MEASUREMENT NEWS

January 1991 Issue #45

RRTC's Doug Loeffler was appointed IAAF Approved Measurer last summer, after he demonstrated his proficiency at the International Measurement Seminar in Columbus, Ohio. In November, on behalf of IAAF, he went to Santa Fe, Argentina, to teach a group of South American course measurers. Read his report in this issue.

Above is a group of the students concentrating on calibration procedures. (Photo by Doug Loeffler)

National Governing Body for Athletics in the United States

The Athletics Congress of the USA

MEASUREMENT NEWS

#45 - January 1991

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Doug Loeffler
Road Running Technical Committee
2000 N.E. 4th Way
Boca Raton, Florida 33431
Home (305) 393-8979
Office (305) 997-2080
Telex 519442
Fax (305) 997-2110

November 19, 1990

Mr. John Disley
IAAF

Dear John,

IAAF MEASUREMENT SEMINAR - SANTA FE, ARGENTINA

I traveled to Buenos Aires as planned on 7 November. I arrived in the IAAF Center in Santa Fe on 9 November with the intention of viewing the area and planning our measurement session. Wayne Nicoll was scheduled to arrive the evening of 9 November, and we planned to start the seminar on Saturday morning, 10 November.

Somewhere along the way I got the impression that the center was located in an area away from local automobile traffic, and had roadways which would lend themselves to practicing measuring on bicycles. This was not the case. The Center is situated on a dead-end street which is approximately 1 km in length. This street, and in fact all the streets in Santa Fe, was concrete. There wasn't an asphalt street to be found. The streets in the surrounding neighborhood were heavily trafficked which made them dangerous for novice measurers. After expressing my concerns to Mr. Scarpin, the director of the Center, we drove to one of the city parks. The roads contained therein presented a challenge to the measurers in that there were numerous curves, parked vehicles and other factors to introduce the measurers to various conditions. The available roads totaled only 1.5 km in length which caused me to lay out a course with a double loop in one section. I was then able to have a course of 2 km in length.

The only available straight stretch of roadway for a calibration course was on the street fronting the park, and it was concrete and had cars parked on the shoulder. My concern about concrete is because it prevented us from putting down permanent marks with PK nails.

Prior to my departure I had a few telephone conversations with Wayne and knew that he had a specific plan in mind for the exact outline of the seminar. Due to my heavy travel schedule we did not get to meet or discuss his plans before we left. We intended to finalize the plan on Friday night in Santa Fe. I was somewhat surprised to find that Mr. Scarpin had printed an outline of the seminar and distributed it to the participants. This outline called for me to start my instruction on Friday afternoon. I was not prepared to do so. I had not finalized the plan with Wayne and was extremely fatigued having slept only 5 hours of the previous 60 hours while I traveled to Argentina, so I rejected this plan.

Mr. Scarpin and I traveled to the airport Friday night to meet Wayne's flight but he was not on the plane. We later learned that Pan Am canceled his flight from Miami, after he had traveled there from Boston. At that point I constructed my own plan and scheduled the class to start at 9:00 AM Saturday morning.

The seminar was attended by 15 people from Argentina, Uruguay, Paraguay and Brazil. Their experience ranged from a great deal to none at all. All seemed to be individuals who would be

actively involved as measurers and not simply an attendee who would relay information back to the federation. We started with a classroom session where I went over each section of the IAAF Course Measurement Procedure. There were many discussions and questions about the details of the procedures. We "walked" through the procedures step-by-step and I introduced as many potential problems as came to mind.

Late Saturday afternoon we proceeded en-masse to the park which was about 5 km from the Center. We organized into two groups and layed out a 300 meter calibration course. While the participants were conducting a bike-check of its length I rode the park and put down marks to denote start-finish and 1 km points. I decided to use an exercise similar to the one Pete used in Columbus where we "had a race on an existing course" and I wanted to know if it would withstand validation, and also wanted to know how to adjust the course for a race the following day. This approach had good and bad points. It introduced them to the validation procedure but also proved confusing when they tried to calculate distances with and without the SCPF. In hindsight it may have been too much for the novices.

I led the measurers around the course on bicycles to show them the route. When we returned to the start I learned that some had measured during the familiarization ride and they immediately had questions about their calculations. I think I worked with almost each individual answering questions and helping them with their calculations. We didn't leave the park until after dark and the result was that I had no time to observe riding techniques. I do not know if they displaced around parked cars, rode tangents, etc. This bothers me because on paper things can appear to be correct whereas in actuality they may have used bad procedures which could have been corrected.

Saturday night the entire group was hosted at a dinner held at a local seafood restaurant. This was particularly enjoyable and gave everyone a chance to socialize and get to know each other.

Sunday morning we all met in the classroom at the Center and reviewed the previous day's activities. I began the session with a discussion of what should have happened and followed this by having individuals discuss their own results/experiences.

I feel that the session was very worthwhile. It was almost too much for one person to handle effectively though. Wayne's presence along with a translator to help him would have permitted us to be much more effective.

Mr. Scarpin had everything very well organized and saw to the needs of each individual. I very much appreciate the hospitality and kindness he showed to me. His staff and particularly Miriam who served as translator were invaluable.

One of the people in attendance was Mr. Rolando Czerniak of Buenos Aires. I spent a good deal of time with Mr. Czerniak in Santa Fe and again in Buenos Aires on my way back to the US. He has been involved in measuring courses in Argentina for many years. Through my discussions with him, working with him on the practice measurement, reviewing his work at the seminar, observing his participation in the seminar and reviewing some of the records he has kept on his measuring activities, I found him to be as competent as any in our TAC Technical Committee. I would like to state my belief and recommend that the IAAF and AIMS recognize his expertise whenever questions arise about course measurement, certification, or validation.

Sincerely yours,

Greg Loeffler

4.

FAX TO:- PETE RIEGEL

THE LONDON MARATHON
Richmond Gate Lodge, Richmond Park
Richmond, Surrey TW10 5HU
01-948 8039/8633

FAX to DOUG LOEFFLER December 6th 1990

Copy to Pete Riegel

Dear Doug,

Many thanks for your long letter, photographs and list of those who attended.

I was, of course, worried about your work-load after I learnt that Wayne never made it.

You seem to have had a tough time and congratulations on keeping your head above water. I have to admit to having a similar experience when I tried to run an IAAF measuring seminar in Tansania. Out of the four bikes we started with only two survived the first ten minutes. One was a racing bike - God knows how it ever got to Arusha in the first place, and a butcher's bike with all the pipe-work for the basket at the front. I was there four days and the only calibration course I could find - straight and on a paved surface was 150m long in the local cemetary.

Maybe we should get together and write a book?

If on reflection you feel that Mr Czerwiak is OK for inclusion let me know and I will ask the IAAF to add him to their list.

Once again many thanks for your sterling efforts - they are greatly appreciated.

Kind regards,

JOHN DISLEY
IAAF Coordinator of Measurers

PS on the matter of getting national records confirmed. Get him to let me know what the races were and I will get him the answers he needs. I need to know the runner's name and the date of the event too.

CAPAIR SOLID TIRE NOW AVAILABLE

A few years ago John Disley gave me a solid tire called a "Suretrak." I have used it for years and found it to be a good measuring tire. It has little calibration change, rides well, and best of all won't go flat. Unfortunately Suretrak went out of business and the tire is not available any more.

A California firm, Capair, bought the Suretrak molds and is on the verge of producing a line of solid tires. I have been communicating with them for over a year. Six months ago they sent me a prototype tire. It would not fit my front rim (it was too narrow) so I went to a bike shop and told them I'd buy a wheel if they would mount the tire to it. It's hard to mount, since the tire contains nylon cords, and the tire assembly must be forcefully stretched onto the rim. But they did the job, and I've found that the tire is a good one.

Capair tells me that the tire sells for about $35 plus postage. They are willing to sell them to me for $21 if I will collect the orders and send them in at one time. They suggest I figure on $6.00 for postage. They will mail the tires directly to the people who ordered them, not to me.

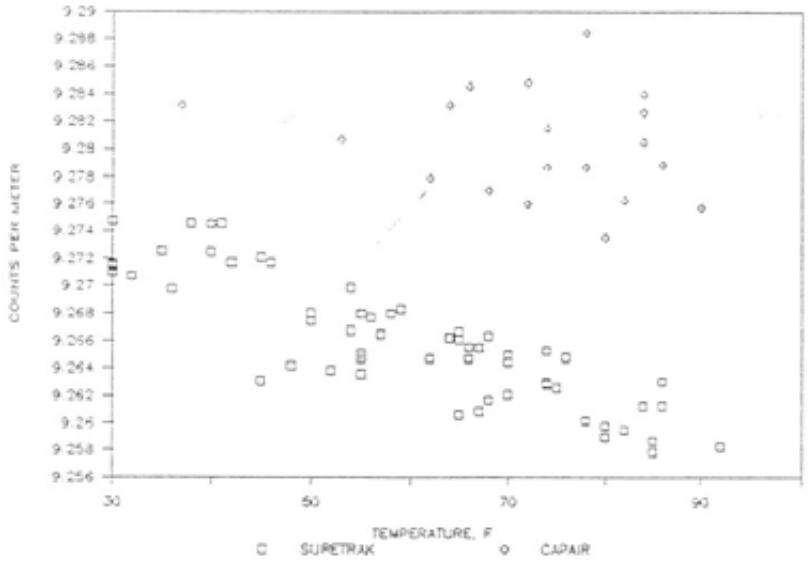
> If you would like a Capair tire, send Pete Riegel $27.00. Be sure to say whether you want a 26 inch or a 27 inch tire. I will hold all the checks I receive until February 22, at which time I will send in an order for what I have to Capair.

When you get the tire it will be in a box that is about 2 feet square. The tire looks way too small to fit on your rim. Be assured it will, if the rim is the right width. If the width is wrong, you'll have to buy a wheel. My wheel cost me $21 including mounting the tire.

I like my Capair tire a lot, and I think you will too.

Pete

SURE-TRAK & CAPAIR CALIBRATIONS



TAC NATIONAL CONVENTION

Road Running Technical Committee Minutes - Nov 28, 1990

Chairman Pete Riegel called the meeting to order at 8:30 pm.

Present were: Lee Barrett, John Boyle, Norm Brand, Dan Brannen, Felix Cichocki, Bill Grass, Norm Green, Frank Greenberg, Philip Greenwald, Finn Hansen, Marijo Hansen, Basil Honikman, Linda Honikman, Jon Hughes, Alan Jones, Justin Kuo, Bob Langenbach, A. C. Linnerud, Mary Anne McBrayer, Tom McBrayer, Jack Moran, Sally Nicoll, Wayne Nicoll, Ron Pate, Rick Recker, Joan Riegel, Pete Riegel, Chuck Shirk, Barb Simon, Phil Stewart, Mike Wickiser, Ric Wilson.

The meeting opened with reports from the Vice Chairman (East) Wayne Nicoll, and Vice Chairman (West) Bob Baumel, Alan Jones (Finish Lines), Sally Nicoll (Validations), and Joan Riegel (Course Registrar).

Computer Timing - Alan Jones suggested the need for some new questions to be put on record application forms, to cover the use of computers used for race timing.

Jack Moran proposed an amendment to a timing rule. The alteration would permit intermediate times, obtained between select times, to be used for record purposes. After some discussion, it was agreed that this should be referred to the records committee.

New Technology - Pete Riegel announced that a new gear drive is presently being produced that will serve as a chassis for new Jones counters. He will send the address of the manufacturer to Allan Steinfeld, so NYRRC may purchase new parts, assuring future supplies of Jones Counters.

Pete announced that there will soon be available a new solid tire, produced in the US, but every bit as good as the one previously made in Great Britain. It will fit 26" or 27" rims. The price is usually $42, but a group order will be taken at a $27 price. Each person must supply his own rim. See details in Measurement News.

Backlogs - Pete raised the issue of several final signatories being somewhat behind in their work. Now that some certifiers are their own final signatory, it is tempting to let the paper work pile up and continue to measure more courses. Are we beginning to have a problem? An appeal to a sense of responsibility may resolve this situation. The position of Final Signatory implies that one is doing the work and doesn't need anyone looking over his shoulder. Pete urged all to remember that this committee must function as a service to the community and to race directors. If anyone needs help, he should ask for it before falling behind and causing a problem.

Post-Validation Procedures - Bob Baumel led a discussion concerning his ideas on post-validation procedures which appeared in November Measurement News. After the discussion it was the sense of the committee that Bob's proposals for post-validation adjustments be considered RRTC policy.

Cones and Monitors on Course Maps - Pete expressed the view that cones are required, and must appear on the map, when they define the inner, shorter boundary of the course. Bob Baumel concurred.

Dan Brannen said he is sometimes asked to restrict runners to one side of the road. In some races, runners are mis-directed by the police. For that reason, he recommends measuring as though the runners have full use of the road. Dan commented that if runners are to be restricted to the left side of the road, the certificate should state that the road must be coned and monitored. This would be helpful information to a new race director reading the certificate for the first time.

Ric Wilson measured and insisted that a monitor stay on those corners where the path can be shortened by the runners. This should be on the certificate. How the race does this is up to them.

Bill Grass pointed out that there were two points to be made: 1) Defining the course and 2) monitoring the course. Monitoring the course should be a problem of the race administration -- RRTC should be responsible only for defining the course.

It was agreed that there is no action to be taken at this time, and further discussion should be directed to Measurment News.

Assistance to TACSTATS - Basil Honikman said that some people think TAC is not as "user friendly" as it should be. One of America's elite athletes is not going to be given a record because of 200 meters excess separation in a 5 km race. If the person hired to do the measurement had briefed the race director, we might be in a position of acknowledging a record, rather than denying it. In this instance, the measurer was given a fixed start and a fixed finish and supplied the race director with the course he asked for. Basil said the measurer should have informed the race director of the consequences of the separation greater than 30 percent, and that the course should have been remeasured.

Recent changes in keeping the course list were discussed. All 8000+ courses have been melded into one current list. A new "Status" column reveals whether a course is "A" (Active); "D" (Deleted); or "M" (No map on file.) This new list reflects all of the NRDC courses, as well as the current lists.

Linda Honikman repeated a need to keep the status of all courses up to date.

Jack Moran recommended that each state certifier be responsible for keeping his own state list in order. It was agreed that we would all pay attention to our individual lists in order to assist TACSTATS do their work more efficiently.

Proposed Amendment to Exempt the Marathon Distance from Rule 185.5 - Len Luchner, representing the Boston Athletic Association, requested the floor and was given time to address the committee. He began by reciting the history of Boston's course, as laid out in 1897, after the Greek Olympics of 1886. The start and finish were fixed to be adjacent to public transportation. Mr. Luchner agreed that 136 meter difference in elevation is a decided aid to runners, however he suggested that when elevation rises, it gives the effect of lengthening the course.

He said that since maximum aerobic performance cannot be maintained over the course of a marathon, he suggested that the present rule does not take into

consideration the physiological condition of the runners. Since only the marathon distance affects this condition of fall off of aerobic performance, he suggested that the marathon distance be exempted from records.

Pete Riegel replied that all RRTC work concerning slope and wind aid had been sent to BAA a year ago, and suggested that it might have been helpful had Boston shared this information, so that it might have been studied in a careful manner, instead of being put in a last-minute verbal "take it or leave it" manner. BAA has never communicated anything technical to RRTC, and we thus have no way to assess the worth of their arguments. Good technical work cannot be done at the last minute.

Basil Honikman, speaking as the Chairman of the Records Committee, asked whether Boston could recommend a technical way, based on this new information, to make records credible.

Len Luchner was then asked by Dan Brannen whether he was an advocate of the re-write of rule 185.5 -- and whether he proposed exempting the marathon distance, as well as distances beyond the marathon length. Luchner agreed that it would seem logical that ultra marathons also be exempted; however, he had no interest in anything beyond the marathon distance and had no opinion on ultras at the moment.

Benji Durden commented that the problem in marathons is not so much energy expenditure, as loss of elasticity of the muscles.

Bob Baumel asked whether the St. George Marathon course will become the record course of the future.

