

**FINAL REPORT OF THE MEASUREMENT OF THE 2000
MEN'S OLYMPIC MARATHON TRIALS
PITTSBURGH, PA
AUGUST 28, 1999**



Measurement group at Finish line of UPMC Pittsburgh Marathon. From left to right: Pete Riegel, Mike Wickiser, Dwane Dover, Larry Grollman, Paul Hronjak, Bernie Conway, Joe Sweeny, Jim Gerweck, Wayne Nicoll

Measurement Team participants:

Larry Grollman : UPMC Pittsburgh Marathon Race Director acting
as liaison and course guide
Mike Wickiser : Team Leader & measurer
Pete Riegel : Data Acquisition
Bernie Conway : Measurer
Dwane Dover : Measurer
Jim Gerweck : Measurer
Paul Hronjak : Measurer
Wayne Nicoll : Measurer
Joe Sweeny : Police guide

Preliminary Actions:

In preparation for the measurement of the Men's Trials

- A team of measurers was recruited from notices in Measurement News and MNForum.
- Contact was made with the race director, Larry Grollman.
- A trip to review the course and set tentative calibration courses was completed.
- From this, the entire group was contacted via postal and email with information prior to the actual measurement.
- It was decided in advance to utilize a median of the measurements acquired to determine course distance.
- A calibration course close to the start & finish was measured by Mike Wickiser & Bernie Conway. This was used in preference to the ones previously laid out by virtue of a better location.
- All members of the group met the evening prior the measurement to discuss the following days activities.

Measurement of the Course:

The measurement team assembled in the hotel lobby and rode bikes to the calibration course on the Eliza Furnace Trail. All measurers calibrated and Pete Riegel recorded tire pressure and temperature data. Once completed, the group rode to the Start line and met with the policeman who would be providing protection for the group measurement.

The measurement of the course was done with Larry leading and the police trailing except when needed to clear traffic. Pete Riegel rode along with Larry and made notations at selected points along the way. During the measurement the group was not always able to follow the SPR. due to unfamiliarity with the course as well as traffic concerns. At these times different members of the team were on course for different sections. For this reason it was later determined to make adjustments to the measured length and to discard the median measurements. The Sum of Shortest Splits method rendered a more acceptable distance in everyone's opinion. Data for the measurement in raw and compiled form is included in this report on later pages.

Upon completion of course measurement, time was taken for photos. This done, the group rode to the calibration course for post calibration. After post calibration data was obtained, Pete Riegel again took tire pressures and size data for Mike Sanford to analyze and to aid his ongoing work on temperature effects for measuring tires.

A meeting was arranged for later that afternoon to review the days work. Pete Riegel was able to compile enough data to determine each measurer's total distance and copies of all data were given to all measurers. This data was checked for accuracy and distances were checked by all. This done the data was deemed accurate and used to determine the validation distance.

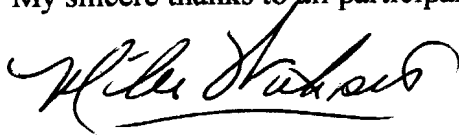
Course Distance:

Utilizing the SOSS and adding adjustment for deviations from the S.P. R., the Validation distance is 42216.8.

This is in excess of the required distance of 42195 by 22 meters and as such I would add this course to the approved list as an acceptable PREVALIDATED course. All measurers agreed that the ride could have been better. I therefore make no recommendation to adjustment of the course length.

The following pages include a course certificate and description, all measurement data and copy of the Eliza Trail calibration course certificate.

My sincere thanks to all participants for their contributions, patience and assistance.

A handwritten signature in black ink, appearing to read "Michael Wickiser", written in a cursive style.

Michael A. Wickiser, measurement team leader



Road Running Technical Council
USA Track & Field

recognized by



Measurement Certificate

Name of course: UPMC CITY OF PITTSBURGH MARATHON Dist: 42.195 KM (26.218753 MILES)

Location (state) PENNSYLVANIA (city) PITTSBURGH

Type of course: road race calibration track Configuration ONE LOOP, 1 TIME

Type of surface: paved 100 % dirt _____ % gravel _____ % grass _____ % track _____ %

Altitude (m/ft above sea level) Start: 232m (760 ft) Finish: 222m (728 ft) Highest: 242m (795 ft) Lowest 222m (728 ft)

Straight line distance between start & finish 5280 ft (1609 m) Drop 0.23 m/km Separation 3.8 %

Measured by (name, address, & phone) S. MARK COURTNEY, 83 CRANBERRY RD., GROVE CITY, PA 16127

(412) 458-4435

Race contact (name, address, & phone) LARRY GROLLMAN, %UPMC, 200 LOTHROP ST.,

PITTSBURGH, PA 15213

(412) 647-7866

Measuring Methods: bicycle steel tape electronic distance meter

Number of measurements of entire course: 2 Date(s) when course measured: 12/15/96, 3/2/97

Race date: 5/4/97 Course paperwork postmark date: 4/18/97

Difference between two best measurements of the course: 80.7 ft (24.6m) Certification code: PA 97009 WB

Replaces PA 96008 WB (if applicable)

Notice to Race Director
Use this Certification Code in *all* public
announcements relating to your race.

