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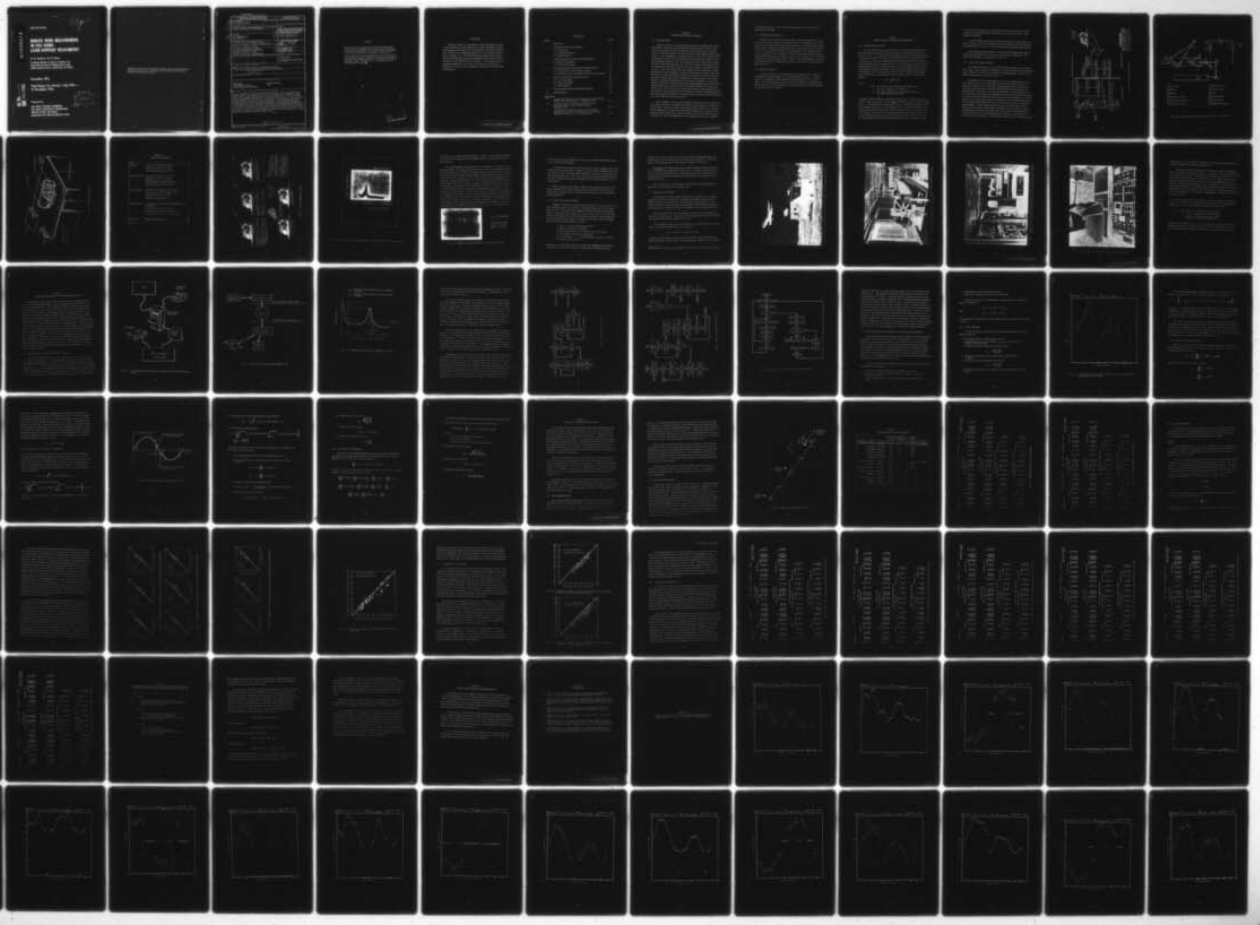

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AFGL-TR-76-0313

REMOTE WIND MEASUREMENT IN FOG USING LASER DOPPLER VELOCIMETRY

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A Laser Doppler velocimeter is an instrument for remote sensing of atmospheric wind. This report describes a test designed to validate the ability of the laser Doppler velocimeter to measure winds in fog. The test instrument was placed at Otis AFB for a test period of one month. It was operated during conditions of fog during the test period. Three-dimensional wind components were generated using three distinct computational algorithms. A description of the laser Doppler velocimeter and computational algorithms is presented. Wind measurement results and a discussion of those results is also given. Because the laser Doppler velocimeter used for the test is a research instrument, recommendations are made for improvement for a system designed to remotely measure winds in fog.

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PREFACE

This final report is a description of the technology used and results obtained in a test intended to verify the feasibility of using laser Doppler velocimetry for measurement of low speed winds in fog. The test was conducted by personnel of Lockheed Missiles & Space Company, Inc., Huntsville Research & Engineering Center. Lockheed-Huntsville personnel contributing to this effort were E. J. Gorzynski, G.M. Miller and K.R. Shrider. The dedicated efforts during the test phase of Dr. Alan I. Weinstein and Frederick J. Brousaides of the Air Force Geophysics Laboratory are gratefully acknowledged.

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Section 1
INTRODUCTION AND SUMMARY

1.1 BACKGROUND

Significant effort is currently being devoted to development of instrumentation to remotely sense atmospheric flow phenomena. Some of the avenues being pursued are active and passive acoustic sensors, optical sensors, and radio methods. A useful survey of such methods is presented in Ref. 1. Two advantages of remote sensors are that flow conditions can be ascertained in regions of space where it would not be convenient to locate instrumentation hardware, and no interference with the flow at the point of interest is introduced by their use. The laser Doppler velocimeter (LDV) is a particularly attractive device for remote sensing of atmospheric phenomena. In the LDV system, the laser radiation backscattered by moving particulates in the atmosphere is used to determine the velocity of the flow. Since it is possible to direct the laser focal volume at a selected sequence of points in space, data from a scanning LDV system can be used to determine the velocity field rapidly and over a range of altitudes. A CO_2 laser Doppler velocimeter system has the following advantages over other remote sensing techniques: (1) the position of the volume within which velocity is sensed can be varied with ease as only optic pointing and focusing operations are involved; (2) the ambient aerosol provides a sufficient scattering target; and (3) the sensing mechanism is non-mechanical which results in the potential for a high frequency turbulence sensor.

The feasibility of using a laser Doppler velocimeter (LDV) system for the remote sensing of low altitude winds and for the detection and tracking of aircraft wake vortices has been demonstrated (Refs. 2 through 6). The particular application for which the test described herein was conducted is the measurement of wind in fog. The accurate measurement of wind in fog is necessary for successful application of fog dispersal systems to dissipate

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fog at military bases. The accurate measurement of low speed wind is particularly important.

1.2 PROGRAM OBJECTIVES

The primary objective of the test was to verify the ability of the LDV to measure low speed winds in both advection fog and radiation fog. It was also desired to define particular potential system or operating modifications which could be employed to improve low speed wind measurement capability in a system specifically designed for such purposes. An adjunct objective was an evaluation of the feasibility of measuring visibility with the LDV by measuring the attenuation of the laser signal. The results of that feasibility evaluation are not reported herein. However, the adjunct purpose of the test is discussed because it affected the manner in which the wind measurement data were taken.

1.3 REPORT FORMAT

A brief description of laser Doppler velocimetry and the Lockheed-Huntsville Mobile Atmospheric Unit is presented in Section 2. Section 3 contains a description of the mathematical algorithms used to measure winds. The tests conducted at the Air Force Geophysics Laboratory Test Site at Otis AFB, Massachusetts are described in Section 4 with a presentation and discussion of results.

Section 2

LASER DOPPLER SYSTEM DEVELOPMENT

2.1 SYSTEM DESCRIPTION

An LDV wind/vortex sensor senses air movement by measurement of the Doppler frequency shift of laser radiation backscattered by the atmospheric aerosol. An instrument must incorporate means to transmit the laser radiation to the region of interest, collect the radiation scattered from the atmospheric aerosol and to photomix the scattered radiation and a portion of the transmitted beam on a photodetector. The difference between the transmitted frequency and the returned frequency is the Doppler shift frequency. The Doppler frequency shift signal is generated at the photodetector and is translatable into an along-optic axis wind velocity component using appropriate electronics. The magnitude of the Doppler shift, Δf, is given by the equation

$$\Delta f = \frac{2}{\lambda} |\vec{V}| \cos\theta$$

where

$|\vec{V}|$ = the velocity vector in the region being sensed

λ = the laser radiation wavelength, and

θ = the angle subtended by the velocity vector and the optic system line of sight.

A Doppler shift of 188 MHz results per m/sec of line-of-sight velocity component. Thus measurement of the Doppler shift frequency, Δf, yields directly the line-of-sight velocity component $|\vec{V}| \cos\theta$. Some typical advantages of the laser Doppler method are: (1) the Doppler shift is a direct absolute measure of the velocity (for example, the hot wire yields velocity via a cooling effect on the wire), (2) the ease with which the position of the sensing volume can be varied (optics pointing and focusing operations only being involved); (3) the ambient aerosol provides sufficient scattering, thus enabling operation

in "clear air" conditions; and (4) the ambient aerosol tracer has a small inertia and responds quickly to variations in airspeed and is thus a good turbulence indicator.

A useful instrument must also incorporate means of scanning the system's sensing volume in the desired manner and to also effect the required signal processing, on-line read-out and permanent recording requirements.

The hardware implementation of the field laser Doppler unit utilized during this investigation is discussed in the following subsections. The overall configuration is summarized in Fig. 2-1.

2.1.1 Basic LDV Optical System

The optical system is of a monostatic design and utilizes a continuous wave laser. This arrangement depends on focusing the transmitter telescope at the location of interest for its spatial resolution property. Details of the optical arrangement are shown in Fig. 2-2.

Specifically, a horizontally polarized, 20-watt, continuous wave CO_2 laser beam (10.6 micron wavelength) emerges from the laser (1) and is deflected 90 degrees by a mirror (3). The approximately 6 mm diameter beam then passes through a Brewster window (4) and a CdS quarter waveplate (5) which converts it to circular polarization. The beam impinges on the secondary mirror (6) and is expanded and reflected into the primary mirror (30 cm diameter) (7) and then focused out into the atmosphere. A small portion of the original laser beam is reflected by the secondary mirror and the Brewster window (4) and is used as a reference frequency on the photodetector (10). Energy scattered by aerosols, at the focal volume (8) is collected by the primary mirror (7), collimated by the secondary (6), and passed through the quarter waveplate (5). The quarter waveplate changes the polarization of the aerosol backscattered radiation from circular to vertical linear polarization. The vertically polarized beam is approximately

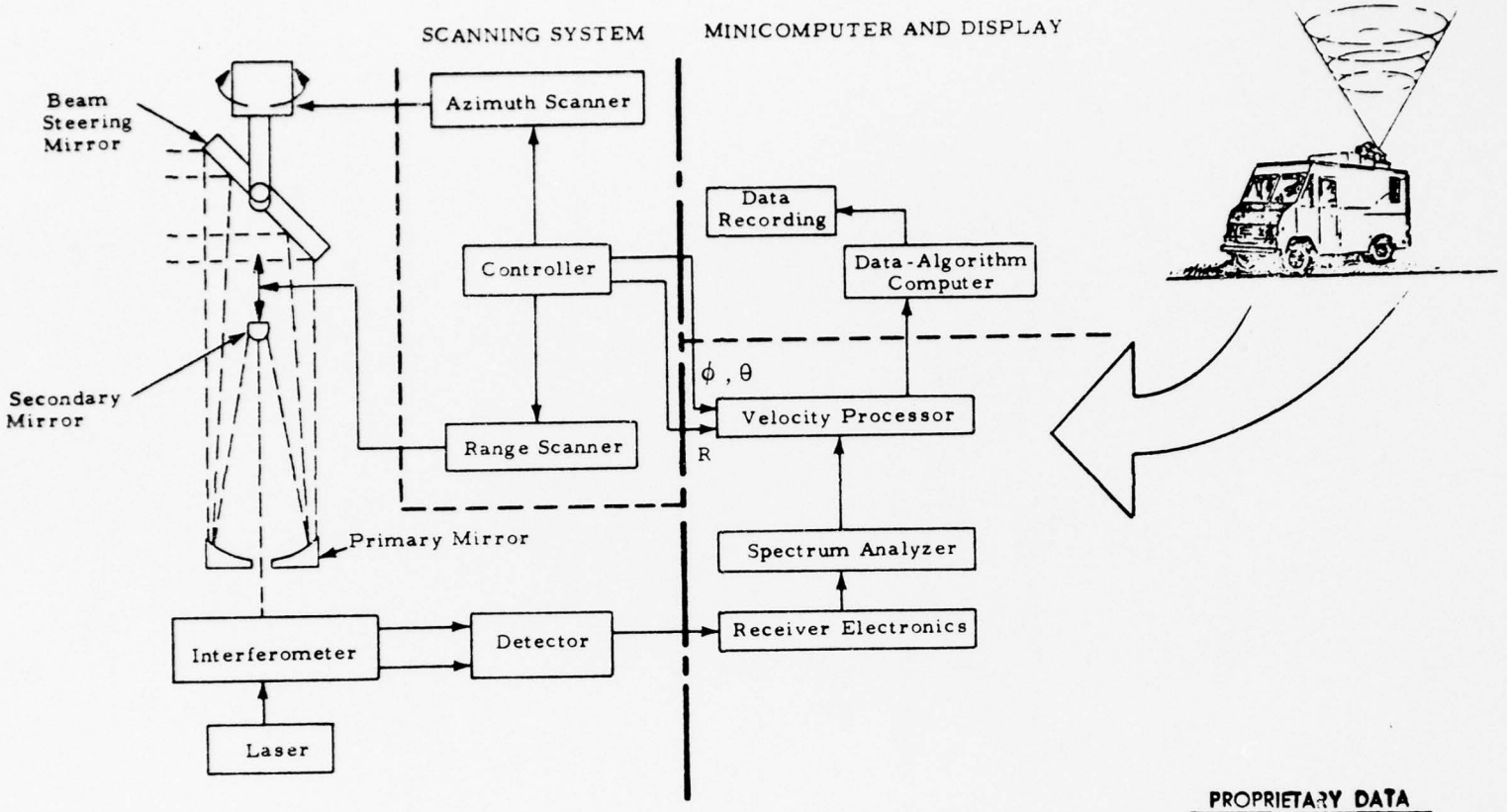

Fig. 2-1 - System Configuration

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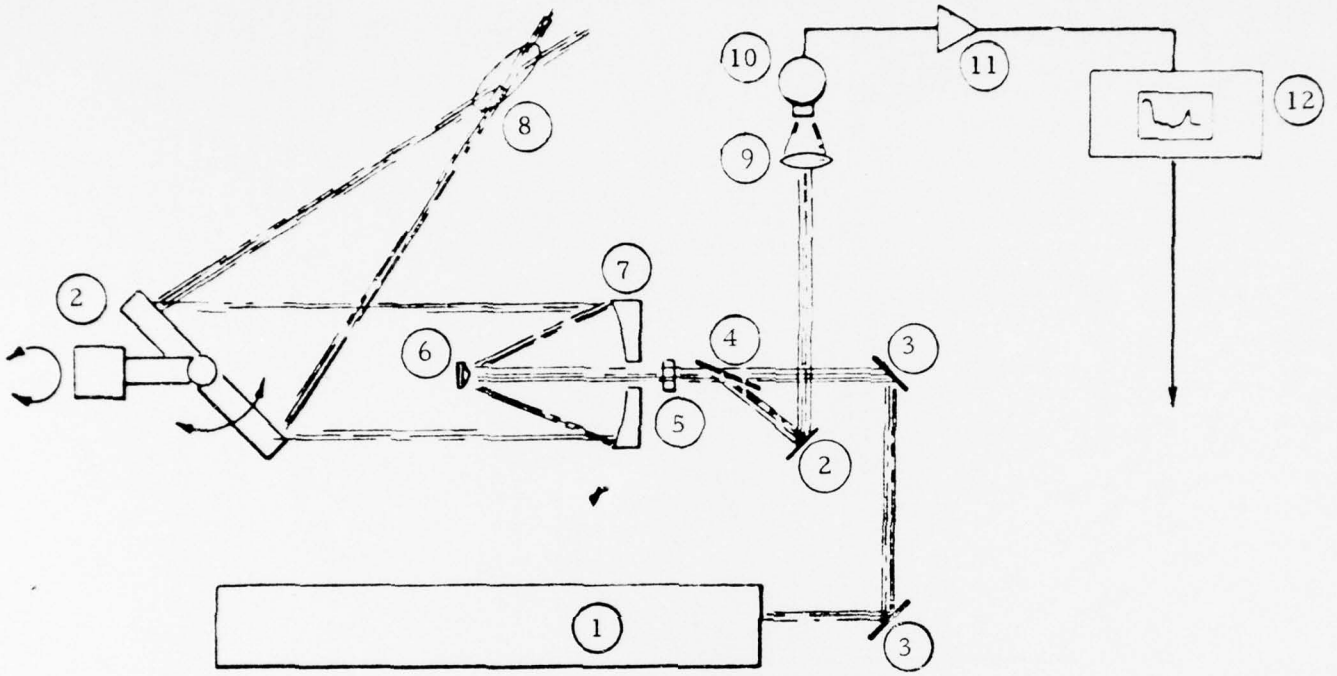


1. CO_2 Laser
2. Mirror
3. Mirror
4. Brewster Window
5. Quarter Wave Plate
6. Secondary Mirror
7. Primary Mirror
8. Focal Volume
9. Lens
10. Photodetector
11. Preamplifier
12. Spectrum Analyzer

Fig. 2-2 - Optical Component Configuration of the Lockheed LDV

78% reflected off the Brewster window (4). After passing through the collecting lens (9) the two beams are photomixed on the detector (10) in a heterodyne configuration. The electrical output of the detector (10) is amplified (11) with a 5 MHz bandwidth, 20 dB gain low noise type preamplifier and fed into a spectrum analyzer (12).

2.1.2 Optic Scanning System

In order to provide the flexibility required to operate the various required modes, a scanning arrangement as shown in Fig. 2-3 is utilized. The required modes of operation include vortex tracking (not required for the measurements described in this document) and velocity azimuth display (VAD) for measurement of atmospheric wind. The mirror assembly, AB, can be rotated about the vertical axis for scanning in azimuth necessary for the VAD (also called conical scan mode of operation). Mirror A is adjusted to control the elevation angle of the beam, thus controlling the cone angle of the conical scan. The scanning hardware as deployed on the mobile van is shown in Fig. 2-4.

Range scanning of the system's focal volume is accomplished by varying the distance between the telescope secondary mirror, E, and the primary mirror, D. This is effected by varying the position of the mirror, E, in a controlled manner by an electric motor/optical encoder combination.

The operator inputs for the scanning system are made through a control panel incorporating thumbswitch controls and LED monitors. The system's scan capabilities is summarized in Table 2-1 and Fig. 2-5, respectively.

2.1.3 Signal Processing System

The Doppler frequency shift of the photodetector output is ascertained through use of a sampled spectrum analyzer which provides frequency spectra (intensity of returned signal as a function of Doppler shift) at a rate of 70 signatures per second. A typical Doppler wind signature is shown in Fig. 2-6.

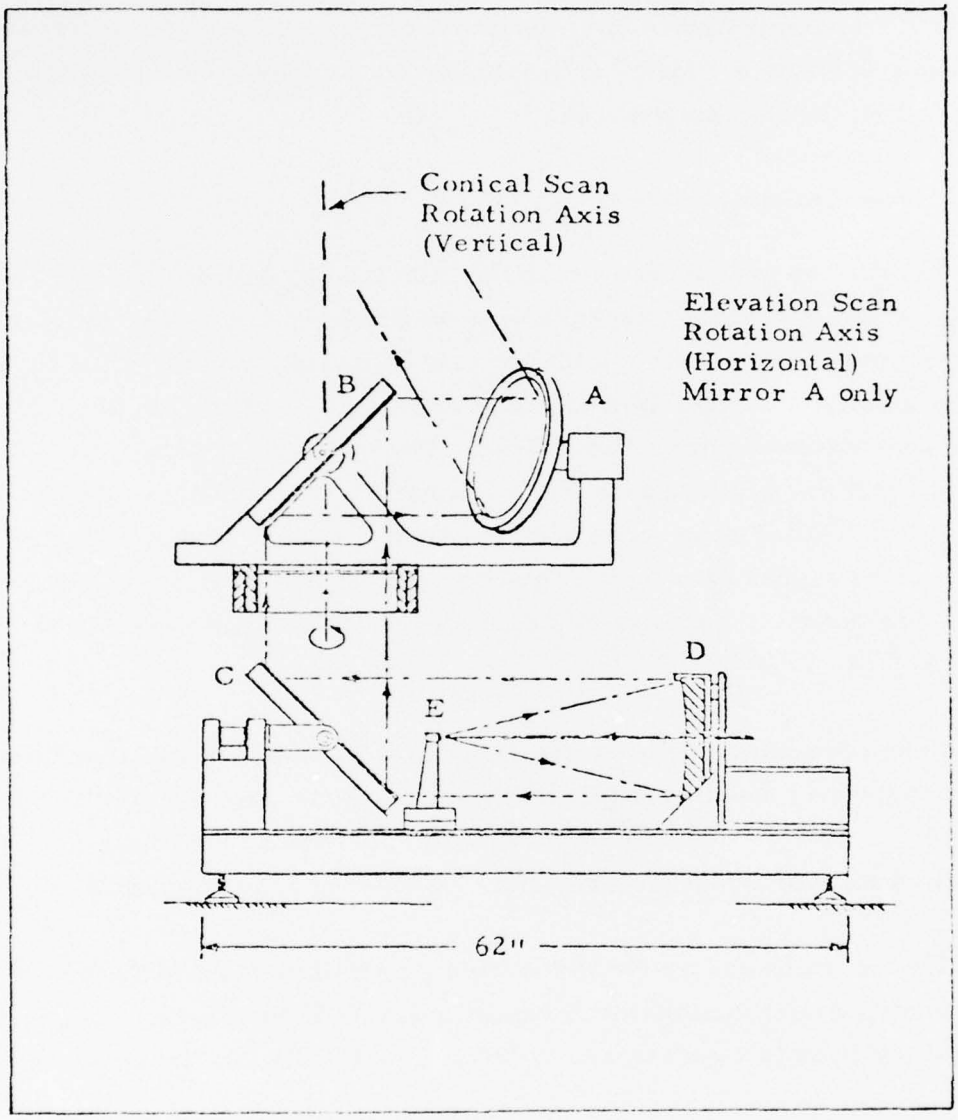


Fig. 2-3 - Schematic of Scan Equipment Added to LDV

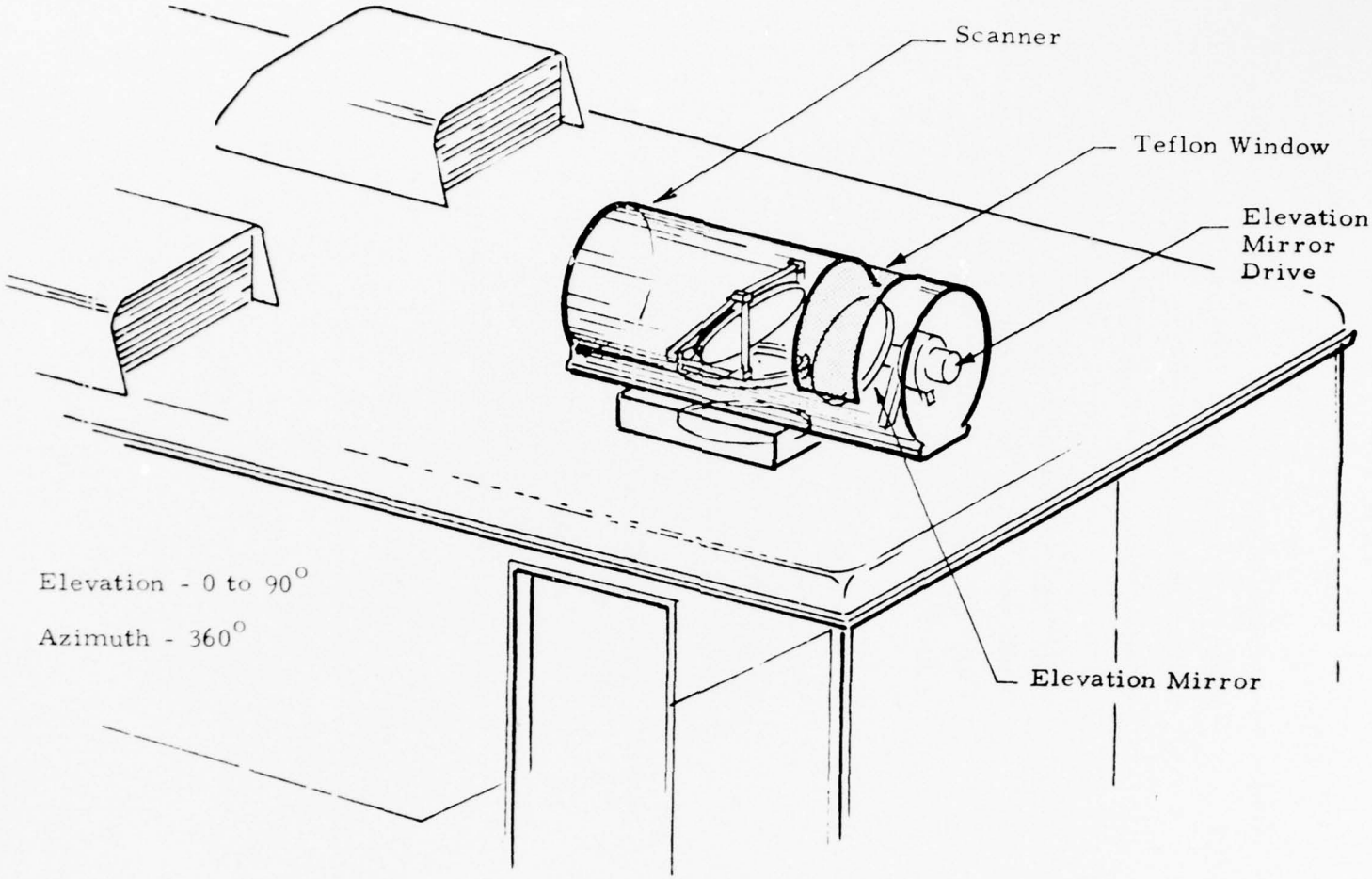


Fig. 2-4 - Multimode Scanner

Table 2-1
SCAN CAPABILITIES

RANGE	Maximum Limit: 100 to 800 m
	Minimum Limit: 16 to 650 m
	Scan Frequency: 0.1 to 6.9 Hz
ELEVATION	Maximum Limit: 10 to 90 deg
	Minimum Limit: 0 to 90 deg
	Hard Limit: 3 deg with Override
	Scan Frequency: 0.1 to 0.5 Hz
VAD MODE	Measurement Altitude: 10 to 640 m
	Measurement Time/Altitude: 5 sec
	Sample Rate: 1 to 7 Cycles
	Number of Altitudes: 8
MULTIMODE	Elevation Coverage: 3 to 90 deg Upwind and Downwind
	Scan Plane Azimuth: 360 deg
	Vertical Line Scan: 16 to 640 m
	Overhead Arc Scan: 90 deg Coverage
ACCURACY	Range: 0.5 m at 500 ft

RANGE SCAN

Limits		Rates
Max.	Min.	
100 to 800 m	16 to 650 m	0.1 to 6.9 Hz
One meter increment		0.1 Hz increm.

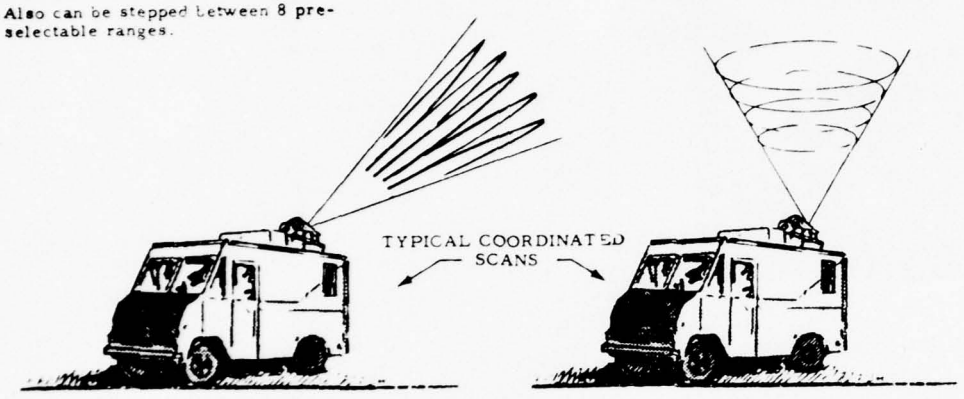
Also can be stepped between 8 pre-selectable ranges.

ELEVATION SCAN

Limits		Rates
Max.	Min.	
10 to 90°	0 to 90°	0.1 to 0.5 Hz
1 deg. increment		0.1 Hz increm.

AZIMUTH SCAN

Currently 360° open loop operation. Can be modified for closed loop pointing and scanning.



Range - Elevation

(for vortex tracks, plume tracks, etc.)

Range - Azimuth

(for wind shear, ballistic winds, etc.)

Notes:

- Maximum Sampling Rate:
  - Current Technique – 69 Hz
  - Advanced Technique – 1 kHz
- Focal Volume Varies with Square of Range and Output Optics Size i.e.,

Range \ Optics Size	30 cm	45 cm
30 m	30 cm	13 cm
300 m	30 m	13 m

Fig. 2-5 - Scan Capabilities of LDV

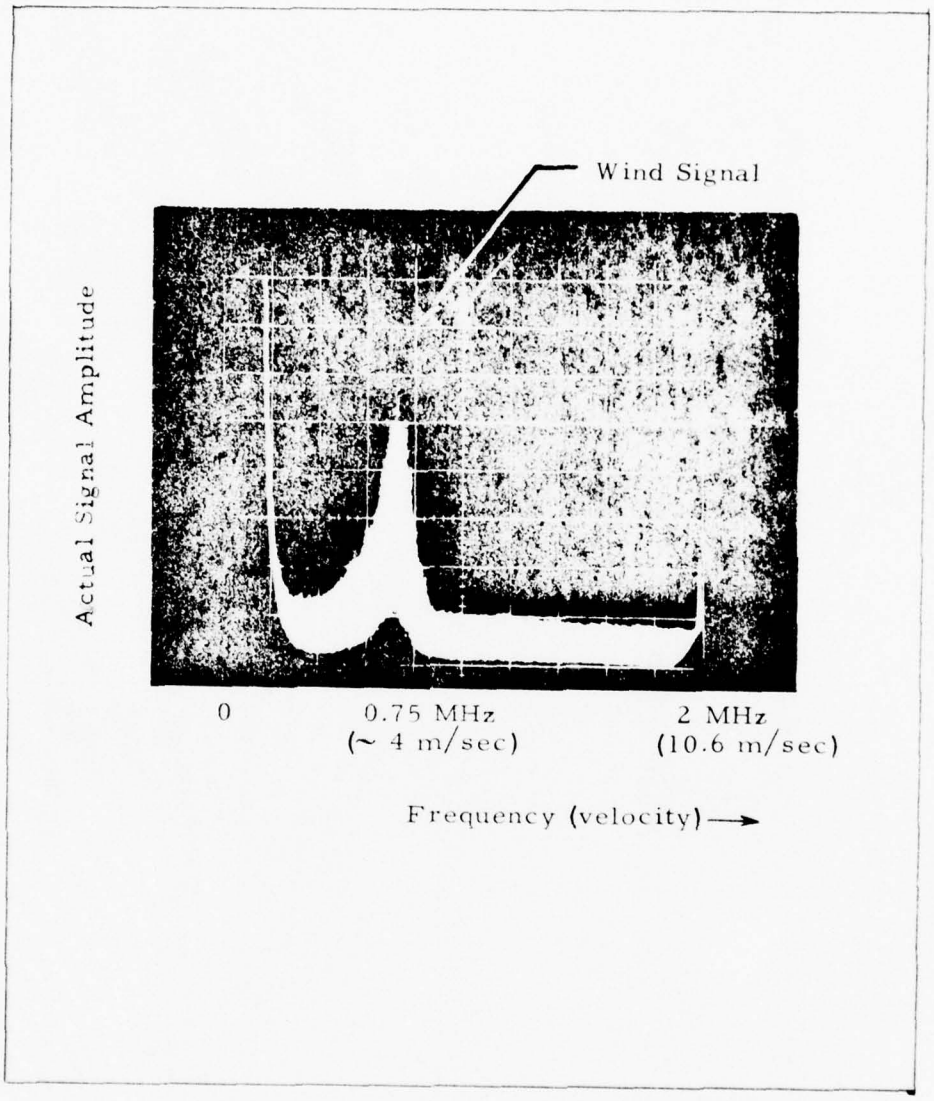
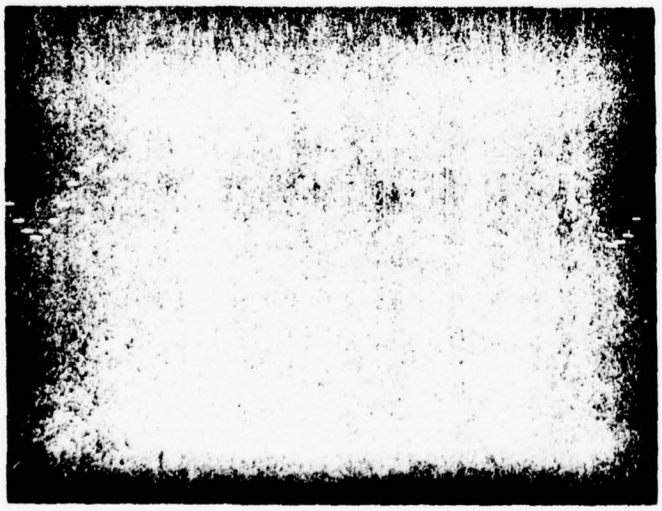


Fig. 2-6 - Typical LDV Wind Signature as Displayed by a Spectrum Analyzer

To yield a line-of-sight velocity estimate, a voltage is made available which has the same time behavior as the Doppler shift, f_d, as given by the peak of the spectrum.

The implementation of this technique is, in essence, a recursive comparison method. The spectrum analyzer scan is driven by a sawtooth voltage derived from a D/A converter, the input to which is counter clocked at a constant rate, hence the digital number output of the counter represents frequency on a linear scale. At each new count, the spectrum analyzer output is converted to a digital representation by an A/D converter, and the binary number representing the current sample is compared with that obtained on the previous count. If the current one is the larger of the two, it is saved by storing in a latch, along with the binary number representing its frequency; if it is smaller, the previous one is retained until the next comparison. This process is continued for the entire sweep. It is evident that the number remaining in the frequency store latch, when the sweep is completed, corresponds to the highest signal power observed, i.e., the peak of the spectrum. At the end of each sweep, the new peak frequency found replaces that obtained on the previous sweep. An example of its output is shown in Fig. 2-7 for the case of



f_m = 5 Hz Sine Wave

Oscilloscope Data
Horiz. = .1 sec/div
Vert. = 1 V/div

Fig. 2-7 - Output of Signal Processor for FM Modulated Input

an FM signal of center frequency 2.0 MHz (f_o) modulated to $\pm$200 kHz about f_o at a 5 Hz rate sinusoidally.

A provision is included for tracking single sideband suppressed carrier signals, with an identification of upper or lower sideband such that when used in conjunction with an acousto-optic modulator the unit can discriminate the sign of the Doppler shift. The signal feedthrough at the translated frequency can also be discriminated against digitally, thus eliminating the need for a "notch filter."

The raw spectral information (output of the spectrum analyzer is also made available to the Systems Engineering Laboratories (SEL) 810A data logging minicomputer which is programmed to generate its own estimate of the spectral peak.

2.1.4 Data Recording and Display

Primary: The primary data gathering function is performed by an SEL 810A general purpose minicomputer. Data gathering by the Mobile Atmospheric Unit is formatted by the computer software and stored on magnetic tape for subsequent processing on the Univac 1108. The SEL 7-track tape control and magnetic tape units allow digital recording of data at 800 bpi at 45 ips, which recording density is common to the Univac 1108 I/O system. The data logged by the computer includes:

- All scan volume location parameters
- "Mode of operation" identifier
- The instantaneous line-of-sight velocity information
- The Doppler spectrum peak strength
- Full spectrum intensity and frequency information (optical)
- A data quality identifier.

Properties of the Doppler spectrum, namely, the amplitude and frequency corresponding to the spectral peak are obtained as a result of on-line

computer processing except for the frequency which is also obtained by the spectral peak locator (velocity processor) discussed previously. The latter allows some flexibility for on-line operator displays (see below).

Secondary: The velocity processor output estimate of the instantaneous line-of-sight velocity, updated at a 70 Hz rate, is available in analog format which can be recorded directly on a strip chart recorder, an option which is extremely useful during the VAD mode of operation for monitoring the characteristic profile.

Some overall views of the mobile unit hardware as utilized during this program are shown in Figs. 2-8 through 2-11.

2.2 WINDS ALOFT SENSING

Using the basic system outlined previously it is possible, by scanning operations, to determine the three-component wind field at any specified altitude between 50 and 2000 feet. The scanning method employed is commonly referred to as the velocity azimuth display* (VAD) technique which was first utilized by Lhermitte and Atlas in conjunction with a microwave radar.

The telescope is focused at the altitude of interest, the beam being directed at a zenith angle, β. The beam is then scanned in azimuth, thus tracing out a circle at the selected altitude (Fig. 2-12).

The instantaneous line-of-sight component of velocity within the sensing volume as measured by the LDV, v_r, is given by

$$v_r = v_h \sin\beta \cos(\theta - \theta_o) + w \cos\beta$$

v_h and θ_o, respectively, being the speed and direction of the horizontal wind motion and w the vertical motion at the height being sampled. The azimuthal

*Also known as conical scan technique because of beam scanning configuration.

Fig. 2-8 - MAU Monitoring Wake Vortex Generated by L-1011 at Huntsville Airport

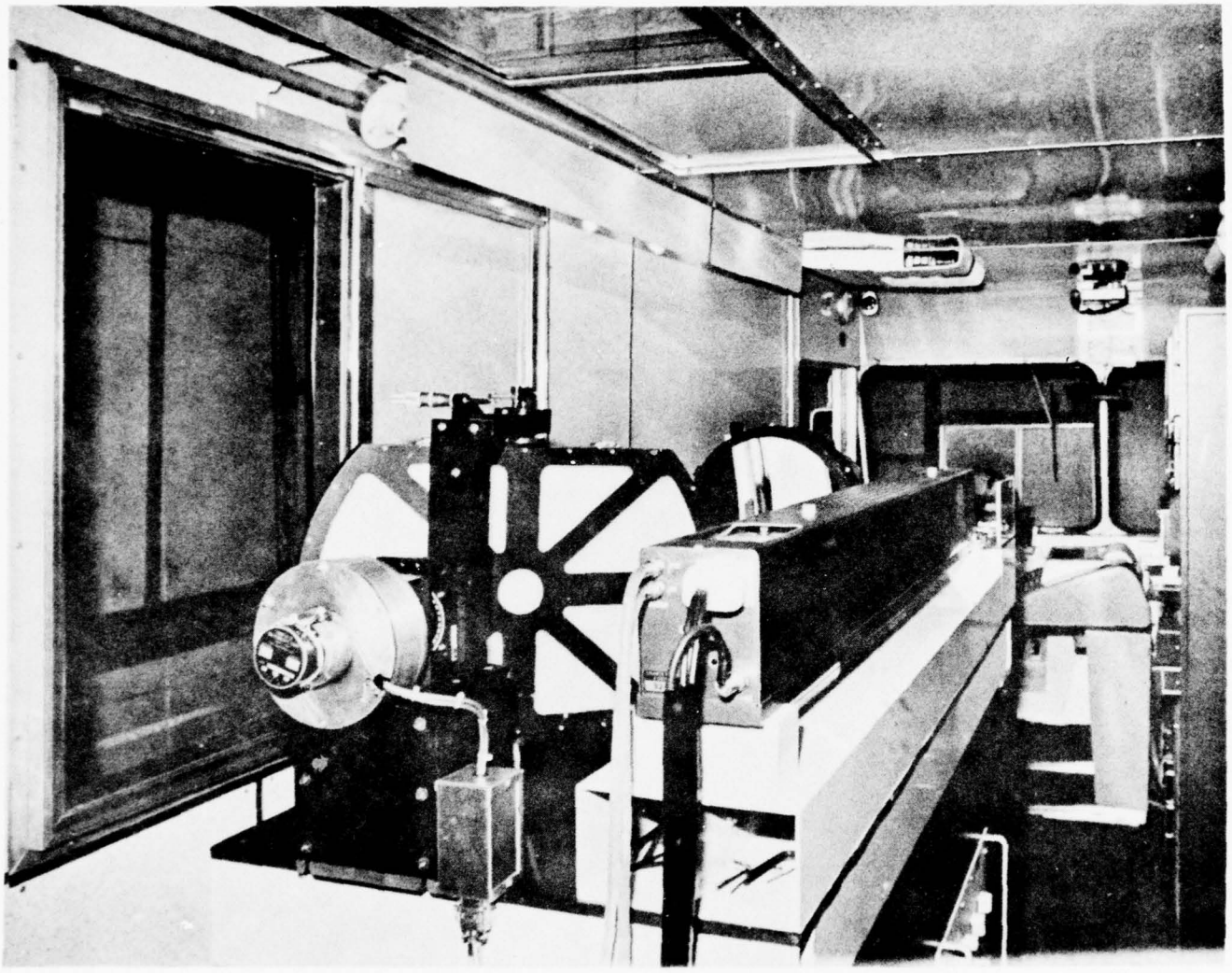


Fig. 2-9 - Interior View of MAU Looking Forward (Depicted in foreground is elevation scanning mirror on left and laser on right.)

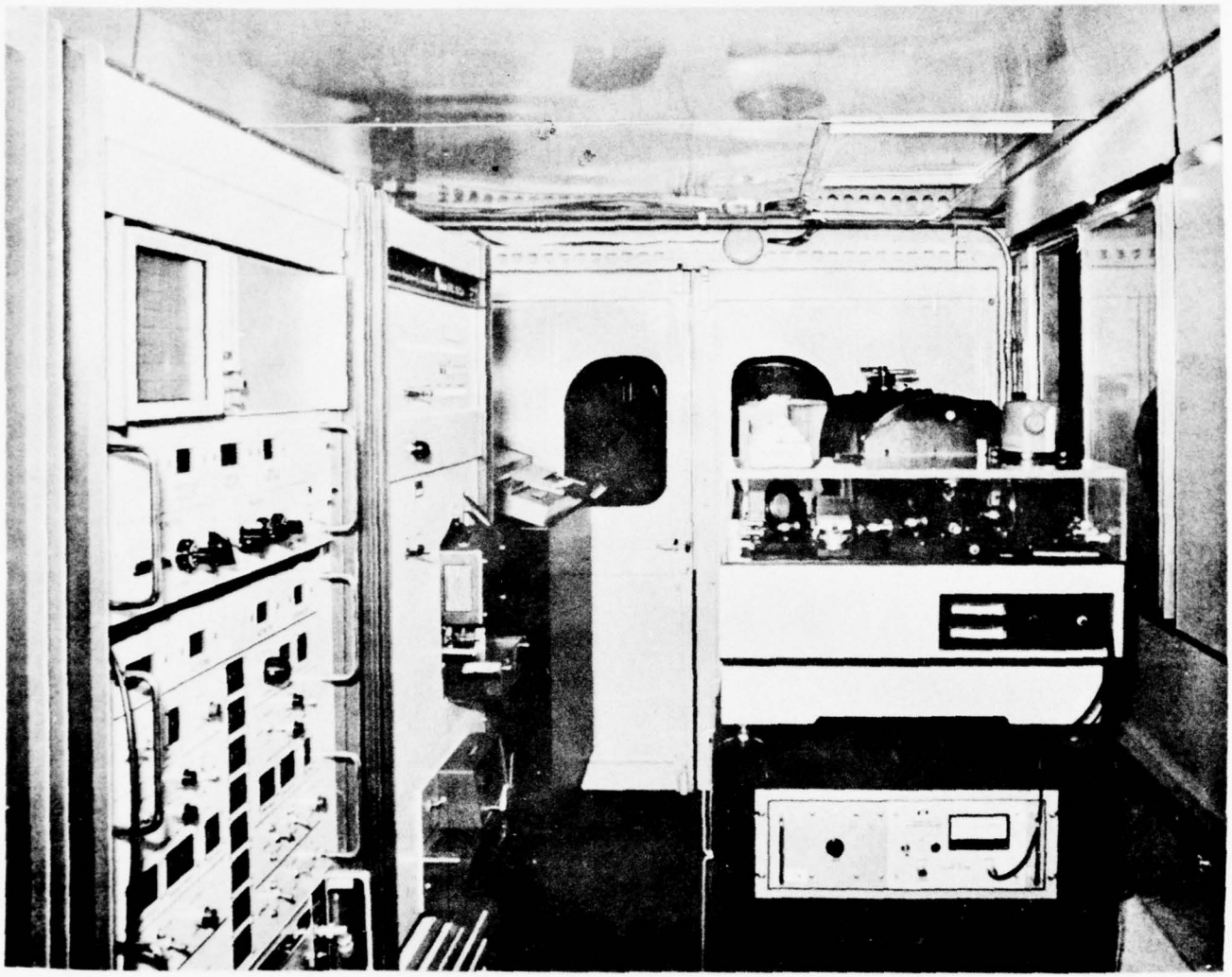


Fig. 2-10 - Interior View of MAU Depicting Display and Scanner Controls in First Rack, Computer in Second Rack, Digital Tape Unit Aft and Optics Package on Right

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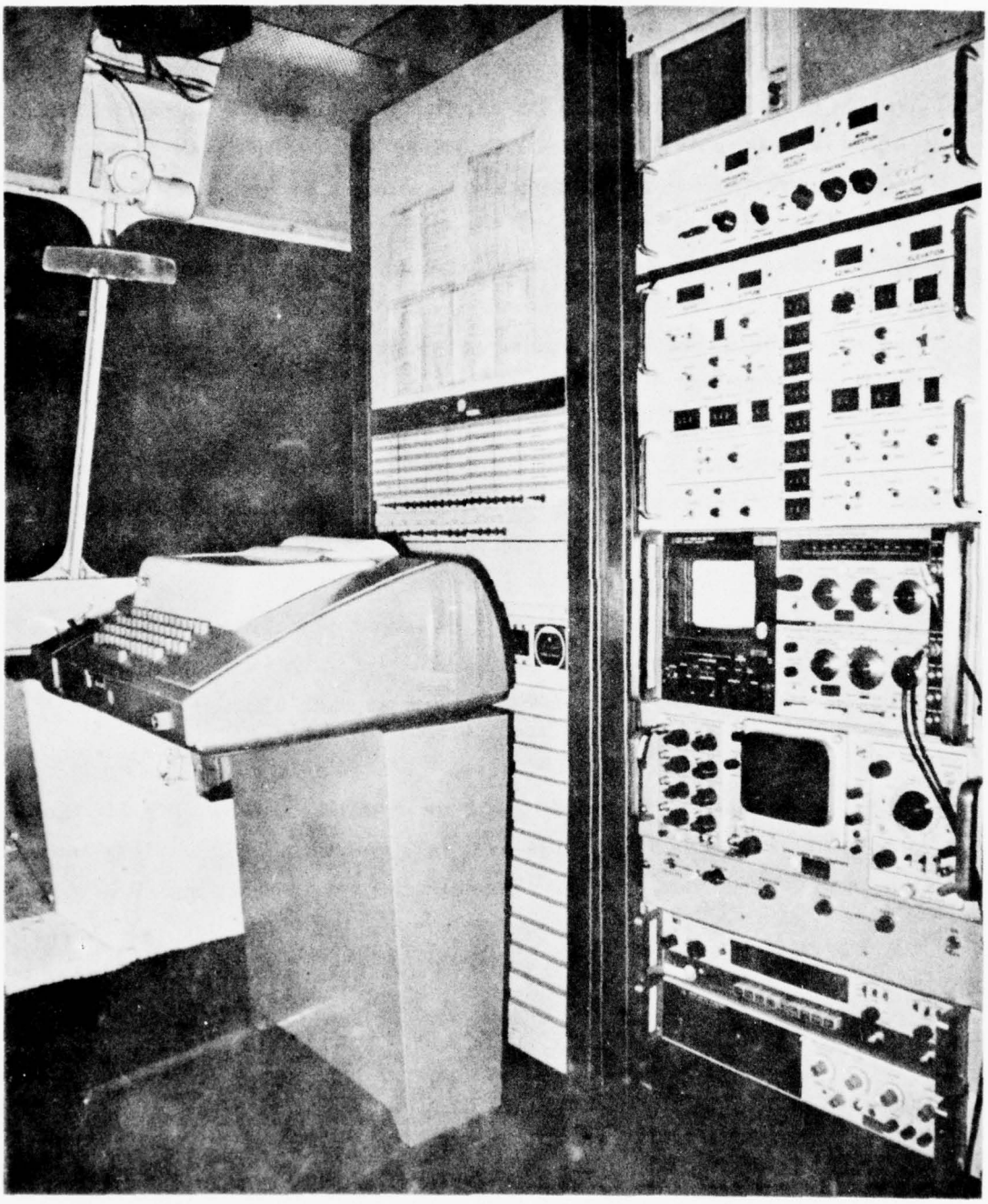

Fig. 2-11 - Computer Mainframe Teletype and LDV Electronics

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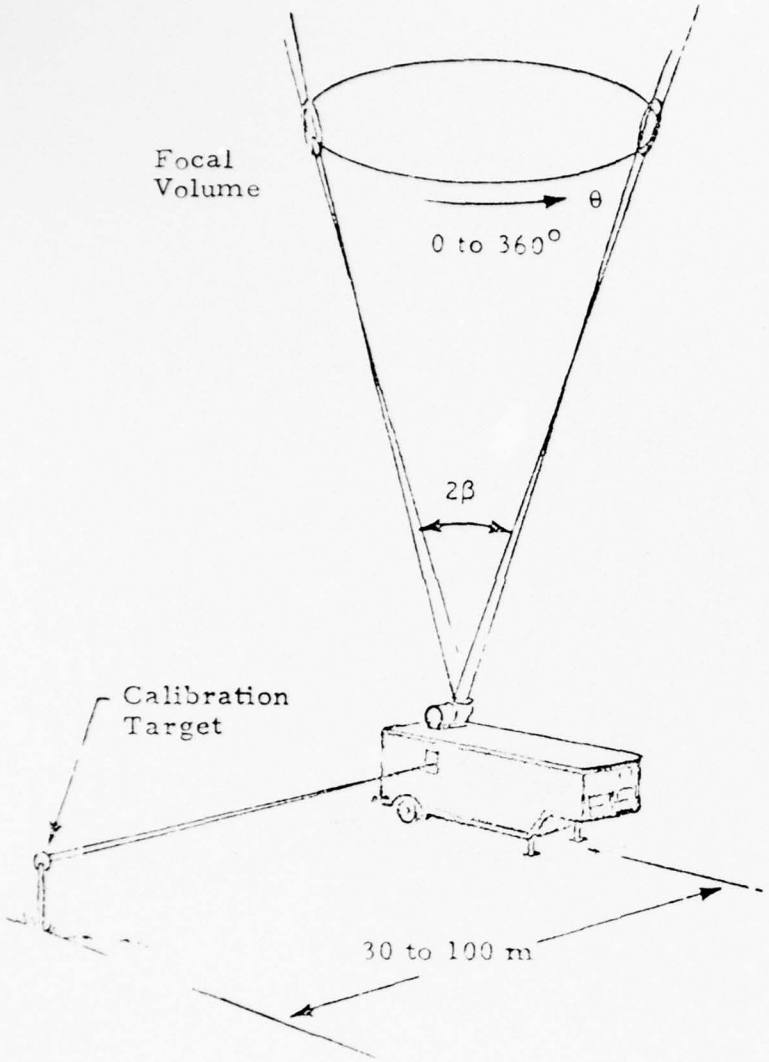
dependence of v_r is sufficient to yield the horizontal speed and direction and vertical component of velocity, respectively.

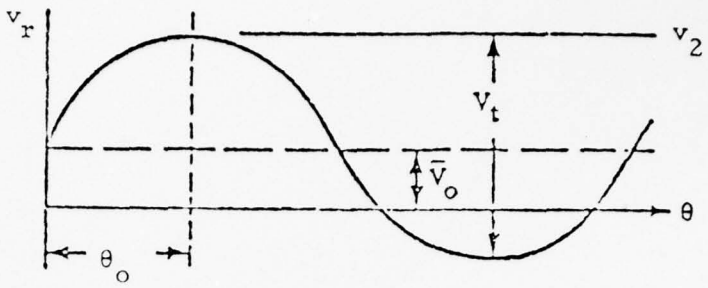
In the present mode of operation, the system is unable to distinguish between positive and negative values of v_r. Therefore, it is the absolute value of v_r ($|v_r|$) that is sensed. This results in a signal as shown in Fig. 2-13 instead of the sinusoidal signal as shown in Fig. 2-12. This results in an ambiguity of 180 deg in the wind direction since it is uncertain which peak in Fig. 2-13 represents looking into the wind. In practice, no problem occurs because the operator records approximate wind direction, and the data processing technique can then calculate exact wind direction. This resolves all wind direction ambiguities if the operator's input estimate is within $\pm$89 deg of the true wind direction.

While operating in the VAD mode the system is capable of measuring winds at n (n = 1 through 8) altitudes (that can be dialed in by using thumbswitches) in sequence over a total time period of 5np sec where

5 sec = time for conical sweep at one altitude
n = number of altitudes to be interrogated
p = number of VAD scans at each altitude (can be chosen to be 1 through 7).

During this investigation n = 2, p = 1 were utilized, thus allowing the measurement of wind at two altitudes every 10 seconds. Alternating between the two altitudes (28m and 43m) was performed for the test duration required.





w = vertical wind component
= $\bar{V}_o/\cos\beta$

v_h = horizontal wind component
= $V_t/2\sin\beta$

θ_o = direction of horizontal wind component

Fig. 2-12 - Principle of VAD Operation

$$V_h = (V_1 + V_2)/2 \sin\theta$$
$$w = (V_1 - V_2)/2 \cos\theta$$

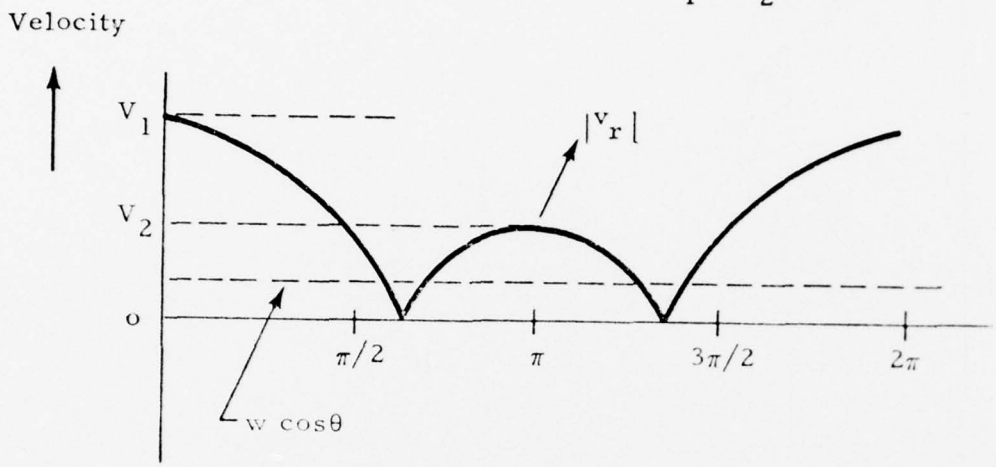


Fig. 2-13 - Azimuth Angle Dependence of Measured Velocity Component

Section 3

DATA PROCESSING FOR WIND MEASUREMENT

Acquisition and processing of the LDV signature is accomplished by means of a compact data handling system developed specifically for the Lockheed-Huntsville MAU. The general elements of the MAU data acquisition and data processing system are shown in Fig. 3-1. The digitized LDV intensity versus frequency signal along with its coordinates in space is fed into the SEL 810 minicomputer. Reprocessing of the LDV signal is carried out on the minicomputer utilizing on-line computer programs written in SEL machine language. Information from the SEL 810 is stored on magnetic tape and is used as an input to the off-line processing algorithms. Off-line processing of the LDV signal is carried out on a Univac 1108 computer with programs written in FORTRAN language and using card inputs with information from the logs to supplement the data. The flow of data from the MAU is sketched in Fig. 3-2 showing both the on-line and off-line data processing routines. On-line manipulation of the data is carried out by the SEL Data Logger program. The off-line processing is carried out by the VAD and Vortex Track program. The final output consists of printouts and plots. A description of the data logger, and the VAD program and their operational characteristics is given in the following sections.

3.1 DESCRIPTION OF LDV SOFTWARE SYSTEM

Data acquisition in the Mobile Atmospheric Unit is carried out by the SEL Data Logger program. A sweeping spectrum analyzer is used to detect the Doppler shift frequency. A diagram of the output of the spectrum analyzer is shown in Fig. 3-3. The output of the spectrum analyzer is the value of signal intensity for each of one hundred frequency bands spanning the entire frequency scale. The data logger on the SEL computer records the signal intensity for each frequency band for which the Doppler frequency shift exceeds the velocity

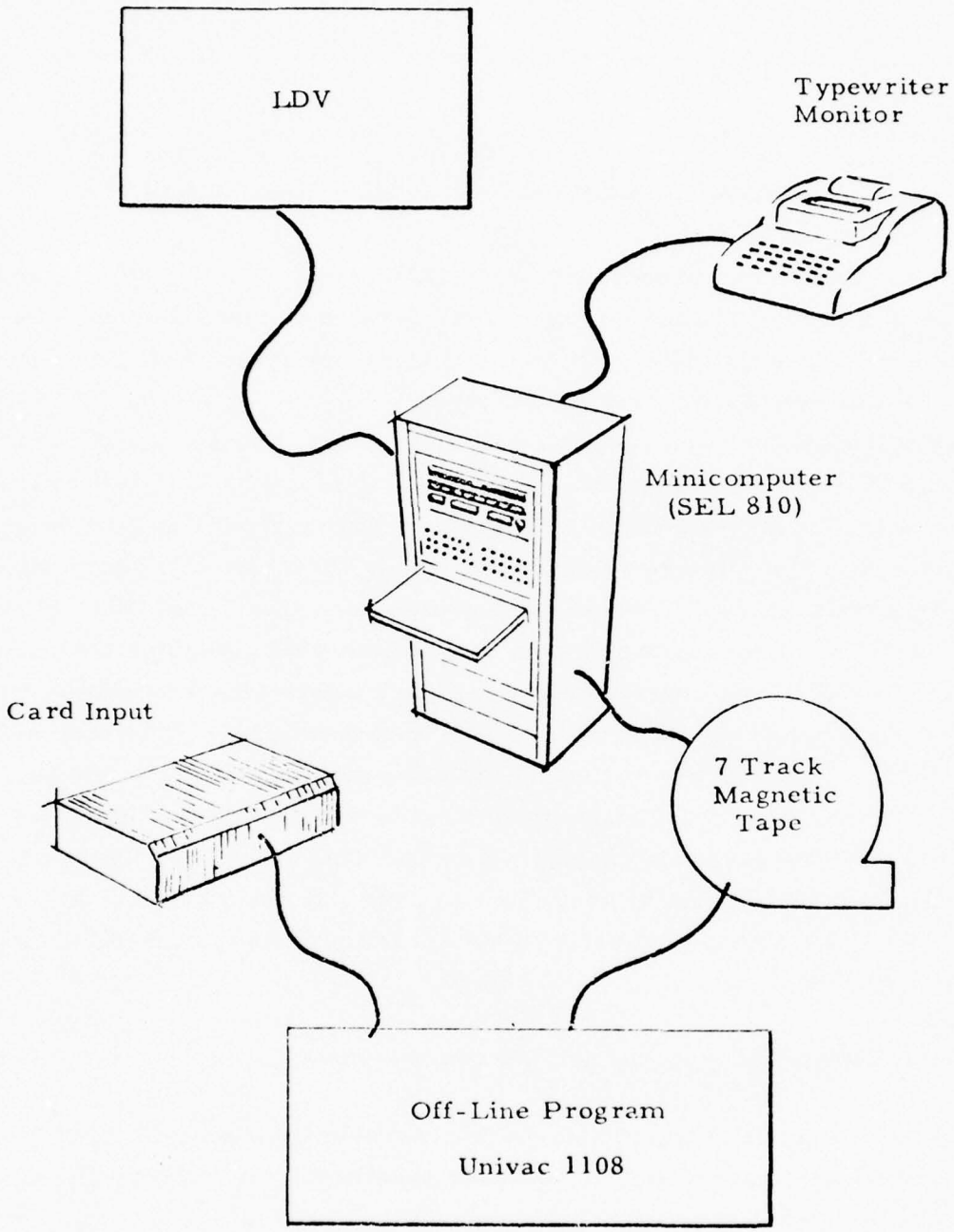


Fig. 3-1 - General Elements of MAU Data Acquisition and Data Processing System

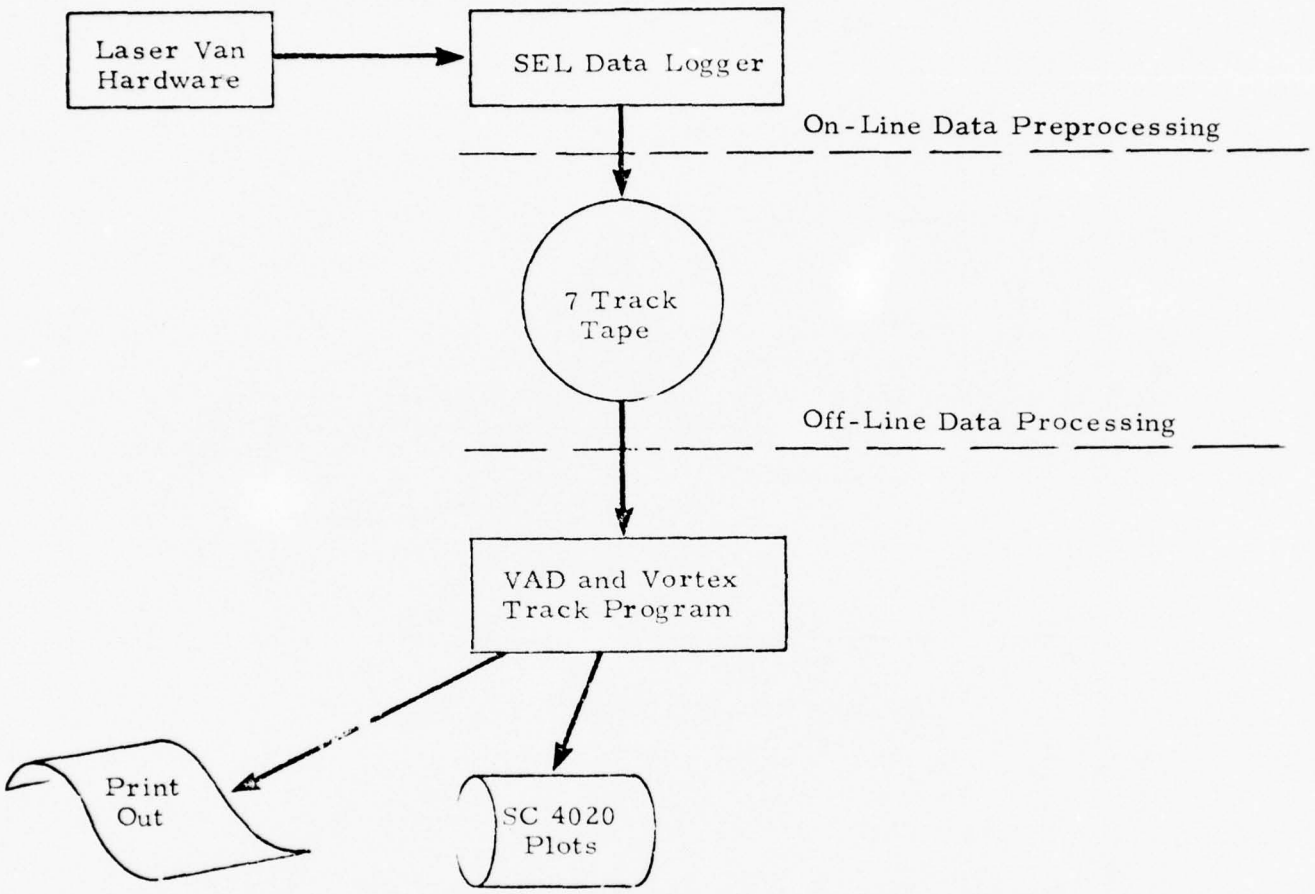


Fig. 3-2 - Data Flow from Mobile Atmospheric Unit

V_{pk} = Highest velocity detectable above amplitude threshold

V_{ms} = Velocity corresponding to maximum signal intensity

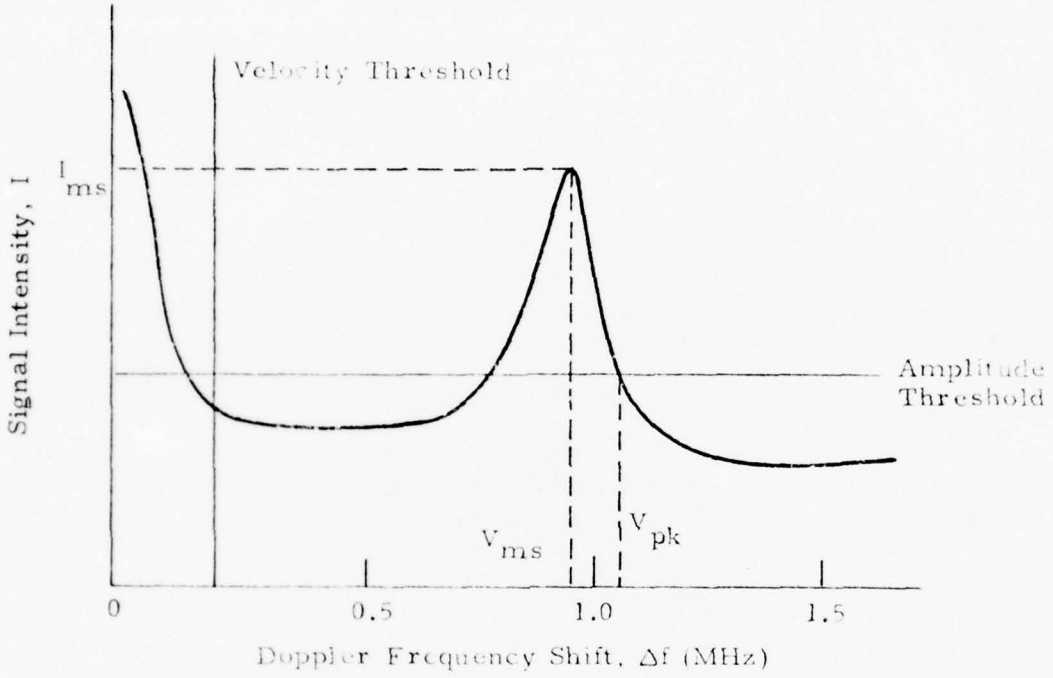


Fig. 3-3 - Typical Spectrum Analyzer Output in VAD Scan

threshold and the signal intensity exceeds the amplitude threshold. This data is stored on magnetic tape for off-line processing. A flow diagram of the data logger is shown in Fig. 3-4.

An off-line conversion program identifies the frequency band with the maximum amplitude LDV signal. This program saves the maximum amplitude LDV signal, I_{ms}, and its corresponding frequency, V_{ms}, which is above both the amplitude and frequency thresholds. The definition of I_{ms} and V_{ms} and the shape of the characteristic LDV spectrum is shown in Fig. 3-3. It can be seen that V_{ms} is the characteristic velocity associated with the flow phenomenon. The output from the off-line conversion program consists of V_{ms} as a function of time and spatial coordinates of the sensing volume. From the output of this program the wake vortex velocity field or wind field can be reconstructed using an additional off-line processing routine.

The two-step process used to generate V_{ms} as a function of time and space was necessitated by the adjunct purpose of relating laser attenuation to visibility. The output tape of the data logger is to be used for the data analysis of that study. In the more usual situation of wind measurement (i.e., when laser attenuation data are not needed) the two steps are accomplished in a one-step process using the SEL 810 computer. The output of the SEL computer in that case is identical with that of the off-line conversion program described above. The flow chart for this data logger is shown in Fig. 3-5.

