

FAX Cover Sheet

DATE: 29 April 1997
 TO: Major Rich Williams
 FROM: Lourdes Placeres, secretary to Dr. Thomas J. Sullivan
 ARAC Program
 Atmospheric Science Division
 Lawrence Livermore National Laboratory
 P.O. Box 808, L-103
 Livermore, CA 94551 USA
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James S. Ellis

Number of pages including cover sheet: — 19 —
 If you do not receive all pages or there is an error during transmission,
 please call (510) 422-1801.

— Message —

Dear Major Rich Williams

Attached are eighteen pages of the ARAC Calculations that were generated and used in the COVD-90-1322-1A Source Term document.

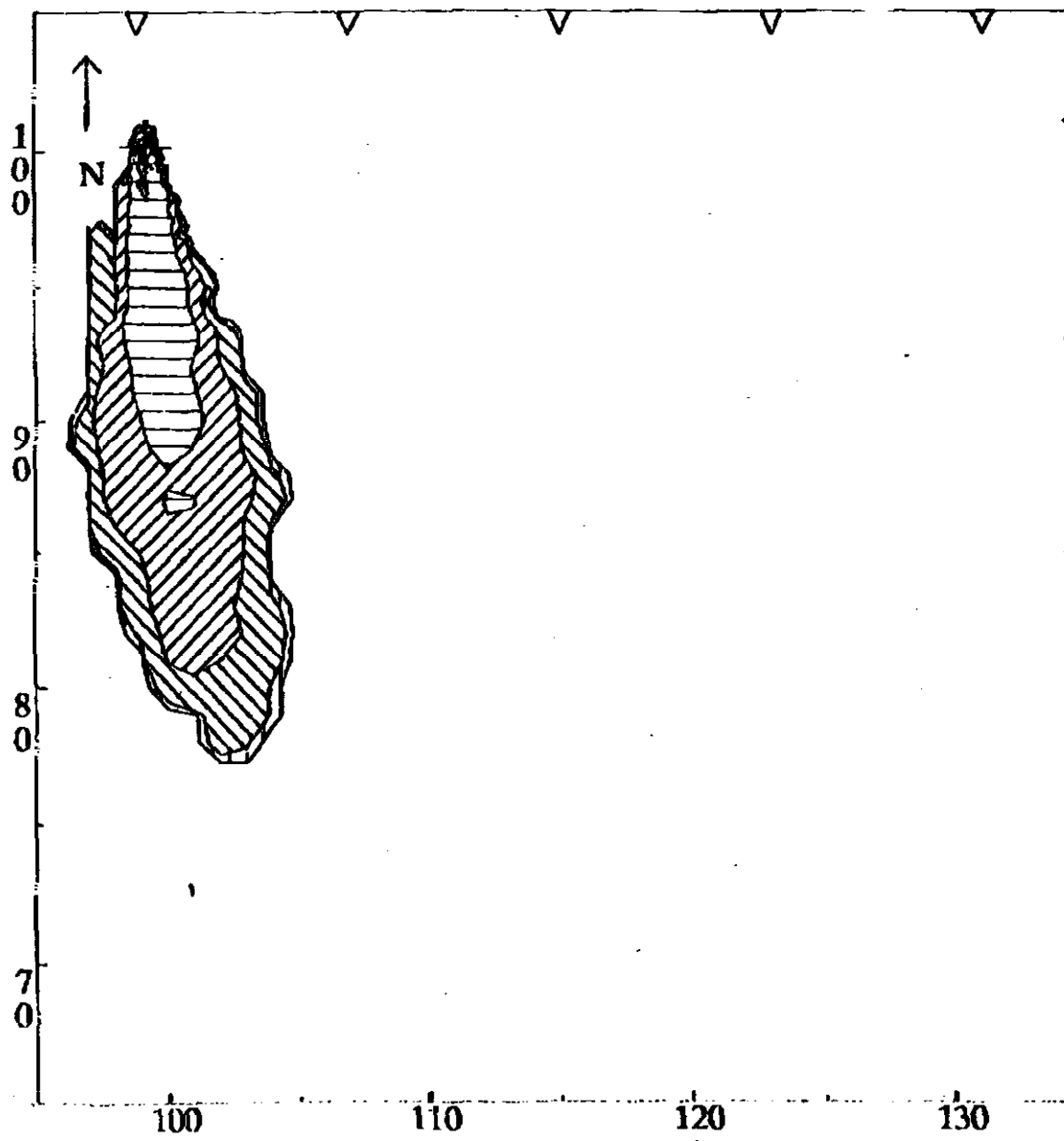
If you have any questions or need clarification, please call me at 510-422-1808.








Buddy Swingle is your contact here at LLNL, 510-423-1444

Thank you.