Alan Jones agreed that while downhill running is difficult, runners achieve their best times by 90 seconds when they run Boston, as compared to running anywhere else.

Ric Wilson commented that the situation with women's records at Boston seems to be reversed. Ten elite men tend to have PR's at Boston, while four elite women do not.

Pete said the question is: Do we want to accept records set on downhill courses? He commented that record times tend to be run on downhill courses, and calling them records is not good for the sport. It was mentioned that the first ten miles went in 46.50 this year at Boston, and that elite males almost always stagger in.

Dan Brannen remembers setting a PR at Boston -- as do lots of people. He believes the course is hard, but it gave him 2 minutes. In order to carry this to its logical extension, should we give a handicap to Elby's 10k?

Pete Riegel commented that the proposed rule change sounds like a bad idea. He hopes that the reasoning of RRTC will prevail. IAAF goes along with 185.5 as it stands, and they won't change. This will be seen as a Big Race putting pressure on TAC to repeal a sensible rule.

Basil Honikman pointed out that the BAA will always be the BAA, and just because a runner can't set a record won't change the tradition of Boston.

Finn Hansen said they have plenty of downhill courses in Utah, and that once runners train for a downhill run, they go fast; but untrained, it kills them.

Track Measurements - Finn Hansen reported that George Kleeman has been asked to head up a committee of equipment and facilities in order to come up with a procedure to measure tracks. Benji Durden recounted his use of a wheel while simulating a curb. If there is no curb, we should use the geometry available. When the race is run, put cones in place. Basil Honikman pointed out that NCAA rules do not require curbs. Ric Wilson commented that some track ends are not a perfect circle.

Bob Baumel commented that if a track looks like a semi-circular ends with two straightaways, it is probably accurate. But you cannot draw conclusions unless you've found the center. At Boulder a 220 track was found to be 190 metrs. What are we prepared to do? How do you adjust a track?

AC Linnerud offered that Division 1A tracks are usually fine, but high school tracks are consistently longer or shorter than they should be.

Ric Wilson cautioned that all tracks would be short if measurd to SPR -- if only 400 meters. Road records shouldn't count and an accumulation of laps would make a difference.

Pete Riegel summed up the problem: Since LDR people run on tracks, we often need to measure the tracks. We should find a method that is accurate enough to do the job, and reasonably simple. He believes that a good bike measurement may be the best way to measure a curved painted line.

Pete Riegel proposed that we pursue this in Measurement News to allow time to air all the differences of opinion throughout the entire committee. It is better to measure with a bicycle than to measure by assumption. So far, we've never had to validate a track. Wayne Nicoll reminded everyone to WALK the bike on the calibration and then WALK the bike around the track for a validation. The bike method is very accurate.

AC Linnerud has six tracks close by and will double check them this winter during a quiet time.

LDR Rule Consolidation - Basil Honikman requested opinions of RRTC, so he could bring our opinions to the Rules Committee. Basil commented that rules should have to do with guiding principles, not technical procedures. A diagram of a finish chute in the rule book which does not work will be deleted.

Proposed Removal of Separation Limit from Rule 185.5 - Sally Nicoll relayed that Steve Vaitones has proposed separation no longer be considered in race courses. This would eliminate the 30% rule.

Dan Brannen commented to Basil that if this rule were to pass and we considered 100% separation, how many courses are seriously wind aided? If this passed and a tailwinded 2:05 performance came up, we would have to accept it.

Misuse of "Certification Pending" - Wayne told that in the state of Delaware a promoter set up 10 summer events and advertised them all as TAC certified -- but only one was actually certified. It was not possible to pull their RRCA

sanctions and insurance, because the races were covered under an independent source of insurance.

Philip Greenwald commented that this is false advertising and is definitely not in the general interest of the sport. This belongs in regulations, not rules.

AC Linnerud commented that the RRCA recommends against the use of "certification pending."

On that note, the meeting adjourned at 10:55 pm.

TAC NATIONAL CONVENTION

Road Running Technical Committee Minutes - Nov 29, 1990

The meeting was called to order at 8:10 pm by chairman Pete Riegel.

Present were: Bob Baumel, John Boyle, Norm Brand, Dan Brannen, Felix Cichocki, Bill Grass, Norm Green, Finn Hansen, Basil Honikman, Linda Honikman, Clain Jones, Jim Knoedel, Bob Langenbach, Carole Langenbach, AC Linnerud, Jeanette MacDonald, Neil MacDonald, Mary Anne McBrayer, Tom McBrayer, Jack Moran, Sally Nicoll, Wayne Nicoll, Vic Owings, Ron Pate, Rick Recker, Joan Riegel, Pete Riegel, Chuck Shirk, Doug Thurston, Karen Wickiser, Mike Wickiser, Ric Wilson

Pete opened the meeting with an expression of thanks to all the certifiers who work so hard all during the year. "You all deserve much more than you get."

Special guest, Clain Jones, producer of Jones counters, was warmly welcomed. Clain, son of Alan Jones who invented of the committee's fundamental tool, is living in Seattle and working at an environmental engineering firm. Clain recalled how much he learned about business when he began assembling counters at age 9.

The meeting proceeded with unfinished business from the previous evening: Shall we assist foreign federations in getting their records recognized for races held in the USA? The RRTC's immediate reaction was that we're always glad to help. Sally Nicoll will pick an IAAF person to validate such a course should the occasion arise.

Finn Hansen commented that it is presumptous to assume other countries don't do something, just because we don't know about what they do. Foreign athletes can run anywhere. We need to make sure our races are certified, since we never know where a record may be set.

Norm Green agreed that if we expect help and support, we should reciprocate.

Wayne Nicoll suggested we put the question to Running Stats requesting an account of records broken by men and women around the world. To the question of why we would want to have US records set outside the country, Sally Nicoll replied that US athletes who run summer races overseas want to bring their marks back to this country.

Dan Brannen suggested we compare our runners and their road records to track

athletes and track records set outside the country.

Proposed Official Accreditations for RRTC Members. Wayne Nicoll presented a proposal to create official accreditation for RRTC people. In order to counter the difficulty some certifiers have in establishing their credibility among track officials, Wayne proposed four levels of certifiers, conforming to the four levels in existence in the present official structure:

1) Association Level - reviewer, apprentice certifier
2) National Level - certifier
3) Masters Level - Validators, as well as certifiers
4) IAAF Level - IAAF measurer

Since RRTC has a source of IAAF measurers, we would be training and accrediting a committee of road race officials. The national officials would not object to this. We would create a new LDR official along with a new finish line official. Wayne envisions this as an enhancement of the work within RRTC. It is his experience that race walkers like having certified road officials.

AC Linnerud wondered whether this would require a written exam. Wayne hoped that would not be necessary. Basic criteria would be met, and a selection committee would appoint the person possessing basic requirements along with years of experience.

Requesting clarification, Dan Brannen asked whether Wayne was proposing one reviewer for each state, as TAC is always short of officials. If each state has a certifier and all are happy with their jobs, there would be no oppportunity for advancement. Wayne pointed out that currently there are not enough final signatories to appoint one for each state. Wayne agreed that there is very little turnover.

Bob Baumel wondered whether RRTC would be under the officials committee. Wayne was not proposing this, and commented that we would be given credentials so track and field officials would understand our positions.

Sally Nicoll added that there are events primarily managed by T&F that attempted to handle their own certification. When they went to the road, it didn't work. If we had a badge, they would have called upon us to measure the road. If the IAAF system gets rolling, then everyone will know we have qualified road measurers -- now it's a SECRET!

Dan Brannen agreed that there's value in becoming a TAC official so people will pay attention to you.

Pete said that he's not opposed to Wayne's proposal. We want to do our job better and educate our people. Pete wondered whether we would find ourselves having to meet other people's standards.

Wayne proposed that we not do anything formal. He volunteered to continue cautious exploration of these suggestions, and we'll communicate further in MN.

The Great Seattle Measurement Contest: The floor was given to Bob and Carol Langenbach, who reported that 29 answers to the contest had been received. First place was awarded to Clain Jones; second place Tom Mayda; third place Bard

Horton. Tom and Bard are friends of Clain. The prizes were the most fun -- Clain received a jar of local honey, local jam, and other local confections. We were polite and didn't open Tom's or Bard's prizes, since they were't present. Fourth prize was awarded to Pete -- a wooden banana slug -- a creature much beloved by the locals. You have to see it to appreciate it -- this four-inch replica will live on the Riegel refrigerator. Mmmmmm. See complete results of the measurment challenge elsewhere in MN.

Computer timing. Alan Jones referred to his article in the last issue of MN. Discussion followed regarding a situation where watches were started manually after the race began and matched select times to the computer timer. Linda and Basil may need to add a caution that timers are not supposed to start a watch manually from another watch. The proper procedure is to have all watches start at the starting line and stopped at the finish line.

Basil related a need for many computers, but one Time Machine is all that is needed. Bob Baumel commented that often there are three Time Machines started by three people, but end up with 25 people, any one of whom may stop it.

Finish Line Manual. Is it time to rewrite our Finish Line Manual and add information about computers? It's a good book, but not used much. It was suggested that we write a chapter on computer timing, telling about actual problems and how they've been solved.

Measurement Fees. Ric Wilson wondered how members of the committee set their measurement fees. He was warned to ask a lot of questions to determine how much work is involved before quoting a fee. One measurer ended up measuring a marathon course three times because the race director kept changing his mind. That's a lot of work for a flat fee. Ron Pate suggested we withold the race certificate until payment is received. Many times races are measured for no fee -- RRCA clubs or local charities, for instance. But most times, the race director would rather pay someone to do the measurement, rather than learn to do it himself. All agreed we had to charge a nominal fee or we'd all be out every weekend measuring race courses gratis and would soon burn out.

At 9:45 pm the meeting officially adjourned.

Joan Riegel

1990 TAC CONVENTION MEASUREMENT CONTEST

Official distance = 660.619 meters

Measured by Bob Langenbach and Steve Berglund using calibrated bicycles.

	Estimated Meters	Error Meters	Percent Error	Place
Clain Jones	661.2	0.58	0.09	1
Tom Mayda	659.2	-1.42	-0.21	2
Bard Horton	657.5	-3.12	-0.47	3
Pete Riegel	657.17	-3.45	-0.52	4
Wayne Nicoll	664.21	3.59	0.54	5
Dave Gwyn	664.9	4.28	0.65	6
Tom McBrayer	654.65	-5.97	-0.90	7
Norm Brand (a)	654.65	-5.97	-0.90	8
Bob Baumel	654.6	-6.02	-0.91	9
Felix Cichocki	667.14	6.52	0.99	10
Basil Honikman	652.56	-8.06	-1.22	11
Alan Jones	669	8.38	1.27	12
Joan Riegel	651.35	-9.27	-1.40	13
Karen Wickiser	650.5	-10.12	-1.53	14
Justin Kuo	650	-10.62	-1.61	15
Mary Anne McBrayer	649.48	-11.14	-1.69	16
Rick Recker	647.64	-12.98	-1.96	17
Mike Wickiser	677.08	16.46	2.49	18
Finn Hansen	688.89	28.27	4.28	19
Haig Bohegian	705	44.38	6.72	20
Ron Pate	610.25	-50.37	-7.62	21
George Vernosky	841	180.38	27.30	22
Bob Boal	844	183.38	27.76	23
Jim Jacobs	846.5	185.88	28.14	24
Peter Torres Jr	880	219.38	33.21	25
Robert DeCelle (b)	1900	1239.38	187.61	26

(a) Used an unspecified method of measurement. Norm's usual "eye in the sky" method was unavailable due to part of the course passing through an underpass.

(b) Measured on Pine St instead of Pike St.

Once again the measurement contest provided the fun part of the RRTC meeting. Bob and Carole Langenbach, assisted by Steve Berglund, provided the absolutely accurate course for us to measure.

The contest was won for the second year in a row by a Jones. Clain and two of his friends swept the board, leaving all the RRTC hotshots skunked. To prevent Pete Riegel from his usual whining when he doesn't win, Bob awarded him a fourth place award, instead of giving a booby prize. Pete will display his lifelike replica of a banana slug on the bookcase in his office.

The top ten measurements were all within 1 percent of the correct value.

SUMMARY OF TAC CONVENTION PACING CONTESTS

Numbers shown below reflect the percent error of pacing measurements made by participants at the last four TAC National Conventions.

	1987	1988	1989	1990	Average
Marcia Baumel	0.02				0.02
Clain Jones				0.09	0.09
Mary Anne McBrayer	-2.91	0.14	4.06	-1.69	-0.10
Pete Riegel	-1.00	0.95	0.08	-0.52	-0.12
Dan Brannen		-0.21			-0.21
Tom Mayda				-0.21	-0.21
Jim Brown			0.36		0.36
Bard Horton				-0.47	-0.47
Stephen Tabb	0.62				0.62
Alan Jones			0.01	1.27	0.64
Dave Gwyn	-3.33		4.91	0.65	0.74
Bob Thurston		0.84			0.84
Jim Smith	0.86				0.86
Joan Riegel		1.74	-3.35	-1.40	-1.00
Rick Recker	-0.79	-2.22	-0.17	-1.96	-1.29
Bob Baumel	0.07		-3.03	-0.91	-1.29
Bob Langenbach	-0.66		3.50		1.42
Tom Knight	1.50				1.50
Karen Wickiser				-1.53	-1.53
Larry Schloss			2.07		2.07
Tom McBrayer	-3.66	-2.38	-1.48	-0.90	-2.11
Basil Honikman			5.67	-1.22	2.23
Mike Wickiser				2.49	2.49
Felix Cichocki	2.14	0.76	6.51	0.99	2.60
Finn Hansen	3.31	4.16	-1.02	4.28	2.69
Ben Hablutzel	-3.05				-3.05
Wayne Nicoll	-1.11		-10.34	0.54	-3.63
Miriam Gomez		-3.86			-3.86
John Dunaway			4.58		4.58
Margaret Brooke	-6.52				-6.52
Nick Brooke	-6.61				-6.61
Haig Bohegian				6.72	6.72
Ron Pate				-7.62	-7.62
Justin Kuo			17.14	-1.61	7.77
Norm Brand	41.61	8.07	0.80	-0.90	12.40
George Vernosky				27.30	27.30
Bob Boal				27.76	27.76
Jim Jacobs				28.14	28.14
Peter Torres Jr				33.21	33.21
Robert DeCelle				187.61	187.61

The Rundown Jan 91
By Wayne B. Nicoll

This past month we attended The Athletics Congress (TAC/USA) Convention in Seattle. The TAC Rule 185.5, which deals with the standards for road race courses, came under intense fire as predicted. The rule requires that to be records-eligible the course must not drop more than 1 meter per kilometer and the distance between the start and finish must not exceed 30% of the race distance. Additionally, if a course meets the drop requirement but is over the spread of 30%, the race may arrange with the Road Running Technical Committee (RRTC) to collect wind data. If the data shows there was no significant advantage from wind on the course, any record performance on the course could be favorably considered for ratification.

The first encounter over the rule occurred in the Records Committee. A representative of the Chicago Old Style Marathon companion event, the Rogaine 5K, was present to appeal the decision of the RRTC and the Records Committee to deny the "World Record" claimed by the race. Francie Larrieu Smith had set a possible World Best and US Womens Open 5K road record with a time of 15:05. There was no problem with elevation drop. The course, run along Lake Michigan, was quite flat but the start-to-finish distance exceeded the 30% by a small amount. It is currently believed to be about 33.5 %. The discussion centered around the reason the race had elected to start and finish with that much spread between the start and finish points. Since the race had a highly competent technical director, and the measurer/certifier was equally as competent, it was puzzling why the two had not conferred on the need to insure the course was ready for a record assault. It appears the offer for a $25,000 bonus was not well publicized and was not known to the measurer/certifier when he laid the course.

