

# MEASUREMENT NEWS



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July

1993

Issue #60

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A new measurement video has come from France. Here is Jean-Francois Delasalle beginning his introduction to the section "measuring the race course."

## MEASUREMENT NEWS

#60 - July 1993

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### MEASUREMENT SEMINAR TO BE HELD IN PHOENIX

In May 1994 (exact date to be determined) USATF will hold a measurement seminar in Phoenix, Arizona, similar to the one held in Columbus, Ohio, in 1990. Felix Cichocki, RRTC Arizona Certifier, has agreed to handle the on-site arrangements. People will arrive on Friday evening, measure Saturday and Sunday, and leave Sunday evening or Monday morning.

It will be international. At least one non-US IAAF measurer will be present. We are presently exploring funding with IAAF, and if they will support the effort, we may see measurers from many countries present, as well as from the USA.

The above is all that's known at present. If you have any suggestions, or if you would like to come, please let Pete Riegel know.

### ANOTHER NEW COURSE MEASUREMENT VIDEO

Just before this Measurement News went to press I received a videotape from Jean-Francois Delasalle. After having it converted to standard US format, I played it. Although I don't understand French at all, it was apparent that Jean-Francois had thoroughly covered the basic things that we do when we measure a course. There was a brief introduction, in which Jean-Francois showed the basic tools (Jones counter, steel tape, paint, notebook etc). A section on laying out a calibration course followed, complete with an example of how to figure the temperature correction.

The section on measuring the race course followed, and it had offsets, measuring to a turnaround cone, even riding up on a sidewalk if that route is commonly preferred by the runners. Jean-Francois had one of his ace French measurers, Isobel Marechal, demonstrate some nice examples of riding the shortest possible route.

After concluding remarks, an appendix was presented, with which some of you may be familiar. It was Tom McBrayer's course measurement video, in its entirety, with full credit given. I had given a copy of this video to Jean-Francois in February, telling him to feel free to use it in any way that is helpful to the art. I think he succeeded. The combined video is superior to either one standing alone. Total playing time is 53 minutes.

The French video is an excellent tool for instructing people, since you can turn down the volume, and tell the audience yourself what is going on.

Those who noticed that Tom changed his clothes in mid-measurement will be pleased to know that Jean-Francois did the same.

I sent a copy of Jean-Francois' video to Tom, and we are presently figuring out the best way to distribute it.

## NEW SOLID TIRE NOW AVAILABLE

Tom Knight sent me an article about a new tire. I wrote to the manufacturer, and found that the tire is a British import to the US, made of micro-cellular polyurethane. According to their brochures, 300,000 airless bicycle tires have been distributed since May 1992. The tires come in many sizes and colors, and "give the feel and comfort of your pneumatic tires, are lighter than a standard tube and tire, and are recyclable.". The initial order comes with a mounting tool which "rolls the tire quickly onto the rim." Those who have wrestled with other airless tires will appreciate this.

The tire's advantage for us is that it will not go flat and spoil a measurement mid-way.

The tire, called the Green Tyre, is distributed in the US by:

Shannon Group, Inc.  
364 Parsippany Road, Suite 9B  
Parsippany, NJ 07054

Phone: 1-201-952-0234 or 1-800-488-TYRE  
Fax: 1-201-952-0185

The manufacturer is:

GreenTyre  
Riverside Park Road  
Middlesborough, Cleveland TS2 1UU  
GREAT BRITAIN Phone: 0642 223322

I have ordered a pair and will report on their behavior in future issues of Measurement News.

## PUTTING THINGS INTO PERSPECTIVE

An often-repeated theme is that several meters added to a course, because of the Short Course Prevention Factor (SCPF), or because of calibration change, is a horrible thing, because each 10 meters is worth a couple of seconds.

The criticisms are valid. The counter-argument, of course, is that we are doing the best we can with the tools we have, and no matter what method of measurement is used, there will always be differences.

Although it is easy to look at 42 meters on the ground, it is less easy to comprehend the entire marathon course that preceded it. One sees the SCPF, but one does not see the rest of the course.

To put things into perspective I scaled things down. The thickness of a pack of 52 playing cards is about 1.4 cm. A pack of 50 typical business cards is about 1.2 cm thick. Thus, four cards is about 1 mm. A meter stick has 1000 mm length.

To visualize the effect of a 1/1000 SCPF, obtain two meter sticks (or yardsticks - they are close enough). Stand them side by side vertically and put a stack of 4 cards beneath one of them. See how much difference it makes

Viewed in this way the SCPF does not look too bad. Visualize small ants racing along the two sticks. Yes, there is a difference, but it is tiny.



Association of International Marathons and Road Races

AIMS

sponsored by **asics**

F A C S I M I L E

TO: ANDY GALLOWAY  
FROM: TED PAULIN  
DATE: 6/5/93  
PAGES: 1 (INC COVER)

FAXED

Andy,

Re: Lisbon Half Marathon Measurement

Thank you for your fax. I have learnt to gather all the facts first before making any judgement. This is the result:

The course was remeasured on Sunday, May 2nd by AIMS/IAAF Measurers Paul Hodgson and Josep Sole as assistant. At a pre measurement meeting the race video was examined along with the course maps. Paul Hodgson was advised the police ordered two changes two days prior to the race. The first was between the 5k and 6k point, a Military Barracks would not allow the race to pass in front, therefore a detour was ordered. The second was a large arch in the city which the runners would pass through, a detour was also ordered. I understand some adjustments were made, I do not know at this stage by who, possibly a race official.

The result of the measurement was the course is 97 metres short. The record therefore does not stand.

A rule of AIMS is that if any changes occur, the course must be remeasured. I was not advised of any changes which must have occurred during our congress.

I will write to the Race Director, Mario Machado, and request an explanation as to why I was not advised of the changes.

I will also pass to our Press Officer for release. This case points out a check system is vital.

Warm regards,

TED PAULIN  
CHAIRMAN  
AIMS TECHNICAL COMMITTEE

cc Mr Chosa Pierre Weiss Peter McLean  
Otto Klappert  
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Melbourne, Victoria 3004  
Australia  
Telephone: 61-3-429 5105  
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COURSE VALIDATION REPORT

2nd MAY 1993

1. Introduction

At the invitation of Mr Ted Paulin, Chairman of the AIMS Technical Committee, I carried out the measurement of the route of the Lisbon Half Marathon in order to validate it's accuracy and ratify a world best time of 59mins. 24sec. set by Kenyan, Sammy Lelei.

The event was held on 14th March 1993, the course being previously laid out by AIMS accredited course measurer, Josep Sole (Spain) who found the preliminary course short by 69m, the start line being moved back to make up the shortfall.

2. The Course

The route was point to point with an estimated separation of 25%. The fall in elevation was of greater significance, falling 69m in the first 5k, (far exceeding the recommendation of 1m per kilometre) with the exception of two small bridges the course was almost completely flat thereafter.

The main feature of the race was Europes longest suspension bridge (Ponte 25 de Abril), and special permission was required from the Minister of Transport to cycle over it.

3. Video Evidence

The video recording of the race was far from ideal for the purpose of course validation. The race had been in progress for some 15 minutes before the winning runner was first observed, the T.V coverage only concentrating on him from 8½k.

Some of the slower runners were observed taking short cuts through an area of gardens around 9k, but I have no reason to suspect that the leader took a similar path.

A small part of the course at the corner of Praca de Comercio was waterlogged, and the lead runner ran wide at this point. As this was not a physical obstruction to him, I measured the SPR which would have been through the water if it had been in evidence during the validation.

4. Measurement Procedure

From the outset the race official Mario Machado, made it clear that two changes had been made to the original measured route. These alterations were imposed by the Police and Military authorities just two days before the race, and a total re-measurement was not possible. In an effort to compensate for the amendments to the route the start line was moved back a further 100m (169m from the start of Josep sole's measurement), although I found no evidence to verify this.

On leaving the elevated exit road from the bridge, a long curved downhill section was negotiated. I was informed that the runners were not allowed to cross the roadway centre line, and measured accordingly, but had no proof of the running line, as this part of the course did not appear on the video.

The shortest possible route (SPR) available to the runners was measured, but video evidence showed two parts of the course where barriers had been positioned which prevented adherence to the natural running line. As these were physical obstructions to the athletes on race day I imagined they were in place during my validation measurement.

The measurement was carried out during the hours of darkness, and although it was often difficult to project the SPR this did not impair the accuracy of the survey.

For convenience, I decided to leave a series of measurement reference points. This was in order to have the opportunity to confer with my colleagues, and to guard against any mis-direction on-route. Due to the cycling restrictions on the bridge I was not allowed to stop, and measured over 5k before establishing my first reference point.

### 5. Results

(see also -Validation data sheets)

In accordance with AIMS validation procedures, the Short Course Prevention Factor (1m per kilometre to be added) was not applied.

I was accompanied throughout my validation measurement by Josep Sole, and although our two measurements were not entirely independent the results are worthy of comparison.

Measurer : Paul Hodgson Validation Constant : 9916.5/1k				
Ref. Point	Counter Reading	Total Counts	Incremental Distance	Cumulative Distance
Start	68,370			
Ref. A	(1)18,906	50,536	5,096.15m	5,096.15m
Ref. B	39,609	71,236	2,087.43m	7,183.58m
Ref. C	58,228	89,858	1,877.88m	9,061.46m
Ref. D	87,820	119,450	2,984.12m	12,045.58m
Ref. E	(2)13,930	145,560	2,632.98m	14,678.56m
Ref. F	52,447	184,077	3,884.13m	18,562.69m
Finish	76,620	208,250	2,437.66m	21,000.35m

Measurer : Josep Sole		Validation Constant: 10,007.25/k		
Ref. Point	Counter Reading	Total Counts	Incremental Distance	Cumulative Distance
Start	65,240			
Ref. A	(1)16,251	51,011	5,097.41m	5,097.41m
Ref. B	37,143	71,903	2,087.69m	7,185.10m
Ref. C	55,938	90,698	1,878.14m	9,063.24m
Ref. D	85,789	120,549	2,982.94m	12,046.18m
Ref. E	(2)12,158	146,918	2,634.99m	14,681.17m
Ref. F	51,023	185,783	3,883.69m	18,564.86m
Finish	75,416	210,176	2,437.53m	21,002.39m

The discrepancy between the two measurements was 2.04m (0.009%), but the error between the validation measurement and the advertised half marathon distance was -97.15m or 0.46%, failing to comply with the permissible error of 0.10%.

#### 6. Doubts and Reservations

As the results show the measured course was 97m short of the advertised distance. However, if the measurement had been carried out for the purpose of setting out a half marathon, the Short Course Correction Factor would have been applied resulting in an additional 21m being added i.e. total correction +118m.