Be It Officially Noted That

Based on examination of data provided by the above named measurer, the course described above and in the map attached is hereby certified as reasonably accurate in measurement according to the standards adopted by the Road Running Technical Council. If *any* changes are made to the course, this certification becomes void, and the course must then be recertified.

Validation of Course – In the event a National Open Record is set on this course, or at the discretion of USA Track & Field, a validation measurement may be required to be performed by a member of the Road Running Technical Council. If such a remeasurement shows the course to be short, then all pending records will be rejected and the course certification will be cancelled.

Automatic Expiration – This certification automatically expires ten years after date of issue, although it may be renewed for additional ten-year periods upon testimony to RRTC that the course is still in use, and has not been altered, and that all key points (start, finish, turn-around points, cone positions, etc.) described on the attached map can still be located precisely.

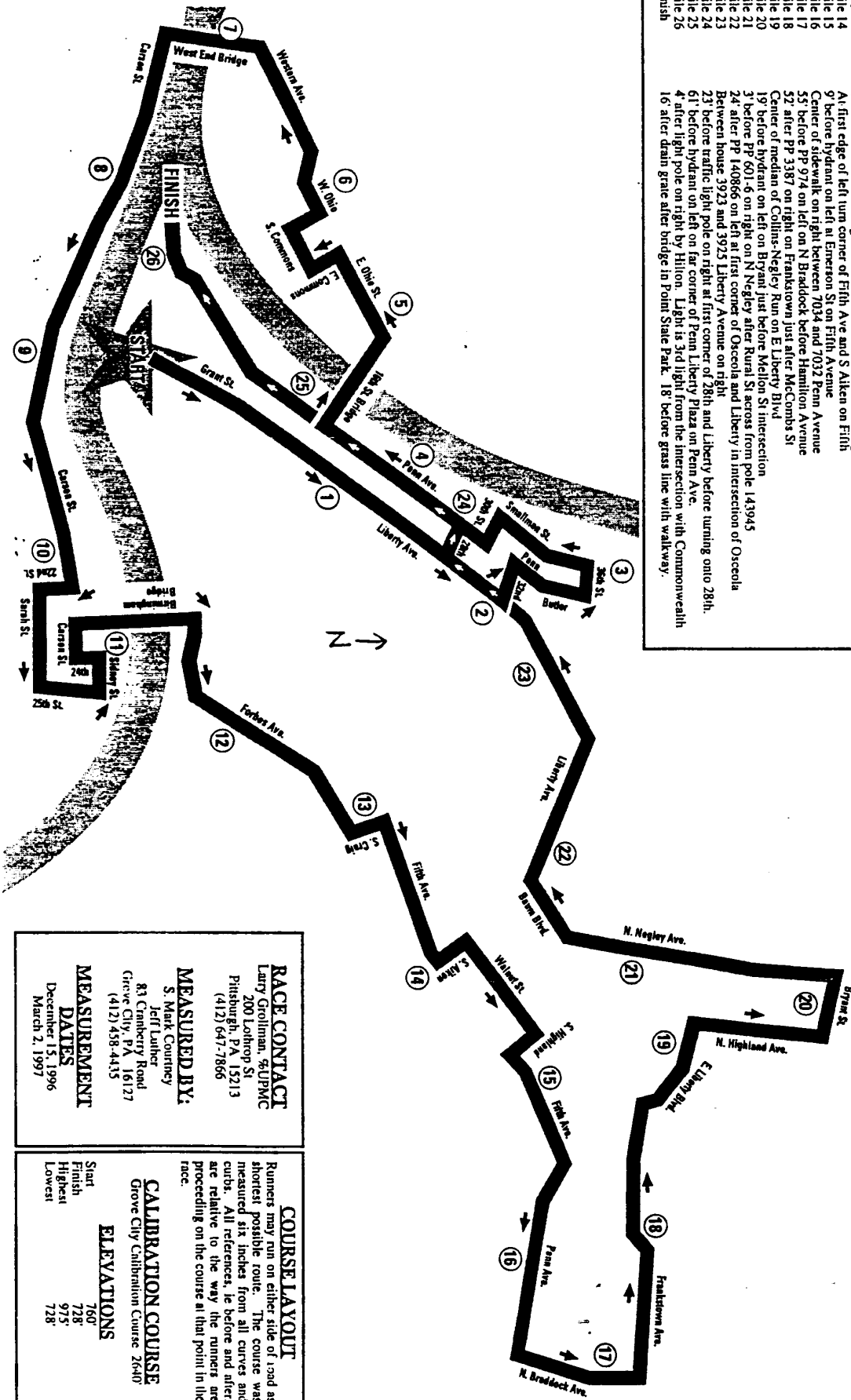
AS NATIONALLY CERTIFIED BY:

Date: 4/24/97

William J. Belleville – USA/TF/RRTC Regional Certifier
2902 Morris Road, Ardmore, PA 19003-1809