There were several aspects of the conduct of the race that further confused the picture. The race was started 34 meters back from the certified start, which meant Francie ran that extra distance. The additional distance threw off the times at the clock at the mile point, causing the runners to think they were moving slower than the actual pace. The 2 Mile clock was not at the two mile mark but was placed at the "one mile to go" mark, thoroughly confusing the elite runners. The clock errors seemed to work to Francie's advantage, forcing her to run faster and resulting in the remarkable performance. Since the course start-to-finish distance exceeded the 30%, we then focused our attention on the wind data. The race staff provided weather station data showing a steady wind of 8MPH out of the northwest. Since most of the race path was southerly and easterly in direction, it was apparent the runners had a significantly high tail wind for about 2.5 miles of the race. The record consideration was tabled to allow the race staff to employ a surveyor to determine the exact distance from the start to the finish.

There is a lesson in this incident. Since the proposed amendments were tabled for another year, it behooves race directors, measurers, and elite athletes to be especially aware of drop, separation, and wind data requirements when a race is preparing for a possible record breaking performance. Think in terms of the "records capturing process". If you do not understand the details, locate someone who does. Talk to your regional certifier or call or write to me. Sally and I are well versed on this subject and can provide sound guidance.

The controversial rule withstood a barrage of criticism from the Boston contingent. Their tactics were to speak rapidly and forcefully against the rule in every committee meeting considering the proposals to (1) eliminate the wind factor from course standards, or (2) to abolish course standards for the marathon distance. Their blitzing techniques were quite successful, creating the appearance that technically they knew what they were talking about and creating emotional reactions among those who believed them. A proposal to eliminate the separation standard went to a nail biting vote in the Mens Long Distance Running Committee and was defeated 23-20. This proposal and the other on exempting marathons from standards, were eventually withdrawn upon an agreement to create a panel to develop a compromise solution over the next year. I am predicting the compromise will be a return to dual sets of records for aided and unaided courses, in my opinion, a serious step backward in road record keeping. The action will create confusion on the international scene as the International Amateur Athletic Federation (IAAF) Council has already agreed to adopt our current drop and separation standards to create a formal World Road Records program.

One really nice development at the Convention was the ratification (at last!) of eighty Masters racewalk records. It is a project that Sally and I have worked on since we first began attending TAC Conventions. The records are the result of hard nosed confirmation of the judging, timing, recording, and course certification standards of the events. There will be a few screams from masters racewalkers who claim to have faster times, but in most cases their performance was in a race in which the standards were not met or adequate documentation cannot be located. There were a similar number of records held as pending, waiting for information that could lead to their ratification next year. Thanks to Sally Nicoll, Don Henry, (the recently appointed TACSTATS Masters race walk records keeper), and his wife, Marie, masters walkers will now have their own ratified records section in the TAC/USA rule book.

Smith's hair-raising run clips 5K field

By Dan Bickley

Money helps make the world go around for Francie Larrieu-Smith. Pretty fast, too.

Setting a world record, Smith won the Rogaine 5K in 15:05 Sunday, pocketing the $3,500 first prize and a $25,000 bonus for shattering the mark of 15:19 set by Lynn Williams in 1988.

"It's terrible to admit, but when there's such an enormous bonus, it helps a bit, no doubt," Smith said.

The 37-year-old Dallas resident also benefitted from faulty time clocks that led Smith to believe she was spinning her wheels.

"I went out really hard, but I looked at my split times and I thought I was behind my pace," Smith said. "So I kept pushing, pushing and pushing. It wasn't until I made the final turn and saw the clock that I knew I was OK. The split times were wrong, but as it turns out, that helped me."

The bonus was implemented late in the week, but Smith already had planned on gunning for the world record—even though her personal best of 15:15 was on the track, not the road.

"I was going after the record, I was in that kind of shape," Smith said. "I normally don't run 5K's on the road, but this fit perfectly into my schedule. And I couldn't be in better shape.

"I thought I was running in the 15:10-15:20 area. I have the time clocks to thank for that."

Annette Peters of Oregon finished second (15:38) and Shelly Steely of New Mexico took third (15:39). Lisa Weidenbach, one of the pre-race favorites, finished fifth (15:44).

Terry Brahm of Indiana won the men's division in 13:51, edging Aaron Ramirez (13:52) and Timothy Hacker (13:53).

"I knew the race would be a flyer and I got out quick," Brahm said. "I wanted to make sure it was a quick pace, I wanted to make it an honest race."

Brahm, a former NCAA champion at Indiana and member of the 1988 Olympic team, led from the start.

"The top runners from all over were here and you can't help but get pumped up for that," Brahm said. "But you have to remember that it's an unusual time of the year because it's late in the season and some guys have just taken time off. It's like playing Russian Roulette."

Jim Spivey of Glen Ellyn finished sixth (13:57).

CHICAGO SUN-TIMES October 29, 1990

CHICAGO SUN-TIMES October 30, 1990

World mark in 5K unlikely, but Smith sure to get bonus

Francie Larrieu-Smith's winning time of 15:05 in Sunday's Rogaine 5K road race probably will not be recognized as a world record.

But the Chicago Marathon office said Smith still will receive the $25,000 bonus for breaking the mark of 15:19 set last year.

"Even if [The Athletics Congress] says it's not a world record, we will pay Francie," spokesman Bob Walz said. "The course was 3.1 miles, we did everything by TAC guidelines, she tested for drugs and all that. Francie is going to get the money."

Jay Wight, the Illinois course certifier for TAC, measured the course using geological maps after the race and found there were 1,700 meters between start and finish. TAC's guidelines state 1,500 meters is the maximum distance allowed between points so that the course can't be predominantly in one direction.

"Given the numbers that we've been able to present so far, the course does not meet current TAC guidelines," Wight said.

Wight says the difference isn't great, but the primary direction of the race was northwest.

"And that's exactly the direction the wind was out of [at approximately 12-14 m.p.h.]," Wight said. "That certainly won't help their case. But I would encourage the marathon office to submit it and see what happens."

Dan Bickley

USA TODAY October 29, 1990

Misplaced clocks push Smith in 5K

By Dick Patrick
USA TODAY

CHICAGO — At first, Francie Larrieu Smith thought she was having a bad day. The clock at the first mile marker read 4:57. "It felt 4:50, maybe 4:45," Smith said.

As it turned out, the clocks were misplaced. Smith felt much better after winning Sunday's Rogaine 5K. Her 15:05

NOTES

bettered the world-best (15:19) of Canada's Lynn Williams and earned Smith a $25,000 bonus along with the $3,500 first-place money.

"Francie was flying," said Terry Brahm, the men's winner (13:51). "She was getting ready to pass us."

Said Smith: "I guess I have those clocks to thank for running faster. I kept pushing, pushing, pushing, thinking I was behind pace. It's terrible to admit it, but when there's an enormous bonus and you're close to it, it helps."

Larrieu-Smith, 37, a four-time Olympian, now considers herself a marathoner. "But this is my speed season," she said. "I can't wait to see what I run next week."

Next is the Senior Bowl 10K in Mobile, Ala., which will end a successful speed season. Two weeks ago, Smith was second in the World 15K Championship in Dublin and last weekend won a 5K in 15:32 in her hometown of Dallas. After a short rest, she'll start training for April's London Marathon.

"My greatest fear is that I don't know when I'll stop running better," Smith said.

4419 Thornbark Court
Hoffman Estates, Illinois 60195

November 6, 1990

Mr. Pete Kozura
Chicago Marathon
214 West Erie
Chicago, Illinois 60610

Dear Pete,

As discussed, at your request I performed a validation measurement of the Rogaine 5K course (IL-90052-JW) on Sunday, November 4, 1990. The purpose of this measurement was to answer questions regarding the conduct of the race and to provide more information concerning the apparent world best 5K established by Francie Larrieu-Smith over the course on Sunday, October 28, 1990.

I followed procedures that would normally be used to validate a course on which it had been reported a world or national record had been set. Were this an actual TAC- ordered validation another measurer would be assigned since I originally measured the course, but otherwise the procedures were the same. The bicycle was calibrated on the Grant Park calibration course, the course was measured once from the actual start to the actual finish, the bicycle was recalibrated over the same calibration course, and the length of the course was then calculated. A copy of the completed validation form is included as part of this report. In addition, a reading of the Jones Counter was taken every time the course substantially changed direction so that a better assessment could be made of the effect of the wind on the conduct of the race.

The results are shown on the first attached sheet and are grapically displayed on the attached copy of the course map. The course measured out to 5039 meters, 39 meters longer than advertised. Five meters of that is due to the "Short Course Prevention Factor" (SCPF) of one meter per thousand incorporated into all TAC certified courses. While a pre-event course measurement for certification includes the SCPF in the measurement constant, a post-event validation measurement of a previously certified course does not. The other 34 meters was a result of starting the race at the north edge of the crosswalk between Daley Plaza and the City-County building in the middle of the block between Randolph and Washington as opposed to the starting point as measured and documented on the certificate. The actual starting point (as well as any other observations on the conduct of the race) was determined from repeated viewing of a videotape of the WGN-TV telecast of the race.

One of the question marks raised about the race was that the time at the one mile split was higher than the pace felt to the elite runners. My validation ride showed the marked mile point to be 1645 meters past the actual start. A mile is 1609.34 meters; if you add 1.6 meters for the SCPF and 34 meters for the additional distance at the start you get approximately 1645 meters. While the WGN camera angle made it impossible to determine the exact location of the clock, I am reasonably certain that it was in the correct location.

Dividing the 5039 meter length by the men's winner's unofficial time of 13:51.7 yields an average pace over the entire distance of 4:25.6 per mile. This equates to a speed of approximately 6 meters per second. The time reported for the lead pack at the one mile mark was approximately 4:40, or some 15 seconds more than the average pace per mile. Approximately six seconds of that is the 34 extra meters at the start. I would suspect that the other nine seconds was lost to the two bridges and their approaches, the hill from Michigan Avenue up to the mile mark, and the three 90 degree turns in the first mile.

Another discrepancy that was brought to my attention was the 9:31 split at the two mile clock. Again it was impossible to determine from the videotape whether or not the clock had been placed at exactly the measured two mile mark, but it is fairly certain that given the first mile pace the runners did not run a 4:51 second mile. During my ride Sunday I took a measurement of the two mile mark to determine if it had been placed in the proper location. That measurement showed the two mile mark to be 3255 meters from the measured start. That works out to 3218.7 meters of course, 3.2 meters of SCPF, and 34 meters of extra distance. Once again it appears that the split point as described on the certificate was in the

right place. It should be noted that a trained eye can pick out that the two-mile clock was placed south of Jackson while the certificate definitely placed the two-mile mark toward the center of the block between Monroe and Jackson.

During Sunday's remeasurement we hit a red light on Lake Shore Drive at Monroe so I took a reading of the Jones Counter there. I made no such measurements at Jackson or Balbo but scaling from a map shows the distance from Monroe to Jackson to be approximately 290 meters and the distance from Jackson to Balbo to be approximately 590 meters. Buckingham Fountain sits in the middle of the block between Jackson and Balbo and is thus approximately 295 meters from either. It is fairly easy to pick out on the videotape due to the two crosswalks across Lake Shore Drive immediately east of the fountain. The angle of the WGN camera does not show decisively to the exact second when the lead runner passed each intersection but after viewing the videotape a number of times and a couple of rides over the course it appears that the lead pack passed Monroe (3081 m) at approximately 8:35, Jackson (3371 m) at 9:20, Buckingham Fountain (3666 m) at 10:11, and Balbo (3961 m) at 10:55. That makes the average pace per mile to those points 4:29.0, 4:27.3, 4:28.2, and 4:26.1, respectively. I would propose that those average mile paces are close enough to lend credibility to the observed split times. The average of those four is 4:27.7; at that pace the runners would have covered the 3255 meters to the two-mile mark in 9:01.3 and thus the distance from the one mile mark to the measured two mile mark in approximately 4:20. This is not unrealistic considering that the second mile is mostly downhill and has only one turn.

One observer who spoke with Jim Spivey after the race told me that Spivey thought the race had been measured backwards and marked accordingly meaning that the mile mark as the course was run was the two mile mark as it was measured and vice versa. I think I have demonstrated that that didn't happen, but it does appear that the two mile clock may have been placed at the "One Mile To Go" point on the marathon course (which, of course, is also one mile to go in the 5K). This can be checked a couple of ways; the first would be to say that it would take the lead runners approximately 29 seconds to cover the 172 meters between the two points and the observed time at the clock was 9:31 as opposed to the 9:01 calculated two mile time. Another way would be to take our 4:27.7 average and extrapolate it to 3427 meters (3255 at two miles plus 172) in which case you calculate a time of 9:30.1 at the "One Mile To Go" point. Given the inherent inaccuracies in our observations and methods those numbers are close enough to conclude that it is more likely than not that the two mile clock was mistakenly placed at the "One Mile To Go" mark and the times were off accordingly. Thus it appears Mr. Spivey's observation was correct in that the two mile clock was one mile from the finish instead of two miles from the start.

My understanding is that you have measured (on a map) the straight line distance between start and finish to be over 1600 meters which still leaves it at over 30% of the race distance. My measurements on the maps I have all show it to be over 1700 meters. Should you apply for a record and the start/finish separation issue be resolved in the race (and the runner's) favor another validator will be assigned to ride the course as I rode it last Sunday. That validator 's primary objective, however, will be only to determine the distance between start and finish. Hopefully they'll have better weather than I had.

The ride Sunday and the subsequent analysis cleared up a lot of the questions I had regarding the course and the conduct of the event. Hopefully it will do the same for you and the race staff. while my views here are by no means unbiased I am quite confident that another experienced course measurer would generate very similar results. I appreciate the opportunity to assist once more with this event and wish you the best of fortune as you plan the 1991 events. Please direct your inquiries to my attention.

Respectfully submitted,

Jay W. Wight
Regional Certifier
RRTC/TAC

cc: Wayne Nicoll
Pete Riegel
Ray Vandersteen

THE ATHLETICS CONGRESS
OF THE USA

3354 Kirkham Road
Columbus, OH 43221

Road Running Technical Committee
Peter S. Riegel, Chairman

614-451-5617 (home)
614-424-4009 (office)
FAX 614-424-5263

November 12, 1990

Jay Wight - 4419 Thornbark Court - Hoffman Estates, IL 60195

Dear Jay,

You have my sympathy concerning the Rogaine thing. It has to have been a major headache for you. It's easy to apply hindsight to the whole thing, and figure out what you might have done. On the other hand, you gave the customer what he asked for. Then it looks like he didn't even use the course you laid out. Lengthening the course without adjusting the miles certainly would produce strange splits, especially when they didn't even put the markers in the right place.

It's frustrating to see a race misuse a course one has laid out. The runners notice the irregularities, and the measurer is assumed to have dropped the ball, which isn't always so. I've winced on numerous occasions when I've run a course I've measured, and they set it up wrong. Without getting heavily involved in the race, I see no easy solution.

The lesson from this is that we should be wary on future measurements. The race people may not be aware of the consequences of a non-standard course, and when we know enough to warn them, we should. We may not always know, however. I've measured many courses without having a good map handy to check the separation. If one is warned well in advance that the customer wants a record-quality course, one can prepare with maps etc. Usually it's not such a borderline thing.

By the way, I spoke to Francie at Columbus, and the subject of wind came up. She allowed as how there was a good tailwind for about a mile of the course. I'd guess it was blowing from the north on Lake Shore Drive.

As time goes by these occurrences should decrease. Your experience should serve to warn us all. I'm sorry you got caught in the middle on this.

Best regards,

Pete

xc: Nicoll

29,Rookhope,
Rickleton,
Washington,
Tyne & Wear,
NE38 9HW

Tel No: 091 4153379 (Home)
091 4557911 ext 201 (Work)
091 4271880 (Fax)
091 4150796 (Fax)

19th. Oct. 1990

Dear Pete,

More measurement reports for your files, including two amended sheets for the Great North Run where I made a few errors transposing information from my hand book to the word processor.

My latest assignments in Dublin and Carpi were quite different. In Carpi I received complete cooperation from the Italian officials, whereas in Ireland I was looked upon as a hindrance.