It must also be stressed that some doubts remain as to the exact position of the start line. No permanent reference point was left to identify it, and it was only by video examination that an "estimate" was made.

A further possible source of error was on the curved section of road on the departure from the bridge. As instructed the centre of the road was not crossed during the measurement procedure. If the whole of the road was available to the runners (which I cannot confirm) I estimated that the runners could have ran some 12m shorter than the measured route.

It should be noted that the validation exercise was carried out seven weeks after the actual event, and some civil engineering works (at 9½ & 16k) were in progress at the time of my measurement. As these works were on the straight sections of the course any variation between the SPR on race day and that during the validation would be negligible.

## 7. Conclusion / Recommendations

4.

It must be stressed that the route measured was the Shortest Possible Route available to the runners on the day of the race, and not the route taken by Sammy Lelei. This is an AIMS directive designed to standardise course measurement and validation practises throughout the world.

The conditions on race day seemed to be ideal, and the fall in elevation was certainly of great assistance to the athletes. Video evidence indicated to me that the winner did not always adhere to the SPR, and despite the fact that the course was short he has obviously ran a very fast time.

My validation measurement has proven the course to be 97m short. However, taking into account the doubts and reservations previously expressed, I believe it is possible that the shortfall could have been as much as 120m.

The lesson to be learnt from this experience is that the precise route of the race should be agreed with the local authorities before the course is measured, even if it means the course being measured in the week before the race. Once the course has been finalised and certified as accuracy no alterations should be made.

Finally, I would like to express my appreciation to my hosts Carlos Moya and Mario Machado. They provided excellent assistance and cooperation, and I was impressed by their honesty and sincerity throughout my enquiry.

Kindest Regards.



Paul Hodgson  
AIMS / IAAF Approved  
Course Measurer.

Copies To :  
John Disley  
Pete Riegel  
Jean Francois Delasalle

## **RECORD COURSE FOUND TO BE SHORT**

THE Lisbon course on which Kenyan Sammy Lelei ran the world's fastest half-marathon was 97 metres short.

Now the AIMS Technical Committee are almost certain to decide to erase Lelei's amazing time of 59min 24sec from the "record" books.

Even the course measurer who vali-

dated the course feels sorry for the Kenyan.

Paul Hodgson, a course measurer for eight years, spent three hours studying video film of the historic race before going out at 10.30 at night, with a police escort, to measure the course.

Even then, he had to wait 75 minutes

for special Ministerial permission to be given for him to cycle over the world's longest suspension bridge, part of the route.

"It was a very interesting exercise and in many ways I feel sorry for the race director," said Hodgson after reporting the 97m shortfall. "He'd had

to make a couple of late variations in the course, one of them because the Army refused to move wagons off the original route.

"I feel equally sorry for the runner. One thing I noticed on the video was that he didn't run a tight line. Whether his concentration wavered or not, I



don't know; but he certainly didn't take the shortest route available.

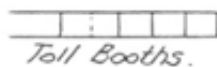
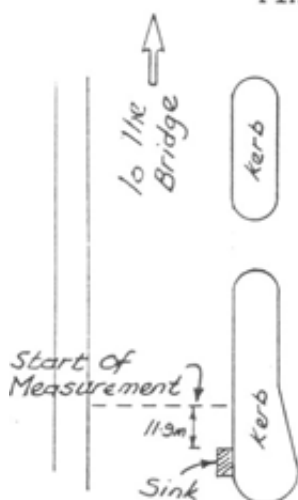
"But my feelings don't come into it. I have submitted my report to the AIMS Technical Committee, whose chairman rang me from Melbourne in Australia at 1.30 one morning to have a long chat about it."



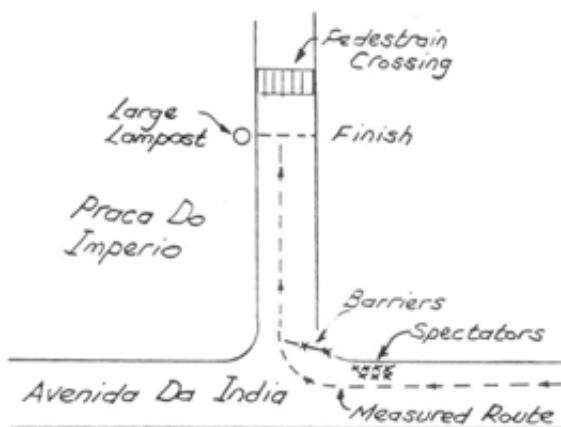
**ADDITIONAL INFORMATION**

**LOCATION OF REFERENCE POINTS**

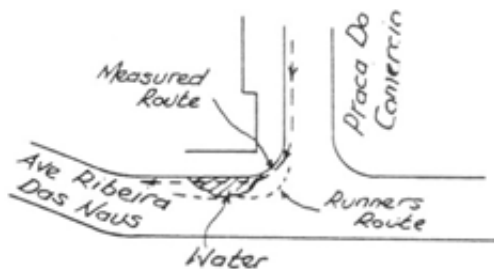
- Start 11.9m North of metal sink grate.
- Ref A At tree opposite corner of Pingo Doce.
- Ref B On speed restriction signpost  .
- Ref C On rail line crossing road, before bridge.
- Ref D Lampost opposite publico, near railway station
- Ref E On white line before pedestrian crossing, at the corner of Praca De Comercio.
- Ref F At lampost directly below centre of suspension bridge.
- Finish On yellow line marked "NR", opposite lampost.



START LOCATION



FINISH LOCATION

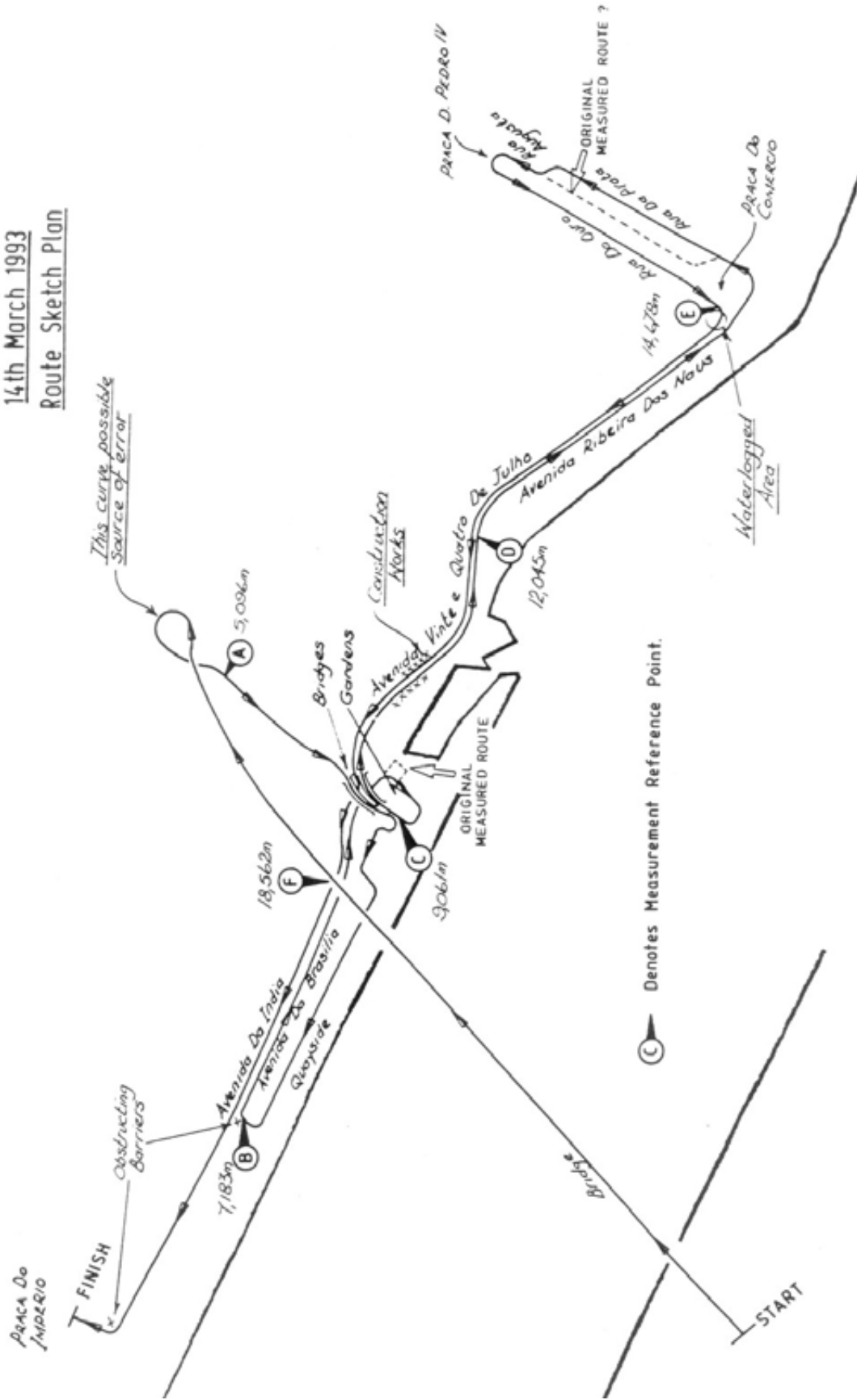


WATERLOGGED AREA

# 3rd LISBON HALF MARATHON

14th March 1993

## Route Sketch Plan





## USA TRACK & FIELD

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

614-451-5617 (home)  
614-424-4009 (work)  
614-424-5263 (FAX, work)

May 17, 1993

Max Coleby - 98 Lindisfarne Road - Newton Hall - Durham DH1 5YQ  
GREAT BRITAIN

Dear Max,

Paul Hodgson said you were "amazed that there is no requirement to include the Short Course Correction Factor when checking the accuracy of a course," and thought you might appreciate an explanation.

Course measurement over here has always been done in cooperation with our records-keepers. In the early 1980's we were seeing that about half the courses were coming up short when we checked them after fast times were run.

To beat the problem we began to require that an extra 1/1000 be tacked on to any course layout. We called this the "Short Course Prevention Factor (SCPF)." There was initial resistance to its use, but that's history now. All layouts worldwide use it. Its purpose was to assure that a competent layout would not be able to be found short upon remeasurement. It worked. These days only 10 percent of our checked courses come up short, and we have had only one expertly-measured course fail, out of about 200 remeasurements.

In the US, anybody at all may measure a course for certification, and if their paperwork looks good they get the certificate. Naturally, this leaves us with no certainty that the course is OK, but 90 percent isn't bad, and all record courses get checked. This process also helps us find new talent, and we now have many fine measurers who once were timid beginners. If a fast time is run, the course is checked by an expert.

