

Measurement News

May 2004 • Number 125



The measurement team of the 2004 Flora London Marathon, posed in front of Nelson's Column in Trafalgar Square. L to r: Tom Riegel, Pete Riegel, Hugh Jones. Story inside this issue.

photo by Tom Riegel

MEASUREMENT NEWS

#125 – MAY 2004

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ABOUT MEASUREMENT NEWS

Measurement News (MN) is the newsletter of the Road Running Technical Council (RRTC) of USA Track & Field (USATF). MN is our way to talk to one another, so that we all know what's going on.

MN is also sent to many foreign measurers associated with AIMS and IAAF, who are also invited to participate in the dialogue.

MN is published bimonthly beginning in January (six issues per year). MN is sent free to RRTC officers and certifiers, and AIMS/IAAF measurers. Others may obtain MN by sending \$20 (for a one year subscription - six issues) to the editor.

If you wish to reproduce or report on anything in MN, go ahead, but an attribution would be appreciated.

MN wants to make road course measurement as good as it can be. All opinions and grievances are solicited. No cows are sacred. If you have a new measurement technique, or if you think things should be done differently, send in your contribution to MN. Your opinion will be given space. Nothing changes until somebody tries!

Electronic copy or clean typed material is most welcome, but send what you can.

Deadlines: Material intended to be included in the July 2004 issue must be in the Editor's hands by June 20. Next issue will be mailed in early July.

ROAD RUNNING TECHNICAL COUNCIL

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Visit the RRTC website at:

<http://www.rrtc.net>

A complete list of certified courses may be downloaded from this site.

A complete USATF measurement book can be downloaded from this site.

ONLINE MEASUREMENT FORUM

All it takes to become a subscriber is access to email. Simply send to mnforum-request@rrtc.net with "subscribe" as the subject (to unsubscribe, use "unsubscribe" as the subject).

To post messages to the list, send email to mnforum@rrtc.net. Please keep your comments in the body of the email (no attachments please). Also, please send only plain text; i.e., avoid formatted (HTML) messages (If you use HTML formatting, the formatting will be removed).

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Chairman's Clatter - From Mike Wickiser

Annual RRTC Meeting: The RRTC will be meeting this year over the August 21-22 weekend. Jim Gerweck is spending all his spare time searching for a suitable location. To date he has tried several 4 star hotels and informs me he plans on continued investigation for as long as someone else is picking up the tab. Just kidding of course. Jim has been busy working on this but the exact location has yet to be determined.

Certified Course Listing: The USATF course search engine has taken off in a big way. Race directors and runners alike are using the website to look up races and maps regularly. Jim Gerweck was a great help spreading the word in the latest *Running Times* article (see page 15). Thanks Jim.

As the running community becomes more tuned into looking for certified courses, the need for prompt information updating is increasing. It is common for me to get messages asking why some particular course isn't listed on the website even though the race is advertising a "certified course". Frequently the course has been certified very recently and the paperwork simply hasn't caught up with the USATF website yet. At this time, the list is updated every other month, coinciding with Measurement News. All newly received measurement certificates and renewed courses were placed into a "current" file, posted on my webpage and included into the "complete" list. Corrections for typo errors and validation status changes are made, then new Active & Archive lists are generated.

Keith Lively, USATF Webmaster, is looking at making some changes in the way the list is posted and it may be possible to make updates as course certificates are received here. If and when I can master the new software, the course list can be maintained up to date rather than every other month. Big improvement! But it only works after the certificates are received. Just as a one week turn time for course measurement review is the certifier's standard, getting certificates into the mail for distribution to measurers and Vice Chairmen is a necessary part of course certification. Courses can't be listed when the certificates are sitting on someone's desk.

Replacement Measurement Certificates: Certifiers, whenever it is necessary to replace, correct or issue a new certificate for an existing course please include a note detailing the reason for replacement. It makes it a lot easier if the map file or listing file needs updated. Thanks



Mike Wickiser

YEAR 2003 MEASUREMENT ACTIVITY

This summary is based on the course list as it existed on March 16, 2004. It was assumed that all of the year 2003 courses had been received, and indeed few have been received since then. Here is how we did last year:

Most active certifier: Tom McBrayer – 132 (135 in 2002)
Most active measurer: Chuck Hinde, with 54 (63 in 2002)
Most active state: Texas, with 158 courses certified (155 in 2002)
Measurers active in 2000: 268 (296 in 2002)
State with most active measurers: tie: New York – 21 (20 in 2002), Texas - 21 (22 in 2002)
Courses certified in 2003: 1287 (1205 in 2002)
New measurers in 2003: 57 (57 in 2002)

NOTE: 2003 BREAKS THE ALL-TIME RECORD FOR COURSES CERTIFIED!

LENGTHS OF COURSES CERTIFIED IN 2003

Length	Number	Percent
5 km	613	44.9
10 km	151	11.1
Hmar	101	7.4
Mar	96	7.0
Cal	78	5.7
8 km	45	3.3
5 mi	30	2.2
1 mi	27	2.0
10 mi	25	1.8
4 mi	17	1.2
15 km	15	1.1
20 km	10	0.7
Other	79	5.8

A note on how the information was compiled: The course list was used without any editing, and massaged using the various sorting and table-making capabilities of Microsoft Excel. Thus, several distances listed on the same certificate will each count as a separate course. Mike Wickiser noticed this, saying:

“I differ from your calculation for most active certifier. While Tom McBrayer certified 132 distances, 20 of those were dual distance certs. Jay Wight issued 124 measurement certificates. Going over the list, it appears about 12 of Jay's certs could have been combined (same race name with 5k/10k distances). This brings Jay & Tom into a dead heat with 112 each.”

In this summary only the surnames of measurers are used. Thus those who share a surname will move higher on the list than those who do not. Using first initials would partially rectify this, but we do have two “D White” measurers, operating in several states. Perhaps there are more.

Calibration courses count as much as full-length race courses. Should they be included? How about giving more credit for marathons than 5 km courses? Lots of things are possible.

Also, as in any large database, the course list contains errors. They are constantly being found and corrected, but any errors in the listing will find their way into the yearly summary.

So, what you see is almost, but not quite, completely accurate.....Pete Riegel

2003 CERTIFICATION STATISTICS

Courses Certified in State in 2003	
TX	158
IL	110
CA	69
NC	66
NY	59
OH	57
FL	56
OK	47
MN	45
AL	42
TN	41
NJ	40
MA	31
VA	31
KS	29
MO	29
CO	28
WA	28
MI	27
PA	27
SC	26
WI	24
IA	23
AZ	19
GA	15
MD	15
NM	14
CT	13
DC	12
AR	11
NH	11
IN	8
OR	8
NV	7
RI	7
SD	7
VT	7
WV	6
DE	5
KY	5
ME	5
NE	5
AK	4
UT	4
PUR	3
HI	1
LA	1
ND	1
ID	0
MS	0
MT	0
WY	0
Total	1287

Measurers Active in State in 2003	
NY	21
TX	21
FL	18
CA	16
NC	13
SC	12
AL	11
IA	11
TN	11
KS	10
VA	10
CO	9
OH	9
GA	8
MN	8
MO	8
NJ	8
PA	8
WI	8
AZ	7
CT	7
IL	7
MD	6
OK	6
AR	5
MA	5
WA	5
IN	4
NH	4
OR	4
KY	3
ME	3
MI	3
NM	3
NV	3
SD	3
VT	3
WV	3
AK	2
DC	2
DE	1
HI	1
LA	1
ND	1
NE	1
PUR	1
RI	1
UT	1
Total	316

Courses Certified by Certifiers in 2003	
ETM	132
JW	124
PH	66
AM	58
BG	58
RS	54
PR	50
RR	48
BB	47
DL	46
RT	45
JD	38
RN	38
MW	37
LMB	35
DP	32
GAN	30
WB	29
BL	28
BS	27
JF	27
SH	27
DJR	22
RF	21
MF	20
RH	19
JS	18
KU	16
TK	15
WC	15
DR	13
DLP	12
DL	9
LB	8
BC	7
DB	4
DS	4
FW	4
BDC	2
WN	2
Total	1287

Measurers with 10 or more	
Hinde	54
Ashby	38
Thurston	32
Recker	30
McBrayer	29
Hess	27
Ferguson	26
Lafarlette	23
Wickiser	23
Wight	23
Scardera	22
Knoedel	20
Cotner	19
Hronjak	19
Clines	18
Melanson	18
Smith	17
Belleville	16
White	16
Dewey	15
Joline	15
Knight	15
Nelson	15
Baldasari	13
Zeigler	13
Moore	12
Newman	12
Sissala	12
Hubbard	11
Kuo	11
Ungurean	11
Vaitones	11
Witkowski	11
Wood	11
Forbis	10
Michael	10
Morgan	10
Total	688

This column contains surnames only. Note that several measurers may share the same surname.

This data was taken from the course list as it existed on March 16, 2004

PERFORMANCE OF USATF MEASURERS SINCE 1982

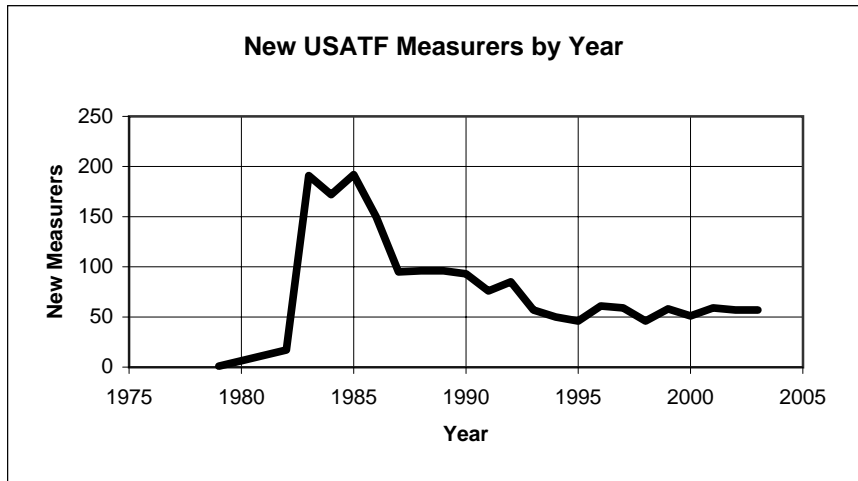
Based on the USATF certified course list as it existed on March 16, 2004