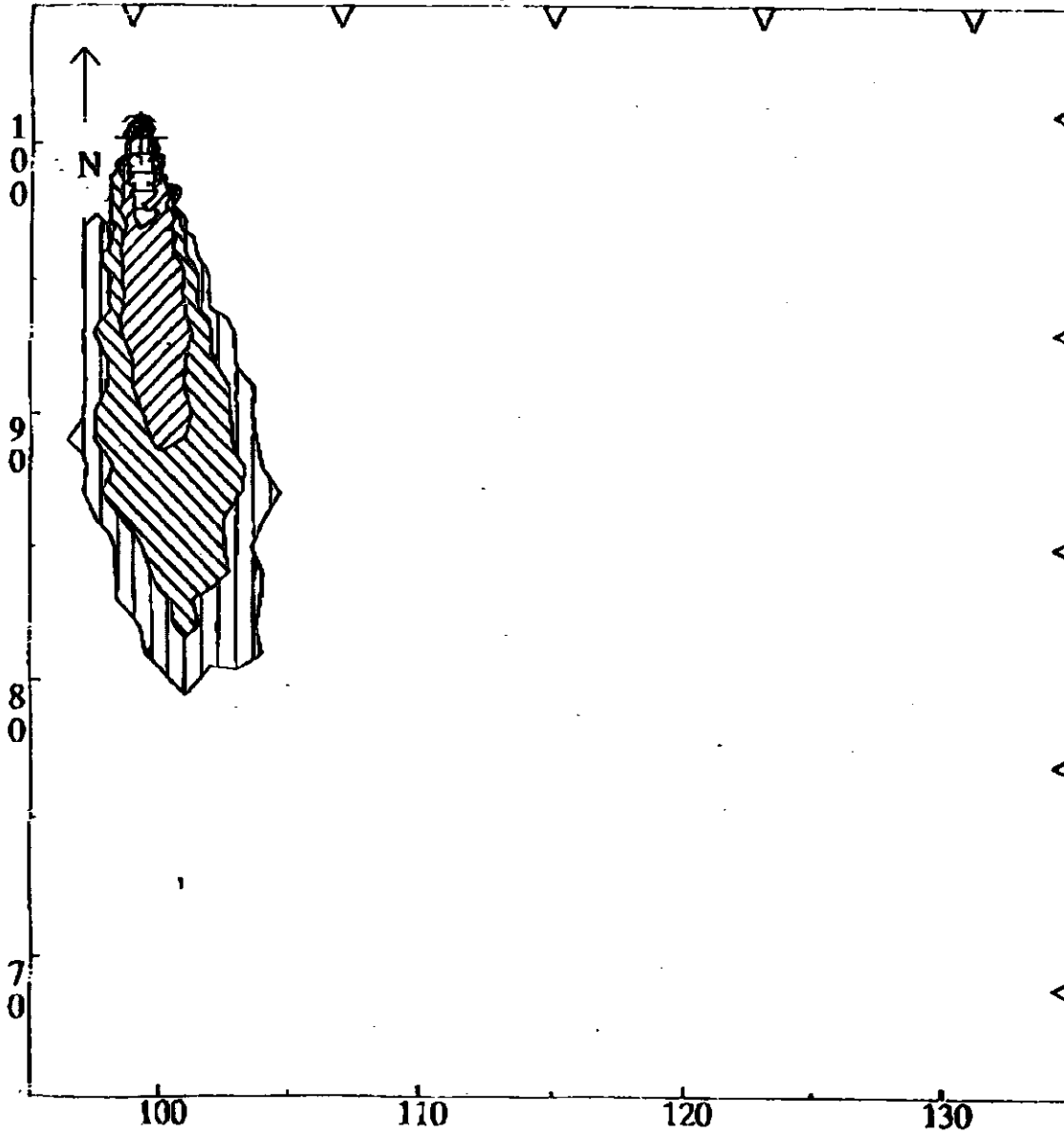
University of California


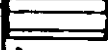









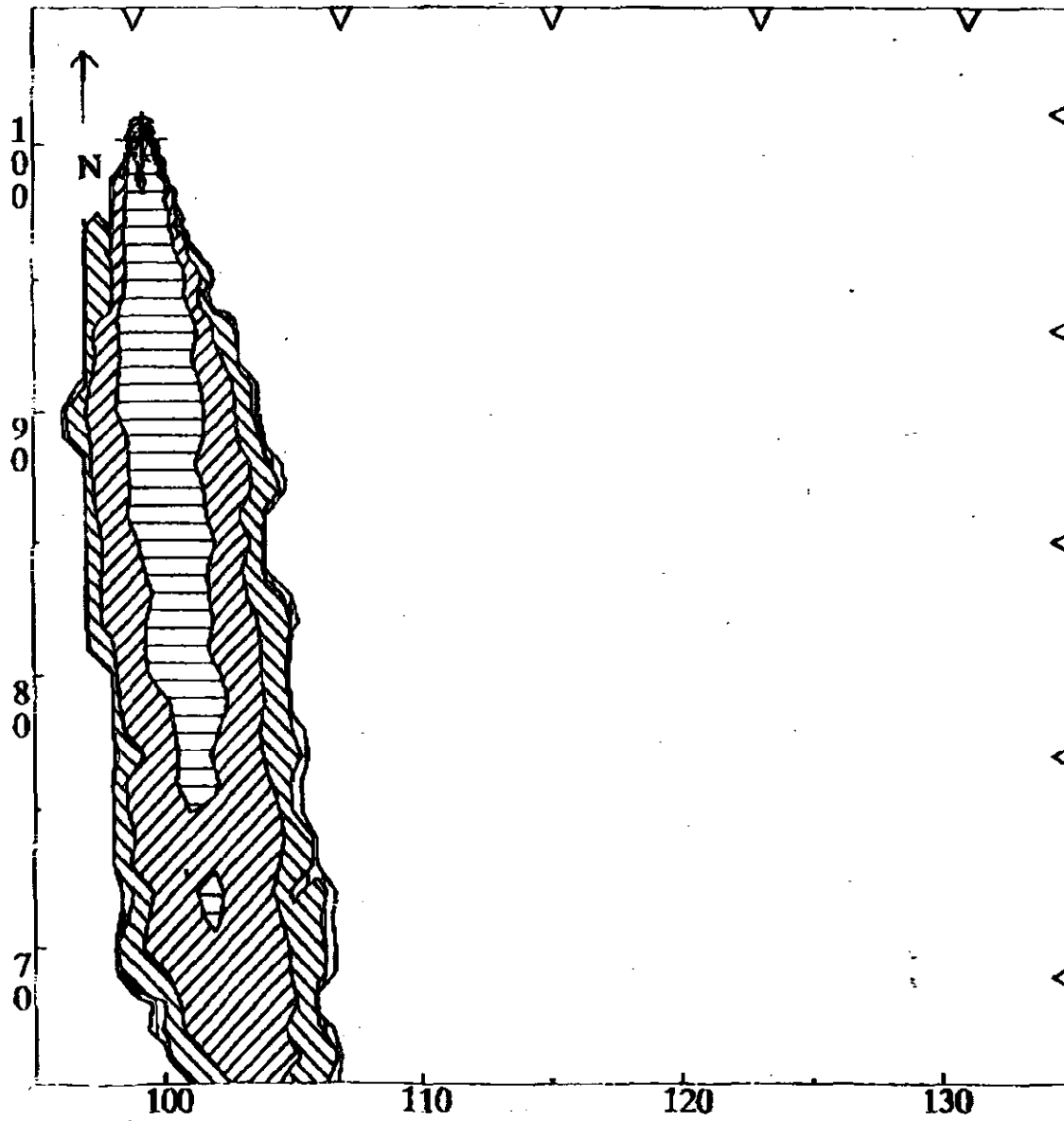
ARAC Computer Simulation Notes	
Respirable Integ. Air Conc.	
Generated: 14SEP90 1940 Z	
Calc #2B Remarks: 1 Facility Initial cld 1km diam 200m depth, 80% aeros., 50% resp., NVALUE met location C at 00z 14-Sep-90	
Integrated at 1.5 m	
14SEP90 0000 Z to 14SEP90 0100 Z	
Material: Droplets	
Contours: (Level and Area Covered)	
	> 1.00E+05 mg-min/m3
Area Covers	0.44 sq km
	> 1.00E+04 mg-min/m3
Area Covers	24.44 sq km
	> 1.00E+03 mg-min/m3
Area Covers	70.27 sq km
	> 1.00E+02 mg-min/m3
Area Covers	106.21 sq km
	> 5.00E+01 mg-min/m3
Area Covers	109.43 sq km
	ARAC
	






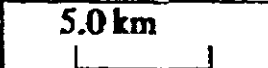

3



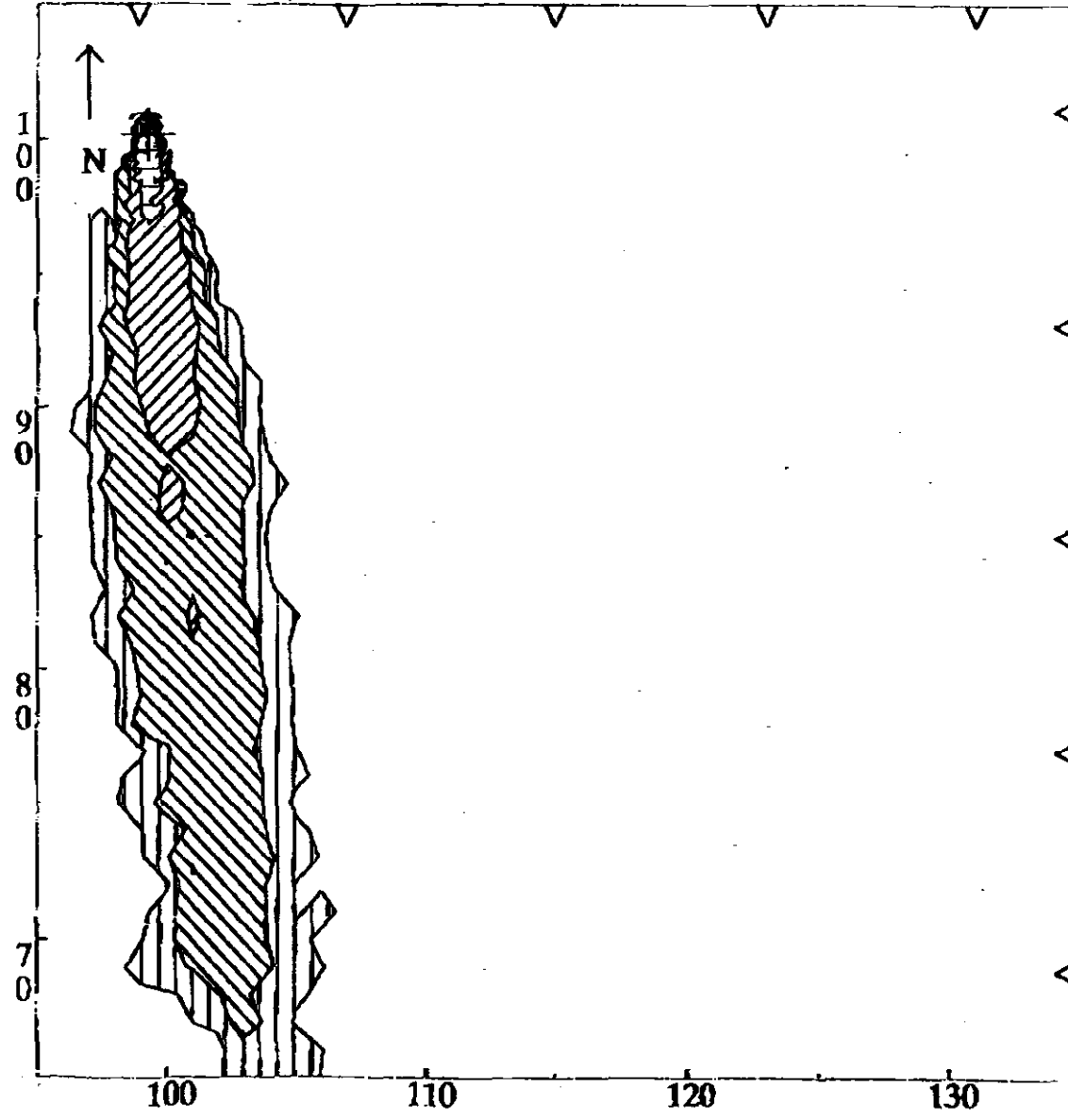
ARAC Computer Simulation Notes	
Estimated Total Deposition	
Generated: 14SEP90 1940 Z	
Calc #2B Remarks: 1 Facility Initial cld 1km diam 200m depth, 80% aeros., 50% resp., NVALUE met location C at 00z 14-Sep-90	
Total Deposition at 0.0 m	
14SEP90 0000 Z to 14SEP90 0100 Z	
Material: Droplets	
Contours: (Level and Area Covered)	
	> 1.00E+07 mg/m2
Area Covers	0.02 sq km
	> 1.00E+06 mg/m2
Area Covers	2.50 sq km
	> 1.00E+05 mg/m2
Area Covers	20.84 sq km
	> 1.00E+04 mg/m2
Area Covers	63.27 sq km
	> 1.00E+03 mg/m2
Area Covers	93.54 sq km
	ARAC
	








4



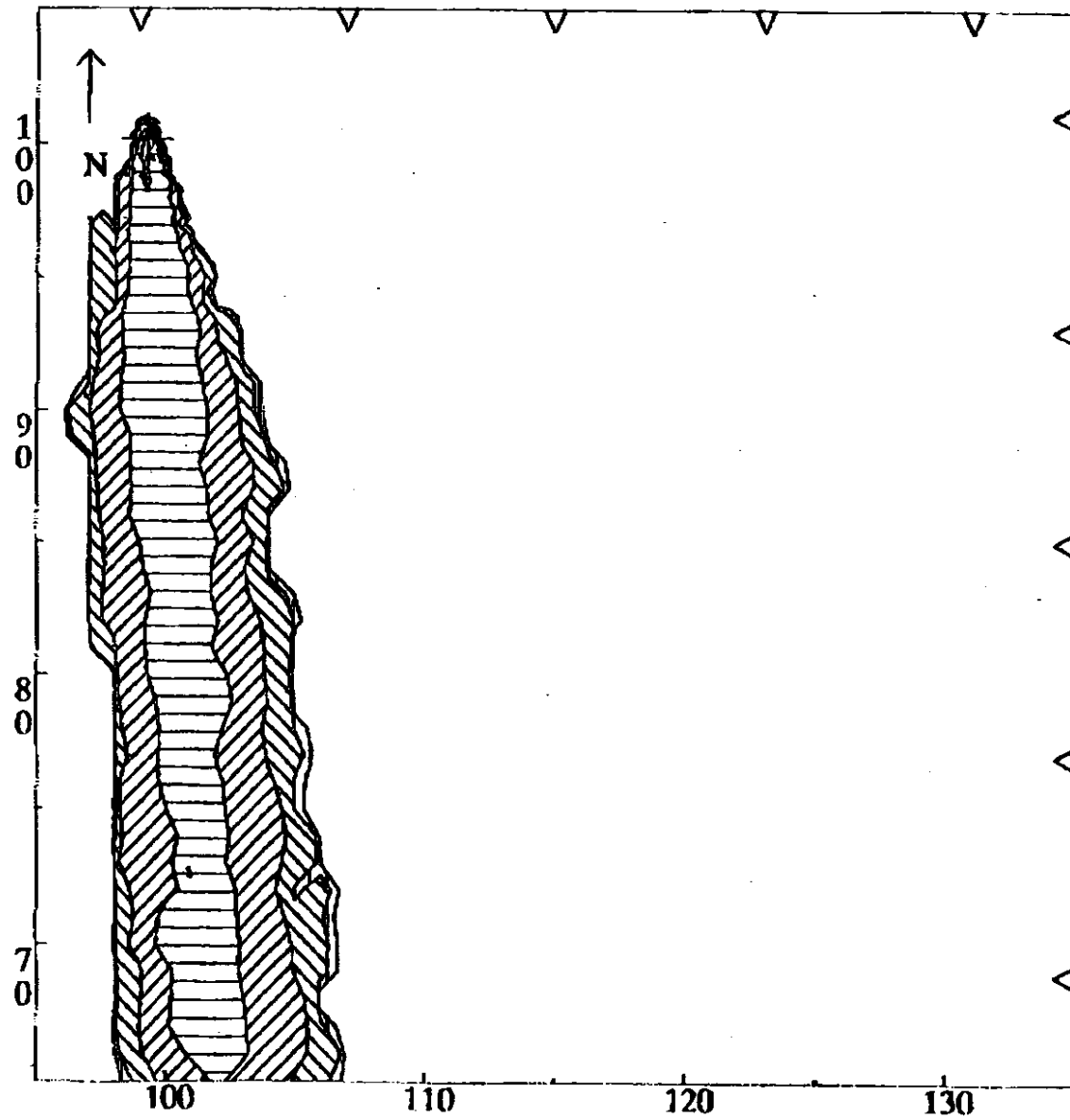
ARAC Computer Simulation Notes	
Respirable Integ. Air Conc.	
Generated: 14SEP90 1940 Z	
Calc #2B Remarks: 1 Facility Initial cld 1km diam 200m depth, 80% aeros., 50% resp., NVALUE met location C at 00z 14-Sep-90	
Integrated at 1.5 m	
14SEP90 0000 Z to 14SEP90 0200 Z	
Material: Droplets	
Contours: (Level and Area Covered)	
	> 1.00E+05 mg-min/m ³ Area Covers 0.44 sq km
	> 1.00E+04 mg-min/m ³ Area Covers 58.69 sq km
	> 1.00E+03 mg-min/m ³ Area Covers 162.27 sq km
	> 1.00E+02 mg-min/m ³ Area Covers 208.21 sq km
	> 5.00E+01 mg-min/m ³ Area Covers 215.43 sq km
	ARAC
	