Final processing of the LDV measurements is carried out by the VAD and Vortex Track program. A macro flow chart of the VAD and Vortex Track program is shown in Fig. 3-6. The VAD processing for wind measurement and vortex tracking algorithm are contained in the same program. Vortex tracking was not used in this test. In this off-line program the array of V_{max} values which is a function of time and space is processed to yield the three-dimensional wind field (VAD mode) or the aircraft wake vortex trajectories (vortex mode). The processing of the VAD measurements involves the computation of the u, v, w wind components from the characteristic sinusoidal

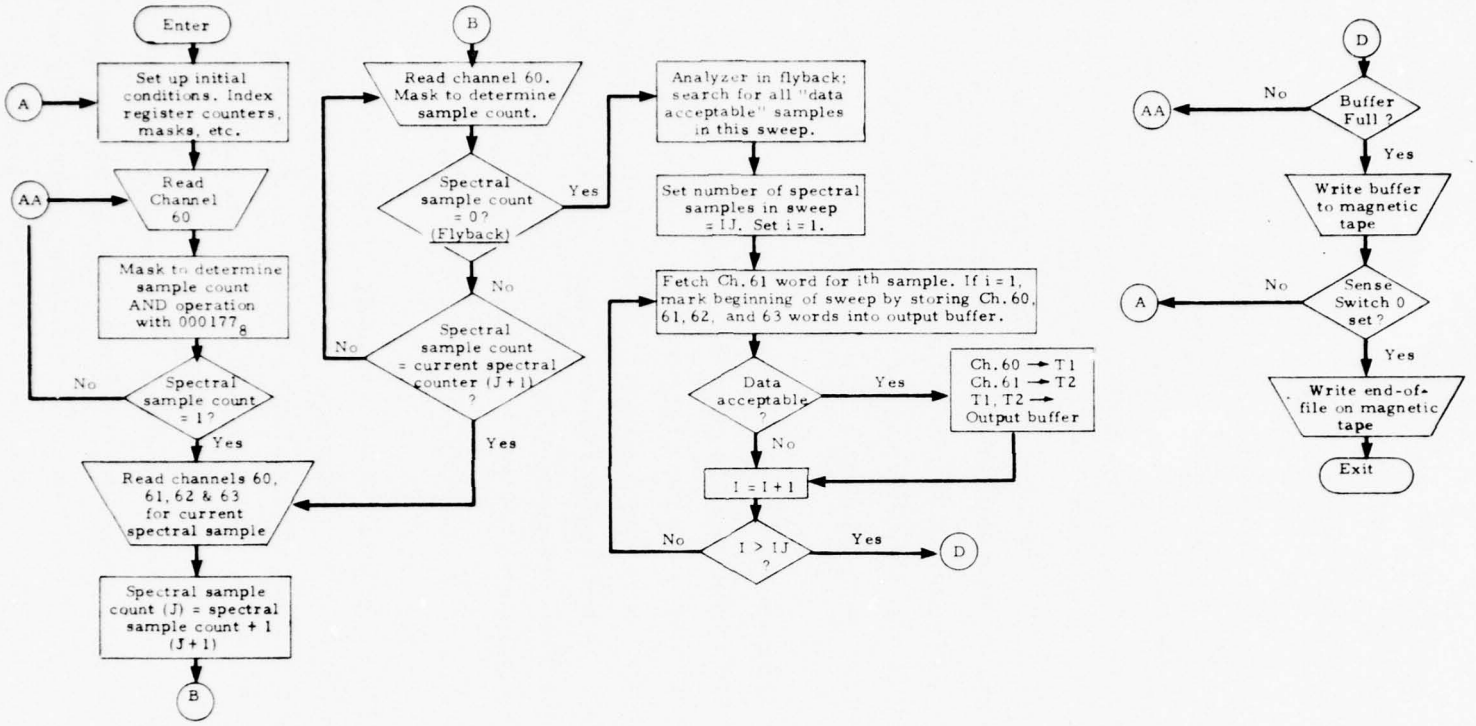


Fig. 3-4 - Full Spectrum Data Logger Macro Flow Chart

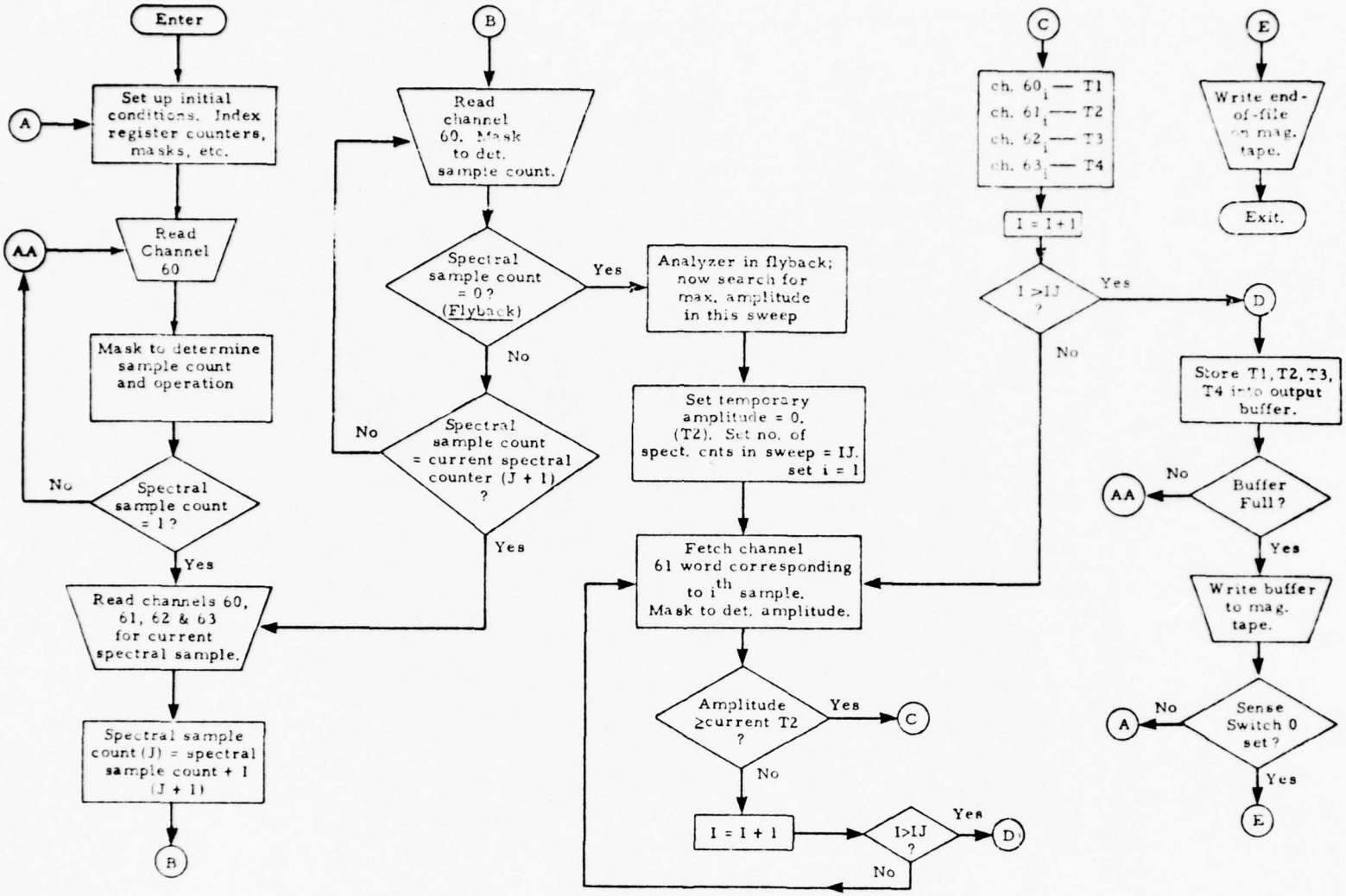


Fig. 3-5 - Data Logger Macro Flow Chart

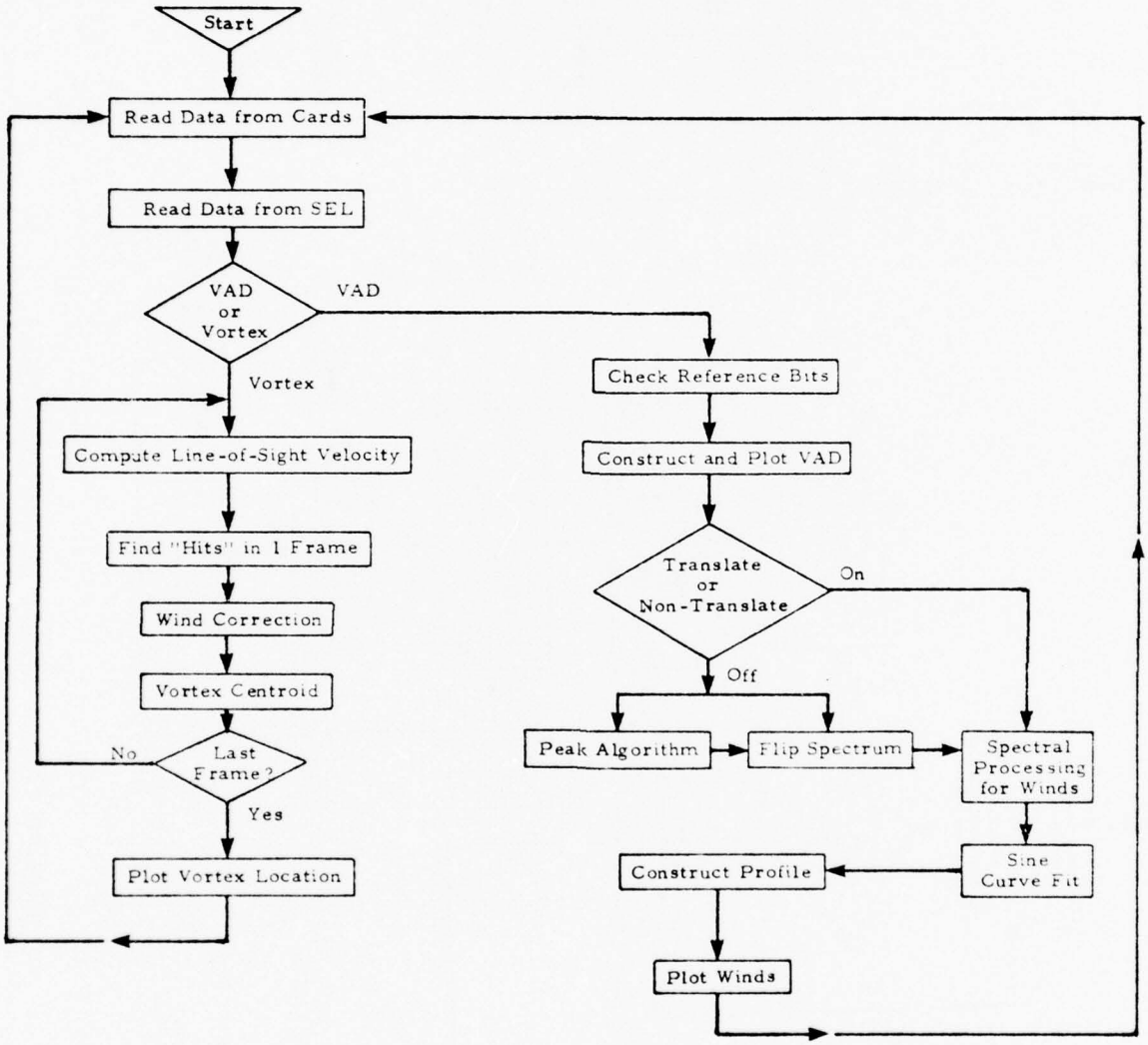


Fig. 3-6 - Macro Flow Chart of VAD and Vortex Program

VAD LDV signature discussed earlier in Section 2 and is described in more detail in Ref. 5. The program is geared to handle both the translated and non-translated LDV signal. A translated signal is provided when the LDV system includes a frequency translator, which distinguishes between positive and negative values of line-of-sight velocity. A non-translated signal provides only the absolute value of line-of-sight velocity as shown in Fig. 2-13. However, during the course of this research effort all of the data acquisition and data processing was done in the non-translate mode. Three basic techniques have been implemented to compute the three-dimensional wind components as follows: (1) a peak algorithm where the magnitude and location of the peak signal in the sinusoidal LDV VAD signature is used to compute the velocity components; (2) a spectral processing for the winds using the derectified signal; and (3) a sine curve fit. The final output is a plot (and printout) of the u, v and w velocity components as a function of altitude and time.

3.2 DATA PROCESSING ALGORITHMS FOR WIND MEASUREMENT

Lockheed-Huntsville has developed three algorithms for calculating the mean wind speed and direction from the VAD signature. For each of these algorithms, mean wind and direction is calculated for each 5 second VAD sweep. Standard deviations of wind speed and direction can be calculated from multiple VAD sweeps. The data output of the LDV system operating in the VAD mode are line-of-sight velocities measured at a selected number (usually 350 in the current Lockheed system) of distinct points around the VAD cone. We recall that the line-of-sight velocity signature is theoretically sinusoidal in the VAD mode (cf., Fig. 2-12).

For all of the processing algorithms, preprocessing of the data occurs; this preprocessing includes:

1. Save line-of-sight velocities for one rotation of scanner
2. If two or more rotations occur at the same altitude, average with previous rotations
3. Assign azimuth angle to each point (assuming constant rotation rate)

4. Edit points to eliminate spurious points
5. Plot line-of-sight velocity versus azimuth angle.

The edit criterion for the elimination of spurious points is that the i^{th} point is eliminated if

$$\left|v_{r,i} - v_{r,i+1}\right| > .2\, v_{r,i+1}$$

and

$$\left|v_{r,i} - v_{r,i-1}\right| > .2\, v_{r,i-1}$$

A sample plot of unedited line-of-sight velocity versus azimuth angle is shown in Fig. 3-7.

3.2.1 Peak Algorithm

For the calculation of wind velocity by the peak algorithm, the calculation procedure is

1. Filter data with an n point moving average
2. Identify the two peak velocity points, V_{p1} and V_{p2} that occur at a minimum of 90 deg apart
3. Compute horizontal component of wind velocity

$$V_h = \frac{V_{p1} + V_{p2}}{2 \sin\beta}$$

4. Compute horizontal wind angle with help of estimated wind direction
5. Compute vertical component of wind velocity

$$w = \frac{V_{p1} - V_{p2}}{2 \cos\beta}$$

6. Derectify VAD signal if no translator is present and plot derectified signal

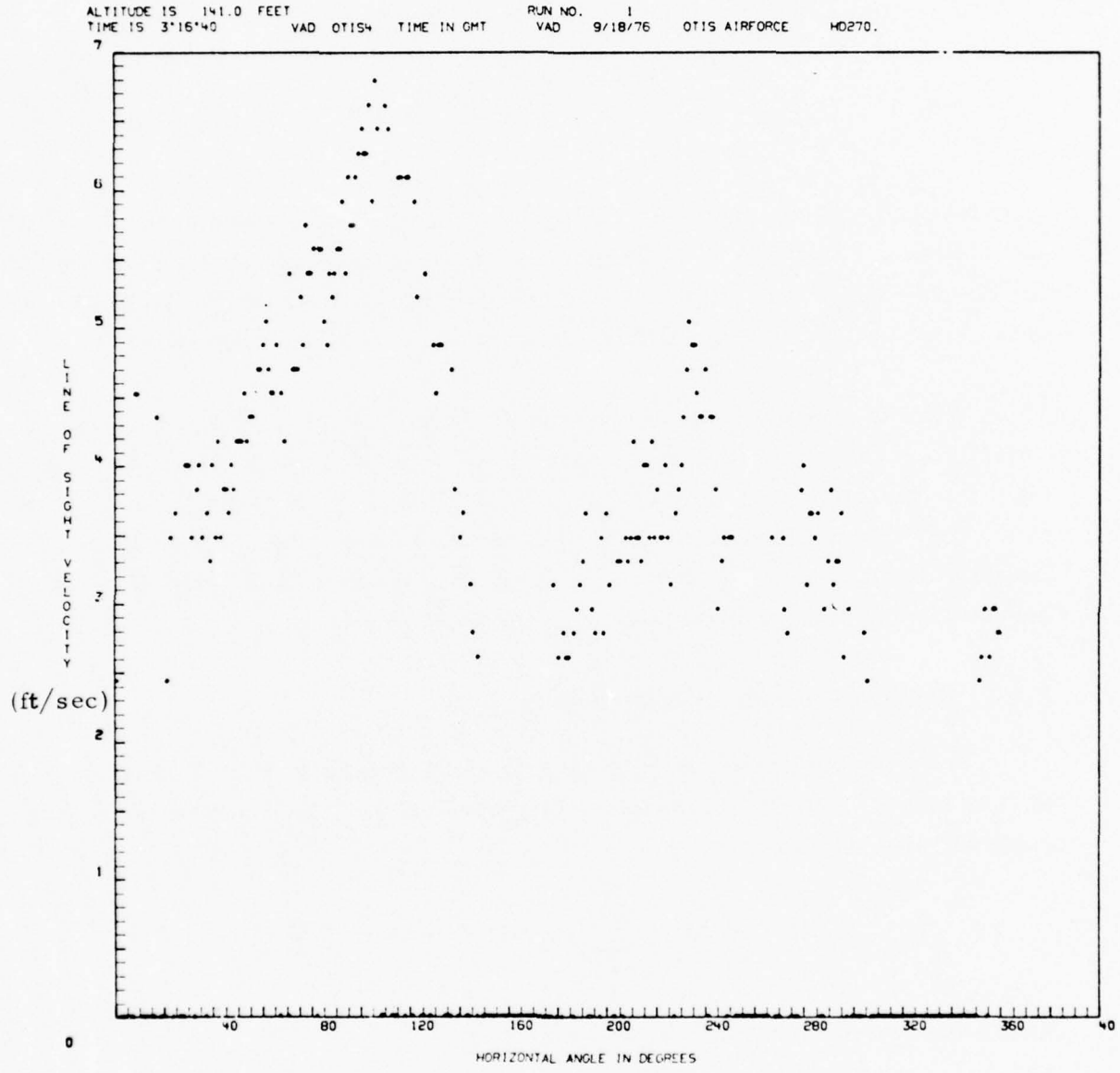


Fig. 3-7 - Sample Output Plot from the VAD and Vortex Track Program Operating in the VAD Mode

The individual data points are filtered with an n point moving average filter (n is usually 21). Thus, each line-of-sight point is filtered by

$$\bar{V}_{r,i} = \left[V_{r,i-\frac{n-1}{2}} + \ldots + V_{r,i-1} + V_{r,i} + V_{r,i+1} + \ldots + V_{r,i+\frac{n-1}{2}} \right] / n$$

where $\bar{V}_{r,i}$ is the filtered value of line-of-sight velocity to be used in further calculations. A plot of the filtered line-of-sight velocities for a 21 point filter is shown in Fig. 3-8. Additional samples of the LDV signature (including raw data, filtered data, and derectified data) are presented in Appendix A.

When the LDV data are measured, an approximation of the wind angle is recorded. The calculated wind angle is the azimuth angle of the peak which is closer to the estimated wind angle. The wind angle plus 90 deg is the angle at which the line-of-sight velocity is theoretically zero. This angle is used for the derectification of the line-of-sight signal. A plot of the derectified (edited but unfiltered) line-of-sight velocity is presented in Fig. 3-9.

3.2.2 Fourier Coefficient Algorithm

The Fourier coefficient algorithm (or spectral algorithm) computes the fundamental harmonic of the line-of-sight velocity. The Fourier series for a generalized periodic function is

$$f(x) = \frac{a_o}{2} + \sum_{n=1}^{\infty} \left(a_n \cos\frac{n\pi x}{L} + b_n \sin\frac{n\pi x}{L} \right)$$

where the Fourier coefficients are given by

$$a_n = \frac{2}{L} \sum_{i=1}^{L} V_i \cos\left(\frac{2\pi i n}{L}\right)$$

$$b_n = \frac{2}{L} \sum_{i=1}^{L} V_i \sin\left(\frac{2\pi i n}{L}\right)$$

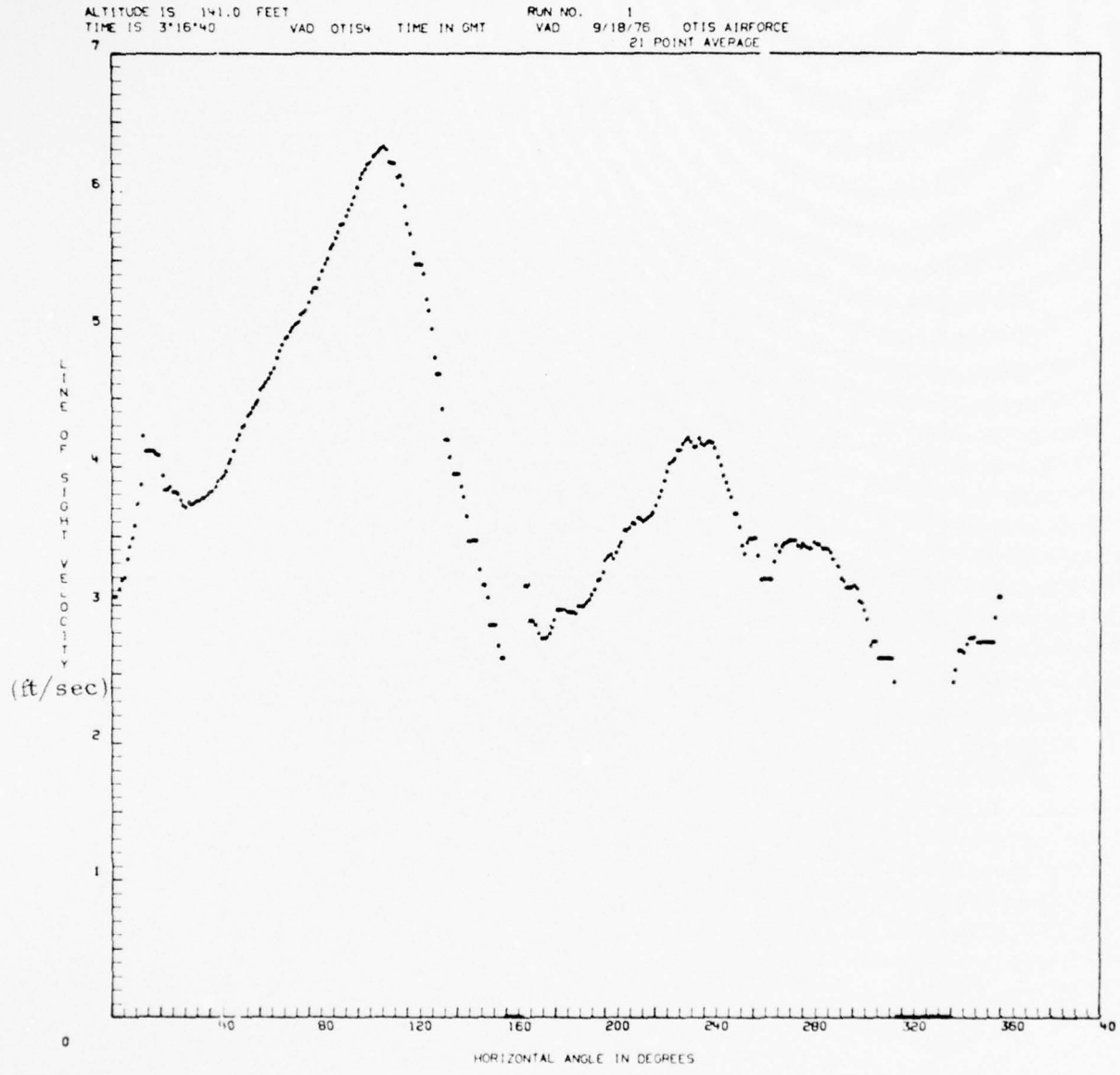


Fig. 3-8 - Filtered Line-of-Sight Velocity for VAD Mode

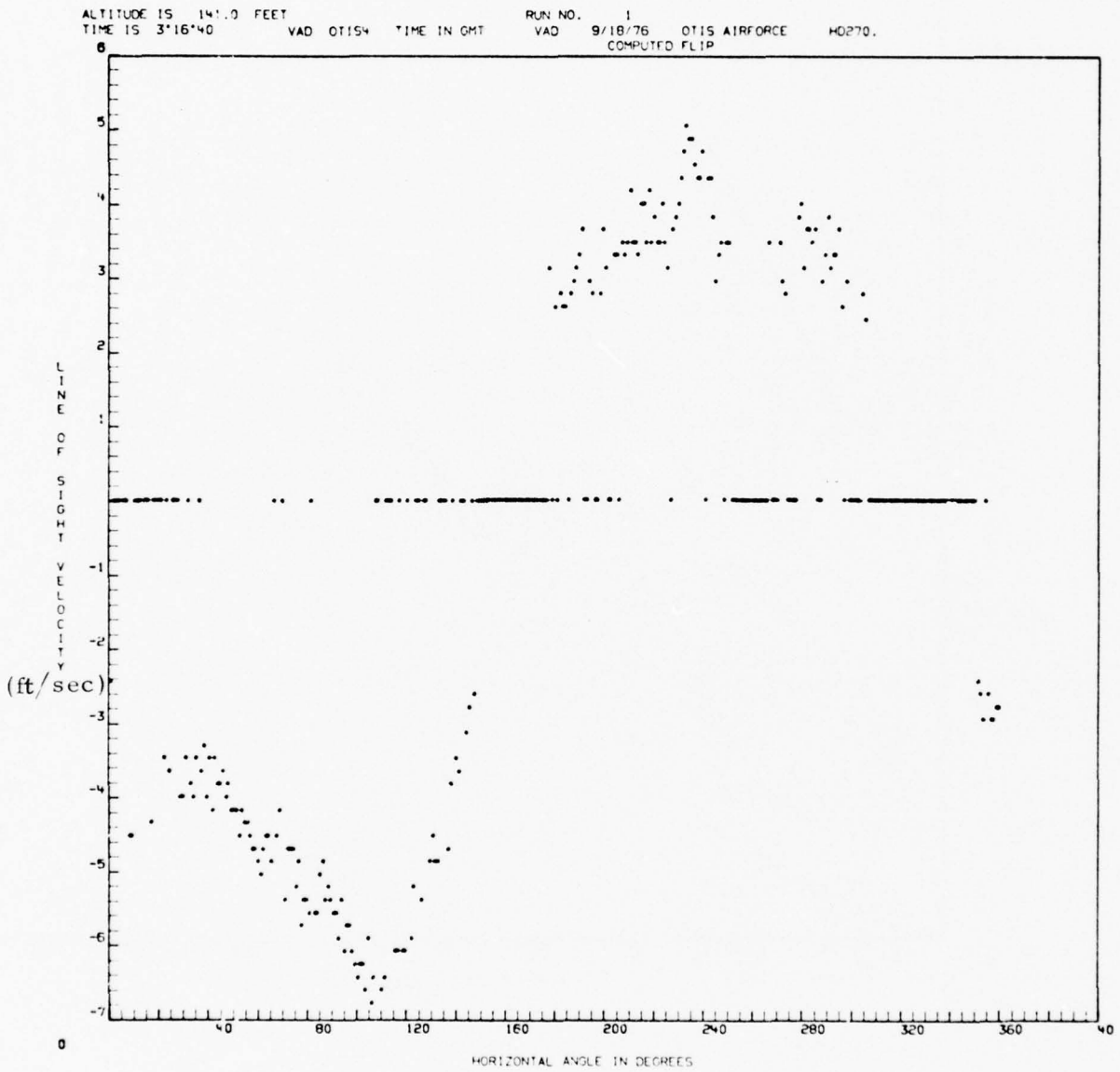


Fig. 3-9 - Derectified Line-of-Sight Velocity for VAD Mode

where the L discrete points are uniformly spaced between 0 and 2π and V_i is the line-of-sight velocity for the i^{th} point in the scan. For the calculation of the three wind components it is necessary to calculate only a_o, a_1, and b_1. However, the second and third harmonics (i.e., n = 2 and n = 3) are also calculated as an indication of the nonuniformity of the wind. A correction factor must be applied to compensate for the absence of data points which lie below the velocity threshold. Although the line-of-sight signature in the VAD mode is theoretically sinusoidal, the existence of the velocity threshold causes the signature to appear as shown in Fig. 3-10. For the purposes of deriving the correction factor, the origin is chosen so

$$v_r = \frac{a_o}{2} + b_1 \sin\theta$$

In Fourier analysis $a_o/2$ is the dc component.

If the vertical component of velocity is small compared with the magnitude of the velocity threshold, the angle for which the signature is zero is $Z\pi/2$ as shown in Fig. 3-10. The parameter, Z, is the ratio of zero points to total points in the VAD scan. Let a_o^* and b_1^* be the values of the Fourier coefficients calculated from the line-of-sight velocity signature. The integral form of the equations for Fourier coefficients is used. For the theoretical velocity signature,

$$a_o^* = 1/\pi \int_0^{2\pi} (a_o/2 + b_1 \sin\theta)\, d\theta = a_o$$

However for the actual velocity signature

$$a_o^* = 1/\pi \left[\int_{Z\pi/2}^{\pi - Z\pi/2} (a_o/2 + b_1 \sin\theta)\, d\theta + \int_{\pi + Z\pi/2}^{2\pi - Z\pi/2} (a_o/2 + b_1 \sin\theta)\, d\theta \right] = a_o(1 - Z)$$

Therefore a correction factor of $1/(1-Z)$ must be applied to the calculated value of a_o.

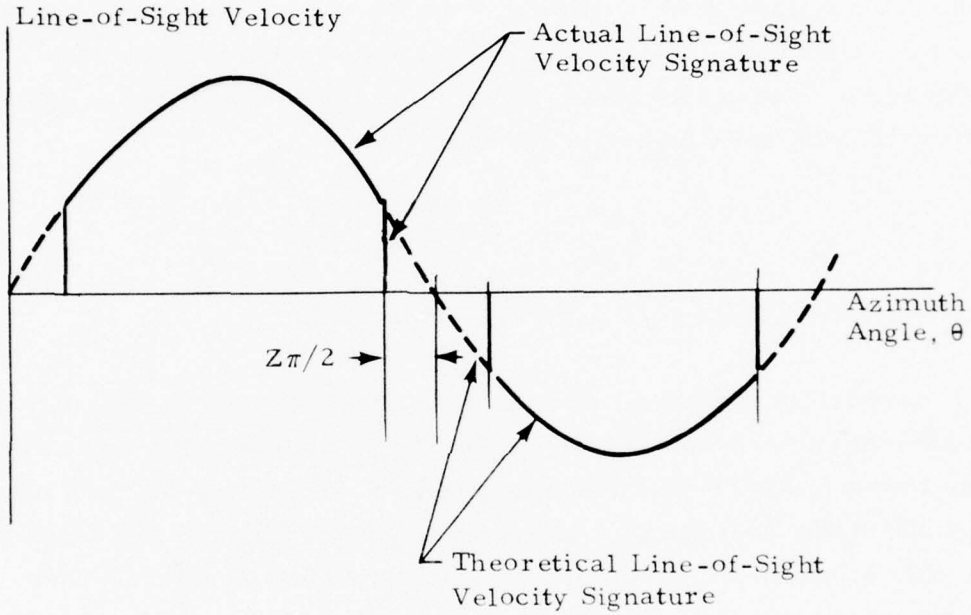


Fig. 3-10 - Line-of-Sight Velocity Signature of VAD

For the sine term, for the theoretical velocity signature

$$b_1^* = 1/\pi \int_0^{2\pi} (a_o/2 + b_1 \sin\theta) \sin\theta \, d\theta = b_1$$

For the actual velocity signature

$$b_1^* = 1/\pi \left[\int_{Z\pi/2}^{\pi - Z\pi/2} (ao/2 + b_1 \sin\theta) \sin\theta \, d\theta + \int_{\pi + Z\pi/2}^{2\pi - Z\pi/2} (a_o/2 + b_1 \sin\theta) \sin\theta \, d\theta \right]$$

$$= b_1 \left[1 - Z + \frac{\sin Z\pi}{\pi} \right]$$

Therefore, a correction factor $1/[1 - Z + (\sin 2\pi)/\pi]$ must be applied to the horizontal wind components.

The calculation procedure for the spectral algorithm is:

1. Compute the Fourier coefficients for the first three harmonics (n=1, 2, 3)

$$a_n = 2/L \sum_{i=1}^{L} V_i \cos(2\pi i n/L)$$

$$b_n = 2/L \sum_{i=1}^{L} V_i \sin(2\pi i n/L)$$

2. Compute corrected fundamental harmonic

$$\text{Corrected Value} = \frac{1}{1 - Z + (\sin 2\pi)/\pi} * \text{Calculated Fundamental}$$

3. Compute vertical wind correction

$$\text{Corrected Value} = \frac{1}{1 - Z} * \text{Calculated Value}$$

4. Compute horizontal velocity

$$V_h = \frac{\sqrt{a_1^2 + b_1^2}}{\sin\beta}$$

5. Compute horizontal angle

$$\text{Angle}_h = \text{Atan}(b_1/a_1)$$

6. Compute vertical wind velocity

$$w = \frac{-a_o}{2\cos\beta}$$

3.2.3 Sine Curve Fit Technique

The line-of-sight velocity signature is sinusoidal for a uniform wind. Therefore, we find the best sinusoidal wave which fits the data in a least squares sense. Therefore we wish to minimize

$$\sum (V_i - C - A\cos\theta_i - B\sin\theta_i)^2$$

where V_i is the line-of-sight velocity (derectified) at point i, θ_i is azimuth at point i. Thus we obtain A, B, and C by

$$\left[\sum_i \cos^2\theta_i\right]A + \left[\sum_i \cos\theta_i \sin\theta_i\right]B + \left[\sum_i \cos\theta_i\right]C = \sum_i V_i \cos\theta_i$$

$$\left[\sum_i \cos\theta_i \sin\theta_i\right]A + \left[\sum_i \sin^2\theta_i\right]B + \left[\sum_i \sin\theta_i\right]C = \sum_i V_i \sin\theta_i$$

$$\left[\sum_i \cos\theta_i\right]A + \left[\sum_i \sin\theta_i\right]B + nC = \sum_i V_i$$

The steps for calculating wind using the least squares algorithm are:

1. Find least squares curve fit for a sine wave to the data

$$\text{Minimum} = \sum (V_i - C - A\cos\theta_1 - B\sin\theta_1)^2$$

where

Y_i is line-of-sight velocity at point

θ_i is azimuth at point

C, A and B are coefficients to be solved for.

2. Compute horizontal velocity

$$V_h = \frac{\sqrt{A^2 + B^2}}{\sin(\text{cone angle}/2)}$$

3. Compute horizontal angle

$$\text{Angle}_h = \text{Atan}(B/A)$$

4. Compute vertical wind velocity

$$w = \frac{-C}{\cos(\text{cone angle}/2)}$$

Section 4

DATA COLLECTION AND ANALYSIS

In this section the data collection procedure and interpretation of the data are described. Proper interpretation of the data is very important. The Lockheed Mobile Atmospheric Unit was built as an experimental unit for the measurement of atmospheric wind phenomena. At the time of the beginning of the fog tests at Otis AFB, the Lockheed unit had been in operation for approximately ten months. During this time period, much information about the operation of remote sensing systems was gained, and new operating techniques were generated. For example, the least squares sine algorithm was originated because of inaccuracies in the peak and spectral algorithms observed in field tests.

During the field tests, design improvements in both system hardware and software have become apparent, and many of these improvements have been incorporated into LDV systems built for the U.S. Army and the Department of Transportation. Some of these improvements are discussed in this section as an indication of the manner in which data resulting from a system designed for use in a fog dispersal system would differ from the data presented herein.

The data described herein is the first data collected in fog with the laser Doppler velocimeter. As expected, the system performed well. However, certain operational and design improvements could further enhance the quality of the data in a system designed for use in fog. The improvements are discussed in this section.

4.1 TEST DESCRIPTION

The Lockheed Mobile Atmospheric Unit was operational at the Otis AFB test site from 7 September through 30 September 1976. The unit was placed on standby status, and the unit was operated for wind measurement during periods of fog. A diagram of the Otis AFB test site is shown in

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Fig. 4-1. For the test, the direction of the towers was assumed to be north. The positive u coordinate was taken as wind from the west, and the positive v component was taken as wind from the south. A table of the days and times on which data were taken is shown in Table 4-1. During the test runs, the altitude at which the VAD scans were made alternated between 30 m and 45 m. Thus, in each minute time period, six scans were made at 30 m and six scans were made at 45 m. Each scan requires five seconds of time.

The brief time breaks in the data are for two reasons. The first was to adjust the laser power for the adjunct purpose of obtaining data on laser attenuation in fog and was unrelated to the primary purpose of the test. The laser power fluctuates slightly with time. In the condition for which wind data only are required, laser power fluctuation is never large enough to be of concern. However, for laser attenuation studies, it was believed that the power should be kept constant.

The second reason for the short interruptions was the removal of moisture condensation from the mirrors in the scanner. In a system designed for operation in fog, a small heater in the scanner would prevent such condensation.

4.2 DATA PRESENTATION

Sample data output are shown in Figs. 4-2 and 4-3. A complete tabular listing of the data measured during the test is presented in Appendix B. The date is the test site date on which the run was initiated. All times are Greenwich Mean Time. The height is the indicated altitude (meters) on the laser focusing system. Before each test run, the laser ranging system is calibrated to assure that the actual altitude of the data is the desired altitude. Thus, an indicated altitude of 28 m corresponds to an actual altitude of 30 m, and an indicated altitude of 43 m corresponds to an actual altitude of 45 m. The data were reduced to give five minute averages beginning at even five minute time periods. Although the run of 16 September started at 09:15:30, the first even five minute time period began at 09:20:00. The following interpretations are placed on each of the columns.

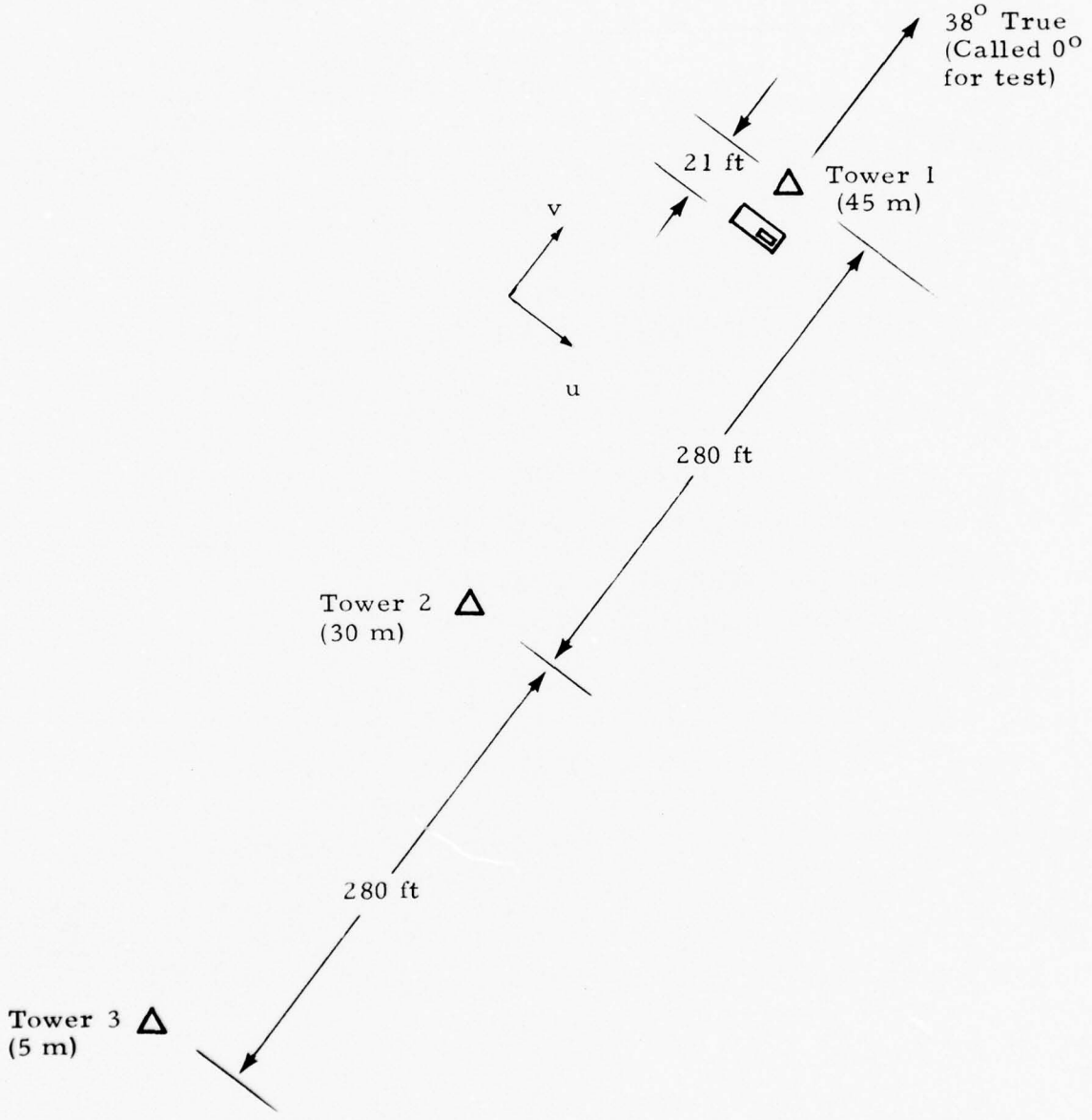

Fig. 4-1 - Diagram of Otis AFB Test Site

Table 4-1

DATA COLLECTION AT OTIS AFB

Date	Start	Stop	Threshold Velocity (m/sec)	Approx. Wind Speed (m/sec)	Approx. Wind Direction	Fog Type
9-16-76	9:15:30	10:00:00	0.53	2	140°	Radiation
	10:03:15	10:30:00	0.53	1.5	200°	
	10:31:00	11:00:00	0.53	1.5	200°	
	11:27:20	11:36:45	0.53	1.5	200°	
	11:41:20	12:00:05	0.53	2	240°	
	12:07:00	12:12:00	0.53			
9-18-76	3:16:20	6:08:40	0.79	3-5	150°	Advection
	6:16:00	6:51:00	0.79	5	160°	
9-18-76	7:16:00	8:12:00	1.06	7	180°	
9-28-76	00:25:00	00:39:00	1.06			
	00:44:00	03:00:00	1.06			
9-28-76	3:15:17	3:25:47	2.12			
	3:30:00	3:34:45	2.12			
	3:39:00	4:41:00	2.12			

VAD OTIS2 TIME IN GMT VAD 9/16/76 OTIS AIRFORCE MD270.

HEIGHT = 28.

START TIME 9:20: 0
END TIME 9:25: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	156	-173	45	234	138.1	144	-153	22	209	136.6	16	11	152	-182	-22	238	140.3	9
2	161	-170	52	236	136.7	137	-132	17	198	133.6	28	19	153	-158	-14	230	135.6	20
3	148	-182	49	239	141.2	167	-124	16	210	126.3	25	16	173	-156	-15	236	131.9	19
4	160	-172	53	236	137.4	151	-109	19	191	125.3	31	23	173	-140	-13	230	128.4	22
5	142	-183	50	233	142.4	138	-134	18	198	134.1	28	17	150	-166	-15	228	137.8	17

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	156	-173	45	234	138.1	144	-153	22	209	136.6	16	11	152	-182	-22	238	140.3	9
2	159	-171	48	235	137.4	140	-141	20	203	135.1	22	15	152	-170	-18	234	137.9	14
3	155	-174	49	236	138.5	148	-136	19	205	132.5	23	16	159	-166	-17	234	136.2	16
4	156	-174	50	236	138.2	149	-129	19	202	130.6	25	17	162	-159	-16	233	134.1	17
5	153	-176	50	236	139.1	147	-130	19	201	131.4	25	17	160	-161	-16	232	134.9	17

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	12	11	4	4	3.9	22	13	10	22	3.7	3	3	1	1	.9	
2	19	20	4	3	6.7	38	47	16	18	17.6	45	57	11	12	18.6	
3	44	24	4	7	12.0	8	33	16	18	7.7	16	32	8	12	8.0	
4	11	12	5	4	3.8	15	43	19	13	13.0	27	55	12	14	14.9	
5	16	15	5	5	5.3	32	35	15	12	13.7	31	35	9	8	11.8	

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	12	11	4	4	3.9	22	13	10	22	3.7	3	3	1	1	.9	
2	16	15	5	4	5.3	30	34	13	20	12.3	30	40	9	9	12.8	
3	26	18	5	5	7.6	26	34	13	19	11.7	28	38	8	10	11.7	
4	23	16	5	5	6.8	25	37	14	18	12.2	28	43	9	11	12.7	
5	22	16	5	5	6.6	26	36	14	17	12.3	28	41	9	10	12.4	

Fig. 4-2 - Sample Data Output at 96 ft Altitude

VAD OTIS2 TIME IN GMT VAD 9/16/76 OTIS AIRFORCE HD270.

HEIGHT = 43.

START TIME 9:20: 0
END TIME 9:25: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	T_H	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	192	-177	46	262	132.6	160	-161	24	228	135.2	15	14	178	-194	-22	264	137.6	8
2	195	-180	46	266	132.9	178	-167	26	245	133.3	13	9	181	-197	-22	269	137.6	8
3	200	-179	45	269	132.0	172	-177	28	248	135.9	11	9	181	-204	-22	273	138.6	9
4	166	-200	45	261	140.5	157	-174	30	235	138.1	13	10	167	-206	-23	266	141.1	7
5	169	-176	52	245	136.4	136	-174	23	222	142.5	16	6	151	-194	-21	247	142.5	10

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	T_H	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	192	-177	48	262	132.6	160	-161	24	228	135.2	15	14	178	-194	-22	264	137.6	8
2	193	-178	47	264	132.8	169	-164	25	237	134.2	14	12	180	-196	-22	267	137.6	8
3	195	-179	46	265	132.6	170	-168	26	240	134.7	13	11	180	-198	-22	268	137.9	8
4	186	-184	46	264	134.7	167	-169	27	239	135.6	13	11	176	-200	-22	268	138.8	8
5	184	-183	47	260	135.0	160	-170	26	235	137.0	14	10	171	-194	-22	264	139.5	8

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	4	5	2	2	1.4	15	22	11	25	2.2	2	2	1	2	.6
2	5	7	3	2	1.9	6	17	7	7	4.3	4	5	1	3	1.1
3	6	11	2	3	2.7	10	12	4	6	3.4	3	4	1	2	1.1
4	11	13	4	8	3.3	5	12	3	9	2.5	5	4	1	5	.9
5	7	6	4	4	2.0	27	3	7	13	6.3	19	6	4	7	4.5

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	4	5	2	2	1.4	15	22	11	25	2.2	2	2	1	2	.6
2	5	6	2	3	1.6	15	19	9	20	3.4	3	4	1	3	.9
3	6	7	2	4	1.9	13	18	8	17	3.4	3	5	1	4	1.0
4	10	13	3	5	4.2	13	17	7	16	3.4	7	6	1	5	1.7
5	16	12	4	9	3.9	21	15	7	16	4.9	15	6	2	10	2.9

Fig. 4-3 - Sample Data Output at 156 ft Altitude

4.2.1 One Minute Means

One minute means were calculated for each of the minutes of the five minute time period. The minutes of the time period are tabulated in the first column. Each of the numbers in this group is an average of the six VAD scans that occur at the given altitude during one minute.

Peaks

The one minute mean u, v and w* components of wind as calculated by the peak algorithm are tabulated. The w component is the vertical component and is positive vertically upward. Speeds are given in cm/sec and angles are given in degrees.

The data calculated from the basic VAD data are horizontal wind speed, wind direction, and vertical component of wind velocity. The u and v components are calculated from horizontal wind speed and direction. The speed is the one minute average of the horizontal component of velocity, and "TH" is θ_o, the direction of the horizontal component of wind. The u and v averages are calculated by averaging the u and v values of the individual VAD scans rather than from averaged values of u and v. Thus

$$u_i = -S_i \sin\theta_{o,i}$$

and

$$v_i = -S_i \cos\theta_{o,i}$$

where the i subscript refers to the individual VAD scans. The average for n scans in the one minute average is

$$\overline{S} = \sum S_i/n$$

*Because of a processing error (since corrected) the w component should be multiplied by -0.5.

$$\overline{\theta}_o = \sum \theta_{o,i}/n$$

$$\overline{u} = \sum u_i/n$$

and

$$\overline{v} = \sum v_i/n$$

It is noted in general that

$$\overline{u} \neq -\overline{S} \sin\overline{\theta}_o$$

$$\overline{v} \neq -\overline{S} \cos\overline{\theta}_o$$

and

$$\overline{S} \neq \sqrt{\overline{u}^2 + \overline{v}^2}$$

The same averaging characteristic results from resolving cup and vane anemometer data into components and averaging or when comparing averaged data from cup and vane anemometers with averaged data from propeller anemometers. The characteristic is particularly pronounced in light and variable wind conditions.

Fourier Coefficients*

Results are shown for wind calculations performed using the spectral algorithm. The symbols have the same meaning as for the peaks algorithm. The "2D" is the magnitude of the second harmonic and is the average of $\sqrt{a_2^2 + b_2^2}$ where a_2 is the second Fourier cosine coefficient and b_2 is the second Fourier sine coefficient. Similarly, "3D" is the average of $\sqrt{a_3^2 + b_3^2}$. The magnitude of these numbers is an indication of turbulence with the frequency of the turbulence increasing with the number of the harmonic.

Sine Wave Fit

Results are shown for the least squares sine fit algorithm with similar meanings of the symbols as for the other two algorithms. The "SP" is an indication of the deviation of the data points from a perfect sine fit.

*Because of a processing error (since corrected) the w component should be multiplied by -1.

4.2.2 Cumulative Means

The cumulative means are averages of individual VAD scans taken over the time period indicated. For example, the three minute cumulative mean is the average of the VAD scans taken over the first three minutes of the five minute time period. They are not averages of the one minute means. The two averaging methods would be identical if the number of VAD scans in each one minute average were always identical. The five minute cumulative means are the averages over the five minute time period of interest.

4.2.3 One Minute Standard Deviations

This section lists the standard deviation of each of the variables for each one minute time period. Each standard deviation is the standard deviation of the six VAD scans in the one minute period.

4.2.4 Cumulative Standard Deviations

The cumulative standard deviations are analogous to the standard means. They are the standard deviations of the individual VAD scans taken over the time period indicated. In general, the cumulative averages of the standard deviations are not averages of the one minute means because of the mathematical definition of standard deviation.

4.3 DATA ANALYSIS

Although meteorological tower data are not available for direct comparison with laser measured winds, a discussion of previous wind comparisons with meteorological towers is helpful in the interpretation of the results of this test. Observations about operation in fog are also appropriate.

4.3.1 Comparison of Computational Algorithms

The relative accuracies of the three computational algorithms can be seen by comparison with meteorological data in past tests.

The winds calculated with the three algorithms described in Section 3 are shown in Figs. 4-4 through 4-6 for data measured at the Wave Propagation Laboratory, National Oceanic and Atmospheric Administration, Boulder, Colorado. The winds were measured in March 1976. The sole difference between the three parts of each figure is the data processing algorithm used. Some general observations are that the peak algorithm tends to give mean wind values that are biased slightly high compared to the tower measured mean winds. This is primarily due to temporal variations in the wind at higher frequencies than the fundamental frequency in the VAD signature; thus the peak of the signature (i.e., the fundamental frequency with superimposed higher frequency variations) has a value that is higher than the averaged values. This interpretation is confirmed by the runs for which the greatest deviation above the 45 degree line occur are the runs for which the greatest value of wind standard deviation (measured by the tower) occur. In particular, for the points of Run 9 farthest off the 45 degree line in Figs. 4-5 and 4-6, the standard deviation of wind speed is 1.82 m/sec and 1.75 m/sec, respectively, whereas the standard deviation of wind speed was usually between 0.9 m/sec and 1.4 m/sec.

It is also observed that the spectral algorithm tends to give mean wind values that are biased slightly low compared to the tower measured mean winds. It was observed during the data processing of the Boulder data that the magnitude of the bias is a function of the number of valid line-of-sight velocities obtained during the VAD scan. The bias is insignificant for data where more than 50 valid data points are obtained during each VAD scan. It is noted that a number of data points below this value was obtained only rarely at Table Mountain and that the low number of data points would never occur in air with a larger quantity of natural aerosol than the very clean air of Table Mountain. The least squares sine algorithm seems to present no systematic bias, and the scatter of the data about the 45 degree line is less for the sine algorithm than for the other two processing techniques. A comparison of the peak algorithm and the spectral algorithm with the sine algorithm for the data measured at Otis AFB is shown in Fig. 4-7. In similar figures in the

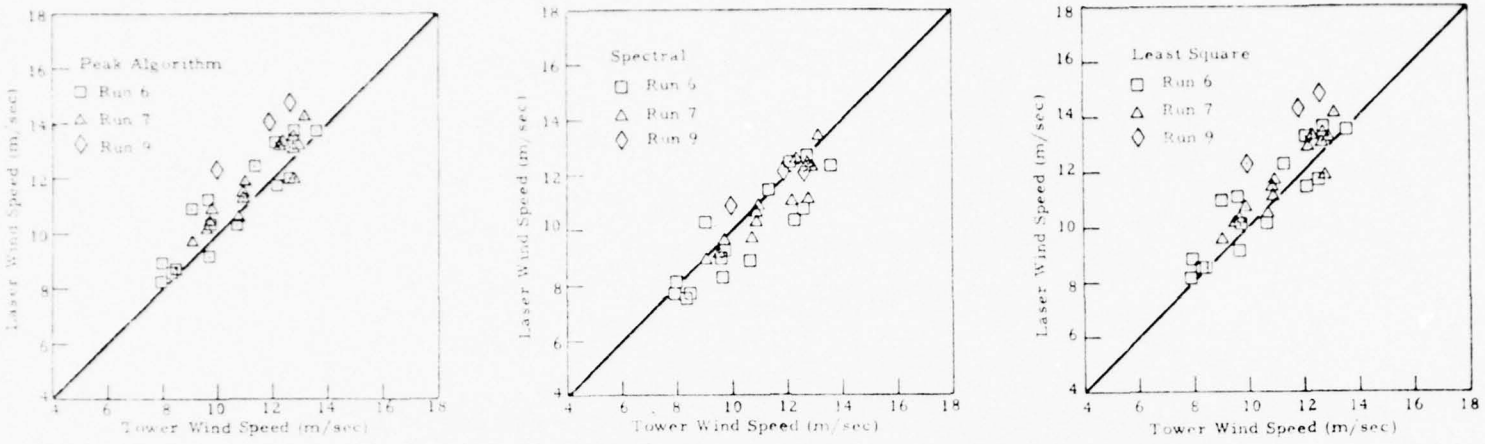

Fig. 4-4 - Comparison of Laser and Tower 16 min Mean Wind Speed at 30 m Altitude

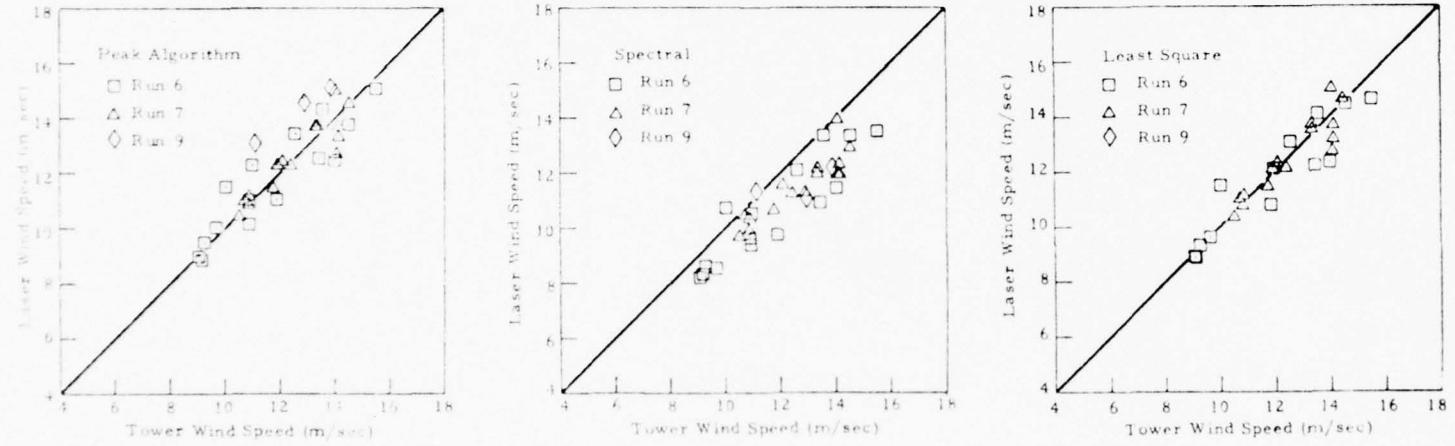

Fig. 4-5 - Comparison of Laser and Tower 16 min Mean Wind Speed at 60 m Altitude

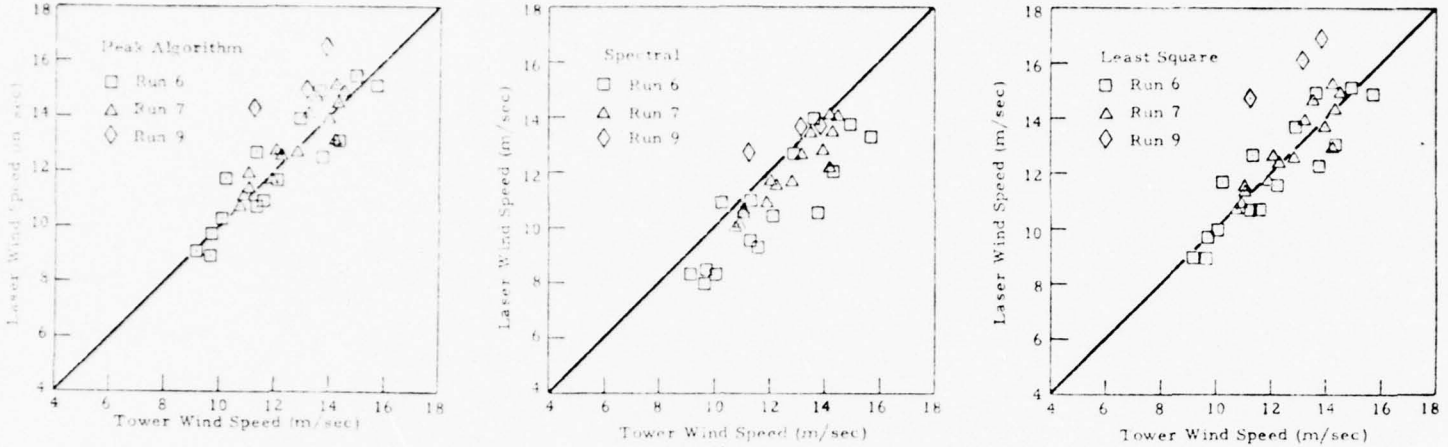

Fig. 4-6 - Comparison of Laser and Tower 16 min Mean Wind Speed at 90 m Altitude

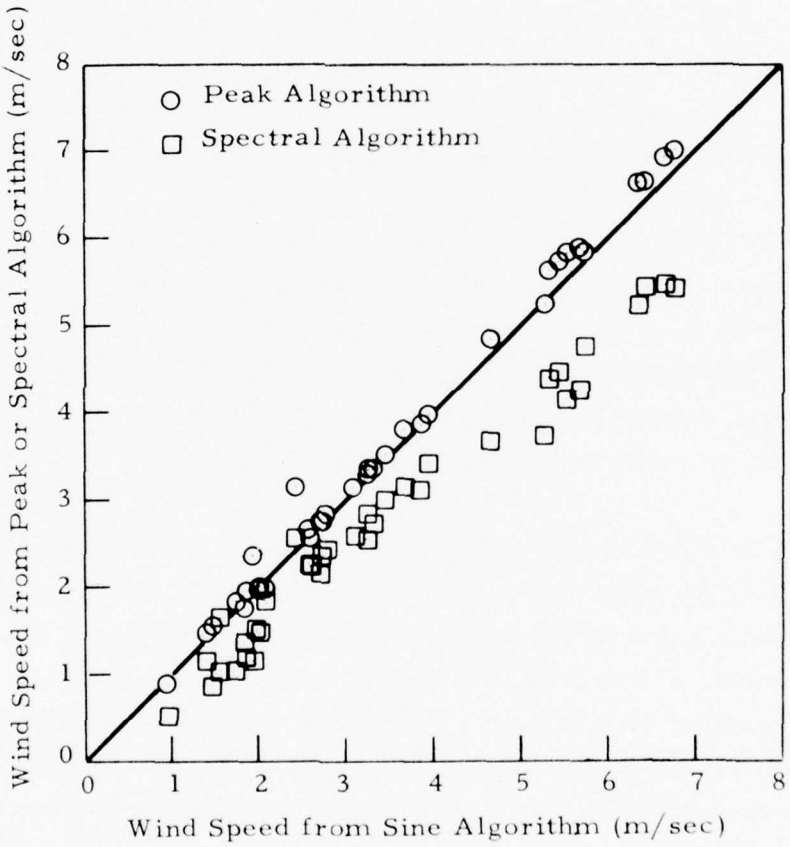

Fig. 4-7 - Comparison of Data Processing Algorithms Measured at Otis AFB

Boulder data (Figs. 4-8 and 4-9) it was observed that the speed calculated by the peak algorithm was almost always greater than that calculated by the sine algorithm. The same observation is valid for the data greater than 4 m/sec at Otis AFB, but for light winds (< 2 m/sec) the peak algorithm often gives a value which is less than that derived from the sine algorithm.

4.3.2 Variations in Fog Density

One of the problems associated with wind measurement in fog is measurement in both fog and clear air. Unfortunately, the magnitude of this problem was not completely anticipated and some data were lost. In fog, for the manner in which the data were taken, the backscattered signal is very large and must be attenuated to avoid going off scale in the spectrum analyzer. With this quantity of attenuation, when the focal volume hits clear air, an adequate signal cannot be obtained. This problem occurs if the data are taken on a linear scale. The Lockheed system also has a logarithmic scale which avoids the problem by displaying and recording the logarithm of the intensity of the return signal. Since the magnitude of the problem was not anticipated, all data during the test were taken in the linear mode.

The problem is illustrated by the data for 18 September. From the magnitude of the wind it is apparent that the fog is an advection fog. Valid data for wind speed on the order of 3 m/sec to 4 m/sec is obtained at both altitudes from 3:20 to 5:20. However, after 5:20 the wind increased to an order of 5 m/sec to 6 m/sec. This would cause the advection fog to lift slightly, providing clearer air at the lower altitude. The data taken at 30 m altitude between 5:20 and 6:50 is therefore somewhat sparse. During the brief interruption from 6:51 to 7:16 the laser power and signal attenuation were adjusted, and valid data were obtained thereafter.

A similar condition is seen in the data of 16 September. The wind speed indicates a radiation fog. Valid data are obtained at the beginning of the run. As the depth of the fog decreased after sunrise, the system began to lose data at the higher altitude. Adjustment of laser power and attenuation at 11:40 restored a good signal at both altitudes.

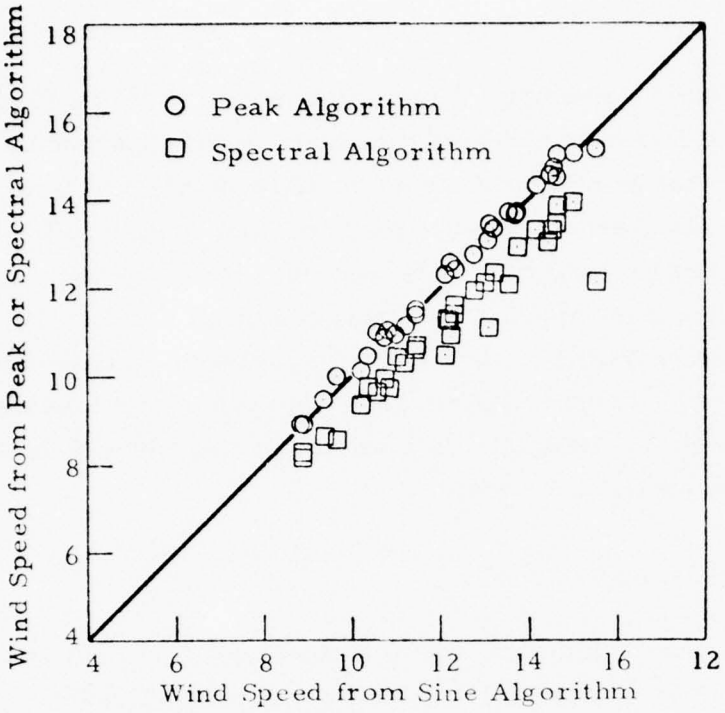

Fig. 4-8 - Comparison of Data Processing Algorithms at 60 m Altitude Measured at Table Mountain, Colorado

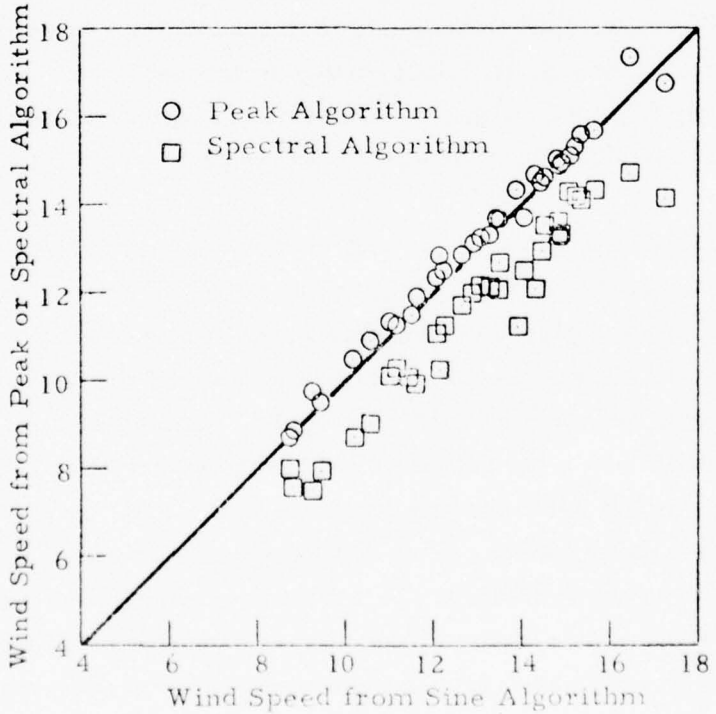

Fig. 4-9 - Comparison of Data Processing Algorithms at 150 m Altitude Measured at Table Mountain, Colorado

As mentioned previously, these adjustments would have been unnecessary if the laser intensity had been measured in the logarithmic scale. In order to verify that an adequate signal could be obtained both in and out of fog conditions, Lockheed-Huntsville made measurements in low cloud conditions at its Huntsville facility on 7 December 1976. The reported meteorological conditions at the Huntsville-Madison County Jetplex (10 miles from the test site) are shown in Table 4-2, and wind conditions are shown in Figs. 4-10 through 4-17. More complete data from this set of measurements are shown in Appendix C. Adequate data were obtained for both in and out of the clouds using the logarithmic scale.

4.3.3 Light and Variable Winds

The existence of light and variable winds presents some unique conditions which must be considered in the data analysis. The first of these is important when comparing the LDV data with propeller anemometer data. For the propeller anemometer data, the wind can fall below the threshold value in one of the component directions. However, because the LDV operates in speed-direction coordinates and then transforms the data into orthogonal coordinates, it has no threshold value in the orthogonal directions. Thus the LDV can indicate values of wind which are below the threshold value of the anemometers. This can affect the averaging over a period of time.

In the mode of LDV operation without a frequency translator, the system is unable to distinguish between positive and negative velocities. Therefore, at the beginning of each run, the operator makes an estimate of wind direction, and the direction is chosen as the angle of the peak of the VAD scan (cf. Figs. 3-7 and 3-8) which lies closest to the estimated wind direction. In practice this causes no problem if the actual wind direction is within ± 89 deg of the estimated wind. In all previous applications of the VAD technique, this criterion has been easily met, and no ambiguity has resulted from the system limitation. However, in light and variable winds, the variation in wind direction from the estimated wind direction can occasionally exceed 90 deg for one or more scans in the one minute average. For each scan for which

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 30.

START TIME 9:45:19
END TIME 9:50:19

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-523	713	63	894	324.1	-634	515	43	819	309.2	8	9	-670	599	-21	899	311.8	67
2	-515	620	252	806	320.2	-469	428	76	635	312.3	26	18	-627	461	-52	779	306.3	107
3	-475	642	140	816	322.7	-198	563	-2	623	338.4	35	31	-281	731	-35	818	338.2	98
4	-493	692	112	850	324.5	-558	563	42	793	315.2	5	6	-556	618	-47	832	318.0	43
5	-511	676	176	849	322.8	-492	509	87	709	316.0	23	17	-545	685	-57	876	321.5	70

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-523	713	63	894	324.1	-634	515	43	819	309.2	8	9	-670	599	-21	899	311.8	67
2	-520	682	126	864	322.8	-579	486	54	757	310.2	14	12	-656	553	-31	859	309.9	81
3	-502	666	132	845	322.8	-426	517	31	704	321.5	23	20	-506	624	-33	843	321.3	88
4	-500	670	128	846	323.0	-448	524	33	719	320.5	20	17	-514	623	-35	841	320.7	80
5	-503	672	140	847	323.0	-459	521	46	716	319.3	21	17	-522	639	-41	850	320.9	78

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	177	51	19	64	11.2	82	7	8	59	4.0	47	27	5	53	.7
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	141	203	22	77	16.6	196	190	4	109	23.5	289	161	28	44	23.3
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	17	50	64	30	3.0	65	55	15	84	.7	11	10	13	15	.2

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	177	51	19	64	11.2	82	7	8	59	4.0	47	27	5	53	.7
2	126	65	110	68	8.2	112	50	20	114	3.4	41	82	18	79	3.2
3	116	113	79	67	10.1	244	110	34	122	19.6	252	139	19	64	19.5
4	104	102	71	60	9.1	224	100	31	115	17.7	227	125	18	57	17.5
5	88	88	68	52	7.8	192	87	37	103	15.1	192	109	19	51	14.8

Fig. 4-10 - Wind Data Measured at 30m Altitude with Low Clouds

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 45.

START TIME 9:45:19
END TIME 9:50:19

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-440	837	80	947	332.2	-465	660	20	808	324.7	22	18	-536	811	-59	973	326.5	44
2	-458	822	97	942	330.8	-478	660	86	816	324.1	7	8	-458	806	-73	927	330.3	46
3	-563	686	132	905	320.3	22	260	3	659	6.9	41	39	8	392	-41	867	12.0	136
4	-581	415	138	715	305.5	-87	689	84	695	352.7	16	31	-64	730	-80	732	354.9	124
5	-514	715	183	889	323.8	-515	641	77	823	321.4	2	4	-516	700	-73	871	323.6	55

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-440	837	80	947	332.2	-465	660	20	808	324.7	22	18	-536	811	-59	973	326.5	44
2	-446	832	85	945	331.7	-469	660	42	810	324.5	17	15	-510	809	-64	958	327.8	45
3	-493	773	104	929	327.1	-272	500	27	750	341.5	27	24	-302	642	-55	921	345.5	81
4	-508	714	110	893	323.5	-242	531	36	741	343.3	25	26	-263	657	-59	890	347.0	88
5	-509	714	128	892	323.6	-310	559	46	761	337.8	19	20	-326	668	-62	885	341.2	80

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH			
1	45	35	67	10	3.4	76	126	36	147	.7	61	2	6	35	3.0			
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0			
3	167	182	42	33	15.6	850	109	38	15	94.4	1063	277	16	115	90.0			
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0			
5	89	159	69	76	10.7	98	60	5	108	2.7	71	39	3	74	2.3			

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH			
1	45	35	67	10	3.4	76	126	36	147	.7	61	2	6	35	3.0			
2	33	26	48	8	2.5	54	89	45	104	.6	63	3	9	37	3.0			
3	108	123	47	28	10.2	505	235	43	111	52.6	605	267	16	80	51.1			
4	103	183	45	91	12.7	458	224	45	102	47.3	550	242	18	105	45.9			
5	94	166	57	82	11.5	409	197	42	103	41.2	480	206	17	94	40.3			

Fig. 4-11 - Wind Data Measured at 45 m Altitude with Low Clouds

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 60.

START TIME 9:45:19
END TIME 9:50:19

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-665	686	78	967	316.1	-500	656	27	835	321.7	19	18	-598	776	-59	987	322.6	44
2	-545	790	101	960	325.3	-523	759	76	922	325.4	6	6	-480	834	-51	962	330.0	33
3	-740	495	84	894	303.9	-550	361	-33	664	303.5	32	32	-746	539	-37	922	305.9	59
4	-287	818	120	867	340.6	-326	590	82	675	331.0	19	27	-457	754	-30	882	328.7	62
5	-368	666	215	826	328.9	-332	674	115	752	333.6	24	30	-400	785	-81	882	333.2	111

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-665	686	78	967	316.1	-500	656	27	835	321.7	19	18	-598	776	-59	987	322.6	44
2	-625	721	86	965	319.2	-507	690	43	864	323.0	15	14	-559	795	-56	979	325.1	40
3	-671	630	85	936	313.1	-525	559	12	784	315.2	22	21	-633	693	-48	956	317.4	48
4	-607	661	91	925	317.7	-491	564	24	766	317.8	21	22	-604	703	-45	944	319.3	50
5	-547	663	122	900	320.5	-452	592	47	763	321.8	22	24	-553	724	-54	929	322.8	65

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	171	113	54	38	12.0	67	204	57	120	12.3	163	57	4	54	9.5
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	105	47	54	61	6.2	89	85	28	28	10.3	51	36	25	20	3.7
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	342	314	15	101	32.4	5	47	18	40	1.9	98	36	56	76	4.6

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	171	113	54	38	12.0	67	204	57	120	12.3	163	57	4	54	9.5
2	140	100	40	27	10.0	49	156	49	99	9.0	134	52	5	41	8.0
3	128	145	39	53	11.4	61	214	56	130	13.5	142	146	17	44	12.1
4	194	150	38	55	15.2	98	193	58	125	13.7	146	133	17	49	11.7
5	237	174	66	76	18.5	111	172	65	107	13.7	160	119	31	58	12.0

Fig. 4-12 - Wind Data Measured at 60 m Altitude with Low Clouds

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 90.

START TIME 9:45:19
END TIME 9:50:19

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-680	619	100	921	312.3	-435	463	-67	637	316.7	34	22	-523	833	-54	984	327.8	55
2	-566	725	93	944	321.5	-464	564	35	736	319.9	28	26	-556	776	-37	967	324.1	59
3	-492	783	134	925	327.8	-357	604	-31	702	329.4	28	29	-534	760	-36	929	324.8	48
4	-561	734	49	929	322.8	-386	520	0	653	322.7	27	23	-452	792	-20	915	330.1	57
5	-353	876	133	944	338.0	-374	510	-49	633	323.7	25	26	-457	732	-28	863	328.0	55

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-680	619	100	921	312.3	-435	463	-67	637	316.7	34	22	-523	833	-54	984	327.8	55
2	-604	690	95	936	318.4	-454	531	1	703	318.8	30	25	-545	795	-42	972	325.3	58
3	-576	713	105	934	320.8	-430	549	-6	703	321.5	29	26	-542	786	-41	962	325.2	55
4	-571	720	86	932	321.4	-415	539	-4	686	321.9	29	25	-512	788	-34	946	326.9	56
5	-540	742	93	934	323.8	-410	535	-10	679	322.1	28	25	-504	780	-33	934	327.0	56

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	202	223	45	50	18.2	34	150	70	93	9.6	149	155	9	38	12.6
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	141	49	24	46	8.8	36	134	110	85	9.7	74	84	11	36	6.6
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	157	169	32	38	13.9	29	121	78	88	7.0	107	114	12	29	9.2
3	140	146	32	31	12.3	54	105	66	71	7.8	88	95	10	32	7.5
4	126	116	40	32	10.4	50	102	71	72	7.4	89	83	14	38	7.0
5	141	121	40	30	11.3	49	94	67	69	6.8	84	78	13	47	6.4

Fig. 4-13 - Wind Data Measured at 90 m Altitude with Low Clouds

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 180.

START TIME 9:45:19
END TIME 9:50:19

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-683	737	110	1005	317.1	-604	763	63	974	321.6	7	3	-575	817	-51	1000	324.8	37
2	-572	762	103	997	322.9	-495	548	48	780	317.3	29	26	-632	750	-49	1013	319.5	36
3	-529	778	92	941	325.7	-454	791	46	913	330.1	8	4	-438	843	-34	950	332.5	52
4	-437	803	131	917	331.3	-412	584	19	724	325.2	22	22	-458	773	-42	902	329.2	50
5	-472	840	79	964	330.6	-539	705	63	888	322.6	5	11	-521	759	-47	922	325.5	53

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-683	737	110	1005	317.1	-604	763	63	974	321.6	7	3	-575	817	-51	1000	324.8	37
2	-609	753	106	1000	321.0	-532	620	53	845	318.7	22	18	-613	772	-50	1008	321.3	37
3	-589	759	102	985	322.2	-512	663	51	862	321.6	18	15	-569	790	-46	994	324.1	41
4	-538	774	112	962	325.2	-479	636	41	816	322.8	19	17	-532	784	-45	963	325.8	44
5	-529	783	107	963	326.0	-487	646	44	826	322.8	17	16	-531	781	-45	957	325.8	45

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	327	255	33	6	24.2	239	257	77	29	26.2	253	251	29	28	20.3
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	55	56	22	23	4.7	163	46	74	56	12.8	72	68	3	21	6.2
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	240	181	24	6	17.4	180	220	55	114	18.7	182	182	20	21	14.7
3	200	148	20	30	14.4	152	199	45	99	16.3	172	153	18	34	13.2
4	175	120	24	43	12.3	148	161	51	108	14.0	149	122	14	55	10.9
5	162	112	25	40	11.4	137	149	47	102	12.7	136	112	13	53	10.0

Fig. 4-14 - Wind Data Measured at 180 m Altitude with Low Clouds

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 270.