Top Measurers Since 1982	
Measurer	Courses
Lafarlette	710
Scardera	603
Nicoll	553
Hinde	543
Linnerud	537
Thurston	513
White	448
McBrayer	426
Brannen	412
Recker	341
Courtney	330
Hubbard	327
Knoedel	299
Beach	286
Riegel	282
Nelson	263
Smith	257
Knight	249
Sissala	241
Witkowski	240
Wight	227
Dewey	217
Ashby	203
Newman	201
Ferguson	183
Hronjak	182
Hess	180
Standish	166
Belleville	155
Melanson	155
Ensz	154
Connolly	153
Wisser	152
Hickey	143
Wickiser	141
Letson	130
Berglund	129
Polansky	125
Lucas	120
Rhodes	120
GuidoBros	115
Katz	110
LeBlanc	108
Vaitones	107
Grass	106
Johnson	106
Joline	106
Pierce	105
Cornwell	102
McDowell	100

Courses Measured by Other Measurers	
Courses Measured	Number of Measurers
50 to 99	38
20 to 49	99
10 to 19	151
5 to 9	219
2 to 4	599
1 only	709

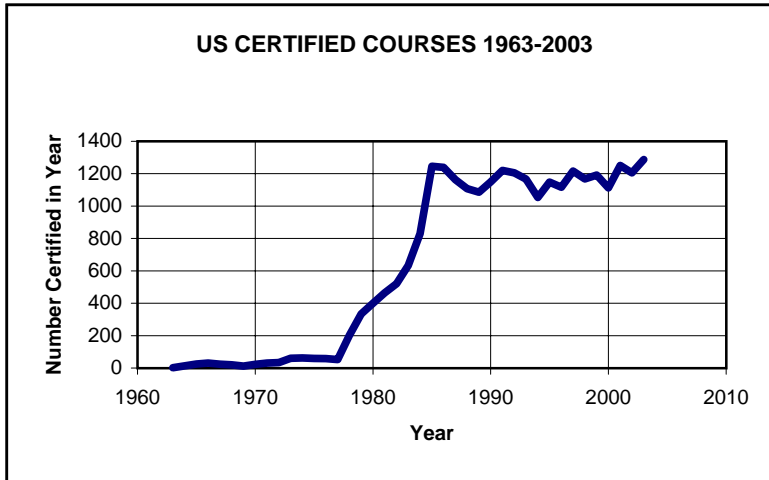
Note: These listings are based on sorted surnames only, thus some inaccuracy exists.

New Measurers by Year	
Year	New Measurers
1979	1
1982	17
1983	191
1984	172
1985	192
1986	150
1987	95
1988	96
1989	96
1990	93
1991	76
1992	85
1993	57
1994	50
1995	46
1996	61
1997	59
1998	46
1999	58
2000	51
2001	59
2002	57
2003	57



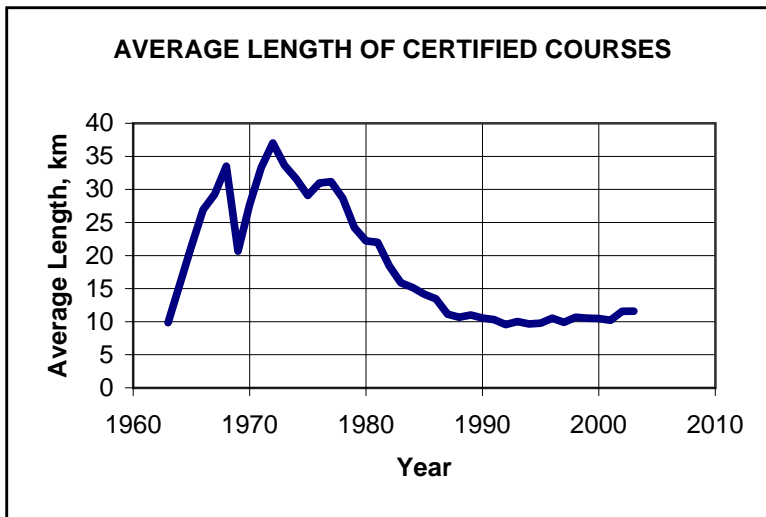
US CERTIFIED COURSES BY YEAR

Year	Courses
1963	2
1965	25
1966	31
1967	24
1968	20
1969	12
1970	23
1971	31
1972	34
1973	60
1974	62
1975	59
1976	58
1977	52
1978	202
1979	334
1980	400
1981	464
1982	521
1983	633
1984	830
1985	1246
1986	1239
1987	1163
1988	1108
1989	1086
1990	1149
1991	1220
1992	1205
1993	1167
1994	1053
1995	1148
1996	1116
1997	1216
1998	1168
1999	1192
2000	1112
2001	1251
2002	1205
2003	1287



In these graphs, the data was taken from the historical list generated by Malcolm Heyworth, and combined with data from the modern list. Malcolm's data was used from 1963-1983, while 1984-2003 used the modern list

All courses certified before 1982-1984 which did not contain the 1.001 short course prevention factor were decertified, and the currently-used listing was begun.



Year	Avg km
1963	9.9
1965	21.4
1966	26.9
1967	29.3
1968	33.5
1969	20.7
1970	27.7
1971	33.3
1972	37.0
1973	33.6
1974	31.6
1975	29.1
1976	31.0
1977	31.2
1978	28.6
1979	24.2
1980	22.2
1981	22.0
1982	18.4
1983	15.9
1984	15.2
1985	14.2
1986	13.5
1987	11.1
1988	10.7
1989	11.0
1990	10.5
1991	10.3
1992	9.6
1993	10.0
1994	9.6
1995	9.8
1996	10.5
1997	9.9
1998	10.7
1999	10.5
2000	10.5
2001	10.2
2002	11.6
2003	11.6

NUMBER OF CERTIFIED COURSES BY STATE AND YEAR

This data was taken from the course list as it existed on March 16, 2004

	1979	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Total
AK		1				1	4	4	5	6	9	9	1	7	2	1	5	10	3	6	4	2	4	84
AL		2	14	8	17	12	11	5	26	27	39	25	28	17	20	24	37	31	25	27	32	20	42	489
AR			4	5	9	4	4	8	8	13	4	5	9	10	5	3	10	13	17	11	5	10	11	168
AZ			13	14	23	20	20	7	10	10	16	9	6	3	8	12	9	6	15		4	16	19	240
CA	1	4	68	103	146	129	94	133	129	88	139	103	87	81	112	77	103	75	95	68	102	57	69	2063
CO			29	17	15	30	14	20	23	26	35	36	29	29	14	10	11	12	20	19	22	30	28	469
CT			1	10	17	23	19	21	31	20	20	19	21	22	20	18	43	24	27	33	23	22	13	447
DC			3	23	25	17	9	11	4	9	7	6	16	11	19	17	11	21	21	10	13	16	12	281
DE				12	25	18	18	13	13	23	23	18	10	11	4	11	11	8	8	3	6	3	5	243
FL			17	21	60	53	71	70	64	72	84	74	56	59	75	54	75	54	67	65	52	61	56	1260
GA			7	20	50	42	28	32	29	30	35	37	30	24	15	31	18	17	22	25	27	12	15	546
HI			7	6	9	9	10	6	1	3		5		3	3		9	5			2	2	1	81
IA	1		7	5	12	4	16	5	21	11	14	8	11	10	11	13	13	8	13	10	10	16	23	242
ID			1	1	4		1		1	1	2			1	2				1	2	2			19
IL			6	17	11	48	53	45	50	68	70	75	72	69	82	79	64	83	67	78	100	92	110	1339
IN			11	23	36	21	17	8	8	15	10	4	16	16	16	12	25	21	27	15	8	17	8	334
KS			7	7	12	31	14	21	20	24	23	29	30	33	23	40	24	49	40	29	20	30	29	535
KY			1	9	19	13	8	16	6	15	7	12	7	1	4	4	11	6	3	9	8	4	5	168
LA			2	2	11	2		1	5	5	2	6	6	4	8	9	4	7	11	14	2	3	1	105
MA		2	4	4	17	29	22	17	34	36	36	26	38	17	21	19	33	35	30	27	33	25	31	536
MD			4	8	16	17	28	14	7	17	5	17	14	19	21	19	20	19	14	26	18	22	15	340
ME			4	3	26	15	6	9	12	11	17	26	17	16	11	7	9	12	7	7	8	8	5	236
MI			21	27	37	22	36	31	19	33	17	25	40	37	58	37	33	24	31	37	34	44	27	670
MN			5	11	27	46	32	12	18	25	15	14	7	14	17	20	33	26	17	18	21	37	45	460
MO			13	14	10	6	8	10	11	4	14	9	7	17	25	9	9	23	20	21	31	25	29	315
MS			1	3	18	6		2	7	2	1	3	5	1		6	1	5		1	3	6		71
MT			1	8	5	8	1	4	1	1	3	7	10			3			2			5		59
NC		1	16	41	88	70	72	56	52	61	57	58	34	25	27	42	64	44	48	71	73	66	66	1132
ND			1	3		2	1			1	2									2	1	4	1	18
NE			4	22	20	25	17	3	5		6	7	7	1	1	5	3	3	9	9	4		5	156
NH			11	11	21	17	16	9	11	12	12	21	34	13	26	28	15	33	25	22	15	16	11	379
NJ		2	15	13	21	38	46	51	33	35	39	50	62	56	48	36	67	41	35	44	37	46	40	855
NM			1		3	3	5	3	11	11	15	4	4	4	4	4	8	2	4	9	9	3	14	121
NV				6	4	5		4	1	4	2	2	4	1	3	3	2	4	7	1	2	2	7	64
NY	3		28	60	57	48	44	41	45	41	65	43	62	76	52	70	79	44	76	56	61	73	59	1183
OH	1		43	51	46	52	56	64	64	62	60	91	69	52	53	55	32	48	53	38	63	26	57	1136
OK			34	69	72	65	51	54	50	51	74	78	47	56	60	34	48	39	34	34	37	24	47	1058
OR			23	32	32	14	11	11	9	12	13	8	11	8	12	13	6	14	14	14	2	5	8	272
PA		1	23	24	28	29	38	57	50	48	34	26	50	26	32	44	41	28	33	18	37	22	27	716
PUR													1							2	5	4	6	21
RI			2	1	4	5	1	2	9	1	5	4	10	6	5	5	10	5	9	9	10	9	7	119
SC				15	32	41	53	37	35	51	25	36	22	29	29	42	27	23	29	34	38	32	26	656
SD			1	6	6	2			4	1	1	1	2			1	2	1	1			3	7	39
TN			3	10	13	10	16	19	9	14	26	24	18	15	21	14	15	38	17	18	36	37	41	414
TX			10	22	37	97	105	94	71	83	70	85	101	98	105	124	111	136	128	110	159	155	158	2059
UT				3	6	6	14	11	6	15	4	10	10	6	7		8	3	13			6	4	132
VA		1	12	17	21	23	26	24	19	14	26	15	17	12	31	24	24	26	24	27	26	37	31	477
VT				1	5	3	5	1	4	3	7	9	4	5	1	4	8	1	6	2	8	8	7	92
WA		1	25	37	53	34	18	20	28	20	14	18	18	15	17	19	7	15	20	16	11	17	28	451
WI			7		13	22	20	17	4	14	12	5	6	16	11	15	13	21		8	19	18	24	265
WV			8	4	7	2	4	3	3		4	3	1	1	4	2	5	3	4	4	7	5	6	80
WY				1				2													2			5
Total	1	20	518	830	1246	1239	1163	1108	1086	1149	1220	1205	1167	1053	1148	1116	1216	1168	1192	1112	1251	1205	1287	23700

NUMBER OF CERTIFIED COURSES BY CERTIFIER AND YEAR

This data was taken from the course list as it existed on March 16, 2004

Only those certifiers active in 2003 are shown in this listing.