I will use 10 km as an example of how it works:

- 1) An amateur measures a 10 km course, which, using the SCPF, is really 10010 metres. His paperwork looks good and a certificate is issued.
- 2) A runner runs a record time, and the timing was done competently.
- 3) A validator (a recognized expert) is sent to check the course. He does not use the SCPF in his calculations, since it is his job to determine, as closely as possible, the actual, true length of the course.

There are several possibilities:

- 1) If the original measurer and the validator both do a perfect job, the original measurement will say the course is 10000 metres, and the validator will obtain 10010 metres.

2) If the original measurer isn't up to par, he will still think the course is 10000 metres, but the validator may get 10003 metres. If the validator used the SCPF in his calculations, he would obtain a value of 9993, indicating the course is short, which isn't the case.

3) If the original measurer really had a bad day, the validator might get 9998 metres as the course length. It's sticky when this happens. It's tempting to say "the course is short!" and throw out the record. However, our US rule requires that the course be "shown to be short" for the record to fail. After a period of wrestling with this, we concluded that bike measurements are not accurate enough to say with certainty that 9998 metres measured by bike provides enough certainty of shortness. We draw the line at 9995, considering that this puts the matter beyond reasonable doubt.

Note that we are not happy to do this, but the alternative would be to have to shoot down a 2:06 marathon performance at 42194 metres. This would be asinine, since such a remeasurement would determine neither shortness nor longness, but would reflect only that the course was reasonably accurate.

4) If measurement comes up to less than 9995, the course is considered to be shown short, and the record run does not count.

So, the SCPF is part of the course layout procedure, and is designed to assure that the course will not be short, even if the original measurer makes minor mistakes. In practice we find that most 10 km courses check out in the 10005 to 10015 metre range.

Validation is supposed to determine whether a course is OK, not to punish an inept measurer. If I find a 10 km course at 9998 metres, I can be sure that the original measurer did a terrible job, but in spite of his blunders produced a course that barely squeaked by - I was unable to prove it short.

The end result of all this is that an expertly-measured course will be slightly longer than an amateur-measured course, but both will likely not be short, and that is our goal. The athlete should not have to pay the price because of limitations to the measurement process.

Note that I have addressed only US procedures. Other countries may do things other ways. However, as checking of worldwide record courses becomes more common, a way must exist to differentiate from the advertised laid-out distance and the expertly-determined actual distance.

If you and I were the only two measurers in the world, we would constantly be finding each other's courses short, since two measurements never exactly agree. However, with the layout getting the extra 1/1000, it would be practically impossible for either of us to ever find the other short, and the records, when set, would stand.

The use of the SCPF was instituted as a practical solution to a problem, and our history with it shows that it works. There are undoubtedly other ways to do the job, but this is the one we have. If you have any comment on the above, I'd like to hear them. We are always looking for better ways to do things.



# Have bike, will measure

(Mug's job or passport to world travel?)



## Mug's job

It's a damp, gloomy evening in a lonely car park. Two people are crouching over a bicycle in earnest conversation prior to the cyclist setting out to ride round a proposed road race route.

One of the group is the race organiser, the other is the course measurer.

The measurer pedals off and spends the next couple of hours (for a typical 10K) following the shortest route which will be available to the runners, stopping at each mile or kilometre to mark the intermediate points.

Note-taking becomes a lottery because of damp paper, the gloom is settling and there's probably a family somewhere wondering why dad should be out working on an event which won't take place for another three months. In short, it seems like a bit of a mug's job.

## World passport

Our course measurer is sitting at home when the telephone rings. "We need you,"

**Course measurers have a simple mission: to define the length of road races as exactly as possible.**

**One of the world's top course measurers, Max Coleby, looks at this demanding role and profiles his colleague Paul Hodgson.**

says the voice on the end of the line. "Milan needs its marathon measuring."

The conversation goes on to assure our man that all air fares will be covered, a \$40 per day allowance to cover out of pocket expenses will be paid and, of course, he'll be met at the airport and lodged in a comfortable hotel.

The course measurement will be accompanied by officials from the National Federation and a police escort.

This is a typical scenario for Paul Hodgson, one of Britain's select band of about half a dozen course measurers who are approved by the International Amateur Athletic Federation (IAAF) and the Association of International Marathons and Road Races (AIMS) to measure and certify courses around the world.

Hodgson is used to both the up and down sides of course measurement. Overseas assignments have taken him to Carpi, Rome and Milan in Italy; from Barcelona to Muscat in Oman, from Paris to Crete.

But most of his work is UK-based. He's

measured in Glasgow in sub zero temperatures, Morpeth in torrential rain, Alnwick when it was difficult to see the next corner because of thick fog and Shildon when he had to take a break in order to allow white-out blizzard conditions to pass.

Hodgson is one of more than 140 course measurers in the UK. All of them have achieved the status of British Athletic Federation (BAF) Grade II measurer through attendance at weekend seminars, which cover the discipline's theory and practical measurement exercises.

Less than 10 years ago, the first national weekend seminar was staged at Crystal Palace where John Disley, Max Coleby and Mike Tomlins put 30 potential measurers through their paces. This group formed the nucleus of Britain's measurers which has expanded since as a consequence of the setting up of area co-ordinators in England and Wales.

As well as masterminding the activities of measurers in their area, they maintain up-to-date records of all certified courses, and organise further weekend courses to recruit new measurers.

Hodgson is one of the leading measurers worldwide. He is in regular contact with his colleagues around the globe, particularly Pete Reigal in the USA who is arguably the 'main man' as far as the nitty gritty of measurement is concerned. Reigal approves the London Marathon course each year.

In 1985, Hodgson ran the now defunct Glasgow Marathon and crossed the finish line in a frustrating 3 hours and 20 seconds. As he watched the timekeepers in action he began to wonder how the organisers knew that the course was precisely 26 miles 385 yards. After all, it would have only needed to be 40 yards over distance and he would have been robbed of his sub-3 hour run.

As a result, he found himself attending the first Northern Counties Course Measurement Seminar at Teesside Airport in 1986, organised by Max Coleby.

Paul recalls being extremely impressed with the detail, professionalism and commitment of the work undertaken on the course. The laying out of a base-line, the calibration of the bicycle, the practical work which required attendance to riding the shortest route and the need for diligence in note-taking in order to enable a detailed report to be produced post measurement.

Now that Hodgson is pre-eminent in course measurement, who checks his work? Well, course measurers are not permitted to certify any race with which they are involved organisationally, so he finds himself measuring courses previously marked by fellow IAAF measurer, Coleby.

Hodgson explains: "Max only lives 15 minutes from my house and, as many people know, is involved on the organising side of a few races in the North East. This is extremely

## The Jones counter

Surely, you may think, there must be better ways of measuring a course than on a bicycle with a Heath Robinson-looking device on the front wheel hub. But there is an almost uncanny accuracy obtainable with the Jones counter. The consistency achieved with the method is far superior to all other methods which have been tried. It's the only method accepted by the IAAF.



It may look a bit suspect but this Jones counter is the recognised method of measuring courses.

useful to both of us in terms of keeping us on our toes.

"Max lays out and measures a course. Then, so that the certification of the course's length is independent, he invariably asks me to do the business. This is always done 'blind'. In other words, he shows me the start line and the route - but never tells me where he thinks the finish line is."

Coleby laid out the Great North Run route in 1982. In 1990, Hodgson checked it in order to satisfy new IAAF requirements - their results tallied within two and a half metres. They were even closer with the Langbaugh Marathon - a difference of approximately one metre.

"Needless to say," adds Hodgson, "it's a great relief all round when there is confirmation of the methods being used."

## Course problems

Despite the high standards, measurers are faced with frustrations arising from race organisers.

"The great majority of organisers are very grateful for the unpaid work of the measurer,"

says Hodgson, "but one of the most common problems is that, on race day, the start and finish and the route are as measured - which is the most important thing of course - but mile or kilometre marker positioning has not been adhered to. "Consequently, runners who experience inaccurate mile splits will start to doubt the overall distance - even though it is accurate."

As the Northern Counties course measurement co-ordinator, Hodgson becomes aware of occasional horror stories. This happens when courses have been measured and a certificate issued but, because of problems on the day, a short course results. Often the runners are not made aware of this and falsely believe personal bests achieved are genuine.

One race in Lancashire last Autumn produced men's and women's course records, a plethora of personal bests and proud statements in *Athletics Weekly* that 111 people had run under 60 minutes for the 10 mile race. But the course was over 300 metres short. At five minute miling that is almost a minute - at six minute miling it is over a minute. It also means that a lot of PBs and sub 60 minute runs count for nothing.

The problem resulted from a genuine mistake and the race organiser is eager to put matters right.

In Cumbria, a 10K race whose start and finish area had been re-developed as a superstore after the course was measured did not seek re-measurement. The result was a very fast winning time which would figure very highly in the 1993 UK road rankings.

As Hodgson points out: "The course measurer will do his job; but the race organiser has a great responsibility to his field of runners to adhere to the course confirmed by the measurer and, when unavoidable changes take place to the route, the responsibility is the race organiser's to arrange a re-measurement.

"Road ranking lists are meaningless unless we know all courses are accurate. The situation is getting better - but we know that there are still some dodgy times in the ranking lists."

A few more like Paul and even the small number that slip through the net now would be put right.

Out comes the tape measure again... this time in Oman.



## HOW TO MEASURE A COURSE

1

Lay out precisely measured straight base line e.g. 400 metres.

2

Ride bike at least four times along base line in order to establish digit counts for 400 metres i.e. calibrate the Jones counter.

3

Convert digits per 400 metres to digits per mile or per kilometre - whichever is required.

4

Calculate digit counts for each intermediate point and for whole distance.

5

Ride the route marking intermediate points and start and finish line.

6

Carry out a post-measurement calibration to ensure that no changes have taken place during measurement.

7

Prepare detailed report including course maps and written description of start and finish lines and all intermediate points. One copy to race organisers. One copy to area co-ordinator. One copy to measurer's files.

## Course Measurement Area Co-ordinators

Wales - Dave Dochow  
Pencroft Road, Cwm  
South Glamorgan, CF5  
Northern Counties - Paul  
29 Bookhope, Riddetown  
Washington, Tyne & Wear  
NE38 9HW  
Southern Counties - Roger Gibson  
"Zwenda", Swanton Road  
NR9 5NW  
Midland Counties - Steve  
Holdsforth, 3 Malling Avenue  
Broughton, Aspley, N. Leicesters  
LE9 6QS.

## ARE CERTIFIERS REALLY EXPERTS?

The USATF/RRTC validation program sees to it that courses on which pending records are set are checked, to see whether the distance was correct. Since we have no universal "truth yardstick" we use the only tool we have - we send an expert measurer to check the course, and accept their measurement as accurate. We have no rigid definition of "expert," and it is generally assumed that anyone who holds a position as an RRTC Course Certifier is an expert. No serious challenge to this assumption has presented itself.

