lower the pressure becomes. An example of which altitude and barometric gain, the pressure decreases by approx. 1.25"/in. per each 100m (1.46"/ft).

Correlation between altitude level and pressure	Altitude (m)	Barometric gain (mmHg)
1000m	1013.25	1013.25
2000m	1013.25	813.25
3000m	1013.25	613.25
4000m	1013.25	413.25
5000m	1013.25	213.25
6000m	1013.25	113.25
7000m	1013.25	13.25
8000m	1013.25	-76.75
9000m	1013.25	-176.75
10000m	1013.25	-276.75
11000m	1013.25	-376.75
12000m	1013.25	-476.75
13000m	1013.25	-576.75
14000m	1013.25	-676.75
15000m	1013.25	-776.75
16000m	1013.25	-876.75
17000m	1013.25	-976.75
18000m	1013.25	-1076.75
19000m	1013.25	-1176.75
20000m	1013.25	-1276.75

Wayne Armbrust showed me a copy of a new IAAF publication at the USATF convention, and I gave it a quick browse. I found this section on track measurement, which seems to me to be a pretty good way to define a track, better than anything I have seen. I can't remember the name of the document - Wayne and I were both in a hurry, and I only had a chance to grab a quick copy.

2.2.1.4 Dimensional Accuracy of the 400m Standard Track

The dimensional accuracy required for all classes of competition is deemed fulfilled if the following set values are attained in the "28 Point Control Readings" (Fig 2.2.1.4a) on the outside edge of the inner track border:

- 84.39m \pm 0.005m for each of the two straights (2 readings)
- 36.50m \pm 0.005m for 12 points per semi-circle (including kerb) on the arc of the circle approximately 10.42m apart (24 readings)

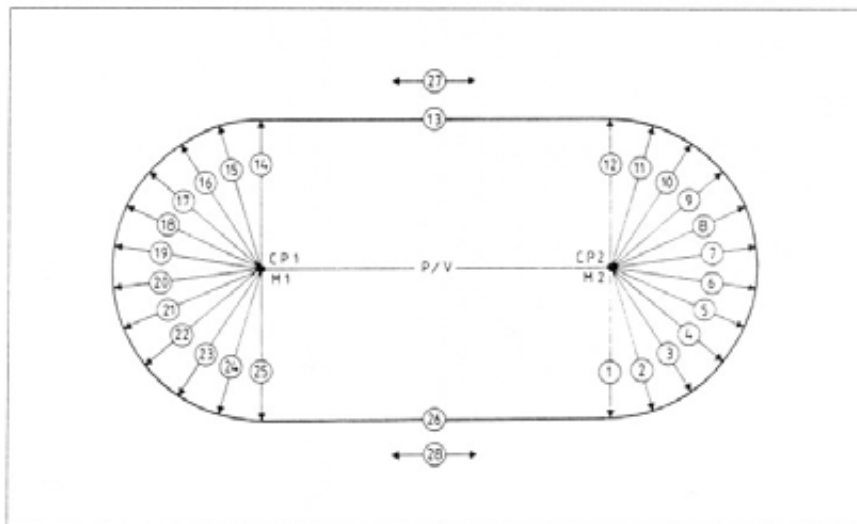


Figure 2.2.1.4a: 28 point control measurement of 400m Standard Track

P/V = Prerequisite: Distance from the centres of the semi-circles (CP/M): 84.39m (\pm 0.005)

Measurement 1-12 and 14-25: 36.50m resp. (\pm 0.005 recommended)

Measurement 13 and 26: 84.39m resp. (\pm 0.005 recommended)

Measurement 27 and 28: alignment of the straights

(permissible deviation of 0.01m)

The readings ascertained for 1-12 and 14-27 must be equalized in the light of the record of 28 point control measurement (Table 2.2.1.4). The track length calculated after equalization may not be less than 400.00m or more than 400.04m.

- Alignment of the kerb in the area of the two straights: no deviations greater than 0.01m (2 readings).

The 28 point control measurement should be carried out and the readings recorded. The average of the deviations must not exceed + 0.04m nor be less than 0.00m (Table 2.2.1.4a).