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Total	
AM								28	31	50	35	45	41	40	35	54	36	71	52	57	69	58	702	
BB		35	72	81	73	66	60	55	52	74	79	49	56	60	35	50	39	33	34	37	24	47	1111	
BC							1	1	3	2	2	4	1	3	3	2	4	6	1	3	2	7	45	
BDC													5				4	2			1	2	14	
BG			1	14	37	22	31	31	28	36	38	37	50	48	49	33	71	61	52	52	56	58	805	
BL																					16	28	44	
BS					19	43	34	31	51	27	43	27	36	32	41	27	26	30	34	38	32	27	598	
DB					6	50	71	38	39	45	43	41	39	31	26	43	3	3	2	2	4	4	490	
DJR																						22	22	
DL						23	18	16	41	77	68	51	53	66	53	72	53	66	51	53	56	46	863	
DL																			13	1	3	9	26	
DLP							4	8	12	4	5	9	10	5	3	9	13	17	11	5	10	12	137	
DP							10	23	27	35	36	29	29	14	10	11	12	20	19	22	36	32	365	
DR		1	10	15	20	19	19	29	17	19	19	21	20	18	17	42	24	26	32	23	21	13	425	
DS													2	1	3	3	2	2	9	9	3	4	38	
ETM				10	26	36	65	71	87	71	87	103	101	112	131	115	143	139	104	136	135	132	1804	
FW						2	4	5	6	9	9	1	7	2	1	5	10	1	6	1	2	4	75	
GAN												15	31	24	25	16	42	48	42	48	46	37	30	404
JD					6	11	6	26	25	28	21	16	13	17	20	28	25	19	22	27	17	38	365	
JF																			14	31	31	27	103	
JS								5	14	6	19	15	19	34	22	26	30	28	27	23	27	18	313	
JW							41	50	67	65	72	69	70	82	79	64	80	66	85	116	109	124	1239	
KU								1	5	15	11	14	7	4	7	8	8	15	17	6	6	16	140	
LB							3	13	15	12	9	11	8	14	13	6	15	16	14	2	6	8	165	
LMB																					14	35	49	
MF								11	7	10	7	8	6	8	10	8	6	9	4	10	12	20	136	
MW							10	21	23	15	7	18	16	25	19	19	21	33	21	21	15	37	321	
PH															42	65	41	47	72	73	67	66	473	
PR	1	66	110	154	143	97	85	58	66	62	112	75	51	52	62	52	59	55	54	61	40	50	1565	
RF																						21	21	
RH								4	14	10	33	22	27	25	25	48	23	24	44	46	19	364		
RN											5	37	18	22	21	39	38	36	36	43	37	38	370	
RR		2	9	27	46	34	12	18	25	16	14	7	14	18	20	32	26	17	18	21	37	48	461	
RS		2	24	48	51	55	76	68	52	83	61	43	38	60	44	61	52	74	54	74	42	54	1116	
RT		9	41	66	55	61	51	23	22	31	22	30	23	42	39	34	39	28	39	42	49	45	791	
SH					22	36	31	19	33	17	25	39	32	58	37	33	20	31	37	34	45	27	576	
TK		11	33	32	43	37	29	8	7	19	11	13	9	15	11	20	18	16	13	28	11	15	399	
WB														12	39	41	27	31	16	33	23	29	251	
WC											4	27	21	15	25	18	17	22	25	27	12	15	228	
WN		4	32	125	125	113	106	117	138	148	140	94	81	74	67	36	49	41	31	31	31	2	1585	

Marathon route crawls to its finish

Traffic crawls around a pyramid of concrete pipes and a mechanical digger standing idle on a dirt track east of Athens. There are no workers in sight. The contractor's office is locked.

This was the scene last week at a €40m (\$49m) project to upgrade the route of the marathon for this summer's Athens Olympics. With 150 days to go before the start on August 13, the site should have been a hive of activity. But work has been delayed by the collapse in December of Evropaiki Techniki, a local company, leaving the workers unpaid.

"We worked without pay for a month because it was an Olympic project," says Panayotis, the digger operator, from a nearby café to which he repairs every day in the (so far vain) hope of receiving his wages. "We thought the money would come through but it hasn't."

The upgrade of the marathon route, from an ancient battlefield on the Marathon plain where the Greeks defeated Persian invaders in 490BC, to the marble stadium in the city centre where the first modern Olympics were held, was intended to make the race a showpiece.

It still should. As of now, though, it is one of several projects lagging far behind schedule. Moreover, unlike problems with the €200m canopy to be installed over the main Olympic stadium, and the roof for the swimming pool, the marathon

A potent symbol of the Athens Olympics is having problems – as are other projects, says Kerin Hope

delay was overlooked for several months.

This may make it all the more difficult to make up for lost time. As George Souflas, public works minister, said last week: "The marathon route is the most worrying – particularly as it's intended to be a symbol of the Athens Games."

In contrast with projects for actual sports venues, where contracts were awarded to big Greek contractors, road upgrades are being handled by small construction companies.

Evropaiki, one such company, was responsible for widening and resurfacing a 17km (11-mile) stretch of the 42km marathon route – a busy suburban road that winds uphill towards Athens. This was due to be delivered in April.

This week, though, J&P Avax, a larger Greek construction company, which has completed two Olympic venues – for weightlifting and wrestling – took over. One public works ministry official said: "Smaller contractors like Evropaiki sometimes have cashflow problems, but our project inspectors didn't pick up that they were in trouble."

Monitoring of Olympic projects is being stepped up following a change



Classic course: but will runners find a road fit for the modern Games?

Getty Images

of government after the March 7 elections. Costas Karamanlis, the new prime minister, also took over the culture ministry, which has responsibility for the Games, in an effort to reassure the IOC that the rightwing administration sees the event as its priority.

But the handover at the culture ministry was not smooth. The secretary-general in charge of Olympic projects, a socialist appointee, refused to work for the new administration. Mr Karamanlis instead chose Spyros Capralos, a senior manager at Athoc, the Games organising body, to take over the job.

The socialist government's €4.6bn

budget for building sports and transport facilities is already under scrutiny. But Karamanlis has given assurances that extra funds will be available if needed.

From Kevin Lucas via Pete Riegel

Unnecessary Conversion to Standard Measurement Units in Course Measurement

Neville F. Wood

In the RRTC method for course measurement, the data sheet (<http://www.rrtc.net/book/appforms.pdf>) asks for the conversion of count data to standard measurement units and adjustment using a steel rule. However, this conversion is unnecessary in most cases and one can improve efficiency and the clarity of data by avoiding it.

I recommend the following procedure. On the second course measurement ride stop at the finish point and note the number of counts. If these counts are greater than the calculated counts for the desired course length, finalize the finish line at this point. If otherwise, ride on until the calculated counts are reached and finalize the finish line at this point. In either case the percentage difference is 100 times the count difference divided by the calculated counts.

In the case where the second ride gives a longer course but retention of the first finish is desired, extend a U-turn by half the count difference.

For example, suppose as in that used in the description of the RRTC method, a first ride gives a finish at 94170 counts and a second ride 94126 counts to the same finish with a count difference of 44. The percentage count difference is $100 \times 44 / 94170 = 0.0467\%$. A new finish line should be established by riding on until a meter reading of 94170. To retain the first finish line, a U-turn should be extended by 22 counts instead.

If after final calibration it is found that the working constant is not the constant of the day, go back and add or subtract counts to the course. Should it not be convenient to return with the bicycle, make the adjustment with a steel rule.

Note that though probably not intuitive to most measurers, the above procedure is accurate even when the second ride is done on a later day with a different measurer and bicycle.



Jim Gerweck and Carol McLatchie bask in the sunshine at the finish of the U.S. Olympic Team Trials Women's Marathon in St. Louis, MO, in early April. Carol led the validation ride of the course in early January, while Jim was in attendance covering the race for *Running Times* magazine. Like the men's Trials held in February in Alabama, the St. Louis race produced fast times, with winner Colleen De Reuck setting a course and Trials record of 2:28:25 and the second and third place finishers also breaking 2:30. Photo by Charlie Mahler.

Running/Etc.

For the record, accurate course distances important

Those last few yards in a 5K can be a real pain, as anyone who has raced hard — or tried to — can attest.

And who needs the .2 in 6.2 miles anyway?

All of us, it turns out.

Accurate courses are crucial because records — whether national, state or age group — can only be set on certified distances, explained Tom McBrayer, a state course certifier.

"That certification tells the record keeper that the runner has run at least the stated distance," he said,

adding that certified courses also allow noncompetitive runners to compare their times in different races.

"Runners like to know when they have set a PR (personal record)," McBrayer said.



Running Notebook

Roberta MacInnis

■ Results: Page 15C.

Texas runners needn't worry. The state leads the nation with the most certified race courses for the eighth consecutive year, according to the Road Running Technical Council of USA Track and Field, which has released figures for 2003.

Texas had 158 new courses, up from the 154 that were certified in 2002. Illinois was second with 110, and California was third with 69. Overall, 1,287 U.S. courses were certified as accurate to their stated distances last year.