Since 1980 we have checked 221 courses. In the early 1980's it was painfully obvious that too many courses were coming up short, and at that time the Short Course Prevention Factor (SCPF) was instituted. An extra 1/1000 was added to the laid-out length of each new course, to give it that slight extra length to permit it to survive remeasurement. It took a few years for the word to get around, but by the end of 1984 things had settled down.

On the principle that it's better to know than to assume, I took a look at the validations we've done. I thought that if there was really a reason to consider ourselves "experts" then it ought to show up in the numbers. If it doesn't show up in the numbers, then maybe we ought to revise how we think of ourselves. The chart below shows what I found.

	Pre 1-1-85 All Courses	Post 1-1-85 Courses		
		All Courses	Originally Measured by a Certifier	Originally Measured by a non- Certifier
Average measured oversize, m/km	-1.016	0.926	1.336	0.645
Standard deviation, m/km	3.029	1.823	0.832	2.219
Maximum oversize, m/km	6.3	7.2	3.6	7.2
Maximum shortness, m/km	9.2	8.1	0.6	8.1
Number of courses measured	78	143	58	85
Number of courses OK	36	123	56	67
Number of courses marginal	7	6	1	5
Number of courses short	35	14	1	13
Percent of courses OK	46.2	86.0	96.6	78.8
Percent of courses marginal	9.0	4.2	1.7	5.9
Percent of courses short	44.9	9.8	1.7	15.3

Some explanation of the above:

- 1) Average measured oversize: If a 10 km course remeasures to 10005 meters, then it is oversize by 5 meters in 10 km, or 0.5 m/km. If it remeasures to 9986 meters, it is short by 14 meters, or 1.4 m/km.
- 2) Standard deviation: This is a statistical measure of how well a group of measurements agree with one another. The lower the standard deviation, the better the agreement.

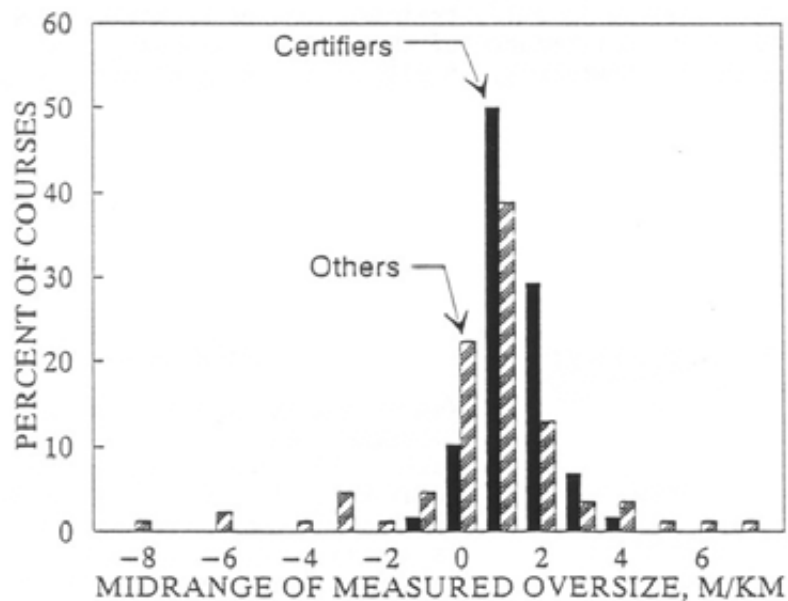
3) Maximum and minimum oversize refer to the longest and shortest courses included in the category. <sup>3</sup>

4) OK courses are those which remeasure to 0 or greater m/km oversize. A 10 km course that remeasures to 10001 is OK.

5) A marginal course is one which remeasures between 0 and 0.5 m/km short. It is called marginal because values in this range do not provide solid proof that a course is short, although they do indicate a bad job of layout. If a world record marathon course remeasured to 42187 meters, it would be short by 7 meters in 42.2 km, or 0.17 m/km. This is insufficient to prove shortness.

6) A short course is one which measures more than 0.5 m/km short.

The validation data for certifiers and others are shown below in a histogram. The spans shown are 1 m/km. Thus a midrange of 2 m/km includes measurements from 1.5 to 2.5. Measurements of both groups are seen to be centered at about 1 m/km oversize, which is due to the use of the 1/1000 short course prevention factor. However, the certifiers have far less variability in their measurements, producing courses which are neither terribly long nor short.



It is the policy of the Records Committee, in concurrence with RRTC, to accept a record if the course remeasures OK or marginal. Although some feel that it would be better to accept the remeasured value as absolutely true, and disqualify any indicated shortness at all, this would force us to shoot down a marathon that remeasures to 42194 meters. This would be seen as unjust to the athlete, since 1 m in a marathon is well below our ability to accurately detect. Therefore we grudgingly accept the slight indicated shortness.



What can we conclude from this?

- 1) Pre-1985 courses were indeed a problem. Less than half were OK, and measurement variability (standard deviation) was over 30 meters in 10 km.
- 2) The pre-1985 short-course problem has been solved. The courses laid out after 1 January 1984 check out as 86 percent OK, with another 4 percent marginal, putting our success rate at 90 percent presently passing validation.
- 3) The size of the short course prevention factor seems to be about right.
- 3) There is a distinct difference between measurements done by certifiers and those done by others. Courses laid out by certifiers are slightly longer (by 7 meters in 10 km), and measurement variability for certifiers is about 1/3 the variability of others. Certifiers are not perfect, and occasionally will produce short courses, but at a rate about 1/7 of others. Of record courses originally measured by certifiers, 98 percent pass the validation. The validation success rate for others is 85 percent.
- 4) The above says absolutely nothing about the ability of any individual certifier or any other measurer, since there are variabilities in both groups.
- 5) When we have succeeded in fully training the non-certifiers, we may see some improvement in the performance of that group. However, since that group will always contain the newcomers, we will probably never achieve full parity.

## Dear Ultrarunning

To the Editors:

Regarding the Key To Shining Key

Ultra:

Entries are already rolling in for this December race, making two outstanding matters more urgent by the day.

1. Is anyone holidaying in the Florida Keys who would be prepared to measure the course for us?

2. Is there a doctor familiar with ultrarunning who will act as our medical advisor?

Offers of help please contact Alan Firth, Route 1, Box 532, Blowing Rock, NC 28605 (704) 265-4847.

Alan Firth  
Blowing Rock, N. Car.

### MEASURER WANTED!

Key to Shining Key is a 50 and 100 mile ultramarathon along the Florida Keys, which passes "over and alongside blue waters, past coral beaches, palm trees and mangroves... all in the warmth...in December! The course is mainly paved roadside shoulders, bike paths and sidewalks in urban areas.

The 100 miler starts near Key Largo. The 50 miler starts near Marathon. Both races finish in Key West.

Alan Firth wants to do everything right for the runners, which includes providing a certified course. If you want to help, contact Alan.

Road Running Technical Council



The Governing Body for Athletics in the United States  
including Track and Field, Long Distance  
Running and Race Walking for  
men and women and boys and girls  
at all age levels.

WAYNE B. NICOLL  
Ragged Mountain Club  
Potter Place, New Hampshire 03265  
(603) 735-5721

Gary Lance  
L.N. Davis Insurance  
Waynesville, NC 28786

10 May 1993

Dear Gary,

Neil MacDonald, who times and scores your Maggie Valley Road Race, referred me to you as the race contact. I am the USA Track & Field Road Running Technical Council volunteer supervisor of road course measurement and certification in the eastern US. AC Linnerud, the measurer/certifier of the Maggie Valley course, is one of 16 volunteer course certifiers who work with me. I am writing to seek your assistance in resolving a question over the records eligibility of the Maggie course.

Carol McLatchie, currently one of the top Masters women road racers in the US, asked me to look into the records eligibility of the course. She was denied rankings credit for her performance at the 1992 race by the federation record keeping center, TACSTATS (now called Road Running Information Center, USA Track & Field) because the course certificate for the Maggie Valley course shows the elevation between start and finish to be in excess of that allowed for records eligibility. To be records eligible, the course may not drop more than one meter per kilometer. Since this is an 8 kilometer race the allowable drop is 8 meters, or 26.25 feet. The course certificate issued by AC shows the start to be at 3150 feet and the finish to be at 3100 feet, or a difference of 50 feet. I would like your assistance in determining what the true difference in elevation is. Neil says that from the finish, you can look directly at the runners at the start - the difference in elevation appears to be minimal.

I obtained a topographic map of the area but the contour interval is 40 feet. It appears to me that the start and finish are both within the same contour lines, which indicates the drop may be less than 40 feet. We could answer this question if you could see the town engineer and photocopy a portion of a more detailed topographic map with a much smaller contour interval. Please send a copy to me so I can make a decision on it. If it is a squeaker, we lean in favor of the race. If the course is records eligible, that is a definite plus to you as a race manager. Most serious runners want to run on records eligible courses. Hope to hear from you soon. Thanks.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Wayne B. Nicoll'.  
Wayne B. Nicoll  
Vice Chair East, RRTC

Copy: Pete Riegel, AC Linnerud  
Carol McLatchie, RRIC USATF



## USA TRACK & FIELD

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

614-451-5617 (home)  
614-424-4009 (work)  
614-424-5263 (FAX, work)

May 14, 1993

Gary Lance - L. N. Davis Insurance - Waynesville, NC 28786

Dear Mr. Lance,

Wayne Nicoll sent me a copy of his letter to you of 10 May.

While resolving the question of start/finish elevations at Maggie Valley using topographic maps would be the normal way we'd do it, there may be a simpler and more direct way. Topographic maps aren't generally much use in the case of close calls, since there are inevitable errors in accurately placing the locations of the points, and the contours themselves are not exactly correct. Fortunately, there are few courses where topographic maps don't work adequately. Unfortunately, yours is one of them. The start-finish elevation difference does eyeball just a bit bigger than the difference allowable for record recognition.

According to our records the start and finish are less than a quarter-mile apart. This being the case, it would take less than half an hour to accurately resolve the question using a surveyor's level and rod.

A local engineer or surveyor might be willing to donate the time to establish the relative elevation difference, and it's a far more accurate way to do it than by any other means.

If you can talk someone into doing this, just have them send a copy of their field notes and conclusions to Wayne or me and we can take it from there.

Best regards,

A handwritten signature in cursive script that reads "Peter Riegel".

