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TAER WIND CONVERSION PROGRAM
(TARWON)
USER'S MANUAL
May 1971

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(TARWON)

USER'S MANUAL

May 1971

Contract NAS8-26128

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FOREWORD

This document presents the results of work performed by the Meteorology Section, Structures & Mechanics Department of Lockheed's Huntsville Research & Engineering Center. This work was carried out under Contract NAS8-26128, "Optimum FPS-16/Jimsphere Data Reduction Procedures," for the Marshall Space Flight Center. The NASA contracting officer representative for this contract was Dr. George Fichtl of the Aerospace Environment Division, Aero-Astroynamics Laboratory.

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Section 1
INTRODUCTION AND SUMMARY

Raw FPS-16/Jimsphere radar tracking data are presently stored at NASA-Marshall Space Flight Center on magnetic tapes. These data consist of Time, Azimuth, Elevation and slant Range (TAER) measurements recorded at 0.1-second time intervals. As more data are gathered daily, the number of computer tapes required for storing the data is becoming larger and is presenting storage and data handling problems. Thus, in order to retain all previously recorded data, some of which have been discarded for lack of storage space, a method was developed by which a computer program is used to reduce the number of tapes required for storing these data. Specifically, this method converts all 0.1-second TAER data to 1-second velocity component data using editing and low-pass filtering techniques. The new 1-second velocity data contain all the useful information present in the 0.1-second TAER data, as discussed in Ref. 1 with an added benefit of a 90% reduction in the number of computer tapes required for storage.

This document provides the necessary information for using the Lockheed-Huntsville TAER Wind Conversion Program (TARWON) to convert raw FPS-16 radar tracking data of the Jimsphere balloon to smoothed, 1-second velocity component data. The approach used in TARWON to edit the TAER data and to derive 0.1-second values of the Cartesian coordinates of the balloon's position are basically the same, except for differences in numerical techniques, as those currently used by NASA in the process of deriving 25-meter wind data (Ref. 2). Beyond this point, however, the two procedures are entirely different. TARWON converts the 0.1-second position coordinates to 0.1-second values of meridional, zonal and vertical components of the balloon's velocity. The TARWON program is primarily designed to be operational on the NASA-MSFC Univac 1108, Exec 8 computing system, but with little effort, its operation

can be extended to other computing systems. Included in this user's manual is the mathematical model, general program description, input guide and three appendices. Appendix A presents the user with the derivation of the equations used in linear curve fitting; Appendix B presents a program listing; and Appendix C presents a sample data case illustrating both program input and output. Tables and figures are also presented to aid in the discussion of program development.

Copies of the TARWON program will be presented to NASA-MSFC in deck form and in magnetic tape form — stored at the NASA-MSFC Computation Laboratory — for program utilization.

Section 2

MATHEMATICAL MODEL

The purpose of the TAER Wind Conversion Program (TARWON) is to compute 1-second velocity data from one-tenth second slant range, azimuth and elevation (RAE) data as observed while tracking the Jimsphere balloon with the FPS-16 radar unit at 0.1-second time intervals continuously. Section 2 presents the equations used in editing the RAE data to obtain the 1-second Z_s (altitude), U_s (zonal), V_s (meridional) and W_s (rise-rate) velocity components. Figures, tables and discussion of program procedures are also presented.

2.1 PROGRAM GENERATED TIME

Program generated time is defined as a monotonic increasing array of points in time, equally spaced by one-tenth second. An analysis of time as recorded by the FPS-16 radar unit while tracking the Jimsphere balloon revealed that tracking time was recorded erroneously in some cases because of tracking errors or magnetic tape faults. Since possible discontinuities in time could arise from such erroneous recordings of tracking time, the actual tracking time is used only as a reference and the program-generated time array is used in computations to prevent discontinuities in time. Time, when referred to in this report, should be regarded as program generated time unless noted otherwise.

2.2 EDITING

The first phase of program development, sometimes called a pre-editing phase, is concerned with eliminating errors in RAE data that were induced by tracking errors or tape unit faults such as bit-dropping during initial recording of data. These induced errors are characterized as "stray" points and data gaps (a thorough discussion of these induced errors can be found in Ref. 3),

and are eliminated using a least squares linear curve fitting technique, as discussed in Appendix A. Program generated time is used to obtain the equations below for computing the least squares coefficients necessary to fit a linear curve through nine values of range, azimuth and elevation data.

$$C_{1_R} = \frac{1}{6} \sum_{j=K}^{K_2} (j-K-4) R_j$$

$$C_{0_R} = \frac{1}{9} \sum_{j=K}^{K_2} R_j - C_{1_R} T_{K+4}$$

$$C_{1_A} = \frac{1}{6} \sum_{j=K}^{K_2} (j-K-4) A_j$$

(2.2.1)

$$C_{0_A} = \frac{1}{9} \sum_{j=K}^{K_2} A_j - C_{1_A} T_{K+4}$$

$$C_{1_E} = \frac{1}{6} \sum_{j=K}^{K_2} (j-K-4) E_j$$

$$C_{0_E} = \frac{1}{9} \sum_{j=K}^{K_2} E_j - C_{1_E} T_{K+4}$$

where R, A and E are the arrays of slant range, azimuth and elevation; T_{K+4} is the current time in seconds associated with the (K+4)th or midpoint of the nine point array and $K_2 = K + 8$, ($K = 1, 2, \dots$). The derivation and discussion of Eqs. (2.2.1) are presented in Appendix A. Using Eqs. (2.2.1), midpoints of the 9-point intervals are computed and denoted as midpoint estimates. In addition, a tenth point or look-ahead estimate is computed. The following

equations are used to compute the midpoint and look-ahead estimates.

$$\begin{aligned}
 \hat{r}_m &= C_{0R} + C_{1R} t_m \\
 \hat{a}_m &= C_{0A} + C_{1A} t_m \\
 \hat{e}_m &= C_{0E} + C_{1E} t_m \\
 \hat{r}_L &= C_{0R} + C_{1R} t_{10} \\
 \hat{a}_L &= C_{0A} + C_{1A} t_{10} \\
 \hat{e}_L &= C_{0E} + C_{1E} t_{10}
 \end{aligned}
 \tag{2.2.2}$$

where t_m and t_{10} are the current times of the midpoint and the tenth point respectively and $\wedge$ denotes estimate.

Comparisons are made between (1) the computed midpoint estimates and the observed midpoint values, and (2) the computed look-ahead estimates and the observed look-ahead values. The comparisons take the form:

$$\left| \text{L.S. Est.} - \text{OBS} \right| \leq (\text{FACTOR}) (\text{RMS ERROR})
 \tag{2.2.3}$$

where the RMS error is defined as the amount of error which can be induced into the RAE data by the FPS-16 radar unit while tracking the Jimsphere balloon. The RMS errors provided by the radar unit manufacturer are 5 yards, 0.01 degrees and 0.01 degrees for slant range, azimuth angle and elevation angle observations respectively (see Ref. 2, the NASA-MSFC TAER edit program). Lockheed-Huntsville as well as Ref. 2 uses a factor of three (3) for midpoint comparisons and factors of twenty (20), fifteen (15) and fifteen (15) for range, azimuth and elevation look-ahead comparisons respectively. The factors used in the look-ahead comparisons are larger than those used in the midpoint

comparisons since the tenth point was not used in the original curve fitting. If the tolerance test (Eq. 2.2.3) fails, the observed value is replaced with the L. S. estimate, thus removing the stray point. Look-ahead editing prevents inclusion of a stray point when computing L. S. coefficients from the next nine points. The general procedure for 9-point editing is depicted in Fig. 1 and discussed on the following page.

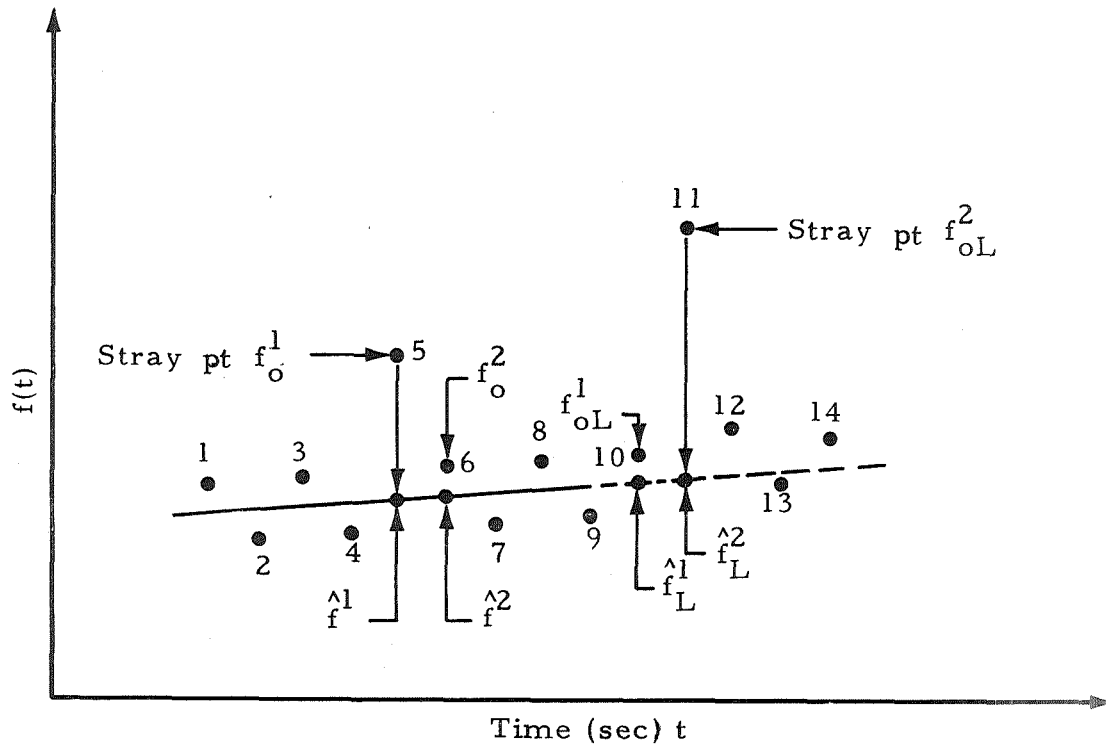


Fig. 1 - Depiction of Stray Point Removal

Stray Points

From Fig. 1, points 1 through 9 are curve-fit to obtain $f(t)$. Using $f(t)$, estimate $\hat{f}^1$ is computed for midpoint 5 and compared with the observed value f_o^1 . Assuming that the comparison test fails, the observed value f_o^1 is replaced with $\hat{f}^1$. The look-ahead point 10 estimate $\hat{f}_L^1$ is computed and compared with the observed look-ahead point f_{oL}^1 . Assuming the comparison test is satisfied, no replacements are made and the 9-point editing proceeds to curve fit points 2 through 10, where the previous midpoint replacement value $\hat{f}^1$ is used in curve fitting points 2 through 10. Using the equation describing points 2 through 10, the midpoint estimate $\hat{f}^2$ for point 6 is computed and compared with the observed value f_o^2 of midpoint 6. Assuming the comparison test is satisfied and no midpoint replacement is necessary, the look-ahead estimate $\hat{f}_L^2$ is computed and compared with the observed look-ahead value, f_{oL}^2 . Assuming that the look-ahead comparison test fails, the observed value f_{oL}^2 is replaced with the computed estimate $\hat{f}_L^2$ and the 9 point editing process begins anew with points 3 through 11.

Data Gap

A discontinuity in tracking data is characterized as a data gap. Data following a data gap appear as many adjacent stray points when compared to data preceding the data gap and will be replaced with the computed least squares estimates during the look-ahead editing process. A data gap is assumed if ten (10) consecutive look-ahead replacements are made. A data gap occurrence is depicted in Fig. 2 and discussed on the following page.

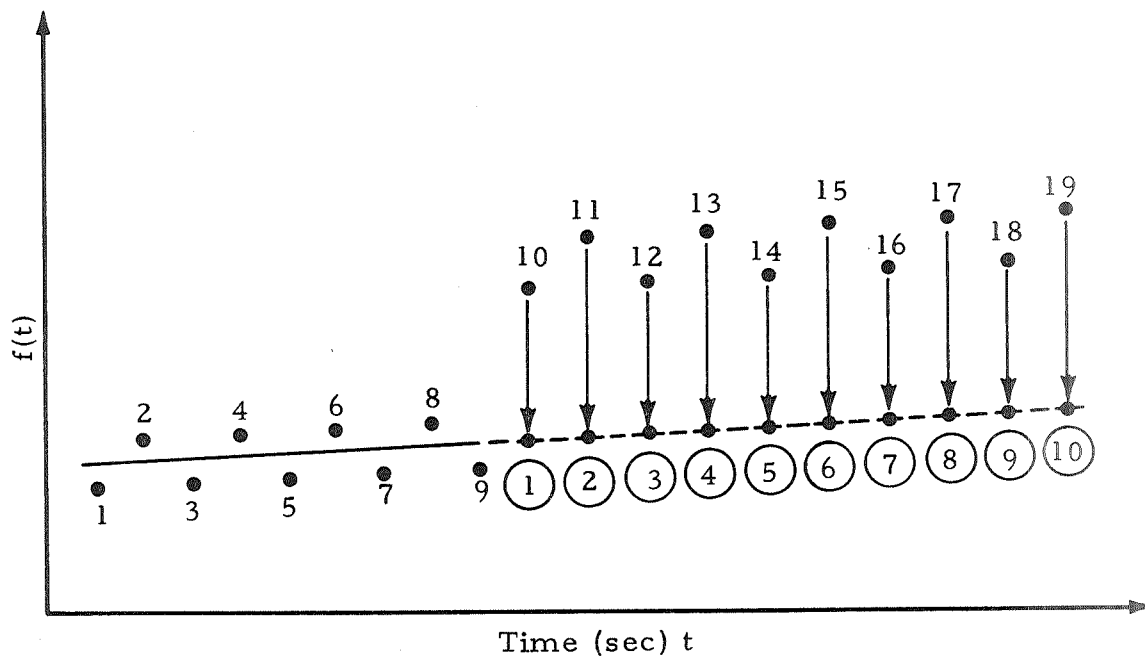


Fig. 2 - Depiction of Data Gap Occurrence

As shown in Fig. 2, points 1 through 9 are curve fitted, look-ahead point 10 is replaced with the estimated point (1) ; points 2 through (1) are curve fitted and look-ahead point 11 is found to be "stray" and is replaced with the estimate (2) ; continuing this process and curve fitting points (1) through (9) , the look-ahead point 19 is examined. If look-ahead point 19 is replaced by estimate (10) , a data gap is assumed to have occurred in the data and all ten replacements are considered invalid and the original values are restored. After restoration of the original values, points 9 of each array of range, azimuth and elevation, which are the last "good" values of each array, are replaced with a value of -10^6 to indicate a data gap follows this point. The curve fitting then begins again with points 10 through 18.