My first mistake on arriving in Dublin was not accepting a pint of Guinness, I think this offended them before I had even started the measurement. I then requested to check an EDM baseline which had been set out especially for the course measurement, and I was promptly accused of doubting the work of "the finest surveyor in all Ireland". As I expected the course turned out to be short, but as I was to return to verify the course on the day of the race, we agreed that an area would be coned off so the runners would run wide and make up the required distance. I had made some preliminary measurements at the designated spot and returned home where I carried out some calculations in order that I may set out a curve of a constant radius on my return. On my return this correction had already been applied which I duly checked and confirmed, but included quite a tight turn. Whilst the accuracy of the course was never in doubt, the race organisors didn't seem to have the runners interests at heart, and weren't prepared to listen to reason.

I include a sketch of my course correction by curves and chords which I intend to write up for inclusion in **Measurement News**, it should make interesting reading.

My report on the measurement of the Italian Marathon course is quite detailed. They seemed very keen to learn the principles of course measurement, but lacked two basic essentials, fitness to ride 26 miles on a bicycle, and commitment to see the job through.

I could almost write a book on my recent course measurement exploits, particularly those in Dublin, but time is short and I don't want to bore you. I will however devote some time to an article for "MN".

Kindest Regards.

Paul.

Paul Hodgson
AIMS / IAAF Approved
Course Measurer.

COURSE CORRECTION USING CHORDS & CURVES

By
Paul Hodgson

On a recent course measurement assignment I was posed an interesting problem. The course which was to be over a distance of 15k, consisted of four complete laps with a common Start/Finish line. On completion of my measurement I discovered that the course was 52m short, which meant that the lap distance needed to be increased by 13m.

I decided to use some basic surveying principles and set out a curve of a constant radius in applying the course correction, and in the process assist the runners by eliminating two tight turns.

Using a steel tape I measured along the initial runners path "A"-"B" which was to be the chord of the curve to be established. Assuming the runners enter and exit the original turn a 45° this would give a Deflection Angle θ of 90°, the radius of the curve could then be calculated :-

$$\text{Radius of Curve A-O} = \frac{AM}{\text{Sin } (\theta \times 0.5)} = \frac{57.5}{\text{Sin } 45°}$$

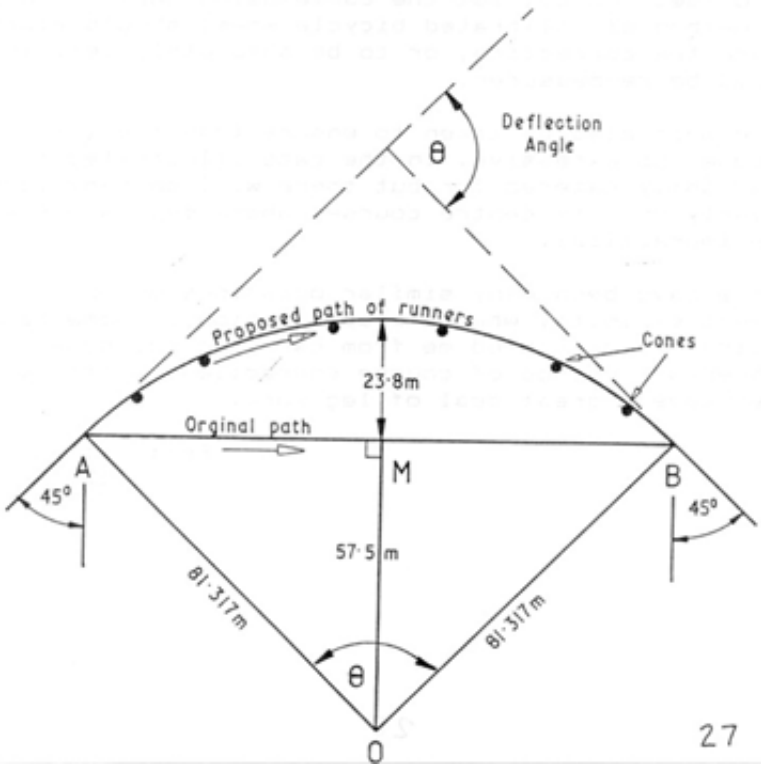
$$\underline{\text{A-O} = 81.317\text{m}}$$

The new route or curved length A-B, can the be deduced:-

Curved length A-B = Radius of curve x θ Radians.

$$\text{A-B} = 81.317\text{m} \times \frac{\pi}{2} \text{ Radians}$$

$$\underline{\text{A-B} = 127.73\text{m}}$$



As the original route A-B was measured at 115m, the new curved path resulted in the course being increased by (127.73-115) = 12.73m.

The maximum offset (i.e. at the mid point of the curve M) =

= Radius of the curve - MO

= 81.317m - 57.5m

= 23.817m

An alternative approach to the problem would be as follows:- Knowing each lap has to be increased by exactly 13m, the proposed curved length A-B should be (115+13) = 128m

The radius of the curve could the be re-calculated :-

$$A\text{-}O = \frac{128}{90°(\text{Radians})}$$

A-O = 81.487m

If the radius of the curve is large or a greater accuracy is required when setting out the arc, additional offsets can be determined from various points along the chord. Or alternatively a number of shorter chords could be set out.

The prescribed method of using curves for course correction should only be used as a guide. In practise having established the maximum offset and set out the curve using marker cones, the Jones Counter method of calibrated bicycle wheel should always be used to measure the correction, or to be absolutely certain the amended lap should be re-measured.

Care must also be taken to ensure that the maximum offset does become too excessive. In the case illustrated an offset of 23m, was easily catered for but there will be many locations particularly on city centre courses where such a large offset would be impractical.

There have been many similar occasions during my course measurement exploits, when the application of some basic mathematics has prevented me from carrying out some laborious "trial & error" method of course correction. A little brain work can often save a great deal of leg work.

Ref:- a:\pw\chorcurv
12.12.90

3717 Wildwood Drive
Endwell, NY 13870
December 12, 1990
(607) 754-2339

Peter S. Riegel
3354 Kirkham Road
Columbus, OH 43221

Dear Pete,

It was fun seeing the gang again in Seattle. Clain really got a kick out of winning the measurement contest. I still don't know how those three guys did it? I went around the thing 3 times and did a whole bunch of calibration walks. However, I had a consistent error. I must walk at a different pace on the calibration than I do on the course. Guess I'll have to go back to my heel-to-toe method!

Here is my report for the year:

When the Boston controversy arose early in 1990, I determined the Boston profile from U.S.G.S. topographic maps and wrote an article which appeared in *Measurement News* on the amount of aid one can expect to receive from the Boston course. Some of this information was later merged with input from Bob Baumel to produce another article for *Measurement News*.

A report was written on computer timing of races which appeared in the November 1990 *Measurement News*. A slightly shortened version also appeared in the November/December issue of TACTIMES. There has been some confusion about whether computers can be used for timing. I believe these articles plus a statement of policy by TACSTATS in TACTIMES has helped clear up the situation.

Alan

Alan Jones

Course Registrar's Annual Report .,.....Joan Riegel

The course list grew at a rate of about 100 per month during 1990. In October, all 8000+ courses were melded into one list, making it possible to look up a course from only one source. A new "status" column signifies a course as "A" (Active); "D" (Deleted); or "M" (no Map on file.) This new list incorporates all of the NRDC courses, as well as the current lists. I hope this helps you.

I look forward to meeting all of you at the TAC convention. It is difficult to draw a full picture of the certifiers from only their handwriting or the width of their penstrokes. Each of you has your own style of presenting a certificate, and it's always fun to match an entire person to our written communications. Please call or write me if I can help you in any way.

1990 ANNUAL REPORT — VICE CHAIRMAN WEST

Administratively, the biggest change in the West this year was the addition of a new State: By the map, **Louisiana** is (mostly) west of the Mississippi, but by historical accident, it had been an "eastern" state in RRTC. But this year, after Basil Honikman moved westward and Doug Loeffler assumed certifier duties for Florida, it left a vacancy in Louisiana—which was filled by **Tom McBrayer** who added it to his already busy job as Texas certifier.

No other western states acquired new certifiers this year, but apprentice certifiers in three states were promoted to Final Signatory. These were **Frederic Wilson** in Alaska, **Lee Barrett** in Oregon, and **Michael Franke** in Iowa.

The IAAF Measurement Seminar in Columbus, OH this past June was attended by more Easterners than Westerners. But three western certifiers, namely **Tom Knight, Tom McBrayer**, and **Bob Baumel**, did attend and were elevated to the status of "IAAF Approved Measurer."

Most of my other RRTC-related activities this past year were visible in the pages of *Measurement News*. The greatest effort was the continuing work to model effects of hills, wind, etc., in relation to last year's change to Rule 185.5 (or what has unfortunately become known as the "Boston controversy"). Early this year, Alan Jones, Pete Riegel, and I collaborated extensively on this subject, culminating in the jointly-authored article by Alan and myself in Mar 90 MN calculating the likely effect of the Boston Marathon's precise pattern of uphills and downhills on an optimally-paced performance.

Another topic that occupied some of my time in thought and correspondence this year was *track measurement*. This prompted me to write the instruction sheet on track measurement printed in Sept 90 MN.

In May 90 MN, I wrote three essays concerning various aspects of the IAAF road course measurement program. It is unclear what effect these missives will have on IAAF. But closer to home, I also wrote a proposal (published in Nov 90 MN) to establish a clear procedure for adjusting courses after TAC validations. This proposal was adopted as RRTC policy at the 1990 TAC Convention in Seattle.

Bob Baumel

Bob Baumel
VC-West, RRTC
December 16, 1990

The Athletics Congress of the USA

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

Annual Report - Vice Chairman East, RRTC

The following is a report on the activities of the office of the Vice Chairman - East, Road Running Technical Committee, TAC/USA, for the year 1990.

Living in New England, the early part of 1990 was dominated by the Boston running community reaction to their perceived effect of new rule 185.5 upon the Boston Marathon. The flurry of unfair accusations and inaccurate information released by the national media kept me busy countering with the truth. Life in this region was difficult for a while for RRTC members. I stand solidly behind the rule as it was written and accepted by The Athletics Congress at the '89 Convention. The Boston Marathon people have proposed a rule change that would eliminate marathons from the usual rules applied to records eligibility. I oppose their suggested rule change.

Although liberalized in the 1989 version of rule 185.5, the separation aspect of the rule was brought to the attention of the media in November when Francie Larrieu Smith ran a 15:05 at the Rogaine 5K in Chicago. The course was measured by Jay Wight, IL Certifier, and it had negligible drop but a 34% spread between start and finish. The start and finish locations were selected by the race organizers. This was the first time the 30% separation as a limiting factor for records eligibility has come to the attention of the press.

Sally Nicoll (Validations Chairman, RRTC) and I attended several major running events to assist with preparations for the records capturing process, including the Red Lobster 10K, the Freihofers Run For Women 5K, and the TAC/USA Mens 5K Championships at Nashville, TN. We also participated in a Race Directors Seminar held in conjunction with the New Bedford Half Marathon in Massachusetts.

I continued to serve on the Ad Hoc LDR Officials Committee. There has been some correspondence generated but very little actual progress in the formalization of TAC/USA officials for road running and walking events. I remain very interested in this project and am eager to see progress in this area. A committee meeting is planned at the 1990 convention. In addition to the need for trained accredited TAC officials at road run and walking events, I would favor the formalization of four levels of officials within the RRTC. I suggest the following titles: Reviewer (equivalent of Association level in the TAC Officials scheme), Certifier (equivalent of National level), Validator (equivalent of Master level TAC Official), and IAAF Measurer (equivalent of IAAF Official). By creating formal accredited TAC Official positions the ability of certifiers to deal with other TAC officials, particularly those not familiar with road course certification procedures, would be greatly enhanced.

Sally and I attended the IAAF Measurers Seminar in Columbus, OH, a highly successful event managed and hosted by Pete and Joan Riegel. I was tested along with other USA and Canadian participants. Sally assisted Joan Riegel with seminar logistic details. The event proved invaluable to all who attended.

I continued testing of the Jones Counter II, a handle bar mounted counter built by Alan Jones from K-Mart bicycle parts. Despite a few adjustment problems initially, the counter performed well during the past summer. Many thanks to Mike Wickiser, IN Certifier, for his assistance in mounting the device on my bike. I am concerned the poor quality of the parts will result in early failure. A device fabricated from quality parts could possibly be a great improvement over the original counter. I would like to express my appreciation for the work done by Chuck Hinde, an Illinois measurer, in his development of a steel cable for calibration course measuring. My thanks to Pete for his guidance to Chuck, and to Bill Grass, WI certifier, for his interest and continued testing of the cable.

A planned trip to Argentina with Doug Loeffler, FL Certifier, to conduct a IAAF South American Measurers Workshop was marred by a cancellation of my flight from Miami to Buenos Aires. The re-scheduled flight was too late to make connections to the training site. Doug had arrived a day early and successfully conducted the workshop on his own.

John Sissala, MD Certifier, was appointed a Final Signatory for Maryland. Bob Harrison of Montgomery AL was appointed as MS Reviewer and Elizabeth Longton of Clarksville, TN, is being appointed as the Reviewer for TN. Elizabeth, following Amy Morss, NY Certifier, will be our second woman certifier. I am continuing to serve as certifier for MA, RI, DE, amd GA, generating about 100 certificates in those states this year.

Several discussions arose this year regarding the measurement of tracks. There is recurring interest in the certification of tracks. Pete Riegel has proposed a method of measuring uncurbed tracks with a bicycle. This will be discussed at the convention and I support the procedure as outlined.

The high quality of the work done by the certifiers in the East continues to be impressive. Since the last report, over 500 new certificates have crossed my desk. The numbers of measurers successfully guided through the measurement process continues to grow steadily. The certifiers are improving their communication with other TAC/USA officials, the RRCA community, and the running public. My heartfelt thanks for their invaluable volunteer contributions to the course certification program.

Respectfully submitted,

Wayne B. Nicoll

The Athletics Congress of the USA

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.

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

Validation Report 1990

In the period since I last reported to RRTC, I have processed 46 validations. Eight of the 46 were based on evidence and/or affidavits submitted showing proper use of a course which had previously been validated. Two assignments still not completed will bring the total to 48. Percentages of acceptability ran high with 44 of the 46 courses found to be within the advertised distance. One of the two outside the acceptable range was a loop used for a time defined event. The distances covered by the participants were recalculated with no resulting loss of records for the athletes involved. The other course was clearly short due to incorrect use of the certified path by a second party.

The validations reported on the accompanying table were conducted by 11 RRTC certifiers, several of whom covered more than one validation in a single trip. Probably the most significant validation was of the 1989 London Marathon which allowed Peterson's mark to be presented this year for US Record - the first foreign event to meet all US ratification requirements. Funding for validations outside the continental US remains a problem, however, with the increased activity of IAAF in developing a pool of international validators we may be able to have a reciprocal system in the near future. Following the IAAF Qualifying Clinic held in Columbus, Ohio this summer, I have assigned validators who met the IAAF qualification to events where the performances of foreign athletes might be a consideration.

Apart from the normal duties of the Validations Chairman, I presented workshops on the records capturing system to race director's seminars conducted by The New England Athletics Congress and the Maine Track Club. I attended the IAAF workshop in Columbus, and the RRCA National Convention in Miami (which I combined with several workdays with TACSTATS prior to their move to California).

During the year I consulted periodically with Master's LDR, Men's LDR and Race Walk to determine the status of their various National Championship events. Additionally I worked with Race Walk on the initiation of a system to recognize Masters Records and advised on some rules changes which are before this Convention which should help expedite that process.