MILE LOCATIONS

- Start 1
 - Mile 1
 - Mile 2
 - Mile 3
 - Mile 4
 - Mile 5
 - Mile 6
 - Mile 7
 - Mile 8
 - Mile 9
 - Mile 10
 - Mile 11
 - Mile 12
 - Mile 13
 - Mile 14
 - Mile 15
 - Mile 16
 - Mile 17
 - Mile 18
 - Mile 19
 - Mile 20
 - Mile 21
 - Mile 22
 - Mile 23
 - Mile 24
 - Mile 25
 - Mile 26
 - Finish
- Center of the front doors of the City-County Building on Grant St.
 90' after the far curb side on left of 17th St. & Liberty Ave. on Liberty
 113' before end of near curb side on left at 31st St. & Liberty Ave. on Liberty
 48' before far curb side on right at intersection of 32nd St. & Smallman on Smallman
 27' before far curb side on right at intersection of 21st and Penn Ave. on Penn Ave.
 110' after the beginning of the left side of bridge at Madison and E. Ohio St. on E. Ohio
 38' after the end of West End Bridge (house on left)
 80' after PP 262305 on right after median barrier dividing E. Carson St. and ramp to Ft. Pitt Bridge
 38' before PP 158189 on left after 115 E. Carson St.
 6' after light pole in front of 1726 E. Carson St.
 12' before far point of concrete median on the on-ramp of Birmingham Bridge
 25' before fire hydrant on right on the up-ramp of Forbes under the overpass
 Across from water meter cover on right on Forbes just after S. Dilbridge
 26' after PP 143290 on right at first corner of Filmore St. on Craig
 At first edge of left turn corner of Fifth Ave. and S. Aiken on Fifth
 9' before hydrant on left at Emerson St. on Fifth Avenue
 Center of sidewalk on right between 7034 and 7032 Penn Avenue
 55' before PP 974 on left on N. Braddock before Hamilton Avenue
 52' after PP 3387 on right on Frankstown just after McCombs St.
 Center of median of Collins-Negley Run on E. Liberty Blvd.
 19' before hydrant on left on Bryant just before Mellon St. intersection
 3' before PP 601-6 on right on N. Negley after Rural St. across from pole 143945
 24' after PP 140866 on left at first corner of Osceola and Liberty in intersection of Osceola
 between house 3923 and 3925 Liberty Avenue on right
 23' before traffic light pole on right at first corner of 28th and Liberty before turning onto 28th.
 61' before hydrant on left on far corner of Penn Liberty Plaza on Penn Ave.
 4' after light pole on right by Hilton. Light is 3rd light from the intersection with Commonwealth
 16' after drain grate after bridge in Point State Park. 18' before grass line with walkway.



UPMC CITY OF PITTSBURGH MARATHON

Allegheny County, PA

Certificate # PA 97009 WB

RACE CONTACT

Larry Grohman, 54UPMC
 200 Lohrnp St.
 Pittsburgh, PA 15213
 (412) 647-7866

MEASURED BY:

S. Mark Courtney
 Jeff Luther
 83 Cranberry Road
 Grove City, PA 16127
 (412) 458-4435

MEASUREMENT DATES

December 15, 1996
 March 2, 1997

COURSE LAYOUT

Runners may run on either side of road as shortest possible route. The course was measured six inches from all curves and curbs. All references, be before and after, are relative to the way the runners are proceeding on the course at that point in the race.

CALIBRATION COURSE

Grove City Calibration Course 2640

ELEVATIONS

Start	760'
Finish	728'
Highest	975'
Lowest	728'



M A R A T H O N

1999 UPMC Health System/City of Pittsburgh Marathon Race Course Description

The Starting Line is located near the Caliguri Statue in front of the City-County Building on Grant Street -- Continue on Grant Street running into Liberty Avenue -- Follow Liberty Avenue into the Strip District -- Continue on Liberty Avenue making a left turn onto 32nd Street -- Go one block and turn right onto Penn Avenue -- Follow Penn Avenue until "Y" in the road (in Lawrenceville) -- Bear left at the "Y" onto Butler Street -- Continue on Butler Street, then turn left onto 36th Street -- Go one block and turn left onto Smallman Street -- Continue on Smallman Street, then turn left onto 30th Street -- Go one block and turn right onto Penn Avenue -- Continue on Penn Avenue -- Turn right onto the 16th Street Bridge -- Cross the 16th Street Bridge and turn left onto E. Ohio Street -- Follow E. Ohio Street and turn left onto E. Commons, then right onto S. Commons, then right onto W. Commons, then left onto W. Ohio Street -- Continue on W. Ohio Street bearing right as the road becomes Western Avenue -- Follow Western Avenue until the West End Bridge -- Cross the West End Bridge and turn left onto E. Carson Street -- Run straight on Carson Street for two miles into and through the South Side -- Turn right onto 22nd Street -- Go one block and turn left onto Sarah Street, then turn left onto 25th Street -- Go two blocks, then turn left onto Sidney Street -- Go one block and turn left onto 24th Street -- Go one block and turn right onto Carson Street -- Turn right to go across the Birmingham Bridge -- At the end of the bridge, use the lower ramp on the right and follow it to Forbes Avenue -- Turn right onto Forbes Avenue and follow Forbes Avenue into and through Oakland -- Turn left onto S. Craig Street -- (Cross the 13.1-mile mark in this block) -- Turn right onto Fifth Avenue and follow Fifth Avenue into Shadyside -- Turn left onto S. Aiken Avenue -- Turn right onto Walnut Street -- Turn right onto S. Highland Avenue -- Turn left back onto Fifth Avenue -- Follow Fifth Avenue past Mellon Park -- Bear right onto Penn Avenue and follow Penn Avenue through Point Breeze --

