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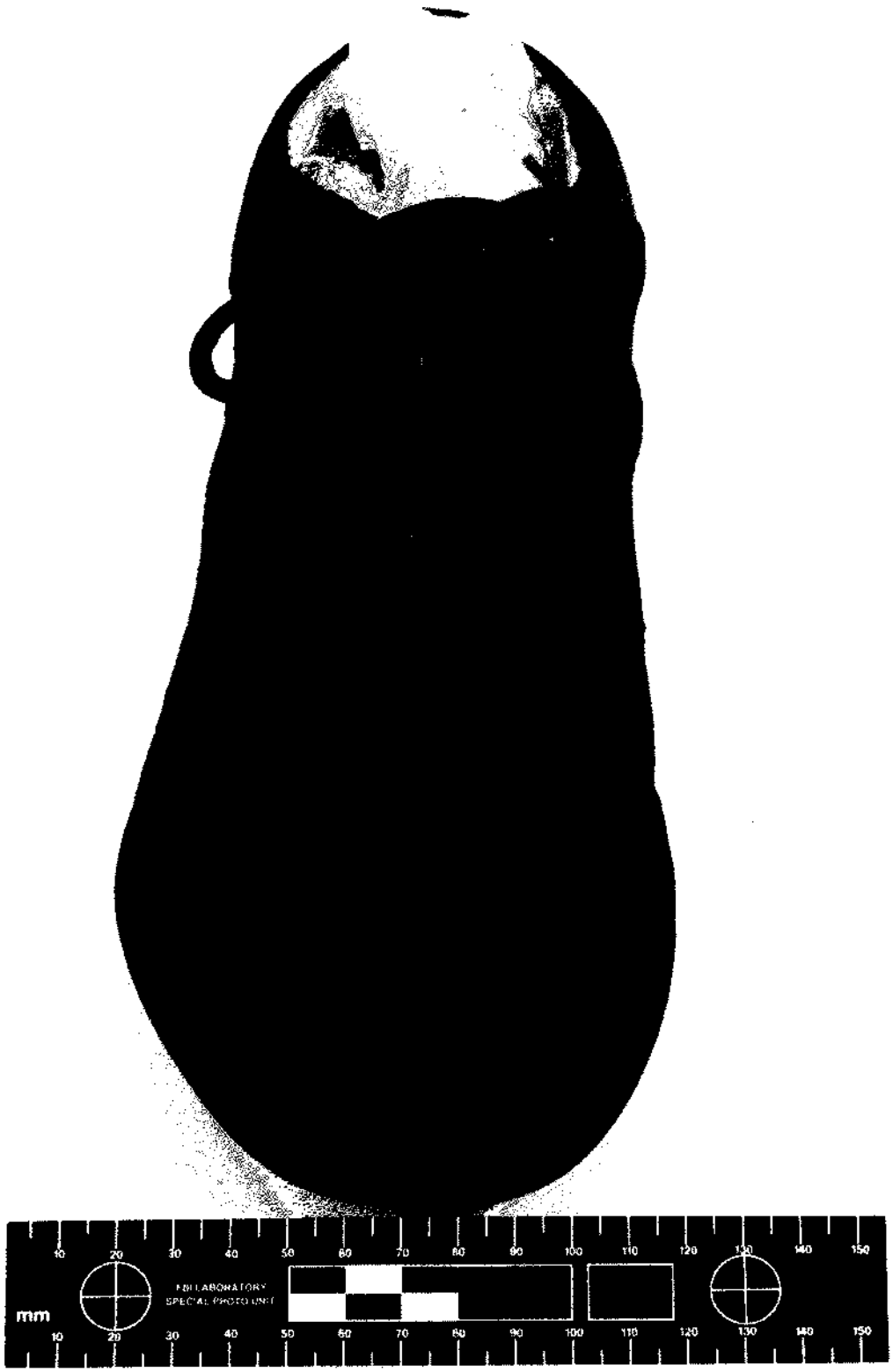
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Vol 1990 Magazine

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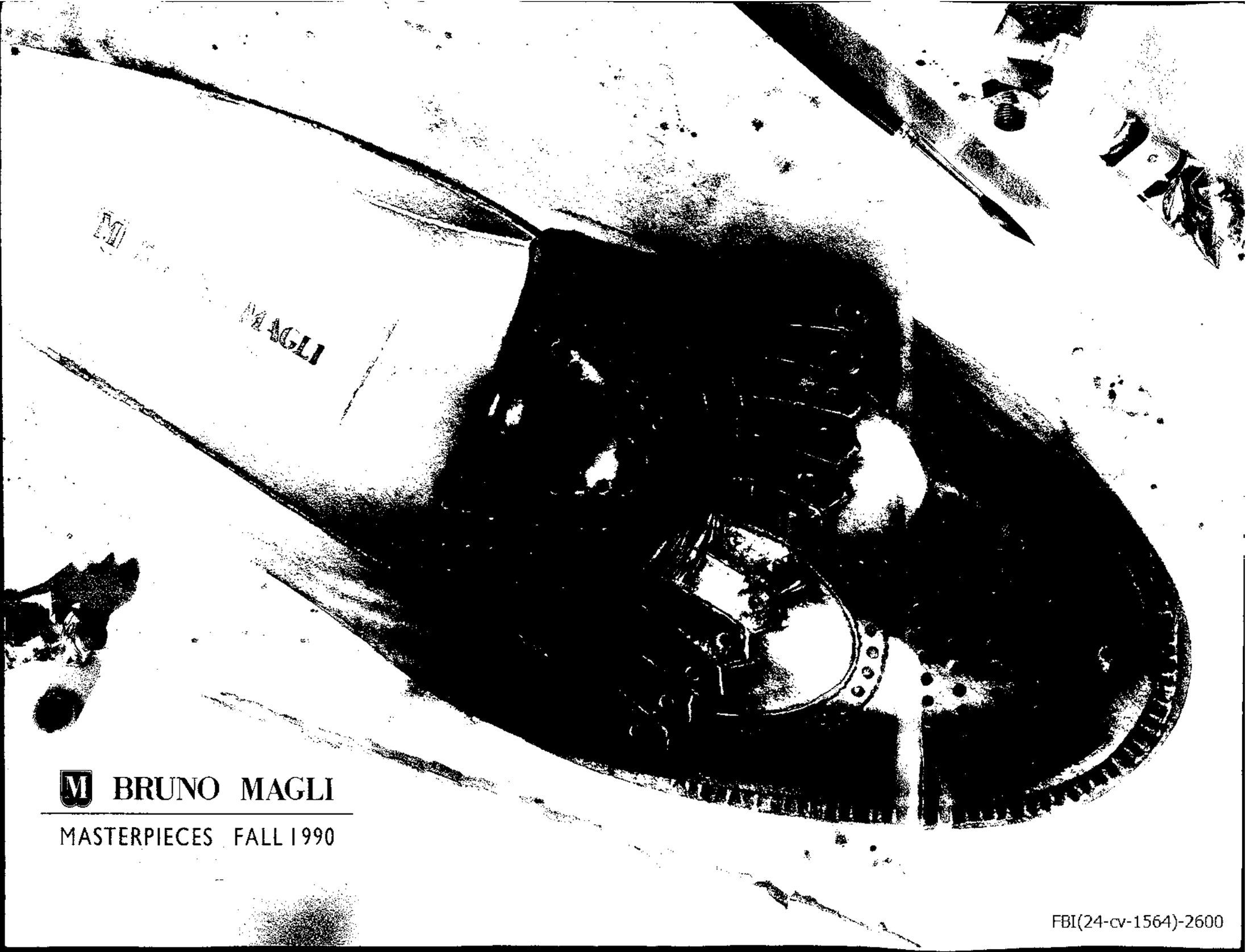


BRUNO MAGLI

MASTERPIECES FALL 1990

MICRO BOTTOMS

Imagine feather-light comfort in an Italian casual and you have a feel for what these shoes are like. Crafted in durable Nabuk leathers, these shoes are soft, light and sophisticated.

EACH PAIR AN ORIGINAL. SIGNED BY A MASTER.

This year, like a true artist, Bruno Magli stretches the limits of creativity to encompass new directions and expressions of Italian craftsmanship. The result: four new collections that demonstrate Bruno Magli's ability to translate the concept of hand-crafted Italian shoemaking into virtually any design, any lifestyle. These new additions reflect Bruno Magli's unique talent for combining old world standards of quality with contemporary interpretations. Together with our complete line of footwear for Fall 1990, they represent, as always, the very best a man's shoe can be.

THE OPANKAS

Nobody makes a shoe like this anymore, because nobody can. Except, of course, Bruno Magli. These comfortable, lightweight slip-ons recapture the lost shoemaker's art of fiddle bottom construction. Finished with a wraparound opanka sole, these shoes are literally the handwork of a master craftsman.

B R U N O M A G L I L I T E S

Premium Italian calfskin is the raw material from which these shoes are sculptured. Antiqued and hand brushed for a look of polished sophistication, with pre-flexed insoles and littleway stitched outsoles for a comfortable fit.

A.

CAMBRIDGE

Five eyelet bal tie, cap toe brogue. Medallion toe. Old Anilin Ilcea Calf. Fully leather lined.

18010 Black **18070** Burgundy
18020 Brown

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

B.

CHESTER

Five eyelet bal tie, wing tip brogue. Medallion toe. Old Anilin Ilcea Calf. Fully leather lined.

18310 Black **18370** Burgundy
18320 Brown

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

C.

CLIFFORD

Wing tip, shawl kiltie slip-on. Quarter lacing and hanging tassel. Old Anilin Ilcea Calf. Fully leather lined.

18410 Black **18470** Burgundy
18120 Brown

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

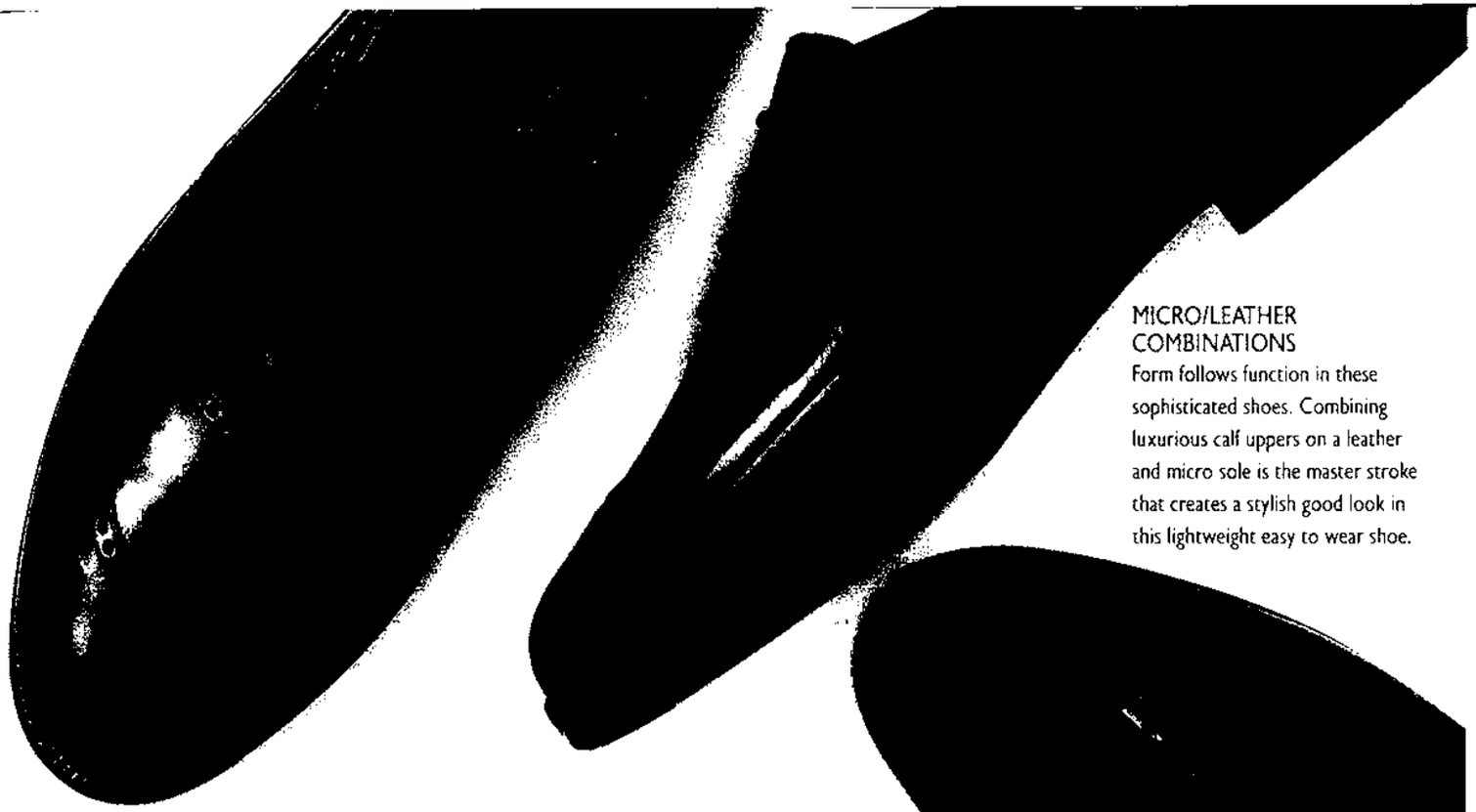
D.

CECIL

Shawl kiltie, moc toe slip-on.
Hand stained Ilcea Calf. Fully leather lined.

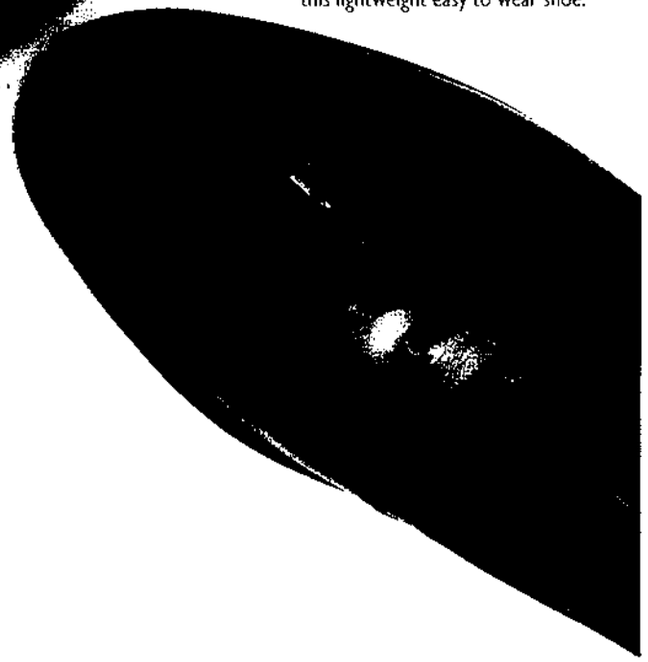
18710 Black **18770** Burgundy
18720 Brown

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11



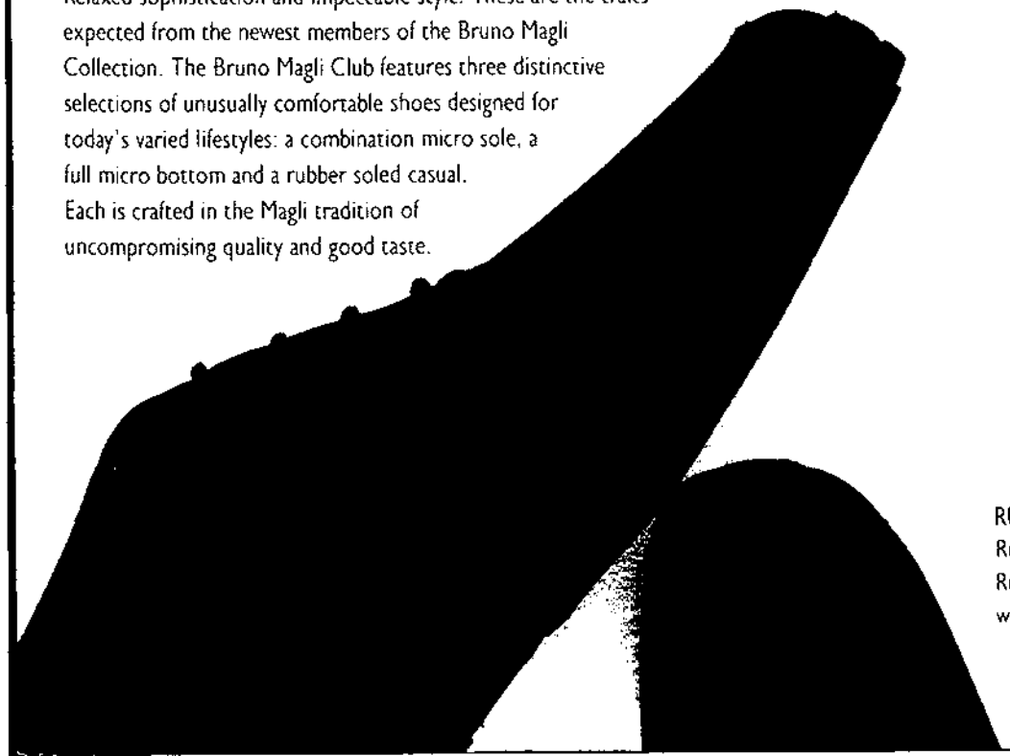
MICRO/LEATHER COMBINATIONS

Form follows function in these sophisticated shoes. Combining luxurious calf uppers on a leather and micro sole is the master stroke that creates a stylish good look in this lightweight easy to wear shoe.



BRUNO MAGLI CLUB COLLECTION

Relaxed sophistication and impeccable style. These are the traits expected from the newest members of the Bruno Magli Collection. The Bruno Magli Club features three distinctive selections of unusually comfortable shoes designed for today's varied lifestyles: a combination micro sole, a full micro bottom and a rubber soled casual. Each is crafted in the Magli tradition of uncompromising quality and good taste.



RUBBER SOLES

Rugged casual style as only Bruno Magli could fashion it. Rubber soles create the cushiony feel you'd expect while textured Nabuk uppers complete this fine look.

TABLE OF CONTENTS

D R E S S S H O E S

Scratch the surface of an oil painting and you'll reveal layers of painstaking detail. So it is with each Magli dress shoe. Full leather linings, hand staining and burnishing, authentic brogues and cap toes—these are the telling details of a mastercraftsman at work.

A.

TORIO

Concealed gore wing tip slip-on. Kiltie and hanging tassel. Fully leather lined. Nabuk Calf.

05510 Black
05520 Brown
05540 Blue
05550 Bone
05596 Taupe

Sizes: **M** 6½-12, 13

B.

VERNON

Concealed gore wing tip slip-on. Kiltie and hanging tassel. Hand stained Ilcea Calf.

35810 Black
35820 Brown
35870 Burgundy

Sizes: **N** 9-12, 13, 14, 15; **M** 6-12, 13, 14, 15; **W** 6-12

C.

VINO

Perforated moc toe slip-on kiltie with tied hanging tassel. Rub-off Calf, fully leather lined.

32410 Black
32420 Brown
32440 Blue
32470 Burgundy
32490 Grey

Sizes: **N** 9-12, 13, 14, 15; **M** 6-12, 13, 14, 15; **W** 6-12

D.

LELAND

Short wing tip kiltie tassel center gore slip-on with scored vamp and quarter. Rub-off Calf. Fully leather lined.

48110 Black
48120 Brown
48170 Burgundy

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

A.

FRASER

Five eyelet bal tie oxford with cap toe. Old Anilin Ilcea Calf. Fully leather lined.

15210	Black	**15240**	Blue
15220	Brown	**15270**	Burgundy
15226	Brandy	**15290**	Grey

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

B.

FULTON

Five eyelet bal tie oxford with folded wing tip toe. Old Anilin Ilcea Calf. Fully leather lined.

15110	Black	**15140**	Blue
15120	Brown	**15170**	Burgundy
15126	Brandy	**15190**	Grey

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

C.

VARANO

Wing tip, five eyelet bal tie oxford. Royal Calfskin, fully leather lined.

14510	Black	**14570**	Burgundy
14520	Brown	**14590**	Grey
14540	Blue	**14596**	Taupe

Sizes: **N** 9-12, 13, 14,* 15;*
M 6½-12, 13, 14,* 15;*
W 6½-11, 11½,* 12*

*Black, Brown and Burgundy only

D.

VOTUS

Five eyelet bal tie oxford with folded straight tip toe. Royal Calfskin, fully leather lined.

14810	Black	**14870**	Burgundy
14820	Brown	**14890**	Grey
14840	Blue	**14896**	Taupe

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 6½-11

A.

D.

A.

SUMMER

Wing tip, concealed gore slip-on. Quarter lacing and tassel. Constructed of Rub-off Calf. Fully leather lined.

01610 Black
01620 Brown
01670 Burgundy

Sizes: N 9-12, 13; M 6 ½-12, 13; W 7-11

B

VANCE

Five eyelet bal, folded cap toe. Old Antiq Ilcea Calf. Fully leather lined.

18610 Black
18620 Brown
18640 Blue*
18670 Burgundy
18690 Grey*

Sizes: N 9-12, 13; M 6 ½-12, 13; W 6 ½-11
*M width only

C

VANGUARD

Five eyelet bal tie with perfed cap toe and quarter detailing. Royal Calfskin, fully leather lined

12410 Black
12425 Tan
12440 Blue
12470 Burgundy
12490 Grey

Sizes: N 9-12, 13; M 6 ½-12, 13; W 7-11

D

ROMA

Five eyelet bal tie brogue with cap toe and medallion. Old Antiq Ilcea Calf.

35010 Black
35020 Brown
35070 Burgundy

Sizes: N 9-12, 13; M 6-12, 13; W 6-11

A.

B.

A.

SULLY

Short wing tip kiltie tassel gored slip-on.
Imperial Calf. Fully leather lined.

46410 Black
46425 Tan
46470 Burgundy

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 6½-11

B.

SETH

Four eyelet bal, wing tip. Imperial Calf.
Fully leather lined.

49810 Black
49825 Tan
49870 Burgundy

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 6½-11

A.

OVERTURE

Center gored, kiltie fringe and tassle slip-on.
Medallion toe. Hand stained Ilcea Calf.
Fully leather lined.

11410 Black
11420 Brown
11470 Burgundy

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

B.

ORLY

Moc toe with kiltie and tassel slip-on. Rub-off Calf.
Fully leather lined.

08610 Black
08620 Brown
08640 Blue
08670 Burgundy
08690 Grey

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

C.

OCEAN

Positive fit kiltie with medallion toe slip-on.
Rub-off Calf. Fully leather lined.

08710 Black
08720 Brown
08770 Burgundy

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

B R U N O M A G L I B O O T S

It is a rare accomplishment when a boot can achieve the comfort of a fine pair of shoes. Yet for Bruno Magli it is a routine feat. Classic boot styles combined with the plush level of comfort found in our finest shoes.

A. **OTIS**
Plain toe, 7" Baby Nappa boot. Side zipper, fully leather lined.

14010 Black
14020 Brown
14070 Burgundy
14090 Grey

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

B. **OSBORNE**
Plain toe, 5½" Baby Nappa boot. Side zipper, fully leather lined.

14110 Black
14120 Brown
14170 Burgundy
14190 Grey

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

EXOTICS

Crocodile, lizard, ostrich—in the hands of a master, exotic skins produce stunning shoes. Extraordinary combinations of color, texture and contrast etched in extravagant luxury.

A.

JAY

Positive fit, baseball stitched slip-on with Genuine Crocodile strap and plug. Antiqued Tumbled Calf. Fully leather lined

32810 Black
32826 Brandy
32870 Burgundy

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 6½-11

B.

JERSEY

Positive fit, baseball stitched slip-on with Genuine Crocodile plug. Strap and tassel made of Antiqued Tumbled Calf. Fully leather lined.

32910 Black
32926 Brandy
32970 Burgundy

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 6½-11

C.

CYRANO

Genuine handsewn moccasin with Ostrich leg plug. Tumbled Calfskin kiltie and tassel. Fully leather lined.

02610 Black
02620 Brown
02640 Blue*
02670 Burgundy*
02690 Grey*
02696 Taupe*

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 6½-11
*M width only

D.

CYCERO

Genuine handsewn moccasin with Ostrich leg plug. Tumbled Calfskin. Fully leather lined.

02810 Black
02820 Brown
02840 Blue*
02870 Burgundy*
02890 Grey*
02896 Taupe*

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 6½-11
*M width only

A.

B.

A.

JESSUP

Positive fit baseball stitched slip-on. Vamp and quarter of Genuine Crocodile. Baby Nappa penny saddle. Fully leather lined.

40810 Black
40820 Brown
40870 Burgundy

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

B.

JEROME

Positive fit baseball stitched slip-on. Vamp and quarter of Genuine Crocodile. Baby Nappa tassel and saddle. Fully leather lined.

15310 Black
15320 Brown
15370 Burgundy

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

C.

JAQUES

Positive fit baseball stitched slip-on. Vamp and quarter of Genuine Crocodile. Baby Nappa kiltie and tassel. Fully leather lined.

40710 Black
40720 Brown
40770 Burgundy

Sizes: **N** 9-12, 13; **M** 6-12, 13; **W** 6-11

D.

JAGGER

Genuine all-over Crocodile tassel slip-on. Fully leather lined.

33212 Black Crocodile
33272 Burgundy Crocodile
33277 Brandy Crocodile

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 6½-11

E.

JARED

Genuine Crocodile slip-on with shawl kiltie and hanging tassel. Fully leather lined.

33912 Black Crocodile
33922 Brown Crocodile
33972 Burgundy Crocodile

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

F.

NORFOLK

Five eyelet bal, cap toe. Genuine Lizard. Fully leather lined.

32512 Black Reptile
32522 Brown Reptile

Sizes: **M** 6½-12, 13

G.

JENSEN

All over Genuine Crocodile slip-on. Hanging tassel and quarter lacing. Fully leather lined.

15012 Black Crocodile
15022 Brown Crocodile
15072 Burgundy Crocodile

Sizes: **M** 6½-12, 13

H.

NASH

Genuine all over Crocodile, center gore slip-on. Fully leather lined.

32112 Black Crocodile
32172 Burgundy Crocodile*
32177 Brandy Crocodile

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 6½-11

*M width only

D.

F O R M A L F O O T W E A R

A complete formal look is the artistic coordination of impeccable style, subtlety and understatement from head to toe. Magli formal shoes are the finishing touches of inconspicuous sophistication. Patent leathers, gros grains, and elegant ornamentation create the perfect formal attitude.

A.

PEYTON

Ribbed gros grain fabric with satin pleated sash across vamp. Fully leather lined.

06110 Black

Sizes: **M** 6½-12, 13

B.

PADUS

Plain toe, positive fit patent leather formal shoe has gros grain pleated sash across vamp. Fully leather lined.

05810 Black

Sizes: **M** 6½-12, 13

C.

BRISTOL

Plain toe positive fit patent leather formal shoe has gros grain penny saddle. Fully leather lined.

04410 Black Patent Leather

Sizes: **M** 6½-12, 13

D.

GENE

All over gros grain center gore plain toe formal shoe has a gold and leather ornament. Fully leather lined.

18116 Black Gros Grain

Sizes: **N** 9-12, 13; **M** 6½-12, 13

E.

PUCCI

Patent leather formal shoe has gros grain bow and is fully leather lined.

03910 Black Patent Leather

Sizes: **N** 9-12, 13; **M** 6-12, 13

A.

MANZO

Genuine handsewn moccasin. Folded Royal Calfskin vamp. Center gore. Fully leather lined.

17310 Black
17320 Brown
17370 Burgundy

Sizes: **N** 9-12, 13; **M** 7-12, 13

B.

JULES

Baby soft Nappa, positive fit baseball stitched slip-on. Laced tassel. Fully leather lined.

08910 Black
08920 Brown
08940 Blue
08950 Bone
08960 White
08970 Burgundy

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

C.

JAN

Baby soft Nappa, positive fit baseball stitched slip-on. Kiltie and tassel. Fully leather lined.

09710 Black
09720 Brown
09740 Blue
09750 Bone
09760 White
09770 Burgundy

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

Smooth, soft and buttery textures are the subtle characteristics that distinguish these lavish slip-ons. The minute you slip into them, you'll appreciate the fit and feel of handsewn quality.

A.

BEAU

Unlined, positive fit genuine moccasin slip-on. Shawl kiltie and tassel. Tumbled Calfskin and Opanka sole.

17010 Black
17020 Brown
17023 Lt. Brown
17050 Bone
17060 White*
17070 Burgundy

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

* **M** width only

B.

BAXTER

Unlined, positive fit genuine moccasin with tied tassel. Tumbled Calfskin and Opanka sole.

17110 Black
17120 Brown
17123 Lt. Brown
17150 Bone*
17160 White*
17170 Burgundy

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

* **M** width only

C.

BUCKLEY

Positive fit genuine moccasin slip-on. Kiltie with quarter lacing and tassle. Fully leather lined. Tumbled Calfskin and Opanka sole.

17510 Black
17520 Brown
17523 Lt. Brown
17570 Burgundy

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

Recapture the lost shoemaker art of fiddle bottom construction in these lightweight slip-ons. Finished with wraparound opanka soles as only Bruno Magli could craft them.

B.

C.

A.

A.

TOPEKA

Genuine Deerskin handsewn moccasin. Inset strap and tassel of Calfskin. Fully leather lined.

04319 Black/Tan Combo

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 6½-11

B.

TATE

Genuine Deerskin handsewn moccasin. Kiltie, tassel, collar and quarter lacing of Calfskin. Fully leather lined.

04319 Black/Tan Combo

Sizes: **N** 9-12,13; **M** 6½-12, 13; **W** 6½-11

C.

AARON

Genuine handsewn moccasin. Kiltie, tassel slip-on with quarter lacing. Genuine Deerskin. Fully leather lined.

41610 Black **41640** Blue
41620 Brown **41650** Bone
41626 Brandy **41670** Burgundy

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

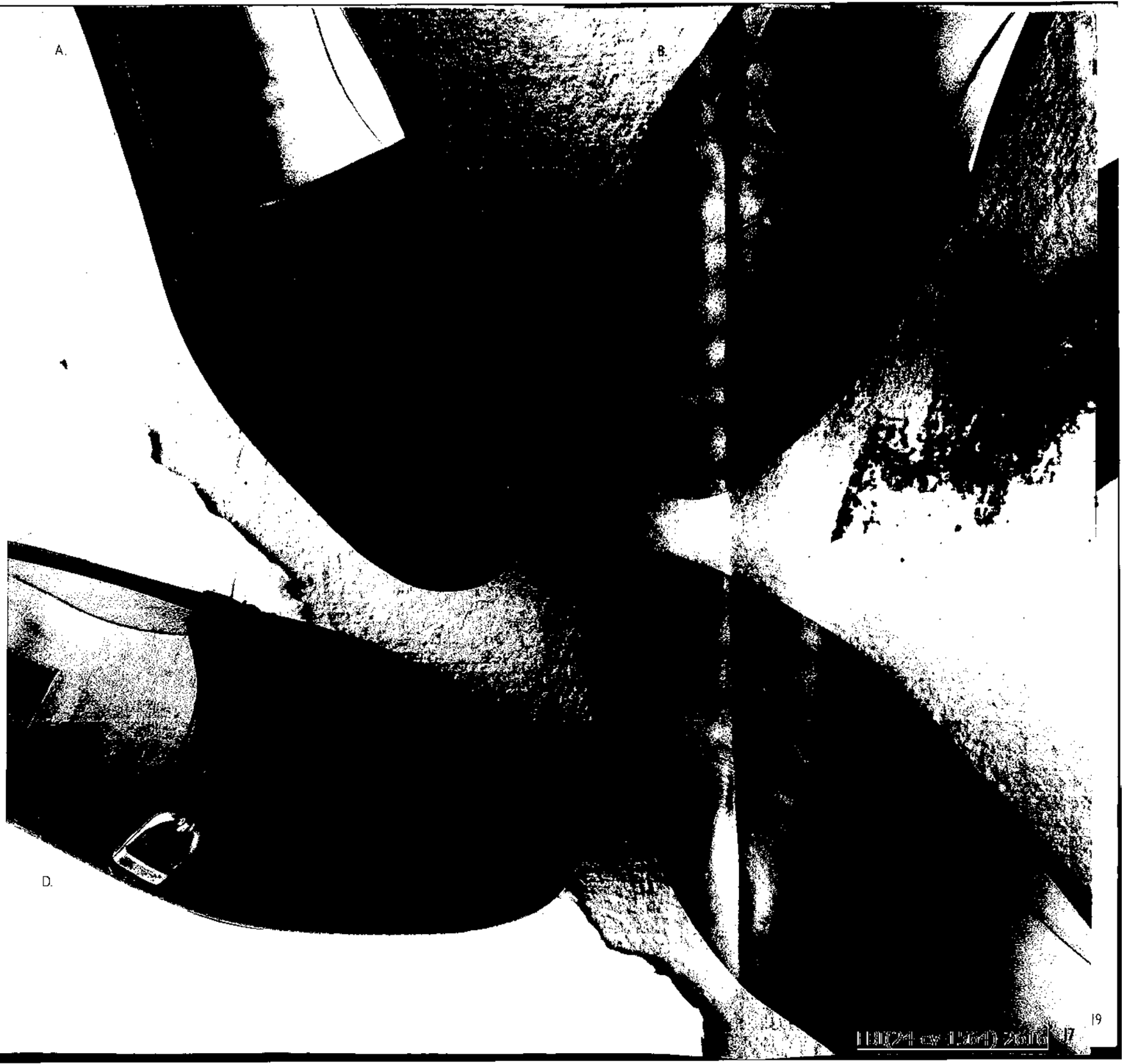
D.

TAMPA

Genuine Deerskin handsewn moccasin. Kiltie and strap of Calfskin. Fully leather lined.

04819 Black/Tan Combo

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 6½-11



DRESS NAPPAS

Comfort elevated to an art form. Bologna construction, lamb skin and a remarkably pliable sole create the sophisticated look for these comfortable shoes. Perhaps, the softest Magli shoes available in dress patterns.

A.

DEXTER

Baby Nappa inverted moc toe center gore slip-on. Gold vamp ornament has BRUNO MAGLI logo. Fully leather lined.

04110 Black
04120 Brown
04140 Blue*
04170 Burgundy*
04190 Grey*

Sizes: **N** 9-12,13; **M** 6½-12, 13; **W** 7-11
* **M** width only

B.

DERRICK

Baby Nappa inverted moc toe center gore slip-on with horsebit ornament and hanging tassel. Fully leather lined.

04210 Black
04220 Brown
04240 Blue*
04270 Burgundy*
04290 Grey*

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11
* **M** width only

C.

DAMON

Baby Nappa inverted moc toe center gore slip-on with hanging tassel. Fully leather lined.

06510 Black
06520 Brown
06540 Blue
06550 Bone
06560 White
06570 Burgundy
06590 Grey

Sizes: **N** 9-12, 13, 14, 15; **M** 5-12, 13, 14, 15; **W** 5-12

A.

NAVAHO

Super soft Baby Nappa positive fit slip-on. Saddle with horse-bit ornament and tied tassel. Fully leather lined.

37210 Black **37250** Bone
37220 Brown **37260** White
37240 Blue **37270** Burgundy

Sizes: **N** 9-12, 13; **M** 6 1/2-12, 13; **W** 7-11

B

DARCY

Baby Nappa inverted moc toe center gore slip-on with BRUNO MAGLI logo ornament. Fully leather lined.

06610 Black
06620 Brown
06610 Blue
06650 Bone
06660 White
06670 Burgundy
06690 Grey

Sizes: **N** 9-12, 13, 14, 15;
M 5-12, 13, 14, 15; **W** 5-12

C.

DARREN

Baby Nappa inverted moc toe center gore slip-on. Fully leather lined.

06710 Black
06720 Brown
06740 Blue*
06750 Bone*
06760 White*
06770 Burgundy
06790 Grey

Sizes: **N** 9-12, 13; **M** 6 1/2-12, 13; **W** 6 1/2-11
*M width only

B R U N O M A G L I C L U B C O L L E C T I O N

Today's casual lifestyle is a study in contrasts. Relaxed, sophisticated and stylish all in unison. The Club Collection is a unique selection of footwear designed to fit effortlessly into an active man's world.

A.

SHERATON

Kiltie, wing tip slip-on. Concealed center gore. Parma Calfskin upper with combination leather/micro sole. Fully leather lined.

33310 Black
33319 Black/Tan
33320 Brown
33325 Tan
33349 Blue/Green*
33379 Burgundy/Grey*
33394 Black/Grey*

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

* **M** width only

B

STEVEN

Four eyelet, wing tip bal tie. Parma Calfskin upper with combination leather micro sole. Fully leather lined.

34019 Black/Tan
34025 Tan
34049 Blue/Green*
34079 Burgundy/Grey*
34094 Black/Grey*

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

* **M** width only

C

STRAND

Four eyelet, wing tip bal tie. Rub-off Calf upper with combination leather/micro sole. Fully leather lined.

33010 Black
33017 Black Patent/Calf
33070 Burgundy

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

D.

D.

STAFFORD

Four eyelet, plain toe tie. Rub-off Calf upper with combination leather/micro sole. Fully leather lined.

33110 Black
33127 Black Patent/Calf
33120 Brown
33170 Burgundy

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

E.

SALSBURY

Positive fit. Parma Calfskin slip-on. Hanging tassel and quarter lacing. Combination leather/micro sole. Fully leather lined.

33410 Black
33419 Black/Brandy
33420 Brown
33425 Tan
33449 Blue/Green*
33479 Burgundy/Grey*
33494 Black/Grey*

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

* **M** width only

The best of all possible worlds merge in these lightweight shoes. Luxurious calf uppers on a unique leather and micro sole for a truly original fit and feel.

A. 

LUTHER

Three eyelet Nabuk leather blucher tie chukka boot. Padded collar. Micro sole and fully leather lined.

36410 Black
36420 Brown
36426 Brandy
36440 Blue
36463 Winter White
36487 Olive

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

B. 

LOGAN

Four eyelet, plain toe bal tie. Nabuk leather with micro sole. Fully leather lined.

36010 Black
36020 Brown
36026 Brandy
36040 Blue
36063 Winter White
36087 Olive

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

C. 

LINCOLN

Four eyelet, moc toe bal tie. Nabuk leather with micro sole. Fully leather lined.

35510 Black
35520 Brown
35526 Brandy
35540 Blue
35563 Winter White
35587 Olive

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11

Soft, light and sophisticated shoes. Crafted in durable Nabuk leathers on micro soles for feather-light comfort.

A.

LORENZO

Moc toe, four eyelet blucher tie. Padded tongue and arch support. Textured Nabuk leather. Rubber sole. Fully leather lined.

36810 Black
36820 Brown
36826 Brandy
36840 Blue
36863 Winter White
36887 Olive

Sizes: **M** 6½-12, 13

B.

LYON

Plain toe, four eyelet bal tie. Padded tongue and arch support. Textured Nabuk leather. Rubber sole. Fully leather lined.

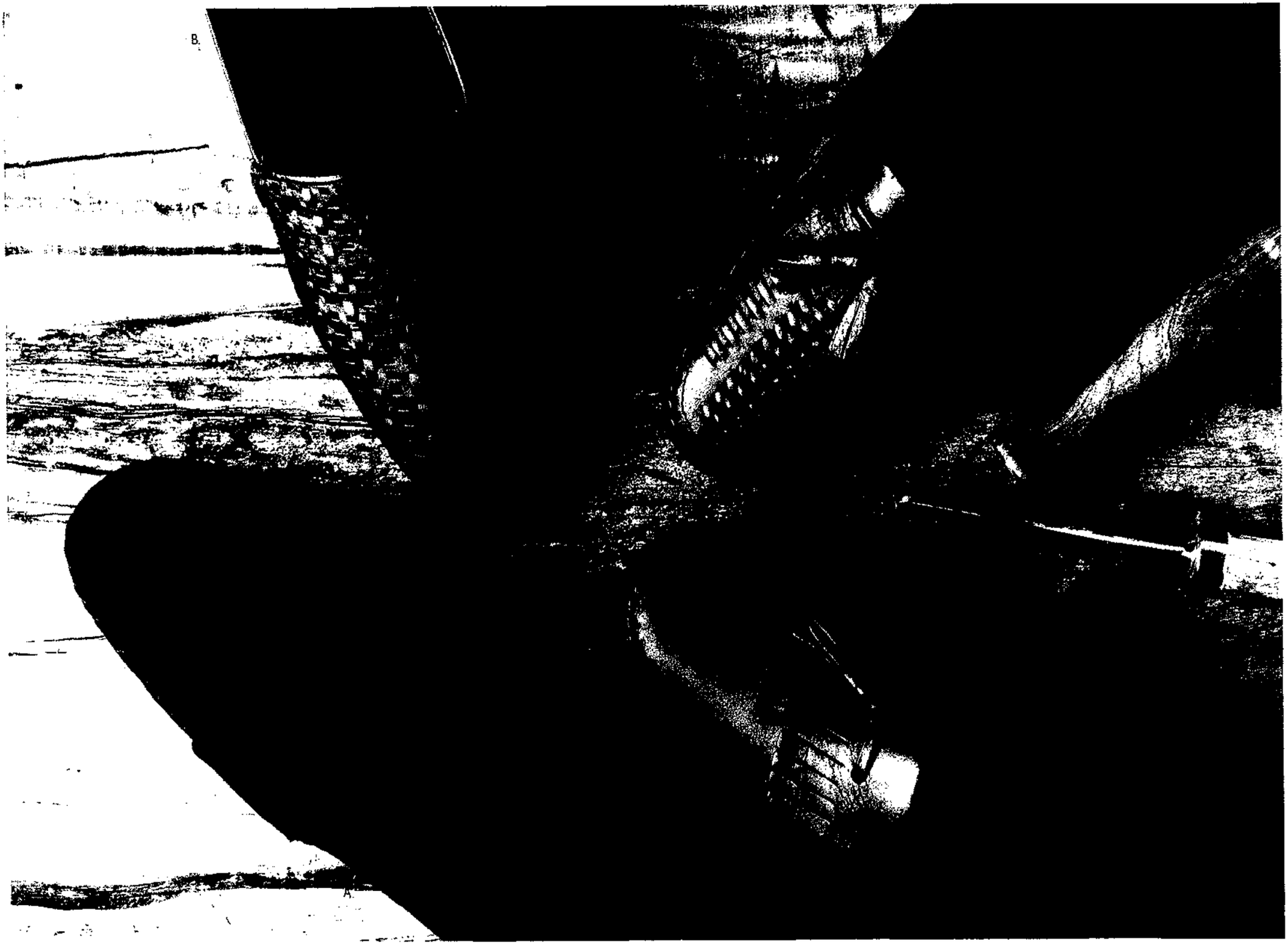
36510 Black
36520 Brown
36526 Brandy
36540 Blue
36563 Winter White
36587 Olive

Sizes: **M** 6½-12, 13

The cushiony feel of rubber soles. The unexpected richness of textured Nabuk uppers. Rugged, casual, yet distinctively set in the Bruno Magli mold.

A.

B.


B.

A.

PERRY

Genuine handsewn kiltie moccasin with tassel.
Unlined Nabuk Calf.

26310 Black
26320 Brown
26340 Blue
26350 Bone
26360 White
26396 Taupe

Sizes: **N** 9-12, 13; **M** 6 :-12, 13; **W** 7-11

B.

WINDSOR

All over woven positive fit slip-on.
Unlined Buffalo Calf

03310 Black
03326 Brandy
03350 Bone
03360 White

Sizes: **M** 6½-12, 13

C.

PENN

Genuine handsewn, unlined, positive fit moccasin.
Kiltie, tassel with woven vamp. Unlined Buffalo Calf.

16210 Black
16226 Brandy
16250 Bone
16260 White
16270 Burgundy

Sizes: **M** 6 :-12, 13

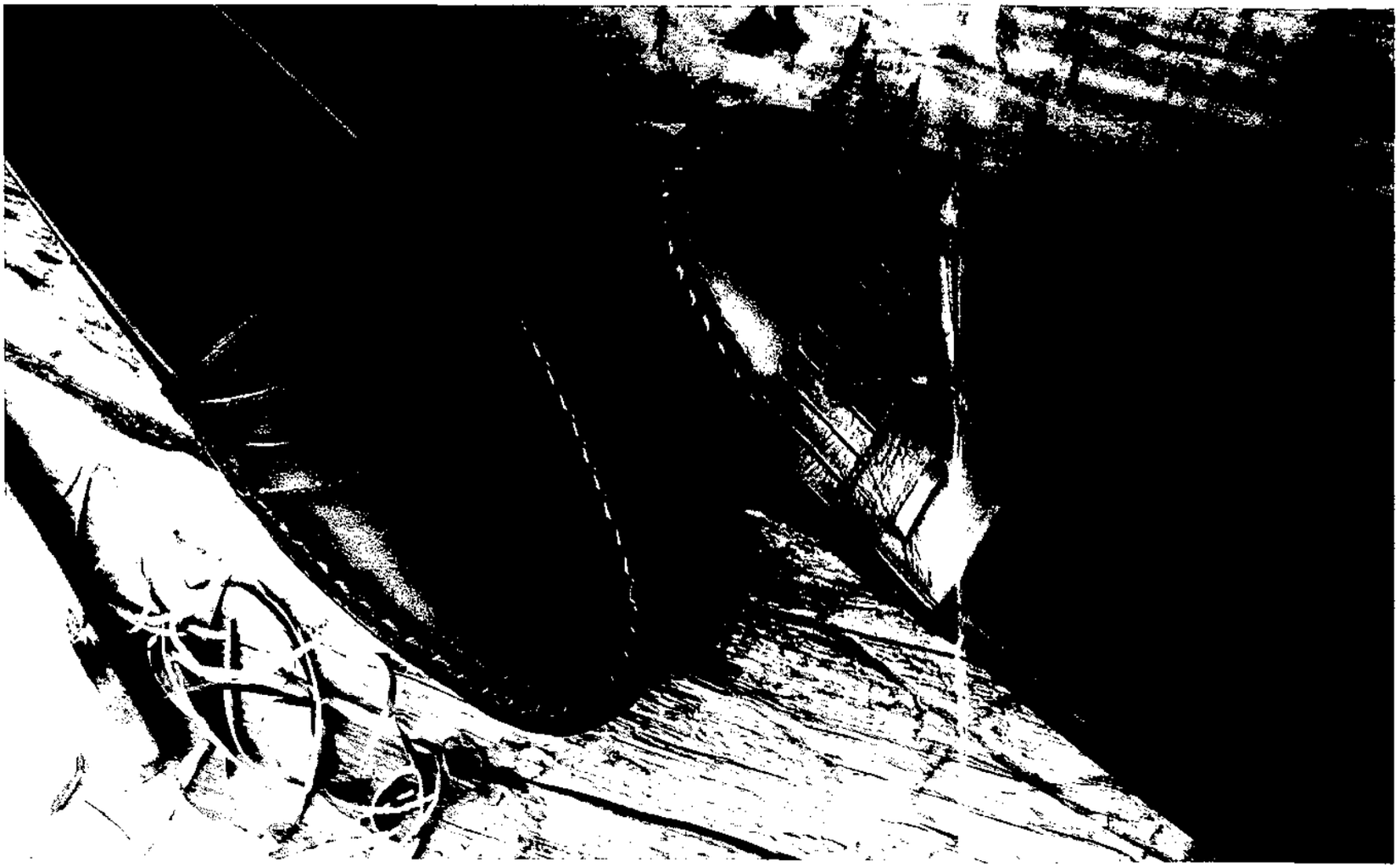
D.

PATRIC

Genuine handsewn kiltie moccasin with tassel.
Unlined Buffalo Calf.

26110 Black
26126 Brandy
26140 Blue
26150 Bone
26160 White
26170 Burgundy

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 7-11



Lightweight and relaxed, these unlined soft shoes mold effortlessly to the foot to create a form-fitting "custom" feel.

E.

ARDEN

Genuine handsewn, laced moccas n.
Penny saddle. Unlined Buffalo Calf.

02210 Black
02225 Tan
02240 Blue*
02250 Bone
02260 White*
02270 Burgundy
02274 Red*
02290 Grey
02296 Taupe

Sizes: **N** 9-12, 13; **M** 6 : 12, 13, **W** 6 :-11
*M width only

F

ABNER

Genuine handsewn, laced moccasin.
Kiltie and tassel. Unlined Buffalo Calf.

02010 Black
02025 Tan
02040 Blue*
02050 Bone
02060 White*
02070 Burgundy
02074 Red*
02090 Grey
02096 Taupe

Sizes: **N** 9-12, 13; **M** 6½-12, 13; **W** 6½-11
*M width only

CA -2

FEDERAL BUREAU OF INVESTIGATION
FOI/PA
DELETED PAGE INFORMATION SHEET
FOI/PA# 24-cv-1564

Total Deleted Page(s) = 2
Page 31 ~ Duplicate;
Page 32 ~ Duplicate;

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X Deleted Page(s) X
X No Duplication Fee X
X For this Page X
XXXXXXXXXXXXXXXXXXXXXXX

October 13, 1994

FEDERAL EXPRESS

Robert L. Shapiro, Esq.
2121 Avenue of the Stars
Nineteenth Floor
Los Angeles, California 90067

RE: PEOPLE V. ORENTHAL JAMES SIMPSON
LOS ANGELES SUPERIOR COURT
CASE NUMBER: BA097211

Dear Mr. Shapiro:

Pursuant to a telephonic request I received yesterday from [redacted] I am enclosing another copy of the computer diskette relating to the population data that was previously forwarded to you in a letter dated October 5, 1994, from Mr. Howard Shapiro, General Counsel of the FBI. [redacted] advised that your office was unable to locate the diskette and requested a second copy.

b6 -12
b7C -12

Sincerely yours,

/S/

[redacted]

Associate General Counsel

b6 -1
b7C -1

Enclosure

177-HQ-1087607

1 - Mr. H. M. Shapiro
1 - Mr. M. A. Ahlerich
1 - [redacted]
1 - Mr. K. W. Nimmich
1 - [redacted]

1 - [redacted]
1 - [redacted]
1 - [redacted]
1 - [redacted]
1 - TILU (DNAIAU)
1 - [redacted]

b6 -1
b7C -1

2 - Marcia Clark, Esq.
[redacted]
Office of the Los Angeles
County District Attorney
Hall of Records
320 West Temple
Los Angeles, California 90012

b6 -11
b7C -11

1 - [redacted]
Office of the Alameda County
District Attorney
661 Washington Street
Oakland, California 94607

1 - [redacted]
Deputy District Attorney
101 W. Broadway, Suite 1440
San Diego, California 94607

Note: This letter responds to a telephonic request made by defense attorney [redacted] who claimed that the 10/5/94 letter did not contain the referenced diskette. However, he did concede that it could have been misplaced at his office.

b6 -12
b7C -12

APPROVED:
Director
Deputy Director

b6 -1
b7C -1

November 29, 1994

FEDERAL EXPRESS

[redacted] b6 -11 b7C -11

Office of the Alameda County District Attorney
661 Washington Street
Oakland, California 94607

RE: PEOPLE V. SIMPSON

Dear [redacted]:

Pursuant to your request, enclosed please find a packet of materials pertaining to [redacted] which may be of assistance to you. b6 -3 b7C -3

The DNA Legal Assistance Subunit (DNALAS) currently has no information concerning defense experts [redacted] We would appreciate any information you may obtain concerning these experts during their participation in the above-captioned matter.

If you need further assistance or information, please contact the DNALAS at telephone number (202) 324-4419, facsimile number (202) 324-1043.

Sincerely yours,

Howard Shapiro
General Counsel

By: [redacted] b6 -1 b7C -1
Investigative Law Unit
DNA Legal Assistance Subunit

Dep. Dir. ____
ADD Adm. ____
ADD Inv. ____
Asst. Dir.: ____
Adm. Servs. ____
Crim. Inv. ____
Ident. ____
Insp. ____
Intell. ____
Lab. ____
Legal Coun. ____
Nat. Sec. ____
Tech. Servs. ____
Training ____
Comp. Affs. Off. ____
Off. of EEO ____
Off. Liaison & Int. Affs. ____
Off. of Public Affs. ____
Telephone Rm. ____
Director's Sec'y ____

1 - [redacted]
1 - DNALAS
[redacted] (4)

Enclosures

NOTE: Enclosure maintained in room 7879.

[redacted]

MAIL ROOM [redacted]

FBI(24-cv-1564)-2649

LOS ANGELES COUNTY DISTRICT ATTORNEY'S OFFICE
BUREAU OF CENTRAL OPERATIONS

GIL GARCETTI • District Attorney
SANDRA L. BUTTITTA • Chief Deputy District Attorney
FRANK E. SUNDSTEDT • Assistant District Attorney
WILLIAM HODGMAN • Director

January 9, 1995

VIA FAX

[redacted]
FBI Headquarters
Washington, D.C.

b6 -1
b7C -1

Dear [redacted]

Re: People v Orenthal James [redacted], Case No. BA097211

b6 -1,12
b7C -1,12

The Prosecution in the Simpson case has recently received a request for discovery of "underlying data" for certain articles which the FBI has had published in peer reviewed journals. I am including a copy of [redacted] letter requesting the data and await your response concerning the request. I [redacted] advised [redacted] that the prosecution does not presently intend to present testimony in this case because of the Defendant's recent waiver of his right to challenge the reliability of the DNA testing methods used by the case.

Very truly yours,

GIL GARCETTI
District Attorney

By [redacted]
Deputy District Attorney
Alameda County

1-ENCLOSURE

b6 -11
b7C -11

[redacted] 1-10-95

b6 -1
b7C -1

210 West Temple
Los Angeles, CA 90012
(213) 974-3701

BEST COPY AVAILABLE

ROBERT L. SHAP[illegible]
Attorney at Law

A PROFESSIONAL CORPORATION

[illegible]
F. LEE BAILEY
[illegible]
[illegible]
[illegible]
SARA L. CAPLAN
[illegible]

[illegible]
[illegible]
LOS ANGELES, CALIFORNIA [illegible]
[illegible]
[illegible]

Dated: Jan. 5, 1995

Clerk of the Court
Los Angeles Superior Court
210 West Temple Street
Los Angeles, CA 90012
FAX: 201/235-3500

People v. Orenthal James Simpson
Case #: BA 097211

Dear Judge Ito, Ms. Clark, [redacted]

b6 -11
b7C -11

This is a summary of outstanding DNA discovery issues as discussed yesterday with Mr. Clarke [redacted]

1. DOJ

A. [redacted] Materials: [redacted] visited DOJ on December 28, 1994. He asked for copies of certain materials as a result of a review of DOJ validation studies. [redacted] said they would be available within a day or two and he will check with someone at the laboratory for more precise information.

b6 -1,11
b7C -1,11

Since [redacted] left on vacation immediately after his DOJ visit, and will be returning this Saturday, we are not certain if he completed his review of validation materials.

B. Further DOJ Testing: [redacted] informed us that DOJ will be asked to test items 115, 116, 117, 84a, 84b, 303, 304 all of which were sent to DOJ on September 26, 1994. Item 81, Ronald Goldman's shirt, was apparently sent to DOJ on January 3, 1994 for testing. It is our understanding that all the other untested items previously sent to DOJ will not be tested.

b6 -11
b7C -11

ENCLOSURE
[illegible]-3

BEST COPY AVAILABLE

b6 -3
b7C -3

It apparently has not yet been determined whether RFLP testing will be performed on these samples. RFLP testing could take over a month to complete. PCR testing, however, would take much less time, perhaps a week. A determination about whether RFLP or PCR testing will be performed can be made expeditiously if initial screening tests are performed by [redacted] as was done previously with Bundy samples that were subject to the split motion. It is our understanding that the prosecution does not object to such a procedure.

C. A Final Visit By [redacted]. It was understood when [redacted] visited DOJ on December 20, 1994 that he could not complete his inspection of PCR testing five days before and after all tests performed by DOJ in this case because testing was not yet complete. If we can get a firm estimate of the week that DOJ anticipates it will complete its PCR testing, then [redacted] will be able to complete his inspection of testing strips and any other validation or proficiency testing materials he has not seen. b6 -2 b7C -2

2. Cellmark.

A. A Final Visit By [redacted]

[redacted] visited Cellmark on December 16, 1994. Unfortunately, the original strips from hybridizations five days before and after testing in this case were the only materials available. The original strips, however, were not the items the court ordered turned over for inspection. The original strips fade over time; the best record of how the strips appeared after testing is the contemporaneous photographs taken of the strips which Cellmark keeps in its case files. Cellmark had objected to going through its case files and pulling out these photographs of the strips. The court, nonetheless, ordered them to do so. b6 -2 b7C -2

Apparently there was some confusion over this issue because the letter the prosecution requested the defense send prior to [redacted] visit referred only to "hybridization strips" and did not specify "photographs" of strips. The defense letter did, however, cite the pages in the transcript where the court issued its order directing Cellmark to produce the strips in its casefiles (the photographs).

Mr. Clark, of course, was not formally active in these proceedings when this discovery issue was litigated, and the defense certainly accepts his representation that he did not realize we wanted the best record of the hybridizations (the photographs) not the original strips. Cellmark certainly should have known.

The prosecution does not object to another visit to Cellmark

BEST COPY AVAILABLE

by [redacted]. The defense requests that be scheduled as soon as possible.

b6 -3
b7C -3

B. Missing pages from discovery.

Defense experts have informed us they cannot find certain data and/or read certain reproductions in the discovery file concerning "slot blots." Mr. Clark says he has the data and believes it was turned over to us. This does not appear to be a problem.

3. LAPD.

A. A Final LAPD Visit.

LAPD has taken the position that it would prefer to have the defense take photographs of hybridization strips rather than produce photographs of strips. On December 19, 1994 when [redacted] visited the LAPD laboratory he did not have the equipment to take such photographs. Therefore, another visit is necessary to take photographs of strips as well as inspect and photograph some additional items of evidence. The prosecution has no objection as long as there is a written list of what is to be examined.

b6 -3
b7C -3

4. Roche Databases.

Roche Molecular Systems (RMS) has indicated that it sent the wrong D1S80 Hispanic database to the defense, and further reveals now that there were two different databases for Caucasians, Blacks, Hispanics, and Orientals created with two different molecular ladders. The defense requests the underlying data from the two databases of each racial group. We understand the prosecution has no objection.

5. Articles.

The defense requests the underlying data from the following validation articles produced by Roche and the FBI laboratories. There have been previous representations from Roche, the FBI, and the prosecutors that there is no objection to the production of this data from articles that are published or in press:

A. Cosso, & Reynolds, Validation of the AmpliFLP D1S80 PCR Amplification Kit for Forensic Casework Analysis According to TWGDAM Guidelines, J. Forensic Sci., May, 1995 (In Press);

FBI B. Comey, Budowle, et. al, PCR Amplification and Typing of the HLA DQa Gene in Forensic Samples, 38 J. Forensic Sci. 239 (1993);

C. Walsh, Fildes, Louie, et. al., Report of the Blind Trial

BEST COPY AVAILABLE

of the Cetus AmpliType HLA DQα Forensic Deoxyribonucleic Acid (DNA) Amplification and Typing Kit, 36 J. Forensic Sci. 1551 (1991);

FBI (D) Jung, Comey, Baer, & Budowle, Extraction Strategy for obtaining DNA from Bloodstains for PCR amplification and typing of HLA DQα gene, Int. Journal of Legal Medicine (?) 145 (1991);

E. Abstract, Gegonis & Reynolds, The Effects of Substrates and their Crime Scene Contaminants on Group Specific Component Typing via Isoelectric Focusing and Two Typing Methods Based on the Polymerase Chain Reaction (PCR), AAFS, Feb. 15-20th 1993;

FBI (F) Budowle, et al, Validation and Population Studies of the Loci LDLR, GYPA, HBGG, D7S8, and Gc (PM Loci), and HLA-DQ Alpha Using Multiplex Amplification and Typing Procedures, J. Forensic Sci. (In Press);

G. Fildes & Reynolds, Consistency and Reproducibility of AmpliType PM Results between Seven Laboratories: Field Trial Results (In Press) J. Forensic Sci. 1995;

H. Fildes & Reynolds, Detection and Resolution of Mixtures With the Polymarker DNA Typing Systems, In Press, Journal unknown;

I. Herrin, Fildes, and Reynolds, Evaluation of the AmpliType PM DNA Test System on Forensic Case Samples, In Press, Journal unknown;

J. Reynolds, et al., The Development and Evaluation of New Genetic Markers for the Application of PCR to Forensic Casework, Advances in Forensic Haemogenetics 4, 1.2 Methodology, at 29-31 (1992)[Particularly, any data on the development of a "DNA Quality Indicator" by Roche].

[redacted]d, b6 -12 b7C -12

FBI(24-cv-1564)-2654

January 10, 1995

[redacted] b6 -11 b7C -11

Office of the Los Angeles
County District Attorney
Hall of Records
320 West Temple
Los Angeles, California 90012

RE: PEOPLE V. ORENTHAL JAMES SIMPSON
LOS ANGELES SUPERIOR COURT
CASE NUMBER: BA097211
DEFENSE DISCOVERY REQUEST

Dear [redacted] b6 -11,12 b7C -11,12

I am writing in response to your letter dated January 9, 1995, which attached a defense DNA discovery request letter dated January 5, 1995, from [redacted] of the defense team in the captioned case.

As you know, the FBI has conducted no DNA testing in the captioned case and is under no legal obligation to provide any of the materials requested by the defense. However, as we noted in our October 5, 1994, letter to Mr. Shapiro in response to a September 26, 1994, subpoena, we have no objection to providing copies of articles and the underlying population data if the information has already been disseminated to other scientists or presented in public forums, and does not present Code of Federal Regulations or Privacy Act problems.

MAILED 19
JAN 11 1995
FBI

1 - Mr. H. M. Shapiro
1 - Mr. M. A. Ahlerich
1 - [redacted]
1 - Mr. K. W. Nimmich
1 - [redacted]
[redacted] (14)

1 - [redacted]
1 - [redacted]
1 - [redacted]
1 - [redacted]
1 - ILU (DNALAU)
1 - [redacted]

197 HQ- 1081150

Dep. Dir.
ADD Adm.
ADD Inv.
Asst. Dir.:
Adm. Servs.
Crim. Inv.
Ident.
Insp.
Intell.
Lab.
Legal Coun.
Rec. Mgnt.
Tech. Servs.
Training
Cong. Affs. Off.
Off. of EEO
Off. Liaison & Int. Affs.
Off. of Public Affs.
Telephone Rm.
Director's Sec'y

MAIL ROOM

b6 -1
b7C -1

OGC.

b6 -11,12
b7C -11,12

I have carefully reviewed the defense letter and have identified only three requests (B, D and F) that apply to the FBI. Each is under the **Articles** section of [redacted] letter and appears to request the underlying data for several peer-reviewed papers written by the FBI and other scientists. I will address each request separately.

The request states:

5. Articles.

The defense requests the underlying data from the following validation articles produced by Roche and the FBI Laboratories. There have been previous representations from Roche, the FBI, and the prosecutors that there is no objection to the production of this data from articles that are published or in press:

B. Comey, Budowle, et. al, PCR Amplification and Typing of the HLA DQ Alpha Gene in Forensic Samples, 38 J. Forensic Sci. 239 (1993);

D. Jung, Comey, Baer, and Budowle, Extraction Strategy for Obtaining DNA from Bloodstains for PCR Amplification and Typing of HLA DQ Alpha Gene, Int. Journal of Legal Medicine (?) [sic] 145 (1991); and

F. Budowle, et al, Validation and Population Studies of the Loci LDLR, GYPA, HBGG, D788, and Gc (PM Loci), and HLA-DQ Alpha Using Multiplex Amplification and Typing Procedure, J. Forensic Sci. (In Press).

FBI Response to Request B and D: It appears the defense is seeking copies of the underlying data used to generate these two papers which have already been peer reviewed, published and widely disseminated in the scientific community. The material being sought by the defense is voluminous and includes notes, papers, typing strips, photographs, other laboratory records which would be extremely expensive and time-consuming to duplicate. Furthermore, the Forensic Research and Training Center is currently understaffed and does not have the personnel resources to duplicate the large amount of material associated with these two papers in a timely fashion. Consequently, the FBI is not able to provide the materials pursuant to the defense request.

[redacted]

b6 -11,12
b7C -11,12

FBI Response to Request F: We provided this material to the defense on a computer diskette on October 5, 1994, and again on October 13, 1994, after [redacted] telephonically contacted me and advised that he had been unable to locate the first diskette we had sent.

Please do not hesitate to contact me at (202) 324-8550 if you have any questions or need to discuss this matter further.

Sincerely yours,

b5

[redacted]
Associate General Counsel

b6 -1
b7C -1

LOS ANGELES COUNTY DISTRICT ATTORNEY'S OFFICE

BUREAU OF SPECIAL OPERATIONS • ORGANIZED CRIME AND ANTI-TERRORIST DIVISION

GIL GARCETTI • District Attorney
SANDRA L. BUTTITTA • Chief Deputy District Attorney
R. DAN MURPHY • Assistant District Attorney

ROGER J. GUNSON • Director

October 12, 1994

b6 -1
b7C -1

[redacted]
Federal Bureau of Investigations
Headquarters
9th Street and Pennsylvania Avenue NW,
Room 7159
Washington, D.C. 20535

Re: People v. Orenthal James Simpson
BA097211

Dear [redacted]:

b6 -1,11
b7C -1,11

Pursuant to your conversation with [redacted] enclosed please find a copy of the defense Motion to Exclude DNA Evidence.

If you have any questions please do not hesitate to contact me.

Very truly yours,

GIL GARCETTI
District Attorney

By [redacted]

Law Clerk

[redacted]

Enclosure

b6 -1,11
b7C -1,11

ENCL BEHIND FILE

197 HQ - 1081150

18-702A Criminal Courts Bldg.
210 West Temple Street
Los Angeles, CA 90012
(213) 974-3785

Alameda County
District Attorney's Office
John J. Meehan, District Attorney

October 12, 1994

Howard M. Shapiro
General Counsel
FBI Headquarters
Washington, D.C. 20535

Dear Mr. Shapiro:

I have been authorized by Los Angeles County Deputy District Attorney [redacted] to formally request the assistance of FBI research scientist [redacted] for the admissibility hearing in the case of People v. Orenthal James Simpson now pending in Los Angeles County. The admissibility hearing is tentatively scheduled to begin on November 1, 1994. I am aware that [redacted] will be out of the country from November 6- 26 and will find a way to work around his prior commitments.

b6 -1,11
b7C -1,11

We have defined the scope of [redacted] testimony within the parameters which you have described in [redacted] letter to [redacted] dated October 7, 1994. In order to avoid any confusion on this issue, I will articulate the parameters of [redacted] testimony again. There are two forms of DNA typing which have been utilized in the Simpson case, RFLP and PCR. [redacted] will be asked to explain the evolution of the statistics debate concerning DNA-RFLP testing. In the PCR part of the admissibility hearing [redacted] will be examined about the large sets of population data which he has in his possession, which also forms the basis for the testimony of other prosecution witnesses. Under no circumstances will [redacted] be asked to examine the actual casework performed by the testing labs in this case. These matters are clearly irrelevant to any admissibility consideration under the legal authority of People v. [redacted] (1991) 53 Cal.3d 771.

b6 -1,3,11
b7C -1,3,11

Thank you for your consideration in this important matter. [redacted] contributions to the development and implementation of all aspects of forensic DNA typing constitute some of the most significant achievements in this area. Should he be permitted to testify in this case, it will reflect quite favorably upon the FBI's continuing commitment to improvements in our system of justice.

b6 -1,11
b7C -1,11

Sincerely,

[redacted]

Senior Deputy District Attorney

Oakland Branch, 661 Washington, Oakland, CA 94607 (510) 268-7500

[redacted]

64)-2659

October 5, 1994

FEDERAL EXPRESS

Robert L. Shapiro, Esq.
2121 Avenue of the Stars
Nineteenth Floor
Los Angeles, California 90067

RE: PEOPLE V. ORENTHAL JAMES SIMPSON
LOS ANGELES SUPERIOR COURT
CASE NUMBER: BA097211

Dear Mr. Shapiro:

We are in receipt of your subpoena dated September 26, 1994, which was received at FBI Headquarters, Washington, D.C., on September 27, 1994.

For your information, disclosure of any information or data in the possession of the FBI is controlled by 28 C.F.R., sections 16.21 - 16.29, and the Privacy Act, 5 U.S.C., Section 552(a). In order for the FBI to consider whether disclosure of the information or data you are seeking is appropriate, it will be necessary for you to serve an enforceable subpoena at FBI Headquarters and provide the information required by the C.F.R. Furthermore, even if you comply with the C.F.R. provisions, it appears that some of the information you have requested may fall under the provisions of the Privacy Act which prohibit the FBI from disclosing information concerning an individual without that individual's notarized written consent, or a valid court order specifically authorizing the FBI to disclose the requested information.

197-HQ-1081150-17

Despite your failure to serve a jurisdictionally valid subpoena, obtain a court order, or comply with the C.F.R. and Privacy Act regulations, the FBI is providing you with a copy of five in-press scientific papers and the accompanying population data. Enclosed are the following:

197-HQ-1081150

3- [redacted]
1 - Mr. H. M. Shapiro
1 - Mr. M. A. Ahlerich
1 - [redacted]
1 - [redacted]
1 - Mr. K. W. Nimmich
1 - [redacted]
(18)

1 - [redacted]
1 - [redacted]
1 - [redacted]
1 - [redacted]
1 - ILU (DNALAU)
1 - [redacted]

b6 -1
b7C -1

Dep. Dir. ____
ADD Adm. ____
ADD Inv. ____
Asst. Dir.: ____
Adm. Servs. ____
Crim. Inv. ____
CJIS ____
Info. Mgmt. ____
Insp. ____
Intell. ____
Lab. ____
Legal Coun. ____
Tech. Servs. ____
Training ____
Off. of EEOA ____
Off. Liaison & Int. Affs. ____
Off. of Public & Cong. Affs. ____
TQM Office ____
Telephone Rm. ____
Director's Office ____

MAIL [redacted] M ☐

FBI/DOJ

Robert L. Shapiro, Esq.

1. Hochmeister, M.N., Budowle, B., Borer, U.V., and Dirnhofer, R., Swiss Population Data on the Loci HLA-DQ Alpha, LDLR, GYPA, HBGG, D7S8, Gc, and D1S80; **Forens. Sci. Int.** (in press).

2. Budowle, B., Baechtel, F.S., Smerick, J.B., Presley, K.W., Giusti, A.M., Parsons, G., Alevy, M., and Chakraborty, R., D1S80 Population Data in African Americans, Caucasians, Southeastern Hispanics, Southwestern Hispanics, and Orientals; **J. Forens. Sci.** (in press).

3. Huang, N.E. and Budowle, B., Chinese Population Data on the PCR-based Loci HLA-DQ Alpha, LDLR, GYPA, HBGG, D7S8, and Gc; **Human Heredity** (in press).

4. Budowle, B., Lindsey, J.A., Decou, J.A., Koons, B.W., Giusti, A.M., and Comey, C.T., Validation and Population Studies of the Loci LDLR, GYPA, HBGG, D7S8, and Gc (PM loci), and HLA-DQ Alpha Using a Multiplex Amplification and Typing Procedure; **J. Forens. Sci.** (in press).

5. Huang, N.E., Chakraborty, R., and Budowle, B., D1S80 Allele Frequencies in a Chinese Population; **Int. J. Leg. Med.** (in press).

6. One diskette containing the raw population data for the papers listed in enclosures 1-6.

The information contained in these papers and the accompanying data have already been disseminated to other scientists or presented in public forums, and do not present C.F.R. or Privacy Act problems. The papers are all in-press and will be published soon in the referenced journals.

The FBI objects to the production of any additional information regarding PCR-based population data at this time since our research is continuing, and premature release of any

Robert L. Shapiro, Esq.

data may harm ongoing research efforts at the FBI Laboratory. However, as explained earlier, we cannot even consider your request until you have complied with all of the applicable provisions of the C.F.R. and Privacy Act. Once you have satisfied all of the requirements, we will provide you with a detailed response stating our position to each of your requests.

Any questions regarding this matter should be directed to Associate General Counsel [redacted] at (202) 324-8550. b6 -1 b7C -1

Sincerely yours,

Howard M. Shapiro
General Counsel

Enclosures (6)

2 - Marcia Clark, Esq.
[redacted]
Office of the Los Angeles
County District Attorney
Hall of Records
320 West Temple
Los Angeles, California 90012

1 - [redacted]
Office of the Alameda County
District Attorney
661 Washington Street
Oakland, California 94607 b6 -11 b7C -11

1 - [redacted]
Deputy District Attorney
101 W. Broadway, Suite 1440
San Diego, California 94607

Note: This letter responds to a subpoena served at FBIHQ at 2:15 p.m. on 9/27/94. This matter is being coordinated by SSA [redacted] and the Investigative Law Unit of the OGC.

[redacted]	Crim. Inv.	Laboratory	Off. of EEO Affairs	
	Crim. Jus. Info. Servs.	Legal Counsel [redacted]		
Director	Finance	National Sec.	Off. of Public & Cong. Affs.	b6 -1 b7C -1
	Info. Res.	Personnel		
Deputy Director	Inspection	Training		

ATTORNEY OR PARTY WITHOUT ATTORNEY (Name and Address):	(310) 556-7886 TELEPHONE NO.:	FOR COURT USE ONLY
ROBERT L. SHAPIRO, ESQ. 2121 Avenue of the Stars 19th Floor Los Angeles, CA 90067 ATTORNEY FOR (Name): Defendant, ORENTHAL JAMES SIMPSON		
Insert name of court, judicial district or branch court, if any, and post office and street address: Los Angeles Superior Court 210 West Temple Street L.A., CA 90012		
Title of case: PEOPLE V. ORENTHAL JAMES SIMPSON		
SUBPENA (CRIMINAL, OR JUVENILE) ☒ DUCES TECUM		CASE NUMBER: BA097211

THE PEOPLE OF THE STATE OF CALIFORNIA (NAME): Custodian of Records, Federal Bureau of Investigation, Laboratory, Quantico, Virginia

1. **YOU ARE ORDERED TO APPEAR AS A WITNESS in this action at the date, time and place shown in the box below UNLESS you make a special agreement with the person named in item 3:**

a. Date: October 3, 1994 Time: 9:00 a.m. ☐Dept.: 103 ☐Div.: ☐ Room:

b. Address: Los Angeles Superior Court
210 West Temple Street Los Angeles, California 90012

2. AND YOU ARE

a. ☐ ordered to appear in person

b. ☒ not required to appear in person if you produce the records described in the accompanying affidavit and a completed declaration of custodian of records in compliance with Evidence Code sections 1560, 1561, 1562, and 1271. (1) Place a copy of the records in an envelope (or other wrapper). Enclose your original declaration with the records. Seal them. (2) Attach a copy of this subpena to the envelope or write on the envelope the case name and number, your name and date, time and place from item 1 (the box above). (3) Place this first envelope in an outer envelope, seal it, and mail it to the clerk of the court at the address in item 1 (the box above. (4) Mail a copy of your declaration to the attorney or party shown at the top of this form.

c. ☐ ordered to appear in person and to produce the records described in the accompanying affidavit. The personal attendance of the custodian or other qualified witness and the production of the original records **is required** by this subpena. The procedure authorized by subdivision (b) of section 1560, and 1562, of the Evidence Code will not be deemed sufficient compliance with this subpena.

d. ☐ ordered to make the original business records described in the accompanying affidavit available for inspection at your business address by the attorney's representative and to permit copying at your business address under reasonable conditions during normal business hours.

3. **IF YOU HAVE ANY QUESTIONS ABOUT THE TIME OR DATE FOR YOU TO APPEAR, OR IF YOU WANT TO BE CERTAIN THAT YOUR PRESENCE IS REQUIRED, CONTACT THE FOLLOWING PERSON BEFORE THE DATE ON WHICH YOU ARE TO APPEAR:**

a. Name: [redacted] b. Telephone number: (310-556-7886) b6 -12 b7C -12

4. **WITNESS FEES:** You may be entitled to witness fees, mileage, or both in the discretion of the court. Contact the person named in item 3 **AFTER** your appearance.

DISOBEDIENCE OF THIS SUBPENA MAY BE PUNISHED BY A FINE, IMPRISONMENT, OR BOTH. A WARRANT MAY ISSUE FOR YOUR ARREST IF YOU FAIL TO APPEAR.

FOR COURT USE ONLY	Date: September 26, 1994	(SIGNATURE OF PERSON ISSUING SUBPENA)
		Robert L. Shapiro (TYPE OR PRINT NAME)
	(See reverse for proof of service)	Attorney for ORENTHAL JAMES SIMPSON (TITLE) b6 -1 b7C -1

SERVICE ACCEPTED 9-27-94 - 1:15 PM

Form Adopted by Rule 982
Judicial Council of California
982(a) (16) [Rev. January 1, 1991]

SUBPENA (CRIMINAL OR JUVENILE)

Penal Code § 1326 et seq.
ons Code,§§ 341, 664, 1727

[redacted]

SHORT TITLE	CASE NUMBER
PEOPLE V. O. J. SIMPSON	BA097211

PROOF OF SERVICE OF SUBPENA

1. I served this ☐ Subpena ☐ Subpena Duces Tecum and supporting affidavit by personally delivering a copy to the person served as follows:

   a. Person served (name):

   b. Address where served:

   c. Date of delivery:

   d. Time of delivery:

2. I received this subpena for service on (date) :

3. ☐ NON-SERVICE RETURN OF SUBPENA

   a. ☐ After due search, careful inquiry, and diligent attempts at the dwelling house or usual place of abode or usual place of business, I hae been unable to make personal delivery of this ☐ Subpena ☐ Subpena Duces Tecum in this county on the following persons (specify) :

   b. Reason:

   (1) ☐ Unknown at address.
   (2) ☐ Moved, forwarding address unknown.
   (3) ☐ No such address.
   (4) ☐ Out-of-county address.
   (5) ☐ Unable to serve hearing date.
   (6) ☐ Other reasons (explanation required) :

4. Person serving:

   a. ☐ Not a registered California process server.
   b. ☐ California sheriff, marshal, or constable.
   c. ☐ Registered California process server.
   d. ☐ Employee or independent contractor of a registered California process server.
   e. ☐ Exempt from registration under Bus. & Prof. Code section 22350(b).
   f. Name, address, and telephone number and, if applicable, county of registration and number:

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Date:

(SIGNATURE)

(For California sheriff, marshal, or constable use only)
I certify that the foregoing is true and correct.

Date:

(SIGNATURE)

AFFIDAVIT IN SUPPORT OF SUBPOENA DUCES TECUM

Declarant is the attorney for the defendant, ORENTHAL JAMES SIMPSON, in the matter of People v. Orenthal James Simpson, Los Angeles Superior Court Case Number BA097211. Said cause is pending in Department 103 of the Los Angeles Superior Court.

The Custodian of Records, Federal Bureau of Investigation, Laboratory, Quantico, Virginia has in its possession or under his/her control the following documents or materials:

1. Hard copies of databases for D1580 and polymarker systems: Please provide printed copies of all databases in the possession of the laboratory provided in a format such that the multi-probe genotype is given for each sample tested (that is, all alleles for all probes).

2. Database disc for D1580 and polymarker systems: Please provide a computer version of all databases (on DOS formatted 3-1/2" disc or equivalent) provided in a format such that the multi-probe genotype is given for each sample tested.

3. Construction of databases for D1580 and polymarker systems: Please provide copies of all documents related to the source or origin of samples in laboratory's databases, including but not limited to: documents concerning the method by which samples were collected, the background or characteristics of individuals who were the source of the samples, the choice of populations and sub-populations to be sampled and the nature of the sample procedure used to collect the samples. In the event that samples were obtained from an outside agency, please identify outside agency by institution name, contact person, address, phone number, and provide copies of all correspondence with that

agency.

Said records are material to the case and matters which are at issue in the above trial, in that are necessary for the [redacted] hearing; that declarant requests Custodian of Records to appear in person or comply with the subpoena and that said witness there produce the aforesaid records.

b6 -3
b7C -3

9-16-94
Date

ROBERT L. SHAPIRO
State Bar No. 043693
Attorney for Defendant,
ORENTHAL JAMES SIMPSON

Alameda County
District Attorney's Office
John J. Meehan, District Attorney

October 12, 1994

Howard M. Shapiro
General Counsel
FBI Headquarters
Washington, D.C. 20535

Dear Mr. Shapiro:

b6 -1,11
b7C -1,11

I have been authorized by Los Angeles County Deputy District Attorney [redacted] to formally request the assistance of FBI research scientist [redacted] for the admissibility hearing in the case of People v. Orenthal James Simpson now pending in Los Angeles County. The admissibility hearing is tentatively scheduled to begin on November 1, 1994. I am aware that [redacted] will be out of the country from November 6- 26 and will find a way to work around his prior commitments.

We have defined the scope of [redacted] testimony within the parameters which you have described in [redacted] letter to [redacted] dated October 7, 1994. In order to avoid any confusion on this issue, I will articulate the parameters of [redacted] testimony again. There are two forms of DNA typing which have been utilized in the Simpson case, RFLP and PCR. [redacted] will be asked to explain the evolution of the statistics debate concerning DNA-RFLP testing. In the PCR part of the admissibility hearing, [redacted] will be examined about the large sets of population data which he has in his possession, which also forms the basis for the testimony of other prosecution witnesses. Under no circumstances will [redacted] be asked to examine the actual casework performed by the testing labs in this case. These matters are clearly irrelevant to any admissibility consideration under the legal authority of People v. [redacted] (1991) 53 Cal.3d 771.

b6 -1,3,11
b7C -1,3,11

Thank you for your consideration in this important matter. [redacted] contributions to the development and implementation of all aspects of forensic DNA typing constitute some of the most significant achievements in this area. Should he be permitted to testify in this case, it will reflect quite favorably upon the FBI's continuing commitment to improvements in our system of justice.

b6 -1,11
b7C -1,11

Sincerely,

[redacted]
Senior Deputy District Attorney

FBI(24-cv-1564)-2667

October 7, 1994

[redacted]
Office of the Los Angeles
County District Attorney
Hall of Records
320 West Temple
Los Angeles, California 90012

b6 -1,11
b7C -1,11

RE: TESTIMONY OF [redacted]
ON FORENSIC DNA MATTERS IN
PEOPLE V. ORENTHAL JAMES SIMPSON
LOS ANGELES SUPERIOR COURT
CASE NUMBER: BA097211

Dear [redacted]

Several weeks ago I was contacted by Senior Deputy District Attorney [redacted] of Alameda County regarding the testimony of [redacted] in the Simpson prosecution. As you know, [redacted] is the FBI's chief DNA researcher and developed the forensic RFLP and PCR procedures used by the FBI Laboratory Division and many other forensic laboratories in the United States and abroad. [redacted] explained that he, along with [redacted] of the San Diego District Attorney's office, would be assisting you in the DNA portions of the Simpson prosecution. He indicated that the prosecution wished to obtain FBI approval for [redacted] to testify at the DNA admissibility hearing scheduled for later this year. b6 -1,11 b7C -1,11

Initially, FBI management was extremely hesitant to authorize [redacted] to testify since the FBI had not conducted any DNA examinations in this case. However, based on the information I obtained in several conversations with you, [redacted] and [redacted] I was able to convince FBI management to give b6 -1,11 b7C -1,11

1 - Mr. H. M. Shapiro
1 - Mr. M. A. Ahlerich
1 - [redacted]
1 - [redacted]
1 - Mr. K. W. Nimmich
[redacted]
(18)

1 - [redacted]
1 - ILU (DNALAU)
1 - [redacted]

b6 -1
b7C -1

facsimile 10-7-94
mailed out 10-7-94
OGC 10-7-94

[redacted]

b6 -1,11
b7C -1,11

tentative approval for [redacted] to testify pursuant to your request. At that time, I made it clear that the FBI would not give final approval for his testimony until we received a written request that stated the reasons and the scope of his testimony. Once the written request is received and evaluated, a final decision will be made on whether [redacted] will be authorized to testify in your case. I also made it clear that his testimony must be limited to the historical development of forensic DNA technology and the related population statistics. Under no circumstance is he to evaluate the specific work conducted by the various laboratories in this case.

To date, we have still not received a written request for [redacted] testimony. When I discussed the matter with you last week, you advised that [redacted] was handling the request. However, [redacted] told me that he was not handling the matter and had not been in contact with you for the past three weeks, and was unsure whether he or [redacted] would be assisting in the case.

b6 -1,11
b7C -1,11

This lack of communication has caused FBI management great concern and they are now reconsidering their tentative approval for [redacted] to testify. I was only able to obtain tentative approval for [redacted] testimony after I convinced FBI management that you, [redacted] were three of the most experienced DNA attorneys in the country, and that I have complete confidence in your individual and collective judgement to call [redacted] as a witness.

However, I am concerned over the confusion that has arisen over the role of [redacted] I believe that it will be a grave mistake if you fail to take advantage of their considerable expertise in your hearing. Although I know you are entirely capable of conducting the admissibility hearing on your own, based on my exposure to Messrs. [redacted] over a four year period in United States v. [redacted] I believe you will be overwhelmed and unable to adequately prepare for the defense challenge at the [redacted] hearing. During our preparation and throughout the admissibility hearing in [redacted] we were overwhelmed despite the fact that we had two FBI attorneys, two prosecutors, and two paralegals working on the DNA issues on a full-time basis.

b6 -3,11,12
b7C -3,11,12

[redacted] Esq.

b6 -1,11
b7C -1,11

Furthermore, even if the concerns we have raised regarding [redacted] testimony are resolved and he is given final authority to testify, you should be aware that he will be out of the country November 6 through November 26, and December 5 through December 15.

The FBI remains committed to providing your office with whatever assistance possible in this case. I am hopeful that you can immediately resolve the communication and delegation problems that have arisen so that we can proceed to assist you as requested. As you know, the outcome of this case will have a major impact on other pending and future DNA cases throughout the country. I am sure you share my desire that we should all work together on this case to ensure your hearing takes advantage of the best prosecution and FBI resources available.

Please contact me at (202) 324-8550 at your earliest convenience to discuss this matter further.

Sincerely yours,

/s/

[redacted]
Associate General Counsel

1 - [redacted]
Office of the Alameda County
District Attorney
661 Washington Street
Oakland, California 94607

b6 -1,11,12
b7C -1,11,12

1 - [redacted]
Deputy District Attorney
101 W. Broadway, Suite 1440
San Diego, California 94607

APPROVED: [redacted]

DATE: February 14, 1995

PRECEDENCE:

TO: [redacted]

b6 -1,11
b7C -1,11

IMMEDIATE ✓

PRIORITY ______

ROUTINE ______

FAX # (213) 680-3814

PAGES (INCLUDING THIS PAGE) 8

FROM: [redacted]
INVESTIGATIVE LAW UNIT
DNA LEGAL ASSISTANCE SUBUNIT
FBI HEADQUARTERS, ROOM 7879
10TH ST. & PENNSYLVANIA AVE., N.W.
WASHINGTON, D.C. 20535
TELEPHONE (202) 324-4419
FACSIMILE (202) 324-1043

197-HQ-1281150-9

MESSAGE: re People v. Simpson (Orenthal James)

ENCLOSURE

********** -JOURNAL- ********** DATE FEB-14-1995 ***** TIME 16:36 **********

DATE/TIME	= FEB-14 16:23	
JOURNAL NO.	= 19	
COMM.RESULT	= OK	
PAGES	= 00	
DURATION	[illegible]	
MODE	XMT	
STATION NAME	=	
TELEPHONE NO.	= T	82136803814
RECEIVED ID	= 6803814	
RESOLUTION	= STANDARD	

-DNA LEGAL ASSISTANCE UNIT-

[illegible] 202 324 10[illegible]

197-HQ-1081150-9
ENCLOSURE

b6 -1
b7C -1

DATE: January 14, 1995

PRECEDENCE:

TO: [redacted]

IMMEDIATE _____ b6 -1,12 b7C -1,12

PRIORITY _____

FAX # (213) 931-9521

ROUTINE _____

PAGES (INCLUDING THIS PAGE) 8

FROM: [redacted]
VESTIGATIVE LAW UNIT
NA LEGAL ASSISTANCE SUBUNIT
FBI HEADQUARTERS, ROOM 7879
10TH ST. & PENNSYLVANIA AVE., N.W.
WASHINGTON, D.C. 20535
TELEPHONE (202) 324-4419
FACSIMILE (202) 324-1043

197 [redacted] 10

MESSAGE: Grenthal Pages.

Re: People v. Simpson

********** -JOURNAL- ********** DATE FEB-14-1995 ***** TIME 16:20 **********

DATE/TIME = FEB-14 16:08
JOURNAL NO. = 18
COMM.RESULT = OK
PAGES = 08
DURATION = 00:11'22
MODE = XMT
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TELEPHONE NO. = T 82139319521
RECEIVED ID = 213 931 9521
RESOLUTION = STANDARD

-DNA LEGAL ASSISTANCE UNIT-

********** 202 324 1043- **********

197-HQ-1081150-10
ENCLOSURE

original yellow already in file please file previously in 197-HQ-1051150

March 20, 1995

FEDERAL EXPRESS

b6 -11
b7C -11

[redacted]
Office of the Los Angeles
County District Attorney
Hall of Records
320 West Temple
Los Angeles, California 90012

RE: PEOPLE V. ORENTHAL JAMES SIMPSON
LOS ANGELES SUPERIOR COURT
CASE NUMBER: BA097211
EDTA VALIDATION STUDIES AND
SHOE PRINT EXAMINATION CORRESPONDENCE

Dear [redacted]:

I am writing as a follow up to my letter to you dated March 3, 1995, to provide you additional discovery materials in the captioned case. Enclosed are the following:

b6 -1,11
b7C -1,11

1. Two (2) copies of the validation studies relating to EDTA tests performed by the FBI Laboratory; and

2. Two (2) copies of all notes and/or correspondence relating to contacts by [redacted] with various shoe manufacturers.

The shoe print examination correspondence supplements the notes I provided to you in my March 3, 1995. I have now provided you with all of the notes and/or correspondence

1 - Mr. H. M. Shapiro
1 - Mr. M. A. Ahlerich
1 - [redacted]
1 - [redacted]
1 - Mr. K. W. Nimmich
1 - [redacted]
1 - [redacted]
[redacted] (18)

1 - [redacted]
1 - [redacted]
1 - [redacted]
1 - [redacted]
1 - ILU (DNALAU)
1 - [redacted]

R-1879 X1430

b6 -1
b7C -1

[redacted] b6 -11 b7C -11

generated to date in connection with the FBI Laboratory's shoe print examination in the captioned case, except for photographs and accompanying transparent overlays, which cannot be sufficiently duplicated on a photo copy machine. These photographs and overlays cannot be released but are available for inspection at FBI Headquarters.

Trial charts and enlargements relating to the shoe print examinations are not yet complete. They will be forwarded to you as soon as they are completed.

We have reviewed all of the discovery requests directed to the FBI Laboratory, and unless otherwise noted, have complied with each request even though many are clearly outside the normal scope of discovery. We leave it to your discretion to decide whether some of the materials we have provided in response to the discovery requests are outside scope and should not be turned over to the defense.

Please do not hesitate to contact [redacted] b6 -1 b7C -1 of my staff at (202) 324-8550 if you have any questions or need further assistance in this matter.

Sincerely yours,

Howard M. Shapiro
General Counsel

Enclosures (3)

3 - Marcia Clark, Esq.
[redacted] b6 -11 b7C -11

b6 -1
b7C -1

LAW OFFICES
JOHNNIE L. COCHRAN, JR.
A PROFESSIONAL CORPORATION

JOHNNIE L. COCHRAN, JR.*
EDDIE J. HARRIS
ERIC G. FERRER**
CARL E. DOUGLAS
CAMERON A. STEWART
CLARA HILL-WILLIAMS
SHAWN S. CHAPMAN
WILMER J. HARRIS
VICTORIA E. KING

*ALSO MEMBER WASHINGTON D.C. BAR
**ALSO MEMBER NEW YORK BAR

4929 WILSHIRE BOULEVARD, SUITE 1010
LOS ANGELES, CALIFORNIA 90010
(213) 931-6200
FAX (213) 931-9521

OF COUNSEL
DONALD K. WILSON, JR.

WASHINGTON D.C. OFFICE
CAPITOL HILL WEST BUILDING
201 MASSACHUSETTS AVENUE N.E.
WASHINGTON, D.C. 20002
PHONE (202) 547-9225
FAX (202) 547-9228

VIA FAX AND MAIL

January 29, 1995

[redacted]
Associate General Counsel
U.S. Department of Justice
Federal Bureau of Investigation
Washington, DC 20535

b6 -1
b7C -1

RE: People v. Orenthal James Simpson
LASC Case No. BA 097211
Case No. BA097211

Dear [redacted]

This is in response to your letter dated January 10, 1995 regarding our request for the data underlying published studies involving the FBI. You have indicated an unwillingness to make the requested information available to us as it would be too time consuming to do so. In an effort to accommodate your concerns, we are providing you with a more specific request for information that will be less burdensome on you to produce.

We therefore request the following. 199-HQ-1081150-11

A. COMEY, BUDOWLE, et al. - PCR Amplification and Typing of HLA Dqa Gene in Forensic Samples, 38 J. Forensic Sci. 239 (1993)

1. Color copies of figure 1 as it appears in the original publication as the xerox copies we received are unreadable.

For the following samples referred to in the study, please provide color photographs [or black and white photographs if color pictures do not exist] as close to first generation of all testing strips, yield gels, product gels or slot blots pertaining to those samples plus any associated work papers showing the source of the samples and any processing of those samples:

2. The 206 known and 26 questioned bloodstains used in the study.

b6 -1
b7C -1

Let to Johnnie L. Cochran, Jr., Esq.
for Howard M. Shapiro
2-13-95

[redacted]

LAW OFFICES
JOHNNIE L. COCHRAN, JR.
A PROFESSIONAL CORPORATION

[redacted]

b6 -1
b7C -1

3. The samples showing 3 or more alleles [referred to on page 241]

4. The 60 questioned samples where there was no DQa result initially [including all data on the retests done with these samples].

5. Selected cases highlighted in the study numbered 25, 42, 48, 65, and 95.

B. BUDOWLE. et al - Validation and Population Studies of the Loci LDLR, GYPA, HBGG, D7S8, and GC [PM loci], and the HLA-DQa using a Multiplex Amplification and Typing Procedure, Journal of Forensic Sci. [The disks previously provided on this article contained only genotype tables. We are requesting other information]

1. For samples 1119, 1127, 1123, 1181, 1341 and any other samples where dot intensity across loci or within loci was determined to be different, color photographs [or black and white photographs if color pictures do not exist] as close to first generation of all testing strips, yield gels, product gels, or slot blots pertaining to those samples plus any associated work papers showing the source of the samples and any processing of those samples.

2. Please provide color copies of all figures from the article. As to figures 4 and figure 5, color photographs [or black and white photographs if color pictures do not exist] as close to first generation of all testing strips, yield gels, product gels or slot blots pertaining to those samples plus any associated work papers showing the source of the samples and any processing of those samples.

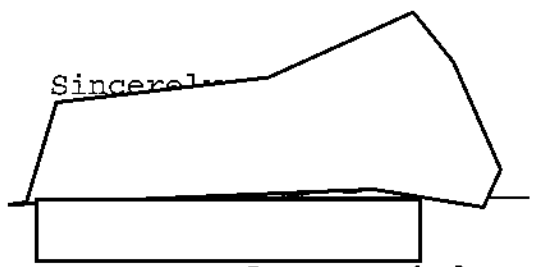
LAW OFFICES
JOHNNIE L. COCHRAN, JR.
A PROFESSIONAL CORPORATION

[redacted] b6 -1 b7C -1

3. For each of the 113 samples referred to in the environmental insult study [table 2], color photographs [or black and white photographs if color pictures do not exist] as close to first generation of all testing strips, yield gels, product gels or slot blots pertaining to those samples plus any associated work papers showing the source of the samples and any processing of those samples.

Your prompt response to the above requests will be greatly appreciated.

Sincerely,



[redacted] b6 -11,12 b7C -11,12

Attorneys for Orenthal J. Simpson

cc: Judge Lance Ito
[redacted]

c:simpsnoj\sylvstr.ltr & a:f.51

b6 -1
b7C -1

February 13, 1995

FEDERAL EXPRESS

Johnnie L. Cochran, Jr., Esq.
4929 Wilshire Boulevard, Suite 1010
Los Angeles, California 90010

Attention: Messrs. [redacted]

b6 -12
b7C -12

RE: PEOPLE V. ORENTHAL JAMES SIMPSON
LOS ANGELES SUPERIOR COURT
CASE NUMBER: BA097211

Dear Messrs. [redacted]

I am writing in response to your letter dated January 29, 1995, which was received in our office on February 9, 1995, regarding your most recent DNA discovery request in the captioned case.

Although your recent letter attempts to narrow the scope of your early January (January 5, 1995, letter to [redacted] discovery request, it fails to do so. In fact, we believe your latest request is broader in scope and seeks copies of additional material not sought in your early January request. This is despite the fact that you are no longer seeking the data associated with the [redacted] extraction paper. Unfortunately, interpretation of your request is difficult because it is confusingly worded, and we are not able to ascertain whether you are requesting the actual samples used, or pictures of the samples and the accompanying data. Furthermore, your latest request asks for additional data from the [redacted] validation and population paper which you did not request in your early January letter.

b6 -1,12
b7C -1,12

197-HQ-1081150

Dep. Dir. [redacted]
ADD Adm. ___
ADD Inv. ___
Asst. Dir.: ___
Adm. Servs. ___
Crim. Inv. ___
CJIS ___
Info. Mgmt. ___
Insp. ___
Intell. ___
Lab. ___
Legal Coun. ___
Tech. Servs. ___
Training ___
Off. of EEOA ___
Off. Liaison & Int. Affs. ___
Off. of Public & Cong. Affs. ___
TQM Office ___
Telephone Rm. ___
Director's Office ___

1 - Mr. L. A. Potts
1 - Mr. H. M. Shapiro
1 - Mr. M. E. Ahlerich
1 - [redacted]
1 - [redacted]
1 - [redacted]
1 - Mr. K. W. Nimmich
1 - Mr. J. J. Kearney
[redacted] (20)

1 - [redacted]
1 - [redacted]
1 - [redacted]
1 - [redacted]
1 - [redacted]
1 - DNALAU, Room 7879

MAILROOM [redacted]

Delivered 2/14/95 mk

Copies faxed to Mr. Cochran on 2/15/95 [redacted]

R-7159

b6 -1,11
b7C -1,11

FBI/DOJ

Johnnie L. Cochran, Jr., Esq.

All of the material that is responsive to your request is located at the FBI's Forensic Science Research and Training Facility (FSRTC) which is located at the FBI Academy in Quantico, Virginia. As we advised in our last letter, most of the materials you are seeking cannot be reproduced by merely running them through a photocopier. Special photographic duplication equipment is required which is expensive and extremely time consuming to operate. Furthermore, this equipment is already committed to other forensic research purposes and using it to duplicate material for discovery purposes would interfere with ongoing research projects. Even if the specialized equipment were available for discovery duplication purposes, the FSRTC is understaffed and does not have the personnel resources to duplicate the large amount of material associated with the two papers referred to in your letter.

Consequently, we are unable to comply with your request. However, we are interested in assisting you to the greatest extent possible, and so we are offering to make the materials you have requested, to the extent they exist, available for review by your experts at the FSRTC.

Furthermore, in response to your complaint that the quality of the copies of the two papers we provided in our last response were poor, we have enclosed first-generation copies of both papers:

1. Comey, Budowle, et. al, PCR Amplification and Typing of the HLA DQ Alpha Gene in Forensic Samples, 38 J. Forensic Sci. 239 (1993); and

2. Budowle, et al, Validation and Population Studies of the Loci LDLR, GYPA, HBGG, D788, and Gc (PM Loci), and HLA-DQ Alpha Using Multiplex Amplification and Typing Procedure, 40 J. Forensic Sci. 45 (1995).

Unfortunately, we do not have reprints of these public source documents that we can send you; however, reprints are available from the publisher. The publisher's address is:

American Society for Testing Materials
1916 Race Street
Philadelphia, Pennsylvania 19103

If you decide to accept our offer to review the materials discussed above at the FSRTC, you will be required to comply with all the rules and regulations that apply to visiting

scientists. For your convenience, we have enclosed a copy of those rules and regulations. If you have any questions, or want to make arrangements to visit the FSRTC, you may contact Associate General Counsel, [redacted] at (202) 324-8550. b6 -1 b7C -1

Sincerely yours,

/S/

Howard M. Shapiro
General Counsel

Enclosures (3)

1 - Honorable Lance A. Ito
Criminal Courts Building
210 West Temple Street
Los Angeles, California 90012

3 - Marsha Clark, Esq.
[redacted] b6 -11 b7C -11
Office of the Los Angeles
County District Attorney
Hall of Records
320 West Temple Street
Los Angeles, California 90012

224

March 3, 1995

FEDERAL EXPRESS

[redacted]
Office of the Los Angeles
County District Attorney
Hall of Records
320 West Temple
Los Angeles, California 90012

C/O Los Angeles Police Department
Crime Laboratory
Attention: [redacted]
555 Ramirez, Space 270
Los Angeles, California 90012

b6 -6,11
b7C -6,11

RE: PEOPLE V. ORENTHAL JAMES SIMPSON
LOS ANGELES SUPERIOR COURT
CASE NUMBER: BA097211
DEFENSE DISCOVERY REQUEST

Dear [redacted]:

I am writing in response to a letter dated February 27, 1995, addressed to the Honorable Lance A. Ito and [redacted] from [redacted] of the defense team in the captioned case. The letter was facsimiled to Special Agent [redacted] on February 28, 1995.

b6 -1,11,12
b7C -1,11,12

197-HQ-1081150-13

I will individually address each of the portions of the letter that are applicable to the FBI.

197 HQ-1081150

1 - Mr. H. M. Shapiro
1 - Mr. M. A. Ahlerich
1 - [redacted]
1 - [redacted]
1 - Mr. K. W. Nimmich
1 - [redacted]
1 - [redacted] (18)

1 - [redacted]
1 - [redacted]
1 - [redacted]
1 - [redacted]
1 - ILU (DNALAU)
1 - [redacted]

Dep. Dir.
Chief of Staff
Off. of Gen. Counsel
Asst. Dir.:
Crim. Inv.
CJIS
Finance
Info. Res.
Insp.
Lab.
National Sec.
Personnel
Training
Off. of EEOA
Off. of Public & Cong. Affs.
Director's Office

MAIL ROOM [redacted]

Hand carried to Federal Express 3/3/95 [redacted]

OIC [redacted]

b6 -1
b7C -1

FBI/DOJ

[redacted]

Request I(2):

All documents prepared by or relied upon by prosecution shoe print expert [redacted] concerning the comparison of shoe prints in this case. This includes but is not limited to: notes, charts, exhibits, photographs, overlays, research data on sole and shoe types, and notes of communications directly and indirectly (e.g. through the LAPD) with SILGA rubber company, the Bruno Magli shoe company, and distributors and retailers of the sole and shoe products.

b6 -1,11
b7C -1,11

Although the shoes, soles, and documentation are presently with the FBI, [redacted] will make efforts to have the items shipped here this week in time for the Saturday inspection.

FBI Response:

Enclosed are the following:

1. Laboratory worksheets and written notes for Laboratory numbers:

40808026
40912024
40920013
40923001
40927003
41006015
41006016
41006017
41018001
41019001
41026003
41114001
41216001
50110004
50118030
50120001

2. Photocopies of 85 known impressions of the U2887 outsoles.

Original shoe print evidence, shoes and shoe soles received at the FBI Laboratory and photographs of crime scene impressions, where submitted, have been returned. Photographs of

[redacted]

evidence taken by Special Agent [redacted] have been previously returned in multiple copies. The set of photographs which contain notes on them relevant to the shoe print examination as well as the transparent overlays will not copy sufficiently on a photocopy machine and cannot be released, but are available for inspection at FBI Headquarters. b6 -1,11 b7C -1,11

Trial charts and enlargements are being prepared but will not be ready for at least two weeks.

Request III(1):

The EDTA report and related documents from the FBI. Early last week when [redacted] brought this matter to the attention of the Court, Your Honor commented that you expected the prosecution to produce a report from the FBI by last Thursday, February 23. Although there have been oral representations as to the results, there has been, as of yet, no report. To plan our defense, it is essential that we receive immediately: b6 -12 b7C -12

a. the FBI's report;
b. all underlying and supporting laboratory notes;
c. all documentation regarding validation studies performed either by the FBI and/or elsewhere regarding testing for the presence of EDTA including, but not limited to, studies validating the sensitivity and specificity of the test conducted.

FBI Response:

The FBI report was forwarded to the Court via Federal Express on March 2, 1995. All underlying and supporting laboratory notes are enclosed. Validation study information is being collected and duplicated and will be forwarded to you as soon as possible.

Pursuant to your request I have addressed this letter and accompanying enclosures to you, but mailed them via Federal Express to the LAPD crime laboratory to ensure Saturday delivery.

[redacted]

b6 -1,11
b7C -1,11

Please do not hesitate to contact [redacted] of my staff at (202) 324-8550 if you have any questions or need to discuss this matter further.

Sincerely yours,

/S/

Howard M. Shapiro
General Counsel

Enclosures (3)

3 - Marcia Clark, Esq.
[redacted]

b6 -1,11
b7C -1,11

[redacted]

May 4, 1995

VIA FACSIMILE

Honorable Lance A. Ito
Criminal Courts Building
210 West Temple Street
Los Angeles, California 90012

b6 -1
b7C -1

RE: PEOPLE V. ORENTHAL JAMES SIMPSON
LOS ANGELES SUPERIOR COURT
CASE NUMBER: BA097211
DECLARATION OF SPECIAL AGENT [redacted]

Dear Judge Ito:

Enclosed is a two page declaration of Special Agent [redacted] concerning conversations he had with [redacted] of National Medical Services, Inc., and [redacted] regarding EDTA testing.

b6 -1,3,11
b7C -1,3,11

197-HQ-1051150-15

I had promised to send this declaration to [redacted] by late yesterday afternoon prior to the 4:00 p.m. hearing. However, I was unable to do so and was not able to contact [redacted] to tell him of the delay before he left for court. I apologize for any inconvenience this delay may have caused. I am sending copies of this letter and the declaration via facsimile to Messrs. Cochran, Shapiro, and [redacted]

b6 -11
b7C -11

197 HQ-1051150

Sincerely,

/S/

[redacted]
Associate General Counsel

Enclosure

1 - Mr. H. M. Shapiro
1 - Mr. M. E. Ahlerich
1 - [redacted]
1 - Mr. J. J. Kearney

(21)

1 - [redacted]
1 - DNALAU, Room 7879

b6 -1
b7C -1

SEE NOTE PAGE TWO

MAILED 18
MAY 05 1995
FBI

Dep. Dir. ___
Chief of Staff ___
Off. of Gen. Counsel ___
Asst. Dir.: ___
Crim. Inv. ___
CJIS ___
Finance ___
Info. Res. ___
Insp. ___
Lab. ___
National Sec. ___
Personnel ___
Training ___
Off. of EEOA ___
Off. of Public & Cong. Affs. ___
Director's Office ___
MAIL ROOM [redacted]

(see copy designations page 2)

FBI/DOJ

Honorable Lance A. Ito

3 - Marsha Clark, Esq.
[redacted]
Office of the Los Angeles
County District Attorney
Hall of Records
320 West Temple Street
Los Angeles, California 90012

b6 -11
b7C -11

1 - Johnnie L. Cochran, Jr., Esq.
4929 Wilshire Boulevard, Suite 1010
Los Angeles, California 90010

1 - Robert L. Shapiro, Esq.
2121 Avenue of the Stars
Nineteenth Floor
Los Angeles, California 90067

Note: This letter responds to a telephonic request made by [redacted] for a declaration from [redacted] regarding his conversations with [redacted] on EDTA testing. Defense attorney [redacted] has claimed that [redacted] has improperly attempted to contact potential defense experts and is seeking sanctions from the court. We delayed sending the declaration because of concerns over some of the statements which we could not resolve until early on 5/4/95. [redacted] contacted [redacted] after the hearing on 5/3/95 and requested that we send the declaration directly to Judge Ito as early as possible on 5/4/95.

b6 -1,3,11,12
b7C -1,3,11,12

July 10, 1995

FEDERAL EXPRESS

Johnnie L. Cochran, Jr., Esq.
4929 Wilshire Boulevard, Suite 1010
Los Angeles, California 90010

Attention: [redacted]

b6 -12
b7C -12

RE: PEOPLE V. ORENTHAL JAMES SIMPSON
LOS ANGELES SUPERIOR COURT
CASE NUMBER: BA097211

Dear Mr. Cochran:

I am writing in response to your letter dated July 9, 1995, which was received in our office on July 10, 1995, regarding the EDTA testing conducted by Supervisory Special Agent (SSA) [redacted] in the captioned case.

b6 -1
b7C -1

I will respond to each of your requests separately:

1. SSA [redacted] has no objection to meeting with you at FBI Headquarters. You should contact him directly to make the necessary arrangements. He can be reached at (202) 324-4318.

2. Yes, we will accept a subpoena by mail for SSA [redacted] in this case.

Regarding your discovery requests:

16

1. No such data exists. It was not saved in the computer.

197HQ-1021150

Dep. Dir. ____
ADD Adm. ____
ADD Inv. ____
Asst. Dir.: ____
Adm. Servs. ____
Crim. Inv. ____
Ident. ____
Insp. ____
Intell. ____
Lab. ____
Legal Coun. ____
Rec. Mgnt. ____
Tech. Servs. ____
Training ____
Cong. Affs. Off. ____
Off. of EEO ____
Off. Liaison & Int. Affs. ____
Off. of Public Affs. ____
Telephone Rm. ____
Director's Sec'y ____

1 - Mr. L. A. Potts
1 - Mr. H. M. Shapiro
1 - Mr. M. E. Ahlerich
1 - [redacted]
1 - [redacted]
1 - Mr. K. W. Nimmich
(20)

MAIL ROOM [redacted]

Hand carried to Federal Express 7/10/95

1 - [redacted]
1 - [redacted]
1 - [redacted]
1 - [redacted]
1 - [redacted]
1 - DNALAU, Room 7879

b6 -1
b7C -1

FBI(24-cv-1564)-2691

[redacted]

b6 -1,11
b7C -1,11

2. No additional data exists.

3. SSA [redacted] CV is enclosed.

4. Eight pages of additional research notes dated May 11, 1995, and a recent abstract titled "Analysis of Metal Chelates by Electrospray Ionization Mass Spectrometry" are enclosed.

If you have any additional questions you may contact Associate General Counsel, [redacted] at (202) 324-8550.

Sincerely yours,

Howard M. Shapiro
General Counsel

Enclosures (3)

1 - Honorable Lance A. Ito
Criminal Courts Building
210 West Temple Street
Los Angeles, California 90012

3 - Marsha Clark, Esq.
[redacted]
Office of the Los Angeles
County District Attorney
Hall of Records
320 West Temple Street
Los Angeles, California 90012

b6 -11
b7C -11

ROBERT L. SHAPIRO
State Bar No. 043693
GERALD F. UELMEN
State Bar No. 39909
SARA L. CAPLAN
State Bar No. 147271
BARRY C. SCHECK, ESQ.
State Bar No. 62646
PETER J. NEUFELD, ESQ.
WILLIAM C. THOMPSON, Ph.D.
State Bar #104967
Law Offices of Robert L. Shapiro
2121 Avenue of the Stars
19th Floor
Los Angeles, CA 90067
310/282-6255; 310/553-3000

Attorneys for Defendant,
ORENTHAL JAMES SIMPSON

SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF LOS ANGELES

THE PEOPLE OF THE STATE OF CALIFORNIA, Plaintiff, v. ORENTHAL JAMES SIMPSON, aka O.J. SIMPSON Defendant.	Case No. BA097211 In Department 103, Los Angeles County Superior Court

MOTION TO EXCLUDE DNA EVIDENCE

ROBERT L. SHAPIRO
State Bar No. 043693
GERALD F. UELMEN
State Bar No. 39909
SARA L. CAPLAN
State Bar No. 147271
BARRY C. SCHECK, ESQ.
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2121 Avenue of the Stars
19th Floor
Los Angeles, CA 90067
310/282-6255; 310/553-3000

Attorneys for Defendant,
ORENTHAL JAMES SIMPSON

SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF LOS ANGELES

THE PEOPLE OF THE STATE OF CALIFORNIA, --against-- ORENTHAL JAMES SIMPSON, aka O.J. SIMPSON Defendant.	Case No. BA097211 MOTION TO EXCLUDE DNA EVIDENCE In Department 103, Los Angeles County Superior Court

TO THE CLERK OF THE ABOVE-ENTITLED COURT AND TO THE DISTRICT ATTORNEY OF THE COUNTY OF LOS ANGELES:

Defendant, ORENTHAL JAMES SIMPSON, by and through counsel, hereby moves this Honorable Court for an order providing that:

I. Pursuant to the rule in People v. Kelly (1976) 17 Cal.3d 24, 130 Cal.Rptr 144. governing the admissibility of scientific evidence, the results of forensic DNA testing the prosecution intends to introduce at trial be excluded on the following grounds:

A. The statistical estimates being offered for Cellmark's RFLP, polymarker, and DQ Alpha tests, DOJ's D1S80 and DQ Alpha tests, and LAPD's DQ Alpha tests should not be admitted because the statistical methods used by the laboratories are not generally accepted as reliable, i.e., there is an ongoing controversy in the relevant scientific communities (statisticians and population geneticists) where experts significant in quality and quantity object to the reliability of the methods. The issues in controversy include:

1. The general acceptance of the methods used to determine the probability of a coincidental match for each test (RFLP, polymarker, D1S80, and DQ Alpha);

2. The general acceptance of the methods used to determine the false positive error rates of the laboratories for each test;

3. The general acceptance of methods used to express the probability of that the defendant is the source of DNA evidence: whether it is appropriate to express the probabilities of a coincidental match and a false positive error as one statistical estimate, two statistical estimates, or in some other fashion;

B. The reliability of the methods used by the LAPD, Cellmark, and DOJ for collecting, handling, processing,

and testing crime scene samples for forensic each PCR based test (DQ Alpha, D1S80, and polymarker testing). The issues in controversy include:

1. The general acceptance of the methods used by crime scene LAPD investigators and laboratory analysts to prevent the contamination of crime scene samples given the uniquely sensitive nature of PCR based DNA testing;

2. The general acceptance of subsequent testing of crime scene samples given the failure of the LAPD laboratory to document and control sources of PCR contamination in its laboratory;

3. The general acceptance of using each of the PCR tests (DQ Alpha, D1S80, and Polymarkers) to analyze forensic crime scene samples;

II. Pursuant to California Evidence Rule Section 352, DNA statistical estimates should not be presented to the jury because, given the present state of the controversy over coincidental match probabilities and false positive error rates, to do so would be unfairly prejudicial, confusing, and misleading. The issues in controversy which would engender unfair prejudice and confusion include:

1. Overstating the value of DNA evidence by

(a) Failing to present one statistical estimate to the jury which combines the probability of a coincidental match and the false positive error

rate of the laboratory; or,

(b) Failing to provide just the comparatively high false positive error rate of a test when the coincidental match probability is much lower;

2. The controversy over the validity of methods for calculating the probability of coincidentally matching DNA profiles;

3. The controversy over the validity of methods to determine the false positive error rate of a laboratory for a particular technique;

III. Pursuant to People v. Griffin (1988) 46 Cal.3d 1011, DNA results from crime scene samples should not be admitted because in the collection, preservation, and processing of crime scene samples LAPD crime scene technicians and laboratory personnel failed to preserve them properly, thereby making subsequent testing by other laboratories unreliable.