**HAYWOOD**

**ATHLETIC  
CLUB, INC.**

P.O. BOX 1203, WAYNESVILLE, NC 28786



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

May 20, 1993

Dear Peter,

Thank you and Wayne Nicoll for your recent inquires concerning the difference in elevation on the Maggie Valley Moonlight Course. In previous conversations with A.C. Linnerud, it was decided that the most appropriate action to resolve this dispute was to solicit a local surveyor to shoot the elevation from the finish line to the start line since this is the only two points in the race where the runners are not traversing the same paths, i.e., out and back. As you can see from the attached letter from Herron Land Surveying that the difference in elevation is only 3.60 feet.

Please feel free to contact Mr. Herron if you need any additional information relative to his procedures in obtaining this elevation. He has been a past supporter of the race financially and he did this for me as a donation for the 1993 event.

Sincerely,

A handwritten signature in cursive script that reads "Gary Lance".

Gary Lance  
President - Haywood Athletic Club

cc: Wayne B. Nicoll, Vice Chair East, RRTC  
A.C. Linnerud, NCA/TAC/USA  
Carol McLatchie, RRIC USATF  
Ed McGinnis, RRCA-NC

## Herron Land Surveying, Ltd.

J. Randy Herron  
*Registered Land Surveyor*

307 South Haywood Street  
Waynesville, NC 28786

Phone: (704) 456-5761  
Fax: (704) 456-1887

May 19, 1993

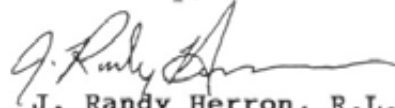
Gary Lance  
L.N. Davis Insurance  
Waynesville, N.C. 28786

Dear Gary:

Concerning the letter to you from Wayne B. Nicoll dated May 10, 1993, our firm sent one of our survey crews out to measure the difference in elevation between the start and finish lines. We have been able to determine the difference in elevation as being 3.60 feet between the starting line and the finish line.

If I may be of further assistance please do not hesitate to contact me.

Sincerely,



J. Randy Herron, R.L.S.

May 24, 1993

Gary Lance  
Haywood Athletic Club, Inc.  
PO Box 1203  
Waynesville, NC 28786

Dear Mr. Lance,

Thanks for providing the information concerning the elevation difference between start and finish of the Maggie Valley Moonlight course. The letter from Randy Herron does not indicate whether the start or the finish is higher, but the difference is so small that it does not really matter.

The reason for the rule about elevation drop is that it's unfair to compare performances run on downhill courses with those run on courses with no drop.

The USATF course list has been amended to reflect the change, and the course now joins the 90 percent of USATF certified courses that are eligible for records.

Best regards,



# Measure Up

June 1993 Volume 6, No 2



## SPREADING THE WORD

Those of you who belong to Road Runner clubs know about the recent (April 22/25) national convention held in Portland, OR. One of the highlights of these conventions has been the workshops (two to four hour sessions with the experts explaining how to do it) which cover a wide variety of subjects of interest to runners in general and club reps in particular. This year's agenda included a short course in course measurement.

Conducted by Wayne Nicoll, the RRTC vice chairman East, and Oregon certifier, Lee Barrett, approximately 15 delegates were exposed to:

- Two hours of classroom instruction which included the measurement video;
- One and one-half hours of field work using hand wheels on a mini cal course (100') and a mini race course (1450');
- The balance of the time was spent completing the paper work plus Q & As.

Measurement classes are not new. They are held from time to time all over the world. What is new is the use of hand wheels on mini courses. What a great idea! No need to fit everyone with bicycles and go full size. Think small! You could even work in a gym or a hotel banquet room if you had to.

If you feel there's a need for measurement instruction in your area, please give me a call. The summer months are ideal and we can work big or small.

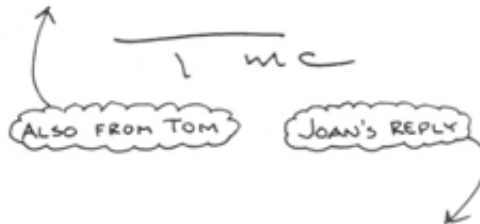
- FROM TOM MCBAYER

JOAN

04.25.93

SHOULD CERTS START  
w/ "001" ? OR "000" ?

OR DOES IT MAKE ANY  
DIFFERENCE



I think they should do  
whatever pleases them, but  
I'll let Pete explain the  
policy (if we have one). J'

April 30, 1993

E. T. McBrayer - 7733 Moline - Houston, TX 77087

Dear Tom,

Joan asked me to expand on her note.

Sometime during the transition from NRDC to TACSTATS, just before NRDC News went out of business and Measurement News picked up the course list, it became apparent that a national numbering scheme would help keep things sorted out.

At one time it was proposed that a central course-numbering czar be appointed, to keep the numbers in order. This idea did not get far. Instead it was decreed that a course number should be prefixed by the abbreviation of the state where the course is, suffixed by the certifier's initials, and have a 5 digit number in between, with the first two numbers being the last two of the year the certificate was issued.

The other three numbers were never rigidly specified. The only requirement is that no certifier should issue the same number to more than one certificate, although multiple courses may be covered by a single certificate. Occasionally mistakes are made, but they cause little problem, and we usually do not send certificates back for correction, since that's more work than the benefit derived therefrom. Numbering mistakes are rare.

Most certifiers begin their year with 001, but Rick Recker prefers 000. David Reik uses the 500 series for calibration courses. His race courses begin with 001 but the calibration courses begin with 501. Various administrative mistakes occasionally result in a 927, rather than the intended 027, or something. We list them as we get them.

Some certifiers keep a separate series for each state. Others, like me, keep a list of courses and number them consecutively regardless of where they are. This means there will be gaps in my state list, with missing numbers.

It might be possible to organize things more neatly, but at a cost in administrative effort, and also by denying the certifiers the choice to number as they please. Since the present numbering scheme has never caused any problem that I have heard of, there seems no reason to change it.

A problem may arise when a super-energetic certifier manages to certify more than 999 courses in a single year, but we can deal with that when it happens.

Occasionally we get courses that are mis-identified as to location. The certifier may mistakenly use the state he serves rather than the state or country where the course is - rather like if I gave the London Marathon the number OH 93xxx PR instead of the proper GBR93xxx PR. This is infrequent, and corrected by an educational letter.

The computer keeps everything in order, and all courses are easily retrievable from the files, which are kept in numerical order for each state, by year.

In short, no problem. Best regards,



Here are Paul Hodgson's answers to his test presented in May Measurement News. Paul begins with question 7, because that was the most difficult, then goes on to answer the others.

7. A 10k race is to be held on a multi lap course. Two separate lap measurements have been recorded 34,534, and 34,550 counts, and your accepted calibration figure is 10,010 counts per kilometre.

The finish is a fixed point at the entrance to a Leisure Centre. Evaluate the following :-

- a) The number of counts required to set out the Start Line relative to the Finish, and the counts required to establish the 1 Mile mark.
- b) On the day of the race you are unexpectedly asked to set out the remaining mile points (i.e. 2, 3, 4, & 5) using a Surveyors wheel. Keeping the distances to be measured to a minimum, how could you achieve this ?.

\*\*\*\*\*

You should take the mean value of the counts per lap i.e. 34,542.

This gives a total distance for the lap of 3,450.749m

3 laps is equal to 10,352.248m, i.e. 352.248m greater than the required distance of 10k.

The start should therefore be 352.248m beyond the finish line, which equates to 3526 counts.

Having established the start it is easy to fix the 1 mile mark by riding the requisite 16,110 counts.

Converting the miles to metres:-

1 Mile	=	1,609.344m
2 "	=	3,218.688m
3 "	=	4,828.032m
4 "	=	6,437.376m
5 "	=	8,046.720m

The key to solving the problem now, is to use the lap distance to calculate the accumulative distances at the points already established, i.e. the Finish, and 1 Mile point.

i.e. The Finish Line is 1 lap minus 352.248m  
= 3450.749 - 352.248m = 3098.501m (1.9253 Mls.)  
= 3218.688 - 3098.501m = **120.187m short of 2 Miles.**

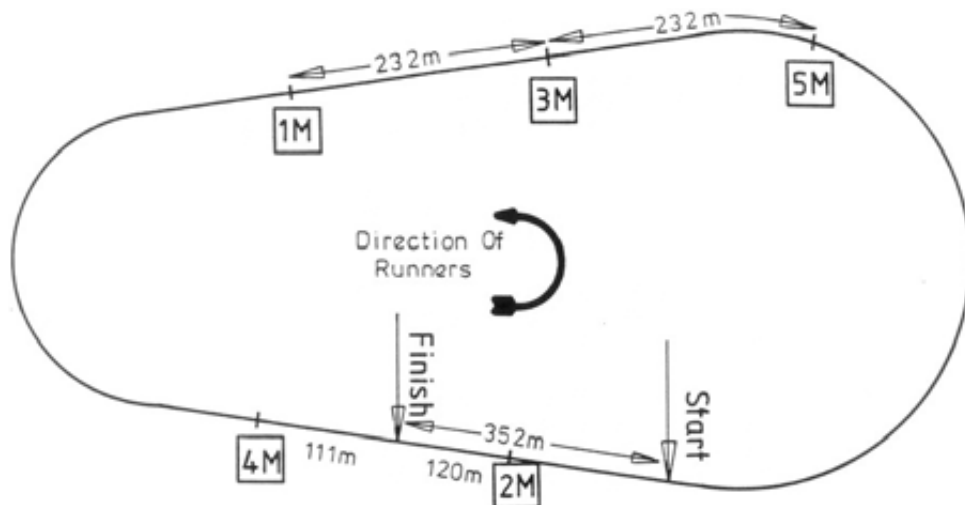
On the second lap the Finish is 2 laps minus 352.248m  
= (2 x 3450.749) - 352.248 = 6,549.249m (4.0695 Mls.)  
= 6,549.249 - 6,437.376m = **111.873m past 4 Miles.**

On the second lap the 1 Mile point is, 1 lap plus 1 Mile  
= 3,450.749m + 1609.344m = 5,060.093m (3.1442 Mls.)  
= 5,060.093 - 4,828.032m = **232.061m past 3 Miles.**

On the third lap the 1 Mile point is 2 laps plus 1 Mile  
= (2 x 3450.749) + 1609.344m = 8,510.842m (5.2884 Mls.)  
= 8,510.842 - 8,046.720m = **464.122m past 5 Miles.**

NOTE:  
WE WOULD  
NORMALLY  
USE THE  
LOWER  
VALUE,  
NOT THE  
AVERAGE.  
*Pete*





If you are really smart you will have discovered that the magic number is 232m, this is the relationship between the mile splits. i.e 3 Mile is 232m before 1 Mile.  
 4 Mile is 232m before 2 Mile.  
 5 Mile is 232m before 3 Mile.

Therefore no single measurement with the surveyors wheel should be greater than 232m.