-more-

Turn left onto N. Braddock Avenue -- Turn left onto Frankstown Avenue (in Homewood) -- Follow Frankstown Avenue for about one mile -- Turn right onto East Liberty Boulevard -- Bear right onto N. Highland Avenue -- Continue on N. Highland Avenue, then turn left onto Bryant Street -- Follow Bryant Street until turning left onto N. Negley Avenue -- Continue on N. Negley Avenue for about one mile -- Turn right onto Baum Boulevard -- Turn right onto Liberty Avenue -- Continue on Liberty Avenue through Bloomfield into the Strip District -- Turn right onto 28th Street -- Go one block and turn left onto Penn Avenue -- Follow Penn Avenue into the Golden Triangle -- Follow the left-hand bend at the end of Penn Avenue at Gateway Center onto Liberty Avenue -- Follow Liberty Avenue and veer right into the left-side entrance of Point State Park -- the Finish Line is located just beyond the portal bridge.

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**1999 UPMC HEALTH SYSTEM/
CITY OF PITTSBURGH MARATHON**

MILE LOCATIONS

Start	Center of front doors of City-County Building - Grant Street
Mile 1	90' beyond far curb side on left of 17th Street & Liberty Avenue
Mile 2	113' before end of near curb side on left at 31st Street & Liberty Avenue
Mile 3	58' before PP#146776 on right at corner of 32nd & Smallman Sts.
Mile 4	27' before far curb side on right in intersection of 21st St. & Penn Ave.
Mile 5	110' beyond on left side beginning of bridge at Madison & E. Ohio Streets
Mile 6	38' after PP #299234 on right on bridge where W. Ohio St. becomes Western Ave.
Mile 7	80' past end of bridge house on left (coming from North Side) on West End Bridge
Mile 8	140' after PP #262305 on right after median barrier dividing E. Carson St. and ramp to Ft. Pitt Bridge
Mile 9	38' before PP #158189 on left beyond 115 E. Carson Street
Mile 10	6' after light pole in front of 1726 E. Carson St.
Mile 11	12' before far point of concrete median on the on-ramp of Birmingham Bridge
Mile 12	25' before fire hydrant on right on the up-ramp of Forbes Avenue under the overpass
Mile 13	Across from water meter cover on right on Forbes Avenue just after S. Dithridge St.
Half-Mar.	26' after PP #143290 on right at first corner of Filmore Street on S. Craig St.
Mile 14	At first edge of left turn corner of Fifth Avenue and S. Aiken St.

- Mile 15 9' before hydrant on left at Emerson St. on Fifth Avenue
- Mile 16 Center of sidewalk on right between 7034 and 7032 Penn Avenue
- Mile 17 55' before PP #974 on left on N. Braddock Avenue before Hamilton Avenue
- Mile 18 52' after PP #3387 on right on Frankstown Avenue just after McCombs Street
- Mile 19 Center of median of Collins Ave.-Negley Run on E. Liberty Blvd.
- Mile 20 19' before hydrant on left on Bryant Street just before Mellon St. intersection
- Mile 21 3' before PP #601-6 on right on N. Negley Avenue after Rural St. across from pole #143945
- Mile 22 24' after PP #140866 on left at first corner of Osceola St. and Liberty Ave. in intersection of Osceola St.
- Mile 23 Between house 3923 and 3925 Liberty Avenue on right
- Mile 24 23' before traffic light pole on right at first corner of 28th St. and Liberty Ave. before turning onto 28th St.
- Mile 25 61' before fire hydrant on left on far corner of Penn Liberty Plaza on Penn Avenue
- Mile 26 4' after light pole on right by Hilton Hotel. Light is 3rd light from intersection with Commonwealth.
- Finish 16' after drain grate after bridge in Point State Park. 18' before grass line with walkway.

VALIDATION OF US MEN'S OLYMPIC TRIALS MARATHON COURSE

Pittsburgh, PA - August 27 & 28, 1999

August 27 - Layout of calibration course on bike path by Mike Wickiser and Bernie Conway

Time at start =	1:20 PM
Time at finish =	2:10 PM
Temperature at start =	83 F
Temperature at finish =	84 F
First measurement =	300.0075 meters
Second measurement =	299.9925 meters
Average measurement =	300 Meters
Average Temperature =	83.5 F
Temperature Correction =	0.029993 meters
Uncorrected length =	300.03 meters
Mark was moved	0.031 meters to shorten course
Final corrected length =	299.999 meters

CALIBRATIONS - August 28, 1999

Team members:	MW	Mike Wickiser	Team leader & Measurer
	BC	Bernie Conway	Measurer
	DD	Dwane Dover	Measurer
	JG	Jim Gerweck	Measurer
	PH	Paul Hronjak	Measurer
	WN	Wayne Nicoll	Measurer
		Pete Riegel	Data Recorder & Calculator

Precalibration - 7:15 AM - 66F

Note: All calibrations include Short Course Prevention Factor (SCPF) of 1.001.