IV. That the court take judicial notice of two volumes of exhibits, Volume I, Transcripts and Affidavits of Scientists; and Volume II, Scientific and Legal Articles, upon which the attached memorandum of points and authorities is based. These volumes contain key scientific articles which are cited in the memorandum, although not every article cited in the memorandum is contained in the volume of exhibits.

V. And any other relief this court deems just and proper.

Dated: October 4, 1994

Respectfully submitted,

By: _____
Barry C. Scheck

By: _____
Peter J. Neufeld

ROBERT L. SHAPIRO
State Bar No. 043693
GERALD F. UELMEN
State Bar No. 39909
SARA L. CAPLAN
State Bar No. 147271
BARRY C. SCHECK, ESQ.
State Bar No. 62646
PETER J. NEUFELD, ESQ.
WILLIAM C. THOMPSON, Ph.D.
State Bar #104967
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2121 Avenue of the Stars
19th Floor
Los Angeles, CA 90067
310/282-6255; 310/553-3000

Attorneys for Defendant,
ORENTHAL JAMES SIMPSON

SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF LOS ANGELES

THE PEOPLE OF THE STATE OF CALIFORNIA, Plaintiff, v. ORENTHAL JAMES SIMPSON, aka O.J. SIMPSON Defendant.	Case No. BA097211 In Department 103, Los Angeles County Superior Court

MEMORANDUM OF POINTS AND AUTHORITIES IN SUPPORT OF DEFENDANT'S MOTION TO EXCLUDE DNA EVIDENCE

Table of Contents

ROBERT L. SHAPIRO
State Bar No. 043693
GERALD F. UELMEN
State Bar No. 39909
SARA L. CAPLAN
State Bar No. 147271
BARRY C. SCHECK, ESQ.
State Bar No. 62646
PETER J. NEUFELD, ESQ.
WILLIAM C. THOMPSON, Ph.D.
State Bar #104967
Law Offices of Robert L. Shapiro
2121 Avenue of the Stars
19th Floor
Los Angeles, CA 90067
310/282-6255; 310/553-3000

Attorneys for Defendant,
ORENTHAL JAMES SIMPSON

SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF LOS ANGELES

THE PEOPLE OF THE STATE OF CALIFORNIA, Plaintiff, v. ORENTHAL JAMES SIMPSON, aka O.J. SIMPSON Defendant.	Case No. BA097211 MEMORANDUM OF POINTS AND AUTHORITIES IN SUPPORT OF DEFENDANT'S MOTION TO EXCLUDE DNA EVIDENCE In Department 103, Los Angeles County Superior Court

TO THE CLERK OF THE ABOVE-ENTITLED COURT AND TO THE DISTRICT ATTORNEY OF THE COUNTY OF LOS ANGELES:

I. INTRODUCTION

The prosecution seeks to introduce DNA evidence derived from a variety of testing methods.[1] Many of these methods are novel:

[1] For a comprehensible explanation of how DNA prints are created using the RFLP and PCR methods, see Thompson, Evaluating the Admissibility of New Genetic Identification Tests: Lessons from the 'DNA War,'", 84 J. of Crim.Law & Criminology 22, 22-26

some have never been reviewed for admissibility by an appellate court in California, some have never been reviewed by any appellate court anywhere. Even the best established methods (those based on RFLP analysis) are controversial and have recently been held inadmissible by appellate courts in California. People v. Barney 8 Cal.App.4th 798, 10 Cal.Rptr.2d 731 (1992); People v. Wallace 14 Cal.App.4th 651 (1993).

A. The Admissibility of DNA Evidence Must Be Determined Under the Standard of People v. Kelly.

The admissibility of each item of DNA evidence depends on whether it was derived from a method that is generally accepted to be reliable. To make this determination, the court must apply the standard set forth in People v. Kelly 17 Cal.3d 24, 130 Cal.Rptr 144 (1976).[2] The Kelly standard has three "prongs":

> (1) it must be established, usually by expert testimony, that the scientific methods utilized are generally accepted as reliable by the relevant scientific community,
>
> (2) the witness furnishing such testimony must be properly qualified as an expert to give an opinion on the subject, and

---

(Spring 1993) [contained in Volume II - Scientific and Legal Articles, No. 28 -- of Defendant's Attached Exhibits], and DNA Technology in Forensic Science, Report of the National Research Council of the National Academy of Sciences (National Academy Press, April 1992) at 27-48 [copy of NRC Report is also attached in Volume II of Defendant's Attached Exhibits].

1 In Kelly, the California Supreme Court adopted a test for the admissibility of scientific evidence that was first articulated in Frye v. United States (D.C. Cir. 1923) 293 Fed. 1013. Hence, the test has long been known as the Kelly-Frye rule. Last year, the United States Supreme Court held that Frye had been superseded by the Federal Rules of Evidence, so Frye is no longer the rule in federal courts. Daubert v. Merrill Dow Pharmaceuticals, Inc. 113 S.Ct. 2786 (1993). Nevertheless, Kelly remains the law in California.

(3) the proponent of the evidence must demonstrate that correct scientific procedures were used in the particular case.

Kelly, 17 Cal.3d at p. 30 [emphasis in original].

The goal of the Kelly standard is to shield the jury from the prejudicial effects of hearing evidence derived from scientific methods whose reliability is in serious dispute among scientists. Such evidence is likely to be overvalued by the jury due to the "aura of infallibility" that surrounds scientific technology. In re Amber B. 191 Cal.App.3d 682, 690-91, 236 Cal.Rptr. 623, 629 (1987).[3] There is also concern that efforts to challenge controversial scientific evidence through cross-examination and expert testimony will consume inordinant amounts of time and raise issues "beyond the scope of critical analysis by the average lay person." Id.; Accord People v. McDonald 37 Cal.3d 351, 372 (1984). The greatest danger arises when a technique carrying an "aura of infallibility" is, in fact, quite fallible, and when an analysis of the reliability of the technique involves technical issues that are difficult for lay individuals to

---

[3] Accord, M. Udall & J. Livermore, Law of Evidence, sec. 102 (2nd Ed., 1982):

> If there is a discernible thread distinguishing what is rigorously scrutinized as scientific evidence before admission from what is more generously received as relevant expert opinion, it is that any technique that in its application is likely to have an enormous effect in resolving completely a matter in controversy must be demonstrably reliable.... Because "science" is often accepted in our society as synonymous with truth, there is a substantial risk of overweighting by the jury. The rules concerning scientific evidence are aimed at that risk.

understand.

A major advantage of the "general acceptance" test incorporated in Kelly is that it does not require courts to master arcane scientific subject matter in order to determine the admissibility of scientific techniques. The role of the Court, when applying the general acceptance test, is simply to determine whether or not the scientific community accepts the technique in its forensic application as reliable.

> Kelly/Frye does not demand judicial absorption of all the relevant literature, nor does it require a decision once and for all whether a particular kind of scientific evidence is reliable. The court need only conduct a 'fair overview' of the subject, sufficient to disclose whether 'scientists significant either in number or expertise publicly oppose [a technique] as unreliable. People v. Reilly (1987) Cal.App.3d 1127, 1148, quoting from People v. Brown (1985) 40 Cal.3d 512, 533.

Accord, People v. Shirley, (1982) 31 Ca.3d 18, 55, cert. denied, 459 U.S. 860 ("Our duty is not to decide whether [the new technique] is reliable as a matter of 'scientific fact,' but simply whether it is generally accepted as reliable by the relevant scientific community").[4]

B. Kelly Requires That Each Major Step of a DNA Typing Procedure Be Generally Accepted As Reliable By the Scientific Community.

In reviewing the admissibility of DNA evidence under Kelly, this court does not write on a blank slate. Four California appellate rulings on DNA evidence have helped establish the

---

[4] When evaluating whether a new scientific technique is generally accepted, the Court may take judicial notice of transcripts of scientific testimony in previous hearings. Cal.Evid.Code Section 452(d). The Court may also consider scientific and legal articles and judicial opinions from other jurisdictions. People v. Brown (1985) 40 Cal.3d 512, 530, 230 Cal.Rptr. 834, 726 P.2d 516; People v. Smith (1989) 215 Cal.App.3d 19, 25, 263 Cal.Rptr. 678, 682.

nature and scope of the issues reviewable under Kelly. People v. Axell 235 Cal.App.3d 836, 1 Cal.Rptr.2d 411 (1991); People v. Barney 8 Cal.App.4th 798, 10 Cal.Rptr.2d 731 (1992); People v. Pizarro 10 Cal.App.4th 57, 12 Cal.Rptr.2d 436 (1992); People v. Wallace 14 Cal.App.4th 651 (1993). One key point established by these cases is that forensic DNA testing requires a series of distinct steps, and that the methods employed at each major step are independently reviewable under Kelly; each step must be generally accepted. For example, Axell and Barney identified three major steps in DNA tests that employ RFLP analysis[5] and made it clear that failure to use a generally accepted method for any of these steps would preclude admissibility of the resulting evidence. For newer technologies, this court will need to identify the steps in the testing procedure and ascertain that a generally accepted method is being used at each step, particularly at critical steps (i.e., points where serious errors might occur).[6]

Statistical computation will obviously be a critical step for every DNA testing procedure that purports to find a "match" between samples with respect to their genetic characteristics.

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[5] The steps were: (1) processing of the DNA samples to produce DNA prints, (2) comparison of the prints to determine whether there is a "match", and (3) estimating the statistical significance of the match, i.e., probability of a match would be declared between samples from different people. Barney, 8 Cal.App.4th at 806.

[6] For PCR-based forensic tests, for example, the scientific community considers sample collection and preservation to be a step that is critical to the overall reliability of the test results. See Point III, infra, particularly the comments of Nobel laureates Richard Roberts and Kary Mullis.

People v. Barney, 10 Cal.Rptr.2d 731, 742 ("The statistical calculation step is the pivotal element of DNA analysis, for the evidence means nothing without a determination of the statistical significance of a match of DNA patterns."); People v. Axell 235 Cal.App.3d 836, 866 1 Cal.Rptr.2d 411, 430 (1991) ("We find that...a match between two DNA samples means little without data on probability..."); People v. Wallace 17 Cal.Rptr.2d 721, n. 3 (1993) (without valid statistics DNA evidence is "meaningless"[7]); accord, Commonwealth v. Curnin, 409 Mass. 218, 526 N.E.2d 440 (1991)("It is apparent from the basis on which we decide the DNA testing issue that we would not permit the admission of test results showing a DNA match (a positive result) without telling the jury anything about the likelihood of that match occurring"); Ex Parte Perry, 586 So.2d 242, 254 (Ala. 1991); State v. Cauthron, 846 P.2d 502 (Wash. 1993)("[t]estimony of a match in DNA samples, without the statistical background or probability estimates, is neither based on a generally accepted scientific theory nor helpful to the trier of fact."); Nelson v. State, 628 A.2d 69 76 (Del. 1993)(trial court's exclusion of

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[7] To say that DNA evidence is "meaningless" without statistical data on match probabilities is not the same as saying that such evidence has no probative value. The problem is not that evidence of a match, by itself, is valueless; the problem is that its value is impossible for the trier of fact to assess in a meaningful manner. Thus, in Wallace, the Court of Appeals suggested that it might be more accurate to state that DNA evidence "'is incomplete without an interpretation of its significance.'" 17 Cal.Rptr. at 726 (n. 3)(quoting Barney). Regardless of the semantics, it is clear that without appropriate statistics the trier of fact will find it difficult if not impossible to weigh the DNA evidence.

match frequency "inherently inconsistent" with its admission of testimony of a match, because "without the necessary statistical calculations, the evidence of the match was 'meaningless' to the jury."); State v. Brown, 470 N.W.2d 30 (Iowa 1991)("Without statistical evidence, the ultimate results of DNA testing would become a matter of speculation."); State v. Vandebogart, 616 A.2d 483, 494 (N.H. 1992)("A match is virtually meaningless without a statistical probability expressing the frequency with which a match would occur.").

Recent scientific commentary has clarified the necessary elements of the statistical estimation procedure. In particular, it is now clear that no statistical procedure is acceptable unless it addresses the probability of two events that could cause a "match" to be reported between samples from different people: (1) a coincidental match between different individuals who happen to have the same genetic characteristics, and (2) a false positive (false match) due to laboratory error. The probability of a coincidental match is typically estimated by determining the frequency of matching genetic characteristics (genotypes) in a suitable reference population (or populations). The probability of a false positive is estimated by determining the laboratory's rate of errors in proficiency tests.[8]

C. The Court Must Look Beyond Forensic Science for Evidence of General Acceptance.

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[8] For example, Cellmark Diagnostics estimates its rate of laboratory error to be approximately 1 in 200 based on having made errors while processing samples in proficiency tests. DNA Discovery at 1664.

The general acceptance test of Kelly cannot be met by showing that promoters and practitioners of the method accept it to be reliable. The test is not whether a method is accepted by those who have a personal or professional stake in its acceptance, but rather, whether it is "accepted as reliable by the larger scientific community in which it originated." People v. John W. 185 Cal.App. 3d 801, 805 (1986); People v. Shirley 31 Cal.3d 18, 54 (1982).

Courts have also recognized that promoters and practitioners of a particular method "may be too closely identified with the endorsement of [the technique] to assess fairly and impartially the nature and extent of any opposing scientific views." Kelly, supra, 17 Cal.3d at 38. Thus, when applying the Kelly standard, the court must look to experts who are "'impartial,' that is, not so personally invested in establishing the technique's acceptance that he might not be objective about disagreements within the relevant scientific community." People v. Brown, supra, 40 Cal.3d 512, 530; accord People v. Young, 425 Mich. 470, 483, 391 N.W.2d 2270, 275-76 (reliance on testimony of practitioner/promoter to establish general acceptance of forensic test was error). In this regard, the court should bear in mind that employees of forensic labs "have a clear pecuniary interest in the acceptance of DNA evidence by the courts. The success of their employers and the stability of their own employment depends upon continued use of DNA testing." Dan L. Burk, DNA Identification: Possibilities and

Pitfalls Revisited, 31 Jurimetrics J. 53, 79-80. Obviously, employees of laboratories that hold patent rights to a new forensic technique have a similar pecuniary interest in the acceptance of the technique in court.

The history of litigation on forensic DNA tests shows the wisdom of looking beyond forensic science to the "larger scientific community" to determine what is and is not accepted. When RFLP-based DNA evidence was first introduced in U.S. courts in 1987, it faced almost no opposition. Few scientists, other than those who were employees or consultants of the forensic laboratories, knew the details of forensic testing procedures, and few had occasion to think about the difficulties posed by the transfer of DNA technology to the forensic arena.

> Forensic DNA tests were ... developed by commercial laboratories whose procedures were proprietary, whose work product is generally not available for examination by outsiders (except when used in a court hearing), and whose laboratory protocols were initially available only by court order. The forensic scientists who developed and validated the techniques in both commercial and government laboratories were well aware that they would be called upon to defend the new tests when their admissibility was challenged in litigation, and they had a professional stake in the outcome of that litigation. In that atmosphere, they had little incentive to air and discuss problems, and strong incentive to suppress doubt and uncertainty for fear that candid statements would be used against them in court.

Thompson, Evaluating the Admissibility of New Genetic Identification Tests: Lessons From the 'DNA War', 84 J. of Crim. Law & Criminology 22, at 95.

During the first few years that these tests were used, there was little hint of the "raging controversy" that would later arise, leading to their exclusion in Barney and Wallace. Indeed,

nearly two years passed before the first scholarly critique of forensic DNA test procedures appeared in the scientific literature. Eric Lander, DNA Fingerprinting on Trial, 339 Nature 501 (1989).[9]

The absence of scholarly criticism did not mean that the methods used by forensic DNA laboratories were "generally accepted." Many laboratories were, in fact, using methods that have since been rejected by the scientific community.[10]

> Without the benefit of open scientific scrutiny, some testing laboratories initially used methods (for such fundamental steps as identifying patterns, declaring matches, making comparison with a databank, and correcting for band shifting) that they later agreed were not experimentally supported.

DNA Technology in Forensic Science, Report of the National Research Council of the National Academy of Sciences, National Academy Press (1992), at 56 [hereinafter "NRC Report"].

Before the methods could become controversial, they had to become known and understood. The absence of criticism when the tests were first introduced was not proof that the tests would be generally accepted in the scientific community; silence does not imply assent. Thus, to conclude that a technique is "generally

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[9] The author, Eric Lander, is a distinguished academic scientist who became familiar with forensic DNA testing only after being retained as a consultant by the defendant in a criminal case. Lander offered a number of criticisms of RFLP tests, some of which have led to important changes in forensic procedures.

[10] For example, Lander's critique induced forensic laboratories to adopt quantitative rules for declaring matches (rather than just eyeballing DNA prints). Lander's criticisms also led some laboratories to modify their "binning" procedures in order to avoid underestimating allele frequencies. For more detailed explanations of these issues, see Thompson, "Lessons", supra, at p. 52-56; 65-68.

accepted" when only a few scientists (other than its promoters) have evaluated it, is perilous indeed.

Should the court embark upon such a perilous cause, there are nevertheless excellent guideposts to be found in the NRC Report.[11] The NRC Report takes no position on the validity or

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[11] The National Academy of Sciences was established by President Lincoln as a body that would assist the government in undertaking research on important and controversial scientific issues. The National Research Council is the Research arm of the Academy and commissions in-depth studies on scientific issues of national importance. The NRC Report, DNA Technology in Forensic Science was commissioned in response to a "crescendo of questions concerning DNA typing [that] had been raised in connection with some well-publicized criminal cases," and "calls for an examination of the issues" from the "scientific and legal communities. NRC Report, at ix.

The Committee that authored the Report consisted of pre-eminent scientists in the fields of population and molecular genetics, forensic science, legal academics, ethicists, and a federal judge (Hon. Jack B. Weinstein). The NRC Report was peer reviewed by a group other than the authors on a confidential basis and the final report was written and approved by the Committee members themselves.

One cannot predict with safety how the NRC, which speaks authoritatively as the voice of the scientific community, will come out. Six of the scientists had previously testified for prosecutors in favor of the admission of DNA evidence and only one had testified for the defense against the admission of the evidence. Yet the Report gave great support to the views of critics of the forensic laboratories.

As will be mentioned many times during the course of this brief and the Kelly hearing, the NRC, in an unusual step, has formed a new committee that is meeting this fall to take up once again the controversy over DNA statistical issues -- both the continuing controversy over the probability of a coincidental match and the issue of laboratory error rates. See, NAS Takes Fresh Look at DNA Fingerprinting," Science, Vol. 265, August 26, 1994, at 1163. Certainly, for purposes of a Kelly analysis, it would make little sense to admit DNA statistical estimates before the new Committee has issued its report, which is expected by the summer.

scientific acceptability of any particular forensic DNA test,[12] but sets forth a set of requirements that it regards as "essential" for assuring the reliability of any forensic DNA test. Hence, one way to judge whether or not a new technique would be generally accepted in the scientific community (if better known) is to determine whether it meets the NRC's "essential" requirements.[13]

One requirement is that forensic DNA tests be validated through empirical studies. Research is necessary to establish the reliability and appropriateness of standards for declaring a match, to identify possible artifacts that could interfere with interpretation of the test results,[14] to establish the statistical frequency of the genetic markers and the error rate

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[12] "[T]oo many methods exist or are planned, and too many issues must be addressed in detail for each method. Instead, our main goal is to provide a general framework for the evaluation of any DNA typing method." NRC Report, at 52.

[13] Cf. Thompson, "Lessons," supra, at 94:

> The NRC's validation standards take into account not only the range of problems that have arisen in connection with DNA profiling, but also issues likely to arise in connection with newer technology. When evaluating the admissibility of current and future DNA technology, courts should be very attentive to whether the validation research recommended by the NRC Report has been done. If it has not, then a strong case can be made for excluding the laboratory's results either on grounds that they fail to meet the general acceptance standard of Frye or that they are insufficiently validated to constitute "scientific knowledge" under Daubert.

[14] "Each DNA typing method must be rigorously characterized with respect to the type of possible artifacts, the conditions under which they are likely to occur, the scientific controls for detecting their occurrence, and the steps to be taken when they occur..." NRC Report, at 54.

of the procedure. The NRC Report emphasizes that the key validating studies must not only be done but published before a laboratory can claim that its methods are generally accepted.

> If a new DNA typing method (or a substantial variation on an existing one) is to be used in court, publication and scientific scrutiny are very important. Extensive empirical characterization must be undertaken. Results must be published in appropriate scientific journals. Publication is the mechanism that initiates the process of scientific confirmation and eventual acceptance or rejection of a method.

NRC Report, p. 56 [emphasis added]

A second requirement is that the laboratory gain "a solid base of experience in forensic application" before it uses a new DNA typing method. Although the NRC Report lists a series of steps a laboratory should take before using a new forensic DNA test, one requirement is emphasized above all others:

> Most important, there is no substitute for rigorous proficiency testing via blind trials. Such proficiency testing constitutes scientific confirmation that a laboratory's implementation of a method is valid not only in theory, but also in practice. No laboratory should let its results with a new DNA typing method be used in court, unless it has undergone such proficiency testing via blind trials.

NRC Report, at 55.

These emphatic pronouncements, from a distinguished scientific panel, following a two year study of the issue, hold an important lesson. The court should not take seriously the claim that a new DNA typing method is "generally accepted" within the meaning of Kelly if the method has not been validated by published research and "rigorous" blind proficiency testing.

D. Acceptance of RFLP Analysis and PCR for Other Scientific Purposes Does Not Imply That Forensic Tests Employing RFLP

Analysis or PCR Are Reliable or Generally Accepted for Forensic Identification.

Prosecutors sometimes make the misleading argument that forensic DNA tests must necessarily be accepted in the scientific community because they employ procedures (e.g., RFLP analysis, PCR) that are used and accepted elsewhere in science for other purposes. Their argument is syllogistic, viz.: RFLP analysis is accepted; Cellmark's DNA test uses RFLP analysis; therefore Cellmark's test is accepted (alternatively: PCR is accepted; the DOJ's DNA tests use PCR; therefore the DOJ's tests are accepted).

The problem with this argument is that it fails to recognize the difficulties that may arise from the transfer of technology from one application to another.[15] It is widely recognized that forensic DNA testing is more technically demanding than other applications of RFLP and PCR technology,[16] and that it

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[15] A scientific technique may be reliable for some purposes and not for others. Indeed, many techniques that have proven reliable for certain purposes in non-forensic settings have been found unacceptable when used for forensic purposes. Polygraphs are one example. The techniques used in polygraphs (monitoring heart rate, blood pressure, galvanic skin response) have a number of accepted applications in physiological research and medicine. It does not follow, however, that lie detection procedures which use these "accepted" procedures are necessarily reliable. See Neufeld and Coleman, When Science Takes the Witness Stand, 262 Scientific American 46, 49 (1990). Hypnosis is another example. The use of hypnosis is well accepted for a number of purposes in psychological research and in psychotherapy. But the California Supreme Court held in People v. Shirley, supra, 31 Cal.3d 18 that the use of hypnosis for refreshing witnesses' memories is not generally accepted.

[16] According to a report by the U.S. Congress' Office of Technology Assessment:

> [i]t is generally agreed that applying DNA tests to forensic samples, especially criminal evidence, potentially presents more difficulties than analyzing

involves additional critical steps that do not arise in other applications (such as the matching and statistical estimation steps[17]). What must be considered under Kelly is whether the method that produced the incriminating evidence is accepted to be reliable as it was applied, not whether a similar method is accepted for another purpose.

The simpleminded notion that any forensic DNA test employing RFLP or PCR is, of necessity, reliable and accepted was flatly rejected by the National Research Council:

> Before a method can be accepted as valid for forensic use, it must be rigorously characterized in both research and forensic settings to determine the circumstances under which it will and will not yield reliable results. It is meaningless to speak of the reliability of DNA typing in general--i.e., without specifying a particular method.

National Research Council, DNA Technology in Forensic Science, 1992, at 51-52.

> samples in basic research or clinical diagnosis. Samples from crime scenes are frequently small and might be of poor quality because of exposure to a spectrum of environmental onslaughts. And unlike paternity samples, where each sample is from an identified source, the contributor to evidence from a crime scene is often unknown.

OTA report, p. 59; see also Lander, DNA Fingerprinting on Trial, supra at 501 (use of RFLP analysis for medical diagnosis does not mean the technique is reliable for forensic identification); NRC Report, p. 51-53 (discussing differences between forensic and diagnostic applications of DNA technology).

[17] "Unlike many of the technical aspects of DNA typing that are validated by daily use in hundreds of laboratories, the extraordinary population-frequency estimates sometimes reported for DNA typing do not arise in research or medical applications that would provide useful validation of the frequency of any particular person's DNA profile." NRC Report, p. 77.

POINT II

LACK OF A GENERALLY ACCEPTED METHOD FOR STATISTICAL COMPUTATION PRECLUDES THE ADMISSIBILITY OF THE PROSECUTION'S DNA EVIDENCE.

A. DNA Evidence is Inadmissible Because There Are No Generally Accepted Statistical Methods That Address Both the Probability of a Coincidental Match Between Two People Who Share Common Genetic Characteristics and the Probability that A Match Would Mistakenly Be Reported Due to Laboratory Error.

Evidence of a DNA "match" between two samples is impossible to evaluate without reliable information on the likelihood that a match would be declared if the samples are from different individuals. Most commentators consider the ability to express this probability to be crucial to the admissibility of DNA-derived evidence: "without being informed of such background statistics, the jury is left to its own speculations." McCormick, Evidence, 655 (Cleary, Ed.).

The need for background statistics to show the meaning of a DNA match is firmly established in California law. People v. Barney, 10 Cal.Rptr.2d 731, 742 ("The statistical calculation step is the pivotal element of DNA analysis, for the evidence means nothing without a determination of the statistical significance of a match of DNA patterns."); People v. Axell (1991) 235 Cal.App.3d 836, 866 1 Cal.Rptr.2d 411, 430 ("We find that...a match between two DNA samples means little without data on probability..."); People v. Wallace (1993) 17 Cal.Rptr.2d 721, n. 3 (quoting conclusion of NRC Report that without valid statistics DNA evidence is "meaningless").

It is now broadly recognized that a false "match" between

samples can occur in two ways.

> Interpretation of DNA typing results depends not only on population genetics, but also on laboratory error. Two samples might show the same DNA pattern for two reasons: two persons have the same genotype at the loci studied, or the laboratory has made an error in sample handling, procedure, or interpretation.

NRC Report, at 88.

Thus, to evaluate DNA evidence, the jury needs statistics that address the probability of both events that could cause a false match. To provide statistics that reflect the probability of one event that could cause an innocent person to match, and not the other, would leave the jury to speculate about the meaning of DNA evidence.

> Especially for a technology with high discriminatory power, such as DNA typing, laboratory error rates must be continually estimated in blind proficiency testing and must be disclosed to juries. For example, suppose the chance of a match due to two persons' having the same pattern were 1 in 1,000,000, but the laboratory had made one error in 500 tests. The jury should be told both results; both facts are relevant to a jury's determination.

NRC Report, at 89.

The same point was made by Professor Daniel Hartl in an expert's report filed in U.S. v. Yee. Although his criticism was directed specifically at the FBI's DNA test, his point applies to any RFLP-based DNA test:

> Once the FBI has declared a match, they treat this declaration as if there were no operator error and no measurement error. The technology simply is not up to this standard....In my judgment, experimental error will turn out to be a very significant term, and perhaps the dominant term, in any valid estimation of the true probability of a match, and any statistical calculation that fails to take this into account is simply meaningless.

Daniel L. Hartl, Expert's Report in the Case of United States v. Yee, at 4, U.S. v. Bonds, 12 F.3d 540 (6th Cir. 1993), aff'g U.S. v. Yee, 134 F.R.D. 161 (N.D. Ohio 1991) [emphasis added].

Other experts have recently echoed this conclusion:

> Statisticians and geneticists involved in the controversy over DNA testing have understandably been fascinated by and mostly written on disputes regarding the statistical and genetic issues that DNA identification raise, but laboratory error places the most serious limits on the evidentiary import of reported DNA matches. If justice is the mutual goal of those involved in the debates over DNA identifications--and I believe it is everyone's concern--the possibility of error must be honestly faced, and it must be incorporated into estimates of the incriminatory power of DNA matches.

Richard Lempert, Comment: Theory and Practice in DNA Fingerprinting, 9 Statistical Science 255, 257 (1994).

When DNA evidence was first introduced in the courtroom, the primary concern was the likelihood of a coincidental match. Little attention was devoted to the likelihood of false positives, perhaps because there was a widespread misperception that false positives are impossible in RFLP-based DNA tests.[18] This misperception was generated and sustained by self-serving claims of DNA test promoters that DNA tests are infallible, fail-

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[18] The courts that decided Axell, Barney, and Wallace appear to have been unaware of the growing belief among scientists that laboratory error rates are crucial to the evaluation of DNA evidence. Consider, for example, the following statement from Barney:

> To say that the frequency of Howard's DNA pattern is 1 in 200 million...is tantamount to saying his pattern is totally unique, and thus only he could have been the source of the crime scene blood stains. 8 Cal.App. at 817 [emphasis added]

This statement is coherent only if one assumes, as the court undoubtedly did, that laboratory error is not a factor in determining whether Howard was the source of the blood stains.

safe, and error-free.[19] Professor Jonathan Koehler has suggested that DNA test promoters "engaged in a sinister semantic game" in which they were able to issue misleading denials of the possibility that a DNA test could make an "error" by excluding consideration of human error in administering or interpreting the test. Koehler, Error and Exaggeration, supra, at 24. Needless to say, the effort to distinguish "human error" from "test error" is pointless and misleading when humans are necessarily involved in administration and interpretation of the test, when occasional human errors are inevitable, and when it is necessary to know the overall rate of error (from whatever cause) to evaluate the test results. "For juries it is of little significance what causes an innocent person to match, what matters is how often such matches might be expected." Laurence Mueller, The Use of DNA Typing in Forensic Science, 3 Accountability in Research 55, 56 (1993); see also Thompson, Lessons, supra, at 92.

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[19] See, People v. Shi Fu Huang, 546 N.Y.S.2d 920 (Co.Ct. 1989)("Dr. Baird testified that it is impossible to get a false positive"); People v. Wesley, 533 N.Y.S.2d 643 (Co.Ct. 1988)("it is impossible under the scientific principles, technology and procedures of DNA Fingerprinting (outside of an identical twin), to get a "false positive" -- i.e., to identify the wrong individual as the contributor of the DNA being tested...Under the undisputed testimony received at the hearing, no "wrong" person, within the established powers of identity for the test, can be identified."); Hicks v. State, 860 S.W.2d 419, Tex.Crim. App. 1993)("According to Caskey, a false positive finding was impossible..."); State v. Cobey, 559 A.2d 391, 392 (Md.App. 1989)("An Incorrect match is an impossible result"); see also Jonathan J. Koehler, DNA Matches and Statistics: Important Questions, Surprising Answers, 76 Judicature 222 (1993); Koehler, Error and Exaggeration in the Presentation of DNA Evidence at Trial, 34 Jurimetics 21 (1993)(quoting a number of similar statements from transcripts of expert testimony).

In any case, the potential for false positives due to laboratory error in DNA testing is now beyond dispute. "Laboratory errors happen, even in the best laboratories and even when the analyst is certain that every precaution against error was taken." NRC Report, at 88-89. See also Koehler, DNA Matches and Statistics, 76 Judicature 222, 229 ("[B]ased on the little evidence available to date, a reasonable estimate of the false positive error rate is 1-4 percent."); Koehler, "Error and Exaggeration," supra, p. 26 (proficiency testing shows error rate of 1-4%); Donald Berry, Comment, 9 Stat. Sci. 252, 253 (1994)("Only the frequency and type of errors are at issue."); R.C. Lewontin, Comment: The Use of DNA Profiles in Forensic Contexts, 9 Stat. Sci. 259 (1994)(discussing sources of error); William C. Thompson, Comment, 9 Stat. Sci. 263, 265 (1994)(discussing data on laboratory error); Cf. Dan L. Burk, DNA Identification: Possibilities and Pitfalls Revisited, 31 Jurimetics 53, 80 ("Bald statements or broad hints that DNA testing is infallible...are not only irresponsible, they border on scientific fraud").

Even experts who support current forensic methods for computing the frequency of matching DNA profiles acknowledge that the rate of false positive errors must also be considered when evaluating DNA evidence. For example, Professor Bruce Weir, a statistician at North Carolina State University, who has been a prominent prosecution witness, has noted the need to take into account laboratory error rates when evaluating DNA evidence.

Bruce Weir, Population Genetics in the Forensic DNA Debate, 89 Proc. Natl. Acad. Sci. 11654, 11658 (1993).

Indeed, most experts now believe that having an accurate estimate of the false positive rate is more important than having an accurate estimate of the probability of a coincidental match because the rate of false positives is likely to be much greater than the rate of coincidental matches, at least for RFLP-based tests.[20] Paul J. Hagerman, DNA Typing in the Forensic Arena, 47 Am.J.Hum.Genet. 876 (high false positive rate makes probability of coincidental match irrelevant); Richard Lempert, Some Caveats Concerning DNA As Criminal Identification Evidence: With Thanks to the Reverend Bayes, 13 Cardozo L.Rev 303, 325 (the probability of a coincidental match between people who have the same DNA profile "is usually dwarfed by the probability of a false positive error"); Mueller, The Use of DNA Typing in Forensic Science, supra, at 58 (exact probability of a coincidental match "should hardly matter" to jury given much greater likelihood of false positive); Richard Ostrowski & Daniel Krane, Unresolved Issues in Forensic Use of DNA Profiling, 3 Accountability in Research 47 (1993).

A central premise of California appellate cases is that evidence of a DNA match is inadmissible unless accompanied by

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[20] By analogy, if one needed to estimate the amount of money a man was carrying, it would typically be more important to have accurate information on the number and denomination of bills in his wallet than on the number and denomination of coins in his pocket because the coins would represent only a small portion of his total money.

statistics that can tell the trier of fact what the match means. Axell, Barney, Pizarro and Wallace all recognize this principle. Now that the scientific community has recognized that error rates must be taken into account in order to make a meaningful evaluation of DNA evidence, the logic of those cases requires that juries be given statistics on the probability of laboratory error; without such statistics, evidence of a DNA match is inadmissible because it is impossible to evaluate.

It would be absurd for courts to insist on valid quantitative estimates of the probability of a coincidental match, without also requiring valid estimates of the rate of false positives due to laboratory error, when the scientific community has determined that the latter is more important than the former to a rational evaluation of DNA evidence. If DNA evidence is "meaningless" without statistical estimates of the probability of a coincidental match, it is also "meaningless" without statistical estimates of the probability of a false positive.[21]

Professor Eric Lander, one of the earliest and most influential scientific commentators on DNA evidence, and a member of the NRC panel, explained the matter succinctly:

> ...it is simply crazy and scientifically unacceptable to agonize over the exact population frequencies, which might be one in a million, or one in a hundred thousand, or one in ten thousand for the frequency of a

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[21] When DNA evidence is analyzed under Daubert, there is little question that valid estimates of positive error rates would be a precondition to admissibility. See, Scheck, DNA and Daubert, 15 Cardozo L.Rev. 1959 (1994).

> genotype in a population, and yet not have actual data for the accuracy, the proficiency of a laboratory's handling of samples...[T]he scientific acceptability of DNA evidence depends on the proficiency of a laboratory being tested such that one can know what the error rate is likely to be, or at least have an upper bound on that error rate.

Prof. Eric Lander, Testimony as a Court's Witness in U.S. v. Porter, District of Columbia Crim. Docket 3F-6277-89, p. 46, July 28, 1994.

At this point, there is broad agreement among scientists with the NRC's position on error rates: DNA evidence cannot be evaluated without knowing the rate of false positives due to laboratory error, error rates must therefore be estimated and these estimates must be disclosed to juries. There is some disagreement, however, about the best way to present error rate statistics.

The NRC Report recommends that jurors be given two numbers, one indicating the frequency of matching genotypes and the other indicating the rate of laboratory error. "The jury should be told both results; both facts are relevant to a jury's determination." NRC Report, at 89.

Other scientists believe that the error rate and frequency statistics should be combined into a single number that reflects the overall likelihood that the laboratory would declare a match between samples from different people. For example, Professor Hagerman suggested that "[r]esults of DNA typing should always be reported as the sum of the laboratory error rate and the estimated frequency of recurrent band patterns in the relevant population." Hagerman, DNA Typing in the Forensic Arena, 47 Am.

J. Hum. Genet. 876 (1990). Another proponent of this approach is Professor Bruce Weir, who has suggested that data on the probability of a coincidental match and the error rate be combined into a single statistic called a likelihood ratio.[22]

Some experts have gone so far as to suggest that jurors be told only the false positive rate; they reason that the probability of a false positive is so much greater than the probability of a coincidental match (at least for multi-locus RFLP matches) that the latter probability has little bearing on the value of the evidence. For example, if the probability of a coincidental match were .000001 (one chance in one million), and the probability of a false positive were .01 (one chance in one hundred), then the overall probability of a match between samples from different people would be approximately .010001, a number

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[22] A likelihood ratio is a statistic that uses a ratio of conditional probabilities to describe the strength or probative value of evidence. See, Richard Lempert, Modeling Relevance, 755 Mich.L.Rev. 1021 (1977); Thompson, Evaluating the Admissibility of New Genetic Identification Tests: Lessons from the 'DNA War', 84 J.Crim.L.& Criminology 22, n.163 (1993).

For a hypothetical case in which the frequency of the matching DSA profiles is 1 in 1,000,000 and the laboratory false positive error rate is 1 in 1000, Weir used a formula that concluded that the possibility of a false positive error diminishes the value of the DNA evidence by a factor of 1000--in other words, the chances of a false match being reported are 1000 times higher if one takes into account the error rate than if one does not.

Weir, Population Genetics in the Forensic DNA Debate, 89 Proc. Natl. Acad. Sci. 11654, 11658 (1993).

Interestingly, the results of Weir's formula can be closely approximated by simply adding together the probability of a coincidental match and the probability of a false positive. That is, of course, exactly what Hagerman proposed.

that conveniently rounds off to .01 (one in 100). So why not just tell jurors the false positive rate and avoid the risk that they will be confused or unduly swayed by an impressive number (one in one million) that has little meaning or value relative to the false positive rate?

> The rate of false positives defines a practical lower bound on the probability of a match, and probability estimates based on population data that are smaller than the false-positive rate should be disregarded."

R.C. Lewontin & Daniel Hartl, Population Genetics in Forensic DNA Typing, 254 Science 1745, 1749 (1991).

Professor Richard Lempert specifically cites the danger of confusion and prejudice as a reason for presenting only the error rate statistic in cases where the probability of a false positive greatly exceeds the probability of a coincidental match.

> ...jurors provided with a laboratory's false positive rate and with information about the likelihood, assuming no testing error, of a match if the DNA evidence was not the defendant's, are likely to be hopelessly confused about the weight to accord the testimony because ordinary people are not very good at working with conditional probabilities. Thus, jurors ordinarily should receive only the laboratory's false positive rate as an estimate of the likelihood that the evidence DNA did not come from the defendant.

Lempert, Caveats, supra, at 325. [23]

Another issue that is being debated is what to tell jurors about the error rate of a laboratory that has performed

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[23] To support his conclusion that the multiple number approach will leave jurors "hopelessly confused," Lempert cites social science research regarding the ability of lay individuals to draw appropriate conclusions from statistical data. Research of this type is highly relevant to the important issue of when and whether DNA statistics are likely to prove misleading and prejudicial to a lay jury.

relatively few blind proficiency tests and therefore has limited data on which to base an error rate estimate. Suppose a laboratory had made no false positive errors, but had participated in only ten proficiency tests in which a false positive might have occurred. It would obviously be quite misleading to tell the jury that the laboratory's error rate is zero. If the true false positive rate were one in 100, or one in 50, or even one in 10, there is a very good chance an error would fail to occur in the first ten trials.

The best solution to this problem is to use a statistical device known as a confidence interval: the number presented to the jury is not the actual number of errors, but a number that can be said with a given degree of confidence (by convention 95% or 99%) to be less than or equal to the true rate of error. For example, if a laboratory had completed 1000 tests without error, one could say, with 95% confidence, that the laboratory's true rate of error is less than or equal to .003 (three in 1000), because there is a 95% chance that at least one error would have been made in 1000 trials if the error rate exceeded .003. Mueller, The Use of DNA Typing in Forensic science, 3 Accountability in Research 55 (1993);[24] Saks and Koehler, What DNA 'Fingerprinting' Can Teach the Law About the Rest of Forensic

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[24] Mueller concludes that, based on data from July 1991 showing the FBI had completed 417 internal proficiency tests, and assuming that all these tests could have produced false positives but did not, "the best we can say is that with 95% confidence the FBI rate of false positives is less than or equal to 1 in 140." Id. Mueller provides a simple formula for computing the confidence interval.

Science, 13 Cardozo L. Rev. 361-372, 369-70; Koehler, DNA Matches and Statistics: Important Questions, Surprising Answers, 76 Judicature 222, 228 (1993).

The advantage of the confidence interval approach is that it is conservative. It minimizes the risk that the number reported to the jury will understate the true error rate and thereby be detrimental to the interests of the defendant. There is only a five percent chance, for example, that a number reported with 95% confidence would understate the true error rate. By contrast, there is a very good chance that the actual frequency of errors in a limited number of tests will understate the true error rate, to the detriment of the defendant. Basic principles of fairness and due process therefore require the use of the confidence interval approach.

Continuing debate is to be expected over how best to determine the rate of laboratory error and how best to present error rate data to the jury. Indeed, the issue of error rates is slated to be examined by a new committee that was recently appointed by the National Academy of Sciences to examine and report on the continuing scientific controversy over the use of statistics in connection with forensic DNA tests. NAS Takes A Fresh Look at DNA Fingerprinting, 265 Science 1163 (August 1994). The appointment of this new committee is an acknowledgement, by the National Academy, that the scientific controversy over DNA statistics was not resolved by the 1992 NRC Report. Part of the continuing controversy concerns error rates. According to

population geneticist James Crow, the chair of the new committee, the "main emphasis will be statistical analysis...and certainly we have to get into the question of error rates [in forensic laboratories]." Id.

The continuing scientific debate about how to determine and express the error rate for forensic DNA laboratories reflects a broad consensus that laboratory error rates are a crucial factor affecting the value of DNA evidence. The fundamental point recognized by the first NRC Report -- that the error rate must be known in order to evaluate DNA evidence -- is not in dispute. The new NAS committee recognizes that to determine the statistical meaning and value of DNA evidence, one must "get into error rates." So must this court.

B. Failure of the Testing Laboratories to Use a Generally Accepted Method for Determining the Probability of a Coincidental Match Renders the Prosecution's DNA Evidence Inadmissible.

1. There Currently Is No Generally Accepted Method for Determining the Frequency of Multi-locus RFLP-based DNA Profiles.

After determining that two DNA samples match, forensic analysts estimate the statistical frequency of such matches in a reference population. The purpose of the statistical estimates is to provide meaning to the match by showing the likelihood that an unrelated person in the reference population would match by chance.

Frequency estimation has been the most controversial aspect of DNA testing. The great majority of courts that have held DNA evidence inadmissible have done so based on the existence of a

scientific dispute over the validity of the forensic laboratories' frequency estimation methods.

To estimate the frequency of a DNA profile in a reference population, forensic analysts first estimate the frequency of each allele (band) in the DNA profile by determining its frequency in a data base containing DNA profiles of a number of individuals.[25] These data bases consist of convenience samples drawn primarily from blood banks, with separate data bases for major racial and ethnic groups (Hispanics, non-Hispanic Caucasians, African-Americans, Asians). Then analysts combine the estimated frequencies of the individual alleles to determine the overall frequency of the DNA profile, using the product rule which works only if the alleles are statistically independent.[26]

These procedures have been challenged on several grounds. One problem is the contention that forensic laboratories tend to underestimate the frequency of matching alleles in their databases, and thereby greatly underestimate the overall

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[25] See generally, NRC Report, at Chapt. 3; Thompson, Lessons, supra, at p. 61-89.

[26] Statistical independence means that the likelihood of a person having a particular allele is not affected by what other alleles the person has. The probability of a series of independent events is the product of their frequencies, and hence will be quite low when all the frequencies are low. For example, the probability of rolling "one" eight times in a row with a fair die is (1/6)8 = .000000595, or approximately one in 1.6 million. The probability might be considerably higher if the probability of rolling "one" on each throw is not independent of the other throws, as would be the case, for example, it were not a fair die. Whether the alleles in DNA profiles are in fact statistically independent is a central issue.

frequency of DNA profiles. See, Thompson, Lessons, supra, at 65-68 (reviewing scientific literature and relevant court opinions).

A more fundamental concern is that the procedure fails to take into account the possibility that there is significant variability among population subgroups in the frequency of alleles. Critics suggest that within major groups, such as Caucasians, Hispanics, Blacks, and Asians, the frequency of alleles may differ among various ethnic, religious or geographic subgroups, a phenomenon known as population substructure. If such variability exists, there are two important implications. See generally, NRC Report, at Chapt. 3. First, the convenience samples used by the forensic laboratories may be unrepresentative of the population in particular locales. Second, the assumption that the frequency of alleles is statistically independent would be invalid.

a. History of Litigation

Concerns about the accuracy of statistical estimates were raised early in litigation on the admissibility of forensic DNA evidence,[27] but at first were voiced by only a few experts in a handful of cases, and had little impact. Before 1991, statistical estimates of forensic laboratories were routinely ruled admissible in most cases; typically the defense failed to

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[27] See People v. Wesley, 140 Misc.2d 306, 533 N.Y.S.2d 643 (1988), aff'd 589 N.Y.S.2d 197 (1992)(Lifecodes test); State v. Schwartz, 447 N.W.2d 422 (1989)(Cellmark's test); also Christopher Joyce, High Profile: DNA in Court Again, New Scientist, July 21, 1990, at 24 (describing the population genetics issues raised in early 1990 in State v. Anderson regarding the FBI's test).

present a single expert to challenge them. In cases where the defense did muster experts, courts often found them less persuasive than the supporting experts presented by the prosecution, and concluded that the critics represented the viewpoint of only a small minority.

In People v. Axell, 235 Cal.App.3d 836, 1 Cal.Rptr.2d 411 (1991) for example, the court chose to credit three experts who testified that Cellmark's statistical procedures are generally accepted over three experts who testified that they are not, suggesting that the prosecution experts had convincingly responded to the defense experts concerns.

It is ironic that the court, in reaching this conclusion, cited Dr. Kenneth Kidd's unpublished (and at that time unavailable) data on the "very small differences" in allele frequencies among various subgroups--the very data that, when later reanalyzed by Dr. Mueller, showed rather large differences among American Indian groups [discussed further below]. Defendant Axell was partly American Indian. The court also relied on testimony by Prof. Conneally who "opined that the probes used by Cellmark are in linkage equilibrium because they are on different chromosomes ... " (235 Cal.App.3d at 852) -- a position that is no longer widely accepted. See NRC Report, at 79-80.

In United States v. Yee, a federal magistrate took a similar tact:

> ... despite the prestige, standing, and expertise of the witnesses who share the view that the scientific

> community could not and would not find the FBI's database and resulting probability estimates acceptable, the view of the government's witnesses about the level of acceptance, when all factors are taken into account, is more likely to be the accurate view.

U.S. v. Yee, 134 F.R.D. at 206

Over time, however, the ranks of the scientific critics grew[28] and their concerns began to be taken more seriously by courts. In 1991 a number of trial courts,[29] and one state supreme court,[30] ruled DNA evidence inadmissible based on concerns about the statistical procedures.

The critics gained momentum when the world's leading population geneticist, Harvard professor Richard Lewontin, and his colleague, Daniel Hartl, published an article in Science, in

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[28] In July 1991, Professor Charles Taylor, a population geneticist at UCLA, conducted a survey of others in his field to determine their positions on the acceptability of the statistical estimation methods used by forensic laboratories. Taylor identified 30 academic scientists with expertise in population genetics who had taken a position on the issue. By his count, 11 supported the forensic labs and 19 did not. Moreover, the ratio of critics to supporters was higher among those whom Taylor rated as better known in the field (based on their work having been cited in major textbooks). The results of the survey were introduced in evidence in People v. Halik, No. VA 00843 (Los Angeles Co. Superior Court, Sept. 26, 1991)(FBI's RFLP test inadmissible under Kelly) and later were made part of the record before the California Court of Appeal in People v. Barney, 10 Cal.Rptr.2d 731 (1992).

[29] State of Arizona v. Despain (Yuma County Superior Court No.15589, February 12, 1991); State of Illinois v. Michael Fleming and Vernon Watson (Circuit Court of Cook County, Nos. 90-CR-2716 and 90-CR-5546, March 12, 1991); State of Arizona v. Hummert & Hale (Superior Court of Maricopa County, Nos. CR 90-05559 and 90-03684, April 16, 1991; State of Vermont v. Arthur Passino (District Court of Vermont Unit No. 2, Franklin Circuit, Docket No. 185-1-90, May 13, 1991); U.S. v. Porter, et al. (Superior Court of District Columbia, September 20, 1991).

[30] Commonwealth v. Curnin, 409 Mass. 218, 565 N.E.2d 440 (1991).

December 1991. This article raised concerns about population structure and concluded that the statistical estimation methods used by forensic laboratories are "unjustified and generally unreliable."[31] The article ignited a furious debate over how much population structure exists and the extent to which population structure undermines the validity of the statistical estimation methods used by forensic laboratories.[32]

The debate came to a head with the publication of the NRC Report in April 1992. The NRC panel found existing empirical data insufficient to resolve the substructure question. The Report further concluded that the concerns raised by Lewontin, Hartl and others were sufficiently serious that the statistical estimation methods developed by the forensic laboratories should not continue to be used. These methods, the NRC felt, might greatly underestimate the frequency of DNA profiles. Instead, the NRC proposed an alternative method that it dubbed "the ceiling principle."[33]

Since the publication of the NRC Report, appellate courts in six states, the District of Columbia, and Guam have held DNA evidence inadmissible under the Frye standard.[34] Indeed, the

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[31] Richard Lewontin & Daniel Hartl, Population Genetics in Forensic DNA Typing, 245 Science 1745 (1991).

[32] See Roberts, Fight Erupts Over DNA Fingerprinting: A Bitter Debate is Raging Over How the Results of This New Forensic Technique Are Interpreted In Court, 245 Science 1721 (1991).

[33] NRC Report, supra note 12, at 82-85.

[34] Commonwealth v. Lanigan (1992) 413 Mass. 154, 596 N.E.2d 311; People v. Barney, 8 Cal.App.4th 798, 10 Cal.Rptr 731 (1992); State v. Vandebogart, 136 N.H. 365, 616 A.2d 843 (1992); State v. Anderson, 853 P.2d 135 (N.M. Ct.App. 1993), rev'd under a different standard (Daubert), N.M. Sup.Ct. No. 21,069, Aug. 25,

only appellate courts that have affirmed its admissibility under Frye "either failed or deliberately refused to consider the NRC Report before rendering a decision." Scheck, DNA and Daubert, 15 Cardozo L. Rev. 1959 (1994). Some of these courts expressed hope that a scientific consensus would soon emerge in favor of methods based on the NRC's ceiling principle.[35] But those hopes now seem to be fading as it "appears that the level of debate has only increased as a result of [the NRC] report."[36]

It is clear that the judgment of the court in Axell and the magistrate in Yee were premature.[37] As increasing numbers of critics emerged, and as their views gave rise to serious debate in the academic community, the conclusion that the prosecution experts speak for the scientific community, and that the defense experts do not, has become impossible to maintain.[38] Courts in

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1994; U.S. v. Porter, 618 A.2d 629 (D.C. App. 1992); People v. Atoigue, DCA No. CR 91-95A (Guam Dist. Ct. App. Div. 1992); People v. Wallace, 17 Cal.Rptr. 2d 721 (Cal.App. 1 Dist. 1993); State v. Bible, 858 P.2d 1152 (Ariz. 1993 (en banc); People v. Pizarro, 12 Cal.Rptr.2d 436 (Ct.App.1992); Vargas v. State (Fla.Ct.App. June 1, 1994).

[35] See Barney, 10 Cal.Rptr.2d 731, 745 ("The NRC report on DNA analysis appears to point the way to ...common ground").

[36] Mueller, supra, p. 2; see also, People v. Wallace, 17 Cal.Rptr.2d 721, 725 ("recent developments have shown that general acceptance may not be easily achieved").

[37] These opinions are good examples of the perils, discussed earlier, of assuming a forensic technique is generally accepted at an early stage in its development when only a few scientists, other than its promoters, have had the opportunity to evaluate it.

[38] The issues raised by the defense have been quite consistent over time; the change in judicial attitude would appear to stem solely from the growing number and prestige of the scientists voicing critical views. See e.g., People v. Barney, 10 Cal.Rptr.2d 731 (noting that "the challenges asserted by Howard and Barney [based on the testimony of Laurence Mueller in

Frye jurisdictions are now hesitant about deciding which scientific views to credit in the face of this dispute. This perspective was adopted by the District of Columbia Court of Appeals:

> We specifically decline the government's invitation to hold that the position of one group of distinguished scientists (those favoring the government's position) is more persuasive, as a matter of molecular biology or population genetics, than the position of an apparently equally distinguished group of scholars who have reached an opposite conclusion; indeed, we view the government's position on this issue as contrary to Frye.[39]

U.S. v. Porter, 618 A.2d 629 (D.C. App. 1992).

The following sections lay out the major scientific and legal issues surrounding the procedure by which laboratories calculate the frequency of matching RFLP-DNA profiles in a reference population. This procedure has three steps. First, the frequency of each single band in the DNA profile is determined. Then the joint frequency of the two bands associated with a given probe is calculated. Finally, an overall frequency across all matching bands is calculated.

b. Determining the Frequency of Individual Bands

1989] are essentially the same as the points raised by Lewontin and Hartl.")

[39] In Porter the government argued that the weight of scientific authority favored current statistical procedures: "at least 18 peer-reviewed articles and ten letters, written by 45 scientists support the methodology at issue, while only 6 articles and 7 letters, authored by only 12 scientists, questioned the method. Id. at 638. The Court properly responded that "the government asks this court to choose between scientists on the basis of rather unimpressive numbers, and thus to make precisely the kinds of determinations as to which Frye requires a consensus of experts." Id.

To determine the frequency of each band (allele) in the DNA print, forensic analysts estimate the percentage of bands in a data base that would "match" the band in question. Typically, the laboratory counts all bands in the data base that fall within a range of sizes; this range is designated a "bin." Some laboratories use "floating bins" keyed to the band in question. For example, to estimate the frequency of a band of 1000 base pairs, Lifecodes counts all bands that fall within $\pm$ 1.8% of its size--that is, all bands in the data base which have an estimated size between 982 and 1018 base pairs. Because all of these bands fall within Lifecodes' match criteria, they all are bands that potentially could be "matched" with the band in question. Other laboratories use "fixed bins" which are established in advance and used in each case. For example, the FBI divides the full range of band sizes into 31 fixed bins. The frequency assigned to each band is determined by counting all the bands in its bin. Cellmark uses a floating bin based on what it calls "resolution limits."

One concern is that forensic laboratories underestimate the frequency of matching bands. This would work to the detriment of the defendant by causing the frequency of the DNA print to be understated, making the DNA evidence appear more significant than it is. Some forensic laboratories have been criticized for using bins that are narrower than their match criteria,[40] a practice

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[40] Laurence D. Mueller, The Use of DNA Typing in Forensic Science, 3 Accountability in Research 1, 8 (1993)(hereinafter "Mueller, 1993")("The size of the floating bins that have been

the NRC Report called "unacceptable."[41] For example, Lander reported that in People v. Castro, 545 N.Y.S.2d 985 (N.Y.Sup.Ct. 1989), Lifecodes used a bin for allele frequency estimates of only ±2/3 standard deviation, while using a matching criteria of ±3 standard deviations.[42] Similarly, the FBI has computed statistics in some cases based on floating bins of ±2.5%, while employing a matching criteria of ±5%. Because the frequency of each allele is multiplied to obtain the frequency of the overall DNA print, systematic underestimates of the frequency of each allele can cause severe errors. With regard to Lifecodes' procedure in Castro, Professor Eric Lander states: "[f]or a three-locus genotype, the error may thus be about 8000 fold." Id. Lander analogized the practice to "catching a match with a 10-foot-wide butterfly net, but then attempting to prove the difficulty of the feat by showing how hard it is to catch matches with a 6-inch-wide butterfly net." Id. Obviously, any binning procedure that fails to include the full range of bands that could potentially be considered to match would be unacceptable to the scientific community.

Another concern is that forensic laboratories may underestimate allele frequencies by failing to take into account

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used by some labs are only about half the appropriate size, thereby producing allele frequency estimates that are too small").

[41] NRC Report, at 78.

[42] Lander, DNA Fingerprinting on Trial, n. 339, Nature 501, 504 (1989). Following the Castro case, Lifecodes abandoned this practice and adopted a floating bin the same size as its quantitative match standard.

sampling error--that is, the tendency for the allele frequency observed in a sample to differ from the true frequency due to the operation of chance in the selection of a sample. Lander's comments are particularly relevant:

> Sampling error poses a particularly serious problem when estimating the frequency of a very rare event, such as an allele at a hypervariable RFLP locus. In a sample size of 500, an allele whose observed frequency was 1 in 500 might have a true frequency (taking a 99% confidence interval) of nearly 7 in 500. If this correction were neglected, the odds of finding the allele would be underestimated by a factor of nearly 7. If this were neglected for both alleles at [three loci] the total chance of finding the observed genotype would be underestimated by a factor of $7^6 = 118,000$.[43]

Fortunately, statistical methods for incorporating sampling error are well developed. If conclusions must be proved beyond a reasonable doubt, it might be wise to use the 99% upper limit of the confidence interval for each allele.

Whether such adjustments for sampling error are necessary and appropriate has been controversial. Some forensic scientists have argued that upper confidence limit estimates are not necessary because the procedure for allele estimation is sufficiently "conservative" to overestimate the frequency of matching alleles even without such a correction. Furthermore, some statisticians disagree with Lander's suggestion that the upper confidence limit of the frequency of <u>each allele</u> be used in computing the frequency of the DNA profile, prefering to make the adjustment for sampling error after the allele frequency

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[43] Lander, <u>Population Genetic Considerations in the Forensic Use of DNA Typing</u>, DNA Technology and Forensic Science, Ballantyne, Sensabaugh & Witkowski (Eds.) (1989), at 146-47.

estimates are combined, rather than before, a procedure likely to produce smaller adjustments.

The scientific dispute over how to deal with sampling error is one facet of the continuing debate over forensic DNA statistics. It is one of the issues likely to be addressed by a new committee recently appointed by the National Academy of Sciences to make a second attempt to resolve the statistical controversy. The debate about sampling error, and how to deal with it, is therefore evidence that the National Academy's first effort to resolve the issue (the 1992 NRC Report) was unsuccessful--a conclusion confirmed by the Academy's current efforts to revisit the issue and try, once again, to find a resolution to the statistical controversy.

c. Determining the Frequency of Genotypes

After determining the frequency of each band, the next step is to determine the frequency of genotypes. A genotype is the pair of alleles (bands) produced by a given probe. One of these alleles is inherited from the mother and one from the father. To determine the frequency of heterozygous (two band) genotypes, forensic DNA laboratories use the formula 2pq, where p and q are the frequency of the two alleles (bands) in the genotype.[44] For example, if the frequency of band A is .03 and the frequency of band B is .05, the laboratory will multiply .03 x .05 x 2 and conclude that the frequency of the genotype AB is .003 (three in

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[44] See generally, NRC Report, at 76-85.

1000).[45] This formula assumes the frequencies of band A and band B are statistically independent, and may significantly underestimate the frequency of genotypes if the allele frequencies are not independent.

When alleles at any genotype are statistically independent in a particular population, the population is said to be in Hardy-Weinberg equilibrium.[46] Whether U.S. populations are in Hardy-Weinberg equilibrium has been a major issue in the debate over DNA statistics. Critics suggest that Hardy-Weinberg equilibrium may not hold due to endogamous mating patterns -- that is, a tendency for people to mate with others having the same subset of possible alleles, to mate with others of the same ethnic, religious, or cultural subgroup. For example, if people with allele A are more likely to mate with those having allele B, than with those having alleles C or D, then genotypes AA and AB would be more common (and genotypes AC and AD less common) than suggested by the formula 2pq. Endogamous mating might occur without people having any awareness of it. If alleles A and B were common in a particular population subgroup, and if people in that subgroup tended to mate with each other, genotype AB would be more common in the general population, and much more common

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[45] The product of the individual allele frequencies is multiplied by 2 because there are two ways a person can get a given genotype. A person may have genotype AB as a result of receiving A from his father and B from his mother, or vice versa. By analogy, there are two ways to roll number eleven with a pair of dice: a five on the first die and a six on the second, or vice-versa. Hence, the probability of rolling eleven is 2 x 1/6 x 1/6 = 1/18.

[46] NRC Report, at 78.

among members of that subgroup, than predicted by applying the formula 2pq to allele frequencies for the general population.[47]

d. Determining the Frequency of a Multi-Probe Match

The final step in the statistical procedures is to determine the frequency of the entire DNA profile, which is sometimes called a multi-locus genotype. The forensic DNA testing laboratories do this by multiplying together the frequencies of the genotypes. If four probes were used, the laboratory would, during Step 2, have computed four genotype frequencies. The product of these frequencies would be presented as the frequency of the entire DNA print. The use of the product rule (i.e., multiplication) to compute the frequency of multi-locus genotypes assumes that the frequencies of the genotypes are statistically independent, and may significantly underestimate the frequency of the multi-locus genotype of the individual genotypes that are not independent.

When the genotypes at different loci are statistically independent in a given population, the population is said to be in linkage equilibrium. NRC Report, at 78-79. Whether the major racial groups in the U.S. population are in linkage equilibrium is another major issue. Linkage equilibrium and Hardy-Weinberg equilibrium are closely related issues because endogamous mating patterns among heterogeneous groups could undermine both. "Once

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[47] Genotypes AA, AB, and BB would also be more common in the general population than predicted by formula, although the effect might be difficult to detect if the subgroup was small relative to the general population.

a population is known to be heterogeneous, one also cannot assume linkage equilibrium even for loci on different chromosomes; if an individual possesses an allele common among Puerto Ricans at one locus, it is more likely that he will do so at a second locus as well." Lander, DNA Fingerprinting on Trial, at 504. Hence, the possibility of endogamous mating among heterogeneous groups, which is also called population structure, is a key underlying issue in the debate over the validity of the forensic laboratories' statistical estimation methods.[48]

e. The Competing Views on Population Structure

The scientific community has split into three camps on the issue of population structure. One school of thought holds that concerns about population structure can be dismissed on theoretical grounds. Members of this "theoretical school" argue that deviations from Hardy-Weinberg equilibrium and linkage equilibrium in the general U.S. population are so implausible that empirical proof of the absence of such deviations is simply unnecessary. A second group, which has been labeled the statistical school, "feels that the issue [of population structure] can be resolved by studying population samples of broad racial groups and applying statistical tests of Hardy-

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[48] If there is such structuring, the multiplication of band frequencies could produce severe errors. By analogy, if a population survey showed that ten percent of Europeans have blond hair, ten percent have blue eyes, and ten percent have fair skin, it would be a mistake to multiply these frequencies to conclude that the frequency of Europeans with all three traits is one in 1000. Because these traits tend to co-occur in Nordics, the actual frequency is much higher, particularly if one happens to be in Scandinavia. NRC Report, supra, at 76.

Weinberg equilibrium (HWE) and linkage equilibrium (LE) to detect substructure." Id. In other words, they believe the issue of population structure must be addressed through empirical (rather than theoretical) analysis, but that statistical analysis of existing data is sufficient to resolve the issue.[49] The third group, which has been labeled the empiricist school, "feels that the only way to resolve the issue is to sample particular ethnic groups to ascertain the actual extent of variation, i.e., how high or low allele frequencies might range." Lander, supra. The empiricists[50] believe that no amount of statistical analysis on existing data bases can resolve the issue because such analyses

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[49] See generally, Chakraborty & Kidd, The Utility of DNA Typing in Forensic Work, 254 Science 1735 (1991); Bernard Devlin, Neil Risch, & Kathryn Roeder, Estimation of Allele Frequencies for VNTR Loci, 48 Am.J.Hum.Genet. 662 (1991); Weir, supra, at 24.

[50] The most prominent exponent of the empiricist school is Richard Lewontin of Harvard. See R.C. Lewontin and D.L. Hartl, Population Genetics in Forensic DNA Typing, 254 Science 1745 (1991); other articles supporting this viewpoint include Mueller, Population Genetics of Hypervariable Human DNA, Forensic DNA Technology, Farley & Harrington (Eds.) (1991) (hereinafter, "Mueller, 1991"), at 51; Mueller, 1993, supra,; Dan Krane, Robert W. Allen, Stanley A. Sawyer, Dmitri A. Petrov, and Daniel L. Hartl, Genetic Differences at Four DNA Typing Loci in Finnish, Italian, and Mixed Caucasian Populations, 89 Proc.Natl.Acad.Sci. 10583 (1992); Eric S. Lander, Reply (Letter), 49 Am.J.Hum.Genet. 899, 901 (1991); Lander, Invited Editorial: Research on DNA Typing Catching Up with Courtroom Application, 48 Am.J.Hum.Genet. 819 (1991); Green, Population Genetic Issues in DNA Fingerprinting (Letter), 50 Am.J.Hum.Genet. 440, 441 (1992); Jennifer R. Slimowitz & Joel E. Cohen, Violations of the Ceiling Principle: Exact Conditions and Statistical Independence, 53 Am.J.Hum.Genet. 314 (1993); William M. Shields, Forensic DNA Typing as Evidence in Criminal Proceedings: Some Problems and Potential Solutions, Proceedings from the Third International Symposium on Human Identification, 1992; Seymour Geisser & Wesley Johnson, Testing Independence of Fragment Lengths within VNTR Loci, 53 Am.J.Hum.Genet. 1103 (1993).

"have insufficient statistical power to detect deviations, if present" and because existing data bases may not include members of some endogamous mating groups. Lander, supra. They favor collecting additional data on a number of distinctive subgroups.[51]

Concerns about population structure were raised from the beginning of litigation on the admissibility of DNA evidence. At first, however, the discussion was dominated by theoretical arguments. The prosecution experts were generally members of the theoretical school, who found analysis of data unnecessary. The defense experts at first had difficulty gaining access to the data bases.[52]

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[51] ...substructure raises concerns of two different types. First, the presence of substructure can result in linkage disequilibrium and thus invalidates the use of the product rule. But even if the population as a whole is in approximate linkage equilibrium, it may not constitute an appropriate reference population of suspects: the appropriate suspect population may consist of a subpopulation for which joint allele frequencies may be quite different.

Affidavit of Prof. S.L. Zabell, submitted regarding statistical issues in the computation of match probabilities for DNA profiles, at 8. See also, R.C. Lewontin, Which Population? 52 Am.J.Hum. Genetics 205 (1993).

[52] In early cases, forensic laboratories provided tables of allele frequencies, but sometimes refused to provide the complete data bases in a form that would allow tests of Hardy-Weinberg equilibrium or linkage equilibrium. See, State v. Schwartz, 427 N.W.2d 422, 427 (Minn. 1989)("[t]he defense request for more specific information regarding its methodology and population data base was denied by Cellmark."); also Geisser, Some Remarks on DNA Fingerprinting, 3 Chance: New Directions for Statistics and Computing 8 (1990)("Cellmark and Lifecodes use proprietary excuses for shielding their data."). Cellmark first made its data bases available in 1989 under a court order issued in

As the data bases became available, the range of issues being debated in the courtroom broadened. Defense experts began presenting statistical analyses of the data bases which, they claimed, supported the existence of population structure. Prosecution experts challenged these claims, and a debate erupted over the appropriate method for testing for substructure.

One test for substructure compares the total number of homozygotes observed in a sample (data base) with the number expected if the sample is in Hardy-Weinberg equilibrium.[53] Because substructure entails endogamous mating within subgroups, it increases the likelihood that mating pairs will share the same allele (band) and thereby produce homozygous offspring (who have only one band, rather than two at a given loci). Hence, if the number of homozygotes observed in a data base exceeds the number

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pretrial proceedings in State v. Cauthron, 846 P.2d 502 (Wash. 1993), but only after extensive litigation during which Cellmark hired a private law firm to assist the district attorney in efforts to quash the discovery order.

The FBI also refused such requests at first, claiming that the data simply were not recorded in a manner allowing tests for independence across loci. Some defense experts found this claim suspicious, but it effectively thwarted their efforts to obtain the data. See Geisser supra, at 9.

[53] If a population is in Hardy-Weinberg equilibrium, the expected number of homozygotes is the sum of the squared frequency of each allele. For example, if a population has four equally common alleles--A, B, C and D--the frequency of homozygotes (i.e., genotypes AA, BB, CC and DD), if mating is random, is expected to be $.25^2+.25^2+.25^2+.25^2 = .25$, because a person with allele A, for example, is no more likely to mate with another A than to mate with a B, C or D. Population structure means that people are more likely to mate with others in their subgroup, hence people are more likely to mate with someone sharing their same allele and the overall frequency of homozygotes is higher.

expected to occur by random mating (by an amount unlikely to occur by chance), it is evidence of substructure. Tests for "excess homozygosity" were first performed on forensic data bases by experts retained by defendants in criminal cases. They reported spectacular deviations from Hardy-Weinberg equilibrium and argued that these findings raised serious concerns about the validity of the statistical procedures of the forensic laboratories.

Prosecution experts responded that the "excess" of homozygotes was more apparent than real. Technical problems in the assay of samples in the data bases may have caused some individuals who are in fact heterozygous to appear to have a single band. Hence, they argued, the true frequency of homozygotes is undoubtedly lower than indicated by the data. Some experts have argued that the "excess" homozygosity disappears entirely when adequate corrections are made for technical problems in the assays,[54] although this conclusion is controversial.[55]

Debate about total homozygosity has faded over time as population geneticists on both sides of the dispute have come to realize that these analyses cannot adequately address the issue

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[54] Bernard Devlin, Neil Risch & Katherine Roeder, No Excess of Homozygosity at Loci Used for DNA Fingerprinting, 149 Science 1416 (1990).

[55] See Lander Reply, supra, at 901 (arguing that the conclusions of Devlin et al. have "been disproved"). Also, Phillip Green & Eric Lander, Technical Comment, 253 Science 1038 (1991) and Joel Cohen, Michael Lynch & Charles Taylor, Technical Comment, 253 Science 1037 (1991)(both commentaries challenge the conclusions of Devlin, Risch & Roeder)

of substructure. Measurement error and uncertainty about the quality of the data undermines confidence in any analysis suggesting substructure is present;[56] the limited sensitivity of these procedures undermines confidence in any analysis suggesting it is absent.[57]

Another way to test for substructure is to compare the distribution of allele frequencies in various subgroups. However, there has been controversy about which subgroups allow relevant comparisons. For example, FBI scientists argued against the possibility of substructure based on data showing that within major groups (Caucasians, Blacks, Hispanics) similar allele frequencies were found in samples drawn in Texas and Florida. Lander responded: "One might analogously conclude that blond hair, blue eyes, and fair skin are not correlated because such traits show similar frequencies in Florida and Texas; examining average frequencies in mixed populations sheds no light on substructure." Lander, supra, 1991, at 821. According to Lander and others of the empiricist school, what is needed is direct comparison of distinct ethnic subgroups; differences among such

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[56] Devlin, Risch & Roeder, supra.

54 "Failure to reject the hypothesis that genotypes are well described by the Hardy-Weinberg law does not mean that large errors cannot be made .... the data set and statistical tests have limited power to uncover deviations if they do exist." Mueller, supra, at 57, 62; also Lander, 1991, supra, at 821 (calling the failure to find excess homozygosity "virtually meaningless because the tests have such low statistical power to detect substructure even if it is present."); Lewontin & Hartl, supra, at 1747 ("Statistical tests for HWE are so lacking power that they are probably the worst way to look for genetic differentiation between subgroups in a population").

groups are difficult to detect in mixed populations. The NRC Report, at 80-82, adopted this position.

Recently, courtroom debate has shifted as new analyses of the existing data bases, using more sophisticated methods, have appeared. These new analyses purport to find reassuring evidence of the statistical independence of VNTR alleles, and thus to show that substructure is not a significant problem.[58]

Critics from the empiricist school respond that analyses of existing data bases cannot rule out the possibility that there is substructure within broad American populations. There may be significant genetic variation among ethnic subgroups that goes undetected because members of discrepant subgroups are not included in the data bases, or because they appear in numbers too small for their differences to be noticed.[59] Most data bases consist of blood bank or hospital data from a narrow region and therefore may fail to capture the genetic diversity of the total population.[60]

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[58] Neil Risch & Bernard Devlin, On the Probability of Matching DNA Fingerprints, 255 Science 717 (1991)("an innocent defendant has little to fear from DNA fingerprinting unless he has an evil twin").

[59] E.g., Nichols & Balding, Effects of Population Structure on DNA Fingerprint Analysis in Forensic Science, 66 Heredity 297, 299-300 (1991)("[H]uman populations are known to be composed of large relatively outbred populations, typically in cities, and smaller inbred populations. In a random sample from both, the effects of inbreeding in the small populations will be swamped. We must examine studies of inbred populations for estimates [of how much they vary]").

[60] Mueller, 1993, supra, at 5 ("the people in the data base have not been sampled at random and thus there is no expectation that the mixture of subgroups within these samples is representative of any real population.").

Professor Lewontin has argued that the large racial/ethnic groups for which laboratories maintain data bases are in fact "conglomerates" of ethnic subgroups which stem from genetically differentiated ancestral populations[61] and have not yet fully blended in the American "melting pot."[62] According to the empiricists, the way to resolve the issue of substructure is "to sample ethnically distinct subpopulations and to observe the actual degree of genetic differentiation."[63] Some data suggesting significant variation among distinctive population subgroups already exist.[64]

Some experts have repeatedly asserted that allele frequencies are similar across distinctive ethnic groups. Efforts to evaluate such claims have been impeded, however, by the failure of the prosecution experts to grant access to the data. For example, Prof. Kenneth Kidd, a frequent prosecution witness, who began testifying about the lack of variation among

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[61] Among Caucasians, for example, evidence from genetic markers other than VNTRs show "more genetic variation among Irish, Spanish, Italians, Slavs, Swedes, and other subpopulations, than there is on the average, between Europeans, Asians, Africans, Amerinds, and Oceanians." Lewontin and Hartl, supra, at 1747.

[62] See Kenneth Lange, Match Probabilities in Racially Admixed Populations, 52 Am.J.Hum.Genet. 305, 306 (1993)("What is lacking in [discussions of match probabilities] is an agreed-on method of computing match probabilities in admixed populations typical of the United States.")

[63] Lander, 1991, supra, at 821; Green, Population Genetic Issues in DNA Fingerprinting (Letter), 50 Am.J.Hum.Genet. 440, 441 (1992)("For VNTR loci, there is no obvious alternative to gathering community/ethnic-specific subpopulation data bases").

[64] See Dan Krane, Robert W. Allen, Stanley A. Sawyer, DMitri A. Petrov, and Daniel L. Hartl, Genetic Differences at Four DNA Typing Loci in Finnish, Italian, and Mixed Caucasian Populations, 89 Proc.Natl.Acad.Sci. 10583 (1992).

subgroups in 1988, refused to allow access to some of the data on which he based his testimony until 1991. At that point, critics challenged some of Kidd's assertions about the data. Lewontin and Hartl reported that there are striking differences in allele frequencies between some of the groups Kidd examined.

In one American Indian group, the Karitiana of Brazil, the entire sample of over 50 individuals had the same allele at one VNTR locus and had one of two alleles at another locus. Lewontin and Hartl note that a comparison of the Karitiana with another Brazilian group, the Surai, show that "certain three-locus VNTR genotypes differ in frequency by a factor of more than 500 in these populations, even though they are separated by only 420 kilometers." Id. In response, Chakraborty and Kidd state that despite inbreeding among the Karitiana "there were no two individuals with identical VNTR profiles."[65] However, this assertion has proven false. An analysis of Kidd's Karitiana data by Prof. Laurence Mueller found that over twenty percent of the individuals in the sample matched another individual over four or more probes. Two pairs of individuals matched over seven probes, although one of the seven-probe matches appears to have been a "false positive" caused by a laboratory sample handling error.[66] Mueller also discovered a previously undetected six-probe match between one of the Karitiana and a member of a different group, the Maya. Id., at 5.

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[65] Chakraborty & Kidd, supra, at 254.

[66] Mueller, 1993, supra, at 4-5. A false positive is an event which is, itself, of considerable interest and importance.

f. The NRC Ceiling Approach

The NRC report acknowledged the existence of the scientific dispute over population structure and proposed a compromise. NRC Report, Chapter 3. The danger of population structure is sufficiently serious, the NRC concluded, that current approaches should not be used. Siding strongly with the empiricist camp, the NRC Report declared that additional empirical studies of ethnic subgroups are needed to determine the extent of population structure.

Pending the completion of the population studies, the NRC recommended an approach to statistical calculation that has been dubbed "the modified ceiling principle." First, the laboratory should check to determine whether the DNA print observed in casework matches any DNA prints in existing data bases. The frequency of such matches (and the size of the data bases) should be reported to the trier-of-fact. Second, the laboratory should estimate the frequency of the DNA print by applying the product rule to "modified ceiling frequencies" consisting of the 95% upper confidence limit of the highest frequency observed in an existing data base or 10%, whichever is higher. Id., at 91-93, 95.

The NRC's modified ceiling approach was intended to provide a reasonable, broadly acceptable basis for making statistical estimates in the face of the current scientific uncertainty over population structure. Lander, DNA Fingerprinting: The NRC Report (letter), 260 Science 1221 (1993).

But the modified ceiling approach has not yet proven to be an acceptable compromise. Moreover, to further fuel the debate, disputes have arisen over how to interpret the NRC's modified ceiling approach, with different scientists offering different interpretations which can lead to radically different statistical interpretations in the same case.

The National Research Council has commenced a new study that will make a second attempt to resolve the statistical debate. A report is expected next spring or summer. The fact that the National Research Council would commission an entirely new study to revisit the statistical questions that were addressed only two years earlier, in the first NRC Report, is perhaps the most powerful evidence that could exist of the continuing nature of the scientific controversy over DNA statistics.

g. Determining the Relevant Reference Population

Another area of scientific dispute, closely linked to the debate over population structure, concerns the relevant reference population to use when estimating the frequency of a DNA profile. Forensic laboratories typically assume that the relevant reference population is the broad racial or ethnic group of which the defendant is a member. Thus, if the defendant is a Caucasian, the laboratory reports the frequency of the defendant's DNA profile among Caucasians (basing its estimate on the frequency of defendant's alleles in the laboratory's Caucasian data base).

Critics argue that focusing on the defendant's ethnic

background misses the issue. In a typical case, the defendant's DNA profile is known and has been found to match the DNA profile of an evidentiary sample. By denying that he is the source of the evidentiary sample, the defendant implicitly raises the possibility that the true perpetrator, whose identify is unknown, also has the "matching" profile. Hence, "it is not the ethnicity of the defendant that is the directly relevant question but rather the ethnic composition of the pool of possible alternative suspects."[67]

This argument rests on the assumption that there is no correlation between the ethnic background of the defendant and that of the true perpetrator in cases where the defendant is falsely accused. In some cases, for example, police will have information about the appearance of the perpetrator which limits the pool of possible suspects to individuals of the defendant's ethnicity. Hence, the need to know whether the frequency of a particular DNA profile is higher among defendant's subgroup than among a larger aggregate group for which the forensic laboratories has a data base will be unavoidable in many cases.

h. In Light of the Continuing Scientific Debate, Kelly, Barney and Wallace Dictate Exclusion of the DNA Evidence.

In Barney, the product rule method (which was used by both Cellmark and the FBI) was found deficient under the first prong of Kelly because it is not generally accepted in the scientific

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[67] Lewontin, Which Population? (Letter), 52 Am.J.Hum.Genet. 205 (1993).

community. Citing a large number of prominent scientists who have publicly criticized the statistical methods of the forensic laboratories in published articles and testimony, and the NRC's conclusion that "substantial controversy" exists on the issue, the court declared that the necessary scientific consensus does not exist and therefore that the DNA evidence is inadmissible.

> Our task under Kelly-Frye is not to choose sides in this dispute over the reliability of the statistical calculation process. Once we discern a lack of general scientific acceptance--which in this instance is palpable--we have no choice but to exclude the "bottom line" expression of statistical significance in its current form.

8 Cal. App.4th at 819.

This ruling differed from that of Axell only because the bulk of the scientific criticism had emerged after the Axell ruling.

> It has become irrelevant how Axell addressed this issue at the time of the decision's filing in October 1991. The situation is somewhat analogous to a "change in the attitude of the scientific community" which undermines a previously correct judicial determination of general acceptance. (People v. Kelly, supra, 17 Cal.3d at p.32, 130 Cal.Rptr. 144, 549 P.2d 1240.) Simply put, Axell has been eclipsed on this point by subsequent scientific developments.

8 Cal.App.4th at 820-21.

The First District Court of Appeal followed Barney in a decision issued in March, 1993. People v. Wallace (1993) 14 Cal.App.4th 651. In Wallace, the court found that the results of an RFLP-based DNA test "should have been excluded for want of general acceptance of the method of statistical calculation employed to produce the frequency estimate of about 1 in 26

million." The prosecution's key witness in Wallace was Professor George Sensabaugh, who had been a member of the NRC committee on forensic DNA evidence. Sensabaugh also offered a "more conservative estimate of in excess of one in a million" but the court found that testimony should also have been excluded because "it too is unsupported by a showing of general acceptance of the underlying statistical basis for it." 17 Cal.Rptr.2d 721, 725. RFLP-based DNA testing is currently inadmissible in California.

In Kelly, the California Supreme Court declared that appellate rulings on the admissibility of scientific evidence are controlling at subsequent trials "at least until new evidence is posited reflecting a change in the attitude of the scientific community." 17 Cal.3d at 30. Hence, it is unnecessary even to hold a hearing on the admissibility of RFLP-based DNA evidence unless the district attorney meets the burden of proving that there has been a significant and meaningful change in scientific opinion since March of 1993, when the most recent appellate opinion rejecting RFLP evidence, Wallace, was issued.

In order to avoid extremely burdensome (and costly) relitigation of issues which have already been resolved after receiving intense scrutiny by appellate courts in this state, the hearing on RFLP-test admissibility should be narrowly focused.

If the district attorney seeks to introduce statistics computed using the product rule method that was rejected in Barney and Wallace, then there is only one type of evidence that this court should hear: evidence that scientific critics of the

product rule method have changed their minds.

Given the current appellate precedent, a number of types of evidence the district attorney may seek to present, in an effort to resuscitate the product rule, are legally irrelevant and should not be heard. For example, evidence offered solely to prove that the scientific critics of the product rule are wrong, as a matter of scientific fact, is irrelevant because the duty of the court, under Kelly, "is not to decide whether [the method] is reliable as a matter of 'scientific fact,' but simply whether it is generally accepted as reliable by the relevant scientific community." People v. Shirley (1982) 31 Cal.3d 18, 55; People v. Reilly (1987) 196 Cal.App.3d 1127, 242 Cal.Rptr. 496, 500 (the requisite acceptance "is that of scientists, not courts"). Thus, evidence of empirical studies that purport to refute or respond to scientific critics is irrelevant absent a showing that such studies have, in fact, changed the minds of the scientific critics.

Evidence of the relative number of supporters and critics of the product rule is also irrelevant, so long as the critics continue to be "significant either in number or expertise."

> ...Frye does not demand judicial absorption of all the relevant literature, nor does it require a decision once and for all whether a particular kind of scientific evidence is reliable. The court need only conduct a 'fair overview' of the subject, sufficient to disclose whether 'scientists significant either in number of expertise publicly oppose [a method] as unreliable.

People v. Reilly (1987) Cal.App.3d 1127, 1148, quoting from People v. Brown (1985) 40 Cal.3d 512, 533.

Barney and Wallace establish conclusively that scientists "significant in number and expertise" opposed the product rule as unreliable as recently as March, 1993. The sole issue for the court is whether these critics have changed their minds in the past nineteen months. If the district attorney can offer no evidence of a change of scientific heart by the critics with respect to the product rule, then no hearing is necessary -- the product rule must be rejected.

i. In Light of the Heated Scientific Debate Over the NRC's Modified Ceiling Principle, It Must Be Excluded Under Kelly As Well.

Is there an alternative to the product rule method that can pass muster under Kelly? The only plausible candidate is the NRC's "modified ceiling principle."[68] But it too is subject to raging controversy -- the necessary scientific consensus on its reliability is not even close to being achieved.

In Barney, the court had expressed hope that a scientific consensus would soon emerge in favor of methods based on the NRC's ceiling principle. Barney, 10 cal.Rptr.2d 731, 745 ("The NRC report on DNA analysis appears to point the way to...common ground"). But in Wallace, the court noted that those hopes seem to be fading.

> Only eight months have passed since our decision in Barney, not enough time to confirm our speculation that the new methods of statistical calculation proposed by

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[68] The program of research recommended by the NRC as a basis for the ceiling principle (sampling 15-20 distinct ethnic populations) has not yet been undertaken. Therefore, the only calculations possible that are consistent with the NRC's recommendations are "modified ceiling" calculations.

> the NRC report will likely receive general acceptance resulting in future admissibility of DNA analysis evidence. However, recent developments have shown that general acceptance may not be easily achieved. It appears that some proponents of DNA analysis, rather than attempting to come to terms with the NRC report, or some other compromise on statistical calculation, have taken the offensive and attacked the report's proposed new methods of statistical calculation as unsound...While we are in no position to choose sides in this ongoing dispute, we note that its persistence threatens the admissibility of [DNA evidence].

17 Cal.Rptr.2d at 725-26.

Since the Wallace opinion was issued, the attacks on the ceiling principle have only increased. Although it was initially attacked as "too conservative" by scientists who continue to believe in the product rule, recent scientific articles have shown that in theory, and perhaps in practice, it may not be conservative enough -- in other words, it may still understate the frequency of matching DNA characteristics, making DNA evidence appear more powerful than it really is. Joel Cohen, "The ceiling principle is not always conservative in assigning genotype frequencies for forensic DNA testing," 51 Am.J.Hum.Genet. 1165 (1992); Jennifer R. Slimowitz & Joel E. Cohen, Violations of the Ceiling Principle: Exact Conditions and Statistical Evidence, 53 Am.J.Hum.Genet. 314 (1993) ("Before the ceiling principle is implemented, more research should be done to determine whether it may be violated in practice."); Seymour Geisser & Wesley Johnson, Testing Independence of Fragment Lengths within VNTR Loci, 53 Am.J.Hum.Genet. 1103 (1993) (even with conservative correction, product rule impermissible). This showing has given impetus to a more general condemnation of the

modified ceiling principle as scientifically indefensible and inadequate.

> Slimowitz and Cohen have shown that the "ceiling principle" is not a ceiling, as others have shown that it is not a principle. Reflective courts find the choice of samples arbitrary, the calculations capricious, and the "expert" testimony indefensible. Like the flat-earth theory, the "ceiling principle" should be buried, not bounded.

Newton E. Morton, Genetic Structure of Forensic Populations, 55 Am.J.Hum.Genet. 587 (1994).

> ...the interim-ceiling principle is an example of data-driven, interest-ridden, pseudo-statistical, ad hoc methodology to which no statistician (or scientist) should be a party.

Expert Report of Dr. Elizabeth Thompson[69], in State v. Hollis (Sup.Ct.King.Co., Wash, No. 92-2-04603-9), Feb. 28, 1994.

> In my view, the "modified ceiling principle" has no rational basis and has been chosen by entirely arbitrary means...It is clear to me that the "modified ceiling principle" was invented in the hope of maintaining the use of DNA pattern matching for forensic purposes, despite the lack of the necessary statistical information to allow a valid estimate of matching probabilities.

R.C. Lewontin, Affidavit in Thompson, DNA Wars, supra.

Can anyone seriously argue that the ceiling principle is generally accepted in the scientific community when prominent geneticists and statisticians are comparing it to the "flat-earth theory," calling it "pseudo-statistical," saying it "has no rational basis" and calling for it to be "buried." Surely, this is a case where "scientists significant in number and expertise publicly oppose [a technique] as unreliable" and it must

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[69] Professor Thompson, an internationally recognized biostatistician, is Chair of the Department of Statistics at the University of Washington.

therefore be excluded under Kelly. People v. Brown (19845) 40 Cal.3d 512, 533.

Courts that have recently reviewed the admissibility of the "modified ceiling principle" to determine whether it passes the "general acceptance" test have concluded that it does not. In People v. Fountain (Superior Court of Contra Costa Co., Calif. No. 91-02674, April 5, 1994), a California Superior Court judge excluded DNA evidence under Kelly, after finding that "a major controversy...exists right now over the proper method to be used for...estimating the statistical probability of a match" (at 3631). Noting that "witnesses for both sides in this case have presented documented instances in which the ceiling principle has failed to be conservative" and that "[t]he FBI, citing serious controversy regarding the NRC report, asked the NRC to reconvene and obtained its agreement that it would do so," the court concluded as follows:

> I think that all of this has demonstrated that there is substantial debate regarding the interim ceiling principle, regarding any of the methods...for the statistical calculation of a match and really [it] cannot be said that there is general acceptance in the scientific community as to any one of those (p.3632).

Similarly, in Commonwealth v. Fowler (Sup.Ct. Bristol Co., Mass., No.32440, 32464, March 31, 1994), a Massachusetts trial court excluded DNA evidence after finding, based on an extensive review of scientific opinion, that there is "no statistical calculation for interpreting the significance of a laboratory DNA 'match' which is generally accepted by the relevant scientific community." (p.17)

> The 1992 NRC Report's recommendation of the use of ceiling and interim ceiling methods further fuelled the controversy concerning the appropriate statistical calculation to be used when interpreting DNA evidence. (p.16)

The court specifically found that there is "disagreement within the relevant scientific community over whether the ceiling principles provide for a more conservative statistical calculation of DNA profile frequencies than the product rule." Id. Moreover, "some scientists in the relevant scientific community believe that the ceiling approach may produce less conservative estimates of DNA profile frequencies" [thereby disadvantaging the defendant]. Id.

Perhaps the most thorough discussion of the current status of the ceiling principle, vis-a-vis the "general acceptance" test, occurred in a Frye ruling in State v. Stenson (Sup.Ct.King Co., Wash., No. 93-1-00039-1, June 8, 1994). The court noted the concerns of numerous critics of the ceiling method, noting that the thrust of their position is that "setting any figure as a conservative figure is not within the realm of real science."

> The setting of a conservative ceiling will some day resolve debate. Scientific debate here is whether or not [the NRC] ceiling is, in fact, conservative. From all of [the evidence], it is clear that the product rule as modified by the ceiling principle is not yet generally accepted by the relevant scientific communities.

The Stenson court specifically rejected an argument that concerns about population structure have been resolved by recent research, such as the FBI's so-called "Worldwide Study." The court noted that the conclusions of the Worldwide study are

inconsistent with other published findings (citing Geisser and Johnson, supra, and Slimowitz and Cohen, supra) and that the conclusions of the Worldwide Study have not been accepted by the scientific community. Even if the Worldwide Study turns out to be correct, "we are clearly in the lag time between controversy and hopeful consensus and Frye precludes the use of the Worldwide study [to resolve] the product rule issue until that consensus is reached."

These three recent trial rulings provide a model for this court, showing the proper resolution of the admissibility issue under Kelly.

2. There Is No Generally Accepted Method for Computing the Frequency of Multi-locus Polymarker Profiles.

The prosecution may seek to introduce statistics in connection with the polymarker test. At this juncture, the polymarker test is entirely novel. It has never been reviewed for admissibility by any appellate court anywhere. It has previously been introduced in only a handful of criminal cases. It has yet to survive any serious challenges, either inside or outside the courts. Few scientists, other than the employees or consultants of the laboratories promoting the test, know much about it. There are no published articles which purport to validate the test or its associated statistics. It fails in a number of respects to meet the "essential" validation requirements set forth in the NRC Report (p. 52-56).

The Polymarker test allows DNA from five different loci (areas of the genome) to be "amplified" via PCR and then "typed."

The polymarker loci have varying numbers of alleles (types). A "match" on the polymarker test means that two samples have the same allele (type) at each loci.

Evidence of such a match is meaningless, of course, unless one knows the probability of finding a match between samples from different people. This probability depends in part on the likelihood of a false positive in the polymarker test, which is completely unknown and impossible to estimate in the absence of rigorous blind proficiency testing (which has not yet been done). The probability of a match between different people also depends on the likelihood of a coincidental match, which depends, in turn, on the rarity of the set of matching alleles. A set of alleles, from different loci, is called a multi-locus genotype. It is the method for estimating the frequency of multi-locus polymarker genotypes that is discussed here.

The major problem with the method is that it makes use of the product rule (multiplication of allele frequencies) without the necessary demonstration that the alleles are statistically independent. The use of the product rule assumes that the various alleles are inherited independently, that there is no reason for persons with a given allele at one loci to have a preferential probability of having a particular allele at another loci, and that there is no population substructure. See NRC Report, Chapter 3. Defense counsel are aware of no studies, either published or unpublished, that have examined these questions.

As the NRC report has noted, "[t]he key question underlying the use of the multiplication rule is whether actual populations have significant substructure for the loci used for forensic testing." NRC Report, at 79 [emphasis added]. Without proof of the absence of substructure for the polymarker loci, the assumption of statistical independence that underlies the use of the product rule is based entirely on speculation. In light of the NRC Report, and the scientific furor that has arisen over the use of the product rule for RFLP-based tests, it seems clear that the scientific community would not accept its use for polymarkers without proof of the independence of the alleles.

The lack of information about population substructure also raises severe doubts about the representativeness of the small convenience samples[70] that serve as data bases for polymarker statistics. There appears to be little information upon which to judge whether the frequency of particular polymarker alleles in one ethnic group, or one geographic area, is likely to be the same as in another. Thus, the relevance of small unrepresentative data bases appears questionable even for

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[70] A "convenience sample" is a sample that is drawn for the convenience of the researcher and does not purport to be a random or representative sample of any particular population. The forensic laboratories have almost uniformly built their databases from "convenience samples" -- from blood banks, paternity testing laboratories, and police personnel. One can understand the nature and inadequacy of convenience samples by comparing it to political polling where the pollster takes opinions from the first ten people encountered instead of making an effort to selectively gather information, or "stratify" the sample, by interviewing in a targeted fashion people in representative categories -- such as gender, income, age, or ethnicity.

estimating the frequency of individual alleles, let alone estimating the frequency of multi-locus genotypes.

3. There Is No Generally Accepted Method for Determining the Joint Probability of a Coincidental Match Across Different DNA Tests, or Across DNA and Serology Tests.

The defendant will oppose any effort to present statistics that purport to show the joint probability of a match on two or more DNA tests, or the joint probability of a match on DNA and conventional serology protein and enzyme marker tests. Examples of the type of joint probability estimates defendant will oppose include efforts to estimate the probability of a match on both DQ-alpha and D1S80 markers, on both DQ-alpha and serology markers, or on both RFLP and polymarkers.

The scientific community clearly would not accept any such omnibus statistical extrapolations in the absence of published research documenting the statistical independence (or lack thereof) of the frequencies that are being combined. No such research has been published. Joint statistical estimates cannot pass muster under Kelly.

C. Failure of the Testing Laboratories to Use a Generally Accepted Method for Determining False Positive Error Rates Renders the Prosecution's DNA Evidence Inadmissible.

1. Essential Elements of an Acceptable Method for Error Rate Determination.

As noted earlier, the scientific community now recognizes that evidence of a DNA match cannot meaningfully be evaluated without knowing the rate of laboratory error. Consequently, under the logic of Axell, Barney, Pizarro and Wallace, evidence of a DNA match cannot be admitted without statistics on the error

rate. To comply with the requirements of Kelly, the method used to determine the error rate must be generally accepted as reliable within the relevant scientific community.

Scientific commentary makes it clear that, in order to be accepted as reliable by the scientific community, the method for determining error rate must involve externally administered blind proficiency testing on samples that replicate casework. A blind proficiency test is one in which the analyst is not aware he or she is being tested. The NRC Report declares that "...laboratory error rates must be continually estimated in blind proficiency testing." NRC Report, p. 89. The proficiency tests must be "truly representative of case materials (with respect to sample quality, accompanying description, etc.)." Id. The NRC notes that "[t]ests based on pure blood samples would probably underestimate an error rate." Thus, it appears that such tests are not accepted as a reliable way to determine the error rate of a forensic test.

Other commentators agree. For example, Professor Bruce Weir, a frequent prosecution witness, has noted that the NRC Report "makes a strong case" for determining actual error rates through proficiency testing, although he warns that "[e]stablishing rates of false positives and false negatives may not be easy." Weir, supra, p. 11658. Professor Jonathan Koehler declares that, "[t]he best way to measure the rate of false positive error associated with a laboratory or an individual technician is through an ongoing series of blind, external

proficiency tests conducted under realistic conditions." Koehler, Error and Exaggeration, supra, at 28. Others who endorse this position are R.C. Lewontin, supra, at 260 ("there must be frequent independent and unannounced inspections and tests"); Mueller, supra, at 57 (noting with approval the NRC's call for blind proficiency tests); Hagerman, supra (noting importance of proficiency testing to error rate determination).[71]

The NRC Committee emphasized the importance of proficiency testing in a prefatory statement to its report:

> We regard the accreditation and proficiency testing of DNA typing laboratories as essential to the scientific accuracy, reliability, and acceptability of DNA typing evidence in the future. Laboratories involved in forensic DNA typing should move quickly to establish quality assurance programs. After a sufficient time for implementation of quality assurance programs has passed, courts should view quality control as necessary for general acceptance.

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[71] The NRC's position is not universally endorsed. Professor Lempert has expressed doubt about whether proficiency testing "will ever be extensive enough to generate reliable false positive probabilities", but nevertheless favors proficiency testing as an incentive to laboratories to do good work and because "proficiency testing may allow the setting of bounds on likely false positive error rates", p. 257. The strongest dissenter from the NRC position appears to be statistician Kathryn Roeder, who has been a consistent supporter of existing forensic statistical methods. Kathryn Roeder, "DNA Fingerprinting: A Review of the Controversy," 9 Stat.Sci. 222, 274-75 (1994). Although she agrees with Lempert that "realistic blind proficiency testing...could have unforeseen benefits," she regards it as "inefficient and inaccurate" for estimating extremely rare events. Her assumption that laboratory error will be an extremely rare event is not shared by other scientists, however, and her suggested alternative to proficiency testing (she favors the method used by NASA for "estimating the probability of a space shuttle disaster") appears to have few adherents.

NRC Report, at x.

In recent testimony, Professor Eric Lander, a member of the NRC Committee, explained that the Committee did not wish to call a moratorium on all forensic DNA testing but wanted to see proficiency testing programs set up as soon as possible because the Committee members unanimously believed "that proficiency testing is an essential component of the scientific reliability and acceptability of [DNA] evidence," p. 43. In saying that laboratories should move "quickly" to establish such programs, the Committee chose the term with care "to be faster than with all deliberate speed, for example," p. 80, and to clearly signal courts that failure to do proficiency testing would not be acceptable for long.

Lander also explained the reason the Committee demanded blind proficiency testing: only blind testing gives an adequate measure of the likelihood of error.

> An adequate [method of proficiency testing] must surely be blind. If you know that you are working on test samples rather than case samples, you will, even if you don't intend to, be more careful. Thus, open proficiency testing where the examiner knows that they are being examined, does not provide an adequate measure of proficiency. Blind proficiency testing, where samples are worked in normal case flow, provides a good measure of that.

Id., at 50.

In light of these very powerful pronouncements demanding realistic blind proficiency testing, it is clear that there are scientists significant in number and expertise who would accept no less. It would therefore appear impossible for any method of

error rate estimation to meet the requirements of Kelly unless it incorporated blind proficiency testing on samples simulating casework.

2. None of the Laboratories That Performed DNA Testing In This Case Have Employed a Generally Accepted Method to Estimate Error Rate.

The evidence to be introduced in the hearing will show that none of the laboratories whose work is offered in this case have done any adequate external blind proficiency testing on realistic samples to provide a meaningful estimate of its error rate. The true error rate of all the laboratories is unknown and unknowable based on currently available data. Consequently, the value of the DNA evidence they offer is impossible to evaluate and therefore inadmissible.

POINT III

THE METHODS USED IN THIS CASE FOR THE COLLECTION, PRESERVATION, HANDLING, AND PROCESSING OF CRIME SCENE SAMPLES FOR FORENSIC PCR BASED DNA TESTING -- THE DQ ALPHA, D1S80, AND POLYMARKER TECHNIQUES -- ARE NOT GENERALLY ACCEPTED AS RELIABLE AMONG MOLECULAR BIOLOGISTS.

Forensic DNA testing based on the PCR technique is very different than RFLP testing. There is universal recognition in the scientific community that special and peculiarly difficult problems must be resolved if a reliable transfer of the extremely sensitive PCR technology from its present use in research laboratories and clinical (medical) diagnostic laboratories to the forensic arena is to be accomplished.

One point that emerges immediately in considering the general acceptance of PCR based forensic testing is that the scientific community has unequivocally warned about special dangers of sample contamination. These dangers embrace both the methods used for the initial collection, preservation, and handling of samples by crime scene technicians as well as the methods used for processing the samples in the laboratory. The NRC Report expressed its most "serious concern" about the problem of "contamination of evidence samples with other human DNA," NRC Report, at 65, and went on to underscore that reliable methods must be developed to prevent and control contamination problems unique to forensic PCR based testing in both the sample gathering and laboratory testing processes. NRC Report, at 66.

Therefore, it must be emphasized that a Kelly inquiry concerning PCR based testing must embrace the methods used by the

laboratories for identifying, correcting, and preventing contamination in the collection, preservation, and handling of crime scene samples. Of necessity, the principal focus of this inquiry will center on the methods used by LAPD crime scene and laboratory personnel since that agency collected, preserved, handled, and initially processed all the critical crime scene samples in this case. In addition, a Kelly inquiry must separately review the general acceptance of each PCR-based technique, and its application by each different laboratory in this case, whether one chooses to characterize the inquiry as a Prong 1 or Prong 3 question. See, People v. Barney, 8 Cal. App. 4th 811, 810; People v. Pizarro, 10 Cal. App. 4th 57, 78 (Application by FBI and Cellmark of RFLP testing procedures must be separately examined).

The prosecution's burden at this hearing is a very heavy one indeed. There are no California appellate cases approving the methods of even the most experienced and validated laboratories which utilize the DQ-alpha technique. Each of the laboratories in this case have just begun validating their use of the DQ-alpha method based on a "kit" they received from Roche laboratories. The use of a commercially distributed standardized PCR DQ-alpha "kit," however, does not mean a laboratory employs adequate methods and controls to do reliable PCR DQ-alpha testing. Individual laboratory validation is required, and many scientists, and the NRC itself, believe that additional scientific controls are necessary to make PCR based forensic

testing reliable. The NRC makes this point clear in its comments on Roche's DQ-alpha "kit":

> One commercial kit for forensic PCR analysis has been marketed. Other such kits will probably be ready for commercial distribution soon. The committee sees a potential for introduction of unreliable kits and the misuse of kits. The existence of a kit suggests ease of use and low chance of technical error. The committee believes that nonexpert laboratories will run a significant chance of error using kits. We therefore recommend that a standing committee (discussed later in this chapter) consider the issue of regulatory approval of kits for commercial use in forensic DNA analysis. Even though no precedent exists for the regulation of tests in forensic DNA applications, we believe that it might be necessary for a government agency to test and approve kits for DNA analysis before their actual forensic use.

NRC Report, at 69.

Moreover, the use of PCR based polymarker tests by Cellmark, and D1S80 tests by DOJ, are clearly, for these laboratories, at the earliest experimental stages. The forensic use of these techniques by the laboratories are barely known to the scientific community, much less generally accepted.

Furthermore, the prosecution will be unable to demonstrate at the Kelly hearing that the LAPD has, nor did it employ, a generally accepted method for the collection, preservation, and handling of crime scene samples for purposes of PCR-based testing. As a consequence, the DNA found in key crime scene samples were severely degraded. Such severe degradation substantially increases the risk of getting unreliable PCR typing results from those samples due to the slightest subsequent contamination by LAPD technicians and laboratory personnel, or by any of the laboratories that subsequently did PCR testing on the

samples. Moreover, the risk of sample contamination created by unreliable preservation and handling practices was seriously compounded by the fact that the LAPD DNA laboratory does not employ generally accepted methods for identifying, preventing, and controlling contamination in its processing of samples for PCR testing. Put simply, the methods employed by LAPD are not generally accepted as reliable and they have created scientifically unacceptable risks of sample contamination for purposes of PCR testing on the crime samples in this case.

A. The Transfer of PCR Technology To Forensic Testing.

The PCR technique was first developed by Dr. Kary Mullis while working for the Cetus Corporation in 1985.[72] Last year, Dr. Mullis won a Nobel prize for this work.

Cetus owned a patent on the PCR technique which survived a lawsuit by DuPont, which claimed the technique was not patentable. Recently, Cetus, and the PCR patent, were purchased by Hoffman-LaRoche (Roche).

The PCR technique is used widely in research laboratories and many clinical laboratories, most notably immunological laboratories doing clinical work on organ transplants. Nonetheless, the scientific community has consistently expressed caution about the transfer of PCR technology to forensic applications. For example, the Office of Technology Assessment of the United States Congress reported in July, 1990:

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[72] The NRC Report offers an explanation of how the PCR technique works. NRC Report, at 40-44.

> At present, however, the enthusiasm of some for PCR applied to forensic casework is tempered. Cautionary voices warn that, compared to RFLP analysis, all the possible artifacts and steps necessary to avoid them have not been fully identified. Some believe that additional studies of PCR on simulated or real samples is necessary to ensure that problems often encountered with real samples, including DNA and non-DNA contaminants, do not interfere with accurate PCR use in forensic applications.[73]

More recently, the NRC began its discussion of forensic PCR testing with this observation:

> PCR is a relatively new technique in molecular biology, having come into common use in research laboratories only in the last four years. Although the basic exponential amplification procedure is well understood, many technical details are not, including why some primer pairs amplify much better than others, why some loci cause systematically unfaithful amplification, and why some assays are much more sensitive to variations in conditions. Nonetheless, it is an extremely powerful technique that holds great promise for forensic applications because of its great sensitivity and the potential of its use on degraded DNA.[74]

And the NRC ended its discussion of PCR by concluding:

> PCR analysis is extremely powerful in medical technology, **but it has not yet achieved full acceptance in the forensic setting**. The theory of PCR analysis, even though it is the analysis of synthetic DNA as opposed to the natural sample, is scientifically accepted and has been accepted by a number of courts. However, most forensic laboratories have invested their energy in the development of RFLP technology and have left the development of forensic PCR technology to a few other laboratories. Thus, there is no broad base of experience in the use of the technique in identity

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[73] Chapter 3, "Validity, Reliability, and Quality Assurance, Genetic Witness: Forensic Uses of DNA Tests," Congress of the United States, Office of Technology Assessment, BA-438, Washington D.C. (July 1990), at page 69.

[74] DNA Technology in Forensic Science, Committee on DNA Technology in Forensic Science, National Research Council, National Academy of Science (National Academy Press, 1992), page 63.

testing. [emphasis added][75]

The reason that the PCR testing has not achieved full acceptance in the forensic setting is because serious problems have been encountered. There are four basic difficulties with the application of current forensic PCR testing methods: contamination, misincorporation, differences in qualitative and quantitative fidelity, and differential amplification.

1. Contamination.

Contamination is the single greatest problem in the transfer of PCR technology to forensic testing. This is because the extraordinary ability of PCR to reproduce a single copy of DNA is also its greatest disadvantage. "PCR is not discriminating as to the source of the DNA it amplifies, and it can be exceedingly sensitive."[76]

Contamination can arise in a myriad of ways. The general categories of contamination outlined by the NRC are:

a) Contamination from handling in the field during collection, either by cross-contaminating samples with each other directly, cross-contaminating samples through DNA carry-over on evidence gathering instruments or the gatherer's clothing, mixing up samples, or inadvertent contribution from the biological

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[75] DNA Technology in Forensic Science, Committee on DNA Technology in Forensic Science, National Research Council, National Academy of Science (National Academy Press, 1992), page 70.

[76] DNA Technology in Forensic Science, Committee on DNA Technology in Forensic Science, National Research Council, National Academy of Science (National Academy Press, 1992), p. 65.

products from the evidence gatherer him or herself (sweat, sneezing, dandruff, etc.)[77];

b) In the laboratory, cross-contamination of samples to each other, or contamination emanating from the evidence handlers and their instruments, while samples are being manipulated, sorted, labeled, dried, cut, before, during, and after the DNA extraction process;

c) Contamination from contaminants in solution, reagents, or aerosols ("Even the simple act of flipping the top of a plastic tube might aerosolize enough DNA to pose a problem.");

d) PCR product carryover contamination - the contamination of evidence samples or reaction solutions with PCR products from prior amplifications; and

e) Mixed samples -- contamination from the fact that a crime scene sample, such as blood stain, could be a mixture of bloods or other biological fluids or substances. NRC Report, 65-67.

Recognized leaders in the scientific community, unaffiliated with laboratories who have a vested interest in the immediate implementation of current forensic PCR methods, have urged against the use of such testing until more stringent controls be employed to guard against sample contamination, including

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[77] Cross-contaminating samples directly is a more serious problem when handling bloodstains than with the mixed body fluids unique to a sexual assault case. In sexual assault cases, a differential extraction procedure bursts open the non-sperm cells from the female while leaving the sperm cells intact. Thus, one would have to contaminate the rape kit swabs or victim's underpants with other sperm rather than with sweat, saliva, or other bodily fluids to achieve a spurious result.

independent blind proficiency testing of laboratories. The views of these scientists alone preclude a finding of general acceptance.

DR. LEWONTIN

First, consider the recent observations of Dr. Richard Lewontin, a pre-eminent geneticist who has been profoundly influential in the scientific debate over forensic DNA testing:

> The usual scenario in a criminal trial is that a small amount of dried blood, semen or tissue scraping is recovered from the scene of a crime. A suspect is then identified, and a sample of his or her blood is taken on cubic-centimeter amounts. DNA from the crime scene scraping and from the suspect's blood sample are then compared side by side in the same laboratory. (Sometimes the tissue or dried blood is found on property of the suspect and it is the victim's DNA that is to be matched with it.) While there is more than enough DNA recoverable from the suspect's large blood sample to carry out the needed procedures, the very small, and often degraded, sample from the crime scene does not contain sufficient DNA for the comparison. To obtain sufficient material, the DNA from the crime scene is "amplified," that is, copied thousands or millions of times in a procedure known as polymerase chain reaction (PCR). As the name of the procedure suggests, the original small number of DNA molecules are copies once, then these copies plus the original are copied a second time and so on for a number of cycles, increasing the total population of molecules exponentially until a sufficient amount has been produced for the matching procedure. The problem with the PCR technique is that because of its chain nature, contaminant molecules in the original sample may also be amplified and, since the original crime scene sample contained so few molecules, contaminants may overwhelm the original in the amplification. In addition, small differences in DNA sequence can have very large effects on the relative amplification of the components in an original mixture.
>
> Now consider the actual practice in a forensic DNA laboratory. A technician is handling two samples. One is the very large DNA sample from the suspect's blood, the other is the minuscule DNA sample from the crime scene, which is then amplified by PCR. The situation is ideal for PCR contamination, with the result that the suspect's DNA will not really be compared with that from the crime scene,

but with his or her own DNA that has just been replicated in the PCR reaction. The result will be a perfect match.