2.3 ONE-TENTH SECOND VELOCITY COMPUTATIONS

One-tenth second velocity components zonal (u), meridional (v) and rise-rate (w) with the associated altitude (z) are computed from the one-tenth second RAE data. Transformations of slant range, azimuth and elevation are made from spherical coordinates to a rectangular coordinate system whose origin is at the earth's center; thus accounting for the earth's curvature with the rectangular coordinates. The equations for determining X_c , Y_c and Z_c (the "c" denoting with respect to the earth's curvature) are:

$$\begin{aligned}
 X_c &= R_E \tan^{-1} \left[\frac{X_s}{Z_s + R_E} \right] && \text{(positive east)} \\
 Y_c &= R_E \tan^{-1} \left\{ \frac{Y_s}{\left[X_s^2 + (Z_s + R_E)^2 \right]^{\frac{1}{2}}} \right\} && \text{(positive north)} \quad (2.3.1) \\
 Z_c &= \left[X_s^2 + Y_s^2 + (Z_s + R_E)^2 \right]^{\frac{1}{2}} - R_E && \text{(positive upward)}
 \end{aligned}$$

where R_E , the radius of the earth at the Eastern Test Range, Cape Kennedy (6,373,334 meters) is considered to be that of a spherical earth, and

$$\begin{aligned}
 X_s &= \rho \cos \theta \sin \phi && \text{(positive east)} \\
 Y_s &= \rho \cos \theta \cos \phi && \text{(positive north)} \\
 Z_s &= \rho \sin \theta && \text{(positive upward)}
 \end{aligned}$$

where

- ρ - slant range (meters)
- θ - elevation (radians)
- ϕ - azimuth (radians)

From Eqs. (2.3.1), one-tenth second velocity components are computed using the following relations:

$$\begin{aligned} u_K &= \frac{1}{2\Delta t} (X_{c_{K+1}} - X_{c_{K-1}}) \\ v_K &= \frac{1}{2\Delta t} (Y_{c_{K+1}} - Y_{c_{K-1}}) \\ w_K &= \frac{1}{2\Delta t} (Z_{c_{K+1}} - Z_{c_{K-1}}) \\ z_K &= Z_{c_K} \end{aligned} \tag{2.3.2}$$

where $\Delta t = 0.1$ since the data are equally spaced by 0.1 second.

As stated previously, a large negative number, -10^6 , is used to identify the presence of a data gap. If this large negative quantity is encountered at some (K+1)th point in the TAER data when computing the 0.1-second velocity data, the Kth, (K+1)th and (K+2)nd values of z, u, v and w in Eqs. (2.3.2) above are flagged with the same quantity, -10^6 , and calculations begin again.

2.4 ONE SECOND VELOCITY CALCULATIONS

One-second velocity components, U_s (zonal), V_s (meridional), W_s (rise-rate) and Z_s (altitude) are computed from the 0.1-second velocity components

using a Martin-Graham low-pass filter. Fifty-five weights are applied over a 55-point interval so that the points are equally weighted on either side of the midpoint to produce a mirror image. For example, the weights for points 1 and 55 are the same, 2 and 54 are the same, etc. These weights were chosen since they provide a desirable frequency response as discussed in Ref. 1. These weights are presented in Table 1.

Table 1
WEIGHTS USED TO OBTAIN SMOOTHED ONE SECOND
VELOCITY DATA

Points	Weight	Points	Weight
(1,55)	-.00170115	(15,41)	.00536330
(2,54)	-.00335008	(16,40)	.01109891
(3,53)	-.00509943	(17,39)	.01746935
(4,52)	-.00685550	(18,38)	.02431932
(5,51)	-.00850874	(19,37)	.03146420
(6,50)	-.00993790	(20,36)	.03869666
(7,49)	-.01101528	(21,35)	.04579480
(8,48)	-.01161294	(22,34)	.05253129
(9,47)	-.01160935	(23,33)	.05868300
(10,46)	-.01089632	(24,32)	.06404076
(11,45)	-.00938586	(25,31)	.06841865
(12,44)	-.00701636	(26,30)	.07166239
(13,43)	-.00375800	(27,29)	.07365641
(14,42)	.00038329	(28,28)	.07432916

The equations used to determine the 1-second Z_s (altitude) and velocity components U_s (zonal), V_s (meridional) and W_s (rise-rate) are the following.

$$Z_{s_k} = \omega_{28} z_{i+27} + \sum_{j=1}^{27} \omega_j [z_{i-j+27} + z_{i+j+27}]$$

$$U_{s_k} = \omega_{28} u_{i+27} + \sum_{j=1}^{27} \omega_j \left[u_{i-j+27} + u_{i+j+27} \right]$$

$$V_{s_k} = \omega_{28} v_{i+27} + \sum_{j=1}^{27} \omega_j \left[v_{i-j+27} + v_{i+j+27} \right]$$

$$W_{s_k} = \omega_{28} w_{i+27} + \sum_{j=1}^{27} \omega_j \left[w_{i-j+27} + w_{i+j+27} \right]$$

where ω_j are the weights, $j=1, 2, \dots, 28$

$$i=1, 11, 21, \dots, 991, \quad k = \left[\frac{i}{10} \right] + 1$$

where $\left[\right]$ denotes integral portion and k has the range: $1 \leq k \leq 100$.

Section 3

PROGRAM DESCRIPTION

Computing system requirements and available program options are discussed, as well as each program unit of the TAER Wind Conversion Program.

3.1 SUMMARY OF PROGRAM OPTIONS

Several options are available in the TAER Wind Conversion program and in summary these are:

- An option is available for skipping any number of files on the TAER data tape before processing is begun.
- Variable logical tape/Fastrand numbers may be inputted to be used in accordance with the various input/output options. See the Input Guide.
- An unlimited number of files of TAER data may be processed. The number of files is input data to the program.
- Physical record length of TAER data may be 60 words/record or 600 words/record. The record size is input.
- One-tenth (0.1) second wind velocity components may be computed. If requested, x, y and z transformations are computed from the TAER data with corrections for the earth's curvature and a 0.1-second velocity tape is generated. The physical record length of each record on tape is 1000 words/record consisting of 250 values of altitude, zonal, meridional and rise-rate components.
- An option is available to smooth one-tenth (0.1) second velocity components using the Martin-Graham low-pass filter with fifty-five (55) weights and create a tape with one (1) second velocity components. All files of 0.1-second velocity data will be read from logical unit ND2 and all files of 1-second velocity data will be written on logical unit ND4 with physical record lengths of 800 words. Each record will consist of 200 values of 1.0-second velocity components.
- Plotting may be requested for TAER data (edited or unedited) and/or 1-second velocity data, using program generated time. The SC 4020 plotter is used for all plotting.
- All files of TAER data need not be edited. If editing is requested, two options are available:
 1. Editing midpoints and look-ahead points.
 2. Editing look-ahead points only.

- Whether editing of a particular file of TAER data is requested or not, an option is available for skipping any number of records initially due to initial "wild" points or due to the presence of an identification record which is sometimes written at the beginning of each file of data.

Each of the above options will be discussed in the following subsections and in Section 4, the Input Guide.

3.2 COMPUTING REQUIREMENTS

The hardware and software requirements, core storage requirements and program run times for the TAER Wind Conversion program are discussed with the following paragraphs.

3.2.1 Hardware and Software Requirements

Effort was made to provide the program user with an efficient third generation computer program which could be used on the Univac 1108, Exec 8 multiprocessing system available at NASA-MSFC. Both FORTRAN IV and FORTRAN V languages are utilized in the program.

3.2.2 Core Storage Utilized

The amount of storage required for program operation is as follows:

• IBANK	-	14,682
• DBANK	-	<u>15,800</u>
Total		30,482 words

3.2.3 Program Run Time

A timing study was made to determine the program run time required to edit one file of TAER data to obtain one file of 1-second velocity data. Editing options (1) midpoint/look-ahead editing and (2) look-ahead editing only were used to obtain the following run times:

Edit Option	Min/File (Average)
Midpoint/Look-Ahead	1.8
Look-Ahead	1.3

Three assumptions were made to obtain the times above. They are:

- One File of TAER data consisted of 600 words/record and contained an average of 125 records/File.
- No Plotting required.

Program execution time on the Univac 1108, Exec 8 multiprocessing system cannot be determined exactly; a reasonable average must be assumed. Experience with this system reveals that execution time for a sample case can vary as much as 25% when it is executed several times.

3.3 MAIN PROGRAM

The main program is basically a driver to all subprograms necessary to perform the following tasks:

- Edit 0.1-second TAER data.
- Plot the 0.1-second TAER data (edited or unedited).
- Compute X_c , Y_c and Z_c transformations of the TAER data accounting for the earth's curvature.
- Create an edited 0.1-second TAER data tape.
- Create a 0.1-second wind velocity data tape with altitude and zonal, meridional and rise-rate velocity components.
- Create a 1-second wind velocity data tape containing altitude and zonal, meridional and rise-rate velocity components using a Martin-Graham low-pass filtering technique.

3.4 SUBPROGRAMS

The subprograms referenced by the main program are of two forms: (1) entry points within a subroutine and (2) subroutines. Entry points are used to combine similar or related operations and to minimize the complexity and physical size of the program.

The following subprograms are referenced by the main program:

- | | |
|----------|----------|
| • TAPE | • EDITL |
| • PLOTT | • TRANS |
| • CALCOF | • OUTPUT |
| • EDITM | • FILTER |

In addition, system routines for I/O operations, SC 4020 plotting and arithmetic operations are utilized.

CALCOF

Subroutine CALCOF is referenced if editing of TAER data is requested. The purpose of CALCOF is to compute the necessary coefficients to fit least squares curves of degree one through nine points of slant range, azimuth and elevation as a function of equally spaced points in time. The equations for this operation are presented in Section 2.

The calling sequence for CALCOF is:

CALL CALCOF (K)

where K is the subscript of the first of nine points of the TAER data arrays to be used in curve fitting and K has the range $1 \leq K \leq 1000$.

EDITM

Subprogram EDITM is an entry point located within subroutine CALCOF and is referenced if midpoint editing is desired. Within CALCOF, as mentioned previously, nine points of range, azimuth and elevation are used to determine six unique least squares coefficients, see Eqs. (2.2.3), which describe three linear curve fits over these data. Using these three least squares fits, the midpoints of each nine point interval are computed and compared with the original

values to locate "stray" points. A point is considered "stray" if the numerical difference of the original and least squares estimate exceeds a specific tolerance. Tolerances of 15.0 yd, 0.03 deg and 0.03 deg are used for midpoint comparisons when editing range, azimuth and elevation respectively. Values of range, azimuth or elevation data which fail these tolerance tests are replaced with the least squares estimate and the program flag ICOFER is set to allow the data to be printed out and studied. Figure 1, page 2-4, is an example of midpoint replacements. The mathematical equations for these comparisons are presented in Section 2.

The calling sequence for EDITM is:

CALL EDITM (K+4)

where K+4 is the subscript of the midpoints of the nine data values of the range, azimuth and elevation arrays and K has the range: $1 \leq K \leq 1000$.

EDITL

Subprogram EDITL is an entry point located within subroutine CALCOF and is referenced to search for "stray" points and gaps in range, azimuth and elevation data. Data gaps are defined as missing TAER data values within a specified time interval which force the functions of range, azimuth and elevation (RAE data) versus time to be discontinuous. EDITL analyzes one point ahead of the original nine values of range, azimuth and elevation used in determining the least squares coefficients to check for extreme variation in the following data and to reduce the possibility of using "stray" points in computing the next set of coefficients. The linear equations, determined from the six previously computed coefficients for range, azimuth and elevation least squares estimates, are used to extrapolate projected estimates of these RAE data at the next point (or tenth point). See Eqs. (2.2.2), page 2-3. The projected values and observed values are compared as in the midpoint editing. The tolerances used in the tenth or look-ahead point comparisons are 100 yd, 0.15 deg and 0.15 deg for the range, azimuth and elevation respectively. Observed values of RAE data

which exceed the projected values by the appropriate tolerances are replaced with the projected or least squares estimate and the program flag ICOFER is set to allow the data to be printed. Unlike EDITM, an error counter (KOUNT) is used in EDITL to count the number of replacements. If 10 consecutive references to EDITL result in replacements, a data gap is assumed to have been encountered, the replacements are considered invalid, and the original observed values of RAE data are restored. To indicate this data gap, the last "good" values of range, azimuth and elevation (see Fig. 2) preceding the occurrence of the data gap are set equal to the value -10^6 . The current point counter K is then modified to allow the 9-point curve fitting to begin again with the values of RAE data immediately following the flagged values, and the error counter KOUNT is reinitialized.

The equations used in EDITL are in Section 2.

The calling sequence for EDITL is:

CALL EDITL (K)

where K is the subscript of the first values of RAE data used in the least squares curve fitting. Note that K+9 will be the subscript of the look-ahead values of range, azimuth and elevation.

TRANS

Subprogram TRANS is an entry point within subroutine CALCOF which is referenced to transform the values of slant range, azimuth and elevation from spherical coordinates into rectangular coordinates with a correction for the earth's curvature to allow one-tenth second velocity data to be computed later in the main program. The equations used in computing the transformations are in Section 2.

The calling sequence for TRANS is:

CALL TRANS (R, A, E, XC, YC, ZC)

where R, A and E are given values of slant range, azimuth and elevation respectively, and XC, YC and ZC are the resulting cartesian coordinates.

OUTPUT

Subprogram OUTPUT is a general purpose I/O package which contains the entry point TAPE. Subroutine OUTPUT is referenced when detailed print-out is requested for the edited RAE data (noting that replacements were made during editing) and the 0.1-second velocity data that were computed from the edited RAE data. All data printed will be from the WARAY, located in the labeled common block TRAN1, which will contain either the TAER data or the velocity data, depending upon when subroutine OUTPUT is called. The calling sequence of subroutine OUTPUT is:

CALL OUTPUT (TITLE)

where TITLE is a five (5) word Hollerith array used to identify the data being printed.

TAPE

Subroutine TAPE is an entry point within subroutine OUTPUT and is referenced from all program units requiring I/O operations on devices other than 5, 6 and 7.

Entry point TAPE contains logic necessary to allow all output devices to be used in a FORTRAN mode for Fastrand utilization or a non-FORTRAN mode for tape utilization. The non-FORTRAN mode is considered more desirable for production work since physical record size of data can be controlled to conserve the amount of tape used and the I/O transfers are faster in the non-FORTRAN mode. The non-FORTRAN/FORTRAN mode option is controlled by the variable

IFOR (see input guide, Section 4), which is input as zero (0) for the non-FORTRAN mode and input as one (1) for the FORTRAN mode. The FORTRAN mode utilizes the FORTRAN V language.

The following table depicts the operations that are available in entry point TAPE.