These control readings also form the basis of the layout of the kerb on whose dimensional accuracy the dimensional accuracy of all markings for the 400m Standard Track depends.

These control readings can also be used for other 400m oval tracks if the relevant measurements for the straights and radii are included (Section 2.2.1.8).

For the construction of the arcs and for the 28 point control readings, the centres of the two semi-circles must be marked by permanent non-corrodable metal tubes placed 84.39m apart.

Tube diameter $\frac{1}{2}$ inch, clear height above foundation 0.15m, foundation diameter min 0.20m, min 1.0m depth down to frost free soil, top edge 0.15m

beneath the finished surface. Second tube with diameter of 0.04m to protect the "measuring tube" (Fig 2.2.1.4b).

Table 2.2.1.4: Record of 28-Point-control-measurement (Example with readings)

Column Line	1	2	3	4
1	Measurement in accordance with Fig 2.2.1.4a Number	Measuring result m	Deviation from the desired value' ± mm	Calculation of the running length for the balance m
2	1	36.502	+2	1. Semicircle $0.001m \times 3.1416 =$ $+0.0031416m$
3	2	36.503	+3	
4	3	36.502	+2	
5	4	36.501	+1	
6	5	36.499	-1	
7	6	36.497	-3	
8	7	36.500	±0	
9	8	36.501	+1	
10	9	36.505	+5	
11	10	36.502	+2	
12	11	36.500	±0	
13	12	36.500	±0	
14	Balance of lines 1 to 12 =		$+12:12 = ±1$	
15	14	36.498	-2	
16	15	36.497	-3	
17	16	36.500	±0	
18	17	36.502	+2	
19	18	36.503	+3	
20	19	36.505	+5	
21	20	36.505	+5	
22	21	36.504	+4	
23	22	36.501	+1	
24	23	36.503	+3	
25	24	36.504	+4	
26	25	36.502	+2	
27	Balance of lines 14 to 25 =		$+24:12 = +2$	
28	13	84.393	+3	Deviation from the running length 1. Semicircle +0.0031416m 2. Semicircle +0.0062832m 2. Straights +0.0060000m
29	26	84.393	+3	
30	27	0.005	-	
31	28	0.008	-	
32	Balance of lines 27 and 28 =		2 Straights $+0.006m$	total: +0.015400m permitted max. +0.040000m

Desired value for 1 to 12 and 14 to 25: 36.500m
Desired value for 13 and 26: 84.390m
Desired value for 27 and 28: Alignment
Permitted deviation from desired value for 1 to 26: ± 0.005m
Permitted deviation from alignment for 27 and 28: 0.01m
Permitted tolerance of the running length: + 0.04m max.

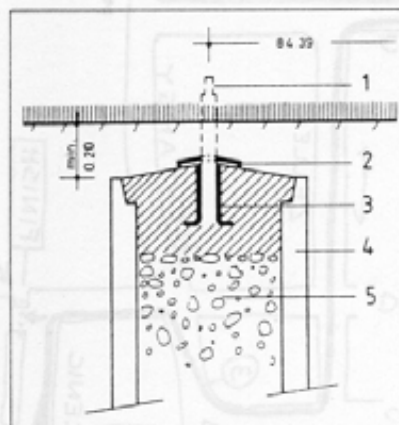


Figure 2.2.1.4b: Marking of centre of semi-circle (Proposal for construction) (Dimensions in m)

1 Stainless steel bolt, 2 socket covered with stainless steel lid, 3 stainless steel socket inserted into mortar in exact vertical position, 4 steel tube in concrete foundation, 5 gravel sand

HealthPower 5k

Columbus, Ohio

START - On Scenic Drive. Look for a manhole on the east side, located mostly in the grass and partly in the sidewalk pavement. Manhole is approximately opposite the south edge of the north entrance to Whetstone High School parking lot. **START** is located at the second sidewalk joint north of the manhole. Start is also 5 feet north of the eastward extension of the line of the south edge of the north entrance to the parking lot.

1 MILE - At 211 Ceramic Drive. Mark is 3 feet east of the east edge of the driveway.

2 MILE - On the bike path just west of Olentangy. Mark is 30 meters (98 feet) west of the first manhole west of Olentangy, located on the north side of the bike path.