All of us who use the PCR technique regularly are acutely conscious of the contamination problem, and the best laboratories have suffered occasionally from it. The perspiration and "oils" on fingertips have provided enough DNA contamination in PCR experiments to give completely artifactual results. Only careful replication catches these errors, and some errors have not been caught until much later when another laboratory found conflicting results. In the forensic context, where the liberty and even life of the suspect is in question, it is essential that courts be assured that laboratories are taking careful precautions against these contamination errors, not to speak of grosser errors of recording, etc. Representatives of commercial laboratories that have previously been found to provide erroneous results have told interviewers that they have "cleaned up their act." Perhaps they have, but we cannot know without independent checks, and anyway what about the people convicted before they "cleaned up their act"? The FBI has consistently refused to allow independent quality control checks, relying on their own internal procedures.

In a forensic context, where the liberty and even life of a suspect is at stake, there must be frequent, independent and unannounced inspections and tests of DNA laboratories, on the model of the inspections carried out by radiation safety officers and the Department of Energy of laboratories using radioactive materials. The issue is certainly too important to be dismissed by the unsubstantiated opinion of someone familiar with the technical procedures at first hand. If the data themselves are unreliable, questions of probabilities of alternative suspects are irrelevant.

R. C. Lewontin, "Comment: The Use of DNA Profiles in Forensic Contexts, in "DNA Fingerprinting: A Review of the Controversy," Statistical Science, Vol. 9, No. 2 (1994), at 259-260.

DR. RICHARD ROBERTS -- NOBEL PRIZE LAUREATE

Dr. Richard J. Roberts recently won the Nobel prize in genetics for his work in the area of restriction enzymes. He has testified numerous times as a prosecution expert in cases involving RFLP analysis and traditional Southern blotting methods. Dr. Roberts has submitted a number of affidavits opposing the use of forensic PCR analysis. In an affidavit

submitted for consideration at a *Frye* hearing in Washington v. Gentry, he had this to say:

> First, I will make some general comments about PCR technology. The technique is an extremely powerful one. In principle, and occasionally in practice, a small region of a single DNA molecule can be amplified sufficiently to allow its detection. This means that DNA from a single cell in principle can be detected by the method. It is this exquisite sensitivity that makes it desirable for use in a forensic setting where often only limited amounts of material may be available. Unfortunately, it is this very sensitivity that makes it also prone to the possibility of contamination. This can result in the amplification, not of the small amount of sample that was intended, but rather of a small amount of an unintentional contaminant. Indeed, problems of contamination are a major source of error in the laboratory and extraordinary precautions need to be taken when performing multiple PCR experiments to avoid amplifying samples that have become contaminated through aerosols or sloppy laboratory procedures. Of course, knowing that such contamination can take place means that when working in a laboratory one takes the necessary precautions to avoid it. Unfortunately, the samples that are collected from crime scenes are, by their very nature, usually contaminated to begin with! It thus becomes extremely important that proper checks and controls are carried out to be certain that the product amplified from a particular sample is from the sample and not from the contaminant. How can this be done? Unfortunately, to the best of my knowledge there is no generally accepted method by which this can be guaranteed at the present time. The reasons are described below.
>
> PCR is a technique that is still relatively new. It has only been in routine use in academic laboratories during the last two years and so our experience with the method is itself fairly limited. This experience for the most part has involved the pristine academic laboratory setting.[78] Much less experience is available for forensic samples. In a laboratory setting it is usually possible to take the great precautions that are necessary to avoid dealing with mixed samples. Nevertheless, it occurs and occasionally

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[78] The term "pristine academic laboratory setting" refers to the fact that research scientists generally work with known samples taken from known sources under ideal conditions.

> amplification results in bands[79] other than the ones expected. In the laboratory one can usually go back and repeat the experiment, perhaps changing reagents or merely being more careful about sample handling. That such artifactual amplification will happen from time to time is to be expected.

Roberts Aff., February 22, 1991, Washington v. Gentry, at 2-3 [emphasis added].[80]

DR. KARY MULLIS -- NOBEL PRIZE LAUREATE

Finally, and perhaps most significantly, there is the position of Dr. Kary Mullis himself, the man who developed the PCR technique and won a Nobel prize last year for doing so.

Dr. Mullis believes that the PCR DQ-alpha test should be used for exclusions but not inclusions. He has publicly taken this position, and criticized the inadequacy of controls being used to protect against contamination, in two Kelly hearings in the past two years. See, Mullis testimony, People v. McIntosh & Schlaepfer and People v. Moffet.

In the course of his testimony in People v. McIntosh & Schlaepfer, Case No. 33026, Tulare County Superior Court, on

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[79] In using the term "bands," Dr. Roberts is referring to running amplified product on a test gel in order to determine the genotype of the test sample.

[80] Dr. Roberts goes on to note that he would want "knowledge by some independent means of the quality of the sample being analyzed," and could "envision PCR results being useful as an adjunct to more conventional RFLP tests, when [the RFLP tests] have already produced results." Roberts Aff., at 4. The prosecution can find little solace in this qualification of Dr. Roberts' strong statement for at least two reasons. First, LAPD's PCR testing preceded Cellmark's RFLP test on sample 52 and, given the contamination problems at LAPD, does not provide prior, independent knowledge about the quality of the sample. Secondly, the prosecution is offering three different forms of forensic PCR testing on all other samples not as an "adjunct," but as the sole basis for analysis.

August 23, 1994, Dr. Mullis touched upon the major issues the defense is raising here.

First, Dr. Mullis specifically addresses why special care must be taken in the collection, handling, and preservation of crime scene samples when PCR testing is going to be done, and why such procedures must be considered a part of the forensic PCR testing method:

> Q. Okay. What I'm pointing at, for the record, is the DNA technology in Forensic Science by the National Research Council that was published in '92. I forgot what exhibit it is.
>
> But, in any event, you are familiar with some of the findings and the information that's contained in that report they submitted in '92?
>
> A. Yes.
>
> Q. Looking at page 52 where they distinguish between the DNA diagnostics and DNA forensic where they give descriptions, I'm just curious whether this accurately represents what you're describing here when you're talking about diagnostics. You're usually involving clean tissue samples, known sources, repeated -- usually can be repeated comparison of discrete alternatives. Is this the kind of stuff that you're acquainted with?
>
> A. Right. You have control over everything. Not over everything, but over many more things when you're in a diagnostic situation than if you're just selecting samples that have been laying around.
>
> Q. So where they describe the forensic differences that are involved in forensic typing, they're speaking of degraded and contaminated possibilities, multiple unknown sources, inability to repeat always, matching of samples that can be from a wide range of alternatives. These are the kinds of things that you're aware of?
>
> A. Yes, it's much more difficult to know that your results are really what they seem to be in that situation. I think -- criminalists, I think, are the people that go around and collect that stuff. They

probably will get better at it. They'll eventually know what you can and can't do. But it's a vast problem compared to what you have in a clinic or in a hospital.

McIntosh, Mullis at 2340, line 17 to 2342 line 3.

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Q. I didn't ask the question very well, I'm sure. But I think you answered it. Just to make sure though, what I'm talking about is that let's say you have samples that are picked up at a crime scene and not handled carefully and contamination could occur, a cross-mixing of various samples of DNA. Because of PCR's inherent sensitivity, if you ran PCR procedure on that DNA and then attempted to type it using the dot blot method, for example, would it be-- tend to be more sensitive to that error because of the evidence that was handled in PCR versus some other type of typing?

A. Yeah, I think I answered saying in certain cases when you wouldn't always know when that was, it certainly would be. In other cases, it introduces an uncertainty there that you don't have it you don't amplify. Because if you don't amplify and you get a thousandth part contamination, you know it will still be a thousandth part when you get to the analysis. It will be a wispy little thing somewhere and you'll say that's probably an artifact.

If you're going to amplify it and you pick up a contaminant that happens to be a lot easier to amplify than the sample that you really want to amplify, then that could become a real problem, because ten cycles gives you a thousand fold amplification, 20 cycles gives you a million, 30 cycles, which these people are doing, 30 or 32, gives you a billion.

Q. Thank you. Now, you said something this morning when you were talking about the application of PCR to the research and diagnostics area and then you were asked about the application in the forensics area. I think you mentioned that forensics is not the same as research and diagnostics. And then you said the certainty level is a lot lower, and I'm not sure what you meant by that.

In other words, when you're using PCR in the forensic area, is the certainty level lower than you would expect it to be?

A. I don't think the certainty level of the PCR reaction inherently would be any lower. It doesn't matter what it's being used for. The certainty level of the whole analysis involves the collection, the maintaining, the processing of the samples.

McIntosh, Mullis at 2387 line 2 - 2388 line 24.

Similarly, Dr. Mullis decisively rebuts the prosecution's contention that a PCR DQ-alpha, polymarker, or D1S80 test must be free of contamination if the negative amplification control (the "blank control") that comes with the Roche kit does not light up. Echoing the NRC's warning that a blank control will not necessarily reveal contamination ("[E]ven in a laboratory contaminated with PCR carryover, blank controls do not necessarily become contaminated on every occasion." NRC Report, at 67), Dr. Mullis describes the dimensions of the problem:

Q. Now, you said earlier something, I won't go into the details, but it is listed here on page 67, that blank controls do not necessarily become contaminated on every occasion. This is a problem?

A. That's a tough problem, too. It is. How many blank controls are you going-- like I said, you cannot ever show that there wasn't one contaminating molecule in a bottle without taking the whole bottle and putting it into the PCR reaction. Once you've done that, you got to make another bottle. Just like you can't ever know if in fact there's just one, you know, virus in your blood stream if you're looking for a dangerous virus. You can't sample the whole thing. You don't sample the whole bottle of a particular reagent when you take a sample of it.

If it's highly contaminated, the statistics say you stick your pipette in there and take it out and you would get at least one of the contaminants. If there's only ten or fifteen in there, it will only be ten or fifteen times when you're using that bottle that you end up pulling one of them out. You never know when that would be. So you have to have five controls and they come out blank and then the unlucky time you might stick it down in there and put it into one of your

experimental tubes and it will show up there, but not in any of your controls.

McIntosh, Mullis at 2375 line 21 to 2376 line 23.

On cross examination Dr. Mullis remained firm in his contention that forensic PCR tests were not as reliable as other diagnostic clinical applications, particularly when analysis was being performed on degraded samples.

Q. As far as the actual basic science of the diagnostic laboratories using PCR, that is no different than a forensic lab using PCR, correct?

A. The basic science is basic science. I suppose the problems in the forensic lab, we have tried to list some of the ones that are in a forensic lab where it's very difficult or impossible to even make a good shot at solving them. Where in a clinical setting it is possible to take precautions that make your results much more reliable. That's what I was talking about just before the break which had to do with being able to know exactly how much DNA you're adding, how many copies of what it is you're looking for to expect and to set up the conditions of the amplification in accord with that.

If you have a sample that's degraded, you don't know how much DNA's in it, you just have to take a shot at it. And you might go too many cycles and, therefore, bring a contaminant up to a level that it will look like if it wasn't a contaminant.

McIntosh, Mullis at 2420 line 1 to line 24.

Finally, Dr. Mullis rejected the idea that combining, as the prosecution has done in this case, several different DNA and conventional serology systems would make the PCR testing any more reliable:

Q. In a case where we use several different systems, one including DQ-alpha as a site, we use RFLP markers as other sites, conventional serological evidence as other sites, would the combination of all those sites be useful?

A. If there weren't so much trouble with reliability on the DQ-alpha thing, that would certainly be data that you could add up together and say well, the probability based on DQ-alpha is that he's in a 17 percent group. The probability based on blood typing is that he's on a 30 percent group. The probability that you do with some RFLP or a couple of those puts him in an even smaller group. But you still would come up with maybe a number of, say, two out of a hundred people might or two out of a thousand or one out of a million maybe, if you're lucky. Depends on the data that you collect, whether it's rare data or whether he's got common things at those places.

But the reliability of the RFLP data, it says why add that to this whole mishmash of stuff that you've got? Why take some piece of evidence that you can find plenty of scientists will come in and say I wouldn't trust it on myself? I would repeat it over and over. I've got this problem with contamination. I've got this one with differential amplification.

This method relies on too many things that are easy to get wrong to make it really worth pursuing. That's all I'm saying. I'm saying why pick a method, why use a method that is so subject to human error and to just things that are way beyond our control? Why pick a method like that to use in a Court of Law? You wouldn't use that on your taxes.

McIntosh, Mullis at 2450 line 12 to 2451 line 21.[81]

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[81] Dr. Mullis reiterated in the next question and answer his position that the appropriate application of PCR technology will be in sequencing tests, such as with mitochondrial DNA, which would avoid many of the statistical and contamination problems bedeviling the DQ Alpha, polymarker, and D1S80 approaches.

Q. Opposed to that, the system you propose with mitochondrial DNA sequencing, that would be far superior?

A. It's easier to do. It's cheaper than having people arguing for days. It is much more informative. And it is presently doable. It's being done all the time. It's like silly to keep using this thing. With all the problems that have been pointed out about it, it should be evidence that there's enough doubt about it in the scientific community without somebody having written a definitive paper showing that it's worthless. There's

TESTIMONY FROM OTHER EXPERTS

Other molecular biologists from the academic community and the clinical community have expressed similar objections to the concerns voiced by Drs. Lewontin, Roberts, and Mullis. For instance, Dr. Ashok Bhagwat, a professor in the Chemistry Department at Wayne State University, had extensive experience studying molecular biology at Cold Spring Harbor where he received his post doctoral training working under Dr. Richard Roberts. In Washington v. Gentry, Dr. Bhagwat offered these succinct views:

> Q: Dr. Bhagwat, is PCR technology generally accepted in the scientific community for use on crime scene evidence?
>
> A: No, it's not.
>
> Q: And could you describe to the Court some of the general reasons why you have that opinion?
>
> A: There are several problems with the material that you are likely to obtain at a crime scene. It is most likely to be contaminated. And let me just slightly digress and say, PCR is so powerful that a single cell contamination could be devastating to the result, and hence, contamination is a big potential problem and it is unlikely that it is easily solvable for evidence arising from crime scenes.

Gentry, 28 RP 2238-2239.

Dr. John Gerdes is clinical director at Immunological

> enough doubt about it in the scientific community that the legal community should take notice that the scientific community is not even using that much any more. They're starting to sequence. We're doing it easily.

McIntosh, 2451 line 22 - 2452 line 13.

Associates of Denver, a reference laboratory that uses the same PCR technology involved in this case in conjunction with transplants (matching organ donors and recipients) and screening for AIDS and other infectious diseases. He has testified over twelve times expressing, from the hands-on perspective of one who runs a clinical laboratory, the same objections raised by Drs. Lewontin, Roberts and Mullis. Dr. Gerdes testified most recently in the McIntosh case, in tandem with Dr. Mullis, and the defense submits this transcript for the Court's edification.

(a) Contamination from PCR carryover.

Most of the discussion so far has focused on cross-contamination of forensic samples in their collection, preservation, handling, and processing. Before leaving the subject of contamination, however, special mention must be made of the phenomenon of PCR product contamination: contamination of samples by PCR product from previously run reactions in a laboratory. This is sometimes called "carryover contamination."

One of the developers of the Cetus/Roche kit, Dr. Russell Higuchi, describes the phenomenon:

> More unique to PCR is the possibility of carryover contamination from a completed PCR to another sample yet to be amplified. Because by the nature of PCR, PCR product will seed production of more PCR product, the sheer number of copies of PCR product after amplification can make the consequences of such contamination more dramatic. A typical PCR could have 10^{12} copies of an amplified gene. If a preparer inadvertently transfers, as before, 0.1 μl[82] of PCR sample A into sample B, even though sample B has a relatively high concentration of human DNA, the number

[82] A μl is a microliter (one millionth of a liter).

> of copies of the target, single-locus gene that derive from sample A far outnumber the copies that actually stem from sample B. Thus, the DNA type obtained will be that of A and not B, and the relative amount of the B type is so small that it would not even show up in the test, eliminating the possibility that the presence of more than two alleles would flag the occurrence of the contamination.[83]

The NRC highlighted the problem of PCR carryover contamination as a key area of vulnerability, declaring "it has become clear that carryover products from one PCR reaction to another must also be eliminated." NRC Report, at 67. Accordingly, the NRC commented that "[m]ethods of detecting and preventing contamination from one PCR reaction to another in forensic laboratories are generally still in their early stages, and additional development should be encouraged."

It is plain, however, that forensic PCR laboratories, including those involved in the instant case, have not responded appropriately. For example, the NRC pointedly suggested that it would be a good idea to treat all evidence samples with uracil N-glycose (UNG) before amplification to destroy any PCR carryover from previous PCR reactions. Id. Clinical laboratories have followed up on this idea. Dr. Gerdes reports that his and other clinical laboratories "don't do anything without UNG anymore," McIntosh, Gerdes, 1915 line 6, and that the UNG control was featured in a PCR chlamydia kit which won recent FDA approval. Id., 1914 line 19. Forensic PCR laboratories, including the ones

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[83] R. Higuchi and E.T. Blake, "PCR in Forensic Science, DNA Technology and Forensic Science," 32 Banbury Report, Cold Spring Harbor Laboratory Press (1989), at page 275.

which did testing in this case, do not use UNG to protect against carryover contamination.

Most importantly, since PCR carryover contamination can be a systemic, cumulative problem in a laboratory, the NRC demanded that controls must be in place to monitor "general contamination" in forensic PCR laboratories:

> In view of the problem of contamination due to handling and carryover, laboratories must incorporate contamination control into their standard operating procedures. And outbreaks of contamination and the steps taken to correct the problem should be documented.

NRC Report, at 67 [emphasis added].

Yet, at every turn, the prosecution and the laboratories have attempted to thwart discovery of laboratory contamination problems. Other than some systematic review of hybridization strips, there is no way to ascertain the extent of contamination in a forensic PCR laboratory, especially when the laboratory does not make a comprehensive effort to monitor or document the occurrence of contamination. Cellmark and the prosecution has opposed, along with Cellmark, the defense's request to view hybridization records from ten cases before and after the analysis performed in the instant matter. The prosecution has opposed the same request with respect to DOJ. Despite evidence that the LAPD laboratory has experienced "outbreaks" of contamination, and has not taken adequate steps to document or correct the problem, the prosecution and the laboratory continue to resist defense efforts to review hybridization strips. Indeed, despite specific reference in the NRC to "outbreaks of

contamination," the prosecution and the laboratories claim they don't understand what is meant by that phrase in defense discovery requests. See Letter of Dr. Robin Cotton, September 27, 1994, at 2 ("Note: Please ask for a clarification on what is meant by 'an outbreak of contamination'"...), attached to People's Response to Discovery Sanction Motion of September 28, 1994.

Given the crucial importance of demonstrating the absence of contamination in PCR laboratories to general acceptance in the scientific community, a strong inference should be drawn against the proponents of forensic PCR evidence for their refusal to permit adequate discovery of their contamination controls and their abject failure to monitor contamination.

2. Misincorporation, Differences in Qualitative and Quantitative Fidelity, and Differential Amplification.

PCR amplification products do not always faithfully represent the starting material in the sample, either qualitatively or quantitatively.

During PCR amplification nucleotides are known to be "misincorporated" at the rate of one per 10,000 nucleotides per cycle. If amplification is performed on a sample that has a large number of molecules, and if the misincorporation is random ("stochastic fluctuation"), then the low frequency of random errors will not skew typing results. The NRC warns, however, that "for systems in which misincorporation is not random," difficulties will arise. NRC Report, at 64. In particular, in DNA systems that contain tandem repeat sequences, "the DNA

polymerase can slip during amplification, introduce or delete copies of the repeat, and produce a heterogeneous collection of fragments, often making interpretation difficult." Id. D1S80 is a VNTR with tandem repeat sequences, thereby requiring, in the NRC's view, that its properties be "thoroughly characterized" before it goes on line.

Differential amplification is also a potential problem:

> In some cases, PCR can be qualitatively faithful but quantitatively unfaithful, because some alleles amplify more efficiently than others. A sample might contain a 50:50 mixture of two alleles and yield an amplified product with a 90:10 ratio. Differential amplification can arise through several mechanisms. It has been observed in the amplification of allelic products of different sizes (larger products tend to amplify less efficiently than shorter products) and in the amplification of sequences that differ significantly in GC content (because of differing denaturation efficiencies). In some cases, faithful amplification occurs at some temperatures and differential amplification at other temperatures. The possibility of differential amplification needs to be addressed in the design and development of amplification protocols for each genetic marker system. The safeguards to ensure that differential amplification does not occur should be defined and documented.

NRC Report, at 64-65.

When dealing with mixed forensic samples, especially small degraded samples, quantitative analysis with current forensic PCR methods can be, in the NRC's words, "problematic." Id.

It should be noted that Dr. Mullis believes that PCR based sequencing methods, such as those being developed now on mitochondrial DNA, can avoid the problems of quantitative and qualitative amplification:

> But the sequencing -- the reason I was so strong on sequencing is that it doesn't rely -- sequencing

> doesn't rely on the quantitative accuracy in the amplification of different bands. The quantitative aspect is not as important. Just as long as you've got enough to sequence, it won't matter if you were sort of inefficient in your amplification if you have enough to sequence. If you don't, you can just amplify some more until you do...
>
> If you're sequencing -- if you're sequencing with PCR amplification, [inefficient amplifications] won't change the results. It will say well, you didn't get enough to even get a sequence, so go back and amplify some more. It won't change the sequence. The data that you come out with will be the same, regardless of whether any of those things are wrong.

McIntosh, Mullis, 2377 line 13 to 2378 line 13.

3. The Absence of External Blind Trials Precludes Validation, and General Acceptance, of the PCR Methods Used In This Case.

The importance of external blind proficiency testing on samples that replicate case work has already been discussed in the context of developing a reliable method to determine the error rate of a laboratory. External blind trials, however, also serve a critical role in establishing the reliability of a new method, or validating that a laboratory can reliably apply a generally accepted method. The NRC was unequivocal on this point:

> Most important, there is no substitute for rigorous external proficiency testing via blind trials. Such proficiency testing constitutes scientific confirmation that a laboratory's implementation of a method is valid not only in theory, but in practice. No laboratory should let its results with a new DNA typing method be used in court, unless it has undergone such proficiency testing via blind trials.

NRC Report, at 55 (emphasis added).

None of the laboratories in this case have undergone external proficiency testing via blind trials with any of the PCR

based methods. Given the controversy about the reliability of forensic PCR methods among the leading scientists in the field, the NRC's bright line injunction has particular force: None of the PCR testing should be used in this case because the testing laboratories have not demonstrated its reliability through external blind proficiency testing.

CONCLUSION

The NRC warned that forensic PCR testing "poses even more serious issues of proficiency, control, and technology transfer than RFLP typing." NRC Report, at 70. It decried reliance upon the commercially distributed PCR "kits" that are being used in this case and observed that "[i]nformation on the extent of the contamination problem in PCR analysis and the differential amplification of mixed samples needs to be further developed and published." Id.

Basic methodological issues in the forensic PCR testing remain unexplored or in controversy.[84] Despite the admonitions of the NRC and leading scientists, forensic laboratories have not responded to the fact that techniques for the collection, preservation, and handling of crime scene samples is an essential part of forensic PCR testing methodology because of the special problem of sample contamination. Unlike the American Society for

---

[84] For example, a recent paper by molecular biologists and mathematicians at USC who are independent of the forensic laboratories, demonstrates that a multiple control tube method (they recommend 10) "is superior to the standard one-tube procedure, either when the sample is small or when laboratory contamination is a potential problem." Navidi, Arnheim, and Waterman, "A Multiple-Tubes Approach for Accurate Genotyping of Very Small DNA Samples by Using PCR: Statistical Considerations," 50 Am. J. Hum. Genet. 347-359, 347 (1992).

Similarly, scientists from the FBI have recommended the use of formamide to improve HLA DQ Alpha amplification based on research that shows eight mistypings of bloodstain evidence without using formamide. Comey, Jung, and Budowle, "Use of Formamide to Improve Amplification of HLA DQ Alpha Sequences," 10 Biotechniques No. 1 (1990).

Histocompatibility and Immunogenetics, which has, for PCR techniques, detailed "Standards for Histocompatibility Testing," there is no comparable set of guidelines for forensic PCR testing.

POINT IV

THE DNA EVIDENCE SHOULD BE EXCLUDED PURSUANT TO EVIDENCE CODE §352 BECAUSE IT CREATES SUBSTANTIAL DANGERS OF UNDUE PREJUDICE, OF CONFUSING THE ISSUES, AND OF MISLEADING THE JURY THAT OUTWEIGH ITS PROBATIVE VALUE.

The substantial dangers of undue prejudice, misleading the jury, and confusion of issues that arise from the statistical estimates offered by the prosecution about the value of DNA evidence are self-evident, and emanate from the core of the statistical controversy that continues to rage within the scientific community.

A. Prejudice and Confusion From the Coincidental Match Controversy.

One danger of undue prejudice arises, of course, from the controversial methods used to determine the probability of a coincidental match. Many courts have recognized this danger and found it, in conjunction with the general acceptance issue, to be a compelling basis to exclude DNA statistical evidence. After reviewing many Frye hearing transcripts and taking testimony at his own, Judge Henry Kennedy of the District of Columbia put the problem bluntly:

> [This] court intends no disrespect to the citizens from whom jury panels are drawn when it states, unequivocally, that jurors are not competent to evaluate and resolve these extraordinarily complex and subtle issues...It is almost certain that jurors would simply "jump" to the bottom line numbers without giving any meaningful consideration to any dispute over the principles which underlie the methodology used to generate those numbers. To permit the fancy of jurors to operate in this manner is the antithesis of "due process."

United States v. Porter, F06277-89, Sup. Ct. Dist. of Colum., Crim Div., Slp. Opn., at 88.

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October 6, 1994

VIA FAX

Hon. Lance A. Ito
Judge, Superior Court
Los Angeles County Superior Court
Department 103
Criminal Courts Building
210 W. Temple Street
Los Angeles, CA 90012

Marcia Clark, Deputy District Attorney
[redacted] Deputy District Attorney
Office of the District Attorney
18000 Criminal Courts Building
210 W. Temple Street
Los Angeles, CA 90012

b6 -11
b7C -11

Re: *People v. Orenthal James Simpson*
Case No. BA 097211

Dear Judge Ito, Ms. Clark and [redacted]

Attached is a copy of the Table of Cases and Table of Authorit es for the Opening Brief to Exclude DNA Evidence. The brief was produced so quickly that we were unable to include the Tables of Cases and Authorities when [redacted] flew it out tc Los Angeles on Wednesday morning.

Please note that asterisks have been placed next to all items that are contained in the two volumes of exhibits that accompanied the brief.

Respectfully,

ROBERT L. SHAPIRO

RLS [redacted]

b6 -12
b7C -12

Table of Cases

*All or part of indicated material has been attached in two separate volumes to Court's and District Attorney's copies of submitted brief.

Table of Authorities

FEDERAL BUREAU OF INVESTIGATION
FOI/PA
DELETED PAGE INFORMATION SHEET
FOI/PA# 24-cv-1564

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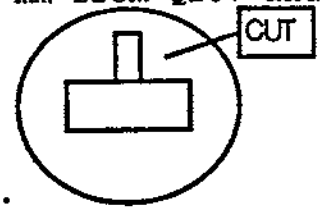
2/19/94 50217009 S UJ VY

Q205-Q207 Removed 1X2 cm sample of Q206 from below heel area to use as a control.

Removed 10 ul of approximately 5ml of K67 blood to place on Q206 cutting and allowed to dry. One-fifth of the sample was analyzed.

Cut 2X5 mm from Q207 and from Q206 in same area that Q207 was



removed.

Q204 was approximately 2X5 mm piece of cloth red in color. One-half of this sample was taken for analyses.

The A/S swab was 2X6 mm and one-half was taken as a control

10ul of K68 blood was taken from approximately 1ml of blood and dried on a tissue to be used as a control for Q204. One fifth of the sample was analyzed.

Cut one each of 2X5 mm sections of K65 with stain and the control K65 without stain. The K65 samples were approximately 2X2 cm before cutting.

Samples were analyzed as follows:

1. The cut samples were placed in 50-400 ul Millipore Ultrafree-MC Filter.

2. 25ul of water were added to each sample and let stand for 45 min.

3. The samples were centrifuged at 4,000 rpm for 10 min.

INSTRUMENTATION CONDITIONS:

The following instrumental conditions were used on the TSQ 70/700 LC/MS/MS for the analysis of EDTA:

	Procedure 1:	Procedure 2:
Column	2.1 mm PRP-1	2.1 mm PRP-1
Mobile Phase:	80:20 AN:H_2O (0.03%)NH4OH	5:95 AN:H_2O (0.06%)NH4OH
Flow Rate:	0.3 mL/minute	0.3 mL/minute
Scan mode	DAU 344	DAU 293
Scan Masses:	298-302 m/z	128-296 m/z
Scan Time:	1.5 seconds	1.5 seconds

Mode: ESI	- MS/MS, coll=20 50psi/4.5kv 5cc sheath cap 200C	+ MS/MS, coll=-20 90psi/4kv 5cc sheath cap 200C
Multiplier:	1200	1200
Masses to Monitor:	300	132, 160 (base peak)

EDTA was screened for with procedure one. The only samples which gave a response above background were known EDTA at 100ppm, the K68 blood which was used as a positive control for Q204 and K67 blood which was used as a positive control for Q206/Q207. The positive samples were analyzed with procedure two.

The order of the samples as run is listed below, the injection volume for all samples was 5ul.

1 Tri-K EDTA at 100ppm
2 H2O blank
3 K65 control from dress
4 K65 stain from dress
5 The control used for the Q204 gate
6 Q204 gate
7 K68 used as a positive control for Q204
8 H2O blank
9 Q206 control from sock
10 Q206/Q207 stain from sock
11 K67 on Q204 for positive control
12 H20/10/20/50/80 ppm EDTA, each run twice
13 H20/c65/k65/c204/q204/k68/c206/q206/q206+k67
scan 0/32/61/90/122/160/195/233/265
14 EDTA dau of 293
15 Water blank
16 K68 control for Q204 dau of 293
17 Water blank
18 K67 with Q206/207 dau of 293

Sample 12 was run to determine the minimum detectable limit of EDTA.

2/20/95

Samples were prepared to determine minimum detectable amount of EDTA on K65.

Four samples from K65 were analyzed.

1 K65 control and 25 ul water
2 K65 with stain and 25 ul of water
3 K65 with 5ul of red top blood and 250ul water
4 k65 with 5ul of purple top blood and 250ul water

These four samples along with a 10ppm EDTA and a blank were

analyzed. The only samples to show the 300 m/z ion for EDTA were the 10ppm standard and the 5ul of blood with EDTA.

The blood with EDTA was 5ul in 250ul or 0.5ul in 25ul. From this analyses it was determined that the minimum detectable amount of blood containing EDTA is 0.5ul of blood.

5ul of blood on cotton has the diameter of approximately 5mm. Therefore the minimum blood EDTA stain would be one tenth the size of a 5mm stain or approximately 1mm square.

2/21/95

Phenolphthalein tests on 1ul of the extract of Q204, Q206, K67 and K68 were positive.

Performed procedure on 0.75ul, 1.25ul and 2.5ul of blood containing EDTA to verify results of previous day. Again, the minimum detectable amount of blood containing EDTA is 0.5ul of blood.

2/22/95

Repeated analyses to detect trace quantities of EDTA. The analyses were performed in the positive ion mode. Daughters of 293 with Q3 scanning 158-162. This analyses is approximately ten times more sensitive than the negative ion. The results were similar except EDTA was detected on the victims dress. The amount of EDTA is approximately 16 time less than that found in EDTA blood based on m/z 160 ion counts (8,000,000/500,000). Ions for m/z 160 were detected in Q204 and Q206, EDTA could not be confirmed with a daughter spectrum while scanning m/z 130-295. A positive ion graph was prepared from EDTA standards. The minimum detectable limit for EDTA ions at m/z 160 is 5ppm. The response in ions for the victims dress is approximately that of a 25ppm solution. Blood concentrations for EDTA in preserved blood are approximately 2,000ppm.

Ran lab coat and Rayon for EDTA. Several m/z 160 ions for lab coat but none for rayon.

2/23/95

Specimens: C204, Q204, C206, Q206, C65, K65, K67, and K68 were analyzed by HPLC for EDTA.

Method: A Water's HPLC system consisting of a 486 UV detector, a 590 pump, and a 710B WISP autosampler were used for this analysis. The following conditions were also utilized in this procedure:

Column: Hamilton PRP-X100

Mobile Phase: 3.0 mM H2SO4/MEOH (95/5)
Detector: Direct UV @ 243nm
Flow: 2.0 ml/min.

The column was initially equilibrated with the mobile phase for 2 hours. Multiple injections of 0.05 M CuSO4 were then made to further condition the column. The extracted samples, which were received in a dried condition, were reconstituted with 20 ul of 0.025 M CuSO4 prior to injection. 10 ul injections were made of all of the samples. Blanks consisted of 0.025 M CuSO4. EDTA was found in K67 and K68 only.

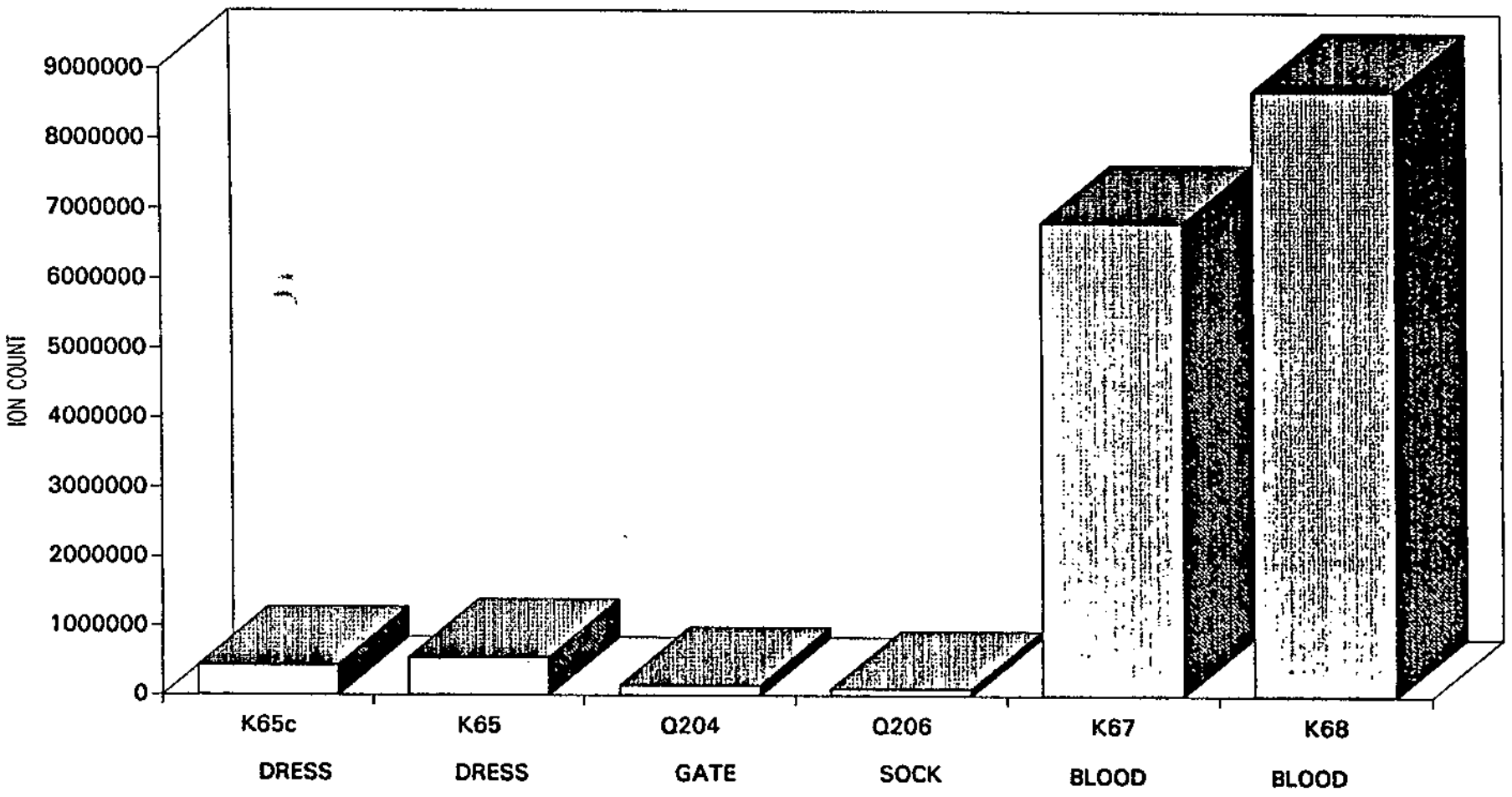
2-28-95

Repeated extract with Q204 to determine if the K68 blood could be removed from a metal surface.

Placed 5ul of K68 on metal surface and allowed to dry. Swabbed approximately One tenth of the 5ul K68 stain with one by one milliliter of the control for Q204.

Same results as previous analyses of Q204.

EDTA ANALYSIS



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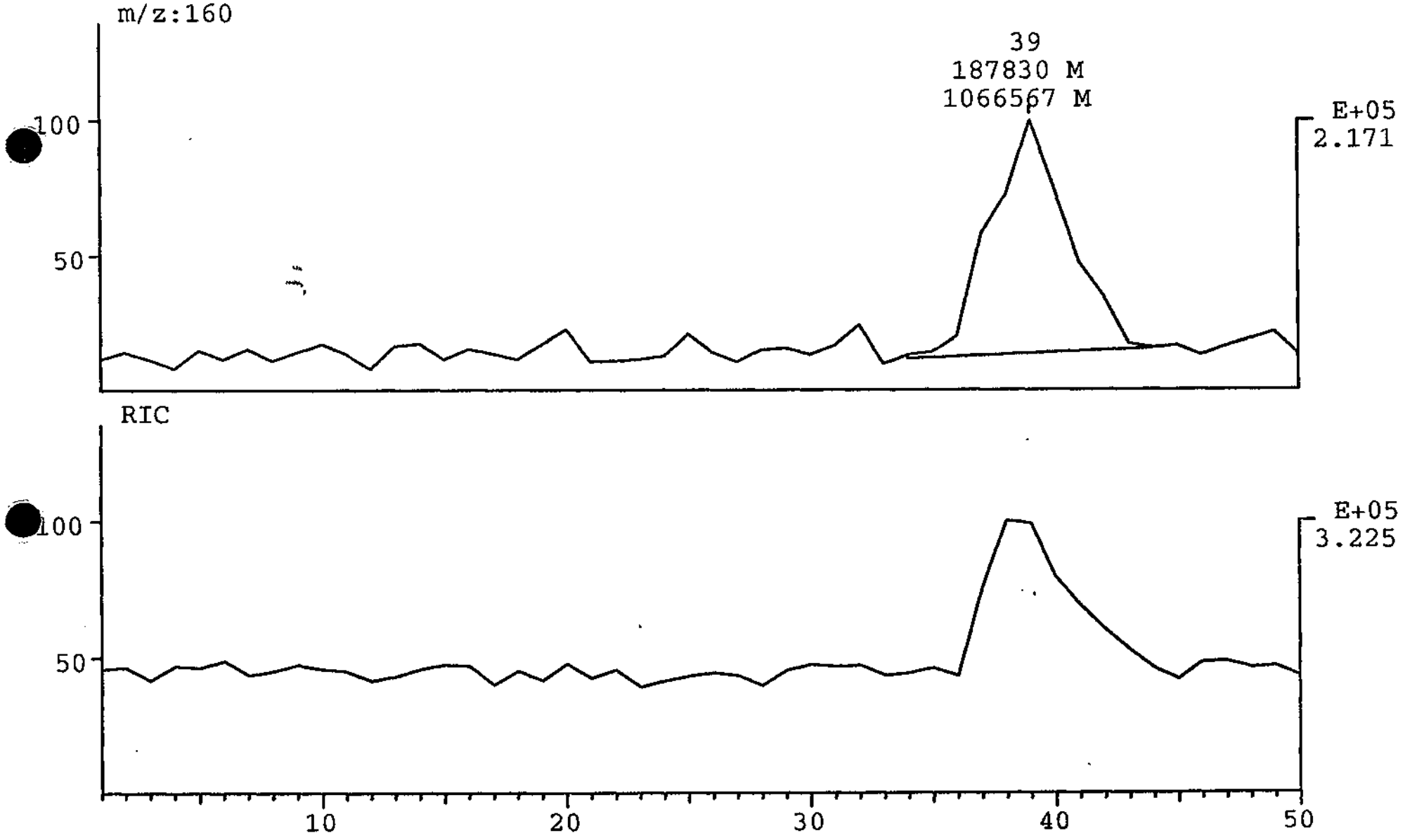
b7c -1



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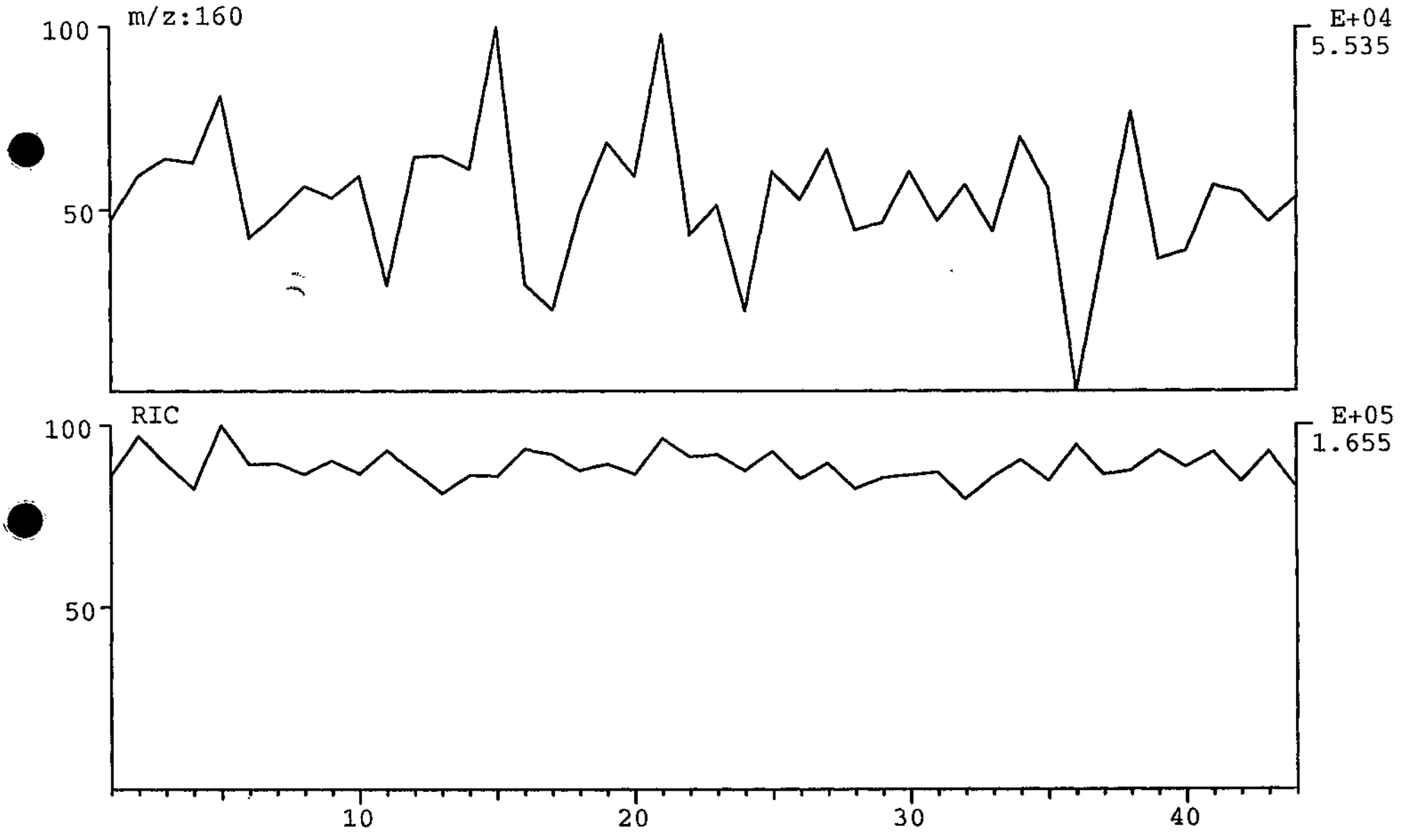

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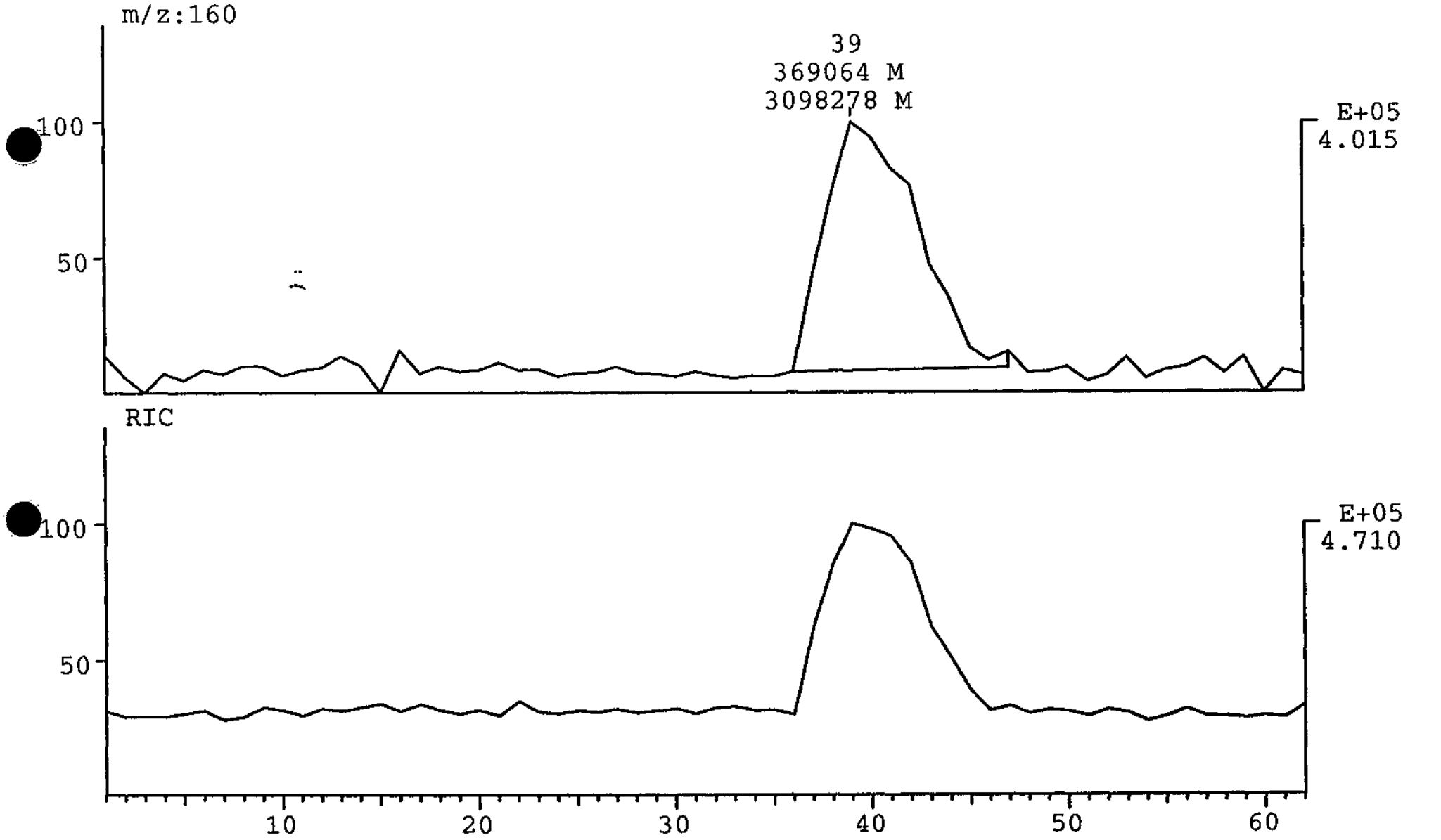

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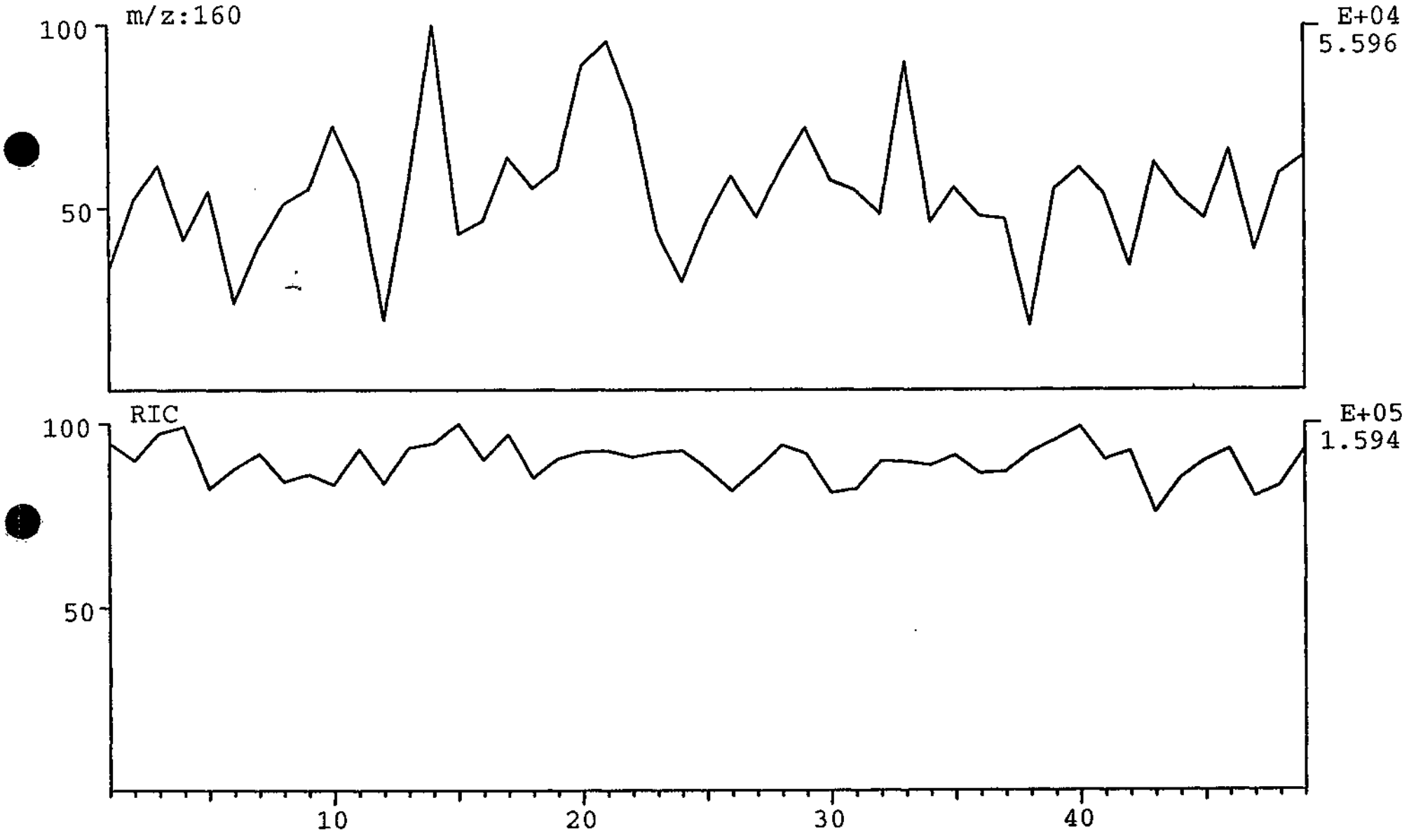

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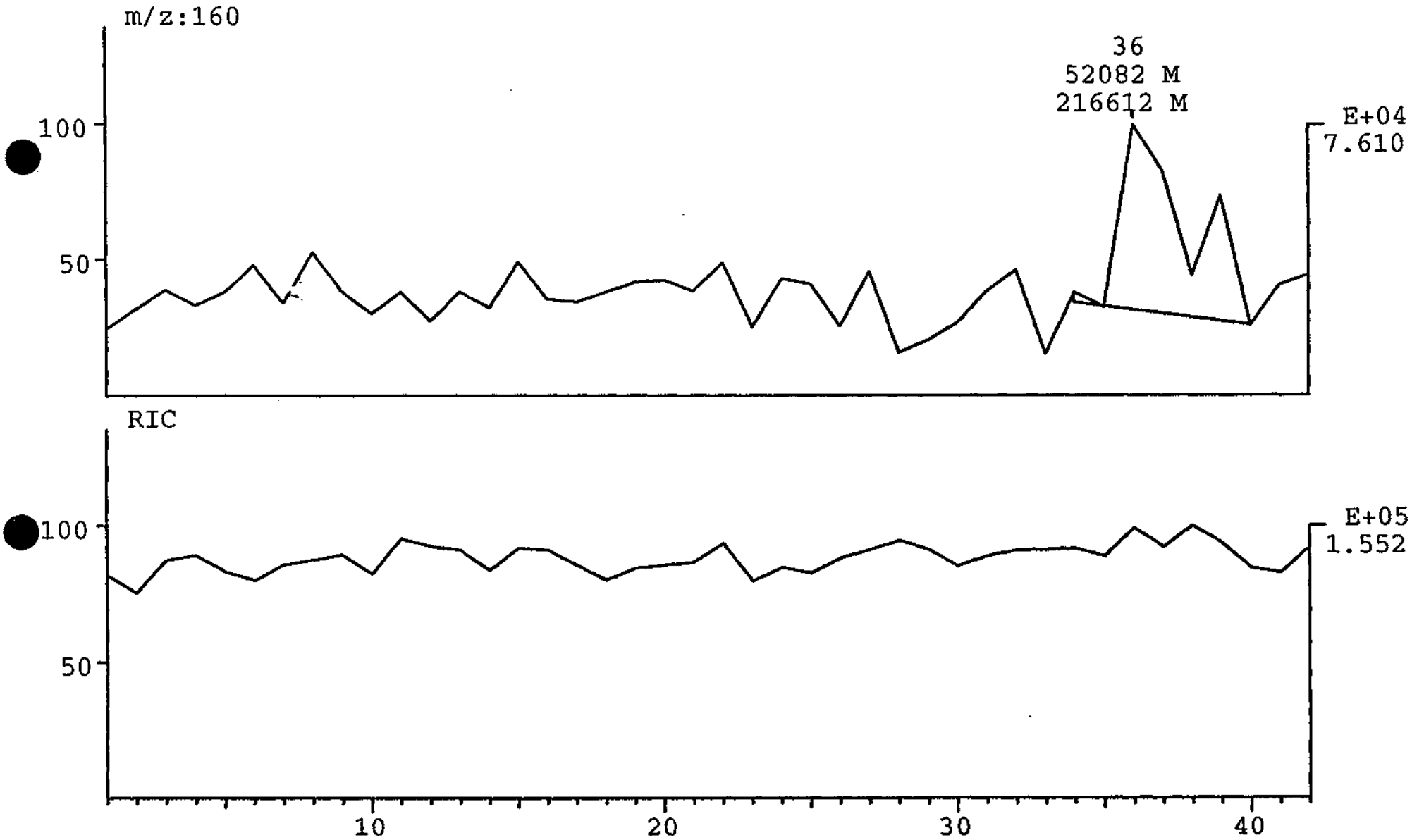

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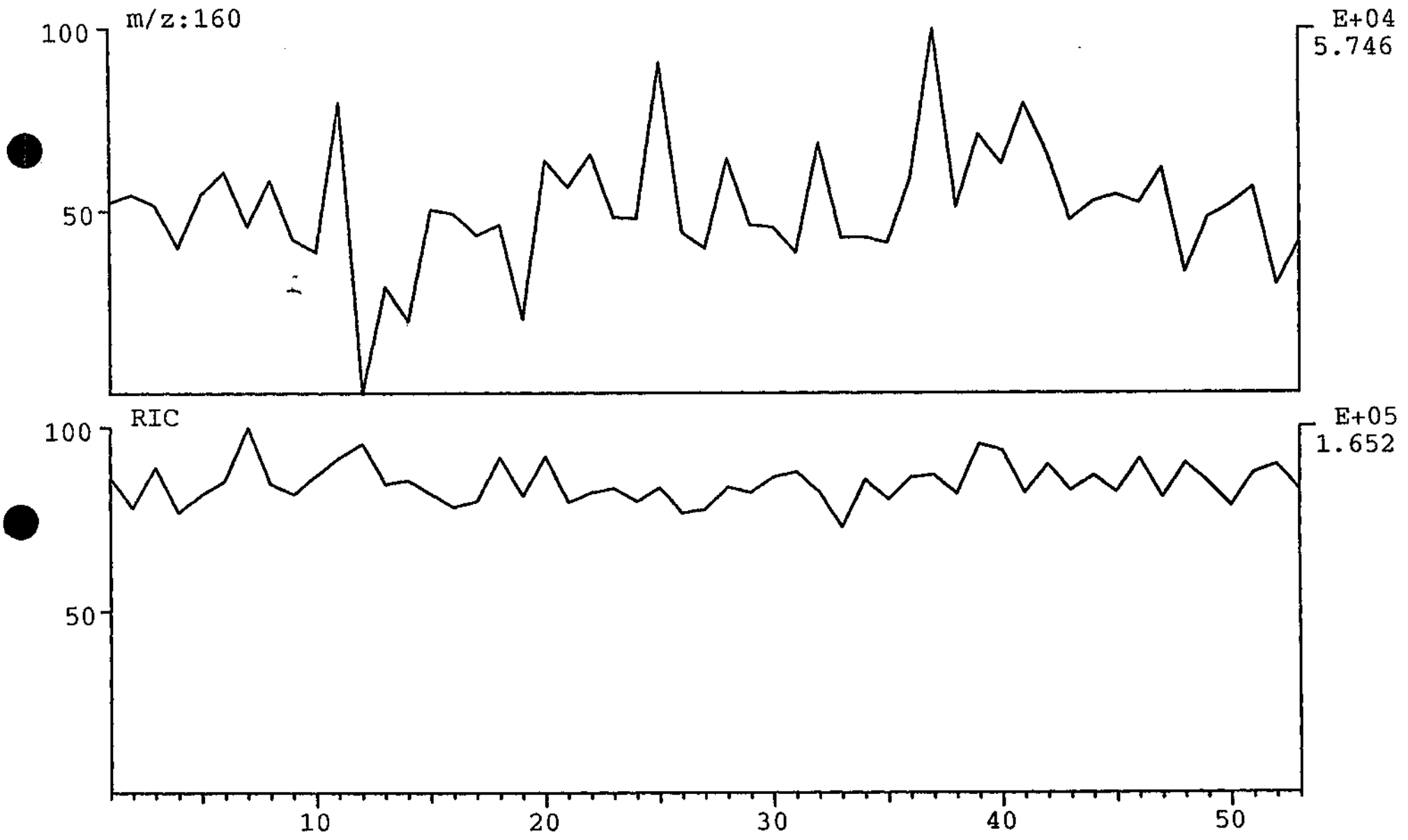

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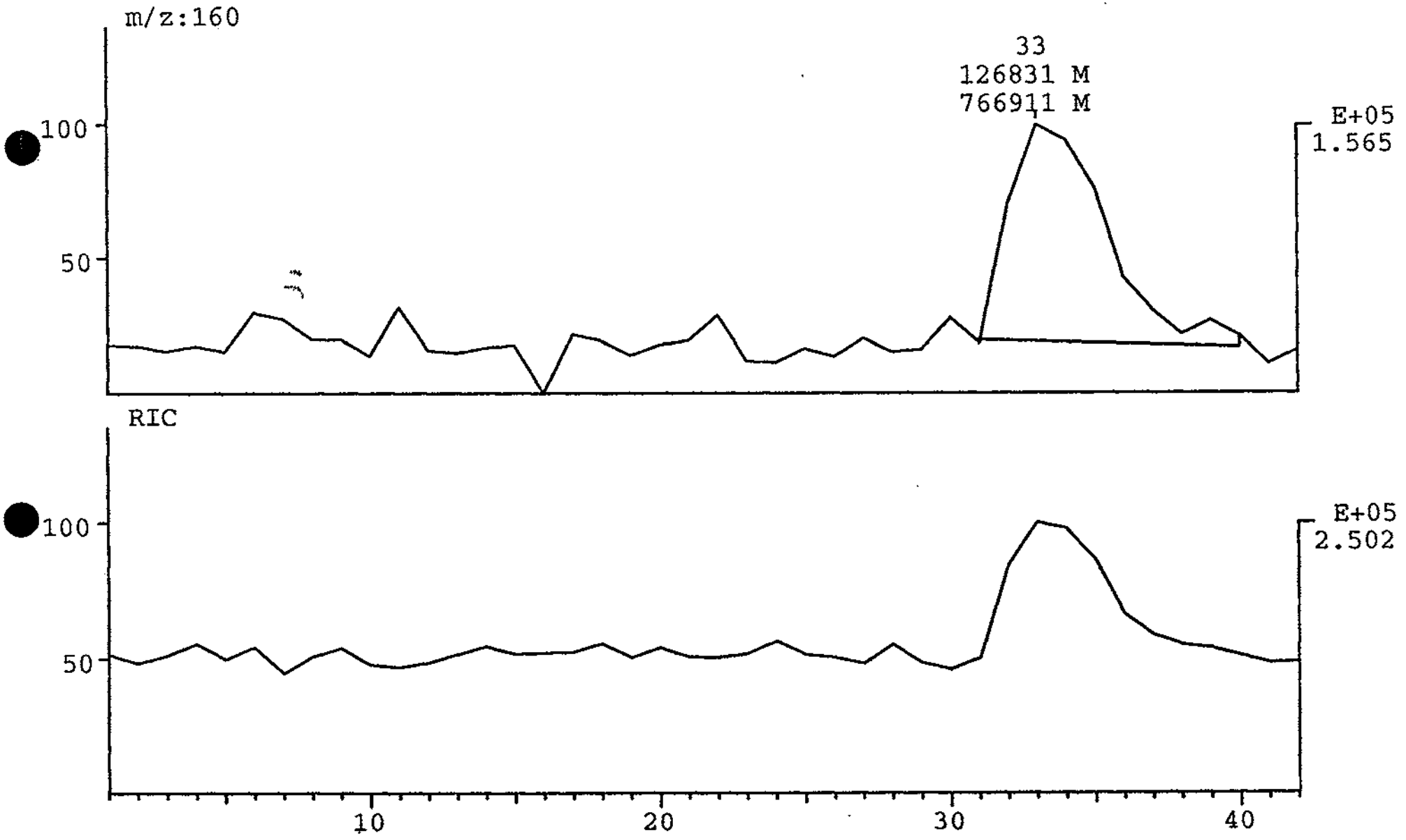

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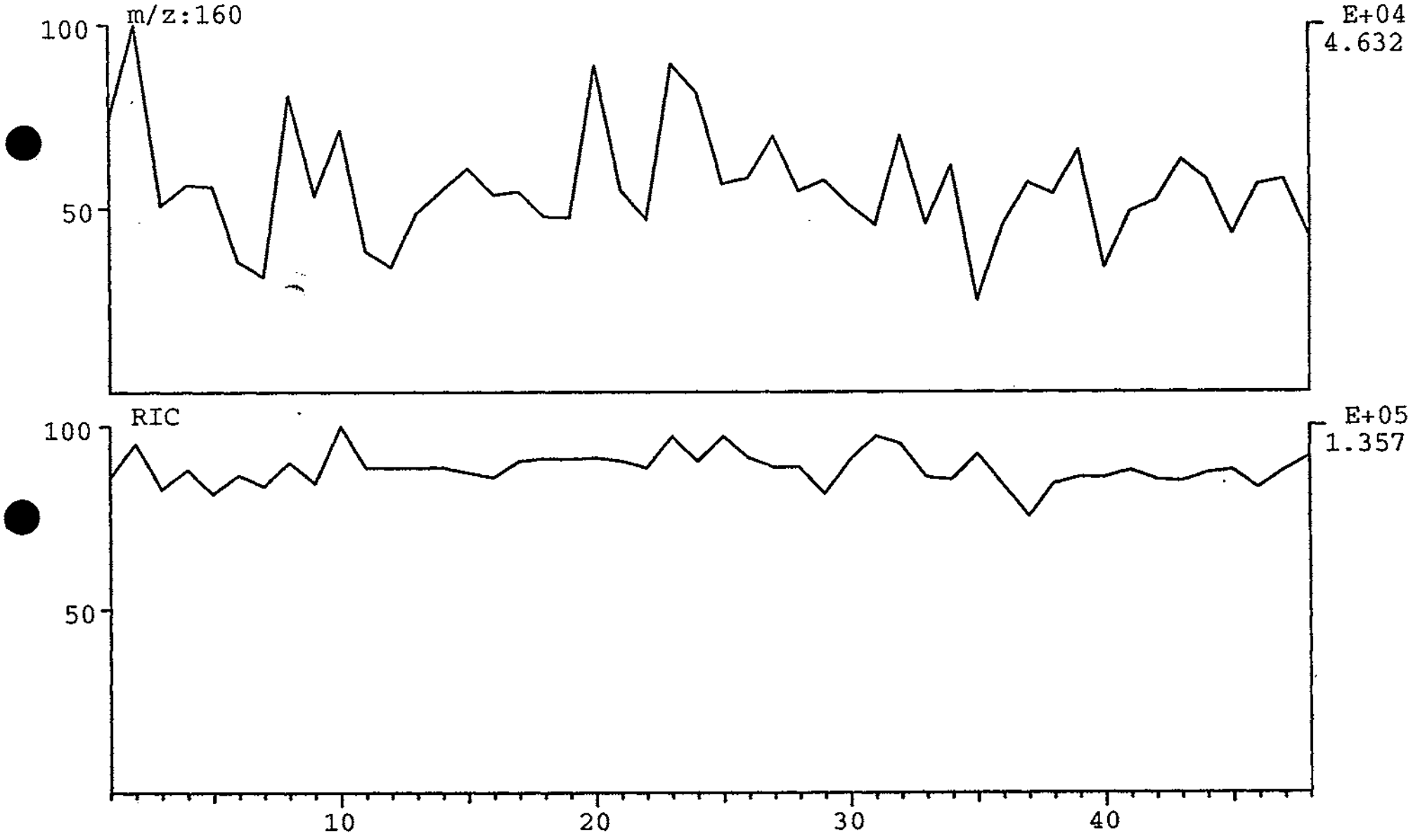

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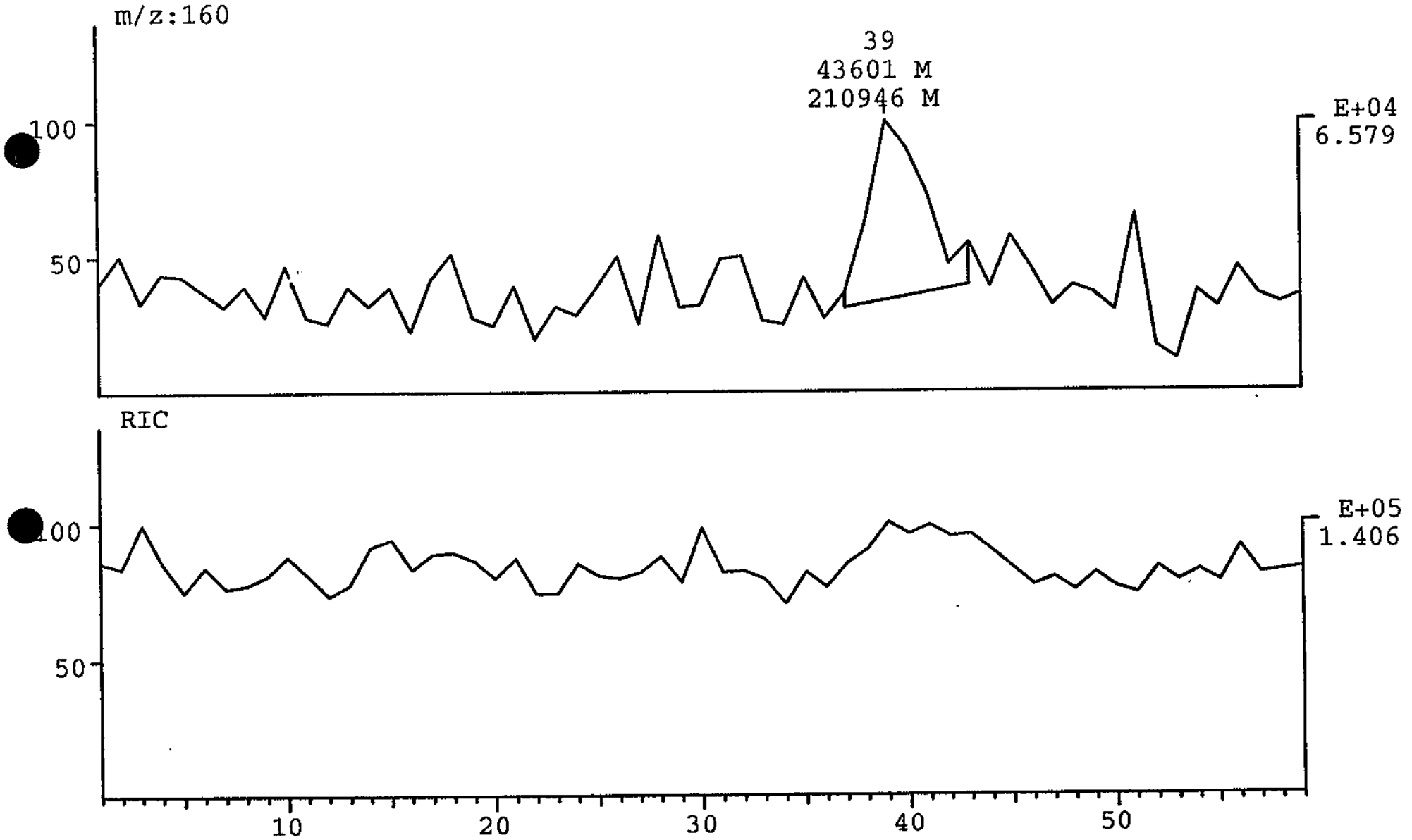

Samp: 50 PPM EDTA
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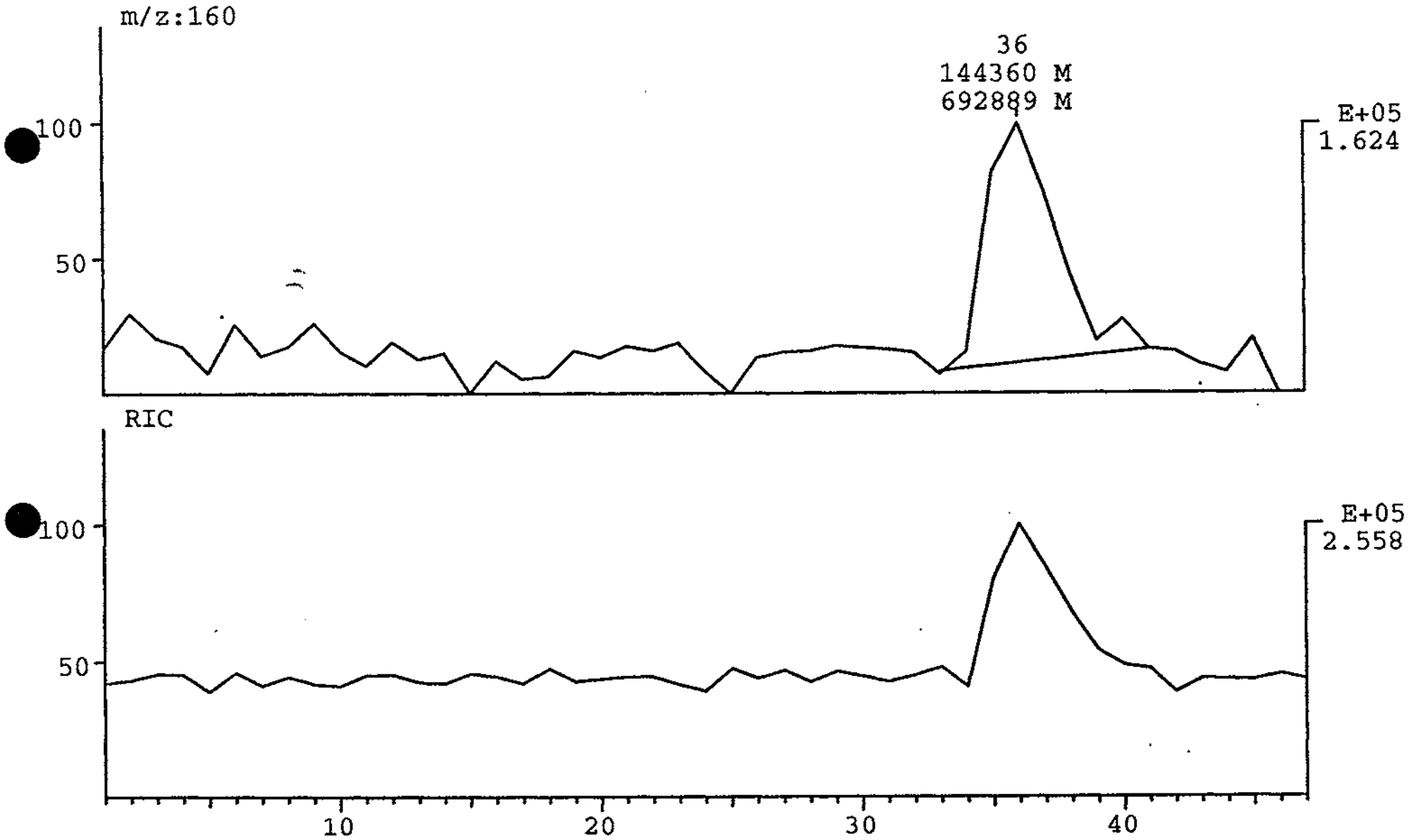

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Channel:	486	Run Time:	7.0 min
Date Acquired:	02/23/95 10:29 AM	Date Processed:	02/23/95 02:25 PM
Scale Factor:	1.00	Dilution:	1.00000
Acq Meth Set:	CAT2_MTH_SET		
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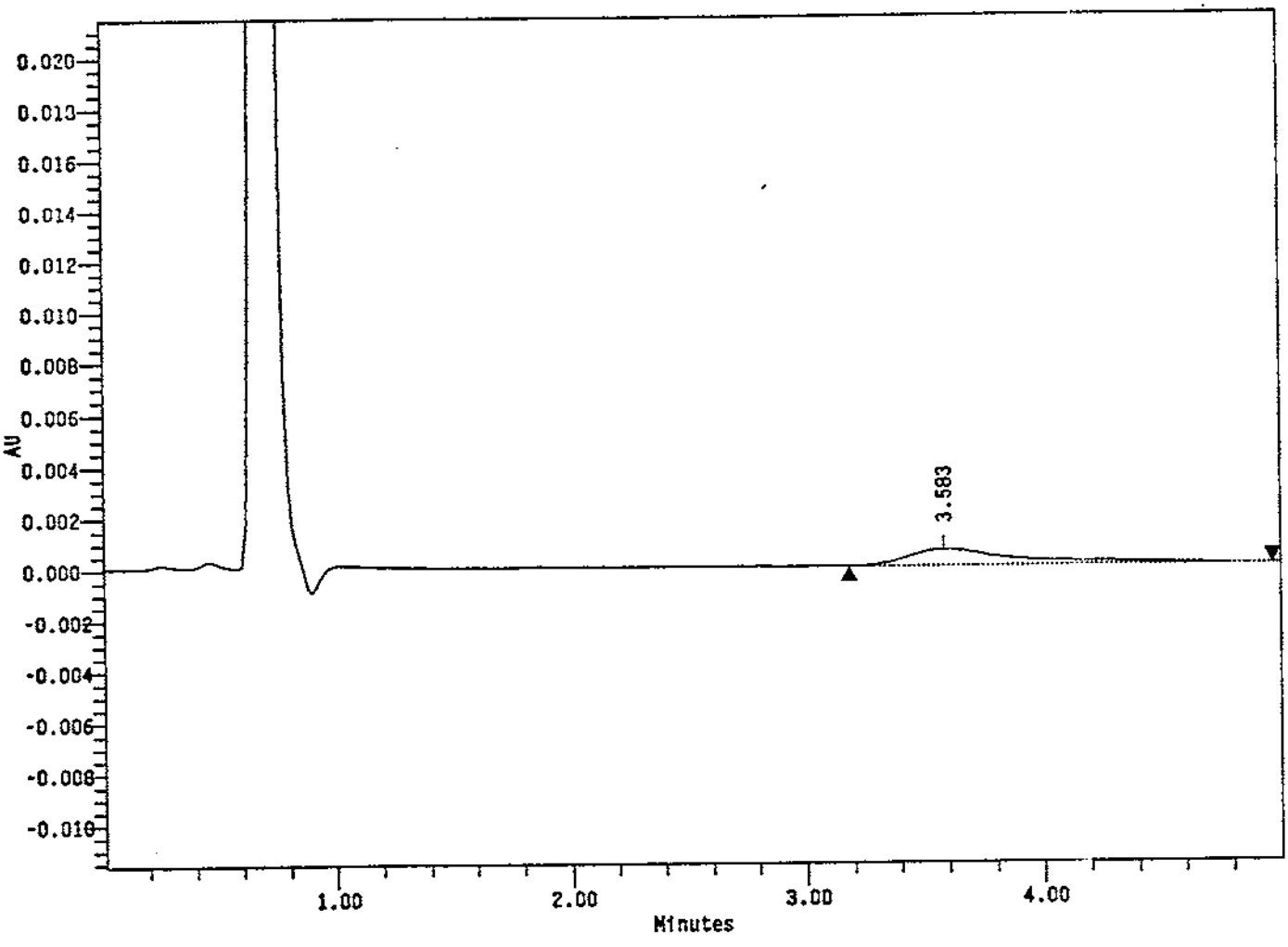
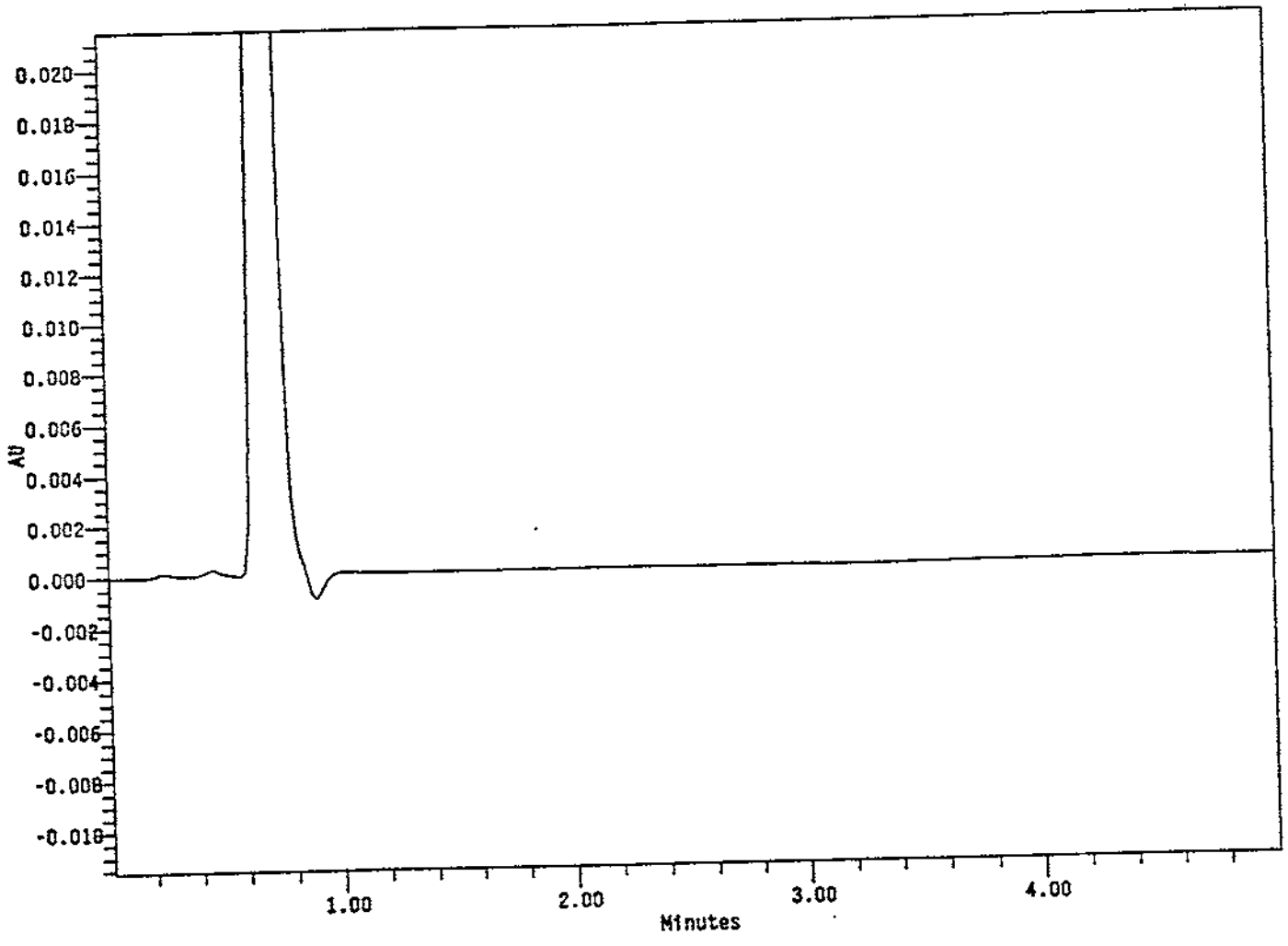


Peak Results

#	Name	Ret Time (min)	Area (uV*sec)	Height (uV)	Amount	Int Type
1	CuEDTA	3.583	20244	622		BB

Millennium Sample Information

Project Name:	CATIONS_2		
Sample Name:	CuSO4		
Vial:	2	Sample Type:	Unknown
Injection:	1	Volume:	10.00
Channel:	486	Run Time:	5.0 min
Date Acquired:	02/23/95 10:59 AM	Date Processed:	02/23/95 02:25 PM
Scale Factor:	1.00	Dilution:	1.00000
Acq Meth Set:	CAT2_MTH_SET		
Processing Method:	edta		

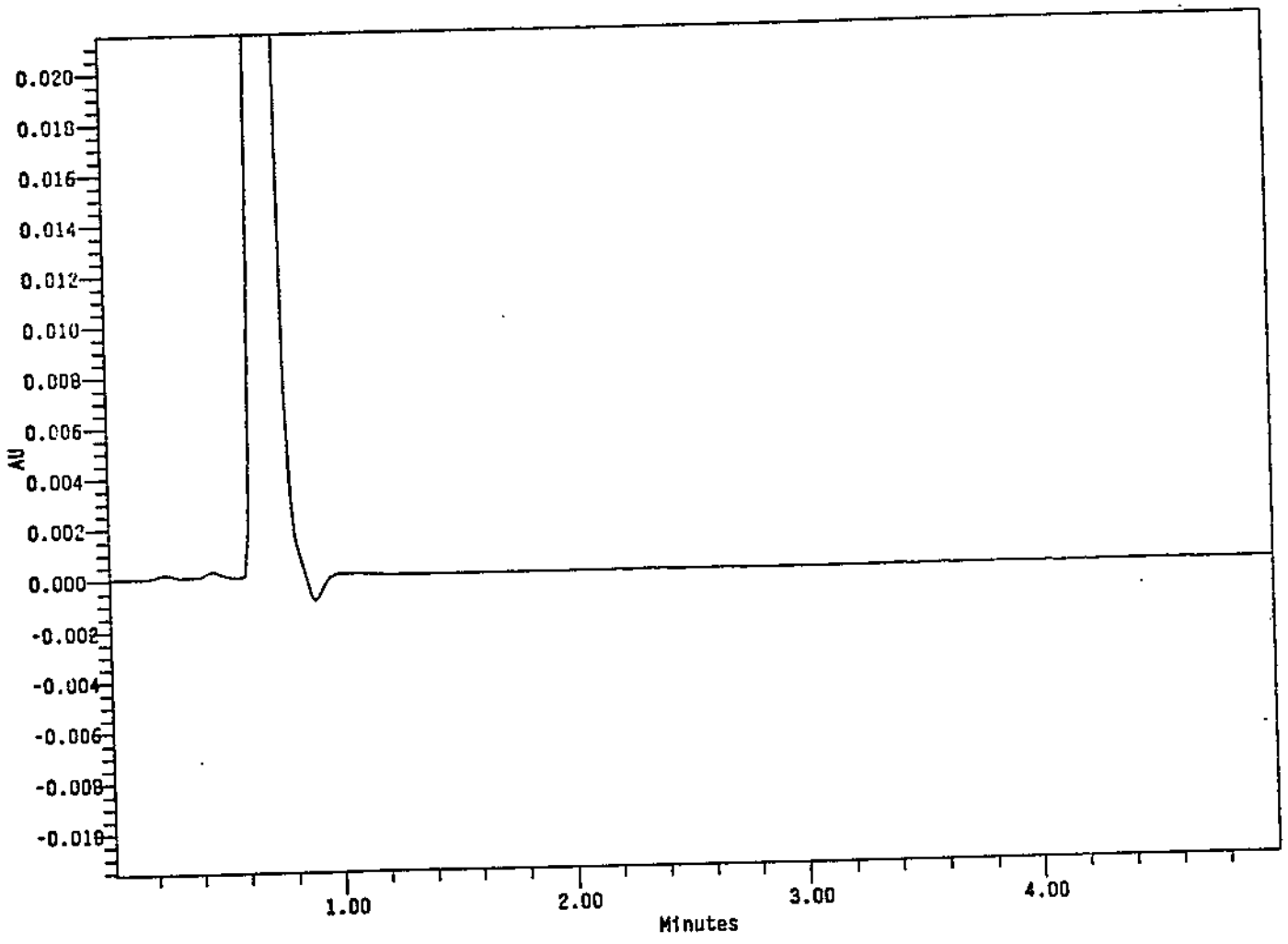


Peak Results

#	Name	Ret Time (min)	Area (uV*sec)	Height (uV)	Amount	Int Type
1	CuEDTA	3.600				Missing

Millennium Sample Information

Project Name:	CATIONS_2		
Sample Name:	blank		
Vial:	1	Sample Type:	Unknown
Injection:	1	Volume:	10.00
Channel:	486	Run Time:	5.0 min
Date Acquired:	02/23/95 11:28 AM	Date Processed:	02/23/95 02:24 PM
Scale Factor:	1.00	Dilution:	1.00000
Acq Meth Set:	CAT2_MTH_SET		
Processing Method:	edta		

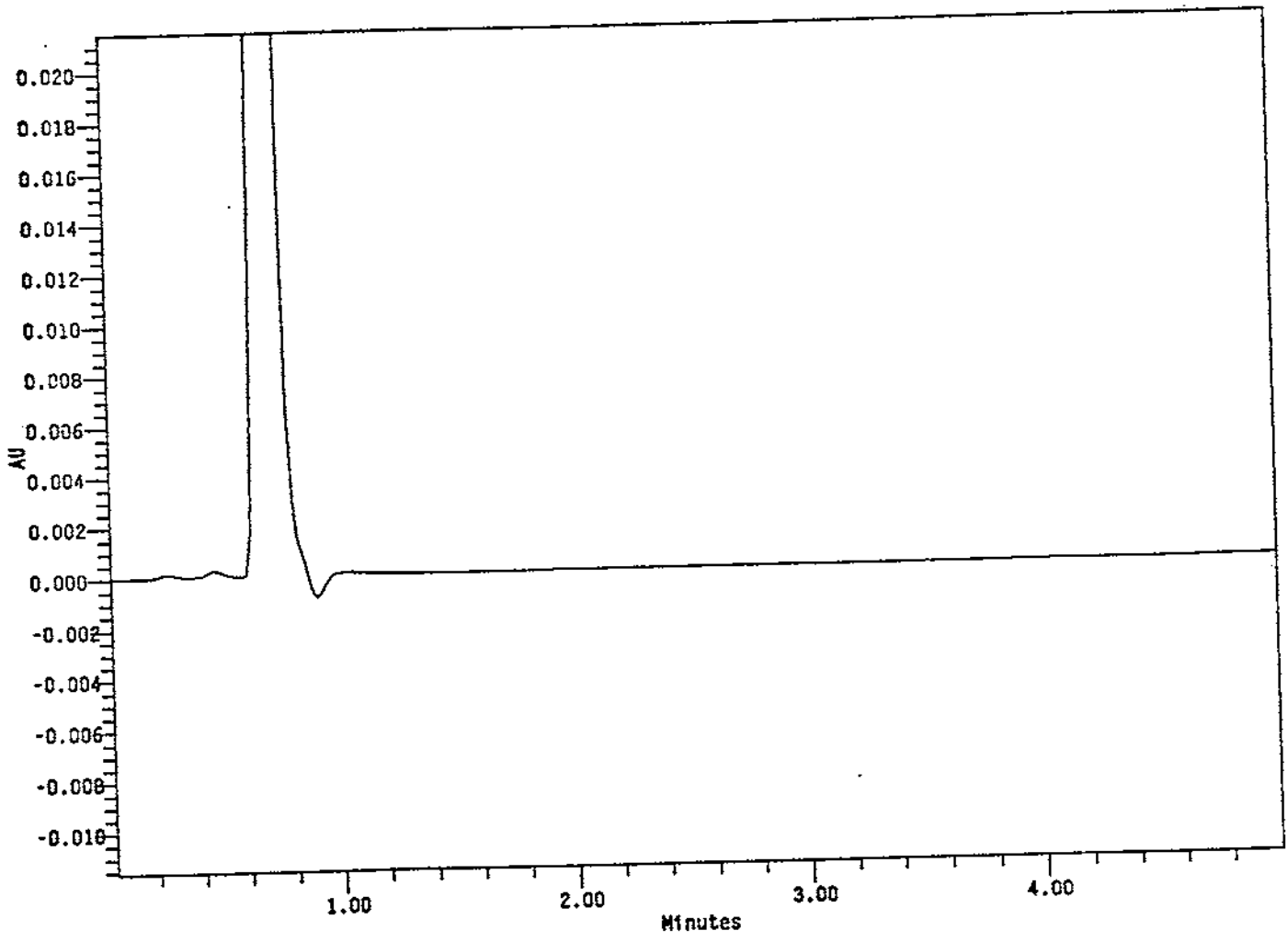


Peak Results

#	Name	Ret Time (min)	Area (uV*sec)	Height (uV)	Amount	Int Type
1	CuEDTA	3.600				Missing

Millennium Sample Information

Project Name:	CATIONS_2		
Sample Name:	C204 50217009		
Vial:	2	Sample Type:	Unknown
Injection:	1	Volume:	10.00
Channel:	486	Run Time:	5.0 min
Date Acquired:	02/23/95 11:35 AM	Date Processed:	02/23/95 02:24 PM
Scale Factor:	1.00	Dilution:	1.00000
Acq Meth Set:	CAT2_MTH_SET		
Processing Method:	edta		

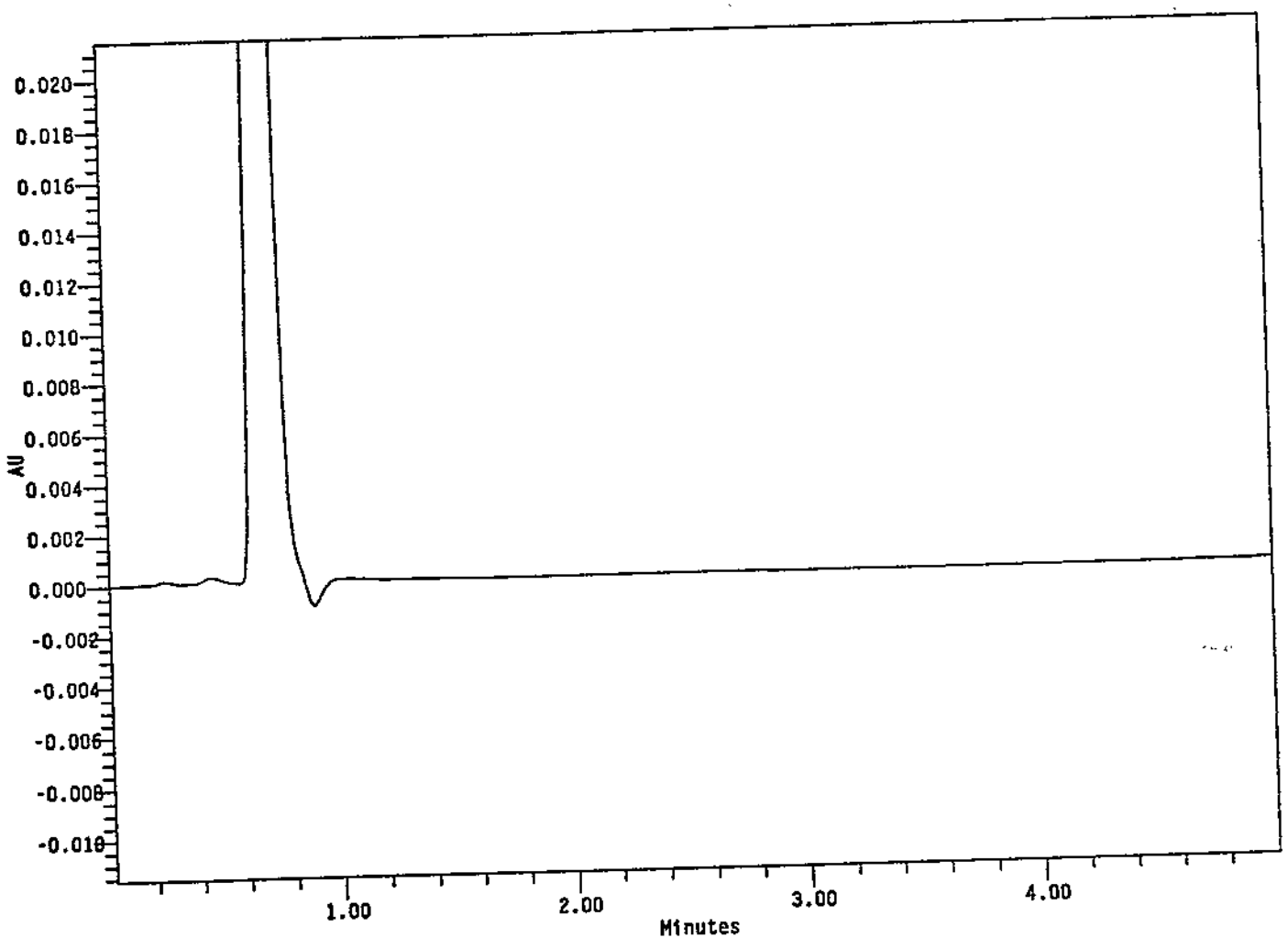


Peak Results

#	Name	Ret Time (min)	Area (uV*sec)	Height (uV)	Amount	Int Type
1	CuEDTA	3.600				Missing

Millennium Sample Information

Project Name:	CATIONS_2		
Sample Name:	blank	Sample Type:	Unknown
Vial:	1	Volume:	10.00
Injection:	1	Run Time:	5.0 min
Channel:	486	Date Processed:	02/23/95 02:23 PM
Date Acquired:	02/23/95 11:41 AM	Dilution:	1.00000
Scale Factor:	1.00		
Acq Meth Set:	CAT2_MTH_SET		
Processing Method:	edta		

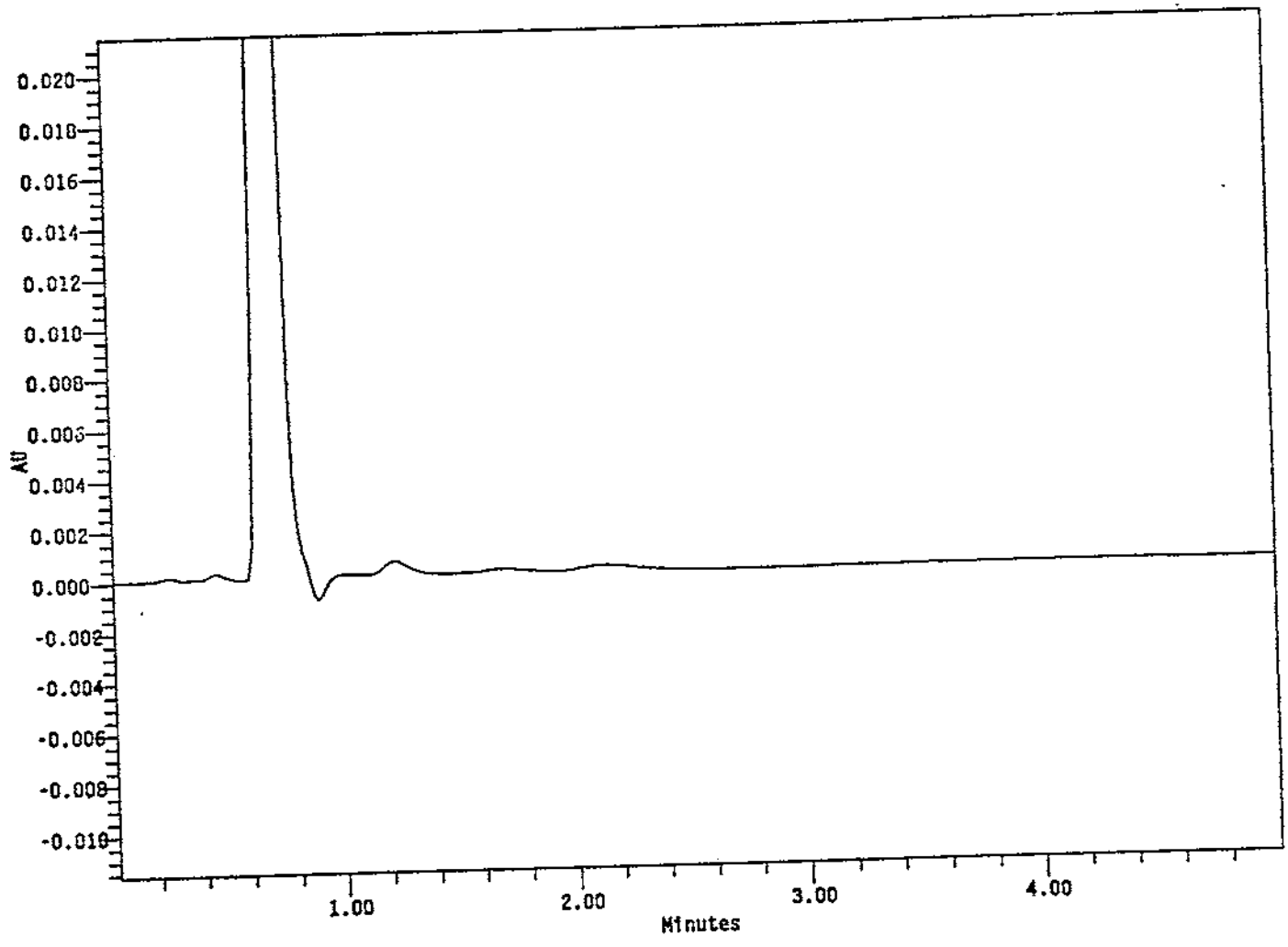


Peak Results

#	Name	Ret Time (min)	Area (uV*sec)	Height (uV)	Amount	Int Type
1	CuEDTA	3.600				Missing

Millennium Sample Information

Project Name:	CATIONS_2		
Sample Name:	0204 50217009	Sample Type:	Unknown
Vial:	3	Volume:	10.00
Injection:	1	Run Time:	5.0 min
Channel:	486	Date Processed:	02/23/95 02:23 PM
Date Acquired:	02/23/95 11:47 AM	Dilution:	1.00000
Scale Factor:	1.00		
Acq Meth Set:	CAT2_MTH_SET		
Processing Method:	edta		

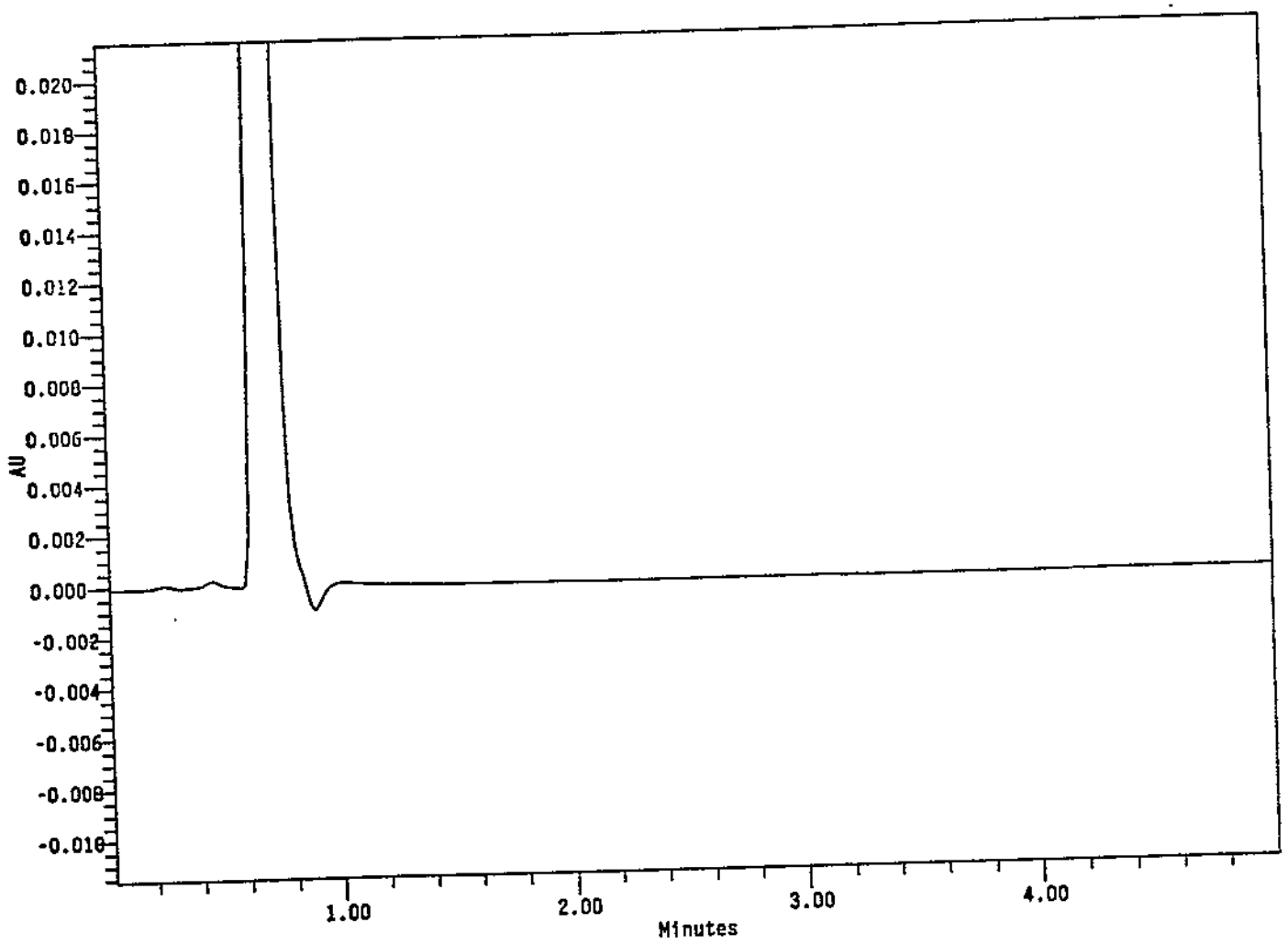


Peak Results

#	Name	Ret Time (min)	Area (uV*sec)	Height (uV)	Amount	Int Type
1	CuEDTA	3.600				Missing

Millennium Sample Information

Project Name:	CATIONS_2		
Sample Name:	blank	Sample Type:	Unknown
Vial:	1	Volume:	10.00
Injection:	1	Run Time:	5.0 min
Channel:	486	Date Processed:	02/23/95 02:22 PM
Date Acquired:	02/23/95 11:53 AM	Dilution:	1.00000
Scale Factor:	1.00		
Acq Meth Set:	CAT2_MTH_SET		
Processing Method:	edta		

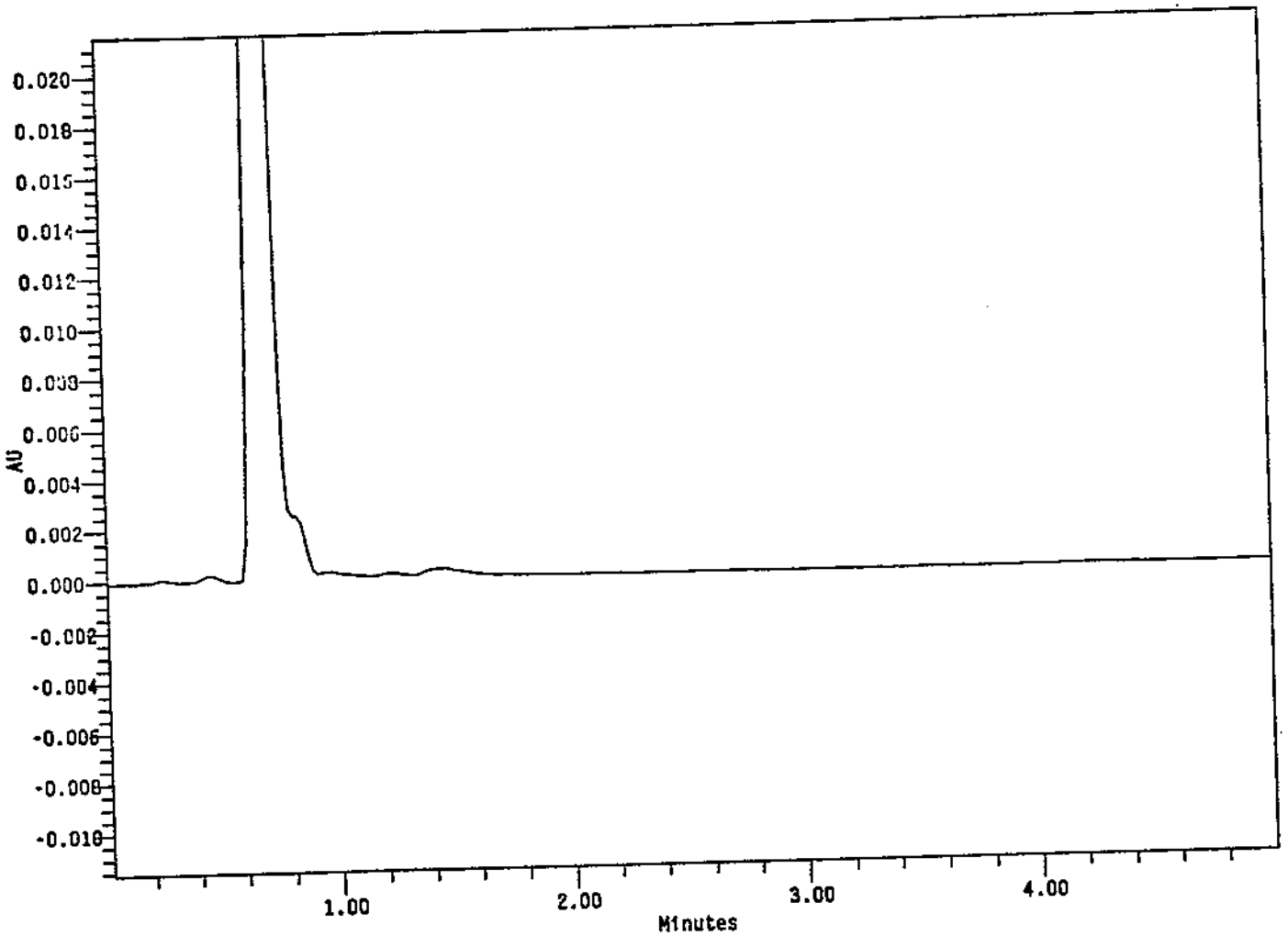


Peak Results

#	Name	Ret Time (min)	Area (uV*sec)	Height (uV)	Amount	Int Type
1	CuEDTA	3.600				Missing

Millennium Sample Information

Project Name:	CATIONS_2	Sample Type:	Unknown
Sample Name:	C206 50217009	Volume:	10.00
Vial:	4	Run Time:	5.0 min
Injection:	1	Date Processed:	02/23/95 02:22 PM
Channel:	486	Dilution:	1.00000
Date Acquired:	02/23/95 11:59 AM		
Scale Factor:	1.00		
Acq Meth Set:	CAT2_MTH_SET		
Processing Method:	edta		

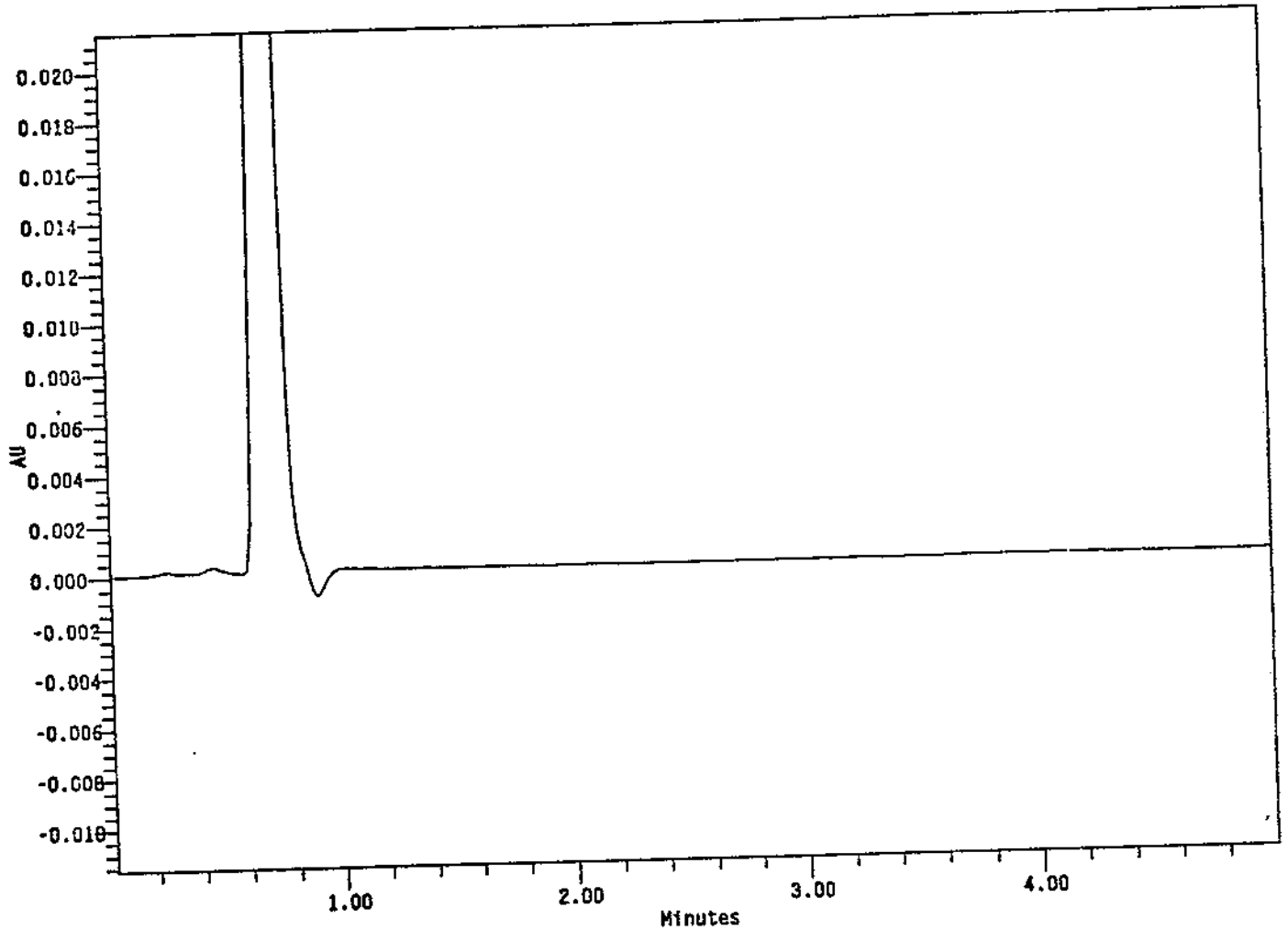


Peak Results

#	Name	Ret Time (min)	Area (uV*sec)	Height (uV)	Amount	Int Type
1	CuEDTA	3.600				Missing

Millennium Sample Information

Project Name:	CATIONS_2		
Sample Name:	blank	Sample Type:	Unknown
Vial:	1	Volume:	10.00
Injection:	1	Run Time:	5.0 min
Channel:	486	Date Processed:	02/23/95 02:21 PM
Date Acquired:	02/23/95 12:06 PM	Dilution:	1.00000
Scale Factor:	1.00		
Acq Meth Set:	CAT2_MTH_SET		
Processing Method:	edta		

