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International Measurement Administrator
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Amadeo I. D. Francis
P.O. Box 11040
San Juan
PUERTO RICO 00910-2140

July 25, 1998

Dear Amadeo,

I have completed my work in Venezuela. The courses for the marathon and racewalks are now laid out and accurate.

While I was there I received good assistance and cooperation from Atilio Martinez and his associates, even though it was a busy and difficult time for them.

I have included maps of the courses which will allow your technical representative to ascertain that the courses are set up properly. For the marathon course, I have also enclosed some photographs which locate the start and finish areas.

Thanks for the opportunity to do this work. I enjoyed making new friends.

Best regards,

reports also sent to:

Atilio Martinez
Noel Vidal
Jose Marchan
Trino Hernandez
Olbers Fereira
Hugh Jones

MEASUREMENT OF MARATHON AND RACEWALK COURSES

XVIII CENTRAL AMERICAN AND CARIBBEAN GAMES

MARACAIBO, VENEZUELA

Amadeo Francis, IAAF vice president who presides over the Caribbean region, asked me to measure the marathon and racewalk courses for the Games, which start on 8 August 1998.

The Games are more than an Athletics meet. They are actually a mini-Olympics, with 28 different sports represented, and 32 countries coming to compete. It is a huge job to stage such an event. The technical official in charge, Atilio Martinez, was working seven-day weeks.

Atilio introduced me to Trino Hernandez, who is in charge of Athletics and several other sports. We conversed with difficulty, as my Spanish and their English were equally inadequate to the task. However, Olbers Fereira was enlisted as a translator, and with his assistance things went well. I was introduced to Jose Rafael Marchan Montilla, who works with Trino, and who is responsible for the accuracy of the road courses.

After introductions and preliminaries, we toured the courses. Present were Trino, Olbers, Marchan, our driver Tomas Ponce M, and me.

Measurement Conditions:

Information provided by the organization revealed the following about the typical weather at the time of the measurement and the games:

Temperature:

Maximum: 99F/35C

Minimum: 78 F/25C (at night)

Humidity:

Maximum: 94%

Minimum: 46%

These seemed to be typical conditions to me. I measured no temperatures.

Racewalk Route - Description

The racewalk route was originally conceived to start and finish in Pachenco Romero Stadium, going out to and back from a 5.1 km loop. This circuit was seen to be too large for efficient judging, so it was revised to a circuit which consisted of multiple 2 km loops plus a 2 km walk to the finish line in the stadium. The new route is located on a former airport runway near the stadium.

Racewalk Route - Measurement

As the measurement of the racewalk route seemed straightforward, I saw no need for haste. We began work on Friday, 17 July, at 9:30 AM with a layout of a 300 meter calibration course. The temperature was well above 30C, and the pavement hot to the touch. I reduced the course by 6

cm, as this still, in my opinion, left the calibration course a bit over 300 meters. This done, I began measuring. After several passes, it became apparent that the original start line would not work, so I laid out a new start line. After 10 km and two hours of riding, we had a course. I was greatly affected by the heat and very anxious that we get the marathon route started at first light, so as to avoid the sun as much as possible.

Marathon Route - Description

The marathon route is point-to-point with no elevation change. It starts in Santa Rita, a small town on the east side of the strait which divides Lake Maracaibo from the Gulf of Venezuela. The course goes northward for 5 km and then crosses the Puente General Rafael Urdaneta, a bridge across the strait. It is about 9 km long, in a straight line with a forbidding (to the bike rider) hump in the middle to let the big ships pass through. Once over the bridge, the route takes a short southward loop through a populated neighborhood (San Francisco), then proceeds northward on Autopista #1, a heavily-trafficked motorway. After 15 km on Autopista #1, Maracaibo city streets are again encountered and the route follows them to the finish at Basilica Chiquinquirá, near Plaza Bolívar and a pleasant *parque*. Because Autopista #1 was not on the original plan, its use was thought to lengthen the course by about 2 km. When we were in Santa Rita, the car's odometer was used to move us up the road the required 2 km difference. We found ourselves at a crossroad with a small restaurant "La Gran Cruzado" on the corner. We laid out a calibration course here and another one at the finish.