In conclusion, the solution is to measure 120m past the Finish Line to fix the 2 Mile mark, returning to the finish measure 112m back to establish the 4 mile point. From the 1 Mile point measure 232m back for the 3 Mile point, then after resetting the wheel (to minimise any inaccuracies in it) measure another 232m to fix the 5 Mile mark. In total the minimum distance to be measured with wheel should be 696m.

Thats my solution to the problem, no doubt I will be proven wrong.

#### Answers to the others questions.

- 1) 16,002 counts per mile.
- 2) i) Incorrect tension.  
 ii) Failure to apply temperature correction, when required.  
 iii) Miscounting number of bays, or tape lengths.  
 iv) Poor alingment of individual bays.  
 v) Using a sub-standard tape - incorrect standardisation of units of measurement.  
 And many more !.
- 3) 69.488m to finish line.
- 4) 49,877.5 say 49,878
- 6) a) 25m for the 10k start.  
 37.5m for the 15k start.  
 b) 184.468m back from the Finish



President: Lynn T. Ellis  
Vice Presidents: Howard Frazier, Charles Hillman, Patricia Ross  
Secretary: Bill Bar  
Treasurer: James K. Boney  
Executive Director: Olan C. Covert

July 1, 1993

TO: National Committee Chairs  
USATF National Officers  
USATF Executive Committee

FROM: Martin E. Weiss/Consultant

SUBJECT: 1993 National Convention Schedule

*Marty Weiss*

Enclosed please find a copy of the first draft of the schedule for USATF's 15th Annual National Convention; with the exception of meetings of the International Competition Committee (team staff selection) on November 28, and of USATF's Executive Committee on November 29, the schedule commences on Tuesday (November 30) morning.

For the most part, meeting dates and number of sessions (inclusive of anticipated attendance and set-ups) listed for this year's Convention parallel those utilized in Louisville; the remainder, as nearly as possible, incorporate changes requested by committee chairs on their 1992 Convention room usage forms, and/or in communications to the National Office subsequent to that Convention.

In the event that any committee chair feels that any meeting(s) for his or her group as scheduled might create a problem or conflict, please contact me by mail or phone with respect to any changes which might be desired. As has been the case in past years, every effort will be made to accommodate such requests.

Additionally, in the event that more meetings have been scheduled for your committee than you feel will be required, please advise me of the date(s) and time(s) of the meetings which can be cancelled.

Do not be concerned if the number of attendees indicated for your meeting(s) is greater than you either anticipate or had requested -- this basically reflects utilization of meeting rooms for each day's morning, afternoon and evening sessions without having to change set-ups; however, please do let me know in the event you anticipate an attendance greater than that indicated on the schedule.

MEW/cc  
cc: National Staff

USA TRACK & FIELD  
15th ANNUAL NATIONAL CONVENTION  
The Riviera Hotel  
Las Vegas, NV  
November 28-December 4, 1993  
Schedule as of June 29, 1993

C = Conference  
C-T = Conference/Theatre\*  
S = Schoolroom  
S-T = Schoolroom/Theatre\*\*  
T = Theatre

Time	Sunday, November 28	Number	Set-up
8 a.m.-6 p.m.	International Competition - Men's Subcommittee	100	S
	International Competition - Women's Subcommittee	100	S
12 Noon-5 p.m.	Monday, November 29	Number	Set-up
	Registration Desk		
	Convention Office		
	Typing Room		
	Press Room		
	U.S. Athletics Calendar Office		
	USATF National Office		

2-5:30 p.m.	USATF Executive Committee	35	C-T
6-11 p.m.	Coaching Education	26	C-T
7:30-9:30 p.m.	USATF Executive Committee	35	C-T

Time	Tuesday, November 30	Number	Set-up
8 a.m.-6 p.m.	Registration Desk		
	Convention Office		
	Typing Room		
	Press Room		
	U.S. Athletics Calendar Office		
	USATF National Office		

9-11 a.m.	First-Timers Orientation	150	T
9-12 Noon	Member Services	150	T
	Associations Executive Committee	35	C-T
	Coaching Education	24	C-T
	Officials Executive Committee	15	C
	SSC Executive Committee	15	C
	Men's Track & Field	24	C-T
	Women's Track & Field	24	C-T
	Men's & Women's Race Walking	24	C-T
	Youth Athletics	15	C
	Masters Long Distance Running	15	C

\* Room set-up Conference-style for number of people indicated; chairs theatre-style around perimeter of room.

\*\* Room set-up Schoolroom-style for number of people indicated; chairs theatre-style around perimeter of room.



Time	Activity	Number	Set-up
4-4-4	Men's & Women's Race Walking	150	T
	Officials	200	T
	Men's Development	150	T
	Women's Development	150	T
Time	Activity	Number	Set-up
2:30-6 (cont.)	Substance Abuse Education & Testing	35	C-T
	Ball Of Fame Library Advisory Board	24	C-T
	Law & Legislation	24	C-T
	Records	24	C-T
	Sports Science Development Seminar	250	T
	Joint Masters Track & Field and Long Distance Running	250	T
3-6	Joint Site Selection Subcommittee	250	T
7-11	Sports Medicine & Science	250	T
8-11	Associations	150	T
	U.S. Olympic Festival	150	T
	Joint Men's & Women's Development	150	T
	Men's & Women's Race Walking	150	T
	Road Running Technical Council	35	C-T
	Men's Decathlon Subcommittee	24	C-T
	Cultural Exchange	24	C-T
	Law & Legislation	24	C-T
	Officials Executive Committee	24	C-T
Time	Activity	Number	Set-up
8 a.m.-6 p.m.	Registration Desk		
	Convention Office		
	Typing Room		
	Press Room		
	U.S. Athletics Calendar Office		
	USATF National Office		
4-m.	Men's & Women's Race Walking	250	T
9-12 Noon	Youth Athletics	250	T
	Women's Track & Field	150	T
	Men's Track & Field	150	T
	Men's Long Distance Running	150	T
	Women's Long Distance Running	150	T
	Rules	24	C-T
1-3	Joint Men's & Women's Long Distance Running	250	T
	Women's Track & Field	150	T
	Men's Track & Field	150	T
	Sponsor Support Advisory Task Group	24	C-T
	Law & Legislation	24	C-T
	Cultural Exchange	24	C-T
1-5	Athletes Advisory	200	T
	Associations Committee Zone Meetings	250	T
2-5	Joint Men's & Women's Track & Field	250	T
3:30-5	Masters Track & Field	150	T
3:30-6	Masters Long Distance Running	150	T
6-7	RECEPTION		
7-7??	JESSE OWENS AWARD BANQUET		

**RRTC**

55

\*\*\*\*\*  
 \* Estimated conclusion of General Meeting is 4:00 p.m.  
 \*\* Will commence one half-hour following conclusion of General Meeting in the event that conclusion is earlier than 4 p.m.

**SATURDAY AFTERNOON MASS BALL OF FAME BANQUET**

Time	Activity	Number	Set-up
5-5-5	Registration Desk		
	Convention Office		
	Typing Room		
	Press Room		
	U.S. Athletics Calendar		
	USATF National Office		
	Delegates Race		
7 a.m.-Finish	Men's Long Distance Running	150	T
	Women's Long Distance Running	150	T
	Joint Law & Legislation and Rules Committees	250	T
	Youth Athletics	250	T
	Masters Track & Field	150	T
	Masters Long Distance Running	150	T
	Athletics for the Disabled	35	C-T
	Athlete Support Subcommittee	24	C-T
	Track & Field Junior Commission	24	C-T
	Overview Project Group	15	C
p.m.	USATF General Meeting	900	Special
1-Conclusion*	Custodial Board & Doping Hearing Board	150	T
4-6	SATURDAY AFTERNOON MASS	100	T
5-6**	BALL OF FAME BANQUET		
6-8:30			

May 13, 1993

Mr. Pete Riegel  
 Measurement New  
 5324 Kildam Road  
 Columbus, OH 43211

Dear Pete,

When school starts in the fall, school cross country swings into action. As one would expect, cross country coaches are always looking for ways to improve their athletes' performance. One of the most important factors in our sport is the running track. In our sport, runners generally run 3-4 miles during training. This is a very important part of their training. With non-runner coaches, some may not be familiar with the track. The track is a very important part of their training. They generally run 3-4 miles during training. This is a very important part of their training. They generally run 3-4 miles during training. This is a very important part of their training.

Question: What is a reasonable method of providing measurements for these courses? Is not interested in air-picky, zero tolerance measurements that involve hours of labor. This is pure volunteer work at the grass-roots level (and intended) for schools with no budget. I might be required to lay out a course immediately before an event. This is a very important part of their training. They generally run 3-4 miles during training. This is a very important part of their training. They generally run 3-4 miles during training. This is a very important part of their training.

4013  
 Men's & Women's Race Walking  
 Officials  
 Men's Development  
 Women's Development

Thursday, December 2  
 Substance Abuse Education & Testing  
 Ball Of Fame Library Advisory Board  
 Law & Legislation  
 Records  
 Sports Science Development Seminar  
 Joint Masters Track & Field and Long Distance Running  
 Joint Site Selection Subcommittee  
 Sports Medicine & Science  
 Associations  
 U.S. Olympic Festival  
 Joint Men's & Women's Development  
 Men's & Women's Race Walking  
 Road Running Technical Council  
 Men's Decathlon Subcommittee  
 Cultural Exchange  
 Law & Legislation  
 Officials Executive Committee

Friday, December 3  
 Registration Desk  
 Convention Office  
 Typing Room  
 Press Room  
 U.S. Athletics Calendar Office  
 USATF National Office

Mr. Pete Riegel  
Measurement News  
3354 Kirkham Road  
Columbus, OH 43221

May 13, 1993

Dear Pete,

When school starts in the fall, high school cross country swings into action. As one would expect, cross country courses often traverse non-paved irregular surfaces... that are notorious (in our area, at least) for gross distance inaccuracy. The events always specify distance - runners assume it is accurate... and, well, the resulting story is legendary. In our area, boys generally run 3-mile courses, girls the 2-mile distance. Frequently I am dealing with non-runner coaches, sometimes endowed with the stereotyped football-coach, big-belly, pump-iron, chew-tobacco mentality.

Question: What is a reasonable method of providing measurements for these courses?

I'm not interested in nit-picky, zero tolerance measurements that involve hours of labor. This is pure volunteer work at the grass-roots level (pun intended) for schools with no budgets, and no interest in course certification. My objective is simply to eliminate 1/4-mile errors in 2-mile courses... and this is no joke. I'd be happy with plus or minus 50 feet. Sometimes, I might be required to lay out a course immediately before an event is conducted, and do it on a "one-shot" basis.

Do any of our measurement people have suggestions or user experiences to share?