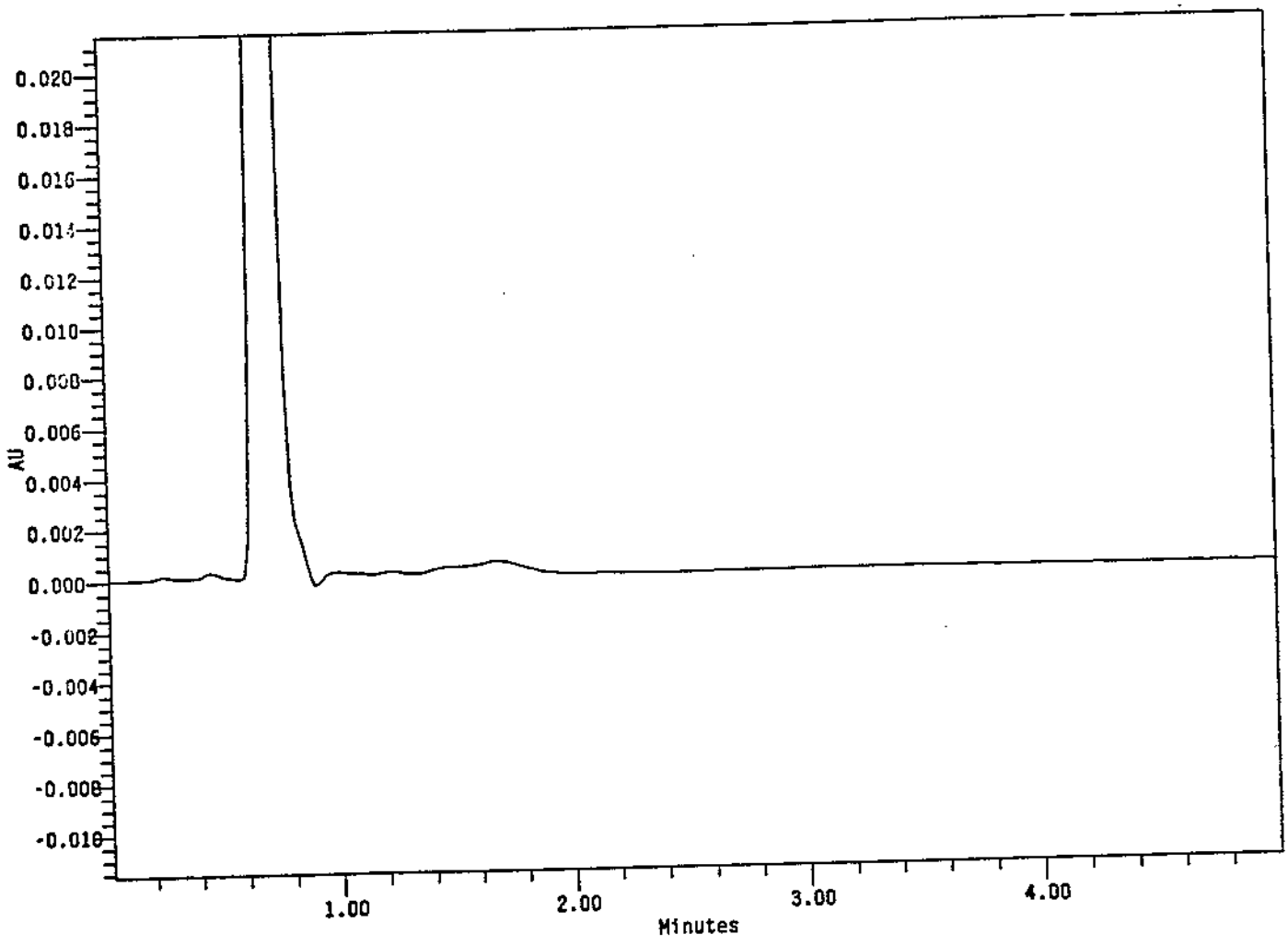


Peak Results

#	Name	Ret Time (min)	Area (uV*sec)	Height (uV)	Amount	Int Type
1	CuEDTA	3.600				Missing

Millennium Sample Information

Project Name:	CATIONS_2		
Sample Name:	Q206 50217009	Sample Type:	Unknown
Vial:	5	Volume:	10.00
Injection:	1	Run Time:	5.0 min
Channel:	486	Date Processed:	02/23/95 02:21 PM
Date Acquired:	02/23/95 12:12 PM	Dilution:	1.00000
Scale Factor:	1.00		
Acq Meth Set:	CAT2_MTH_SET		
Processing Method:	edta		

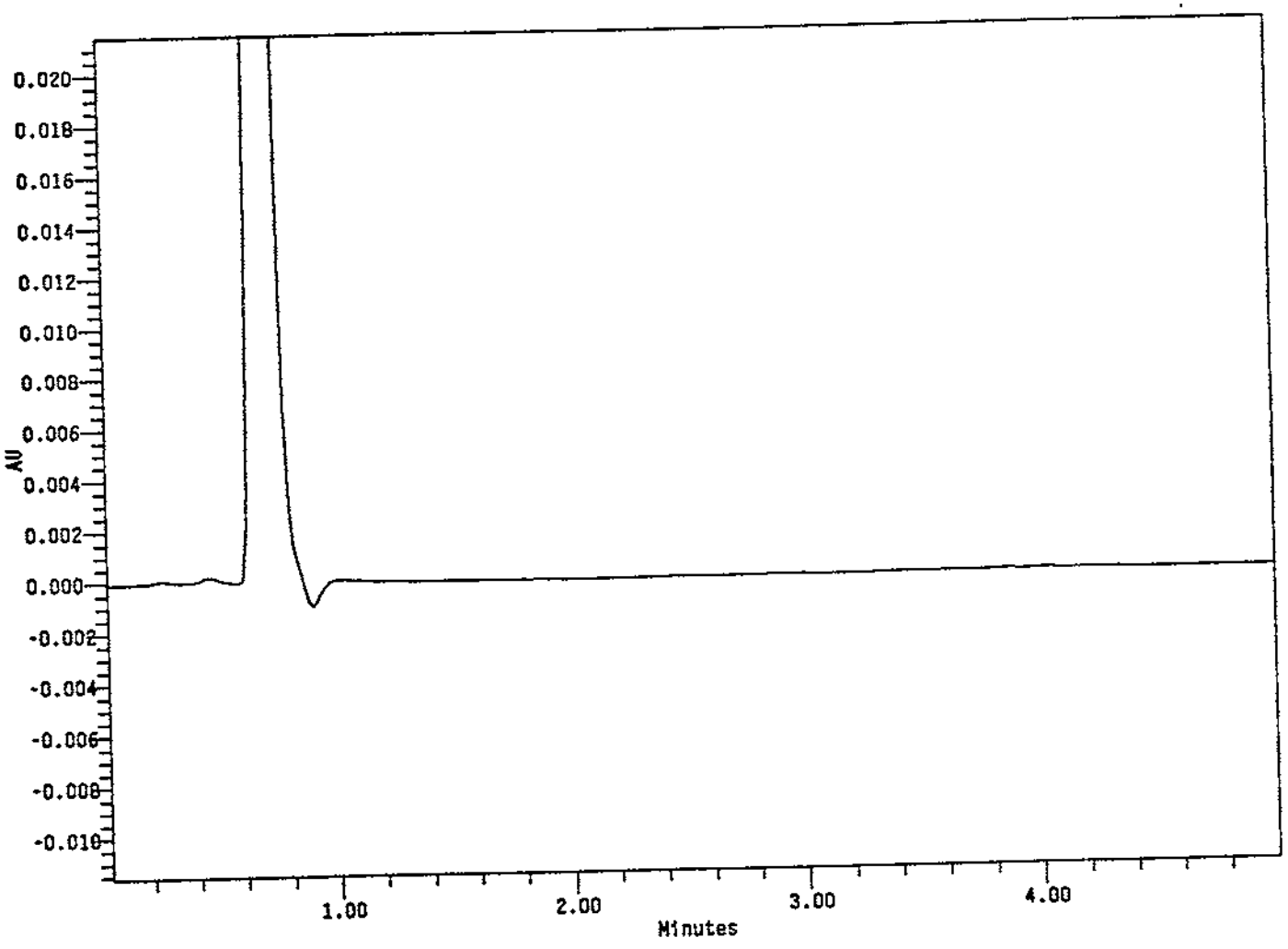


Peak Results

#	Name	Ret Time (min)	Area (uV*sec)	Height (uV)	Amount	Int Type
1	CuEDTA	3.600				Missing

Millennium Sample Information

Project Name:	CATIONS_2		
Sample Name:	blank	Sample Type:	Unknown
Vial:	1	Volume:	10.00
Injection:	1	Run Time:	5.0 min
Channel:	486	Date Processed:	02/23/95 02:20 PM
Date Acquired:	02/23/95 12:18 PM	Dilution:	1.00000
Scale Factor:	1.00		
Acq Meth Set:	CAT2_MTH_SET		
Processing Method:	edta		

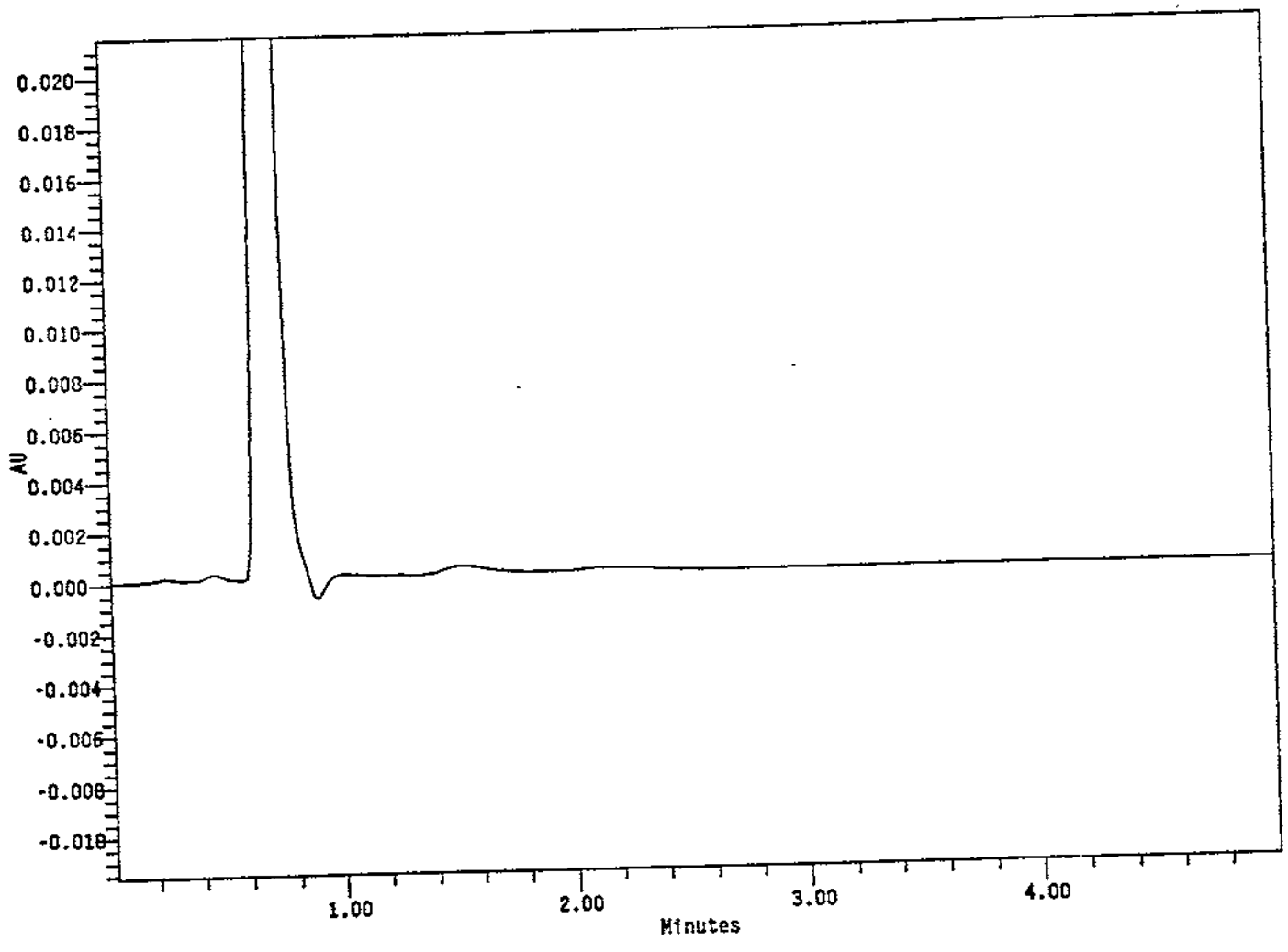


Peak Results

#	Name	Ret Time (min)	Area (uV*sec)	Height (uV)	Amount	Int Type
1	CuEDTA	3.600				Missing

Millennium Sample Information

Project Name:	CATIONS_2		
Sample Name:	C65 50217009	Sample Type:	Unknown
Vial:	6	Volume:	10.00
Injection:	1	Run Time:	5.0 min
Channel:	486	Date Processed:	02/23/95 02:20 PM
Date Acquired:	02/23/95 12:24 PM	Dilution:	1.00000
Scale Factor:	1.00		
Acq Meth Set:	CAT2_MTH_SET		
Processing Method:	edta		

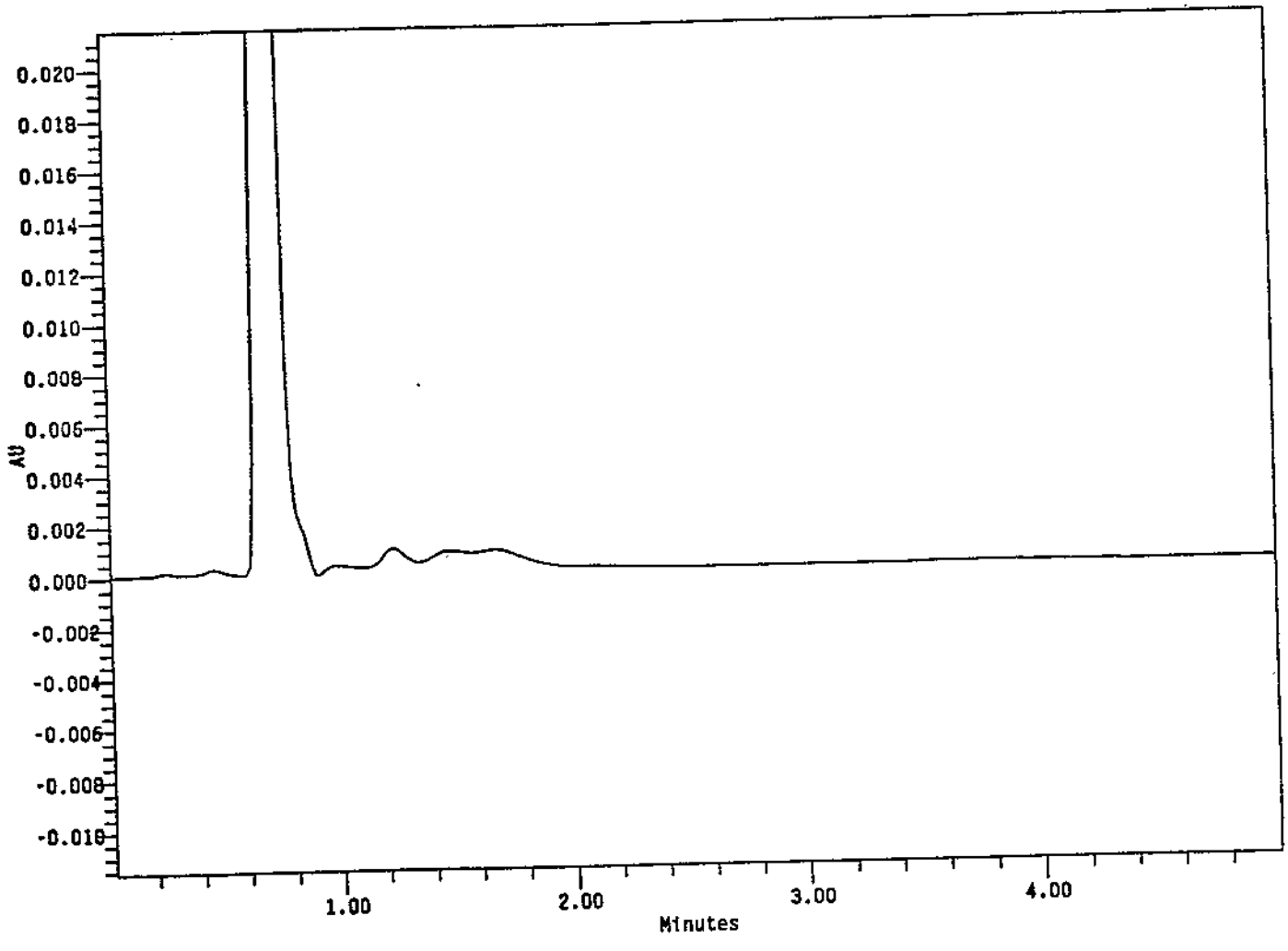


Peak Results

#	Name	Ret Time (min)	Area (uV*sec)	Height (uV)	Amount	Int Type
1	CuEDTA	3.600				Missing

Millennium Sample Information

Project Name:	CATIONS_2	Sample Type:	Unknown
Sample Name:	K65 50217009	Volume:	10.00
Vial:	7	Run Time:	5.0 min
Injection:	1	Date Processed:	02/23/95 02:19 PM
Channel:	486	Dilution:	1.00000
Date Acquired:	02/23/95 12:37 PM		
Scale Factor:	1.00		
Acq Meth Set:	CAT2_MTH_SET		
Processing Method:	edta		

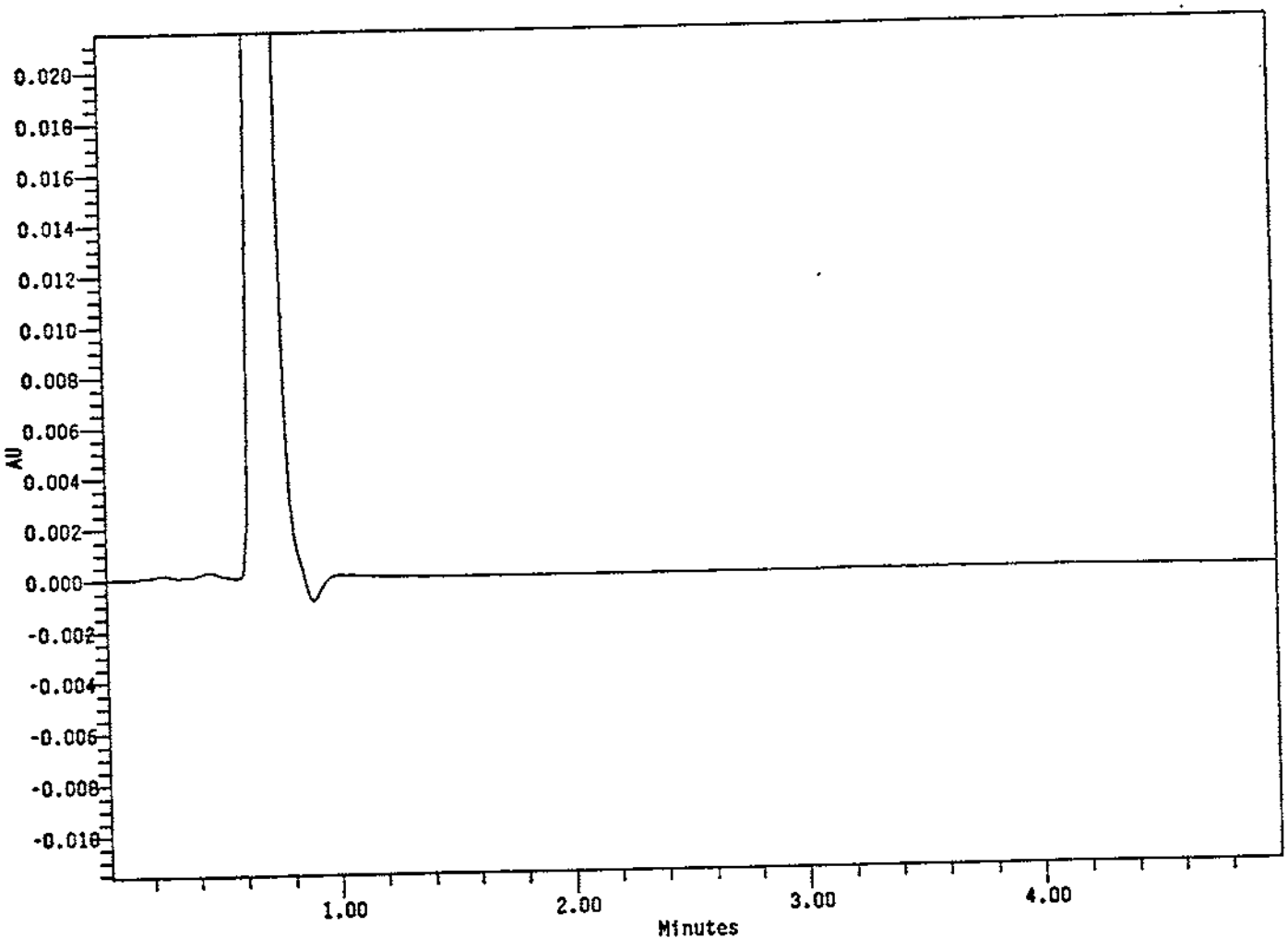


Peak Results

#	Name	Ret Time (min)	Area (uV*sec)	Height (uV)	Amount	Int Type
1	CuEDTA	3.600				Missing

Millennium Sample Information

Project Name:	CATIONS_2		
Sample Name:	blank		
Vial:	1	Sample Type:	Unknown
Injection:	1	Volume:	10.00
Channel:	486	Run Time:	5.0 min
Date Acquired:	02/23/95 12:31 PM	Date Processed:	02/23/95 02:19 PM
Scale Factor:	1.00	Dilution:	1.00000
Acq Meth Set:	CAT2_MTH_SET		
Processing Method:	edta		

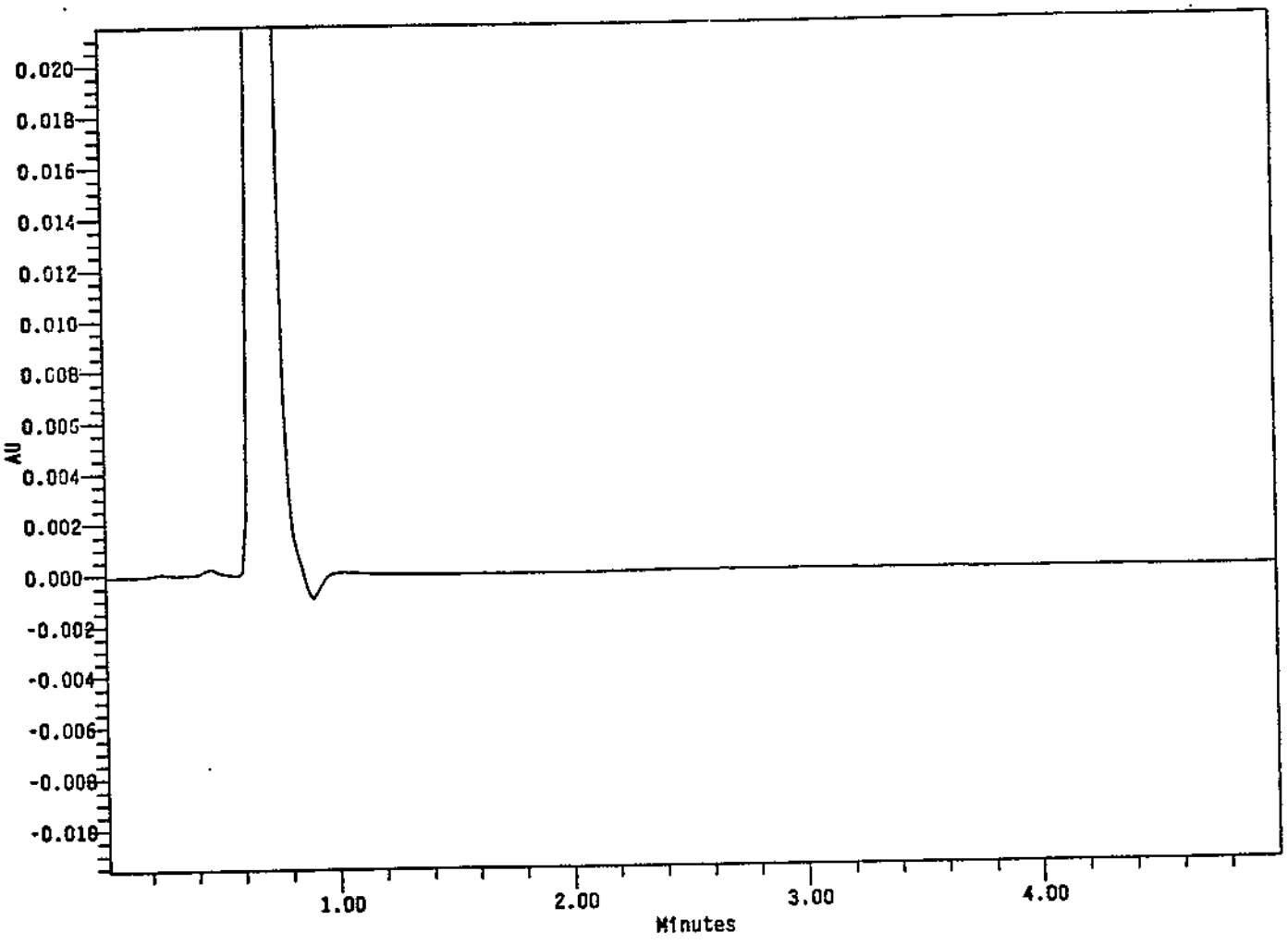


Peak Results

#	Name	Ret Time (min)	Area (uV*sec)	Height (uV)	Amount	Int Type
1	CuEDTA	3.600				Missing

Millennium Sample Information

Project Name:	CATIONS_2		
Sample Name:	blank		
Vial:	1	Sample Type:	Unknown
Injection:	1	Volume:	10.00
Channel:	486	Run Time:	5.0 min
Date Acquired:	02/23/95 12:43 PM	Date Processed:	02/23/95 02:18 PM
Scale Factor:	1.00	Dilution:	1.00000
Acq Meth Set:	CAT2_MTH_SET		
Processing Method:	edta		

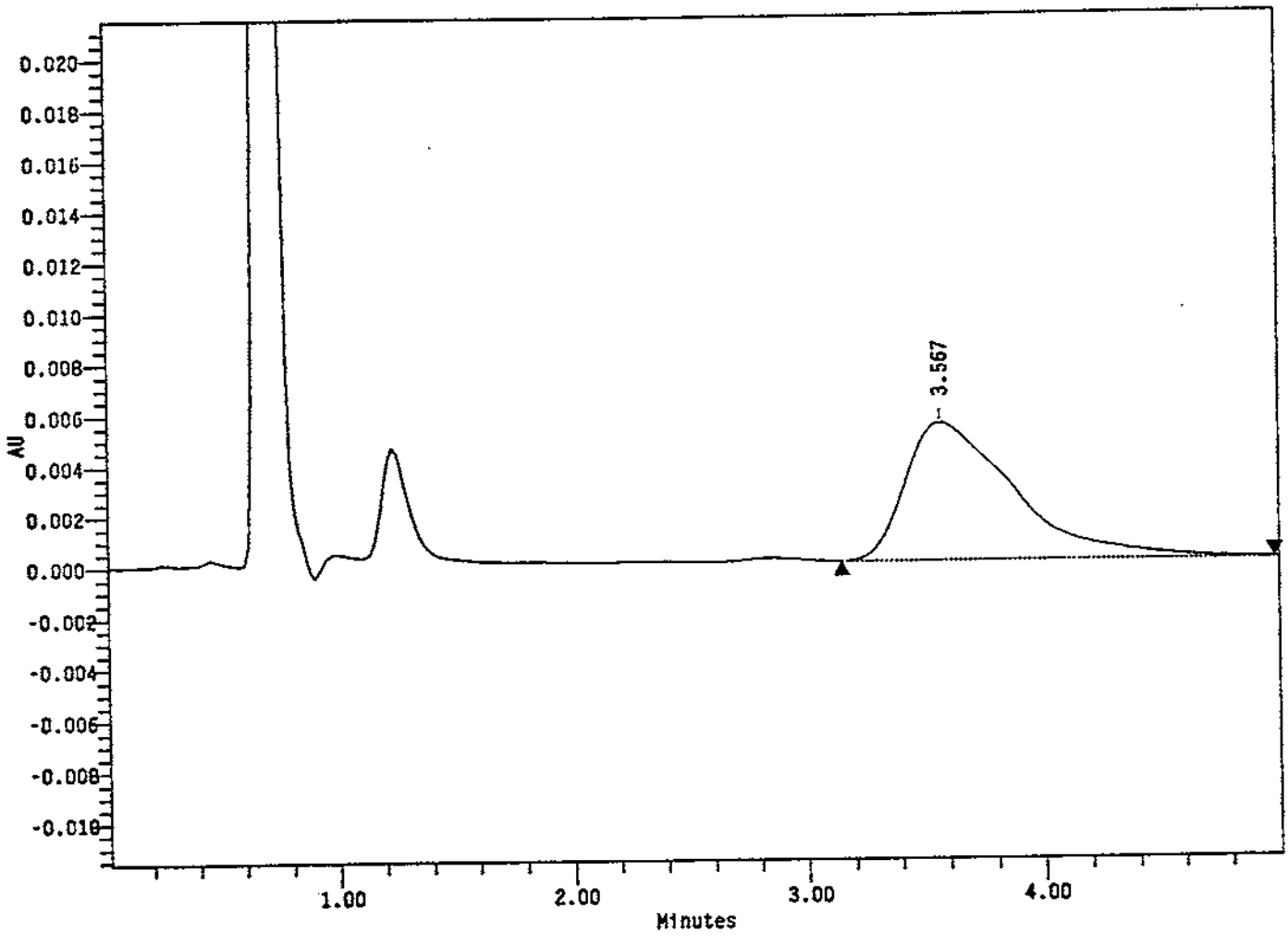


Peak Results

#	Name	Ret Time (min)	Area (uV*sec)	Height (uV)	Amount	Int Type
1	CuEDTA	3.600				Missing

Millennium Sample Information

Project Name:	CATIONS_2		
Sample Name:	K67 50217009		
Vial:	8	Sample Type:	Unknown
Injection:	1	Volume:	10.00
Channel:	486	Run Time:	5.0 min
Date Acquired:	02/23/95 12:49 PM	Date Processed:	02/23/95 02:18 PM
Scale Factor:	1.00	Dilution:	1.00000
Acq Meth Set:	CAT2_MTH_SET		
Processing Method:	edta		

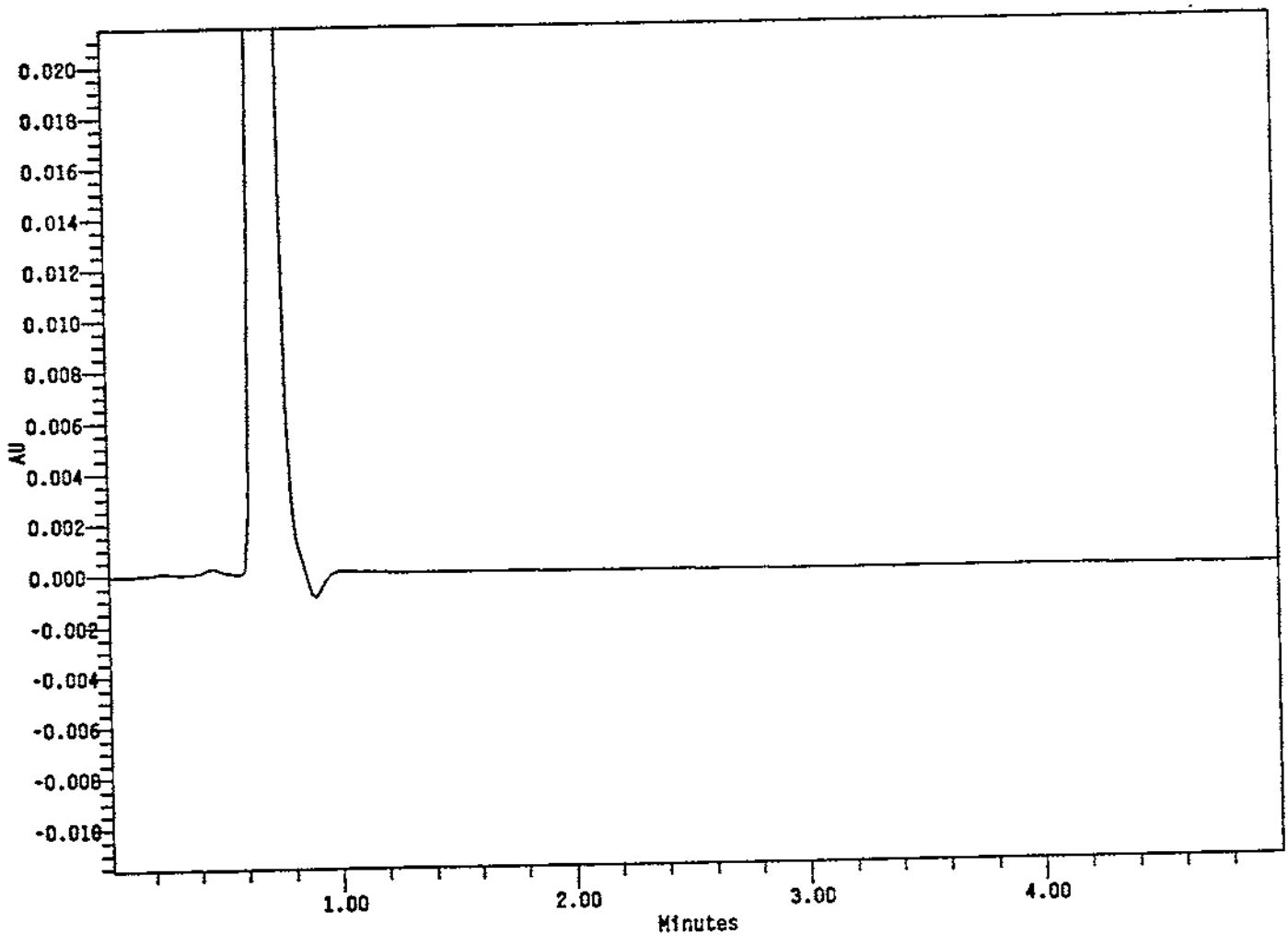


Peak Results

#	Name	Ret Time (min)	Area (uV*sec)	Height (uV)	Amount	Int Type
1	CuEDTA	3.567	172242	5439		BB

Millennium Sample Information

Project Name:	CATIONS_2		
Sample Name:	blank		
Vial:	1	Sample Type:	Unknown
Injection:	1	Volume:	10.00
Channel:	486	Run Time:	5.0 min
Date Acquired:	02/23/95 12:55 PM	Date Processed:	02/23/95 02:17 PM
Scale Factor:	1.00	Dilution:	1.00000
Acq Meth Set:	CAT2_MTH_SET		
Processing Method:	edta		

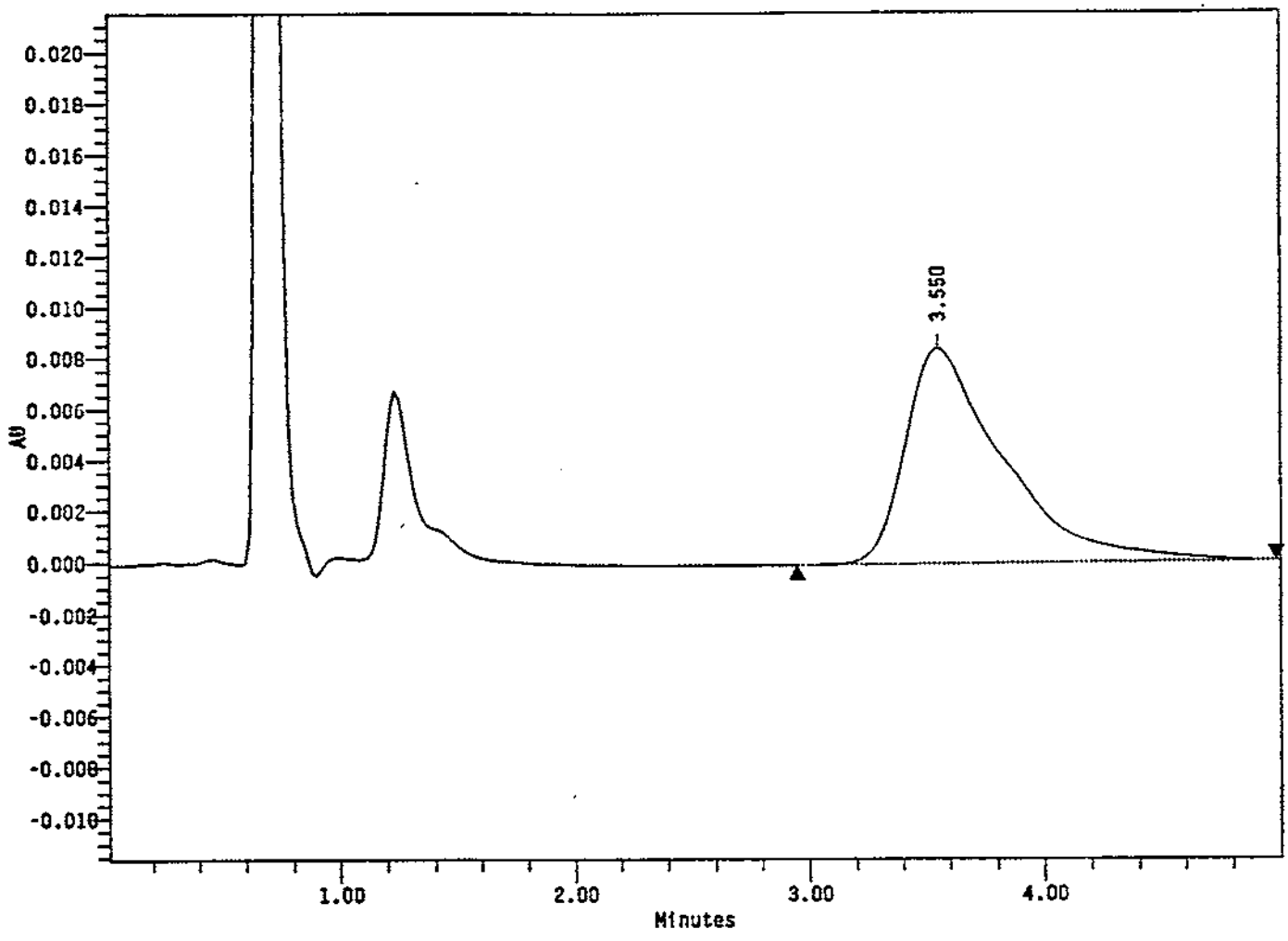


Peak Results

#	Name	Ret Time (min)	Area (uV*sec)	Height (uV)	Amount	Int Type
1	CuEDTA	3.600				Missing

Millennium Sample Information

Project Name:	CATIONS_2		
Sample Name:	K68 50217009		
Vial:	9	Sample Type:	Unknown
Injection:	1	Volume:	10.00
Channel:	486	Run Time:	5.0 min
Date Acquired:	02/23/95 01:02 PM	Date Processed:	02/23/95 02:17 PM
Scale Factor:	1.00	Dilution:	1.00000
Acq Meth Set:	CAT2_MTH_SET		
Processing Method:	edta		



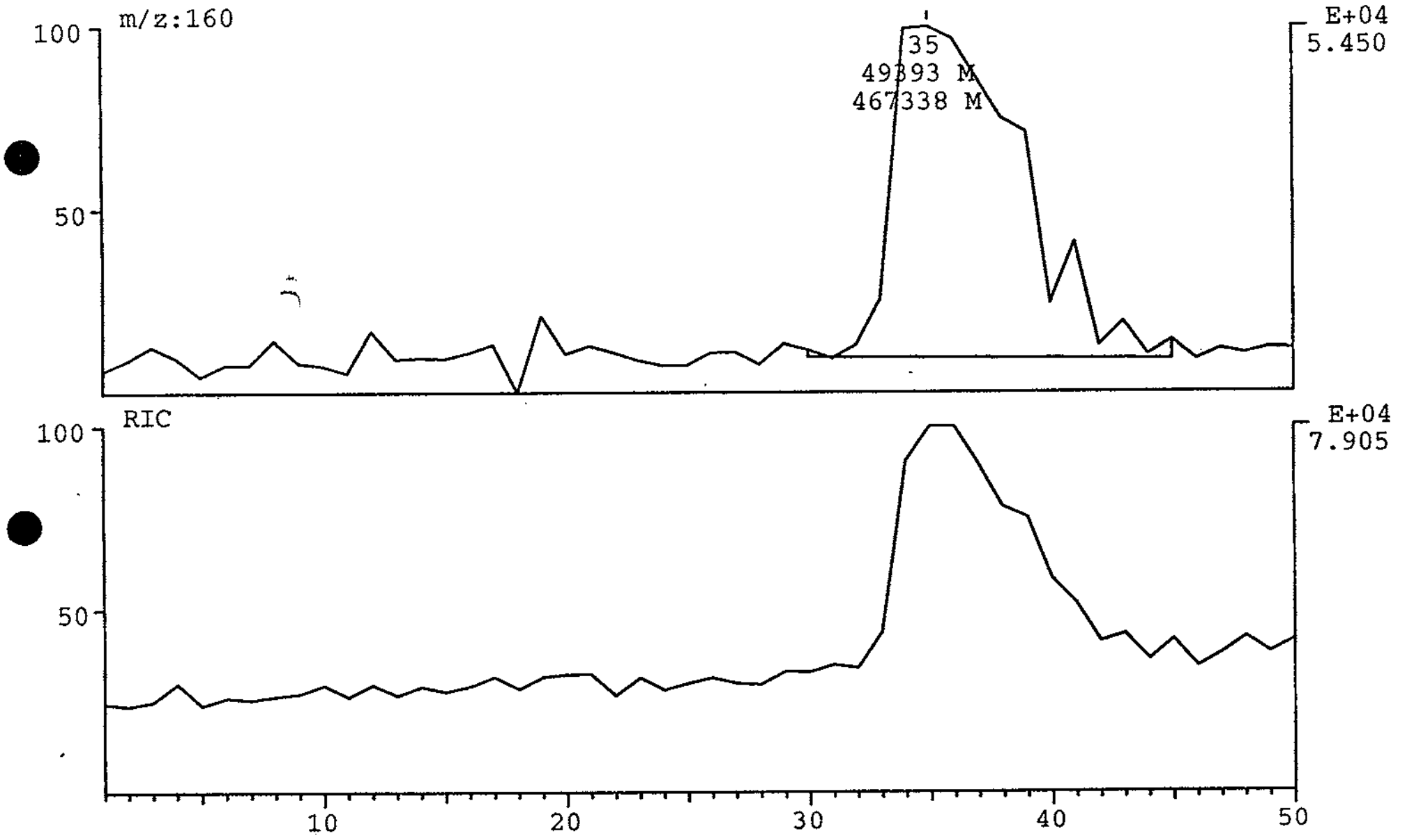
Peak Results

#	Name	Ret Time (min)	Area (uV*sec)	Height (uV)	Amount	Int Type
1	CuEDTA	3.550	243156	8434		BB

Samp: 50PPM EDTA
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 50
Area: 0, 4.00 Baseline : 0, 3

Start : 13:48:11 50
Study : 50217009
Inlet :
Masses: 157 > 162
Label : 0, 40.00

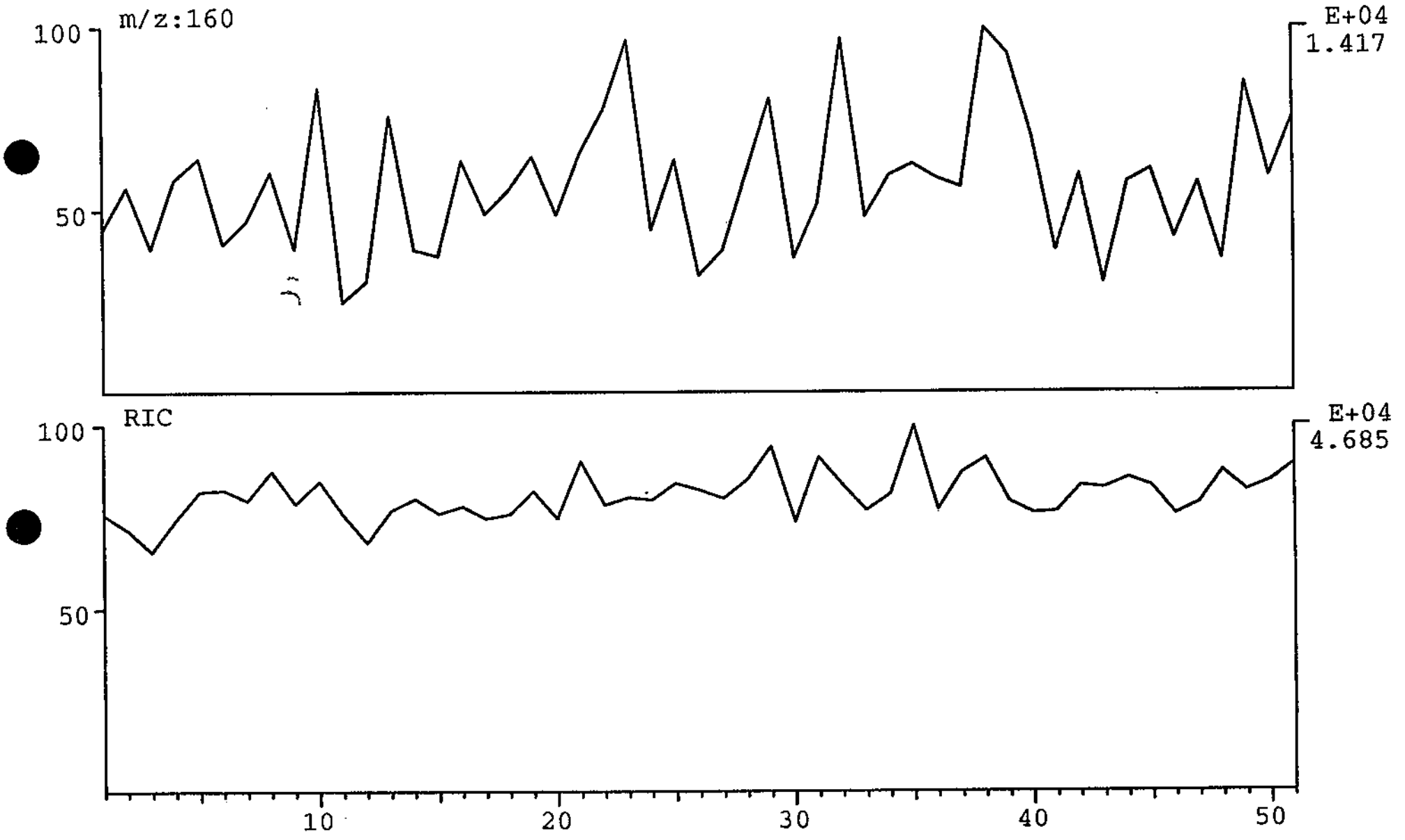
b6 -1
b7c -1



Samp: BLANK
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 51
Area: 0, 4.00 Baseline : 0, 3

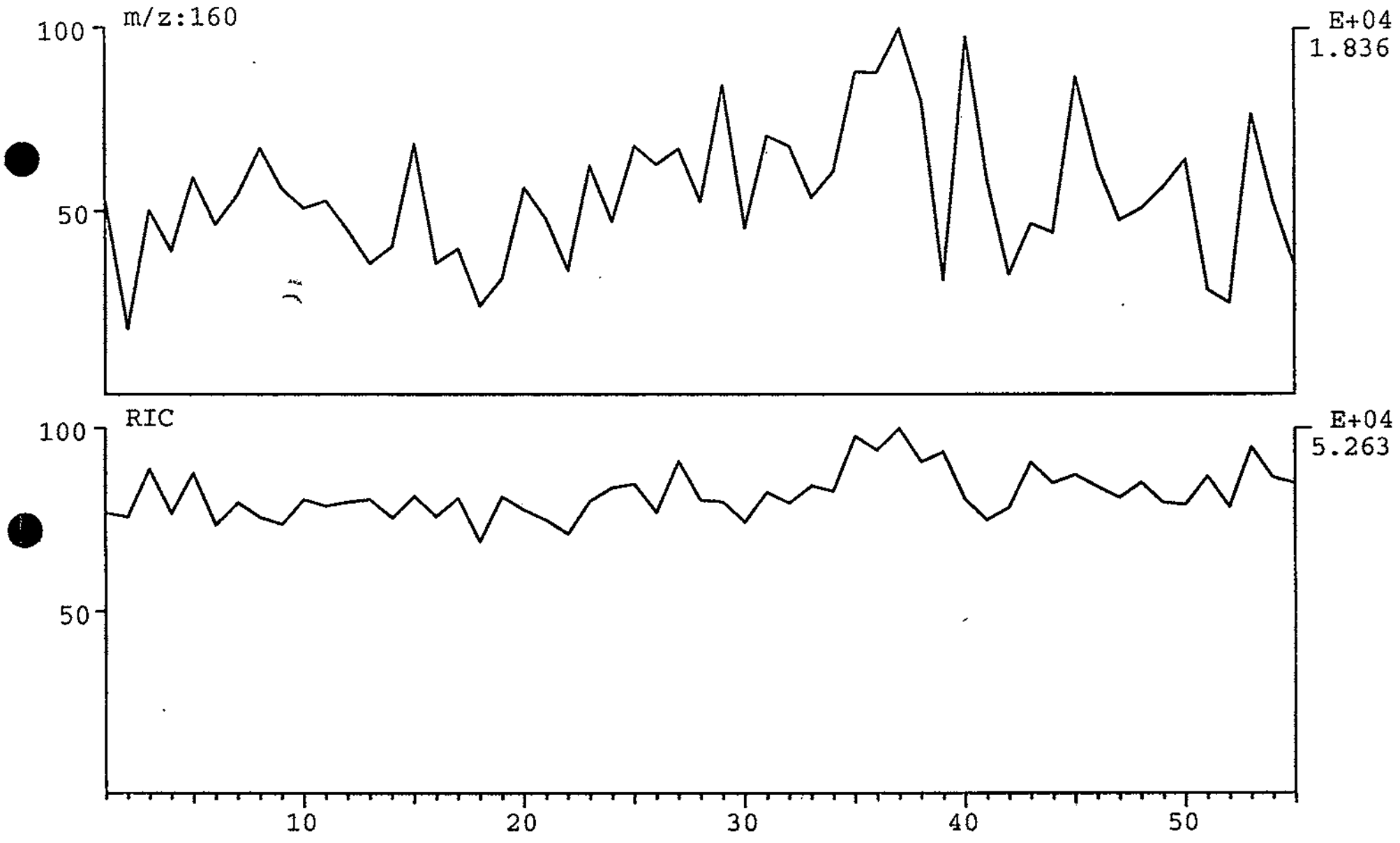
Start : 13:50:50 . 51
Study : 50217009
Inlet :
Masses: 157 > 162
Label : 0, 40.00

b6 -1
b7c -1



Samp: CONTROL FOR Q204 Start : 13:53:09 55
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR Study : 50217009
Oper: Inlet :
Peak: 1000.00 mmu Label wndw: 1 > 55 Masses: 157 > 162
Area: 0, 4.00 Baseline : 0, 3 Label : 0, 40.00

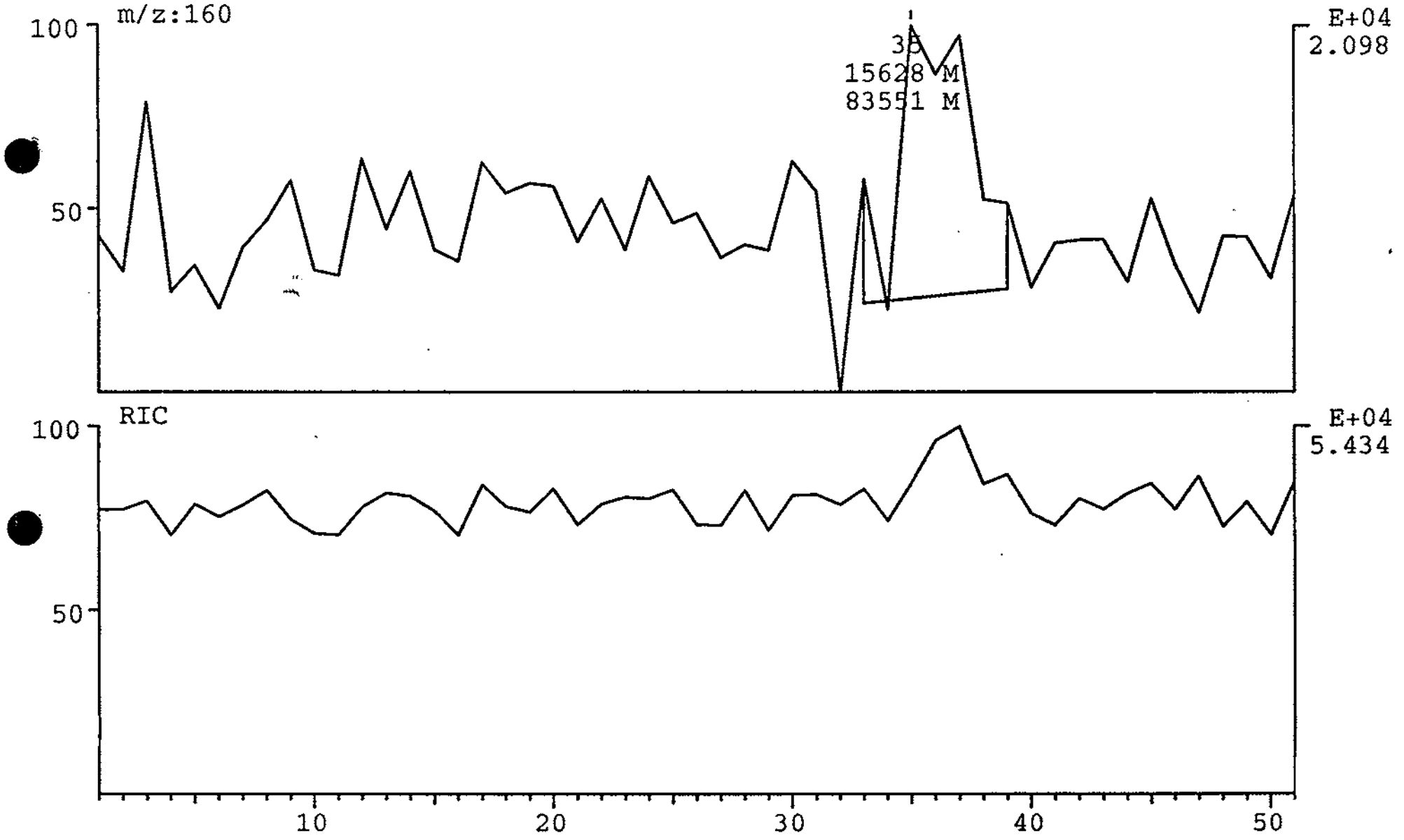
b6 -1
b7c -1



Samp: LAB COAT
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 51
Area: 0, 4.00 Baseline : 0, 3

Start : 13:57:29 · 51
Study : 50217009
Inlet :
Masses: 157 > 162
Label : 0, 40.00

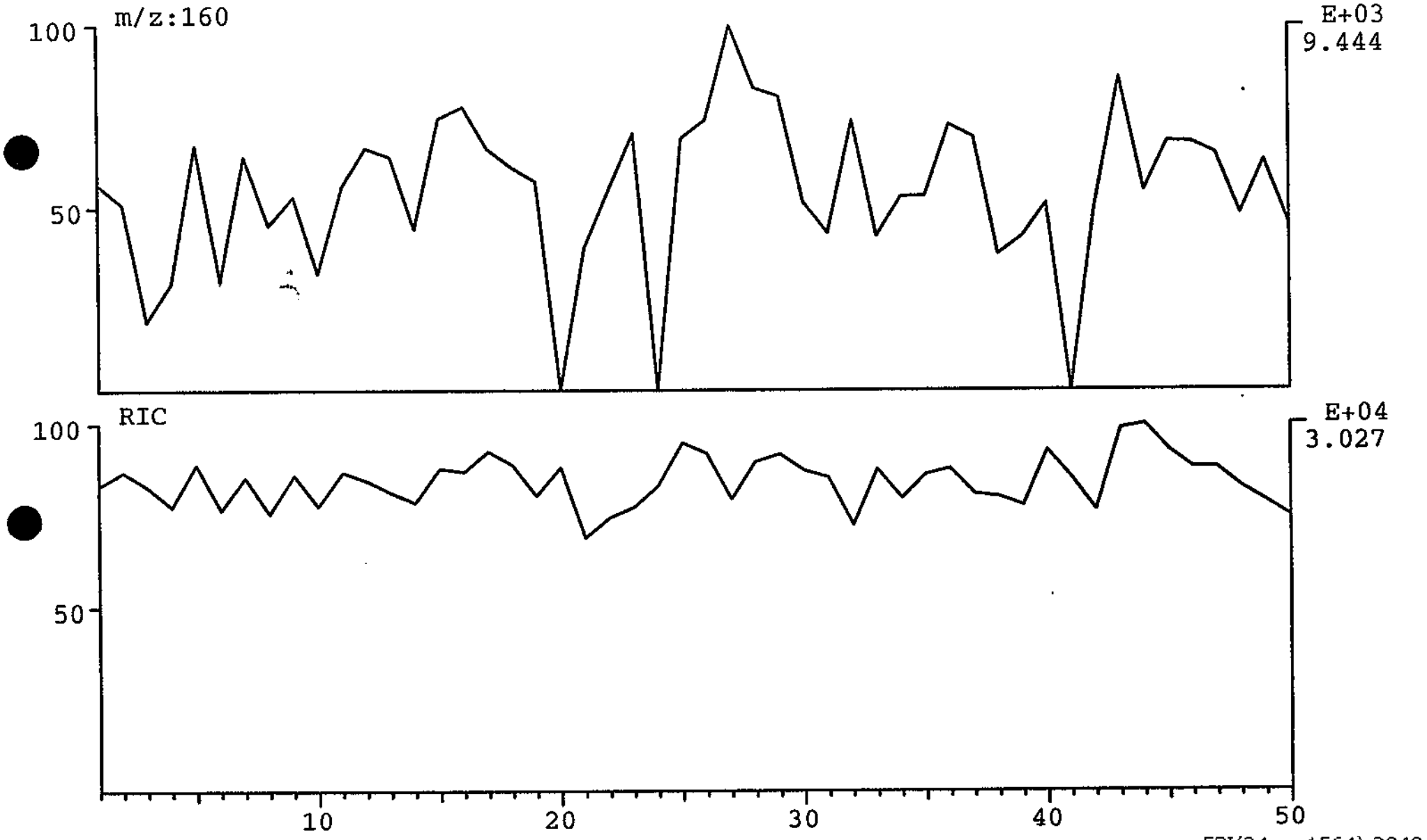
b6 -1
b7c -1



Samp: BLANK
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 50
Area: 0, 4.00 Baseline : 0, 3

Start : 01:11:01 50
Inlet :
Masses: 158 > 162
Label : 0, 40.00

b6 -1
b7C -1

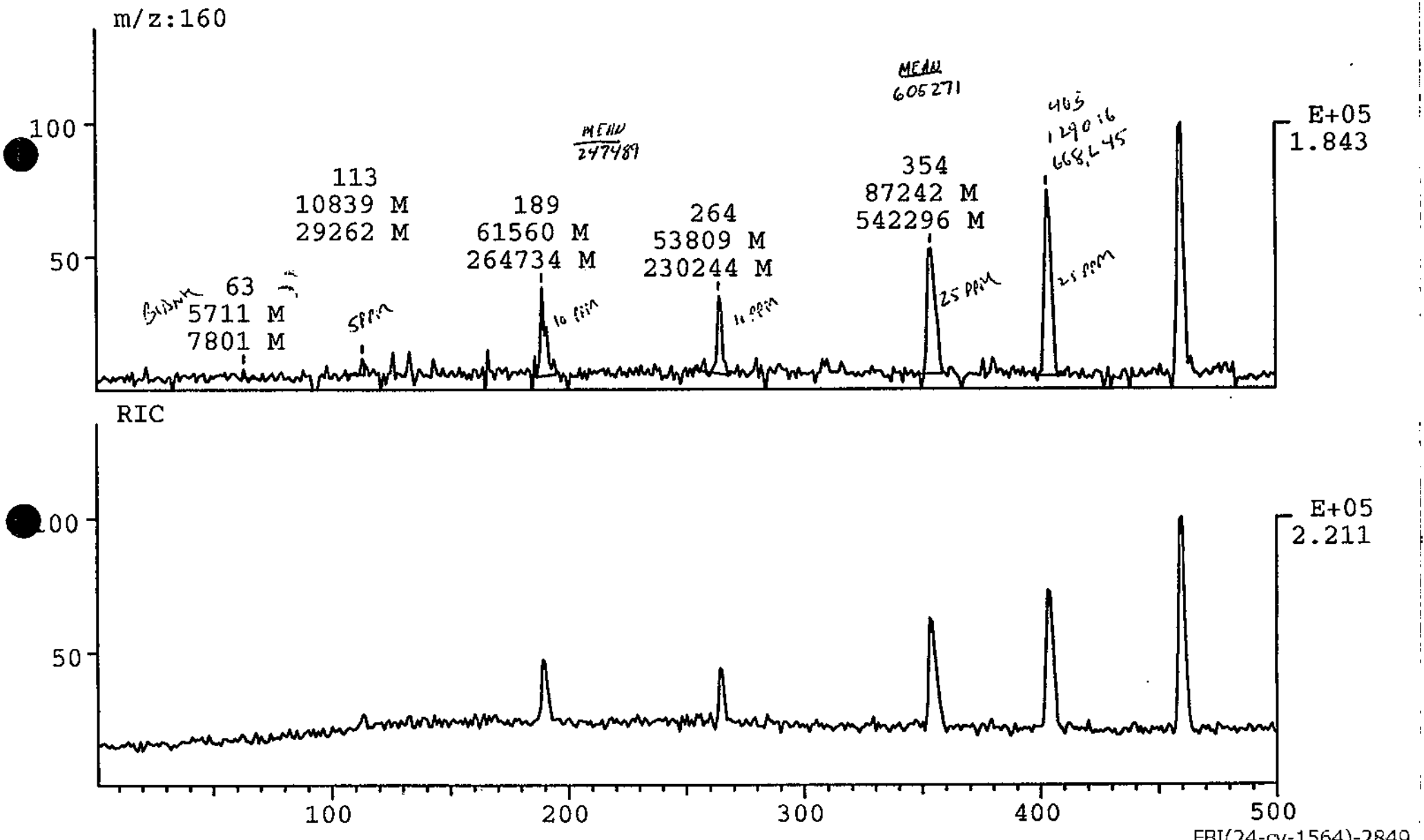


Samp: 1-5-10-50-100 PPM EDTA
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode:
Oper:
Peak: 1000.00 mmu
Area: 0, 4.00

Label wndw: 1 > 500
Baseline : 0, 3

Start : 646
Inlet :
Masses: 157 > 162
Label : 0, 40.00

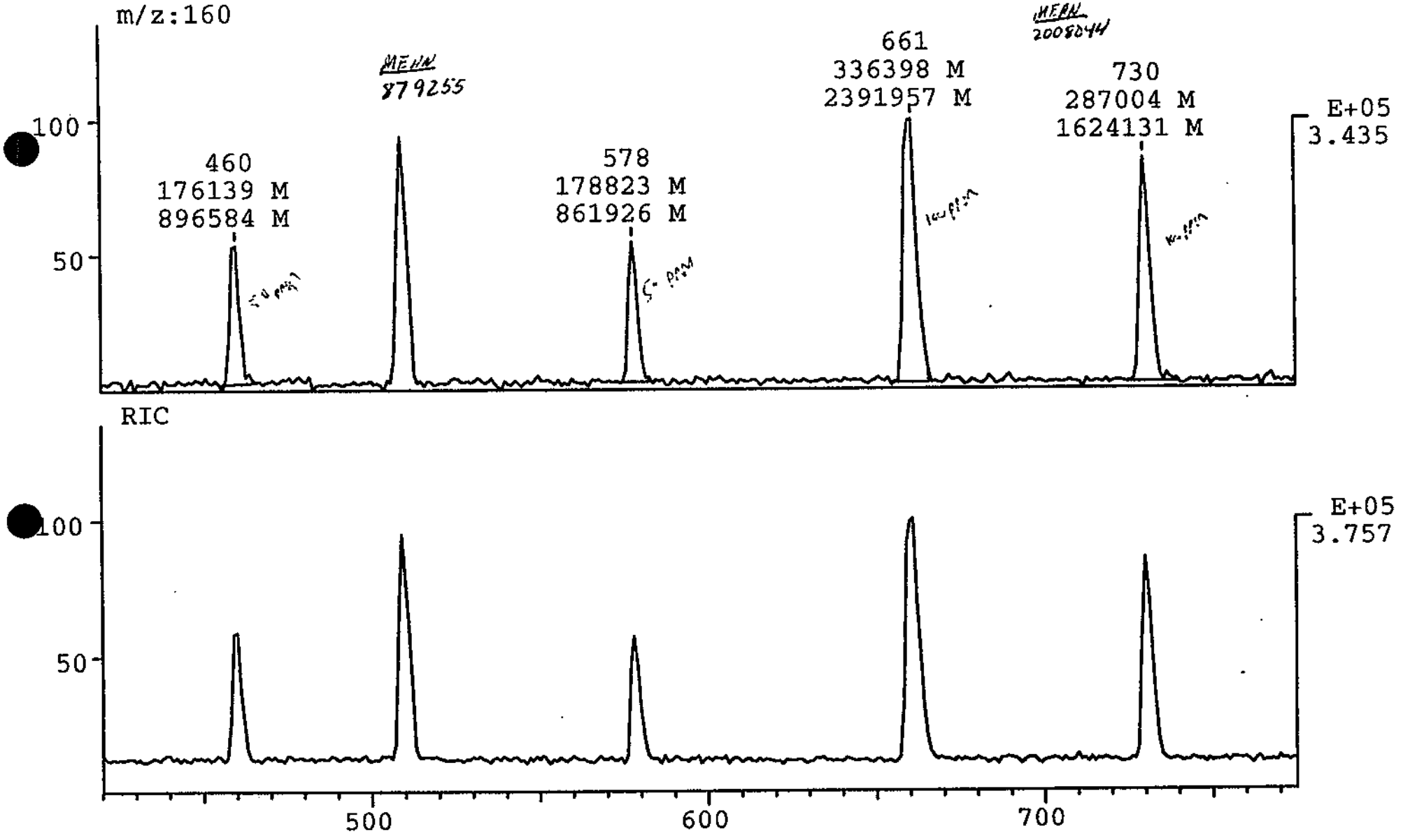
b6 -1
b7C -1



Samp: 1-5-10-50-100 PPM EDTA
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 420 > 775
Area: 0, 4.00 Baseline : 0, 3

Start : 08:07:38 .779
Inlet :
Masses: 158 > 162
Label : 0, 40.00

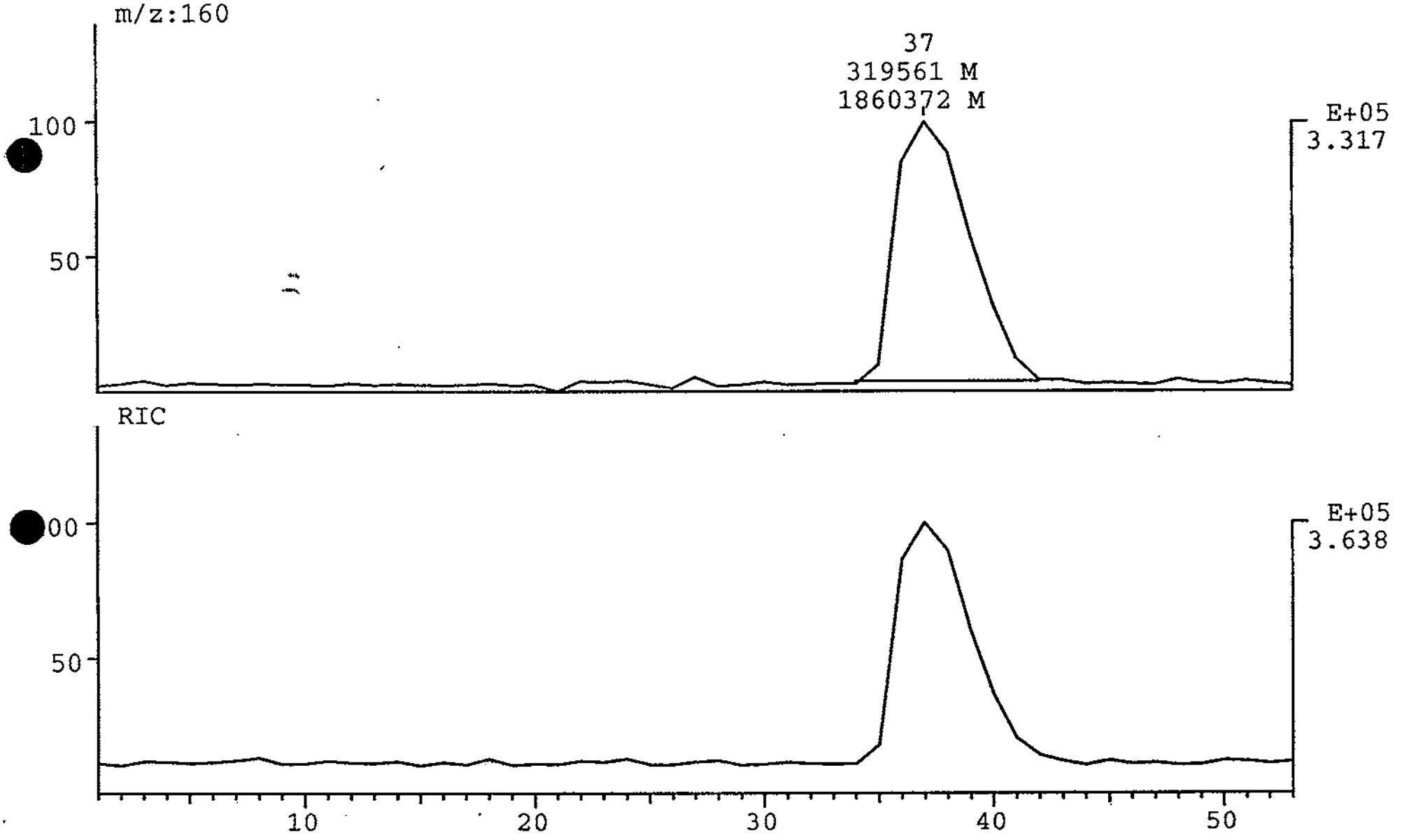
b6 -1
b7C -1



Samp:* 50 PPM EDTA
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 53
Area: 0, 4.00 Baseline : 0, 3

Start : 09:32:45 . 53
Inlet :
Masses: 158 > 162
Label : 0, 40.00

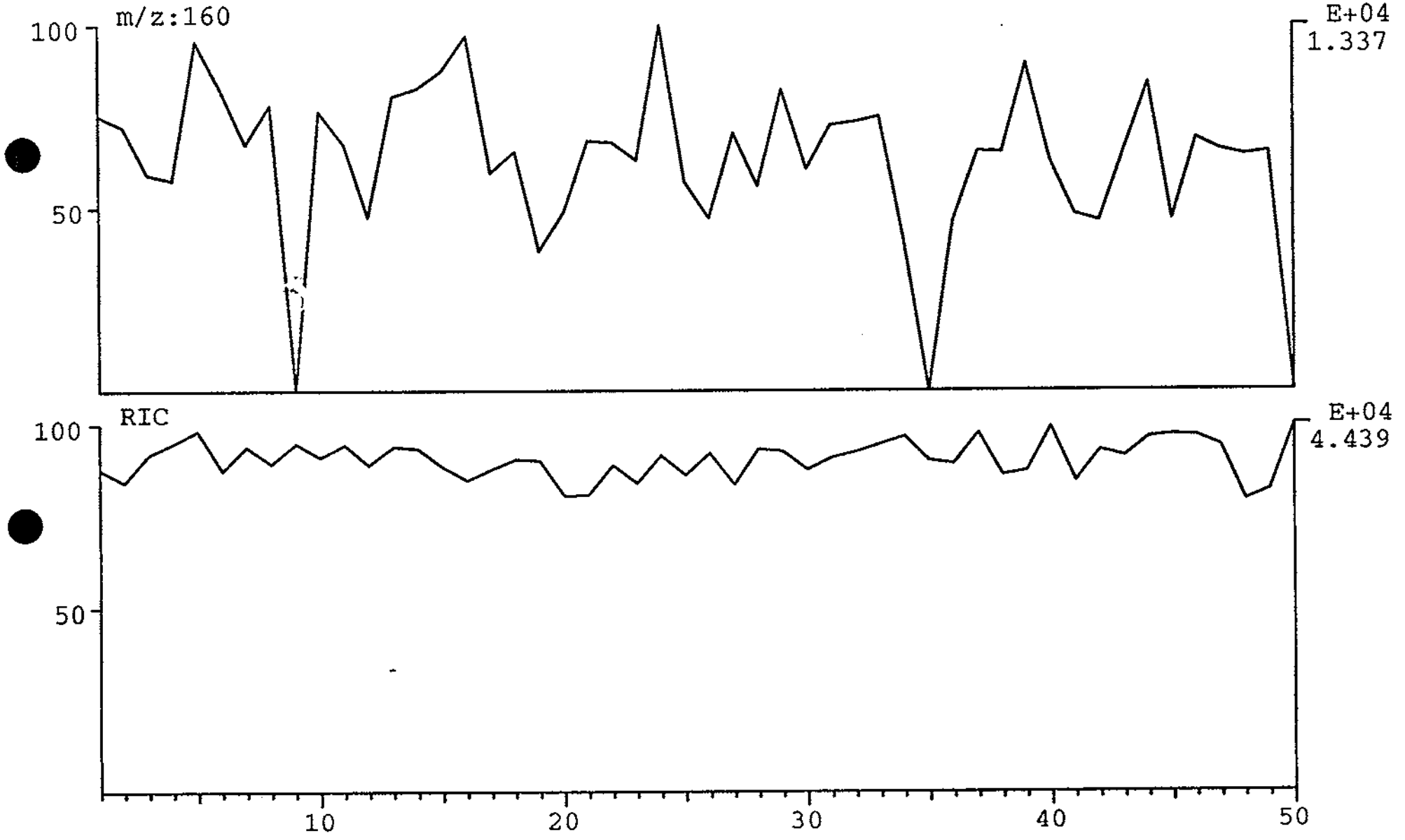
b6 -1
b7c -1



Samp: BLANK
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 50
Area: 0, 4.00 Baseline : 0, 3

Start : 09:35:07 50
Inlet :
Masses: 158 > 162
Label : 0, 40.00

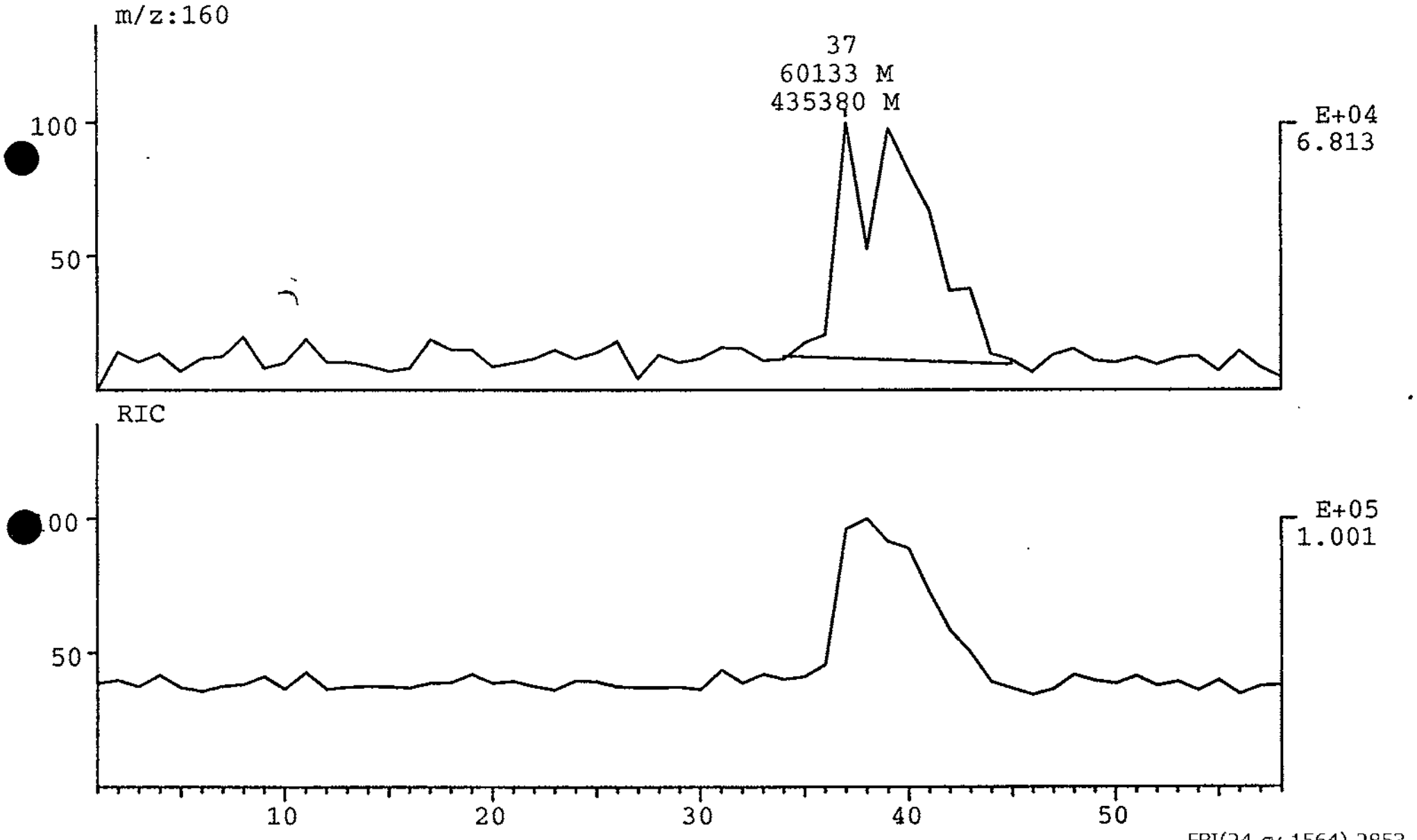
b6 -1
b7C -1



Samp: CONTROL FOR Q65
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 58
Area: 0, 4.00 Baseline : 0, 3

Start : 09:38:20 58
Study : 50217009
Inlet :
Masses: 158 > 162
Label : 0, 40.00

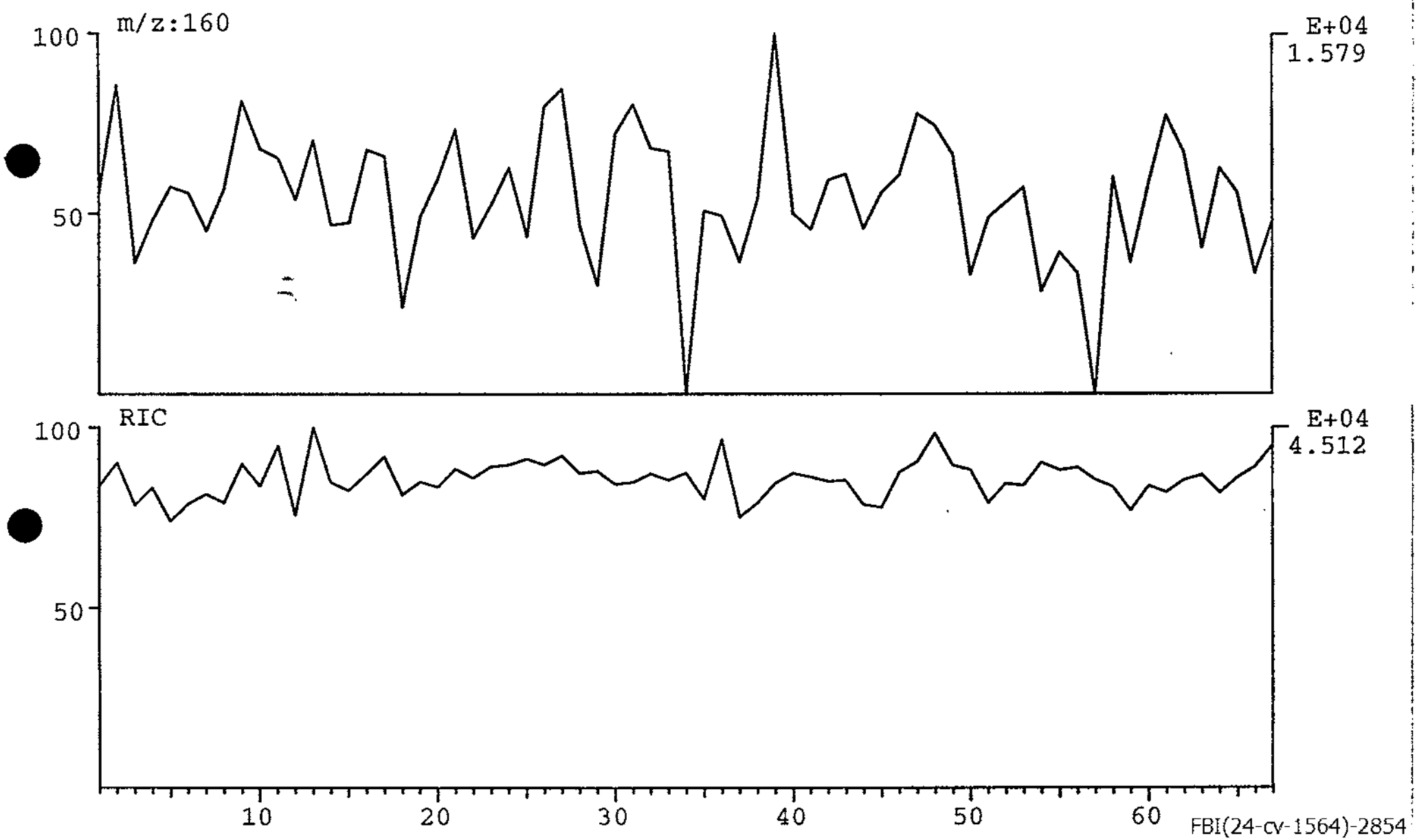
b6 -1
b7c -1



Samp: BLANK
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 67
Area: 0, 4.00 Baseline : 0, 3

Start : 09:41:21 67
Study : 50217009
Inlet :
Masses: 158 > 162
Label : 0, 40.00

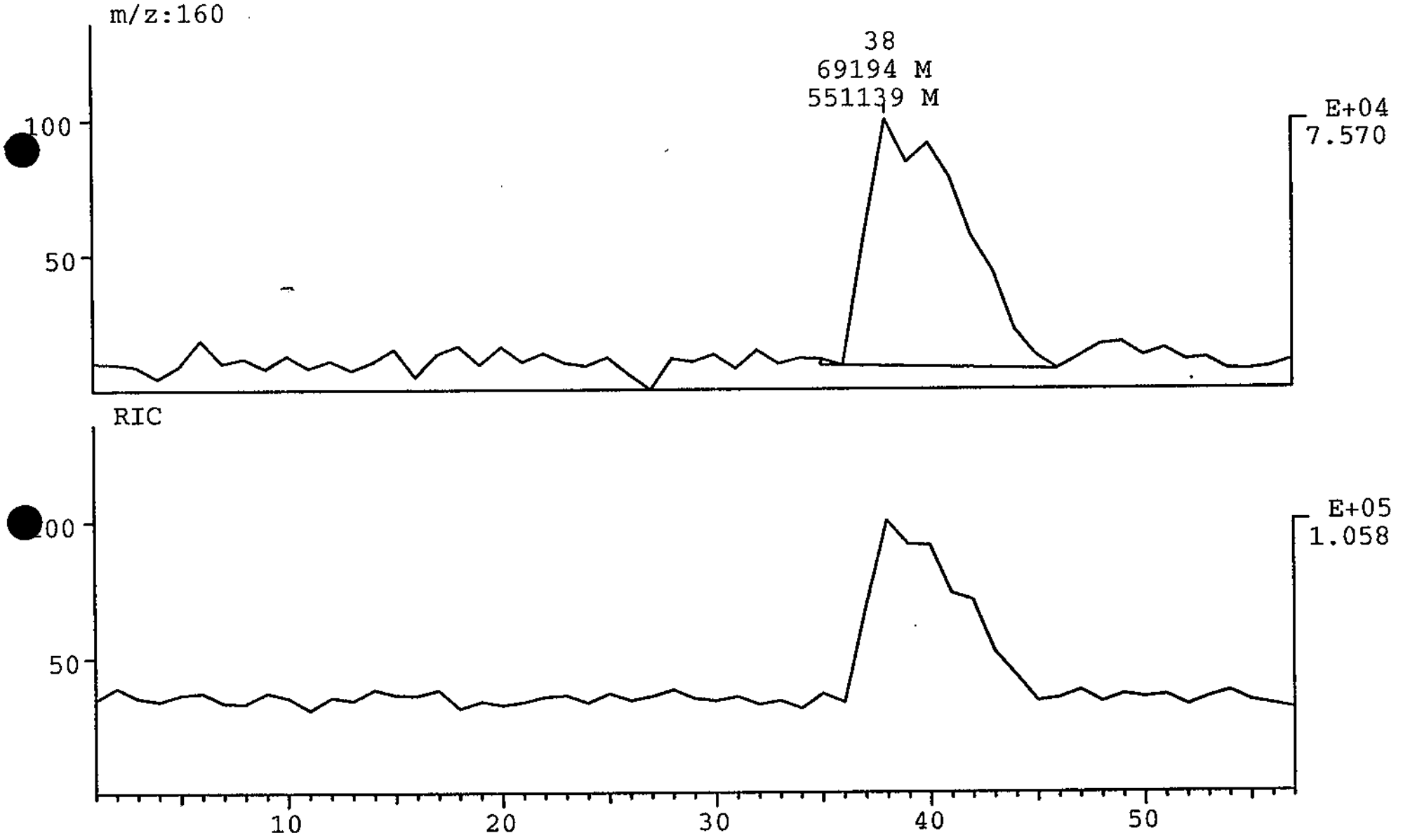
b6 -1
b7C -1



Samp:* K65
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 57
Area: 0, 4.00 Baseline : 0, 3

Start : 09:44:20 57
Study : 50217009
Inlet :
Masses: 158 > 162
Label : 0, 40.00

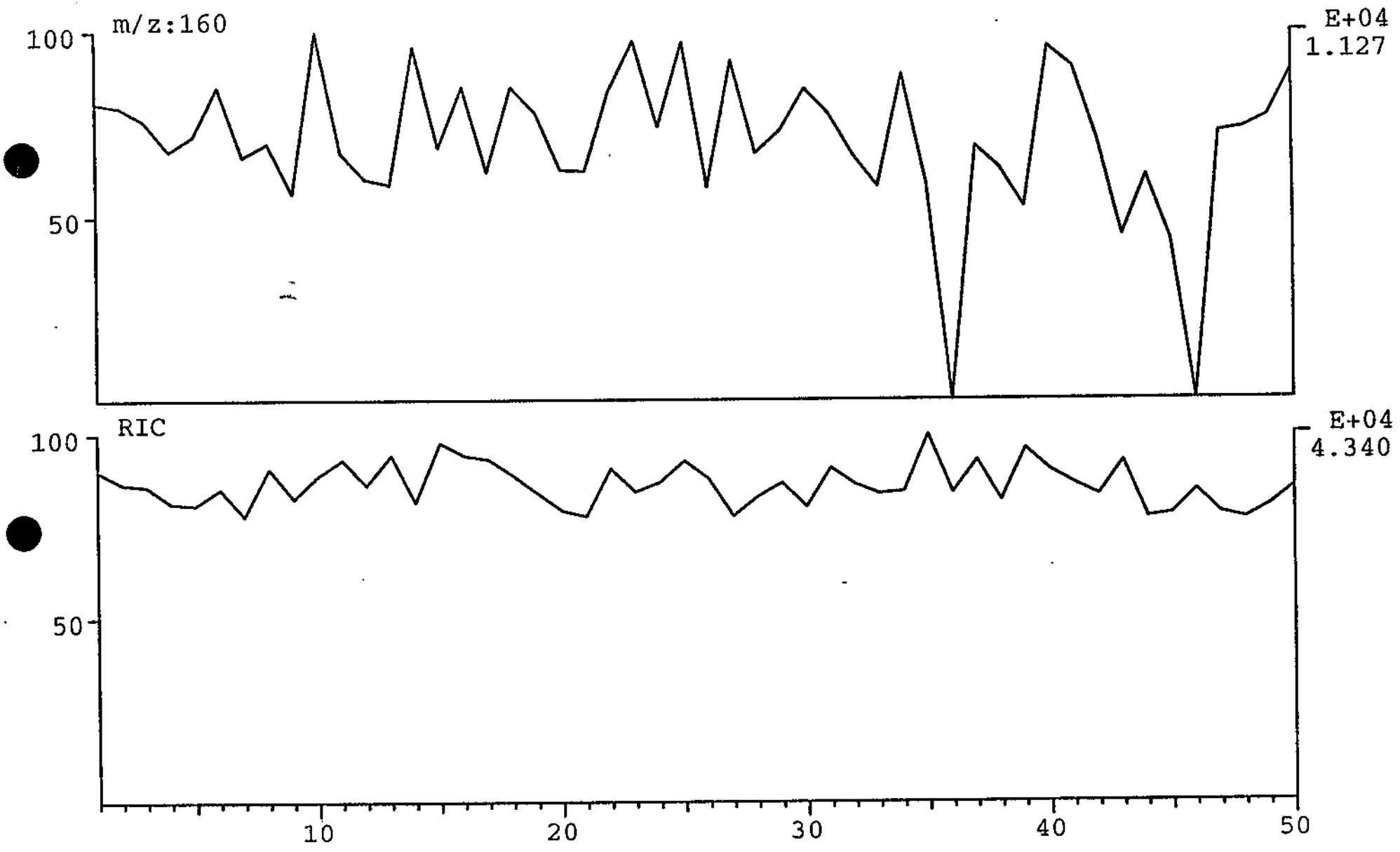
b6 -1
b7C -1



Samp: BLANK
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 50
Area: 0, 4.00 Baseline : 0, 3

Start : 09:47:25 . 50
Study : 50217009
Inlet :
Masses: 158 > 162
Label : 0, 40.00

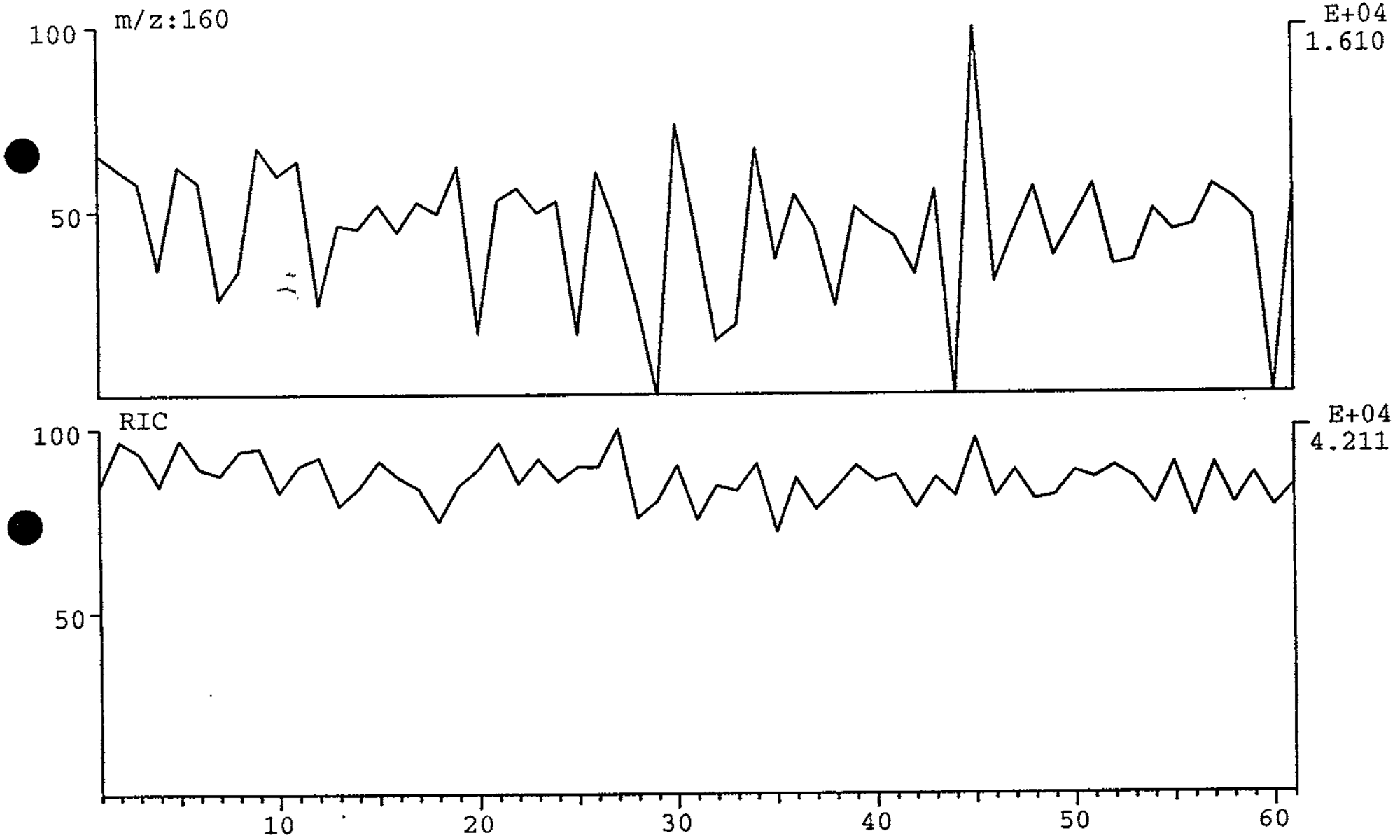
b6 -1
b7c -1



Samp: CONTROL FOR Q204
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 61
Area: 0, 4.00 Baseline : 0, 3

Start : 09:50:13 61
Study : 50217009
Inlet :
Masses: 158 > 162
Label : 0, 40.00

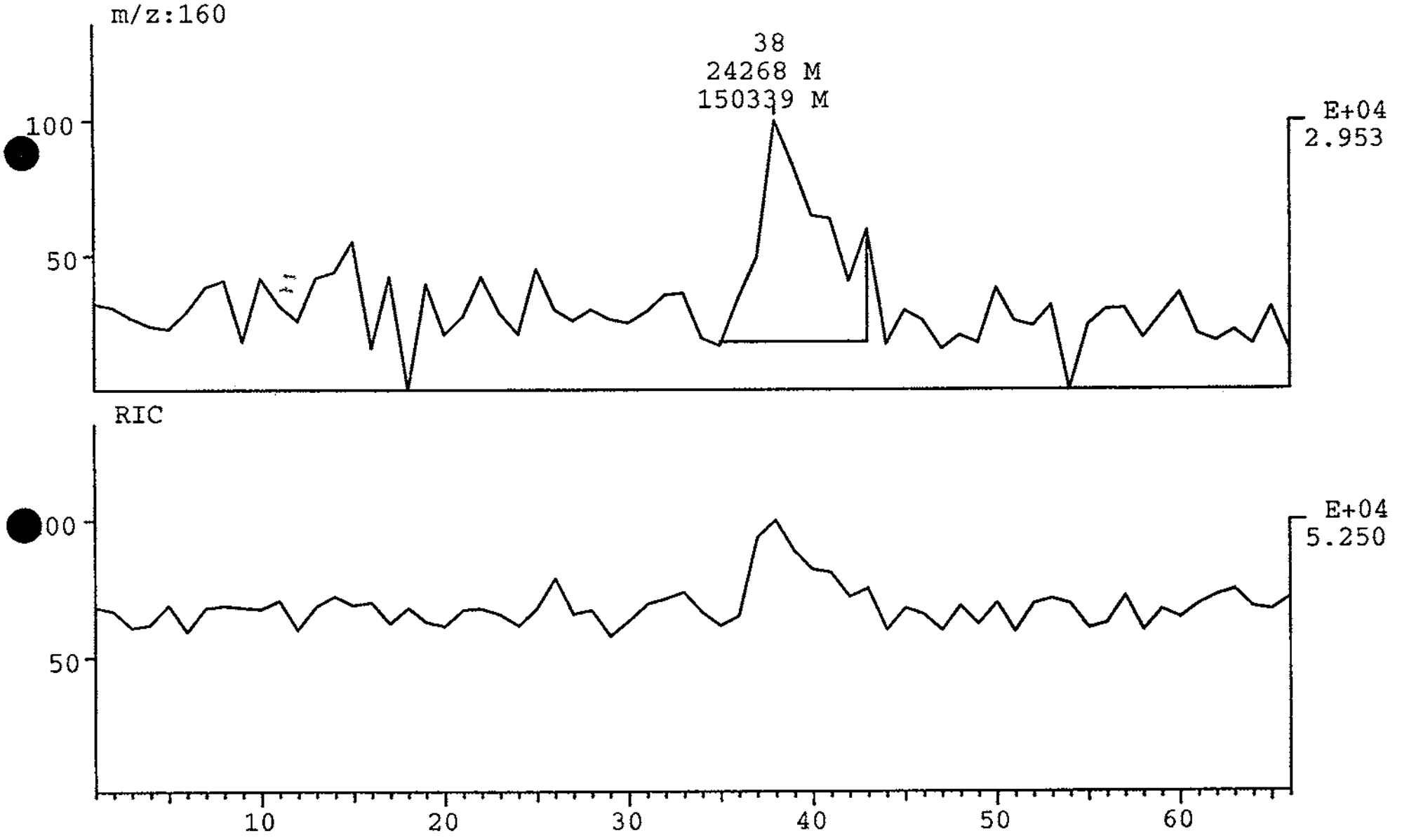
b6 -1
b7c -1



Samp: Q204
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 66
Area: 0, 4.00 Baseline : 0, 3

Start : 09:54:57 · 66
Study : 50217009
Inlet :
Masses: 158 > 162
Label : 0, 40.00

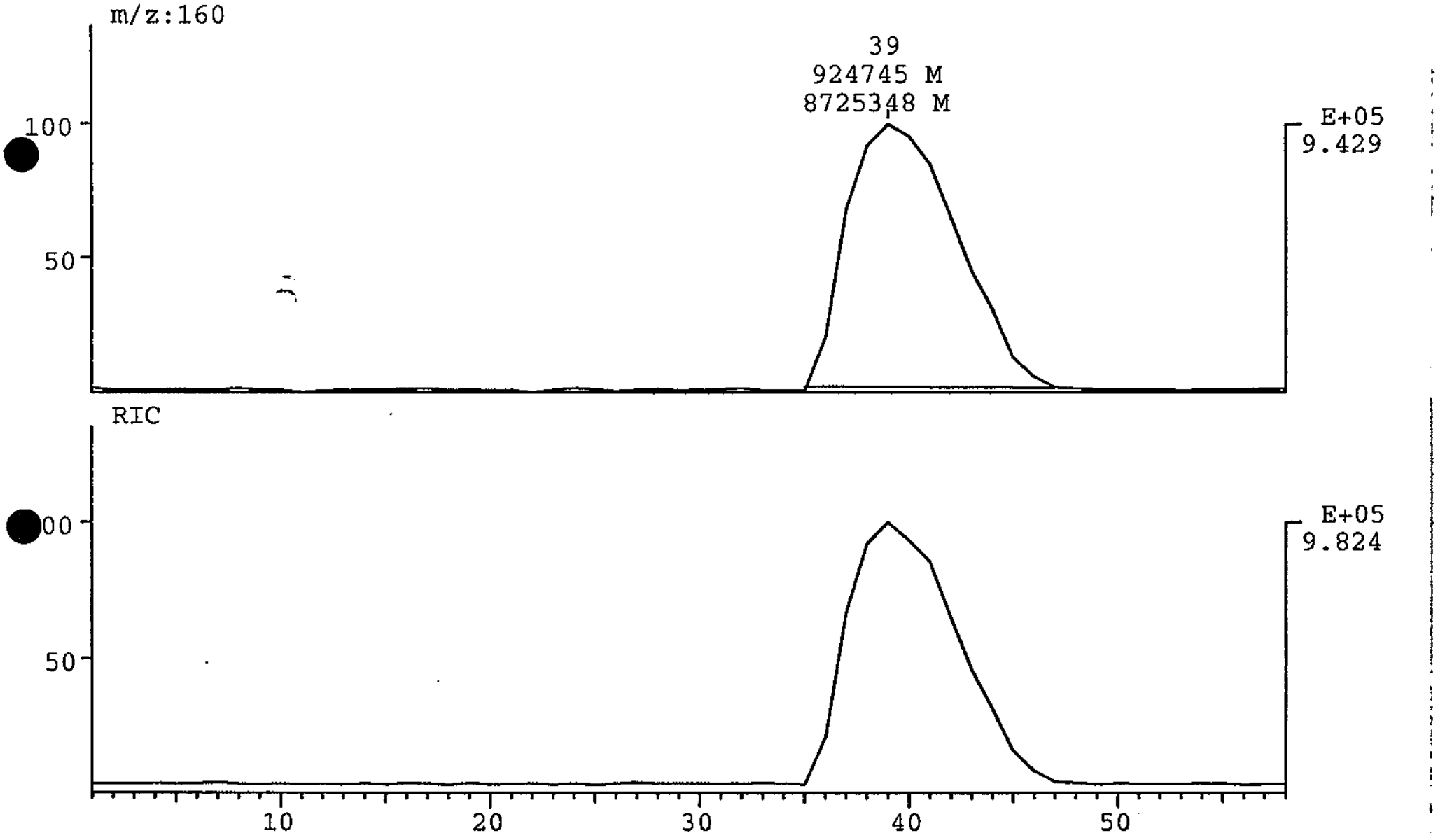
b6 -1
b7C -1



Samp: K68 POS CONTROL FOR Q204
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 58
Area: 0, 4.00 Baseline : 0, 3

Start : 10:04:49 58
Study : 50217009
Inlet :
Masses: 158 > 162
Label : 0, 40.00

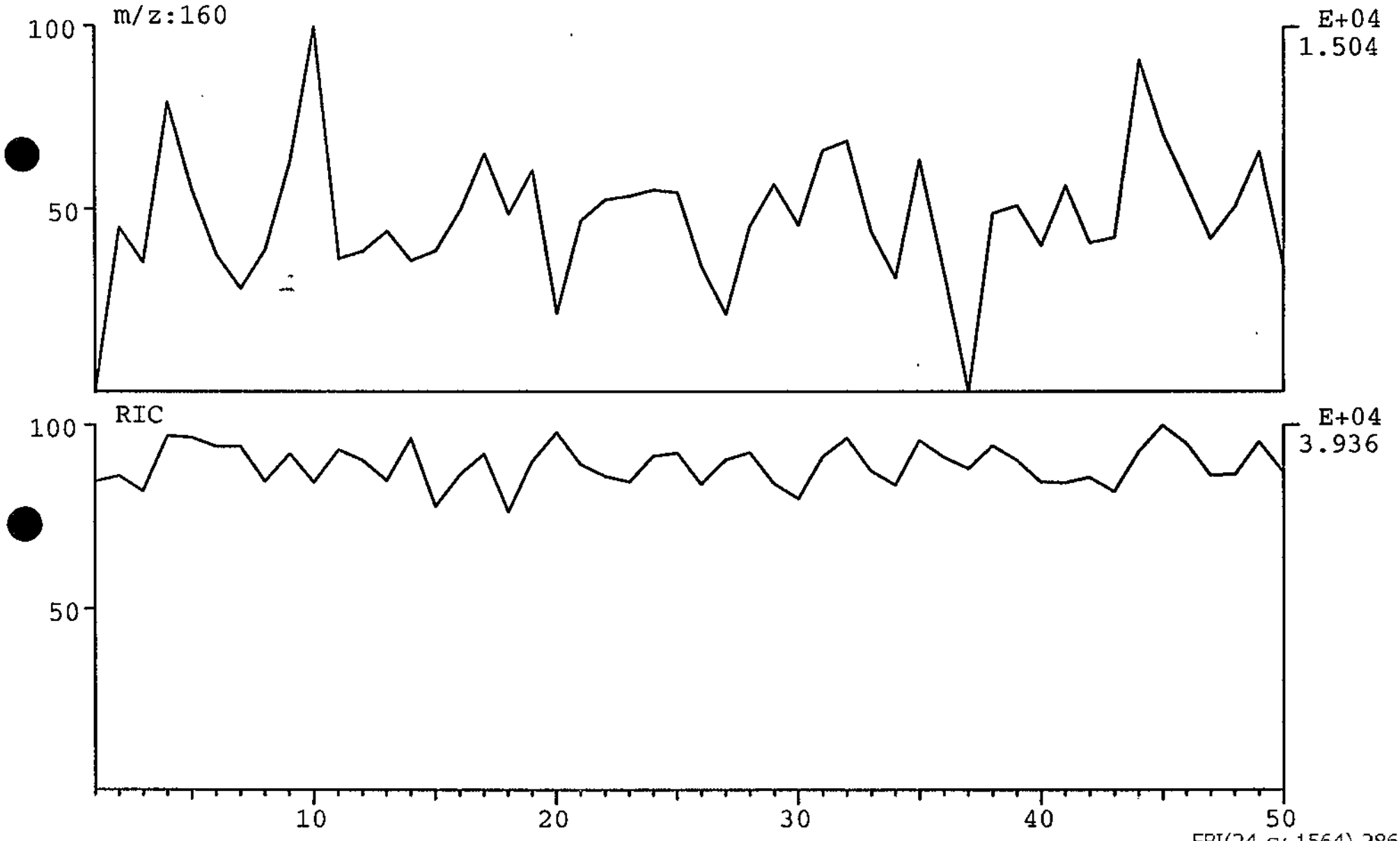
b6 -1
b7C -1



Samp: BLANK
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 50
Area: 0, 4.00 Baseline : 0, 3

Start : 10:07:49 50
Study : 50217009
Inlet :
Masses: 158 > 162
Label : 0, 40.00

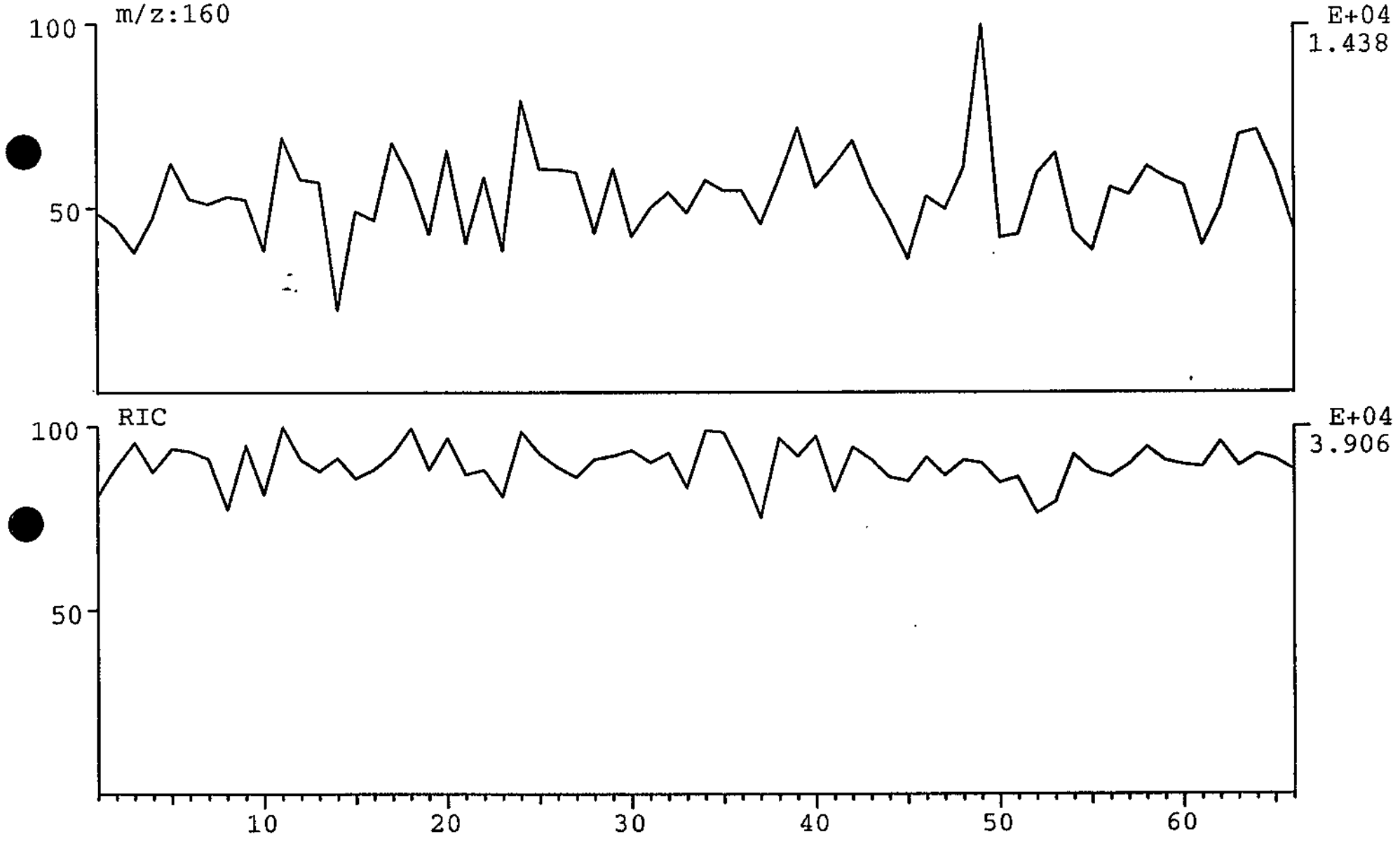
b6 -1
b7c -1



Samp: CONTROL FOR 206 SOCK
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 66
Area: 0, 4.00 Baseline : 0, 3

Start : 10:10:20 66
Study : 50217009
Inlet :
Masses: 158 > 162
Label : 0, 40.00

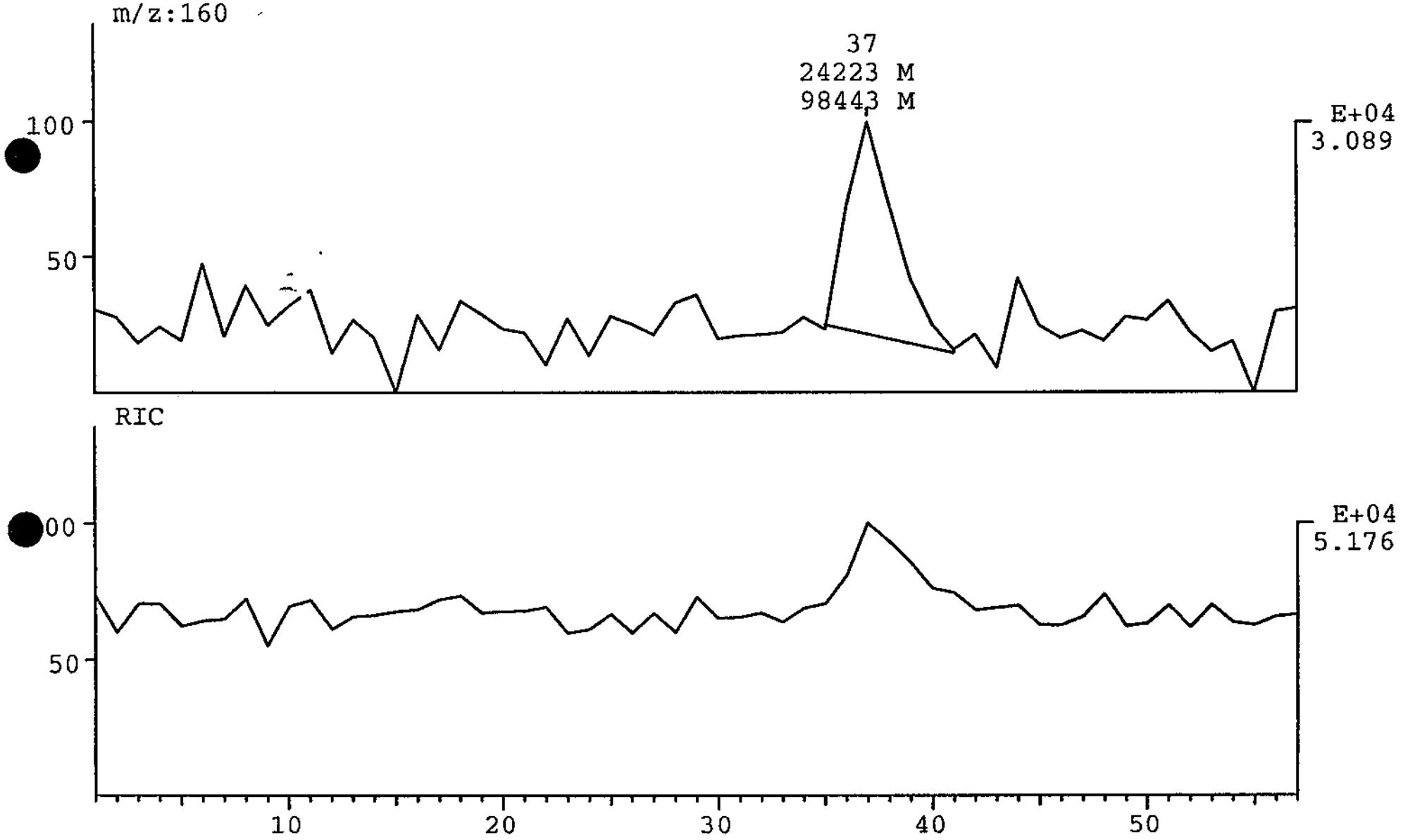
b6 -1
b7C -1



Samp: Q206
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 57
Area: 0, 4.00 Baseline : 0, 3