Texas now has 1,039 active courses.

While the 5K remains the most popular race distance in the United States, with 613 new courses certified in 2003, on a percentage basis, the 5K dropped from 50 to 45 percent.

But the marathon and half-marathon distances are both making strides. Ninety-six new marathons were certified last year, compared to 79 in 2002. The number of new half-marathon courses jumped from 69 to

101.

It's a trend that's reflected here.

"What we've seen locally, the half (marathon) allows a choice on race day; you can be a part of the activity without having to do the entire marathon," McBrayer said. "A runner may be working up to the marathon, and this is a good start."

Contributing to the marathon's increasing popularity may be a new approach by organizers.

"We have noticed that marathons like the Rock 'n' Roll (series) really take off because they are an event, e.g. rock and roll bands every mile or Disney with its many attractions," McBrayer said.

January's P.F. Chang Rock 'n' Roll Marathon in Arizona was the largest inaugural running event ever, with 29,282 entrants, 24,031 starters and 23,808 finishers.

Body shaping — The *National Body Challenge*, a reality series on the Discovery Health Channel, is tracking six young adults as they compete to lose the most weight and make the most positive lifestyle

changes. The winner, uh, loser, wins \$10,000 and a trip to the Bahamas.

The series visits Houston in an episode to air at 8 p.m. Monday, when contestant and native son **Christlord Templonuevo** runs his first 5K — The ConocoPhillips Rodeo Run, which was held in February.

Templonuevo, a 26-year-old manager at a mini-golf course, is 5-6 and weighed 207 pounds in January when the challenge began.

While he's been under the guidance of a personal trainer and nutritionist, he says he has made the changes necessary to maintain his new weight once the show ends and he's on his own again. Among them is regular exercise, including running.

Templonuevo runs around Rice University and at Memorial Park. He admits that running can be tough, particularly the first mile, but says he has a lot more energy because of it.

"In fact, I wish the Rockets would take a look at me, because they could use a quick-step point guard," he jokes.

Templonuevo says the coolest part

of participating in the Rodeo Run was "I'd never seen that many people come together to do something like that. It was constant energy."

He can't say how he did in the race because the episode hasn't aired yet.

"I represented Houston to the best of my ability," he said.

The final episode of the series airs at 8 p.m. on April 19.

Resurrection Run — After last week's glut of races, only one is on tap for Easter weekend. The ninth annual Resurrection Run takes place at 8 a.m. Saturday in Nassau Bay.

A kid's K precedes the race at 7:45 a.m. and a free egg hunt for the younger set follows at 9 a.m.

Late registration is set for 2-6:30 p.m. today-Friday at On the Run, 2427 Bay Area Blvd. Race-day packet pick up and registration will be from 6:45 a.m. to 7:30 a.m.

Call 281-244-4553 for information.

Roberta MacInnis covers running for the Chronicle. Her notebook appears Thursdays. E-mail her at roberta.macinnis@chron.com.

MEASUREMENT OF LONDON MARATHON AND FLORA LIGHT WOMEN'S CHALLENGE

by Pete Riegel

Since 1987, with the exception of 2001, I've been to London to check the route of the London Marathon. To my knowledge, no other race has had such a long history of verification by a foreign measurer. John Disley, co-founder of the race (with the late Chris Brasher), saw this as important to the sport.

This year was a special treat as my son Tom, a civil engineer living in Virginia, was able to take a break and come along. John assured me that his presence would not be a burden. Although Tom has been aware of my measurement activity, he has never taken up the trade. In this trip he received his initiation.

On Sunday morning, a week before the race, we loaded two bikes into John Disley's car and proceeded to the 400 metre calibration course located in East Ferry Road in the Isle of Dogs, where we met Hugh Jones and Geoff Hall, a local measurer. Because of alterations to the northwest exit from the Tower of London, the course was shortened, and we needed to find some extra distance. The finish line is fixed, and the start line is desired to remain in the same general location.

Over the years adjustments to the course have been simplified by the presence of several roundabouts along the course. Each roundabout may be run clockwise or counter-clockwise, and the difference used to fine-tune the course length. Hugh Jones, London's course measurer, estimated that the Billingsgate roundabout, if run long way around (counter-clockwise), would provide enough extra distance to make up for the loss at The Tower.

Tom had absorbed much of the methodology by parental osmosis, and needed little instruction in technique. After calibration, we proceeded to measure between a reference point in Poplar High Street and another in front of the Britannia Hotel. We obtained a length 30 metres longer than the 2003 route, when the Billingsgate roundabout was run clockwise. At this point Geoff left us to recalibrate and go on to another activity.

After this was done, we took a scenic non-measuring ride 6 km up the Thames to the north gate of The Tower. A yeoman warder (beefeater) told us details of the ongoing construction and what would result when it was done. We established a reference point at the iron gate hinge, and measured to another (previously established) reference point at Southwark Bridge. This completed the bicycle measurement of the 2004 London Marathon course. It remained only to tape the distance through The Tower, along Tower Wharf, but this could not be done on Sunday. It was scheduled for Tuesday.

Measurement done, we cycled along Lower Thames Street and the Embankment, through Trafalgar Square (where we stopped for a photo opportunity), through Admiralty Arch, down The Mall and past Buckingham Palace and into Hyde Park, where we recalibrated on the 500 metre calibration course north of Rotten Row. This calibration also served as the pre-calibration for the next activity.

Hugh had provided me with a map, and a pile of supplementary material, relating to the Flora Light Women's Challenge, where last year Paula Radcliffe ran 14:51 in an all-women race. We measured the course, and obtained good agreement:

Hugh: 5003.3 (standard metres, without SCPF)

Tom: 5006.9 (standard metres, without SCPF)

Pete: 5005.6 (standard metres, without SCPF)

These values compared with Hugh's original length of 5005 standard metres as laid out.

With measurement done, we recalibrated and went to the cafe in Hyde Park to do our figuring. That done, Hugh went home and John took Tom and me to a local pub for further hydration.

On Tuesday morning, Hugh, Tom and I met at the south gate of The Tower. We began at an established reference point and taped our way along Tower Wharf, terminating our measurement at the gate hinge. Quick calculation revealed the overall effect of the Tower construction and the Billingsgate roundabout change was to require the start to be moved only 13 metres. During the week Hugh put down proper marks, and on Saturday, the day before the race, John, Tom and I laid down three start lines and a finish line.



Hydration time after the measurements. L to r: Pete, John, Tom

I know of no place where measurement can be such a pleasure. The city on a sunny Sunday morning, free of traffic and with spring in bloom, is a bicycle-tourist's delight. Also, the knowledge that Hugh Jones had done the original measurements was a great anxiety-reducer, as he is a thoroughgoing professional at measurement. We knew there would be no problems. And there weren't.

Photos by Tom Riegel



Hugh taping at the hinge.



Hugh (left) and Pete comparing taping notes.

running shorts

running shorts running shorts running shorts running shorts running shorts

Races and Rankings Online

Curious about the route of the half marathon you're planning to run while you're on vacation this summer? Ever wonder how many certified 10K courses are in your state?

The information you're looking for can probably be found on the USA Track and Field website's searchable database of all 10,115 active certified courses. With this database, the result of an 18-month project by USATF Road Running Technical Council president Mike Wickiser and USATF Multimedia Supervisor Keith Lively, it's now possible to find a course map by race distance or location and print out a copy to preview the course or to ensure that the start and finish are located correctly.

The maps are presented in both viewable and print-optimized formats, which, despite some hefty compression software, still occupy a substantial 1.6 gigabytes of disk space on the USATF server.

Besides the searchable course database, the maps are also linked to a similar search engine listing of USATF sanctioned events. It's possible to look for a specific course, or by specifying certain parameters, e.g., all races between 5 and 10 miles in Nebraska or all road miles in the U.S.

The online maps are just the largest project in USATF's efforts to make its activities more electronically oriented. Two years ago, it became possible for individuals to join or renew their USATF membership online, and a similar ability should soon be available for clubs and organizations. Local sanctioning personnel can now input race information online, which is then transferred to the race database, and the entire process may become paperless by the end of the year. The affiliated Road Running

Technical Council site, www.rtc.net, provides comprehensive course certification information, including both online and downloadable versions of the course measurement manual. Finally, the entire USATF website is scheduled for a complete overhaul in late spring, to put its appearance more in line with the dynamically changing nature of the site's contents.

Just around the electronic corner at www.runningusa.org, you can view a listing of your race results and see how you stack up against other runners in your state or hometown. Going to the "Results" section and clicking on "See all your race results" will bring up a listing of all results submitted by race directors since 1998, with an age-graded percentage ranking to show if you've gotten relatively slower or faster over the years, and allowing you to compare performances from different races. Another section allows you to see how you rank geographically, by age, or over certain distances.

Ryan Lamma of RunningUSA calls it the "most comprehensive ranking system out there," gathering data from over 3,000,000 race finishers annually from nearly 3,000 events. "With more manpower it could be even better," he says, noting that there are close to 20,000 road races each year, most of which don't submit results. "We're getting the major races," but it's up to runners to prod organizers of smaller events to send in results to the database. To make that easier, there's a button on the rankings page that automatically sends such an email to race directors, and someday it may be possible to see any runner's complete racing curriculum vitae online.

Of course, that could eliminate one of running's little pleasures, coming back from an out-of-town race and regaling your training buddies with reports of a performance just a little bit faster than you normally turn in. In the end, the truth may be out there, for all to view online.

—Jim Gerweck



Mark Shearman

Kenenisa Bekele

HEARD on the run

Kenenisa Bekele continued his impressive Olympic build-up by setting a new indoor world record for 5,000m at the Norwich Union Indoor Grand Prix in Birmingham, England, on February 20. Bekele's time of 12:49.61, which eclipsed his outdoor PR, took nearly two seconds off of Haile Gebrselassie's two-year-old record, also run in Birmingham. ● For those runners having trouble catching a significant other on the roads, **RunningSingles.com** provides meeting services for singles who share "a passion for running." When setting up a profile, the service asks questions about how often you run, what races distances you prefer, and "What is the most interesting thing that ever happened to you while running?" in addition to traditional questions about appearance, personality, and religious beliefs. Before you lie about your PRs, however, check out the story at left. ● **Shayne Culpepper**, 2000 Olympian in the 1500m, was the surprise bronze medalist in the 3,000m at the IAAF World Indoor Championships on March 7. Culpepper moved into third on the final lap, finishing the tactical race in 9:12.15. Ethiopians **Meseret Defar** and **Berhane Adere** placed first and second. ● One-upping the Boston and New York City marathons, both of which now offer a head-start for the elite women, **The City of Los Angeles Marathon** actually offered \$50,000 to the first runner of either gender to reach the finish. Working with a 20:30 head start, 49-year-old Tatyana Pozdnyakova easily beat men's winner David Kirui by 3:51 seconds. Five men and five women were the first 10 finishers.