	MW	BC	DD	JG	PH	WN
Counter Readings	20100	16000	788600	5080	335000	93000
	22989	18878.5	791995.7	8670	338569	96303
	25880	21759.5	795392.7	12261	342139	99606
	28769	24639	798788.5	15850.5	345707.5	102908
	31659	27519	802185.5	19441.5	349277	106211
Elapsed counts	2889	2878.5	3395.7	3590	3569	3303
	2891	2881	3397	3591	3570	3303
	2889	2879.5	3395.8	3589.5	3568.5	3302
	2890	2880	3397	3591	3569.5	3303
Average counts	2889.75	2879.75	3396.375	3590.375	3569.25	3302.75
Counts per km	9642.165	9608.798	11332.609	11979.925	11909.437	11020.213

Note: BC's recorded count for his second calibration ride was 18888.5. As a recording mistake is likely, the more probable value of 18878.5 is used in these calculations.

Postcalibration - Noon - 80F

	MW	BC	DD	JG	PH	WN
Counter Readings	84500	78000	333800	81880	908000	623000
	87387	80875	337192	85462.5	911563	626299
	90274	83751	340582.3	89045	915127.5	629599
	93161	86626	343974.5	92629	918693.5	632897
	96049	89503	347366.2	96214	922257	636198
Elapsed counts	2887	2875	3392	3582.5	3563	3299
	2887	2876	3390.3	3582.5	3564.5	3300
	2887	2875	3392.2	3584	3566	3298
	2888	2877	3391.7	3585	3563.5	3301
Average counts	2887.25	2875.75	3391.55	3583.5	3564.25	3299.5
Counts per km	9633.823	9595.451391	11316.51	11956.99	11892.75	11009.37
Day's constant (average)	9637.994	9602.125	11324.560	11968.455	11901.096	11014.791

Calibration Behavior

	MW	BC	DD	JG	PH	WN
4-ride span, precal, counts	2	2.5	1.3	1.5	1.5	1
4-ride span, postcal, counts	1	2	1.9	2.5	3	3
Average 4-ride span, counts	1.5	2.25	1.6	2	2.25	2
Precal constant, cts/km	9642.165	9608.798	11332.609	11979.925	11909.437	11020.213
Postcal constant, cts/km	9633.823	9595.451	11316.510	11956.985	11892.754	11009.369
Precal - Postcal, cts/km	8.3	13.3	16.1	22.9	16.7	10.8
Tire type	solid	pneu	pneu	pneu	pneu	solid

COURSE MEASUREMENT (continuous ride except for a 20 minute break taken at Mile 13)

	Time	Temp, F	Counter readings obtained					
			MW	BC	DD	JG	PH	WN
Start	8:45	66.5	49300	45000	823000	42000	371400	126000
Mile 3	8:25	68.6	96222	91589	878133	100104	429137	179594
Mile 6	8:48	68.6	142769	137955	932833	157952	486598	232793
Mile 9	9:06	71.1	189338	184339	987543	215797	544066	286072
Mile 13	9:36	71	251469	246244	1060542	293013	620806	357132
Mile 17	10:19	74.4	313544	308090	1133481	370123	697451	428082
Mile 20	10:37	76.9	360058	354426	1188136	427890	754856	481249
Mile 23	10:57	80.1	406643	400793	1242824	485730	812338	534498
Finish	11:27	81.9	456575	450539	1301440	547708	873965	591536

	Elapsed Interval Counts					
	MW	BC	DD	JG	PH	WN
Start						
Mile 3	46922	46589	55133	58104	57737	53594
Mile 6	46547	46366	54700	57848	57461	53199
Mile 9	46569	46384	54710	57845	57468	53279
Mile 13	62131	61905	72999	77216	76740	71060
Mile 17	62075	61846	72939	77110	76645	70950
Mile 20	46514	46336	54655	57767	57405	53167
Mile 23	46585	46367	54688	57840	57482	53249
Finish	49932	49746	58616	61978	61627	57038

	Elapsed Interval Meters						Span, m	
	MW	BC	DD	JG	PH	WN	Shortest	max - min
Start								
Mile 3	4868.4	4851.9	4868.4	4854.8	4851.4	4865.6	4851.4	17.0
Mile 6	4829.5	4828.7	4830.2	4833.4	4828.2	4829.8	4828.2	5.2
Mile 9	4831.8	4830.6	4831.1	4833.1	4828.8	4837.0	4828.8	8.2
Mile 13	6446.5	6447.0	6446.1	6451.6	6448.1	6451.3	6446.1	5.5
Mile 17	6440.7	6440.9	6440.8	6442.8	6440.2	6441.3	6440.2	2.6
Mile 20	4826.1	4825.6	4826.2	4826.6	4823.5	4826.9	4823.5	3.4
Mile 23	4833.5	4828.8	4829.2	4832.7	4830.0	4834.3	4828.8	5.5
Finish	5180.7	5180.7	5176.0	5178.4	5178.3	5178.3	5176.0	4.7
Total	42257.2	42234.3	42248.0	42253.4	42228.5	42264.6	42223.0	