I asked whether splits had been established. They said no. I suggested that we measure the course in reverse, against traffic all the way, so we could lay them out. They said the police would protect us; no problem.

Marathon Route - Measurement

We met in Santa Rita at 6:30 AM on Saturday, 18 July, at first light. The police had refused to protect a finish-to-start ride, so we rode from the estimated start to the finish, with plans to correct the length at the end. Splits would be laid down later by Marchan. A second rider, Noel Vidal, had been enlisted. I gave him a quick overview of the plan, and we calibrated. Once done, we started our ride without police escort. As the ride was with traffic all the way, I was not uneasy.

When we reached the bridge, at 5 km, I started riding across but was halted by shrill blasts of a whistle commanding an immediate stop. I did so, and waited as our permission to cross the bridge was debated at length. I felt like Lawrence of Arabia with the sun creeping higher and higher. I knew that every km of ride not taken cool would have to be taken hot. After 45 minutes the problem was resolved, and we resumed our ride. To my surprise, they shut down the bridge as we rode across, which took 20 to 25 minutes. I suspect the halted drivers may have experienced impatience.

In San Francisco, after crossing the bridge, we took a break at a small store with the word "pool" on it, and took a count. We did the same just before entering Autopista #1. Marchan placed a nail at this point, as it would assist him when he laid out the split points. At each break I gulped down liters of water, as I was sweating heavily.

Autopista #1 generally curves to the right, which made following the shortest route easy -- just stay to the right, on the apron. However, there was one left-hand curve. When I reached it, I looked at Noel and we grimaced at one another. There was no safe way to move gently left to cross the two lanes of high-speed traffic. I decided on an offset maneuver, which I could tell Noel understood by the look of relief on his face. We locked up our wheels, waited for an opening, and moved to the left. So did the truck that was driving behind us. During the left-hand riding, I remember hearing many uncomplimentary things shouted by passing drivers and seeing some amusing and interesting gestures. Soon we were finished with the bend, and it was time to move back to the right.

Moving back required a 5 minute wait, as our sojourn in the left-hand lane had backed up traffic for miles. Once things thinned out, we were able to get back across the road. We resumed our right-hand riding. As we approached our exit onto Delicias, I saw that the exit was an elevated ramp -- to me a significant hill. By now I was approaching full fatigue. As soon as we got onto the city streets, I called for a halt and some more water. We were only 5 km from the finish, but I had to have a rest. After another 3 km, I called for another halt and rest. Finally we reached the finish. I had intended that we would recalibrate on the calibration course we had laid out there, but it was Saturday and there were people and cars all over the course. I decided that we could recalibrate in Santa Rita, as we had to adjust the start anyway.

We loaded up the bikes, went to Santa Rita, and recalibrated. Then we went to a small open-air restaurant. I drank welcome beer, ran the calculations, and figured that we could safely remove 85 meters from the course. We used Marchan's measuring wheel to do this. Olbers had calibrated it, obtaining 301 meters over the 300 meter calibration course. Close enough.

Paperwork:

At the end of each of the measurements I went through a slow, methodical, step-by-step calculation procedure, pausing to answer questions as I did so. The response to this was enthusiastic. The questions were perceptive, and I think that the Venezuelan measuring team learned a lot about the calibrated bicycle method of measuring. I am going to send Marchan and Noel copies of the Spanish measuring book written by Mexico's Rodolfo Martinez. I gave a Jones/Oerth counter to Marchan, and another to Noel.

With the paperwork done, it was time to go home. The plane trip back to home was a horror story, due to storms, but not really part of this narrative.

Conclusion:

The XVIII Juegos Deportivos Centroamericanos y del Caribe now have accurate racewalk courses, and an accurate marathon course.

Submitted by :

Pete Riegel
IAAF "A" Measurer
Measurement Administrator, Americas



START AND FINISH OF THE MARATHON COURSE



Here is the starting area, looking south. Note the restaurant "la Gran Cruzada" at the southeast corner of the intersection. The nails shown on the course map may be found on the east side of the road. One nail is located about 5 meters north of the north edge of the road. A second nail, located 85 meters north of the first nail, marks the starting line.



