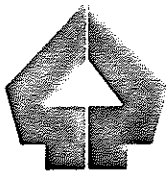




HEALTH AND SAFETY EXECUTIVE

**HEAVY GAS DISPERSION TRIALS
THORNEY ISLAND 1982-3**

DATA FOR TRIAL 013/1



Health & Safety Executive

Red Hill
Broad Lane
Sheffield S3 7HQ
Telephone 0742 78141
ext.
Telex 668113

Your reference

Our reference

Date

COMMERCIAL IN CONFIDENCE

This report is issued to sponsors of the trials on a commercial in confidence basis and must not be released before 1 January 1984.

SUMMARY INFORMATION AT THE TIME OF THE SPILL

Gas released at:	11:41:11 hrs
Freon 12/Nitrogen mixture: relative density	1.96
Number of smoke canisters discharged:	4
Mean Wind Speed at 10 m height:	
During main data collection period:	7.5 m/s
From 5 minute cyclic data just before the release:	4.5 m/s
Mean Wind Heading ('A' station) (relative to the centre line of the array)	30.8°
NB Positive angles are to the right (clockwise) of the centre line when looking downwind of the gas bag.	
Relative Humidity (at 10 m height)	74.1%
Insolation	407W/m ²
Ambient Air Temperature (at 9 m height)	13.18°C
Treated Runway Surface Temperature	14.3°C
Grass Surface Temperature	14.7°C
Observed Cloud Cover	3/8

STABILITY CONDITION

E (From Observations)
E (From DT/DZ)
G (From Solarimeter)
G (From Heat Flux)
E (From Richardson No)
D (From Bulk Richardson No)
D/E (From Standard Deviation of Wind Heading)

Stability condition inferred from data during the release and just before the release: D.

HISTORY

About 2 hours before gas was released (around 0900 hours), the wind speed was very low (about 0.4 m/s) and the wind heading was -113° . Insolation was also very low at this time of the morning and these conditions gave a stable atmosphere. Throughout the morning insolation gradually increased such that, by the time gas was released, insolation was moderate. Approximately 1.5 hours before the release the wind changed its direction so that its heading was 40° and the wind speed began to increase. During the remainder of the period leading up to the spill the wind generally increased but there were periods when the wind dropped noticeably, and it is worth noting that just before the release the mean wind speed was 4.5 m/s compared with 7.5 m/s during the release and data collection period. The wind heading remained more or less the same in the period leading up to the spill. Based on wind speed, insolation and the parameters listed earlier the stability during the spill was judged to be 'D'.

THORNEY ISLAND HEAVY GAS DISPERSION TRIALS

Notes on information presented in the Summary Sheets

1 ATMOSPHERIC STABILITY

The atmospheric stability during the period of the experiment was obtained from the following methods:

i) Visual Observation

This is based on the amount of cloud cover, or the judged level of incoming solar radiation and the value of the wind speed (see attached table provided by the Meteorological Office).

ii) Temperature Difference (DT/DZ)

This method is one of the two suggested by the US Nuclear Regulatory Commission and in the present exercise was calculated as:

$$\frac{DT}{DZ} = \frac{T_{30} - T_9}{21} * 100.0$$

The NRC tables, see e.g. Sedefian and Bennett[1] or McQuaid[2] were then consulted to determine the appropriate stability.

iii) Solarimeter

The measured insolation, from the solarimeter, was used together with the wind speed to determine the stability based on the information presented in Pasquill[3] (Figure 6.13).

iv) Heat Flux

Heat flux (H) was calculated from the insolation (R) by the formula $H = 0.4(R-100)$ based on the suggestion by Smith[4]. Pasquill's[3], Figure 6.13 was then consulted to determine the stability. This method therefore agrees generally with the previous method.

v) Richardson Number

The Richardson number is calculated according to Sedefian and Bennett[1] as:

$$R_i = \frac{g(D\theta/DZ)}{T(DU/DZ)^2}$$

where θ is the potential temperature and T is the actual temperature; in this case, the temperature at 16 m above the ground. $D\theta/DZ$ was calculated as:

$$\frac{T_{30} - T_9}{21} + 0.00986$$

$$\frac{DU}{DZ} \text{ was calculated as } \frac{U_{30} - U_{10}}{20}$$

Sedefian and Bennett calculate the limits of Richardson number for the various stability categories, however the limits they presented were valid for measurements at heights whose geometric mean was 22 m. Since the measurement stations were at 30 m, 9 m and 16 m the limits of Richardson number for the various stability categories were recalculated to correspond to a geometric mean height of 16 m.

vi) Bulk Richardson Number

The bulk Richardson number was also calculated according to Sedefian and Bennett^[1] as:

$$R_{i_{\infty}} = \frac{g(D\theta/DZ)\bar{Z}^2}{T \bar{U}^2}$$

where $\bar{Z}$ is the geometric mean height = $\sqrt{9 \times 30}$
 T is the temperature at 16 m above the ground
 and $\bar{U}$ is the mean wind speed at 30 m.

Here again the limits of $R_{i_{\infty}}$ were recalculated to correspond to a geometric mean height of 16 m.

vii) Standard Deviation of Wind Heading

The standard deviation of wind heading was calculated from the Porton wind vane, which has a resolution bandwidth of 11°. The resulting accuracy is predicted to be around +2° or so, assuming a Gaussian distribution of wind direction. These estimates were compared with the simple assumption that the standard deviation is approximately 1/6 (maximum-minimum angle).

The NRC limits for σ_{θ} are then used to determine the appropriate stability category.

2 WIND SPEED

Two values of wind speed are presented. The first is the mean value at the 10 m height for the first 10 minutes of the data collection period, which generally began about one minute before the gas bag was dropped.

The second wind speed is also a mean value obtained at the 10 m height, but corresponds to data taken over a five minute period just before main data collection began; data during this period is termed the 'cyclic' data.

REFERENCES

- 1 Sedefian L and Bennett E (1980) "A comparison of Turbulence classification schemes". Atmospheric Environment, Vol 14, No 7, pp 741-750.
- 2 McQuaid J (1981) "Climatological records from the Thorney Island mast". Commercial in Confidence HGDT Report 1981/6.
- 3 Pasquill F (1974) "Atmospheric Diffusion". 2nd Ed. Published by Ellis Horwood Ltd, Chichester.
- 4 Smith F B (1979) "The relation between Pasquill stability P and Kazanski-Monin stability (in neutral and unstable conditions). Atmospheric Environment, Vol 13, pp 879-881.

MODIFIED PASQUILL STABILITY CATEGORIES

Wind Speed (kt)	DAYTIME (excluding 1 hour after sunrise and 1 hour before sunset)				Within 1 hour before sunset or after sunrise	NIGHT-TIME	
	Incoming Solar Radiation ($W\ m^{-2}$)					Cloud Amount (oktas)	
	Strong (>600)	Mod (300-600)	Slt (<300)	Overcast		0-3	4-7 8
<3	A	A-B	B	C	D	F or G see note 2 below	F D
4-5	A-B	B	C	C	D	F	E D
6-9	B	B-C	C	C	D	E	D D
10-12	C	C-D	D	D	D	D	D D
>12	C	D	D	D	D	D	D D

Notes

- 1 Night was originally defined to include periods of one hour before sunset and after sunrise. These two hours are always categorised here as D.
- 2 Pasquill said that in light winds on clear nights the vertical spread may be less than for category F but excluded such cases because the surface plume is unlikely to have any definable travel. However, they are important from the point of view of the build up of pollution and category G (night-time, 0 or 1 okta of cloud, wind speed 0 or 1 kt) has been added.
- 3 1 kt = 0.52 m/s.

KEY TO GRAPHS

1 AVERAGING TIME

Length of the time window over which mean values have been calculated for the purpose of the plots. Since the full record contains 20 samples per second, an averaging time of 0.6 seconds gives the arithmetic mean of 12 samples of the original signal. Note that it is not a running average but a 'box' window which is moved through the data in increments of the averaging time.

2 X:Y:Z

The location in metres of the sensor on the trials site. The (X,Y) axes are defined by the grid of fixed masts, the release point is at X = 400 metres, Y = 200 metres. The Z axis defines the height of the sensor on the mast at location (X, Y) - see mast array. Note that the axis is defined by measurement from the mast base and is not absolute in the sense that it takes no account of any slope of the trials site.

3 TYPE

Defines the type of sensor which generated the data shown in the plots.

GAS:	Standard oxygen deficiency sensor Frequency response 1 Hz (at - 3 dB point)
HGAS	High speed oxygen deficiency sensor Frequency response 10 Hz (at - 3 dB point)
SMOK	High speed light scattering smoke sensor Frequency response 10 Hz (at - 3 dB point)
WSPD:	Wind heading as indicated by wind vanes in degrees relative to the site axis. Positive values are to the right of the site axis (looking 'downwind' for the source) and negative values to the left.
AIRT:	Air temperature in degrees centigrade
SOLA:	Solar radiation as measured by solarimeter in watts/square metre.
BROM:	Barometric pressure measured in millibars.
UANA:	Velocity component A of tri-axial anemometers in the horizontal (X Y) plane.
UANB:	Velocity component B of tri-axial anemometer in the horizontal (X Y) plane.
UANW:	Velocity component W of tri-axial anemometer in the vertical (Z) direction.

UANT: Temperature, as measured by tri-axial anemometer with this facility.

RUN UP MEAN: The mean value of the appropriate sensor output averaged over the run up period i.e. in the period 1766 to 1466 seconds before the gas container release.

RUN DOWN MEAN: The mean value of the appropriate sensor output averaged over the run down period i.e. in the period 1144 to 1444 seconds after the gas container release.

4 GAS SENSORS

The readings of the GAS and HGAS sensors are in terms of the % concentration of the released gas mixture with an associated error band of either 10% of reading or as determined by calibration checks with a standard gas mixture. An estimate of the accuracy of each sensor for each test will be sent out separately. Note that the SMOK sensors have no absolute calibration in terms of gas concentration but have been included because of the potential high frequency information their outputs contain. An approximate calibration may be obtained by comparing their output to that of the nearest oxygen deficiency sensor.

5 SONIC ANEMOMETERS

Prints of the sonic anemometer outputs are included for completeness but it will be appreciated that analysis of records can only be performed using the data tapes. The three wind velocity components A, B and W can be transposed into components corresponding with the X, Y and Z coordinates of the mast array as follows:

$$X = \frac{1}{\sqrt{3}} (A - B)$$

$$Y = A + B$$

$$Z = W$$

RMS turbulence values measured at 10 m height on 'A' mast are given below. The values are non-dimensionalised i.e. original values have been divided by U_{10} , the mean wind speed at 10 m height during the main data collection period which was 7.367 m/s.

U' RMS = 0.134 (component in the wind direction)

V' RMS = 0.120 (crosswind component)

W' RMS = 0.064 (vertical component)

6 RUNNING MEANS

In order to assist analysis, a three minute running mean has been superimposed on all environmental records except the sonic anemometers. The points plotted represent the mean of 300 values (0.6 second averages) and are plotted at 0.6 second intervals.

NOTES ON VALIDATION OF GAS SENSOR DATA FOR TRIAL 013

- 1 Only the lowest gas sensors on the M3 mast at (400, 350) detected gas - pages G13 and G14. Apart from the smoke sensors at 0.4 m and 2.0 m, the other sensors on this mast were connected and functioning correctly, implying a concentration of much less than 0.1% at the other sensor positions. Of the two smoke sensors, the one at 0.4 metres was malfunctioning and no signal due to the presence of gas could be discerned above the noise level of the one at 2.0 m.
- 2 The smoke sensor at 2.0 m on the mobile mast at (500, 350) was functioning correctly but no signal due to the presence of smoke in the gas could be discerned above the noise level.
- 3 The gas sensor at 6.4 m on the mobile mast at (500, 350) was malfunctioning - see page G20. Nevertheless, a signal due to the presence of gas can still be clearly distinguished.

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Head/Special Instruments and Techniques Section
Safety Engineering Laboratory
15 June 1983

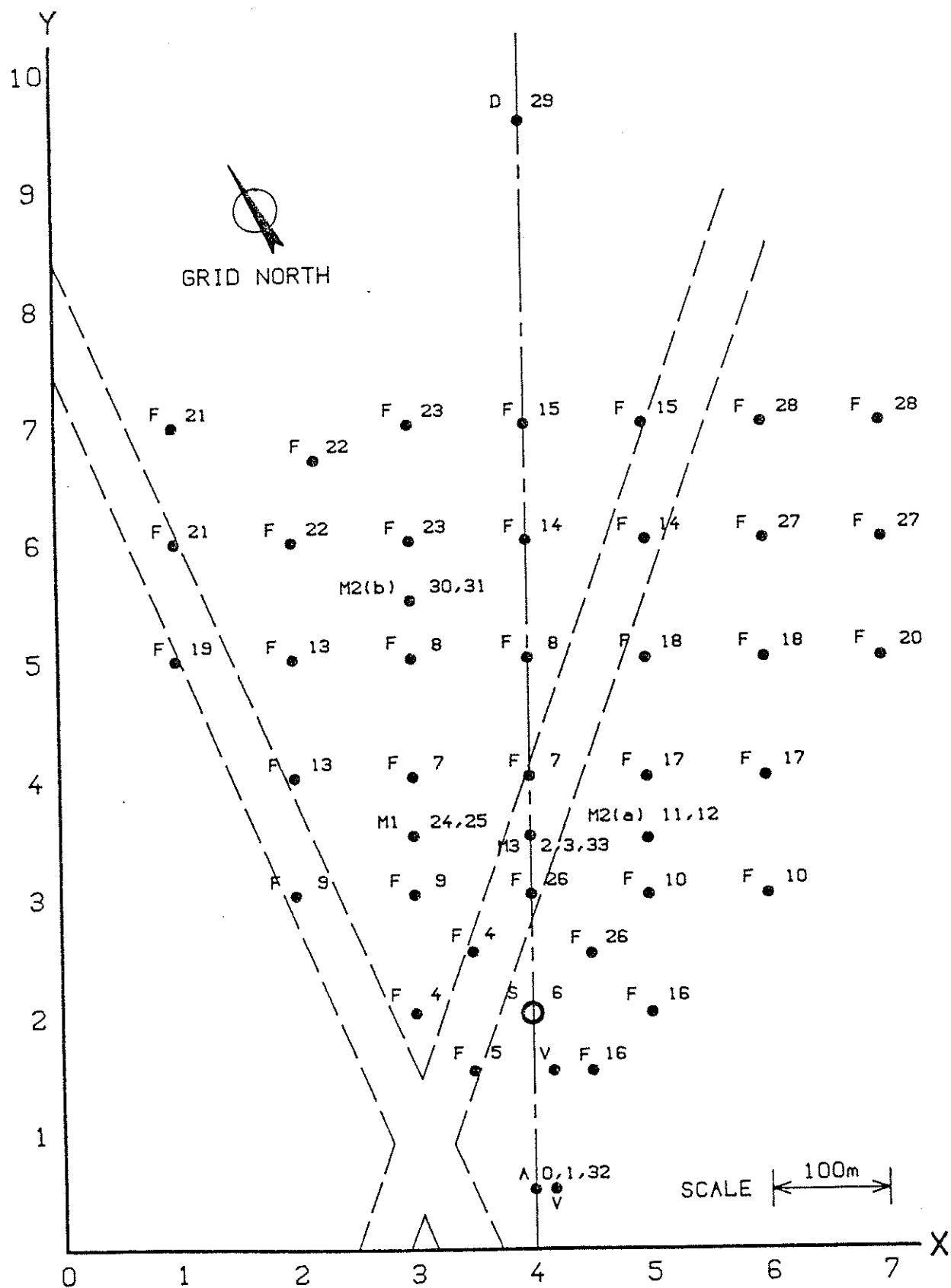
INSTRUMENT SENSORS AND DISTRIBUTIONS (EFFECTIVE FOR TRIAL 013)

Note: The Location Coordinates are the X, Y coordinates in metres at 1/100 scale. The source is at (4.0, 2.0).
The table scans the layout by successive rows (i.e. at constant Y) of masts.

LOCATION COORDINATES	TYPE OF MAST	DATA TERMINAL NUMBER	CHANNEL NUMBER	HEIGHT ABOVE GROUND m	TYPE OF SENSOR	REMARKS	PAGE NUMBER
4.0, 0.5	A	32	5	0.4	Solarimeter		E01
		32	6	0.4	Barometric Pressure		E02
		0	0	2.0	Cup Anemometer		E03
		0	1	2.0	Thermometer		E04
		0	4	2.0	Sonic Anemometer - XY		E05
		0	5	2.0	Sonic Anemometer - XY		E06
		0	6	2.0	Sonic Anemometer - Z		E07
		0	7	2.0	Sonic Anemometer - Temp		E08
		0	2	4.5	Cup Anemometer		E09
		0	3	9.0	Thermometer		E10
		1	0	10.0	Cup Anemometer		E11
		32	0	10.0	Sonic Anemometer - XY		E12
		32	1	10.0	Sonic Anemometer - XY		E13
		32	2	10.0	Sonic Anemometer - Z		E14
		32	3	10.0	Sonic Anemometer - Temp		E15
		32	4	10.0	Relative Humidity		E16
		1	6	10.0	Wind Vane		E17
		1	1	16.0	Thermometer		E18
		1	2	17.3	Cup Anemometer		E19
		1	3	22.0	Thermometer		E20
		1	4	30.0	Cup Anemometer		E21
		1	5	30.0	Thermometer		E22
		32	7	30.0	Relative Humidity		E23
		1	7	10.0	Wind Vane		E24
4.2, 0.5	V	1	7	10.0	Wind Vane		
3.5, 1.5	F	5	0	0.4	Gas Sensor		
		5	2	1.4	Gas Sensor		
		5	3	2.4	Gas Sensor		E25
4.0, 1.5	V	6	4	10.0	Wind Vane		
4.5, 1.5	F	16	0	0.4	Gas Sensor		
		16	2	1.4	Gas Sensor		
		16	3	2.4	Gas Sensor		
3.0, 2.0	F	4	0	0.4	Gas Sensor		
		4	2	1.4	Gas Sensor		
		4	3	2.4	Gas Sensor		
4.0, 2.0	S	6	0	0.4	Thermometer		E26
		6	1	0.4	Gas Sensor		
		6	2	12.0	Thermometer		E27
5.0, 2.0	F	6	3	12.0	Gas Sensor		
		16	4	0.4	Gas Sensor		
		16	6	1.4	Gas Sensor		
3.5, 2.5	F	16	7	2.4	Gas Sensor		
		4	4	0.4	Gas Sensor		
		4	5	2.4	Gas Sensor		
4.5, 2.5	F	4	6	4.4	Gas Sensor		
		4	7	6.4	Gas Sensor		
		26	0	0.4	Gas Sensor		G01
2.0, 3.0	F	26	1	2.4	Gas Sensor		G02
		26	2	4.4	Gas Sensor		G03
		26	3	6.4	Gas Sensor		G04
3.0, 3.0	F	9	0	0.4	Gas Sensor		
		9	1	2.4	Gas Sensor		
		9	2	4.4	Gas Sensor		
4.0, 3.0	F	9	3	6.4	Gas Sensor		
		9	4	0.4	Gas Sensor		
		9	5	2.4	Gas Sensor		
5.0, 3.0	F	9	6	4.4	Gas Sensor		
		9	7	6.4	Gas Sensor		
		26	4	0.4	Gas Sensor		G05
6.0, 3.0	F	26	5	2.4	Gas Sensor		G06
		26	6	4.4	Gas Sensor		G07
		26	7	6.4	Gas Sensor		G08
		10	0	0.4	Gas Sensor		G09
		10	1	2.4	Gas Sensor		G10
		10	2	4.4	Gas Sensor		G11
		10	3	6.4	Gas Sensor		G12
		10	4	0.4	Gas Sensor		
		10	5	2.4	Gas Sensor		
		10	6	4.4	Gas Sensor		
		10	7	6.4	Gas Sensor		

LOCATION COORDINATES	TYPE OF MAST	DATA TERMINAL NUMBER	CHANNEL NUMBER	HEIGHT ABOVE GROUND m	TYPE OF SENSOR	REMARKS	PAGE NUMBER
3.0, 3.5	M1	24	0	0.4	Gas Sensor		
		24	5	2.0	High Speed Gas Sensor		E28
		25	2	2.0	Sonic Anemometer - XY		E29
		25	3	2.0	Sonic Anemometer - XY		E30
		25	4	2.0	Sonic Anemometer - Z		E31
		25	0	2.0	Sonic Anemometer - Temp		
		24	1	2.4	Gas Sensor		
		24	4	2.4	High Speed Gas Sensor		
		24	2	4.4	Gas Sensor		
		24	6	5.0	RLSD Smoke Detector		
		24	3	6.4	Gas Sensor		G13
		3	0	0.4	Gas Sensor		
		33	3	0.4	RLSD Smoke Detector		
		33	2	2.0	High Speed Gas Sensor		
4.0, 3.5	M3	33	4	2.0	RLSD Smoke Detector		E32
		3	5	2.0	Sonic Anemometer - XY		E33
		3	6	2.0	Sonic Anemometer - XY		E34
		3	7	2.0	Sonic Anemometer - Z		G14
		3	1	2.4	Gas Sensor		
		3	2	4.4	Gas Sensor		E35
		2	2	5.0	Sonic Anemometer - XY		E36
		2	3	5.0	Sonic Anemometer - XY		E37
		2	4	5.0	Sonic Anemometer - Z		E38
		2	1	5.0	Sonic Anemometer - Temp		
		2	1	5.0	High Speed Gas Sensor		
		33	3	6.4	Gas Sensor		
		33	5	10.0	RLSD Smoke Detector		E39
		2	5	20.0	Sonic Anemometer - XY		E40
		2	6	20.0	Sonic Anemometer - XY		E41
		2	7	20.0	Sonic Anemometer - Z		G15
		2	0	0.4	Gas Sensor		E42
		11	2	2.0	Sonic Anemometer - XY		E43
		11	3	2.0	Sonic Anemometer - XY		E44
5.0, 3.5	M2(a)	11	4	2.0	Sonic Anemometer - Z		E45
		11	0	2.0	Sonic Anemometer - Temp		G16
		12	4	2.0	High Speed Gas Sensor		
		12	6	2.0	RLSD Smoke Detector		G17
		12	1	2.4	Gas Sensor		G18
		12	5	2.4	High Speed Gas Sensor		G19
		12	2	4.4	Gas Sensor		G20
		12	3	6.4	Gas Sensor		E46
		11	5	15.0	Sonic Anemometer - XY		E47
		11	6	15.0	Sonic Anemometer - XY		E48
		11	7	15.0	Sonic Anemometer - Z		E49
		11	1	15.0	Sonic Anemometer - Temp		
		13	0	0.4	Gas Sensor		
		13	1	2.4	Gas Sensor	Not connected	
		13	2	4.4	Gas Sensor		
		13	3	6.4	Gas Sensor		
		7	0	0.4	Gas Sensor		
		7	1	2.4	Gas Sensor		
		7	2	4.4	Gas Sensor		
3.0, 4.0	F	7	3	6.4	Gas Sensor		
		7	4	0.4	Gas Sensor		
		7	5	2.4	Gas Sensor		
		7	6	4.4	Gas Sensor		
		7	7	6.4	Gas Sensor		G21
4.0, 4.0	F	17	0	0.4	Gas Sensor		G22
		17	1	2.4	Gas Sensor		G23
		17	2	4.4	Gas Sensor		G24
		17	3	6.4	Gas Sensor		
		17	4	0.4	Gas Sensor		
5.0, 4.0	F	17	5	2.4	Gas Sensor		
		17	6	4.4	Gas Sensor		
		17	7	6.4	Gas Sensor		
		17	0	0.4	Gas Sensor		
		17	1	2.4	Gas Sensor		
6.0, 4.0	F	17	2	4.4	Gas Sensor		
		17	3	6.4	Gas Sensor		
		17	4	0.4	Gas Sensor		
		17	5	2.4	Gas Sensor		
		17	6	4.4	Gas Sensor		
1.0, 5.0	F	17	7	6.4	Gas Sensor		
		19	0	0.4	Gas Sensor		
		19	1	2.4	Gas Sensor		
		19	2	4.4	Gas Sensor		
		19	3	6.4	Gas Sensor		
2.0, 5.0	F	13	4	0.4	Gas Sensor		
		13	5	2.4	Gas Sensor	Not connected	
		13	6	4.4	Gas Sensor		
		13	7	6.4	Gas Sensor		
		13	0	0.4	Gas Sensor		
3.0, 5.0	F	8	1	2.4	Gas Sensor		
		8	2	4.4	Gas Sensor		
		8	3	6.4	Gas Sensor		
		8	4	0.4	Gas Sensor		
		8	5	2.4	Gas Sensor	Not connected	
4.0, 5.0	F	8	6	4.4	Gas Sensor		
		8	7	6.4	Gas Sensor		
		8	0	0.4	Gas Sensor		G25
		8	1	2.4	Gas Sensor		G26
		8	2	4.4	Gas Sensor		G27
5.0, 5.0	F	18	3	6.4	Gas Sensor		G28
		18	0	0.4	Gas Sensor		
		18	1	2.4	Gas Sensor		

COORDINATE	NAME	TERMINAL NUMBER	CHANNEL NUMBER	HEIGHT ABOVE GROUND m	TYPE OF SENSOR	REMARKS	PAGE NUMBER
6.0, 5.0	F	18	4	0.4	Gas Sensor		G29
		18	5	2.4	Gas Sensor		G30
		18	6	4.4	Gas Sensor		G31
		18	7	6.4	Gas Sensor		G32
7.0, 5.0	F	20	4	0.4	Solarimeter		E50
		20	0	0.4	Gas Sensor		
		20	1	2.4	Gas Sensor		
		20	2	4.4	Gas Sensor		
		20	3	6.4	Gas Sensor		
3.0, 5.5	M2(b)	31	0	0.4	Gas Sensor		
		31	5	2.0	RLSD Smoke Detector		
		30	2	2.0	Sonic Anemometer - XY		E51
		30	3	2.0	Sonic Anemometer - XY		E52
		30	4	2.0	Sonic Anemometer - Z		E53
		30	0	2.0	Sonic Anemometer - Temp		E54
		31	6	2.0	RLSD Smoke Detector		
		31	4	2.0	High Speed Gas Sensor		
		31	1	2.4	Gas Sensor		
		31	2	4.4	Gas Sensor		
		31	3	6.4	Gas Sensor		
		30	5	15.0	Sonic Anemometer - XY		E55
		30	6	15.0	Sonic Anemometer - XY		E56
		30	7	15.0	Sonic Anemometer - Z		E57
		30	1	15.0	Sonic Anemometer - Temp		E58
1.0, 6.0	F	21	0	0.4	Gas Sensor		
		21	1	2.4	Gas Sensor		
		21	2	4.4	Gas Sensor		
		21	3	6.4	Gas Sensor		
2.0, 6.0	F	22	0	0.4	Gas Sensor		
		22	1	2.4	Gas Sensor		
		22	2	4.4	Gas Sensor		
		22	3	6.4	Gas Sensor		
3.0, 6.0	F	23	0	0.4	Gas Sensor	Not connected	
		23	1	2.4	Gas Sensor		
		23	2	4.4	Gas Sensor		
		23	3	6.4	Gas Sensor		
4.0, 6.0	F	14	0	0.4	Gas Sensor		
		14	1	2.4	Gas Sensor		
		14	2	4.4	Gas Sensor		
		14	3	6.4	Gas Sensor		
5.0, 6.0	F	14	4	0.4	Gas Sensor		G33
		14	5	2.4	Gas Sensor		G34
		14	6	4.4	Gas Sensor		G35
		14	7	6.4	Gas Sensor		G36
6.0, 6.0	F	27	0	0.4	Gas Sensor		G37
		27	1	2.4	Gas Sensor		G38
		27	2	4.4	Gas Sensor		G39
		27	3	6.4	Gas Sensor		G40
7.0, 6.0	F	27	4	0.4	Gas Sensor		
		27	5	2.4	Gas Sensor		
		27	6	4.4	Gas Sensor		
		27	7	6.4	Gas Sensor		
1.0, 7.0	F	21	4	0.4	Gas Sensor		
		21	5	2.4	Gas Sensor		
		21	6	4.4	Gas Sensor		
		21	7	6.4	Gas Sensor		
2.2, 6.7	F	22	4	0.4	Gas Sensor		
		22	5	2.4	Gas Sensor		
		22	6	4.4	Gas Sensor		
		22	7	6.4	Gas Sensor		
3.0, 7.0	F	23	4	0.4	Gas Sensor		
		23	5	2.4	Gas Sensor		
		23	6	4.4	Gas Sensor		
		23	7	6.4	Gas Sensor		
4.0, 7.0	F	15	0	0.4	Gas Sensor		
		15	1	2.4	Gas Sensor		
		15	2	4.4	Gas Sensor		
		15	3	6.4	Gas Sensor		
5.0, 7.0	F	15	4	0.4	Gas Sensor		
		15	5	2.4	Gas Sensor		
		15	6	4.4	Gas Sensor		
		15	7	6.4	Gas Sensor		
6.0, 7.0	F	28	0	0.4	Gas Sensor	Not connected	
		28	1	2.4	Gas Sensor		G41
		28	2	4.4	Gas Sensor		G42
		28	3	6.4	Gas Sensor		G43
7.0, 7.0	F	28	4	0.4	Gas Sensor		G44
		28	5	2.4	Gas Sensor		G45
		28	6	4.4	Gas Sensor		G46
		28	7	6.4	Gas Sensor		G47
4.0, 9.5	D	29	0	0.4	Gas Sensor		
		29	1	2.4	Gas Sensor	Not connected	
		29	2	4.4	Gas Sensor	Not connected	
		29	3	10.0	Wind Vane		E59
		29	4	10.0	Wind Speed		E60
		29	5	10.0	Relative Humidity		E61
		29	6	10.0	Thermometer		E62



LAYOUT OF MASTS
 ALPHABETIC CODE = MAST TYPE
 NUMERIC CODE = DATA TERMINAL NUMBER

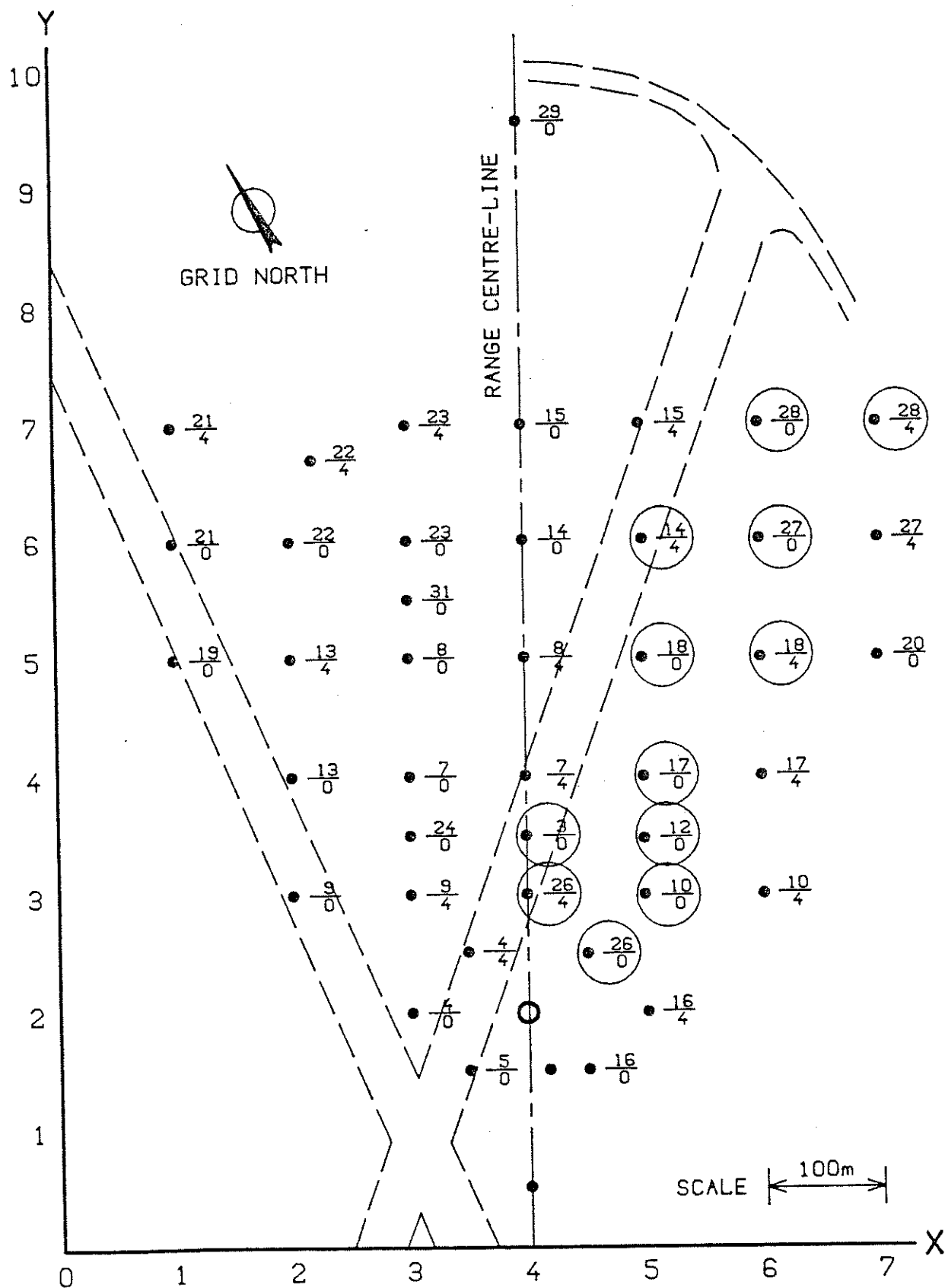
TRIAL No. - 013

DATE - 19/10/82

47 SENSORS SAW GAS

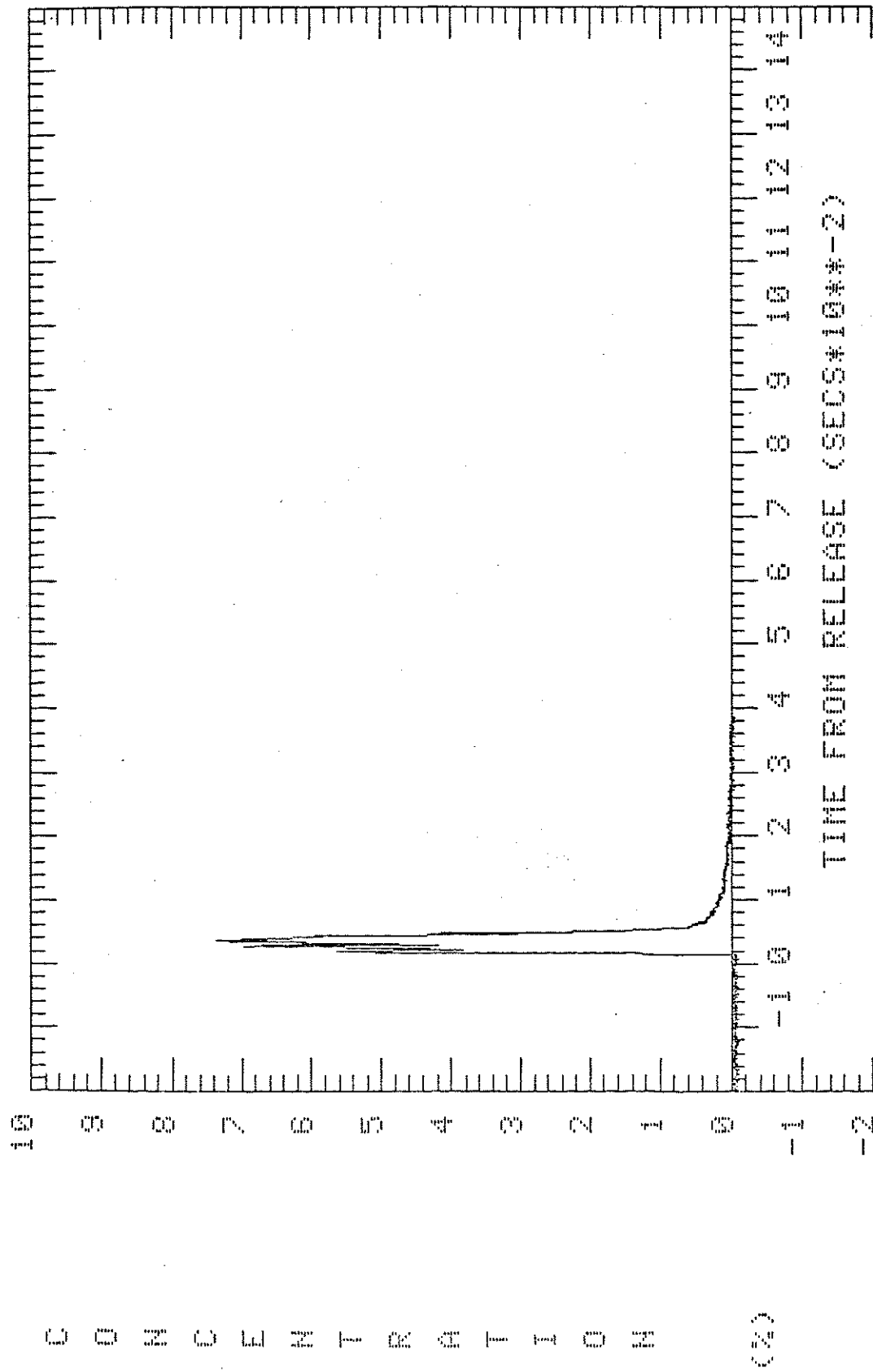
WIND SPEED (U_{10}) 7-8 m/sec

PASQUILL CATEGORY - E/D



$\frac{21}{4}$ = DATA TERMINAL CHANNEL NUMBER OF GAS SENSORS AT 0.4m HEIGHT

○ = SENSORS AT 0.4m HEIGHT VERIFIED TO HAVE SEEN GAS

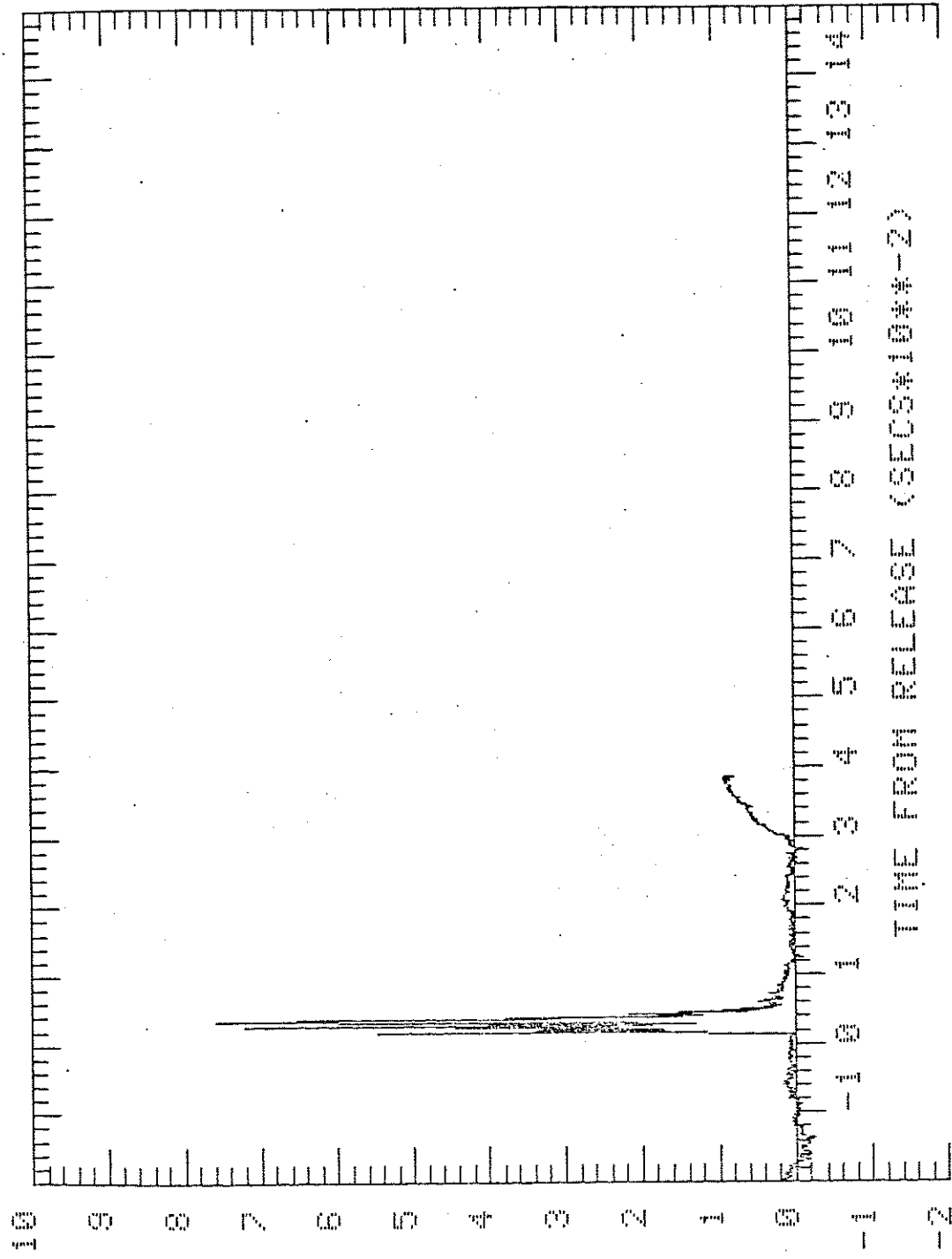


TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 450 W Y: 250 W Z: 0.4 M

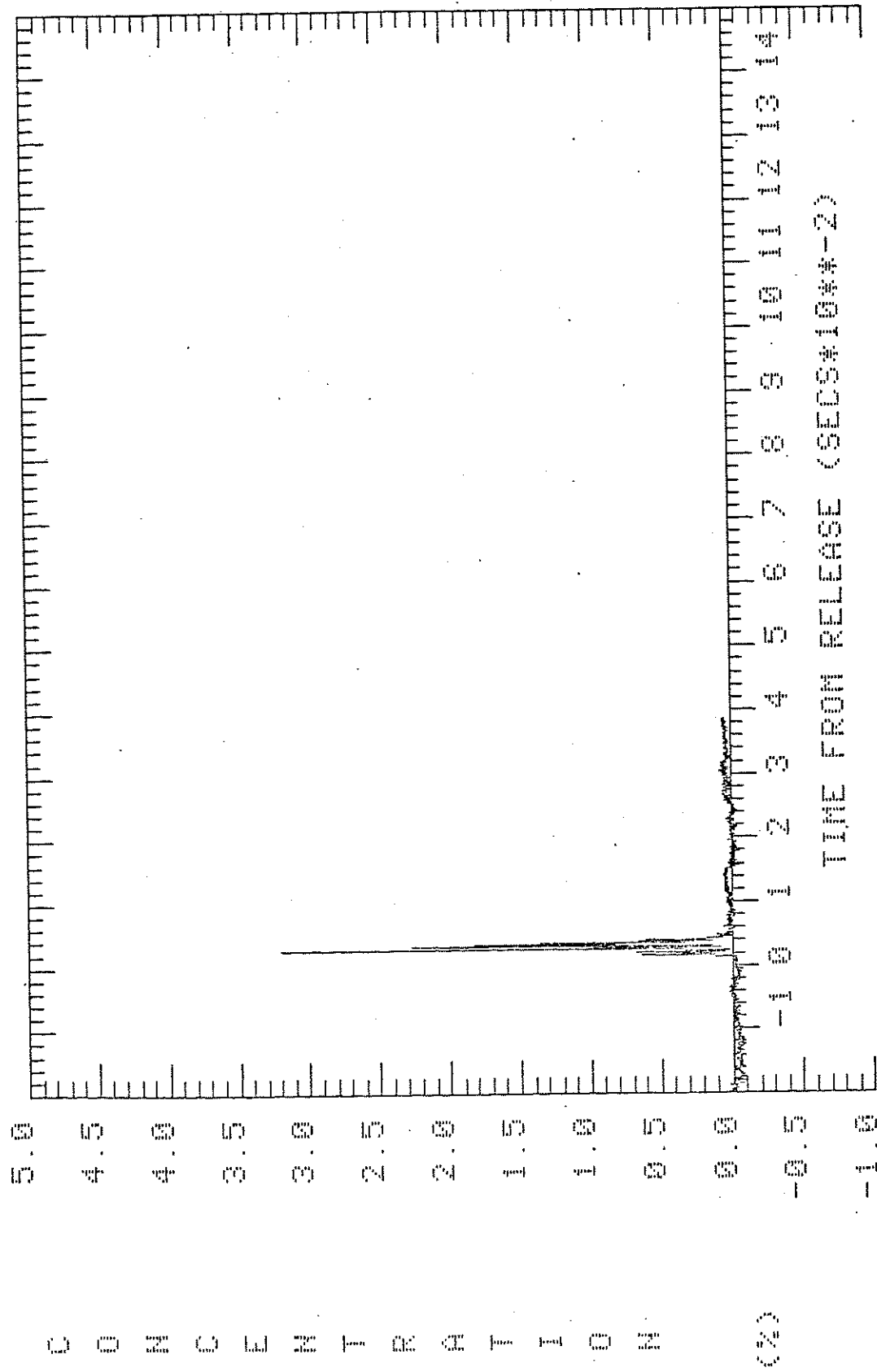
COMPLETION

(%)



TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 450 M Y: 250 M Z: 2.4 M

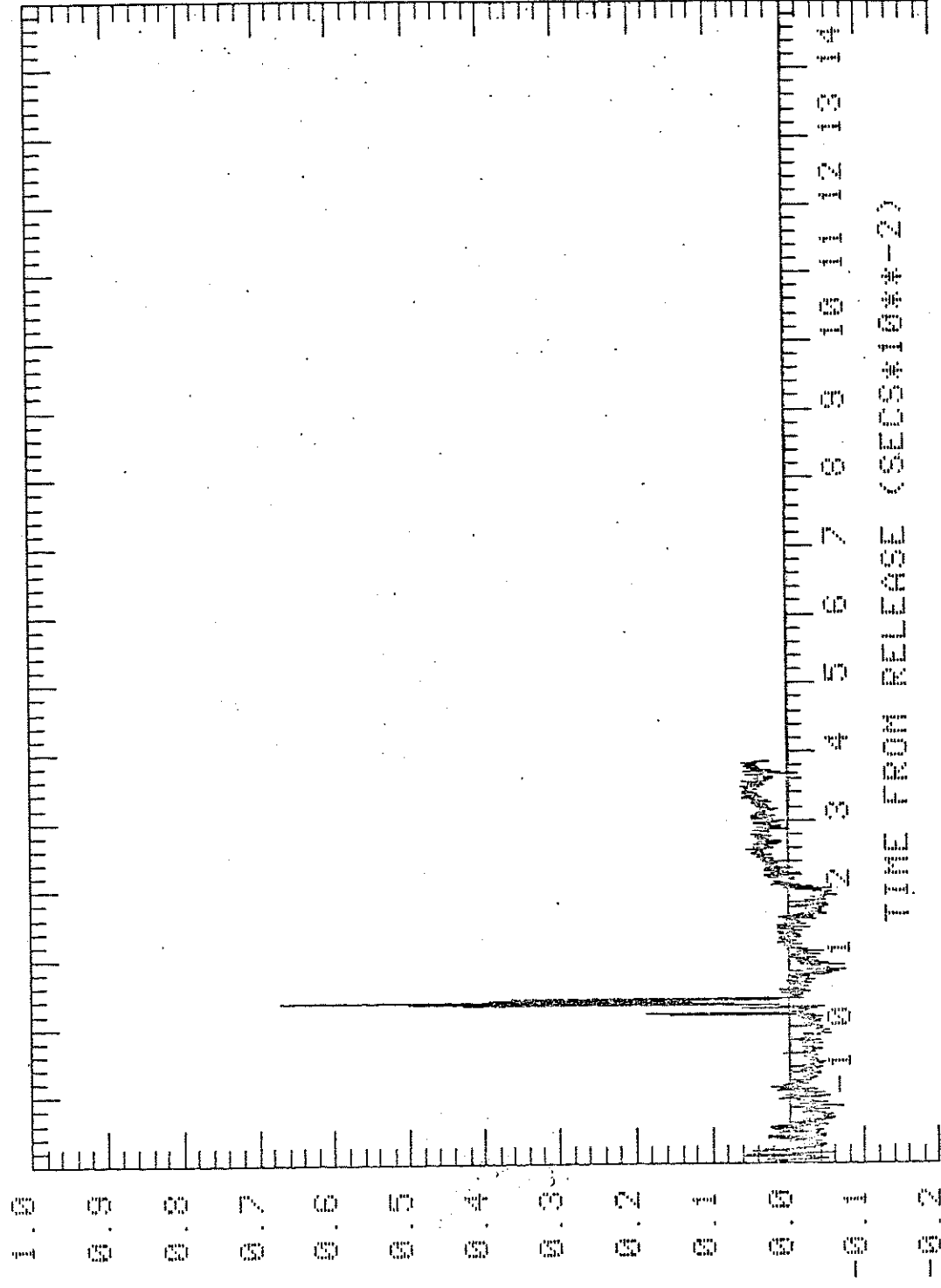


TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 450 M Y: 250 M Z: 4.4 M

COINTEGRATION

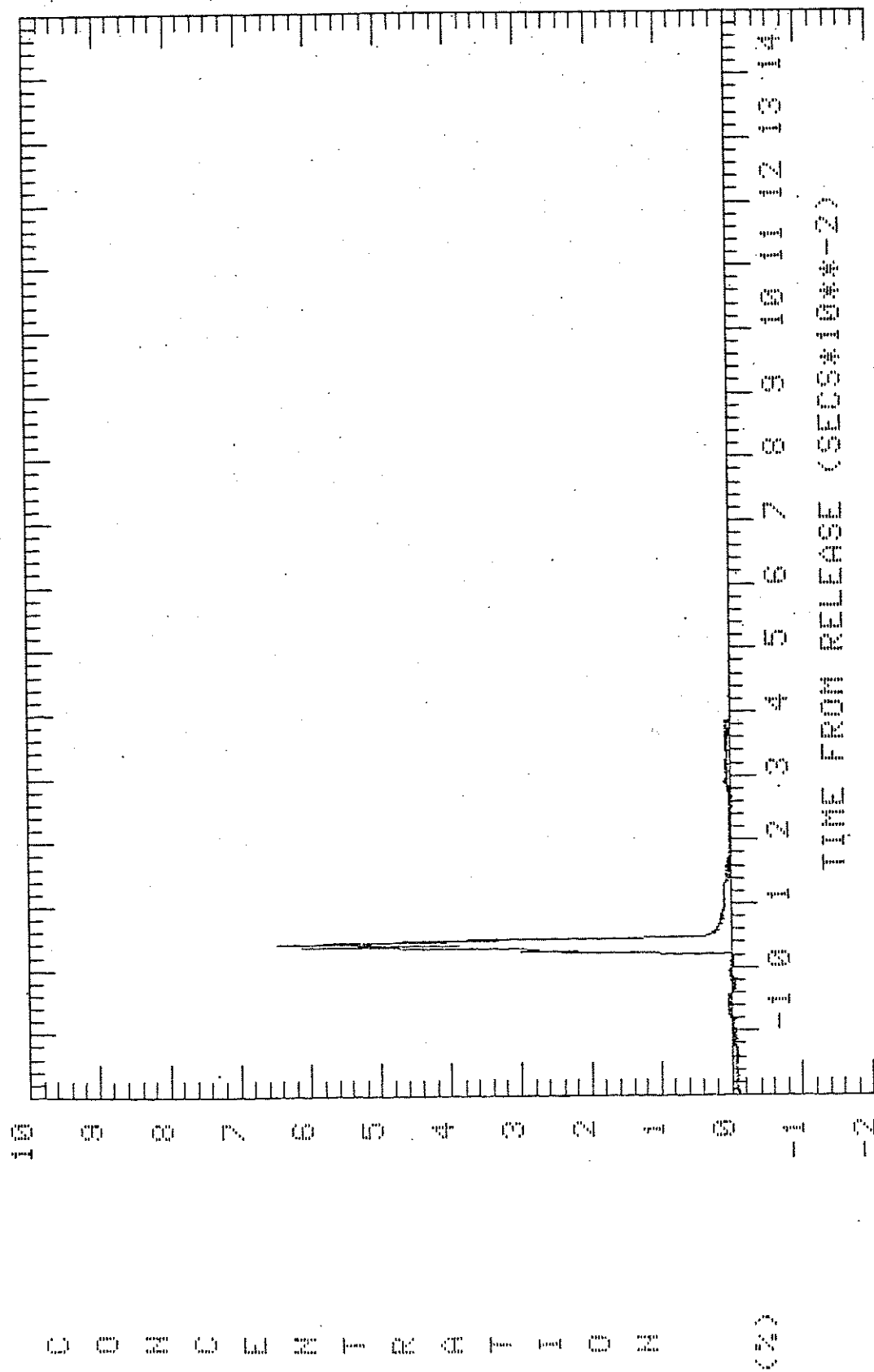
(2)



TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

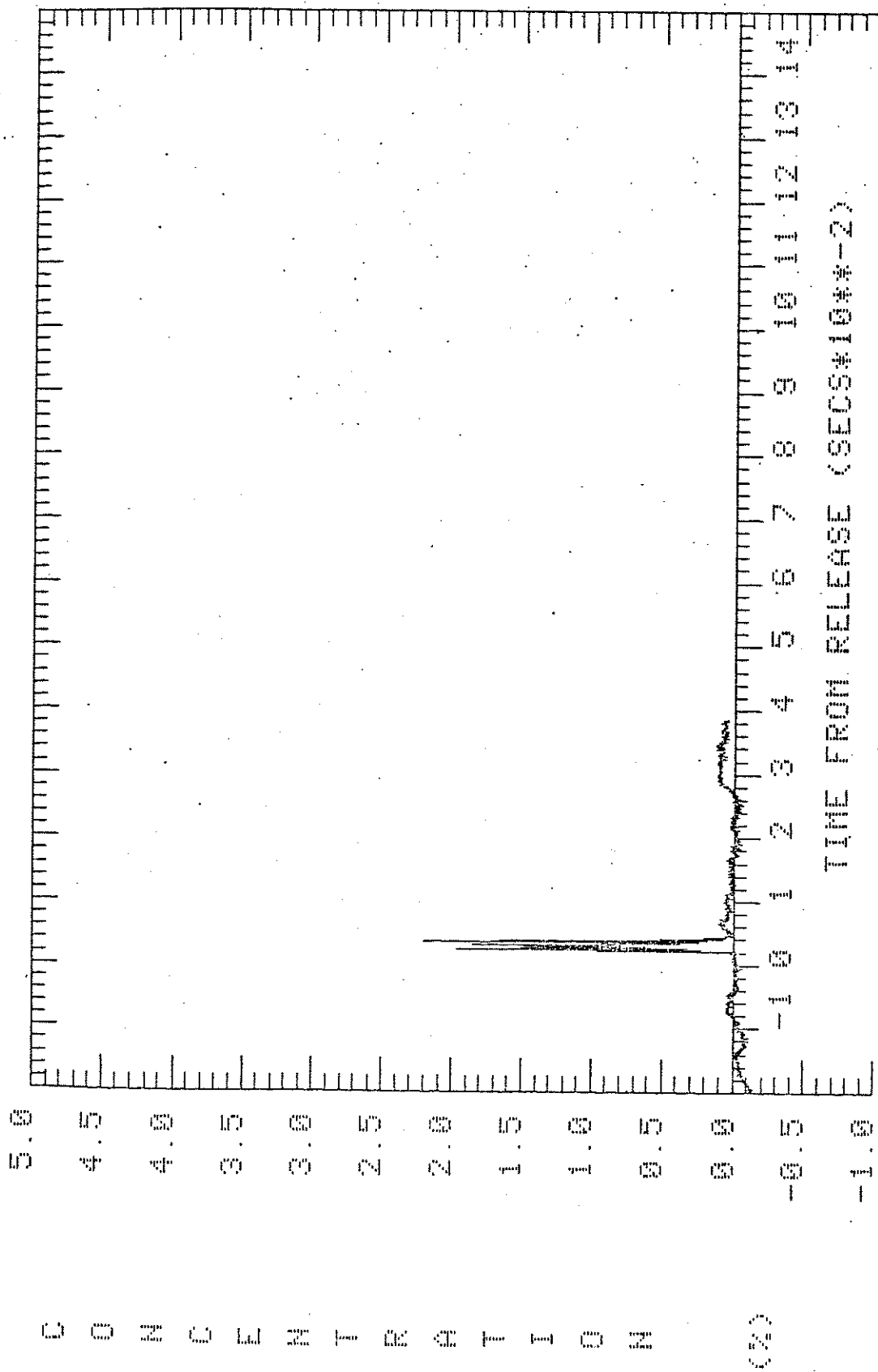
X: 450 M Y: 250 M Z: 6.4 M

G04



TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 400 M Y: 300 M Z: 0.4 M

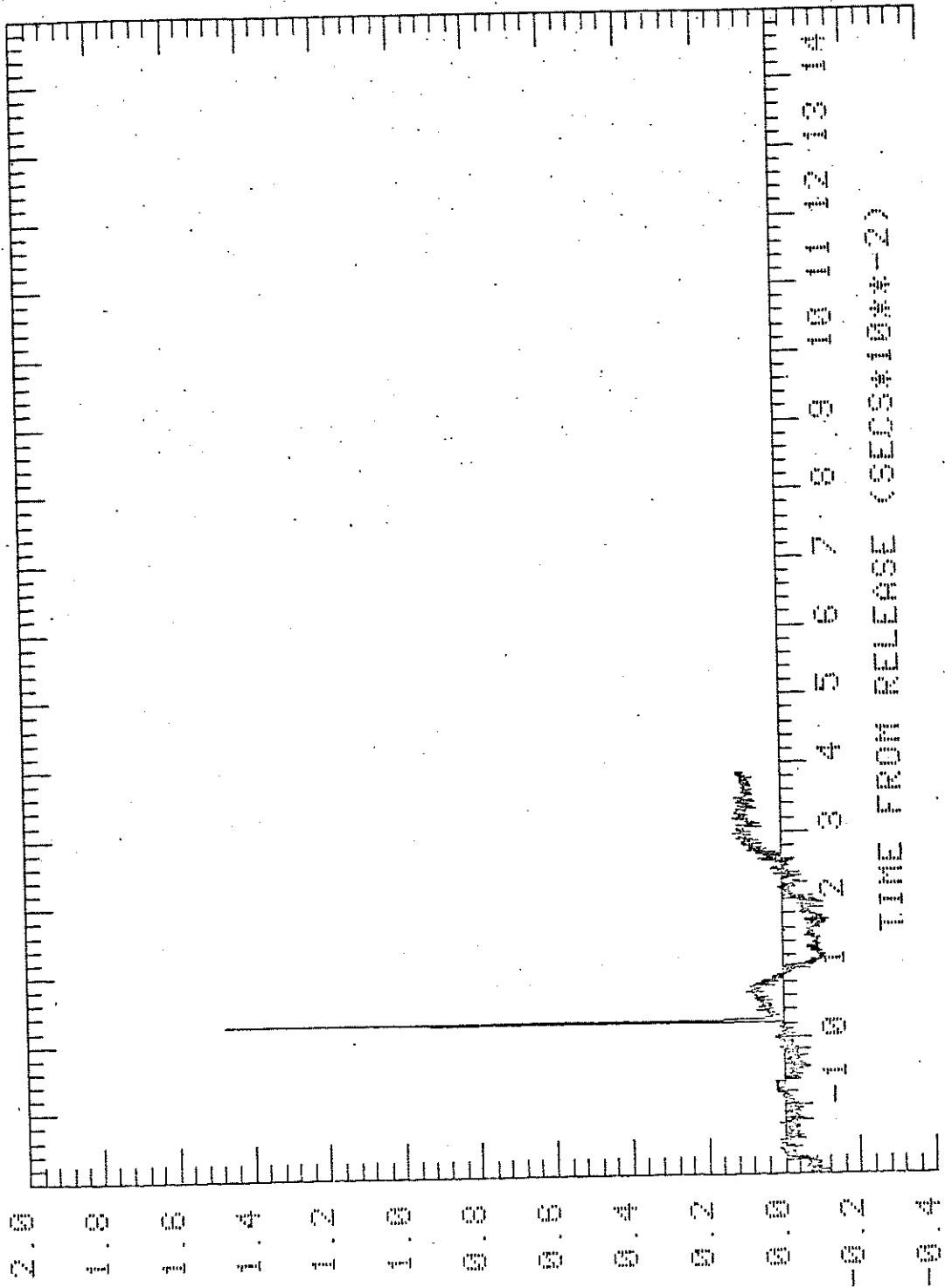


TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 400 H Y: 300 H Z: 2.4 H

COINTEGRATION

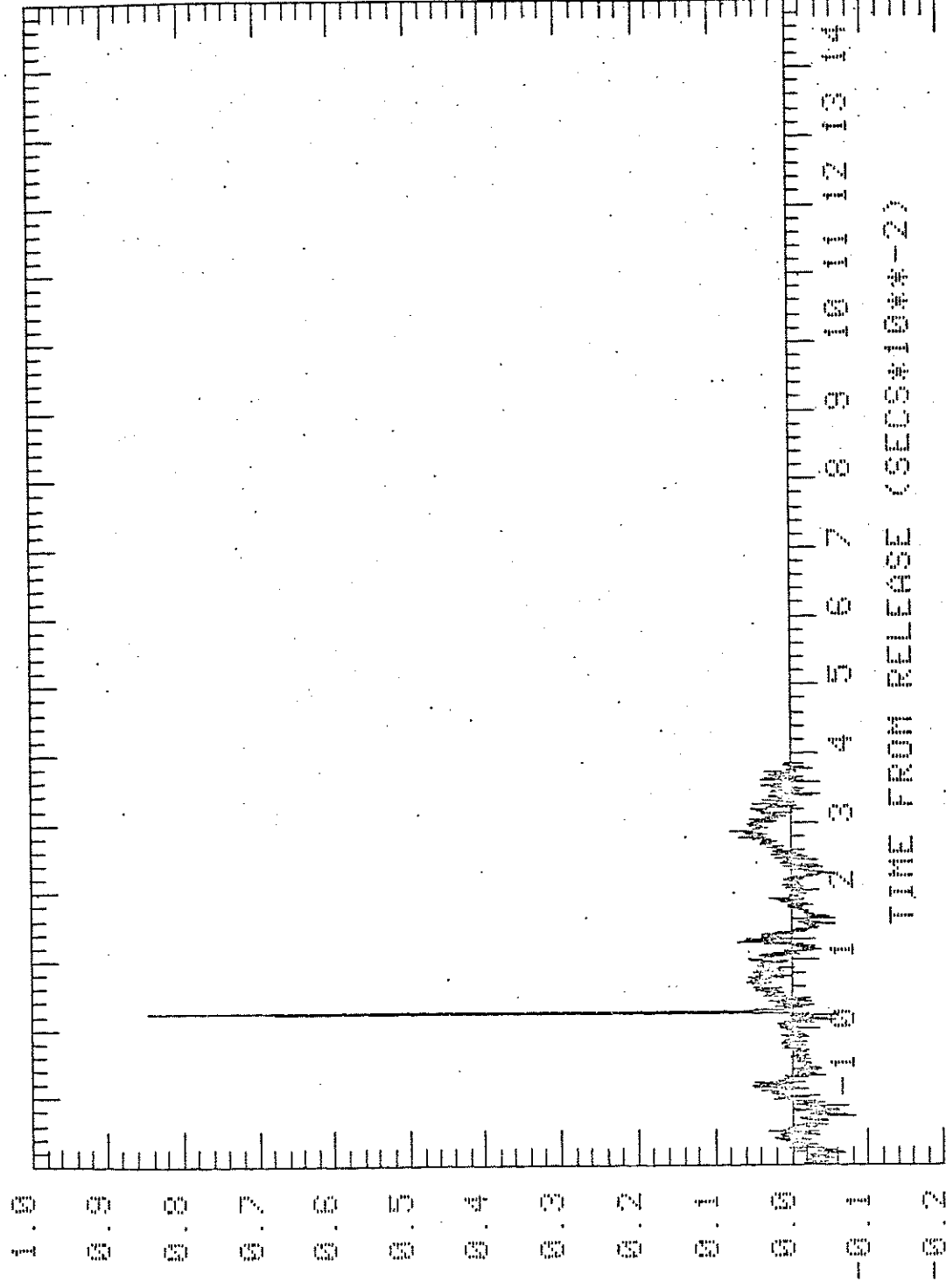
(2)



TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 400 H Y: 300 H Z: 4.4 H

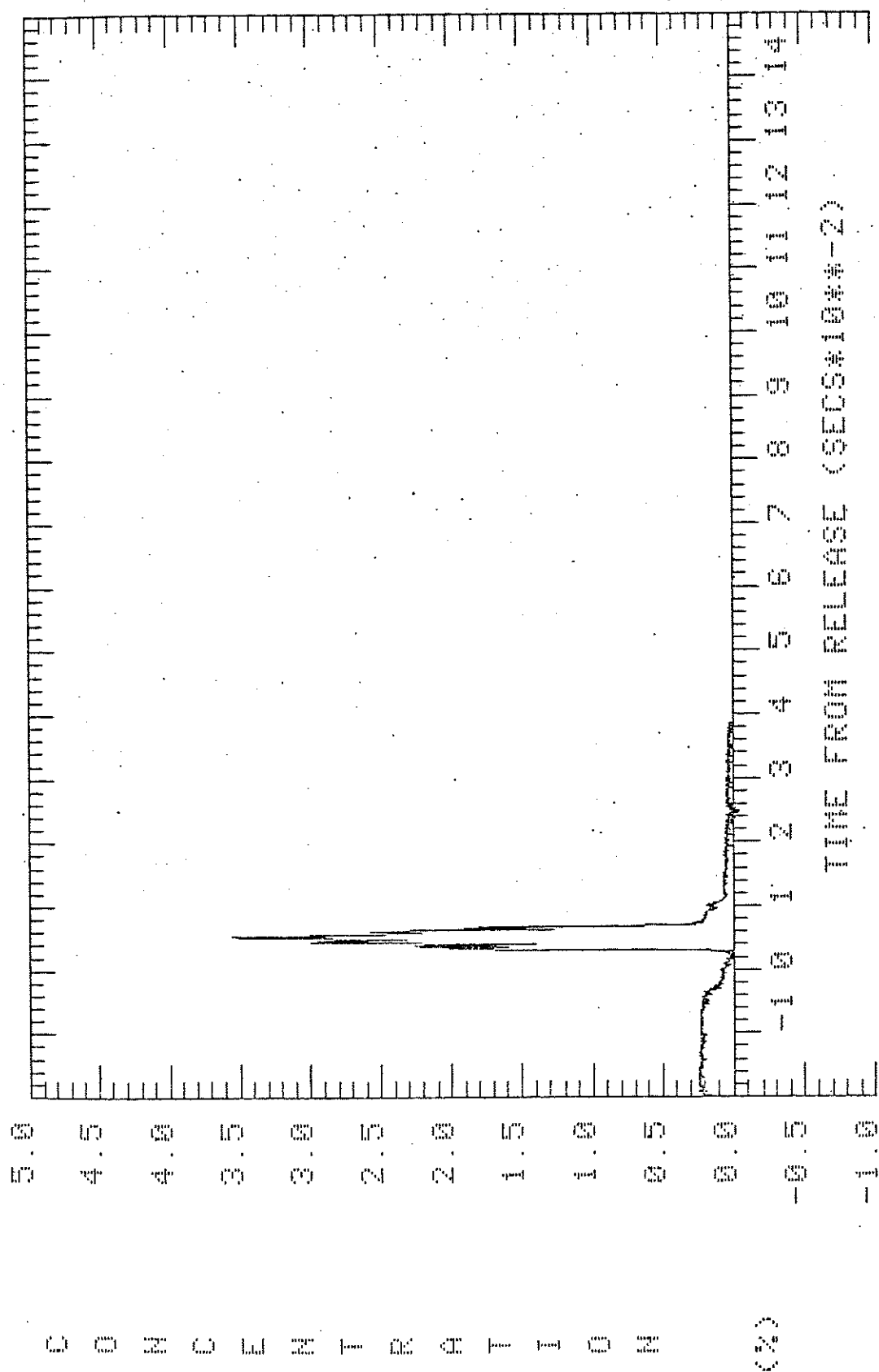
C O N C E N T R A T I O N



TIME FROM RELEASE (SECS*10**-2)

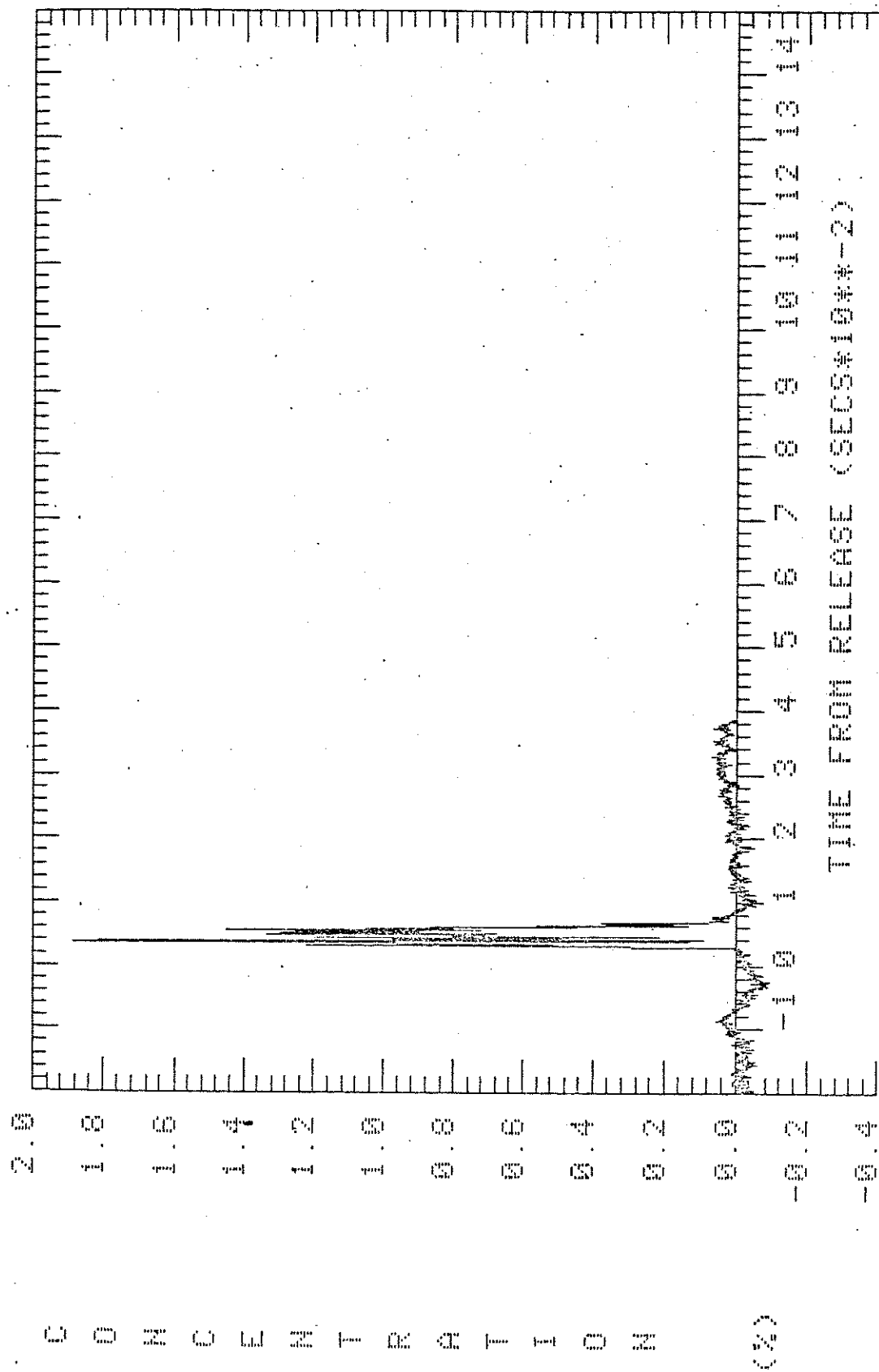
TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 489 H Y: 300 H Z: 6.4 H



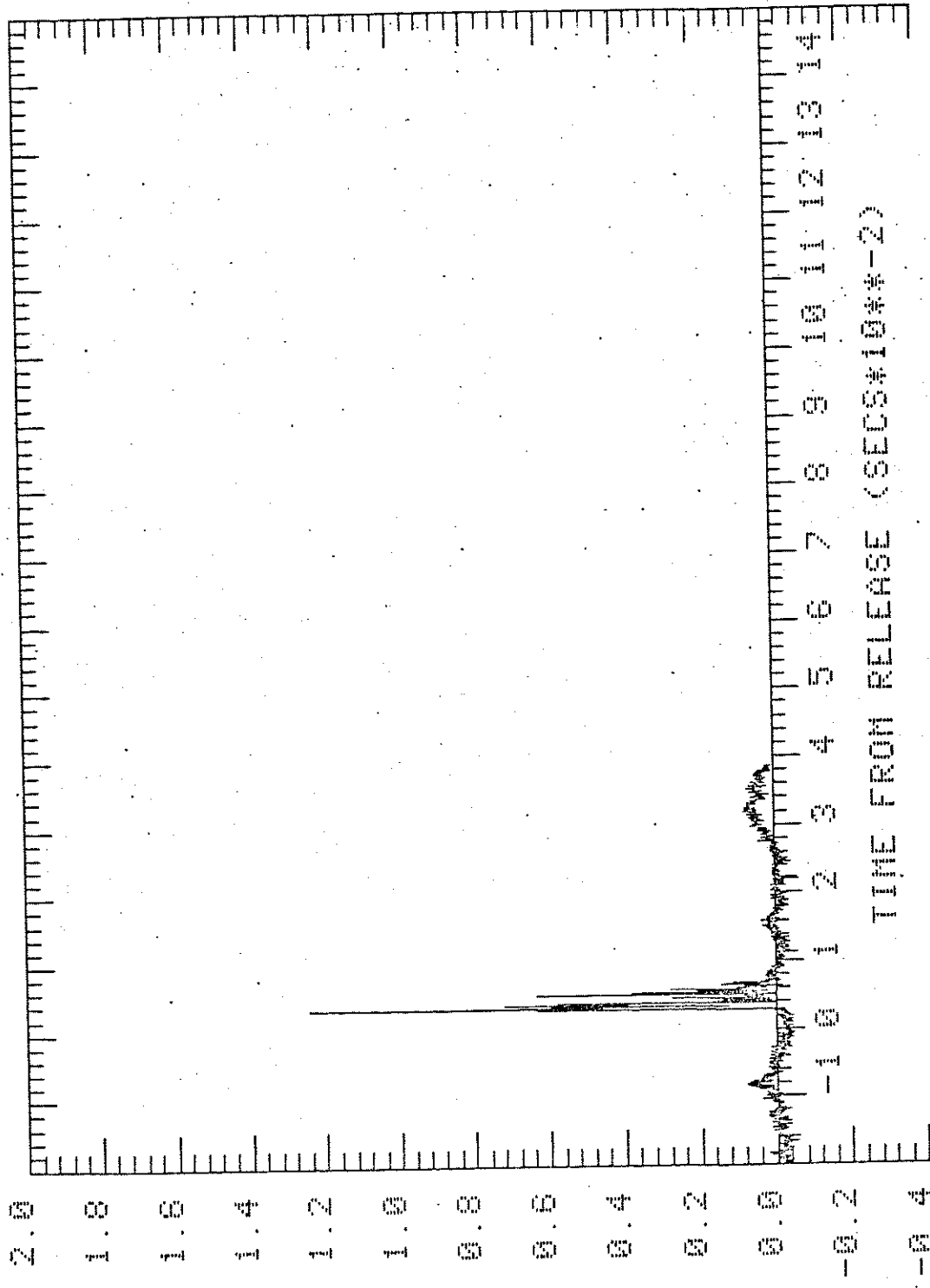
TRIAL: 010 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 500 N Y: 300 N Z: 0.4 N



TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 500 H Y: 300 H Z: 2.4 H



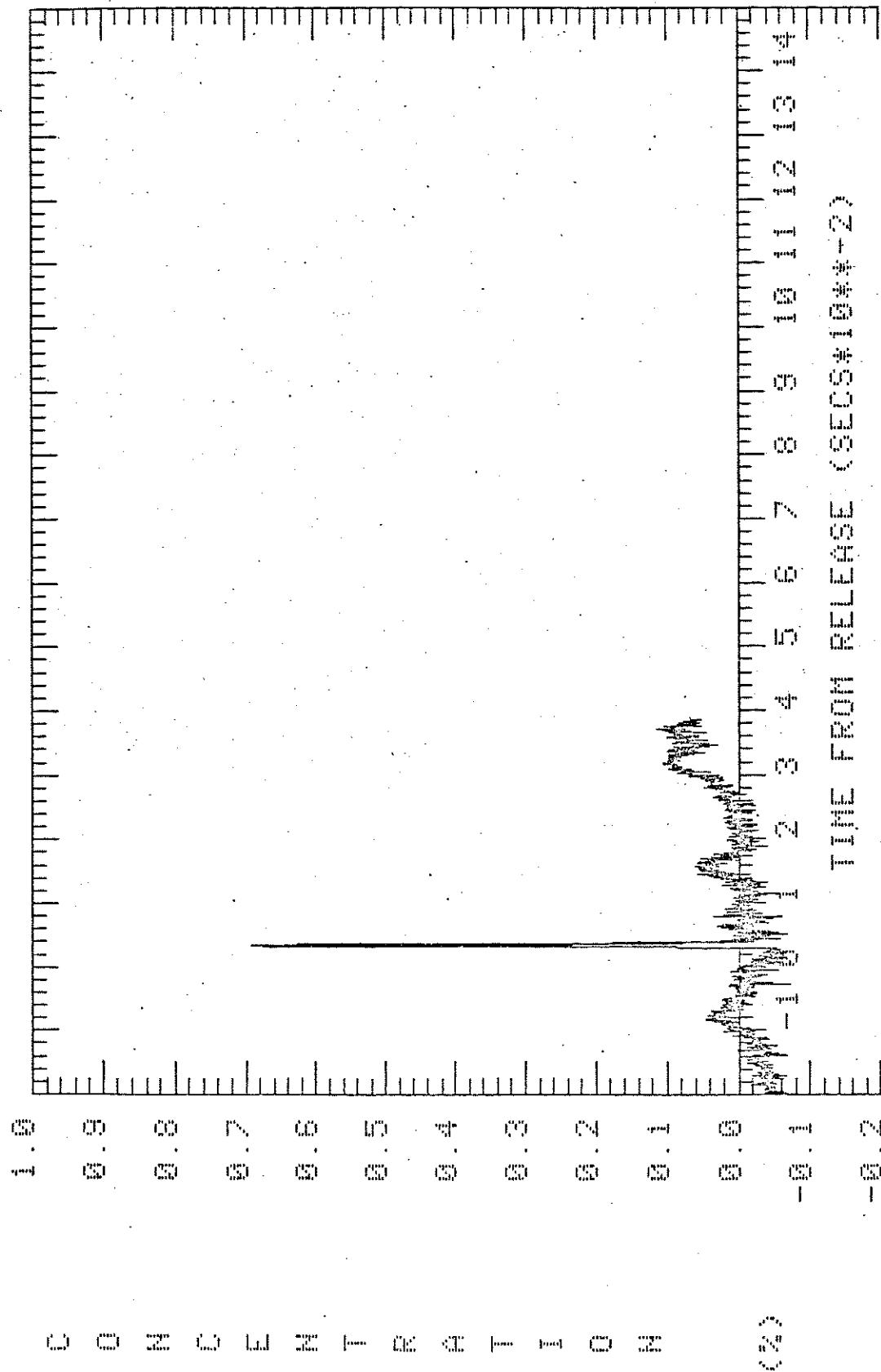
C O N C E N T R A T I O N

(%)

TIME FROM RELEASE (SECS*10**-2)

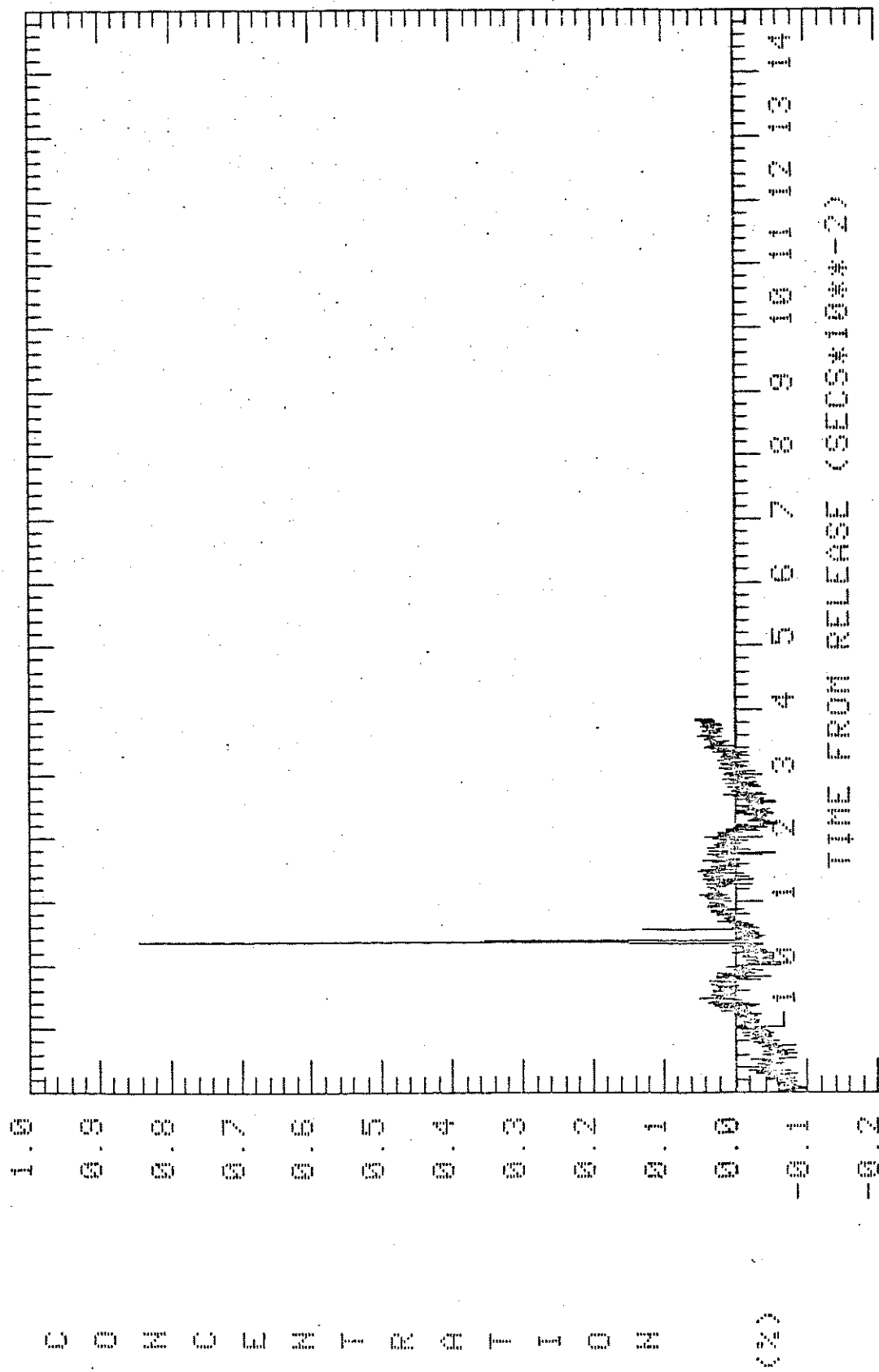
TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 500 M Y: 300 M Z: 4.4 M



TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 500 M Y: 300 M Z: 6.4 M

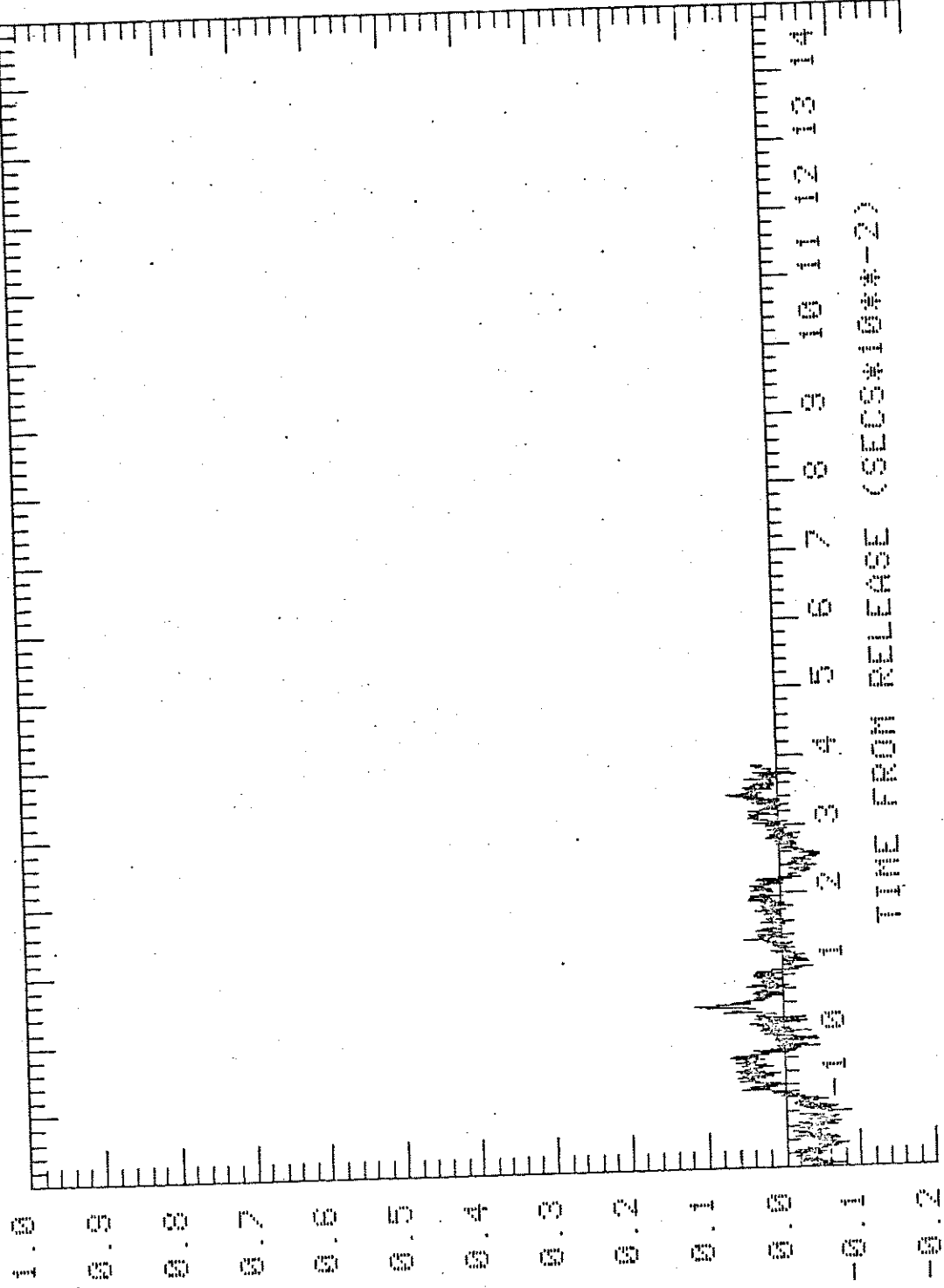


TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 400 N Y: 350 N Z: 0.4 N

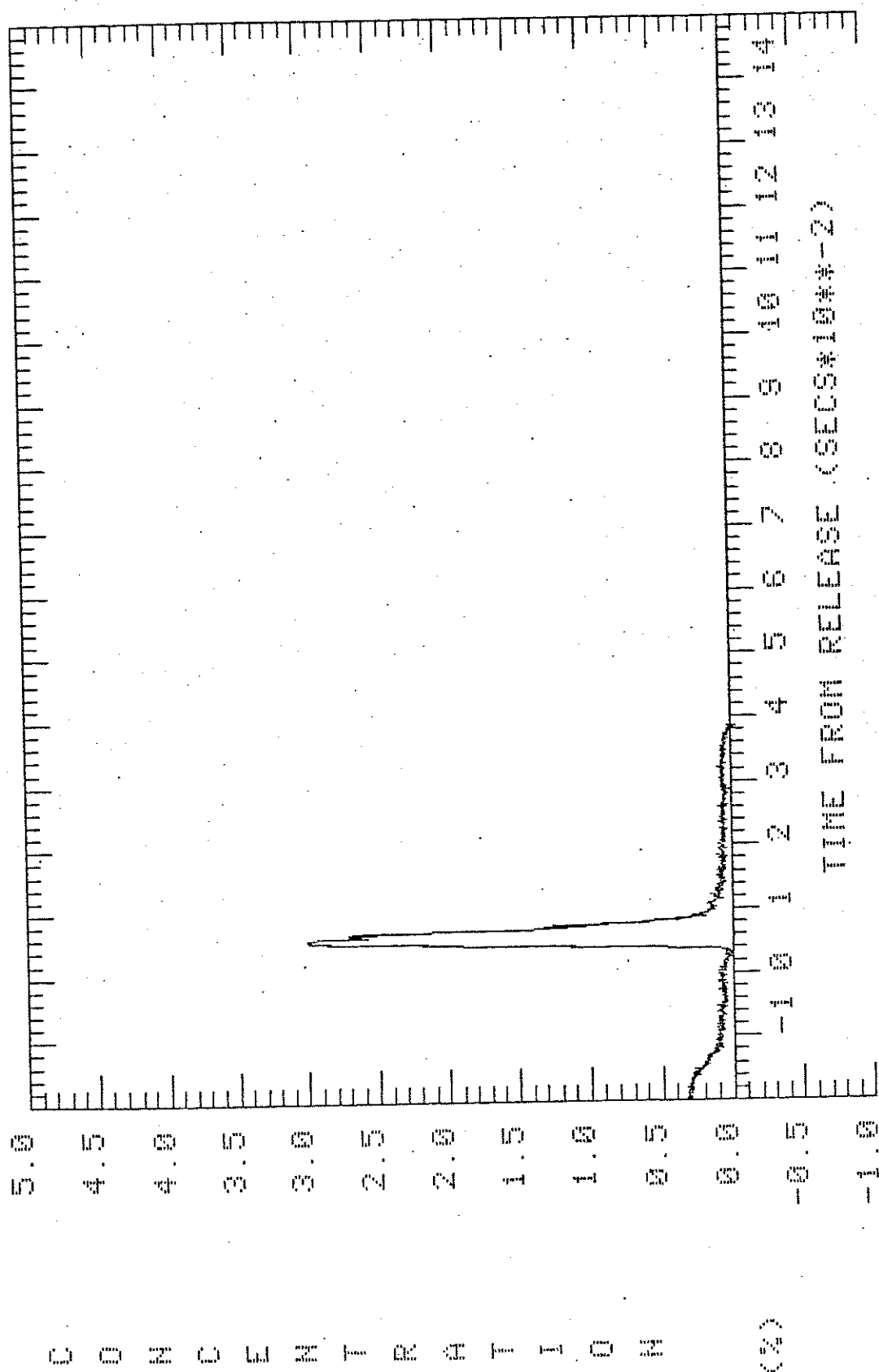
C O N C E N T R A T I O N

(%)



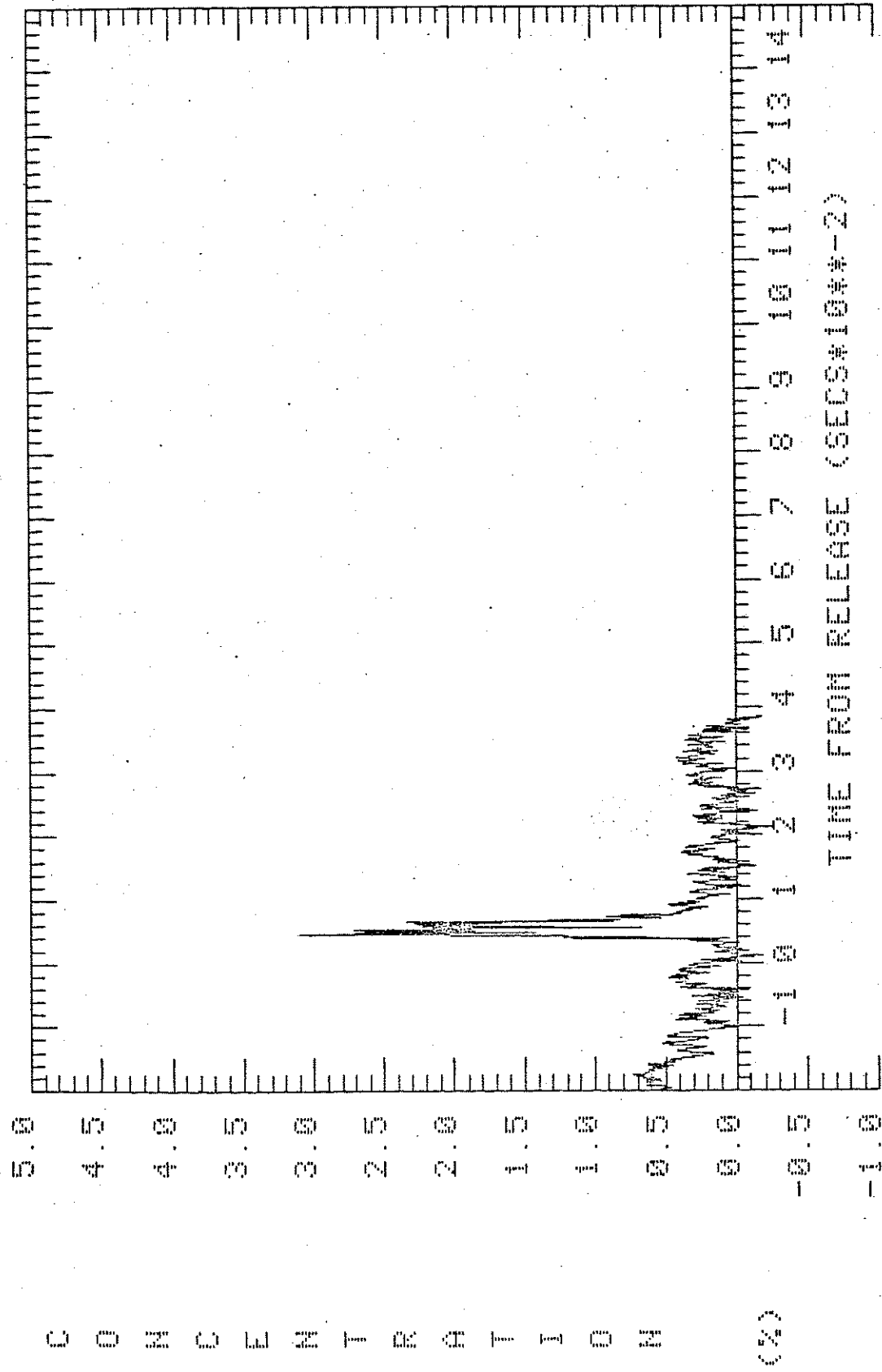
TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 400 N Y: 350 N Z: 2.4 N



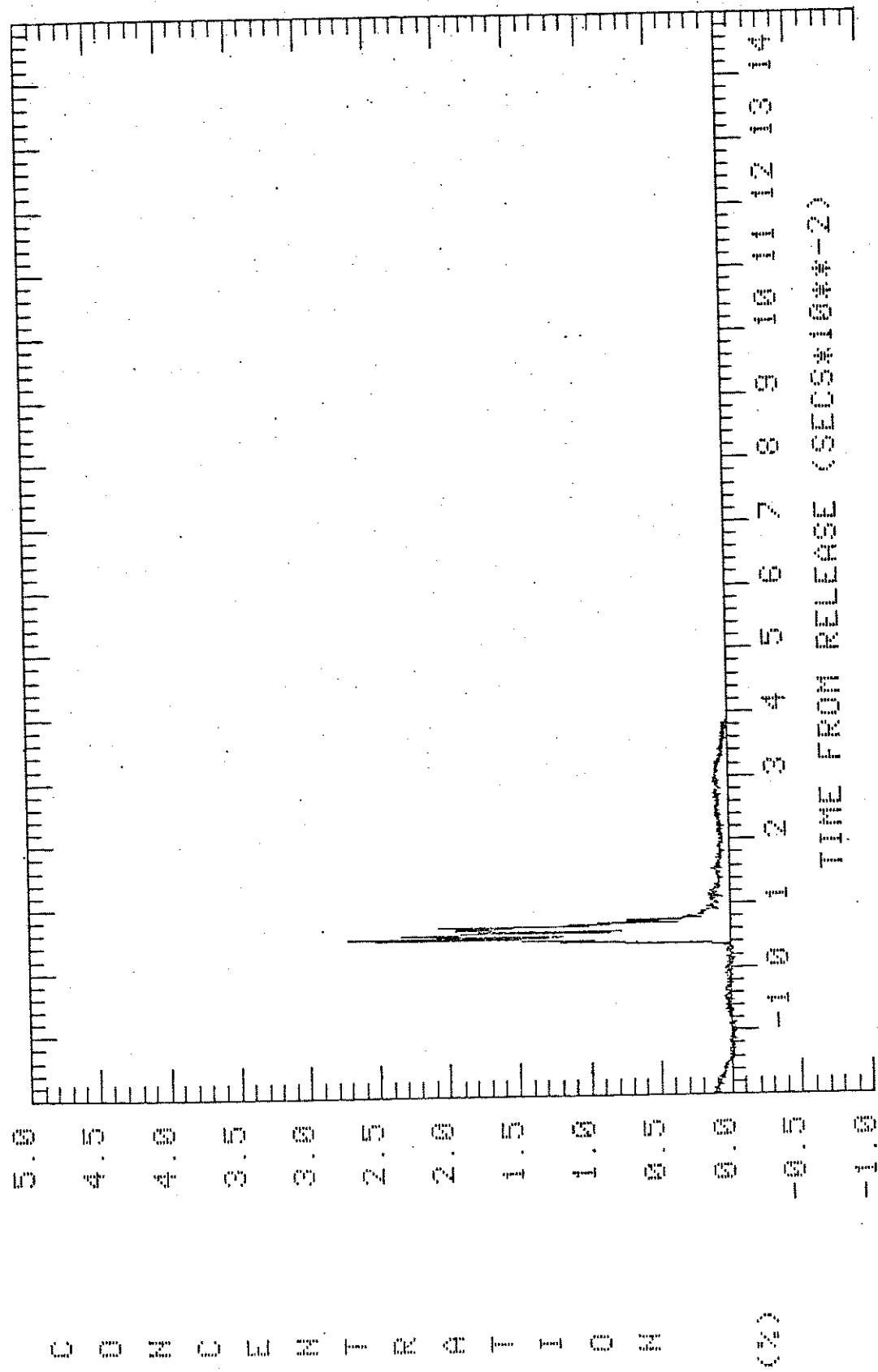
TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 500 M Y: 350 M Z: 0.4 M



TRIAL: 013 TYPE: HGAS AVERAGING TIME: 0.6 SECS

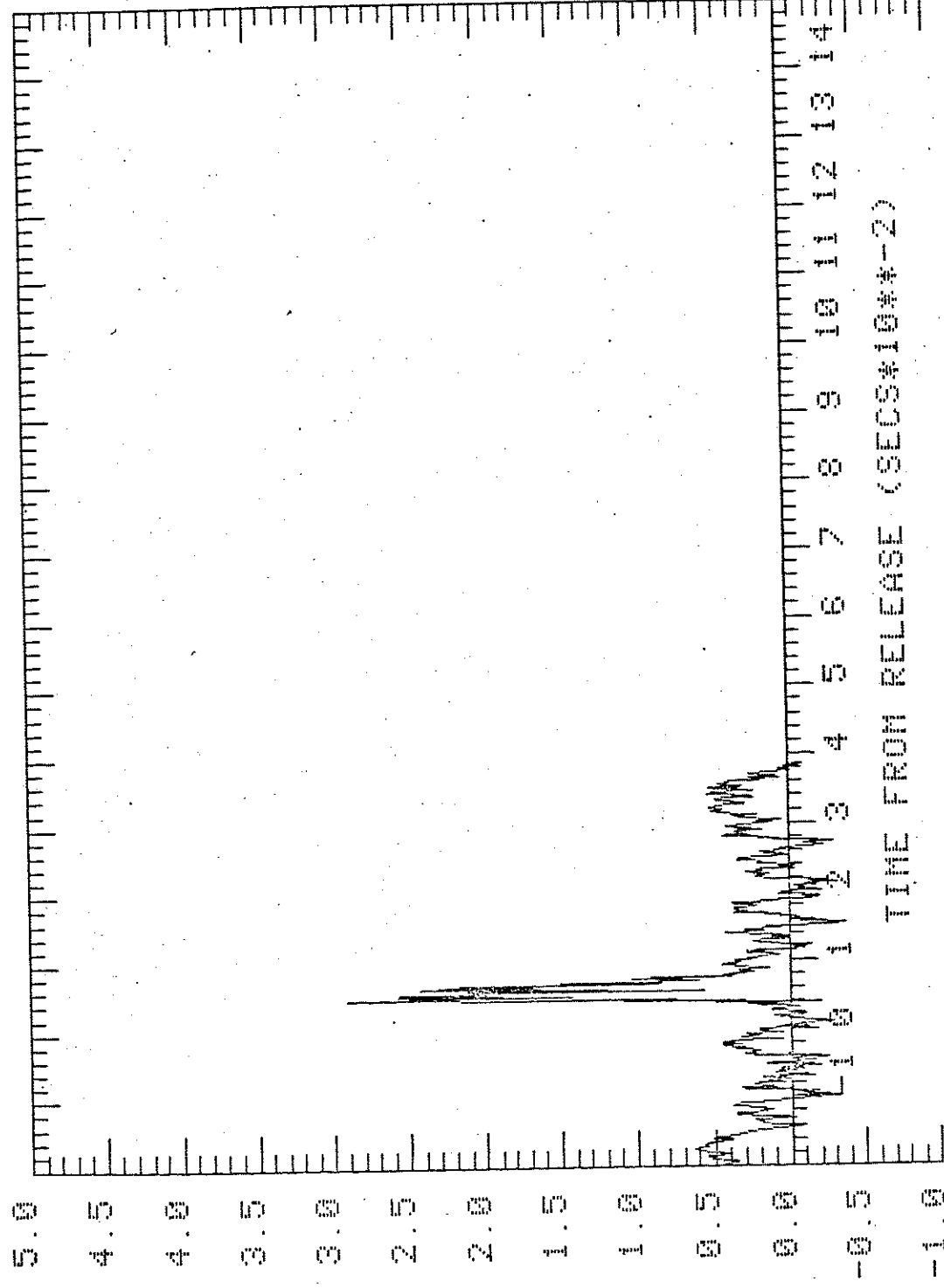
X: 500 H Y: 350 H Z: 2.0 H



TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 500 M Y: 350 M Z: 2.4 M

C O N C E N T R A T I O N

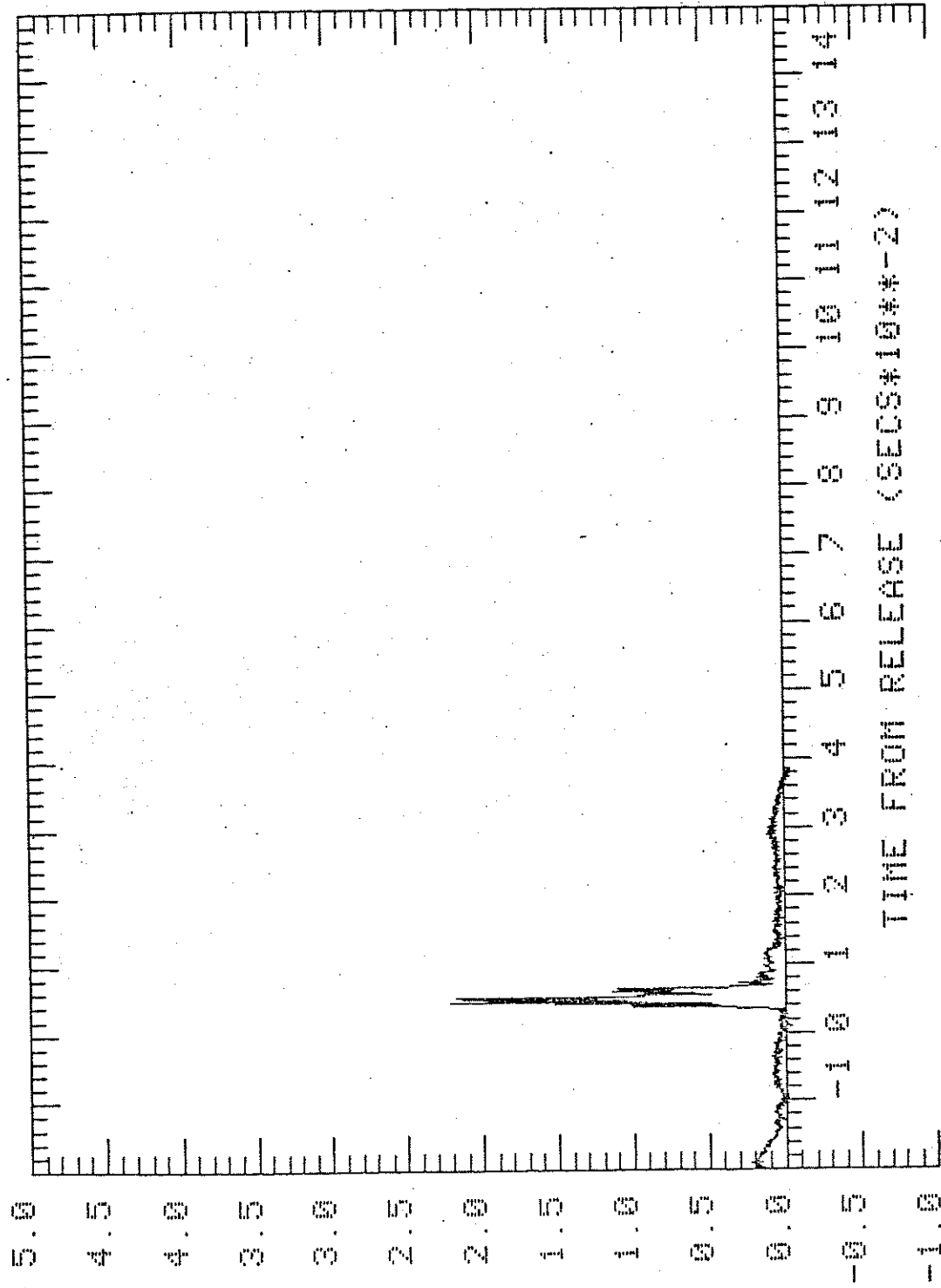


TRIAL: 913 TYPE: HGAS AVERAGING TIME: 0.6 SECS

X: 500 H Y: 350 H Z: 2.4 H

CONCENTRATION

(2)

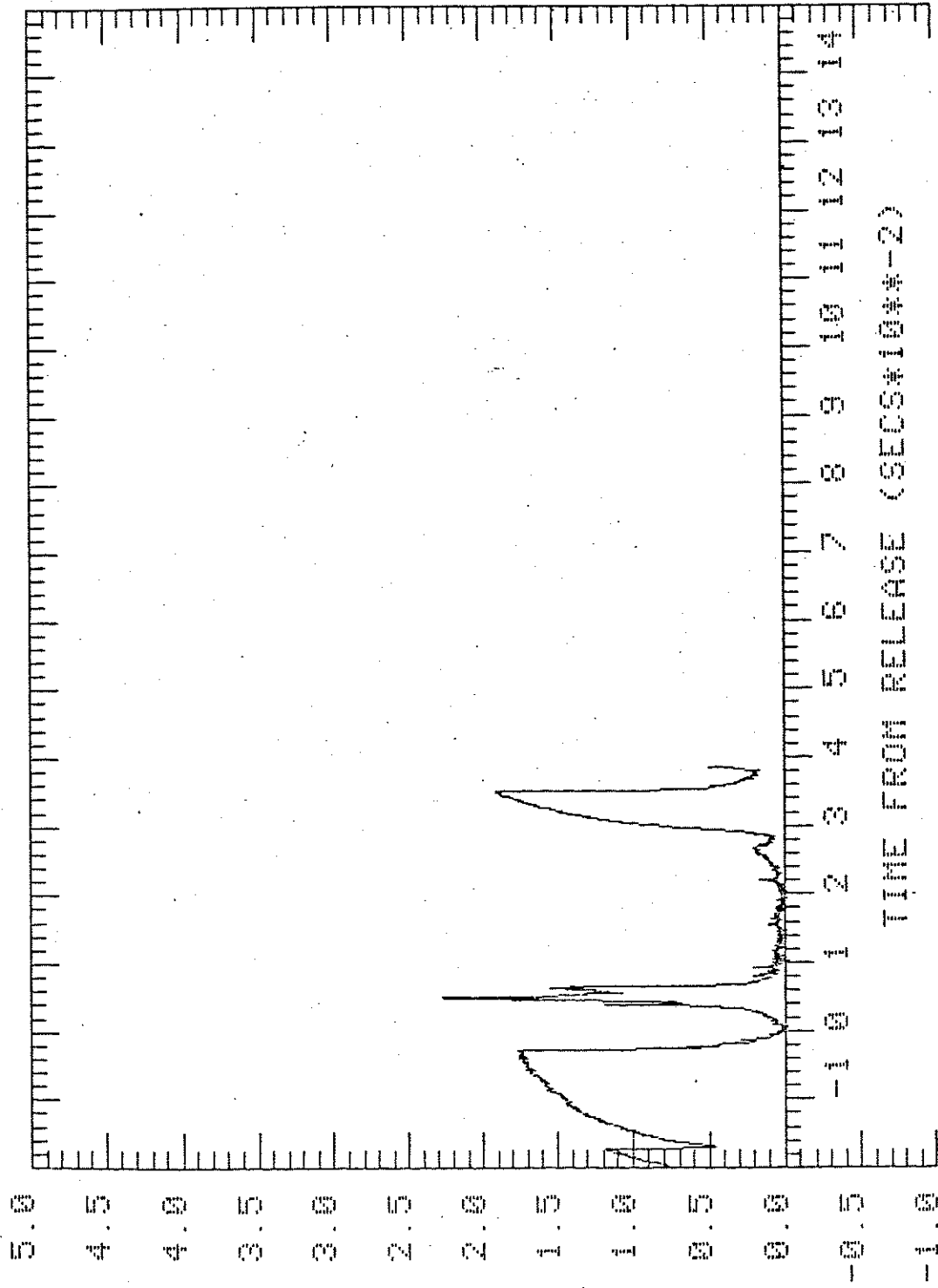


TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 500 M Y: 350 M Z: 4.4 M

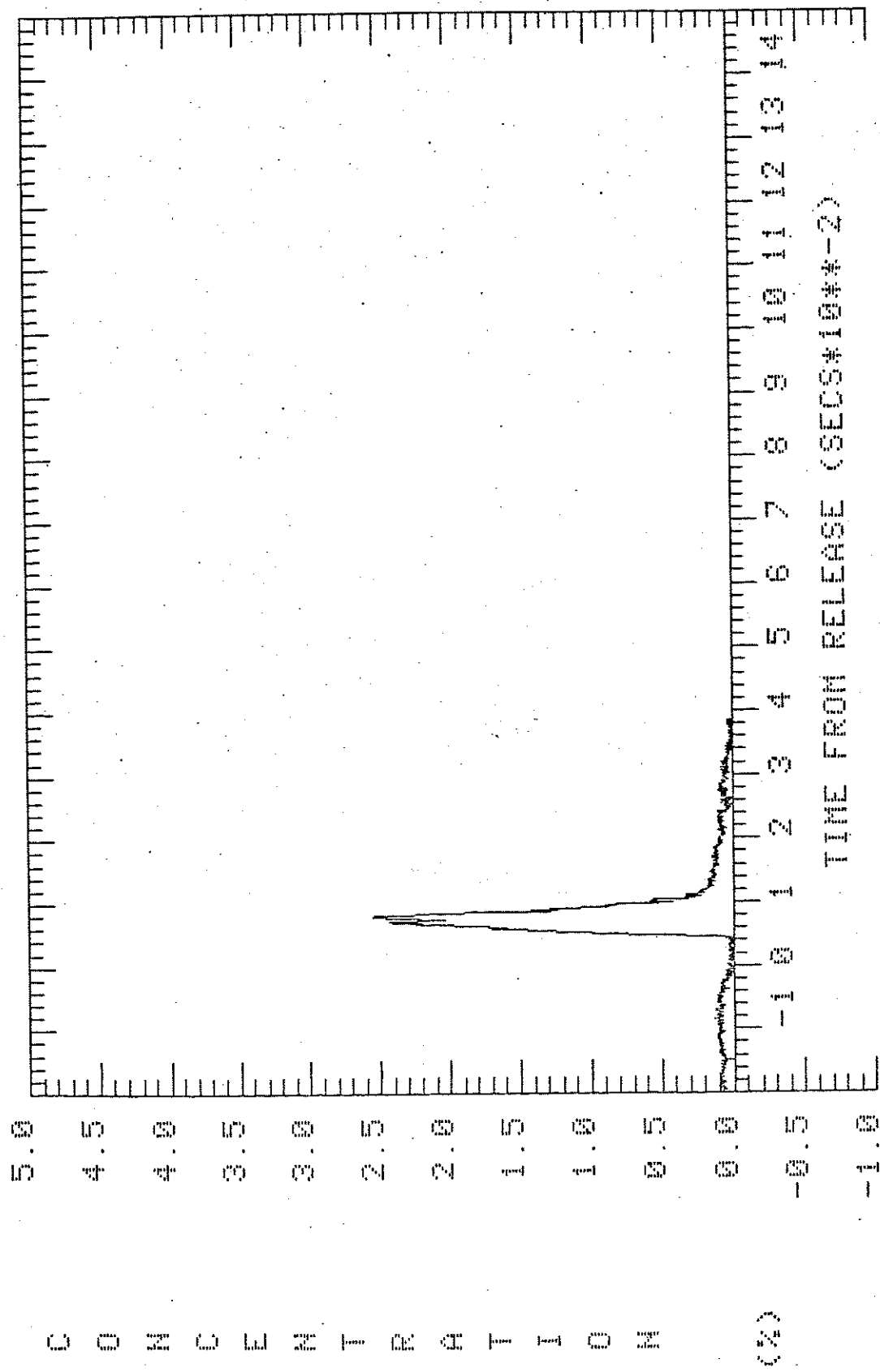
CONCENTRATION

(%)



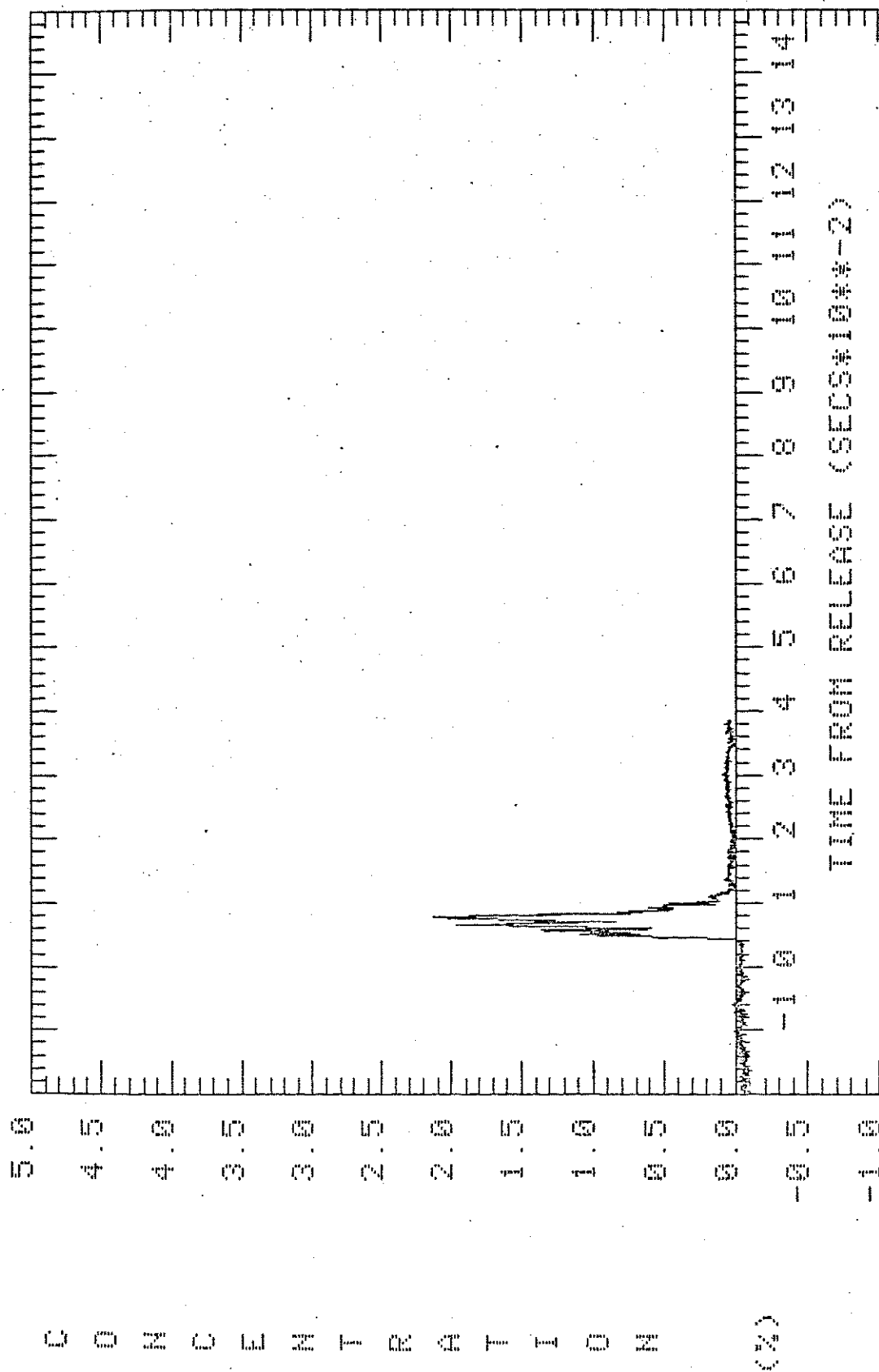
TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 500 M Y: 350 M Z: 6.4 M



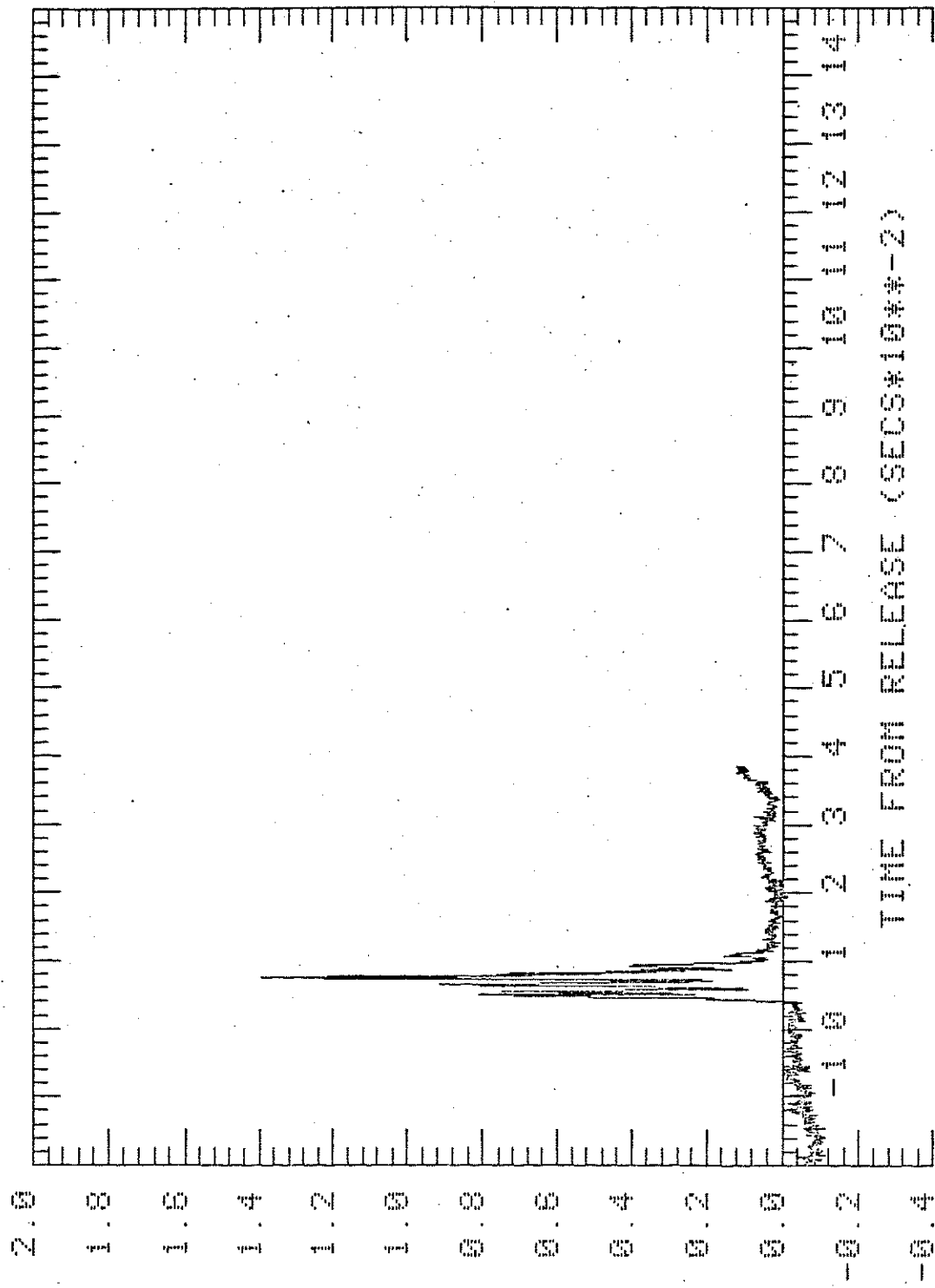
TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 599 H Y: 400 H Z: 0.4 H



TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 599 H Y: 499 H Z: 2.4 H

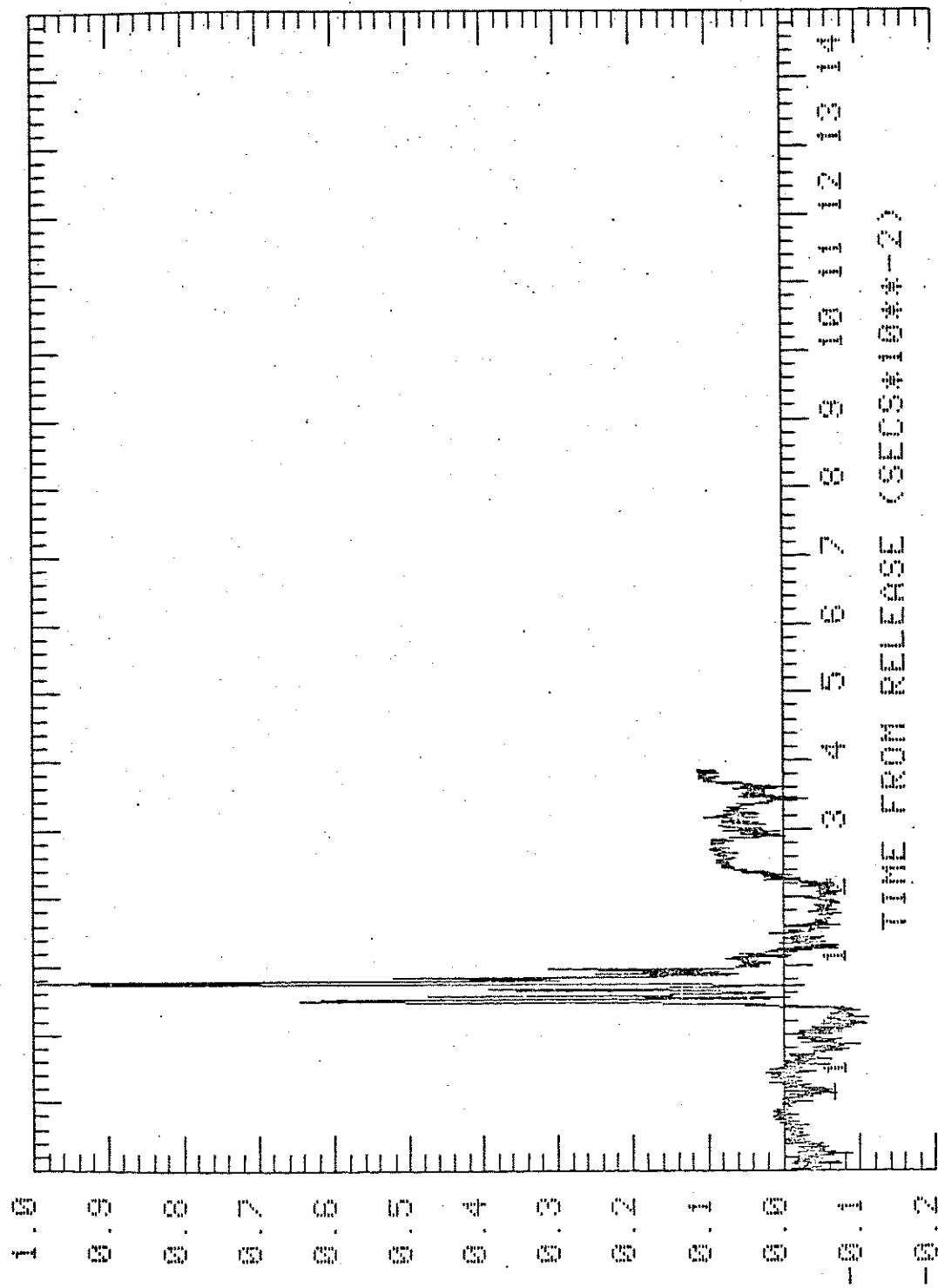


COUNT RATE

(%)

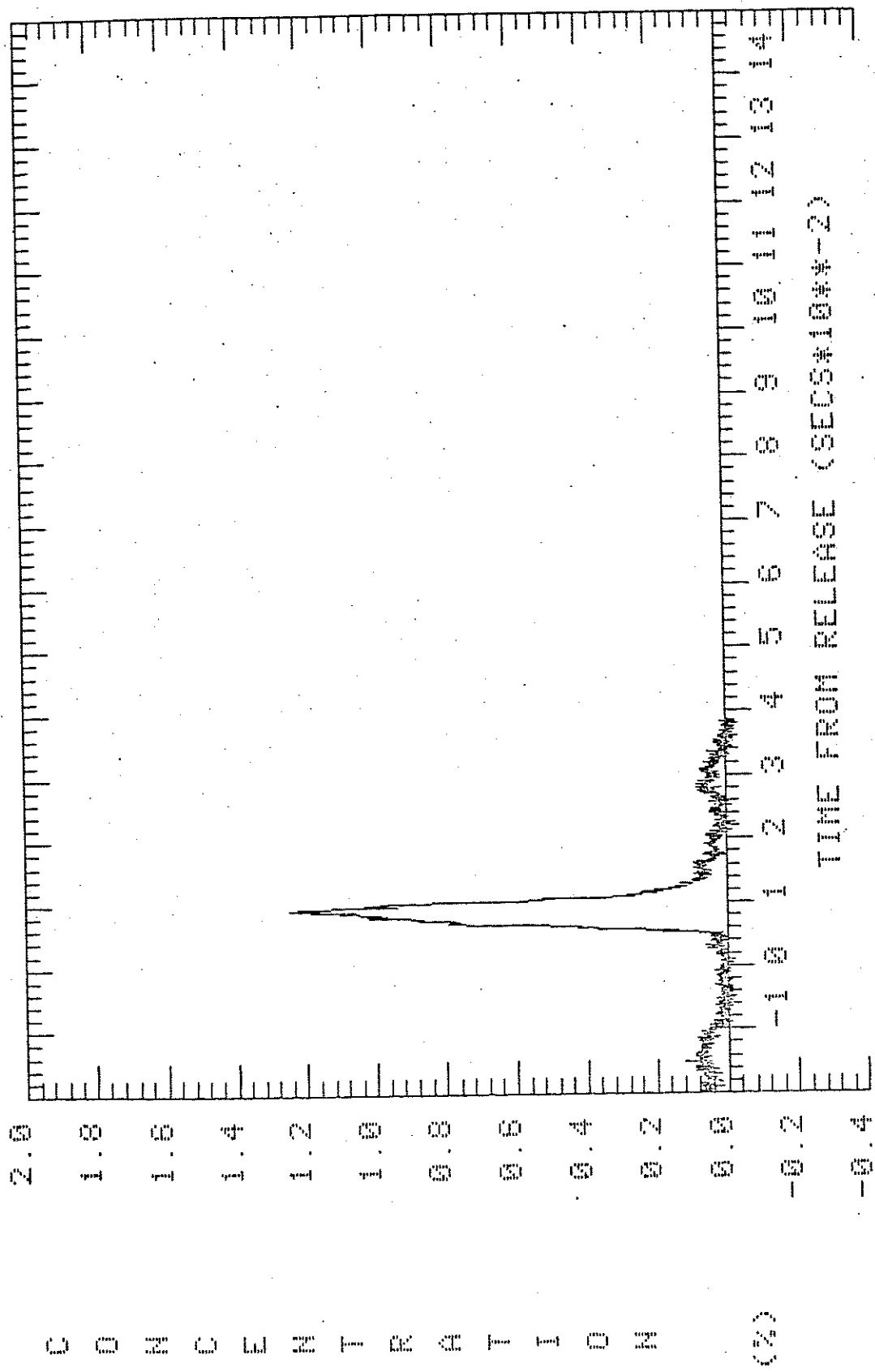
TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 500 M Y: 400 M Z: 4.4 M



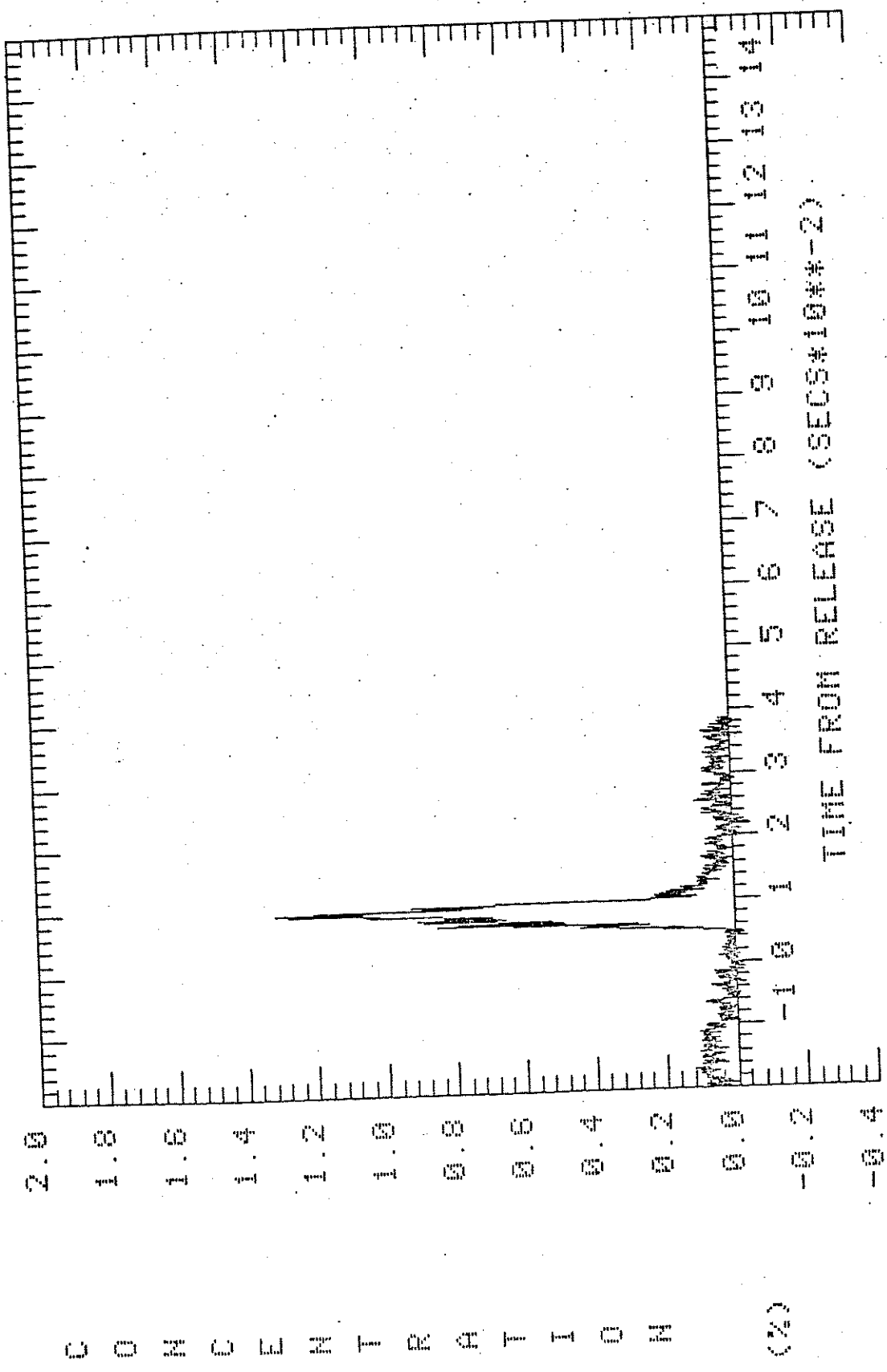
TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 500 N Y: 400 N Z: 6.4 N



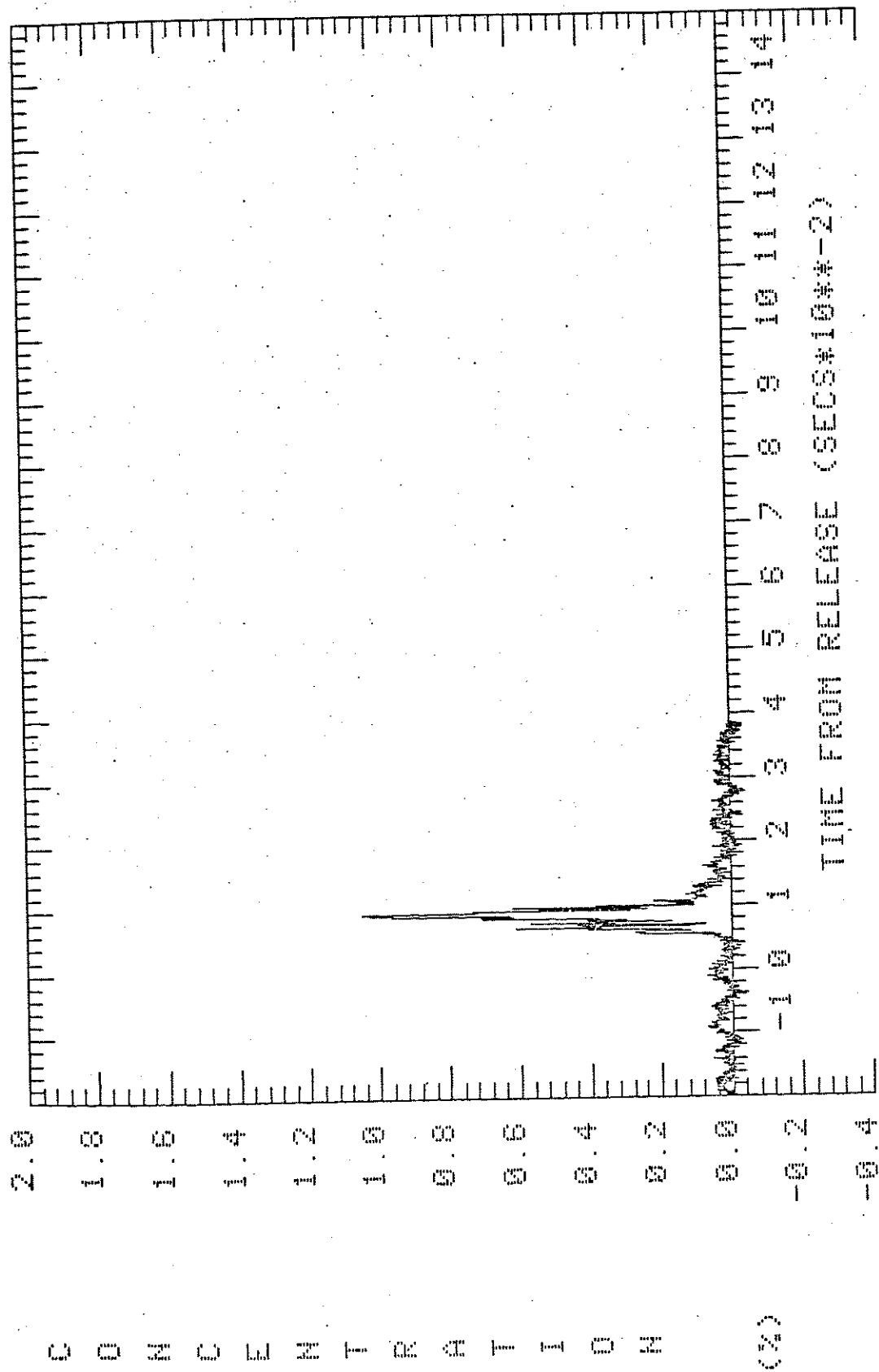
TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 500 M Y: 500 M Z: 0.4 M



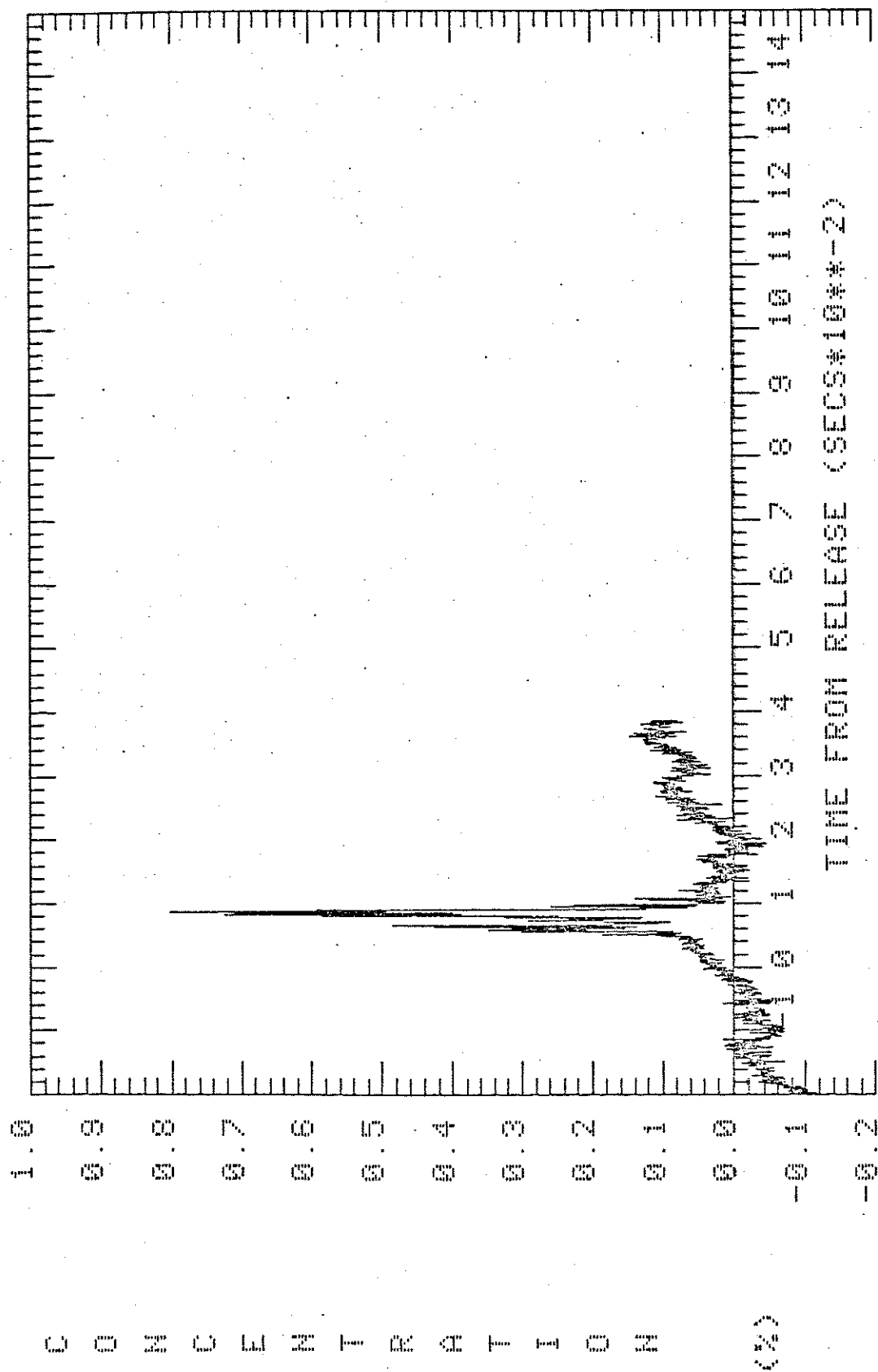
TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 500 M Y: 500 M Z: 2.4 M



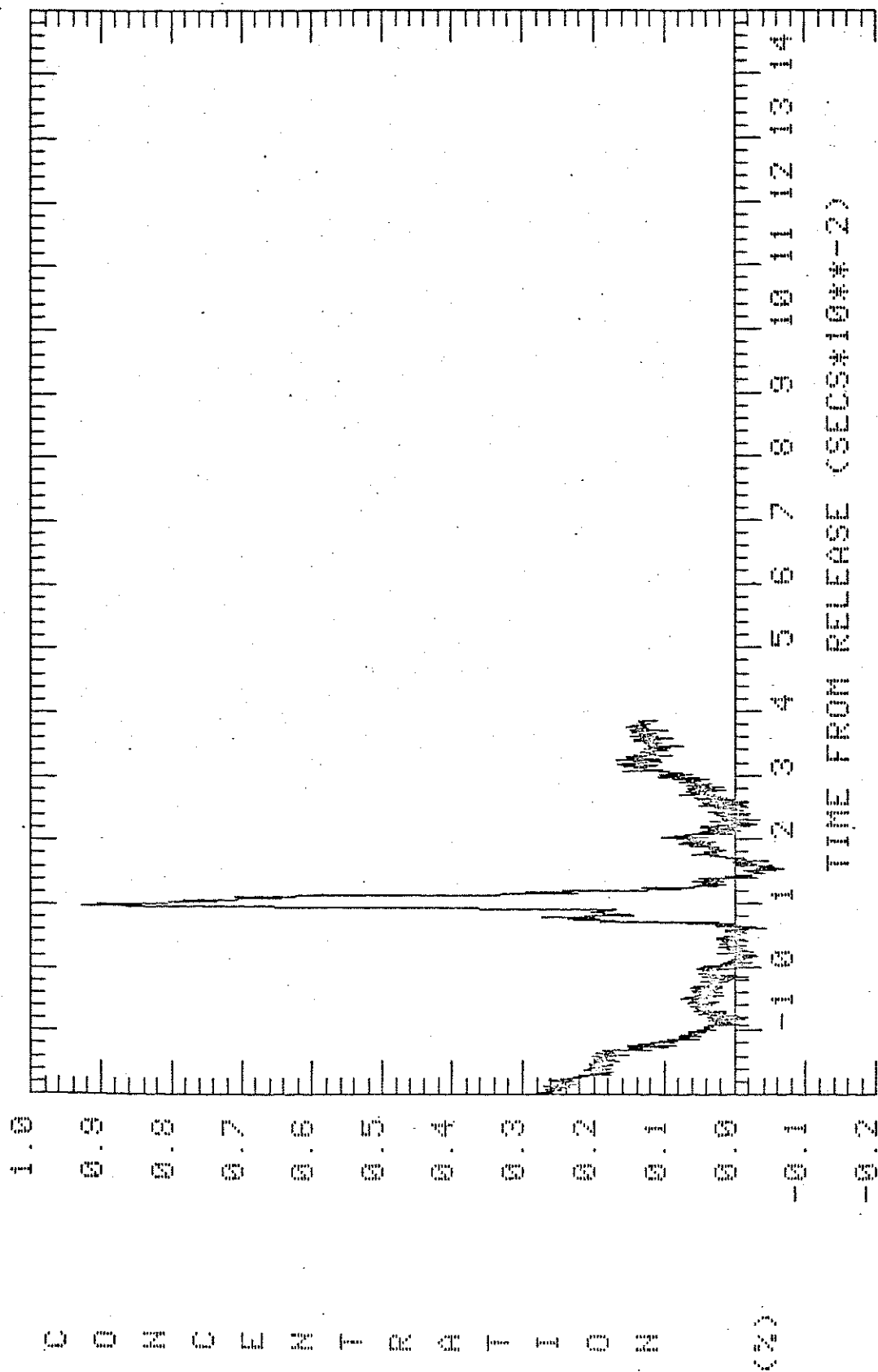
TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 500 M Y: 500 M Z: 4.4 M



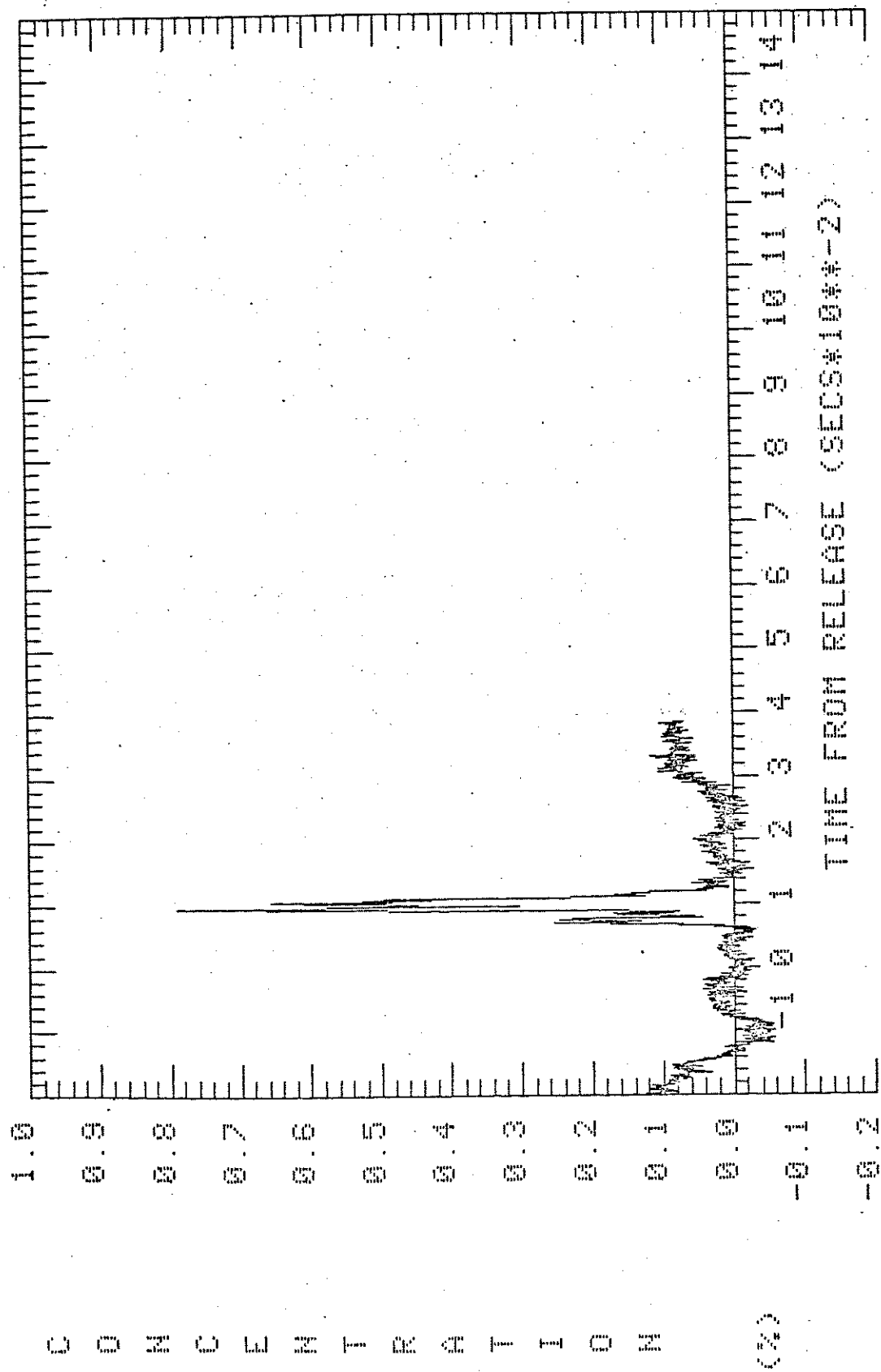
TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 500 H Y: 500 H Z: 6.4 H



TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

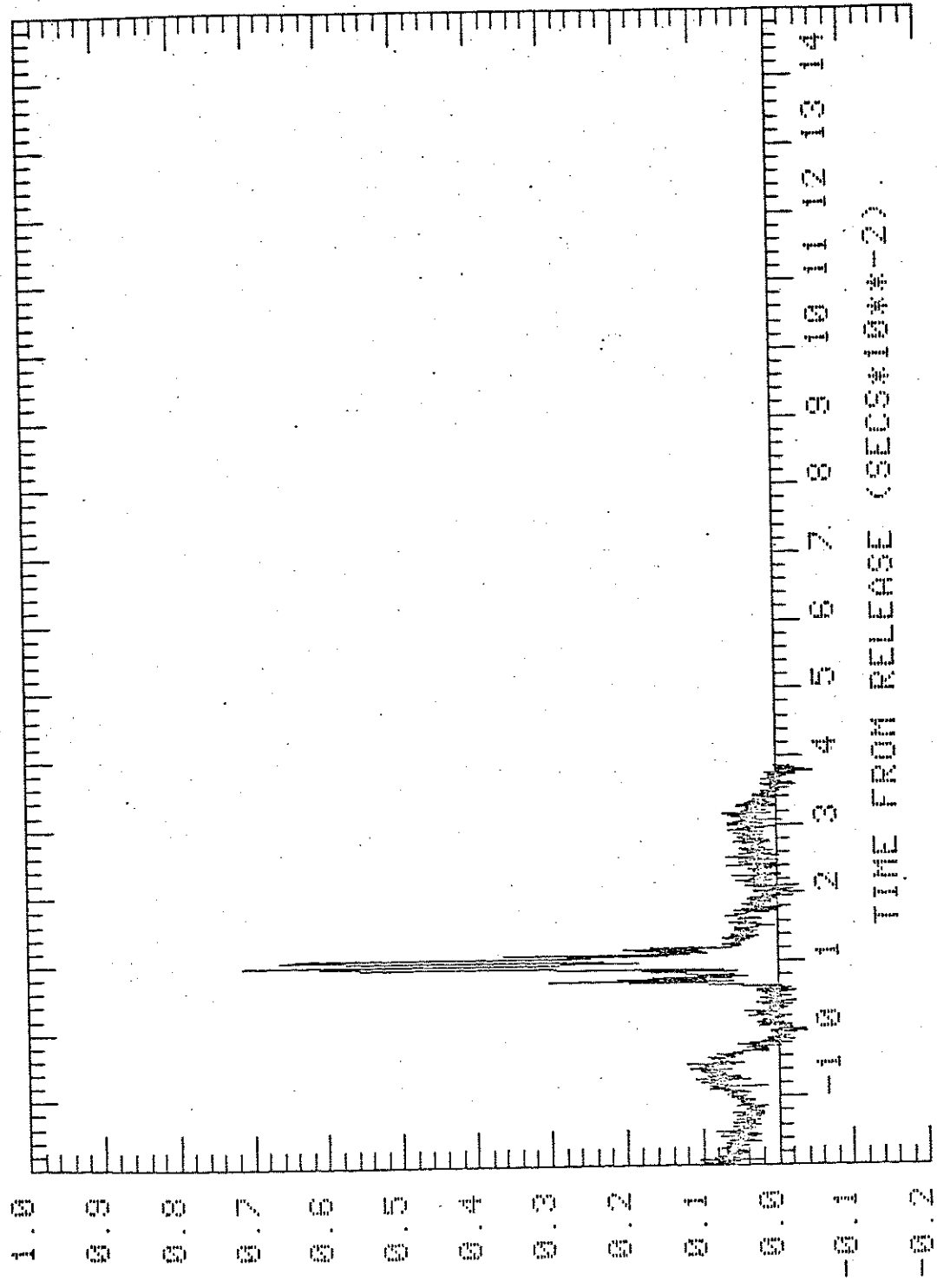
X: 600 H Y: 500 H Z: 0.4 H



TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

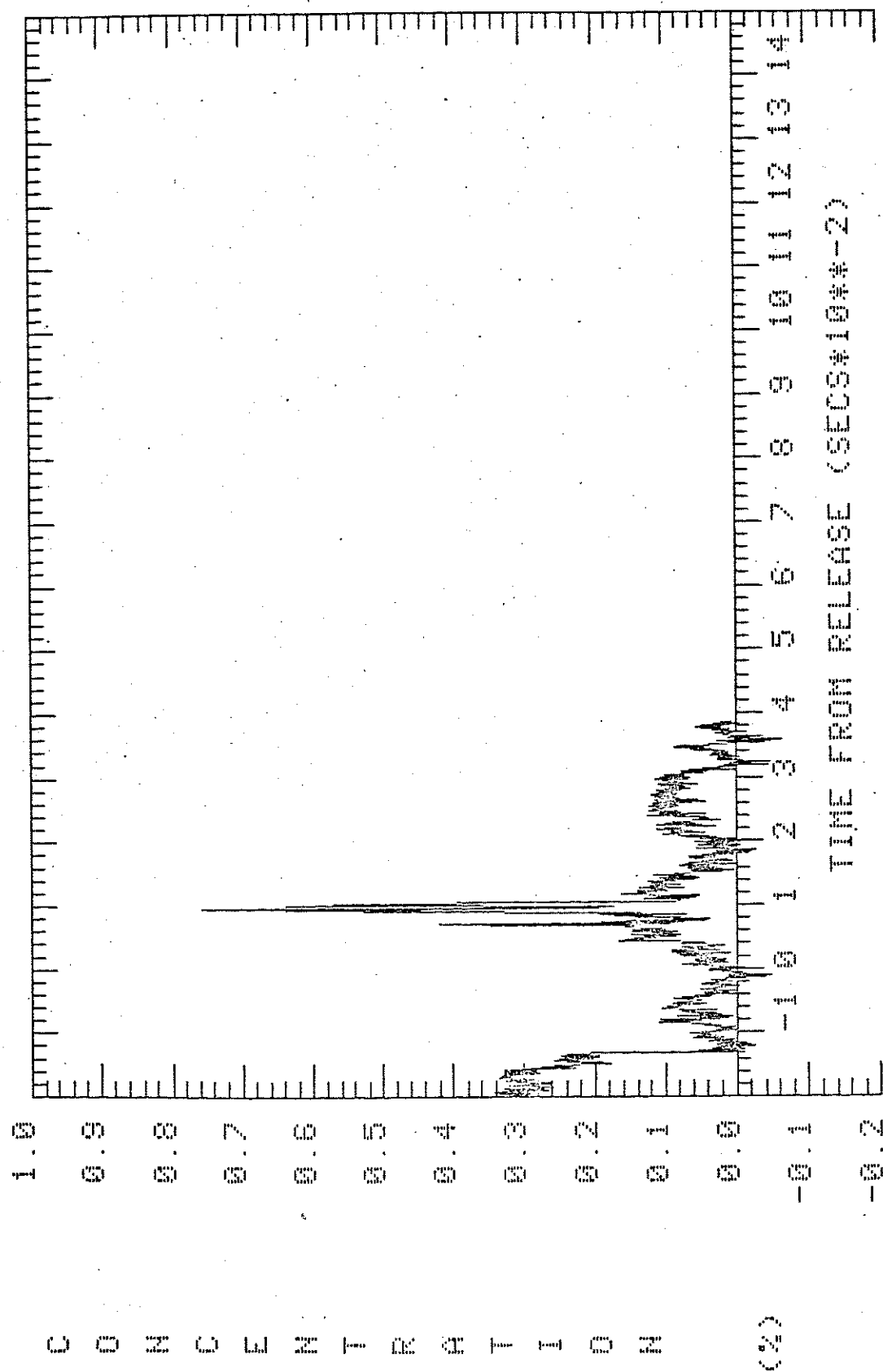
X: 690 N Y: 590 N Z: 2.4 N

CONCENTRATION



TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 600 M Y: 500 M Z: 4.4 M

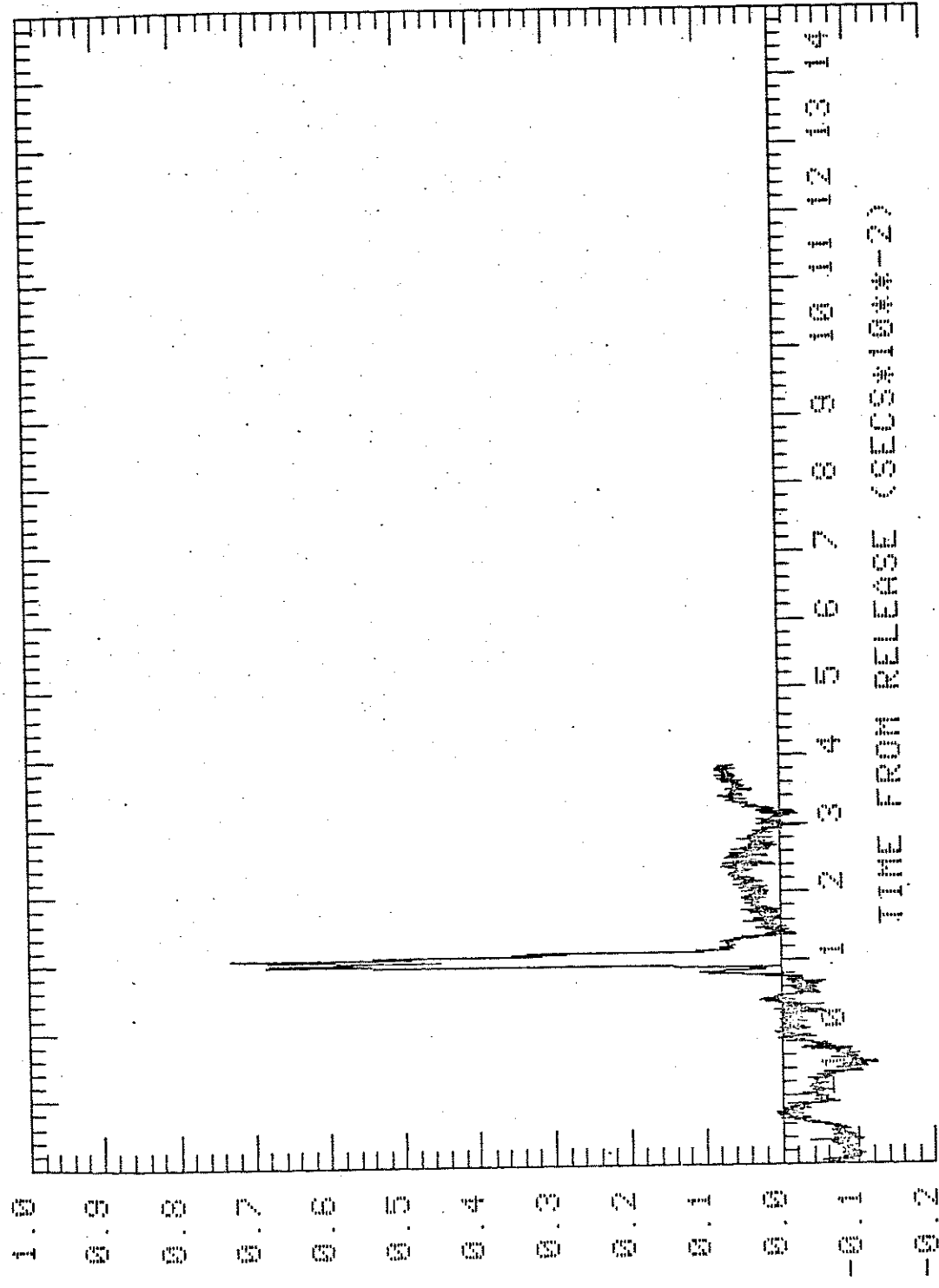


TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 600 N Y: 500 N Z: 6.4 N

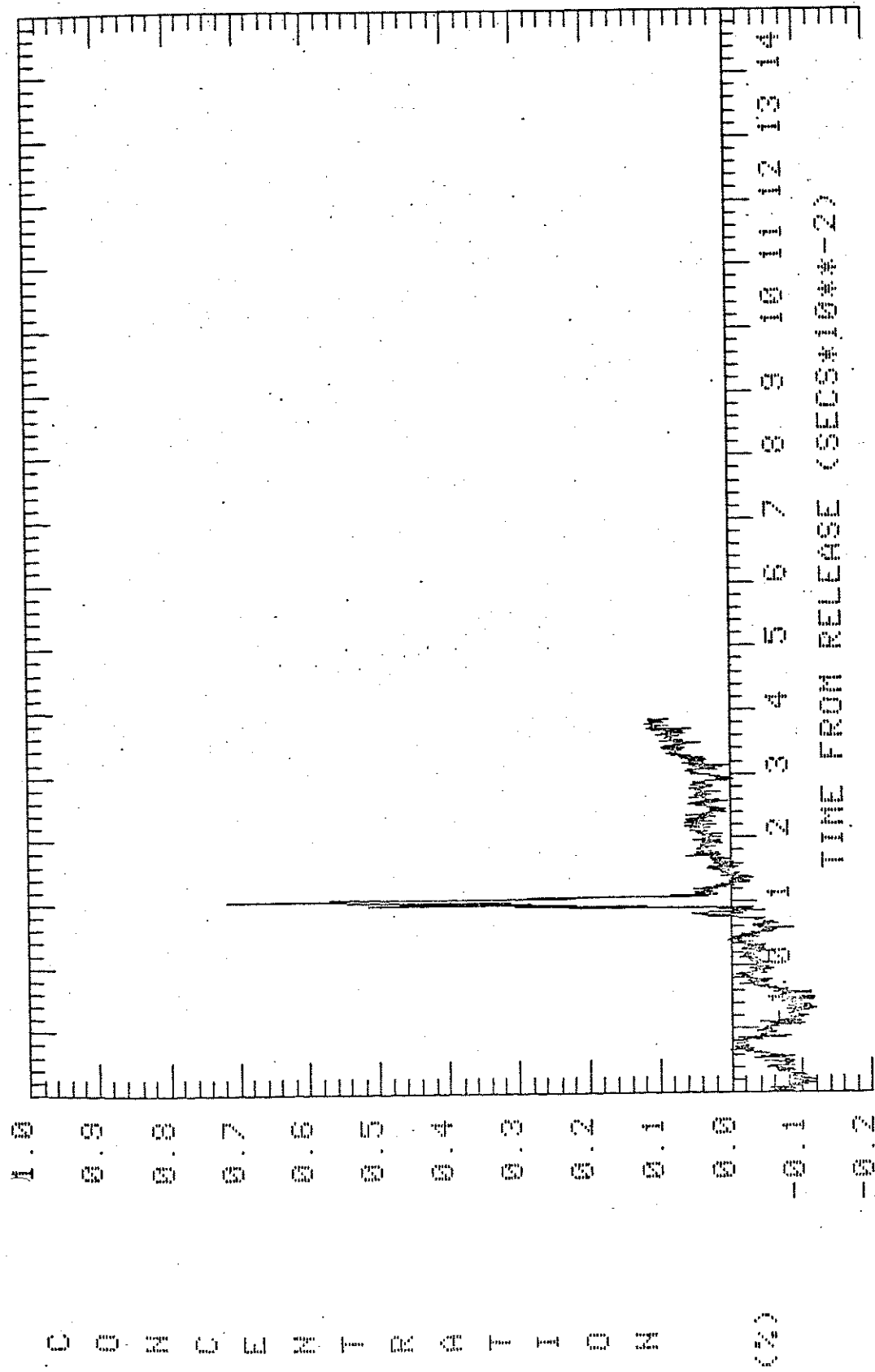
C O N T R A I T I O N

(%)



TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

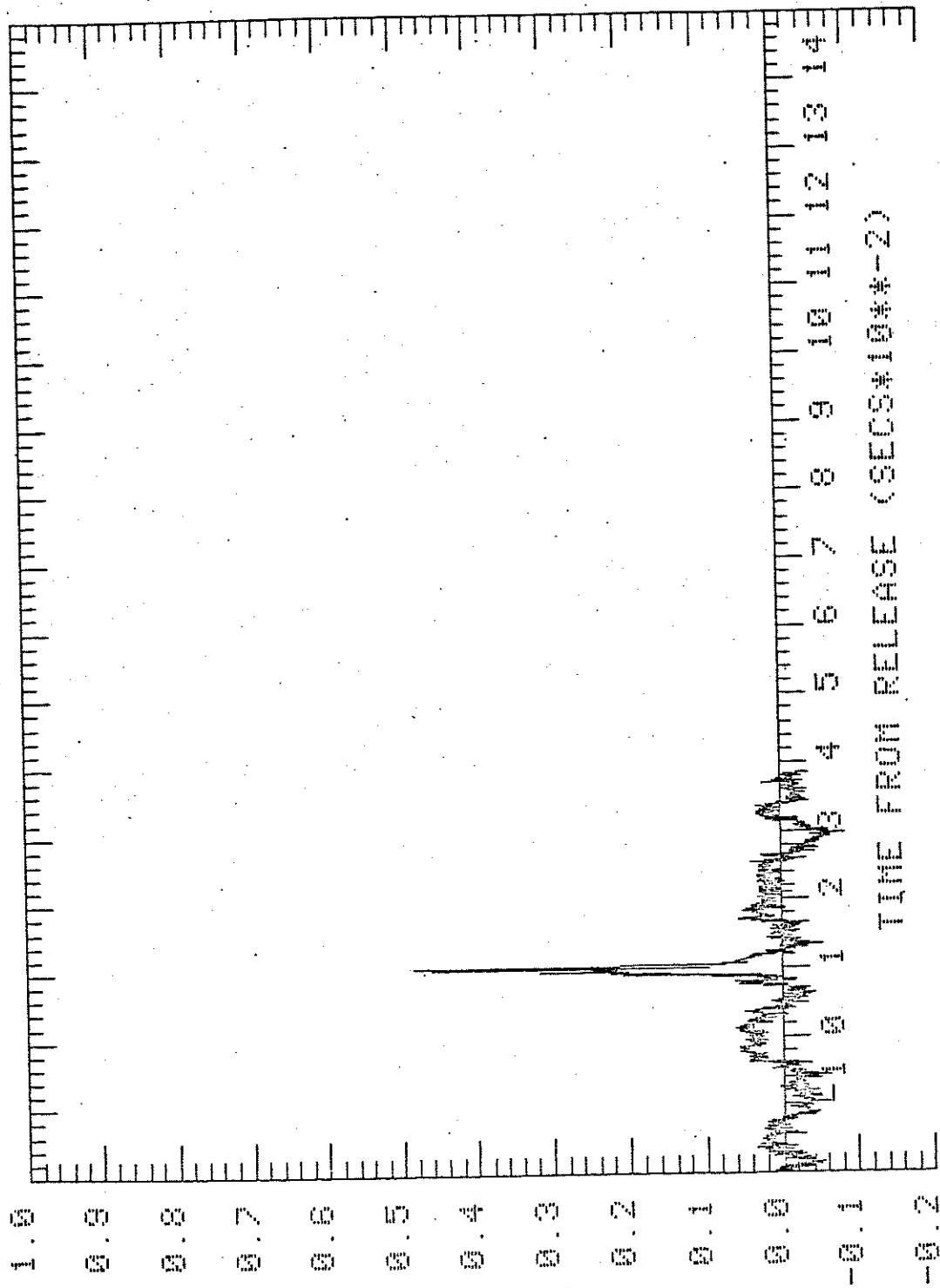
X: 500 M Y: 600 M Z: 0.4 M



TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 500 H Y: 600 H Z: 2.4 H

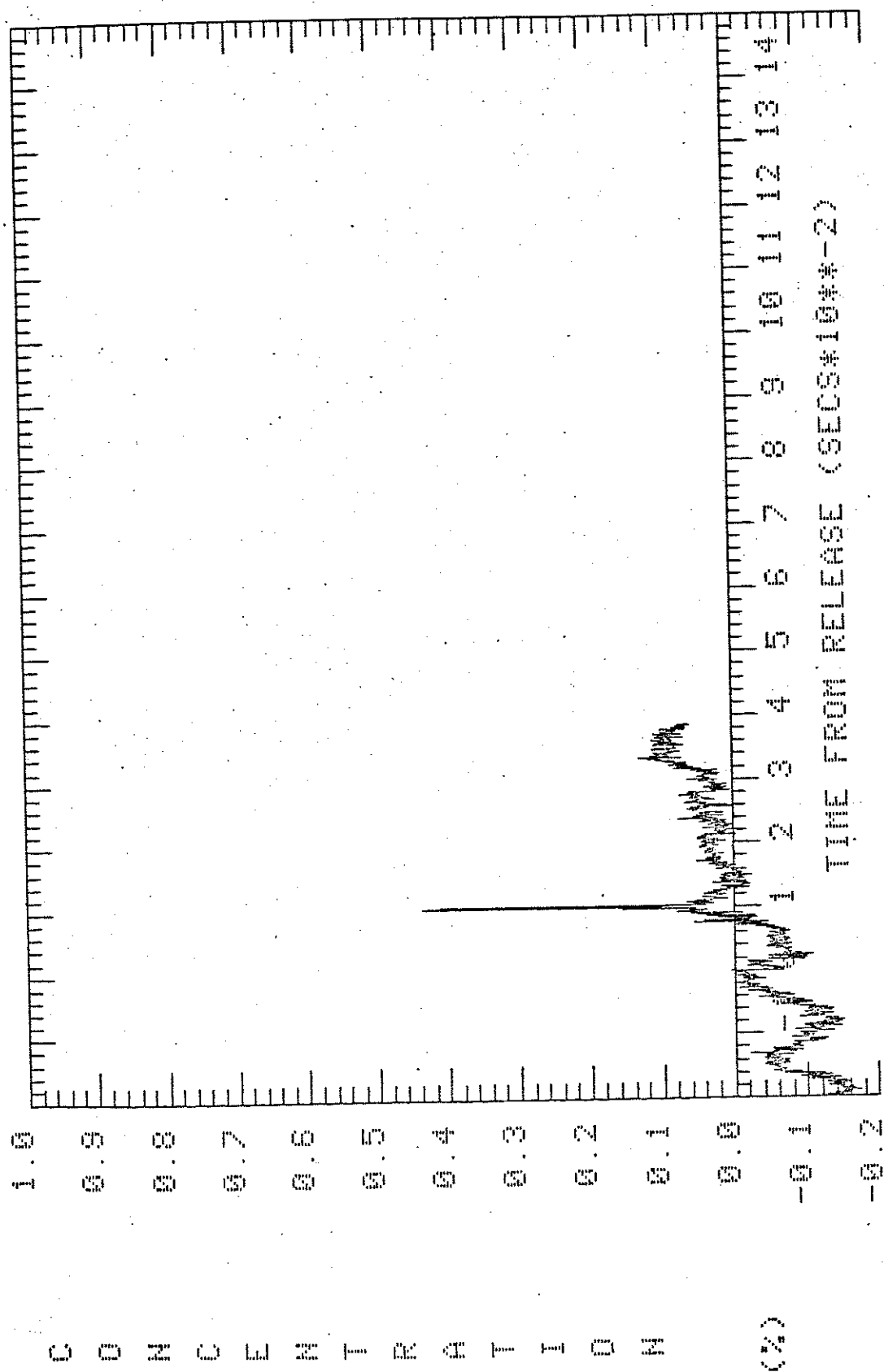
CONCENTRATION



(%)

TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

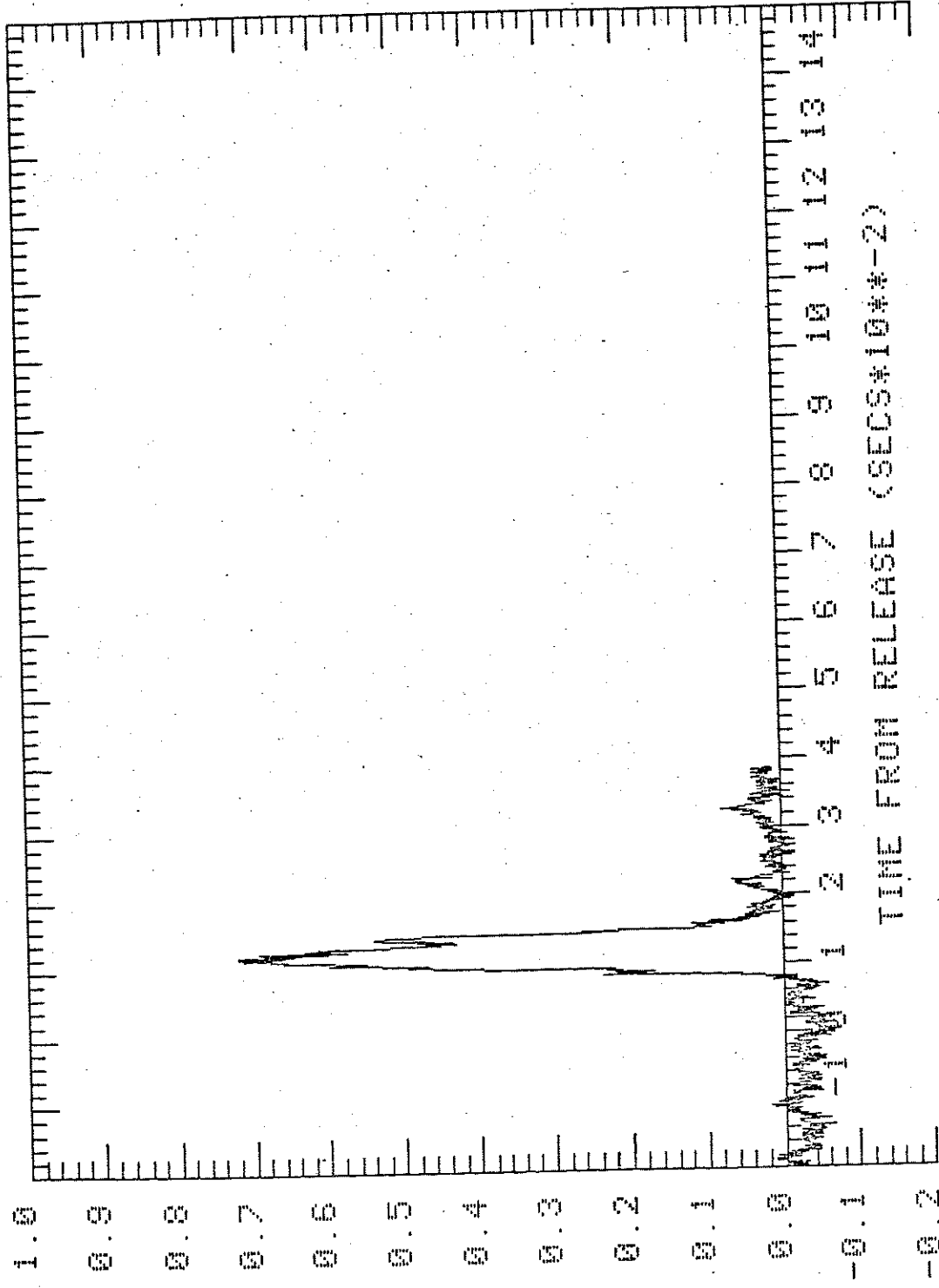
X: 500 M Y: 600 M Z: 4.4 M



TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 500 N Y: 600 N Z: 6.4 N

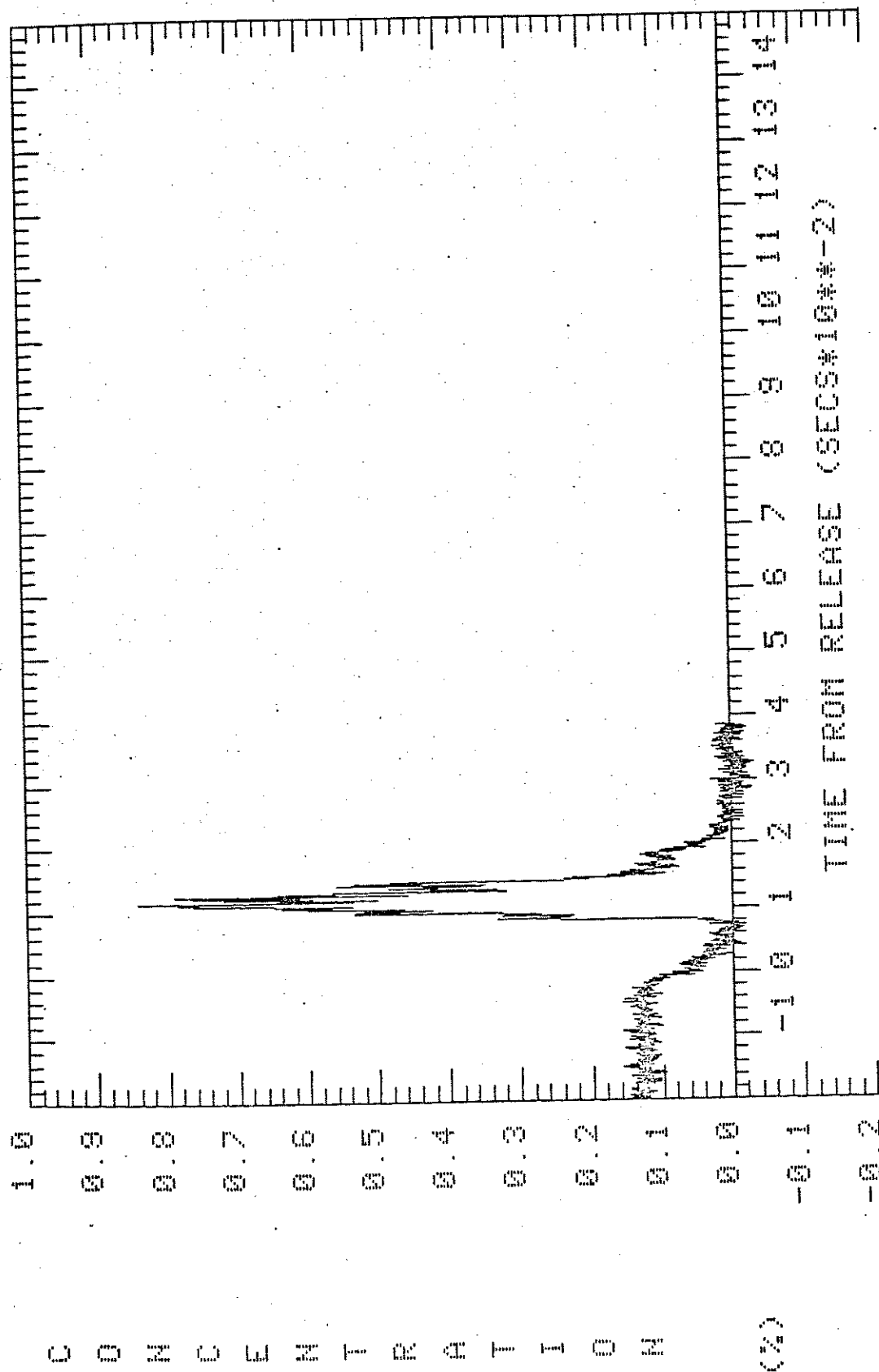
CONCENTRATION



(2)

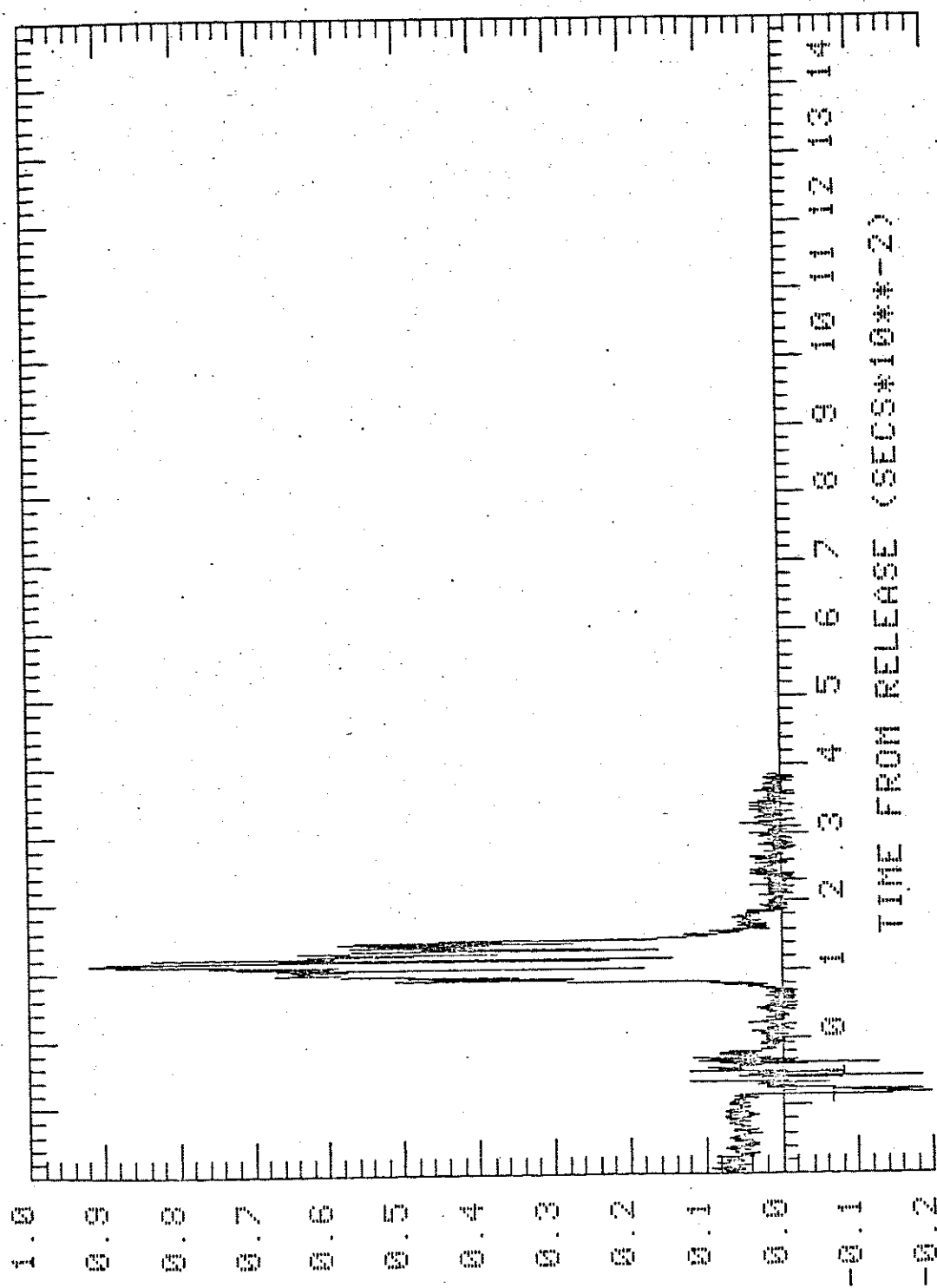
TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 600 M Y: 600 M Z: 0.4 M



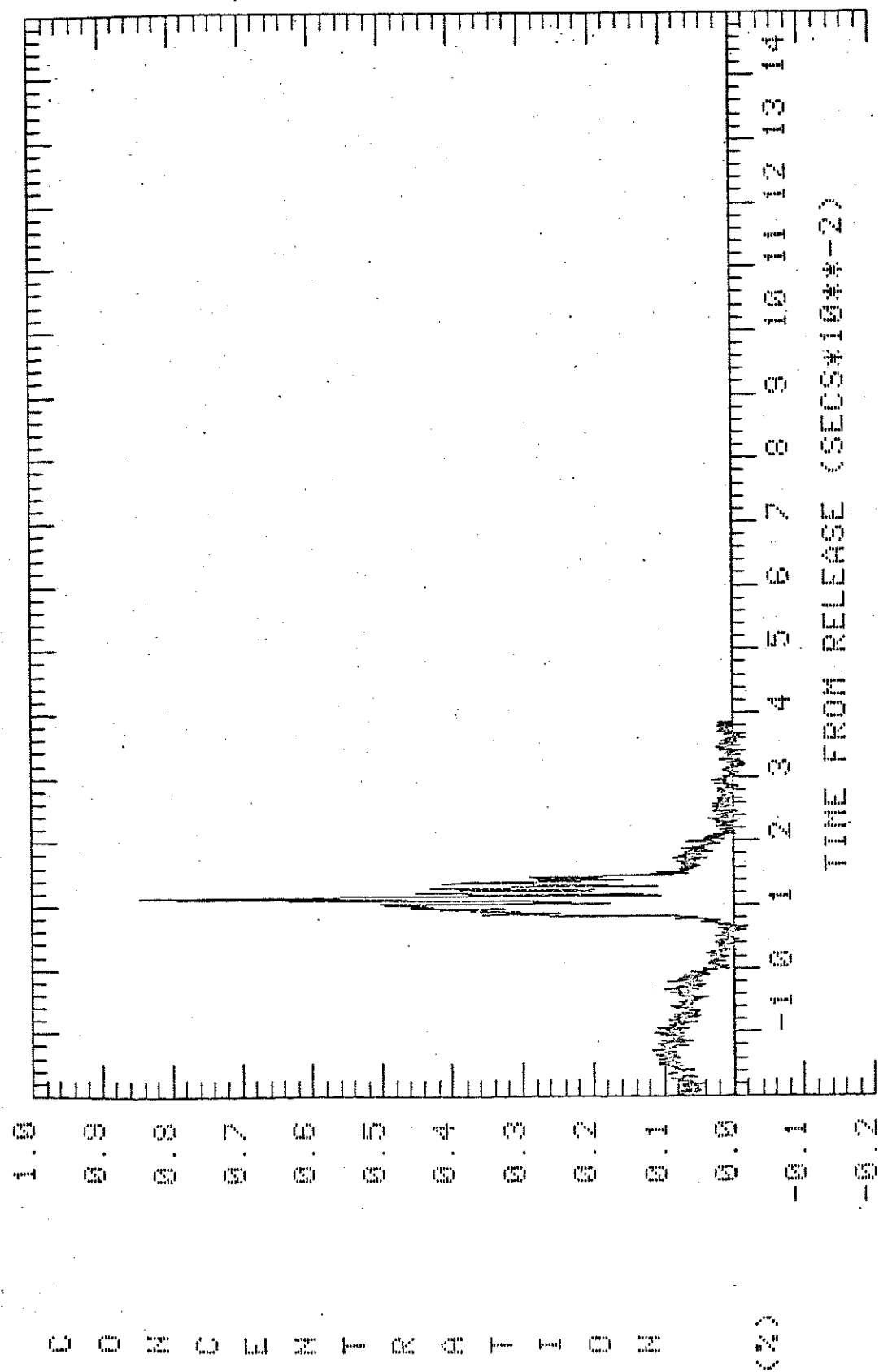
TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 600 M Y: 600 M Z: 2.4 M



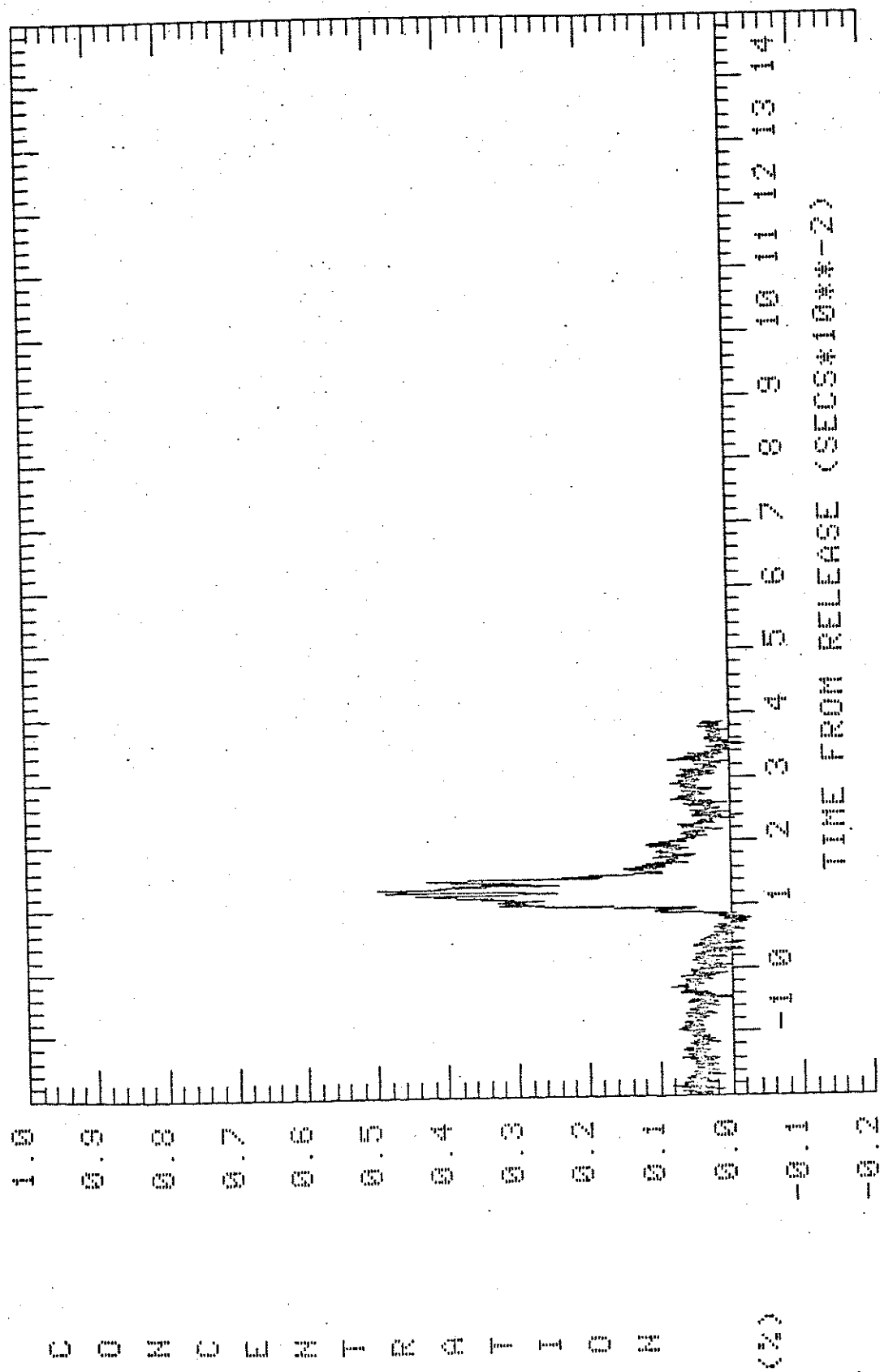
TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 600 M Y: 600 M Z: 4.4 M



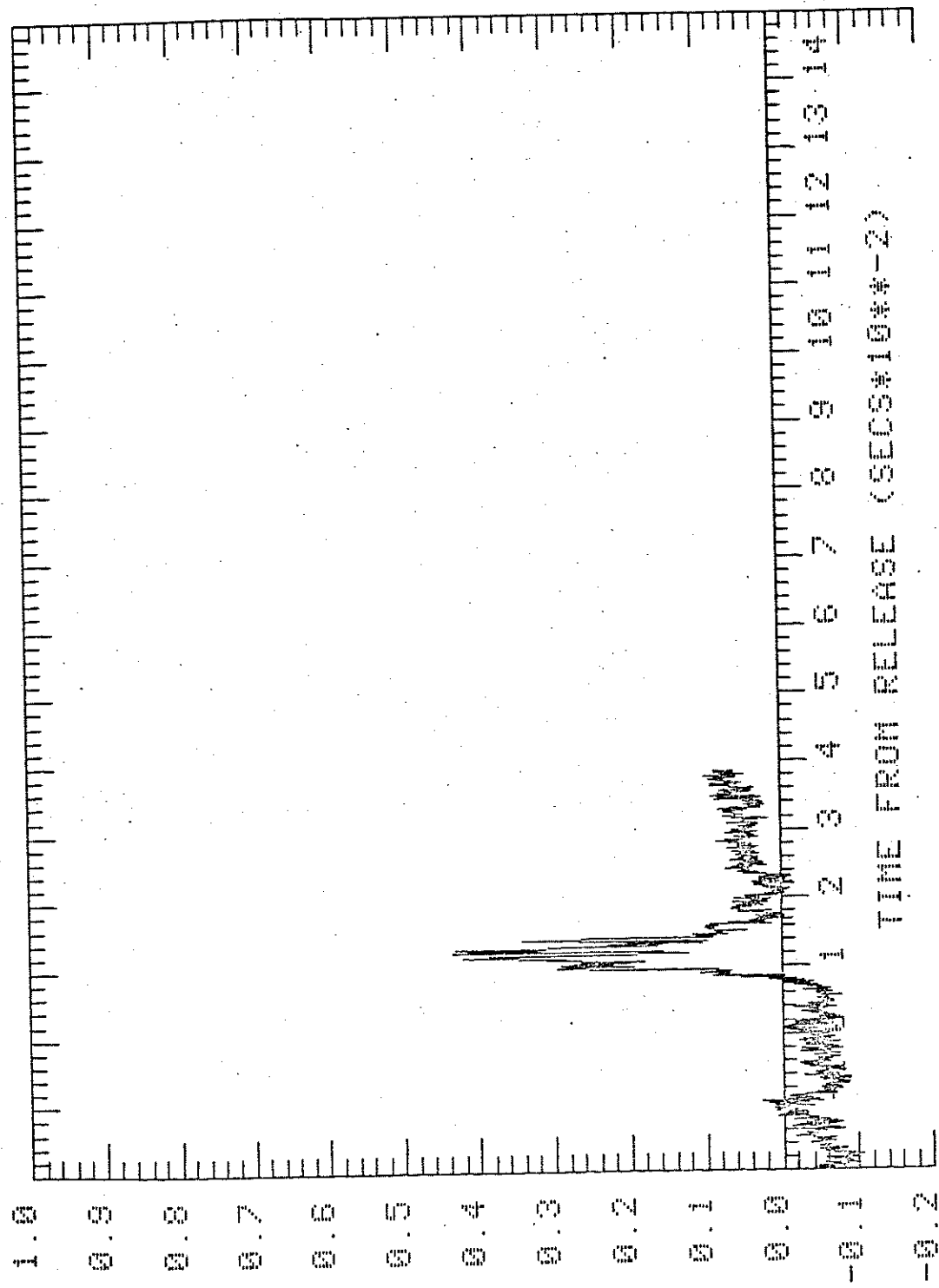
TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 600 H Y: 600 M Z: 6.4 M



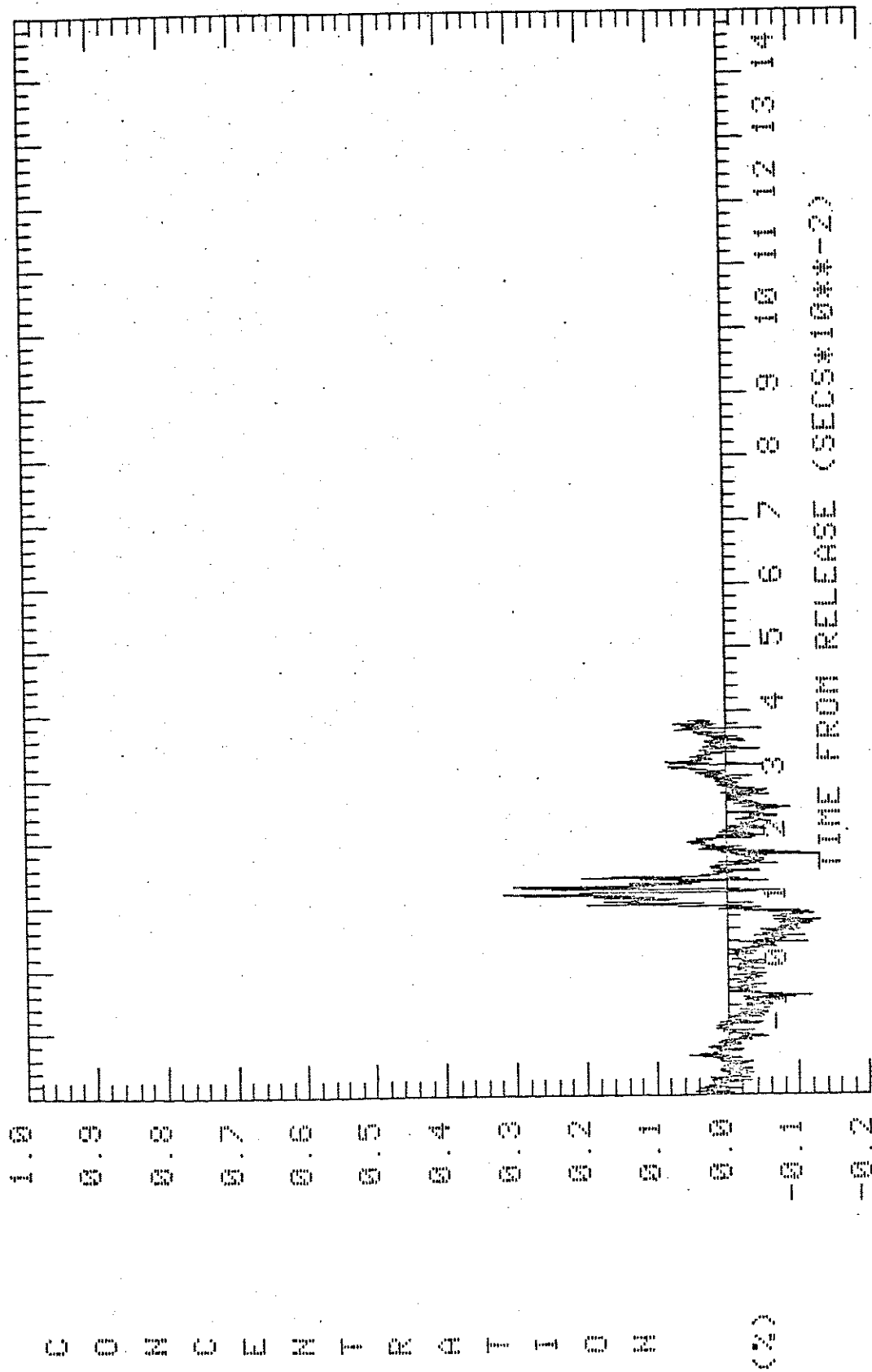
TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 600 M Y: 700 M Z: 2.4 M



TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

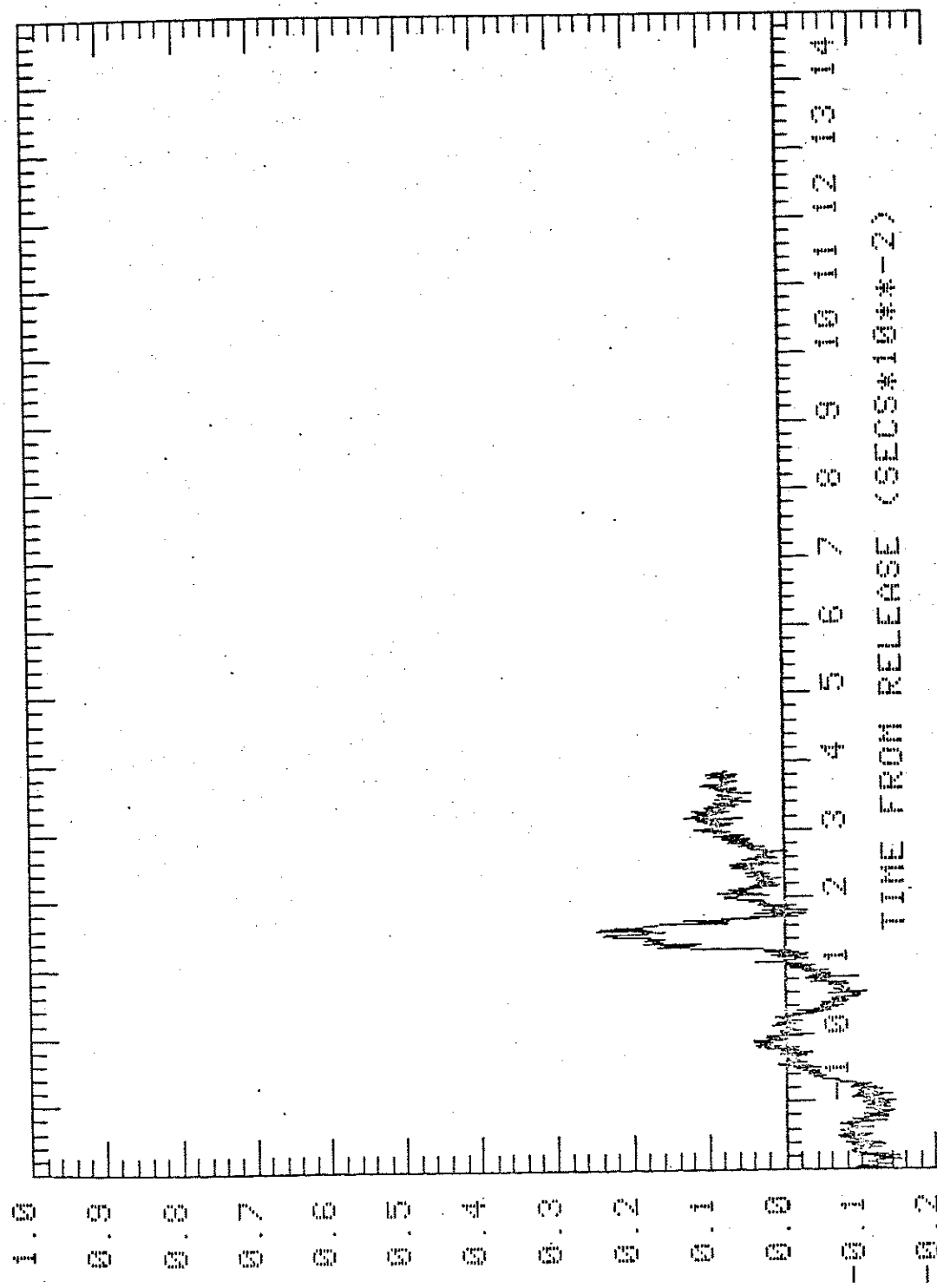
X: 699 M Y: 700 M Z: 4.4 M



TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 600 M Y: 700 M Z: 6.4 M

C O N C E N T R A T I O N

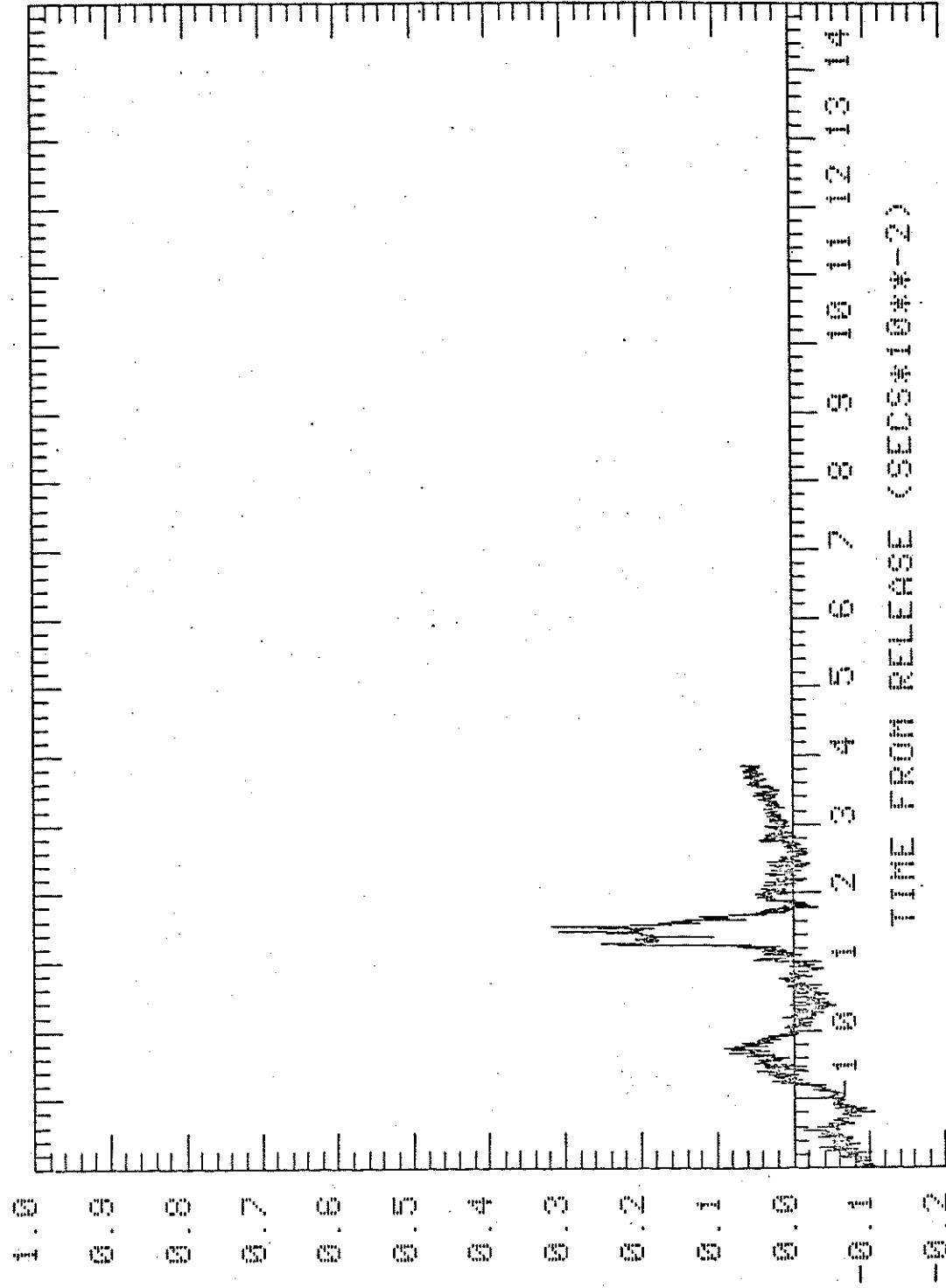


TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 700 M Y: 700 M Z: 0.4 M

C O N C E N T R A T I O N

(%)



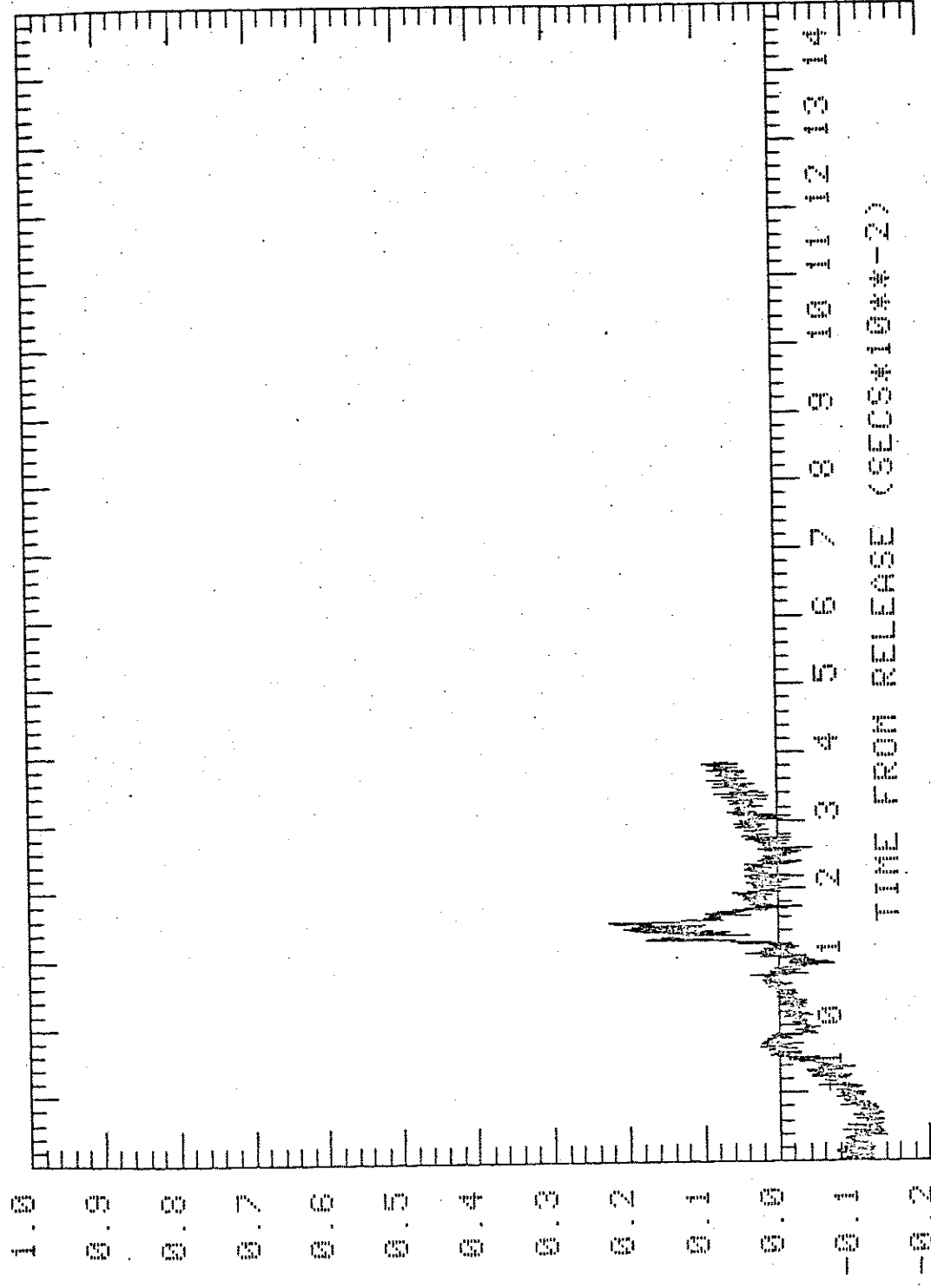
TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 700 M Y: 700 M Z: 2.4 M

G45

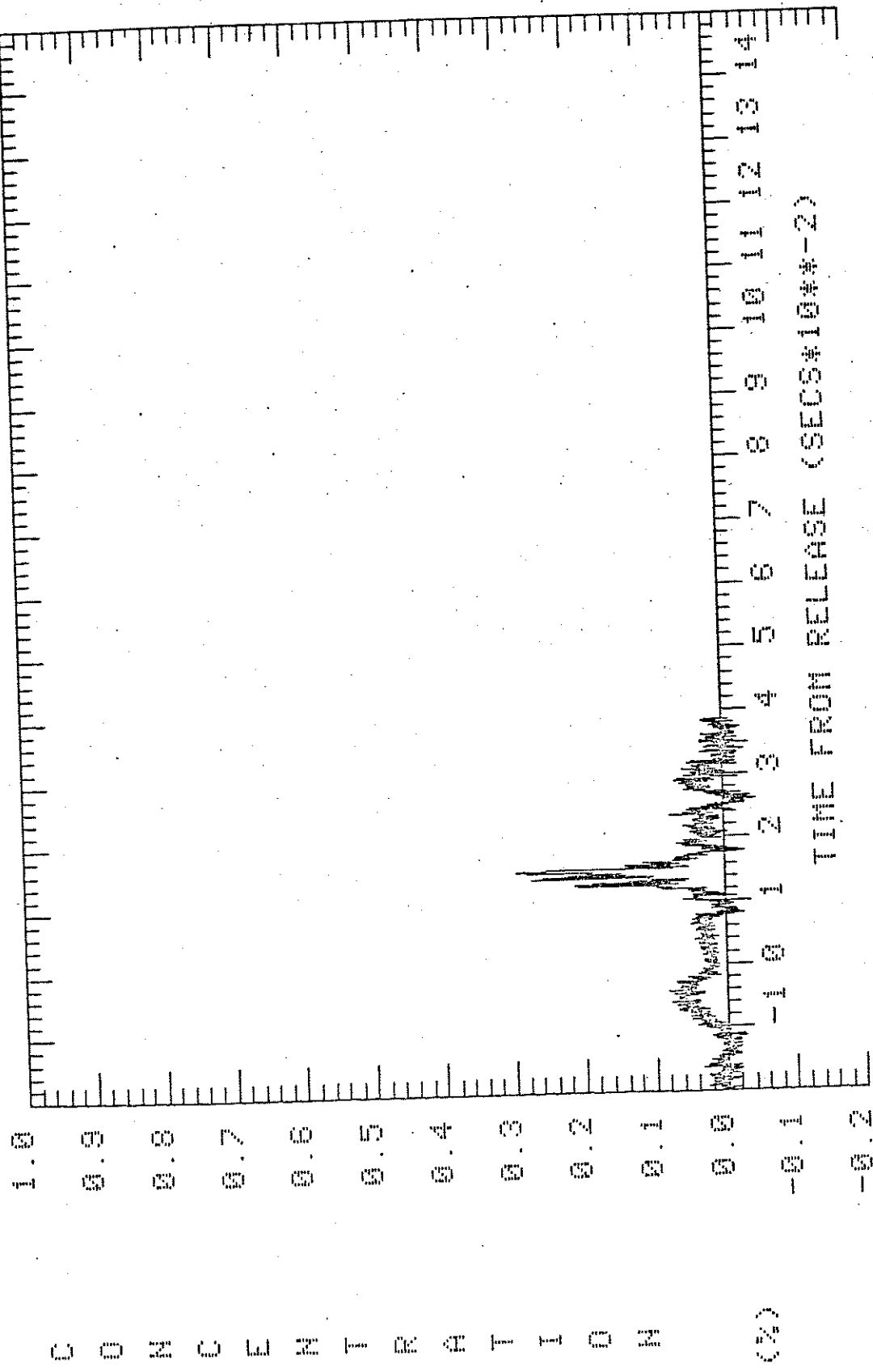
CO2 DETECTOR

(%)



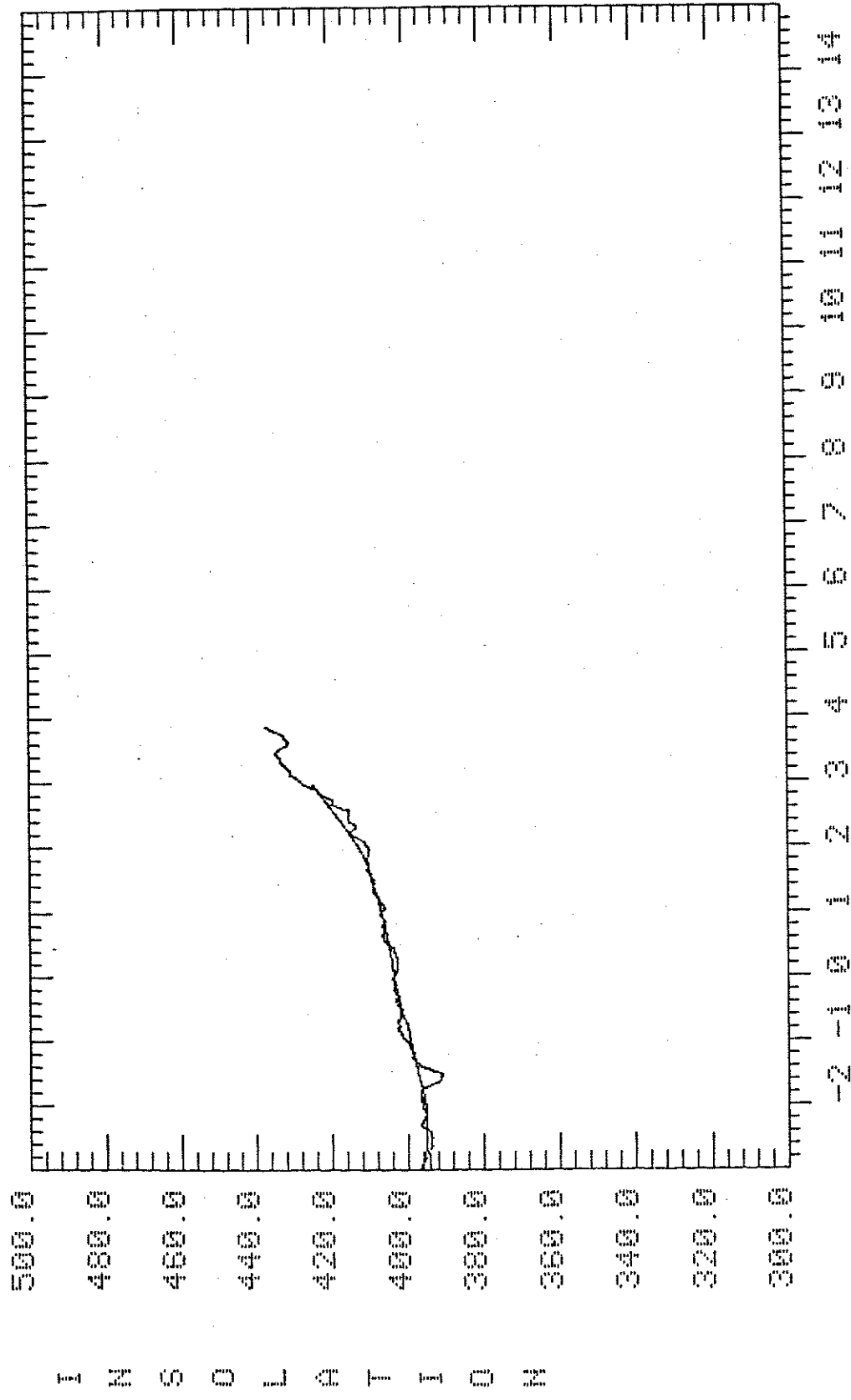
TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 700 H Y: 700 H Z: 4.4 H



TRIAL: 013 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 700 N Y: 700 N Z: 6.4 N



TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: SOLA UNITS: W/M*2
AVERAGING TIME: 0.6 SEC X: 400 H Y: 50 H Z: 0.4 H
MEAN OF RUN UP: 267.25 MEAN OF RUN DOWN: 456.34

1020.0

1019.8

1019.6

1019.4

1019.2

1019.0

1018.8

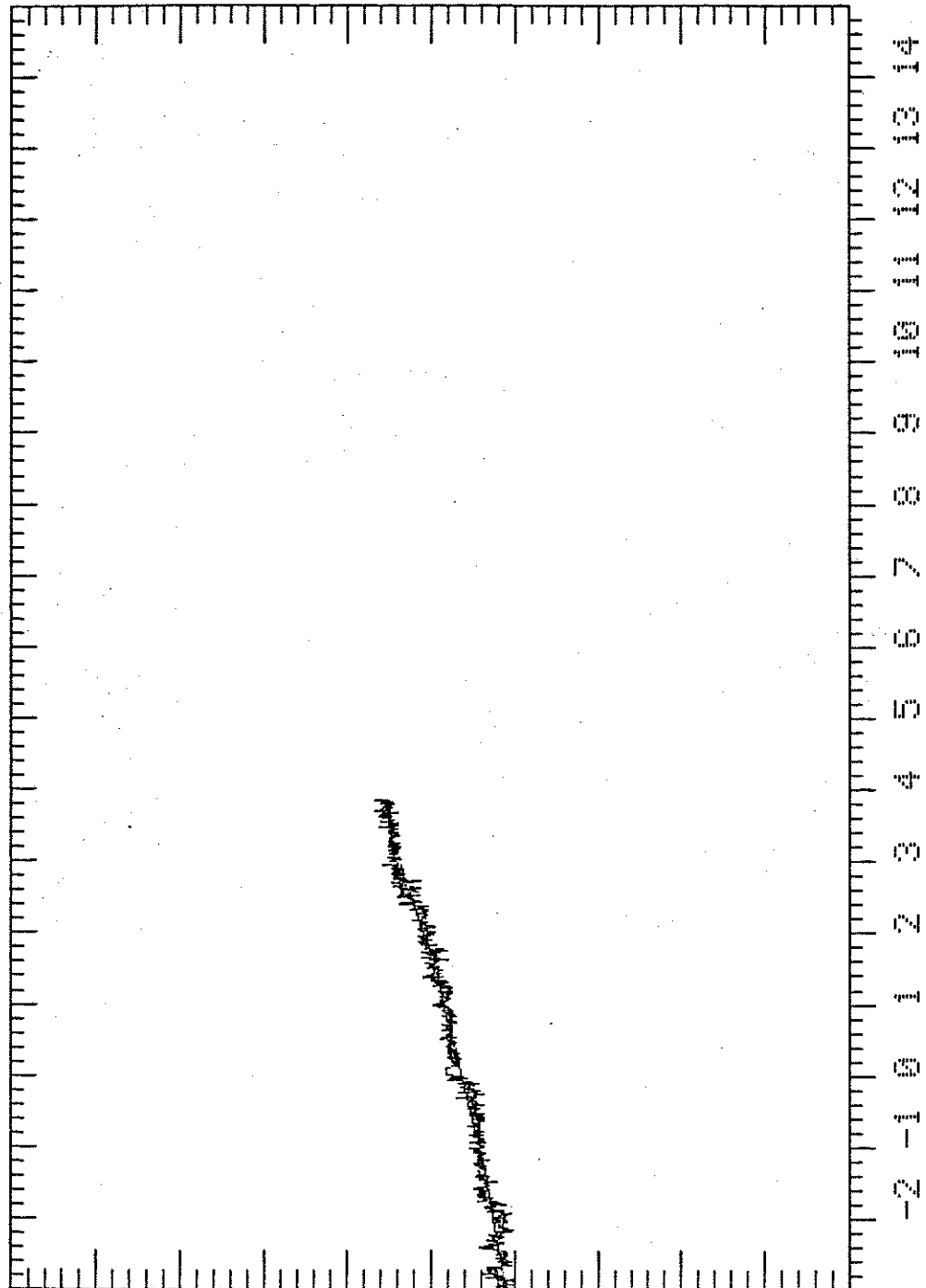
1018.6

1018.4

1018.2

1018.0

P R E S S U R E



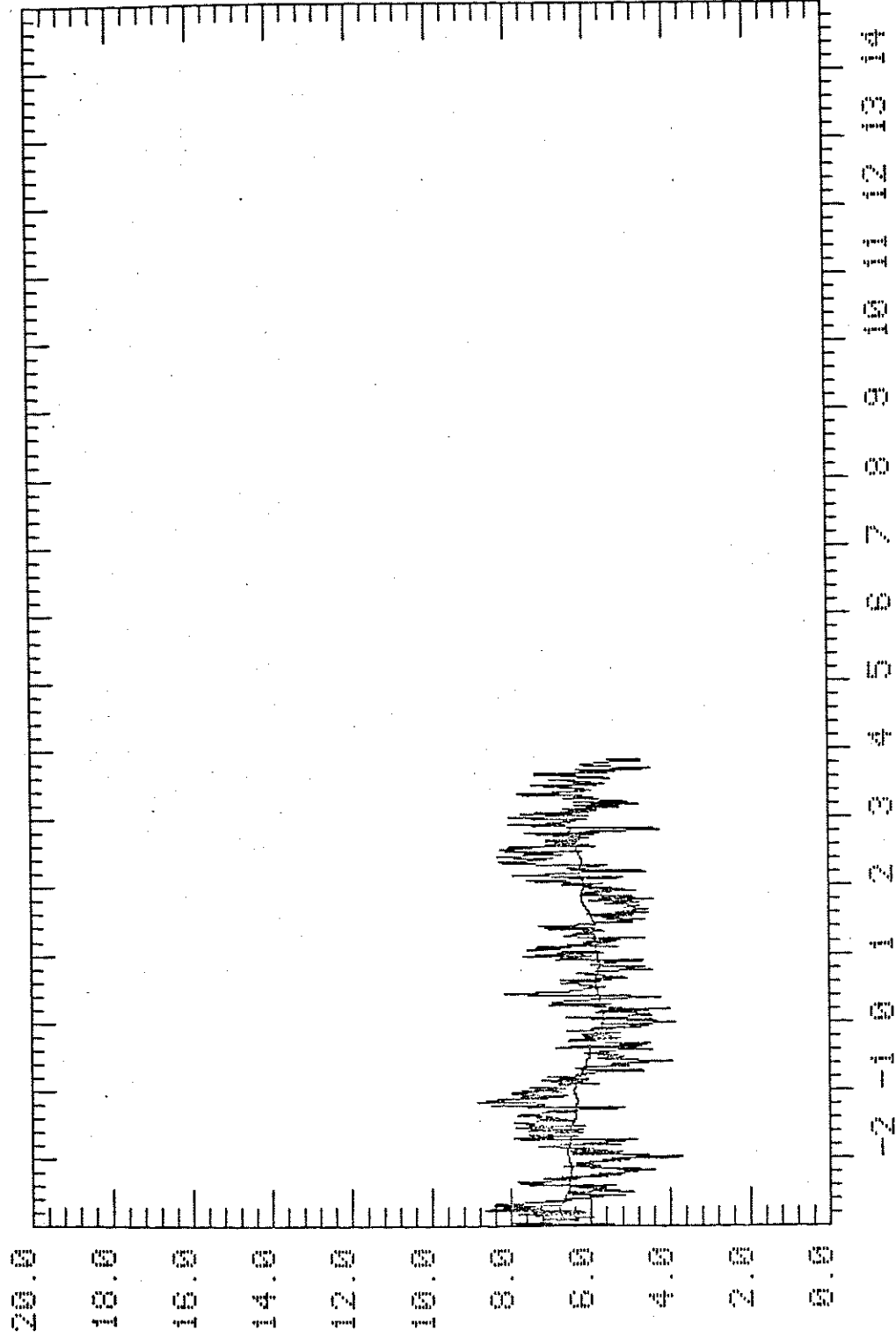
TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: BRON UNITS: MBAR

AVERAGING TIME: 0.6 SEC X: 400 H Y: 50 H Z: 0.4 H

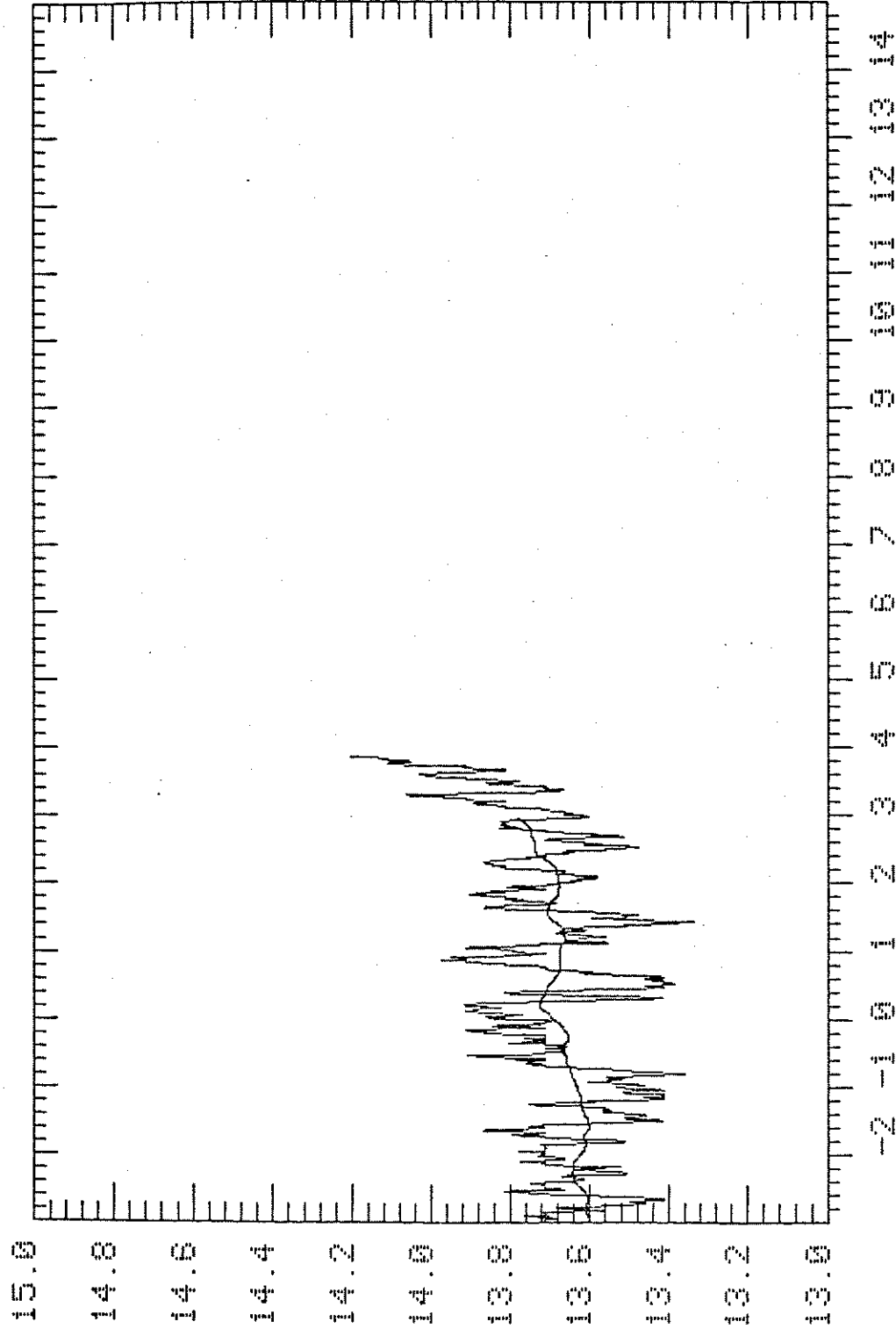
MEAN OF RUN UP: 1019 MEAN OF RUN DOWN: 1019

W I N D S P E E D



TRIAL: 013 TYPE: WSPD UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 400 N Y: 50 N Z: 2.0 N
MEAN OF RUN UP: 4.51 MEAN OF RUN DOWN: 7.07

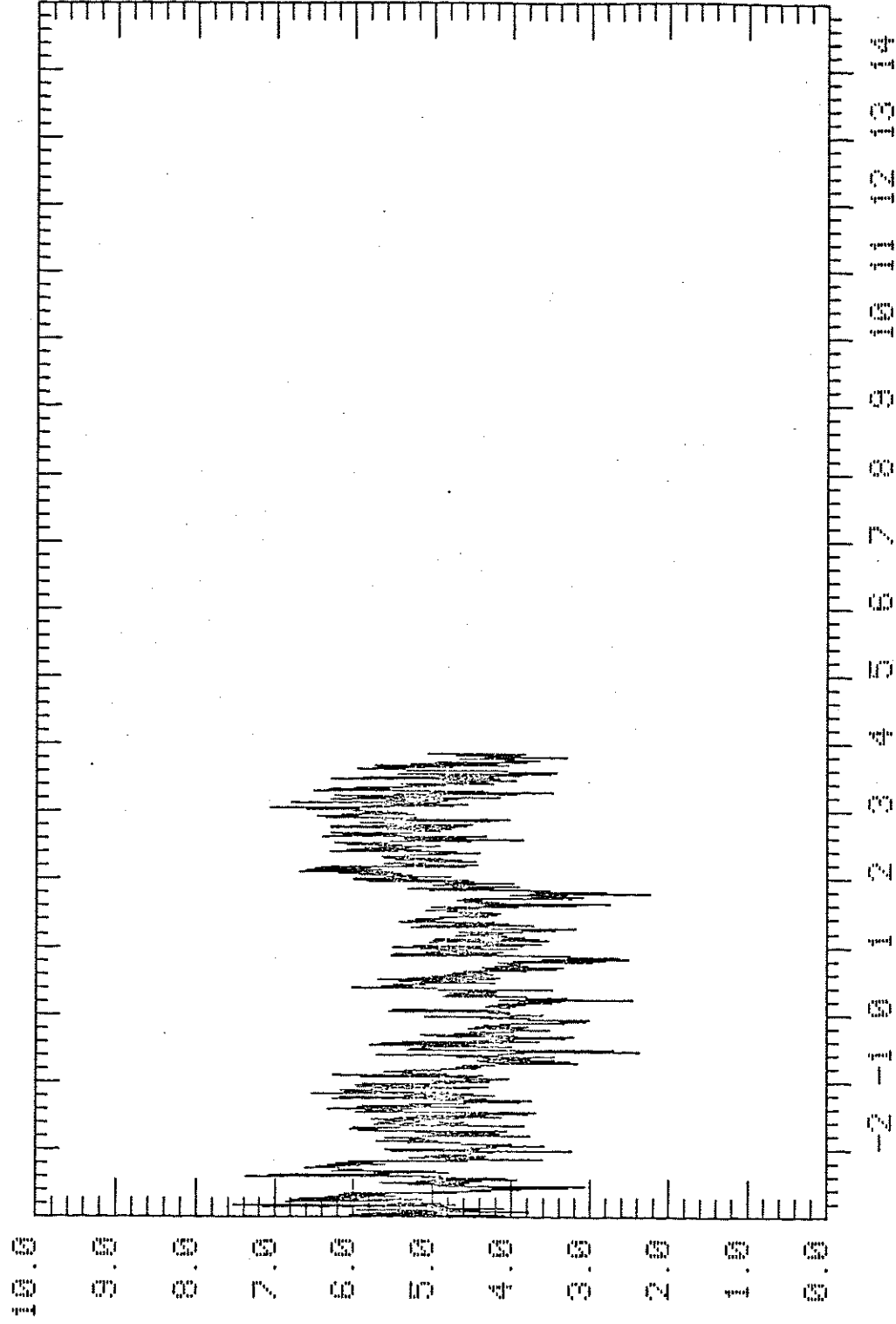
T E M P E R A T U R E



TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: AIRT UNITS: DEGREES C
AVERAGING TIME: 0.6 SEC X: 499 N Y: 50 N Z: 2.0 N
MEAN OF RUN UP: 12.98 MEAN OF RUN DOWN: 13.97

W I R E D Y L O C I T Y

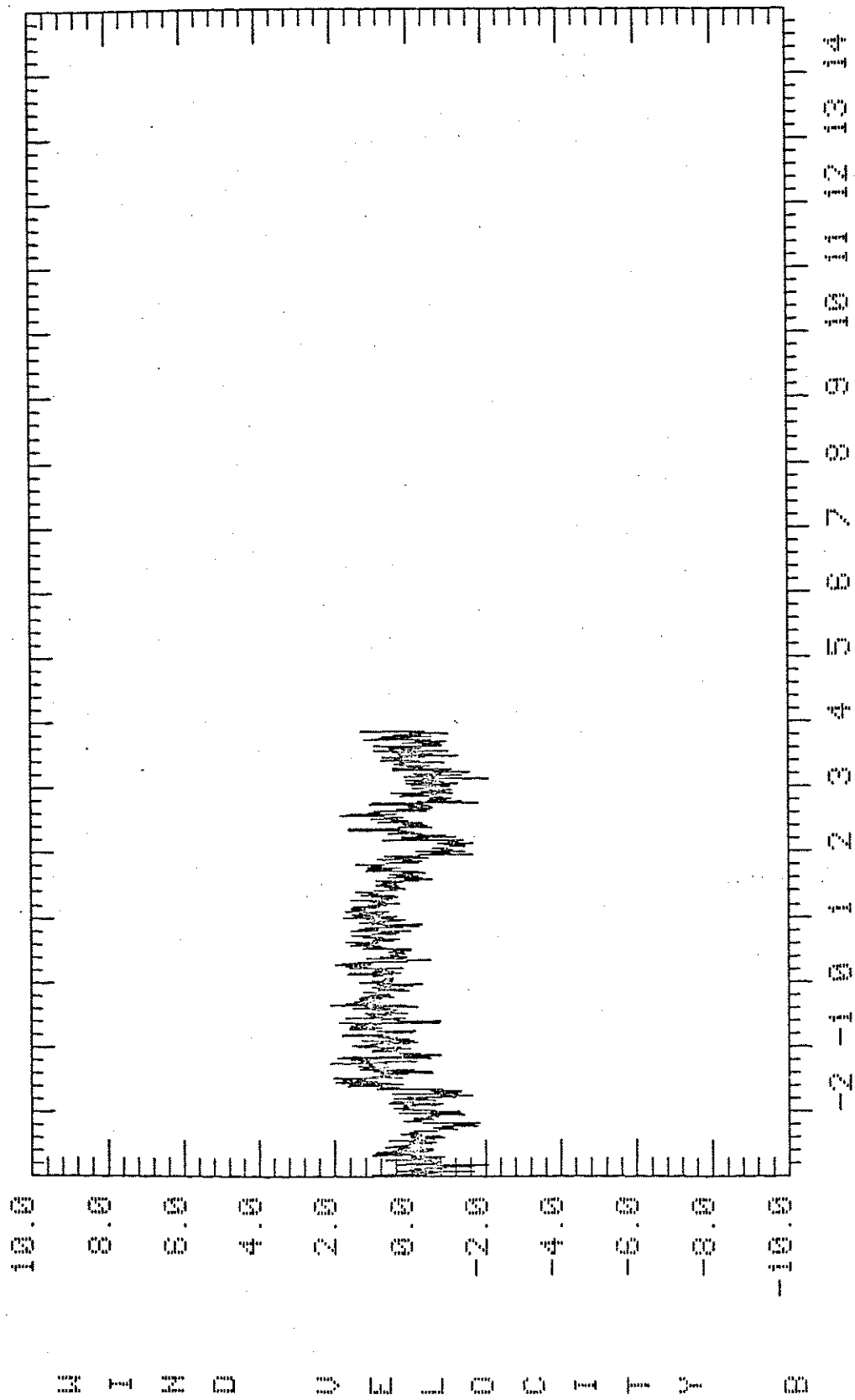


TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: UANA UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 2.0 M

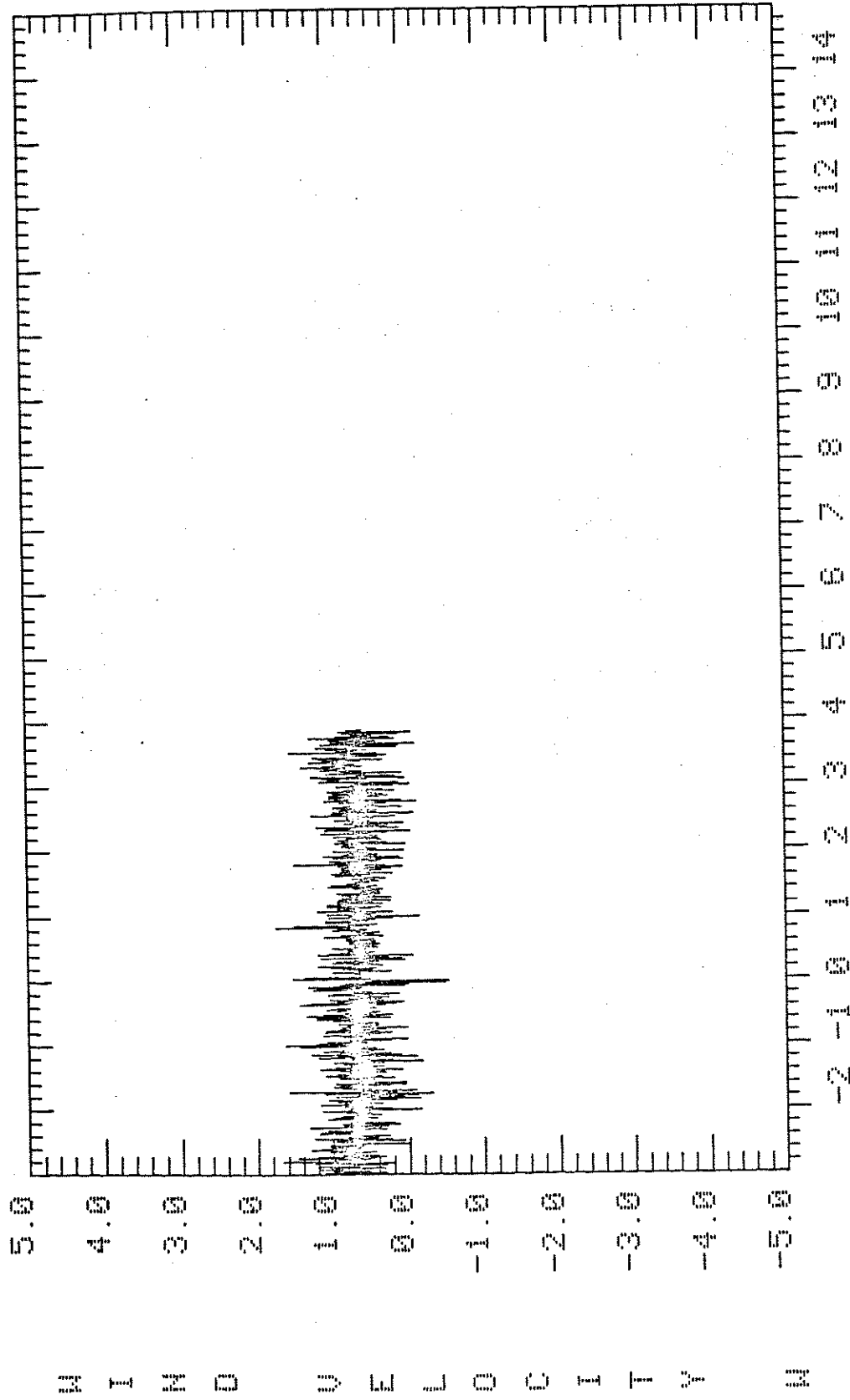
MEAN OF RUN UP: 3.86 MEAN OF RUN DOWN: 5.07



TRIAL: 013 TYPE: UNAB UNITS: N/S

AVERAGING TIME: 0.8 SEC X: 400 M Y: 50 M Z: 2.0 M

MEAN OF RUN UP: -0.31 MEAN OF RUN DOWN: 1.00

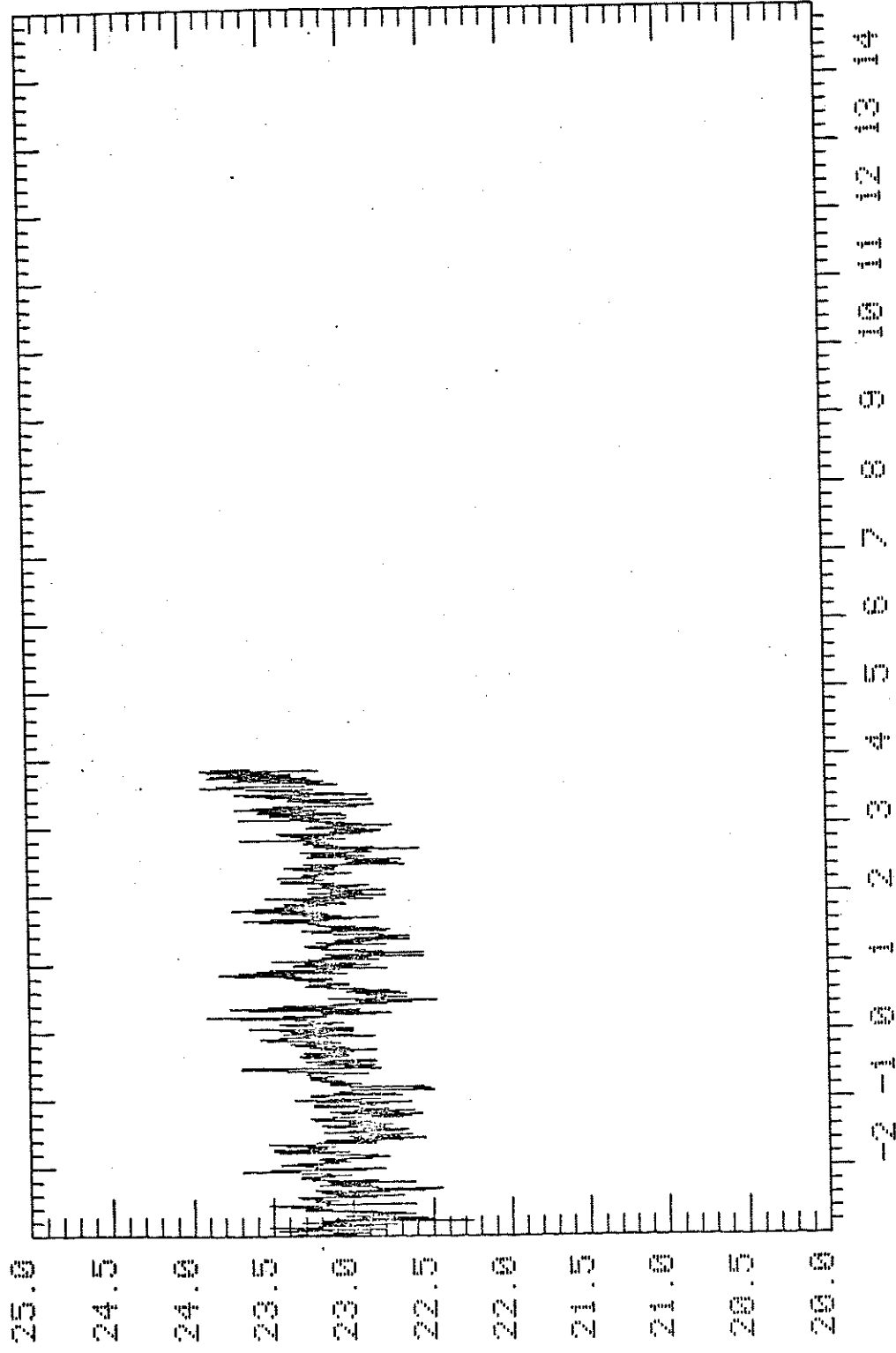


TRIAL: 013 TYPE: UAHW UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 2.0 M

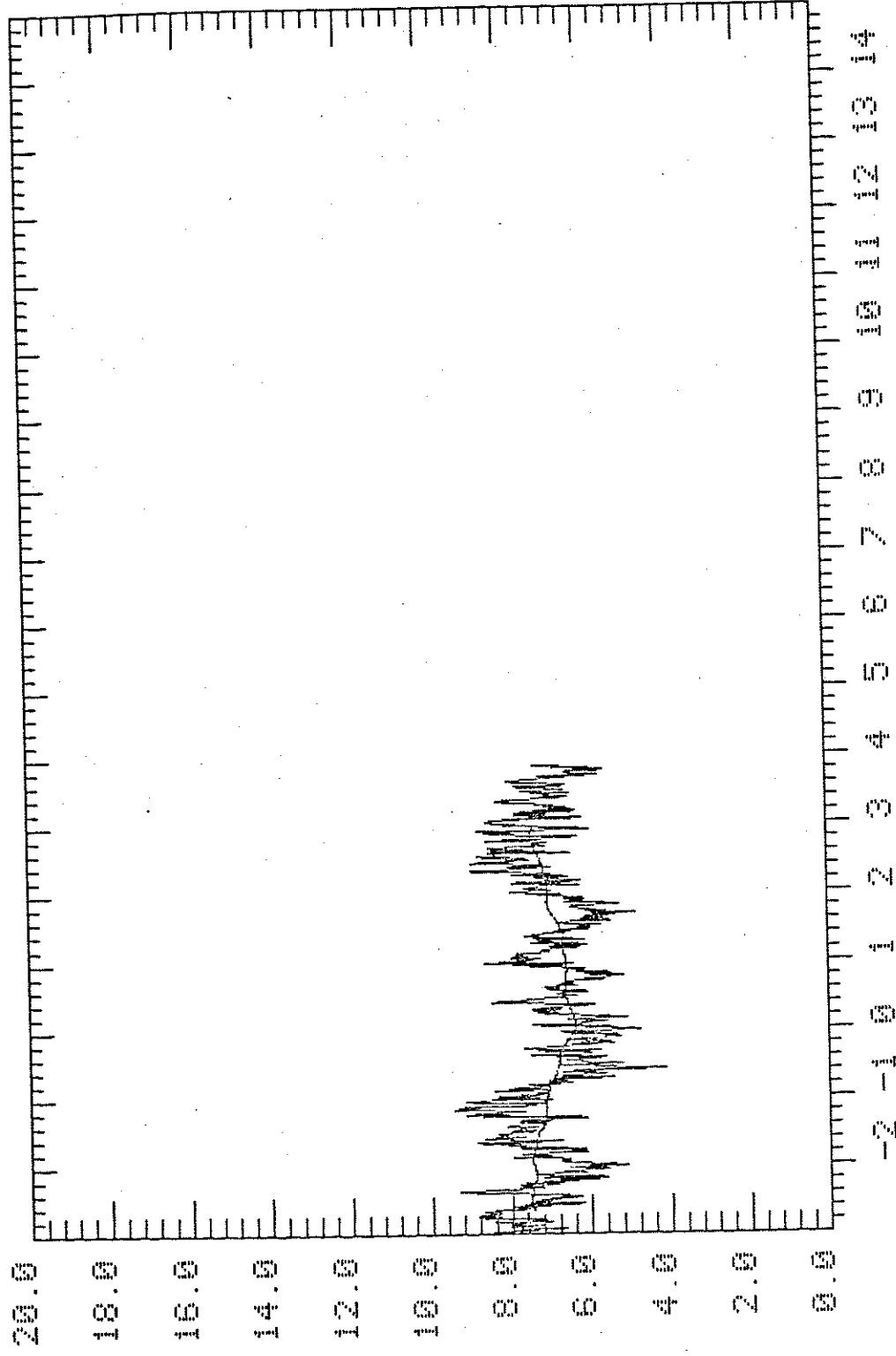
MEAN OF RUN UP: -2.54 MEAN OF RUN DOWN: 0.74

T E M P E R A T U R E



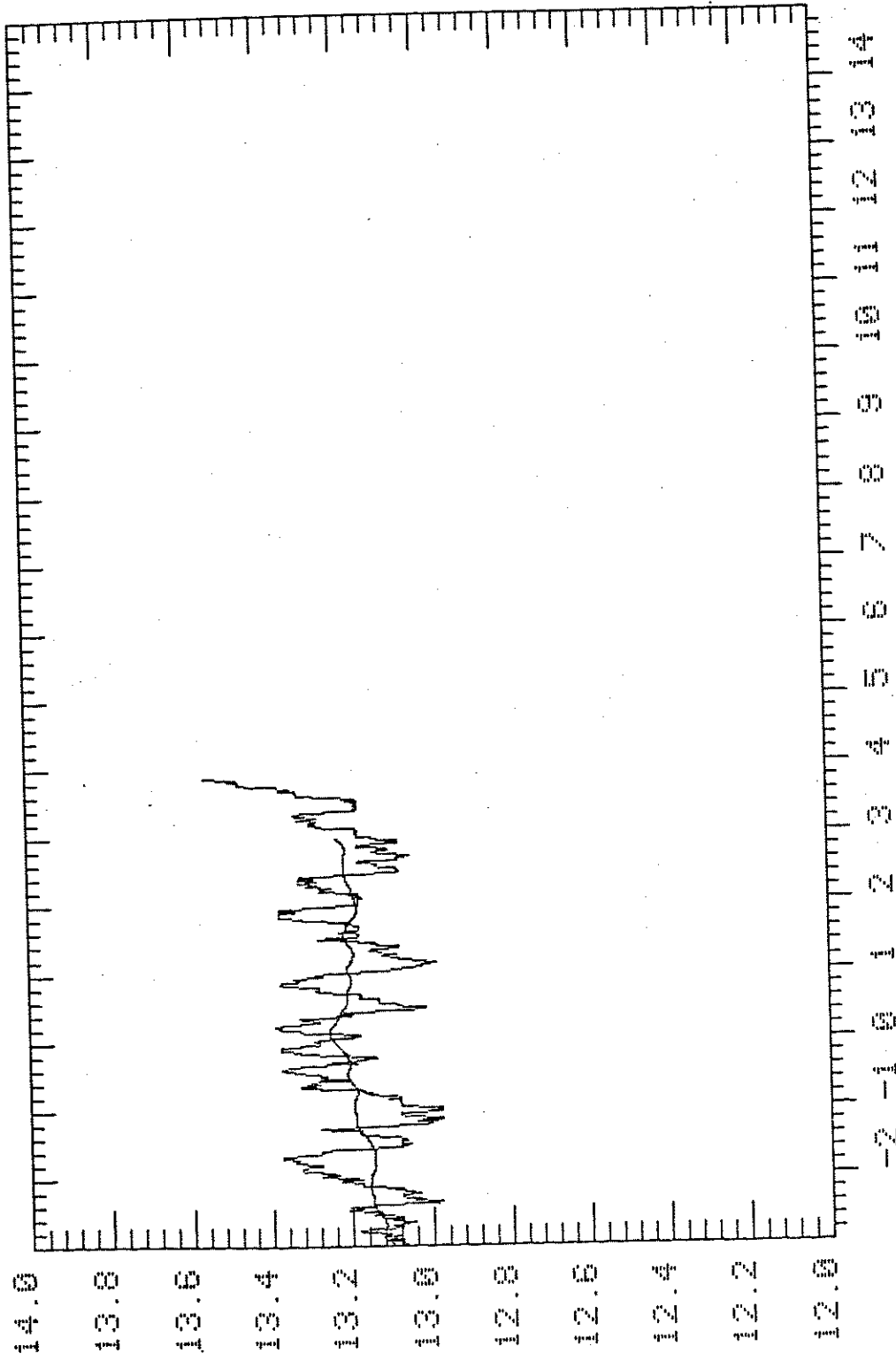
TRIAL: 013 TYPE: UANT UNITS: DEGREES C
AVERAGING TIME: 0.6 SEC X: 490 N Y: 50 N Z: 2.0 N
MEAN OF RUN UP: 17.61 MEAN OF RUN DOWN: 23.37

W I N D S P E E D



TRIAL: 013 TYPE: USPD UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 4.5 M
MEAN OF RUN UP: 5.12 MEAN OF RUN DOWN: 7.93

T E M P E R A T U R E

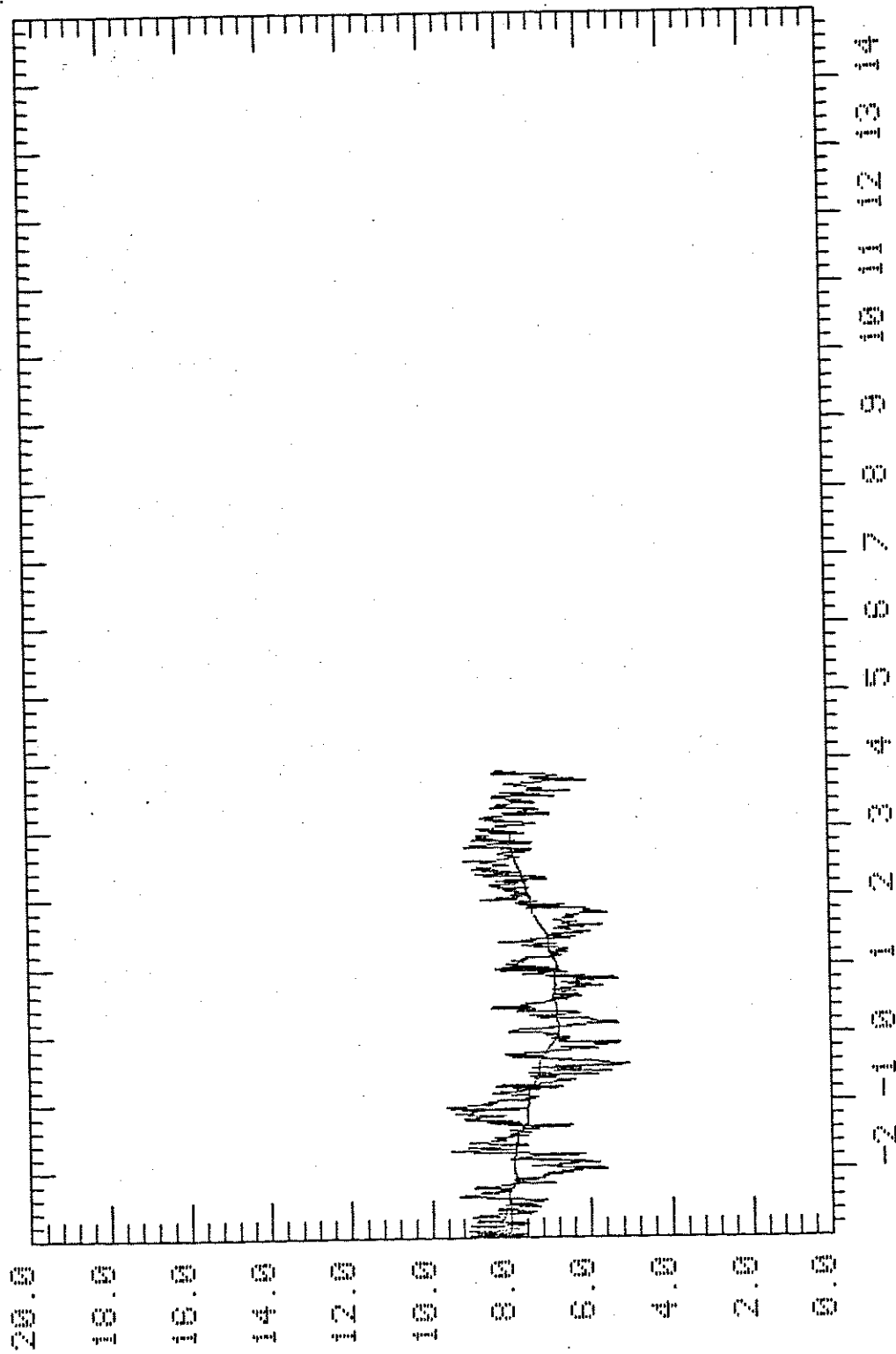


TIME FROM RELEASE (SECS*10**-2)

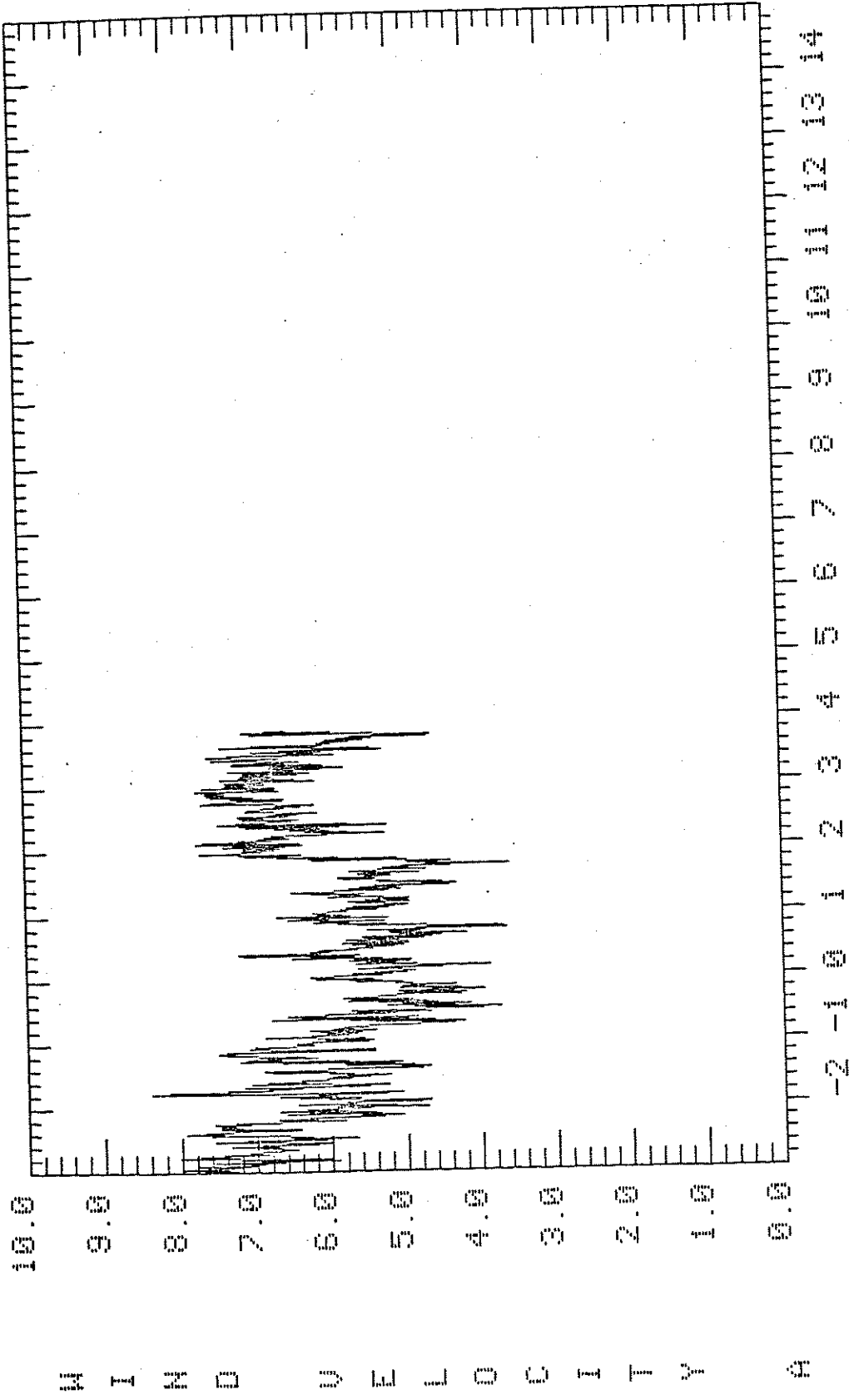
TRIAL: 013 TYPE: AIRT UNITS: DEGREES C

AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 W Z: 9.0 M

MEAN OF RUN UP: 12.57 MEAN OF RUN DOWN: 13.48



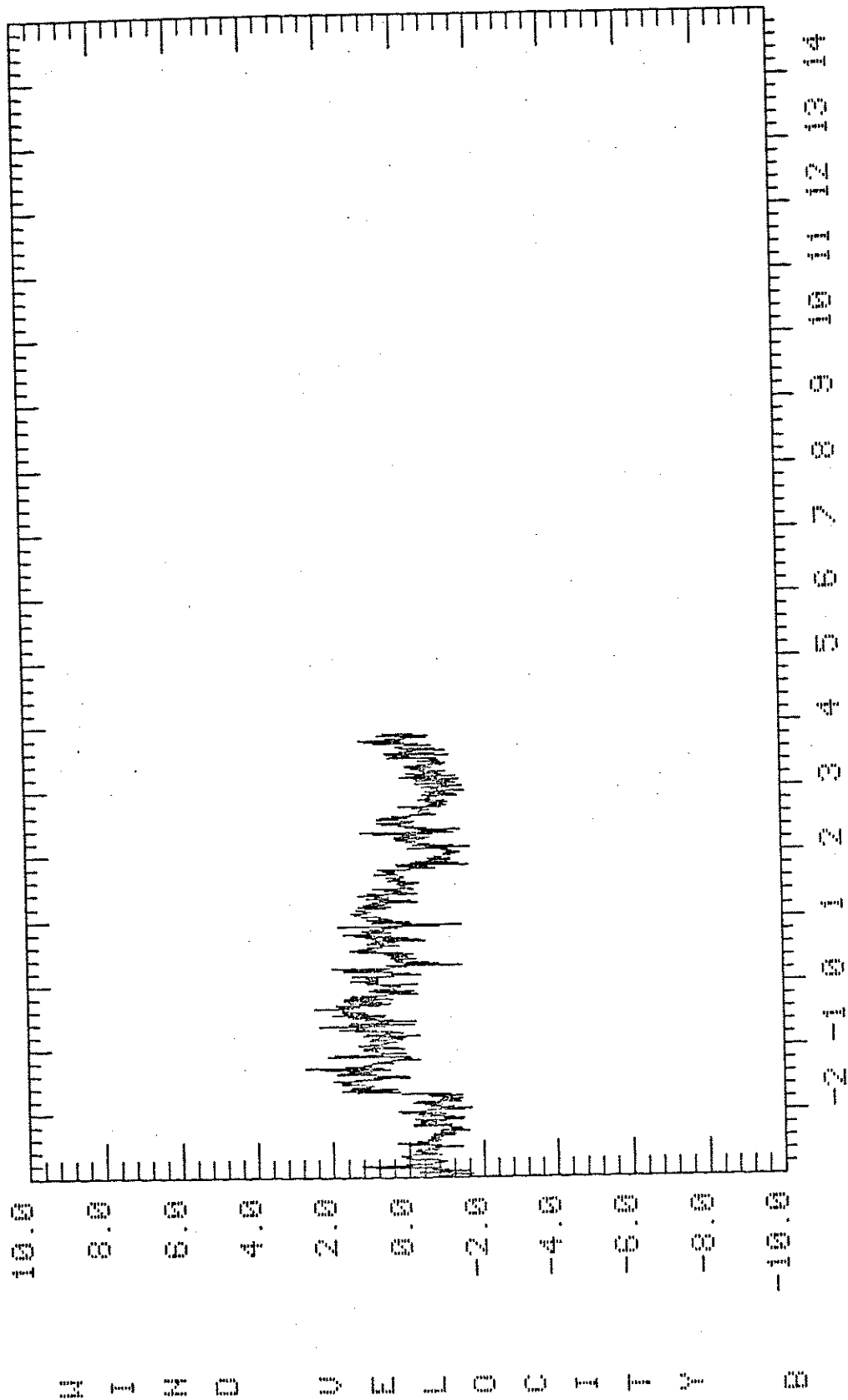
TRIAL: 013 TYPE: WSPD UNITS: M/S
 AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 10.0 M
 MEAN OF RUN UP: 5.46 MEAN OF RUN DOWN: 8.40



TRIAL: 013 TYPE: UANA UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 10.0 M

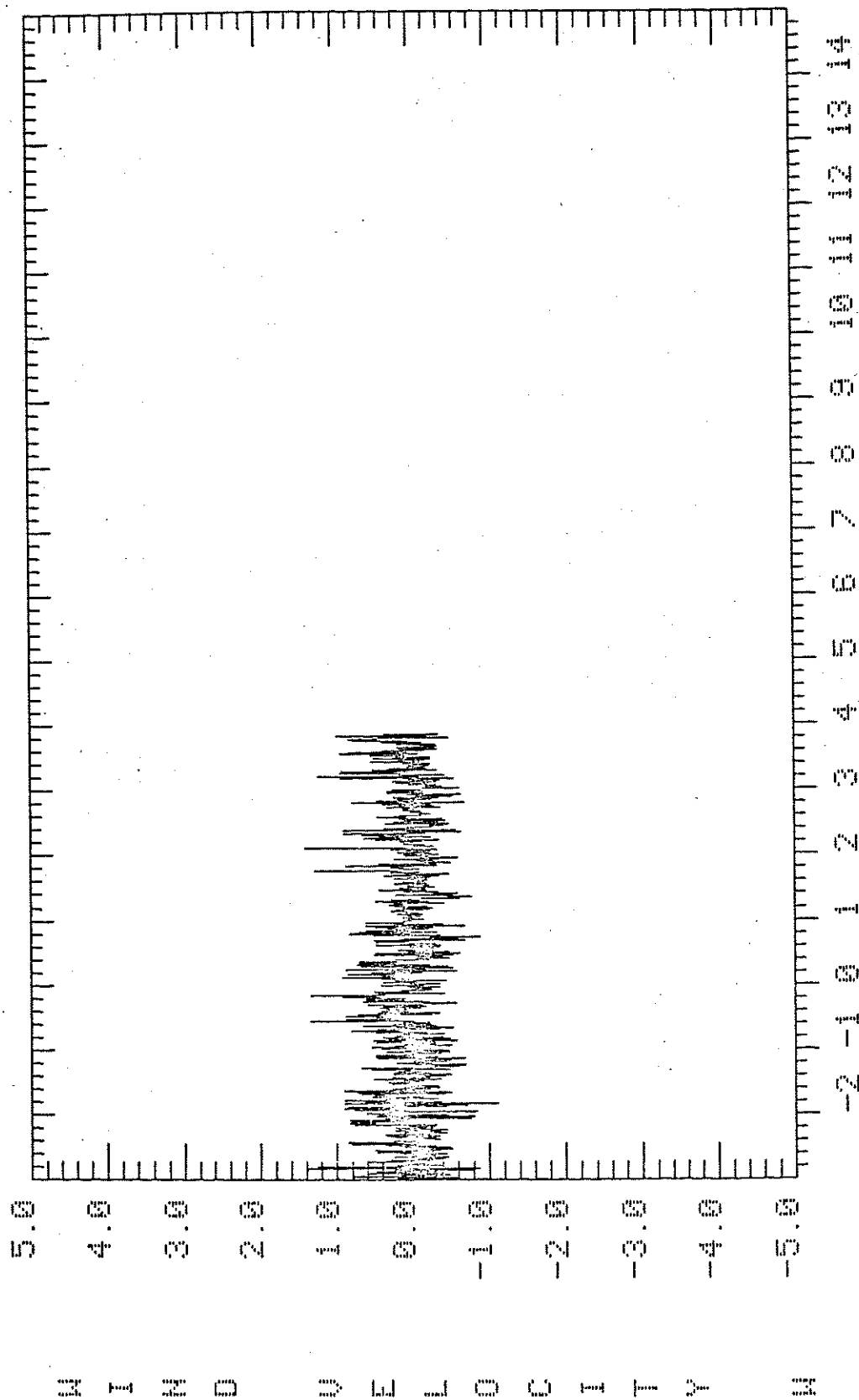
MEAN OF RUN UP: 4.74 MEAN OF RUN DOWN: 6.40



TRIAL: 013 TYPE: UAHB UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 490 M Y: 50 M Z: 10.0 M

MEAN OF RUN UP: -0.44 MEAN OF RUN DOWN: 1.93

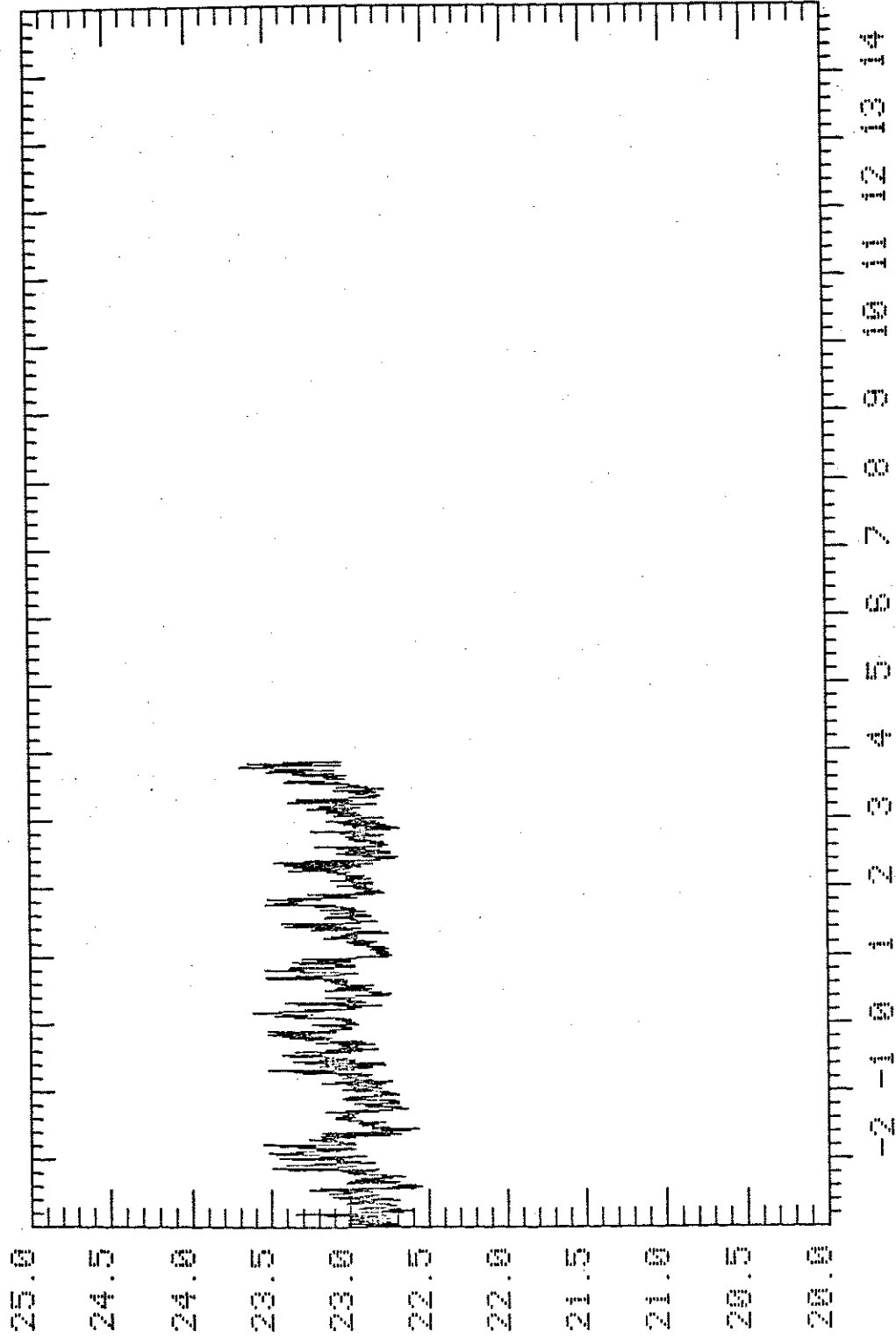


TRIAL: 013 TYPE: UAW UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 10.0 M

MEAN OF RUN UP: 0.01 MEAN OF RUN DOWN: 0.00

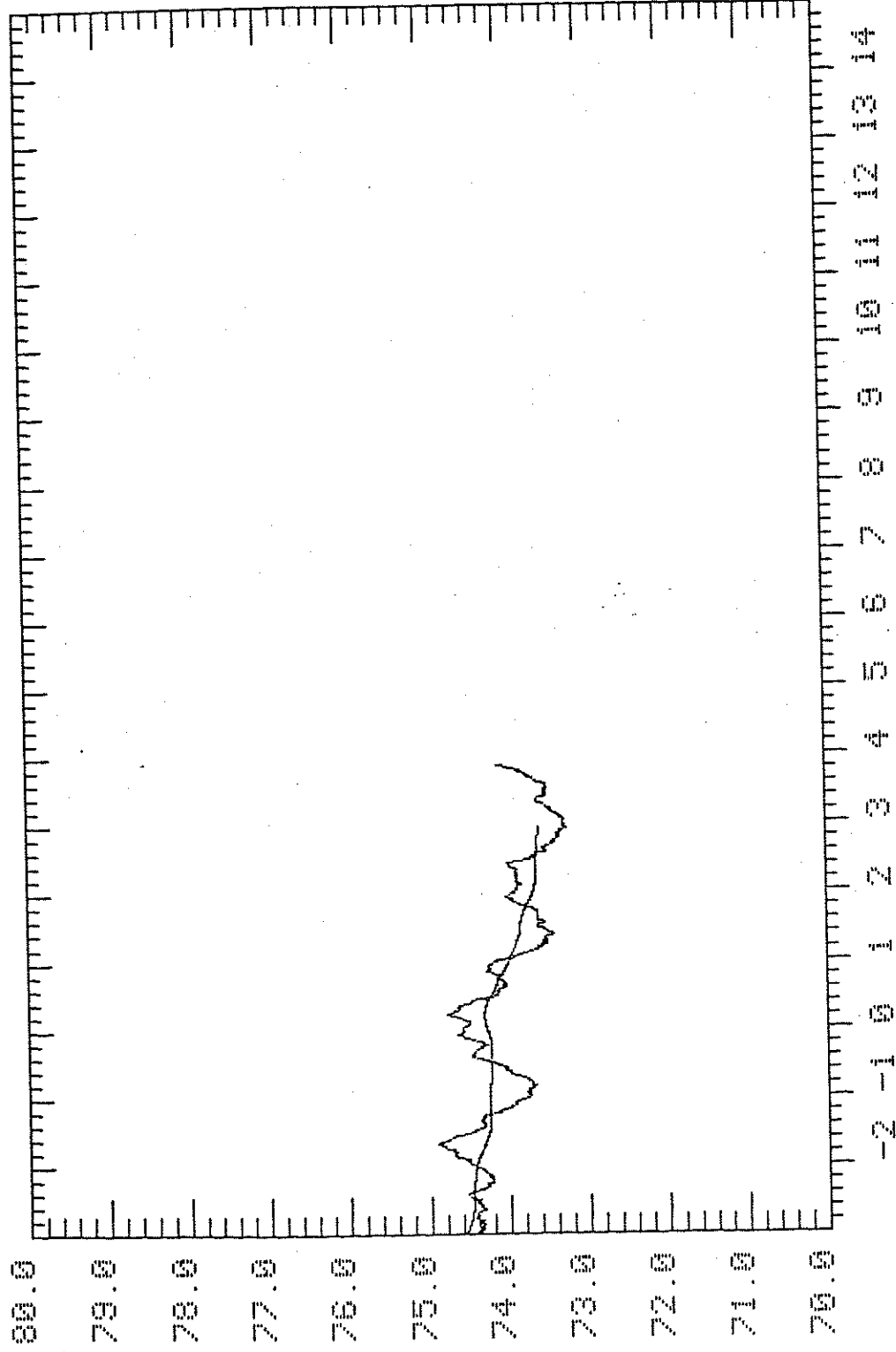
T E M P E R A T U R E



TIME FROM RELEASE (SECS*10**-2)

TRIAL: 913 TYPE: UANT UNITS: DEGREES C
AVERAGING TIME: 0.6 SEC X: 400 N Y: 50 N Z: 10.0 N
MEAN OF RUN UP: 22.67 MEAN OF RUN DOWN: 23.25

H U N D I T Y



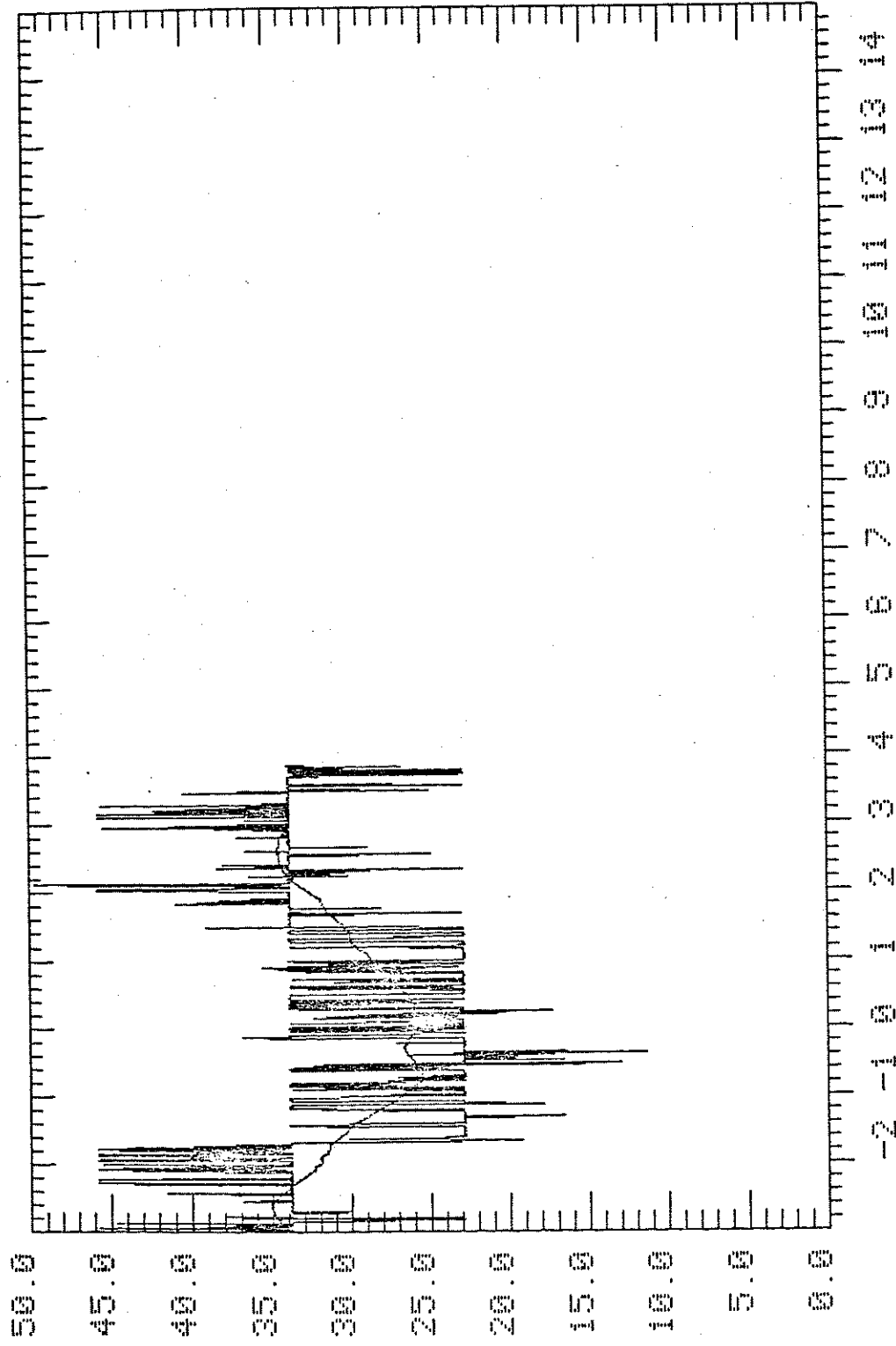
TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: RHUN UNITS: PER CENT

AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 10.0 M

MEAN OF RUN UP: 81.60 MEAN OF RUN DOWN: 69.06

WIND DIRECTION

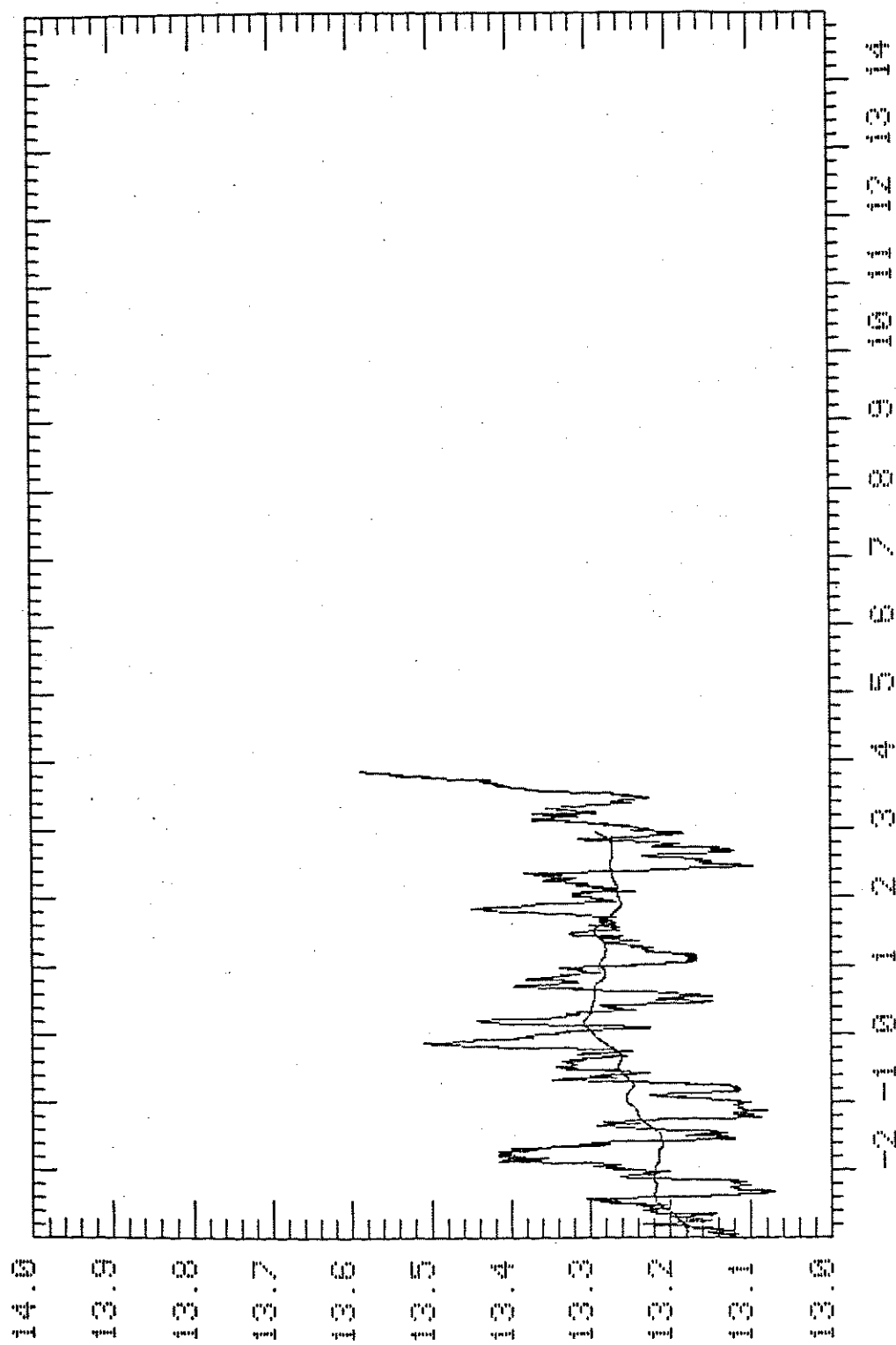


TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: WIND UNITS: DEGREES

AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 10.0 M

MEAN OF RUN UP: 35.30 MEAN OF RUN DOWN: 25.12

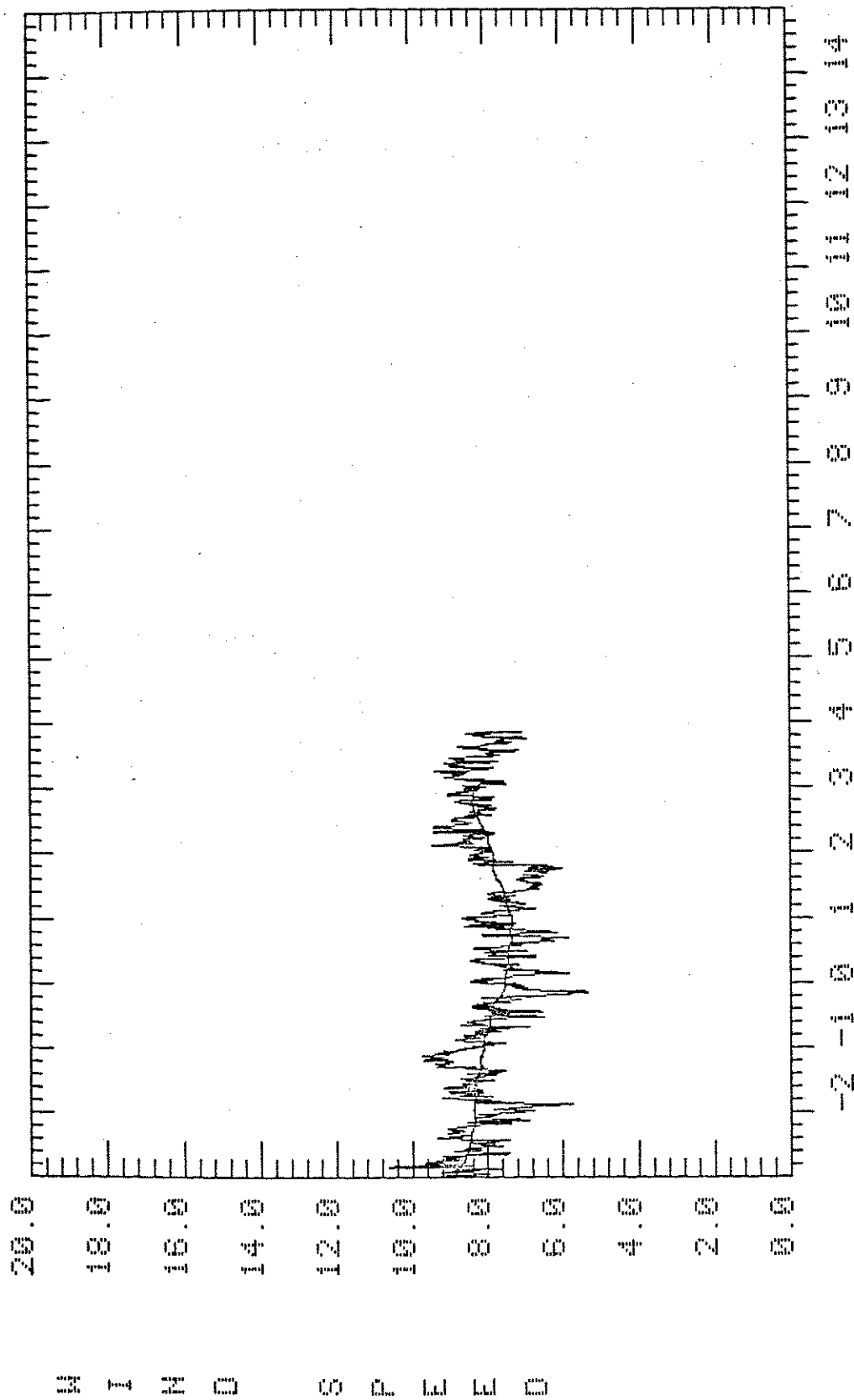


TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: AIRT UNITS: DEGREES C

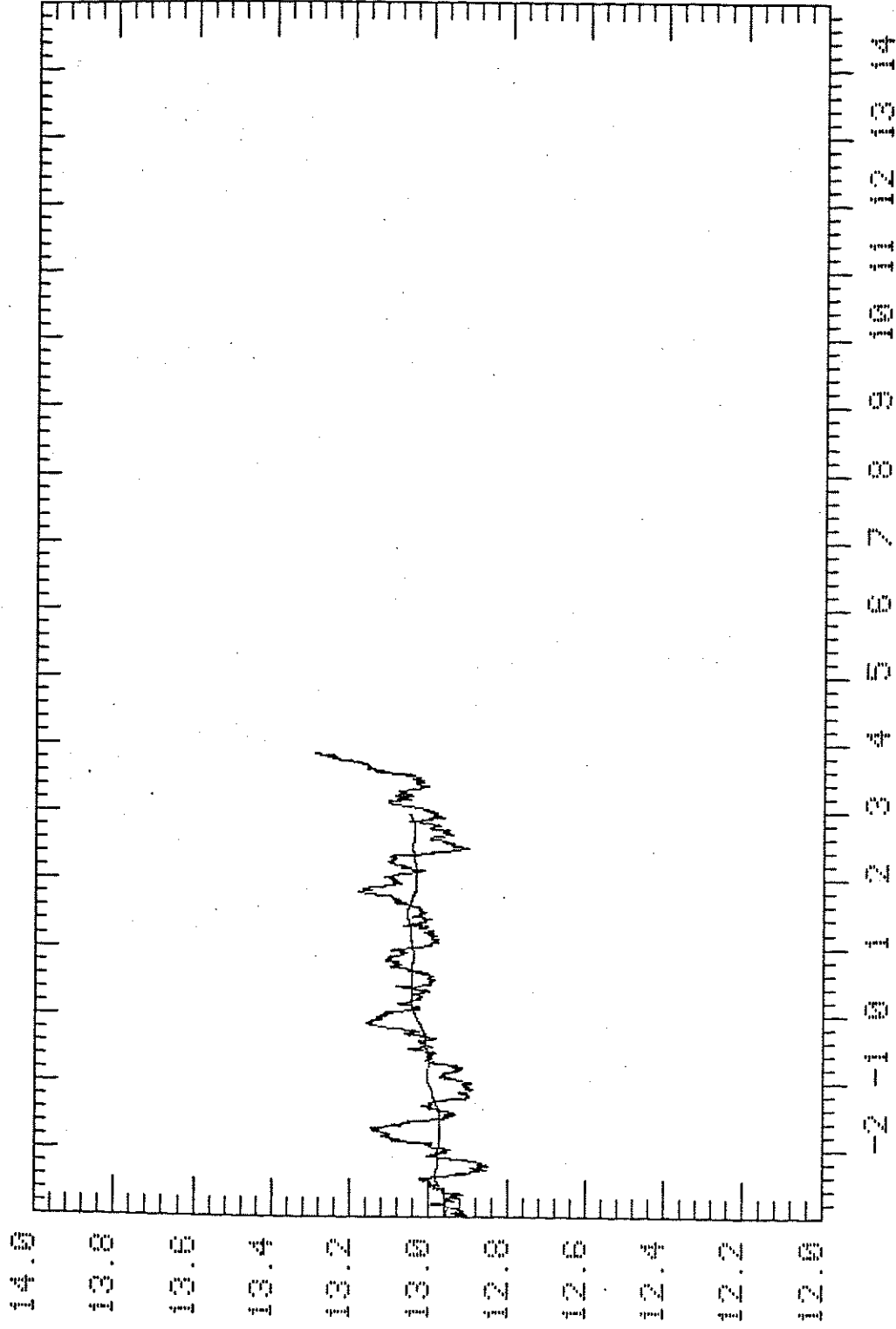
AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 N Z: 16.0 M

MEAN OF RUN UP: 12.67 MEAN OF RUN DOWN: 13.55



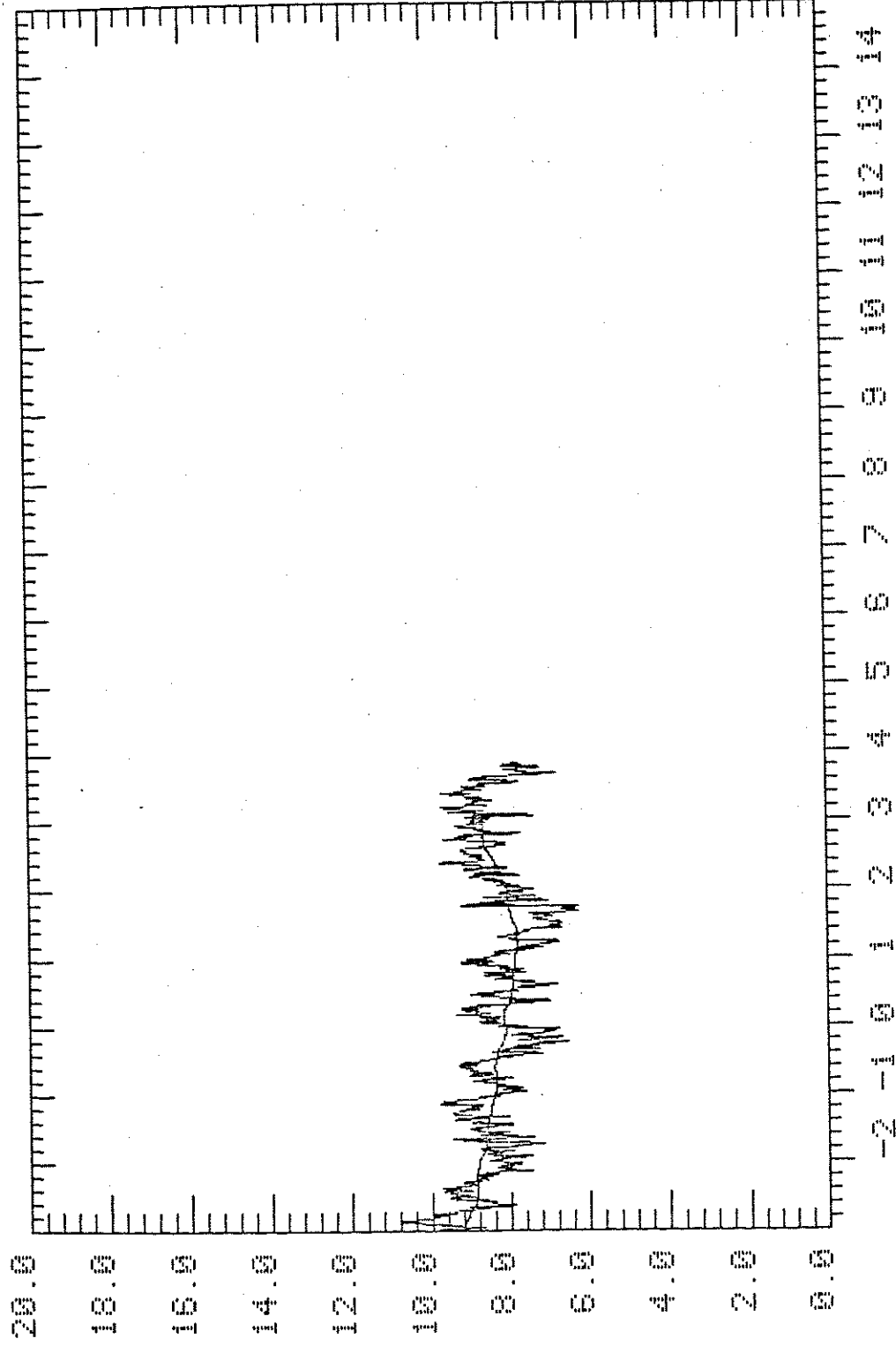
TRIAL: 013 TYPE: MSPD UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 17.3 M
MEAN OF RUN UP: 5.80 MEAN OF RUN DOWN: 9.19

T E M P E R A T U R E



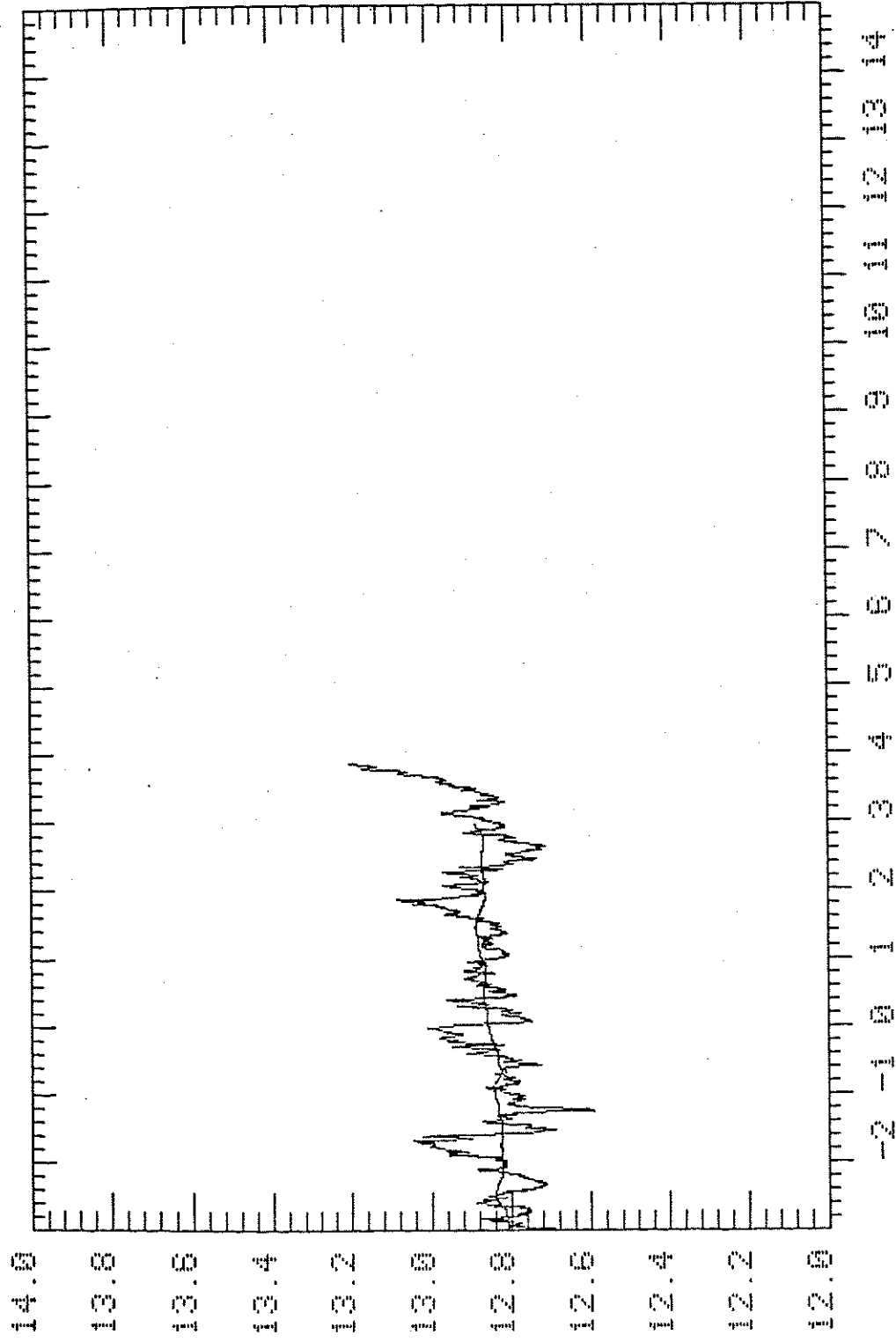
TRIAL: 013 TYPE: AIRT UNITS: DEGREES C
AVERAGING TIME: 0.6 SEC X: 400 N Y: 50 N Z: 22.0 N
MEAN OF RUN UP: 12.49 MEAN OF RUN DOWN: 13.34

W I N D S P E E D



TRIAL: 013 TYPE: WSPD UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 30.0 M
MEAN OF RUN UP: 6.04 MEAN OF RUN DOWN: 9.68

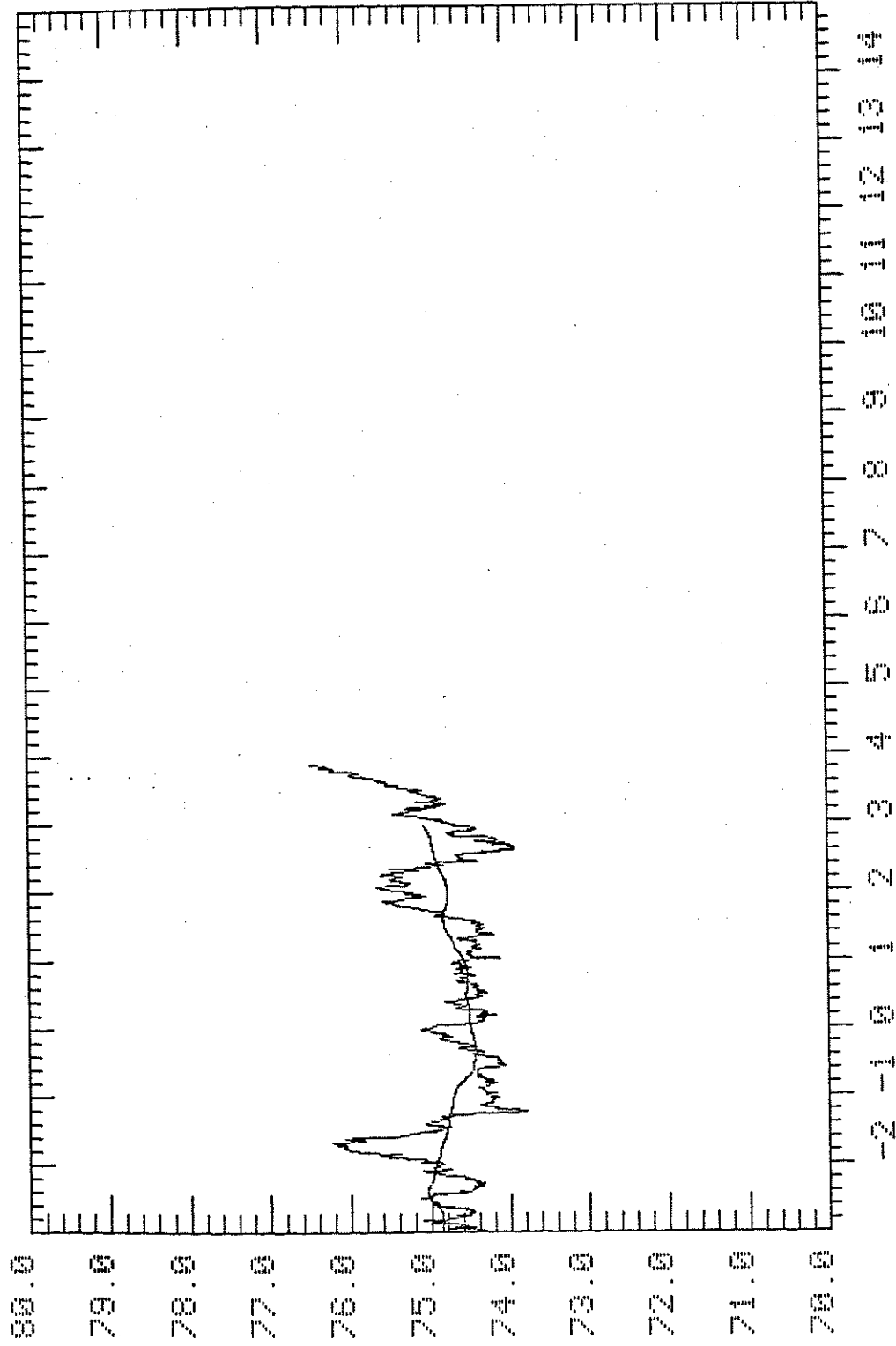
T E M P E R A T U R E



TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: AIRT UNITS: DEGREES C
 AVERAGING TIME: 0.6 SEC X: 499 N Y: 50 N Z: 30.0 N
 MEAN OF RUN UP: 12.33 MEAN OF RUN DOWN: 13.14

H U N D I T Y



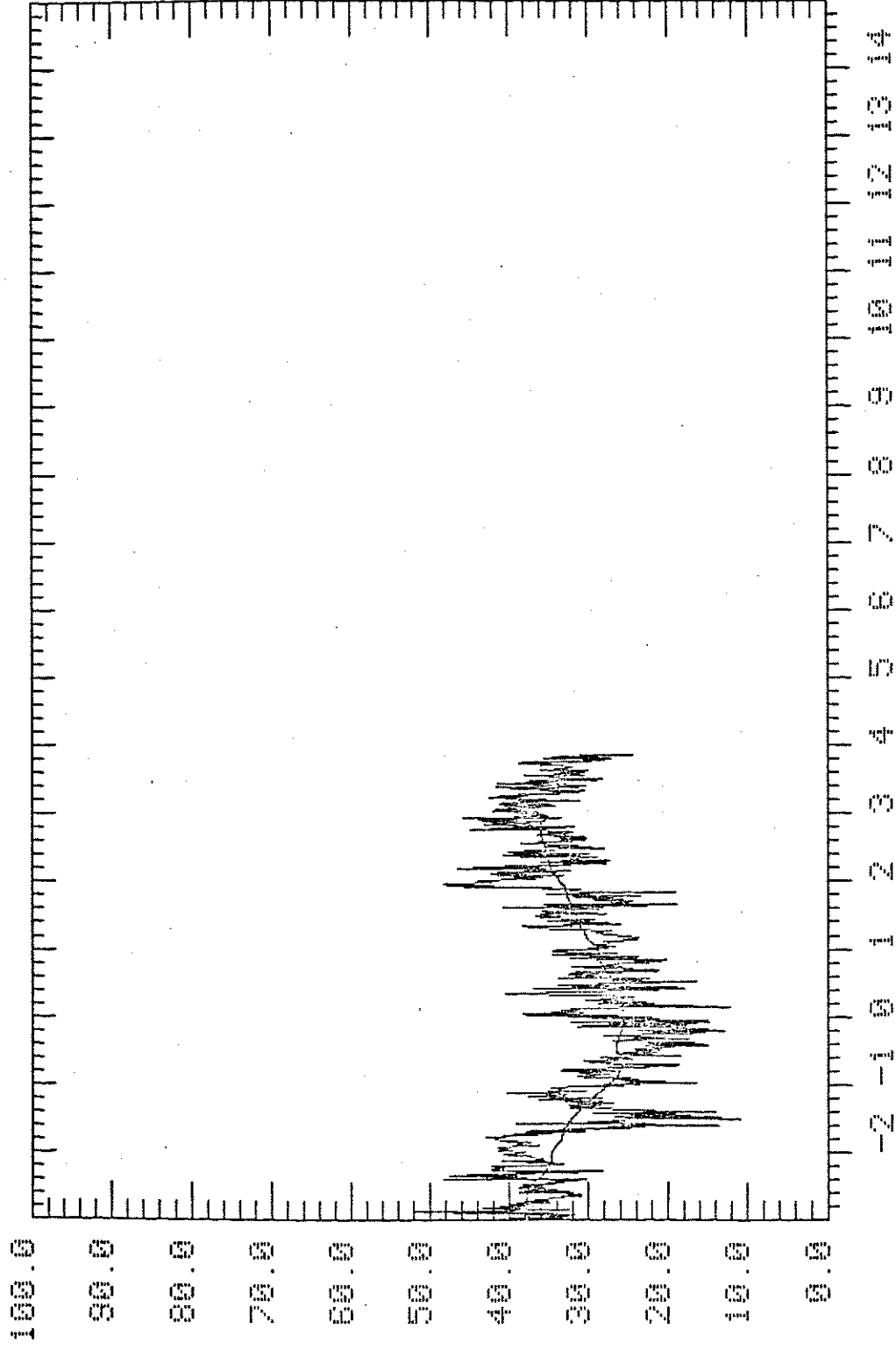
TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: RHUN UNITS: PER CENT

AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 30.0 M

MEAN OF RUN UP: 82.05 MEAN OF RUN DOWN: 70.77

M I N D D I R E C T I O N

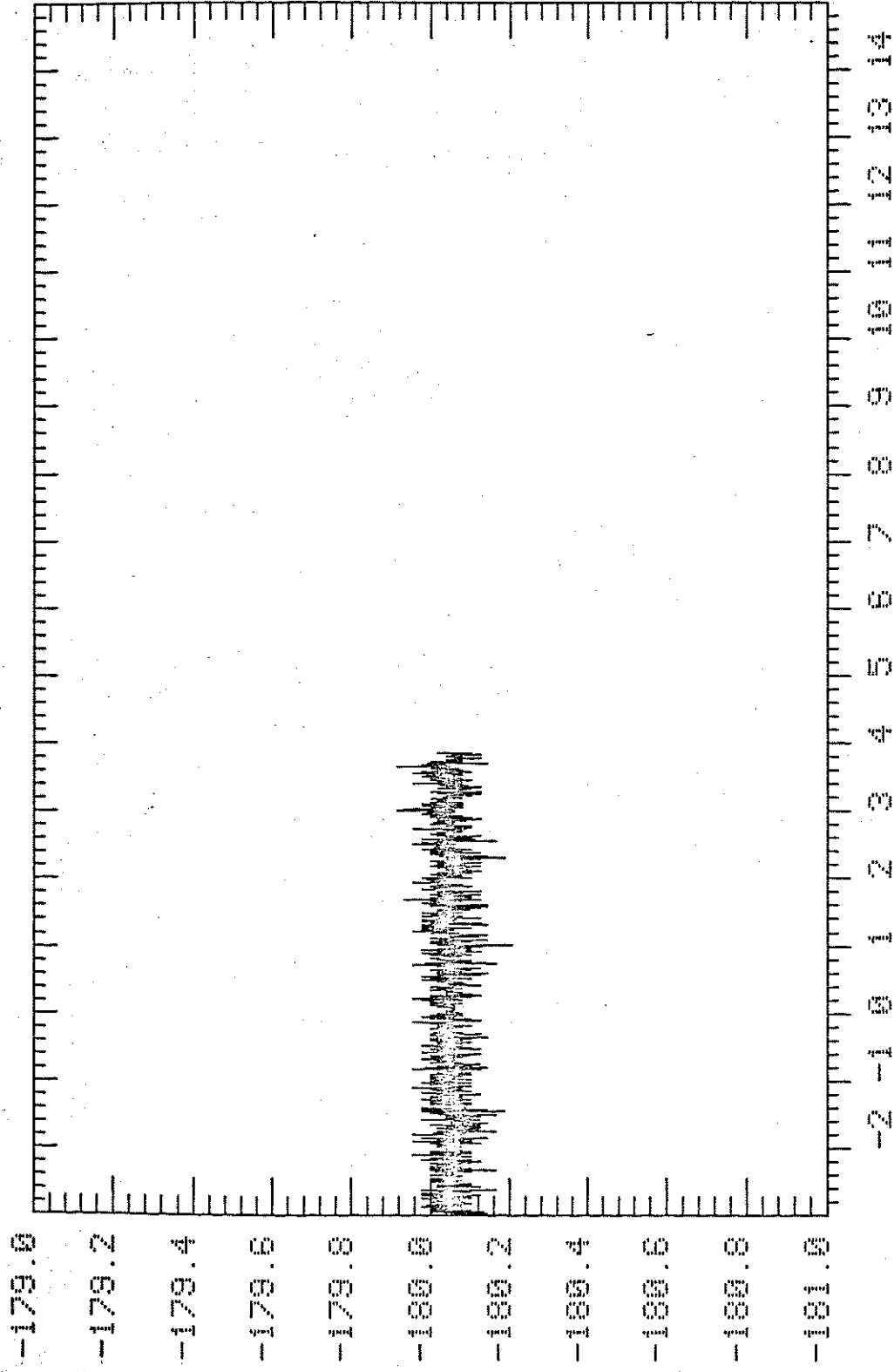


TRIAL: 013 TYPE: WHG UNITS: DEGREES

AVERAGING TIME: 0.6 SEC X: 420 H Y: 50 H Z: 10.0 H

MEAN OF RUN UP: 36.91 MEAN OF RUN DOWN: 24.97

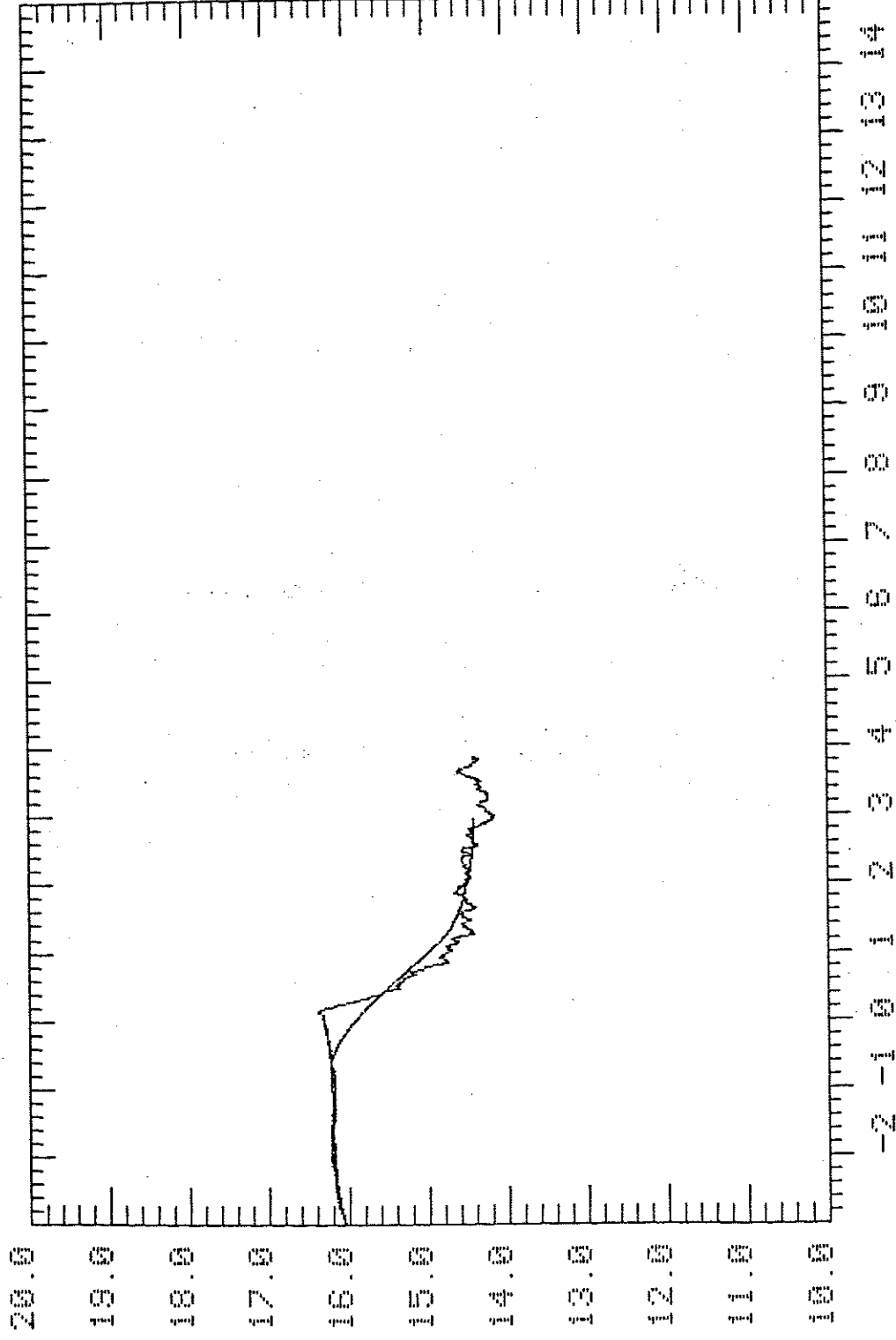
W I N D D I R E C T I O N



TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: WINDG UNITS: DEGREES
AVERAGING TIME: 0.6 SEC X: 400 N Y: 150 N Z: 10.0 N
MEAN OF RUN UP: -180.20 MEAN OF RUN DOWN: -180.03

T E M P E R A T U R E



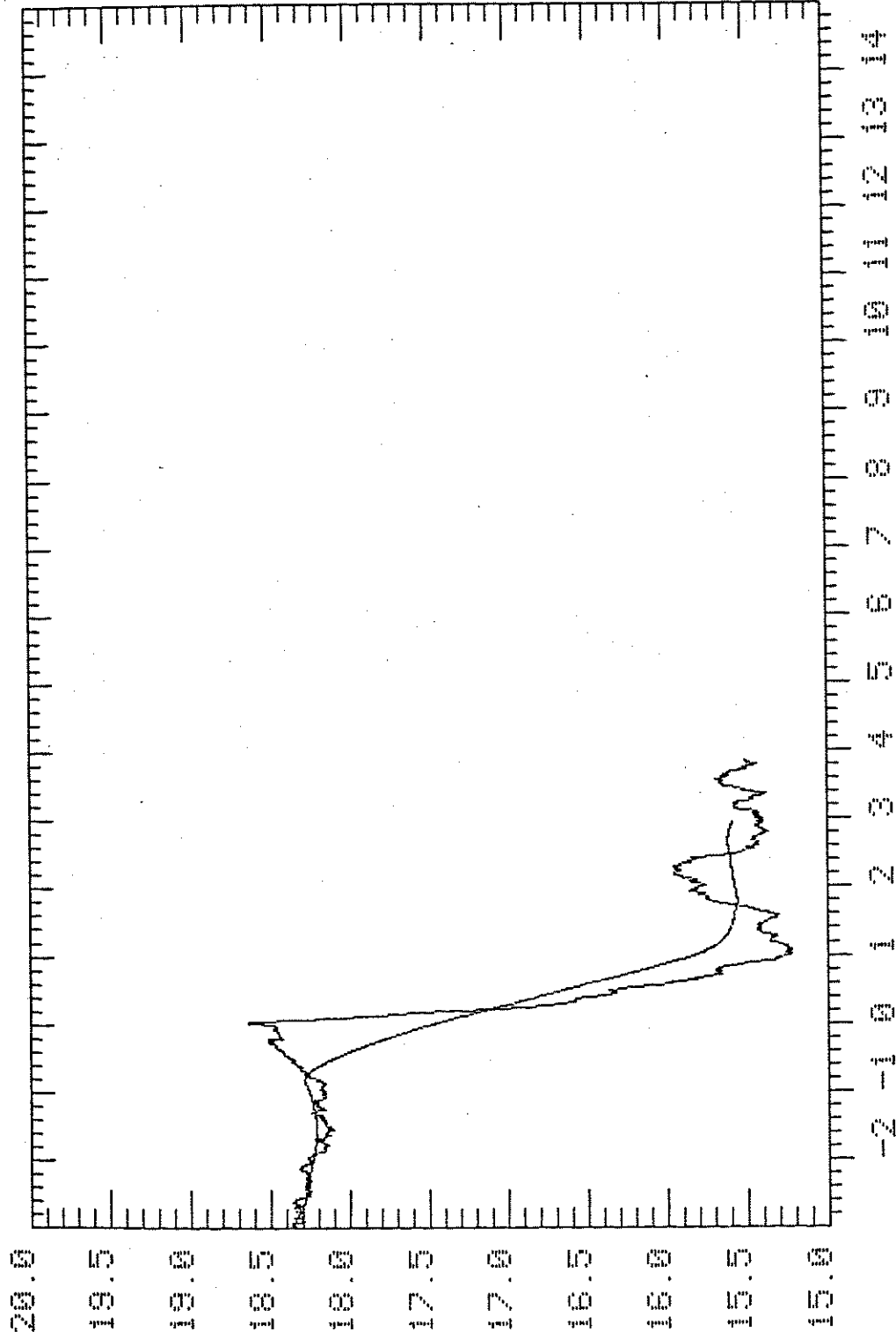
TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: AIRT UNITS: DEGREES C

AVERAGING TIME: 0.6 SEC X: 400 M Y: 200 M Z: 0.4 M

MEAN OF RUN UP: 15.40 MEAN OF RUN DOWN: 14.53

T E M P E R A T U R E

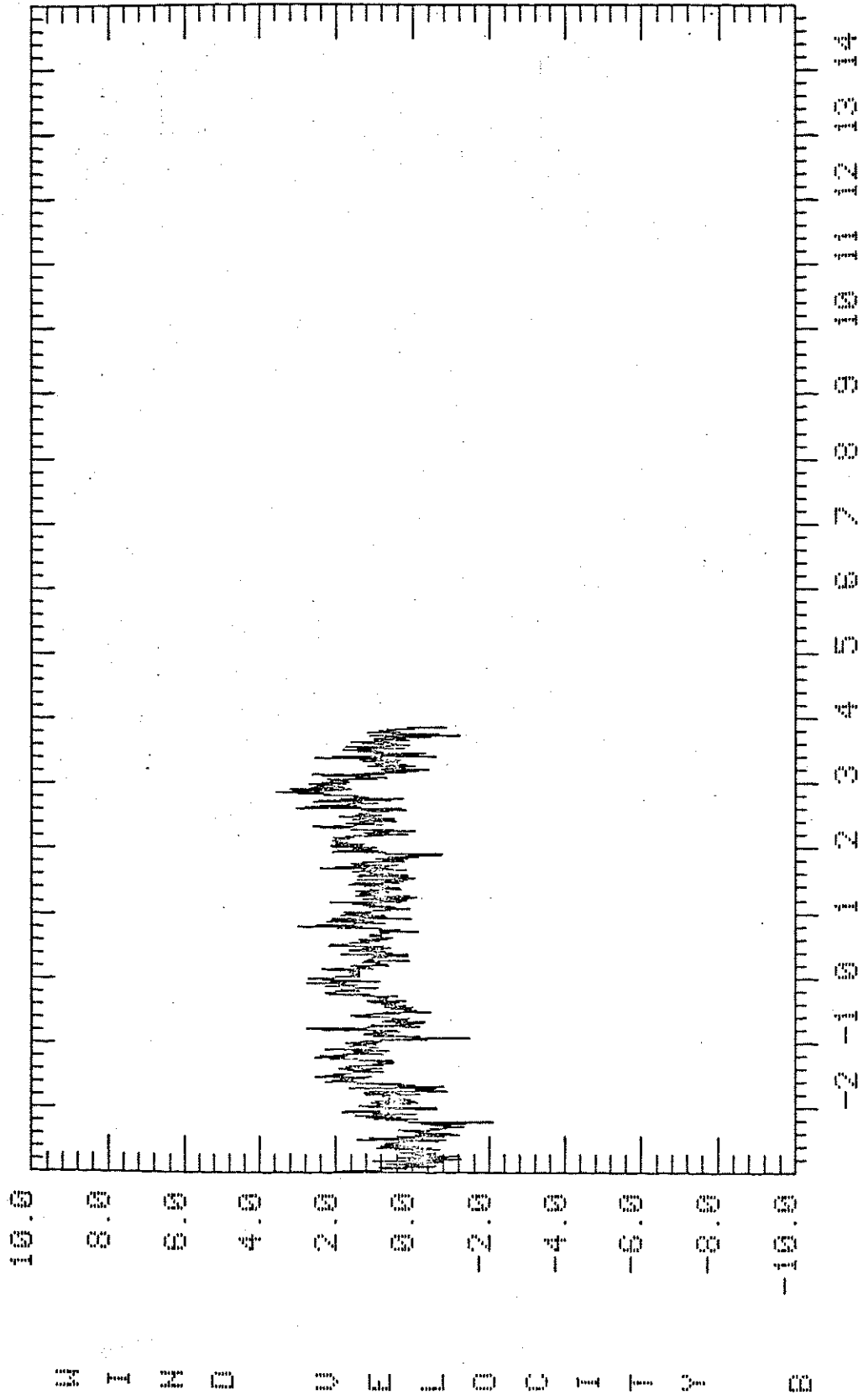


TIME FROM RELEASE (SECS*10**2)

TRIAL: 913 TYPE: AIRT UNITS: DEGREES C

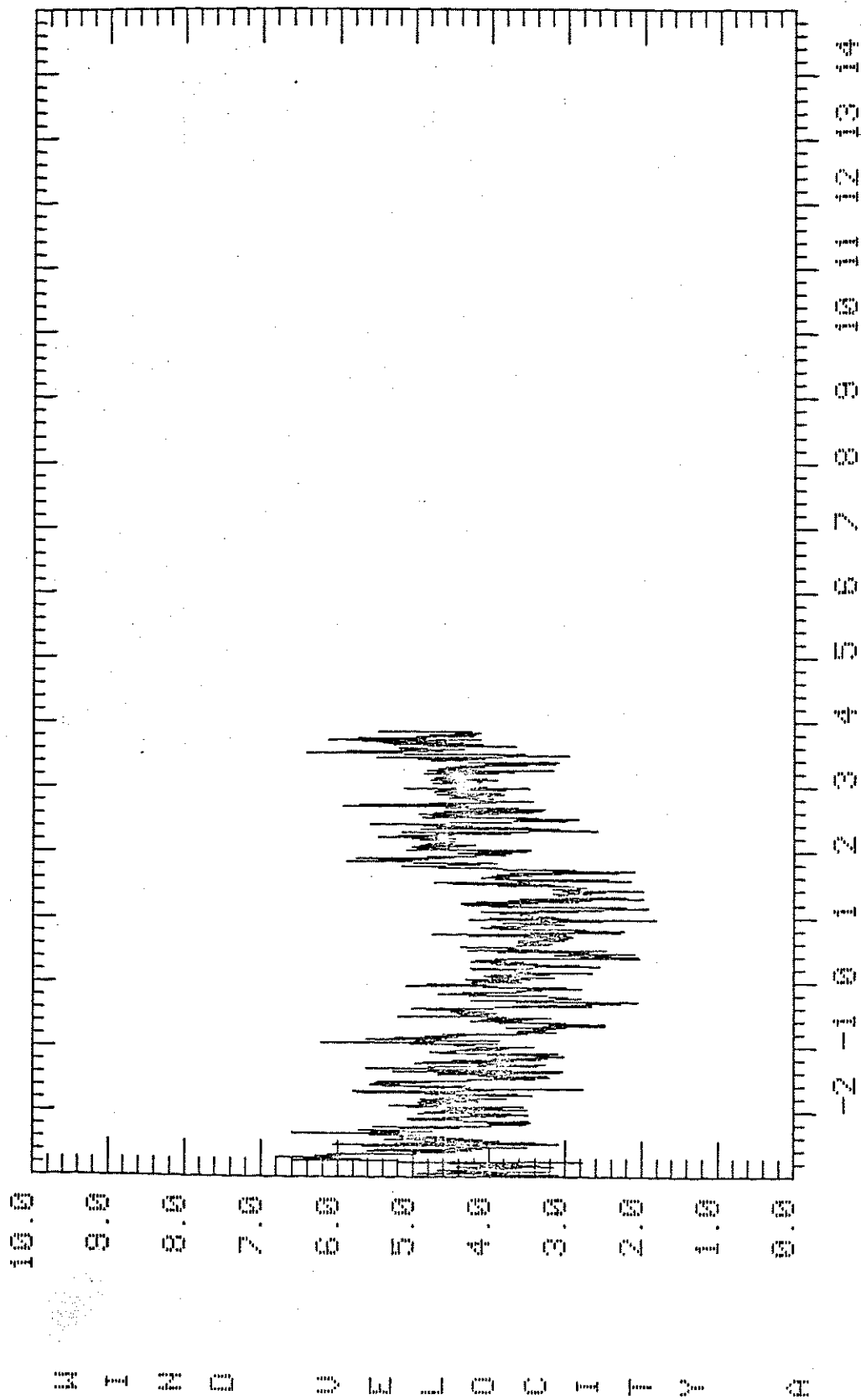
AVERAGING TIME: 0.8 SEC X: 400 N Y: 200 N Z: 12.0 M

MEAN OF RUN UP: 17.83 MEAN OF RUN DOWN: 15.43



TIME FROM RELEASE (SECS*10**-2)

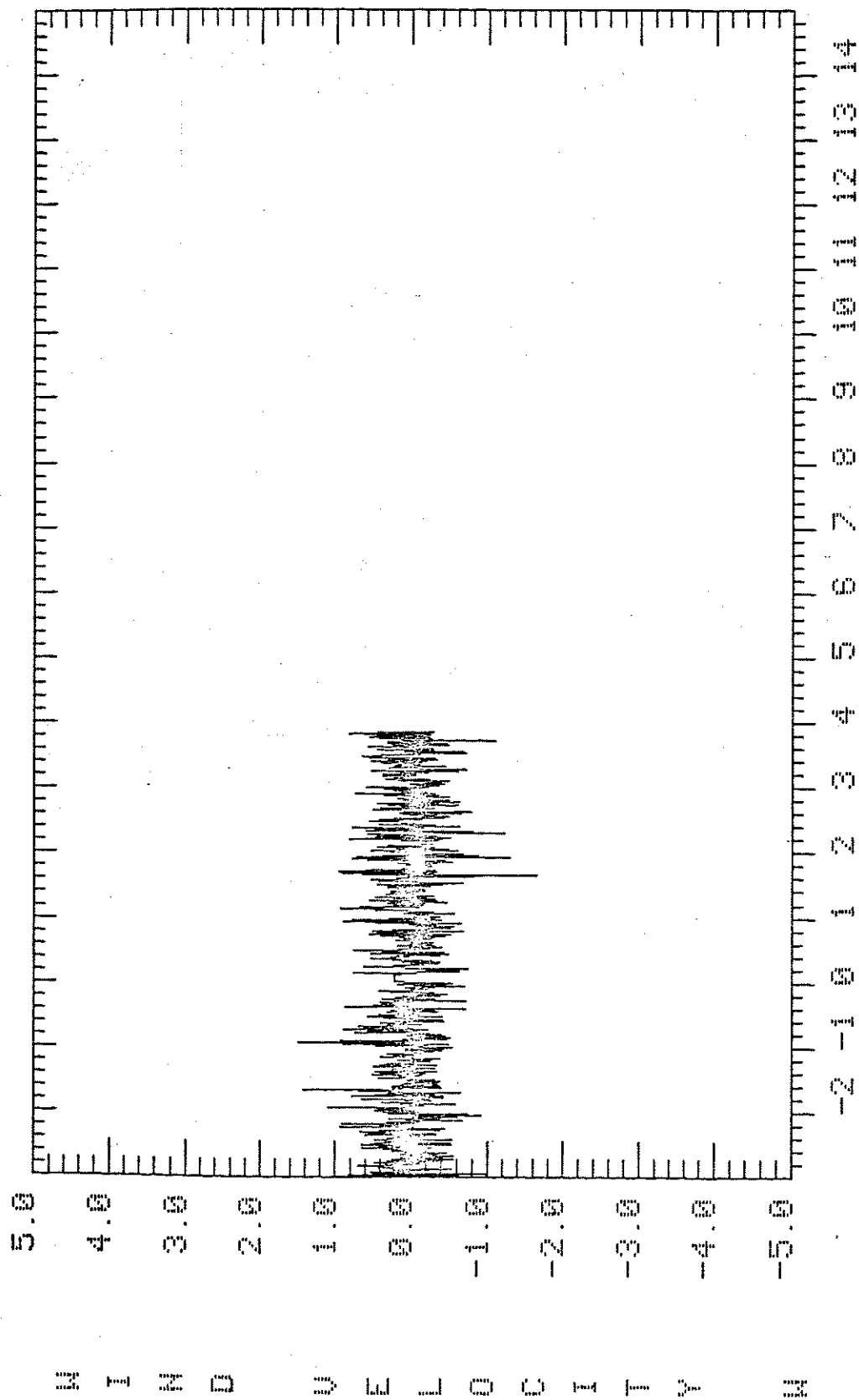
TRIAL: 013 TYPE: UAHB UNITS: M/S
 AVERAGING TIME: 0.6 SEC X: 300 H Y: 350 H Z: 2.0 H
 MEAN OF RUN UP: 0.19 MEAN OF RUN DOWN: 1.76



TRIAL: 013 TYPE: UANA UNITS: M/S

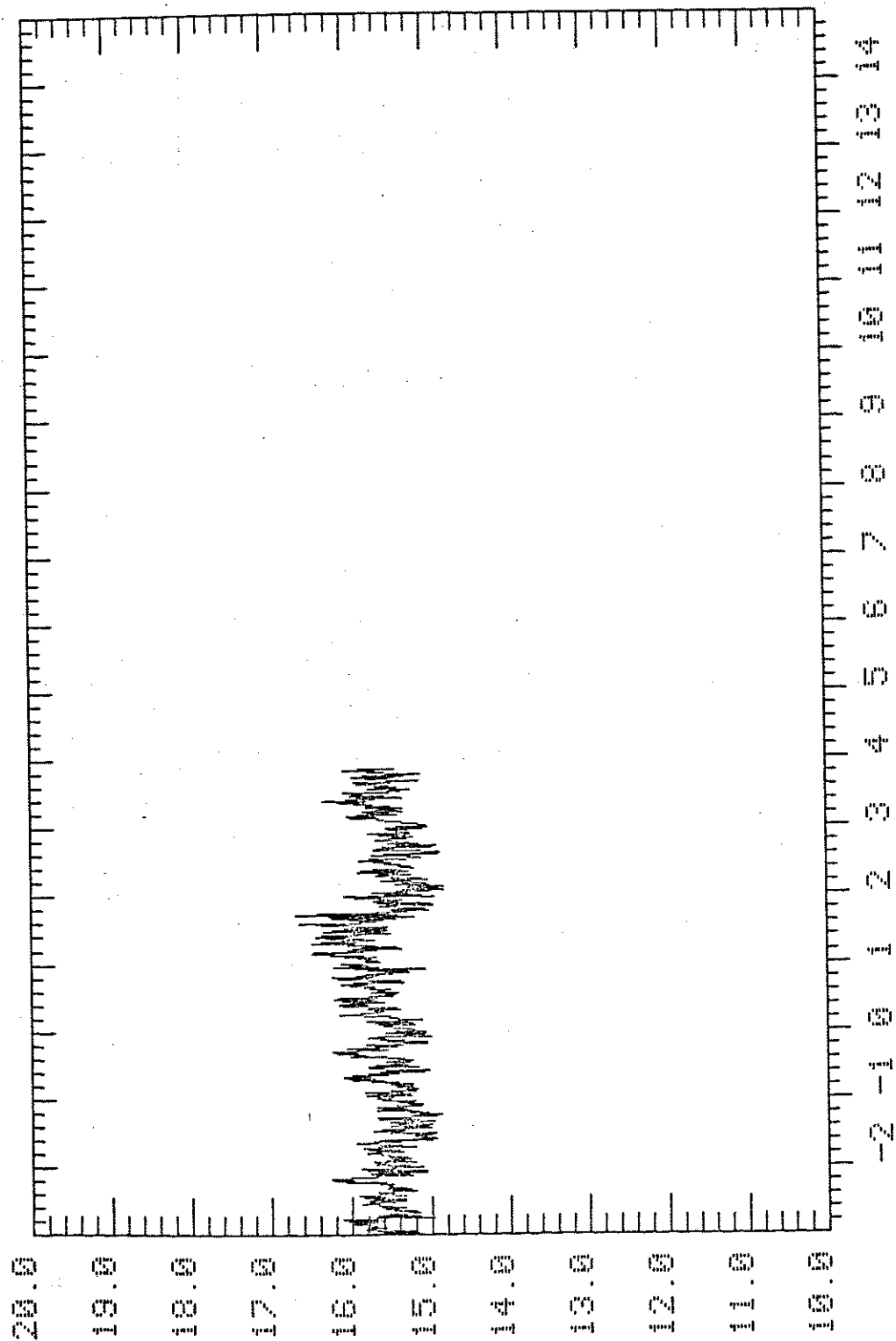
AVERAGING TIME: 0.6 SEC X: 303 H Y: 359 H Z: 2.0 H

MEAN OF RUN UP: 3.05 MEAN OF RUN DOWN: 5.09



TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: UAHW UNITS: M/S
 AVERAGING TIME: 0.6 SEC X: 300 M Y: 350 M Z: 2.0 M
 MEAN OF RUN UP: 0.03 MEAN OF RUN DOWN: -0.05

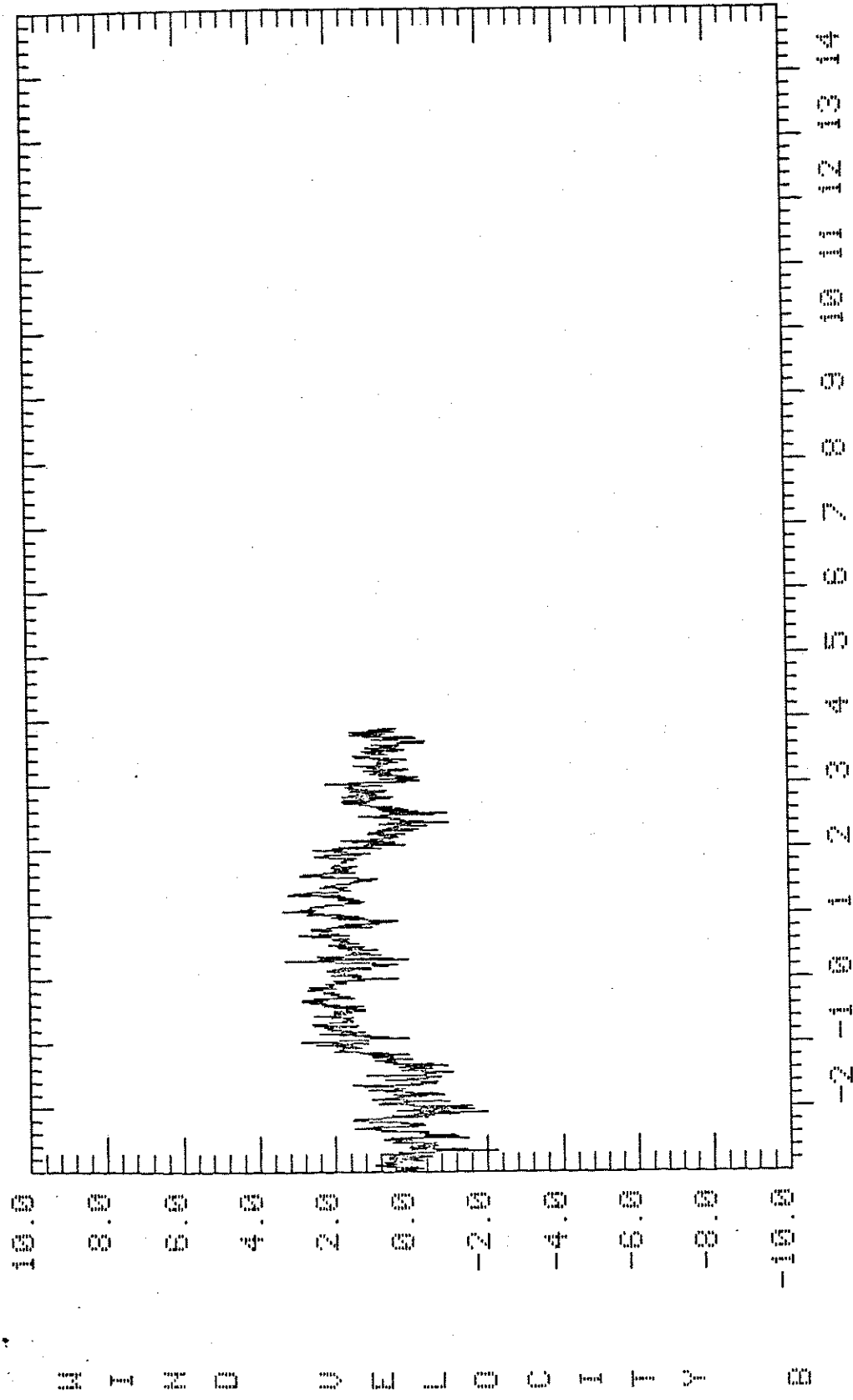


TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: UANT UNITS: DEGREES C

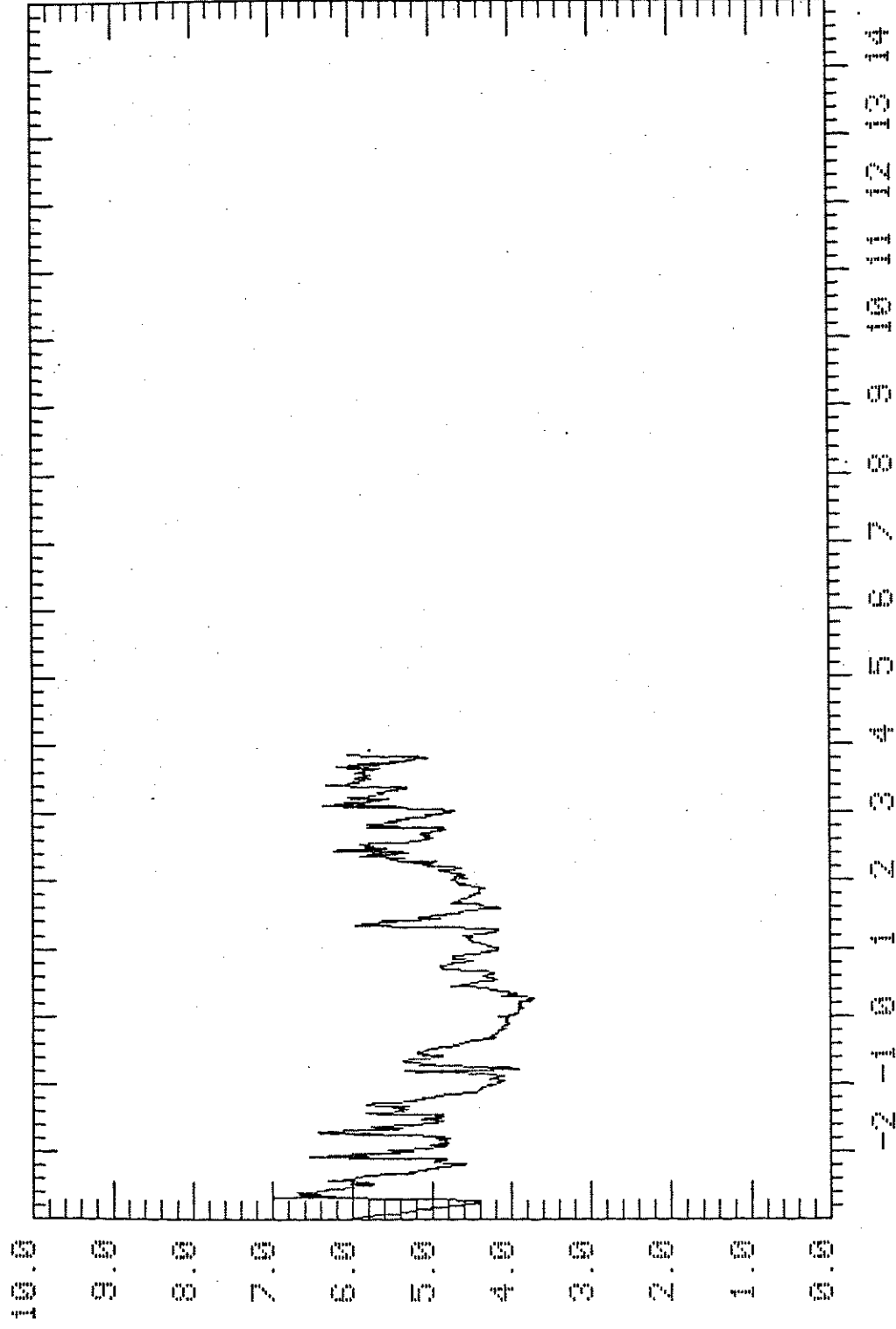
AVERAGING TIME: 0.6 SEC X: 300 H Y: 350 H Z: 2.0 H

MEAN OF RUN UP: 15.09 MEAN OF RUN DOWN: 15.58



TRIAL: 013 TYPE: UNAB UNITS: M/S
 AVERAGING TIME: 0.6 SEC X: 490 M Y: 350 M Z: 2.0 M
 MEAN OF RUN UP: 0.50 MEAN OF RUN DOWN: 1.11

WIND VELOCITY

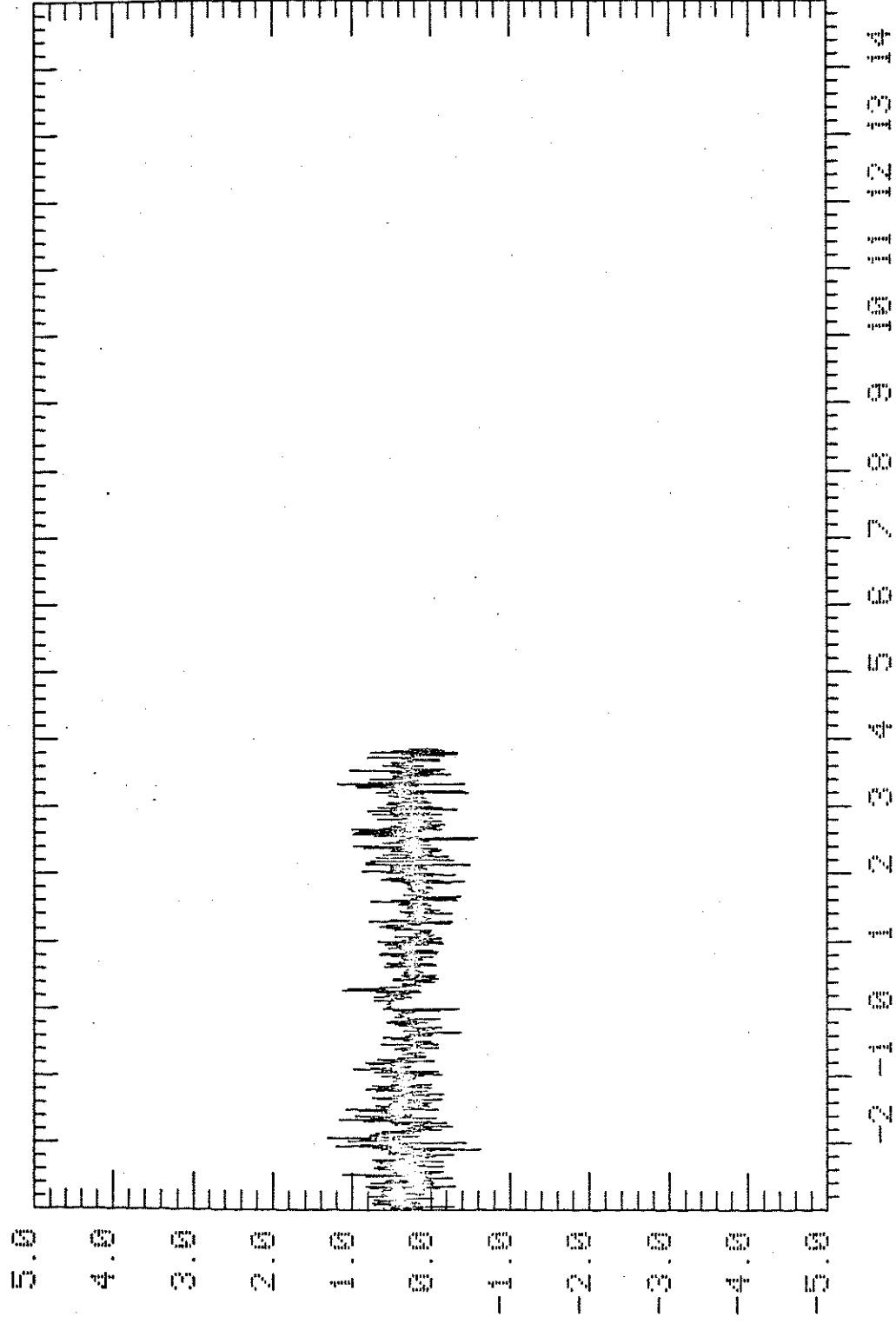


TRIAL: 013 TYPE: UAHN UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 400 M Y: 350 M Z: 2.0 M

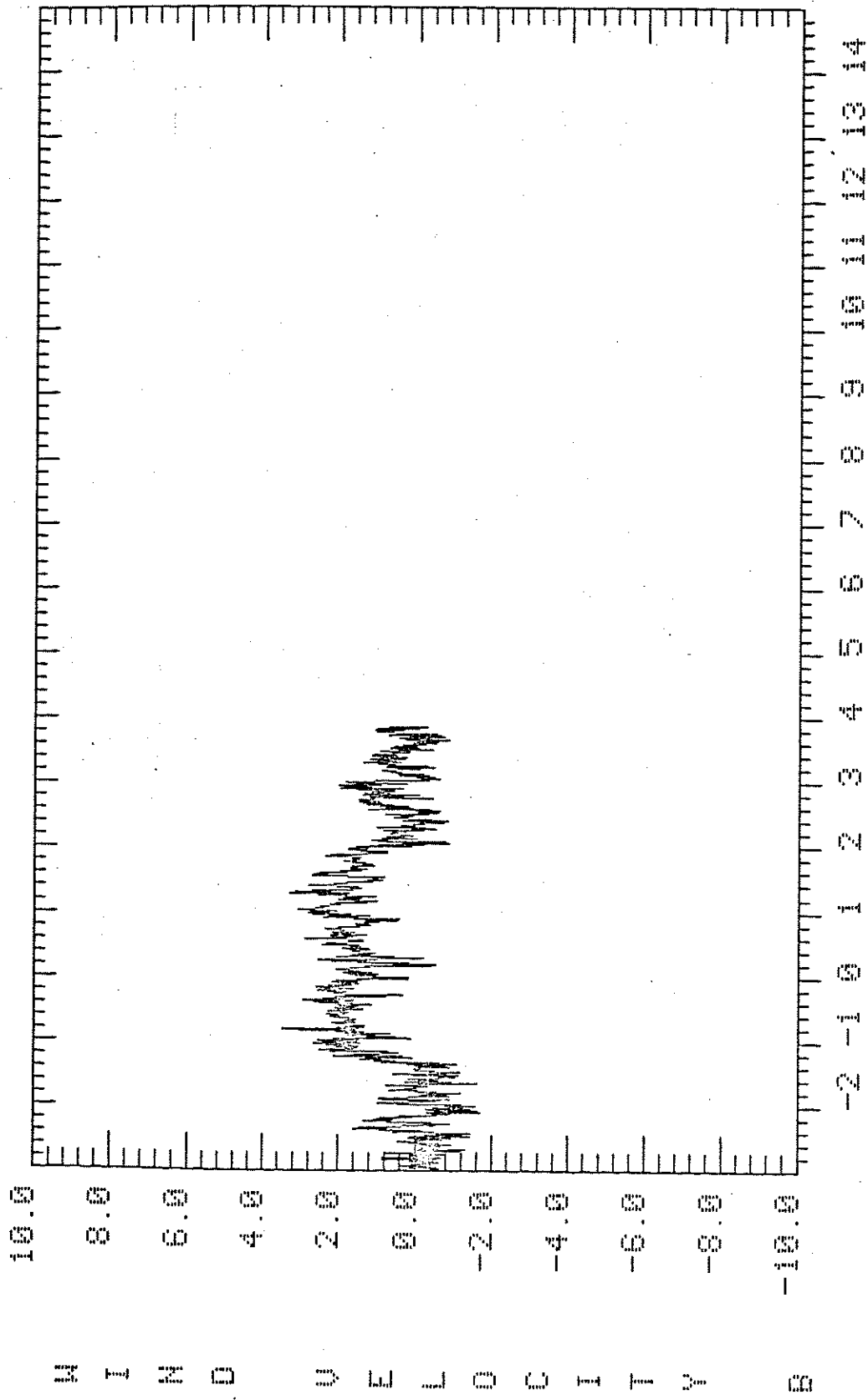
MEAN OF RUN UP: 3.38 MEAN OF RUN DOWN: 5.63

W I N D V E L O C I T Y



TIME FROM RELEASE (SECS*10**-2)

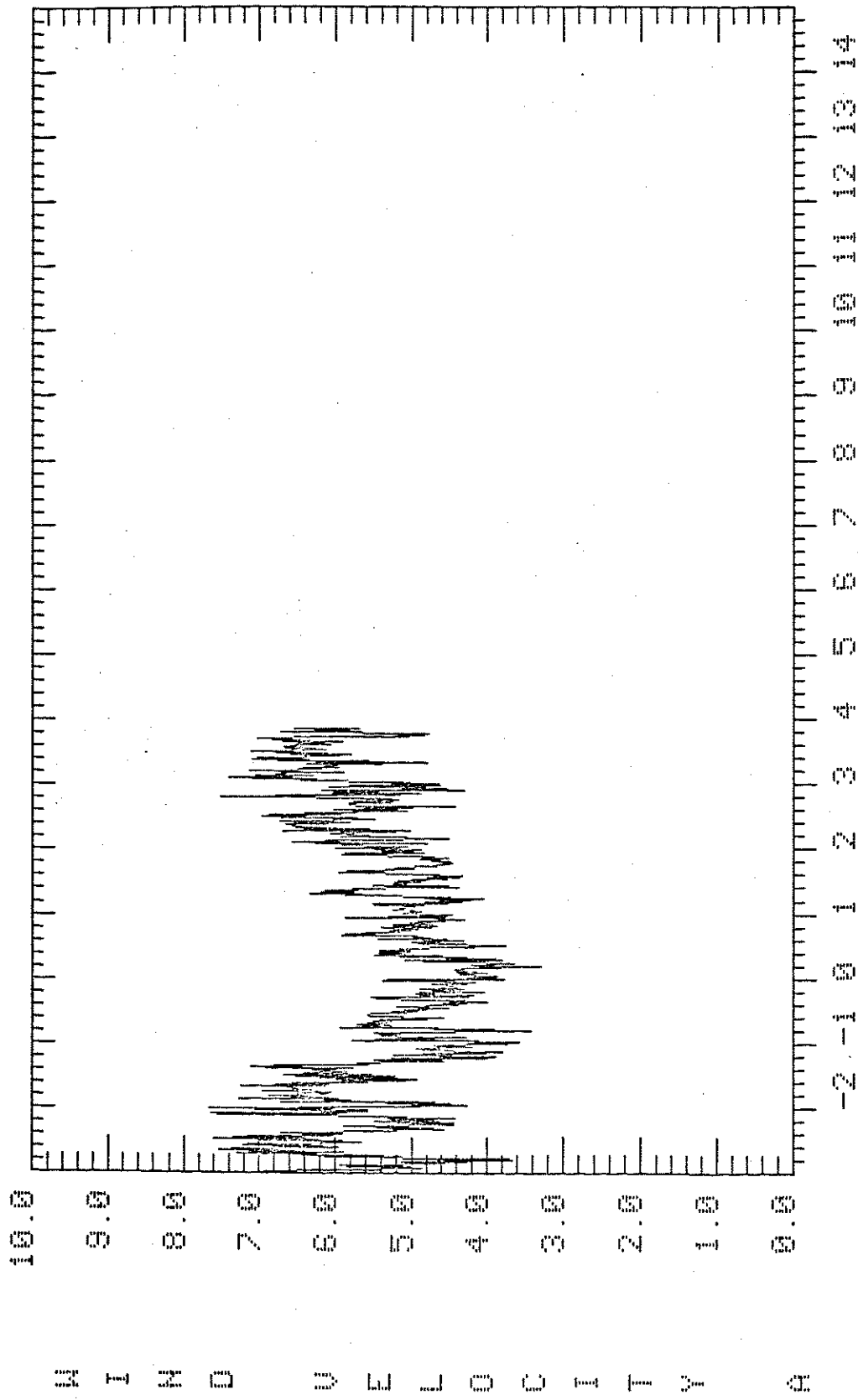
TRIAL: 013 TYPE: WIND UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 400 M Y: 350 M Z: 2.0 M
MEAN OF RUN UP: 0.19 MEAN OF RUN DOWN: 0.33



TRIAL: 013 TYPE: UANB UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 400 M Y: 350 M Z: 5.0 M

MEAN OF RUN UP: 0.37 MEAN OF RUN DOWN: 0.95



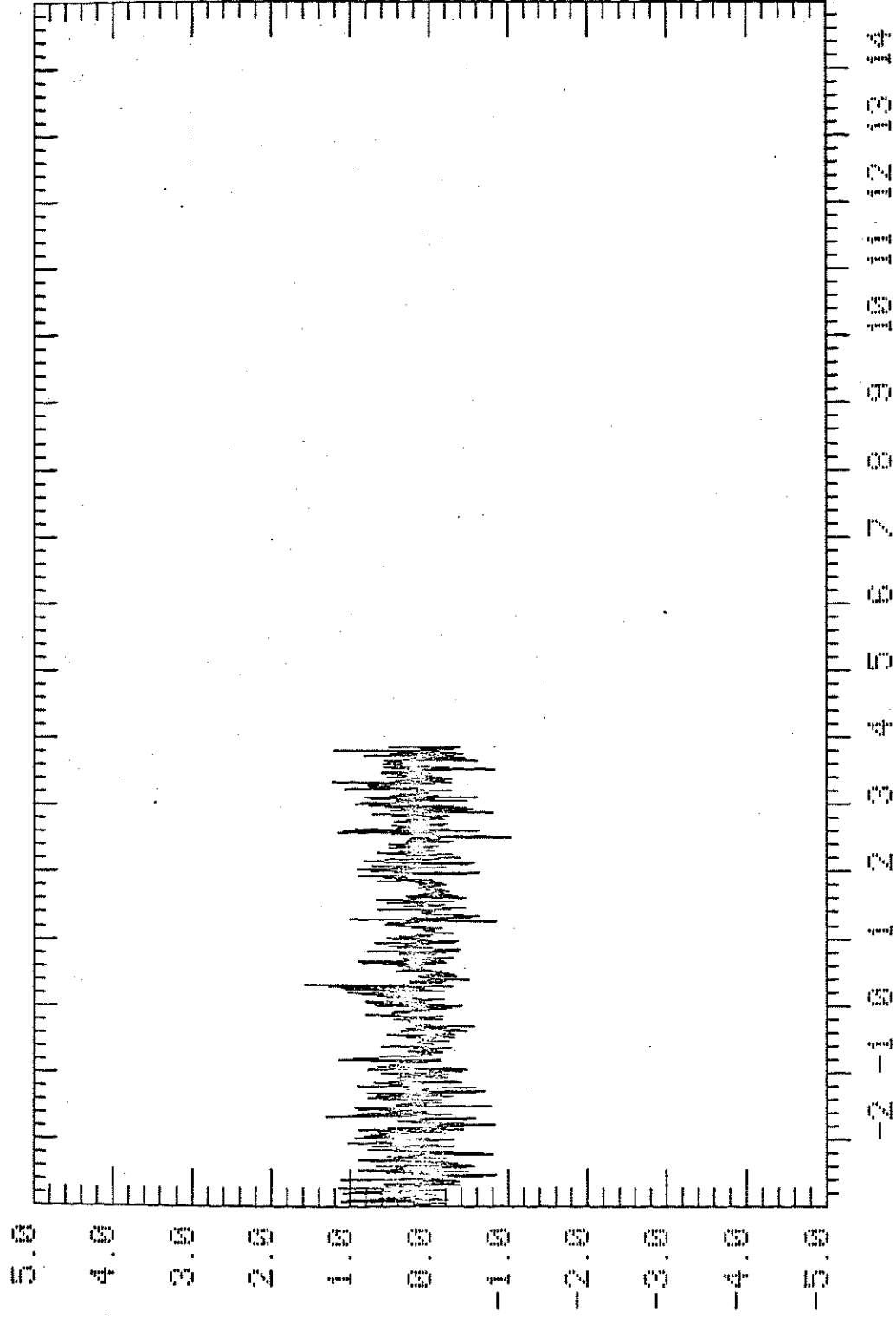
TIME FROM RELEASE (SECS*10**2)

TRIAL: 013 TYPE: UANA UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 499 N Y: 350 N Z: 5.9 N

MEAN OF RUN UP: 3.39 MEAN OF RUN DOWN: 6.39

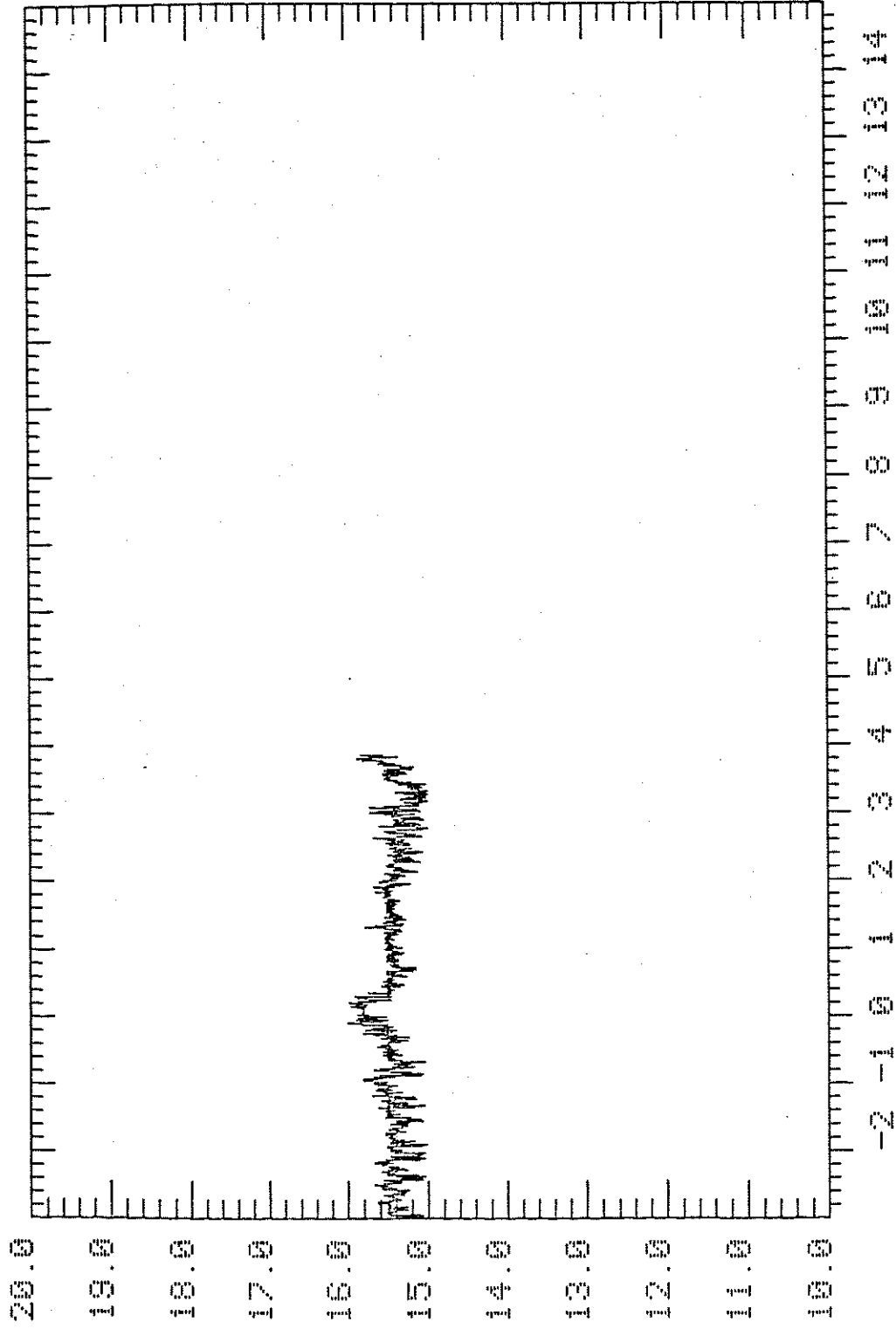
W I N D V E L O C I T Y



TIME FROM RELEASE (SECS*10**-2)

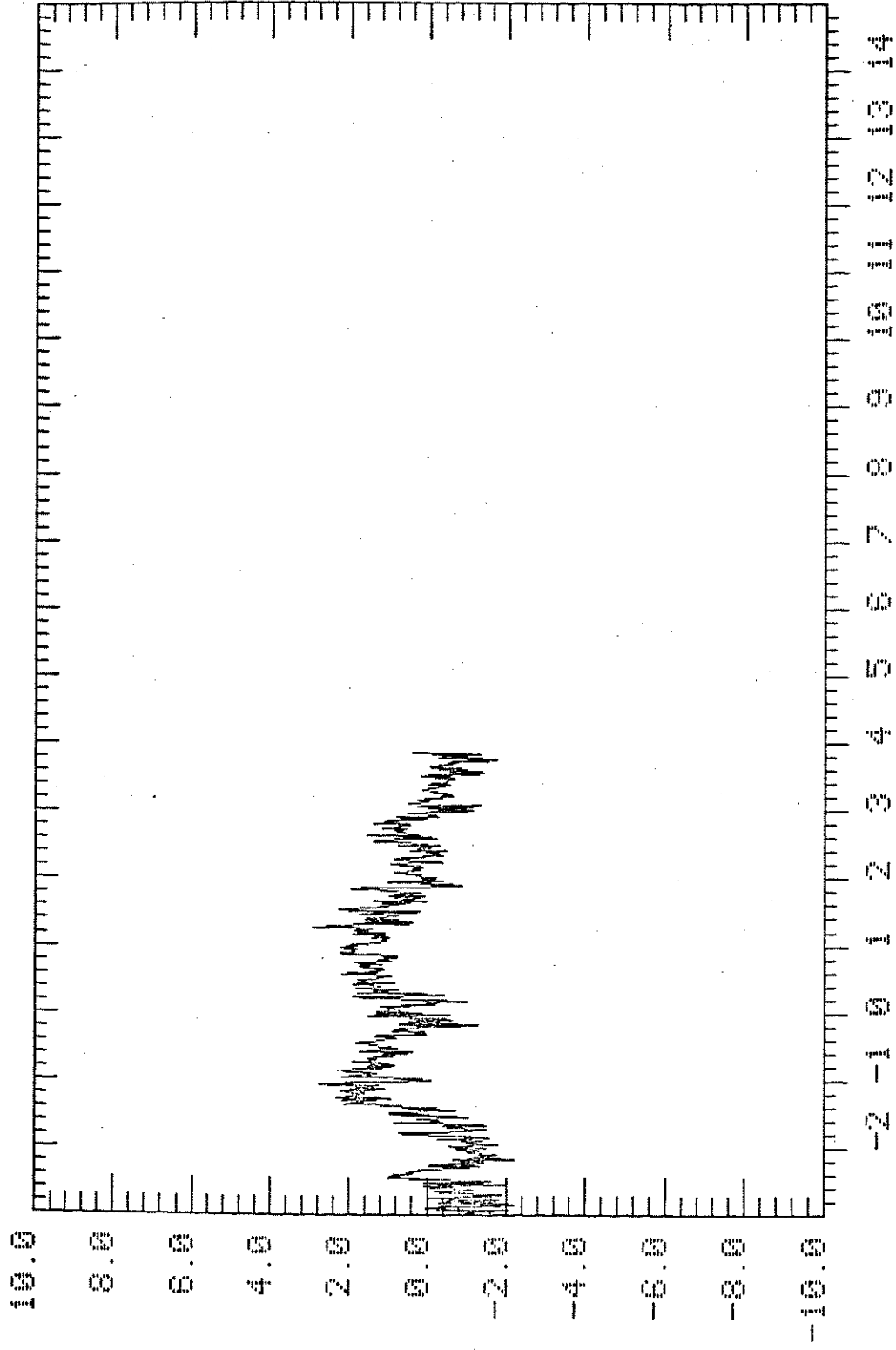
TRIAL: 813 TYPE: UAHM UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 400 M Y: 350 M Z: 5.0 M
MEAN OF RUN UP: 0.14 MEAN OF RUN DOWN: 0.22

T E M P E R A T U R E

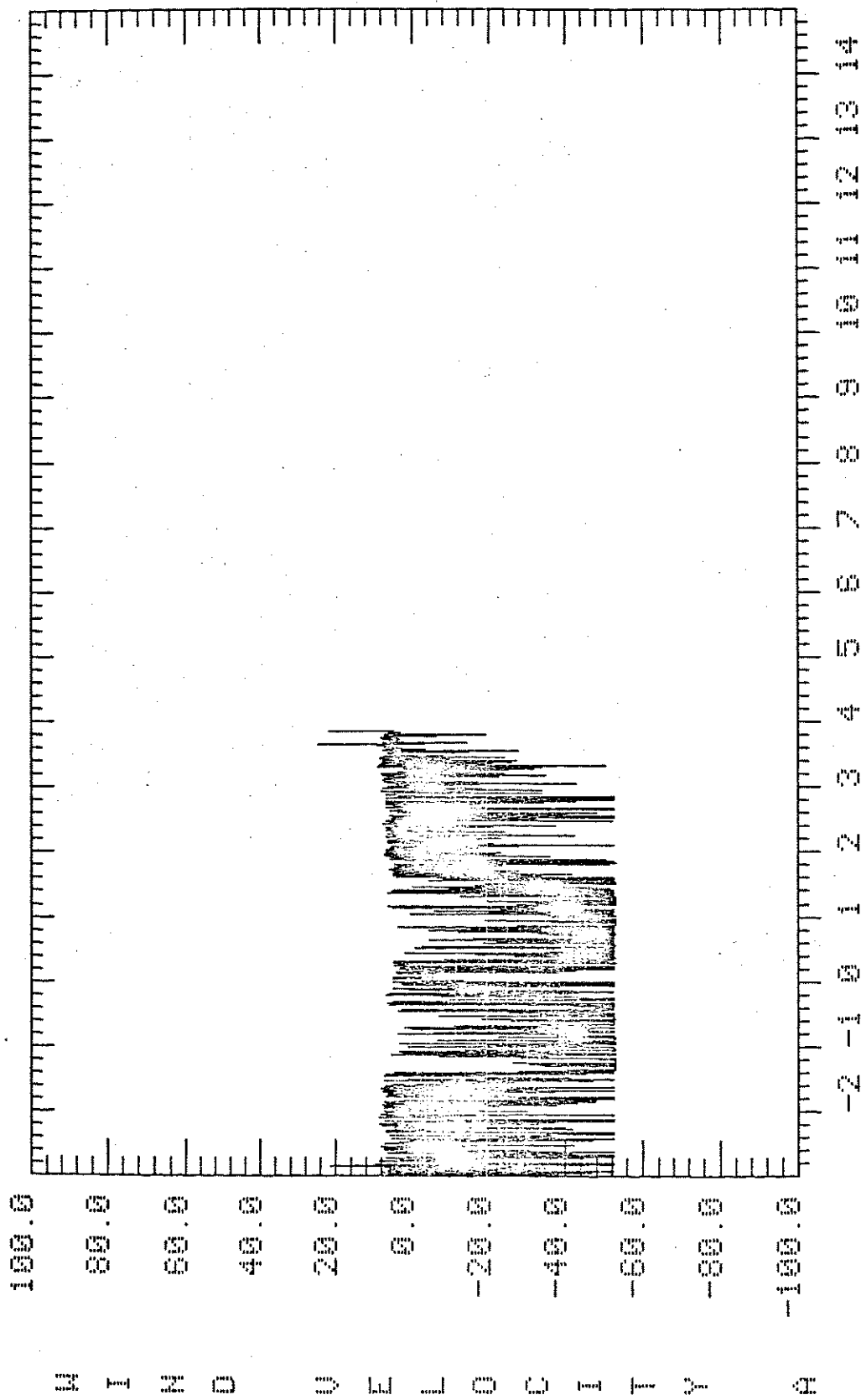


TRIAL: 013 TYPE: UAH UNITS: DEGREES C
AVERAGING TIME: 0.6 SEC X: 400 M Y: 350 M Z: 5.0 M
MEAN OF RUN UP: 15.14 MEAN OF RUN DOWN: 15.54

W I N D V E L O C I T Y



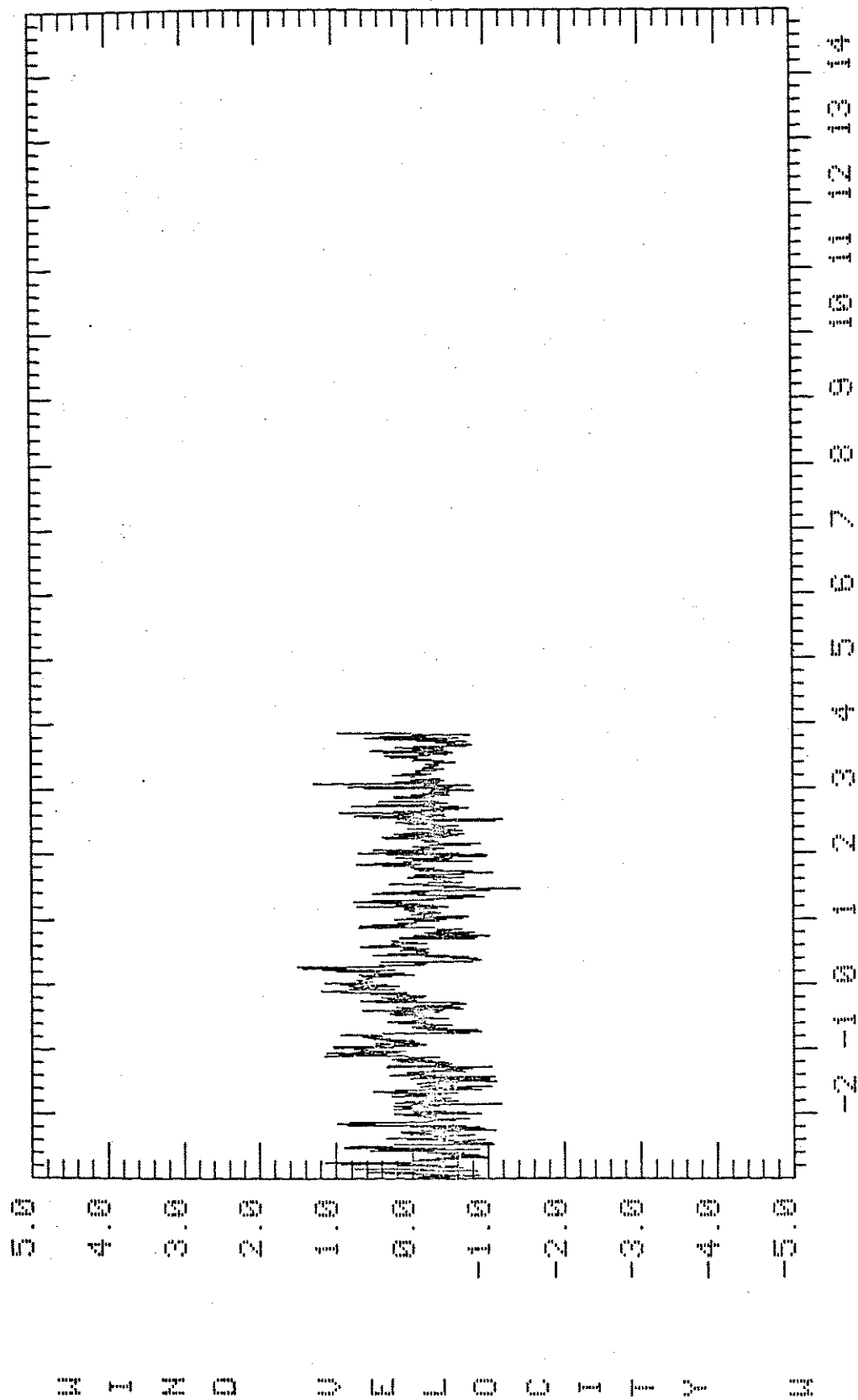
TRIAL: 013 TYPE: UAHB UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 400 M Y: 350 M Z: 20.0 M
MEAN OF RUN UP: -0.12 MEAN OF RUN DOWN: 0.60



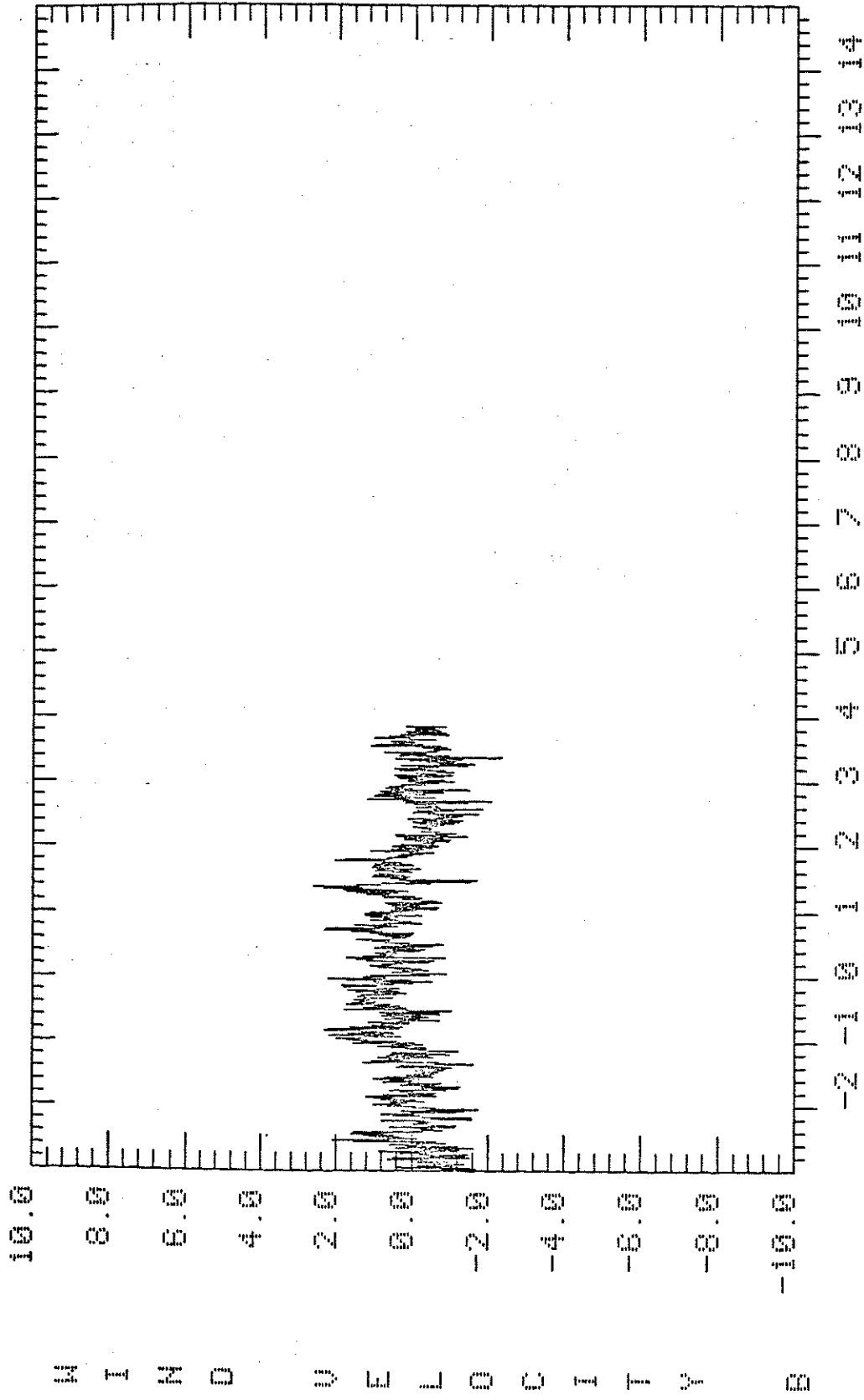
TRIAL: 913 TYPE: UANA UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 400 M Y: 350 M Z: 20.0 M

MEAN OF RUN UP: -1.60 MEAN OF RUN DOWN: 6.00



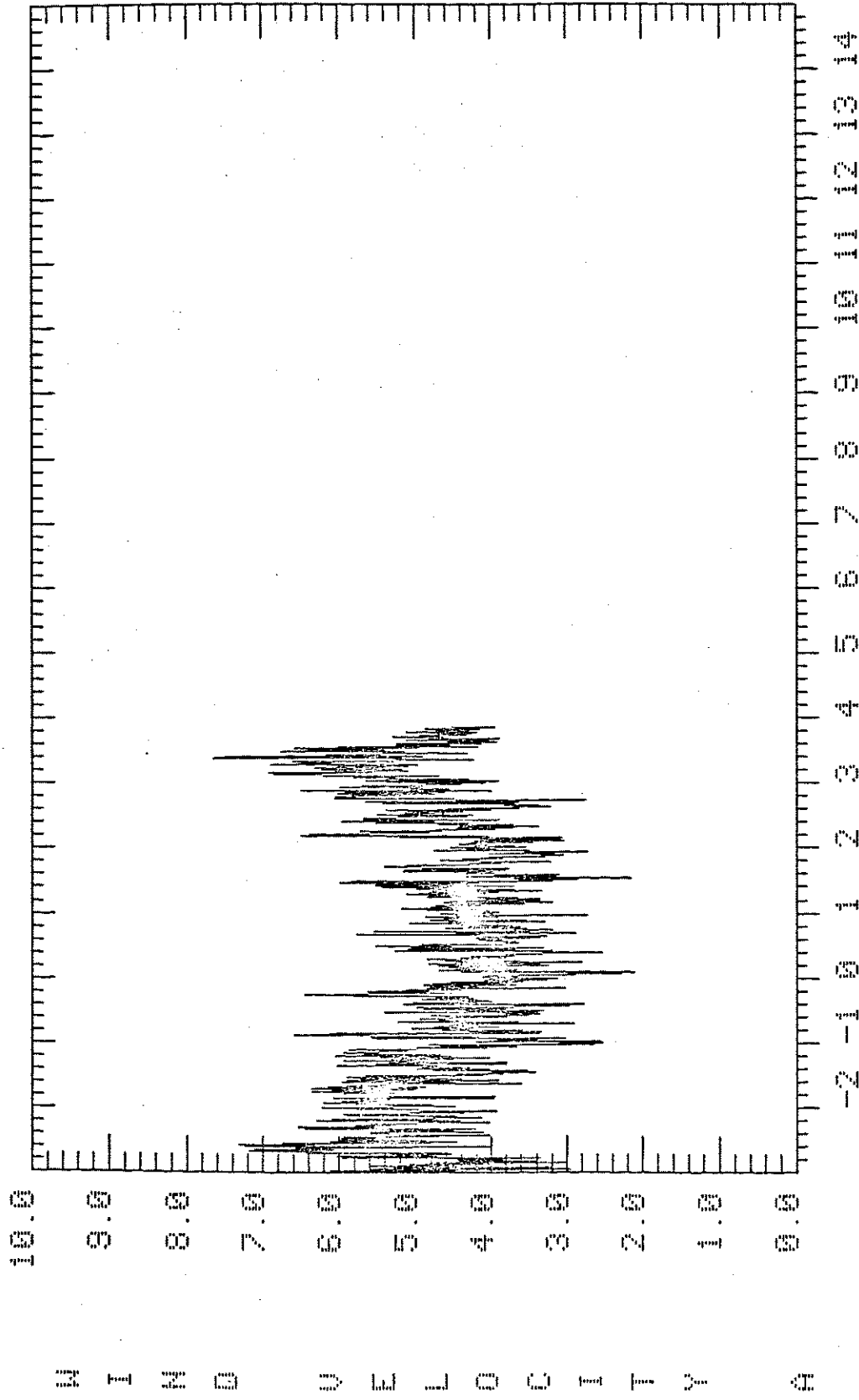
TRIAL: 913 TYPE: UAHH UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 400 M Y: 350 M Z: 20.0 M
MEAN OF RUN UP: 0.01 MEAN OF RUN DOWN: -0.14



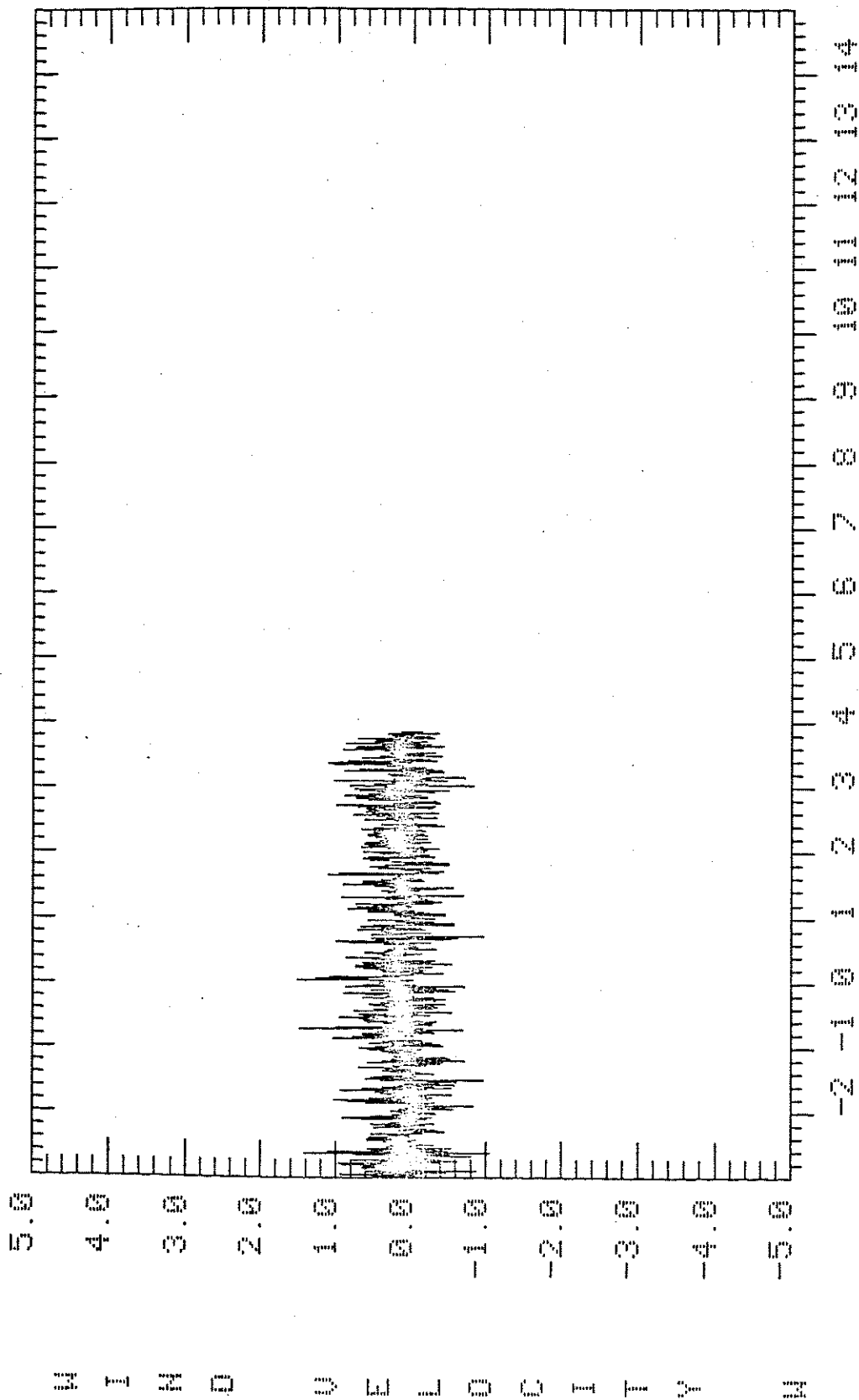
TRIAL: 013 TYPE: UWB UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 500 M Y: 350 M Z: 2.0 M

MEAN OF RUN UP: 0.34 MEAN OF RUN DOWN: 0.76



TRIAL: 913 TYPE: UANA UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 500 H Y: 350 H Z: 2.0 H
MEAN OF RUN UP: 3.23 MEAN OF RUN DOWN: 5.41

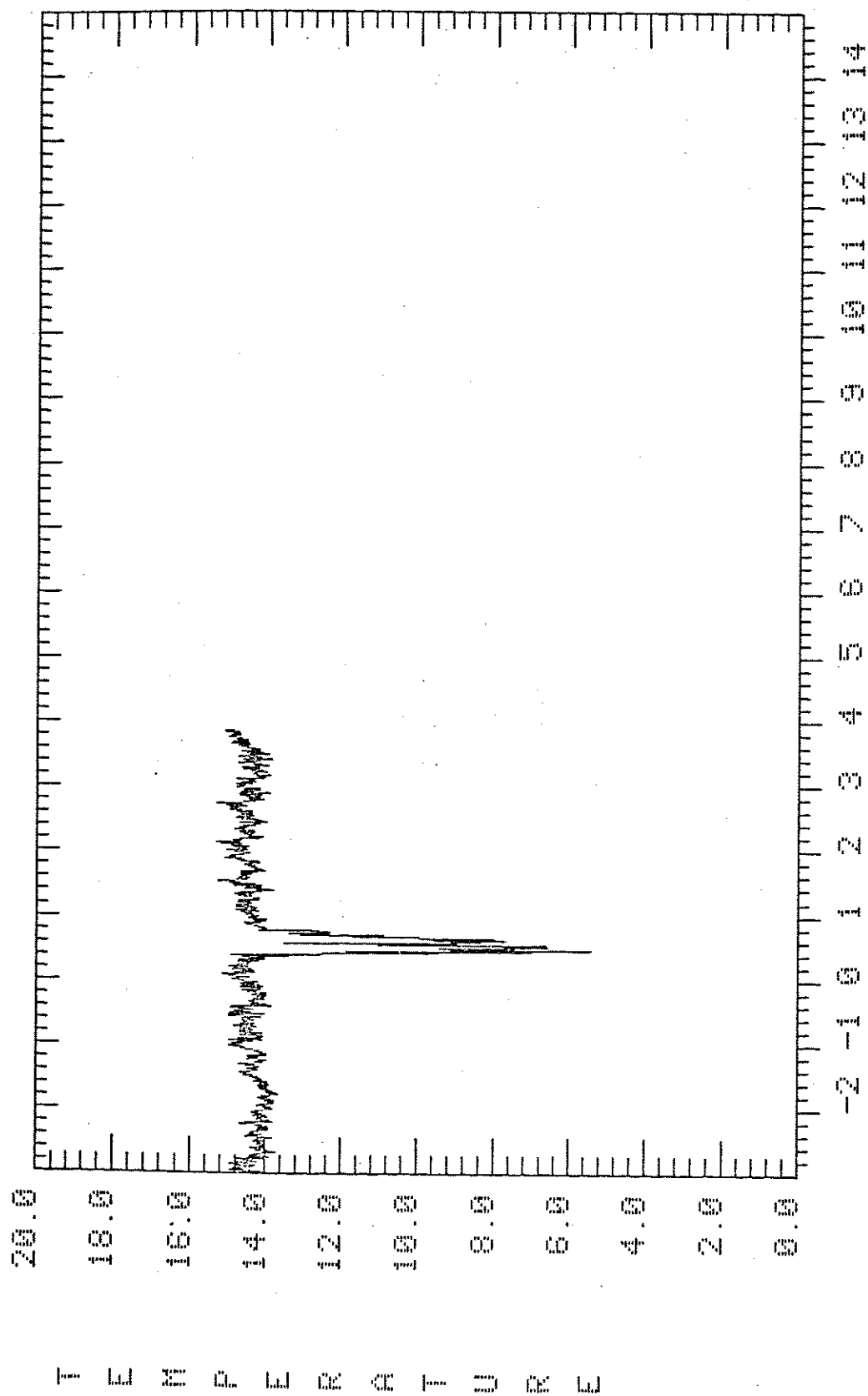


TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: UAHN UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 599 H Y: 359 H Z: 2.9 H

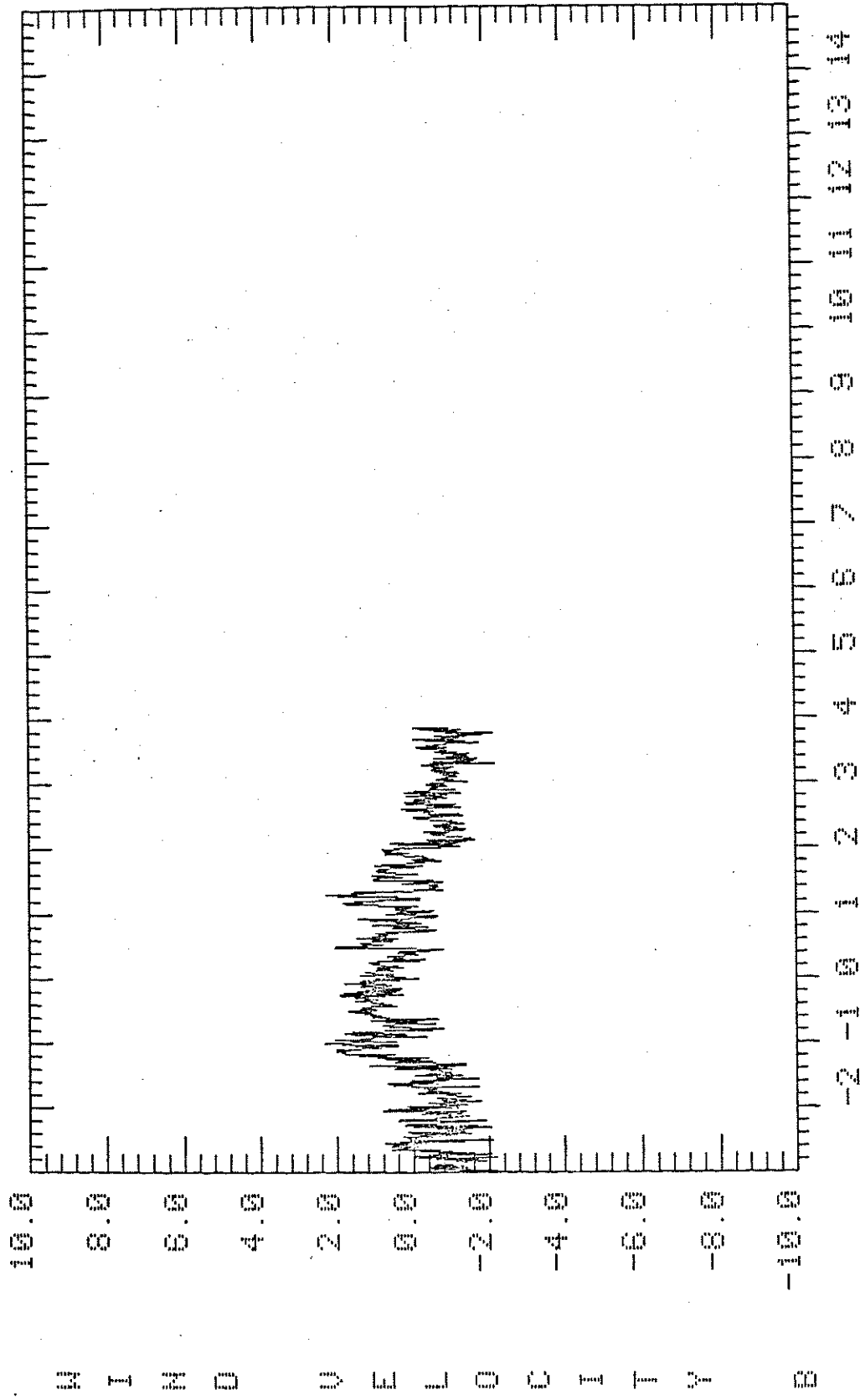
MEAN OF RUN UP: 0.07 MEAN OF RUN DOWN: 0.13



TRIAL: 013 TYPE: UANT UNITS: DEGREES C

AVERAGING TIME: 0.6 SEC X: 500 M Y: 350 M Z: 2.0 M

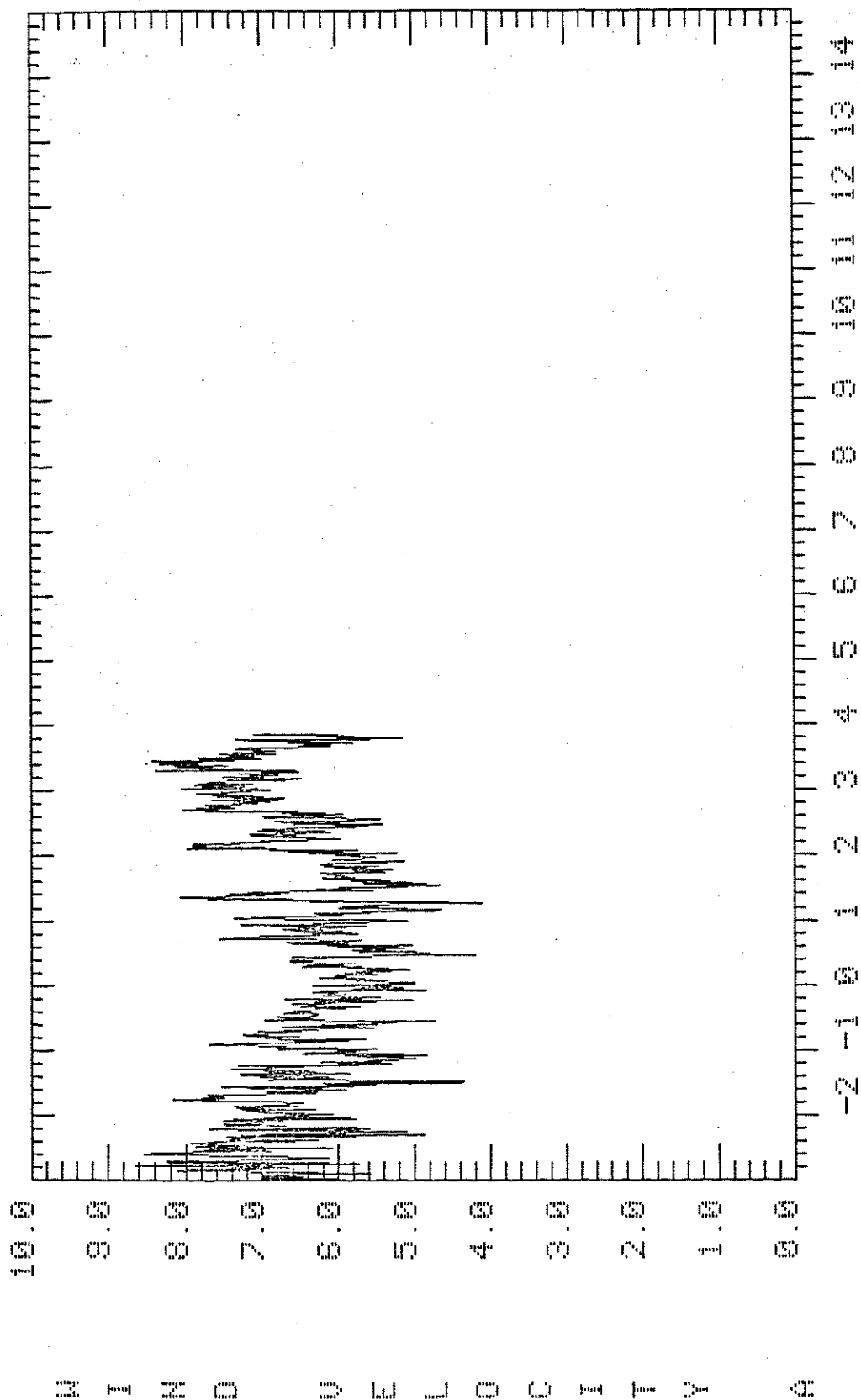
MEAN OF RUN UP: 13.77 MEAN OF RUN DOWN: 14.56



TRIAL: 013 TYPE: UAHB UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 599 M Y: 350 M Z: 15.0 M

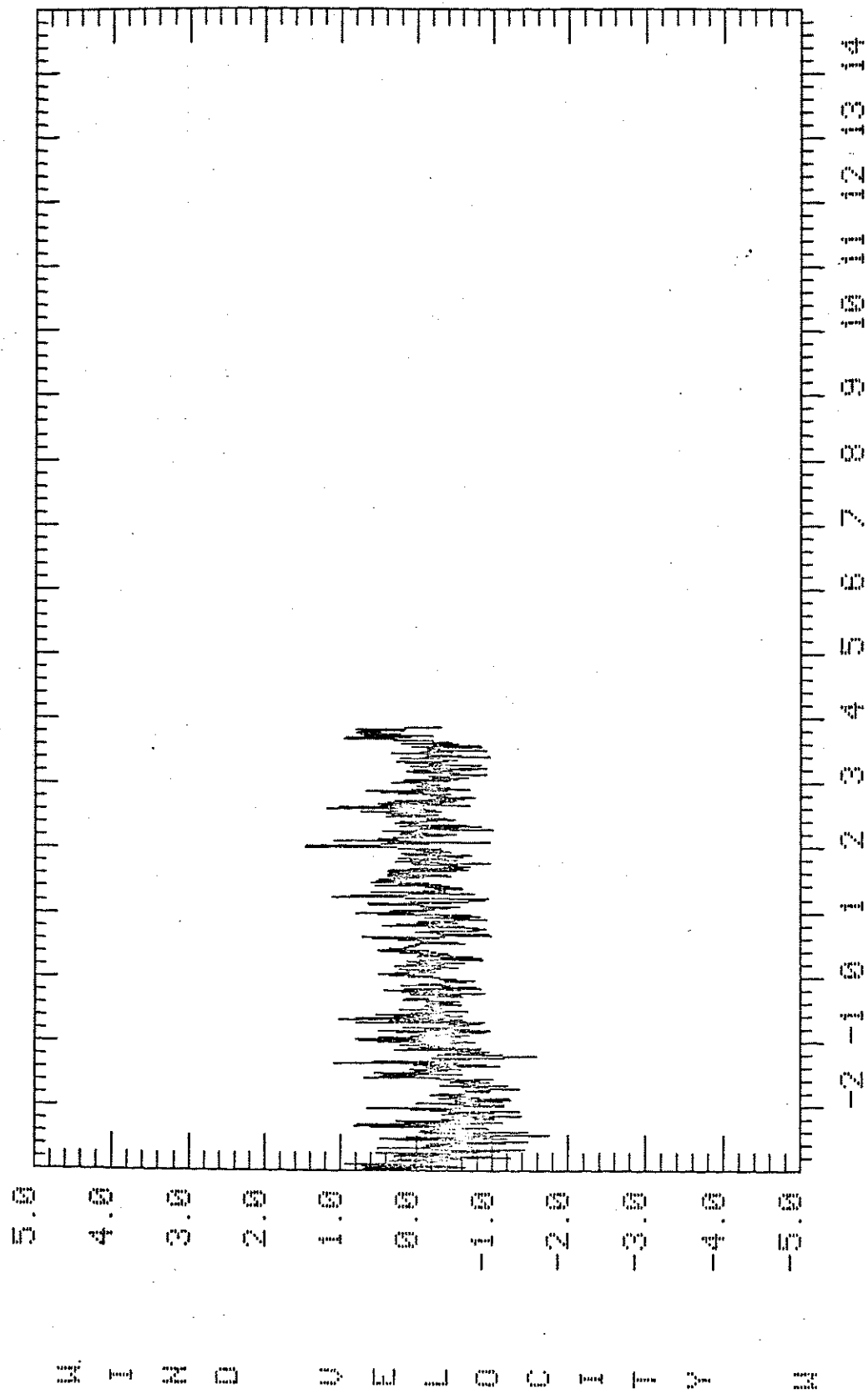
MEAN OF RUN UP: 0.04 MEAN OF RUN DOWN: 0.84



TRIAL: 013 TYPE: UANA UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 599 N Y: 359 N Z: 15.0 N

MEAN OF RUN UP: 4.50 MEAN OF RUN DOWN: 7.14

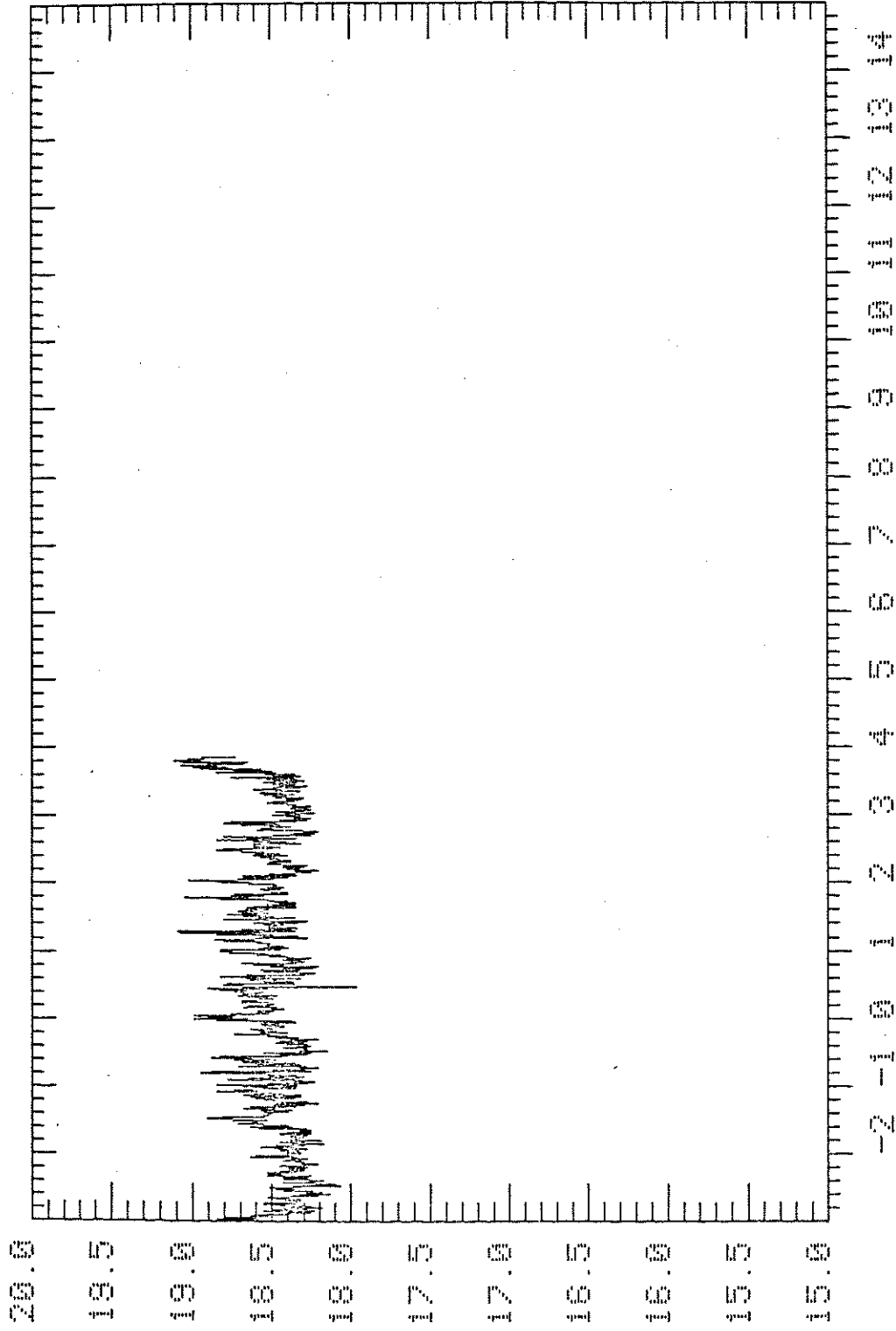


TRIAL: 013 TYPE: UAHN UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 593 M Y: 350 M Z: 15.0 M

MEAN OF RUN UP: -0.25 MEAN OF RUN DOWN: -0.13

T E M P E R A T U R E

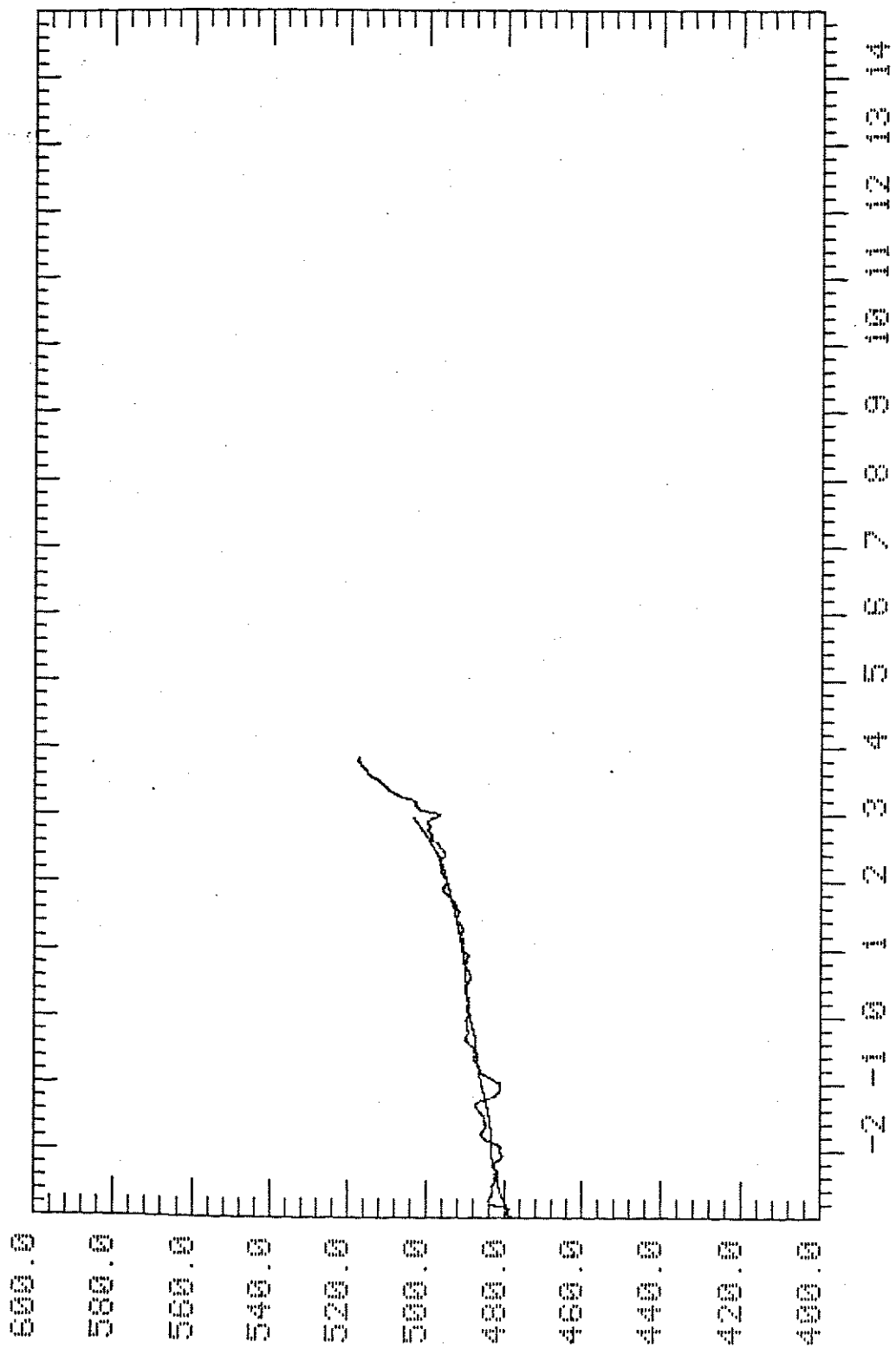


TRIAL: 013 TYPE: UAH UNITS: DEGREES C

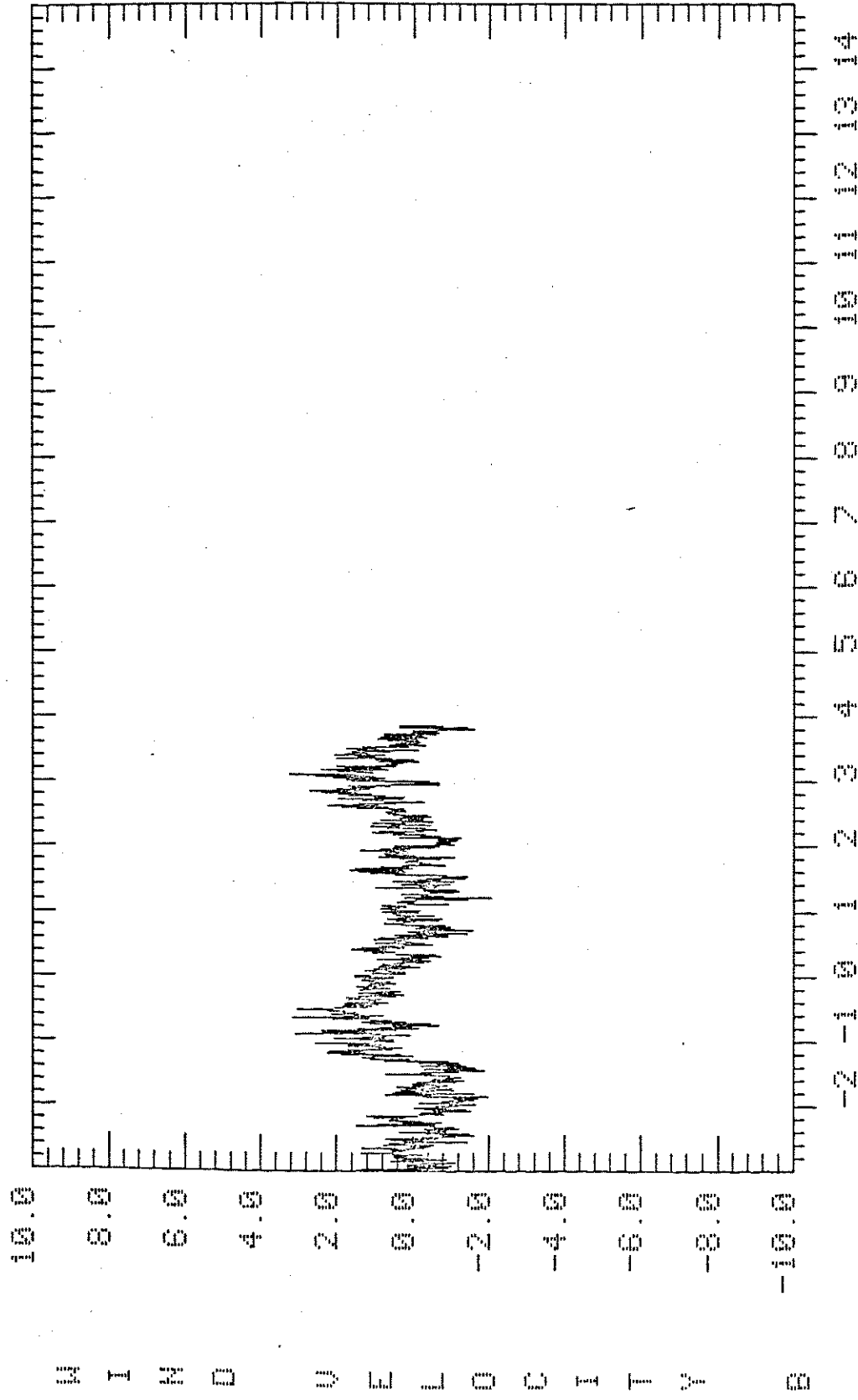
AVERAGING TIME: 0.6 SEC X: 500 M Y: 350 M Z: 15.0 M

MEAN OF RUN UP: 18.09 MEAN OF RUN DOWN: 18.72

I N S O L A T I O N



TRIAL: 013 TYPE: SOLA UNITS: W/M*2
AVERAGING TIME: 0.6 SEC X: 700 N Y: 500 N Z: 0.4 M
MEAN OF RUN UP: 397.66 MEAN OF RUN DOWN: 531.51

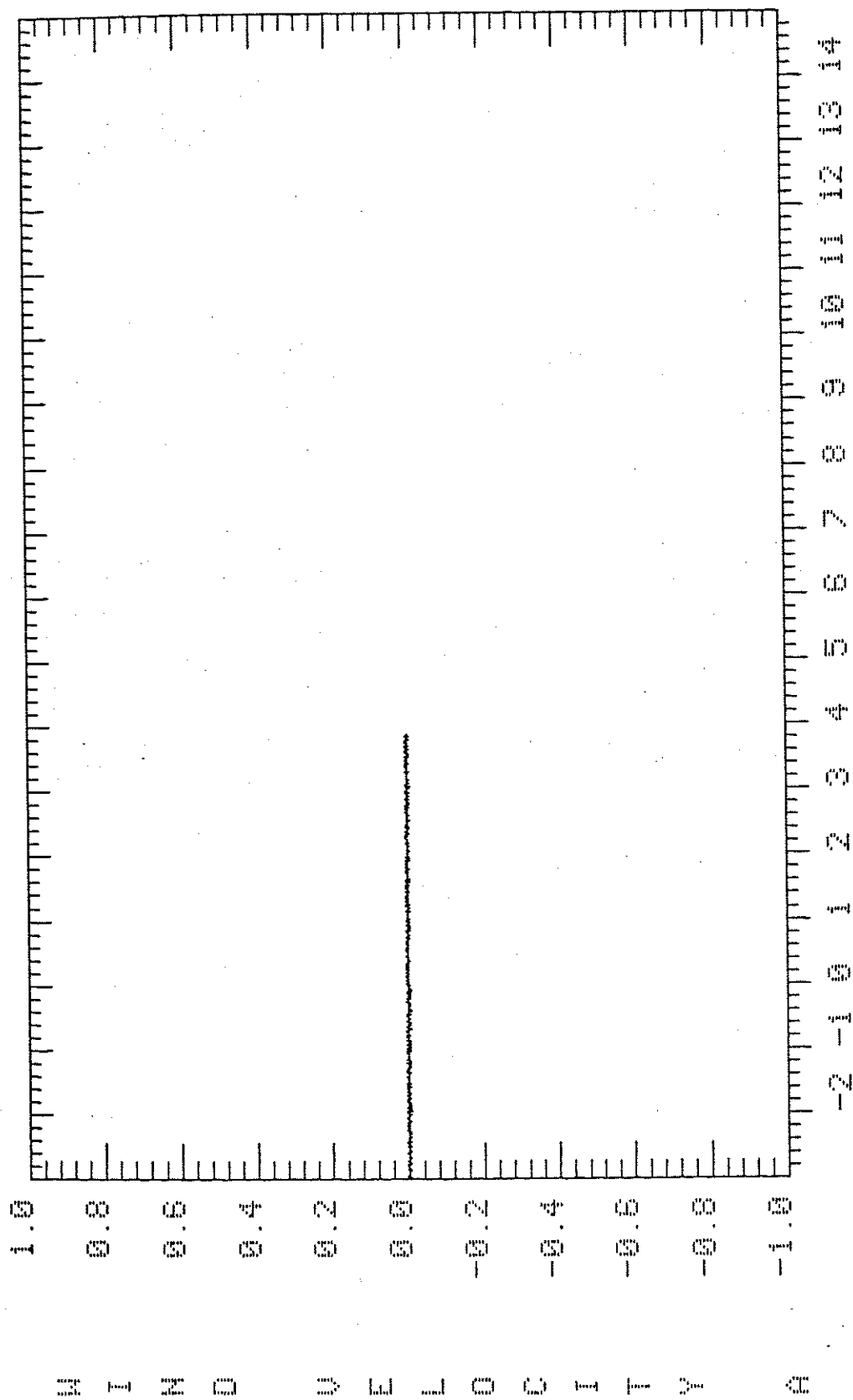


TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: UAHB UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 300 M Y: 550 M Z: 2.0 M

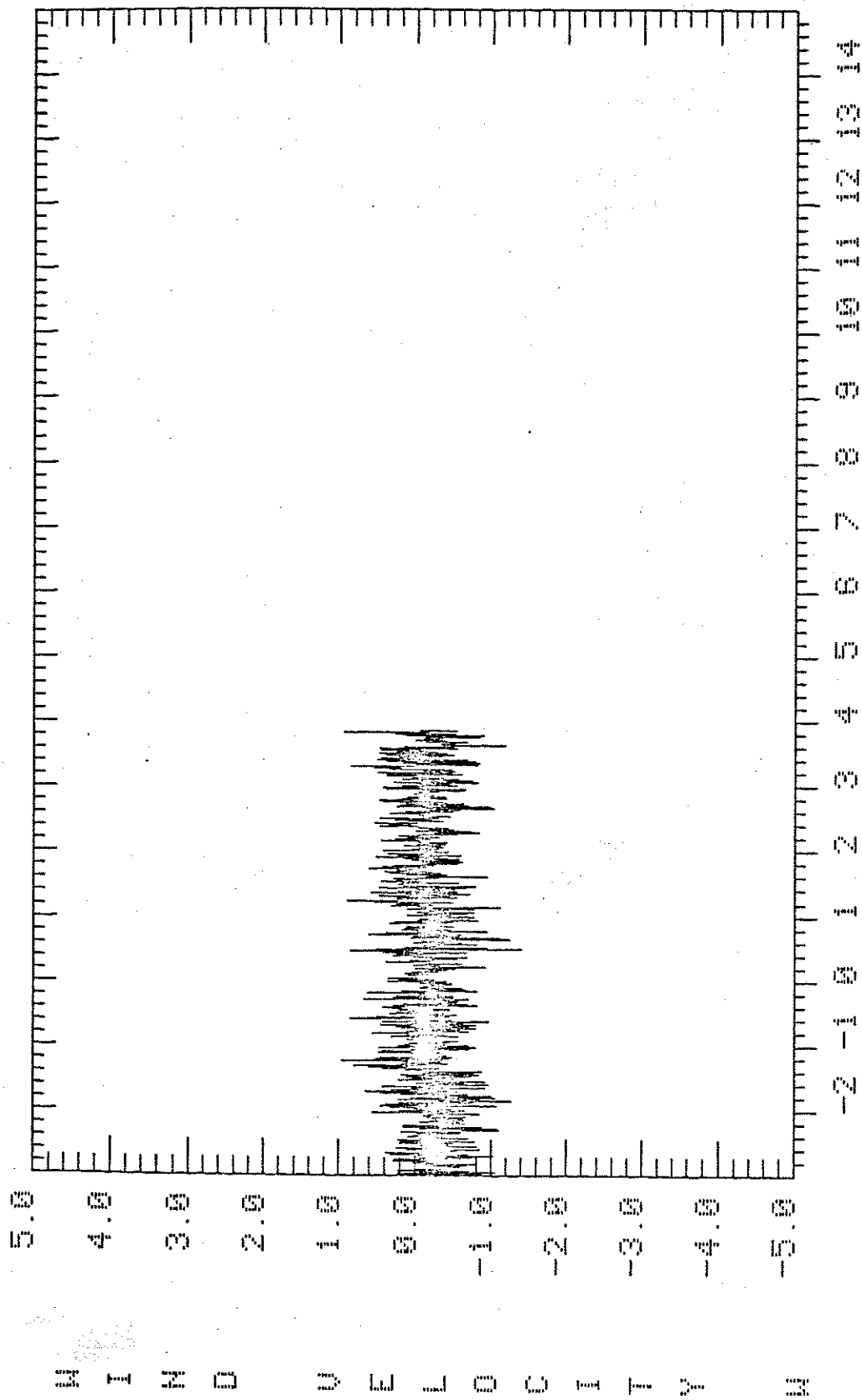
MEAN OF RUN UP: -0.48 MEAN OF RUN DOWN: 0.98



TRIAL: 013 TYPE: UANA UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 300 M Y: 550 M Z: 2.0 M

MEAN OF RUN UP: 0.00 MEAN OF RUN DOWN: 0.00

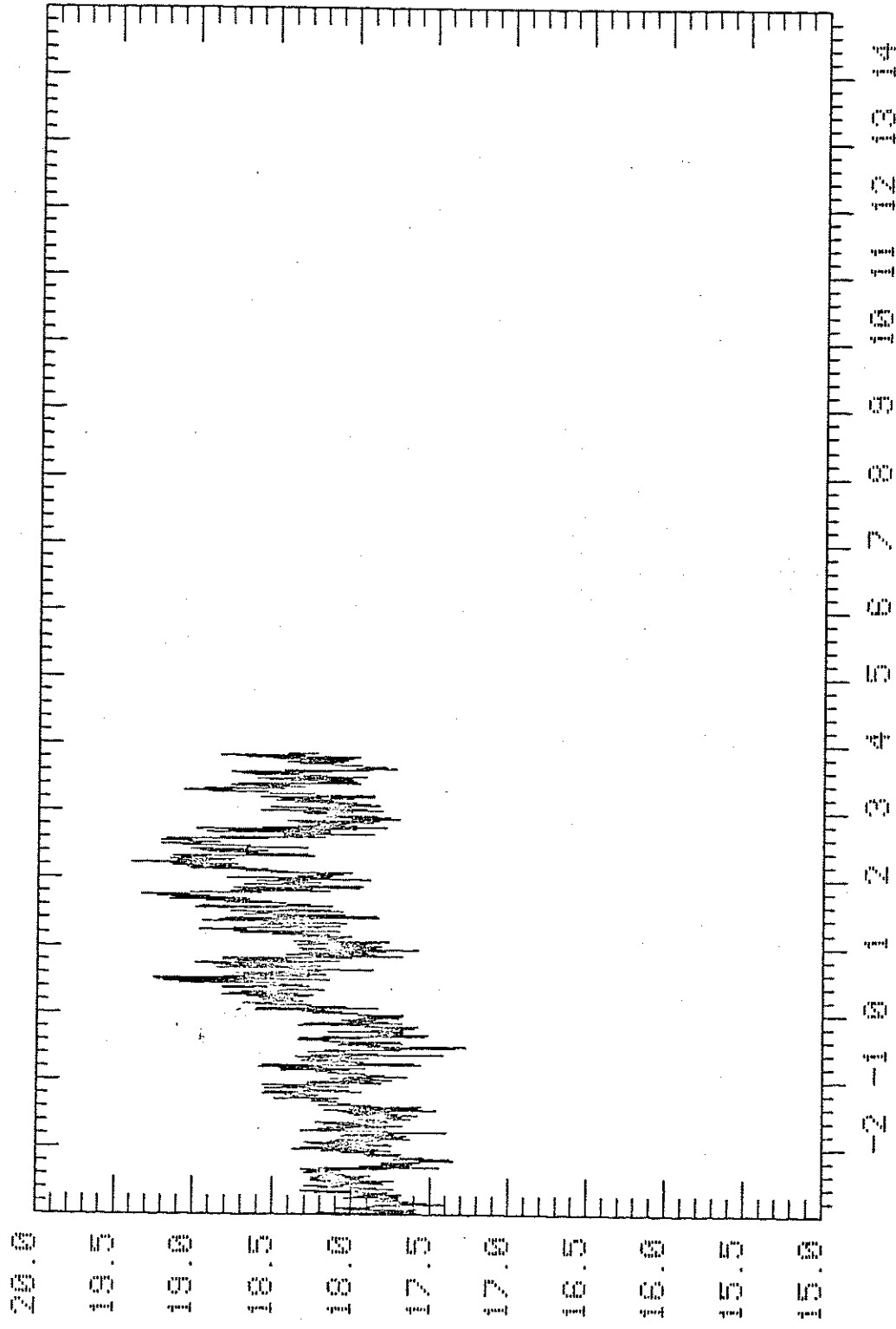


TRIAL: 013 TYPE: UAHN UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 300 M Y: 550 M Z: 2.0 M

MEAN OF RUN UP: -0.12 MEAN OF RUN DOWN: -0.17

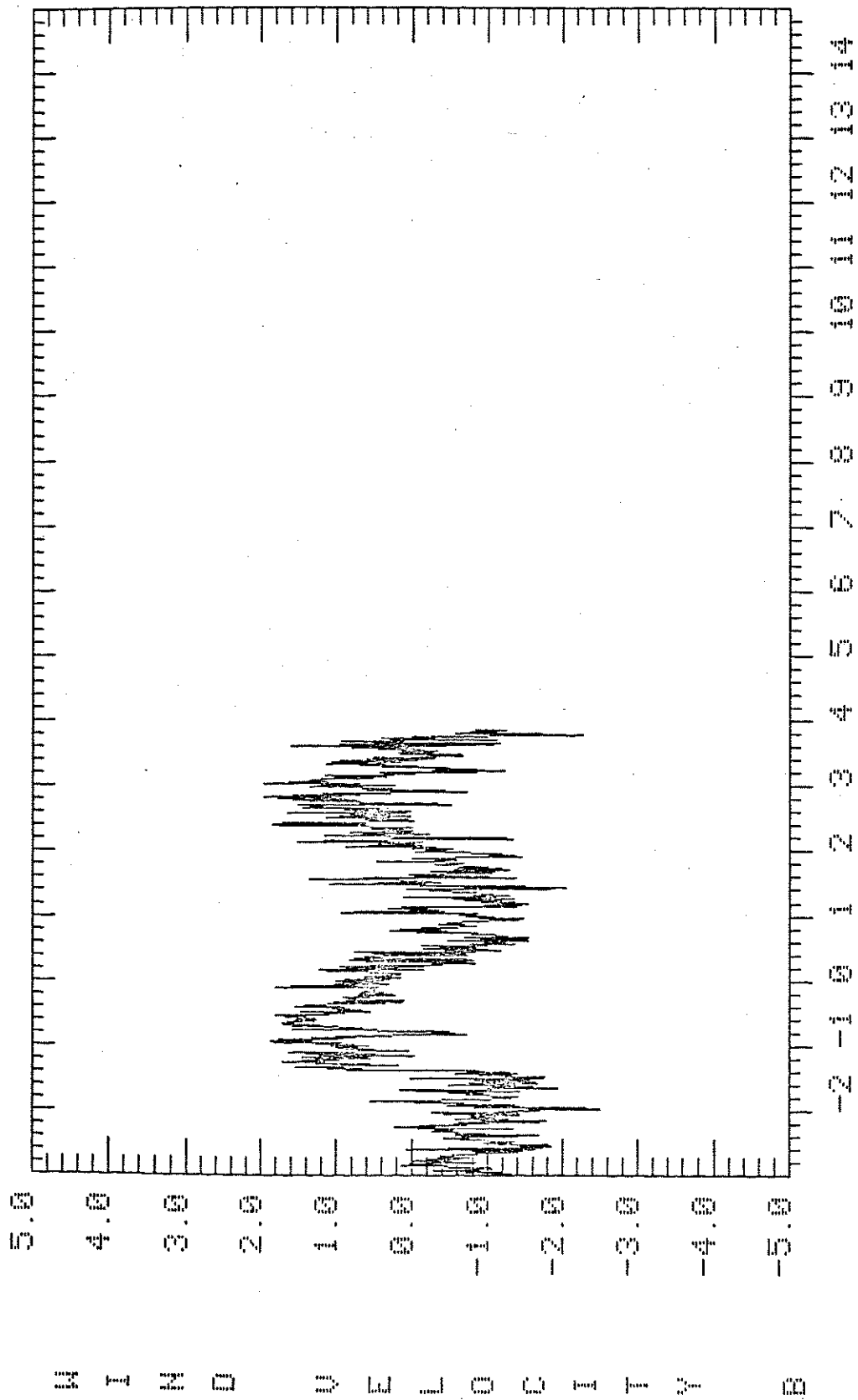
T E M P E R A T U R E



TRIAL: 613 TYPE: UANT UNITS: DEGREES C

AVERAGING TIME: 0.6 SEC X: 300 M Y: 550 M Z: 2.0 M

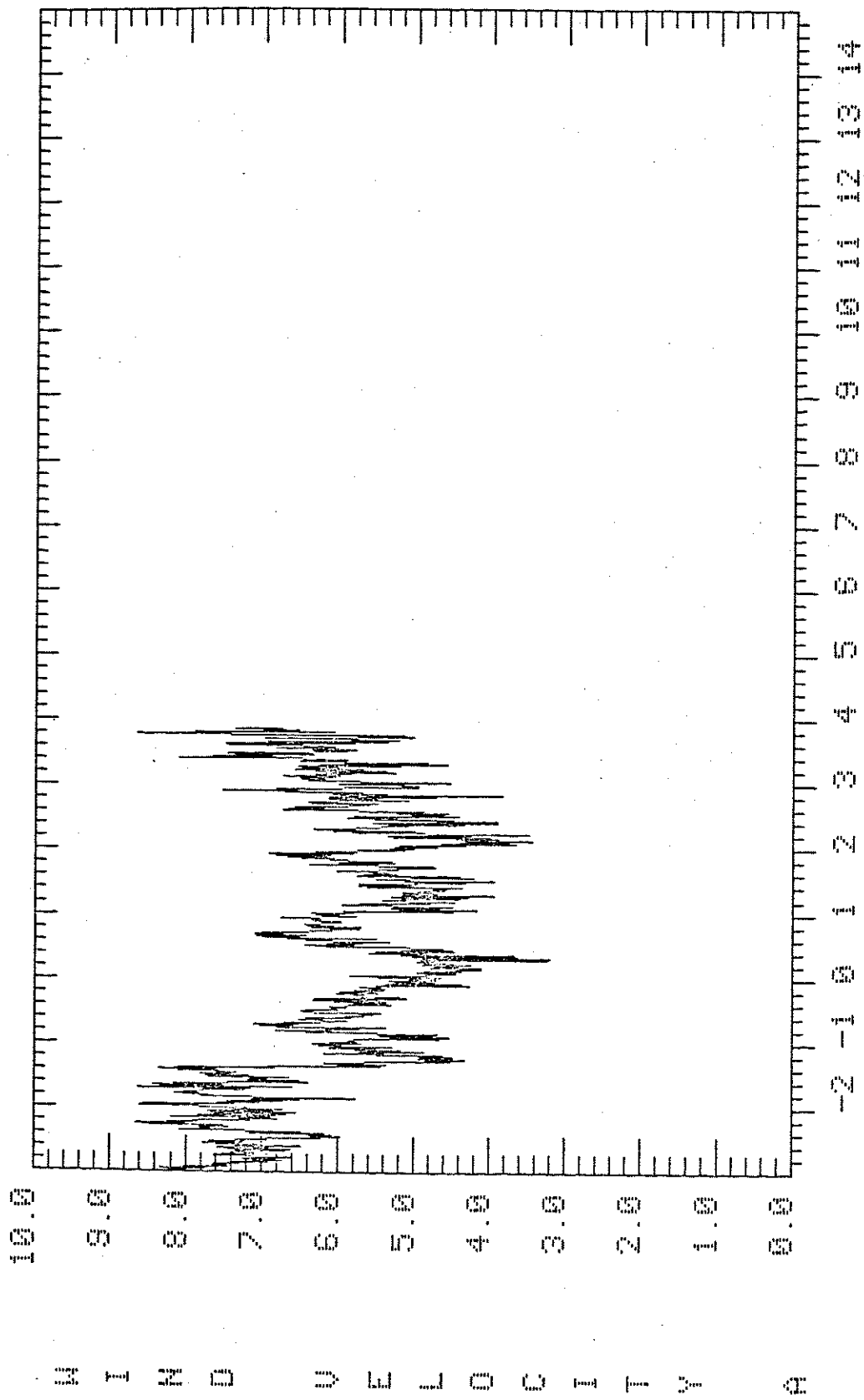
MEAN OF RUN UP: 17.77 MEAN OF RUN DOWN: 18.40



TRIAL: 013 TYPE: UAHB UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 300 M Y: 550 M Z: 15.0 M

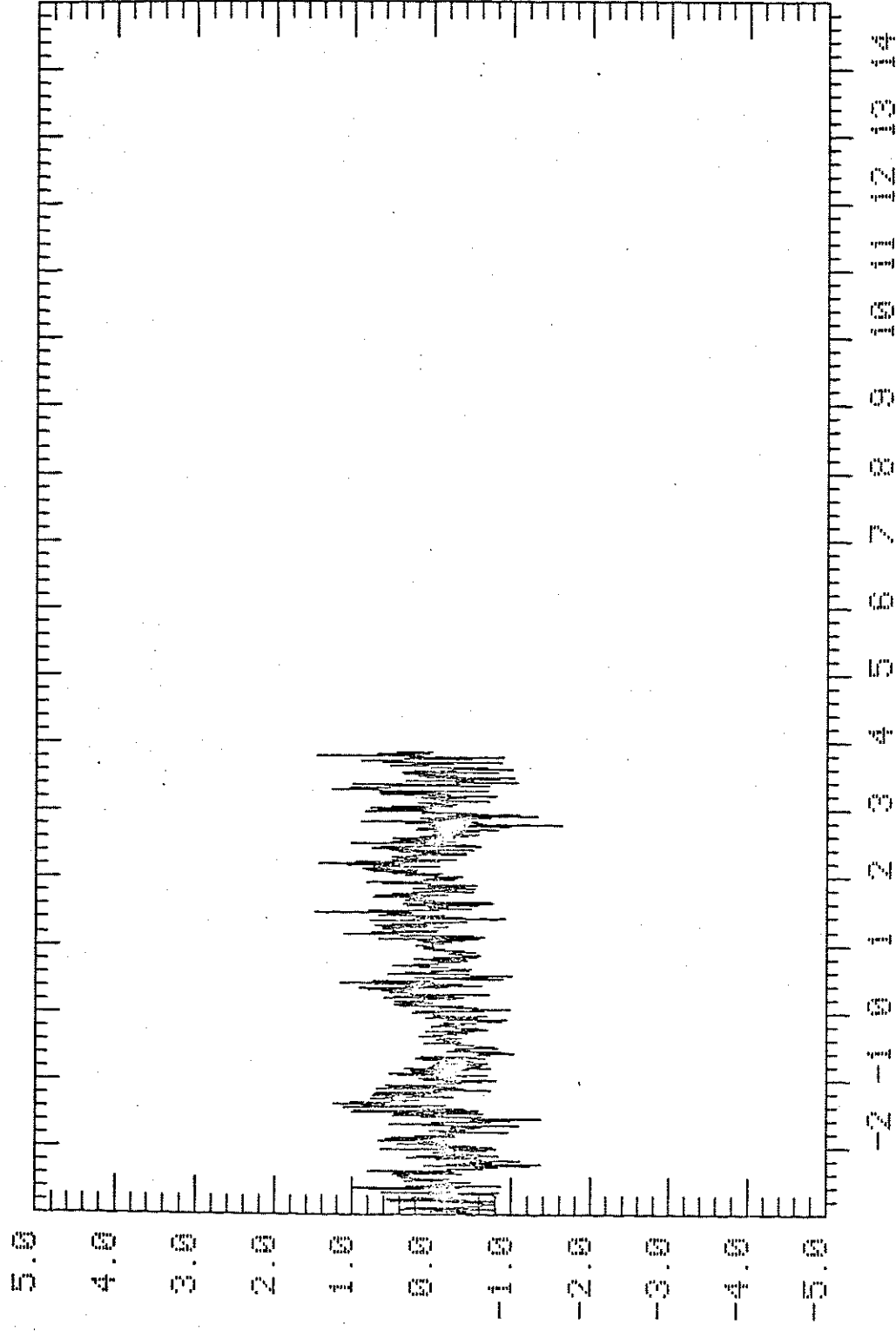
MEAN OF RUN UP: -0.72 MEAN OF RUN DOWN: 0.63



TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: UANA UNITS: M/S
 AVERAGING TIME: 0.6 SEC X: 300 N Y: 550 N Z: 15.0 M
 MEAN OF RUN UP: 4.60 MEAN OF RUN DOWN: 6.93

W I N D U F L O C I T Y



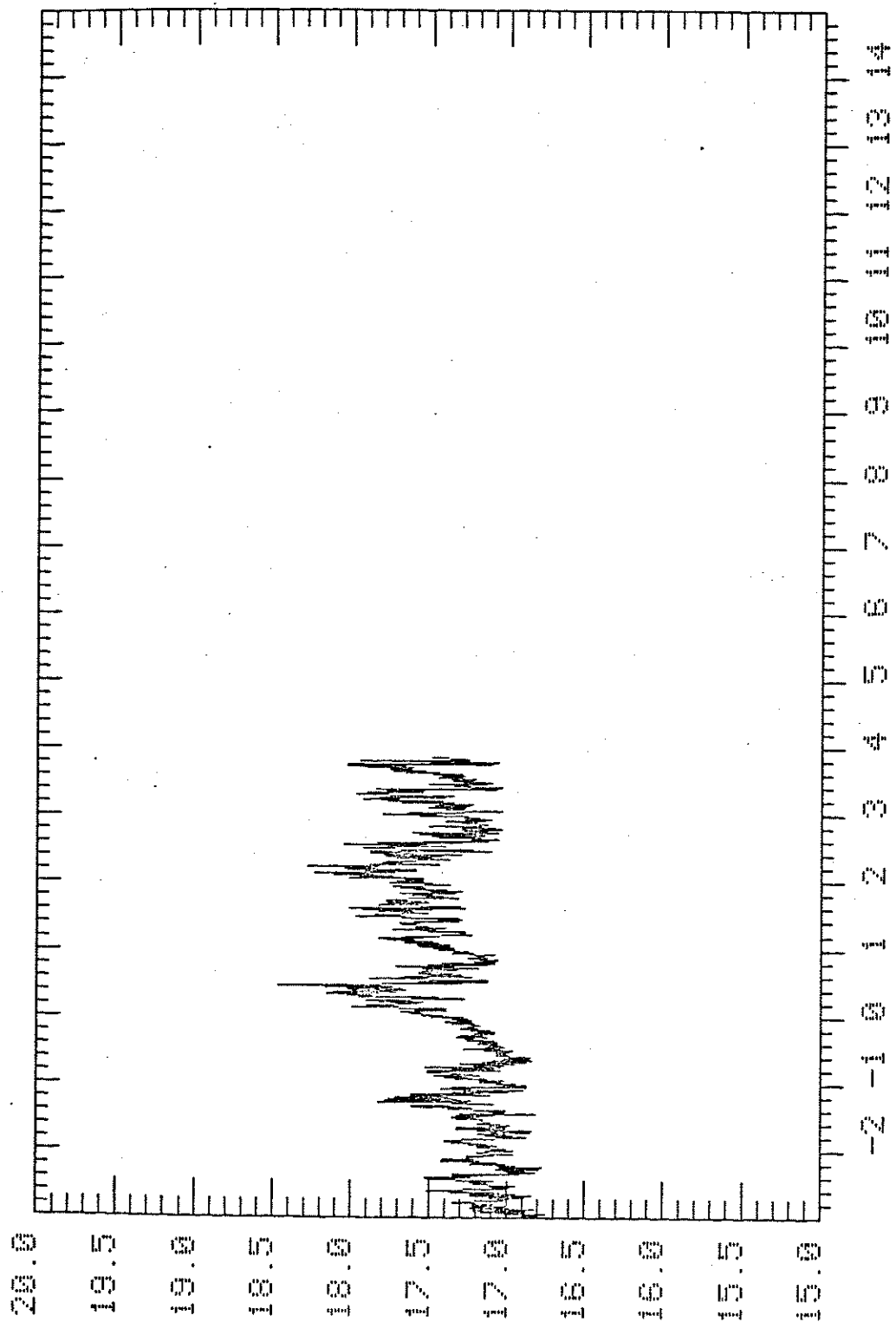
TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: WIND UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 300 M Y: 550 M Z: 15.0 M

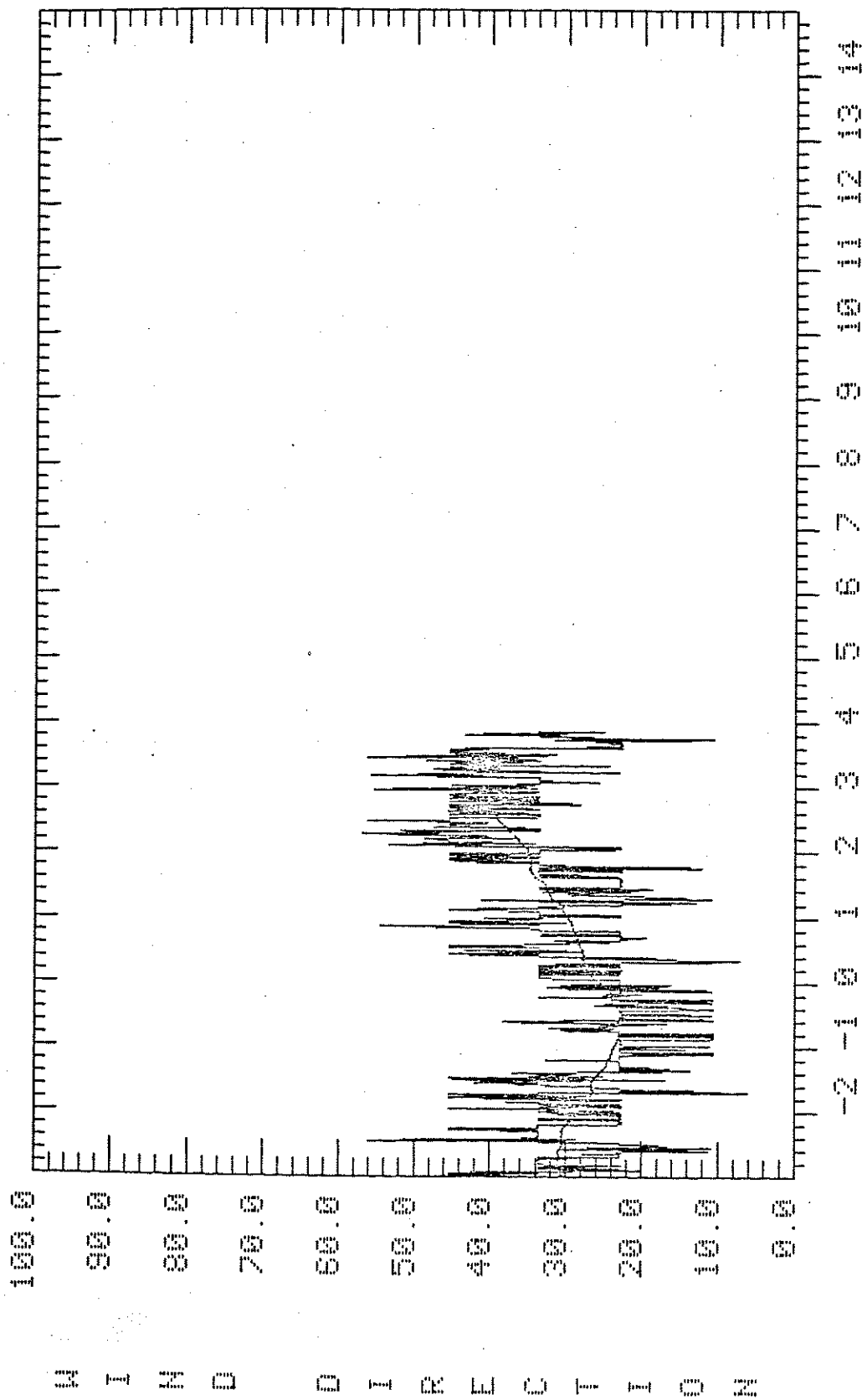
MEAN OF RUN UP: -0.15 MEAN OF RUN DOWN: -0.10

T E M P E R A T U R E



TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: UANT UNITS: DEGREES C
AVERAGING TIME: 0.6 SEC X: 300 N Y: 550 N Z: 15.0 M
MEAN OF RUN UP: 16.81 MEAN OF RUN DOWN: 17.57

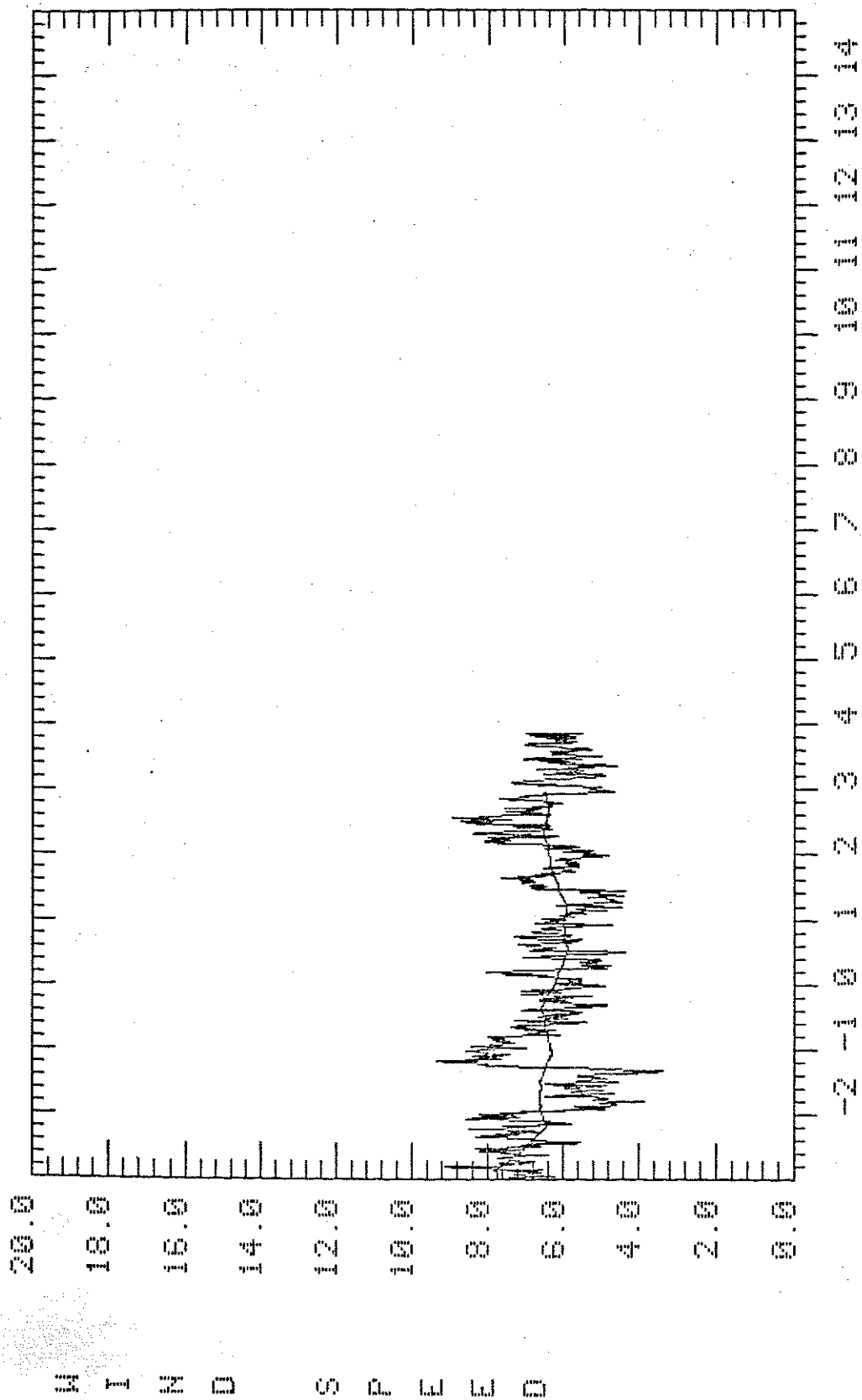


TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: WIND UNITS: DEGREES

AVERAGING TIME: 0.6 SEC X: 400 M Y: 950 M Z: 10.0 M

MEAN OF RUN UP: 33.43 MEAN OF RUN DOWN: 26.92

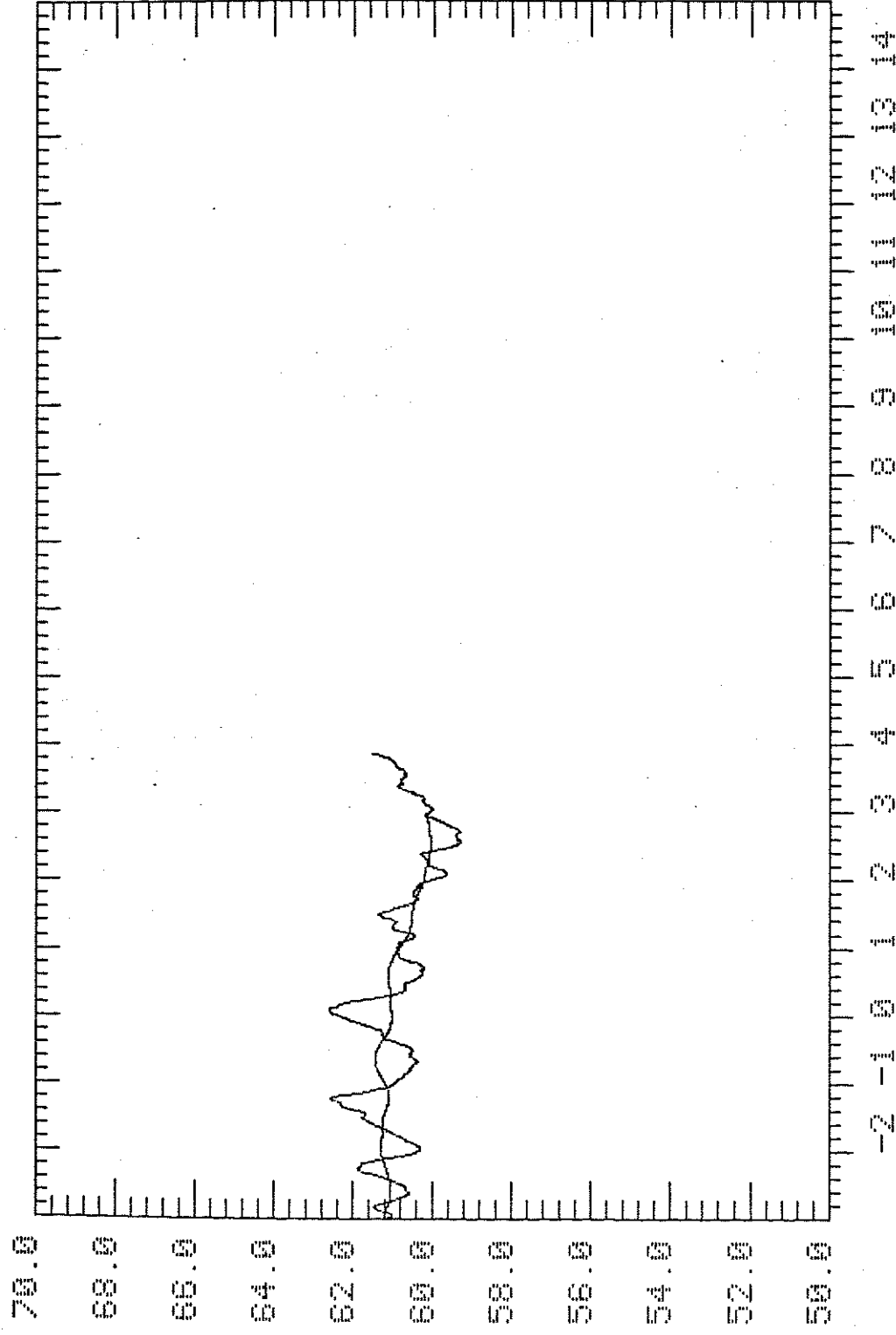


TRIAL: 013 TYPE: WSPD UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 400 M Y: 950 M Z: 10.0 M

MEAN OF RUN UP: 4.79 MEAN OF RUN DOWN: 7.63

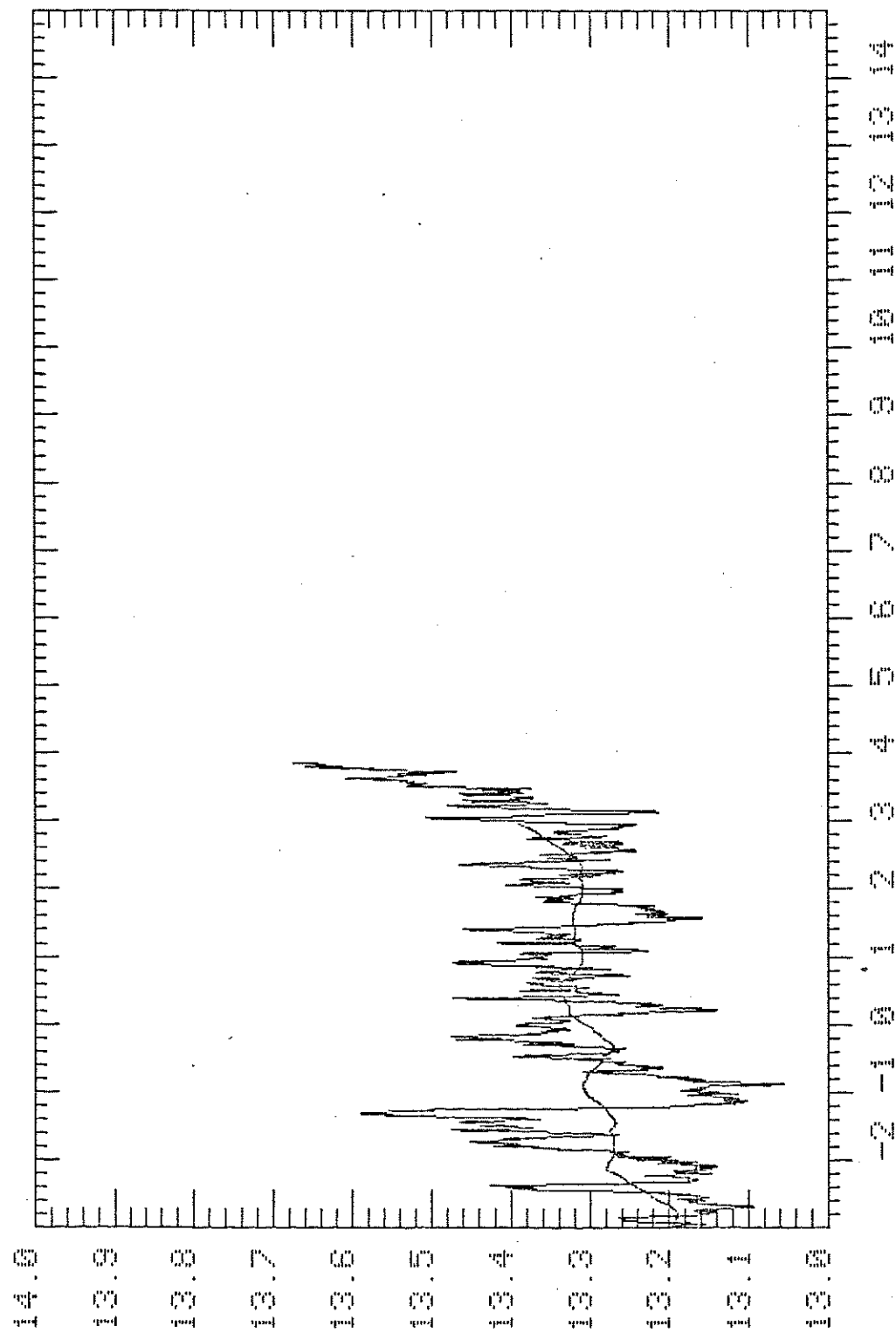
H U N D R E D I T Y



TRIAL: 013 TYPE: RHUM UNITS: PER CENT

AVERAGING TIME: 0.6 SEC X: 400 M Y: 950 M Z: 10.0 M

MEAN OF RUN UP: 68.78 MEAN OF RUN DOWN: 55.59



TIME FROM RELEASE (SECS*10**-2)

TRIAL: 013 TYPE: AIRT UNITS: DEGREES C

AVERAGING TIME: 0.6 SEC X: 400 M Y: 950 M Z: 10.0 M

MEAN OF RUN UP: 12.65 MEAN OF RUN DOWN: 13.53

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