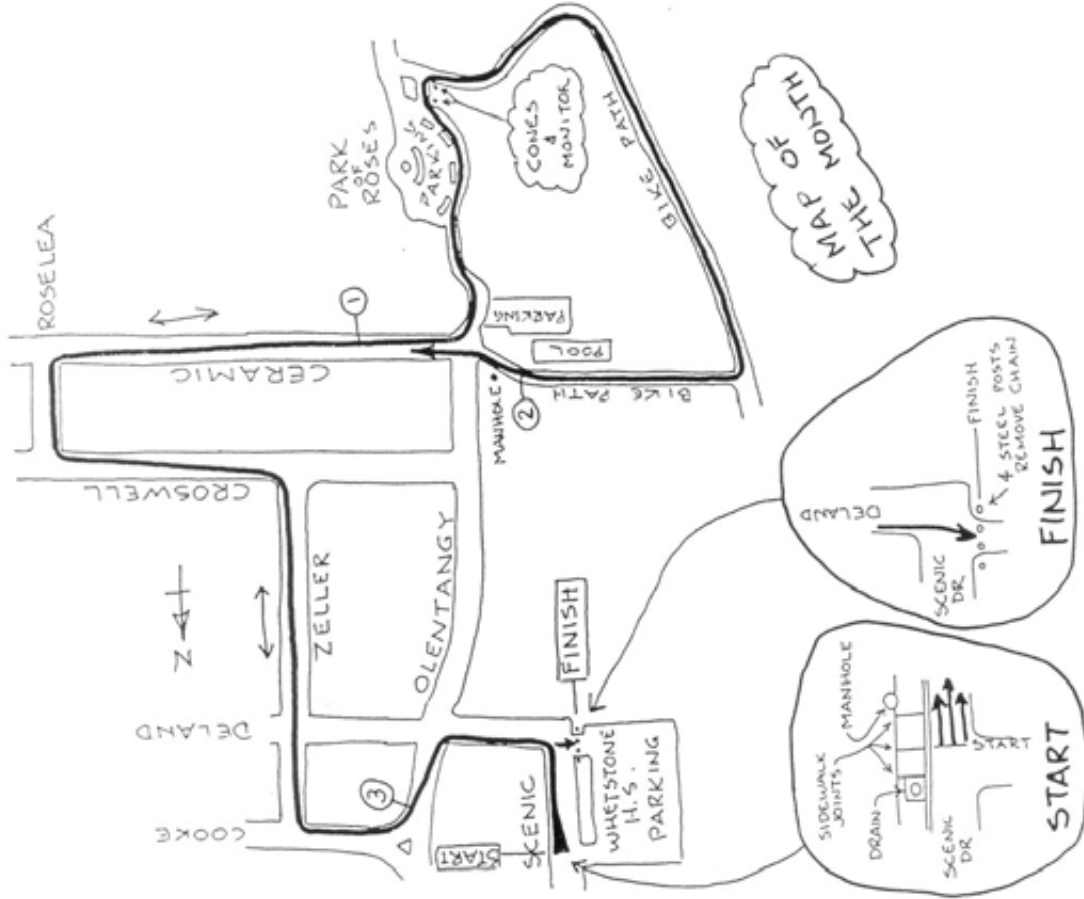
3 MILE - At 4314 Olentangy. Mark is at the water valve located in the grass approximately 10 feet north of the north edge of the driveway.

FINISH - At the south entrance to Olentangy High School parking lot, at the line of steel posts located between the lot and Scenic Drive.

Note: Cones and a monitor should be placed at the area shown, as this part of the route is likely to be shortcut by runners. The legal route lies entirely on pavement.