Here is the finish area, looking south. The finish is marked by a nail located about 2 meters east of the east edge of Av 11, which can be seen in the background.

XVIII JUEGOS DEPORTIVOS CENTROAMERICANOS Y DEL CARIBE

Racewalk courses

All calculations use larger constant and include 1.001 short course prevention factor.

Measured 17 July 1998 by Pete Riegel

Laid out 300 m calibration course at 9:30 AM
shortened it by 6 cm as pavement was hot to the touch.
Estimated pavement temperature in excess of 40C

Precalibration - 10 AM

0	
3411	3411
6824	3413
10236	3412
13646.5	3410.5

average 3411.625
Counts/m 11.38346

Postcalibration - Noon

7430	
10839	3409
14249	3410
17658	3409
21067	3409

average 3409.25
Counts/m 11.37553

Constant for the day = 11.38346 counts per meter

Measurements:

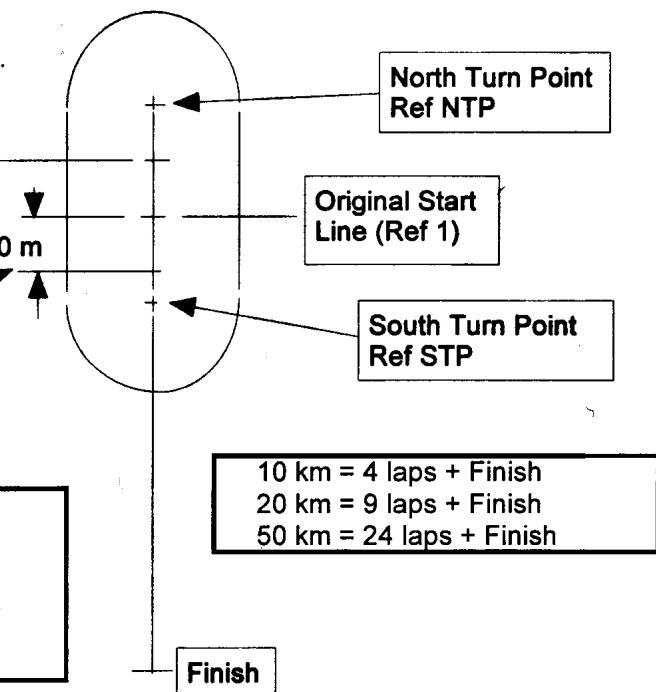
	Counter Reading	Interval Counts	Interval Meters	
Ref 2	13647			
Finish	31467	17820	1565.4	
Ref 2	49253	17786	1562.4	Use
Ref 2 to Ref 1 =		299.7	= (300/1.001)	

Point STP was chosen to coincide with the existing south turn point.

STP	66150		
NTP	77415	11265	989.6
STP	88680	11265	989.6
NTP	650		
New Start	1269	619	54.4
Ref 1	2840	1571	138.0
New Start	4412	1572	138.1
NTP	5030	618	54.3
			Use

Each end arc has cones set on a 3 m radius. The contestants' path is 30 cm beyond the cones.

The length of each arc is thus $3.30 \times \pi =$



Summary of measurements:

Start to finish:

Finish to Ref 2	1562.4
Ref 2 to Ref 1	299.7
Ref 1 to New Start	138.0
Total	2000.2

Length of lap

Straightaway =	989.6
Curve =	10.4

2 x Straightaway =	1979.2
2 x Curve =	20.7

Total	1999.9
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No adjustment to the straightaway distance was made. Calibration change is sufficient to bring the distance over 2000.0 meters

10.4 meters

XVIII JUEGOS DEPORTIVOS CENTROAMERICANOS Y DEL CARIBE

Marathon Course

All calculations use larger constant and include 1.001 short course prevention factor.