Table 2
LIST OF PROGRAM I/O OPERATIONS

Non-FORTRAN MODE, IFOR = 0		
Option	Command	I/O Statement
1	Write	CALL WRITER (NT, 2, IER, NW, ARRAY)
2	Read	CALL REDTPR (NT, 2, IERR, NWR, NW, ARRAY)
3	Open Buffers & Rewind	CALL OPEN (NT, 1, 2*)
4	Close Buffers End File & Rewind	CALL CLOSE (NT, 2)
5	Rewind Only	CALL CLOSE (NT, 4), CALL OPEN (NT, 1, 2)
6	End File Only	CALL CLOSE (NT, 3)
7	Skip Files	CALL SKFBIN (NT, IARG, IERR)
8	Skip Records	CALL SKRBIN (NT, IARG, IERR)
FORTRAN Mode, IFOR = 1		
Option	Command	I/O Statement
1	Write	** WRITE (NT) (ARRAY (NJ), NJ = 1, NW) READ (NT, END = 170) (ARRAY (NJ), NJ = 1, NW) REWIND NT
2	Read	
3	Rewind Only	
4	End File & Rewind	END FILE NT, REWIND NT
5	Rewind Only	REWIND NT
6	End File Only	END FILE NT

* Integer specifying buffer size to be used for the File NT. This option added to NASA-MSFC Exec 8 system 26 April 1971.

** Only FORTRAN V statement used in program.

As shown in Table 2, options 7 and 8 cannot be used in the FORTRAN mode. These options are restricted to use with the TAER data input tape. Also, option 2 in the FORTRAN mode involves use of the special non-formatted read command available on the 1108 system. The purpose of its use is to detect end-of-file marks on the one-tenth second velocity tape when creating a one second velocity data tape.

The ability to detect an end-of-file mark in the FORTRAN mode is extremely useful when using the 1108, since output devices can be assigned as either tapes or Fastrand. This flexibility was used extensively during program checkout. The calling sequence for entry point TAPE is of the general form:

CALL TAPE (IUNIT, IOP, IARG, ARRAY, IERR)

where

IUNIT	The logical unit number for the I/O request.
IOP	I/O option to be performed (see Table 2).
IARG	Number of words to be transferred to/from unit number IUNIT — for options 1 and 2. = 0 for options 3 through 6. = number of files of TAER data to skip on unit IUNIT before processing data — option 7 only. = number of records of TAER data to skip on unit IUNIT before processing data — option 8 only.
ARRAY	Storage location of data to be transferred to/from unit IUNIT — for options 1 and 2. - N/A for all other options. The variable DUM is used in the calling sequence for all other options.
IERR	Error status of the read request — option 2. = 1 - transmission of data valid. = 2 - end of file encountered during read. = 3 or 4 - redundancy during read request.

PLOTT

Subroutine PLOTT is referenced if data are to be plotted, utilizing the SC 4020 plotter. Four (4) options are available within subroutine PLOTT.

1. Open plot file buffers.
2. Compute minimum and maximum values of TAER data arrays to be plotted later using option 3.
3. Plot TAER data, three grids per frame.
4. Close plot file buffers.

In addition, options 1 and 4 are referenced if one (1) second velocity plots are requested.

The calling sequence for subroutine PLOTT is:

CALL PLOTT (IOP)

where IOP is the option within PLOTT to be performed.

SCRND

Subroutine SCRND is referenced by subroutine PLOTT to obtain rounded up/off maximum and minimum values of data to be plotted. SCRND is an 1108 systems routine normally referenced by the 1108 plot routines.

The calling sequence for subroutine SCRND is:

CALL SCRND (XMAX, XMIN, X2, X1)

where

XMAX, XMIN	Maximum and minimum values of some array X to be plotted.
X2, X1	Rounded up/off values of XMAX and XMIN, respectively, to be used as suitable end points for the SC 4020 grid.

For additional information concerning SCRND, see page 10.21.4.1-16 of the Univac 1108 Programmer Procedures Manual.

FILTER

Subroutine FILTER is referenced if one second wind velocity components are to be computed from the one-tenth second velocity components previously written on logical I/O Unit ND2. FILTER provides the logic necessary to apply the Martin-Graham low-pass filter (discussed in detail in Refs. 1 and 4) to the 0.1-sec velocity components using a fifty-five (55) point smoothing procedure, one weight per point. The equations used in the smoothing procedure are presented in Section 2. The low-pass filter is applied to all files of 0.1-sec velocity data furnished via logical Unit ND2. At the completion of each file, the remaining data are processed to form the final record of data for that file. The remaining unused locations in the final record are filled with zeros. All 1-second velocity data are written on logical Unit ND4.

One-second velocity data plots may be requested via program option, see the Input Guide, using the SC 4020 routine QUIK3V.

The calling sequence for FILTER is

CALL FILTER

The input/output unit numbers, ND2 and ND4; number of files to process, NFILES; and the plotting option variable IPLOT are transferred via labeled common UNITS.

Section 4 INPUT GUIDE

Section 4 serves as a user's guide for inputting data into the TAER Wind Conversion Program, TARWON. Included in this section is the input format of each data card, a brief discussion of each variable, the basic deck set-up, a sample instruction card and examples of SAVE labels which must be used to save the generated output tapes.

4.1 CARD INPUT

The following is a list of the input variables and their input format.

Card	Variables	Format
1	ISKIP, ND1, NFILES, NWPREC, ND3, ITRAN, ND2, IFILTR, ND4, IPLOT, IFOR	(11I6)
2*	IEDIT, NREC	(2I6)

*Card 2 is repeated for each file of TAER data processed. A Card 2 will be read NFILES times.

4.2 DESCRIPTION OF INPUT VARIABLES

<u>Variable</u>	<u>Description</u>
ISKIP	Number of files to skip on input tape ND1 before processing TAER data.
ND1	Logical tape number containing the TAER data. If ND1 is input as zero, logical unit 8 is used.
NFILES	Number of files of TAER data to process. All need not be edited. Files that are to be skipped are not included.

<u>Variable</u>	<u>Description</u>
NWPREC	Number of words per physical record of TAER data supplied via logical unit ND1. Only two options are available: 60 words/record or 600 words/record.
ND3	Logical unit number for edited TAER data to be written. If ND3 is input as zero, ND3 is set to logical unit number 10, but is not referenced unless IEDIT (which is discussed later) becomes nonzero.
ITRAN	≠ 0 Compute x, y and z coordinates from edited or unedited TAER data (using corrections for the earth's curvature) and from these values, compute 0.1-second velocity components writing these data on logical unit ND2. = 0 <u>Do not</u> compute x, y and z coordinates and <u>do not</u> create a 0.1-second velocity tape.
ND2	Logical unit number for 0.1-second velocity components to be written. If ND2 is input as zero, ND2 is set to logical unit 9, but is not referenced unless ITRAN is nonzero.
IFILTR	≠ 0 Compute 1-second velocity components from the 0.1-second velocity components stored on unit ND2 and write the resulting data on unit ND4. If this option is requested, ITRAN is set equal to one since 0.1-second velocities must be computed. = 0 Do not compute 1-second velocity components.
ND4	Logical unit number for 1-second velocity data to be written. If ND4 is input as zero, ND4 will be set to logical unit 11 but will not be referenced unless IFILTR is nonzero.
IPLLOT	= 0 No plots. = 1 Plot TAER data (edited or unedited) only. = 2 Plot 1-second velocity data only. = 3 Plot both options 1 and 2.
IFOR	= 0 Generate output tapes in non-FORTRAN mode. = 1 Generate output tapes in FORTRAN mode.
IEDIT	= 0 Do not edit this file of TAER data. = 1 Edit midpoints and look-ahead points in this file of TAER data. = 2 Edit look-ahead points only in this file.
NREC	≠ 0 Skip NREC records on this file of TAER data before processing (whether editing is requested or not). = 0 Do not skip any records on this file before processing (whether editing is requested or not).

4.3 TAER DATA INPUT TAPE FORMAT

The TAER data input tape is assumed to be written in IBM 7094 floating point binary as illustrated in the deck set-up, Subsection 4.7. The "W" option on assign card 1 denotes this assumption. If the TAER data input tape is written in Univac floating point binary, the "W" option must be removed. The format structure is of two forms:

1. 60 word physical records, each block containing 10 values of TAER data (6 words per 0.1-second time step).
2. 600 word physical records, each block containing 100 values of TAER data. (6 words per 0.1-second time step).

Word	Data
1	Time in hours
2	Time in seconds
3	Slant range in yards
4	Azimuth in degrees
5	Elevation in degrees
6	Radar number
7	Time in hours
8	Time in seconds (word 2 + 0.1-second)
...	
60*	Same as 6
61	Time in hours
...	
599	Elevation in degrees
600	Same as 6

*If data are written in 60 word physical records, word 60 is last word of that record.

Words 1 and 6 of each 0.1-second time step are not utilized. In some cases, a 9 word tape identification record may appear as the first record on each file. This identification record is skipped using the "skip record" option described earlier in this section.

4.4 EDITED TAER DATA OUTPUT TAPE FORMAT

An edited TAER data tape will be written if requested via program option. As stated previously in this report, all output tapes may be written in a non-FORTRAN mode or a FORTRAN mode. If the non-FORTRAN mode is requested, data will be written in 1000 word physical word records. Use of

the FORTRAN mode will result in 1000 word logical records. Each 1000 word record contains 250 values of tracking time, slant range, azimuth and elevation with four words per 0.1-second time step. The format structure is:

Word	Data
1	Time in seconds (Tracking)
2	Range in yards
3	Azimuth in degrees
4	Elevation in degrees
5	Word 1 + 0.1 second
6	Range in yards
:	
1000	Elevation in degrees

4.5 ONE-TENTH SECOND VELOCITY OUTPUT TAPE FORMAT

A one-tenth second velocity output tape will be written if requested via program option. Data will be written in either 1000 word physical records or 1000 word logical records depending upon the mode (FORTRAN or non-FORTRAN) requested. Each 1000 word record contains 250 values of each velocity component described below. The format structure is four words per 0.1-second time step as follows:

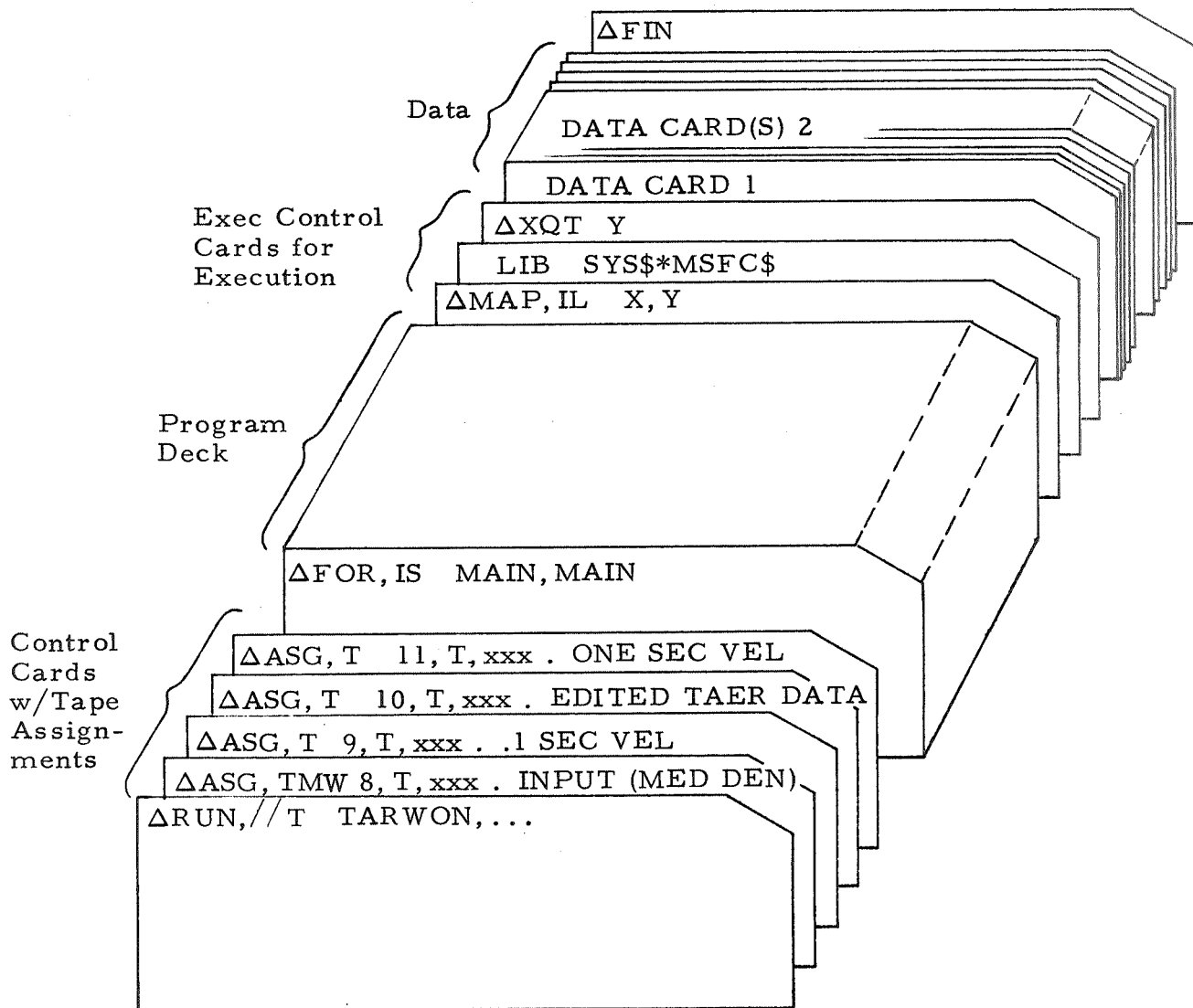
Word	Component
1	Altitude (m)
2	Zonal (m-sec^{-1})
3	Meridional (m sec^{-1})
4	Rise-rate (m sec^{-1})
5	Same as 1
6	Same as 2
:	
1000	Same as 4

4.6 ONE SECOND VELOCITY OUTPUT TAPE FORMAT

A one second velocity output tape is written if requested via program option. Data are written in either 800 words per physical record (non-FORTRAN mode) or 800 words per logical record (FORTRAN mode). Each 800 word record contains 200 values of each velocity component described on the following page. The format structure is four words per one second time step as follows:

Word	Component
1	Altitude (m)
2	Zonal (m sec ⁻¹)
3	Meridional (m sec ⁻¹)
4	Rise rate (m sec ⁻¹)
5	Same as 1
6	Same as 2
⋮	
800	Same as 4

4.7 DECK SETUP FOR UNIVAC 1108, EXEC 8



Comments:

The "M" and "W" options appearing on the first assign card indicate that the input tape containing the raw TAER data is written in medium density (556 BPI) and in IBM 7094 floating point binary. The absence of M and W implies high density (800 BPI) and 1108 floating point binary respectively. The symbol "Δ" denotes the master space 7/8 punch.

4.9 SAVE LABEL FORMAT

The following SAVE label format is used on the Univac 1108 system.