It is very encouraging to note that several significant national events have requested guidance prior to race day on

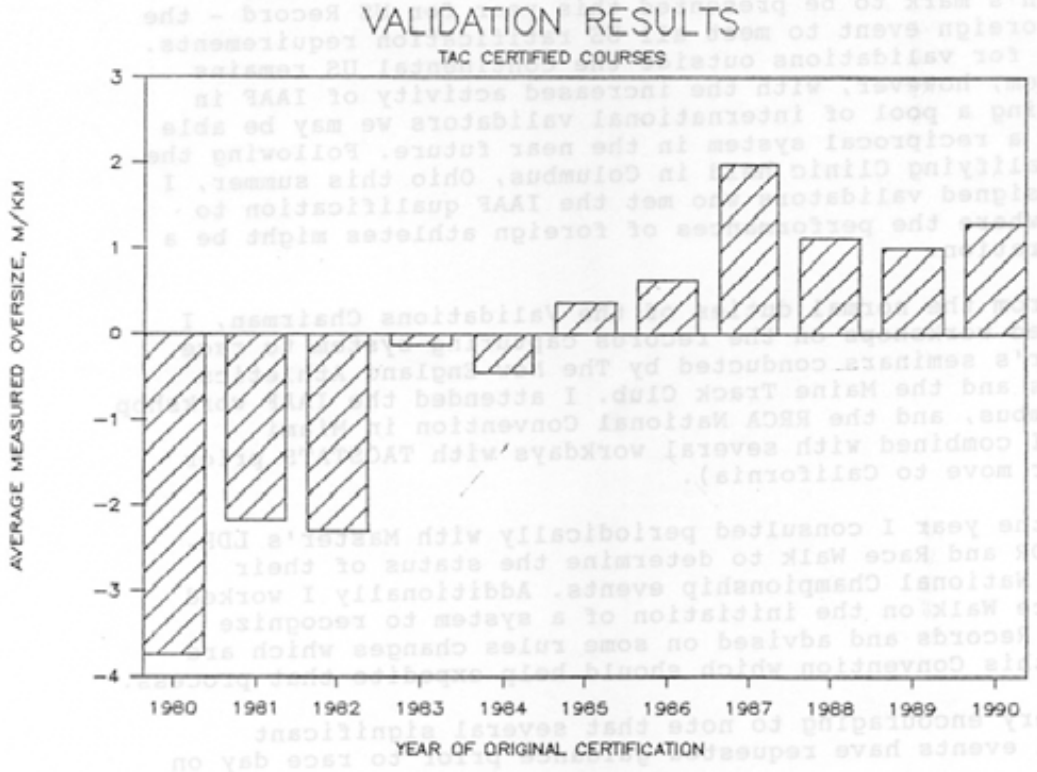
how to meet validation requirements on race day to insure proper press for the athlete if any records were set. Significant among these races in 1990 were Red Lobster 10K, Freihofer's 5K, Cherry Blossom 10 Mile, Nike Women's 8K, Music City 5K, and The City Of Alhambra Moonlight 8K. It was my privilege to be asked to officiate on race day for records purposes at three TAC National Championships: Red Lobster, Freihofer's, and Music City.

Thank you to all the RRTC members who assisted me with information, advice, and validations assignments throughout the year. It is not only a pleasure to work with you - it's fun!

Respectfully submitted,

Sally H. Nicoll

Sally H. Nicoll
Validations Chairman



November 14, 1990

ANNUAL REPORT
Validations Chairman, RRTC

The table presented below reflects: (a) the course validation activity for 1990, (b) 1989 validations completed after the 1989 report was prepared and (c) assignments currently in progress.

DISTANCE	ID#	NAME	MEASURER	VALIDATOR	DATE	LENGTH
1000m	IL90009JW	Highland PK	J. Wight	M. Wickiser	10/7/90	10034.06
1250m	FL90004DL	FL Ave Walk	D. Loeffler	W. Nicoll	8/28/90	1251.56
1 Mi	NY87002DB	Sri Chinmoy	D. Brannen	W. Nicoll	11/15/89	1.00346
1K	MI85010AP	Levagood Pk	A. Phillips	M. Wickiser	10/28/89	1002.12+
2K	NY86072PR	R. Moses Pkwy	N. Dudziak	W. Nicoll	10/28/8	2001.04
5K	CA86068PR	Carlsbad	J. Collias	W. Nicoll	8/90	*
5K	NY90002WN	Freihofers	W. Nicoll	A. Morss	5/5/90	5004.32
5K	CA89022CW	Oakland Ex	C. Wisser	T. McBrayer	5/5/90	5005.8
5K	IL86031WG	Pk Ridge	C. Parson	J. Wight	6/3/90	4998.48
5K	FL87022BH	Run For Pies	D. Alred	W. Nicoll	10/29/89	5000.8
5K	ME89007GN	TAC Walk	M. Hlamo	W. Nicoll	6/2/90	5003.13+
5K	TN90011WN	Metr Corp	N. MacDonald	W. Nicoll	10/4/90	5003.11+
8K	IN87077PR	Gov's Cup	J. Pierce	M. Wickiser	10/22/89	8030.21
8K	FL89001BH	ICI Masters	L. Allhouse	D. Loeffler	10/8/89	7997.98
8K	FL90002BH	ICI Masters	M. McGarity	D. Loeffler	10/21/90	8000.12
8K	VA89007RT	Shamrock	C.E. George	R. Thurston	11/19/89	8010.75
8K	DC90001JS	Nike Womens	J. Sissala	B. Thurston	4/22/90	8010.44
8K	OR87009PC	Spring Classic	L. Barrett	T. Knight	8/26/89	8004.09
8K	OR90004LB	Spring Classic	L. Barrett	T. Knight	8/26/90	8009.00
8K	CA89001TK	Stanford 50+	D. Carpenter	T. Knight	10/1/89	8003.3
8K	CA90001TK	Stanford 50+	D. Carpenter	T. Knight	11/4/90	8009.39
8K	CA83043CW	Willy's	B. Clark	T. Knight	10/14/90	8001.17

10K	CA86039CW	Run for Parks	C. Wisser	T. McBrayer	5/24/90	10017.652
10K	FL88013WN	Red Lobster	W. Nicoll	D. Loeffler	10/21/89	10017.65
10K	FL89004WN	Red Lobster	W. Nicoll	D. Loeffler	10/21/89	10007.8
12K	WA86010TD	Bloomsday	M. Renner	B. Baumel	5/19/90	*
15K	FL89001WN	Gasparilla	W. Nicoll	D. Loeffler	10/21/89	15028.7
10Mi	PA86002GD	Fool's Run	D. Kennedy	M. Wickiser	9/22/90	9.94438
10Mi	DC86004RT	Cherry Blossom	R. Thurston	W. Nicoll	4/1/90	*
10Mi	IL85106PR	Park Forest	J. Nair	J. Wight	11/89	*
10Mi	I185106PR	Park Forest	J. Nair	J. Wight	11/26/90	*
20K	CA89021CW	Oakland Dble	C. Wisser	T. McBrayer	5/28/90	20011.21
20K	OR84039PC	Pear Blossom	D. Gustafson	L. Barrett	10/25/89	20014.7
20K	NY89006WN	Sauerkraut	G. Tillson	W. Nicoll	10/29/89	19979.49
25K	MI90005SH	Old Kent	R. Dewey	M. Wickiser	10/6/90	25041.22
30K	CA87015CW	Foundation	C. Wisser	T. Knight	11/11/89	30072.1
30K	CA87015CW	Foundation	C. Wisser	T. Knight	10/30/90	*
30K	CA87056RS	SCATAC	R. Scardera	T. Knight	12/2/89	30010.8
½ Mar	FL85016WN	Citrus Bowl	W. Nicoll	D. Loeffler	10/21/89	13.1322mi
½ Mar	GA84037WN	Savannah	J. Burke	D. Loeffler	11/11/89	21120.54
½ Mar	MA86003JMC	New Bedford	R. Nelson	W. Nicoll	11/89	*
½ Mar	PA86002WN	Phila Distance	J. Bernhardt	P. Riegel	11/18/90	21108.67
Mar	UK89017PR	ADT London '89	J. Disley	P. Riegel	4/16/89	42238m
50Mi	CA86039RS	West Coast Univ	B. Hickey	T. Knight	10/12/90	*
50Mi	OH83038PR	Wolfpack Loops	P. Riegel	M. Wickiser	10/21/89	50172
.9709251mi	NY88002DB	Crocheron Pk	D. Brannen	W. Nicoll	11/15/89	.9726145

* indicates a previous validation applies to current year based on evidence submitted.

Currently assigned, not completed:

8K	IL90002JW	Shamrock Shuffle	C. Hinde	J. Wight
10K	DC86041RT	Nat'l Invit Walk	R. Thurston	

Sally H. Nicoll

Sally H. Nicoll, Validations Chairman

VALIDATION RESULTS - MEASURED M/KM OVERSIZE

Year of Original Certification

1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
-8.25	-3.51	-8.75	-7.70	-9.25	-5.93	-5.56	0.16	0.31	-1.03	0.01
-6.66	-3.07	-8.60	-6.00	-5.93	-4.20	-0.91	0.20	0.79	-0.25	0.62
-1.08	-2.58	-7.50	-5.66	-5.18	-3.29	-0.56	0.36	0.95	0.39	0.86
1.00	-1.95	-4.30	-1.90	-5.18	-2.95	-0.30	0.43	1.74	0.41	1.17
	-1.60	-1.60	-1.78	-1.50	-2.70	0.28	0.50	1.84	0.56	1.28
	-0.40	-1.40	-1.17	-1.20	-1.08	0.50	0.56		0.62	1.30
		-1.14	-0.84	-0.90	-0.07	0.50	0.82		1.18	1.45
		-1.02	-0.69	-0.75	0.07	0.53	0.92		1.35	1.65
		-0.45	-0.63	-0.64	0.27	0.63	0.94		1.90	3.41
		-0.20	0.22	0.20	0.27	0.66	1.00		1.91	
		-0.20	0.31	0.33	0.50	0.66	1.10		4.09	
		-0.20	0.70	0.43	0.70	0.74	1.28			
		-0.13	1.00	0.43	0.75	0.75	2.40			
		-0.05	1.11	0.45	0.87	0.78	3.47			
		1.00	1.16	0.50	0.88	0.85	3.77			
			1.46	0.62	1.00	1.00	13.66			
			1.47	0.64	1.03	1.00				
			1.60	0.70	1.08	1.00				
			1.92	0.74	1.09	1.06				
			2.55	0.76	1.13	1.09				
			3.44	0.88	1.14	1.40				
			6.33	0.99	1.15	1.52				
				1.00	1.35	1.71				
				1.09	1.52	1.77				
				1.29	1.75	1.99				
				1.42	2.10	2.00				
				1.43	2.37	2.55				
				1.60	3.96					
				1.68	5.58					

Averages

-3.75	-2.19	-2.30	-0.14	-0.46	0.36	0.65	1.97	1.13	1.01	1.31

Fraction of courses that measured at least the nominal distance

1/4	0/6	1/15	13/22	20/29	22/29	23/27	16/16	5/5	9/11	9/9

Percent of courses that measured at least the nominal distance

25	0	7	59	69	76	85	100	100	82	100

And Still More on Computer Timing for Road Races

Donald D. Mitchell and Philip F. Meyfarth

In the last two issues of TacTimes, Jim Gallagher and Alan Jones give their views on using computers as timing devices. We think that their view of timing is too narrow and too focused on hardware specifications. A broader discussion of what actually happens when a race is timed is required. To us, "timing" is more than operating a timing device and generating a stream of time data -- it includes the entire process by which times are collected, adjusted, and assigned to different runners. It is in this sense that we use the word.

Let's begin with the end result. The runners, the race organizers, and TACSTATS/USA all want a list of finishers in order from first to last, with each finisher being assigned a finish time reported as hours, minutes, and whole seconds. There must be great confidence that the list is "correct", so that not only are finish places accurate, but the assigned times accurately reflect the actual elapsed times that the runners took to complete the race course.

The crucial issue is the manner in which this list is generated. There are at least two ways to generate this list and **the method chosen determines how the times are collected and recorded.** The two methods can be stated simply and in non-technical terms. Either:

1. one uses the sequence of runner IDs (for example, barcode tags) to order the list and then allocates times to those IDs, or

2. one distributes observed finish times (printed timer list or computer file, for example) to runner IDs that are not in finish order (for example, sequentially by runner number); sorting is then required to re-order the time stream from first to last.

A type 1 system need not concern itself with collecting time data to a resolution finer than that required for reporting purposes -- 1 second. A type 2 system will require sorting the collection of finish times, and will require high-resolution devices (as Gallagher describes) to ensure that they are returned to the proper order.

In every system known to us the time data stream arrives at the computer in ordered form (the first time is followed by the second time, the third, and so on) as does the ID data stream (at least within any chute). It's hard to see the need for disrupting a list that's already in the order desired, only to later re-order it, but it could be done. We do not know if Gallagher's or Jones' software is based on a type 2 method. We only have detailed "internal" knowledge of one other software package besides our own, and it is a type 1 system. Selecting the method is a design decision which is no one else's business -- but that's the decision that will determine the degree of precision and resolution that the actual timing device needs to have.

We have been developing and úsing race timing and scoring software and hardware for 10 years, using DEC PDP-11 and now VAX equipment. For the last 6 years we have relied on NEC PC-8201 and PC-8300 notebook portables to collect finish times and select times. These are battery-powered general-purpose diskless computers that run our timing programs, storing timing information internally. Any given NEC is dedicated to either finish or select times. This information is downloaded into our VAX as the race progresses; at any given time half the NECs (plus spares) are at the line and half are at the VAX, being unloaded. In this way it is not necessary for the VAX to be wired to the finish line. We typically have 5 NECs deployed at a single finish line race; all are synched electronically to the master NEC (whose clock was set at the start).

The way we use the NEC yields a 1 second time resolution, and a typical drift is less than 1 second per week, measured against WWV*. The NEC would be classified as a medium (?) resolution, low drift device.

Our software is based on the type 1 approach -- the order of finish is initially determined by the runner ID data stream. Even when we do multiple-finish line races the procedure is the same for each line internally (see below for more on multiple line races).

Jones mostly concerns himself with drift, but he does make a statement that troubles us: "Anyone who submits race results to TACSTATS should be able to prove that the times are accurate." No one could quarrel with that statement -- except to ask for an operational definition of "prove that the times are accurate." He seems almost to be saying that you need only establish that your clock has a low rate of drift in order to be confident of your times.

We believe that high resolution timing devices are not required in type 1 systems and in any case do not by themselves ensure high accuracy.

In support of this contention, we will give a more detailed description of the logic used in our timing system, an hypothetical example, and an actual example.

Description

In our system, the NEC records in a file:

HH:MM:SS for any second in which at least 1 runner finished, and
how many people finished in that second

	HH:MM:SS	number/finished this second
example:	00:13:02	4
	00:13:04	1

(select times stored similarly, except the race number is recorded instead of the number of people)

The actual hand/eye/machine interaction is no different from that of a printing timer/pushbutton system -- the operator hits a key as a body crosses the line. Internally it is different. As we understand printing timers (and those computer-based ones that Gallagher and Jones describe) a button or key generates an interrupt and when the CPU processes that interrupt it notes what the internal time is, and stores that time value somewhere. Each interrupt generates a time value for storage; you have as many time records as you have button-pushes. This is a perfectly reasonable and workable technique, but it's not the only one.

It's equally reasonable for the interrupt to cause the CPU to look at the clock and if the clock has not yet changed to the next second, to store only the number of interrupts within the current second. That is what we do; among other things it dramatically decreases storage requirements and transmission times. There is at most one record for each second in the race. A modest bit of encoding stores all information about a second and what happened in it in 4 bytes.

The latest TacTimes listings of pending Masters records includes 7 for which our group did the timing. We have complete confidence in the accuracy of the times we supplied to TACSTATS/USA, but not because we used high-resolution timing devices (we didn't), or just because our NECs have low drift (they do).

Rather, it stems from confidence in an approach to data collection and analysis that was designed from the beginning to take into account the special feature of road racing -- the physical and logical decoupling of the time data and ID data streams -- and that owes more to the study of prehistory** than of physics. We would never claim that our approach is the only workable one, but we are certain that it is a valid one.

Hypothetical Example

Assume that four events occurred at the finish line: runners #123, #234, #345, and #456 crossed the line. Assume for the sake of argument that it was (magically) possible by a single observation each to establish that #123 finished at 13:02.21, #234 at 13:02.29, and so on. (When will we get those transponder systems that make it possible?)