Measured 18 July 1998 by Pete Riegel

Laid out 300 m calibration course on 16 July.
shortened it by 6 cm as pavement was hot to the touch.
Estimated pavement temperature in excess of 40C

Precalibration - 6:40 AM

Pete Riegel			Noel Vidal		
31240			64760		
34646.5	3406.5	3405.5 average	68152.5	3392.5	3391.875 average
38051.5	3405	11.36302 counts/m	71544	3391.5	11.31756 counts/m
41457	3405.5		74936	3392	
44862	3405		78327.5	3391.5	

Postcalibration - 11:00 AM

Pete Riegel			Noel Vidal		
26400			78310		
29803.5	3403.5	3402.875 average	81698	3388	3387.375 average
33207	3403.5	11.35426 counts/m	85085.5	3387.5	11.30254 counts/m
36610	3403		88472	3386.5	
40011.5	3401.5		91859.5	3387.5	

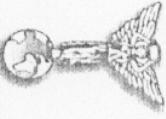
Constant for the day:	Pete:	11.36302 counts/m
	Noel	11.31756 counts/m

Measurements

Point	Counter Reading	Pete		Noel	
		Interval Counts	Interval Meters	Interval Counts	Interval Meters
S end Cal	45000			85260	
Ref "scale"	95414	50414	4436.7	135459	50199
Ref "pool"	217535	122121	10747.2	257048	121589
Ref "nail"	293599	76064	6694.0	332799	75751
Finish	525505	231906	20408.8	563769	230970
Total Measured Length =		42286.7		42280.2	

Noel's figure is official, as it is shorter.

Desired length = 42195 meters Course was shortened by 85 m. A nail was set 85 meters north of the south end of the calibration course, establishing the start.



International Measurement Certificate

IMAF

AIMC

AIMS



Distance MARATON - 42.195 KM

Name of race: XVIII JUEGOS DEPORTIVOS
CENTROAMERICANOS Y DEL CARIBE

Location: SANTA RITA A MARACAIBO

Country: VENEZUELA

Type of course: PUNTO A PUNTO Date of race: 22/8/98

Date of measurement: 18/7/98

Drop: 0

Separation: 16 KM - 38%

Technical specifications of start/finish:

Measurer: PETER RIEGEL Y NOEL VIDAL

Grade:

RIEGEL = A
VIDAL = C

Country:

USA
VENEZUELA

This is to certify that the length of the above road race has been established by an expert employing the method of a bicycle calibrated with a Jones counter.
It remains valid for five years so long as the course is in no way changed from that defined in the full measurement report submitted by the expert measurer named above and approved by the race organiser.
Any modification of the course, however minimal, will require a new official measurement to be undertaken and will nullify this certificate.

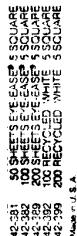
Reference number:

VEN 98001 PR

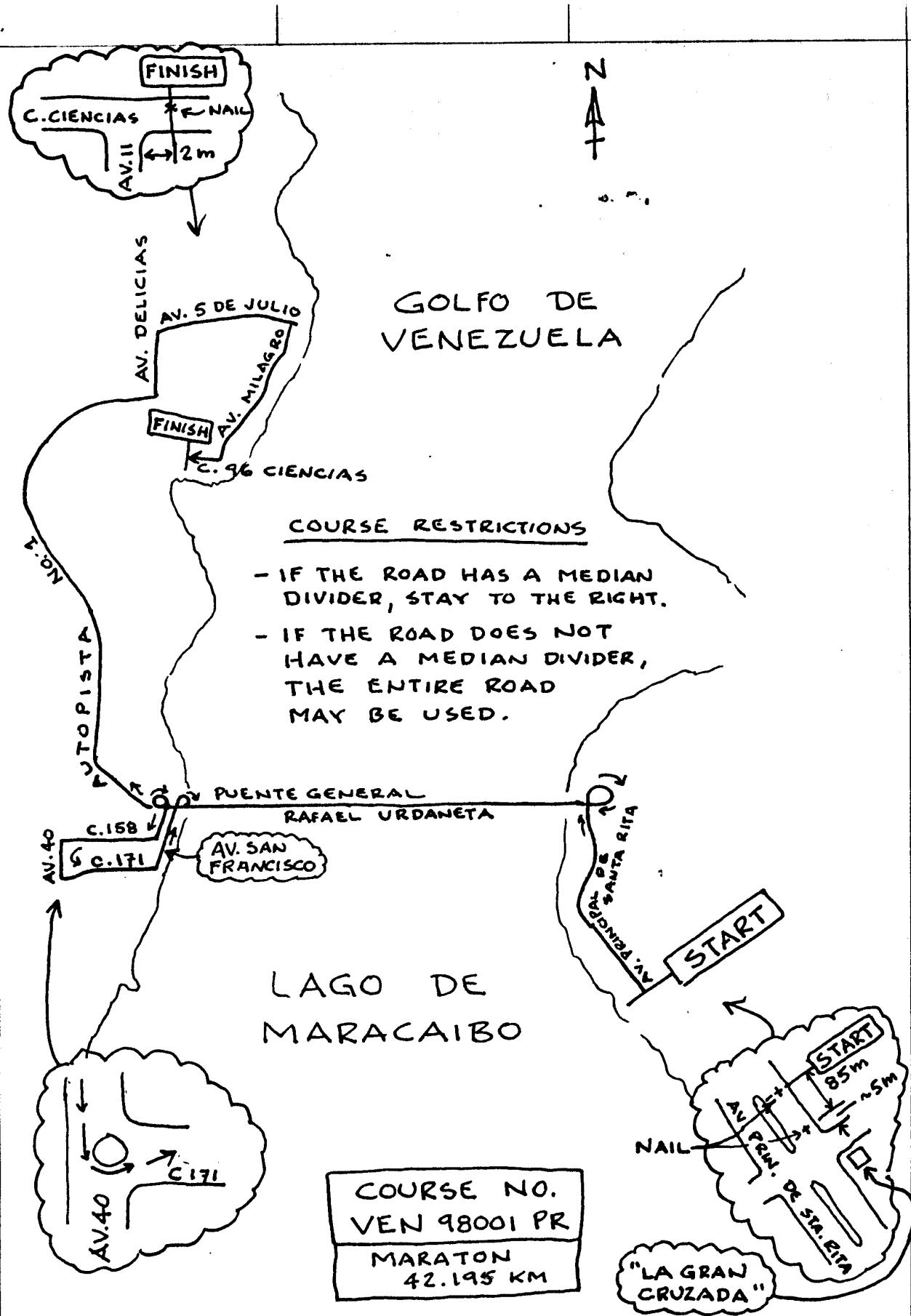
Registered the 19/7/98 by the International Measurement Administrator PETER RIEGEL

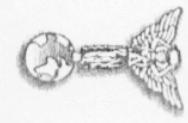
Signed:

Peter Riegel



National Brand





International Measurement Certificate

AVIMC



IAVFF

AVIMS

Name of race: XVIII JUEGOS DEPORTIVOS

CENTROAMERICANOS Y DEL CARIBE

Location: MARACAIBO

Country: VENEZUELA

Type of course: VUELTAS

Date of race: 10 KM - 17/8/98
20 KM - 15/8/98
50 KM - 19/8/98

Date of measurement: 17/7/98

Drop:

0

Separation:

~1.5 KM

Measurer:

PETER RIEGEL

Grade: A

Country: USA

This is to certify that the length of the above road race has been established by an expert employing the method of a bicycle calibrated with a Jones counter.
It remains valid for five years so long as the course is in no way changed from that defined in the full measurement report submitted by the expert measurer named above and approved by the race organiser.
Any modification of the course, however minimal, will require a new official measurement to be undertaken and will nullify this certificate.

Reference number:

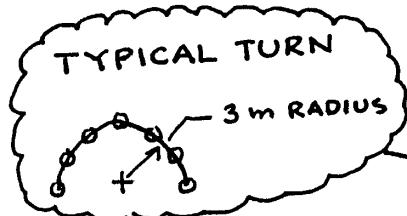
VEN 98002 PR

Registered the 19/7/98 by the International Measurement Administrator

PETER RIEGEL

Signed:

Peter Riegel



MARCHAS
10 }
20 } KM
50 }

LOCATIONS OF POINTS

SOUTH TURN

CENTER IS 3 M SOUTH
OF THE THIRD FENCE POST
NORTH OF GATE IN FENCE.