START TIME 9:45:19
END TIME 9:50:19

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-635	680	47	931	316.9	-442	601	91	747	323.6	25	28	-545	811	-28	978	326.0	52
2	-530	822	85	981	327.1	-488	733	59	910	326.9	15	12	-555	801	-29	994	324.8	40
3	-495	823	107	961	328.9	559	185	7	589	71.6	69	48	877	156	-67	891	79.9	201
4	-533	831	122	987	327.3	-395	870	33	956	335.5	9	4	-459	899	-50	1010	332.9	44
5	-415	904	96	995	335.3	-382	698	94	796	331.3	31	26	-517	901	-20	1040	330.1	44

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-635	680	47	931	316.9	-442	601	91	747	323.6	25	28	-545	811	-28	978	326.0	52
2	-585	775	72	964	323.7	-473	689	69	855	325.8	18	17	-552	804	-29	988	325.2	44
3	-547	787	81	963	325.0	-215	563	54	789	352.3	31	25	-194	642	-38	964	353.9	83
4	-545	795	89	968	325.4	-251	624	50	822	348.9	26	21	-247	693	-41	973	349.7	76
5	-523	814	90	973	327.1	-272	637	57	818	346.0	27	21	-292	728	-37	984	346.4	70

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	70	73	38	23	5.8	300	131	72	56	20.6	195	196	33	49	15.8
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	78	97	35	33	7.1	214	120	54	102	14.7	138	139	23	36	11.2
3	73	83	33	27	6.4	545	270	54	157	54.2	724	343	27	57	58.1
4	63	74	34	26	5.6	479	271	48	155	47.6	638	319	24	53	51.2
5	78	80	31	26	6.4	431	244	46	139	43.2	581	298	23	55	46.5

Fig. 4-15 - Wind Data Measured at 270 m Altitude with Low Clouds

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 360.

START TIME 9:45:19
END TIME 9:50:19

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-506	763	127	916	326.4	-371	651	108	749	330.2	27	26	-500	799	-49	943	327.9	36
2	-430	888	78	996	334.1	-463	699	40	866	326.6	21	18	-533	816	-28	988	326.6	64
3	-600	666	-7	897	317.9	-534	337	-81	633	302.2	31	28	-716	508	19	879	305.3	52
4	-573	699	16	933	320.0	-483	613	20	801	322.2	21	27	-542	739	12	944	322.8	87
5	-293	914	115	960	342.2	-264	775	92	819	341.1	19	24	-407	910	-38	997	335.9	46

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-506	763	127	916	326.4	-371	651	108	749	330.2	27	26	-500	799	-49	943	327.9	36
2	-455	846	94	969	331.5	-432	683	63	827	327.8	23	21	-522	811	-35	973	327.0	55
3	-492	801	69	951	328.1	-458	596	27	778	321.4	25	23	-571	735	-21	949	321.6	54
4	-519	767	51	945	325.4	-466	602	25	786	321.7	24	24	-561	736	-10	947	322.0	65
5	-486	788	60	947	327.8	-437	627	34	791	324.4	23	24	-539	761	-14	955	324.0	62

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	173	83	5	1	11.1	260	153	96	16	20.2	163	148	35	34	12.7
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	216	253	90	57	20.4	222	127	104	36	18.3	201	258	50	86	19.4
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	130	93	29	46	9.0	191	112	78	68	14.4	117	105	28	35	9.0
3	128	118	56	52	10.0	164	195	96	112	17.4	136	174	36	55	13.1
4	145	155	65	49	12.7	162	162	88	89	15.8	139	177	40	58	13.4
5	157	152	64	45	13.2	166	162	84	82	16.2	140	175	38	56	13.3

Fig. 4-16 - Wind Data Measured at 360 m Altitude with Low Clouds

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 540.

START TIME 9:45:19
END TIME 9:50:19

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-418	792	63	902	332.4	-278	753	43	806	339.5	20	16	-389	833	-34	924	335.0	47
2	-514	869	63	1010	329.4	-587	779	1	976	323.0	14	9	-531	897	-36	1043	329.3	31
3	-401	861	74	955	334.8	-429	723	79	842	329.3	13	12	-432	855	-42	960	333.0	44
4	-360	913	101	982	338.4	-386	876	37	958	336.1	3	3	-378	897	-37	974	337.1	39
5	-455	826	89	949	331.1	-360	669	91	780	331.3	24	22	-458	836	-33	961	331.3	52

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-418	792	63	902	332.4	-278	753	43	806	339.5	20	16	-389	833	-34	924	335.0	47
2	-450	818	63	938	331.4	-381	762	29	863	334.0	18	14	-436	854	-35	963	333.1	42
3	-430	835	67	945	332.7	-400	746	49	855	332.1	16	13	-435	854	-38	962	333.1	43
4	-418	848	73	951	333.7	-398	768	47	872	332.8	14	11	-425	862	-38	964	333.8	42
5	-428	843	77	951	333.0	-389	743	58	849	332.4	16	14	-433	855	-36	963	333.1	45

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	154	32	20	43	9.7	85	74	78	39	7.5	127	18	15	38	7.6		
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		
3	96	102	25	52	7.9	75	16	63	52	3.8	55	87	30	53	5.3		
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		
5	122	82	44	13	8.9	202	140	11	26	18.1	161	62	22	23	10.2		

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	154	32	20	43	9.7	85	74	78	39	7.5	127	18	15	38	7.6		
2	122	50	14	70	7.0	188	54	60	102	10.9	121	39	11	74	6.3		
3	103	67	17	56	6.6	141	45	60	77	8.3	90	52	17	59	5.2		
4	96	68	21	53	6.4	126	66	54	81	7.6	84	49	16	53	4.9		
5	95	66	25	45	6.4	132	90	50	81	9.4	95	49	16	45	5.8		

Fig. 4-17 - Wind Data Measured at 540 m Altitude with Low Clouds

Table 4-2

METEOROLOGICAL CONDITIONS FOR WIND MEASUREMENT IN LOW CLOUDS, HUNTSVILLE-MADISON COUNTY AIRPORT

8:55 CST

Clouds: 800 ft Thin Broken, 1600 ft Overcast
Visibility: 2-1/2 Miles in Light Drizzle and Fog
Wind: 320 deg at 10 knots

9:55 CST

Clouds: 400 ft Thin Broken, 800 ft Overcast
Tops Reported at 7000 MSL
Visibility: 1-1/2 Miles in Light Drizzle and Fog
Wind: 330 deg at 14 knots

10:55 CST

Clouds: 600 ft Overcast
Tops Reported at 7200 MSL
Visibility: 2 Miles in Light Drizzle and Fog
Wind: 340 deg at 12 knots

this condition occurs, the wind angle is erroneous by exactly 180 deg. The wind speed is correct. The u and v components are correct in magnitude for each VAD scan; but are wrong in sign.

The one minute averages for which this condition occurs can be clearly identified in the data. Since it is known that there are six scans in every one minute average and the angle of one or more of the scans is wrong by 180 deg, the standard deviation of the one minute mean of the wind angle will exceed 60 deg if the condition occurs. Similarly, the standard deviation of both the u and v components must exceed 74% of their respective mean values. To see this, assume that the true value from each scan of a one minute average is a. Therefore, for 6 scans in the one minute average, the expected value and expected value of the square are

$$E(X^2) = 6a^2/6 \quad E(X) = 6a/6$$

and the Variance is

$$E(X^2) - E^2(X) = a^2 - a^2 = 0$$

If one of the six values has the wrong sign,

$$E(X^2) = 6a^2/6 \quad E(X) = 4a/6$$

and the variance is

$$E(X^2) - E^2(X) = a^2 - (4a/6)^2 = 0.52a^2$$

or the standard deviation is 0.74 a. Thus the condition described above is suspected if the standard deviations of both the u and v components exceeds 74% of their respective mean values for the one minute average.

In some conditions (e.g., 43 m data of 14 September 1976 ending at 10:40:00) the standard deviation for winds calculated from the sine algorithm may indicate that this condition exists, whereas the standard deviation for the peak algorithm indicates that the problem does not exist. When this condition occurs, the wind data calculated with the peak algorithm can be expected to give more reliable data than the wind data calculated with the sine algorithm.

It is noted that this condition occurs only rarely for the light winds of 16 September and never for the higher winds of 18 September. The higher winds are less susceptible to wind speed changes of more than 90 deg.

This limitation of the Lockheed LDV as configured for the test has been recognized in the past. A translator is currently being installed in the Lockheed system, and translators have been installed in the LDV systems built for the U.S. Army Missile Command and Department of Transportation. The presence of a translator removes all ambiguity associated with the direction of the wind and solves the problem described. It also obviates the need for estimates of wind direction to be made by the system operator. The absence of a translator has caused no problem in past measurements of wind using the VAD mode. However, it is clear that a translator will be necessary for measurement of wind in light and variable conditions.

Section 5
CONCLUSIONS AND RECOMMENDATIONS

The ability of the laser Doppler velocimeter to measure winds in fog has been demonstrated. The continuity of the data recorded and the quantity of data recorded were adversely affected by the secondary purpose of the test. This purpose was the measurement of laser attenuation in fog and required that the laser power be kept constant within limits more restrictive than required by wind measurements alone.

The addition of a translator (to distinguish between positive and negative line-of-sight velocities) and real time data processing will further enhance the ability of the LDV to measure winds in fog. Both of these additions are planned for 1977. The ability of the LDV to measure wind in patchy fog or in fog and clear air above the fog is enhanced by the use of the logarithmic scale of laser intensity rather than the linear scale.

It is recommended that the future activities of the Lockheed LDV and the Department of Transportation LDV be monitored. It is likely that both of these units will take data in fog in their normal use.

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Section 6

REFERENCES

1. Little, B. et al., "Remote Sensing of Wind Profiles in the Boundary Layer," ESSA Technical Report ERL 168-WPL12, June 1970.

2. Lawrence, T.R., et al., "A Study on Laser Doppler Velocimeter Atmospheric Wind Interrogation Systems – Final Report," LMSC-HREC TR D306888, Lockheed Missiles & Space Company, Huntsville, Ala., October 1973.

3. Bilbro, J.W., et al., "Development of a Laser Doppler System for the Detection, Tracking, and Measurement of Aircraft Wake Vortices," FAA-RD-74-213, March 1975.

4. Bilbro, J.W., et al., "Laser Doppler Velocimeter Wake Vortex Tests," NASA TM X-64988, March 1976.

5. Brashears, M.R., T.R. Lawrence, and A.D. Zalay, "Mobile Laser Doppler System Check Out and Calibration," LMSC-HREC TR D497036, Lockheed Missiles & Space Company, Huntsville, Ala., September 1976.

6. Brashears, M.R., and W.R. Eberle, "Verification of Wind Measurement with Mobile Laser Doppler System," LMSC-HREC TR D497071, Lockheed Missiles & Space Company, Huntsville, Ala., November 1976.

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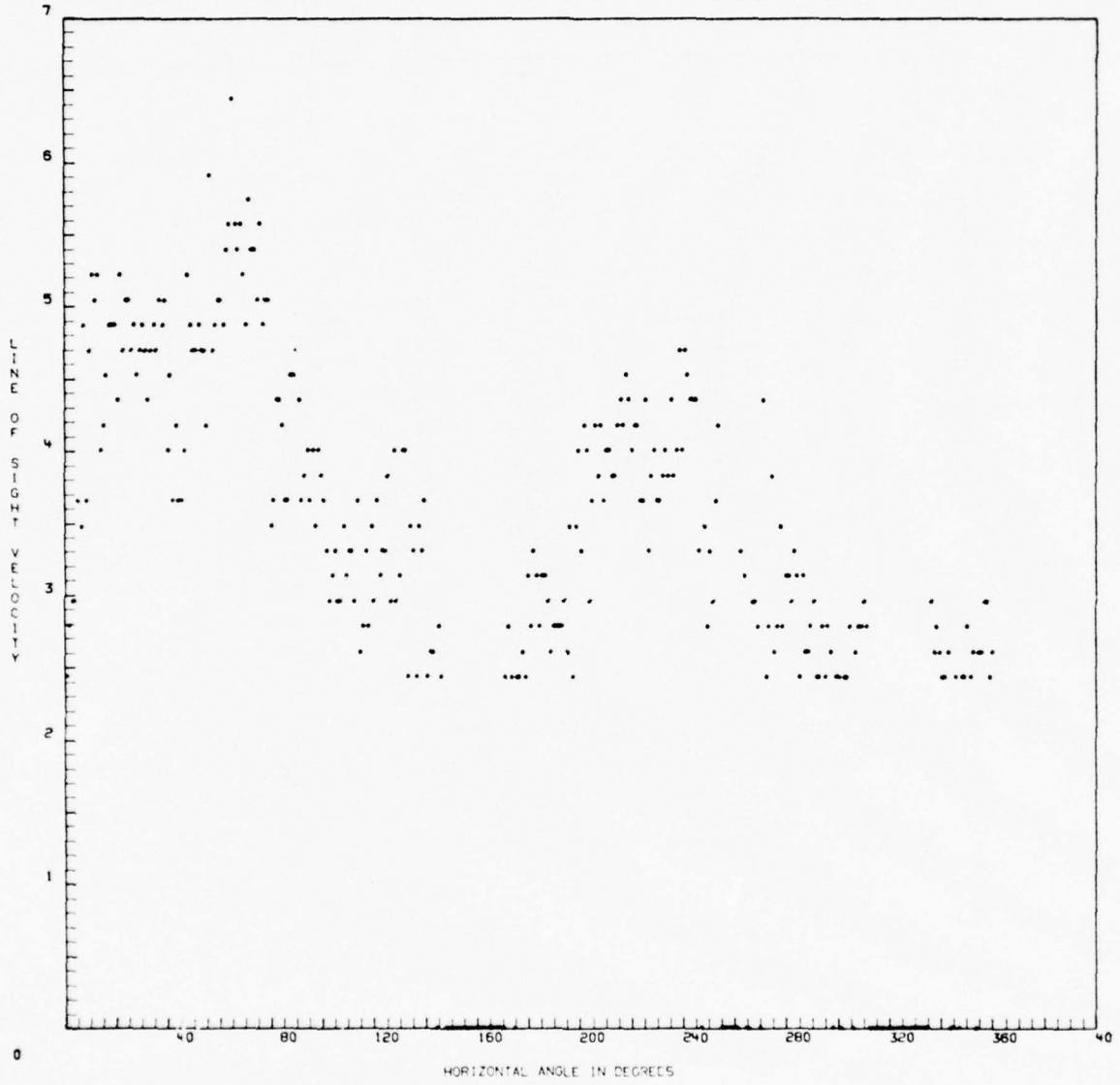
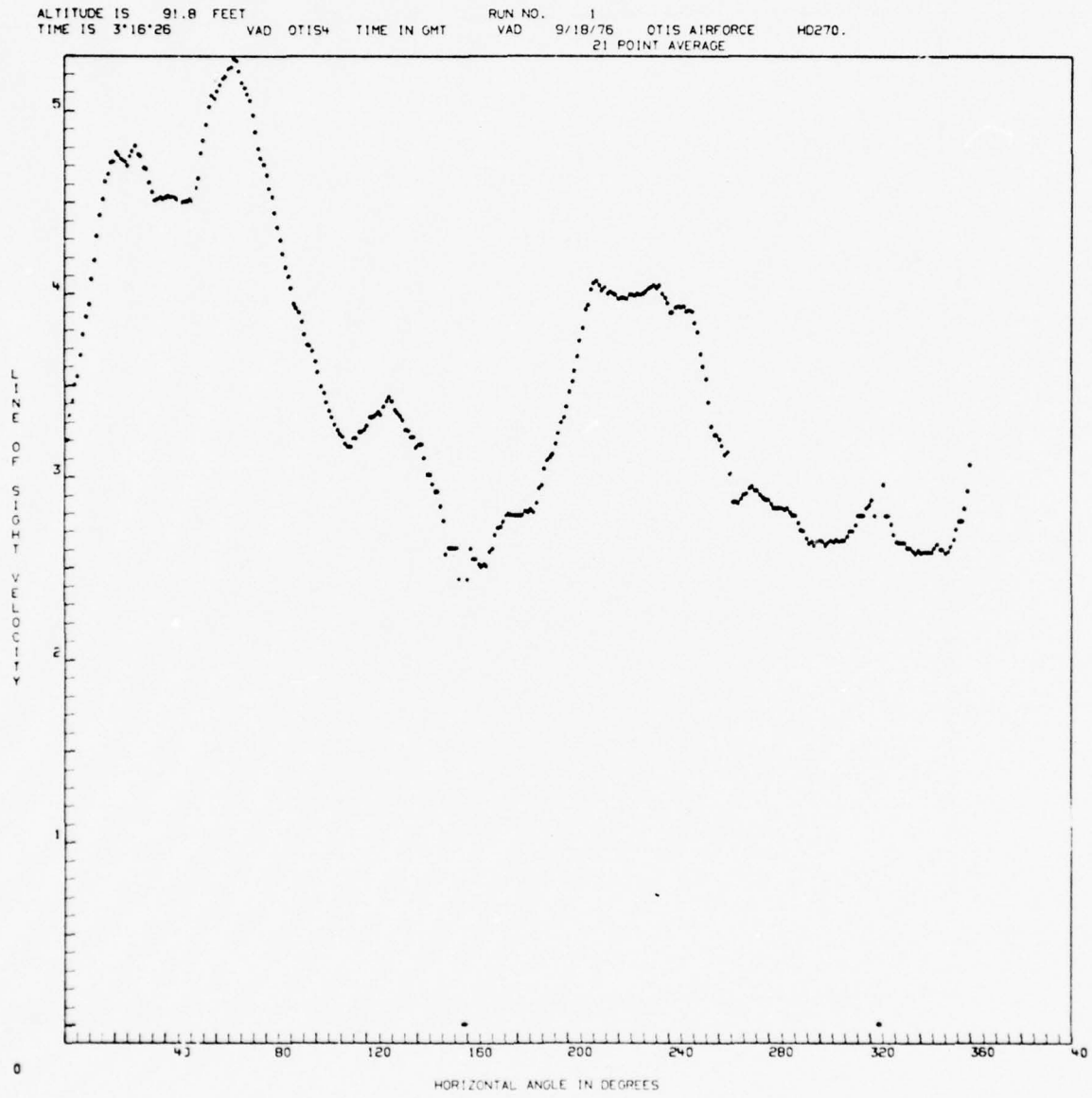
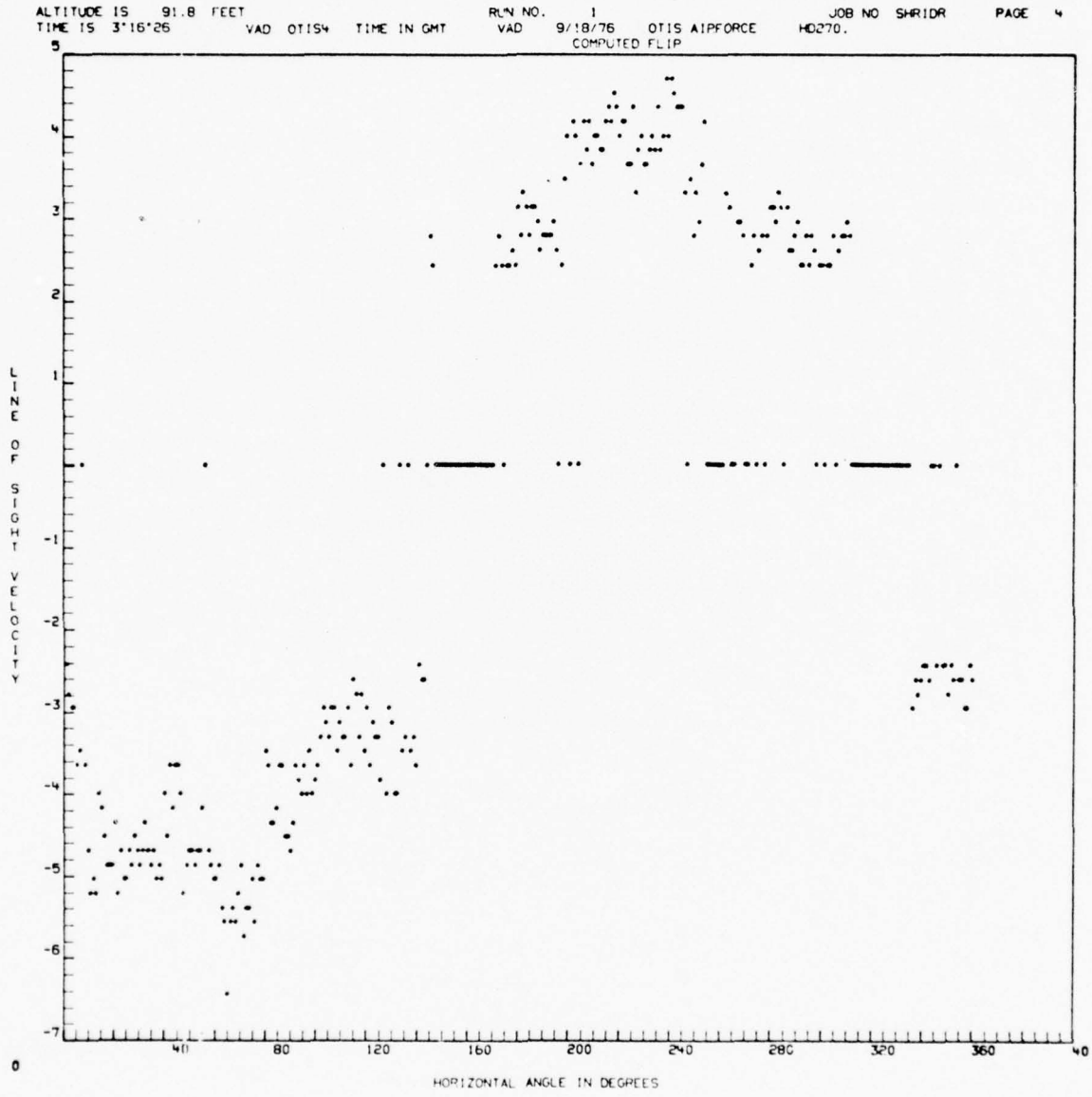
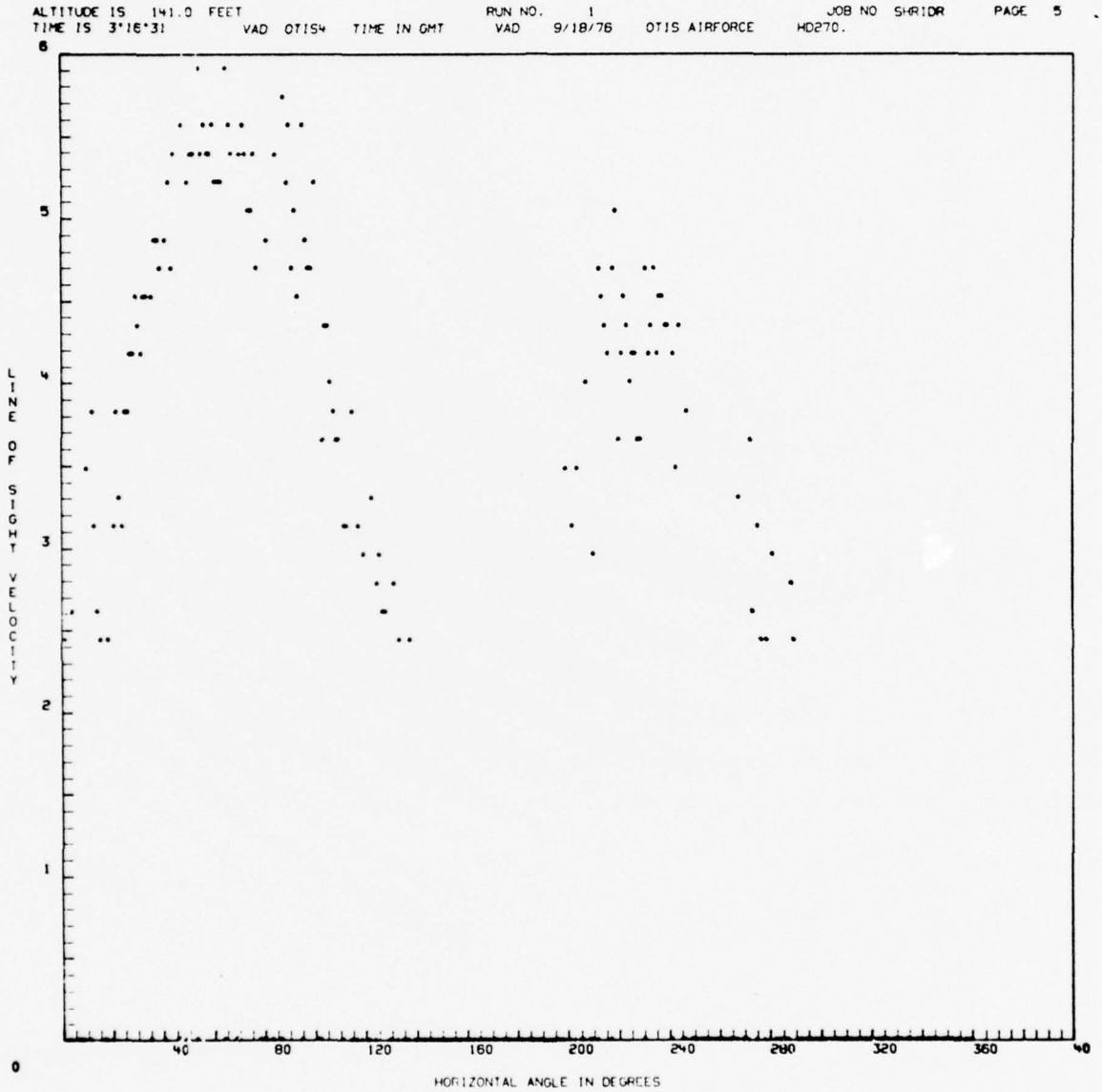
Appendix A

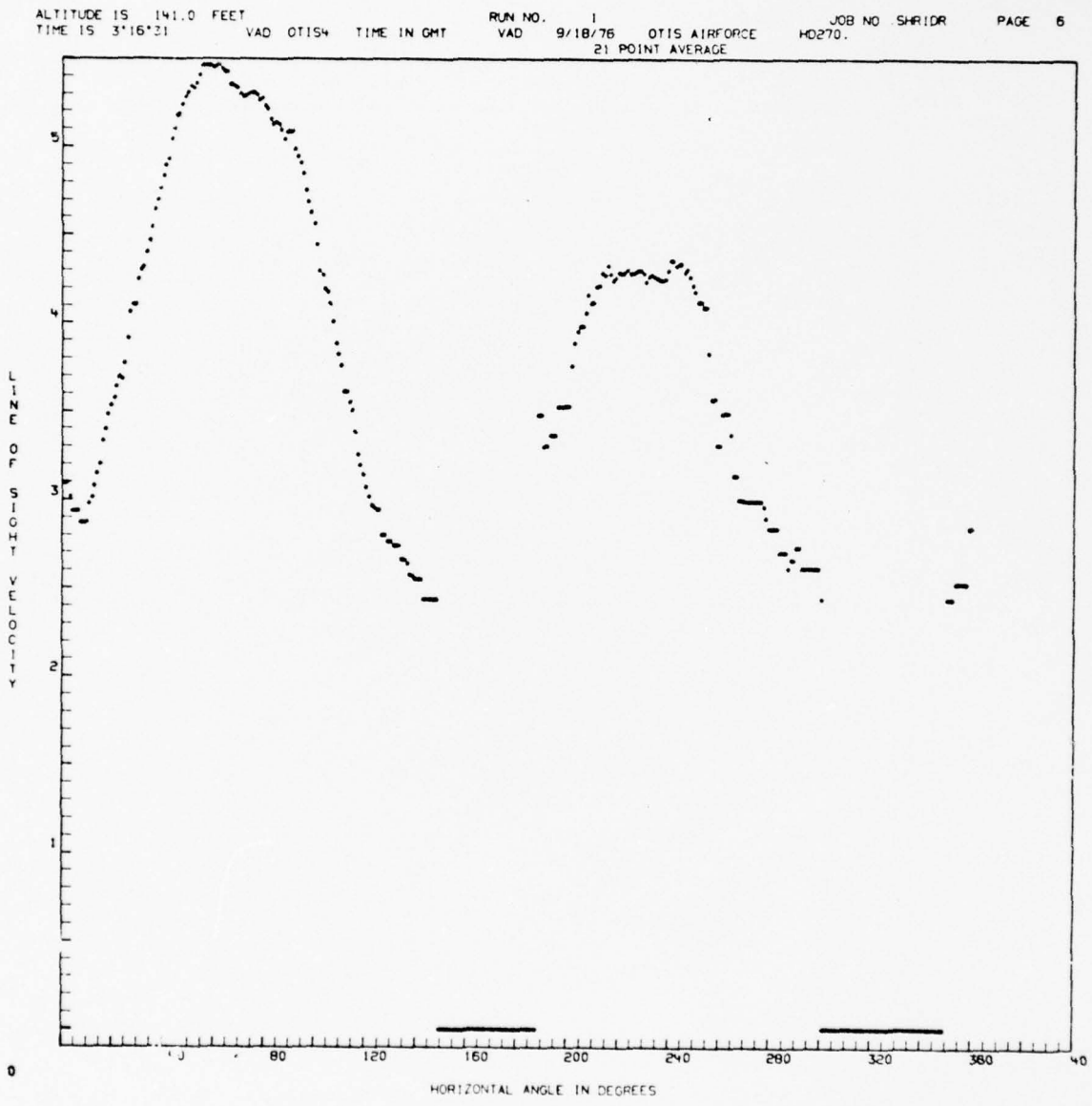
SAMPLE LDV SIGNATURES FOR OPERATION IN THE VAD MODE AT OTIS AFB, MASSACHUSETTS – SEPTEMBER 1976

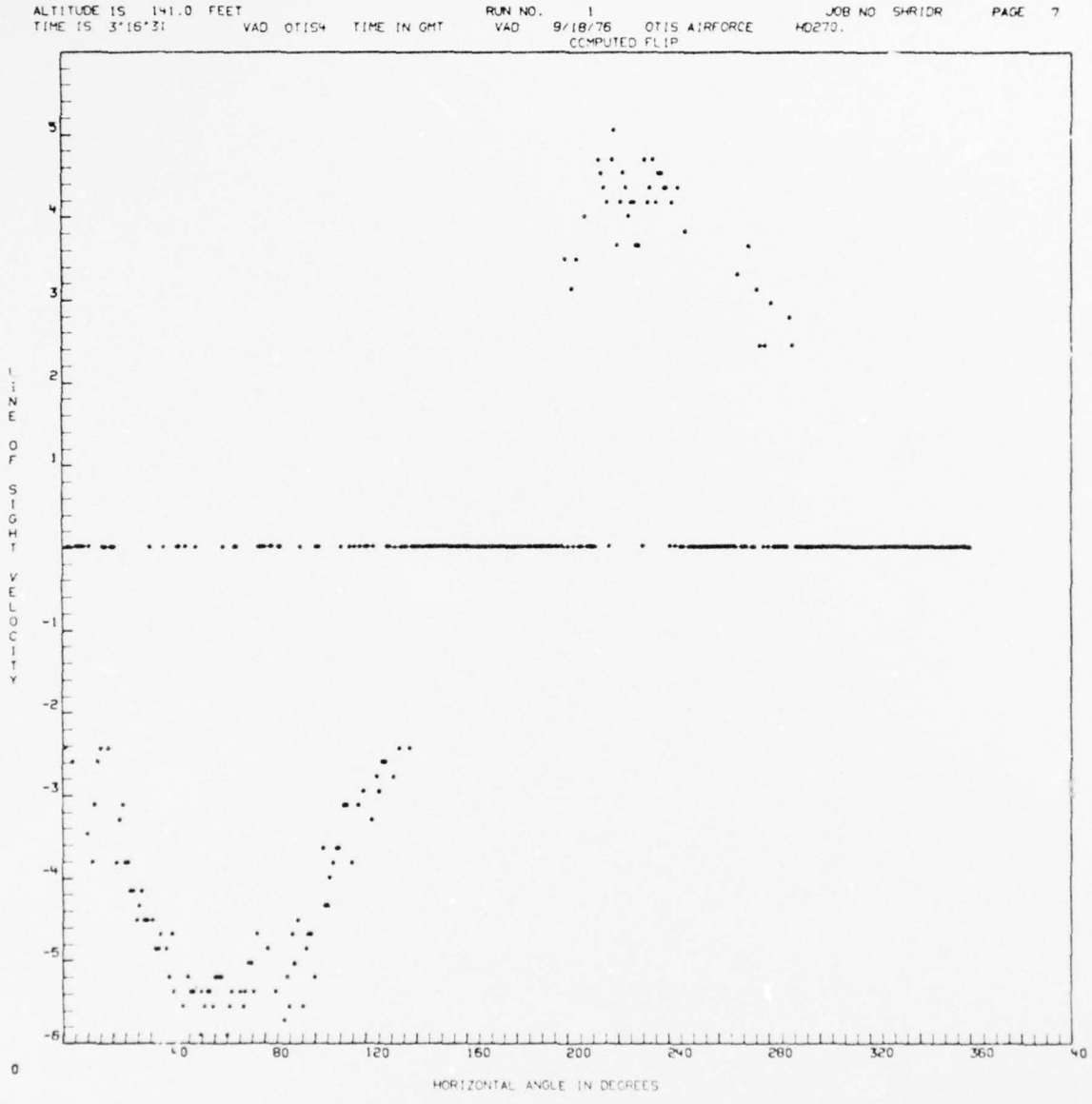

ALTITUDE IS 91.8 FEET
RUN NO. 1
TIME IS 3:16:26 VAD OTIS4 TIME IN GMT VAD 9/18/76 OTIS AIRFORCE H0270.
LINE OF SIGHT VELOCITY
HORIZONTAL ANGLE IN DEGREES
0
1
2
3
4
5
6
7
40
80
120
160
200
240
280
320
360
40

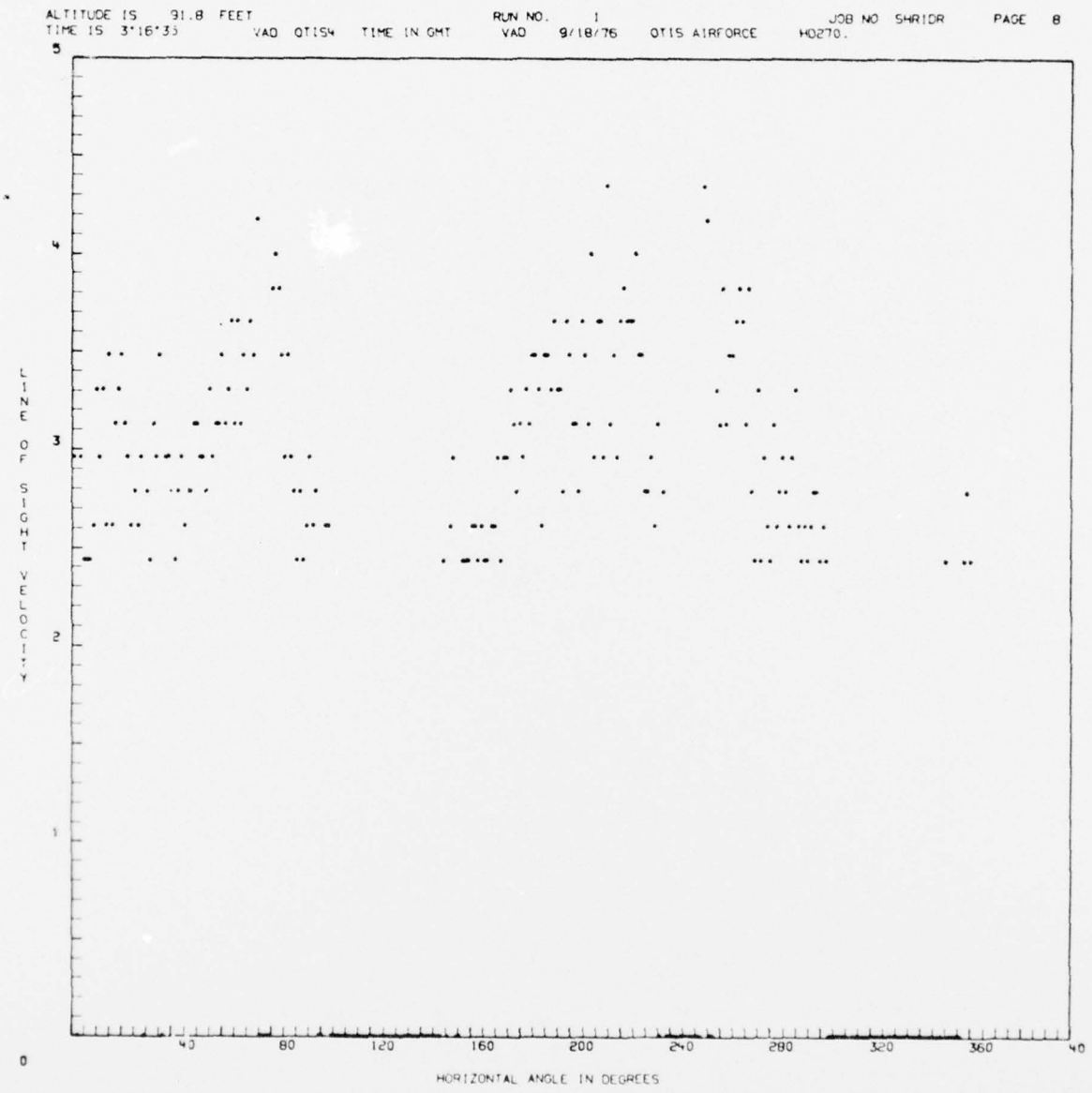

ALTITUDE IS 91.8 FEET
TIME IS 3*16*26
VAD OTIS4 TIME IN GMT
RUN NO. 1
VAD 9/18/76 OTIS AIRFORCE HD270.
21 POINT AVERAGE
LINE OF SIGHT VELOCITY
0
1
2
3
4
5
40
80
120
160
200
240
280
320
360
40
HORIZONTAL ANGLE IN DEGREES

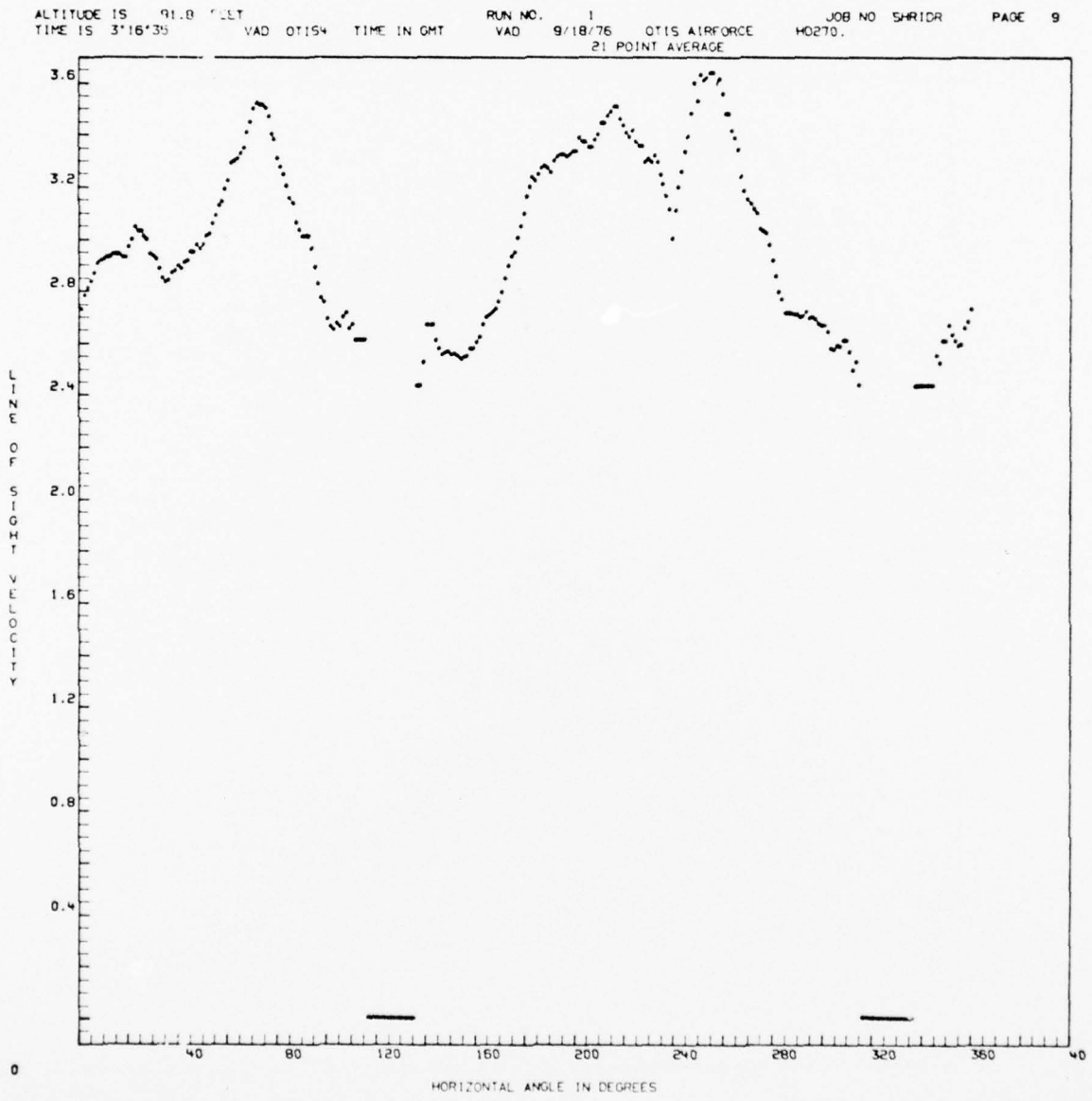

ALTITUDE IS 91.8 FEET
RUN NO. 1
JOB NO SHRIDR
PAGE 4
TIME IS 3'16'26
VAD OTIS4 TIME IN GMT
VAD 9/18/76 OTIS AIRFORCE
HD270.
COMPUTED FLIP
LINE OF SIGHT VELOCITY
5
4
3
2
1
-1
-2
-3
-4
-5
-6
-7
0
40
80
120
160
200
240
280
320
360
40
HORIZONTAL ANGLE IN DEGREES

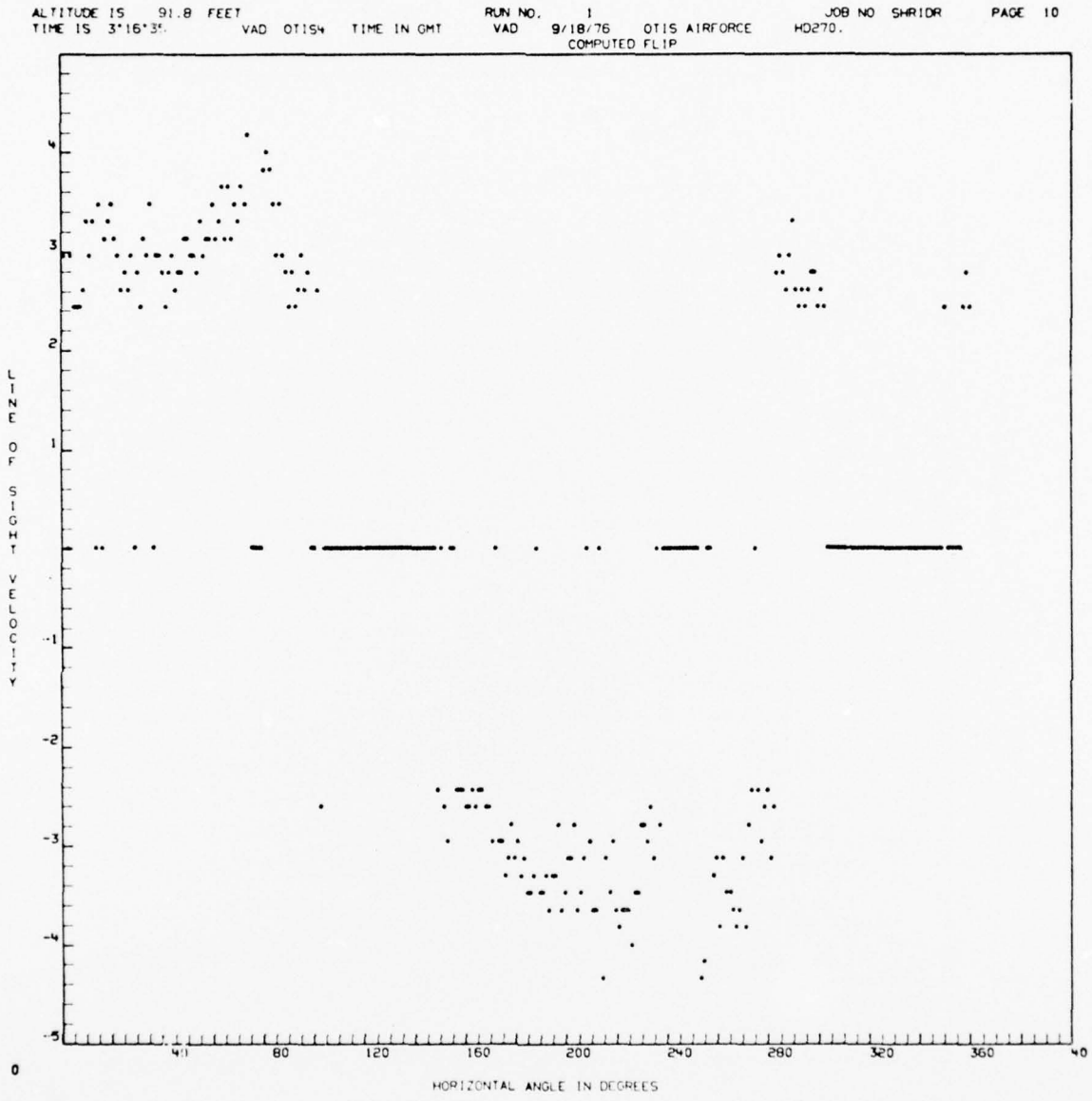

ALTITUDE IS 141.0 FEET
RUN NO. 1
JOB NO SHRIDR
PAGE 5
TIME IS 3*16*31
VAD OTIS4 TIME IN GMT
VAD 9/18/76
OTIS AIRFORCE
HD270.
LINE OF SIGHT VELOCITY
6
5
4
3
2
1
0
40
80
120
160
200
240
280
320
360
40
HORIZONTAL ANGLE IN DEGREES

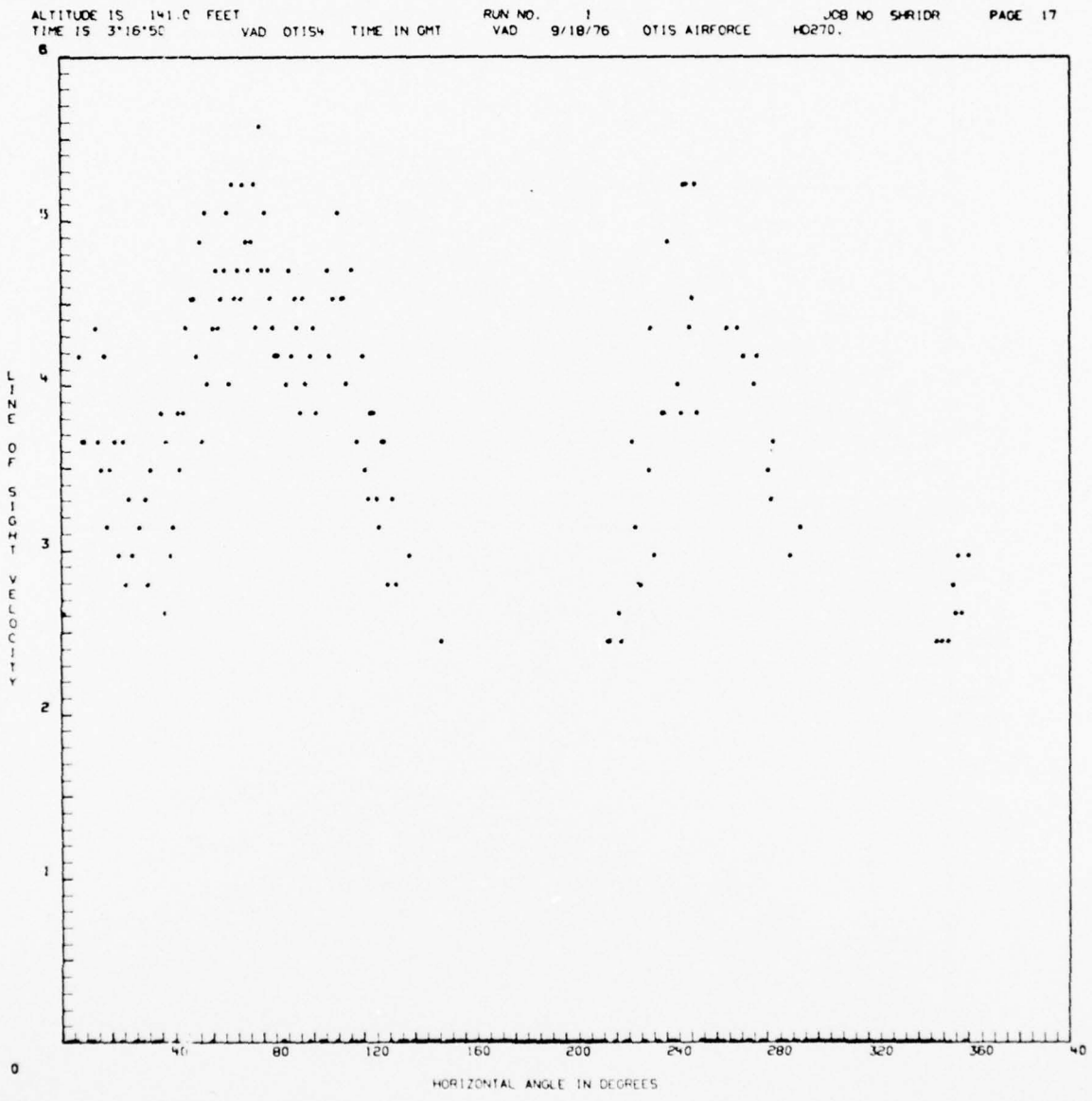

ALTITUDE IS 141.0 FEET
TIME IS 3'16'31
VAD OTIS4 TIME IN GMT
RUN NO. 1
VAD 9/18/76 OTIS AIRFORCE
JOB NO SHRIDR
PAGE 6
H0270.
21 POINT AVERAGE
LINE OF SIGHT VELOCITY
5
4
3
2
1
0
80
120
160
200
240
280
320
360
40
HORIZONTAL ANGLE IN DEGREES

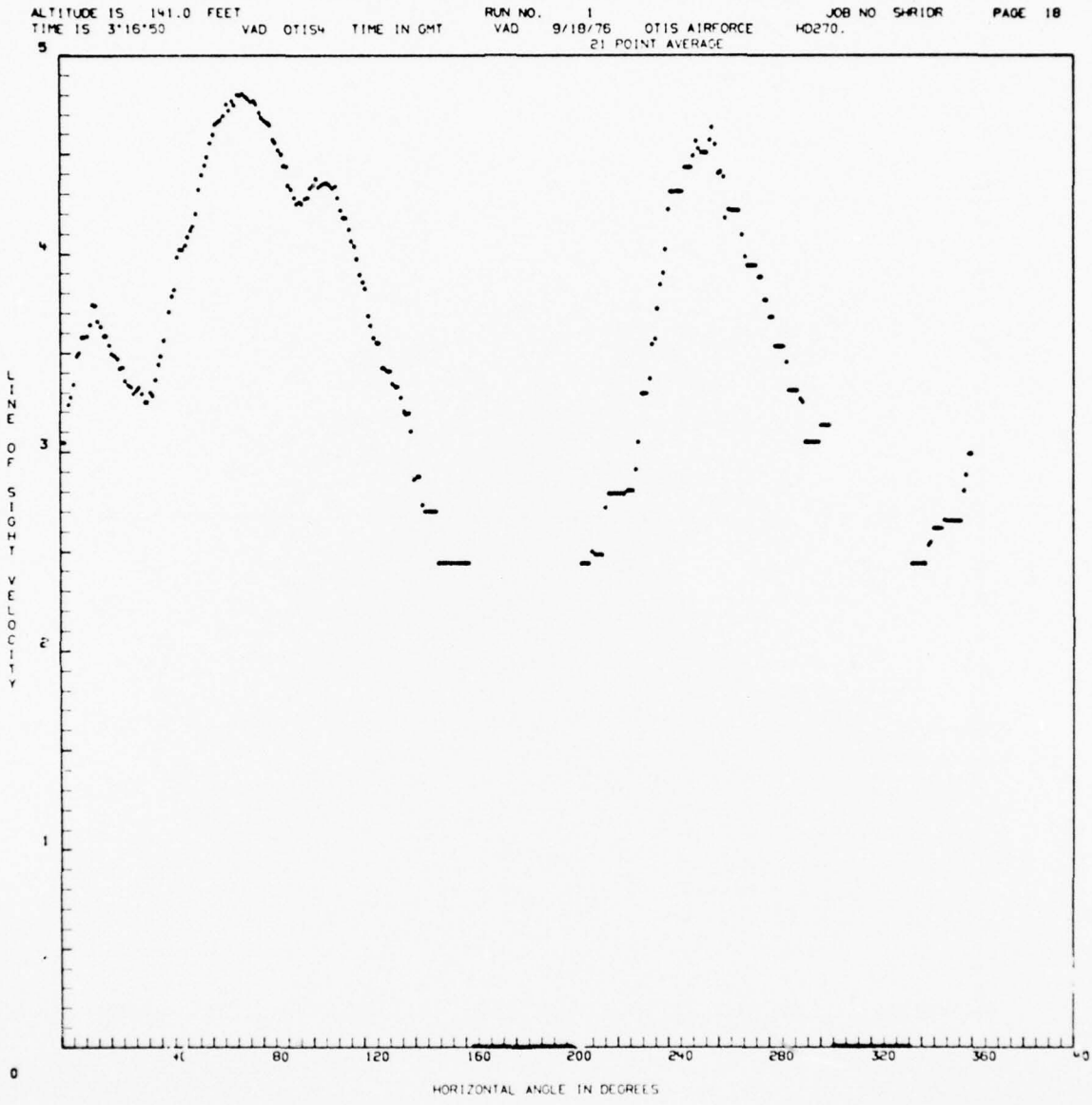

ALTITUDE IS 141.0 FEET
RUN NO. 1
JOB NO SHRIDR
PAGE 7
TIME IS 3'16'31
VAD OTIS4 TIME IN GMT
VAD 9/18/76 OTIS AIRFORCE H0270.
COMPUTED FLIP
LINE OF SIGHT VELOCITY
5
4
3
2
1
-1
-2
-3
-4
-5
-6
0
40
80
120
160
200
240
280
320
360
40
HORIZONTAL ANGLE IN DEGREES

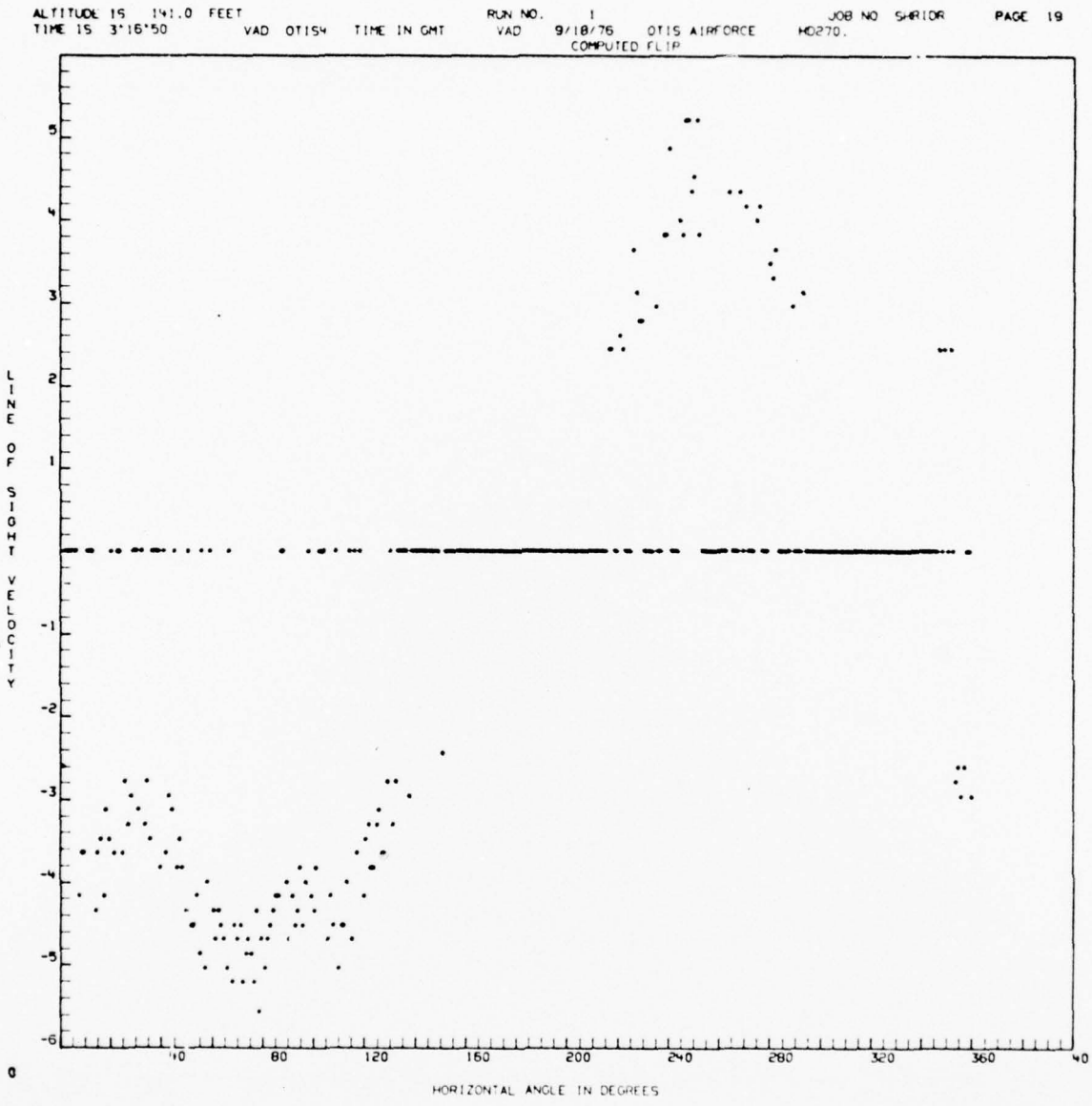

ALTITUDE IS 91.8 FEET
RUN NO. 1
JOB NO SHRIDR
PAGE 8
TIME IS 3:16:33
VAD OTIS4 TIME IN GMT
VAD 9/18/76
OTIS AIRFORCE
H0270.
LINE OF SIGHT VELOCITY
5
4
3
2
1
0
40
80
120
160
200
240
280
320
360
40
HORIZONTAL ANGLE IN DEGREES

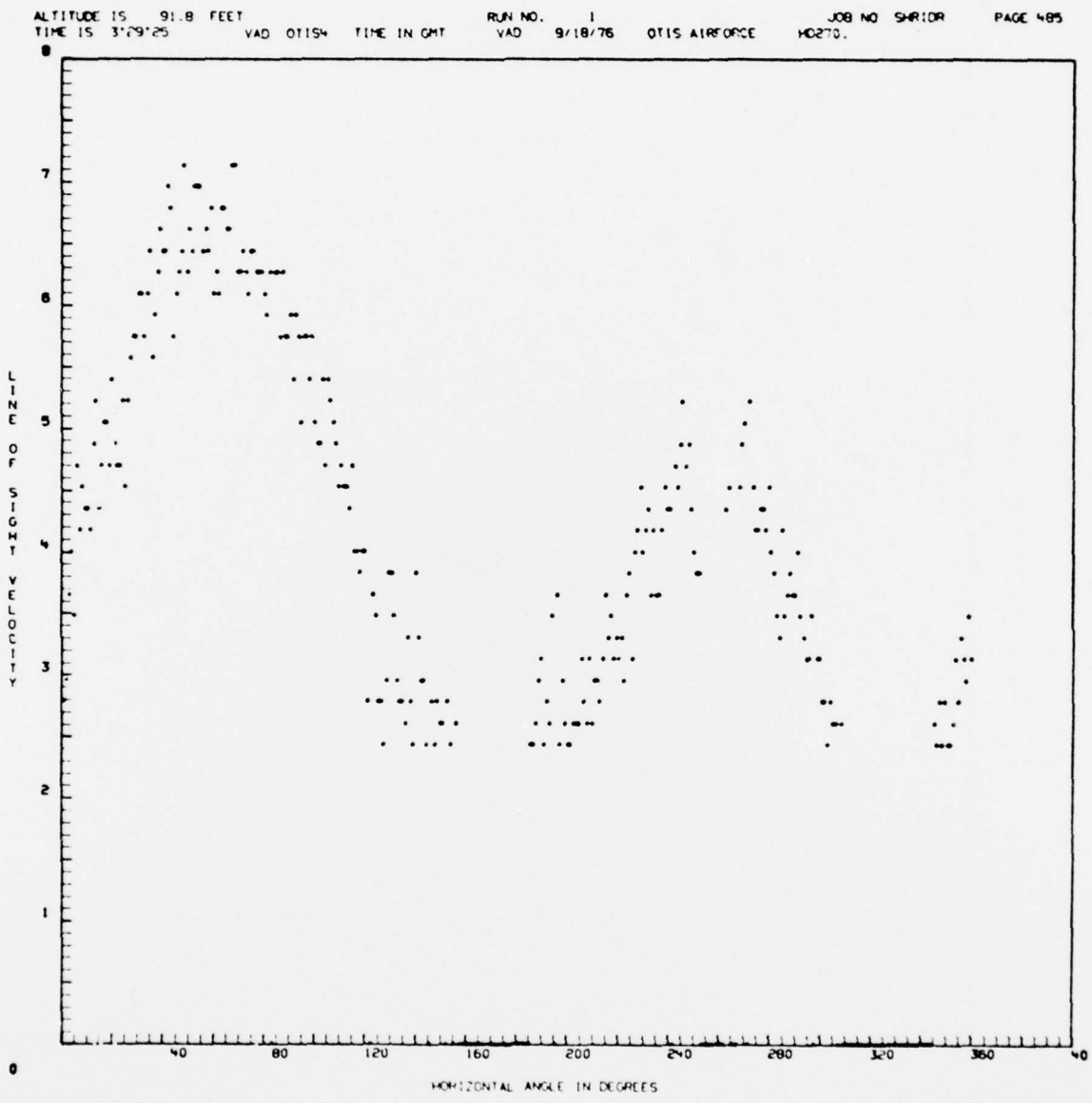

ALTITUDE IS 91.0 FEET
TIME IS 3'16'35
VAD OTIS4 TIME IN GMT
RUN NO. 1
VAD 9/18/76 OTIS AIRFORCE
JOB NO SHRIDR
PAGE 9
H0270.
21 POINT AVERAGE
LINE OF SIGHT VELOCITY
3.6
3.2
2.8
2.4
2.0
1.6
1.2
0.8
0.4
0
40
80
120
160
200
240
280
320
360
40
HORIZONTAL ANGLE IN DEGREES

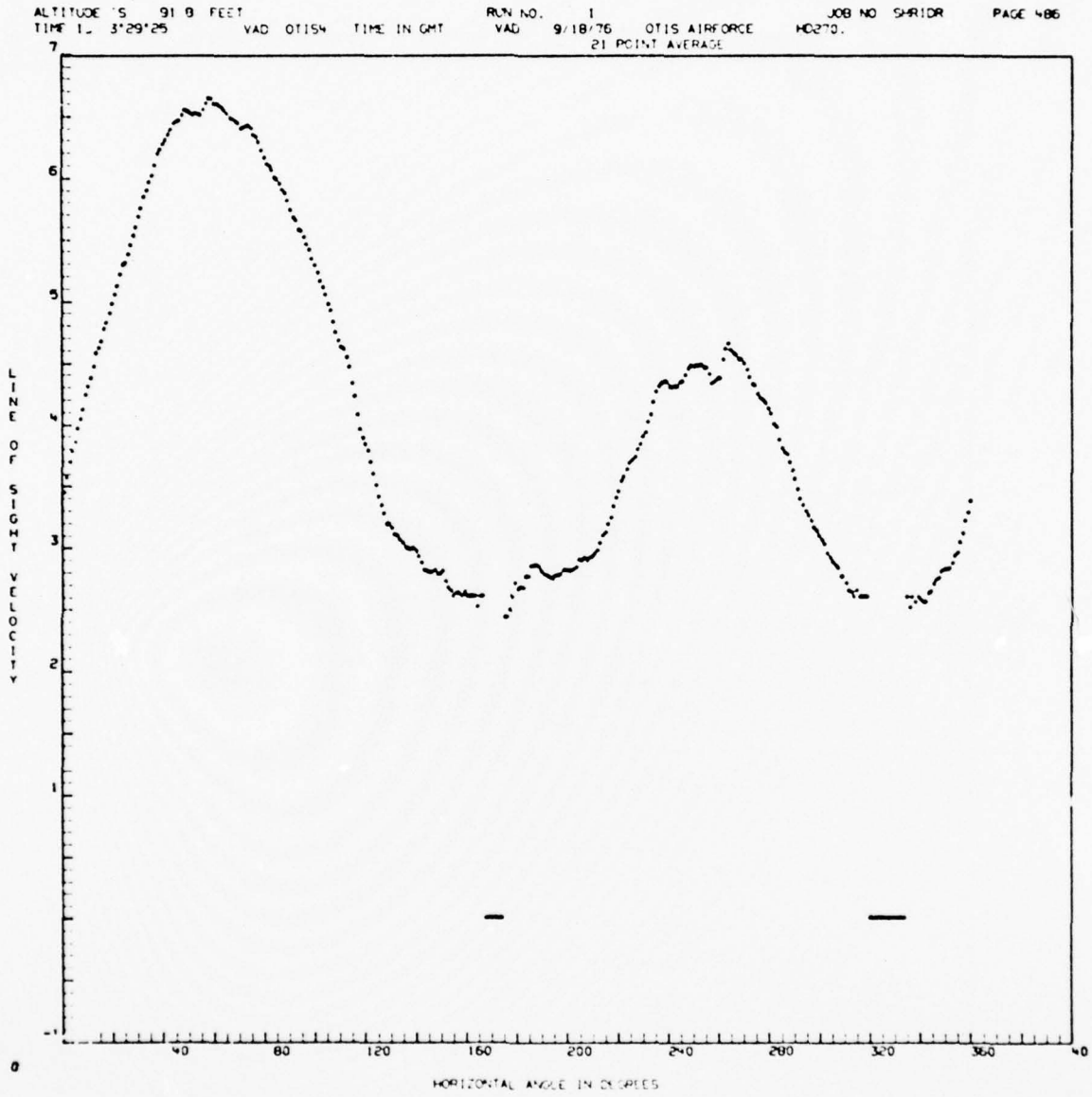

ALTITUDE IS 91.8 FEET
TIME IS 3*16*3
VAD OTIS4 TIME IN GMT
RUN NO. 1
VAD 9/18/76 OTIS AIRFORCE
JOB NO SHRIDR
PAGE 10
HD270.
COMPUTED FLIP
LINE OF SIGHT VELOCITY
4
3
2
1
-1
-2
-3
-4
-5
0
40
80
120
160
200
240
280
320
360
40
HORIZONTAL ANGLE IN DEGREES

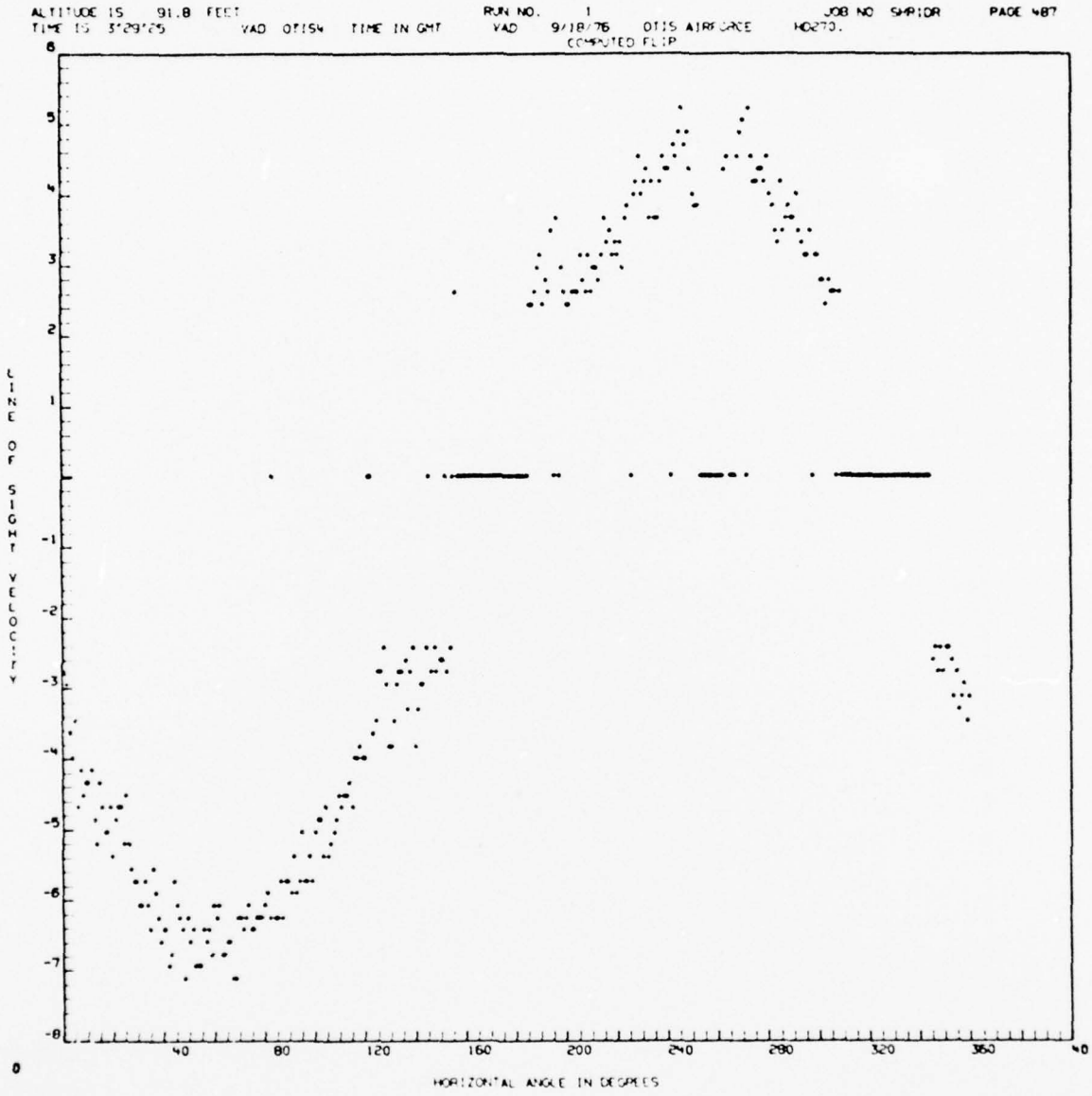

ALTITUDE IS 141.0 FEET
RUN NO. 1
JOB NO SHRIDR
PAGE 17
TIME IS 3:16:50
VAD OTIS4 TIME IN GMT
VAD 9/18/76 OTIS AIRFORCE
HO270.
LINE OF SIGHT VELOCITY
0
1
2
3
4
5
6
40
80
120
160
200
240
280
320
360
40
HORIZONTAL ANGLE IN DEGREES

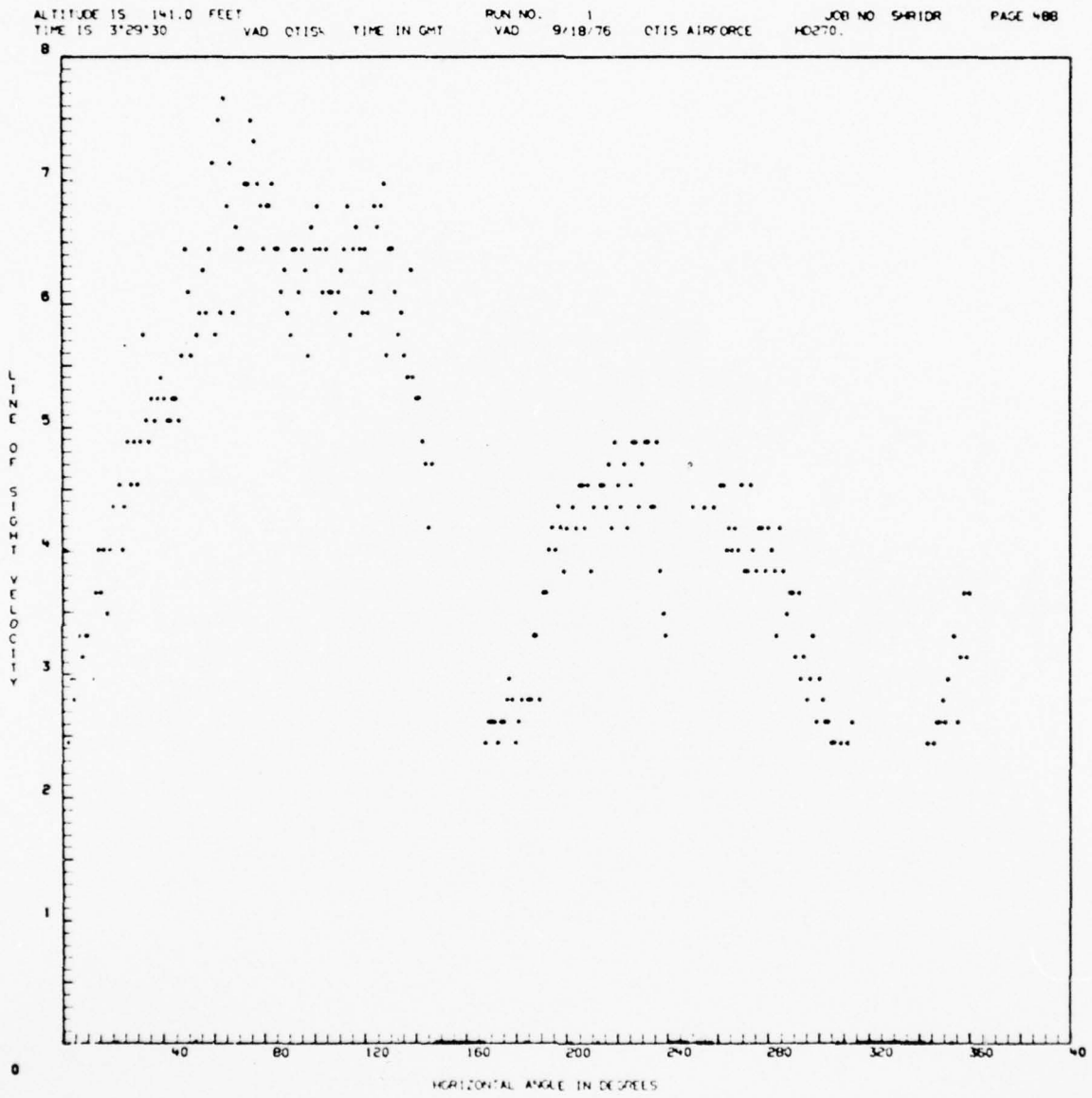

ALTITUDE IS 141.0 FEET
RUN NO. 1
JOB NO SHRIDR
PAGE 18
TIME IS 3*16*50
VAD OTIS4 TIME IN GMT
VAD 9/18/76 OTIS AIRFORCE HO270.
21 POINT AVERAGE
LINE OF SIGHT VELOCITY
5
4
3
2
1
0
40
80
120
160
200
240
280
320
360
HORIZONTAL ANGLE IN DEGREES