CENTRAL SITE SAVE LABEL				MONTH	DAY	YEAR
PROGRAMMER (LAST & INITIAL) TYSON, J				JOB NUMBER XXXXXX		
DR. #	DENSITY 8	BIN X	B C D	REEL 1	REELS OF 1	
FILE NAME: B5 (9)						
TITLE: EDITED TAER DATA						
PUNCH	BIN # XXX	# COPIES		FORM #		
CLASS 5	SEQ. #	# FILES 4		UNIT CODE		
MSFC FORM 340 (REV. FEB. 1968)						

CENTRAL SITE SAVE LABEL				MONTH	DAY	YEAR
PROGRAMMER (LAST & INITIAL) TYSON, J				JOB NUMBER XXXXXX		
DR. #	DENSITY 8	BIN X	B C D	REEL 1	REELS OF 1	
FILE NAME: A6 (10)						
TITLE: 01 SEC VEL DATA						
PUNCH	BIN # XXX	# COPIES		FORM #		
CLASS 5	SEQ. #	# FILES 4		UNIT CODE		
MSFC FORM 340 (REV. FEB. 1968)						

CENTRAL SITE SAVE LABEL				MONTH	DAY	YEAR
PROGRAMMER (LAST & INITIAL) TYSON, J				JOB NUMBER XXXXXX		
DR. #	DENSITY 8	BIN X	B C D	REEL 1	REELS OF 1	
FILE NAME: B6 (11)						
TITLE: ONE SEC VEL DATA						
PUNCH	BIN # XXX	# COPIES		FORM #		
CLASS 5	SEQ. #	# FILES 4		UNIT CODE		
MSFC FORM 340 (REV. FEB. 1968)						

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3. DeMandel, R.E., and S.J. Krivo, "Characteristics and Processing of FPS-16/Jimsphere Raw Radar Data," NASA CR-61290, NASA-MSFC, May 1969.
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1. Ralston, Anthony, A First Course in Numerical Analysis, Chapter 6, McGraw-Hill, New York, 1965.
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Appendix A

METHOD OF LEAST SQUARES LINEAR CURVE FITTING
FOR DISCRETE EQUALLY SPACED DATA POINTS

INVESTIGATION AND APPLICATION

Appendix A

A.1 INTRODUCTION

The method of least squares is employed extensively in the TAER WIND CONVERSION PROGRAM, TARWON, in search of "stray" points and discontinuities in the observed TAER (Time, Azimuth, Elevation and Range) data. Each of the observed TAER data are approximated with a linear least squares approximation of the form

$$P(t) = C_0 + C_1 t$$

where C_0 and C_1 must be determined and time is the independent variable in seconds. Omitting the rigorous theory of least squares, it is true that the above coefficients, C_0 and C_1 must be computed such that

$$S = \sum_{i=1}^N \left[y_i(t) - P_i(t) \right]^2$$

is a minimum for all t_i , $i=1, 2, \dots, N$ where $P_i(t) = C_0 + C_1 t_i$ is the approximating polynomial of degree one (1) and $y_i(t)$ are the observed data values at the i^{th} points. Using calculus and taking partial derivatives of S with respect to C_0 and C_1 , we obtain the following equations respectively.

$$\sum_{i=1}^N C_0 + C_1 \sum_{i=1}^N t_i = \sum_{i=1}^N y_i \quad (\text{A.1.1})$$

and

$$C_0 \sum_{i=1}^N t_i + C_1 \sum_{i=1}^N t_i^2 = \sum_{i=1}^N t_i y_i \quad (\text{A.1.2})$$

Solving these equations simultaneously, equations for C_0 and C_1 , below, are obtained which produce an absolute minimum.

$$C_0 = \frac{\sum_{i=1}^N (1) \sum_{i=1}^N y_i - \sum_{i=1}^N t_i \sum_{i=1}^N t_i y_i}{\sum_{i=1}^N (1) \sum_{i=1}^N t_i^2 - \left(\sum_{i=1}^N t_i \right)^2} \quad (A.1.3)$$

$$C_1 = \frac{\sum_{i=1}^N (1) \sum_{i=1}^N t_i y_i - \sum_{i=1}^N t_i \sum_{i=1}^N y_i}{\sum_{i=1}^N (1) \sum_{i=1}^N t_i^2 - \left(\sum_{i=1}^N t_i \right)^2} \quad (A.1.4)$$

These equations for C_0 and C_1 are considered the classical equations for computing a linear least squares approximation of N discrete data points and were used initially in developing the TAER WIND CONVERSION PROGRAM with good results. As development of the program proceeded, numerical errors were encountered in the curve fitting procedure which led to a study of these equations. The results of the study found the classical equations for C_0 and C_1 to be inappropriate when applied to the TAER data due to the magnitude of the independent variable, time.

Analytically speaking, it can be proved that the denominator, which we shall denote as D , can never be zero. The proof will be omitted since it can be found in any numerical analysis textbook. Numerically speaking however, the denominator D can be zero. It was found that as the magnitudes of the

quantities $\sum_{i=1}^N (1) \sum_{i=1}^N t_i^2$ and $\left(\sum_{i=1}^N t_i \right)^2$ increased, the difference of these two

quantities, D , while being perfectly acceptable analytically, became numerically unacceptable. The usable single precision computer word size available on

both the IBM 7094 and Univac 1108 systems provide decimal accuracy to only eight places and therefore resulted in divisions by zero and consequently numerical errors induced into the data. In addition, an observation was made that errors were induced infrequently on the IBM 7094 computing system and very frequently using the Univac 1108 computing system. This observation can be attributed to the differences in handling floating point divisions by zero on the two computing systems. Figure A-1 depicts a typical example of errors being induced into the TAER data as a result of dividing by zero.

It should be noted at this time that the classical equations for computing the coefficients C_0 and C_1 , Eqs. (A.1.3) and (A.1.4) respectively, are general equations and are in no way restrictive to equally or unequally spaced data.

Two approaches were considered to eliminate possible divisions by zero: the use of double-precision in the computations and a re-evaluation of Eqs. (A.1.3) and (A.1.4) to reflect the equally spaced property of the independent variable time associated with TAER data. Due to the large amounts of data normally processed when editing, the use of double precision was felt unwise since program run time would be greatly increased. Therefore, a re-derivation of the equations for C_0 and C_1 was decided upon that would reflect the equally spaced property that exists with the TAER data and provide new equations for C_0 and C_1 more suitable for computer application. The re-derivation and method of programming is presented herein.

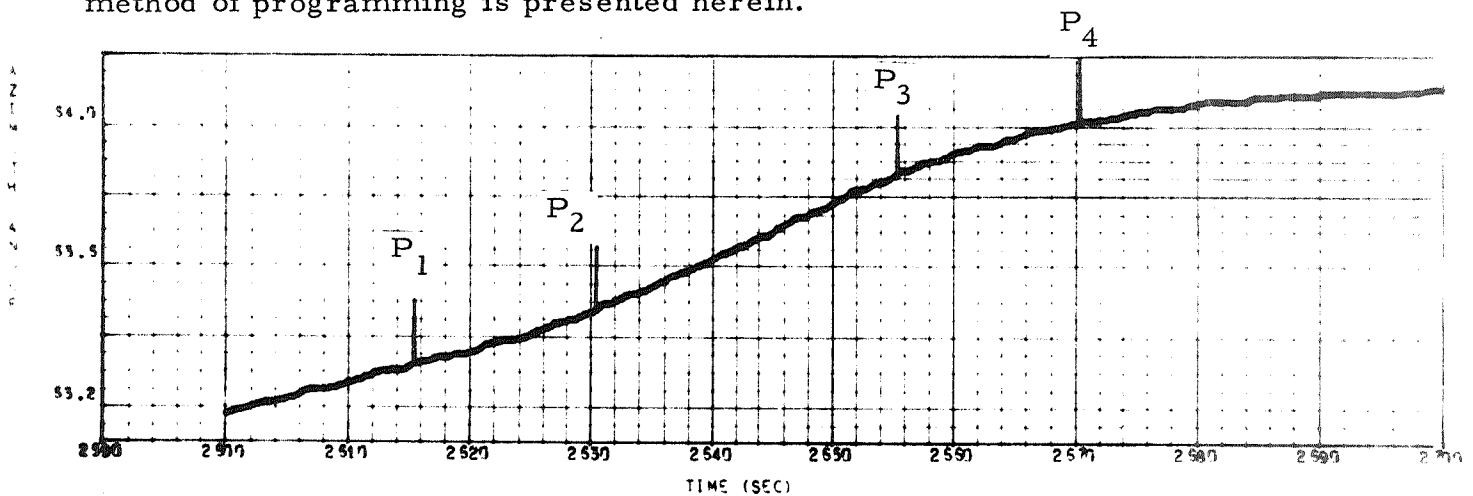


Fig. A-1 - Example of Induced Errors in Curve Fitting (Points P_1 , P_2 , P_3 , and P_4 are Values of Azimuth that were Induced into the data Resulting from Divisions by Zero)

A.2 DERIVATION

Equation (A.1.4) may be written in the general form

$$C_1 = \frac{\sum_{i=K}^{K_2} (1) \sum_{i=K}^{K_2} y_i t_i - \sum_{i=K}^{K_2} t_i \sum_{i=K}^{K_2} y_i}{\sum_{i=K}^{K_2} (1) \sum_{i=K}^{K_2} t_i^2 - \left(\sum_{i=K}^{K_2} t_i \right)^2} \quad (A.2.1)$$

where $K=1, 2, \dots, N$, $K_2 = K + K^*$ and K^* is the number of data points minus one to be used in the curve fitting. Since the denominator in the equation above, which we shall again denote as D , is identical to the denominator in the equation for C_0 , Eq. (A.1.3), the discussion concerning D above is sufficient for this analysis. For convenience we shall omit the use of i under the summation symbols unless clarification is felt needed. We can now let

$$D = (K_2 - K + 1) \sum_K^{K_2} t_i^2 - \left(\sum_K^{K_2} t_i \right)^2 \quad (A.2.2)$$

where t_i are equally spaced points in time by a quantity Δt . Furthermore let $t_{i+1} > t_i$, $i=1, 2, \dots$ so that we construct an infinite sequence of points of the form:

$$s_n = (\Delta t) 1, (\Delta t) 2, (\Delta t) 3, \dots$$

whose sum is defined as

$$S_t = \sum_{i=1}^{\infty} t_i = \Delta t [1 + 2 + \dots]$$

such that we have

$$S_t = \Delta t \sum_{i=1}^{\infty} n_i, \quad n_i = 1, 2, \dots, \quad (A.2.3)$$

for all i .

By definition the K_2^{th} partial sum of Eq. (A.2.3) is defined as

$$S_{p_{K_2}} = \Delta t \sum_{i=1}^{K_2} n_i = \frac{K_2 (K_2 + 1)}{2} \Delta t$$

and likewise, the $(K-1)^{\text{th}}$ partial sum can be written as

$$S_{p_{K-1}} = \Delta t \sum_{i=1}^{K-1} n_i = \frac{K (K-1)}{2} \Delta t$$

Since the identity is true

$$\sum_K^{K_2} t_i = \Delta t \sum_1^{K_2} n_i - \Delta t \sum_1^{K-1} n_i, \quad ,$$

substituting the equations for the partial sums into the equation above yields the following.

$$\sum_K^{K_2} t_i = \frac{\Delta t}{2} \left[(K_2 + K) (K_2 - K + 1) \right] \quad (A.2.4)$$

Similarly, let us construct an infinite sequence of points where

$$s_{n_2} = (\Delta t)^2 1^2, (\Delta t)^2 2^2, (\Delta t)^2 3^2, \dots$$

whose sum can be defined as

$$S_{t_2} = \sum_{i=1}^{\infty} t_i^2 = \Delta t^2 [1^2 + 2^2 + 3^2 + \dots]$$

such that we have

$$S_{t_2} = (\Delta t)^2 \sum_{i=1}^{\infty} n_i^2, \quad n_i = 1, 2, \dots \quad (\text{A.2.5})$$

We know also by definition that the K_2^{th} partial sum of Eq. (A.2.5) is defined as

$$S_{p_{K_2}}^2 = (\Delta t)^2 \sum_{i=1}^{K_2} n_i^2 = \left[\frac{K_2 (K_2 + 1) (2K_2 + 1)}{6} \right] (\Delta t)^2$$

and likewise the $(K-1)^{\text{th}}$ partial sum would be

$$S_{p_{K-1}}^2 = (\Delta t)^2 \sum_{i=1}^{K-1} n_i^2 = \left[\frac{K (K - 1) (2K - 1)}{6} \right] (\Delta t)^2.$$

Since

$$\sum_K t_i^2 = (\Delta t)^2 \sum_1^{K_2} n_i^2 - (\Delta t)^2 \sum_1^{K-1} n_i^2$$

then by substituting the values of partial sums above we get

$$\sum_K^{K_2} t_i^2 = \frac{(\Delta t)^2}{6} \left[K_2 (K_2 + 1) (2 K_2 + 1) - K (K - 1) (2 K - 1) \right] \quad (A.2.6)$$

Substituting Eqs. (A.2.4) and (A.2.6) into Eq. (A.2.2), D becomes

$$D = (K_2 - K + 1) \frac{(\Delta t)^2}{12} \left[(K_2 - K + 1) - 1 \right] \left[K_2 - K + 1 \right] \left[(K_2 - K + 1) + 1 \right]$$

which can be written generally as

$$D = \frac{(\Delta t)^2}{12} (K_2 - K + 1) \prod_{j=0}^2 \left[(K_2 - K + 1) + (j - 1) \right] \quad (A.2.7)$$

The equation of D above redefines the denominator of Eq. (A.2.1) which by observation can be seen to be a function of Δt and the number of points used in the curve fitting only; the variable time, t_i , being eliminated completely since we have equally spaced points in time.

From Eq. (A.2.1), we let Q denote the numerator so that

$$Q = \sum_K^{K_2} (1) \sum_K^{K_2} y_i t_i - \sum_K^{K_2} t_i \sum_K^{K_2} y_i \quad (A.2.8)$$

We shall now rederive Q for suitable program application.

Since the independent variable time, t, always takes the form

$$t_i = t_{i-1} + \Delta t \quad ,$$

it follows in general that

$$\sum_{i=K}^{K_2} t_i = \sum_{i=K}^{K_2} \left[t_{K-1} + (i - K + 1) \Delta t \right] \quad (\text{A.2.9})$$

which reduces to

$$\sum_{i=K}^{K_2} t_i = (K_2 - K + 1) \left[t_K + K \Delta t \right] + \Delta t \sum_{i=K}^{K_2} i$$

and finally through the use of partial sums to

$$\sum_{i=K}^{K_2} t_i = (K_2 - K + 1) \left\{ t_K + \frac{\Delta t}{2} \left[(K_2 - K + 1) - 1 \right] \right\} \quad (\text{A.2.10})$$

where $K=1, 2, \dots, N$, $K_2 = K + K^*$ and where K^* is the number of points to be used in the curve fitting minus one.