NORTH TURN

CENTER OF NORTH TURN
IS 989.6 M NORTH OF
CENTER OF SOUTH TURN.

START

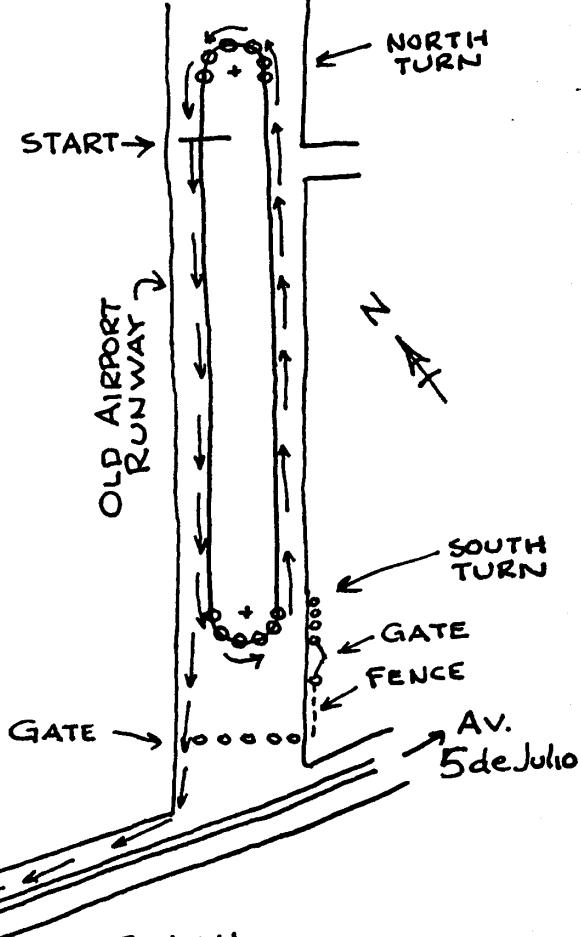
START IS 54.3 m
SOUTH OF CENTER
OF NORTH TURN.

1 LAP = 2 KM

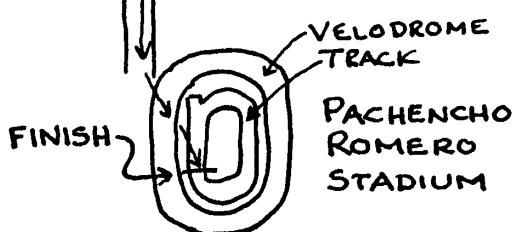
10 KM = 4 LAPS + FINISH

20 KM = 9 LAPS + FINISH

50 MM - 341APS + FINISH



FINISH
FINISH IS STANDARD
TRACK FINISH.



COURSE NO.
VEN 98002 PR

ALL POINTS EXCEPT
FINISH ARE MARKED
WITH PAINT + NAIL.

Traducción de Computadora:

MEDIDA De MARATON Y Marcha CURSOS XVIII CENTROAMERICANO Y CARIBE JUEGOS MARACAIBO, VENEZUELA

Amadeo Francis, IAAF vicepresidente quien preside encima del Caribe región, me preguntó medir la maratón y cursos del [Marcha] por los Juegos, que salida en 8 el agosto de 1998.

Los Juegos son más que un Atletismo encuentran. Están realmente un [mini-Olympics], con 28 deportes diferentes representó, y 32 países vienen a competir. Es un trabajo grande organizar tal evento. El oficial técnico en cargo, Atilio Martínez, trabajaba semanas del siete-día.

Atilio me introdujo a Trino Hernández, quien está a cargo de Atletismo y varios otros deportes. Nos conversamos con dificultad, como mi español y sus ingleses estaban igualmente inadecuado a la tarea. De cualquier modo que, se alistó como a un traductor Olbers Fereira, y con sus cosas de la ayuda fue bien. Se introduce a José Rafael Marchan Montilla, quien trabajó con Trino, y quien está responsable por la exactitud de los cursos del camino.

Después de introducciones y preliminares, recorrimos los cursos. Presente era Trino, Olbers, Marchan, nuestro chófer Tomás Ponce M, y yo.