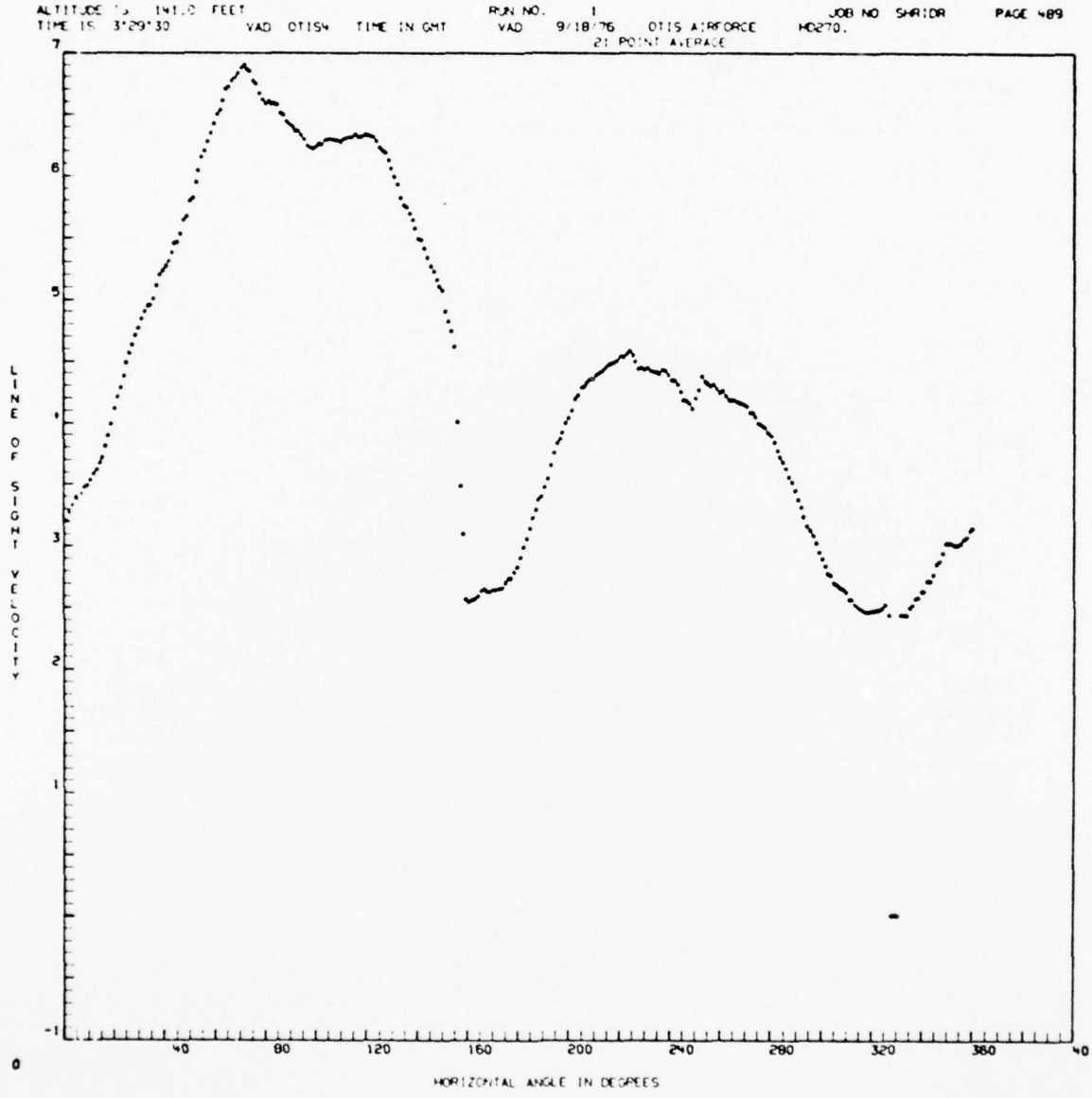

ALTITUDE IS 141.0 FEET
RUN NO. 1
JOB NO SHRIOR
PAGE 19
TIME IS 3:16:50
VAD OTIS4 TIME IN GMT
VAD 9/18/76 OTIS AIRFORCE H0270.
COMPUTED FLIP
LINE OF SIGHT VELOCITY
5
4
3
2
1
-1
-2
-3
-4
-5
-6
0
40
80
120
160
200
240
280
320
360
40
HORIZONTAL ANGLE IN DEGREES

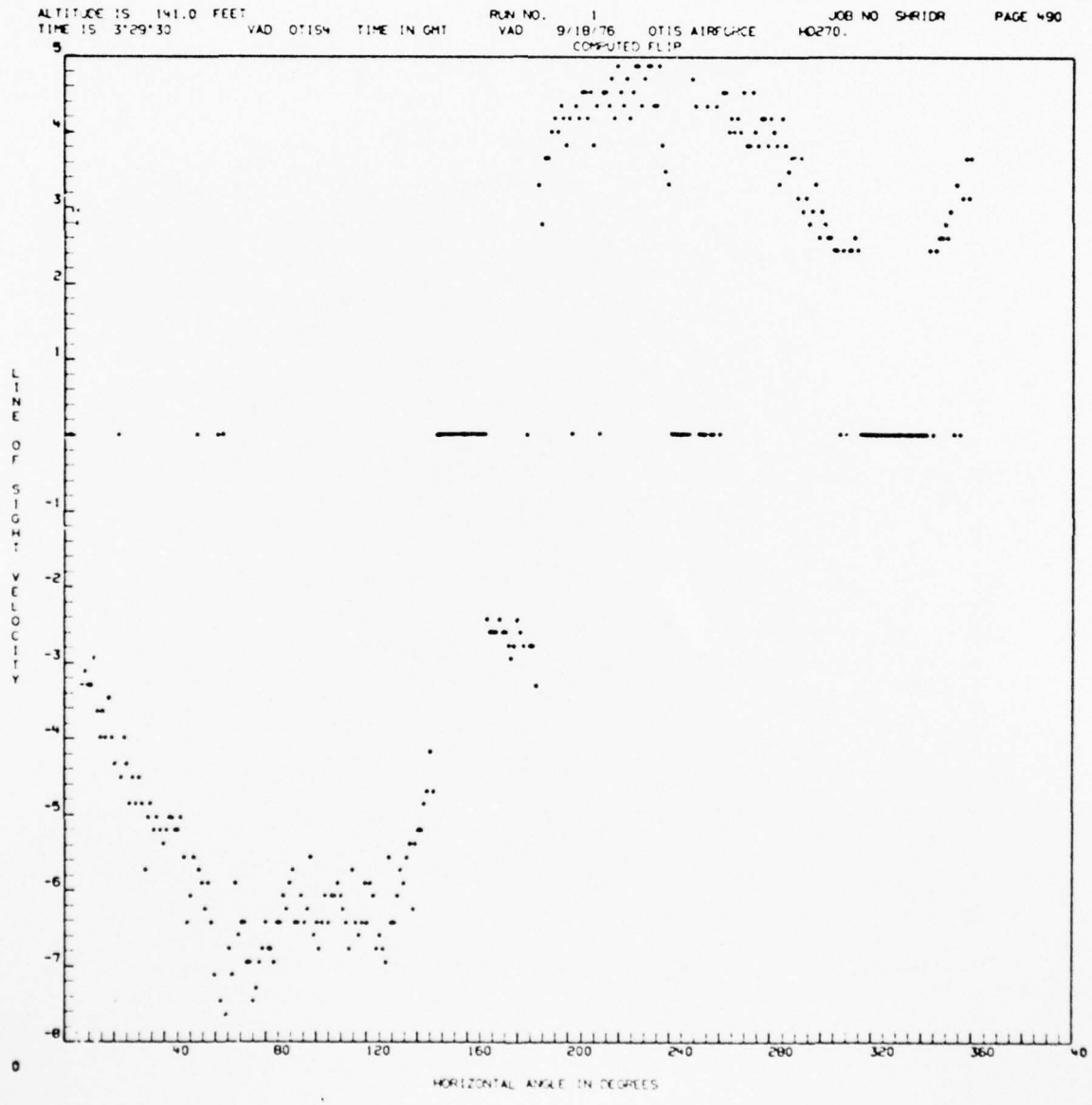

ALTITUDE IS 91.8 FEET
RUN NO. 1
JOB NO SHRIDR
PAGE 485
TIME IS 3'29'25
VAD OTIS4 TIME IN GMT
VAD 9/18/76 OTIS AIRFORCE
HO270.
LINE OF SIGHT VELOCITY
0
1
2
3
4
5
6
7
8
40
80
120
160
200
240
280
320
360
40
HORIZONTAL ANGLE IN DEGREES

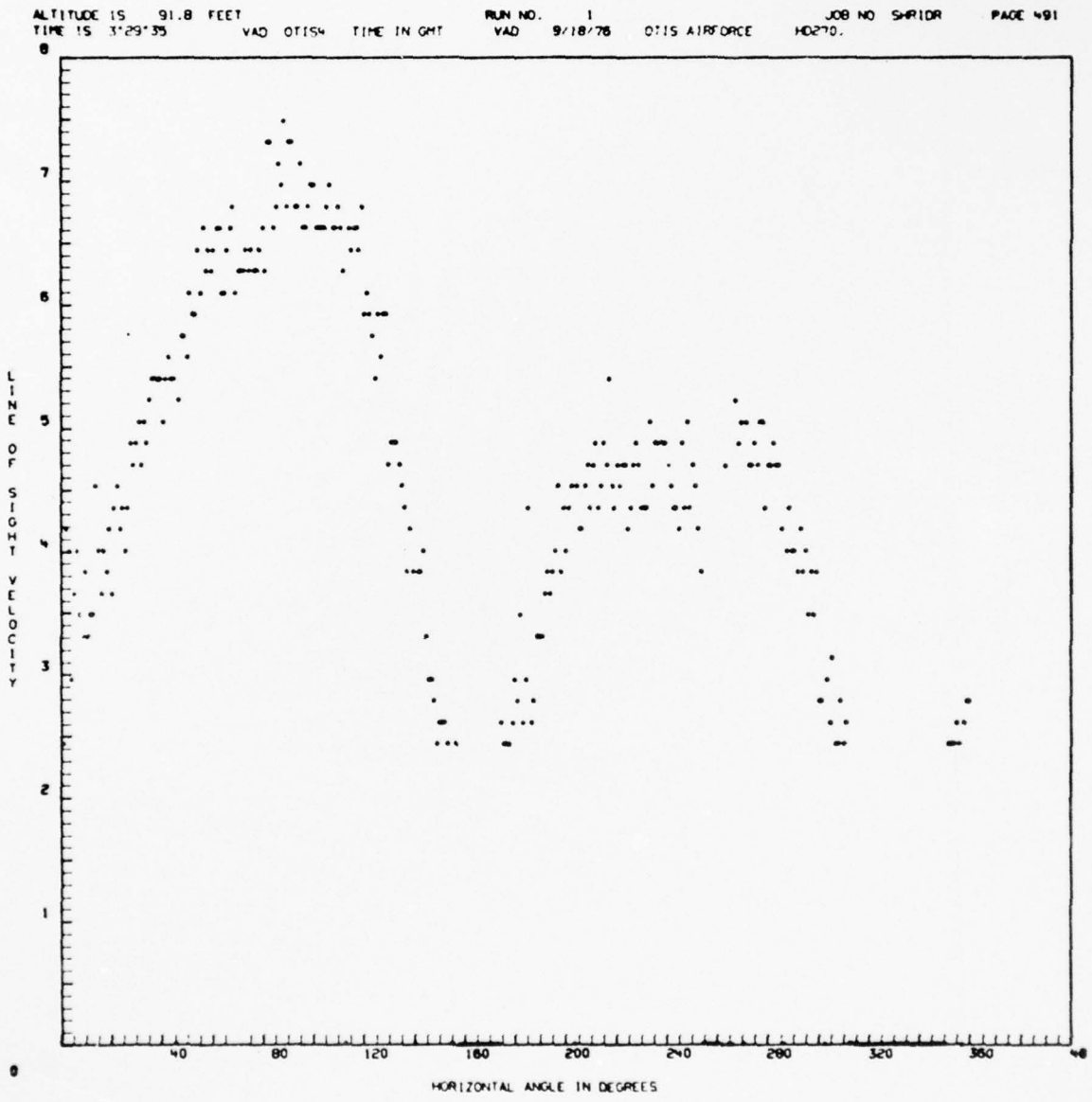

ALTITUDE IS 91 8 FEET
RUN NO. 1
JOB NO SHRIDR
PAGE 486
TIME I_ 3*29*25
VAD OTIS4 TIME IN GMT
VAD 9/18/76 OTIS AIRFORCE HD270.
21 POINT AVERAGE
LINE OF SIGHT VELOCITY
7
6
5
4
3
2
1
-1
0
40
80
120
160
200
240
280
320
360
40
HORIZONTAL ANGLE IN DEGREES


ALTITUDE IS 91.8 FEET
RUN NO. 1
JOB NO SMRIDR
PAGE 487
TIME IS 5'29'25
VAD OTIS4 TIME IN GMT
VAD 9/18/76 OTIS AIR FORCE
HD270.
COMPUTED FLIP
LINE OF SIGHT VELOCITY
6
5
4
3
2
1
-1
-2
-3
-4
-5
-6
-7
-8
0
40
80
120
160
200
240
280
320
360
40
HORIZONTAL ANGLE IN DEGREES


ALTITUDE IS 141.0 FEET
RUN NO. 1
JOB NO SHRIDR PAGE 488
TIME IS 3*29*30
VAD OTIS TIME IN GMT
VAD 9/18/76 OTIS AIRFORCE H0270.
LINE OF SIGHT VELOCITY
HORIZONTAL ANGLE IN DEGREES
0
1
2
3
4
5
6
7
8
40
80
120
160
200
240
280
320
360
40

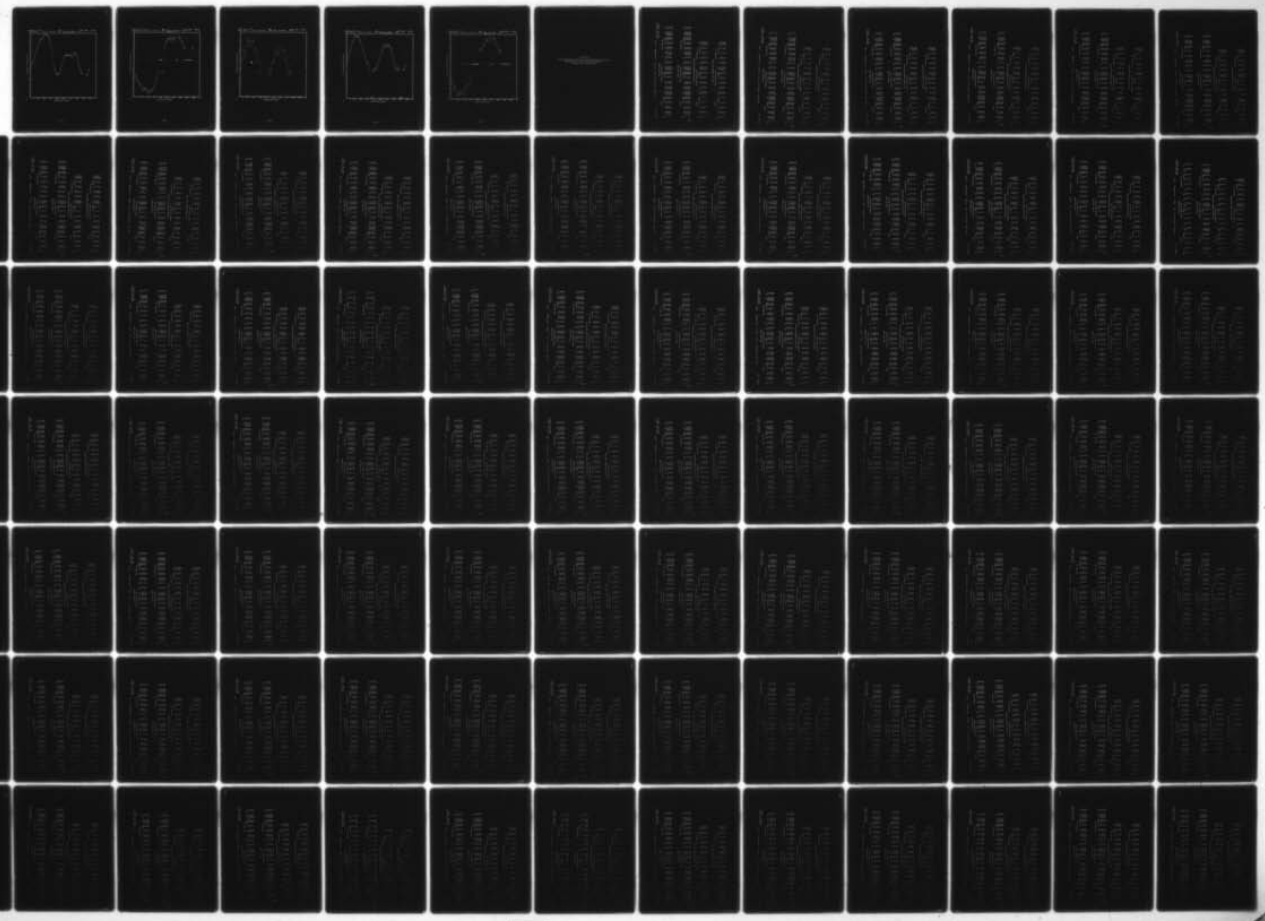

ALTITUDE IS 141.0 FEET
RUN NO. 1
JOB NO SHRIDR
PAGE 489
TIME IS 3*29'30
VAD OTIS4 TIME IN GMT
VAD 9/18/76 OTIS AIRFORCE H0270.
21 POINT AVERAGE
LINE OF SIGHT VELOCITY
7
6
5
4
3
2
1
0
-1
40
80
120
160
200
240
280
320
360
40
HORIZONTAL ANGLE IN DEGREES

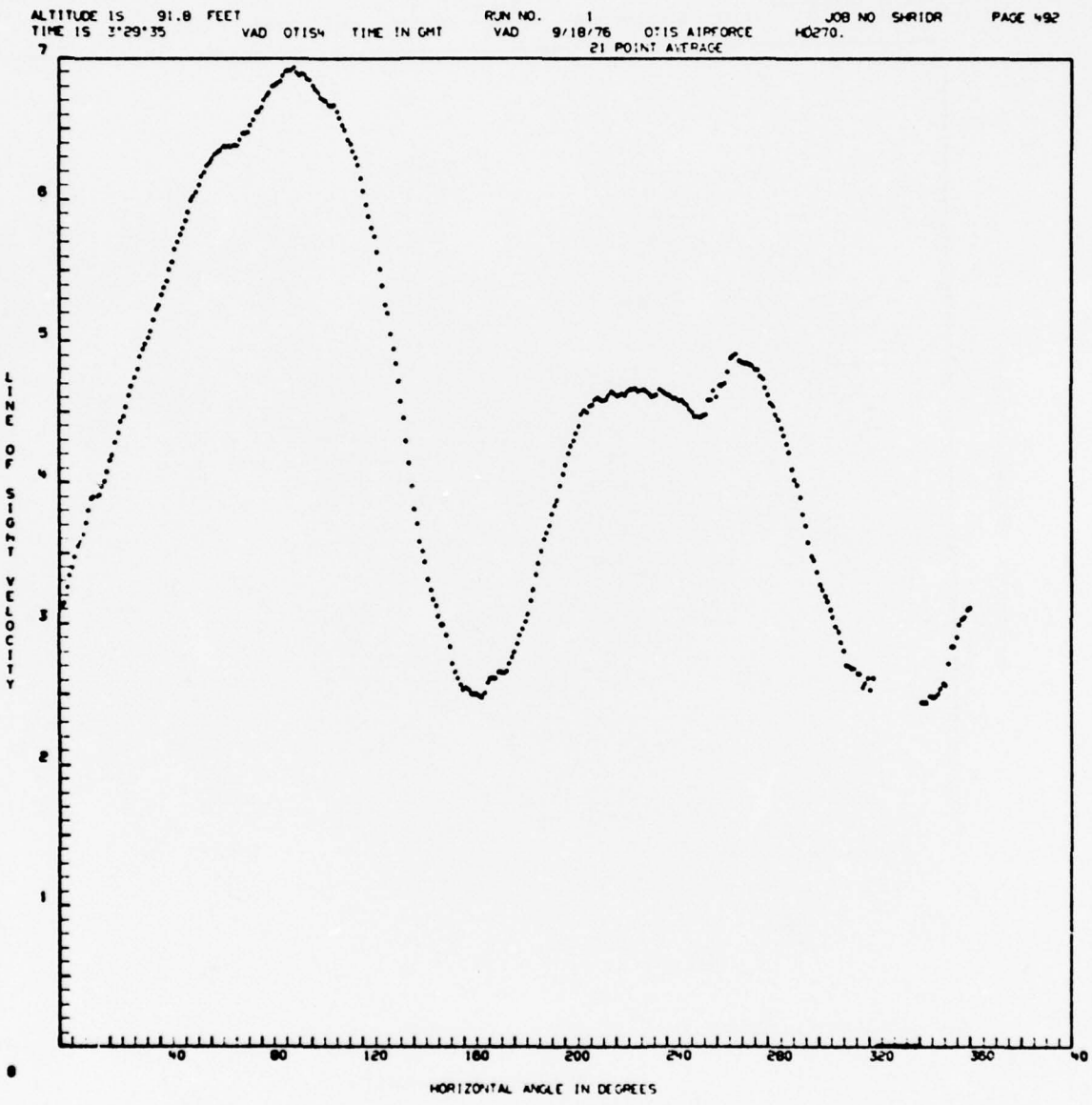

ALTITUDE IS 141.0 FEET
TIME IS 3'29'30
VAD OTIS4 TIME IN GMT
RUN NO. 1
VAD 9/18/76 OTIS AIRFORCE H0270.
JOB NO SHRIDR
PAGE 490
COMPUTED FLIP
LINE OF SIGHT VELOCITY
HORIZONTAL ANGLE IN DEGREES
5
4
3
2
1
-1
-2
-3
-4
-5
-6
-7
-8
0
40
80
120
160
200
240
280
320
360
40

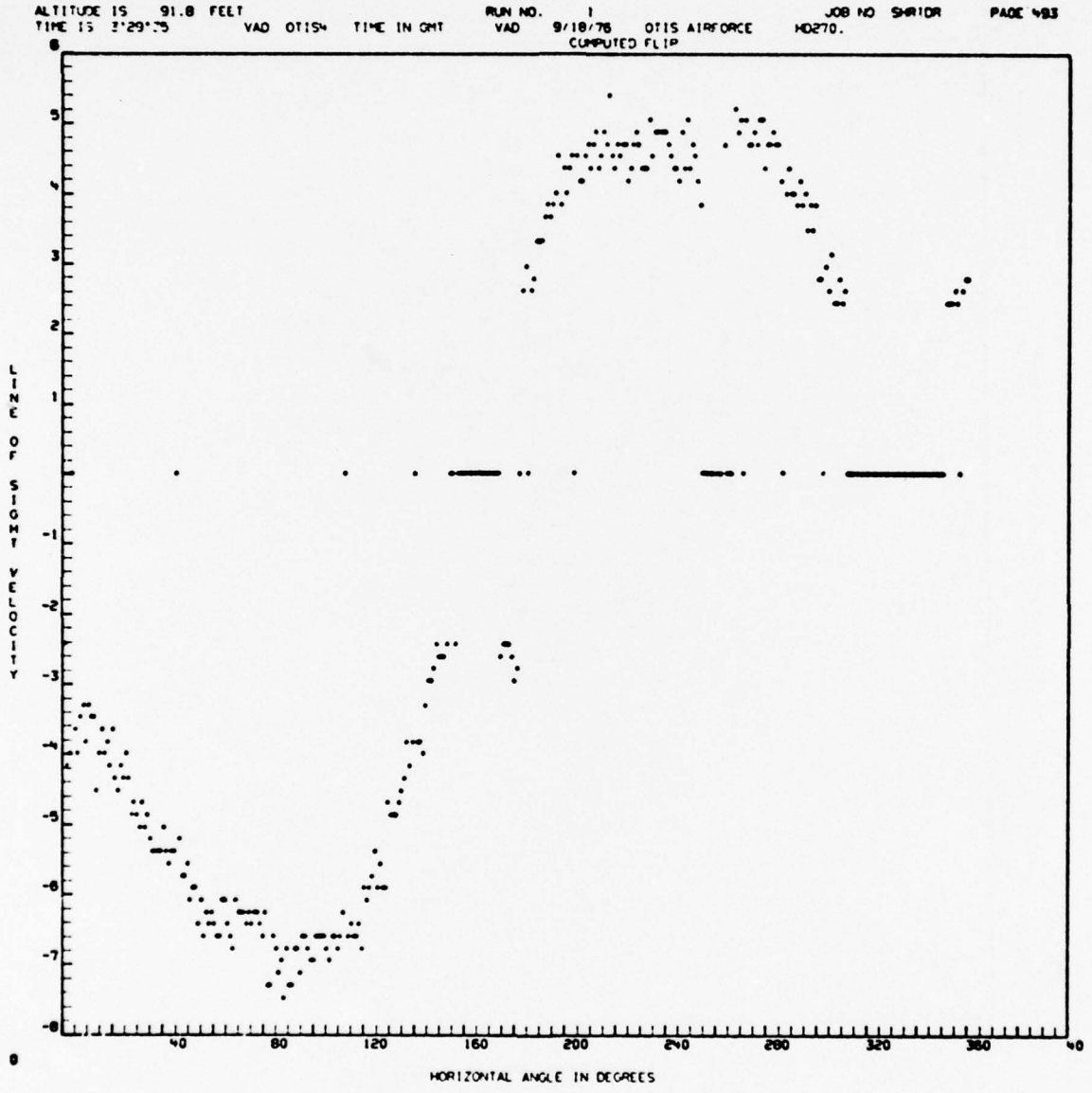

ALTITUDE IS 91.8 FEET
RUN NO. 1
JOB NO SHRIDR
PAGE 491
TIME IS 3'29'35
VAD OTIS4 TIME IN GMT
VAD 9/18/76 OTIS AIRFORCE
HD270.
LINE OF SIGHT VELOCITY
0
1
2
3
4
5
6
7
8
40
80
120
160
200
240
280
320
360
HORIZONTAL ANGLE IN DEGREES

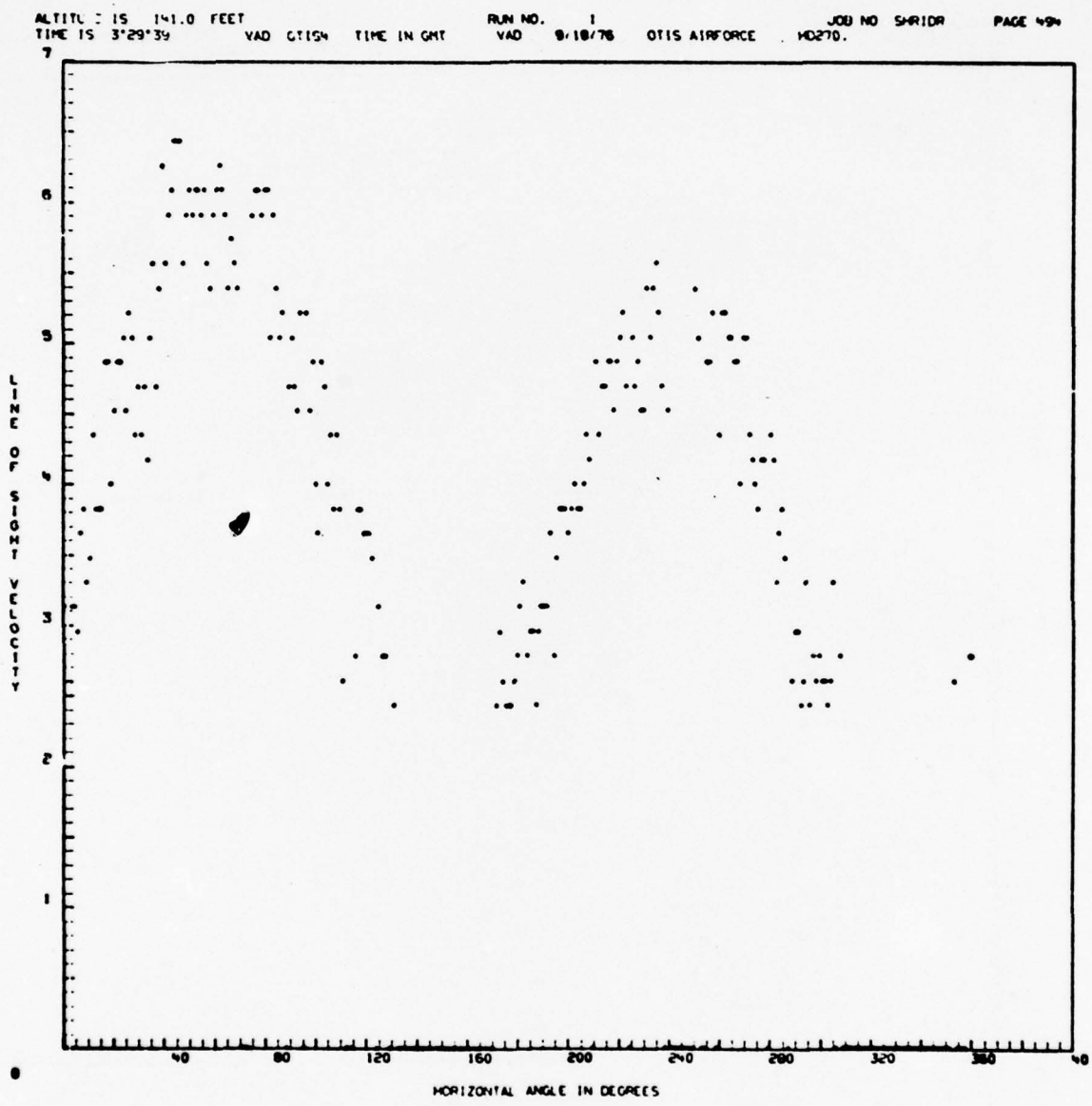
AD-A038 514 LOCKHEED MISSILES AND SPACE CO INC HUNTSVILLE ALA HU--ETC F/G 4/2
REMOTE WIND MEASUREMENT IN FOG USING LASER DOPPLER VELOCIMETRY.(U)
DEC 76 H R BRASHEARS, W R EBERLE F19628-76-C-0237
UNCLASSIFIED LMSC-HREC-TR-D497127 AFGL-TR-76-0313 NL

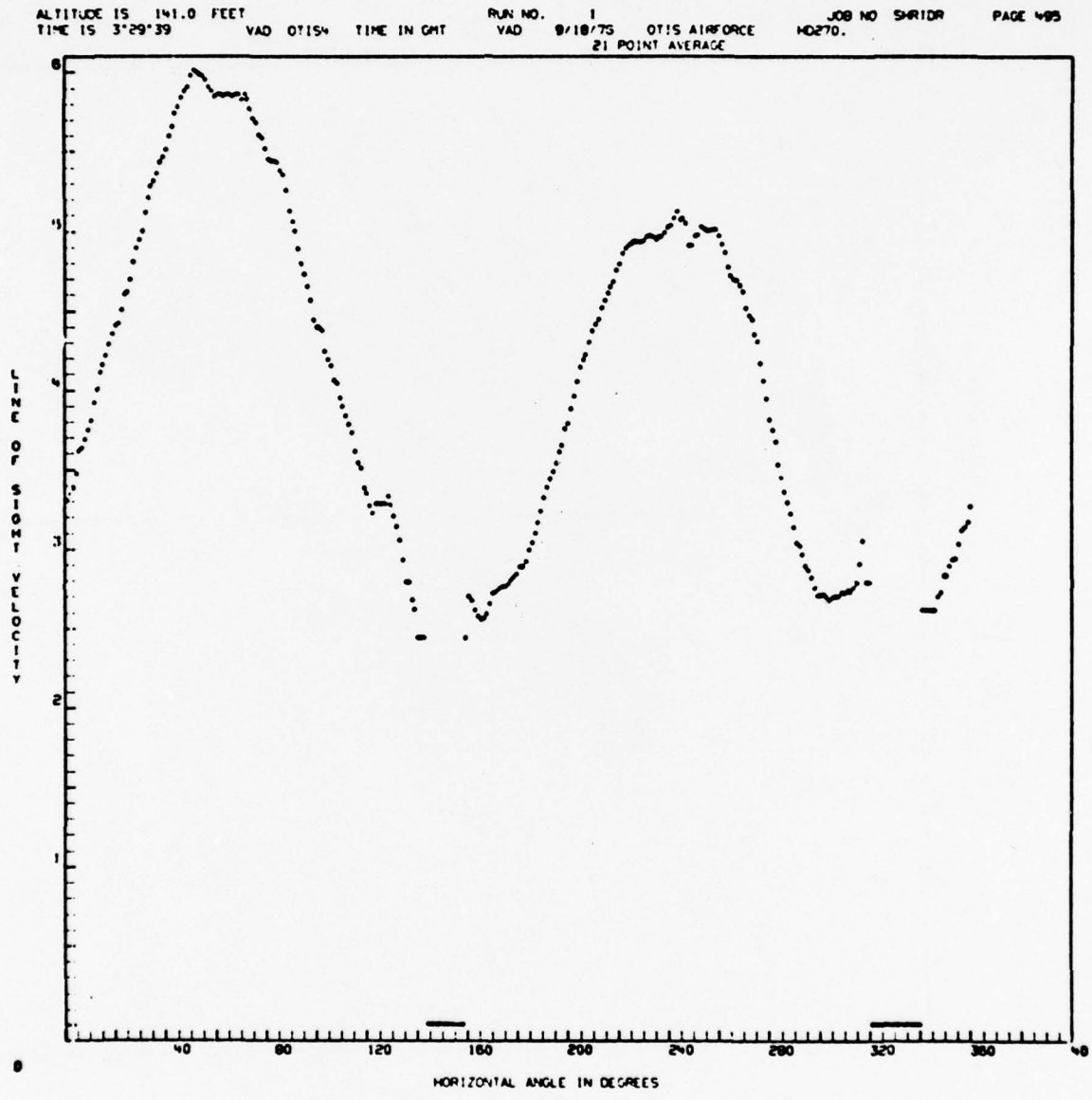
2 OF 3
AD A038 514

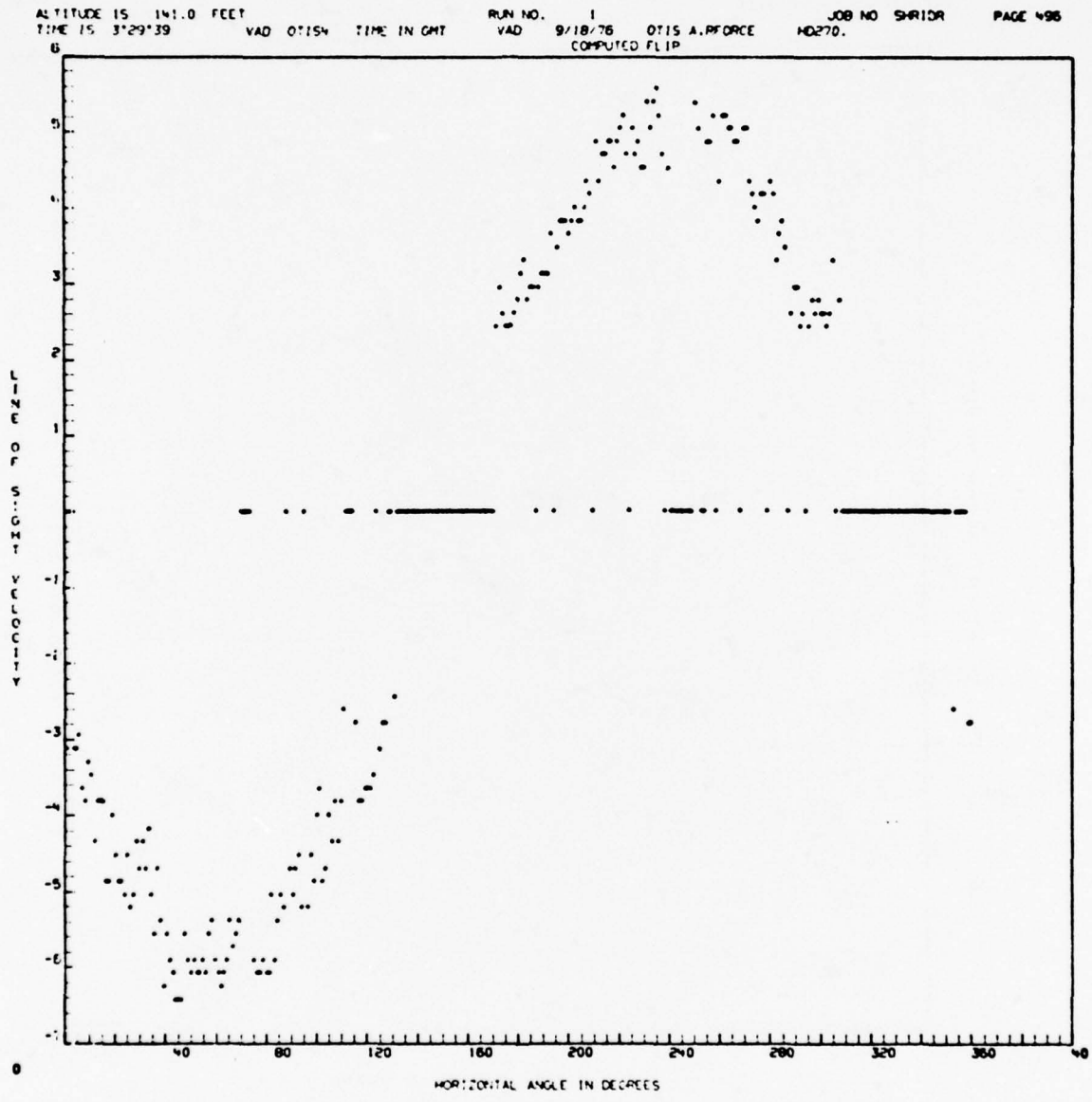



ALTITUDE IS 91.8 FEET
TIME IS 3:29:35
VAD OTIS4 TIME IN GMT
RUN NO. 1
VAD 9/18/76 OTIS AIRFORCE
JOB NO SHRIDR
PAGE 492
H0270.
21 POINT AVERAGE
LINE OF SIGHT VELOCITY
HORIZONTAL ANGLE IN DEGREES
0
1
2
3
4
5
6
7
40
80
120
160
200
240
280
320
360
40


ALTITUDE IS 91.8 FEET
RUN NO. 1
JOB NO SHRIDR
PAGE 483
TIME IS 3'29'.5
VAD OTIS4 TIME IN GMT
VAD 9/18/76 OTIS AIRFORCE H0270.
COMPUTED FLIP
LINE OF SIGHT VELOCITY
6
5
4
3
2
1
-1
-2
-3
-4
-5
-6
-7
-8
0
40
80
120
160
200
240
280
320
360
40
HORIZONTAL ANGLE IN DEGREES


ALTITUDE IS 141.0 FEET
TIME IS 3°29°39
VAD OTIS4 TIME IN GMT
RUN NO. 1
VAD 9/18/78 OTIS AIRFORCE HD270.
JOB NO SHRIDR
PAGE 494
LINE OF SIGHT VELOCITY
HORIZONTAL ANGLE IN DEGREES
0
1
2
3
4
5
6
7
40
80
120
160
200
240
280
320
360


ALTITUDE IS 141.0 FEET
TIME IS 3°29°39
VAD OTIS4 TIME IN GMT
RUN NO. 1
VAD 9/18/75 OTIS AIRFORCE
JOB NO SHRIDR
PAGE 495
HD270.
21 POINT AVERAGE
LINE OF SIGHT VELOCITY
0
1
2
3
4
5
6
40
80
120
160
200
240
280
320
360
HORIZONTAL ANGLE IN DEGREES


ALTITUDE IS 1411.0 FEET
TIME IS 3°29'39
VAD 0715H TIME IN GMT
RUN NO. 1
VAD 9/18/76 OTIS A.FORCE
JOB NO SHRIDR
PAGE 495
HD270.
COMPUTED FLIP
LINE OF SIGHT VELOCITY
HORIZONTAL ANGLE IN DEGREES
40
80
120
160
200
240
280
320
360

Appendix B

TABULAR DATA FOR WIND MEASURED AT OTIS AFB,
MASSACHUSETTS, IN FOG CONDITIONS
DURING SEPTEMBER 1976

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 9:20: 0
END TIME 9:25: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-166	162	49	234	134.3	-127	154	18	203	140.7	23	15	-138	188	-19	236	143.8	12
2	-142	185	49	237	142.4	-161	119	16	203	125.5	25	18	-172	145	-14	230	129.4	20
3	-160	175	54	238	137.4	-155	117	19	198	125.9	29	20	-173	148	-13	234	129.6	21
4	-147	180	50	234	140.7	-139	126	18	194	131.7	31	20	-157	158	-14	229	134.7	19
5	-135	173	54	221	142.0	-105	146	15	189	144.0	27	19	-117	169	-14	217	144.6	20

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-166	162	49	234	134.3	-127	154	18	203	140.7	23	15	-138	188	-19	236	143.8	12
2	-153	175	49	235	138.7	-145	135	17	203	132.5	24	17	-156	165	-17	233	136.0	17
3	-155	175	50	236	138.3	-148	129	18	202	130.4	25	18	-162	159	-16	233	134.0	18
4	-153	176	50	236	138.9	-146	128	18	200	130.8	27	18	-160	159	-15	232	134.2	18
5	-150	176	51	233	139.5	-138	132	17	197	133.3	27	18	-152	161	-15	229	13641	19

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	18	15	6	4	5.6	39	15	12	22	10.1	32	13	7	5	8.4
2	33	18	4	3	9.1	11	39	15	16	10.7	22	45	10	10	12.6
3	12	6	4	7	2.6	15	44	18	23	12.1	24	52	12	15	13.8
4	19	19	5	3	6.5	30	39	16	9	14.7	32	43	9	10	13.5
5	15	9	5	5	4.3	47	42	15	20	19.6	54	50	11	11	20.4

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	18	15	6	4	5.6	39	15	12	22	10.1	32	13	7	5	8.4
2	29	20	5	4	8.5	31	35	13	19	12.7	31	40	9	9	12.8
3	24	17	5	5	7.1	27	38	14	19	12.6	30	44	10	11	13.1
4	23	17	5	5	6.9	28	37	15	17	12.9	30	43	9	11	12.9
5	23	16	5	8	6.5	35	38	14	18	14.9	38	43	9	12	14.8

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 9:20: 0
END TIME 9:25: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-192	178	47	263	132.8	-169	168	26	240	134.6	13	10	-178	197	-22	266	137.7	8
2	-196	180	46	267	132.4	-174	174	28	247	134.7	12	8	-181	202	-22	272	138.0	9
3	-175	200	45	267	138.7	-161	175	30	239	137.1	14	11	-172	208	-23	270	140.3	7
4	-168	183	49	249	137.2	-148	176	27	231	139.7	11	5	-159	198	-23	254	141.0	7
5	-156	177	55	237	138.3	-114	145	15	190	141.2	26	15	-139	173	-14	231	140.3	22

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-192	178	47	263	132.8	-169	168	26	240	134.6	13	10	-178	197	-22	266	137.7	8
2	-194	179	47	265	132.6	-172	171	27	243	134.7	12	9	-179	199	-22	269	137.8	8
3	-188	186	46	266	134.6	-168	172	28	242	135.5	13	10	-177	202	-22	269	138.7	8
4	-183	185	47	262	135.2	-163	173	28	239	136.5	12	8	-172	201	-22	266	139.2	8
5	-178	184	48	257	135.9	-153	167	25	229	137.5	15	10	-166	195	-21	259	139.5	11

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	6	6	3	3	1.7	15	17	7	13	4.6	3	3	1	1	.8
2	8	9	2	2	2.5	7	11	4	7	2.5	3	4	1	2	1.0
3	19	14	4	6	4.8	8	15	4	11	3.1	5	5	1	5	1.0
4	9	10	4	5	3.0	6	3	3	5	1.2	4	6	1	6	1.2
5	11	10	3	4	3.4	35	44	13	28	16.0	40	54	10	11	17.3

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	6	6	3	3	1.7	15	17	7	13	4.6	3	3	1	1	.8
2	7	7	2	3	2.1	12	14	6	11	3.5	3	4	1	3	.9
3	15	14	3	4	4.3	11	14	5	11	3.5	5	6	1	4	1.5
4	16	13	4	8	4.1	14	12	5	11	3.6	9	6	1	8	1.7
5	18	13	5	13	4.1	28	24	9	25	7.6	23	26	5	16	7.4

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 9:25: 0
END TIME 9:30: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-122	166	51	208	143.3	-120	129	20	177	137.4	23	22	-132	166	-24	213	141.3	8
2	-129	152	49	201	139.5	-101	111	13	165	134.6	32	29	-116	137	-14	203	137.1	18
3	-107	146	51	195	144.0	-87	116	16	175	138.6	24	21	-101	127	-14	202	138.8	22
4	-135	133	50	191	134.2	-138	30	3	148	100.4	40	40	-172	21	-2	188	97.0	29
5	-136	128	52	188	133.0	-149	75	12	169	115.8	27	21	-156	98	-16	190	121.5	17

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-122	166	51	208	143.3	-120	129	20	177	137.4	23	22	-132	166	-24	213	141.3	8
2	-126	158	50	204	141.1	-109	119	16	170	135.8	28	26	-123	149	-18	207	138.9	14
3	-120	154	50	201	142.0	-101	118	16	172	136.7	27	24	-115	142	-17	206	138.8	17
4	-124	149	50	199	140.1	-110	96	13	166	127.7	30	28	-130	112	-13	201	128.4	20
5	-126	144	51	196	138.5	-119	91	12	167	125.0	29	27	-135	109	-14	199	126.8	19

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	19	21	5	6	7.6	27	12	12	26	4.4	10	12	1	3	4.0
2	18	12	7	6	5.9	37	65	14	21	28.8	46	90	13	8	31.5
3	72	33	9	5	23.7	85	76	15	38	37.3	98	90	13	21	40.0
4	8	12	2	3	4.3	5	50	8	20	17.2	20	74	11	7	23.6
5	12	14	1	2	5.5	4	29	7	13	9.4	16	45	10	5	14.8

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	19	21	5	6	7.6	27	12	12	26	4.4	10	12	1	3	4.0
2	18	17	6	7	6.6	33	49	13	23	21.4	36	69	11	8	23.5
3	43	23	7	8	14.0	54	57	13	28	26.6	61	74	11	13	28.8
4	37	23	6	8	12.7	49	67	13	28	29.1	59	90	13	14	32.8
5	34	23	5	8	11.7	46	61	12	25	26.3	53	82	12	14	29.6

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 9:25: 0
END TIME 9:30: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-155	160	51	224	135.8	-111	149	22	187	143.0	16	6	-131	180	-21	224	143.8	13
2	-128	165	56	210	141.9	-105	127	18	167	139.9	13	11	-135	159	-22	210	139.4	13
3	-129	146	53	197	138.3	-97	124	17	158	141.6	14	4	-118	159	-20	199	143.1	16
4	-111	136	47	180	140.4	-63	103	7	123	148.4	18	12	-76	158	-10	180	153.8	27
5	-122	104	43	175	131.8	-78	71	9	108	131.5	18	16	-124	113	-12	174	131.8	27

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-155	160	51	224	135.8	-111	149	22	187	143.0	16	6	-131	180	-21	224	143.8	13
2	-143	162	53	218	138.6	-108	139	20	178	141.6	15	9	-133	170	-21	217	141.8	13
3	-138	157	53	211	138.5	-104	134	19	171	141.6	14	7	-127	166	-21	211	142.2	14
4	-132	152	52	204	139.0	-95	127	16	160	143.2	15	8	-116	164	-18	204	144.9	17
5	-130	143	50	198	137.6	-92	116	15	150	141.0	16	10	-117	155	-17	198	142.4	19

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	15	16	3	9	5.1	11	11	4	9	3.9	13	9	3	5	4.0
2	14	8	5	4	4.4	10	23	9	10	8.1	15	20	7	8	6.6
3	21	20	5	6	8.3	10	12	3	11	4.0	15	14	4	7	5.5
4	31	28	6	4	13.3	21	12	2	7	10.7	33	23	3	3	12.9
5	43	38	8	9	25.2	14	21	2	5	13.1	33	37	5	7	16.2

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	15	16	3	9	5.1	11	11	4	9	3.9	13	9	3	5	4.0
2	20	13	5	10	5.6	11	20	7	14	6.1	13	18	5	9	5.6
3	21	17	5	13	6.4	12	19	6	16	5.4	15	17	5	12	5.5
4	25	21	6	18	8.2	23	22	7	25	7.3	30	19	6	17	9.0
5	34	31	7	20	12.9	22	31	7	31	9.6	30	30	7	20	11.6

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 9:30: 0
END TIME 9:35: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-156	114	53	194	125.9	-155	101	21	186	123.0	17	9	-152	130	-23	201	130.4	12
2	-145	88	50	190	117.9	-152	97	25	182	122.4	13	8	-161	111	-21	197	124.3	13
3	-141	57	42	189	107.3	-153	70	18	173	113.7	17	14	-171	74	-15	193	113.0	17
4	-177	81	48	196	114.6	-160	85	22	183	117.6	11	12	-174	99	-21	202	119.4	12
5	-179	100	48	207	119.1	-155	67	20	180	110.2	24	22	-175	79	-16	209	112.0	15

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-156	114	53	194	125.9	-155	101	21	186	123.0	17	9	-152	130	-23	201	130.4	12
2	-151	100	52	192	121.6	-153	99	23	184	122.6	15	9	-157	120	-22	199	127.1	13
3	-161	86	49	191	117.1	-153	90	21	180	119.8	16	10	-161	105	-20	197	122.7	14
4	-165	85	49	192	116.4	-155	88	22	181	119.2	14	11	-165	104	-20	198	121.8	14
5	-168	88	48	195	116.9	-155	84	21	181	117.5	16	13	-167	99	-19	200	120.0	14

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	11	15	2	5	5.3	3	8	3	4	2.3	4	6	1	3	1.8
2	14	30	6	3	10.0	13	16	7	9	6.1	8	19	4	3	5.9
3	13	85	6	6	28.0	11	43	11	13	14.5	11	49	8	5	15.1
4	9	20	3	5	6.3	13	22	6	13	6.9	6	17	2	5	5.0
5	8	14	3	2	4.5	22	65	14	23	24.0	5	89	13	8	26.4

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	11	15	2	5	5.3	3	8	3	4	2.3	4	6	1	3	1.8
2	13	27	4	5	8.9	10	13	6	7	4.6	8	17	3	3	5.4
3	13	54	7	5	17.8	16	28	8	10	9.5	11	36	6	5	11.3
4	14	47	6	5	15.5	11	27	7	11	8.8	11	32	5	5	10.0
5	14	43	5	8	14.0	13	36	9	13	13.0	11	47	7	7	14.4

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 9:30: 0
END TIME 9:35: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-114	119	31	172	136.2	-90	9	9	95	94.7	45	26	-167	24	2	174	98.5	33
2	-151	38	23	175	102.0	-85	17	8	98	98.5	31	26	-147	31	-3	168	101.8	25
3	-158	74	32	179	115.5	-84	34	7	103	110.7	24	17	-139	65	-7	173	113.8	26
4	-175	67	40	190	110.4	-86	26	5	104	103.5	27	27	-146	36	-4	172	103.2	27
5	-154	106	27	192	124.2	-101	31	5	110	106.9	16	14	-162	48	-7	175	106.8	27

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-114	119	31	172	136.2	-90	9	9	95	94.7	45	26	-167	24	2	174	98.5	33
2	-131	81	28	174	120.4	-88	12	8	96	96.5	38	26	-158	27	0	171	100.0	29
3	-140	79	29	175	118.9	-87	19	8	98	100.9	34	23	-152	39	-2	172	104.4	28
4	-148	76	32	179	116.9	-87	21	7	100	101.6	32	24	-150	38	-3	172	104.1	28
5	-149	82	31	182	118.3	-89	23	7	102	102.6	29	22	-153	40	-4	172	104.6	28

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	40	35	5	9	17.5	4	28	2	5	16.9	14	42	10	8	14.6
2	23	85	2	4	30.9	11	48	4	10	29.7	16	77	10	7	27.7
3	25	31	10	9	12.5	16	48	3	6	30.1	27	82	8	3	29.8
4	7	33	13	10	10.0	13	54	5	10	32.7	22	88	14	7	31.7
5	27	37	20	16	13.2	10	27	2	6	14.6	22	38	6	15	13.6

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	40	35	5	9	17.5	4	28	2	5	16.9	14	42	10	8	14.6
2	37	73	6	7	29.4	8	37	3	7	22.7	18	58	10	8	20.7
3	35	62	7	8	25.0	11	41	3	7	25.3	22	67	10	7	24.0
4	34	54	10	11	22.5	11	43	4	8	26.5	22	70	11	7	25.3
5	33	54	12	13	21.0	12	40	4	9	24.6	22	65	10	9	23.4

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 9:35: 0
END TIME 9:40: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-175	110	44	208	122.1	-166	108	24	198	122.9	5	7	-172	122	-21	212	125.2	9
2	-177	98	44	205	118.9	-156	69	22	180	111.2	20	22	-175	83	-16	209	113.6	14
3	-170	111	45	204	122.9	-163	100	27	192	121.4	10	11	-168	119	-24	207	125.1	9
4	-185	69	47	199	110.4	-150	108	13	186	125.4	23	15	-166	118	-16	205	125.1	18
5	-186	70	50	200	110.6	-150	112	13	188	126.5	24	13	-166	119	-16	205	125.5	18

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-175	110	44	208	122.1	-166	108	24	198	122.9	5	7	-172	122	-21	212	125.2	9
2	-176	104	44	206	120.4	-161	87	23	189	116.6	13	15	-173	101	-18	210	118.9	12
3	-174	106	44	205	121.2	-161	91	24	190	118.1	12	14	-172	107	-20	209	120.9	11
4	-177	97	45	204	118.6	-159	95	22	189	119.9	15	14	-171	109	-19	208	121.9	13
5	-178	92	46	203	117.0	-157	98	20	189	121.1	17	14	-170	111	-19	208	122.6	14

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	3	7	3	2	2.0	2	1	0	2	.2	1	3	1	1	.6
2	11	22	4	3	6.9	20	59	13	21	21.9	7	84	11	6	24.8
3	8	9	5	2	3.2	4	14	3	5	4.0	3	7	2	3	1.9
4	8	19	2	2	5.8	4	11	3	6	3.0	5	10	3	2	3.0
5	7	19	3	2	5.6	4	9	1	2	2.7	5	8	1	1	2.5

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	3	7	3	2	2.0	2	1	0	2	.2	1	3	1	1	.6
2	8	18	3	3	5.3	15	46	9	18	16.6	5	63	8	4	18.6
3	8	15	4	3	4.8	13	39	8	15	13.9	5	52	7	4	15.5
4	9	23	4	4	6.8	12	35	8	13	12.6	5	46	7	4	13.6
5	9	24	4	4	7.3	11	32	8	12	11.6	6	41	6	4	12.3

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 9:35: 0
END TIME 9:40: 0

ONE MINUTE MEANS

	PEAKS					I	FOURIER COEFFICIENTS						I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-159	56	11	175	109.8	-90	37	2	103	114.2	33	29	-139	70	-2	163	117.2	21
2	-187	68	55	202	109.7	-106	23	5	110	102.2	29	15	-173	37	-9	178	101.8	28
3	-176	113	47	211	122.5	-121	68	9	141	119.2	14	9	-173	114	-20	209	123.3	20
4	-193	46	54	202	103.2	-118	11	3	122	95.1	18	18	-183	24	-14	191	97.1	27
5	-190	54	57	202	106.1	-85	28	7	124	104.4	21	26	-123	41	-11	190	109.6	32

CUMULATIVE MEANS

	PEAKS					I	FOURIER COEFFICIENTS						I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-159	56	11	175	109.8	-90	37	2	103	114.2	33	29	-139	70	-2	163	117.2	21
2	-172	61	31	187	109.8	-98	31	4	106	108.6	31	22	-154	55	-5	170	110.1	24
3	-173	80	37	195	114.2	-106	44	6	118	112.3	25	18	-161	76	-10	184	114.7	23
4	-178	72	41	197	111.7	-109	36	5	119	108.4	23	18	-166	64	-11	185	110.6	24
5	-180	68	44	198	110.6	-104	35	5	120	107.6	23	19	-158	60	-11	186	110.4	25

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					I,	FOURIER COEFFICIENTS				I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	31	37	19	13	16.0	28	22	2	15	20.3	33	38	10	7	18.1	
2	7	27	14	10	7.4	17	8	2	10	3.8	15	19	5	16	5.7	
3	8	23	6	6	6.4	7	11	2	5	5.1	9	14	2	3	4.3	
4	11	36	6	4	10.8	5	27	2	5	12.8	5	48	4	8	14.6	
5	21	38	7	4	12.5	61	79	8	37	54.2	96	118	10	12	55.4	

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					I,	FOURIER COEFFICIENTS				I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	31	37	19	13	16.0	28	22	2	15	20.3	33	38	10	7	18.1	
2	27	32	28	18	12.3	24	18	2	16	15.8	31	35	8	14	15.5	
3	22	38	24	19	12.1	23	24	3	21	13.9	27	41	10	22	14.1	
4	22	40	22	17	12.5	21	28	3	19	15.3	25	47	9	20	15.9	
5	22	39	21	15	12.5	32	41	4	23	25.8	48	64	9	19	26.4	

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 9:40: 0
END TIME 9:45: 0

ONE MINUTE MEANS

	PEAKS					I	FOURIER COEFFICIENTS						I	SINE WAVE FIT					
MIN	U	V	#	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-171	29	29	185	96.6	-30	42	-3	98	137.1	26	27	-57	83	-7	171	137.8	26
2	-132	90	15	171	122.9	3	66	-3	96	160.5	34	21	9	115	-7	168	162.1	26
3	-103	-37	34	133	67.7	-7	94	-6	101	175.2	52	15	-10	148	-2	155	174.8	18
4	-81	56	25	130	121.1	-72	-31	9	99	67.6	54	23	-87	-8	-27	113	94.7	19
5	-175	24	44	193	96.3	-93	-30	11	112	69.9	41	24	-149	-12	-10	167	81.2	31

CUMULATIVE MEANS

	PEAKS					I	FOURIER COEFFICIENTS						I	SINE WAVE FIT					
MIN	U	V	#	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-171	29	29	185	96.6	-30	42	-3	98	137.1	26	27	-57	83	-7	171	137.8	26
2	-154	55	23	179	107.9	-16	52	-3	97	147.1	30	24	-28	97	-7	170	148.2	26
3	-139	27	26	165	95.8	-13	65	-4	98	155.5	36	21	-23	112	-6	165	156.8	24
4	-124	34	26	156	102.4	-28	40	0	98	132.7	41	22	-39	81	-11	152	140.7	23
5	-133	33	29	163	101.3	-40	27	1	101	121.3	41	22	-59	64	-11	154	129.9	24

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					I,	FOURIER COEFFICIENTS				I	SINE WAVE FIT				
MIN	U	V	#	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	33	65	30	29	23.2	50	74	6	12	64.3	90	118	6	18	61.6
2	24	62	34	10	22.9	26	73	9	6	65.9	45	125	4	7	65.9
3	38	77	32	27	37.2	38	8	4	3	22.9	53	14	12	18	19.1
4	62	71	35	24	46.5	16	61	5	6	39.2	49	77	25	52	53.8
5	34	87	16	45	23.9	20	57	3	16	29.9	40	82	10	48	25.4

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					I,	FOURIER COEFFICIENTS				I	SINE WAVE FIT				
MIN	U	V	#	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	33	65	30	29	23.2	50	74	6	12	64.3	90	118	6	18	61.6
2	35	69	31	23	26.0	44	72	7	10	63.6	79	117	5	14	62.2
3	42	82	31	32	34.4	41	63	6	9	55.5	72	100	8	16	54.0
4	53	79	31	33	38.6	45	75	8	8	64.4	72	108	17	37	59.8
5	54	79	30	38	36.1	48	76	9	11	64.1	79	109	16	39	59.5

HEIGHT = 28. VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

START TIME 9:40: 0
END TIME 9:45: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-170	99	45	198	120.2	-166	99	22	194	120.7	4	4	-171	110	-21	204	122.6	15
2	-185	87	47	206	115.0	-123	100	12	161	129.6	25	19	-162	135	-13	214	129.8	23
3	-168	59	34	188	109.5	-110	48	5	127	112.5	23	20	-160	80	-11	189	115.6	25
4	-162	54	31	177	108.2	-111	16	8	120	98.4	23	22	-163	26	-5	180	98.6	29
5	-191	86	59	211	114.0	-156	63	21	175	112.3	19	7	-181	97	-21	211	117.7	20

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-170	99	45	198	120.2	-166	99	22	194	120.7	4	4	-171	110	-21	204	122.6	15
2	-177	93	46	202	117.6	-144	100	17	178	125.2	15	12	-166	122	-17	209	126.2	19
3	-174	80	42	197	114.6	-132	81	13	159	120.5	18	15	-164	107	-15	202	122.3	21
4	-171	74	39	192	113.1	-127	65	11	150	115.2	19	17	-164	87	-12	197	116.6	23
5	-175	76	43	196	113.3	-132	65	13	155	114.6	19	15	-167	89	-14	199	116.8	23

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	6	6	3	2	2.3	5	6	2	4	2.1	5	7	1	3	2.1
2	11	20	14	8	6.0	32	18	11	23	10.7	30	26	11	6	10.6
3	25	59	14	8	19.7	14	42	5	13	19.5	20	60	6	9	19.6
4	16	46	10	10	15.6	14	43	8	6	22.2	18	76	6	7	25.3
5	12	15	8	17	2.7	38	40	11	22	17.6	28	46	10	16	14.3

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	6	6	3	2	2.3	5	6	2	4	2.1	5	7	1	3	2.1
2	11	16	10	7	5.1	31	13	9	23	8.7	21	22	8	7	8.2
3	17	40	13	10	12.7	31	37	10	32	14.6	20	44	8	13	14.0
4	18	42	13	13	13.4	29	47	9	33	18.8	19	62	8	15	19.7
5	19	38	14	15	12.1	32	45	10	32	18.4	22	59	9	16	18.6

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 9:45: 0
END TIME 9:50: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-190	87	46	210	114.4	-188	71	20	203	110.5	10	8	-191	102	-21	218	117.8	17
2	-188	65	45	203	108.8	-170	19	17	178	94.9	20	19	-191	36	-14	206	99.7	22
3	-181	39	43	191	102.0	-141	34	9	163	102.5	28	19	-163	49	-7	192	105.3	25
4	-169	63	41	185	109.8	-135	32	11	159	99.1	29	22	-163	39	-7	192	100.5	22
5	-147	14	44	158	94.8	-148	13	15	151	95.1	23	15	-168	30	-14	173	99.8	21

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-190	87	46	210	114.4	-188	71	20	203	110.5	10	8	-191	102	-21	218	117.8	17
2	-189	77	46	207	111.8	-180	47	18	191	103.3	15	13	-191	71	-18	212	109.4	19
3	-186	64	45	201	108.4	-166	42	15	181	103.1	19	15	-181	63	-14	205	108.0	21
4	-182	63	44	198	108.7	-159	40	14	176	102.1	22	17	-177	58	-13	202	106.3	21
5	-176	54	44	190	106.1	-157	35	14	171	100.8	22	17	-175	53	-13	197	105.1	21

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	6	14	3	6	3.8	3	19	2	6	5.1	4	14	2	7	3.4
2	13	37	6	7	11.0	23	48	10	20	17.0	11	71	11	7	20.8
3	5	45	6	4	13.5	41	70	16	18	31.7	37	89	13	11	31.4
4	6	40	10	11	12.2	32	78	10	16	34.1	30	98	11	14	33.3
5	10	58	3	5	21.8	8	22	5	7	8.7	5	27	3	8	8.7

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	6	14	3	6	3.8	3	19	2	6	5.1	4	14	2	7	3.4
2	9	28	4	7	8.1	18	43	7	19	14.1	8	58	8	9	16.6
3	9	38	5	10	11.1	33	52	11	23	21.0	26	69	11	14	22.1
4	11	38	6	12	11.1	35	58	11	23	23.9	27	75	11	15	24.5
5	18	44	6	19	14.4	32	54	10	23	21.9	25	69	10	18	22.5

HEIGHT = 43.