Measured by Pete Riegel, Columbus, OH

USATF Certified Course OH 96002 PR



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2455 Union St #412
San Francisco, CA 94123
(415) 346-4165 Phone
(415) 346-0621 FAX

Pete Riegel
3354 Kirkham Rd
Columbus, OH 43221
(614) 451-5610 FAX

February 9, 1996

Dear Pete,

Would you please put this notice in the next newsletter? I am no longer in the business of putting on races. Therefore I have a full complement of equipment for the entire finish line operation and scoring of races for sale. The equipment includes:

- A. 8000 continuous feed Post Card Stock for mailing results.
- B. A Chatsworth Card Reader Model MR 1000 for Race Day entries.
- C. 30,000 Mark Sense Cards for feeding race day entra data to the Card Reader.
- D. Alan Jones "Run Score Software".
- E. A Time Machine which downloads the timing data into the computer. (The Time Machine also does 'Select Timing' simultaneously).
- F. A self standing 20' wide Finish Line Structure which can be divided for 5K and 10K races, or separate Men and Women finish lines.
- G. A 15' Finish Line Banner with the word "Finish" in red felt 2' high letters. (This banner has practically no wind resistance. I have used the banner and structure in very high wind conditions, like 50 mph wind).
- H. Forty stanchions with bases for setting up chutes. Includes engineers tape for chutes.
- I. Fifty stringers for tear off tag stringing.
- J. Bar Code Reader for putting finish order data into computer.
- K. Finish Line Clock with 8" numerals.

I will sell all of the above for \$1,500.00 plus shipping. I don't want to sell anything separately. The going rate for scoring races here in California is about \$2.50 per runner. I presume the rate elsewhere is similar. One can earn a living scoring races.

Yours Truly,

Paul Oerth

E-MAIL ADDRESSES

If you would like your e-mail address here, let the editor know. This list will be expanded, and will appear in each issue of **Measurement News**.

Bob Baume1	Bobbau@pcok.com
Andy Beach	Abeach@ti.com
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Tom Knight	Tdk@leland.stanford.edu
Gene Newman	Br runner@aol.com
Pete Riegel	Riegelpete@aol.com
Brian Smith	Bnewbatt@aol.com
Jay Wight	Jaywight2@aol.com

WEB SITES

Gene Newman sent me a list of web sites of interest to runners, taken from **Running Times**. You will see the original elsewhere in this issue.

In addition to the **Running Times** listing I recommend:

HTML LDR Main Page <http://www.silcom.com/~honikman/index.htm>

This listing contains links to records, course measurement and other aspects of USATF involvement in course measurement and related subjects.

Also:

Runner's World <http://www.runnersworld.com>

This listing is informative, and worth looking at. I followed the US Women's Marathon Trials on this page, since it was not televised on the day. RW provided mile-by-mile coverage, well done. Although I did not see it, I understand that the Men's Trials were similarly covered

Veteran Propeller Heads

Here are 16 fantastic spots on the World Wide Web, including the name of each site and its Uniform (some say, "Universal") Resource Locator, or URL. Just type the URL on the "Location" line on your Web browser, and hit the "Enter" key. The browser will take you right to the spot.

"Yahoo" (a great starting point—a listing of other Web sites)

<http://www.yahoo.com/Recreation/Sports/Running>

Greater Boston Track Club (information and history)

<http://www.research.digital.com/CRL/personal/tuttle/gbtc/home.html>

Other GBTC resources

<http://www.research.digital.com/CRL/personal/tuttle/gbtc/whatselse.html>

"The Running Page" (very slick Web page with articles and links to other spots)

<http://sunsite.unc.edu/drears/running/running.html>

Dead Runners' Society (chatty, friendly, off-beat discussion group)

<http://storm.coccam.iupui.edu/drs/drs.html>

Internet Running-Related Sources

(a direct route to "The Running Page's" links to other sites)

<http://sunsite.unc.edu/drears/running/www.html>

Internet Resources for Runners (another good general running pit stop)

<http://www.nauticom.net/users/kenecon>

"Running Stats Home Page" (current reports on road races around the country)

<http://rainbow.mil.com/~benjd/rs.html>

"X-Country Analysis Information"

(analysis and news on cross country across the country)

<http://www.cs.uml.edu/~phoffman/xc.html>

"The Endurance Training Journal"

(an online magazine on endurance-sport training)

<http://s2.com:80/etj>

"Dr. Pribut's Sports Page" (information and advice on sports injuries)

<http://www.clark.net/pub/pribut/spsport.html>

"RunChat!" (interactive chat system)

<http://www.4-lane.com/sportschat>

"Athletics Home Page" (world records and statistics for many different countries)