Using the identity for t_i in Eq. (A.2.9), it follows that

$$\sum_{i=K}^{K_2} y_i t_i = t_{K-1} \sum_{i=K}^{K_2} y_i + \Delta t \sum_{i=K}^{K_2} (i - K + 1) y_i$$

and from Eq. (A.2.10)

$$\sum_{i=K}^{K_2} t_i \sum_{i=K}^{K_2} y_i = (K_2 - K + 1) \left\{ t_K + \frac{\Delta t}{2} \left[(K_2 - K + 1) - 1 \right] \right\} \sum_{i=K}^{K_2} y_i$$

which when substituted into the equation for Q (A.2.8) and reduced yields

$$Q = (K_2 - K + 1) \left\{ (t_{K-1} - t_K) \sum_K^{K_2} y_i + \Delta t \left[\sum_K^{K_2} (i - K + 1) y_i \right. \right. \\ \left. \left. - \frac{1}{2} \left\{ (K_2 - K + 1) - 1 \right\} \sum_K^{K_2} y_i \right] \right\}$$

which finally reduces to

$$Q = \frac{\Delta t}{2} (K_2 - K + 1) \sum_K^{K_2} \left[2(i - K) - (K_2 - K + 1) + 1 \right] y_i \quad (A.2.11)$$

We have now redefined the numerator Q and denominator D of Eq. (A.2.1) for use with equally spaced data. Substituting the values of Q and D into the equation for C_1 we get

$$C_1 = \left(\frac{6}{\Delta t} \right) \frac{\sum_{i=K}^{K_2} \left[2(i - K) - (K_2 - K + 1) + 1 \right] y_i}{\prod_{j=0}^2 \left[(K_2 - K + 1) + (j - 1) \right]} \quad (A.2.12)$$

Now that the coefficient C_1 has been re-evaluated in a form more suitable for computer application, we can also re-evaluate the y-intercept or coefficient C_0 .

From Eq. (A.1.1) we know that

$$\sum_{i=1}^N y_i = C_1 \sum_{i=1}^N t_i + C_o \sum_{i=1}^N (1) \quad (1)$$

can be expressed generally as

$$\sum_{i=K}^{K_2} y_i = C_1 \sum_{i=K}^{K_2} t_i + C_o \sum_{i=K}^{K_2} (1) \quad .$$

Solving for C_o from the latter equation we get

$$C_o = \frac{\sum_{i=K}^{K_2} y_i - C_1 \sum_{i=K}^{K_2} t_i}{(K_2 - K + 1)}$$

and since we have the expression

$$\sum_{i=K}^{K_2} t_i = (K_2 - K + 1) \left\{ t_K + \frac{\Delta t}{2} \left[(K_2 - K + 1) - 1 \right] \right\} \quad ,$$

from Eq. (A.2.10), it follows that by substitution

$$C_o = \frac{1}{(K_2 - K + 1)} \sum_{i=K}^{K_2} y_i - \frac{C_1}{2} \left\{ 2 t_K + \Delta t \left[(K_2 - K + 1) - 1 \right] \right\} \quad (A.2.13)$$

We have now derived two new equations for C_1 and C_o , Eqs. (A.2.12) and (A.2.13) respectively, which can be used to fit a given number of equally spaced points with a linear least squares approximation.

An application of these new equations for C_0 and C_1 is presented in the following section.

A.3 APPLICATION

This section pertains to Eqs. (A.2.12) and (A.2.13) and their application in the TAER WIND CONVERSION PROGRAM.

As mentioned previously in this report, nine equally spaced (by .1 second) TAER data points are used in the least squares curve fitting procedure of the TAER WIND CONVERSION PROGRAM. Therefore we know the following:

$$\sum_{i=K}^{K_2} (1) = (K_2 - K + 1) = 9$$

and

$$\Delta t = .1$$

Substituting these known quantities into Eqs. (A.2.12) and (A.2.13) respectively, we obtain the following equations.

$$C_1 = \frac{1}{6} \sum_{i=K}^{K_2} [i - K - 4] y_i \quad (A.3.1)$$

and

$$C_0 = \frac{1}{9} \sum_{i=K}^{K_2} y_i - C_1 t_{K+4} \quad (A.3.2)$$

where

$$t_{K+4} = t_K + .4$$

The equations for C_0 and C_1 above can now be applied to curve fitting the TAER data. Upon comparison of the above equations with the classical equations for C_0 and C_1 , Eqs. (A.1.3) and (A.1.4) respectively, one can see that the denominators have been eliminated so that they do not appear in the above equations. Another observation is that only the value of time at the midpoint of the nine points is actually used in the curve fitting.

The FORTRAN programming procedure using the above equations is presented in general by the following statements

```
C**      * X6 = 1./6. , X9 = 1./9.
DATA X6 /1.6666666E-01 /, X9 /1.1111111E-01 /
K2      = K + 8
K4      = K + 4
TK4     = TIME(K4)
SUM1    = 0.0
SUM0    = 0.0
DO 10 I = K,K2
SUM1    = SUM1 + FLOAT(I - K4)*Y(I)
10 SUM0 = SUM0 + Y(I)
C1      = X6 * SUM1
C0      = X9 * SUM0 - C1 * TK4
```

where TIME is the independent variable, Y is the dependent variable and K has the range: $1 \leq K \leq 1000$.

Results of applying the above procedure to the induced errors depicted in Fig. A-1, page A-3, are presented in Fig. A-2. Comparison of the two figures shows that the stray points P_1, P_2, P_3 and P_4 in Fig. A-1 have been eliminated using the new procedure.

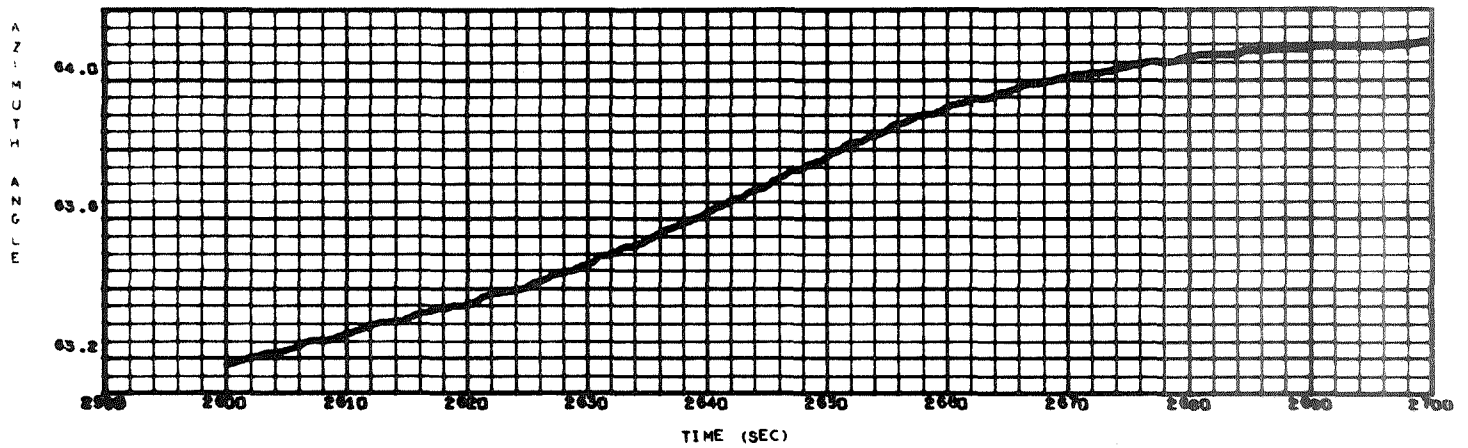


Fig. A-2 - Example of Removal of Induced Errors in Curve Fitting

Appendix B
PROGRAM LISTING

@FOR.S MAIN,MAIN
HVM 088-05/14-10:04 (0,)

MAIN PROGRAM

STORAGE USED: CODE(1) 001224; DATA(0) 000337; BLANK COMMON(2) 000000

COMMON BLOCKS:

0003 TAPEV 013724
0004 EDIT1 000003
0005 TRAN1 001750
0006 UNITS 000007

EXTERNAL REFERENCES (BLOCK, NAME)

0007 TAPE
0010 PLOTT
0011 CALCOF
0012 EDITM
0013 EDITL
0014 TRANS
0015 OUTPUT
0016 FILTER
0017 NINTR%
0020 NRDU\$
0021 NI02\$
0022 NWDU\$
0023 NI01\$
0024 NERR2\$
0025 NSTOP\$

STORAGE ASSIGNMENT (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001 000145 10L	0001 000455 100L	0001 000460 110L	0001 000465 120L	0001 000504 130L
0001 000556 150L	0001 000627 170L	0001 000652 180L	0001 000672 190L	0001 000176 20L
0001 000724 210L	0001 000743 220L	0001 001000 240L	0001 000304 2466	0001 000323 2566
0001 001013 260L	0001 001031 270L	0001 001076 280L	0001 000206 30L	0001 001153 300L
0001 001161 310L	0000 000073 320F	0000 000074 330F	0000 000171 340F	0000 000205 350F
0001 000561 350G	0001 000565 355G	0000 000213 360F	0000 000251 370F	0001 000631 3746
0000 000257 380F	0000 000262 390F	0001 000270 40L	0000 000274 400F	0000 000304 410F
0001 001036 4726	0001 000275 50L	0001 000372 80L	0001 000447 90L	0000 R 000035 A
0003 R 012574 AA	0003 R 004230 AZ	0000 R 000000 C1	0000 R 000001 C2	0000 R 000033 ORT
0000 R 000011 DUM	0000 R 000036 E	0003 R 006344 ELEV	0000 I 000003 FILE	0000 I 000004 FNUF
0000 I 000037 I	0000 I 000002 ISAD	0004 I 000002 ICOFER	0000 I 000022 IEDIT	0000 I 000012 IERR
0000 I 000010 IFILTR	0000 I 000014 IFIRST	0004 I 000001 IFLAGN	0006 I 000006 IFOR	0000 I 000056 IM1
0006 I 000005 IPL0T	0000 I 000013 IPLOTT	0000 I 000005 ISKIP	0000 I 000053 ISPL	0000 I 000024 IT
0000 I 000007 ITRAN	0000 I 000032 K	0004 I 000000 KOUNT	0000 I 000031 L	0000 I 000054 LA
0000 I 000055 LA1	0000 I 000045 LH	0000 I 000025 M	0000 I 000020 MAXI	0000 I 000017 MAXP
0000 I 000047 MJ	0000 I 000015 MNEXT	0000 I 000030 N	0006 I 000000 NO1	0006 I 000001 NO2
0006 I 000002 NO3	0006 I 000003 NO4	0006 I 000004 NFILES	0000 I 000026 NM	0000 I 000016 NP
0000 I 000021 NR	0000 I 000023 NREC	0000 I 000046 NU	0000 I 000006 NWPREF	0000 R 000034 R
0003 R 002114 RANGE	0003 R 000000 T	0003 R 010460 TIME	0005 R 000000 WARAY	0000 R 000037 XM1

0000 R 000050 XP1
0000 R 000041 ZM1

0000 R 000042 XSA
0000 R 000052 ZP1

0000 R 000040 YM1
0000 R 000044 ZSA

0000 R 000051 YP1

0000 R 000043 YSA

```

00100 1* C      T A E R   W I N D   C O N V E R S I O N   P R O G R A M      TER 10
00100 2* C                                     - T A R W O N -                TER 20
00100 3* C                                     - T A R W O N -                TER 30
00100 4* C                                     - T A R W O N -                TER 40
00100 5* C      DEVELOPED BY JOHN TYSON                                TER 50
00100 6* C      LOCKHEED-HUNTSVILLE                                TER 60
00100 7* C      DEPT 54/50 EXT 411                                    TER 70
00100 8* C      MAY, 1971                                           TER 80
00100 9* C                                                         TER 90
00100 10* C                                                        TER 100
00100 11* C      * ALL TAER DATA RECORDS ARE NOT USED. IF THE DO-LOOP READING * TER 110
00100 12* C      * INPUT DATA DOES NOT COMPLETE NORMALLY, PROGRAM PROCESSING * TER 120
00100 13* C      * FOR THAT FILE WILL TERMINATE AND PROCESSING OF THE NEXT FILE * TER 130
00100 14* C      * WILL COMMENCE.                                         * TER 140
00100 15* C      * ISKIP - NUMBER OF FILES TO BE SKIPPED ON THE INPUT TAPE   * TER 150
00100 16* C      * BEFORE PROCESSING IS BEGUN.                             * TER 160
00100 17* C      * NREC - VARIABLE INPUT VIA INPUT CARD TO INDICATE NUMRER OF * TER 170
00100 18* C      * RECORDS TO SKIP ON THAT PARTICULAR FILE DUE TO WILD POINTS. * TER 180
00100 19* C                                                         TER 190
00100 20* C      ***** EDIT PROCEDURE*****                          TER 200
00100 21* C      0 - DO NOT EDIT                                           TER 210
00100 22* C      1 - EDIT MIDPOINTS AND LAST POINTS.                     TER 220
00100 23* C      2 - EDIT LAST POINTS ONLY.                               TER 230
00100 24* C                                                         TER 240
00100 25* C      ***** PLOT PROCEDURE *****                          TER 250
00100 26* C      IPLOT = 0 - NO PLOTS.                                     TER 260
00100 27* C      = 1 - PLOT TAER DATA ONLY                               TER 270
00100 28* C      = 2 - PLOT ONE SEC VEL ONLY.                             TER 280
00100 29* C      = 3 - PLOT BOTH 1 AND 2.                                  TER 290
00101 30* C      COMMON /TAPEV/ T(1100),RANGE(1100),AZ(1100),ELEV(1100),TIME(1100),TER 300
00101 31* C      1AA(600)                                                TER 310
00103 32* C      COMMON /EDIT1/ KOUNT,IFLAGN,ICOFEF                       TER 320
00104 33* C      COMMON /TRAN1/ VARAY(1000)                               TER 330
00105 34* C      COMMON /UNITS/ ND1,ND2,ND3,ND4,NFILES,IPLCT,IFOR        TER 340
00106 35* C      DATA C1/.91440183/,C2/.01745329/,ISAD/O/              TER 350
00112 36* C      INTEGER FILE,FNUM                                         TER 360
00113 37* C      READ (5,320) ISKIP,ND1,NFILES,NWPREC,ND3,ITRAN,ND2,IFILTR,ND4,IPLCTER 370
00113 38* C      IT,IFOR                                                  TER 380
00113 39* C                                                         TER 390
00130 40* C      IF (ND1.EQ.0) ND1=8                                       TER 400
00132 41* C      IF (ND2.EQ.0) ND2=9                                       TER 410
00134 42* C      IF (ND3.EQ.0) ND3=10                                      TER 420
00136 43* C      IF (ND4.EQ.0) ND4=11                                      TER 430
00140 44* C      IF (IFILTR.NE.0) ITRAN=1                                  TER 440
00140 45* C                                                         TER 450
00142 46* C      WRITE (F,330) ISKIP,ND1,NFILES,NWPREC,ITRAN,ND2,IFILTR,ND4,IPLCT,ITER 460
00142 47* C      1FOR                                                    TER 470
00142 48* C      * INITIAL REWIND OF UNITS ND1 (INPUT) AND ND2 (EDITED OUTPUT). * TER 480
00156 49* C      CALL TAPE (ND1,3,0,DUM,IERR)                             TER 490
00157 50* C      IF (ITRAN.NE.0) CALL TAPE (ND2,3,0,DUM,IERR)           TER 500