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

START TIME 9:45: 0
END TIME 9:50: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-182	90	44	208	116.7	-112	4	8	125	91.3	29	21	-179	20	-5	202	94.7	31
2	-194	84	44	213	113.2	-135	15	13	155	90.8	24	20	-180	22	-7	211	93.8	27
3	-194	66	40	209	108.5	-165	65	19	180	111.7	12	11	-192	88	-16	214	114.2	18
4	-178	102	37	207	119.6	-153	21	12	168	95.0	18	18	-188	31	-12	207	97.5	26
5	-142	43	12	167	103.9	-118	-21	16	123	78.6	23	16	-163	-27	-10	171	80.2	26

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-182	90	44	208	116.7	-112	4	8	125	91.3	29	21	-179	20	-5	202	94.7	31
2	-189	87	44	211	114.8	-124	10	11	141	91.1	26	21	-180	21	-6	206	94.2	29
3	-190	80	43	210	112.8	-137	27	13	153	97.6	22	18	-184	42	-9	209	100.5	25
4	-187	85	42	210	114.5	-141	26	13	157	96.9	21	18	-185	39	-10	208	99.8	26
5	-178	76	35	200	112.1	-136	15	14	149	92.9	21	17	-180	25	-10	200	95.5	26

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	34	33	12	14	13.3	27	53	8	14	28.9	32	93	13	19	29.0
2	6	19	5	7	5.2	29	79	12	28	31.6	25	113	16	18	33.1
3	11	41	6	3	11.6	16	28	7	12	9.5	7	30	6	4	8.2
4	16	21	12	15	6.0	27	68	5	22	25.7	23	85	9	14	25.6
5	21	78	10	7	30.3	15	22	5	9	12.1	13	43	6	6	15.1

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	34	33	12	14	13.3	27	53	8	14	28.9	32	93	13	19	29.0
2	23	26	9	11	9.5	29	66	10	27	29.1	27	100	14	18	30.0
3	20	32	8	9	10.3	32	62	10	30	26.2	23	89	13	16	26.7
4	20	31	9	10	9.8	31	62	9	28	25.6	23	86	12	15	25.9
5	27	47	15	20	16.5	30	59	8	29	24.4	23	83	11	21	25.1

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 9:50: 0
END TIME 9:55: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-144	24	33	154	99.6	-143	29	17	159	102.5	13	19	-156	38	-16	174	104.4	23
2	-133	59	36	148	113.8	-130	57	15	145	113.5	17	11	-146	67	-14	163	114.4	22
3	-139	56	40	152	111.6	-133	55	16	147	112.1	18	12	-151	65	-14	167	113.5	21
4	-115	66	40	165	121.3	-131	-6	9	157	88.5	24	25	-154	-5	-6	182	89.4	26
5	-130	-37	45	155	74.3	-140	9	13	149	92.1	22	16	-160	9	-12	171	92.9	22

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-144	24	33	154	99.6	-143	29	17	159	102.5	13	19	-156	38	-16	174	104.4	23
2	-139	40	34	151	106.1	-137	42	16	153	107.6	15	15	-151	51	-15	169	109.0	23
3	-139	45	36	151	107.9	-136	46	16	151	109.0	16	14	-151	56	-15	168	110.4	22
4	-132	51	37	155	111.5	-135	32	14	152	103.5	18	17	-152	39	-12	172	104.8	23
5	-132	34	39	155	104.5	-135	28	14	152	101.4	19	17	-153	33	-12	172	102.5	23

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	5	53	21	10	19.0	26	68	8	27	22.9	28	68	8	21	22.4
2	7	23	9	7	8.9	9	21	4	3	9.0	10	23	5	2	9.0
3	4	17	8	8	6.3	10	27	8	8	11.0	13	21	5	6	8.4
4	85	41	15	13	38.9	14	94	10	30	33.5	13	104	9	21	33.6
5	21	78	2	2	31.1	14	54	6	12	21.5	7	64	9	4	21.9

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	5	53	21	10	19.0	26	68	8	27	22.9	28	68	8	21	22.4
2	8	44	16	9	16.4	20	52	7	21	18.1	21	53	7	16	17.6
3	7	38	14	8	14.1	18	45	7	18	16.0	19	45	6	14	15.2
4	44	45	14	11	23.3	17	65	9	21	23.2	17	70	8	17	23.0
5	40	42	13	10	28.5	16	63	8	20	23.0	16	69	8	15	22.9

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 9:50: 0
END TIME 9:55: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-147	7A	3	167	117.0	-107	-36	22	115	71.2	35	25	-153	-52	-10	163	71.0	25
2	-130	32	10	155	99.5	-89	-63	23	112	54.8	40	18	-130	-83	-9	158	57.6	22
3	-13A	52	9	163	108.4	-91	-56	24	113	57.8	39	27	-144	-84	-4	174	59.4	28
4	-175	77	41	194	113.8	-135	64	12	170	110.1	20	15	-163	70	-10	204	110.0	21
5	-193	AA	46	205	108.7	-171	81	25	191	115.3	14	11	-191	103	-18	218	118.3	21

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-147	7A	3	167	117.0	-107	-36	22	115	71.2	35	25	-153	-52	-10	163	71.0	25
2	-138	54	7	161	[illegible]3	-98	-49	23	113	63.0	38	21	-141	-68	-10	161	64.3	24
3	-138	53	8	162	[illegible]3	-9A	-52	23	113	61.1	38	23	-142	-74	-8	166	62.5	25
4	-147	59	16	170	109.6	-105	-24	20	127	72.8	34	21	-147	-39	-8	175	73.9	24
5	-15A	A0	22	17	109.5	-11A	-3	21	139	81.0	30	19	-156	-11	-10	183	82.5	24

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	5	17	4	4	6.0	5	11	1	2	5.8	4	18	2	4	6.6
2	25	82	14	14	34.8	13	19	3	5	11.5	18	31	11	18	11.2
3	17	7A	9	8	29.7	23	25	4	3	17.7	33	41	11	18	16.3
4	19	21	10	17	6.8	42	81	9	30	35.6	28	106	12	14	34.0
5	4	14	3	3	4.2	11	11	6	12	3.1	7	10	4	5	3.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	5	17	4	4	6.0	5	11	1	2	5.8	4	18	2	4	6.6
2	17	A1	10	12	25.5	14	20	2	4	12.2	17	30	7	13	11.2
3	18	A5	10	10	24.3	17	22	3	3	14.2	23	34	9	16	13.1
4	24	5A	14	14	23.1	30	66	7	28	29.5	25	85	9	23	28.3
5	29	52	20	22	20.7	38	73	7	34	31.5	29	95	10	27	30.9

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 9:55: 0
END TIME 10: 0: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	#	SPEED	TH	U	V	#	SPEED	TH	2D	3D	U	V	#	SPEED	TH	SP
1	-141	-3	46	156	87.0	-97	9	15	140	96.4	20	22	-112	18	-11	171	101.5	24
2	-138	-42	51	165	71.5	-123	-10	13	152	77.3	28	23	-143	-16	-9	183	79.9	24
3	-185	19	55	189	95.5	-140	12	15	166	87.2	23	20	-159	12	-12	193	89.6	21
4	-161	71	20	184	112.3	-126	-23	9	147	76.4	29	22	-144	-26	-6	175	78.3	24
5	-124	-37	41	161	71.3	-130	-7	13	144	86.1	30	23	-159	-16	-7	175	84.6	26

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	#	SPEED	TH	U	V	#	SPEED	TH	2D	3D	U	V	#	SPEED	TH	SP
1	-141	-3	46	156	87.0	-97	9	15	140	96.4	20	22	-112	18	-11	171	101.5	24
2	-139	-24	49	161	78.6	-111	-1	14	146	86.1	24	22	-129	0	-10	177	89.8	24
3	-152	-12	50	169	83.3	-119	2	14	152	86.4	24	22	-137	3	-11	182	89.8	24
4	-154	8	43	173	90.6	-121	-3	13	151	83.9	25	22	-139	-4	-9	180	86.9	24
5	-148	-1	42	170	86.2	-123	-4	13	149	84.4	26	22	-143	-6	-9	179	86.4	24

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT					
MIN	U	V	#	SPEED	TH	U	V	#	SPEED	TH	U	V	#	SPEED	TH	
1	29	65	3	5	27.7	78	77	12	15	57.3	92	106	13	2	57.1	
2	37	77	4	7	30.8	63	74	12	24	42.3	59	105	15	6	41.9	
3	26	29	9	28	8.2	62	78	15	24	41.0	58	106	15	8	40.6	
4	10	56	22	18	17.8	44	67	12	16	33.9	41	96	14	5	36.4	
5	41	93	15	14	38.1	17	61	10	10	25.9	18	75	6	6	26.2	

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT					
MIN	U	V	#	SPEED	TH	U	V	#	SPEED	TH	U	V	#	SPEED	TH	
1	29	65	3	5	27.7	78	77	12	15	57.3	92	106	13	2	57.1	
2	32	71	5	8	29.3	68	73	12	21	48.6	74	103	13	7	48.6	
3	37	65	6	20	26.1	66	72	12	23	45.4	70	101	14	10	45.4	
4	32	72	18	20	27.2	61	70	12	21	42.4	63	98	14	9	42.8	
5	36	78	17	19	30.4	54	67	11	19	38.9	56	92	12	9	39.3	

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 9:55: 0
END TIME 10: 0: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-199	60	43	202	107.5	-182	50	17	192	105.1	13	10	-195	70	-16	209	109.5	20
2	-187	37	42	193	101.0	-167	27	20	175	98.6	18	15	-190	37	-14	202	100.1	20
3	-178	53	42	195	105.9	-178	45	20	185	103.9	9	9	-189	66	-19	202	109.0	22
4	-189	54	46	201	105.7	-176	41	20	184	103.0	13	10	-199	61	-17	212	106.9	19
5	-198	52	47	208	104.9	-183	41	17	191	102.6	9	9	-205	56	-19	216	105.2	19

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-189	60	43	202	107.5	-182	50	17	192	105.1	13	10	-195	70	-16	209	109.5	20
2	-188	49	43	198	104.5	-175	39	18	184	102.1	15	12	-193	55	-15	206	105.2	20
3	-185	50	42	197	104.9	-176	41	19	185	102.7	13	11	-192	58	-16	205	106.4	21
4	-186	51	43	198	105.1	-176	41	19	184	102.7	13	11	-194	59	-16	207	106.5	20
5	-188	52	44	200	105.1	-177	41	19	186	102.7	13	11	-196	59	-17	208	106.3	20

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	13	29	5	4	9.1	10	30	7	7	9.2	5	27	6	4	7.6
2	3	28	4	4	8.3	17	46	10	15	15.8	7	60	8	11	17.4
3	19	59	13	10	17.7	4	22	4	4	6.7	4	23	2	3	6.7
4	9	43	7	13	11.9	13	32	10	12	10.1	11	35	6	9	10.0
5	13	30	4	6	8.8	15	33	6	12	10.1	11	35	6	6	9.7

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	13	29	5	4	9.1	10	30	7	7	9.2	5	27	6	4	7.6
2	10	30	4	6	9.0	15	38	8	14	12.6	6	47	7	8	13.4
3	14	40	8	7	11.9	12	33	7	11	10.9	6	40	6	7	11.6
4	12	40	8	9	11.7	12	32	8	11	10.5	8	38	6	8	11.0
5	13	38	7	9	11.1	13	32	7	12	10.3	9	37	6	8	10.6

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 10: 5: 0
END TIME 10:10: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-130	-37	33	137	73.7	-108	-27	21	117	78.0	44	13	-138	-23	-10	146	78.6	14
2	-119	-57	43	135	64.3	-117	-33	16	124	74.0	17	9	-130	-37	-17	137	74.0	11
3	-122	-52	45	134	66.8	-113	-44	17	122	68.5	7	4	-127	-50	-19	138	68.2	11
4	-122	-35	46	129	73.7	-94	-28	8	100	73.4	17	16	-123	-35	-16	130	73.9	13
5	-105	-57	46	128	60.9	-71	-24	7	91	81.0	20	31	-106	-19	-16	128	82.6	15

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-130	-37	33	137	73.7	-108	-27	21	117	78.0	44	13	-138	-23	-10	146	78.6	14
2	-124	-48	38	136	68.7	-113	-30	18	121	75.8	30	11	-133	-30	-14	141	76.1	12
3	-123	-49	40	135	68.1	-113	-35	18	121	73.5	23	9	-131	-37	-15	140	73.6	12
4	-123	-45	42	134	69.6	-108	-33	15	116	73.5	21	11	-129	-36	-16	137	73.7	12
5	-120	-47	43	133	68.0	-101	-31	14	111	74.9	21	14	-125	-33	-16	136	75.4	13

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	5	17	5	2	7.6	12	37	9	16	18.3	24	39	16	20	15.8
2	12	23	6	2	11.1	6	16	6	6	7.6	4	15	3	4	6.2
3	5	8	2	3	3.7	4	5	2	4	2.5	2	6	1	3	2.2
4	4	16	3	3	7.1	7	14	5	9	7.9	4	17	5	3	7.9
5	26	39	2	1	21.4	30	47	4	12	44.6	28	69	5	2	36.5

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	5	17	5	2	7.6	12	37	9	16	18.3	24	39	16	20	15.8
2	11	22	7	2	10.5	10	27	8	12	13.1	16	28	11	14	11.4
3	9	19	7	2	8.8	8	23	7	10	11.4	13	25	10	11	10.1
4	8	19	6	4	8.6	12	21	7	13	10.4	12	23	8	11	9.4
5	15	23	6	4	12.1	22	27	8	16	20.4	18	35	8	10	17.3

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 10: 51: 0
END TIME 10:10: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-171	6	31	175	91.2	-132	-17	1	135	82.1	49	38	-180	23	-18	184	97.0	9
2	-111	-68	38	132	58.6	7	19	0	71	152.5	27	73	20	33	3	119	162.1	11
3	-167	9	47	172	92.7	-73	9	0	85	105.9	46	41	-140	30	-18	161	109.6	15
4	-153	54	46	168	111.2	-64	32	1	88	121.9	26	50	-135	28	-19	162	110.1	18
5	-68	17	8	99	117.3	-34	31	0	59	131.6	51	55	-74	42	-7	112	127.0	11

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-171	6	31	175	91.2	-132	-17	1	135	82.1	49	38	-180	23	-18	184	97.0	9
2	-138	-34	35	152	73.4	-56	2	0	100	120.5	37	57	-70	29	-6	149	132.5	10
3	-149	-17	40	160	80.9	-62	5	0	94	114.8	41	51	-97	29	-11	153	123.6	12
4	-150	0	41	162	88.5	-63	12	1	93	116.6	37	51	-107	29	-13	156	120.2	14
5	-136	3	36	151	93.5	-58	15	0	87	119.2	39	51	-101	31	-12	148	121.4	13

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	17	39	23	15	13.7	12	18	1	11	8.0	8	31	4	9	9.7
2	7	16	6	3	7.5	43	61	1	8	88.3	85	89	16	6	89.2
3	8	37	18	9	12.4	40	27	1	18	39.6	73	36	8	26	37.0
4	38	33	14	23	16.6	40	42	1	17	42.7	79	56	11	31	43.0
5	61	63	58	41	52.0	33	28	1	14	39.3	75	45	15	31	45.3

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	17	39	23	15	13.7	12	18	1	11	8.0	8	31	4	9	9.7
2	33	48	15	25	19.8	80	49	1	35	72.6	121	66	17	35	71.9
3	30	48	17	22	19.5	66	41	1	30	60.9	108	55	15	32	60.5
4	31	54	16	22	22.8	60	42	1	27	56.1	101	54	14	31	56.1
5	48	55	30	35	30.6	57	40	1	28	53.3	97	52	14	35	53.7

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 10:10: 0
END TIME 10:15: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-102	-61	47	123	59.2	-69	-45	4	85	56.7	15	32	-107	-55	-18	124	62.1	11
2	-95	-61	46	118	56.9	-52	-22	1	73	77.5	26	56	-94	-10	-11	120	86.3	16
3	-80	-42	40	112	78.5	-28	-13	0	62	97.1	30	56	-52	-16	-8	107	99.2	13
4	-73	-61	29	101	54.4	-7	24	0	53	147.0	49	53	-14	48	-2	107	149.6	13
5	-68	-41	32	107	81.5	-54	-12	0	67	84.3	61	66	-94	-16	-1	108	80.0	14

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-102	-61	47	123	59.2	-69	-45	4	85	56.7	15	32	-107	-55	-18	124	62.1	11
2	-99	-61	47	121	58.2	-62	-35	3	79	66.3	20	43	-101	-34	-15	122	73.3	14
3	-92	-54	44	118	65.3	-50	-27	2	73	77.1	23	48	-84	-28	-13	117	82.4	13
4	-88	-56	41	114	62.8	-40	-15	1	68	93.2	29	49	-68	-10	-10	115	97.9	13
5	-85	-53	39	113	65.8	-42	-14	1	68	91.8	35	52	-72	-11	-9	114	95.0	13

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	16	23	3	5	12.7	10	11	2	7	9.0	17	18	3	7	11.1
2	21	27	4	4	16.8	25	41	1	8	48.7	39	69	8	10	42.7
3	49	53	14	18	55.2	38	43	1	8	76.2	65	75	10	12	73.6
4	13	41	30	26	21.0	34	40	1	12	72.0	73	77	5	22	71.0
5	48	70	39	33	62.0	22	39	1	21	38.2	42	47	11	31	31.5

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	16	23	3	5	12.7	10	11	2	7	9.0	17	18	3	7	11.1
2	18	29	3	5	14.2	19	30	2	10	33.8	29	52	7	8	31.3
3	32	37	9	12	34.5	31	36	2	12	52.7	49	60	8	12	49.9
4	30	37	17	17	31.8	36	42	2	15	63.7	62	71	9	15	61.1
5	33	43	21	20	37.5	34	41	2	15	59.9	59	67	10	18	57.4

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE MD 90.

HEIGHT = 43.

START TIME 10:10: 0
END TIME 10:15: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-38	7	-6	89	88.1	-30	36	0	51	134.9	84	79	-73	55	-9	97	126.0	11
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-38	7	-6	89	88.1	-30	36	0	51	134.9	84	79	-73	55	-9	97	126.0	11
2	-38	7	-6	89	88.1	-30	36	0	51	134.9	84	79	-73	55	-9	97	126.0	11
3	-38	7	-6	89	88.1	-30	36	0	51	134.9	84	79	-73	55	-9	97	126.0	11
4	-38	7	-6	89	88.1	-30	36	0	51	134.9	84	79	-73	55	-9	97	126.0	11
5	-38	7	-6	89	88.1	-30	36	0	51	134.9	84	79	-73	55	-9	97	126.0	11

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	29	97	23	27	75.5	8	22	0	10	25.8	20	35	12	10	23.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	29	97	23	27	75.5	8	22	0	10	25.8	20	35	12	10	23.0
2	29	97	23	27	75.5	8	22	0	10	25.8	20	35	12	10	23.0
3	29	97	23	27	75.5	8	22	0	10	25.8	20	35	12	10	23.0
4	29	97	23	27	75.5	8	22	0	10	25.8	20	35	12	10	23.0
5	29	97	23	27	75.5	8	22	0	10	25.8	20	35	12	10	23.0

HEIGHT = 28.

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

START TIME 10:15: 0
END TIME 10:20: 0

ONE MINUTE MEANS

MIN	PEAKS U	PEAKS V	PEAKS W	PEAKS SPEED	PEAKS TH	FOURIER COEFFICIENTS U	FOURIER COEFFICIENTS V	FOURIER COEFFICIENTS W	FOURIER COEFFICIENTS SPEED	FOURIER COEFFICIENTS TH	FOURIER COEFFICIENTS 2D	FOURIER COEFFICIENTS 3D	SINE WAVE FIT U	SINE WAVE FIT V	SINE WAVE FIT W	SINE WAVE FIT SPEED	SINE WAVE FIT TH	SINE WAVE FIT SP
1	-84	-44	20	99	65.9	-25	35	0	54	141.7	42	44	-36	59	1	89	142.3	16
2	-51	-39	22	125	82.5	-37	-14	0	69	83.1	39	52	-57	-34	0	118	80.5	13
3	-83	-84	70	119	44.5	12	50	9	51	193.8	39	24	25	83	8	87	196.5	14
4	-96	-100	48	140	44.0	-64	-50	1	86	52.9	23	38	-99	-71	-12	129	54.7	13
5	-64	-31	16	108	82.4	-28	-1	0	62	106.3	49	57	-55	1	-4	116	106.0	14

CUMULATIVE MEANS

MIN	PEAKS U	PEAKS V	PEAKS W	PEAKS SPEED	PEAKS TH	FOURIER COEFFICIENTS U	FOURIER COEFFICIENTS V	FOURIER COEFFICIENTS W	FOURIER COEFFICIENTS SPEED	FOURIER COEFFICIENTS TH	FOURIER COEFFICIENTS 2D	FOURIER COEFFICIENTS 3D	SINE WAVE FIT U	SINE WAVE FIT V	SINE WAVE FIT W	SINE WAVE FIT SPEED	SINE WAVE FIT TH	SINE WAVE FIT SP
1	-84	-44	20	99	65.9	-25	35	0	54	141.7	42	44	-36	59	1	89	142.3	16
2	-58	-40	22	120	78.8	-35	-3	0	65	96.1	39	50	-52	-13	0	112	94.2	13
3	-61	-45	27	120	75.4	-30	2	1	64	105.9	39	48	-45	-4	0	109	104.4	14
4	-71	-60	33	125	66.4	-40	-12	1	70	90.8	35	45	-60	-23	-3	115	90.2	13
5	-69	-51	27	120	71.8	-36	-8	1	68	95.9	39	49	-58	-14	-3	115	95.5	14

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	PEAKS V	PEAKS W	PEAKS SPEED	PEAKS TH	FOURIER COEFFICIENTS U	FOURIER COEFFICIENTS V	FOURIER COEFFICIENTS W	FOURIER COEFFICIENTS SPEED	FOURIER COEFFICIENTS TH	SINE WAVE FIT U	SINE WAVE FIT V	SINE WAVE FIT W	SINE WAVE FIT SPEED	SINE WAVE FIT TH
1	13	46	58	32	21.6	35	30	0	3	51.9	55	58	7	16	54.8
2	59	102	35	25	74.3	41	45	1	14	61.5	79	71	13	22	69.2
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	8	3	7	5	3.0	8	23	0	6	16.3	19	38	10	7	19.5
5	41	82	30	32	60.1	40	47	1	17	70.6	75	82	10	21	70.3

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	PEAKS V	PEAKS W	PEAKS SPEED	PEAKS TH	FOURIER COEFFICIENTS U	FOURIER COEFFICIENTS V	FOURIER COEFFICIENTS W	FOURIER COEFFICIENTS SPEED	FOURIER COEFFICIENTS TH	SINE WAVE FIT U	SINE WAVE FIT V	SINE WAVE FIT W	SINE WAVE FIT SPEED	SINE WAVE FIT TH
1	13	46	58	32	21.6	35	30	0	3	51.9	55	58	7	16	54.8
2	53	90	37	27	65.2	38	46	0	14	62.0	72	77	11	24	68.6
3	51	86	38	25	62.4	39	47	3	14	66.1	72	79	11	24	72.4
4	46	76	33	23	54.0	37	47	2	16	60.9	66	75	12	22	65.7
5	43	77	32	27	55.1	37	46	2	16	62.9	67	77	11	21	65.6

VAD OTIS2 TIME IN GMT OF VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 20.

START TIME 10:20: 0
END TIME 10:25: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-36	13	16	130	113.9	-40	-8	1	75	102.6	37	36	-61	-14	-6	127	98.7	14
2	-97	-70	51	136	59.6	-44	-18	0	72	84.4	44	39	-75	-33	-10	130	89.4	13
3	-111	-92	47	147	50.2	-53	-30	2	86	80.7	29	26	-87	-44	-14	142	81.2	15
4	-133	-73	46	155	61.1	-74	-38	2	86	62.2	25	33	-121	-67	-15	143	59.8	15
5	-132	-77	49	155	59.8	-61	-55	1	86	48.5	24	27	-112	-78	-18	140	54.7	14

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-36	13	16	130	113.9	-40	-8	1	75	102.6	37	36	-61	-14	-6	127	98.7	14
2	-64	-31	35	133	84.7	-42	-13	1	74	92.8	41	37	-68	-24	-8	129	93.7	13
3	-82	-51	39	137	73.8	-46	-19	1	78	89.0	37	34	-74	-30	-10	133	89.7	14
4	-96	-57	41	142	70.4	-53	-24	1	80	81.8	34	34	-87	-40	-11	135	81.7	14
5	-103	-60	43	145	68.4	-55	-30	1	81	75.5	32	32	-92	-47	-12	136	76.6	14

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	61	123	45	23	78.6	40	57	1	18	70.2	63	103	10	18	72.2
2	21	64	16	17	34.4	40	43	1	10	60.8	83	73	15	21	66.0
3	13	19	6	8	8.3	45	47	2	11	63.4	74	84	9	6	61.9
4	15	22	12	12	9.0	17	14	1	15	11.4	30	17	8	19	12.3
5	11	19	8	7	7.9	9	20	1	10	13.8	20	19	6	13	10.4

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	61	123	45	23	78.6	40	57	1	18	70.2	63	103	10	18	72.2
2	53	102	37	19	62.9	38	49	1	13	63.2	72	85	13	19	66.1
3	48	88	31	17	54.1	40	44	2	14	61.8	71	83	12	17	63.3
4	47	77	27	16	46.5	37	42	2	14	54.1	65	73	11	18	55.7
5	45	70	25	17	42.1	33	41	1	14	50.6	60	67	10	17	51.4

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 2M.

START TIME 10:35: 0
END TIME 10:40: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-161	-53	44	171	71.6	-121	-71	18	142	59.2	12	13	-151	-72	-21	169	64.3	13
2	-157	-60	48	172	68.9	-125	-62	19	140	63.5	9	14	-165	-58	-23	176	70.3	14
3	-163	-48	46	173	73.4	-129	-57	16	144	65.9	9	16	-162	-52	-21	174	72.2	13
4	-158	-52	55	168	71.5	-98	-79	11	130	50.8	22	23	-126	-98	-18	167	51.9	21
5	-160	-48	60	172	73.0	-66	-51	6	122	74.6	35	16	-87	-56	-15	161	80.7	20

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-161	-53	44	171	71.6	-121	-71	18	142	59.2	12	13	-151	-72	-21	169	64.3	13
2	-159	-56	46	172	70.2	-123	-66	19	141	61.5	10	14	-158	-65	-22	173	67.5	14
3	-160	-54	46	172	71.2	-125	-63	18	142	62.9	10	14	-159	-60	-22	173	69.0	14
4	-160	-53	48	171	71.2	-118	-68	16	139	59.6	13	17	-150	-71	-21	171	64.4	16
5	-160	-54	51	171	71.6	-108	-64	14	136	62.4	17	17	-138	-68	-20	170	67.4	16

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	9	8	5	7	3.2	11	8	1	7	4.8	9	9	2	5	4.3
2	14	31	6	3	11.1	5	5	4	4	2.2	8	10	2	5	3.9
3	12	26	4	5	9.4	10	23	6	5	10.0	8	33	6	3	11.4
4	13	17	11	7	6.8	22	21	4	10	12.6	30	38	5	3	16.8
5	17	38	14	10	13.2	61	75	6	5	66.1	96	94	12	4	68.5

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	9	8	5	7	3.2	11	8	1	7	4.8	9	9	2	5	4.3
2	11	22	6	5	8.3	8	8	3	6	4.1	11	12	2	6	5.0
3	11	23	5	5	8.5	9	14	4	5	6.6	10	21	3	5	7.6
4	11	21	8	6	8.0	18	17	5	9	10.0	23	31	4	5	13.0
5	12	24	10	7	8.9	36	34	6	11	28.6	51	47	7	7	30.6

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE MD 90.

HEIGHT = 43.

START TIME 10:35: 0
END TIME 10:40: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-128	48	34	171	116.9	4	85	-1	121	155.1	66	43	1	94	1	163	186.7	17
2	-109	-5	7	146	94.0	-4	35	0	116	124.4	66	43	9	27	8	120	189.7	9
3	-119	-71	21	150	60.7	-19	43	0	110	131.6	64	34	-19	59	-5	126	158.2	13
4	-101	27	7	136	110.3	-9	113	-1	114	174.9	75	57	-6	161	-11	180	215.1	5
5	-64	30	-82	72	114.4	3	116	0	116	181.4	60	20	12	27	65	30	204.7	3

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-128	48	34	171	116.9	4	85	-1	121	155.1	66	43	1	94	1	163	186.7	17
2	-118	21	20	159	105.4	0	60	0	118	139.8	66	43	5	61	5	141	188.2	13
3	-115	-12	21	156	88.9	-5	54	0	115	136.8	65	40	-1	60	1	136	177.2	13
4	-112	-4	18	152	93.4	-6	66	0	115	144.7	67	43	-2	81	-1	145	185.0	11
5	-110	-2	14	148	94.2	-5	68	0	115	146.2	67	42	-2	79	1	140	185.8	11

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	90	73	39	32	44.7	18	92	1	10	70.6	67	154	54	84	104.4
2	79	93	56	49	49.0	20	119	2	11	88.2	69	118	84	50	104.0
3	25	72	26	28	28.8	43	99	2	9	77.8	91	100	45	63	69.0
4	73	64	19	10	46.9	20	8	1	9	9.7	38	161	88	139	74.7
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	90	73	39	32	44.7	18	92	1	10	70.6	67	154	54	84	104.4
2	82	84	48	41	46.3	19	105	2	10	77.8	65	135	68	70	99.4
3	66	90	41	36	45.6	30	100	2	10	75.7	74	121	59	66	88.6
4	66	86	37	33	45.7	28	92	2	10	69.0	67	133	64	84	85.8
5	65	84	42	36	44.9	27	91	2	10	67.9	66	131	64	86	84.1

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HU 90.

HEIGHT = 28.

START TIME 10:40: 0
END TIME 10:45: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-157	-63	49	173	67.7	-17	8	0	119	122.0	56	22	-30	29	-6	171	129.2	24
2	-136	-68	56	160	63.5	6	46	0	122	148.2	59	32	19	45	11	130	176.0	13
3	-140	-35	51	168	78.0	-51	-22	1	109	88.3	52	24	-98	3	-20	179	94.9	17
4	-112	-69	38	145	57.9	-21	74	-1	109	146.9	74	44	-47	98	-4	145	156.1	15
5	-69	21	4	137	119.2	-17	46	0	117	130.4	80	58	-18	165	-58	179	156.2	12

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-157	-63	49	173	67.7	-17	8	0	119	122.0	56	22	-30	29	-6	171	129.2	24
2	-146	-66	53	166	65.4	-4	28	0	121	136.1	58	28	-3	37	3	149	154.4	18
3	-144	-56	52	167	69.4	-19	12	0	117	121.0	56	27	-33	27	-4	158	135.6	18
4	-136	-59	49	162	66.7	-20	27	0	115	127.2	60	31	-36	44	-4	155	140.5	17
5	-122	-41	39	156	78.1	-19	31	0	115	127.9	65	37	-32	70	-16	160	149.0	16

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	20	25	12	8	10.6	71	107	5	8	87.9	115	141	11	9	83.6
2	18	48	8	4	19.0	48	112	4	11	82.3	92	98	38	31	86.1
3	23	89	14	5	33.7	49	91	4	16	71.9	77	146	8	23	62.6
4	38	53	19	20	26.0	18	84	2	15	59.5	59	100	35	51	54.0
5	82	99	47	30	67.9	22	113	3	10	77.0	70	109	38	107	52.5

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	20	25	12	8	10.6	71	107	5	8	87.9	115	141	11	9	83.6
2	21	38	10	9	15.2	59	107	4	10	82.4	102	114	29	31	84.9
3	21	58	11	8	22.5	59	103	4	13	80.5	103	122	27	32	81.8
4	29	56	14	15	23.3	52	101	4	14	75.7	93	119	28	37	75.6
5	52	79	31	21	42.4	46	102	4	13	74.7	88	126	38	58	70.7

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 10:40: 0
END TIME 10:45: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
5	-128	-43	9	138	70.5	-12	131	0	132	174.0	84	64	7	27	67	29	185.9	3

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
5	-128	-43	9	138	70.5	-12	131	0	132	174.0	84	64	7	27	67	29	185.9	3

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	23	21	13	15	11.5	13	11	1	9	5.9	15	17	11	19	26.3

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	23	21	13	15	11.5	13	11	1	9	5.9	15	17	11	19	26.3

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

START TIME 10:45: 0
END TIME 10:50: 0

HEIGHT = 28.

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-39	53	-16	144	148.3	-4	76	0	124	146.7	74	52	-9	50	22	145	173.5	11
2	-87	-12	20	142	89.5	-17	118	-1	120	171.0	95	68	-26	134	6	194	199.3	10
3	-127	0	9	139	89.9	-5	124	0	125	176.5	94	74	-5	109	19	184	209.6	7
4	-103	13	1	142	103.5	-13	129	-1	131	173.6	86	63	-5	47	55	74	229.9	8
5	-135	-41	32	146	71.9	-9	124	-1	127	174.0	91	74	-39	111	24	200	223.5	10

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-39	53	-16	144	148.3	-4	76	0	124	146.7	74	52	-9	50	22	145	173.5	11
2	-65	17	3	143	116.2	-11	99	0	121	160.0	85	61	-18	96	13	172	187.6	11
3	-87	10	5	142	106.9	-9	108	0	123	165.8	88	66	-14	101	15	176	195.4	9
4	-89	11	4	142	106.4	-10	111	0	124	167.0	88	65	-12	93	21	161	200.5	9
5	-95	4	5	142	101.9	-9	113	0	124	167.9	88	66	-16	95	22	166	203.5	9

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	107	99	74	28	69.5	22	107	2	11	75.0	84	144	43	70	90.9
2	70	100	27	12	61.2	10	13	1	13	5.3	62	156	89	73	70.7
3	23	57	7	10	26.3	18	15	0	14	8.9	40	177	101	80	71.7
4	62	100	28	9	54.3	20	11	0	8	9.4	51	93	55	81	72.3
5	23	32	14	14	14.3	28	24	1	22	13.7	66	198	111	68	107.1

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	107	99	74	28	69.5	22	107	2	11	75.0	84	144	43	70	90.9
2	87	101	54	20	68.9	17	72	2	12	49.2	69	150	69	73	77.4
3	77	86	43	17	57.9	17	59	1	12	40.1	59	154	78	73	73.9
4	73	85	40	16	56.0	17	55	1	12	37.0	57	146	76	81	72.9
5	70	82	37	15	53.6	16	52	1	13	34.7	57	148	78	79	75.5

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 11:45: 0
END TIME 11:50: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-35	0	7	145	110.5	-72	-28	10	129	84.5	33	21	-87	-27	-9	161	85.0	19
2	-123	-73	54	154	58.5	-61	-22	9	136	92.6	25	14	-78	-20	-7	165	94.2	21
3	-134	-93	44	166	55.1	-110	-63	19	145	62.8	23	21	-144	-67	-13	183	65.5	22
4	-135	-56	39	181	68.9	-115	30	10	151	101.3	33	27	-140	39	-7	184	104.9	29
5	-136	-74	47	159	61.6	-135	-77	19	157	60.0	8	6	-146	-84	-19	170	59.9	17

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-35	0	7	145	110.5	-72	-28	10	129	84.5	33	21	-87	-27	-9	161	85.0	19
2	-76	-39	28	149	86.5	-67	-26	10	132	88.3	29	18	-83	-24	-8	163	89.3	20
3	-98	-56	34	155	74.5	-83	-40	13	137	78.6	27	19	-106	-40	-10	171	80.2	21
4	-105	-56	35	160	73.4	-89	-26	13	140	82.9	28	20	-112	-25	-10	173	85.0	22
5	-111	-60	38	160	71.2	-98	-36	14	143	78.6	24	18	-119	-36	-12	173	80.3	21

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	79	127	44	7	83.3	53	98	15	10	63.0	65	127	11	9	64.0
2	32	49	7	9	21.6	73	104	17	7	73.4	85	132	16	5	72.3
3	16	16	12	8	7.2	26	70	4	12	31.5	33	90	7	12	31.2
4	27	116	19	14	40.3	42	101	11	36	38.3	67	108	12	21	40.8
5	12	30	5	6	11.7	7	9	3	9	2.8	7	10	4	6	3.6

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	79	129	44	7	83.3	53	98	15	10	63.0	65	127	11	9	64.0
2	75	109	39	9	66.3	60	98	16	9	65.2	72	124	13	8	65.2
3	66	86	32	12	53.8	53	89	13	12	55.3	66	112	11	14	55.1
4	62	90	30	16	50.8	52	93	13	19	52.6	66	114	11	16	52.8
5	57	82	27	15	46.1	50	86	12	19	48.1	61	105	11	14	48.5

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 11:45: 0
END TIME 11:50: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-235	-60	61	246	75.7	-172	-68	16	188	68.0	8	8	-221	-77	-21	238	70.6	20
2	-241	-76	49	258	72.3	-192	-46	18	205	77.1	18	11	-239	-49	-18	253	78.1	25
3	-269	-47	44	275	79.9	-237	-59	23	246	75.8	5	3	-267	-55	-22	274	78.1	13
4	-257	-50	44	264	79.7	-233	-45	19	242	80.0	5	5	-255	-39	-20	263	82.3	13
5	-269	-34	60	274	82.6	-205	-92	17	232	63.9	18	15	-236	-88	-20	263	68.1	21

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-235	-60	61	246	75.7	-172	-68	16	188	68.0	8	8	-221	-77	-21	238	70.6	20
2	-238	-68	55	252	73.9	-183	-56	17	197	72.9	14	10	-231	-62	-19	246	74.6	23
3	-248	-62	52	259	75.8	-200	-57	19	212	73.8	11	8	-242	-60	-20	255	75.7	20
4	-250	-59	50	261	76.7	-208	-54	19	220	75.3	9	7	-245	-55	-20	257	77.3	18
5	-254	-53	52	264	78.0	-207	-63	18	222	72.8	11	9	-243	-62	-20	258	75.3	19

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	7	34	9	9	7.7	19	23	7	12	8.6	14	31	5	7	8.0
2	22	44	15	14	10.4	27	54	11	26	16.0	23	62	11	9	15.4
3	5	17	4	3	3.7	9	5	2	8	1.6	5	5	2	4	1.2
4	28	36	10	30	8.2	25	46	7	26	12.1	31	50	8	30	12.4
5	11	31	9	8	6.8	54	34	12	29	15.3	56	57	12	19	18.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	7	34	9	9	7.7	19	23	7	12	8.6	14	31	5	7	8.0
2	16	39	13	13	9.0	25	43	9	22	13.5	21	50	9	11	12.7
3	20	34	12	15	8.2	33	35	8	29	11.1	24	41	7	16	10.5
4	22	35	12	19	8.2	34	37	8	31	11.4	26	43	7	20	11.1
5	21	35	12	18	8.2	38	39	9	31	13.0	34	48	8	20	13.1

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE MD 90.

HEIGHT = 28.

START TIME 11:50: 0
END TIME 11:55: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-141	-67	47	166	63.5	-109	7	3	125	95.9	41	21	-141	23	-3	163	99.0	26
2	-135	-67	36	154	63.5	-93	-51	12	129	70.2	30	25	-113	-49	-11	162	69.8	23
3	-148	-88	56	178	59.0	-117	-92	15	153	51.3	15	14	-128	-105	-15	171	50.7	18
4	-157	-79	48	181	63.1	-122	-60	10	151	64.9	29	17	-144	-67	-8	181	65.3	25
5	-162	-75	50	183	65.3	-129	13	2	136	97.6	42	24	-165	36	0	177	102.5	29

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-141	-67	47	166	63.5	-109	7	3	125	95.9	41	21	-141	23	-3	163	99.0	26
2	-138	-67	42	160	63.5	-102	-20	7	127	84.0	36	22	-128	-10	-6	163	85.5	25
3	-141	-74	47	166	61.9	-107	-45	10	136	72.6	28	20	-128	-43	-9	166	73.3	22
4	-145	-75	47	170	62.2	-111	-48	10	139	70.8	29	19	-132	-49	-9	169	71.4	23
5	-148	-75	48	172	62.8	-114	-37	8	139	75.8	31	20	-138	-33	-7	171	77.3	24

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	25	53	9	13	19.3	30	56	6	12	30.7	31	79	10	11	30.5
2	11	26	16	7	10.3	33	72	6	17	44.3	34	109	4	10	44.8
3	28	36	16	20	13.3	28	23	8	17	12.2	30	30	8	14	13.7
4	21	36	5	5	13.3	34	62	11	17	28.5	38	84	11	7	30.7
5	17	37	13	16	12.1	19	44	10	23	16.2	8	56	11	9	17.8

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	25	53	9	13	19.3	30	56	6	12	30.7	31	79	10	11	30.5
2	19	41	13	12	15.2	31	68	8	14	38.3	34	98	9	10	39.1
3	23	40	16	17	14.4	30	66	9	20	35.1	32	92	9	12	36.3
4	23	38	14	16	13.9	31	64	9	20	33.3	33	89	9	13	34.7
5	23	38	13	17	13.4	30	65	10	20	32.4	33	90	10	12	34.2

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 11:50: 0
END TIME 11:55: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-262	-61	54	273	76.5	-232	-70	22	245	72.7	4	3	-259	-69	-23	271	74.8	15
2	-276	-27	51	279	84.1	-197	-76	18	216	68.6	12	13	-251	-77	-20	267	72.5	18
3	-279	-65	45	289	76.7	-222	-48	19	233	78.6	20	18	-274	-37	-16	284	82.6	20
4	-284	-58	45	292	78.3	-268	-49	21	277	79.7	9	7	-286	-46	-19	293	80.7	12
5	-263	-77	58	282	73.3	-224	-78	15	241	70.0	11	7	-256	-83	-20	273	71.7	20

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-262	-61	54	273	76.5	-232	-70	22	245	72.7	4	3	-259	-69	-23	271	74.8	15
2	-269	-43	52	276	80.6	-213	-73	20	229	70.5	8	8	-255	-73	-22	269	73.5	17
3	-273	-50	50	280	79.4	-216	-65	20	230	73.0	12	11	-261	-62	-20	274	76.4	18
4	-276	-52	49	284	79.1	-230	-61	20	243	74.8	11	10	-268	-57	-20	279	77.6	16
5	-273	-57	50	283	78.0	-229	-64	19	242	73.9	11	9	-265	-62	-20	278	76.5	17

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	21	43	5	10	9.9	21	25	3	13	7.1	22	29	3	13	7.2
2	6	21	10	5	4.3	21	33	11	7	10.4	30	42	9	9	11.1
3	21	30	14	18	6.3	33	51	15	32	13.9	13	66	12	13	13.7
4	10	24	6	6	4.9	17	43	13	19	9.1	9	36	7	7	7.2
5	33	58	7	5	13.9	34	28	12	26	8.6	23	36	8	11	8.6

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	21	43	5	10	9.9	21	25	3	13	7.1	22	29	3	13	7.2
2	16	36	8	8	8.1	27	29	9	18	8.9	26	35	7	11	9.2
3	18	35	11	13	7.6	28	38	11	22	11.0	24	48	9	13	11.3
4	17	32	10	13	6.9	35	39	11	30	10.8	24	45	8	14	10.4
5	21	38	10	11	8.7	34	37	11	29	10.5	24	44	8	14	10.2

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 2M.

START TIME 11:55: 0
END TIME 12: 0: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-142	12	51	218	91.3	-120	-72	14	144	58.3	13	15	-147	-79	-13	177	61.0	29
2	-146	-28	49	173	61.8	-117	-18	12	140	88.1	21	17	-142	-7	-13	171	88.8	23
3	-147	-52	19	181	74.7	-112	-85	15	143	52.8	13	14	-136	-91	-14	167	56.0	20
4	-153	-23	44	196	79.7	-132	-84	20	159	57.2	12	9	-150	-92	-19	180	58.3	17
5	-152	-60	42	170	68.1	-105	-24	10	136	81.6	30	20	-130	-24	-9	167	81.5	24

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-142	12	51	218	91.3	-120	-72	14	144	58.3	13	15	-147	-79	-13	177	61.0	29
2	-144	-29	50	197	77.7	-119	-47	13	142	72.0	17	16	-145	-46	-13	174	73.9	26
3	-145	-37	40	192	76.8	-117	-59	14	142	66.0	15	16	-142	-60	-14	172	68.2	24
4	-147	-33	41	193	77.5	-121	-66	15	147	63.6	15	14	-144	-69	-15	174	65.6	22
5	-148	-38	41	189	75.8	-118	-58	14	145	67.0	18	15	-142	-60	-14	173	68.5	23

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	76	174	67	65	48.0	28	23	7	15	13.5	37	45	9	13	19.1
2	26	93	10	8	16.3	44	68	9	21	38.5	43	93	8	10	37.1
3	59	89	30	48	35.9	16	17	6	15	7.3	20	20	5	17	7.7
4	30	130	14	40	36.5	19	17	7	7	9.1	20	25	6	4	10.1
5	21	99	12	8	16.9	30	85	12	10	42.4	32	107	7	11	41.6

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	76	174	67	65	48.0	28	23	7	15	13.5	37	45	9	13	19.1
2	56	135	48	52	38.7	35	54	7	18	30.8	38	77	8	11	31.1
3	55	120	44	50	36.9	30	49	7	16	27.1	33	68	7	13	27.0
4	49	120	38	47	36.0	28	44	7	16	23.7	30	60	7	12	23.9
5	45	110	35	43	33.2	28	54	8	16	28.2	30	71	8	12	27.9

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 11:55: 0
END TIME 12: 0: 0

ONE MINUTE MEANS

	PEAKS				I	FOURIER COEFFICIENTS						I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-267	47	38	324	97.3	-154	-124	10	206	52.4	26	21	-239	-159	-9	299	57.1	51
2	-247	-43	38	274	79.9	-192	-53	15	222	71.4	18	17	-242	-39	-15	276	78.9	26
3	-252	-79	30	280	73.8	-186	-74	16	204	67.8	16	13	-251	-70	-15	263	74.2	19
4	-243	-72	42	258	73.1	-218	-63	18	229	73.8	7	5	-250	-65	-19	260	75.2	14
5	-242	-98	32	261	78.6	-209	-75	17	226	70.1	5	4	-237	-69	-15	252	73.4	15

CUMULATIVE MEANS

	PEAKS				I	FOURIER COEFFICIENTS						I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-267	47	38	324	97.3	-154	-124	10	206	52.4	26	21	-239	-159	-9	299	57.1	51
2	-256	-1	38	297	87.9	-175	-86	13	214	62.6	22	19	-240	-94	-12	287	68.8	37
3	-255	-45	35	291	83.5	-178	-82	14	211	64.3	20	17	-244	-87	-13	279	70.5	31
4	-252	-37	37	283	81.0	-188	-77	15	215	66.6	17	14	-245	-82	-14	275	71.7	27
5	-250	-39	36	277	80.5	-192	-77	15	217	67.2	15	12	-244	-79	-14	270	72.0	25

ONE MINUTE STANDARD DEVIATIONS

	PEAKS				I,	FOURIER COFFFICIENTS				I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	74	189	29	66	36.1	36	63	8	48	15.2	53	84	13	47	16.5
2	22	119	19	13	24.6	41	107	12	50	24.4	20	140	9	40	27.1
3	23	101	29	33	19.2	23	27	8	16	9.0	19	33	7	14	7.8
4	19	40	8	10	9.5	7	19	4	6	4.7	5	13	2	5	2.7
5	15	39	13	8	9.5	17	34	9	7	9.5	20	38	8	7	9.8

CUMULATIVE STANDARD DEVIATIONS

	PEAKS				I,	FOURIER COEFFICIENTS				I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	74	189	29	66	36.1	36	63	8	48	15.2	53	84	13	47	16.5
2	52	154	23	51	30.4	42	93	10	48	22.1	37	129	11	43	24.7
3	44	141	25	46	27.7	37	78	10	40	18.8	32	107	10	38	20.7
4	37	126	22	42	24.8	36	68	9	36	17.0	28	94	9	34	18.1
5	36	119	20	40	22.5	34	63	9	32	15.7	27	85	9	32	16.7

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 11:30: 0
END TIME 11:35: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-134	-38	36	146	74.5	-105	-43	21	121	68.2	26	12	-131	-51	-12	149	69.0	18
2	-125	-68	37	145	61.2	-104	-27	23	122	77.5	27	12	-122	-20	-17	153	81.5	18
3	-133	-41	35	148	72.8	-91	-22	9	115	80.0	40	18	-117	-15	-7	152	83.8	22
4	-123	-28	26	136	75.9	-79	-26	16	105	74.8	38	24	-109	-35	-7	148	75.1	22
5	-117	-57	36	142	63.2	-99	-9	16	116	84.9	34	19	-128	-2	-11	154	89.5	21

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-134	-38	36	146	74.5	-105	-43	21	121	68.2	26	12	-131	-51	-12	149	69.0	18
2	-130	-52	36	146	68.4	-105	-36	22	122	72.5	27	12	-127	-36	-15	151	74.8	18
3	-131	-49	36	146	69.8	-100	-32	18	119	74.8	31	14	-124	-30	-12	152	77.6	19
4	-129	-43	33	144	71.4	-95	-30	17	116	74.8	33	16	-120	-31	-11	151	76.9	20
5	-127	-46	34	143	69.9	-95	-26	17	116	76.7	33	17	-122	-26	-11	151	79.3	20

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	10	42	7	6	17.7	7	39	8	4	19.3	11	48	7	5	19.4
2	11	17	9	4	7.8	16	60	14	4	31.7	29	94	4	15	38.0
3	18	49	18	8	20.0	23	68	10	9	39.6	35	98	8	5	42.8
4	20	47	9	13	21.2	23	64	10	8	41.3	40	92	6	11	43.7
5	33	47	10	9	23.4	20	59	15	6	32.9	29	88	8	7	36.4

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	10	42	7	6	17.7	7	39	8	4	19.3	11	48	7	5	19.4
2	11	36	7	5	15.1	11	48	11	4	25.0	21	71	6	11	28.8
3	13	39	11	6	16.4	16	54	12	7	29.4	25	79	8	9	32.9
4	15	41	11	9	17.6	20	55	11	9	32.2	30	81	8	9	35.2
5	19	42	11	9	18.6	20	56	12	9	32.0	30	81	7	9	35.2

VAD OTIS2 TIME IN GMT CT VAD 9/16/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 11:30: 0
END TIME 11:35: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-236	-9	66	241	87.5	-37	60	0	113	137.4	48	17	-61	92	-10	188	143.2	40
2	-227	-12	52	240	85.9	-70	2	4	118	97.8	36	26	-138	21	-10	205	103.8	37
3	-229	-45	64	240	78.8	-41	44	2	117	136.8	29	28	-81	83	-10	200	141.3	38
4	-225	-23	29	231	83.2	3	105	-2	110	181.0	43	23	12	165	-12	177	183.7	34
5	-191	5	66	229	95.0	-37	31	1	116	130.5	35	25	-69	60	-6	194	136.9	38

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-236	-9	66	241	87.5	-37	60	0	113	137.4	48	17	-61	92	-10	188	143.2	40
2	-231	-10	59	240	86.7	-55	29	2	116	116.1	42	22	-102	53	-10	197	122.0	39
3	-231	-21	60	240	84.2	-50	34	2	116	122.6	38	24	-96	63	-10	198	128.1	39
4	-229	-22	53	238	83.9	-37	51	1	115	136.6	39	24	-70	87	-11	193	141.4	38
5	-221	-18	56	236	86.4	-37	46	1	115	135.3	38	24	-69	81	-10	193	140.4	38

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	14	45	30	13	10.8	48	84	5	6	59.2	104	132	15	21	59.2
2	28	75	22	14	19.5	48	90	8	13	59.4	94	134	10	21	53.8
3	20	51	15	13	13.1	76	79	7	8	64.7	141	111	10	22	60.0
4	30	42	13	24	11.7	35	8	1	3	18.9	66	15	6	6	22.7
5	81	108	11	10	37.0	73	89	12	14	71.9	135	129	17	32	70.3

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	14	45	30	13	10.8	48	84	5	6	59.2	104	132	15	21	59.2
2	22	60	26	13	15.5	49	89	7	10	60.4	103	132	12	22	57.7
3	21	58	23	13	14.9	57	84	6	9	60.7	112	124	11	21	57.5
4	23	54	25	16	13.9	57	79	6	9	59.1	112	116	10	21	56.3
5	44	68	23	15	20.9	60	80	8	10	60.9	115	117	12	23	58.5

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE MD 90.

HEIGHT = 28.

START TIME 3:20: 0
END TIME 3:25: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-188	253	55	325	143.2	-171	206	25	281	140.2	18	14	-190	234	-17	316	140.9	28
2	-140	229	36	278	149.0	-117	202	21	240	151.0	18	8	-116	240	-14	275	154.2	25
3	-153	233	71	286	145.5	-166	179	26	245	137.2	19	19	-183	219	-25	287	139.6	17
4	-183	201	33	282	137.0	-160	184	14	246	139.1	20	17	-180	223	-12	288	141.0	29
5	-160	237	50	290	146.1	-117	209	23	244	151.3	15	9	-124	248	-19	282	153.4	26

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-188	253	55	325	143.2	-171	206	25	281	140.2	18	14	-190	234	-17	316	140.9	28
2	-162	240	45	300	146.4	-142	204	23	259	146.0	18	11	-150	237	-16	294	148.1	27
3	-160	238	52	296	146.1	-149	197	24	255	143.6	19	13	-159	232	-18	292	145.7	24
4	-166	229	47	293	143.8	-152	194	21	253	142.5	19	14	-165	230	-17	291	144.5	25
5	-164	231	48	292	144.3	-145	197	21	251	144.2	18	13	-156	233	-17	289	146.3	25

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	66	61	41	35	15.1	66	61	22	11	18.5	81	69	16	23	19.3
2	74	26	22	20	16.4	63	24	15	34	14.4	66	26	14	17	14.6
3	50	58	25	34	13.7	26	23	13	30	3.8	25	43	4	37	6.5
4	51	64	30	23	16.7	37	14	17	30	5.9	31	19	10	24	5.4
5	46	27	6	20	9.9	51	27	17	32	12.4	52	28	10	20	11.7

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	66	61	41	35	15.1	66	61	22	11	18.5	81	69	16	23	19.3
2	72	45	32	36	15.4	67	43	18	33	16.7	80	48	15	29	17.6
3	65	47	32	35	14.6	59	39	16	32	14.7	70	46	13	30	15.6
4	62	53	32	33	15.3	54	35	17	31	13.1	63	41	13	28	13.8
5	58	49	29	30	14.3	54	34	16	31	13.2	62	39	12	27	13.7

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 3:20: 0
END TIME 3:25: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-205	250	74	332	139.9	-176	204	36	278	136.6	27	20	-206	235	-30	330	136.6	20
2	-196	215	38	299	137.8	-161	185	26	247	138.9	16	10	-194	222	-18	298	138.9	20
3	-174	259	66	318	146.1	-157	215	29	268	143.5	23	13	-165	256	-28	307	146.7	17
4	-149	274	61	322	150.8	-148	201	26	256	141.9	25	16	-173	240	-19	312	142.9	28
5	-164	238	35	301	144.4	-118	205	22	238	150.2	20	11	-133	254	-15	291	152.2	22

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-205	250	74	332	139.9	-176	204	36	278	136.6	27	20	-206	235	-30	330	136.6	20
2	-201	234	58	317	138.9	-169	195	31	263	137.7	22	15	-200	229	-25	315	137.7	20
3	-193	242	60	317	141.2	-165	202	31	265	139.5	22	15	-189	238	-26	312	140.5	19
4	-181	250	60	318	143.8	-160	201	29	263	140.2	23	15	-185	238	-24	312	141.1	22
5	-178	248	56	315	143.9	-152	202	28	258	142.0	22	14	-175	241	-22	308	143.2	22

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	48	68	37	35	13.4	18	82	18	45	17.3	38	110	20	31	21.5
2	56	49	15	15	13.9	21	19	5	15	5.3	32	21	6	10	7.2
3	56	38	41	32	10.9	23	34	6	28	6.4	23	44	7	36	6.2
4	67	61	24	31	15.5	28	62	12	35	14.7	61	90	17	24	20.4
5	68	67	25	25	18.1	32	16	13	20	7.5	40	31	9	22	9.4

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	48	68	37	35	13.4	18	82	18	45	17.3	38	110	20	31	21.5
2	50	60	34	32	13.1	20	60	14	37	12.8	34	79	16	28	15.9
3	52	55	35	31	12.6	21	53	12	34	11.3	35	70	14	30	14.1
4	58	57	32	30	13.8	24	54	12	33	12.0	43	74	14	28	15.6
5	60	58	32	30	14.4	30	49	12	33	11.9	46	68	14	28	15.2

VAD OTIS4 TIME IN GMT CT VAD 7/18/76 OTIS AIRFORCE MD 90.

START TIME 3:25: 0
END TIME 3:30: 0

HEIGHT = 28.

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-174	220	50	285	141.8	-166	169	21	242	134.5	16	16	-187	190	-15	276	134.8	22
2	-165	272	52	320	148.4	-180	236	25	298	142.4	8	4	-186	260	-20	321	144.1	13
3	-234	269	68	359	139.2	-195	253	33	321	142.2	18	11	-196	296	-22	356	146.3	20
4	-234	242	63	346	136.0	-186	167	15	279	139.5	27	27	-196	222	-12	342	142.3	32
5	-177	286	65	340	148.1	-186	238	35	303	141.8	16	6	-196	274	-25	339	144.0	25

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-174	220	50	285	141.8	-166	169	21	242	134.5	16	16	-187	190	-15	276	134.8	22
2	-170	244	51	301	144.9	-172	200	23	268	138.1	13	11	-187	222	-17	297	139.1	18
3	-192	253	57	322	142.9	-180	219	26	287	139.6	15	11	-190	248	-19	318	141.6	18
4	-202	250	54	327	141.3	-182	207	24	285	139.5	17	14	-191	242	-17	323	141.8	22
5	-197	258	60	330	142.7	-183	213	26	289	140.0	17	13	-192	249	-19	326	142.2	22

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	46	32	13	16	10.7	31	50	11	31	13.1	40	67	9	25	16.2		
2	22	28	7	22	5.1	14	31	7	27	4.2	14	32	5	28	4.0		
3	49	14	30	31	6.5	19	28	13	19	5.0	21	30	8	26	4.1		
4	63	62	52	28	14.4	142	24	27	55	35.4	184	31	21	17	35.2		
5	48	27	17	21	8.6	21	32	8	30	4.5	21	41	11	27	6.4		

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	46	32	13	16	10.7	31	50	11	31	13.1	40	67	9	25	16.2		
2	36	40	14	26	9.0	25	54	9	40	10.5	29	63	8	34	12.7		
3	51	35	24	39	8.5	25	52	12	43	9.0	26	64	8	42	11.0		
4	55	41	30	38	10.2	67	52	17	45	17.7	85	58	12	39	18.4		
5	54	41	29	35	10.2	60	51	16	42	15.8	76	56	12	37	16.5		

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 3:25: 0
END TIME 3:30: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-181	237	40	301	142.7	-166	178	15	247	137.4	17	15	-185	220	-13	291	140.3	22
2	-182	288	51	343	147.5	-175	214	26	278	140.4	23	19	-204	273	-15	342	142.9	17
3	-206	321	70	383	147.1	-169	245	22	306	144.6	26	17	-196	287	-16	360	144.9	33
4	-265	256	71	371	133.7	-237	221	31	326	133.0	19	9	-257	257	-23	365	134.7	23
5	-167	285	47	338	149.4	-175	135	6	252	125.0	34	31	-222	149	-2	321	123.1	47

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-181	237	40	301	142.7	-166	178	15	247	137.4	17	15	-185	220	-13	291	140.3	22
2	-182	264	46	324	145.3	-171	197	21	264	139.1	21	17	-195	248	-14	319	141.7	19
3	-189	282	53	342	145.8	-170	212	21	277	140.8	22	17	-196	260	-15	332	142.7	24
4	-210	275	58	350	142.6	-188	215	24	290	138.7	21	15	-212	259	-17	341	140.6	24
5	-202	277	56	348	143.9	-186	200	20	283	136.1	24	18	-214	239	-14	337	137.3	28

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	44	26	31	26	8.4	47	30	5	36	10.0	52	26	7	34	9.5
2	38	37	19	34	6.9	28	32	26	28	6.6	19	36	13	32	4.2
3	26	36	23	30	5.0	55	68	18	37	16.0	69	79	11	29	17.0
4	28	43	29	25	6.9	33	26	12	31	5.2	21	37	8	29	5.2
5	64	38	24	14	12.4	71	118	17	45	32.1	106	162	21	21	36.6

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	44	26	31	26	8.4	47	30	5	36	10.0	52	26	7	34	9.5
2	39	41	25	37	7.7	37	35	19	34	8.1	38	41	10	41	6.9
3	37	47	26	44	6.9	41	51	18	40	11.1	48	57	10	42	10.7
4	48	47	28	42	8.7	49	45	17	43	10.3	50	51	10	41	10.1
5	53	45	27	38	9.7	53	70	18	45	16.8	62	91	14	39	18.6

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 3:30: 0
END TIME 3:35: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-200	205	26	295	135.8	-173	153	16	240	131.5	22	25	-209	193	-12	294	133.1	26
2	-217	266	25	348	140.5	-179	212	8	280	139.5	15	20	-220	259	-14	342	139.6	20
3	-173	275	55	326	147.9	-162	220	34	275	143.3	21	18	-189	265	-22	327	144.2	18
4	-185	253	57	318	142.7	-196	89	1	234	110.2	43	43	-254	99	0	313	108.6	44
5	-153	214	27	269	144.5	-147	189	26	242	142.2	14	13	-163	223	-15	279	143.9	16

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-200	205	26	295	135.8	-173	153	16	240	131.5	22	25	-209	193	-12	294	133.1	26
2	-209	236	25	322	138.1	-176	183	12	260	135.5	18	22	-214	226	-13	318	136.3	23
3	-196	250	36	323	141.7	-171	196	20	265	138.4	20	21	-205	240	-16	321	139.2	21
4	-193	251	41	322	142.0	-177	171	16	258	131.6	25	26	-217	206	-12	319	131.9	27
5	-184	243	38	310	142.5	-171	175	18	254	133.9	23	23	-205	210	-13	310	134.5	24

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	61	60	16	46	14.3	49	57	10	31	16.3	59	62	5	31	15.2
2	46	46	27	33	9.2	33	47	26	50	6.1	35	28	14	30	5.6
3	37	22	15	32	5.0	18	30	13	29	4.1	14	27	11	23	3.4
4	21	65	12	47	9.5	22	111	15	57	24.3	51	164	21	43	31.3
5	51	35	16	16	12.8	28	12	7	18	5.9	30	19	6	18	6.4

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	61	60	16	46	14.3	49	57	10	31	16.3	59	62	5	31	15.2
2	52	60	21	47	11.7	40	59	19	44	12.4	46	57	10	38	11.4
3	49	52	24	41	10.8	33	53	20	39	10.7	39	51	11	33	9.9
4	44	54	23	42	10.3	33	83	21	45	18.9	46	107	15	35	21.4
5	48	52	22	44	10.7	34	73	19	41	17.4	48	94	14	36	19.7

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 3:30: 0
END TIME 3:35: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-180	264	33	325	145.0	-171	215	16	276	141.6	13	8	-178	251	-10	309	144.6	23
2	-200	281	29	347	144.4	-174	209	23	277	139.5	23	20	-208	251	-10	333	139.7	27
3	-199	272	64	337	144.4	-155	230	25	279	146.2	14	10	-180	267	-23	323	146.1	22
4	-201	271	62	348	142.5	-170	244	26	303	144.7	14	10	-180	279	-20	341	146.7	25
5	-226	224	44	323	134.9	-169	217	22	277	142.3	16	9	-187	250	-18	315	143.3	22

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-180	264	33	325	145.0	-171	215	16	276	141.6	13	8	-178	251	-10	309	144.6	23
2	-189	272	29	335	144.7	-172	212	19	277	140.6	17	14	-192	251	-10	320	142.3	25
3	-191	272	40	336	144.6	-167	218	21	278	142.4	17	13	-188	256	-14	321	143.5	24
4	-194	272	46	339	144.0	-168	225	22	284	143.0	16	12	-186	262	-16	327	144.4	24
5	-200	263	45	336	142.3	-168	224	22	283	142.9	16	11	-186	260	-16	324	144.2	24

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	40	56	21	34	10.7	26	15	11	23	4.0	28	16	11	21	4.6
2	24	28	13	21	5.1	39	52	15	29	12.6	42	64	11	27	12.8
3	42	31	35	29	7.3	32	12	12	23	5.2	25	9	8	14	4.1
4	59	77	26	35	15.2	45	51	9	39	11.1	66	59	7	34	14.3
5	52	31	33	21	10.2	39	19	7	25	7.0	37	21	9	29	5.7

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	40	56	21	34	10.7	26	15	11	23	4.0	28	16	11	21	4.6
2	34	45	18	30	8.3	31	35	13	25	8.7	37	43	11	26	9.2
3	35	40	29	29	7.8	32	31	13	24	8.1	33	36	12	22	8.0
4	42	51	29	30	10.0	35	38	12	30	8.8	43	44	11	27	9.9
5	45	51	29	29	10.5	35	35	11	29	8.4	41	40	10	27	9.2

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

START TIME 3:35: 0
END TIME 3:40: 0

HEIGHT = 28.

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-155	213	14	269	143.5	-135	185	16	232	143.2	15	14	-158	217	-11	272	143.7	19
2	-143	237	22	281	149.0	-167	187	21	253	138.2	12	7	-179	214	-16	281	140.1	19
3	-197	207	65	291	136.0	-164	174	24	246	137.6	20	16	-182	211	-23	287	140.0	21
4	-186	206	59	281	137.4	-184	163	29	248	131.3	17	17	-203	195	-25	283	133.9	14
5	-233	212	62	322	132.8	-201	189	30	278	133.9	18	17	-226	224	-24	322	135.1	23

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-155	213	14	269	143.5	-135	185	16	232	143.2	15	14	-158	217	-11	272	143.7	19
2	-149	225	18	275	146.3	-151	186	19	243	140.7	14	11	-168	215	-13	276	141.9	19
3	-167	218	35	281	142.5	-156	182	21	244	139.6	16	13	-173	214	-17	280	141.2	20
4	-171	214	41	281	141.3	-163	177	23	245	137.6	16	14	-180	209	-19	281	139.4	18
5	-185	214	45	290	139.4	-171	180	24	252	136.8	17	14	-190	212	-20	290	138.5	19

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	38	44	11	19	11.8	25	34	11	24	8.6	30	28	5	11	8.5
2	48	18	25	17	10.0	33	23	8	21	7.6	36	20	8	20	7.1
3	37	44	40	24	10.5	61	24	19	31	15.0	73	24	15	21	15.4
4	52	35	22	11	12.8	26	26	14	27	6.1	29	17	9	16	6.0
5	64	41	38	37	12.5	58	33	18	57	7.4	52	32	17	41	8.4

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	38	44	11	19	11.8	25	34	11	24	8.6	30	28	5	11	8.5
2	42	35	19	19	10.8	32	24	10	25	8.1	34	24	7	16	7.7
3	46	38	45	22	11.6	44	27	14	26	10.9	50	23	11	19	10.8
4	47	37	41	19	11.8	42	27	14	26	10.5	47	23	11	18	10.2
5	54	37	41	22	12.3	47	29	15	37	9.9	51	25	13	29	9.9

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 3:35: 0
END TIME 3:40: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-168	224	28	283	142.9	-151	182	18	238	140.1	20	18	-164	230	-14	285	144.2	18
2	-202	238	53	318	139.5	-189	188	27	269	134.7	23	10	-211	224	-21	312	136.6	22
3	-200	222	49	303	138.0	-187	184	26	264	134.5	18	13	-202	213	-23	295	136.4	15
4	-212	209	56	302	134.3	-196	177	26	265	132.0	15	14	-210	213	-24	301	135.4	15
5	-210	243	69	329	139.2	-192	196	27	282	135.3	21	15	-215	239	-28	330	137.5	25

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-168	224	28	283	142.9	-151	182	18	238	140.1	20	18	-164	230	-14	285	144.2	18
2	-186	231	41	302	141.1	-171	185	23	255	137.2	22	14	-190	227	-18	300	140.1	20
3	-190	228	44	302	140.1	-176	185	24	258	136.4	21	14	-194	222	-19	298	138.9	19
4	-196	223	47	302	138.5	-182	183	25	260	135.2	19	14	-198	220	-20	299	138.0	18
5	-199	227	51	307	138.7	-184	185	25	264	135.2	19	14	-201	224	-22	305	137.9	19

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	37	35	10	18	9.8	27	24	6	25	6.1	28	24	7	8	7.3
2	49	48	20	27	11.5	31	29	8	24	7.4	36	38	7	21	8.6
3	40	39	42	16	9.5	21	18	10	15	5.2	22	15	13	17	4.0
4	39	41	22	17	10.2	17	19	9	11	4.8	25	22	10	13	5.7
5	60	57	38	34	13.7	50	58	16	32	14.4	49	70	17	38	13.5

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	37	35	10	18	9.8	27	24	6	25	6.1	28	24	7	8	7.3
2	45	42	20	29	10.5	34	26	8	28	7.1	40	31	7	21	8.7
3	43	39	28	25	10.0	31	23	9	25	6.6	35	27	9	20	7.6
4	42	40	27	23	10.2	29	22	9	22	6.4	33	26	10	18	7.2
5	45	43	30	27	10.7	33	31	10	25	8.2	36	37	11	25	8.4

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

START TIME 3:40: 0
END TIME 3:45: 0

HEIGHT = 28.

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-195	259	82	338	142.8	-160	215	19	272	143.7	27	21	-167	269	-16	325	148.2	30
2	-229	219	41	330	133.0	-202	192	26	285	132.8	14	13	-220	227	-16	323	136.4	27
3	-195	267	64	351	146.4	-183	237	25	304	142.6	18	11	-191	275	-19	341	145.0	29
4	-242	256	72	354	136.7	-213	206	24	315	133.0	17	19	-226	240	-21	348	136.4	34
5	-279	200	72	351	125.7	-182	159	11	261	131.4	31	17	-214	216	-16	327	134.2	42

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-195	259	82	338	142.8	-160	215	19	272	143.7	27	21	-167	269	-16	325	148.2	30
2	-213	237	60	334	137.5	-183	202	23	279	137.9	20	17	-195	247	-16	324	141.3	28
3	-209	253	61	339	140.3	-183	213	23	287	139.4	19	15	-194	256	-17	329	142.5	28
4	-213	254	64	343	139.5	-190	212	23	294	137.8	19	16	-202	252	-18	334	141.0	30
5	-228	242	66	345	136.5	-188	200	21	287	136.4	21	16	-204	244	-18	332	139.5	32

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	79	73	38	30	17.9	56	49	19	56	11.4	70	43	23	27	14.0	
2	59	83	37	19	17.9	33	58	20	20	12.9	37	59	15	22	11.8	
3	65	66	23	26	14.7	56	51	14	52	11.1	57	54	12	42	11.6	
4	48	38	26	31	8.8	76	90	22	31	20.5	93	79	16	13	20.3	
5	69	62	38	53	11.8	80	77	19	38	24.0	81	105	17	31	23.1	

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	79	73	38	30	17.9	56	49	19	56	11.4	70	43	23	27	14.0	
2	68	78	42	24	17.9	49	53	19	39	13.0	59	55	18	24	14.0	
3	67	76	36	25	17.1	49	54	17	44	12.3	57	54	16	31	13.1	
4	64	68	34	27	15.4	57	62	18	42	14.5	66	60	16	29	14.9	
5	62	70	34	34	15.6	61	68	18	43	16.8	69	72	16	29	16.8	

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 3:40: 0
END TIME 3:45: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-248	188	76	372	125.7	-179	223	27	292	142.1	24	13	-206	275	-24	352	143.1	30
2	-265	196	59	377	126.4	-177	227	16	302	142.4	23	15	-207	284	-16	366	143.6	32
3	-262	274	80	392	135.9	-170	229	19	294	143.7	33	19	-199	298	-18	366	145.9	38
4	-289	237	61	379	129.2	-277	210	30	350	126.9	14	8	-288	240	-23	378	129.6	18
5	-276	260	69	384	133.3	-232	229	38	329	134.8	21	11	-245	274	-29	372	138.2	28

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-248	188	76	372	125.7	-179	223	27	292	142.1	24	13	-206	275	-24	352	143.1	30
2	-256	192	67	375	126.0	-178	225	22	297	142.3	23	14	-207	280	-20	359	143.3	31
3	-259	222	72	381	129.7	-175	226	21	296	142.8	27	16	-204	286	-19	362	144.3	33
4	-266	226	69	381	129.5	-199	222	23	309	139.0	24	14	-224	275	-20	366	140.8	30
5	-268	232	69	381	130.3	-206	224	26	313	138.2	23	13	-228	275	-22	367	140.3	29

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	90	207	38	37	37.2	70	33	8	41	14.1	70	51	12	37	13.0
2	93	184	40	32	31.3	90	57	15	37	19.2	91	72	10	37	17.9
3	66	85	21	22	15.6	66	46	19	32	14.3	60	56	13	24	12.6
4	43	53	26	19	10.0	20	40	7	22	6.5	25	43	11	23	6.8
5	55	41	34	32	9.2	47	24	9	31	7.4	52	42	11	30	9.2

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	90	207	38	37	37.2	70	33	8	41	14.1	70	51	12	37	13.0
2	83	186	38	33	32.8	77	44	13	38	16.0	77	60	11	36	14.9
3	75	159	33	30	27.6	71	44	15	35	15.0	70	58	12	32	13.8
4	69	140	31	27	24.3	77	43	14	40	15.1	72	57	11	30	13.9
5	66	127	32	26	22.1	72	39	14	39	13.9	68	54	12	30	13.0

VAD OTIS4 TIME IN GHT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 3:45: 0
END TIME 3:50: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-195	219	50	297	138.3	-185	202	25	275	137.6	13	9	-183	233	-23	297	141.8	17
2	-208	234	81	314	138.2	-181	205	30	276	138.6	14	7	-188	233	-28	301	141.0	22
3	-186	219	65	299	140.2	-208	168	28	269	128.8	16	9	-221	192	-23	295	130.8	24
4	-205	105	43	244	116.1	-197	86	15	220	112.9	17	20	-220	95	-13	247	112.5	26
5	-212	93	57	249	112.6	-186	123	32	225	123.6	14	15	-211	138	-25	255	123.1	19

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-195	219	50	297	138.3	-185	202	25	275	137.6	13	9	-183	233	-23	297	141.8	17
2	-202	226	66	306	138.2	-183	203	27	275	138.1	13	8	-186	233	-25	299	141.4	19
3	-197	224	65	303	138.9	-191	192	28	273	135.0	14	8	-198	219	-25	298	137.9	21
4	-199	191	59	287	132.5	-193	162	24	258	128.8	15	12	-204	184	-21	283	130.8	22
5	-201	174	59	279	128.7	-192	155	26	252	127.8	15	12	-205	176	-22	278	129.3	22

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	46	36	12	30	10.0	32	11	7	27	4.3	28	13	6	26	3.2
2	25	31	27	34	3.9	34	25	12	26	6.6	35	24	12	27	6.0
3	80	36	17	22	16.8	16	25	17	15	5.4	18	23	12	12	5.2
4	37	79	22	27	20.5	15	49	13	21	11.8	15	61	13	24	13.2
5	28	97	23	17	23.9	28	14	9	17	6.7	21	31	9	15	7.7

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	46	36	12	30	10.0	32	11	7	27	4.3	28	13	6	26	3.2
2	36	33	25	32	7.2	31	18	10	25	5.3	30	18	9	25	4.6
3	52	33	22	29	10.9	29	26	10	22	6.9	31	28	10	21	6.9
4	48	73	24	39	17.2	26	59	12	32	13.1	29	69	12	32	14.6
5	45	86	24	39	19.9	26	55	12	33	12.2	28	65	11	31	13.8

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 3:45: 0
END TIME 3:50: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-206	235	44	317	138.9	-174	192	20	260	138.1	19	18	-195	242	-20	312	141.3	17
2	-207	280	86	360	143.5	-162	173	8	248	136.5	34	23	-194	255	-18	330	141.5	36
3	-215	186	49	304	130.2	-211	130	17	252	121.9	24	17	-246	164	-20	301	123.6	23
4	-229	120	47	257	117.9	-192	96	19	226	113.2	26	22	-216	103	-11	262	114.5	22
5	-194	156	49	255	128.2	-183	103	20	223	116.6	23	23	-203	110	-16	257	117.1	22

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-206	235	44	317	138.9	-174	192	20	260	138.1	19	18	-195	242	-20	312	141.3	17
2	-207	259	68	340	141.4	-167	182	14	254	137.3	27	21	-195	249	-19	322	141.4	27
3	-210	236	62	329	137.8	-181	166	15	253	132.4	26	20	-211	222	-19	315	135.8	26
4	-213	208	58	311	133.0	-184	149	16	247	127.8	26	20	-212	194	-17	302	130.7	25
5	-209	197	56	299	132.0	-184	139	17	241	125.4	25	21	-210	175	-17	292	127.7	24

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	50	34	29	36	9.3	42	31	15	50	3.4	36	16	7	34	3.6			
2	82	68	29	48	15.2	55	55	7	16	17.7	48	77	12	36	14.8			
3	66	96	34	20	21.9	40	39	25	35	9.9	31	48	22	12	10.8			
4	16	33	27	21	6.7	24	77	14	37	21.5	18	114	19	18	25.8			
5	25	46	28	14	11.7	20	79	12	25	23.0	17	120	16	15	27.9			

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	50	34	29	36	9.3	42	31	15	50	3.4	36	16	7	34	3.6			
2	66	58	36	47	12.6	48	45	13	35	12.7	41	56	10	35	10.7			
3	64	78	35	43	16.3	49	49	17	34	13.8	45	66	14	31	13.5			
4	57	85	34	50	16.9	44	63	14	36	17.6	40	93	15	36	19.0			
5	52	81	32	50	15.8	40	64	15	35	19.1	36	104	15	38	21.5			

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 2M.

START TIME 3:50: 0
END TIME 3:55: 0

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-214	136	65	257	122.2	-172	128	18	216	126.8	24	13	-190	161	-21	251	130.1	23
2	-176	141	21	231	128.1	-168	108	16	204	121.9	15	22	-182	128	-10	228	123.5	22
3	-99	172	59	235	148.8	-176	75	17	224	118.4	19	19	-194	94	-15	248	120.6	28
4	-227	175	72	292	126.6	-153	192	22	259	143.1	22	16	-161	229	-21	296	145.3	33
5	-167	143	58	286	131.2	-197	121	25	234	120.6	17	13	-229	144	-23	274	121.6	26

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-214	136	65	257	122.2	-172	128	18	216	126.8	24	13	-190	161	-21	251	130.1	23
2	-197	138	45	245	124.9	-170	119	17	210	124.5	20	17	-186	146	-16	240	127.0	22
3	-166	149	49	242	132.5	-172	105	17	215	122.6	20	18	-189	130	-16	243	125.0	24
4	-182	156	55	256	130.9	-167	129	19	227	128.1	20	17	-181	156	-17	257	130.5	27
5	-180	154	56	261	130.9	-172	127	20	228	126.7	20	16	-190	154	-18	260	128.8	27

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	33	42	25	35	8.7	32	23	10	35	4.7	28	26	8	32	5.0
2	36	55	23	39	12.7	17	46	10	29	11.3	14	62	6	37	12.9
3	138	43	25	46	32.6	68	123	20	63	30.4	80	123	19	63	28.8
4	30	65	27	44	11.1	94	49	17	59	20.8	102	53	16	48	20.4
5	183	71	36	46	43.4	16	40	15	30	7.8	13	43	9	25	8.0

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	33	42	25	35	8.7	32	23	10	35	4.7	28	26	8	32	5.0
2	37	46	32	38	10.7	25	35	10	30	8.4	22	48	9	35	9.7
3	92	47	30	40	22.4	42	74	13	42	17.7	46	79	12	44	17.4
4	84	52	31	46	19.9	59	78	14	50	20.4	65	85	13	50	20.1
5	106	60	32	47	25.0	54	72	14	47	18.8	61	78	13	47	18.6

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 3:50: 0
END TIME 3:55: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-177	205	61	274	137.8	-177	155	20	237	131.1	23	17	-190	183	-18	265	133.7	22
2	-161	189	17	254	137.8	-160	131	20	208	128.4	24	16	-183	169	-11	251	132.1	25
3	-188	102	52	238	115.1	-168	122	21	211	126.6	20	15	-192	147	-24	243	127.6	17
4	-236	191	85	313	128.1	-203	175	36	272	129.8	27	13	-228	201	-33	310	130.0	22
5	-236	169	50	298	124.7	-192	162	29	256	129.1	13	13	-216	190	-24	296	129.9	23

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-177	205	61	274	137.8	-177	155	20	237	131.1	23	17	-190	183	-18	265	133.7	22
2	-169	196	37	263	137.8	-168	142	20	222	129.7	24	16	-186	176	-14	258	132.8	24
3	-175	167	42	255	130.6	-168	136	20	218	128.7	22	16	-188	167	-18	253	131.2	22
4	-189	172	52	269	130.0	-176	145	24	231	129.0	24	15	-197	175	-21	267	130.9	22
5	-200	172	52	275	128.9	-180	149	25	237	129.0	21	15	-202	178	-22	273	130.7	22

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	22	67	22	54	8.9	40	30	7	48	3.9	41	45	7	57	4.8
2	22	66	29	47	12.4	17	38	12	37	4.9	27	45	6	47	5.5
3	10	116	11	29	29.6	40	14	10	28	9.1	28	10	5	21	5.0
4	48	79	42	43	15.3	19	57	12	34	10.6	26	73	10	46	12.3
5	32	70	51	35	13.2	23	54	16	33	11.1	33	75	17	43	13.5

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	22	67	22	54	8.9	40	30	7	48	3.9	41	45	7	57	4.8
2	23	64	32	50	10.5	30	36	9	43	4.5	33	44	7	50	5.0
3	21	92	27	45	20.9	32	31	9	39	6.2	31	39	8	43	5.5
4	39	88	35	50	19.4	33	41	12	44	7.3	34	50	10	49	7.4
5	42	83	39	48	18.2	31	44	13	42	8.0	34	55	12	49	8.8

VAD OTIS4 TIME IN GMT CT VAD 7/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 3:55: 0
END TIME 4: 0: 0

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-254	126	75	290	116.8	-226	101	27	250	114.1	20	20	-244	123	-23	275	116.7	22
2	-199	161	64	264	129.3	-179	133	22	229	126.5	22	20	-206	151	-18	263	125.9	26
3	-180	150	34	234	129.7	-157	133	17	210	130.7	19	17	-171	171	-15	246	134.5	19
4	-203	232	79	308	138.8	-181	187	36	267	133.8	23	16	-203	217	-28	311	135.9	27
5	-268	192	80	335	125.4	-213	140	39	275	118.5	25	21	-261	147	-29	333	117.6	30

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-254	126	75	290	116.8	-226	101	27	250	114.1	20	20	-244	123	-23	275	116.7	22
2	-227	143	70	278	122.6	-204	116	25	241	119.8	21	20	-226	136	-21	270	120.9	24
3	-212	145	59	265	124.8	-189	121	22	231	123.2	21	19	-209	147	-19	262	125.2	22
4	-209	168	64	277	128.6	-187	139	26	241	126.1	21	18	-207	166	-21	275	128.1	23
5	-220	173	67	288	128.0	-192	137	28	247	124.6	22	19	-217	162	-23	286	126.1	25

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	46	44	44	28	12.1	29	30	11	27	7.0	17	24	15	14	5.4
2	50	66	21	12	18.1	33	46	16	15	13.9	33	57	8	12	14.1
3	31	30	11	17	9.7	37	17	14	20	10.3	37	38	8	19	11.5
4	18	38	14	35	4.7	19	76	14	43	15.5	46	91	17	28	18.8
5	40	61	10	30	11.5	31	115	23	48	27.6	31	156	25	24	28.7

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	46	44	44	28	12.1	29	30	11	27	7.0	17	24	15	14	5.4
2	56	56	39	25	15.9	39	40	13	29	12.1	31	43	12	14	11.0
3	53	49	33	29	14.3	43	35	13	27	12.9	42	44	11	19	12.6
4	46	60	31	36	13.9	38	56	15	35	13.8	42	66	13	31	14.9
5	50	60	28	41	13.4	38	68	17	39	16.9	45	87	16	37	18.1

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

START TIME 3:55: 0
END TIME 4: 0: 0

HEIGHT = 43.