Start : 10:14:27 57
Study : 50217009
Inlet :
Masses: 158 > 162
Label : 0, 40.00

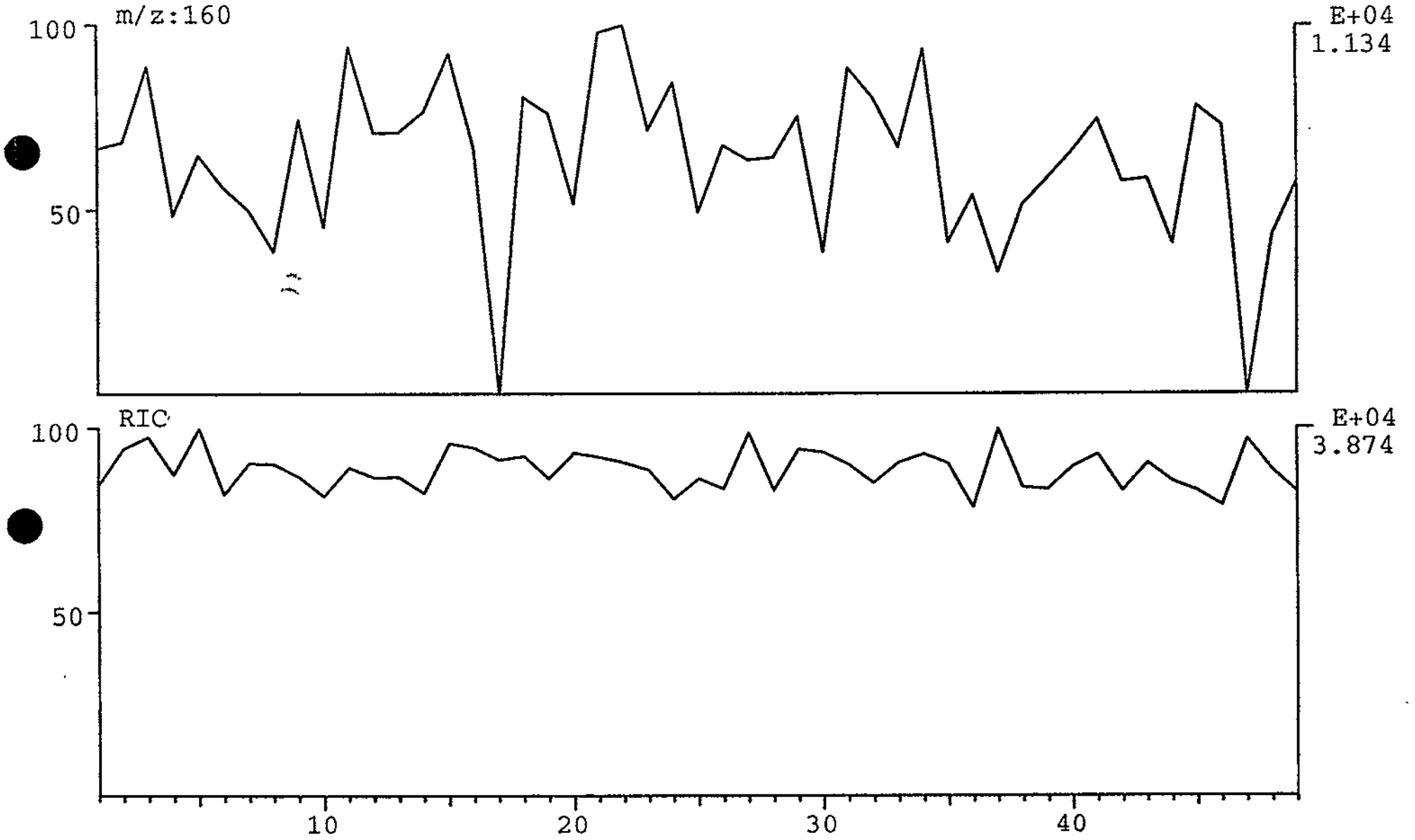
b6 -1
b7c -1



Samp: BLANK
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 49
Area: 0, 4.00 Baseline : 0, 3

Start : 10:17:28 49
Study : 50217009
Inlet :
Masses: 158 > 162
Label : 0, 40.00

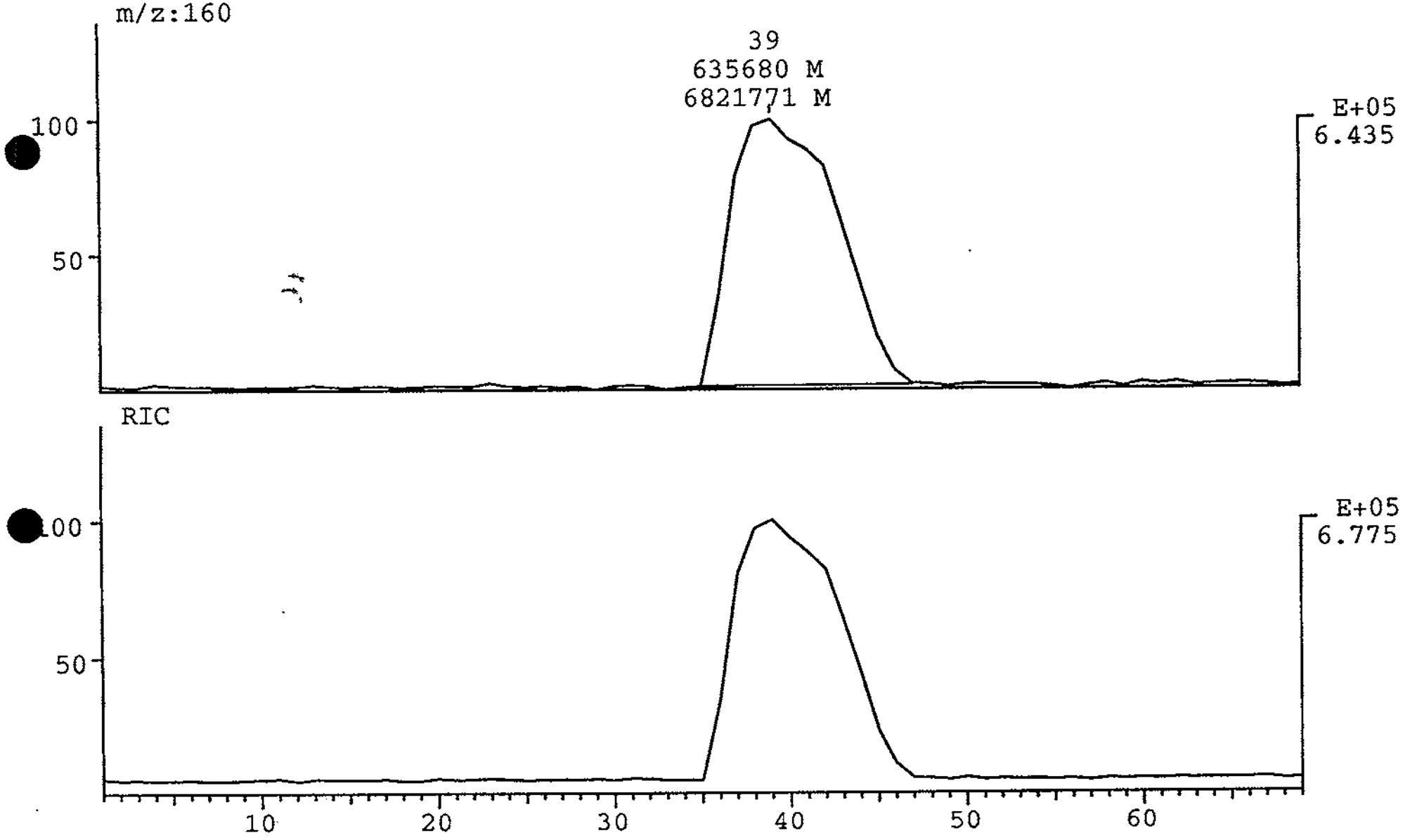
b6 -1
b7c -1



Samp: K67 CONTROL FOR Q206
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 69
Area: 0, 4.00 Baseline : 0, 3

Start : 10:19:53 . 69
Study : 50217009
Inlet :
Masses: 158 > 162
Label : 0, 40.00

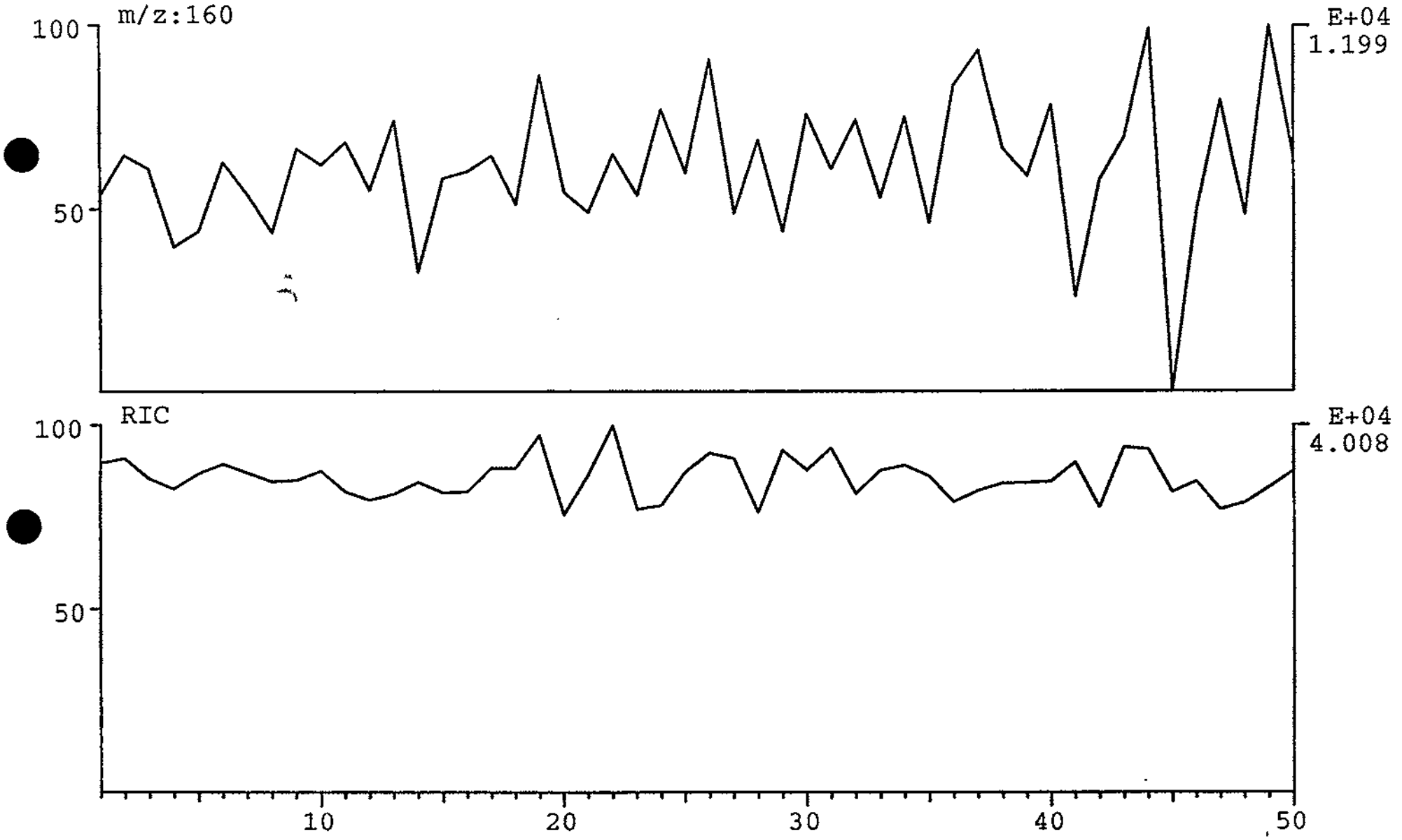
b6 -1
b7c -1



Samp: BLANK
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 50
Area: 0, 4.00 Baseline : 0, 3

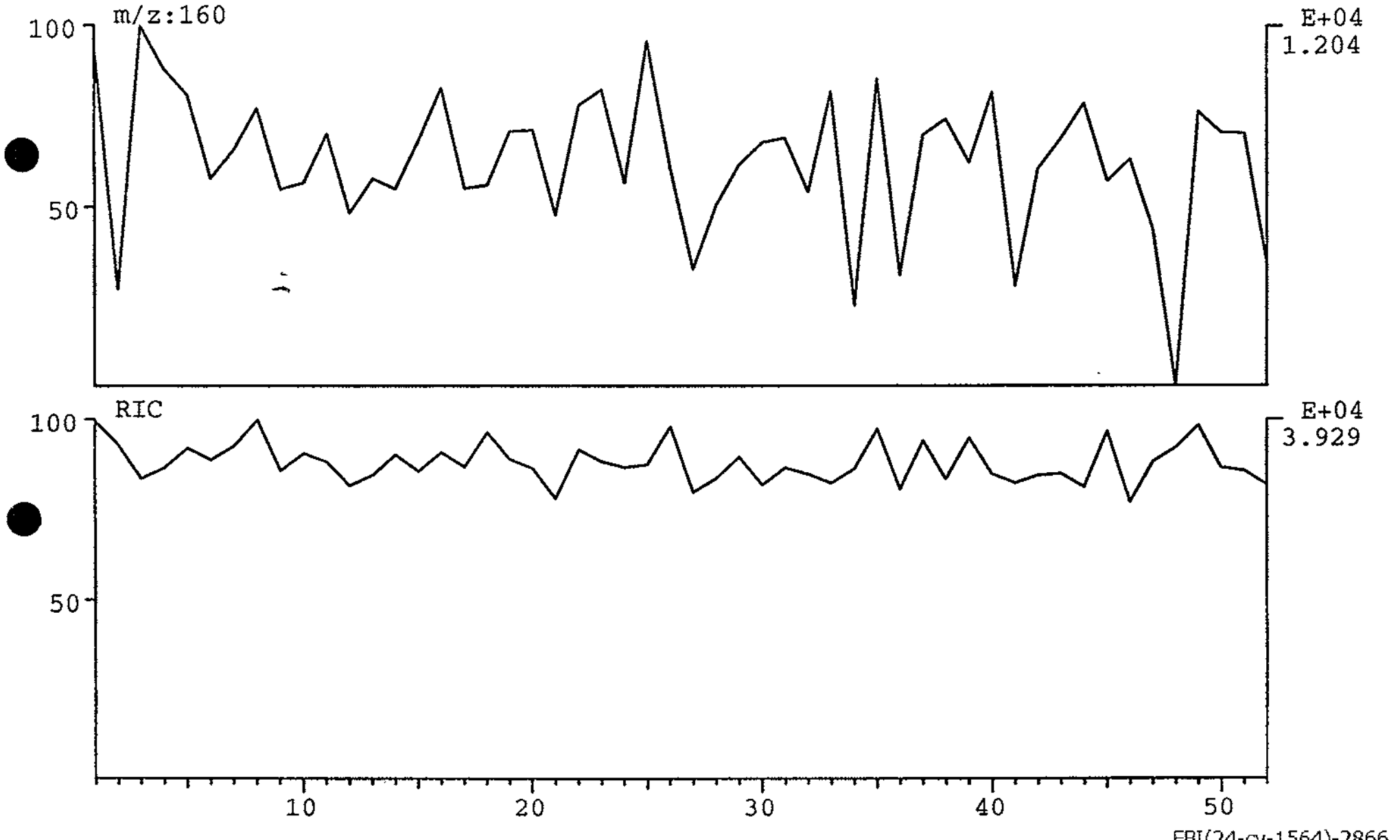
Start : 10:22:49 50
Study : 50217009
Inlet :
Masses: 158 > 162
Label : 0, 40.00

b6 -1
b7C -1



Samp: REPEAT OF CONTROL FOR Q204 Start : 10:25:46 52
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR Study : 50217009
Oper: Inlet :
Peak: 1000.00 mmu Label wndw: 1 > 52 Masses: 158 > 162
Area: 0, 4.00 Baseline : 0, 3 Label : 0, 40.00

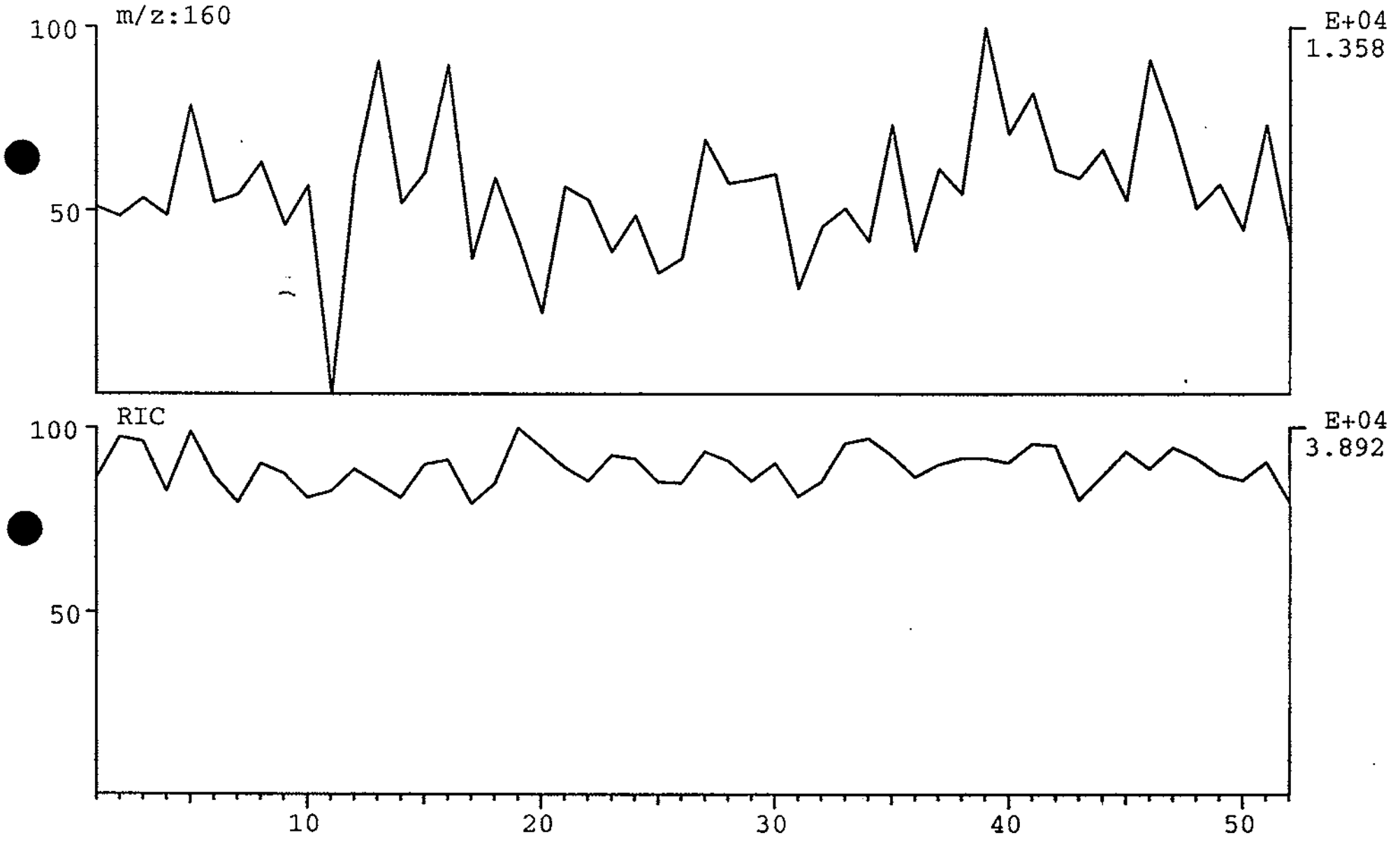
b6 -1
b7C -1



Samp: REPEAT OF Q204
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 52
Area: 0, 4.00 Baseline : 0, 3

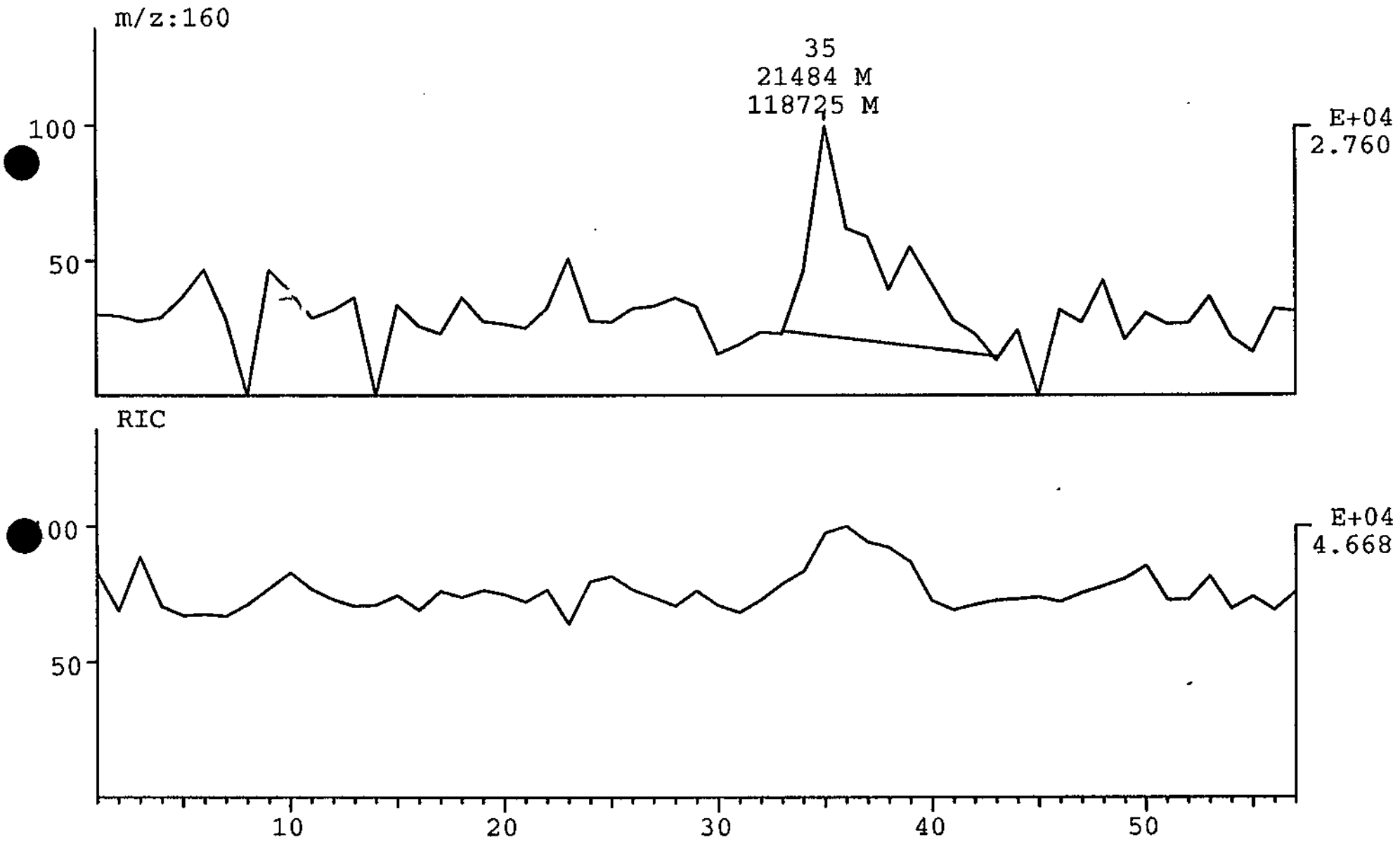
Start : 10:28:30 52
Study : 50217009
Inlet :
Masses: 158 > 162
Label : 0, 40.00

b6 -1
b7C -1



Samp: REPEAT OF Q206 Start : 10:31:36 . 57
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR Study : 50217009
Oper: Inlet :
Peak: 1000.00 mmu Label wndw: 1 > 57 Masses: 158 > 162
Area: 0, 4.00 Baseline : 0, 3 Label : 0, 40.00

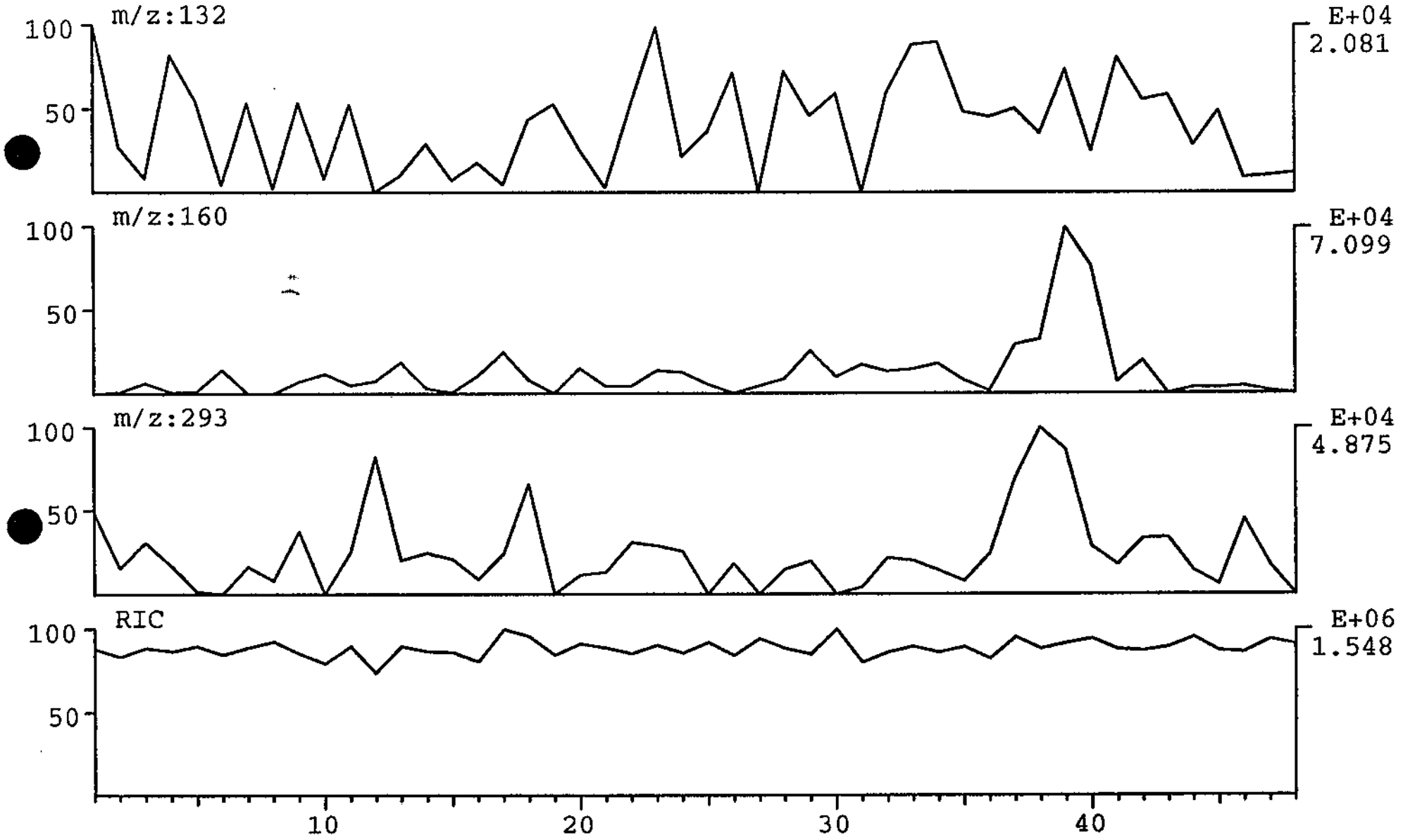
b6 -1
b7c -1



Samp: 10PPM EDTA
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 48
Area: 0, 4.00 Baseline : 0, 3

Start : 10:35:03 48
Study : 50217009
Inlet :
Masses: 130 > 295
Label : 0, 40.00

b6 -1
b7c -1

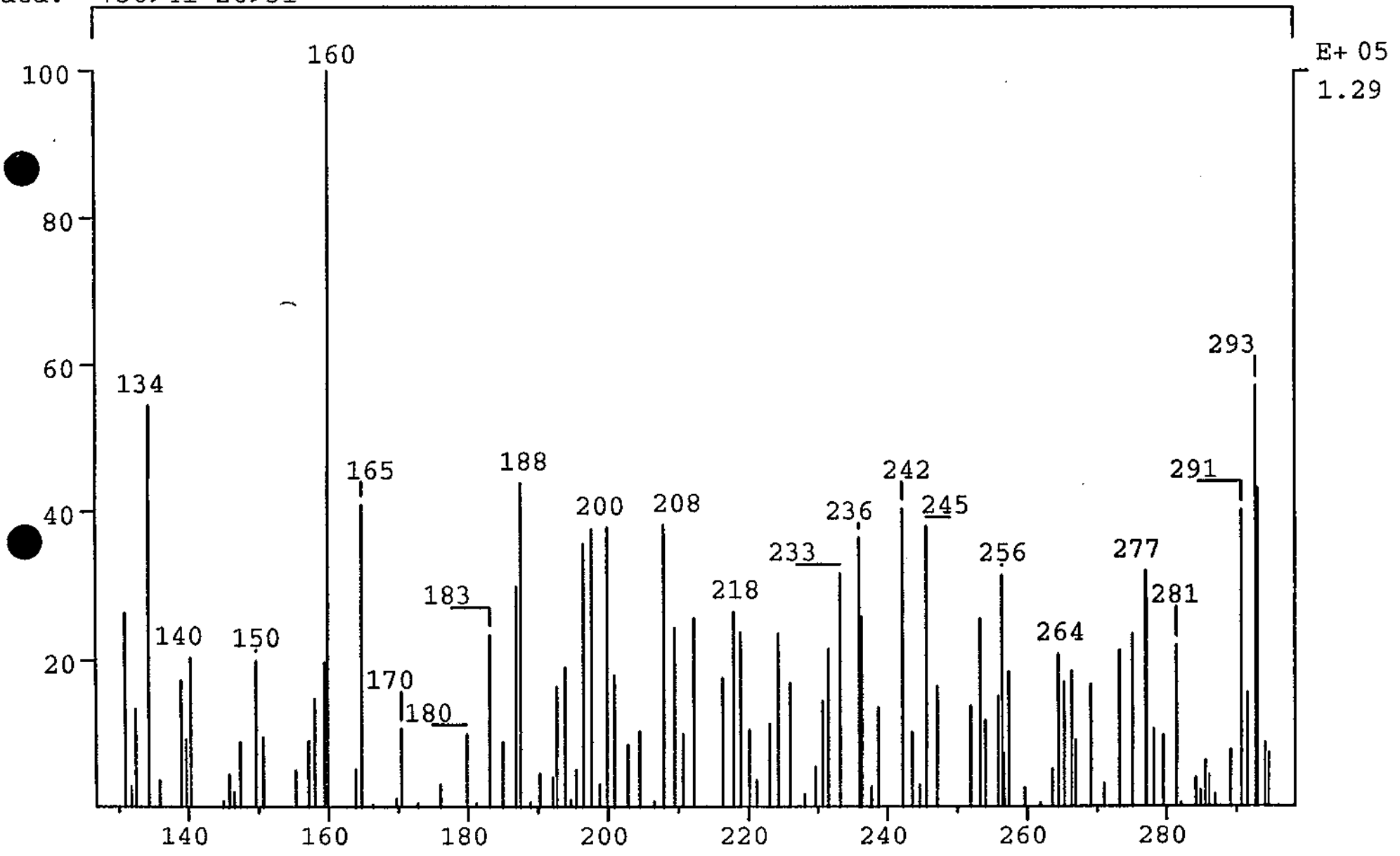


Samp: 10PPM EDTA
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU 293.0 @ -20eV LMR GAS UP LR
Oper:
Base: 159.9
Norm: 159.9
Peak: 1000.00 mmu
Data: +36>41-26>31

Inten : 129427
RIC : 2309151

Start : 10:35:03 48
Study : 50217009
Inlet :
Masses: 130 > 295
#peaks: 110

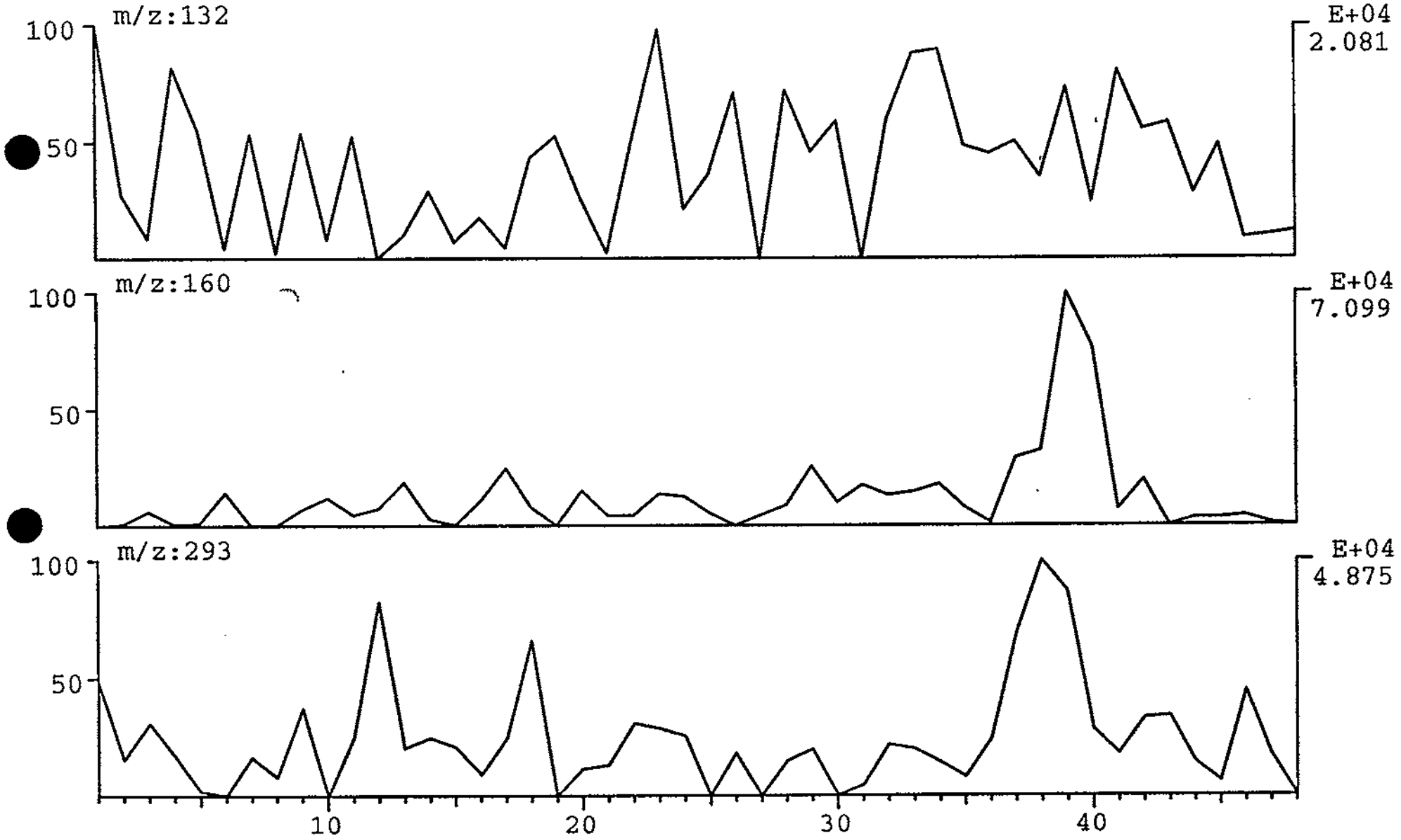
b6 -1
b7c -1



Samp: 10PPM EDTA
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 48
Area: 0, 4.00 Baseline : 0, 3

Start : 10:35:03 48
Study : 50217009
Inlet :
Masses: 130 > 295
Label : 0, 40.00

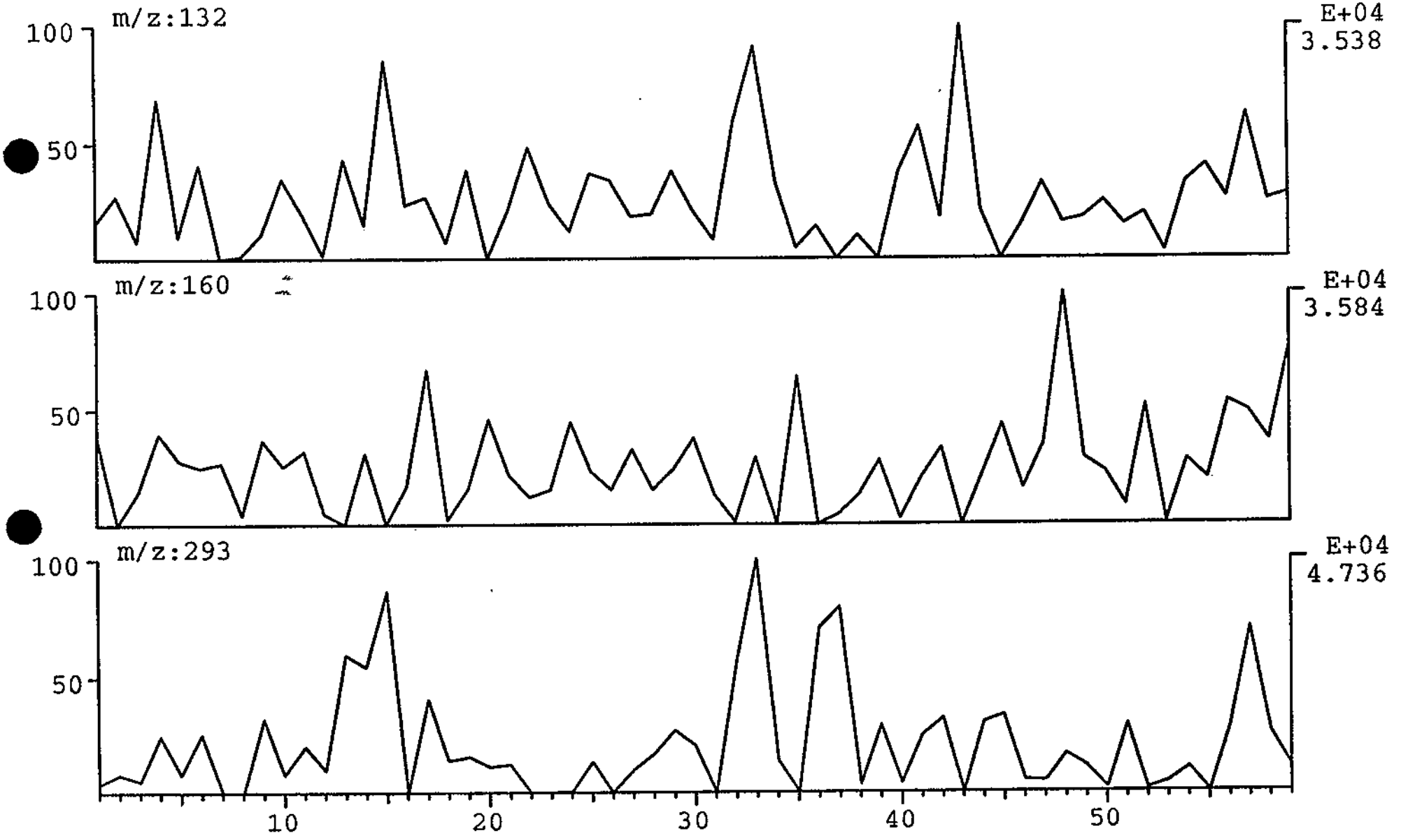
b6 -1
b7C -1



Samp: BLANK
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 59
Area: 0, 4.00 Baseline : 0, 3

Start : 10:39:58 59
Study : 50217009
Inlet :
Masses: 130 > 295
Label : 0, 40.00

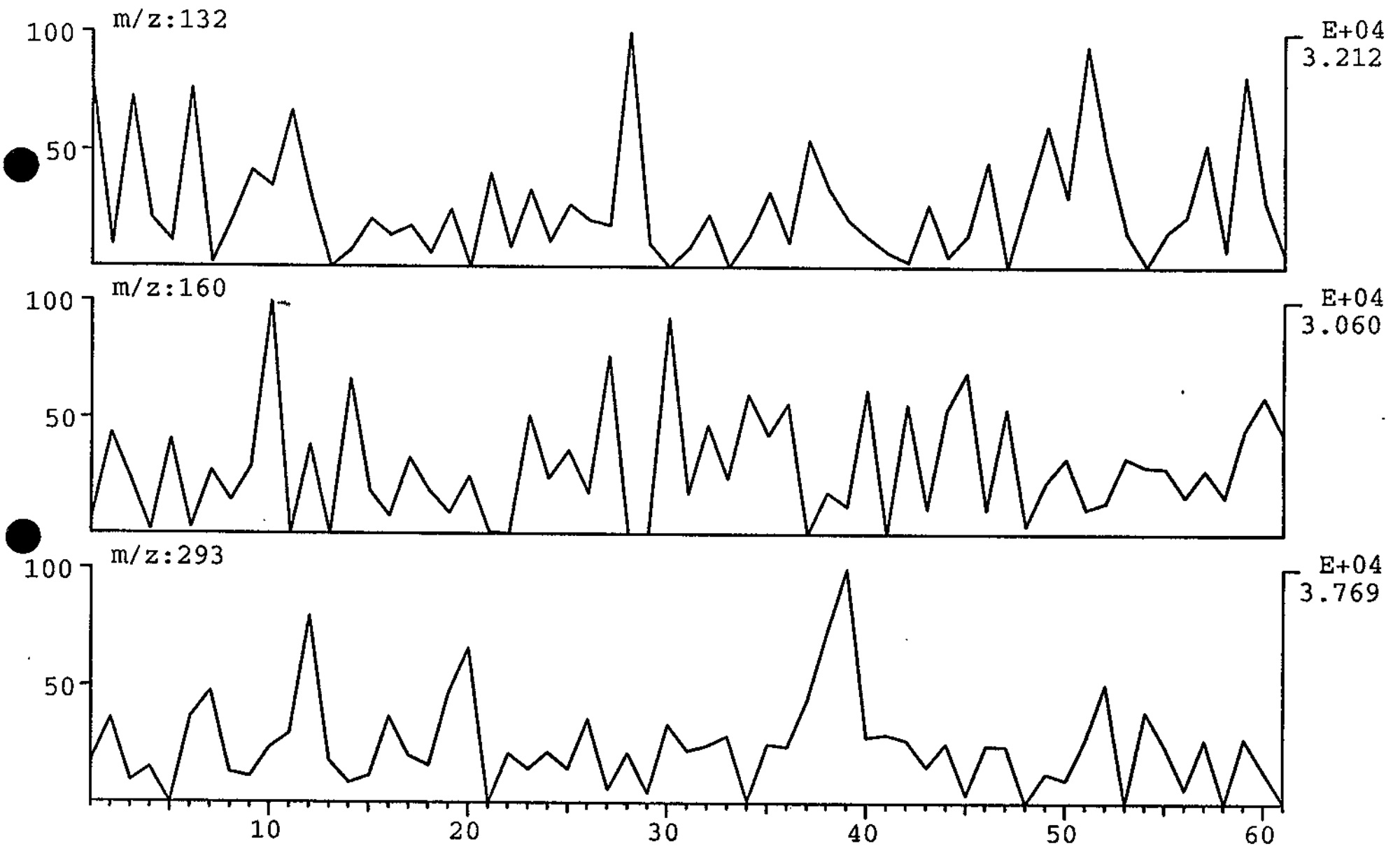
b6 -1
b7c -1



Samp: Q204 FULL DAU
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 61
Area: 0, 4.00 Baseline : 0, 3

Start : 10:42:53 61
Study : 50217009
Inlet :
Masses: 130 > 295
Label : 0, 40.00

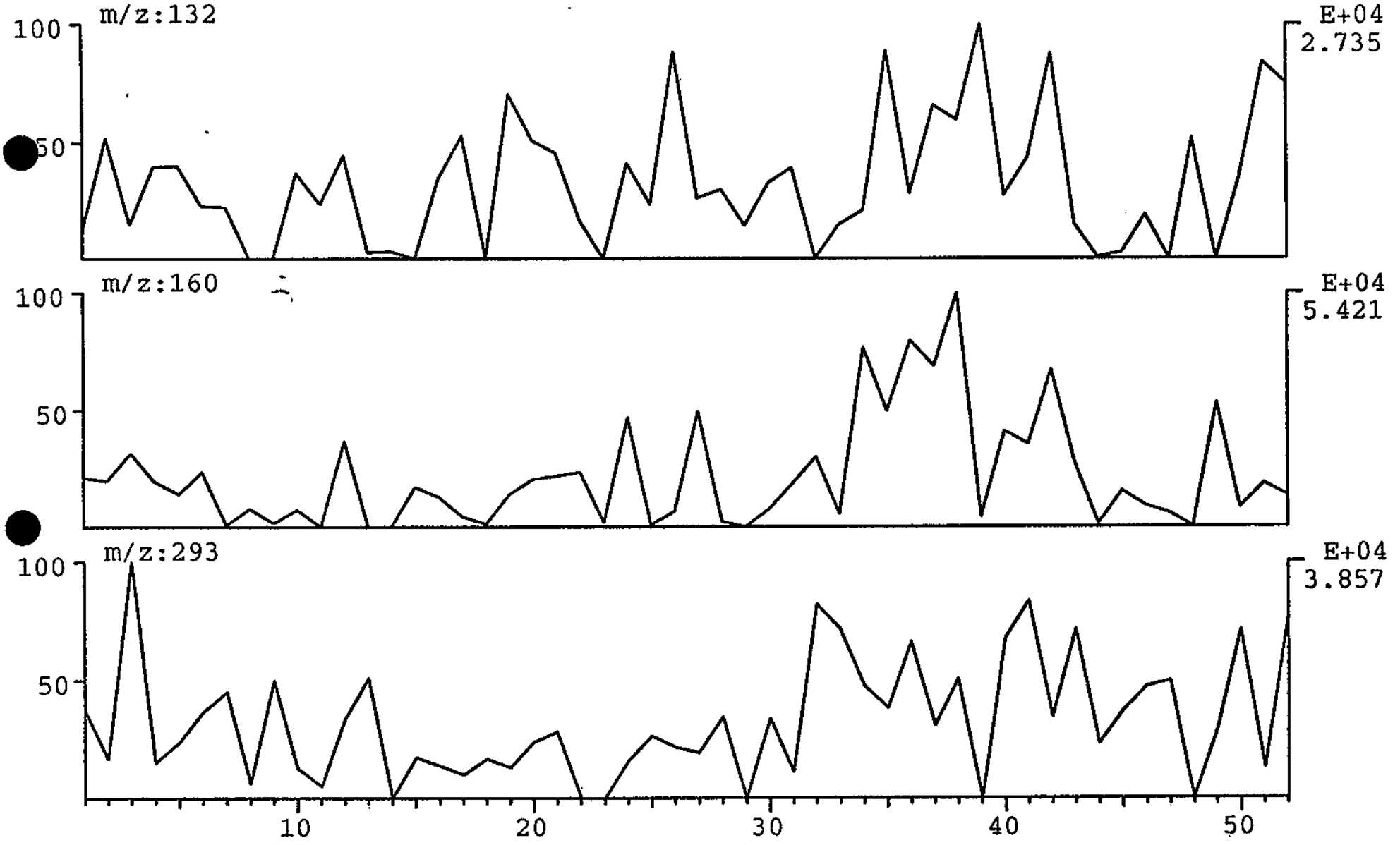
b6 -1
b7C -1



Samp: Q206 FULL DAU
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 52
Area: 0, 4.00 Baseline : 0, 3

Start : 10:45:47 · 52
Study : 50217009
Inlet :
Masses: 130 > 295
Label : 0, 40.00

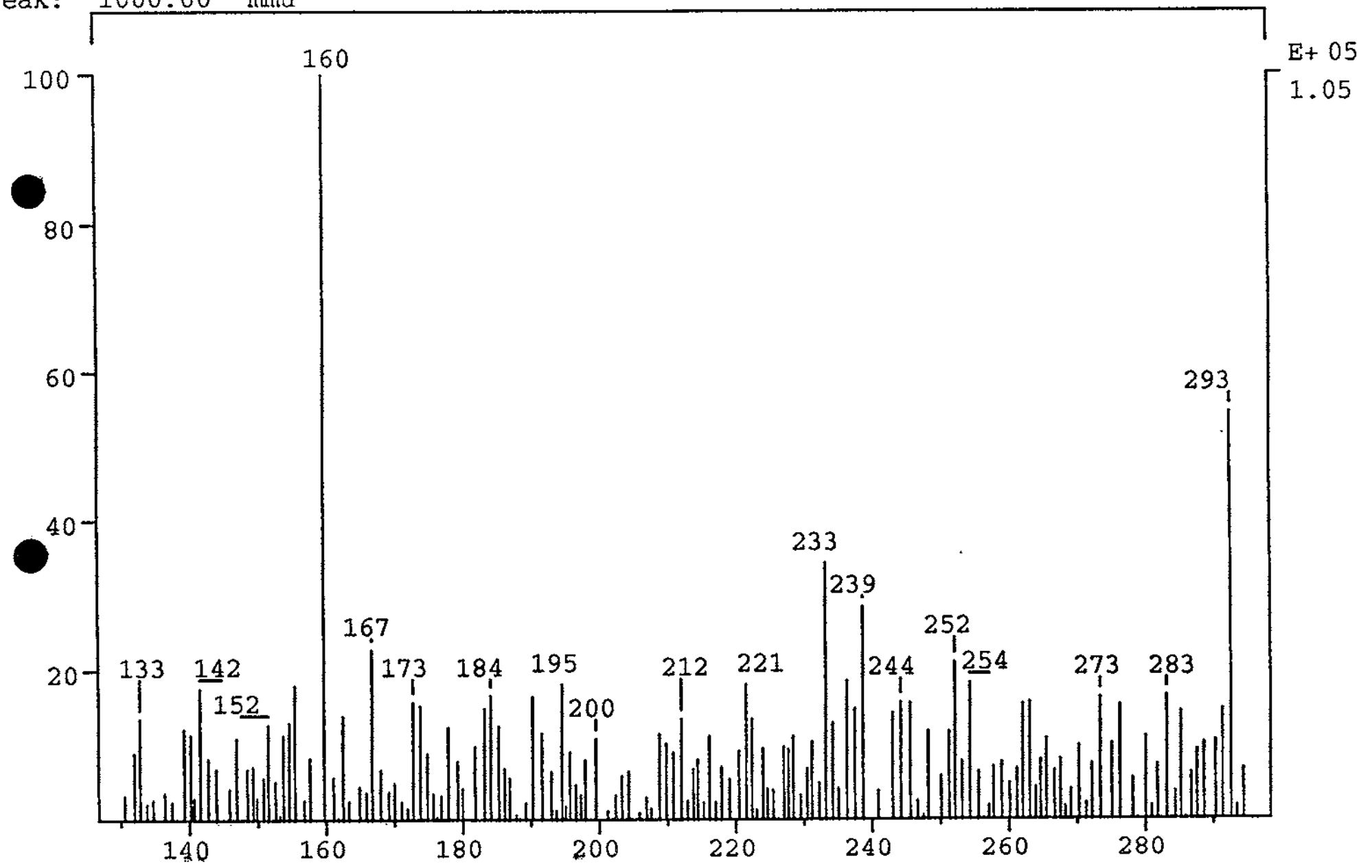
b6 -1
b7C -1



Samp: CONTROL FOR K65 DRESS
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU 293.0 @ -20eV LMR GAS UP LR
Oper:
Base: 159.8 Inten : 104551
Norm: 159.8 RIC : 1487479
Peak: 1000.00 mmu

Start : 10:48:41 · 51
Study : 50217009
Inlet :
Masses: 130 > 295
#peaks: 159

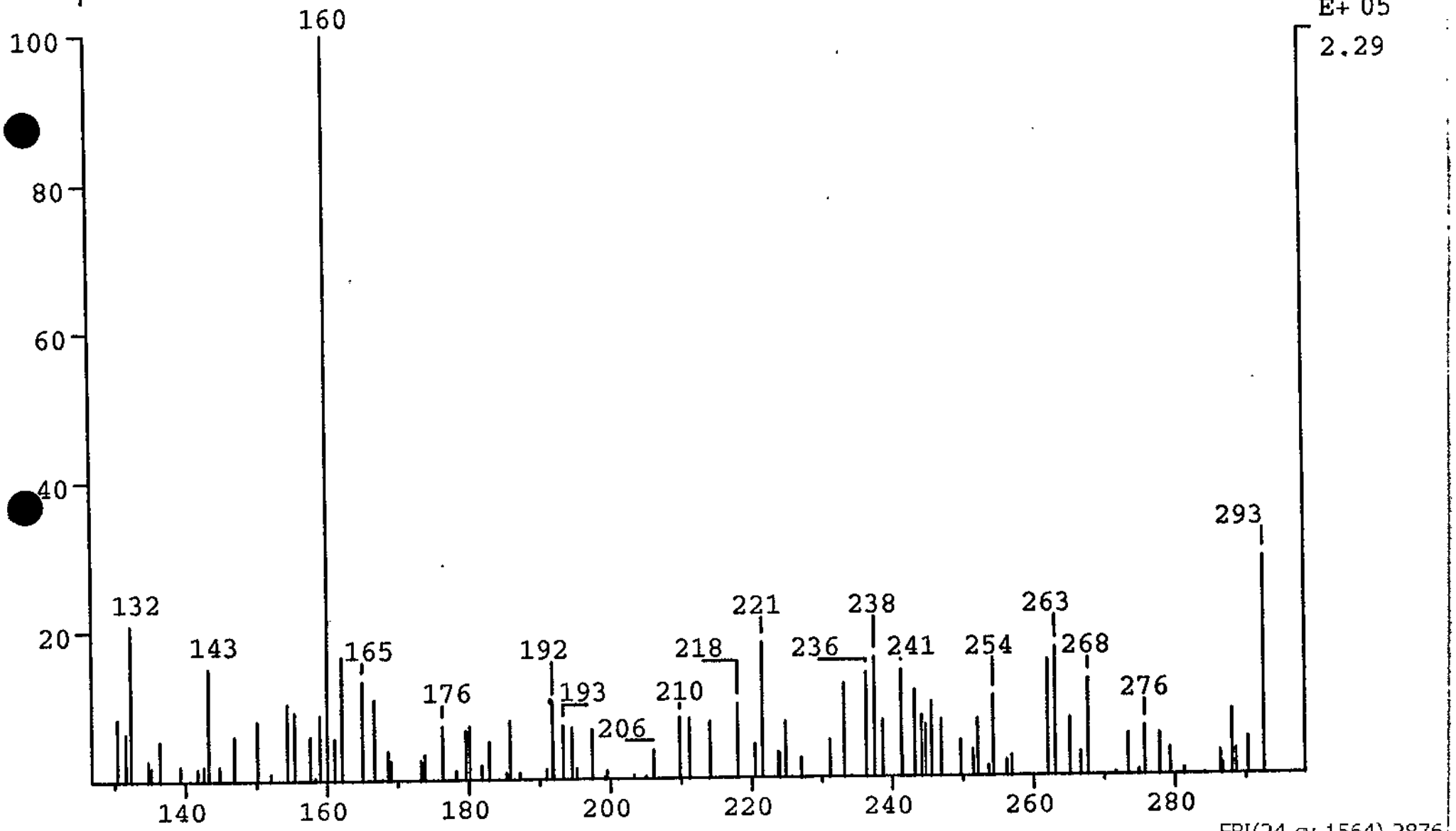
b6 -1
b7C -1



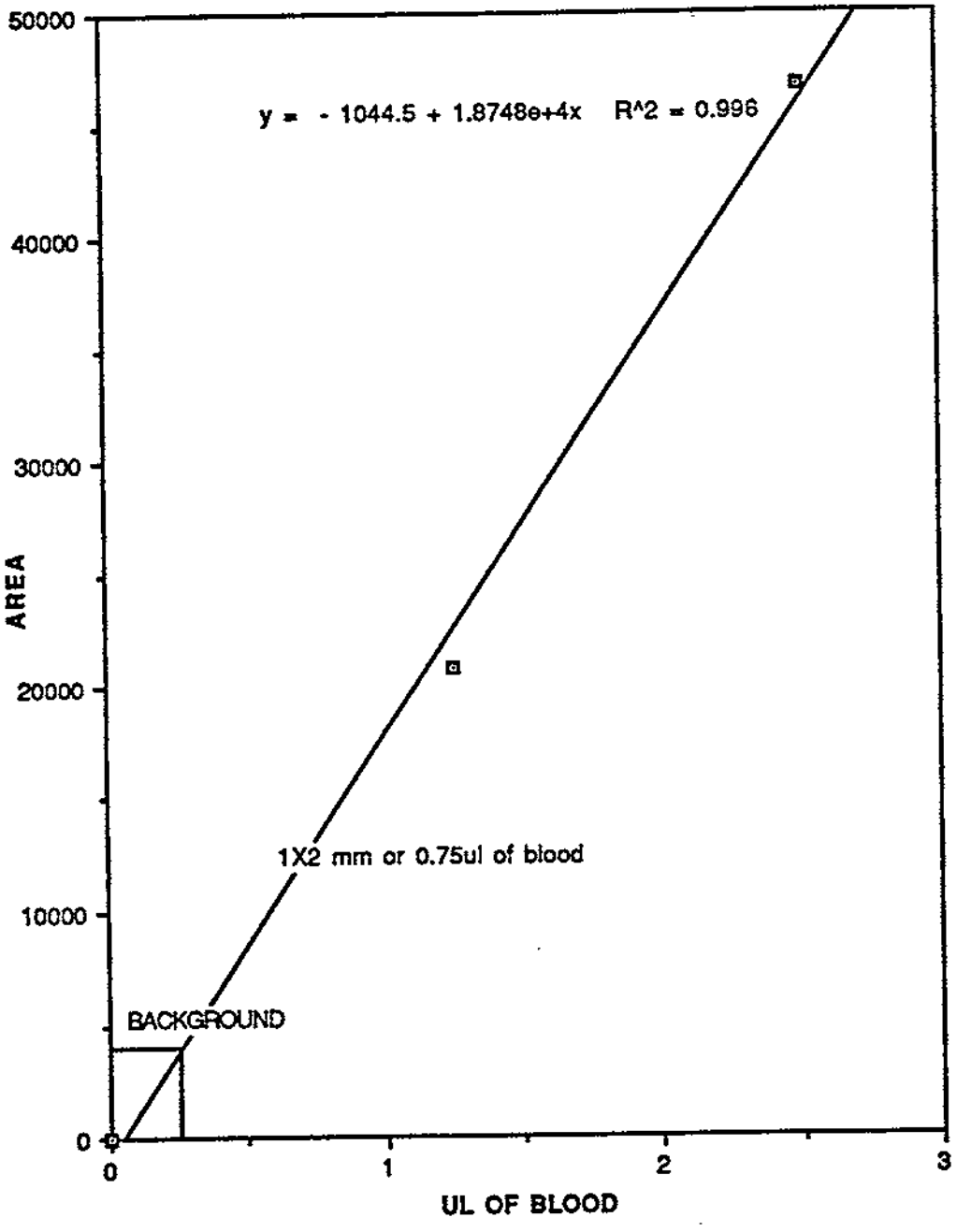
Samp: CONTROL FOR K65 DRESS
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU 293.0 @ -20eV LMR GAS UP LR
Oper:
Base: 160.1 Inten : 228538
Norm: 160.1 RIC : 1652054
Peak: 1000.00 mmu
Data: +39>41-29>31

Start : 10:46:41 . 51
Study : 50217009
Inlet :
Masses: 130 > 295
#peaks: 101

b6 -1
b7c -1



EDTA IN BLOOD (2,000 ppm)

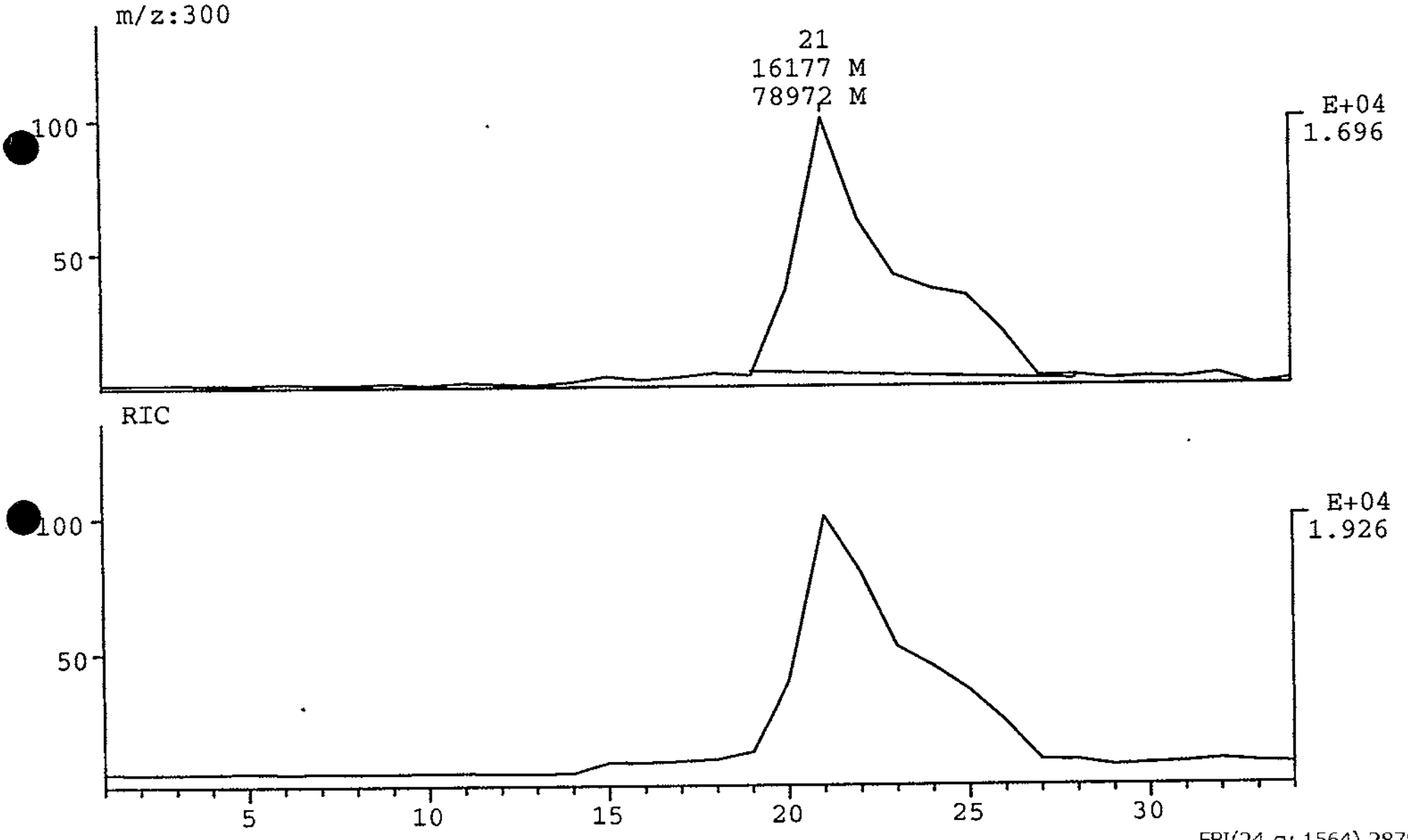


Samp: 20 PPM EDTA
Comm: ACN/H20/NH4OH 75/25/0.03 PRP1 2.1X150 0.2ML
Mode: ESI -DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 34
Area: 0, 4.00 Baseline : 0, 3

Start : 12:43:16 34

Inlet :
Masses: 297 > 302
Label : 0, 40.00

b6 -1
b7C -1



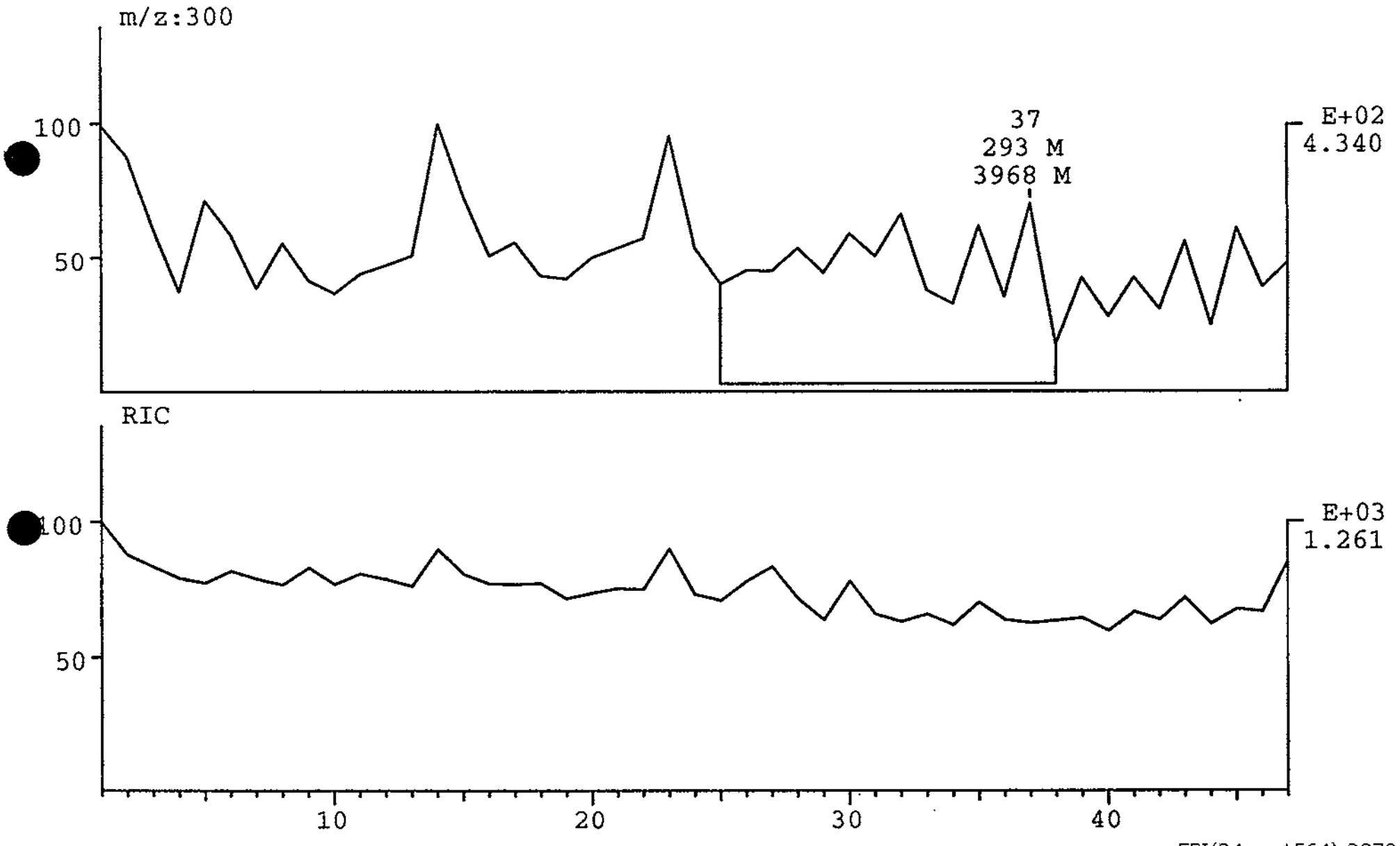
Samp: BLANK
Comm: ACN/H20/NH4OH 75/25/0.03 PRP1 2.1X150 0.2ML
Mode: ESI -DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu
Area: 0, 4.00

Label wndw: 1 > 47
Baseline : 0, 3

Start : 12:45:25 47

Inlet :
Masses: 297 > 302
Label : 0, 40.00

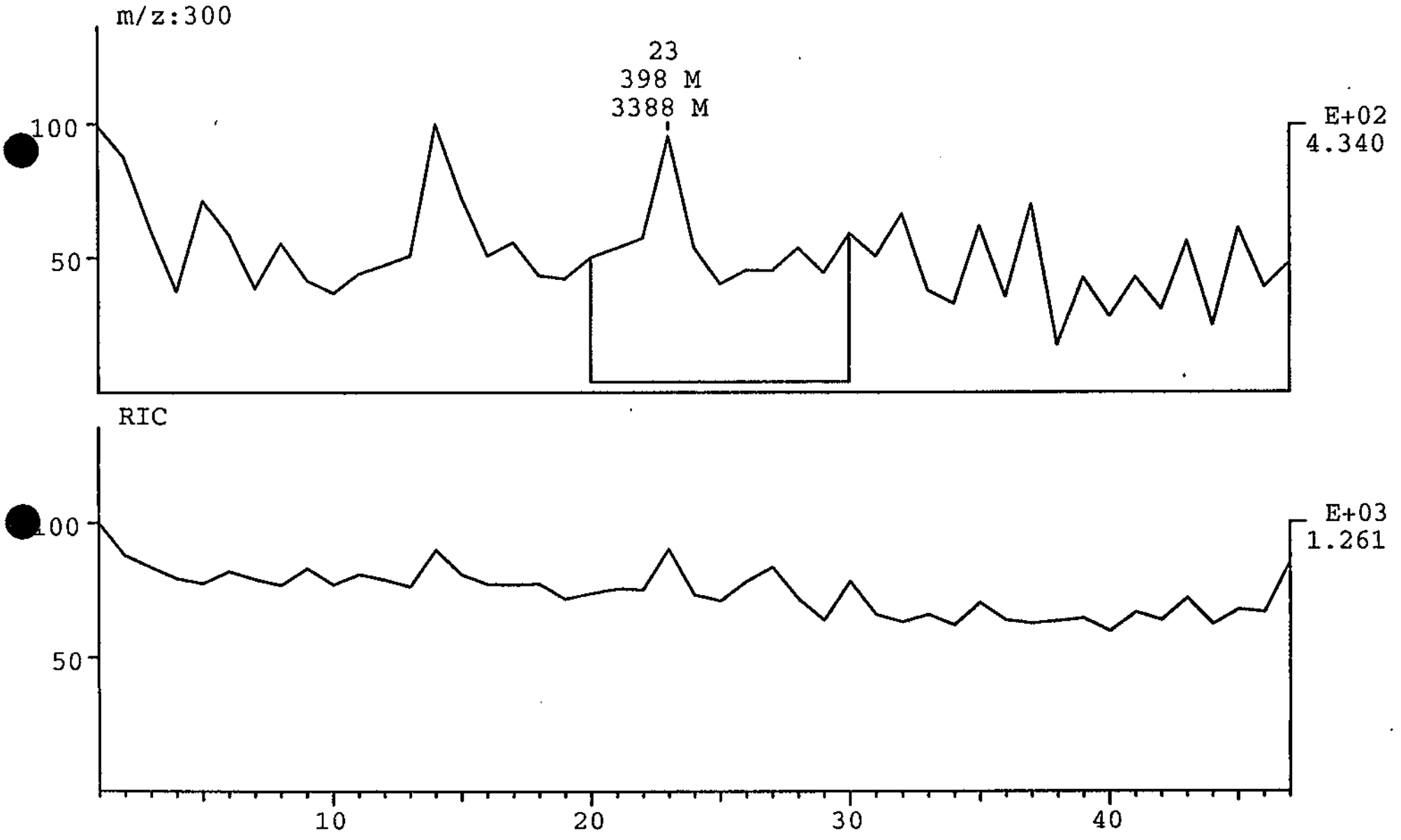
b6 -1
b7C -1



Samp: BLANK
Comm: ACN/H20/NH4OH 75/25/0.03 PRP1 2.1X150 0.2ML
Mode: ESI -DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 47
Area: 0, 4.00 Baseline : 0, 3

Start : 12:45:25 47
Inlet :
Masses: 297 > 302
Label : 0, 40.00

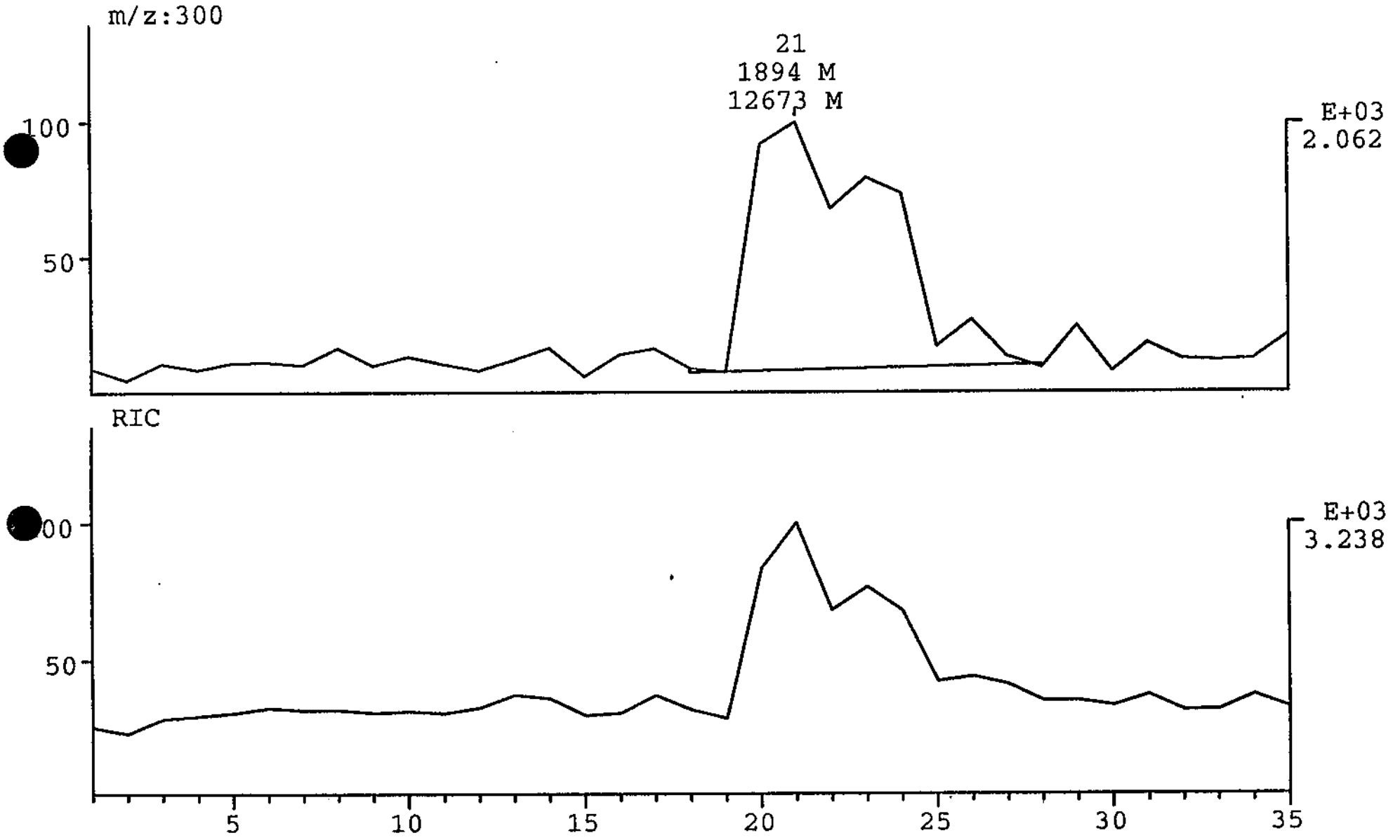
b6 -1
b7C -1



Samp: 0.75 UL OF BLOOD WITH EDTA
Comm: ACN/H20/NH4OH 75/25/0.03 PRP1 2.1X150 0.2ML
Mode: ESI -DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 35
Area: 0, 4.00 Baseline : 0, 3

Start : 12:47:59 35
Inlet :
Masses: 297 > 302
Label : 0, 40.00

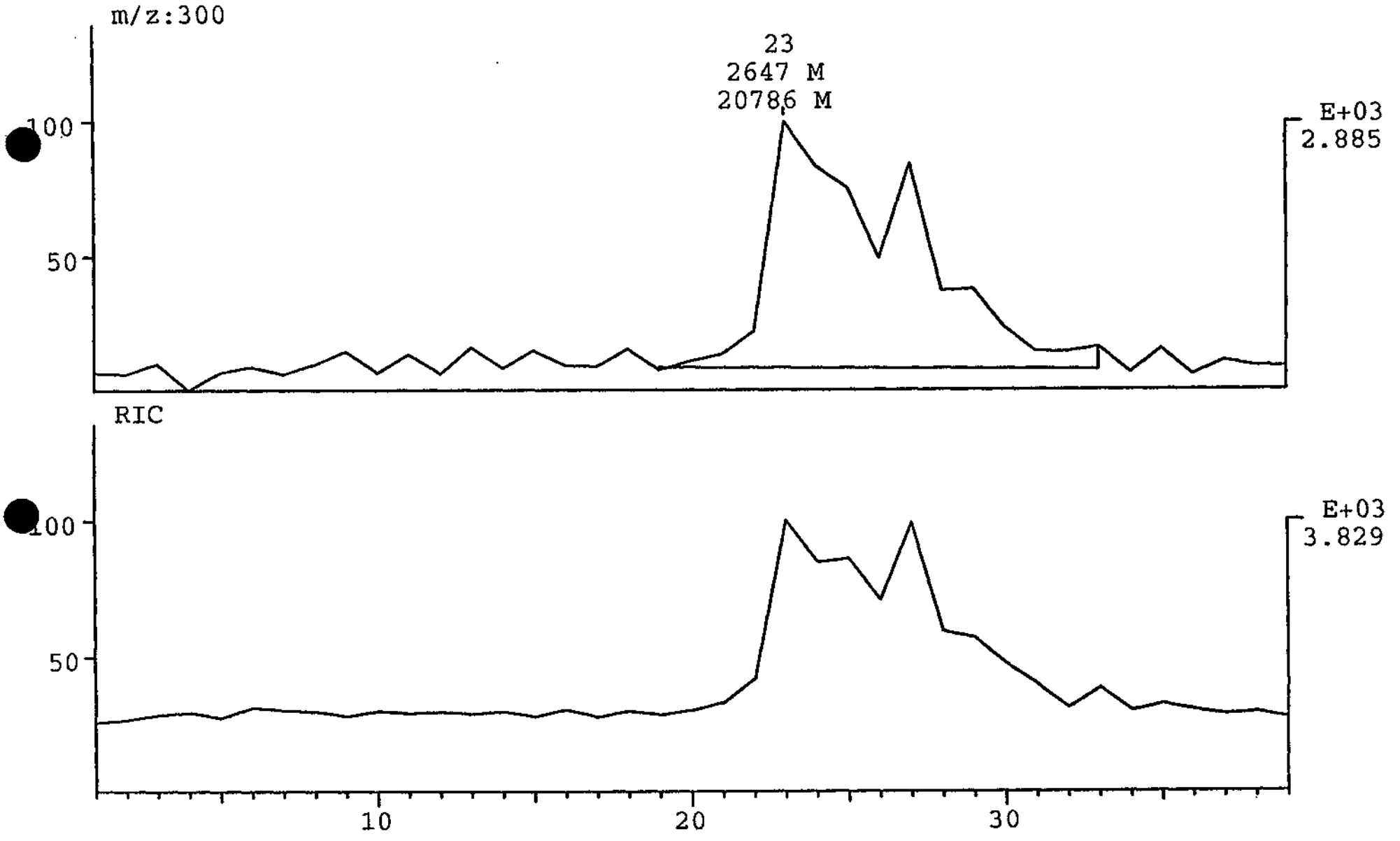
b6 -1
b7C -1



Samp: 1.25UL BLOOD STAIN
Comm: ACN/H20/NH4OH 75/25/0.03 PRP1 2.1X150 0.2ML
Mode: ESI -DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 39
Area: 0, 4.00 Baseline : 0, 3

Start : 12:50:28 .39
Inlet :
Masses: 297 > 302
Label : 0, 40.00

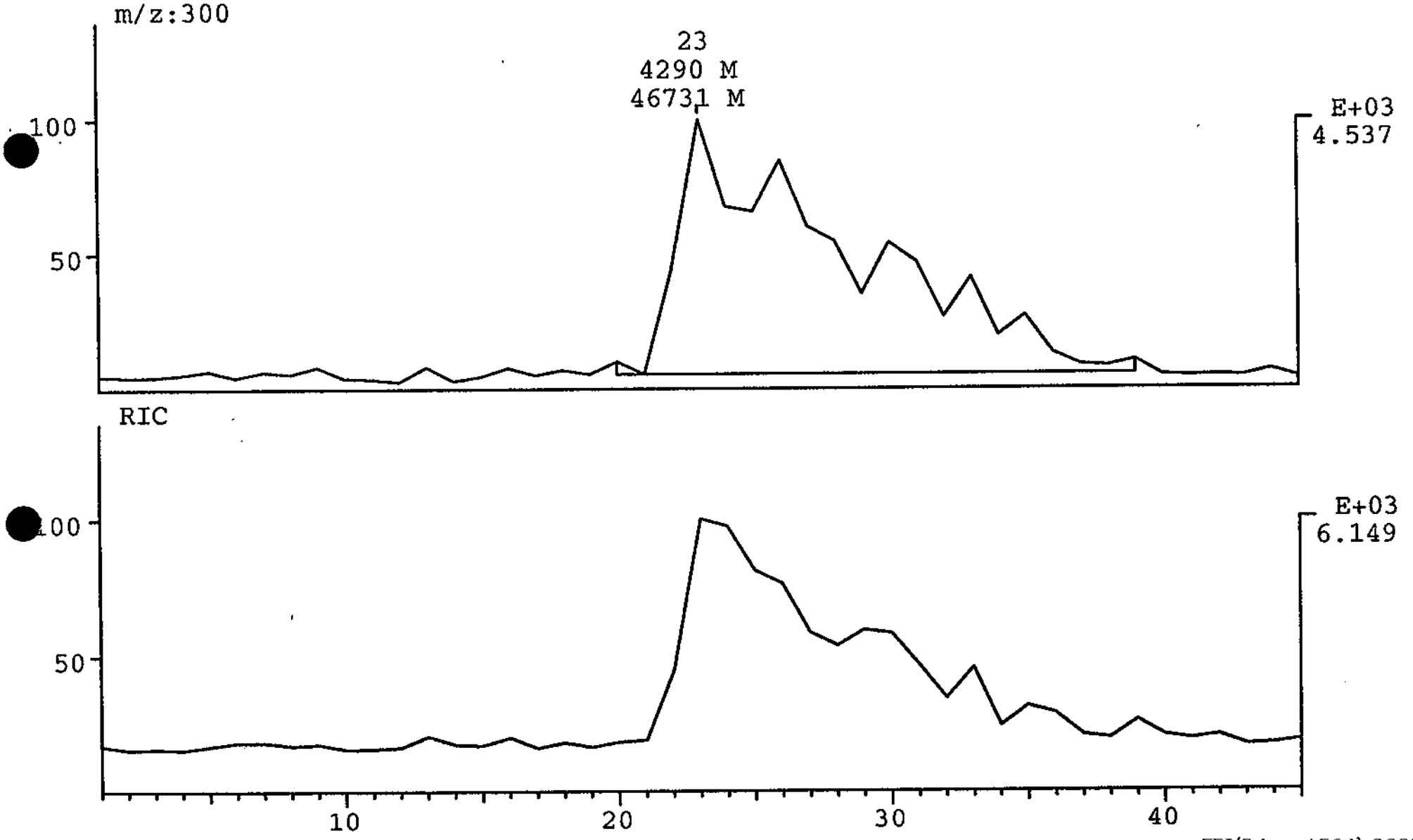
b6 -1
b7C -1

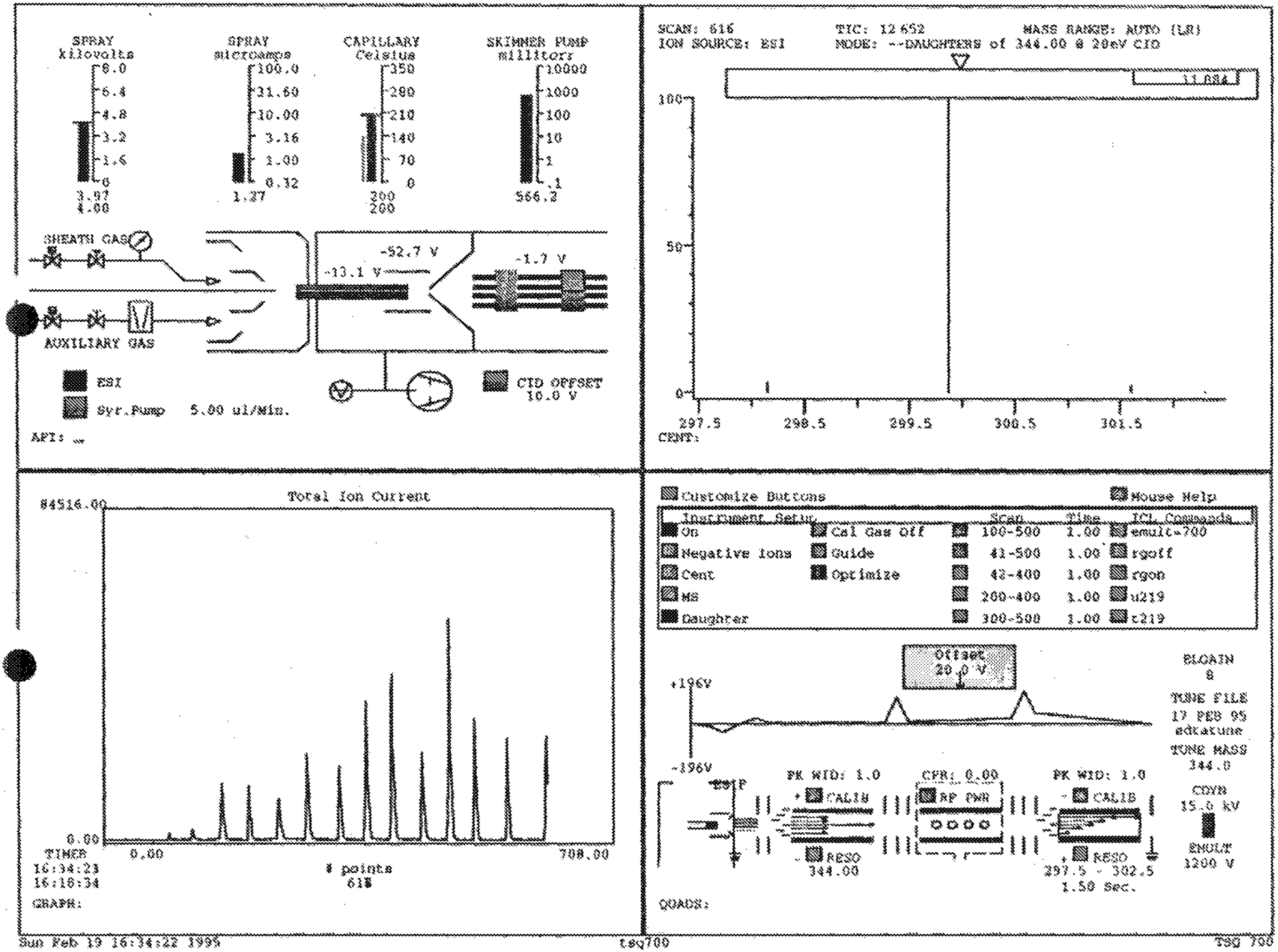


Samp: 2.5UL BLOOD STAIN
Comm: ACN/H20/NH4OH 75/25/0.03 PRP1 2.1X150 0.2ML
Mode: ESI -DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 45
Area: 0, 4.00 Baseline : 0, 3

Start : 12:52:20 45
Inlet :
Masses: 297 > 302
Label : 0, 40.00

b6 -1
b7C -1





Instrument serial # - [redacted]
ICIS Version 7.0
ICL Version 7.2
ULTRIX V4.2A (Rev. 47) System #1: Wed Dec 14 15:15:11 EST 1994
File name: ojni1
Study:
Sample: TRI-K EDTA 100 PPM IN H2O
Amount: 0.0
Volume: 0.0
Operator: [redacted] b6 -1 b7C -1
Client:
Injected volume: 0.0
Comments: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Analysis will stop at user request
Tune file name : edtatune.ict from 17 FEB 95
ICL procedure: plotic
Analysis started at :19-FEB-95 15:30:08.1

Vacuum status -> ok
Collision gas on
Manifold temperature 70.007 C
Manifold presure 0.00003149
Collision cell pressure 0
Skimmer pump pressure 589.374
Ion source type = Electrospray ionization - Finnigan

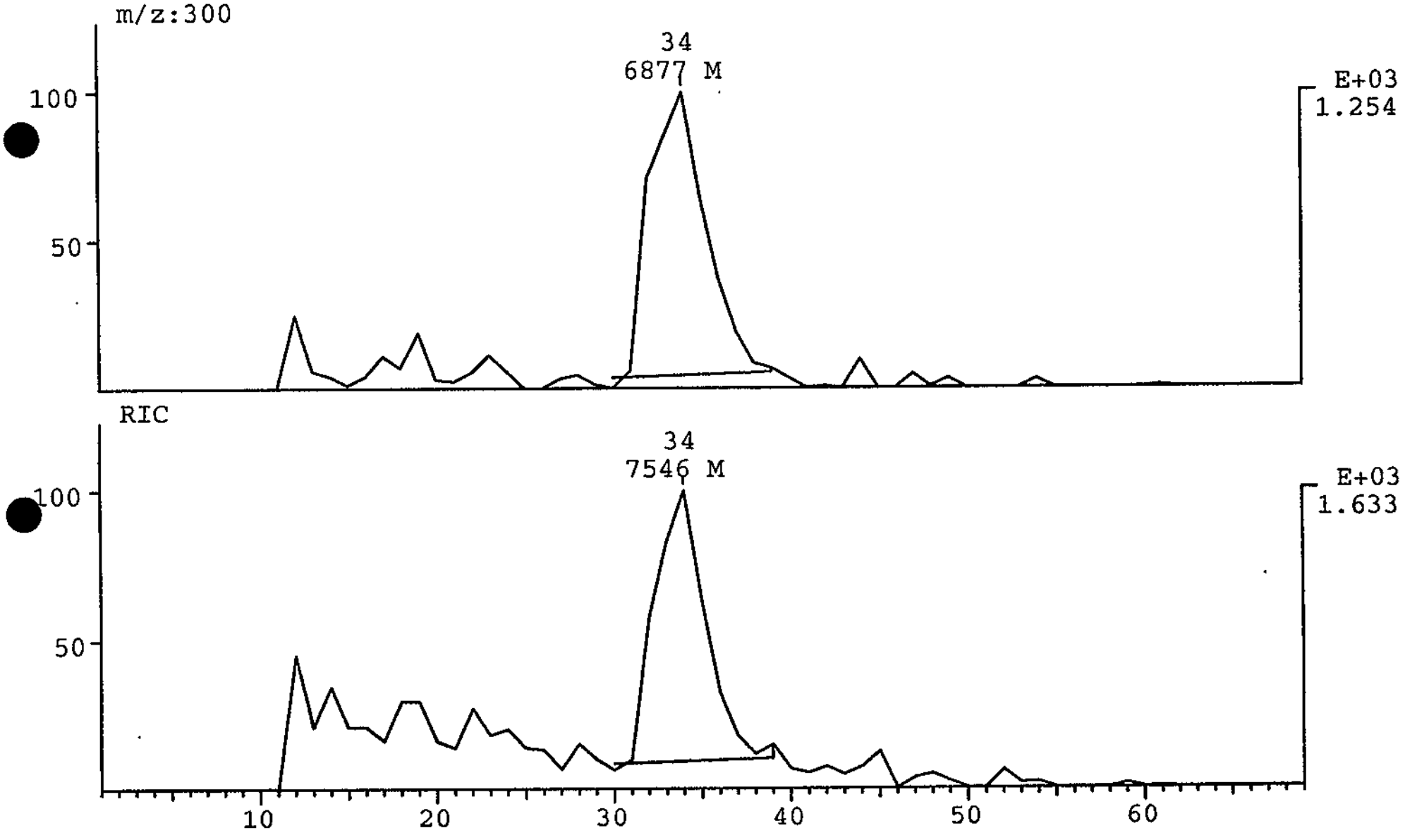
Parent Offset	:	7.0 volts			
Collision Offset	:	20.0 volts			
Daughter Offset	:	25.0 volts			
Lens 1-1	:	30.0 volts at mass	9	30.0 volts at mass	49
		29.6 volts at mass	126	30.0 volts at mass	197
		31.0 volts at mass	224	36.2 volts at mass	496
		61.1 volts at mass	993	122.2 volts at mass	1797
Lens 1-2	:	5.0 volts			
Lens 1-3	:	29.1 volts			
Lens 2-1	:	6.7 volts at mass	9	6.7 volts at mass	49
		6.7 volts at mass	197	7.0 volts at mass	224
		10.8 volts at mass	496	27.2 volts at mass	993
		77.6 volts at mass	1797		
Lens 2-2	:	159.3 volts			
Lens 2-3	:	14.2 volts			
Lens 3-1	:	31.7 volts			
Lens 3-2	:	195.9 volts			
Lens 3-3	:	65.0 volts			
	:	5.0 volts			
Parent Calib	:	5.7 volts at mass	9	6.1 volts at mass	49
		7.7 volts at mass	197	11.0 volts at mass	496
		16.4 volts at mass	993	61.6 volts at mass	1687
		80.4 volts at mass	1797		
Collision RFP	:	0.0 volts			
Daughter Calib	:	-16.6 volts at mass	8	-15.9 volts at mass	48
		-14.9 volts at mass	60	-15.0 volts at mass	100
		-16.3 volts at mass	307	-18.9 volts at mass	599
		-2.3 volts at mass	1750		
Parent Reso	:	4.9 volts at mass	59	9.3 volts at mass	224
		11.0 volts at mass	370	29.7 volts at mass	993
		95.0 volts at mass	1797		
Daughter Reso	:	22.7 volts at mass	8	22.2 volts at mass	48
		20.7 volts at mass	193	17.5 volts at mass	481
		14.3 volts at mass	962	24.5 volts at mass	1750
Collector	:	0.0 volts			
User Output #1	:	0.0 volts			
User Output #2	:	0.0 volts			
OCTA OFFSET	:	-1.7 volts			
TUBE LENS	:	-45.4 volts at mass	9	-45.4 volts at mass	49
		-45.4 volts at mass	197	-46.8 volts at mass	224
		-52.7 volts at mass	339	-60.8 volts at mass	496

```
                    -93.[redacted]volts at mass  993 -145.8[redacted]olts at mass 1797
CAPILLARY       :    -8.9 volts at mass    9   -8.9 volts at mass   49
                     -8.9 volts at mass  197  -10.1 volts at mass  224
                    -17.0 volts at mass  496  -34.6 volts at mass  993
                    -62.6 volts at mass 1797
Scan mode =  Daughter scan using mass  344
2000u mass range / Negative ions
Full scan ->
First mass =  297.496  amu
Last mass  =  302.486  amu
Scan time  =  1.499  seconds
Scan rate  =  3.3  amu/seconds
ESI spray voltage =  4.05372  kV
ESI spray current =  16.947  uA
Capillary temperature =  210.608  C
Sheath gas  on
Auxilary gas  on
At retention time  0.04  Min. ->  Filament is off
    Electron multiplier = 0 V     Conversion dynode = 15 KV
    Electrometer gain = 8 Electrometer zero = -24
Analysis stopped at :19-FEB-95 15:31:58.9 (retention time 1.85)
Analysis stopped because user requested stop from analysis
```

Samp: TRI-K EDTA 100 PPM IN H2O
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI -DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 69
Area: 10, 4.00 Baseline : 0, 10
Disp: Area

Start : 15:30:08 69
Inlet :
Masses: 297 > 302
Label : 4, 5.00

b6 -1
b7c -1

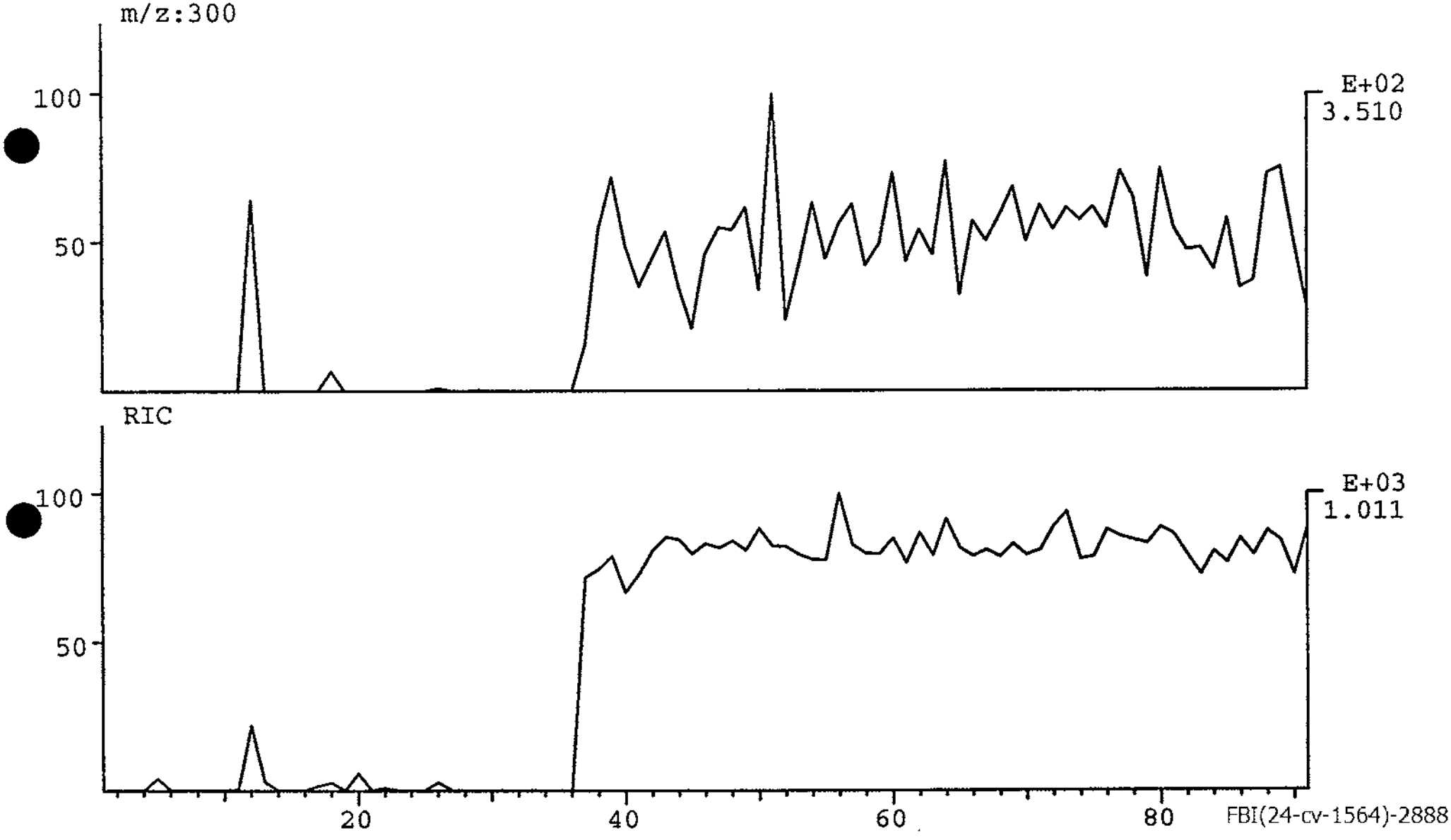


Samp: H2O BLANK FOR EDTA
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI -DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu
Area: 10, 4.00
Disp: Area

Label wndw: 1 > 91
Baseline : 0, 10

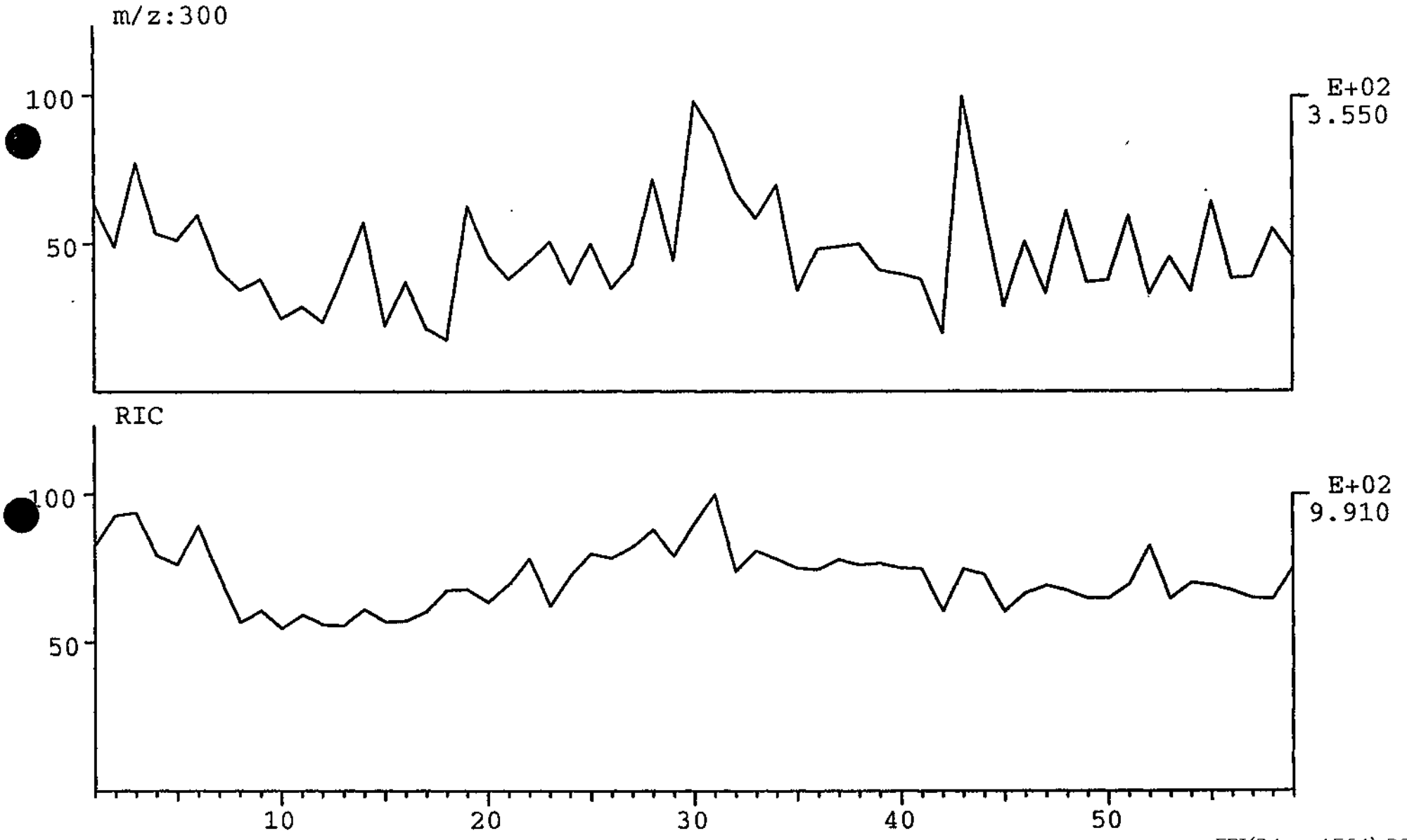
Start : 15:32:59 91
Inlet :
Masses: 297 > 302
Label : 4, 5.00

b6 -1
b7C -1



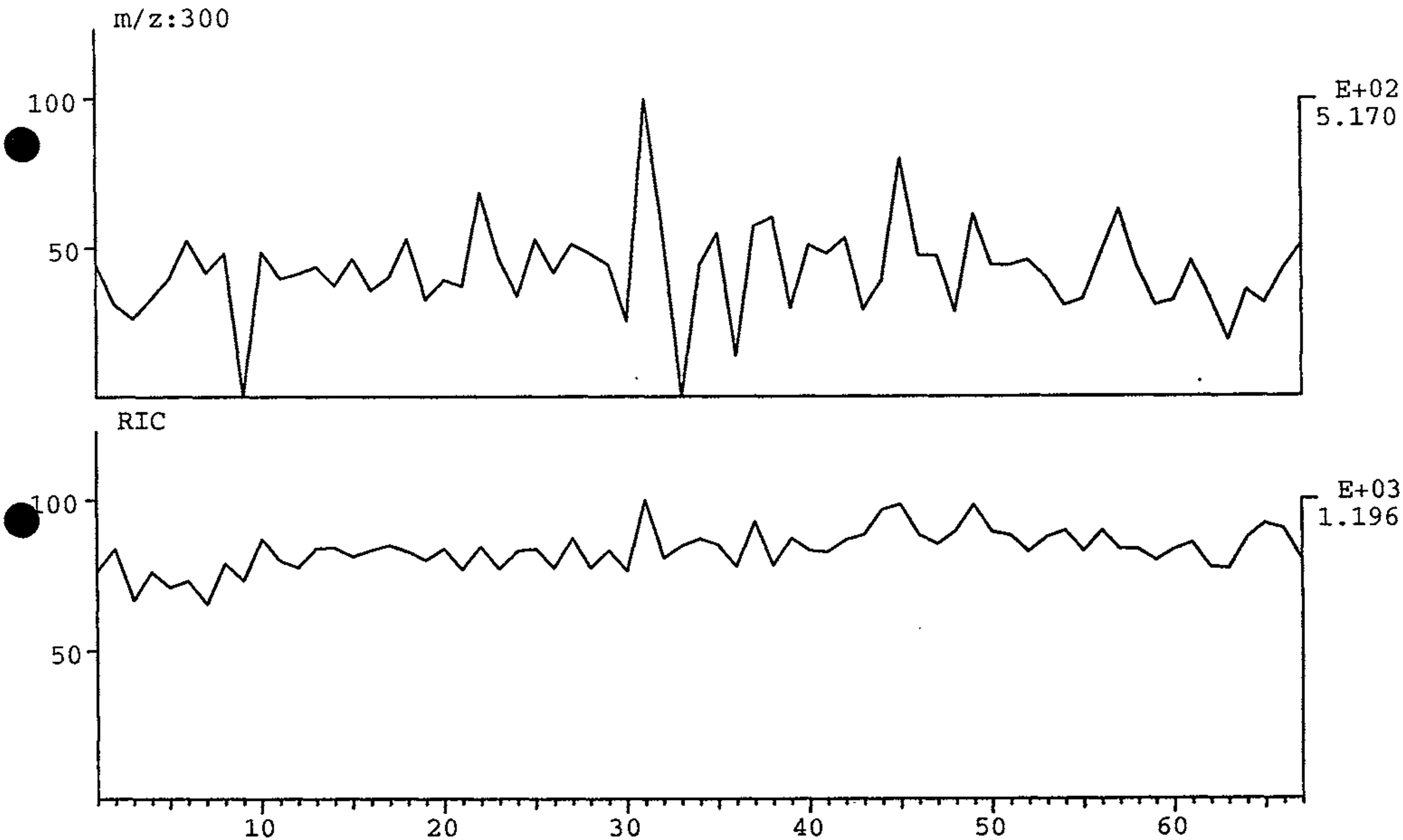
Samp: K65 CONTROL FROM DRESS
Start : 15:35:28 59
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI -DAU LMR GAS UP LR
Oper:
Inlet :
Peak: 1000.00 mmu Label wndw: 1 > 59
Masses: 297 > 302
Area: 10, 4.00 Baseline : 0, 10
Label : 4, 5.00
Disp: Area

b6 -1
b7c -1

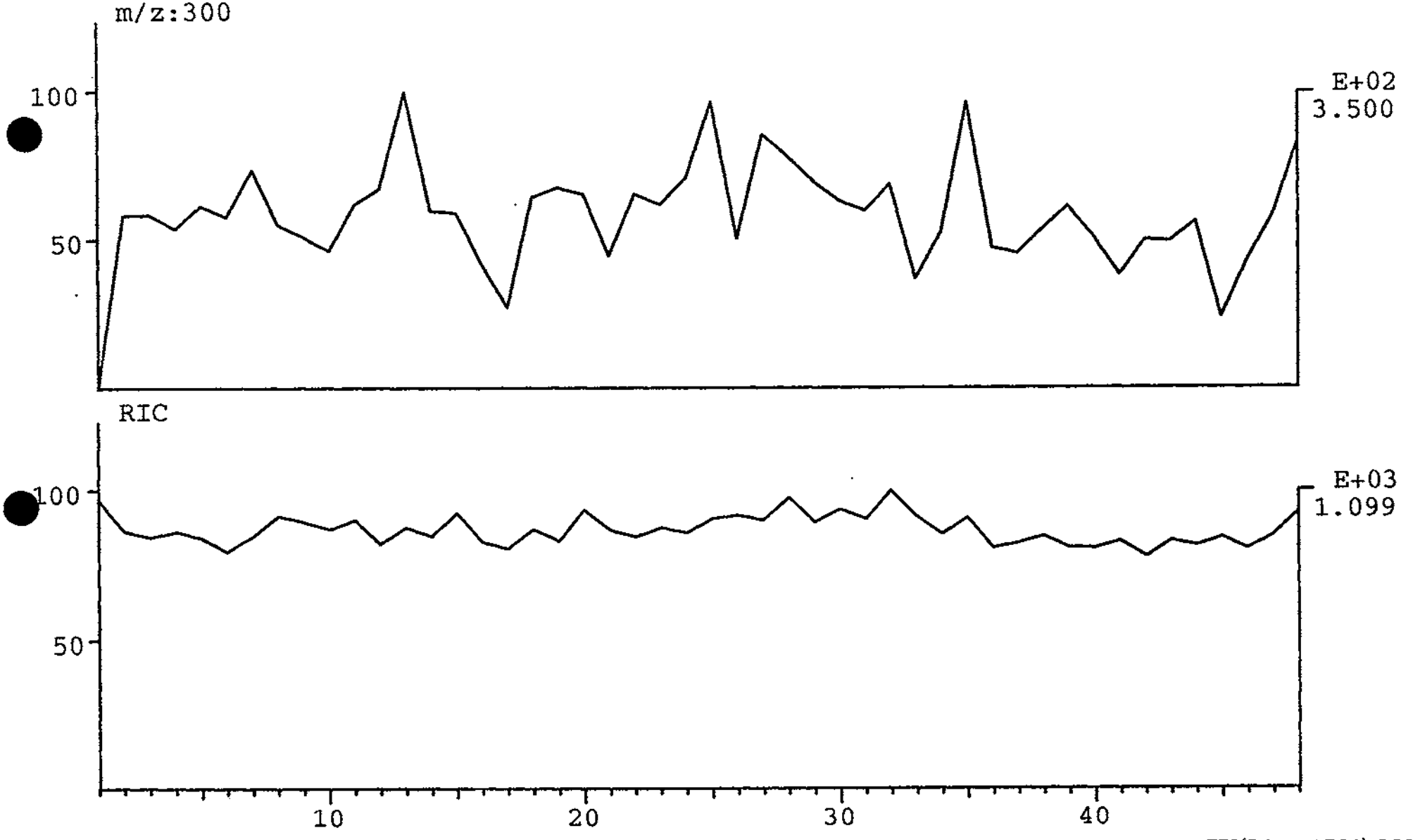


CHRO:

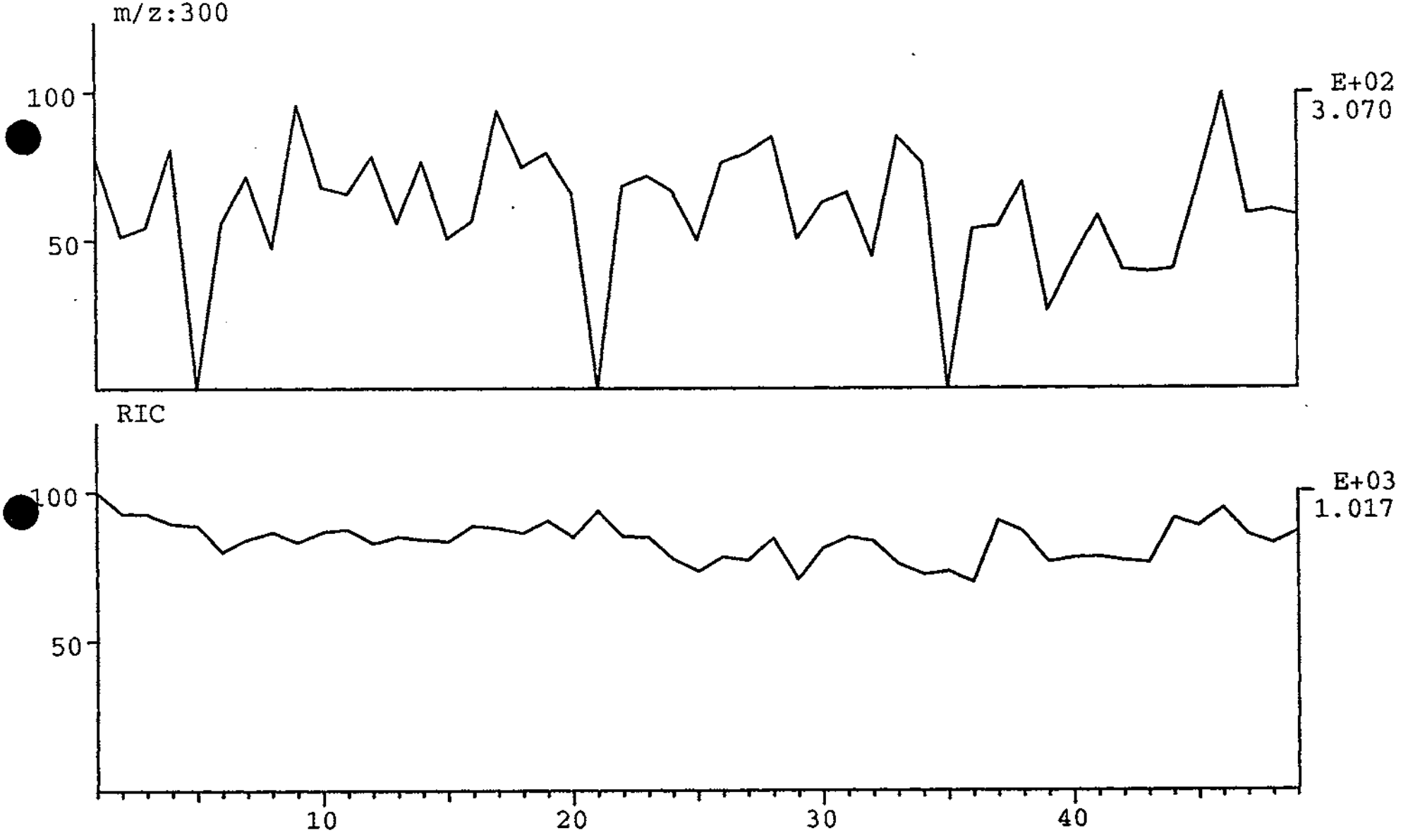
Samp: K65 STAIN FROM DRESS | Start : 15:37:40 | 67
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI -DAU LMR GAS UP LR
Oper: | Inlet : | b6 -1 b7C -1
Peak: 1000.00 mmu | Label wndw: 1 > 67 | Masses: 297 > 302
Area: 10, 4.00 | Baseline : 0, 10 | Label : 4, 5.00
Disp: Area



CHRO: 0jn15
Samp: CONTROL FROM Q204 Start : 15:40:26 48
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI -DAU LMR GAS UP LR
Oper:
Inlet : b6 -1 b7C -1
Peak: 1000.00 mmu Label wndw: 1 > 48 Masses: 297 > 302
Area: 10, 4.00 Baseline : 0, 10 Label : 4, 5.00
Disp: Area

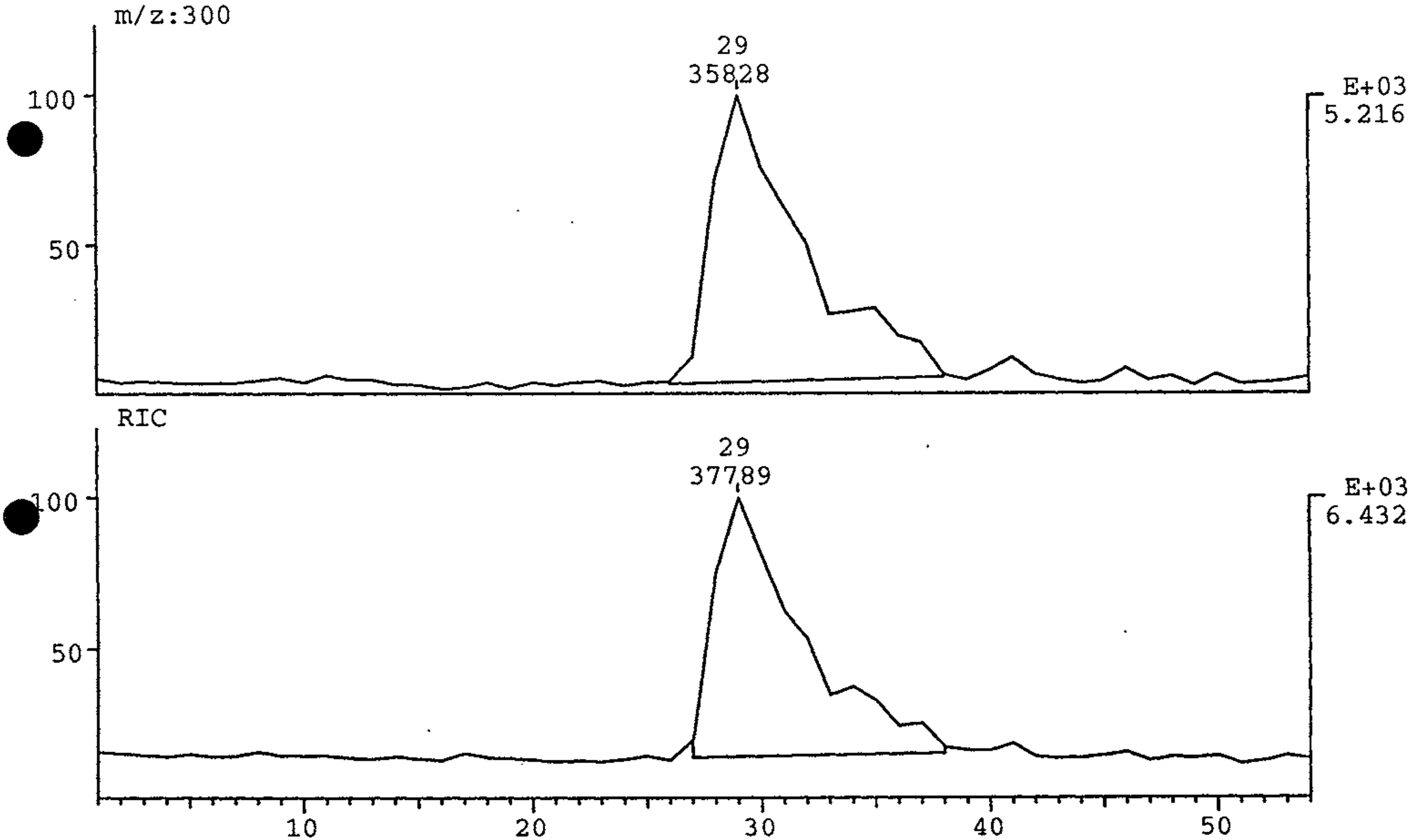


```
Samp:  Q204 GATE SAMPLE                                  Start :  15:42:28     49
Comm:  ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode:  ESI -DAU LMR GAS UP LR
Oper:                                                    Inlet :                b6 -1
Peak:  1000.00  mmu     Label wndw:   1 > 49             Masses:  297 > 302     b7C -1
Area:  10, 4.00         Baseline  :   0, 10              Label :  4, 5.00
Disp:  Area
```



CHRO: 03H17
Samp: K68 CONTROL FOR Q204 Start : 15:44:55 54
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI -DAU LMR GAS UP LR
Oper: Inlet :
Peak: 1000.00 mmu Label wndw: 1 > 54 Masses: 297 > 302
Area: 10, 4.00 Baseline : 0, 10 Label : 4, 5.00
Disp: Area

b6 -1
b7C -1



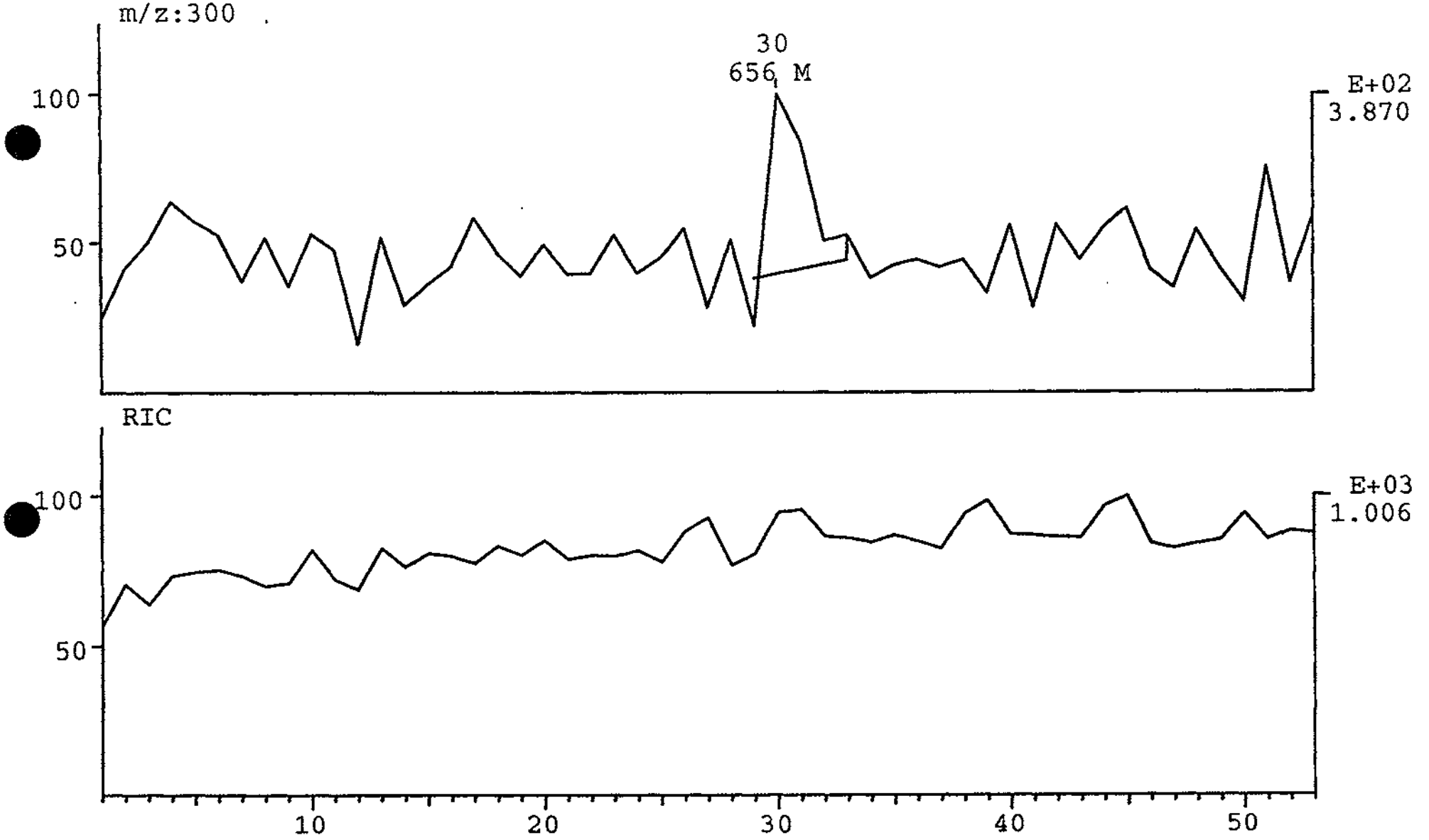
FBI(24-cv-1564)-2893

Samp: H2O BLANK FOR EDTA
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI -DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu
Area: 10, 4.00
Disp: Area

Label wndw: 1 > 53
Baseline : 0, 10

Start : 15:46:51 · 53
Inlet :
Masses: 297 > 302
Label : 4, 5.00

b6 -1
b7C -1



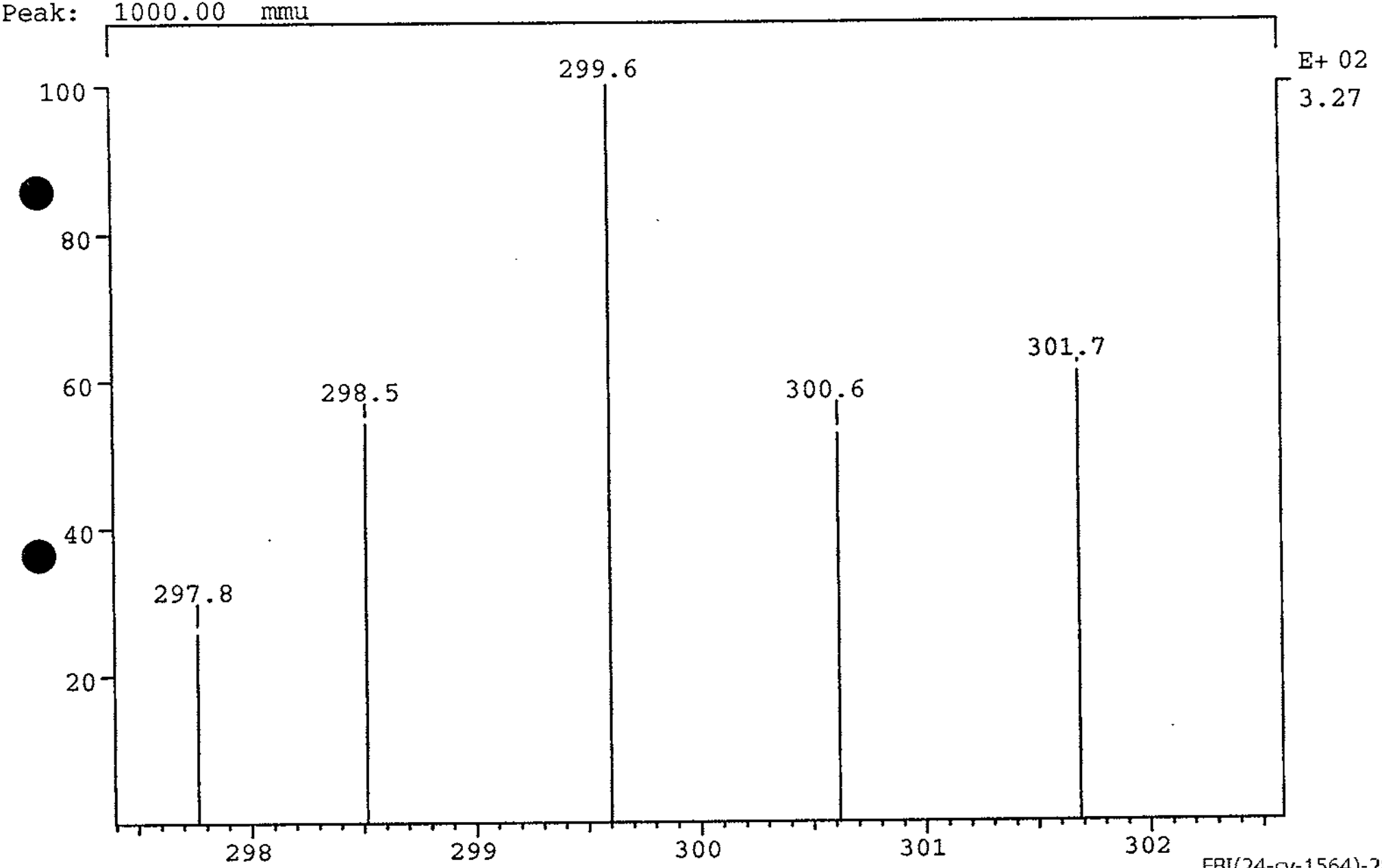
Samp: H2O BLANK FOR EDTA
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI -DAU 344.0 @ 20eV LMR GAS UP LR
Oper:
Base: 299.6
Norm: 299.6
Peak: 1000.00 mmu

Inten : 327
RIC : 959

Start : 15:46:51 53

Inlet :
Masses: 297 > 302
#peaks: 5

b6 -1
b7C -1



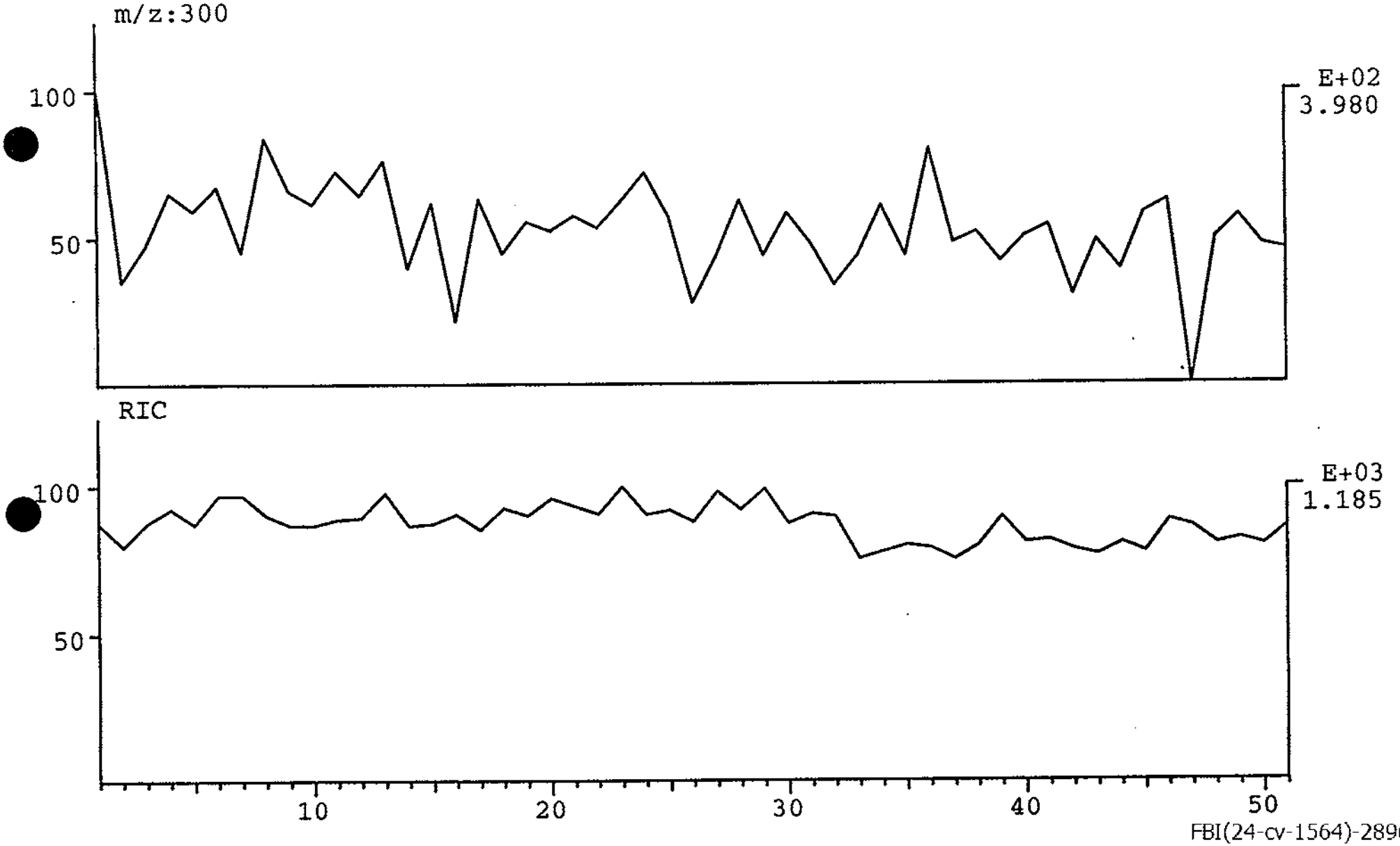
Samp: Q206 CONTROL FROM SOCK
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI -DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu
Area: 10, 4.00
Disp: Area

Label wndw: 1 > 51
Baseline : 0, 10

Start : 15:49:23 51

Inlet :
Masses: 297 > 302
Label : 4, 5.00

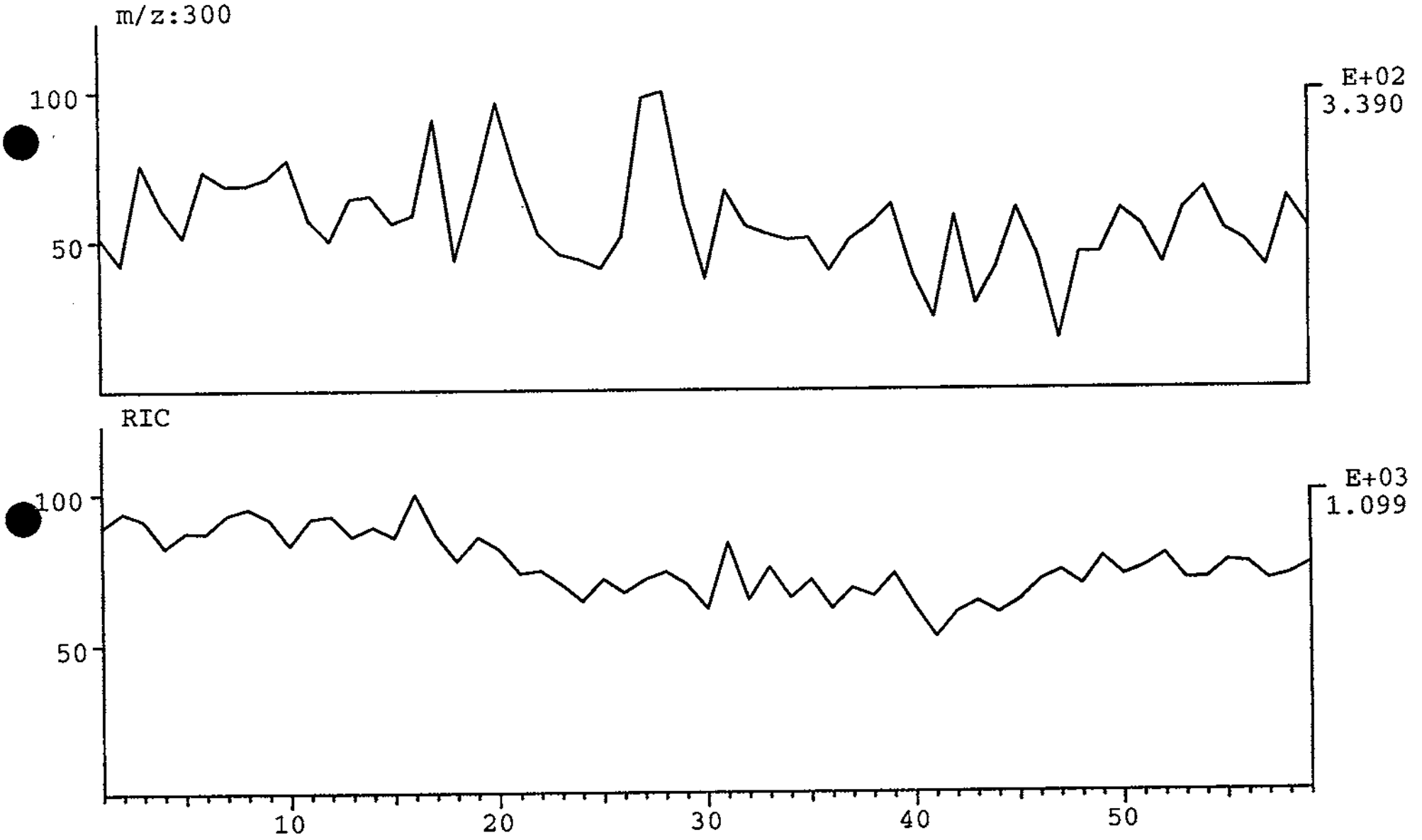
b6 -1
b7C -1



Samp: Q206/Q207 STAIN FROM SOCK
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI -DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 59
Area: 10, 4.00 Baseline : 0, 10
Disp: Area

Start : 15:51:45 59
Inlet :
Masses: 297 > 302
Label : 4, 5.00

b6 -1
b7C -1

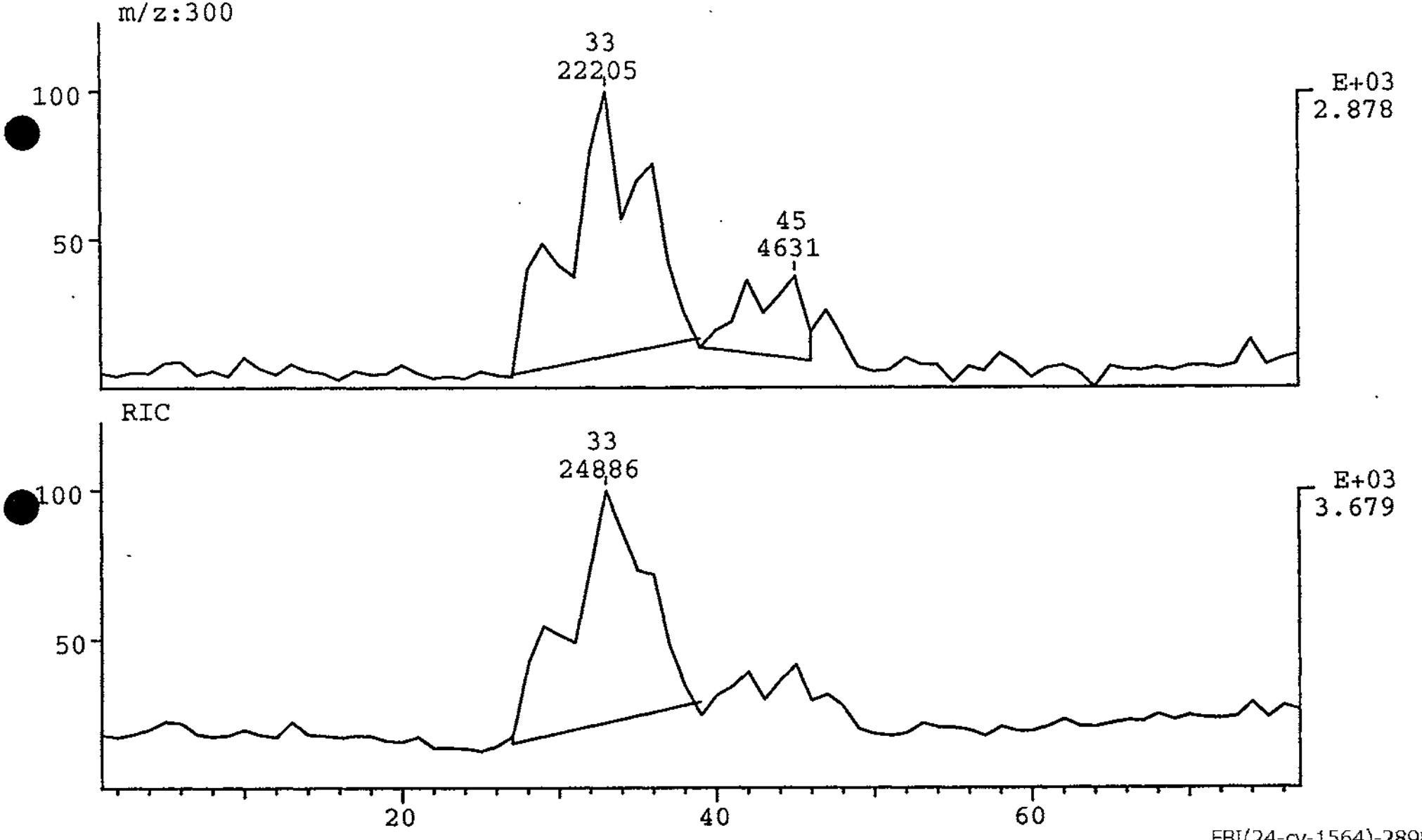


SMRO: [illegible]
Samp: Q206 W/ K67 APPLIED
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI -DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu
Area: 10, 4.00
Disp: Area

Label wndw: 1 > 77
Baseline : 0, 10

Start : 15:54:35 77
Inlet :
Masses: 297 > 302
Label : 4, 5.00

b6 -1
b7C -1



CHRO: edtatest Elapse: 00:00:05.5

Samp: EDTA SENSITIVITY/QUANTITATION TEST Start : 765

Comm: ACN/0.03% NH3 75:25 PRP1 2.1X150MM 0.3ML/MIN

Mode:

Oper:

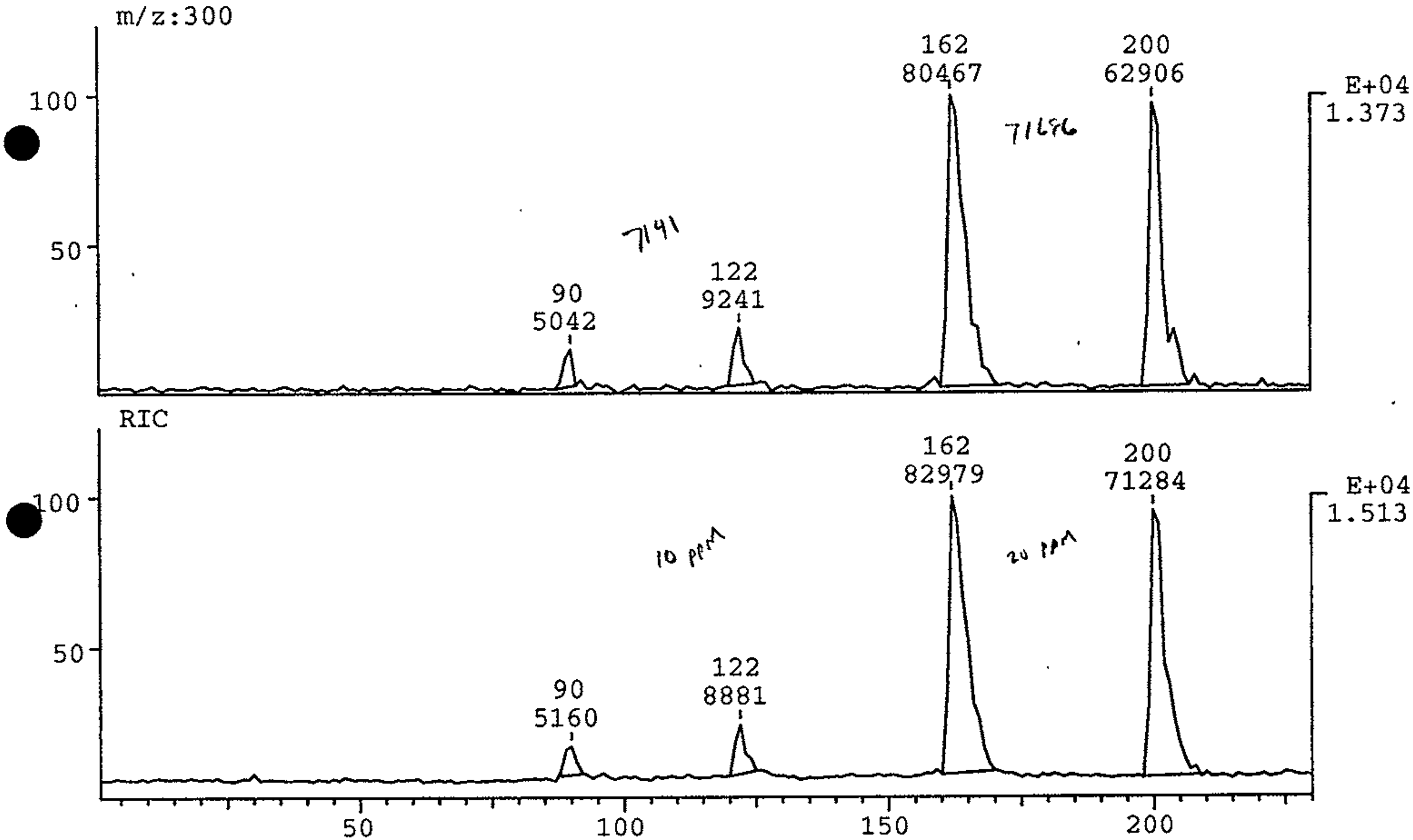
Inlet :

Peak: 1000.00 mmu Label wndw: 1 > 230 Masses: 297 > 302

Area: 2, 4.00 Baseline : 0, 3 Label : 2, 7.00

Disp: Area

b6 -1
b7C -1



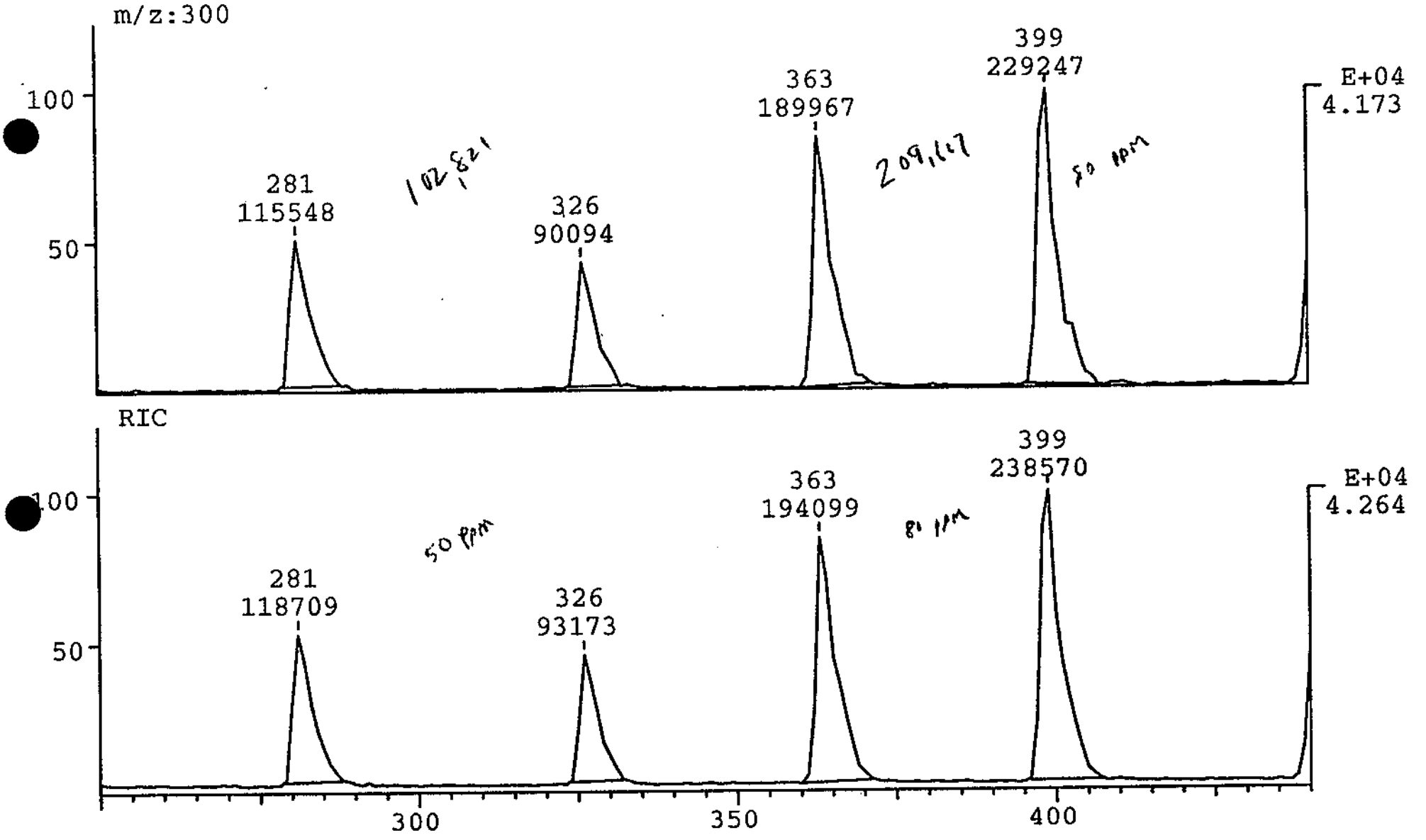
FBI(24-cv-1564)-2899

CHRO: edtatest
Samp: EDTA SENSITIVITY/QUANTITATION TEST
Comm: ACN/0.03% NH3 75:25 PRP1 2.1X150MM 0.3ML/MIN
Mode:
Oper:
Peak: 1000.00 mmu Label wndw: 250 > 440
Area: 2, 4.00 Baseline : 0, 3
Disp: Area

Elapse: 00:00:05.5 1
Start : 772

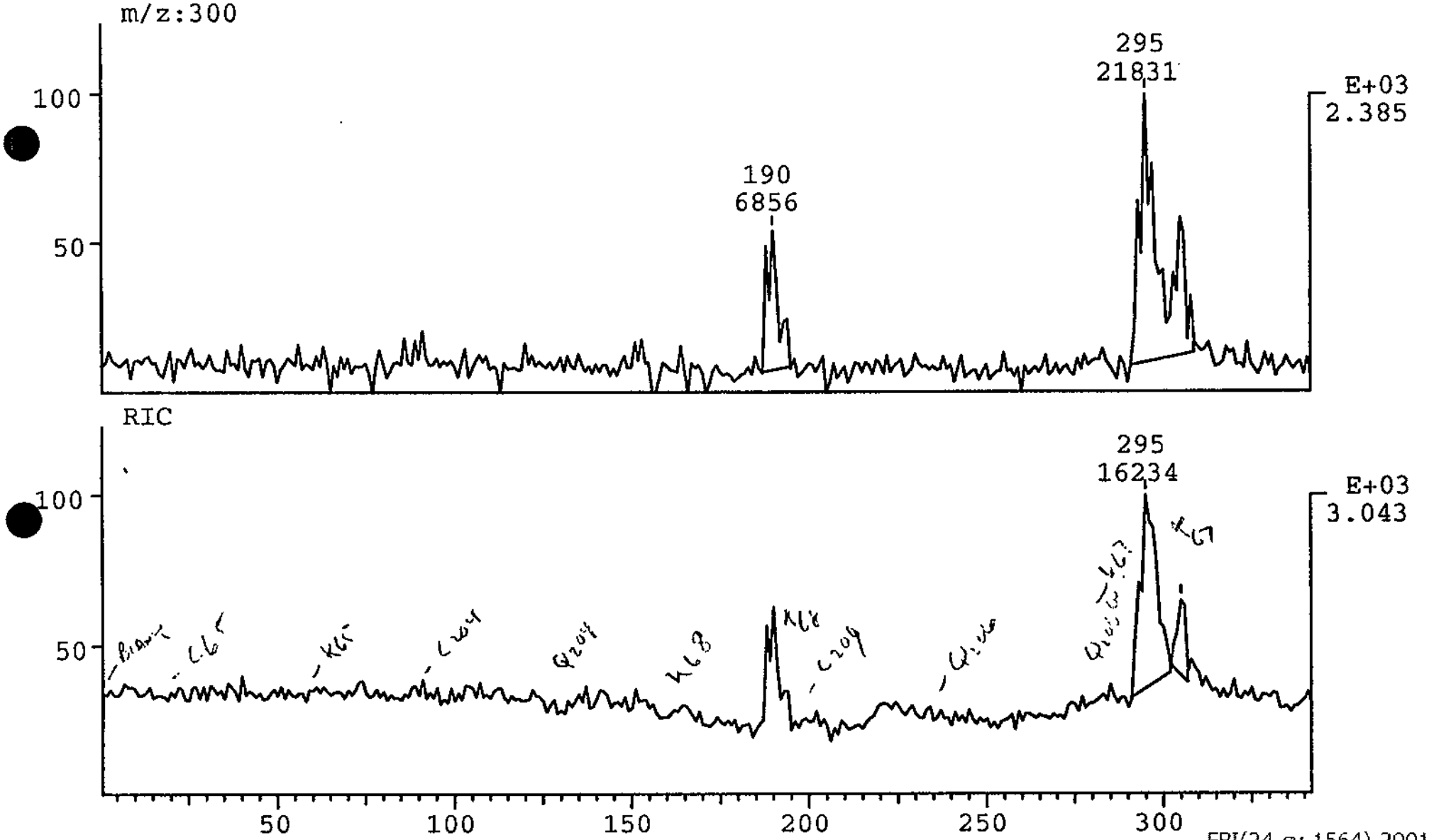
Inlet :
Masses: 297 > 302
Label : 2, 7.00

b6 -1
b7C -1



Samp: C65,K65,C204,Q204,K68,C206,Q206,Q206/K67 Start : 16:48:40 342
Comm: ACN/0.03% NH3 75:25 PRP1 2.1X150MM 0.3ML/MIN
Mode: ESI -DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 342 Inlet :
Area: 10, 4.00 Baseline : 0, 10 Masses: 297 > 302
Disp: Area Label : 4, 5.00

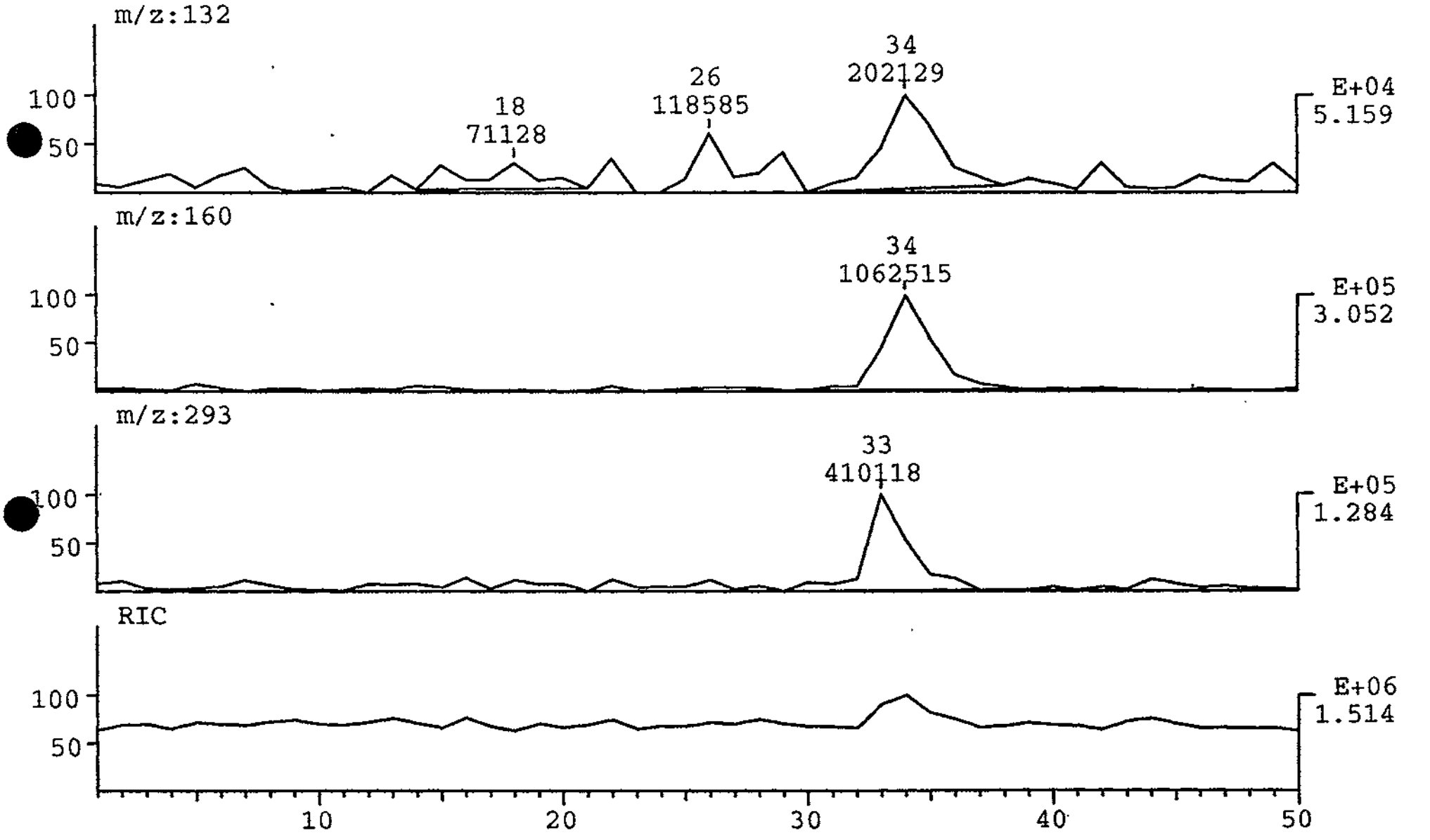
b6 -1
b7c -1



Samp: TRI-K EDTA 50 PPM 5UL INJ
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 50
Area: 2, 4.00 Baseline : 0, 3
Disp: Area

Start : 17:09:19 · 50
Inlet :
Masses: 128 > 296
Label : 5, 21.00

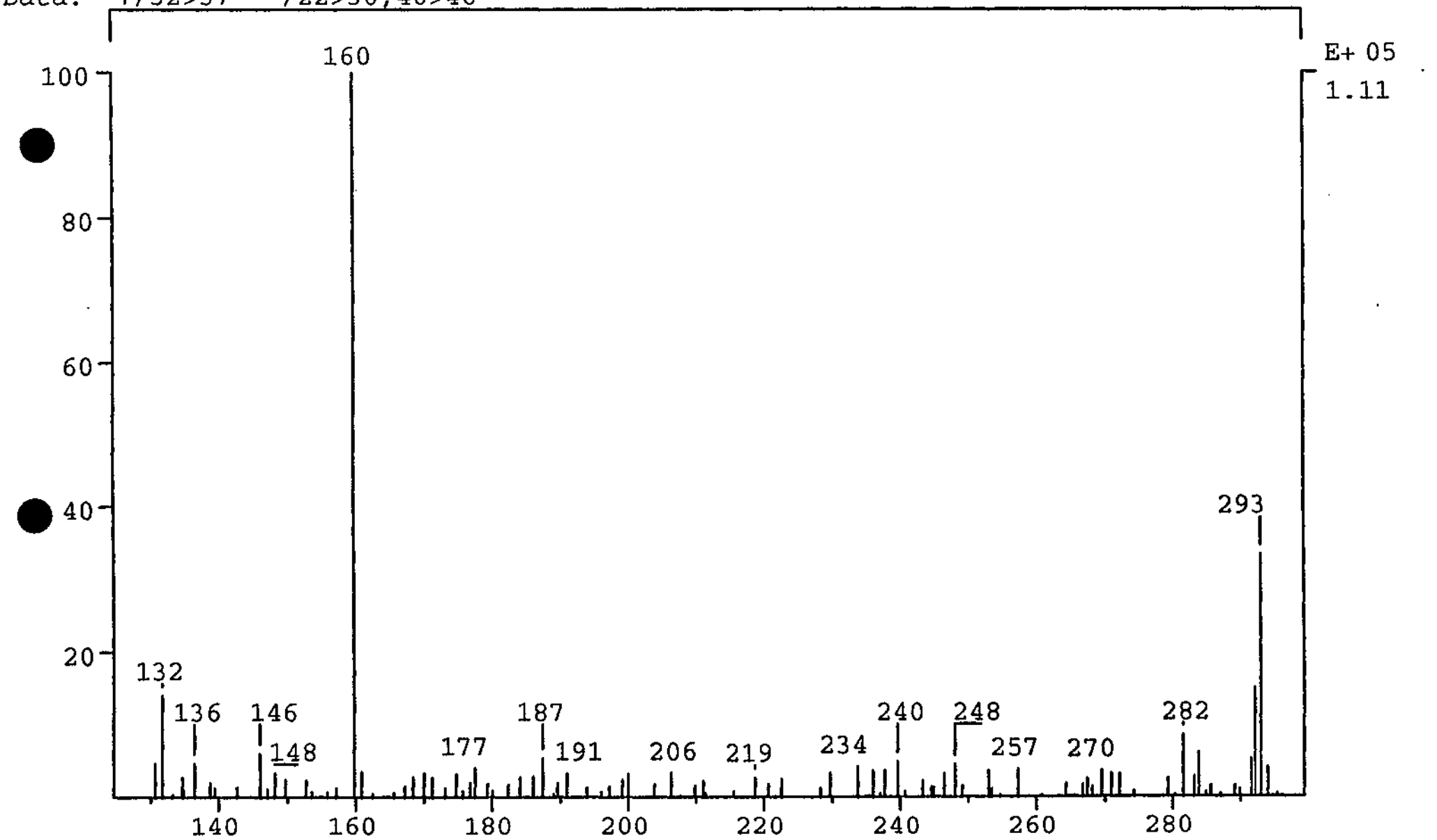
b6 -1
b7C -1



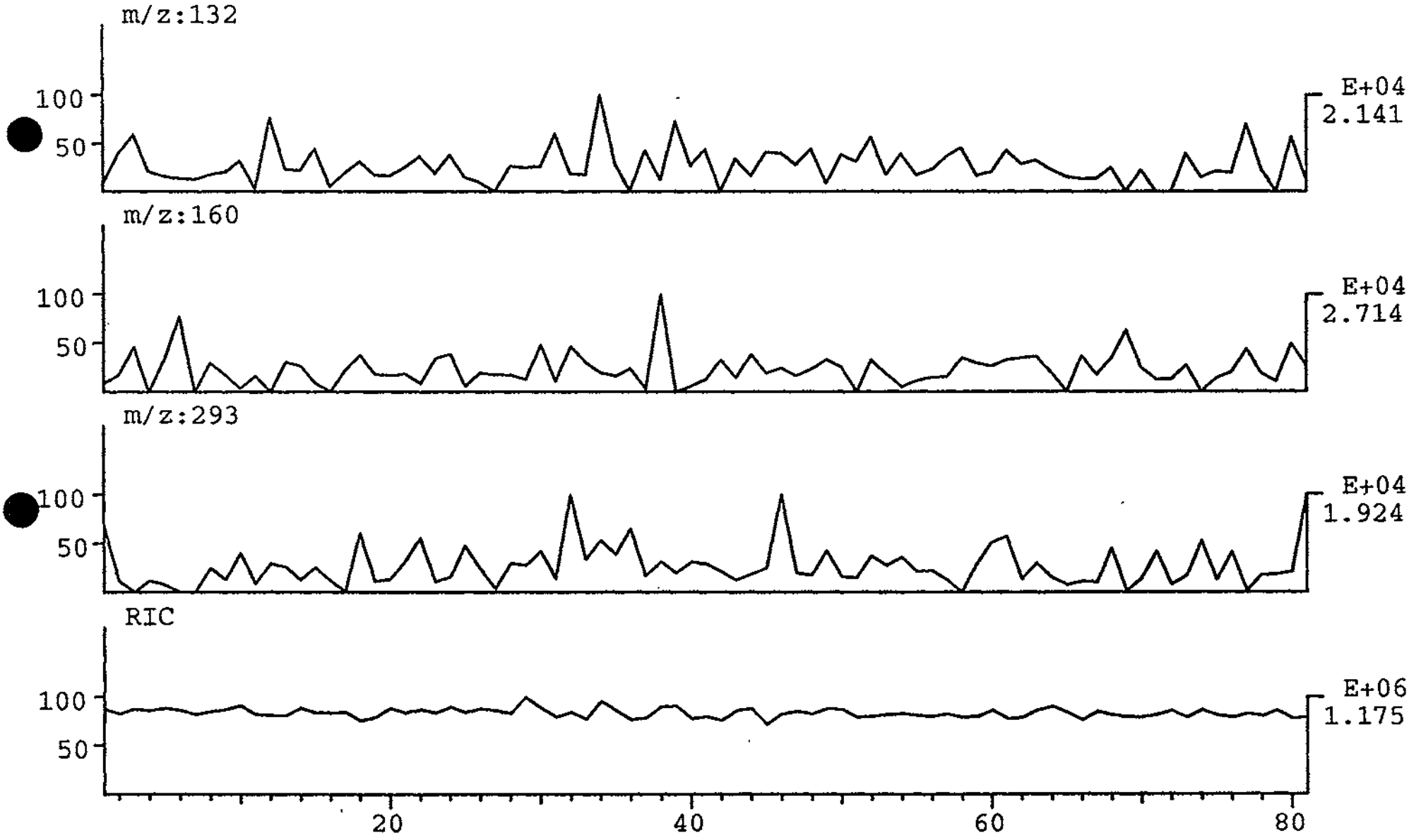
SPEC: edta50ppm
Samp: TRI-K EDTA 50 PPM 5UL INJ
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU 292.7 @ -20eV LMR GAS UP LR
Oper:
Base: 159.8
Norm: 159.8
Peak: 1000.00 mmu
Data: +/32>37 - /22>30,40>46

Start : 17:09:19 50
Inlet :
Inten : 111296
RIC : 418795
Masses: 128 > 296
#peaks: 105

b6 -1
b7C -1



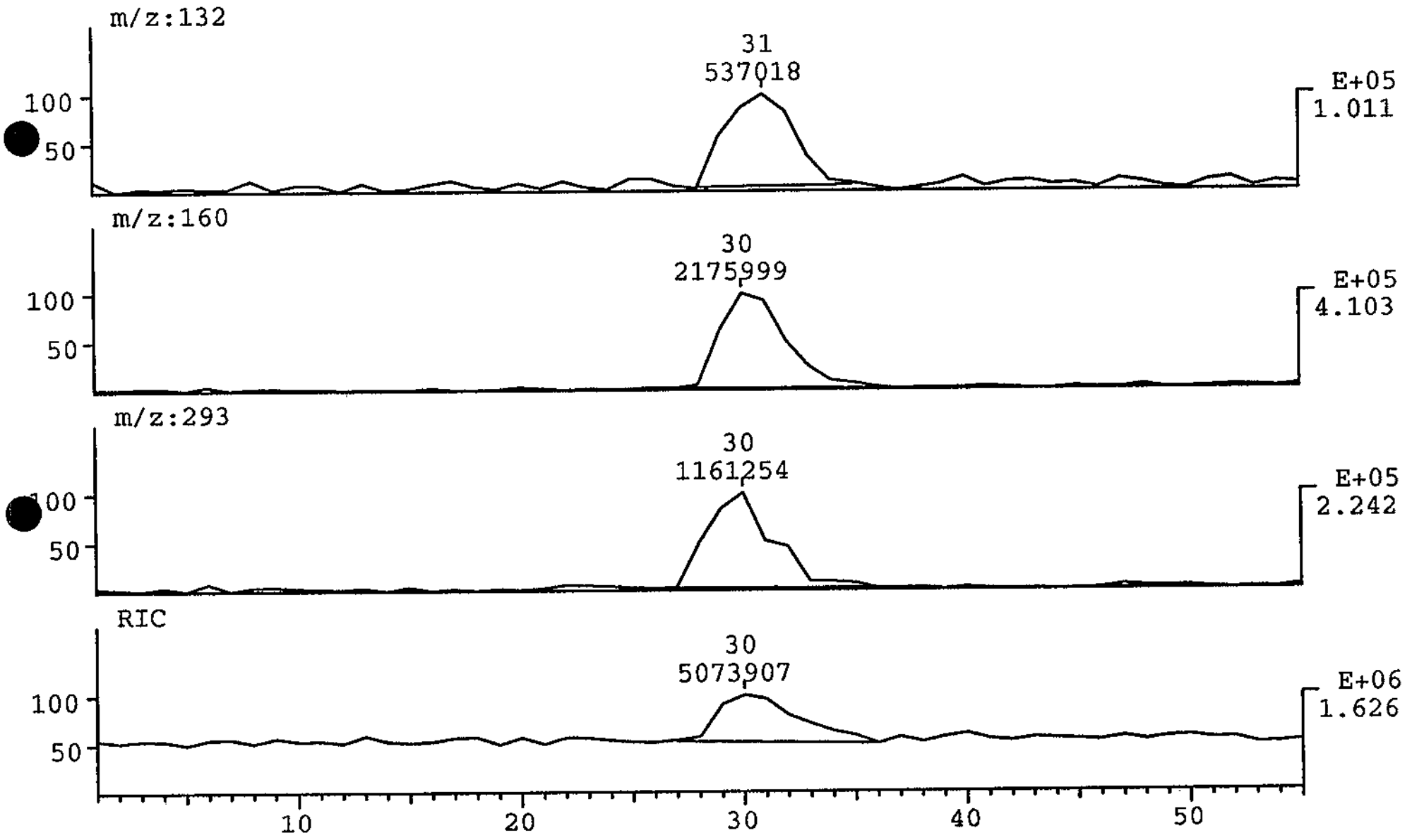
CHRO: ojblank
Samp: H2O BLANK FOR EDTA
Start : 17:11:25 81
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Inlet :
b6 -1
b7C -1
Peak: 1000.00 mmu Label wndw: 1 > 81
Masses: 128 > 296
Area: 2, 4.00 Baseline : 0, 3
Label : 5, 21.00
Disp: Area



CHRO: OJK68CON
Samp: K68 BLOOD USED FOR Q204 CONTROL
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 55
Area: 2, 4.00 Baseline : 0, 3
Disp: Area

Start : 17:16:08 55
Inlet :
Masses: 128 > 296
Label : 5, 21.00

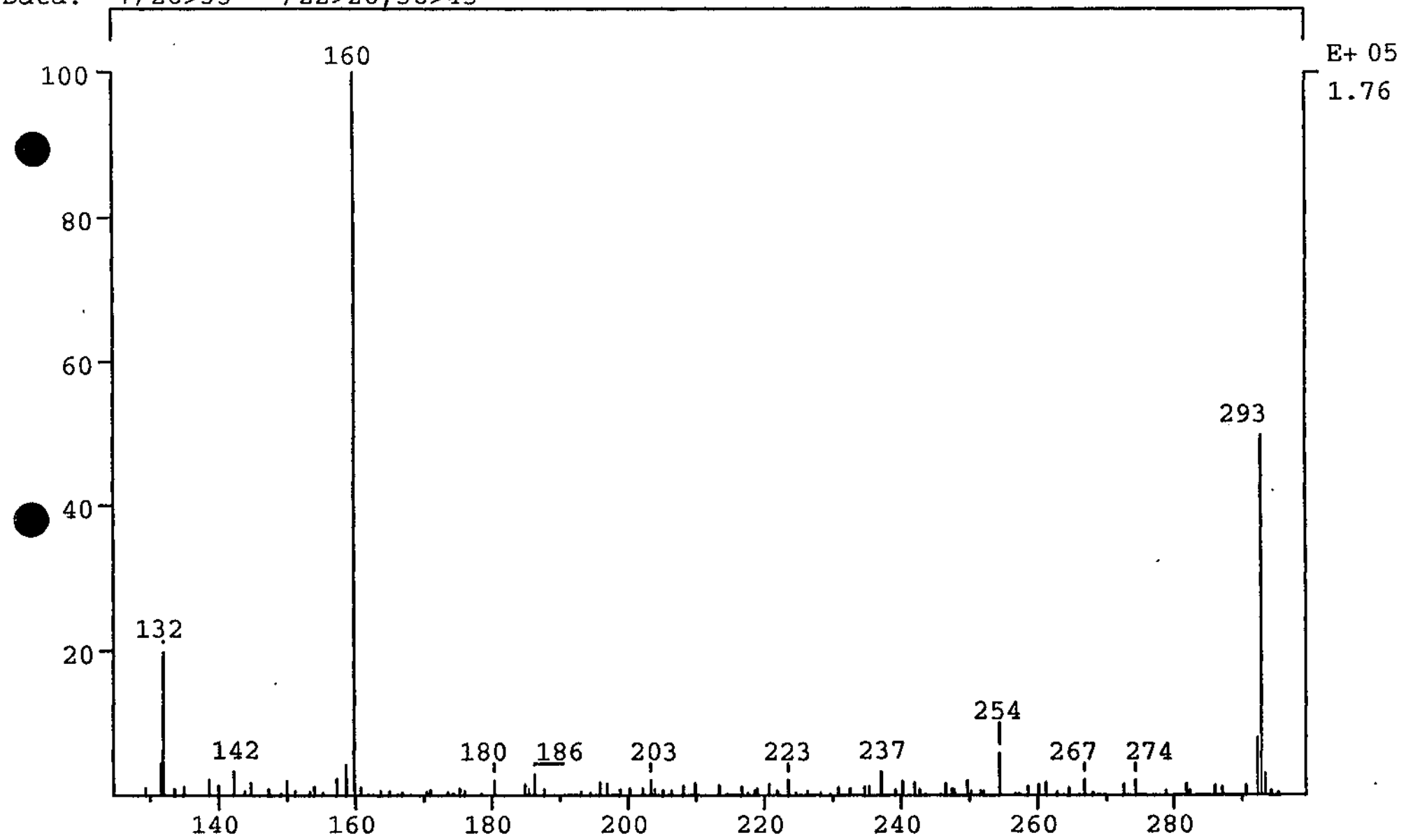
b6 -1
b7C -1



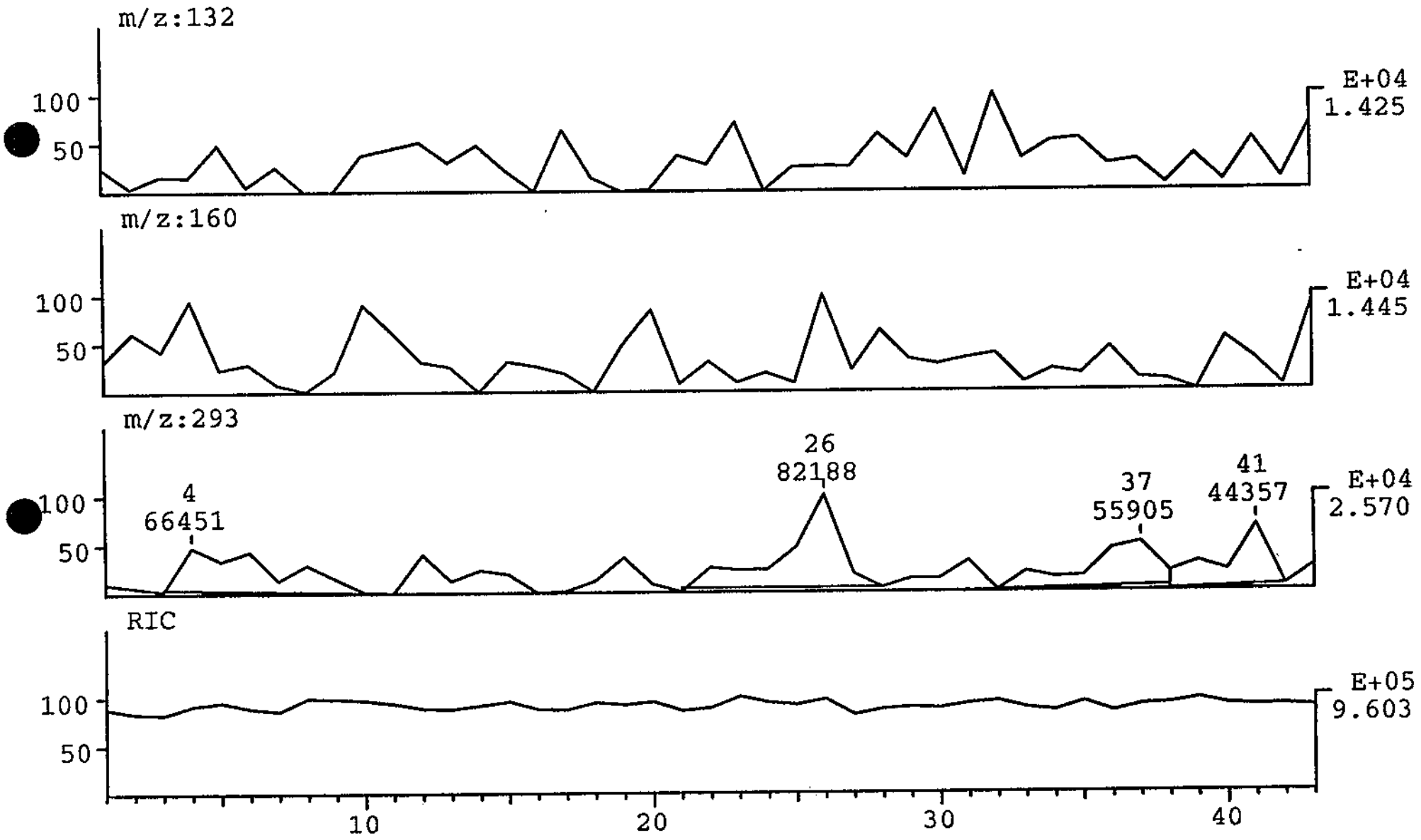
Samp: K68 BLOOD USED FOR Q204 CONTROL
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU 292.7 @ -20eV LMR GAS UP LR
Oper:
Base: 159.9
Norm: 159.9
Peak: 1000.00 mmu
Data: +/28>35 - /22>26,38>45

Start : 17:16:08 55
Inlet :
Inten : 175705
RIC : 528460
Masses: 128 > 296
#peaks: 114

b6 -1
b7C -1



CHRO: ojblank2 19-FEB-93 Elapse: 00:00:56.0 55
Samp: H2O BLANK FOR EDTA Start : 17:19:21 43
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 43 Inlet : b6 -1
Area: 2, 4.00 Baseline : 0, 3 Masses: 128 > 296 b7c -1
Disp: Area Label : 5, 21.00



CHRO: [illegible]

Samp: Q206/207 W K67 BLOOD APPLIED Start : 17:21:44 53

Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M

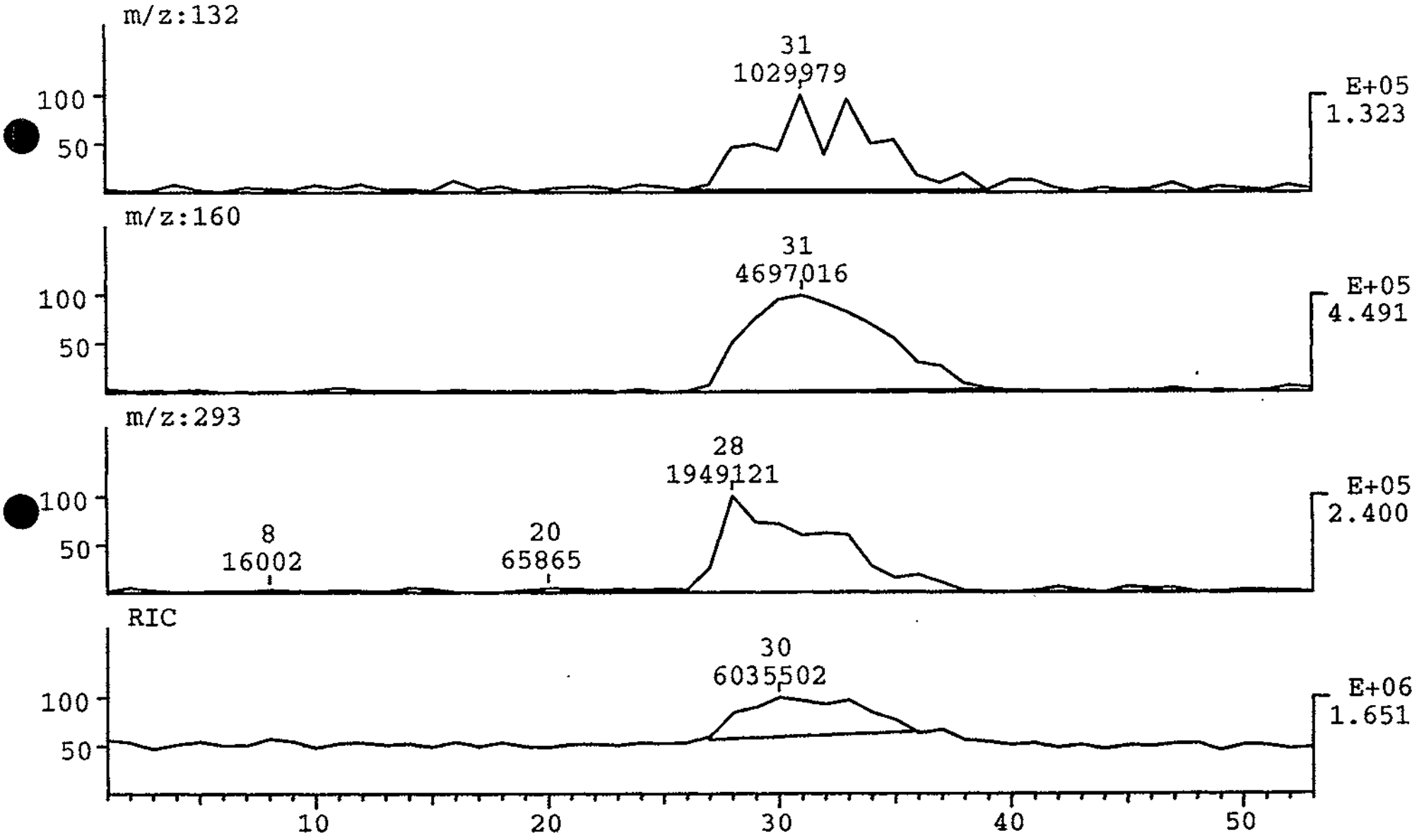
Mode: ESI +DAU LMR GAS UP LR

Oper: Inlet : b6 -1 b7C -1

Peak: 1000.00 mmu Label wndw: 1 > 53 Masses: 128 > 296

Area: 2, 4.00 , Baseline : 0, 3 Label : 5, 21.00

Disp: Area

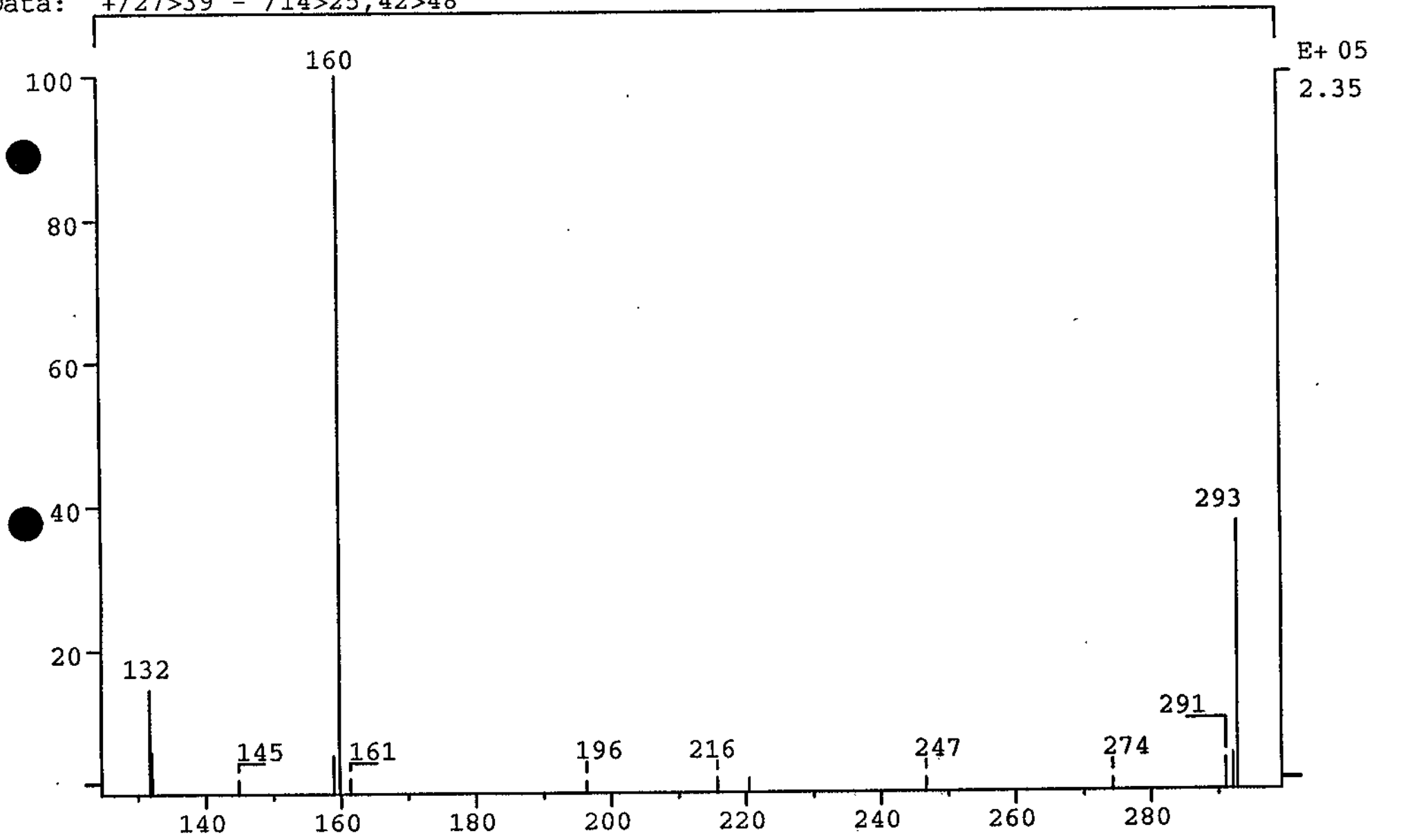


Samp: Q206/207 W K67 BLOOD APPLIED
Comm: ACN/10mM NH3 5:95 PRP1 2.1X150MM 0.3ML/M
Mode: ESI +DAU 292.7 @ -20eV LMR GAS UP LR
Oper:
Base: 159.9
Norm: 159.9
Peak: 1000.00 mmu
Data: +/27>39 - /14>25,42>48

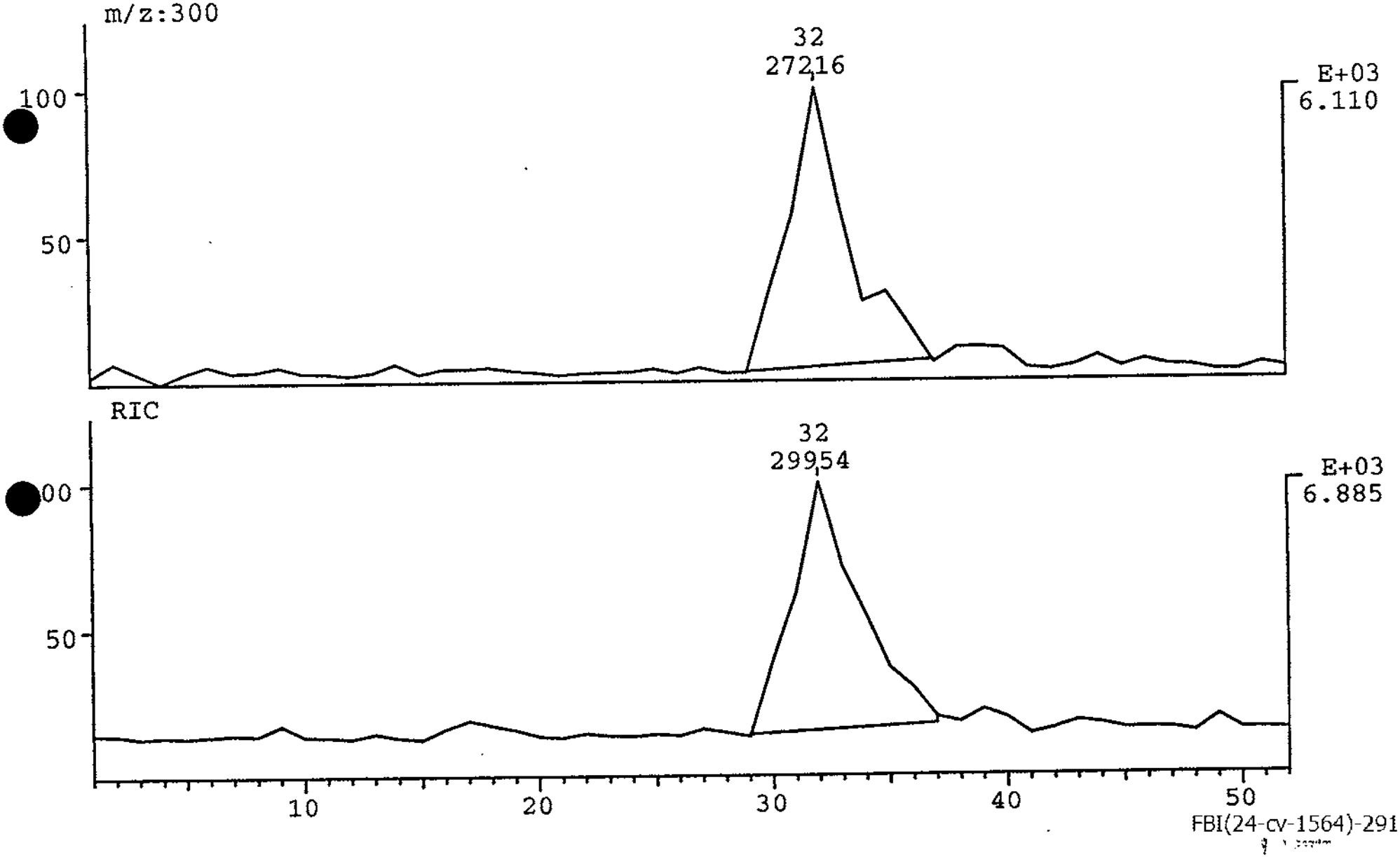
Start : 17:21:44
Inten : 234946
RIC : 585579
Inlet :
Masses: 128 > 296
#peaks: 133

53

b6 -1
b7C -1

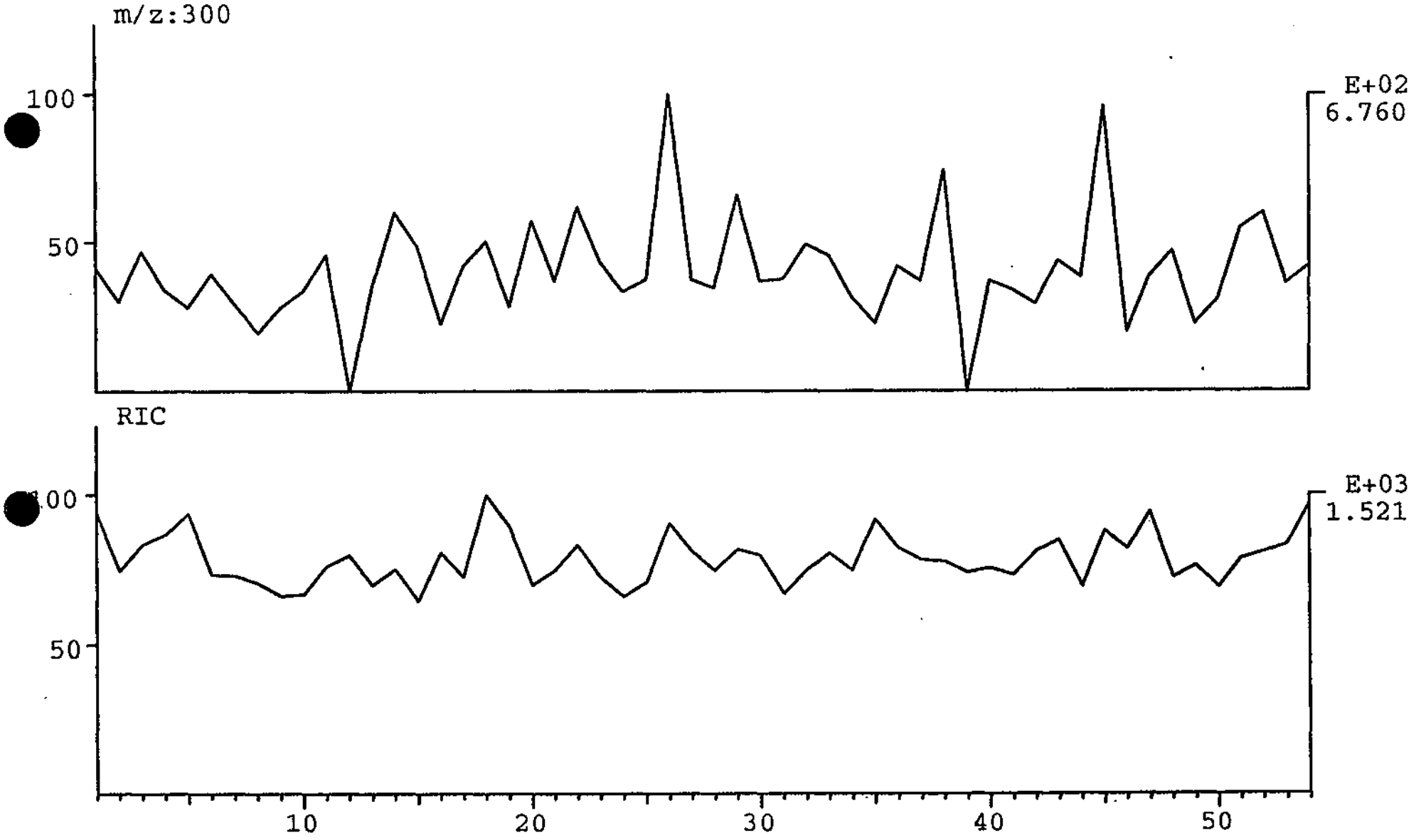


CHRO: 2201 20-FEB-95 Elapse: 00:00:50.9 . 51
Samp: 10 PPM EDTA Start : 10:10:19 52
Comm: ACN/H20/NH4OH 75/25/0.03 PRP1 2.1X150 0.2ML
Mode: ESI -DAU LMR GAS UP LR
Oper:
Peak: 1000.00 mmu Label wndw: 1 > 52 Inlet : b6 -1
Area: 10, 4.00 Baseline : 0, 10 Masses: 297 > 302 b7c -1
Disp: Area Label : 4, 5.00

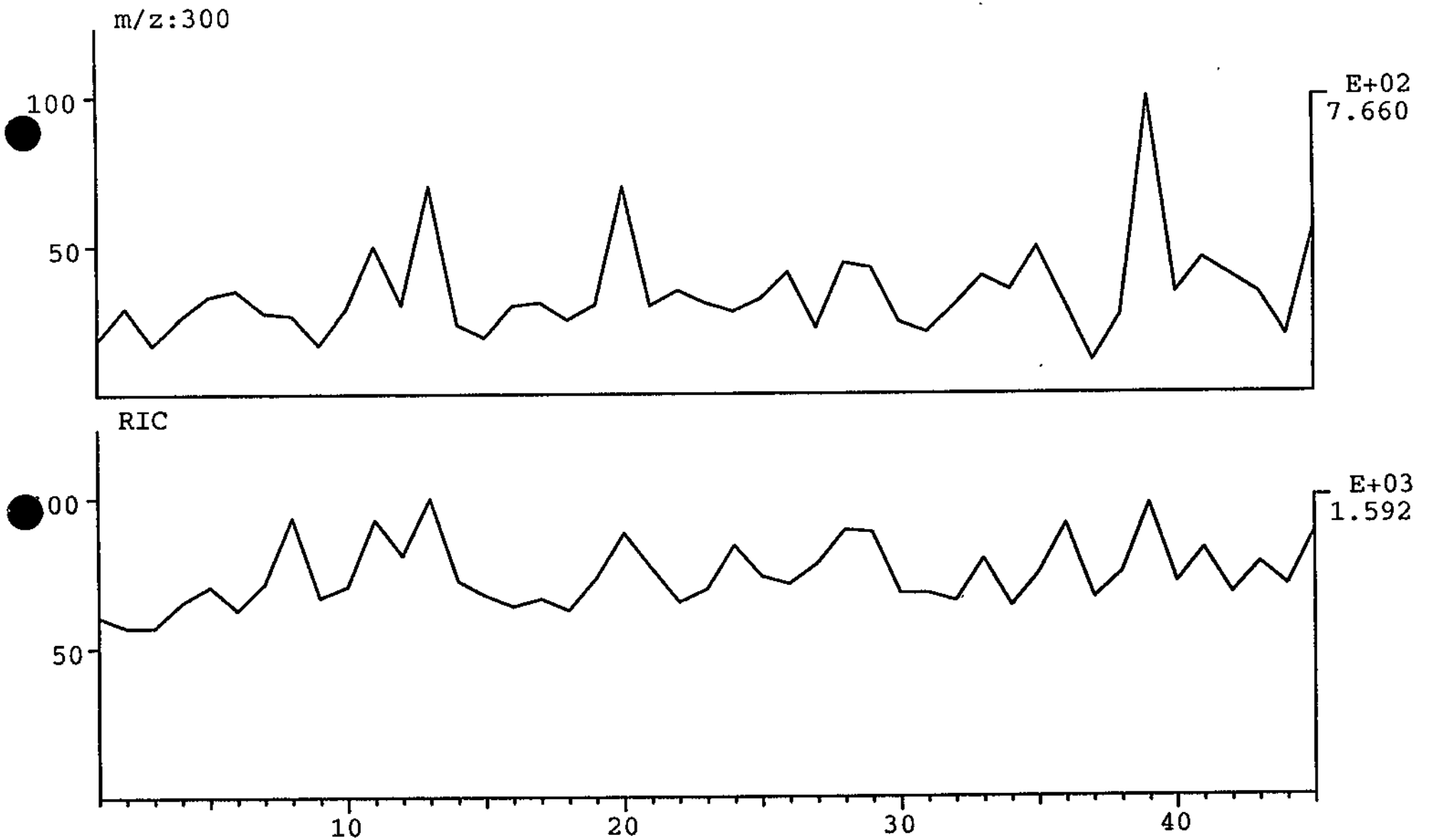


CHRO: 2202 20-FEB-95 Elapse: 00:00:30.5 31
Samp: BLANK Start : 10:14:46 54
Comm: ACN/H20/NH4OH 75/25/0.03 PRP1 2.1X150 0.2ML
Mode: ESI -DAU LMR GAS UP LR
Oper: Inlet :
Peak: 1000.00 mmu Label wndw: 1 > 54 Masses: 297 > 302
Area: 10, 4.00 Baseline : 0, 10 Label : 4, 5.00
Disp: Area

b6 -1
b7c -1

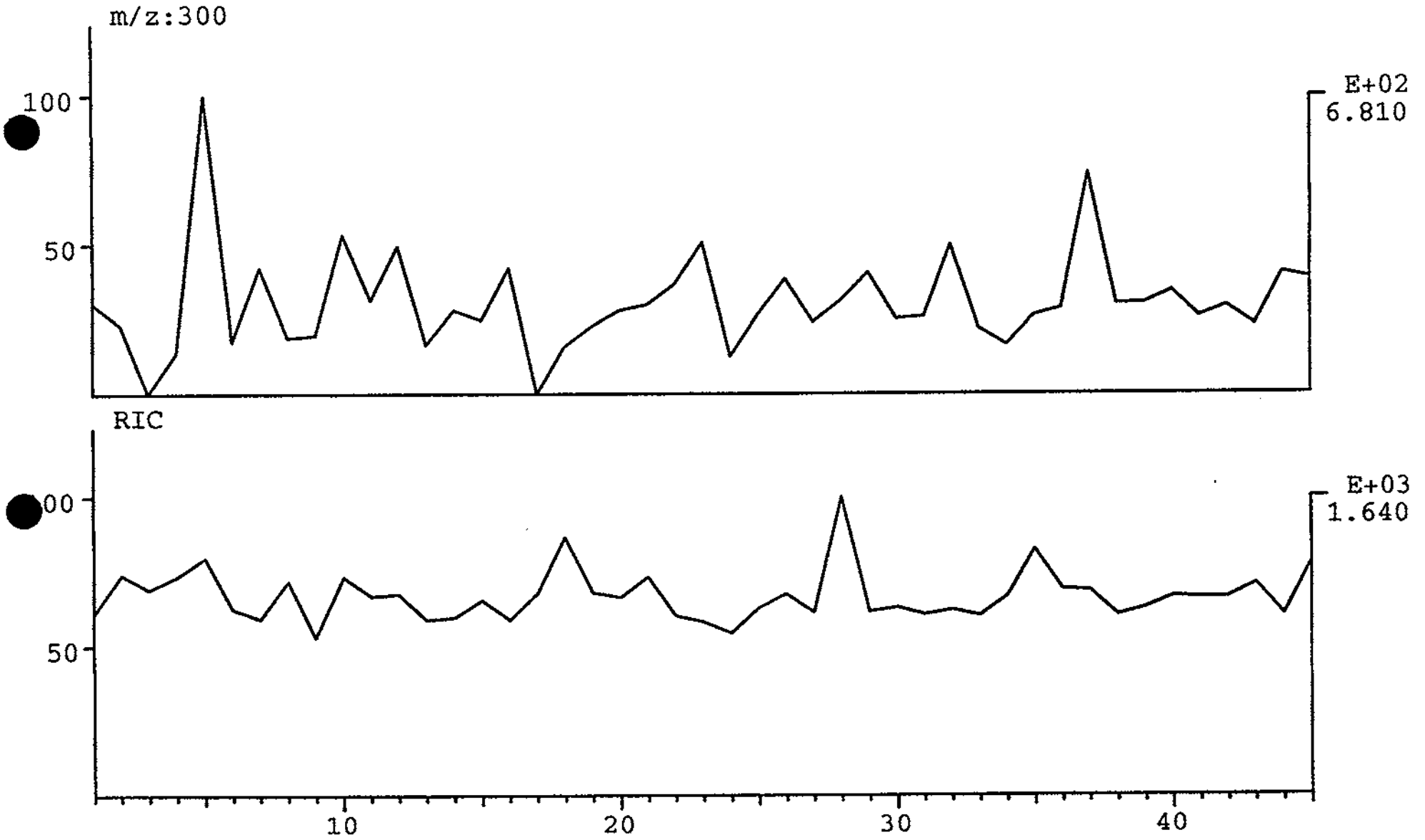


CHRO: 2203 20-FEB-95 Elapse: 00:00:50.9 31
Samp: CONTROL FOR Ø65 Start : 10:17:38 45
Comm: ACN/H20/NH4OH 75/25/0.03 PRP1 2.1X150 0.2ML
Mode: ESI -DAU LMR GAS UP LR
Oper: [redacted] Inlet : b6 -1 b7C -1
Peak: 1000.00 mmu Label wndw: 1 > 45 Masses: 297 > 302
Area: 10, 4.00 Baseline : 0, 10 Label : 4, 5.00
Disp: Area



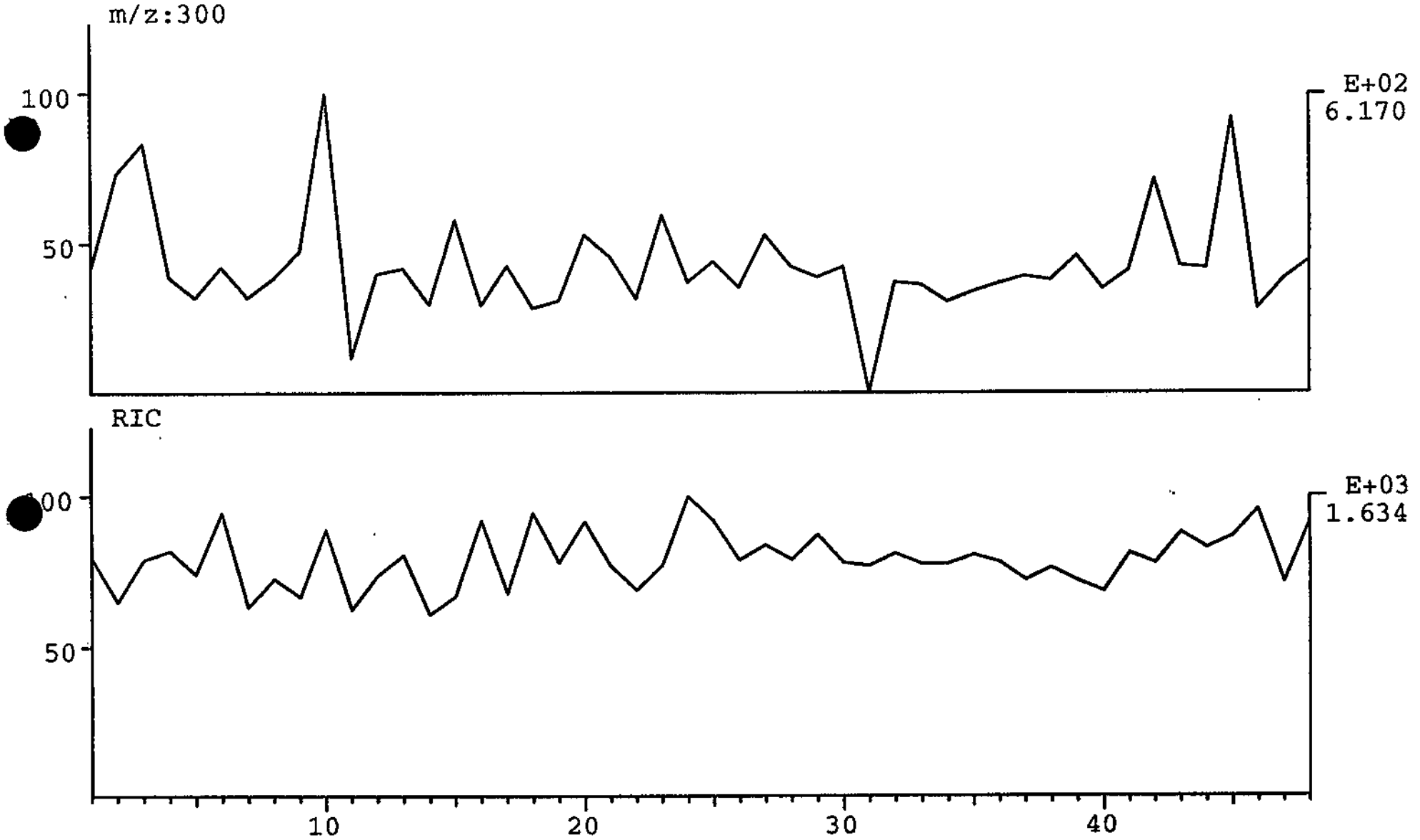
CHRO: 2204 20-FEB-95 Elapse: 00:00:50.8 31
Samp: K65 Start : 10:20:48 45
Comm: ACN/H20/NH4OH 75/25/0.03 PRP1 2.1X150 0.2ML
Mode: ESI -DAU LMR GAS UP LR
Oper:
Inlet :
Peak: 1000.00 mmu Label wndw: 1 > 45 Masses: 297 > 302
Area: 10, 4.00 Baseline : 0, 10 Label : 4, 5.00
Disp: Area

b6 -1
b7C -1



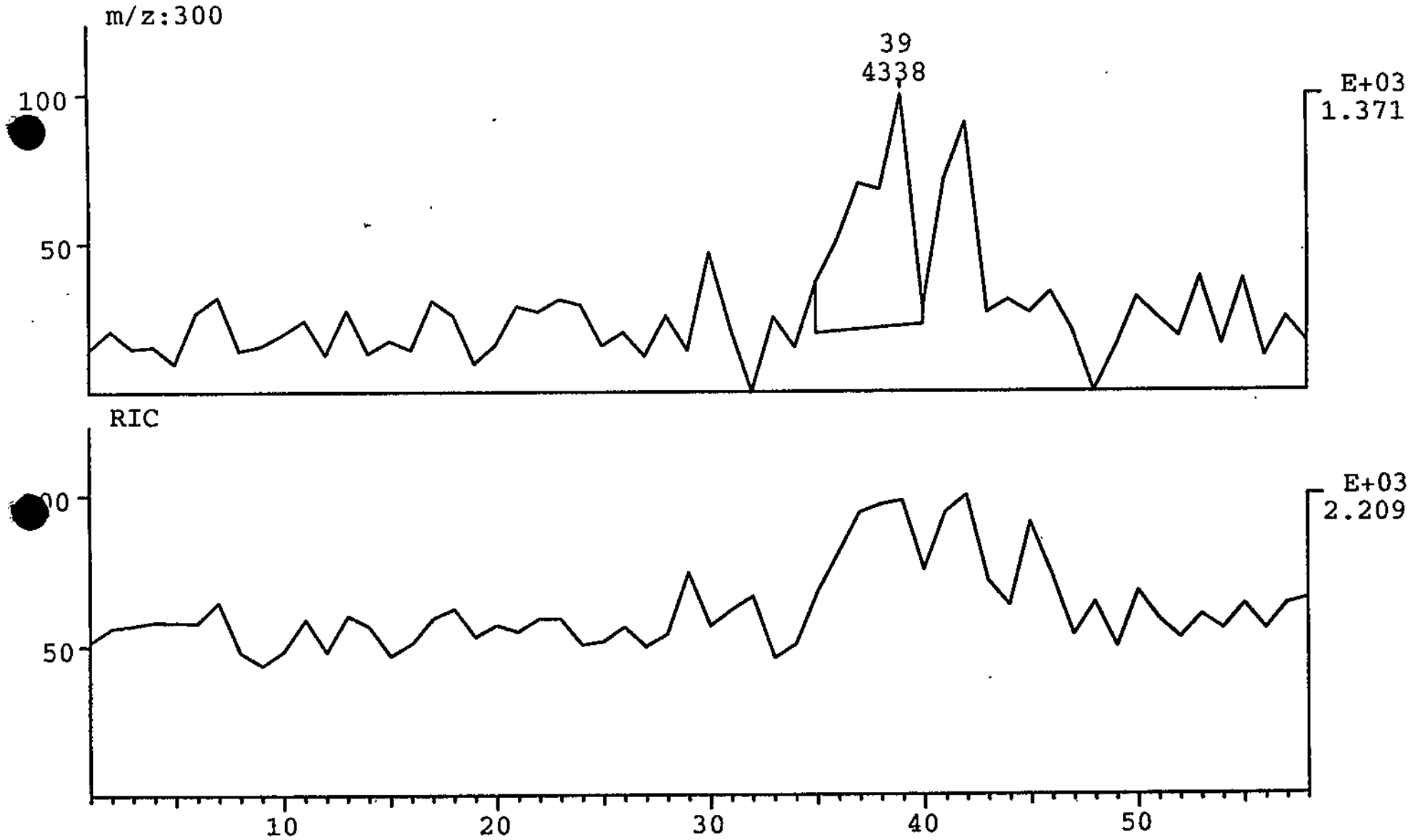
CHRO: 2205 20-FEB-95 Elapse: 00:00:50.3 31
Samp: 5UL BLOOD IN 250 UL H20 NO EDTA Start : 10:24:19 48
Comm: ACN/H20/NH4OH 75/25/0.03 PRP1 2.1X150 0.2ML
Mode: ESI -DAU LMR GAS UP LR
Oper: Inlet :
Peak: 1000.00 mmu Label wndw: 1 > 48 Masses: 297 > 302
Area: 10, 4.00 Baseline : 0, 10 Label : 4, 5.00
Disp: Area

b6 -1
b7C -1



CHRO: 2206 20-FEB-95 Elapse: 00:00:51.4 31
Samp: 5UL BLOOD 250 UL H20 WITH EDTA Start : 10:27:06 58
Comm: ACN/H20/NH4OH 75/25/0.03 PRP1 2.1X150 0.2ML
Mode: ESI -DAU LMR GAS UP LR
Oper:
Inlet :
Peak: 1000.00 mmu Label wndw: 1 > 58 Masses: 297 > 302
Area: 10, 4.00 Baseline : 0, 10 Label : 4, 5.00
Disp: Area

b6 -1
b7C -1



7-2 (Rev. 2-21-91)

RECORDED 8/8/94 [redacted]

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

8/8/94 [redacted]

b6 -1
b7C -1

Date:

To: Los Angeles Police Department
555 Ramirez Street, SP. 270
Los Angeles, California 90012

FBI File No. 95A-HQ-1075008

Lab No. 40808026 S/D UJ QJ

Reference: Communication dated August 8, 1994

Your No. 94-08-17431

Re: ORENTHAL J. SIMPSON - SUSPECT;
NICOLE SIMPSON AND RONALD GOLDMAN - VICTIMS;
HOMICIDE [redacted]

Specimens received: August 8, 1994

Specimens personally delivered by Criminalist III [redacted] on August 8, 1994:

Q1	Debris from glove (Item number 19)
Q2	Hair from GOLDMAN (Item number 74)
Q3	Debris from glove (Item number 110)
Q4	Debris from cap (Item number 111)
Q5-Q6	Glass microscope slides from cap (Item number 111)
Q7	Debris from glove (Item number 112)
Q8	Debris from knit hat (Item number 113)
Q9-Q19	Glass microscope slides from knit hat (Item number 113)

b6 -1,6
b7C -1,6

(over)

Rec'd 048-77 from [redacted] 8/8/94 to [redacted] for copies

Photos to [redacted] 8/10 for [redacted] (see photos)

returned 048-77 to [redacted] 10/19/94 - Copies returned

DEBRIS FROM GOLDMAN'S:

Q20 Shoes (Item number 160)

Q21 Pants (Item number 161)

Q22 Socks (Item number 162)

Q23 Shirt (Item number 163)

Q24 Debris from N. SIMPSON's dress (Item number 164)

Q25 Debris from bag containing GOLDMAN's shirt (165)

Q26 Debris from cap from O.J. SIMPSON residence (Item number 168)

Q27 Debris from socks from O.J. SIMPSON residence (Item number 221)

DEBRIS REMOVED FROM CHICAGO ITEMS:

Q28 Pillowcase (Item number 153)

Q29 Pillowcase (Item number 154)

Q30 Bedsheet (Item number 155)

Q31 Bedsheet (Item number 156)

Q32 Washcloth (Item number 157)

Q33 Socks (Item number 158)

Q34 Athletic bag (Item number 159)

Q35 Debris from towel - O.J.'s car (Item number 166)

Q36 Debris from plastic sheet - O.J.'s car (Item number 167)

Q37 Debris from shovel - O.J.'s car (Item number 169)

Q38 Hairs (Item number 141)

Q39-Q46 Tape lits from COWLING's bronco

Q47 Knit hat (Item number 38)

Q48-Q77 Thirty (30) photographs

K1 Head hair sample from GOLDMAN (Item number 73)

K2 Eye hair samples from GOLDMAN (Item number 73)

K3 Arm hair sample from GOLDMAN (Item number 73)

K4 Head hair sample from N. SIMPSON (Item number 83)

K5 Arm hair sample from N. SIMPSON (Item number 83)

K6 Eye hair samples from N. SIMPSON (Item number 83)

K7 Head hair sample from O. J. SIMPSON (Item number 122)

Q48-77 { Q48-66 (photos number 1 → 19)
Q67-68 (photos 00 01 09 – 00 01 10)
Q69-74 (photo 00 00 46 → 00 00 51)
Q75-77 (photo 00 00 54 → 00 00 56)

Copies of Q48-77 retained. Original Q48-77 photos to be retained.

8/8/94 — 1/78 → 77 photographs searched through lab reference materials w/o locating shoe design or manufacturer.

8/9/94 — talked to [illegible] re fax of proposed letter.

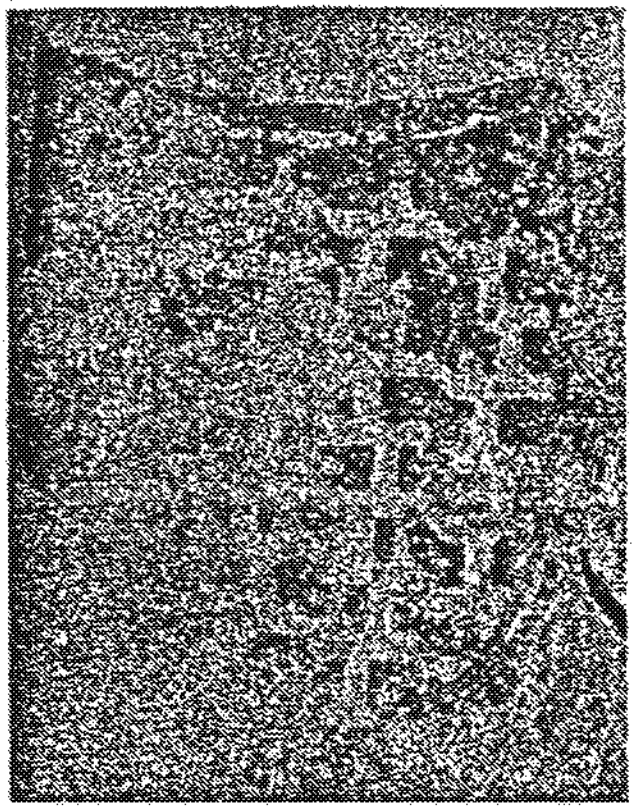
8/10/94 faxed proposed letter to [redacted] search for shoe design. (fax 213-237-0040) b6 -3 b7C -3

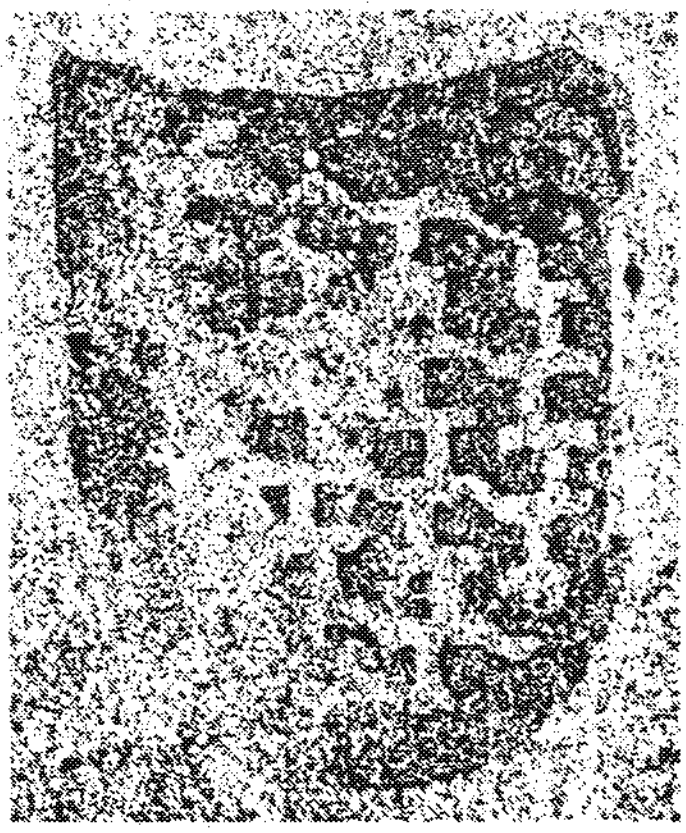
8/16-17-?/94 Faxed drawing + copy of impression to other laboratories out of country + logged for companies carrying high end shoes.

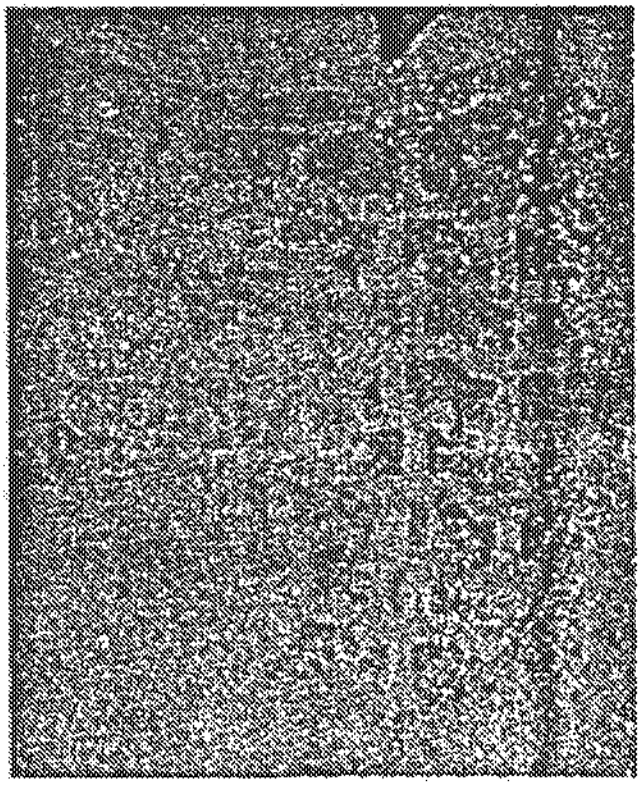
advised on 8/19/94 on telephone call from [redacted] that design was his Bruno Magli design / furnished list of distributors 8/19/94 for large sizes. Furnished on mail - sample shoe for size 12 + 9.5 that was left in back of store. b6 -9 b7C -9

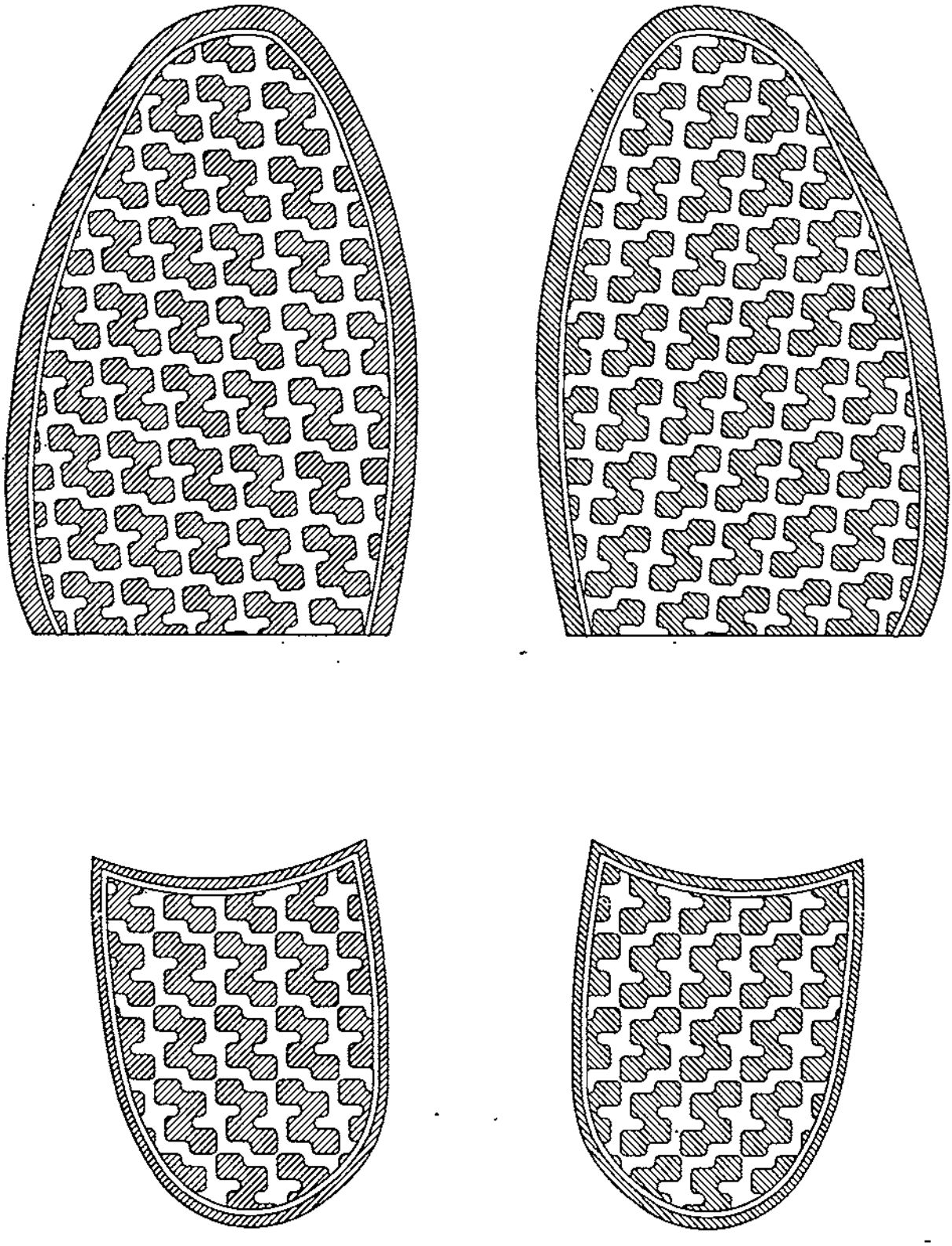
8/18/94 FAX from NPA [redacted] re "LORD" label - Requested they send photos due to poor fax. b6 -3 b7C -3

Request [illegible] for manufacturer in Italy - SILGA Gomma









SKETCH

July 14, 1994
per Kearney —
call Michele Kestler
Lab Director — LAPD

213-237-0044
213-237-0031

Called Michele 7/14/94 —
She showed blood impressions on carpet & vehicle — plus photos of
for impressions on concrete sidewalk.
Will send photo's & attempt to determine brand/manufacturer / size
No bloody shoes of suspect recovered.
No shoe boxes at suspects residence —
Scene has been cleaned up —
All impressions were outside.