Best regards, *Ed Ohio*



## USA TRACK & FIELD

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

3  
614-451-5617 (home)  
614-424-4009 (work)  
614-424-5263 (FAX, work)

May 17, 1993

Ed Okie - PO Box 448 - Lake Wales, FL 33859

Dear Ed,

Measuring a cross-country course is a job that requires covering the course at least once, unless you are fortunate enough to have a very accurate map available, which is very unlikely.

Since you are not particularly interested in getting the course certified, the choice of instrument is whatever suits your desire for accuracy.

If you have a good idea of your pace length, you could pace off the course. Our RRTC measurement contests have found quite a few people who can do this within 1 to 2 percent, but this probably won't get you within 50 feet in a three mile course.

A better way is to use a measuring wheel. Most common wheels are too small to be accurate on rough ground. You saw Tom McBrayer's homemade measuring wheel in November 1992 Measurement News. Wayne Nicoll uses one too, and I have made and used one as well. John Disley uses one too. They are great for use on rough ground, and they are a lot easier to load and unload than a bike is.

You will have to calibrate the wheel, of course, to get its size. It's better to calibrate it on the same sort of ground as the race course. How you achieve the calibration is up to you, since it's your own standard you are trying to meet.

If you do not have to do this very often, you could skip making a measuring wheel and just push your bike. However, making a wheel is not hard once you locate the broken-down bike that someone will sell you cheap. All you need is the front wheel and fork. The handlebar clamping post makes a good handle to push with.

I'll put your letter in MN and see if readers have any other suggestions for you.

Best regards,

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

6/23

PETE RIEBEL  
3354 KIRKHAM RD  
COLUMBUS OH 43221

FROM  
DON STANDISH

DEAR PETE,

JUST A NOTE TO INFORM YOU OF WHAT CAN BE DONE WITH PERSISTENCE. BOB SEMER HAS COORDINATED THE DEVELOPMENT OF PARKLAND IN FREMONT INTO ONE OF THE FINEST X-C COURSES IN N-W OHIO - IF NOT THE WHOLE STATE OF OHIO.

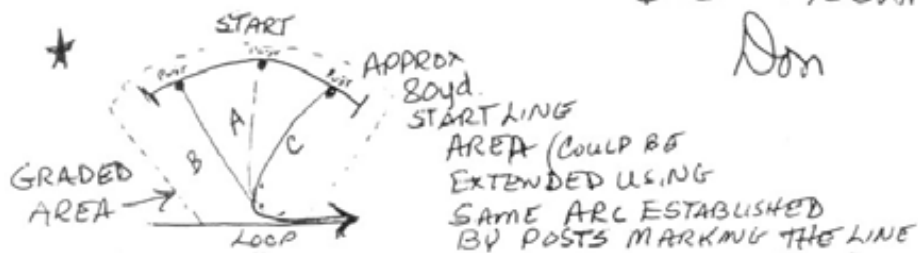
THE DAYS BEFORE I ARRIVED TO MEASURE THIS BEAUTY WERE FILLED WITH GRADING, HAND CLEARING ALL ROCKS, SEEDING AND PREPARING THE RUNNING PATH FOR THE MEASUREMENT PROCESS. THE NEW GRASS WAS IN PLACE AND THEN 3 1/2" OF RAIN WASHED ALL THIS INTO THE FLOOD PLANE. ONCE AGAIN GRADING - HAND CLEARING - SEEDING WERE DONE TO GIVE ONE OF THE SMOOTHEST DIRT ROADS I'VE EVER SEEN. ALL CORNERS WERE SET WITH FENCE POSTS MARKERS - AND START/FINISH AREAS WERE STAKED FOR PERMANENT 4"X6" POSTS SET IN CONCRETE TO BE INSTALLED PER MY INSTRUCTIONS. THIS WAS WELL THOUGHT THROUGH AND NO EXPENSE WAS SPARED.

TO INSURE ADEQUATE START LINE ROOM - MEASUREMENTS WERE TAKEN

FROM CENTER START POST TO INSIDE CORNER POST MARKING THE APEX OF THE FIRST TURN, THEN THOSE FIGURES WERE DUPLICATED FOR END POINTS. APPROX 40yd on EITHER SIDE OF CENTER POST. USING BOB AS A REFERENCE POINT I ROPE LINE-OF-SIGHT AND MARKED THE END POINTS ON BOTH SIDES OF THE MIDDLE POST GIVING AMPLE STAGING ROOM FOR SEVERAL HIGH SCHOOL TEAMS TO LINE UP ON THE LINE. IT IS HOPED THAT ONE DAY REGIONAL MEETS WILL BE SCHEDULED. SEVERAL LOCAL HIGH SCHOOLS ARE INTERESTED IN THE USE OF THIS COURSE ALREADY!

THERE IS A VERY SHARP HILL NICKNAMED "BUTT BUSTER" RISING @ 30 feet in less than 50' OF TRAVEL, THIS WILL BE "BAPTIZED" JULY 4th IN THE FIRST OPEN RACE ON THE COURSE. THOUGHT YOU'D LIKE TO KNOW OF THE REAL ACHIEVEMENT BOB HAS MADE IN GETTING THIS DONE WITH REAL CLASS. HE JUST MET WITH THE MAYOR WHO AUTHORIZED A FOOT-BRIDGE TO BE ERECTED OVER THE DITCH THAT SEPARATES THE START/FINISH LINES. IT WILL BE UP FOR THE "INAUGURATION RUN"

BEST REGARDS,  
Don







### MEASURING A CAT

Help in solving Stu and Libby Riegel's perplexing problem of how to measure a house cat (May MN) came from an unexpected quarter. There are many different trade and professional organizations, but your Editor was stupefied to learn from Les Sims of the existence of the British Cat Measurement Society. Its Press Officer, Sylvester McFeline, provided a solidly practical and thoroughly scholarly solution to the problem.

It's not for the squeamish, but since when have measurers shrunk from an arduous task? See the solution as you read on.

Marcia Baume sent a photo of something she claims is a cat. It is Schwartzeneggeresque in its dimensions, and she proposes it as a standard of comparison for large cats. Better buy a bigger microwave oven if you want to use the Sims method! Perhaps it was something it drank.

### MEASURING A DOG

In 1985 I was riding near Athens, Ohio, measuring the course of the Athens Marathon. I had finished marking mile 8, and was riding along a scenic country road by the Hocking River with nothing on my mind but mile 9. Suddenly three large, snarling dogs charged out from a farmhouse and arranged themselves in the road directly ahead of me. One was to my right, one to my left, and one dead ahead. I had no time to do anything except rise up on the pedals and brace myself. The right and left dogs moved outward. The dog ahead of me looked right and left, could not decide, and stayed where he was.

My only memory of the collision was a view straight down at my front wheel, which was directly on top of the middle of the dog. I remember feeling BUMP! BUMP! and then I was past the dogs and had not fallen. I accelerated fast to get clear of the dogs, and rode on to mile 9.

The guys in the van behind me were roaring with laughter. I was worried that I would be shot by the farmer on the way back, for killing his dog, but the dog evidently got off easy, because we saw no sign of any of them on the way back.

The race director suggested that I deduct about 5 counts from the measurement for the extra distance covered while passing over the dog.

### BRACING THE SQUARE - HOT NEW DEVELOPMENTS

Last issue's solution by Roger Gibbons, which used 27 rods, was a test of readers' wits. No one has yet mentioned that it is not a valid solution. If one Pythagorizes one's way through the geometry, it is seen that the square may be braced, but is not quite square, the corners having angles of 88.76 and 91.24 degrees. Thus that solution of Roger's flunks. Close but no cigar.

When I told Roger of the non-squareness, he buckled down and came up with another solution, which uses 25 rods. Isn't it a beauty! And the square does have 90 degree corners, thus the solution is valid. Roger thinks he may be able to improve on it even further. See next MN for the stunning conclusion!

FROM  
LES SMS

HOW TO MEASURE A CAT  
Avoid Catastrophe with the Purrfect Solution

A recent letter in "Measurement News" asked for help with the problem of measuring a cat. As Press Officer for the BCMS (British Cat Measurement Society), perhaps I can be of some assistance.

The basic method of measuring cats was devised in the 16th century by the famous Chinese philosopher and amateur cat measurer Mee Ow and the technique has been revised over the years as a result of improving technology. The current state-of-the-art method has many similarities with the measurement of road race courses and is known as the Dead Reckoning Method (for reasons which will be apparent). It is incorrectly believed by some to be a means of navigation.

Two cats are necessary for the measurement; one live (the cat to be measured) and one dead (used for calibration purposes). Dead cats are available to order from:  
Dedkat Meat Products Ltd.  
The Cattacombes  
Catterick  
Yorkshire  
England

They stock dead cats in a variety of sizes and are principle suppliers to food retailers and taxidermists worldwide. Amongst their customers are Kentucky Fried Cat, McDougalls Catburgers Inc. and Grandmas Catswhisker Cookies. The cats are despatched frozen in the meat loaf position to facilitate packaging and transport.

On receipt of your dead cat proceed as follows:

1. Weigh both cats. See note below on units.
2. Determine the volume of the dead cat in the meat loaf position by the liquid displacement method.
3. De-frost the dead cat in your micro-wave oven. Ensure that you have the correct cat.
4. When the cat is de-frozen, measure its fur length using a calibrated engineers depth gauge and tail length using a steel rule.
5. Repeat measurements on live cat. Restraints may be necessary.
6. Re-arrange the dead cat into the full stretch position.
7. Put it in your freezer overnight ensuring that the full stretch position is maintained by the use of clamps. Freeze to -20 deg.C.
8. Repeat the liquid displacement operation on the dead cat.

You now have all the data required for calculation Note that all units must be compatible. The international (SI System) unit for cat measurement is the KILOKATTE. 1 kilokatte = 13.75916 cu.ins. approx.  
1 kilokatte = 10 kilokittens

The formula is as follows:

$$V = \frac{4}{3} \left( \frac{T}{t} + \frac{F}{f} \right) \times \frac{A}{B} + \frac{5(C+D)}{2} \times \text{SCPF}$$

Use conversion factor quoted above to convert from cu.ins. to kilokattes.

- Where V = Volume of live cat  
 T = Tail length (live cat) t = Tail length (dead cat)  
 F = Fur length (live cat) f = Fur length (dead cat)  
 A = Weight of live cat B = Weight of dead cat  
 C = Volume of dead cat in meat loaf position  
 D = Volume of dead cat in full stretch position  
 SCPF (Short Cat Prevention Factor) = 1.001

Pete Riegel  
3354 Kirkham Road  
Columbus, OH 43221

129 Warwick Road  
Ponca City, OK 74601  
93-06-26

Dear Pete,

I've waited until the last minute to write this, so it can't be as erudite or funny as I had hoped. Suffice it to say that the enclosed pictures illustrate the definition of **BIG** for cats. His name is Patches, AKA Bubba. He has been drinking out of the toilet, feet firmly on the floor, since he was about six months old. His mass is about 6.5 kg, but it is very difficult to tare myself from such a measurement.