Running Resources on the Web

Searchable Course Database	www.usatf.org/events/courses/search
USATF Sanctioned Events	www.usatf.org/calendars/search.asp
Course Certification	www.rtc.net
Race Results Database	www.runningusa.org

Measurement of the Month

Marcel H. LaMontagne

CALGARY MARATHON

CALGARY AL (CAN)

In Calgary, Alberta we have Canada's oldest continuous marathon. The race started in 1963 with local running icon Doug Kyle's dream of competing in the 1964 Olympics in Tokyo, Japan. Doug felt he had a chance in the marathon distance and if we could host the Olympic Trails he would have the home advantage.

Advantage (or disadvantage) in Calgary lies primarily with the altitude, at 1042 metres incoming runners can claim running is more difficult. Little did Doug and his band from the Calgary Track and Field Club realize the marathon would still be flourishing in 2004. Doug remains involved as the race referee.

For the 40th running of the Calgary Marathon changes are in the works, changes that require a new course and thus a new course measurement. Recent years had the marathon using the Fort Calgary site as their venue host site. Choosing a new venue Millennium Park would allow us to break the mould and start fresh.

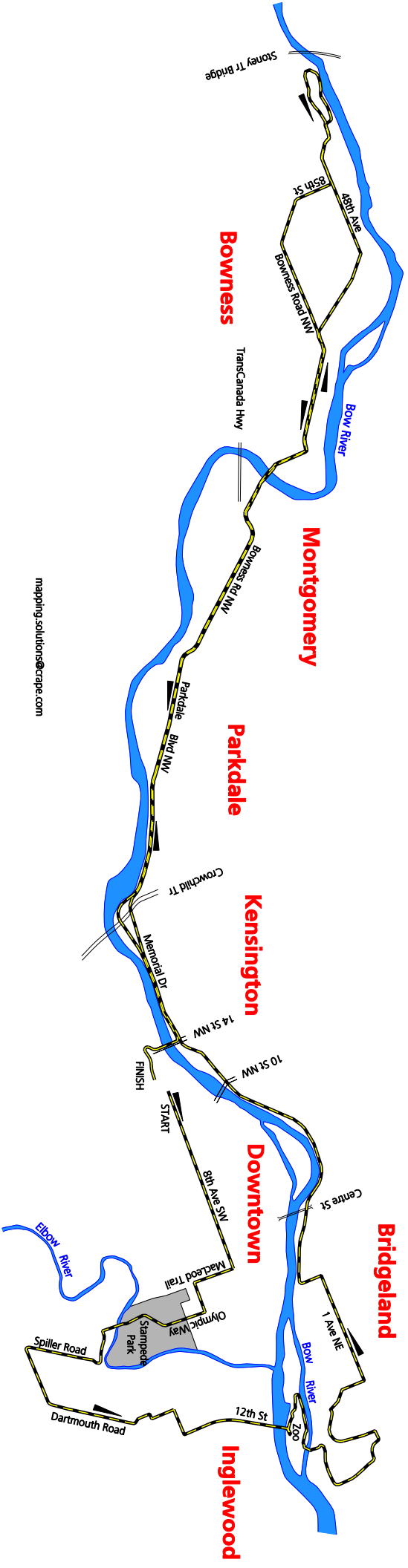
Within any city we must work within the geographic and access restrictions available to us. The natural topography of Calgary presents a number of challenges to designing a road race course. Located in the foothills of the Canadian Rockies the city boasts impressive views and rolling terrain. The city's footprint contains two major rivers, the Elbow and Bow, two smaller waterways, Fish Creek and Nose Creek. River escarpments, many natural areas, Canada's largest urban park Fish Creek Provincial Park and Canada's largest municipal park Nose Hill. The Canadian Pacific Railroad line traverses east to west and north to south across the centre of the city. A three leg above ground light rail transit system originates from the downtown. Like most cities in North America, Calgarians love their cars, and don't like being hindered while driving them whenever they please. All of which present a logistical challenge to the development of a marathon road race route.

In addition to the marathon course, a 10km, half marathon and one mile courses were all to be integrated into the same venue. Flat and fast was the mandate from the Race Director. To aid in the design of road race courses, I use mapping software (MapArt) that allows me to calculate distances as one progresses along a route. In an effort to reward our destination runners we chose to include as many local highlights as possible.

With a route plan in mind we met with key civic operations City Transportation (roadways), Transit, Police and Parks. Stampede Park, the Calgary Zoo and Bowness Park also were approached to have their facilities within the course route. As negotiations took place our intentions never wavered, even when it was suggested we move to more non-vehicle conflict areas. Safety as always was paramount, and entered into our decisions as the Calgary Police and Transportation provided their input. The resulting course was a tribute to the working relationships we cultivated over many years.

The start will take the runners the length of downtown's Stephen Avenue Pedestrian Mall to Calgary's City Hall. It's Stampede time in Calgary thus we

BURRNGO Calgary Marathon



planned a route to include the entire length of Stampede Park, winding our way through 60,000 people expected to be on the grounds at that time. On to the Calgary Zoo, running next to Bengal Tigers and a proliferation of exotic birds and animals. We move to a spectacular view of the downtown complete with a backdrop of the Canadian Rockies. Winding roadways along the Bow River (world renowned for it's fly fishing) to Bowness Park in our northwest for a loop of the park. Return is to the Millennium Clock on the western edge of Calgary's downtown, only 200 metres from the start line.

Once we received the approvals from the various civic groups I was able to move to the roadways and start the measuring process. We operate within the guidelines established by Athletics Canada/Run Canada committee standards, the same race course measuring procedure used by IAAF, AIMS and USATF.

I was able to measure the course Easter weekend to take advantage of low traffic periods. Weather was a fresh 0c (but dry) although it warmed to 10c by mid day. Calgary's weather can at times be quite unpredictable. In late April 2003 a popular half marathon was cancelled because of a heavy spring snowfall. Fortunately I had measured the course in dry conditions prior to race day.

Earlier I had measured a conveniently located 300m calibration course. A previous trial run confirmed the course would be feasible, thus I felt quite confident the measuring process would only require a minor change. This change would be accommodated at between intervals 25-26 km with the addition of a turnaround. The turnaround is partially due to a fixed start and finish line. Our course designs require the start for the marathon to have the runners move eastward and the remaining races, runners move westward. This is accomplished by separating the two start lines by 4 metres, the width of the chip sensing mats. For ease of access to the Zoo on a busy holiday weekend I chose to measure km 1-25 on April 9th, completing km 26-42 the following day.

In addition to measuring the course distance, each km split was marked, as is the mile out and mile remaining marks. All marks are tape measured to at least one fixed permanent object and a GPS reading for future reference. Additional GPS readings every 500 metres (minimum) providing the basis of a course profile. Reference points were established at the entry and exit to the Zoo, in the event we encounter construction projects in the upcoming years.

With the assistance of a local geomantic company we are working to develop an interactive website which will allow runners to 'run in virtuality' the course via a web access. The virtual course will include roadways, buildings and all 'built' landmarks within the city. Aerial photos from satellites form the basis of the mapping database. The City Police use the same GPS backdrop as their basis to respond, keep informed and keep continuous contact with all of their vehicles. GPS readings also allow us to assist the signage crew to effectively move along the course and lay out the split signage. Although GPS coordinates cannot be used for course measuring every year we are finding more useful GPS applications.

Should you like to see more race related information please visit the website at <http://www.calgary-marathon.com>.