7-2 (Rev. 2-21-91)

RECORDED
9/16/94
xxx

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

9/20/94

b6 -1
b7C -1

To: Los Angeles Police Department
555 Ramirez Street, SP. 270
Los Angeles, California 90012

Date:

FBI File No. 95A-HQ-1075008

Lab No. 40912024 D QJ

Reference: Letter dated September 5, 1994

Your No. 94-08-17431

b6 -1
b7C -1

Re: ORENTHAL J. SIMPSON - SUSPECT;
NICOLE SIMPSON,
RONALD GOLDMAN - VICTIMS;
HOMOCIDE

Specimens received: September ~~12~~ 8, 1994

Specimens:

U 2887 outsoles received from S.I.L.G.A. GOMMA, Civitanova Marche (MC), Italy , further described as follows:

K20	Left U 2887, size 42
K21	Right U 2887, size 42
K22	Left U 2887, size 43
K23	Right U 2887, size 43
K24	Left U 2887, size 44
K25	Right U 2887, size 44

Outsoles received 9/8/94 w/ [illegible]

return set of outsole K20 → K31 to LAPD / [illegible] of K20 – K31 2#2

K26	Left U 2887, size 45
K27	Right U 2887, size 45
K28	Left U 2887, size 46
K29	Right U 2887, size 46
K30	Left U 2887, size 47
K31	Right U 2887, size 47

Impressions made from K30 → K31 outsole / compared with Q48 → Q77 impressions — 9/8/94. Impressions at crime scene depicts thought Q48-77 photos as: European Size 46 — US Size 12 w/exception of Q57, 58, 63

9/6/94

- Q48 left sole size 46
- Q49 right sole size 46
- Q50 right sole - pattern not totally clear contour - size 46 (P47)
- Q51 left sole size 46 (P45)
- Q52 left heel + part of sole size 46 (same as Q71, 72) (P49, P50)
- Q53 right heel + sole size 46 (same as Q73) (P51)
- Q54 left sole + heel (heel indistinct but position consistent) size 46 (same as Q74) (P52)
- Q55 left heel/sole size 46
- Q56 right heel/sole size 46 (same as Q75) (P55)
- Q57 - indistinct (same as Q76) (P56)
- Q58 indistinct
- Q59 heel/sole right (size 46)
- Q60 left sole (size 46)
- Q61 left heel (size 46) (same as Q77) (P57)
- Q62 right sole/heel (size 46)
- Q63 indistinct
- Q64 left heel (size 46)
- Q65 left heel (size 46)
- Q66 right heel/sole (size 46)
- Q67 indistinct on ground (poss left heel) (envelope has partial impression)

- Q68 left heel - sole area - size 46 (P36) blurred by [illegible]
- (50) Q69 right sole - toe indistinct - for pattern - contour & some pattern - profile size 46
- (51) Q70 left sole - trace of heel - size 46
- (52) Q71 left heel/sole - size 46
- Q72 left heel/sole - size 46
- (53) Q73 right heel/sole size 46
- (54) Q74 left sole / trace of heel (size 46)
- (55) Q75 right heel/sole (size 46)
- (56) Q76 indistinct
- (57) Q77 left heel (size 46)

Size 46 European conversion to U.S. casts = size 12 per Bruno Magli.

- On left side of carpet (#33) Q100-101 some limited areas of impression on carpet may represent grooves of shoe - however lack sufficient clarity to make definite comparison. no other recognizable pattern
- on right side - too limited for comparison.

(see photos)

recd outsole samples from Italy
9/8/94

FBI(24-cv-1564)-2926

SILGA GOMMA S.R.L.
Sede Sociale ed Amministrativa:
62012 CIVITANOVA MARCHE (MC)
Strada del Casone, 33/F - ☎ 0733/811011
Telex: 560116 SILGAC I
Telefax: 0733/811177
Stabilimento:
62012 CIVITANOVA MARCHE (MC)
62027 SAN SEVERINO MARCHE (MC)
Via S. Michele - ☎ 0733/839327 - Fax 0733/834744

SPETTLE
FEDERAL BUREAU OF INVESTIGATION LAB

00000 WASHINGTON,D.C. USA

b6 -9
b7C -9

Registro Società Tribunale Macerata: n. 2254 - C.C.I.A.A. Macerata: n. 33358 - C.C.P.: n. 13803622
MC 002388 - Partita IVA e Codice Fiscale: IT-00083630434 - Capitale Sociale L. 5.000.000.000 i.v.

I N V O I C E

FOGLIO	COD. CLIENTE	PARTITA IVA CLIENTE	ZONA	AGENTE	DATA DOCUMENTO	N. DOCUMENTO
1					5/09/94	5723

PAGAMENTO: 106 CAMPIONI GRATIS

BANCA:

BENESTARE BANCARIO N.:

CODICE ARTICOLO	DESCRIZIONE ARTICOLO	NUMER.	U.M.	QUANTITÀ	PREZZO UNIT.	IMPORTO	RESIDUO ORD.
	** Bolla n° 2210/E del 5/09/94 **						
C U2887 NE 00	U 2887 NERO	43	Pa	2	1,05	2,10	
C U2887 NE 00	" "	45	Pa	2	1,05	2,10	
C U2887 NE 00	" "	46	Pa	2	1,05	2,10	
C U2887 TH 00	U 2887 TESTA DI MORO	42	Pa	2	1,05	2,10	
C U2887 TH 00	" "	44	Pa	2	1,05	2,10	
C U2887 TH 00	" "	47	Pa	2	1,05	2,10	
	F.CO DESTINO						
	PAIA 12						
	SAMPLES FREE OF CHARGES						

b6 -9
b7C -9

IMPORTO MERCE	% SC.	IMPORTO SCONTO	SPESE INCASSO	IMPONIBILE	AL. IVA	I.V.A.	SPESE BOLLI - ART. 15
12,60				12,60	C		

CAUSALE ESENZIONE: NON IMP.ART.8/A N

TOTALE DOCUMENTO: 12,60 USD

NOTE

Peso lordo : 5,00 Peso netto : 4,00 Numero colli : 1

DHL WORLDWIDE EXPRESS

Shipment Airwaybill
(Non negotiable)

40697985 6

Quote this shipment number in an e...

AOJ — DCA

1 From (Sender)

Account no.: *SG0100M

Sender's name:

Sender's reference *first twelve characters will be shown on invoice*

S.I.L.D.A. GOMMA SRL

0008 3630434

STRADA DEL CASONE 33/F

CIVITANOVA M. MC ITALY

Postcode: 62012

Phone/Fax/Telex: 0733-811011

2 To (Receiver)

FEDERAL BUREAU OF INVESTIGATION

WASHINGTON, D.C.

Postcode:

U.S.A.

Contact person: MR. BODZIAK W.

Phone/Fax/Telex: 202-324 4450

3 Shipment details

Not all payment and service options are available in all countries.

Services

- [ ] DOCUMENT
- [x] WORLDWIDE PARCEL EXPRESS all de... tracks
- [ ] INTRA EC *(in free circulation)*
- [ ] EXPRESS DOCUMENT
- [ ] DOMESTIC
- [ ] WORLDMAIL — Airmail/Printed Matter specify
- [ ] OTHER SERVICE specify

Transport charges
If left blank sender pays transport charges

- [ ] Sender
- [ ] Cash / Cheque / Credit Card

For approved customers only

- [ ] External Billing Agreement
- [ ] Transport Collect

Shipment insurance *see reverse*

- [ ] YES [redacted]

Full description of contents

SOLES

RIF BOLLA DI ACCOMPAGNAMENTO

International Worldwide Parcel Express shipments only

Declared value give currency: 4117.500

Sender's VAT / GST no.

Harmonised commodity code *if applies*

Receiver's VAT / GST no. or EIN / SSN

Type of export: [ ] PERMANENT [ ] REPAIR/RETURN [ ] TEMPORARY

Destination duties / taxes *If left blank receiver pays duties / taxes*

[ ] Receiver [ ] Sender [ ] Other — *Specify destination approved account number*

4 Size and weight

No. of pieces	Weight
1	5. kg

Dimensions cm L x W x H: 33 45 25

VOLUMETRIC/CHARGED WEIGHT: kg

CODES	CHARGES
	Services
	Special
	Insurance
	Other/VAT
CURRENCY CODE	TOTAL

TRANSPORT COLLECT STICKER No.

[redacted]

PICKED UP BY: W 14

Route No.:

Time: 16/00

Date: 05-09-94

5 Sender's authorisation and signature

I/we agree that DHL's standard terms apply to this shipment and limit DHL's liability. The Warsaw Convention may also apply (see reverse). I/we understand that DHL does not transport cash or dangerous goods (see reverse).

Signature: [signature]

Date: 05.09.94

(*) Il mittente dichiara di accettare ... effettivo sia quello determinato elettronicamente da DHL in caso di discordanza con quello qui riportato.

7-2 (Rev. 2-21-91)

RECORDED
9/16/94
XXX

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

9/20/94

Date:

To: Los Angeles Police Department
555 Ramirez Street
Los Angeles, California 90012

b6 -1
b7C -1

FBI File No. 95A-HQ-1075008

Lab No. 40920013 D QJ

Reference: Airbill dated 9/16/94

Your No. 94-08-17431

Re: ORENTHAL J. SIMPSON - SUSPECT;
NICOLE SIMPSON,
RONALD GOLDMAN - VICTIMS;
HOMOCIDE

9/20/94

Specimens received: September 20, 1994

Specimens:

K32 8 X 10 photographs with subject and 8 X 10 photographs of enlargement of shoes of subject

Shoes depicted in
K32 photographs are different than the Bruno Magli shoes
of the U2887 outsoles. / Different size people + shoe style.

NO IDENT

b6 -3
b7C -3

7-2 (Rev. 2-21-91)

RECORDED
9/19/94
xxx

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

[redacted]

To: Los Angeles Police Department
555 Ramirez Street, SP. 270
Los Angeles, California 90012

Date:

FBI File No. 95A-HQ-1075008

Lab No. 40923001 D QJ

b6 -1
b7C -1

Reference: Air bill dated 9/17/94

Your No. 94-08-17431

Re: ORENTHAL J. SIMPSON - SUSPECT;
NICOLE SIMPSON,
RONALD GOLDMAN - VICTIMS;
HOMOCIDE

[redacted]

recd 9/23/94

Specimens received: September 23, 1994

Specimens:

One pair (1) U 2887 outsoles received from S.I.L.G.A. GOMMA, Civitanova Marche (MC), Italy, further described as follows:

K33 Left U 2887, size 46

K34 Right U 2887, size 46

ALSO SUBMITTED:

Five (5) page computer printout~~, list of distributors~~

K33/34 + A/S rate to [redacted] 1/15/95

b6 -1
b7C -1

A/S unpaid

K33/34 → Same as other Size 46 (12) Sole but black

(see 40915024)

3 of 7

FBI(24-cv-1564)-2935

7-2 (Rev. 2-21-91)

RECORDED
9/27/94
XXX

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

9/27/94
[redacted]

Laboratory Work Sheet

Date:

To: Los Angeles Police Department
555 Ramirez Street, SP. 270
Los Angeles, California 90012

b6 -1
b7C -1

FBI File No. 95A-HQ-1075008

Lab No. 40927003 S/D UJ QJ

Reference: Receipt dated 9/26/94

Your No. 94-08-17431

9/28/94

Re: ORENTHAL J. SIMPSON - SUSPECT;
NICOLE SIMPSON - VICTIM;
R ~~D~~ONALD GOLDMAN - VICTIM;
HOMICIDE

Specimens received: September 27, 1994

Specimens:

Q82 - Q83 Two (2) color photographs and negatives ~~relating~~ ~~to~~ of back of victim "Nicole Simpson"

Q82 Color Negative #2 Autopsy Photograph of Nicole Simpson (full shot)

Q83 Color negative #4 Autopsy photograph of close view of back of Nicole Simpson -

2 Natural Size + 2 8x10 prints to AFIP 9/28 → recd back via 11/21/94 letter → compare to scale / contours on back - enhanced copy sent by [redacted]

A pattern injury on victim Nicole Simpson's back (above the scale) was visually enhanced. The pattern area contains contours which are not unlike the contours + general size of the K28/29 heels. / too limited to further characterize or compare.

recd 9/27/94 from Kearney/Heatley
to to [redacted] 9/27/94 at Riverside

b6 -1
b7C -1

U.S. Department of Justice

Federal Bureau of Investigation

Washington, D. C. 20535

September 28, 1994

Major [redacted]
Armed Forces Institute of Pathology
CME
14th and Alaska Avenue, N.W.
Washington, D.C. 20306-6000

b6 -5
b7C -5

RE: ORENTHAL J. SIMPSON - SUSPECT;
NICOLE SIMPSON,
RONALD GOLDMAN - VICTIMS;
HOMOCIDE

Dear Major [redacted]

b6 -5
b7C -5

Enclosed are photographic prints made from the original negatives which depict a patterned area on the back of the victim:

Q83 Full frame print
Q83 Natural size of questioned area
Q82 Approximate natural size enlargement taken from a more distant photograph of victim's back

Also enclosed is a natural size photograph of a right outsole.

Please attempt to improve the visualization of the patterned area in question.

Sincerely,

[redacted]
FBI Laboratory

b6 -1
b7C -1

(Rev. 1-9-90)
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D. C. 20535

DATE: 9/28/94 Re: Simpson

TO: Major [redacted] b6 -5 b7C -5
Armed Forces Institute of Pathology
CME
14th and Alaska Avenue, N.W.
Washington, D.C. 20306-6000

RECEIVED
SEP 28 11 00 AM '94

FEDERAL EXPRESS

Invoice of Contents

Description of Contents:

Four (4) Photogtaphs

FBI File# 95A-HQ-1075008

Case# 40927003 D QJ

Your# _____

[X] Return to [redacted] b6 -1 b7C -1

Room 3372C TL _____

Ext. 4450

Shipping# _____

SHIPPING METHODS

Air Freight and Express Services

201 4117 743

[X] Overnight

[ ] 2-Day Standard Service

[ ] Saturday Delivery

[ ] Economy (2-3 Days Service)

[ ] Deferred (4-5 Days Service)

[ ] Mail Room: 1B327, TL 152
(registered mail)

[ ] FMSS - Supply Room, 1B353
(not registered)

Hazardous Materials Only

Weight of Hazardous Materials:

Packaged By _____
Signature

Date _____

All items listed above are contained in this package.

A detailed description items will be found in Bureau communication dated _____.

(SHIPPING HOURS - 9:00 A.M. TO 4:00 P.M.)

DEPARTMENT OF DEFENSE
ARMED FORCES INSTITUTE OF PATHOLOGY
WASHINGTON, DC 20306-6000

REPLY TO ATTENTION OF

11/23/98

PATIENT IDENTIFICATION		PLEASE USE AFIP ACCESSION NUMBER IN ALL CORRESPONDENCE
AFIP ACCESSION NUMBER 2471137-6	CHECK DIGIT	SEQUENCE 00
NAME Simpson, Nicole A-000-94 SURGICAL/AUTOPSY PATH ACCESSION #'S	SSAN	
PLEASE INFORM US OF ANY PATIENT IDENTIFICATION ERRORS		

b6 -1
b7C -1

[redacted]
Laboratory Division, Room 3372C
Federal Bureau of Investigation
10th St. and Pennsylvania Ave.
Washington, DC 20535

WRO/dl

DATE: 11-21-94

CONSULTATION REPORT ON CONTRIBUTOR MATERIAL

AFIP DIAGNOSIS:

Hon

~~41123018~~

Initially received are four photographic prints:
- Q83 full frame print,
- Q83 Natural size of questioned area,
- Q82 Enlargement of portion of a more distant photograph, and
- a greyscale print of the outsole of a shoe.

Later received are three other photographic prints, two in color of a rug, and one greyscale of a rug with the label "Luminol."

ORIGINAL
Copy & Specs Detached

A number of enhancement methods were applied to the prints. However, none of the manipulations were particularly useful to me; the marks on the body and rug are insufficient for diagnosis.

I am enclosing one processed image for your interest. Per your request, I am returning the prints to you. If you are able to come to any further conclusions, I would be very interested in any feedback you might be able to give me. Thank you for this interesting consult.

b6 -5
b7C -5

[redacted]
MAJ(P),MC, USA
Deputy Medical Examiner

[redacted]

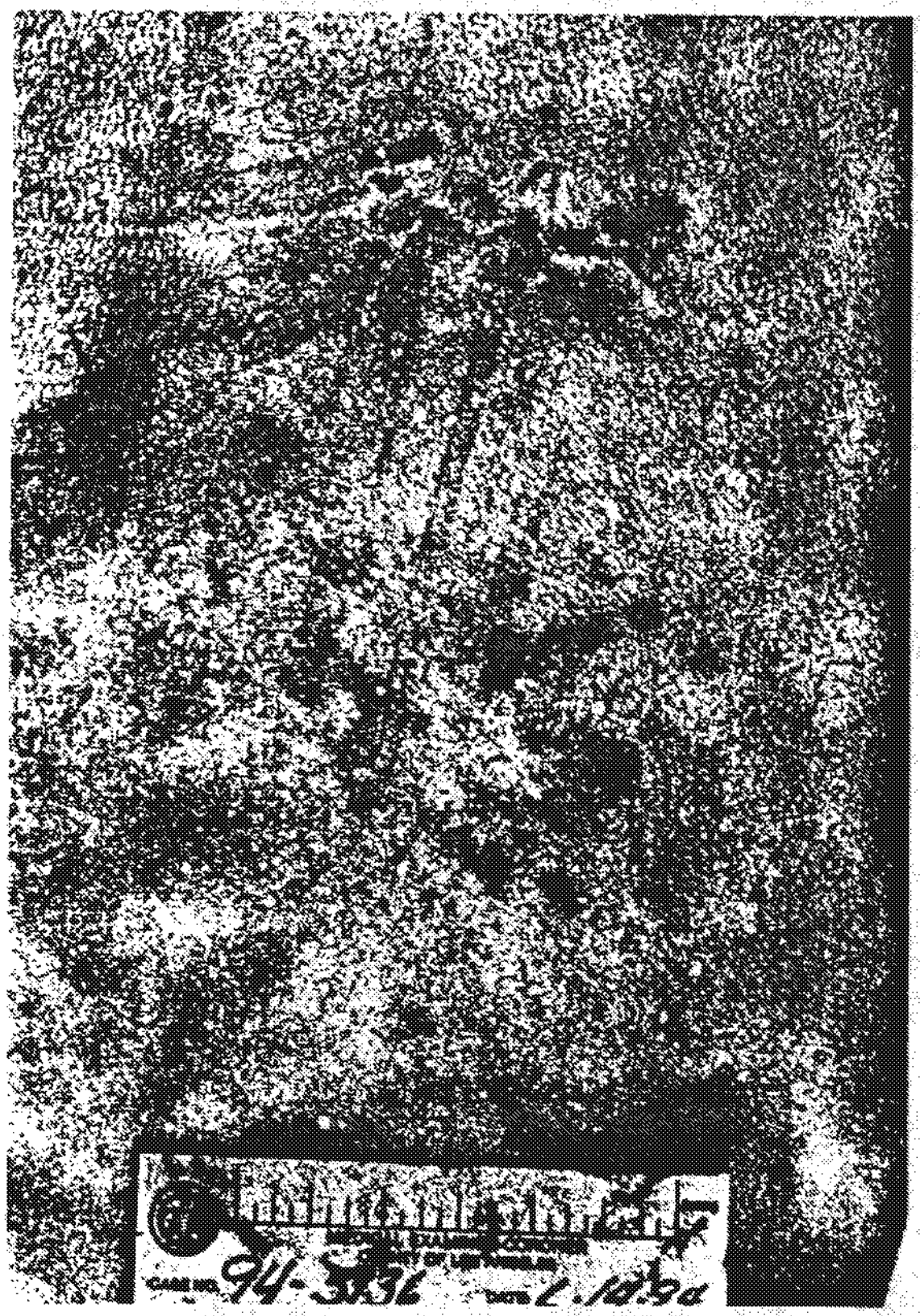
b6 -1
b7C -1

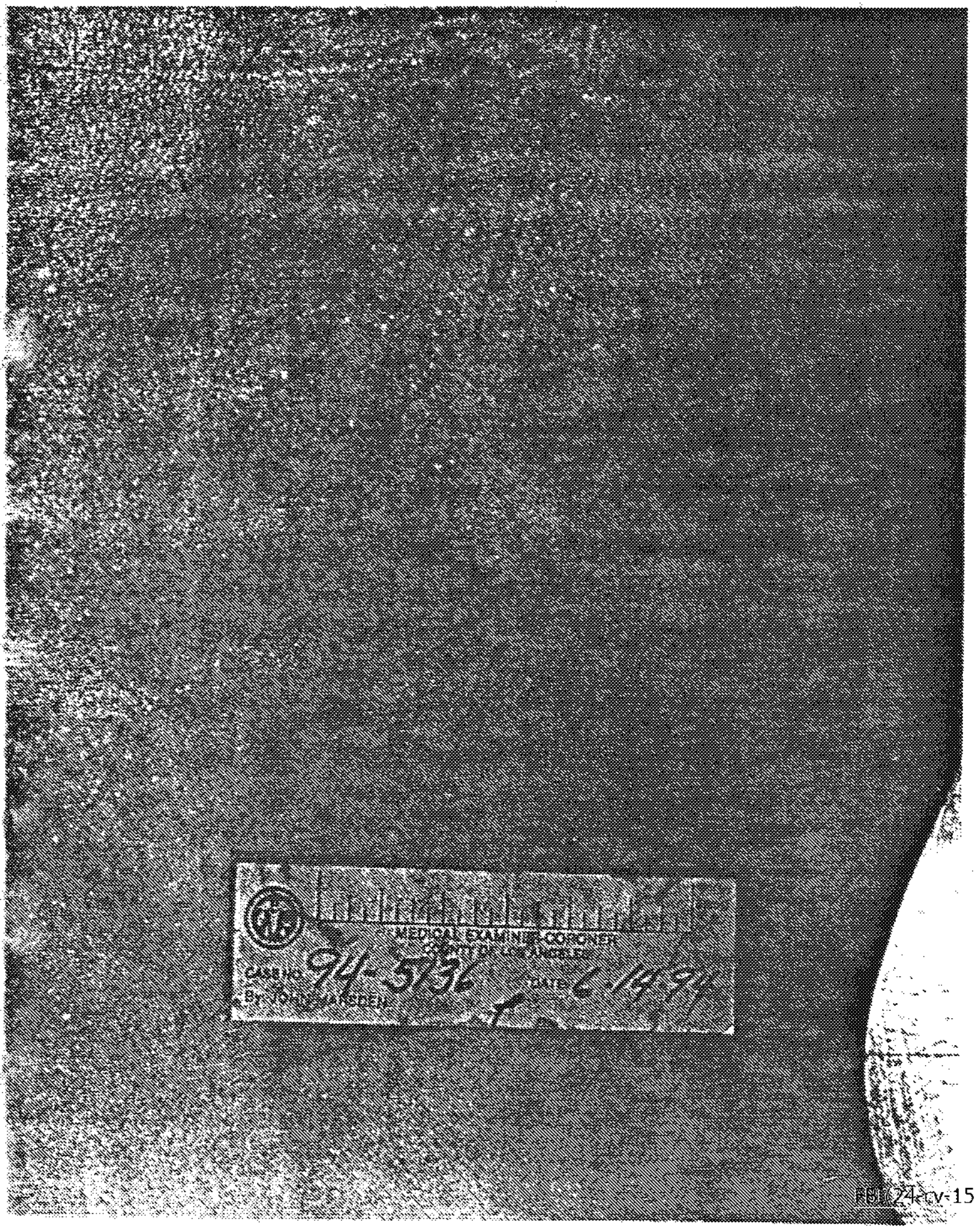
95A HQ-1075018-16

95A HQ-1075008

AFIP F/L 61
15 May 87

FBI LABORATORY
SPECIAL PHOTO UNIT
FBI
LABORATORY





7-2 (Rev. 2-21-91)

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

Date:

To: Los Angeles Police Department
555 Ramirez Street
Los Angeles, California 90012

FBI File No. 95A-HQ-1075008

Lab No. 41006015 S/D UJ QJ

Reference: Fax received 8/19/94

Your No. 94-08-17431

Re: ORENTHAL J. SIMPSON - SUSPECT;
NICOLE SIMPSON,
RONALD GOLDMAN - VICTIMS;
HOMOCIDE

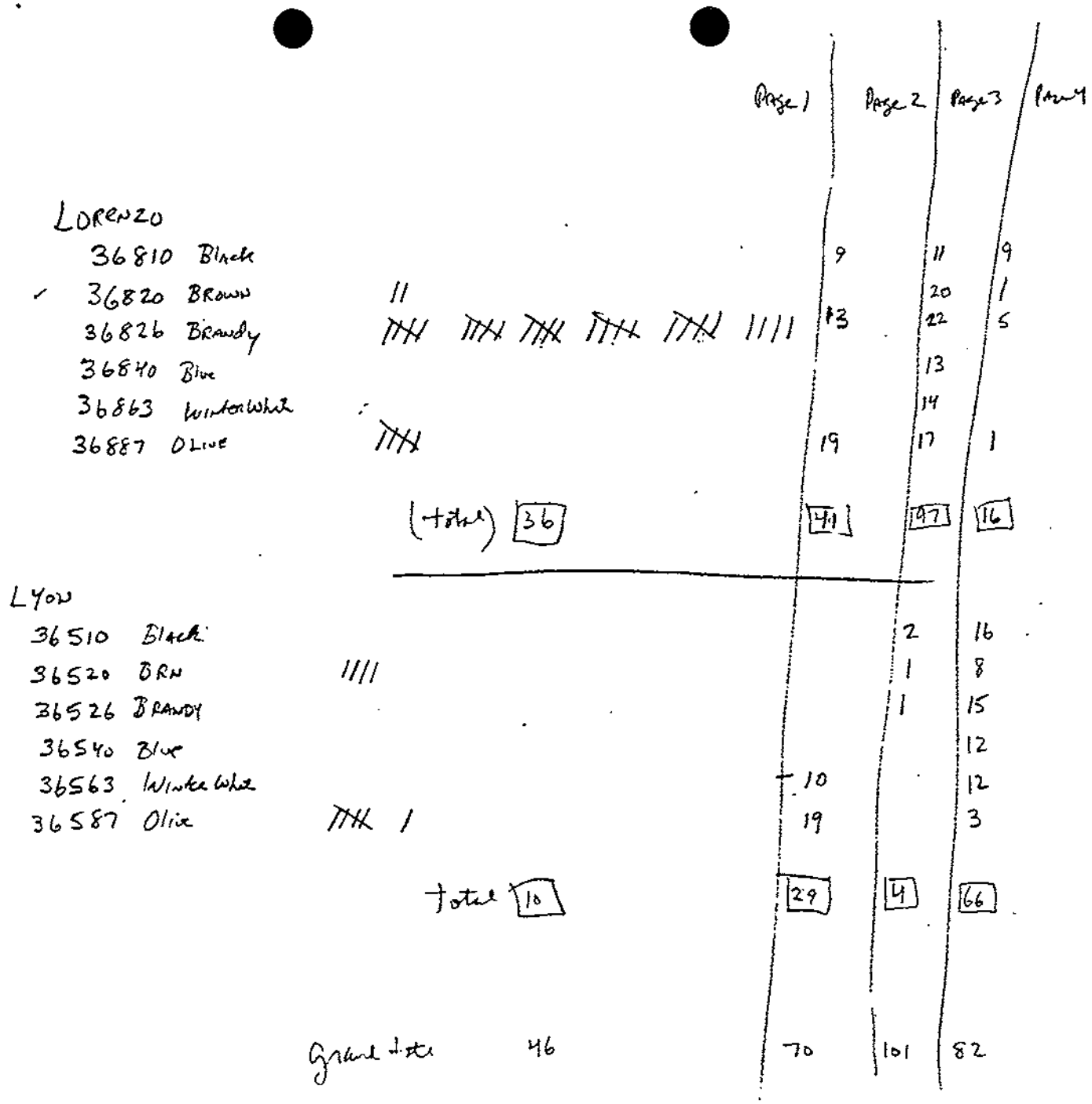
Specimens received: August 19, 1994

Specimens:

ALSO SUBMITTED:

Faxed list of shoe sales, received 8/19/94 from UMA Shoe Company

Faxed list received from UMA lists all stores to which the design of our shoe were distributed - either a lorenzo or lugo upper - size 12 + 13 [illegible] per request.



grand total 299 Size 12 "U2887" sole sks

LORENZO (high) - 190

LYON (Low) - 109

b6 -1,9
b7C -1,9,

(202)32

To: [redacted]

From: [redacted]

5 pages

page 1

Order	Date	Customer	Style	Size	Qty	Invoiced	[illegible]
81752	03/14/90	MARSHS -HUN	36520 M	12	1 of	12 080890	
81752	03/14/90	MARSHS -HUN	36520 M	12	1 of	12 080890	
81752	03/14/90	MARSHS -HUN	36520 M	12	1 of	12 080890	
81752	03/14/90	MARSHS -HUN	36520 M	12	1 of	12 080890	
82170	03/27/90	MADISON -NYO	36887 M	12	1 of	13 080990	
82170	03/27/90	MADISON -NYO	36887 M	13	1 of	13 080990	
82170	03/27/90	MADISON -NYO	36887 M	12	1 of	13 080990	
82170	03/27/90	MADISON -NYO	36887 M	13	1 of	13 080990	
82170	03/27/90	MADISON -NYO	36887 M	12	1 of	13 080990	
82170	03/27/90	MADISON -NYO	36887 M	13	1 of	13 080990	
82220	03/28/90	BETTINA -WOR	36820 M	12	1 of	8 100490	
82220	03/28/90	BETTINA -WOR	36820 M	12	1 of	8 100490	
82239	03/28/90	MADISON -NYO	36587 M	12	1 of	13 080990	
82239	03/28/90	MADISON -NYO	36587 M	13	1 of	13 080990	
82239	03/28/90	MADISON -NYO	36587 M	12	1 of	13 080990	
82239	03/28/90	MADISON -NYO	36587 M	13	1 of	13 080990	
82239	03/28/90	MADISON -NYO	36587 M	12	1 of	13 080990	
82239	03/28/90	MADISON -NYO	36587 M	13	1 of	13 080990	
82239	03/28/90	MADISON -NYO	36587 M	12	1 of	13 080990	
82239	03/28/90	MADISON -NYO	36587 M	13	1 of	13 080990	
82239	03/28/90	MADISON -NYO	36587 M	12	1 of	13 080990	
82239	03/28/90	MADISON -NYO	36587 M	13	1 of	13 080990	
82239	03/28/90	MADISON -NYO	36587 M	12	1 of	13 080990	
82239	03/28/90	MADISON -NYO	36587 M	13	1 of	13 080990	
82242	03/28/90	MADISON -NYO	36826 M	12	1 of	13 080990	
82242	03/28/90	MADISON -NYO	36826 M	13	1 of	13 080990	
82242	03/28/90	MADISON -NYO	36826 M	12	1 of	13 080990	
82242	03/28/90	MADISON -NYO	36826 M	13	1 of	13 080990	
82242	03/28/90	MADISON -NYO	36826 M	12	1 of	13 080990	
82242	03/28/90	MADISON -NYO	36826 M	13	1 of	13 080990	
83142	04/20/90	GONZALEZ-NBE STR.4 PLAZA LAS AMERICAS	36826 M	12	1 of	9 101290	
83142	04/20/90	GONZALEZ-NBE STR.4 PLAZA LAS AMERICAS	36826 M	12	1 of	9 101290	
83142	04/20/90	GONZALEZ-NBE STR.4 PLAZA LAS AMERICAS	36826 M	12	1 of	9 101290	
83142	04/20/90	GONZALEZ-NBE STR.4 PLAZA LAS AMERICAS	36826 M	12	1 of	9 101290	
83142	04/20/90	GONZALEZ-NBE STR.4 PLAZA LAS AMERICAS	36826 M	12	1 of	9 101290	
83142	04/20/90	GONZALEZ-NBE STR.4 PLAZA LAS AMERICAS	36826 M	12	1 of	9 101290	
83142	04/20/90	GONZALEZ-NBE STR.4 PLAZA LAS AMERICAS	36826 M	12	1 of	9 101290	
83142	04/20/90	GONZALEZ-NBE STR.4 PLAZA LAS AMERICAS	36826 M	12	1 of	9 101290	
83142	04/20/90	GONZALEZ-NBE STR.4 PLAZA LAS AMERICAS	36826 M	12	1 of	9 101290	
83142	04/20/90	GONZALEZ-NBE STR.4 PLAZA LAS AMERICAS	36826 M	12	1 of	9 101290	
83142	04/20/90	GONZALEZ-NBE STR.4 PLAZA LAS AMERICAS	36826 M	12	1 of	9 101290	
83142	04/20/90	GONZALEZ-NBE STR.4 PLAZA LAS AMERICAS	36826 M	12	1 of	9 101290	
83584	05/04/90	TAYMOR -BR3 BURLINGTON STR.	36826 M	12	1 of	7 082390	
83584	05/04/90	TAYMOR -BR3 BURLINGTON STR.	36826 M	12	1 of	7 082390	
83584	05/04/90	TAYMOR -BR3 BURLINGTON STR.	36826 M	12	1 of	7 082390	
83584	05/04/90	TAYMOR -BR3 BURLINGTON STR.	36826 M	12	1 of	7 082390	
83584	05/04/90	TAYMOR -BR3 BURLINGTON STR.	36826 M	12	1 of	7 082390	
83584	05/04/90	TAYMOR -BR3 BURLINGTON STR.	36826 M	12	1 of	7 082390	
83584	05/04/90	TAYMOR -BR3 BURLINGTON STR.	36826 M	12	1 of	7 082390	
83645	05/07/90	OXFORD -RID	36887 M	12	1 of	8 080890	
83645	05/07/90	OXFORD -RID	36887 M	12	1 of	8 080890	
84323	05/23/90	SAKS -YGT STR.20 CHICAGO	36826 M	12	1 of	11 080990	
84323	05/23/90	SAKS -YGT STR.20 CHICAGO	36826 M	12	1 of	11 080990	
84323	05/23/90	SAKS -YGT STR.20 CHICAGO	36826 M	12	1 of	11 080990	
84326	05/23/90	SAKS -YGT STR.42 FAIRLANE	36826 M	12	1 of	11 080990	
84326	05/23/90	SAKS -YGT STR.42 FAIRLANE	36826 M	12	1 of	11 080990	
84327	05/23/90	SAKS -YGT STR.28 TROY	36826 M	12	1 of	12 080990	
84327	05/23/90	SAKS -YGT STR.28 TROY	36826 M	13	1 of	12 080990	
84328	05/23/90	SAKS -YGS STR.23 CHEVY CHASE	36826 M	12	1 of	12 080990	

84328	05/23/90	SAKS	+YGS STR.23 CHEVY CHASE	36826	M	12	1 of	12	080990 [redacted]
84328	05/23/90	SAKS	+YGS STR.23 CHEVY CHASE	36826	M	13	1 of	12	080990
84328	05/23/90	SAKS	+YGS STR.23 CHEVY [illegible]SE	36826	M	[illegible]	1 of	12	080990
84328	05/23/90	SAKS	+YGS STR.23 CHEVY [illegible]SE	36826	M	[illegible]	1 of	12	080990
84329	05/23/90	SAKS	+YON STR.38 BERGEN COUNTY	36826	M	12	1 of	12	080990
84329	05/23/90	SAKS	+YON STR.38 BERGEN COUNTY	36826	M	13	1 of	12	080990
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85959	07/26/90	SAKS	-YON	36810	M	13	1 of	15	080990
86769	08/23/90	PARANZIN-CHA		36887	M	12	1 of	5	110190
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86769	08/23/90	PARANZIN-CHA		36887	M	12	1 of	5	110190
86769	08/23/90	PARANZIN-CHA		36887	M	12	1 of	5	110190
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86769	08/23/90	PARANZIN-CHA		36887	M	12	1 of	5	110190
86769	08/23/90	PARANZIN-CHA		36887	M	12	1 of	5	110190
86769	08/23/90	PARANZIN-CHA		36887	M	12	1 of	5	110190
86769	08/23/90	PARANZIN-CHA		36887	M	12	1 of	5	110190
86769	08/23/90	PARANZIN-CHA		36887	M	12	1 of	5	110190
86986	08/31/90	MADISON -NYO		36563	M	12	1 of	1	090490
86986	08/31/90	MADISON -NYO		36563	M	12	1 of	1	090490
86986	08/31/90	MADISON -NYO		36563	M	12	1 of	1	090490
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86986	08/31/90	MADISON -NYO		36563	M	12	1 of	1	090490
87662	09/20/90	MRSID	-NEW	36887	M	12	1 of	6	122690
87662	09/20/90	MRSID	-NEW	36887	M	12	1 of	6	122690
87662	09/20/90	MRSID	-NEW	36887	M	12	1 of	6	122690
87662	09/20/90	MRSID	-NEW	36887	M	12	1 of	6	122690

b6 -4
b7C -4

Order #	Date	Customer		
10029	07/18/91	SAKS	-YON	STORE 38 BERGEN COUNTY
10330	07/18/91	SAKS	-YON	STORE 38 [redacted]N COUNTY
10646	08/12/91	MADISON	-NYD	
10646	08/12/91	MADISON	-NYD	
11210	08/29/91	SAKS	-YOR	STR # 42 FAIRLANE DEPT 031
11210	08/29/91	SAKS	-YOR	STR # 42 FAIRLANE DEPT 031
11210	08/29/91	SAKS	-YOR	STR # 42 FAIRLANE DEPT 031
11210	08/29/91	SAKS	-YOR	STR # 42 FAIRLANE DEPT 031
12543	10/01/91	SHOEMART	-NOR	
12543	10/01/91	SHOEMART	-NOR	
12911	10/09/91	SAKS	-YON	STR # 1 NEW YORK DEPT 31
12959	10/10/91	SAKS	-YOR	STR # 42 DEPT 31
12961	10/10/91	SAKS	-YOR	STR # 20 CG DEPT 31
12974	10/10/91	SAKS	-YOR	STR 28 TROY DEPT 31
13239	10/17/91	BLOOMING	-NJK	STR # 1 N.Y. DEPT 540
13239	10/17/91	BLOOMING	-NJK	STR # 1 N.Y. DEPT 540
13718	10/31/91	SHOEMART	-NOR	
13877	11/05/91	SHOEMART	-NOR	
15059	12/11/91	UNWL	-DEN	
16505	01/27/92	BACHRACH	-DEC	
16736	02/04/92	WORLD	-MIA	BATT /ADVENTURA
16903	02/10/92	BECKS	-BEL	ATTN: NUBER
19728	04/22/92	MADISONO	-ORL	
19728	04/22/92	MADISONO	-ORL	
19728	04/22/92	MADISONO	-ORL	
19728	04/22/92	MADISONO	-ORL	
19728	04/22/92	MADISONO	-ORL	
19728	04/22/92	MADISONO	-ORL	
19728	04/22/92	MADISONO	-ORL	
20070	04/30/92	BACHRACH	-DEC	
21851	06/19/92	MADISONO	-ORL	
22481	07/17/92	JANE	-038	
24245	09/16/92	JANE	-038	
25456	10/22/92	LEVINE	-SEC	
25456	10/22/92	LEVINE	-SEC	
25456	10/22/92	LEVINE	-SEC	
25456	10/22/92	LEVINE	-SEC	
25456	10/22/92	LEVINE	-SEC	
26915	12/14/92	LEVINE	-SEC	
26915	12/14/92	LEVINE	-SEC	
27106	12/18/92	MADISON	-NYD	
27106	12/18/92	MADISON	-NYD	
27106	12/18/92	MADISON	-NYD	
30276	04/16/93	MADISONG	-GUR	
30276	04/16/93	MADISONG	-GUR	
31178	05/19/93	SYMS	-SEC	
31178	05/19/93	SYMS	-SEC	
31181	05/19/93	SYMS	-SEC	
31181	05/19/93	SYMS	-SEC	
31181	05/19/93	SYMS	-SEC	
31181	05/19/93	SYMS	-SEC	
31322	05/25/93	SYMS	-SEC	
31322	05/25/93	SYMS	-SEC	
32399	07/06/93	SYMS	-SEC	
91563	01/07/91	STERLING	-FTL	
92140	01/25/91	LEVINE	-SEC	
92140	01/25/91	LEVINE	-SEC	
92782	02/20/91	SAKS	-YON	STORE #1 DEPT. 31
92782	02/20/91	SAKS	-YON	STORE #1 DEPT. 31
[illegible]		[illegible]		

36826	M	12	1	of	12	071991
36826	M	[redacted]	1	of	12	071991
36810	M	12	1	of	10	081391
36887	M	12	1	of	10	081391
36840	M	12	1	of	14	083091
36840	M	13	1	of	14	083091
36887	M	12	1	of	11	083091
36887	M	13	1	of	11	083091
36887	M	12	1	of	8	122791
36887	M	13	1	of	8	122791
36826	M	12	1	of	4	101091
36826	M	12	1	of	2	101191
36810	M	12	1	of	2	101191
36826	M	12	1	of	1	101191
36820	M	12	1	of	4	101891
36820	M	13	1	of	4	101891
36820	M	12	1	of	1	111591
36810	M	12	1	of	1	122791
36826	M	12	1	of	1	121291
36840	M	12	2	of	24	021092
36840	M	12	1	of	1	020592
36863	M	13	1	of	1	021192
36810	M	12	3	of	30	042392
36820	M	12	1	of	14	042392
36820	M	13	1	of	14	042392
36840	M	12	4	of	17	042392
36826	M	12	1	of	14	042392
36826	M	13	1	of	14	042392
36887	M	12	1	of	13	042392
36840	M	12	1	of	1	050192
36526	M	12	1	of	23	062592
36840	M	12	1	of	1	072092
36820	M	12	1	of	1	091792
36887	M	12	7	of	44	102792
36820	M	12	4	of	36	102792
36820	M	13	1	of	36	102792
36863	M	12	4	of	37	102792
36863	M	13	1	of	37	102792
36887	M	12	3	of	22	121792
36810	M	12	2	of	21	121792
36810	M	12	1	of	9	122192
36887	M	12	1	of	8	122192
36826	M	12	1	of	11	122192
36820	M	12	1	of	9	041993
36840	M	12	1	of	7	041993
36810	M	12	1	of	25	082393
36820	M	12	10	of	93	082393
36840	M	12	2	of	28	062893
36840	M	13	2	of	28	062893
36863	M	12	10	of	98	062893
36863	M	13	2	of	98	062893
36826	M	12	13	of	164	082393
36826	M	13	9	of	164	082393
36887	M	12	2	of	9	082393
36826	M	12	1	of	5	010891
36510	M	12	1	of	12	012891
36520	M	12	1	of	12	012891
36810	M	12	1	of	4	022591
36826	M	12	1	of	2	022591
36510	M	12	1	of	1	022891

93140	03/04/91	SAKS	-YOR	STORE #23 - CHEVY CHASE	36826	M	12	1	of	3 030691
93143	03/04/91	SAKS	-YGT	STORE #4[redacted] FAIRLANE	36810	[redacted]	12	1	of	5 030691
93143	03/04/91	SAKS	-YGT	STORE #4[redacted] FAIRLANE	36826	M	13	1	of	5 030691
93158	03/04/91	SAKS	-YGT	STORE# 28 - TROY	36826	M	13	1	of	2 030691
93305	03/06/91	BRUNO	-PHO		36587	M	12	1	of	12 030791
93305	03/06/91	BRUNO	-PHO		36526	M	12	1	of	7 030791
93305	03/06/91	BRUNO	-PHO		36563	M	12	1	of	8 030791
93458	03/12/91	BRSTREET	-BRO		36820	M	12	1	of	1 031491
93675	03/18/91	BLOOMING	-NWK	STR. NY DEPT. 540	36810	M	12	1	of	8 031991
93835	03/20/91	MADISON	-NYO		36826	M	12	1	of	8 032791
93835	03/20/91	MADISON	-NYO		36887	M	13	1	of	6 032791
93851	03/20/91	CHERNIN	-CHI		36510	M	12	12	of	88 032191
93851	03/20/91	CHERNIN	-CHI		36510	M	13	1	of	88 032191
93851	03/20/91	CHERNIN	-CHI		36520	M	12	8	of	88 032191
93851	03/20/91	CHERNIN	-CHI		36520	M	13	2	of	88 032191
93851	03/20/91	CHERNIN	-CHI		36587	M	12	2	of	21 032191
93851	03/20/91	CHERNIN	-CHI		36587	M	13	1	of	21 032191
94595	04/08/91	SAKS	-YGT	STR. #20 DEPT. 31	36826	M	13	1	of	1 041091
94596	04/08/91	SAKS	-YGT	STR #42 FAIRLANE	36826	M	12	1	of	1 041091
95102	04/19/91	BLOOMING	-NWK	STR # NEW YORK DEPT 540	36887	M	12	1	of	17 083091
95102	04/19/91	BLOOMING	-NWK	STR # NEW YORK DEPT 540	36887	M	13	1	of	17 083091
95379	04/26/91	MADISONO	-ORL		36510	M	12	2	of	60 100191
95379	04/26/91	MADISONO	-ORL		36510	M	13	1	of	60 100191
95379	04/26/91	MADISONO	-ORL		36540	M	12	6	of	59 100191
95379	04/26/91	MADISONO	-ORL		36540	M	13	1	of	59 100191
95379	04/26/91	MADISONO	-ORL		36563	M	12	5	of	52 100191
95379	04/26/91	MADISONO	-ORL		36563	M	13	1	of	52 100191
95379	04/26/91	MADISONO	-ORL		36526	M	12	7	of	52 100191
95379	04/26/91	MADISONO	-ORL		36526	M	13	2	of	52 100191
96427	05/21/91	SAKS	-YON	STORE 38 DEPT 31 BERGEN	36810	M	12	1	of	10 080891
96427	05/21/91	SAKS	-YON	STORE 38 DEPT 31 BERGEN	36826	M	12	1	of	10 080891
96427	05/21/91	SAKS	-YON	STORE 38 DEPT 31 BERGEN	36826	M	13	1	of	10 080891
96435	05/21/91	SAKS	-YGT	STORE 28 DEPT 31 TROY	36810	M	12	1	of	9 080891
96439	05/21/91	SAKS	-YGT	STORE 39 DEPT 31 FRONTENAC	36810	M	12	1	of	9 080891
96439	05/21/91	SAKS	-YGT	STORE 39 DEPT 31 FRONTENAC	36826	M	12	1	of	10 080891
96847	06/03/91	BLOOMING	-NWK	NEW YORK DEPT 540	36810	M	12	1	of	5 060491
96970	06/05/91	LEVINE	-SEC		36526	M	12	1	of	14 060691
96970	06/05/91	LEVINE	-SEC		36540	M	12	1	of	14 060691
96970	06/05/91	LEVINE	-SEC		36563	M	12	1	of	8 060691
97070	06/07/91	AIR	-WES		36810	M	12	1	of	7 100391
97289	06/14/91	CENTURY	-NYO		36510	M	12	2	of	32 061791
97607	06/24/91	MARTY	-SEC	LYON-BLACK-BRANDY-BLUE-WINTER WHITE	36526	M	12	6	of	42 062591
97607	06/24/91	MARTY	-SEC	LYON-BLACK-BRANDY-BLUE-WINTER WHITE	36526	M	13	2	of	42 062591
97607	06/24/91	MARTY	-SEC	LYON-BLACK-BRANDY-BLUE-WINTER WHITE	36540	M	12	5	of	49 062591
97607	06/24/91	MARTY	-SEC	LYON-BLACK-BRANDY-BLUE-WINTER WHITE	36540	M	13	2	of	49 062591
97607	06/24/91	MARTY	-SEC	LYON-BLACK-BRANDY-BLUE-WINTER WHITE	36563	M	12	5	of	50 062591
97607	06/24/91	MARTY	SEC	LYON-BLACK-BRANDY-BLUE-WINTER WHITE	36563	M	13	1	of	50 062591
97659	06/25/91	MARTY	-SEC	ARDEN-BLACK-BLUE-WHITE-ORLY-BROWN-STAFFORD BRW-TAN	36563	M	13	1	of	1 062691
98103	07/15/91	STYLEBAT	-PIT		36810	M	12	1	of	5 071691

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FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

Date:

To: Los Angeles Police Department
555 Ramirez Street
Los Angeles, California 90012

FBI File No. 95A-HQ-1075008

Lab No. 41006016 S/D UJ QJ

Reference: Communication received August 30, 1994

Your No. 94-08-17431

Re: ORENTHAL J. SIMPSON - SUSPECT;
NICOLE SIMPSON,
RONALD GOLDMAN - VICTIMS;
HOMOCIDE

Specimens received: August 30, 1994

Specimens:

ALSO SUBMITTED:

Fax received 8/30/94 from UMA Shoe Company with list of stores and addresses

8/30/94 - Sc 41006015

BRUNO MAGLI

Post-it™ Fax Note 7671 | Date 8/30/94 | # of pages ▶ 4
To | From
Co./Dept. | Co.
Phone # | Phone (201) 438-7733
Fax # 202 324-1094 | Fax #

b6 -1,9
b7C -1,9

MARSHS HUN
MARSH'S MENS AND BOYS
268-274 MAIN STREET
HUNTINGTON, NY 11743

MADISON NYO
BRUNO MAGLI- NEW YORK (CLOSED)
535 MADISON AVE.
NEW YORK, NEW YORK 10022
now at 5th Avenue + 54th Street

BETTINA WOR
BETTINA ORIGINALS
ESSEX GREEN PLAZA
W. ORANGE, NJ 07052

OXFORD RID
OXFORD STREET ELIAS DABIT
HIGHLAND VILLAGE,STE.#145
4500-I55N
JACKSON, MS 39211

SAKS YGT STR.20 CHICAGO
SAKS FIFTH AVE.
669 N. MICHIGAN AVE.
CHICAGO, IL 60611

SAKS YGT STR.42 FAIRLANE
SAKS FIFTH AVE.
FAIRLANE TOWN CENTER
DEARBORN, MI 48126

SAKS YGT STR.28 TROY
SAKS FIFTH AVE.
2901 W BIG BEAVER RD.
TROY, MI 48084

SAKS YGS STR.23 CHEVY CHASE
SAKS FIFTH AVE.
5555 WISCONSIN AVE.
CHEVY CHASE, MD 20815

SAKS YON STR.38 BERGEN COUNTY
SAKS FIFTH AVE.
380 HACKENSACK AVE.
HACKENSACK, NJ 07601

SAKS YON
SAKS FIFTH AVE. (DO NOT HAVE EXACT STORES)
MENS SHOE DEPT.031
555 TUCKAHOE RD.
YONKER, NY 10710

7-2 (Rev. 2-21-91)

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

To: Los Angeles Police Department
555 Ramirez Street
Los Angeles, California 90012

Date:

FBI File No. 95A-HQ-1075008

Lab No. 41006017 S/D UJ QJ

Reference: UPS receit dated August 19, 1994

Your No. 94-08-17431

Re: ORENTHAL J. SIMPSON - SUSPECT;
NICOLE SIMPSON,
RONALD GOLDMAN - VICTIMS;
HOMOCIDE

[redacted]
8/19/94

b6 -1
b7C -1

/ Specimens received: August 19, 1994

Specimens:

/ K-35 Right BRUNO MAGLI "Lorenzo" style shoe, size 12, style number 36840.

/ K-36 Right BRUNO MAGLI "Lyon" style shoe, size 9 1/2, style number 36540.

impression of K35/36 obtained from UMA/Bruno Magli - remain fm '90-'92 stock -
K35, size 12 utilizes Eur 46 outsole supplied by Sigi / K36 - Eur size 42 sole
K-35 Lorenzo - high heel counter
K36 - Lyon - low heel counter

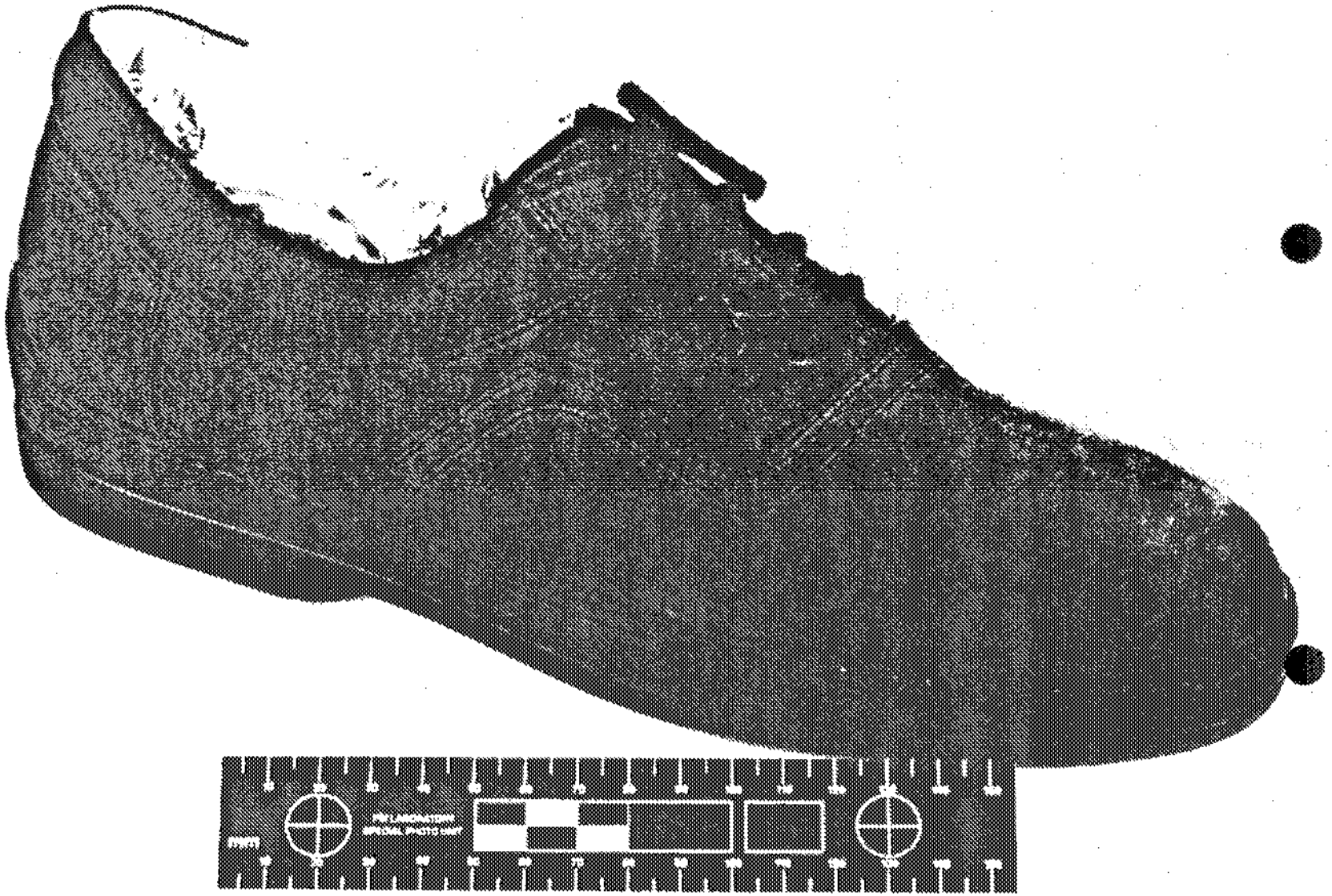
K35/36 retail - $160 recommended retail value/now sell at retail

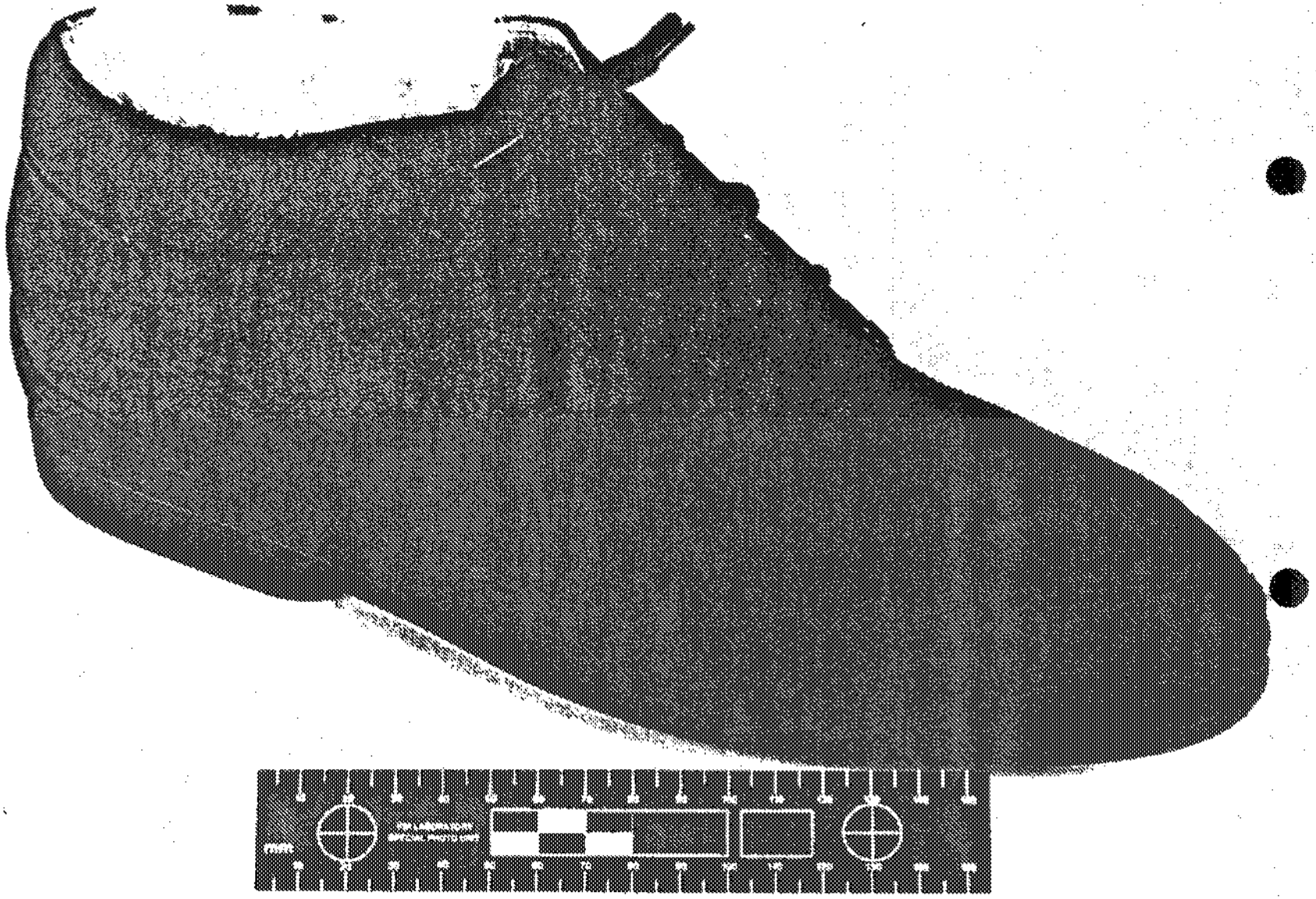
received K35/K36 from UMA/ Bruno Magli 08/19/94

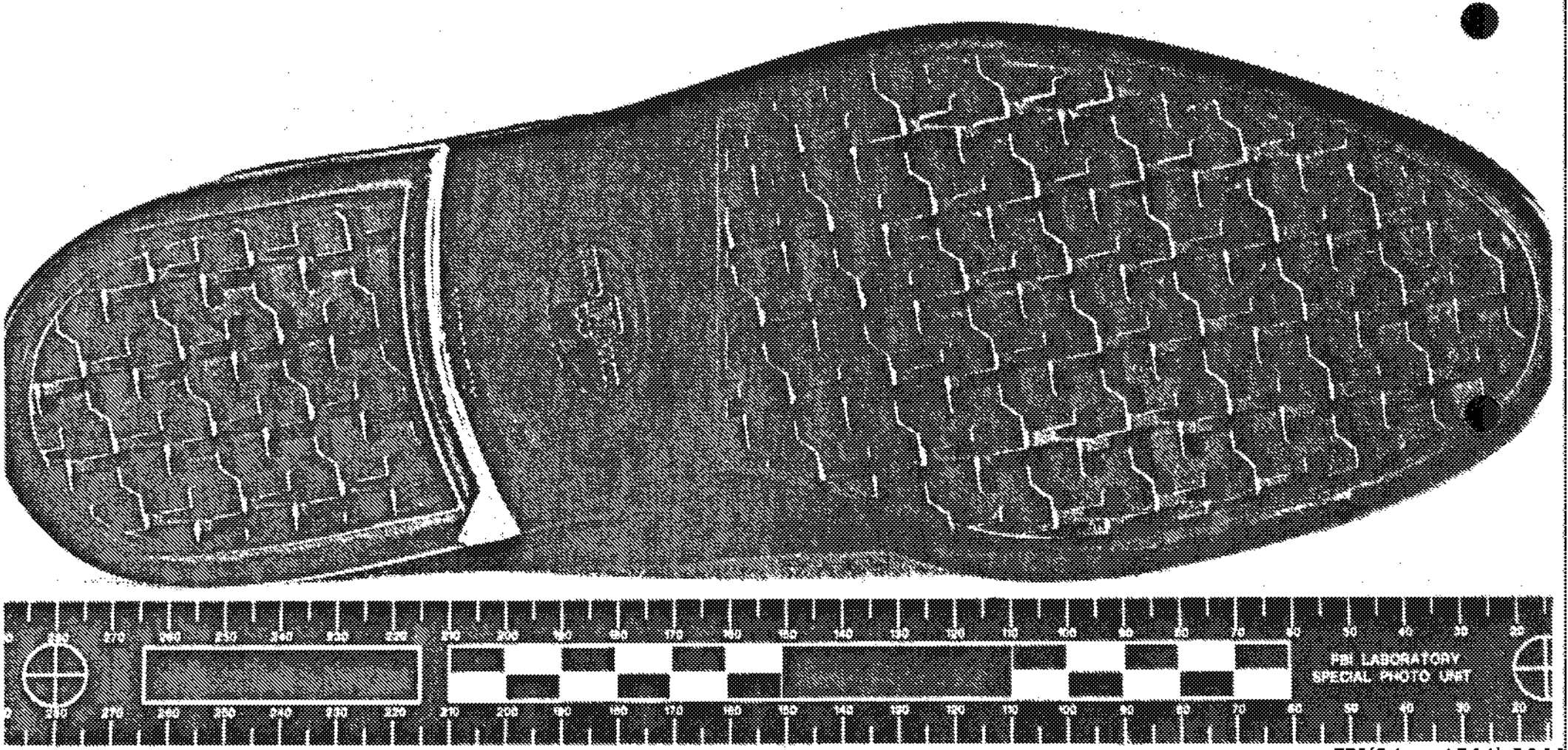
K35 piece of shoelace to Deadwire case worksheet /

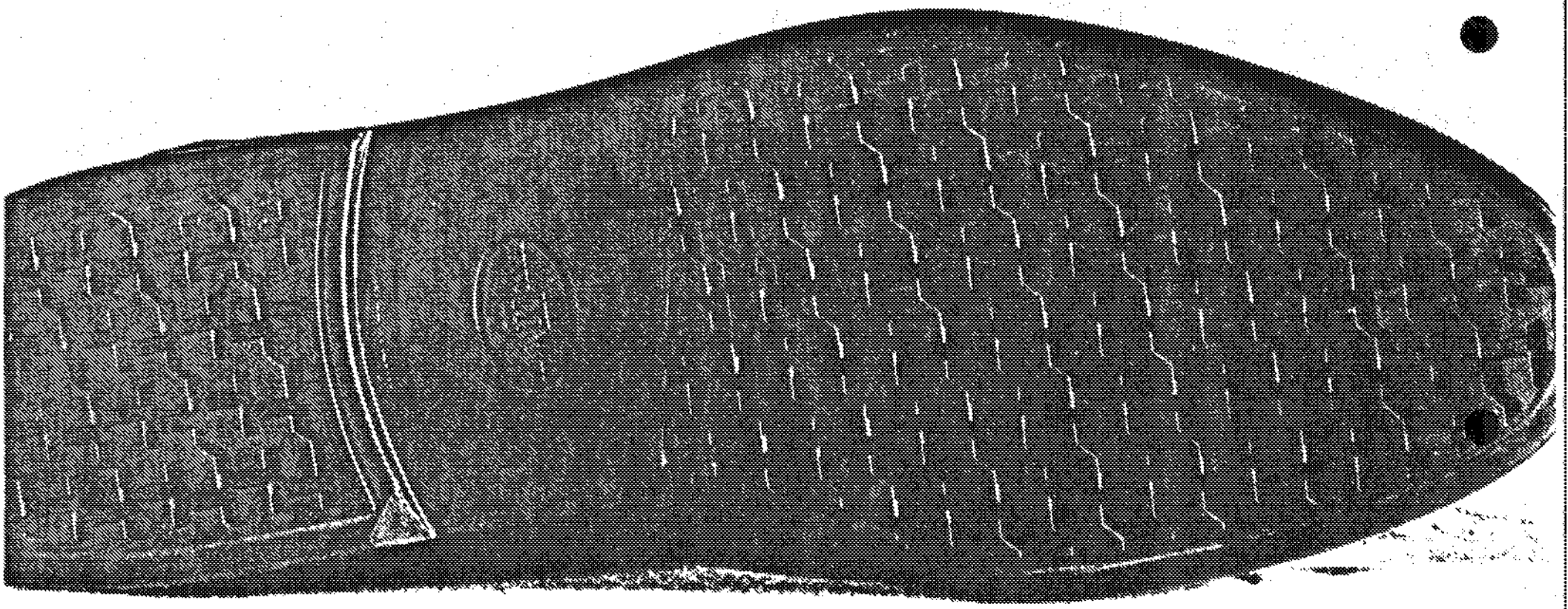
b6 -1
b7C -1

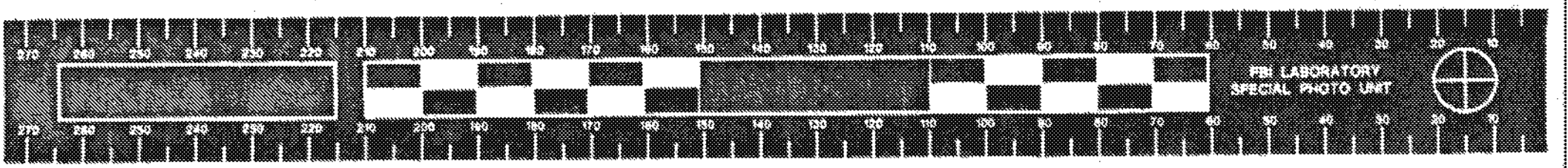
recd 8/19/94 [redacted]






FBI LABORATORY
SPECIAL PHOTO UNIT




FBI LABORATORY
SPECIAL PHOTO UNIT

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FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

To: Los Angeles Police Department
555 Ramirez Street
Los Angeles, California 90012

Date:

FBI File No. 95A-HQ-1075008

Lab No. 41018001 D UJ QJ

Reference: Communication received 10/14/94

Your No. 94-08-17431

Re: ORENTHAL J. SIMPSON - SUSPECT;
NICOLE SIMPSON;
RONALD GOLDMAN - VICTIMS;
HOMOCIDE

received 10/14/94 expressmail

[redacted]

b6 -1
b7C -1

to UJ on 1/10/95

Specimens received: October 14, 1994

Specimens:

✓ ~~Q-87~~	One 3 x 5 inch photograph, labeled P#1627, of dress, item #86
✓ Q-88	Four 3 x 5 inch photographs, labeled P#1623 through P#1626 of dress, item #86
✓ ~~Q-89~~	Five 3 x 5 inch photographs, labeled P#1628 through P#1632, of jeans, item #79
✓ ~~Q-90~~	Twenty-one 3 x 5 inch photographs, labeled P#1154 through P1174, of jeans, item #79
✓ ~~Q-91~~	Five 3 x 5 inch photographs, labeled P#1175 through P#1179, of white socks, item #80
✓ ~~Q-92~~	Eighteen 3 x 5 inch photographs, labeled P#1180 through P#1197, of clothing item #81.

1/20/95 photo'd 287-Q88 CF#1054

b6 -1
b7C -1

= K37 + Q87-99 for reference purposes / no separate examination performed.

Q... 99 all 3x5" photos No color ... (...)

12/18/94
Per ... ... , ... full set of color ... ... to be ... [redacted]

Q-93 Six 3 x 5 inch photographs, labeled P#1198 through P#1203, of dress, item #86.

Q-94 Three 3 x 5 inch photographs, labeled P#1204 through P#1206 of underwear, item #87.

Q-95 Seven 3 x 5 inch photographs, labeled P#36 through P#42, of victim SIMPSON and adjacent tiled walkway

Q-96 Thirteen 3 x 5 inch photographs, labeled P#45 through P#57 of footwear impressions on tiled walkway.

Q-97 Six 3 x 5 inch photographs, labeled P#62 through P#67, of footwear impressions on steps

Q-98 Three 3 x 5 inch photographs, labeled P#70 through P#72, of steps

Q-99 Twenty 3 x 5 inch photographs, labeled P#368 through P#386 and P#390, of footwear impressions on walkway

K-37 Twenty five 3 x 5 inch photographs labeled P1040 through P1063, of PATAUGAS boots of victim GOLDMAN, European size 44, US size 11 item #78

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FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

To: Los Angeles Police Department
555 Ramirez Street, SP. 270
Los Angeles, California 90012

Date:

FBI File No. 95A-HQ-1075008

Lab No. 41019001 D/S UJ QJ

Reference: Examination at Los Angeles Police Department
September 1, 1994

Your No. 94-08-17431

Re: ORENTHAL J. SIMPSON - SUSPECT;
NICOLE SIMPSON - VICTIM;
RONALD GOLDMAN - VICTIM;
HOMOCIDE

full exam 8/31→9/2/94

10/19/94
[redacted]

b6 -1
b7C -1

Specimens received: September 1, 1994

Specimens:

Q-100 Photographs of luminol processing of floor mat, item #33, on September 1, 1994 and accompanying photographic log.

Q-101 Color photographs of carpet and Leuco Crystal Violet processing of floor mat, item #33, on September 1, 1994 and accompanying photographic log.

attempts to further enhance impressions on Q100 + Q101 (ARP) negatives -

Q100 too limited for analysis of impressions

Q101 reflects some pattern, attempts to position/associate it with 02887 design on negative - however, some of the pattern reflects a curvature similar to the 02887 sole. Insufficient detail to be conclusive.

note: (photos of carpet Q173-201 do not reflect suff detail to enable any further comparison result)

Copies of Q100-Q101 photos to Deadman on 10/19/94 for return to LA.

Unable to obtain any impressions/analysis for carpet.

FBI(24-cv-1564)-2972

8/31/94 at LAPD Lab

took 2 sets of photographs of possible shoes with Bruno Magli information to Michele Kestler

sent tentative schedule for 9/1/94 processing of carpet.

9/1/94 Processed carpeting from Ford Bronco — (see photo log)

9/1/94 at LAPD Laboratory 555 Ramirez Street

met with Inv [redacted], Phil VANATTER, [redacted], Michele Kestler b6 -3,6 b7C -3,6

& [redacted] - Personal photographs of the impressions at scene, on envelopes at scene

Carpeting cut from the Ford Bronco - LAPD item # 33 was fumed with

2% Sulphosalicylic acid / dried 1 hour / Positioned for luminol photography -

Photographed in position twice, existing light 1/4 sec F16 ASA 3200

(Plumb scale 152mm = 6" apart) / Carpet divided by covering one half

Luminol shot of 1st section of item 33 w/3200 ASA F 5.6 Shutter B (open)

Present were [redacted] b6 -3 b7C -3

1st exposure - total darkness 2 15

2nd exposure - 2 15 w/ alternate light

3rd exposure 2 15 total darkness

Videotaped by [redacted]

Luminol shot of 2nd section (1st section left uncovered)

(2 shots 3200 ASA F16 1/4 sec with existing light taken first)

1st exposure w/luminol 3 minutes (total dark)

2nd exposure 3 min (w/ Alternate light)

For luminol processing only - present were [redacted] b6 -3 b7C -3

& Ron Ragusa (LAPD)

2 hours drying -

Photographed entire carpet #33 with color 120 film

treated with Leuco Crystal Violet (spray)

reaction with 2 areas plus some spots

Photo in color w/ 120 after 30 min drying.

9/1/94 at LAPD lab

in addition to processing item # 33 (cont'd)

viewed item #39 envelope w/ glass - contains partial sp in blood

item # 18 - Reebok shoes of Simpson - are different design than questioned impressions
US size 12

item #79 Blue jeans of Goldman - numerous blood stains - item has 2 Sp -
partial heel - partial sole

item #86 Black dress of Nicole Simpson - blood stains on back - possible impression -
needs photographic enhancement -
possibly chemical enhancement

PHOTOGRAPHIC LOG

SEPTEMBER 1, 1994 AT LOS ANGELES POLICE DEPT. LAB.

BLACK AND WHITE, T-MAX 3200
PHOTOGRAPHY OF CARPETING, ITEM #33

FRAME #1 CAMERA OPERATION TEST

FRAME #2 GRAY SCALE AND DATE
FRAME #3 " " " " " "

FRAME #4 COPY SHOT 1ST HALF OF CARPET
FRAME #5 " " " " " "

FRAME #6 2 MINUTE, 15 SEC EXPOSURE, TOTAL DARKNESS W/LUMINOL
FRAME #7 2 MINUTE, 15 SEC. EXPOSURE, TOTAL DARKNESS/W LUMINOL AND ATTENUATED LIGHT
FRAME #8 2 MINUTE, 15 SEC EXPOSURE, TOTAL DARKNESS W/LUMINOL

FRAME #9 RECORD SHOT OF 2ND HALF OF CARPET
FRAME #10 RECORD SHOT OF 2ND HALF OF CARPET

FRAME #11 3 MINUTES, TOTAL DARKNESS, W/ LUMINOL
FRAME #12 3 MINUTES, TOTAL DARKNESS, W/ LUMINOL W/ATTENUATED LIGHT

END OF BLACK AND WHITE LUMINOL PHOTOGRAPHY

KODAK PRO 400; 120MM FILM COLOR
TAKEN AFTER ABOVE LUMINOL PROCEDURE W/60MM LENS

FRAME #1 RECORD COPY SHOT
FRAME #2 RECORD COPY SHOT

PROCESS WITH LEUCO CRYSTAL VIOLET (LCV)

FRAME #3 COLOR SHOT OF LCV (WET)
FRAME #4 COLOR SHOT OF LCV (WET)

FRAME #5 COLOR SHOT OF LCV (DRY)
FRAME #6 COLOR SHOT OF LCV (DRY)

WITH 80MM LENS
CLOSEUP OF IMPRESSIONED AREA

END OF COLOR PHOTOGRAPHS
FRAME #7 COLOR SHOT OF LCV
FRAME #8 COLOR SHOT OF LCV
FRAME #9 COLOR SHOT OF LCV
FRAME #10 COLOR SHOT OF LCV

b6 -1
b7C -1

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RECORDED
10/26/94
nrl

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

10/26/94
[redacted]

b6 -1
b7C -1

To: The Honorable Lance A. Ito
Criminal Courts Building
Department 103
210 West Temple Street
Los Angeles, California 90012

Date:

FBI File No. 95A-HQ-

Lab No: 41026003 S/D UJ QJ

Reference: Communication dated October 26, 1994

Your No.

Re: ORENTHAL J. SIMPSON - SUSPECT;
NICOLE SIMPSON AND RONALD GOLDMAN - VICTIMS;
HOMICIDE

10/26/94
10/15/94

Specimens received: October 26, 1994

Specimens personally delivered by Detective Philip L. Vannatter on October 26, 1994:

Q102 Jeans (#79)

Q103 Dress (#86)

Q104 Glass microscope slide (#332)

RESUBMITTED ITEMS FROM FBI LABORATORY NUMBER 40808026 S/D UJ QJ:

Q8A-Q8C Containers

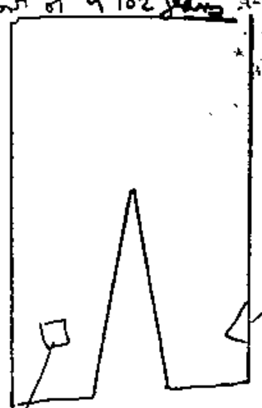
Q8B1 Glass microscope slide

recd Q102/103 10/26/94
& retd 10/28/94

(see photos Q102/103)

10/26/94

front of Q102 jeans



heel impression shape + size correspond w/ heel as best can be compared; curvature of front of heel slightly different (pos on body + curved surface need further)

possible fine impression U2817 design - too limited to further exam

No other fine impressions clearly noted on Q102

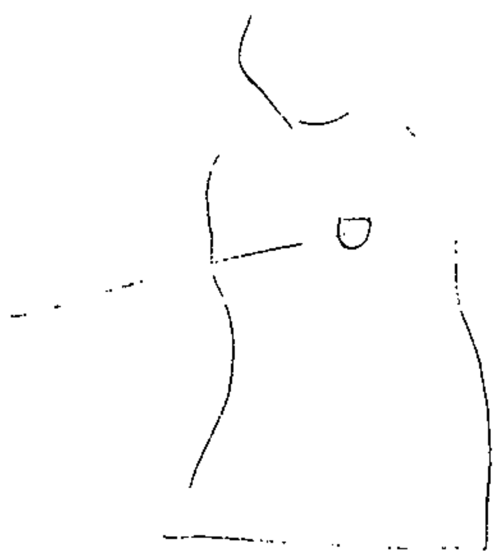
receive jeans + dress (Q102-103) from [redacted] / VanAtter 10/26/94

b6 -1
b7C -1

to Special Photo 10/26

retd. 10/26/94 to [redacted] / VanAtter

partial impression: front of Q103 dress correspond with the contour of the left heel - lacks outline detail for more detailed comparison



Q103 dress

Copy shots front + back - UPS film
fluorophoto select area #47 Blue filter T-100 + D-11.
2 area on dress photo IR film + 29 red filter + Cornsgetry
Six photo dress - soft light box T-max 400 D-11 + UPS color film

Evidence Receipt (to be used in lieu of correspondence covering evidence submissions to the Laboratory)
FL-16 (Rev. 4-7-82)

Please Furnish Complete Information

Agency submitting evidence		Date
Los Angeles Police Dept.	☐ FBI ☐ Federal ☑ Local or State	10/26/94
		Laboratory #
Delivered by	Accepted by	BuFile #
		95A - HQ -

Suspect(s)	Victim(s)
ORENTHAL J. SIMPSON	NICOLE SIMPSON RONALD GOLDMAN
Offense: Homicide Agency case #	Place and date of offense

Date of hearing, grand jury, trial, or reason why expeditious handling is necessary

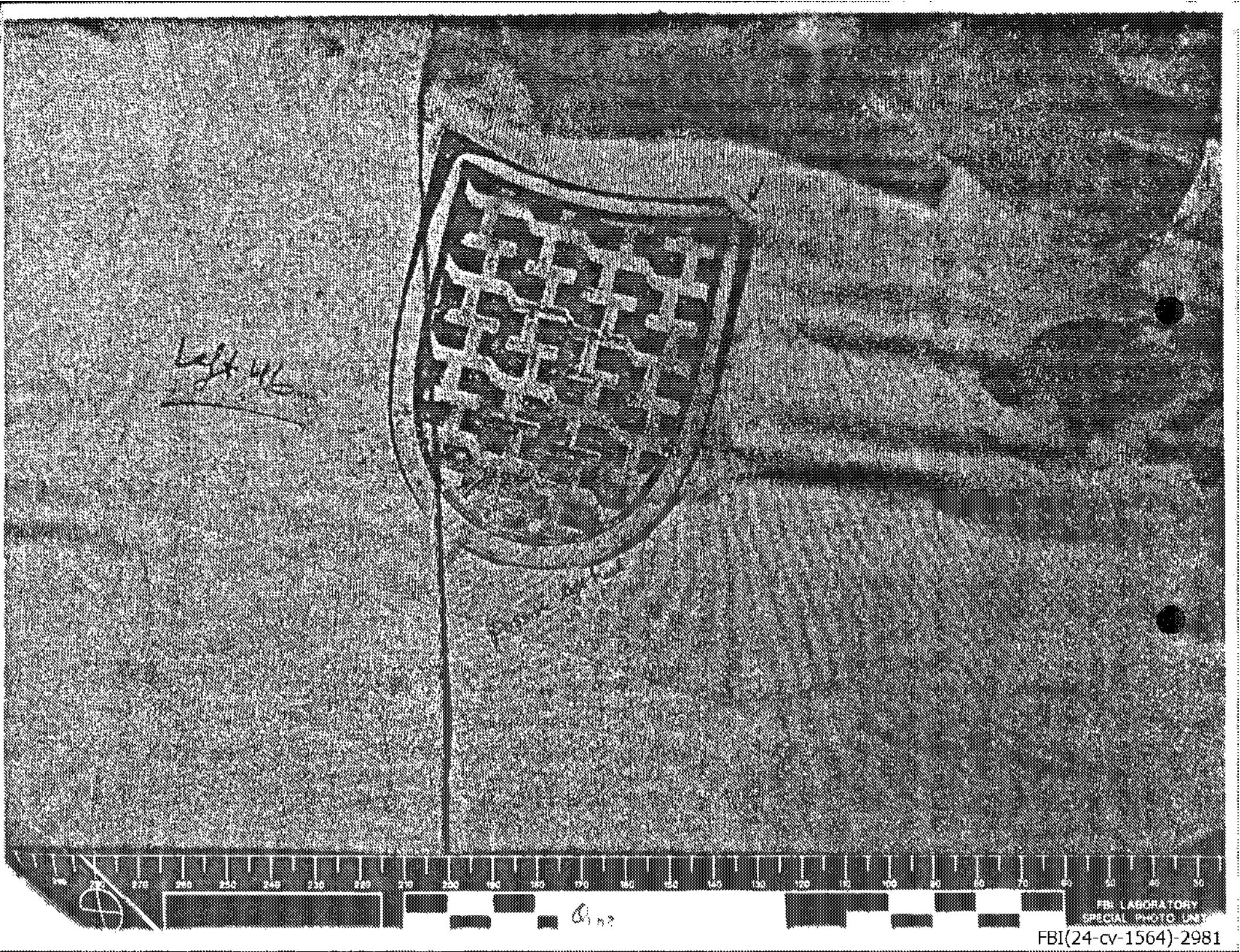
Prev. exams this case	Evid. located	Report to be directed to
☑ Yes ☐ No	Room # 3931	

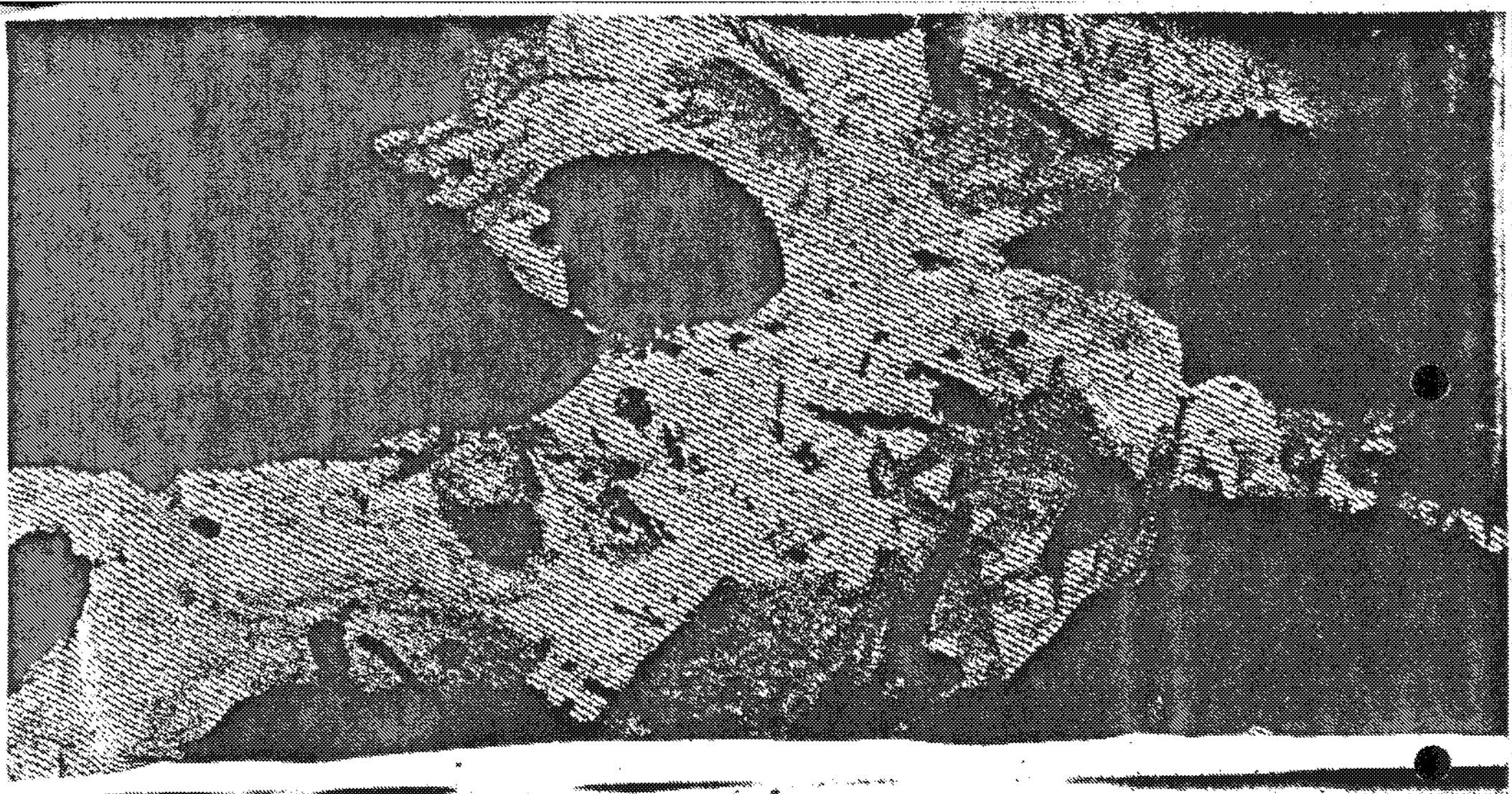
Copies to	Evidence to be returned to
	☐ Mailed Back ☑ Picked Up by Contributor

Brief Facts covering case

Description of evidence	Exams requested
	(This space for blocking)

(Use reverse side if necessary for additional evidence)


FBI LABORATORY
SPECIAL PHOTO. UNIT



FBI LABORATORY
SPECIAL PHOTO UNIT

Q-- 102

FBI
LABORATORY

T-MAX 100 w/ D-11 Blue 47 filter

FBI LABORATORY
SPECIAL PHOTO UNIT

Q-- 102

FRONT RIGHT LEG

7-2 (Rev. 2-21-91)

b6 -1,6
b7C -1,6

RECORDED
11/14/94
xxx

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

11/14/94
1 - [redacted]
(1) - [redacted]

To: Detective [redacted]
City of LA Police Department
150 N. Los Angeles Street
Los Angles, California 90012

Date:

FBI File No. 95A-HQ-1075008

Lab No. 41114001 S/D UJ, QJ

Reference: Federal Express #6303571234

Your No.

b6 -1
b7C -1

[redacted]

Re: ORENTHAL J. SIMPSON - SUBJECT;
NICOLE BROWN SIMPSON,
RONALD GOLDMAN - VICTIMS;
HOMICIDE

recd 11/14/94

Specimens received: November 14, 1994

Specimens:

Q105-116 Twelve (12) color photographs of footwear impressions

Q117-146 Thirty (30) color photographs of general crime scene and footwear impressions

Q147 Black/White photograph of sidewalk depicting footwear impressions

Q105 → Q50+69 ; Q102 → Q51, Q70 / Q107 → Q52, 71, 72, 108, 110 /

Q111/112 → Q53+73 ; Q113 → Q77 ; Q115 → Q75 + Q56 , Q114 → Q76 Q57 / orig Q105 → 147 [illegible] to [redacted] 1/12/95

b6 -1
b7C -1

Q109 → Q61, 77 ; Q119 → Q68 ;

Q116 → Similar Contour & perimeter [illegible]

([illegible] Q105 - 147 [illegible])

6303571234

2338M 6303571234

1129-8632-4 11-10-94

Det. [redacted] #13552 213 4852531 [redacted] 202 3244450

b6 -1,6
b7C -1,6

CITY OF L A/ POLICE DEPT R.H.D. F.B.I. -J.E.H. BLDG.

150 N LOS ANGELES ST RM. #3372C 10TH ST. & PENNSYLVANIA AV

LOS ANGELES CA 90012 WASHINGTON D.C. 20535

X

X

[redacted]

[redacted]

b6 -1
b7C -1

REVISION DATE 6/92

4/11/94 001 DQT 136

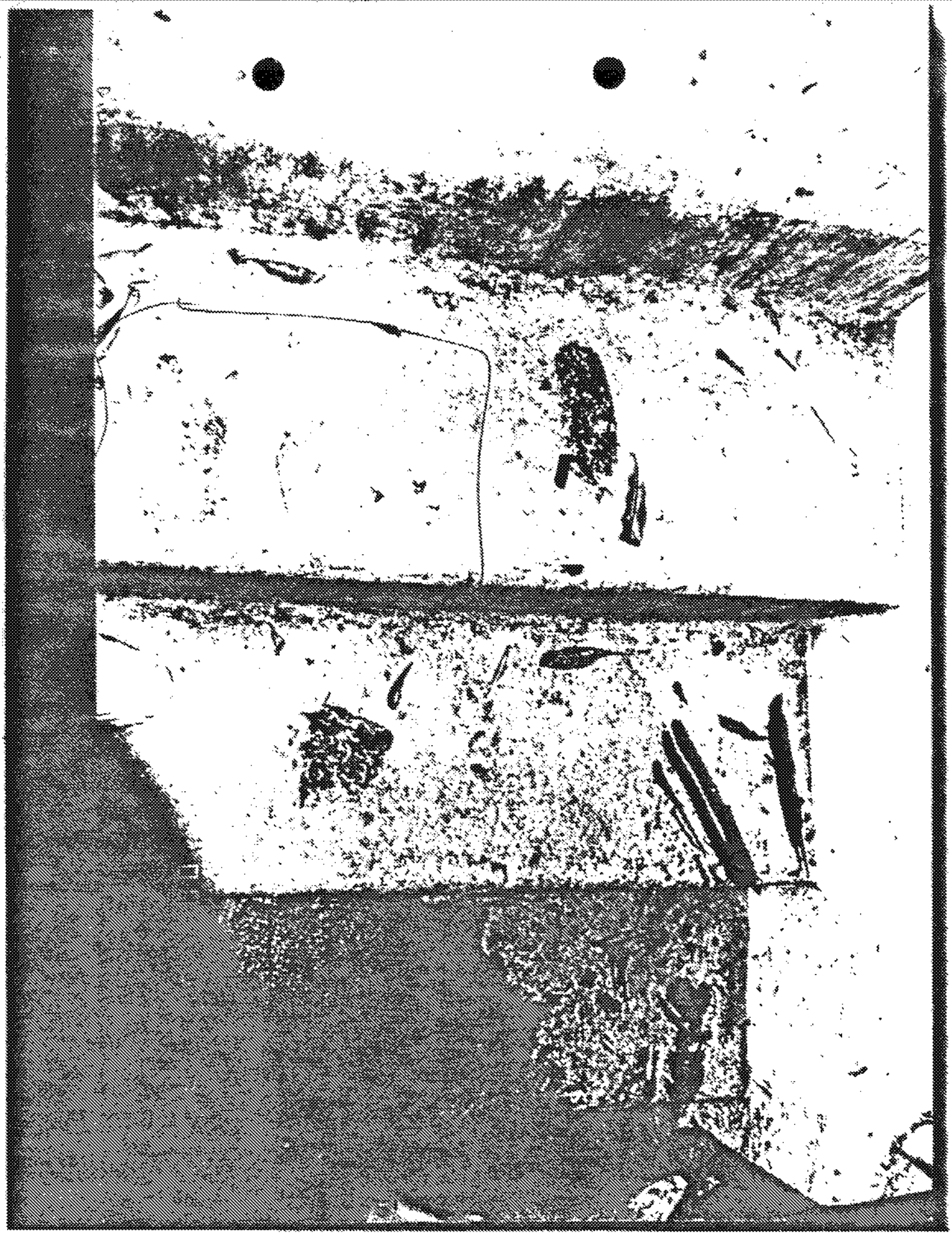
FBI(24-cv-1564)-2985

40912024 / 4118001 combined results.

Q#	letter	X-reference other Q's	P#	Results
Q48	A	—	P368	left sole size 46
Q49	B	—	P369	right sole - Size 46
Q50	C	Q69, Q105	P370/P47	pattern not clear/contour w/size 46 right
Q51	D	Q70, Q106	P371/P48	left sole, size 46 (trace of heel)
Q52	E	Q71,72,107,108,110	P372,P49/P50	left heel/sole size 46
Q53	F	Q73, Q111, Q112	P373/P51	heel/sole right size 46
Q54	G	Q74, Q113	P374/P52	heel/sole left size 46 (heel indistinct)
Q55	H	—	P375	heel/sole left size 46
Q56	I	Q75, Q115	P376, P55	heel/sole right size 46
Q57	J	Q76, Q114	P377/P56	too indistinct / no difference
Q58	K	—	P378	too indistinct / no difference
Q59	L	—	P379	heel /sole right 46
Q60	M	—	P380	sole / left 46
Q61	N	Q77, Q109	P381 /P57	left heel - size 46
Q62	O	—	P382	right heel /sole size 46
Q63	P	—	P383	too indistinct - no differences
Q64	S	—	P384	left heel size 46
Q65	X	—	P385	left heel / sole 46
Q66	Y	—	P386	right sole / heel size 46
Q67	—	deposit ground + part of envelope	—	(design or ground similar / poss. left heel 46) indistinct
Q68			—	left heel, size 46

Q71, 72 → See Q52

Q116 similar contour + perimeter of right 46 sole. / no difference



Evidence Receipt (to be used in lieu of correspondence covering evidence submissions to the Laboratory
7-16 (Rev. 4-7-82)

11/14

Please Furnish Complete Information

Agency submitting evidence: LAPD Det.

☐ FBI
☐ Federal
☐ Local or State

Date: 11/14/94

Laboratory: 41114001 b6 -1,6 b7C -1,6

Delivered by: FedEx Courier

Accepted by:

BuFile #: 9SA-HQ-1075008

Suspect(s): OJ SIMPSON S

Victim(s): NICOLE BROWN SIMPSON
RONALD GOLDMAN
5

Offense: HOMICIDE

Agency case #: 1075008

Place and date of offense: OJ QS

Date of hearing, grand jury, trial, or reason why expeditious handling is necessary

ORIGINAL
Copy & Specs Detached

Prev. exams this case: ☒ Yes ☐ No

Evid. located Room # 3372C.

Report to be directed to

Copies to

Evidence to be returned to
☐ Mailed Back
☐ Picked Up by Contributor

Brief Facts covering case

Description of evidence

Forty two (42) color photographs, one (1) B&W photograph depicting footwear impressions of crime scene.

Exams requested

9SA-HQ-1075008

(This space for blocking)

b6 -1
b7C -1

(Reverse side if necessary for additional evidence)

FBI/DC

7-2 (Rev. 2-21-91)

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

Date:

To: Los Angeles Police Department

FBI File No. 95A-HQ-1075008

Lab No. 41216001 S/D UJ, QJ

Reference: Field Exam

Your No.

Re: ORENTHAL J. SIMPSON - SUBJECT;
NICOLE BROWN SIMPSON - VICTIMS,
RONALD GOLDMAN

[redacted] 11/7/94

b6 -1
b7C -1

Specimens received: November 7, 1994 Field Exam

Specimens:

✓ Q148 White bloodstained envelope containing eyeglasses and bearing footwear impressions (item 39)

K55 Left REEBOK shoe, size 12, belonging to ORENTHAL J. SIMPSON (item 18)

K56 Right REEBOK shoe, size 12, belonging to ORENTHAL J. SIMPSON (item 18)

K57 Left PATAUGAS boot, size 11, belonging to RONALD GOLDMAN (item 78)

K58 Right PATAUGAS boot, size 11, belonging to RONALD GOLDMAN (item 78)

Q148, K55-58 phot & compared for notes
11/7/94

11/7/94

at L

OJ's
item 18 - Reebok Shoes - low top - white

interior label
{ USA - Size 12
UK - 11½
EUR - 46½

made in Indonesia

inside length ~ 298mm -
outside length - L+R 310mm
shoes have little wear

outside length - 309-310
inside length 298-300 mm
(Lorenzo) K35
3684OM - 12

K36 Lyon 9.5
Retail Price sticker $160.00

Insole & outsole
Dimensions for K56 and K35
are virtually identical.

item 78 Goldman's
"PATAUGAS" boots
made in Spain / direct attach injection molded
on bottom "44" size 11
left boot heavily soiled & blood
impression of right boot taken

item 39 White envelope
photographed -
SILGA U2887 design on envelope
possibly other impression on opposite end - too limited / may be from several soles - possible trowling impression on envelope.
(refer to envelope photos from scene).

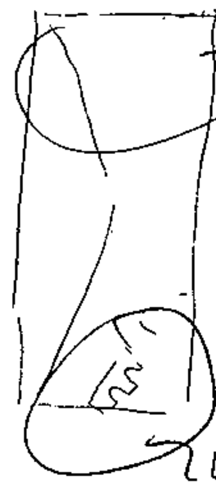
4/12 16 001 D

FBI(24-cv-1564)-2990

12/16/94

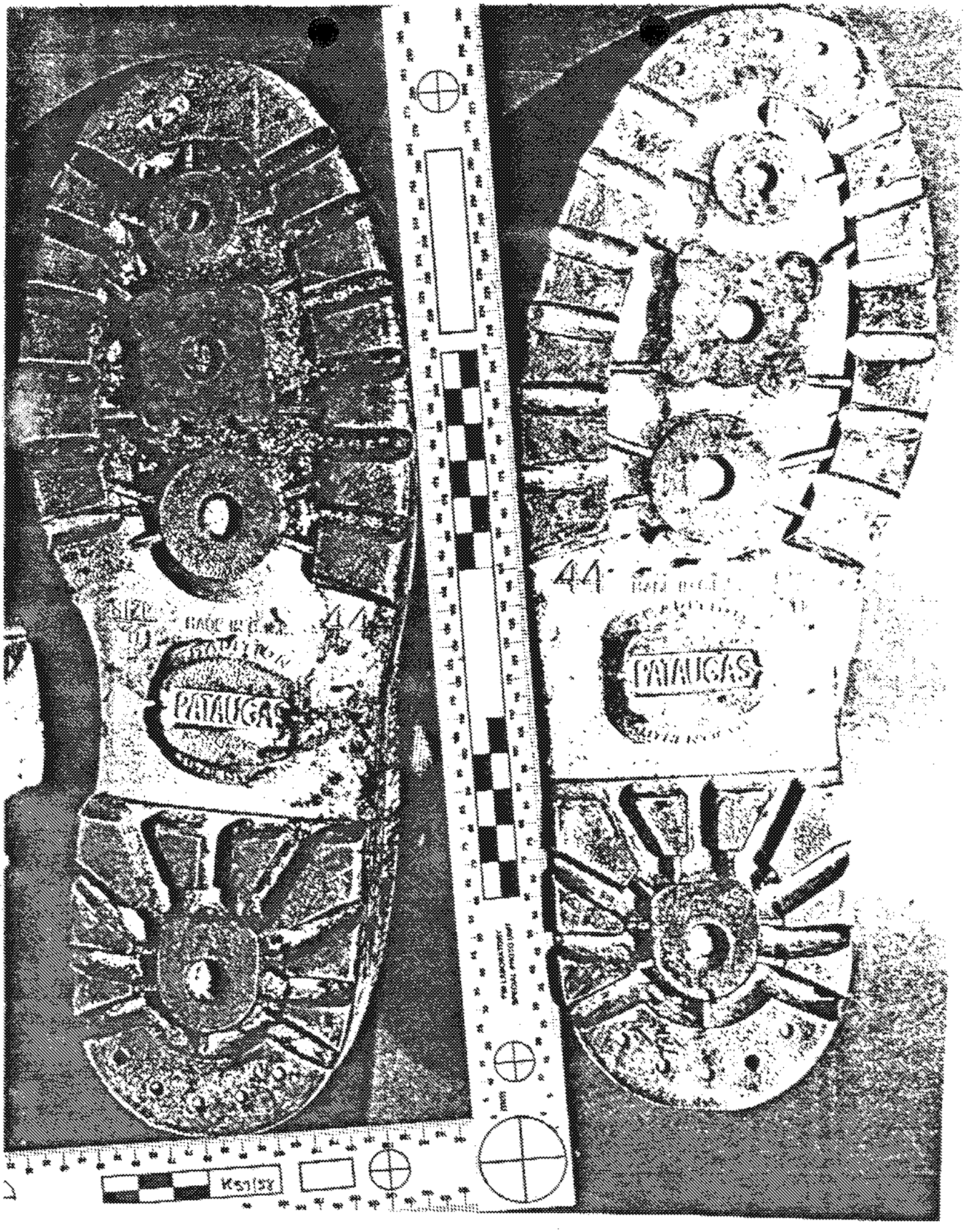
White envelope, item 39

Shoe impression on end corresponds with Silga design possibly left heel, but too limited for more detailed analysis.

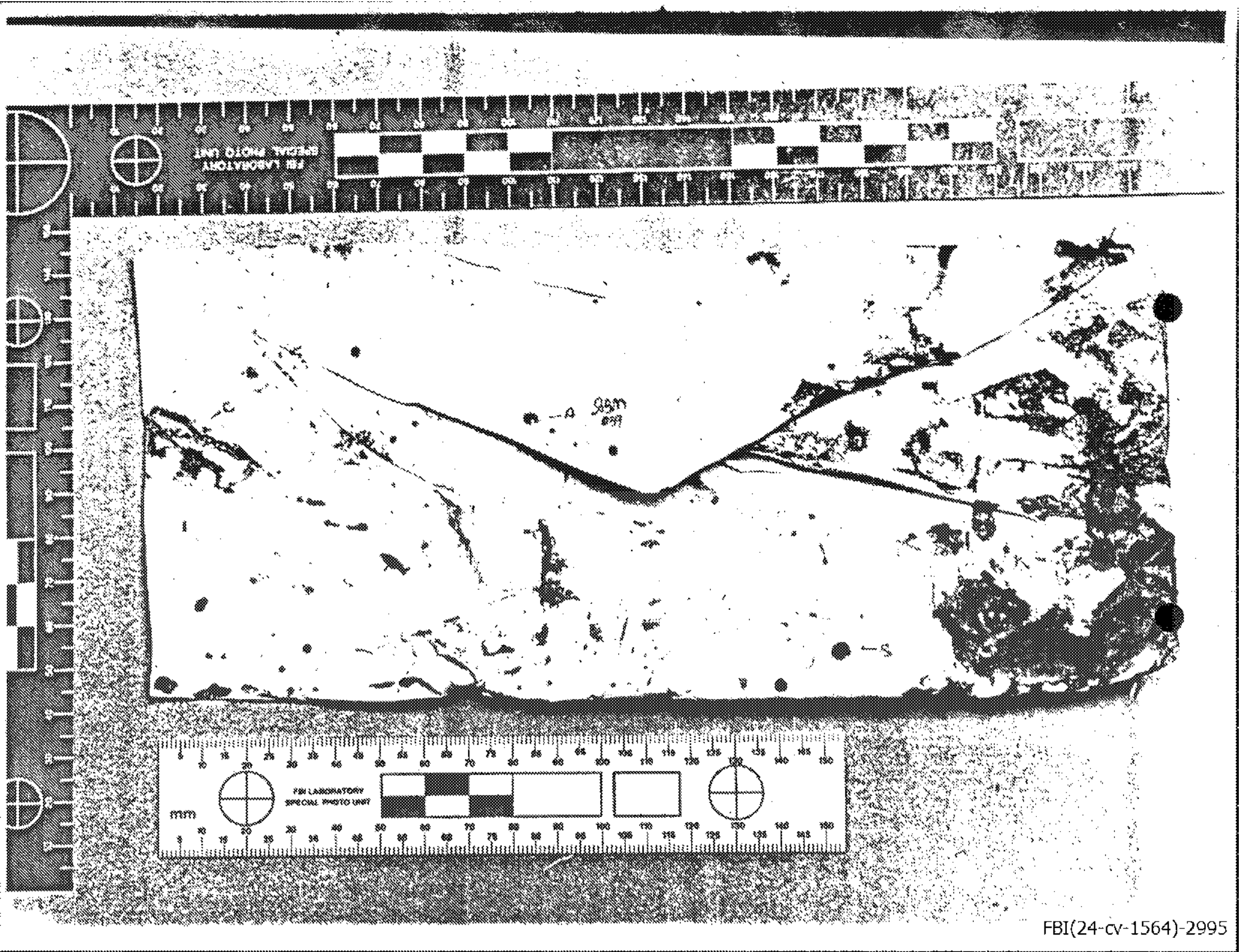


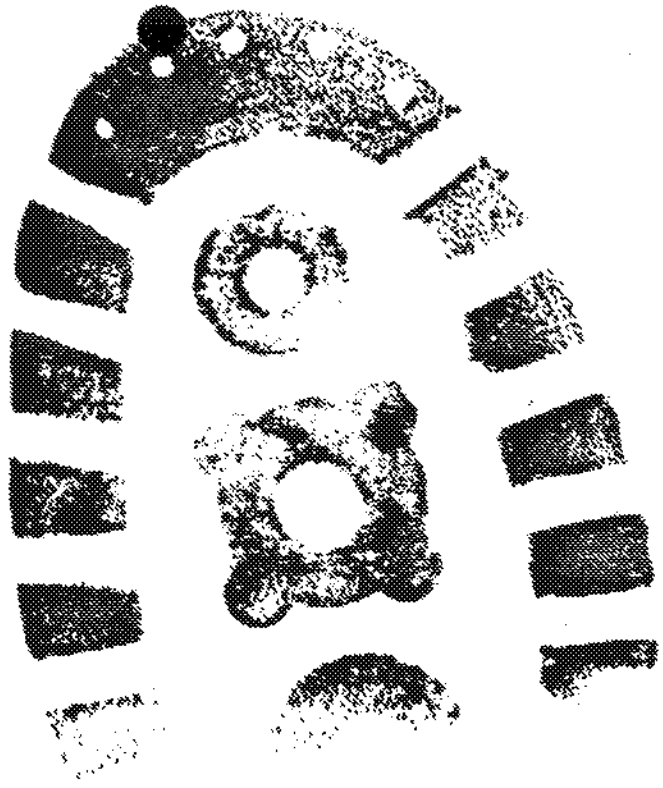
A shoe impression on the Q_{148} envelope corresponds with the U2887 design. Its partial & limited nature precluded sizing & further comparison.

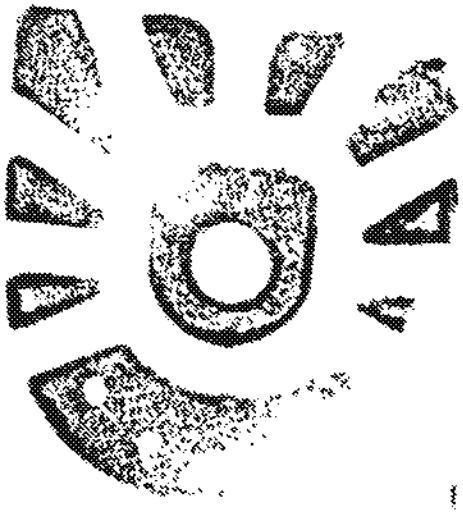
The opposite end of the Q_{148} envelope may reflect impression of shoes possibly from the reverse side / it is also too limited for a meaningful comparison.

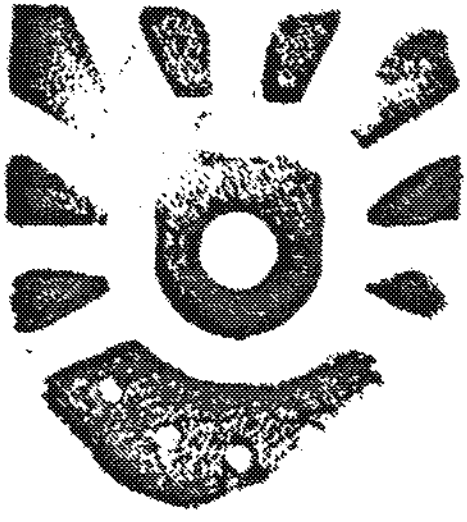

PATAUGAS
PATAUGAS

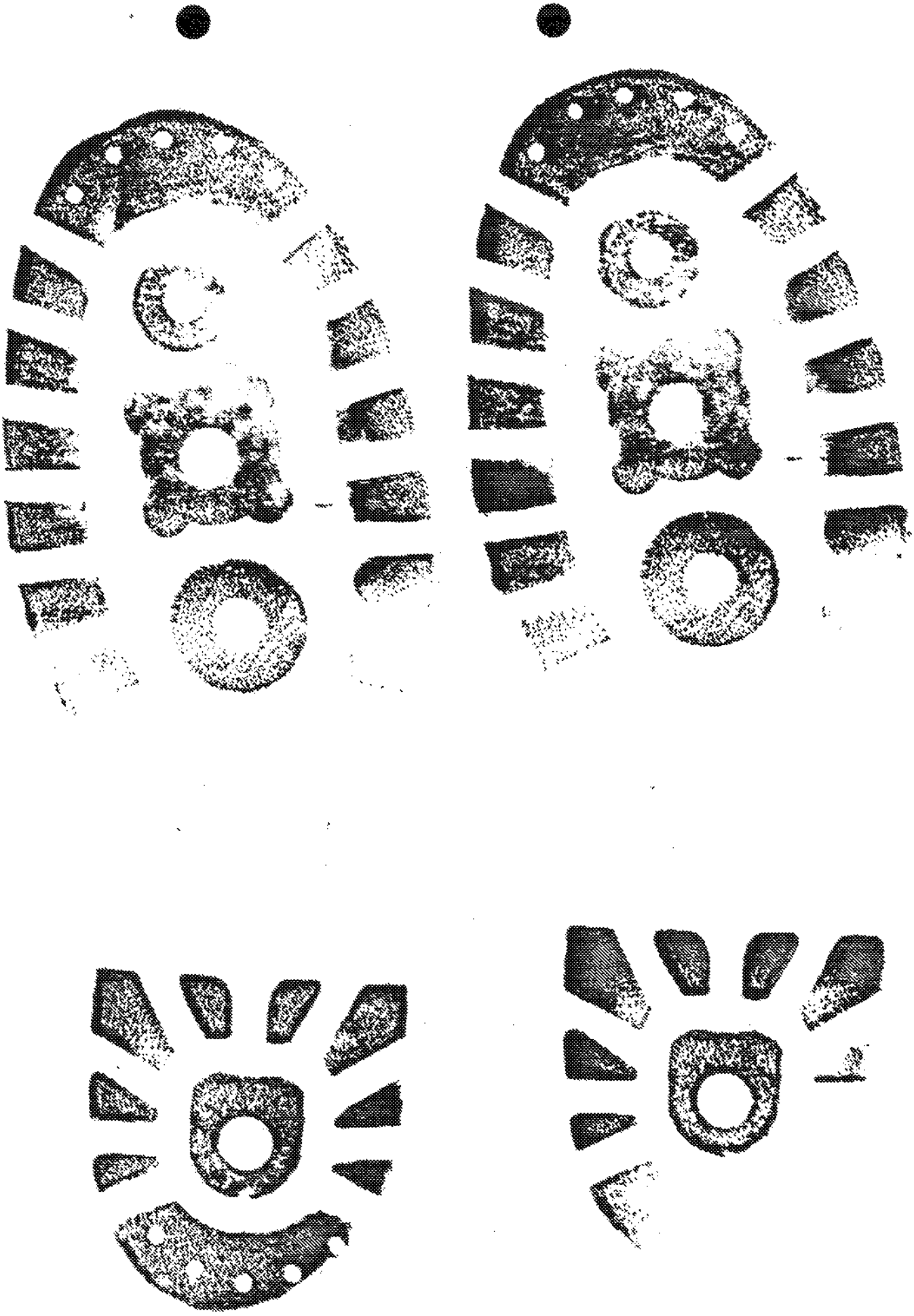
Reebok

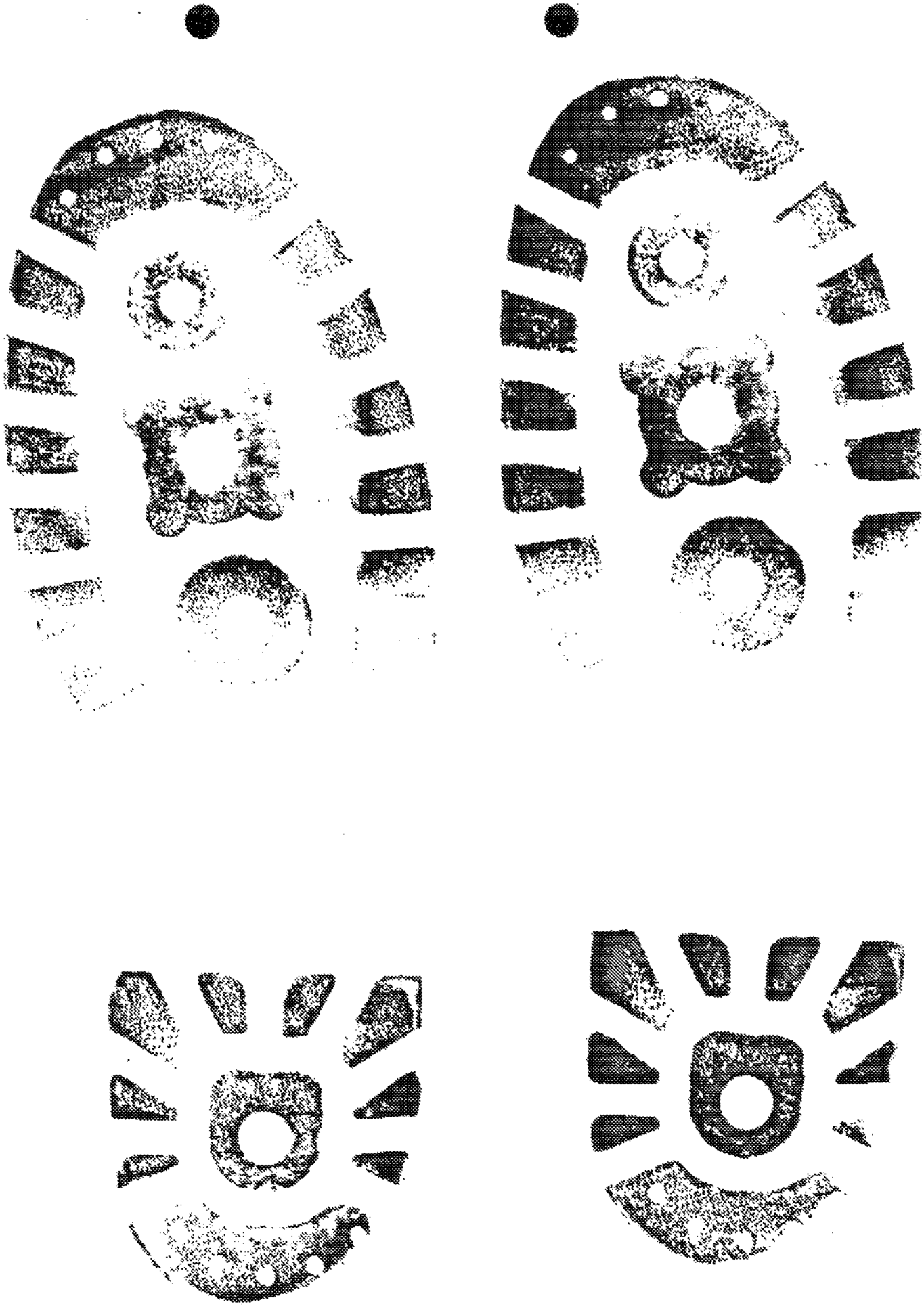

FBI LABORATORY
SPECIAL PHOTO UNIT











7-2 (Rev. 2-21-91)

RECORDED 1/12/95 [redacted]

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

1/10/95 [redacted]

b6 -1
b7C -1

Date:

To: The Honorable Lance A. Ito
Criminal Courts Building
Department 103
210 West Temple Street
Los Angeles, California 90012

FBI File No. 95A-HQ-1075008

Lab No. 50110004 S/D UJ QJ

Reference: Communication dated January 10, 1995

Your No. [redacted] 1/12/95

b6 -1
b7C -1

Re: ORENTHAL J. SIMPSON - SUSPECT;
NICOLE SIMPSON AND RONALD GOLDMAN - VICTIMS;
HOMICIDE

Q163 - Q202
to QJ 1/10/95

Specimens received: January 10, 1995

Specimens personally delivered by Mr. [redacted] on January 10, 1995: rec'd 1/12/95

b6 -11
b7C -11

Q160 Shirt (Item number 97)

Q161 Shirt (Item number 101)

Q162 Shirt (Item number 102)

Q163 Piece of paper (Item number 62 and 63)

Q164-Q169 Six (6) negatives (C133165, #20-25)

Q170-Q173 Four (4) negatives (C#132369, #9-12)

Q174-Q184 Eleven (11) negatives (C133219, #1-11)

Q185-Q186 Two (2) negatives (C133969, 2 B&W)

Q187-Q196 Ten (10) negatives (C#133219, 1-10)

Q197-Q202 Six (6) negatives (C#133295, #1-5)

Q163 - piece of paper - no friction ridges comparable

Photos 164 → 202

50110004
1/12/95

Q164 → 169 gloves no exam
170-172 no exam
173-184) brown carpet
187-201)
Q202 door - no exam
Q185-186 paper no exam

163 - No friction ridges -
DLK negative
no exam

Q173-184 & 187-201 photos of carpet offered no addl detail than in prior photos & exam of carpet.