<http://www.hkkk.fi/~niininen/athl.html>

"College XC-Track Info/Reviews"

(results from collegiate running)

<http://www.cs.uml.edu:80/~phoffman/college.html>

"Centennial Olympic Games Home Page"

(information and advertisements for Atlanta Games)

<http://www.atlanta.olympic.org>

"The Athletics Statistics Page"

(interesting and offbeat track-and-field statistics)

<http://www.users.interport.net/~bricklan/athletic/athletic.html>



Association of International Marathons and Road Race

AIMS

sponsored by



DATE: 18 January 1996 NR. OF PAGES: One
 FAX MESSAGE TO: Peter Riegel FAX NO: 1-614-451.5610
 FROM: Andy Galloway

Dear Pete,

Reference Measurement News Issue #75 January 1996;

I refer to your response to Phil Stewart's letter to you of November 8.

This is definitely not correct. AIMS does recognise world records on the road and in fact we present each runner on setting a world record over 10km, 15km, 20km, half-marathon, 25km and marathon with an AIMS/CITIZEN World Record Certificate, provided the course is validated after the event as being correct distance.

In the past years we have presented a number of these certificates and if you wish a full list of 'AIMS' World Records can be provided.

Best regards,

P.O. Box 10-106
 Hamilton, New Zealand
 Telephone: 64-7-849 1782
 Telefax: 64-7-849 1789

Subj: Re: Illinois course list
Date: 96-02-11 01:13:25 EST

From: JayWight2
To: Riegelpete

Thanks, Pete. I'm trying to figure out how to download the course list, and will keep on trying. If I need you to send me the disk, I'll let you know. I'm writing this on a Mac but I have an IBM compatible at work. On both, I'm running the most recent versions of Microsoft Office (excepting Windows 95, which we're not on as of yet).

I have another question. What was ever decided about certificates for non-record eligible courses? Chuck Hinde measured a 5K that starts on Upper Wacker Drive in Chicago and finishes on Lower Wacker Drive. His forms indicated that the drop was 20 feet which, of course, is more than 5 meters, which, of course, makes the drop more than 1 m/km. I wrote Chuck a note and told him that the course was not record eligible due to excessive drop and thus under nocircumstnaces would it be record eligible. However I don't know of a procedure that would get this word to the race director unless I tell him. Your thoughts? Was the idea of putting a "record eligible" box on the certificate abandoned?

I'll let you know soon about my plans for Atlanta. Thanks for the advice about saving on-line time. My remote mail at work works much the same way. I also need to figure out how to connect at faster than 2400 bps.

Dear Jay,

I'm glad you were able to receive and use the IL list. I was not sure whether sending it to you by email was the best way to go, but it worked. I do not trust my 1-2-3 program to create files in other formats, such as Microsoft Word, and I think the best way remains to send it in an ASCII files and let the recipient parse it into the desired format.

For changes to the list, you can simply add a code to the beginning to any line you wish to change, email it to me, and we will fix the list and email you a clean copy. If you prefer to do this by mail, printed list, disk or other means let me know. I like email for this, but it doesn't suit everybody. So let me know what you want.

I was intrigued by your statement about figuring out how to get your AOL to operate at faster than 2400 baud. My modem is 28.8 kb, and when I signed onto AOL I was connected at 14400. Bob Baumel helped me to find a new AOL connection number, and I now am able to operate at 28800 baud. I am not sure whether you are limited by the speed of your modem, or by the speed of the AOL connection. There are faster connections. I cleared out my email files awhile back, and do not have a copy of Bob's emails to me. Perhaps he will send you a copy.

If you cannot download faster than 2400, it's going to be on-line time-consuming for you to retrieve huge files. I hope you can resolve your problem.

Nothing was decided about certificates for record-eligible courses. There is presently no distinction made on the certificate itself. What makes the distinction is the drop and separation recorded on each certificate. Back when we were engaged in the Battle of Boston, and even earlier, it seemed to me that standards could change, and that it might not be smart to enter information on the certificate which might not remain true. Thus, if ever the standard for what is a record-eligible course should change, the certificates will not become erroneous.

Perhaps this should be rethought. I'll put it in next **Measurement News** for the multitudes to think about.

Best regards,