USATF/RTC CERTIFIED COURSE LIST
New Entries, March - April 2004

DISTANCE	COURSE ID	STA	LOCATION	COURSE NAME/RACE	m/km DROP	pct SEP	MEASURER	REPLACES
Cal	AL 04004 JD	A	Northport	Kentuck Park 300 meter	0.0	100	R Carroll	
15 km	AL 04005 JD	A	Sheffield	Huff-N-Puff On the Bluff 15k	0.2	1	D Michael	
5 km	AL 04006 JD	A	Northport	Rabbit Run 5k	0.0	4	R Carroll	
5 km	AL 04007 JD	A	Florence	Spring Fever 5k	-0.2	3	D Michael	
1 mi	AL 04008 JD	A	Florence	Spring Fever 1 Mile	-0.8	10	D Michael	
21.0975 km	AR 04001 DLP	A	Fayetteville	Hogeye Half Marathon	0.0	0	C Knott	
42.195 km	AR 04002 DLP	A	Little Rock	Little Rock Marathon 2004	0.1	0	J Curry	AR 03001 DLP
21.0975 km	AR 04003 DLP	A	Little Rock	The Lung Run Half Marathon	0.1	1	J Curry	AR 98003 DLP
8 km	CA 04003 TK	A	Stanford	Fifty Plus 8km at Stanford	0.8	2	T Knight	
10 km	CA 04010 RS	A	Los Angeles	Nike Run Hit Wonder 10km	0.6	5	R Scardera	
5 km	CA 04011 RS	A	Los Angeles	Nike Run Hit Wonder 5km	1.5	11	R Scardera	
10 km	CA 04012 RS	A	Agoura Hills	2004 Great Race of Agoura 10km	2.6	5	R Scardera	CA 03020 RS
42.195 km	CA 04013 RS	A	San Miguel	Buzz Marathon	0.0	0	E Rogers	
Cal	CA 04014 RS	A	San Miguel	camp Roberts 1000 ft. Calibration	0.0	100	F Kronenberger	
21.0975 km	CA 04015 RS	A	Redlands	A Run Through Redlands 2004	-0.1	2	R Scardera	CA 92015 RS
21.0975 km	CO 04001 DP	A	Denver	Platte River 1/2 Marathon	1.8	76	A Lind	CO 03001 DP
5 km	CO 04002 DP	A	Denver	Mama Mia	0.0	3	P Tanui	
5 km	CO 04003 DP	A	Fort Collins	CSU Homecoming	0.0	3	J Lonsdale	
Cal	CT 04001 OH	A	Windsor Locks	Bradley Field 1400 ft. Calibration	0.0	100	GuidoBros	
5 km	CT 04002 PH	A	Windsor Locks	Bradley Field 5k & 10k	0.0	0	GuidoBros	
10 km	CT 04002 PH	A	Windsor Locks	Bradley Field 5k & 10k	0.0	0	GuidoBros	
5 km	DC 04001 JS	A	Washington	Race for the Cure	0.0	17	J Sissala	
42.195 km	FL 04005 DL	A	Miami	Miami Tropical Marathon	0.0	1	D Matuszak	FL 02043 DL
21.0975 km	FL 04006 DL	A	Miami	Miami Tropical Half Marathon	0.0	1	D Matuszak	FL 02058 DL
10 km	FL 04010 DL	A	Temple Terrace	Strawberry Classic 10k	0.0	1	E McDowell	
10 km	FL 04011 DL	A	Miramar	Miramar 10k	0.0	3	G Witkowski	FL 01021 DL
5 km	FL 04012 DL	A	Miramar	Miramar 5k	0.0	4	G Witkowski	FL 01027 DL
Cal	FL 04013 DL	A	Treasure Island	Sunset Beach 1320 ft. Calibration	0.0	100	A Johnson	
10 mi	FL 04014 DL	A	Lake Worth	Shamrock 10 Miler	0.0	2	G Witkowski	
5 mi	FL 04015 DL	A	North Bay Village	North Bay Village 5 Miler	0.0	2	G Witkowski	
15 km	FL 04016 DL	A	Jacksonville	Gate River Run 15k	0.0	2	D Aldred	FL 03017 DL
21.0975 km	FL 04017 DL	A	Tampa	HOPS by Tampa Bay H-Marathon	0.0	4	T Ward	
5 km	FL 04018 DL	A	St. Petersburg	Pelican 5k	0.0	0	E McDowell	
10 km	FL 04019 DL	A	St. Petersburg	St. Anthony's Triathlon Course	0.0	4	A Johnson	
4 mi	FL 04020 DL	A	Pompano Beach	Pompano Beach 4 Miler	0.0	1	J Musters	
10 km	GA 04006 WC	A	Ft. McPherson	Army Hooah	-0.6	76	W Cornwell	GA 03007 WC
5 km	GA 04007 WC	A	Ft. McPherson	Army Hooah	0.6	70	W Cornwell	GA 03006 WC
21.0975 km	GA 04008 WC	A	Alpharetta	US Half Marathon Series-Atlanta	0.3	1	J Grosko	
5 mi	ID 02001 MR	A	Boise	City of Trees 5 Miler	0.0	1	L Anderson	
21.0975 km	ID 02002 MR	A	Boise	City of Trees Half Marathon	0.0	0	L Anderson	
42.195 km	ID 02003 MR	A	Boise	City of Trees Marathon	0.0	0	L Anderson	
5 km	ID 03001 MR	A	Boise	Basic 5 - 5 kilometer	0.0	4	L Anderson	
5 mi	ID 03002 MR	A	Boise	Basic 5 - 5 Miler	0.0	3	L Anderson	
42.195 km	ID 03004 MR	A	Boise	City of Trees Marathon	0.0	0	B Gans	
5 km	IN 04004 MW	A	Indianapolis	Indianapolis Race for the Cure	0.3	16	J Sauer	IN 03001 MW
Cal	IN 04005 MW	A	Wyckliffe	Hwy 164 1000 meter calibration	0.0	100	J Johnson	
42.195 km	IN 04006 MW	A	French Lick	Germany to France Marathon(flat)	0.0	1	J Johnson	
5 km	IN 04007 MW	A	Chesterton	Running With the Irish	0.0	3	M Kingery	IN 02001 MW
21.0975 km	IN 04013 PR	A	Elkhart	The Great Race	0.6	51	P Riegel	IN 97011 PR
Cal	IN 04014 PR	A	Goshen	Oak Lane 1000 ft. Calibration	0.0	100	P Riegel	
2 km	KS 04006 BG	A	Overland Park	Corporate Woods 2km (alt)	0.0	0	W Armbrust	
1 km	KS 04007 BG	A	Overland Park	Corporate Woods 1km (alt)	0.0	40	W Armbrust	
5 km	KY 04012 PR	A	Louisville	Anthem 5k	0.0	0	J Kaiser	
10 km	KY 04015 PR	A	Louisville	Rodes City Run 10k	0.6	19	J Kaiser	KY 01012 PR
5 km	LA 04003 JF	A	Baton Rouge	Baton Rouge Race for the Cure	0.0	1	C George	
21.0975 km	MA 04001 RN	A	Wakefield	Massachusetts Law Enforcement	0.0	1	R Nelson	MA 03003 RN
5 km	MA 04002 RN	A	Wakefield	Massachusetts Law Enforcement	0.1	6	R Nelson	MA 02005 RN

DISTANCE	COURSE ID	STA	LOCATION	COURSE NAME/RACE	m/km DROP	pct SEP	MEASURER	REPLACES
5 km	MD 04001 JS	A	Largo	Watkins Park 5k	0.0	0	J Sissala	MD 98018 RT
21.0975 km	MI 04001 SH	A	Northville	Martian	-0.2	3	K Medelis	MI 02002 SH
42.195 km	MI 04002 SH	A	Northville	Martian	-0.1	2	K Medelis	MI 02001 SH
Cal	MI 04003 SH	A	South Lyon	McHattie Park Rail Trail 1861.73ft.	0.0	100	K Medelis	
5 km	MN 04001 RR	A	Golden Valley	Golden Valley	0.4	3	D Wright	
10 km	MN 04002 RR	A	Golden Valley	Golden Valley	0.0	1	D Wright	
Cal	MO 04003 BG	A	Willard	Frisco Highline 333.17m Calibrator	0.0	100	R Johnson	
21.0975 km	MO 04004 BG	A	Willard	Frisco Highline Half Marathon	0.0	1	R Johnson	
10 km	MO 04005 BG	A	Willard	Frisco Highline 10km	0.0	1	R Johnson	
42.195 km	MO 04008 BG	A	Clayton	2004 Women's Olympic Trials	0.6	9	T Eckelman	MO 03001 BG
42.195 km	MO 04009 BG	A	St. Louis	Spirit of St. Louis	0.0	0	T Eckelman	
21.0975 km	MO 04010 BG	A	St. Louis	Spirit of St. Louis	0.0	1	T Eckelman	
Cal	MO 04011 BG	A	Springfield	Glenwood 1000 ft. Calibration	0.0	100	C Crowson	
5 km	MO 04012 BG	A	Springfield	RRS	0.0	11	C Crowson	
5 km	MO 04013 BG	A	Ellisville	Chevy's Cinco de Mayo	0.0	1	D Spetnagel	MO 01009 BG
5 km	MO 04014 BG	A	Forest Park	Run for the Stars	0.2	2	D Spetnagel	
10 km	MO 04015 BG	A	Forest Park	Run for the Stars	-0.1	1	D Spetnagel	
5 km	MO 04016 BG	A	Maryland Heights	Creve Coeur Park	0.2	4	D Spetnagel	MO 01007 BG
5 km	MT 03002 GT	A	Helena	Komen Race for the Cure	4.4	4	D Krebs	MT 95001 GT
10 km	MT 03003 GT	A	Helena	Governor's Cup 10k	0.5	5	D Krebs	MT 95002 GT
5 km	MT 03004 GT	A	Helena	Governor's Cup 5k	1.0	7	D Krebs	MT 95003 GT
Cal	MT 03005 GT	A	Helena	Rocky Mtn College 2591.788 ft.	0.0	100	J Devitt	
2 mi	MT 03006 GT	A	Billings	Montana Women's Run 2 Mile	0.3	11	J Devitt	MT 93001 GT
5 mi	MT 03007 GT	A	Billings	Montana Women's Run 5 Mile	0.1	4	J Devitt	MT 93002 GT
5 km	MT 04001 GT	A	Billings	Big Sky Games 5k	0.0	3	J Devitt	MT 93006 GT
Cal	NC 04007 PH	A	Greenville	Red Banks Road 1000 ft. Cal.	0.0	100	K Sloan	
5 km	NC 04011 PH	A	Durham	Durham VC "Great Human Race"	1.5	16	D Forbis	NC 97020 PH
5 km	NC 04012 PH	A	Clayton	Clayton Road Race	0.0	2	P Hronjak	NC 86019 ACL
5 km	NC 04013 PH	A	Raleigh	Run for Respect	0.0	0	N Wood	NC 03014 PH
5 km	NC 04014 PH	A	Chapel Hill	Girls on the Run 5k	0.0	2	D Forbis	NC 03016 PH
5 km	NC 04015 PH	A	Greenville	Fiesta Biathlon	-0.1	1	P Hronjak	
5 km	NC 04016 PH	A	Greensboro	Greensboro Grand Slam 5k	-0.2	8	P Hronjak	
10 km	NC 04017 PH	A	Greensboro	Greensboro Grand Slam 10k	0.5	6	P Hronjak	
5 km	NC 04018 PH	A	Bath	Bath Spring Fling	0.0	1	P Hronjak	
5 km	NC 04019 PH	A	Asheboro	Randolph County 5k Health Run	0.3	1	D Forbis	NC 97064 PH
5 km	NC 04020 PH	A	Raleigh	North Raleigh Rat Race	0.0	3	N Wood	
5 km	NC 04022 PH	A	China Grove	Main Street Challenge 5k	-0.3	3	D White	NC 99017 PH
5 km	NC 04023 PH	A	Salisbury	Salisbury Greenway 5k	0.0	4	D White	
4 mi	NC 04024 PH	A	Charlotte	Shamrock 4 Mile Run	-0.1	3	T Rhodes	NC 03013 PH
Cal	NC 04025 PH	A	Hendersonville	West 5th Street 1000ft. Calibration	0.0	100	D White	
8 km	NC 04026 PH	A	Hendersonville	Resurrection Run	0.0	1	D White	
5 km	NH 04001 RF	A	Bedford	Bedford Rotary Memorial 5k	0.2	1	R Fitzpatrick	NH 93031 WN
12 km	NH 04002 RF	A	Bedford	Bedford Rotary Memorial 12k	0.0	4	R Fitzpatrick	NH 86001 WN
Cal	NH 04003 RF	A	Manchester	Holt Ave. 1000 ft. Calibration	0.0	100	R Fitzpatrick	
5 km	NH 04004 RF	A	Manchester	Operation Uplink 5k Road Race	0.3	5	R Fitzpatrick	
5 km	NJ 04001 LMB	A	Rahway	Winters End 5k	0.0	11	L Baldasari	
5 km	NJ 04002 LMB	A	Pompton Plains	Chilton Hospital/SPA23 Apple 5k	0.0	5	L Baldasari	
4 mi	NJ 04005 LMB	A	West Long Branch	West Long Branch 4 Mile	0.0	1	P Hess	
5 km	NJ 04006 LMB	A	Princeton	Eden Family 5k	0.0	7	L Baldasari	
4 mi	NJ 04007 LMB	A	Perth Amboy	Perth Amboy 4 Mile	0.0	3	P Hess	
5 km	NJ 04008 LMB	A	Nutley	Nutley Chamber of Commerce 5k	0.0	0	L Baldasari	
5 km	NJ 04009 LMB	A	Piscataway	Hip-Hop 5k	0.0	0	P Hess	
5 mi	NJ 04010 LMB	A	Readington	Raising hope 5 Mile	-0.4	1	P Hess	
5 km	NJ 04011 LMB	A	Little Falls	Little Falls 5k	0.3	5	P Hess	
5 km	NJ 04012 LMB	A	Island Heights Boro	River to Bay 5k	0.0	5	L Baldasari	
5 km	NJ 04013 LMB	A	Hamilton	Mercer Co. Park W. Picnic Area 5k	0.0	4	L Baldasari	
5 km	NJ 04014 LMB	A	Princeton	Diana Run 5k	0.0	0	L Baldasari	
5 km	NJ 04015 LMB	A	Little Falls	Passaic Valley H.S. 5k	-0.2	2	P Hess	
21.0975 km	NM 04001 GAN	A	Albuquerque	Memorial day Half Marathon	0.0	0	G Newman	
5 km	NM 04002 GAN	A	Albuquerque	Memorial 5km	0.0	5	G Newman	
21.0975 km	NM 04003 GAN	A	Albuquerque	Memorial H-Marathon (alt.)	0.0	0	G Newman	