Condiciones de la medida:

Información proveyó por la organización reveló el partidarios acerca del tiempo típico al tiempo de la medida y los juegos:

Temperatura:

Máximo: 99F/ 35C

Mínimo: 78 F/ 25C (por la noche)

Humedad:

Máximo: 94%

Mínimo: 46%

Estos parecieron ser condiciones típicas a mí. Medí algunas temperaturas.

Marcha Dirige- Descripción

Se concibió la ruta del [Marcha] originalmente comenzar y cumplir en Pachenchó Romero Estadio, sale a la inversa de un 5,1 vuelta del [km]. Se cuidó de estar demasiado grande este circuito por eficaz juez, así se revisó a un circuito que constó de múltiple 2 vueltas del [km]

más un 2 andado del [km] a la línea de llegada en el estadio. Se localiza la ruta nueva en un pista de aterrizaje del aeropuerto anterior acerca al estadio.

Marcha Dirige- Medida

Como la medida de la ruta del [Marcha] pareció sincero, vi ninguna necesidad por prisa. Empezamos trabajo el viernes, 17 julio, a 9: 30 Está con una esquema de un 300 curso de la calibración del metro. La temperatura era bien sobre 30C, y el pavimento caliente al toque. Reduje el curso por 6 [cm], como este silencio, en mi opinión, izquierdo el curso de la calibración un pedazo encima de 300 metros. Éste hace, empecé a medir. Después de varios pasos llegó a ser claro que la línea de la salida del original no trabajaría, para que derribé fuera una línea de la salida nueva. Después de 10 [km] y dos horas de paseo a caballo, teníamos un curso. Se afectó grandemente por el calor y muy ansioso que hacemos la maratón dirige comenzó a primera luz, así acerca de evita el sol tanto como posible.

Maratón Dirige- Descripción

La ruta de la maratón es punto-a-punto sin cambio de la elevación. Comienza en Santa Rita, un pueblo pequeño en el lado del este del aprieto que divide Lago Maracaibo del Golfo de Venezuela. El curso va [northward] por 5 [km] y entonces cruces el Puente Rafael Urdaneta General, un puente por el aprieto. Está aproximadamente 9 [km] largo, en una línea de la recta con un prohibitivo (al jinete de la bicicleta) giba en el medio permitir el grande envía paso por. Una vez encima del puente, la ruta toma una vuelta del [southward] corta por un pobló barrio (San Francisco), entonces [northward] de los beneficioses en Autopista #1, un muy-traficó autopista. Después de 15 [km] en Autopista #1, Maracaibo se encuentran calles de la ciudad de nuevo y la ruta los sigue al fin a basílica Chiquinquirá, Plaza Bolívar cercano y un [parque] agradable. Porque Autopista #1 no estaba en el diseño del original, su se pensó alargar el curso uso por aproximadamente 2 [km]. Cuando estábamos en Santa Rita, se usó movernos el [odometer] del carro arriba el camino el requirió 2 diferencia del [km]. Nos hallamos a una travesía con un restaurante pequeño "La Gran Cruzado" en el esquina. Derribamos fuera un curso de la calibración aquí y otro al fin.

Pregunté si se habían establecido rajas. Dijeron no. Sugerí que midiéramos el curso en marcha atrás, contra tráfico toda la manera, para que podríamos poner ellos fuera. Dijeron que los policíacos nos protegerían; ningún problema.

Maratón Dirige- Medida

Encontramos en Santa Rita a 6: 30 Está el sábado, 18 julio, a primera luz. El policía se había negado a proteger un cumplir-a-salida monta, para que montamos del estimó salida al fin, con piensa corregir la longitud al final. Se acostarían rajas más tarde por Marchan. Se había alistado un jinete del segundo, Noel Vidal. Le dí un apreciación global rápido del diseño, y calibrámos. Una vez hace, comenzamos nuestro paseo sin escolta policíaca. Como el paseo era con tráfico toda la manera, no estaba tranquilo.