ADJUSTMENTS TO THE COURSE AS MEASURED

Noted Occurrence	Effect
1) A truck was parked at about 1.5 miles	none
2) Because of traffic, some riders rode right-of-center instead of SPR on three corners between miles 2 & 3	used SOSS
3) After crossing 16th street bridge, runners must stay to the right of the E Ohio median. This is not so documented on the course map. (mile 4-5)	None
4) Cars were parked close to corners at S 22nd and Sarah. (mile 10-11)	1 meter
5) After descending the off-ramp from the Birmingham Bridge, the route onto Forbes Avenue is split by a median divider. All riders rode the longer way around the median. Sideways displacement was about 10 meters, angle of curve about 30 degrees (mile 11-12)	5.2 meters
6) Riders rode RSO on Penn between between miles 15-16.	none
7) Some riders stayed right of center on the turn on Liberty between miles 22-23.	used SOSS

ADJUSTMENTS TO MEASURED VALUES BASED ON ABOVE:

SOSS measured distances are used in this calculation

	Original Measured Length	Adjustment	Corrected Measured Length	Cumulative Length	Desired Length	Adjustment if desired, m
Start				0		
Mile 3	4851.4		4851.4	4851.4	4828.0	-23.4
Mile 6	4828.2		4828.2	9679.6	9656.1	-23.5
Mile 9	4828.8		4828.8	14508.4	14484.1	-24.3
Mile 13	6446.1	-6.2	6439.9	20948.3	20921.5	-26.8
Mile 17	6440.2		6440.2	27388.5	27358.8	-29.6
Mile 20	4823.5		4823.5	32212.0	32186.9	-25.1
Mile 23	4828.8		4828.8	37040.8	37014.9	-25.9
Finish	5176.0		5176.0	42216.8	42195.0	-21.8

TIRE DATA

Circumference was measured by rolling the unloaded bike forward one wheel revolution, and distance measured by an adjacent steel tape.

Pressure was measured using a Topeak SmartGauge, a digital device. Some doubt was expressed as to its accuracy. A further check will be made later. It seemed to give lower readings than other on-site gauges, and also seemed low by "feel."

Sidewall-to-sidewall was measured with a vernier caliper.

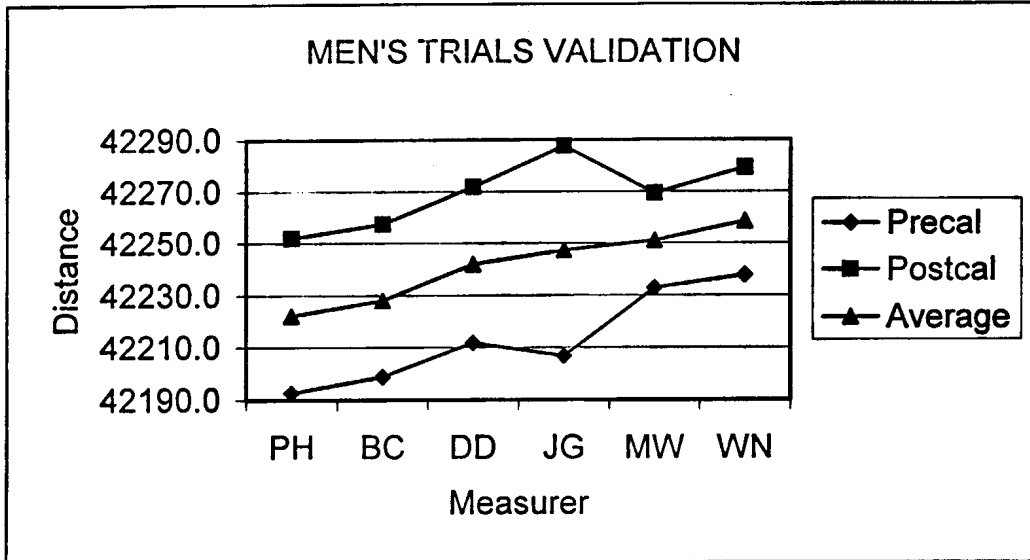
	Sidewall markings	Tire Circumference, m	Tire Pressure PSI	Sidewall to sidewall cm
Bernie Conway - BC	Vittoria 27x622? (very worn, illegible)	2.093 2.066	82.5 20	2.28
Paul Hronjak - PH	Performance 26x1.50	2.002 1.970	50 13	3.7
Dwane Dover - DD	Specialized Team Control Knobby 26x2.0	2.105 2.086	72 36	5.05
Jim Gerweck - JG	Avocet Cross 26x1.5	2.004 1.986	47.5 23	3.7
Solid Tires				
Mike Wickiser - MW	Natl Tire Co Cyclepro 700x25			2.05
Wayne Nicoll	???? (very worn, illegible)			2.85