DISTANCE	COURSE ID	STA	LOCATION	COURSE NAME/RACE	m/km DROP	pct SEP	MEASURER	REPLACES
4 mi	NY 04003 AM	A	Green Island	Green Island 4 Mile	0.0	2	J Gilmer	
42.195 km	NY 04004 AM	A	New York	NYRRC More Marathon	-0.1	1	P Hess	
5 km	NY 04005 AM	A	New York	NYRRC 102nd Street 5k	0.0	0	P Hess	
8 km	NY 04006 AM	A	New York	NYRRC 8k Championship 2004	0.2	3	P Hess	
5 km	NY 04007 AM	A	Batavia	5k Fetal Alcohol Syndrome Run	1.5	8	B Laskowski	
5 km	NY 04008 AM	A	Niagara Falls	Run Against Hunger	0.0	8	J Grandits	
5 km	NY 04009 AM	A	Gowanoa	Course 5k Challenge	0.0	2	B Laskowski	
5 km	OH 04001 RT	A	Marietta	Shamrock 5k 2004	0.0	0	J Corra	
10 km	OH 04002 RT	A	Marietta	Shamrock 10k 2004	0.0	2	J Corra	
1 mi	OH 04009 PR	A	Columbus	The Miracle Mile	0.0	11	P Riegel	
10 km	OH 04011 PR	A	Cincinnati	Strides of March 10k	0.0	0	S Prescott	
42.195 km	OH 04011 PR	A	Cincinnati	Flying Pig Marathon	0.0	3	D Connolly	OH 03009 PR
5 km	OH 04016 PR	A	Greenhills	Be A Winner at Heart 5k	0.0	1	D Connolly	
5 km	OH 04017 PR	A	Toledo	Toledo Symphony Owe 5 km	0.0	3	D Standish	
42.195 km	OH 04018 PR	A	Cleveland	Cleveland Rite Aid Marathon	0.0	0	J Glaze	OH 03004 MW
10 km	OH 04019 PR	A	Cleveland	Cleveland Rite Aid 10k	0.0	2	J Glaze	OH 03003 MW
5 km	OK 04002 BB	A	Tulsa	Racing on the River	0.0	2	G Lafarlette	
5 km	OK 04003 BB	A	Tulsa	Run Away 5k	0.0	0	G Lafarlette	
5 km	OK 04004 BB	A	Oklahoma City	Redbud Classic 5km Course	-2.0	40	J Smith	
5 km	OK 04005 BB	A	Carnegie	Cat Race	0.0	3	J Smith	
8 km	OK 04006 BB	A	Tulsa	Osteopathic Run 2004	0.1	5	G Lafarlette	
5 km	OK 04007 BB	A	Tulsa	Cinco de Mayo	-0.2	2	G Lafarlette	
5 km	OK 04008 BB	A	Mannford	Cim-Tel 5km Classic	0.0	5	G Lafarlette	
5 km	OK 04009 BB	A	Oklahoma City	Code 3 5km	0.2	4	J Smith	
5 km	OK 04010 BB	A	Tulsa	Route 66 CPA Run	1.8	4	G Lafarlette	
12 km	OK 04011 BB	A	Pawnee	Pawnee 12km Road Run	0.0	0	J Smith	OK 02019 BB
5 km	OK 04012 BB	A	Pawnee	Pawnee 5km Road Run	0.0	0	J Smith	OK 02018 BB
10 km	PA 04002 WB	A	Altoona	Family Services of Blair Co. 10km	0.0	0	J Brady	
10 km	PA 04003 WB	A	Willow Grove	NAS Willow Grove 10km	0.0	0	B Belleville	PA 01006 WB
5 km	PA 04004 WB	A	Lincoln University Chester Co.	Dudley Forbes 5k Run	0.0	0	D White	
10 km	RI 04001 RN	A	Bristol	Senator John Chafee Memorial 10k	0.0	0	R Nelson	
5 km	SC 04008 BS	A	Bishopville	Lee County 5k	0.0	4	S Blake	
5 km	SC 04009 BS	A	Columbia	Fidler 5k	0.0	0	S Blake	
8 km	SC 04010 BS	A	Columbia	F.A.S.T. Family Road Rally 8k	0.2	4	E Prytherch	
10 km	SC 04011 BS	A	Columbia	Lake Carolina Shamrock Shuffle	-0.2	1	S Blake	
5 km	SC 04012 BS	A	Lancaster	Forest Hills 5k	-0.2	1	C Sinclair	
42.195 km	SD 04019 PR	A	Brookings	Brookings Marathon	0.0	0	A Stockholm	SD 03051 PR
42.195 km	TN 04004 DJR	A	Nashville	Country Music Marathon	0.8	9	J Zeigler	
4 mi	TN 04005 DJR	A	Oak Ridge	Haiti Run for Health	0.0	0	D Waters	
21.0975 km	TN 04006 DJR	A	Nashville	Country Music Half Marathon	1.5	17	J Zeigler	
21.0975 km	TN 04007 DJR	A	Strawberry Plains	Strawberry Plains Half Marathon	0.0	0	A Morgan	TN 90001 WN
5 km	TN 04008 DJR	A	Nashville	Race Judicata	-0.7	3	J Zeigler	
5 km	TN 04009 DJR	A	Smyrna	Sharp Springs Natural Area 5k	0.0	1	T dePaulis	
5 km	TX 04005 JF	A	Burnet	Bluebonnet Festival 5k	0.0	1	J Ferguson	
5 km	TX 04006 WG	A	Alamo	Texas Independence Day 5k	0.0	5	B Grass	TX 97010 ETM
10 km	TX 04007 JF	D	Austin	Texas Round Up 10k	3.0	8	J Ferguson	
2 mi	TX 04007 WG	A	McAllen	Hidalgo County Fitness Stampede	0.0	0	B Grass	
5 km	TX 04008 JF	A	Austin	Sunrise stampede 5k	0.0	0	J Ferguson	
10 km	TX 04008 WG	A	McAllen	Hidalgo County Fitness Stampede	0.0	0	B Grass	
10 km	TX 04009 JF	A	Austin	Capitol 10,000	0.4	10	J Ferguson	TX 01004 JF
5 km	TX 04009 BG	A	Mission	Sweetheart Run	0.0	0	B Grass	
5 km	TX 04010 JF	A	Austin	Daisy 5k	0.0	0	J Ferguson	TX 03009 JF
8 km	TX 04011 ETM	A	Dallas	Borden Uptown Run&Trolley Walk	-0.1	2	D Coniff	TX 03015 ETM
5 km	TX 04011 JF	A	Dripping Springs	Run for Your Heritage 5k	0.0	0	J Ferguson	
42.195 km	TX 04012 ETM	A	Seabrook	Seabrook Marathon	0.0	0	W Vanderbrink	
10 km	TX 04012 JF	A	Austin	Texas Round-Up 10k	3.0	8	J Ferguson	TX 04007 JF
5 km	TX 04013 ETM	A	Houston	Run With the Wolves 5k	0.0	3	R Barnhill	
5 km	TX 04014 ETM	A	Lake Jackson	Brazosport College Gator Gallop	0.0	6	D Beatty	TX 02018 & 96015
1 mi	TX 04015 ETM	A	Lake Jackson	Brazosport College Gator Gallop	0.0	7	D Beatty	TX 96014 ETM
5 km	TX 04016 ETM	A	Fort Worth	Dallas Park Elementary Panther 5k	0.0	0	M Polansky	
8 km	TX 04017 ETM	A	Fort Worth	Hope River Run	0.0	0	M Hutcheson	
5 km	TX 04018 ETM	A	Fort Worth	Run to Joe's 5k	1.3	2	C Clines	TX 02027 ETM
Cal	TX 04019 ETM	A	N. Richland Hills	Clines - Holiday In. 304.8 meter	0.0	100	C Clines	
5 km	TX 04020 ETM	A	Fort Worth	Mustang Stampede 5k/1k	0.0	12	M Polansky	