Event at Line	Actual Absolute Time MM SS	ID Sequence in batch	Relative Time in second	VAX file Time	
#123 crosses	13:02.21	123	1st	13:03	(includes TAC
#234 crosses	13:02.29	234	2nd	13:03	round-up)
#345 crosses	13:02.63	345	3rd	13:03	
#456 crosses	13:02.68	456	4th	13:03	

The actual absolute time stream gives us no useful information that cannot be derived from the combination of ID sequence and NEC 1-second resolution time. We do not need to know that #123 finished .08 second before #234 in order to know that #123 finished before #234, because we know the relative position of IDs #123 and #234 (1st and 2nd within that second).

Misalignment and the Role of Select Times

It is easy to show that the time list and the ID list are unlikely to be aligned properly without STs, since no timing person can be expected to generate one and only one interrupt for every valid finisher. It is also easy to show that although the ID list will have fewer errors than the times list does, it will not be perfect. It is therefore a certainty that at least some assignments of the raw Nth time to the raw Nth ID will not be accurate. We may then ask whether the inaccuracies introduced through misalignment of the two data streams are greater than any possible inaccuracies introduced by low resolution or high drift. If so, we should attend to these large sources of error before worrying about smaller ones.

Raw Data, Archives and Audit Trails

We maintain "archive" data files in which the data from NECs and from barcode readers are stored exactly as received. Programs read from these files to assemble ID..TIME pairs which, after being aligned via the STs, are used to score the race. Of interest here is that long after the race we can build the ID..TIME pairs exactly as they were when first merged -- before any editing/alignment of any kind had been done. We do not know whether other systems do this or not, but this archiving of the raw data seems to us to be mandatory if we are to have confidence in the (demonstrable) accuracy of our results. If I cannot show you what I started with, but only what I ended with, why should you believe me? At least the Chronomix operator has tapes. Sooner or later the racks of barcode tags are thrown out -- what's left to be the "audit trail" if there's a complaint or an error comes to light?

A Real Example: 1990 Boilermaker

Several of the pending masters records mentioned above come from the 1990 Utica Boilermaker 15k. Scoring file reconstruction showed that 3,520 raw times were taken and 3,477 raw IDs were processed. The final ID count was 3,479 -- we got that by removing 3 duplicates and adding one missed tag (discovered via the STs). There were 41 extra times to remove. We typically find that we must make 10 to 20 times as many time adjustments as we make ID adjustments. (We'd be interested in knowing if other people have found similar ratios.) At the Boilermaker we had select timer teams at the left and right of the single finish line; they collected 759 STs for us.

At this race, Anny Stockman ran 1:07:13 for a pending F55-59 15k record. What do we actually know about her performance? Her ID was the 42nd barcode tag in batch (chute-full) #23. It was wanded (rather than being typed in) on our "Y" reader; the batch was processed between 9:46:15 and 9:48:11 AM. When batches 1-23 are reassembled in default order, her number appears at raw finish place 899. The raw 899th time is 1:07:07. There was no select time for her, but her tag was wanded immediately after tag 3291, which was associated with a select time of 1:07:13. Inasmuch as there were three 1:07:13s in a row before the next select time of 1:07:21, she was assigned to the second 1:07:13.

By 899th place, the timer had accumulated only 8 extra times (fewer than 1 per hundred), but the absolute error for finishers in that range was 6 seconds. Had we not had good ST control, and had we not had good ID control, Anny Stockman's time would have been wrongly given as 1:07:07, a serious error.

Discussion

In what sense can we say that the timing device's resolution contributed to the "accurate" 1:07:13 for Anny Stockman? Probably not at all. Her time was made accurate by a combination of good physical and logical control over the IDs, a tractable list of finish times recorded by a top-quality timing person using reliable equipment, and the presence of sufficient STs. Though the nature of "proof" here is a little slippery (do STs qualify as proof?) we submit that if we're to talk about proving that times are accurate we're going to have to be able to show:

what was actually recorded at the line (raw times)
the actual raw sequence of IDs with some kind of audit trail
some reasonably close ST
how these data streams were used to produce the
the aligned (edited) results

Timing device specifications relating to resolution play no necessary role here, though drift does. If we must use timing device specifications (which in any case "prove" nothing about anyone's time) then they must be keyed to the system's logic. If anyone does run a type 2 system then of course Gallagher's concerns are valid ones. But if the system does not use that logic then a resolution of 1 second is enough.

It follows from this, we think, that a good "timing system" can be shown to be good not just by showing high resolution/low drift on some hardware clock, but by showing the capability both in terms of materials handling and software to generate the requisite data streams, store them, and then manipulate then in accordance with many select times. Any type 1 system should have had a major programming effort put towards collecting, identifying, wanding, and checking barcode tags (or other ID) since that data stream is the primary ordering stream.

If TACSTATS/USA is interested in accuracy, then it should require assurances that the ID processing system is dependable and well-conceived, that select times are collected and actually used to make adjustments, and that the adjustments can be justified and accounted for by comparison with the raw data, which must be preserved as collected. And finally -- yes, the timing devices must have low drift and resolution appropriate to the ordering method being used. Only then does one have a timing system rather than just a clock.

Note on multiple finish lines.

Even with the 1 sec resolution the only problem within a given race will occur when people finishing in different lines are given the same 1 second time. When the lines are merged, (again, only trivially by time, since each line has been ordered internally by ID first) it will not be possible to state which of two runners in the same second but in different lines actually finished "first." This is an awards ceremony problem, not a TACSTATS/USA problem, because the times will both be as accurate and valid as if they had come from a single finish line race. Of course, this is only true if each line has independent select timing and is adjusted internally as a logical single line before the lines are merged (which is the way we do it). We have done two-line events many times and have never had a same-second awards ceremony problem. Still, it could happen.

Biographical notes

Donald D. Mitchell is President of Runtime Services, of Buffalo NY. He holds a Ph.D. in anthropology from Harvard University and teaches at the State University of New York, College at Buffalo.
Philip F. Meyfarth is Chief Systems Programmer of Runtime Services. He holds a Ph.D. in mechanical engineering from M.I.T., and teaches at M.I.T.
Both have spent many years collecting and analyzing quantitative data (PFM in engineering; DDM in surveying, agriculture, and prehistory).

*We suspect that not everyone knows how to receive WWV/WWVH. These stations broadcast on 2.5, 5.00, 10.00, 15.00, and 20.00 MHz; in the Northeast it's often easier to receive CHU (Canada) on 7.335 MHz. If you hang around finish lines you'll meet amateur radio operators eventually; they can help you if you don't have a short-wave (HF) receiver.

**Prehistory?

Odd as it may seem at first, the techniques and concepts used in prehistory are directly relevant to road race timing. The hypothetical discussion above could pass for an introductory session on "absolute dating," (chronometry, or measuring time in quantitative units), "relative dating" (putting events in order without having absolute dates for them) and "cross dating" (combining relative and absolute dates from different sources); in both racing and prehistory we are confronted with imperfect data from which we must reconstruct unique events.

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

Dear Pete,

Thank you very much for the next copy of Measurement News issue 44.

During my last measurement I had an interesting experience. I recorded a divergent results of four post-calibration rides:

1st - 10.160
2nd - 10.171
3rd - 10.177
4th - 10.177

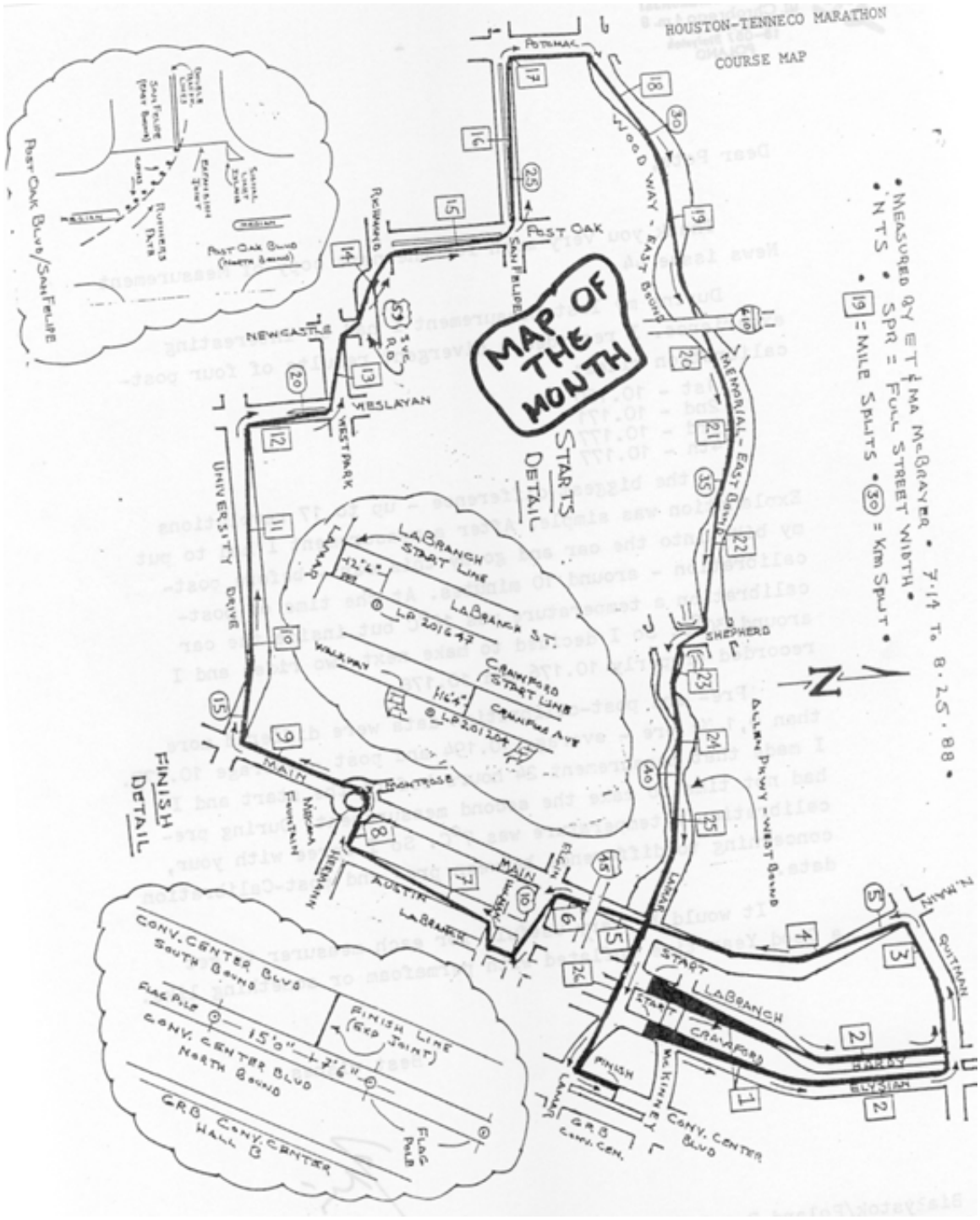
the biggest difference - up to 17 revolutions Explenation was simple. After a measurement I had to put my bike into the car end go by this car - before post-calibration - around 10 minutes. At the time of post-calibration a temperature was 14°C but inside the car around 30°C. So I decided to make next two rides and I recorded properly 10.176 and 10.178.

Pre- and post-calibration data were differed more than 0,1 %: pre - average 10.194 and post - average 10.177. I made that measurement 24 hours before the start and I had not time to make the second measurement. During pre-calibration a temperature was 7°C. So I agree with your, concerning to difference between pre- and post-Calibration data.

It would be very usefull for each measurer to get a Good Year tire inflated with permafoam or something like.

Best wishes

Białystok/Poland,Dec 1,1990


HOUSTON-TENNECO MARATHON
COURSE MAP
MAP OF THE MONTH
• MEASURED BY ELTHA McBRAYER • 7.14 To 8.25.88 •
• NTS • SPR = FULL STREET WIDTH •
• 19 = MILE SPLITS • 30 = KM SPLIT •
STARTS DETAIL
FINISH DETAIL
POST OAK BLVD/SAN FELIPE
POST OAK
SAN FELIPE
NEWCASTLE
WESTPARK
WESLAYAN
UNIVERSITY DRIVE
LABRANCH
LABRANCH START LINE
LABRANCH ST.
LP 201647
WALKWAY
CRAWFORD START LINE
CRAWFORD AVE
LP 201224
MAIN
MONTROSE
HEIGHTS
AUSTIN
FOUNTAIN
MEMORIAL - EAST BOUND
SHEPHERD
ALLEN PKWY - WEST BOUND
START
FINISH
McKINNEY
ELYSIAN
GUTHRIE
CONV. CENTER BLVD
SOUTH BOUND
NORTH BOUND
FLAG POLE
FINISH LINE
(EXP JOINT)
15'0"
17'6"
GRB CONV. CENTER
HALL C
GRB CONV. CEN.
N

December 10, 1990

Pete Riegel - 3354 Kirkham Road - Columbus, OH 43221
Wayne Nicoll - Ragged Mountain Club - Potter Place, NH 03265
Jay Wight - 4419 Thornbark Court - Hoffman Estates, IL 60195
William E. Grass - 339 E. Careless Ave - Whitefish Bay, WI 53217

Dear Concerned Measurers:

Thank you all for your comments on the idea of using a 500 ft. cable to layout a bicycle calibration course.

Taking one suggestion, I was finally able to recheck the 500 ft. cable I use for laying out a 1000 ft. calibration course.

First I measured out 500 ft. using a 50 ft. steel tape. (I had stretched out the 500 ft. cable to insure that I was measuring in a straight line.) This was redone measuring in the opposite direction. Both measurements were within 1/8 inch, so I'm satisfied that the 500 ft. is accurate. The temperature was 45 degrees at the time.

Then I strung out the 500 ft. 3/32 dia. cable. In a relaxed, but tight condition it was 2 1/8 inches short of the measured 500 ft. At 10 lbs pull on a scale it was 1 1/8 inches short. At 20 lbs it was right on the mark. At 30 lbs it was 1 1/2 inches long. This was repeated several times. At 20 lbs pull the result was consistant within 1/4" At 30 lbs the repeatability was within 1/8 inch. My scale did not go above 30 lbs. The stretch of my cable may be different than Bill Grass's. Each cable may be different depending on how it is constructed.

A couple of other points. The cable loops are mechanically crimped. There is no possibility of slippage. There is a splice in the cable and it is double crimped using two crimping ferrules. No possibility of slippage here.

The cable was originally made at the same time that I laid out the 500 ft. on the street in front of my house. The temperature at that time was about 65 degrees. I agree it is necessary to check the cable at different temperatures to determine the expansion coefficient for that cable. It is also important to note if it is a sunny day or not. The actual temperature on the street may be much higher than the air temperature on a sunny day. I will do more checking at various temperatures and report the results.

I also agree that the cable should be rechecked to determine if a permanent stretch has occurred. I would think twice a year should be sufficient. In any event, once I know the temperature effect and the permanent stretch I will be able to adjust my calibration course accordingly.

On the page are some pointers or things I learned about making and using the cable.

Chuck Hinde. 9916 Mansfield, Oak Lawn, IL 60453 708-422-4705

Chuck

MAKING THE CALIBRATION CABLE

I used 3/32 dia cable because it is stiff enough so it does not tangle or kink easily. And it is strong enough to take a good pull. Cable is easier to handle and roll up than wire.

A nail was driven part way into the pavement at each end of the 500 ft measured distance on the street. A 1 1/2 in loop was made in the end of the cable and crimped mechanically using a ferrule designed for the cable. I used a steel chisel backed by a street plate to crimp the ferrule.

I found it difficult to create a loop at the other end of the cable so that it would be accurate, so I cut the cable about 12 short of the 500 ft. (actually I had a 15 to 20 ft short piece) I made a loop in the end of the short piece, crimped it and placed the end over the nail. After feeding both cables through two double hole ferrules I grasped both cables a pulled as hard as I could and had another person mark both cables. Then after releasing the short cable from the nail I placed them together and crimped both ferrules. Then I rechecked the cable against the measured 500 ft. I found it to be right when pulling the cable as hard as I could by hand. A 20 lb pull using a scale was also right on.