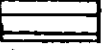




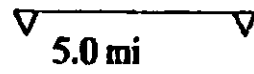
5



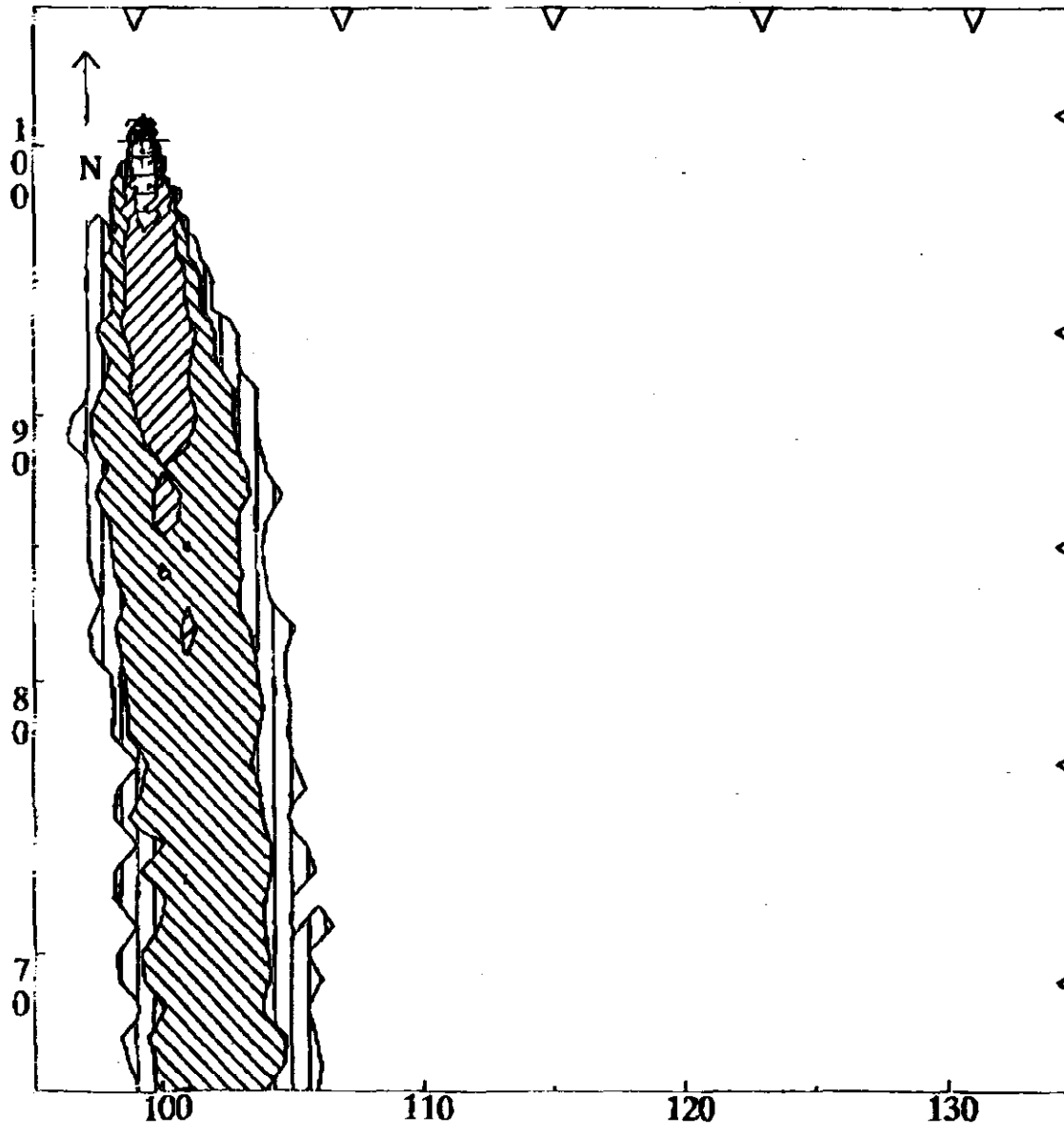
ARAC Computer Simulation Notes	
Estimated Total Deposition	
Generated: 14SEP90 1940 Z	
Calc #2B Remarks: 1 Facility Initial cld 1km diam 200m depth, 80% aeros., 50% resp., NVALUE met location C at 00z 14-Sep-90	
Total Deposition at 0.0 m 14SEP90 0000 Z to 14SEP90 0200 Z	
Material: Droplets	
Contours: (Level and Area Covered)	
	> 1.00E+07 mg/m2
Area Covers	0.02 sq km
	> 1.00E+06 mg/m2
Area Covers	2.50 sq km
	> 1.00E+05 mg/m2
Area Covers	29.09 sq km
	> 1.00E+04 mg/m2
Area Covers	127.27 sq km
	> 1.00E+03 mg/m2
Area Covers	192.54 sq km
	5.0 km
	5.0 mi
ARAC	


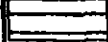




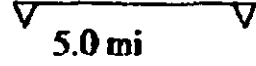
(6)

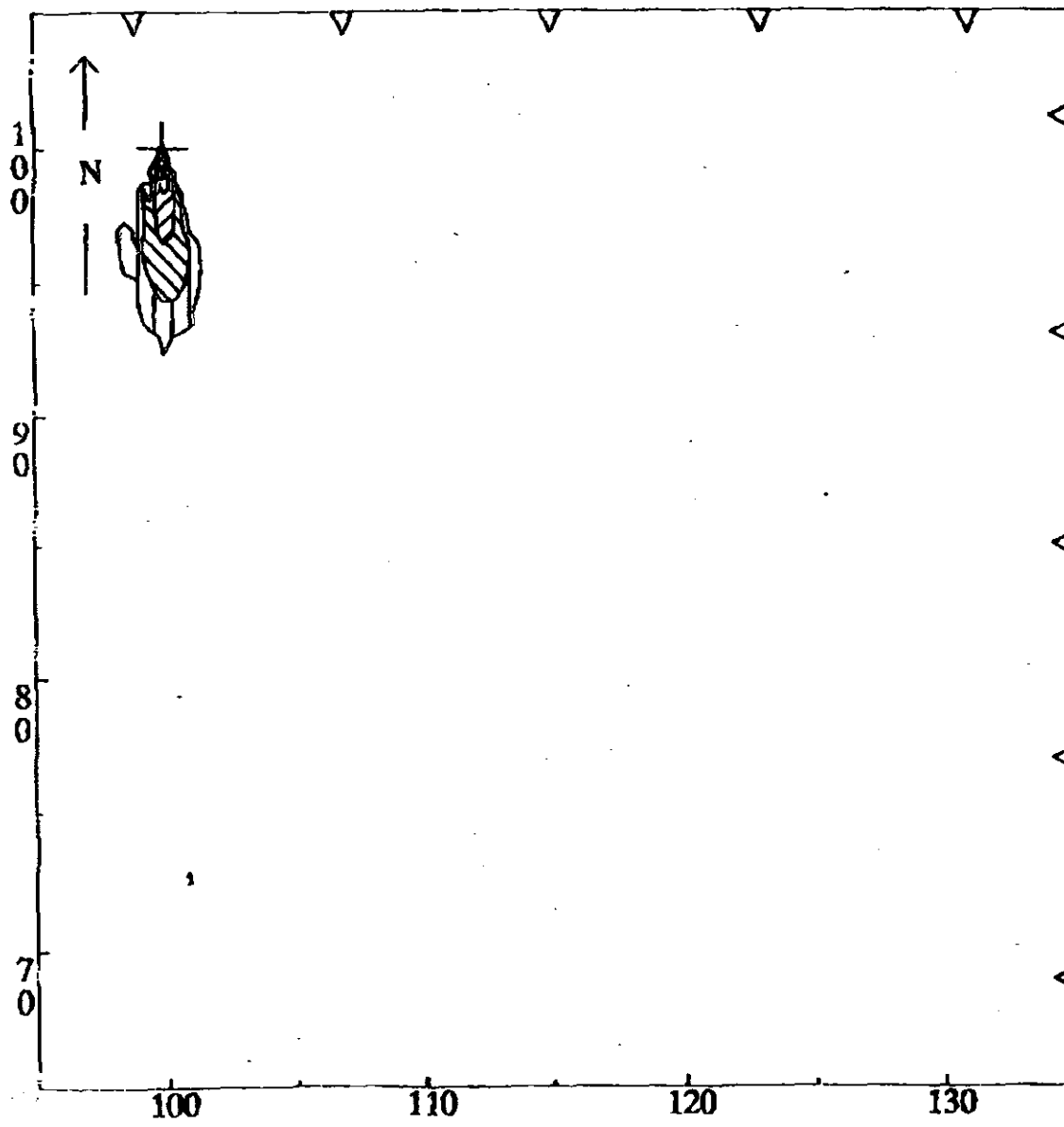


ARAC Computer Simulation Notes	
Respirable Integ. Air Conc.	
Generated: 14SEP90 1940 Z	
Calc #2B Remarks: 1 Facility Initial cld 1km diam 200m depth, 80% aeros., 50% resp., NVALUE met location C at 00z 14-Sep-90	
Integrated at 1.5 m	
14SEP90 0000 Z to 14SEP90 0600 Z	
Material: Droplets	
Contours: (Level and Area Covered)	
	> 1.00E+05 mg-min/m3 Area Covers 0.44 sq km
	> 1.00E+04 mg-min/m3 Area Covers 87.69 sq km
	> 1.00E+03 mg-min/m3 Area Covers 176.27 sq km
	> 1.00E+02 mg-min/m3 Area Covers 216.21 sq km
	> 5.00E+01 mg-min/m3 Area Covers 222.43 sq km
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ARAC Computer Simulation Notes	
Estimated Total Deposition	
Generated: 14SEP90 1940 Z	
Calc #2B Remarks: 1 Facility Initial cld 1km diam 200m depth, 80% aeros., 50% resp., NVALUE met location C at 00z 14-Sep-90	
Total Deposition at 0.0 m	
14SEP90 0000 Z to 14SEP90 0600 Z	
Material: Droplets	
Contours: (Level and Area Covered)	
	> 1.00E+07 mg/m ²
Area Covers	0.02 sq km
	> 1.00E+06 mg/m ²
Area Covers	2.50 sq km
	> 1.00E+05 mg/m ²
Area Covers	30.09 sq km
	> 1.00E+04 mg/m ²
Area Covers	150.27 sq km
	> 1.00E+03 mg/m ²
Area Covers	208.54 sq km
	
	
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ARAC Computer Simulation Notes

Respirable Integ. Air Conc.


