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CLOUD GEOMETRY ANALYSIS OF THE SMOKE WEEK III OBSCURATION TRIAL--ETC(U)
JAN 82 G R BLACKMAN
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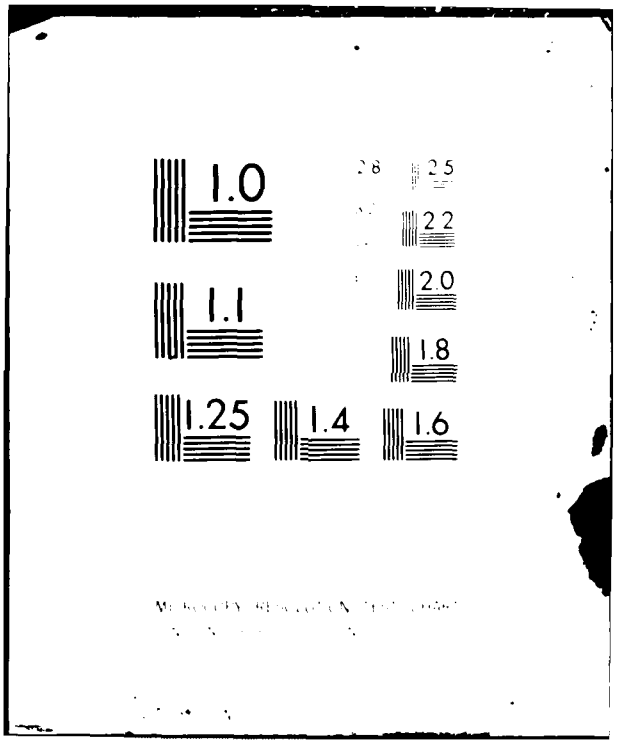
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CLOUD GEOMETRY ANALYSIS OF THE SMOKE WEEK III OBSCURATION TRIALS

JANUARY 1982

By

George R. Blackman

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US Army Electronics Research and Development Command
Atmospheric Sciences Laboratory
White Sands Missile Range, NM 88002

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There is a critical requirement within the Army for the validation of the predictive models that define the effects of various types and concentrations of battlefield obscurants on the performance of electro-optical weapon and surveillance systems. A technique has been developed which will assist by producing accurate and comprehensive dimensional analysis of field-acquired digital images of smoke clouds. This report contains the temporal geometric growth measurements and object transport rates of the obscurants expended during the Smoke Week III field test conducted at Eglin AFB, August 1980.

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CONTENTS

INTRODUCTION..... 5

DATA ACQUISITION..... 5

ANALYSIS PROCEDURE..... 5

REPORTING FORMAT OF ANALYSIS RESULTS..... 7

REFERENCES..... 9

EVENT DATA REFERENCE LISTING..... 10

ANALYSIS RESULTS..... 15

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INTRODUCTION

The Smoke Week III field test was sponsored by the PM Smoke/Obscurants Office (US Army DARCOM) and was conducted at Eglin AFB, FL, from 11 through 22 August 1980. This experiment permitted numerous DOD electro-optics research investigators to observe and measure the controlled expenditure of a large variety of battlefield screening materials.[1] One of a number of systems that the Atmospheric Sciences Laboratory (ASL) fielded during this test was MIDAS (Multispectral Image Data Acquisition System). This system has the capability to simultaneously sense and record on video tape multi-wavelength images in the time-sequence observation of a smoke scene. These images are presently being used by ASL in the development of algorithms and procedures for automating the characterization of the obscurant in terms of dynamic geometry and composition. This report contains those analysis results pertaining to the temporal three-dimension geometry for all of the field-test events for which adequate data were received.

DATA ACQUISITION

The fielded equipment configuration consisted of two sensor observation stations positioned at respective ranges of 1100 meters and 1360 meters from the center of the smoke grid and with an angular pointing separation of 45° (figure 1). Station 2 comprised a bank of four sensors that recorded the video images in the spectral bandpasses of 0.5μm to 0.7μm, 1.06μm ± 0.2μm, 3.0μm to 5.0μm and 8.0μm to 14.0μm. Station 1 contained two sensors; 0.5μm to 0.7μm and 8.0μm to 14.0μm. The raster images were later digitized to nine-track computer-compatible tapes in picture element arrays of 250 by 300 and with a dynamic range of eight bits (256 gray-levels).

ANALYSIS PROCEDURE

The calculation of the smoke geometry from the digital images acquired from a single perspective (observation site) was primary to the ultimate consideration, that of providing temporal geometry measurements of the solid feature in three-dimension space.[2] In the two-dimension data reduction (single site observation data) the cloud feature was first isolated from the surrounding scene. This isolation was achieved by the differencing of (1) the gray-level values of the array of picture elements (pixels) in the scene recorded 0.1 s prior to the ignition of the event from (2) the positionally correspondent pixels in each of the scenes that followed in time and contained the cloud feature; hence, the delineation of the cloud perimeters in temporal

---

[1]Nelson, J. G., Project Manager, "Smoke Week III Test Plan," Smoke/Obscurants Office, DRCPM-SMK-T, Aberdeen Proving Ground, MD, August 1980.

[2]Blackman, G. R., "Temporal Characterization of Smoke and Dust Cloud Geometry by Processing of Two-Perspective Video Images," Smoke/Obscurants Symposium V Proceedings, DRCPM-SMK-T-001-81, Harry Diamond Laboratories, Adelphi, MD, April 1981.

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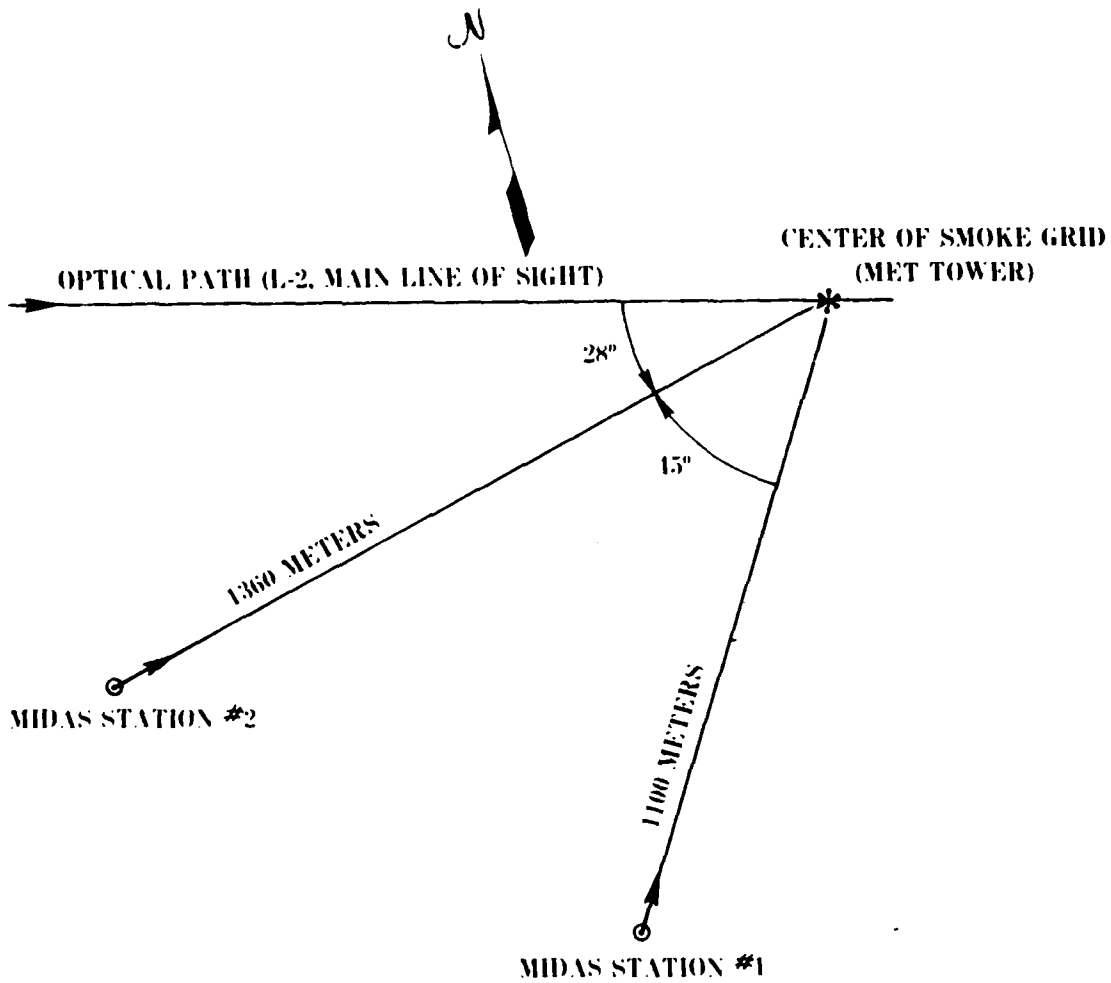

Figure 1. Midas Field Layout, Smoke Week III, Eglin AFB, FL.

space. The point positions along this closed feature boundary, for a given time-increment, provide the endpoints for all vector-distance dimension calculations made within the cloud. For example, the values for the height and width of the cloud are the products of the maximum pixel spatial distances in the vertical and horizontal, respectively, and the object-plane spatial dimension of a pixel (resolution).

The fitting of an ellipse to these perimeter pixels efficiently typified the external geometry of the smoke clouds. The geometric projection of time-coincident pairs of these ellipses (one from each site-perspective) into a common three-dimension object-space coordinate system allowed the calculation of ellipsoid parameters that logically described the solid form of the cloud, the associated dynamics, and the geographic relationship. The specific information that resulted from the application of this technique to the Smoke Week III imaged data is as follows:

Height - The distance from the top of the vertical-plane cross section of the ellipsoid to a horizontal plane that contains the detonation location. The vertical plane is described as normal to the optical axis.

Horizontal Extent - The width of the ellipsoid cross section at the two most widely spaced lateral points on the perimeter.

Vertical Extent - The distance between the greatest vertical separation of points on the perimeter of the ellipsoid cross section.

Area - Square measure within the ellipsoid cross-section perimeter.

Lateral Offset - Distance measured in the horizontal plane of the track of the ellipsoid centroid.

Path Length - The vector segment distance of the optical path from the entry to exit points on the ellipsoid surface.

Volume - Cubic measure of the ellipsoid.

Centroid Height - The vertical distance of the centroid from the horizontal plane that contains the detonation point. This measure provides the best estimate of the position of the center-of-mass.

Transport Direction - The geographic azimuth of the ground track of the ellipsoid centroid.

Transport Rate - The elapsed time of movement between centroid points on the ground, in meters/second.

These measurments are provided for each Smoke Week III trial in the information listings that are found later in this text.

REPORTING FORMAT OF ANALYSIS RESULTS

Pages 15 through 174 contain a listing of the Smoke Week III test trials that were analyzed and indicates those pages that depict specific information derived from each trial. Five pages of information are presented in the text

for each trial: (1) the listing of the geometry information (the items listed in the preceding paragraph), (2) three-dimension cross sections of the temporal sequences of the ellipsoids, (3) a graphic that summarizes trends of key measurements, (4) an example of the analysis of one frame from the perspective of MIDAS station 1, and (5) an example of one frame from MIDAS station 2.

To locate one of these types of information for a given trial, refer to the section titled "Event Data Reference Listing." An explanation of the "Event Data Reference listing" is as follows:

Data Listing - This item notes (1) the period for which analysis was conducted within the total time span of the event and (2) the source munition responsible for the event. For example, measurements were computed for the "Trial 01" (page 15) at a time increment of 1 s from T+10 s to T+50 s. This numerical reference at the right-hand edge notes the page location for the complete listing of all measurements for all time increments of the Event 01.

Three-Dimension Temporal Graphics - This item lists the pages on which the cross-section depictions of the top and side views of the ellipsoid sequences for each trial can be found. The side view is from the perspective of instrumentation aligned with the optical path line of sight (LOS). The scaling is in meters and the numbers associated with the ellipsoids denote seconds into the event.

Summary Graphic - A graphic, compiled for each trial, represents the time-trends of the data values derived for height, width, centroid height, and transport distance of the centroid (apparent center of mass from the perspective of the optical path vector).

Detailed Examples of Data Derived from Both Stations - This item gives (1) page references for two examples (from both stations) of the detailed report graphics that are generated for all images in the sequence and (2) the respective data listings for specific time increments in the event. For example, the times of the reports selected for Trial 01 are both T + 18 s and and can be found on pages 18 and 19.

REFERENCES

1. Nelson, J. G., Project Manager, "Smoke Week III Test Plan," Smoke/Obscurants Office, DRCPM-SMK-T, Aberdeen Proving Ground, MD, August 1980.

2. Blackman, G. R., "Temporal Characterization of Smoke and Dust Cloud Geometry by Processing of Two-Perspective Video Images," Smoke/Obscurants Symposium V Proceedings, DRCPM-SMK-T-001-81, Harry Diamond Laboratories, Adelphi, MD, April 1981.

EVENT DATA REFERENCE LISITNG

TRIAL 01 (RP Formulation - 6 charges)
Data listing, T + 10 s to T + 50 s..... 15
3-D Temporal graphics..... 16
Summary graphic..... 17
Sensor 1 perspective; example at T + 18.0 s..... 18
Sensor 2 perspective; example at T + 18.0 s..... 19

TRIAL 03 (XM 49 Fog Oil, IR 1)
Data listing, T = 0 s to T + 118 s..... 20
3-D Temporal graphics..... 21
Summary graphic..... 22
Sensor 1 perspective; example at T + 60.0 s..... 23
Sensor 2 perspective; example at T + 60.0 s..... 24

TRIAL 04 (A3M3, Fog Oil)
Data listing, T = 0 s to T + 22 s..... 25
3-D Temporal graphics..... 26
Summary graphic..... 27
Sensor 1 perspective; example at T + 22.0 s..... 28
Sensor 2 perspective; example at T + 22.0 s..... 29

TRIAL 05 (XM45 Gen with Peg 200)
Data listing, T + 20 s to T + 106 s..... 30
3-D Temporal graphics..... 31
Summary graphic..... 32
Sensor 1 perspective; example at T + 40.0 s..... 33
Sensor 2 perspective; example at T + 40.0 s..... 34

TRIAL 06 (Fog Oil with IR 1)
Data listing, T = 0 s to T + 60 s..... 35
3-D Temporal graphics..... 36
Summary graphic..... 37
Sensor 1 perspective; example at T + 40.0 s..... 38
Sensor 2 perspective; example at T + 40.0 s..... 39

TRIAL 07 (5" Zuni)
Data listing, T = 0 s to T + 38 s..... 40
3-D Temporal graphics..... 41
Summary graphic..... 42
Sensor 1 perspective; example at T + 10.0 s..... 43
Sensor 2 perspective; example at T + 10.0 s..... 44

TRIAL 08 (N3A3/Fog Oil)
Data listing, T = 0 s to T + 82 s..... 45
3-D Temporal graphics..... 46
Summary graphic..... 47
Sensor 1 perspective; example at T + 40.0 s..... 48
Sensor 2 perspective; example at T + 40.0 s..... 49

TRIAL 09 (HE - 6 units, 10 lbs ea)
Data listing, T = 0 s to T + 50 s..... 50
3-D Temporal graphics..... 51
Summary graphic..... 52
Sensor 1 perspective; example at T + 26.0 s..... 53
Sensor 2 perspective; example at T + 26.0 s..... 54

TRIAL 11 (XM49/IR 1)
Data listing, T = 0 s to T + 42 s..... 55
3-D Temporal graphics..... 56
Summary graphic..... 57
Sensor 1 perspective; example at T + 14.0 s..... 58
Sensor 2 perspective; example at T + 14.0 s..... 59

TRIAL 12 (VEESS)
Data listing, T = 0 s to T + 52 s..... 60
3-D Temporal graphics..... 61
Summary graphic..... 62
Sensor 1 perspective; example at T + 26.0 s..... 63
Sensor 2 perspective; example at T + 26.0 s..... 64

TRIAL 13 (VEESS)
Data listing, T + 10 s to T + 44 s..... 65
3-D Temporal graphics..... 66
Summary graphic..... 67
Sensor 1 perspective; example at T + 14.0 s..... 68
Sensor 2 perspective; example at T + 14.0 s..... 69

TRIAL 15 (Peg 200)
Data listing, T = 0 s to T + 99 s..... 70
3-D Temporal graphics..... 71
Summary graphic..... 72
Sensor 1 perspective; example at T + 50.0 s..... 73
Sensor 2 perspective; example at T + 50.0 s..... 74

TRIAL 16 (XM 825 WP, 2 chgs)
Data listing, T = 0 s to T + 20 s..... 75
3-D Temporal graphics..... 76
Summary graphic..... 77
Sensor 1 perspective; example at T + 14.0 s..... 78
Sensor 2 perspective; example at T + 14.0 s..... 79

TRIAL 17 (HC-6 rds)
Data listing, T = 0 s to T + 18.0 s..... 80
3-D Temporal graphics..... 81
Summary graphic..... 82
Sensor 1 perspective; example at T + 18.0 s..... 83
Sensor 2 perspective; example at T + 18.0 s..... 84

TRIAL 19 (XM 49/Fog oil)
Data listing, T + 26 s to T + 74 s..... 85
3-D Temporal graphics..... 86
Summary graphic..... 87
Sensor 1 perspective; example at T + 40.0 s..... 88
Sensor 2 perspective; example at T + 40.0 s..... 89

TRIAL 20 (XM 49/IR 2)
Data listing, T = 0 s to T + 40 s..... 90
3-D Temporal graphics..... 91
Summary graphic..... 92
Sensor 1 perspective; example at T + 22.0 s..... 93
Sensor 2 perspective; example at T + 22.0 s..... 94

TRIAL 22 (HC, 1 round - 4 cannisters)
Data listing, T = 0 s to T + 22 s..... 95
3-D Temporal graphics..... 96
Summary graphic..... 97
Sensor 1 perspective; example at T + 22.0 s..... 98
Sensor 2 perspective; example at T + 22.0 s..... 99

TRIAL 23 (6-M8 Grenades-Modified RP filled)
Data listing, T = 0 s to T + 40 s..... 100
3-D Temporal graphics..... 101
Summary graphic..... 102
Sensor 1 perspective; example at T + 22.0 s..... 103
Sensor 2 perspective; example at T + 22.0 s..... 104

TRIAL 24 (3-5" Zuni)
Data listing, T = 0 s to T + 11 s..... 105
3-D Temporal graphics..... 106
Summary graphic..... 107
Sensor 1 perspective; example at T + 5.0 s..... 108
Sensor 2 perspective; example at T + 5.0 s..... 109

TRIAL 25 (XM 825 - 2 rds)
Data listing, T = 0 s to T + 36 s..... 110
3-D Temporal graphics..... 111
Summary graphic..... 112
Sensor 1 perspective; example at T + 6.0 s..... 113
Sensor 2 perspective; example at T + 6.0 s..... 114

TRIAL 26 (XM 49/IR 2)
Data listing, T = 0 s to T + 60 s..... 115
3-D Temporal graphics..... 116
Summary graphic..... 117
Sensor 1 perspective; example at T + 14.0 s..... 118
Sensor 2 perspective; example at T + 14.0 s..... 119

TRIAL 27 (IR 1 grenades - 12)
Data listing, T = 0 s to T + 38 s..... 120
3-D Temporal graphics..... 121
Summary graphic..... 122
Sensor 1 perspective; example at T + 3.0 s..... 123
Sensor 2 perspective; example at T + 3.0 s..... 124

TRIAL 28 (HE - 105mm equiv)
Data listing, T = 0 s to T + 36 s..... 125
3-D Temporal graphics..... 126
Summary graphic..... 127
Sensor 1 perspective; example at T + 6.0 s..... 128
Sensor 2 perspective; example at T + 6.0 s..... 129

TRIAL 30 (CBU 88 - large pellet)
Data listing, T = 0 s to T + 34 s..... 130
3-D Temporal graphics..... 131
Summary graphic..... 132
Sensor 1 perspective; example at T + 0.5 s..... 133
Sensor 2 perspective; example at T + 0.5 s..... 134

TRIAL 34 (Alkali Halide - 33 lbs)
Data listing, T + 15 s to T + 66 s..... 135
3-D Temporal graphics..... 136
Summary graphic..... 137
Sensor 1 perspective; example at T + 22.0 s..... 138
Sensor 2 perspective; example at T + 22.0 s..... 139

TRIAL 35 (IR 2, 1/2 size grenades)
Data listing, T = 0 s to T + 50 s..... 140
3-D Temporal graphics..... 141
Summary graphic..... 142
Sensor 1 perspective; example at T + 6.0 s..... 143
Sensor 2 perspective; example at T + 6.0 s..... 144

TRIAL 36 (Alkali Halide - 4 cannisters)
Data listing, T + 5 s to T + 54 s..... 145
3-D Temporal graphics..... 146
Summary graphic..... 147
Sensor 1 perspective; example at T + 10.0 s..... 148
Sensor 2 perspective; example at T + 10.0 s..... 149

TRIAL 37 (HE - 27 lbs, 155mm equiv)
Data listing, T = 0 s to T + 32 s..... 150
3-D Temporal graphics..... 151
Summary graphic..... 152
Sensor 1 perspective; example at T + 1.0 s..... 153
Sensor 2 perspective; example at T + 1.0 s..... 154

TRIAL 38 (XM 38/IR 1, 12 grenades)
Data listing, T = 0 s to T + 32 s..... 155
3-D Temporal graphics..... 156
Summary graphic..... 157
Sensor 1 perspective; example at T + 3.0 s..... 158
Sensor 2 perspective; example at T + 3.0 s..... 159

TRIAL 39 (6 - L8 and 6 - XM76 grenades)
Data listing, T = 0 s to T + 42 s..... 160
3-D Temporal graphics..... 161
Summary graphic..... 162
Sensor 1 perspective; example at T + 10.0 s..... 163
Sensor 2 perspective; example at T + 10.0 s..... 164

TRIAL 40 (6 - L8 and 6 - XM76 grenades)
Data listing, T = 0 s to T + 36 s..... 165
3-D Temporal graphics..... 166
Summary graphic..... 167
Sensor 1 perspective; example at T + 6.0 s..... 168
Sensor 2 perspective; example at T + 6.0 s..... 169

TRIAL 42 (Smokey Bear - Fog Oil/IR 2)
Data listing, T = 0 s to T + 6 s..... 170
3-D Temporal graphics..... 171
Summary graphic..... 172
Sensor 1 perspective; example at T + 6.0 s..... 173
Sensor 2 perspective; example at T + 6.0 s..... 174

SMOKE III EGLIN AFB, FLORIDA

EVENT 01 TIME 1427Z DATE [illegible]

RED PHOSPHORUS - 6 CHARGES SENSOR [illegible]

	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECTIVE			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
10.0	3.7	5.6	4.2	18.4	7.2	0.0	137.0	1.6	0.0	0.0
11.0	4.0	5.6	4.5	19.7	7.8	0.0	175.3	1.7	261.4	1.4
12.0	4.3	5.6	4.8	21.1	8.3	0.0	218.3	1.9	261.6	1.4
13.0	4.6	5.7	5.2	22.9	8.9	0.0	271.2	2.0	261.9	1.3
14.0	4.9	5.8	5.5	25.4	9.4	0.0	336.8	2.1	262.2	1.3
15.0	5.3	6.0	5.9	28.0	9.8	0.0	408.4	2.3	262.5	1.2
16.0	5.6	6.3	6.3	30.8	10.3	0.0	486.5	2.5	262.8	1.2
17.0	5.9	6.6	6.7	34.3	10.7	0.0	579.3	2.6	263.2	1.1
18.0	6.3	6.9	7.0	38.1	11.1	0.0	683.5	2.8	263.6	1.1
19.0	6.7	7.3	7.5	42.7	11.5	0.0	804.4	2.9	264.0	1.1
20.0	7.1	7.6	7.9	47.3	11.9	0.0	932.3	3.1	264.4	1.0
21.0	7.5	8.1	8.3	53.0	12.2	0.0	1085.8	3.3	264.9	1.0
22.0	7.9	8.6	8.8	59.1	12.5	0.0	1253.7	3.5	265.5	0.9
23.0	8.3	9.0	9.2	65.1	12.8	0.0	1424.9	3.7	266.1	0.9
24.0	8.7	9.5	9.7	72.3	13.0	0.0	1625.6	3.9	266.8	0.8
25.0	9.2	10.0	10.3	80.6	13.3	0.0	1858.7	4.1	267.5	0.8
26.0	9.7	10.6	10.8	89.3	13.5	0.0	2108.0	4.3	268.4	0.7
27.0	10.1	11.1	11.3	98.1	13.7	0.0	2361.6	4.5	269.3	0.7
28.0	10.6	11.8	11.9	108.7	13.9	0.0	2663.9	4.7	270.4	0.7
29.0	11.1	12.4	12.5	120.2	14.0	0.0	2997.0	4.9	271.6	0.6
30.0	11.7	13.1	13.1	132.0	14.1	0.0	3334.4	5.1	273.0	0.6
31.0	12.2	13.8	13.7	146.0	14.2	0.0	3742.1	5.3	274.7	0.5
32.0	12.8	14.6	14.4	160.9	14.3	0.0	4169.3	5.6	276.6	0.5
33.0	13.3	15.4	15.0	176.4	14.3	0.0	4616.3	5.8	279.0	0.4
34.0	13.9	16.3	15.7	194.2	14.3	0.0	5127.8	6.0	281.8	0.4
35.0	14.5	17.2	16.4	213.7	14.3	0.0	5685.2	6.3	285.2	0.4
36.0	15.1	18.2	17.2	235.1	14.3	0.0	6294.5	6.5	289.5	0.3
37.0	15.8	19.4	18.0	259.1	14.3	0.0	6982.4	6.8	294.9	0.3
38.0	16.4	20.5	18.7	284.5	14.2	0.0	7700.0	7.0	301.8	0.3
39.0	17.1	21.8	19.5	312.6	14.1	0.0	8491.8	7.3	310.6	0.2
40.0	17.7	23.1	20.3	342.6	14.0	0.0	9316.6	7.6	321.5	0.2
41.0	18.4	24.4	21.1	375.2	13.8	0.0	10220.9	7.8	334.4	0.2
42.0	19.1	25.9	21.9	410.8	13.7	0.0	11212.8	8.1	348.4	0.2
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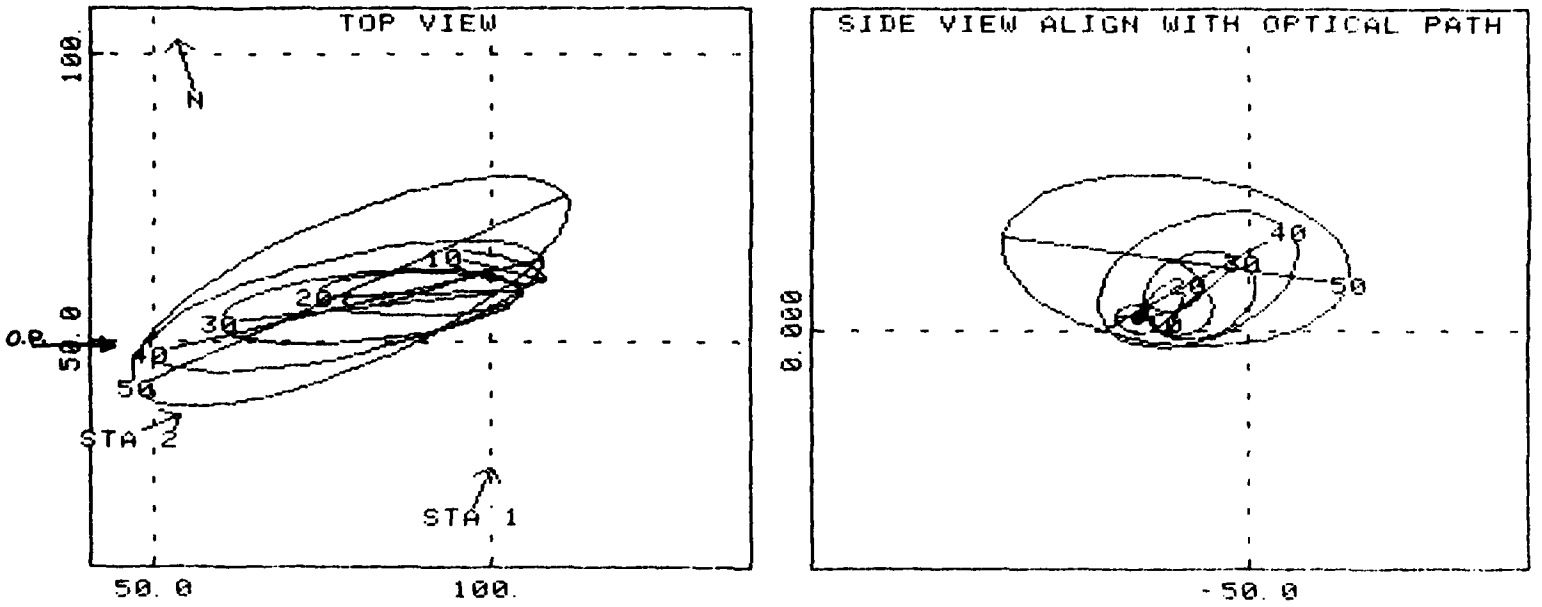
44.0	20.4	28.9	23.4	487.9	13.3	0.0	13364.5	8.7	13.5	0.2
45.0	21.0	30.4	24.1	529.6	13.0	0.0	14532.6	9.0	23.0	0.2
46.0	21.7	32.0	24.8	572.9	12.8	0.0	15743.9	9.3	30.5	0.3
47.0	22.3	33.7	25.5	619.5	12.5	0.0	17076.1	9.6	36.3	0.3
48.0	23.0	35.4	26.3	669.5	12.2	0.0	18538.5	9.9	41.0	0.3
49.0	22.8	40.6	25.1	791.7	11.8	0.0	22502.2	10.2	44.7	0.4
50.0	23.3	40.3	25.6	800.7	11.5	0.0	23644.2	10.5	47.7	0.4

SMOKE III EGLIN AFB, FLORIDA

EVENT 01 TIME 1427Z DATE 081180

RED PHOSPHORUS -- 6 CHARGES SENSOR 0.5-0.7



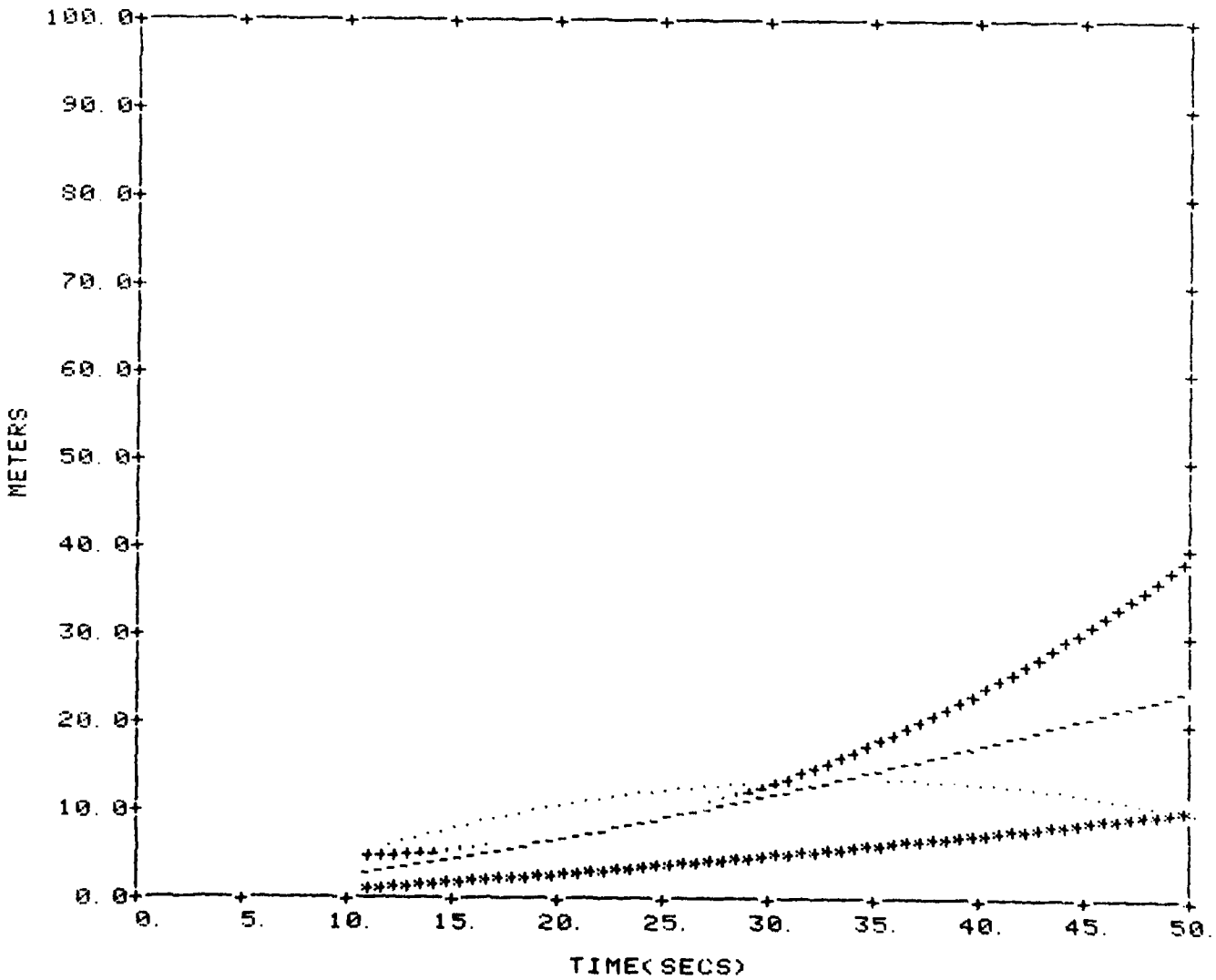
SMOKE III EGLIN AFB, FLORIDA

EVENT 01 TIME 1427Z DATE 081180

RED PHOSPHORUS - 6 CHARGES SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

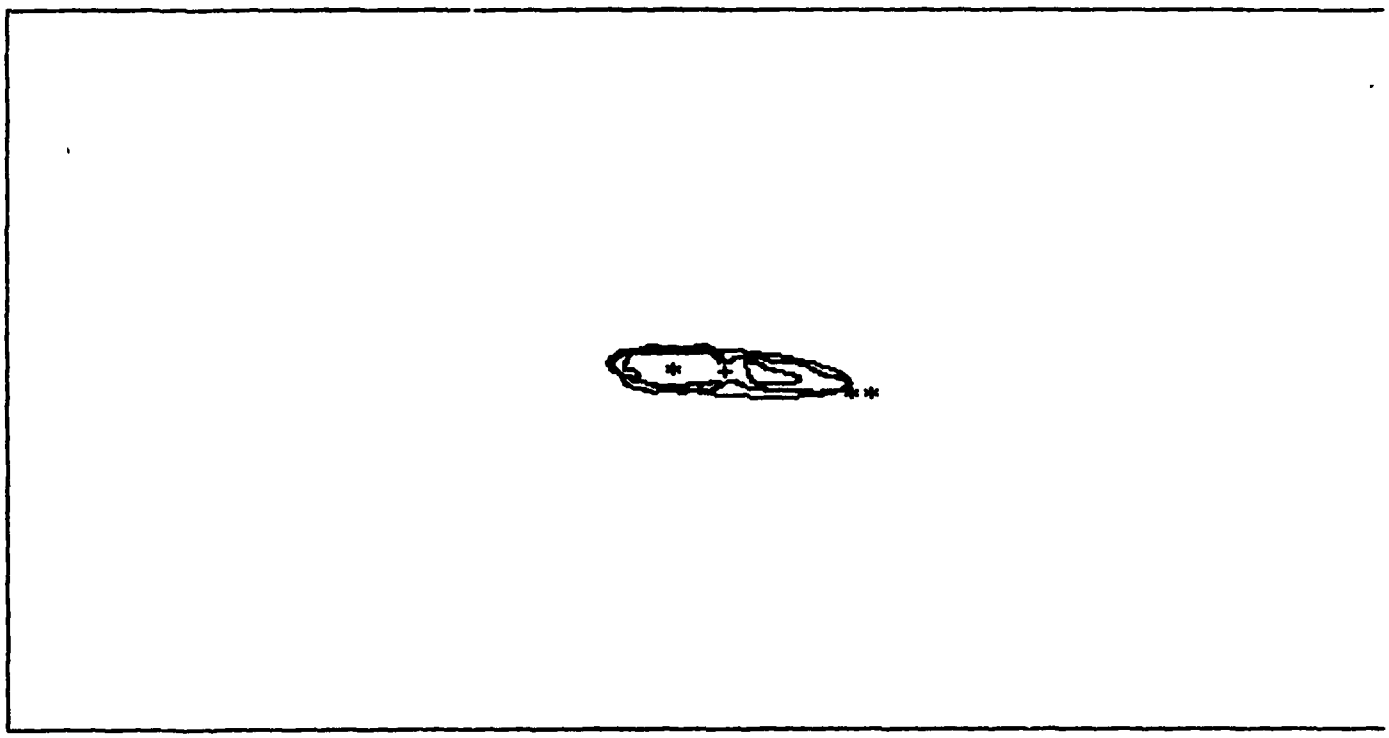
. . . . . TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 01

1427 Z 08-11-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 18.0



HEIGHT(ABOVE DETONATION PT.) =	8.0M	HEIGHT OF CENTROID=	4.M
WIDTH(MAX. HORIZONTAL EXTENT)=	33.0M	LATERAL OFFSET	= -19.M
VERTICAL EXTENT =	8.0M	AXES	= 33., 7.M
AREA =	176.8SQM	INCLINATION	= 5.9 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 4.M OFFSET= -26.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 0.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 26.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

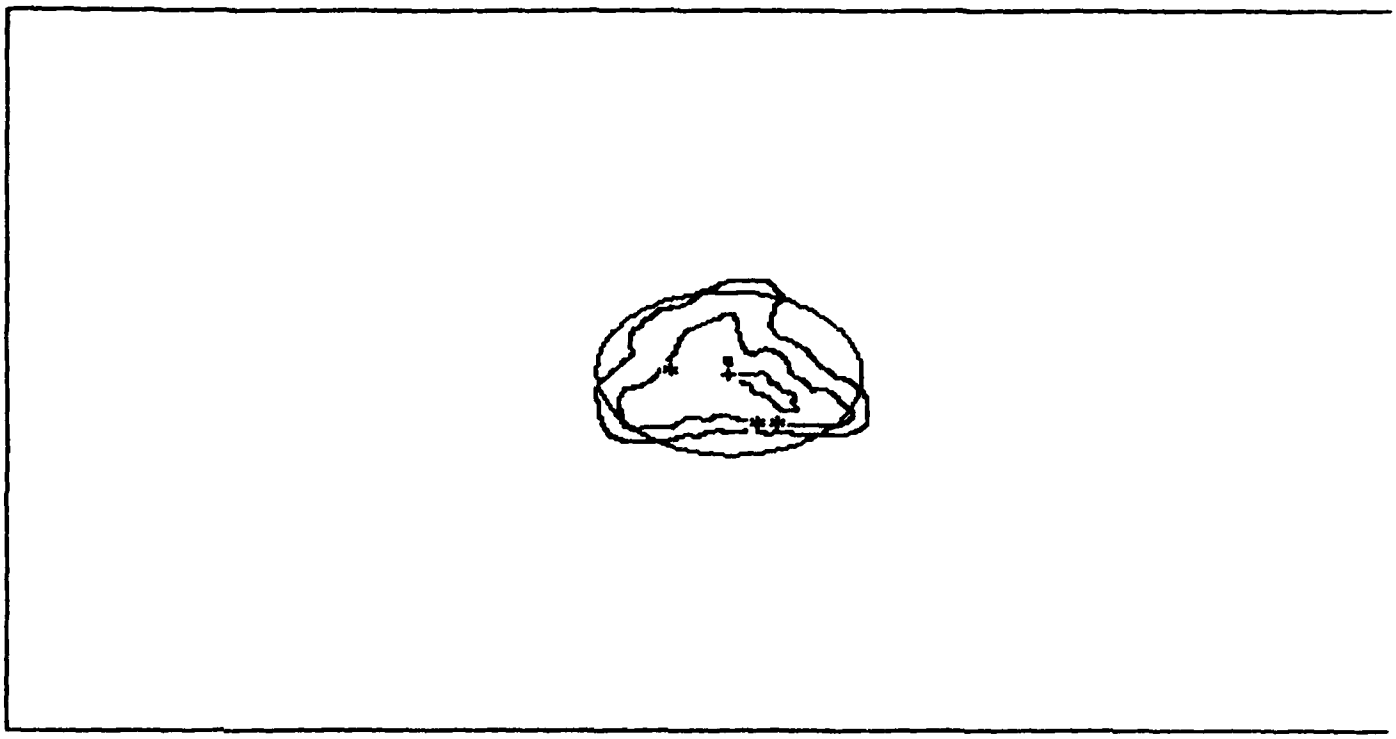
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 01

1427 Z 08-11-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 18.0



HEIGHT(ABOVE DETONATION PT.) =	9.0M	HEIGHT OF CENTROID=	3.M
WIDTH(MAX. HORIZONTAL EXTENT)=	15.0M	LATERAL OFFSET =	-2.M
VERTICAL EXTENT =	11.0M	AXES =	14., 11.M
AREA =	88.7SQM	INCLINATION =	2.9 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 3.M OFFSET= -5.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 10.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 13.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= -1.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA

EVENT 03 TIME 1839Z DATE 081180

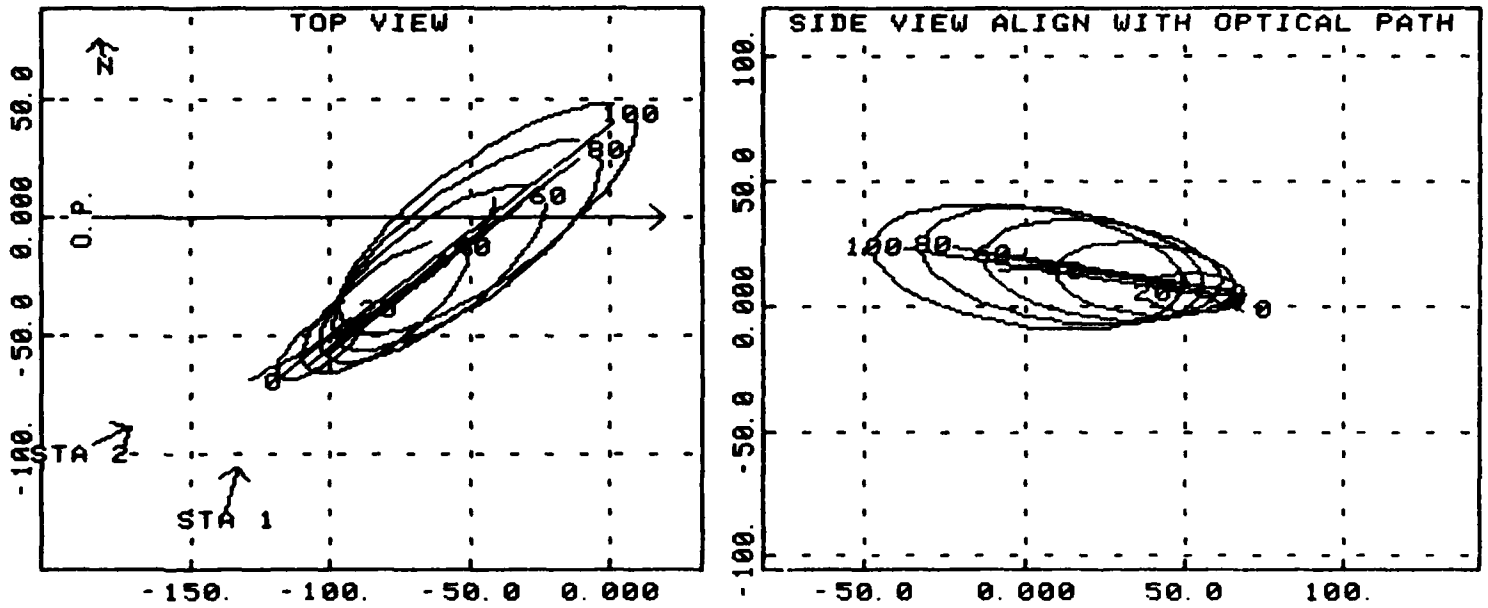
XM49 FOG OIL IR#1 SENSOR 0.5-0.7

	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECTIVE			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	-0.1	2.7	3.4	7.1	3.7	0.0	15.5	-1.8	0.0	0.0
2.0	0.2	6.8	2.4	12.8	2.0	0.0	25.4	-1.0	75.4	1.7
4.0	0.9	9.5	2.1	15.2	0.4	0.0	27.0	-0.2	75.1	1.6
6.0	2.6	12.5	4.0	39.1	-1.3	0.0	138.0	0.6	74.9	1.6
8.0	4.4	15.5	5.9	71.8	-2.9	0.0	377.9	1.4	74.6	1.6
10.0	6.0	18.4	7.7	110.7	-4.5	0.0	757.1	2.2	74.4	1.6
12.0	7.6	21.3	9.4	156.6	-6.1	0.0	1311.2	2.9	74.1	1.6
14.0	9.1	24.1	11.0	209.1	-7.7	0.0	2063.9	3.6	73.9	1.5
16.0	10.6	26.9	12.7	268.1	-9.2	0.0	3042.9	4.3	73.6	1.5
18.0	12.1	29.7	14.3	332.0	-10.8	0.0	4237.4	5.0	73.3	1.5
20.0	13.5	32.4	15.8	400.2	-12.3	0.0	5652.0	5.6	73.0	1.5
22.0	14.9	35.0	17.3	473.7	-13.9	0.0	7327.8	6.3	72.7	1.4
24.0	16.3	37.6	18.8	552.5	-15.4	0.0	9289.0	6.9	72.4	1.4
26.0	17.6	40.1	20.2	632.8	-16.9	0.0	11428.8	7.5	72.0	1.4
28.0	18.9	42.6	21.7	719.3	-18.4	0.0	13908.1	8.1	71.7	1.4
30.0	20.2	45.0	23.1	807.0	-19.9	0.0	16577.2	8.6	71.3	1.3
32.0	21.4	47.3	24.4	897.9	-21.3	0.0	19508.0	9.2	71.0	1.3
34.0	22.6	49.6	25.8	990.8	-22.8	0.0	22660.4	9.7	70.6	1.3
36.0	23.7	51.8	27.0	1084.0	-24.3	0.0	25970.7	10.2	70.2	1.3
38.0	24.8	54.0	28.3	1182.1	-25.7	0.0	29630.0	10.7	69.8	1.2
40.0	25.9	56.1	29.5	1278.4	-27.1	0.0	[illegible]	11.1	69.4	1.2
42.0	26.9	58.2	30.8	1378.3	-28.5	0.0	[illegible]	11.6	68.9	1.2
44.0	28.0	60.2	31.9	1476.4	-29.9	0.0	[illegible]	12.0	68.5	1.2
46.0	28.9	62.2	33.1	1578.0	-31.3	0.0	[illegible]	12.4	68.0	1.2
48.0	29.9	64.1	34.2	1677.4	-32.7	0.0	[illegible]	12.8	67.5	1.1
50.0	30.8	66.0	35.3	1778.2	-34.0	0.0	[illegible]	13.1	67.0	1.1
52.0	31.7	67.8	36.3	1878.0	-35.4	0.0	[illegible]	13.5	66.4	1.1
54.0	32.5	69.5	37.3	1974.3	-36.7	0.0	[illegible]	13.8	65.9	1.1
56.0	33.3	71.3	38.3	2074.0	-38.1	0.0	69175.3	14.1	65.3	1.0
58.0	34.0	72.9	39.2	2171.2	-39.4	0.0	74087.4	14.4	64.7	1.0
60.0	34.8	74.5	40.2	2268.4	-40.7	0.0	79108.8	14.7	64.0	1.0
62.0	35.4	76.1	41.1	2362.6	-42.0	0.0	84061.9	14.9	63.4	1.0
64.0	36.1	77.6	41.9	2453.6	-43.2	7.4	88912.6	15.1	62.7	0.9
66.0	36.7	79.1	42.7	2546.1	-44.5	16.1	93965.1	15.4	61.9	0.9
68.0	37.3	80.5	43.4	2634.2	-45.7	21.3	98832.0	15.5	61.2	0.9
70.0	37.8	81.9	44.1	2718.8	-47.0	25.4	103552.8	15.7	60.4	0.9
72.0	38.3	83.2	44.8	2802.9	-48.2	28.8	108334.1	15.9	59.5	0.9
74.0	38.7	84.5	45.5	2884.6	-49.4	31.9	113035.3	16.0	58.6	0.8
76.0	39.1	85.7	46.1	2962.6	-50.6	34.5	117570.0	16.1	57.7	0.8
78.0	39.5	86.9	46.6	3037.9	-51.8	36.9	121991.7	16.2	56.7	0.8
80.0	39.8	88.1	47.1	3109.3	-53.0	39.1	126224.1	16.3	55.6	0.8
82.0	40.1	89.2	47.6	3181.2	-54.2	41.2	130566.5	16.3	54.5	0.8
84.0	40.4	90.2	48.0	3246.3	-55.3	43.0	134495.3	16.4	53.4	0.7
86.0	40.6	91.2	48.4	3308.5	-56.5	44.7	138286.7	16.4	52.2	0.7
88.0	40.7	92.2	48.7	3365.0	-57.6	46.2	141722.4	16.4	50.9	0.7
90.0	40.9	93.1	49.0	3419.9	-58.7	47.7	145119.1	16.3	49.5	0.7
92.0	41.0	94.0	49.3	3472.6	-59.8	49.1	148426.2	16.3	48.1	0.7
94.0	41.0	94.8	49.5	3518.7	-60.9	50.3	151298.2	16.2	46.5	0.6
96.0	41.0	95.5	49.7	3561.5	-62.0	51.4	153999.6	16.1	44.9	0.6
98.0	40.9	96.2	49.8	3596.6	-63.0	52.4	156179.4	16.0	43.2	0.6
100.0	40.9	96.9	49.9	3630.5	-64.1	53.3	158332.1	15.9	41.4	0.6
102.0	40.8	97.5	49.9	3661.1	-65.1	54.2	160312.9	15.8	39.5	0.6
104.0	40.6	98.1	49.9	3684.4	-66.2	55.0	161806.5	15.6	37.5	0.6
106.0	40.4	98.6	49.9	3704.0	-67.2	55.6	163083.6	15.4	35.3	0.5
108.0	40.1	99.0	49.8	3718.0	-68.2	56.2	163998.4	15.2	33.1	0.5
110.0	38.3	44.2	46.5	1612.8	-69.2	89.0	116353.8	15.0	30.7	0.5
112.0	38.1	44.2	46.6	1610.8	-70.2	88.8	116341.1	14.8	28.3	0.5
114.0	37.8	44.1	46.6	1607.8	-71.1	88.5	116180.0	14.5	25.7	0.5
116.0	37.5	44.0	46.6	1604.6	-72.1	87.8	115935.4	14.3	23.0	0.5
118.0	37.2	43.9	46.5	1598.3	-73.0	86.9	115403.7	14.0	20.2	0.5

SMOKE III EGLIN AFB, FLA.

EVENT 03 TIME 1839Z DATE 081180

XM49 FOG OIL IR#1 SENSOR 0.5-0.7



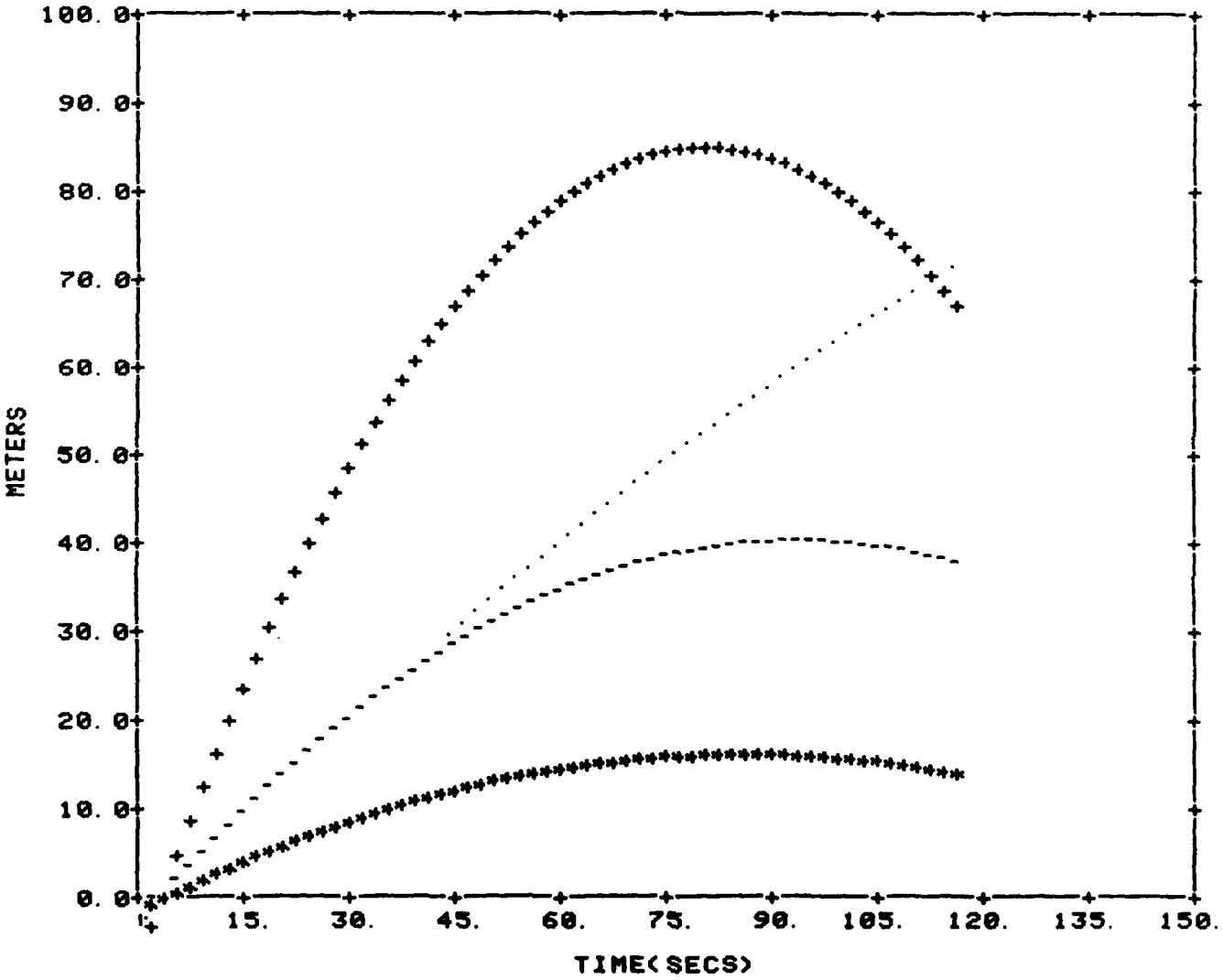
SMOKE III EGLIN AFB, FLA.

EVENT 03 TIME 1839Z DATE 081180

XM49 FOG OIL IR#1 SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

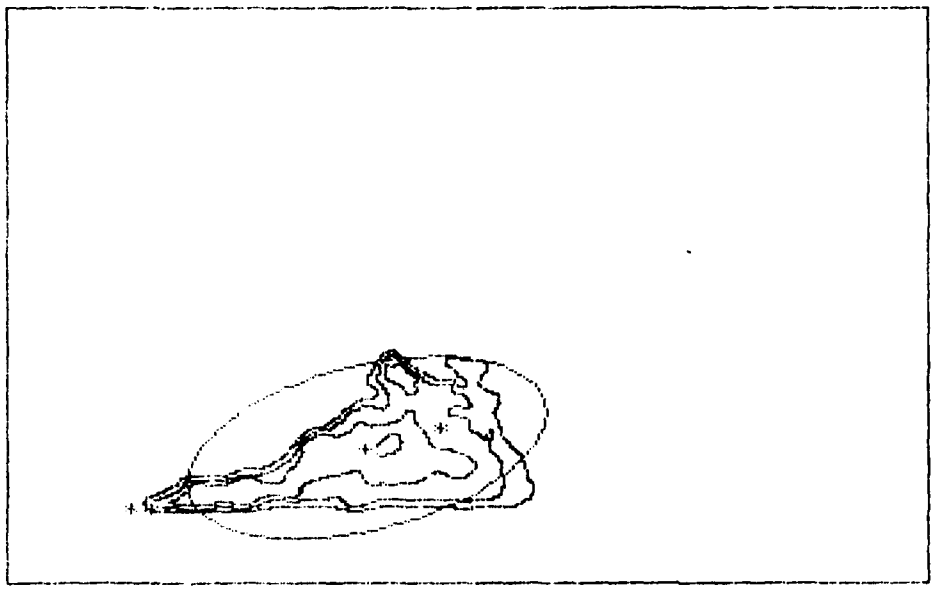
.....TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

EVENT # 03

1839 Z 08-11-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 60.0



HEIGHT(ABOVE DETONATION PT.) =	38.0M	HEIGHT OF CENTROID=	15.M
WIDTH(MAX. HORIZONTAL EXTENT)=	79.0M	LATERAL OFFSET =	45.M
VERTICAL EXTENT =	39.0M	AXES =	76., 40.M
AREA =	1765.0SQM	INCLINATION =-	18.5 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 20.M OFFSET= 61.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 59.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 31.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= -6.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M

EVENT # 03

1839 Z 08-11-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 60.0

HEIGHT(ABOVE DETONATION PT.) =	34.0M	HEIGHT OF CENTROID=	16.M
WIDTH(MAX. HORIZONTAL EXTENT)=	31.0M	LATERAL OFFSET =	-3.M
VERTICAL EXTENT =	35.0M	AXES =	37., 26.M
AREA =	624.9SQM	INCLINATION =	47.7 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 22.M OFFSET= -8.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 23.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 16.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= -4.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA.

EVENT 04 TIME 2033Z DATE 081180

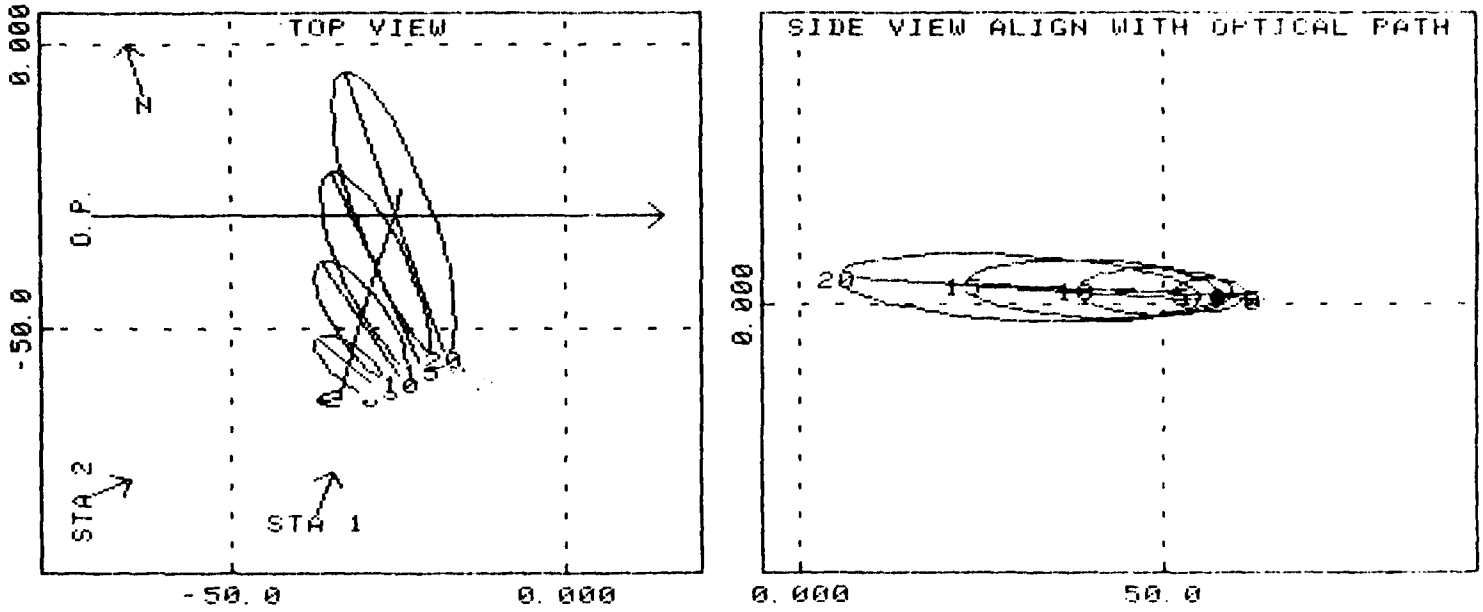
A3M3 FOG OIL SENSOR 0 5-0 7

	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECTIVE			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	2.3	2.7	2.6	5.5	2.2	0.0	22.3	1.0	0 0	0 0
1.0	2.9	3.4	3.3	9.0	1.1	0.0	41 1	1.2	27 0	1 1
2.0	3.4	4.8	4.1	15.3	0.0	0.0	71.8	1.3	27 3	1 2
3.0	3.8	6.4	4.7	23.6	-1.3	0.0	112.9	1 5	27 6	1 2
4.0	4.3	8.2	5.3	34.2	-2.5	0 0	168.2	1 6	27 8	1 3
5.0	4.7	10.1	5.9	46.5	-3.8	0.0	236.3	1 8	28 1	1 4
6.0	5.1	12.2	6.4	61.1	-5.2	0.0	322.1	1.9	28 3	1 4
7.0	5.4	14.4	6.8	77.5	-6.6	0.0	424.8	2 0	28 5	1 5
8.0	5.8	16.7	7.3	96.4	-8.1	0.0	551.2	2.1	28 7	1 5
9.0	6.1	19.1	7.8	116.8	-9.6	0.0	692.3	2.2	28 9	1 6
10.0	6.4	21.5	8.2	138.8	-11.2	0.0	852.9	2 3	29 0	1 6
11.0	6.8	24.1	8.7	163.3	-12.9	0.0	1040.8	2.4	29 2	1 7
12.0	7.0	26.7	9.1	189.2	-14.6	0.0	1244.4	2.5	29 3	1 7
13.0	7.3	29.4	9.5	216.7	-16.3	3.1	1468.3	2 6	29.5	1 8
14.0	7.6	32.1	9.8	245.5	-18.1	6.7	1707.0	2 7	29 6	1 9
15.0	7.8	34.9	10.2	276.1	-20.0	8.5	1972.1	2 7	29 7	1 9
16.0	8.1	37.8	10.6	308.8	-21.9	9.7	2262.1	2.8	29.8	2 0
17.0	8.3	40.8	10.9	341.5	-23.8	10.5	2550.0	2.9	29.9	2 0
18.0	8.6	43.8	11.3	377.0	-25.8	11.1	2880.0	2.9	30.0	2 1
19.0	8.8	46.9	11.6	412.4	-27.9	11.4	3202.0	3.0	30 1	2 1
20.0	9.0	50.1	12.0	449.8	-30.0	11.7	3556.2	3.0	30 2	2 2
21.0	9.2	53.3	12.3	487.8	-32.2	11.9	3914.0	3.0	30.3	2.3
22.0	9.4	56.6	12.7	526.1	-34.4	12.0	4274.6	3.0	30.4	2.3

SMOKE III EGLIN AFB, FLA.

EVENT 04 TIME 2033Z DATE 081180

A3M3 FOG OIL SENSOR 0.5-0.7



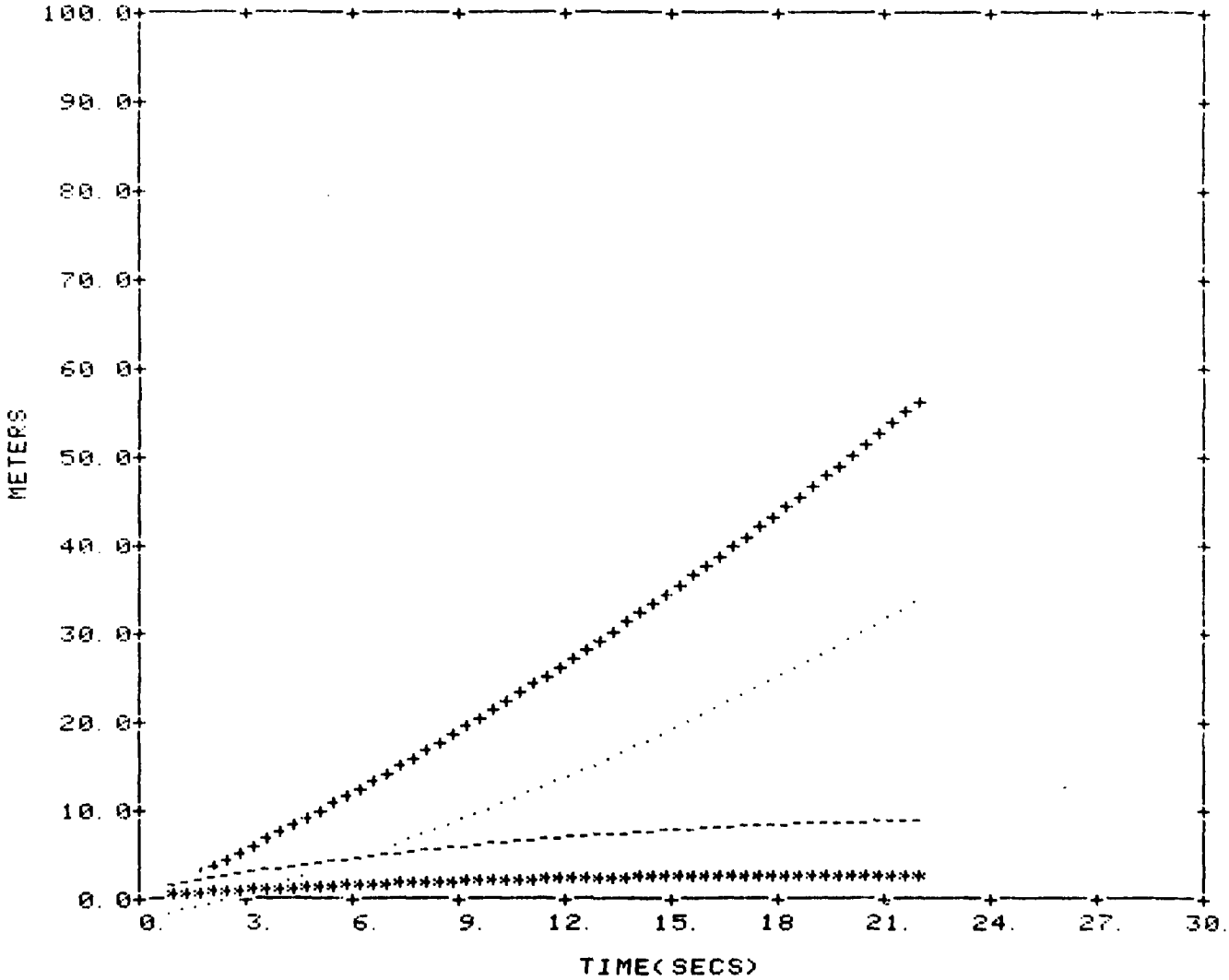
SMOKE III EGLIN AFB, FLA.

EVENT 04 TIME 2033Z DATE 081180

A3M3 FOG OIL SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

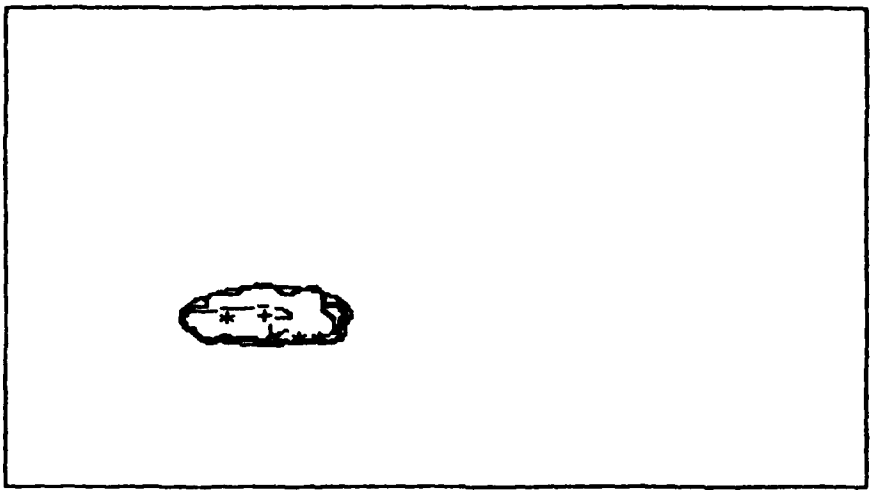
.....TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 04

2033 Z 08-11-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 22.0



HEIGHT(ABOVE DETONATION PT.) =	12.0M	HEIGHT OF CENTROID=	5.M
WIDTH(MAX. HORIZONTAL EXTENT)=	34.0M	LATERAL OFFSET =	-9.M
VERTICAL EXTENT =	14.0M	AXES =	35., 14.M
AREA =	349.8SQM	INCLINATION =	-1.5 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 5.M OFFSET= -17.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 25.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 34.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= -5.M

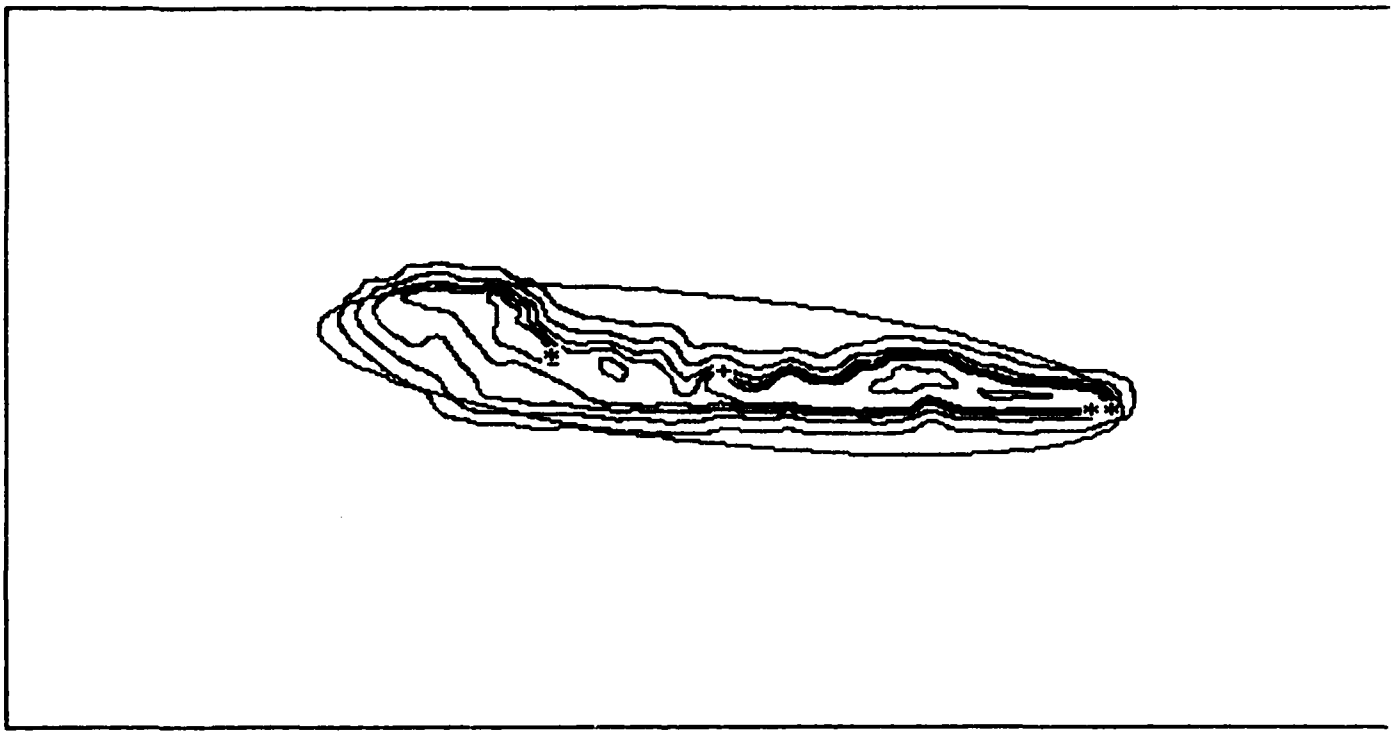
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 04

2033 Z 08-11-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 22.0



HEIGHT(ABOVE DETONATION PT.) =	13.0M	HEIGHT OF CENTROID=	3.M
WIDTH(MAX. HORIZONTAL EXTENT)=	58.0M	LATERAL OFFSET	= -28.M
VERTICAL EXTENT =	15.0M	AXES	= 59., 13.M
AREA =	371.8SQM	INCLINATION	= 7.2 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 5.M OFFSET= -40.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 46.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 25.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= -2.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB FLA

EVENT 05 TIME 2149Z DATE 08110

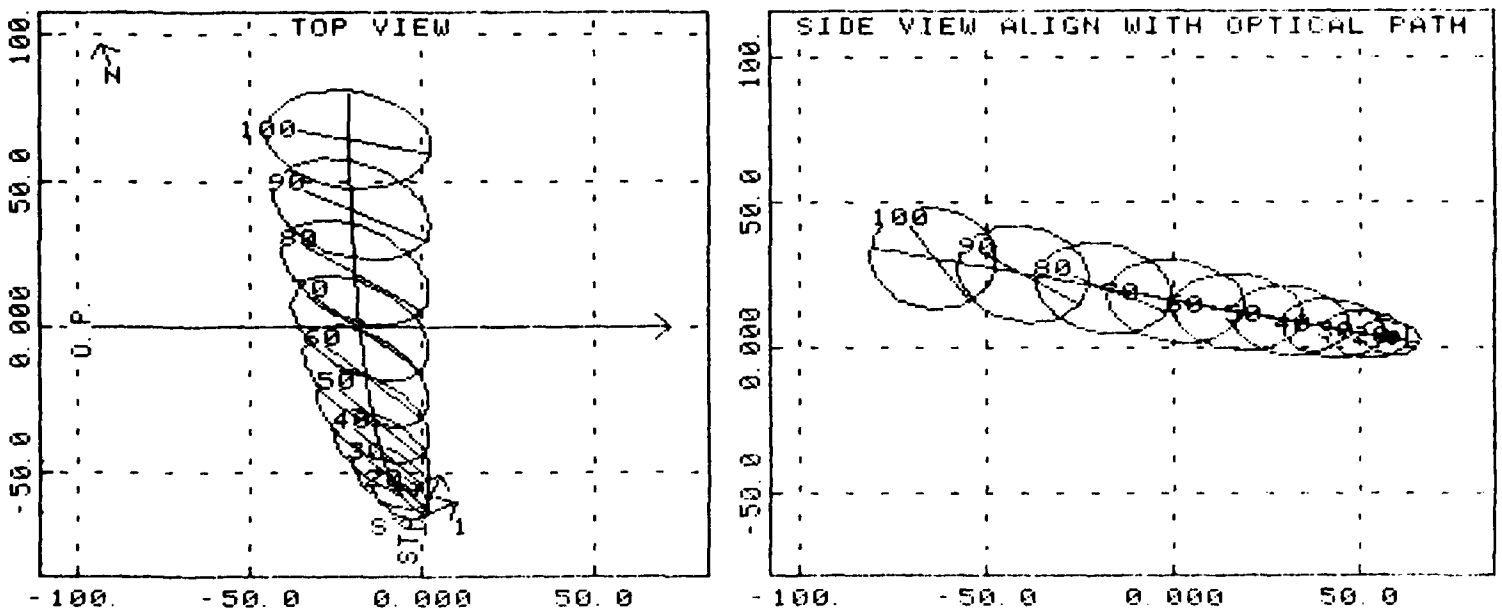
XM45 GENERATOR SENSOR 0 0 0 7

TIME (SEC)	DIMENSIONS OF OBJECT CROSSSECTION NORMAL TO OPTICAL PATH (METERS) HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ METERS)	LATERAL OFFSET	PATH LENGTH	DIMENSIONS INDEPENDENT OF PERSPECTIVE VOLUME (CUBIC METERS)	VENTROID HEIGHT	[illegible] DIRECTION	[illegible]
20.0	8.9	16.0	11.7	145.3	-7.1	0.0	1401.0	[illegible]	[illegible]	[illegible]
21.0	9.3	16.7	12.2	158.0	-7.7	0.0	1581.6	3.1	945.2	[illegible]
22.0	9.6	17.3	12.7	170.6	-8.2	0.0	1766.4	3.3	946.5	[illegible]
23.0	9.9	18.0	13.1	182.8	-8.8	0.0	1952.0	3.4	947.8	[illegible]
24.0	10.3	18.6	13.6	195.9	-9.4	0.0	2138.5	[illegible]	949.0	[illegible]
25.0	10.7	19.2	14.0	209.2	-10.0	0.0	2325.8	[illegible]	350.2	[illegible]
26.0	11.0	19.9	14.4	222.8	-10.7	0.0	2604.3	[illegible]	351.2	[illegible]
27.0	11.4	20.5	14.9	237.3	-11.4	0.0	2856.8	4.0	352.2	[illegible]
28.0	11.8	21.1	15.3	251.2	-12.1	0.0	3105.5	4.1	353.2	[illegible]
29.0	12.1	21.7	15.7	265.1	-12.8	0.0	3361.1	4.3	354.1	[illegible]
30.0	12.5	22.3	16.1	279.8	-13.6	0.0	3639.1	[illegible]	354.9	[illegible]
31.0	12.9	22.9	16.5	294.3	-14.4	0.0	3921.4	4.6	355.7	[illegible]
32.0	13.3	23.4	16.9	308.7	-15.2	0.0	4207.5	4.8	356.4	[illegible]
33.0	13.7	24.0	17.3	323.0	-16.0	0.0	4500.1	[illegible]	357.2	[illegible]
34.0	14.0	24.5	17.7	337.9	-16.9	0.0	4810.1	5.2	357.8	[illegible]
35.0	14.4	25.0	18.1	352.8	-17.8	0.0	5129.0	5.4	358.5	[illegible]
36.0	14.8	25.6	18.5	367.7	-18.7	0.0	5457.1	[illegible]	359.1	[illegible]
37.0	15.2	26.1	18.9	383.2	-19.6	0.0	5804.9	[illegible]	[illegible]	[illegible]
38.0	15.6	26.6	19.2	398.2	-20.6	0.0	6145.4	6.0	[illegible]	[illegible]
39.0	16.0	27.1	19.6	413.2	-21.5	0.0	6498.0	6.2	[illegible]	[illegible]
40.0	16.4	27.6	20.0	428.8	-22.5	0.0	6869.2	6.5	[illegible]	[illegible]
41.0	16.8	28.0	20.3	443.0	-23.6	0.0	7215.7	[illegible]	[illegible]	[illegible]
42.0	17.3	28.5	20.7	458.8	-24.6	0.0	7609.2	[illegible]	[illegible]	[illegible]
43.0	17.7	28.9	21.0	473.8	-25.7	0.0	7988.6	7.0	[illegible]	[illegible]
44.0	18.1	29.4	21.4	488.5	-26.8	0.0	8368.1	[illegible]	8.1	[illegible]
45.0	18.5	29.8	21.7	503.0	-28.0	0.0	8748.2	7.7	8.1	[illegible]
46.0	18.9	30.2	22.0	517.6	-29.1	0.0	9141.0	7.9	8.8	[illegible]
47.0	19.4	30.6	22.3	532.7	-30.3	0.0	9553.5	8.2	4.2	[illegible]
48.0	19.8	31.0	22.6	546.4	-31.5	0.0	9932.6	8.5	4.6	[illegible]
49.0	20.2	31.4	23.0	561.5	-32.8	0.0	10360.4	8.8	4.9	[illegible]
50.0	20.7	31.7	23.3	575.9	-34.0	0.0	10776.1	[illegible]	[illegible]	[illegible]
51.0	21.1	32.1	23.6	589.8	-35.3	0.0	11184.6	9.[illegible]	5.5	[illegible]
52.0	21.6	32.4	23.9	603.6	-36.6	0.0	11597.3	9.6	5.9	[illegible]
53.0	22.0	32.7	24.2	617.4	-38.0	0.0	12016.8	9.9	6.2	4
54.0	22.5	33.0	24.5	630.3	-39.3	0.0	12418.2	10.2	6.[illegible]	[illegible]
55.0	22.9	33.4	24.8	643.9	-40.7	0.0	12844.8	10.5	6.7	4
56.0	23.4	33.6	25.0	656.7	-42.1	0.0	13255.0	10.9	[illegible]	[illegible]
57.0	23.8	33.9	25.3	669.4	-43.6	0.0	13670.4	11.2	7.[illegible]	[illegible]
58.0	24.3	34.2	25.6	681.9	-45.0	0.0	14088.8	11.5	[illegible]	[illegible]
59.0	24.8	34.4	25.8	694.1	-46.5	0.0	14504.1	11.9	7.8	[illegible]
60.0	25.2	34.7	26.1	705.2	-48.0	0.0	14892.6	12.2	8.0	[illegible]
61.0	25.7	34.9	26.4	717.7	-49.6	0.0	15330.2	12.5	8.2	[illegible]
62.0	26.2	35.1	26.6	728.6	-51.1	0.0	15728.8	12.9	8.4	[illegible]
63.0	26.7	35.3	26.8	739.9	-52.7	0.0	16142.7	13.2	8.6	[illegible]
64.0	27.2	35.5	27.1	750.5	-54.3	0.0	16542.7	13.6	8.8	[illegible]
65.0	27.7	35.7	27.3	760.9	-56.0	0.0	16946.0	14.0	9.0	[illegible]
66.0	28.2	35.8	27.6	770.9	-57.6	0.0	17342.2	14.4	9.2	[illegible]
67.0	28.6	36.0	27.8	780.4	-59.3	0.0	17730.4	14.8	9.4	[illegible]
68.0	29.1	36.1	28.0	789.6	-61.0	5.5	18118.6	15.1	9.6	[illegible]
69.0	29.6	36.2	28.2	797.8	-62.8	7.9	18476.8	15.5	9.8	[illegible]
70.0	30.2	36.3	28.4	806.4	-64.5	8.6	18858.0	15.9	10.0	[illegible]
71.0	30.7	36.4	28.6	815.1	-66.3	7.8	19251.9	16.3	10.1	[illegible]
72.0	31.2	36.5	28.8	821.8	-68.2	4.6	19584.4	16.8	10.3	[illegible]
73.0	31.7	36.5	29.0	829.0	-70.0	0.0	19939.1	17.2	10.4	[illegible]
74.0	32.2	36.6	29.3	836.6	-71.9	0.0	20320.4	17.6	10.6	[illegible]
75.0	32.8	36.6	29.5	843.4	-73.7	0.0	20681.4	18.0	10.7	[illegible]
76.0	33.3	36.6	29.6	848.6	-75.7	0.0	20992.6	18.5	10.9	[illegible]
77.0	33.8	36.6	29.8	854.1	-77.6	0.0	21321.2	18.9	11.[illegible]	[illegible]
78.0	34.7	36.1	30.7	859.4	-79.6	0.0	21656.4	19.4	11.2	[illegible]
79.0	35.3	36.1	30.9	864.8	-81.6	0.0	22001.5	19.8	11.3	[illegible]
80.0	35.8	36.0	31.1	869.1	-83.6	0.0	22312.8	20.3	11.4	[illegible]
81.0	36.4	36.0	31.3	874.5	-85.6	0.0	22675.4	20.7	11.5	[illegible]
82.0	37.0	35.9	31.5	877.8	-87.7	0.0	22964.7	21.2	11.7	[illegible]
83.0	37.5	35.8	31.8	881.4	-89.8	0.0	23277.0	21.7	11.8	[illegible]
84.0	38.1	35.7	31.9	883.5	-91.9	0.0	23542.9	22.2	11.9	[illegible]
85.0	38.7	35.6	32.1	886.7	-94.0	0.0	23849.7	22.6	12.1	[illegible]
86.0	39.3	35.5	32.3	890.4	-96.2	0.0	24191.4	23.1	12.2	[illegible]
87.0	39.9	35.3	32.5	892.3	-98.4	0.0	24457.9	23.6	12.3	[illegible]
88.0	40.5	35.2	32.7	893.5	-100.6	0.0	24716.2	24.1	12.4	[illegible]
89.0	41.1	35.0	32.9	896.5	-102.9	0.0	25037.8	24.6	12.5	[illegible]
90.0	41.7	34.9	33.1	897.6	-105.1	0.0	25301.9	25.2	12.6	[illegible]
91.0	42.3	34.7	33.3	899.0	-107.4	0.0	25570.3	25.7	12.7	[illegible]
92.0	42.9	34.6	33.4	901.5	-109.7	0.0	25880.4	26.2	12.8	[illegible]
93.0	43.5	34.4	33.6	901.9	-112.1	0.0	26122.2	26.7	12.9	[illegible]
94.0	44.2	34.3	33.8	905.1	-114.5	0.0	26448.0	27.3	13.0	[illegible]
95.0	44.8	34.2	33.9	905.6	-116.9	0.0	26690.7	27.8	13.1	[illegible]
96.0	45.4	34.0	34.1	907.7	-119.3	0.0	26979.8	28.4	13.2	[illegible]
97.0	46.1	33.9	34.3	908.9	-121.7	0.0	27212.0	28.9	13.3	[illegible]
98.0	46.7	33.8	34.5	911.9	-124.2	0.0	27512.1	29.5	13.4	[illegible]
99.0	47.4	33.7	34.6	915.4	-126.7	0.0	27821.8	30.1	13.4	[illegible]
100.0	48.0	33.7	34.8	917.7	-129.2	0.0	28047.6	30.6	13.5	[illegible]
101.0	48.8	33.9	35.2	935.5	-131.7	0.0	28649.2	31.2	13.6	[illegible]
102.0	49.4	33.9	35.3	939.4	-134.3	0.0	28874.4	31.8	13.7	[illegible]
103.0	50.1	34.0	35.5	946.5	-136.9	0.0	29196.6	32.4	13.8	[illegible]
104.0	50.8	34.1	35.6	953.1	-139.5	0.0	29475.2	33.0	13.9	[illegible]
105.0	51.5	34.2	35.7	959.5	-142.2	0.0	29697.3	33.6	13.9	[illegible]
106.0	52.1	34.3	35.9	967.8	-144.8	0.0	29974.5	34.2	14.0	[illegible]

SMOKE III EGLIN AFB, FLA.

EVENT 05 TIME 2149Z DATE 081180

XM45 GENERATOR SENSOR 0 5-0. 7



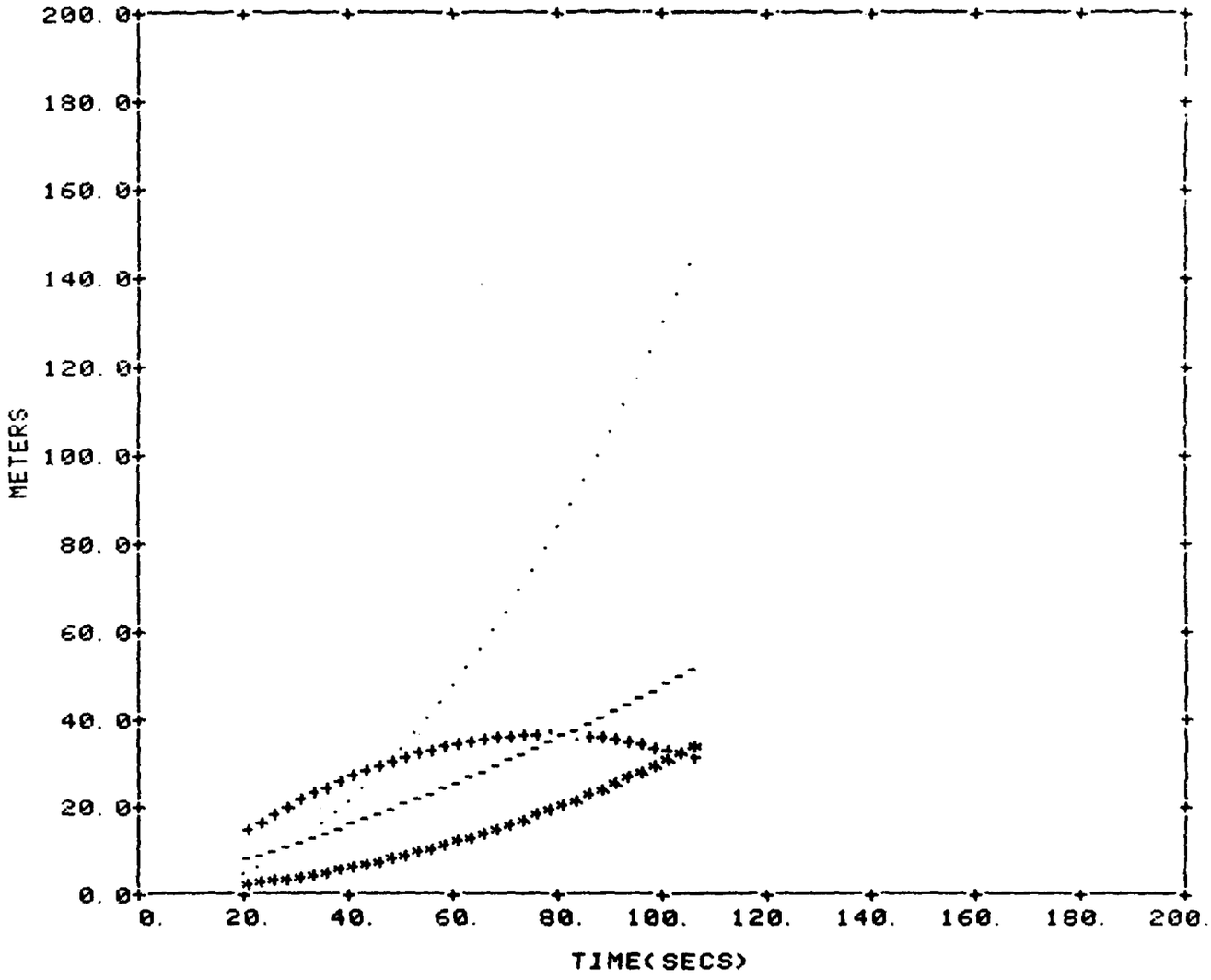
SMOKE III EGLIN AFB, FLA.

EVENT 05 TIME 2149Z DATE 081180

XM45 GENERATOR SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

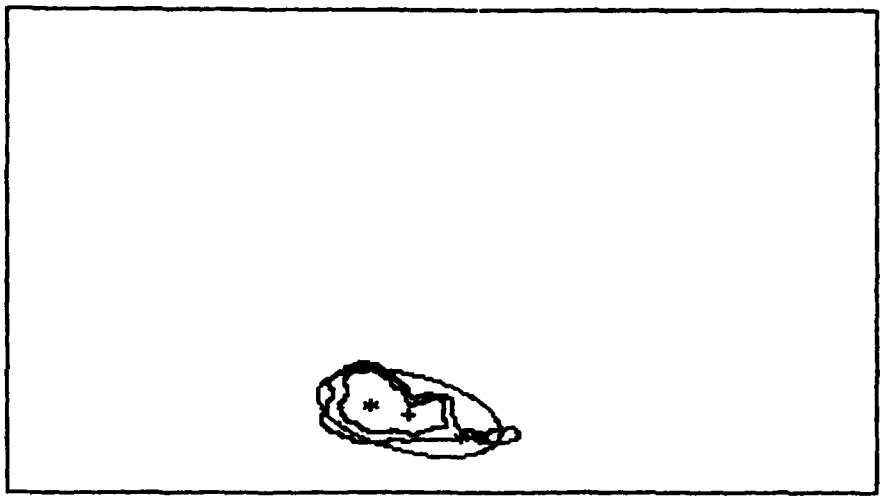
.....TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 05

2149 Z 08-11-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 40.0



HEIGHT(ABOVE DETONATION PT.) =	18.0M	HEIGHT OF CENTROID=	5.M
WIDTH(MAX. HORIZONTAL EXTENT)=	40.0M	LATERAL OFFSET =	-13.M
VERTICAL EXTENT =	19.0M	AXES =	38., 18.M
AREA =	435.9SQM	INCLINATION =	17.2 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 8.M OFFSET= -21.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 25.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 25.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

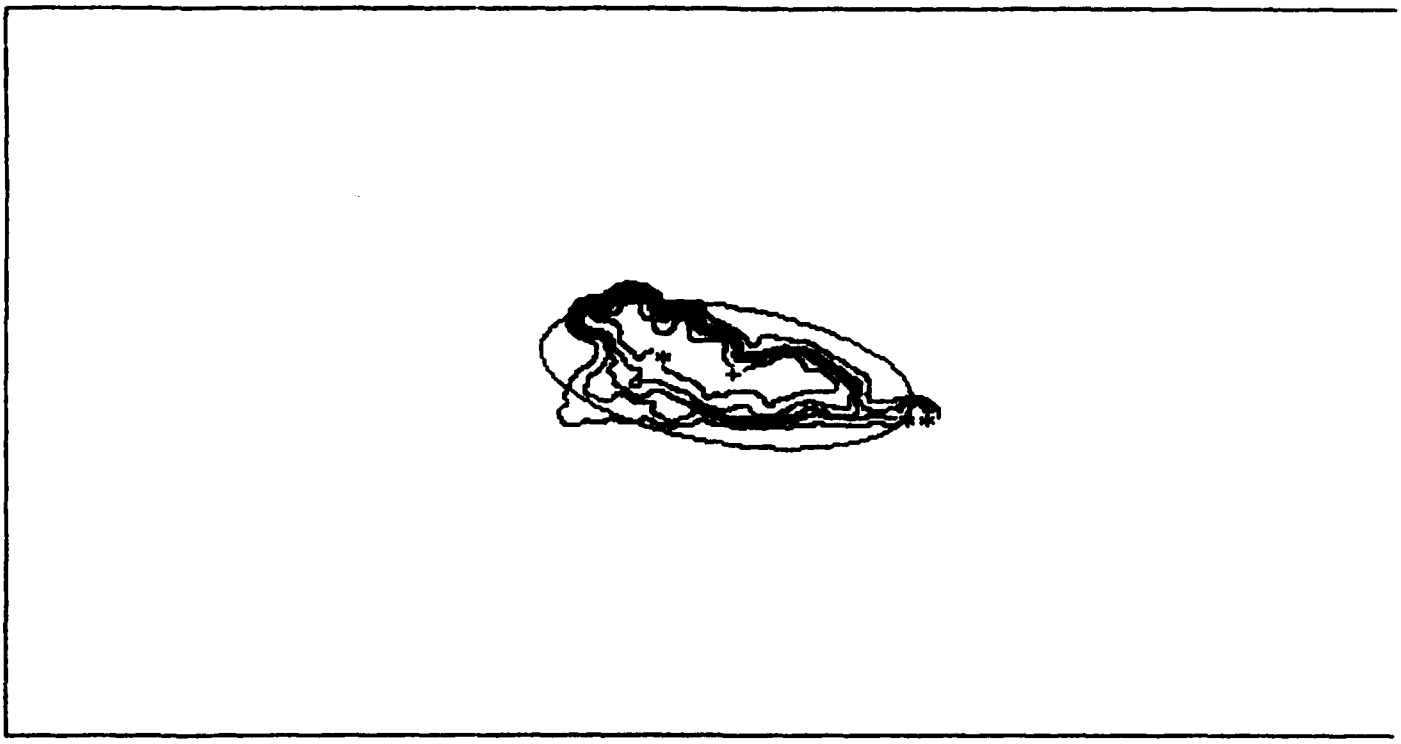
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 05

2149 Z 08-11-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 40.0



HEIGHT(ABOVE DETONATION PT.) =	17.0M	HEIGHT OF CENTROID=	6.M
WIDTH(MAX. HORIZONTAL EXTENT)=	39.0M	LATERAL OFFSET	= -20.M
VERTICAL EXTENT =	18.0M	AXES	= 37., 14.M
AREA =	253.08QM	INCLINATION	= 15.9 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 8.M OFFSET= -28.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 29.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 15.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 2.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III FOG IN AIR/FLA

EVENT 06 TIME 2250Z DATE 081180

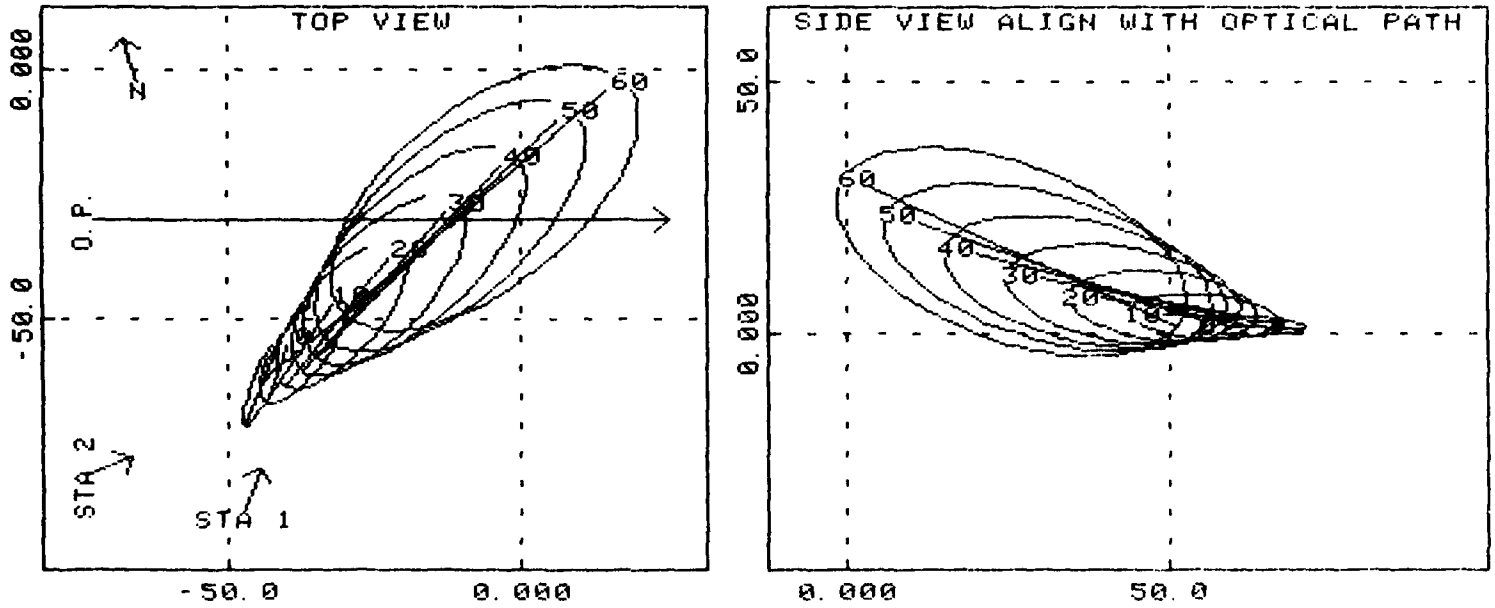
FOG OIL IR#1 SEPP 0.5-0.7

TIME(SEC)	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS) HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ METERS)	LATERAL OFFSET	PATH LENGTH	DIMENSIONS INDEPENDENT OF PERSPECTIVE VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	3.5	18.4	3.7	52.3	-3.0	0.0	133.9	1.6	0.0	0.0
1.0	3.8	17.9	3.9	54.2	-3.7	0.0	148.7	1.9	60.9	0.9
2.0	4.3	19.0	4.7	68.7	-4.3	0.0	227.1	2.0	60.9	0.9
3.0	4.7	19.4	5.2	77.9	-5.0	0.0	288.5	2.1	60.9	0.9
4.0	5.2	19.8	5.8	87.9	-5.6	0.0	362.8	2.3	60.9	0.9
5.0	5.6	20.2	6.3	98.1	-6.2	0.0	444.8	2.5	60.9	0.9
6.0	6.1	20.7	6.8	108.6	-6.9	0.0	536.3	2.7	60.9	0.9
7.0	6.5	21.1	7.3	120.0	-7.5	0.0	644.0	2.9	60.9	0.9
8.0	7.0	21.6	7.9	131.6	-8.2	0.0	760.5	3.0	60.9	0.9
9.0	7.4	22.2	8.4	143.7	-8.8	0.0	888.7	3.2	60.9	0.9
10.0	7.9	22.7	8.9	156.2	-9.5	0.0	1030.0	3.4	60.9	0.9
11.0	8.3	23.3	9.5	170.1	-10.1	0.0	1195.0	3.6	60.9	0.9
12.0	8.8	23.9	10.0	184.0	-10.7	0.0	1369.1	3.8	60.9	0.9
13.0	9.3	24.5	10.5	197.8	-11.4	0.0	1549.4	4.0	60.9	0.9
14.0	9.7	25.1	11.0	212.8	-12.0	0.0	1754.7	4.2	60.9	0.9
15.0	10.2	25.7	11.6	228.5	-12.6	0.0	1977.4	4.4	60.9	0.9
16.0	10.7	26.4	12.1	245.4	-13.3	0.0	2230.4	4.6	60.9	0.9
17.0	11.1	27.0	12.6	261.8	-13.9	0.0	2482.4	4.8	60.9	0.9
18.0	11.6	27.7	13.2	279.7	-14.5	0.0	2769.5	5.0	60.8	0.9
19.0	12.1	28.4	13.7	297.7	-15.1	0.0	3068.1	5.3	60.8	0.9
20.0	12.6	29.1	14.3	316.4	-15.8	0.0	3388.9	5.5	60.8	0.9
21.0	13.1	29.8	14.8	335.9	-16.4	0.0	3735.5	5.7	60.8	0.9
22.0	13.6	30.5	15.3	355.7	-17.0	0.0	4097.1	5.9	60.8	0.9
23.0	14.1	31.2	15.9	376.4	-17.6	0.0	4487.1	6.1	60.8	0.9
24.0	14.6	31.9	16.4	396.6	-18.2	0.0	4874.9	6.4	60.8	0.9
25.0	15.1	32.6	17.0	419.7	-18.9	0.0	5339.3	6.6	60.8	0.9
26.0	15.6	33.3	17.6	442.2	-19.5	0.0	5801.5	6.8	60.8	0.9
27.0	16.1	34.1	18.1	465.4	-20.1	0.0	6288.8	7.1	60.8	0.9
28.0	16.6	34.8	18.7	489.4	-20.7	0.0	6808.6	7.3	60.8	0.9
29.0	17.2	35.5	19.3	514.0	-21.3	0.0	7354.6	7.5	60.8	0.9
30.0	17.7	36.3	19.8	538.3	-21.9	0.0	7903.3	7.8	60.8	0.9
31.0	18.2	37.0	20.4	565.5	-22.5	0.0	8539.3	8.0	60.8	0.9
32.0	18.8	37.8	21.0	591.2	-23.1	0.0	9148.1	8.3	60.8	0.9
33.0	19.3	38.5	21.6	619.7	-23.7	0.0	9847.8	8.5	60.8	0.9
34.0	19.9	39.3	22.3	647.8	-24.3	3.1	10549.3	8.8	60.8	0.9
35.0	20.4	40.0	22.8	675.6	-24.9	6.1	11253.6	9.0	60.8	0.9
36.0	21.0	40.8	23.5	706.0	-25.5	8.2	12052.6	9.3	60.7	0.9
37.0	21.6	41.5	24.1	735.0	-26.1	9.7	12817.9	9.5	60.7	0.9
38.0	22.2	42.3	24.8	767.1	-26.7	11.2	13694.8	9.8	60.7	0.9
39.0	22.8	43.0	25.4	798.9	-27.3	12.4	14578.0	10.1	60.7	[illegible]
40.0	23.4	43.8	26.1	829.8	-27.9	13.4	15448.1	10.3	60	[illegible]
41.0	24.0	44.5	26.7	862.5	-28.5	14.5	16388.3	10.6	60.7	0.1
42.0	24.6	45.3	27.5	897.6	-29.1	15.5	17428.3	10.9	60	[illegible]
43.0	25.2	46.0	28.2	931.9	-29.7	16.4	18459.6	11.1	60.7	[illegible]
44.0	25.9	46.7	28.9	966.9	-30.3	17.3	19527.8	11.4	60.7	[illegible]
45.0	26.5	47.4	29.6	1001.3	-30.9	18.1	20593.2	11.7	60.7	[illegible]
46.0	27.1	48.1	30.3	1037.4	-31.4	18.9	21735.6	12.0	60.7	[illegible]
47.0	27.8	48.8	31.1	1076.2	-32.0	19.6	[illegible]	12.3	60.7	[illegible]
48.0	28.5	49.5	31.9	1113.7	-32.6	20.5	24027.1	12.5	60.7	[illegible]
49.0	29.2	50.2	32.7	1152.2	-33.2	21.3	25519.4	12.8	60.7	[illegible]
50.0	29.9	50.9	33.5	1189.6	-33.8	22.0	26780.9	13.1	60.7	[illegible]
51.0	30.6	51.6	34.3	1229.1	-34.3	22.7	28150.1	13.4	60.7	[illegible]
52.0	31.5	52.4	35.6	1306.3	-34.9	23.7	[illegible]	[illegible]	60	[illegible]
53.0	32.0	52.7	36.0	1309.1	-35.5	24.2	[illegible]	14	60.7	[illegible]
54.0	32.7	53.3	36.8	1350.8	-36.1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	53.8	37.6	1384.3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
56.0	34.1	53.6	38.4	1419.5	-37.2	[illegible]	[illegible]	14.9	60.7	[illegible]
57.0	34.8	53.7	39.2	1455.3	-37.8	[illegible]	[illegible]	15.2	60	[illegible]
58.0	35.5	53.7	40.0	1493.1	-38.3	[illegible]	62766.9	15.6	[illegible]	[illegible]
59.0	36.2	54.0	40.8	1529.2	-38.9	[illegible]	66474.4	15.9	60.6	[illegible]
60.0	36.9	54.1	41.5	1563.7	-39.5	[illegible]	69936.3	16.2	60.5	[illegible]

SMOKE III EGLIN AFB, FLA.

EVENT 06 TIME 2250Z DATE 081180

FOG OIL IR#1 SENSOR 0.5-0.7



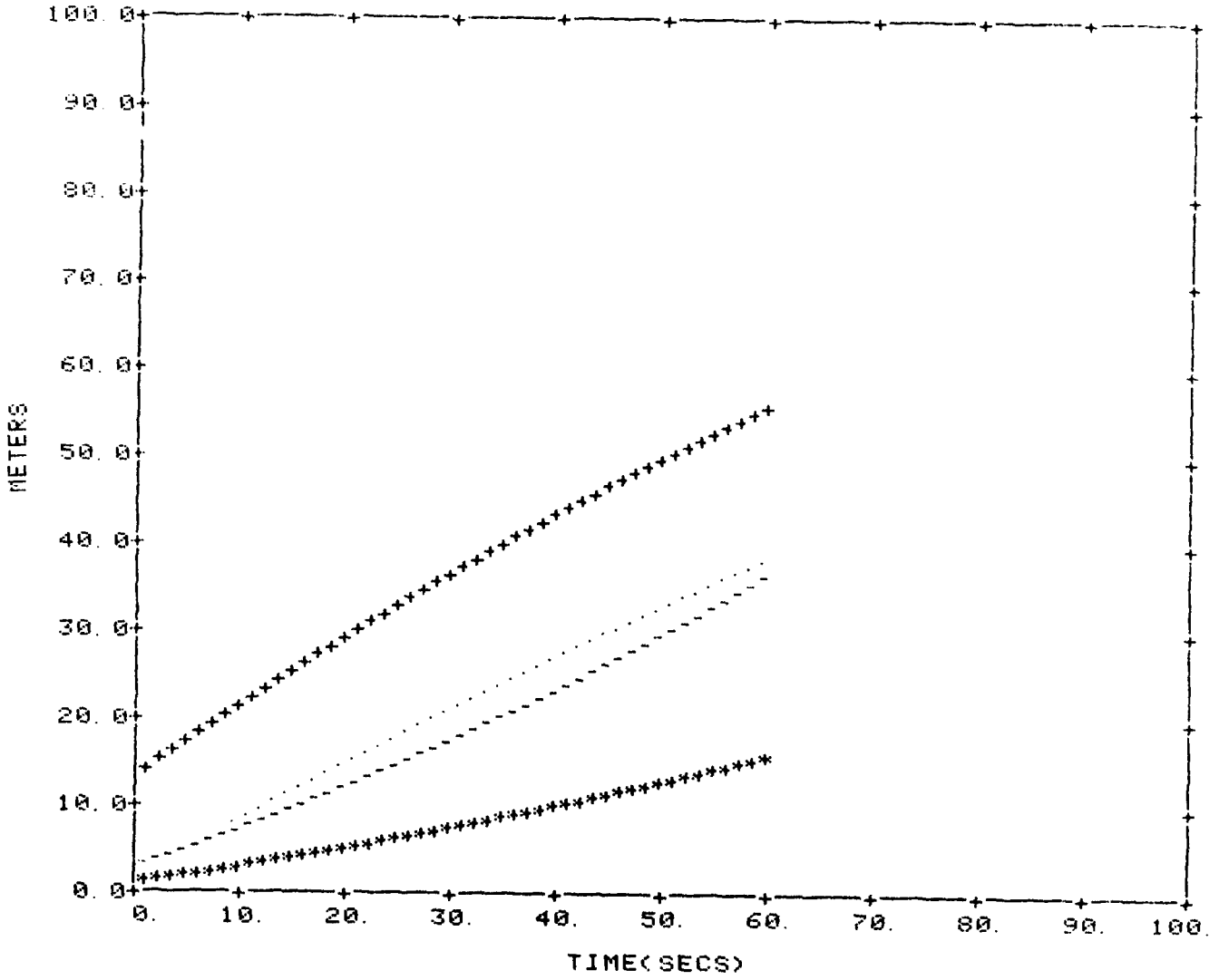
SMOKE III EGLIN AFB, FLA.

EVENT 06 TIME 2250Z DATE 081180

FOG OIL IR#1 SENSOR 0 5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

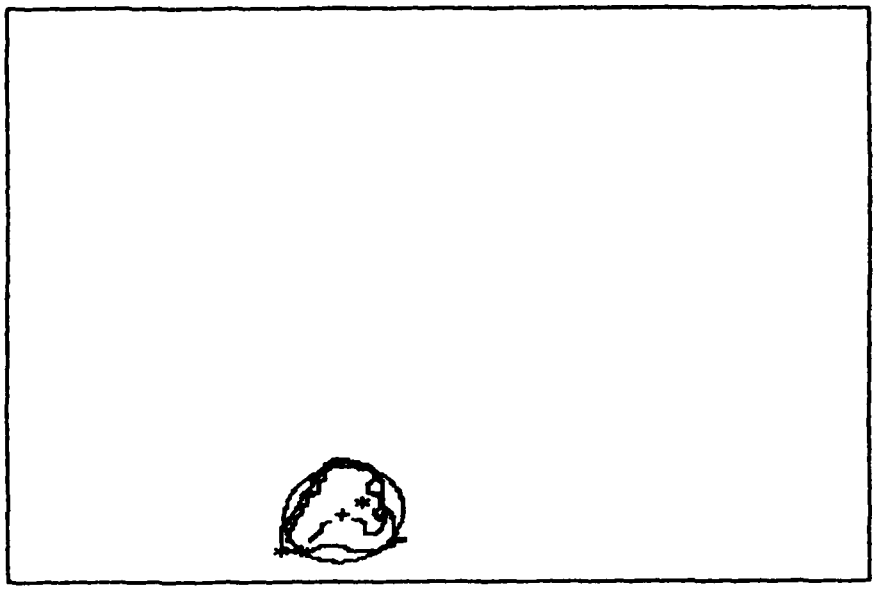
. . . . . TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 06

2250 Z 08-11-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 40.0



HEIGHT(ABOVE DETONATION PT.) =	22.0M	HEIGHT OF CENTROID=	9.M
WIDTH(MAX. HORIZONTAL EXTENT)=	25.0M	LATERAL OFFSET =	10.M
VERTICAL EXTENT =	22.0M	AXES =	25., 23.M
AREA =	410.3SQM	INCLINATION =-	34.5 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 12.M OFFSET= 14.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 20.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 20.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

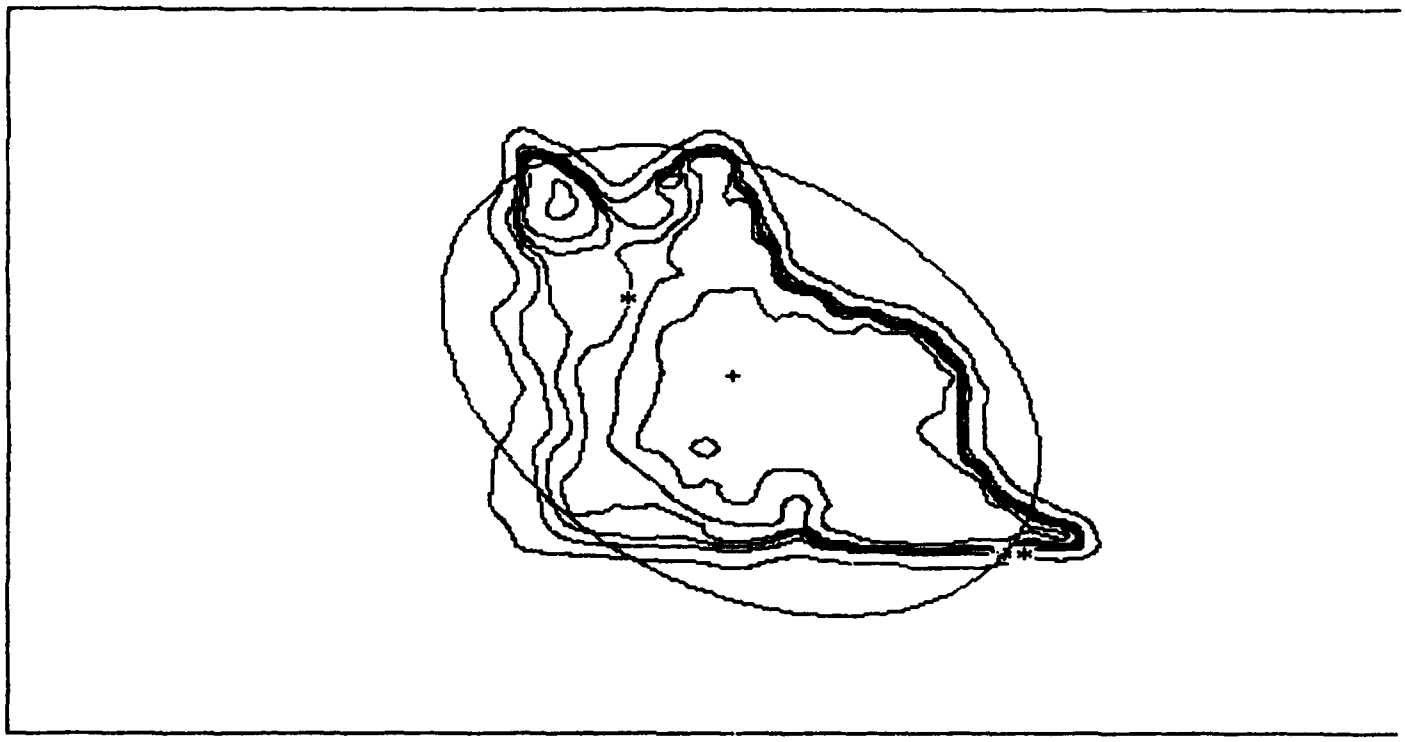
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 06

2250 Z 08-11-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 40.0



HEIGHT(ABOVE DETONATION PT.) =	27.0M	HEIGHT OF CENTROID=	12.M
WIDTH(MAX. HORIZONTAL EXTENT)=	33.0M	LATERAL OFFSET =	-15.M
VERTICAL EXTENT =	28.0M	AXES =	36., 25.M
AREA =	354.9SQM	INCLINATION =	40.7 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 17.M OFFSET= -21.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 28.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 22.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 1.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

MODE III [illegible]

EVENT 07 TIME [illegible]

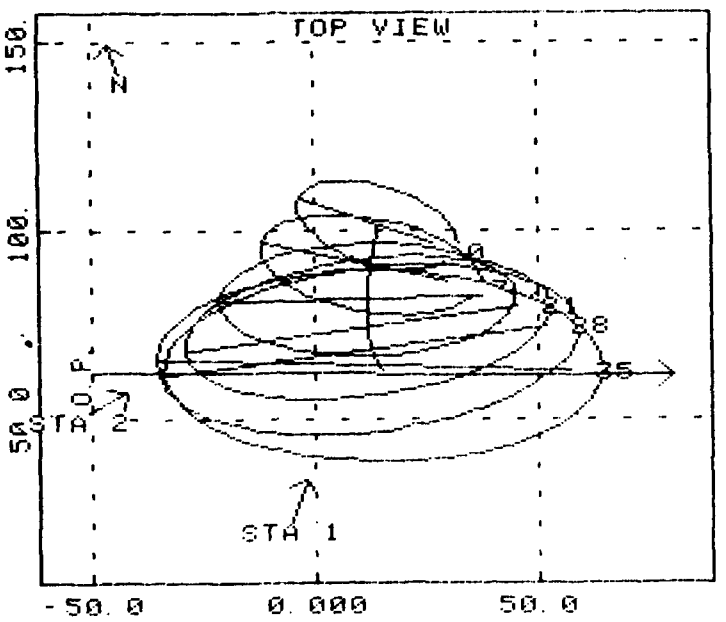
5 INCH ZONE [illegible]

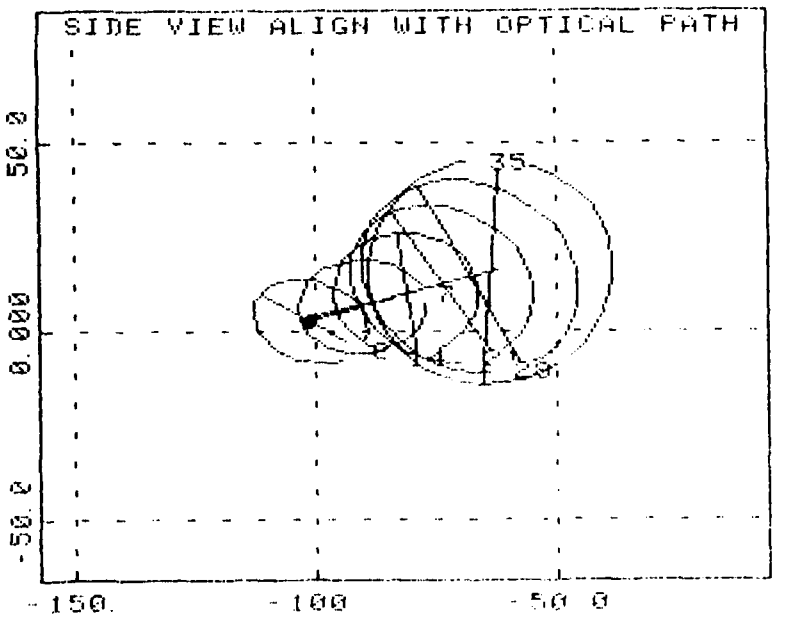
TIME(SEC)	DIMENSIONS OF OBJECT CROSSSECTION NORMAL TO OPTICAL PATH (METERS) HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ METERS)	LATERAL OFFSET	RATE LENGTH	DIMENSIONS INDEPENDENT OF PERSPECTIVE RANGE (SQUARE METERS)	TRANSVERSE HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	13.9	23.5	22.1	401.8	-11.2	[illegible]	[illegible]	[illegible]	0.0	[illegible]
1.0	14.5	24.4	22.0	417.2	-9.6	[illegible]	[illegible]	[illegible]	204.5	[illegible]
2.0	15.1	25.1	22.1	433.7	-8.0	[illegible]	[illegible]	4.0	204.1	[illegible]
3.0	15.8	25.5	22.4	447.1	-6.4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.0	16.5	25.9	22.8	462.2	-4.9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5.0	17.4	26.1	23.3	478.0	-3.4	[illegible]	[illegible]	[illegible]	202.9	[illegible]
6.0	18.2	26.3	23.9	493.8	-2.0	[illegible]	[illegible]	[illegible]	202.4	[illegible]
7.0	19.1	26.4	24.7	512.2	-0.5	[illegible]	[illegible]	[illegible]	201.9	[illegible]
8.0	20.1	26.6	25.6	533.7	0.8	[illegible]	[illegible]	[illegible]	201.4	[illegible]
9.0	21.0	26.8	26.5	558.9	2.2	[illegible]	[illegible]	[illegible]	200.9	[illegible]
10.0	22.1	27.2	27.6	586.0	3.5	[illegible]	1389.8	[illegible]	200.3	[illegible]
11.0	23.1	27.6	28.7	622.1	4.8	[illegible]	[illegible]568.9	8.7	199.8	[illegible]
12.0	24.1	28.2	29.9	661.8	6.1	0.0	[illegible]984.3	[illegible]	199.1	[illegible]
13.0	25.2	28.9	31.1	707.5	7.3	[illegible]	[illegible]647.8	9.6	[illegible]	[illegible]
14.0	26.2	29.8	32.4	758.1	8.5	0.0	[illegible]1540.2	10.1	197.8	[illegible]
15.0	27.3	30.8	33.7	813.9	9.7	0.0	[illegible]6656.4	10.5	197.1	[illegible]
16.0	28.4	31.8	35.0	874.3	10.8	0.0	[illegible]8031.9	10.9	196.3	[illegible]
17.0	29.4	33.0	36.3	938.4	11.9	0.0	[illegible]1587.8	11.3	195.5	[illegible]
18.0	30.5	34.2	37.7	1003.1	13.0	8.9	45506.4	11.6	194.6	[illegible]
19.0	31.5	35.5	39.1	1080.4	14.0	28.7	49620.5	12.0	193.7	[illegible]
20.0	32.6	36.7	40.4	1153.9	15.0	38.2	[illegible]0885.7	12.4	192.7	[illegible]
21.0	33.6	37.9	41.8	1231.0	16.0	45.0	[illegible]0454.4	12.7	191.7	[illegible]
22.0	34.6	39.1	43.2	1310.0	16.9	50.1	63266.9	13.0	190.6	[illegible]
23.0	35.6	40.3	44.6	1391.2	17.8	54.3	[illegible]0345.4	13.3	189.4	[illegible]
24.0	36.6	41.4	46.0	1473.5	18.7	57.7	73664.2	13.6	188.1	[illegible]
25.0	37.6	42.4	47.4	1553.0	19.5	60.7	[illegible]8982.8	13.9	186.8	[illegible]
26.0	38.5	43.3	48.7	1634.0	20.3	63.2	[illegible]4570.5	14.2	185.3	[illegible]
27.0	39.5	44.2	50.1	1715.3	21.1	65.5	[illegible]0372.1	14.4	183.7	[illegible]
28.0	40.4	44.9	51.4	1795.8	21.9	67.6	[illegible]6295.5	14.7	182.0	[illegible]
29.0	41.3	45.7	52.8	1876.7	22.6	69.5	[illegible]2403.2	14.9	180.2	[illegible]
30.0	42.1	46.5	54.0	1958.7	23.2	71.3	[illegible]8724.4	15.1	178.2	[illegible]
31.0	43.0	47.1	55.3	2038.9	23.9	73.0	115023.9	15.3	176.1	[illegible]
32.0	43.8	47.9	56.5	2119.6	24.5	74.5	[illegible]1406.8	15.5	173.8	[illegible]
33.0	44.5	48.7	57.7	2204.0	25.1	75.9	[illegible]3022.3	15.7	171.4	[illegible]
34.0	45.3	49.6	58.8	2292.1	25.6	77.1	[illegible]4311.8	15.9	168.7	[illegible]
35.0	45.9	50.7	59.8	2385.8	26.1	78.1	[illegible]1776.4	16.0	165.9	[illegible]
36.0	46.6	52.1	60.8	2485.7	26.6	[illegible]	[illegible]9[illegible]5.8	[illegible]	162.8	[illegible]
37.0	47.1	53.5	61.7	2583.3	27.0	[illegible]	[illegible]791.0	[illegible]	159.5	[illegible]
38.0	47.6	55.6	62.5	2707.8	27.5	[illegible]	[illegible]785.2	16.4	156.1	[illegible]

SMOKE III EGLIN AFB, FLORIDA

EVENT 07 TIME 1313Z DATE 081280

5 INCH ZUNI SENSOR 0.5-0.7

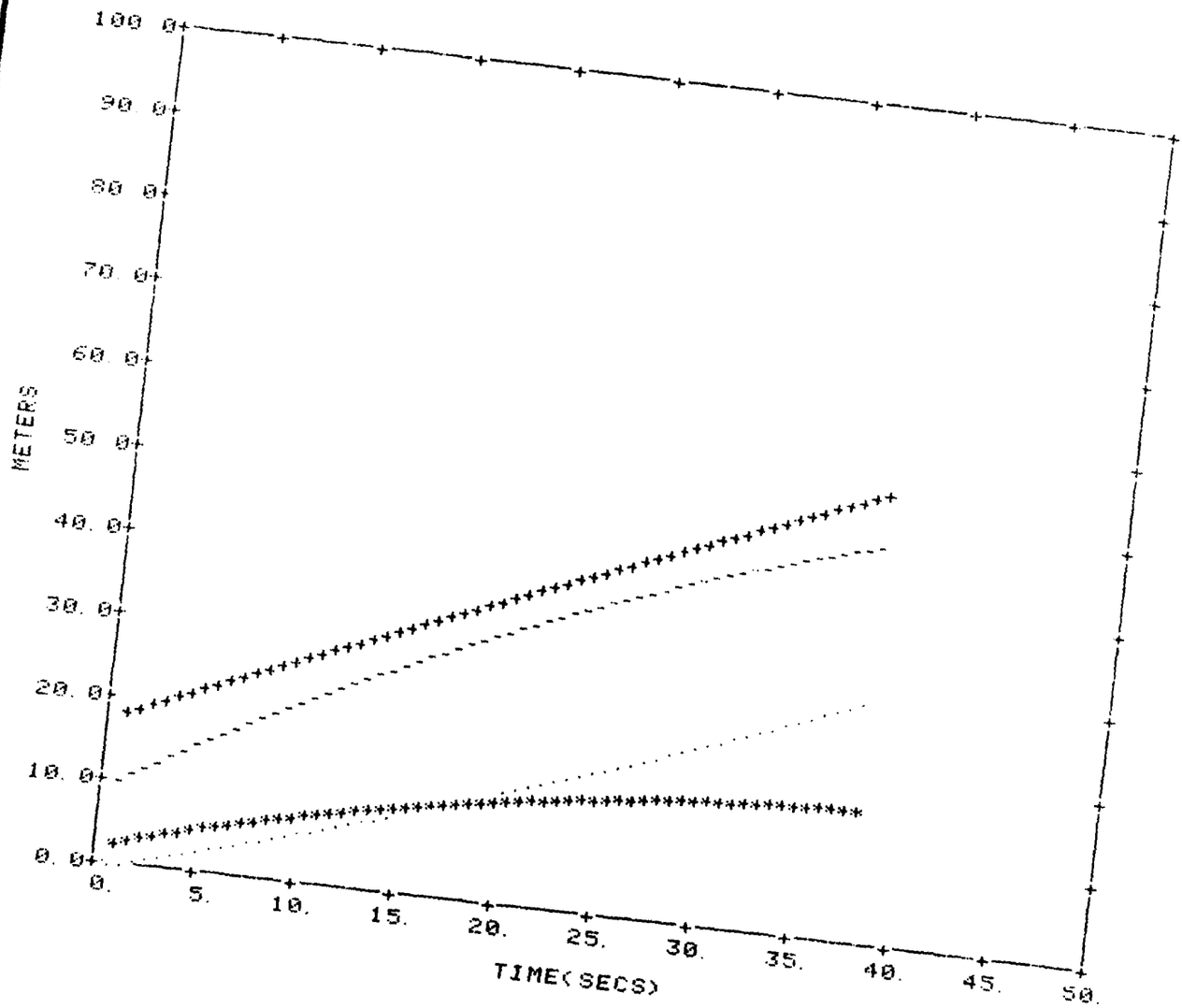




EVENT 07 SMOKE III EGLIN AFB, FLORIDA
5 INCH ZUNI TIME 1313Z DATE 081280
SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC

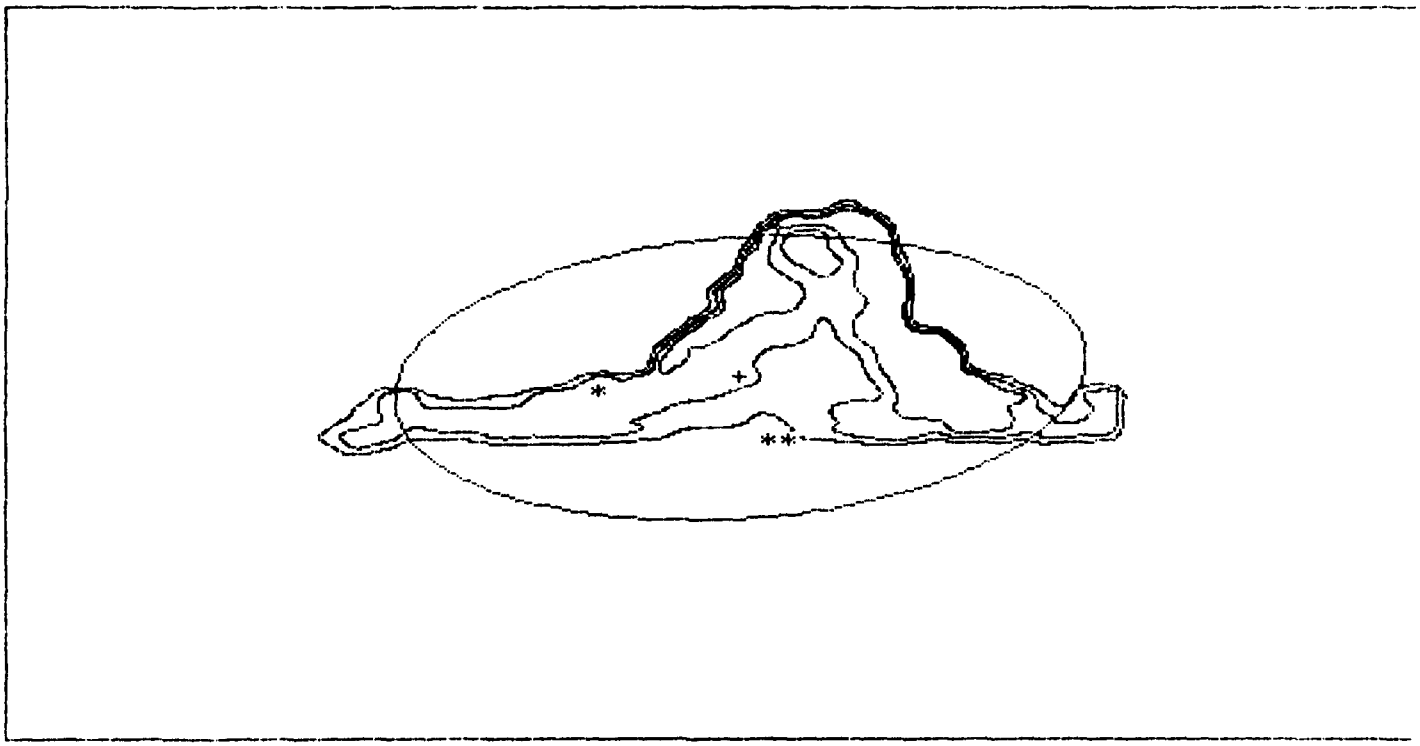


------HEIGHT ABOVE DET. PT.
++++++WIDTH
. . . . . TRANSPORT
******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 07

1313 Z 08-12-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 10.0



HEIGHT(ABOVE DETONATION PT.) =	28.0M	HEIGHT OF CENTROID=	8.M
WIDTH(MAX. HORIZONTAL EXTENT)=	81.0M	LATERAL OFFSET =	-4.M
VERTICAL EXTENT =	30.0M	AXES =	69 , 34.M
AREA =	1054.2SQM	INCLINATION =	-4.9 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 6.M OFFSET= -18.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 34.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 76.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)=-28.M

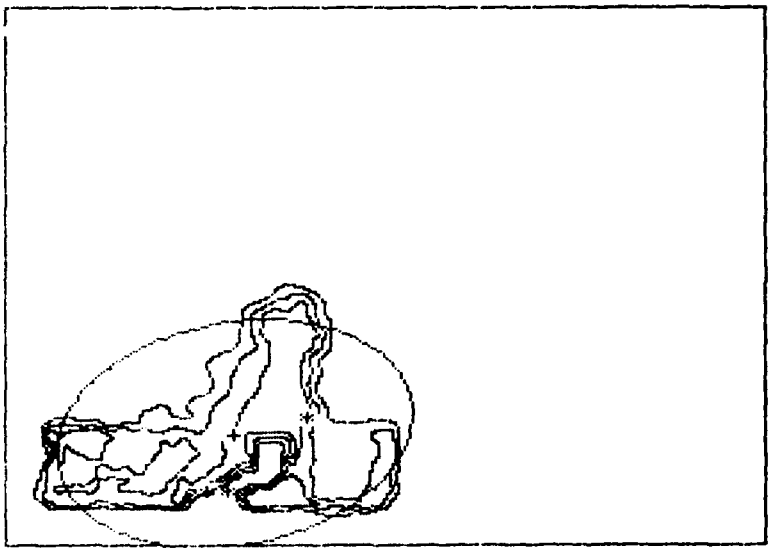
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 07

1313 Z 08-12-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 10.0



HEIGHT(ABOVE DETONATION PT.) =	26.0M	HEIGHT OF CENTROID=	7.M
WIDTH(MAX. HORIZONTAL EXTENT)=	39.0M	LATERAL OFFSET =	2.M
VERTICAL EXTENT =	29.0M	AXES =	39., 28.M
AREA =	545.8SQM	INCLINATION	=-16.4 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 9.M OFFSET= 9.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 37.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 20 M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= -7.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA

EVENT 08 TIME 1519Z DATE 081280

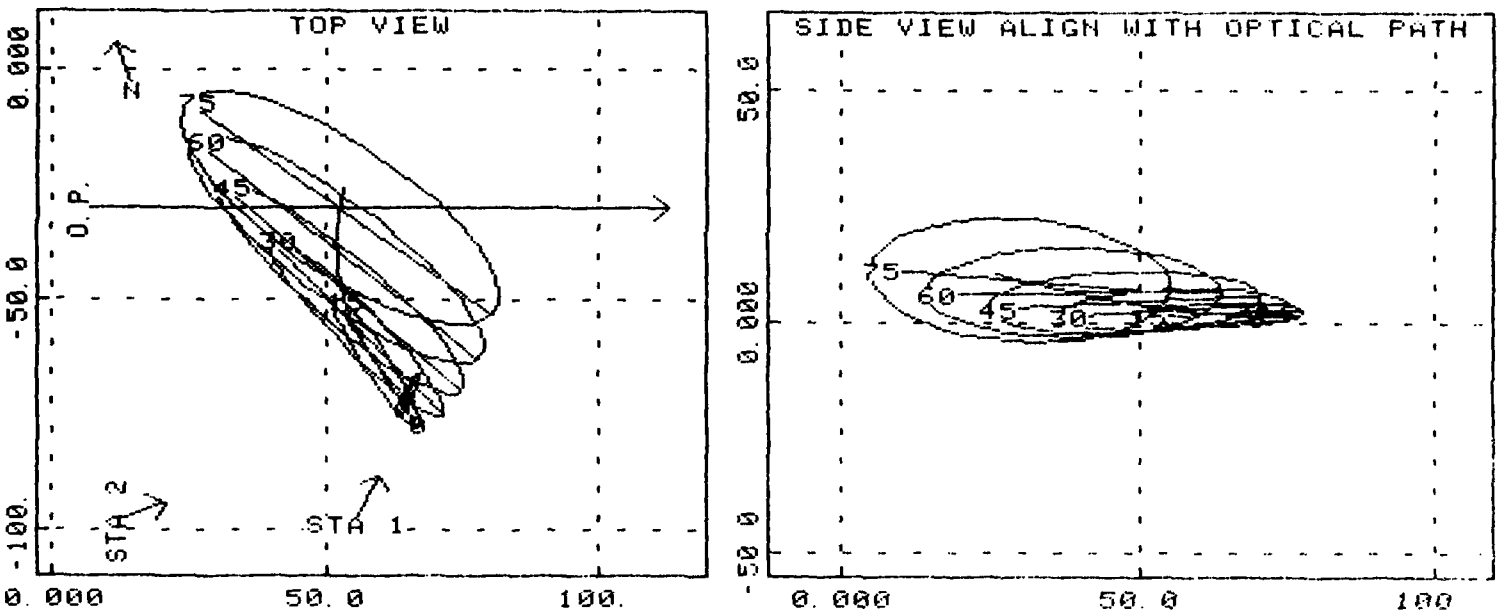
N3A3 FOG OIL SENSOR 0 5-0 7

TIME(SEC)	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS) HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ METERS)	LATERAL OFFSET	PATH LENGTH	DIMENSIONS INDEPENDENT OF PERSPECTIVE VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0 0	1 9	10 5	1 8	14 4	-3 5	0 0	18 0	1 0	0 0	[illegible]
1 0	2 2	13 1	2 3	23 5	-4 0	0 0	37 0	1 1	335 6	[illegible]
2 0	2 4	15 4	2 6	31 1	-4 5	0 0	53 7	1 1	336 2	[illegible]
3 0	2 5	16 8	2 8	36 4	-5 0	0 0	66 9	1 1	336 7	[illegible]
4 0	2 6	17.9	2 9	41 1	-5 5	0 0	80 3	1 1	337 2	[illegible]
5 0	2 7	18.9	3 1	45 4	-6 0	0 0	93 2	1 2	337 8	[illegible]
6 0	2 8	19 9	3 2	50 6	-6 5	0 0	110 8	1 2	338 4	[illegible]
7 0	2 9	20 9	3 4	55 7	-7 1	0 0	129 1	1 2	338 9	[illegible]
8 0	3 1	21 9	3 6	61 6	-7 6	0 0	152 7	1 3	339 5	[illegible]
9 0	3 2	22 8	3.7	66 8	-8 1	0 0	174 4	1 3	340 1	[illegible]
10 0	3 3	23 8	4 0	73 2	-8 6	0 0	204 1	1 3	340 6	[illegible]
11 0	3 4	24 7	4 1	79 0	-9 1	0 0	231 5	1 4	341 2	[illegible]
12 0	3 6	25 6	4 3	85 7	-9.6	0 0	266 5	1 4	341 8	[illegible]
13 0	3 7	26 5	4 5	92.7	-10 1	0 0	304 8	1 5	342 4	[illegible]
14 0	3 9	27 3	4 7	99 6	-10 7	0 0	345 5	1 5	343 0	[illegible]
15 0	4 1	28 1	5 0	107.3	-11 2	0 0	393 7	1 6	343 6	[illegible]
16 0	4 2	29 0	5 2	115 0	-11 7	0 0	443 8	1 6	344 2	[illegible]
17 0	4 4	29 8	5.4	123.3	-12 2	0 0	501 5	1 7	344 8	[illegible]
18 0	4 6	30 6	5 6	131.6	-12.8	0 0	562 6	1 8	345 4	[illegible]
19 0	4 7	31 3	5 9	139.8	-13 3	0 0	625 1	1 8	346 0	[illegible]
20 0	4 9	32 1	6.1	149.1	-13.8	0 0	700 8	1 9	346 7	[illegible]
21 0	5 1	32 9	6 4	158 6	-14.3	0 0	781 6	1 9	347 3	[illegible]
22 0	5 3	33 5	6.6	168.2	-14 9	0 0	868 0	2 0	347 9	[illegible]
23 0	5 5	34 3	6.9	177.9	-15.4	0 0	958 0	2 1	348 6	[illegible]
24 0	5 7	35 0	7.1	188 6	-15.9	0 0	1063 8	2 2	349 2	[illegible]
25 0	5 9	35 6	7.4	199.2	-16 5	0 0	1173 9	2 2	349 9	[illegible]
26 0	6 1	36.3	7.7	209.8	-17 0	0 0	1287 2	2 3	350 5	[illegible]
27 0	6 4	36 9	8 0	221.9	-17.6	0 0	1424 0	2 4	351 2	[illegible]
28 0	6 6	37 6	8 2	233.3	-18 1	0 0	1557 2	2 5	351 8	[illegible]
29 0	6 8	38 2	8 5	244.7	-18.6	0 0	1697 2	2 6	352 5	[illegible]
30 0	7 0	38 7	8 8	257.7	-19.2	0 0	1864 5	2 6	353 1	[illegible]
31 0	7 3	39 3	9 1	270 2	-19.7	0 0	2030 8	2 7	353 8	[illegible]
32 0	7 5	39 9	9 4	282.4	-20 3	0 0	2199 6	2 8	354 5	[illegible]
33 0	7 8	40.4	9 7	296 4	-20 8	0 0	2402 7	2 9	355 1	[illegible]
34 0	8 0	41.0	10 0	309.7	-21.3	0 0	2602 5	3 0	355 8	[illegible]
35 0	8 2	41 5	10 3	323 3	-21 9	0 0	2814 1	3 1	356 5	[illegible]
36 0	8 5	42 0	10 6	337 2	-22 4	0 0	3041 1	3 2	357 2	[illegible]
37 0	8 8	42 5	10.9	351 9	-23.0	0 0	3288 1	3 3	357 8	[illegible]
38 0	9 0	42 9	11 2	366 3	-23 5	0 3	3539 9	3 4	358 5	[illegible]
39 0	9 3	43 4	11 5	380 9	-24 1	3 9	3804 0	3 5	359 2	[illegible]
40 0	9 6	43 8	11 8	396 8	-24 7	5 7	4104 1	3 6	359 9	[illegible]
41 0	9 8	44 2	12 1	412 3	-25 2	7 0	4404 8	3 8	0 6	[illegible]
42 0	10 1	44 6	12 5	427 7	-25 8	8 1	4716 9	3 9	1 2	[illegible]
43 0	10 4	45 0	12 8	444 2	-26 3	9 2	5062 1	4 0	1 9	[illegible]
44 0	10 7	45 4	13 1	459 5	-26 9	10 2	5392 6	4 1	2 6	[illegible]
45 0	11 0	45 8	13 5	476 3	-27 4	11 1	5768 7	4 2	3 3	[illegible]
46 0	11 3	46 1	13 8	493 6	-28 0	12 0	6166 5	4 4	4 0	[illegible]
47 0	11 6	46 5	14 2	510 5	-28 6	12 8	6570 3	4 5	4 7	[illegible]
48 0	11 9	46 8	14.5	527 6	-29 1	13 6	6992 4	4 6	5 4	[illegible]
49 0	12 2	47 1	14 8	544 2	-29 7	14 4	7415 1	4 7	6 1	[illegible]
50 0	12 5	47 4	15 2	562 7	-30 3	15 2	7900 4	4 9	6 7	[illegible]
51 0	12 8	47 6	15 6	580 4	-30 8	16 0	8381 0	5 0	7 4	[illegible]
52 0	13 1	47 9	16 0	597 5	-31 4	16 7	8863 5	5 1	8 1	[illegible]
53 0	13 5	48 1	16 3	615 7	-32 0	17 4	9382 9	5 3	8 8	[illegible]
54 0	13 8	48 4	16 7	634 2	-32 6	18 2	9934 0	5 4	9 5	[illegible]
55 0	14 1	48 6	17 1	652 7	-33 1	18 9	10499 6	5 6	10 2	[illegible]
56 0	14 5	48 8	17 5	671 0	-33 7	19 6	11074 4	5 7	10 8	[illegible]
57 0	14 8	49 0	18 0	691 0	-34 3	20 3	11717 9	5 9	11 5	[illegible]
58 0	15 2	49 2	18 4	709 9	-34 9	21 0	12349 0	6 0	12 2	[illegible]
59 0	15 6	49 3	18 8	729 0	-35 4	21 7	13002 2	6 2	12 9	[illegible]
60 0	16 0	49 5	19 2	748 2	-36 0	22 4	13678 1	6 3	13 5	[illegible]
61 0	16 3	49 6	19 7	767 5	-36 6	23 1	14377 0	6 5	14 2	[illegible]
62 0	16 7	49 7	20 1	786 7	-37 2	23 8	15089 7	6 7	14 9	[illegible]
63 0	17 1	49 9	20 6	806 6	-37 8	24 5	15840 9	6 8	15 5	[illegible]
64 0	17 5	50 0	21 0	825 9	-38 4	25 1	16597 8	7 0	16 2	[illegible]
65 0	17 9	50 1	21 5	845 0	-38 9	25 8	17360 3	7 2	16 8	[illegible]
66 0	18 3	50 1	22 0	864 8	-39 5	26 5	18173 6	7 3	17 5	[illegible]
67 0	18 7	50 2	22 5	885 5	-40 1	27 2	19036 0	7 5	18 1	[illegible]
68 0	19 2	50 2	23 0	905 1	-40 7	27 8	19870 8	7 7	18 8	[illegible]
69 0	19 6	50 3	23 5	925 5	-41 3	28 5	20768 7	7 8	19 4	[illegible]
70 0	20 0	50 3	24 0	945 0	-41 9	29 1	21639 0	8 0	20 1	[illegible]
71 0	20 5	50 3	24 5	966 0	-42 5	29 8	22592 3	8 2	20 7	[illegible]
72 0	20 9	50 3	25 1	986 6	-43 1	30 4	23546 2	8 4	21 3	[illegible]
73 0	21 4	50 3	25 6	1007 0	-43 7	31 1	24512 3	8 6	22 0	[illegible]
74 0	21 8	50 3	26 1	1026 2	-44 3	31 6	25448 7	8 8	22 6	[illegible]
75 0	22 3	50 3	26 7	1048 0	-44 9	32 3	26506 6	9 0	23 2	[illegible]
76 0	22 8	50 3	27 2	1067 3	-45 5	32 8	27473 3	9 2	23 8	[illegible]
77 0	23 3	50 2	27 8	1088 6	-46 1	33 4	28550 9	9 4	24 4	[illegible]
78 0	23 7	50 2	28 4	1108 5	-46 7	33 9	29572 5	9 5	25 0	[illegible]
79 0	24 2	50 1	28 9	1130 0	-47 3	34 5	30687 0	9 7	25 6	[illegible]
80 0	24 7	50 1	29 5	1150 1	-47 9	34 9	31744 8	10 0	26 2	[illegible]
81 0	25 2	50 0	30 1	1171 5	-48 5	35 4	32876 1	10 2	26 8	[illegible]
82 0	25 7	50 0	30 7	1191 9	-49 1	35 8	33976 7	10 4	27 4	[illegible]

SMOKE III EGLIN AFB, FLA.

EVENT 08 TIME 1519Z DATE 081280

N3A3 FOG OIL SENSOR 0.5-0.7



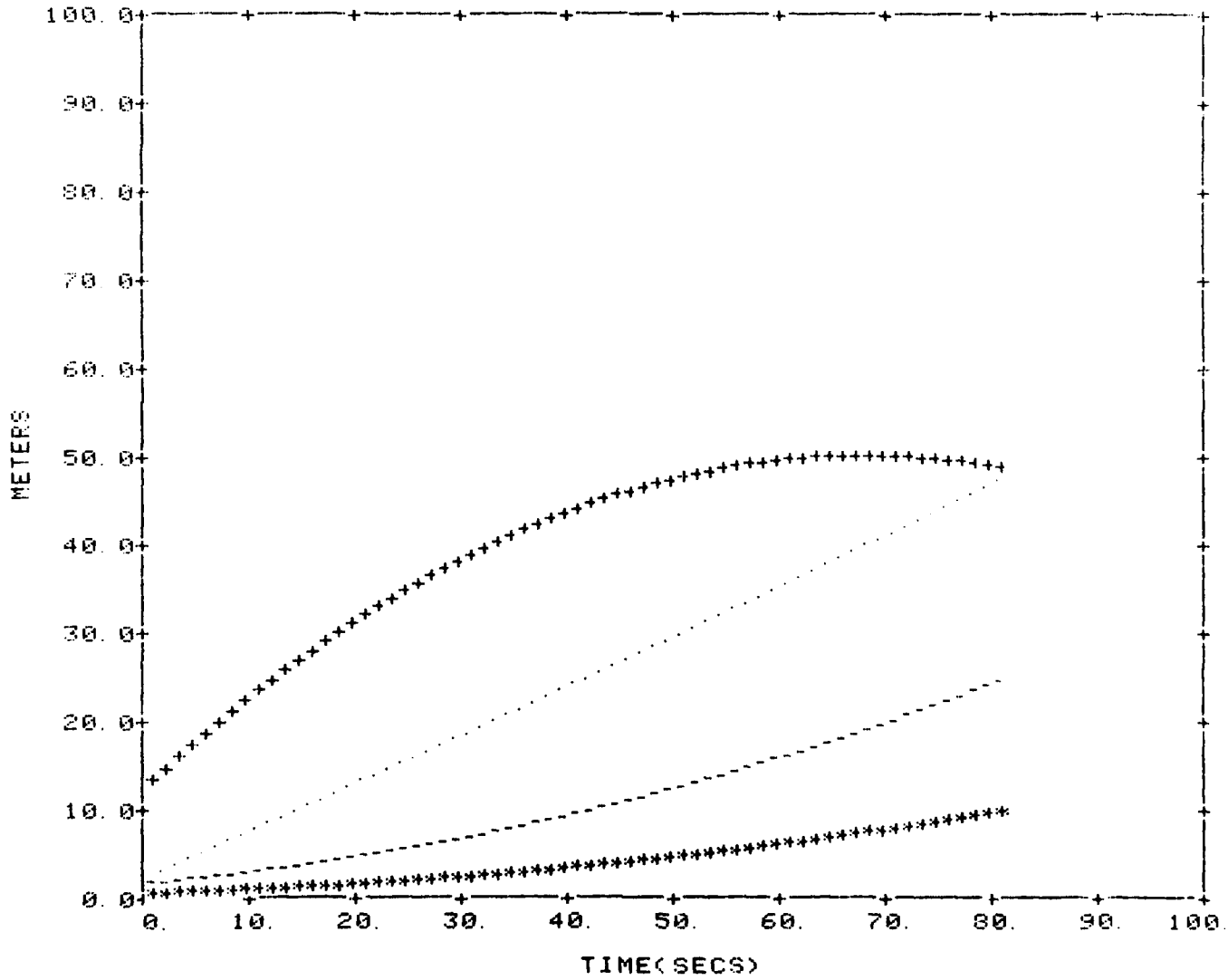
SMOKE III EGLIN AFB, FLA.

EVENT 08 TIME 1519Z DATE 081280

N3A3 FOG OIL SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



-------HEIGHT ABOVE DET. PT.

++++++WIDTH

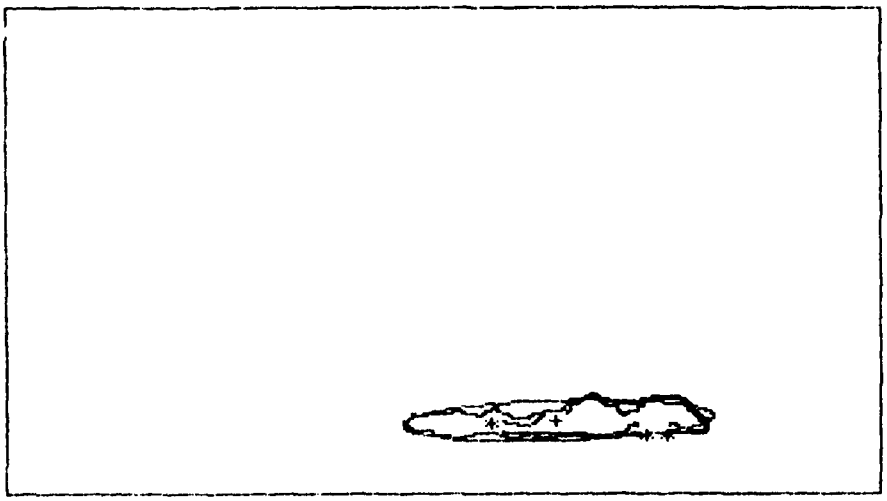
. . . . . TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 08

1519 Z 08-12-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 40.0



HEIGHT(ABOVE DETONATION PT.) =	9.0M	HEIGHT OF CENTROID=	4.M
WIDTH(MAX. HORIZONTAL EXTENT)=	61.0M	LATERAL OFFSET	= -21.M
VERTICAL EXTENT =	11.0M	AXES	= 63., 10.M
AREA =	453.8SQM	INCLINATION	= -2.0 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 3.M OFFSET= -34.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE 19.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 61.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)=-36.M

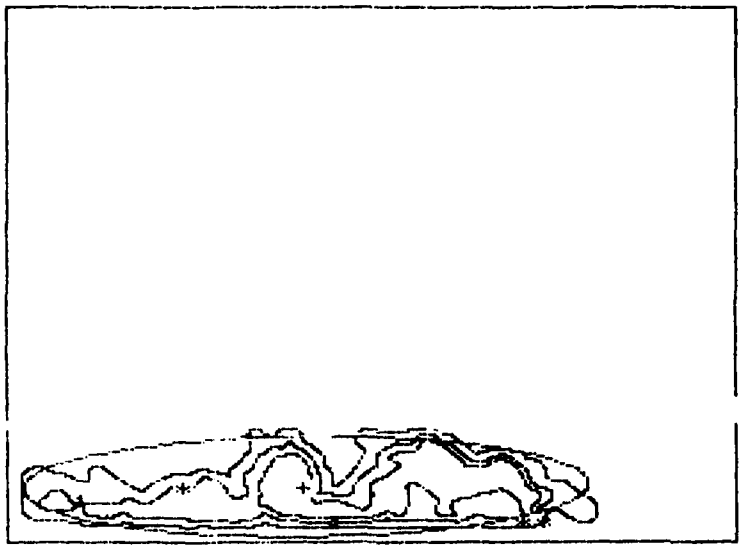
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 08

1519 Z 08-12-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 40.0



HEIGHT(ABOVE DETONATION PT.) =	12.0M	HEIGHT OF CENTROID=	4.M
WIDTH(MAX. HORIZONTAL EXTENT)=	61.0M	LATERAL OFFSET	= -25.M
VERTICAL EXTENT =	12.0M	AXES	= 60., 13.M
AREA =	464.6SQM	INCLINATION	= -0.6 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 4.M OFFSET= -37.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 58.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 59.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA.

EVENT 09 TIME 1956Z DATE 081280

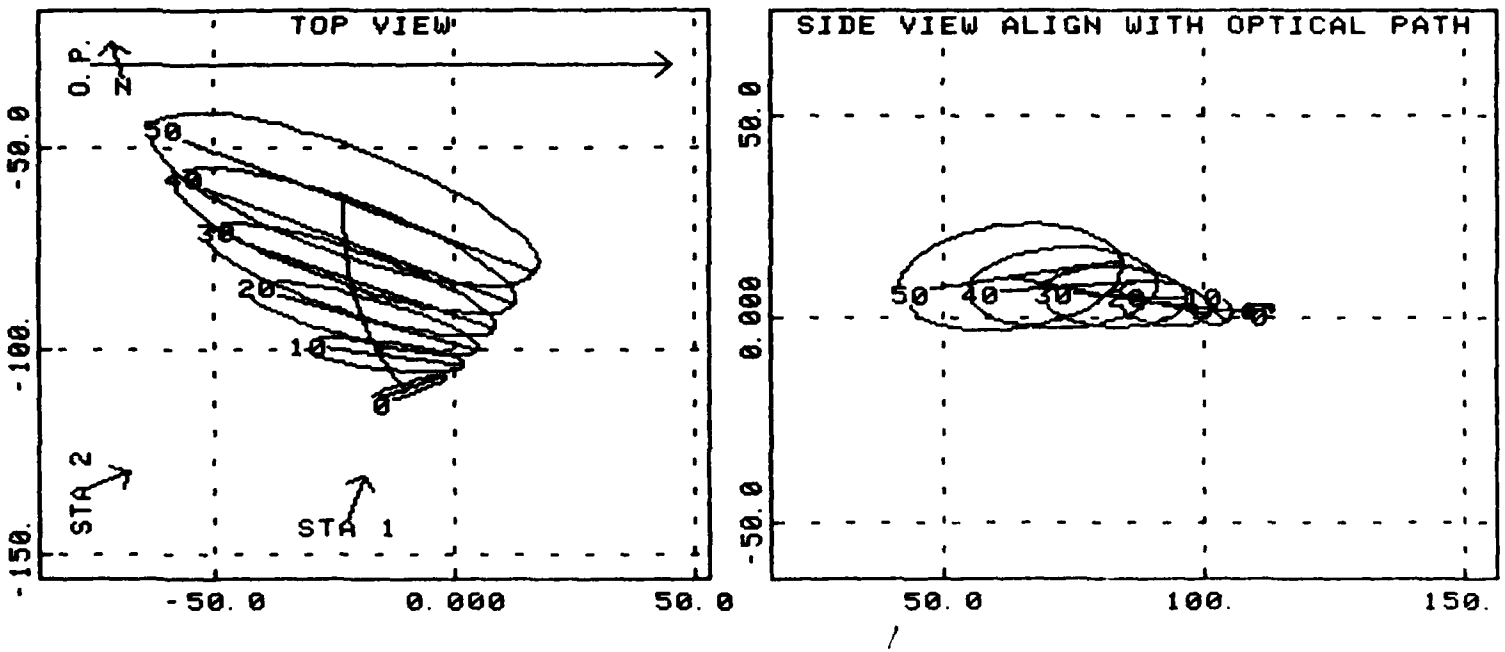
155MM 60LBS. - 10LBS. EA. SENSOR 0.5-0.7

TIME(SEC)	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS) HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	DIMENSIONS INDEPENDENT OF PERSPECTIVE VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	3.4	6.9	3.6	16.5	0.8	0.0	83.2	1.7	0.0	0.0
1.0	3.9	6.7	4.3	19.8	-0.1	0.0	138.7	1.7	342.5	1.0
2.0	4.2	6.2	4.9	20.9	-0.9	0.0	189.8	1.8	343.2	1.0
3.0	4.5	5.6	5.3	21.6	-1.8	0.0	244.2	1.9	343.9	1.0
4.0	4.8	5.2	5.7	22.8	-2.6	0.0	305.0	1.9	344.6	1.0
5.0	5.1	5.1	6.1	24.4	-3.5	0.0	366.1	2.0	345.3	1.0
6.0	5.3	5.3	6.5	27.1	-4.4	0.0	439.5	2.1	346.0	1.0
7.0	5.6	5.8	6.8	31.1	-5.2	0.0	526.9	2.2	346.7	1.0
8.0	5.9	6.5	7.2	35.7	-6.1	0.0	616.4	2.3	347.4	1.0
9.0	6.1	7.3	7.5	41.3	-7.0	0.0	720.1	2.4	348.2	1.0
10.0	6.4	8.1	7.8	48.1	-7.9	0.0	843.4	2.5	348.9	1.0
11.0	6.7	9.1	8.2	55.4	-8.8	0.0	974.5	2.6	349.6	1.0
12.0	6.9	10.0	8.5	63.2	-9.7	0.0	1112.7	2.7	350.3	1.0
13.0	7.2	11.0	8.8	72.0	-10.6	0.0	1274.5	2.8	351.1	1.0
14.0	7.5	12.1	9.1	81.5	-11.5	0.0	1453.6	2.9	351.8	1.0
15.0	7.8	13.1	9.4	91.2	-12.4	0.0	1636.7	3.1	352.5	1.0
16.0	8.1	14.1	9.7	102.3	-13.3	0.0	1859.9	3.2	353.3	1.0
17.0	8.3	15.1	10.0	113.4	-14.2	0.0	2081.3	3.3	354.0	1.0
18.0	8.6	16.1	10.4	125.8	-15.1	0.0	2342.8	3.5	354.7	1.0
19.0	8.9	17.1	10.7	138.4	-16.0	0.0	2614.4	3.6	355.5	1.0
20.0	9.3	18.1	11.0	151.6	-16.9	0.0	2906.2	3.8	356.2	1.0
21.0	9.6	19.1	11.4	166.1	-17.8	0.0	3244.4	3.9	357.0	1.0
22.0	9.9	20.1	11.7	180.4	-18.8	0.0	3578.8	4.1	357.7	1.0
23.0	10.3	21.1	12.1	196.2	-19.7	0.0	3967.7	4.2	358.5	1.0
24.0	10.6	22.1	12.4	211.6	-20.6	0.0	4351.1	4.4	359.2	1.0
25.0	11.0	23.1	12.8	228.8	-21.6	0.0	4801.3	4.6	360.0	1.0
26.0	11.3	24.0	13.2	246.1	-22.5	0.0	5263.9	4.7	0.7	1.0
27.0	11.7	24.9	13.6	263.9	-23.4	0.0	5752.1	4.9	1.4	1.0
28.0	12.1	25.8	14.0	282.5	-24.4	0.0	6281.8	5.1	2.2	1.0
29.0	12.5	26.8	14.4	302.1	-25.3	0.0	6853.3	5.3	2.9	1.0
30.0	12.9	27.7	14.9	322.4	-26.3	0.0	7467.7	5.5	3.7	1.0
31.0	13.3	28.6	15.3	343.2	-27.2	0.0	8114.0	5.7	4.4	1.0
32.0	13.8	29.4	15.8	365.3	-28.2	0.0	8822.5	5.9	5.2	1.0
33.0	14.2	30.3	16.3	387.5	-29.2	0.0	9550.0	6.1	5.9	1.0
34.0	14.7	31.2	16.8	410.5	-30.1	0.0	10326.0	6.3	6.6	1.0
35.0	15.1	32.0	17.2	433.0	-31.1	0.0	11101.1	6.5	7.4	1.0
36.0	15.6	32.8	17.8	457.9	-32.1	0.0	11994.7	6.7	8.1	1.0
37.0	16.1	33.6	18.3	482.4	-33.0	0.0	12890.2	6.9	8.8	1.0
38.0	16.6	34.4	18.8	508.1	-34.0	0.0	13857.3	7.2	9.5	1.0
39.0	17.1	35.2	19.4	534.4	-35.0	0.0	14876.3	7.4	10.3	1.0
40.0	17.6	35.9	20.0	561.4	-36.0	0.0	15951.7	7.6	11.0	1.0
41.0	18.1	36.7	20.6	589.0	-37.0	0.0	17075.3	7.9	11.7	1.0
42.0	18.7	37.4	21.1	617.0	-38.0	0.0	18249.1	8.1	12.4	1.0
43.0	19.2	38.1	21.7	646.0	-39.0	0.0	19498.3	8.4	13.1	1.0
44.0	19.8	38.8	22.3	674.5	-40.0	0.0	20754.5	8.6	13.8	1.0
45.0	20.3	39.5	23.0	704.6	-41.0	0.0	22115.9	8.9	14.5	1.0
46.0	20.9	40.2	23.6	736.1	-42.0	0.0	23584.8	9.1	15.2	1.0
47.0	21.5	40.8	24.3	766.9	-43.0	0.0	25053.4	9.4	15.9	1.0
48.0	22.1	41.5	24.9	798.3	-44.0	0.0	26587.0	9.7	16.6	1.0
49.0	22.7	42.1	25.6	832.0	-45.0	0.0	28282.6	9.9	17.2	1.0
50.0	23.4	42.7	26.3	865.0	-46.0	0.0	29986.4	10.2	17.9	1.0

SMOKE III EGLIN AFB, FLA.

EVENT 09 TIME 1956Z DATE 081280

155MM 60LBS. - 10LBS. EA. SENSOR 0.5-0.7



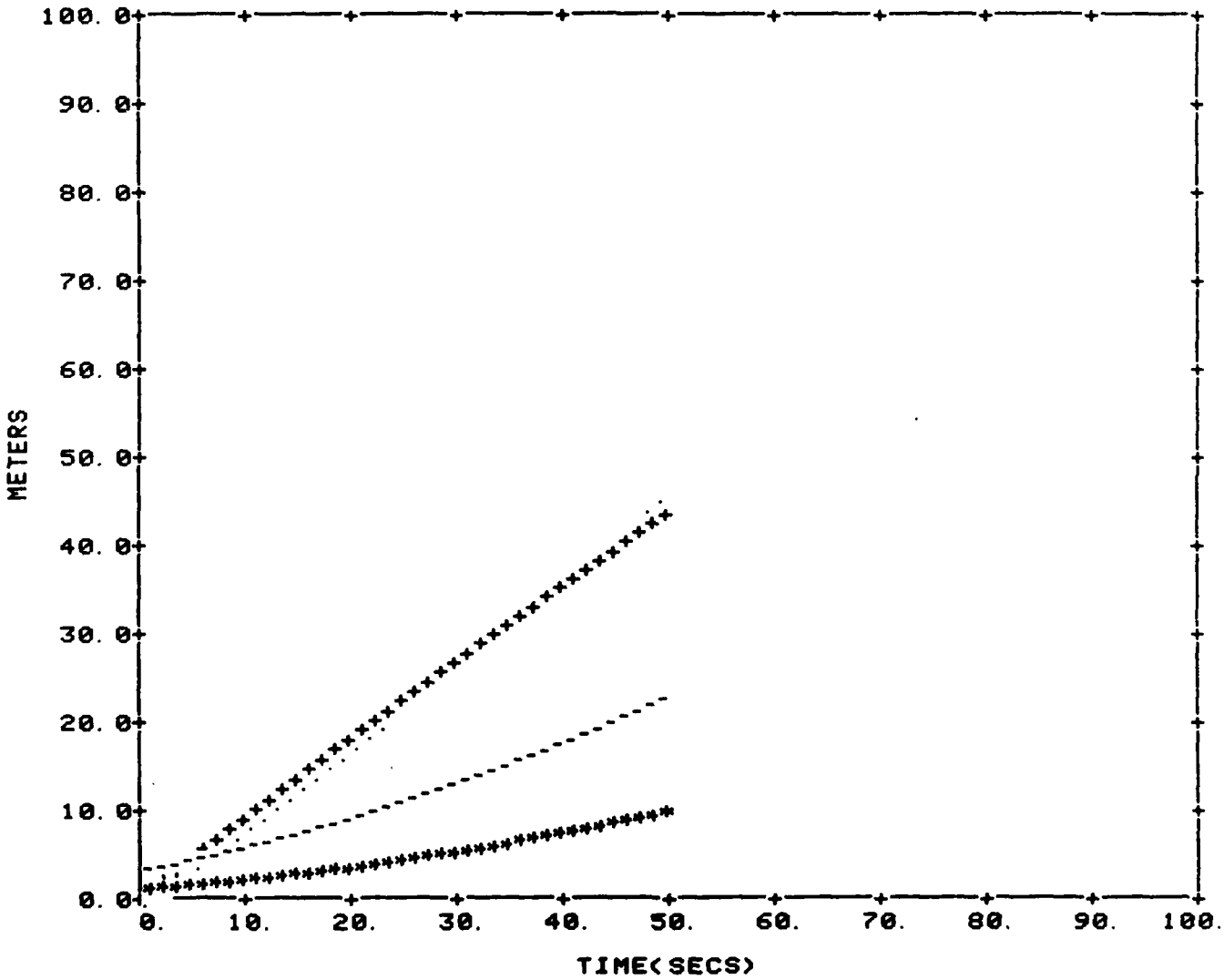
SMOKE III EGLIN AFB, FLA.

EVENT 09 TIME 1956Z DATE 081280

155MM 60LBS. - 10LBS. EA. SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC

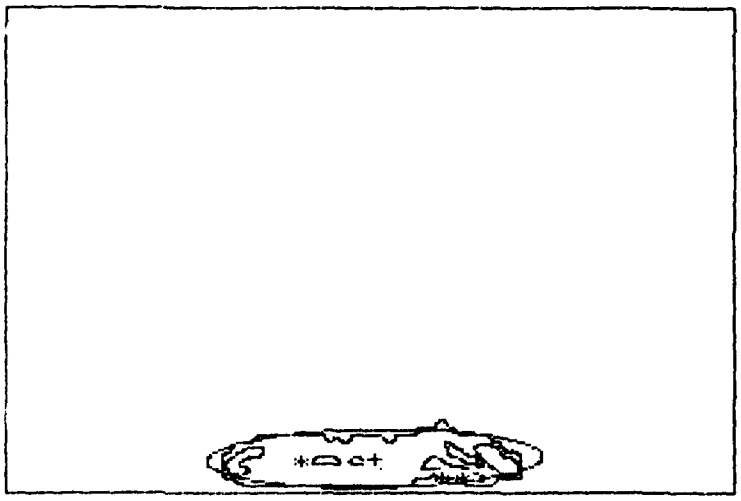


------HEIGHT ABOVE DET. PT.
++++++WIDTH
. . . . . TRANSPORT
******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 09

1956 Z 08-12-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 26.0



HEIGHT(ABOVE DETONATION PT.) =	14.0M	HEIGHT OF CENTROID=	5.M
WIDTH(MAX. HORIZONTAL EXTENT)=	60.0M	LATERAL OFFSET	= -16.M
VERTICAL EXTENT =	16.0M	AXES	= 68., 14.M
AREA =	354.0SQM	INCLINATION	= -1.1 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 4.M OFFSET= -31.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 48.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 60.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= -6.M

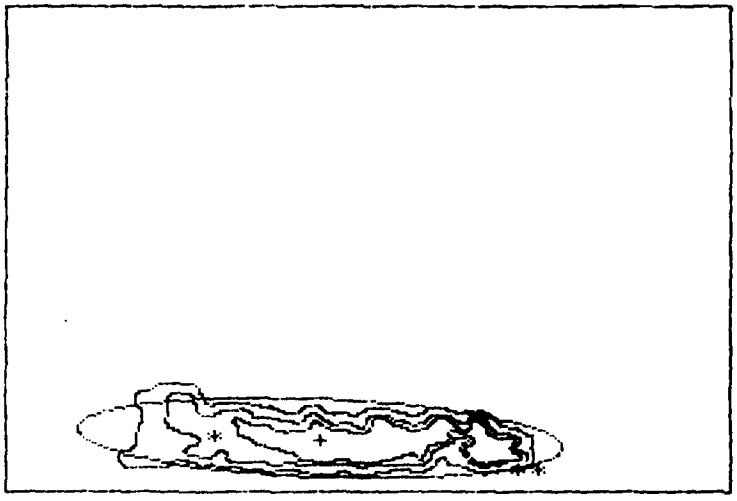
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 09

1956 Z 08-12-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 26.0



HEIGHT(ABOVE DETONATION PT.) =	11.0M	HEIGHT OF CENTROID=	4.M
WIDTH(MAX. HORIZONTAL EXTENT)=	44.0M	LATERAL OFFSET =	-23.M
VERTICAL EXTENT =	12.0M	AXES =	52., 10.M
AREA =	305.7SQM	INCLINATION =	2.7 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 4.M OFFSET= -34.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 41.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 41.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB FLORIDA

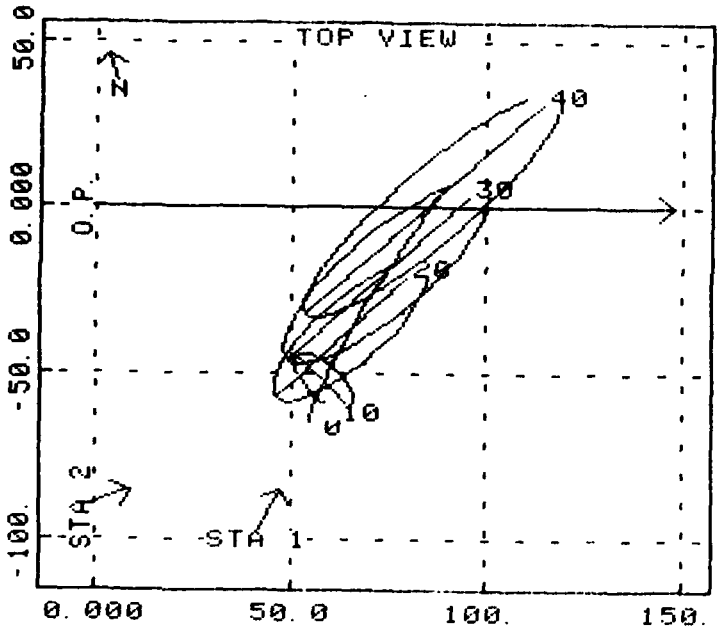
EVENT 11 TIME 22217 DATE 081[illegible]

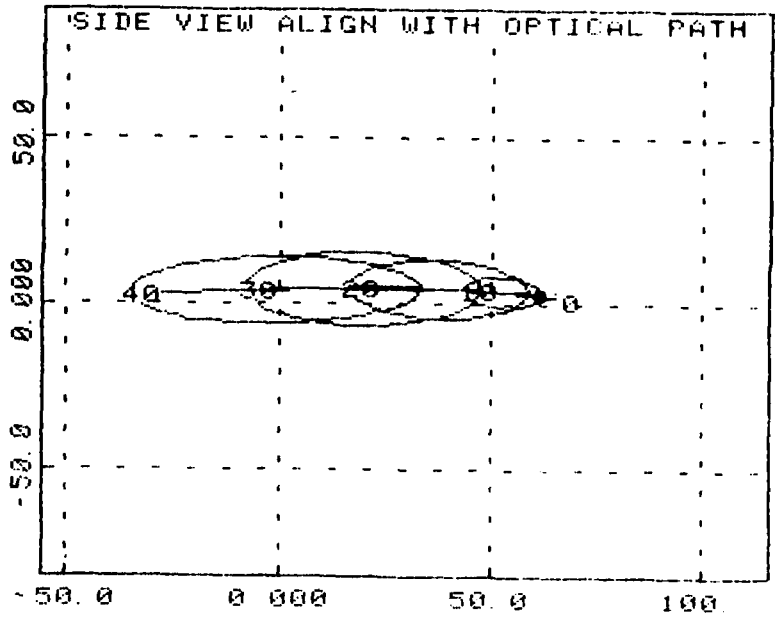
XM49 IR#1 SEEING [illegible]

TIME(SEC)	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS) HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ METERS)	LATERAL OFFSET	PATH LENGTH	DIMENSIONS INDEPENDENT OF PERSPECTIVE VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	3.2	2.5	2.5	4.8	0.1	0.0	8.4	[illegible]	[illegible]	[illegible]
1.0	3.9	3.7	3.5	10.4	-1.0	0.0	28.1	[illegible]	29.2	1.1
2.0	4.5	5.1	4.3	17.4	-2.2	0.0	59.6	[illegible]	30.2	[illegible]
3.0	5.0	6.7	5.0	26.5	-3.3	0.0	107.2	[illegible]	31.1	[illegible]
4.0	5.5	8.3	5.7	37.2	-4.5	0.0	171.6	[illegible]	[illegible]	[illegible]
5.0	6.0	9.9	6.4	49.5	-5.7	0.0	254.9	[illegible]	32.7	1
6.0	6.5	11.4	7.0	63.2	-6.9	0.0	358.5	2.9	33.4	[illegible]
7.0	6.9	12.9	7.6	77.6	-8.2	0.0	477.0	3.1	34.1	[illegible]
8.0	7.3	14.5	8.3	93.7	-9.5	0.0	622.4	3.3	34.7	[illegible] 4
9.0	7.7	15.9	8.8	110.1	-10.8	0.0	781.4	[illegible]	35.4	[illegible]
10.0	8.1	17.3	9.4	127.1	-12.2	0.0	958.5	3.4	35.9	[illegible] 4
11.0	9.8	25.9	12.5	252.2	-13.5	0.0	2677.8	3.5	36.[illegible]	[illegible]
12.0	10.3	27.8	13.2	287.6	-14.9	0.0	3247.7	3.6	37.0	[illegible]
13.0	10.7	29.6	13.9	323.2	-16.4	0.0	3849.5	3.7	37.5	[illegible]
14.0	11.1	31.5	14.6	360.2	-17.8	0.0	4507.5	3.8	38.0	[illegible]
15.0	11.5	33.3	15.2	396.9	-19.3	0.0	5187.5	3.9	38.[illegible]	[illegible]
16.0	11.9	35.1	15.9	435.5	-20.8	0.0	5937.0	4.0	38.9	[illegible]
17.0	12.3	36.8	16.4	474.3	-22.4	0.0	6718.8	4.1	[illegible]	[illegible]
18.0	12.6	38.5	17.0	512.2	-24.0	0.0	7499.1	4.1	39.8	[illegible]
19.0	12.9	40.2	17.5	552.6	-25.6	0.0	8373.6	4.2	40.2	1.5
20.0	13.2	41.9	18.0	590.5	-27.2	0.0	9201.7	4.2	40.5	[illegible]
21.0	13.5	43.5	18.5	630.8	-28.9	0.0	10121.3	4.2	[illegible]	[illegible]
22.0	13.7	45.1	18.9	668.2	-30.5	0.0	10976.2	4.3	41.[illegible]	[illegible]
23.0	15.0	47.1	21.3	786.9	-32.3	0.0	14484.2	4.3	41.6	[illegible]
24.0	15.2	48.3	21.7	823.5	-34.0	0.0	15464.5	4.3	41.9	[illegible]
25.0	15.3	49.3	21.9	847.8	-35.8	0.0	16092.7	4.3	42.2	[illegible]
26.0	15.4	50.4	22.0	872.1	-37.6	0.0	16701.6	4.3	42.5	[illegible]
27.0	15.4	51.5	22.2	895.5	-39.4	0.0	17275.3	4.3	42.8	[illegible]
28.0	15.4	52.6	22.2	917.7	-41.3	10.4	17801.7	4.3	43.0	[illegible]
29.0	15.4	53.7	22.3	938.3	-43.2	15.6	18267.3	[illegible]	43.3	[illegible]
30.0	15.4	54.8	22.3	957.1	-45.1	19.0	18671.9	4.3	43.[illegible]	[illegible]
31.0	15.4	55.8	22.2	974.1	-47.0	21.5	19009.9	4.3	43.8	[illegible]
32.0	15.3	59.5	22.1	1033.5	-49.0	24.0	20209.9	4.2	44.1	[illegible]
33.0	15.2	60.7	22.0	1048.8	-51.0	25.3	20443.1	4.2	44.3	[illegible]
34.0	15.0	61.9	21.8	1061.5	-53.0	26.2	20588.2	4.1	44.5	[illegible]
35.0	14.9	63.0	21.6	1071.4	-55.1	26.9	20641.5	4.1	44.[illegible]	[illegible] 4
36.0	14.7	64.1	21.4	1078.6	-57.1	27.3	20603.7	4.0	44.[illegible]	[illegible]
37.0	14.5	65.2	21.2	1083.0	-59.3	27.4	20475.2	3.9	45.1	[illegible] 4
38.0	14.3	66.3	20.9	1084.6	-61.4	27.4	20257.4	3.8	45.3	[illegible]
39.0	14.0	67.3	20.5	1083.4	-63.6	27.2	19952.8	[illegible]	[illegible]	[illegible]
40.0	13.8	68.3	20.2	1079.3	-65.8	26.8	19564.7	3.7	45.7	[illegible]
41.0	13.5	69.3	19.8	1072.4	-68.0	26.2	19098.0	3.6	45.9	[illegible]
42.0	13.2	70.2	19.4	1062.8	-70.2	25.5	18558.1	3.5	46.1	[illegible]

EVENT 11
XM49 IR#1

SMOKE III EGLIN AFB, FLORIDA
TIME 2221Z DATE 081280
SENSOR 0.5-0.7





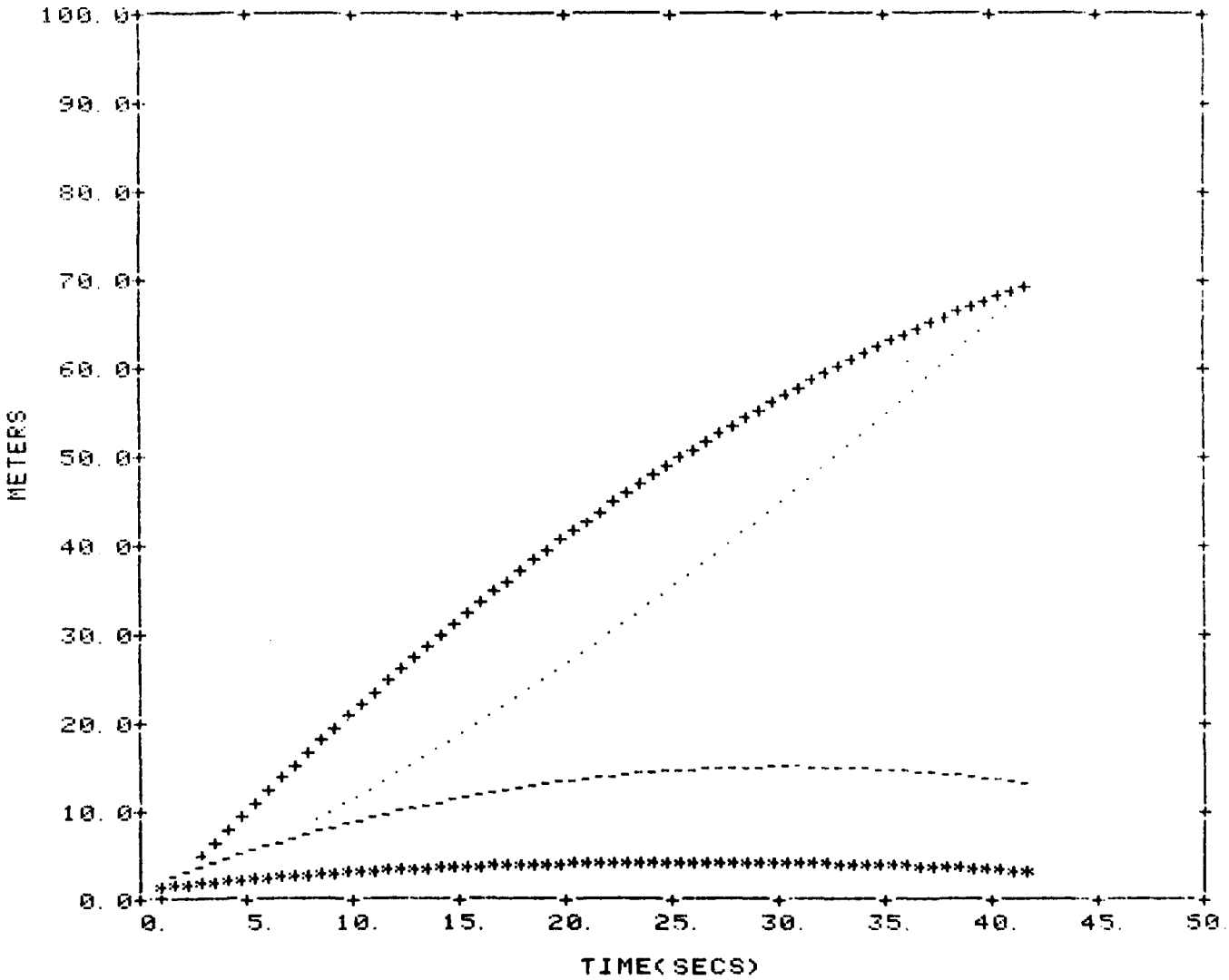
SMOKE III EGLIN AFB, FLORIDA

EVENT 11 TIME 2221Z DATE 081280

XM49 IR#1 SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC

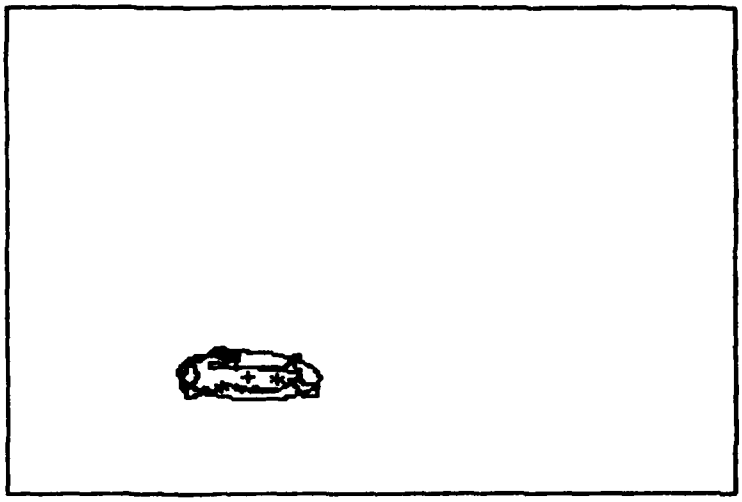


------HEIGHT ABOVE DET. PT.
++++++WIDTH
. . . . . TRANSPORT
******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 11

2221 Z 08-12-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 14.0



HEIGHT(ABOVE DETONATION PT.) =	9.0M	HEIGHT OF CENTROID=	2.M
WIDTH(MAX. HORIZONTAL EXTENT)=	28.0M	LATERAL OFFSET =	3.M
VERTICAL EXTENT =	12.0M	AXES =	28., 12.M
AREA =	210.1SQM	INCLINATION =	4.0 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 2.M OFFSET= 9.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 2.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 24.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 15.M

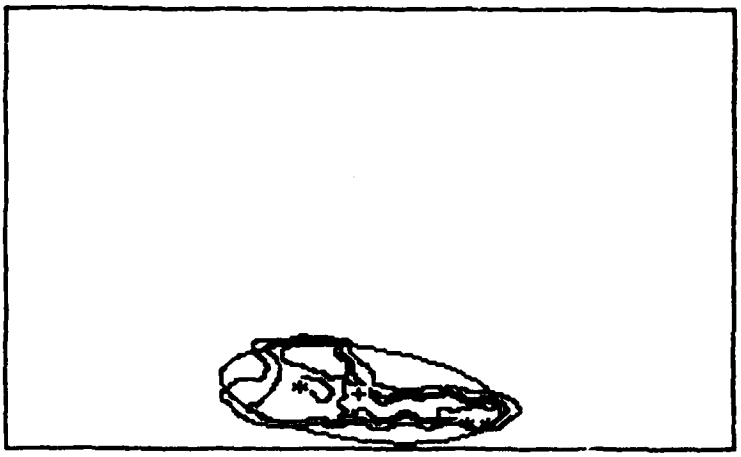
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 11

2221 Z 08-12-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 14.0



HEIGHT(ABOVE DETONATION PT.) =	11.0M	HEIGHT OF CENTROID=	4.M
WIDTH(MAX. HORIZONTAL EXTENT)=	32.0M	LATERAL OFFSET	= -13.M
VERTICAL EXTENT =	12.0M	AXES	= 30., 12.M
AREA =	204.0SQM	INCLINATION	= 9.1 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 5.M OFFSET= -19.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 16.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 15.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 1.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLORIDA

EVENT 12 TIME 1500Z DATE 081380

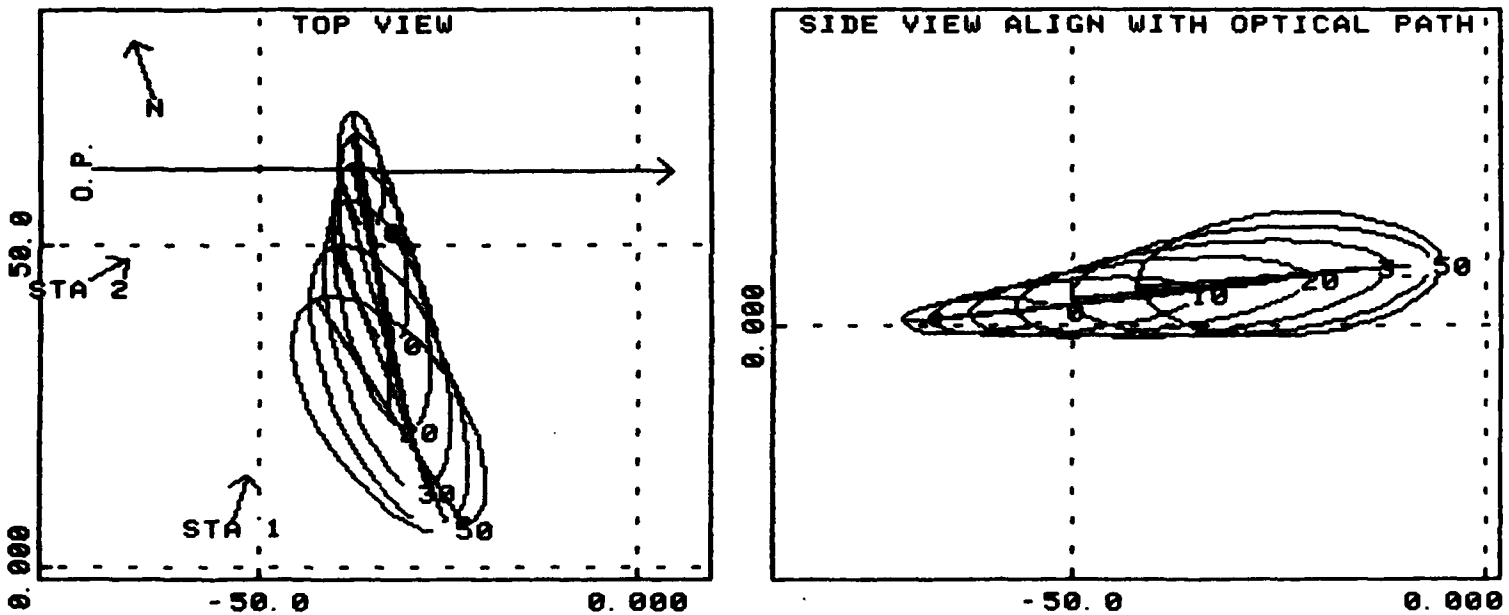
VEESS SENSOR 0.5-0.7

TIME(SEC)	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS) HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	DIMENSIONS INDEPENDENT OF PERSPECTIVE VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	4.0	18.3	5.5	76.2	3.4	5.1	270.0	1.3	0.0	0.0
1.0	4.4	19.9	5.8	86.9	4.5	5.4	322.8	1.5	186.4	1.1
2.0	4.7	21.5	6.1	98.6	5.6	5.6	384.7	1.6	186.5	1.1
3.0	5.0	23.1	6.5	110.8	6.7	5.8	453.0	1.8	186.5	1.1
4.0	5.4	24.5	6.8	123.9	7.8	5.9	532.7	1.9	186.6	1.1
5.0	5.7	26.0	7.2	136.9	8.8	6.0	614.0	2.1	186.7	1.1
6.0	6.0	27.3	7.5	150.1	9.9	6.1	701.1	2.2	186.8	1.1
7.0	6.3	28.7	7.9	163.3	10.9	6.1	792.5	2.4	186.9	1.0
8.0	6.7	29.9	8.2	177.1	11.9	6.1	892.5	2.5	187.0	1.0
9.0	7.0	31.1	8.6	190.6	12.9	6.1	993.2	2.7	187.1	1.0
10.0	7.3	32.3	8.9	204.8	13.9	6.0	1105.3	2.8	187.2	1.0
11.0	7.6	33.4	9.2	219.1	14.9	6.0	1223.2	3.0	187.3	1.0
12.0	7.9	34.5	9.6	233.7	15.8	5.9	1348.7	3.1	187.4	1.0
13.0	8.3	35.5	10.0	248.8	16.8	5.7	1485.2	3.3	187.6	0.9
14.0	8.6	36.5	10.3	263.6	17.7	5.6	1622.0	3.4	187.7	0.9
15.0	8.9	37.4	10.6	279.0	18.6	5.3	1773.5	3.6	187.8	0.9
16.0	9.2	38.2	10.9	292.7	19.5	5.1	1908.3	3.7	187.9	0.9
17.0	9.5	39.1	11.3	308.1	20.4	4.7	2070.1	3.8	188.1	0.9
18.0	9.8	39.8	11.6	322.5	21.2	4.3	2225.1	4.0	188.2	0.9
19.0	10.1	40.5	11.9	338.1	22.1	3.8	2403.8	4.1	188.3	0.9
20.0	10.4	41.2	12.2	352.6	22.9	3.1	2572.0	4.3	188.5	0.8
21.0	10.6	41.8	12.5	367.2	23.8	2.0	2749.8	4.4	188.6	0.8
22.0	10.9	42.4	12.8	380.5	24.6	0.0	2913.8	4.5	188.8	0.8
23.0	11.2	42.9	13.1	395.6	25.4	0.0	3112.6	4.6	189.0	0.8
24.0	11.5	43.4	13.4	408.3	26.1	0.0	3282.3	4.8	189.1	0.8
25.0	11.7	43.8	13.7	422.7	26.9	0.0	3486.5	4.9	189.3	0.8
26.0	12.0	44.2	13.9	435.9	27.6	0.0	3680.6	5.0	189.5	0.8
27.0	12.3	44.5	14.2	448.9	28.4	0.0	3880.7	5.2	189.7	0.7
28.0	12.5	44.8	14.4	461.0	29.1	0.0	4071.5	5.3	189.9	0.7
29.0	12.8	45.0	14.7	473.2	29.8	0.0	4275.7	5.4	190.1	0.7
30.0	13.0	45.1	14.9	484.5	30.5	0.0	4474.4	5.5	190.3	0.7
31.0	13.2	45.2	15.1	494.2	31.2	0.0	4653.1	5.7	190.5	0.7
32.0	13.5	45.3	15.4	505.7	31.8	0.0	4870.6	5.8	190.8	0.7
33.0	13.7	45.2	15.6	514.4	32.5	0.0	5053.8	5.9	191.0	0.6
34.0	13.9	45.2	15.8	523.8	33.1	0.0	5255.7	6.0	191.3	0.6
35.0	14.1	45.1	16.0	531.8	33.7	0.0	5442.5	6.1	191.6	0.6
36.0	14.4	44.9	16.2	539.2	34.3	0.0	5633.9	6.2	191.8	0.6
37.0	14.6	44.7	16.5	546.1	34.9	0.0	5820.3	6.4	192.1	0.6
38.0	14.8	44.4	16.7	552.1	35.4	0.0	6006.1	6.5	192.5	0.6
39.0	15.0	44.1	16.9	557.7	36.0	0.0	6192.6	6.6	192.8	0.6
40.0	15.2	43.6	17.1	560.6	36.5	0.0	6339.2	6.7	193.2	0.5
41.0	15.4	43.2	17.3	564.3	37.1	0.0	6511.7	6.8	193.5	0.5
42.0	15.6	42.7	17.5	566.6	37.6	0.0	6674.7	6.9	193.9	0.5
43.0	15.8	42.1	17.7	567.8	38.1	0.0	6821.3	7.0	194.3	0.5
44.0	16.0	41.5	17.9	568.1	38.5	0.0	6964.2	7.1	194.8	0.5
45.0	16.3	40.9	18.1	567.8	39.0	0.0	7109.4	7.2	195.3	0.5
46.0	16.5	40.1	18.3	565.0	39.5	0.0	7215.2	7.3	195.8	0.4
47.0	16.7	39.3	18.5	562.6	39.9	0.0	7347.7	7.4	196.3	0.4
48.0	16.9	38.5	18.7	558.9	40.3	0.0	7457.8	7.5	196.9	0.4
49.0	17.1	37.7	18.9	554.0	40.7	0.0	7559.7	7.6	197.5	0.4
50.0	17.3	36.8	19.1	548.0	41.1	0.0	7648.6	7.7	198.2	0.4
51.0	17.5	35.8	19.4	542.0	41.5	0.0	7755.3	7.8	198.9	0.4
52.0	17.7	34.9	19.6	534.5	41.8	0.0	7839.0	7.9	199.7	0.4

SMOKE III EGLIN AFB, FLORIDA

EVENT 12 TIME 1500Z DATE 081380

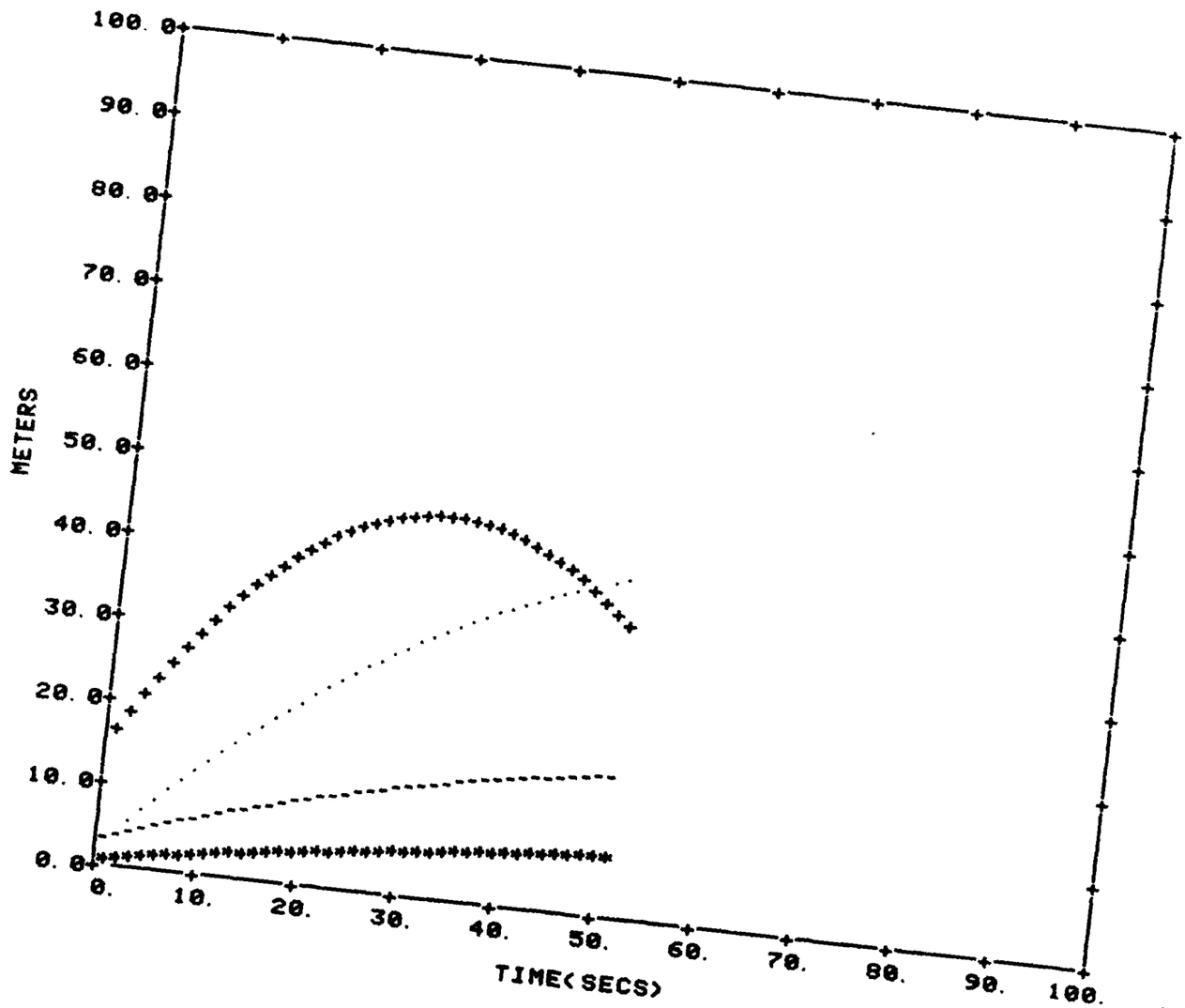
VEESS SENSOR 0.5-0.7



EVENT 12 SMOKE III EGLIN AFB, FLORIDA
VEESS TIME 1500Z DATE 081380
SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC

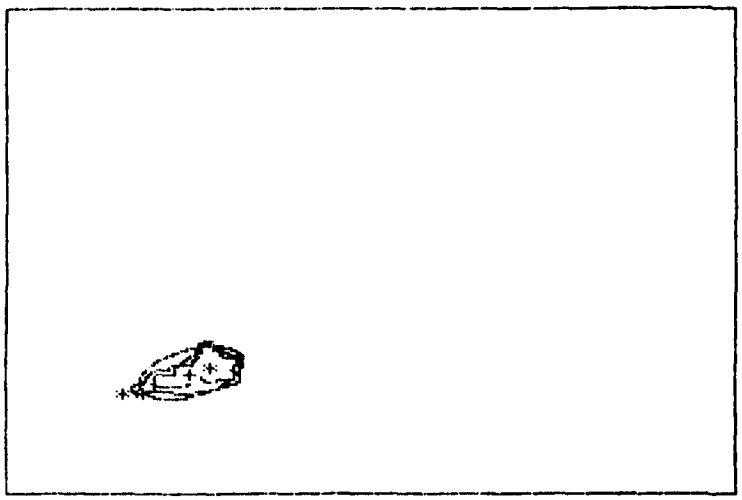


-------HEIGHT ABOVE DET. PT.
++++++WIDTH
. . . . . TRANSPORT
******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 12

1500 Z 08-13-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 26.0



HEIGHT(ABOVE DETONATION PT.) =	12.0M	HEIGHT OF CENTROID=	5.M
WIDTH(MAX. HORIZONTAL EXTENT)=	22.0M	LATERAL OFFSET =	11 M
VERTICAL EXTENT =	13.0M	AXES =	22., 11.M
AREA =	174.4SQM	INCLINATION =-	19.7 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 6.M OFFSET= 15.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 9.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 12.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 1.M

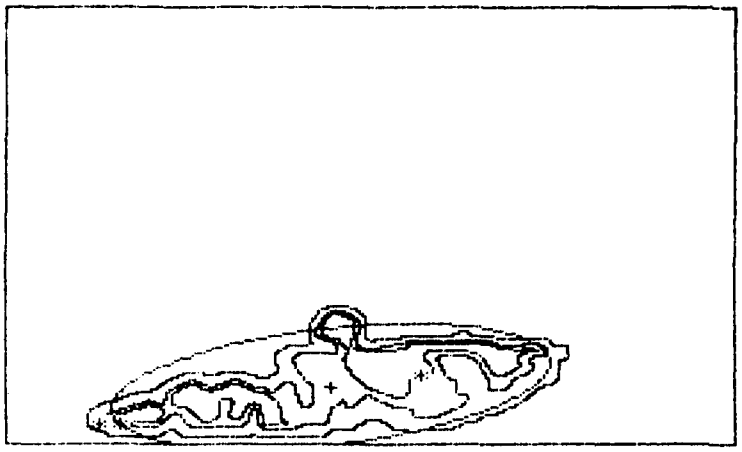
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 12

1500 Z 08-13-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 26.0



HEIGHT(ABOVE DETONATION PT.) =	15.0M	HEIGHT OF CENTROID=	5.M
WIDTH(MAX. HORIZONTAL EXTENT)=	51.0M	LATERAL OFFSET =	23.M
VERTICAL EXTENT =	17.0M	AXES =	47., 15.M
AREA =	428.1SQM	INCLINATION =	-8.1 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 6.M OFFSET= 33.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 42.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 30.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 1.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLORIDA

EVENT 13 TIME 2154Z DATE 081480

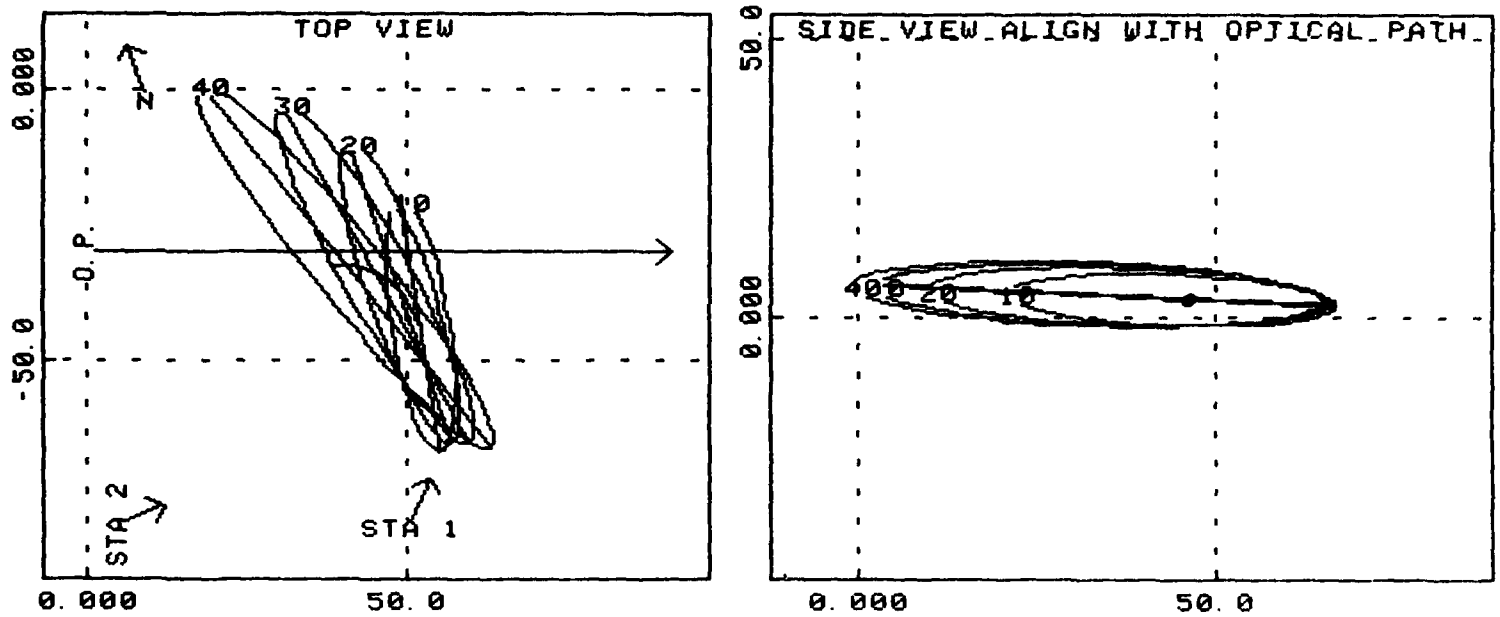
VEESS SENSOR 0 5-0 7

TIME(SEC)	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS) HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	DIMENSIONS INDEPENDENT OF PERSPECTIVE VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
10 0	7.9	46.0	9.3	326.9	-11.2	6 3	1986.2	3 3	0.0	0 0
11 0	8.0	47.1	9.4	338.8	-12.0	6.7	2089 8	3 3	353 7	0 8
12.0	8.1	48.1	9.5	350.6	-12.7	7.1	2194.9	3.4	352 5	0 8
13.0	8.3	49.1	9.6	362.4	-13.4	7 4	2303.5	3 4	351 3	0 7
14 0	8 4	50.0	9.8	374.5	-14.0	7.7	2418.4	3 5	349 9	0 7
15.0	8.5	51.0	9.9	386.2	-14.6	8.0	2533 0	3 6	348 5	0 7
16 0	8.6	51.9	10.0	397.3	-15.2	8.2	2641.2	3 6	347 0	0 7
17.0	8.7	52.8	10.1	408.4	-15.8	8.5	2752.2	3 7	345 5	0 7
18.0	8.8	53.7	10.2	419.3	-16.4	8.7	2863.8	3.7	343 8	0 6
19.0	8.9	54.5	10.3	430.2	-16.9	8.9	2979 3	3.8	342 1	0 6
20 0	9.0	55.4	10.4	440.8	-17.4	9.1	3093.4	3 8	340 3	0 6
21.0	9.1	56.2	10.5	450.6	-17.9	9.3	3200 9	3.9	338 3	0 6
22 0	9.2	57.0	10.6	461.3	-18.3	9.4	3322.9	3 9	336 3	0 6
23.0	9 3	57.7	10.7	471.6	-18.8	9.6	3445.8	4 0	334 1	0 6
24.0	9.4	58.5	10.8	481.4	-19.2	9.8	3563.6	4 0	331 9	0 6
25.0	9.4	59.2	10.8	489.4	-19.6	9.9	3656.8	4 0	329 6	0 5
26.0	9.5	59.9	10.9	499.2	-19.9	10.1	3783.8	4 1	327.1	0 5
27.0	9.6	60.6	11.0	508.5	-20.2	10.3	3908.6	4 1	324.5	0 5
28.0	9.6	61.2	11.0	515.9	-20.6	10.4	4004.1	4.1	321 9	0 5
29.0	9.7	61.9	11.1	524.2	-20.8	10.5	4119.3	4.2	319 1	0 5
30.0	9.8	62.5	11.2	533.3	-21.1	10.7	4252.4	4.2	316.3	0 5
31.0	9.8	63.0	11.2	539.7	-21.3	10.8	4348.9	4 2	313.4	0 5
32.0	9.9	63.6	11.3	548.1	-21.5	11 0	4477.6	4.2	310.5	0 5
33.0	9.9	64.1	11.3	555.2	-21.7	11.1	4593.5	4 2	307.5	0 5
34.0	10.0	64.7	11.4	562.1	-21.9	11.3	4711.7	4.3	304.4	0 5
35.0	10.0	65.1	11.4	567.3	-22.0	11.4	4805.5	4.3	301.4	0 5
36 0	10.0	65.6	11.5	574.5	-22.1	11 6	4938.2	4.3	298.3	0 5
37.0	10.1	66.1	11.5	579.7	-22.2	11.7	5039.0	4 3	295.3	0 5
38.0	10.1	66.4	11.6	584.3	-22.3	11.9	5139 1	4 3	292.3	0 5
39.0	10.1	66.8	11.6	589.4	-22.3	12 0	5250.1	4 3	289.4	0 5
40 0	10.1	67.2	11.6	594.6	-22.3	12.2	5369 4	4 3	286 5	0 5
41.0	10.1	67.6	11.7	598.9	-22.3	12 4	5474 9	4 3	283.7	0 5
42.0	10.2	67.9	11.7	601.9	-22.3	12 5	5566 7	4 3	281 0	0 5
43.0	10.2	68.2	11.7	606.6	-22.2	12 7	5693 1	4 3	278 4	0 5
44 0	10.2	68.5	11 7	609.2	-22 1	12 9	5788 4	4 3	275 9	0 5

SMOKE III EGLIN AFB, FLORIDA

EVENT 13 TIME 2154Z DATE 081480

VEESS SENSOR 0.5-0.7



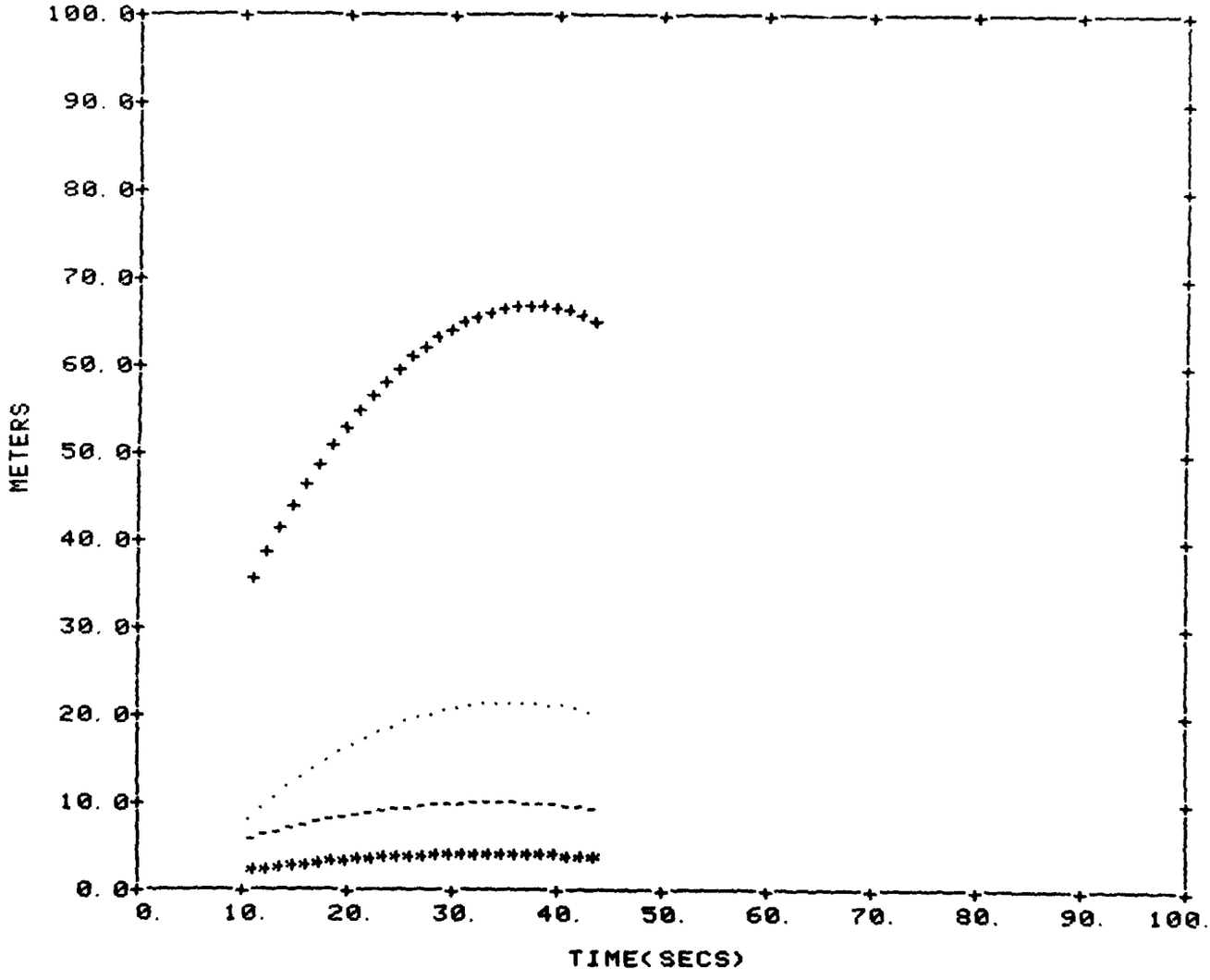
SMOKE III EGLIN AFB, FLORIDA

EVENT 13 TIME 2154Z DATE 081480

VEESS SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

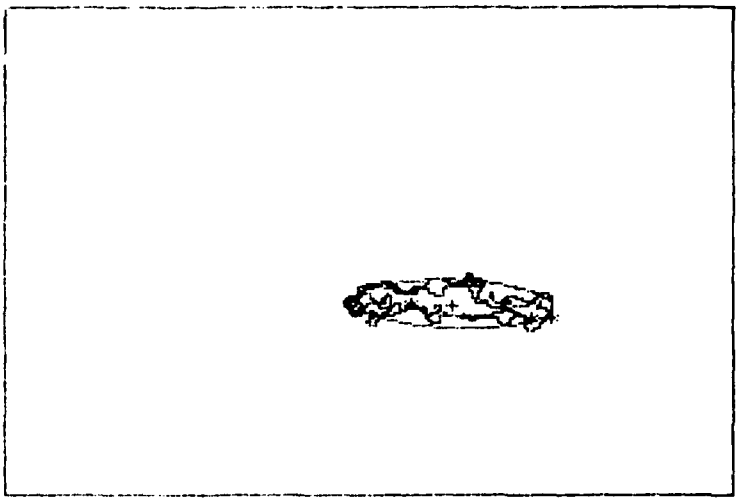
. . . . . TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 13

2154 7 08-14-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 14.0



HEIGHT(ABOVE DETONATION PT.) =	10.0M	HEIGHT OF CENTROID=	3.M
WIDTH(MAX. HORIZONTAL EXTENT)=	42.0M	LATERAL OFFSET	= -18.M
VERTICAL EXTENT =	14.0M	AXES	= 40., 12.M
AREA =	307.1SQM	INCLINATION	= 2.3 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 4.M OFFSET= -26.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 10.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 39.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)=-18.M

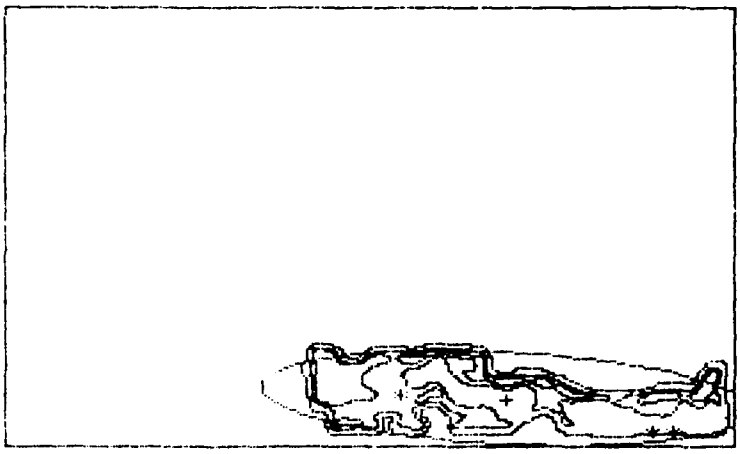
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 13

2154 Z 08-13-80 STATION # 2 SENSOR= 0 5-0 7 MICRON

T+ 14.0



HEIGHT(ABOVE DETONATION PT.) =	11.0M	HEIGHT OF CENTROID=	4 M
WIDTH(MAX. HORIZONTAL EXTENT)=	46.0M	LATERAL OFFSET	= -17.M
VERTICAL EXTENT =	12.0M	AXES	= 52., 12 M
AREA =	310.5SQM	INCLINATION	= 3.5 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 5.M OFFSET= -28.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 45.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 45 M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M

SMOKE III EGLIN AFB, FLA

EVENT 15 TIME 2346Z DATE 081480

PEO 200

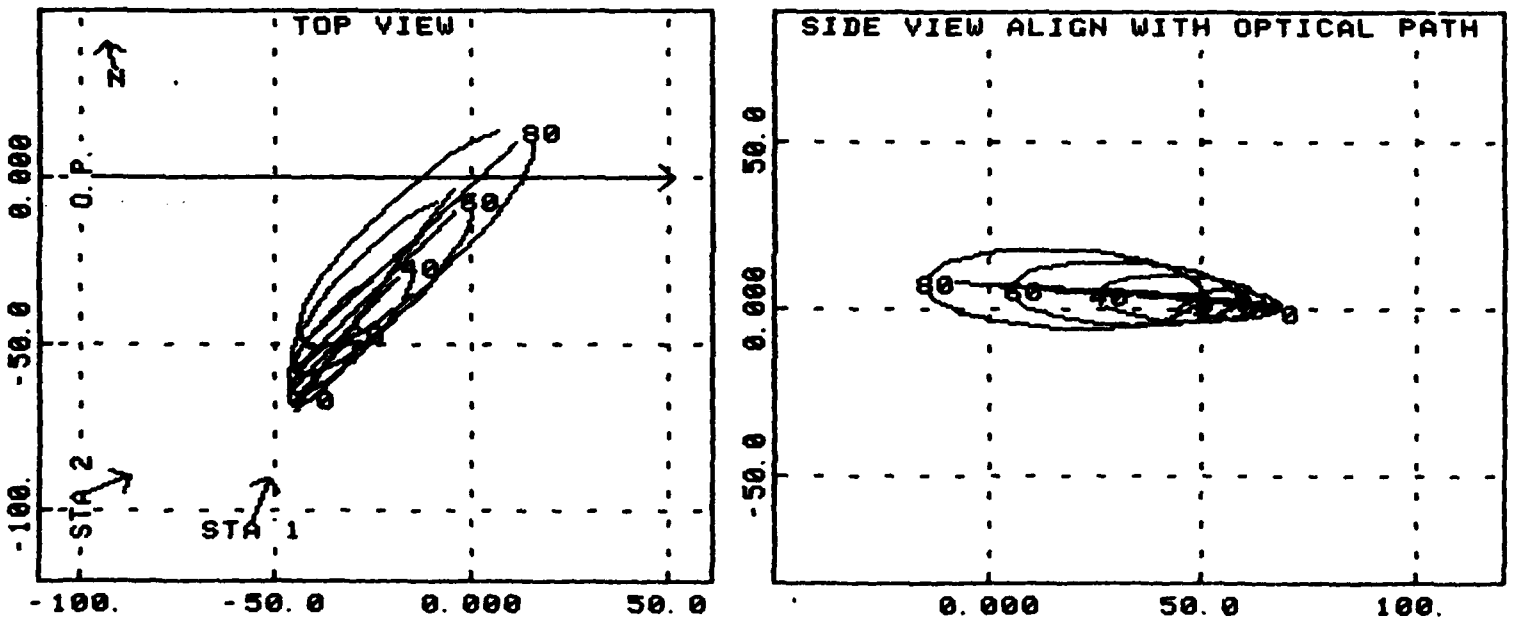
SENSOR 0 5-0 7

TIME (SEC)	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH (METERS) HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ METERS)	LATERAL OFFSET	PATH LENGTH	DIMENSIONS INDEPENDENT OF PERSPECTIVE VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0 0	1 1	3 9	2 4	7 3	-2 5	0 0	12 8	-0 1	0 0	0 0
1 0	1 4	4 9	2 8	10 6	-3 0	0 0	22 0	0 0	44 3	0 6
2 0	1 6	5 9	3 1	14 2	-3 5	0 0	33 1	0 1	44 3	0 6
3 0	1 9	6 8	3 4	18 2	-4 1	0 0	47 5	0 2	44 4	0 6
4 0	2 1	7 8	3 7	23 0	-4 6	0 0	66 4	0 3	44 4	0 6
5 0	2 4	8 8	4 0	27 9	-5 1	0 0	87 9	0 4	44 5	0 6
6 0	2 6	9 7	4 3	33 1	-5 6	0 0	111 9	0 5	44 6	0 6
7 0	2 9	10 7	4 7	39 1	-6 1	0 0	142 9	0 6	44 6	0 6
8 0	3 1	11 6	4 9	45 0	-6 7	0 0	174 3	0 6	44 7	0 6
9 0	3 3	12 6	5 2	51 5	-7 2	0 0	212 3	0 7	44 7	0 6
10 0	3 6	13 5	5 5	58 9	-7 7	0 0	258 6	0 8	44 8	0 6
11 0	3 8	14 5	5 8	66 0	-8 3	0 0	304 7	0 9	44 8	0 6
12 0	4 1	15 4	6 1	74 1	-8 8	0 0	361 8	1 0	44 9	0 6
13 0	4 3	16 3	6 4	82 2	-9 4	0 0	421 0	1 1	44 9	0 6
14 0	4 5	17 2	6 7	90 3	-9 9	0 0	482 3	1 2	44 9	0 6
15 0	4 8	18 1	7 0	99 5	-10 5	0 0	557 9	1 3	45 0	0 6
16 0	5 0	19 0	7 3	108 3	-11 0	0 0	630 4	1 4	45 0	0 6
17 0	5 3	19 9	7 6	118 1	-11 6	0 0	716 7	1 5	45 1	0 6
18 0	5 5	20 8	7 8	127 9	-12 1	0 0	807 2	1 6	45 1	0 6
19 0	5 7	21 7	8 1	138 1	-12 7	0 0	903 7	1 7	45 2	0 6
20 0	5 9	22 6	8 4	148 7	-13 2	0 0	1008 3	1 7	45 2	0 7
21 0	6 2	23 4	8 7	158 9	-13 8	0 0	1110 5	1 8	45 3	0 7
22 0	6 4	24 3	9 0	170 5	-14 4	0 0	1234 1	1 9	45 3	0 7
23 0	6 6	25 2	9 2	181 7	-14 9	0 0	1356 3	2 0	45 4	0 7
24 0	6 9	26 0	9 5	194 1	-15 5	0 0	1498 9	2 1	45 4	0 7
25 0	7 1	26 9	9 8	206 3	-16 1	0 0	1641 0	2 2	45 4	0 7
26 0	7 3	27 7	10 1	218 0	-16 7	0 0	1780 1	2 3	45 5	0 7
27 0	7 5	28 6	10 4	231 4	-17 3	0 0	1949 5	2 4	45 5	0 7
28 0	7 8	29 4	10 6	244 5	-17 8	0 0	2117 2	2 4	45 6	0 7
29 0	8 0	30 2	10 9	257 0	-18 4	0 0	2278 4	2 5	45 6	0 7
30 0	8 2	31 0	11 2	271 6	-19 0	0 0	2479 8	2 6	45 6	0 7
31 0	8 4	31 8	11 4	284 6	-19 6	0 0	2656 7	2 7	45 7	0 7
32 0	8 6	32 6	11 7	298 8	-20 2	0 0	2859 3	2 8	45 7	0 7
33 0	8 9	33 4	12 0	314 0	-20 8	0 0	3086 4	2 9	45 8	0 7
34 0	9 1	34 2	12 3	327 8	-21 4	0 0	3290 1	2 9	45 8	0 7
35 0	9 3	35 0	12 5	343 2	-22 0	0 0	3528 8	3 0	45 8	0 7
36 0	9 5	35 8	12 8	359 1	-22 6	0 0	3782 2	3 1	45 9	0 7
37 0	9 7	36 6	13 1	374 4	-23 2	0 0	4027 6	3 2	45 9	0 7
38 0	9 9	37 4	13 3	389 2	-23 9	0 0	4269 2	3 3	45 9	0 7
39 0	10 2	38 1	13 7	406 2	-24 5	0 0	4560 0	3 3	46 0	0 7
40 0	10 4	38 9	13 9	421 6	-25 1	0 0	4821 7	3 4	46 0	0 7
41 0	10 6	39 7	14 2	439 1	-25 7	0 0	5136 4	3 5	46 1	0 7
42 0	10 8	40 4	14 4	454 5	-26 3	0 0	5408 5	3 6	46 1	0 7
43 0	11 0	41 2	14 7	472 6	-27 0	0 0	5745 7	3 6	46 1	0 7
44 0	11 2	41 9	15 0	488 6	-27 6	0 0	6040 5	3 7	46 2	0 7
45 0	11 4	42 6	15 2	505 9	-28 2	0 0	6371 3	3 8	46 2	0 7
46 0	11 6	43 4	15 5	523 7	-28 9	0 0	6720 7	3 9	46 2	0 7
47 0	11 8	44 1	15 8	541 1	-29 5	0 0	7065 9	3 9	46 3	0 7
48 0	12 0	44 8	16 0	559 2	-30 2	0 0	7434 2	4 0	46 3	0 8
49 0	12 3	45 5	16 3	578 7	-30 8	0 0	7842 3	4 1	46 3	0 8
50 0	12 4	46 2	16 5	595 6	-31 5	0 0	8191 0	4 2	46 4	0 8
51 0	12 6	46 9	16 8	614 3	-32 1	0 0	8591 9	4 2	46 4	0 8
52 0	12 8	47 6	17 1	633 2	-32 8	0 0	9006 4	4 3	46 4	0 8
53 0	13 0	48 3	17 3	651 8	-33 4	0 0	9418 3	4 4	46 5	0 8
54 0	13 2	49 0	17 6	671 1	-34 1	0 0	9852 9	4 5	46 5	0 8
55 0	13 4	49 7	17 8	690 4	-34 8	0 0	10297 7	4 5	46 5	0 8
56 0	13 7	50 4	18 1	711 3	-35 4	0 0	10793 1	4 6	46 5	0 8
57 0	13 8	51 1	18 4	729 6	-36 1	0 0	11220 2	4 7	46 6	0 8
58 0	14 0	51 7	18 6	750 1	-36 8	0 0	11720 8	4 7	46 6	0 8
59 0	14 2	52 4	18 9	770 1	-37 4	0 0	12212 2	4 8	46 6	0 8
60 0	14 4	53 0	19 1	789 2	-38 1	0 0	12682 8	4 9	46 7	0 8
61 0	14 6	53 7	19 4	810 6	-38 8	0 0	13228 9	4 9	46 7	0 8
62 0	14 8	54 4	19 6	830 6	-39 5	0 0	13740 0	5 0	46 7	0 8
63 0	15 0	55 0	19 9	851 6	-40 2	0 0	14292 2	5 1	46 8	0 8
64 0	15 2	55 6	20 1	871 4	-40 9	0 0	14811 5	5 1	46 8	0 8
65 0	15 4	56 3	20 4	891 9	-41 6	0 0	15359 8	5 2	46 8	0 8
66 0	15 6	56 9	20 6	914 0	-42 3	0 0	15969 2	5 3	47 8	0 8
67 0	15 8	57 5	20 9	934 1	-43 0	0 0	16518 6	5 3	46 9	0 8
68 0	15 9	58 2	21 1	954 9	-43 7	0 0	17100 3	5 4	46 9	0 8
69 0	16 1	58 8	21 4	977 3	-44 4	6 1	17743 0	5 5	46 9	0 8
70 0	16 3	59 4	21 6	998 4	-45 1	9 1	18392 0	5 5	46 9	0 8
71 0	16 5	60 0	21 8	1020 2	-45 8	11 3	18989 5	5 6	47 0	0 8
72 0	16 7	60 6	22 1	1040 1	-46 5	13 1	19569 4	5 6	47 0	0 8
73 0	16 9	61 2	22 3	1061 7	-47 2	14 7	20215 1	5 7	47 0	0 8
74 0	17 0	61 8	22 5	1083 5	-47 9	16 1	20879 0	5 8	47 1	0 8
75 0	17 2	62 4	22 8	1106 3	-48 6	17 4	21588 4	5 8	47 1	0 9
76 0	17 4	63 0	23 0	1128 5	-49 4	18 6	22282 2	5 9	47 1	0 9
77 0	17 6	63 5	23 3	1150 5	-50 1	19 8	22975 2	5 9	47 1	0 9
78 0	17 7	64 1	23 5	1172 1	-50 8	20 8	23666 4	6 0	47 2	0 9
79 0	17 9	64 7	23 7	1192 5	-51 6	21 8	24315 9	6 1	47 2	0 9
80 0	18 1	65 3	23 9	1215 1	-52 3	22 7	25057 1	6 1	47 2	0 9
81 0	18 3	65 8	24 2	1238 4	-53 0	23 6	25836 1	6 2	47 2	0 9
82 0	18 4	66 4	24 4	1259 2	-53 8	24 4	26526 1	6 2	47 3	0 9
83 0	18 6	66 9	24 6	1283 4	-54 5	25 3	27361 4	6 3	47 3	0 9
84 0	18 8	67 5	24 8	1305 2	-55 3	26 0	28104 5	6 3	47 3	0 9
85 0	18 9	68 0	25 0	1327 9	-56 0	26 8	28896 8	6 4	47 3	0 9
86 0	19 1	68 6	25 3	1350 5	-56 8	27 5	29691 4	6 5	47 3	0 9
87 0	19 2	69 1	25 5	1372 2	-57 5	28 2	30461 7	6 5	47 4	0 9
88 0	19 4	69 6	25 7	1395 0	-58 3	28 8	31282 9	6 6	47 4	0 9
89 0	19 6	70 2	25 9	1415 1	-59 1	29 4	32000 4	6 6	47 4	0 9
90 0	19 7	70 7	26 1	1439 1	-59 8	30 0	32889 8	6 7	47 4	0 9
91 0	19 9	71 2	26 3	1462 8	-60 6	30 6	33777 2	6 7	47 5	0 9
92 0	20 0	71 7	26 5	1483 5	-61 4	31 2	34547 9	6 8	47 5	0 9
93 0	20 2	72 2	26 7	1504 4	-62 1	31 7	35327 9	6 8	47 5	0 9
94 0	20 3	72 8	26 9	1528 3	-62 9	32 2	36255 1	6 9	47 5	0 9
95 0	20 5	73 3	27 1	1549 1	-63 7	32 7	37051 1	6 9	47 6	0 9
96 0	20 6	73 8	27 3	1573 1	-64 5	33 2	38001 4	7 0	47 6	0 9
97 0	20 8	74 3	27 5	1594 4	-65 3	33 6	38836 1	7 0	47 6	0 9
98 0	20 9	74 7	27 7	1617 3	-66 0	34 0	39757 3	7 1	47 6	0 9
99 0	21 1	75 2	27 9	1637 8	-66 8	34 4	40572 6	7 1	47 6	0 9

SMOKE III EGLIN AFB, FLA.

EVENT 15 TIME 2346Z DATE 081480

PEG 200 SENSOR 0.5-0.7



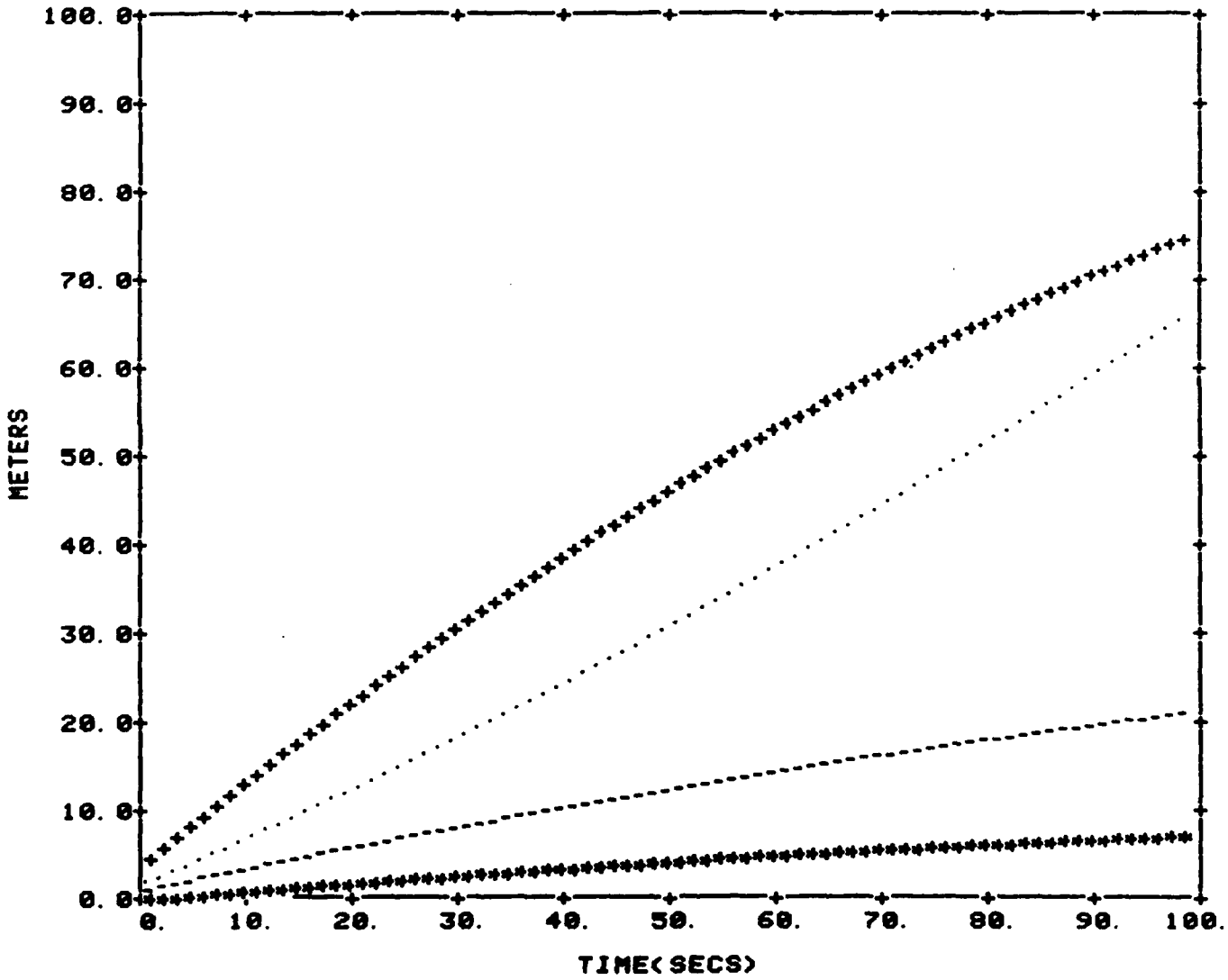
SMOKE III EGLIN AFB, FLA.

EVENT 15. TIME 2346Z DATE 081480

PEG 200 SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

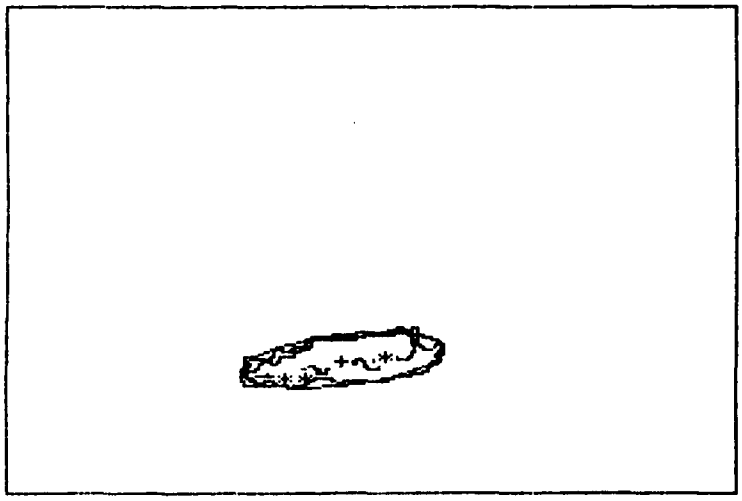
.....TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 15

2346 Z 08-14-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 50.0



HEIGHT(ABOVE DETONATION PT.) =	12.0M	HEIGHT OF CENTROID=	4.M
WIDTH(MAX. HORIZONTAL EXTENT)=	40.0M	LATERAL OFFSET =	9.M
VERTICAL EXTENT =	15.0M	AXES =	41., 12.M
AREA =	397.7SQM	INCLINATION =	-8.1 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 5.M OFFSET= 18.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 22.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 34.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 5.M

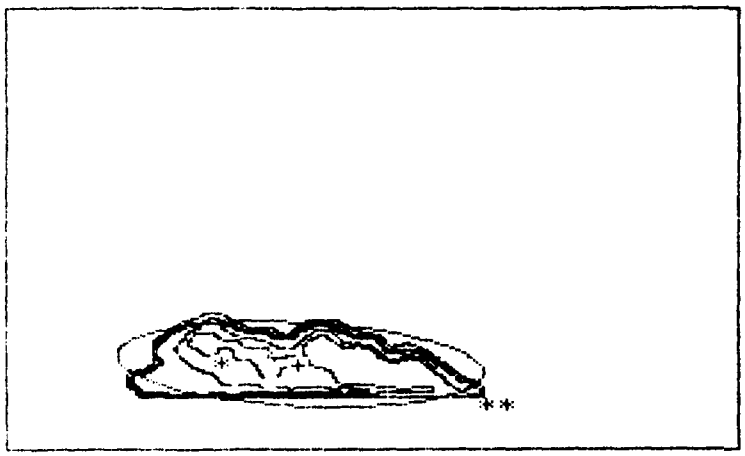
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 15

2346 Z 08-14-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 50.0



HEIGHT(ABOVE DETONATION PT.) =	11.0M	HEIGHT OF CENTROID=	5.M
WIDTH(MAX. HORIZONTAL EXTENT)=	38.0M	LATERAL OFFSET	= -21.M
VERTICAL EXTENT =	11.0M	AXES	= 39., 11.M
AREA =	253.1SQM	INCLINATION	= 3.6 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 5.M OFFSET= -29.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 32.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 30.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 1.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA.

EVENT 16 TIME 1841Z DATE 081580

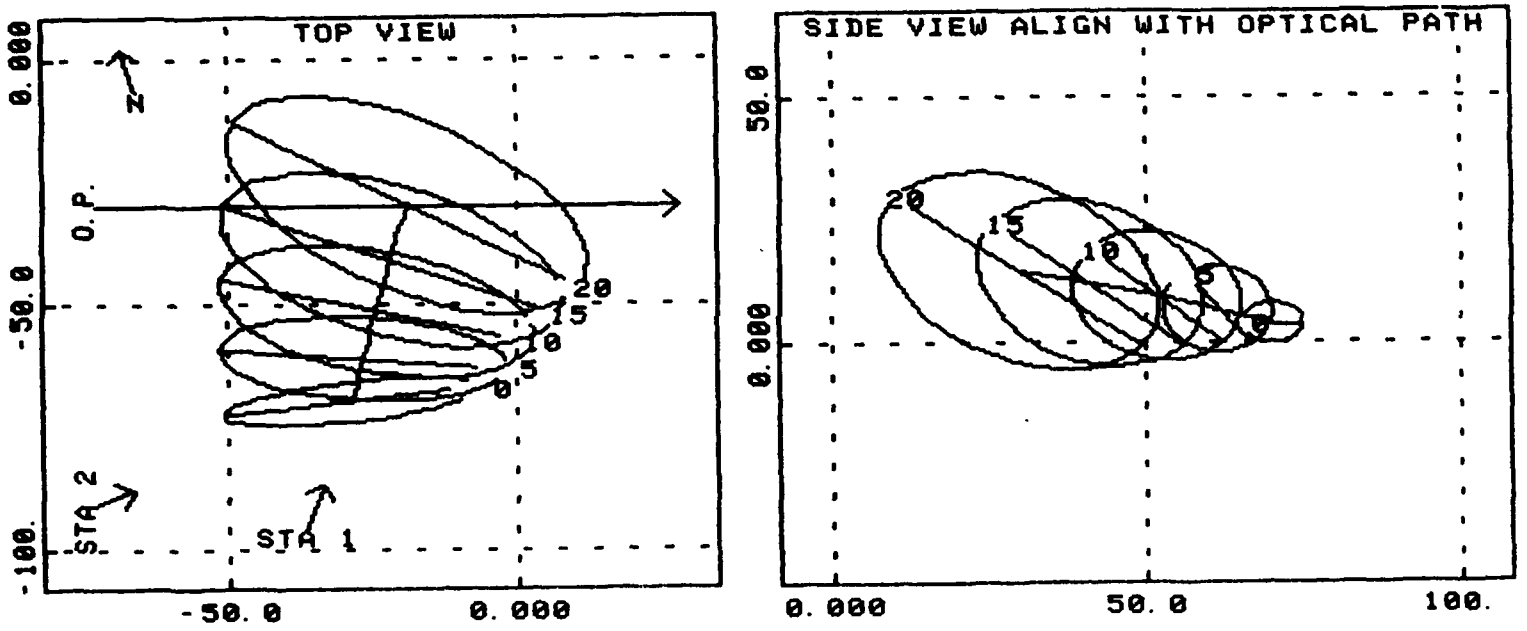
XM825 WP TWIN CHARGES SENSOR 0.5-0.7

	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECTIVE			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	8.0	9.8	8.1	62.2	-0.1	0.0	1530.5	3.9	0.0	0.0
1.0	9.5	10.7	10.0	83.6	-1.8	0.0	2387.8	4.5	26.9	1.7
2.0	11.0	12.0	11.9	111.5	-3.5	0.0	3407.9	5.1	27.1	1.8
3.0	12.6	13.6	13.8	147.8	-5.3	0.0	4648.4	5.7	27.2	1.8
4.0	14.1	15.4	15.6	189.6	-7.1	0.0	6019.2	6.2	27.4	1.8
5.0	15.5	17.4	17.5	238.4	-8.9	0.0	7593.9	6.8	27.5	1.9
6.0	17.0	19.3	19.3	292.6	-10.8	0.0	9338.2	7.4	27.6	1.9
7.0	18.5	21.2	21.1	351.2	-12.7	0.0	11223.6	7.9	27.8	1.9
8.0	19.9	23.2	22.9	414.2	-14.6	0.0	13277.3	8.5	27.9	2.0
9.0	21.3	25.1	24.6	481.4	-16.6	0.0	15485.1	9.0	28.0	2.0
10.0	22.7	27.0	26.3	550.8	-18.6	0.0	17784.1	9.5	28.2	2.1
11.0	24.1	28.8	27.9	622.9	-20.6	0.0	20202.2	10.1	28.3	2.1
12.0	25.4	30.6	29.6	697.7	-22.7	0.0	22729.7	10.6	28.4	2.1
13.0	26.7	32.4	31.1	772.7	-24.8	0.0	25266.7	11.1	28.5	2.2
14.0	27.9	34.1	32.6	850.0	-26.9	0.0	27879.1	11.7	28.6	2.2
15.0	29.2	35.8	34.0	927.0	-29.1	10.1	30469.6	12.2	28.7	2.2
16.0	30.4	37.6	35.4	1005.2	-31.3	23.3	33067.8	12.7	28.8	2.3
17.0	31.6	39.3	36.7	1084.9	-33.5	29.6	35698.7	13.2	28.9	2.3
18.0	32.7	41.0	38.0	1162.6	-35.8	33.3	38166.3	13.7	29.0	2.3
19.0	33.8	42.8	39.3	1242.1	-38.1	35.5	40641.9	14.2	29.1	2.4
20.0	34.9	44.6	40.5	1319.8	-40.4	36.7	42939.0	14.7	29.2	2.4

SMOKE III EGLIN AFB, FLA.

EVENT 16 TIME 1841Z DATE 081580

XM825 WP TWIN CHARGES SENSOR 0.5-0.7



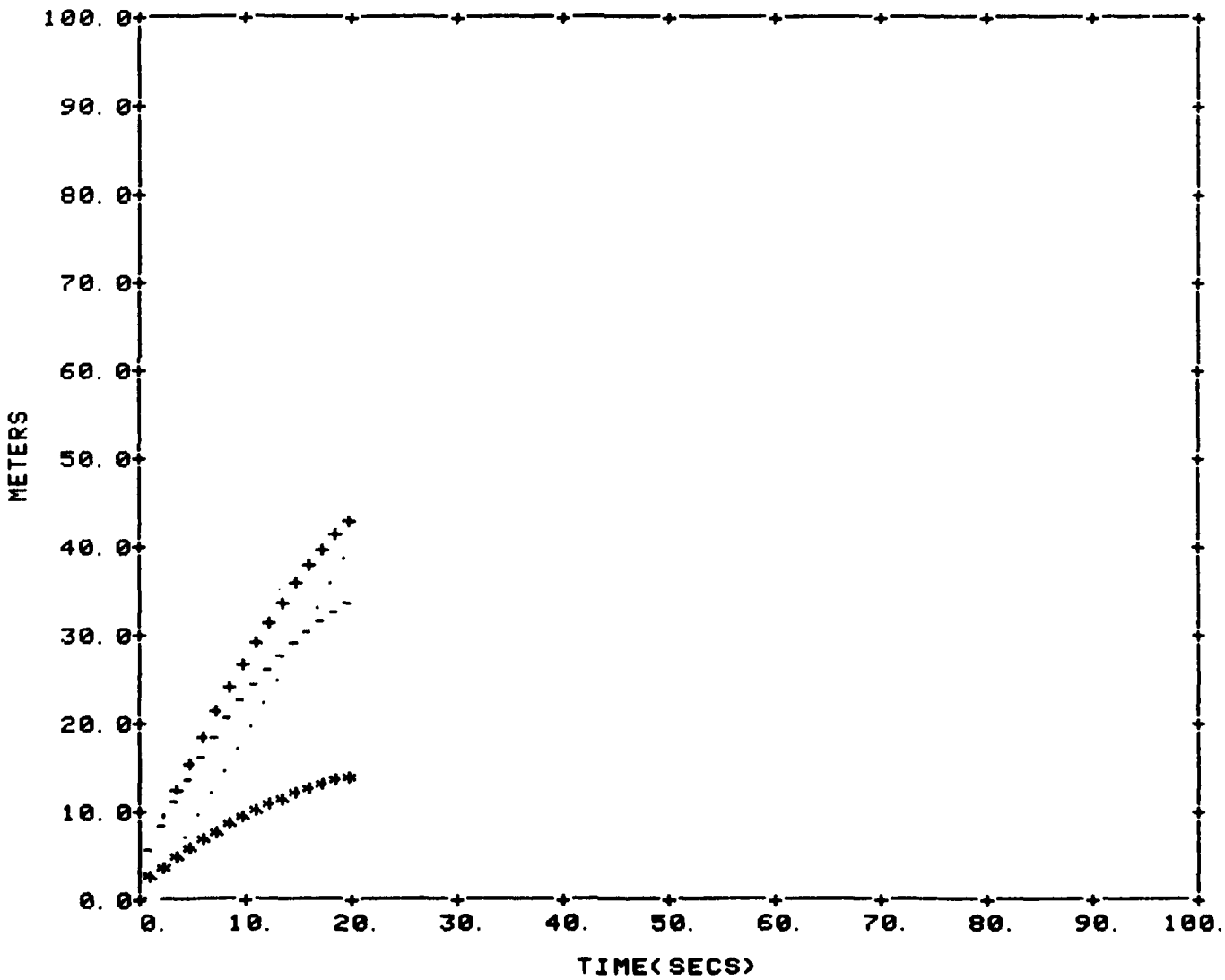
SMOKE III EGLIN AFB, FLA.

EVENT 16 TIME 1841Z DATE 081580

XM825 WP TWIN CHARGES SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

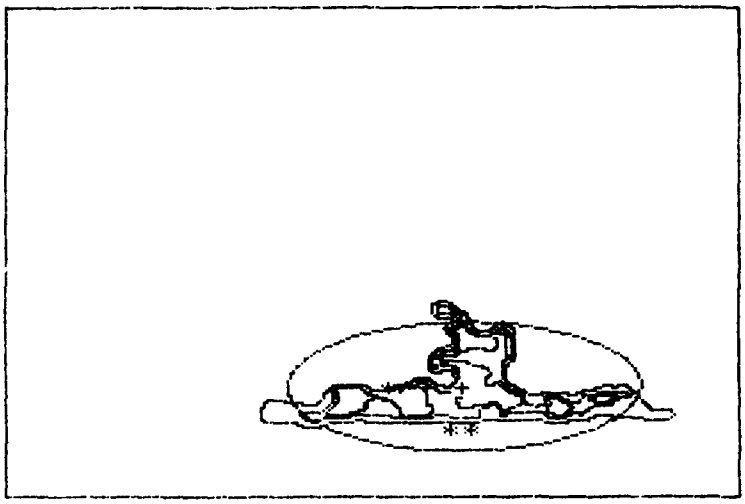
.....TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 16

1841 Z [illegible] STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 14.0



HEIGHT(ABOVE DETONATION PT.) =	30.0M	HEIGHT OF CENTROID=	10.M
WIDTH(MAX. HORIZONTAL EXTENT)=	82.0M	LATERAL OFFSET =	0.M
VERTICAL EXTENT =	30.0M	AXES =	70., 30.M
AREA =	895.6SQM	INCLINATION =	-0.7 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 10.M OFFSET= -15.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 61.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 61.M
SHEAR(HOR DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

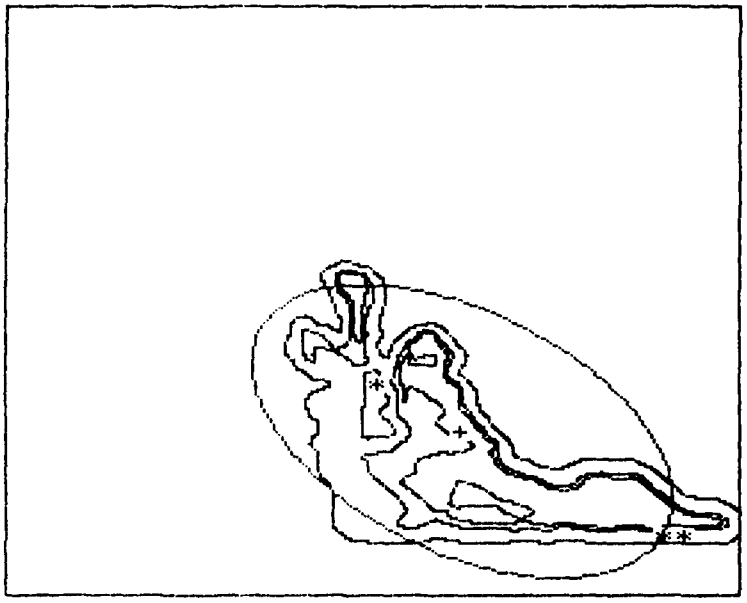
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M

SMOKE III EVENT # 16

1841 Z 09-15-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 14.0



HEIGHT(ABOVE DETONATION PT.) =	34.0M	HEIGHT OF CENTROID=	13.M
WIDTH(MAX. HORIZONTAL EXTENT)=	48.0M	LATERAL OFFSET =	-23.M
VERTICAL EXTENT =	36.0M	AXES =	50., 29.M
AREA =	660.1SQM	INCLINATION =	34.0 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 19.M OFFSET= -32.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 38.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 18.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= -4.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA.

EVENT 17 TIME 2010Z DATE 081580

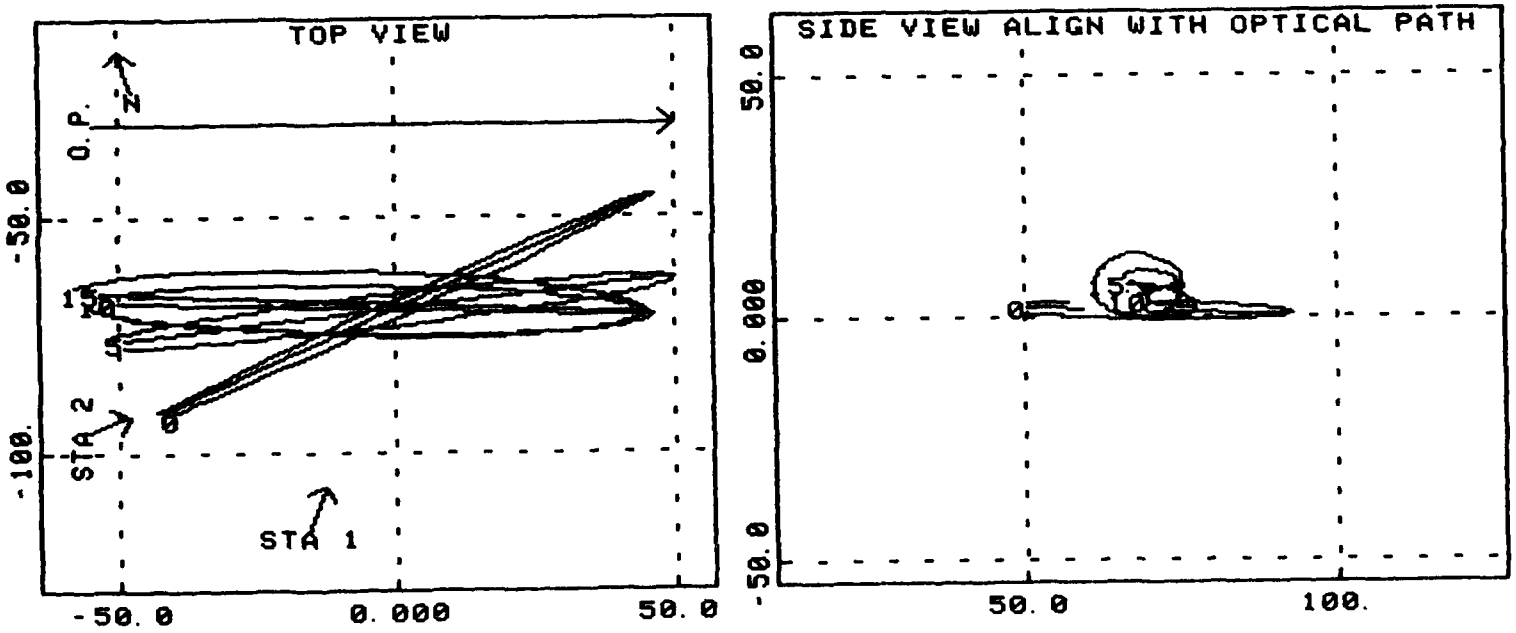
HC 6 RNDS - 24 CANISTERS SENSOR 0.5-0.7

	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECT			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	3.3	47.9	3.7	130.8	-1.1	0.0	672.7	1.4	0.0	0.0
1.0	4.0	33.1	4.5	101.0	-0.8	0.0	870.9	1.8	263.5	0.7
2.0	4.7	28.5	5.2	103.1	-0.6	0.0	1213.3	2.1	266.4	0.7
3.0	4.7	23.7	4.4	69.2	-0.4	0.0	814.1	2.5	269.7	0.6
4.0	6.0	19.4	6.3	91.0	-0.3	0.0	2007.2	2.8	273.2	0.6
5.0	6.6	15.0	7.0	79.5	-0.2	0.0	2477.0	3.2	277.1	0.6
6.0	7.3	11.7	7.6	68.5	-0.2	0.0	2984.1	3.5	281.2	0.6
7.0	8.0	9.7	8.3	62.3	-0.2	0.0	3565.5	3.8	285.6	0.6
8.0	8.6	9.0	8.9	63.1	-0.2	0.0	4166.4	4.2	290.3	0.5
9.0	9.3	9.5	9.5	71.4	-0.3	0.0	4828.0	4.5	295.3	0.5
10.0	9.9	10.5	10.2	84.4	-0.5	0.0	5545.8	4.8	300.3	0.5
11.0	10.6	11.6	10.9	99.2	-0.6	0.0	6317.7	5.1	305.5	0.5
12.0	11.3	12.6	11.6	114.3	-0.9	0.0	7167.4	5.5	310.7	0.5
13.0	11.9	13.3	12.2	128.0	-1.1	0.0	8064.4	5.8	315.8	0.5
14.0	12.5	13.8	12.9	139.3	-1.5	0.0	8963.3	6.1	320.7	0.5
15.0	13.2	14.1	13.5	150.1	-1.8	0.0	9974.9	6.4	325.4	0.6
16.0	13.8	14.4	14.1	160.1	-2.2	0.0	11008.6	6.7	329.9	0.6
17.0	14.4	14.8	14.8	172.4	-2.7	0.0	12176.1	7.0	334.0	0.6
18.0	15.0	15.5	15.4	187.5	-3.2	0.0	13308.6	7.3	337.9	0.6

SMOKE III EGLIN AFB, FLA.

EVENT 17 TIME 2010Z DATE 081580

HC 6 RNDS - 24 CANISTERS SENSOR 0.5-0.7



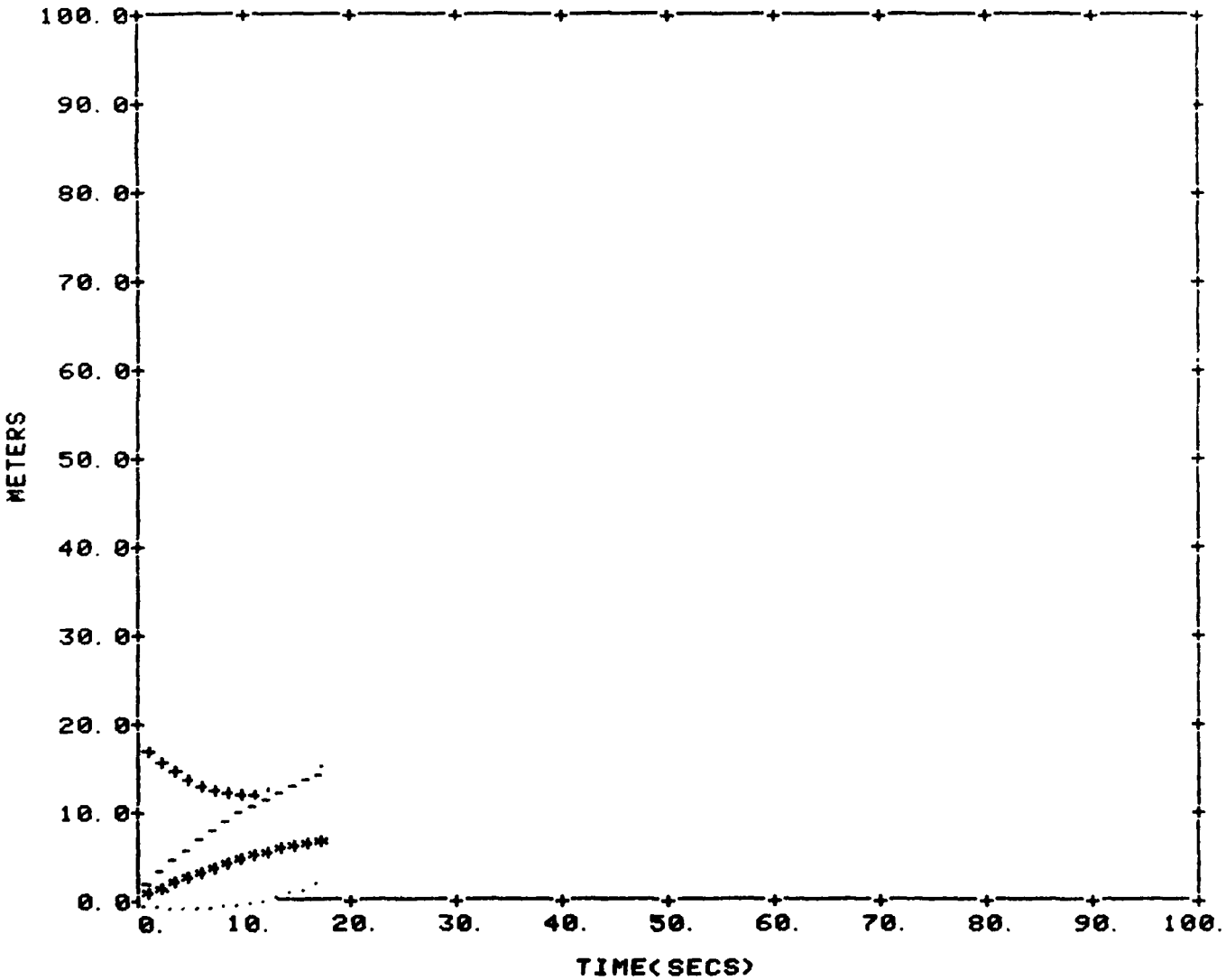
SMOKE III EGLIN AFB, FLA.

EVENT 17 TIME 2010Z DATE 081580

HC 6 RNDS - 24 CANISTERS SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

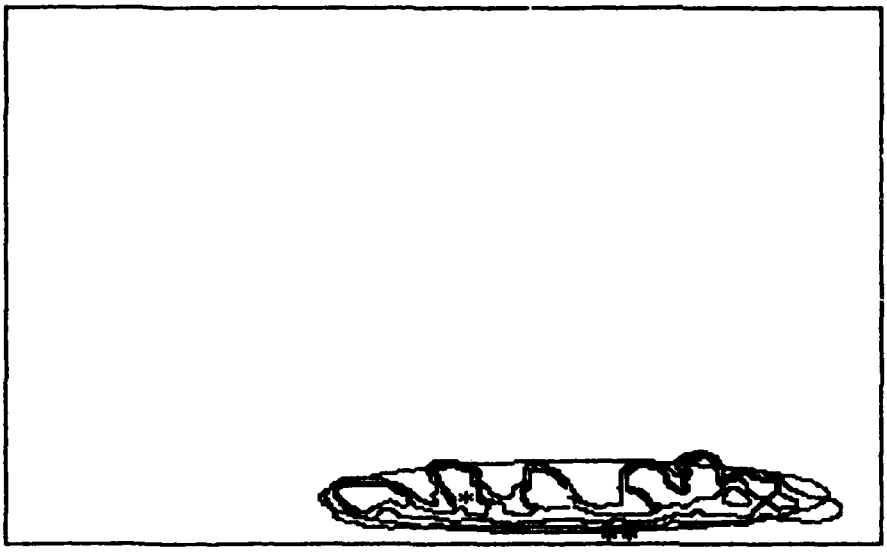
.....TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 17

2010 Z 08-15-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 18.0



HEIGHT(ABOVE DETONATION PT.) =	19.0M	HEIGHT OF CENTROID=	9.M
WIDTH(MAX. HORIZONTAL EXTENT)=	104.0M	LATERAL OFFSET =	-9.M
VERTICAL EXTENT =	19.0M	AXES =	102., 17.M
AREA =	1105.7SQM	INCLINATION =	-0.5 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 9.M OFFSET= -31.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 96.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE=102.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

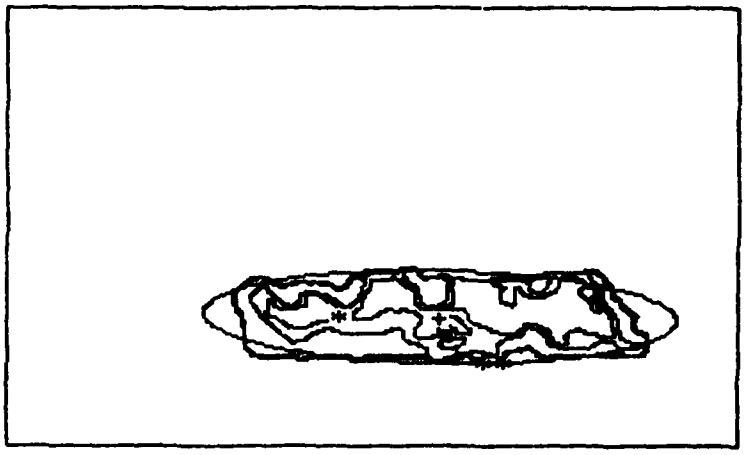
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 17

2010 Z 08-15-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 18.0



HEIGHT(ABOVE DETONATION PT.) =	12.0M	HEIGHT OF CENTROID=	6.M
WIDTH(MAX. HORIZONTAL EXTENT)=	44.0M	LATERAL OFFSET =	-6.M
VERTICAL EXTENT =	12.0M	AXES =	50., 12.M
AREA =	445.1SQM	INCLINATION =	1.3 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 6.M OFFSET= -17.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 42.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 42.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA.

E ENT 19 TIME 2145Z DATE 081580

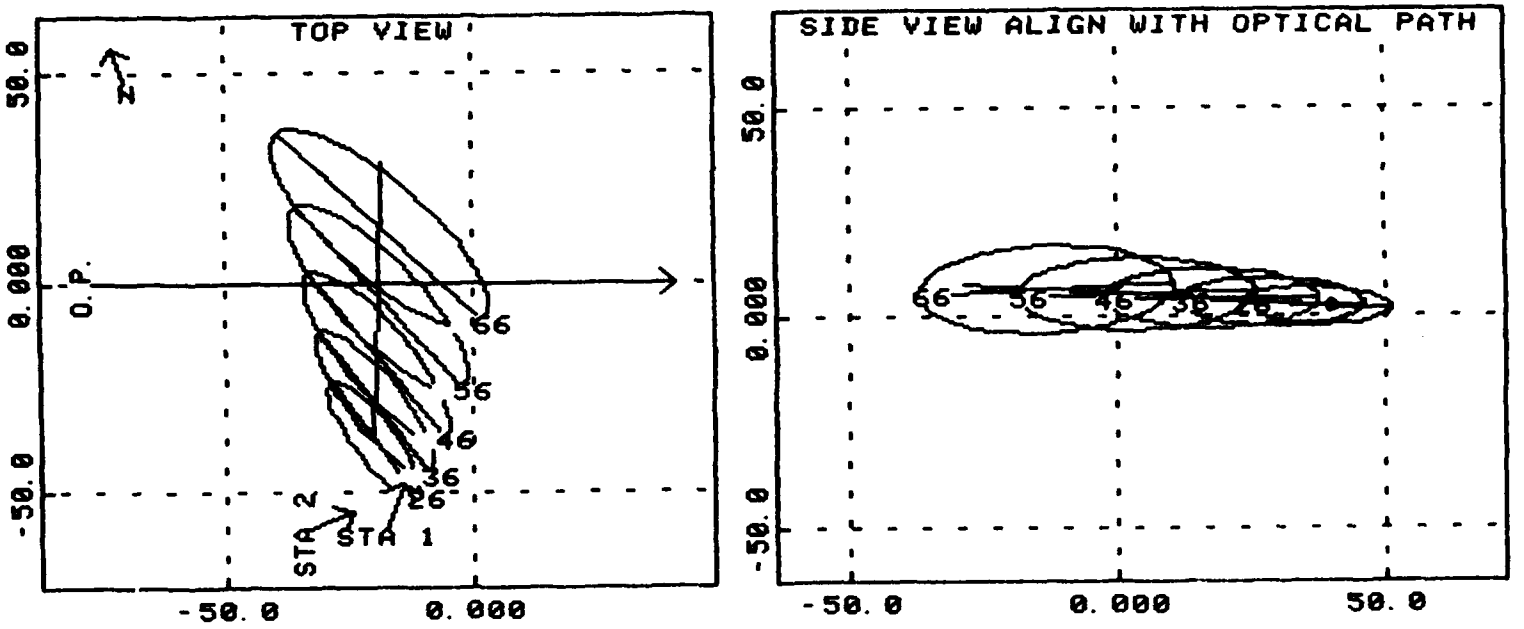
XM49 FOG OIL SENSOR 0.5-0.7

	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECTIVE			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
26.0	7.0	28.0	9.0	195.1	-12.7	0.0	1330.2	2.5	0.0	0.0
27.0	7.2	28.7	9.2	205.3	-13.4	C.0	1436.4	2.6	18.0	0.7
28.0	7.4	29.4	9.4	215.9	-14.2	0.0	1549.0	2.7	17.9	0.8
29.0	7.6	30.2	9.6	226.4	-15.0	0.0	1664.6	2.8	17.8	0.8
30.0	7.8	30.8	9.9	237.1	-15.8	0.0	1786.7	2.8	17.7	0.8
31.0	8.0	31.5	10.1	248.5	-16.6	0.0	1921.5	2.9	17.6	0.8
32.0	8.2	32.2	10.4	260.1	-17.5	0.0	2062.4	3.0	17.5	0.9
33.0	8.4	32.8	10.6	271.5	-18.4	0.0	2206.2	3.1	17.4	0.9
34.0	8.6	33.5	10.9	284.2	-19.3	0.0	2374.5	3.2	17.4	0.9
35.0	8.8	34.1	11.1	296.3	-20.3	0.0	2537.1	3.3	17.3	1.0
36.0	9.0	34.7	11.3	308.1	-21.2	0.0	2698.5	3.3	17.3	1.0
37.0	9.2	35.3	11.6	321.2	-22.3	0.0	2889.2	3.4	17.2	1.0
38.0	9.5	35.9	11.9	334.1	-23.3	0.0	3076.8	3.5	17.1	1.0
39.0	9.7	36.5	12.1	347.2	-24.3	0.0	3278.6	3.6	17.1	1.1
40.0	9.9	37.1	12.4	360.4	-25.4	0.0	3484.5	3.7	17.0	1.1
41.0	10.1	37.6	12.7	373.6	-26.5	0.0	3698.8	3.8	17.0	1.1
42.0	10.4	38.2	12.9	387.3	-27.7	0.0	3927.5	3.9	17.0	1.1
43.0	10.6	38.7	13.2	401.4	-28.8	0.0	4174.8	4.0	16.9	1.2
44.0	10.8	39.2	13.5	415.3	-30.0	0.0	4419.7	4.1	16.9	1.2
45.0	11.1	39.7	13.8	430.4	-31.3	1.0	4699.0	4.2	16.8	1.2
46.0	11.3	40.2	14.1	444.5	-32.5	6.2	4966.7	4.3	16.8	1.2
47.0	11.6	40.7	14.4	458.9	-33.8	8.7	5246.2	4.4	16.8	1.3
48.0	11.8	41.1	14.7	473.7	-35.1	10.6	5543.9	4.5	16.7	1.3
49.0	12.1	41.6	15.0	488.8	-36.4	12.3	5858.1	4.6	16.7	1.3
50.0	12.3	42.0	15.3	504.6	-37.8	13.7	6197.3	4.7	16.7	1.4
51.0	12.6	42.4	15.6	520.1	-39.1	14.9	6543.9	4.8	16.6	1.4
52.0	12.9	42.8	15.9	535.5	-40.5	16.1	6894.6	4.9	16.6	1.4
53.0	13.2	43.2	16.2	551.7	-42.0	17.1	7274.2	5.0	16.6	1.4
54.0	13.4	43.6	16.5	566.8	-43.4	17.9	7638.9	5.1	16.6	1.5
55.0	13.7	44.0	16.9	583.0	-44.9	18.7	8042.1	5.3	16.5	1.5
56.0	14.0	44.3	17.2	599.0	-46.4	19.4	8454.2	5.4	16.5	1.5
57.0	14.3	44.7	17.5	615.2	-48.0	20.0	8884.8	5.5	16.5	1.5
58.0	14.6	45.0	17.9	631.6	-49.6	20.5	9335.7	5.6	16.5	1.6
59.0	14.9	45.3	18.3	648.9	-51.2	20.9	9826.8	5.7	16.4	1.6
60.0	15.1	45.6	18.6	664.9	-52.8	21.0	10289.6	5.8	16.4	1.6
61.0	15.4	45.9	19.0	682.2	-54.4	21.1	10812.5	6.0	16.4	1.7
62.0	15.7	46.2	19.3	699.3	-56.1	21.0	11336.9	6.1	16.4	1.7
63.0	16.0	46.5	19.7	715.6	-57.8	20.7	11862.7	6.2	16.4	1.7
64.0	16.4	46.8	20.0	732.8	-59.5	20.1	12427.8	6.3	16.3	1.7
65.0	16.7	47.0	20.4	750.0	-61.3	19.2	13013.8	6.5	16.3	1.8
66.0	17.0	47.2	20.8	767.3	-63.1	18.0	13623.2	6.6	16.3	1.8
67.0	17.3	47.5	21.2	785.3	-64.9	16.2	14270.9	6.7	16.3	1.8
68.0	17.6	47.6	21.6	802.3	-66.7	13.5	14913.3	6.9	16.3	1.8
69.0	18.0	47.9	22.0	820.2	-68.6	9.2	15596.8	7.0	16.3	1.9
70.0	18.3	48.1	22.4	837.9	-70.5	0.0	16303.2	7.1	16.2	1.9
71.0	18.6	48.2	22.8	855.6	-72.4	0.0	17028.8	7.3	16.2	1.9
72.0	19.0	48.4	23.1	872.6	-74.4	0.0	17756.1	7.4	16.2	1.9
73.0	19.3	48.5	23.6	891.1	-76.3	0.0	18559.4	7.5	16.2	2.0
74.0	19.7	48.7	24.0	908.9	-78.3	0.0	19365.1	7.7	16.2	2.0

SMOKE III EGLIN AFB, FLA.

EVENT 19. TIME 2145Z DATE 081580

XM49 FOG OIL SENSOR 0.5-0.7



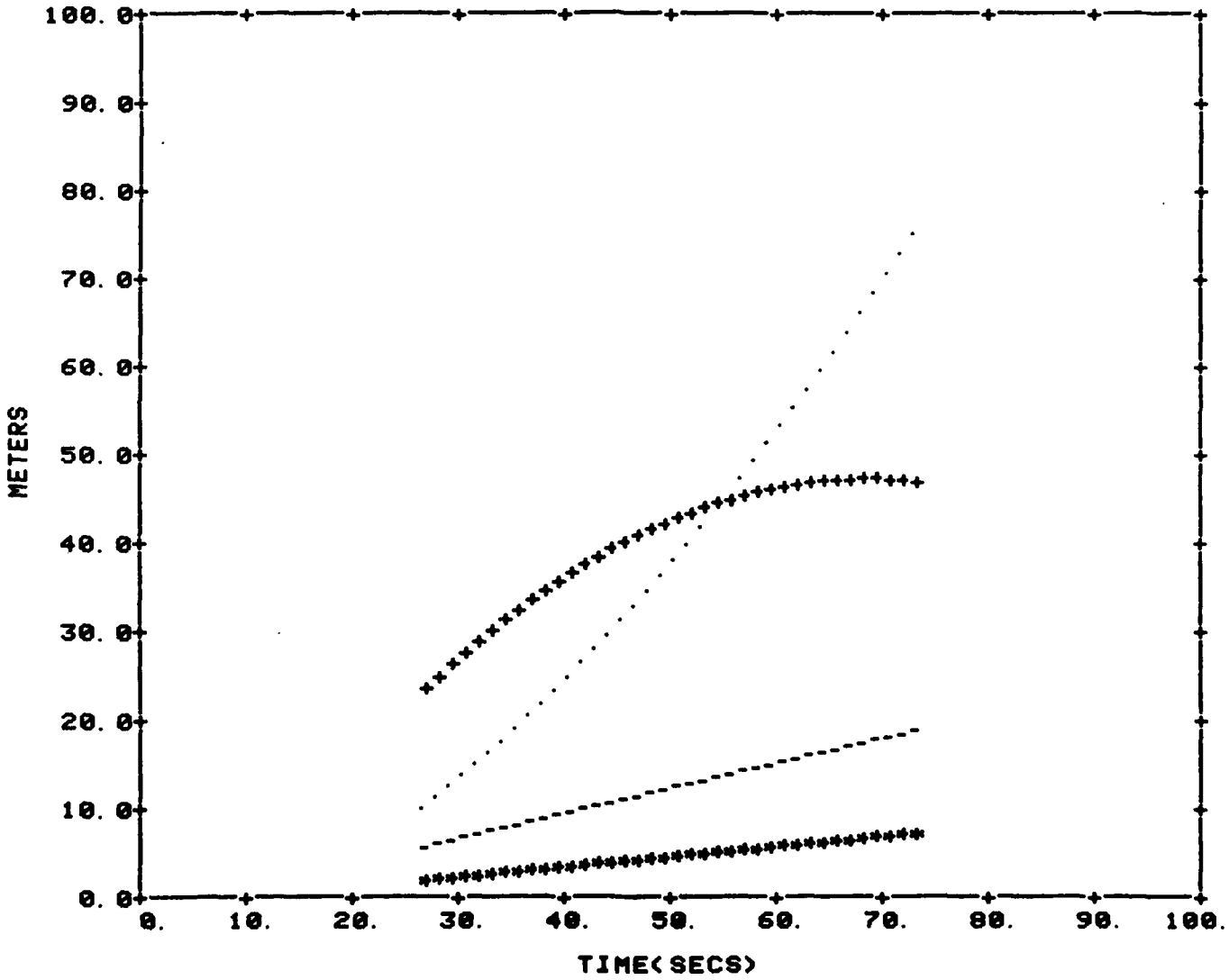
SMOKE III EGLIN AFB, FLA.

EVENT 19 TIME 2145Z DATE 081580

XM49 FOG OIL SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

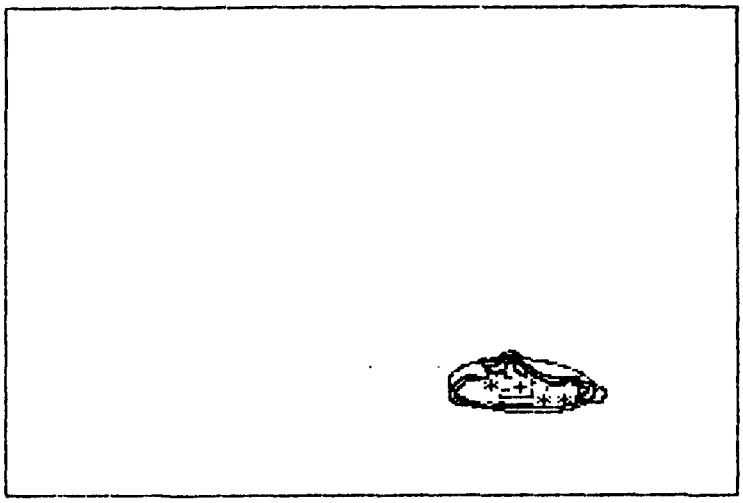
.....TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 19

2145 Z 08-15-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 40.0



HEIGHT(ABOVE DETONATION PT.) =	11.0M	HEIGHT OF CENTROID=	3.M
WIDTH(MAX. HORIZONTAL EXTENT)=	31.0M	LATERAL OFFSET =	-7.M
VERTICAL EXTENT =	14.0M	AXES =	29., 13 M
AREA =	176.8SQM	INCLINATION =	5.3 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 4.M OFFSET= -13.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 8.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 27.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= -5 M

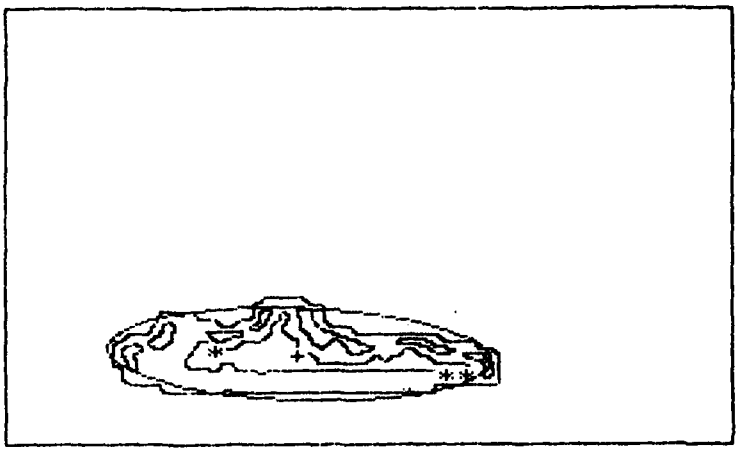
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 19A

2145 Z 08-15-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 40.0



HEIGHT(ABOVE DETONATION PT.) =	10.0M	HEIGHT OF CENTROID=	2.M
WIDTH(MAX. HORIZONTAL EXTENT)=	41.0M	LATERAL OFFSET	= -17.M
VERTICAL EXTENT =	12.0M	AXES	= 41., 12.M
AREA =	146.3SQM	INCLINATION	= 2.6 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 3.M OFFSET= -26.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 34.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 41.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= -1.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA.

EVENT 20. TIME 2242Z DATE 081580

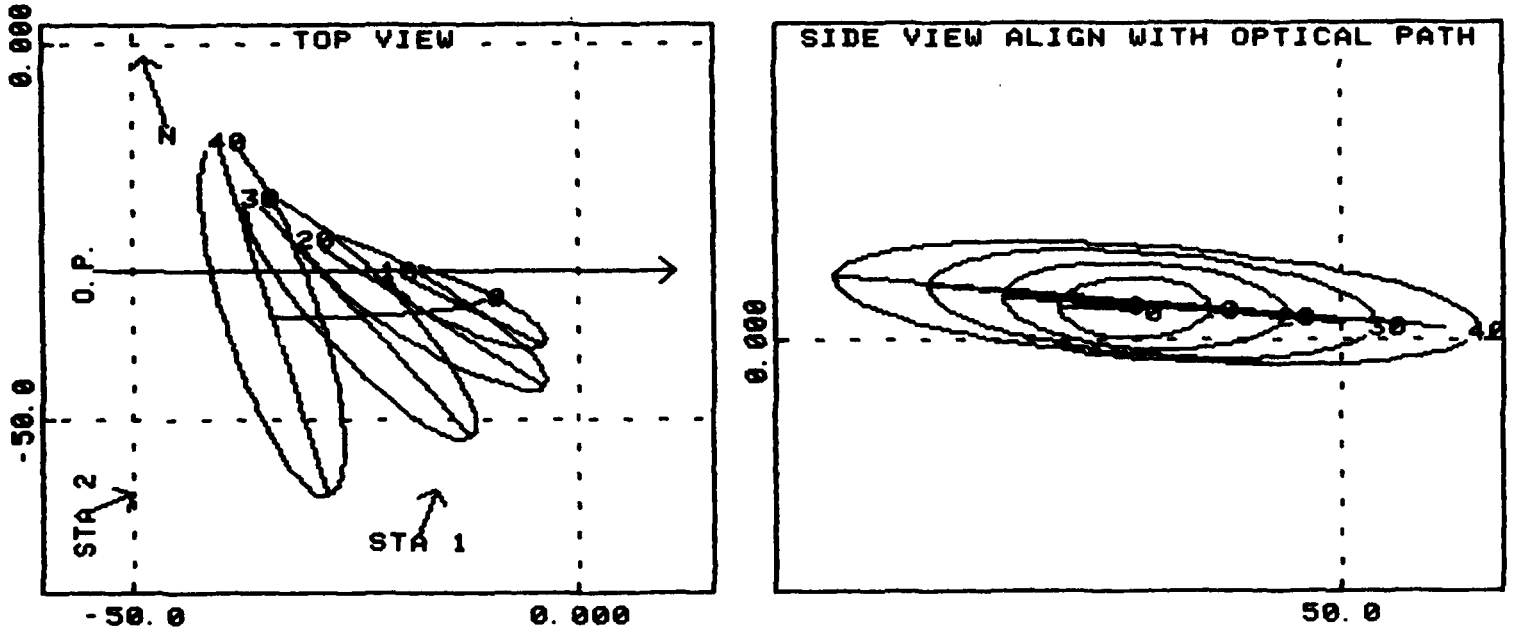
XM49 IR#2 SENSOR 0.5-0.7

	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECTIVE			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	3.7	1.8	2.0	2.7	-6.1	0.0	3.2	2.7	0.0	0.0
1.0	4.0	3.3	2.5	6.6	-6.0	0.0	11.8	2.7	230.4	0.1
2.0	4.5	5.6	3.4	15.1	-5.9	0.0	40.6	2.7	239.2	0.1
3.0	4.9	7.8	4.2	25.6	-5.8	0.0	88.2	2.8	246.3	0.2
4.0	5.2	9.9	4.9	38.0	-5.7	2.9	155.8	2.8	251.9	0.2
5.0	5.5	12.0	5.5	51.4	-5.6	4.6	240.2	2.8	256.4	0.2
6.0	5.1	7.7	4.6	27.5	-5.5	0.0	139.5	2.8	260.1	0.2
7.0	5.3	8.5	4.9	32.4	-5.4	0.0	182.7	2.8	263.0	0.3
8.0	5.4	9.3	5.1	37.3	-5.3	0.0	228.5	2.9	265.5	0.3
9.0	5.6	10.1	5.4	43.0	-5.3	2.2	283.1	2.9	267.6	0.3
10.0	5.7	11.0	5.7	48.8	-5.2	4.0	339.5	2.9	269.3	0.3
11.0	5.9	11.9	5.9	55.4	-5.1	5.3	403.9	2.9	270.9	0.4
12.0	6.0	12.7	6.2	61.8	-5.0	6.2	467.2	2.9	272.2	0.4
13.0	6.2	13.7	6.5	69.2	-4.9	7.0	540.6	3.0	273.3	0.4
14.0	6.3	14.6	6.7	76.7	-4.8	7.7	614.9	3.0	274.3	0.4
15.0	6.5	15.6	7.0	84.7	-4.8	8.2	692.9	3.0	275.2	0.5
16.0	6.6	16.6	7.2	93.0	-4.7	8.7	771.6	3.0	276.0	0.5
17.0	6.8	17.5	7.4	101.5	-4.6	9.1	851.4	3.0	276.8	0.5
18.0	6.9	18.6	7.7	110.8	-4.5	9.4	937.1	3.1	277.4	0.5
19.0	7.1	19.6	7.9	120.6	-4.5	9.7	1027.3	3.1	278.0	0.6
20.0	7.2	20.7	8.1	130.3	-4.4	9.8	1110.1	3.1	278.5	0.6
21.0	7.3	21.8	8.4	140.8	-4.3	10.0	1199.1	3.1	279.0	0.6
22.0	7.4	22.9	8.6	151.4	-4.3	10.1	1286.5	3.1	279.5	0.6
23.0	7.6	24.1	8.8	162.6	-4.2	10.2	1376.4	3.2	279.9	0.7
24.0	7.7	25.3	9.0	174.0	-4.2	10.3	1465.6	3.2	280.3	0.7
25.0	7.8	26.5	9.2	185.6	-4.1	10.3	1550.1	3.2	280.6	0.7
26.0	7.9	27.7	9.5	198.0	-4.1	10.3	1642.8	3.2	281.0	0.7
27.0	8.1	28.9	9.7	210.5	-4.0	10.3	1731.3	3.2	281.3	0.8
28.0	8.2	30.2	9.9	223.5	-4.0	10.3	1821.2	3.2	281.6	0.8
29.0	8.3	31.5	10.1	236.6	-3.9	10.3	1908.3	3.3	281.8	0.8
30.0	8.4	32.8	10.2	249.3	-3.9	10.2	1983.4	3.3	282.1	0.8
31.0	8.5	34.1	10.4	263.7	-3.8	10.2	2082.1	3.3	282.3	0.9
32.0	8.6	35.5	10.6	276.9	-3.8	10.1	2157.1	3.3	282.5	0.9
33.0	8.7	36.9	10.8	291.6	-3.8	10.1	2251.4	3.3	282.8	0.9
34.0	8.8	38.3	10.9	305.6	-3.7	10.0	2331.3	3.3	283.0	1.0
35.0	8.9	39.7	11.0	319.6	-3.7	9.9	2410.4	3.4	283.1	1.0
36.0	9.0	41.2	11.2	334.3	-3.7	9.9	2498.6	3.4	283.3	1.0
37.0	9.0	42.7	11.3	348.9	-3.6	9.8	2583.9	3.4	283.5	1.0
38.0	9.1	44.2	11.4	362.8	-3.6	9.8	2657.8	3.4	283.7	1.1
39.0	9.2	45.7	11.5	378.7	-3.6	9.8	2765.2	3.4	283.8	1.1
40.0	9.2	47.3	11.5	392.9	-3.6	9.7	2843.7	3.4	284.0	1.1

SMOKE III EGLIN AFB, FLA.

EVENT 20
XM49 IR#2

TIME 2242Z DATE 081580
SENSOR 0.5-0.7



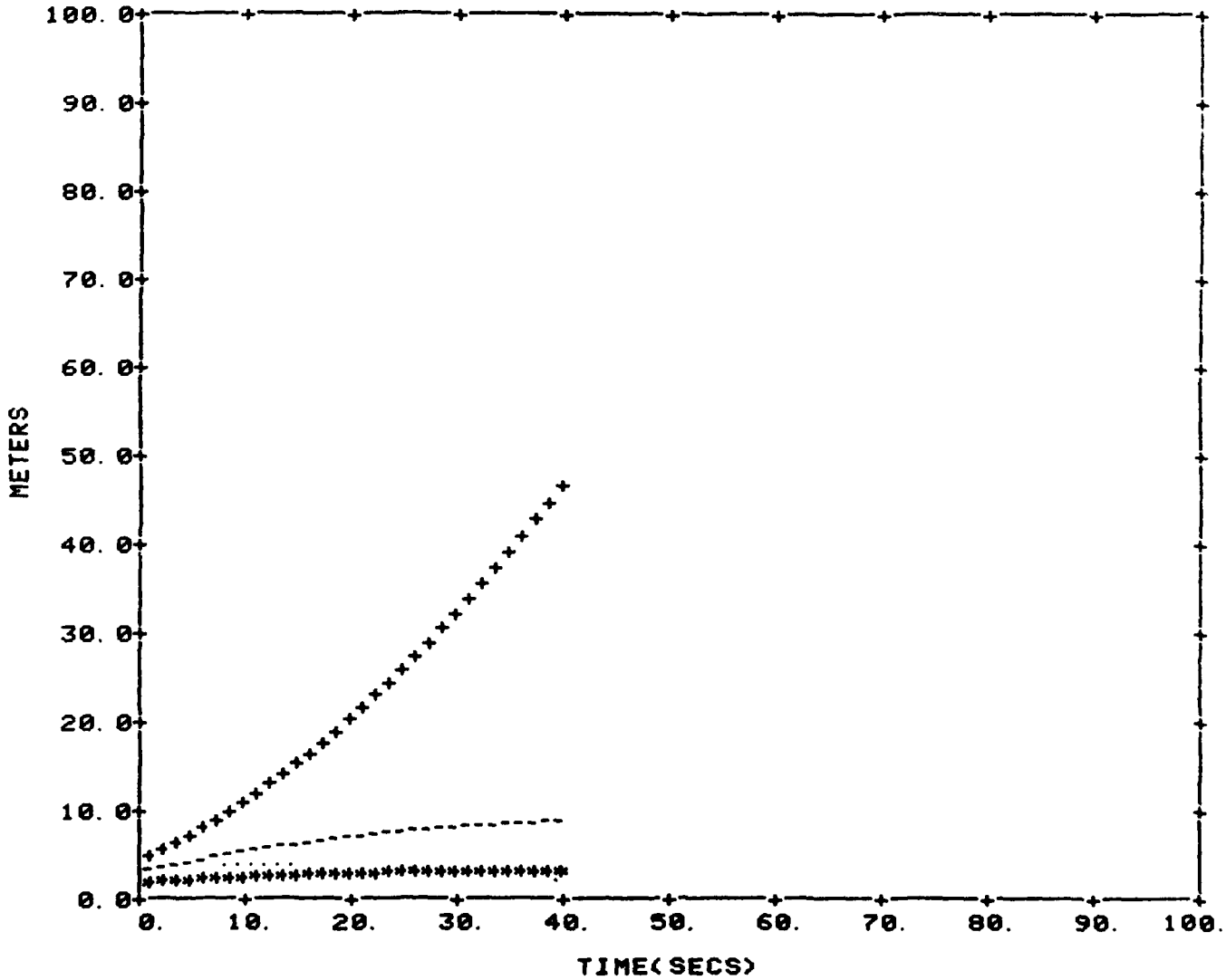
SMOKE III EGLIN AFB, FLA.

EVENT 20 TIME 2242Z DATE 081580

XM49 IR#2 SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC

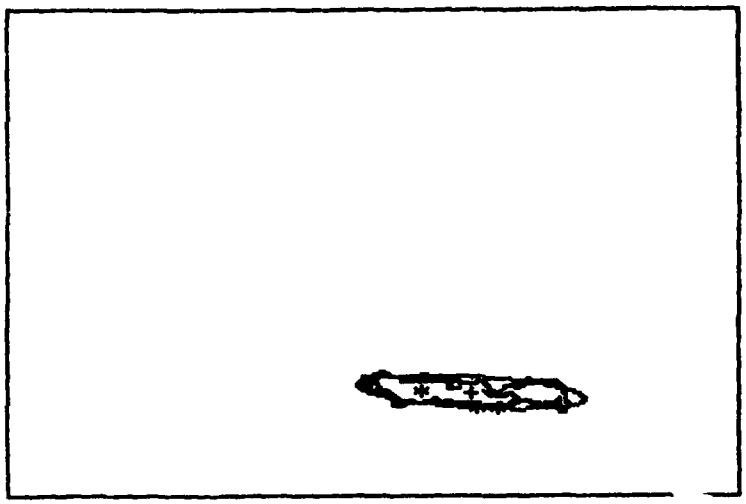


------HEIGHT ABOVE DET. PT.
++++++WIDTH
.....TRANSPORT
******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 20

2242 Z 08-15-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 22.0



HEIGHT(ABOVE DETONATION PT.) =	8.0M	HEIGHT OF CENTROID=	4.M
WIDTH(MAX. HORIZONTAL EXTENT)=	41.0M	LATERAL OFFSET =	-4.M
VERTICAL EXTENT =	10.0M	AXES =	46., 7.M
AREA =	240.5SQM	INCLINATION =	4.5 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 4.M OFFSET= -14.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 0.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 40.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

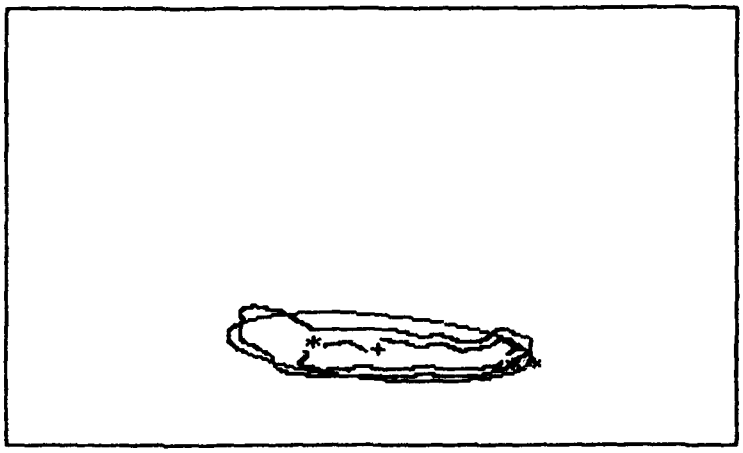
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 20

2242 Z 08-15-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 22.0



HEIGHT(ABOVE DETONATION PT.) =	7.0M	HEIGHT OF CENTROID=	2.M
WIDTH(MAX. HORIZONTAL EXTENT)=	31.0M	LATERAL OFFSET	= -16.M
VERTICAL EXTENT =	9.0M	AXES	= 33., 8.M
AREA =	152.0SQM	INCLINATION	= 5.6 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 3.M OFFSET= -23.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 7.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 31.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA.

EVENT 22 TIME 1850Z DATE 081680

HC 1ROUND(4CANNISTERS) SENSOR 0.5-0.7

	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECTIVE			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	2.6	7.5	3.6	20.7	0.2	0.0	66.6	0.8	0.0	0.0
1.0	3.1	8.4	4.2	27.4	-0.7	0.0	100.5	1.0	54.5	1.2
2.0	3.7	9.4	4.8	34.7	-1.7	0.0	141.3	1.3	56.0	1.2
3.0	4.2	10.5	5.3	43.5	-2.6	0.0	197.3	1.5	57.3	1.3
4.0	4.7	11.6	5.9	53.5	-3.6	0.0	266.6	1.7	58.5	1.4
5.0	5.2	12.9	6.4	64.8	-4.6	0.0	353.2	1.9	59.7	1.4
6.0	5.6	14.3	7.0	77.3	-5.6	0.0	456.6	2.1	60.7	1.5
7.0	6.1	15.7	7.5	92.2	-6.7	0.0	593.0	2.3	61.6	1.5
8.0	6.5	17.2	8.1	108.2	-7.8	0.0	750.9	2.5	62.5	1.6
9.0	7.0	18.8	8.6	126.0	-8.9	0.0	939.4	2.7	63.3	1.7
10.0	7.4	20.4	9.1	145.3	-10.0	0.0	1161.3	2.8	64.0	1.7
11.0	7.8	22.3	9.6	166.7	-11.2	0.0	1419.1	3.0	64.7	1.8
12.0	8.1	24.1	10.1	189.0	-12.4	0.0	1704.0	3.1	65.3	1.9
13.0	8.5	26.1	10.6	213.8	-13.6	0.0	2039.7	3.2	65.9	1.9
14.0	8.8	28.1	11.0	239.0	-14.9	0.0	2395.3	3.3	66.5	2.0
15.0	9.1	30.3	11.4	267.2	-16.2	0.0	2815.2	3.4	67.0	2.1
16.0	9.4	32.5	11.8	296.4	-17.5	0.0	3264.5	3.5	67.5	2.1
17.0	9.7	34.8	12.2	327.1	-18.8	0.0	3752.9	3.6	67.9	2.2
18.0	9.9	37.2	12.5	358.7	-20.1	0.0	4270.6	3.6	68.3	2.3
19.0	10.1	39.7	12.8	391.0	-21.5	0.0	4809.2	3.7	68.7	2.3
20.0	10.3	42.3	13.1	425.7	-22.9	0.0	5407.0	3.7	69.1	2.4
21.0	10.4	45.0	13.3	461.5	-24.4	0.0	6033.3	3.8	69.5	2.5
22.0	10.6	47.8	13.6	498.8	-25.8	0.0	6702.9	3.8	69.8	2.5

AD-A111 759 ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND WS--ETC F/G 20/6
CLOUD GEOMETRY ANALYSIS OF THE SMOKE WEEK III OBSCURATION TRIAL--ETC(U)
JAN 82 G R BLACKMAN
UNCLASSIFIED ERADCOM/ASL-TR-0103 NL

2 OF 3
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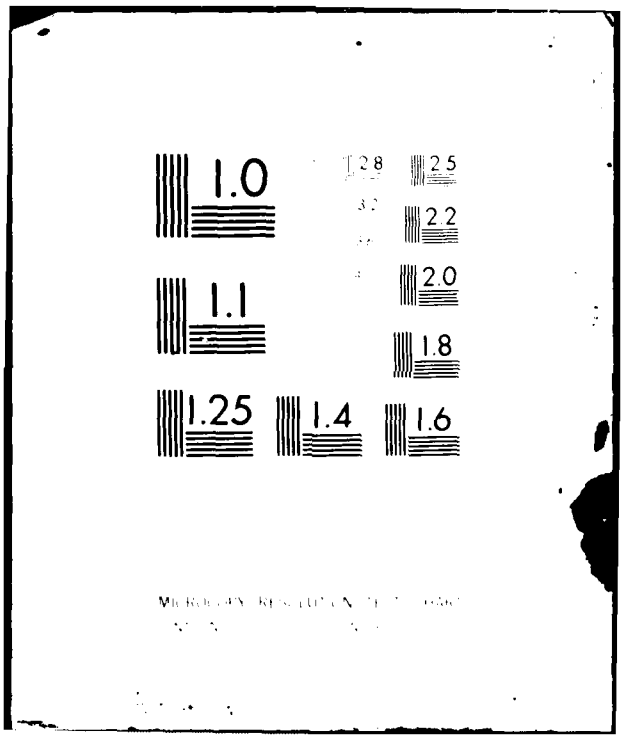
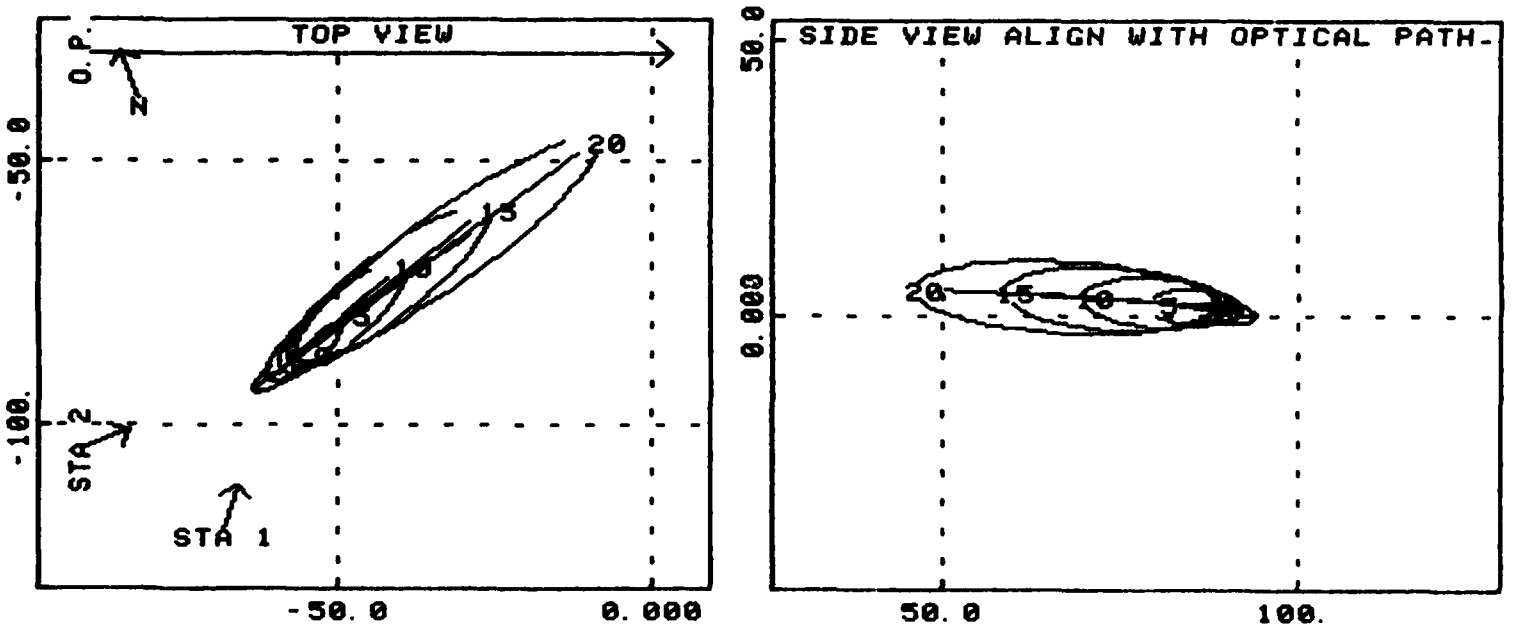

1.0
2.8
2.5
2.2
2.0
1.1
1.8
1.25
1.4
1.6

SMOKE III EGLIN AFB, FLA.

EVENT 22 TIME 1850Z DATE 081680

HC 1ROUND(4CANNISTERS) SENSOR 0.5-0.7



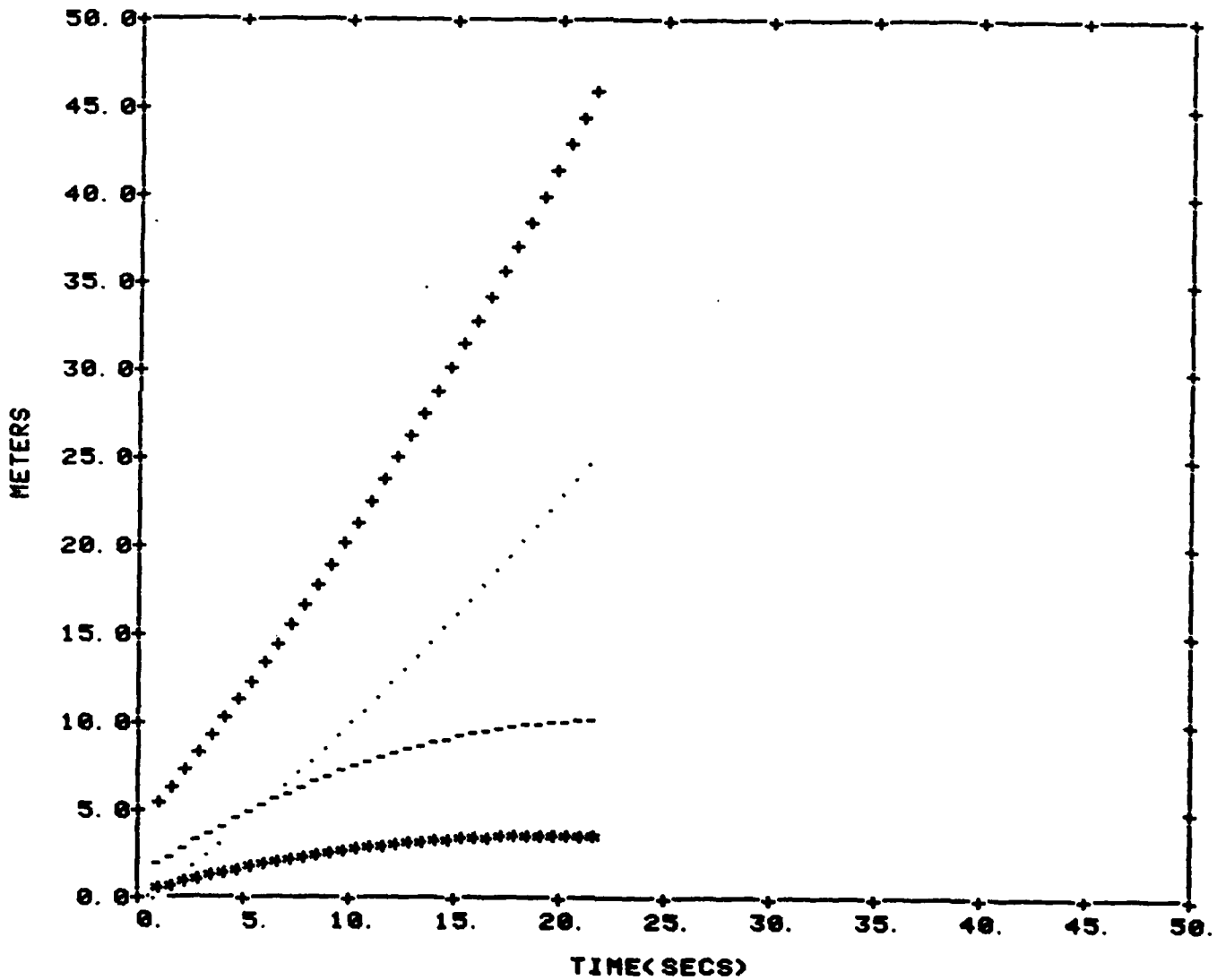
SMOKE III EGLIN AFB, FLA.

EVENT 22 TIME 1850Z DATE 081680

HC 1ROUND(4CANNISTERS) SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

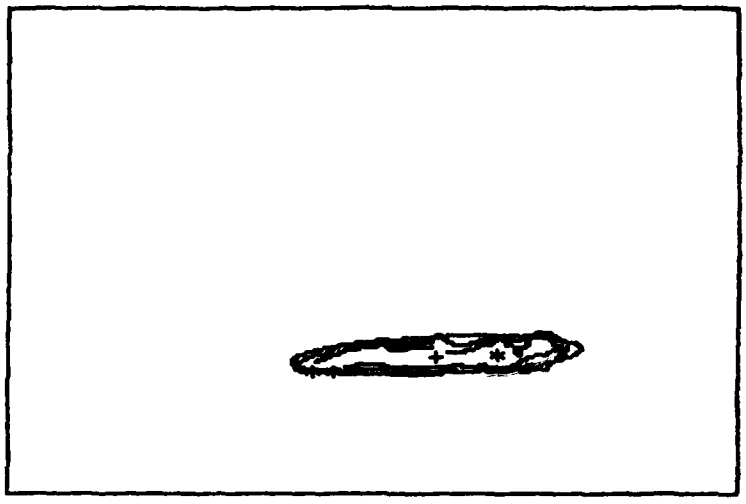
.....TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 22

1850 Z 08-16-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 22.0



HEIGHT(ABOVE DETONATION PT.) =	9.0M	HEIGHT OF CENTROID=	4.M
WIDTH(MAX. HORIZONTAL EXTENT)=	55.0M	LATERAL OFFSET =	22.M
VERTICAL EXTENT =	9.0M	AXES =	58., 9.M
AREA =	401.9SQM	INCLINATION =	-3.1 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 4.M OFFSET= 35.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 3.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING E[illegible] 48.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS 4.M

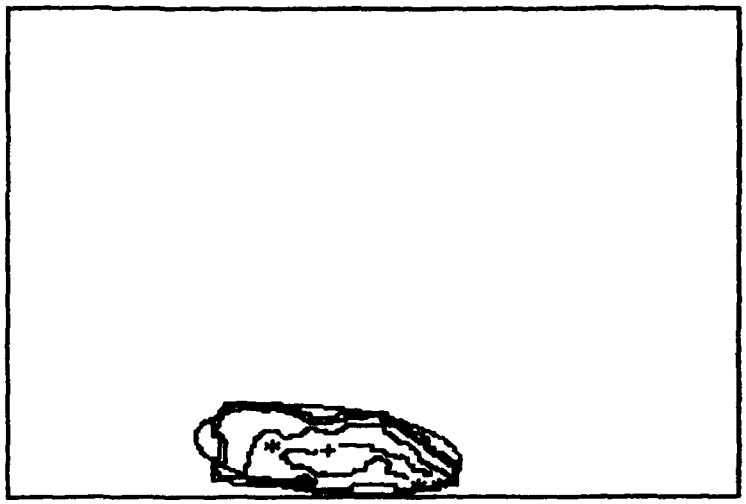
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 22

1850 Z 08-16-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 22.0



HEIGHT(ABOVE DETONATION PT.) =	10.0M	HEIGHT OF CENTROID=	4.M
WIDTH(MAX. HORIZONTAL EXTENT)=	26.0M	LATERAL OFFSET =	-11.M
VERTICAL EXTENT =	11.0M	AXES =	28., 11.M
AREA =	156.6SQM	INCLINATION =	7.7 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 5.M OFFSET= -17.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 22.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 22.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA.

EVENT 23 TIME 2007Z DATE 081680

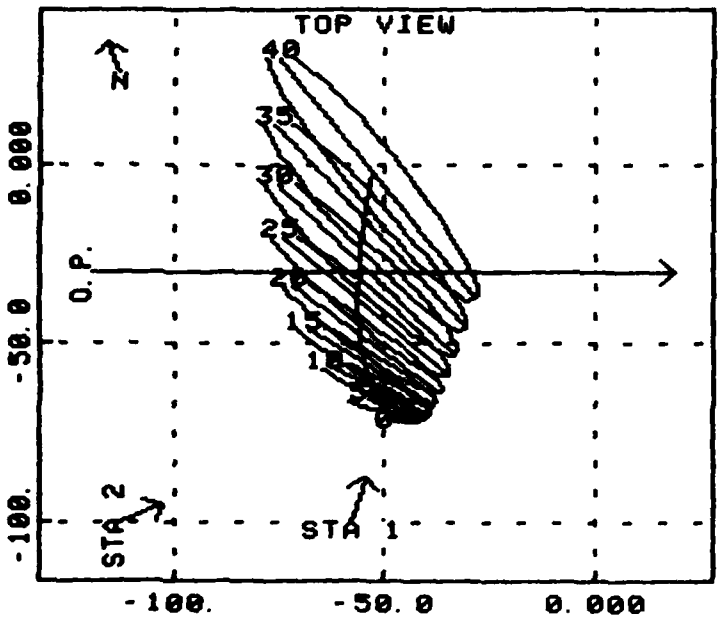
M8 GRENADES MODIFIED RP FILLED SENSOR 0.5-0.7

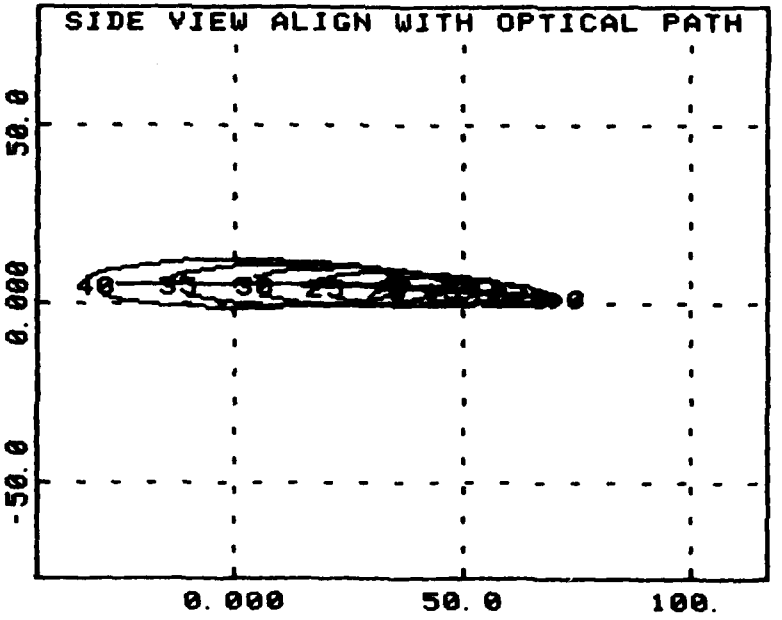
	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECTIVE			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	2.5	3.0	3.1	7.2	0.9	0.0	66.1	1.0	0.0	0.0
1.0	2.8	3.7	3.3	9.7	0.3	0.0	87.2	1.1	328.9	0.9
2.0	3.1	4.8	3.6	13.3	-0.4	0.0	111.3	1.3	332.4	1.0
3.0	3.4	6.0	3.8	17.8	-1.2	0.0	139.4	1.5	335.7	1.0
4.0	3.7	7.4	4.1	23.1	-2.0	0.0	173.1	1.6	338.9	1.0
5.0	4.0	8.8	4.4	29.2	-2.9	0.0	210.8	1.8	341.9	1.0
6.0	4.2	10.3	4.6	35.7	-3.8	0.0	252.1	1.9	344.7	1.1
7.0	4.5	11.8	4.8	43.3	-4.8	0.0	303.0	2.1	347.4	1.1
8.0	4.8	13.3	5.1	51.3	-5.8	0.0	357.6	2.2	349.9	1.1
9.0	5.1	14.9	5.3	59.8	-6.9	0.0	417.4	2.4	352.2	1.2
10.0	5.3	16.5	5.6	69.2	-8.1	0.0	485.5	2.5	354.4	1.2
11.0	5.6	18.1	5.8	79.5	-9.3	0.0	562.8	2.7	356.5	1.3
12.0	5.9	19.7	6.1	90.2	-10.5	0.0	645.0	2.8	358.4	1.3
13.0	6.1	21.3	6.3	101.5	-11.8	0.0	733.2	3.0	0.2	1.3
14.0	6.4	23.0	6.6	114.2	-13.2	0.0	837.5	3.1	1.9	1.4
15.0	6.6	24.6	6.8	127.5	-14.6	0.0	942.6	3.3	3.4	1.4
16.0	6.9	26.3	7.0	141.8	-16.0	0.0	1065.4	3.4	4.9	1.5
17.0	7.2	28.0	7.3	156.5	-17.6	0.0	1193.9	3.5	6.3	1.5
18.0	7.4	29.7	7.6	172.1	-19.1	0.0	1333.9	3.6	7.6	1.6
19.0	7.7	31.4	7.8	188.5	-20.8	0.0	1484.3	3.8	8.8	1.6
20.0	7.9	33.2	8.1	205.5	-22.4	0.0	1642.2	3.9	10.0	1.7
21.0	8.2	34.9	8.3	223.9	-24.2	0.0	1821.8	4.0	11.0	1.7
22.0	8.4	36.7	8.6	243.3	-26.0	3.2	2014.9	4.1	12.0	1.8
23.0	8.7	38.5	8.9	263.5	-27.8	6.6	2218.9	4.3	13.0	1.8
24.0	8.9	40.3	9.1	284.4	-29.7	8.4	2434.2	4.4	13.9	1.9
25.0	9.2	42.1	9.4	306.0	-31.7	9.6	2660.7	4.5	14.8	1.9
26.0	9.4	44.0	9.6	328.6	-33.7	10.5	2901.1	4.6	15.6	2.0
27.0	9.6	45.8	9.9	352.4	-35.7	11.2	3161.4	4.7	16.3	2.1
28.0	9.9	47.7	10.2	377.2	-37.8	11.6	3439.1	4.8	17.1	2.1
29.0	10.1	49.6	10.4	402.7	-40.0	11.9	3726.4	4.9	17.8	2.2
30.0	10.3	51.5	10.7	429.6	-42.2	12.1	4038.9	5.0	18.4	2.2
31.0	10.6	53.4	11.0	457.7	-44.5	12.2	4375.0	5.1	19.0	2.3
32.0	10.8	55.3	11.3	486.8	-46.8	12.1	4726.8	5.2	19.6	2.3
33.0	11.1	57.3	11.6	517.7	-49.2	11.9	5110.3	5.3	20.2	2.4
34.0	11.3	59.2	11.8	548.7	-51.6	11.6	5497.0	5.4	20.7	2.4
35.0	11.5	61.2	12.1	581.4	-54.1	11.2	5917.4	5.5	21.2	2.5
36.0	11.7	63.2	12.4	614.2	-56.7	10.6	6339.2	5.6	21.7	2.6
37.0	12.0	65.2	12.7	649.0	-59.3	9.9	6801.9	5.6	22.2	2.6
38.0	12.2	67.2	13.0	685.0	-61.9	9.0	7287.1	5.7	22.7	2.7
39.0	12.4	69.2	13.3	721.8	-64.6	7.8	7788.4	5.8	23.1	2.7
40.0	12.7	71.3	13.6	760.9	-67.4	6.1	8337.9	5.9	23.5	2.8

SMOKE III EGLIN AFB, FLA.

EVENT 23 TIME 2007Z DATE 081680

M8 GRENADES MODIFIED RP FILLED SENSOR 0.5-0.7





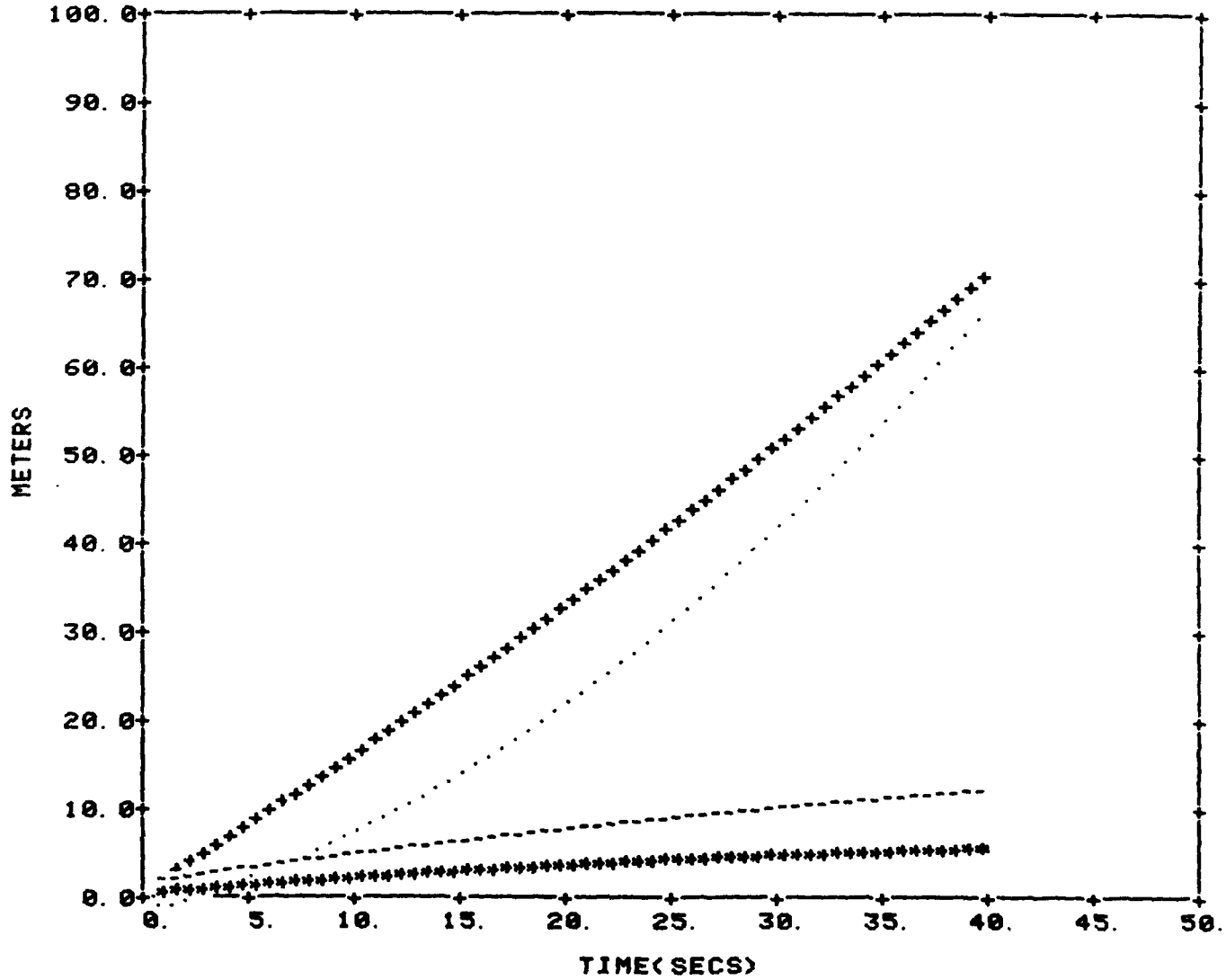
SMOKE III EGLIN AFB, FLA.

EVENT 23 TIME 2007Z DATE 081680

MB GRENADES MODIFIED RP FILLED SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

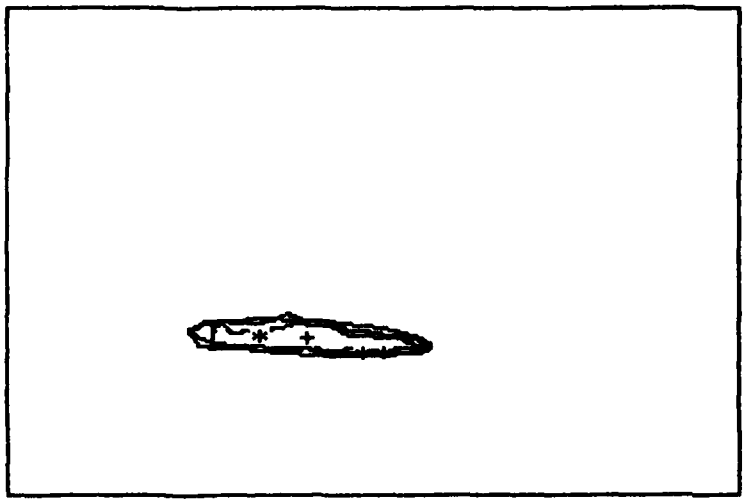
.....TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 23

2007 Z 08-16-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 22.0



HEIGHT(ABOVE DETONATION PT.) =	9.0M	HEIGHT OF CENTROID=	4.M
WIDTH(MAX. HORIZONTAL EXTENT)=	48.0M	LATERAL OFFSET	= -14.M
VERTICAL EXTENT =	9.0M	AXES	= 47., 8.M
AREA =	328.4SQM	INCLINATION	= 4.1 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 4.M OFFSET= -23.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 1.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 38.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)=-19.M

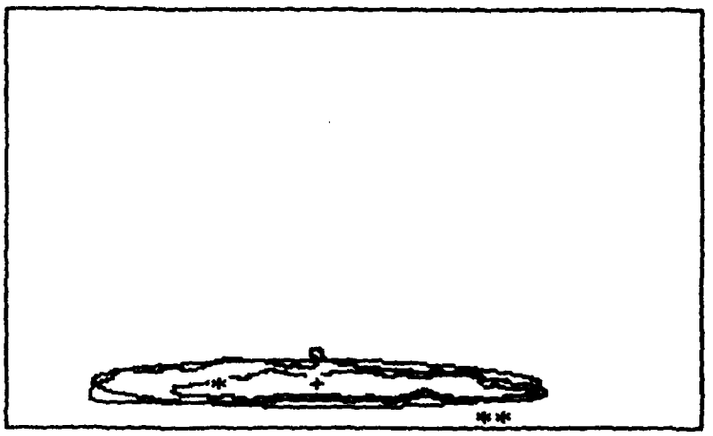
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 23

2007 Z 08-16-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 22.0



HEIGHT(ABOVE DETONATION PT.) =	9.0M	HEIGHT OF CENTROID=	4.M
WIDTH(MAX. HORIZONTAL EXTENT)=	51.0M	LATERAL OFFSET	= -20.M
VERTICAL EXTENT =	7.0M	AXES	= 50., 6.M
AREA =	312.78QM	INCLINATION	= 0.5 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 4.M OFFSET= -31.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 45.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 49.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= -1.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA

EVENT 24 TIME 2036Z DATE 081680

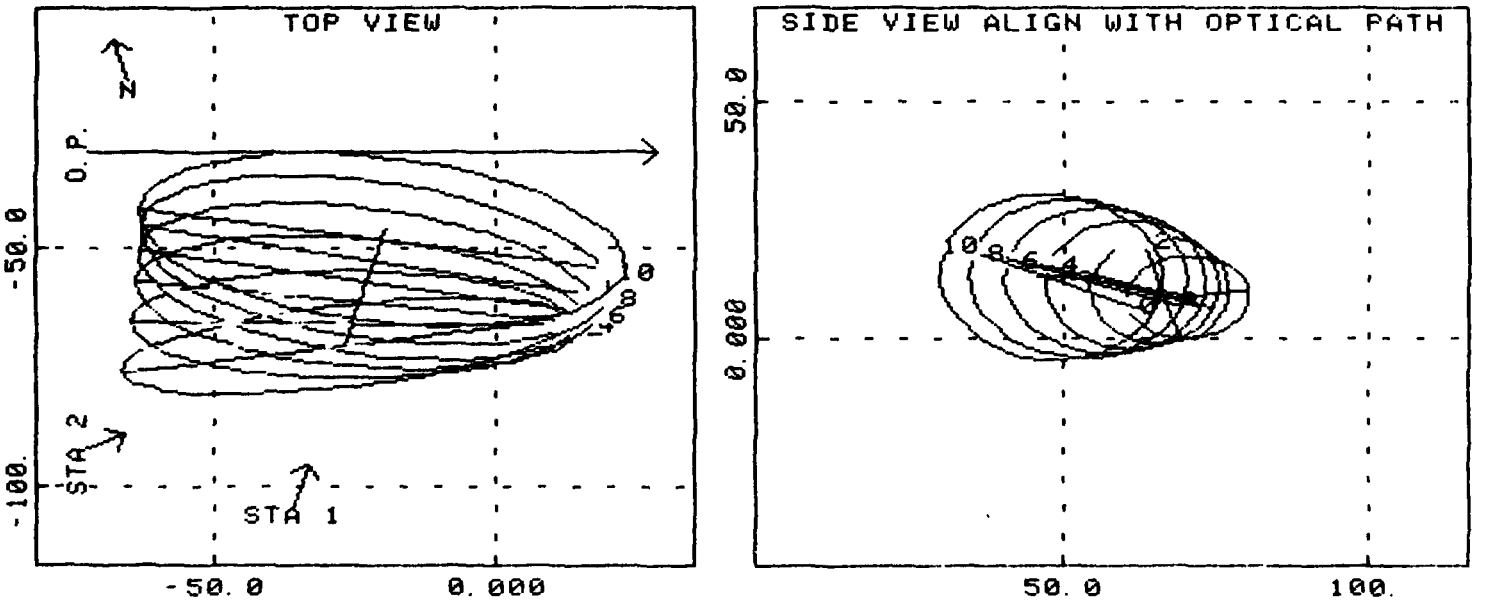
5 IN ZUNI(WP) 3 EA SENSOR 0 5-0 7

	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECTIVE			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	17.4	20.3	17.2	273.9	0.5	0.0	12338.4	8.8	0.0	2.0
1.0	19.6	20.5	20.0	322.0	-1.8	0.0	16500.8	9.6	32.3	2.4
2.0	21.6	22.6	22.6	401.6	-4.1	0.0	21079.3	10.2	32.1	2.4
3.0	23.4	25.4	25.0	498.3	-6.4	0.0	25807.2	10.9	32.0	2.4
4.0	25.0	28.2	27.2	602.3	-8.6	0.0	30711.7	11.4	31.9	2.4
5.0	26.4	30.8	29.1	702.7	-10.9	0.0	35535.5	11.8	31.8	2.3
6.0	27.6	32.9	30.8	794.0	-13.1	0.0	40205.0	12.2	31.7	2.3
7.0	28.6	34.5	32.2	872.8	-15.3	0.0	44641.8	12.5	31.6	2.3
8.0	29.4	35.6	33.3	931.1	-17.5	0.0	48415.0	12.8	31.4	2.3
9.0	30.0	36.2	34.2	972.8	-19.7	0.0	51763.4	12.9	31.3	2.3
10.0	30.4	36.4	34.8	996.3	-21.9	0.0	54480.4	13.0	31.2	2.3
11.0	30.6	36.2	35.2	998.0	-24.1	0.0	56284.5	13.0	31.1	2.3

SMOKE III EGLIN AFB, FLA.

EVENT 24 TIME 2036Z DATE 081680

5 IN. ZUNI(WP) 3 EA. SENSOR 0.5-0.7



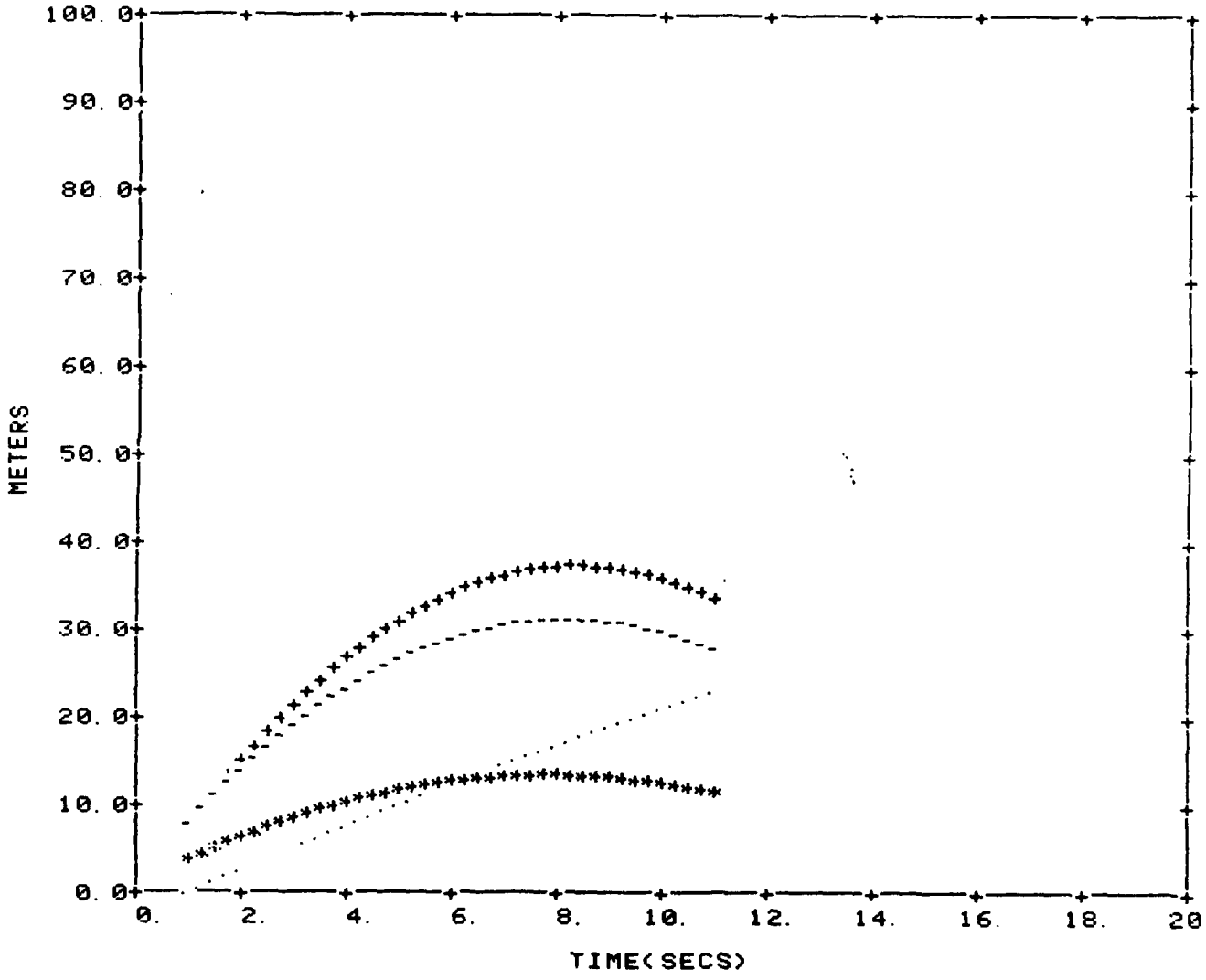
SMOKE III EGLIN AFB, FLA.

EVENT 24 TIME 2036Z DATE 081680

5 IN. ZUNI(WP) 3 EA. SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

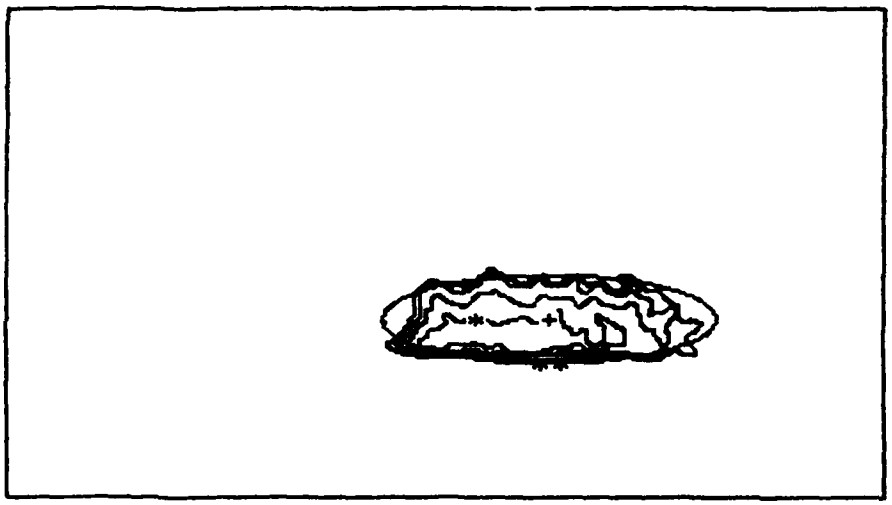
. . . . . TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 24

2036 Z 08-16-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 0.5



HEIGHT(ABOVE DETONATION PT.) =	22.0M	HEIGHT OF CENTROID=	11.M
WIDTH(MAX. HORIZONTAL EXTENT)=	63.0M	LATERAL OFFSET =	-1.M
VERTICAL EXTENT =	22.0M	AXES =	67., 21.M
AREA =	747.9SQM	INCLINATION =	0.0 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 11.M OFFSET= -15.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 59.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 59.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

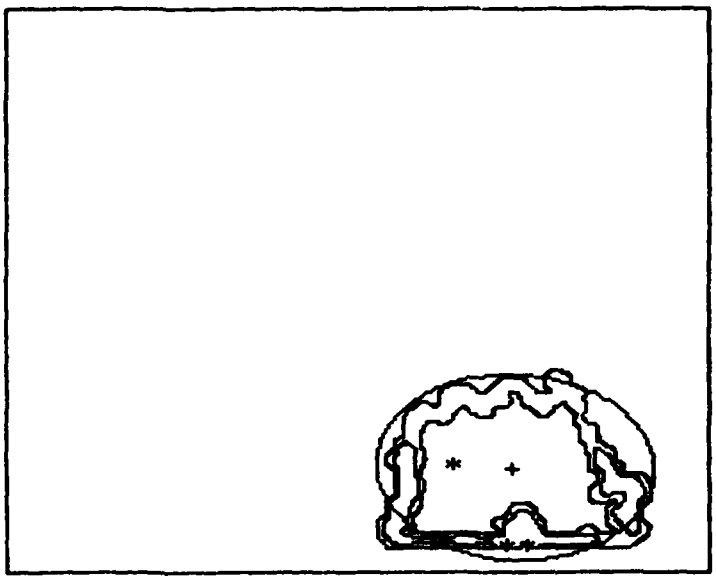
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 24

2036 Z 08-16-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 0.5



HEIGHT(ABOVE DETONATION PT.) =	22.0M	HEIGHT OF CENTROID=	10.M
WIDTH(MAX. HORIZONTAL EXTENT)=	29.0M	LATERAL OFFSET =	-1.M
VERTICAL EXTENT =	23.0M	AXES =	30., 23.M
AREA =	143.5SQM	INCLINATION =	5.0 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 10.M OFFSET= -7.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 28.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 25.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA.

EVENT 25 TIME 2146Z DATE 081680

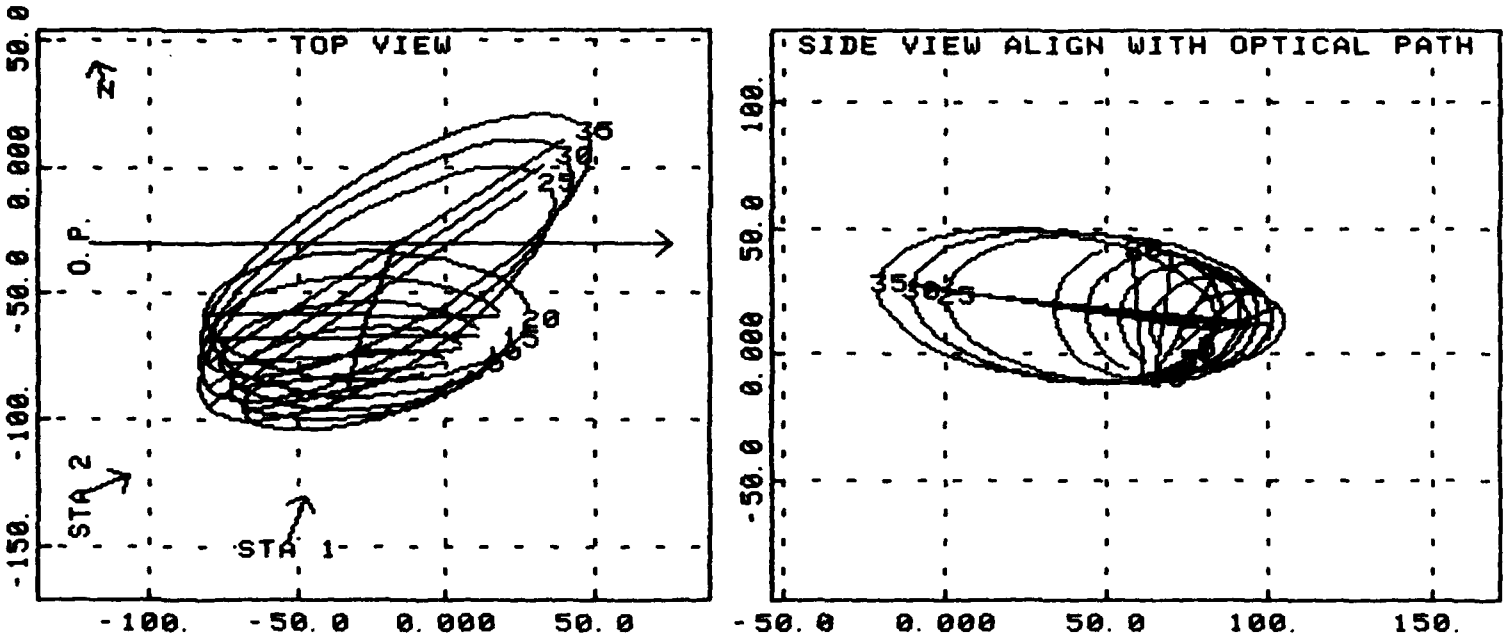
XM825 - 2 ROUNDS SENSOR 0.5-0.7

	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECTIVE			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	25.2	31.3	28.4	690.8	-1.6	0.0	28287.6	11.0	0.0	0.0
1.0	26.5	32.3	30.3	761.5	-2.9	0.0	33043.8	11.4	23.0	1.3
2.0	27.8	33.4	32.0	835.3	-4.2	0.0	38164.6	11.7	23.6	1.3
3.0	29.0	34.5	33.7	909.4	-5.5	0.0	43475.3	12.1	24.1	1.3
4.0	30.1	35.6	35.3	983.4	-6.8	0.0	48964.7	12.5	24.7	1.3
5.0	31.2	36.8	36.8	1060.6	-8.1	0.0	54770.3	12.8	25.2	1.4
6.0	32.3	37.9	38.3	1138.1	-9.5	0.0	60754.0	13.2	25.7	1.4
7.0	33.3	39.1	39.6	1216.2	-10.9	0.0	66937.0	13.5	26.2	1.4
8.0	34.3	40.2	41.0	1294.9	-12.3	0.0	73288.3	13.8	26.7	1.4
9.0	35.3	41.4	42.3	1374.9	-13.7	0.0	79863.0	14.2	27.1	1.5
10.0	36.2	42.5	43.4	1451.1	-15.2	0.0	86326.4	14.5	27.6	1.5
11.0	37.1	43.6	44.6	1528.0	-16.6	0.0	93004.2	14.8	28.0	1.5
12.0	37.9	44.7	45.7	1604.0	-18.1	0.0	99757.1	15.1	28.4	1.5
13.0	38.7	45.7	46.7	1677.0	-19.7	0.0	106446.8	15.4	28.8	1.6
14.0	39.5	46.7	47.7	1746.7	-21.2	0.0	113004.9	15.7	29.2	1.6
15.0	40.2	47.6	48.6	1816.0	-22.8	0.0	119706.1	15.9	29.6	1.6
16.0	40.9	48.4	49.4	1881.5	-24.4	0.0	126280.0	16.2	29.9	1.6
17.0	41.6	49.2	50.2	1941.5	-26.0	0.0	132563.2	16.5	30.3	1.7
18.0	42.2	50.0	51.0	2002.3	-27.6	0.0	139005.4	16.7	30.6	1.7
19.0	42.8	50.6	51.6	2055.0	-29.3	0.0	144988.0	16.9	31.0	1.7
20.0	43.3	51.3	52.3	2108.0	-30.9	0.0	151127.2	17.2	31.3	1.7
21.0	45.9	96.3	56.9	4264.0	-32.6	41.8	225931.5	17.4	31.6	1.8
22.0	46.4	97.6	57.5	4365.3	-34.3	46.0	233900.4	17.6	31.9	1.8
23.0	46.9	98.7	58.1	4457.5	-36.1	49.6	241273.4	17.8	32.2	1.8
24.0	47.3	99.8	58.5	4538.1	-37.8	52.6	247818.1	18.1	32.5	1.8
25.0	47.7	100.8	59.0	4615.8	-39.6	55.4	254312.2	18.2	32.7	1.9
26.0	48.1	101.6	59.3	4678.0	-41.4	57.7	259594.0	18.4	33.0	1.9
27.0	48.4	102.4	59.7	4737.1	-43.3	59.9	264812.0	18.6	33.3	1.9
28.0	48.7	103.1	59.9	4778.9	-45.1	61.6	268634.0	18.8	33.5	2.0
29.0	49.0	103.6	60.1	4815.8	-47.0	63.2	272222.6	19.0	33.8	2.0
30.0	49.2	104.0	60.1	4835.4	-48.9	64.5	274394.7	19.1	34.0	2.0
31.0	49.4	104.3	60.2	4849.9	-50.8	65.7	276333.2	19.3	34.3	2.0
32.0	49.5	104.5	60.2	4849.7	-52.8	66.6	277103.7	19.4	34.5	2.1
33.0	49.6	104.6	60.2	4838.4	-54.7	67.3	277077.7	19.5	34.7	2.1
34.0	49.7	104.5	60.0	4815.1	-56.7	67.9	276173.3	19.7	34.9	2.1
35.0	49.7	104.3	59.9	4784.9	-58.7	68.4	274886.8	19.8	35.2	2.1
36.0	49.7	103.9	59.7	4737.3	-60.7	68.6	272222.1	19.9	35.4	2.2

SMOKE III EGLIN AFB, FLA.

EVENT 25 TIME 2146Z DATE 081680

XM825 - 2 ROUNDS SENSOR 0.5-0.7



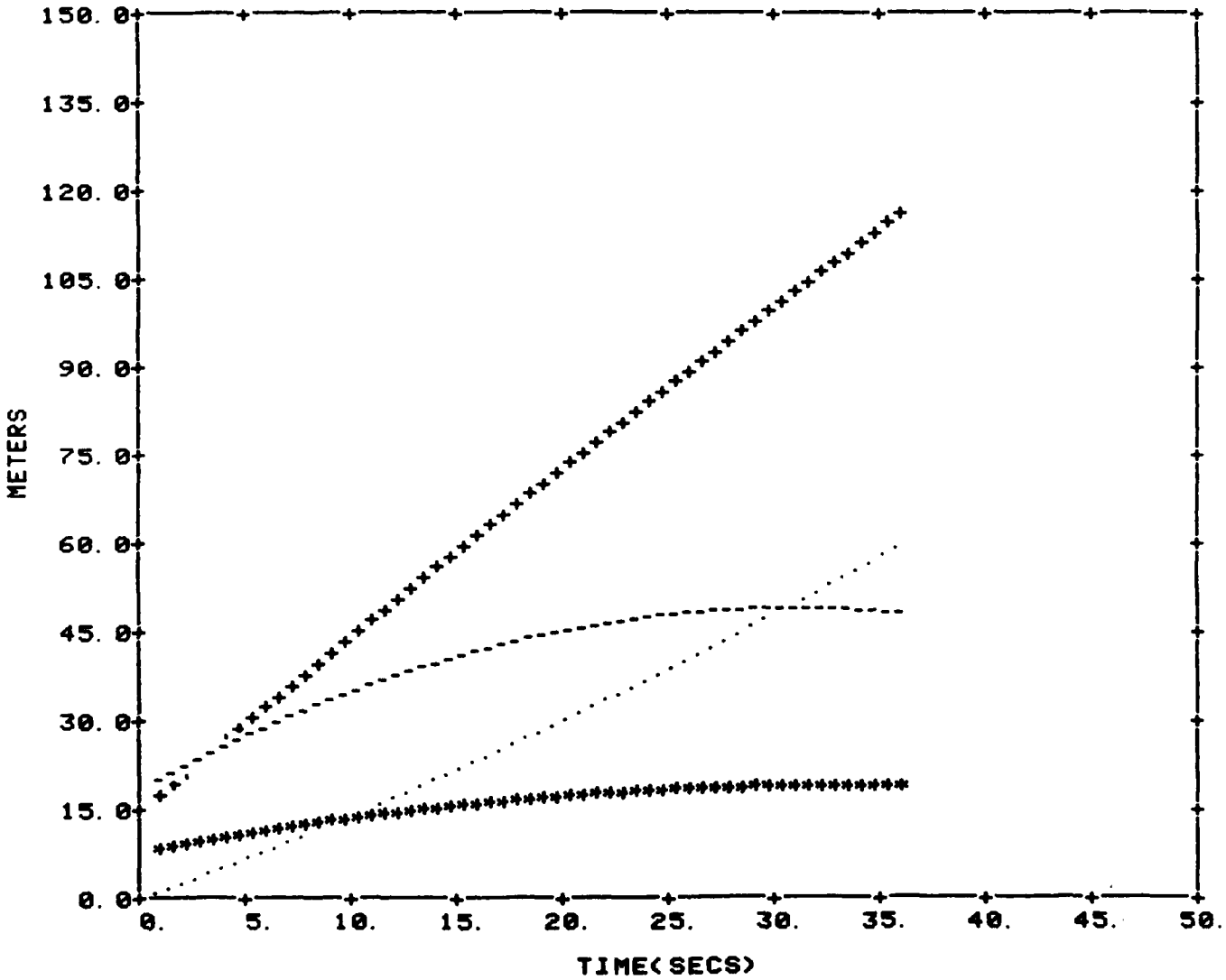
SMOKE III EGLIN AFB, FLA.

EVENT 25 TIME 2146Z DATE 081680

XM825 - 2 ROUNDS SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

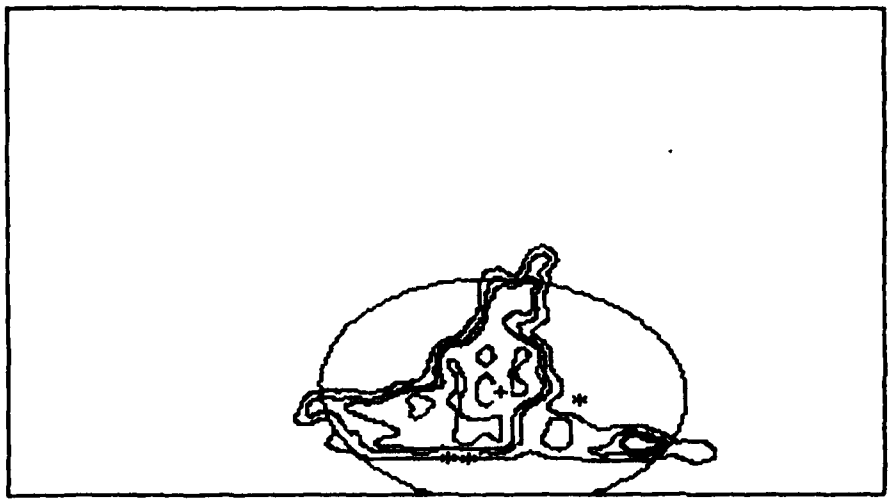
.....TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 25

2146 Z 08-16-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 6.0



HEIGHT(ABOVE DETONATION PT.) =	51.0M	HEIGHT OF CENTROID=	16.M
WIDTH(MAX. HORIZONTAL EXTENT)=	84.0M	LATERAL OFFSET =	8.M
VERTICAL EXTENT =	52.0M	AXES =	74., 34.M
AREA =	1314.7SQM	INCLINATION =	5.5 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 14.M OFFSET= 24.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 58.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 50.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= -6.M

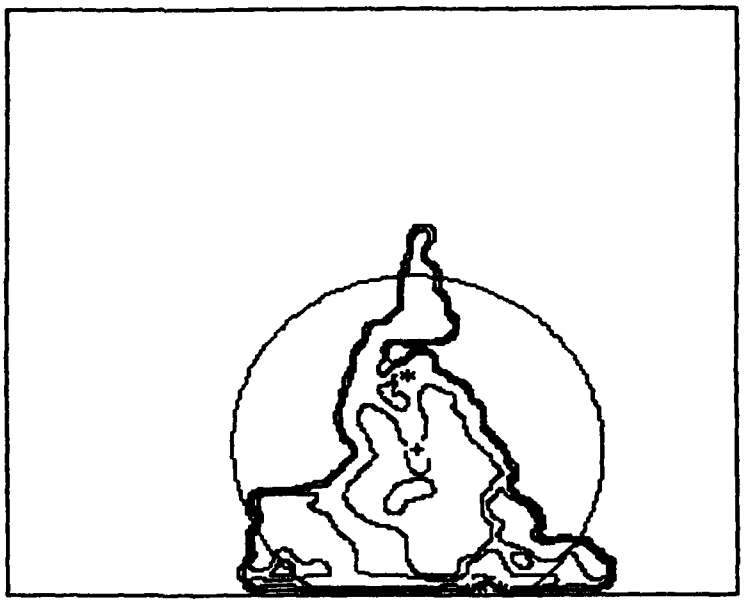
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 25

2146 Z 08-16-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 6.0



HEIGHT(ABOVE DETONATION PT.) =	46.0M	HEIGHT OF CENTROID=	18.M
WIDTH(MAX. HORIZONTAL EXTENT)=	40.0M	LATERAL OFFSET =	-8.M
VERTICAL EXTENT =	47.0M	AXES =	44., 39.M
AREA =	731.7SQM	INCLINATION =	85.3 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 27.M OFFSET= -9.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 37.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 17.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 11.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA

EVENT 26 TIME 2247Z DATE 081680

XM49 IR#2 SENSOR 0 5-0 7

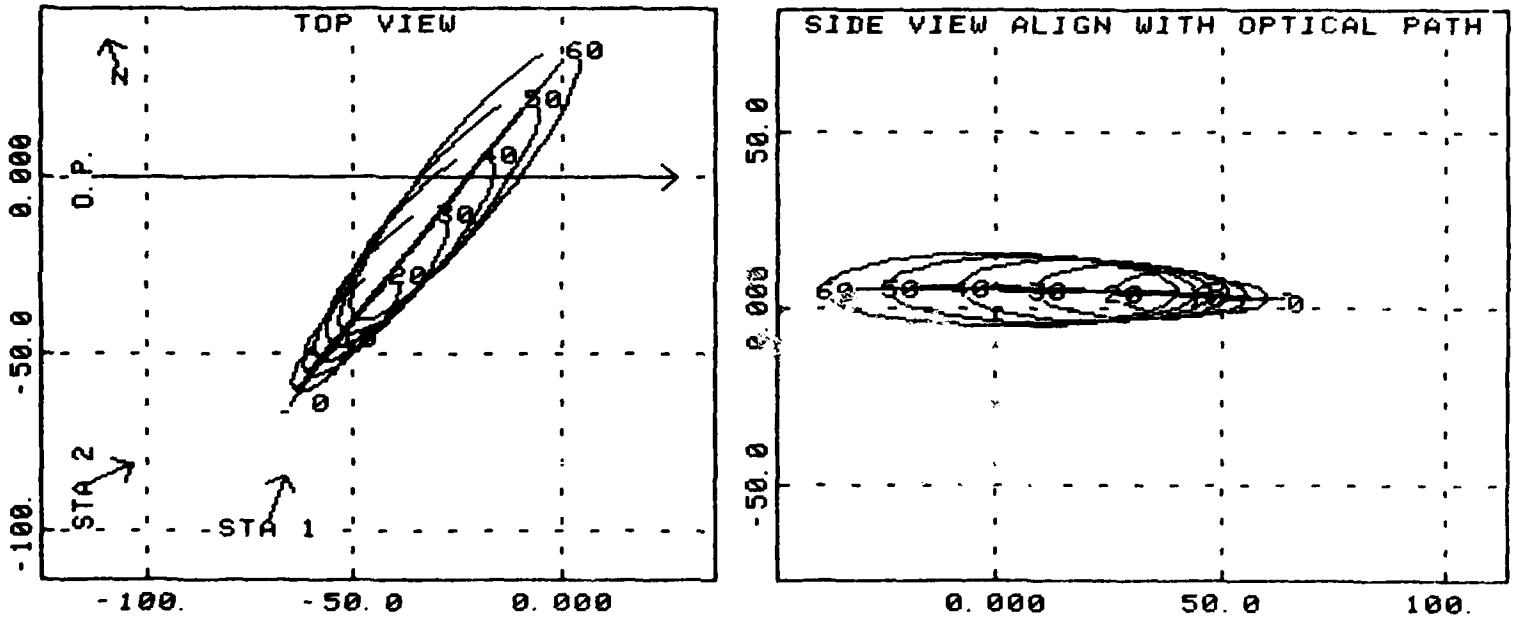
	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECTIVE			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	4.3	4.1	3.1	9.8	4.2	0.0	29.2	2.7	0.0	0.0
1.0	4.5	4.4	3.3	11.5	3.0	0.0	38.5	2.8	47.3	1.4
2.0	4.9	5.6	4.0	17.4	1.8	0.0	64.2	2.9	47.3	1.4
3.0	5.4	6.8	4.7	24.9	0.6	0.0	103.0	3.0	47.4	1.4
4.0	5.8	8.0	5.3	33.3	-0.6	0.0	151.9	3.1	47.4	1.4
5.0	6.2	9.3	5.9	42.8	-1.8	0.0	213.2	3.2	47.5	1.4
6.0	6.5	10.6	6.4	53.3	-2.9	0.0	286.5	3.3	47.5	1.4
7.0	6.9	11.9	7.0	65.1	-4.1	0.0	377.1	3.4	47.6	1.4
8.0	7.2	13.2	7.4	77.2	-5.3	0.0	474.2	3.5	47.6	1.4
9.0	7.6	14.6	8.0	90.8	-6.5	0.0	592.4	3.6	47.7	1.4
10.0	7.9	15.9	8.4	104.4	-7.6	0.0	714.3	3.7	47.7	1.4
11.0	8.2	17.2	8.8	119.2	-8.8	0.0	855.3	3.8	47.8	1.4
12.0	8.5	18.6	9.3	134.7	-9.9	0.0	1011.1	3.9	47.8	1.4
13.0	8.8	19.9	9.7	151.5	-11.1	0.0	1188.8	3.9	47.8	1.4
14.0	9.1	21.3	10.1	167.9	-12.2	0.0	1364.7	4.0	47.9	1.4
15.0	9.3	22.6	10.5	185.7	-13.4	0.0	1566.0	4.1	47.9	1.4
16.0	9.6	24.0	10.9	204.6	-14.5	0.0	1789.8	4.2	48.0	1.3
17.0	9.9	25.3	11.2	222.9	-15.6	0.0	2008.4	4.2	48.0	1.3
18.0	10.1	26.7	11.6	243.1	-16.7	0.0	2264.5	4.3	48.1	1.3
19.0	10.4	28.0	12.0	262.1	-17.8	0.0	2505.5	4.4	48.1	1.3
20.0	10.6	29.4	12.3	282.9	-18.9	0.0	2782.3	4.4	48.2	1.3
21.0	10.8	30.7	12.7	304.0	-20.1	0.0	3068.7	4.5	48.2	1.3
22.0	11.1	32.1	13.0	325.9	-21.1	0.0	3376.7	4.6	48.3	1.3
23.0	11.3	33.4	13.3	348.3	-22.2	0.0	3699.2	4.6	48.4	1.3
24.0	11.5	34.7	13.7	370.7	-23.3	0.0	4025.9	4.7	48.4	1.3
25.0	11.7	36.1	14.0	393.4	-24.4	0.0	4365.1	4.7	48.5	1.3
26.0	11.9	37.4	14.2	415.5	-25.5	0.0	4694.4	4.8	48.5	1.3
27.0	12.1	38.7	14.5	438.7	-26.6	0.0	5052.0	4.8	48.6	1.3
28.0	12.3	40.0	14.8	463.7	-27.6	0.0	5455.0	4.9	48.6	1.3
29.0	12.5	41.3	15.1	487.2	-28.7	0.0	5830.4	4.9	48.7	1.3
30.0	12.6	42.6	15.3	510.3	-29.7	0.0	6198.2	5.0	48.7	1.3
31.0	12.8	43.9	15.6	535.6	-30.8	0.0	6623.6	5.0	48.8	1.3
32.0	13.0	45.2	15.8	559.1	-31.8	0.0	7009.3	5.1	48.8	1.3
33.0	13.1	46.5	16.1	584.0	-32.9	0.0	7433.0	5.1	48.9	1.3
34.0	13.3	47.8	16.3	609.9	-33.9	0.0	7885.5	5.1	49.0	1.2
35.0	13.4	49.1	16.5	634.9	-34.9	0.0	8318.9	5.2	49.0	1.2
36.0	13.6	50.4	16.7	659.7	-35.9	0.0	8753.5	5.2	49.1	1.2
37.0	13.7	51.7	16.9	684.6	-37.0	1.3	9192.6	5.2	49.1	1.2
38.0	13.8	52.9	17.1	708.5	-38.0	6.9	9608.2	5.3	49.2	1.2
39.0	13.9	54.2	17.3	733.2	-39.0	9.4	10049.9	5.3	49.3	1.2
40.0	14.1	55.4	17.5	758.7	-40.0	11.4	10514.2	5.3	49.3	1.2
41.0	14.2	56.7	17.7	783.8	-41.0	12.9	10974.2	5.3	49.4	1.2
42.0	14.3	57.9	17.8	807.6	-42.0	14.1	11399.7	5.3	49.4	1.2
43.0	14.4	59.2	18.0	833.9	-42.9	15.2	11897.5	5.4	49.5	1.2
44.0	14.5	60.4	18.1	858.1	-43.9	16.1	12339.1	5.4	49.6	1.2
45.0	14.5	61.7	18.2	880.5	-44.9	16.9	12732.5	5.4	49.6	1.2
46.0	14.6	62.9	18.4	904.8	-45.9	17.6	13181.3	5.4	49.7	1.2
47.0	14.7	64.1	18.5	928.4	-46.8	18.2	13613.8	5.4	49.8	1.2
48.0	14.7	65.3	18.6	952.3	-47.8	18.8	14058.5	5.4	49.8	1.[illegible]
49.0	14.8	66.6	18.7	975.2	-48.7	19.3	14474.5	5.4	49.9	1.[illegible]
50.0	14.8	67.8	18.8	998.7	-49.7	19.7	14911.7	5.4	50.0	1.[illegible]
51.0	14.9	69.0	18.9	1019.9	-50.6	20.0	15282.3	5.4	50.0	1.1
52.0	15.8	70.3	20.8	1145.7	-51.6	22.6	18870.2	5.4	50.1	1.1
53.0	15.8	71.5	20.8	1168.9	-52.5	22.9	19320.7	5.4	50.2	1.1
54.0	15.9	72.6	20.9	1189.6	-53.4	23.1	19706.3	5.4	50.2	1.1
55.0	15.8	73.5	20.8	1201.8	-54.3	[illegible]	19870.5	5.4	50.3	1.1
56.0	15.8	74.4	20.8	1213.4	-55.2	[illegible]	20015.8	5.4	50.4	1.1
57.0	15.7	75.4	20.7	1224.6	-56.2	[illegible]	20142.3	5.4	50.4	1.1
58.0	15.7	76.3	20.6	1235.3	-57.1	23.3	20250.8	5.4	50.5	1.1
59.0	15.6	77.2	20.5	1245.2	-58.0	23.2	20334.0	5.4	50.6	1.1
60.0	15.6	78.2	20.4	1254.5	-58.9	23.2	20397.1	5.3	50.7	1.1

SMOKE III EGLIN AFB, FLA.

EVENT 26
XM49 IR#2

TIME 2247Z

DATE 081680
SENSOR 0.5-0.7



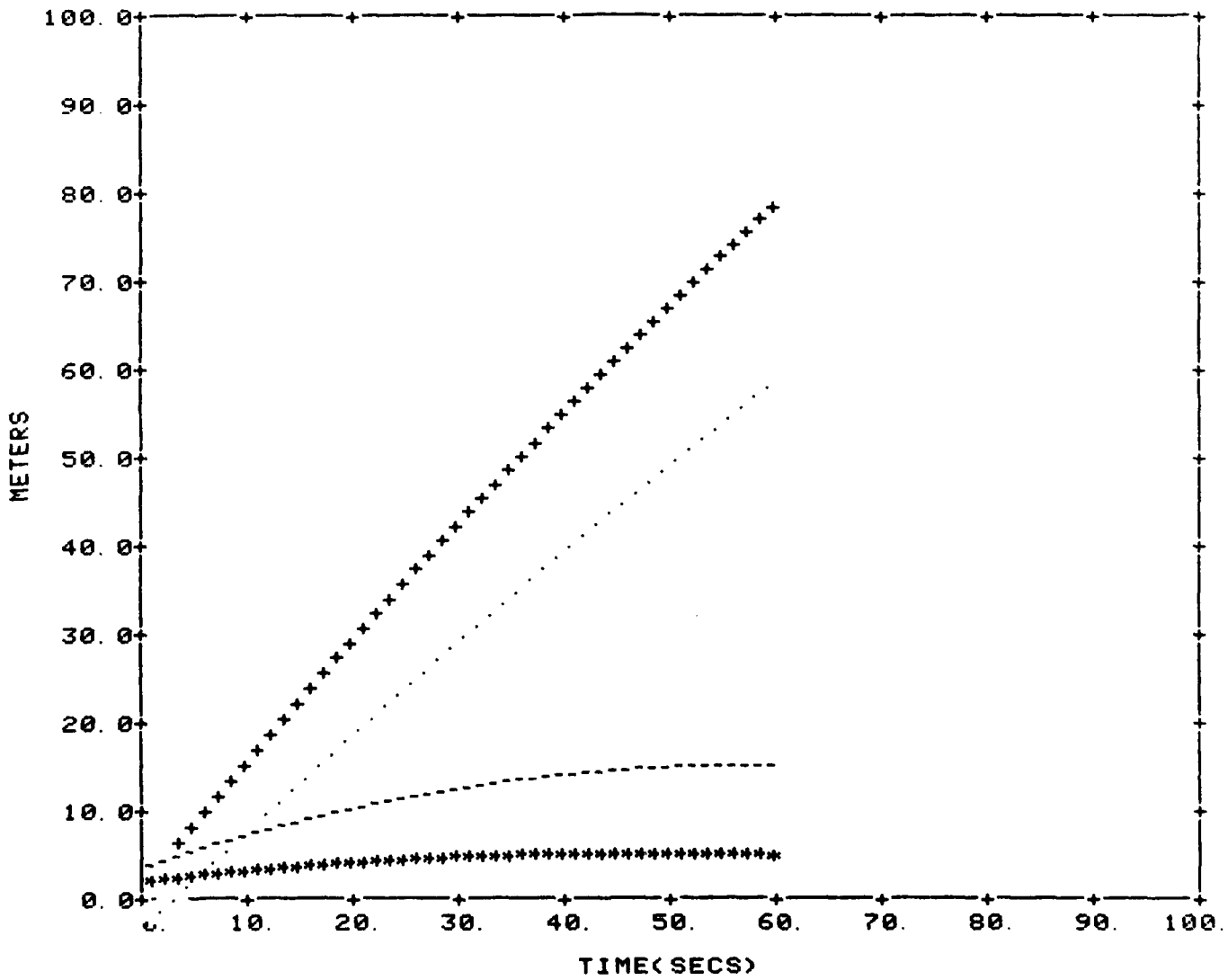
SMOKE III EGLIN AFB, FLA.

EVENT 26 TIME 2247Z DATE 081680

XM49 IR#2 SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

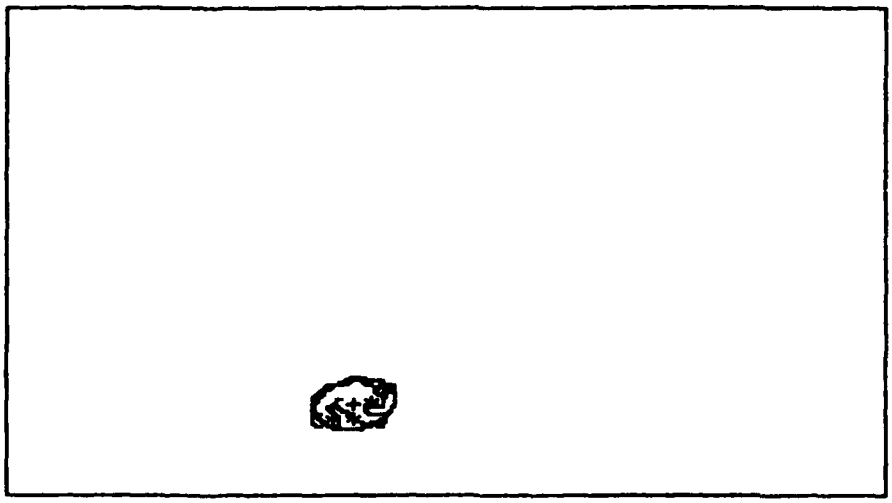
. . . . . TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 26

2247 Z 08-16-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 14.0



HEIGHT(ABOVE DETONATION PT.) =	9.0M	HEIGHT OF CENTROID=	4.M
WIDTH(MAX. HORIZONTAL EXTENT)=	16.0M	LATERAL OFFSET =	2.M
VERTICAL EXTENT =	12.0M	AXES =	16., 12.M
AREA =	151.3SQM	INCLINATION =-	17.8 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 4.M OFFSET= 5.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 7.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 14.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

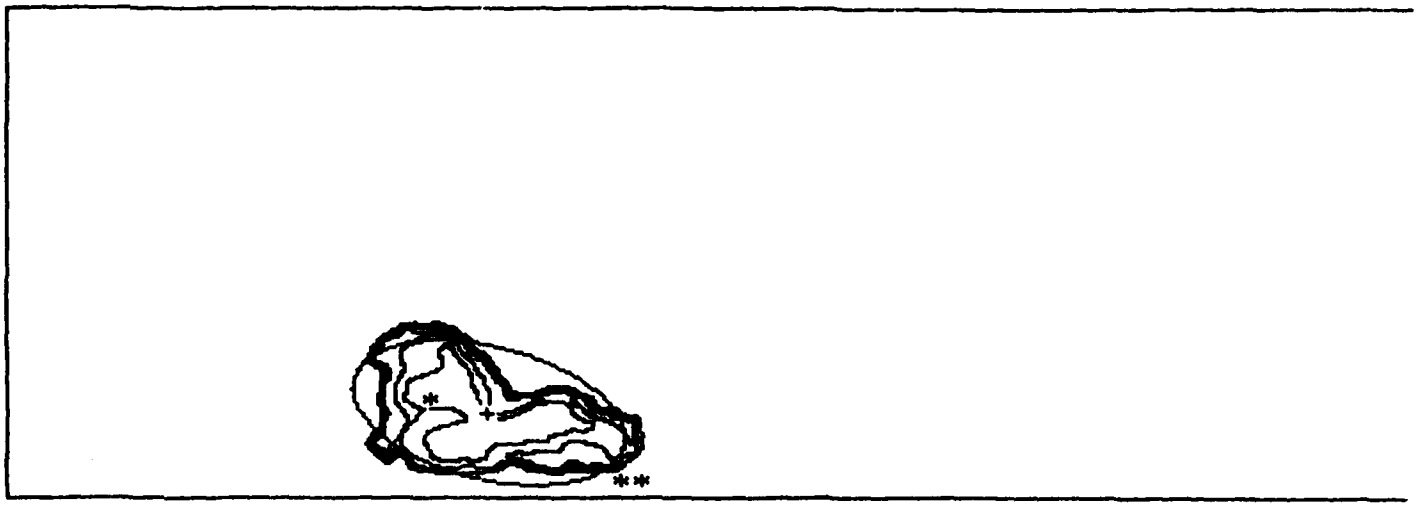
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 26

2247 Z 08-16-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 14.0



HEIGHT(ABOVE DETONATION PT.) =	10.0M	HEIGHT OF CENTROID=	4.M
WIDTH(MAX. HORIZONTAL EXTENT)=	14.0M	LATERAL OFFSET =	-8.M
VERTICAL EXTENT =	9.0M	AXES =	15., 8.M
AREA =	82.7SQM	INCLINATION =	18.1 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 5.M OFFSET= -11.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 14.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 10.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 1.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA

EVENT 27 TIME 1548Z DATE 081880

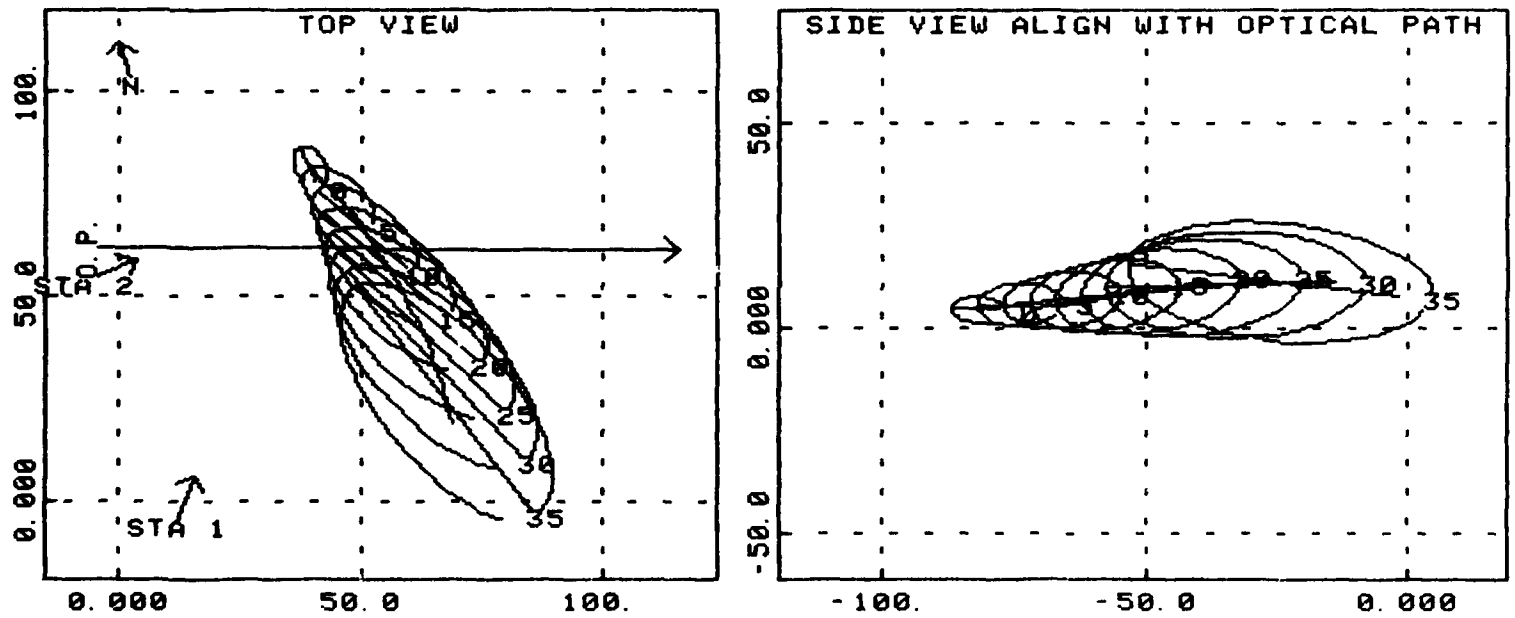
IR#1 GRENADES - 12 EA SENSOR 0 5-0 7

	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECTIVE			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	7.8	10.5	6.5	53.1	-1.3	0.0	236.8	4.6	0.0	0 0
1.0	8.5	11.7	7.3	66.6	0 2	0.0	345.1	4.8	156.9	2 0
2.0	9.1	12.9	8.0	81.0	1.8	0.0	478.1	5.1	157.5	2 0
3.0	9.7	14.0	8.8	96.6	3.3	0.0	641.5	5.3	158.2	2 0
4.0	10.3	15.2	9.5	113.1	4.9	0.0	834.6	5.6	158 8	2 0
5.0	10.9	16.3	10.2	131.1	6.5	0.0	1064.0	5.8	159.5	1 9
6.0	11.5	17.4	10.9	149.6	8.1	0.0	1319.2	6.1	160.2	1 9
7.0	12.1	18.6	11.7	169.9	9.7	0.0	1616.0	6.3	160.8	1 9
8.0	12.8	19.8	12.4	191.9	11.2	0.0	1958.1	6.5	161.5	1 9
9.0	13.3	20.9	13.1	214.3	12.8	1.6	2322.7	6 8	162.2	1 9
10.0	14.0	22.2	13.9	239.2	14.4	7.9	2747.1	7 0	162.9	1 9
11.0	14.5	23.4	14.6	265.2	16.0	10.6	3207.7	7.2	163 6	1 9
12.0	15.1	24.6	15.4	292.6	17.6	12.5	3713.1	7.4	164 3	1 9
13.0	15.7	25.8	16.1	320.5	19.2	13.8	4243.5	7 7	165 0	1 9
14.0	16.3	27.1	16.8	350.5	20.9	14.6	4832.8	7 9	165 8	1 9
15.0	16.9	28.3	17.6	381.8	22.5	15.1	5466.7	8.1	166.5	1 8
16.0	17.4	29.6	18.3	414.5	24.1	15.2	6151.6	8.3	167.2	1 8
17.0	18.0	30.9	19.0	449.2	25.7	15.1	6902.6	8.5	168.0	1 8
18.0	18.5	32.3	19.6	484.6	27.4	14.6	7686.0	8.7	168.7	1.8
19.0	19.0	33.6	20.3	520.9	29.0	13.6	8513.8	8.9	169.5	1 8
20.0	19.5	34.9	20.9	557.9	30.6	12.2	9380.2	9.0	170 2	1 8
21.0	20.0	36.3	21.5	597.0	32.3	10.2	10316.6	9.2	171.0	1 8
22.0	20.4	37.7	22.0	636.7	33.9	7.0	11289.5	9 4	171 8	1 8
23.0	20.9	39.1	22.6	678.0	35.6	0.0	12327.6	9.6	172.5	1 8
24.0	21.3	40.5	23.0	720.1	37.2	0.0	13399.8	9.8	173 3	1 8
25.0	21.7	41.9	23.5	762.6	38.9	0.0	14499.2	9.9	174.1	1 8
26.0	22.1	43.4	24.0	808.6	40.5	0.0	15712.3	10.1	174.9	1 8
27.0	22.5	44.8	24.5	855.0	42.2	0.0	16943.8	10.2	175 7	1 8
28.0	22.9	46.3	24.9	902.4	43.9	0.0	18208.0	10.4	176.5	1.8
29.0	23.2	47.9	25.4	952.4	45.6	0.0	19537.7	10.6	177 3	1 8
30.0	23.6	49.4	25.9	1004.2	47.2	0.0	20918.5	10.7	178.1	1 8
31.0	24.0	51.0	26.4	1058.4	48.9	0.0	22359.2	10.8	178 9	1 8
32.0	24.5	52.6	27.0	1115.6	50.6	0.0	23866 1	11.0	179.7	1 8
33.0	25.0	54.3	27.7	1175.5	52.3	0.0	25415.2	11.1	180 5	1 8
34.0	25.5	56.0	28.5	1238.9	54.0	0.0	27036.1	11.2	181 3	1 7
35.0	26.1	57.8	29.4	1306.6	55.7	0.0	28749.4	11 4	182 2	1 7
36.0	26.7	59.6	30.4	1377.6	57.4	0.0	30517 3	11.5	183 0	1 7
37.0	27.5	61.4	31.7	1453.2	59.1	0.0	32358.7	11.6	183 8	1 7
38.0	28.3	63.2	33.1	1533.7	60.8	0.0	34313.6	11.7	184.6	1 7

SMOKE III EGLIN AFB, FLA.

EVENT 27 TIME 1548Z DATE 081880

IR#1 GRENADES - 12 EA. SENSOR 0.5-0.7



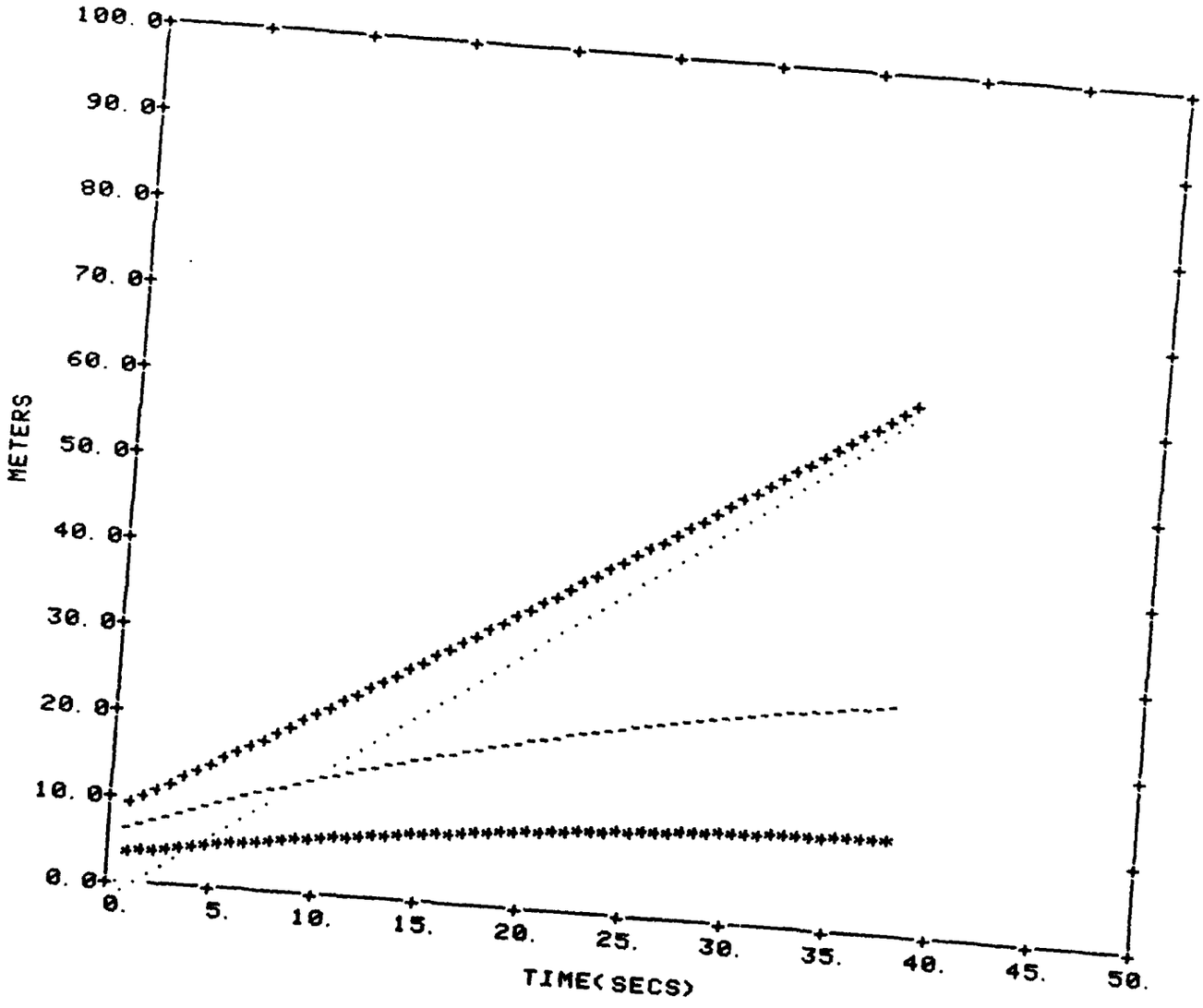
EVENT 27 SMOKE III EGLIN AFB, FLA.

IR#1 GRENADES - 12 EA. TIME 1548Z DATE 081880

SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC

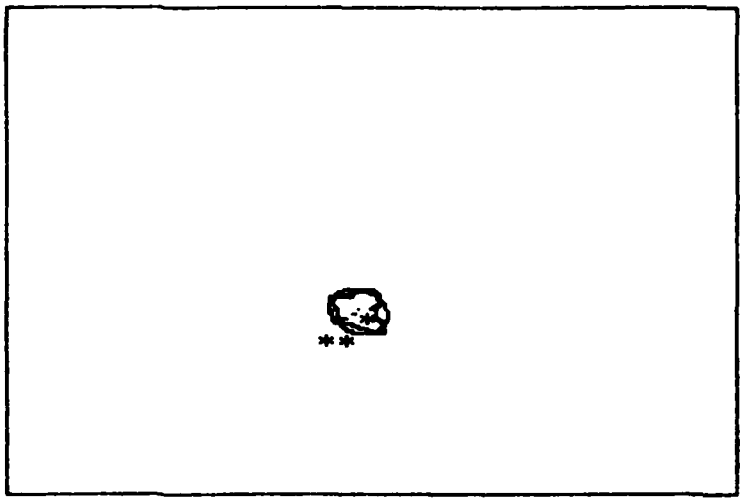


------HEIGHT ABOVE DET. PT.
++++++WIDTH
. . . . . TRANSPORT
******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 27

1548 Z 08-18-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 3.0



HEIGHT(ABOVE DETONATION PT.) =	12.0M	HEIGHT OF CENTROID=	6.M
WIDTH(MAX. HORIZONTAL EXTENT)=	11.0M	LATERAL OFFSET =	4.M
VERTICAL EXTENT =	11.0M	AXES =	12., 10.M
AREA =	100.5SQM	INCLINATION =	37.8 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 5.M OFFSET= 6.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 10.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 9.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

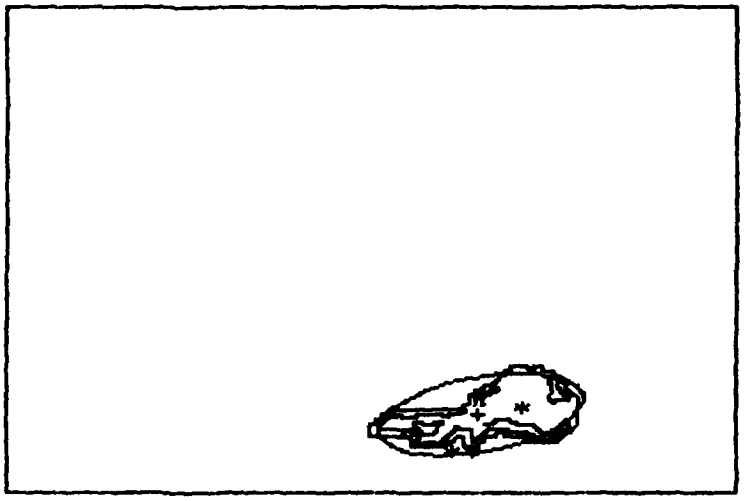
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 27

1548 Z 08-18-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 3.0



HEIGHT(ABOVE DETONATION PT.) =	11.0M	HEIGHT OF CENTROID=	5.M
WIDTH(MAX. HORIZONTAL EXTENT)=	22.0M	LATERAL OFFSET =	2.M
VERTICAL EXTENT =	10.0M	AXES =	22., 9.M
AREA =	104.1SQM	INCLINATION	=-13.1 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 6.M OFFSET= 6.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 20.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 12.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA.

EVENT 28 TIME 1749Z DATE 081880

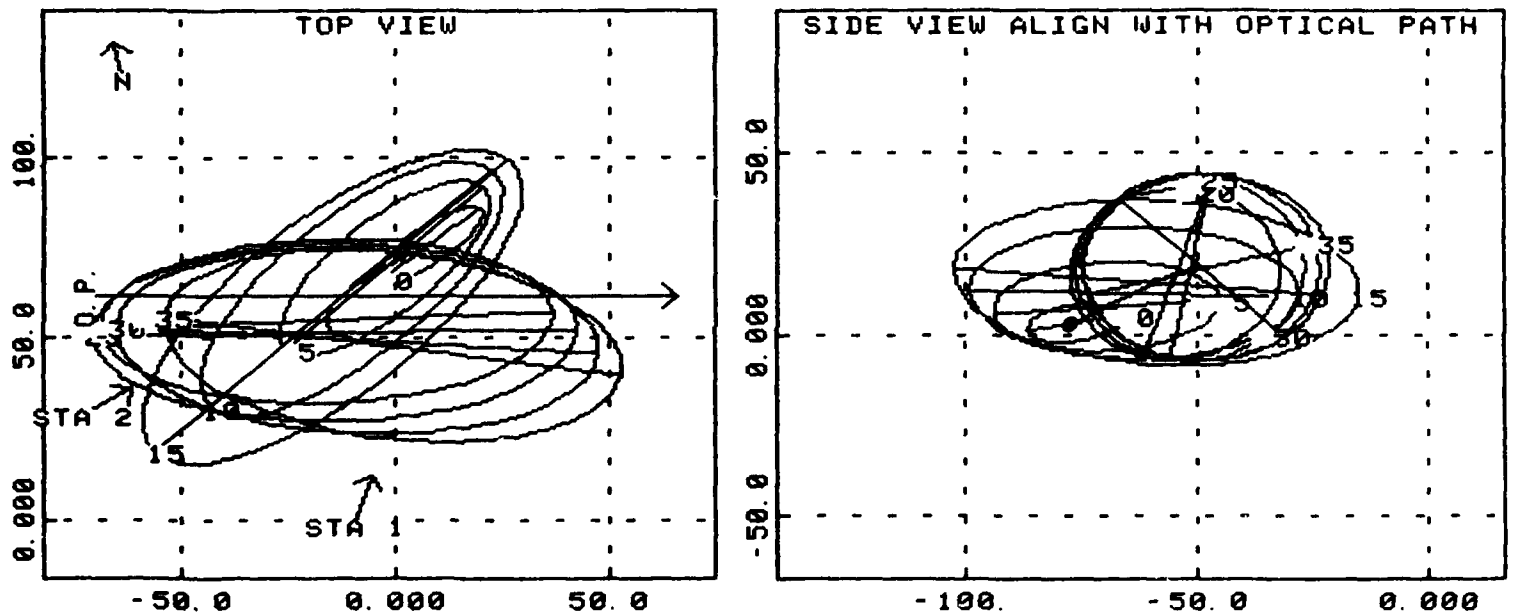
HE 105MM EQUIVALENT 5EA SENSOR 0 5-0 7

	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECTIVE			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	8.3	20.6	10.4	161.4	4.0	0.0	1516.3	3.1	0 0	0 0
1.0	10.9	26.5	13.5	272.3	5.4	0.0	3258.7	4.1	255 3	2 8
2.0	13.3	32.3	16.4	407.4	6.7	9.1	5889.9	5.1	254 6	2 7
3.0	15.6	37.9	19.2	563.9	8.1	16.5	9517.8	6.0	253 8	2 6
4.0	17.8	43.3	21.9	738.6	9.4	21.6	14197.3	6.9	252.9	2.4
5.0	20.0	48.4	24.6	930.1	10.7	25.8	20014.2	7.7	252.0	2 3
6.0	22.1	53.4	27.1	1131.9	11.9	29.3	26833.2	8.6	250.9	2 2
7.0	24.1	58.1	29.4	1342.3	13.1	32.5	34648.0	9.3	249.7	2.1
8.0	26.0	62.5	31.8	1560.4	14.2	35.3	43470.3	10.1	248.4	1 9
9.0	27.8	66.7	34.0	1782.5	15.4	37.9	53155.2	10.8	246.8	1 8
10.0	29.6	70.7	36.1	2006.7	16.4	40.3	63630.5	11.5	245.0	1.7
11.0	31.3	74.4	38.2	2231.9	17.5	42.4	74823.3	12.2	243.0	1.6
12.0	32.9	77.9	40.3	2457.1	18.5	44.5	86683.3	12 8	240.6	1 4
13.0	34.5	81.1	42.1	2674.9	19.5	46.2	98702.4	13.4	237 8	1 3
14.0	36.0	84.1	44.0	2891.5	20.4	47.8	111235.0	14.0	234.4	1 2
15.0	37.4	87.0	45.7	3103.8	21.3	49.4	124031.2	14.5	230.4	1 1
16.0	38.7	89.7	47.3	3307.5	22.2	50.7	136727.1	15.0	225.6	1 0
17.0	39.9	92.2	48.9	3507.6	23.1	51.9	149617.1	15.5	219 8	0 9
18.0	38.4	42.8	45.0	1510.3	23.9	71.4	96630.1	15.9	212.8	0 8
19.0	39.4	44.0	46.1	1593.9	24.6	72.3	104661.9	16.3	204.4	0 8
20.0	40.3	45.2	47.2	1675.8	25.3	73.0	112731.9	16.7	194.8	0 7
21.0	41.1	46.2	48.2	1747.2	26.0	73.3	120087.6	17.0	184.2	0 7
22.0	41.8	47.1	49.0	1812.9	26.7	73.5	127069.5	17.3	173.3	0 7
23.0	42.5	47.9	49.7	1867.3	27.3	73.2	133118.4	17.6	162 9	0 7
24.0	43.0	48.6	50.2	1915.9	27.9	72.8	138637.2	17.9	153.4	0 8
25.0	43.4	49.2	50.7	1956.7	28.5	72.0	143341.5	18.1	145.3	0 9
26.0	43.8	49.7	51.0	1991.8	29.0	70.9	147338.7	18.3	138.5	0 9
27.0	44.0	50.1	51.2	2016.8	29.5	69.5	150106.8	18.4	132.9	1 0
28.0	44.2	50.6	51.4	2040.1	29.9	68.0	152333.0	18.5	128.2	1 1
29.0	44.3	51.0	51.4	2058.4	30.3	66.4	153656.0	18.6	124 4	1.2
30.0	44.3	51.3	51.4	2071.7	30.7	64.6	153974.3	18.7	121.1	1 4
31.0	44.4	51.7	51.4	2086.9	31.0	63.2	153874.9	18.7	118 4	1 5
32 0	44.3	52.1	51.3	2099.2	31.3	61.9	153028.3	18.7	116 1	1 6
33.0	44.2	52.4	51.2	2109.6	31.6	60.8	151543.4	18.6	114 1	1 7
34.0	44.1	52.6	51.2	2118.4	31.8	60.1	149548.4	18.5	112.3	1 8
35.0	44.0	52.8	51.2	2124.3	32.0	59.5	147052.8	18.4	110.8	2 0
36 0	43.9	52.9	51.3	2130.5	32.2	59.4	144543.6	18.3	109.5	2 1

SMOKE III EGLIN AFB, FLA.

EVENT 2B TIME 1749Z DATE 081880

HE 105MM EQUIVALENT 5EA SENSOR 0.5-0.7



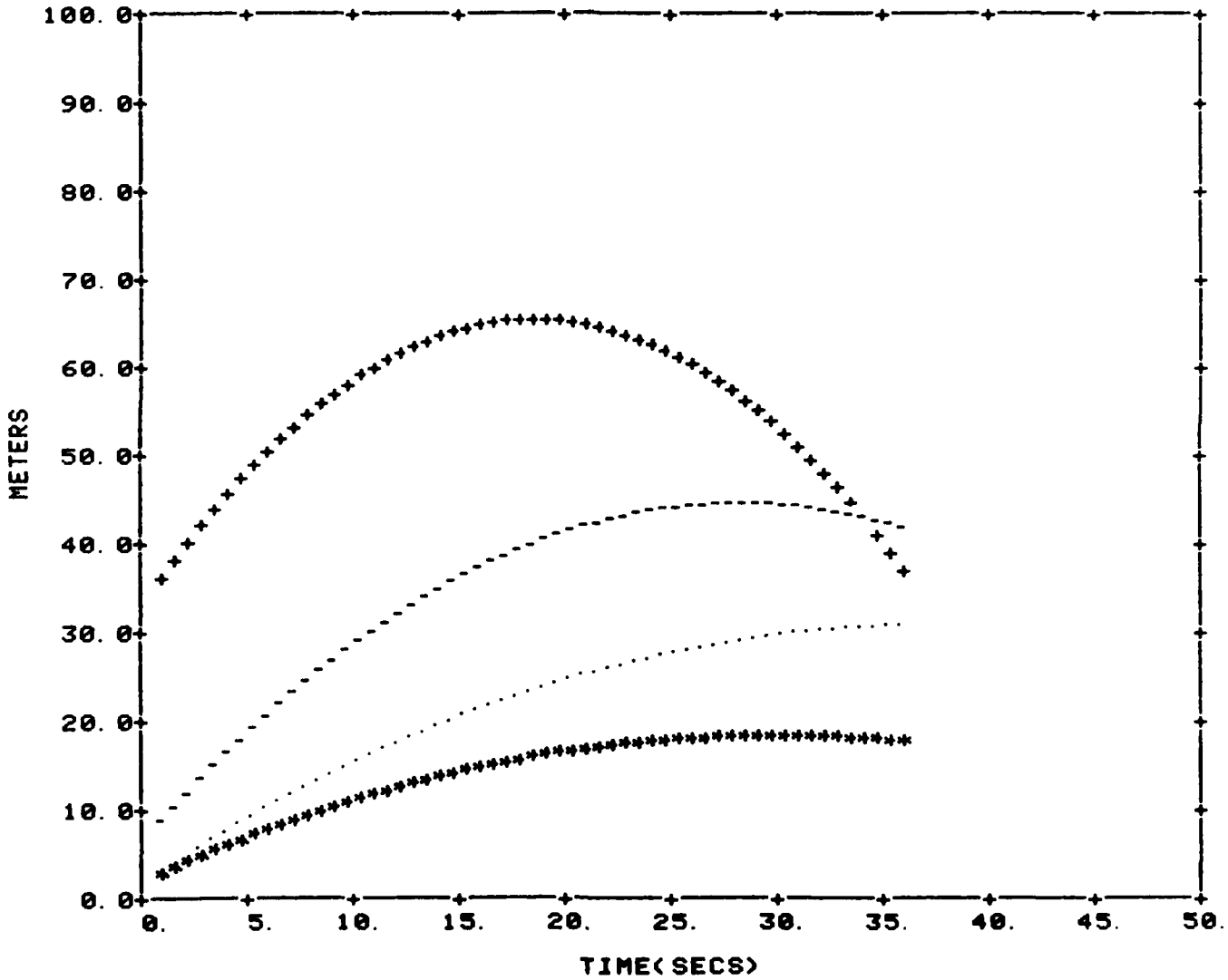
SMOKE III EGLIN AFB, FLA.

EVENT 28 TIME 1749Z DATE 081880

HE 105MM EQUIVALENT 5EA SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

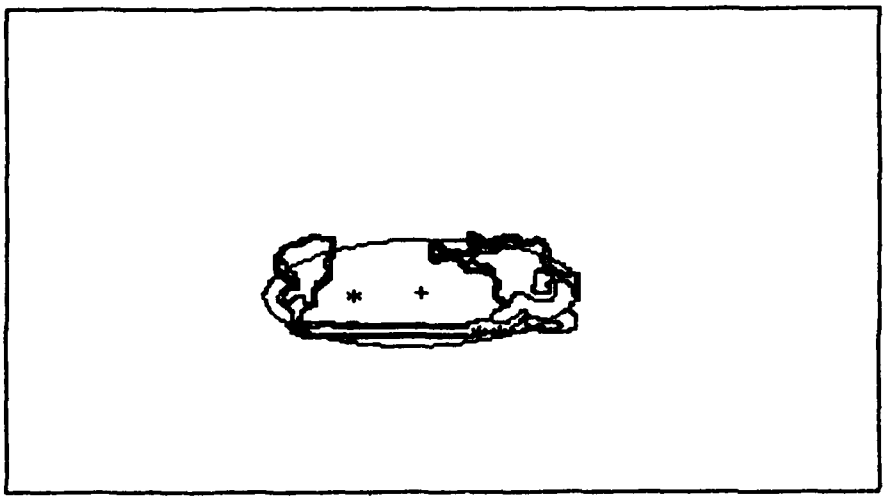
.....TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 28

1749 Z 08-18-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 6.0



HEIGHT(ABOVE DETONATION PT.) =	24.0M	HEIGHT OF CENTROID=	9.M
WIDTH(MAX. HORIZONTAL EXTENT)=	61.0M	LATERAL OFFSET	= -14.M
VERTICAL EXTENT =	25.0M	AXES	= 63., 26.M
AREA =	771.3SQM	INCLINATION	= -2.2 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 9.M OFFSET= -28.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 60.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 61.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= -1.M

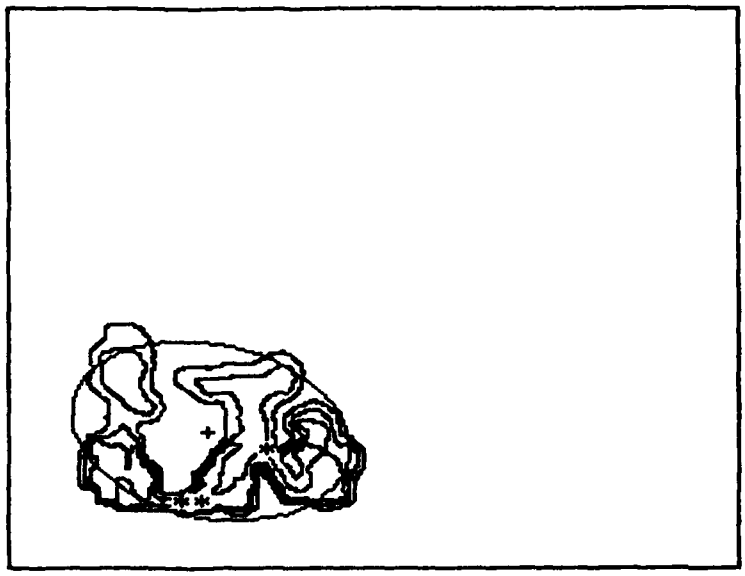
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 28

1749 Z 08-18-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 6.0



HEIGHT(ABOVE DETONATION PT.) =	22.0M	HEIGHT OF CENTROID=	9.M
WIDTH(MAX. HORIZONTAL EXTENT)=	30.0M	LATERAL OFFSET =	2.M
VERTICAL EXTENT =	24.0M	AXES =	30., 22.M
AREA =	376.1SQM	INCLINATION =	18.6 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 7.M OFFSET= 8.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 30.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 30.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE [illegible] EQUIP [illegible]

EVENT 30 TIME [illegible] DATE [illegible]

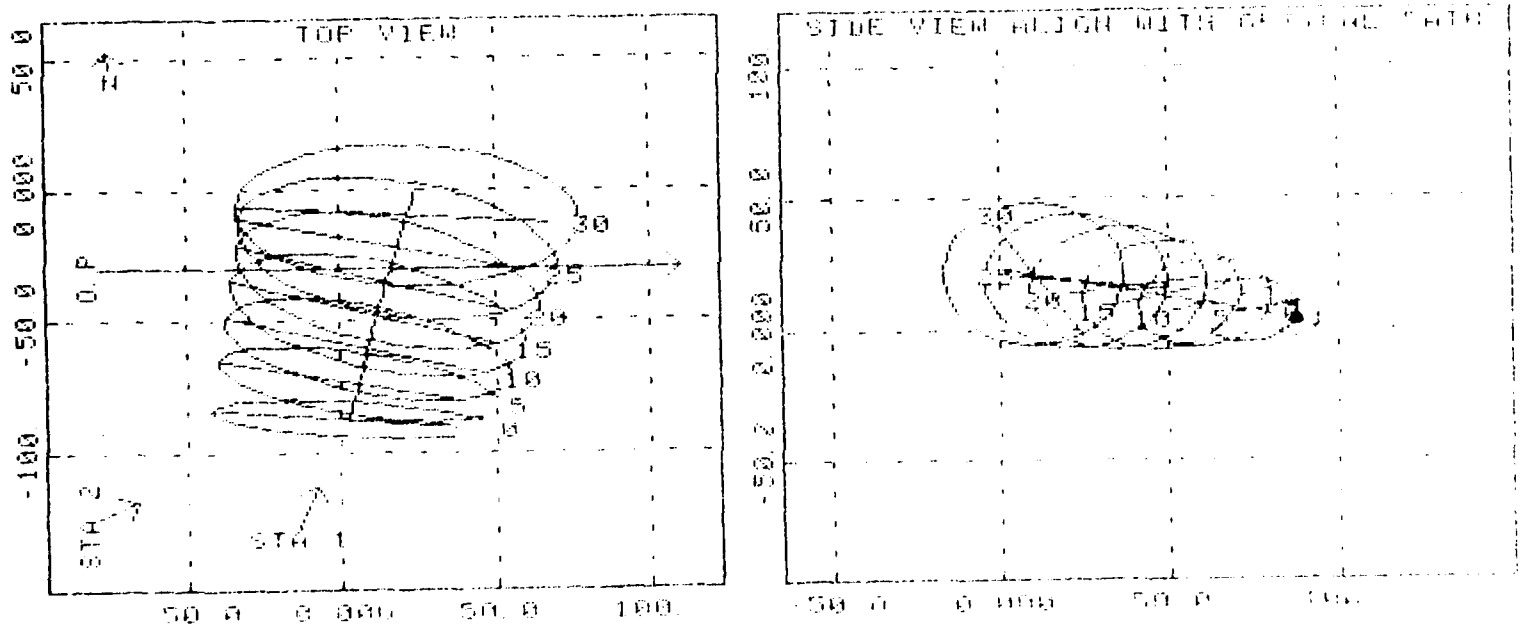
CBU 88 - LARGE PELLET CONC [illegible]

TIME(SEC)	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS) HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ METERS)	LATERAL OFFSET	PATH LENGTH	DIMENSIONS INDEPENDENT OF PERSPECTIVE VOLUME (CUBIC METERS)	INFLUID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	10.1	14.5	13.5	154.3	-2.9	0.0	2157.1	[illegible]	[illegible]	[illegible]
1.0	11.8	17.8	15.5	216.4	-3.5	0.0	3113.9	4.3	[illegible]	[illegible]
2.0	13.5	20.3	17.6	287.7	-8.2	[illegible]	[illegible]476.1	4.7	[illegible]	[illegible]
3.0	15.2	23.2	19.7	366.6	-10.7	[illegible]	[illegible]251.2	5.3	[illegible]	[illegible]
4.0	16.8	26.4	21.7	450.2	-13.5	[illegible]	[illegible]251.5	[illegible]	[illegible]	[illegible]
5.0	18.5	28.9	23.8	539.7	-16.2	[illegible]	[illegible]696.3	6.6	28.[illegible]	[illegible]
6.0	20.1	31.3	25.8	632.8	-18.6	[illegible]	[illegible]467.7	7.2	28.0	[illegible]
7.0	21.7	33.5	27.8	728.1	-21.4	0.0	[illegible]436.9	7.9	28.1	[illegible]
8.0	23.3	35.6	29.6	826.0	-24.1	0.0	41830.8	8.5	28.2	[illegible]
9.0	24.3	37.5	31.5	925.1	-26.7	0.0	[illegible]388.7	9.1	28.[illegible]	[illegible]
10.0	26.3	39.4	33.2	1023.0	-29.3	0.0	[illegible]4058.1	9.7	28.4	[illegible]
11.0	27.7	41.1	34.9	1122.0	-31.9	0.0	55968.8	10.3	28.4	[illegible]
12.0	29.1	42.7	36.5	1219.6	-34.5	0.0	[illegible]4958.7	11.9	[illegible]	[illegible]
13.0	30.5	44.3	38.0	1317.2	-37.1	0.0	[illegible]1138.9	11.5	28.6	[illegible]
14.0	31.8	45.7	39.4	1409.9	-39.7	12.3	[illegible]169.6	12.1	28.7	[illegible]
15.0	33.0	47.0	40.8	1501.4	-42.3	39.0	[illegible]310.5	12.8	28.8	[illegible]
16.0	34.2	48.2	42.0	1591.5	-44.9	91.4	85563.7	13.2	28.9	[illegible]
17.0	35.4	49.4	43.2	1674.8	-47.4	99.3	[illegible]556.2	13.8	28.9	[illegible]
18.0	36.5	50.4	44.4	1754.4	-50.0	64.9	[illegible]1523.5	14.4	29.0	[illegible]
19.0	37.6	51.4	45.4	1830.4	-52.6	68.8	107507.3	14.9	29.1	[illegible]
20.0	38.7	52.1	46.4	1899.6	-55.1	71.4	113255.4	15.5	29.2	[illegible]
21.0	39.7	52.8	47.3	1963.4	-57.7	73.1	118937.2	16.0	29.3	[illegible]
22.0	40.7	53.3	48.2	2021.7	-60.2	73.8	124576.8	16.6	29.4	[illegible]
23.0	41.7	53.8	49.1	2073.8	-62.7	73.7	130081.0	17.1	29.5	[illegible]
24.0	42.6	54.0	49.9	2118.1	-65.3	72.7	135445.7	17.7	29.5	[illegible]
25.0	43.5	54.1	50.6	2154.7	-67.8	70.5	140611.8	18.2	29.6	[illegible]
26.0	44.4	54.1	51.4	2186.8	-70.3	66.9	145845.1	18.7	29.7	[illegible]
27.0	45.3	54.0	52.1	2212.4	-72.8	61.2	150883.4	19.3	29.8	[illegible]
28.0	46.2	53.9	52.9	2238.6	-75.3	52.4	156306.8	19.8	29.9	[illegible]
29.0	47.1	53.8	53.5	2260.2	-77.8	37.3	161537.6	20.3	30.0	[illegible]
30.0	47.9	53.7	54.2	2284.8	-80.3	0.0	166949.4	20.8	30.1	[illegible]
31.0	48.7	53.8	54.8	2312.8	-82.8	0.0	172431.3	21.3	30.2	[illegible]
32.0	49.5	54.1	55.4	2355.3	-85.3	0.0	178524.2	21.8	30.2	[illegible]
33.0	50.2	54.9	55.9	2406.4	-87.7	0.0	184448.7	22.3	30.3	[illegible]
34.0	50.9	56.2	56.3	2478.9	-90.2	0.0	190948.4	22.8	30.4	[illegible]

SMOKE III EGLIN AFB, FLA

EVENT 30 TIME 2226Z DATE 081980

CBU 88 - LARGE PELLET SENSOR 0 5-0 7



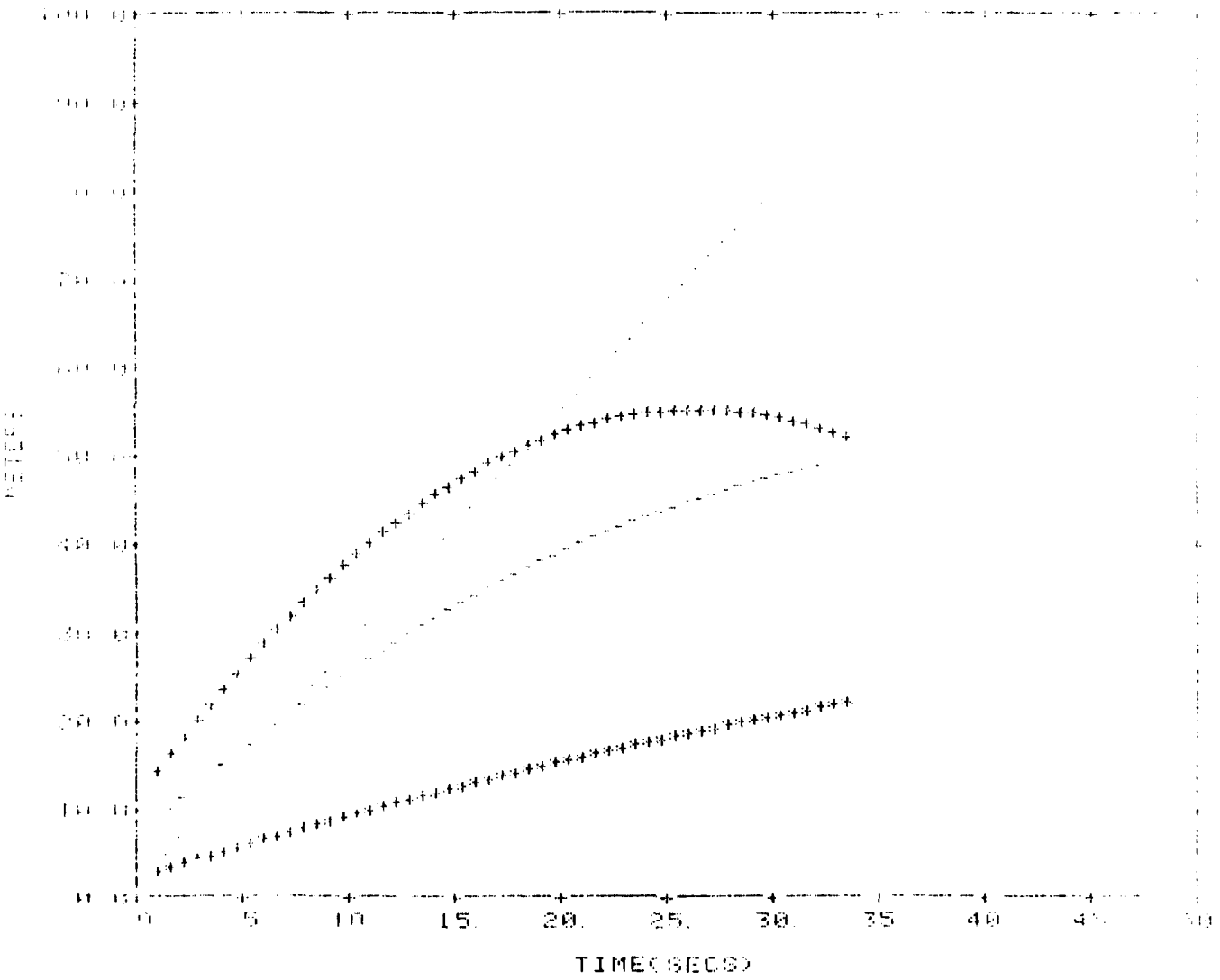
SMOKE III EGLIN AFB FLA

EVENT 20 TIME 2226Z DATE 081080

CBU 86 LARGE PELLET SENSOR [illegible]

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC

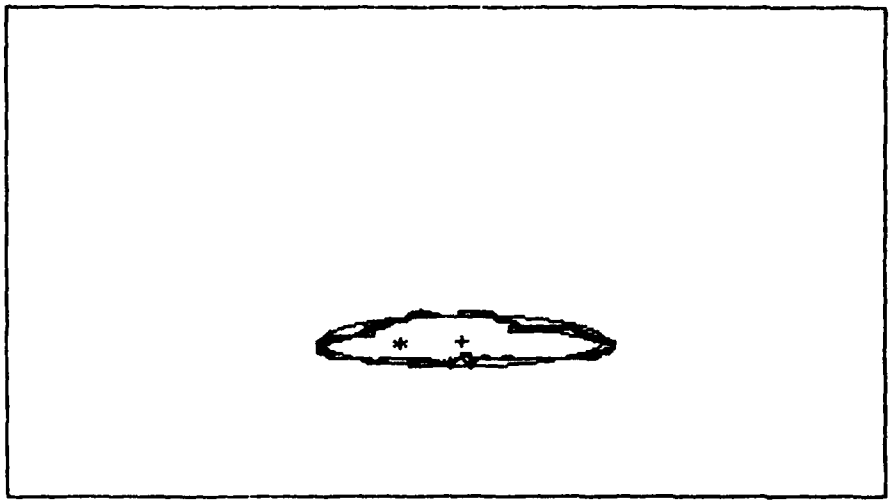


-------HEIGHT ABOVE DET PT.
++++++WIDTH
TRANSPORT
******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 30

2226 Z 08-18-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 0.5



HEIGHT(ABOVE DETONATION PT.) =	12.0M	HEIGHT OF CENTROID=	5.M
WIDTH(MAX. HORIZONTAL EXTENT)=	59.0M	LATERAL OFFSET =	0.M
VERTICAL EXTENT =	13.0M	AXES =	57., 12.M
AREA =	126.7SQM	INCLINATION =	-0.4 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 5.M OFFSET= -12.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 29.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 59.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)=-11.M

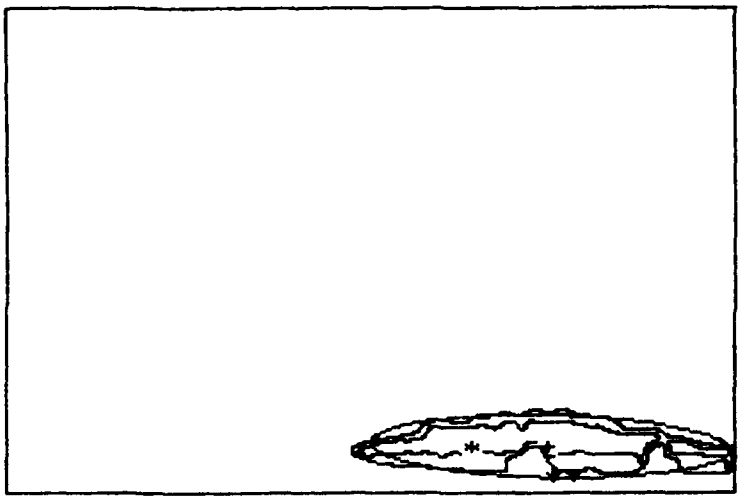
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 30

2226 Z 08-18-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 0.5



HEIGHT(ABOVE DETONATION PT.) =	8.0M	HEIGHT OF CENTROID=	4.M
WIDTH(MAX. HORIZONTAL EXTENT)=	41.0M	LATERAL OFFSET =	-2.M
VERTICAL EXTENT =	8.0M	AXES =	38., 8.M
AREA =	329.0SQM	INCLINATION =	1.7 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 4.M OFFSET= -10.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 32.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 38.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= -3.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA

EVENT 34 TIME 23257 DATE 081980

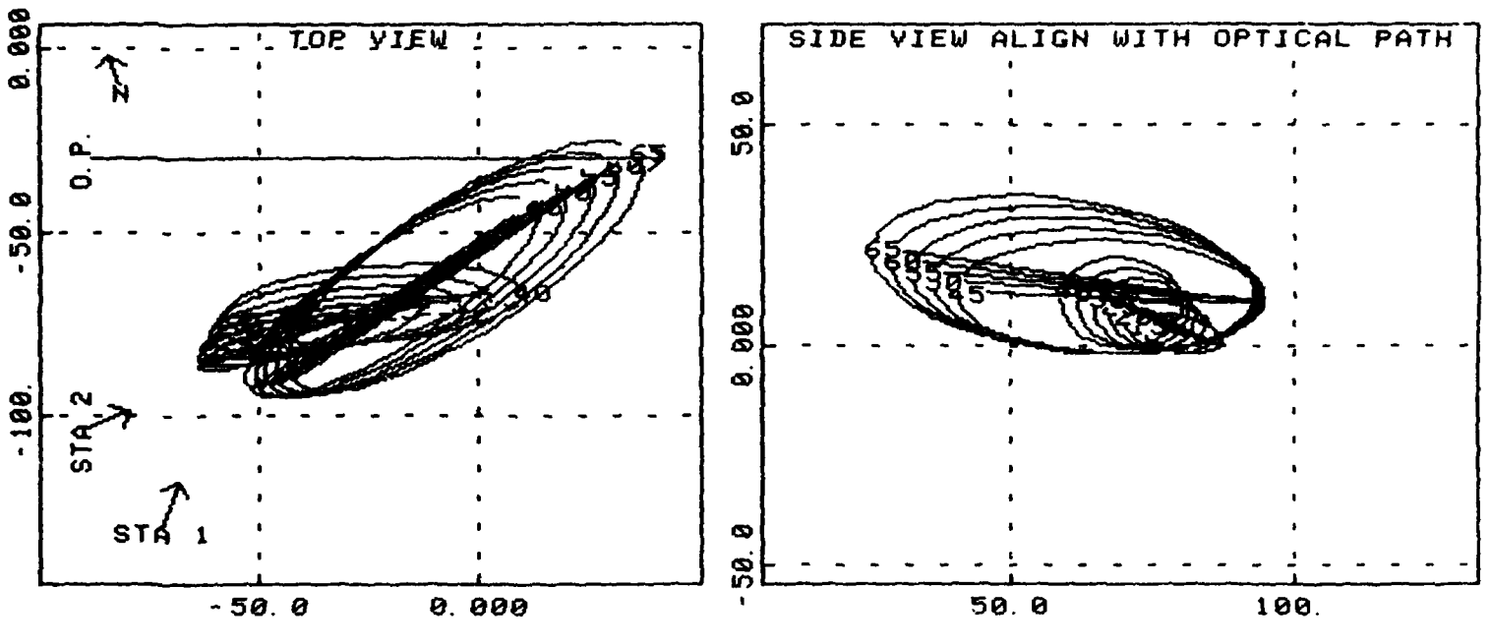
ALKALI HAILIDE 33 LBS SENSOR 0 5 0 7

	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECTIVE			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
15.0	7.1	14.8	8.7	92.5	-9.9	0.0	1122.3	2.7	0.0	0.0
16.0	7.7	15.2	9.3	102.7	-10.3	0.0	1371.9	3.0	81.1	1.1
17.0	8.2	15.6	9.9	111.9	-10.7	0.0	1625.5	3.3	81.0	1.0
18.0	8.8	15.9	10.4	121.2	-11.1	0.0	1913.2	3.6	81.0	1.0
19.0	9.4	16.2	11.0	131.0	-11.6	0.0	2241.6	3.9	80.9	1.0
20.0	9.9	16.4	11.5	140.1	-12.0	0.0	2586.4	4.2	80.9	1.0
21.0	10.4	16.6	12.0	148.5	-12.4	0.0	2943.6	4.4	80.8	1.0
22.0	11.0	16.8	12.5	156.9	-12.8	0.0	3328.9	4.7	80.8	1.0
23.0	11.5	16.9	12.9	165.2	-13.3	0.0	3736.7	5.0	80.7	1.0
24.0	12.0	17.0	13.4	172.9	-13.7	0.0	4152.5	5.3	80.7	1.0
25.0	12.5	17.1	13.8	180.7	-14.1	0.0	4591.6	5.6	80.6	1.0
26.0	13.0	17.3	14.3	189.6	-14.5	0.0	5093.3	5.9	80.6	1.0
27.0	13.5	17.4	14.7	197.2	-15.0	0.0	5567.4	6.1	80.5	1.0
28.0	14.0	17.6	15.2	206.5	-15.4	0.0	6119.6	6.4	80.5	1.0
29.0	14.5	17.8	15.5	214.5	-15.8	0.0	6643.4	6.7	80.4	1.0
30.0	15.0	18.0	16.0	223.7	-16.2	0.0	7224.5	7.0	80.4	1.0
31.0	15.5	18.2	16.4	233.3	-16.6	0.0	7835.4	7.3	80.3	1.0
32.0	16.0	18.5	16.8	243.2	-17.1	0.0	8469.7	7.5	80.3	1.0
33.0	16.5	18.8	17.3	254.4	-17.5	0.0	9174.7	7.8	80.2	1.0
34.0	16.9	19.1	17.7	264.3	-17.9	0.0	9828.6	8.1	80.1	1.0
35.0	17.4	19.4	18.2	275.8	-18.3	0.0	10560.4	8.4	80.1	1.0
36.0	17.	19.7	18.6	288.2	-18.7	0.0	11340.6	8.6	80.0	1.0
37.0	18.4	20.1	19.0	300.1	-19.1	0.0	12112.1	8.9	80.0	1.0
38.0	18.9	20.5	19.5	313.6	-19.6	0.0	12967.2	9.2	79.9	1.0
39.0	19.4	20.9	20.0	327.0	-20.0	0.0	13820.4	9.4	79.9	1.0
40.0	19.9	21.2	20.4	339.8	-20.4	0.0	14654.2	9.7	79.8	1.0
41.0	20.4	21.6	20.8	354.1	-20.8	0.0	15569.3	10.0	79.7	1.0
42.0	22.2	51.9	23.9	974.1	-21.2	0.0	23704.2	10.2	79.7	1.0
43.0	22.7	52.8	24.5	1013.8	-21.6	0.0	25166.9	10.5	79.6	1.0
44.0	23.2	53.7	25.0	1051.4	-22.1	0.0	26570.6	10.8	79.6	1.0
45.0	23.8	54.5	25.5	1091.4	-22.5	0.0	28110.4	11.0	79.5	1.0
46.0	24.3	55.4	26.1	1130.0	-22.9	0.0	29619.6	11.3	79.5	1.0
47.0	24.8	56.2	26.6	1168.6	-23.3	0.0	31158.5	11.5	79.4	1.0
48.0	25.4	57.0	27.1	1209.1	-23.7	0.0	32817.5	11.8	79.3	1.0
49.0	25.9	57.7	27.7	1246.9	-24.1	0.0	34375.8	12.0	79.3	0.9
50.0	26.4	58.5	28.2	1287.4	-24.5	0.0	36092.7	12.3	79.2	0.9
51.0	26.9	59.2	28.7	1324.2	-24.9	0.0	37657.7	12.5	79.2	0.9
52.0	27.4	59.9	29.3	1365.4	-25.3	0.0	39464.5	12.8	79.1	0.9
53.0	27.9	60.7	29.8	1403.8	-25.8	0.0	41163.5	13.0	79.0	0.9
54.0	28.4	61.3	30.3	1439.8	-26.2	0.0	42759.3	13.3	79.0	0.9
55.0	29.0	62.0	30.9	1480.5	-26.6	0.0	44620.1	13.5	78.9	0.9
56.0	29.5	62.6	31.4	1518.4	-27.0	0.0	46358.2	13.8	78.8	0.9
57.0	30.0	63.3	31.9	1555.6	-27.4	0.0	48079.2	14.0	78.8	0.9
58.0	30.5	63.9	32.4	1594.2	-27.8	0.0	49897.1	14.3	78.7	0.9
59.0	31.0	64.5	32.9	1631.5	-28.2	0.0	51654.9	14.5	78.7	0.9
60.0	31.5	65.1	33.4	1667.6	-28.6	0.0	53369.2	14.8	78.6	0.9
61.0	32.0	65.6	34.0	1706.3	-29.0	0.0	55234.0	15.0	78.5	0.9
62.0	32.5	66.2	34.5	1743.1	-29.4	0.0	57011.9	15.2	78.5	0.9
63.0	33.0	66.7	35.0	1778.6	-29.8	0.0	58721.7	15.5	78.4	0.9
64.0	33.5	67.3	35.5	1816.0	-30.2	0.0	60549.3	15.7	78.3	0.9
65.0	34.0	67.8	36.0	1853.3	-30.7	0.0	62374.1	16.0	78.3	0.9
66.0	34.4	68.3	36.5	1889.1	-31.1	0.0	64118.0	16.2	78.2	0.9

SMOKE III EGLIN AFB, FLA.

EVENT 34 TIME 2325Z DATE 081980

ALKALI HAILIDE 33 LBS SENSOR 0.5-0.7



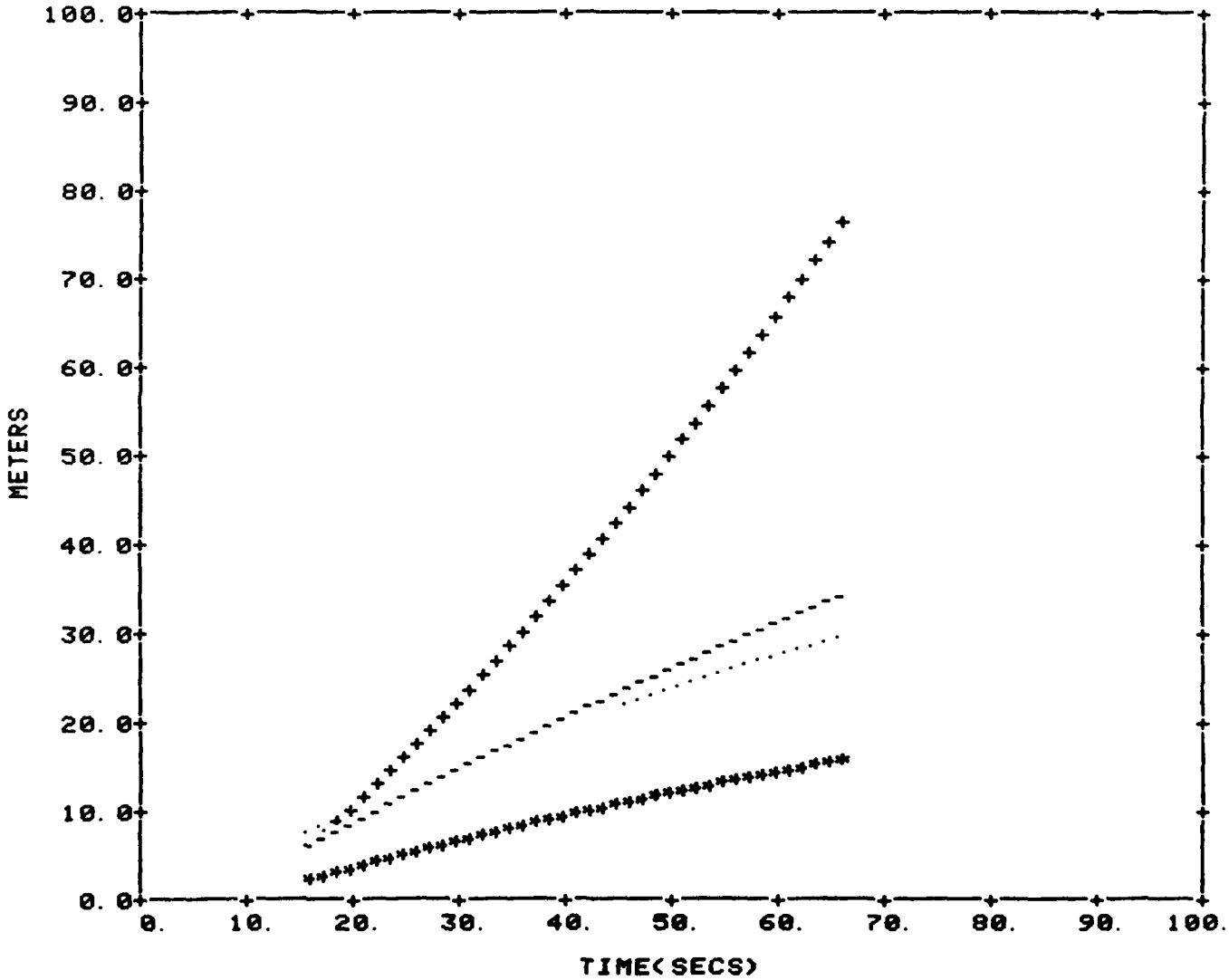
SMOKE III EGLIN AFB, FLA.

EVENT 34 TIME 2325Z DATE 081980

ALKALI HAILIDE 33 LBS SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

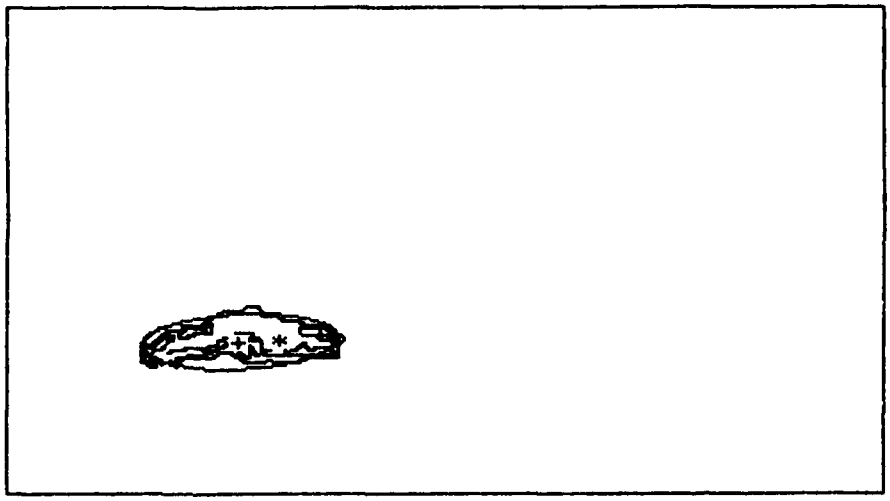
.....TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 34

2325 Z 08-19-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 22.0



HEIGHT(ABOVE DETONATION PT.) =	13.0M	HEIGHT OF CENTROID=	5.M
WIDTH(MAX. HORIZONTAL EXTENT)=	41.0M	LATERAL OFFSET =	14.M
VERTICAL EXTENT =	15.0M	AXES =	39., 13.M
AREA =	296.6SQM	INCLINATION =	-3.2 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 5.M OFFSET= 22.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 20.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 38.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 8.M

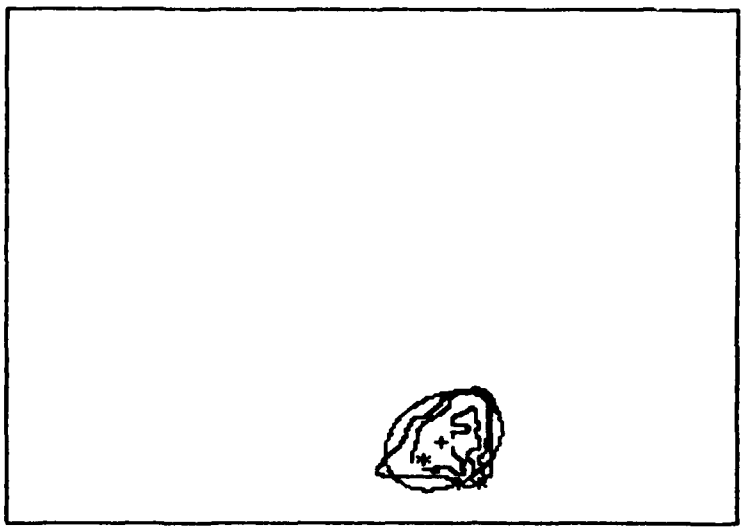
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 34

2325 Z 08-19-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 22.0



HEIGHT(ABOVE DETONATION PT.) =	12.0M	HEIGHT OF CENTROID=	5.M
WIDTH(MAX. HORIZONTAL EXTENT)=	12.0M	LATERAL OFFSET =	-3.M
VERTICAL EXTENT =	12.0M	AXES =	14., 11.M
AREA =	83.9SQM	INCLINATION =-	44.8 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 3.M OFFSET= -5.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 10.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 11.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= -1.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA

EVENT 35 TIME 1532Z DATE 082080

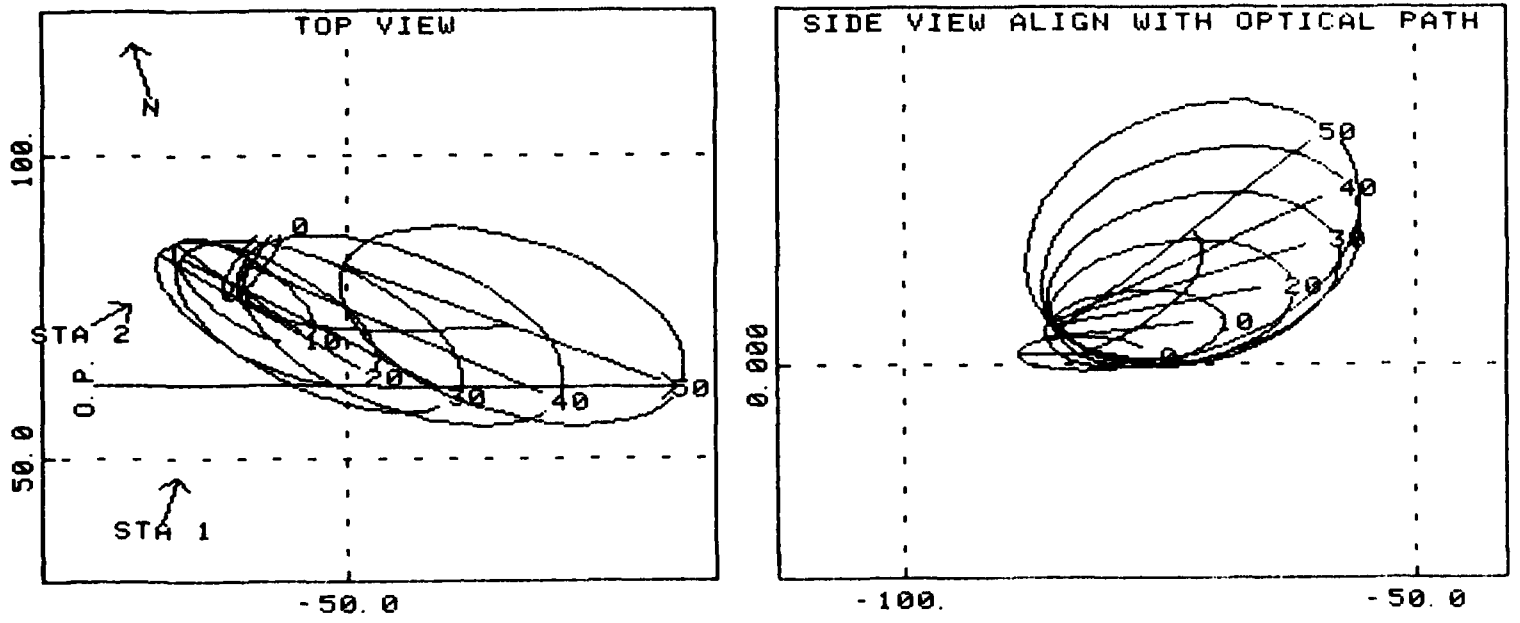
HALF SIZE GRENADES IR#2 SENSOR 0.5-0.7

	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECTIVE			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	3.5	12.7	4.2	41.5	2.3	0.0	131.6	1.5	0.0	0.0
1.0	4.3	14.6	5.1	58.0	2.9	0.0	225.9	1.8	222.2	0.6
2.0	5.1	16.5	6.0	77.6	3.5	0.0	359.8	2.1	219.3	0.6
3.0	5.8	18.3	6.9	98.7	4.0	0.0	525.4	2.4	216.2	0.6
4.0	5.6	12.9	5.8	58.0	4.5	0.0	282.5	2.7	212.7	0.6
5.0	6.3	13.7	6.4	68.6	5.0	0.0	380.7	3.0	208.9	0.5
6.0	6.9	14.5	7.1	80.2	5.5	0.0	501.4	3.4	204.7	0.5
7.0	7.6	15.2	7.8	92.4	6.0	0.0	641.8	3.7	200.2	0.5
8.0	8.2	16.0	8.4	104.9	6.5	0.0	801.0	4.0	195.3	0.5
9.0	8.8	16.7	9.1	118.7	7.0	0.0	990.1	4.3	190.1	0.5
10.0	9.5	17.5	9.7	132.6	7.4	0.0	1197.5	4.6	184.6	0.4
11.0	10.1	18.2	10.4	146.5	7.8	0.0	1420.3	4.9	179.0	0.4
12.0	10.7	18.9	11.0	162.0	8.2	0.0	1683.1	5.2	173.3	0.4
13.0	11.4	19.6	11.6	177.3	8.6	0.0	1961.2	5.5	167.7	0.4
14.0	12.0	20.3	12.2	193.1	9.0	0.0	2263.2	5.9	162.2	0.5
15.0	12.6	20.9	12.9	209.2	9.4	0.0	2588.8	6.2	157.0	0.5
16.0	13.2	21.6	13.5	225.5	9.7	0.0	2935.7	6.5	152.0	0.5
17.0	13.9	22.1	14.2	241.7	10.1	0.0	3296.9	6.8	147.4	0.5
18.0	14.5	22.7	14.8	258.6	10.4	0.0	3690.0	7.1	143.2	0.5
19.0	15.1	23.3	15.4	276.4	10.7	0.0	4117.7	7.4	139.4	0.6
20.0	15.7	23.8	16.0	293.3	11.0	0.0	4545.4	7.7	135.8	0.6
21.0	16.3	24.4	16.6	310.9	11.3	0.0	5003.7	8.0	132.7	0.6
22.0	16.9	24.9	17.2	329.1	11.5	0.0	5493.0	8.3	129.8	0.6
23.0	17.5	25.4	17.8	347.3	11.8	0.0	5999.6	8.7	127.2	0.7
24.0	18.1	25.9	18.3	364.6	12.0	0.0	6496.5	9.0	124.8	0.7
25.0	18.7	26.3	18.9	382.6	12.3	0.0	7030.0	9.3	122.6	0.7
26.0	19.3	26.8	19.5	400.7	12.5	0.0	7578.7	9.6	120.7	0.8
27.0	19.9	27.2	20.1	418.8	12.7	0.0	8142.8	9.9	118.9	0.8
28.0	20.5	27.7	20.7	437.6	12.8	0.0	8738.3	10.2	117.3	0.8
29.0	21.1	28.1	21.2	455.4	13.0	0.0	9320.6	10.5	115.8	0.9
30.0	21.7	28.5	21.8	473.8	13.2	0.0	9933.2	10.8	114.4	0.9
31.0	22.3	28.8	22.3	491.6	13.3	0.0	10536.1	11.1	113.2	1.0
32.0	22.9	29.2	22.9	509.8	13.4	0.0	11162.7	11.4	112.0	1.0
33.0	23.5	29.5	23.5	528.3	13.5	0.0	11809.9	11.7	111.0	1.0
34.0	24.1	29.8	24.0	545.9	13.6	0.0	12438.5	12.1	110.0	1.1
35.0	24.6	30.1	24.6	562.8	13.7	0.0	13048.8	12.4	109.0	1.1
36.0	25.2	30.4	25.1	580.4	13.7	0.0	13692.4	12.7	108.3	1.2
37.0	25.8	30.7	25.7	598.8	13.8	0.0	14367.6	13.0	107.4	1.2
38.0	26.4	30.9	26.2	615.2	13.8	0.0	14978.2	13.3	106.6	1.2
39.0	27.0	31.2	26.8	633.2	13.8	0.0	15653.3	13.6	105.9	1.3
40.0	27.6	31.4	27.3	650.2	13.8	0.0	16292.1	13.9	105.3	1.3
41.0	28.1	31.6	27.9	667.1	13.8	0.0	16931.7	14.2	104.7	1.4
42.0	28.7	31.8	28.4	683.6	13.8	0.0	17557.5	14.5	104.1	1.4
43.0	29.3	31.9	28.9	699.8	13.8	0.0	18176.2	14.8	103.[illegible]	1.5
44.0	29.8	32.1	29.4	715.5	13.7	0.0	18770.2	15.1	103.0	1.5
45.0	30.4	32.2	30.0	731.8	13.6	0.0	19389.5	15.4	102.6	1.5
46.0	31.0	32.4	30.5	747.5	13.5	0.0	19981.7	15.7	102.1	1.6
47.0	31.5	32.5	31.0	762.8	13.4	0.0	20558.2	16.0	101.7	1.6
48.0	32.1	32.6	31.5	777.8	13.3	0.0	21118.2	16.3	101.2	1.7
49.0	32.6	32.7	31.9	791.1	13.2	0.0	21605.4	16.6	100.8	1.7
50.0	33.1	32.7	32.4	805.7	13.1	0.0	22140.5	16.9	100.5	1.7

SMOKE III EGLIN AFB, FLA.

EVENT 35 TIME 1532Z DATE 082080

HALF SIZE GRENADES IR#2 SENSOR 0.5-0.7



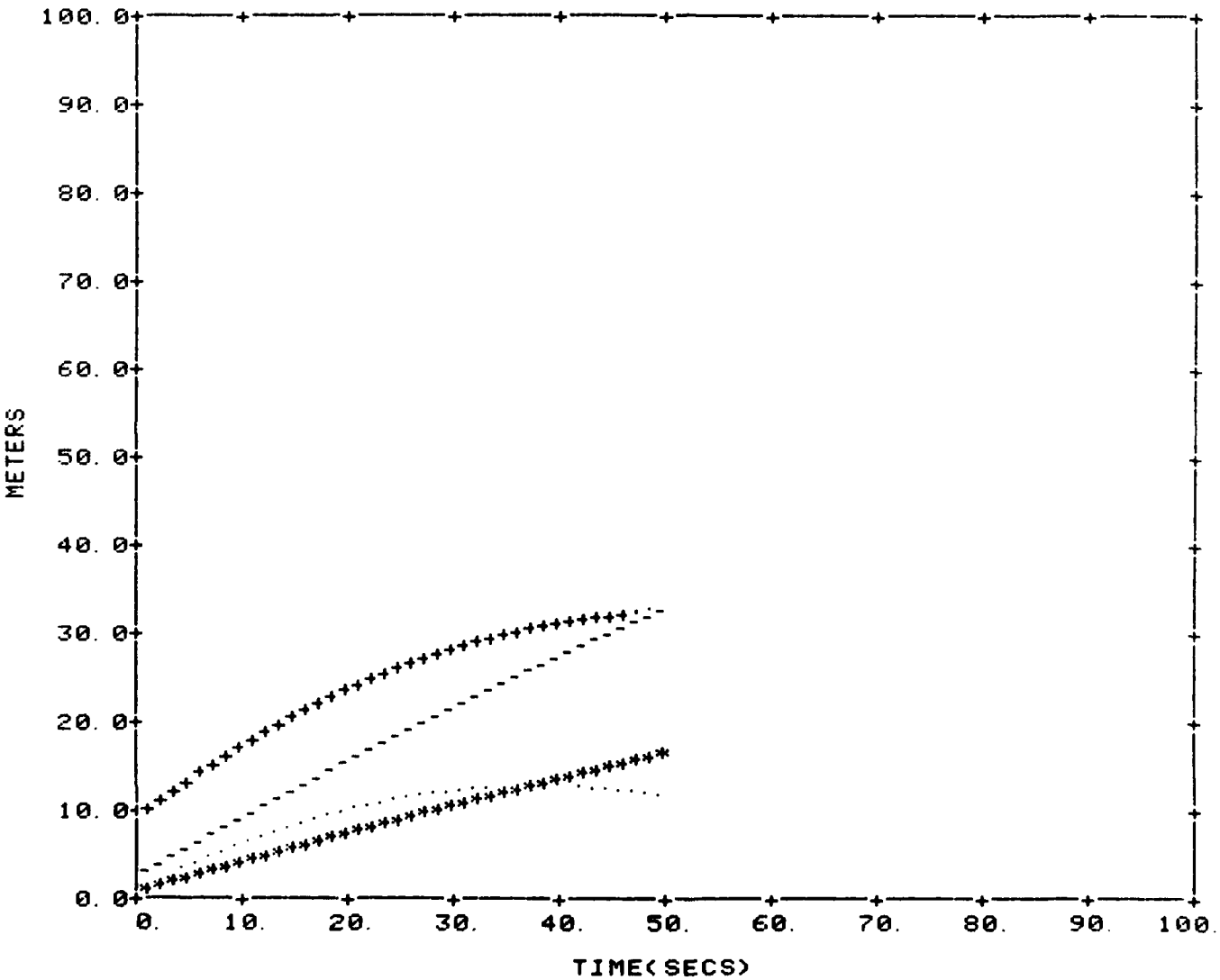
SMOKE III EGLIN AFB, FLA.

EVENT 35 TIME 1532Z DATE 082080

HALF SIZE GRENADES IR#2 SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

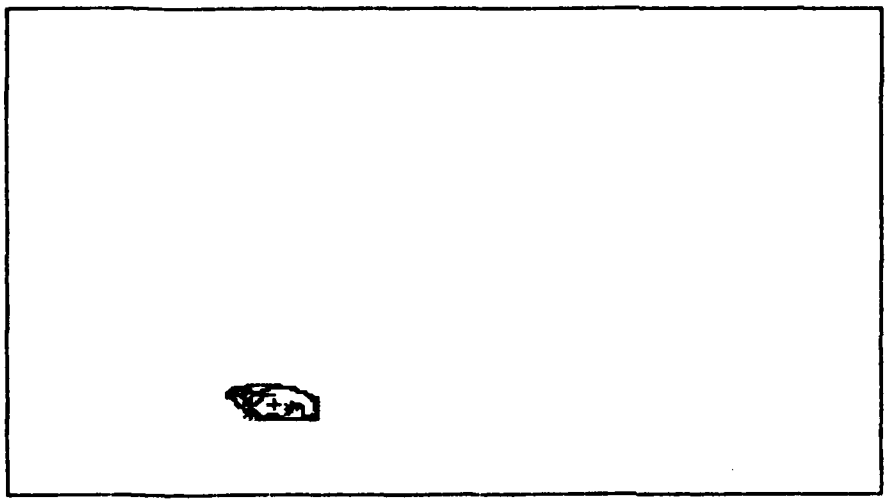
. . . . . TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 35

1531 Z 08-20-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 6.0



HEIGHT(ABOVE DETONATION PT.) =	6.0M	HEIGHT OF CENTROID=	2.M
WIDTH(MAX. HORIZONTAL EXTENT)=	18.0M	LATERAL OFFSET =	2.M
VERTICAL EXTENT =	8.0M	AXES =	17., 8.M
AREA =	117.3SQM	INCLINATION =	11.6 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 2.M OFFSET= 6.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 0.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 14.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

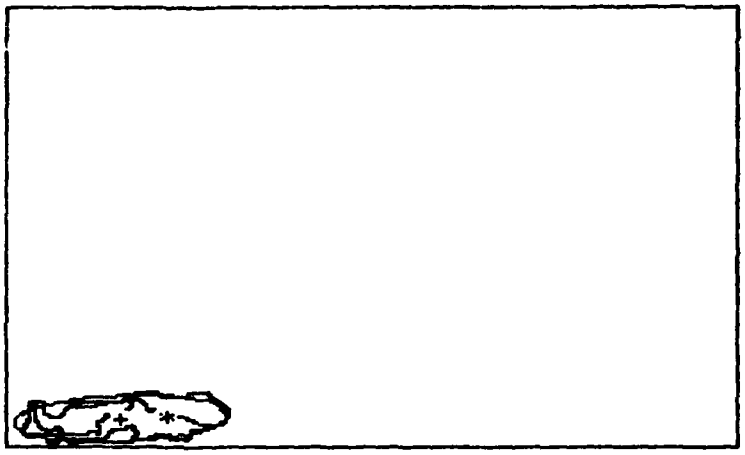
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 35

1532 Z 08-20-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 6.0



HEIGHT(ABOVE DETONATION PT.) =	6.0M	HEIGHT OF CENTROID=	3.M
WIDTH(MAX. HORIZONTAL EXTENT)=	22.0M	LATERAL OFFSET =	6.M
VERTICAL EXTENT =	6.0M	AXES =	23., 6.M
AREA =	104.2SQM	INCLINATION =	-3.3 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 3.M OFFSET= 11.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 20.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 21.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. A. 7 METERS)= 1.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA.

EVENT 36 TIME 1624Z DATE 082080

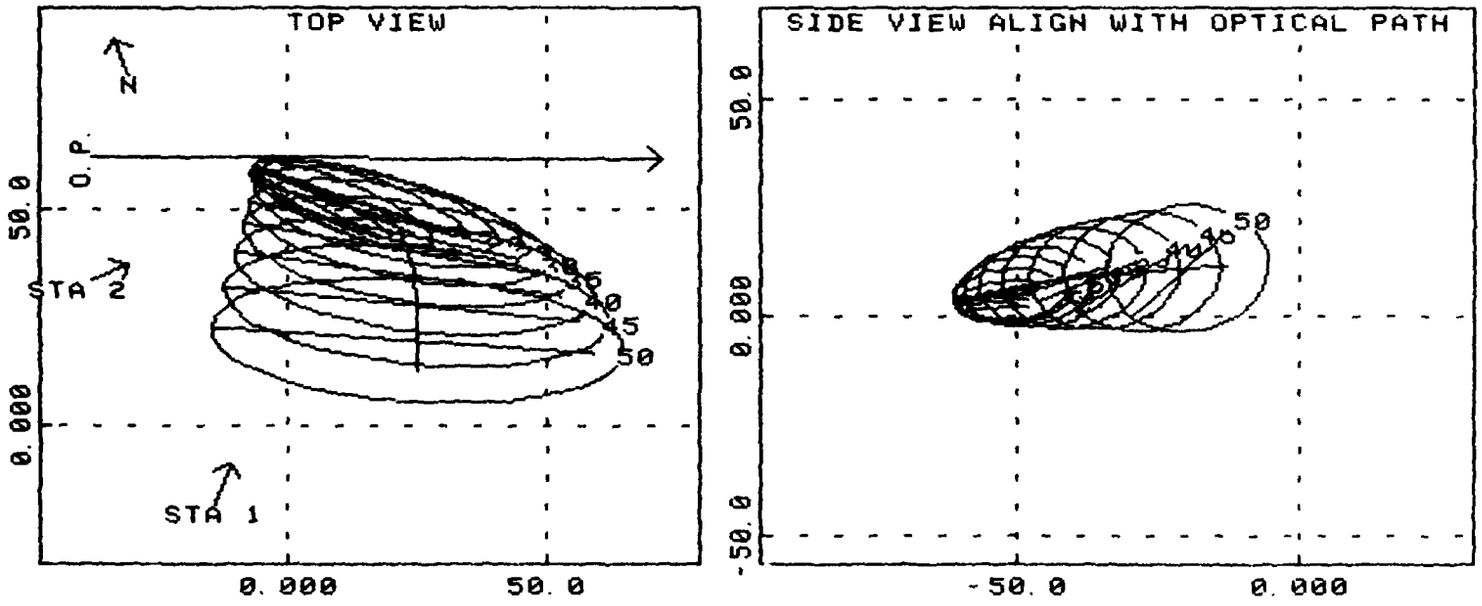
ALKALI HAILIDE 4 CANNISTERS SENSOR 0.5-0.7

	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECTIVE			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
5.0	5.3	17.1	5.9	78.8	9.8	0.0	581.1	2.4	0.0	0.0
6.0	6.0	17.4	6.6	89.6	9.5	0.0	751.7	2.7	84.8	0.9
7.0	6.6	17.7	7.3	100.5	9.2	0.0	944.6	2.9	87.2	0.9
8.0	7.2	18.0	7.9	111.3	9.0	0.0	1158.2	3.2	89.7	0.8
9.0	7.7	18.3	8.6	122.9	8.8	0.0	1406.3	3.4	92.4	0.8
10.0	8.3	18.6	9.3	134.3	8.7	0.0	1674.6	3.7	95.3	0.8
11.0	8.9	18.9	9.9	146.1	8.6	0.0	1973.0	3.9	98.5	0.8
12.0	9.5	19.2	10.6	158.0	8.5	0.0	2299.0	4.2	101.8	0.7
13.0	10.0	19.5	11.2	169.5	8.5	0.0	2637.5	4.4	105.3	0.7
14.0	10.6	19.8	11.8	182.1	8.6	0.0	3025.4	4.7	109.1	0.7
15.0	11.1	20.1	12.4	194.5	8.7	0.0	3433.4	4.9	113.0	0.7
16.0	11.7	20.4	13.0	207.2	8.8	0.0	3872.4	5.1	117.1	0.7
17.0	12.2	20.7	13.6	219.5	9.0	0.0	4326.7	5.4	121.3	0.7
18.0	12.7	21.0	14.2	232.5	9.2	0.0	4824.8	5.6	125.6	0.7
19.0	13.2	21.2	14.8	245.4	9.5	0.0	5345.9	5.8	130.0	0.6
20.0	13.8	21.6	15.4	258.9	9.8	0.0	5909.3	6.1	134.3	0.7
21.0	14.3	21.8	16.0	272.2	10.2	0.0	6492.0	6.3	138.5	0.7
22.0	14.8	22.1	16.5	285.6	10.6	0.0	7104.5	6.5	142.7	0.7
23.0	15.2	22.4	17.1	298.3	11.0	0.0	7720.1	6.7	146.7	0.7
24.0	15.7	22.7	17.7	312.3	11.5	0.0	8401.3	6.9	150.5	0.7
25.0	16.2	23.0	18.2	325.9	12.1	0.0	9096.5	7.1	154.2	0.7
26.0	16.7	23.2	18.7	339.4	12.7	0.0	9819.3	7.3	157.6	0.7
27.0	17.1	23.5	19.3	353.0	13.3	0.0	10562.1	7.5	160.8	0.8
28.0	17.6	23.8	19.8	366.8	14.0	0.0	11345.0	7.7	163.8	0.8
29.0	18.0	24.0	20.3	380.5	14.7	0.0	12146.6	7.9	166.6	0.8
30.0	18.5	24.3	20.8	393.9	15.5	0.0	12963.8	8.1	169.3	0.9
31.0	18.9	24.5	21.3	407.7	16.3	0.0	13815.5	8.3	171.7	0.9
32.0	19.3	24.8	21.7	420.8	17.1	0.0	14672.9	8.4	173.9	0.9
33.0	19.7	25.0	22.2	435.3	18.0	0.0	15598.9	8.6	176.0	1.0
34.0	20.1	25.3	22.7	448.2	19.0	0.0	16494.4	8.8	177.9	1.0
35.0	20.5	25.5	23.1	461.4	20.0	0.0	17422.2	9.0	179.7	1.0
36.0	20.9	25.7	23.6	475.4	21.0	0.0	18408.4	9.1	181.4	1.1
37.0	21.3	26.0	24.1	489.4	22.1	0.0	19417.8	9.3	182.9	1.1
38.0	21.7	26.2	24.5	502.3	23.2	0.0	20398.9	9.5	184.3	1.1
39.0	22.1	26.4	24.9	516.5	24.4	0.0	21460.4	9.6	185.7	1.2
40.0	22.4	26.7	25.3	529.1	25.6	0.0	22462.1	9.8	186.9	1.2
41.0	22.8	26.9	25.7	542.4	26.9	0.0	23533.4	9.9	188.1	1.3
42.0	23.1	27.1	26.1	555.5	28.2	0.0	24604.5	10.1	189.2	1.3
43.0	23.5	27.3	26.5	568.0	29.5	0.0	25663.7	10.2	190.2	1.4
44.0	23.8	27.5	26.9	581.7	30.9	0.0	26810.1	10.4	191.2	1.4
45.0	24.2	27.8	27.3	595.6	32.4	0.0	27976.2	10.5	192.1	1.4
46.0	24.5	28.0	27.7	607.2	33.9	0.0	29042.7	10.6	192.9	1.5
47.0	24.8	28.2	28.0	621.4	35.4	0.0	30264.8	10.8	193.7	1.5
48.0	25.1	28.4	28.4	633.2	37.0	0.0	31371.9	10.9	194.5	1.6
49.0	25.4	28.6	28.7	645.6	38.6	0.0	32525.7	11.0	195.2	1.6
50.0	25.7	28.9	29.1	658.8	40.3	0.0	33724.8	11.1	195.9	1.7
51.0	25.9	29.1	29.4	671.3	42.0	0.0	34906.9	11.2	196.5	1.7
52.0	26.2	29.3	29.7	682.6	43.7	0.0	36044.3	11.4	197.1	1.8
53.0	26.5	29.5	30.0	695.4	45.6	0.0	37272.3	11.5	197.7	1.8
54.0	26.7	29.7	30.3	708.4	47.4	0.0	38498.3	11.6	198.2	1.9

SMOKE III EGLIN AFB, FLA.

EVENT 36 TIME 1624Z DATE 082080

ALKALI HAILIDE 4 CANNISTERS SENSOR 0.5-0.7



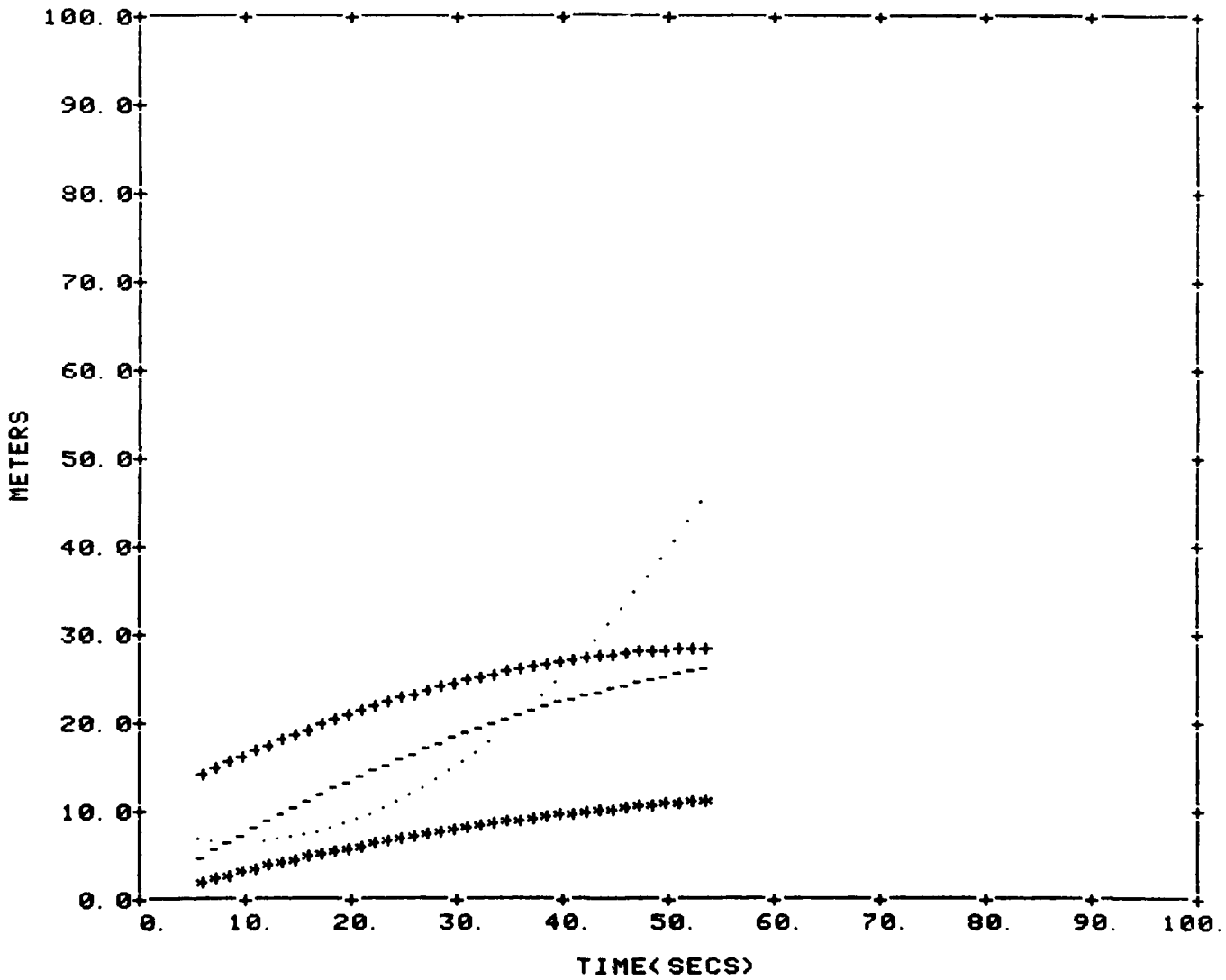
SMOKE III EGLIN AFB, FLA.

EVENT 36 TIME 1624Z DATE 082080

ALKALI HAILIDE 4 CANNISTERS SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

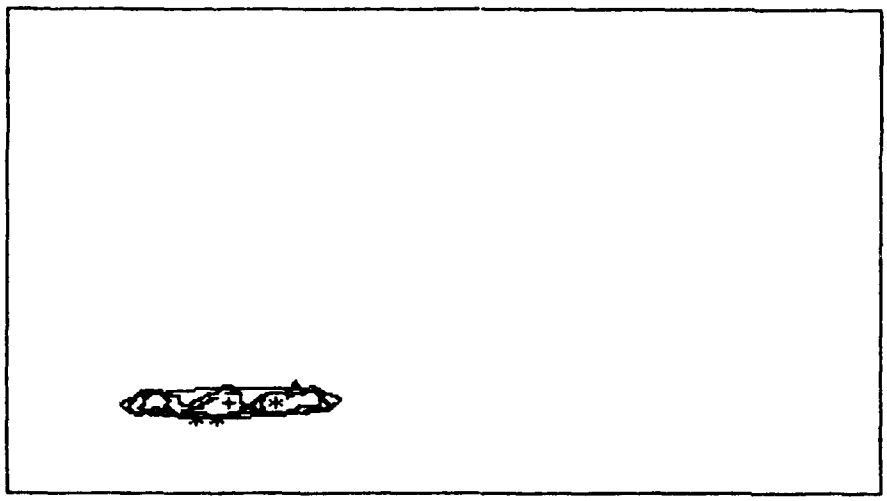
.....TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 36

1624 Z 08-20-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 10.0



HEIGHT(ABOVE DETONATION PT.) =	9.0M	HEIGHT OF CENTROID=	4.M
WIDTH(MAX. HORIZONTAL EXTENT)=	41.0M	LATERAL OFFSET =	4.M
VERTICAL EXTENT =	8.0M	AXES =	44., 7.M
AREA =	213.9SQM	INCLINATION =	-1.7 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 4.M OFFSET= 14.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE=-59.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 39.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 65.M

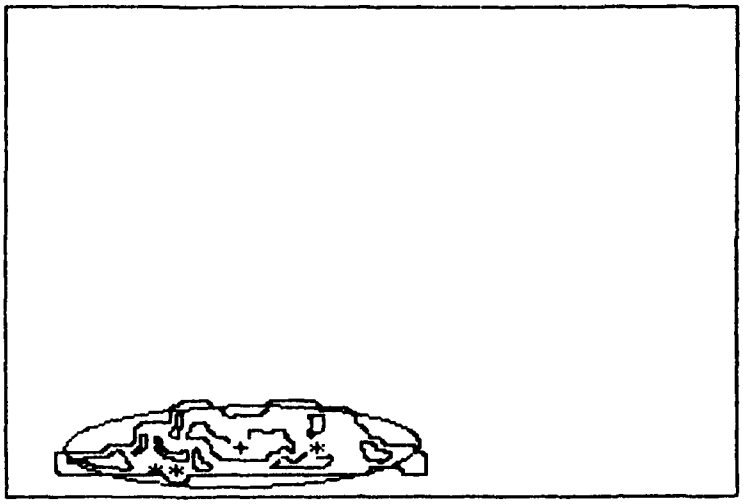
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 36

1625 Z 08-20-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 10.0



HEIGHT(ABOVE DETONATION PT.) =	8.0M	HEIGHT OF CENTROID=	3.M
WIDTH(MAX. HORIZONTAL EXTENT)=	39.0M	LATERAL OFFSET =	8.M
VERTICAL EXTENT =	10.0M	AXES =	38., 10.M
AREA =	120.3SQM	INCLINATION =	-1.2 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 3.M OFFSET= 16.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 25.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 33.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 5.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB FLA

EVENT 37 TIME 1832Z DATE 082080

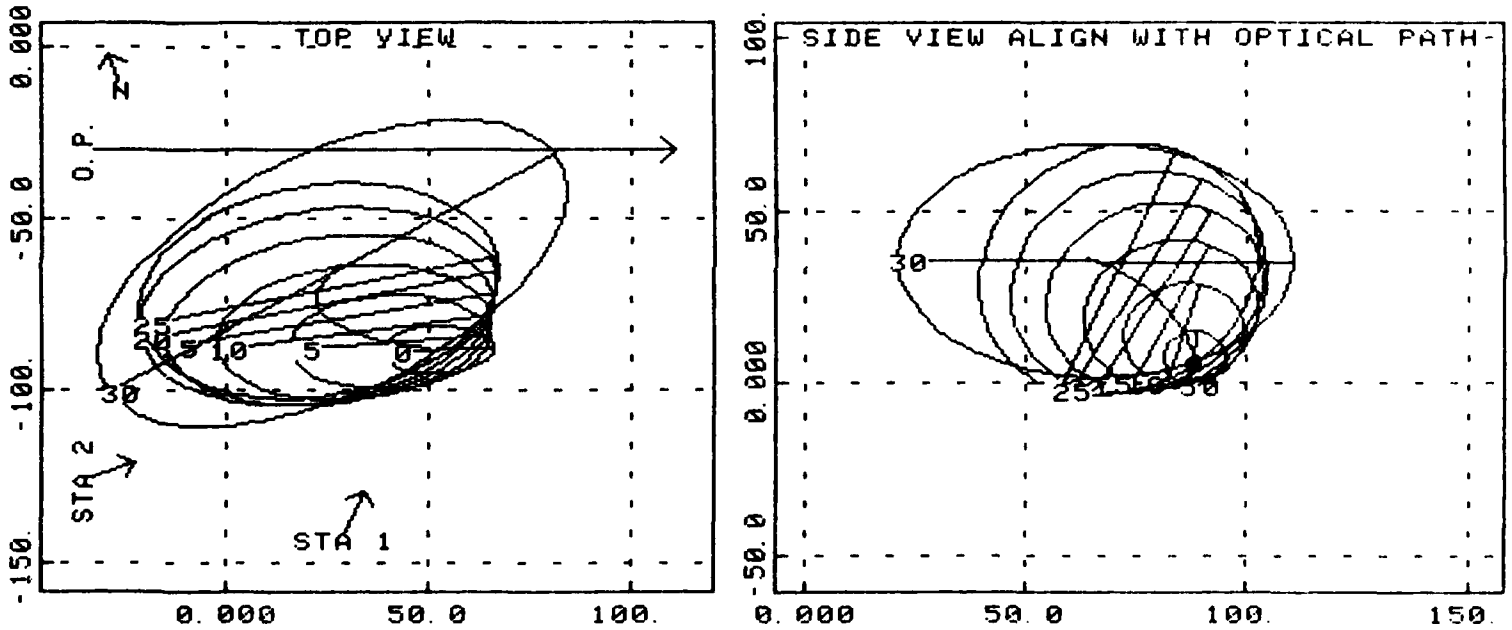
155MM HE 27LBS 3 RNDS SENSOR 0 5 0 7

	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECTIVE			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	14.9	14.0	15.3	16 3	-1 9	0 0	2849.3	7 2	0 0	0 0
1 0	17.8	16.7	18.3	240.8	-2.3	0 0	4786 5	8 6	294 3	2 7
2.0	20 6	19.5	21.2	325 2	-2 8	0 0	7395 2	10 0	295 3	2 6
3.0	23.5	22.2	24.2	421.2	-3.3	0 0	10759 5	11 4	296 3	2 4
4.0	26.2	24.8	27.0	526.3	-3 8	0.0	14854 8	12 7	297 3	2 [illegible]
5 0	28.8	27.3	29.7	638.3	-4 3	0 0	19654 5	14 0	298 6	2 [illegible]
6.0	31.5	29.9	32.5	761.7	-4 8	0 0	25337.4	15 2	299 9	2 1
7 0	34.0	32.3	35.1	890.1	-5.4	0 0	31677 1	16 5	301 4	2 0
8.0	36.5	34.7	37.7	1026.3	-6.0	0.0	38800.3	17 6	303 1	1 9
9.0	38.9	37.1	40.2	1170.4	-6.6	0 0	46704 0	18 8	304 9	1 8
10 0	41.3	39.4	42.7	1316.0	-7 2	0 0	55070 1	19 9	307 1	1 7
11.0	43.6	41.6	45.1	1469 3	-7.8	0.0	64171.2	21 0	309 5	1 6
12.0	45.8	43.7	47.4	1622.4	-8.5	0 0	73541.4	22 1	312 2	1 5
13.0	48.0	45.8	49.7	1781.0	-9 2	0 0	83464 1	23 1	315 3	1 4
14.0	50.1	47.8	52.0	1941.2	-9 9	0 0	93674 8	24 1	318 9	1 3
15.0	52.1	49.7	54.1	2099.4	-10 7	0 0	103917 3	25 0	323 1	1 2
16 0	54.1	51.5	56.3	2261.3	-11 4	0.0	114459 1	26 0	327 9	1 1
17.0	56.0	53.2	58.3	2418.2	-12.2	0 0	124669.5	26 8	333 3	1 0
18.0	57.8	54.8	60.3	2573.7	-13.0	0.0	134766 3	27 7	339 5	1 0
19.0	59.6	56.3	62.2	2727.5	-13.8	0.0	144635 8	28 5	346 4	0 9
20.0	61.4	57.7	64.1	2880.2	-14.6	0 0	154277.5	29 3	353 9	0 9
21.0	63.0	58.9	65.9	3025.2	-15.5	0 0	163162.4	30 1	1 8	0 9
22.0	64.6	60.1	67.6	3164.3	-16.4	0 0	171356.6	30 8	9 8	0 9
23.0	66.1	61.2	69.3	3301.9	-17.3	0.0	179132.0	31 5	17 6	0 9
24.0	67.6	62.0	70.9	3426.7	-18.2	0 0	185660.3	32 1	25 0	0 9
25.0	69.0	62.9	72.5	3552.5	-19.1	0 0	191894 2	32 7	31 8	1 0
26.0	70.2	63.6	73 8	3664.9	-20.1	0 0	196788 7	33 3	37 9	1 0
27.0	71.5	64.2	75.2	3773.7	-21 1	0 0	201031 8	33 9	43 2	1 1
28.0	72.6	64 8	76.4	3871.1	-22.1	0 0	204106 5	34 4	47 9	1 2
29.0	73.7	64 7	77 7	3950.9	-23.1	0 0	205762 2	34 9	51 9	1 3
30.0	69.0	89.4	67.4	4731.1	-24.2	0.0	309054.9	35 3	55 4	1 4
31.0	69.7	90.4	67.9	4818.0	-25.3	0 0	314276.9	35 8	58 5	1 5
32.0	70.3	91.3	68.2	4897.5	-26.3	0 0	317916.3	36 2	61 2	1 6

SMOKE III EGLIN AFB, FLA.

EVENT 37 TIME 1832Z DATE 082080

155MM HE 27LBS. 3 RNDS. SENSOR 0.5-0.7



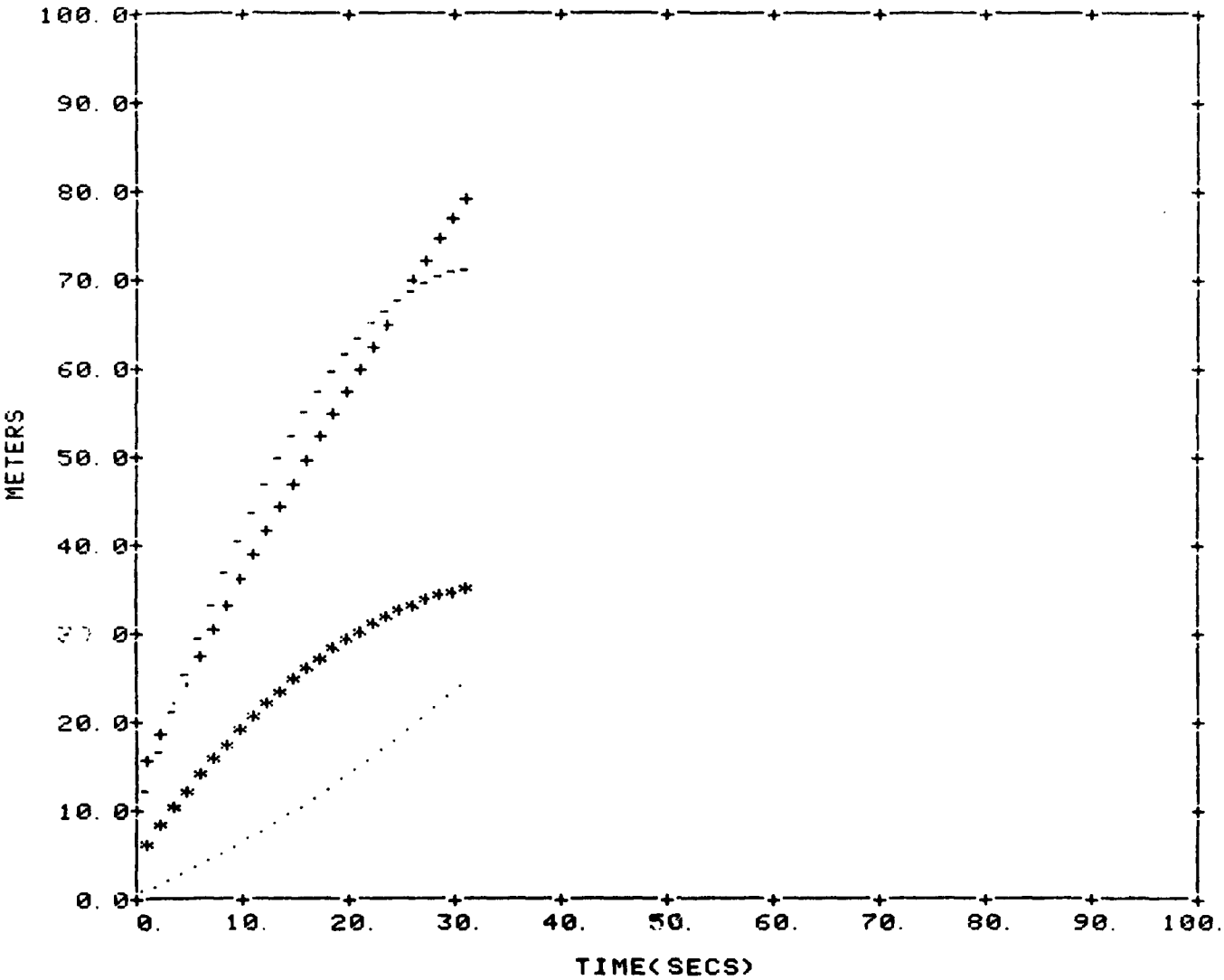
SMOKE III EGLIN AFB, FLA.

EVENT 37 TIME 1832Z DATE 082080

155MM HE 27LBS. 3 RNDS. SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

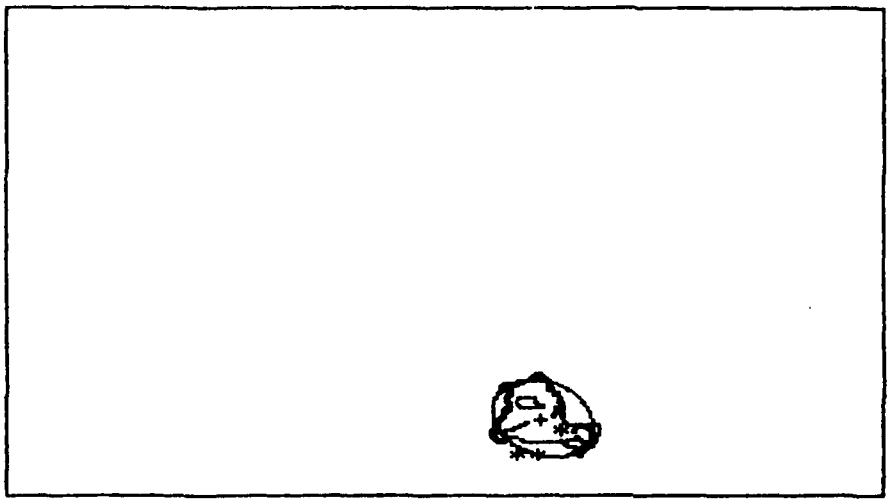
. . . . . TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 37

1832 Z 08-20-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 1.0



HEIGHT(ABOVE DETONATION PT.) =	19.0M	HEIGHT OF CENTROID=	8.M
WIDTH(MAX. HORIZONTAL EXTENT)=	22.0M	LATERAL OFFSET =	2.M
VERTICAL EXTENT =	20.0M	AXES =	22., 17.M
AREA =	240.9SQM	INCLINATION =	34.0 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 6.M OFFSET= 6.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 12.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 22.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 7.M

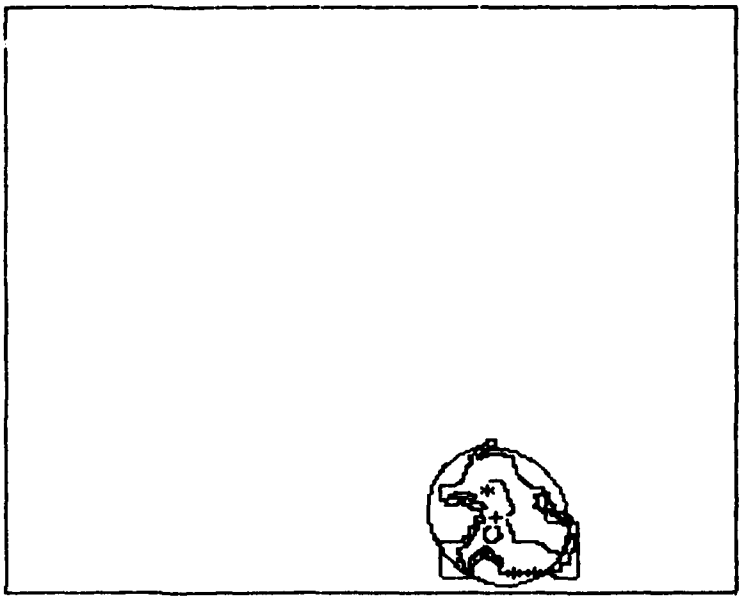
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 37

1832 Z 08-20-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 1.0



HEIGHT(ABOVE DETONATION PT.) =	17.0M	HEIGHT OF CENTROID=	7.M
WIDTH(MAX. HORIZONTAL EXTENT)=	15.0M	LATERAL OFFSET =	-3.M
VERTICAL EXTENT =	18.0M	AXES =	18., 15.M
AREA =	135.7SQM	INCLINATION =	72.0 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 11.M OFFSET= -4.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 12.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 9.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
# = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB FLA

EVENT 38 TIME 1405Z DATE 082180

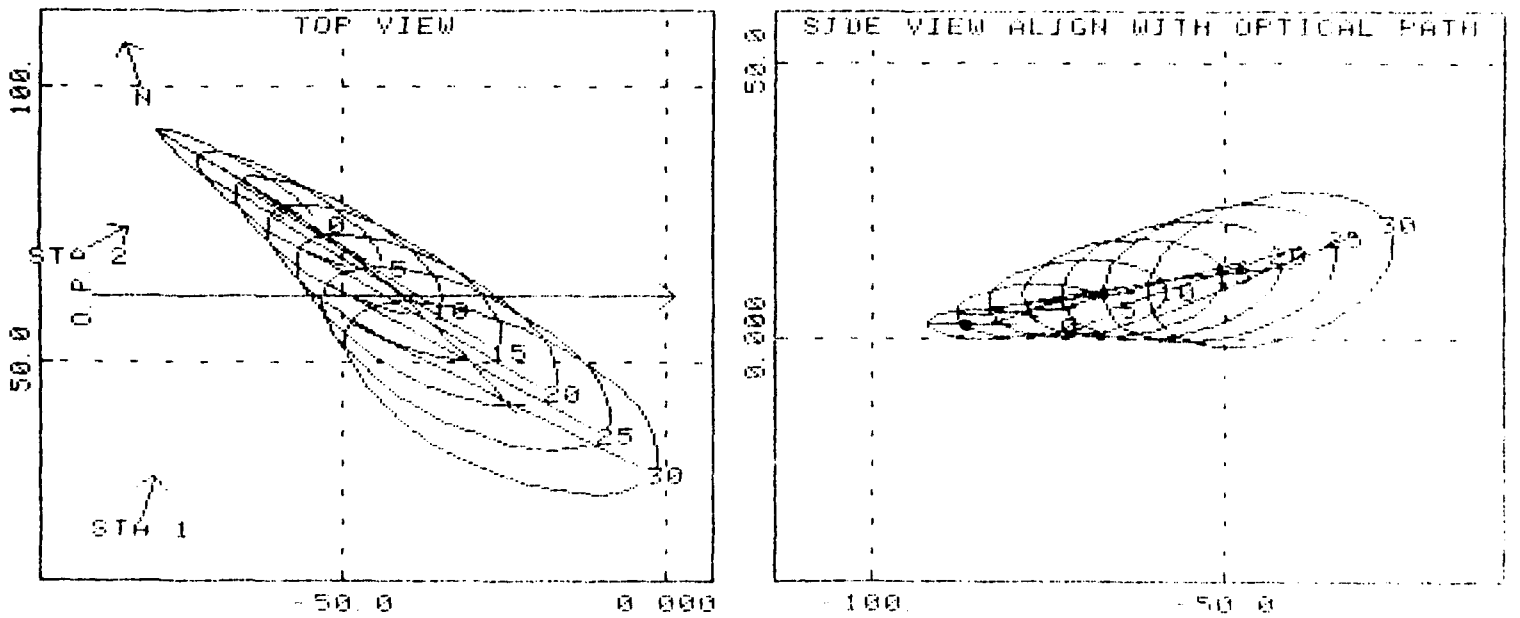
XM38 GRENADES IR#1 12 EA SENSOR 0 5-0 7

TIME(SEC)	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS) HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	DIMENSIONS INDEPENDENT OF PERSPECTIVE VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0 0	5.1	17 3	5 2	70 2	1 3	0 0	411 5	2 5	0 0	0 0
1 0	6 1	18 2	6.1	86.7	2.5	0 0	586 5	3 1	141 5	2 1
2 0	7.1	19 1	7 0	104.2	3 8	0 0	795 1	3 6	142 0	2 1
3 0	8 0	19 9	7 8	122 4	5.0	0 0	1035 3	4 1	142 6	2 1
4.0	9 0	20.7	8.7	142.0	6 3	0 0	1320 2	4 6	143 1	2 0
5.0	9.9	21.5	9 6	161 8	7.5	0 0	1630.4	5 1	143.6	2 0
6 0	10.8	22.3	10 5	182.4	8.8	0 0	1977 5	5 5	144.2	2 0
7 0	11.7	23 1	11 3	203.6	10.1	0 0	2358 5	6 0	144 7	2 0
8 0	12 5	23.8	12.2	225 3	11.4	0 0	2774 5	6 4	145 2	2 0
9.0	13.4	24.6	13 0	247 4	12.7	0 0	3222 1	6 9	145 [illegible]	2 0
10.0	14 2	25.3	13 8	270.0	14.0	0 0	3703 3	7 3	146 4	2 0
11.0	15.0	25.9	14.6	292 3	15.3	0 0	4202 6	7 7	146 9	2 0
12 0	15.7	26.6	15 4	315.7	16 6	0 0	4752 8	8 1	147 5	2 0
13 0	16 5	27.2	16 1	339.0	17.9	4 9	5322 1	8 4	148 1	1 9
14.0	17 2	27.8	16 9	363.0	19.2	9 1	5936 7	8 8	148 7	1 9
15.0	18 0	28.5	17 6	387 2	20 6	11 8	6578 1	9 1	149 3	1 9
16 0	18 8	28 9	18.7	411 3	21 9	13 8	7242.7	9 5	149 9	1 9
17.0	19 5	29.5	19.4	434.5	23.3	15 2	7906 2	9 8	150 5	1 9
18.0	20.1	30.0	20.1	459.1	24.6	16 4	8635 0	10 1	151 1	1 9
19 0	20.8	30.5	20 9	483.1	26.0	17 2	9371 2	10 4	151 7	1 9
20.0	21.4	31.0	21.6	507.0	27.4	17.7	10124.5	10 6	152 4	1 9
21.0	22.0	31.5	22.3	530.8	28.7	17 8	10901 7	10 9	153 0	1 9
22 0	22.6	31 9	23.0	553 8	30.1	17 6	11674 6	11 1	153 6	1 9
23 0	23.2	32.3	23.7	578.3	31.5	16 9	12517.1	11 4	154 3	1 8
24 0	23.8	32.7	24.4	600.7	32.9	15 6	13314.2	11 6	154 9	1 8
25 0	24 3	33.1	25 0	624.7	34.3	13 7	14186 5	11 8	155 6	1 8
26 0	24 8	33 5	25.7	647.5	35.7	10.4	15040 7	12 0	156 2	1 8
27.0	25 3	33.9	26.3	669 4	37.2	2 4	15881.6	12 1	156 9	1 8
28.0	25.8	34 2	27.0	691 6	38.6	0 0	16755.2	12 3	157 6	1 8
29 0	26 3	34.5	27 6	713 3	40.0	0 0	17628.6	12 4	158 3	1 8
30 0	26 7	34.8	28 2	734 9	41 5	0 0	18517 4	12 6	158 9	1 8
31 0	27 1	35 1	28 9	756 7	42 9	0 0	19432 7	12 7	159 6	1 8
32 0	27 6	35.3	29 5	777 3	44.4	0 0	20317 3	12 8	160 3	1 8

SMOKE III ECLIN AFB, FLA

EVENT 38 TIME 1405Z DATE 082180

XM38 GRENADES IR#1 12 EA SENSOR 0.5-0.7



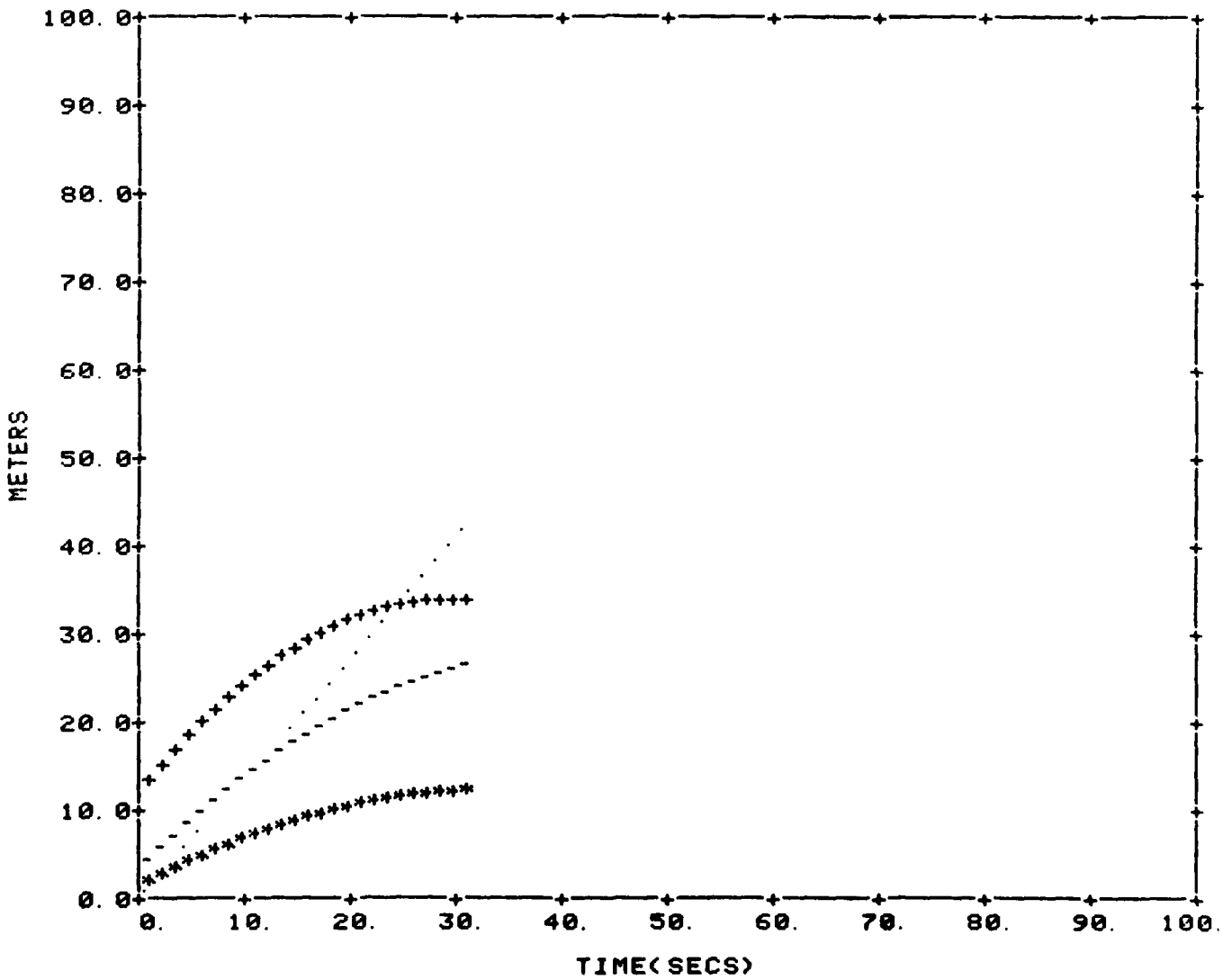
SMOKE III EGLIN AFB, FLA.

EVENT 38 TIME 1405Z DATE 082180

XM38 GRENADES IR#1 12 EA SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

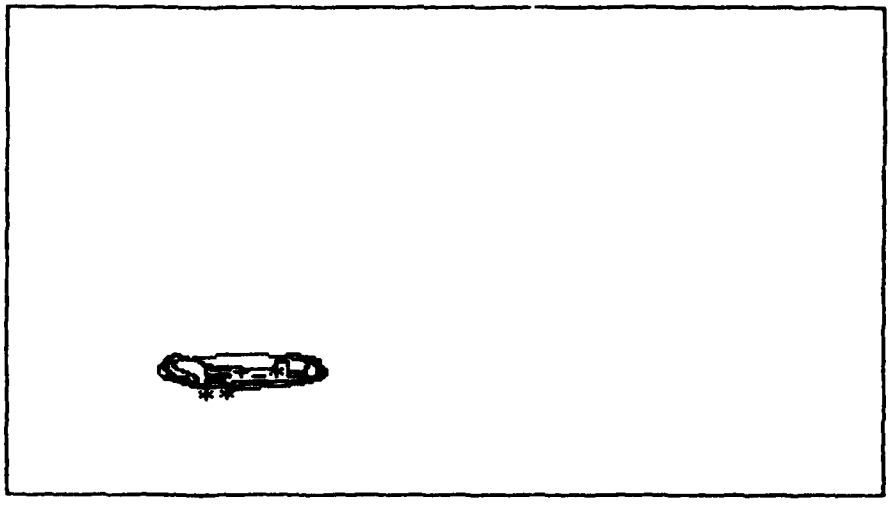
. . . . . TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 38

1405 Z 08-21-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 3.0



HEIGHT(ABOVE DETONATION PT.) =	9.0M	HEIGHT OF CENTROID=	5.M
WIDTH(MAX. HORIZONTAL EXTENT)=	32.0M	LATERAL OFFSET =	5.M
VERTICAL EXTENT =	8.0M	AXES =	34., 8.M
AREA =	146.7SQM	INCLINATION =	0.0 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 5.M OFFSET= 12.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 25.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 31.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 4.M

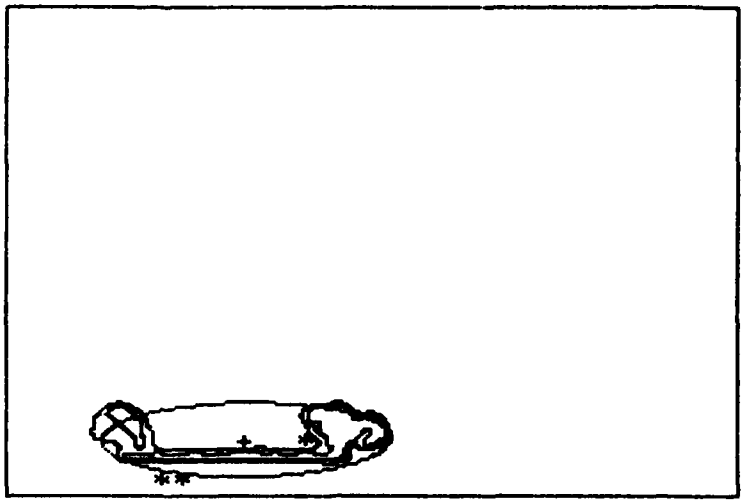
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 38

1405 Z 08-21-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 3.0



HEIGHT(ABOVE DETONATION PT.) =	9.0M	HEIGHT OF CENTROID=	5.M
WIDTH(MAX. HORIZONTAL EXTENT)=	32.0M	LATERAL OFFSET =	7.M
VERTICAL EXTENT =	8.0M	AXES =	31., 9.M
AREA =	115.3SQM	INCLINATION =	-0.7 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 5.M OFFSET= 14.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 31.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 30.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA.

EVENT 39 TIME 1442Z DATE 082180

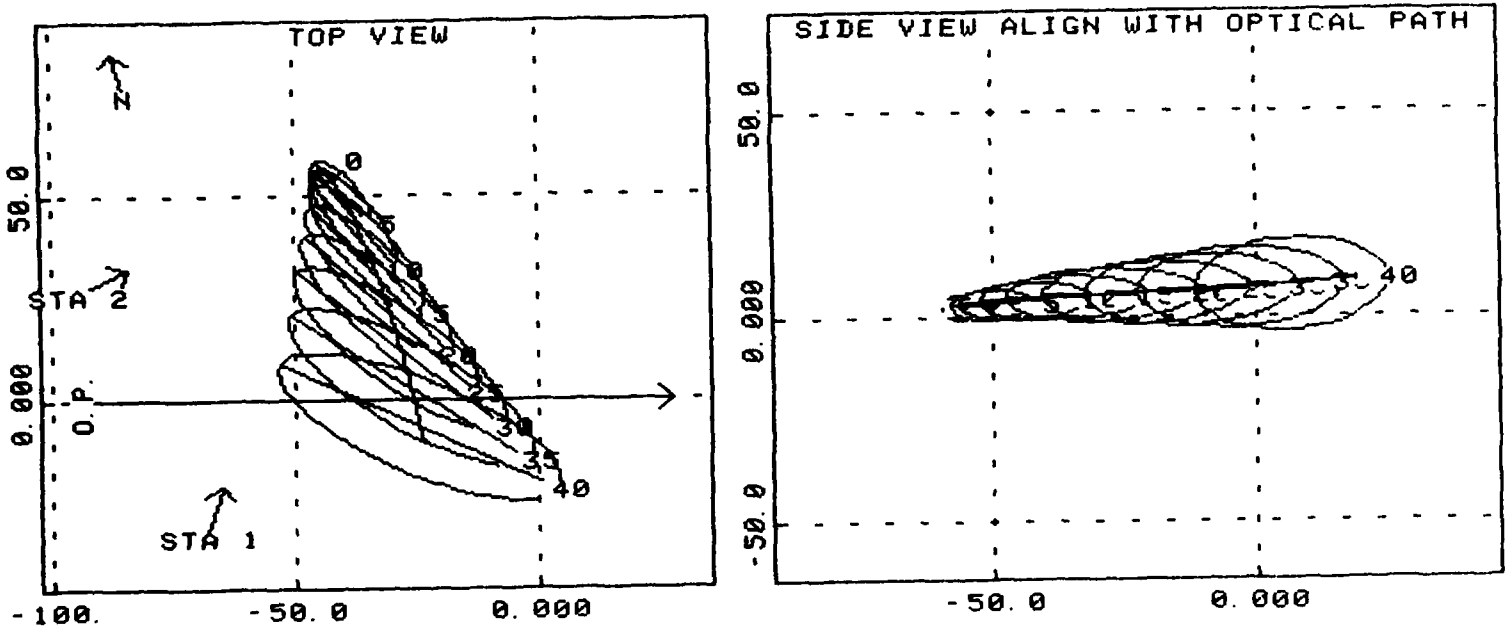
LB(RP) 6 EA. AND XM76 IR#2 6 EA SENSOR 0.5-0.7

	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECTIVE			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	5.4	5.9	5.9	27.6	-1.3	0.0	106.9	2.4	0.0	0.0
1.0	5.6	7.2	6.2	34.7	-0.1	0.0	164.5	2.6	168.3	1.3
2.0	5.9	9.0	6.4	45.7	1.1	0.0	232.8	2.7	169.0	1.3
3.0	6.3	11.1	6.8	58.8	2.3	0.0	313.2	2.9	169.6	1.3
4.0	6.5	13.2	7.0	72.6	3.5	0.0	400.5	3.0	170.2	1.3
5.0	6.9	15.3	7.4	87.9	4.7	0.0	504.6	3.2	170.8	1.4
6.0	7.2	17.3	7.7	103.8	6.0	0.0	619.4	3.3	171.4	1.4
7.0	7.5	19.2	8.0	119.9	7.3	0.0	742.3	3.5	172.0	1.4
8.0	7.8	21.1	8.3	136.9	8.6	0.0	882.8	3.6	172.5	1.4
9.0	8.1	22.8	8.7	154.8	9.9	0.0	1041.1	3.8	173.1	1.4
10.0	8.4	24.5	9.0	172.6	1[illegible].3	0.0	1206.6	3.9	173.6	1.5
11.0	8.8	26.2	9.4	191.4	12.6	0.0	1396.9	4.1	174.1	1.5
12.0	9.1	27.7	9.7	209.8	14.0	0.0	1591.2	4.2	174.6	1.5
13.0	9.4	29.1	10.1	229.3	15.5	0.0	1814.6	4.4	175.1	1.5
14.0	9.7	30.5	10.5	248.3	16.9	0.0	2045.0	4.5	175.6	1.5
15.0	10.1	31.7	10.8	268.2	18.4	0.0	2305.4	4.6	176.1	1.5
16.0	10.4	32.9	11.2	288.0	19.8	0.0	2579.0	4.8	176.5	1.6
17.0	10.7	33.9	11.6	307.4	21.3	0.0	2863.7	4.9	177.0	1.6
18.0	11.0	34.9	12.0	326.8	22.9	0.0	3169.3	5.0	177.4	1.6
19.0	11.4	35.8	12.4	346.6	24.4	0.0	3504.1	5.2	177.9	1.6
20.0	11.7	36.6	12.8	366.5	26.0	0.0	3861.7	5.3	178.3	1.6
21.0	12.0	37.3	13.2	385.4	27.6	0.0	4231.0	5.4	178.7	1.7
22.0	12.4	38.0	13.6	404.6	29.2	0.0	4628.2	5.5	179.1	1.7
23.0	12.7	38.5	14.1	423.6	30.8	0.0	5054.9	5.7	179.5	1.7
24.0	13.0	39.0	14.5	442.1	32.5	0.0	5501.2	5.8	179.9	1.7
25.0	13.4	39.3	14.9	459.9	34.1	0.0	5972.2	5.9	180.2	1.7
26.0	13.7	39.7	15.4	478.3	35.8	0.0	6490.3	6.0	180.6	1.8
27.0	14.1	39.9	15.9	494.9	37.5	0.0	7009.3	6.2	181.0	1.8
28.0	14.4	40.0	16.3	511.0	39.3	5.0	7554.1	6.3	181.3	1.8
29.0	14.8	40.1	16.8	527.2	41.0	10.2	8154.3	6.4	181.6	1.8
30.0	15.1	40.1	17.3	541.4	42.8	13.7	8751.1	6.5	182.0	1.8
31.0	15.5	40.0	17.8	556.1	44.6	16.7	9413.2	6.6	182.3	1.8
32.0	15.8	39.8	18.2	568.7	46.5	19.3	10075.8	6.7	182.6	1.9
33.0	16.2	39.6	18.7	581.6	48.3	21.7	10804.1	6.8	182.9	1.9
34.0	16.6	39.3	19.3	593.2	50.2	24.0	11558.0	6.9	183.3	1.9
35.0	16.9	39.0	19.7	602.9	52.1	26.0	12319.5	7.0	183.6	1.9
36.0	17.3	38.5	20.3	612.3	54.0	27.9	13142.6	7.2	183.8	1.9
37.0	17.7	38.1	20.8	620.8	55.9	29.6	14004.9	7.3	184.1	2.0
38.0	18.0	37.6	21.4	629.0	57.9	30.9	14936.4	7.4	184.4	2.0
39.0	18.4	37.1	21.9	635.0	59.8	31.9	15870.3	7.5	184.7	2.0
40.0	18.8	36.5	22.5	640.6	61.8	32.1	16862.6	7.6	185.0	2.0
41.0	19.1	35.9	23.0	645.3	63.9	31.5	17904.3	7.6	185.2	2.0
42.0	19.5	35.3	23.6	649.6	65.9	29.3	19011.3	7.7	185.5	2.1

SMOKE III EGLIN AFB, FLA.

EVENT 39 TIME 1442Z DATE 082180

LB(RP) 6 EA. AND XM76 IR#2 6 EA SENSOR 0.5-0.7



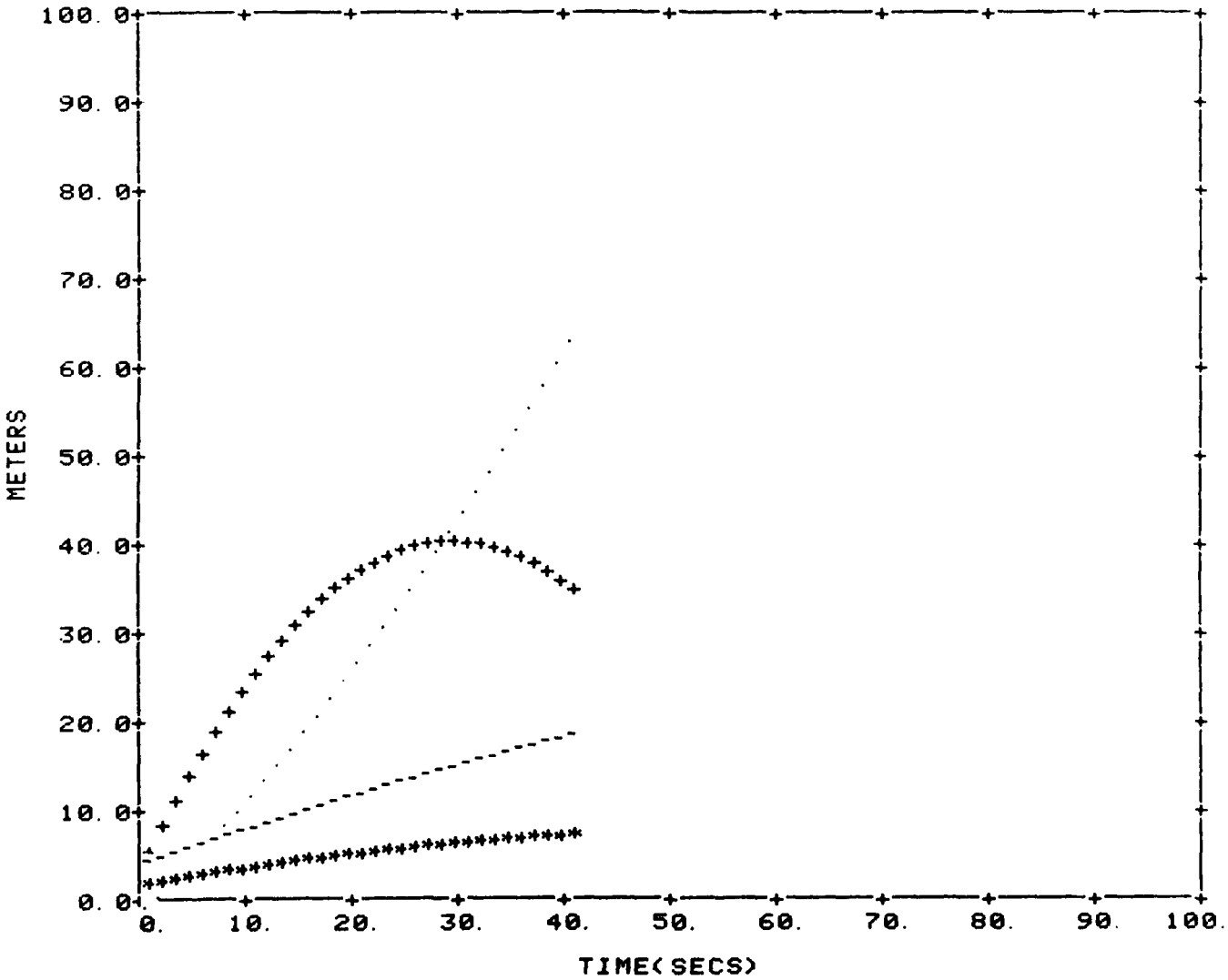
SMOKE III EGLIN AFB, FLA.

EVENT 39 TIME 1442Z DATE 082180

L8(RP) 6 EA. AND XM76 IR#2 6 EA SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

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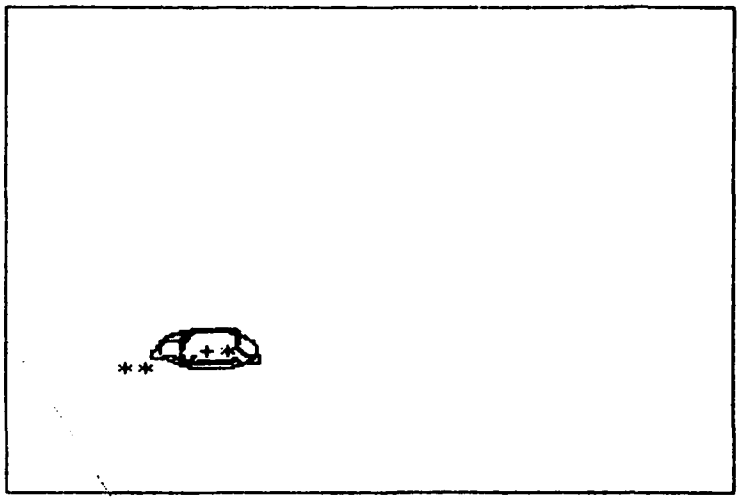
. . . . . TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 39

1442 Z 08-21-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 10.0



HEIGHT(ABOVE DETONATION PT.) =	9.0M	HEIGHT OF CENTROID=	4.M
WIDTH(MAX. HORIZONTAL EXTENT)=	22.0M	LATERAL OFFSET =	14.M
VERTICAL EXTENT =	8.0M	AXES =	20., 9.M
AREA =	144.6SQM	INCLINATION =	2.7 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 4.M OFFSET= 18.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 9.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 19.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 2.M

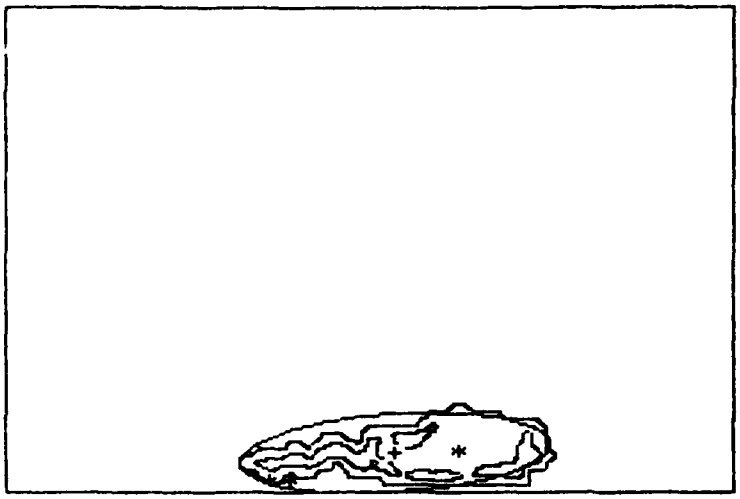
** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 39

1442 Z 08-21-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 10.0



HEIGHT(ABOVE DETONATION PT.) =	9.0M	HEIGHT OF CENTROID=	3.M
WIDTH(MAX. HORIZONTAL EXTENT)=	34.0M	LATERAL OFFSET =	12.M
VERTICAL EXTENT =	10.0M	AXES =	33., 10.M
AREA =	152.5SQM	INCLINATION =	-4.6 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 4.M OFFSET= 19.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 28.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 28.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLA

EVENT 40 TIME 1521Z DATE 082180

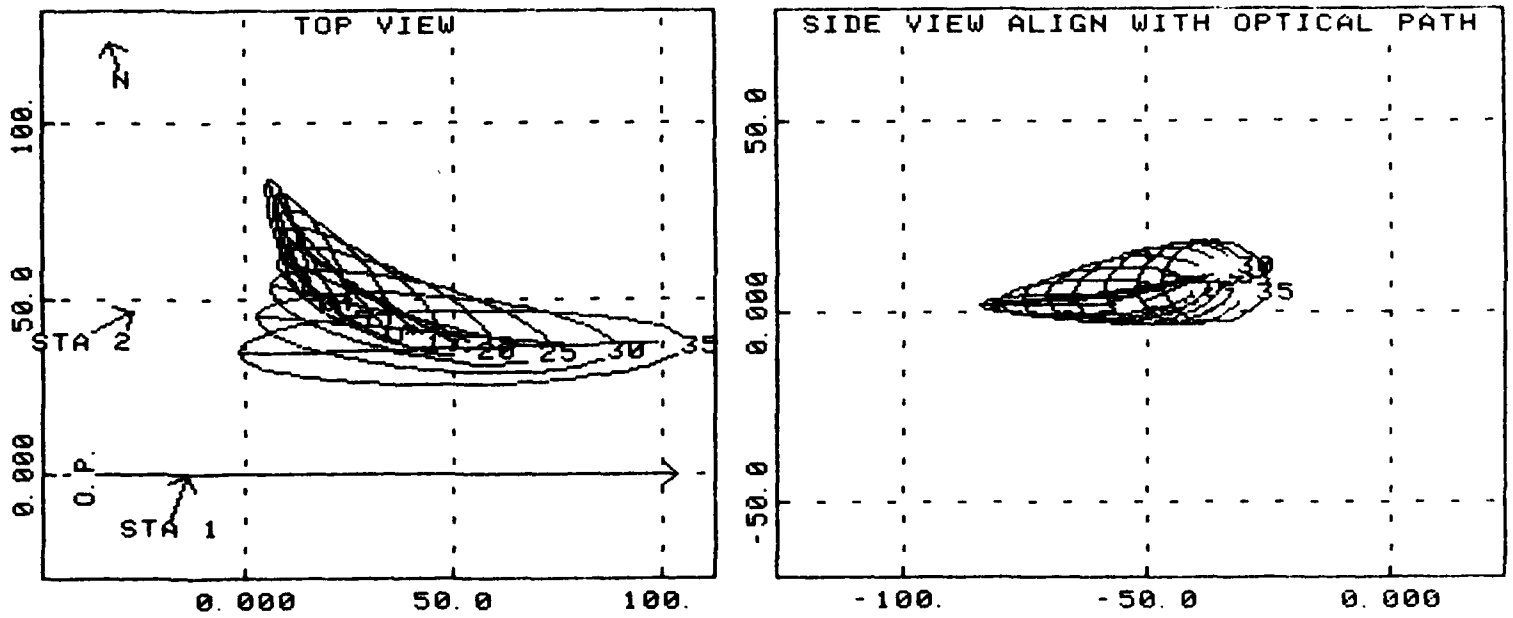
L8(RP) 6 EA AND XM76 IR#2 6 EA SENSOR 0 5-0 7

	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS)						DIMENSIONS INDEPENDENT OF PERSPECTIVE			
TIME(SEC)	HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0.0	4.8	34.2	5.5	147.1	-2.1	0.0	555.6	2.1	0.0	0.0
1.0	5.6	34.4	6.5	173.5	-1.2	0.0	772.7	2.4	144.7	1.4
2.0	6.4	34.6	7.4	199.0	-0.3	0.0	1018.7	2.7	144.5	1.4
3.0	7.2	34.8	8.3	224.0	0.5	0.0	1299.8	3.1	144.3	1.4
4.0	8.0	34.9	9.2	248.9	1.4	0.0	1617.7	3.4	144.0	1.4
5.0	8.7	34.9	10.1	272.4	2.3	0.0	1959.7	3.7	143.8	1.4
6.0	9.4	34.9	11.0	294.5	3.2	0.0	2327.1	4.0	143.6	1.4
7.0	10.1	34.9	11.8	315.8	4.1	0.0	2724.8	4.2	143.4	1.4
8.0	10.8	34.8	12.6	336.7	5.0	0.0	3163.3	4.5	143.2	1.4
9.0	11.4	34.7	13.4	356.0	5.8	0.0	3624.8	4.7	142.9	1.4
10.0	12.1	34.6	14.1	373.6	6.7	0.0	4102.4	5.0	142.7	1.4
11.0	12.7	34.4	14.9	390.5	7.6	0.0	4626.5	5.2	142.5	1.4
12.0	13.2	34.2	15.5	405.4	8.5	0.0	5164.0	5.5	142.3	1.5
13.0	13.8	33.9	16.2	419.9	9.4	0.0	5756.8	5.7	142.1	1.5
14.0	14.3	33.6	16.8	431.2	10.2	0.0	6345.5	5.9	141.9	1.5
15.0	14.8	33.3	17.4	442.2	11.1	0.0	6995.1	6.1	141.7	1.5
16.0	15.2	32.9	17.9	451.0	12.0	0.0	7669.9	6.3	141.5	1.5
17.0	15.7	32.4	18.6	457.9	12.9	0.0	8370.7	6.4	141.3	1.5
18.0	16.1	31.8	19.1	462.6	13.7	0.0	9096.5	6.6	141.1	1.5
19.0	16.5	31.3	19.5	465.2	14.6	0.0	9845.6	6.8	140.9	1.5
20.0	16.9	30.7	19.9	466.8	15.5	0.0	10663.7	6.9	140.7	1.5
21.0	17.2	30.0	20.3	465.3	16.4	0.0	11475.7	7.0	140.5	1.5
22.0	17.5	29.3	20.6	462.9	17.3	0.0	12354.7	7.2	140.3	1.5
23.0	17.7	28.6	20.9	457.9	18.1	0.0	13242.1	7.3	140.1	1.5
24.0	17.9	27.8	21.1	451.9	19.0	0.0	14192.2	7.4	139.9	1.5
25.0	18.1	27.0	21.3	443.5	19.9	0.0	15142.5	7.5	139.7	1.5
26.0	18.3	26.1	21.4	433.3	20.8	0.0	16096.2	7.6	139.5	1.5
27.0	18.4	25.3	21.6	422.9	21.6	0.0	17127.4	7.6	139.3	1.6
28.0	18.5	24.4	21.6	411.6	22.5	0.0	18169.1	7.7	139.2	1.6
29.0	18.6	23.6	21.6	399.5	23.4	0.0	19212.2	7.8	139.0	1.6
30.0	18.6	22.9	21.6	387.4	24.3	0.0	20258.8	7.8	138.8	1.6
31.0	18.6	22.2	21.6	375.8	25.1	0.0	21287.4	7.8	138.6	1.6
32.0	18.6	21.7	21.5	367.3	26.0	0.0	22415.3	7.9	138.4	1.6
33.0	18.6	21.4	21.4	360.0	26.9	0.0	23446.2	7.9	138.3	1.6
34.0	18.5	21.2	21.3	355.5	27.8	0.0	24439.4	7.9	138.1	1.6
35.0	18.5	21.3	21.2	355.4	28.6	0.0	25410.3	7.9	137.9	1.6
36.0	18.4	21.7	21.1	360.1	29.5	0.0	26331.1	7.9	137.8	1.6

SMOKE III EGLIN AFB, FLA.

EVENT 40 TIME 1521Z DATE 082180

LB(RP) 6 EA AND XM76 IR#2 6 EA SENSOR 0.5-0.7



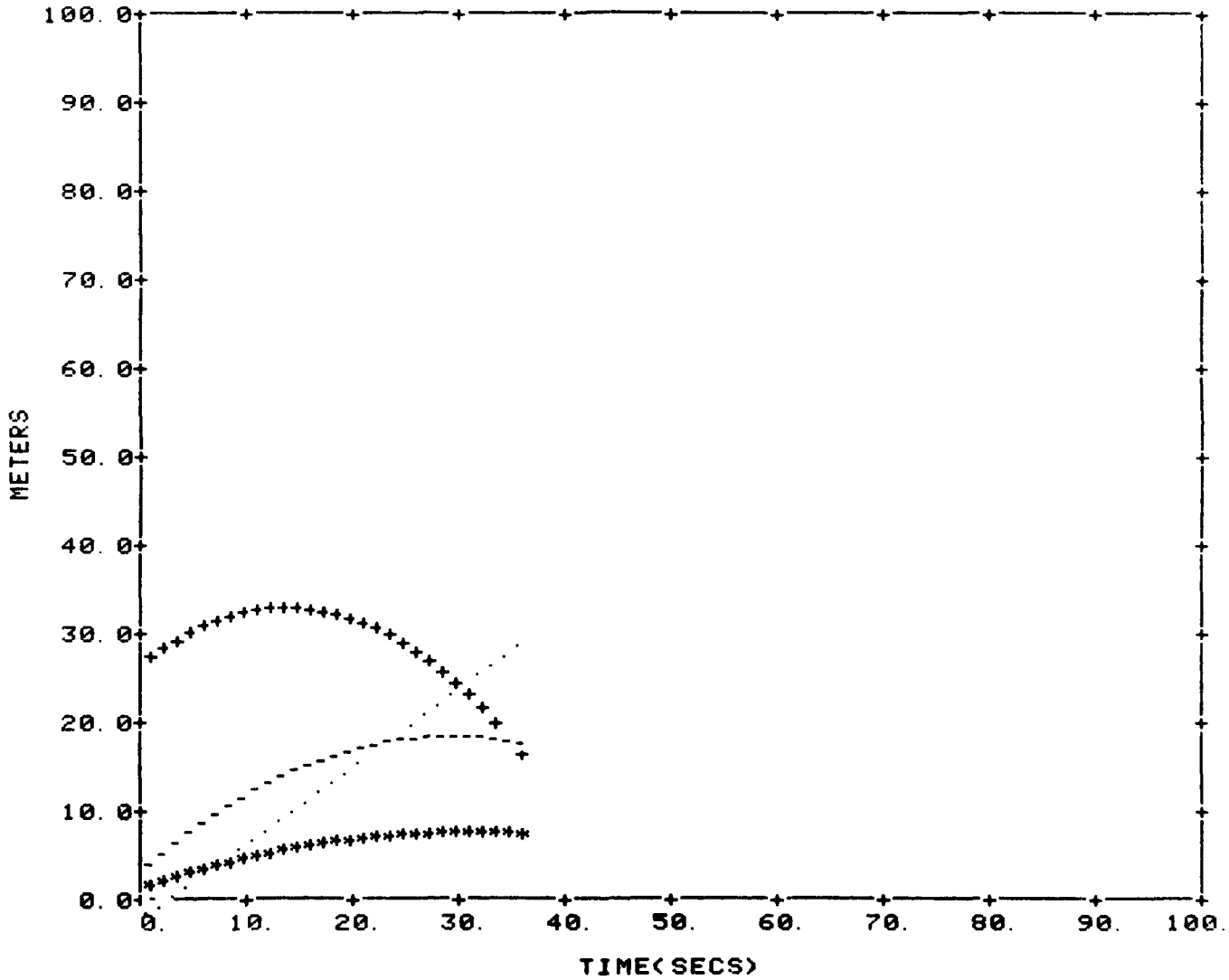
SMOKE III EGLIN AFB, FLA.

EVENT 40 TIME 1521Z DATE 082180

LB(RP) 6 EA AND XM76 IR#2 6 EA SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

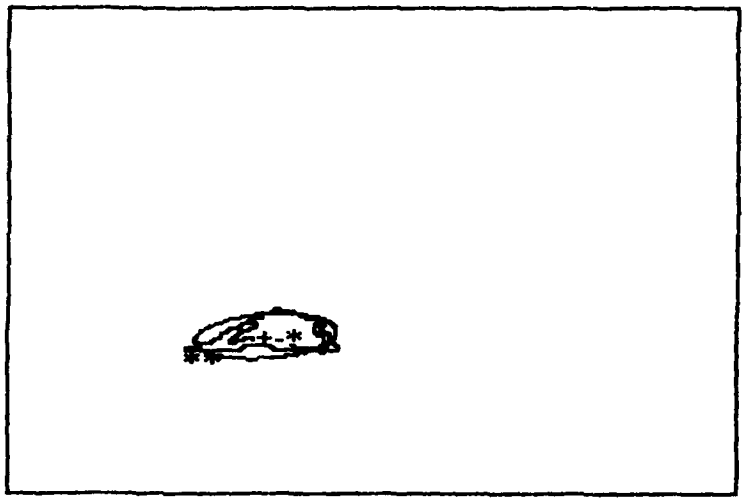
.....TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 40

1521 Z 08-21-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 6.0



HEIGHT(ABOVE DETONATION PT.) =	11.0M	HEIGHT OF CENTROID=	5.M
WIDTH(MAX. HORIZONTAL EXTENT)=	31.0M	LATERAL OFFSET =	12.M
VERTICAL EXTENT =	11.0M	AXES =	28., 11.M
AREA =	214.6SQM	INCLINATION =	-5.6 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 5.M OFFSET= 18.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 15.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 22.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 1.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

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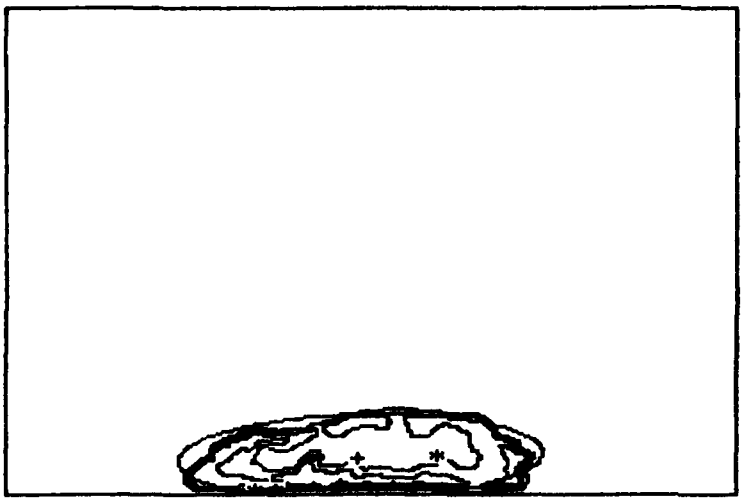
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EVENT # 40

1521 Z 08-21-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 6.0



HEIGHT(ABOVE DETONATION PT.) =	10.0M	HEIGHT OF CENTROID=	4.M
WIDTH(MAX. HORIZONTAL EXTENT)=	37.0M	LATERAL OFFSET =	10.M
VERTICAL EXTENT =	11.0M	AXES =	39., 11.M
AREA =	284.2SQM	INCLINATION =	-1.7 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= 4.M OFFSET= 18.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 34.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 34.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 1.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, N.M.

SMOKE III EGLIN AFB, FLORIDA

EVENT 42 TIME 1633Z DATE 092180

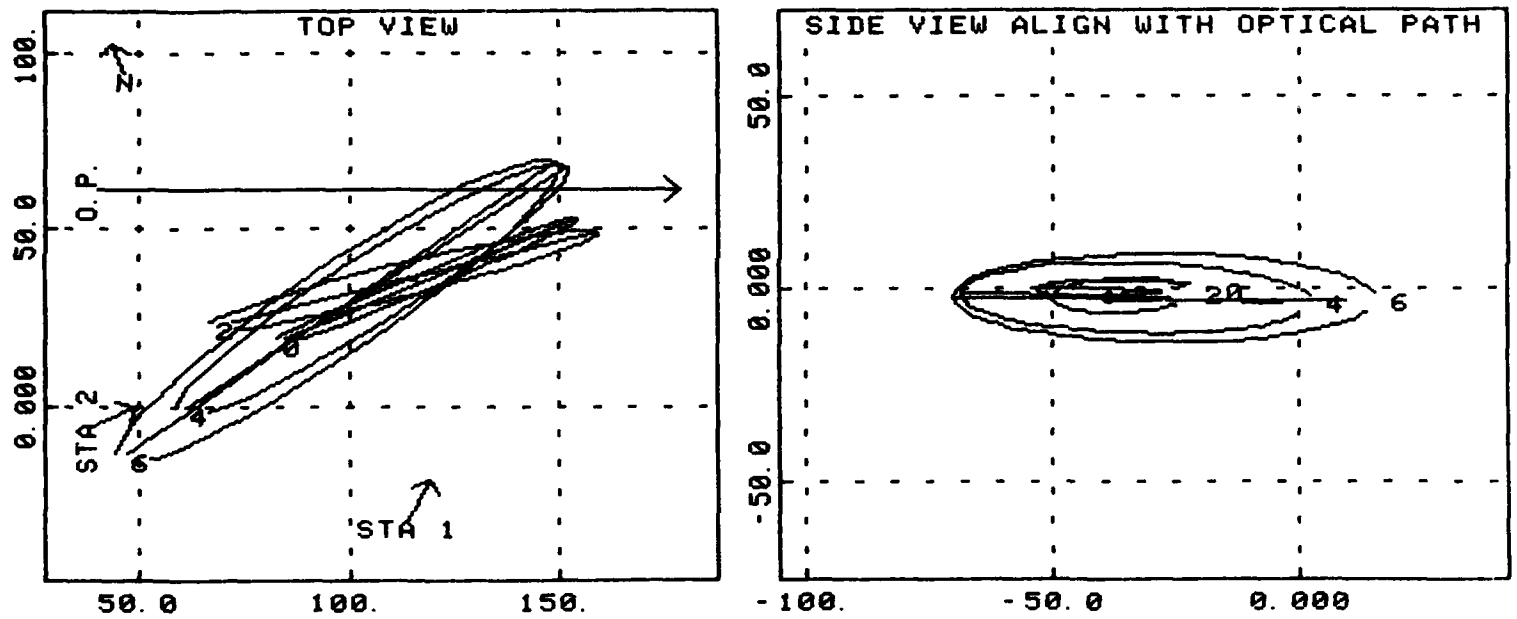
IR#2 WITH FOG OIL SENSOR 0.5-0 7

TIME(SEC)	DIMENSIONS OF OBJECT CROSSECTION NORMAL TO OPTICAL PATH(METERS) HEIGHT (REF DET PT)	HORIZONTAL EXTENT	VERTICAL EXTENT	AREA (SQ. METERS)	LATERAL OFFSET	PATH LENGTH	DIMENSIONS INDEPENDENT OF PERSPECTIVE VOLUME (CUBIC METERS)	CENTROID HEIGHT	TRANSPORT DIRECTION	TRANSPORT RATE
0 0	1.9	35.9	5.2	145.1	14 9	0 0	1124 4	-0 7	0 0	0 0
1 0	2.3	32.6	7.6	193.5	14.3	0 0	2665 3	-1 5	296 3	2 8
2 0	2.5	28.8	9.2	206.3	14.5	0 0	4260.8	-2 1	281 0	3 1
3 0	2.8	24.7	10.7	202.1	15.5	0.0	6005 7	-2 6	268 5	3 5
4 0	6.4	71.5	18.3	1021.7	17.3	13.2	20148.0	-2 8	259 0	4 0
5 0	7.4	79.0	20.6	1275.0	19.8	15 8	27716 2	-2.9	251 9	4 6
6 0	8 8	86.1	23.1	1562.2	23.1	16.9	37473 1	-2 8	246 5	5 3

SMOKE III EGLIN AFB, FLORIDA

EVENT 42 TIME 1633Z DATE 082180

IR#2 WITH FOG OIL SENSOR 0.5-0.7



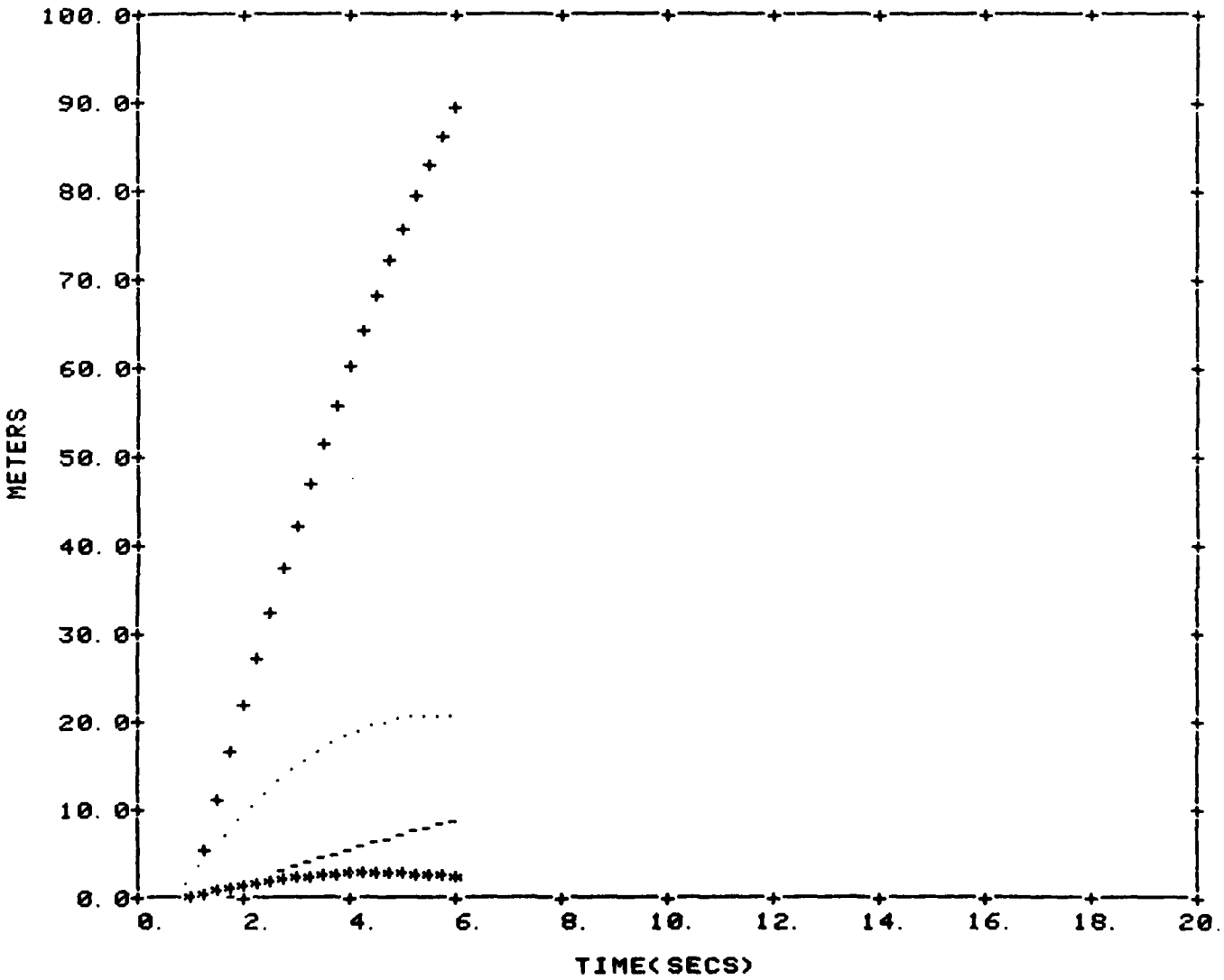
SMOKE III EGLIN AFB, FLORIDA

EVENT 42 TIME 1633Z DATE 082180

IR#2 WITH FOG OIL SENSOR 0.5-0.7

PERSPECTIVE FROM PRIMARY INSTRUMENTATION SITE

SUMMARY GRAPIC



------HEIGHT ABOVE DET. PT.

++++++WIDTH

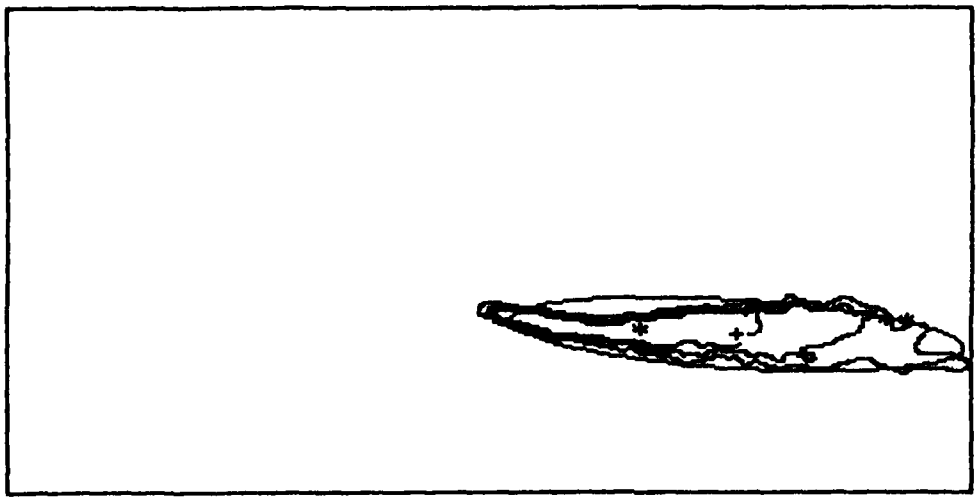
.....TRANSPORT

******HEIGHT OF CENTER OF MASS ABOVE DET. PT.

SMOKE III EVENT # 42

1633 Z 08-21-80 STATION # 1 SENSOR= 0.5-0.7 MICRON

T+ 6.0



HEIGHT(ABOVE DETONATION PT.) =	5.0M	HEIGHT OF CENTROID=	-4.M
WIDTH(MAX. HORIZONTAL EXTENT)=	98.0M	LATERAL OFFSET =	-32.M
VERTICAL EXTENT =	19.0M	AXES =	91., 16.M
AREA =	973.4SQM	INCLINATION =	4.4 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= -2.M OFFSET= -52.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 0.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 80.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)= 0.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

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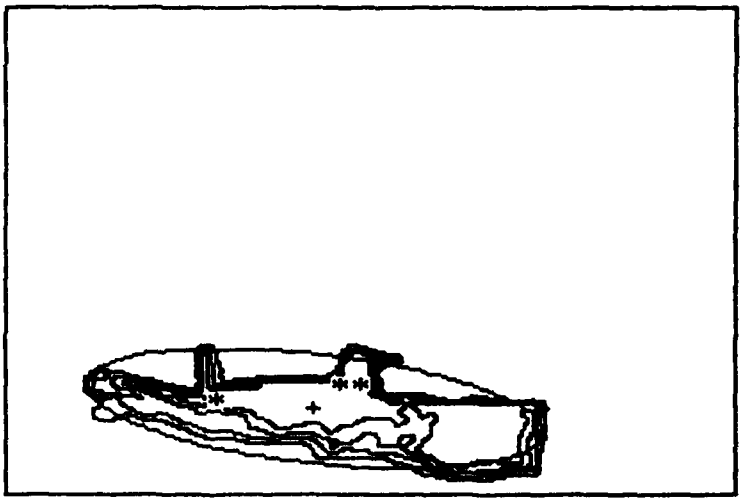
SMOKE III EVENT # 42

1633 Z 08-21-80 STATION # 2 SENSOR= 0.5-0.7 MICRON

T+ 6.0



HEIGHT(ABOVE DETONATION PT.) =	5.0M	HEIGHT OF CENTROID=	-3.M
WIDTH(MAX. HORIZONTAL EXTENT)=	49.0M	LATERAL OFFSET =	-4.M
VERTICAL EXTENT =	17.0M	AXES =	49., 14.M
AREA =	211.3SQM	INCLINATION =	7.7 DEG

CENTROID OF BUOYANT PORTION OF CLOUD: HEIGHT= -2.M OFFSET= -14.M
HORIZONTAL EXTENT AT 7 METERS ABOVE SURFACE= 17.M
HOR. EXTENT OF LINE CONTAINING PT. OF MAX. OFFSET OF LEADING EDGE= 32.M
SHEAR(HOR. DISTANCE BETWEEN PT. OF MAX. OFFSET AND PT. AT 7 METERS)=-12.M

** = DETONATION POINT
+ = CENTROID OF PRIMARY ELLIPSE
* = CENTROID OF BOUYANT PORTION OF CLOUD

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CLOUD GEOMETRY ANALYSIS OF THE SMOKE WEEK III OBSCURATION TRIAL--ETC(U)
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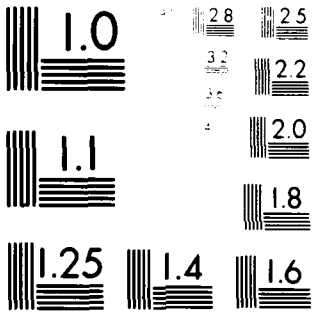

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