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-266	125	89	303	115.7	-203	125	19	244	121.9	26	23	-243	150	-27	291	121.7	21
2	-214	189	64	294	130.5	-184	153	21	244	129.7	20	14	-209	189	-24	288	132.2	19
3	-233	130	43	274	118.5	-186	125	17	226	123.5	15	23	-209	156	-17	264	126.1	16
4	-230	254	75	349	138.3	-191	204	36	285	136.8	23	14	-213	259	-31	337	140.4	19
5	-227	254	77	346	138.1	-184	224	31	298	140.6	18	15	-203	268	-28	346	142.5	29

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-266	125	89	303	115.7	-203	125	19	244	121.9	26	23	-243	150	-27	291	121.7	21
2	-240	154	76	299	123.1	-194	139	20	244	125.8	23	19	-226	169	-26	289	126.9	20
3	-238	145	64	289	121.4	-191	134	19	237	125.0	20	20	-220	164	-22	280	126.6	19
4	-236	172	67	304	125.5	-191	152	23	249	127.8	21	19	-218	187	-24	294	129.9	19
5	-234	190	69	313	128.2	-189	168	25	260	130.6	20	18	-215	205	-25	305	132.7	21

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	41	65	35	47	13.9	37	41	14	26	11.4	43	52	6	39	10.9
2	60	67	28	15	17.3	32	37	11	18	10.7	42	44	8	21	11.3
3	20	62	25	20	13.1	11	31	4	15	7.5	13	43	8	19	8.7
4	63	26	39	27	10.5	29	42	14	35	7.9	36	33	9	32	6.3
5	45	46	25	22	9.9	64	51	14	34	14.5	70	59	11	29	14.3

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	41	65	35	47	13.9	37	41	14	26	11.4	43	52	6	39	10.9
2	64	70	33	34	16.8	35	40	12	21	11.3	44	50	7	30	11.9
3	51	66	34	31	15.3	28	37	10	21	9.9	37	47	8	29	10.6
4	53	75	35	34	15.9	28	49	13	32	10.6	36	60	9	38	11.3
5	51	78	33	40	15.6	37	57	14	38	12.5	44	68	9	42	12.9

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 4: 0: 0
END TIME 4: 5: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-222	193	74	296	130.7	-206	120	25	246	119.1	18	19	-233	148	-22	287	121.6	24
2	-223	192	65	298	130.6	-181	178	31	261	136.4	20	9	-192	222	-24	303	139.9	25
3	-261	143	34	304	118.9	-206	161	19	265	128.3	19	16	-234	190	-17	306	128.9	20
4	-271	173	64	329	122.2	-240	141	21	283	119.8	20	14	-267	168	-19	320	122.0	21
5	-240	203	56	322	130.5	-239	110	27	273	112.8	19	23	-266	128	-21	316	114.5	30

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-222	193	74	296	130.7	-206	120	25	246	119.1	18	19	-233	148	-22	287	121.6	24
2	-222	192	69	297	130.7	-193	151	28	254	128.4	20	13	-211	188	-23	296	131.5	25
3	-235	177	54	299	126.9	-197	155	25	257	128.4	19	14	-218	189	-21	299	130.6	23
4	-244	176	59	307	125.7	-208	151	24	264	126.1	20	14	-231	183	-20	305	128.3	23
5	-244	180	59	310	126.4	-213	144	25	266	123.9	19	16	-237	174	-21	307	126.1	24

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	30	42	44	38	6.6	31	65	25	39	14.7	33	82	23	35	16.9
2	32	34	19	17	8.3	70	35	14	47	16.1	73	34	14	24	15.5
3	41	47	14	19	11.2	38	23	8	25	8.2	31	49	8	12	10.7
4	48	78	53	55	12.2	46	56	22	54	9.8	45	55	19	45	9.8
5	59	50	32	24	13.0	28	80	24	38	17.8	24	122	15	18	23.5

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	30	42	44	38	6.6	31	65	25	39	14.7	33	82	23	35	16.9
2	30	36	32	27	7.3	55	57	19	42	17.3	60	70	18	29	18.2
3	37	45	32	25	10.1	50	48	17	37	14.8	53	62	16	25	15.9
4	43	54	37	37	10.7	52	50	18	43	14.0	54	60	16	32	14.9
5	45	54	36	35	11.0	50	56	19	42	15.2	52	74	16	31	16.9

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 4: 0: 0
END TIME 4: 5: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-222	244	81	333	137.8	-202	178	25	271	131.2	23	13	-236	229	-27	331	133.8	19
2	-172	239	18	321	145.1	-149	205	15	274	142.2	25	15	-176	255	-9	333	144.4	25
3	-259	207	51	341	128.4	-217	143	22	264	122.7	16	13	-265	177	-16	323	123.3	27
4	-267	169	50	332	122.7	-240	151	14	288	121.7	16	19	-264	181	-14	325	124.1	18
5	-265	213	58	348	129.2	-231	155	27	280	124.0	20	18	-263	207	-26	337	128.2	21

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-222	244	81	333	137.8	-202	178	25	271	131.2	23	13	-236	229	-27	331	133.8	19
2	-197	241	49	327	141.4	-176	192	20	273	136.7	24	14	-206	242	-18	332	139.1	22
3	-220	229	50	332	136.6	-191	174	21	270	131.5	21	14	-228	218	-17	329	133.3	24
4	-231	215	50	332	133.3	-203	168	19	274	129.2	20	15	-236	209	-16	328	131.1	23
5	-239	214	52	336	132.4	-209	165	21	275	128.0	20	16	-242	209	-18	330	130.4	22

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	48	29	42	38	7.1	32	31	7	36	5.6	32	43	11	35	7.1
2	132	56	47	32	26.7	95	75	21	47	22.2	117	71	18	40	22.4
3	49	68	19	12	14.1	32	47	16	38	9.3	22	48	7	19	8.7
4	70	88	47	36	18.8	22	49	20	21	9.7	27	55	27	24	9.9
5	62	51	25	31	12.4	25	20	9	19	5.1	34	30	12	23	6.7

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	48	29	42	38	7.1	32	31	7	36	5.6	32	43	11	35	7.1
2	98	43	54	34	19.0	73	57	16	40	16.5	87	58	17	35	16.8
3	88	54	43	28	18.1	64	57	14	38	15.6	75	62	14	30	16.1
4	85	67	43	30	18.9	60	55	17	35	14.8	68	61	17	28	15.2
5	81	63	40	30	17.6	55	50	15	32	13.4	63	56	17	27	13.7

VAD OTIS4 TIME IN GMT CT VAD 7/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 4: 5: 0
END TIME 4:10: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-268	216	73	350	127.9	-236	165	30	301	127.4	23	11	-249	215	-26	347	131.3	33
2	-231	205	64	317	131.4	-185	163	19	256	133.1	24	13	-203	214	-15	305	136.7	26
3	-145	252	28	345	152.3	-224	193	27	301	129.2	16	14	-248	233	-20	348	132.2	30
4	-284	218	63	360	127.2	-249	180	29	316	124.2	16	17	-277	215	-26	362	126.2	28
5	-275	181	74	351	121.0	-245	171	30	301	125.1	20	13	-269	206	-23	341	127.1	25

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-268	216	73	350	127.9	-236	165	30	301	127.4	23	11	-249	215	-26	347	131.3	33
2	-251	211	69	335	129.5	-212	164	25	280	130.0	23	12	-228	215	-21	327	133.8	30
3	-218	224	56	338	136.7	-216	173	25	287	129.8	21	13	-234	221	-20	334	133.3	30
4	-236	222	54	344	134.2	-225	175	26	295	128.3	20	14	-246	219	-22	341	131.4	29
5	-247	214	61	345	131.7	-229	174	27	296	127.7	20	14	-250	217	-22	341	130.6	29

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	36	77	28	57	10.4	101	52	22	68	20.8	106	72	22	57	19.5
2	59	65	31	49	14.0	81	32	15	47	17.6	73	49	12	39	15.1
3	196	62	43	41	36.6	43	73	20	58	13.0	50	77	11	47	14.0
4	33	37	19	27	6.7	37	81	24	52	14.9	28	97	16	38	16.6
5	31	60	37	31	10.1	45	24	9	41	6.0	20	43	11	34	5.6

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	36	77	28	57	10.4	101	52	22	68	20.8	106	72	22	57	19.5
2	50	69	29	54	11.8	93	42	19	61	18.8	92	60	18	52	17.2
3	122	68	38	50	24.1	79	53	19	60	16.8	80	64	16	51	15.8
4	109	61	33	45	21.2	71	60	20	58	16.2	72	72	16	48	16.0
5	101	62	34	43	20.1	67	55	18	55	14.8	66	67	15	46	14.7

VAD OTIS4 TIME IN GMT OF VAD 9/18/76 OTIS AIRFORCE MD 90.

HEIGHT = 43.

START TIME 4: 5: 0
END TIME 4:10: 0

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-344	179	74	393	117.0	-253	151	33	298	120.4	34	20	-314	209	-28	380	123.4	25
2	-240	210	51	362	127.1	-228	173	23	290	127.7	18	15	-265	215	-17	348	129.4	21
3	-276	249	47	377	132.0	-218	181	24	286	130.0	26	15	-258	251	-17	363	134.3	24
4	-301	256	57	402	130.3	-254	201	28	326	128.3	17	19	-293	248	-27	385	130.2	23
5	-249	243	64	396	136.9	-242	160	19	294	123.3	25	22	-293	225	-20	375	127.2	22

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-344	179	74	393	117.0	-253	151	33	298	120.4	34	20	-314	209	-28	380	123.4	25
2	-312	194	64	377	122.1	-240	162	28	294	124.1	26	18	-290	212	-23	364	126.4	23
3	-294	215	58	377	125.7	-232	169	26	291	126.3	26	17	-278	227	-21	364	129.3	24
4	-299	225	58	383	126.8	-237	177	27	299	126.8	24	17	-282	232	-22	369	129.5	23
5	-288	229	59	386	129.0	-238	173	25	298	126.0	24	18	-284	230	-22	370	129.0	23

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	49	71	42	60	8.9	51	53	24	62	7.4	41	47	20	52	5.2
2	72	74	33	33	15.6	51	20	17	31	9.0	56	42	17	22	11.0
3	49	46	43	26	9.4	36	11	18	24	6.0	44	27	20	23	7.5
4	53	65	14	28	11.3	30	29	14	21	6.4	30	26	8	27	4.4
5	177	103	43	33	32.8	24	40	16	15	8.7	44	63	11	40	10.3

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	49	71	42	60	8.9	51	53	24	62	7.4	41	47	20	52	5.2
2	68	71	39	49	13.2	50	40	20	47	8.7	53	43	18	42	8.8
3	63	67	40	41	12.7	46	33	19	39	8.2	51	42	19	35	9.0
4	59	65	35	39	12.3	43	35	18	39	7.7	47	39	17	34	8.1
5	96	75	37	38	10.5	39	36	17	35	7.9	46	44	16	35	8.5

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

START TIME 4:10: 0
END TIME 4:15: 0

HEIGHT = 28.

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-220	247	83	369	141.7	-221	182	30	309	126.7	20	19	-244	208	-25	353	127.6	32
2	-173	251	69	326	144.1	-153	224	26	281	145.1	26	10	-174	259	-19	320	145.5	24
3	-172	224	46	292	142.4	-173	165	19	243	133.4	20	20	-197	203	-13	288	135.3	28
4	-184	164	83	290	128.3	-190	140	24	248	123.2	26	20	-212	148	-20	282	122.9	28
5	-148	172	36	268	143.0	-196	117	17	235	121.8	10	14	-207	139	-17	256	124.4	19

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-220	247	83	369	141.7	-221	182	30	309	126.7	20	19	-244	208	-25	353	127.6	32
2	-198	249	77	349	142.8	-189	202	28	294	135.2	23	15	-211	231	-22	338	135.9	29
3	-189	240	66	329	142.7	-184	189	25	276	134.6	22	17	-207	221	-19	320	135.7	28
4	-188	223	70	320	139.3	-185	178	25	269	132.0	23	18	-208	205	-19	312	132.8	28
5	-179	212	63	309	140.1	-187	165	23	262	129.8	20	17	-208	191	-19	300	131.0	26

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	177	46	21	53	30.8	85	101	26	77	26.0	77	146	24	45	30.0	
2	81	97	23	25	23.6	61	54	10	19	16.9	57	54	9	17	14.0	
3	67	55	29	38	15.4	29	35	18	25	9.3	40	52	15	38	10.7	
4	49	160	23	22	35.7	28	89	20	43	20.6	45	114	21	20	25.9	
5	150	43	32	34	36.0	37	37	4	16	12.2	48	42	8	23	13.4	

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	177	46	21	53	30.8	85	101	26	77	26.0	77	146	24	45	30.0	
2	134	72	22	47	24.6	80	83	19	57	23.4	75	112	18	38	24.9	
3	117	66	24	51	22.8	66	71	19	54	19.3	64	95	17	44	20.7	
4	104	98	23	49	26.3	59	76	19	52	19.8	59	102	18	43	22.1	
5	114	91	31	50	28.0	55	74	17	49	19.8	57	96	16	45	20.7	

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 4:10: 0
END TIME 4:15: 0

ONE MINUTE MEANS

	PEAKS				I	FOURIER COEFFICIENTS						I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-267	268	63	387	134.2	-234	201	36	310	130.0	20	13	-283	255	-31	381	131.8	28
2	-235	249	66	345	135.9	-190	188	19	276	134.4	28	16	-229	246	-21	344	136.9	24
3	-140	262	38	302	152.0	-157	167	20	230	136.5	24	16	-182	231	-22	296	141.7	22
4	-86	237	51	304	162.4	-170	145	14	230	130.7	35	24	-219	189	-21	305	131.3	23
5	-237	200	65	317	130.9	-175	125	4	217	125.7	17	27	-229	171	-17	288	126.9	21

CUMULATIVE MEANS

	PEAKS				I	FOURIER COEFFICIENTS						I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-267	268	63	387	134.2	-234	201	36	310	130.0	20	13	-283	255	-31	381	131.8	28
2	-251	255	65	364	135.1	-210	194	27	292	132.4	24	15	-254	250	-26	361	134.5	26
3	-216	257	56	344	140.4	-193	185	25	272	133.7	24	15	-231	244	-24	341	136.8	25
4	-191	252	55	333	146.4	-187	174	22	261	132.9	27	17	-228	229	-23	331	135.3	24
5	-191	242	57	330	143.5	-185	165	19	253	131.5	25	19	-228	218	-22	323	133.7	24

ONE MINUTE STANDARD DEVIATIONS

	PEAKS				I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	51	79	34	54	11.5	31	51	6	51	5.9	36	42	8	52	2.8	
2	53	52	33	28	11.6	49	55	9	19	14.8	56	58	10	23	12.7	
3	52	27	26	30	9.6	27	32	13	39	4.3	28	18	4	22	5.0	
4	180	47	51	38	37.3	44	37	7	19	13.6	71	85	13	41	18.6	
5	41	47	31	61	13.2	33	14	5	32	4.0	39	25	9	39	5.1	

CUMULATIVE STANDARD DEVIATIONS

	PEAKS				I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	51	79	34	54	11.5	31	51	6	51	5.9	36	42	8	52	2.8	
2	53	64	32	46	11.1	46	51	11	40	11.3	54	49	10	42	9.5	
3	73	55	32	51	13.2	48	47	12	48	9.7	57	42	9	48	8.9	
4	123	52	37	50	23.6	47	48	12	46	10.7	60	60	10	48	12.1	
5	117	55	35	52	22.7	44	47	13	47	10.2	56	60	10	49	11.6	

HEIGHT = 28.

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

START TIME 4:15: 0
END TIME 4:20: 0

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-157	211	33	286	143.2	-151	125	16	215	124.0	20	25	-212	147	-3	289	123.1	33
2	-221	177	67	289	128.6	-193	122	24	236	121.7	27	14	-216	160	-19	280	125.8	29
3	-214	150	43	267	124.9	-196	112	19	227	119.6	23	14	-211	142	-9	256	123.7	21
4	-260	227	77	364	132.1	-201	242	26	330	139.8	26	14	-212	280	-21	369	142.7	38
5	-224	212	28	315	133.4	-211	157	25	269	126.1	15	12	-230	186	-20	301	129.0	20

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-157	211	33	286	143.2	-151	125	16	215	124.0	20	25	-212	147	-3	289	123.1	33
2	-189	194	50	287	135.9	-172	124	20	226	122.9	24	19	-214	153	-11	285	124.4	31
3	-196	178	47	280	131.8	-181	119	18	226	121.7	23	17	-213	149	-11	274	124.1	27
4	-212	189	55	300	131.9	-186	149	20	251	126.0	24	17	-213	181	-13	297	128.6	30
5	-215	194	50	303	132.2	-190	150	21	255	126.0	22	16	-216	182	-14	298	128.7	28

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	99	85	37	49	23.7	42	108	8	65	28.9	51	134	17	22	29.4
2	48	47	17	33	12.1	43	56	11	36	15.9	46	73	11	24	17.0
3	36	55	19	20	13.6	18	20	5	18	5.0	14	28	9	19	5.8
4	109	70	19	38	20.3	87	88	14	62	18.3	101	79	11	39	18.9
5	51	50	9	21	12.9	36	55	14	29	13.1	41	43	7	19	10.9

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	99	85	37	49	23.7	42	108	8	65	28.9	51	134	17	22	29.4
2	81	68	32	40	19.5	46	82	10	51	22.3	46	103	16	22	22.9
3	68	66	28	35	18.0	39	65	9	41	17.7	37	83	13	25	18.2
4	82	69	29	50	18.1	53	88	11	64	19.2	56	98	13	50	19.7
5	76	66	28	46	17.1	51	81	11	59	18.0	53	90	13	45	18.2

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD

HEIGHT = 43.

START TIME 4:15: 0
END TIME 4:20: 0

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-198	259	51	334	143.2	-197	151	30	250	127.3	32	17	-235	196	-24	309	129.7	36
2	-219	209	47	309	133.6	-209	147	24	254	125.5	16	14	-222	184	-23	289	129.5	20
3	-235	123	26	269	117.3	-168	112	8	204	123.6	32	17	-215	152	-4	267	124.7	20
4	-309	226	67	385	126.1	-247	182	32	311	126.2	26	17	-282	234	-25	371	129.3	21
5	-236	218	31	329	133.5	-229	166	19	284	125.9	16	12	-248	204	-13	323	129.5	19

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-198	259	51	334	143.2	-197	151	30	250	127.3	32	17	-235	196	-24	309	129.7	36
2	-209	230	49	321	138.0	-201	149	27	252	126.3	23	16	-228	190	-24	299	129.6	27
3	-217	196	41	304	131.5	-191	137	21	237	125.5	26	16	-224	178	-17	289	128.0	25
4	-242	209	48	326	130.0	-206	149	24	257	125.7	26	16	-240	193	-19	311	128.4	24
5	-241	207	45	327	130.7	-210	152	23	262	125.7	24	16	-241	195	-18	313	128.6	23

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	73	39	48	28	13.2	26	27	7	29	5.5	25	34	11	19	6.9
2	65	60	22	34	14.7	21	24	5	22	6.1	23	26	5	23	5.1
3	31	46	29	38	8.6	25	20	4	22	6.6	20	41	6	20	8.9
4	21	37	10	18	5.7	27	41	9	9	8.9	26	57	11	28	8.8
5	71	35	12	28	13.9	25	14	7	21	4.1	32	16	9	22	5.1

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	73	39	48	28	13.2	26	27	7	29	5.5	25	34	11	19	6.9
2	66	57	34	33	14.3	23	27	6	25	5.7	24	29	8	23	5.7
3	58	73	34	42	16.0	28	30	11	33	5.9	23	37	12	26	7.0
4	65	66	31	52	14.0	37	33	11	44	6.7	35	49	12	46	7.4
5	65	61	29	48	13.9	36	35	11	42	6.2	34	45	12	42	7.0

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE MD 90.

HEIGHT = 28.

START TIME 4:20: 0
END TIME 4:25: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-256	89	42	279	108.0	-234	106	20	259	114.2	8	11	-243	119	-17	273	115.9	17
2	-287	165	46	340	119.5	-241	147	20	295	123.8	19	15	-254	190	-19	333	127.7	27
3	-247	183	35	318	125.4	-217	152	24	281	124.4	20	12	-236	188	-14	320	127.1	23
4	-222	113	25	253	119.9	-252	76	15	266	106.6	10	15	-268	97	-13	288	110.0	18
5	-253	144	27	296	120.2	-248	84	16	267	109.4	15	14	-267	112	-13	293	113.4	20

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-256	89	42	279	108.0	-234	106	20	259	114.2	8	11	-243	119	-17	273	115.9	17
2	-274	130	55	312	114.2	-238	128	20	279	119.4	14	13	-249	158	-18	305	122.3	22
3	-266	147	48	314	117.7	-231	136	21	279	121.0	16	13	-245	167	-17	310	123.8	23
4	-254	137	42	308	118.3	-237	120	19	276	117.1	14	14	-251	148	-16	304	120.1	21
5	-254	139	39	306	118.7	-239	113	19	274	115.7	15	14	-254	141	-15	302	118.8	21

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	22	65	23	36	11.6	28	31	9	30	6.4	28	33	8	31	6.2
2	54	78	35	54	12.3	99	48	18	63	21.1	102	62	14	56	19.6
3	50	85	36	50	15.5	68	86	18	46	20.2	68	106	18	53	20.8
4	138	94	25	19	36.3	28	38	9	28	8.2	24	36	9	20	7.6
5	52	43	27	38	10.5	43	41	13	31	10.9	45	31	11	33	8.7

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	22	65	23	36	11.6	28	31	9	30	6.4	28	33	8	31	6.2
2	42	80	31	55	13.0	72	45	14	52	16.3	75	61	11	54	15.7
3	45	83	33	52	14.4	69	59	15	49	17.2	71	76	13	53	17.0
4	80	85	32	46	21.6	61	60	14	44	16.5	62	74	12	47	16.2
5	75	79	32	44	19.8	58	58	13	42	15.7	59	69	12	44	15.2

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 4:20: 0
END TIME 4:25: 0

ONE MINUTE MEANS

	PEAKS				I	FOURIER COEFFICIENTS						I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-246	144	34	289	120.3	-208	117	13	244	119.1	17	23	-237	139	-12	285	120.3	23
2	-289	183	78	356	123.4	-228	168	27	288	125.9	29	13	-262	213	-21	344	128.9	25
3	-251	192	38	329	127.5	-211	141	24	267	123.2	21	11	-243	178	-18	315	125.8	23
4	-169	148	34	496	137.0	-229	93	12	249	112.0	22	20	-267	121	-13	297	114.1	27
5	-279	107	39	304	110.9	-228	112	19	256	116.4	20	16	-267	149	-15	307	119.1	19

CUMULATIVE MEANS

	PEAKS				I	FOURIER COEFFICIENTS						I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-246	144	34	289	120.3	-208	117	13	244	119.1	17	23	-237	139	-12	285	120.3	23
2	-266	162	54	320	121.7	-217	140	20	264	122.2	23	18	-248	173	-16	312	124.3	24
3	-261	172	49	323	123.7	-215	141	21	265	122.6	22	16	-246	175	-17	313	124.8	24
4	-238	167	45	317	126.8	-218	130	19	262	120.1	22	17	-251	162	-16	309	122.3	24
5	-246	156	44	314	123.8	-220	126	19	260	119.4	22	17	-254	160	-16	309	121.7	23

ONE MINUTE STANDARD DEVIATIONS

	PEAKS				I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	38	46	35	35	9.6	35	48	9	33	12.0	41	75	8	31	16.2	
2	96	85	51	76	15.8	51	56	15	54	10.1	70	62	15	62	11.4	
3	68	79	34	39	17.2	44	80	12	24	19.0	53	85	10	24	17.9	
4	190	108	35	33	49.4	16	23	8	18	4.8	23	42	9	27	7.6	
5	26	53	22	28	9.5	38	14	11	35	5.3	23	18	9	20	4.1	

CUMULATIVE STANDARD DEVIATIONS

	PEAKS				I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	38	46	35	35	9.6	35	48	9	33	12.0	41	75	8	31	16.2	
2	71	67	47	65	12.4	42	56	14	48	11.3	55	77	12	55	14.3	
3	69	71	43	56	14.1	42	63	13	40	13.9	53	78	11	46	15.2	
4	112	79	41	52	25.9	38	60	12	37	13.2	48	74	11	42	14.4	
5	102	78	38	49	24.4	37	55	12	36	12.1	45	67	10	39	13.1	

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 4:25: 0
END TIME 4:30: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-259	164	61	317	122.0	-256	111	21	281	113.6	21	16	-275	145	-21	314	118.0	20
2	-263	137	40	312	117.2	-248	88	10	268	109.1	15	21	-281	111	-12	306	111.3	20
3	-298	184	51	357	121.0	-260	142	32	298	118.5	18	13	-299	176	-25	351	120.6	18
4	-255	214	38	343	130.0	-260	156	28	305	121.0	11	9	-283	187	-22	341	123.6	21
5	-314	214	32	387	124.3	-294	165	22	338	119.1	12	9	-315	204	-15	377	122.8	18

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-259	164	61	317	122.0	-256	111	21	281	113.6	21	16	-275	145	-21	314	118.0	20
2	-261	151	51	314	119.7	-252	101	16	275	111.5	18	18	-278	129	-17	311	114.9	20
3	-273	162	51	328	120.2	-255	114	21	282	113.7	18	17	-285	145	-19	323	116.7	19
4	-268	174	48	331	122.5	-256	124	23	288	115.5	16	15	-284	155	-20	328	118.3	20
5	-277	182	46	342	122.9	-263	132	23	297	116.2	15	14	-290	165	-19	337	119.2	19

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	42	78	40	30	15.0	25	18	12	21	4.6	37	33	9	28	7.6
2	47	79	9	41	18.5	31	56	16	39	10.1	30	53	7	36	9.0
3	33	71	19	36	11.6	27	22	10	25	4.7	25	38	6	30	5.6
4	58	70	23	23	14.7	29	18	10	25	4.3	31	18	9	22	4.8
5	54	57	21	28	10.9	18	21	6	23	2.7	19	27	5	26	3.1

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	42	78	40	30	15.0	25	18	12	21	4.6	37	33	9	28	7.6
2	44	86	31	34	16.2	27	39	14	30	7.7	33	45	9	31	8.6
3	42	81	27	37	14.6	27	39	15	30	7.5	31	48	9	35	8.1
4	46	80	26	36	14.9	27	40	14	30	7.5	31	46	9	33	7.9
5	50	77	26	41	14.1	29	40	13	35	7.0	31	47	8	37	7.4

VAD OTISH TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HU 90.

HEIGHT = 28.

START TIME 4:25: 0
END TIME 4:30: 0

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-260	125	47	300	115.9	-238	85	17	256	109.1	21	19	-262	107	-10	289	111.8	25
2	-253	139	33	293	118.1	-240	118	14	270	115.9	16	8	-253	146	-11	294	119.7	21
3	-316	166	41	359	117.2	-277	141	21	314	116.5	16	14	-302	179	-18	353	120.4	20
4	-279	154	41	323	118.3	-233	126	18	267	118.4	17	13	-272	156	-14	315	120.0	22
5	-230	201	31	325	130.0	-199	175	28	288	133.8	22	22	-223	224	-14	342	138.9	28

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-260	125	47	300	115.9	-238	85	17	256	109.1	21	19	-262	107	-10	289	111.8	25
2	-256	133	39	296	117.1	-239	103	16	263	112.8	18	13	-257	128	-11	292	116.1	23
3	-275	143	40	316	117.1	-251	115	18	279	113.9	18	13	-271	144	-13	311	117.4	22
4	-276	145	40	318	117.4	-247	117	18	277	114.9	17	13	-271	146	-13	312	118.0	22
5	-283	159	38	320	120.5	-235	132	20	280	119.6	19	15	-259	166	-13	319	123.2	23

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	42	81	30	27	16.8	21	39	17	25	8.7	36	58	12	36	12.3
2	39	57	17	48	10.4	35	36	8	39	6.9	29	38	6	36	6.2
3	37	40	24	43	5.7	38	49	15	47	7.4	32	40	11	32	6.5
4	49	55	47	41	11.3	31	23	19	32	4.6	38	14	13	31	4.5
5	93	93	29	61	21.3	113	63	14	49	27.0	138	50	8	52	27.7

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	42	81	30	27	16.8	21	39	17	25	8.7	36	58	12	36	12.3
2	39	66	24	38	13.2	28	40	13	33	8.2	31	50	9	34	10.0
3	47	60	23	49	11.2	35	45	13	44	8.0	37	52	10	44	9.1
4	46	58	28	46	11.0	35	42	14	41	7.5	37	47	10	41	8.3
5	63	71	25	50	14.9	65	53	15	43	16.6	76	58	10	45	17.6

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 4:30: 0
END TIME 4:35: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-331	125	69	359	110.1	-263	149	23	306	119.2	22	12	-285	175	-18	340	121.4	33
2	-184	159	46	309	138.3	-224	133	26	276	124.9	24	10	-235	176	-18	312	128.8	23
3	-273	186	51	336	124.2	-250	160	26	299	121.9	20	14	-272	195	-26	337	125.2	21
4	-247	215	43	335	131.2	-235	147	32	279	122.0	25	21	-266	209	-19	340	127.9	24
5	-292	189	60	347	122.3	-257	179	29	316	124.6	13	11	-271	205	-23	342	126.9	20

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-331	125	69	359	110.1	-263	149	23	306	119.2	22	12	-285	175	-18	340	121.4	33
2	-257	142	58	334	124.2	-244	144	24	291	122.0	23	11	-260	176	-18	326	125.1	28
3	-263	157	56	335	124.2	-246	149	25	294	122.0	22	12	-264	182	-21	330	125.1	26
4	-259	172	52	335	125.9	-243	149	27	290	122.0	23	14	-264	189	-19	332	125.8	25
5	-260	175	54	337	125.1	-246	155	27	296	122.6	21	13	-266	193	-20	335	126.1	24

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	39	65	25	48	9.2	38	47	8	40	8.6	46	55	8	39	10.1
2	204	47	46	31	46.6	98	33	18	52	22.3	109	50	19	35	23.2
3	36	56	32	41	9.0	35	50	13	52	5.4	23	49	12	41	5.7
4	60	57	29	42	12.7	40	32	9	42	5.9	29	36	5	40	3.5
5	32	25	20	23	5.4	20	31	7	17	6.0	24	31	5	20	5.8

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	39	65	25	48	9.2	38	47	8	40	8.6	46	55	8	39	10.1
2	160	57	37	47	35.2	74	39	13	47	16.4	84	50	14	38	17.5
3	130	60	35	44	28.7	62	42	13	47	13.5	69	49	13	38	14.4
4	116	63	33	42	25.6	57	39	12	45	11.9	61	47	12	38	12.6
5	103	57	31	39	22.6	51	39	11	42	10.8	54	44	11	35	11.3

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 4:30: 0
END TIME 4:35: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-294	152	65	357	116.7	-278	103	19	304	109.6	16	20	-307	120	-15	344	111.1	28
2	-282	172	56	330	125.8	-255	134	31	290	117.3	16	11	-282	173	-24	334	121.2	21
3	-269	193	56	335	127.0	-249	151	28	291	122.5	13	16	-273	199	-28	343	126.1	23
4	-255	249	33	365	134.4	-249	190	26	315	127.2	12	10	-272	227	-18	356	129.7	21
5	-291	209	43	368	124.7	-241	173	24	300	125.4	22	14	-281	217	-16	358	127.3	24

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-294	152	65	357	116.7	-278	103	19	304	109.6	16	20	-307	120	-15	344	111.1	28
2	-279	173	60	342	121.6	-266	120	25	297	113.7	16	16	-294	149	-20	338	116.5	24
3	-274	180	59	340	123.3	-259	130	26	295	116.5	15	16	-287	165	-23	340	119.5	24
4	-269	198	52	347	126.3	-256	146	26	300	119.9	14	14	-283	182	-21	344	122.3	23
5	-273	199	50	351	126.0	-253	151	26	300	120.5	15	14	-283	188	-20	347	123.2	23

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	54	122	15	25	21.9	32	72	15	32	14.0	41	98	14	23	18.0
2	28	58	34	24	10.0	20	33	8	28	5.0	15	39	8	25	5.7
3	47	60	24	37	13.6	50	24	9	33	8.9	47	50	11	32	9.8
4	49	65	27	40	13.9	36	35	10	42	9.8	37	36	9	44	4.3
5	48	81	28	36	15.8	35	40	22	36	7.6	17	46	12	25	6.6

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	54	122	15	25	21.9	32	72	15	32	14.0	41	98	14	23	18.0
2	45	90	24	27	16.5	27	54	13	30	10.5	31	75	11	24	13.4
3	51	81	25	30	15.5	36	48	12	30	10.6	37	71	12	26	12.9
4	56	82	28	34	15.5	36	52	11	34	10.5	37	69	11	32	12.1
5	58	80	27	35	15.3	35	51	13	34	10.2	34	66	11	31	11.3

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 4:35: 0
END TIME 4:40: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-262	226	44	349	130.5	-210	126	2	273	120.9	26	23	-243	169	-4	335	124.3	41
2	-272	194	36	340	125.1	-252	151	35	297	121.2	20	18	-283	184	-22	340	123.0	29
3	-308	181	51	360	119.4	-259	202	24	330	127.4	14	10	-275	228	-20	359	129.2	23
4	-257	264	70	378	134.1	-218	226	25	316	135.6	17	9	-226	268	-19	353	139.3	31
5	-193	215	40	347	141.3	-244	171	28	308	124.6	15	13	-260	198	-25	337	127.2	26

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-262	226	44	349	130.5	-210	126	2	273	120.9	26	23	-243	169	-4	335	124.3	41
2	-267	209	40	345	127.8	-231	139	18	285	121.1	23	21	-263	177	-13	338	123.7	35
3	-282	199	44	350	124.7	-241	162	21	302	123.4	19	17	-267	196	-16	345	125.7	31
4	-276	214	50	357	127.0	-236	177	22	305	126.3	19	15	-257	213	-17	347	129.0	31
5	-258	215	48	355	130.1	-237	176	23	306	126.0	18	15	-258	210	-18	345	128.6	30

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	27	41	19	19	7.5	81	108	17	34	29.8	100	140	15	11	31.4
2	50	60	32	23	12.8	42	31	12	31	8.3	26	28	9	15	5.9
3	41	66	21	28	6.1	38	51	14	59	4.1	34	53	12	57	4.2
4	36	101	22	64	13.2	29	43	11	43	5.3	28	52	11	46	5.9
5	202	51	83	31	36.8	41	73	18	26	15.5	50	72	17	24	14.8

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	27	41	19	19	7.5	81	108	17	34	29.8	100	140	15	11	31.4
2	39	52	26	21	10.4	66	77	22	34	20.9	73	96	15	13	21.5
3	44	58	24	43	9.8	57	74	19	48	16.8	60	85	14	36	17.2
4	43	74	24	49	11.2	52	72	17	47	15.6	57	84	13	38	16.3
5	102	87	43	45	19.9	50	71	17	43	15.4	55	80	14	35	15.7

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 33.

START TIME 4:35: 0
END TIME 4:40: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-284	262	33	397	132.4	-265	207	31	337	127.9	14	12	-290	249	-21	384	130.4	21
2	-267	209	14	346	127.5	-247	174	22	305	124.9	11	10	-270	206	-15	343	127.3	19
3	-321	215	65	399	123.6	-280	71	0	296	103.3	22	41	-334	90	-3	366	104.2	50
4	-295	267	59	402	131.6	-208	125	5	254	120.5	27	33	-276	189	-8	358	123.2	39
5	-262	272	51	387	136.8	-238	189	37	307	128.5	28	18	-288	251	-20	385	131.1	27

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-284	262	33	397	132.4	-265	207	31	337	127.9	14	12	-290	249	-21	384	130.4	21
2	-275	231	25	370	129.7	-255	189	26	320	126.3	12	11	-279	226	-18	362	128.7	20
3	-289	226	38	379	127.8	-263	152	18	312	119.0	15	20	-297	183	-13	363	121.0	29
4	-291	237	43	385	128.8	-248	145	14	297	119.4	18	24	-291	185	-12	362	121.6	32
5	-285	243	45	386	130.3	-246	153	19	299	121.1	20	23	-290	197	-13	366	123.4	31

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	69	75	19	26	14.2	18	23	6	26	2.4	21	35	5	34	3.4
2	57	71	29	18	14.7	20	36	9	16	7.4	28	38	9	15	7.5
3	85	98	22	76	15.8	55	71	5	58	13.8	61	124	8	55	20.9
4	40	70	38	49	9.2	32	72	14	13	18.1	46	129	15	25	22.6
5	86	51	54	47	13.4	42	30	10	33	7.6	46	47	19	40	8.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	69	75	19	26	14.2	18	23	6	26	2.4	21	35	5	34	3.4
2	61	76	25	34	14.1	21	34	9	26	5.6	26	42	7	32	6.0
3	70	81	31	51	14.5	36	73	15	39	14.0	47	98	10	39	16.8
4	63	79	33	50	13.2	42	73	16	43	14.8	46	105	12	36	18.1
5	67	75	36	49	13.4	42	69	17	41	14.1	46	99	13	37	17.0

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HL 90.

HEIGHT = 28.

START TIME 4:40: 0
END TIME 4:45: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-234	219	15	327	132.9	-218	165	15	276	126.3	22	13	-240	205	-3	319	130.1	21
2	-285	188	69	349	123.2	-253	191	26	319	126.9	12	9	-273	218	-20	352	128.4	26
3	-266	226	53	356	130.4	-239	183	24	304	127.9	22	18	-275	231	-18	363	130.1	26
4	-295	196	93	405	122.3	-288	210	22	359	126.1	12	11	-308	244	-17	395	128.4	31
5	-317	252	85	412	128.2	-304	226	41	380	126.6	10	7	-317	254	-36	407	128.6	22

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-234	219	15	327	132.9	-218	165	15	276	126.3	22	13	-240	205	-3	319	130.1	21
2	-259	204	42	338	128.1	-235	178	21	298	126.6	17	11	-256	212	-12	336	129.2	24
3	-262	212	46	345	128.9	-237	180	22	300	127.1	19	14	-263	219	-14	346	129.6	24
4	-270	208	45	359	127.4	-249	187	22	314	126.9	17	13	-274	225	-15	358	129.3	26
5	-279	218	53	369	127.5	-260	195	26	327	126.6	16	12	-282	230	-19	367	129.2	25

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	48	55	22	25	11.9	26	51	9	43	7.9	23	48	8	26	8.3
2	48	65	37	30	12.7	31	35	14	32	6.4	33	41	15	31	7.2
3	55	53	18	26	11.3	54	24	11	45	7.1	45	33	8	24	7.9
4	88	101	28	53	32.7	41	30	11	40	5.1	45	37	10	46	5.3
5	42	75	21	26	11.5	23	16	13	17	3.3	23	20	14	20	3.2

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	48	55	22	25	11.9	26	51	9	43	7.9	23	48	8	26	8.3
2	53	59	41	29	12.8	33	44	12	42	6.9	32	43	14	32	7.5
3	52	57	39	29	12.0	41	37	12	42	6.6	37	40	12	32	7.4
4	62	109	42	43	18.4	46	37	11	48	6.3	43	40	12	41	6.9
5	61	100	39	45	17.1	47	37	14	51	5.8	43	38	15	42	6.3

HEIGHT = 43.

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE MD 90.

START TIME 4:40: 0
END TIME 4:45: 0

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-263	247	26	376	134.1	-235	195	8	309	129.6	16	14	-268	246	-3	368	132.6	24
2	-290	225	65	375	128.4	-246	178	29	306	125.8	24	16	-282	222	-28	361	128.4	21
3	-233	250	40	355	136.7	-227	203	22	306	131.7	17	11	-249	249	-15	354	134.9	22
4	-331	231	39	433	125.2	-254	161	1	315	124.2	31	27	-317	253	-9	424	129.1	43
5	-262	294	43	400	138.6	-175	204	12	326	136.5	26	26	-202	262	-14	409	139.9	38

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-263	247	26	376	134.1	-235	195	8	309	129.6	16	14	-268	246	-3	368	132.6	24
2	-278	235	47	376	131.0	-241	186	20	307	127.5	20	15	-275	233	-16	364	130.3	22
3	-269	240	45	369	132.8	-237	191	20	307	128.8	19	14	-267	238	-16	361	131.8	22
4	-282	236	43	386	130.8	-241	183	15	309	127.6	22	17	-281	242	-14	378	131.1	28
5	-274	248	43	389	132.2	-229	184	14	312	129.3	23	19	-266	246	-14	384	132.7	30

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	U	SINE WAVE FIT V	W	SPEED	TH
1	103	70	40	45	17.3	38	34	5	30	7.4	53	42	11	38	8.6
2	74	45	15	40	11.9	30	30	17	29	5.7	49	34	13	41	6.9
3	70	76	21	29	16.6	21	21	10	23	3.4	22	23	8	26	3.1
4	91	148	42	44	22.3	93	62	13	53	18.0	100	91	12	30	17.9
5	64	49	37	25	10.2	163	127	27	68	33.7	232	139	15	70	36.9

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	U	SINE WAVE FIT V	W	SPEED	TH
1	103	70	40	45	17.3	38	34	5	30	7.4	53	42	11	38	8.6
2	86	56	35	42	14.3	33	31	16	28	6.5	49	38	18	38	7.7
3	82	61	31	39	14.8	30	29	14	26	6.0	43	34	15	34	6.8
4	88	84	33	42	17.0	53	41	16	34	10.4	65	54	14	43	10.6
5	84	85	33	46	16.1	85	64	18	42	16.8	114	74	14	49	17.9

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE MD 90.

HEIGHT = 28.

START TIME 4:45: 0
END TIME 4:50: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-269	216	39	351	128.6	-212	187	13	294	133.2	16	20	-241	227	-12	342	134.1	34
2	-265	239	67	367	132.4	-232	200	46	308	130.9	20	16	-266	254	-27	371	133.6	23
3	-253	256	47	362	135.3	-243	191	27	312	128.2	19	13	-264	230	-21	352	131.0	22
4	-258	216	60	349	129.7	-257	168	24	311	123.3	15	13	-276	204	-20	348	126.5	25
5	-246	295	83	396	139.8	-215	234	25	327	137.5	20	14	-245	275	-17	377	138.3	29

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-269	216	39	351	128.6	-212	187	13	294	133.2	16	20	-241	227	-12	342	134.1	34
2	-267	228	53	358	130.4	-221	193	28	301	132.1	18	18	-253	239	-19	355	133.9	29
3	-262	237	49	360	132.1	-229	192	28	305	130.8	18	16	-257	236	-20	354	132.9	27
4	-261	234	51	357	131.5	-235	187	27	306	129.0	18	15	-261	229	-20	353	131.4	26
5	-258	244	59	364	132.9	-231	195	27	310	130.6	18	15	-258	237	-19	357	132.7	27

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	46	54	35	27	10.6	88	36	13	46	17.3	85	42	9	25	16.0
2	76	60	31	30	14.5	38	22	9	25	6.7	33	32	11	21	6.4
3	36	32	25	32	6.1	31	32	14	14	7.9	33	28	19	24	6.0
4	67	88	13	47	16.7	56	48	18	55	8.9	48	47	11	41	8.9
5	60	100	51	52	15.6	62	55	21	24	13.8	70	61	16	34	13.1

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	46	54	35	27	10.6	88	36	13	46	17.3	85	42	9	25	16.0
2	59	58	36	29	12.2	68	30	21	37	13.1	65	39	12	27	12.1
3	52	50	32	30	10.5	57	30	17	31	11.4	55	35	14	25	10.3
4	55	59	29	34	11.9	57	35	18	37	11.2	53	40	14	29	10.2
5	54	71	33	40	12.7	58	44	19	35	12.0	56	47	14	31	10.9

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 93.

START TIME 4:45: 0
END TIME 4:50: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-231	267	40	368	139.0	-205	209	25	292	135.3	18	14	-244	255	-14	355	136.3	29
2	-271	253	54	383	132.7	-248	220	30	333	131.6	16	8	-274	258	-22	379	133.3	21
3	-248	265	41	383	137.4	-233	211	17	316	132.3	19	13	-264	248	-15	364	133.2	24
4	-296	238	60	412	128.9	-262	138	20	305	116.8	36	24	-319	183	-18	388	118.9	44
5	-230	340	57	430	146.6	-225	261	26	351	139.2	19	9	-249	331	-15	423	142.9	29

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-231	267	40	368	139.0	-205	209	25	292	135.3	18	14	-244	255	-14	355	136.3	29
2	-253	259	48	376	135.6	-228	213	27	314	133.3	17	11	-260	256	-18	368	134.7	25
3	-251	262	46	378	136.2	-230	212	24	315	133.0	17	11	-262	254	-17	367	134.2	24
4	-262	258	50	386	134.4	-237	194	23	312	129.1	22	14	-275	237	-17	372	130.5	29
5	-256	274	52	395	136.8	-235	207	24	320	131.0	21	14	-270	255	-17	382	132.9	29

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	81	83	42	34	18.0	47	18	9	38	6.8	38	19	6	23	5.7
2	74	79	24	42	15.2	35	24	10	25	5.9	39	28	11	28	5.9
3	106	77	34	21	19.9	38	19	15	34	4.7	33	21	16	31	3.8
4	88	132	29	36	22.0	33	79	12	34	14.9	63	124	16	35	20.1
5	132	69	40	47	19.3	63	46	19	36	11.6	78	55	15	41	11.8

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	81	83	42	34	18.0	47	18	9	38	6.8	38	19	6	23	5.7
2	77	78	33	38	16.2	45	22	9	37	6.4	40	23	10	27	5.8
3	88	75	32	33	16.9	42	21	12	35	5.8	37	22	12	28	5.2
4	86	89	31	36	18.0	42	52	12	34	11.0	50	67	12	30	12.2
5	94	91	32	41	18.6	45	57	13	37	11.7	56	75	13	38	12.9

VAD OTIS* TIME IN GMT OF VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = **.

START TIME 4:50: 0
END TIME 4:55: 0

ONE MINUTE MEANS

MIN	MEANS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-198	274	91	435	145.9	-255	255	29	363	135.2	23	20	-291	320	-34	437	137.6	35
2	-324	287	84	436	132.1	-269	240	29	364	131.8	27	14	-298	296	-32	422	134.6	30
3	-208	316	56	468	153.2	-144	317	21	368	156.9	21	17	-156	397	-12	445	159.0	45
4	-256	331	66	425	142.3	-163	275	32	333	151.7	24	16	-193	337	-21	406	151.6	38
5	-193	340	65	402	150.8	-138	299	29	336	155.0	18	6	-151	348	-23	387	156.2	29

CUMULATIVE MEANS

MIN	MEANS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-198	274	91	435	145.9	-255	255	29	363	135.2	23	20	-291	320	-34	437	137.6	35
2	-261	282	88	436	135.0	-262	247	28	364	133.5	25	17	-294	308	-33	430	136.1	33
3	-243	329	77	448	143.8	-223	271	25	365	141.3	24	17	-248	338	-26	435	143.7	37
4	-247	327	74	440	143.3	-206	272	27	356	144.2	24	17	-233	338	-24	427	145.9	37
5	-237	331	70	433	144.8	-193	277	27	352	146.3	23	15	-217	340	-24	419	147.9	36

ONE MINUTE STANDARD DEVIATIONS

MIN	MEANS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	219	219	91	81	45.5	71	60	28	93	6.8	71	79	35	84	9.2
2	90	89	81	91	6.5	59	34	32	51	7.4	45	55	28	63	4.5
3	65	59	67	30	8.4	122	52	19	40	21.6	136	36	20	16	18.8
4	52	53	41	33	10.1	105	64	28	77	20.5	125	44	16	46	19.7
5	46	44	32	10	8.4	62	43	19	18	12.9	67	50	17	12	12.6

CUMULATIVE STANDARD DEVIATIONS

MIN	MEANS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	219	219	91	81	45.5	71	60	28	83	6.8	71	79	35	84	9.2
2	173	175	82	82	31.8	63	42	28	66	7.0	57	66	30	71	7.1
3	136	135	71	84	28.9	101	54	25	57	17.3	110	71	28	59	16.1
4	127	118	62	81	23.2	105	59	26	64	18.4	114	64	25	56	17.1
5	117	108	56	82	21.2	101	57	24	58	17.8	111	61	24	53	16.7

VAR OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 4:50: 0
END TIME 4:55: 0

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-319	301	116	449	131.1	-235	182	18	304	128.0	36	31	-303	299	-30	432	133.8	37
2	-251	449	76	517	150.4	-232	292	48	378	141.8	24	14	-306	390	-30	501	141.5	39
3	-249	453	65	522	150.8	-273	321	38	426	138.8	20	16	-300	403	-25	506	142.7	43
4	-249	376	77	453	146.2	-168	321	38	371	153.4	23	18	-202	380	-22	440	153.0	34
5	-216	419	62	475	152.1	-130	315	24	356	158.8	25	22	-153	402	-16	446	160.3	47

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-319	301	116	449	131.1	-235	182	18	304	128.0	36	31	-303	299	-30	432	133.8	37
2	-285	375	97	483	140.7	-233	237	33	341	134.9	30	22	-304	344	-30	467	137.7	38
3	-272	409	85	497	144.5	-248	268	35	372	136.3	26	20	-303	366	-28	481	139.5	39
4	-266	397	83	487	144.9	-229	281	36	372	140.4	26	19	-278	369	-26	471	142.8	38
5	-257	400	79	484	146.3	-210	288	33	369	144.0	25	20	-254	376	-24	466	146.2	40

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	78	126	33	110	15.0	73	56	25	64	12.8	74	93	21	90	10.8
2	38	67	66	54	6.4	70	59	25	68	10.3	62	79	23	65	9.3
3	57	58	38	37	8.0	30	78	30	55	8.8	28	73	16	48	7.2
4	27	41	30	32	4.7	90	49	25	60	14.3	105	33	16	47	14.0
5	78	72	40	55	11.5	109	64	27	61	19.5	124	59	13	55	17.8

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	78	126	33	110	15.0	73	56	25	64	12.8	74	93	21	90	10.8
2	69	124	54	90	14.9	68	79	29	74	13.2	65	95	21	83	10.4
3	65	109	50	76	13.5	59	87	28	78	11.7	54	90	19	73	9.5
4	59	97	45	70	11.9	75	82	27	73	14.1	80	80	18	69	12.0
5	63	92	45	67	12.0	90	79	27	70	16.7	101	76	17	67	14.7

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

START TIME 4:55: 0
END TIME 5: 01 0

HEIGHT = 28.

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-188	258	38	374	138.6	-193	207	20	322	137.6	20	14	-207	261	-11	376	141.2	35
2	-271	348	67	447	141.9	-227	276	23	365	140.1	20	14	-268	343	-20	442	141.6	27
3	-313	217	42	397	124.5	-275	217	15	354	128.0	14	11	-296	249	-13	391	129.9	25
4	-304	271	57	417	132.0	-275	173	14	337	121.0	26	21	-331	213	-12	406	122.0	36
5	-274	278	41	404	134.3	-267	164	20	332	119.6	14	15	-303	197	-11	382	122.0	38

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-188	258	38	374	138.6	-193	207	20	322	137.6	20	14	-207	261	-11	376	141.2	35
2	-233	307	54	413	140.3	-211	244	22	345	138.9	20	14	-240	305	-16	411	141.4	31
3	-258	278	50	408	135.3	-231	236	20	348	135.5	18	13	-258	287	-15	405	137.8	29
4	-269	277	52	410	134.5	-242	221	18	345	132.0	20	15	-275	269	-14	405	134.0	31
5	-270	277	49	409	134.5	-248	208	19	343	129.3	19	15	-281	254	-14	400	131.4	32

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	75	200	57	26	37.6	107	133	25	35	31.8	120	148	21	26	30.7
2	58	51	33	24	9.4	51	70	26	44	11.8	48	63	12	23	10.1
3	68	102	20	20	17.9	25	47	11	22	7.8	38	46	10	18	8.2
4	74	56	36	23	12.7	40	95	22	41	16.4	49	98	11	30	15.3
5	58	106	71	49	15.7	29	120	31	45	20.5	48	131	23	49	19.7

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	75	200	57	26	37.6	107	133	25	35	31.8	120	148	21	26	30.7
2	77	142	46	45	25.2	80	106	24	44	22.2	90	113	17	42	21.1
3	82	135	40	39	23.9	73	91	21	38	19.3	81	99	15	37	18.6
4	81	119	38	35	21.5	69	94	21	38	19.4	80	102	14	35	18.8
5	76	115	46	38	20.2	63	101	23	40	20.0	75	111	16	39	19.4

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 4:55: 0
END TIME 5: 01: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-228	353	26	424	146.6	-199	255	16	330	142.4	25	23	-233	336	-7	418	145.3	35
2	-294	284	44	458	130.7	-225	251	6	376	139.3	24	20	-261	304	-3	439	139.8	46
3	-301	306	56	440	135.7	-212	260	25	343	140.9	25	26	-281	339	-19	449	140.2	29
4	-348	278	56	455	128.2	-281	227	31	372	130.0	22	17	-322	284	-20	437	131.7	28
5	-318	257	55	427	127.8	-235	254	14	353	138.0	25	23	-273	329	-14	433	140.7	45

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-228	353	26	424	146.6	-199	255	16	330	142.4	25	23	-233	336	-7	418	145.3	35
2	-259	321	34	440	139.2	-211	253	11	351	141.0	25	22	-246	321	-5	428	142.7	40
3	-272	316	41	440	138.1	-212	255	16	348	141.0	25	23	-257	327	-9	434	141.9	36
4	-293	306	45	444	135.5	-230	248	20	355	138.0	24	21	-275	315	-12	435	139.2	34
5	-297	297	47	441	134.0	-231	249	19	354	138.0	24	22	-274	318	-13	435	139.5	36

B-75

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	38	66	31	53	7.9	78	50	19	65	11.7	80	53	12	37	12.3
2	95	209	29	45	32.0	144	115	31	38	29.7	151	134	16	44	27.8
3	86	62	44	25	13.7	66	42	27	33	12.0	69	64	9	20	11.9
4	60	92	15	50	12.3	87	48	26	45	14.3	75	57	9	47	11.3
5	92	117	63	66	19.3	88	44	25	63	12.1	76	32	16	42	9.4

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	38	66	31	53	7.9	78	50	19	65	11.7	80	53	12	37	12.3
2	75	147	30	51	22.9	109	82	25	57	21.0	113	96	13	40	20.2
3	79	125	35	43	20.1	96	71	26	50	18.2	101	85	14	36	17.7
4	81	116	32	45	18.7	97	66	26	49	17.7	98	80	13	38	16.6
5	82	116	38	49	18.7	94	62	26	51	16.6	93	73	14	38	15.4

VAD OTIS4 TIME IN GMT CT V&D 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 93.

START TIME 5: 0: 0
END TIME 5: 5: 0

ONE MINUTE MEANS

	PEAKS				I	FOURIER COEFFICIENTS					I		SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-294	312	27	433	136.4	-230	240	25	346	135.8	24	15	-274	303	-11	418	137.2	34
2	-299	281	79	427	132.8	-298	182	24	355	121.7	26	16	-339	233	-18	416	124.4	35
3	-290	311	55	437	137.0	-261	239	24	358	131.9	20	20	-305	311	-17	439	135.2	27
4	-304	259	49	403	130.3	-284	209	24	356	125.9	15	11	-307	257	-17	405	129.6	26
5	-298	297	75	431	134.6	-268	243	29	363	131.9	15	15	-295	297	-26	422	134.7	30

CUMULATIVE MEANS

	PEAKS				I	FOURIER COEFFICIENTS					I		SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-294	312	27	433	136.4	-230	240	25	346	135.8	24	15	-274	303	-11	418	137.2	34
2	-297	295	53	430	134.4	-267	209	24	351	128.2	25	15	-309	265	-15	417	130.3	34
3	-295	300	53	432	135.3	-265	218	24	353	129.4	23	17	-308	279	-16	424	131.9	32
4	-297	291	53	425	134.1	-269	216	24	354	128.5	21	16	-307	274	-16	419	131.3	31
5	-297	292	58	426	134.2	-269	222	25	356	129.3	20	15	-305	279	-18	420	132.0	31

ONE MINUTE STANDARD DEVIATIONS

	PEAKS				I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	41	52	36	29	7.8	66	81	31	27	17.4	55	84	19	34	13.6	
2	81	106	36	51	17.2	53	50	21	34	10.7	47	52	11	34	8.6	
3	77	79	30	33	13.8	39	67	28	56	8.5	40	63	9	45	7.9	
4	39	52	16	33	8.0	23	54	20	29	8.3	32	60	12	26	8.9	
5	68	77	27	40	13.1	38	46	22	51	5.1	28	60	12	40	7.1	

CUMULATIVE STANDARD DEVIATIONS

	PEAKS				I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	41	52	36	29	7.8	66	81	31	27	17.4	55	84	19	34	13.6	
2	63	83	44	40	13.3	67	70	25	30	15.4	59	75	15	33	12.6	
3	66	80	39	38	13.1	58	69	25	38	13.5	53	73	13	37	11.3	
4	60	76	35	38	12.1	52	65	24	36	12.4	48	70	13	35	10.7	
5	60	75	34	38	12.1	49	61	23	39	11.2	44	67	13	36	10.0	

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 2m.

START TIME 5: 0: 0
END TIME 5: 51 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-277	262	49	393	134.1	-245	211	24	326	130.6	16	10	-276	264	-20	384	133.6	27
2	-304	234	63	419	126.6	-299	194	12	363	121.1	23	22	-342	239	-14	425	123.8	44
3	-261	294	59	403	138.7	-226	257	29	350	139.5	20	14	-256	302	-20	403	140.1	26
4	-295	241	50	385	129.2	-237	185	16	311	126.8	23	16	-285	217	-15	367	126.4	31
5	-296	255	57	393	130.1	-275	221	28	355	128.6	14	10	-296	255	-25	392	130.6	23

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-277	262	49	393	134.1	-245	211	24	326	130.6	16	10	-276	264	-20	384	133.6	27
2	-293	248	56	404	130.3	-272	202	18	345	125.8	20	16	-309	251	-17	404	128.7	36
3	-281	265	57	405	133.4	-255	223	22	347	130.9	20	15	-289	270	-18	404	132.9	32
4	-284	259	55	400	132.4	-251	214	21	338	129.9	21	15	-288	257	-17	395	131.3	32
5	-287	258	56	399	132.0	-255	215	22	341	129.6	19	14	-290	257	-19	395	131.2	30

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	89	59	28	36	14.7	34	38	15	37	6.4	24	29	8	24	4.5
2	80	153	29	40	24.1	41	104	20	85	10.6	29	101	6	58	11.4
3	80	54	32	39	12.6	89	33	16	43	13.5	79	31	9	23	12.1
4	47	48	15	31	8.9	30	83	20	37	15.4	28	85	10	26	13.8
5	28	63	35	52	6.4	45	50	15	60	4.8	44	40	14	56	2.9

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	89	59	28	36	14.7	34	38	15	37	6.4	24	29	8	24	4.5
2	86	112	28	39	19.4	46	75	18	66	9.7	42	72	8	48	9.7
3	83	95	29	36	17.4	65	67	18	57	12.8	62	64	8	40	11.8
4	75	86	26	35	15.7	58	71	18	55	13.3	56	72	9	40	12.3
5	68	81	27	38	14.3	56	67	18	55	12.0	53	66	10	42	11.1

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 5: 5: 0
END TIME 5:10: 0

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-236	265	38	368	137.6	-193	213	13	298	138.5	23	18	-225	264	-10	359	139.7	32
2	-227	290	35	383	141.5	-253	170	10	316	123.1	17	11	-276	215	-10	362	127.3	39
3	-247	324	114	429	143.1	-250	173	10	315	126.7	42	31	-323	296	-10	442	132.7	34
4	-209	290	13	431	147.3	-257	180	25	327	122.8	26	22	-321	232	-15	415	124.2	40
5	-317	279	54	427	130.6	-247	228	20	341	131.4	19	9	-300	266	-11	405	131.0	39

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-236	265	38	368	137.6	-193	213	13	298	138.5	23	18	-225	264	-10	359	139.7	32
2	-234	276	37	375	139.4	-220	193	12	306	131.4	20	15	-249	242	-10	360	134.0	35
3	-237	291	61	392	140.5	-230	187	11	309	129.9	27	20	-272	259	-10	386	133.6	35
4	-229	290	46	403	142.4	-237	185	15	314	128.0	27	20	-285	252	-11	394	131.0	36
5	-246	287	49	407	140.2	-239	193	16	319	128.6	25	18	-288	254	-11	396	131.0	37

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	62	88	19	26	16.9	76	47	16	37	16.6	79	58	6	25	15.9
2	82	83	34	25	17.5	47	82	24	26	17.0	55	85	16	22	15.9
3	143	70	78	50	20.3	110	73	25	96	14.5	92	69	14	99	8.2
4	255	54	69	26	37.9	48	99	22	58	18.2	42	129	23	40	19.0
5	65	68	51	38	11.5	11	71	26	45	10.6	28	59	13	34	8.3

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	62	88	19	26	16.9	76	47	16	37	16.6	79	58	6	25	15.9
2	69	83	24	26	16.6	69	67	19	33	17.9	72	73	11	23	16.5
3	94	80	58	42	17.3	82	67	20	57	16.7	84	75	12	68	14.2
4	149	73	64	42	23.9	75	75	21	57	17.0	77	90	15	62	15.8
5	141	71	61	42	22.4	67	75	22	55	15.9	71	85	15	57	14.6

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 5: 5: 0
END TIME 5:10: 0

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-238	305	37	399	141.7	-221	212	8	314	133.2	19	18	-254	281	-5	387	137.4	30
2	-269	299	27	401	138.0	-263	193	7	335	125.5	18	10	-289	255	-4	394	130.8	34
3	-317	322	62	500	130.4	-259	258	39	374	136.5	26	12	-337	340	-19	483	135.3	33
4	-240	336	48	463	146.3	-180	255	18	378	144.2	19	21	-213	324	-9	458	148.2	46
5	-306	339	35	459	137.1	-222	266	13	352	140.4	28	21	-275	346	-2	449	141.4	40

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-238	305	37	399	141.7	-221	212	8	314	133.2	19	18	-254	281	-5	387	137.4	30
2	-251	300	32	400	139.8	-242	203	8	324	127.4	18	14	-272	268	-5	390	134.1	32
3	-298	309	43	437	136.3	-248	223	19	343	132.0	21	13	-296	295	-10	424	134.5	32
4	-284	315	44	443	138.7	-232	231	19	351	134.9	21	15	-276	302	-10	433	137.8	35
5	-288	319	42	446	138.4	-230	234	18	351	136.0	22	16	-276	311	-8	436	138.5	36

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	74	76	22	20	15.2	40	66	18	30	13.0	51	67	5	20	12.3
2	57	57	46	35	10.3	36	64	24	48	13.9	42	83	15	38	12.5
3	46	39	43	40	4.4	98	46	27	69	14.7	63	47	13	49	7.6
4	211	102	55	49	31.6	224	91	15	63	36.6	256	85	11	44	36.3
5	45	72	51	49	8.7	69	54	22	62	10.1	60	53	15	35	9.3

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	74	76	22	20	15.2	40	66	18	30	13.0	51	67	5	20	12.3
2	69	69	35	27	12.5	44	73	20	40	13.4	48	73	10	30	12.3
3	85	55	40	58	11.2	67	69	27	56	13.9	61	73	13	58	10.6
4	129	69	43	57	17.9	121	73	25	59	21.3	133	75	12	56	19.9
5	113	68	44	55	16.9	112	71	24	58	19.5	122	73	13	53	18.2

VAD OTIS4 TIME IN GMT OF VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 5:10: 0
END TIME 5:15: 0

ONE MINUTE MEANS

	PEAKS					I	FOURIER COEFFICIENTS						I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-334	254	7	437	126.2	-124	222	0	282	152.4	60	42	-183	345	10	456	151.4	41
2	-380	160	73	413	112.7	-203	216	-9	297	136.6	78	66	-221	296	-18	371	143.1	23
3	-294	418	154	526	124.6	-330	192	7	399	115.0	56	48	-364	306	51	492	120.6	31
4	-340	114	19	398	106.6	164	101	-14	192	238.4	58	35	326	255	-63	415	232.0	59
5	-234	313	147	440	145.6	-11	167	0	302	192.0	64	84	153	218	-91	331	201.1	80

CUMULATIVE MEANS

	PEAKS					I	FOURIER COEFFICIENTS						I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-334	254	7	437	126.2	-124	222	0	282	152.4	60	42	-183	345	10	456	151.4	41
2	-341	240	17	434	129.2	-135	221	-1	284	150.2	63	45	-189	338	6	444	150.2	38
3	-329	282	67	481	129.4	-206	211	1	326	137.4	60	46	-253	327	22	462	139.4	35
4	-326	222	63	428	122.9	-175	201	0	315	145.8	60	45	-204	321	15	458	147.2	37
5	-316	235	75	430	126.1	-152	196	0	313	152.4	61	51	-153	306	0	440	154.9	43

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					I,	FOURIER COEFFICIENTS				I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	45	128	48	60	17.0	124	63	22	38	30.5	230	159	47	109	35.6	
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0	
3	150	219	147	74	36.5	74	165	32	127	21.9	184	267	70	292	24.2	
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0	
5	265	106	173	67	37.4	344	116	10	78	81.8	313	1	83	145	54.5	

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					I,	FOURIER COEFFICIENTS				I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	45	128	48	60	17.0	124	63	22	38	30.5	230	159	47	109	35.6	
2	42	124	50	55	16.3	117	53	21	36	28.5	210	147	45	105	32.6	
3	46	151	113	59	23.6	140	102	24	95	30.7	211	186	56	181	32.2	
4	45	145	104	57	23.1	131	102	23	98	41.3	262	179	59	173	40.7	
5	114	133	115	56	25.1	193	101	22	73	47.4	287	168	71	171	44.9	

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HU 90.

START TIME 5:10: 0
END TIME 5:15: 0

HEIGHT = 43.

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-341	340	42	488	134.8	-266	251	6	367	133.3	21	15	-323	344	-6	472	136.7	29
2	-438	340	147	585	123.2	-325	279	30	435	130.4	45	26	-433	409	-37	599	133.2	34
3	-371	366	77	542	132.7	-290	272	29	408	134.3	27	10	-337	367	-29	514	137.5	42
4	-271	407	51	527	147.6	-207	194	13	330	128.3	43	45	-373	305	-1	536	126.2	48
5	-267	362	75	488	151.0	-249	173	22	339	117.4	42	41	-414	274	12	536	124.8	38

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-341	340	42	488	134.8	-266	251	6	367	133.3	21	15	-323	344	-6	472	136.7	29
2	-386	340	99	533	129.4	-293	263	17	398	132.0	32	20	-374	374	-20	531	135.1	31
3	-388	349	92	536	130.6	-292	266	21	402	132.8	30	17	-361	372	-23	525	135.9	35
4	-361	362	82	534	134.5	-272	250	19	385	131.7	33	23	-364	356	-18	527	133.7	38
5	-344	362	81	525	137.6	-268	235	20	376	129.1	35	27	-373	341	-12	529	132.0	38

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	65	57	31	33	9.3	36	31	31	43	3.1	23	28	11	34	1.4
2	115	227	123	157	24.9	77	73	52	68	10.6	80	88	20	104	5.8
3	47	83	74	45	8.9	98	78	33	81	15.2	108	80	16	31	15.0
4	191	141	89	103	25.6	96	190	26	109	38.3	120	246	28	97	30.2
5	212	93	59	117	32.7	98	159	25	93	36.0	177	173	131	116	23.3

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	65	57	31	33	9.3	36	31	31	43	3.1	23	28	11	34	1.4
2	101	152	105	116	18.4	64	53	42	64	7.4	79	69	22	97	4.3
3	84	130	94	96	15.5	75	61	39	68	10.4	89	71	20	79	9.2
4	123	132	93	95	19.2	86	105	36	83	19.5	94	129	24	82	16.2
5	144	125	86	99	22.6	88	118	34	85	23.4	112	139	58	87	17.7

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 5:15: 0
END TIME 5:20: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
5	-104	110	234	355	133.9	-306	268	14	412	131.8	87	73	-511	428	94	675	129.4	40

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
5	-104	110	234	355	133.9	-306	268	14	412	131.8	87	73	-511	428	94	675	129.4	40

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	311	330	12	11	91.5	92	29	10	50	11.6	48	142	36	54	11.9

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	311	330	12	11	91.5	92	29	10	50	11.6	48	142	36	54	11.9

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 5:15: 0
END TIME 5:20: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-250	469	50	555	152.3	-243	277	22	375	139.4	30	25	-337	414	-21	537	140.8	36
2	-362	433	53	566	140.1	-261	287	45	402	137.2	39	24	-363	377	-29	531	136.0	37
3	-336	373	14	513	138.4	-308	253	20	404	129.6	18	19	-361	327	-6	491	132.2	34
4	-351	365	30	525	136.1	-288	255	3	394	132.2	28	35	-406	224	-2	542	125.3	31
5	-340	315	94	483	129.2	-276	196	27	352	125.1	36	39	-312	287	-35	435	132.9	37

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-250	469	50	555	152.3	-243	277	22	375	139.4	30	25	-337	414	-21	537	140.8	36
2	-301	454	51	560	146.7	-252	282	33	388	138.4	34	24	-349	397	-25	534	138.6	36
3	-313	427	41	545	144.1	-269	273	29	393	135.6	29	23	-353	375	-19	520	136.6	36
4	-321	414	40	541	142.4	-273	269	23	393	134.9	29	25	-364	343	-15	525	134.2	35
5	-325	392	52	528	139.4	-274	252	24	384	132.7	30	28	-352	331	-20	505	133.9	35

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	159	90	47	70	16.6	82	40	36	55	11.0	62	55	18	60	5.9
2	50	38	29	45	4.5	88	86	17	50	16.8	65	67	13	35	9.5
3	99	56	26	38	12.0	54	53	23	32	10.0	53	52	7	38	7.5
4	121	110	44	62	17.0	98	63	28	71	13.3	235	272	24	176	30.6
5	76	169	99	117	19.7	71	109	39	79	17.3	86	91	53	70	14.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	159	90	47	70	16.6	82	40	36	55	11.0	62	55	18	60	5.9
2	130	71	38	58	14.9	82	62	30	52	13.4	62	61	16	48	7.8
3	120	75	38	56	14.3	77	60	28	47	12.8	58	66	16	49	8.1
4	116	85	38	56	14.8	80	59	29	51	12.7	113	142	19	85	15.4
5	109	114	40	76	16.7	77	78	31	59	14.2	108	133	30	90	14.9

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 2M.