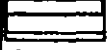



Generated: 14SEP90 1847 Z

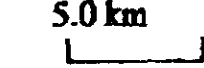
Calc #1 Remarks: One Item.
25m diam initial sphere at 20m above gnd. NVALUE metadata for location C at 00z 14-Sep-90

Integrated at 1.5 m
14SEP90 0000 Z to 14SEP90 0100 Z


Material: Droplets

Contours:
(Level and Area Covered)

	> 1.00E+02 mg-min/m ³
	Area Covers 0.16 sq km
	> 5.00E+01 mg-min/m ³
	Area Covers 0.39 sq km
	> 1.00E+01 mg-min/m ³
	Area Covers 1.94 sq km
	> 1.00E+00 mg-min/m ³
	Area Covers 6.29 sq km
	> 1.00E-01 mg-min/m ³
	Area Covers 12.71 sq km

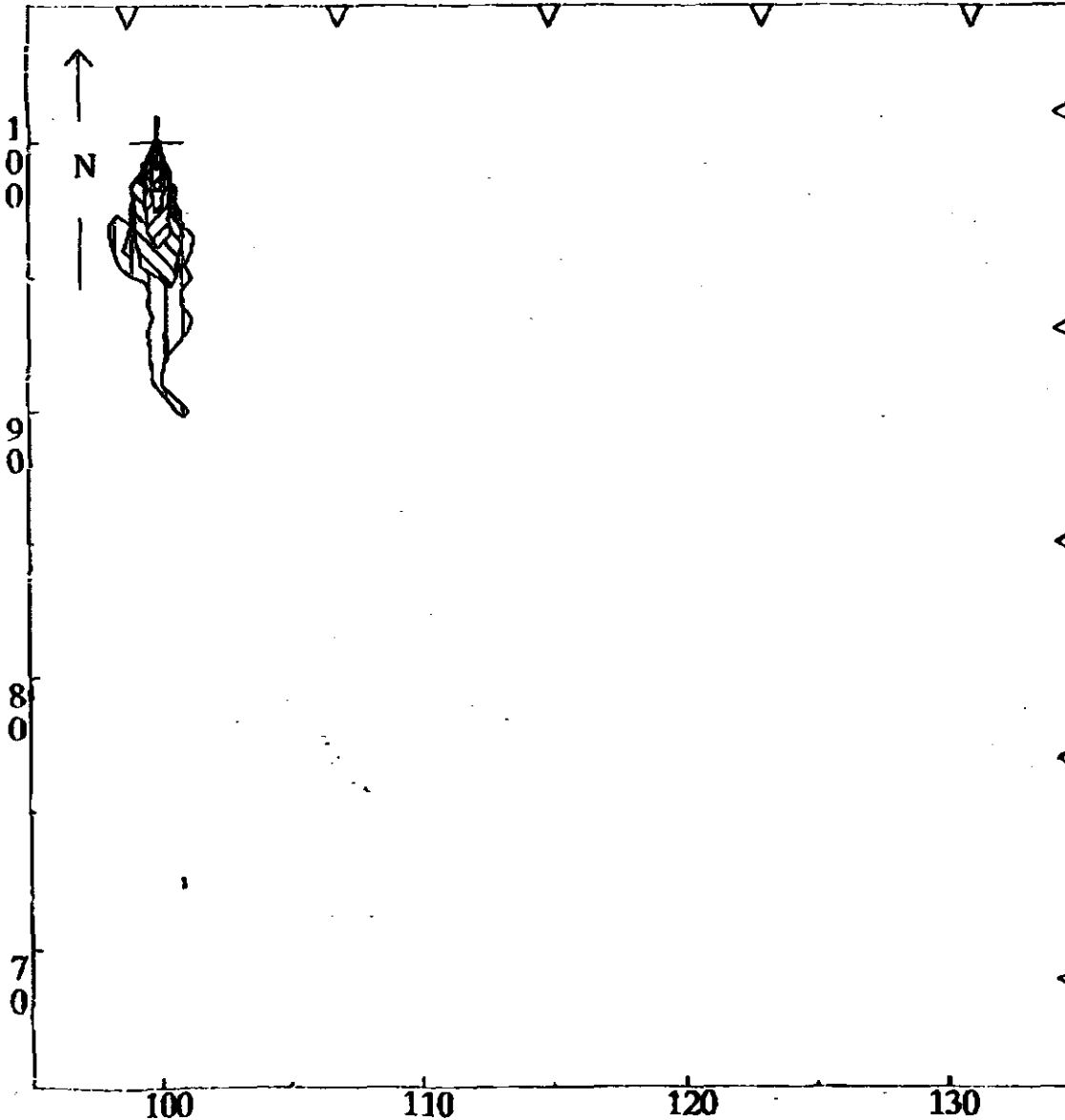



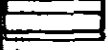





5.0 km



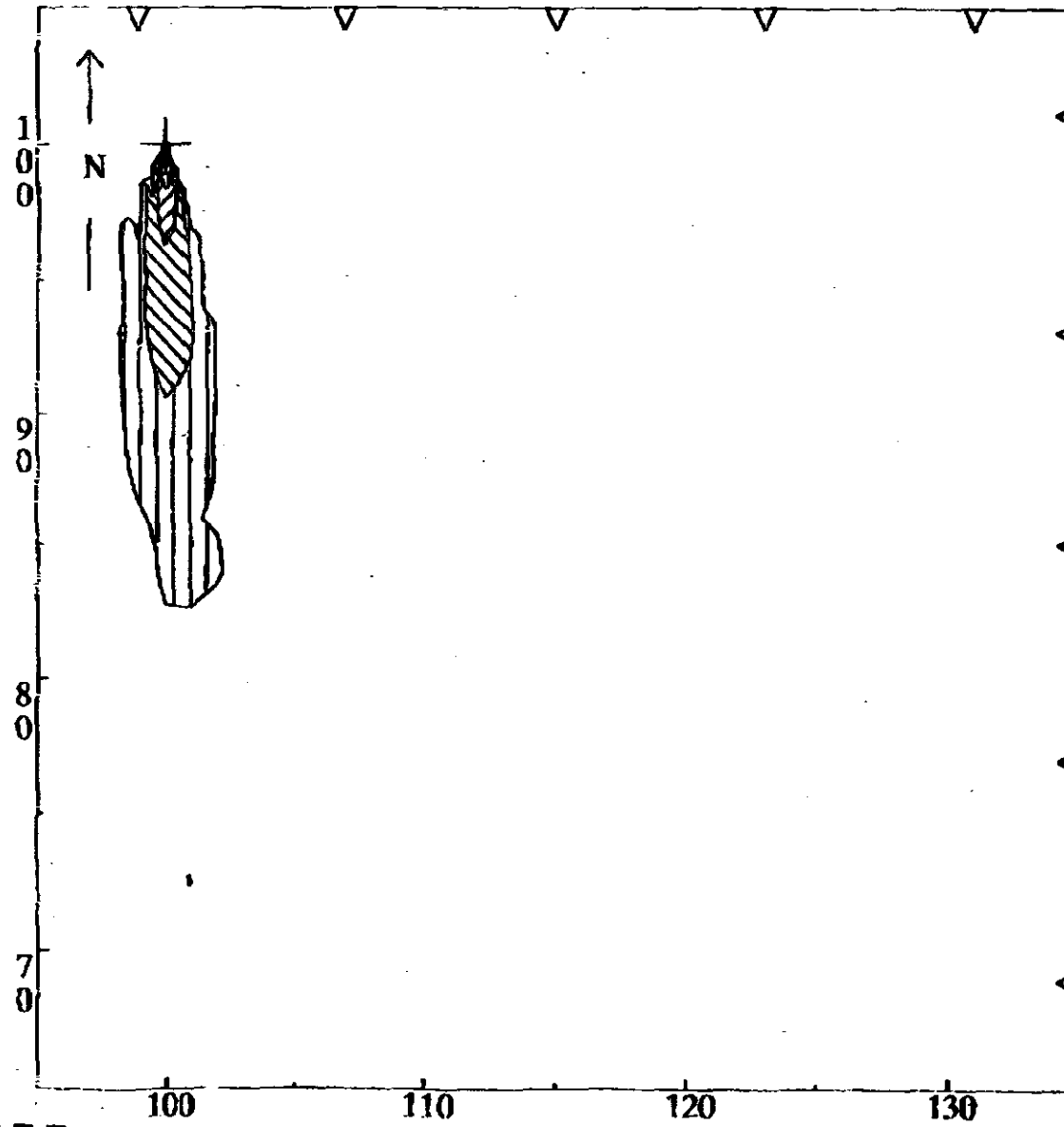
5.0 mi

ARAC



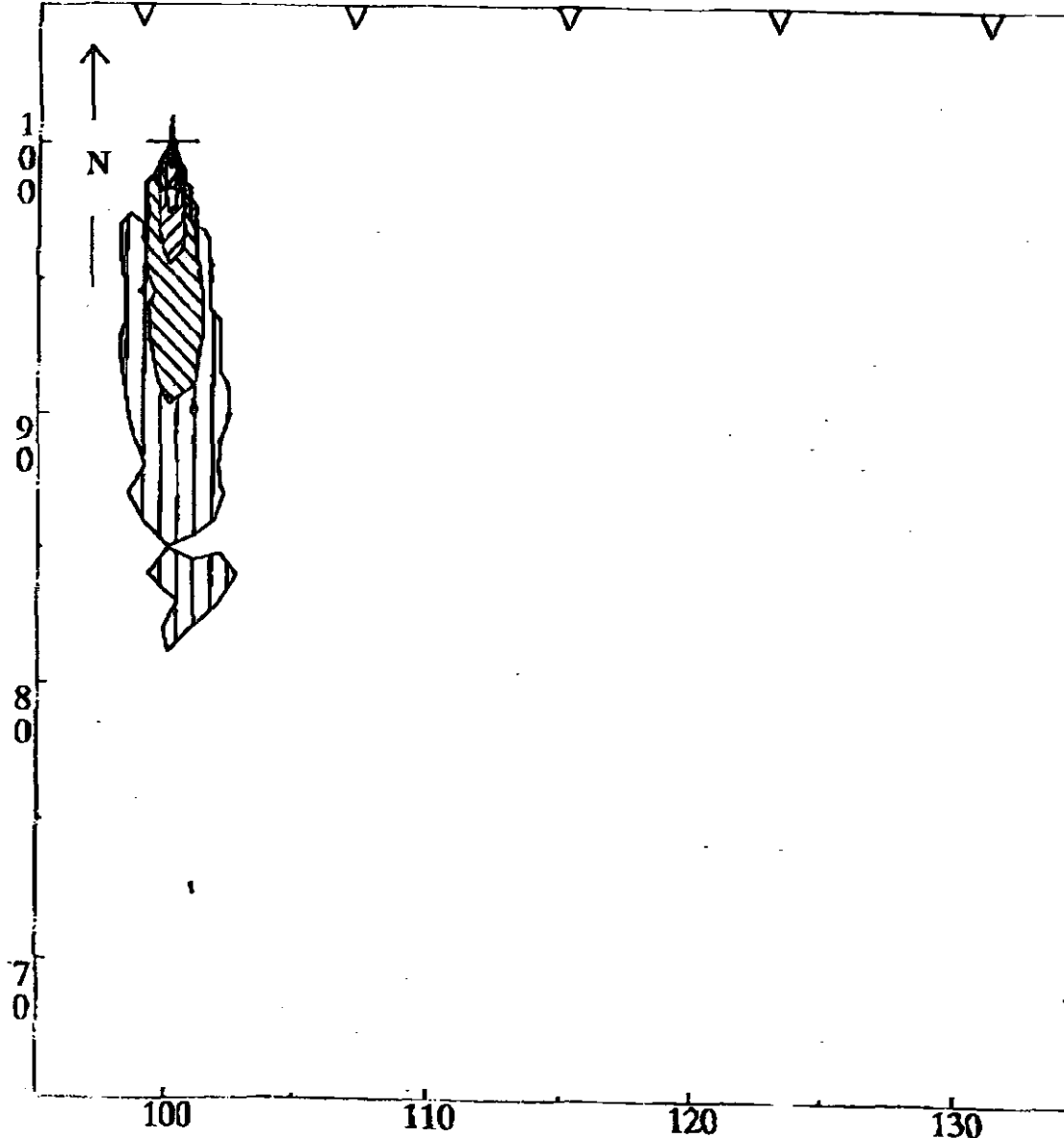
ARAC Computer Simulation Notes	
Estimated Total Deposition	
Generated: 14SEP90 1847 Z	
Calc #1 Remarks: One Item. 25m diam initial sphere at 20m above gnd. NVALUE metadata for location C at 00z 14-Sep-90	
Total Deposition at 0.0 m 14SEP90 0000 Z to 14SEP90 0100 Z	
Material: Droplets	
Contours: (Level and Area Covered)	
	> 1.00E+02 mg/m2
Area Covers	0.52 sq km
	> 5.00E+01 mg/m2
Area Covers	0.93 sq km
	> 1.00E+01 mg/m2
Area Covers	2.54 sq km
	> 1.00E+00 mg/m2
Area Covers	5.97 sq km
	> 1.00E-01 mg/m2
Area Covers	14.20 sq km
	5.0 km
	5.0 mi
ARAC	








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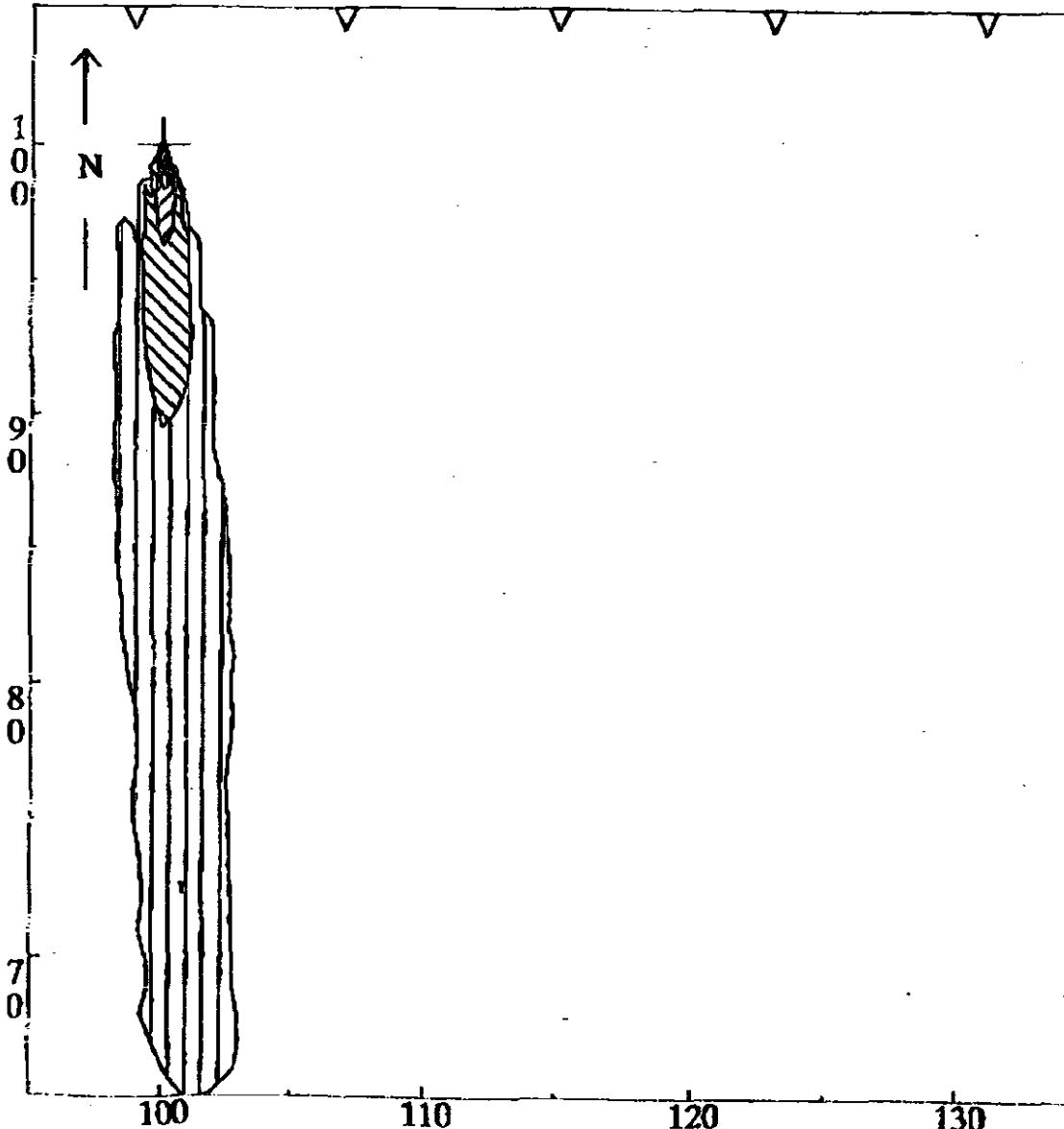
ARAC Computer Simulation Notes	
Respirable Integ. Air Conc.	
Generated: 14SEP90 1847 Z	
Calc #1 Remarks: One Item. 25m diam initial sphere at 20m above gnd. NVALUE metadata for location C at 00z 14-Sep-90	
Integrated at 1.5 m	
14SEP90 0000 Z to 14SEP90 0200 Z	
Material: Droplets	
Contours: (Level and Area Covered)	
	> 1.00E+02 mg-min/m3
Area Covers	0.16 sq km
	> 5.00E+01 mg-min/m3
Area Covers	0.39 sq km
	> 1.00E+01 mg-min/m3
Area Covers	1.94 sq km
	> 1.00E+00 mg-min/m3
Area Covers	13.36 sq km
	> 1.00E-01 mg-min/m3
Area Covers	44.21 sq km
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(11)



ARAC Computer Simulation Notes	
Estimated Total Deposition	
Generated: 14SEP90 1847 Z	
Calc #1 Remarks: One Item. 25m diam initial sphere at 20m above gnd. NVALUE metadata for location C at 00z 14-Sep-90	
Total Deposition at 0.0 m 14SEP90 0000 Z to 14SEP90 0200 Z	
Material: Droplets	
Contours: (Level and Area Covered)	
	> 1.00E+02 mg/m2
Area Covers	0.52 sq km
	> 5.00E+01 mg/m2
Area Covers	0.93 sq km
	> 1.00E+01 mg/m2
Area Covers	2.98 sq km
	> 1.00E+00 mg/m2
Area Covers	15.04 sq km
	> 1.00E-01 mg/m2
Area Covers	45.26 sq km
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ARAC Computer Simulation Notes

Respirable Integ. Air Conc.


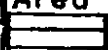

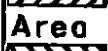

Generated: 14SEP90 1847 Z

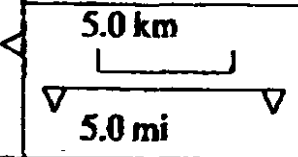
Calc #1 Remarks: One item.
25m diam initial sphere at 20m above gnd. NVALUE mldata for location C at 00z 14-Sep-90

Integrated at 1.5 m
14SEP90 0000 Z to 14SEP90 0600 Z

Material: Droplets

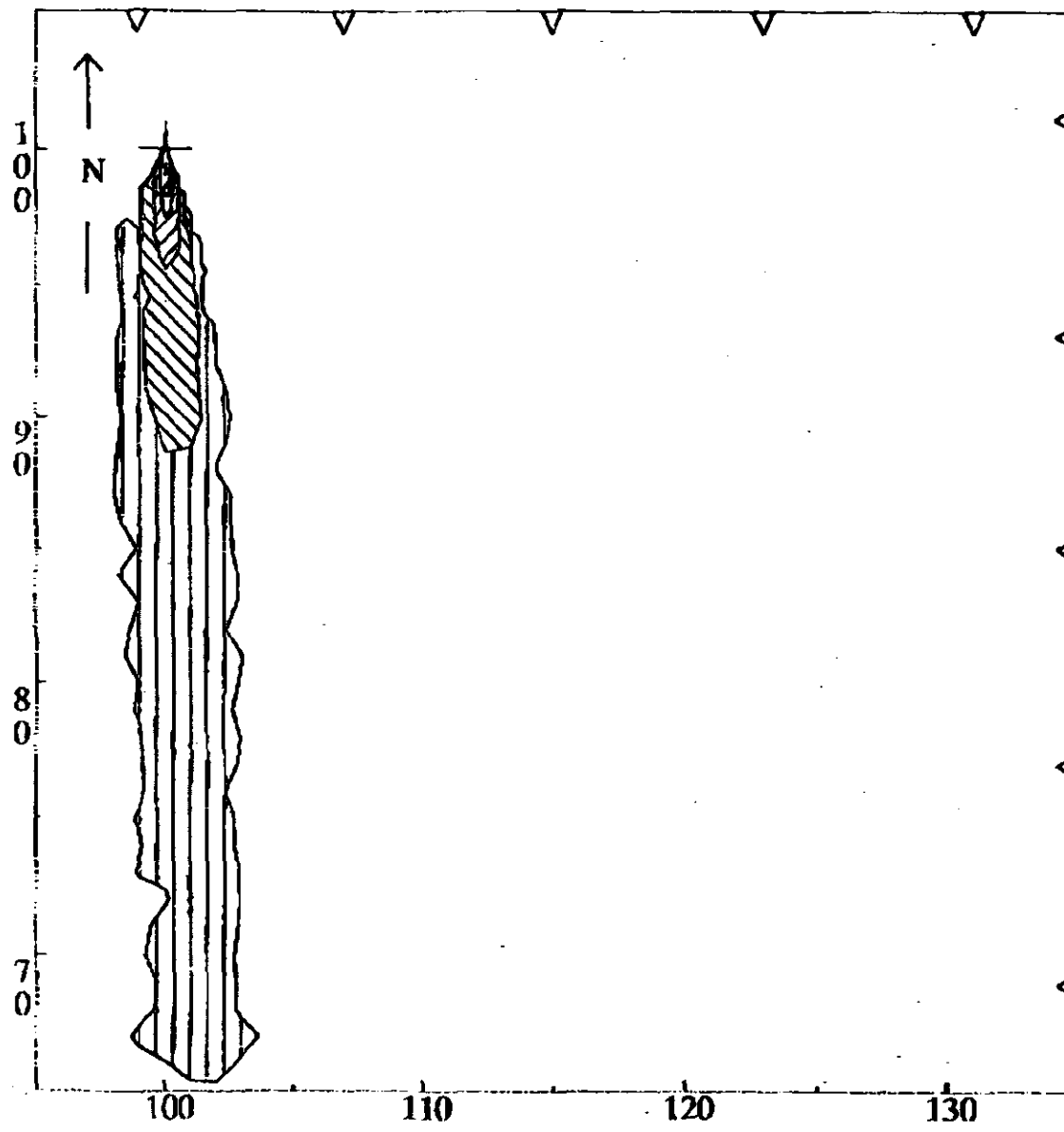
Contours:
(Level and Area Covered)






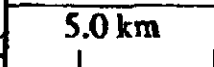

-  > 1.00E+02 mg-min/m³
Area Covers 0.16 sq km
-  > 5.00E+01 mg-min/m³
Area Covers 0.39 sq km
-  > 1.00E+01 mg-min/m³
Area Covers 1.94 sq km
-  > 1.00E+00 mg-min/m³
Area Covers 14.36 sq km
-  > 1.00E-01 mg-min/m³
Area Covers 109.21 sq km



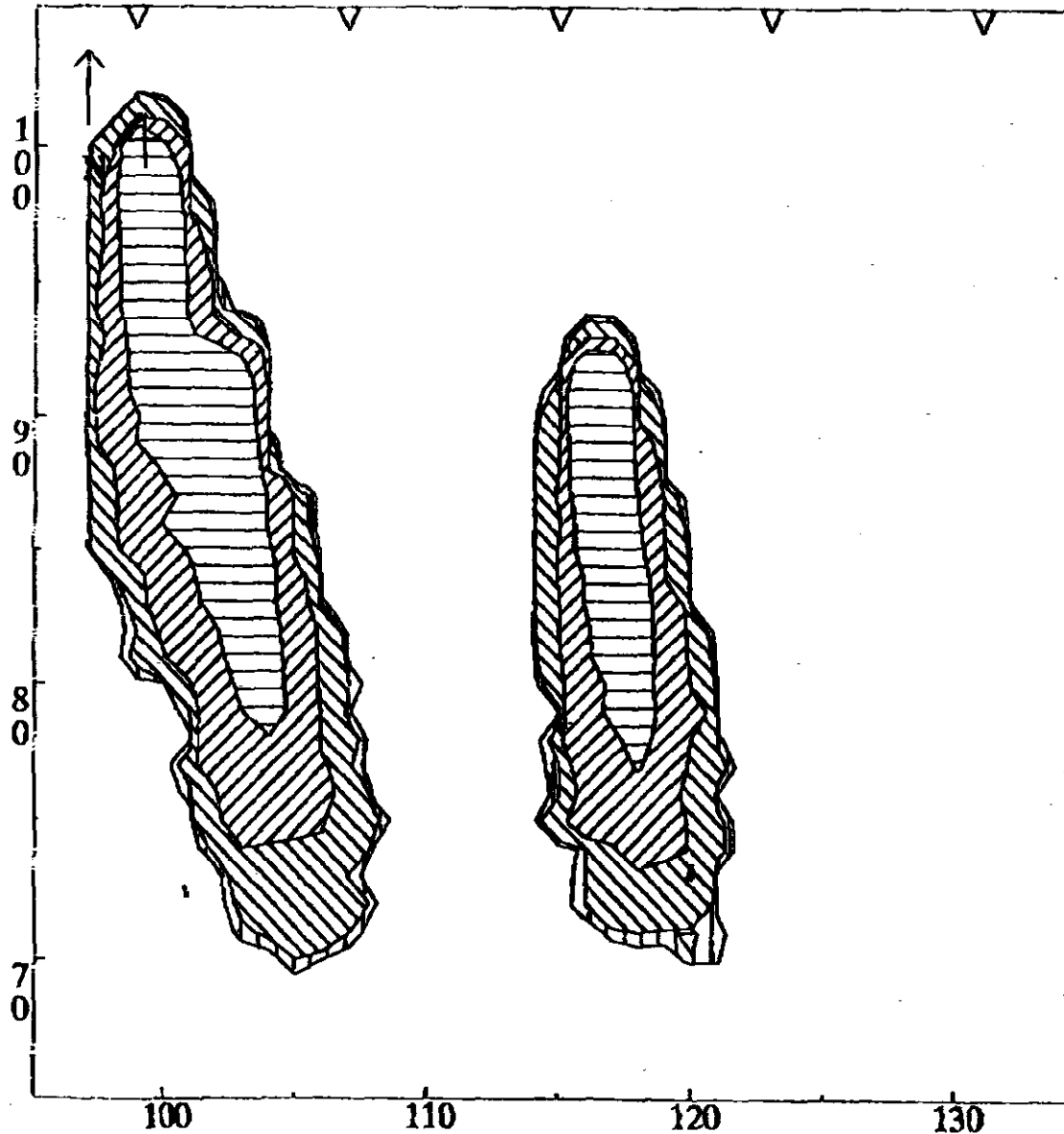
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ARAC Computer Simulation Notes	
Estimated Total Deposition	
Generated: 14SEP90 1847 Z	
Calc #1 Remarks: One Item. 25m diam initial sphere at 20m above gnd. NVALUE metadata for location C at 00z 14-Sep-90	
Total Deposition at 0.0 m 14SEP90 0000 Z to 14SEP90 0600 Z	
Material: Droplets	
Contours: (Level and Area Covered)	
	> 1.00E+02 mg/m2
Area Covers	0.52 sq km
	> 5.00E+01 mg/m2
Area Covers	0.93 sq km
	> 1.00E+01 mg/m2
Area Covers	2.98 sq km
	> 1.00E+00 mg/m2
Area Covers	19.04 sq km
	> 1.00E-01 mg/m2
Area Covers	110.26 sq km
	
	
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ARAC Computer Simulation Notes

Respirable Integ. Air Conc.

Generated: 14SEP90 1944 Z

Calc #2 Remarks: All 3 Facilities
Initial cloud 1km diam 200m depth,
80% aeros., 50% resp., NVALUE
met location C at 00z 14-Sep-90

Integrated at 1.5 m
14SEP90 0000 Z to 14SEP90 0100 Z

Material: Droplets

Contours:
(Level and Area Covered)

> 1.00E+04 mg-min/m³

Area Covers 96.25 sq km

> 1.00E+03 mg-min/m³

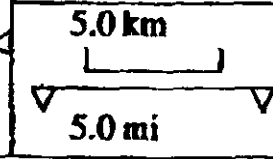
Area Covers 196.00 sq km

> 1.00E+02 mg-min/m³

Area Covers 282.75 sq km

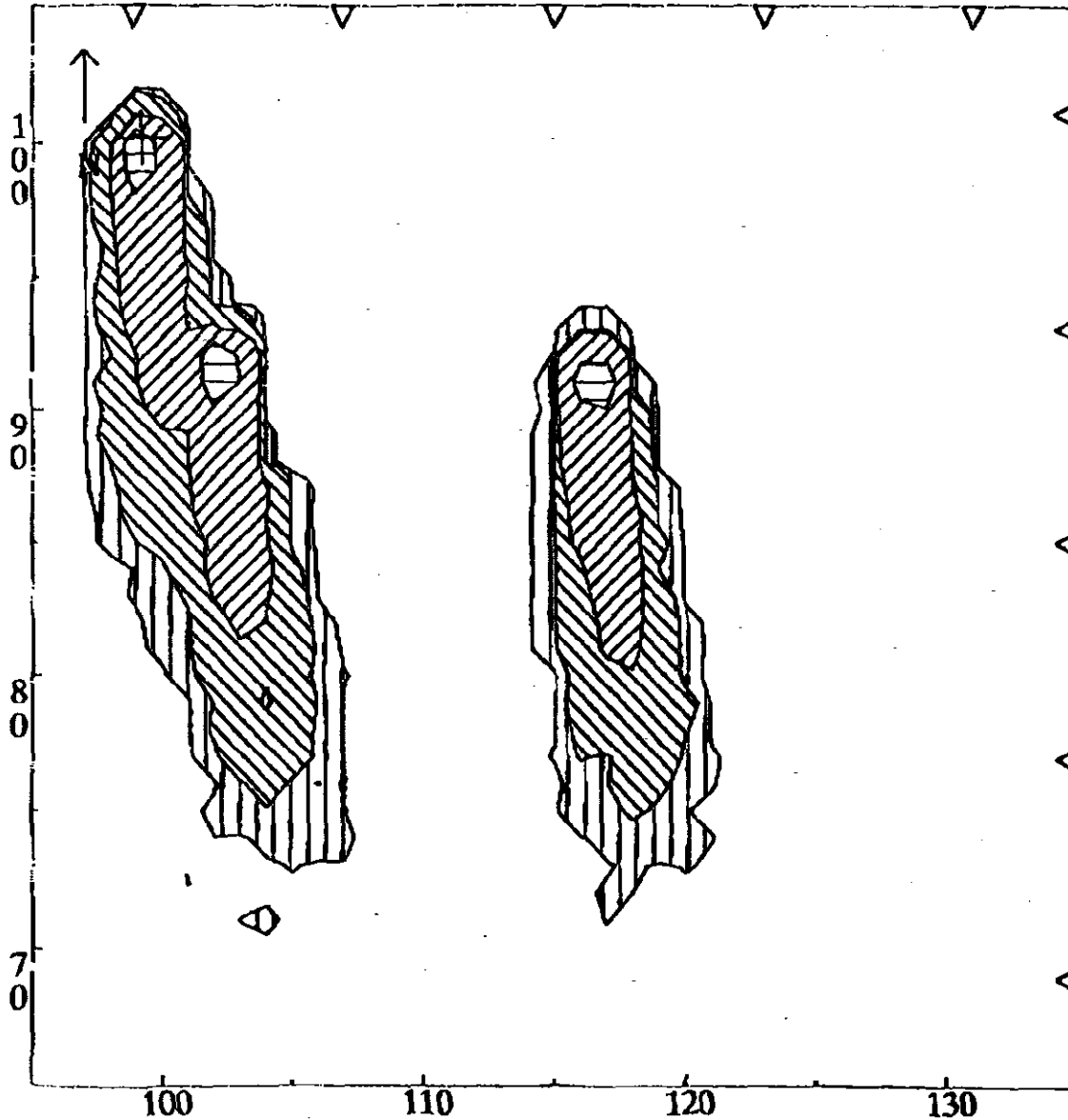
> 5.00E+01 mg-min/m³







Area Covers 304.50 sq km



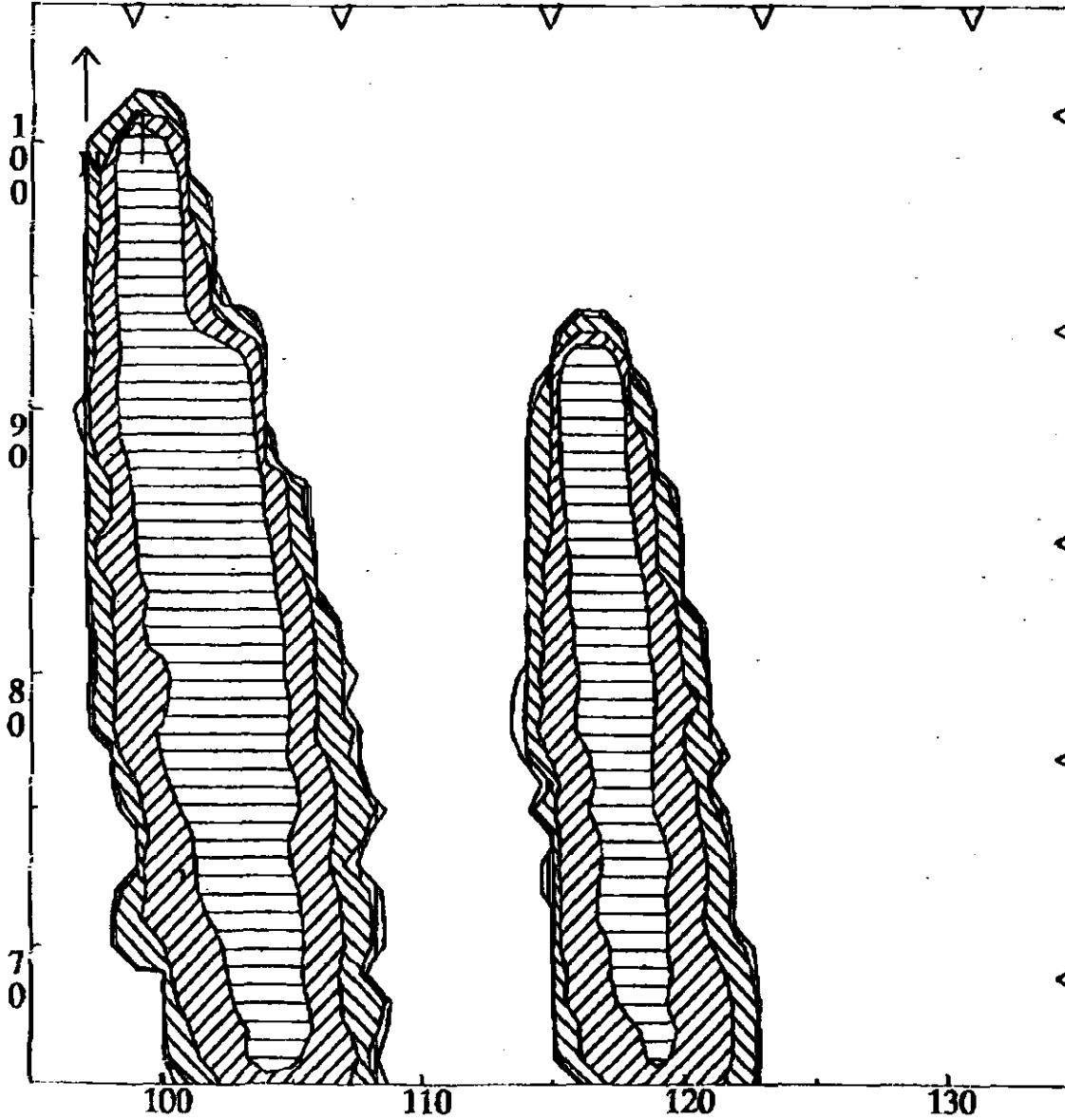
ARAC

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ARAC Computer Simulation Notes	
Estimated Total Deposition	
Generated: 14SEP90 1944 Z	
Calc #2 Remarks: All 3 Facilities Initial cld 1km diam 200m depth, 80% aeros., 50% resp., NVALUE met location C at 00z 14-Sep-90	
Total Deposition at 1.5 m 14SEP90 0000 Z to 14SEP90 0100 Z	
Material: Droplets	
Contours: (Level and Area Covered)	
	> 1.00E+06 mg/m2
Area Covers	6.00 sq km
	> 1.00E+05 mg/m2
Area Covers	77.25 sq km
	> 1.00E+04 mg/m2
Area Covers	172.75 sq km
	> 1.00E+03 mg/m2
Area Covers	258.75 sq km
	
	
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ARAC Computer Simulation Notes

Respirable Integ. Air Conc.

Generated: 14SEP90 1944 Z

Calc #2 Remarks: All 3 Facilities
Initial cld 1km diam 200m depth,
80% aeros., 50% resp., NVALUE
met location C at 00z 14-Sep-90

Integrated at 1.5 m

14SEP90 0000 Z to 14SEP90 0200 Z

Material: Droplets

Contours:
(Level and Area Covered)

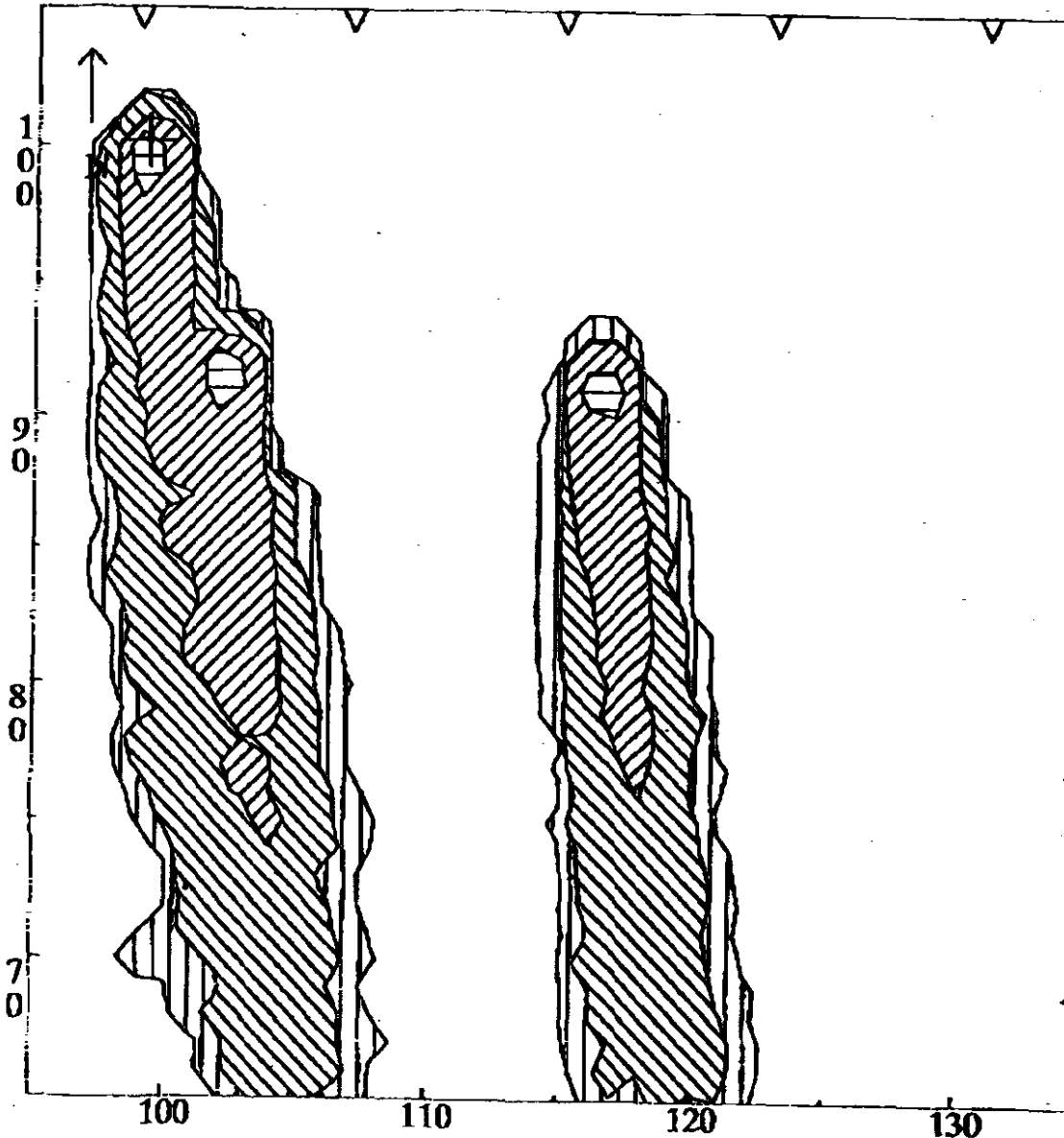
[Horizontal Hatching]	> 1.00E+04 mg-min/m ³	Area Covers 195.25 sq km
[Diagonal Hatching]	> 1.00E+03 mg-min/m ³	Area Covers 342.00 sq km
[Cross-hatching]	> 1.00E+02 mg-min/m ³	Area Covers 422.75 sq km
[Vertical Hatching]	> 5.00E+01 mg-min/m ³	Area Covers 437.50 sq km











5.0 km

5.0 mi

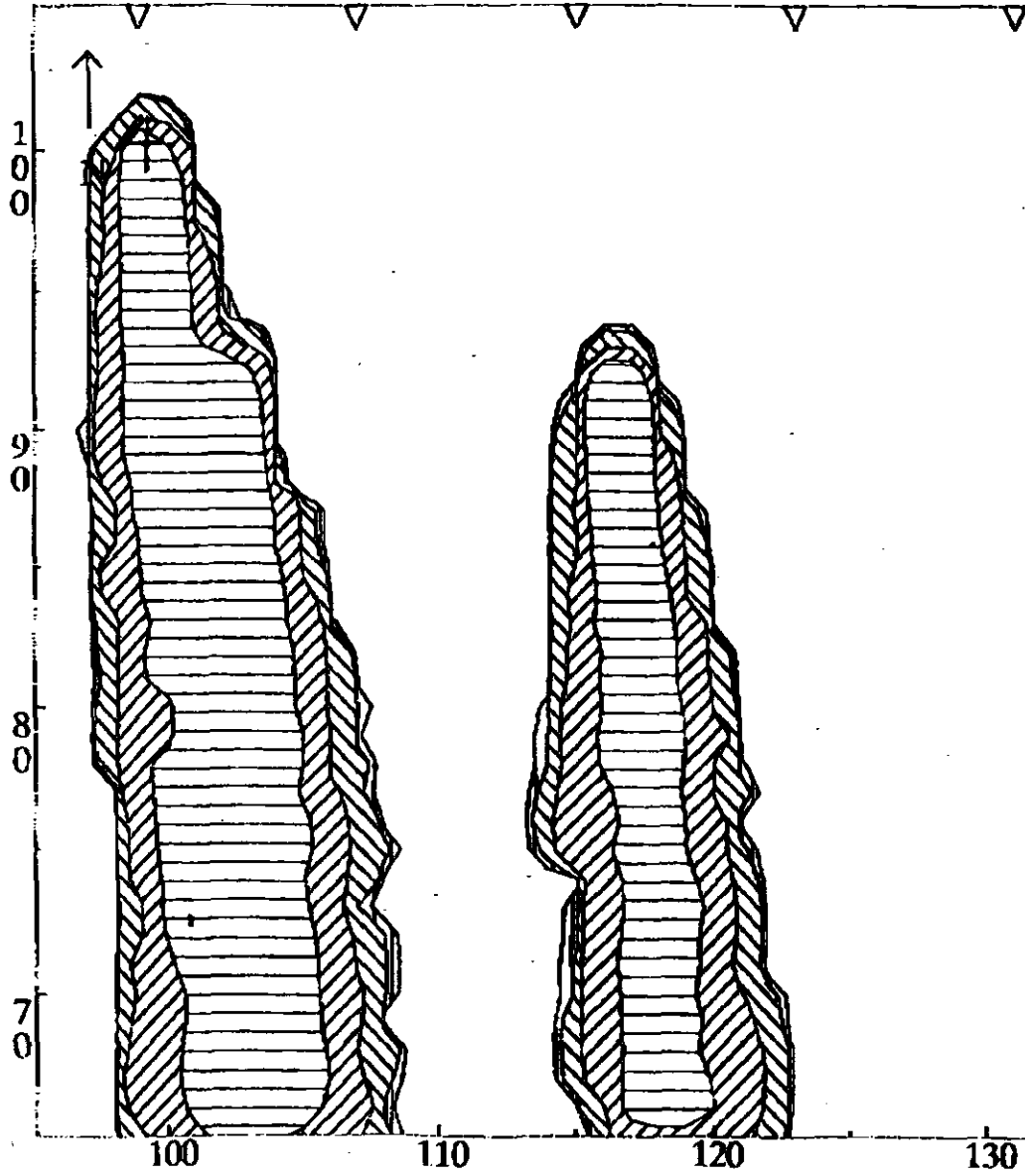
ARAC

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ARAC Computer Simulation Notes	
Estimated Total Deposition	
Generated: 14SEP90 1944 Z	
Calc #2 Remarks: All 3 Facilities Initial cld 1km diam 200m depth, 80% aeros., 50% resp., NVALUE mel location C at 00z 14-Sep-90	
Total Deposition at 1.5 m 14SEP90 0000 Z to 14SEP90 0200 Z	
Material: Droplets	
Contours: (Level and Area Covered)	
	> 1.00E+06 mg/m2
	Area Covers 6.00 sq km
	> 1.00E+05 mg/m2
	Area Covers 111.25 sq km
	> 1.00E+04 mg/m2
	Area Covers 309.75 sq km
	> 1.00E+03 mg/m2
	Area Covers 407.75 sq km
	
	
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ARAC Computer Simulation Notes

Respirable Integ. Air Conc.

Generated: 14SEP90 1944 Z

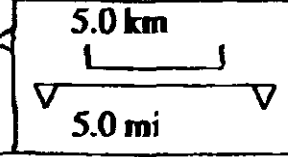
Calc #2 Remarks: All 3 Facilities
Initial cld 1km diam 200m depth,
80% aeros., 50% resp., NVALUE
met location C at 00z 14-Sep-90

Integrated at 1.5 m
14SEP90 0000 Z to 14SEP90 0600 Z

Material: Droplets

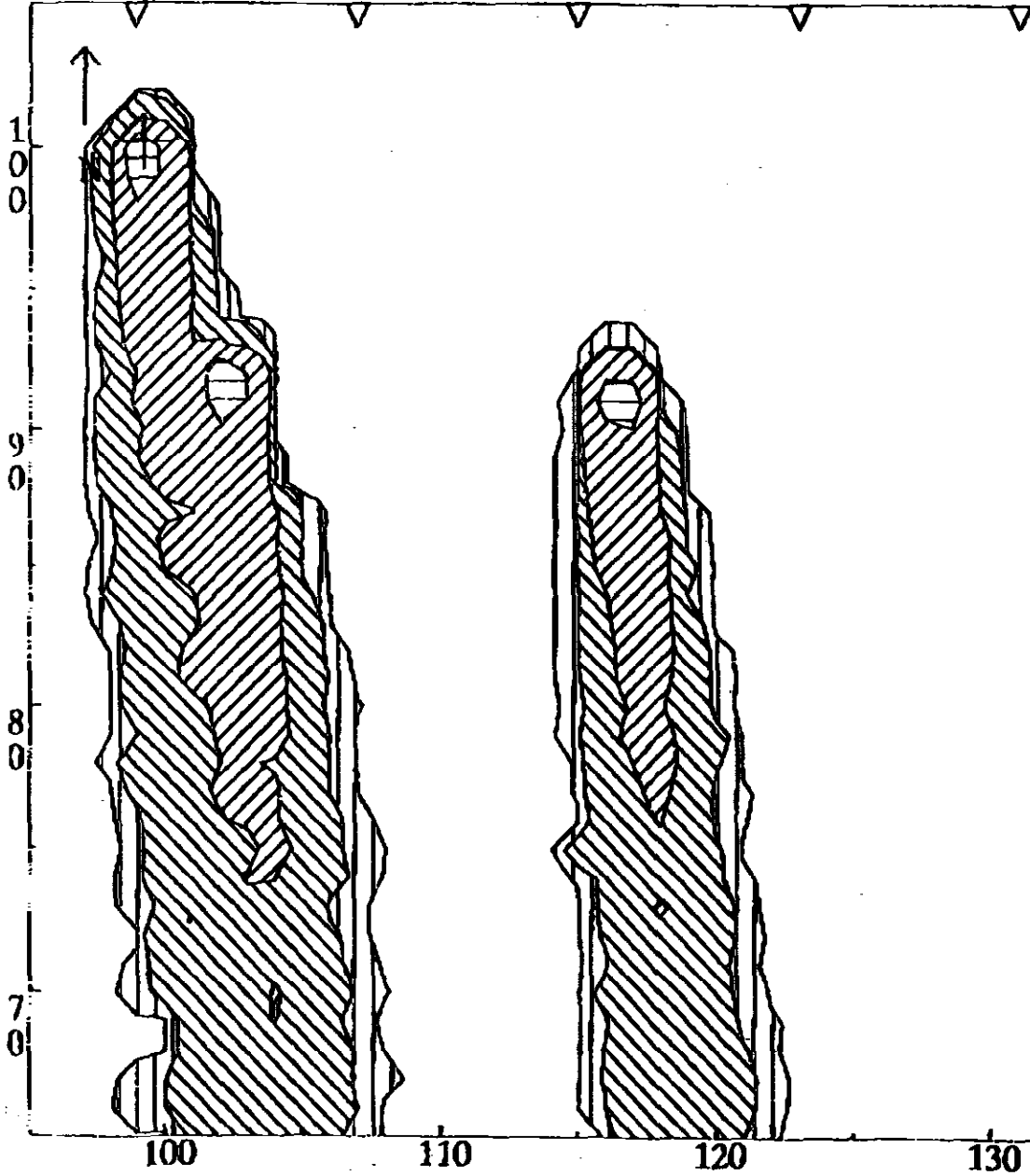
Contours:
(Level and Area Covered)

	> 1.00E+04 mg-min/m ³	Area Covers 232.25 sq km
	> 1.00E+03 mg-min/m ³	Area Covers 366.00 sq km
	> 1.00E+02 mg-min/m ³	Area Covers 444.75 sq km
	> 5.00E+01 mg-min/m ³	Area Covers 457.50 sq km



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ARAC Computer Simulation Notes

Estimated Total Deposition

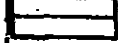



Generated: 14SEP90 1944 Z

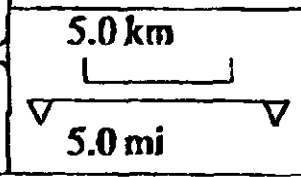
Calc #2 Remarks: All 3 Facilities
Initial cld 1km diam 200m depth,
80% aeros., 50% resp., NVALUE
met location C at 00z 14-Sep-90

Total Deposition at 1.5 m
14SEP90 0000 Z to 14SEP90 0600 Z

Material: Droplets

Contours:
(Level and Area Covered)

-  > 1.00E+06 mg/m2
Area Covers 6.00 sq km
-  > 1.00E+05 mg/m2
Area Covers 120.25 sq km
-  > 1.00E+04 mg/m2
Area Covers 333.75 sq km
-  > 1.00E+03 mg/m2
Area Covers 423.75 sq km



ARAC