```

00161	51*		IF (ISKIP.EQ.0) GO TO 10	TER	510
00161	52*	C	* BEGIN PROCESSING FILE NUMBER 'ISKIP+1'. *	TER	520
00163	53*		CALL TAPE (ND1,7,ISKIP,DUM,IERR)	TER	530
00164	54*		IF (IERR.NE.0) WRITE (6,370) IERR	TER	540
00164	55*	C		TER	550
00170	56*		IPLOTT=0	TER	560
00171	57*		IF (IPL0T.E0.1.0R.IPL0T.E0.3) IPLOTT=1	TER	570
00173	58*	10	FILE=0	TER	580
00174	59*		IFIRST=0	TER	590
00175	60*		IF (NWPREC.E0.60) GO TO 20	TER	600
00177	61*		MNEXT=101	TER	610
00200	62*		NP=100	TER	620
00201	63*		MAXP=1100	TER	630
00202	64*		MAXI=11	TER	640
00203	65*		IF (NWPREC.E0.600) GO TO 30	TER	650
00205	66*		WRITE (6,380) NWPREC	TER	660
00210	67*		GO TO 310	TER	670
00211	68*	20	MNEXT=11	TER	680
00212	69*		NP=10	TER	690
00213	70*		MAXP=1010	TER	700
00214	71*		MAXI=101	TER	710
00214	72*	C		TER	720
00214	73*	C	*****	TER	730
00214	74*	C	*****	TER	740
00215	75*	30	NR=0	TER	750
00216	76*		FILE=FILE+1	TER	760
00217	77*		IF (IPLOTT.E0.1) CALL PLOTT (1)	TER	770
00221	78*		READ (5,320) IEDIT,NREC	TER	780
00221	79*	C	* SKIP NREC RECORDS OF ND1 BECAUSE OF WILD POINT. *	TER	790
00225	80*		IF (NREC.NE.0) CALL TAPE (ND1,8,NREC,DUM,IERR)	TER	800
00227	81*		WRITE (6,340) IEDIT,FILE,ND3	TER	810
00227	82*	C	* INITIAL REWIND OF UNIT ND3 (EDITED TAER OUTPUT). *	TER	820
00234	83*		IF (IEDIT.E0.0) GO TO 40	TER	830
00236	84*		IF (IFIRST.E0.1) GO TO 40	TER	840
00240	85*		CALL TAPE (ND3,3,0,DUM,IERR)	TER	850
00241	86*		IFIRST=1	TER	860
00242	87*	40	IT=-1	TER	870
00243	88*		M=1	TER	880
00244	89*		NM=1	TER	890
00244	90*	C		TER	900
00244	91*	C	*****	TER	910
00245	92*	50	DO 70 I=NM,MAXI	TER	920
00250	93*		N=1	TER	930
00251	94*		CALL TAPE (ND1,2,NWPREC,AA,IERR)	TER	940
00252	95*		IF (IERR-2) 60,290,300	TER	950
00255	96*	60	DO 70 L=1,NP	TER	960
00260	97*		IT=IT+1	TER	970
00261	98*		TIME(M)=.1*FLOAT(IT)	TER	980
00262	99*		T(M)=AA(N+1)	TER	990
00263	100*		RANGE(M)=AA(N+2)	TER	1000
00264	101*		AZ(M)=AA(N+3)	TER	1010
00265	102*		ELEV(M)=AA(N+4)	TER	1020
00266	103*		N=N+6	TER	1030
00267	104*	70	M=M+1	TER	1040
00267	105*	C		TER	1050
00272	106*		IF (IPLOTT.E0.1) CALL PLOTT (2)	TER	1060

```

00274 107*      KOUNT=0                      TER 1070
00275 108*      IFLAGN=1                    TER 1080
00276 109*      ICOFER=0                    TER 1090
00277 110*      K=0                          TER 1100
00277 111*      C      *****                    TER 1110
00300 112*      80 K=K+1                      TER 1120
00300 113*      C      DRT IS THE TIME INTERVAL    TER 1130
00301 114*      DRT=T(K+1)-T(K)                TER 1140
00302 115*      IF (DRT.GT..11.OR.DRT.LT..099) WRITE (6,390) K,T(K),DRT    TER 1150
00310 116*      IF (IEDIT.EQ.0) GO TO 110        TER 1160
00312 117*      CALL CALCOF (K)                  TER 1170
00313 118*      GO TO (90,100), IEDIT            TER 1180
00314 119*      90 CALL EDITM (K+4)              TER 1190
00315 120*      100 CALL EDITL (K)              TER 1200
00316 121*      110 IF (K.EQ.1000) GO TO 120     TER 1210
00320 122*      GO TO 80                        TER 1220
00320 123*      C      *****                    TER 1230
00321 124*      120 IF (IPLOTT.EQ.1) CALL PLOTT (3)    TER 1240
00323 125*      IF (KOUNT.EQ.0) GO TO 130        TER 1250
00325 126*      WRITE (6,400) KOUNT              TER 1260
00330 127*      130 IF (ITRAN+IEDIT) 260,260,140    TER 1270
00330 128*      C                                  TER 1280
00333 129*      140 IF (ITRAN.EQ.0) GO TO 150      TER 1290
00335 130*      P=C1*RANGE(1)                    TER 1300
00336 131*      A=C2*A7(1)                      TER 1310
00337 132*      E=C2+ELEV(1)                    TER 1320
00340 133*      CALL TRANS (R,A,E,XM1,YM1,ZM1)    TER 1330
00341 134*      R=C1*RANGE(2)                    TER 1340
00342 135*      A=C2*A7(2)                      TER 1350
00343 136*      E=C2+ELEV(2)                    TER 1360
00344 137*      CALL TRANS (R,A,E,XSA,YSA,ZSA)    TER 1370
00345 138*      LN=3                             TER 1380
00346 139*      150 NU=1                         TER 1390
00346 140*      C      *****                    TER 1400
00347 141*      DO 250 I=1,4                     TER 1410
00352 142*      IF (IEDIT.EQ.0) GO TO 170        TER 1420
00354 143*      DO 160 L=1,250                   TER 1430
00357 144*      MJ=4*L-3                         TER 1440
00360 145*      WARAY(MJ)=T(NU)                  TER 1450
00361 146*      WARAY(MJ+1)=RANGE(NU)            TER 1460
00362 147*      WARAY(MJ+2)=AZ(NU)               TER 1470
00363 148*      WARAY(MJ+3)=ELEV(NU)             TER 1480
00364 149*      160 NU=NU+1                      TER 1490
00364 150*      C      * WRITE EDITED TRAE ON UNIT NO2. *    TER 1500
00366 151*      CALL TAPE (NO3,1,1000,WARAY,IERR)    TER 1510
00367 152*      IF (ICOFER.NE.0) CALL OUTPUT (30H PRINTOUT OF .1 SEC TAER DATA )    TER 1520
00371 153*      IF (ITRAN.EQ.0) GO TO 240        TER 1530
00371 154*      C                                  TER 1540
00371 155*      C      * GAP OCCURRENCE AT LOCN LN CAUSES CURRENT VALUES *    TER 1550
00371 156*      C      * AT LOCNS MJ,MJ+1,MJ+2 TO BE CHANGED TO -10**6 *    TER 1560
00373 157*      170 DO 230 L=1,250               TER 1570
00376 158*      MJ=4*L-3                         TER 1580
00377 159*      IF (IEDIT.EQ.0) GO TO 190        TER 1590
00401 160*      IF (IBAD.NE.0) GO TO 180         TER 1600
00403 161*      IF (RANGE(LN).GT.-1.E+5) GO TO 190    TER 1610
00405 162*      180 IBAD=IBAD+1                 TER 1620

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00406 163*      WARAY(MJ)=-1.E+6                      TER 1630
00407 164*      WARAY(MJ+1)=-1.E+6                    TER 1640
00410 165*      WARAY(MJ+2)=-1.E+6                    TER 1650
00411 166*      WARAY(MJ+3)=-1.E+6                    TER 1660
00412 167*      IF (IBAD.NE.1) GO TO 190              TER 1670
00414 168*      XP1=0.                                TER 1680
00415 169*      YP1=0.                                TER 1690
00416 170*      ZP1=0.                                TER 1700
00417 171*      GO TO 220                              TER 1710
00420 172*      190 R=C1*RANGE(LN)                     TER 1720
00421 173*      A=C2*AZ(LN)                           TER 1730
00422 174*      E=C2*ELEV(LN)                         TER 1740
00423 175*      CALL TRANS (R,A,E,XP1,YP1,ZP1)        TER 1750
00424 176*      IF (IBAD.EQ.0) GO TO 210              TER 1760
00426 177*      IF (IBAD-2) 220,220,200              TER 1770
00431 178*      200 IBAD=0                             TER 1780
00432 179*      GO TO 220                              TER 1790
00433 180*      210 WARAY(MJ)=ZSA                      TER 1800
00434 181*      WARAY(MJ+1)=(XP1-XM1)*5.0             TER 1810
00435 182*      WARAY(MJ+2)=(YP1-YM1)*5.0             TER 1820
00436 183*      WARAY(MJ+3)=(ZP1-ZM1)*5.0             TER 1830
00437 184*      220 XM1=XSA                            TER 1840
00440 185*      YM1=YSA                              TER 1850
00441 186*      ZM1=ZSA                              TER 1860
00442 187*      XSA=XP1                              TER 1870
00443 188*      YSA=YP1                              TER 1880
00444 189*      ZSA=ZP1                              TER 1890
00445 190*      230 LN=LN+1                            TER 1900
00445 191*      C                                     TER 1910
00445 192*      C      * WRITE ZUVW ON UNIT NO2. *      TER 1920
00447 193*      CALL TAPE (ND2,1,1000,WARAY,IEPR)     TER 1930
00450 194*      IF (ICOFER.NE.0) CALL OUTPUT (30H PRINTOUT OF .1 SEC VEL DATA ) TER 1940
00452 195*      240 NR=NR+1                            TER 1950
00453 196*      WRITE (6,350) NR,FILE                 TER 1960
00457 197*      250 CONTINUE                          TER 1970
00457 198*      C      *****                      TER 1980
00461 199*      260 CONTINUE                          TER 1990
00462 200*      IF (IPLOTT.EQ.0) GO TO 270             TER 2000
00464 201*      ISPL=MOD(NR,80)                       TER 2010
00465 202*      IF (ISPL.NE.0) GO TO 270             TER 2020
00467 203*      CALL PLOTT (4)                        TER 2030
00470 204*      CALL PLOTT (1)                        TER 2040
00470 205*      C                                     TER 2050
00470 206*      C      THE CARRY OVER OF THE LAST 'NP' POINTS. TER 2060
00471 207*      270 DO 280 LA=1001,MAXP               TER 2070
00474 208*      LA1=LA-1000                           TER 2080
00475 209*      ELEV(LA1)=ELEV(LA)                   TER 2090
00476 210*      AZ(LA1)=AZ(LA)                       TER 2100
00477 211*      T(LA1)=T(LA)                         TER 2110
00500 212*      RANGE(LA1)=RANGE(LA)                 TER 2120
00501 213*      280 TIME(LA1)=TIME(LA)                TER 2130
00503 214*      M=MNEXT                              TER 2140
00504 215*      NM=2                                  TER 2150
00505 216*      IT=TIME(NP)*10.+.1                   TER 2160
00506 217*      GO TO 50                              TER 2170
00506 218*      C      *****                      TER 2180

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00506 219* C TER 2190
00506 220* C * END FILE ONLY. * TER 2200
00507 221* 290 IF (ITRAN.NE.0) CALL TAPE (ND2,6,0,DUM,IERR) TER 2210
00511 222* IF (IEDIT.NE.0) CALL TAPE (ND3,6,0,DUM,IERR) TER 2220
00511 223* C FOR INCOMPLETE NEW RECORD LENGTH TER 2230
00513 224* IM1=I-1 TER 2240
00514 225* FNUM=ISKIP+FILE TER 2250
00515 226* WRITE (6,360) FNUM,IM1,NR TER 2260
00522 227* IF (IPLOTT.EQ.1) CALL PLOTT (4) TER 2270
00524 228* IF (FILE.GE.NFILES) GO TO 310 TER 2280
00526 229* GO TO 30 TER 2290
00526 230* C ***** TER 2300
00526 231* C ***** TER 2310
00526 232* C TER 2320
00527 233* 300 WRITE (6,410) IERR TER 2330
00527 234* C * REWIND UNIT ND1. * TER 2340
00532 235* 310 CALL TAPE (ND1,5,0,DUM,IERR) TER 2350
00532 236* C * CLOSE UNITS ND2 AND ND3 W/ENDFILE AND REWIND. * TER 2360
00533 237* IF (ITRAN.NE.0) CALL TAPE (ND2,4,0,DUM,IERR) TER 2370
00535 238* IF (IEDIT.NE.0) CALL TAPE (ND3,4,0,DUM,IERR) TER 2380
00537 239* IF (IFILTR.GT.0) CALL FILTER TER 2390
00541 240* STOP TER 2400
00541 241* C TER 2410
00542 242* 320 FORMAT (13I6) TER 2420
00543 243* 330 FORMAT (6H1 SKIP I2,16H FILES FROM TAPE I2,18H BEFORE PROCESSING/2X4 TER 2430
00543 244* 10HNUMBER OF FILES TO BE PROCESSED IS I4/2X40HNUMBER OF WORDS TER 2440
00543 245* 2PER PHYSICAL RECORD IS I4/2X7HITRAN =I2,45H-OUTPUT .1 SECOND VELO TER 2450
00543 246* 3CITY DATA(2UVW) ON UNIT I5/2X7HIFILTR=I2,40H-OUTPUT ONE SECOND VELO TER 2460
00543 247* 4CITY DATA ON UNIT I5/2X66HPLOTTING=(0,NONE),(1,TAER),(2,1 SEC VEL), TER 2470
00543 248* 5(3,BOTH 1 AND 2) IPLOT =I2/2X5HIFOR=I2) TER 2480
00544 249* 340 FORMAT (2X7HIEDIT =I2,20H FOR PROCESSING FILE I2,20H OUTPUT DATA ON TER 2490
00544 250* 1 UNIT I3) TER 2500
00545 251* 350 FORMAT (/14H END OF RECORD I3,5H FILE I3/) TER 2510
00546 252* 360 FORMAT (/27H PROCESSING OF FILE NUMBER I2,27H OF INPUT TAPE IS COTER 2520
00546 253* 1MPLETE./15H THE REMAINING I3,23H RECORDS WERE NOT USED./52H THE NUTER 2530
00546 254* 2MBER OF RECORDS CREATED ON OUTPUT TAPE(S) IS I4/1H1) TER 2540
00547 255* 370 FORMAT (28H ERROR WHILE SKIPPING FILES-I3) TER 2550
00550 256* 380 FORMAT (8H NWPREC=I5) TER 2560
00551 257* 390 FORMAT (/75X18HTAPE TIME ERROR T(I4,3H) =F11.2,7H DRT =F11.2) TER 2570
00552 258* 400 FORMAT (41H AT THE END OF 1000 POINT PROCESS, KOUNT=I5) TER 2580
00553 259* 410 FORMAT (/10X20HTAPE ERROR - IERR = I2) TER 2590
00554 260* END TER 2600

```

END OF COMPILATION:

NO DIAGNOSTICS.