Yours,



Marcia Baumel



Recycled Paper



# USA TRACK & FIELD

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May 4, 1993

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

Dear Roger,

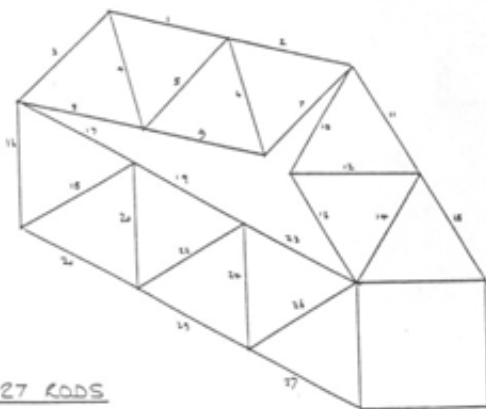
Your persistence probably will pay off. I first saw this puzzle around 30 years ago in a publication of wide circulation. Readers exerted themselves in numbers far greater than our MN recipients. I myself sweated over solutions, finally coming up with the same one you sent to me on April 25. I was proud of myself, and thought I'd have the distinction of winning.

When the results were published, I found that I was in a small elite group, but that somebody had found an even simpler solution - very elegant - which will appear in the January issue.

Also appearing in the January issue will most likely be the announcement that you are the winner. I will be astounded if anyone gets a solution any better - but there is at least one. And if anybody should tie you before next MN, you are still first. I will publish your solution in next MN to give people something to shoot at.

I put your non-square solution in the MN you will get in a couple of days, just to see if anyone will notice that the square is a parallelogram. ]

Well done!



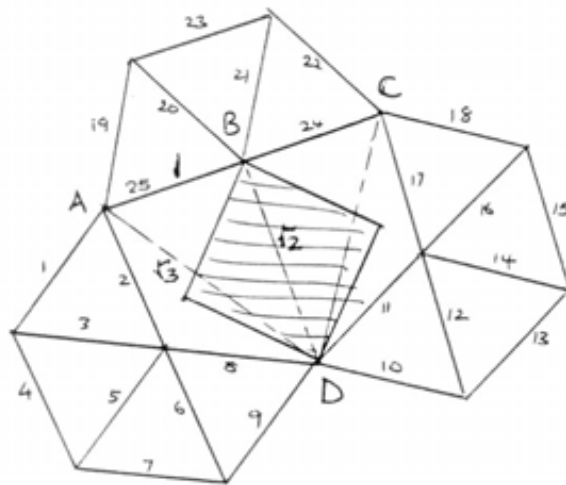
27 KODS

THIS APPEARED IN  
MN LAST MONTH.  
NOT SQUARE!

"Zeando"  
 Swannington  
 Norfolk  
 England  
 NR9 5NW  
 25 April '93

Dear Pete,

After a lot of sleepless nights, and a little lateral thinking I think I have come up with an improved version with 25 links.



25  
LINKS!

$$AD = CD = \sqrt{3}$$

$$AB = BC = 1$$

DB is perpendicular to AC

$\therefore$  triangle ABD is right angled.

$$\therefore AD^2 = AB^2 + BD^2$$

$BD = \sqrt{2}$  = diagonal of a square of side 1 unit.

triangle ACD is rigid.

ABC is rigid.

$\therefore$  points B, D are fixed.

Thus square is rigid.

Many Regards,

Roger Gibbons



TADEUSZ DZIEKONSKI  
 ul. Chrobrego 4 m. 8  
 (skrzynka pocztowa 14)  
 15-057 Białystok  
 POLAND

Dear Pete,

Thank you very much for the next copy of "News" and the letter of April 29.

Nice to see my name on the grade A list of measurers.

You wrote that you usually check the calibration course, measured by another person before. I agree with you. I told Mr Wolfgang Konrad about it but he said - "Way, the calibration course is OK". But I checked this course by using another method. As you know I use the wheel of 27 inches of diameter - with the solid tire - and the pre- and post-calibration data are always close if the weather is constant during a measurement /only dry or only wet/. I compared these data in Vienna to check the calibration course and received the following result:

- average constant of the day of my all measurements done in 1992 year during dry weather: 9.234,2687 revolutions per km
- constant of the day of Vienna: 9.284,4615
- difference: 0,1728

As you see the difference is very small. So I was not glad in Budapest when I received a bike with a wheel of 26 inches.

Below an example of measurement as a problem to conclude. Question is: which version of an adjustment is better? I think the second, because I used the solid tire which does not change much /circumference/ if the weather is only dry or only wet.

half-marathon measurement during changed weather

dry: from finish line to 5 km point

wet: from 5 km point to start line

pre-calibration data: 10.974,215

post-calibration data: 10.965,704

measured distance: 231.534,5

solutions:

1/ constant of the day : 10.969,953

231.534,5 : 10.969,953 = 21 km 106,25 m

subtract 8,75 m

2/ 16,0975 km/173.662 : 10.974,215 = 16 km 97,9 m

subtract 0,4 m

5 km/54.872,5 : 10.965,704 = 5 km 4 m

subtract 4 m

total subtract 4,4 m

copy to Ted Paulin

Best regards

Białystok/Poland, May 26, 1993



USA TRACK & FIELD

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Chairman, Road Running Technical Council
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Columbus, OH 43221

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614-424-4009 (work)
614-424-5263 (FAX, work)

June 8, 1993

Tadeusz Dziekonski - ul. Chrobrego 4 m. 8 - 15-057 Bialystok - POLAND

Dear Tadeusz,

I do not think there is only one correct answer to your question about the final adjustment. Your reasoning is sound, and I cannot argue with it.

As for me, I would use the larger constant and subtract 0.6 m. When there is an uncertainty in the calibration figure, I want the course to be safe against being later found short.

My tire behaves like yours. On a rainy day it may change its calibration by 10 counts/km. However, I am not sure exactly when the change takes place. It takes some time for the tire and rim to get wet, and the exact time of the calibration change is unknown. So, I would do the conservative thing and use the larger constant.

I would be nervous if I added less. Someone might run fast, and then I would have to worry about the remeasurement by a validator. We do not always get the perfect data we desire, and I prefer to leave the course in a safe condition against remeasurement.

One of my Jones/Oerth counters also began to come apart. Like you, I successfully fixed it with Super Glue. If you do not notice that the counter is separating from the gear, the counter may come completely off, and be lost in the road.

Paul Oerth has fixed the problem. JO counters are now assembled using a hot glue, which sticks better than the glue they used to use.

Best regards,

Handwritten signature: Peter

I used the Super Glue to keep all units of the Jones/Oerth Counter together. It works ok.



for WOOD, RUBBER, PLASTICS, METAL, PAPER & LEATHER

Application: Both surfaces must be smooth, clean and dry. Apply to one surface. Only one drop per square inch and no more. Place in fixed position immediately. Apply slight pressure for ten seconds or until bond sets.

Care in handling: To keep tip of tube clear and remove glue from fingers, wipe excess glue with cloth or tissue paper. Store in cool, dry location.

Warning: KEEP OUT OF THE REACH OF CHILDREN EYE IRRITANT



BONDS SKIN IN SECONDS



Material from Osaka, Japan

- verde -

Handwritten note: FROM TADEUSZ with arrows pointing to the Super Glue logo and the handwritten note above.



Article for May Issue of NH Runners

Let The Good Times Roll

By Wayne B. Nicoll

The editor of this publication has firmly indicated to you he is committed to seeing that NH runners start showing up in the record books, both at state and national level. For this to happen, our runners need to be running on USA Track & Field certified race courses. NH has one of the highest percentages of road race courses that are certified, so you will have little difficulty finding race courses that are certified. Preparations for the capture of record performances at a race go beyond the accurate measurement of the course. There must be a solid procedure for the timing and the identification of all of the participants in the race.

Very seldom does a race director of a small race ever consider the possibility that his race might produce state or national records or rankings. But it happens every weekend in the country. Many record performances go unrecognized because the race staffs and finish line companies do not know what has to be done to prepare for the documentation of a new record. I am particularly concerned about the disinterest shown by large finish line services outside of NH who choose to ignore the USATF requirements for insuring there is an accurate match of the correct finish time to each finisher.

If you have never been involved in the preparation of a finish line at a large race you probably have no idea how the scoring process works. Every system is unique - no two finish line companies or large race staffs are operating exactly the same way. But the eventual goal - that of linking the finisher with the correct time - is the same. The finish time and the identification of the runner occur at different points in the finish area. In general, all times are punched in as the runners cross but it is not feasible yet technologically to immediately link all finishers to their time as they finish. The runner is identified in a sequential order in the chute by a tear off tag or recording of the bib number. At this point all the scorers have is raw data, which is usually fed into a computer. There can be many problems with that data. Runners may have switched places in a chute, or some runners may have changed chutes. Timers may have recorded too many or too few times. Often the race management will post their raw results and the grumbling among the runners begins as they note the posted times do not agree with their personal watches.

To reconcile this information there must be a team of people at the finish who gather select times. They randomly but steadily select a bib number of an approaching runner, note the time the runner crossed, and copy both the time and bib number down. Select teams are encouraged to aim for accuracy, not quantity. This data is turned over to the scorers. With the select time sheets the scorers are able to run through the raw data on the computer and make adjustments as necessary. Proof of proper use of select times must be included in the application for a pending record.

There are some other USAT&F requirements that most finish line companies ignore. If the start and finish are not close together, the primary electronic timing device must be taken to the start. Many finish line timers will carry a stopwatch to the start, and go to the finish and program the watch time onto the printing timers. Wrong In order for a national record to be accepted there must be at least two stopped watches on the first male and first female finisher. All official times are rounded up to the nearest second. A recommended procedure is to have a person assigned to collecting the necessary signatures of timers, the stopped times, the race director's signature, and other race information requested on the records application. This person can also assemble the race course certificate, a copy of the results, examples of the select timing, and the records application, and have it ready to mail soon after the race. If race applications are not processed quickly it is possible the record might not be processed prior to the USATF Convention in December where the record would be ratified. Delaying a record ratification could mean the pending record may be surpassed by another runner, cancelling out the opportunity for the first record claimant to be nationally recognized.

Is all of this worth it? You bet it is! Some of the smallest races often can boast of having an American record on their course. I saw a small race have US records set in the mens 80-84 age group two years in a row. The Viking Classic 5K/10K in Rome, GA prints a list of their numerous state and national records on their entry form each year. When your state magazine begins publishing this records information, it will not take long for serious runners to decide whether they will run that race in the future. And most important, when you strive for accuracy in course measurement and finish line scoring, you raise the overall quality of road racing in the state and give many runners the recognition they deserve.