START TIME 5:20: 0
END TIME 5:25: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
4	-341	150	211	374	113.7	-152	302	7	339	153.1	89	86	-234	434	-34	493	151.6	10
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
4	-341	150	211	374	113.7	-152	302	7	339	153.1	89	86	-234	434	-34	493	151.6	10
5	-341	150	211	374	113.7	-152	302	7	339	153.1	89	86	-234	434	-34	493	151.6	10

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE MD 90.

HEIGHT = 43.

START TIME 5:20: 0
END TIME 5:25: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-238	415	77	557	152.4	-158	261	26	380	150.2	41	22	-210	381	-18	537	156.0	53
2	-330	469	71	575	144.4	-306	281	16	429	132.8	51	29	-394	354	-25	540	131.5	44
3	-433	397	81	607	133.1	-278	340	28	447	141.0	40	30	-418	427	-27	605	135.2	34
4	-325	480	123	585	145.5	-247	311	46	407	141.4	35	29	-279	422	-48	512	146.3	42
5	-415	392	76	578	132.7	-267	314	21	417	139.7	28	25	-334	431	-22	547	142.2	45

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-238	415	77	557	152.4	-158	261	26	380	150.2	41	22	-210	381	-18	537	156.0	53
2	-280	437	74	565	148.8	-225	270	22	400	142.0	46	26	-294	369	-21	538	144.8	49
3	-339	422	77	582	142.7	-246	297	29	418	141.6	43	27	-342	391	-24	564	141.1	43
4	-336	436	89	582	143.4	-246	301	30	416	141.5	41	28	-326	399	-30	551	142.4	43
5	-352	427	86	582	141.3	-250	303	28	416	141.2	39	27	-328	405	-28	551	142.4	43

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	300	109	61	72	35.8	235	93	37	46	41.5	341	60	16	44	41.0
2	79	92	39	84	8.7	126	116	49	146	13.4	89	122	11	99	12.6
3	138	100	43	48	15.5	83	50	37	59	11.4	57	96	30	42	10.0
4	54	81	48	53	8.1	82	64	28	46	13.4	64	66	28	38	9.5
5	57	100	60	69	9.7	69	67	27	70	8.8	49	46	18	56	3.8

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	300	109	61	72	35.8	235	93	37	46	41.5	341	60	16	44	41.0
2	223	100	50	74	26.2	200	99	38	101	32.0	266	89	14	70	32.7
3	205	99	46	67	23.5	163	89	37	84	25.4	216	94	21	68	26.2
4	178	97	50	63	20.6	145	82	36	75	22.8	190	87	24	65	23.1
5	164	97	51	62	19.3	133	79	34	73	20.6	170	81	23	62	20.6

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 5:25: 0
END TIME 5:30: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
2	-214	328	245	392	146.7	-274	287	11	398	136.3	79	58	-340	381	-13	512	138.2	40
3	-90	322	70	379	170.1	-164	288	5	339	148.9	78	66	-16	271	-107	357	190.8	20
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
5	-259	311	-83	420	136.0	-301	237	7	384	128.2	88	81	-239	325	-69	410	141.3	32

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
2	-214	328	245	392	146.7	-274	287	11	398	136.3	79	58	-340	381	-13	512	138.2	40
3	-131	324	129	383	162.3	-201	288	7	359	144.7	79	63	-124	308	-76	408	173.3	27
4	-131	324	129	383	162.3	-201	288	7	359	144.7	79	63	-124	308	-76	408	173.3	27
5	-180	319	44	398	151.8	-241	267	7	369	138.1	82	70	-170	315	-73	409	160.5	29

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	267	44	125	101	40.2	57	96	2	53	16.9	314	167	169	142	60.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	29	230	133	152	24.9	38	9	28	35	2.4	2	160	58	126	14.3

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	202	31	134	72	31.5	76	68	4	50	14.0	291	134	131	134	52.2
4	202	31	134	72	31.5	76	68	4	50	14.0	291	134	131	134	52.2
5	156	117	144	94	29.3	79	56	14	42	13.5	215	124	97	114	41.5

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 5:25: 0
END TIME 5:30: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-436	384	91	585	130.9	-351	255	29	440	126.0	41	41	-415	406	-24	584	134.2	36
2	-416	350	58	548	130.1	-288	302	23	425	137.4	16	13	-327	377	-13	504	139.7	41
3	-390	409	141	585	134.4	-291	330	46	445	138.2	31	24	-373	454	-35	589	140.4	31
4	-327	429	96	547	142.3	-279	278	31	398	135.6	29	18	-340	378	-14	516	138.3	40
5	-364	355	79	530	132.5	-278	278	33	397	134.6	27	15	-351	367	-13	513	136.4	42

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-436	384	91	585	130.9	-351	255	29	440	126.0	41	41	-415	406	-24	584	134.2	36
2	-427	368	76	564	130.5	-322	277	26	433	131.3	30	28	-374	393	-19	547	136.7	38
3	-415	381	96	573	131.7	-312	294	32	437	133.5	30	27	-374	412	-24	560	137.9	36
4	-391	394	83	566	134.6	-303	289	32	426	134.0	30	24	-365	403	-21	548	138.0	37
5	-386	387	81	559	134.2	-298	287	32	421	134.1	29	23	-362	396	-20	542	137.7	38

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	39	84	86	64	6.8	47	57	22	24	9.1	50	60	15	49	6.0
2	62	47	51	42	7.0	94	37	19	56	12.4	84	33	8	54	8.9
3	66	171	108	88	16.5	56	72	44	59	9.5	28	50	29	45	3.4
4	70	79	48	41	10.3	78	24	23	58	8.9	85	43	13	24	10.5
5	89	156	89	79	18.6	57	70	21	65	9.3	74	63	20	63	8.1

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	39	84	86	64	6.8	47	57	22	24	9.1	50	60	15	49	6.0
2	50	69	71	57	6.6	76	53	20	41	11.8	79	50	13	64	7.7
3	56	108	87	66	10.4	71	63	30	46	11.4	66	56	20	61	6.7
4	71	102	81	61	11.2	73	55	28	51	10.6	72	54	19	57	7.7
5	74	112	78	65	12.6	70	57	26	54	10.3	71	57	19	58	7.7

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 5:30: 0
END TIME 5:35: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-57	341	45	558	165.7	-341	157	25	443	101.2	75	92	-890	799	402	1268	108.4	41
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
3	-395	302	21	522	130.4	-281	214	7	376	129.2	63	50	-366	304	-26	499	130.8	27
4	-365	247	71	470	121.2	-251	265	23	385	135.1	51	34	-356	359	-15	512	135.3	20
5	-14	480	51	613	174.4	-276	272	10	403	138.3	54	50	-227	223	-133	419	165.5	56

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-57	341	45	558	165.7	-341	157	25	443	101.2	75	92	-890	799	402	1268	108.4	41
2	-57	341	45	558	165.7	-341	157	25	443	101.2	75	92	-890	799	402	1268	108.4	41
3	-284	315	29	534	142.2	-301	195	13	398	119.9	67	64	-541	469	116	756	123.3	32
4	-324	281	50	502	131.7	-276	230	18	392	127.5	59	49	-449	414	50	634	129.3	26
5	-220	347	50	539	145.9	-276	244	15	396	131.1	57	49	-375	350	-10	562	141.4	36

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	594	183	6	50	73.4	110	381	10	220	48.4	822	1220	722	1347	42.5		
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		
3	188	80	56	95	21.3	123	98	24	61	22.6	139	109	17	38	20.4		
4	56	181	79	71	24.4	66	128	11	55	20.6	71	59	16	46	8.7		
5	393	200	73	140	44.4	172	45	19	132	19.4	281	203	206	176	68.4		

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	594	183	6	50	73.4	110	381	10	220	48.4	822	1220	722	1347	42.5		
2	594	183	6	50	73.4	110	381	10	220	48.4	822	1220	722	1347	42.5		
3	350	104	45	79	41.0	112	189	21	114	31.4	469	609	392	722	27.3		
4	243	145	65	79	34.0	91	158	17	86	26.5	334	416	273	504	20.3		
5	326	186	66	113	41.9	119	131	18	100	24.4	327	364	262	429	44.2		

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 5:30: 0
END TIME 5:35: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-396	409	28	578	135.5	-344	234	34	425	122.5	24	21	-421	329	-11	549	127.8	46
2	-402	440	37	607	137.8	-323	345	29	477	136.4	17	13	-382	436	-17	583	138.6	39
3	-366	390	37	544	137.2	-352	162	0	403	112.3	19	26	-401	208	-2	474	115.6	59
4	-261	486	22	512	139.9	-264	254	-7	447	125.3	15	32	-302	301	2	517	128.3	73
5	-364	421	51	574	137.8	-217	350	-5	456	148.5	25	18	-237	442	-1	542	152.1	71

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-396	409	28	578	135.5	-344	234	34	425	122.5	24	21	-421	329	-11	549	127.8	46
2	-399	425	33	593	136.7	-333	290	31	451	129.5	21	17	-401	383	-14	566	133.2	42
3	-387	412	35	575	136.9	-340	243	19	433	123.2	20	20	-401	318	-9	532	126.7	49
4	-357	382	32	560	137.6	-322	245	13	437	123.7	19	23	-378	314	-6	529	127.1	54
5	-358	389	35	562	137.7	-302	266	9	440	128.5	20	22	-350	339	-5	531	131.9	58

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	77	100	36	64	10.6	25	111	11	63	13.9	75	123	21	52	14.1
2	106	61	52	28	11.6	37	66	22	44	7.5	45	66	27	42	6.6
3	97	47	36	29	11.2	42	128	12	67	17.8	48	153	7	54	19.3
4	265	258	42	49	45.4	143	277	9	139	41.0	169	295	11	116	41.0
5	85	139	61	66	15.6	183	126	15	67	27.9	199	113	18	50	24.5

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	77	100	36	64	10.6	25	111	11	63	13.9	75	123	21	52	14.1
2	88	81	43	49	10.7	32	104	17	58	12.9	62	109	23	48	11.9
3	91	71	39	49	10.6	36	127	22	64	16.7	56	151	20	67	16.9
4	154	144	39	55	22.7	80	168	23	85	23.7	101	188	18	79	23.8
5	142	141	44	56	21.3	112	164	23	81	26.0	134	181	18	74	25.6

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 5:35: 0
END TIME 5:40: 0

ONE MINUTE MEANS

	PEAKS				I	FOURIER COEFFICIENTS						I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	99	501	28	575	187.7	-206	266	6	370	143.4	50	47	-347	381	-26	567	135.8	58
2	-407	316	81	524	128.2	-211	293	20	375	144.5	62	38	-302	406	-40	529	143.3	24
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
4	-326	338	148	483	132.8	-233	367	33	440	147.7	58	45	-273	470	-17	544	149.7	29
5	-365	343	68	510	133.5	-243	262	0	379	142.7	41	53	-274	369	-30	518	144.4	34

CUMULATIVE MEANS

	PEAKS				I	FOURIER COEFFICIENTS						I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	99	501	28	575	187.7	-206	266	6	370	143.4	50	47	-347	381	-26	567	135.8	58
2	-106	427	49	555	163.9	-208	276	11	372	143.9	55	44	-329	391	-32	552	138.8	44
3	-106	427	49	555	163.9	-208	276	11	372	143.9	55	44	-329	391	-32	552	138.8	44
4	-169	401	77	534	155.0	-215	302	18	392	145.0	56	44	-313	414	-28	549	141.9	40
5	-228	384	75	527	148.6	-223	290	12	388	144.3	52	47	-301	400	-29	540	142.7	38

ONE MINUTE STANDARD DEVIATIONS

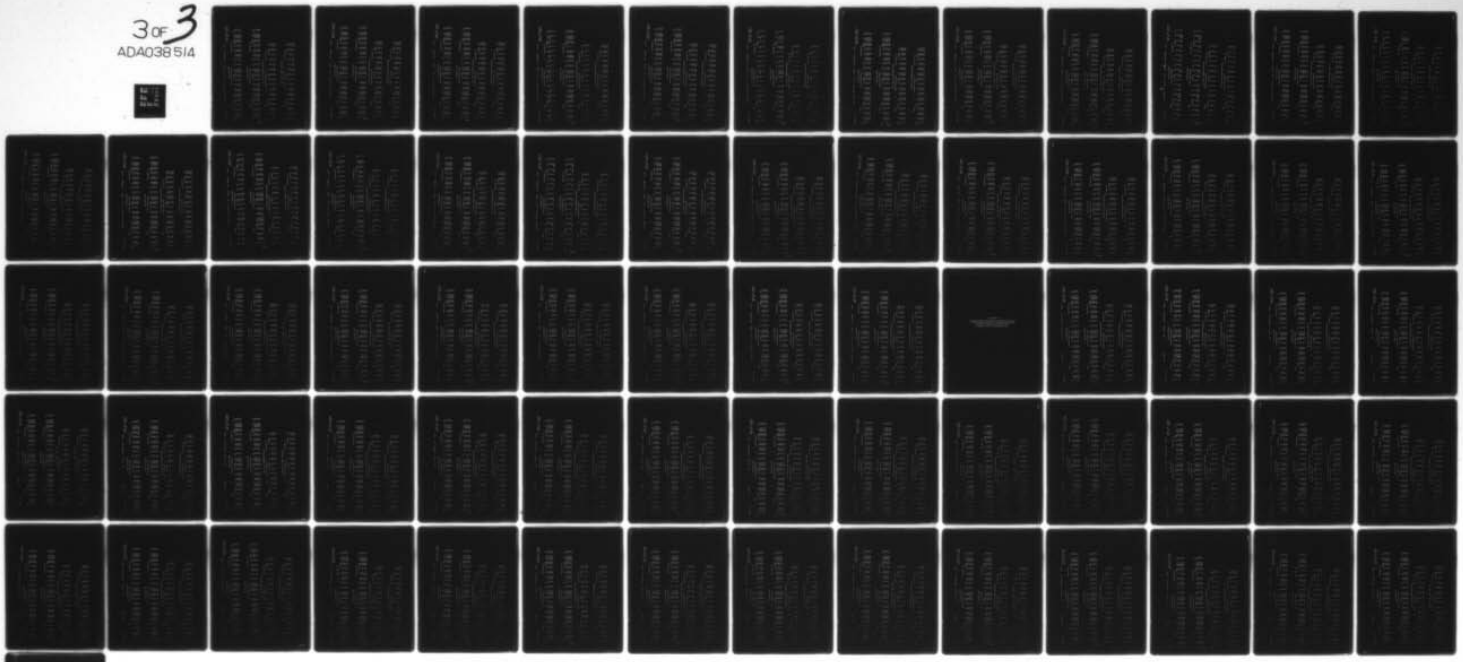
	PEAKS				I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	283	113	232	86	31.5	145	126	10	91	28.0	143	229	51	85	27.6
2	88	69	62	31	11.5	107	96	16	85	17.3	148	92	51	29	18.7
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	42	173	152	120	17.8	79	72	19	79	10.0	44	74	15	83	2.7
5	103	73	65	78	11.4	176	64	15	130	23.8	260	85	46	78	29.9

CUMULATIVE STANDARD DEVIATIONS

	PEAKS				I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	283	113	232	86	31.5	145	126	10	91	28.0	143	229	51	85	27.6
2	199	133	179	72	39.2	125	110	14	84	23.1	139	179	49	68	23.6
3	199	133	179	72	39.2	125	110	14	84	23.1	139	179	49	68	23.6
4	169	152	172	89	36.8	111	107	18	86	19.9	120	158	42	69	20.3
5	160	129	140	85	32.6	130	96	19	97	20.5	168	139	42	71	22.8

AD-A038 514 LOCKHEED MISSILES AND SPACE CO INC HUNTSVILLE ALA HU--ETC F/G 4/2
REMOTE WIND MEASUREMENT IN FOG USING LASER DOPPLER VELOCIMETRY.(U)
DEC 76 H R BRASHEARS, W R EBERLE F19628-76-C-0237
UNCLASSIFIED LMSC-HREC-TR-D497127 AFGL-TR-76-0313 NL

3 OF 3
ADA038514



END

DATE FILMED
5-77

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 5:35: 0
END TIME 5:40: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-367	422	60	568	139.0	-322	324	25	458	135.2	17	15	-362	425	-26	560	139.6	30
2	-413	319	31	529	127.6	-291	289	39	413	134.4	22	24	-359	388	-10	532	136.9	39
3	-314	455	46	564	145.3	-310	350	39	470	138.2	14	7	-349	427	-20	553	140.5	31
4	-373	392	72	551	135.5	-199	315	12	428	149.5	27	25	-239	386	-9	527	151.2	51
5	-356	419	28	556	139.4	-316	288	39	429	132.4	27	17	-402	363	-13	544	132.1	41

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-367	422	60	568	139.0	-322	324	25	458	135.2	17	15	-362	425	-26	560	139.6	30
2	-389	375	47	550	133.8	-308	308	31	437	134.8	19	19	-361	408	-18	547	138.3	34
3	-385	400	46	554	137.4	-309	321	34	448	135.9	17	16	-357	414	-19	549	139.0	33
4	-367	398	53	553	136.9	-279	319	28	443	139.5	20	18	-325	406	-16	543	142.3	38
5	-385	402	49	554	137.4	-286	314	30	440	138.2	21	18	-340	398	-16	543	140.4	39

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	90	69	37	67	9.3	70	61	29	89	3.5	49	40	10	52	3.7
2	73	79	42	54	10.0	47	63	18	62	6.6	39	68	17	60	5.3
3	98	76	29	24	12.3	21	43	30	25	5.0	21	43	22	28	4.1
4	88	111	69	97	11.4	210	144	26	114	36.5	260	156	24	88	36.7
5	77	87	69	73	9.7	66	48	17	75	4.3	46	40	21	46	4.2

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	90	69	37	67	9.3	70	61	29	89	3.5	49	40	10	52	3.7
2	83	89	40	62	10.9	60	62	25	78	4.9	43	55	15	55	4.5
3	92	91	36	53	12.3	50	59	26	67	5.1	37	52	17	48	4.4
4	89	95	47	65	11.9	122	86	27	80	19.4	142	89	19	60	19.2
5	86	92	52	65	11.4	114	81	26	78	17.7	132	83	19	57	17.8

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE MD 90.

HEIGHT = 28.

START TIME 5:40: 0
END TIME 5:45: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-270	227	73	433	122.3	-132	323	22	380	156.1	50	24	-191	344	-24	460	152.9	33
2	-335	270	33	465	127.3	-190	290	6	359	145.9	54	47	-251	315	-21	419	143.5	25
3	-368	356	63	520	134.3	-236	251	4	367	140.7	77	45	-379	322	-17	543	139.0	29
4	-323	366	172	495	138.4	-215	327	30	413	145.2	52	39	-269	450	-37	532	148.5	30
5	-336	156	151	398	113.7	-208	225	13	366	132.9	73	75	-464	177	-30	526	109.1	25

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-270	227	73	433	122.3	-132	323	22	380	156.1	50	24	-191	344	-24	460	152.9	33
2	-307	253	49	452	125.3	-167	303	12	367	150.0	53	38	-227	327	-22	435	147.3	28
3	-333	296	54	480	129.0	-196	282	9	367	146.2	63	41	-290	325	-20	479	141.8	28
4	-331	312	81	483	131.2	-200	292	14	378	145.9	60	41	-285	353	-24	491	143.3	29
5	-332	283	94	468	127.9	-201	280	14	375	143.5	63	47	-318	321	-25	498	137.0	28

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	37	291	58	48	45.1	162	76	29	51	25.8	269	59	13	30	36.8
2	77	183	57	59	25.2	71	84	13	49	16.9	142	66	46	95	18.2
3	81	76	85	78	8.8	171	61	19	122	20.2	210	151	48	115	24.5
4	98	102	92	109	11.0	110	116	21	64	20.1	81	89	37	71	10.5
5	122	143	154	97	25.3	152	176	26	72	36.4	140	200	191	154	22.1

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	37	291	58	48	45.1	162	76	29	51	25.8	269	59	13	30	36.8
2	70	218	58	54	32.2	111	78	21	48	20.2	191	62	35	76	25.7
3	78	178	68	72	25.2	138	75	20	83	20.1	207	104	40	106	25.3
4	81	164	88	79	22.8	130	85	22	80	19.6	185	112	39	100	22.8
5	87	170	103	87	23.8	131	106	22	77	23.3	189	146	83	109	26.0

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 5:40: 0
END TIME 5:45: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-336	458	51	573	143.9	-312	346	29	476	138.4	17	9	-350	418	-18	555	140.1	45
2	-365	344	26	506	133.3	-321	247	32	408	127.0	18	12	-352	318	-16	478	131.5	35
3	-400	423	74	620	135.3	-239	373	18	493	142.8	26	18	-279	464	-16	590	145.7	70
4	-273	531	63	602	154.9	-274	331	34	446	140.6	28	17	-343	439	-16	572	142.2	46
5	-352	454	47	578	142.0	-217	358	30	426	150.2	26	11	-270	446	-11	530	149.2	42

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-336	458	51	573	143.9	-312	346	29	476	138.4	17	9	-350	418	-18	555	140.1	45
2	-352	396	38	537	138.2	-317	292	30	439	132.3	18	11	-351	364	-17	514	135.5	40
3	-367	405	49	563	137.3	-292	318	26	456	135.6	20	13	-328	396	-17	538	138.7	49
4	-345	435	52	572	141.0	-288	321	28	454	136.8	22	14	-332	406	-17	546	139.5	48
5	-346	439	51	574	141.3	-272	329	29	448	139.8	23	13	-318	415	-16	542	141.7	47

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	76	30	44	30	7.7	98	53	22	40	13.3	94	60	22	28	11.4
2	54	47	66	26	7.4	20	59	17	43	6.2	23	73	21	50	6.9
3	98	211	122	25	22.7	145	209	22	98	29.5	172	209	18	91	25.9
4	87	66	46	74	8.3	110	74	41	42	17.6	123	103	29	82	14.9
5	69	86	40	88	6.8	108	104	21	127	13.0	108	93	18	100	11.9

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	76	30	44	30	7.7	98	53	22	40	13.3	94	60	22	28	11.4
2	64	71	57	44	9.1	65	74	19	53	11.3	63	83	21	56	9.9
3	77	126	81	55	14.1	100	131	20	72	18.7	110	138	19	76	16.6
4	88	126	79	61	14.5	101	119	26	65	18.3	110	130	21	77	16.0
5	83	117	67	66	13.1	105	116	25	81	16.0	111	122	20	81	15.5

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 5:45: 0
END TIME 5:50: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-253	121	-97	281	115.5	24	233	-6	234	186.0	77	68	-54	206	51	213	165.1	26
2	-382	494	12	625	142.2	-285	279	41	399	134.3	62	58	-346	379	-47	514	137.5	77
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-253	121	-97	281	115.5	24	233	-6	234	186.0	77	68	-54	206	51	213	165.1	26
2	-317	307	-42	453	128.8	-130	256	17	317	160.1	69	63	-200	293	1	364	151.3	52
3	-317	307	-42	453	128.8	-130	256	17	317	160.1	69	63	-200	293	1	364	151.3	52
4	-317	307	-42	453	128.8	-130	256	17	317	160.1	69	63	-200	293	1	364	151.3	52
5	-317	307	-42	453	128.8	-130	256	17	317	160.1	69	63	-200	293	1	364	151.3	52

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	91	264	77	243	18.9	219	33	34	117	36.6	206	122	70	213	19.5
3	91	264	77	243	18.9	219	33	34	117	36.6	206	122	70	213	19.5
4	91	264	77	243	18.9	219	33	34	117	36.6	206	122	70	213	19.5
5	91	264	77	243	18.9	219	33	34	117	36.6	206	122	70	213	19.5

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 5:45: 0
END TIME 5:50: 0

ONE MINUTE MEANS

	PEAKS				I	FOURIER COEFFICIENTS						I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-285	525	41	608	151.8	-288	361	26	465	141.7	25	14	-352	475	-9	594	143.3	42
2	-327	314	-9	556	136.4	-296	287	0	447	128.2	49	25	-362	232	-125	533	161.0	43
3	-443	431	46	634	134.5	-254	391	15	471	147.3	43	29	-409	421	-9	596	135.8	47
4	-395	513	71	708	141.6	-298	386	33	495	143.1	33	28	-353	519	-24	635	145.8	45
5	-296	389	35	537	143.7	-326	315	9	475	131.0	55	47	-275	460	-45	546	151.8	28

CUMULATIVE MEANS

	PEAKS				I	FOURIER COEFFICIENTS						I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-285	525	41	608	151.8	-288	361	26	465	141.7	25	14	-352	475	-9	594	143.3	42
2	-306	420	15	563	144.1	-292	324	13	456	134.9	37	19	-357	354	-67	563	152.1	43
3	-340	422	23	596	141.7	-283	341	14	460	138.0	39	22	-370	371	-53	571	148.0	44
4	-353	444	35	622	141.7	-286	352	18	468	139.2	37	23	-366	406	-46	587	147.5	44
5	-342	433	35	606	142.1	-294	345	16	469	137.6	41	28	-349	416	-46	579	148.3	41

ONE MINUTE STANDARD DEVIATIONS

	PEAKS				I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	123	102	67	103	12.3	65	49	35	64	6.5	68	90	22	99	5.4
2	260	270	102	119	38.3	63	221	39	134	29.3	263	297	207	200	88.1
3	136	92	48	32	14.9	79	47	25	60	8.8	82	82	37	43	10.4
4	214	237	70	35	27.5	120	107	37	135	10.2	103	97	35	96	9.4
5	228	169	262	135	31.4	66	182	12	112	21.8	153	134	114	165	15.2

CUMULATIVE STANDARD DEVIATIONS

	PEAKS				I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	123	102	67	103	12.3	65	49	35	64	6.5	68	90	22	99	5.4
2	195	223	97	109	26.3	61	158	38	101	21.4	183	245	153	154	60.2
3	188	196	78	97	25.5	65	140	34	91	19.6	163	215	135	134	52.3
4	190	209	78	99	25.3	78	132	35	100	17.7	149	202	118	127	45.5
5	194	195	126	109	25.9	76	139	32	100	18.4	151	190	115	132	41.2

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE MD 90.

HEIGHT = 28.

START TIME 5:50: 0
END TIME 5:55: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
2	-133	-85	12	159	57.1	-90	66	3	112	125.8	28	30	-4	0	-85	5	91.7	3
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
2	-133	-85	12	159	57.1	-90	66	3	112	125.8	28	30	-4	0	-85	5	91.7	3
3	-133	-85	12	159	57.1	-90	66	3	112	125.8	28	30	-4	0	-85	5	91.7	3
4	-133	-85	12	159	57.1	-90	66	3	112	125.8	28	30	-4	0	-85	5	91.7	3
5	-133	-85	12	159	57.1	-90	66	3	112	125.8	28	30	-4	0	-85	5	91.7	3

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE MD 90.

HEIGHT = 43.

START TIME 5:50: 0
END TIME 5:55: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-427	384	-50	604	130.8	-173	371	16	426	152.9	38	69	-341	477	-4	589	144.4	27
2	-375	359	102	583	134.2	-217	330	24	440	153.9	52	53	-308	349	-39	514	146.1	56
3	-284	341	136	594	138.5	-284	213	-12	382	123.9	67	44	-460	344	-67	649	127.8	41
4	-326	549	65	646	148.9	-222	417	32	511	143.3	46	48	-306	485	-35	588	144.2	46
5	-219	365	32	539	151.7	-162	319	9	368	153.2	51	34	-269	470	10	550	150.0	34

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-427	384	-50	604	130.8	-173	371	16	426	152.9	38	69	-341	477	-4	589	144.4	27
2	-394	369	45	591	133.0	-200	345	21	435	153.5	47	59	-320	397	-25	542	145.4	45
3	-369	372	70	592	134.5	-223	309	12	420	145.4	52	55	-358	383	-37	572	140.6	44
4	-352	427	68	609	139.0	-223	343	18	449	144.8	50	53	-342	415	-36	577	141.8	45
5	-316	410	58	590	142.4	-206	336	16	427	147.1	50	48	-322	430	-23	569	144.0	42

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	139	192	30	66	21.5	102	122	34	67	20.3	54	40	26	26	6.1
2	235	203	171	97	30.7	227	114	27	134	35.8	253	154	41	169	36.9
3	225	376	140	45	46.7	55	170	14	59	26.0	215	304	52	54	33.2
4	94	95	44	79	9.2	78	261	23	165	33.7	124	219	30	206	16.7
5	324	167	82	47	42.5	88	47	28	39	14.2	87	70	24	45	10.5

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	139	192	30	66	21.5	102	122	34	67	20.3	54	40	26	26	6.1
2	195	185	153	82	26.0	181	110	28	108	29.2	194	136	38	134	28.1
3	198	228	148	72	30.2	159	135	29	97	30.4	200	179	44	125	29.0
4	170	211	123	76	26.1	136	182	28	124	30.3	177	191	39	148	25.3
5	222	198	113	75	30.8	126	154	28	113	26.8	159	167	41	127	22.3

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 5:55: 0
END TIME 6: 0: 0

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-246	482	50	569	156.6	-210	330	12	416	147.7	57	42	-283	482	-11	565	149.0	35
2	-404	445	64	682	136.8	-296	427	4	542	143.9	66	45	-444	682	64	819	144.8	35
3	-238	451	122	587	149.8	-329	308	7	490	129.4	65	72	-342	365	0	565	127.4	46
4	-320	375	161	528	134.6	-329	378	0	512	139.5	68	39	-406	515	-9	694	142.0	23
5	-202	491	-28	565	159.2	-210	338	1	412	148.0	75	27	-367	458	30	590	141.2	36

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-246	482	50	569	156.6	-210	330	12	416	147.7	57	42	-283	482	-11	565	149.0	35
2	-312	466	56	616	148.4	-246	371	9	468	146.1	61	43	-350	565	20	671	147.2	35
3	-285	461	80	605	147.1	-274	348	8	476	140.0	62	54	-347	491	12	632	139.9	39
4	-292	443	97	569	144.5	-286	354	6	484	139.9	64	51	-359	496	8	645	140.4	35
5	-282	448	83	586	146.1	-277	352	5	476	140.8	65	48	-360	492	10	639	140.4	35

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	194	106	86	113	23.9	131	91	36	53	22.0	73	94	34	83	8.7
2	208	308	66	98	30.5	125	187	24	148	17.4	150	404	184	420	6.2
3	147	291	177	93	40.2	111	204	12	87	28.5	119	287	54	129	38.6
4	71	234	269	127	24.7	149	154	9	182	14.6	191	204	37	121	21.2
5	235	44	40	50	25.0	105	83	14	35	18.3	51	54	33	35	6.3

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	194	106	86	113	23.9	131	91	36	53	22.0	73	94	34	83	8.7
2	207	203	75	117	27.4	130	141	30	117	19.4	134	273	120	291	7.8
3	186	231	122	107	31.7	126	164	25	105	23.9	126	288	100	245	25.1
4	168	227	159	113	30.3	130	159	22	121	22.0	139	269	90	224	23.9
5	173	216	156	108	29.7	128	152	22	116	21.4	131	254	85	212	22.6

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE MD 90.

HEIGHT = 43.

START TIME 6: 0: 0
END TIME 6: 5: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-455	327	135	578	121.4	-209	263	4	350	137.8	79	59	-278	238	-44	506	118.2	50
2	-328	542	130	658	151.7	-272	465	11	545	149.6	50	42	-406	616	6	741	147.1	27
3	-397	558	16	687	144.6	-199	395	8	451	152.6	32	50	-419	542	6	690	142.5	35
4	-357	532	97	667	147.9	-281	309	15	427	135.3	56	35	-306	483	-10	612	146.5	70
5	-325	574	72	663	150.1	-333	383	41	508	139.2	48	35	-412	518	-32	665	141.4	34

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-455	327	135	578	121.4	-209	263	4	350	137.8	79	59	-278	238	-44	506	118.2	50
2	-340	489	131	638	144.1	-256	414	9	496	146.6	57	46	-374	521	-5	682	139.9	32
3	-347	502	108	648	144.2	-245	411	9	487	147.8	52	47	-383	525	-3	684	140.4	33
4	-364	511	105	653	145.3	-255	381	10	470	144.3	53	44	-361	513	-5	663	142.2	44
5	-357	522	99	655	146.1	-269	382	16	477	143.4	52	42	-370	514	-10	664	142.0	42

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	85	273	173	232	20.7	35	170	1	107	23.1	142	498	106	155	63.6
2	210	69	124	108	19.7	84	79	36	73	9.8	133	108	93	156	5.6
3	64	19	103	22	5.3	92	88	16	36	15.6	117	34	10	45	9.4
4	225	47	91	83	19.4	27	143	19	107	13.4	203	180	36	107	23.1
5	39	85	17	59	6.3	88	74	19	110	3.5	45	65	18	49	5.4

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	85	273	173	232	20.7	35	170	1	107	23.1	142	498	106	155	63.6
2	190	159	123	132	23.1	78	131	30	116	13.2	138	273	91	181	27.9
3	169	143	124	119	20.5	79	120	27	105	13.0	129	241	81	160	24.8
4	178	122	112	107	19.5	69	130	25	105	13.9	149	219	69	147	23.6
5	161	117	102	99	17.8	76	120	26	104	12.7	137	199	64	133	21.4

VAD OTIS4 TIME IN GMT CT VAD 9/18/[illegible] OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 6:20: 0
END TIME 6:25: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
4	-37	70	92	80	151.4	-12	149	0	149	175.1	95	87	4	27	-71	27	187.8	3
5	59	142	-5	154	202.4	-33	119	2	124	164.1	39	63	-104	128	-16	165	140.7	17

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
4	-37	70	92	80	151.4	-12	149	0	149	175.1	95	87	4	27	-71	27	187.8	3
5	10	106	43	117	176.9	-22	134	1	136	169.6	67	75	-49	77	-43	96	164.2	10

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	68	51	69	52	36.1	15	21	1	18	7.7	77	71	39	97	33.3

HEIGHT = 43. VAD OTIS4 TIME IN GMT CT VAD 9/18/76 UTIS AIRFORCE HD 90.

START TIME 6:20: 0
END TIME 6:25: 0

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-165	485	-67	531	163.6	-243	299	0	410	139.9	60	52	-199	390	-25	519	164.2	33
2	-266	413	279	549	138.7	-390	473	24	616	141.3	65	53	-298	507	-107	592	150.2	24
3	-99	450	31	512	178.4	-112	377	-8	411	167.2	80	61	-25	530	-10	534	180.0	29
4	-156	484	-64	556	158.8	-103	419	2	440	167.3	57	54	-179	496	30	534	160.3	32
5	-255	633	98	712	158.5	-251	507	19	575	153.1	54	61	-323	574	-11	675	151.4	57

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-165	485	-67	531	163.6	-243	299	0	410	139.9	60	52	-199	390	-25	519	164.2	33
2	-190	467	19	535	157.4	-280	343	6	462	140.2	62	52	-224	420	-45	537	160.7	31
3	-165	463	22	529	163.1	-234	352	2	448	147.6	67	55	-170	450	-36	536	166.0	30
4	-162	470	-8	538	161.6	-188	376	2	445	154.5	63	54	-173	466	-12	535	164.0	31
5	-186	513	19	584	160.8	-204	410	6	479	154.2	61	56	-212	494	-12	572	160.7	38

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	170	84	167	118	16.2	126	123	35	90	24.5	309	124	160	137	42.2
2	141	384	247	220	39.0	145	54	4	133	7.4	122	54	54	108	7.6
3	292	214	200	241	35.5	174	176	12	201	20.0	65	268	107	267	9.8
4	176	198	163	103	27.5	102	62	18	70	13.4	94	101	78	105	9.6
5	213	82	91	43	18.4	95	119	23	104	11.0	170	85	43	103	13.8

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	170	84	167	118	16.2	126	123	35	90	24.5	309	124	160	137	42.2
2	160	165	233	130	23.2	138	133	32	132	20.9	269	120	142	128	36.4
3	192	169	215	153	26.9	159	137	28	144	23.4	245	164	129	160	32.0
4	181	174	197	135	26.3	153	119	24	121	22.2	201	144	116	139	26.0
5	189	170	190	141	24.2	141	130	25	128	19.6	201	138	101	143	23.8

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 38.

START TIME 6:25: 0
END TIME 6:30: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-76	-5	89	77	85.4	-46	99	3	110	154.6	50	60	-4	4	-83	6	130.7	1
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-76	-5	89	77	85.4	-46	99	3	110	154.6	50	60	-4	4	-83	6	130.7	1
2	-76	-5	89	77	85.4	-46	99	3	110	154.6	50	60	-4	4	-83	6	130.7	1
3	-76	-5	89	77	85.4	-46	99	3	110	154.6	50	60	-4	4	-83	6	130.7	1
4	-76	-5	89	77	85.4	-46	99	3	110	154.6	50	60	-4	4	-83	6	130.7	1
5	-76	-5	89	77	85.4	-46	99	3	110	154.6	50	60	-4	4	-83	6	130.7	1

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

HEIGHT = 43.

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

START TIME 6:25: 0
END TIME 6:30: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-407	383	68	692	129.4	-240	427	18	497	152.2	62	62	-197	366	-109	578	188.6	69
2	-248	502	58	563	153.6	-155	423	25	454	160.4	36	32	-179	526	-23	557	161.1	31
3	-294	499	60	600	150.5	-128	385	-6	423	163.6	59	36	-282	510	26	643	153.2	51
4	-298	510	22	608	149.0	-214	321	12	391	147.0	30	40	-344	436	-8	574	141.4	42
5	-335	499	142	616	146.0	-294	422	17	525	145.3	57	61	-479	422	-7	663	130.2	62

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-407	383	68	692	129.4	-240	427	18	497	152.2	62	62	-197	366	-109	578	188.6	69
2	-327	443	63	628	141.5	-197	425	22	475	156.3	49	47	-188	446	-66	567	174.9	50
3	-313	466	61	616	145.2	-169	408	10	454	159.3	53	42	-227	472	-28	599	166.0	51
4	-309	477	51	619	146.2	-181	385	10	437	156.1	47	42	-258	463	-22	592	159.5	48
5	-315	482	70	614	146.1	-204	393	12	455	153.8	49	46	-303	454	-19	607	153.5	51

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	166	428	88	62	43.0	123	101	12	131	12.1	244	408	237	158	84.0		
2	60	61	87	60	6.1	73	58	21	74	7.2	37	32	34	37	3.4		
3	175	76	70	86	16.8	143	91	41	110	19.0	293	106	56	104	26.6		
4	116	126	63	69	15.1	86	55	16	80	9.3	103	125	38	42	15.7		
5	130	106	127	86	13.3	111	100	20	98	12.6	112	183	84	98	17.4		

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	166	428	88	62	43.0	123	101	12	131	12.1	244	408	237	158	84.0		
2	145	295	83	89	31.6	105	78	17	102	10.3	165	285	166	109	57.9		
3	153	228	76	86	26.3	123	83	32	106	14.5	223	226	137	110	47.7		
4	142	204	73	81	23.6	114	85	29	102	14.2	203	202	119	97	42.8		
5	138	187	92	80	21.7	121	88	26	106	14.4	208	196	111	100	40.5		

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 6:30: 0
END TIME 6:35: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-241	514	141	614	155.6	-178	487	30	525	160.6	67	51	-187	546	-43	606	161.7	43
2	-255	466	145	562	149.0	-149	426	12	474	158.7	64	51	-183	469	-46	523	158.4	38
3	-234	480	19	571	152.9	-173	335	19	403	151.6	53	31	-228	446	-14	536	152.3	47
4	-259	379	93	500	142.8	-278	318	18	430	138.9	37	30	-300	413	-10	517	144.1	42
5	-194	324	122	510	149.2	-214	200	0	339	122.9	65	61	-94	190	-125	478	144.1	43

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-241	514	141	614	155.6	-178	487	30	525	160.6	67	51	-187	546	-43	606	161.7	43
2	-247	492	143	590	152.5	-164	459	21	501	159.7	66	51	-185	510	-44	567	160.2	40
3	-243	488	100	583	152.7	-167	416	21	467	156.9	61	44	-200	488	-33	556	157.5	43
4	-247	463	98	564	150.4	-193	393	20	458	152.7	56	41	-223	471	-28	547	154.4	43
5	-240	444	101	557	150.2	-196	367	17	442	148.8	57	44	-206	433	-41	538	153.0	43

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	230	120	131	66	25.7	107	118	28	137	8.8	187	115	109	94	20.6
2	145	201	178	147	24.2	129	148	41	120	21.0	136	111	73	90	17.4
3	172	197	31	66	22.5	126	97	33	47	22.6	177	113	25	54	21.7
4	164	178	168	107	27.3	101	95	20	111	12.1	88	85	23	89	10.1
5	288	279	130	69	51.8	37	221	19	109	37.8	491	185	171	175	70.8

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	230	120	131	66	25.7	107	118	28	137	8.8	187	115	109	94	20.6
2	188	157	148	109	24.2	113	131	35	127	14.9	159	115	90	98	18.5
3	179	150	133	95	23.0	115	132	33	115	17.8	162	116	74	85	19.5
4	172	160	138	102	23.9	119	130	30	113	18.2	153	112	66	86	18.5
5	185	180	135	99	27.7	112	155	30	118	23.2	217	155	89	101	28.7

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 6:30: 0
END TIME 6:35: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-96	129	-8	162	143.1	-90	-45	-1	102	63.3	31	55	-133	-75	11	154	60.5	34
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
4	-358	46	418	362	97.3	-256	517	16	578	153.6	90	79	-898	859	266	1244	133.7	60
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-96	129	-8	162	143.1	-90	-45	-1	102	63.3	31	55	-133	-75	11	154	60.5	34
2	-96	129	-8	162	143.1	-90	-45	-1	102	63.3	31	55	-133	-75	11	154	60.5	34
3	-96	129	-8	162	143.1	-90	-45	-1	102	63.3	31	55	-133	-75	11	154	60.5	34
4	-227	87	204	262	120.2	-173	236	7	340	108.4	61	67	-516	392	139	699	97.1	47
5	-227	87	204	262	120.2	-173	236	7	340	108.4	61	67	-516	392	139	699	97.1	47

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	185	59	302	141	32.4	117	398	13	336	63.8	541	661	180	770	51.8
5	185	59	302	141	32.4	117	398	13	336	63.8	541	661	180	770	51.8

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 20.

START TIME 6:35: 0
END TIME 6:40: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
2	-162	-19	-5	164	82.8	67	88	3	111	217.3	49	73	-3	-18	-97	19	12.2	4
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
2	-162	-19	-5	164	82.8	67	88	3	111	217.3	49	73	-3	-18	-97	19	12.2	4
3	-162	-19	-5	164	82.8	67	88	3	111	217.3	49	73	-3	-18	-97	19	12.2	4
4	-162	-19	-5	164	82.8	67	88	3	111	217.3	49	73	-3	-18	-97	19	12.2	4
5	-162	-19	-5	164	82.8	67	88	3	111	217.3	49	73	-3	-18	-97	19	12.2	4

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

HEIGHT = 43.

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

START TIME 6:35: 0
END TIME 6:40: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-384	368	329	555	130.9	-369	642	12	748	149.3	84	72	-320	737	-13	805	156.1	13
2	-291	526	51	611	151.2	-219	385	20	449	151.1	59	37	-305	525	6	620	149.4	45
3	-46	397	-293	403	170.5	-333	131	-37	359	111.4	71	55	-193	224	115	297	139.2	40
4	-223	515	69	566	156.5	-71	292	3	305	164.1	43	49	-272	451	21	528	148.9	60
5	-426	157	354	455	110.2	-285	396	12	489	144.1	94	85	-285	488	-7	566	149.6	121

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-384	368	329	555	130.9	-369	642	12	748	149.3	84	72	-320	737	-13	805	156.1	13
2	-312	491	113	599	146.7	-253	442	18	516	150.7	64	45	-308	572	1	661	150.9	38
3	-297	481	72	579	149.1	-261	411	13	500	146.8	65	46	-297	538	13	624	149.7	38
4	-277	487	72	577	150.3	-229	391	11	468	149.6	61	47	-293	523	14	608	149.6	42
5	-288	462	94	567	147.2	-233	391	11	469	149.2	64	50	-292	520	12	605	149.6	48

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	58	251	296	126	23.9	85	152	5	88	11.6	52	217	59	220	2.9
2	113	75	104	73	10.8	116	119	29	146	11.3	121	125	40	114	11.8
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	86	31	24	6	9.3	50	102	0	86	14.3	51	5	4	22	5.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	58	251	296	126	23.9	85	152	5	88	11.6	52	217	59	220	2.9
2	108	131	185	81	15.5	124	162	25	185	10.7	106	162	42	150	10.7
3	128	127	216	99	16.4	119	182	30	182	14.0	107	188	53	182	10.7
4	121	116	196	89	15.4	132	174	27	183	16.5	98	174	48	169	9.8
5	123	144	203	92	18.5	127	166	26	175	15.9	94	167	47	162	9.4

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 2P.

START TIME 6:40: 0
END TIME 6:45: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
5	-100	119	9	154	139.6	35	101	1	107	198.9	32	77	100	182	1	208	208.8	16

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
5	-100	119	9	156	139.6	35	101	1	107	198.9	32	77	100	182	1	208	208.8	16

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

VAD OTIS4 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 6:40: 0
END TIME 6:45: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
2	-208	607	93	642	161.0	-224	604	7	644	159.6	79	84	-108	618	-37	628	170.0	23
3	-244	440	19	536	149.0	-316	292	13	463	129.6	84	71	-475	190	29	644	118.5	52
4	-336	455	152	663	139.2	-271	454	20	571	149.2	55	55	-341	338	-133	548	132.2	40
5	-120	394	-117	415	164.2	-44	243	2	276	174.9	71	53	14	353	39	386	186.9	43

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	0	0	.0	0
2	-208	607	93	642	161.0	-224	604	7	644	159.6	79	84	-108	618	-37	628	170.0	23
3	-253	473	34	557	151.4	-297	354	12	499	135.6	83	74	-402	276	15	641	128.8	46
4	-298	464	98	615	144.8	-283	409	16	538	143.0	68	64	-369	310	-65	590	130.7	43
5	-251	445	41	561	149.9	-220	364	12	469	151.5	68	61	-266	321	-37	536	145.7	43

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0	
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0	
3	162	119	96	95	20.7	124	195	20	123	25.6	356	378	55	259	42.1	
4	213	343	155	146	35.0	206	122	35	43	24.5	207	275	159	189	31.5	
5	91	125	143	146	6.8	171	71	12	118	27.3	193	88	36	112	25.2	

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS						SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0	
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0	
3	143	128	89	95	18.7	115	219	17	134	25.9	349	379	57	225	43.1	
4	181	254	138	132	28.2	163	171	27	97	24.9	267	310	142	201	35.3	
5	178	226	146	159	25.6	193	167	25	156	28.5	299	266	130	201	41.1	

VAD OTISS TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 20.

START TIME 7:20: 0
END TIME 7:25: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-42	649	63	660	176.6	-64	518	21	528	172.5	45	49	-91	622	-27	634	171.4	39
2	-49	601	42	636	179.5	-80	464	28	493	170.9	30	30	-84	608	-20	617	172.1	31
3	26	634	17	645	184.7	36	488	12	543	178.4	48	58	-87	590	0	757	173.1	51
4	-129	560	30	579	166.6	-30	419	15	431	176.0	37	26	-35	565	-17	575	176.3	27
5	-29	625	62	639	177.0	-24	494	47	507	177.4	31	21	-33	611	-25	631	176.7	46

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-42	649	63	660	176.6	-64	518	21	528	172.5	45	49	-91	622	-27	634	171.4	39
2	-46	621	52	647	175.4	-73	491	24	504	171.6	37	39	-87	615	-23	625	171.7	34
3	-23	625	41	659	178.4	-38	490	21	516	173.8	40	45	-87	607	-16	667	172.2	40
4	-44	609	34	640	175.6	-36	473	19	496	174.3	39	40	-75	597	-16	645	173.2	37
5	-44	619	43	640	175.9	-33	477	25	498	175.0	38	36	-66	600	-18	642	173.9	39

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	156	29	79	45	12.9	82	81	30	77	9.3	88	58	22	52	8.3
2	203	107	47	73	20.9	104	80	28	89	11.3	63	57	12	57	5.8
3	263	193	93	100	25.0	216	223	48	171	35.4	460	268	39	151	40.1
4	67	75	75	70	7.3	105	53	30	50	14.5	111	37	24	36	11.1
5	122	63	53	61	11.0	118	53	24	45	14.2	169	50	19	49	15.4

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	156	29	79	45	12.9	82	81	30	77	9.3	88	58	22	52	8.3
2	176	81	59	61	17.0	91	81	28	83	10.0	73	56	17	54	6.8
3	202	100	71	75	19.6	145	135	35	115	20.6	250	149	27	110	21.8
4	184	98	70	80	18.1	135	123	33	108	19.1	223	131	26	105	19.7
5	171	91	67	78	16.6	130	111	33	97	18.0	211	118	25	95	18.6

HEIGHT = 43. VAD OTIS5 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HL 90.

START TIME 7:20: 0
END TIME 7:25: 0

ONE MINUTE MEANS

MIN	PEAKS U	PEAKS V	PEAKS W	PEAKS SPEED	PEAKS TH	FOURIER COEFFICIENTS U	FOURIER COEFFICIENTS V	FOURIER COEFFICIENTS W	FOURIER COEFFICIENTS SPEED	FOURIER COEFFICIENTS TH	FOURIER COEFFICIENTS 2D	FOURIER COEFFICIENTS 3D	SINE WAVE FIT U	SINE WAVE FIT V	SINE WAVE FIT W	SINE WAVE FIT SPEED	SINE WAVE FIT TH	SINE WAVE FIT SP
1	-54	662	22	665	175.2	-171	490	3	531	160.3	29	18	-165	615	-6	655	164.2	60
2	-139	679	-23	709	168.5	-111	519	0	537	167.9	26	23	-142	649	1	675	167.8	52
3	67	698	70	719	185.9	-34	540	30	558	177.2	27	16	-2	659	-29	669	180.5	53
4	-43	680	67	698	176.6	-25	544	14	562	177.1	19	21	-18	643	-22	662	178.3	46
5	-60	646	66	669	175.2	-66	550	25	557	173.1	19	18	-62	659	-32	663	174.4	36

CUMULATIVE MEANS

MIN	PEAKS U	PEAKS V	PEAKS W	PEAKS SPEED	PEAKS TH	FOURIER COEFFICIENTS U	FOURIER COEFFICIENTS V	FOURIER COEFFICIENTS W	FOURIER COEFFICIENTS SPEED	FOURIER COEFFICIENTS TH	FOURIER COEFFICIENTS 2D	FOURIER COEFFICIENTS 3D	SINE WAVE FIT U	SINE WAVE FIT V	SINE WAVE FIT W	SINE WAVE FIT SPEED	SINE WAVE FIT TH	SINE WAVE FIT SP
1	-54	662	22	665	175.2	-171	490	3	531	160.3	29	18	-165	615	-6	655	164.2	60
2	-93	670	1	696	172.1	-143	503	1	534	163.8	28	20	-154	631	-2	664	165.9	57
3	-94	677	23	703	176.4	-109	515	10	542	168.0	28	19	-106	640	-11	666	170.5	55
4	-92	677	35	702	176.5	-86	523	11	547	170.5	25	19	-83	641	-14	665	172.6	53
5	-48	673	40	696	176.2	-82	528	14	549	171.0	24	19	-79	644	-17	664	172.9	50

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	PEAKS V	PEAKS W	PEAKS SPEED	PEAKS TH	FOURIER COEFFICIENTS U	FOURIER COEFFICIENTS V	FOURIER COEFFICIENTS W	FOURIER COEFFICIENTS SPEED	FOURIER COEFFICIENTS TH	SINE WAVE FIT U	SINE WAVE FIT V	SINE WAVE FIT W	SINE WAVE FIT SPEED	SINE WAVE FIT TH
1	140	67	58	59	15.6	109	78	29	52	13.6	147	88	28	46	14.9
2	155	57	58	47	13.1	81	107	30	104	9.7	123	74	13	68	11.2
3	170	76	103	57	14.5	154	75	53	85	15.1	129	74	48	79	10.5
4	145	66	92	70	13.3	146	45	38	36	15.3	168	68	34	69	14.4
5	126	59	97	62	15.3	62	90	41	91	6.2	42	56	28	55	3.8

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	PEAKS V	PEAKS W	PEAKS SPEED	PEAKS TH	FOURIER COEFFICIENTS U	FOURIER COEFFICIENTS V	FOURIER COEFFICIENTS W	FOURIER COEFFICIENTS SPEED	FOURIER COEFFICIENTS TH	SINE WAVE FIT U	SINE WAVE FIT V	SINE WAVE FIT W	SINE WAVE FIT SPEED	SINE WAVE FIT TH
1	140	67	58	59	15.6	109	78	29	52	13.6	147	88	28	46	14.9
2	148	61	80	53	14.3	98	89	28	77	12.1	132	81	22	56	12.9
3	162	65	81	54	15.4	125	85	39	78	14.2	146	78	33	62	13.8
4	173	69	84	57	14.6	134	76	38	69	14.8	154	74	33	63	14.1
5	171	63	84	59	14.5	123	78	38	72	13.5	140	70	33	60	12.8

VAD OTISS TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE MD 90.

HEIGHT = 28.

START TIME 7:25: 0
END TIME 7:30: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-40	632	62	637	176.4	-81	507	33	515	170.6	44	44	-64	616	-30	621	174.2	30
2	-112	608	-14	623	169.5	-75	468	19	475	170.7	35	22	-108	595	1	606	169.7	28
3	-151	591	44	614	166.1	-136	444	41	473	163.0	45	27	-171	571	-16	610	163.5	34
4	-2	546	31	577	179.5	-72	433	5	458	167.6	48	44	-55	550	-14	570	173.6	20
5	66	666	112	681	185.7	53	543	43	558	186.4	55	48	56	679	-55	686	185.1	23

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-40	632	62	637	176.4	-81	507	33	515	170.6	44	44	-64	616	-30	621	174.2	30
2	-77	619	21	629	172.7	-78	486	26	494	170.7	39	32	-88	605	-13	613	171.8	29
3	-102	607	23	624	170.6	-96	473	30	487	168.3	41	31	-114	594	-14	612	169.1	31
4	-84	598	27	616	172.1	-92	466	26	482	168.1	42	33	-104	586	-14	605	169.9	29
5	-47	614	50	631	175.3	-58	484	30	500	172.4	45	37	-66	608	-24	624	173.5	27

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	75	46	26	47	6.7	38	52	16	49	4.7	53	41	20	45	4.5
2	98	28	50	31	8.9	26	53	25	52	3.3	28	26	24	28	2.5
3	86	86	86	94	7.4	97	71	32	75	11.0	138	76	21	71	13.3
4	216	73	45	67	22.0	132	138	9	119	19.0	155	68	10	57	16.1
5	131	74	46	68	11.3	121	115	24	112	12.8	88	63	24	60	7.3

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	75	46	26	47	6.7	38	52	16	49	4.7	53	41	20	45	4.5
2	93	38	56	38	8.5	31	54	22	53	3.8	45	34	27	36	4.1
3	95	56	65	59	8.5	63	61	26	59	7.5	91	52	25	48	8.7
4	123	63	62	62	11.7	76	77	25	70	9.8	103	56	23	51	10.0
5	134	70	69	68	12.9	106	91	26	86	13.0	120	69	29	63	11.4

VAD OTISS TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 7:25: 0
END TIME 7:30: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-80	635	70	655	172.6	-21	525	58	531	176.9	23	18	-50	630	-36	637	175.1	29
2	-70	597	-23	616	172.5	-28	447	-12	457	177.2	26	19	-17	581	3	589	178.4	58
3	-146	537	19	579	165.0	-162	397	4	435	158.0	23	21	-173	512	-7	552	161.5	51
4	7	655	-4	672	180.8	-16	538	-1	551	178.6	23	18	-8	671	7	680	179.3	46
5	20	677	103	693	181.6	48	577	54	587	184.4	15	15	61	658	-47	666	185.1	44

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-80	635	70	655	172.6	-21	525	58	531	176.9	23	18	-50	630	-36	637	175.1	29
2	-76	616	27	637	172.5	-24	489	25	497	177.1	24	19	-35	607	-18	615	176.6	42
3	-100	590	24	616	169.9	-72	457	18	475	170.4	24	20	-83	574	-14	593	171.3	45
4	-75	605	17	629	172.4	-59	475	13	493	172.3	24	19	-66	596	-9	613	173.2	46
5	-57	619	33	641	174.1	-39	494	21	510	174.6	22	18	-42	608	-16	623	175.4	45

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	145	37	51	33	12.8	78	59	33	55	8.9	92	33	20	32	8.2
2	147	81	87	79	13.4	106	64	28	69	12.8	104	80	29	85	9.5
3	160	66	44	61	16.3	83	58	33	61	11.1	114	52	17	39	12.9
4	159	83	75	74	14.5	129	64	40	63	13.9	119	77	35	73	10.5
5	160	92	93	90	13.6	106	105	17	102	11.0	86	90	19	90	7.6

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	145	37	51	33	12.8	78	59	33	55	8.9	92	33	20	32	8.2
2	140	62	83	60	12.5	88	71	48	71	10.4	95	62	31	64	8.6
3	147	73	70	65	14.0	108	77	43	72	13.9	120	74	27	64	12.4
4	154	79	71	70	14.6	113	83	43	76	14.1	122	84	30	75	12.3
5	157	85	74	77	14.7	118	95	42	88	14.2	125	87	32	79	12.4

VAD OTISS TIME IN GMT OF VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 20.

START TIME 7:30: 0
END TIME 7:35: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-28	572	58	646	180.1	-86	538	20	561	170.8	59	47	-47	588	-46	597	176.7	21
2	174	627	46	652	195.8	87	486	28	498	189.7	32	30	89	612	-16	623	187.9	33
3	-105	659	69	680	171.4	-33	568	58	570	176.6	15	13	-46	656	-42	660	176.1	32
4	51	695	69	708	184.2	-5	572	23	585	179.7	21	19	11	675	-21	686	181.2	44
5	130	772	65	808	190.0	154	634	19	668	194.4	14	25	190	738	-16	777	194.9	50

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-28	572	58	646	180.1	-86	538	20	561	170.8	59	47	-47	588	-46	597	176.7	21
2	73	599	52	649	187.9	0	512	24	530	180.2	46	39	21	600	-31	610	182.3	27
3	7	621	59	661	181.8	-11	532	37	544	178.9	35	29	-3	621	-35	629	180.0	29
4	17	639	61	672	182.4	-10	542	33	554	179.1	31	27	0	634	-32	642	180.3	33
5	40	669	62	698	183.9	21	560	31	576	182.1	28	26	36	654	-29	669	183.1	36

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	298	159	49	76	33.0	143	67	30	66	14.8	106	179	80	182	9.7
2	34	94	35	90	3.8	81	107	20	111	8.9	77	100	29	100	7.5
3	146	56	61	65	12.3	42	75	32	76	4.1	41	57	28	58	3.4
4	133	72	75	63	11.4	136	77	17	80	13.2	137	40	16	39	11.5
5	81	75	70	58	6.9	132	112	41	77	13.9	143	105	47	61	12.6

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	298	159	49	76	33.0	143	67	30	66	14.8	106	179	80	182	9.7
2	228	128	41	79	23.9	143	89	25	93	15.3	114	139	60	141	10.2
3	217	109	48	79	21.6	116	87	32	87	12.3	98	117	50	118	8.8
4	198	105	54	73	19.4	118	85	29	85	12.2	105	105	44	107	9.2
5	184	118	56	89	17.9	136	96	32	94	13.8	135	112	44	113	11.4

VAD OTISS TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 7:30: 0
END TIME 7:35: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-130	541	32	630	162.9	-62	462	6	496	171.7	32	19	-58	584	-1	618	173.6	55
2	117	566	4	607	194.8	35	470	13	478	182.3	20	20	71	564	3	577	185.2	43
3	3	721	92	733	180.1	-26	556	34	562	177.9	34	18	-27	707	-24	716	177.7	55
4	34	687	67	696	182.7	45	435	5	439	168.3	36	29	83	582	3	654	188.4	70
5	-17	822	74	829	178.7	114	639	43	665	190.9	23	21	126	781	-26	808	189.9	55

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-130	541	32	630	162.9	-62	462	6	496	171.7	32	19	-58	584	-1	618	173.6	55
2	-15	554	19	619	177.6	-17	466	9	487	176.6	26	19	1	575	0	599	178.9	49
3	-9	606	42	655	178.4	-20	494	17	511	177.0	29	19	-7	617	-7	636	178.6	51
4	1	625	48	665	179.4	-4	481	14	508	179.7	31	22	14	608	-4	640	180.9	56
5	-2	668	54	701	179.3	21	515	20	543	182.2	29	22	38	646	-9	677	182.9	56

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	257	199	103	56	32.4	173	58	54	21	21.5	192	87	37	27	20.5
2	154	178	38	121	23.0	81	115	30	114	11.6	104	109	21	104	13.0
3	138	69	32	60	11.5	82	62	21	65	8.3	116	51	16	41	9.9
4	117	60	60	53	10.2	255	114	26	89	31.8	298	104	32	44	28.9
5	117	47	66	44	8.3	143	93	45	74	13.8	160	108	33	63	13.6

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	257	199	103	56	32.4	173	58	54	21	21.5	192	87	37	27	20.5
2	244	182	79	88	31.9	143	85	43	75	17.9	166	94	30	73	17.8
3	212	173	75	96	24.8	124	84	39	79	15.2	149	103	28	84	15.5
4	192	156	71	88	23.7	141	96	36	80	20.2	192	102	29	76	19.3
5	177	162	70	105	21.2	163	116	39	102	19.4	189	125	31	101	18.4

VAD OTISS TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

START TIME 7:35: 0
END TIME 7:40: 0

HEIGHT = 28.

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	95	802	100	814	186.8	65	689	60	697	185.4	21	23	76	796	-47	802	185.4	26
2	24	743	74	749	181.9	-1	638	67	641	179.5	20	15	-3	742	-40	744	179.7	22
3	-128	694	55	709	169.7	115	566	33	583	192.0	21	18	83	675	-32	684	187.4	44
4	-2	598	80	605	180.2	22	515	48	524	183.1	17	14	23	595	-45	603	182.3	31
5	-93	643	105	659	172.1	-31	540	48	550	176.8	20	13	-35	620	-42	628	176.8	35

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	95	802	100	814	186.8	65	689	60	697	185.4	21	23	76	796	-47	802	185.4	26
2	62	775	88	784	184.5	34	665	63	671	182.7	20	19	39	771	-44	775	182.8	24
3	2	746	78	760	179.8	60	634	54	643	185.6	21	19	53	741	-40	747	184.2	30
4	1	711	78	723	179.9	51	605	52	615	185.0	20	18	46	706	-41	712	183.8	30
5	-19	696	84	709	178.2	32	591	51	600	183.2	20	17	28	687	-41	694	182.3	31

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	102	42	31	33	7.5	84	44	34	42	7.1	61	35	11	32	4.6
2	96	25	53	23	7.6	74	54	18	52	6.9	58	26	17	26	4.4
3	139	80	88	73	12.2	82	79	26	68	8.9	69	82	22	76	6.3
4	96	61	54	58	9.6	100	74	34	73	11.1	104	64	22	61	10.2
5	119	61	78	68	10.1	109	45	42	47	11.3	99	50	32	51	9.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	102	42	31	33	7.5	84	44	34	42	7.1	61	35	11	32	4.6
2	103	46	43	43	7.7	84	54	27	53	7.4	71	41	14	41	5.2
3	144	71	60	63	11.4	90	77	30	70	8.8	71	71	17	68	5.9
4	132	93	58	91	10.8	92	91	30	87	9.2	79	93	18	91	6.9
5	134	91	62	90	11.0	100	87	32	84	10.1	89	92	21	90	7.8

VAD OTIS5 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE Hd 90.

HEIGHT = 43.

START TIME 7:35: 0
END TIME 7:40: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	54	837	36	840	183.7	88	597	39	654	192.7	31	28	143	738	-12	829	194.2	59
2	-29	723	49	732	177.9	2	578	2	583	180.5	23	19	42	717	-16	721	183.4	53
3	4	694	67	706	180.8	76	565	17	576	187.8	24	21	83	666	-23	674	187.1	49
4	52	647	109	678	183.8	-6	525	40	552	180.5	22	23	0	623	-41	650	179.8	49
5	5	643	50	652	180.6	3	471	33	485	181.1	26	18	24	613	-26	628	182.6	57

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	54	837	36	840	183.7	88	597	39	654	192.7	31	28	143	738	-12	829	194.2	59
2	12	780	43	786	180.8	45	588	21	619	186.6	27	23	93	728	-14	775	188.8	56
3	9	748	52	756	180.8	56	579	19	603	187.1	26	23	89	705	-17	738	188.2	54
4	19	729	66	738	181.5	41	566	24	591	185.5	25	23	67	685	-23	717	186.1	53
5	17	708	63	721	181.3	34	548	26	570	184.6	25	22	59	671	-24	699	185.5	53

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	56	63	43	61	4.0	190	231	52	115	29.4	282	266	58	66	29.7
2	126	45	34	48	9.7	89	48	28	49	8.7	63	50	4	51	4.9
3	140	70	90	70	11.5	88	38	31	30	9.2	71	64	21	64	6.0
4	219	54	26	71	18.1	190	87	29	98	18.9	205	45	17	49	18.0
5	114	66	89	65	10.1	126	87	49	87	15.1	146	60	32	54	13.7

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	56	63	43	61	4.0	190	231	52	115	29.4	282	266	58	66	29.7
2	103	79	37	77	7.7	148	159	44	92	21.7	202	183	39	80	21.0
3	119	85	61	83	9.0	128	127	39	77	17.8	163	151	33	88	16.8
4	142	89	59	86	11.4	143	119	37	83	17.9	174	137	31	88	17.1
5	135	90	65	88	11.0	139	119	39	93	17.2	167	128	31	89	16.4

HEIGHT = 28. VAD OTISS TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE MD 90.

START TIME 7:40: 0
END TIME 7:45: 0

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	43	529	-31	538	184.9	18	455	3	458	182.0	26	21	26	514	10	519	182.9	47
2	215	673	83	721	197.4	214	571	49	617	200.4	19	15	239	654	-31	703	199.9	44
3	136	730	116	752	190.3	105	645	53	664	189.0	14	13	122	699	-42	718	189.7	43
4	83	571	36	605	188.5	86	514	17	532	189.6	10	12	69	573	-8	592	187.5	37
5	135	516	37	557	194.7	115	463	26	482	193.9	16	13	141	526	-15	551	195.2	43

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	43	529	-31	538	184.9	18	455	3	458	182.0	26	21	26	514	10	519	182.9	47
2	121	594	21	621	190.6	107	507	23	530	190.4	23	18	122	578	-8	602	190.6	46
3	127	647	58	672	190.5	106	561	35	582	189.8	19	16	122	625	-21	647	190.3	45
4	117	630	53	658	190.1	102	551	31	571	189.8	17	15	111	614	-19	635	189.7	43
5	121	607	50	637	191.0	104	533	30	553	190.6	17	15	117	595	-18	618	190.8	43

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	95	58	84	56	10.3	59	50	16	51	7.2	73	48	17	49	7.9
2	162	76	67	72	13.2	107	67	31	60	10.5	104	73	26	72	8.7
3	134	41	60	52	9.9	126	45	16	49	10.8	122	38	21	41	9.8
4	127	92	35	77	19.8	119	37	9	33	13.0	148	66	13	62	14.3
5	162	50	67	18	17.7	77	54	39	51	9.7	86	49	23	31	9.8

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	95	58	84	56	10.3	59	51	16	51	7.2	73	48	17	49	7.9
2	152	98	95	113	12.8	130	82	33	98	12.7	139	93	29	112	11.8
3	142	109	94	113	11.5	125	97	31	105	11.7	129	97	31	107	10.8
4	151	105	85	108	13.2	121	89	28	96	11.7	132	92	28	100	11.3
5	151	106	80	105	14.0	112	90	30	95	11.3	123	92	27	96	11.1

VAD OTISS TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 93.

START TIME 7:40: 0
END TIME 7:45: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	34	558	8	570	183.9	41	384	26	433	189.8	31	23	69	481	-7	539	192.0	56
2	181	758	77	783	193.2	145	610	23	628	193.4	18	18	226	724	-29	760	197.3	37
3	136	650	109	695	191.6	26	545	37	582	180.7	22	21	33	641	-29	685	181.2	50
4	82	576	95	643	194.6	-9	474	-5	488	179.7	34	19	-15	594	-13	607	179.2	65
5	87	634	83	649	188.0	87	489	20	508	189.9	24	21	135	576	-18	608	192.8	52

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	34	558	8	570	183.9	41	384	26	433	189.8	31	23	69	481	-7	539	192.0	56
2	102	651	40	668	188.2	89	489	25	523	191.5	25	21	142	593	-17	641	194.4	47
3	113	653	61	676	189.3	69	506	29	542	188.1	24	21	107	608	-21	655	190.3	48
4	107	639	58	668	190.6	50	499	20	529	186.0	26	20	78	605	-19	643	187.6	52
5	103	634	63	664	190.0	58	496	20	524	186.9	26	21	90	599	-19	636	188.8	52

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	111	98	96	91	12.1	175	152	28	99	31.4	200	183	18	104	30.8
2	84	59	66	68	5.7	41	89	60	89	3.6	53	42	23	44	3.8
3	189	40	72	24	16.1	218	97	40	84	23.5	256	83	38	57	23.3
4	219	292	56	130	31.9	133	102	34	108	14.8	141	98	12	106	12.6
5	114	56	54	52	10.3	114	65	34	65	13.2	149	30	25	31	14.3

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	111	98	96	91	12.1	175	152	28	99	31.4	200	183	18	104	30.8
2	122	131	88	134	10.5	138	169	44	136	22.4	167	182	23	139	22.1
3	142	109	88	112	12.2	164	150	42	123	22.7	199	157	28	119	22.7
4	159	149	81	115	18.1	158	138	42	120	21.1	191	143	25	116	21.0
5	149	133	76	104	16.6	149	125	40	109	19.5	182	127	25	104	19.7

VAD OTISS TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE MD 90.

HEIGHT = 25.

START TIME 7:45: 0
END TIME 7:50: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	30	525	22	544	182.7	35	454	28	463	184.4	23	18	55	514	-19	528	186.0	42
2	214	718	82	765	196.9	165	507	21	548	197.6	45	24	173	742	-29	768	193.6	32
3	-56	761	127	770	175.7	-34	626	59	646	176.8	35	29	-11	776	-61	782	179.0	26
4	45	659	46	695	185.0	-31	531	34	538	177.0	31	33	-44	678	-32	693	176.6	41
5	119	655	95	673	190.3	58	561	58	571	185.9	15	16	76	659	-43	668	186.5	33

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	30	525	22	544	182.7	35	454	28	463	184.4	23	18	55	514	-19	528	186.0	42
2	122	621	52	655	189.8	100	480	25	505	191.0	34	21	114	628	-24	648	189.8	37
3	63	668	77	693	185.1	55	529	36	552	186.3	34	24	72	677	-36	692	186.2	33
4	58	665	69	694	185.1	33	529	36	549	184.2	34	26	43	677	-35	693	183.8	35
5	72	662	75	689	186.2	39	536	41	554	184.6	29	24	50	673	-37	687	184.4	35

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	153	37	72	41	16.1	93	25	32	29	11.3	119	38	30	42	12.6
2	161	91	75	66	13.2	137	59	27	56	14.4	92	108	56	91	8.5
3	109	53	44	47	8.5	171	55	46	51	15.3	103	51	29	46	7.9
4	233	136	67	97	22.4	83	139	31	136	10.8	151	74	13	69	13.0
5	104	69	61	59	9.3	90	72	30	71	9.4	84	52	31	52	7.4

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	153	37	72	41	16.1	93	25	32	29	11.3	119	38	30	42	12.6
2	178	120	77	127	15.9	131	51	28	61	14.1	118	142	44	143	11.0
3	178	122	80	119	15.2	155	87	38	89	15.7	126	138	42	134	11.1
4	187	122	77	112	16.8	149	99	34	99	14.9	139	123	37	120	12.1
5	173	111	73	102	15.4	133	94	35	93	13.7	128	111	35	108	11.1

VAD OTISS TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 7:45: 0
END TIME 7:50: 0

ONE MINUTE MEANS

	PEAKS					I	FOURIER COEFFICIENTS					I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH		U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	126	620	47	647	191.1		-20	476	7	498	175.7	22	16	8	568	-6	588	179.8	52
2	106	816	116	837	187.3		57	623	23	640	185.4	31	26	173	821	-53	842	192.0	41
3	85	836	97	846	185.9		56	724	58	732	184.4	11	16	66	842	-58	848	184.5	24
4	90	719	53	727	187.1		65	602	41	607	186.3	13	17	42	701	-28	702	183.5	37
5	-51	661	81	693	175.6		60	523	32	538	186.4	28	23	51	663	-19	674	184.9	51

CUMULATIVE MEANS

	PEAKS					I	FOURIER COEFFICIENTS					I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH		U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	126	620	47	647	191.1		-20	476	7	498	175.7	22	16	8	568	-6	588	179.8	52
2	116	718	81	742	189.2		18	550	15	569	180.6	26	21	90	694	-29	715	185.9	47
3	109	762	87	780	188.0		32	614	31	629	182.0	21	19	81	749	-40	764	185.4	38
4	101	751	79	767	187.8		40	611	33	624	183.0	19	19	72	737	-37	749	184.9	38
5	71	738	79	753	185.4		44	594	33	607	183.7	21	19	68	723	-33	735	184.9	40

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH		U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	154	90	77	101	12.8		157	86	36	81	18.7	164	90	20	85	16.8	
2	162	37	48	29	11.4		145	62	37	59	13.1	79	48	37	39	5.7	
3	107	64	65	60	7.5		101	29	36	32	7.8	81	45	20	44	5.6	
4	68	42	34	40	5.5		46	74	28	72	4.9	14	47	17	47	1.3	
5	129	31	80	29	10.9		121	45	41	40	13.1	111	56	17	42	10.3	

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH		U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	154	90	77	101	12.8		157	86	36	81	18.7	164	90	20	85	16.8	
2	151	122	71	121	11.7		150	105	34	100	16.2	150	149	37	147	13.6	
3	134	118	68	114	10.3		132	120	41	114	13.6	127	140	34	135	11.1	
4	120	105	62	103	9.2		117	110	38	104	12.1	112	125	31	122	9.7	
5	135	99	65	97	10.6		116	106	38	101	12.2	110	118	30	114	9.6	

VAD OTISS TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 28.