Tire Pressures, PSI

Pressure Data	Pre-precab	Post-Postcab
MW	Solid	
BC	84.5	83.5
DD	72.0	73.0
JG	51.0	50.0
PH	54.5	51.5
WN	solid	

MEASURED LENGTH AFTER 6.2 METER ADJUSTMENT

	Length by Precal	Length by Postcal	Length by Average
PH	42192.7	42251.9	42222.3
BC	42198.8	42257.5	42228.1
DD	42211.8	42271.9	42241.8
JG	42206.8	42287.7	42247.2
MW	42232.8	42269.3	42251.0
WN	42237.6	42279.2	42258.4
SOSS			42216.8



CALIBRATION DATA

PRECALIBRATION

BC	DD	JG	MW	PH	WN
16000	788600	05080	20100	335000	093000
18888.5	791995.7	08670	22989	338569	096303
21759.5	795392.7	12261	25880	342139	099606
24639	798788.5	15850.5	28769	345707.5	102908
27519	802185.5	19441.5	31659	349277	106211

POSTCALIBRATION

BC	DD	JG	MW	PH	WN
78000	333800	81880.	84500	908000	623000
80875	337192	85462.	87387	911563	626299
83751	340582.3	89045	90274	915127.5	629599
86626	343974.5	92629	93161	918693.5	632897
89503	347366.2	96214	96049	922257	636198

ORDER/	5	2	6	1	4	3
LOCATION	BC	DD	JG	MW	PH	WN
Start	45000	823000	42000	49300	371400	126000

66.5

8:45

ORDER/	5	2	6	1	4	3
LOCATION	BC	DD	JG	MW	PH	WN
M3	91589	878133	00104	96222	429137	179594

68.6

8:25

ORDER/	2	5	3	4	1	6
LOCATION	BC	DD	JG	MW	PH	WN
M6	37955	932833	57952	42769	486598	232793

68.6

8:48

ORDER/	5	4	2	3	1	6
LOCATION	BC	DD	JG	MW	PH	WN
M9	84339	987543	15797	89338	544066	286072

9:06

71.1

ORDER/	2	4	6	1	3	5
LOCATION	BC	DD	JG	MW	PH	WN
M 13 13	46244	060542	93013	51469	620886	357132

9:36

71.1
rest of 9:
79.4

ORDER/ LOCATION	5 BC	4 DD	3 JG	1 MW	2 PH	6 WN	74.4
M17	08090	133481	70123	13544	697451	428082	10:19

ORDER/ LOCATION	5 BC	2 DD	4 JG	3 MW	1 PH	6 WN	76.9
M20	54226	188136	27890	60058	754856	481249	10:37

ORDER/ LOCATION	3 BC	6 DD	2 JG	4 MW	1 PH	5 WN	80.1
M23	00793	242824	85730	06643	812338	534498	10:57

ORDER/ LOCATION	5 BC	4 DD	3 JG	2 MW	1 PH	6 WN	81.9
FINISH	50539	301440	47708	56575	873965	591536	11:27



Road Running Technical Council
USA Track & Field



Measurement Certificate

Name of the course ELIZA FURNACE / JAIL TRAIL Distance 300m

Location (state) PENNSYLVANIA (city) PITTSBURGH

Type of course: road race calibration track Configuration PT. TO PT.

Type of surface: paved 100 % dirt _____ % gravel _____ % grass _____ % track _____ %

Altitude (meters/feet) above sea level) Start 740 Finish 740 Highest 740 Lowest 740

Straight line distance between start & finish 300m Drop 0 m/km Separation 100 %

Measured by (name, address, & phone) Bernard Conway, 67 Southwood Cres., London, ON N6J 1S8
and Mike Wickiser, 2939 Vincent Rd., Silver Lake, OH 44224

Race contact (name, address, & phone) _____

Measuring methods: bicycle steel tape electronic distance meter

Number of measurements of entire course: TWO Date(s) when course measured: AUG. 27 / 99

Race date: _____ Course paperwork postmark date: AUG. 30 / 99

Difference between two best measurements of the course: 1.5 cm Certification code: PA99014 BDC

Replaces _____ (if applicable)

Notice to Race Director
Use this Certification Code in *all* public
announcements relating to your race.

Be It Officially Noted That

Based on examination of data provided by the above named measurer, the course described above and in the map attached is hereby certified as reasonably accurate in measurement according to the standards adopted by the Road Running Technical Council. If *any* changes are made to the course, this certification becomes void, and the course must then be recertified.

Validation of Course — In the event a National Open Record is set on this course, or at the discretion of USA Track & Field, a validation remeasurement may be required to be performed by a member of the Road Running Technical Council. If such a remeasurement shows the course to be short, then all pending records will be rejected and the course certification will be cancelled.

Automatic Expiration — This certification automatically expires ten years after date of issue, although it may be renewed for additional ten-year periods upon testimony to RRTC that the course is still in use, and has not been altered, and that all key points (start, finish, turn-around points, cone positions, etc.) described on the attached map can still be located precisely.