Cuando alargamos el puente, a 5 [km], comencé paseo a caballo por pero se detuvo por explosiones chillones de un silbato imponente una parada inmediata. Hacía así, y esperó como nuestro permiso cruzar el puente se debatió a longitud. Enfieltré como Lawrence de Arabia con el sol se arrastra más alto y más alto. Supe que cada [km] de paseo no toma fresco tendría que se tomar caliente. Después de 45 minutos se se resolvió el problema, y reasumimos nuestro paseo. A mi sorpresa cierran el puente cuando montamos por, que les tomó 20 a 25 minutos. Sospecho el detuvo chóferes hubieran experimentado impaciencia.

En San Francisco después de cruce el puente, tomamos un descanso a una tienda pequeña con la palabra "piscina" en él, y tomó una cuenta. Hacíamos el mismo sólo antes de entrar Autopista #1. Marchan puso una uña a estas alturas, cuando lo asistiría cuando derribó fuera los puntos de la raja. A cada descanso tragué litros de abajo de agua, cuando sudaba pesadamente.

Autopista #1 generalmente encorvados a la derecha, que le hizo la ruta más corta a partidarios fácil--sólo queda a la derecha, en el delantal. De cualquier modo que, había un izquierdo-mano encorva. Cuando alargué lo, miré Noel y hicimos muecas el uno al otro. Había ninguna manera segura mover suavemente izquierdo cruzar las dos sendas de alto-rapidez trafica. Decidí en un desplazamiento maniobra, que podría decir Noel entendió por la mirada de solaz en su cara. Cerramos con llave nuestras ruedas, esperó una abertura, y movió a la izquierda. Así hacía el camión que nos manejaba atrás. Durante el paseo a caballo del izquierdo-mano recuerdo oído muchas cosas poco halagüeño gritaron por chóferes del paso y vista algunas acciones entretenidas e interesantes. Pronto se cumplimos con la curvatura, y era el hora de mover inverso a la derecha.

Inverso de la mudanza requirió un 5 minuto espera, como nuestra estancia en la senda del izquierdo-mano había apoyado tráfico por millas. Una vez cosas adelgazaron fuera, podíamos volver por el camino. Reasumimos nuestro paseo a caballo del derecho-mano. Cuando nos acercamos nuestra salida hacia Delicias, vi que la salida era una rampa elevada--a mí una colina significante. Por ahora me acercaba fatiga llena. En cuanto hicimos hacia las calles de la ciudad, exigí una parada y algunos más agua. Estábamos sólo 5 [km] del fin, pero tenía que tener un descanso. Después de otro 3 [km], exigí otra parada y descanso. Finalmente alargamos el fin. Había tenido la intención de que haría [recalibrate] en el curso de la calibración que habíamos derribado fuera allí, pero estaba sábado y había personas y carros todo encima del curso. Decidí que pudiéramos [recalibrate] en Santa Rita, cuando teníamos que ajustar la salida sin embargo.

Cargamos arriba las bicicletas, fue a Santa Rita, y [recalibrated]. Entonces fuimos a un restaurante pequeño al aire libre. Bebí cerveza bienvenida, corrió las calculaciones, y figurado que podríamos quitar seguramente 85 metros del curso. Usamos Marchan mide rueda hacer éste. Olbers lo había calibrado, obtiene 301 metros encima del 300 curso de la calibración del metro. Cierre bastante.

Paperwork:

Al final de cada de las medidas que fui por un lento, metódico, procedimiento de la calculación del paso-by-paso, pausa contestar preguntas cuando hacía así. La contestación a éste estaba entusiástica. Las preguntas eran [perceptive], y pienso que el venezolano mide equipo sabio mucho acerca del calibró método de la bicicleta de medir. Voy a enviar Marchan y Noel copia del español mide libro escribe por México Rodolfo Martinez. Dí un Jones/ Oerth se opone a a Marchan, y otro a Noel.

Con el [paperwork] hace, era el hora de ir hogar. El inverso del viaje del avión a hogar era un cuento del horror, debido a tormentas, pero no verdaderamente parte de esta narrativa.

Conclusión:

El XVIII Juegos Deportivos Centroamericanos y que [del] Caribe ahora tiene cursos del [Marcha] exactos, y un curso de la maratón exacto.

Sometió por: Pete Riegel

IAAF "A" Measurer
Administrador de la medida, Americas