DISTANCE	COURSE ID	STA	LOCATION	COURSE NAME/RACE	m/km	pct	MEASURER	REPLACES
					DROP	SEP		
1 km	TX 04020	ETM	A Fort Worth	Mustang Stampede 5k/1k	0.0	12	M Polansky	
8 km	TX 04021	ETM	A Houston	Law Week 2004	0.0	1	E McBrayer	
42.195 km	TX 04022	ETM	A Dallas	Dallas Trails Marathon	0.1	1	K Ashby	TX 03027 & 98025
5 km	TX 04023	ETM	A Houston	Running With the Bulls III	0.0	7	R Barnhill	TX 03040 ETM
5 km	TX 04024	ETM	A Fort Worth	Cowtown 5k	0.0	4	M Polansky	
42.195 km	TX 04025	ETM	A Dallas	Big D Texas Marathon	0.0	1	K Ashby	
5 km	TX 04026	ETM	A Dallas	Big D Texas Marathon	0.0	4	K Ashby	
5 km	TX 04027	ETM	A Houston	Houston Astros Race for Pennant	1.6	5	E McBrayer	TX 03022 ETM
5 km	TX 04028	ETM	A Temple Terrace	Temple Historic District 5k	0.0	1	K Vierzba	
3.5 mi	TX 04029	ETM	A Dallas	Chase Corporate Challenge 2004	0.0	0	A Beach	
5 km	TX 04030	ETM	A Houston	Dad's Day 2004	0.0	2	E McBrayer	TX 03034 ETM
5 km	TX 04031	ETM	A Houston	Sprint for Life 2004	-0.8	3	E McBrayer	
5 km	TX 04032	ETM	A Lake Jackson	Family Fitness 5k Run/Walk	0.0	1	D Beatty	
2 mi	TX 04033	ETM	A Woodway	"Devil Dogs" Duathlon	0.0	0	K Vierzba	
5 km	TX 04034	ETM	A Irving	U.S. Secret Service 5k	0.0	1	C Clines	
5 km	TX 04035	ETM	A Fort Worth	Little Night Run	-0.2	5	C Clines	
21.0975 km	TX 04036	ETM	A Dallas	Runaway Train Half Marathon	0.0	1	K Ashby	TX 02039 ETM
Cal	UT 04003	DP	A Moab	Highway 191 - 400 meter	0.0	100	C Catmull	
10 km	VA 04002	RT	A Richmond	Ukrop's Monument Ave 10k 2004	0.2	4	M George	
10 km	VA 04003	JS	A Sterling	Cascades Firehouse 10k	0.0	0	J Sissala	VA 03001 JS
Cal	WA 04001	BL	A Coupeville	Haller Ave 399.99 Calibration	0.0	100	T Cotner	
5 km	WA 04002	BL	A LaConner	Smelt Run 5k	0.0	0	T Cotner	
10 km	WA 04003	BL	A LaConner	Smelt Run 10k	0.0	0	T Cotner	
100 km	WI 04001	DB	A Eagle	American 100k	0.0	0	D Brannen	
Renewed								
10 km	CA 89032	RS	A04 Cypress	Cypress Community Festival 10km	0.0	2	R Hickey	
5 km	CA 89033	RS	A04 Cypress	Cypress Community Festival 5km	0.0	5	R Hickey	
Cal	DE 89009	WN	A04 Elkton	Elkton Rd. Half Mile Calibration	0.0	100	D White	
10 km	FL 92049	DL	A04 Melbourne	Eye of the Dragon 10k	0.0	0	G Revels	
5 km	FL 94024	DL	A04 Lake Worth	John Prince Park 5k	0.0	2	J Foy	
Cal	MT 92004	GT	A03 Helena	Governor's Cup 1828.818 ft. Cal.	0.0	100	F Ritchie	
10 km	NC 86024	ACL	A04 Goldsboro	Greater Goldsboro 10k	-0.3	8	A Linnerud	
5 km	NC 86120	ACL	A04 Goldsboro	Greater Goldsboro 5k	0.0	5	A Linnerud	
42.195 km	NC 93026	ACL	A04 Camp Lejune	The Lejune Marathon	0.0	1	R Geruthy	
5 km	NH 93006	WN	A04 Derry	Foot Health 5k Road Race	0.3	6	T Kemple	
10 km	NJ 90001	DB	A04 Pompton Plains	Pequannock: Clinton 10km	0.0	3	D Brannen	
15 km	NY 89009	AM	A04 Canandaigua	Canandaigua Elks 15k	-0.2	3	C North	
10 km	NY 90001	AM	A04 Ithaca	Skunk Cabbage Classic 10k	0.0	0	E Smith	
21.0975 km	NY 90002	AM	A04 Ithaca	Skunk Cabbage 1/2 Marathon	-1.4	0	E Smith	
21.0975 km	NY 92009	AM	A04 Mendon	Bill Kehoe 1/2 Marathon	0.0	4	W Kehoe	
5 km	NY 92017	AM	A04 Sodus Point	Lighthouse 5k	-0.9	12	G Tillson	
4 mi	OH 89042	PR	A04 Spencerville	Spencerville canal Stop	0.0	0	B McMichael	
5 km	TX 93048	ETM	A04 Richmond	Richmond Courthouse	0.0	0	C Hull	

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PUBLICATIONS AVAILABLE FROM RRTC

Printed Course Lists - A list of certified courses for any state is \$2.00. (Free to RRTC certifiers). You will receive a list that is current as of the last published Measurement News. Courses can be sorted in a special way; otherwise it will be sorted by distance as it appears in MN. Other specially-sorted lists can be done - for instance, you might want to have all the 5k's in IL, IN, and MO. If you are online, lists can be sent that way. Contact Mike Wickiser at MikeWickiser@neo.rr.com

Web Page Access to Course Lists:The complete list can be downloaded from the RRTC website at www.rrtc.net/download/ Also, try the new USATF Search Engine linked from www.rrtc.net or directly at www.usatf.org/events/courses/search/

Individual Certificates - These may be obtained by sending the course number and \$2.00 per course desired. **SEND THE COMPLETE ID, INCLUDING PREFIX AND SUFFIX LETTERS**, i.e: CA 92057 RS. Send course name, length and location as well. If you are thinking of hiring a measurer, this is an excellent way to see the sort of work you can expect. In addition, you may wish to check out a course you intend to run. Bring the map to the course and see if the race director got it right!

Above material may be obtained from: Mike Wickiser - 2939 Vincent Rd. - Silver Lake, OH 44224-2906

Measurement Calculation Computer Program by Bob Baumel, version 1.2 for Macintosh or IBM PC. This software can be downloaded for free from the RRTC website at www.rrtc.net/download/ or Bob will distribute it by email attachment (send requests to webmaster@rrtc.net) or on floppy disks (send blank, formatted diskette and stamped return mailer to Bob at: 129 Warwick Road, Ponca City OK 74601-7424). Be sure to specify Mac or PC version.

Electronic Certificate Templates (available to Certifiers only), in Adobe Acrobat format. Requires Acrobat or Acrobat Reader 4.0 or greater (Current Acrobat Reader may be downloaded for free from www.adobe.com). The template allows you to fill in certificates on the computer and print them. Available in both FS and non-FS version. Distributed by Bob Baumel by email or diskette [same addresses as for Measurement software]. Bob can customize the template with certifier's personal info at the bottom to avoid re-typing it every time (Be sure to specify exact ID text desired when requesting a template).

Online course measurement book, edited by Bob Baumel. It's a revision of the one you can buy from USATF, but the basic procedures have not changed. Available at: www.rrtc.net

Course Measurement Procedures - the Bible of course measurement. Complete instructions for measuring courses for USATF certification. The same procedures are now used for IAAF and AIMS courses. \$9.00 postpaid. Available from: USATF - Book Order Dept. - PO Box 120 Indianapolis, IN 46206

Course Measurement Video - a concise 17 minute introduction to course measurement, intended as a supplement to Course Measurement Procedures. See how it's done! Version 2 sells for \$10 but there are still a few copies of the original version available for \$7.50. Send to: Tom McBrayer - 4021 Montrose - Houston, TX 77006-4956.

Historical/Technical Material Available on CD

Measurement News Archive - Every issue of Measurement News from #1 (1982) to #115 (2002). Full of material describing

measurement techniques, technical articles, and history, written by numerous people worldwide. Set of 2 CD's in pdf (Adobe Acrobat 5.0) format. Cost \$10.00, postpaid.

Historical Archive - A collection of technical articles, measurement reports, seminars spanning the period 1963 to present. Includes detailed full reports of several group rides of Olympic Marathon courses. All on one CD in pdf format. Cost \$5.00, postpaid.

The above two items are available from:
Pete Riegel, 3354 Kirkham Road, Columbus, OH 43221
email: riegelpete@aol.com

OTHER PUBLICATIONS AND EQUIPMENT

Road Race Management is a monthly newsletter providing race organizing ideas and news for race directors. \$97 per year from: Road Race Management - 4904 Glen Cove Pkwy - Bethesda, MD 20816 Phone: 301-320-6865 Fax: 301-320-9164

Jones/Oerth Counters - Paul Oerth - 2455 Union St - Apt 412 - San Francisco, CA 94123. Phone: 415-346-4165 Fax 415 346 0621. Email: Poerth@aol.com. US Price is \$70 for the 5 digit model, \$80 for the 6 digit model, postpaid. Foreign price is \$75/\$85 plus postage. Foreign orders shipped by airmail. Visa, MasterCard, American Express cards accepted. Advance payment is required.

RunScore - The flagship of IBM-style finish line programs. For information contact: Alan Jones - 3717 Wildwood Dr - Endwell, NY 13760. Online at: www.runscore.com

Apple Raceberry JaM - Race management software for Macintosh and Windows. Online at www.raceberryjam.com or call Jack Moran at (952) 920-0558.

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Denver, CO 80225

Delivery will be made in approx. 4 weeks. Ask for latest price.

Maps can be located and ordered online at: www.usgs.gov

Maps can be obtained in just a few days from:

Map Express - PO Box 280445 - Lakewood, CO 80228-0445
1-800-MAP-00EX (1-800-627-0039)

Maps can be located and ordered online at: www.mapexp.com

Topo Maps on CD-ROM - 3-D TopoQuads includes authentic USGS 7.5-minute quadrangle maps, assembled into one seamless database

See an interactive online demo at www.delorme.com

Also - check out Street Atlas USA from the above - it's a seamless street map of the whole USA at a decent price.

USGS TOPOGRAPHIC MAPS ONLINE - FREE

Maps.Com has a section where you can click on to all USGS maps, free. This can be very handy for obtaining accurate elevation information.

23 Check out: www.maps.com

ROAD RUNNING TECHNICAL COUNCIL

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CERTIFIERS - Please check this listing to be sure we have your data correct.