FOR,S CALCOF,CALCOF
HVH 080-05/14-10:04 (0.)

SUBROUTINE CALCOF ENTRY POINT 000623
EDITM ENTRY POINT 000637
EDITL ENTRY POINT 000644
TRANS ENTRY POINT 000660

STORAGE USED: CODE(1) 000677; DATA(0) 000234; BLANK COMMON(2) 000000

COMMON BLOCKS:

0003 TAPEV 013724
0004 EDIT1 000003

EXTERNAL REFERENCES (BLOCK, NAME)

0005 NWDUS
0006 NJ02\$
0007 COS
0010 SIN
0011 ATAN
0012 SORT
0013 NERR3\$

STORAGE ASSIGNMENT (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001	000503	100L	0000	000102	110F	0000	000105	120F	0001	000022	124G	0000	000117	130F
0000	000131	140F	0000	000143	150F	0000	000155	160F	0000	000167	170F	0001	000200	20L
0001	000221	30L	0001	000455	305G	0001	000242	40L	0001	000402	50L	0001	000423	60L
0001	000444	70L	0001	000500	90L	0003	012574	AA	0003 R	004230	AZ	0000 R	000041	C
0000 R	000057	COEFO	0000 R	000060	COEFOA	0000 R	000061	COEFOE	0000 R	000054	COEF1	0000 R	000055	COEF1A
0000 R	000056	COEF1E	0000 R	000042	C1	0000 R	000043	C2	0000 R	000044	D	0000 R	000066	DIF
0000 R	000073	DIFO	0000 R	000067	DIF1	0000 R	000074	DIF10	0000 R	000070	DIF2	0000 R	000075	DIF20
0000 R	000045	D1	0000 R	000046	D2	0003 R	000344	ELEV	0004 I	000002	ICOFER	0000 I	000076	IFLAGL
0004 I	000001	IFLAGN	0000	000210	INLPS	0000 I	000052	J	0000 I	000077	KK	0000 I	000100	KKK9
0004 I	000000	KOUNT	0000 I	000071	K10	0000 I	000051	K2	0000 I	000047	K4	0003 R	002114	RANGE
0000 R	000040	RE	0000 R	000000	SAVE	0003	000000	T	0003 R	010460	TIME	0000 R	000062	TIMK4
0000 R	000072	TIM10	0000 R	000050	TK4	0000 R	000064	X	0000 R	000053	XJK4	0000 R	000036	X6
0000 R	000037	X9	0000 R	000063	Y	0000 R	000065	Z	0000 R	000101	ZC3			

00101	1*	SUBROUTINE CALCOF (K)	COF	10
00103	2*	COMMON /TAPEV/ T(1100),RANGE(1100),AZ(1100),ELEV(1100),TIME(1100),COF	COF	20
00103	3*	1AA(600)	COF	30
00104	4*	COMMON /EDIT1/ KOUNT,IFLAGN,ICOFER	COF	40
00105	5*	DIMENSION SAVE(10,3)	COF	50
00106	6*	DATA X6/1.6666666E-01/,X9/1.1111111E-01/,RE/6373334./	COF	60
00106	7*	C	COF	70
00106	8*	C * TOLERANCES =(FACTOR)*(RMS ERROR) *	COF	80

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00106 9* C * -RMS ERROR- * COF 90
00106 10* C * SLANT RANGE = 5.00 YARDS * COF 100
00106 11* C * AZIMUTH = 0.01 DEGREES * COF 110
00106 12* C * ELEVATION = 0.01 DEGREES * COF 120
00106 13* C COF 130
00112 14* C=0. COF 140
00113 15* C1=0. COF 150
00114 16* C2=0. COF 160
00115 17* D=0. COF 170
00116 18* D1=0. COF 180
00117 19* D2=0. COF 190
00120 20* K4=K+4 COF 200
00121 21* TK4=TIME(K4) COF 210
00122 22* K2=K+8 COF 220
00123 23* DO 10 J=K,K2 COF 230
00126 24* C=C+RANGE(J) COF 240
00127 25* C1=C1+AZ(J) COF 250
00130 26* C2=C2+ELEV(J) COF 260
00131 27* XJK4=FLCAT(J-K4) COF 270
00132 28* D=D+XJK4*RANGE(J) COF 280
00133 29* D1=D1+XJK4*AZ(J) COF 290
00134 30* 10 D2=D2+XJK4*ELEV(J) COF 300
00136 31* COEF1=X6*D COF 310
00137 32* COEF1A=X6*D1 COF 320
00140 33* COEF1E=X6*D2 COF 330
00141 34* COEF0=X9*C-TK4*COEF1 COF 340
00142 35* COEF0A=X9*C1-TK4*COEF1A COF 350
00143 36* COEF0E=X9*C2-TK4*COEF1E COF 360
00144 37* RETURN COF 370
00144 38* C COF 380
00145 39* ENTRY EDITM(KM) COF 390
00147 40* TIMK4=TIME(KM) COF 400
00150 41* Y=COEF0+COEF1*TIMK4 COF 410
00151 42* X=COEF0A+COEF1A*TIMK4 COF 420
00152 43* Z=COEF0E+COEF1E*TIMK4 COF 430
00152 44* C DIF IS THE RANGE DIFFERENCE FOR MID-POINT COF 440
00152 45* C DIF1 IS THE AZIMUTH DIFFERENCE FOR MID-POINT COF 450
00152 46* C DIF2 IS THE ELEVATION DIFFERENCE FOR MID-POINT COF 460
00153 47* DIF=ABS(RANGE(KM)-Y) COF 470
00154 48* DIF1=ABS(AZ(KM)-X) COF 480
00155 49* DIF2=ABS(ELEV(KM)-Z) COF 490
00156 50* IF ((DIF.LE.15.0).AND.(DIF1.LE.0.03).AND.(DIF2.LE.0.03)) GO TO 40 COF 500
00160 51* ICONF=1 COF 510
00161 52* IF (DIF.LE.15.0) GO TO 20 COF 520
00163 53* WRITE (6,120) RANGE(KM),Y,TIME(KM),DIF COF 530
00171 54* RANGE(KM)=Y COF 540
00172 55* 20 IF (DIF1.LE.0.03) GO TO 30 COF 550
00174 56* WRITE (6,130) AZ(KM),X,TIME(KM),DIF1 COF 560
00202 57* AZ(KM)=Y COF 570
00203 58* 30 IF (DIF2.LE.0.03) GO TO 40 COF 580
00205 59* WRITE (6,140) ELEV(KM),Z,TIME(KM),DIF2 COF 590
00213 60* ELEV(KM)=Z COF 600
00214 61* 40 RETURN COF 610
00214 62* C COF 620
00215 63* ENTRY EDITL(K) COF 630
00217 64* K10=K+9 COF 640

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00220 65*      TIM10=TIME(K10)                      COF 650
00221 66*      Y=COEF0+COEF1*TIM10                 COF 660
00222 67*      X=COEF0A+COEF1A*TIM10                COF 670
00223 68*      Z=COEF0F+COEF1F*TIM10                COF 680
00223 69*      C      DIF0 IS THE RANGE DIFFERENCE FOR LOOK-A-HEAD COF 690
00223 70*      C      DIF10 IS THE AZIMUTH DIFFERENCE FOR LOOK-A-HEAD COF 700
00223 71*      C      DIF20 IS THE ELEVATION DIFFERENCE FOR LOOK-A-HEAD COF 710
00224 72*      DIF0=ABS(RANGE(K10)-Y)                COF 720
00225 73*      DIF10=ABS(AZ(K10)-X)                 COF 730
00226 74*      DIF20=ABS(ELEV(K10)-Z)                COF 740
00227 75*      IFLAGL=IFLAGN                        COF 750
00230 76*      IFLAGN=0                             COF 760
00231 77*      IF ((DIF0.GT.100.) .OR. (DIF10.GT..15) .OR. (DIF20.GT..15)) IFLAGN=1 COF 770
00233 78*      IF ((IFLAGN+IFLAGL).NE.2) GO TO 90     COF 780
00235 79*      KOUNT=KOUNT+1                         COF 790
00236 80*      ICOFER=1                             COF 800
00237 81*      WRITE (6,110) KOUNT                   COF 810
00242 82*      SAVE(KOUNT,1)=RANGE(K10)               COF 820
00243 83*      SAVE(KOUNT,2)=AZ(K10)                 COF 830
00244 84*      SAVE(KOUNT,3)=ELEV(K10)               COF 840
00245 85*      IF (DIF0.LE.100.0) GO TO 50           COF 850
00247 86*      WRITE (6,150) RANGE(K10),Y,TIME(K10),DIF0 COF 860
00255 87*      RANGE(K10)=Y                          COF 870
00256 88*      50 IF (DIF10.LE.0.15) GO TO 60         COF 880
00260 89*      WRITE (6,150) AZ(K10),X,TIME(K10),DIF10 COF 890
00266 90*      AZ(K10)=X                             COF 900
00267 91*      60 IF (DIF20.LE.0.15) GO TO 70         COF 910
00271 92*      WRITE (6,170) ELEV(K10),Z,TIME(K10),DIF20 COF 920
00277 93*      ELEV(K10)=Z                           COF 930
00300 94*      70 CONTINUE                           COF 940
00301 95*      IF (KOUNT.NE.10) GO TO 100            COF 950
00303 96*      KK=K10-10                             COF 960
00304 97*      DO 30 KKK9=1,10                       COF 970
00307 98*      KK=KK+1                               COF 980
00310 99*      RANGE(KK)=SAVE(KKK9,1)                 COF 990
00311 100*     AZ(KK)=SAVE(KKK9,2)                     COF 1000
00312 101*     80 ELEV(KK)=SAVE(KKK9,3)                COF 1010
00314 102*     K=K-1                                  COF 1020
00315 103*     RANGE(K)=-1.E+6                       COF 1030
00316 104*     AZ(K)=-1.E+6                          COF 1040
00317 105*     ELEV(K)=-1.E+6                        COF 1050
00320 106*     90 IFLAGN=1                            COF 1060
00321 107*     KOUNT=0                                COF 1070
00321 108*     C                                       COF 1080
00322 109*     100 RETURN                             COF 1090
00322 110*     C                                       COF 1100
00323 111*     ENTRY TRANS(R,A,EL,XT,YT,ZT)          COF 1110
00325 112*     X=R*COS(EL)*SIN(A)                    COF 1120
00326 113*     Y=R*COS(EL)*COS(A)                    COF 1130
00327 114*     ZC3=R*SIN(EL)+RE                      COF 1140
00330 115*     XT=RE*ATAN(X/ZC3)                      COF 1150
00331 116*     YT=RE*ATAN(Y/SQRT(X**2+ZC3**2))        COF 1160
00332 117*     ZT=SQRT(X**2+ZC3**2+Y**2)-RE          COF 1170
00333 118*     RETURN                                COF 1180
00333 119*     C                                       COF 1190
00334 120*     110 FORMAT (7H KOUNT=15)              COF 1200

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00335	121*	120	FORMAT (7H RANGE=F13.5,3H Y=F13.5,6H TIME=F12.2,7H DIF =F13.5)	COF 1210
00336	122*	130	FORMAT (7H AZ =F13.5,3H X=F13.5,6H TIME=F12.2,7H DIF1 =F13.5)	COF 1220
00337	123*	140	FORMAT (7H ELEV =F13.5,3H Z=F13.5,6H TIME=F12.2,7H DIF2 =F13.5)	COF 1230
00340	124*	150	FORMAT (7H RANGE=F13.5,3H Y=F13.5,6H TIME=F12.2,7H DIF0 =F13.5)	COF 1240
00341	125*	160	FORMAT (7H AZ =F13.5,3H X=F13.5,6H TIME=F12.2,7H DIF10=F13.5)	COF 1250
00342	126*	170	FORMAT (7H ELEV =F13.5,3H Z=F13.5,6H TIME=F12.2,7H DIF20=F13.5)	COF 1260
00343	127*		END	COF 1270

END OF COMPILATION:

NO DIAGNOSTICS.