When making the cable the temperature and sun condition should be recorded and the cable checked at various conditions to determine the temperature coefficient for that particular cable.

USING THE CABLE

At the race course site I look for a side street with a 1000 ft straight run without dips or hills. I drive a nail part way into the pavement, put the loop of the cable over the nail and walk in one direction until reaching the end of the cable. There I place a piece of duct tape and spray some bright orange paint along side of the tape for a permanent mark in case the tape does not stay.
Then I walk in the other direction past my center nail and place the tape a spray paint at the other end of the 500 ft course. I also spray a small arrow about 15 ft before the tape as a warning so I don't override the tape. Grey duct tape is pretty hard to spot.

Now, after removing my nail, I'm ready to calibrate the bicycle.

I bought a plastic reel used for electrical extension cords for about $4.75 to use to wind up the cable. I try to keep a tension on the cable as I wind it up to keep the winding tight as I walk back to the nail winding up the cable. I have never had any trouble with tangled cable.

The whole process of calibrating the bicycle takes about 20 minutes.

Chuck Hinde 9916 Mansfield, Oak Lawn, IL 60453 708-422-4705

THE ATHLETICS CONGRESS
OF THE USA
Road Running Technical Committee
William E. Grass
Wisconsin Regional Certifier

8183-S North 107th St.
Milwaukee, WI
53224
(414) 355-4048 hm
(414) 449-6956 wk

November 19, 1990

Pete Riegel - 3354 Kirkham Road - Columbus, OH 43221
Wayne Nicoll - Ragged Mountain - Potter Place, NH 03265
Jay Wight - 4419 Thornbark Court - Hoffman Estates, IL 60195
Chuck Hinde - 9916 Mansfield - Oak Lawn, IL 60453

Dear Measurers,

I read with great interest the letters in Measurement News about using a 500 coil of cable to lay out a short cal course. So much so that I bought the materials and built a "Hinde's Cable". I had to solve a few problems but give the method a qualified success.

My first problem was handling 500 feet of cable. After untangling it twice, I bought a 12 inch "Cordwheel" used to store long extension cords. It worked well.

I used the same temperature corrections used for steel tape. At this point I have only data at 48 degrees F (3/4 in. correction).

The end loops are secured with crimp connectors and very secure.

The "qualified" success is because of a stretch problem. Ten pounds does not do the job with this much heavy cable. I aborted my first attempt because I did not have a spring scale for higher loads.
Armed with 50 pound scale I recorded the stretch in the cable with loads for 5 to 50 pounds in five pound steps. This was done by applying the load and marking the cable end point on a piece of tape on the ground. This tape was actually a series of overlapping mailing labels that could be removed without stretching. This was repeated several time and an average mark determined for each load. The label/tape was removed and measured later. The results can be seen in the attached graph. The repeatability of the measurements at the low end were poor with a range of 1/2 inch at 10 pounds. At 50 pounds the spread was less than 1/8 inch. This is good enough.

A couple of cautions: don't cable across an intersection as the drainage curve of the roadway will result in the cable coming off the road at the sides when it is in tension and creating a dangerous condition. Be sure to "whip" out all the slack as you pull it tight. Use as flat a road as you can.

I plan to use this method with a measured 50 LB load and will report my results. I also plan to do a temperature check also. My test course is only one cable length from home.

Bill

THE ATHLETICS CONGRESS
OF THE USA

Road Running Technical Committee
Peter S. Riegel, Chairman

3354 Kirkham Road
Columbus, OH 43221

614-451-5617 (home)
614-424-4009 (office)
FAX 614-424-5263

November 26, 1990

Bill Grass - 8183-S N 107 St - Milwaukee, WI 53224

Dear Bill,

Thanks for the dope on your "Hinde's cable." You did a nice job of documenting what you did.

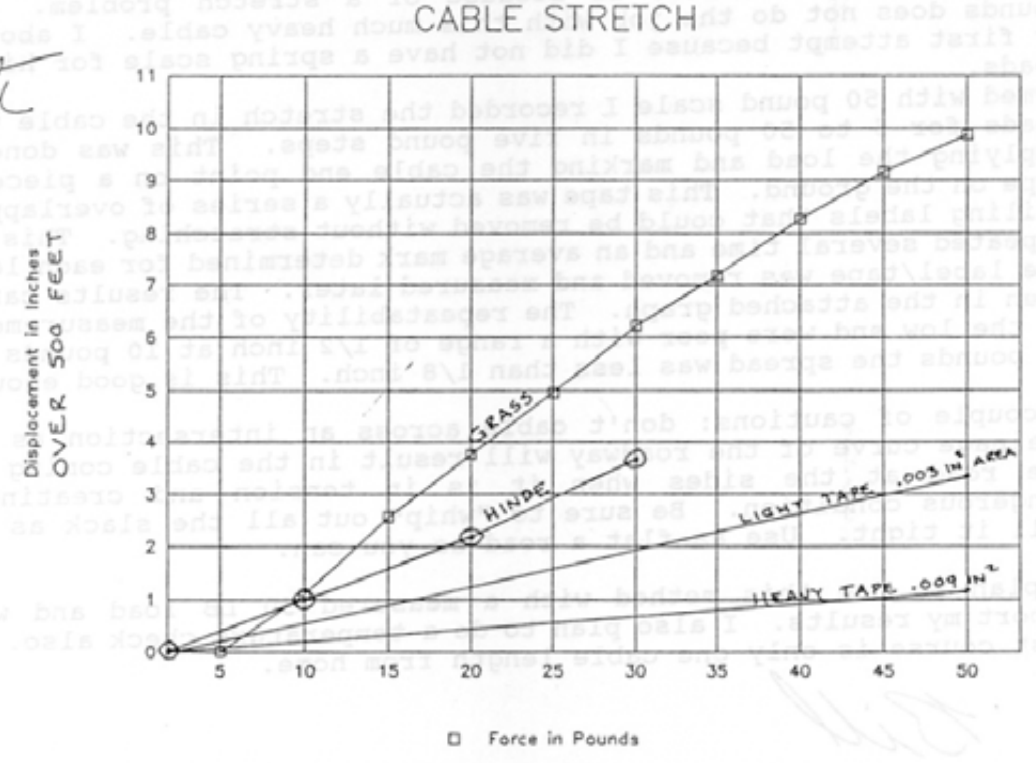
One question was unanswered - what kind of cable did you use? I ask because it looks pretty stretchy compared to what one would get compared to a steel tape. I enclose a copy of your plot with my calculated stretch of 500 feet of steel tape plotted on it. The tape stretches a lot less than your cable. Maybe this is because your cable is twisted strands, and the twisted assembly inherently stretches more. Also it could be you've got a thin cable with little cross-sectional area.

In any case, as long as you use a force gauge I can't see how you would get in serious trouble using it. Your plan to use 50 pounds seems like it would work pretty well. I'll put your letter and graph in next MN.

Off to the convention now, to fight the good fight.

Best regards,

Pete



ATTENTION VALIDATORS

In November MN Bob Baumel suggested course adjustments to be made depending on the results of validation measurements. His suggestions were discussed at the TAC Convention, and it was the general consensus that they made sense. They are shown below and are now RRTC policy.

For a 10 kilometer course:

- If the measurement comes out less than 9995 m, then the race fails validation (i.e., pending marks are rejected) and the previous course certification expires. This is unchanged from existing policy.
- If the measurement comes out between 9995 m and 10005 m, then the race *passes* validation (i.e., pending marks are accepted) but the previous course certification expires. For recertification, the course must be extended so its measured distance is 10010 m. If possible, the validator should implement this immediately by writing a new Certificate with corrected Map.
- If the measured distance is greater than 10005 m, then the race passes validation and the previous course certification remains in effect.
- If the measured length is so great that race organizers think the course should be shortened, this should only be done by a normal recertification—which requires at least one more measurement in addition to the validation.

Adjustments to courses of other lengths should be made proportionately.

With regard to a "new Certificate with a corrected Map", this can simply be the old certificate with the old number crossed out and replaced by a new number that reflects the date of validation. The reference point for the start, finish, or turnaround can also be crossed out and revised. Of course, an entirely new certificate may be issued if desired.

With regard to those races that request pre-race validation, they should be aware that the validation measurement may require a small increase in the length of their course, and be prepared to do this before the race.

Since this is a new policy, there will be some problems to iron out. Suggestions and commentary are welcome.

2420 Glenwood
Anchorage, AK 99508
Dec. 4, 1990

Dear Pete,

So now I've been to a TAC National Convention. The high point was finally meeting some of the members of the RRTC that I've heard so much about. It was a pleasure to participate in discussions both in and outside of formal meetings. I learned much, not only hard data but also about the nature of various individuals preceptions of issues. As a "Final Signatory", a "State Record Keeper" (and holder) and an "Athlete-at-large" member of the Alaska Association Board trying to represent Alaska at the Men's, Master's, and Women's LDR committees, plus any other committees I could make it to (whew), I must admit I found all the changing of hats exhausting. But, on the other hand, I believe this gives me a very broad perspective on many of the issues discussed. I must admit though, I am still not sure how the RRTC fits into the structure of TAC although I have an inkling that it is somewhat analogous to how my division of the U.S. Geological Survey fits into the federal government: A group of nonbiased specialists who can be relied on for dispassionate discussion and analysis related to solution of problems. My "hat switching" either means that I must be totally biased or totally confused!

One issue seemed to permete the meetings of many of the committees I went to. Unfortunately, it has come to be known as the "Boston" issue. Trying to step back from the "spray" of the arguments, I began at the meeting to wonder what was the real issue. Why were the perception of folks in the Men's and Women's LDR so different than the Master's LDR? Why did so many of both sides, including RRTC folks, get so emotional? What is anybody saying? Is it Boston or records? If it is records, why were St. George and Fontana Days rarely mentioned and then only as bogeymen to scare? Why is it that New York never get mentioned by anyone but RRTC people as an also affected race?

The Boston Athletic Association clearly feels attacked, angry, and hurt. They feel they don't get the respect they desire. On the basis of that, I can partially understand their reaction. Members of RRTC repeatedly said the issue is not about Boston; then why was Boston constantly being used as an example to prove or dispprove a point?

If the reasonable side of the issue is the RRTC position, what is it the Masters have that the Open Athletes don't? Is it wisdom? Then why was their National Championship on a notoriously aided course (St. George)? Is it personal interests or the interest of the sport? Is it the fact that Masters athletes rarely go head to head and they want to compare times directly?

And what do the Open Athletes know? Is it that they recognize that even in head to head competition, you only know who is best that day. Why do they (not only Benji Durden) keep saying Boston is not where they'd go for fast times? Is it that the issues of the human body's response to endurance-related stress they allude to are really more important than has been considered?

Pete, you said at one point that you wanted there to be a "standard course" for TACSTATS, so a 10k is a 10k and a marathon is a marathon. Hence the direction you have lead the RRTC. Yet, I got a clear sense that for Boston to lengthen their course to account for the calculated shortening would not be acceptable. I believe you said you didn't want to get into the complexity that adjusting courses in that way would create. Is it that it would be that complex, or is it that you don't trust the figures yet? Could not a simple factor based on the net drop be used, ignoring hills to create maximum compensation?

Dan Brannen a number of times described his experience at Boston, crediting the course with a 2 minute "gift". Each time I heard this, he finished the description with the expression "... and that's

from the heart." Is this just an expression, or is this saying something about how at least some are viewing the issue. From the heart or the head?

I've written a lot of questions here, I have suspicions of answers for some. Yet as we consider this issue (what ever it really is) I think we must continually ask these and other questions if we are going to ever get the mandate that Basil (and I also) think we so desparately need.

One thing that comes back to me over and over in this issue is that we are talking about something called "Road-racing", a human endeavor affected by venue, weather, mood, and many other factors that are unquantifable in a practical sense. Are we spending an inordinate amount of time trying to quantify issues that beyond a certain common-sense point get lost in the noise of everything else? I spend a lot of my day in a digital world, trying to quantify geologic processes. Yet, we recognize that beyond a certain point our data just don't allow us to go. Certainly we can make guesses and formulate theories beyond the limits of our data, that is our job; but, we don't without a lot of testing, start to believe in them. And even then, we continue to test them.

In 1989 there was a theory on wind aid and road-racing. In 1990 there is a rule concerning it; yet we have no testing. We have no way to validly quantify wind during a race. We have some literally "back of the envelope" calculations to show wind aid but have no proof beyond antedotal stories. (See attached letter for a fuller analysis.) What are we doing? Where are we going? As we try to quantify or standardize things, where does it go? Is a possible 1 second/km aid through some means worth controlling? What about surface? I remember an article in Scientific American years ago about work done at MIT to design and build a track out of materials that would enable runners to go faster by aiding their push off. (Controlling elastic rebound rates to match the expected pace.) Do we outlaw that in a road course if some one decided to do it? What about shoes, are some faster than others and is that fair?

Or do we go the other way and say there are many factors of variable importance that affect a road race. Therefore it is not possible to quantify them and recommend that no records be recognized. Or taking a note from automobiles, if you want a land-speed record you go to the Bonneville Salt Flats and you obey their rules, period. Maybe certain road-race courses can be designed as the U.S. standard and only times on those can be accepted. Pretty scary and on the face ridiculous, huh? On that note, I'll quit here.

Cheers,

Ric

Ric Wilson

THE ATHLETICS CONGRESS
OF THE USA

3354 Kirkham Road
Columbus, OH 43221

Road Running Technical Committee
Peter S. Riegel, Chairman

614-451-5617 (home)
614-424-4009 (office)
FAX 614-424-5263

December 17, 1990

Frederic Wilson - 2420 Glenwood - Anchorage, AK 99508

Dear Ric,

Thanks for your letter of December 4. I will not address your concluding suggestion that road records may be inappropriate, since they exist. They are wanted by the fans, and it's RRTC's job to examine the technical basis for them, and recommend based on our conclusions.

I won't rehash any technical replies, since that's already been done in Measurement News. The constituency of TAC may have whatever record rules it wishes. It's our job to recommend various options, and we have done so. I believe that a sound technical base is necessary for records to have validity. I also believe the records system should be as inclusive as possible - as many as possible should be able to play the game, should they wish to.

We have three choices:

1) Credible records for 90 to 93 percent of the sport

2) Meaningless records for 100 percent of the sport

3) Two sets of records -
   a) one set credible, for 90 percent of the sport
   b) one set meaningless, for 10 percent of the sport.

TAC has opted for (1). It used to do (3).

Note that the media have historically shown a preference for (3)(b) above, since these records usually include the faster, more newsworthy times.

Those anti-science people who rant and rave at all the technical analysis, calculus and science should realize that complicated thinking underlies many of the common things in our lives. Almost everybody can drive a car, or talk on the telephone, because anonymous scientists and engineers did a lot of incomprehensible thinking to get them made. The thing is to judge the finished product, not the process that produced it.

The end product is what appears in the record book. Last February TACSTATS proposed a format for records. Here's a copy. I think it does a good job of giving everybody the appropriate credit, and I think it's a format that should be accepted. Rule 185.5 is inclusive, simple and fair. It should not be changed, but given a chance to work.

Best regards,

Pete

All-Time U.S. Leading Road Running Performances and Records

Open Division : Women

Notes on U.S. Records:
[illegible] a performance to be recognized as a U.S. Record [illegible] conforms to standards which limit elevation drop and wind assistance to runners.
TAC rule 185.b defines the maximum elevation drop as 1 meter per kilometer and the separation between the start and finish as 50% of the race distance. [illegible]
[illegible]
In order to represent the essential variety of road race courses, marks faster than the record are listed with a limit of one per course.

Notes on 'Women's Only' Records:
Records are kept for performances in both 'Women's Only' and 'Mixed' races. The faster of the two records is listed in bold type.