START TIME 7:50: 0
END TIME 7:55: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-41	555	16	582	175.7	12	445	25	459	181.7	18	23	9	560	-13	570	180.6	47
2	125	693	82	705	190.3	51	595	43	600	184.8	18	14	51	692	-38	695	184.4	39
3	59	687	125	691	184.9	54	579	64	596	186.5	19	14	82	658	-48	677	187.9	39
4	9	650	93	667	180.7	31	569	66	572	183.2	12	12	27	661	-50	664	182.4	25
5	6	590	53	595	180.9	-40	514	42	522	175.6	16	11	-37	577	-25	584	176.3	28

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-41	555	16	582	175.7	12	445	25	459	181.7	18	23	9	560	-13	570	180.6	47
2	42	624	49	644	183.0	31	520	34	529	183.3	18	19	30	626	-26	632	182.5	43
3	98	647	77	661	183.7	40	542	45	554	184.5	18	17	49	638	-34	649	184.5	42
4	39	648	81	662	183.0	38	548	50	558	184.2	17	16	44	643	-38	652	184.0	38
5	32	635	75	648	182.5	21	541	48	550	182.3	17	15	26	629	-35	637	182.3	35

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	187	30	55	25	18.7	118	58	26	48	16.0	114	36	11	32	11.8
2	30	50	57	46	2.9	55	66	48	67	5.1	38	48	27	45	3.5
3	49	77	52	28	3.8	126	99	37	80	14.3	135	103	29	85	12.9
4	184	40	60	41	14.0	57	86	31	86	5.6	65	47	24	47	5.7
5	83	44	47	41	8.2	87	41	30	42	9.6	85	28	21	28	8.4

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	187	30	55	25	18.7	118	58	26	48	16.0	114	36	11	32	11.8
2	155	82	63	73	14.9	90	99	38	92	11.5	84	80	24	75	8.6
3	124	89	69	76	11.9	102	100	39	92	12.3	105	88	27	80	10.3
4	132	75	66	69	12.2	92	96	38	89	10.9	96	80	27	72	9.4
5	123	73	63	69	11.3	96	84	36	82	11.1	99	76	26	71	9.6

VAD OTISS TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 43.

START TIME 7:50: 0
END TIME 7:55: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	93	661	22	679	187.7	49	517	2	531	186.2	23	20	70	634	-9	643	186.3	43
2	83	677	93	694	185.9	56	563	21	579	186.1	21	18	59	668	-28	679	185.4	50
3	102	680	105	695	189.0	-50	525	22	548	173.9	27	21	-28	637	-16	657	176.8	59
4	113	639	107	659	189.9	-8	569	51	579	179.2	17	14	15	639	-37	643	181.3	40
5	-1	607	38	614	179.9	-49	499	33	511	174.5	20	15	-15	575	-25	584	178.4	40

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	93	661	22	679	187.7	49	517	2	531	186.2	23	20	70	634	-9	643	186.3	43
2	79	668	55	686	186.8	52	538	11	551	186.2	22	19	65	650	-18	660	185.9	46
3	87	672	71	689	187.5	20	534	14	550	182.3	23	20	35	646	-17	659	183.0	50
4	94	663	81	681	188.2	12	544	29	556	181.5	22	18	30	644	-22	655	182.6	47
5	76	653	73	668	186.6	1	535	26	548	180.2	21	18	21	631	-23	641	181.8	46

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	135	39	59	43	11.3	115	69	43	58	13.3	91	41	28	41	8.2
2	142	94	67	70	13.7	103	56	40	50	10.5	112	61	26	53	10.0
3	100	87	30	72	7.4	162	77	53	74	17.4	167	111	21	101	15.8
4	122	76	47	74	11.0	77	50	43	48	7.9	70	62	28	63	6.2
5	95	50	52	51	8.9	109	36	39	29	12.8	108	52	18	47	11.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	135	39	59	43	11.3	115	69	43	58	13.3	91	41	28	41	8.2
2	133	66	67	55	11.9	105	65	41	57	11.6	97	52	28	49	8.7
3	122	71	62	59	11.0	130	67	44	61	14.4	127	73	25	67	11.8
4	120	72	59	63	10.8	118	64	46	58	12.9	113	69	27	65	10.5
5	120	72	60	66	10.8	117	62	43	56	13.0	112	71	25	67	10.5

VAD OTIS5 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE HD 90.

HEIGHT = 26.

START TIME 7:55: 0
END TIME 8: 0: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-6	590	146	602	179.3	35	493	64	505	184.9	24	17	31	578	-57	588	184.0	33
2	-8	571	58	576	179.3	-2	516	38	520	179.9	15	12	-7	568	-23	571	179.3	24
3	91	502	64	529	189.4	-4	426	31	440	176.7	20	16	0	503	-25	523	178.0	38
4	-37	569	74	572	176.3	20	495	16	495	182.3	21	29	47	571	-30	573	184.7	19
5	200	664	73	694	196.8	95	662	19	668	188.1	52	71	100	679	-35	686	188.4	20

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-6	590	146	602	179.3	35	493	64	505	184.9	24	17	31	578	-57	588	184.0	33
2	-7	580	98	588	179.3	15	505	50	513	182.2	19	14	10	573	-39	579	181.5	29
3	23	555	88	570	182.5	9	480	44	490	180.4	19	15	7	551	-34	561	180.4	31
4	15	557	86	570	181.6	10	482	40	491	180.7	20	17	12	554	-34	563	181.0	30
5	23	562	85	575	182.3	14	490	39	499	181.0	21	19	16	559	-34	568	181.3	29

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	132	40	59	48	12.1	106	81	48	67	13.8	100	84	29	70	11.5
2	83	40	38	41	8.2	71	26	13	28	7.7	62	34	16	33	6.3
3	163	40	58	60	17.0	108	98	34	78	18.2	141	104	31	75	19.2
4	57	28	41	28	5.7	10	5	37	4	1.1	9	29	7	29	.8
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	132	40	59	48	12.1	106	81	48	67	13.8	100	84	29	70	11.5
2	103	39	65	45	9.7	87	57	35	48	10.8	81	59	28	52	9.0
3	129	54	64	56	12.9	91	79	35	67	13.3	99	80	29	64	12.6
4	123	51	60	52	12.3	85	74	36	62	12.3	93	75	27	60	11.8
5	126	54	59	57	12.4	85	81	35	71	12.1	93	78	26	64	11.6

VAD OTIS5 TIME IN GMT CT VAD 9/18/76 OTIS AIRFORCE MD 90.

HEIGHT = 43.

START TIME 7:55: 0
END TIME 8: 0: 0

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	76	590	90	603	188.2	38	459	34	479	186.5	28	23	79	568	-28	593	189.3	46
2	43	589	70	595	184.5	-51	470	25	477	173.8	29	17	-35	581	-16	585	176.4	39
3	-7	573	78	576	179.3	44	462	27	469	186.1	24	18	45	560	-25	566	185.0	43
4	114	577	112	625	192.1	-71	539	24	549	173.1	37	38	22	598	-56	603	182.5	21
5	76	647	80	693	186.1	75	555	20	576	189.2	56	39	131	671	-26	695	191.2	30

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	76	590	90	603	188.2	38	459	34	479	186.5	28	23	79	568	-28	593	189.3	46
2	61	589	81	599	186.4	-3	464	30	478	180.6	29	20	26	574	-23	589	183.3	43
3	37	584	80	591	183.9	13	463	29	475	182.6	27	20	33	569	-24	581	183.9	43
4	54	582	87	599	185.8	-6	481	28	492	180.4	29	24	30	576	-31	586	183.6	38
5	58	594	86	616	185.9	9	495	26	508	182.0	34	27	49	594	-30	607	185.0	36

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	97	87	63	76	10.1	134	96	41	79	17.8	144	106	28	71	16.8
2	76	61	29	55	8.0	72	49	33	52	8.2	68	36	6	35	6.8
3	62	42	70	44	6.1	63	68	40	61	8.8	74	62	25	56	8.1
4	197	136	67	67	22.6	82	61	34	66	8.5	76	56	38	52	7.6
5	256	54	118	45	21.9	129	106	45	86	15.0	129	43	34	28	11.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	97	87	63	76	10.1	134	96	41	79	17.8	144	106	28	71	16.8
2	86	73	49	65	9.0	115	75	36	65	15.2	126	79	21	55	14.3
3	84	63	56	58	8.7	101	71	37	62	13.3	109	72	22	55	12.3
4	119	82	59	61	13.1	102	75	36	69	12.9	101	68	29	54	11.3
5	149	81	71	68	14.7	110	85	37	79	13.5	112	74	30	66	11.5

Appendix C

TABULAR DATA FOR WIND MEASURED IN LOW CLOUD CONDITIONS AT LOCKHEED MISSILES & SPACE COMPANY, HUNTSVILLE, ALABAMA, ON 7 DECEMBER 1976

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 30.

START TIME 9:45:19
END TIME 9:50:19

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-523	713	63	894	324.1	-634	515	43	819	309.2	8	9	-670	599	-21	899	311.8	67
2	-515	620	252	806	320.2	-469	428	76	635	312.3	26	18	-627	461	-52	779	306.3	107
3	-475	642	140	816	322.7	-198	563	-2	623	338.4	35	31	-281	731	-35	818	338.2	98
4	-493	692	112	850	324.5	-558	563	42	793	315.2	5	6	-556	618	-47	832	318.0	43
5	-511	676	176	849	322.8	-492	509	87	709	316.0	23	17	-545	685	-57	876	321.5	70

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-523	713	63	894	324.1	-634	515	43	819	309.2	8	9	-670	599	-21	899	311.8	67
2	-520	682	126	864	322.8	-579	486	54	757	310.2	14	12	-656	553	-31	859	309.9	81
3	-502	666	132	845	322.8	-426	517	31	704	321.5	23	20	-506	624	-33	843	321.3	88
4	-500	670	128	846	323.0	-448	524	33	719	320.5	20	17	-514	623	-35	841	320.7	80
5	-503	672	140	847	323.0	-459	521	46	716	319.3	21	17	-522	639	-41	850	320.9	78

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	177	51	19	64	11.2	82	7	8	59	4.0	47	27	5	53	.7
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	141	203	22	77	16.6	196	190	4	109	23.5	289	161	28	44	23.3
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	17	50	64	30	3.0	65	55	15	84	.7	11	10	13	15	.2

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	177	51	19	64	11.2	82	7	8	59	4.0	47	27	5	53	.7
2	126	65	110	68	8.2	112	50	20	114	3.4	41	82	18	79	3.2
3	116	113	79	67	10.1	244	110	34	122	19.6	252	139	19	64	19.5
4	104	102	71	60	9.1	224	100	31	115	17.7	227	125	18	57	17.5
5	88	88	68	52	7.8	192	87	37	103	15.1	192	109	19	51	14.8

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 45.

START TIME 9:45:19
END TIME 9:50:19

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-440	837	80	947	332.2	-465	660	20	808	324.7	22	18	-536	811	-59	973	326.5	44
2	-458	822	97	942	330.8	-478	660	86	816	324.1	7	8	-458	806	-73	927	330.3	46
3	-563	686	132	905	320.3	22	260	3	659	6.9	41	39	8	392	-41	867	12.0	136
4	-581	415	138	715	305.5	-87	689	84	695	352.7	16	31	-64	730	-80	732	354.9	124
5	-514	715	183	889	323.8	-515	641	77	823	321.4	2	4	-516	700	-73	871	323.6	55

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-440	837	80	947	332.2	-465	660	20	808	324.7	22	18	-536	811	-59	973	326.5	44
2	-446	832	85	945	331.7	-469	660	42	810	324.5	17	15	-510	809	-64	958	327.8	45
3	-493	773	104	929	327.1	-272	500	27	750	341.5	27	24	-302	642	-55	921	345.5	81
4	-508	714	110	893	323.5	-242	531	36	741	343.3	25	26	-263	657	-59	890	347.0	88
5	-509	714	128	892	323.6	-310	559	46	761	337.8	19	20	-326	668	-62	885	341.2	80

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	45	35	67	10	3.4	76	126	36	147	.7	61	2	6	35	3.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	167	182	42	33	15.6	850	109	38	15	94.4	1063	277	16	115	90.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	89	159	69	76	10.7	98	60	5	108	2.7	71	39	3	74	2.3

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	45	35	67	10	3.4	76	126	36	147	.7	61	2	6	35	3.0
2	33	26	48	8	2.5	54	89	45	104	.6	63	3	9	37	3.0
3	108	123	47	28	10.2	505	235	43	111	52.6	605	267	16	80	51.1
4	103	183	45	91	12.7	458	224	45	102	47.3	550	242	18	105	45.9
5	94	166	57	82	11.5	409	197	42	103	41.2	480	206	17	94	40.3

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 60.

START TIME 9:45:19
END TIME 9:50:19

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-665	686	78	967	316.1	-500	656	27	835	321.7	19	18	-598	776	-59	987	322.6	44
2	-545	790	101	960	325.3	-523	759	76	922	325.4	6	6	-480	834	-51	962	330.0	33
3	-740	495	84	894	303.9	-550	361	-33	664	303.5	32	32	-746	539	-37	922	305.9	59
4	-287	818	120	867	340.6	-326	590	82	675	331.0	19	27	-457	754	-30	882	328.7	62
5	-368	666	215	826	328.9	-332	674	115	752	333.6	24	30	-400	785	-81	882	333.2	111

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-665	686	78	967	316.1	-500	656	27	835	321.7	19	18	-598	776	-59	987	322.6	44
2	-625	721	86	965	319.2	-507	690	43	864	323.0	15	14	-559	795	-56	979	325.1	40
3	-671	630	85	936	313.1	-525	559	12	784	315.2	22	21	-633	693	-48	956	317.4	48
4	-607	661	91	925	317.7	-491	564	24	766	317.8	21	22	-604	703	-45	944	319.3	50
5	-547	663	122	900	320.5	-452	592	47	763	321.8	22	24	-553	724	-54	929	322.8	65

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	171	113	54	38	12.0	67	204	57	120	12.3	163	57	4	54	9.5
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	105	47	54	61	6.2	89	85	28	28	10.3	51	36	25	20	3.7
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	342	314	15	101	32.4	5	47	18	40	1.9	98	36	56	76	4.6

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	171	113	54	38	12.0	67	204	57	120	12.3	163	57	4	54	9.5
2	140	100	40	27	10.0	49	156	49	99	9.0	134	52	5	41	8.0
3	128	145	39	53	11.4	61	216	56	130	13.5	142	146	17	44	12.1
4	194	150	38	55	15.2	98	193	58	125	13.7	146	133	17	49	11.7
5	237	174	66	76	18.5	111	172	65	107	13.7	160	119	31	58	12.0

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 90.

START TIME 9:45:19
END TIME 9:50:19

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-680	619	100	921	312.3	-435	463	-67	637	316.7	34	22	-523	833	-54	984	327.8	55
2	-566	725	93	944	321.5	-464	564	35	736	319.9	28	26	-556	776	-37	967	324.1	59
3	-492	783	134	925	327.8	-357	604	-31	702	329.4	28	29	-534	760	-36	929	324.8	48
4	-561	734	49	929	322.8	-386	520	0	653	322.7	27	23	-452	792	-20	915	330.1	57
5	-353	876	133	944	338.0	-374	510	-49	633	323.7	25	26	-457	732	-28	863	328.0	55

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-680	619	100	921	312.3	-435	463	-67	637	316.7	34	22	-523	833	-54	984	327.8	55
2	-604	690	95	936	318.4	-454	531	1	703	318.8	30	25	-545	795	-42	972	325.3	58
3	-576	713	105	934	320.8	-430	549	-6	703	321.5	29	26	-542	786	-41	962	325.2	55
4	-571	720	86	932	321.4	-415	539	-4	686	321.9	29	25	-512	788	-34	946	326.9	56
5	-540	742	93	934	323.8	-410	535	-10	679	322.1	28	25	-504	780	-33	934	327.0	56

C-4

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		
2	202	223	45	50	18.2	34	150	70	93	9.6	149	155	9	38	12.6		
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		
4	141	49	24	46	8.8	36	134	110	85	9.7	74	84	11	36	6.6		
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		
2	157	169	32	38	13.9	29	121	78	88	7.0	107	114	12	29	9.2		
3	140	146	32	31	12.3	54	105	66	71	7.8	88	95	10	32	7.5		
4	126	116	40	32	10.4	50	102	71	72	7.4	89	83	14	38	7.0		
5	141	121	40	30	11.3	49	94	67	69	6.8	84	78	13	47	6.4		

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 180.

START TIME 9:45:19
END TIME 9:50:19

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-683	737	110	1005	317.1	-604	763	63	974	321.6	7	3	-575	817	-51	1000	324.8	37
2	-572	762	103	997	322.9	-495	548	48	780	317.3	29	26	-632	750	-49	1013	319.5	36
3	-529	778	92	941	325.7	-454	791	46	913	330.1	8	4	-438	843	-34	950	332.5	52
4	-437	803	131	917	331.3	-412	584	19	724	325.2	22	22	-458	773	-42	902	329.2	50
5	-472	840	79	964	330.6	-539	705	63	888	322.6	5	11	-521	759	-47	922	325.5	53

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-683	737	110	1005	317.1	-604	763	63	974	321.6	7	3	-575	817	-51	1000	324.8	37
2	-609	753	106	1000	321.0	-532	620	53	845	318.7	22	18	-613	772	-50	1008	321.3	37
3	-589	759	102	985	322.2	-512	663	51	862	321.6	18	15	-569	790	-46	994	324.1	41
4	-538	774	112	962	325.2	-479	636	41	816	322.8	19	17	-532	784	-45	963	325.8	44
5	-529	783	107	963	326.0	-487	646	44	826	322.8	17	16	-531	781	-45	957	325.8	45

C-5

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	327	255	33	6	24.2	239	257	77	29	26.2	253	251	29	28	20.3
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	55	56	22	23	4.7	163	46	74	56	12.8	72	68	3	21	6.2
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	240	181	24	6	17.4	180	220	55	114	18.7	182	182	20	21	14.7
3	200	148	20	30	14.4	152	199	45	99	16.3	172	153	18	34	13.2
4	175	120	24	43	12.3	148	161	51	108	14.0	149	122	14	55	10.9
5	162	112	25	40	11.4	137	149	47	102	12.7	136	112	13	53	10.0

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 270.

START TIME 9:45:19
END TIME 9:50:19

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-635	680	47	931	316.9	-442	601	91	747	323.6	25	28	-545	811	-28	978	326.0	52
2	-530	822	85	981	327.1	-488	733	59	910	326.9	15	12	-555	801	-29	994	324.8	40
3	-495	823	107	961	328.9	559	185	7	589	71.6	69	48	877	156	-67	891	79.9	201
4	-533	831	122	987	327.3	-395	870	33	956	335.5	9	4	-459	899	-50	1010	332.9	44
5	-415	904	96	995	335.3	-382	698	94	796	331.3	31	26	-517	901	-20	1040	330.1	44

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-635	680	47	931	316.9	-442	601	91	747	323.6	25	28	-545	811	-28	978	326.0	52
2	-565	775	72	964	323.7	-473	689	69	855	325.8	18	17	-552	804	-29	988	325.2	44
3	-547	787	81	963	325.0	-215	563	54	789	352.3	31	25	-194	642	-38	964	353.9	83
4	-545	795	89	968	325.4	-251	624	50	822	348.9	26	21	-247	693	-41	973	349.7	76
5	-523	814	90	973	327.1	-272	637	57	818	346.0	27	21	-292	728	-37	984	346.4	70

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	70	73	38	23	5.8	300	131	72	56	20.6	195	196	33	49	15.8
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	78	97	35	33	7.1	214	120	54	102	14.7	138	139	23	36	11.2
3	73	83	33	27	6.4	545	270	54	157	54.2	724	343	27	57	58.1
4	63	79	34	26	5.6	479	271	48	155	47.6	638	319	24	53	51.2
5	78	80	31	26	6.4	431	244	46	139	43.2	581	298	23	55	46.5

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 360.

START TIME 9:45:19
END TIME 9:50:19

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-506	763	127	916	326.4	-371	651	108	749	330.2	27	26	-500	799	-49	943	327.9	36
2	-430	888	78	996	334.1	-463	699	40	866	326.6	21	18	-533	816	-28	988	326.6	64
3	-600	666	-7	897	317.9	-534	337	-81	633	302.2	31	28	-716	508	19	879	305.3	52
4	-573	699	16	933	320.0	-483	613	20	801	322.2	21	27	-542	739	12	944	322.8	87
5	-293	914	115	960	342.2	-264	775	92	819	341.1	19	24	-407	910	-38	997	335.9	46

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-506	763	127	916	326.4	-371	651	108	749	330.2	27	26	-500	799	-49	943	327.9	36
2	-455	846	94	969	331.5	-432	683	63	827	327.8	23	21	-522	811	-35	973	327.0	55
3	-492	801	69	951	328.1	-458	596	27	778	321.4	25	23	-571	735	-21	949	321.6	54
4	-519	767	51	945	325.4	-466	602	25	786	321.7	24	24	-561	736	-10	947	322.0	65
5	-486	788	60	947	327.8	-437	627	34	791	324.4	23	24	-539	761	-14	955	324.0	62

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	173	83	5	1	11.1	260	153	96	16	20.2	163	148	35	34	12.7
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	216	253	90	57	20.4	222	127	104	36	18.3	201	258	50	86	19.4
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	130	93	29	46	9.0	191	112	78	68	14.4	117	105	28	35	9.0
3	128	118	56	52	10.0	164	195	96	112	17.4	136	174	36	55	13.1
4	145	155	65	49	12.7	162	162	88	89	15.8	139	177	40	58	13.4
5	157	152	64	45	13.2	166	162	84	82	16.2	140	175	38	56	13.3

VAD HPEC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 540.

START TIME 9:45:19
END TIME 9:50:19

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-418	792	63	902	332.4	-278	753	43	806	339.5	20	16	-389	833	-34	924	335.0	47
2	-514	869	63	1010	329.4	-587	779	1	976	323.0	14	9	-531	897	-36	1043	329.3	31
3	-401	861	74	955	334.8	-429	723	79	842	329.3	13	12	-432	855	-42	960	333.0	44
4	-360	913	101	982	338.4	-386	876	37	958	336.1	3	3	-378	897	-37	974	337.1	39
5	-455	826	89	949	331.1	-360	669	91	780	331.3	24	22	-458	836	-33	961	331.3	52

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-418	792	63	902	332.4	-278	753	43	806	339.5	20	16	-389	833	-34	924	335.0	47
2	-450	818	63	938	331.4	-381	762	29	863	334.0	18	14	-436	854	-35	963	333.1	42
3	-430	835	67	945	332.7	-400	746	49	855	332.1	16	13	-435	854	-38	962	333.1	43
4	-418	848	73	951	333.7	-398	768	47	872	332.8	14	11	-425	862	-38	964	333.8	42
5	-428	843	77	951	333.0	-389	743	58	849	332.4	16	14	-433	855	-36	963	333.1	45

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	154	32	20	43	9.7	85	74	78	39	7.5	127	18	15	38	7.6		
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		
3	96	102	25	52	7.9	75	16	63	52	3.8	55	87	30	53	5.3		
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		
5	122	82	44	13	8.9	202	140	11	26	18.1	161	62	22	23	10.2		

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	154	32	20	43	9.7	85	74	78	39	7.5	127	18	15	38	7.6		
2	122	50	14	70	7.0	188	54	60	102	10.9	121	39	11	74	6.3		
3	103	67	17	56	6.6	141	45	60	77	8.3	90	52	17	59	5.2		
4	96	68	21	53	6.4	126	66	54	81	7.6	84	49	16	53	4.9		
5	95	66	25	45	6.4	132	90	50	81	9.4	95	49	16	45	5.8		

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 30.

START TIME 9:50:21
END TIME 9:55:21

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-636	439	-38	774	304.6	-437	546	10	700	321.2	4	10	-465	622	-1	777	323.2	82
2	-419	689	179	809	328.6	-394	614	52	731	327.1	14	8	-463	637	-59	788	323.9	69
3	-566	748	177	938	322.9	-599	516	92	792	310.7	21	16	-632	686	-64	933	317.3	60
4	-242	693	66	735	341.0	-269	461	24	539	329.8	29	24	-333	623	-43	720	333.7	73
5	-270	630	6	685	336.7	-377	337	8	506	311.8	13	11	-463	423	-21	628	312.4	96

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-636	439	-38	774	304.6	-437	546	10	700	321.2	4	10	-465	622	-1	777	323.2	82
2	-492	606	106	797	320.6	-408	591	38	721	325.1	11	9	-463	632	-40	784	323.7	74
3	-510	641	124	832	321.2	-456	572	52	738	321.5	13	11	-505	645	-46	821	322.1	70
4	-421	659	104	800	327.8	-394	535	43	672	324.3	18	15	-448	638	-45	787	326.0	71
5	-399	654	90	784	329.1	-391	507	38	648	322.5	17	14	-450	607	-41	765	324.0	75

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		
2	54	41	19	7	4.8	20	68	20	46	4.2	10	22	28	12	1.5		
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		
4	92	144	33	166	3.2	97	33	27	20	10.7	245	64	16	170	15.3		
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		
2	131	147	127	21	14.3	29	62	28	37	4.5	7	18	39	11	1.2		
3	113	140	109	72	11.7	98	63	35	47	8.1	84	31	34	75	3.3		
4	169	129	91	106	13.8	130	77	33	110	9.0	156	39	27	109	9.5		
5	164	118	91	106	13.0	119	103	33	118	9.5	142	89	27	116	10.0		

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HU270.

HEIGHT = 45.

START TIME 9:50:21
END TIME 9:55:21

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-830	428	22	935	297.2	-562	352	-46	664	302.0	54	28	-687	779	-76	1040	318.5	80
2	-510	724	135	912	324.1	-501	729	87	885	325.4	7	4	-487	790	-74	933	328.1	54
3	-471	820	157	947	330.1	-546	491	88	735	311.9	28	15	-593	692	-46	913	319.4	72
4	-589	660	132	887	318.6	-355	574	5	679	327.8	17	15	-480	637	-33	800	322.6	77
5	-83	776	170	780	353.8	-337	579	107	670	329.7	26	28	-482	712	-54	860	325.8	76

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-830	428	22	935	297.2	-562	352	-46	664	302.0	54	28	-687	779	-76	1040	318.5	80
2	-617	625	97	920	315.1	-521	603	42	812	317.6	23	12	-554	786	-75	968	324.9	63
3	-580	674	112	927	318.9	-527	575	53	793	316.2	24	13	-564	763	-68	954	323.5	65
4	-583	669	119	913	318.8	-470	575	37	755	320.1	22	14	-536	721	-56	903	323.2	69
5	-512	685	126	894	323.8	-451	575	47	743	321.4	22	16	-528	720	-56	897	323.6	70

C-11

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	212	231	39	64	19.5	41	43	40	12	3.7	82	111	17	51	7.9
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	158	61	9	151	5.1	46	114	61	72	8.4	10	124	21	105	4.8
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	238	236	71	47	20.7	96	219	82	128	13.8	130	79	12	71	7.9
3	208	216	65	41	18.5	89	184	71	111	11.6	108	80	17	65	7.0
4	176	170	51	77	14.5	97	154	66	109	11.4	94	105	24	105	5.9
5	248	160	51	87	18.7	101	141	66	105	11.1	88	96	22	98	5.4

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 60.

START TIME 9:50:21
END TIME 9:55:21

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-693	470	56	838	304.1	-509	348	-42	617	304.3	33	27	-645	537	-25	840	309.7	41
2	-555	691	159	890	321.0	-429	594	110	735	324.1	26	22	-491	789	-54	931	328.0	64
3	-193	884	161	905	347.6	-289	705	77	762	337.6	25	20	-424	835	-23	937	333.0	56
4	-308	770	99	830	338.1	-354	603	64	700	329.5	25	26	-330	803	-15	868	337.6	53
5	-588	690	89	907	319.5	-444	440	-57	626	314.6	27	26	-596	670	-33	898	318.3	62

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-693	470	56	838	304.1	-509	348	-42	617	304.3	33	27	-645	537	-25	840	309.7	41
2	-601	617	125	873	315.4	-456	512	59	696	317.5	29	23	-542	705	-44	900	321.9	56
3	-499	684	134	881	323.4	-414	560	64	712	322.5	28	23	-513	737	-39	910	324.7	56
4	-461	701	127	871	326.4	-402	569	64	710	323.9	27	23	-476	751	-34	901	327.3	56
5	-482	699	121	877	325.2	-409	547	44	696	322.4	27	24	-496	737	-34	901	325.8	57

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	63	95	12	34	7.0	37	42	17	12	4.3	23	66	29	44	3.3
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	91	144	40	39	11.0	53	146	90	69	11.8	90	153	26	61	10.8
3	217	178	52	36	16.4	94	153	74	65	13.9	94	141	24	53	10.4
4	206	159	48	34	17.3	86	134	64	57	12.5	116	125	23	49	10.7
5	192	142	46	37	15.7	78	131	76	61	11.8	114	117	21	44	10.3

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 90.

START TIME 9:50:21
END TIME 9:55:21

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-467	820	132	967	329.8	-429	714	73	838	329.2	15	15	-499	827	-35	968	328.6	48
2	-452	754	86	879	329.0	-404	563	13	694	324.2	36	29	-554	759	-81	940	323.8	62
3	-376	856	121	936	336.2	-380	638	-4	744	329.0	21	22	-503	802	-21	947	327.9	59
4	-300	790	52	864	339.2	446	744	67	867	31.0	10	24	495	732	-70	884	34.1	147
5	-471	720	54	862	326.5	-468	513	31	703	317.9	17	21	-512	643	-1	836	320.7	80

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-467	820	132	967	329.8	-429	714	73	838	329.2	15	15	-499	827	-35	968	328.6	48
2	-462	798	117	938	329.5	-421	663	53	790	327.6	22	19	-517	804	-50	959	327.0	53
3	-428	821	119	937	332.2	-404	653	30	771	328.1	22	20	-511	803	-38	954	327.3	55
4	-406	816	107	922	333.4	-263	668	36	787	338.6	20	21	-343	791	-44	943	338.5	71
5	-422	792	94	907	331.6	-314	629	35	766	333.4	19	21	-385	754	-33	916	334.0	73

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	232	200	40	58	18.0	136	8	34	62	8.3	40	125	11	86	5.9
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	40	29	16	43	1.5	1	85	114	72	3.5	51	25	13	6	3.4
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	4	130	37	114	4.3	142	68	60	46	12.3	109	201	21	88	14.6

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	232	200	40	58	18.0	136	8	34	62	8.3	40	125	11	86	5.9
2	164	147	39	65	12.7	97	87	42	94	6.5	43	97	28	63	5.0
3	127	109	29	61	9.7	72	76	72	80	5.0	40	69	26	45	3.9
4	126	99	38	54	9.2	354	77	66	81	26.0	413	69	27	50	27.5
5	110	107	43	71	8.5	318	101	60	81	24.4	360	117	31	73	25.2

VAD MREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 180.

START TIME 9:50:21
END TIME 9:55:21

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-547	844	175	1007	327.1	-429	630	52	775	325.9	28	23	-553	820	-72	994	326.3	55
2	-613	562	49	832	312.4	-576	304	-35	652	297.8	34	31	-724	493	-33	877	304.2	41
3	-221	852	54	900	345.8	-384	629	-28	745	327.3	22	10	-412	814	-25	917	333.4	46
4	-615	594	85	856	313.9	-565	685	33	888	320.4	6	4	-566	719	-29	916	321.8	47
5	-557	675	130	874	320.4	-358	472	-35	609	321.3	32	26	-482	682	-35	842	324.1	62

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-547	844	175	1007	327.1	-429	630	52	775	325.9	28	23	-553	820	-72	994	326.3	55
2	-569	750	133	944	322.2	-478	522	23	734	316.5	30	26	-610	711	-59	955	318.9	51
3	-430	791	101	929	331.6	-440	564	2	739	320.9	27	20	-531	752	-46	940	324.7	49
4	-461	758	99	917	328.7	-461	585	7	764	320.8	24	17	-537	747	-43	936	324.2	48
5	-485	737	106	907	326.6	-435	554	-3	725	320.9	26	19	-523	731	-41	912	324.2	52

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	86	56	7	94	2.4	174	91	69	22	14.5	158	3	31	90	7.5
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	262	21	40	45	16.6	52	204	69	145	11.9	135	3	12	58	7.6
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	19	1	35	11	1.0	100	191	20	89	18.7	67	158	17	90	10.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	86	56	7	94	2.4	174	91	69	22	14.5	158	3	31	90	7.5
2	72	168	73	121	8.6	149	199	70	73	17.2	149	189	32	93	13.8
3	237	132	71	92	16.5	120	184	67	89	16.0	166	145	30	75	13.1
4	225	142	63	88	16.5	119	171	61	101	14.3	149	130	28	68	11.8
5	195	126	57	77	14.4	117	170	56	116	14.0	131	129	24	79	10.7

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

START TIME 9:50:21
END TIME 9:55:21

HEIGHT = 270.

ONE MINUTE MEANS

	PEAKS					I	FOURIER COEFFICIENTS					I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH		U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-588	786	11	984	323.1		-543	425	-70	693	308.3	36	23	-680	702	-25	989	315.7	57
2	-405	742	27	845	331.3		-373	487	-49	614	322.5	34	32	-516	650	-8	831	321.5	52
3	-316	859	35	937	340.0		-306	708	28	773	336.2	23	20	-383	833	-16	918	335.3	63
4	-439	939	35	1037	334.9		-511	674	101	848	322.9	19	15	-491	869	-44	999	330.5	36
5	-570	779	14	966	323.7		-521	709	33	881	323.6	9	7	-500	778	-12	925	327.2	52

CUMULATIVE MEANS

	PEAKS					I	FOURIER COEFFICIENTS					I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH		U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-588	786	11	984	323.1		-543	425	-70	693	308.3	36	23	-680	702	-25	989	315.7	57
2	-527	771	17	938	325.8		-486	446	-63	667	313.0	36	26	-626	685	-19	936	317.6	55
3	-443	804	24	938	331.5		-414	551	-26	709	322.3	30	23	-528	744	-18	929	324.7	58
4	-442	827	26	955	332.1		-430	572	-5	732	322.4	28	22	-522	765	-22	940	325.7	55
5	-474	815	23	958	330.0		-453	606	4	769	322.7	24	18	-517	768	-20	937	326.1	54

C-14

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH		U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	65	60	132	8	5.1		90	32	8	51	6.7	132	160	32	23	12.0	
2	0	0	0	0	.0		0	0	0	0	.0	0	0	0	0	.0	
3	315	80	9	34	19.9		2	142	80	130	4.1	44	23	15	39	1.9	
4	0	0	0	0	.0		0	0	0	0	.0	0	0	0	0	.0	
5	6	25	33	17	1.2		1	44	30	35	1.7	21	28	28	35	.1	

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH		U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	65	60	132	8	5.1		90	32	8	51	6.7	132	160	32	23	12.0	
2	115	49	99	80	5.9		117	42	14	58	9.5	133	117	24	93	9.1	
3	212	70	67	59	13.3		129	163	65	97	14.5	164	116	19	69	11.7	
4	189	83	60	67	12.0		122	154	78	103	13.0	148	116	20	68	10.7	
5	171	74	53	57	10.8		111	146	69	112	11.0	126	99	20	60	9.1	

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. MD270.

START TIME 9:50:21
END TIME 9:55:21

HEIGHT = 360.

ONE MINUTE MEANS

	PEAKS					I	FOURIER COEFFICIENTS				I		SINE WAVE FIT					
MIN	U	V	W	SPEED	TH		U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-500	838	42	983	328.9		-428	723	-7	845	330.2	20	12	-485	832	-16	964	329.7	40
2	-496	761	86	909	326.8		-247	693	-24	736	340.4	16	20	-383	781	-24	870	333.8	52
3	-281	891	60	936	342.4		-407	631	26	754	327.6	27	19	-446	804	-45	920	330.9	49
4	-282	867	111	912	341.9		-415	635	124	759	326.8	25	17	-416	819	-70	919	333.0	44
5	-522	782	61	947	326.4		-332	640	77	724	332.7	27	25	-448	828	-11	942	331.6	56

CUMULATIVE MEANS

	PEAKS					I	FOURIER COEFFICIENTS				I		SINE WAVE FIT					
MIN	U	V	W	SPEED	TH		U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-500	838	42	983	328.9		-428	723	-7	845	330.2	20	12	-485	832	-16	964	329.7	40
2	-499	812	57	958	328.2		-368	713	-13	809	333.6	19	15	-451	815	-18	933	331.1	44
3	-412	849	58	949	333.9		-383	680	2	787	331.2	22	17	-449	811	-29	928	331.0	46
4	-390	848	67	943	335.2		-389	673	22	782	330.4	22	17	-444	812	-36	926	331.4	46
5	-423	831	66	944	333.0		-375	664	36	768	331.0	23	19	-445	816	-30	930	331.4	48

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					I,	FOURIER COEFFICIENTS				I		SINE WAVE FIT				
MIN	U	V	W	SPEED	TH		U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	120	120	9	41	9.6		191	91	50	175	8.2	45	33	6	52	1.3	
2	0	0	0	0	.0		0	0	0	0	.0	0	0	0	0	.0	
3	34	44	6	32	2.8		136	60	66	124	6.3	1	17	15	16	.5	
4	0	0	0	0	.0		0	0	0	0	.0	0	0	0	0	.0	
5	156	52	113	43	9.6		101	6	39	41	7.3	71	27	40	57	3.0	

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					I,	FOURIER COEFFICIENTS				I		SINE WAVE FIT				
MIN	U	V	W	SPEED	TH		U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	120	120	9	41	9.6		191	91	50	175	8.2	45	33	6	52	1.3	
2	85	96	26	52	6.9		171	67	37	139	8.3	67	38	6	65	2.5	
3	134	83	19	42	9.3		140	72	47	120	7.4	48	29	17	47	1.8	
4	131	75	27	40	8.9		126	67	65	108	6.8	45	26	22	42	1.8	
5	140	73	49	38	9.3		116	58	62	96	6.5	46	25	27	43	1.9	

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 540.

START TIME 9:50:21
END TIME 9:55:21

ONE MINUTE MEANS

	PEAKS					I	FOURIER COEFFICIENTS						I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-282	925	92	967	343.0	-198	834	-13	858	346.6	19	16	-307	890	-21	942	340.9	68
2	-324	880	61	944	339.4	-436	726	63	848	329.1	16	12	-432	863	-23	968	333.0	47
3	-391	859	209	944	335.5	-440	603	90	747	323.8	27	20	-458	798	-36	921	330.1	65
4	-486	755	65	902	327.1	-359	647	28	741	330.9	27	27	-458	817	-29	943	330.5	52
5	-690	735	137	1009	316.8	-358	778	96	857	335.2	20	13	-512	846	-50	990	328.8	46

CUMULATIVE MEANS

	PEAKS					I	FOURIER COEFFICIENTS						I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-282	925	92	967	343.0	-198	834	-13	858	346.6	19	16	-307	890	-21	942	340.9	68
2	-310	895	71	952	340.6	-356	762	37	851	334.9	17	13	-390	872	-22	960	335.6	54
3	-330	886	106	950	339.3	-377	722	50	825	332.1	19	15	-407	854	-26	950	334.3	57
4	-382	843	92	934	335.2	-371	697	43	797	331.7	22	19	-424	841	-27	948	333.0	55
5	-426	827	99	945	332.6	-369	709	50	806	332.2	22	18	-437	842	-30	954	332.4	54

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		
2	109	125	43	81	8.6	73	4	47	34	4.4	50	140	2	103	6.4		
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		
4	86	77	48	18	7.2	9	9	101	3	.9	112	105	15	37	9.1		
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		
2	77	92	35	59	6.4	146	63	55	25	10.6	80	100	2	74	6.4		
3	75	75	75	48	5.8	127	95	52	56	10.3	74	90	7	63	5.9		
4	107	97	65	45	8.4	99	83	62	62	8.0	80	86	9	52	6.4		
5	152	97	62	50	10.4	90	82	60	61	7.4	80	79	12	50	6.1		

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 30.

START TIME 9:55:21
END TIME 10: 0:21

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-588	482	32	763	309.6	69	287	-3	566	18.2	20	26	113	344	8	685	17.3	102
2	-485	544	-87	730	318.3	-135	417	-52	439	342.0	18	27	-220	665	18	701	341.6	128
3	-518	532	115	743	315.6	-588	375	61	698	302.5	15	13	-653	386	-57	760	300.5	102
4	-664	399	112	775	301.0	-592	383	29	704	302.6	13	9	-609	438	-34	751	305.7	51
5	-360	770	133	872	335.7	-440	564	49	716	322.0	24	16	-460	701	-33	839	326.7	72

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-588	482	32	763	309.6	69	287	-3	566	18.2	20	26	113	344	8	685	17.3	102
2	-554	503	-7	752	312.5	1	330	-19	524	6.1	19	27	2	451	12	690	5.4	110
3	-540	514	41	748	313.7	-234	349	12	594	340.7	18	21	-260	425	-15	718	339.5	107
4	-560	495	53	753	311.6	-294	353	15	612	334.3	17	19	-318	427	-18	724	333.8	98
5	-510	564	73	783	317.6	-330	406	23	638	331.3	19	18	-354	496	-22	753	332.0	91

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	112	9	173	81	5.9	644	234	30	40	83.1	787	240	27	9	82.1
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	84	102	69	132	.9	74	42	5	84	.4	54	60	1	77	1.8
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	279	43	48	77	18.0	3	10	69	10	.3	44	53	7	69	.5

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	112	9	173	81	5.9	644	234	30	40	83.1	787	240	27	9	82.1
2	99	37	141	60	6.5	470	182	35	79	62.4	589	251	20	11	61.6
3	84	60	125	79	4.9	465	132	51	118	56.2	551	184	40	55	56.3
4	91	71	115	71	6.8	441	117	46	115	52.6	513	164	37	51	52.2
5	160	142	106	87	14.3	379	140	50	109	44.8	439	189	32	73	44.2

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 45.

START TIME 9:55:21
END TIME 10: 0:21

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-456	614	-38	786	323.0	-431	391	-58	582	312.2	35	31	-568	633	-13	852	318.0	71
2	-240	860	70	893	344.4	-578	416	0	713	305.7	8	17	-630	489	-8	799	307.8	121
3	-444	689	204	820	327.1	-473	549	87	727	319.1	13	6	-481	640	-91	804	322.9	58
4	-238	799	134	829	343.3	-393	465	76	609	319.7	32	36	-585	607	-24	843	316.0	85
5	-360	760	157	847	335.2	-301	658	-109	759	337.2	15	5	-327	757	-87	847	337.5	69

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-456	614	-38	786	323.0	-431	391	-58	582	312.2	35	31	-568	633	-13	852	318.0	71
2	-384	696	-1	822	330.1	-480	399	-38	626	310.0	26	26	-589	580	-11	834	314.6	88
3	-408	693	80	821	328.9	-477	459	11	666	313.6	21	18	-546	607	-43	822	317.9	76
4	-380	710	89	823	331.3	-463	460	22	657	314.6	23	21	-552	597	-40	826	317.6	77
5	-375	722	106	829	332.3	-423	509	44	682	320.3	21	17	-496	645	-52	831	322.6	75

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	187	179	11	30	18.9	33	30	8	45	.0	21	47	9	21	3.2
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	8	2	1	3	.5	38	64	5	23	5.6	64	65	24	13	6.4
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	167	39	77	106	9.2	337	27	12	111	24.6	282	24	2	88	18.4

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	187	179	11	30	18.9	33	30	8	45	.0	21	47	9	21	3.2
2	182	190	63	65	18.2	88	24	34	82	3.8	39	90	7	34	6.3
3	133	135	122	46	13.0	65	90	73	81	6.3	73	77	45	30	7.2
4	136	127	111	42	13.0	68	80	71	76	6.1	67	69	41	28	6.5
5	133	111	103	54	11.7	159	115	72	90	14.9	159	91	41	42	12.8

VAD MREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 60.

START TIME 9:55:21
END TIME 10: 0:21

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-363	805	51	884	335.7	-472	506	24	711	318.3	20	21	-474	666	0	846	324.3	90
2	-835	922	17	936	296.8	-494	457	87	674	312.7	25	16	-624	644	-20	897	315.8	97
3	-915	756	147	885	331.2	147	367	65	655	24.8	38	38	199	527	-49	842	24.4	132
4	-208	856	107	881	346.3	-236	718	93	756	341.7	8	14	-300	795	-52	850	339.3	63
5	-278	729	112	805	340.5	-294	609	97	678	334.8	18	30	-319	773	-50	837	337.5	60

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-363	805	51	884	335.7	-472	506	24	711	318.3	20	21	-474	666	0	846	324.3	90
2	-521	678	39	902	322.7	-480	490	45	699	316.4	22	19	-524	659	-7	863	321.5	92
3	-476	709	82	895	326.1	-229	441	53	681	343.8	28	27	-234	606	-23	854	346.7	108
4	-433	733	87	893	329.4	-230	487	60	694	343.4	25	25	-245	637	-28	854	345.4	100
5	-395	731	93	871	332.2	-246	517	69	690	341.3	23	26	-264	671	-34	850	343.4	90

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	24	12	61	21	1.1	237	77	3	103	18.5	239	189	19	15	20.9
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	245	135	9	0	18.3	661	330	77	37	74.8	788	408	12	68	68.1
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	323	3	22	110	22.0	120	92	10	135	5.9	38	116	12	122	.6

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	24	12	61	21	1.1	237	77	3	103	18.5	239	189	19	15	20.9
2	273	222	47	34	22.5	168	61	36	76	13.5	190	135	18	32	15.6
3	236	176	68	25	18.9	491	184	47	61	53.8	575	236	27	42	49.7
4	238	169	62	23	18.8	440	199	45	63	48.1	515	225	27	38	44.5
5	246	142	54	61	18.6	375	181	42	74	40.9	437	205	25	57	37.8

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 90.

START TIME 9:55:21
END TIME 10: 0:21

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-367	826	69	915	336.3	-356	602	-32	701	329.5	24	16	-427	758	-9	872	330.7	60
2	-401	720	52	824	330.8	-384	524	-47	650	323.7	20	25	-459	784	-46	910	329.6	72
3	-505	768	171	933	326.6	-364	758	32	844	334.7	13	14	-404	804	-57	901	333.2	63
4	-390	912	-8	993	336.8	-276	581	-82	643	334.5	22	12	-386	864	-20	947	335.9	65
5	-510	605	74	806	318.3	-376	555	49	680	324.3	32	28	-426	749	-49	878	329.0	56

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-367	826	69	915	336.3	-356	602	-32	701	329.5	24	16	-427	758	-9	872	330.7	60
2	-378	791	63	885	334.5	-365	576	-37	684	327.6	23	19	-438	767	-21	884	330.3	64
3	-429	782	106	904	331.3	-365	649	-9	748	330.4	19	17	-424	782	-36	891	331.5	63
4	-423	803	87	919	332.2	-350	638	-21	731	331.1	19	16	-418	796	-33	900	332.2	64
5	-444	754	85	891	328.7	-356	617	-3	718	329.4	22	19	-420	784	-37	895	331.4	62

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	200	41	53	44	12.5	74	6	13	43	5.0	91	28	29	69	4.4
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	184	122	52	0	13.6	130	64	32	114	6.1	9	64	14	61	1.3
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	54	262	79	163	15.4	39	219	77	158	13.5	125	246	9	149	15.4

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	200	41	53	44	12.5	74	6	13	43	5.0	91	28	29	69	4.4
2	143	68	39	61	9.4	55	45	13	42	4.9	67	25	29	53	3.1
3	153	79	70	51	10.5	76	110	42	109	6.1	51	42	29	49	2.8
4	138	88	79	58	9.6	77	102	48	106	5.7	49	50	27	50	3.1
5	125	154	73	94	11.9	68	126	60	110	7.7	63	104	24	71	4.5

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 180.

START TIME 9:55:21
END TIME 10: 0:21

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-534	662	117	851	321.0	-559	620	37	835	317.9	3	3	-556	662	-34	865	319.9	53
2	-502	739	73	908	325.5	-289	653	-42	719	336.4	17	18	-446	729	-3	860	328.9	55
3	-305	921	178	971	341.6	-586	626	-13	859	316.8	22	17	-550	762	-30	940	324.1	79
4	-431	849	79	955	333.1	-224	726	44	772	342.4	24	18	-261	852	-39	893	343.0	78
5	-474	840	209	965	330.5	-237	738	126	776	342.1	24	19	-344	882	-74	947	338.6	54

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-534	662	117	851	321.0	-559	620	37	835	317.9	3	3	-556	662	-34	865	319.9	53
2	-513	713	88	889	324.0	-379	642	-15	758	330.2	13	13	-482	707	-13	862	325.9	54
3	-461	765	110	910	328.4	-431	638	-15	783	326.9	15	14	-499	721	-17	881	325.5	61
4	-451	793	100	925	330.0	-362	667	4	779	332.1	18	15	-420	764	-25	885	331.3	67
5	-454	800	115	930	330.1	-344	674	21	779	333.5	19	16	-409	781	-32	894	332.3	65

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	171	152	83	29	14.4	126	12	17	62	8.9	149	0	38	77	8.5
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	100	23	104	24	6.0	166	100	113	45	14.1	86	10	48	16	5.5
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	122	116	63	39	10.5	179	21	47	80	12.4	123	39	32	55	7.9
3	144	141	69	52	12.3	179	19	39	82	12.1	106	42	28	59	6.6
4	121	118	72	48	10.2	191	65	66	67	13.9	153	75	32	47	10.7
5	111	109	78	46	9.3	180	65	76	61	13.2	143	82	35	49	10.1

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 270.

START TIME 9:55:21
END TIME 10: 0:21

ONE MINUTE MEANS

	PEAKS					I FOURIER COEFFICIENTS							I SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-393	782	80	875	333.2	-352	620	63	714	330.4	32	29	-506	756	-2	911	326.2	58
2	-457	763	94	891	328.9	-442	566	76	720	321.9	27	18	-473	752	-28	890	327.7	62
3	-804	590	215	998	306.2	705	-5	-3	705	90.5	30	34	822	-99	54	828	97.0	178
4	-359	838	18	917	336.8	-330	767	67	837	336.7	16	11	-374	835	-30	916	335.9	50
5	-368	839	126	917	336.2	-500	676	1	842	323.4	19	15	-458	788	-34	912	329.8	70

CUMULATIVE MEANS

	PEAKS					I FOURIER COEFFICIENTS							I SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-393	782	80	875	333.2	-352	620	63	714	330.4	32	29	-506	756	-2	911	326.2	58
2	-436	769	90	886	330.4	-412	584	72	718	324.7	28	22	-484	754	-20	897	327.2	60
3	-528	724	121	914	324.3	-132	437	53	715	356.2	29	25	-157	540	-1	880	359.6	90
4	-472	762	87	915	328.5	-198	547	58	755	349.7	24	20	-230	639	-11	892	351.7	77
5	-457	773	92	915	329.6	-241	565	50	768	345.9	24	19	-262	660	-14	895	348.6	76

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					I, FOURIER COEFFICIENTS					I SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	47	62	29	29	4.6	20	64	32	38	4.4	18	77	22	56	3.6
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	121	45	60	7	8.1	66	17	47	11	4.6	59	44	21	64	2.3
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					I, FOURIER COEFFICIENTS					I SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	50	45	22	23	4.1	54	55	24	27	5.8	23	55	21	41	2.7
3	188	97	65	59	12.5	561	299	42	23	63.1	654	429	41	48	64.9
4	178	98	78	46	12.2	447	288	40	66	49.9	519	366	36	51	51.8
5	167	94	73	42	11.5	424	267	42	68	46.6	482	339	34	47	48.0

VAD HREC2

VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 360.

START TIME 9:55:21
END TIME 10: 0:21

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-487	711	82	862	325.5	-422	424	-73	599	315.1	48	25	-523	787	-58	945	326.4	46
2	-388	755	153	862	332.8	-349	589	42	685	329.2	32	28	-481	764	-40	904	327.7	61
3	-660	722	156	879	317.5	-751	530	5	920	305.2	14	4	-749	558	-10	935	306.7	68
4	-401	793	69	896	333.3	-436	487	26	674	318.1	29	25	-494	734	-47	904	326.2	61
5	-183	677	66	856	348.1	-559	462	-28	726	309.6	31	31	-618	535	14	818	310.8	130

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-487	711	82	862	325.5	-422	424	-73	599	315.1	48	25	-523	787	-58	945	326.4	46
2	-421	740	129	862	330.4	-373	534	3	656	324.5	37	27	-495	772	-46	918	327.2	56
3	-481	736	136	891	327.2	-447	533	4	722	319.7	31	21	-558	718	-37	922	322.1	59
4	-454	755	119	893	329.2	-457	518	11	706	319.1	31	23	-537	723	-40	916	323.5	60
5	-416	772	107	893	331.9	-471	510	6	709	317.8	31	24	-548	697	-32	902	321.7	70

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	186	85	42	10	13.7	5	65	80	59	2.4	1	70	10	59	2.4
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	155	50	83	25	10.3	171	156	47	2	19.9	229	122	57	26	16.5
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	193	65	51	7	10.5	43	105	88	45	8.3	24	51	13	48	1.9
3	167	59	44	59	10.7	192	84	72	142	11.8	128	114	21	80	10.4
4	153	56	41	47	10.0	168	92	60	113	12.8	146	104	31	34	11.1
5	173	69	58	43	11.6	158	93	57	103	12.2	137	119	35	49	11.2

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 540.

START TIME 9:55:21
END TIME 10: 0:21

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-526	715	78	896	323.3	-385	620	-44	747	326.5	21	17	-474	750	-13	893	327.6	54
2	-336	835	140	900	338.0	-452	643	79	799	325.2	18	17	-508	760	-38	922	325.7	55
3	-351	927	177	991	339.2	-622	489	-7	792	308.1	28	26	-643	607	-26	885	313.3	118
4	-618	519	69	852	309.6	-492	387	37	709	308.1	28	22	-578	583	-31	899	314.6	51
5	-85	878	107	882	354.4	-513	507	-20	722	314.6	26	24	-546	603	0	814	317.8	104

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-526	715	78	896	323.3	-385	620	-44	747	326.5	21	17	-474	750	-13	893	327.6	54
2	-431	775	109	898	330.6	-419	631	17	773	325.9	19	17	-491	755	-26	908	326.7	54
3	-415	805	123	917	332.4	-459	603	12	777	322.3	21	19	-522	725	-26	903	324.0	67
4	-473	724	107	898	325.9	-469	541	19	758	318.2	23	20	-538	685	-27	902	321.3	62
5	-424	743	107	896	329.4	-474	537	14	753	317.8	23	20	-539	674	-24	891	320.9	68

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	100	143	20	55	10.6	117	232	43	131	17.4	110	80	5	9	8.7		
2	1	20	12	18	.5	188	84	39	39	14.6	96	152	10	72	10.3		
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		
4	227	308	77	22	26.2	269	370	80	1	39.4	344	388	4	30	34.0		
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	100	143	20	55	10.6	117	232	43	131	17.4	110	80	5	9	8.7		
2	124	108	38	34	10.5	134	143	79	85	13.1	86	99	16	45	7.9		
3	113	116	45	51	9.9	147	139	70	74	13.9	101	108	14	40	9.1		
4	164	210	55	53	17.4	169	216	67	69	20.9	165	194	12	35	16.4		
5	205	202	51	49	19.0	157	201	63	65	19.4	153	182	15	45	15.2		

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 30.

START TIME 10: 0:25
END TIME 10: 5:25

ONE MINUTE MEANS

	PEAKS					I	FOURIER COEFFICIENTS						I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH		U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-270	736	46	796	339.3		-210	637	33	682	342.4	7	2	-199	703	-27	746	344.1	69
2	-550	433	16	700	308.2		-251	553	16	608	335.5	18	16	-248	647	-7	694	338.9	86
3	-326	693	162	767	334.8		-408	537	37	675	322.7	8	2	-430	602	-38	741	324.4	86
4	-568	637	253	860	318.0		-496	321	14	594	303.3	22	24	-616	468	-46	779	306.9	93
5	-668	500	196	878	307.1		-554	493	95	778	313.6	20	15	-589	603	-69	890	315.5	71

CUMULATIVE MEANS

	PEAKS					I	FOURIER COEFFICIENTS						I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH		U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-270	736	46	796	339.3		-210	637	33	682	342.4	7	2	-199	703	-27	746	344.1	69
2	-383	635	36	764	328.9		-224	609	28	657	340.1	11	7	-215	685	-21	728	342.4	75
3	-354	644	67	765	330.4		-270	591	30	662	335.7	10	6	-269	664	-25	731	337.9	77
4	-425	645	129	797	326.3		-345	501	25	639	324.9	14	12	-385	599	-32	747	327.6	83
5	-486	609	146	817	321.5		-397	492	42	674	322.1	16	13	-436	600	-41	783	324.5	80

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH		U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	169	113	111	49	14.0		190	5	13	64	15.2	199	60	22	4	16.1	
2	0	0	0	0	.0		0	0	0	0	.0	0	0	0	0	.0	
3	0	0	0	0	.0		0	0	0	0	.0	0	0	0	0	.0	
4	92	128	49	34	10.3		104	13	19	80	6.5	33	117	18	45	8.4	
5	246	247	7	19	25.5		313	159	58	123	24.8	278	286	6	10	26.1	

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH		U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	169	113	111	49	14.0		190	5	13	64	15.2	199	60	22	4	16.1	
2	199	142	80	65	20.5		137	49	14	62	11.4	144	54	19	30	11.8	
3	163	160	91	53	17.0		145	53	12	52	12.8	159	60	18	25	13.2	
4	173	136	121	68	15.3		168	145	15	64	19.7	218	123	19	37	19.3	
5	206	179	107	68	18.5		209	137	41	96	19.8	232	150	24	73	19.9	

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

START TIME 10: 0:25
END TIME 10: 5:25

HEIGHT = 95.

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-475	597	111	763	321.4	-403	548	6	681	323.6	13	2	-401	641	-33	756	327.9	73
2	-403	690	-1	799	329.7	-367	400	-44	550	316.3	37	14	-437	608	0	756	324.0	87
3	-633	570	118	852	312.0	-540	322	-32	629	300.8	33	25	-672	542	-36	864	308.9	56
4	-641	577	75	896	311.5	-484	423	27	683	309.4	27	27	-638	562	-36	872	311.1	56
5	-526	658	209	843	321.3	-563	621	88	839	317.8	18	8	-506	712	-110	874	324.6	59

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-475	597	111	763	321.4	-403	548	6	681	323.6	13	2	-401	641	-33	756	327.9	73
2	-427	659	38	787	326.9	-379	449	-27	593	318.8	29	10	-425	619	-10	756	325.3	82
3	-478	636	56	803	323.2	-419	417	-28	602	314.3	30	14	-487	599	-16	783	321.2	76
4	-532	617	62	834	319.3	-441	419	-9	629	312.6	29	18	-537	587	-23	813	317.8	69
5	-532	623	83	836	319.6	-458	448	4	659	313.4	27	17	-533	605	-35	821	318.8	68

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		
2	22	46	93	51	.3	20	145	7	92	12.0	99	97	8	21	10.4		
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		
4	202	274	60	31	21.9	150	296	77	77	27.7	158	219	6	26	17.8		
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH		
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0		
2	44	83	93	42	4.7	25	133	30	100	9.5	73	71	20	15	7.7		
3	109	88	86	47	8.4	83	126	25	83	11.9	137	70	21	55	10.4		
4	150	137	72	62	13.2	99	165	49	84	15.6	150	114	19	64	12.5		
5	137	126	85	57	12.1	101	169	56	110	14.4	137	114	37	63	11.7		

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 60.

START TIME 10: 0:25
END TIME 10: 5:25

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-483	405	-67	631	309.9	-270	364	-64	454	323.4	50	9	-394	574	-6	697	325.5	78
2	-599	488	-14	776	309.0	-288	454	-81	555	327.7	36	25	-417	612	16	768	325.5	81
3	-559	684	-2	884	320.7	-664	420	-3	787	302.2	13	7	-702	478	11	850	304.2	75
4	-651	609	147	889	312.9	-398	507	3	646	321.9	25	22	-571	644	-52	862	318.4	68
5	-481	819	207	951	329.5	-548	703	75	892	322.0	20	8	-511	770	-91	925	326.4	65

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-483	405	-67	631	309.9	-270	364	-64	454	323.4	50	9	-394	574	-6	697	325.5	78
2	-560	458	-31	728	309.3	-282	424	-75	521	326.2	41	20	-409	599	8	745	325.5	80
3	-560	514	-24	767	312.2	-378	423	-57	588	320.2	34	16	-483	569	9	771	320.2	79
4	-590	544	32	807	312.4	-384	451	-37	607	320.8	31	18	-512	594	-11	801	319.6	75
5	-575	584	57	828	314.8	-406	487	-21	648	321.0	29	17	-512	619	-22	819	320.5	74

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	90	87	52	15	9.2	169	95	40	10	20.2	231	173	27	12	21.7
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	43	30	46	52	.5	45	22	49	11	4.4	51	80	46	93	1.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
2	92	77	48	84	6.5	120	85	30	59	14.5	164	124	24	42	15.4
3	75	129	42	104	7.8	215	69	44	141	16.8	198	118	19	63	16.5
4	77	111	97	105	6.1	168	70	51	114	13.2	162	106	41	79	12.8
5	82	145	110	110	8.5	165	115	63	149	12.1	148	117	48	86	12.0

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 90.

START TIME 10: 0:25
END TIME 10: 5:25

ONE MINUTE MEANS

	PEAKS				I	FOURIER COEFFICIENTS						I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-429	597	-21	735	324.2	-278	527	35	596	332.0	29	33	-280	734	14	786	339.0	73
2	-518	611	-52	802	319.6	-520	326	31	623	302.0	13	20	-559	416	-8	705	306.5	101
3	-541	625	12	828	319.1	-144	481	-9	503	343.3	52	18	-327	646	-13	725	333.1	125
4	-502	675	115	843	323.2	-459	505	8	685	317.8	25	21	-576	621	-8	860	317.1	65
5	-546	851	203	1011	327.3	-504	396	-51	642	308.1	46	30	-625	799	-78	1016	321.9	73

CUMULATIVE MEANS

	PEAKS				I	FOURIER COEFFICIENTS						I	SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-429	597	-21	735	324.2	-278	527	35	596	332.0	29	33	-280	734	14	786	339.0	73
2	-488	606	-42	780	321.1	-440	393	32	614	312.0	18	25	-466	522	0	732	317.3	92
3	-501	611	-28	792	320.6	-366	415	21	586	319.8	27	23	-431	553	-3	730	321.3	100
4	-502	632	19	809	321.5	-397	445	17	619	319.1	26	22	-480	576	-5	773	319.9	89
5	-508	663	45	838	322.3	-412	438	7	622	317.6	29	24	-500	608	-15	808	320.2	86

ONE MINUTE STANDARD DEVIATIONS

	PEAKS				I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0	
2	2	70	6	55	3.1	75	128	9	4	13.7	75	121	6	12	11.6	
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0	
4	35	65	29	31	4.6	67	9	86	39	4.7	147	140	6	2	13.6	
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0	

CUMULATIVE STANDARD DEVIATIONS

	PEAKS				I,	FOURIER COEFFICIENTS					I	SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH	
1	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0	
2	51	51	18	55	3.5	149	147	6	16	19.9	169	203	14	48	20.5	
3	50	42	31	51	3.0	192	128	22	57	22.5	155	177	13	39	18.5	
4	42	55	79	50	3.4	159	110	43	70	17.6	156	155	11	73	15.7	
5	41	97	100	89	3.8	151	102	47	64	16.6	153	164	29	113	14.4	

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

START TIME 10: 0:25
END TIME 10: 5:25

HEIGHT = 180.

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-470	586	-23	771	321.6	-352	468	-55	592	322.8	27	27	-515	570	-4	778	318.1	55
2	-350	614	-60	770	331.0	-243	485	-59	545	333.2	37	21	-379	591	26	704	327.1	82
3	-539	723	68	903	323.2	-576	503	-13	766	311.1	18	8	-613	508	10	797	309.6	80
4	-196	813	87	841	346.2	-400	538	10	671	323.4	16	25	-462	698	-27	838	326.5	61
5	-525	690	34	868	322.7	-439	485	-49	655	317.8	29	34	-608	650	-14	891	316.8	51

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-470	586	-23	771	321.6	-352	468	-55	592	322.8	27	27	-515	570	-4	778	318.1	55
2	-410	600	-42	771	326.3	-297	477	-57	568	328.0	32	24	-447	581	10	741	322.6	69
3	-436	625	-20	797	325.7	-353	482	-48	608	324.6	29	21	-480	566	10	752	320.0	71
4	-367	678	10	810	331.5	-366	493	-31	626	324.2	25	22	-475	604	0	777	321.8	68
5	-387	680	13	817	330.4	-375	496	-33	630	323.4	26	23	-492	610	-1	791	321.2	66

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	206	128	93	28	18.0	83	92	4	23	11.8	137	92	17	23	12.1
2	392	143	129	33	33.0	34	46	8	25	5.4	1	75	13	62	3.4
3	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
4	119	57	19	28	8.8	43	13	89	15	3.6	42	10	4	31	2.0
5	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	206	128	93	28	18.0	83	92	4	23	11.8	137	92	17	23	12.1
2	265	130	94	25	22.4	81	80	6	34	9.6	111	70	22	57	8.9
3	237	125	95	63	19.4	143	53	20	93	11.2	122	69	19	56	9.7
4	231	139	94	57	19.1	120	52	49	82	9.3	101	86	24	63	8.6
5	221	129	88	56	18.0	114	48	46	77	8.9	105	81	23	71	8.1

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

START TIME 10: 0:25
END TIME 10: 5:25

HEIGHT = 270.

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-294	740	-16	808	338.5	-376	513	27	656	323.1	24	15	-371	608	-5	736	328.3	104
2	-146	681	-139	697	347.9	-383	405	10	559	316.5	30	6	-405	506	5	649	321.2	83
3	-511	703	-43	870	323.9	-437	517	27	678	319.7	26	13	-505	617	6	798	320.7	67
4	-372	652	98	751	330.2	-402	529	69	665	322.7	24	17	-383	693	-23	792	331.0	64
5	-413	759	69	867	331.2	-396	654	37	765	328.9	22	15	-494	717	-15	871	325.4	63

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-294	740	-16	808	338.5	-376	513	27	656	323.1	24	15	-371	608	-5	736	328.3	104
2	-245	721	-57	771	341.6	-378	477	21	624	320.9	26	12	-382	574	-1	707	326.0	97
3	-351	714	-51	811	334.5	-402	493	24	645	320.4	26	12	-431	591	1	743	323.8	85
4	-355	703	-26	801	333.8	-402	499	31	648	320.8	25	13	-423	608	-2	751	325.0	82
5	-369	717	-2	817	333.2	-400	538	33	678	322.8	24	13	-441	635	-5	781	325.1	77

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	190	39	80	34	13.6	161	166	2	37	20.1	210	149	4	17	20.2
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	12	70	0	64	2.1	62	86	45	105	.7	31	19	12	5	2.6
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	67	48	14	45	6.7	100	121	21	156	1.8	30	37	25	48	.2

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	190	39	80	34	13.6	161	166	2	37	20.1	210	149	4	17	20.2
2	160	44	91	69	11.0	114	132	10	62	14.7	150	121	7	51	14.9
3	184	48	65	80	12.5	92	105	24	75	10.4	126	89	9	62	11.0
4	165	50	84	75	11.3	82	95	28	67	9.4	115	90	13	59	10.2
5	144	59	84	73	10.0	79	117	25	98	8.8	103	92	16	77	8.7

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. MD270.

HEIGHT = 360.

START TIME 10: 0:25
END TIME 10: 5:25

ONE MINUTE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-241	783	-34	832	343.2	-133	600	52	621	347.5	21	20	-239	735	-4	780	341.9	73
2	-323	544	-22	637	329.4	-249	435	48	501	330.1	19	40	-357	596	6	695	329.0	83
3	-501	648	54	832	323.3	-395	432	15	591	317.2	33	23	-526	578	-14	785	317.4	72
4	-245	709	-57	751	340.8	-303	549	41	628	331.0	25	34	-454	663	9	804	325.5	63
5	-300	779	114	853	339.2	-444	630	48	772	324.6	18	13	-438	764	-28	882	330.2	48

CUMULATIVE MEANS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	2D	3D	SINE WAVE FIT U	V	W	SPEED	TH	SP
1	-241	783	-34	832	343.2	-133	600	52	621	347.5	21	20	-239	735	-4	780	341.9	73
2	-268	705	-30	767	338.6	-172	545	51	581	341.7	20	27	-278	689	-1	752	337.6	76
3	-361	682	3	793	332.5	-261	503	37	585	331.9	25	25	-377	644	-6	765	329.5	75
4	-342	686	-6	786	333.9	-268	508	37	592	331.7	25	27	-390	647	-3	772	328.9	73
5	-331	709	23	803	335.2	-312	538	40	637	330.0	23	23	-402	677	-10	799	329.2	67

ONE MINUTE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	204	23	66	37	14.0	127	14	14	14	11.8	138	58	19	12	11.0
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	236	28	33	121	14.3	63	101	55	31	11.1	28	92	15	49	6.0
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	243	60	39	31	16.8	13	74	57	71	2.6	51	7	1	20	3.1

CUMULATIVE STANDARD DEVIATIONS

MIN	PEAKS U	V	W	SPEED	TH	FOURIER COEFFICIENTS U	V	W	SPEED	TH	SINE WAVE FIT U	V	W	SPEED	TH
1	204	23	66	37	14.0	127	14	14	14	11.8	138	58	19	12	11.0
2	152	136	47	115	12.7	112	96	10	70	13.1	119	90	15	50	10.8
3	204	102	60	108	14.2	149	105	34	52	17.2	161	99	15	47	13.7
4	189	92	59	98	13.2	134	96	31	50	15.4	147	89	15	45	12.4
5	185	92	77	89	13.0	140	103	34	77	13.5	128	93	17	64	10.6

VAD HREC2 VAD 12/07/76 HUNTSVILE ALA. HD270.

HEIGHT = 540.

START TIME 10: 0:25
END TIME 10: 5:25

ONE MINUTE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-173	803	13	824	347.4	-304	479	-81	579	328.0	31	14	-380	753	-12	850	333.5	54
2	-456	471	-133	656	315.9	-222	439	-83	492	333.1	38	8	-326	653	14	730	333.4	75
3	-609	568	28	840	312.5	-359	464	-54	588	322.3	30	27	-486	602	0	775	321.0	63
4	-609	633	38	879	316.1	-558	387	-16	680	304.7	30	22	-673	601	-50	903	311.7	55
5	-506	699	135	879	323.8	150	341	54	684	29.7	25	28	149	398	-4	832	31.4	93

CUMULATIVE MEANS

	PEAKS					FOURIER COEFFICIENTS							SINE WAVE FIT					
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	2D	3D	U	V	W	SPEED	TH	SP
1	-173	803	13	824	347.4	-304	479	-81	579	328.0	31	14	-380	753	-12	850	333.5	54
2	-268	693	-35	768	336.9	-276	466	-82	550	329.7	34	12	-362	720	-3	810	333.5	61
3	-404	643	-9	797	327.2	-309	465	-71	565	326.7	32	18	-412	673	-1	796	328.5	62
4	-438	641	-1	811	325.3	-351	452	-62	584	323.1	32	19	-455	661	-9	814	325.7	61
5	-455	656	32	828	324.9	-225	424	-32	609	339.7	30	21	-304	595	-8	818	342.1	69

C-32

ONE MINUTE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	69	104	41	87	6.3	156	59	27	33	16.3	153	6	40	64	9.5
2	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
3	47	163	24	76	10.4	42	7	3	20	3.7	25	24	10	34	.3
4	0	0	0	0	.0	0	0	0	0	.0	0	0	0	0	.0
5	172	159	57	27	15.3	688	433	79	66	80.8	834	586	60	131	84.7

CUMULATIVE STANDARD DEVIATIONS

	PEAKS					FOURIER COEFFICIENTS					SINE WAVE FIT				
MIN	U	V	W	SPEED	TH	U	V	W	SPEED	TH	U	V	W	SPEED	TH
1	69	104	41	87	6.3	156	59	27	33	16.3	153	6	40	64	9.5
2	170	205	90	115	18.7	120	48	19	56	11.9	113	58	33	82	6.7
3	223	180	73	98	19.5	98	34	20	46	9.5	106	77	24	64	8.3
4	217	161	68	94	18.0	134	44	29	62	12.4	142	75	29	72	10.1
5	197	151	89	86	16.3	367	176	66	74	44.7	439	261	33	79	45.0

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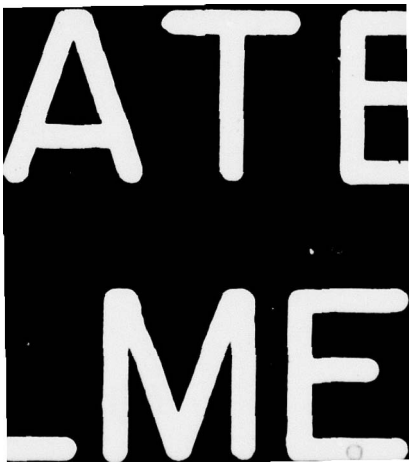
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