No exam on Q164-172, Q202, Q185-186

S P E C I A L ...issions to the Laboratory)

(FBI/DOJ)

Rush for today 1/10/95

Please Furnish Complete Information

Agency submitting evidence		Date
LAPD	☐ FBI ☐ Federal ☑ Local or State	1-10-9
		Laboratory #

Delivered by	Accepted by	BuFile #
[redacted]	[redacted]	b6 -1,6 b7C -1,6

Suspect(s)	Victim(s)
Orenthal J. Simpson S	501 Nicole Simpson V Ronald Goldman V

Offense	Place and date of offense
Homicide — Hom	
Agency case #	

Date of hearing, grand jury, trial, or reason why expeditious handling is necessary

Prev. exams this case	Evid. located	Report to be directed to
☑ Yes ☐ No	Room # 3931	

Copies to	Evidence to be returned to
	☐ Mailed Back ☐ Picked Up by Contributor

Brie[f] ...overing case

ORIGINAL
Specs detached

...iption of evidence	Exams requested
3 shirts / piece of paper / 6 envelopes	95A HQ-1075008
[redacted]	95A HQ-1 b6 -1 b7C -1
	(This space for blocking)

(Use reverse side if necessary for additional evidence)

FBI(24-cv-1564)-3003

7-1 (Rev. 2-21-91)

FBI LABORATORY

1 - [redacted] b6 -1 b7C -1

FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D. C. 20535

To: The Honorable Lance A. Ito
Criminal Courts Building
Department 103
210 West Temple Street
Los Angeles, California 90012

Date: January 20, 1995
FEDERAL EXPRESS

FBI File No. 95A-HQ-1075008

Lab No. 50118030 D/S UJ QJ

Reference: Communication dated 1/17/95

Your No.

Re: ORENTHAL J. SIMPSON - SUBJECT;
NICOLE BROWN SIMPSON,
RONALD GOLDMAN - VICTIM(S);
HOMICIDE

Specimens received: January 18, 1995

Specimens:

K64 Thirty-six color photographs depicting the shoes of officers [redacted] b6 -6 b7C -6

Results of examination:

The design evident in the questioned footwear impressions in blood, previously submitted in this case, do not correspond with the design characteristics of the shoes depicted in K64.

K64 is returned herewith.

b6 -1
b7C -1

[redacted]

Enclosure

MAIL ROOM ☐

This Report Is Furnished For Official Use Only

7-1 (Rev. 2-21-91)

FBI LABORATORY

FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D. C. 20535

1 - (1) - [redacted]

b6 -1
b7C -1

Date: January 20, 1995

To: The Honorable Lance A. Ito
Criminal Courts Building
Department 103
210 West Temple Street
Los Angeles, California 90012

FBI File No. 95A-HQ-1075008

Lab No. 50120001 D QJ

Reference: Communication dated January 20, 1995

Your No. 94-08-17431

Re: ORENTHAL J. SIMPSON - SUSPECT;
NICOLE SIMPSON AND RONALD GOLDMAN -
VICTIMS;
HOMICIDE

Specimens received: January 20, 1995

Specimens:

Q-203 Piece of paper with footwear impressions

Results of examination:

Q203 and an electrostatic lift of Q203 have been photographed. Copies of those photographs and the Q203 item are returned herewith.

No footwear impressions of the "U 2887" SILGA design, represented by the K22 through K31 items, were present on the Q203 item.

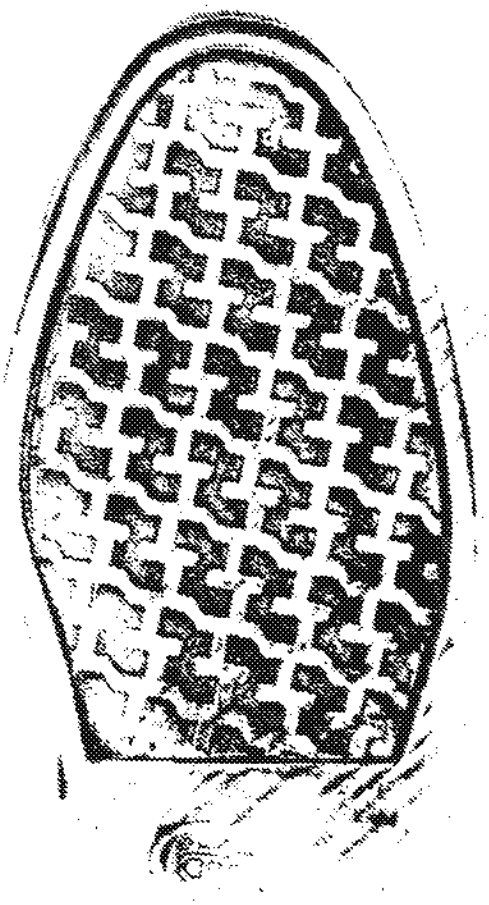
Enclosures (2)

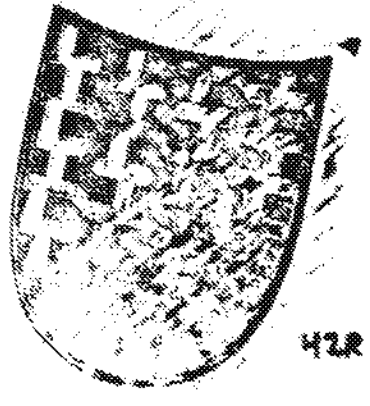
b6 -1
b7C -1

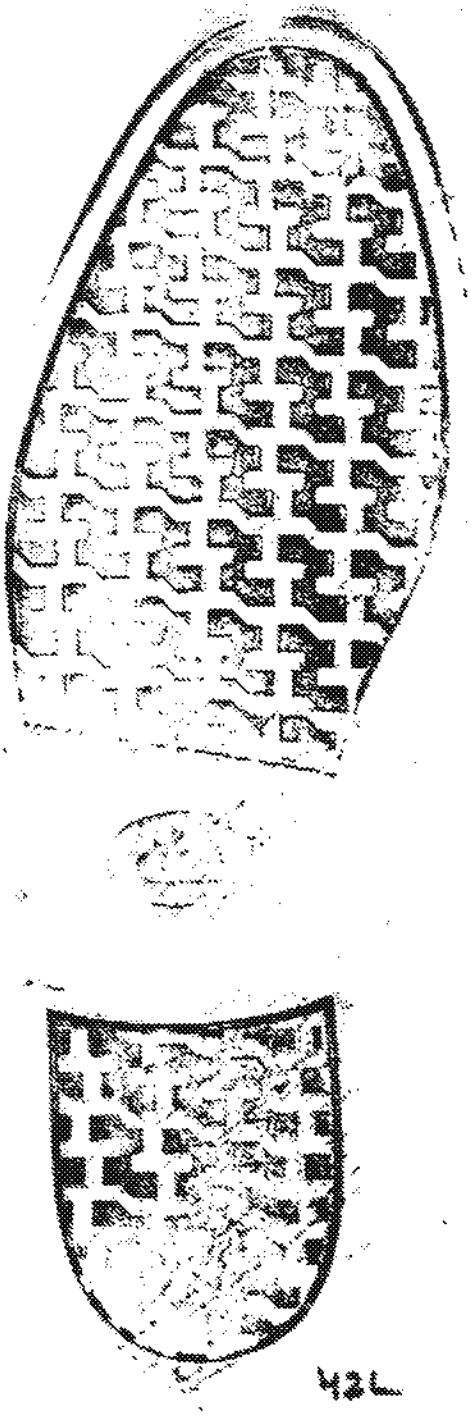
[redacted]

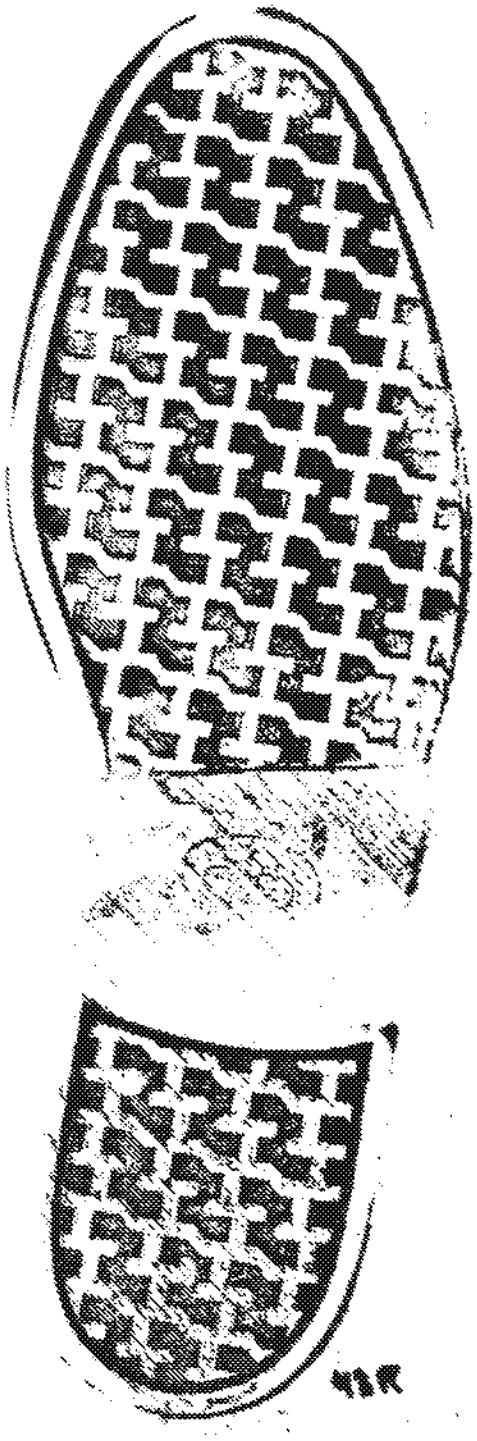
MAIL ROOM ☐

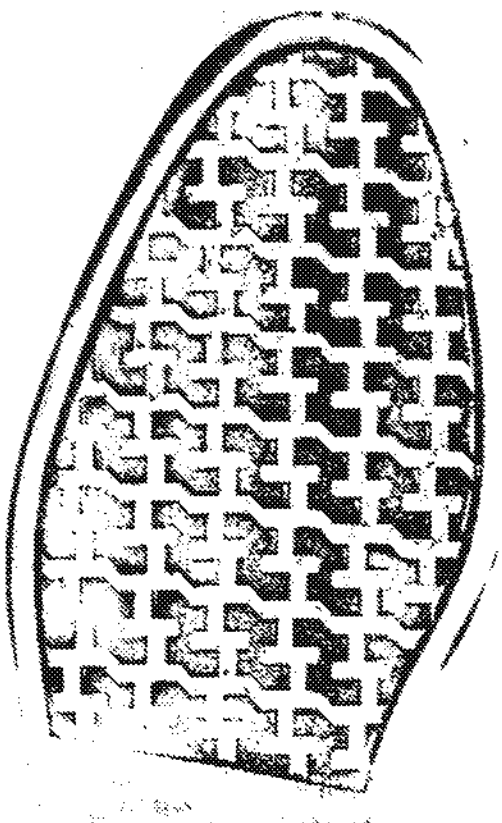
This Report Is Furnished For Official Use Only

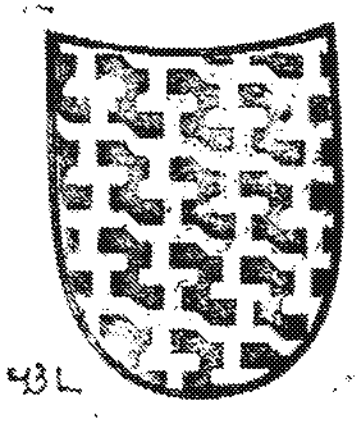


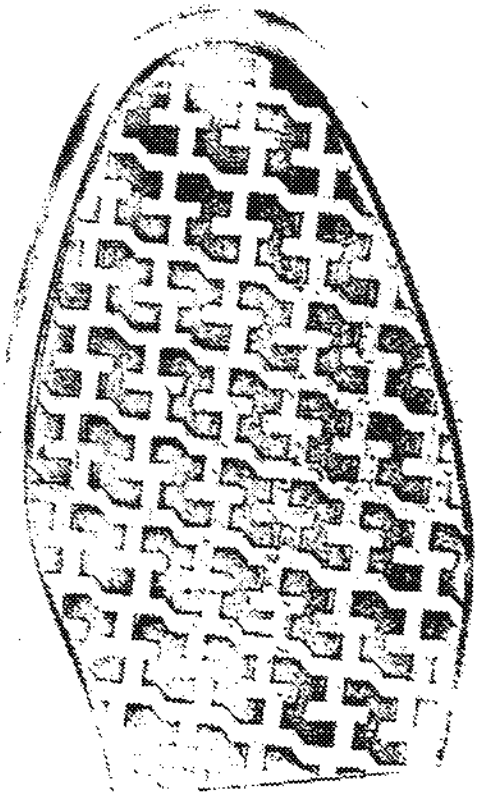

42R

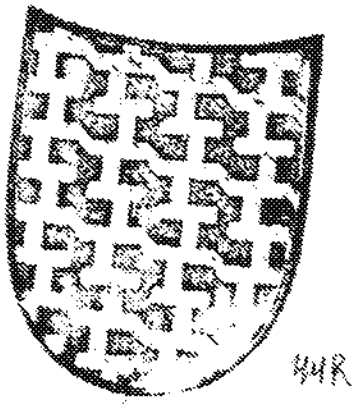

42L







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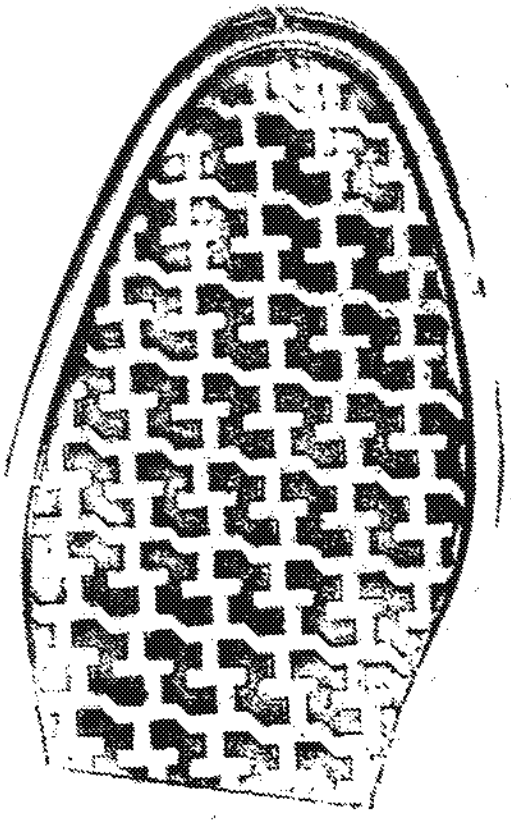

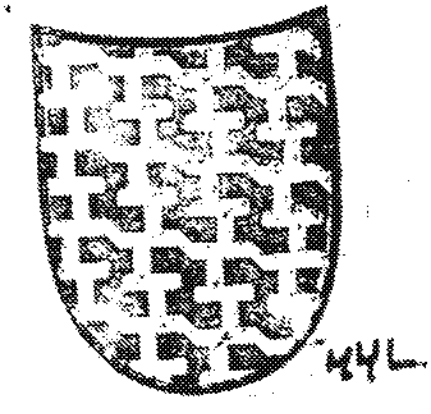
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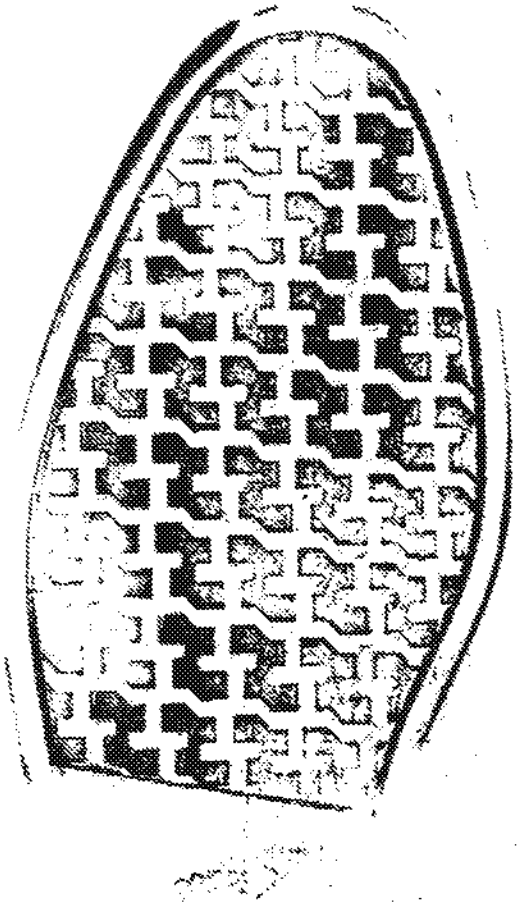

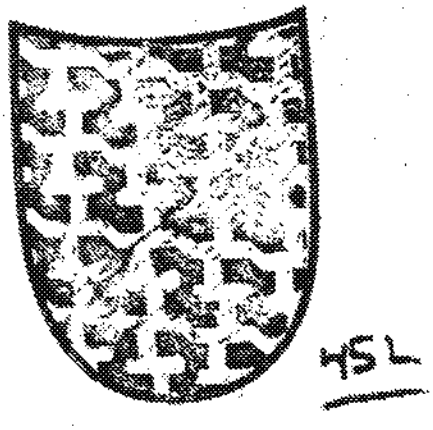
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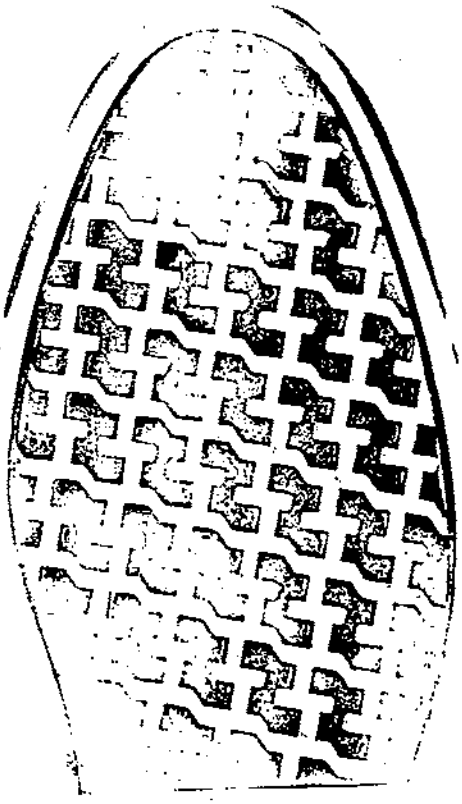

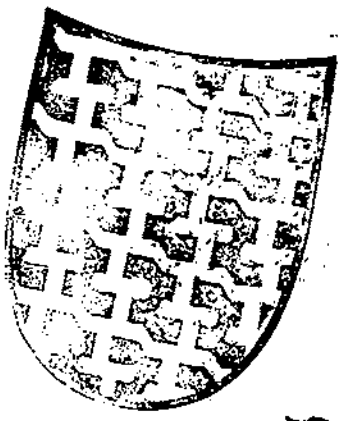

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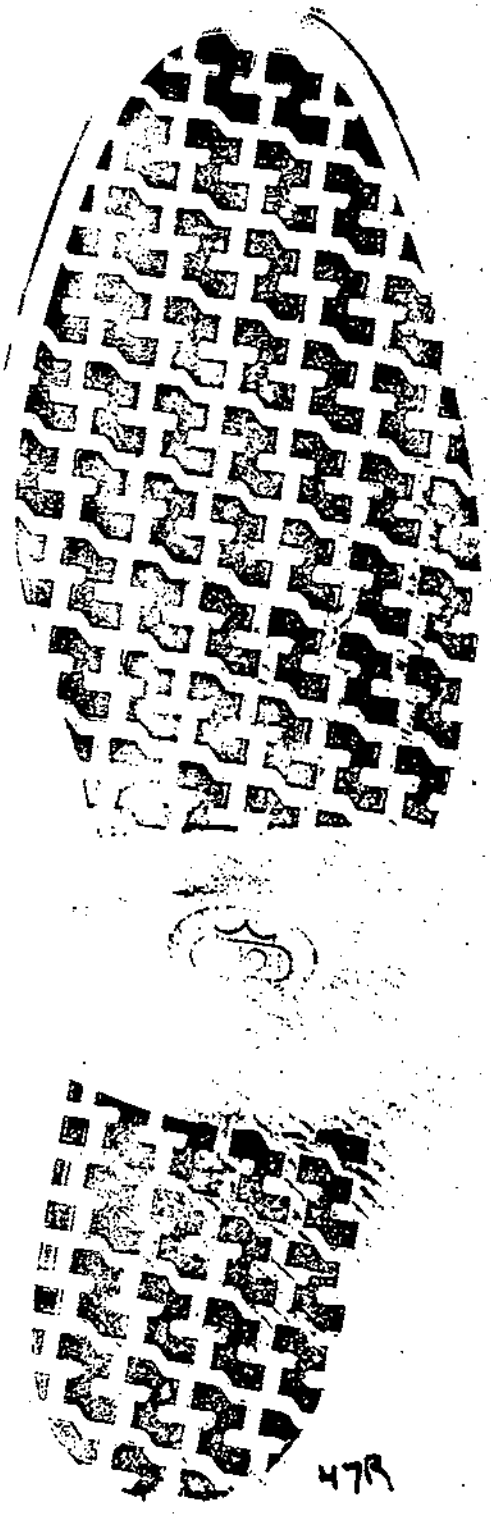
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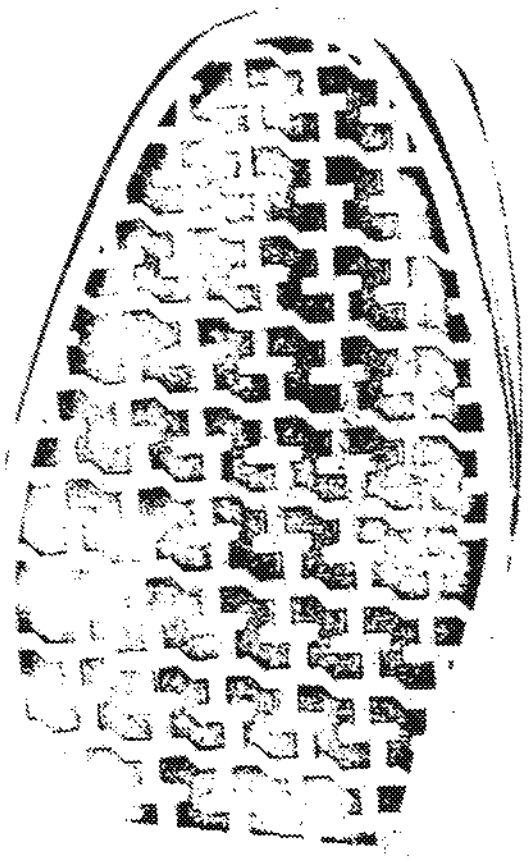

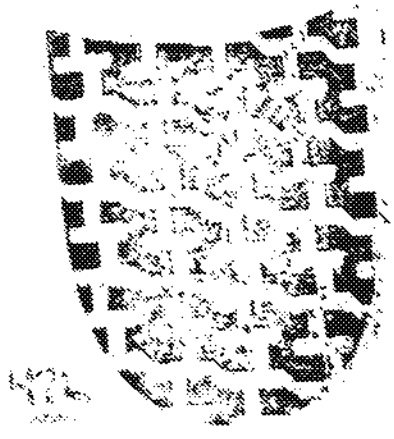

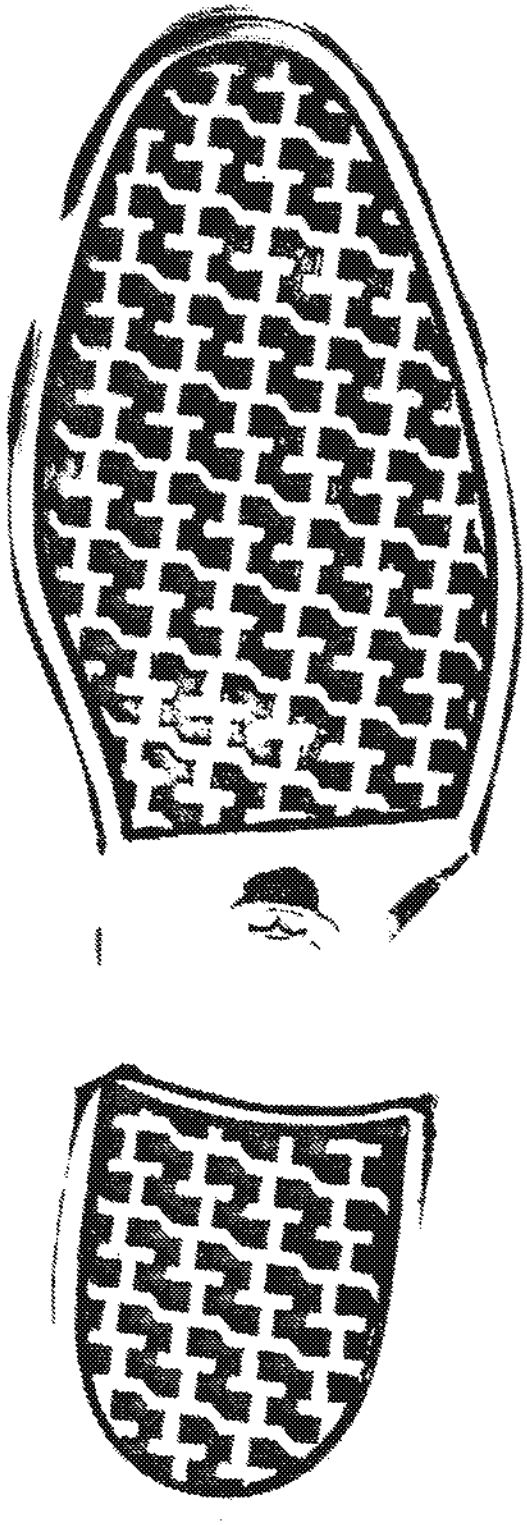

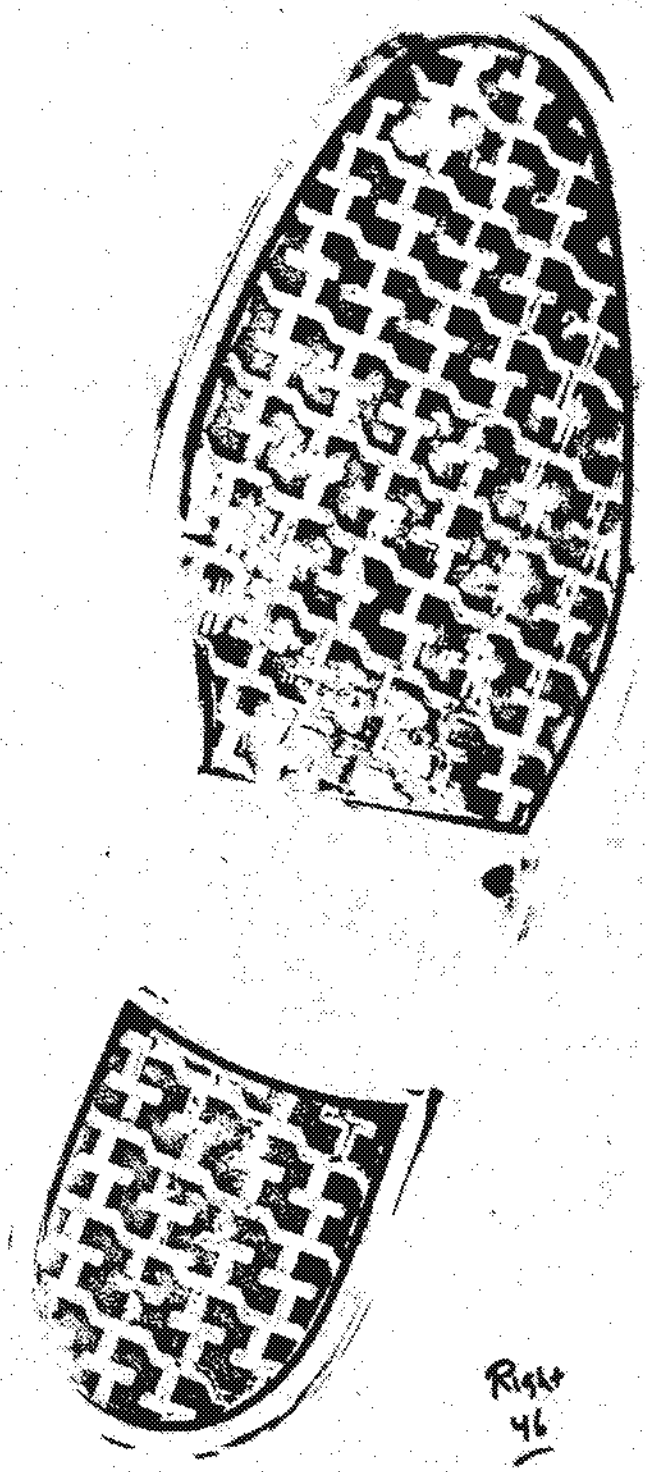
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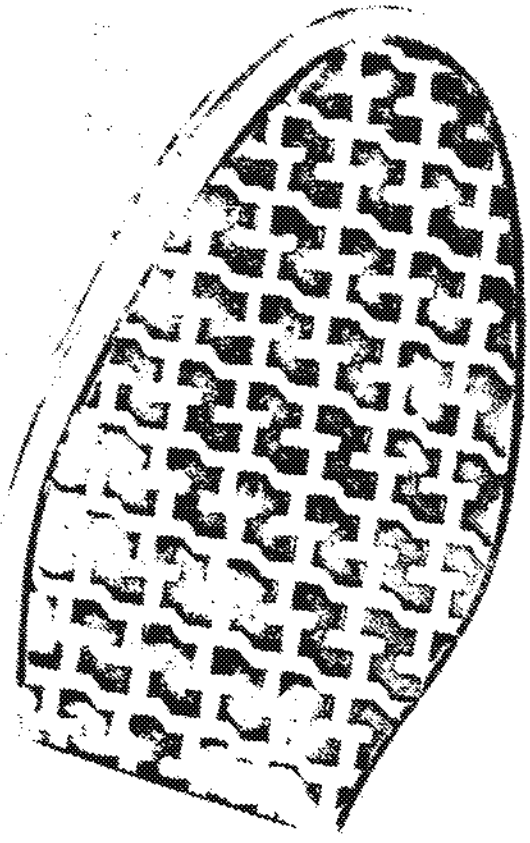

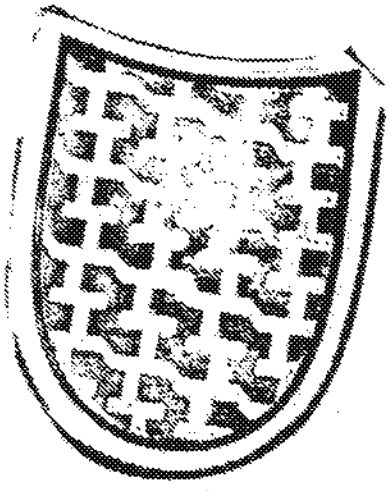

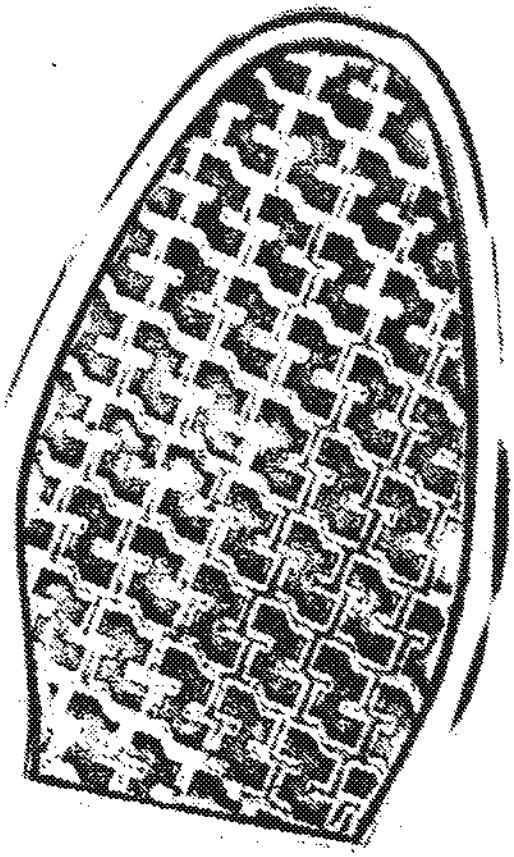

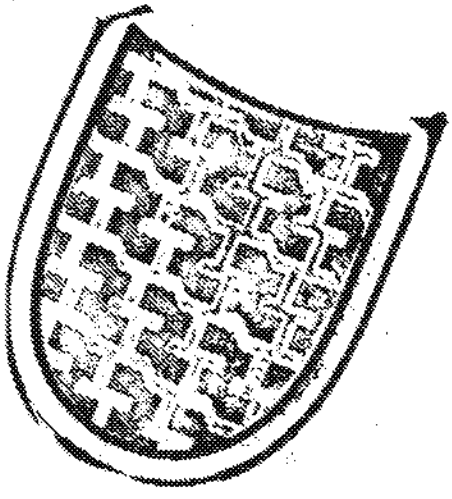

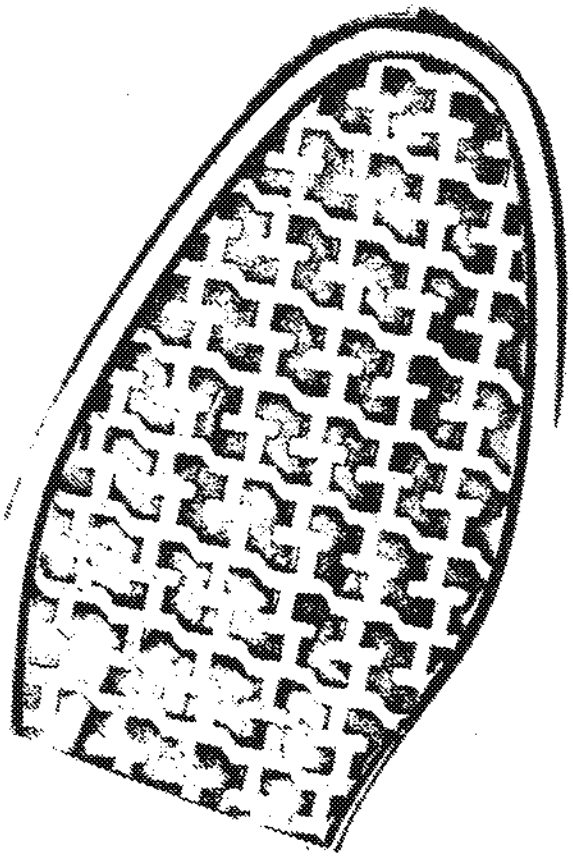

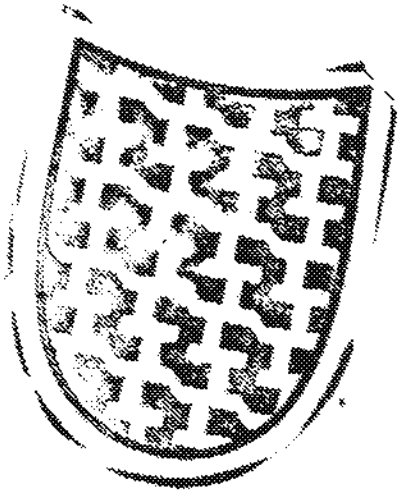

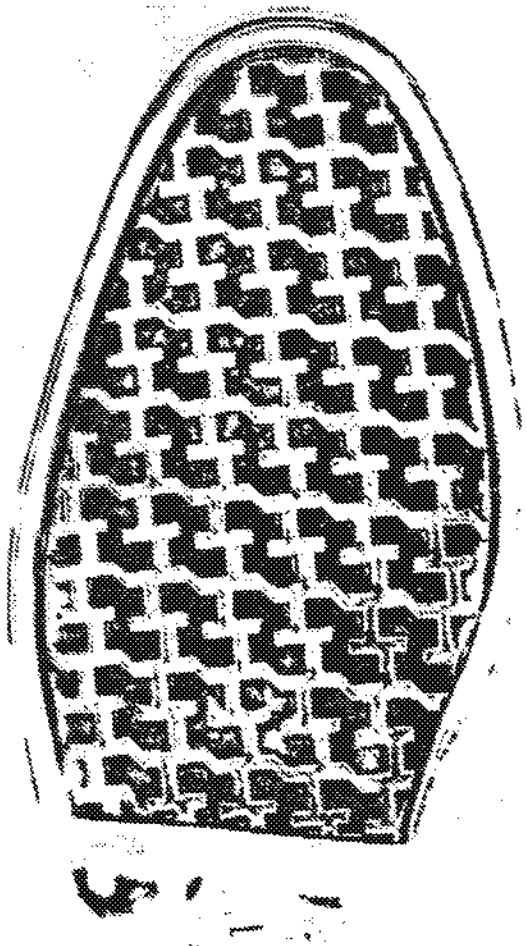

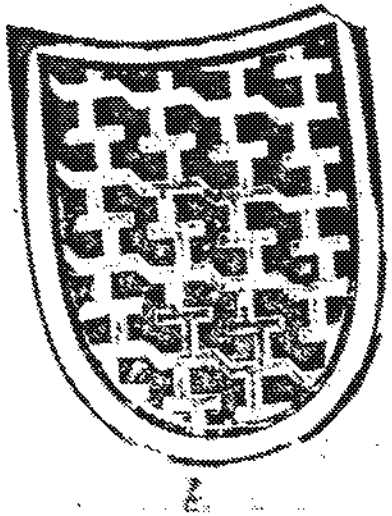

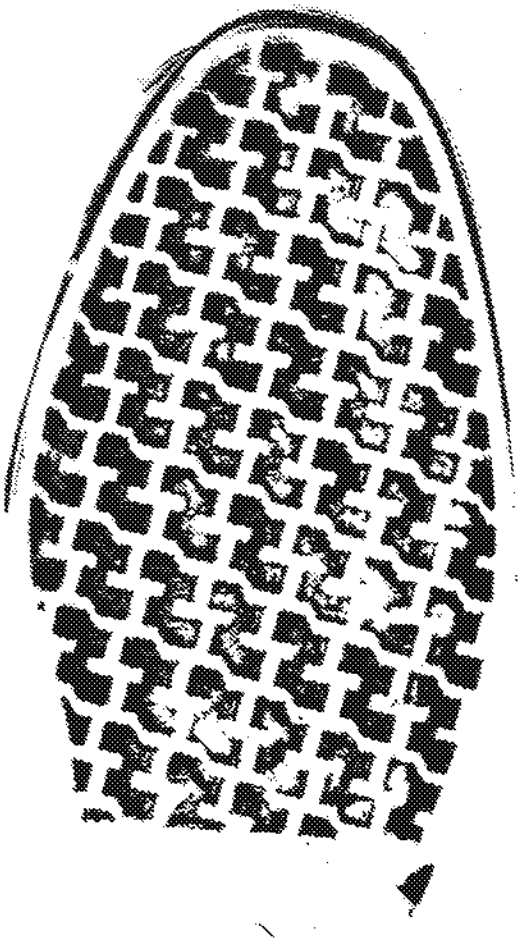

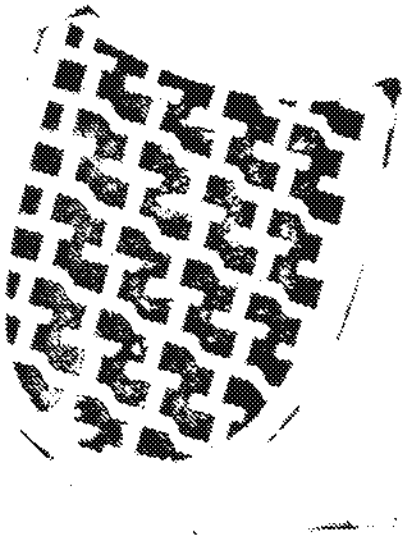
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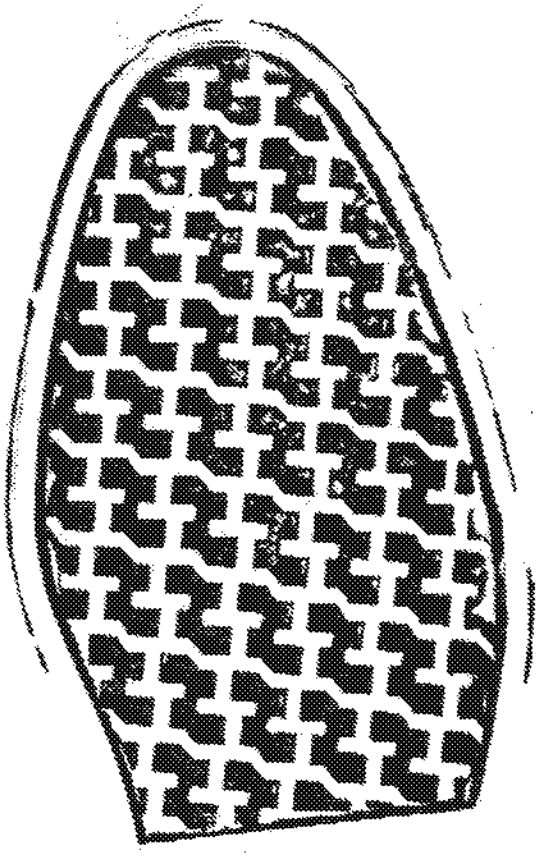

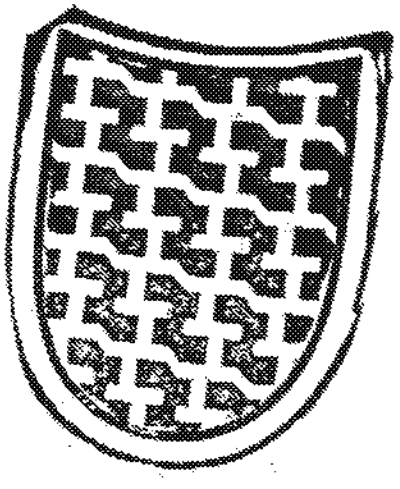

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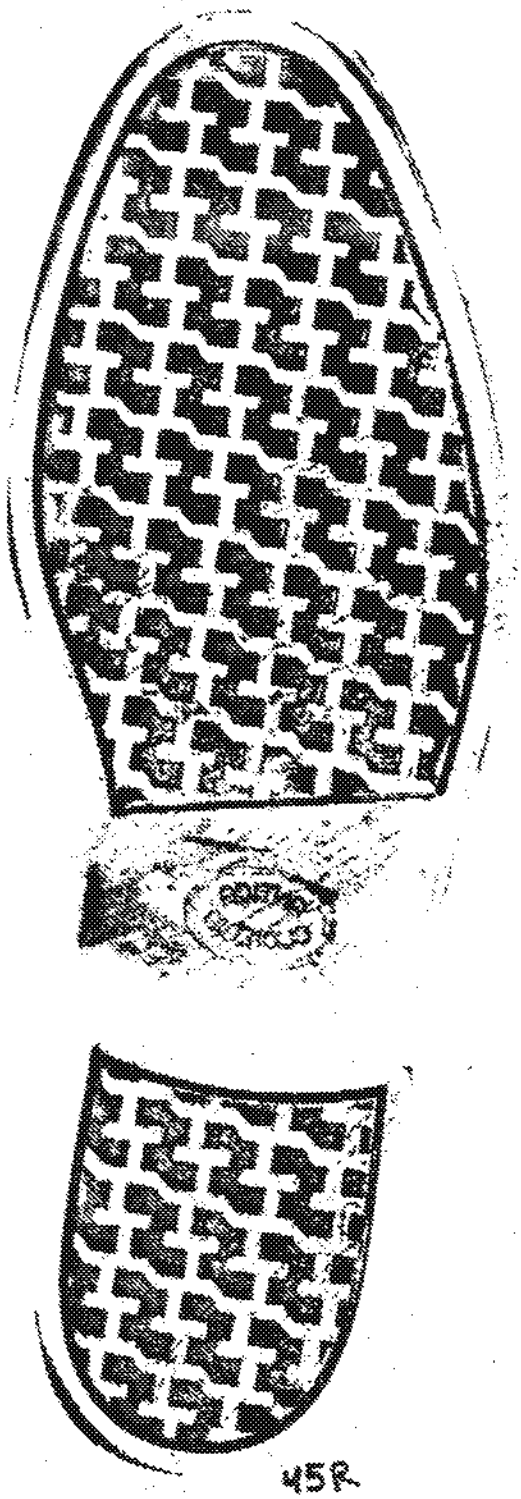
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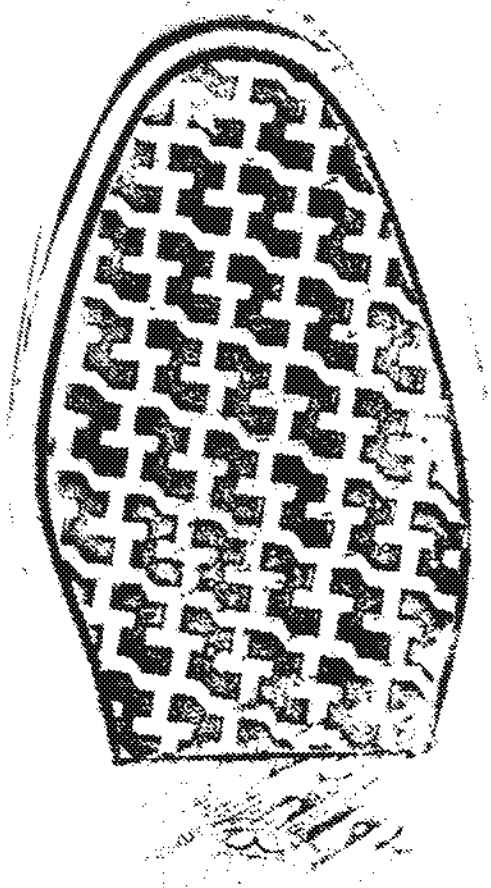

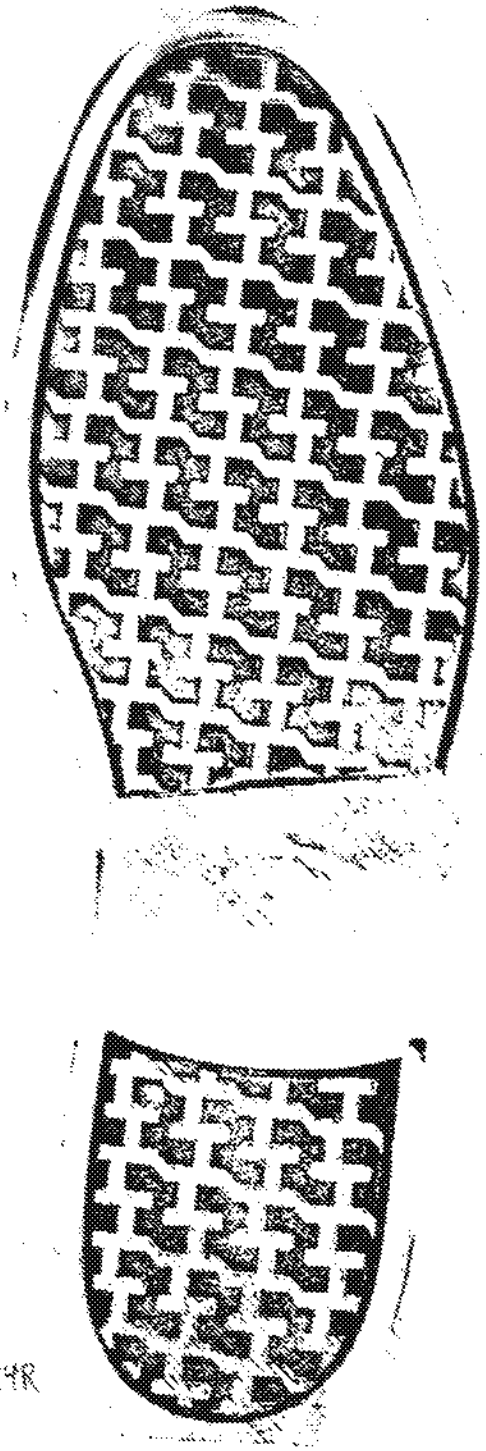

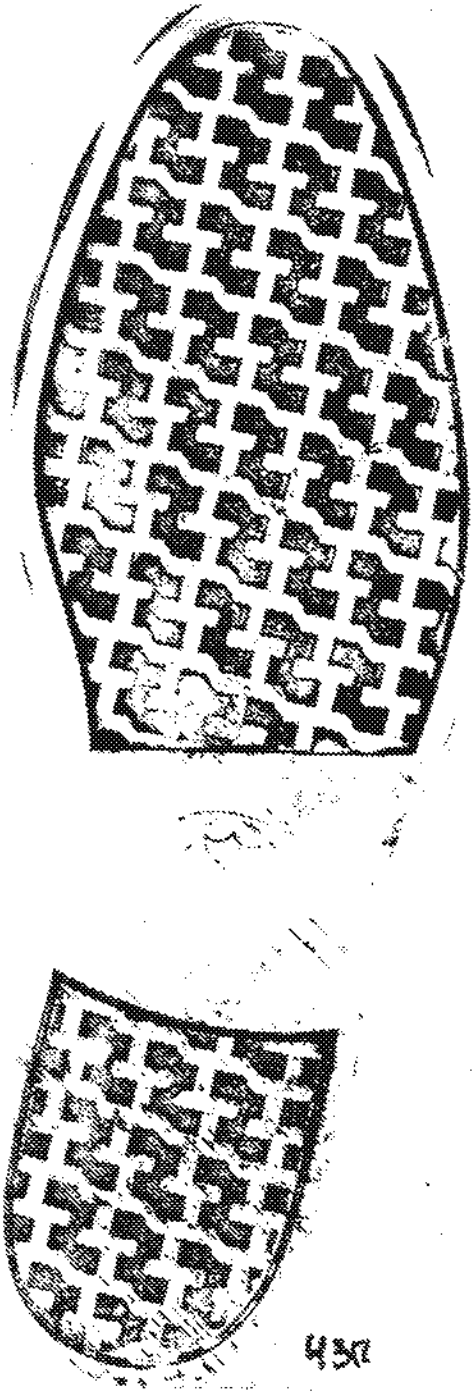
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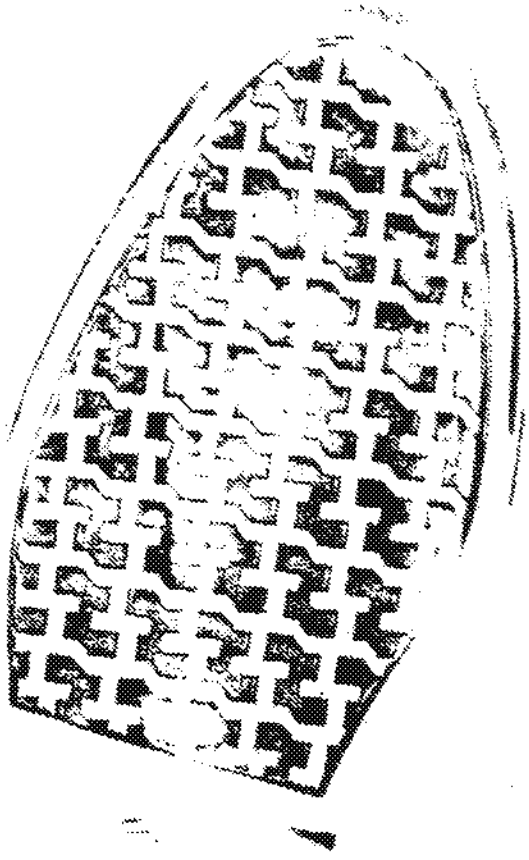

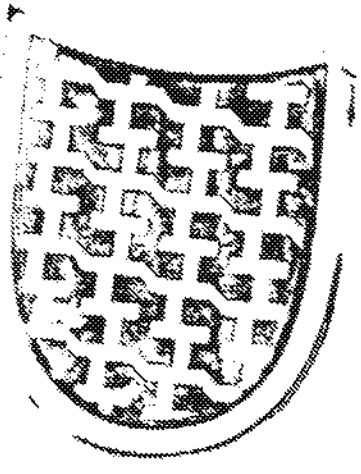

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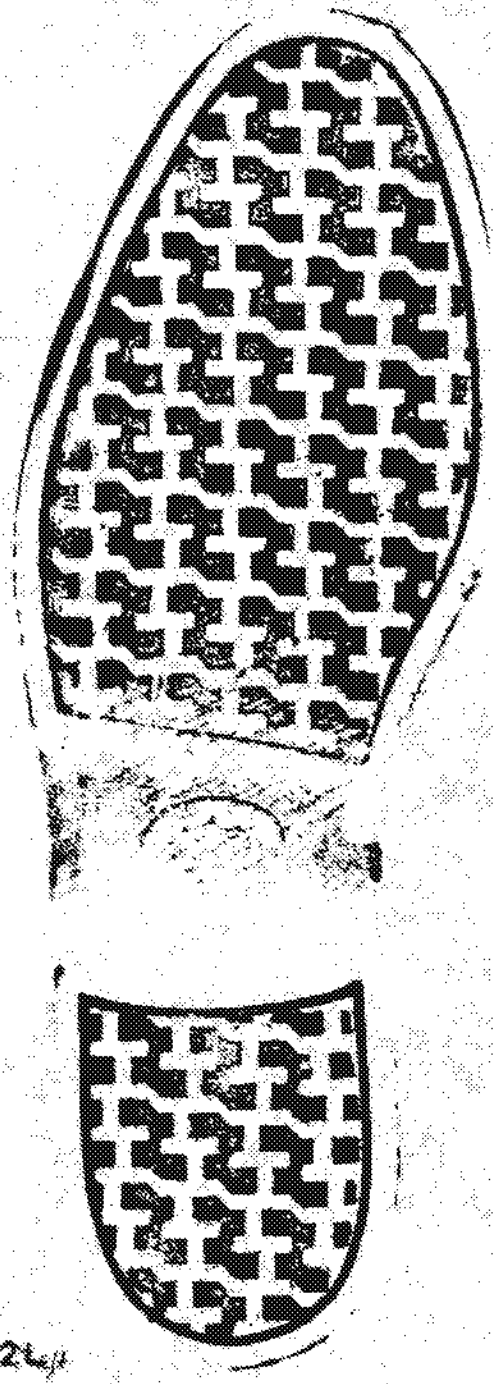

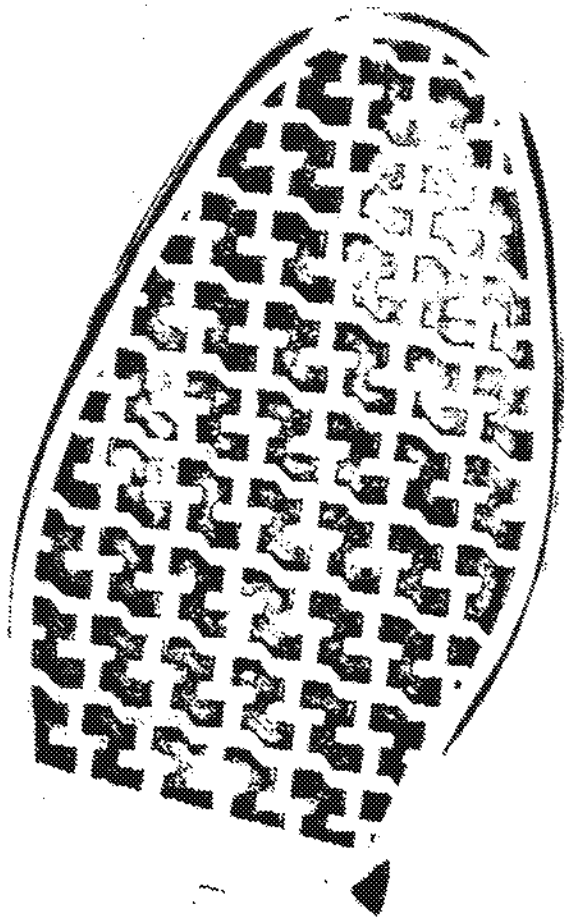

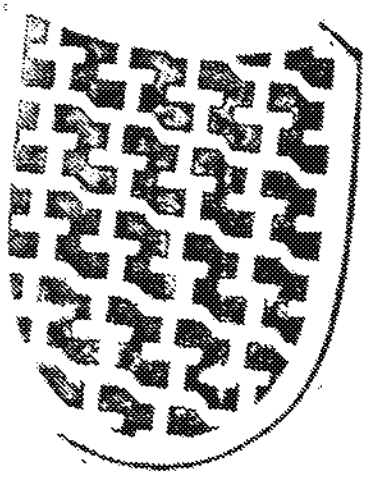

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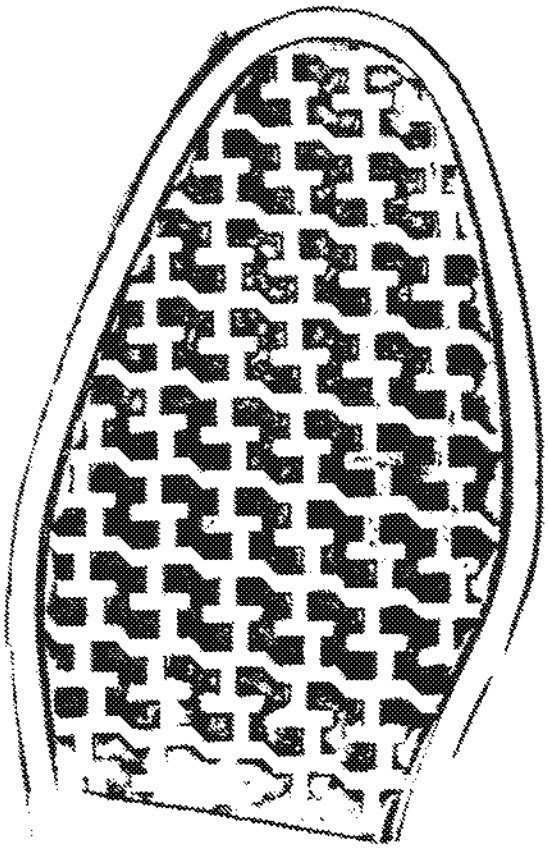

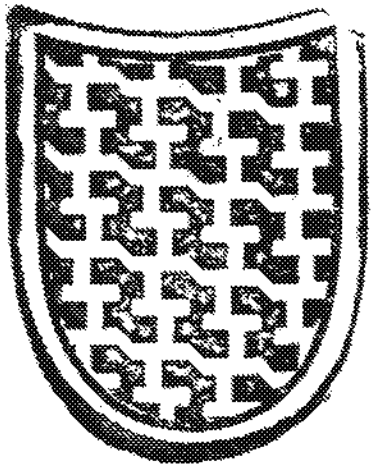

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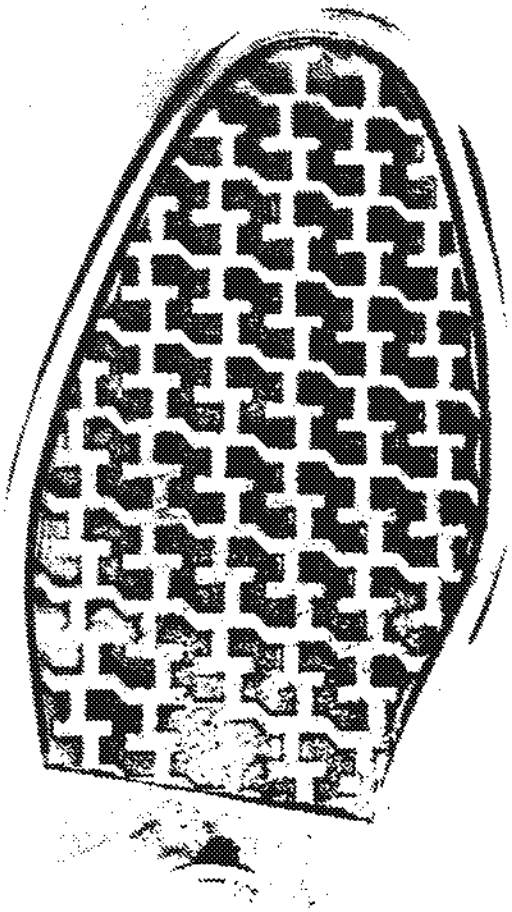

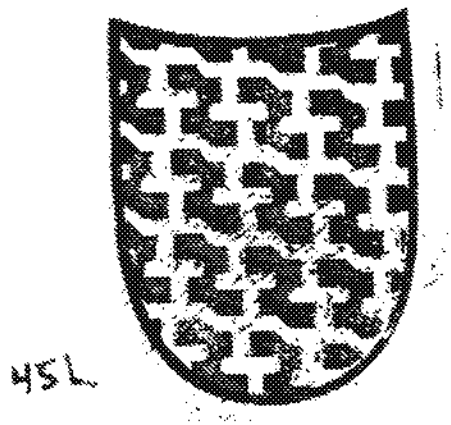
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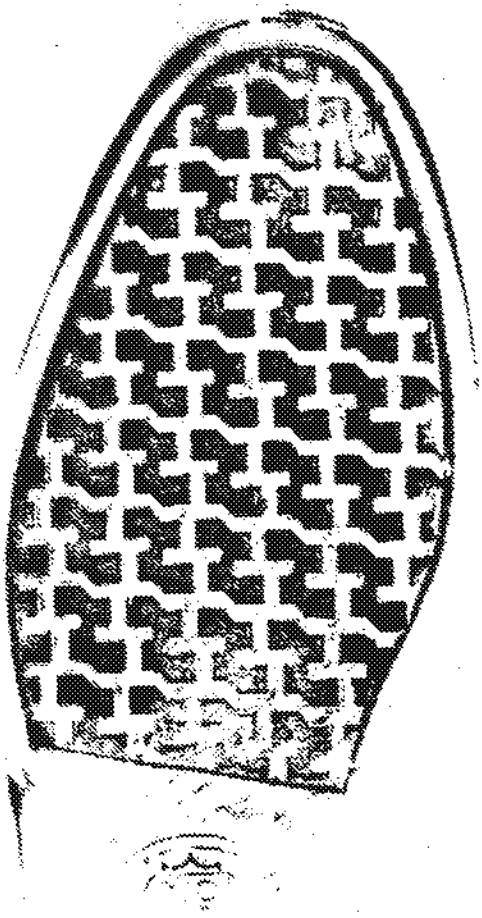

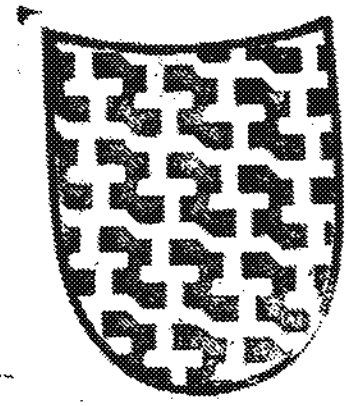

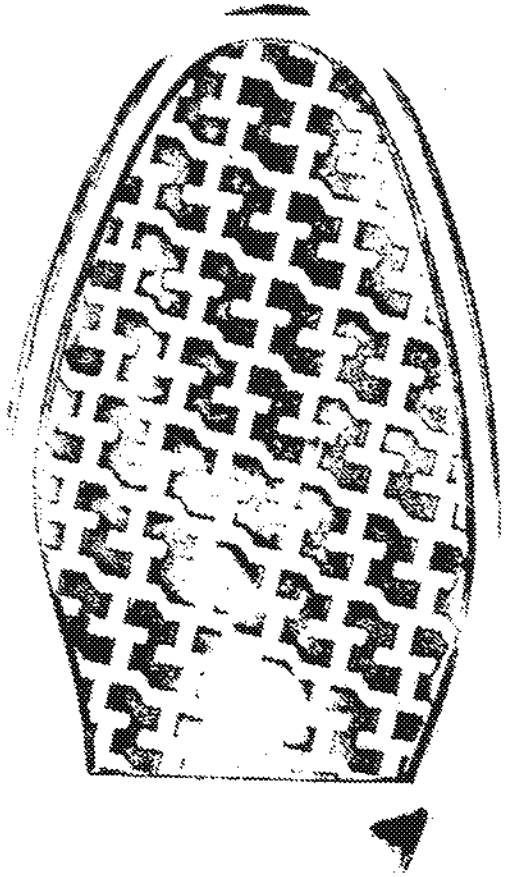

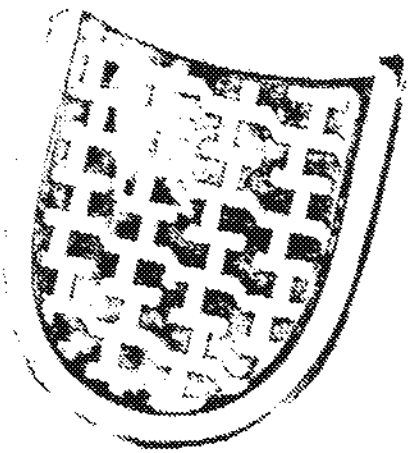

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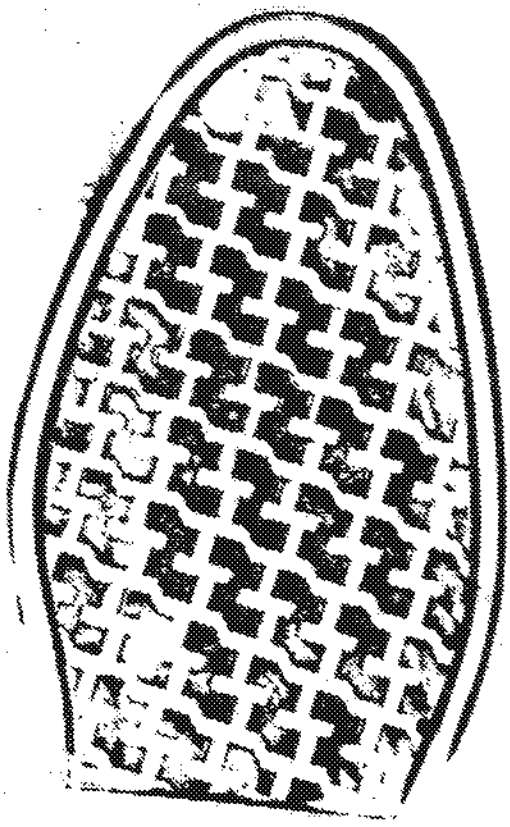

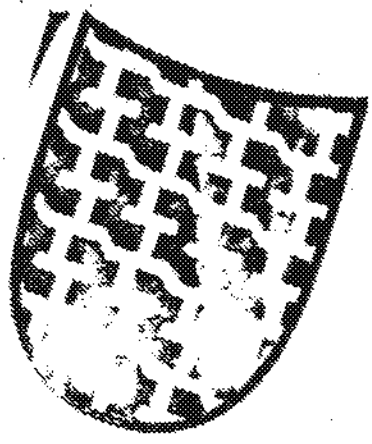

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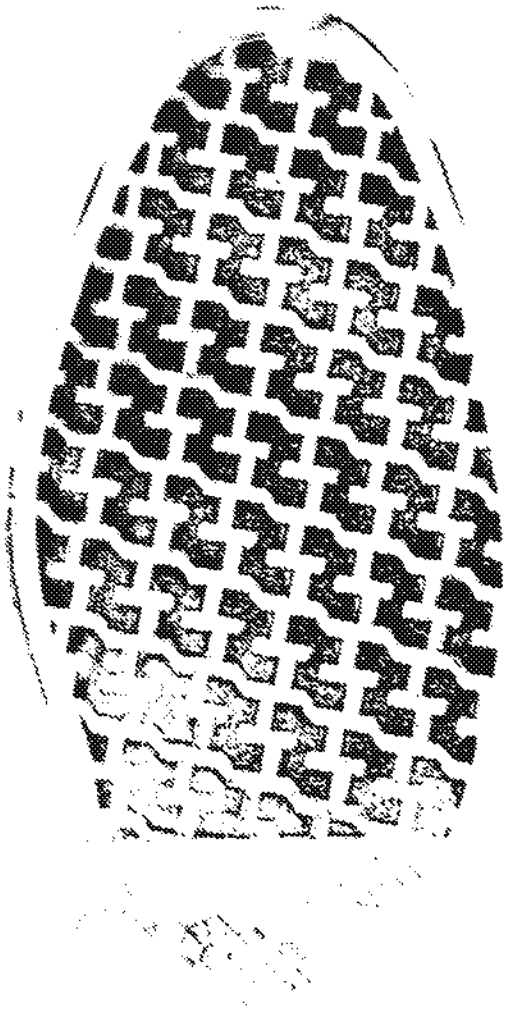

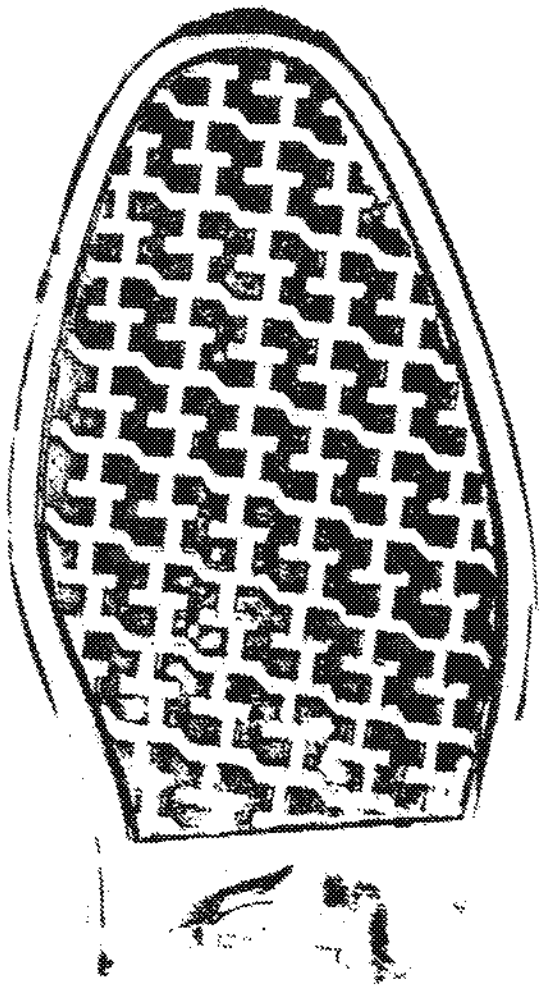

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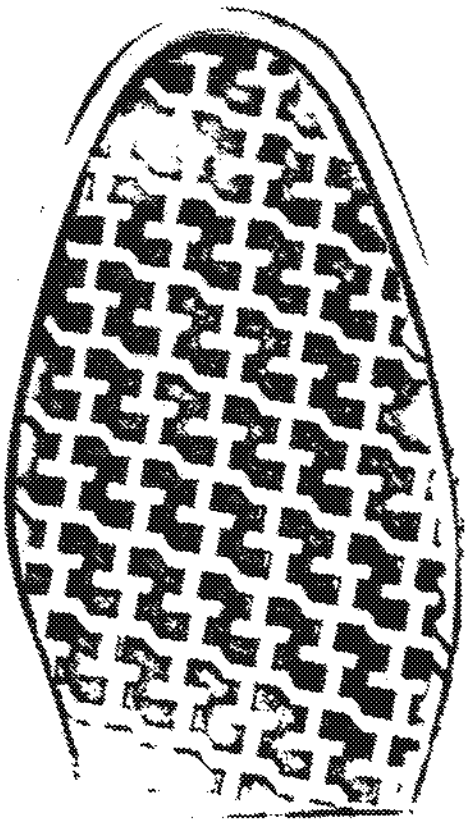

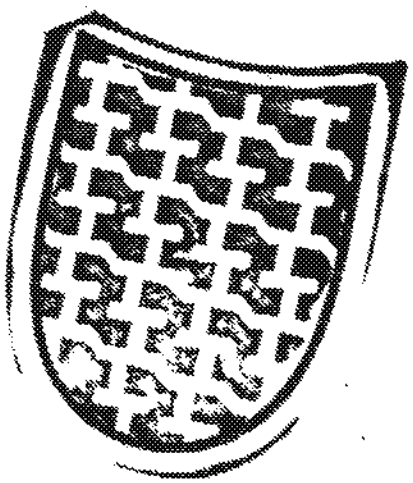

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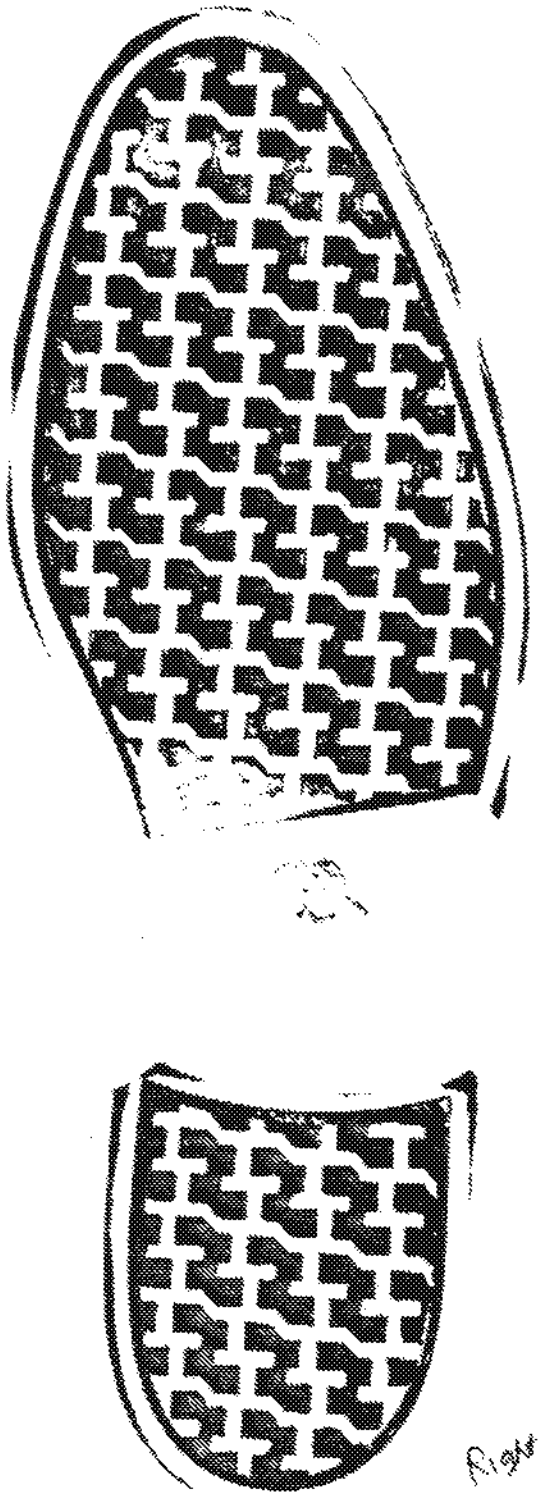
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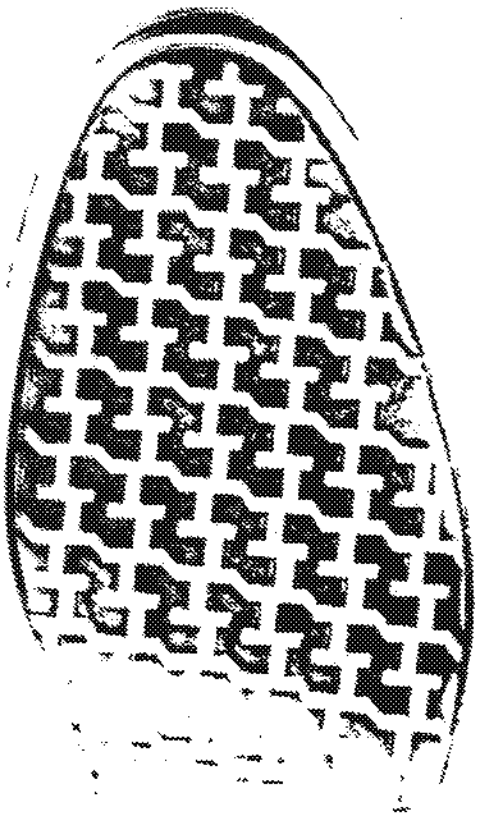

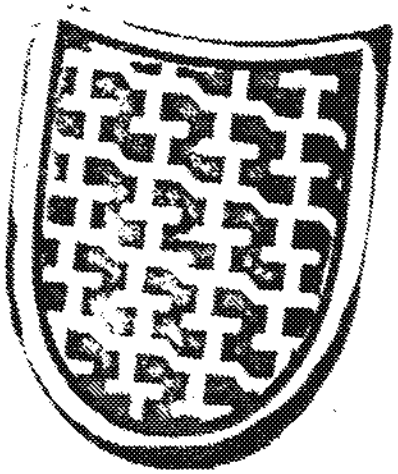

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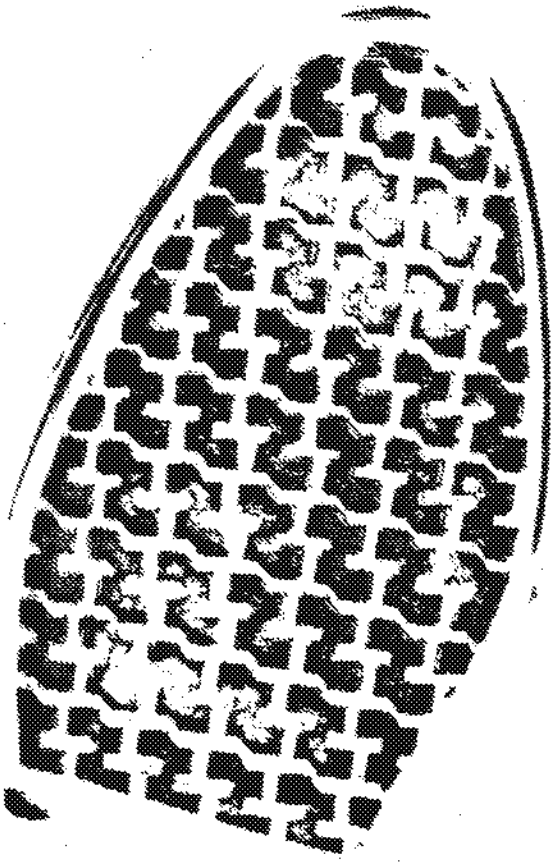

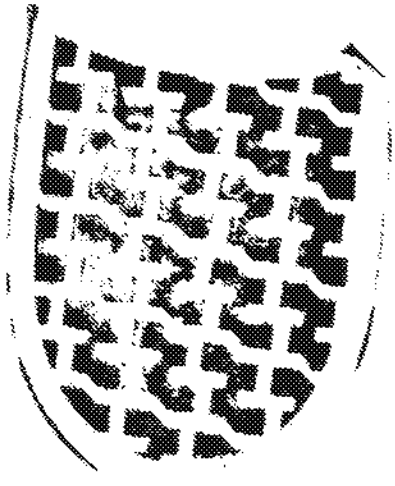

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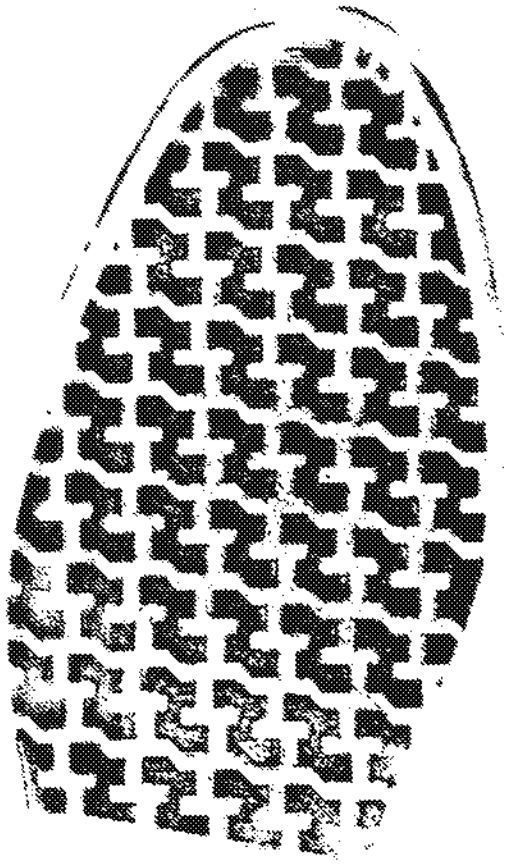

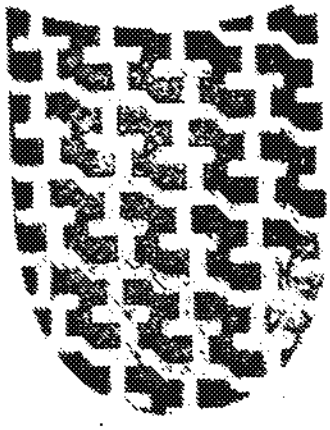

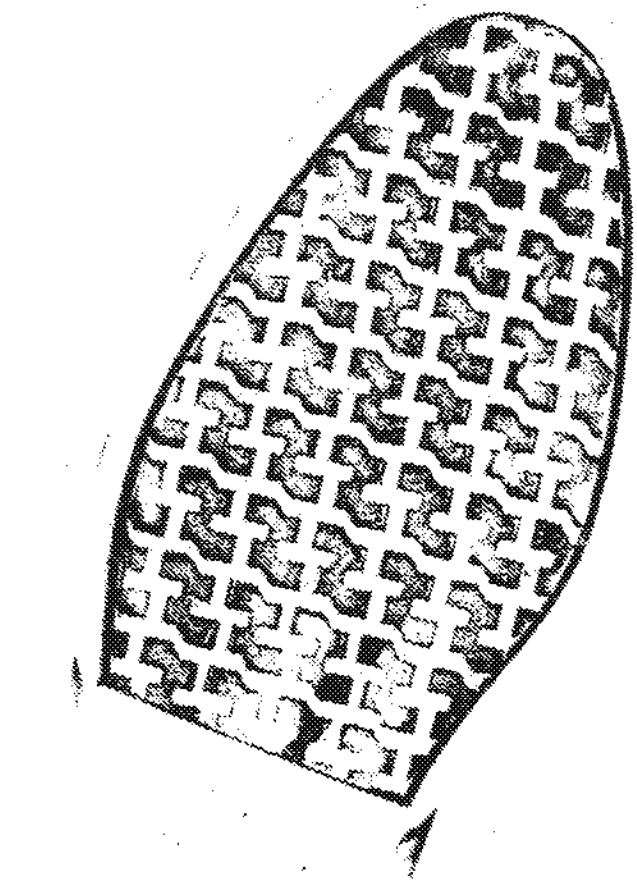

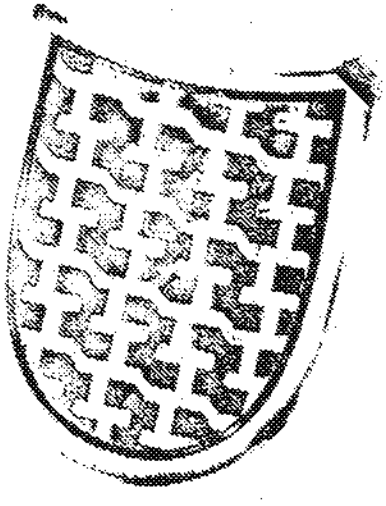

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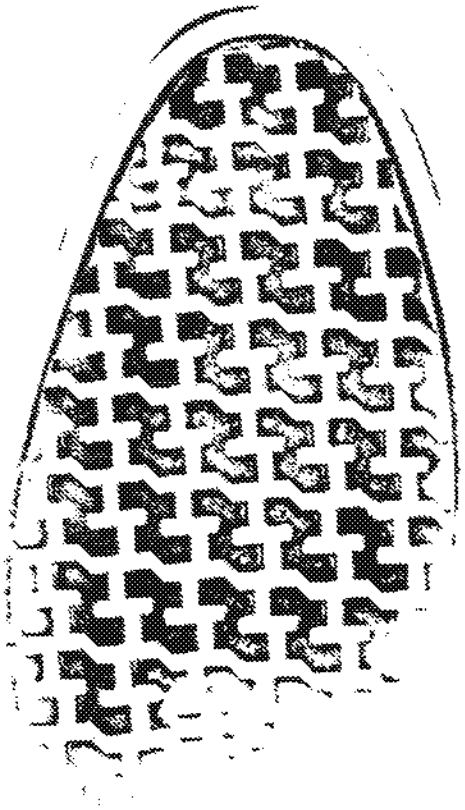

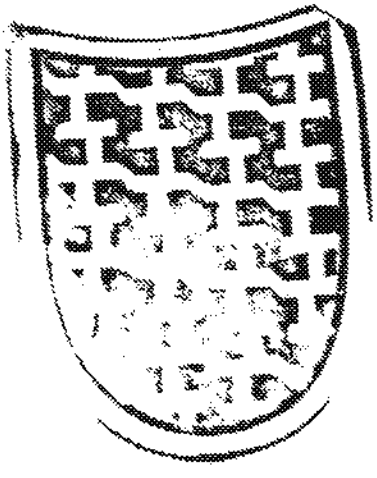

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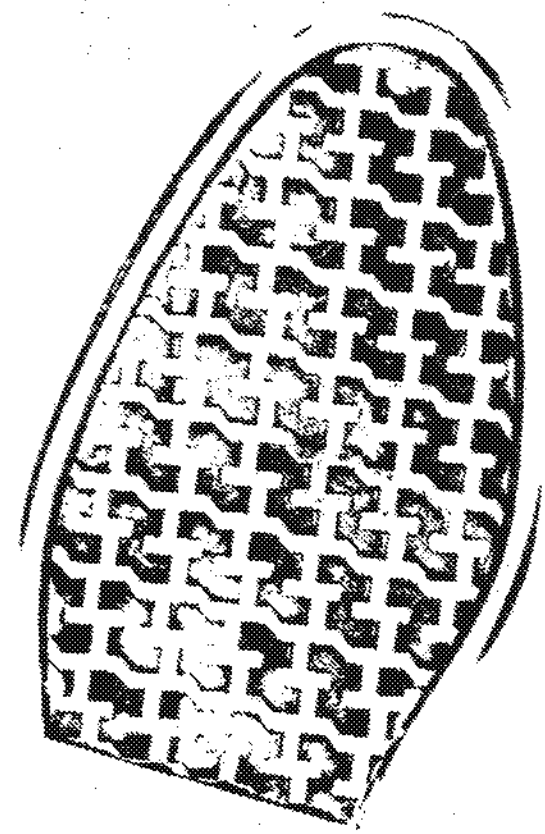

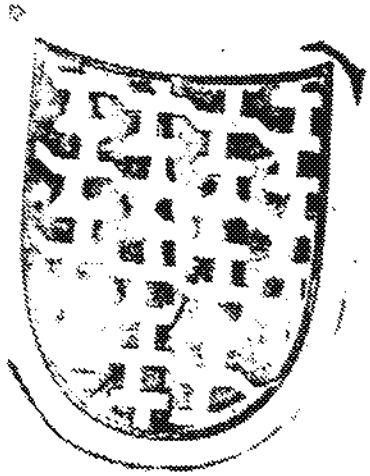

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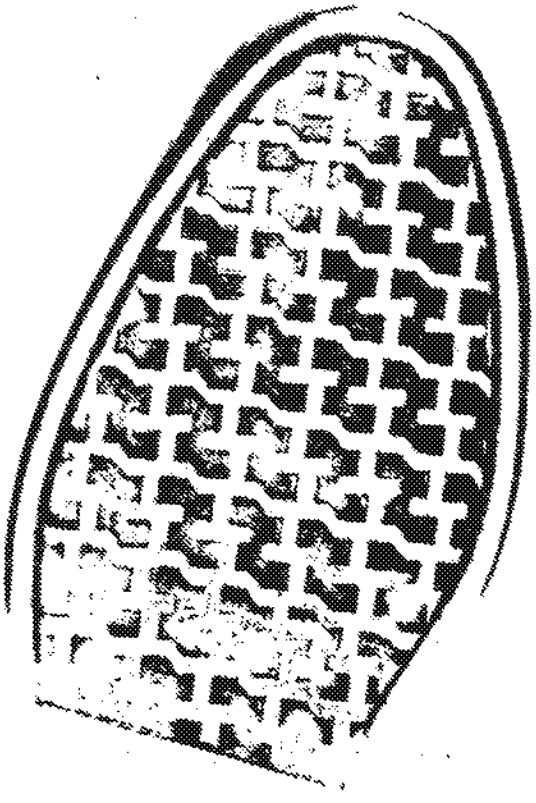

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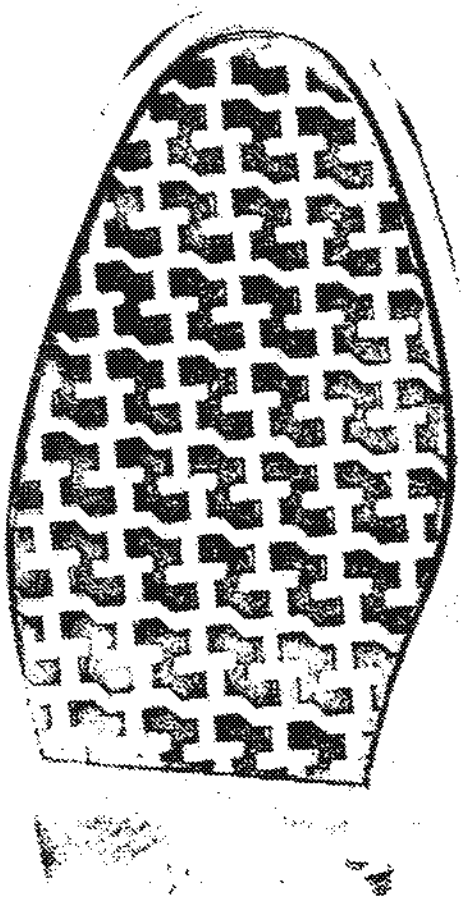

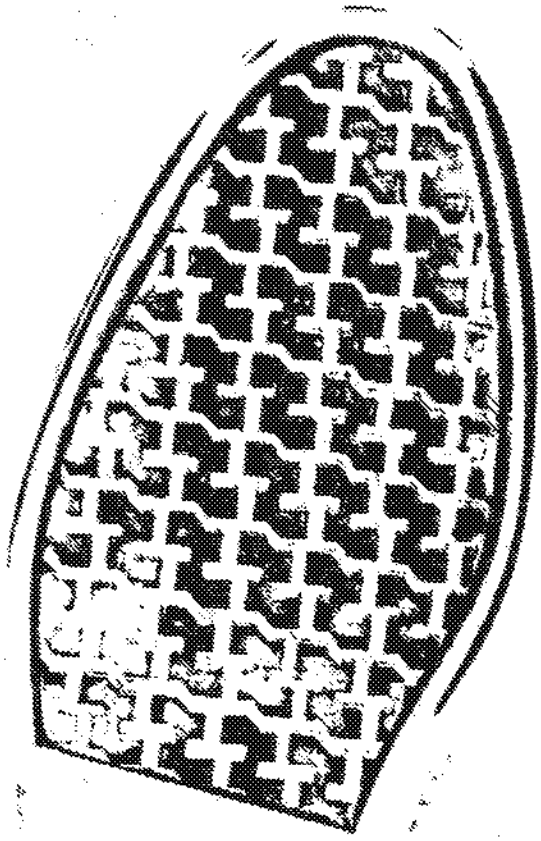

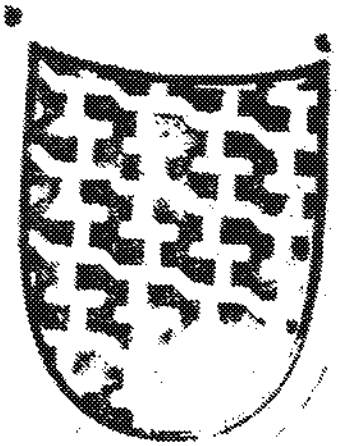

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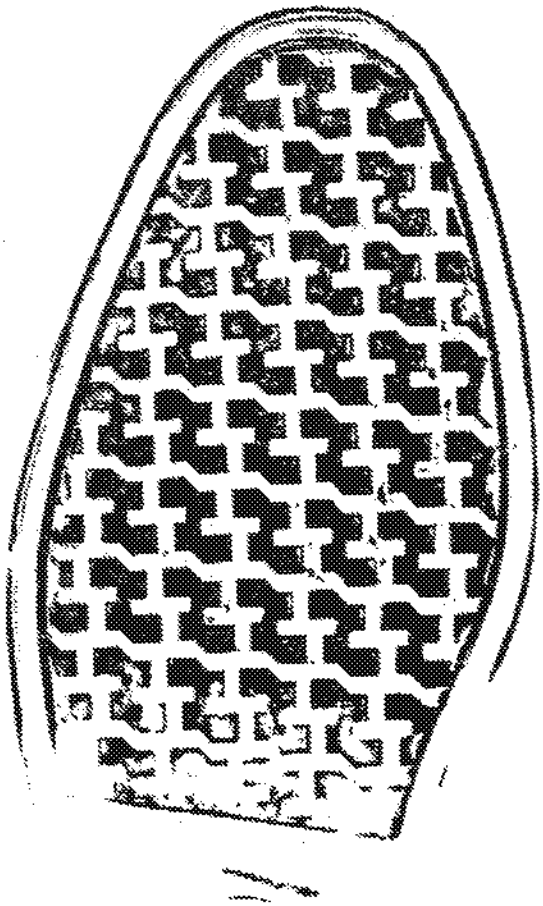

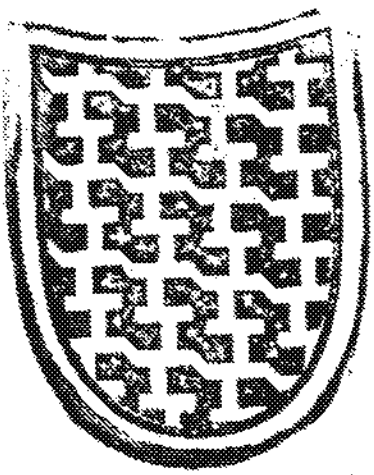

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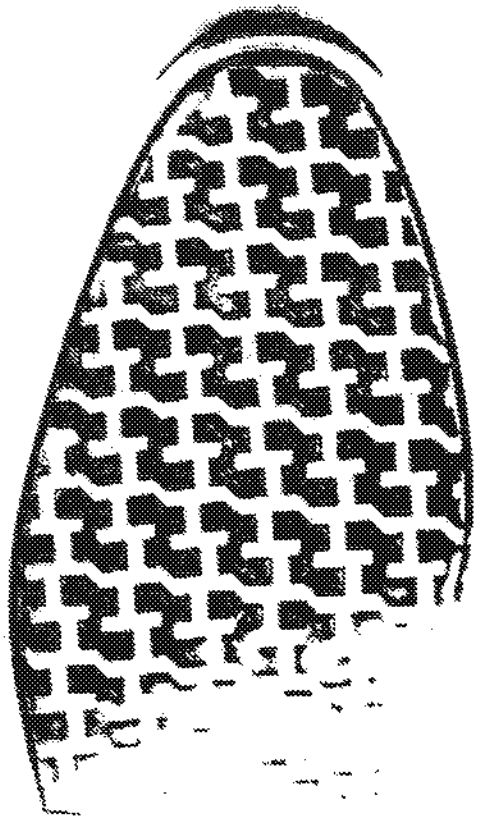

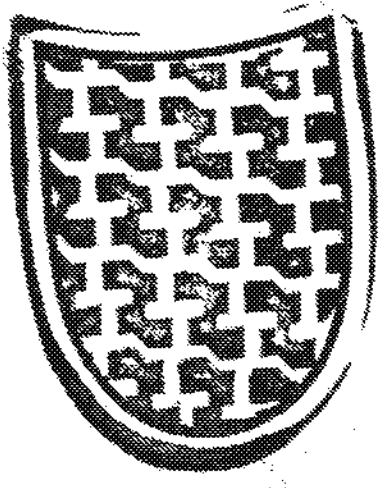

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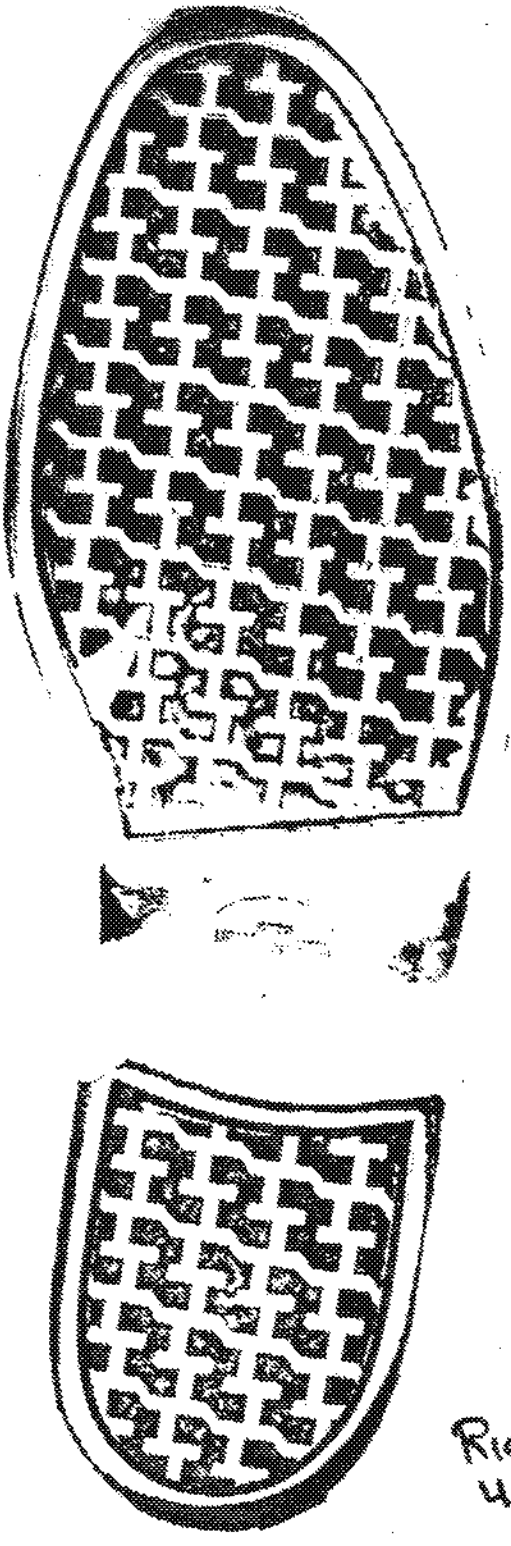
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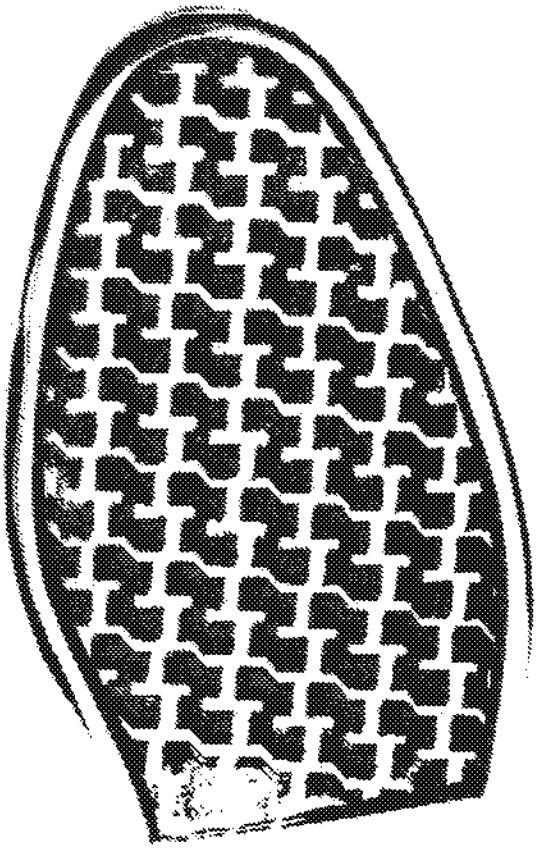

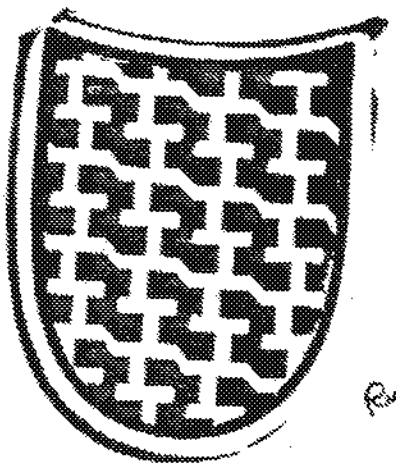

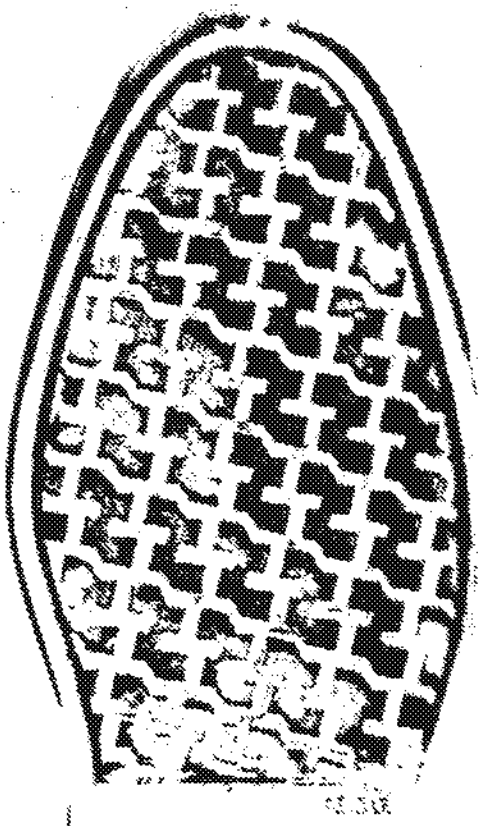

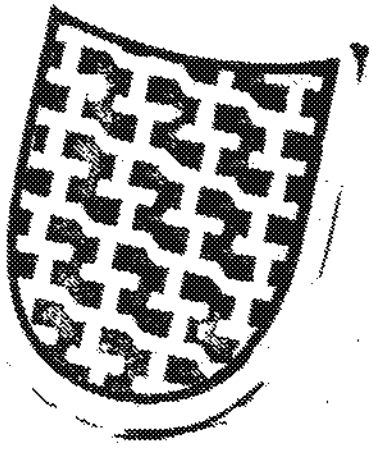

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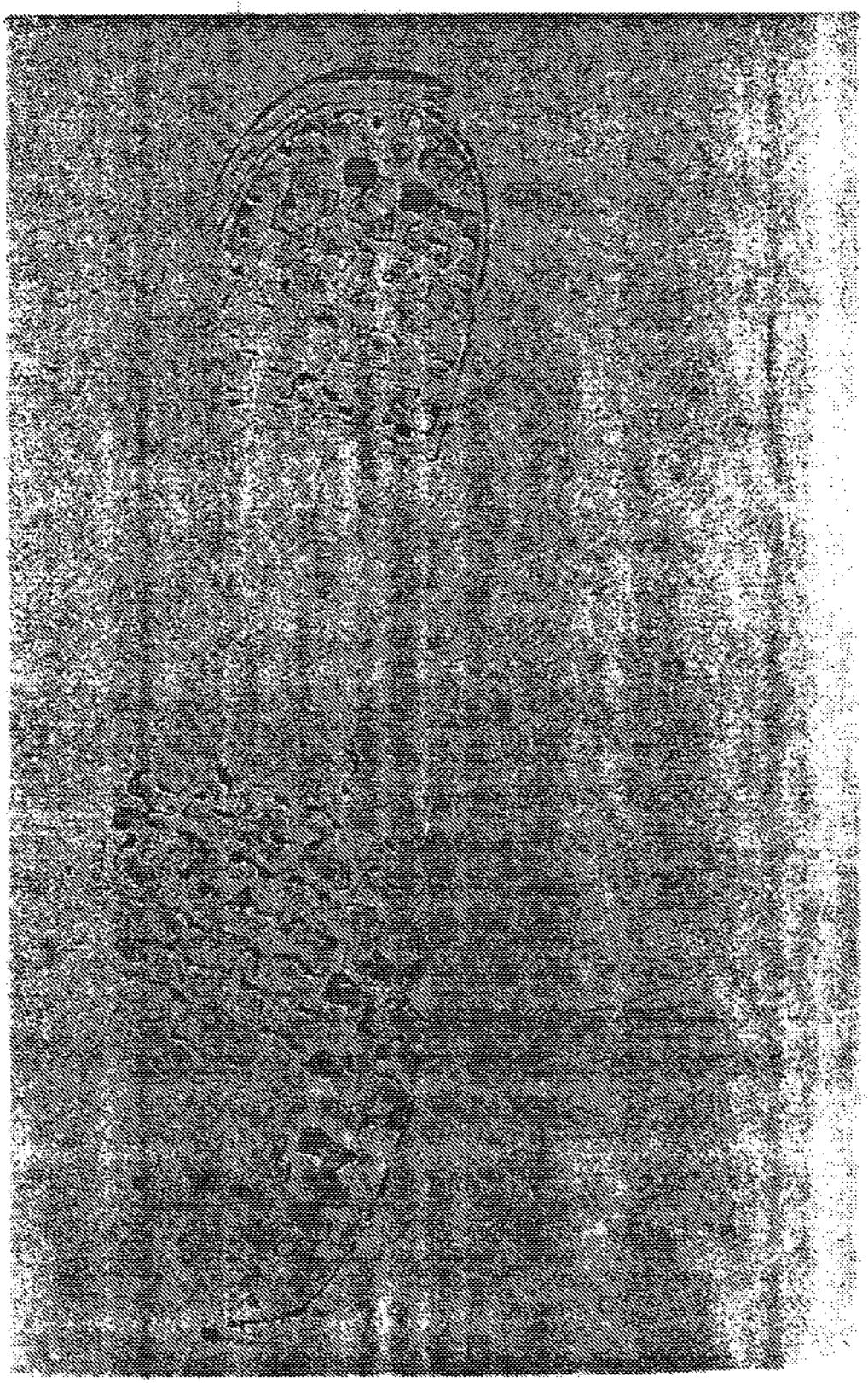

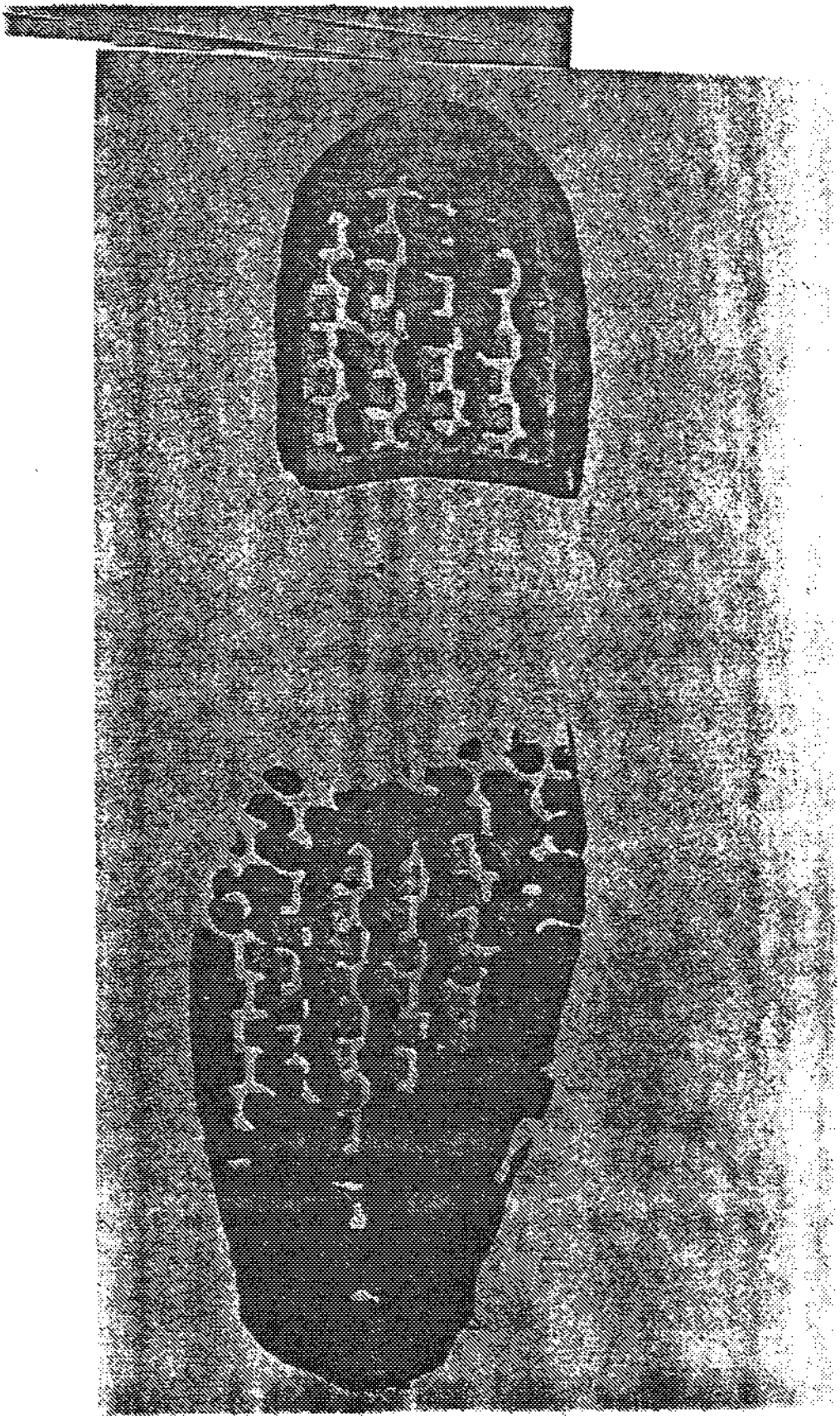

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