	DIST	TIME	COMMENT	NAME	HOME	ST	RACE	ST DATE
•	5 km	15:06a	Elev drop 9.2m/km	BRENDA WEBB	AUSTIN	TX	ALL FOR ONE CLASSIC	OH 101787
	5 km	15:18.8	US All-Comers Record	LYNN WILLIAMS (CAN)	CANADA		CARLSBAD	CA 060389
	5 km	**15:26.3**	**US Record**	**JUDI ST HILAIRE**	**HINGHAM**	**MA**	**FREIHOFER'S WOMEN'S**	**NY 060389**
	5 km	15:30.2	US Record (Mixed Race)	PATTI SUE PLUMER	LOS ANGELES	CA	CARLSBAD	CA 060190
	8 km	25:03	US All-Comers Record	GRETE WAITZ (NOR)	NORWAY		SHAMROCK	VA 031586
	8 km	**25:07**	**US Record**	**LYNN JENNINGS**	**NEW MARKET**	**NH**	**NIKE WOMEN'S RACE**	**DC 051489**
	8 km	25:34	US Record (Mixed Race)	LYNN JENNINGS	DURHAM	NH	SALEM SCREEN PRINTERS	NH 111085
	10 km	30:38.4	US All-Comers Record	LIZ MCCOLGAN (GBR)	SCOTLAND		RED LOBSTER	FL 031189
•	10 km	31:07a	Elev drop 10m/km	BETTY GEIGER	RALEIGH	NC	THE GREAT RACE	PA 092588
	10 km	**31:04**	**US Record**	**LYNN JENNINGS**	**NEW MARKET**	**NH**	**OLD RELIABLE RUN**	**NC 111388**
	10 km	31:38	US Record (Women's Race)	MARY DECKER	EUGENE	OR	VALLEY RIVER CENTER	OR 050684
	12 km	38:35	US All-Comers Record	INGRID KRISTIANSEN (NOR)	NORWAY		OCTOBERFAST	IL 100685
	12 km	**39:20**	**US Record**	**JUDI ST HILAIRE**	**BRIGHTON**	**MA**	**OKTOBERFAST**	**IL 100685**
	15 km	47:43	US All-Comers Record	LIZ MCCOLGAN (GBR)	SCOTLAND		GASPARILLA	FL 021389
	15 km	**48:28**	**US Record**	**LISA WEIDENBACH**	**ISSAQUAH**	**WA**	**CASCADE RUN OFF**	**OR 061889**
	15 km	49:26	Unvalidatable (Women's)	JUDI ST HILAIRE	BRIGHTON	MA	IAAF GATESHEAD	110285
	20 km	1:00:52	Unvalidatable (Women's)	CATHIE TWOMEY	EUGENE	OR		JP 030782
	20 km	1:06:13	Unvalidatable (All-Comers)	LORRAINE MOLLER (NZL)	NEW ZEALAND		CHICAGO DIST. CLASSIC	IL 070884
	20 km	1:08:24	Pending	JANIS KLECKER	MINNETONKA	MN	NEW HAVEN	CT 090489
	20 km	**1:08:34**	**US Record**	**JOAN BENOIT**	**FREEPORT**	**ME**	**PHILADELPHIA (SPLIT)**	**PA 091784**
	20 km	1:09:31	US Record (Women's Race)	NANCY CONZ	EASTHAMPTON	MA	AVON WOMEN'S	DC 030682
	25 km	**1:24:43**	**US Record**	**JOAN SAMUELSON**	**FREEPORT**	**ME**	**OLD KENT RIVER BANK**	**MI 051086**
	25 km	1:26:34	Unvalidatable (Women's)	NANCY CONZ	EASTHAMPTON	MA	TAC NATIONAL (W)	MA 061382
•	30 km	1:43:27a	Possible Wind, Elev. Aid	LISA WEIDENBACH	MARBLEHEAD	MA	PRICE CHOPPERTHON	NY 032485
	30 km	1:49:07	Unvalidatable (Women's)	DEBBIE MUELLER	BROOKLINE	MA	OHME - HOCHI	JP 021785
	30 km	1:50:05	Pending	LINDA SOMERS	DAVIS	CA	FOUNDATION	CA 111289
	30 km	**[illegible]**	**US Record**	**LINDA SOMERS**	**DAVIS**	**CA**	**FOUNDATION**	**CA 111000**
	10 mi	**51:47**	**US Record**	**CATHY O'BRIEN**	**BOSTON**	**MA**	BOBBY CRIM	MI 082689
	20 mi	1:55:29a	Possible Wind Aid	KIM ROSENQUIST	SPOKANE	WA	TWIN CITIES (SPLIT)	MN 101286
	20 mi	1:59:27.1	Unvalidatable	SHARLEY GILBERT	RICHMOND	CA	CLARKSBURG	CA 111686
	half mar	1:08:32	US All-Comers Record	INGRID KRISTIANSEN (NOR)			BANK OF BOSTON	MA 031989
	half mar	**1:08:34**	**US Record**	**JOAN BENOIT**	**FREEPORT**	**ME**	PHILADELPHIA DIST	PA 091784
	marathon	**2:21:21**	**US Record**	**JOAN BENOIT**	**FREEPORT**	**ME**	AMERICA'S	IL 102085
	marathon	2:24:52a	Possible Wind Aid (Women's)	JOAN BENOIT	FREEPORT	ME	1984 OLYMPIC GAMES	CA 080584
	marathon	2:31:04	US Record (Women's Race)	JOAN BENOIT	WATERTOWN	MA	1984 OLYMPIC TRIALS	WA 051284
	50 km	**3:13:51**	**US Record**	**JANIS KLECKER**	**HOPKINS**	**MN**	**ULTRADISTANCE CLASSIC**	**FL 121783**
•	100 km	7:33:13a	Possible Wind Aid	ANN TRASON	OAKLAND	CA	EDMUND FITZGERALD	MN 102689
	100 km	**7:47:29**	**US Record**	**MARCY SCHWAM**	**WELLESLEY**	**MA**	**SANTANDER, SPAIN**	**091981**
•	50 mi	5:54:17a	Possible Wind Aid	ANN TRASON	OAKLAND	CA	EDMD FITZGERALD (SPLIT)	MN 102689
	50 mi	**5:59:26**	**US Record**	**MARCY SCHWAM**	**WELLESLEY**	**MA**	**AMJA ULTRAMARATHON**	**IL 100382**
	100 mi	**10:55:00**	**US Record**	ANN TRASON	OAKLAND	CA	SRI CHINMOY/TAC U.S.	NY 091789
	12 hr	**141,622 m**	**US Record**	**ANN TRASON**	OAKLAND	CA	SRI CHINMOY/TAC U.S.	[illegible]
	24 hr	230,273 m	US Record	ANN TRASON	OAKLAND	CA	SRI CHINMOY/TAC U.S.	NY 091789

All-Time U.S. Leading Road Running Performances and Records

Open Division : Men

Notes on U.S.Records:
In order for a performance to be recognized as a U.S. Record it must have been achieved on a course which conforms to standards which limit elevation drop and wind assistance to runners. TAC rule 185.6 defines the maximum elevation drop as 1 meter per kilometer and the separation between the start and finish as 30% of the race distance. 90% of the 6,200 certified race courses comply with these standards. An additional 2% with separations of more than 30% but with no elevation drop also comply when it may be shown that the runners were not aided by a tailwind. In order to represent the essential variety of road race courses, marks faster than the record are listed with a limit of one per course.

Notes on 'Women's Only' Records:
Records are kept for performances in both 'Women's Only' and 'Mixed' races. The faster of the two records is listed in bold type.

	DIST	TIME	COMMENT	NAME	HOME	ST	RACE	ST	DATE
	5 km	13:25.7	US All-Comers Record	YOBES ONDIEKI (KEN)	KENYA		CARLSBAD	CA	040289
	5 km	13:30.2	US Record	STEVE SCOTT	FALLBROOK	CA	CARLSBAD	CA	032788
	8 km	22:04	US Record	ALBERTO SALAZAR	EUGENE	OR	RUNNERS WORLD MIDNITE	CA	010481
●	10 km	27:22a	Possible Wind Aid	MARK NENOW	LEXINGTON	KY	CRESCENT CITY	LA	040184
	10 km	27:41	US All-Comers Record	ARTURO BARRIOS (MEX)	MEXICO		CONTINENTAL HOMES	AZ	030186
	10 km	27:48	US Record	MARK NENOW	LEXINGTON	KY	CONTINENTAL HOMES	AZ	030285
	12 km	33:46	Unvalidatable	SIMEON KIGEN (KEN)	KENYA		FUN BETWEEN STATES	OR	051485
	12 km	34:19	Unvalidatable	JON SINCLAIR	FT COLLINS	CO	RUN BETWEEN STATES	OR	050583
	15 km	42:28	US All-Comers Record	MIKE MUBYOKI (KEN)	EL PASO/KENYA		CASCADE RUN OFF	OR	062683
	15 km	42:40	US Record	STEVE SPENCE	HANOVER	PA	CASCADE RUN OFF	OR	061889
	20 km	58:38	Unvalidatable	HERB LINDSAY	BOULDER	CO	MAPLE LEAF (SPLIT)	VT	092081
	25 km	1:15:58	US Record	MARK SMITH	CADILLAC	MI	OLD KENT RIVER BANK	MI	051488
	30 km	1:29:04a	Possible Wind, Elev Aid	BILL ROGERS	MELROSE	MA	BANKATHON	NY	032876
	30 km	1:31:40a	Possible Wind Aid	PHIL COPPESS	CLINTON	IA	TWIN CITIES (SPLIT)	MN	100685
	10 mi	46:13	US Record	GREG MEYER	WELLESLEY	MA	CHERRY BLOSSOM	DC	032783
●	20 mi	1:38:38a	Possible Wind Aid	PHILIP COPPESS	CLINTON	IA	TWIN CITIES (SPLIT)	MN	100685
	20 mi	1:40:47	US Record	TOM FLEMING	BLOOMFIELD	NJ	MIKE HANNON	NY	022474
	half mar	59:22a	Elev Drop 29m/km	SAM SITONIK (KEN)	KENYA		FONTANA DAYS	CA	041986
●	half mar	59:41a	Elev Drop 29m/km	TERRY COTTON	SAN DIEGO	CA	FONTANA DAYS	CA	041986
	half mar	1:00:55	US Record	MARK CURP	LEE'S SUMMIT	MO	PHILADELPHIA DIST	PA	091585
	marathon	2:07:13	US All-Comers Record	STEVE JONES (GBR)	GREAT BRITAIN		AMERICA'S	IL	102085
●	marathon	2:08:52a	Elev Drop 3.1m/km	ALBERTO SALAZAR	EUGENE	OR	BOSTON	MA	041982
	marathon	2:09:21a	Unvalidatable	ALBERTO SALAZAR	EUGENE	OR	FUKUOKA		120483
●	marathon	2:09:29a	Possible Wind Aid	ALBERTO SALAZAR	EUGENE	OR	NEW YORK CITY	NY	102482
●	marathon	2:09:37a	Possible Wind Aid	DICK BEARDSLEY	EXELCIOR	MN	TWIN CITIES	MN	062081
	marathon	2:10:04	Pending	PAT PETERSEN	NEW YORK	NY	LONDON	GB	042380
	marathon	2:10:20	US Record (Tie)	TONY SANDOVAL	EUGENE	OR	NIKE OTC	OR	090979
	marathon	2:10:20	US Record (Tie)	JEFF WELLS	EUGENE	OR	NIKE OTC	OR	090979
	50 km	2:50:55	Unvalidatable	DON PAIA	S. FRANCISCO	CA	MET AC 50 MILE (SPLIT)	NY	110682
	50 mi	4:50:51	US All-Comers Record	BRUCE FORDYCE			AMJA ULTRAMARATHON	IL	101484
	50 mi	4:51:25	US Record	BARNEY KLECKER	HOPKINS	MN	AMJA ULTRAMARATHON	IL	100580
	100 mi	11:46:38	Unvalidatable	YIANNIS KOUROS (GRE)	GREECE		SRI CHINMOY	NY	110784
	100 mi	12:12:19	US Record	RAE CLARK		CA	SRI CHINMOY	NY	040189
	1000 mi	250:35:18	Unvalidatable	YIANNIS KOUROS (GRE)			SRI CHINMOY/IAU	NY	052088
	12 hr	157,715 m	US Record	RAE CLARK		CA	SRI CHINMOY	NY	040189
	144 hr	1028,370m	US All-Comers Record	YIANNIS KOUROS (GRE)			SRI CHINMOY/IAU 1000 MI	NY	052088

Sponsored by John Hancock Financial Services
Compiled by TACSTATS/USA 7745 SW 138 Terrace, Miami, Florida 33158 tel. (305) 253-8448

THE ATHLETICS CONGRESS
OF THE USA

Road Running Technical Committee
Peter S. Riegel, Chairman

3354 Kirkham Road
Columbus, OH 43221

614-451-5617 (home)
614-424-4009 (office)
FAX 614-424-5263

December 13, 1990

TACSTATS - 915 Randolph - Santa Barbara, CA 93111

Dear Basil,

On February 26, 1990, just after the Indianapolis meeting that "was not about Boston", you FAXed to all and sundry two examples of how the records could look, and it made great sense. The pages were titled "All-Time U. S. Leading Road Running Performances and Records."

This is a powerful document, and I think it could be used to great effect. With powerful hindsight I wish we had had it in Seattle, blown up to poster size. It would show the doubters how it is possible to be fair yet still give everybody the credit deserved.

Let's do it next year. It's a dynamite sales tool. In addition, I suggest posters would be nice if any meetings of the Compromise and Conciliation Committee are to occur.

It's interesting to note that of all 30 of the record distances (15 each for men and women), up to 100 miles, 11 US records on the summaries were bettered by runs set on aided courses, or 37 percent. This in spite of the fact that aided courses comprise less than 10 percent of the venues.

In addition, for the most popular of the distances (5k, 10k, half marathon, marathon), 3/4 of the AR's have been bettered by runs on aided courses.

Best regards,

Pete

THIS MONTH'S PUZZLE

The puzzle this month is the same as last month. Look at your November MN for the puzzle. I expected David Reik to win, since he has called for puzzles that don't require a PhD to solve, but I was lamentably disappointed. Back to square one, you dummies!

John I. Disley CBE
Hampton House
Upper Sunbury Road
Hampton
Middlesex TW12 2DW

Tel: 01 979 1707
or 01 941 1867 (FAX)

To:- Alvin Chriss (Copy to Pete Riegel)

Re:- The Boston Problem

Yes, I can understand how emotive this problem will be in the States and recognise that it is easy for me to make ethical statements from such a distance.

However, it seems to me that Boston"protesteth too much" - for 90 odd years Boston has been happy to be Boston. A marathon route on a peculiar course that is unique.

I believe that Boston is big enough to stand on its heritage and be proud to be different.

Surely we can find some words like "wind assisted" to place Boston performances in a category of their own. Your"point to point" title seems to me to be positive in its statement. It could be that there will be other races in that category. The Great North Run in Newcastle, England is also suspect because itlis all in one direction. It is our biggest half-marathon and we will need to invent a category in the UK to put it's performances in.

I don't have any physiological research to tell me that running down-hill with the wind is easier than any other environment. But I do know that I broke the world best performance for 4 miles back in 1955 when I ran a course in Wales that lost a net 300ft and had a 40mph wind to my back. Incidently, there was 120ft of uphill in the middle of this route - but with that wind it was hardly noticeable.

As to Fred Lebow's intervention, I believe that AIMS is commited to proper measurement and courses that have less than 1 metre net loss per 1,000m, so I don't think that Fred has AIMS behind him here at all.

I am prepared to push the AAA's in the UK and IAAF to accept the criteria that TAC has formulated. It seems to be a very fair compromise - fair to the next generation of runners, and incidently, the next generation of Fred Lebow's.

Track and Field has made all kinds of arbitary decisions which we live with - with the wind assisted rule being the most obvious, but where a track is measured is another. Road running is in the process of regulating itself and traditional events will have to accept the rule for the common good, special pleading for dispensation is just not on. And generations to come will not thank us for being less than definitive about the records criteria.

Best of luck with your meeting next week - you have my support and Chris Brasher's on this matter.

Kind regards: