HEALTH AND SAFETY EXECUTIVE

HEAVY GAS DISPERSION TRIALS THORNEY ISLAND 1982-3

DATA FOR TRIAL 005/1

Research and Laboratory Services Division
Red Hill, Sheffield S3 7HQ Tel: 0742 78141

8 Trials 24 to 29

The correct heights for the gas sensors on the mast at (372,228) are 0.4, 2.4 and 4.4 metres, not 0.4, 1.4 and 2.4 as shown. In trials 26 and 27, where the mast was in the cloud, gas was detected at a height 2.4 m as shown on page G05. The height shown on page G05 is therefore correct.

9 Trial 23

Pages E05 and E17 have been inverted. Although the page numbers are incorrect, the positional information on the plots is correct.

10 Trials 26 to 28

The key to the instrument list shows

BE = Building east side i.e. to right of axis

BW = Building west side i.e. to left of axis

This should be

BE = Building east side i.e. to left of axis

BW = Building west side i.e. to right of axis

I shall be pleased to answer any queries arising from the above changes.

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HEALTH AND SAFETY EXECUTIVE

HEAVY GAS DISPERSION TRIALS
THORNEY ISLAND 1982-3

Data for Trial 005/I

Research and Laboratory Services Division
Broad Lane, Sheffield S3 7HQ

THORNEY ISLAND TRIALS SPILL 005 3 AUGUST 1982

SUMMARY INFORMATION AT THE TIME OF THE SPILL

Gas released at:	14:27:00 hrs
Freon 12/Nitrogen mixture: relative density	1.69
Number of smoke canisters discharged:	4
Mean Wind Speed at 10 m height:	
During main data collection period:	4.6 m/s
From 5 minute cyclic data just before the release:	4.7 m/s
Mean Wind Heading ('A' station) - (relative to the centre line of the array)	-3.2°
Relative Humidity (at 10 m height)	64.1%
Insolation	552 W/m^2
Ambient Air Temperature (at 9 m height)	22.2°C
Treated Runway Surface Temperature	26.4°C
Grass Surface Temperature	30.8°C
Observed Cloud Cover	6/8

NB Positive angles are to the right (clockwise) of the centre line when looking downwind of the gas bag.

STABILITY CONDITION

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

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

THORNEY ISLAND TRIALS SPILL 005 3 AUGUST 1982

HISTORY

During the morning of this spill the wind was blowing towards the sea i.e. opposite to the required direction. Insolation was then moderate to strong and the land temperature was relatively high (approximately 22°C at 2 m height at 1100 hours and rising). By midday, however, the wind had changed direction so that it was blowing approximately down the centre line of the mast array, possibly due to the onset of a sea breeze. At this time wind speed was in the range 4 to 5 m/s and insolation was moderate (500 to 600 W/m^2); the atmospheric stability was then judged to be about Pasquill category 'B'. From hereon to the spill time there was little change in environmental conditions so that, at the time of the spill, the atmosphere was judged to be unstable.

It is worth noting that the bag failed to drop properly during this release; after dropping a few metres the bag was caught but was eventually released after a hold of a few minutes, by which time some of the gas had escaped.

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:

$$\frac{DT}{DZ} = \frac{T_{30}-T_9}{21} * 100.00$$

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:

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

$\frac{DU}{DZ}$ 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:

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

where $\overline{Z}$ is the geometric mean height = $\sqrt{9 \times 30}$
T is the temperature at 16 m above the ground
and $\overline{U}$ 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, pp741-750.

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 pp879-881.

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	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 Z 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 pots.

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' from 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.

TEMP: Rapid response platinum resistance thermometer.
Frequency response 10 Hz approximately.

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 6905 to 6605 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 1057 to 1357 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 4.198 m/s.

Turbulence intensity (U) = 10.2 (component in the wind direction)
Turbulence intensity (V) = 11.6 (crosswind component)
Turbulence intensity (W) = 11.3 (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 005

1. Standard gas sensors at 3.6, 6.8 and 10 metres on the mast at (450, 250) were functioning correctly but did not detect gas.

2. Standard gas sensors at 10 metres on the masts at (400, 300) and (400, 500) and at 14.5 metres on the mast at (400, 700) were functioning correctly but did not detect gas.

3. The smoke sensors at 2 metres and 3.6 metres on the mast at (400, 350) and at 3.6 metres and 5 metres on the mast at (300, 550) were malfunctioning.

4. The standard gas sensor at 10 m on the mast at (400, 400) was functioning but gas could not be distinguished from the high level of noise.

5. The standard gas sensor at 3.6 metres on the mast at (400, 500) was malfunctioning.

6. Several gas sensors plots have two peaks at times approximately 1 second and 4 seconds after release. This is presumed to be a result of the two stage release described on page 2 of the text.

B Roebuck
Special Instruments and Techniques Section
Safety Engineering Laboratory
21 June 1984

INSTRUMENT STATIONS AND DISTRIBUTIONS (EFFECTIVE FOR TRIAL 005)

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
4.2, 0.5	V	1	7	10.0	Wind Vane		E23
3.5, 1.5	F	5	0	0.4	Gas Sensor		
		5	1	1.6	Gas Sensor		
		5	2	2.8	Gas Sensor		
		5	3	4.0	Gas Sensor		
4.0, 1.5	V	6	4	10.0	Wind Vane		E24
4.5, 1.5	F	16	0	0.4	Gas Sensor		
		16	1	1.6	Gas Sensor		
		16	2	2.8	Gas Sensor		
		16	3	4.0	Gas Sensor		
3.0, 2.0	F	4	0	0.4	Gas Sensor		
		4	1	1.6	Gas Sensor		
		4	2	2.8	Gas Sensor		
		4	3	4.0	Gas Sensor		
4.0, 2.0	S	6	0	0.4	Thermometer		E25
		6	1	0.4	Gas Sensor		
		6	2	12.0	Thermometer		E26
		6	3	12.0	Gas Sensor		
5.0, 2.0	F	16	4	0.4	Gas Sensor		
		16	5	1.6	Gas Sensor		
		16	6	2.8	Gas Sensor		
		16	7	4.0	Gas Sensor		
3.5, 2.5	F	4	4	0.4	Gas Sensor		
		4	5	3.6	Gas Sensor		
		4	6	6.8	Gas Sensor		
		4	7	10.0	Gas Sensor		
4.5, 2.5	F	26	0	0.4	Gas Sensor		G01
		26	1	3.6	Gas Sensor		
		26	2	6.8	Gas Sensor		
		26	3	10.0	Gas Sensor		
2.0, 3.0	F	9	0	0.4	Gas Sensor		
		9	1	3.6	Gas Sensor		
		9	2	6.8	Gas Sensor		
		9	3	10.0	Gas Sensor		
3.0, 3.0	F	9	4	0.4	Gas Sensor		
		9	5	3.6	Gas Sensor		
		9	6	6.8	Gas Sensor		
		9	7	10.0	Gas Sensor		
4.0, 3.0	F	26	4	0.4	Gas Sensor		G02
		26	5	3.6	Gas Sensor		G03
		26	6	6.8	Gas Sensor		G04
		26	7	10.0	Gas Sensor		
5.0, 3.0	F	10	0	0.4	Gas Sensor		
		10	1	3.6	Gas Sensor		
		10	2	6.8	Gas Sensor		
		10	3	10.0	Gas Sensor		
6.0, 3.0	F	10	4	0.4	Gas Sensor		
		10	5	3.6	Gas Sensor		
		10	6	6.8	Gas Sensor		
		10	7	10.0	Gas Sensor		

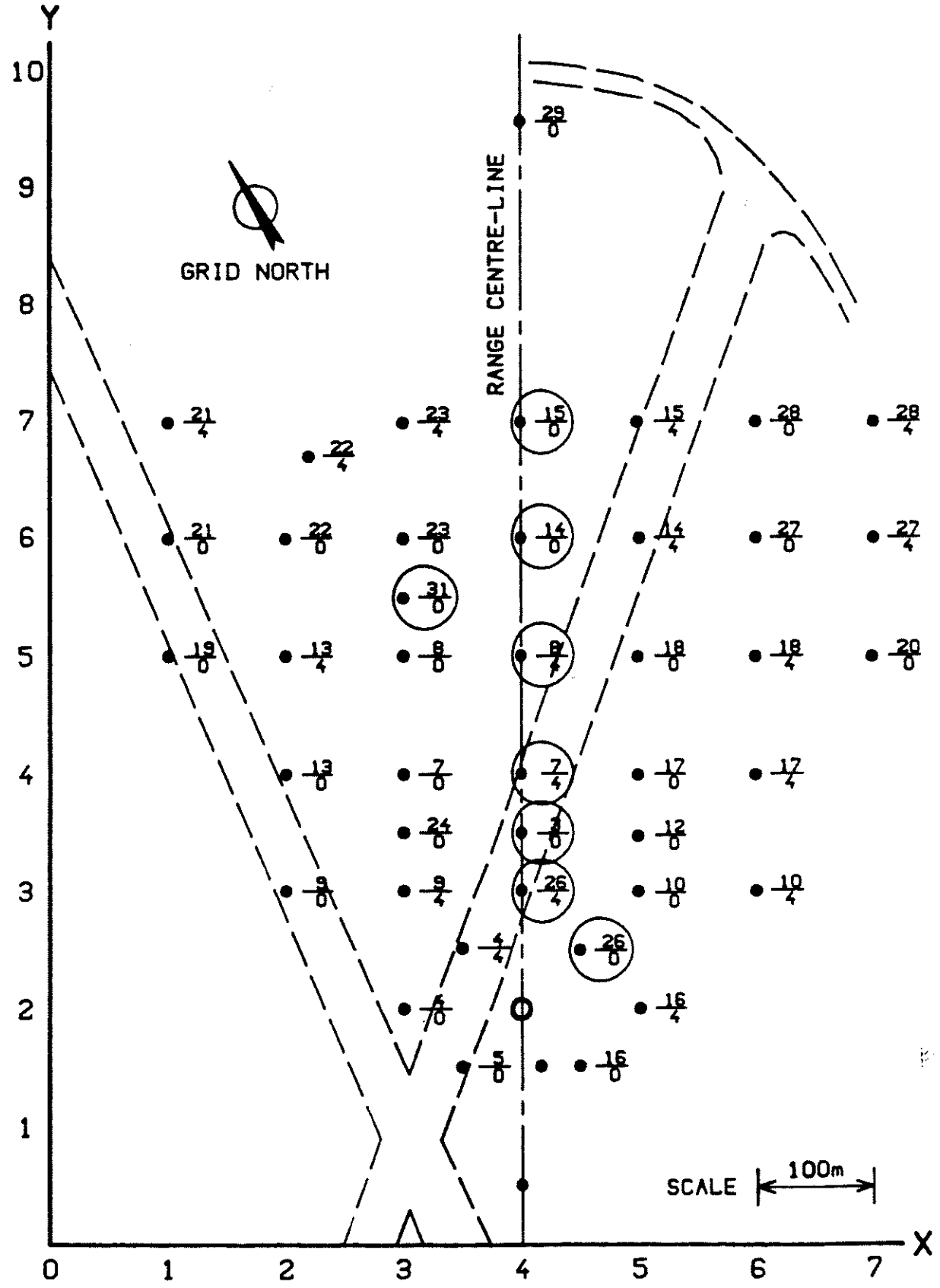
LOCATION COORDINATES	TYPE OF MAST	DATA TERMINAL NUMBER	CHANNEL NUMBER	HEIGHT ABOVE GROUND m	TYPE OF SENSOR	REMARKS	PAGE NUMBER
3.0, 3.5	M1	24	0	0.4	Gas Sensor		
		24	1	3.6	Gas Sensor		
		24	4	3.6	High Speed Gas Sensor		
		24	5	5.0	High Speed Gas Sensor		
		24	6	5.0	RLSD Smoke Detector		
		25	2	5.0	Sonic Anemometer - XY		E27
		25	3	5.0	Sonic Anemometer - XY		E28
		25	4	5.0	Sonic Anemometer - Z		E29
		25	0	5.0	Sonic Anemometer - Temp		E30
		24	2	6.8	Gas Sensor		
		24	3	10.0	Gas Sensor		
4.0, 3.5	M3	3	0	0.4	Gas Sensor		G05
		33	3	0.4	RLSD Smoke Detector		
		3	1	3.6	Gas Sensor		G06
		33	4	3.6	RLSD Smoke Detector		
		2	2	5.0	Sonic Anemometer - XY		E31
		2	3	5.0	Sonic Anemometer - XY		E32
		2	4	5.0	Sonic Anemometer - Z		E33
		2	1	5.0	Sonic Anemometer - Temp		E34
		33	0	5.0	High Speed Gas Sensor		G07
		33	1	5.0	High Speed Gas Sensor		G08
		3	2	6.8	Gas Sensor		G09
		3	3	10.0	Gas Sensor		G10
		3	5	10.0	Sonic Anemometer - XY		E35
		3	6	10.0	Sonic Anemometer - XY		E36
		3	7	10.0	Sonic Anemometer - Z		E37
		33	2	10.0	High Speed Gas Sensor		G11
		33	5	10.0	RLSD Smoke Detector		
		2	5	20.0	Sonic Anemometer - XY		E38
		2	6	20.0	Sonic Anemometer - XY		E39
		2	7	20.0	Sonic Anemometer - Z		E40
5.0, 3.5	M2(a)	12	0	0.4	Gas Sensor		
		12	1	3.6	Gas Sensor		
		12	5	3.6	High Speed Gas Sensor		
		11	2	5.0	Sonic Anemometer - XY		E41
		11	3	5.0	Sonic Anemometer - XY		E42
		11	4	5.0	Sonic Anemometer - Z		E43
		11	0	5.0	Sonic Anemometer - Temp		E44
		12	4	5.0	High Speed Gas Sensor		
		12	6	5.0	RLSD Smoke Detector		
		12	2	6.8	Gas Sensor		
		12	3	10.0	Gas Sensor		
		11	5	15.0	Sonic Anemometer - XY		E45
		11	6	15.0	Sonic Anemometer - XY		E46
		11	7	15.0	Sonic Anemometer - Z		E47
		11	1	15.0	Sonic Anemometer - Temp		E48
2.0, 4.0	F	13	0	0.4	Gas Sensor		
		13	1	3.6	Gas Sensor		
		13	2	6.8	Gas Sensor		
		13	3	10.0	Gas Sensor		
3.0, 4.0	F	7	0	0.4	Gas Sensor		
		7	1	3.6	Gas Sensor		
		7	2	6.8	Gas Sensor		
		7	3	10.0	Gas Sensor		
4.0, 4.0	F	7	4	0.4	Gas Sensor		G12
		7	5	3.6	Gas Sensor		G13
		7	6	6.8	Gas Sensor		G14
		7	7	10.0	Gas Sensor		
5.0, 4.0	F	17	0	0.4	Gas Sensor		
		17	1	3.6	Gas Sensor		
		17	2	6.8	Gas Sensor		
		17	3	10.0	Gas Sensor		
6.0, 4.0	F	17	4	0.4	Gas Sensor		
		17	5	3.6	Gas Sensor		
		17	6	6.8	Gas Sensor		
		17	7	10.0	Gas Sensor		
1.0, 5.0	F	19	0	0.4	Gas Sensor		
		19	1	3.6	Gas Sensor		
		19	2	6.8	Gas Sensor		
		19	3	10.0	Gas Sensor		
2.0, 5.0	F	13	4	0.4	Gas Sensor		
		13	5	3.6	Gas Sensor		
		13	6	6.8	Gas Sensor		
		13	7	10.0	Gas Sensor		
3.0, 5.0	F	8	0	0.4	Gas Sensor		
		8	1	3.6	Gas Sensor		
		8	2	6.8	Gas Sensor		
		8	3	10.0	Gas Sensor		
4.0, 5.0	F	8	4	0.4	Gas Sensor		G15
		8	5	3.6	Gas Sensor		
		8	6	6.8	Gas Sensor		G16
		8	7	10.0	Gas Sensor		

LOCATION COORDINATES	TYPE OF MAST	DATA TERMINAL NUMBER	CHANNEL NUMBER	HEIGHT ABOVE GROUND m	TYPE OF SENSOR	REMARKS	PAGE NUMBER
5.0, 5.0	F	18	0	0.4	Gas Sensor		
		18	1	3-6	Gas Sensor		
		18	2	6.8	Gas Sensor		
		18	3	10.0	Gas Sensor		
6.0, 5.0	F	18	4	0.4	Gas Sensor		
		18	5	3.6	Gas Sensor		
		18	6	6.8	Gas Sensor		
		18	7	10.0	Gas Sensor		
7.0, 5.0	F	20	4	0.4	Solarimeter		E49
		20	0	0.4	Gas Sensor		
		20	1	3.6	Gas Sensor		
		20	2	6.8	Gas Sensor		
		20	3	10.0	Gas Sensor		
3.0, 5.5	M2(b)	31	0	0.4	Gas Sensor		G17
		31	1	3.6	Gas Sensor		G18
		31	5	3.6	RLSD Smoke Detector		
		30	2	5.0	Sonic Anemometer - XY		E50
		30	3	5.0	Sonic Anemometer - XY		E51
		30	4	5.0	Sonic Anemometer - Z		E52
		30	0	5.0	Sonic Anemometer - Temp		E53
		31	6	5.0	RLSD Smoke Detector		
		31	4	5.0	High Speed Gas Sensor		G19
		31	2	6.8	Gas Sensor		G20
		31	3	10.0	Gas Sensor		G21
		30	5	15.0	Sonic Anemometer - XY		E54
		30	6	15.0	Sonic Anemometer - XY		E55
		30	7	15.0	Sonic Anemometer - Z		E56
		30	1	15.0	Sonic Anemometer - Temp		E57
1.0, 6.0	F	21	0	0.4	Gas Sensor		
		21	1	3.6	Gas Sensor		
		21	2	6.8	Gas Sensor		
		21	3	10.0	Gas Sensor		
2.0, 6.0	F	22	0	0.4	Gas Sensor		
		22	1	3.6	Gas Sensor		
		22	2	6.8	Gas Sensor		
		22	3	10.0	Gas Sensor		
3.0, 6.0	F	23	0	0.4	Gas Sensor		
		23	1	3.6	Gas Sensor		
		23	2	6.8	Gas Sensor		
		23	3	10.0	Gas Sensor		
4.0, 6.0	F	14	0	0.4	Gas Sensor		G22
		14	1	3.6	Gas Sensor		G23
		14	2	6.8	Gas Sensor		G24
		14	3	10.0	Gas Sensor		G25
5.0, 6.0	F	14	4	0.4	Gas Sensor		
		14	5	3.6	Gas Sensor		
		14	6	6.8	Gas Sensor		
		14	7	10.0	Gas Sensor		
6.0, 6.0	F	27	0	0.4	Gas Sensor		
		27	1	3.6	Gas Sensor		
		27	2	6.8	Gas Sensor		
		27	3	10.0	Gas Sensor		
7.0, 6.0	F	27	4	0.4	Gas Sensor		
		27	5	3.6	Gas Sensor		
		27	6	6.8	Gas Sensor		
		27	7	10.0	Gas Sensor		
1.0, 7.0	F	21	4	0.4	Gas Sensor		
		21	5	5.1	Gas Sensor		
		21	6	9.8	Gas Sensor		
		21	7	14.5	Gas Sensor		
2.2, 6.7	F	22	4	0.4	Gas Sensor		
		22	5	5.1	Gas Sensor		
		22	6	9.8	Gas Sensor		
		22	7	14.5	Gas Sensor		
3.0, 7.0	F	23	4	0.4	Gas Sensor		
		23	5	5.1	Gas Sensor		
		23	6	9.8	Gas Sensor		
		23	7	14.5	Gas Sensor		
4.0, 7.0	F	15	0	0.4	Gas Sensor	Not connected	
		15	1	5.1	Gas Sensor		G26
		15	2	9.8	Gas Sensor		G27
		15	3	14.5	Gas Sensor		
5.0, 7.0	F	15	4	0.4	Gas Sensor		
		15	5	5.1	Gas Sensor		
		15	6	9.8	Gas Sensor		
		15	7	14.5	Gas Sensor		
6.0, 7.0	F	28	0	0.4	Gas Sensor		
		28	1	5.1	Gas Sensor		
		28	2	9.8	Gas Sensor		
		28	3	14.5	Gas Sensor		

LOCATION COORDINATES	TYPE OF MAST	DATA TERMINAL NUMBER	CHANNEL NUMBER	HEIGHT ABOVE GROUND m	TYPE OF SENSOR	REMARKS	PAGE NUMBER
7.0, 7.0	F	28	4	0.4	Gas Sensor		
		28	5	5.1	Gas Sensor		
		28	6	9.8	Gas Sensor		
		28	7	14.5	Gas Sensor		
4.0, 9.5	D	29	0	0.4	Gas Sensor		
		29	1	3.6	Gas Sensor		
		29	2	6.8	Gas Sensor		
		29	3	10.0	Gas Sensor		
		29	4	10.0	Wind Speed		E58
		29	5	10.0	Relative Humidity		E59
		29	6	10.0	Thermometer		E60
		29	7	10.0	Wind Vane		E61

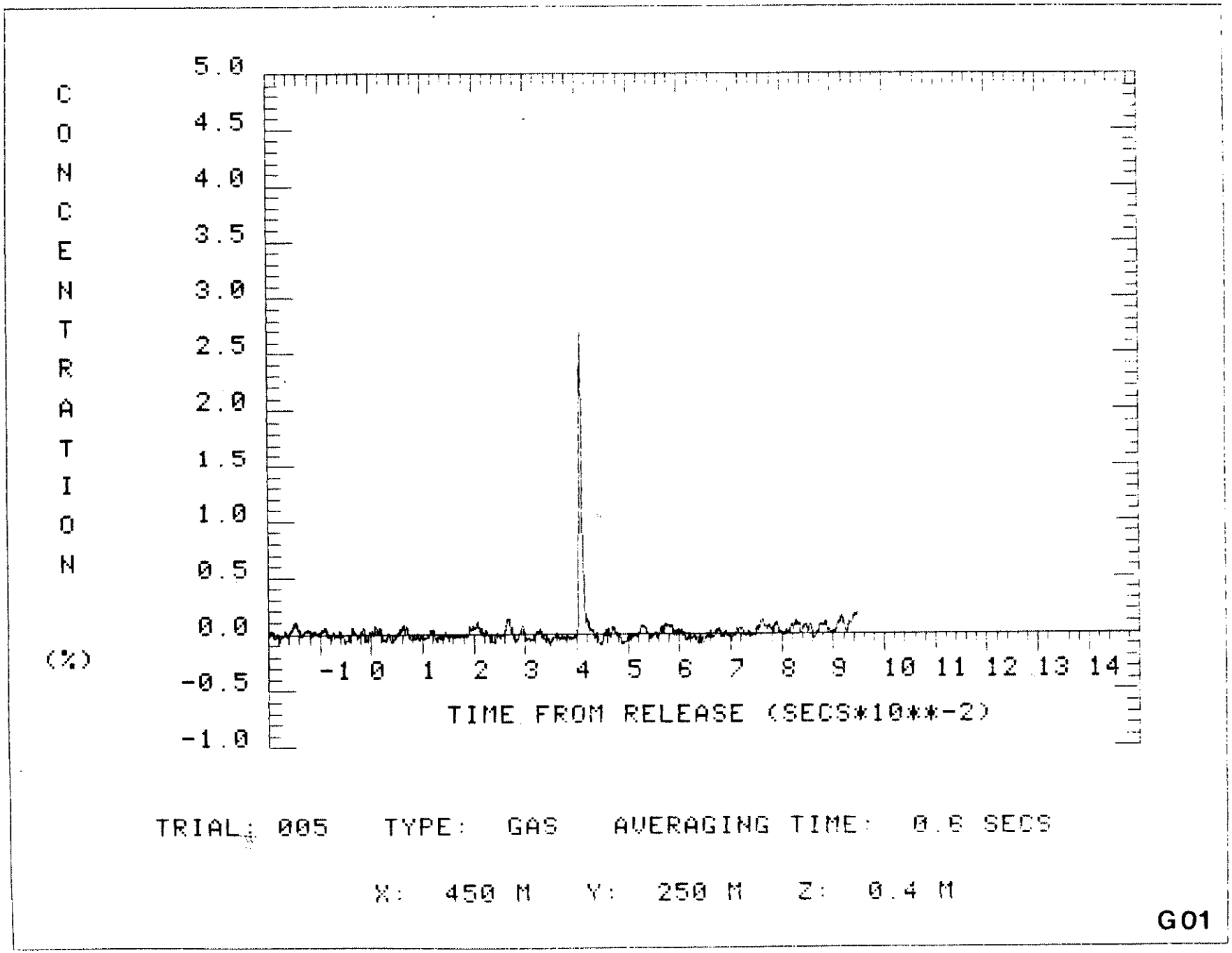
TRIAL No. - 005 DATE - 3/8/82 26 SENSORS SAW GAS

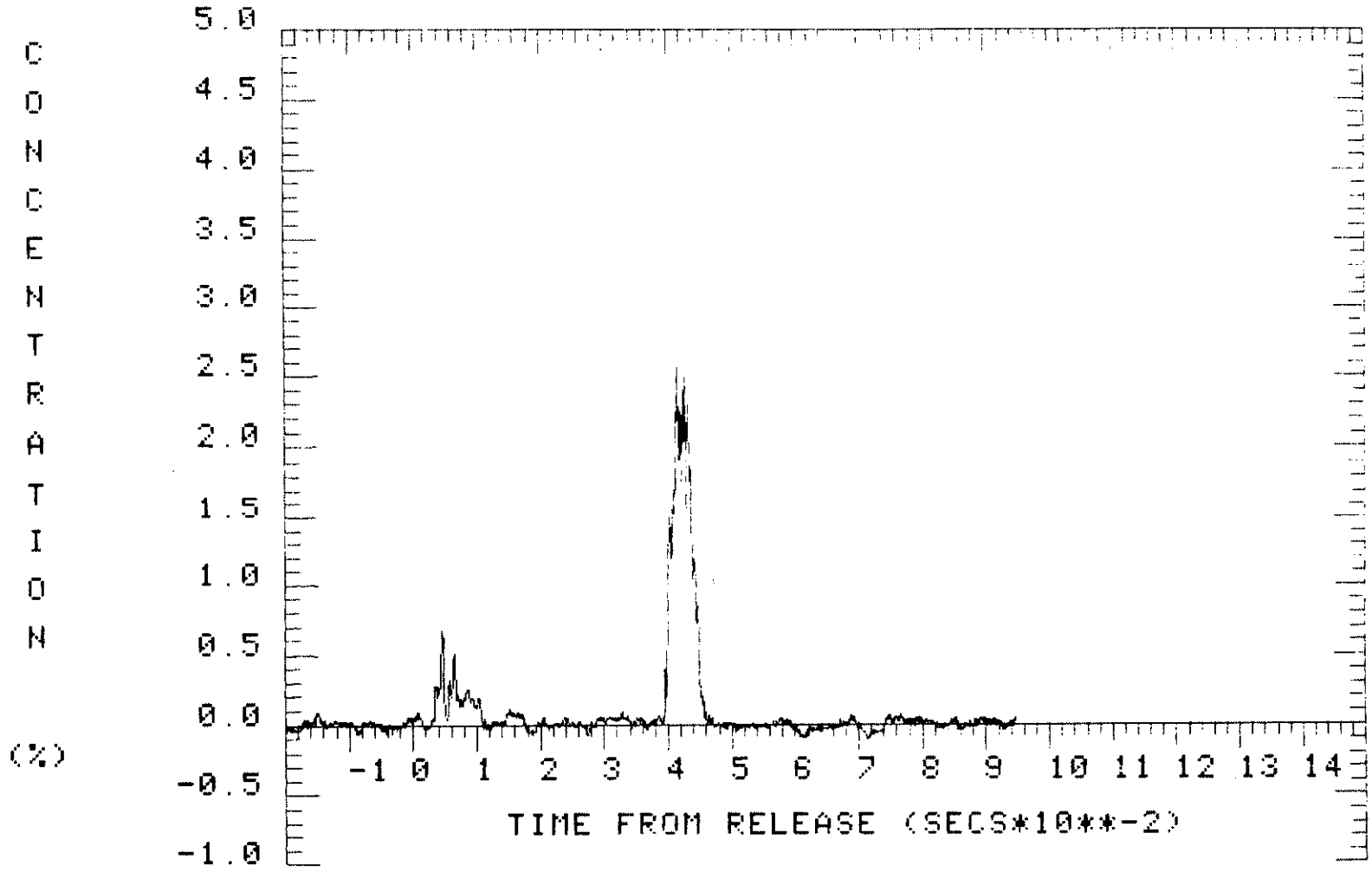
WIND SPEED (U_{10}) 4-5 m/sec PASQUILL CATEGORY - B



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

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

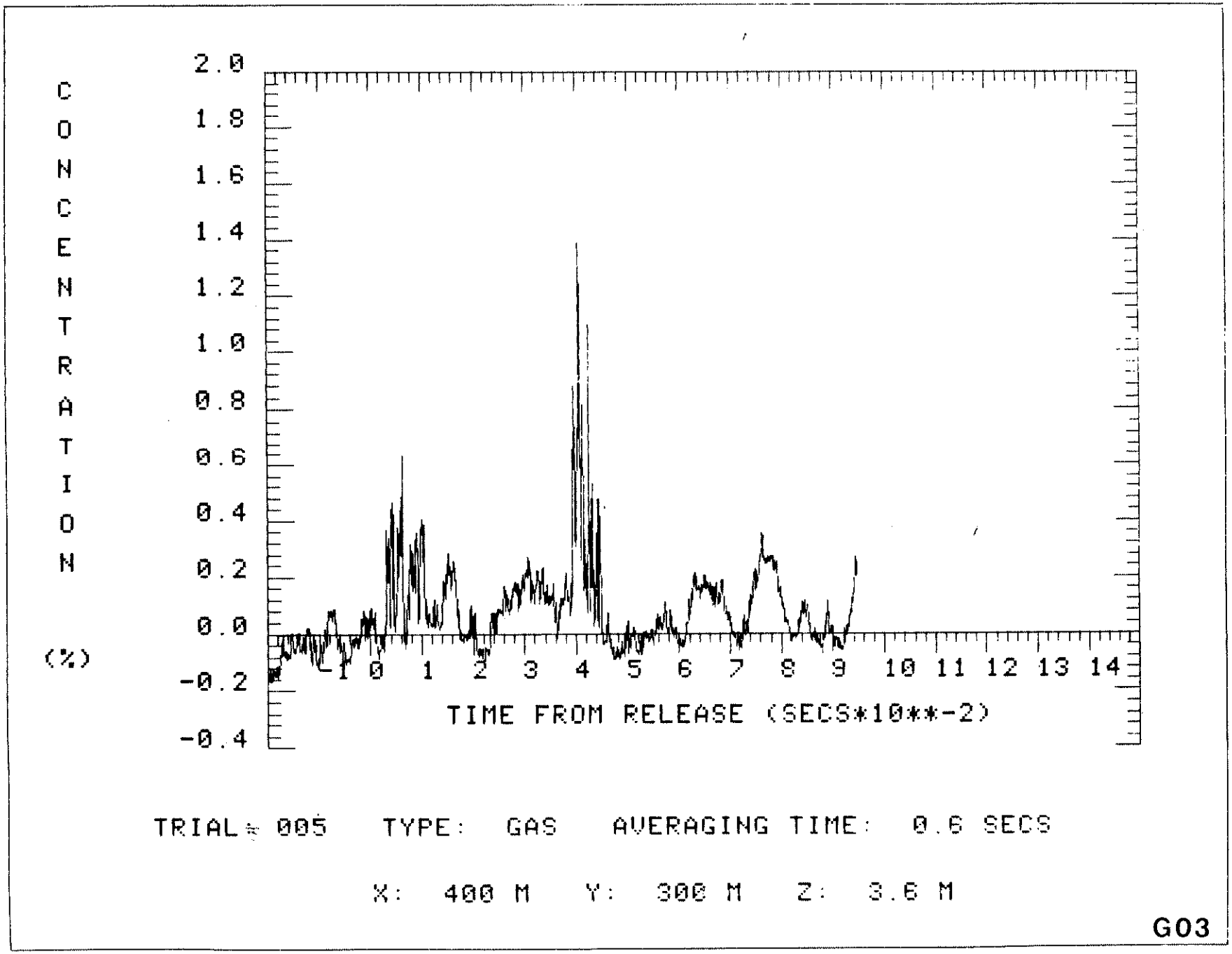

CONCENTRATION
(%)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.6 SECS
X: 450 M Y: 250 M Z: 0.4 M
G01

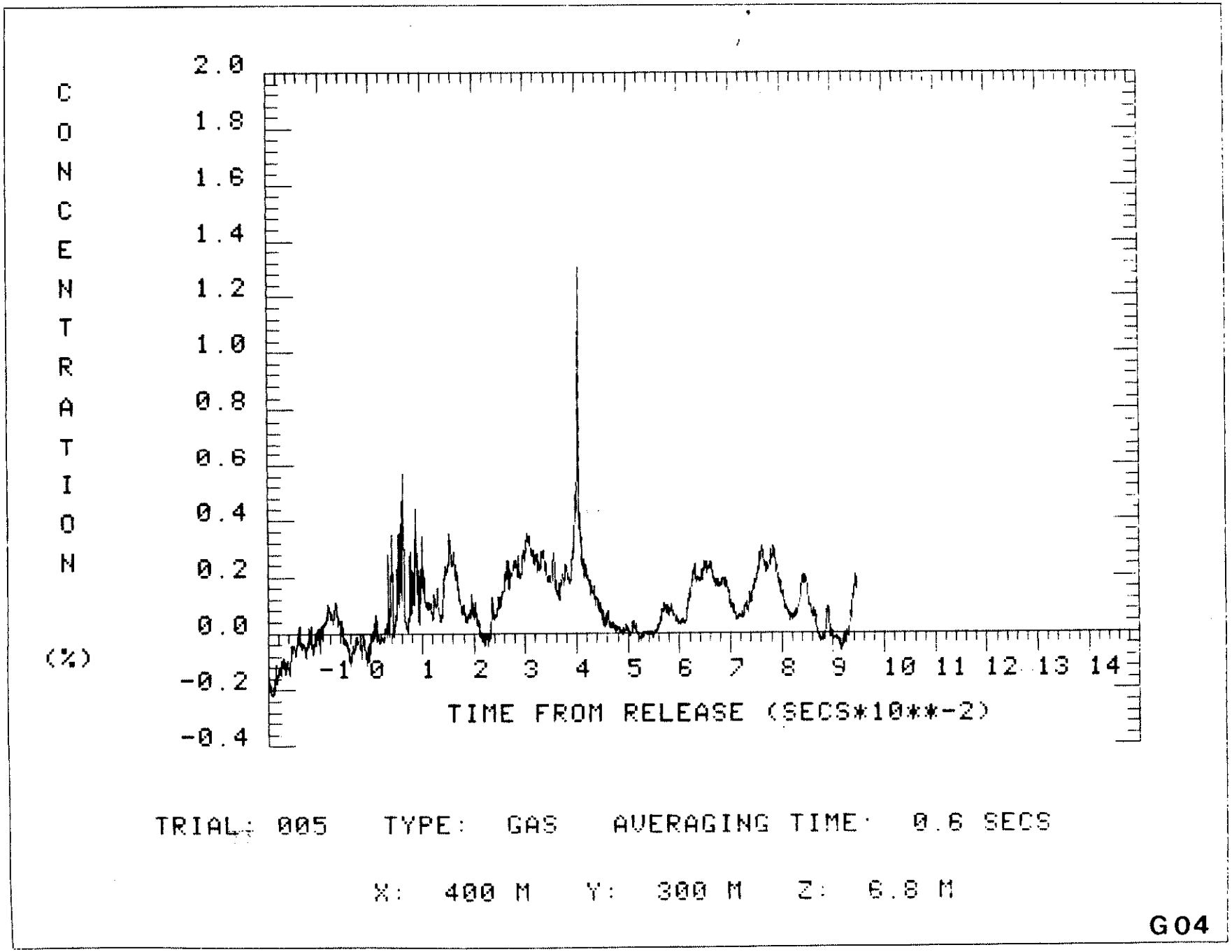


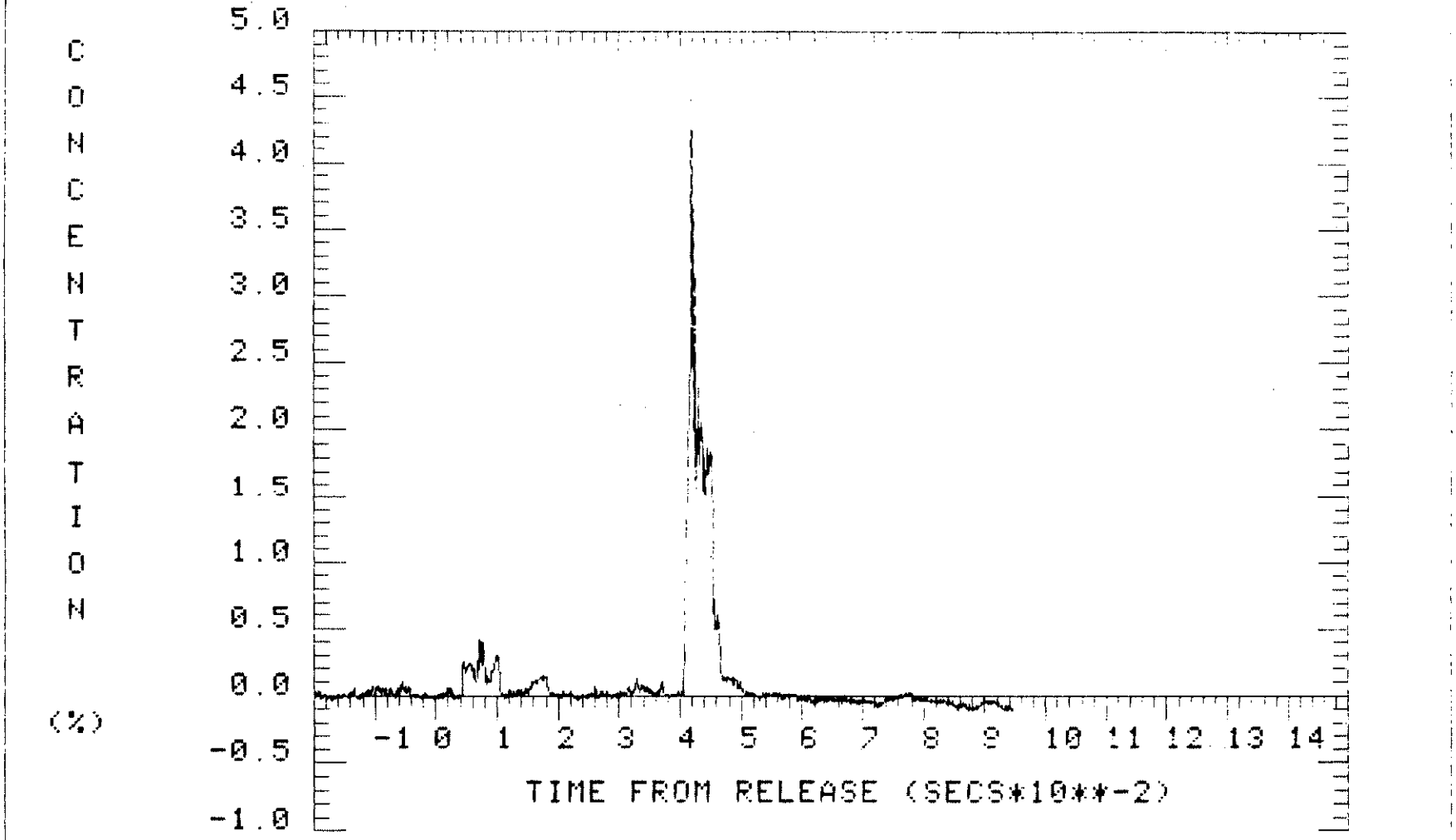
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.6 SECS

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

G02


CONCENTRATION
(%)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL= 005 TYPE: GAS AVERAGING TIME: 0.6 SECS
X: 400 M Y: 300 M Z: 3.6 M
G03

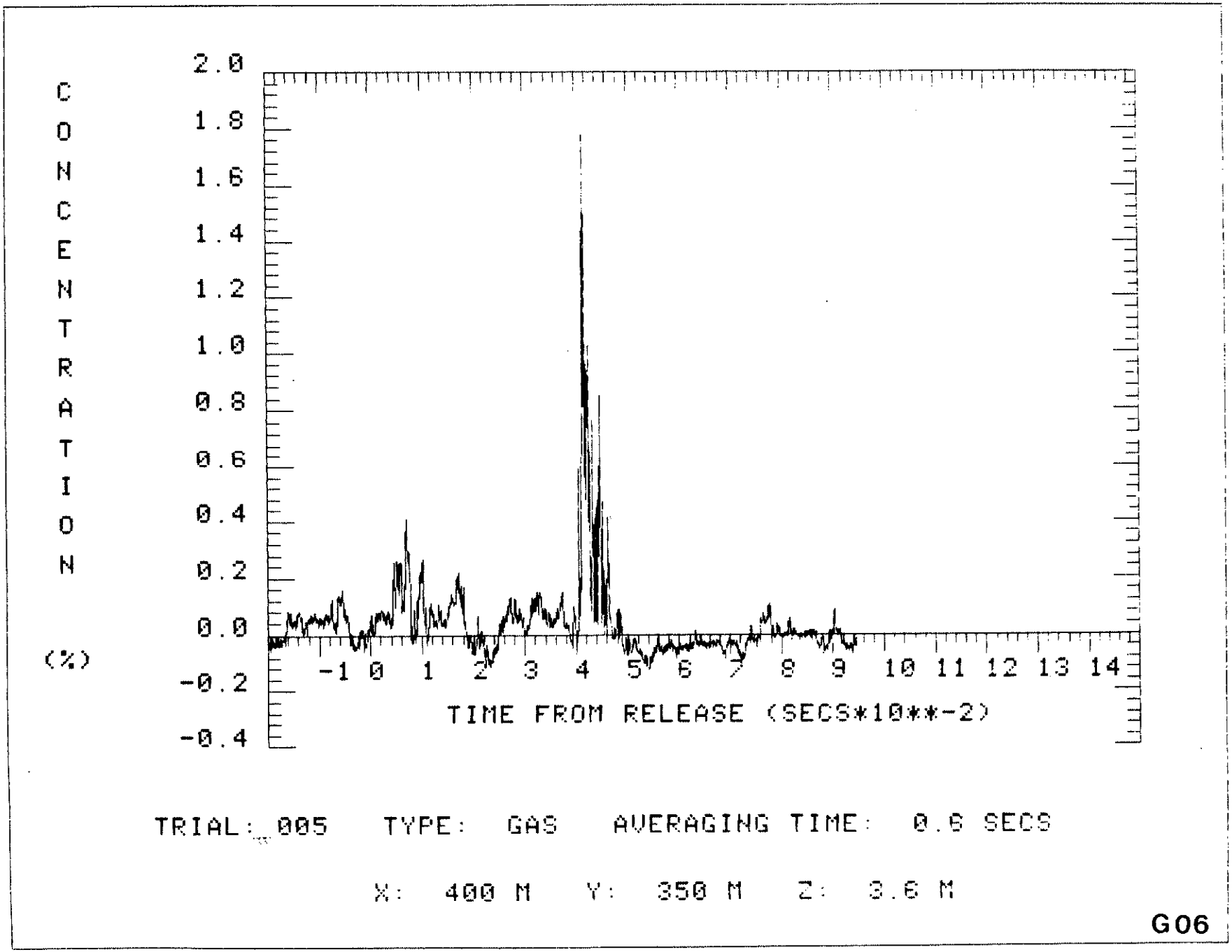

CONCENTRATION (%)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.6 SECS
X: 400 M Y: 300 M Z: 6.8 M
G04

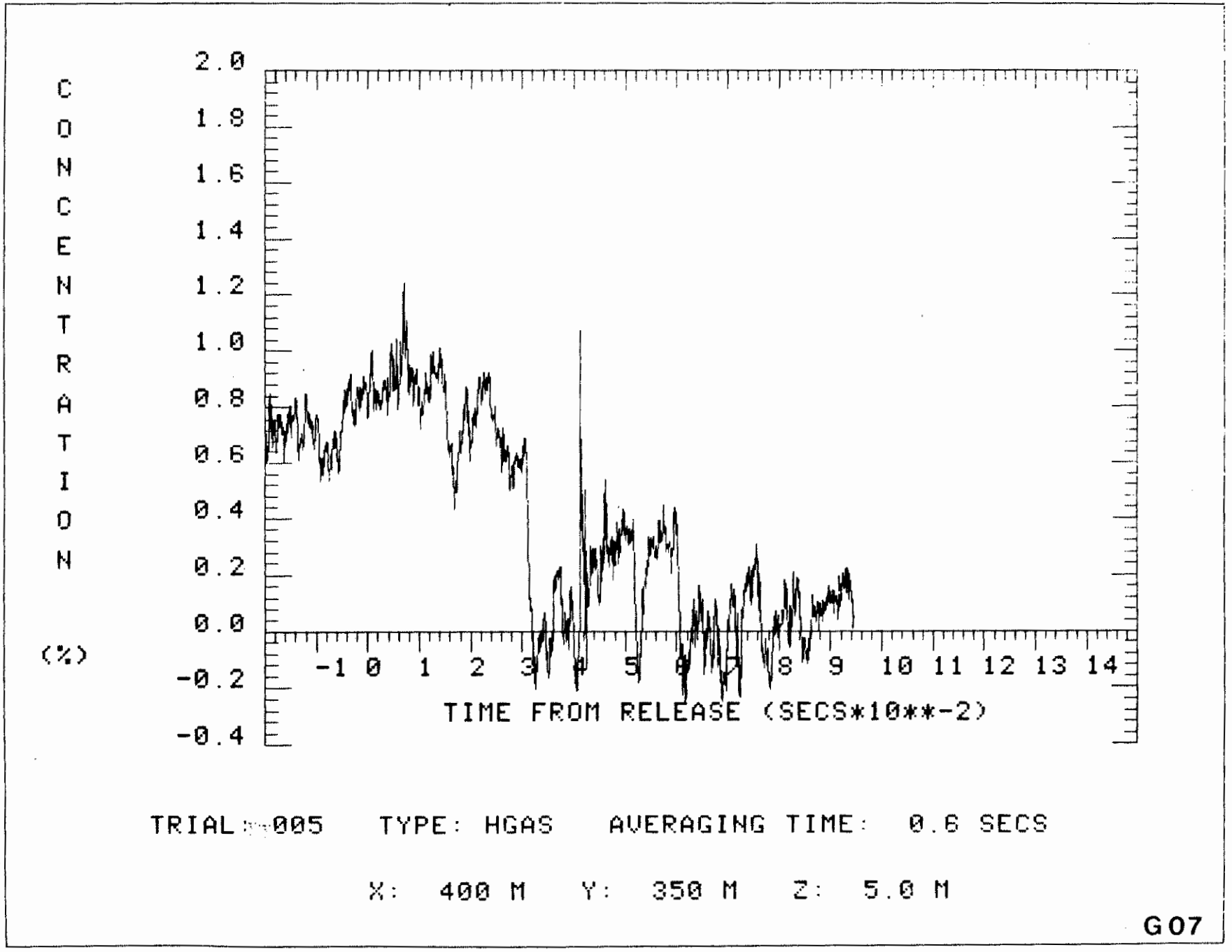


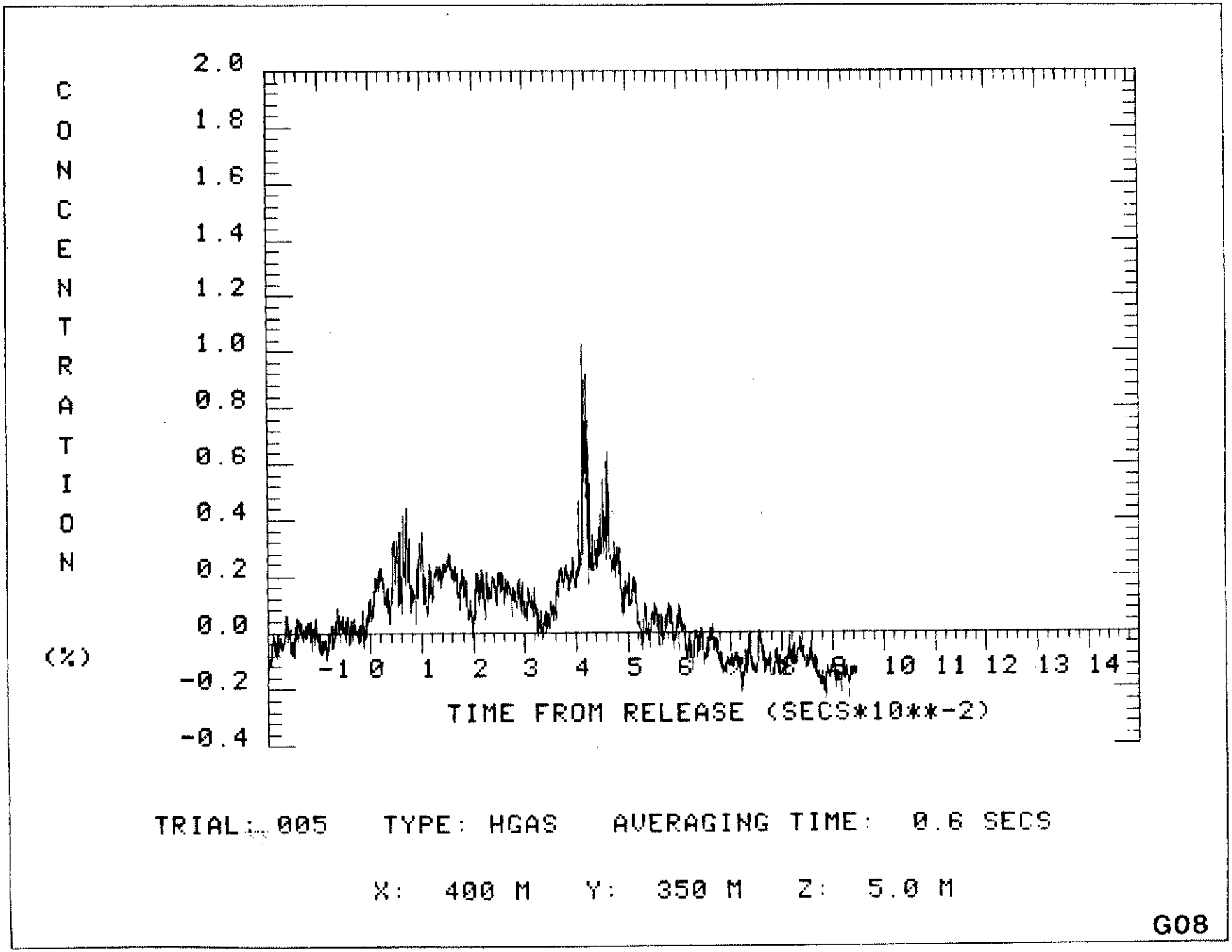
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.6 SECS

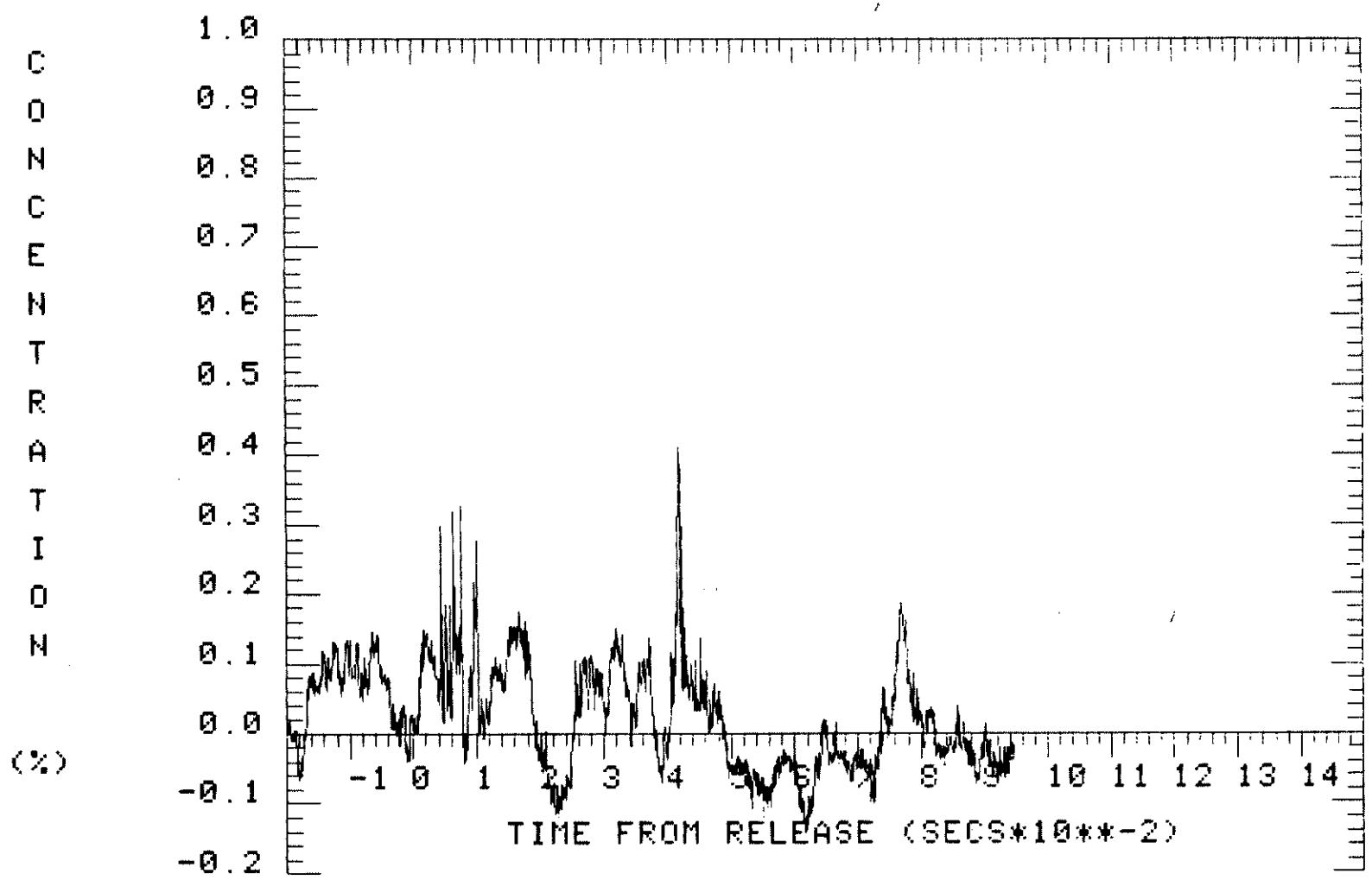
X: 400 M Y: 350 M Z: 0.4 M

G05


CONCENTRATION (%)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.6 SECS
X: 400 M Y: 350 M Z: 3.6 M
G06


CONCENTRATION
(%)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: HGAS AVERAGING TIME: 0.6 SECS
X: 400 M Y: 350 M Z: 5.0 M
G07

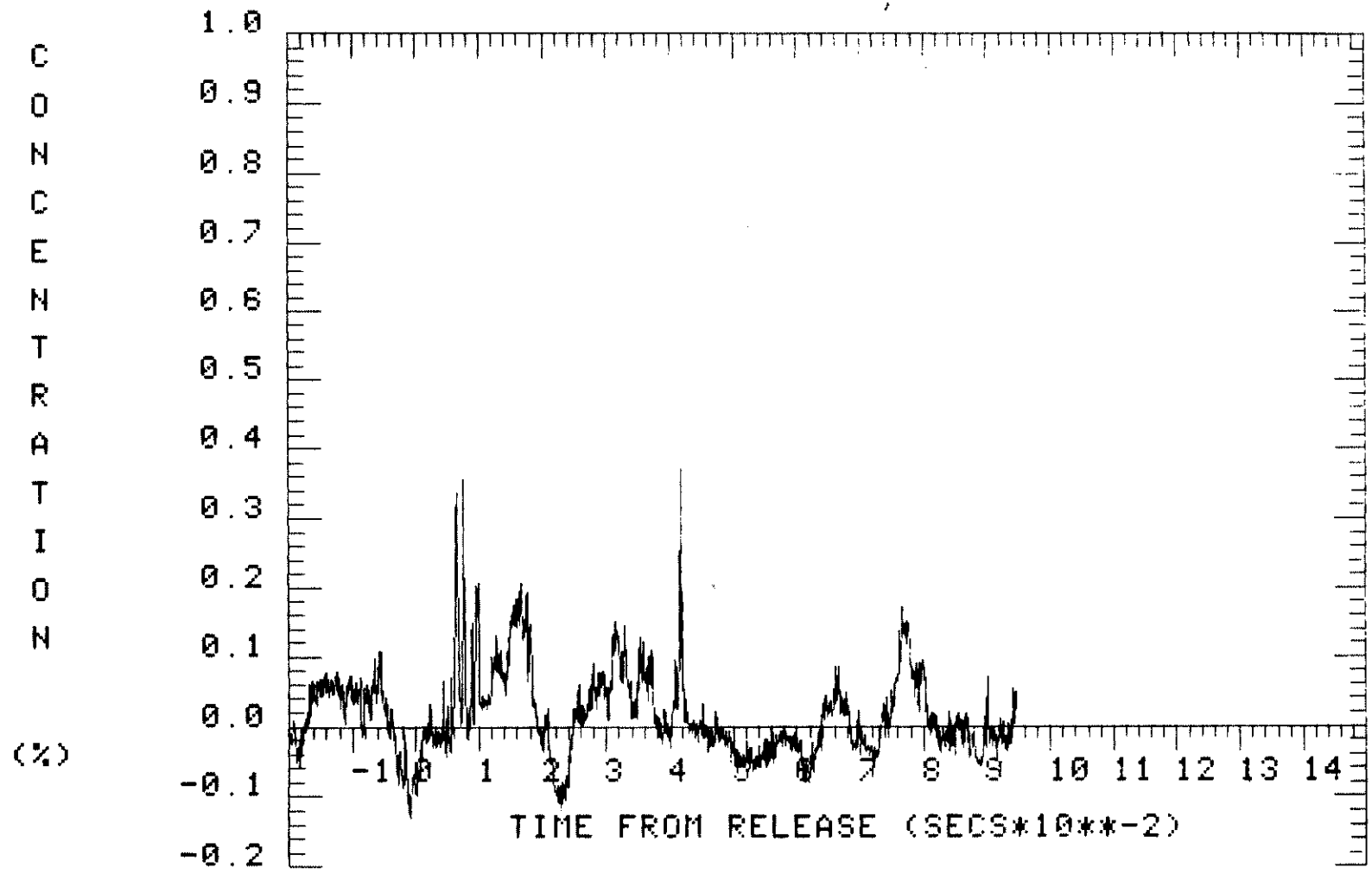

CONCENTRATION (%)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: HGAS AVERAGING TIME: 0.6 SECS
X: 400 M Y: 350 M Z: 5.0 M
G08



TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.8 SECS

X: 400 M Y: 350 M Z: 6.8 M

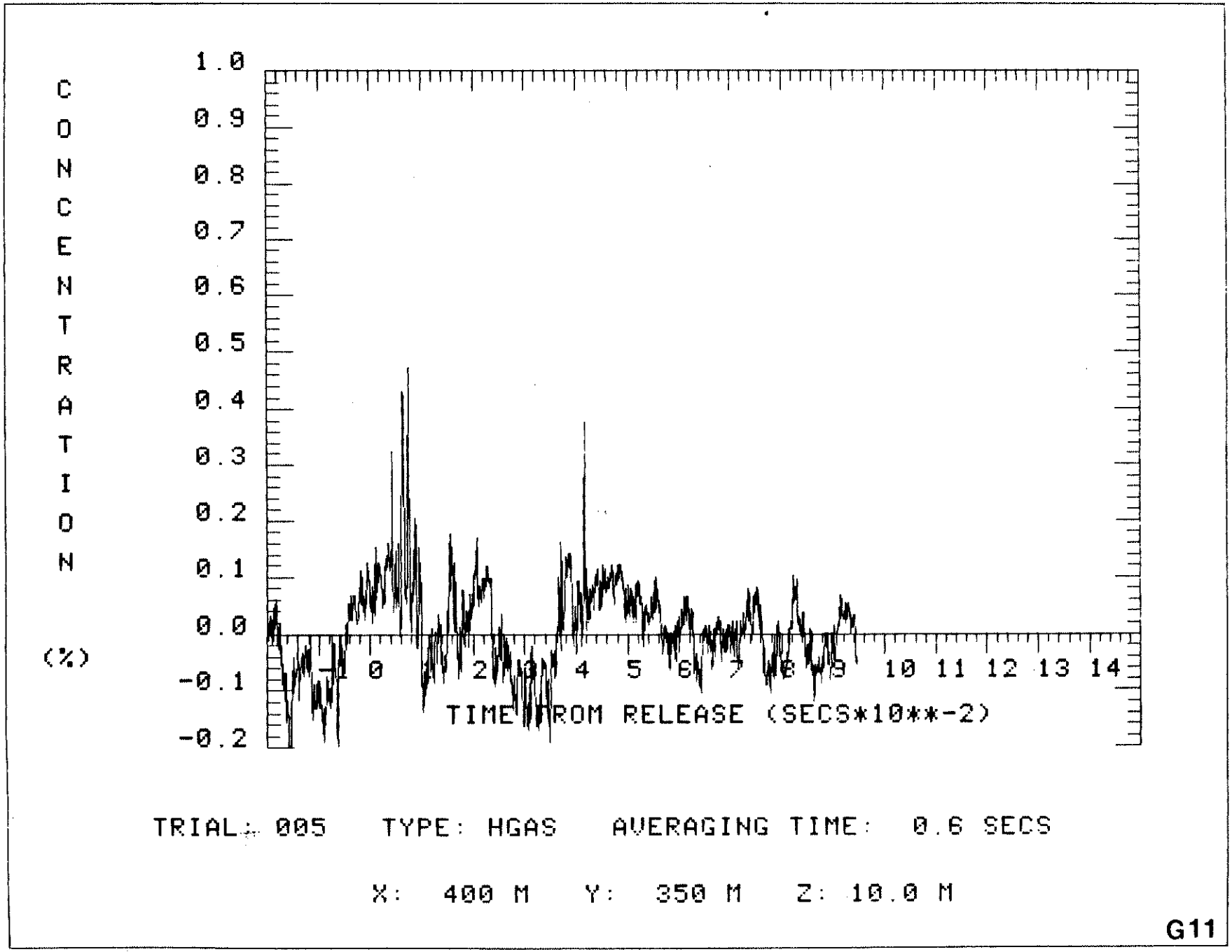
G09



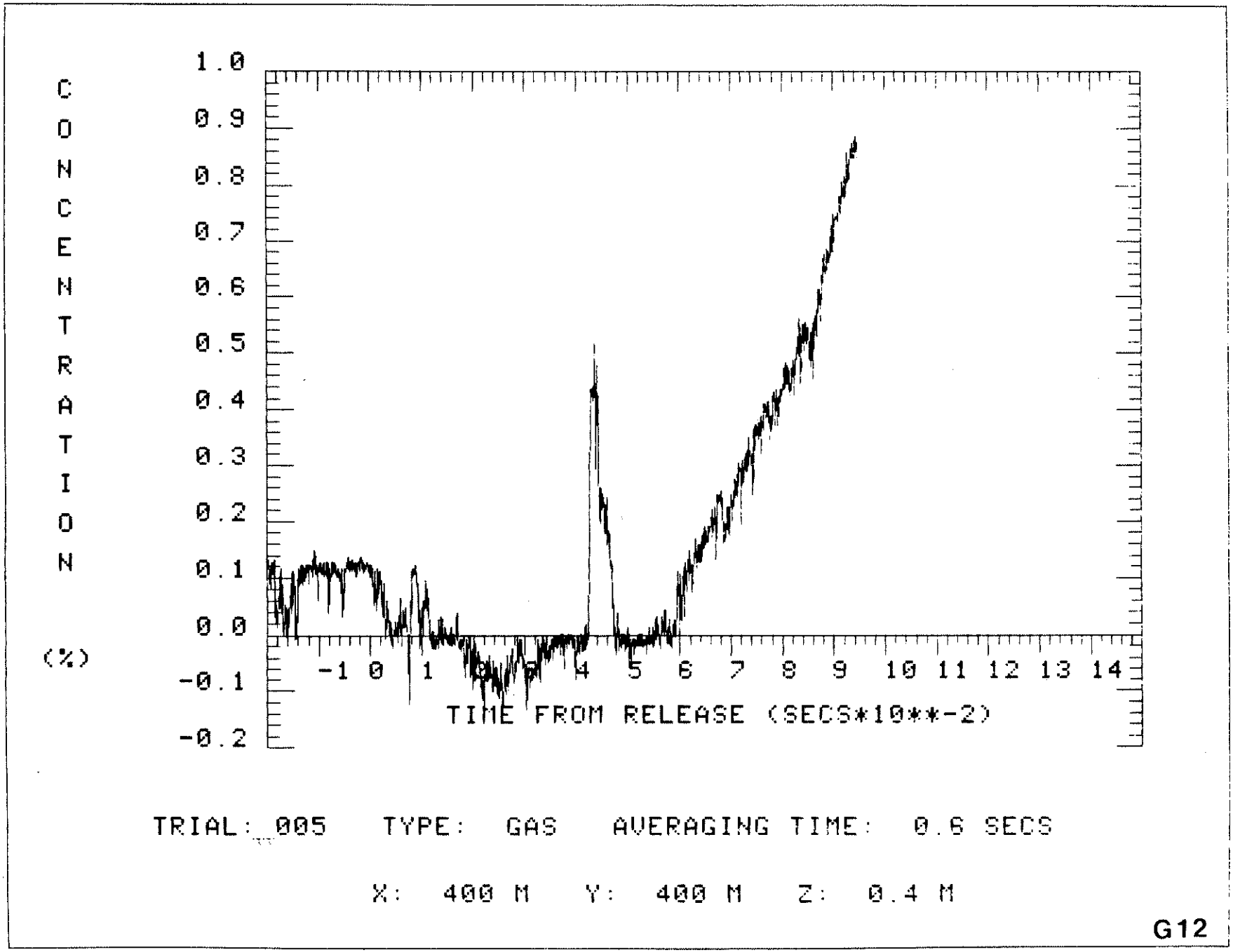
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 400 M Y: 350 M Z: 10.0 M

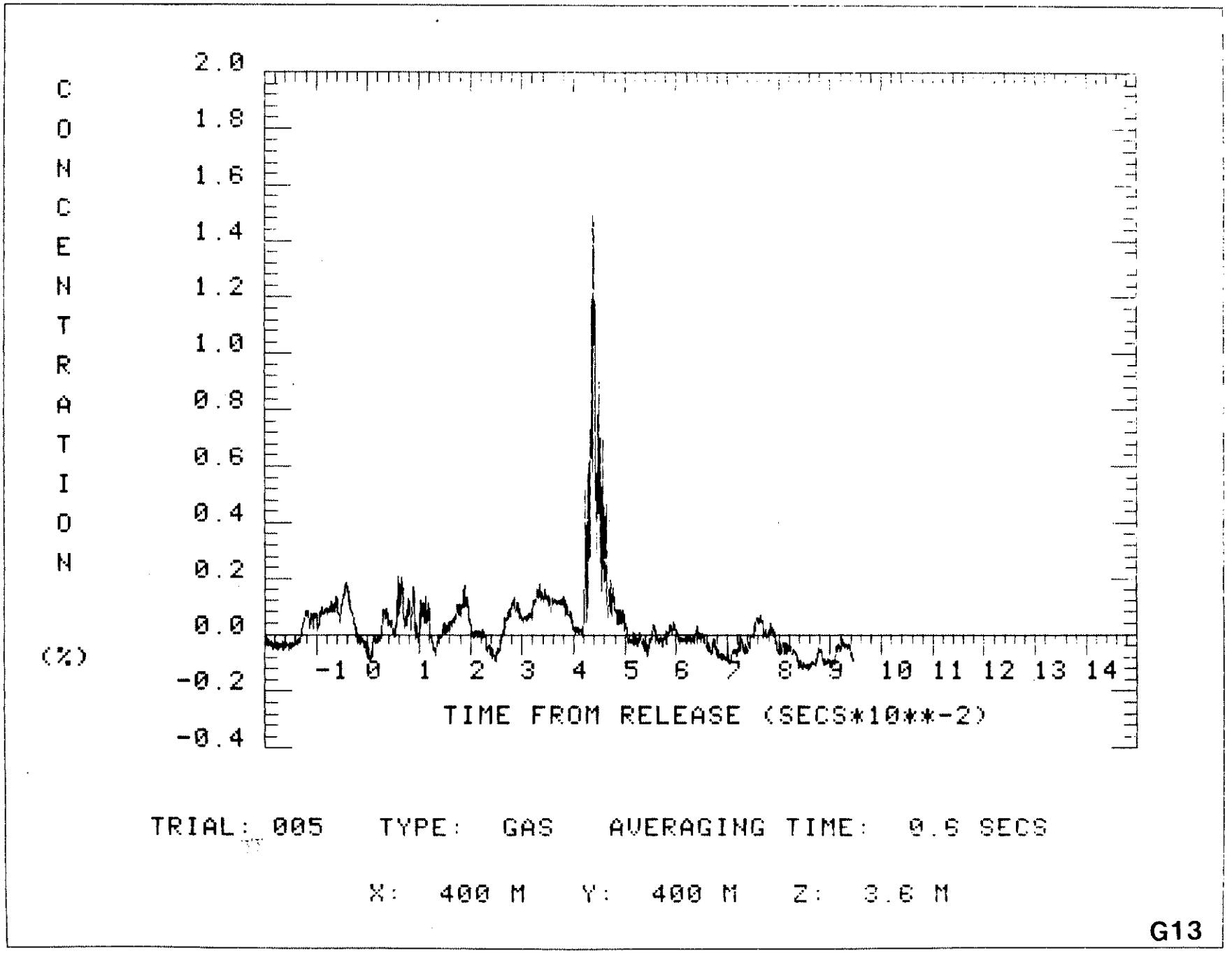
G10


CONCENTRATION
(%)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
-0.2
-1 0 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: HGAS AVERAGING TIME: 0.6 SECS
X: 400 M Y: 350 M Z: 10.0 M

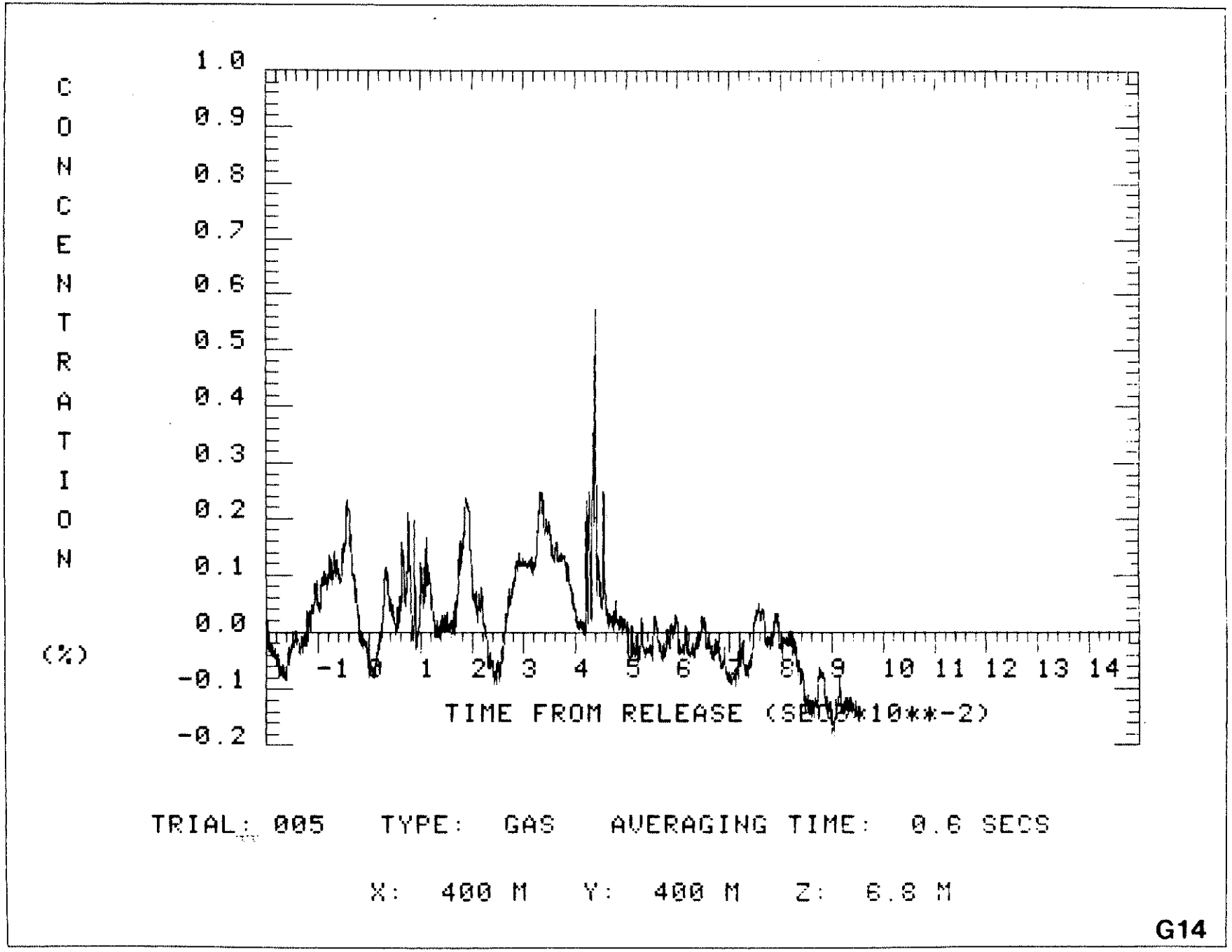
G11


CONCENTRATION (%)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
-0.2
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.6 SECS
X: 400 M Y: 400 M Z: 0.4 M

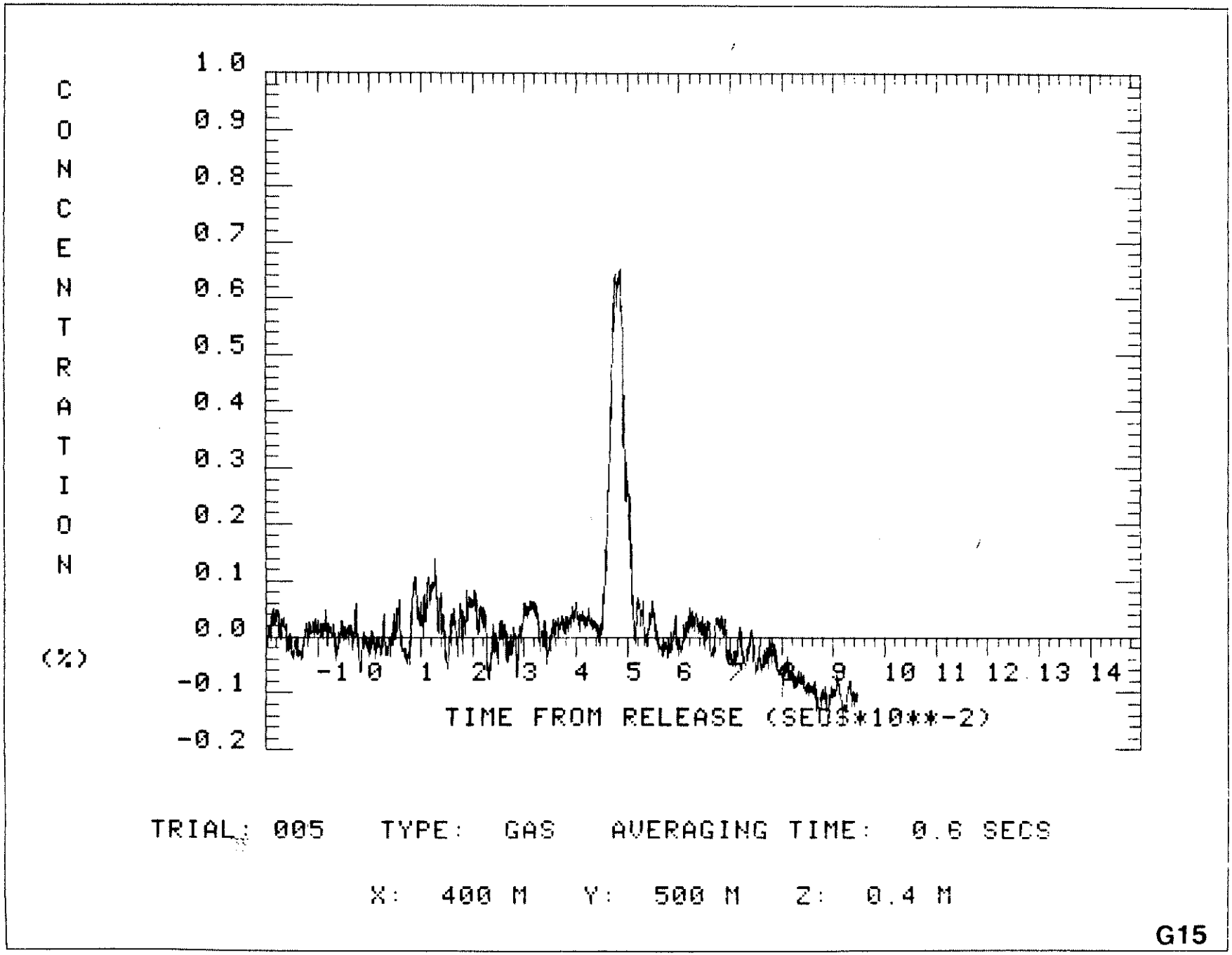
G12


CONCENTRATION (%)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.5 SECS
X: 400 M Y: 400 M Z: 3.6 M

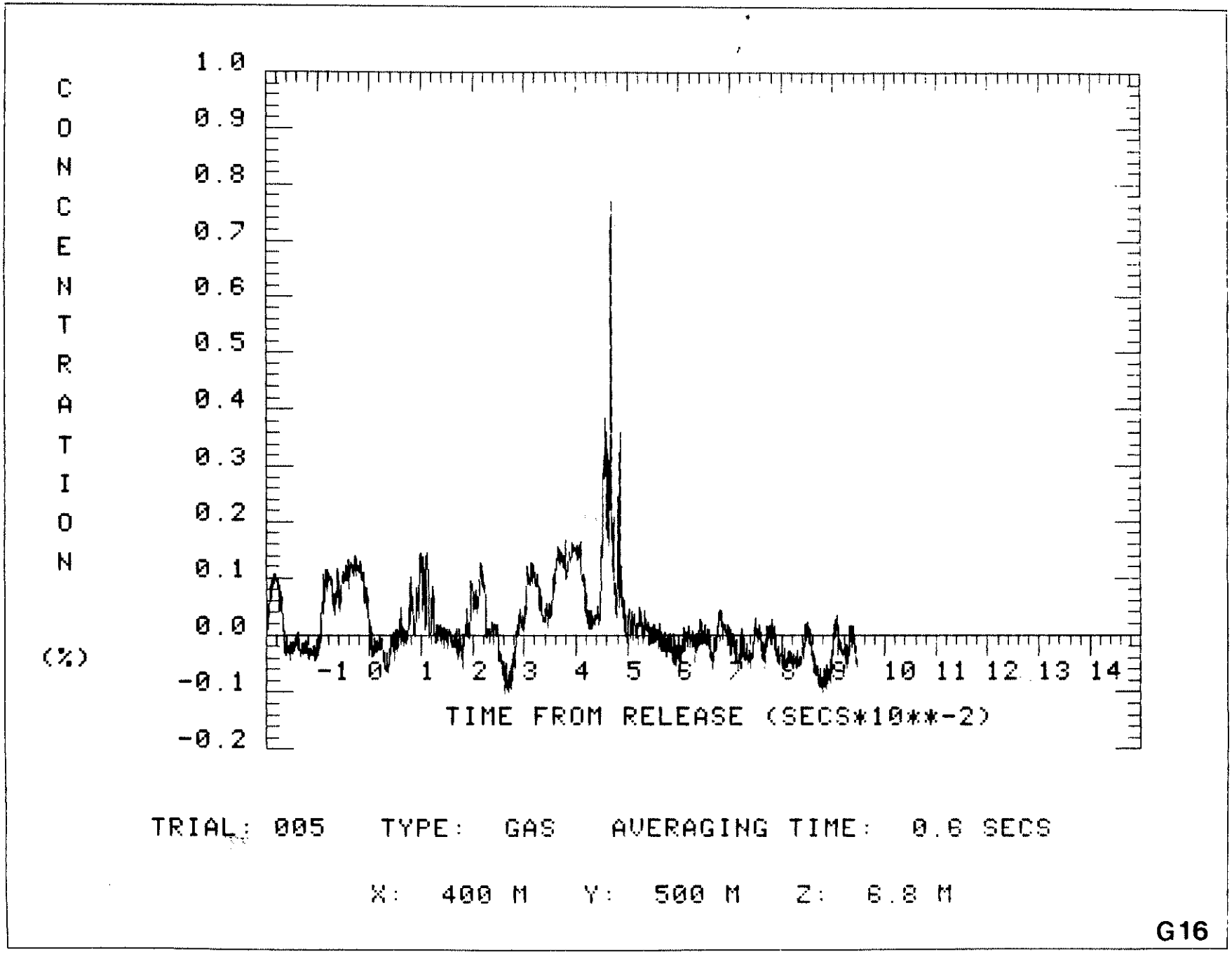
G13


CONCENTRATION (%)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
-0.2
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.6 SECS
X: 400 M Y: 400 M Z: 6.8 M

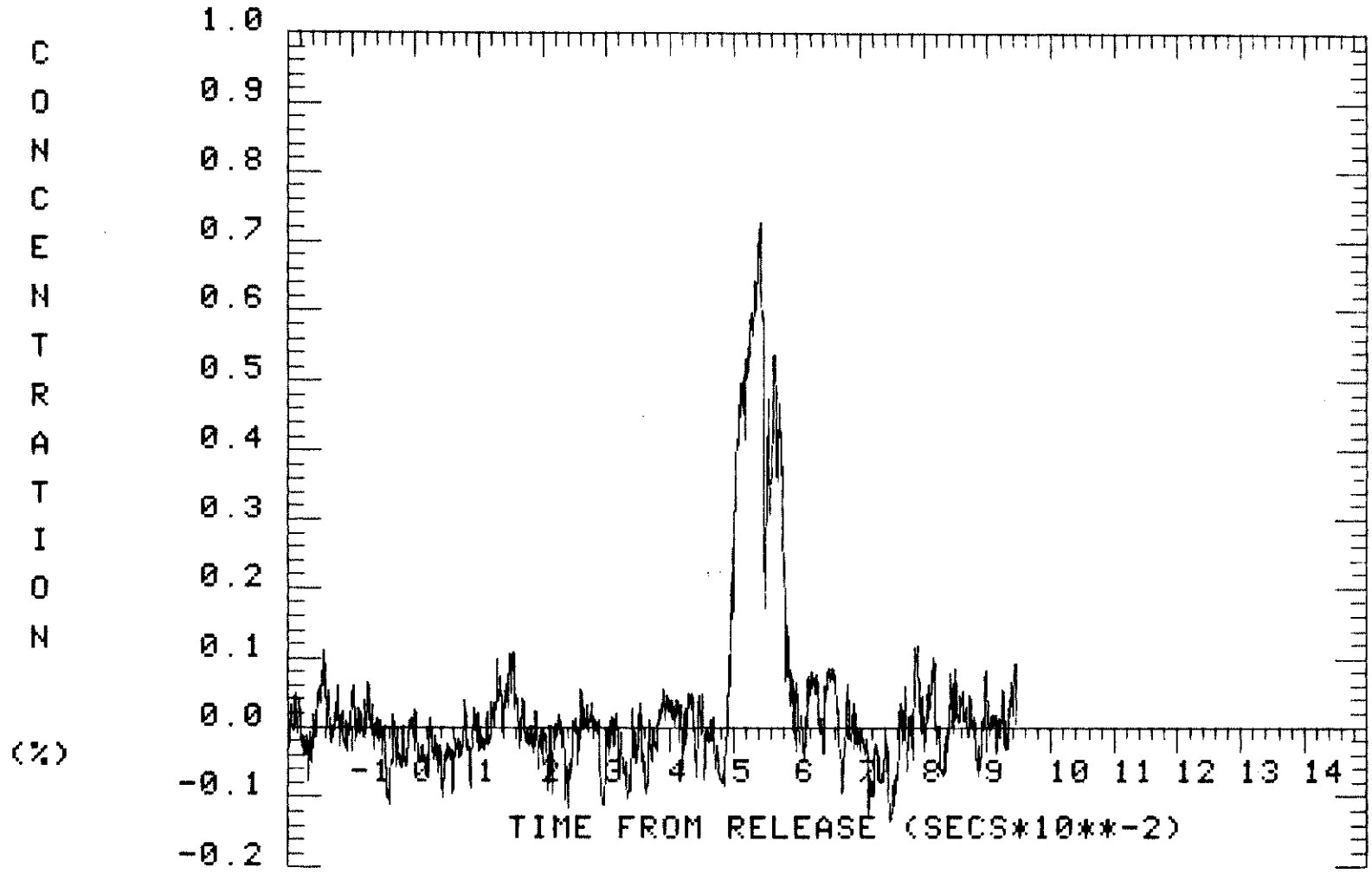
G14


CONCENTRATION
(%)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
-0.2
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.6 SECS
X: 400 M Y: 500 M Z: 0.4 M

G15


CONCENTRATION
(%)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
-0.2
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.6 SECS
X: 400 M Y: 500 M Z: 6.8 M

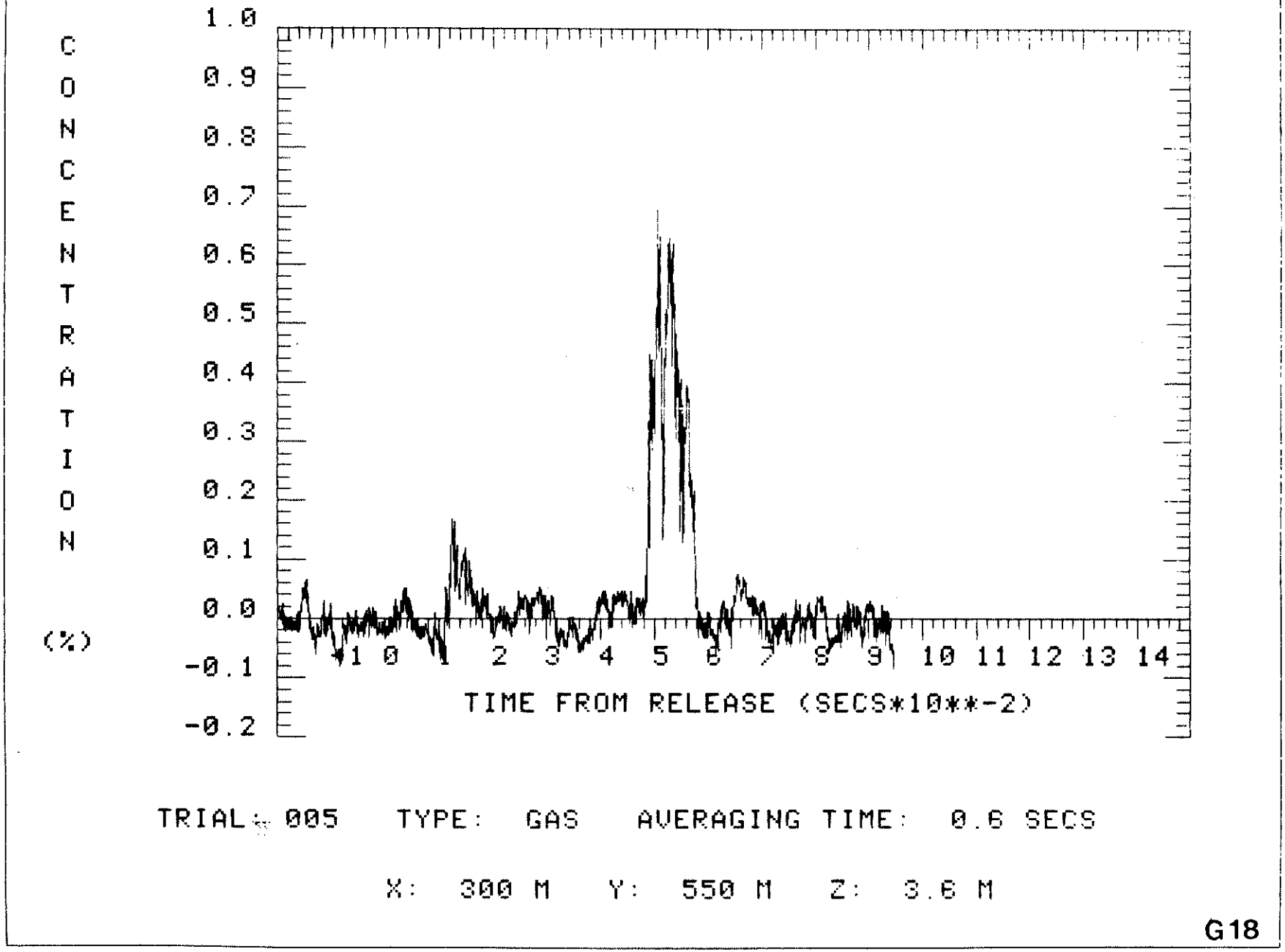
G16



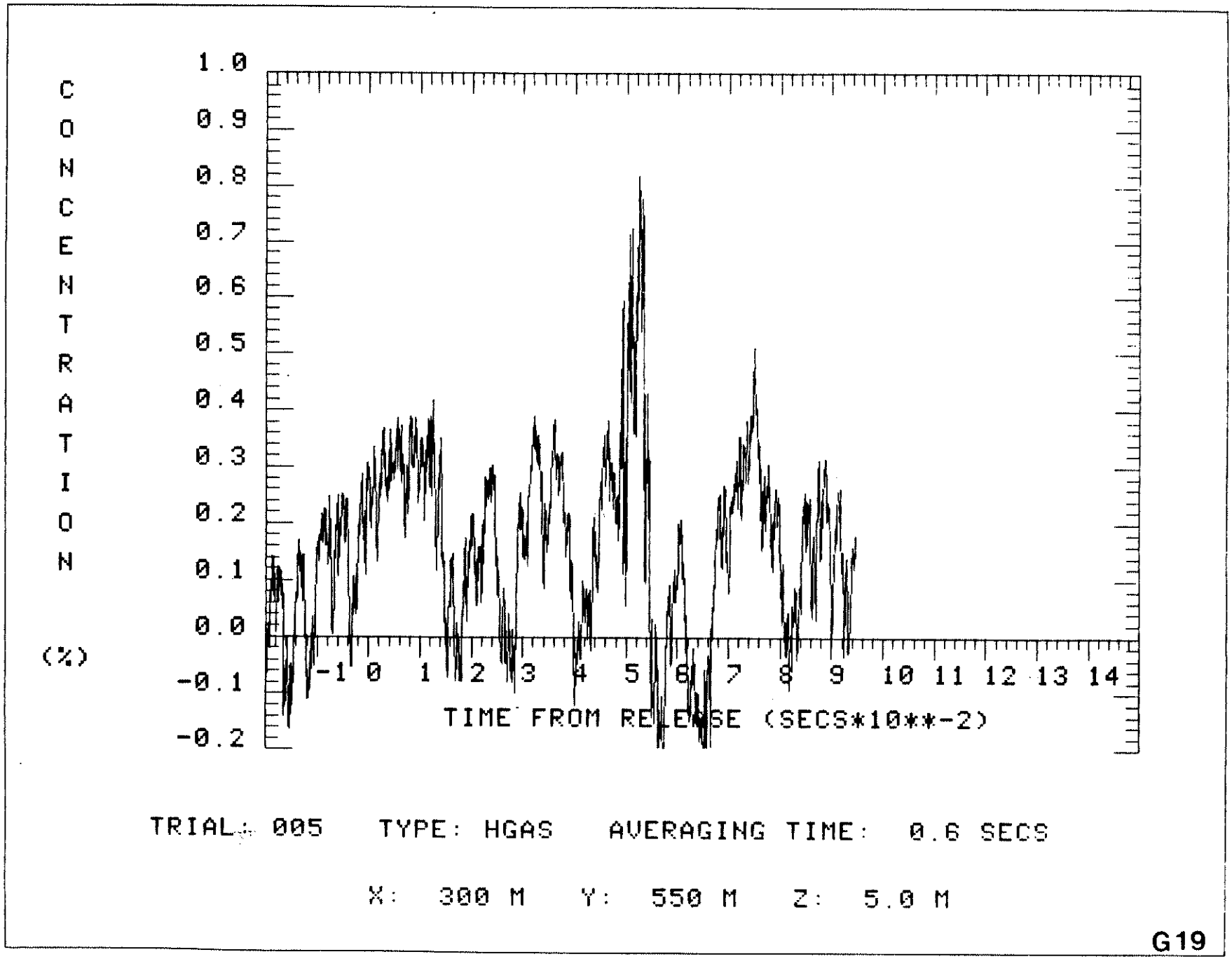
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.6 SECS

X: 300 M Y: 550 M Z: 0.4 M

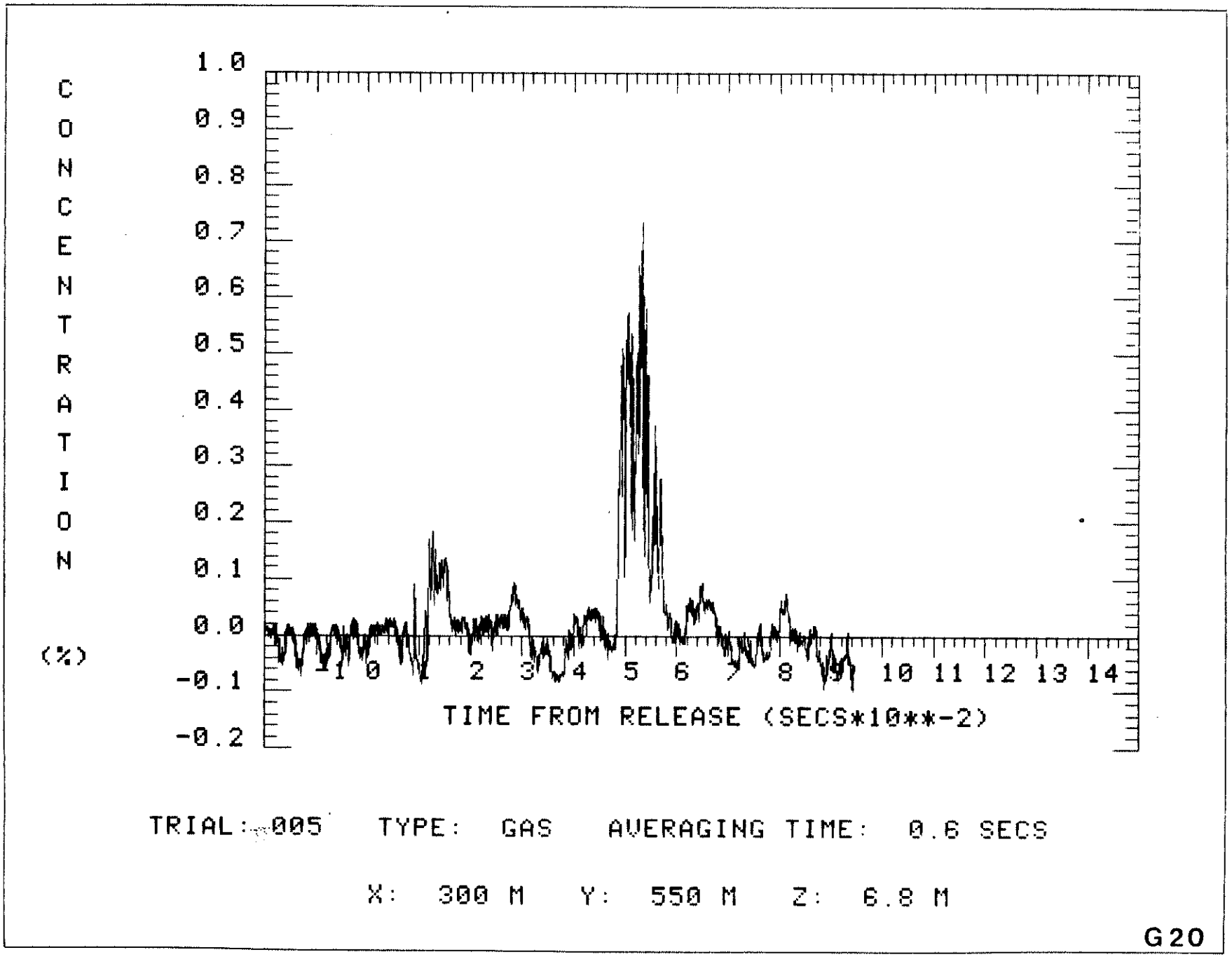
G17


CONCENTRATION
(%)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
-0.2
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.6 SECS
X: 300 M Y: 550 M Z: 3.6 M

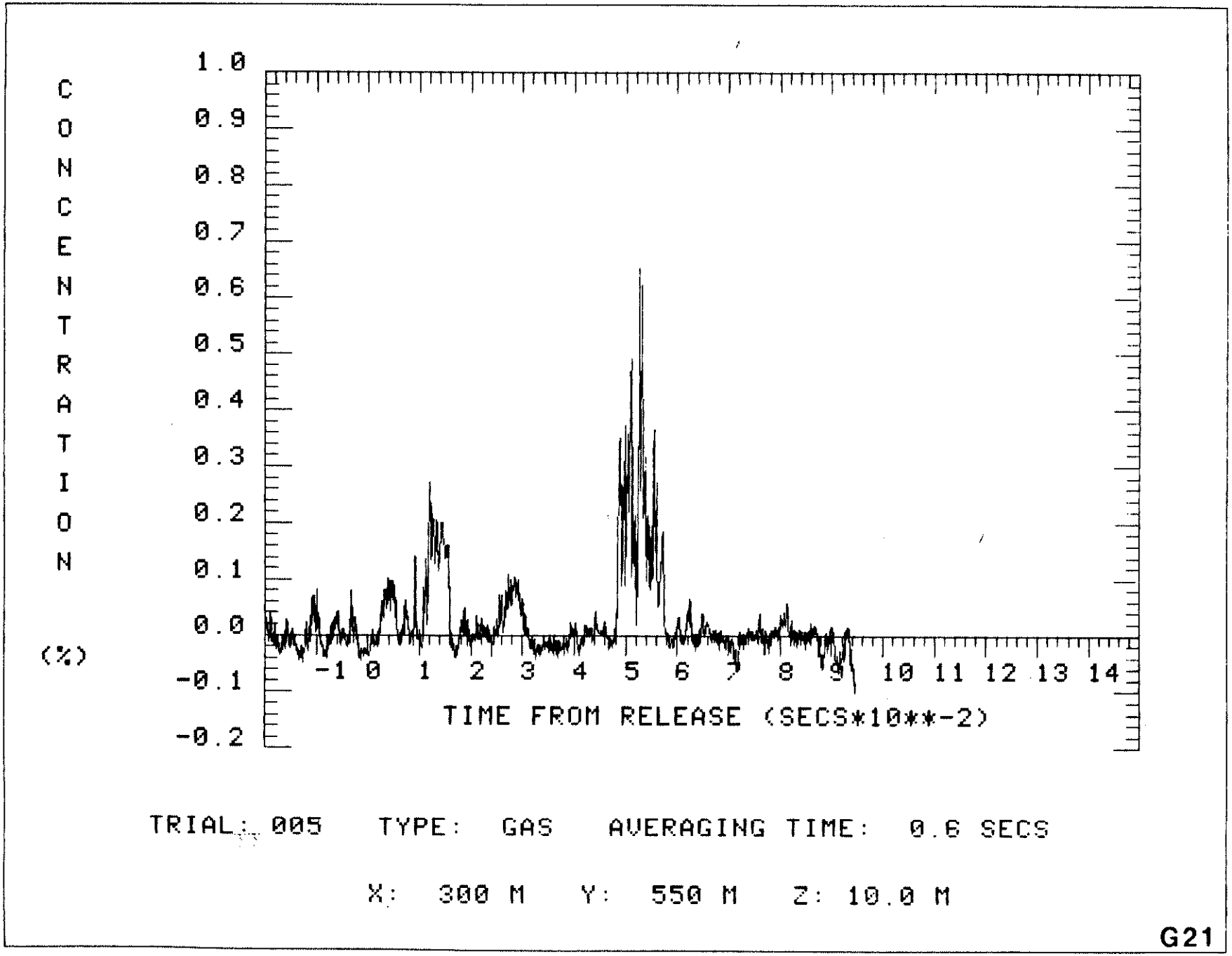
G18


CONCENTRATION (%)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
-0.2
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: HGAS AVERAGING TIME: 0.6 SECS
X: 300 M Y: 550 M Z: 5.0 M

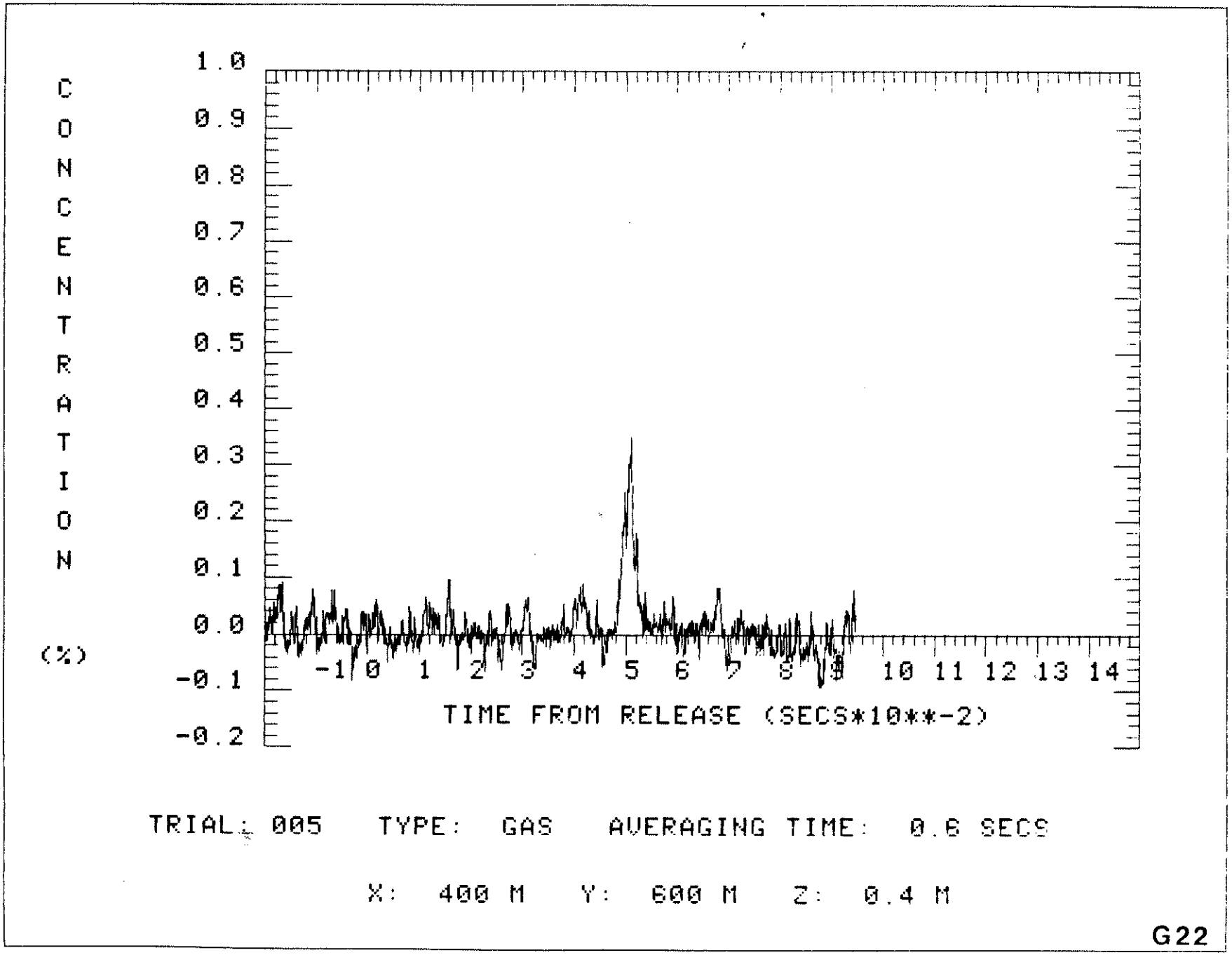
G19

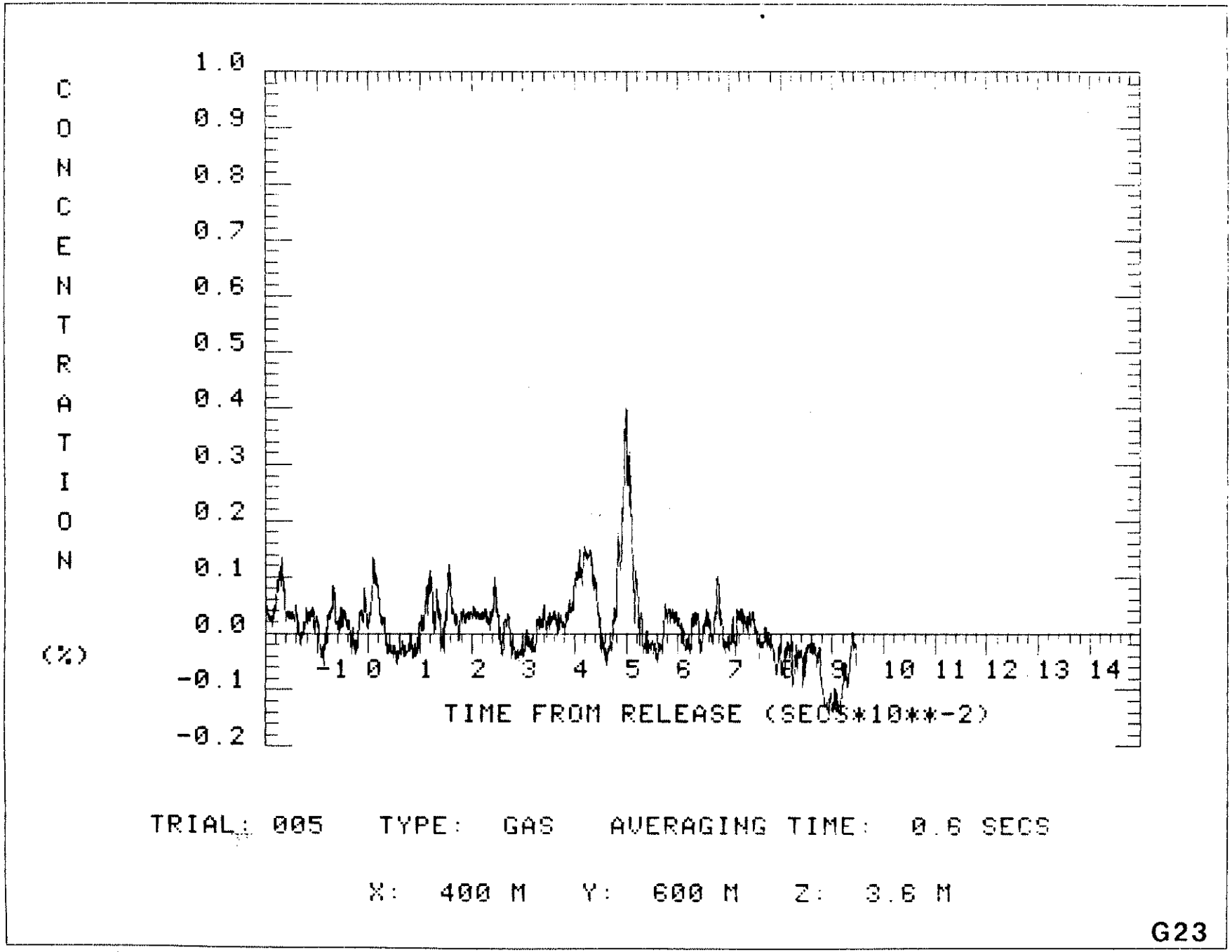

CONCENTRATION (%)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
-0.2
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.6 SECS
X: 300 M Y: 550 M Z: 6.8 M

G20

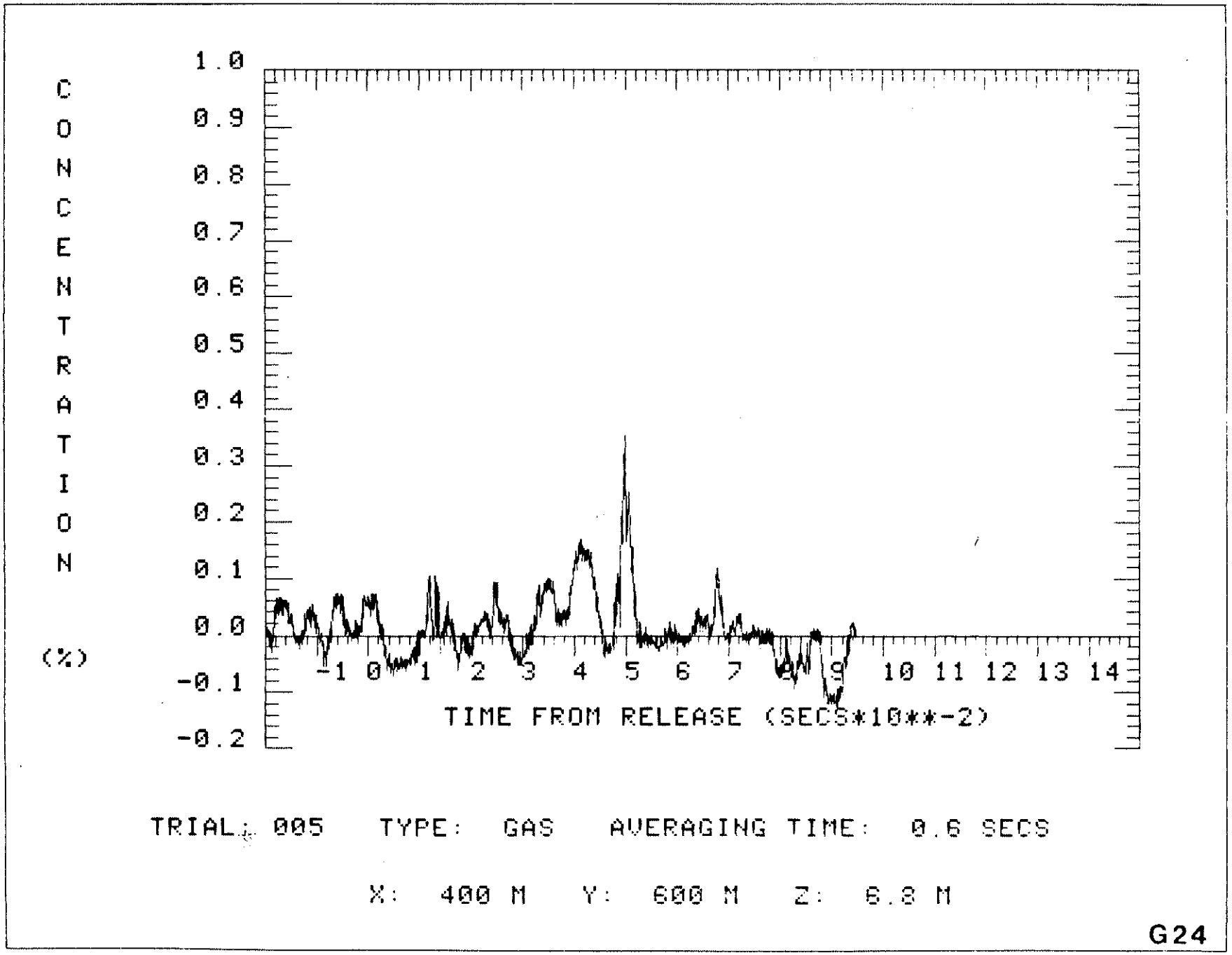

CONCENTRATION
(%)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
-0.2
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.6 SECS
X: 300 M Y: 550 M Z: 10.0 M

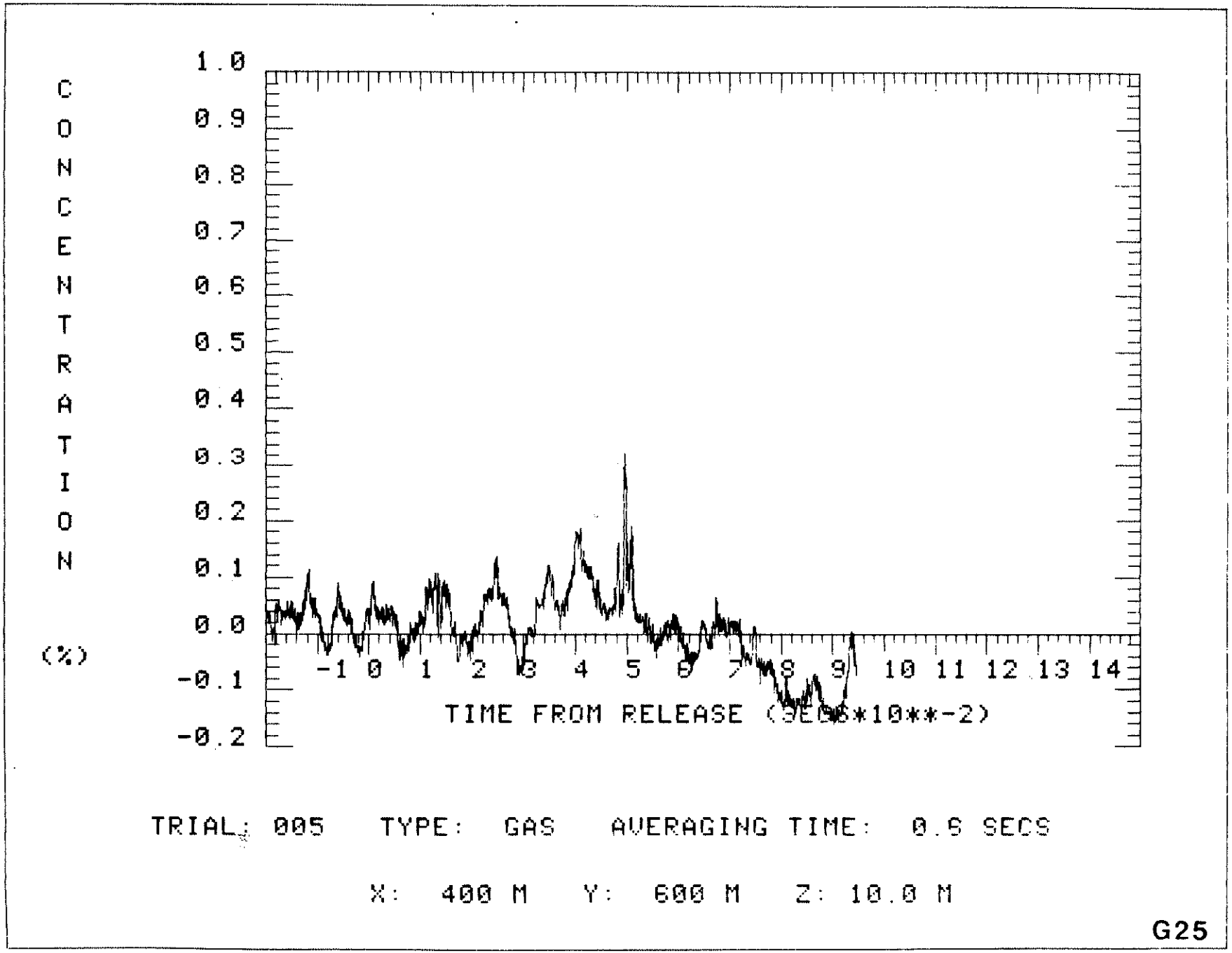
G21


CONCENTRATION
(%)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
-0.2
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.6 SECS
X: 400 M Y: 600 M Z: 0.4 M
G22

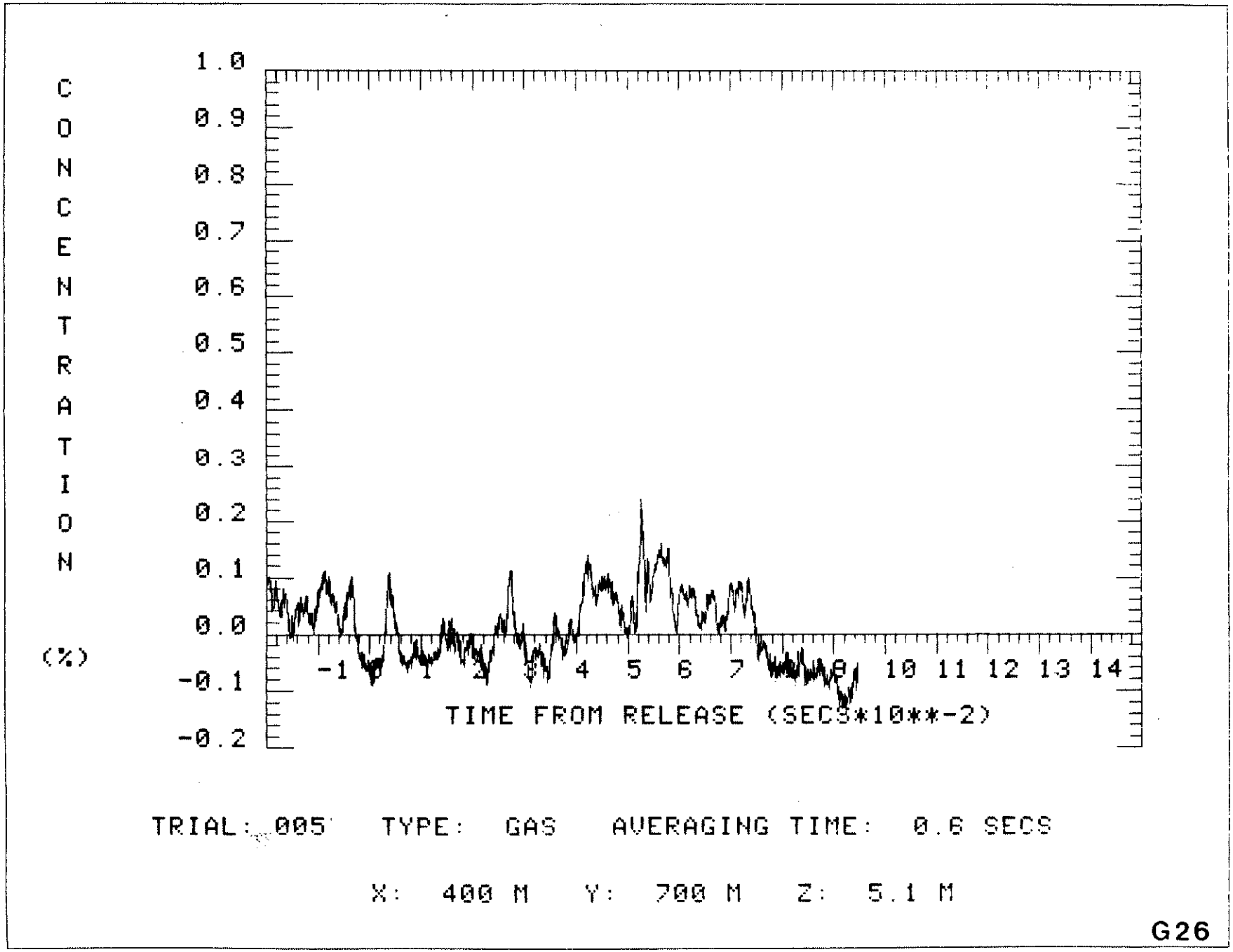

CONCENTRATION
(%)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
-0.2
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.6 SECS
X: 400 M Y: 600 M Z: 3.6 M

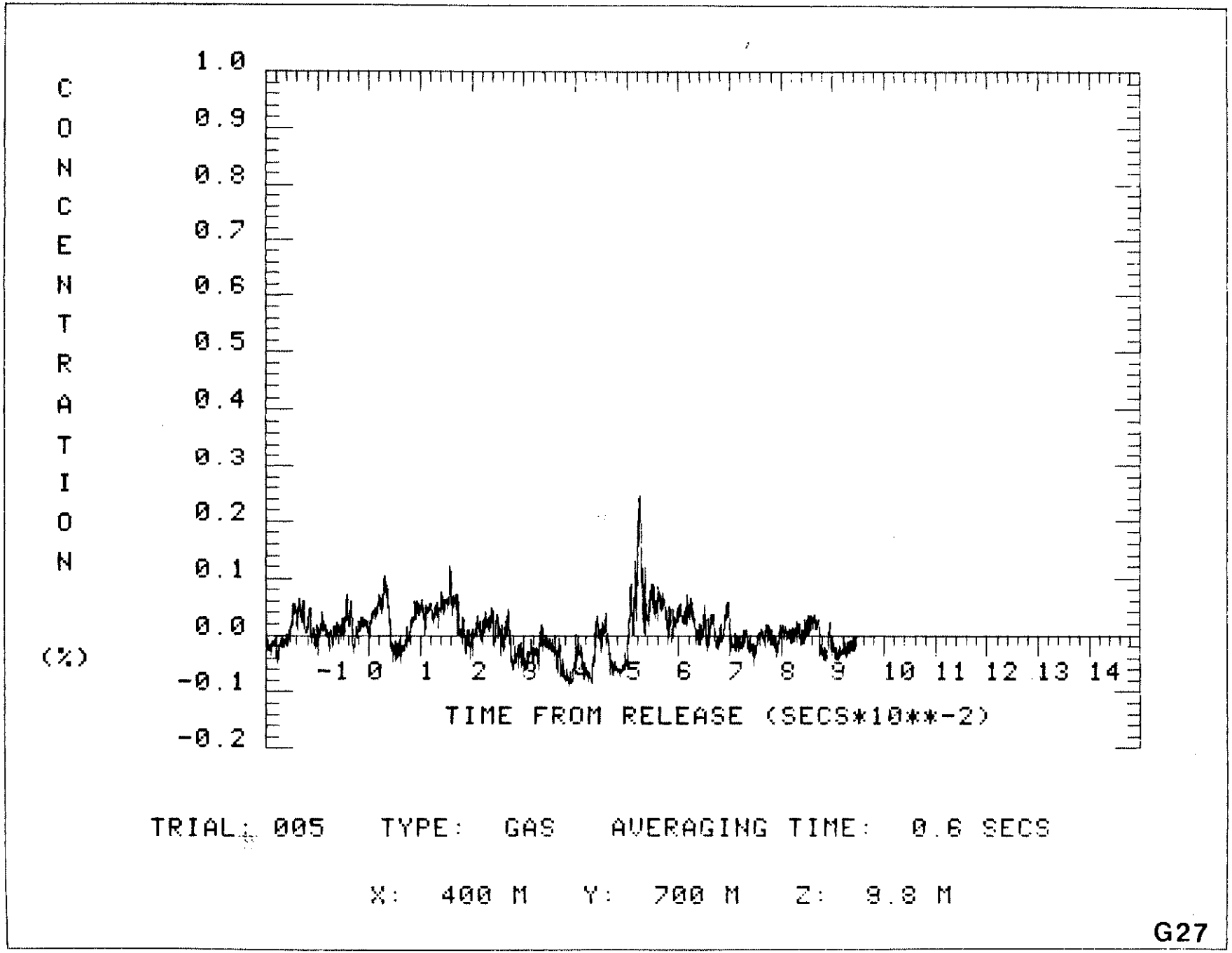
G23


CONCENTRATION (%)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
-0.2
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.6 SECS
X: 400 M Y: 600 M Z: 6.8 M
G24

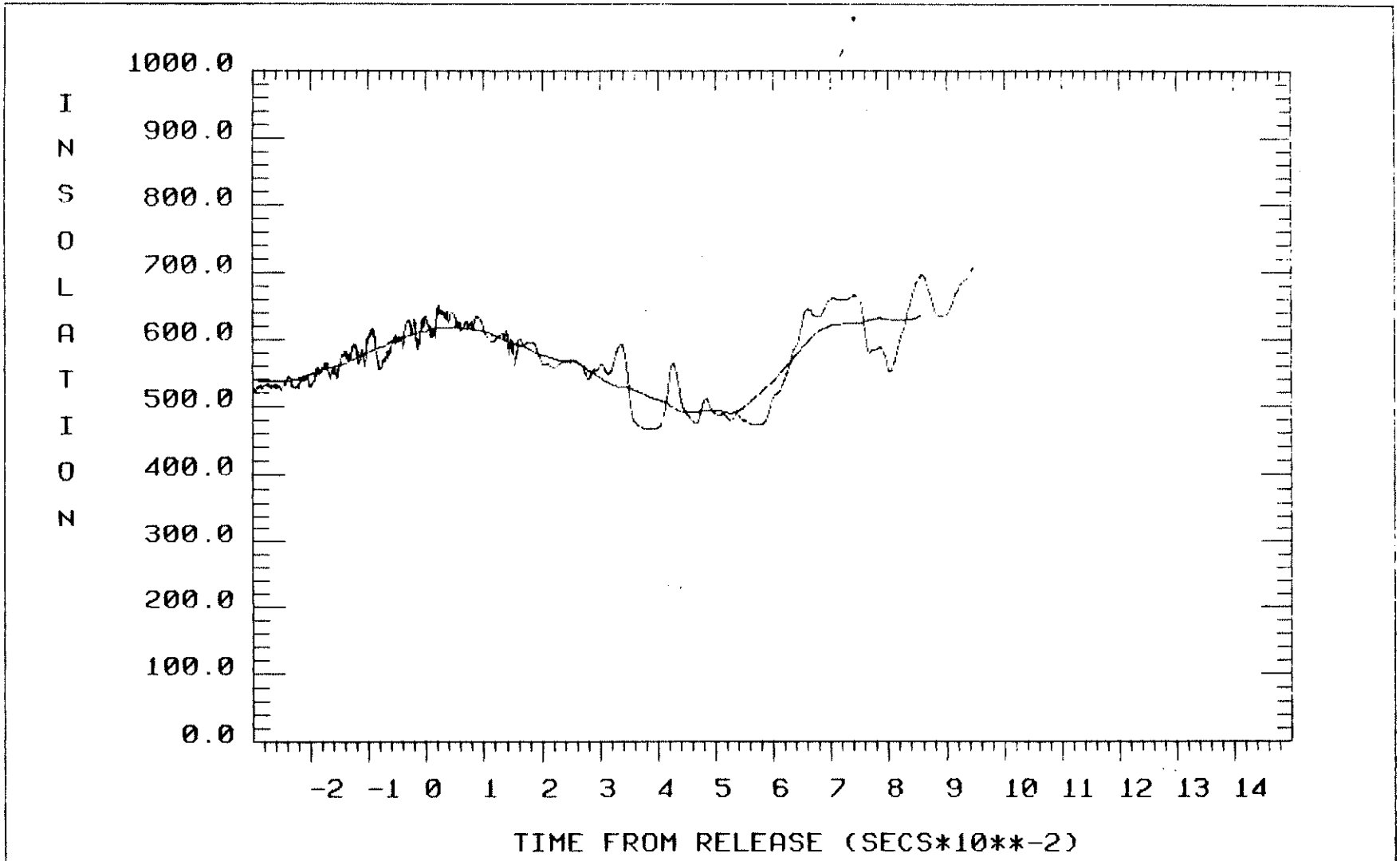

CONCENTRATION
(%)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
-0.2
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.5 SECS
X: 400 M Y: 600 M Z: 10.0 M

G25


CONCENTRATION
(%)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
-0.2
-1
0
1
2
3
4
5
6
7
8
10
11
12
13
14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.6 SECS
X: 400 M Y: 700 M Z: 5.1 M
G26


CONCENTRATION (%)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
-0.2
-1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: GAS AVERAGING TIME: 0.6 SECS
X: 400 M Y: 700 M Z: 9.8 M

G27

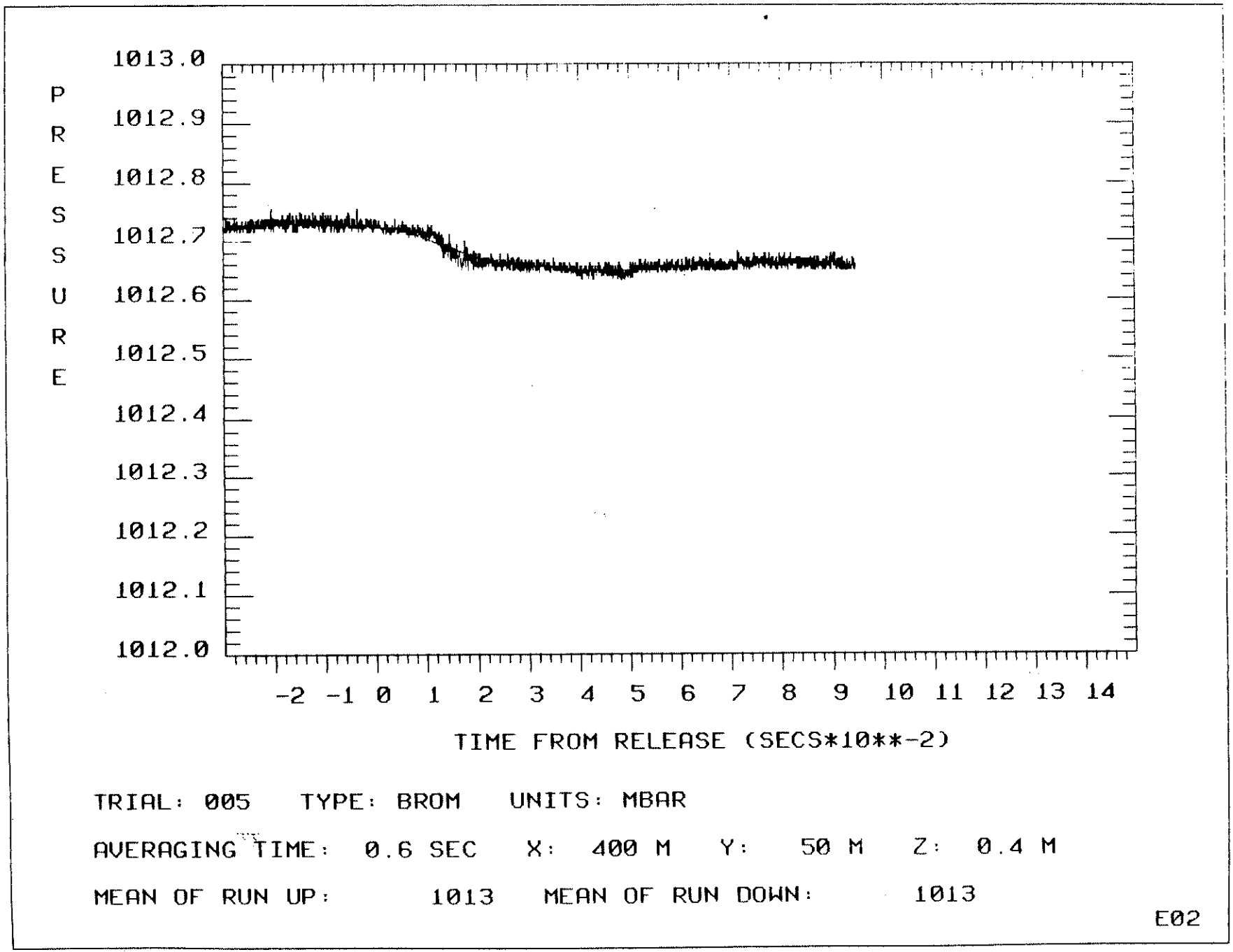


TRIAL: 005 TYPE: SOLA UNITS: W/M**2

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

MEAN OF RUN UP: 524.02 MEAN OF RUN DOWN: 572.70

E01

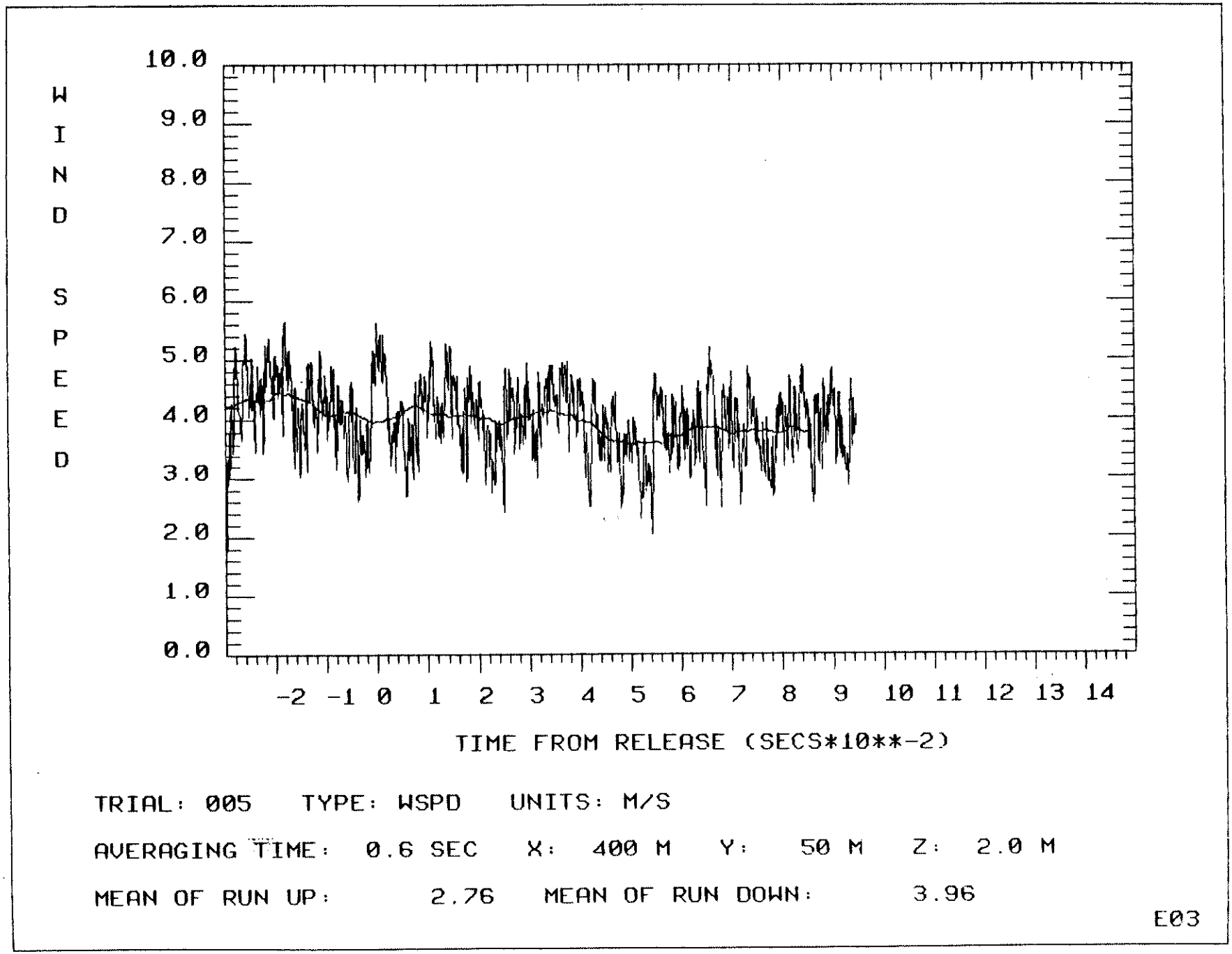


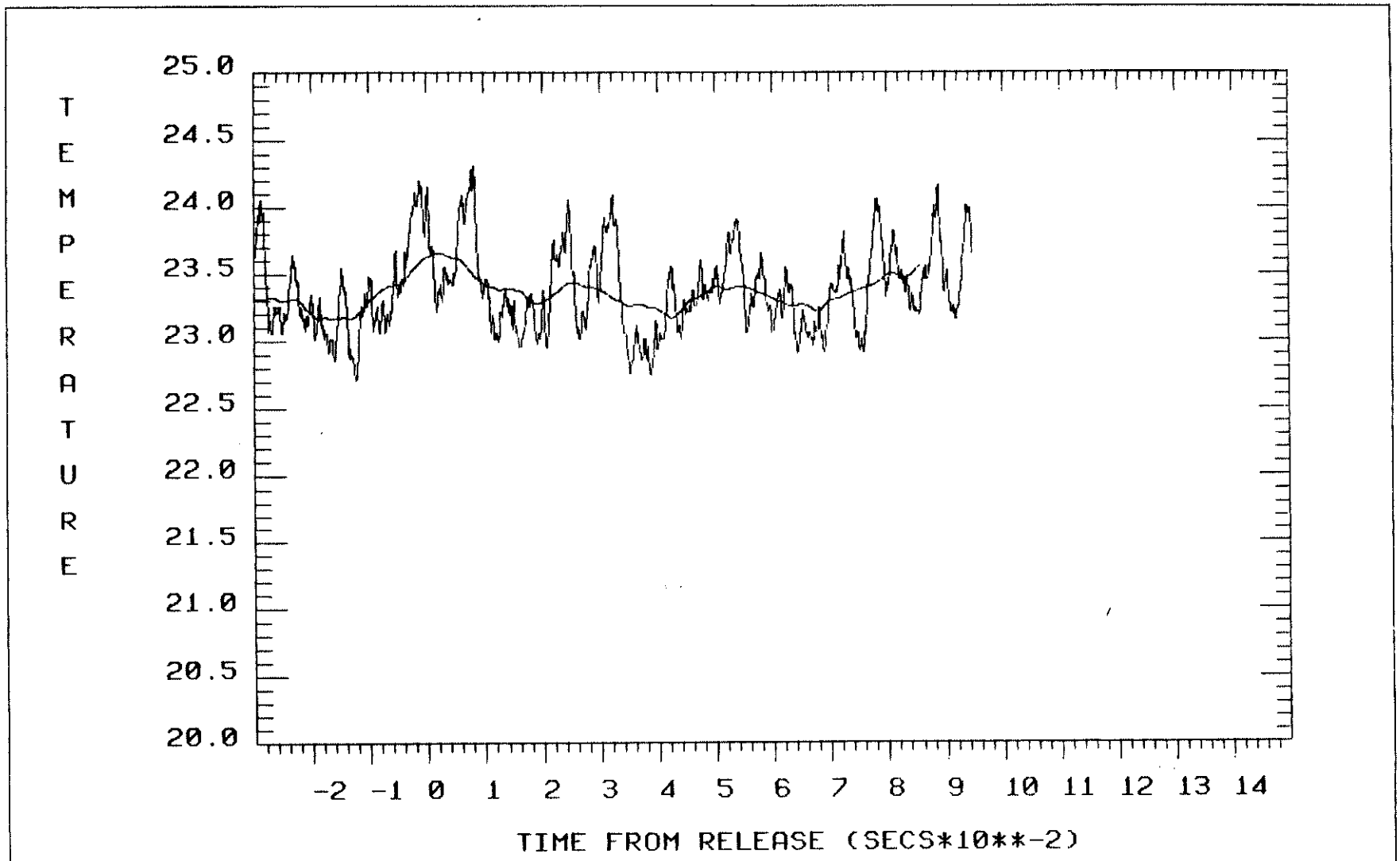
TRIAL: 005 TYPE: BROM UNITS: MBAR

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

MEAN OF RUN UP: 1013 MEAN OF RUN DOWN: 1013

E02


WIND SPEED
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: WSPD UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 2.0 M
MEAN OF RUN UP: 2.76 MEAN OF RUN DOWN: 3.96
E03

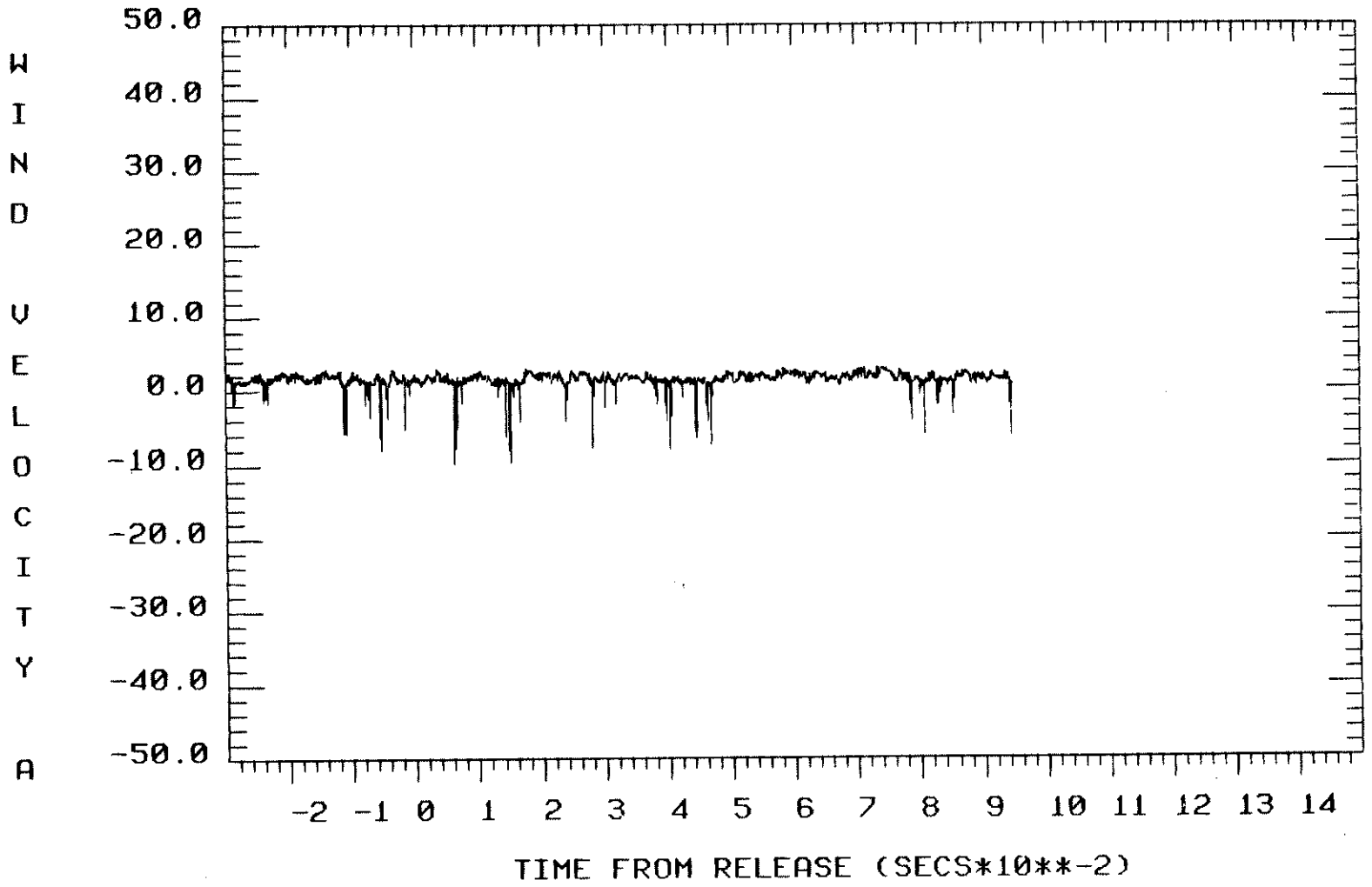


TRIAL: 005 TYPE: AIRT UNITS: DEGREES C

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

MEAN OF RUN UP: 22.81 MEAN OF RUN DOWN: 23.51

E04

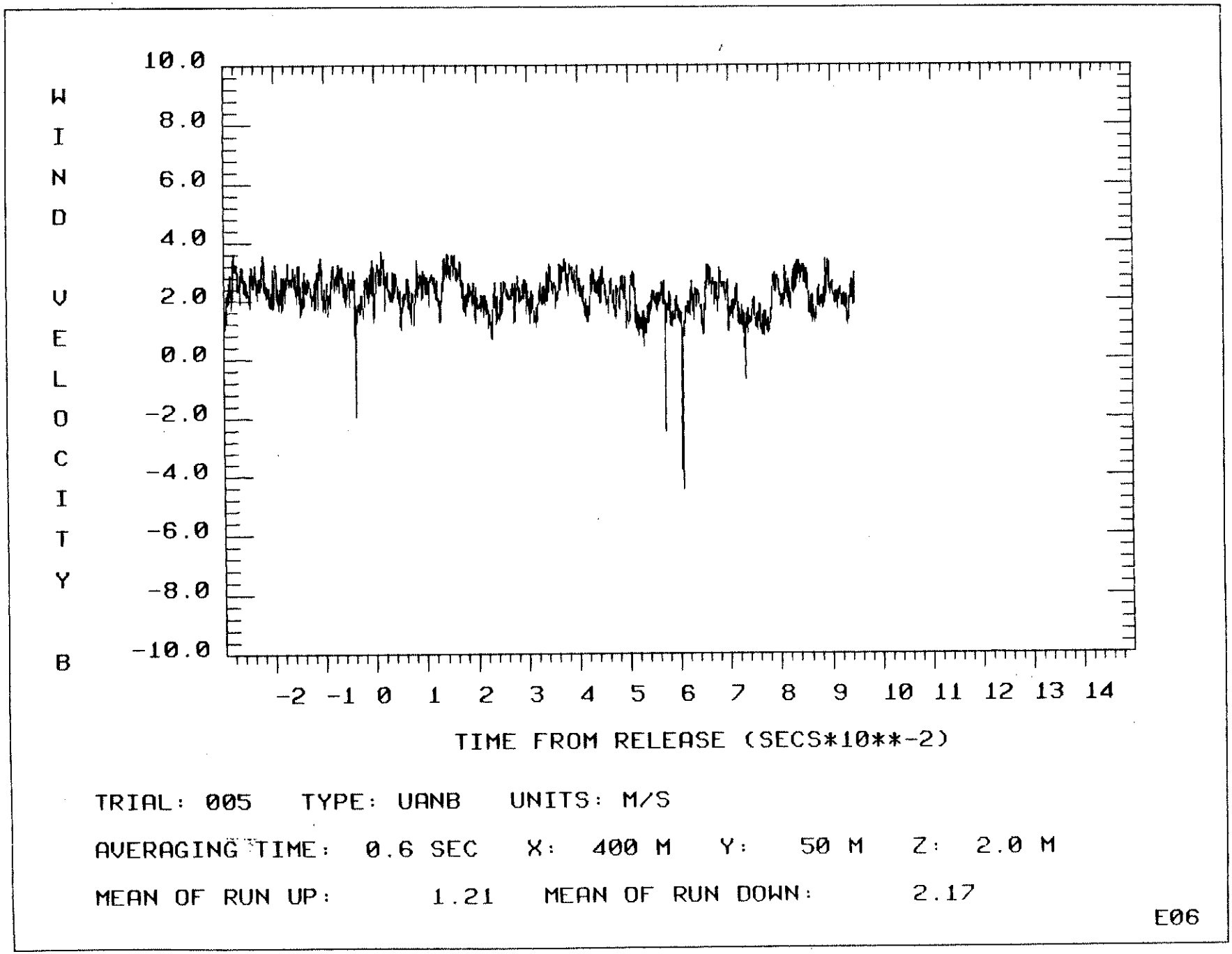


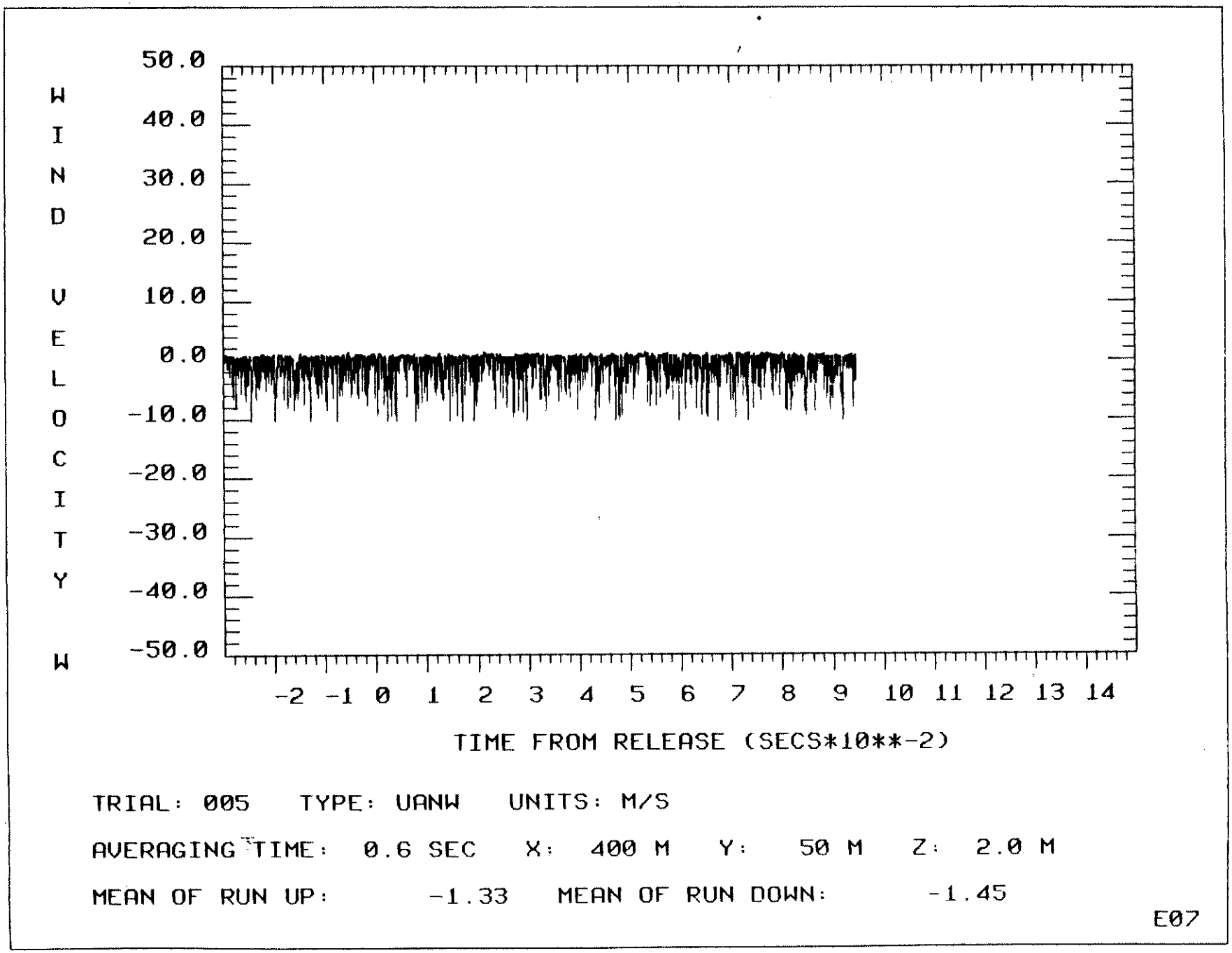
TRIAL: 005 TYPE: UANA UNITS: M/S

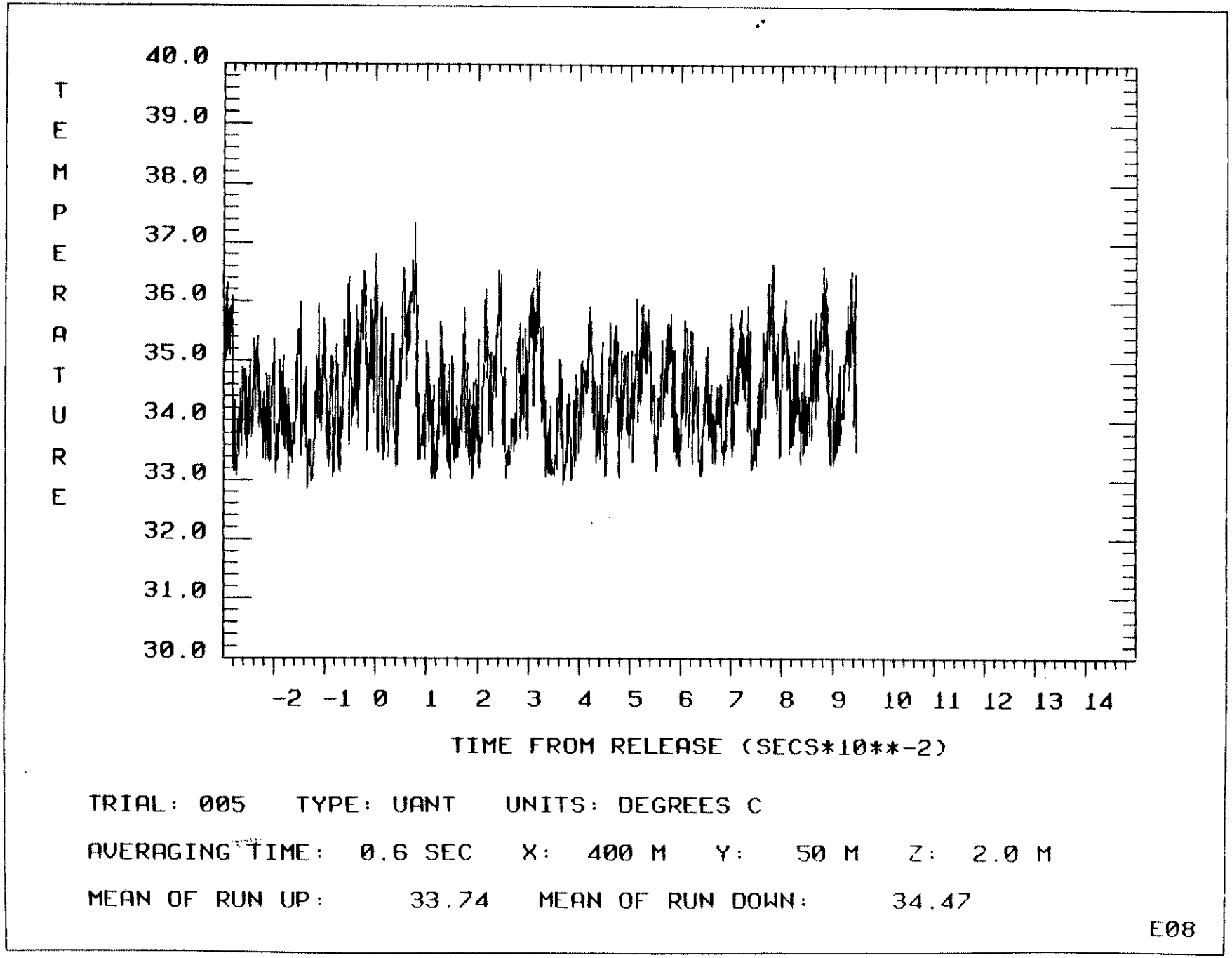
AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 2.0 M

MEAN OF RUN UP: 1.12 MEAN OF RUN DOWN: 1.47

E05


WIND VELOCITY B
10.0
8.0
6.0
4.0
2.0
0.0
-2.0
-4.0
-6.0
-8.0
-10.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANB UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 2.0 M
MEAN OF RUN UP: 1.21 MEAN OF RUN DOWN: 2.17
E06


WIND VELOCITY W
50.0
40.0
30.0
20.0
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANW UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 2.0 M
MEAN OF RUN UP: -1.33 MEAN OF RUN DOWN: -1.45
E07

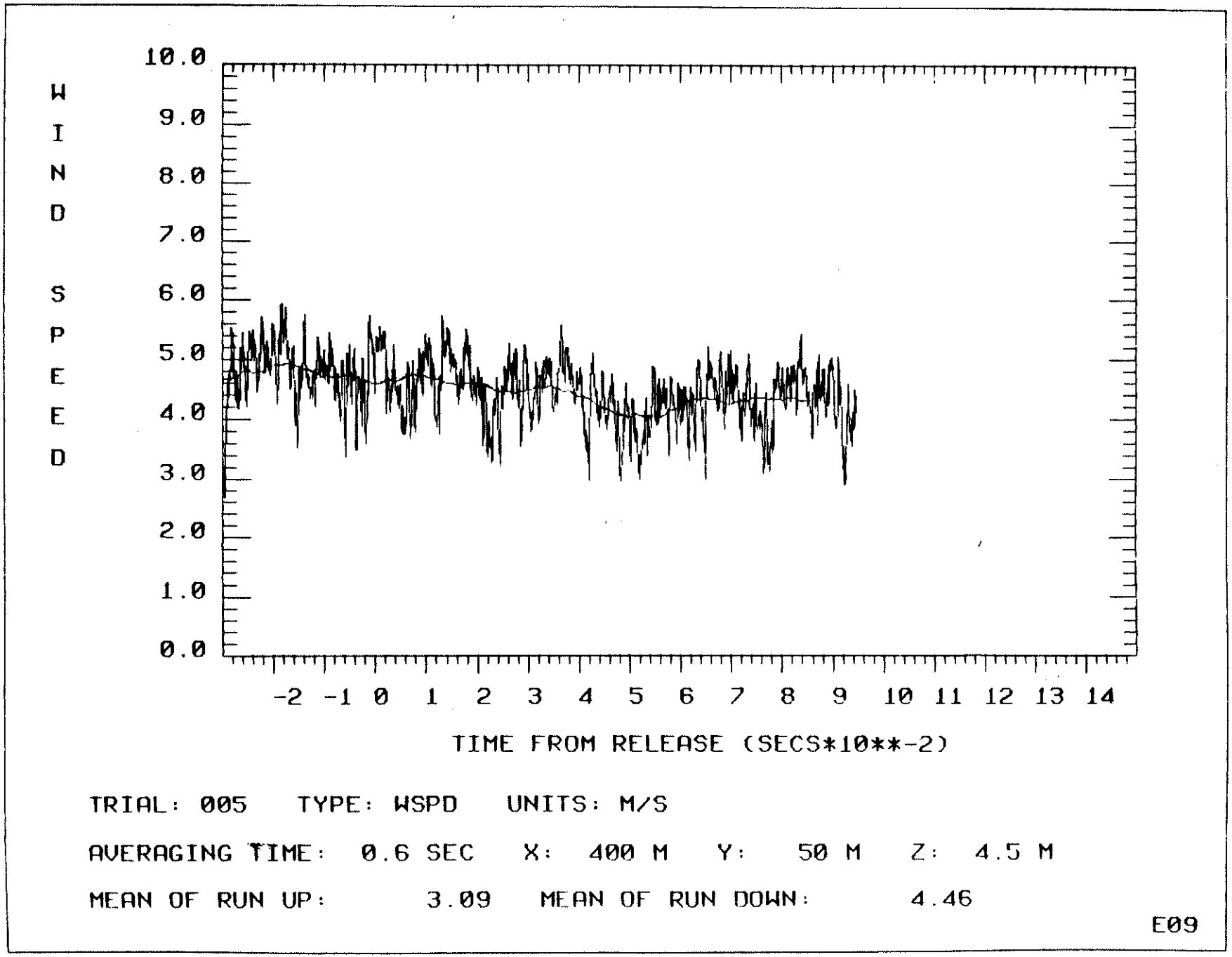


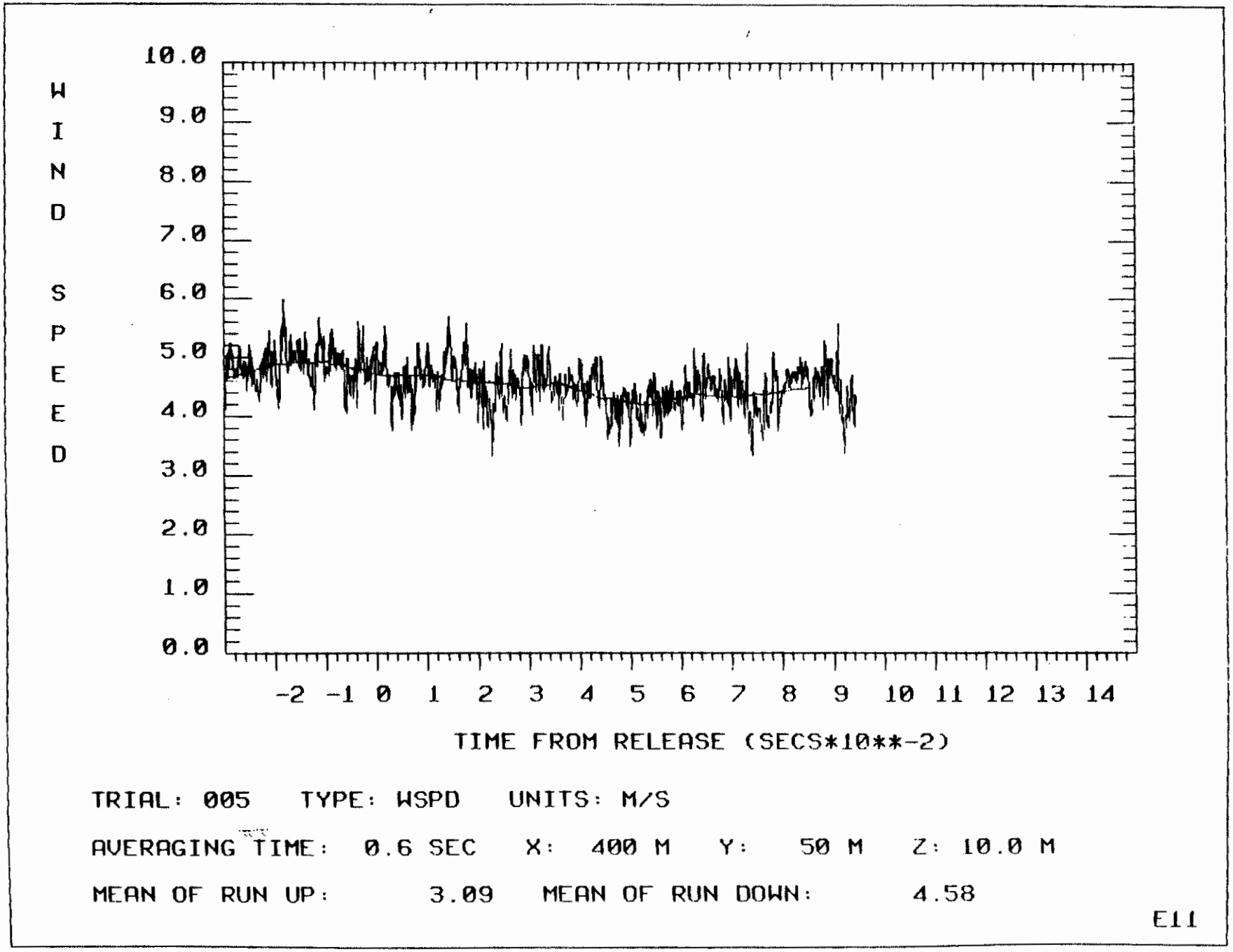
TRIAL: 005 TYPE: UANT UNITS: DEGREES C

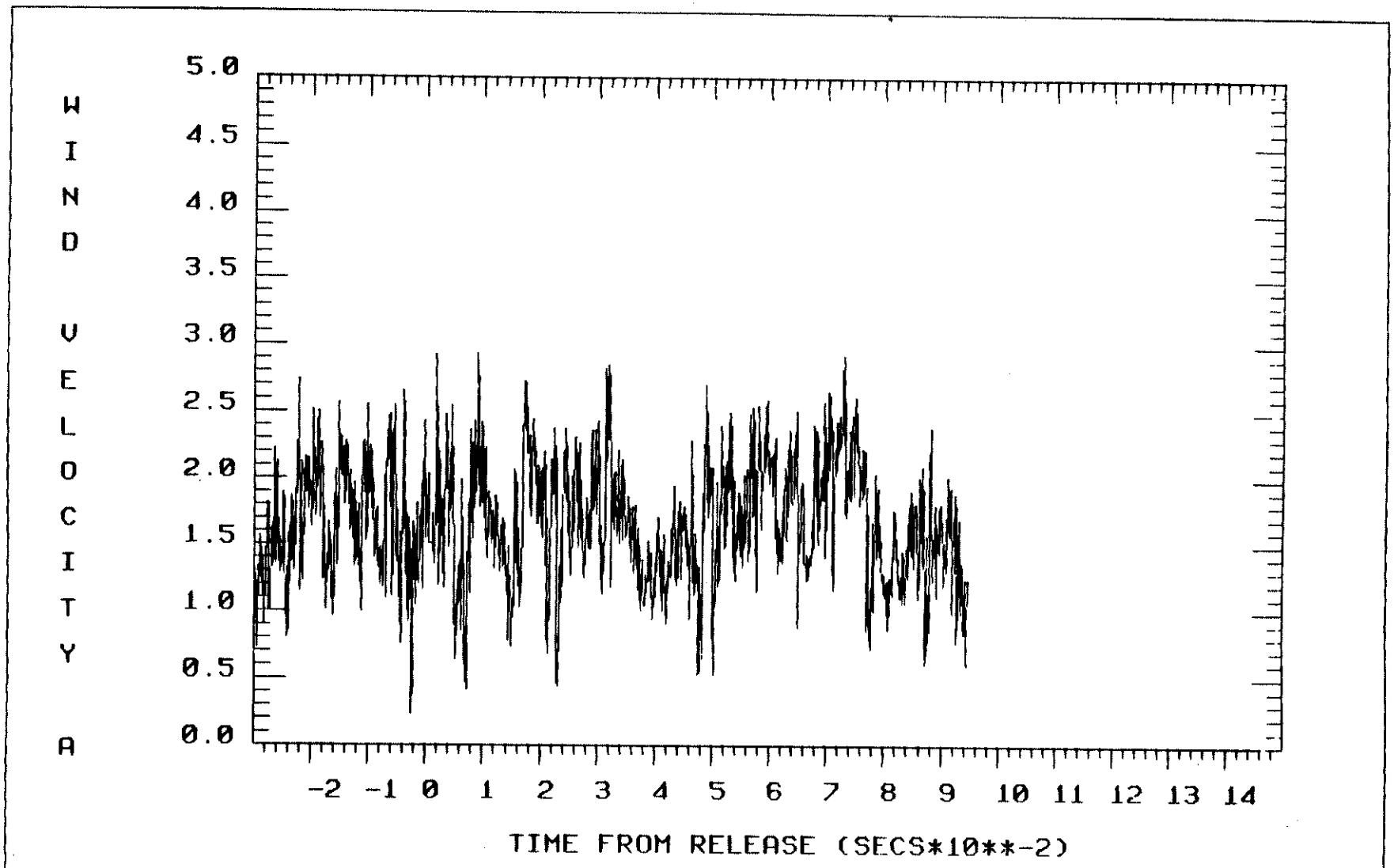
AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 2.0 M

MEAN OF RUN UP: 33.74 MEAN OF RUN DOWN: 34.47

E08


WIND SPEED
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: WSPD UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 4.5 M
MEAN OF RUN UP: 3.09 MEAN OF RUN DOWN: 4.46
E09


WIND SPEED
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: WSPD UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 10.0 M
MEAN OF RUN UP: 3.09 MEAN OF RUN DOWN: 4.58
E11

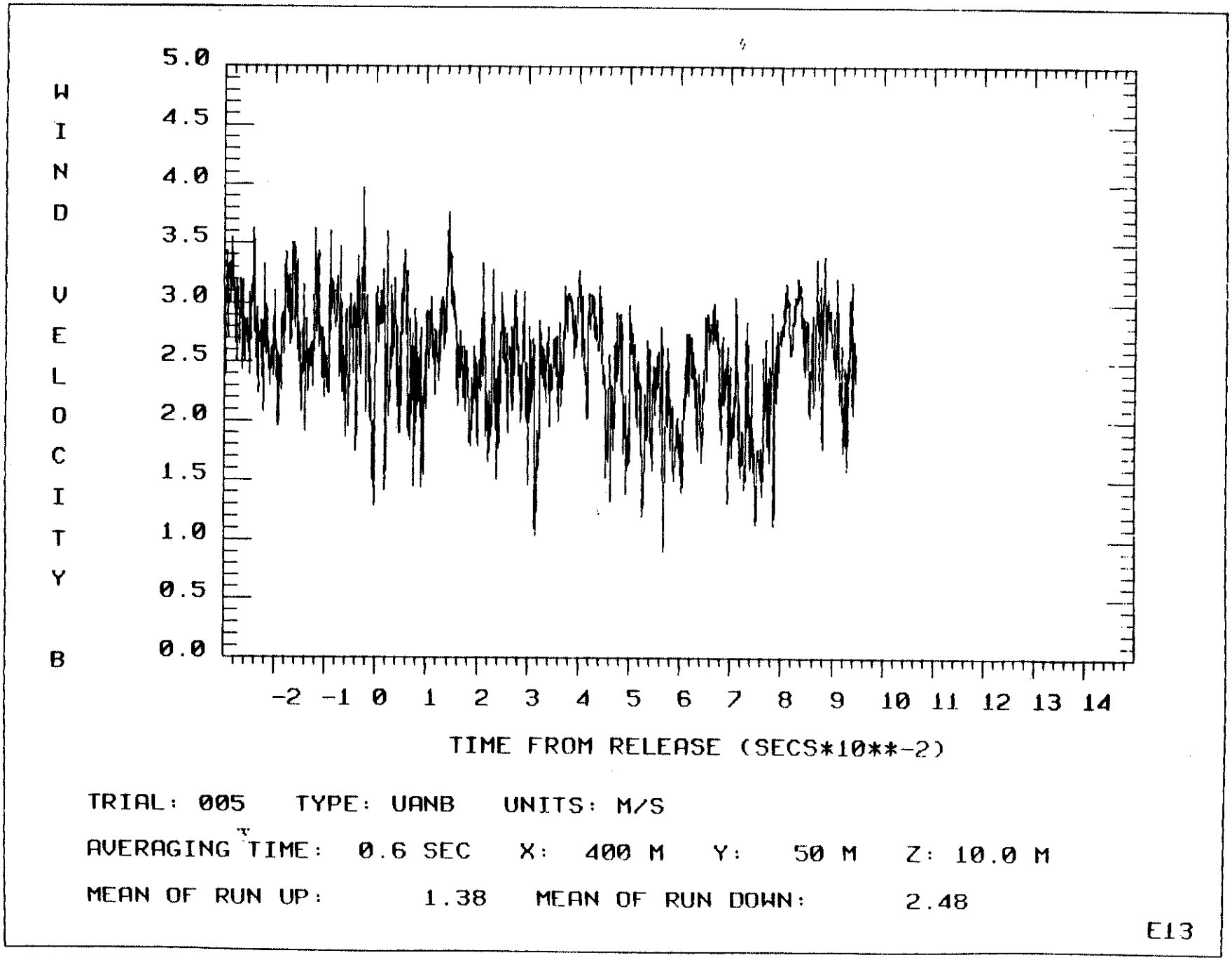


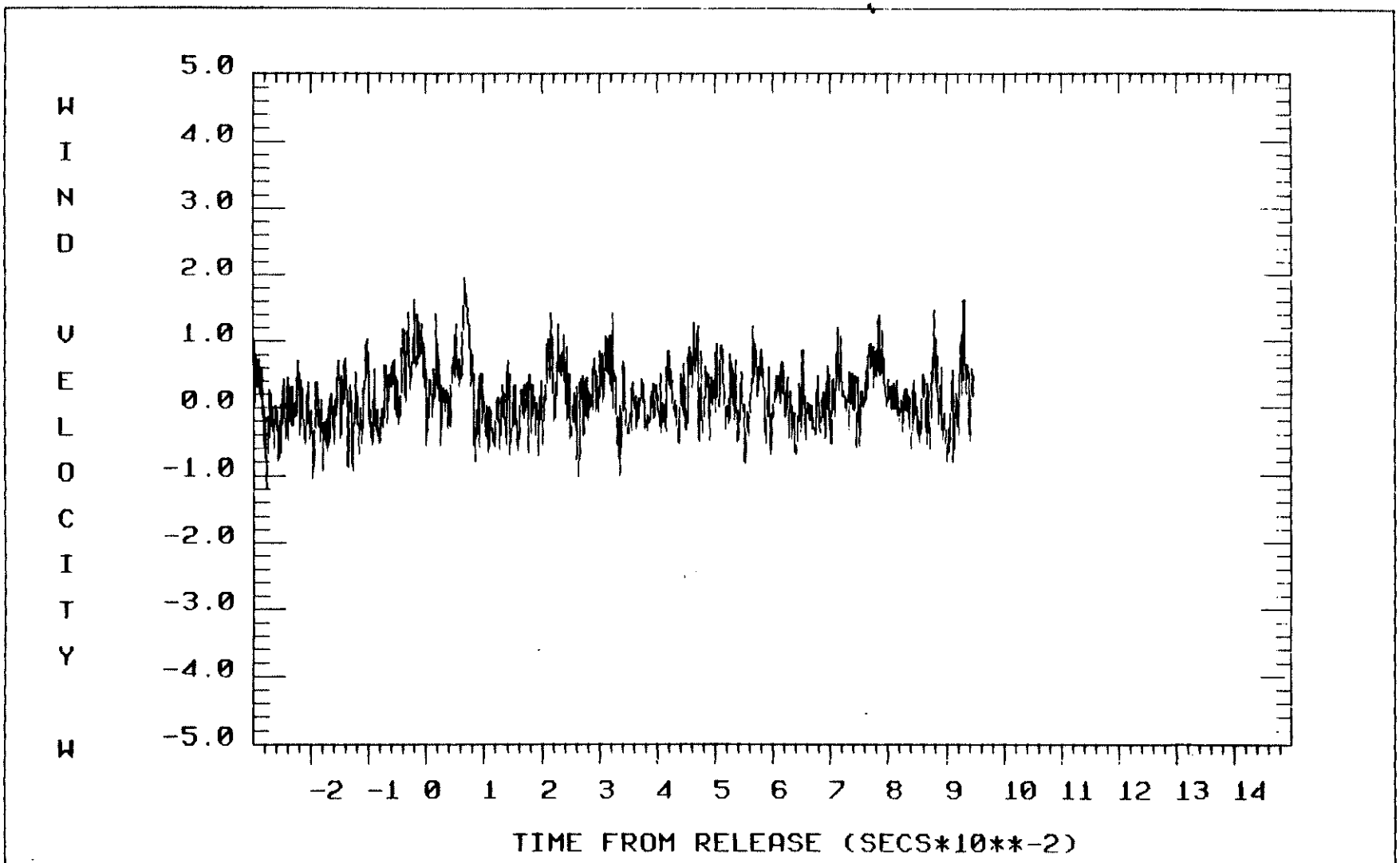
TRIAL: 005 TYPE: UANA UNITS: M/S

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

MEAN OF RUN UP: 1.50 MEAN OF RUN DOWN: 1.76

E12


WIND VELOCITY B
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANB UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 10.0 M
MEAN OF RUN UP: 1.38 MEAN OF RUN DOWN: 2.48
E13

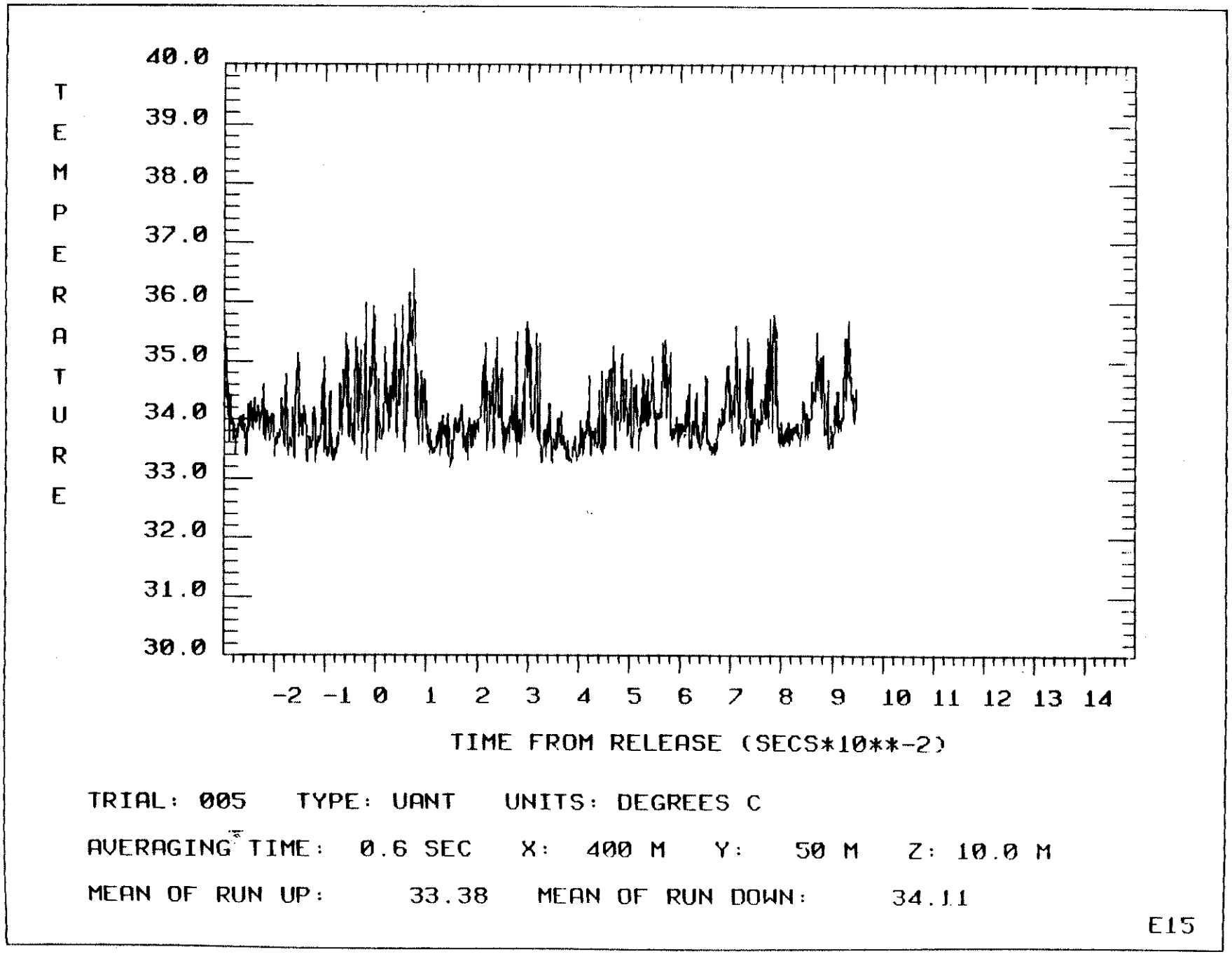


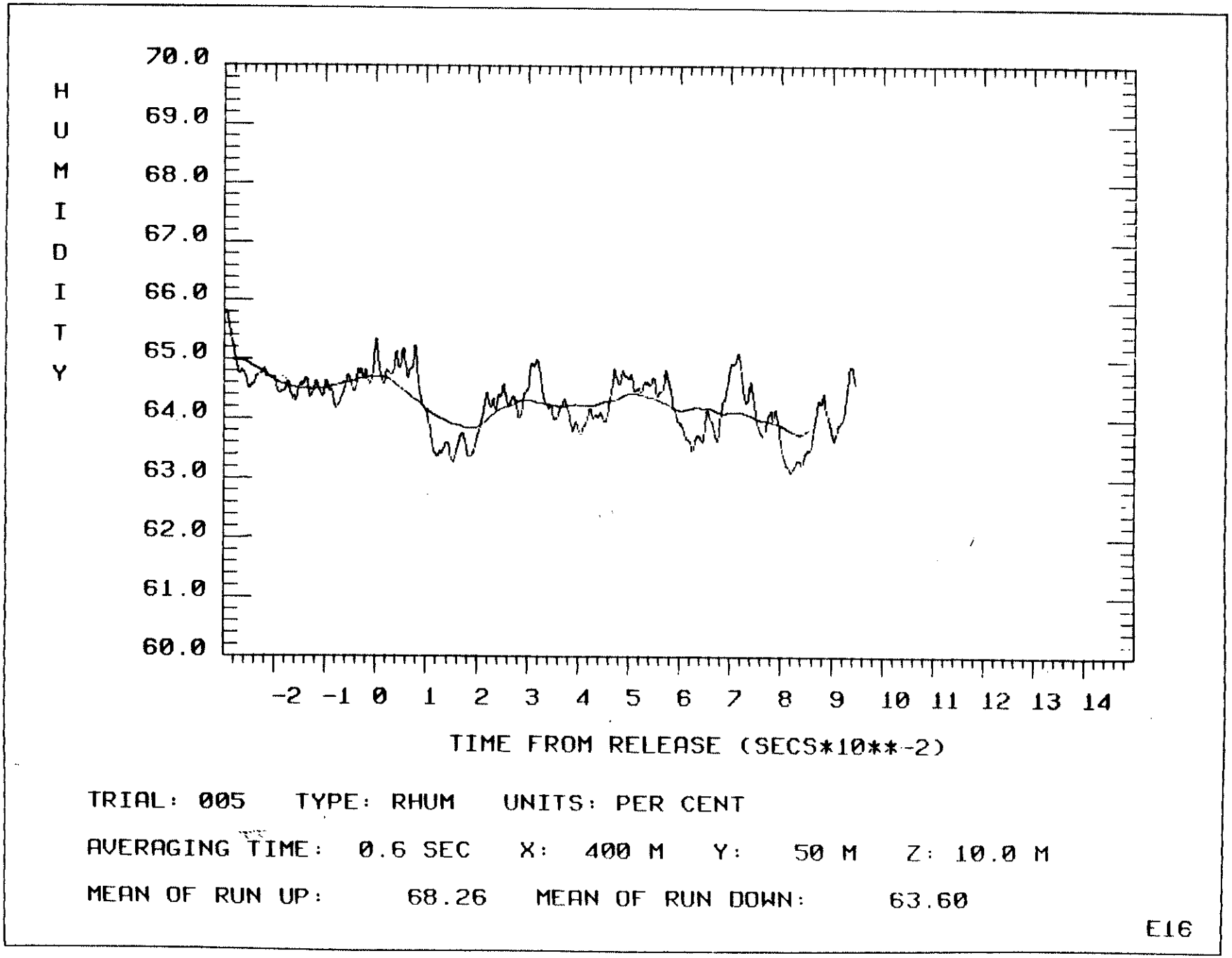
TRIAL: 005 TYPE: UANW UNITS: M/S

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

MEAN OF RUN UP: 0.04 MEAN OF RUN DOWN: 0.07

E14


TEMPERATURE
40.0
39.0
38.0
37.0
36.0
35.0
34.0
33.0
32.0
31.0
30.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANT UNITS: DEGREES C
AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 10.0 M
MEAN OF RUN UP: 33.38 MEAN OF RUN DOWN: 34.11
E15

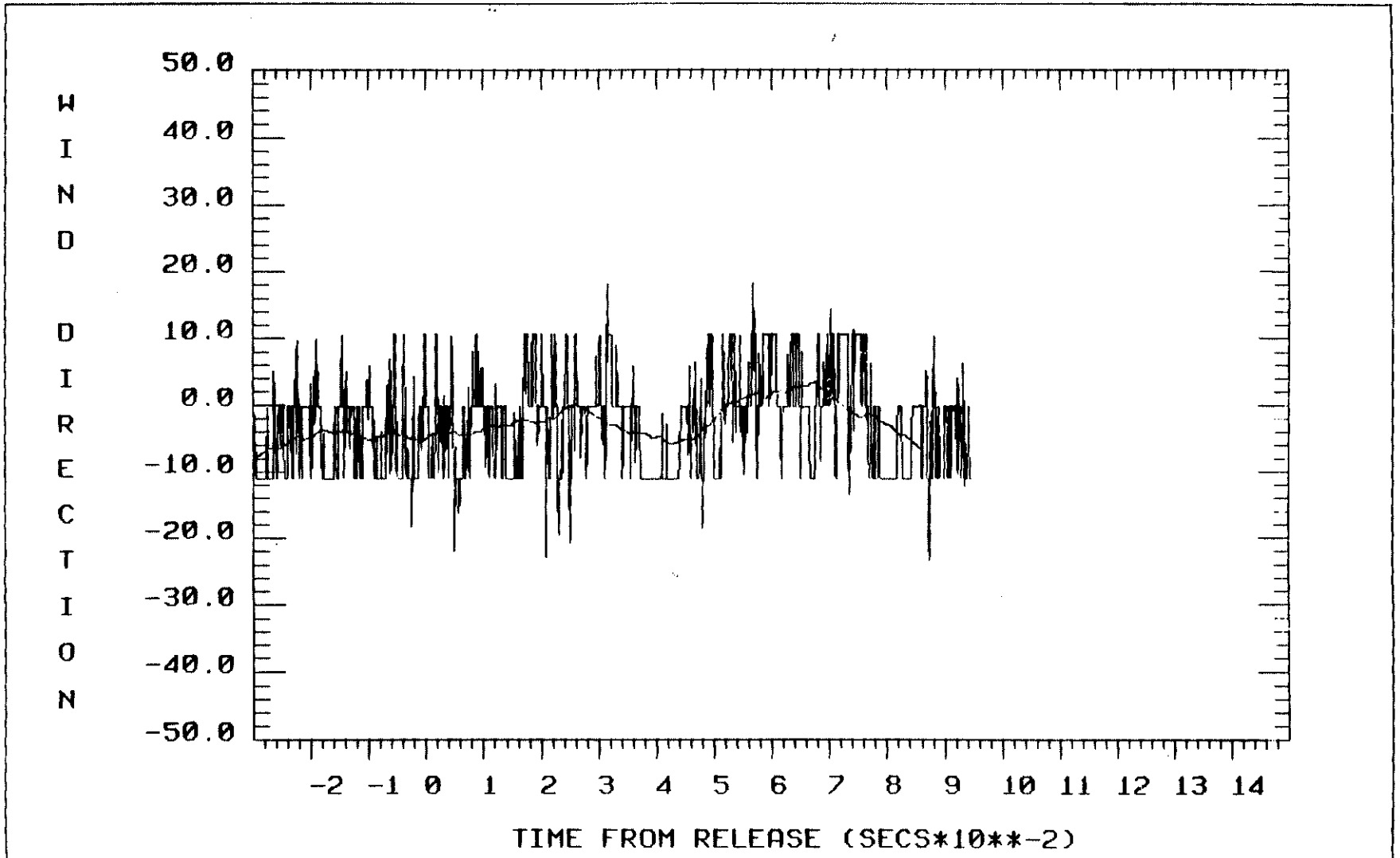


TRIAL: 005 TYPE: RHUM UNITS: PER CENT

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

MEAN OF RUN UP: 68.26 MEAN OF RUN DOWN: 63.60

E16

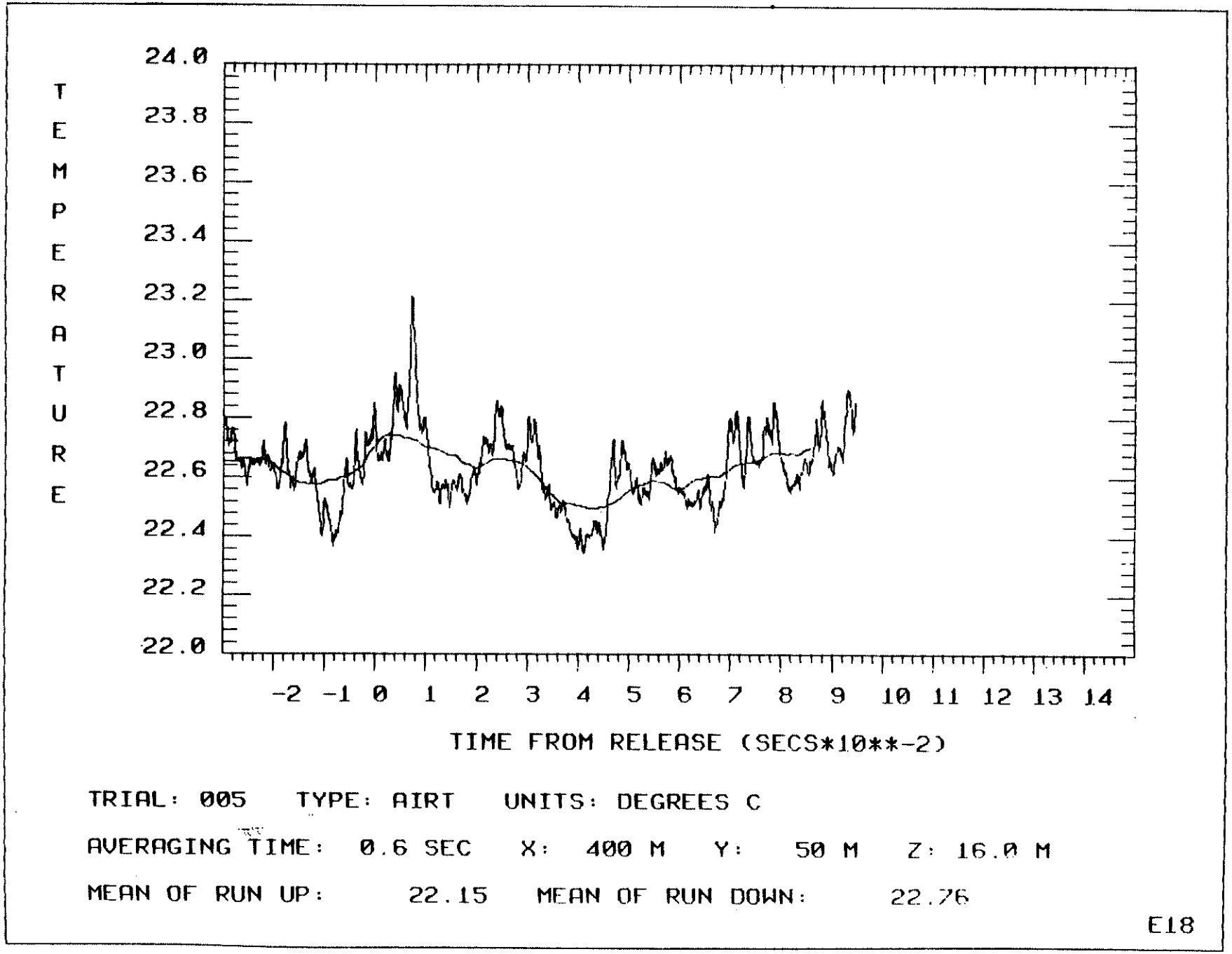


TRIAL: 005 TYPE: WHDG UNITS: DEGREES

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

MEAN OF RUN UP: 5.59 MEAN OF RUN DOWN: -1.71

E17

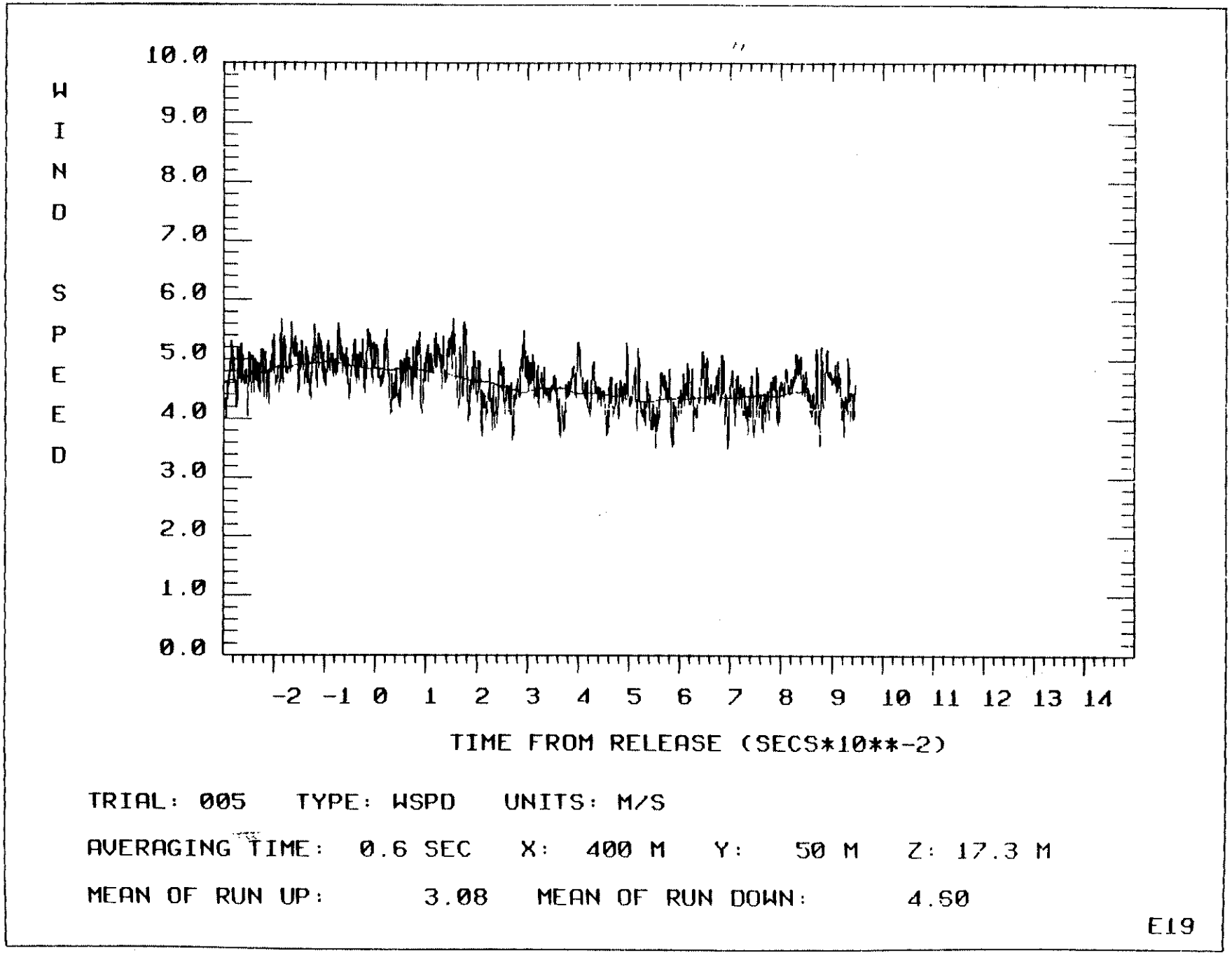


TRIAL: 005 TYPE: AIRT UNITS: DEGREES C

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

MEAN OF RUN UP: 22.15 MEAN OF RUN DOWN: 22.76

E18

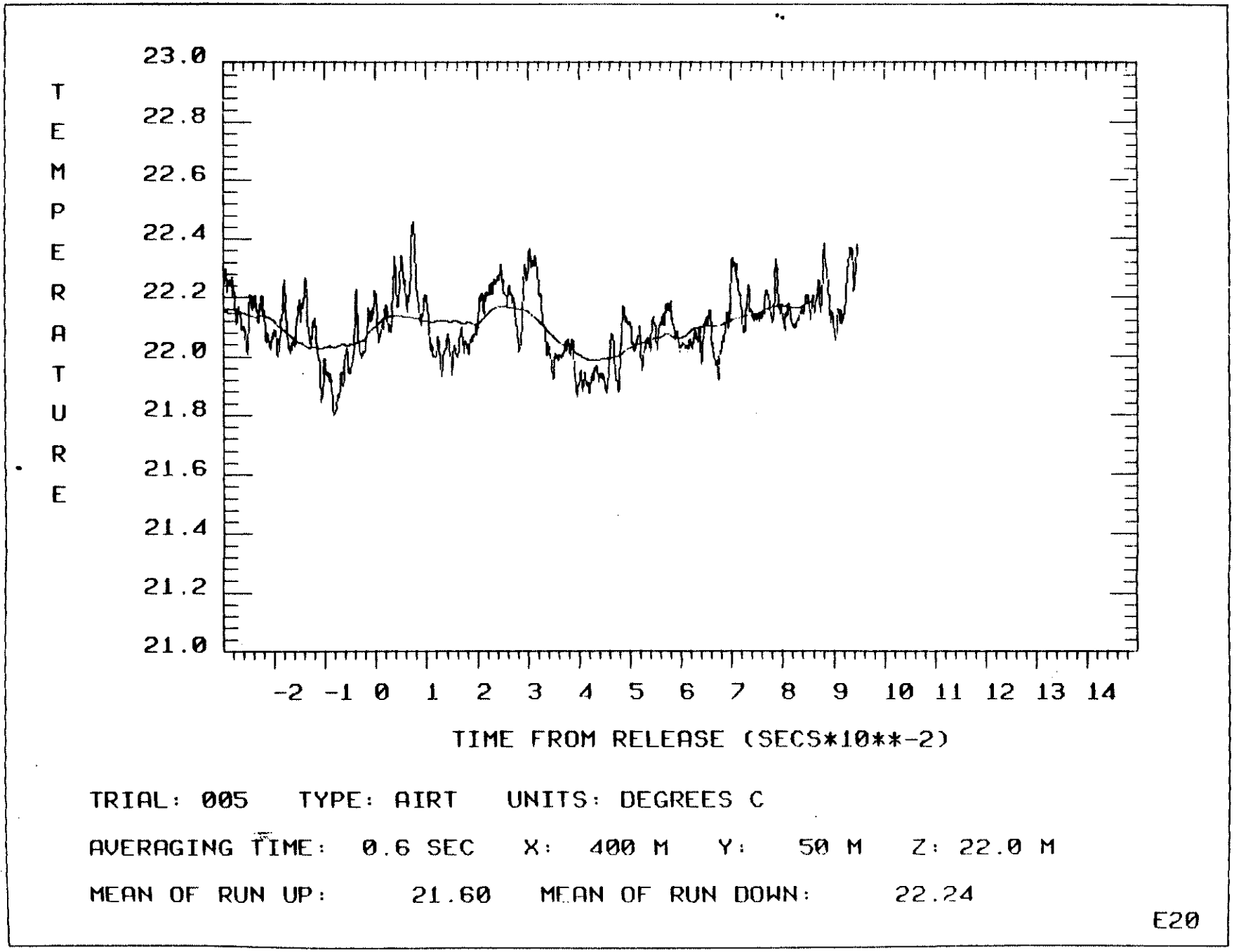


TRIAL: 005 TYPE: WSPD UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 17.3 M

MEAN OF RUN UP: 3.08 MEAN OF RUN DOWN: 4.60

E19

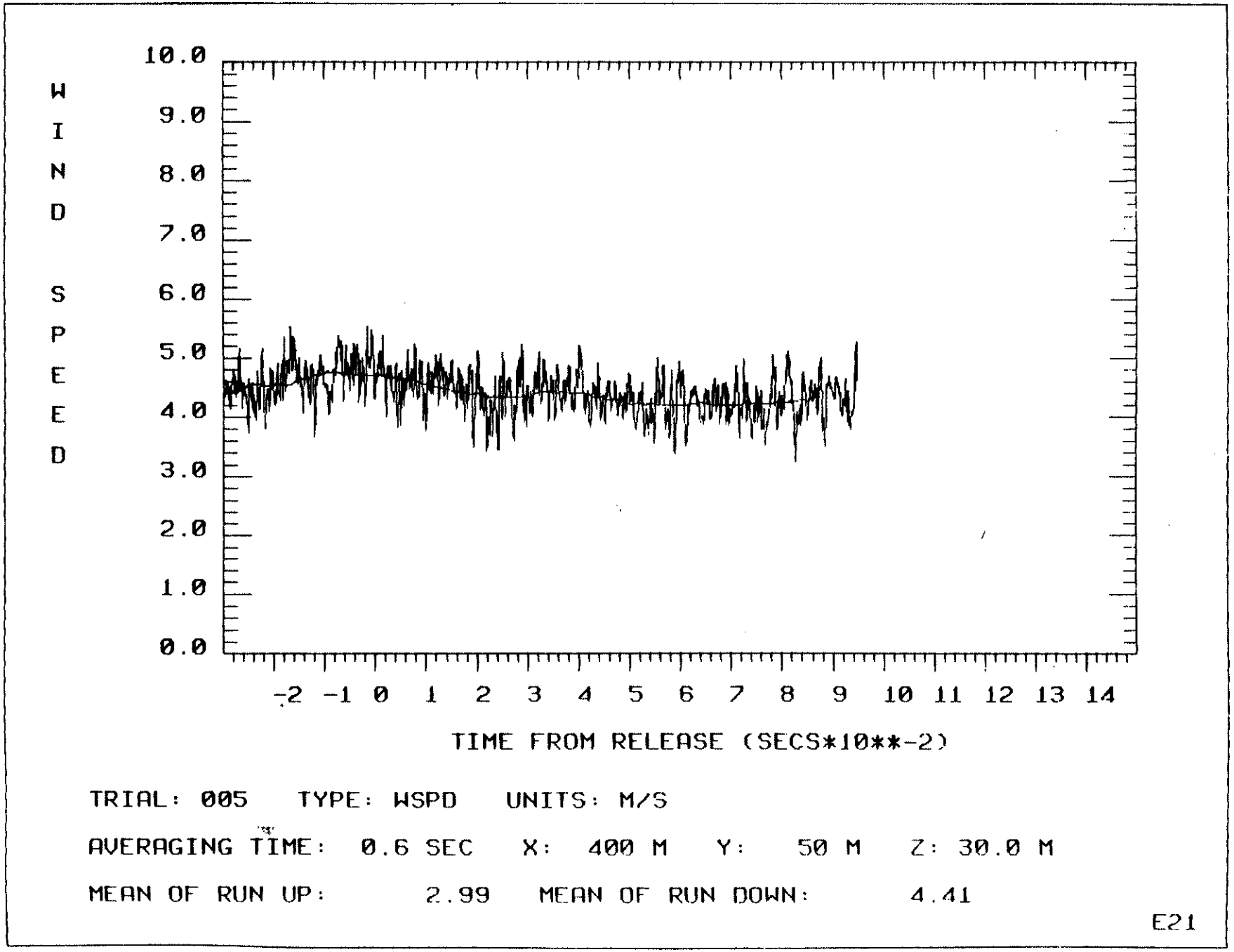


TRIAL: 005 TYPE: AIRT UNITS: DEGREES C

AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 22.0 M

MEAN OF RUN UP: 21.60 MEAN OF RUN DOWN: 22.24

E20

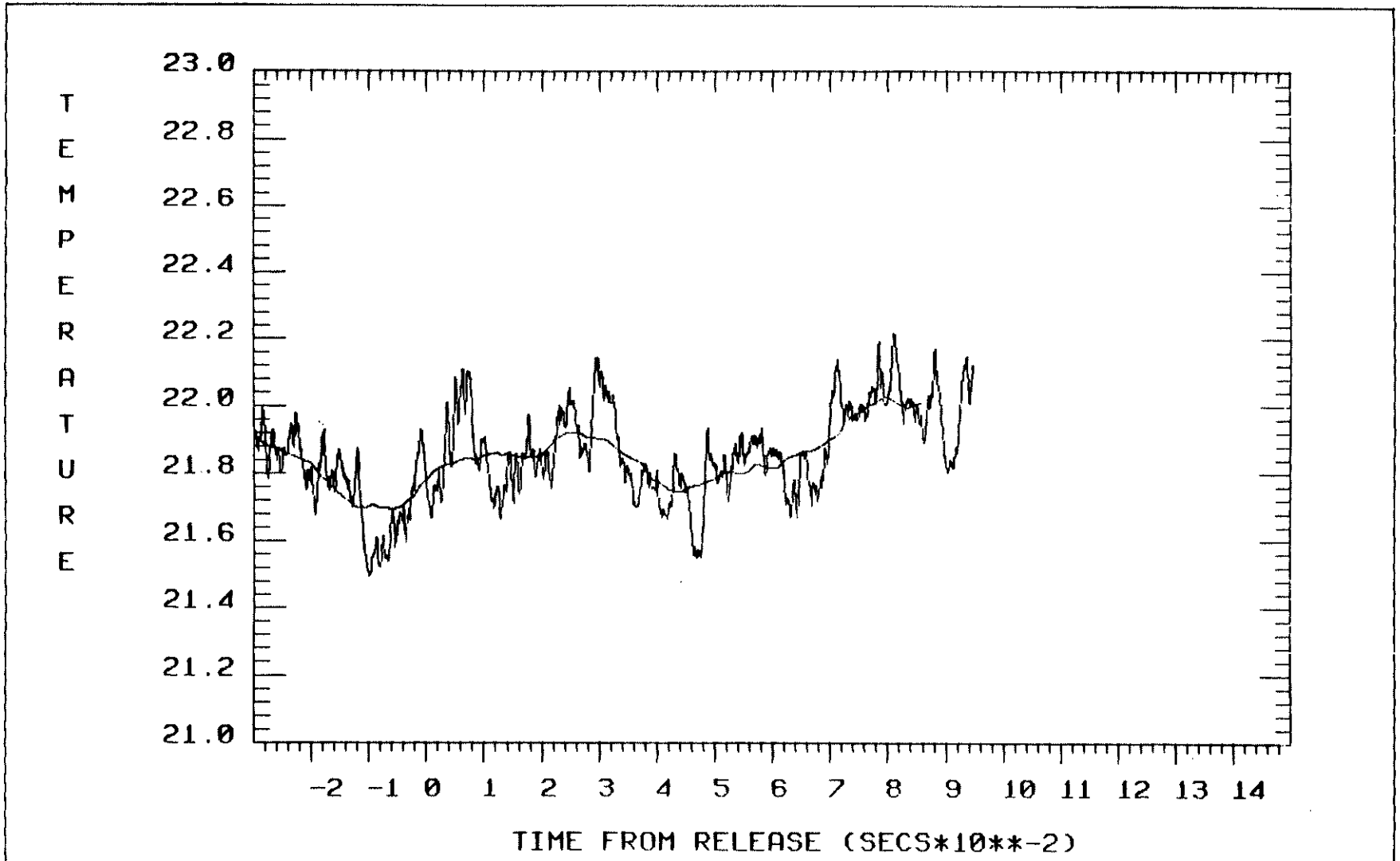


TRIAL: 005 TYPE: WSPD UNITS: M/S

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

MEAN OF RUN UP: 2.99 MEAN OF RUN DOWN: 4.41

E21

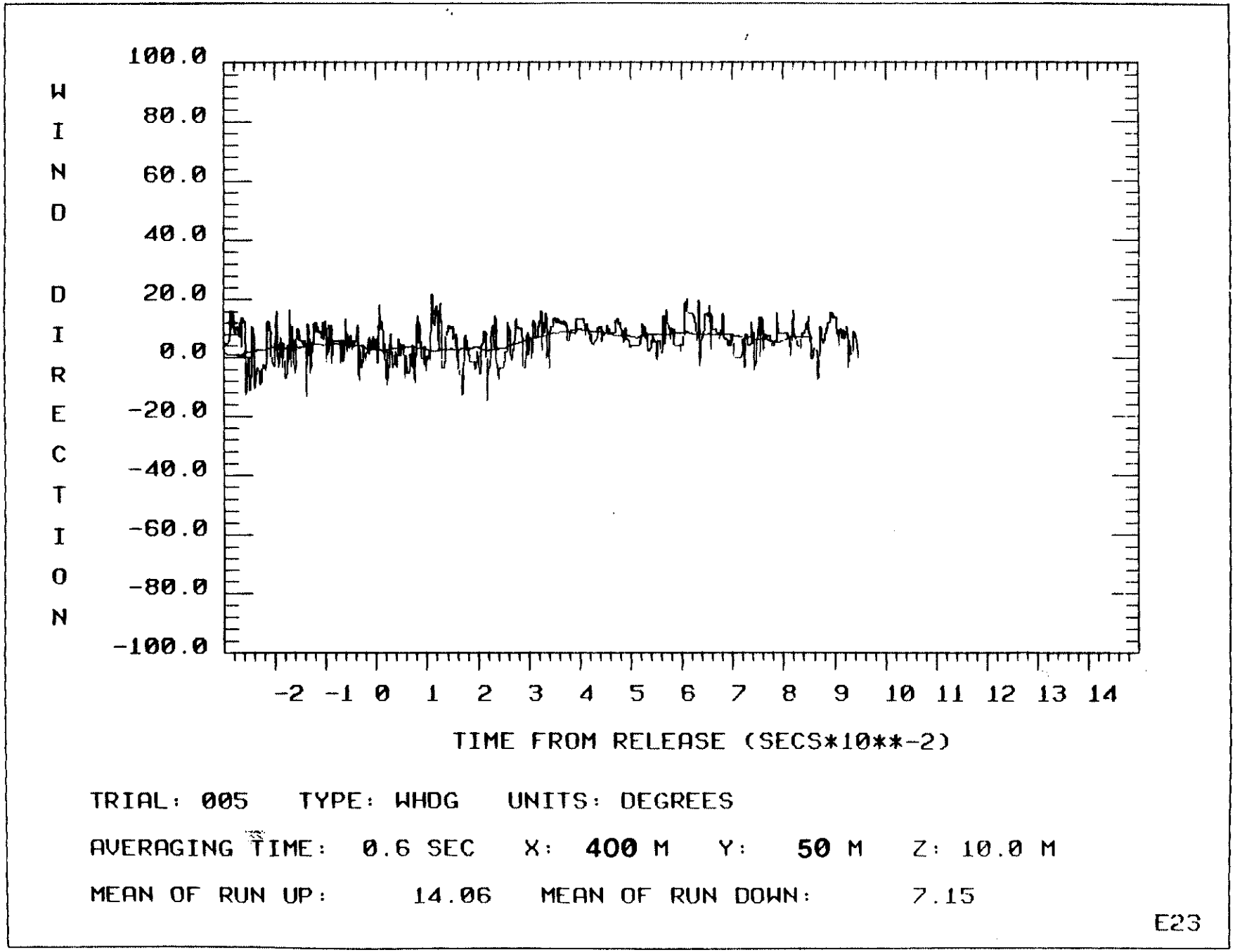


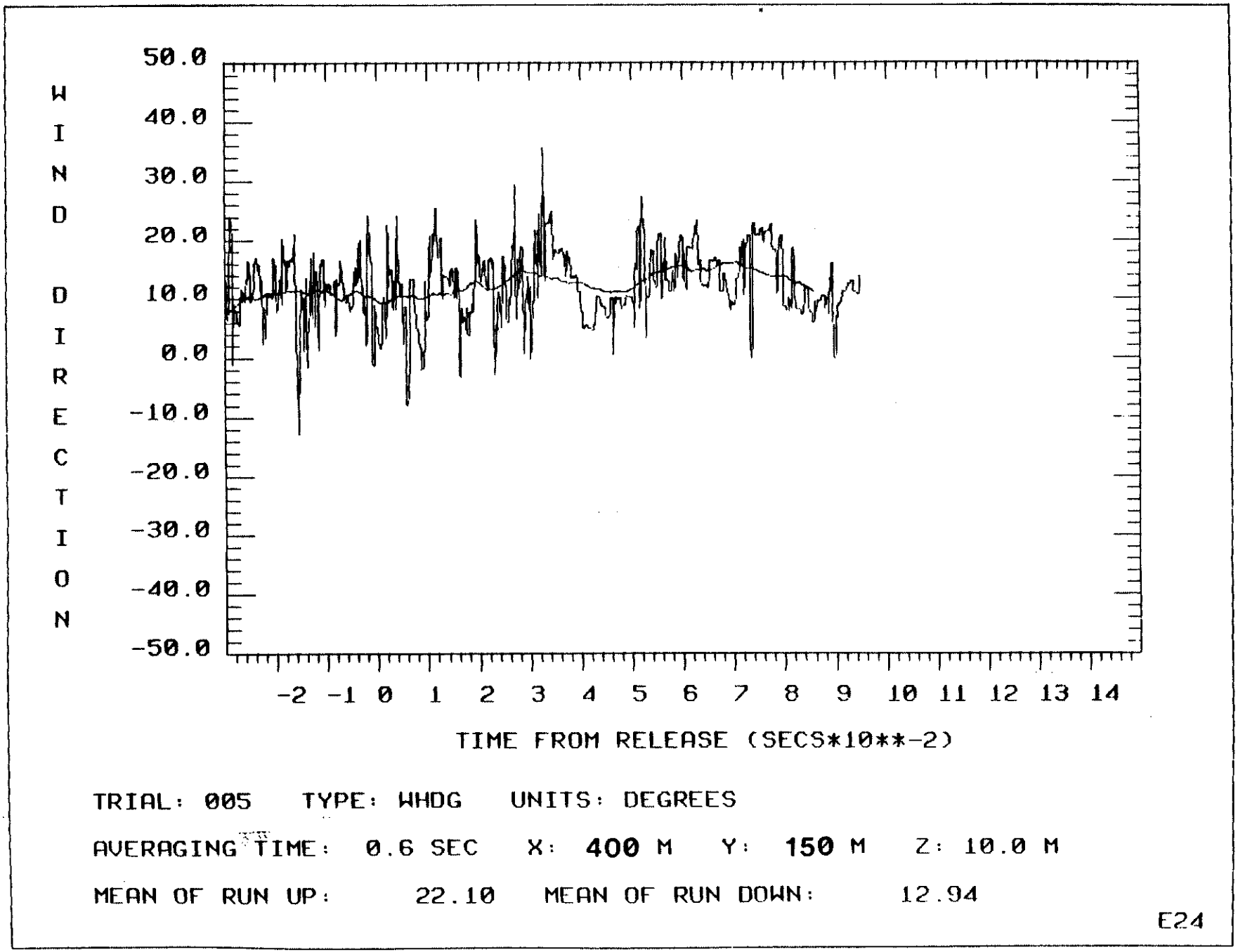
TRIAL: 005 TYPE: AIRT UNITS: DEGREES C

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

MEAN OF RUN UP: 21.36 MEAN OF RUN DOWN: 21.97

E22


WIND DIRECTION
100.0
80.0
60.0
40.0
20.0
0.0
-20.0
-40.0
-60.0
-80.0
-100.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: WHDG UNITS: DEGREES
AVERAGING TIME: 0.6 SEC X: 400 M Y: 50 M Z: 10.0 M
MEAN OF RUN UP: 14.06 MEAN OF RUN DOWN: 7.15
E23

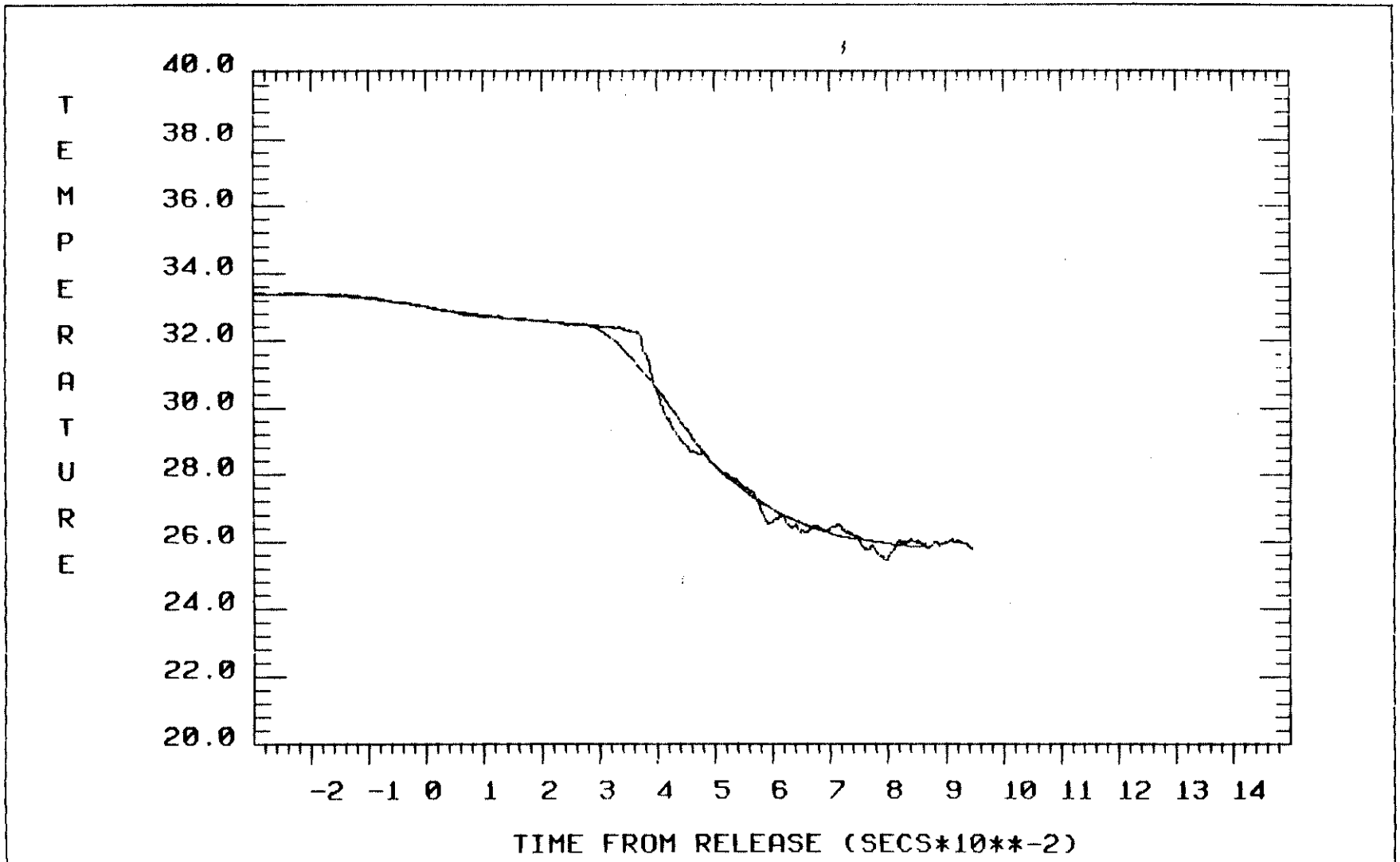


TRIAL: 005 TYPE: WHDG UNITS: DEGREES

AVERAGING TIME: 0.6 SEC X: 400 M Y: 150 M Z: 10.0 M

MEAN OF RUN UP: 22.10 MEAN OF RUN DOWN: 12.94

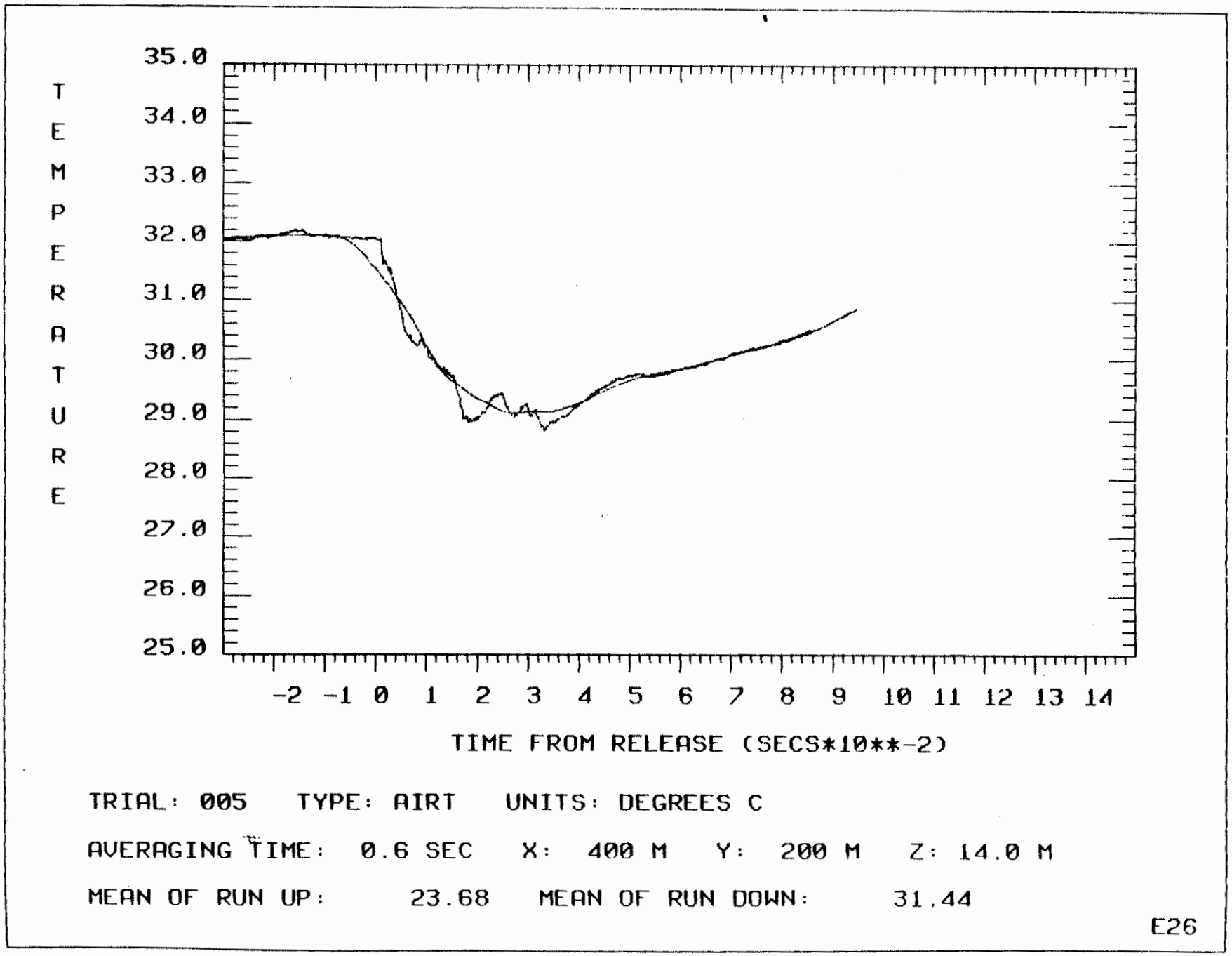
E24

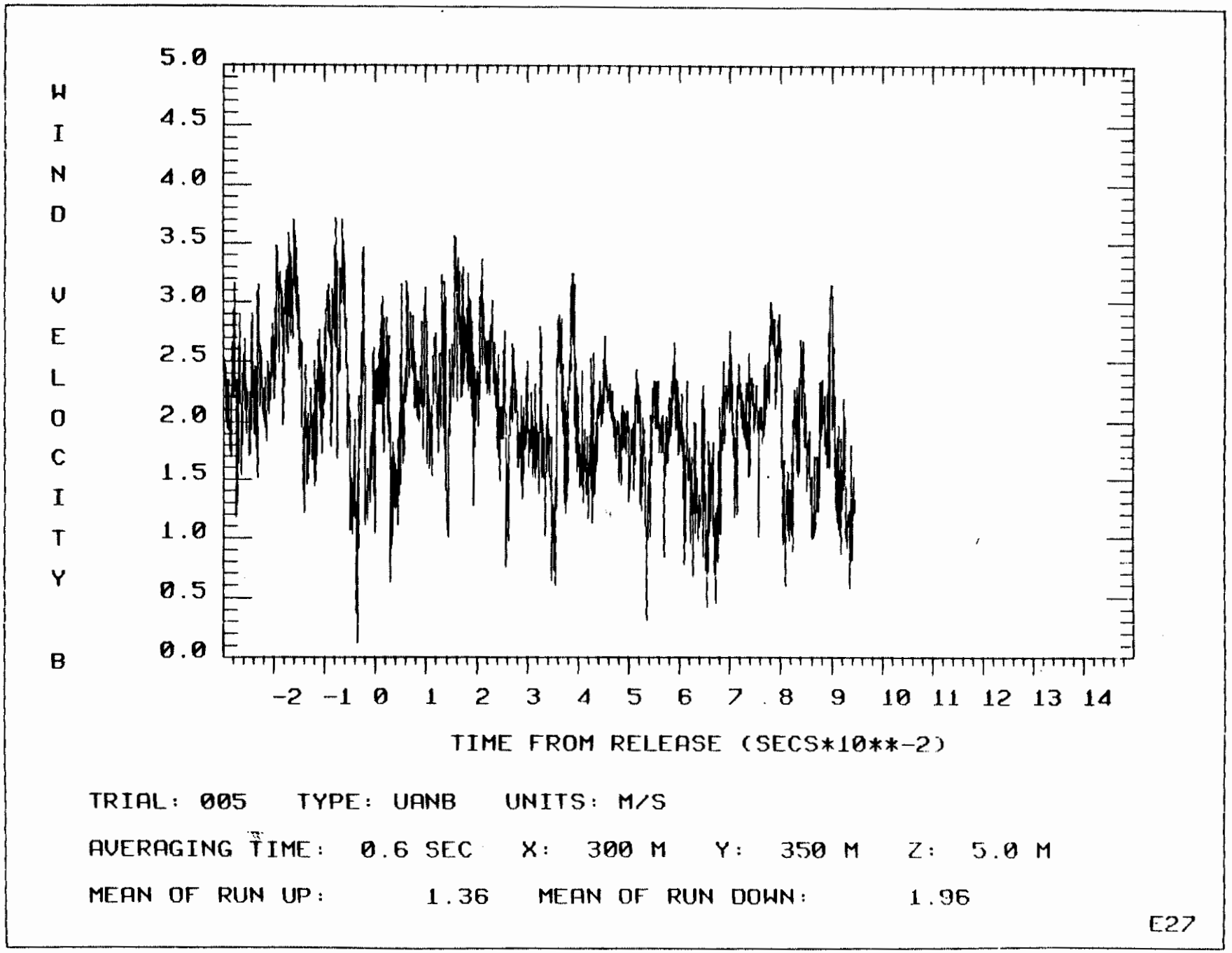


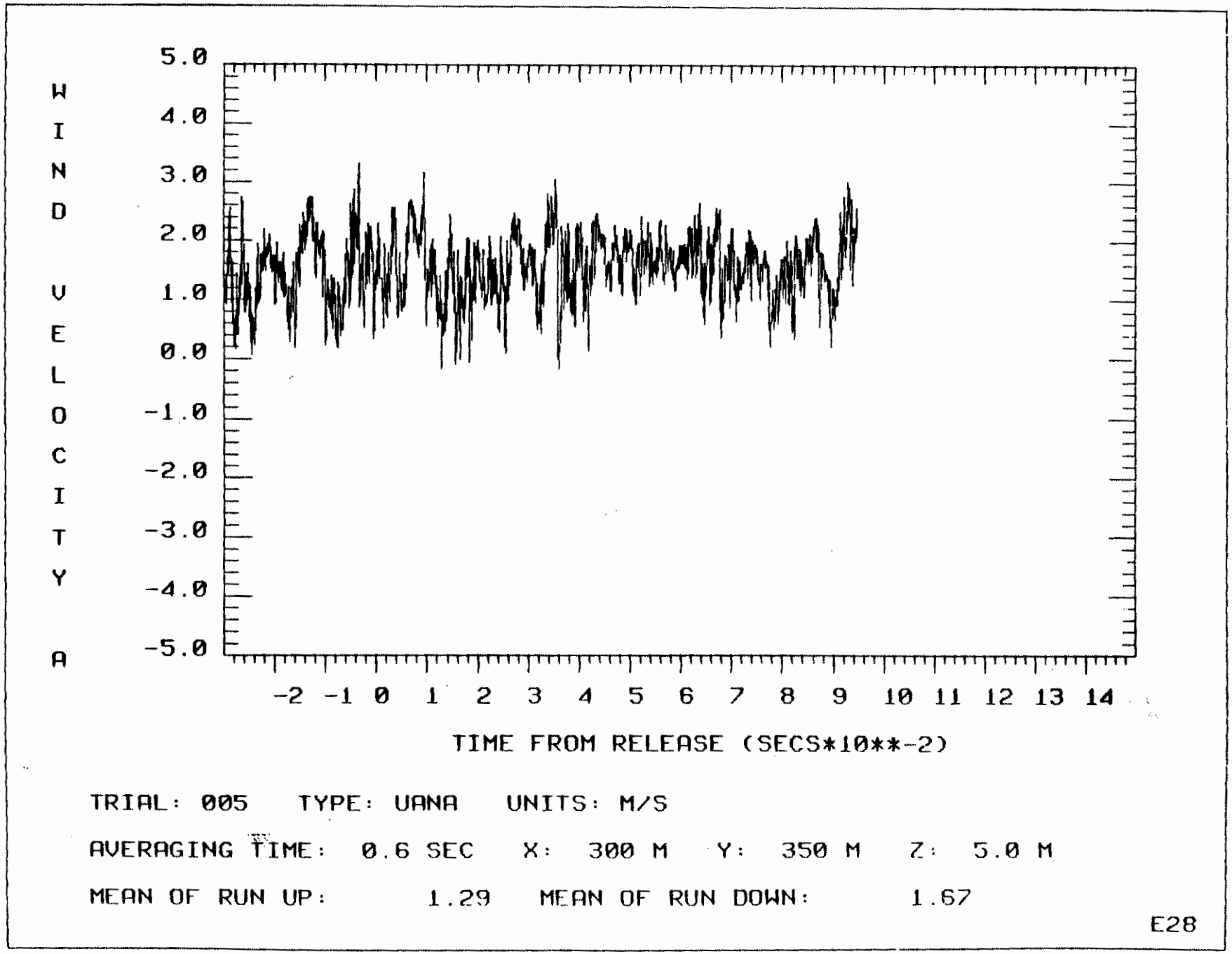
TRIAL: 005 TYPE: AIRT UNITS: DEGREES C

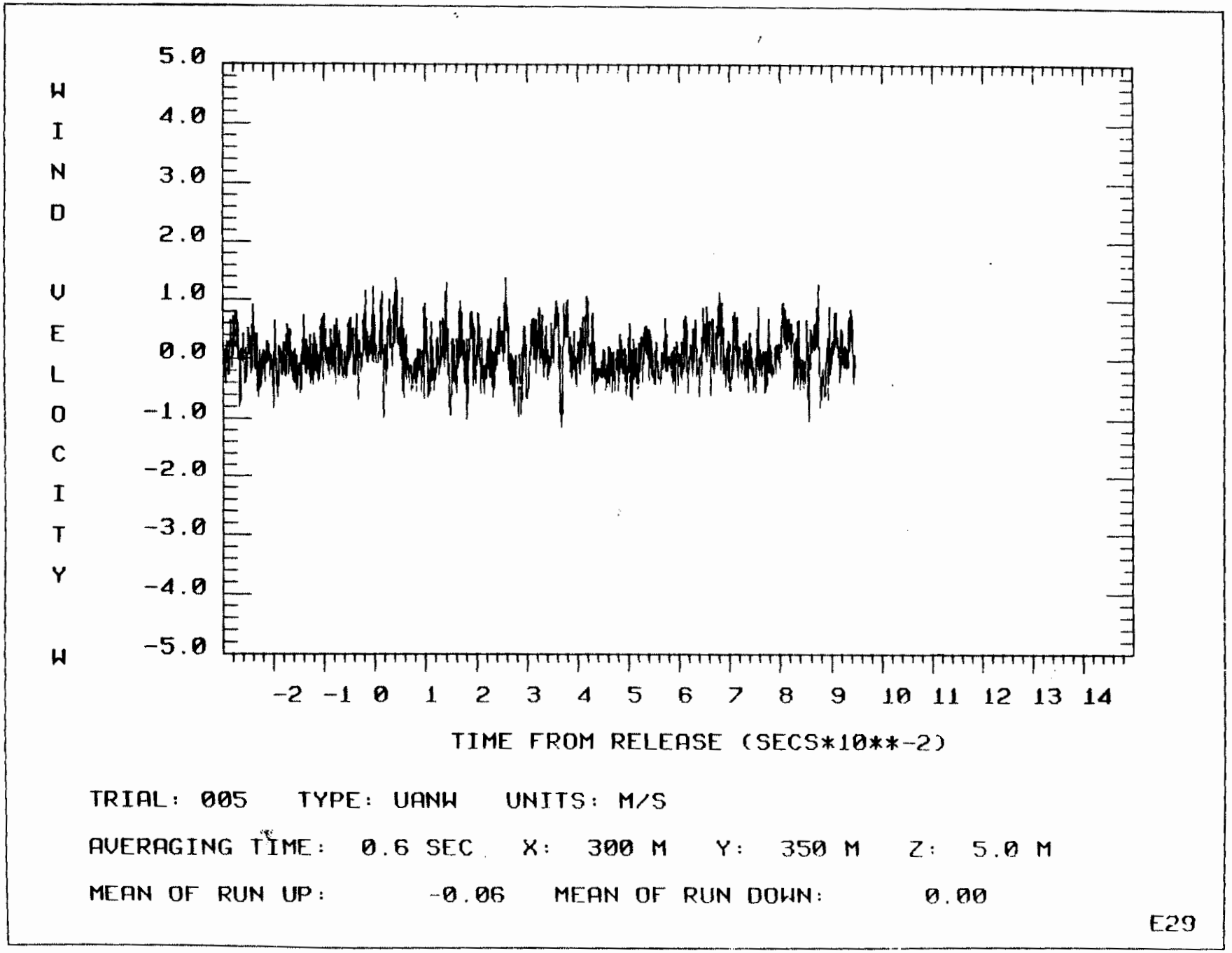
AVERAGING TIME: 0.6 SEC X: 400 M Y: 200 M Z: 0.4 M

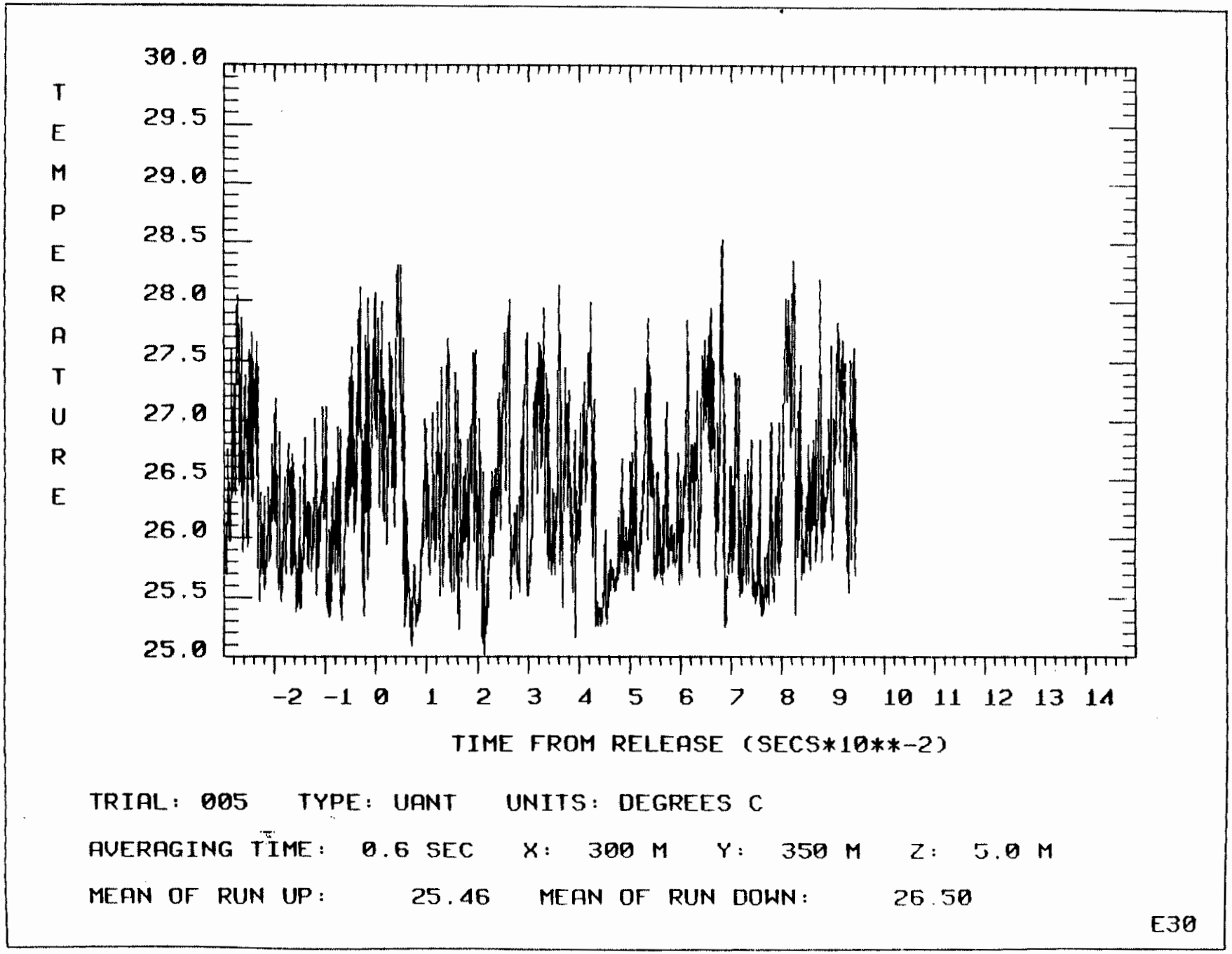
MEAN OF RUN UP: 33.51 MEAN OF RUN DOWN: 25.79

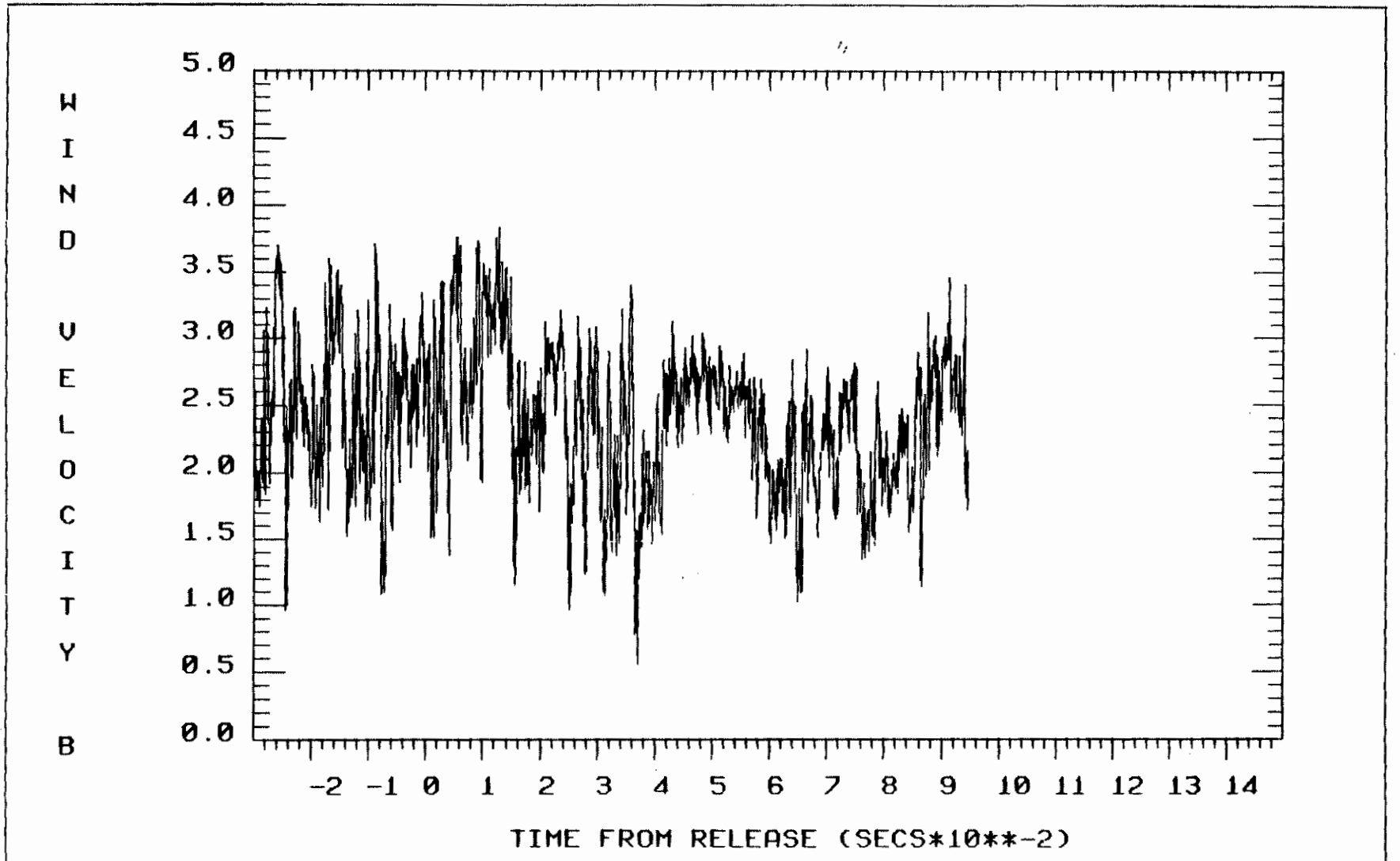

TEMPERATURE
35.0
34.0
33.0
32.0
31.0
30.0
29.0
28.0
27.0
26.0
25.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: AIRT UNITS: DEGREES C
AVERAGING TIME: 0.6 SEC X: 400 M Y: 200 M Z: 14.0 M
MEAN OF RUN UP: 23.68 MEAN OF RUN DOWN: 31.44
E26


WIND VELOCITY B
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANB UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 300 M Y: 350 M Z: 5.0 M
MEAN OF RUN UP: 1.36 MEAN OF RUN DOWN: 1.96
E27


WIND VELOCITY A
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANA UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 300 M Y: 350 M Z: 5.0 M
MEAN OF RUN UP: 1.29 MEAN OF RUN DOWN: 1.67
E28


WIND VELOCITY W
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANW UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 300 M Y: 350 M Z: 5.0 M
MEAN OF RUN UP: -0.06 MEAN OF RUN DOWN: 0.00
E29


TEMPERATURE
30.0
29.5
29.0
28.5
28.0
27.5
27.0
26.5
26.0
25.5
25.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANT UNITS: DEGREES C
AVERAGING TIME: 0.6 SEC X: 300 M Y: 350 M Z: 5.0 M
MEAN OF RUN UP: 25.46 MEAN OF RUN DOWN: 26.50
E30

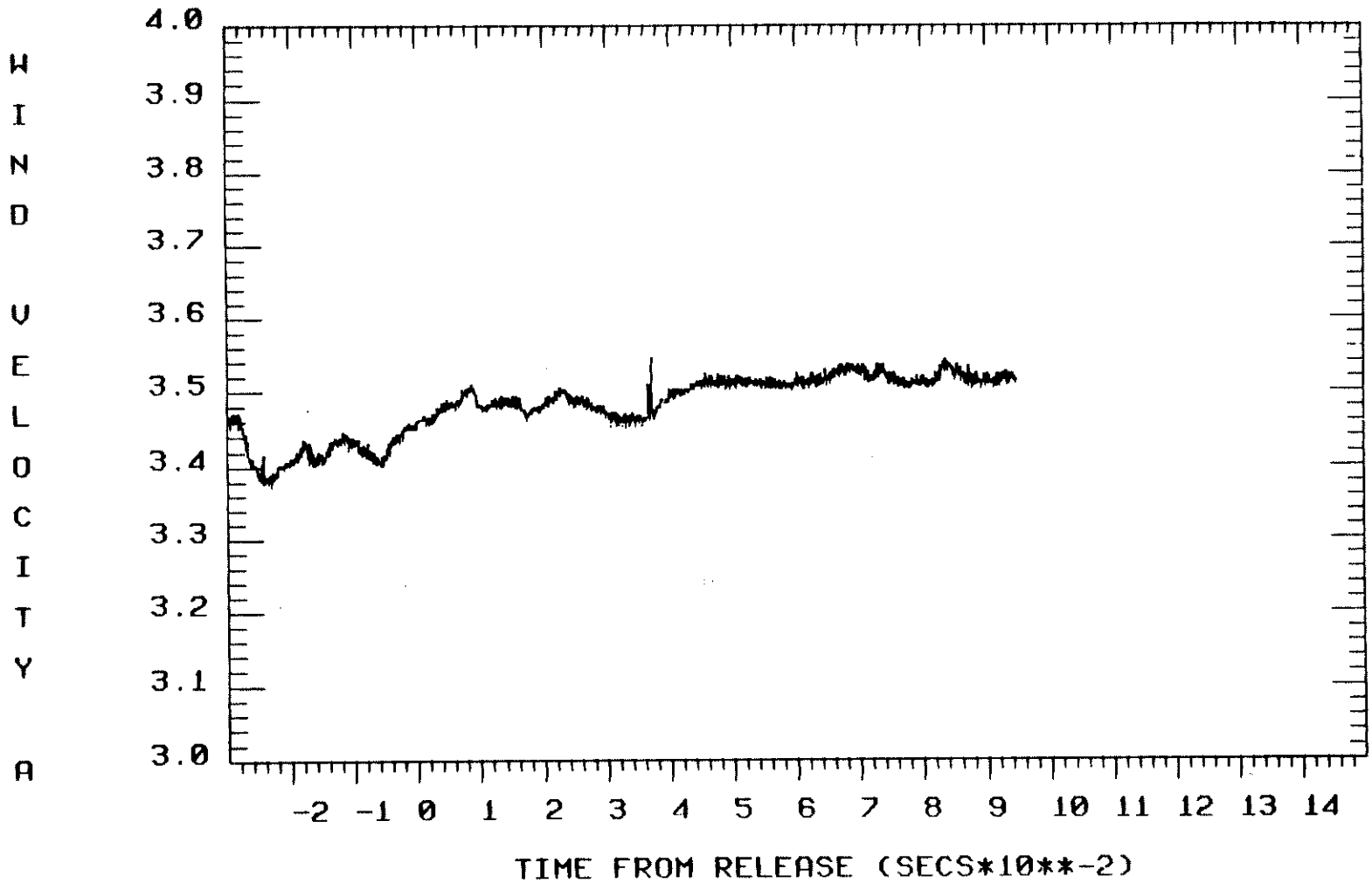


TRIAL: 005 TYPE: UANB UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 400 M Y: 350 M Z: 10.0 M

MEAN OF RUN UP: 1.05 MEAN OF RUN DOWN: 2.48

E31

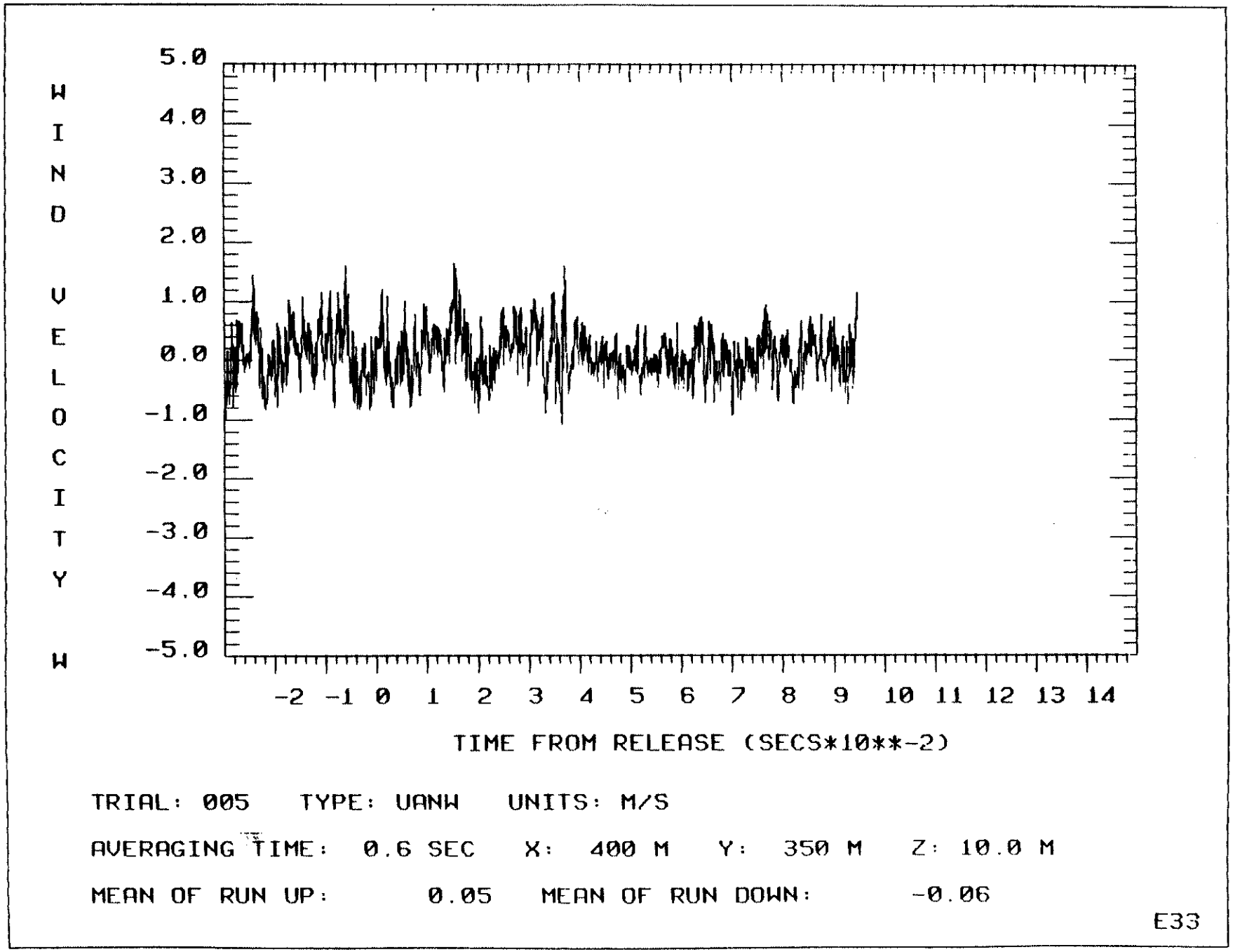


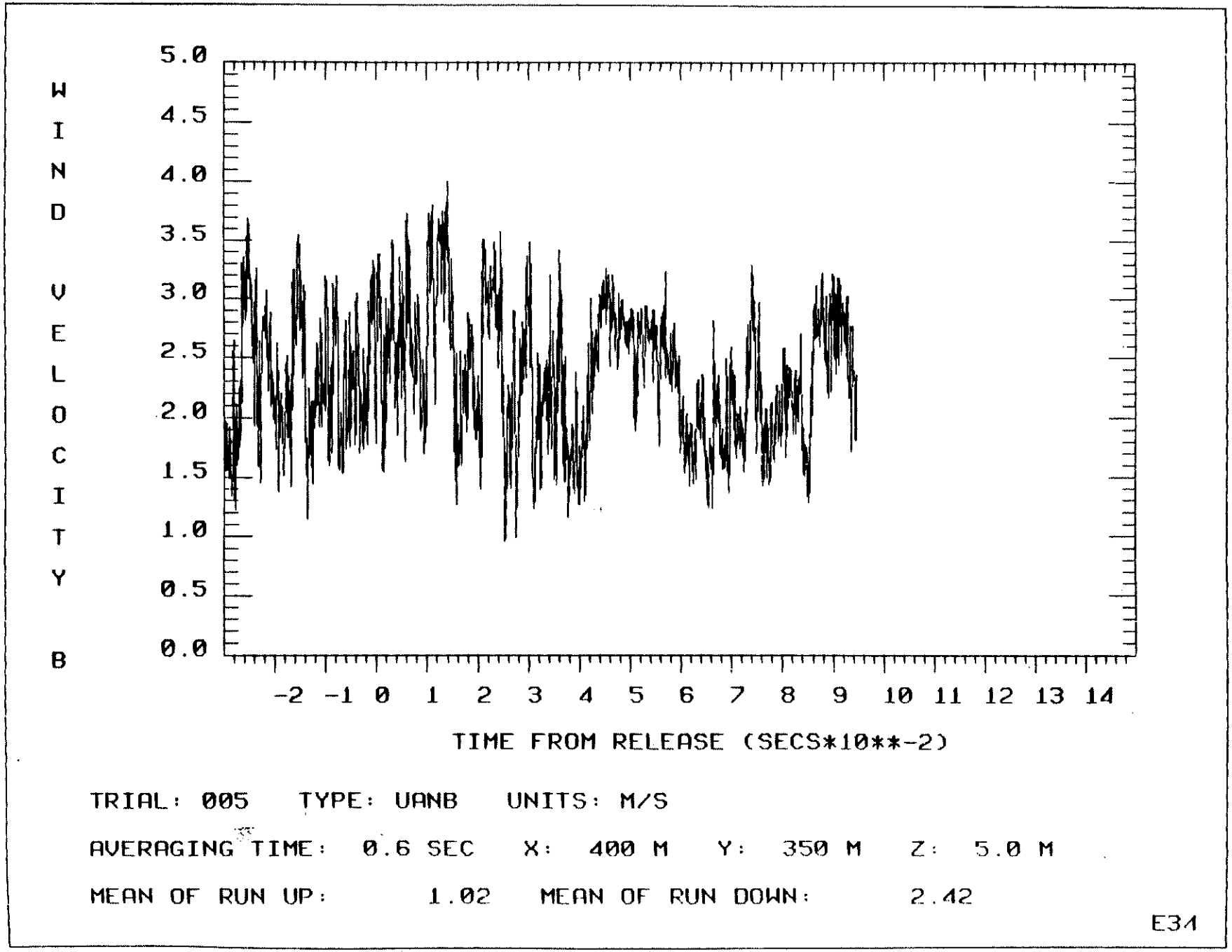
TRIAL: 005 TYPE: UANA UNITS: M/S

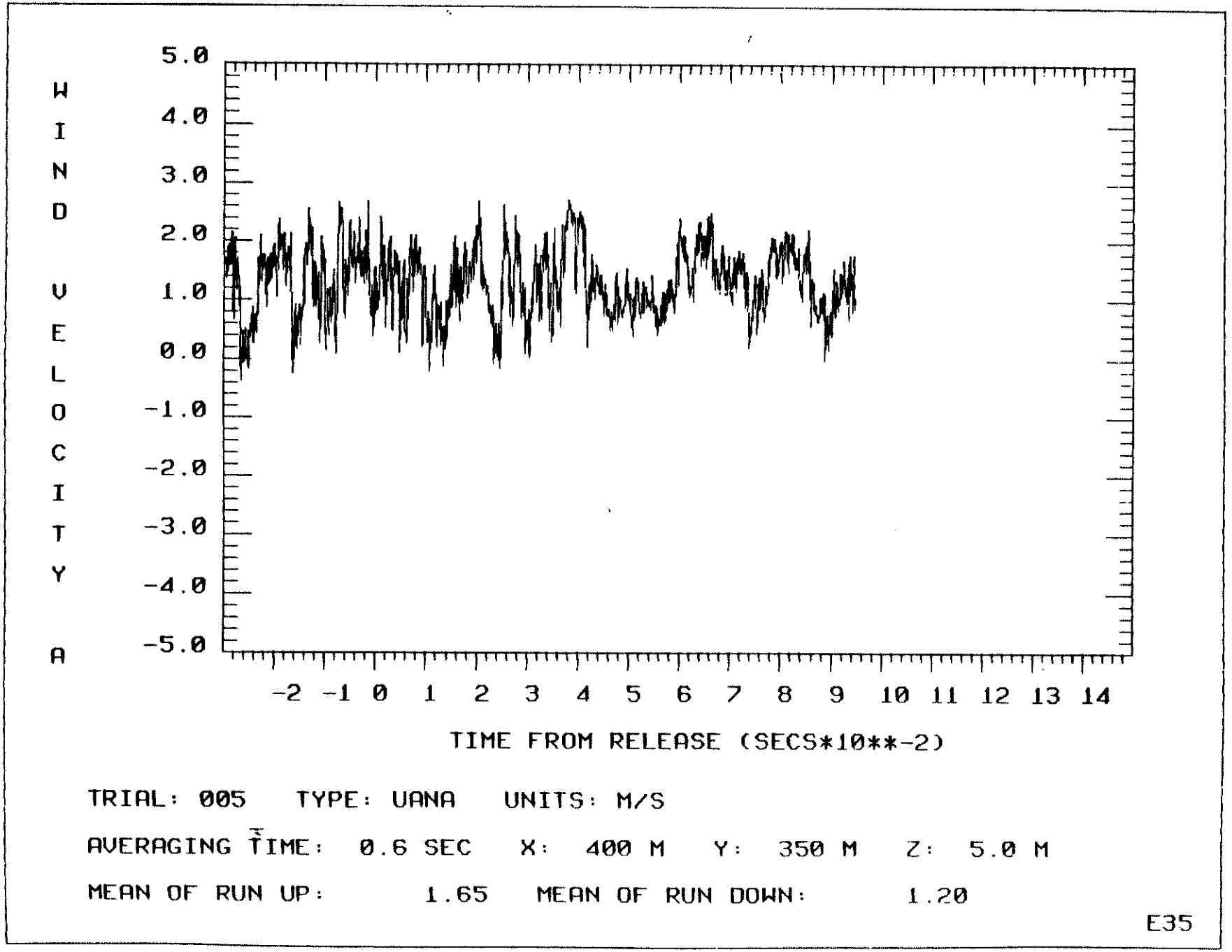
AVERAGING TIME: 0.6 SEC X: 400 M Y: 350 M Z: 10.0 M

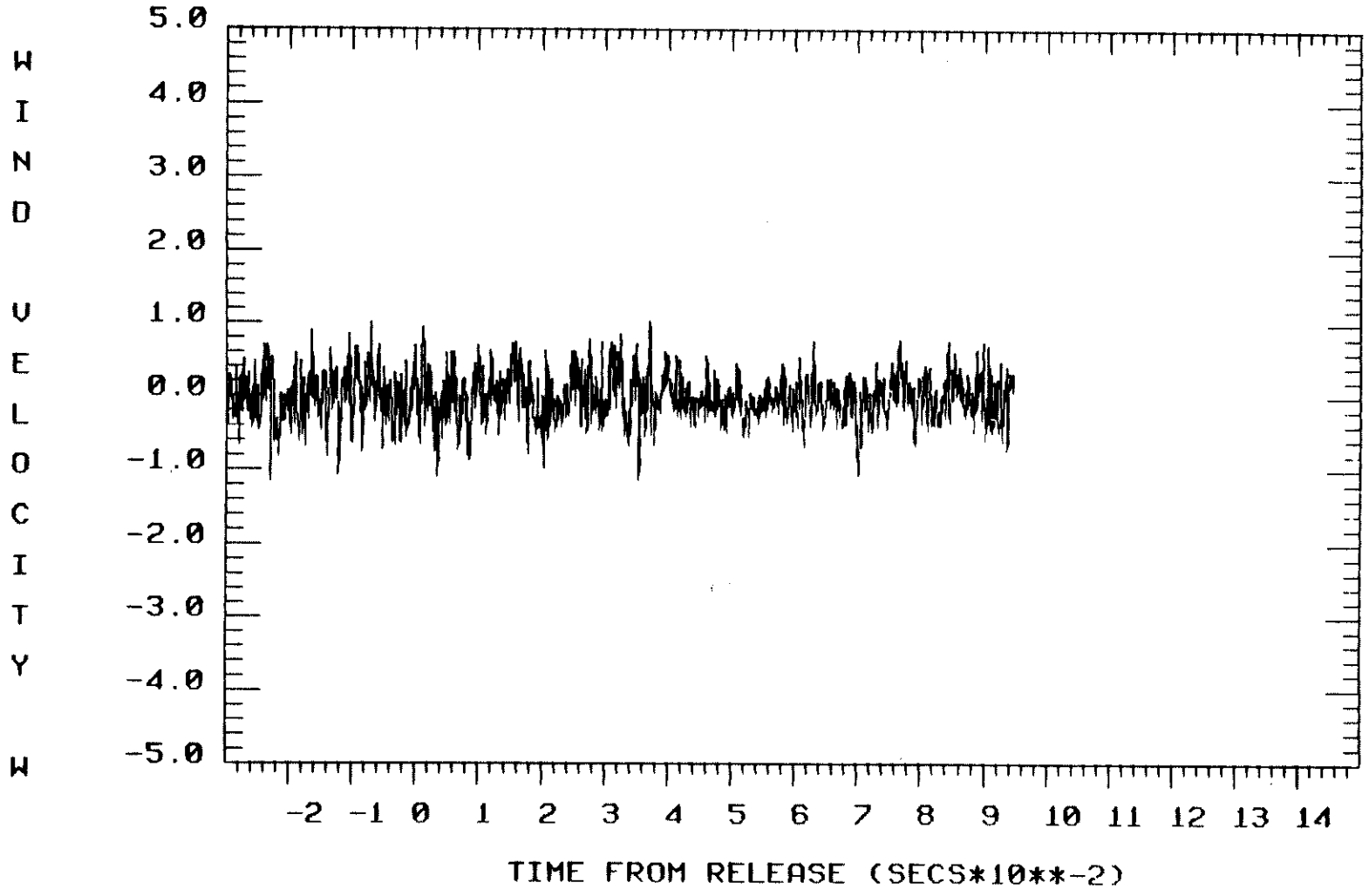
MEAN OF RUN UP: 3.52 MEAN OF RUN DOWN: 3.52

E32


WIND VELOCITY W
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANW UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 400 M Y: 350 M Z: 10.0 M
MEAN OF RUN UP: 0.05 MEAN OF RUN DOWN: -0.06
E33


WIND VELOCITY B
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANB UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 400 M Y: 350 M Z: 5.0 M
MEAN OF RUN UP: 1.02 MEAN OF RUN DOWN: 2.42
E34


WIND VELOCITY
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANA UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 400 M Y: 350 M Z: 5.0 M
MEAN OF RUN UP: 1.65 MEAN OF RUN DOWN: 1.20
E35

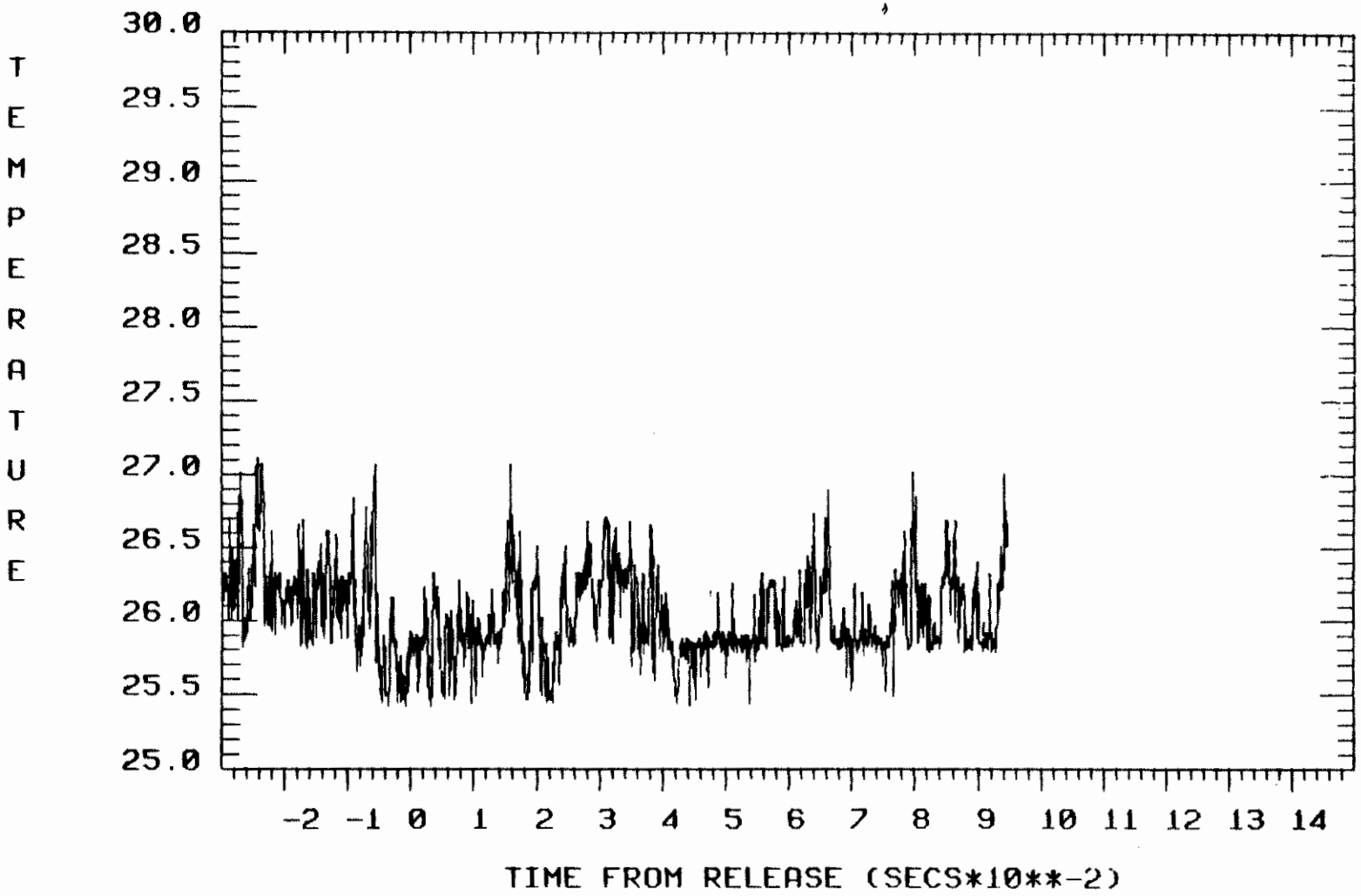


TRIAL: 005 TYPE: UANW UNITS: M/S

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

MEAN OF RUN UP: 0.02 MEAN OF RUN DOWN: -0.08

E36

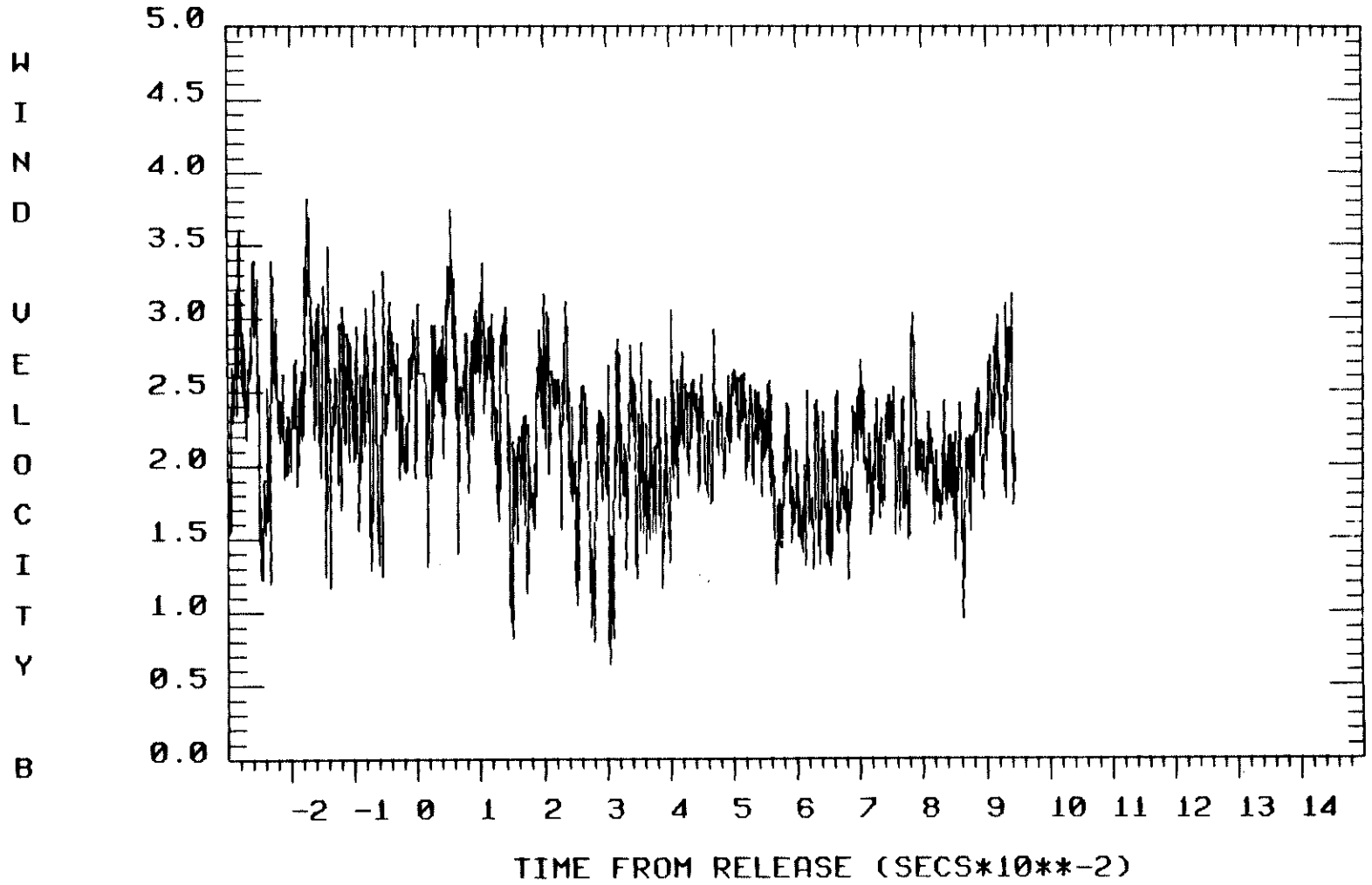


TRIAL: 005 TYPE: UANT UNITS: DEGREES C

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

MEAN OF RUN UP: 25.59 MEAN OF RUN DOWN: 26.12

E37

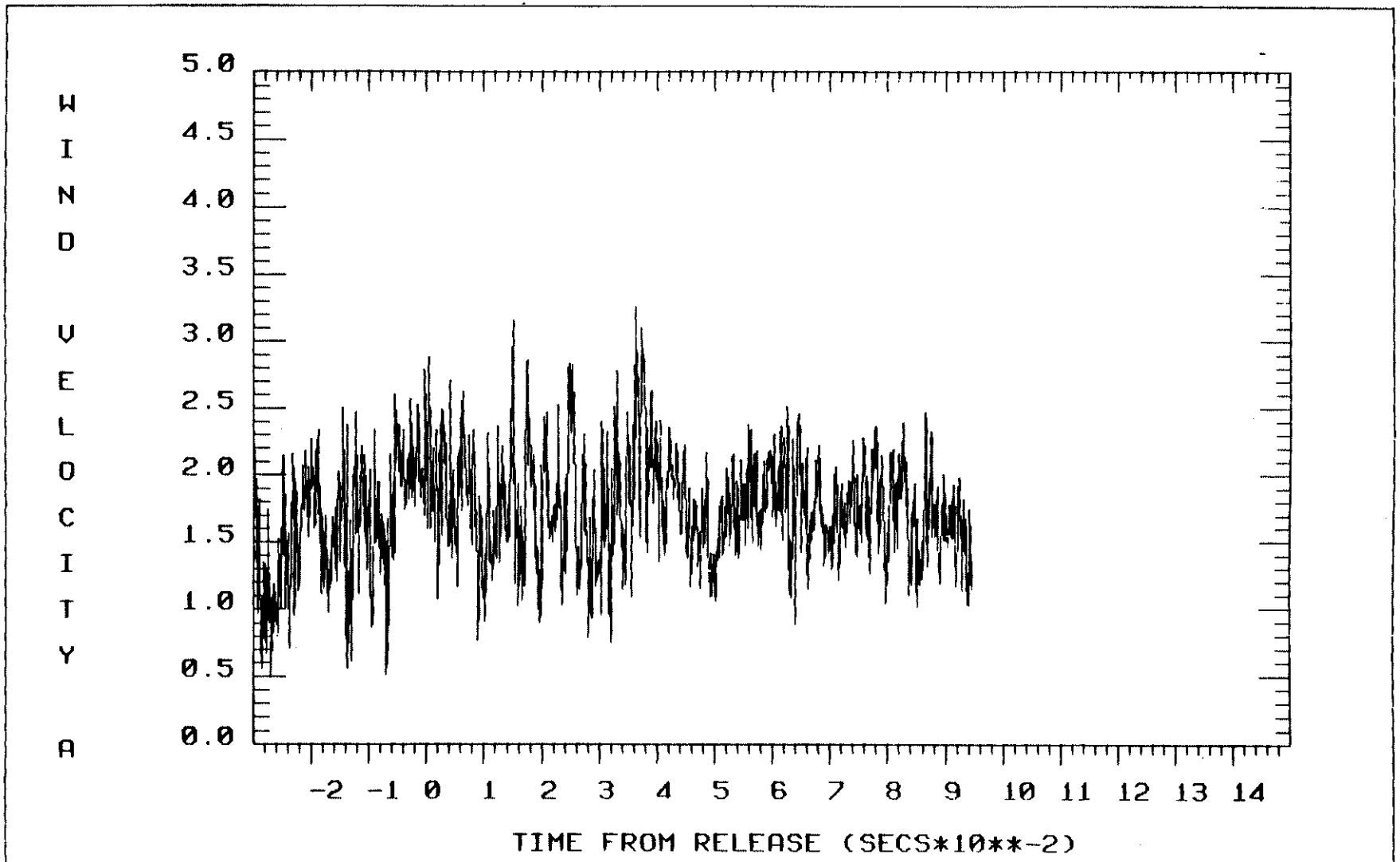


TRIAL: 005 TYPE: UANB UNITS: M/S

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

MEAN OF RUN UP: 0.91 MEAN OF RUN DOWN: 2.26

E38

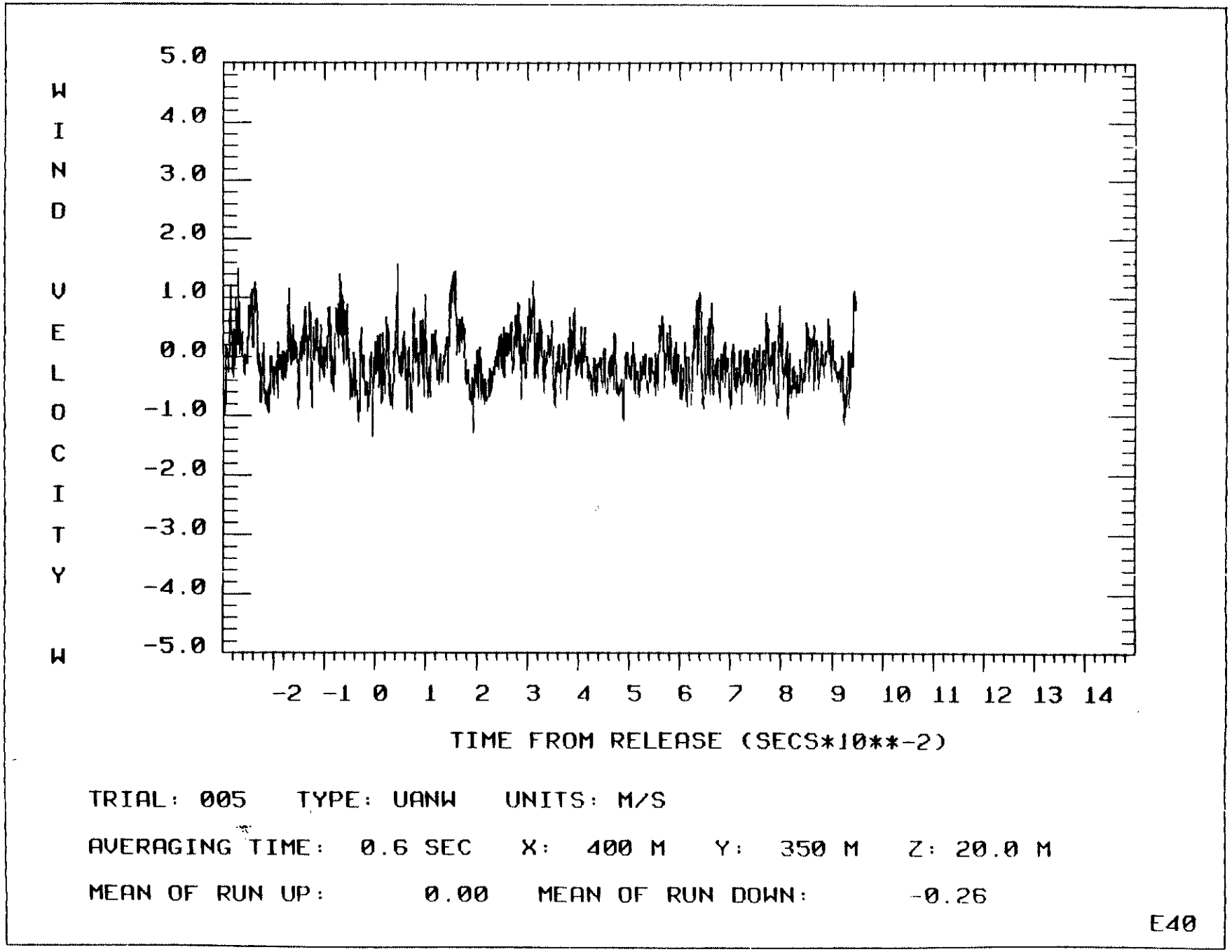


TRIAL: 005 TYPE: UANA UNITS: M/S

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

MEAN OF RUN UP: 1.86 MEAN OF RUN DOWN: 1.65

E39

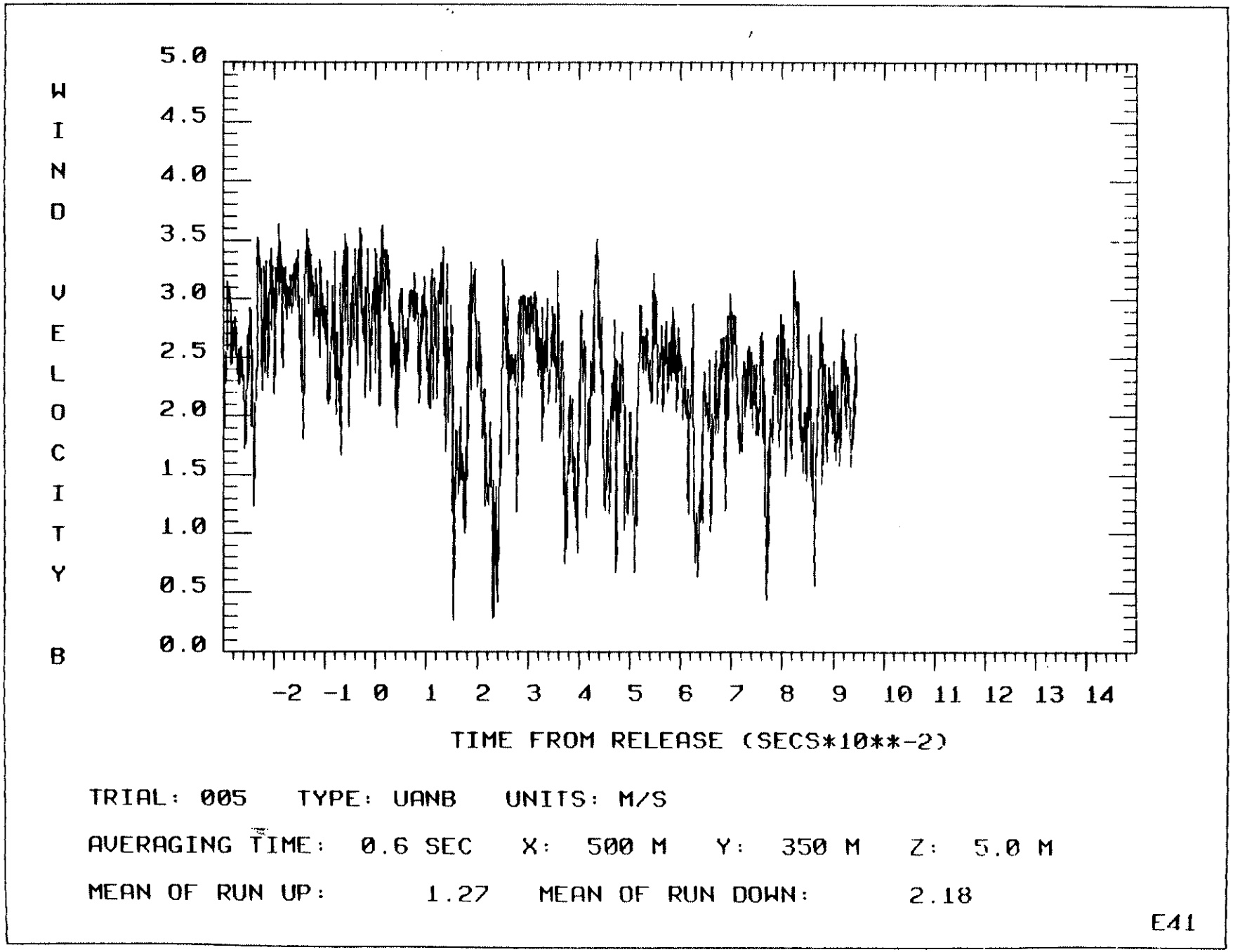


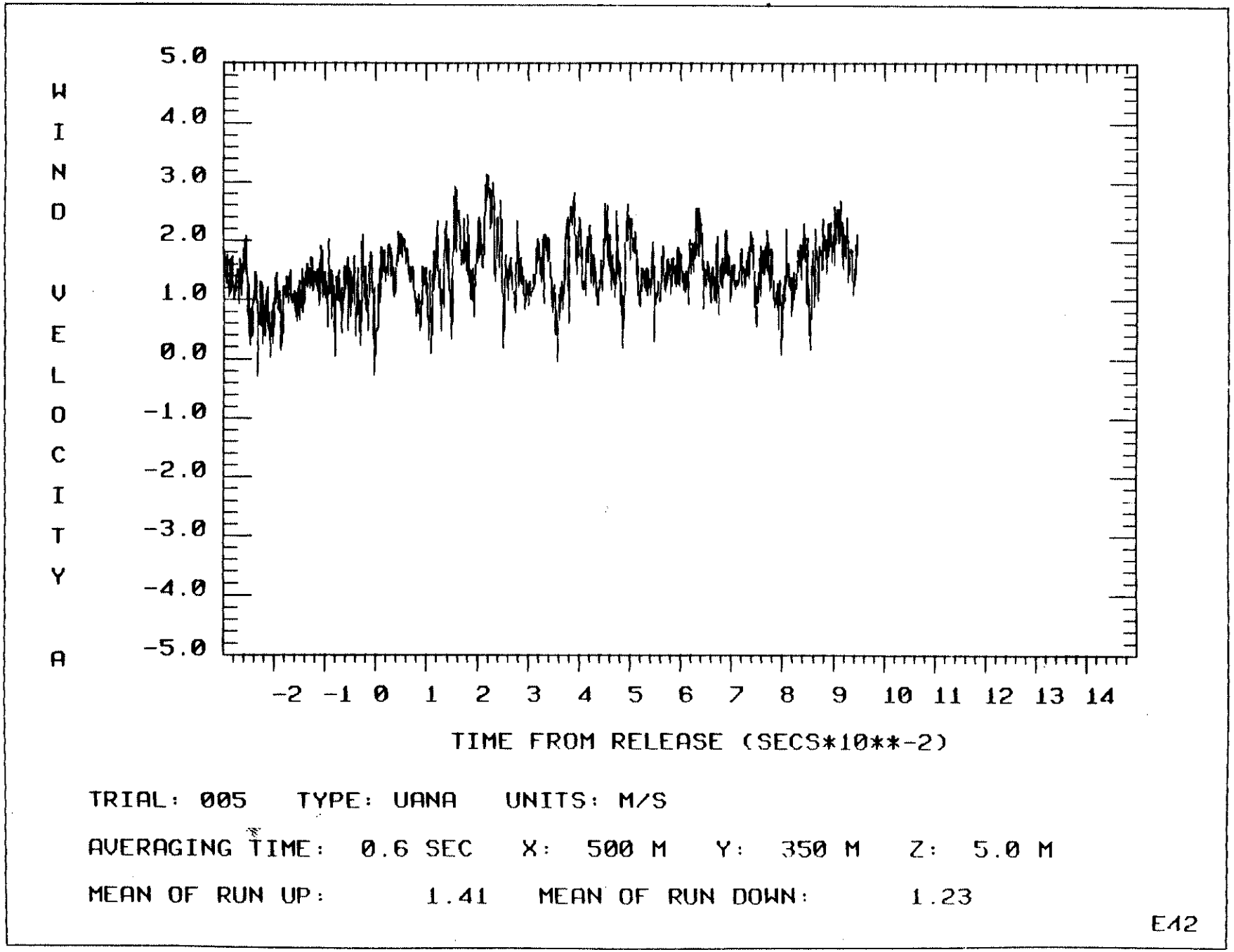
TRIAL: 005 TYPE: UANW UNITS: M/S

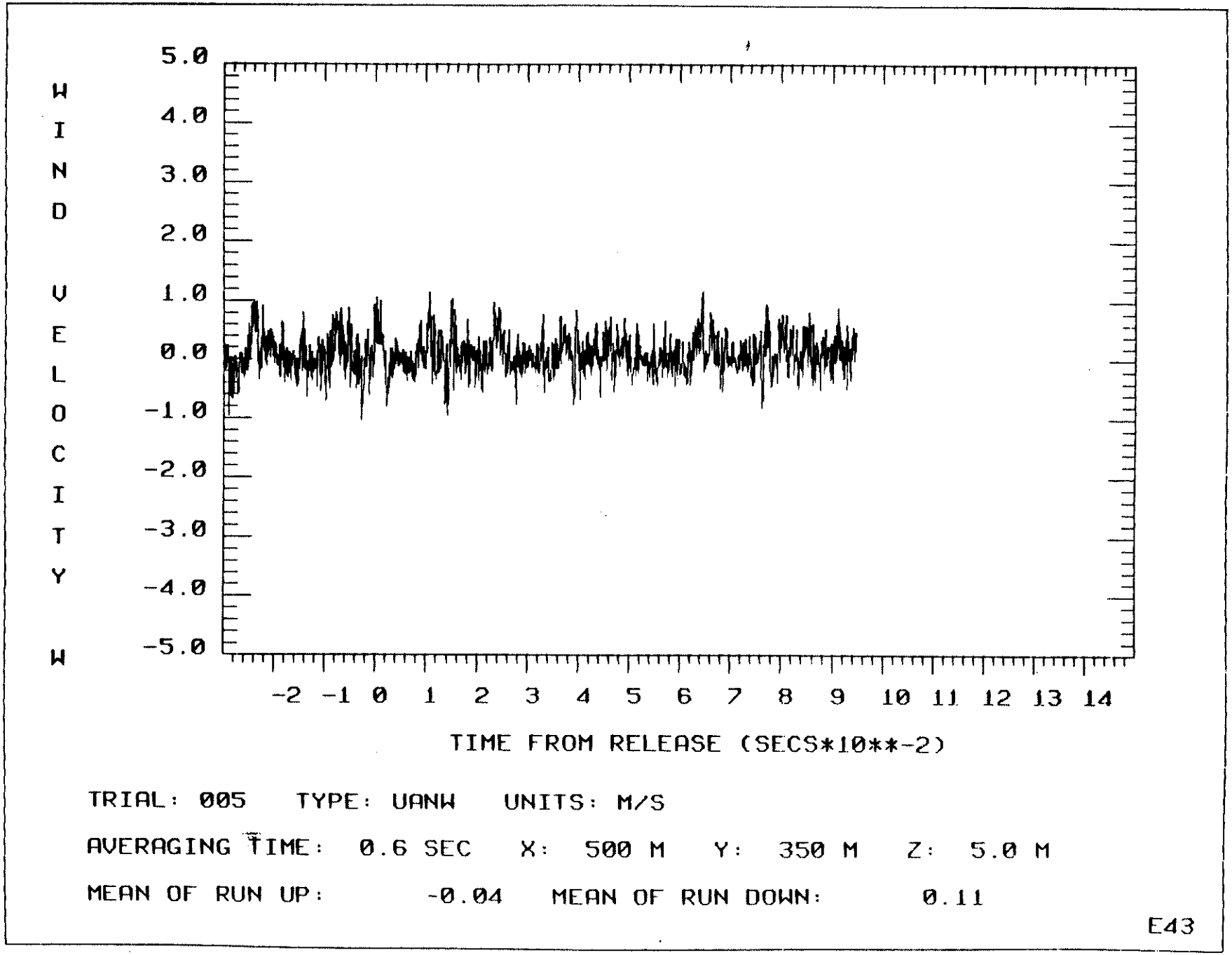
AVERAGING TIME: 0.6 SEC X: 400 M Y: 350 M Z: 20.0 M

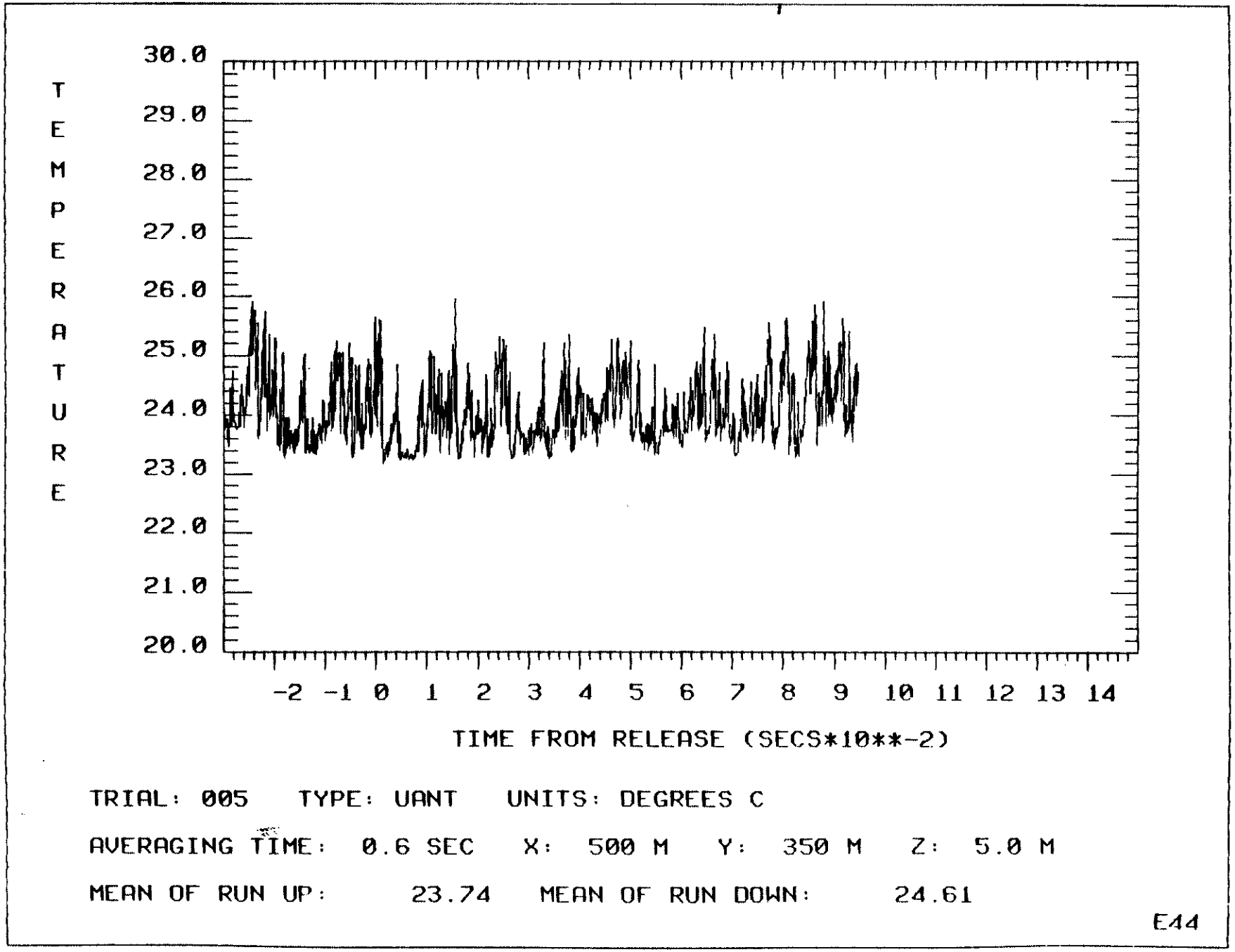
MEAN OF RUN UP: 0.00 MEAN OF RUN DOWN: -0.26

E40


WIND VELOCITY
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANB UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 500 M Y: 350 M Z: 5.0 M
MEAN OF RUN UP: 1.27 MEAN OF RUN DOWN: 2.18
E41


WIND VELOCITY
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANA UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 500 M Y: 350 M Z: 5.0 M
MEAN OF RUN UP: 1.41 MEAN OF RUN DOWN: 1.23
E42


WIND VELOCITY W
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANW UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 500 M Y: 350 M Z: 5.0 M
MEAN OF RUN UP: -0.04 MEAN OF RUN DOWN: 0.11
E43

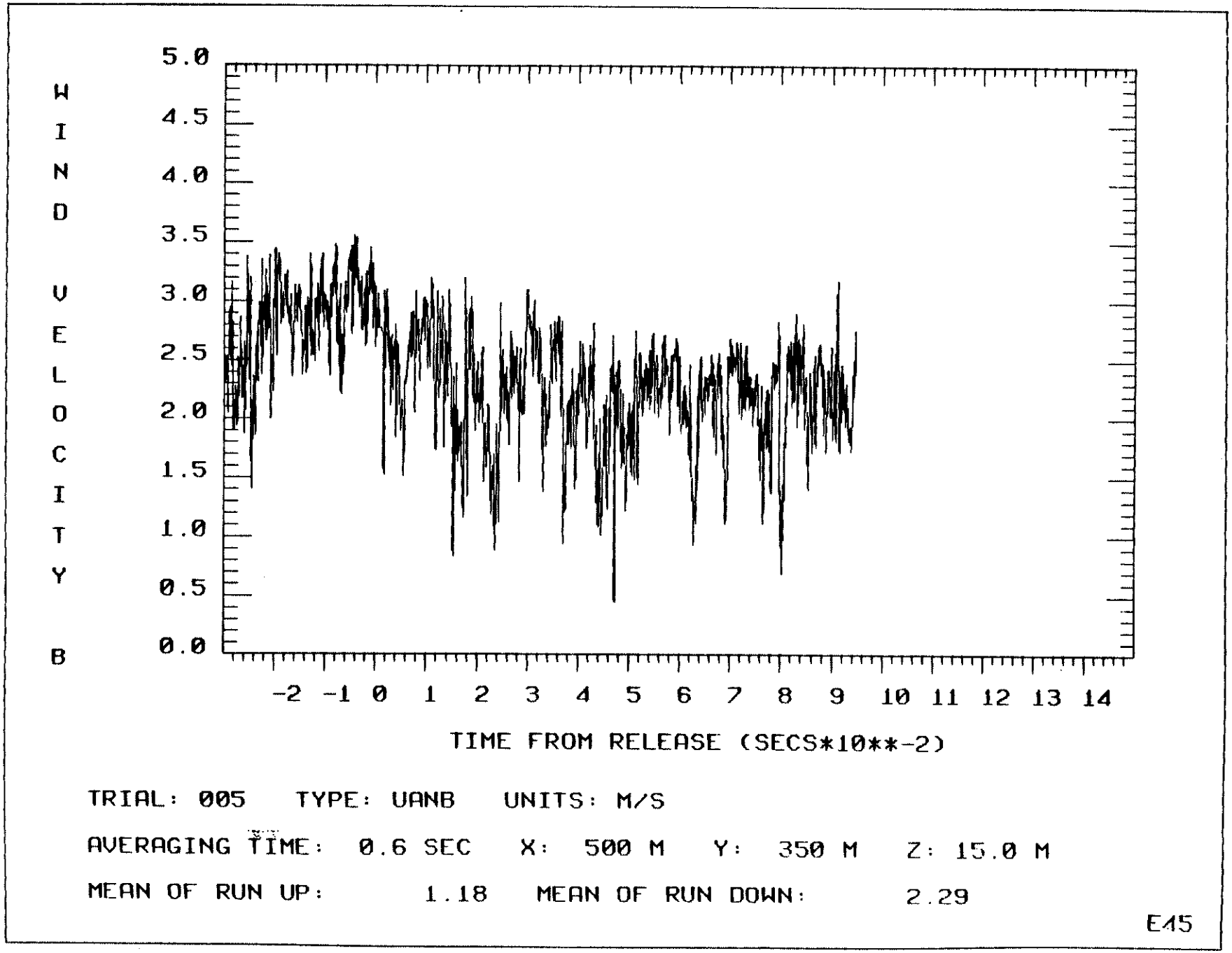


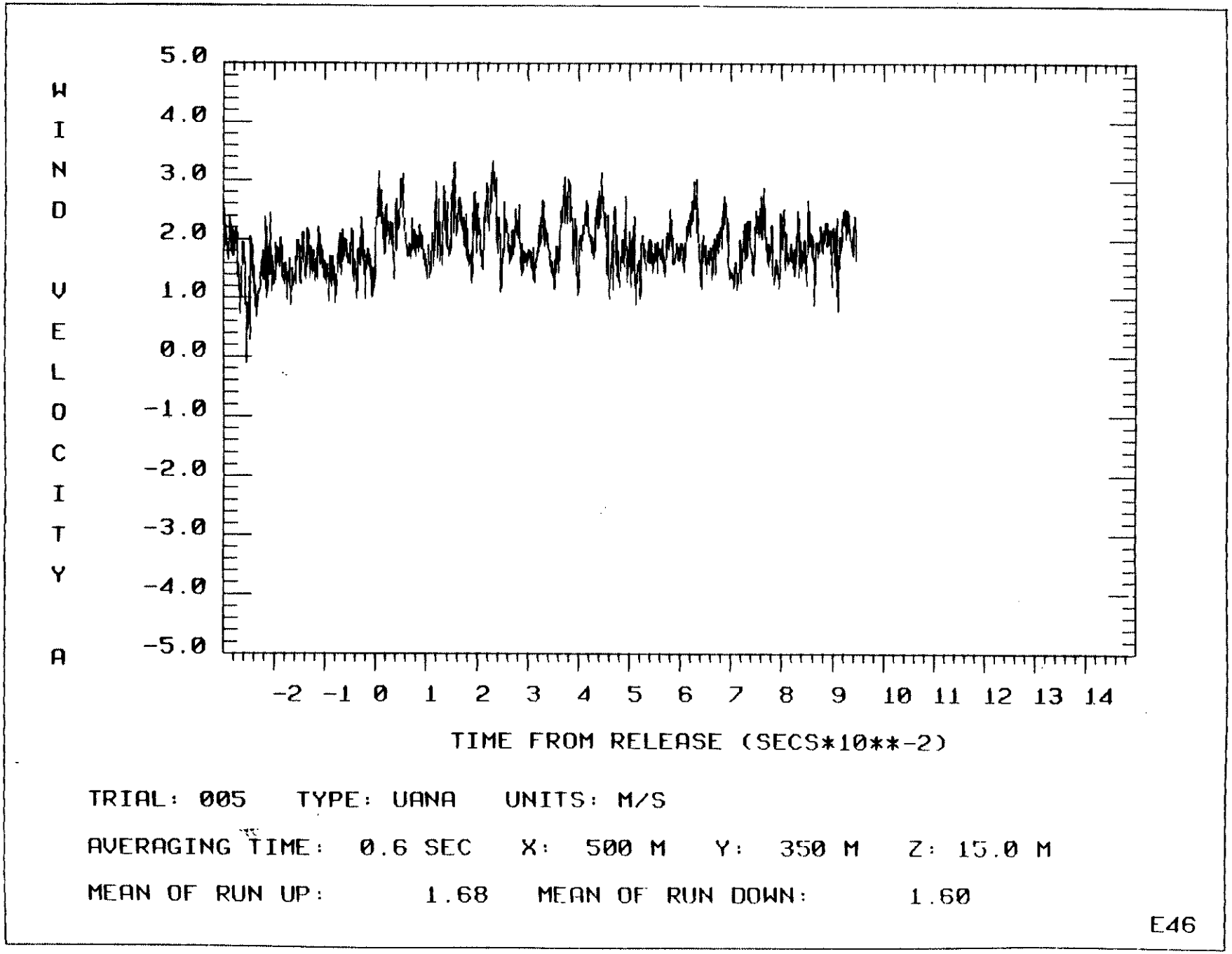
TRIAL: 005 TYPE: UANT UNITS: DEGREES C

AVERAGING TIME: 0.6 SEC X: 500 M Y: 350 M Z: 5.0 M

MEAN OF RUN UP: 23.74 MEAN OF RUN DOWN: 24.61

E44


WIND VELOCITY B
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANB UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 500 M Y: 350 M Z: 15.0 M
MEAN OF RUN UP: 1.18 MEAN OF RUN DOWN: 2.29
E45

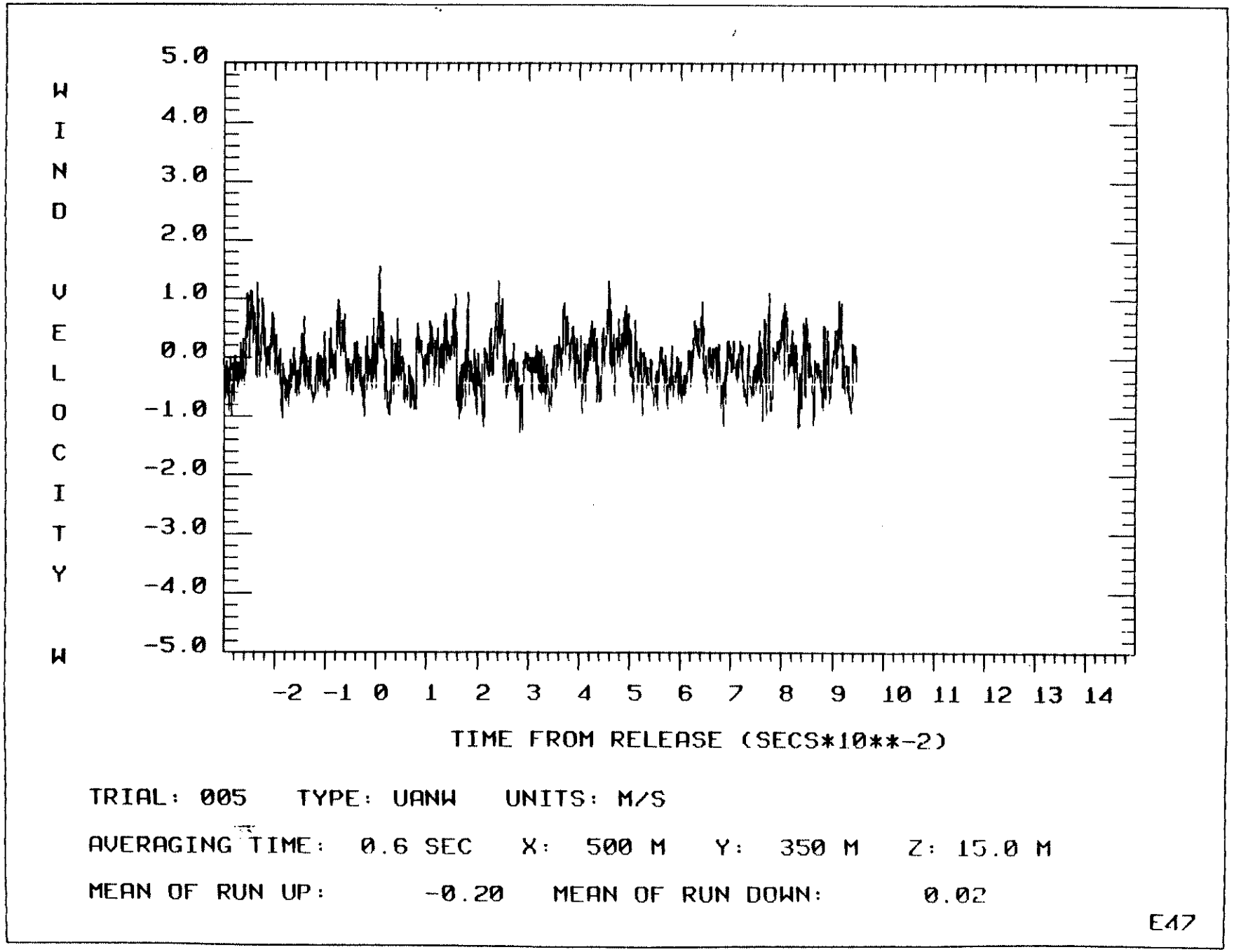


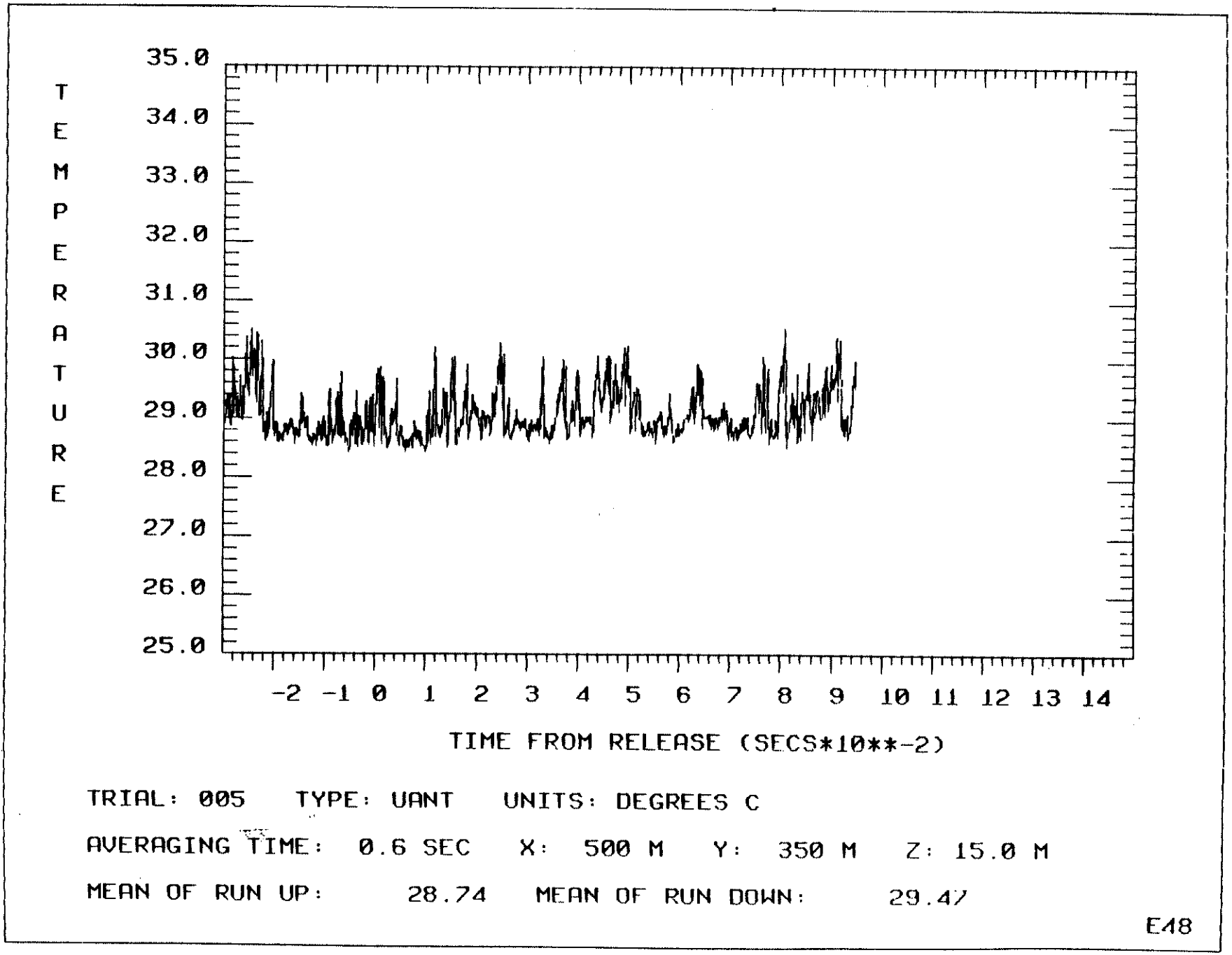
TRIAL: 005 TYPE: UANA UNITS: M/S

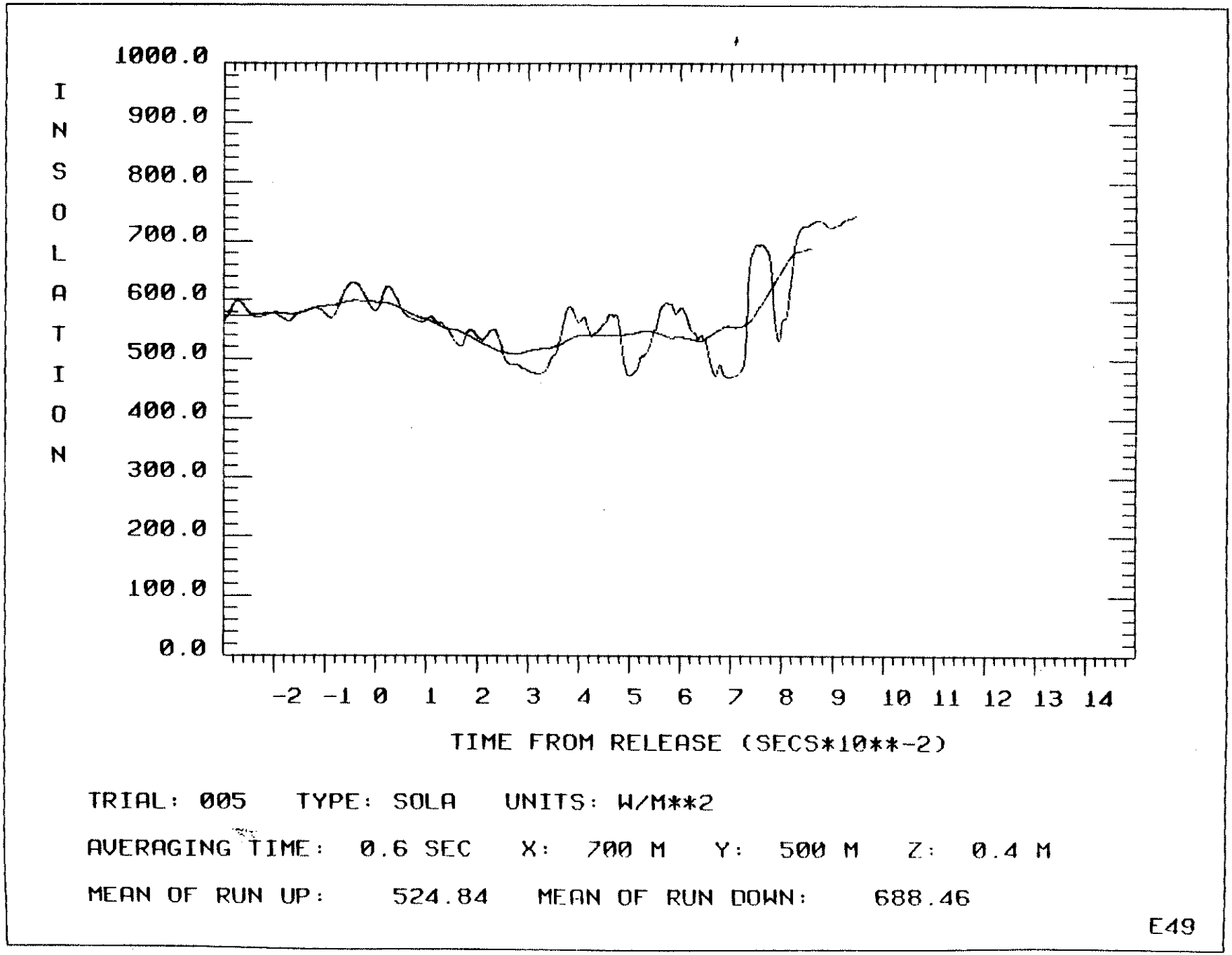
AVERAGING TIME: 0.6 SEC X: 500 M Y: 350 M Z: 15.0 M

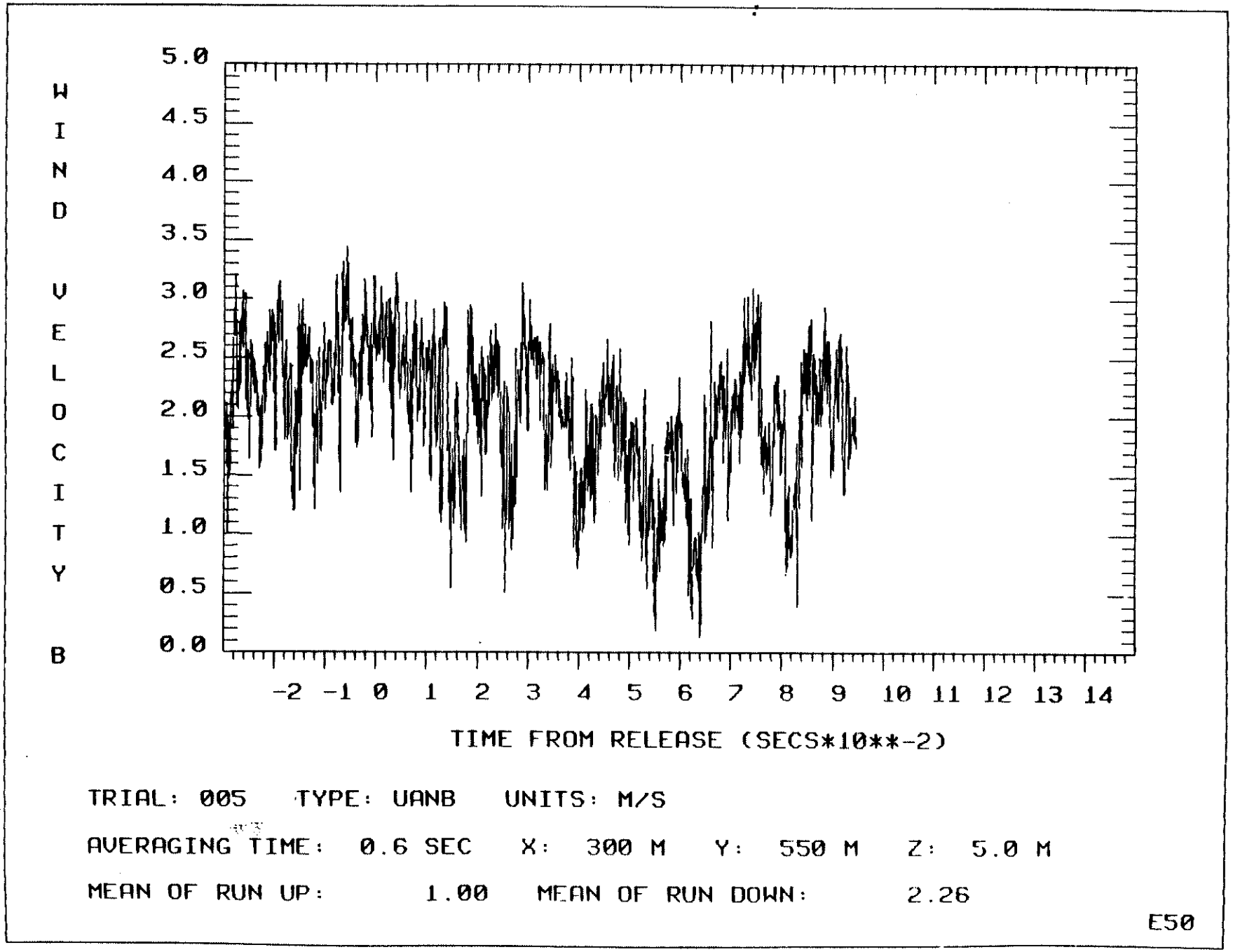
MEAN OF RUN UP: 1.68 MEAN OF RUN DOWN: 1.60

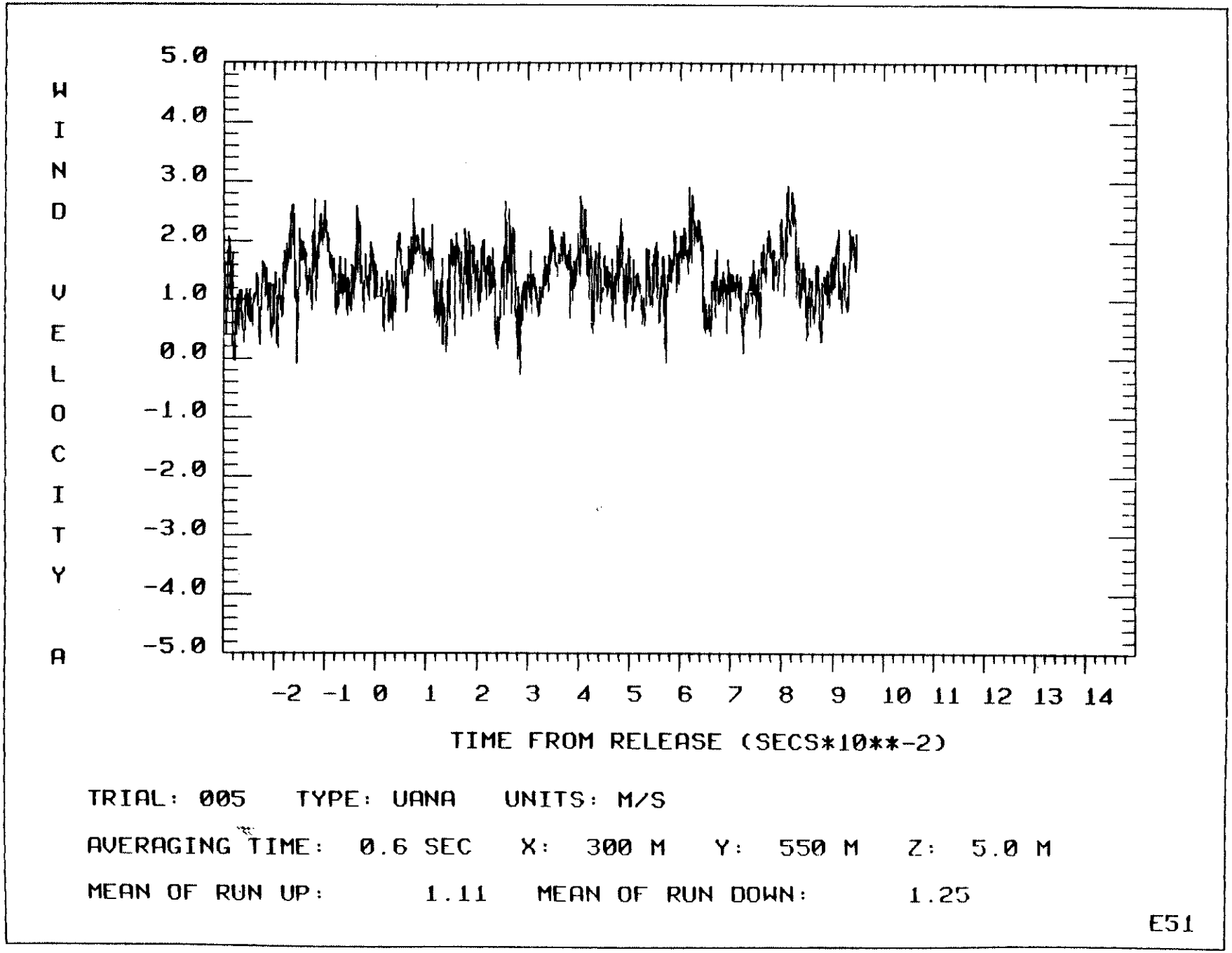
E46

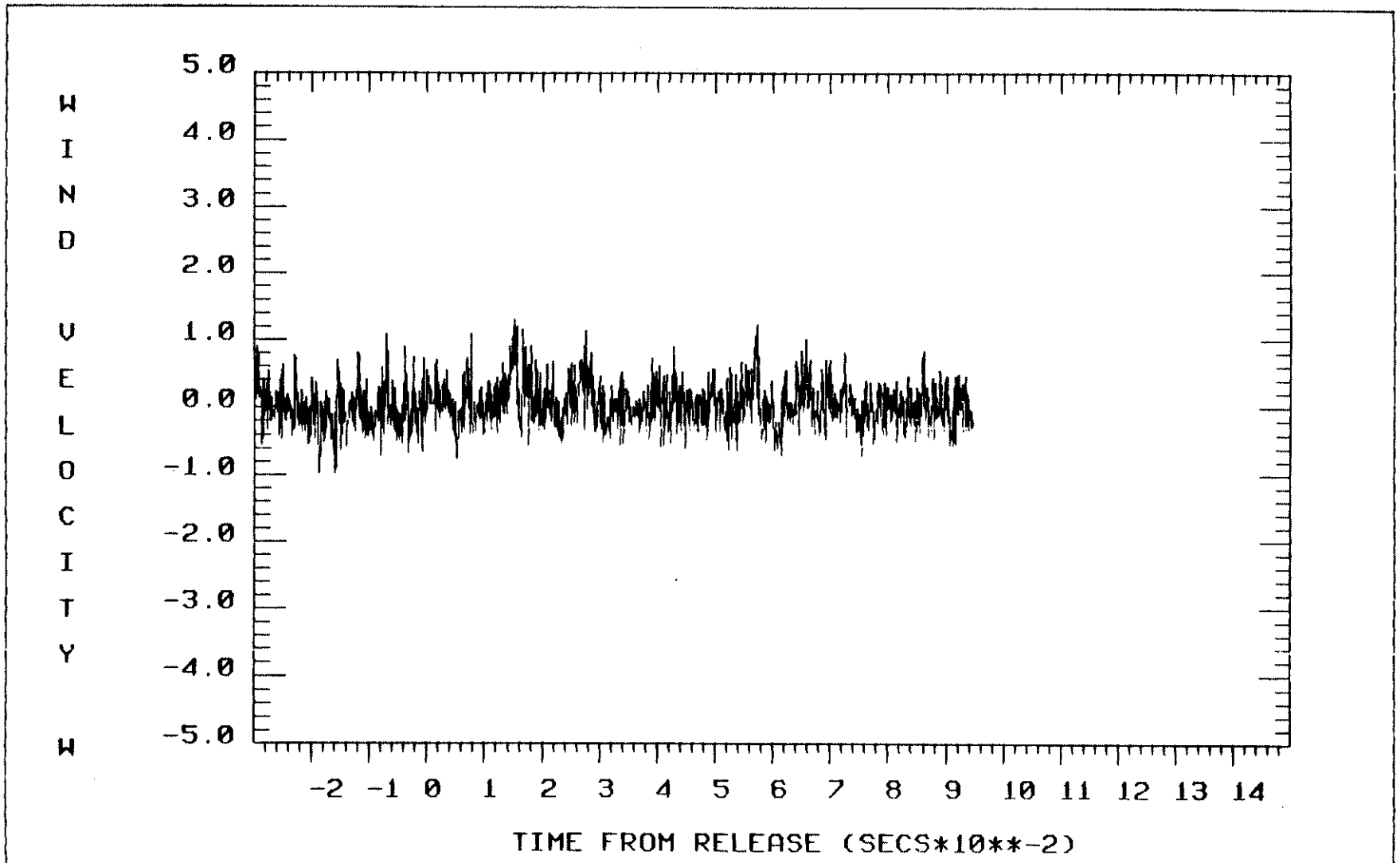

WIND VELOCITY W
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANW UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 500 M Y: 350 M Z: 15.0 M
MEAN OF RUN UP: -0.20 MEAN OF RUN DOWN: 0.02
E47


TEMPERATURE
35.0
34.0
33.0
32.0
31.0
30.0
29.0
28.0
27.0
26.0
25.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANT UNITS: DEGREES C
AVERAGING TIME: 0.6 SEC X: 500 M Y: 350 M Z: 15.0 M
MEAN OF RUN UP: 28.74 MEAN OF RUN DOWN: 29.47
E48


INSOLATION
1000.0
900.0
800.0
700.0
600.0
500.0
400.0
300.0
200.0
100.0
0.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: SOLA UNITS: W/M**2
AVERAGING TIME: 0.6 SEC X: 700 M Y: 500 M Z: 0.4 M
MEAN OF RUN UP: 524.84 MEAN OF RUN DOWN: 688.46
E49


WIND VELOCITY B
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANB UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 300 M Y: 550 M Z: 5.0 M
MEAN OF RUN UP: 1.00 MEAN OF RUN DOWN: 2.26
E50


WIND VELOCITY A
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANA UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 300 M Y: 550 M Z: 5.0 M
MEAN OF RUN UP: 1.11 MEAN OF RUN DOWN: 1.25
E51

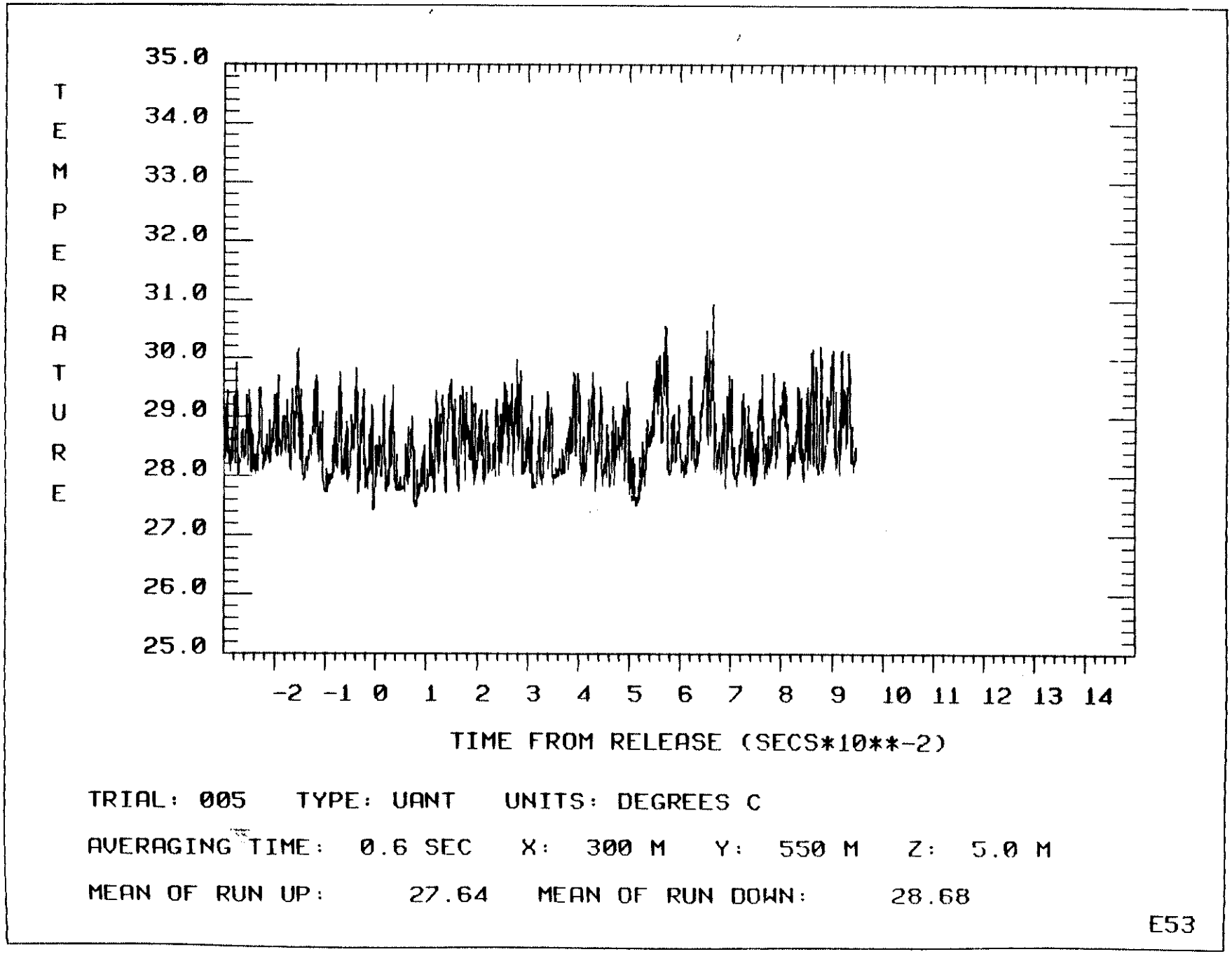


TRIAL: 005 TYPE: UANW UNITS: M/S

AVERAGING TIME: 0.6 SEC X: 300 M Y: 550 M Z: 5.0 M

MEAN OF RUN UP: -0.01 MEAN OF RUN DOWN: -0.03

E52

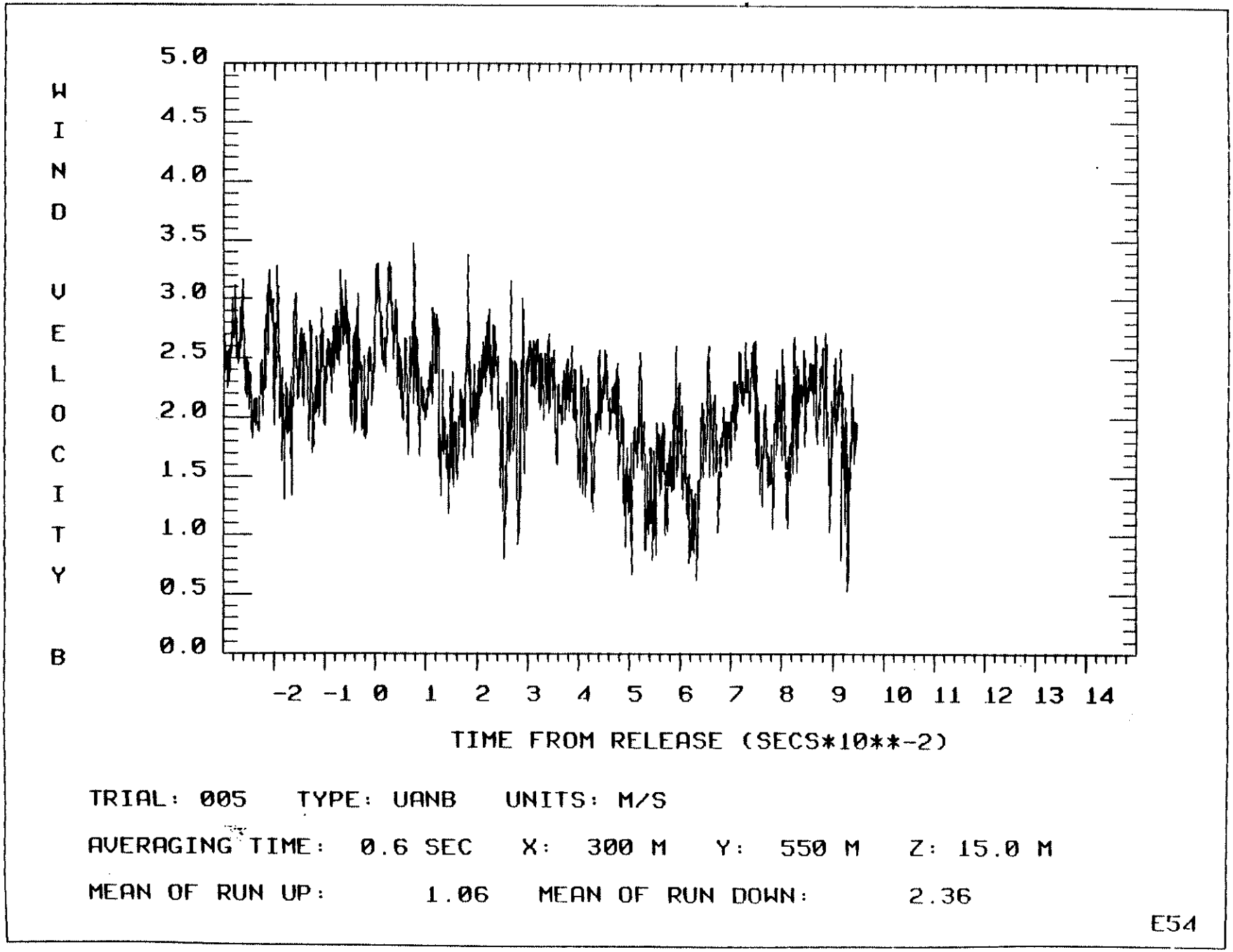


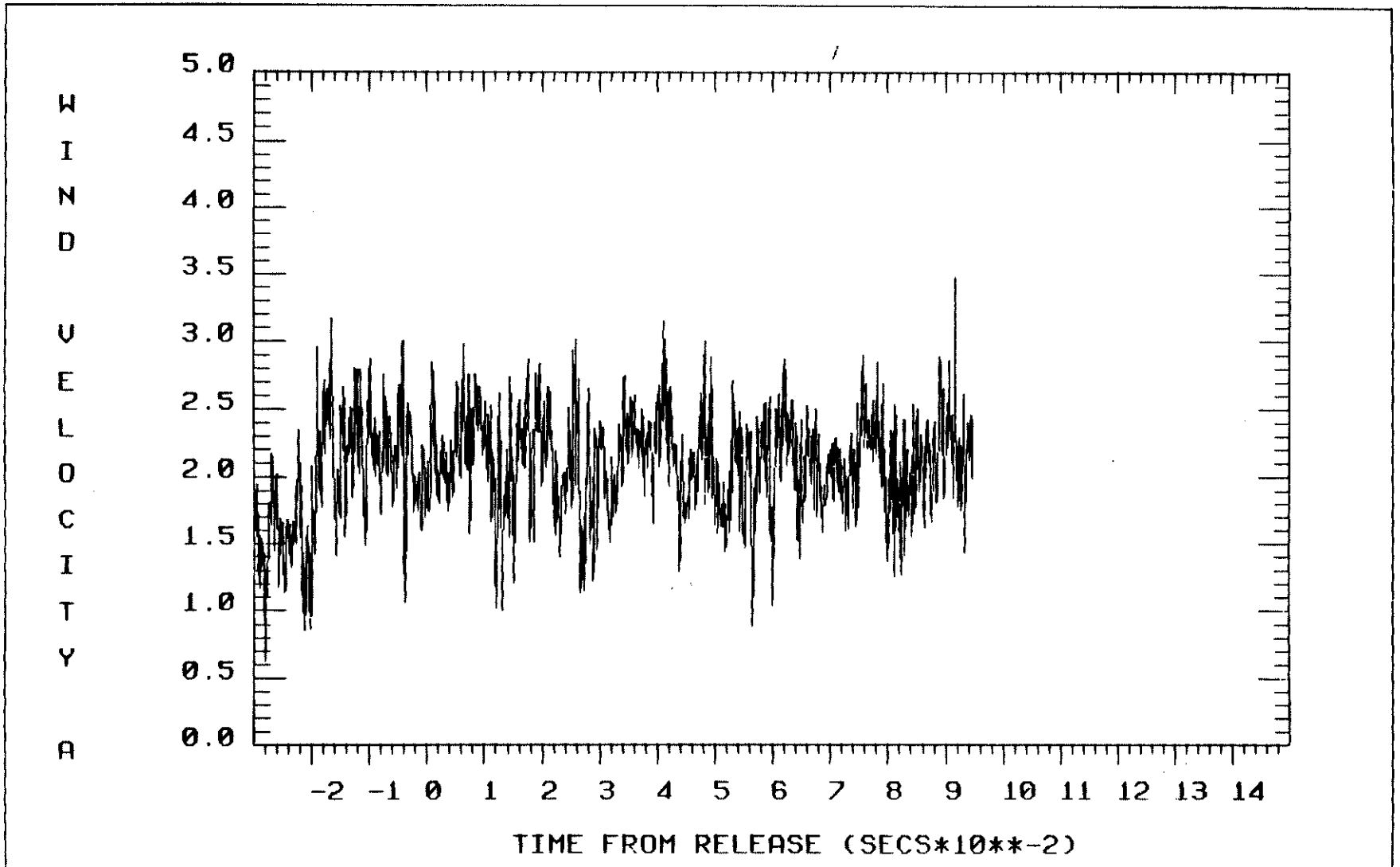
TRIAL: 005 TYPE: UANT UNITS: DEGREES C

AVERAGING TIME: 0.6 SEC X: 300 M Y: 550 M Z: 5.0 M

MEAN OF RUN UP: 27.64 MEAN OF RUN DOWN: 28.68

E53


WIND VELOCITY
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: UANB UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 300 M Y: 550 M Z: 15.0 M
MEAN OF RUN UP: 1.06 MEAN OF RUN DOWN: 2.36
E54

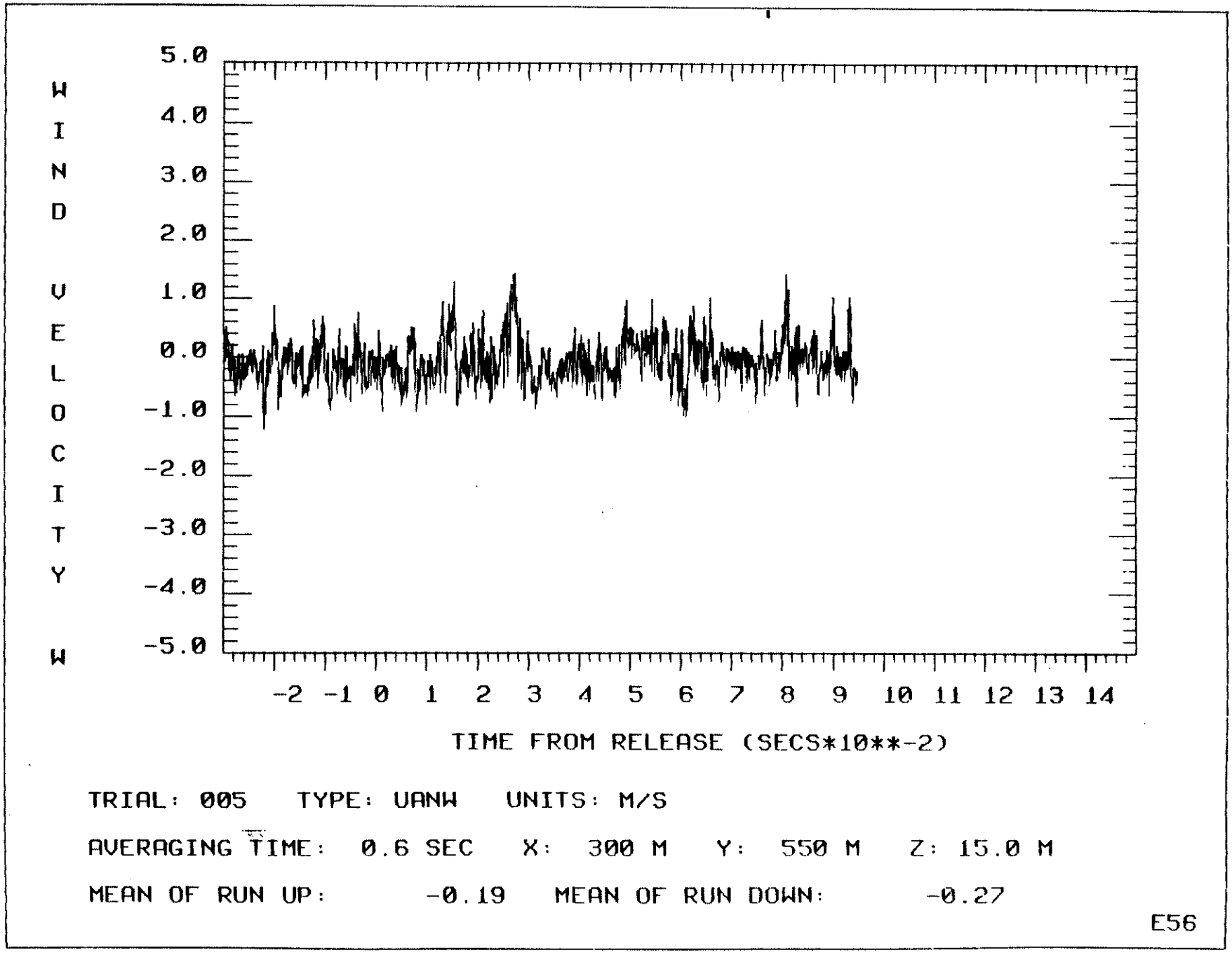


TRIAL: 005 TYPE: UANA UNITS: M/S

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

MEAN OF RUN UP: 1.70 MEAN OF RUN DOWN: 1.94

E55

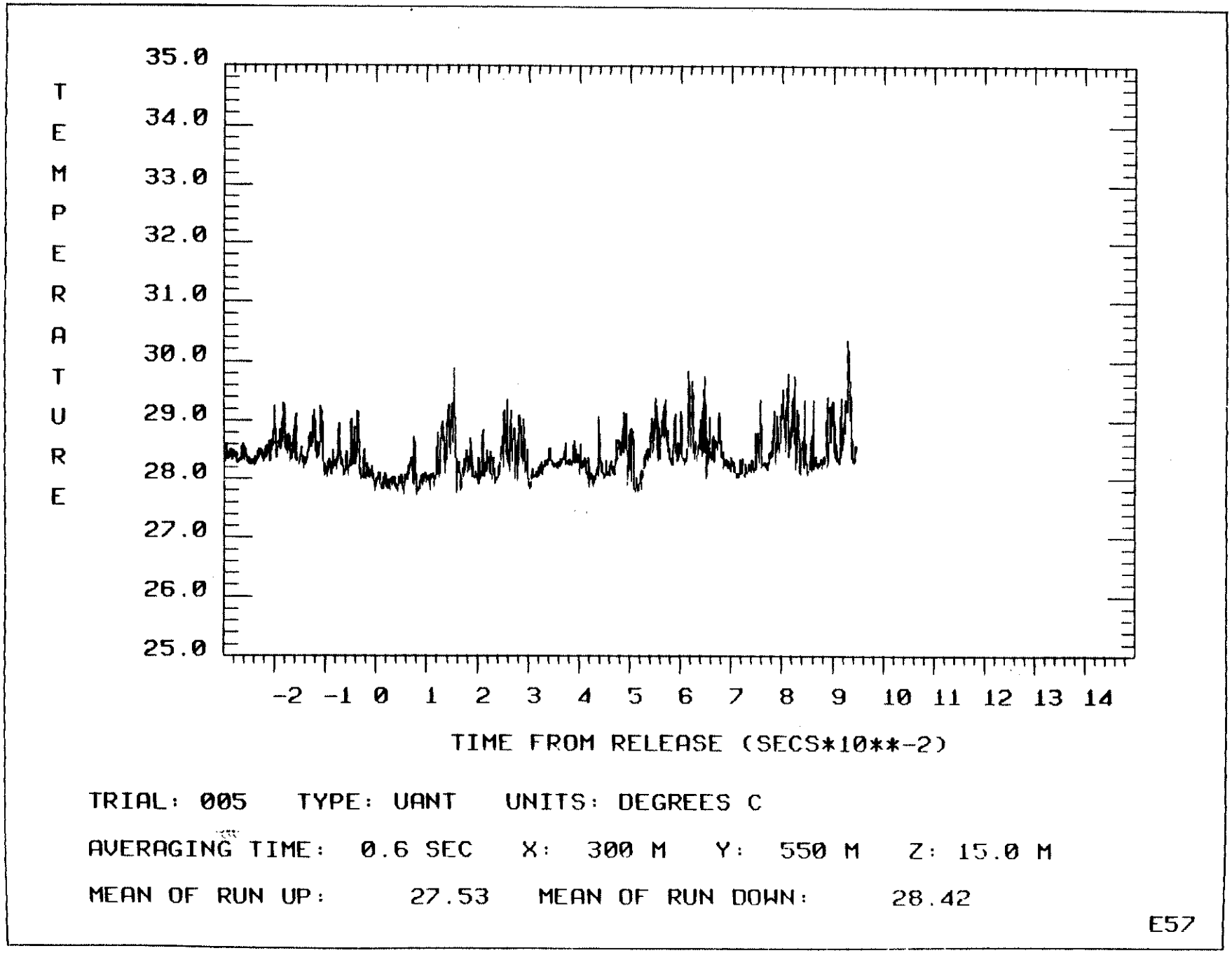


TRIAL: 005 TYPE: UANW UNITS: M/S

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

MEAN OF RUN UP: -0.19 MEAN OF RUN DOWN: -0.27

E56

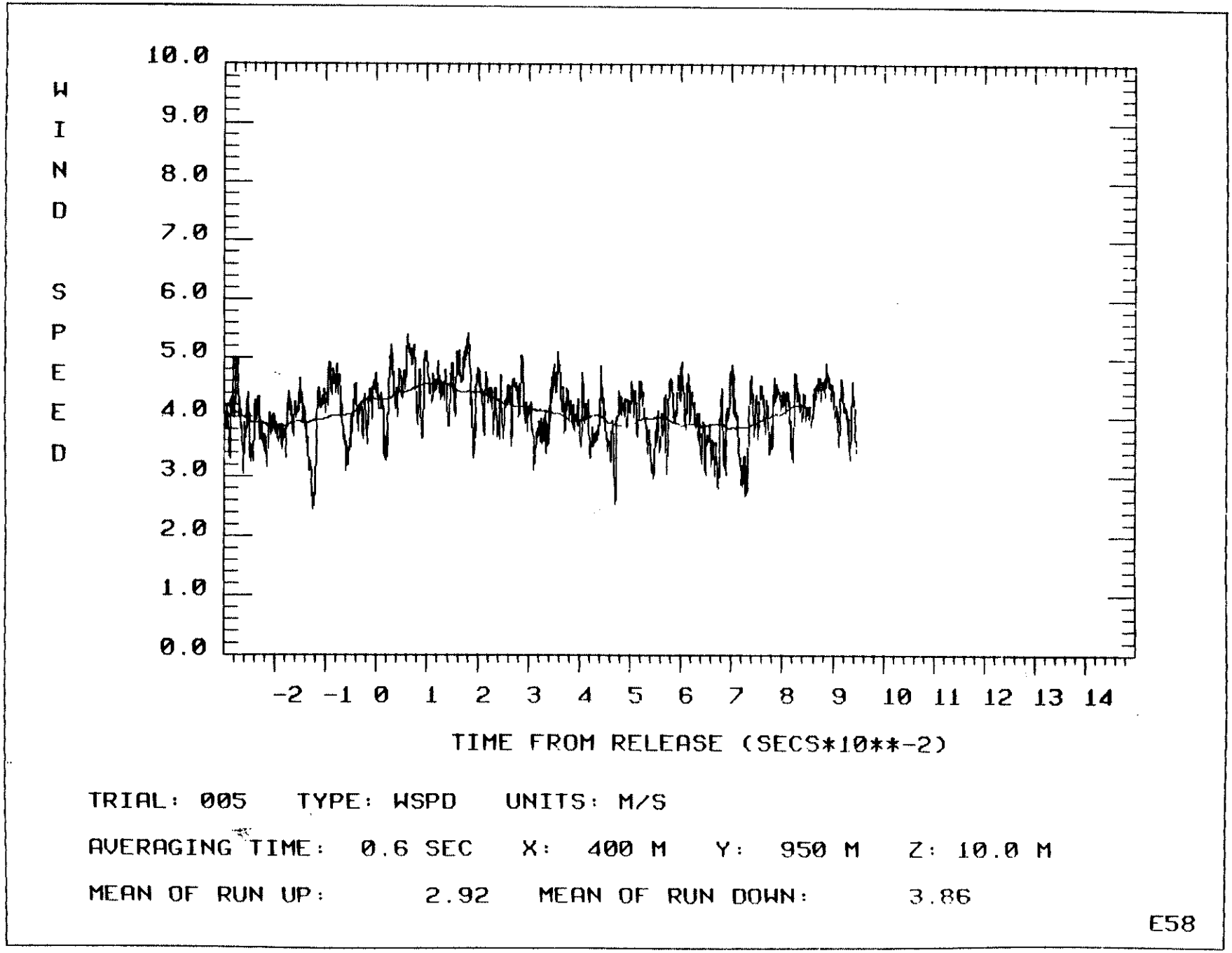


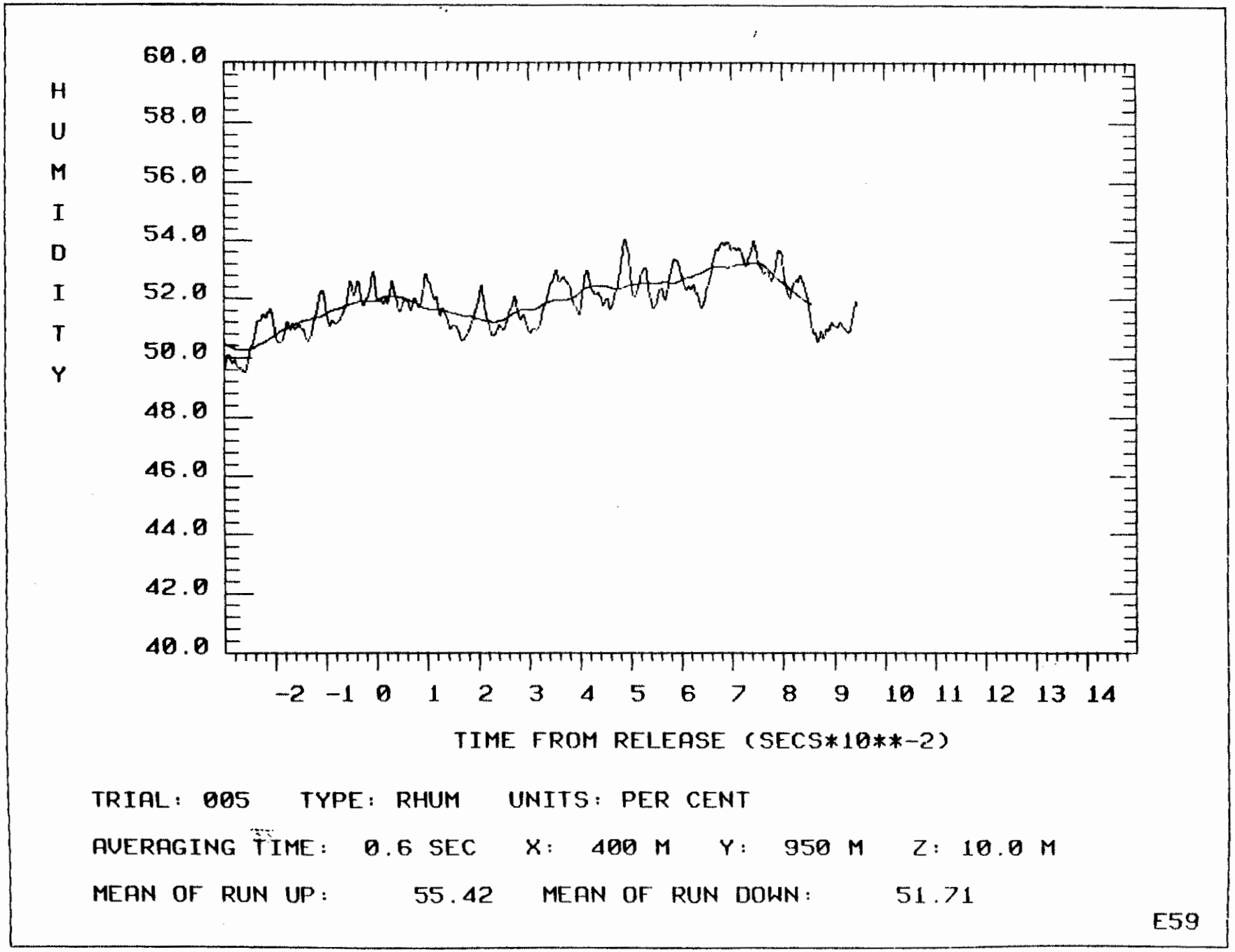
TRIAL: 005 TYPE: UANT UNITS: DEGREES C

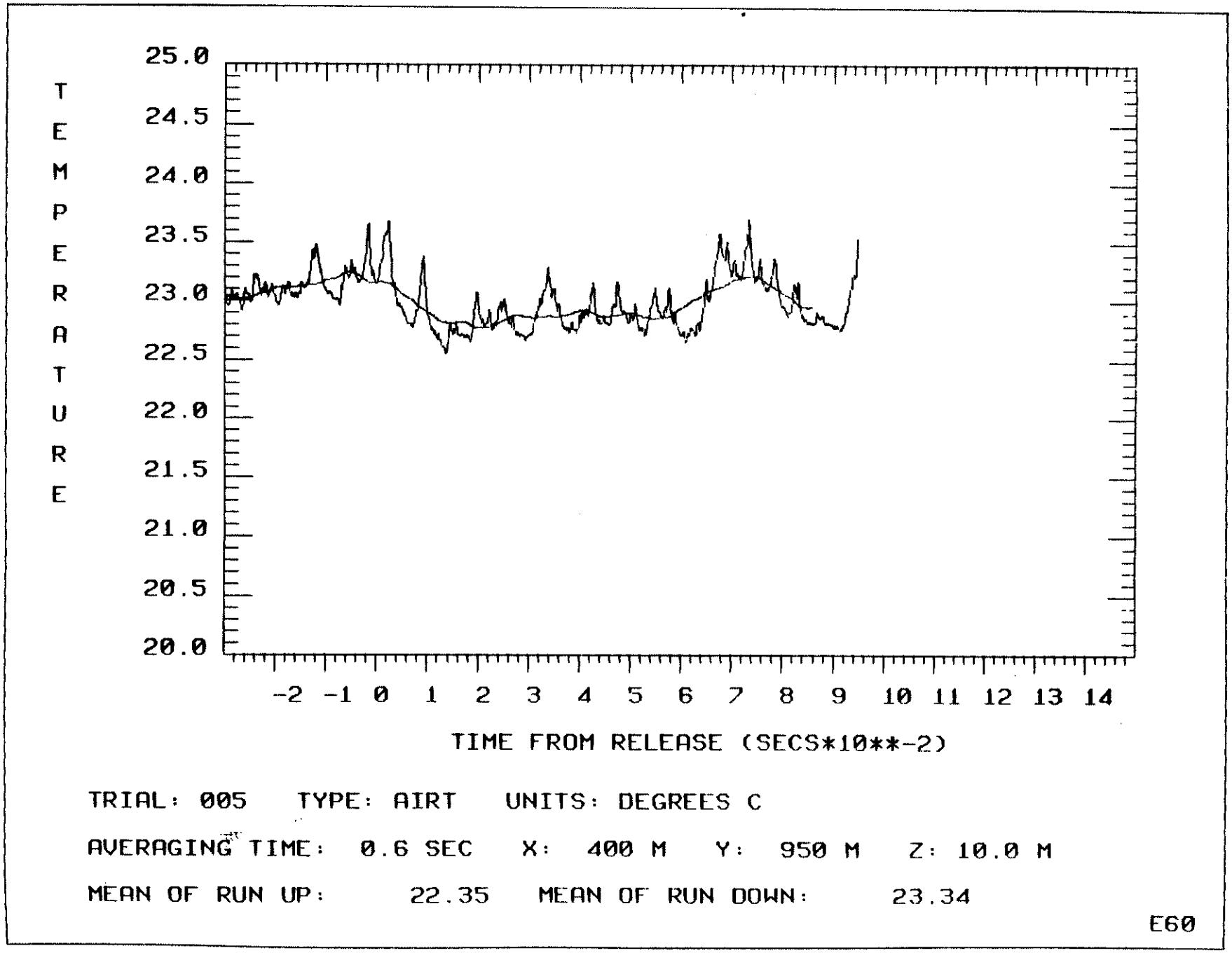
AVERAGING TIME: 0.6 SEC X: 300 M Y: 550 M Z: 15.0 M

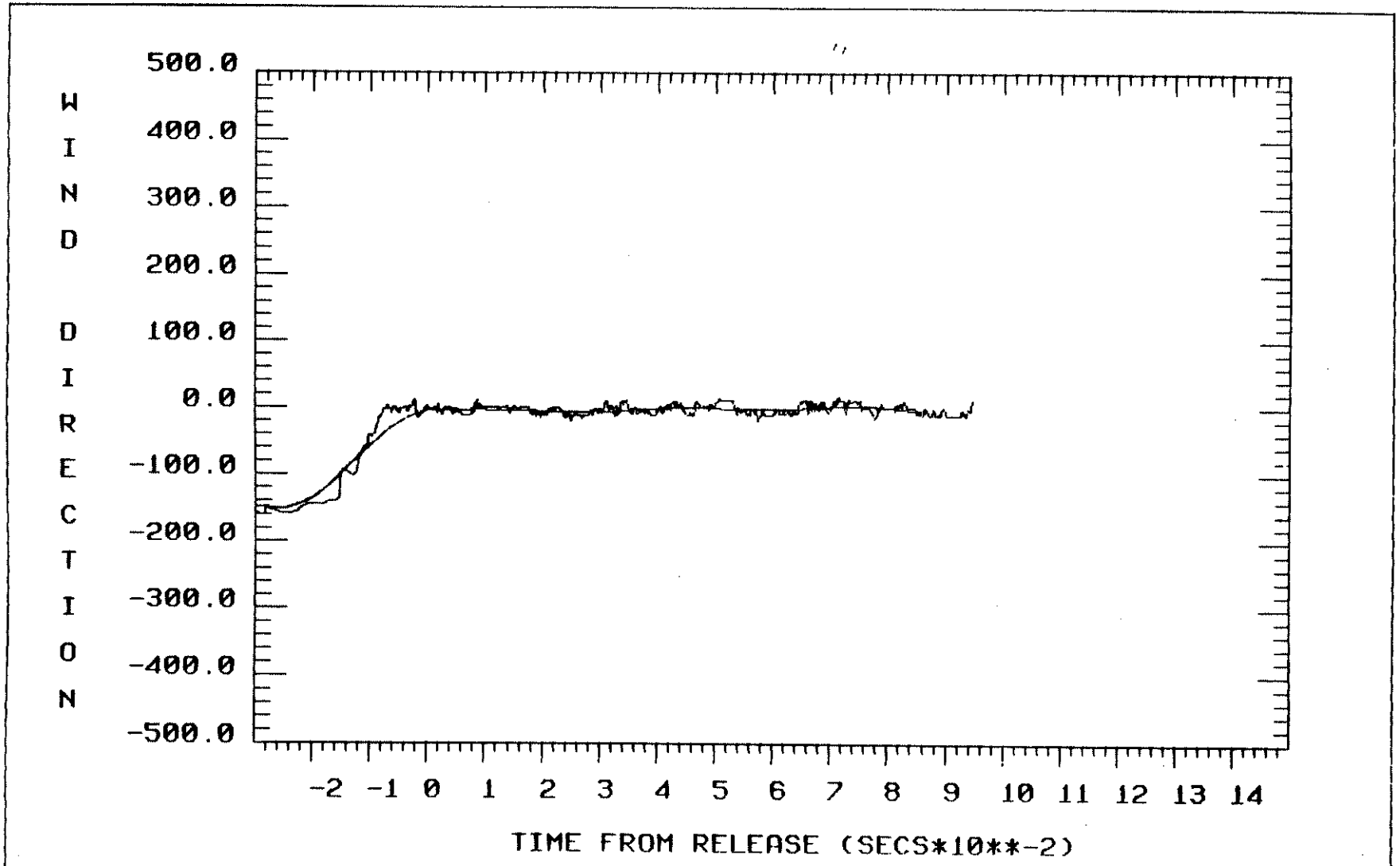
MEAN OF RUN UP: 27.53 MEAN OF RUN DOWN: 28.42

E57


WIND SPEED
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: WSPD UNITS: M/S
AVERAGING TIME: 0.6 SEC X: 400 M Y: 950 M Z: 10.0 M
MEAN OF RUN UP: 2.92 MEAN OF RUN DOWN: 3.86
E58


HUMIDITY
60.0
58.0
56.0
54.0
52.0
50.0
48.0
46.0
44.0
42.0
40.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: RHUM UNITS: PER CENT
AVERAGING TIME: 0.6 SEC X: 400 M Y: 950 M Z: 10.0 M
MEAN OF RUN UP: 55.42 MEAN OF RUN DOWN: 51.71
E59


TEMPERATURE
25.0
24.5
24.0
23.5
23.0
22.5
22.0
21.5
21.0
20.5
20.0
-2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
TIME FROM RELEASE (SECS*10**-2)
TRIAL: 005 TYPE: AIRT UNITS: DEGREES C
AVERAGING TIME: 0.6 SEC X: 400 M Y: 950 M Z: 10.0 M
MEAN OF RUN UP: 22.35 MEAN OF RUN DOWN: 23.34
E60



TRIAL: 005 TYPE: WHDG UNITS: DEGREES

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

MEAN OF RUN UP: 0.94 MEAN OF RUN DOWN: -7.18

E61