AS NATIONALLY CERTIFIED BY:

Bernard Conway Date: Aug. 30 / 99

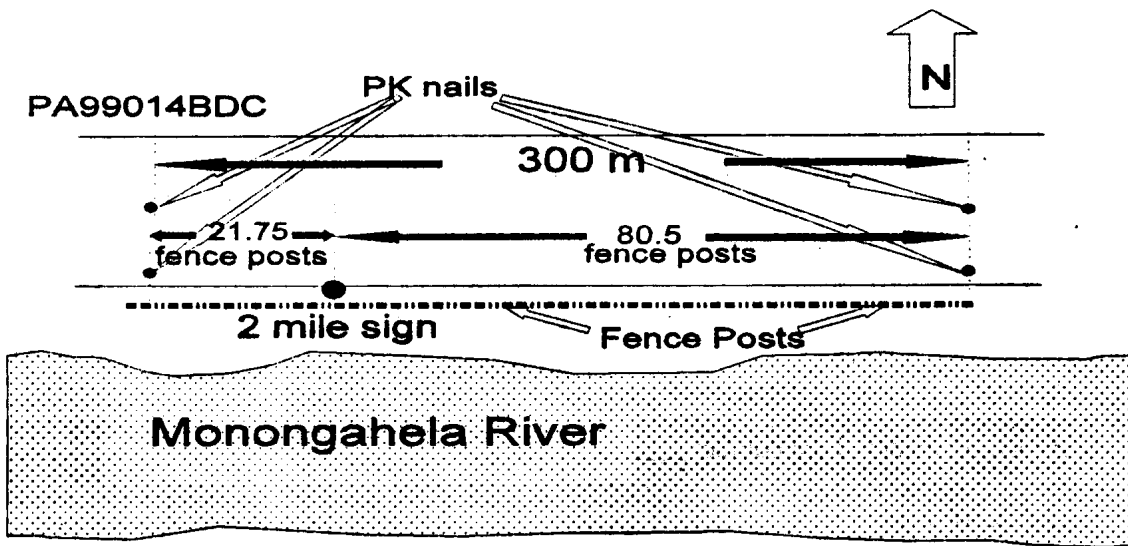
Bernard Conway - USATF/RRTC National Certifier IAAF/AIMS International Grade A Measurer
67 Southwood Cres., London, Ontario, Canada, N6J 1S8
Phone: 519-641-6889 (H) 519-633-0090 (W) Fax: 519-633-9516 email: measurer@ican.net

300 m Eliza Furnace/Jail Trail Calibration Course

East End - PK nail 80 ½ fence posts east of the “2 mile” bikepath sign.

West End - PK nail 21 ¾ fence posts west of the “2 mile” bikepath sign.

PA 99014 BDC



Aug 27/99 1:20 PM 300m 85°C

1st meas. 300m Tooker position

2nd meas. 299.985m

Final 85°C shorter by 3.01

E end. PK nail 80.5 fence posts E of mile 2 marker.
(duplicated by 3:4:5)

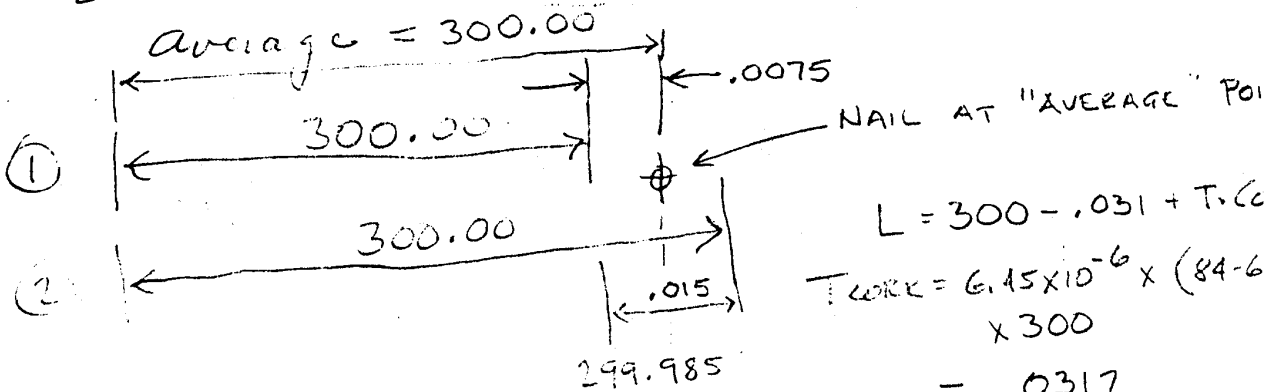
W end. PK nail 21 3/4 fence posts W of mile 2 marker.
2:00 PM

ORIGINAL

BY PETER:

Calibration course laid out
by Mike Wickham & Bonnie Conway
27 August 1999

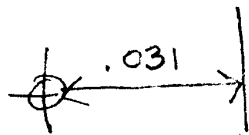
1st Measurement = 300.00 m
2nd Measurement = 299.985 m



$$L = 300 - .031 + T.C$$

$$T.CORR = 6.45 \times 10^{-6} \times (84-6) \times 300$$

$$= .0312$$



$$L = 300 - .031 + .0312$$

$$L = 300.00$$

FINAL POSITION OF NAIL