@FOR,S OUTPUT,OUTPUT
HVM 088-05/14-10:05 (0,)

SUBROUTINE OUTPUT ENTRY POINT 000340
TAPE ENTRY POINT 000345

STORAGE USED: CODE(1) 000411; DATA(0) 000040; BLANK COMMON(2) 000000

COMMON BLOCKS:

0003 TRAN1 001750
0004 UNITS 000007

EXTERNAL REFERENCES (BLOCK, NAME)

0005 WRITER
0006 REDTPR
0007 OPEN
0010 CLOSE
0011 SKFRIN
0012 SKRBRIN
0013 NWDUS
0014 NI01\$
0015 NI02\$
0016 NERR2\$
0017 NWRUS
0020 NRRUS
0021 NWEF\$
0022 NREW\$
0023 NERR3\$

STORAGE ASSIGNMENT (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001 000214 100L	0001 000007 110G	0001 000224 110L	0001 000015 115G	0001 000234 120L
0001 000041 124G	0001 000253 130L	0001 000273 140L	0001 000276 150L	0001 000304 160L
0001 000312 170L	0001 000244 173G	0000 000007 180F	0000 000010 190F	0001 000065 20L
0001 000264 203G	0001 000103 30L	0001 000117 40L	0001 000137 50L	0001 000152 60L
0001 000162 70L	0001 000171 80L	0001 000205 90L	0000 I 000000 I	0000 I 000004 IER
0004 I 000006 IFOR	0000 I 000001 IJ	0000 000021 INJP\$	0004 000005 IPL0T	0000 I 000002 J
0004 I 000000 N01	0004 000001 N02	0004 000002 N03	0004 000003 N04	0004 000004 NFILES
0000 I 000006 NJ	0000 I 000003 NW	0000 I 000005 NWR	0003 R 000000 WARAY	

00101	1*	SUBROUTINE OUTPUT (NAME)	OUT	10
00103	2*	COMMON /TRAN1/ WARAY(1000)	OUT	20
00104	3*	COMMON /UNITS/ N01,N02,N03,N04,NFILES,IPL0T,IFOR	OUT	30
00105	4*	DIMENSION NAME(5)	OUT	40
00106	5*	WRITE (6,180) NAME	OUT	50
00114	6*	DO 10 I=1,1000,12	OUT	60
00117	7*	IJ=I+11	OUT	70

00120	8*	IF (IJ.GT.1000) IJ=1000	OUT	80
00122	9*	10 WRITE (6,190) (WARRAY(J),J=1,IJ)	OUT	90
00131	10*	RETURN	OUT	100
00131	11*	C	OUT	110
00132	12*	ENTRY TAPE(NT,IOP,IARG,ARRAY,IERR)	OUT	120
00134	13*	DIMENSION ARRAY(1)	OUT	130
00134	14*	C	OUT	140
00134	15*	C ** IOP = 1 - WRITE	OUT	150
00134	16*	C ** IOP = 2 - READ	OUT	160
00134	17*	C ** IOP = 3 - OPEN W/REWIND	OUT	170
00134	18*	C ** IOP = 4 - CLOSE W/ENDFILE AND REWIND	OUT	180
00134	19*	C ** IOP = 5 - REWIND ONLY	OUT	190
00134	20*	C ** IOP = 6 - END FILE ONLY	OUT	200
00134	21*	C ** IOP = 7 - SKIP FILES	OUT	210
00134	22*	C ** IOP = 8 - SKIP RECORDS	OUT	220
00134	23*	C	OUT	230
00134	24*	C **	**OUT	240
00134	25*	C ** IFOR = 0 - NON FORTRAN OUTPUT ON 1108 TAPE DEVICES.	**OUT	250
00134	26*	C ** IFOR = 1 - FORTRAN OUTPUT ON 1108 FASTRAND DEVICES.	**OUT	260
00134	27*	C **	**OUT	270
00135	28*	IERR=1	OUT	280
00136	29*	NW=IARG	OUT	290
00137	30*	IF (ND1.EQ.NT) GO TO 20	OUT	300
00141	31*	IF (IFOR.EQ.1) GO TO 30	OUT	310
00143	32*	20 GO TO (40,50,60,70,80,90,100,110), IOP	OUT	320
00143	33*	C	OUT	330
00144	34*	30 GO TO (120,130,150,140,150,160), IOP	OUT	340
00144	35*	C *NON-FORTRAN*	OUT	350
00145	36*	40 CALL WRITER (NT,2,IER,NW,ARRAY)	OUT	360
00146	37*	IF (IER.EQ.2) GO TO 170	OUT	370
00150	38*	IERR=IER	OUT	380
00151	39*	RETURN	OUT	390
00152	40*	50 CALL REDTPR (NT,2,IERR,NWR,NW,ARRAY)	OUT	400
00153	41*	RETURN	OUT	410
00154	42*	60 CALL OPEN (NT,1,2)	OUT	420
00155	43*	RETURN	OUT	430
00156	44*	70 CALL CLOSE (NT,2)	OUT	440
00157	45*	RETURN	OUT	450
00160	46*	80 CALL CLOSE (NT,4)	OUT	460
00161	47*	CALL OPEN (NT,1,2)	OUT	470
00162	48*	RETURN	OUT	480
00163	49*	90 CALL CLOSE (NT,3)	OUT	490
00164	50*	RETURN	OUT	500
00165	51*	100 CALL SKFRIN (NT,IARG,IERR)	OUT	510
00166	52*	RETURN	OUT	520
00167	53*	110 CALL SKRBRIN (NT,IARG,IERR)	OUT	530
00170	54*	RETURN	OUT	540
00170	55*	C *FORTRAN*	OUT	550
00171	56*	120 WRITE (NT) (ARRAY(NJ),NJ=1,NW)	OUT	560
00177	57*	RETURN	OUT	570
00200	58*	130 CONTINUE	OUT	580
00201	59*	READ(NT,END=170) (ARRAY(NJ),NJ=1,NW) @ FOR 1108 ONLY	OUT	590
00207	60*	RETURN	OUT	600
00210	61*	140 END FILE NT	OUT	610
00211	62*	150 REWIND NT	OUT	620
00212	63*	RETURN	OUT	630

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00213 64* 160 END FILE NT
00214 65* RETURN
00215 66* 170 IERR=2
00216 67* RETURN
00216 68* C
00217 69* 180 FORMAT (5A6)
00220 70* 190 FORMAT (3(7X,4F9.2))
00221 71* END
```

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OUT 640
OUT 650
OUT 660
OUT 670
OUT 680
OUT 690
OUT 700
OUT 710
```

END OF COMPILATION: NO DIAGNOSTICS.

FOR,S PLOTT,PLOTT
HVN 088-05/14-10:05 (0,)

SUBROUTINE PLOTT ENTRY POINT 000225

STORAGE USED: CODE(1) 000237; DATA(0) 000124; BLANK COMMON(2) 000000

COMMON BLOCKS:

0003 TAPEV 013724
0004 PLSYM 000001

EXTERNAL REFERENCES (BLOCK, NAME)

0005 IDENT
0006 SCRND
0007 QUIK3L
0010 ENDJOB
0011 NERR2\$
0012 NERR3\$

STORAGE ASSIGNMENT (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001	000012	10L	0001	000033	1206	0001	000020	20L	0001	000134	40L	0001	000206	50L
0003	012574	AA	0003 R	004230	AZ	0000 R	000063	AZMN	0000 R	000062	AZMX	0000 R	000000	BCDX
0000 R	000014	BCDY	0000 R	000030	CCDY	0000 R	000044	DCDY	0003 R	006344	ELEV	0000 R	000065	ELMN
0000 R	000054	ELMX	0000	000104	INJP\$	0004 I	000000	ISYM	0000 I	000066	L	0003 R	002114	RANGE
0000 R	000061	RGMN	0000 R	000060	RGMX	0003	000000	T	0003 R	010460	TIME	0000 R	000070	XL
0000 R	000067	XR	0000 R	000074	YBA	0000 R	000076	YBE	0000 R	000072	YBR	0000 R	000073	YTA
0000 R	000075	YTE	0000 R	000071	YTR									

00101	1*	SUBROUTINE PLOTT (IOP)	TER	10
00103	2*	COMMON /TAPEV/ T(1100),RANGE(1100),AZ(1100),ELEV(1100),TIME(1100)	TER	20
00103	3*	1AA(600)	TER	30
00104	4*	DIMENSION PCDX(12), BCDY(12), CCDY(12), DCDY(12)	TER	40
00105	5*	COMMON /PLSYM/ ISYM	TER	50
00106	6*	GO TO (10,20,40,50), IOP	TER	60
00106	7*	C	TER	70
00107	8*	10 CALL IDENT (35)	TER	80
00110	9*	RETURN	TER	90
00110	10*	C	TER	100
00111	11*	20 RGMX=RANGE(1)	TER	110
00112	12*	RGMN=RANGE(1)	TER	120
00113	13*	AZMX=AZ(1)	TER	130
00114	14*	AZMN=AZ(1)	TER	140
00115	15*	ELMX=ELEV(1)	TER	150
00116	16*	ELMN=ELEV(1)	TER	160
00117	17*	DO 30 L=2,1000	TER	170
00122	18*	RGMX=AMAX1(RGMX,RANGE(L))	TER	180

00123	19*	RGMN=AMIN1(RGMN,RANGE(L))	TER	190
00124	20*	AZMX=AMAX1(AZMX,AZ(L))	TER	200
00125	21*	AZMN=AMIN1(AZMN,AZ(L))	TER	210
00126	22*	ELMX=AMAX1(ELMX,ELEV(L))	TER	220
00127	23*	30 ELMN=AMIN1(ELMN,ELEV(L))	TER	230
00131	24*	CALL SCRND (TIME(1000),TIME(1),XR,XL)	TER	240
00132	25*	CALL SCRND (RGMX,RGMN,YTR,YBR)	TER	250
00133	26*	CALL SCRND (AZMX,AZMN,YTA,YBA)	TER	260
00134	27*	CALL SCRND (ELMX,ELMN,YTE,YBE)	TER	270
00135	28*	RETURN	TER	280
00135	29*	C	TER	290
00136	30*	40 CALL QUIK3L (-3,XL,XR,YBR,YTR,ISYM,BCDX,BCDY,-1000,TIME,RANGE)	TER	300
00137	31*	CALL QUIK3L (+3,XL,XR,YBA,YTA,ISYM,BCDX,CCDY,-1000,TIME,AZ)	TER	310
00140	32*	CALL QUIK3L (+3,XL,XR,YBE,YTE,ISYM,BCDX,DCDY,-1000,TIME,FLEV)	TER	320
00141	33*	RETURN	TER	330
00141	34*	C	TER	340
00142	35*	50 CALL ENDJOB	TER	350
00143	36*	RETURN	TER	360
00143	37*	C	TER	370
00144	38*	DATA ISYM/35/	TER	380
00146	39*	DATA BCDX/6HTIME (.6HSEC) ,10*1H /	TER	390
00150	40*	DATA BCDY/6HRANGE ,6H*YDS* ,10*1H /	TER	400
00152	41*	DATA CCDY/6HAZIMUT,6HH*DEG*,10*1H /	TER	410
00154	42*	DATA DCDY/6HELEVAT,6HION *D,6HEG* ,9*1H /	TER	420
00156	43*	END	TER	430

END OF COMPILATION: NO DIAGNOSTICS.

FOR,S FILTER,FILTER
HVH 080-05/14-10:05 (0,)

SUBROUTINE FILTER ENTRY POINT 000777

STORAGE USED: CODE(1) 001013; DATA(0) 002133; BLANK COMMON(2) 000000

COMMON BLOCKS:

0003 TRAN1 001750
0004 TAPEV 013724
0005 UNITS 000007
0006 PLSYM 000001

EXTERNAL REFERENCES (BLOCK, NAME)

0007 TAPE
0010 PLOTT
0011 QUIK3V
0012 NWDOUS
0013 NI02\$
0014 NI01\$
0015 NERR3\$

STORAGE ASSIGNMENT (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001 000022 1246	0001 000400 130L	0001 000432 150L	0001 000122 1606	0001 000516 160L
0001 000143 1666	0001 000533 170L	0001 000540 190L	0001 000070 20L	0001 000625 200L
0001 000633 210L	0001 000220 2166	0001 000647 220L	0001 000717 230L	0001 000251 2316
0001 000740 240L	0001 000274 2416	0000 001630 250F	0000 001666 260F	0000 001700 270F
0001 000375 2746	0000 001705 280F	0000 001717 290F	0001 000117 30L	0000 001720 300F
0001 000402 3026	0000 001751 310F	0000 001765 320F	0000 002023 330F	0000 002030 340F
0001 000551 3426	0000 002034 350F	0000 002055 360F	0001 000131 50L	0001 000215 70L
0001 000243 90L	0003 R 000000 A	0000 R 000034 AC0X	0000 R 000050 AC0Y	0000 R 000130 ARAY
0000 R 000064 AC0Y	0000 R 000100 AC0Y	0004 R 013560 00M	0000 R 000114 AC0Y	0000 I 001570 I
0000 I 001600 IEND	0000 I 001627 IER	0000 I 001575 IERR	0000 I 001571 IFILE	0005 000006 IFOR
0000 I 001610 II	0000 I 001623 IK	0000 I 001625 IKR	0000 I 001603 IMAX	0000 002106 INJP\$
0005 I 000005 IPLOT	0000 I 001606 IPT	0000 I 001626 IR	0006 I 000000 ISYM	0000 I 001601 IT
0000 I 001605 ITT	0000 I 001573 I28	0000 I 001572 I56	0000 I 001616 J	0000 I 001607 K
0000 I 001604 KC	0000 I 001622 K01	0000 I 001577 KKM	0000 I 001624 KR	0000 I 001617 K1
0000 I 001620 K2	0000 I 001602 M	0000 I 001621 MJ	0000 I 001611 MN	0005 000000 N01
0005 I 000001 N02	0005 000002 N03	0005 I 000003 N04	0005 I 000004 NFILES	0000 I 001576 NREC
0004 R 012430 SU	0000 R 001613 SUMU	0000 R 001614 SUMV	0000 R 001615 SUMW	0000 R 001612 SUMZ
0004 R 012740 SV	0004 R 013250 SW	0004 R 012120 SZ	0004 R 011610 T	0004 R 002342 U
0004 R 004704 V	0004 R 007246 W	0000 R 001574 WMID	0000 R 000000 WW	0004 R 000000 Z

00101 1* SUBROUTINE FILTER
00101 2* C
00101 3* C

FIL 10
FIL 20
* FIL 30

Line	Code	Text	File	Page
00101	4*	C	* SUBROUTINE FILTER APPLIES THE LOW PASS FILTER TO .1 SECOND	40
00101	5*	C	* VELOCITY DATA CREATED FROM THE .1 SECOND TAER DATA- RANGE,	50
00101	6*	C	* AZIMUTH AND ELEVATION, AND CREATES ONE SECOND VELOCITY DATA	60
00101	7*	C	* ON UNIT ND4.	70
00101	8*	C	* * * * *	80
00101	9*	C	* NUMBER OF WEIGHTS USED - 55 (27 VALUES W/MIRROR IMAGE AND	90
00101	10*	C	* A MIDPOINT.)	100
00101	11*	C	* * * * *	110
00101	12*	C	* .1 SECOND VELOCITY DATA IS WRITTEN IN 1000 WORD PHYSICAL	120
00101	13*	C	* RECORDS, ONE SECOND VELOCITY DATA IS WRITTEN IN 200 WORD	130
00101	14*	C	* PHYSICAL RECORDS.	140
00101	15*	C	* * * * *	150
00101	16*	C	* FORMAT FOR .1 SECOND DATA IS OF THE FORM	160
00101	17*	C	* Z(1),U(1),V(1),W(1),Z(2),U(2),V(2),W(2),Z(3),...OR A(4,250)	170
00101	18*	C	* THE ONE SECOND DATA IS OF THE SAME FORM EXCEPT THERE ARE 200	180
00101	19*	C	* VALUES OF EACH COMPONENT, OR A(4,200)	190
00101	20*	C	* * * * *	200
00101	21*	C	* PROCESSING OF EACH FILE BEGINS BY STORING 1250 WORDS INTO	210
00101	22*	C	* THE WORKING ARRAYS (READING FIVE (5) 1000 WORD RECORDS) AND	220
00101	23*	C	* FROM THERE ON READING FOUR (4) RECORDS SO AS TO ALWAYS HAVE	230
00101	24*	C	* 1250 WORDS IN THE WORKING ARRAYS AT ONE TIME.	240
00101	25*	C	* * * * *	250
00101	26*	C		260
00101	27*	C	** PLOT OPTIONS **	270
00101	28*	C	IPL0T = 0 - NO PLOTS	280
00101	29*	C	= 1 - TAER DATA ONLY	290
00101	30*	C	= 2 - ONE SEC VEL ONLY	300
00101	31*	C	= 3 - BOTH 1 AND 2	310
00101	32*	C		320
00101	33*	C		330
00103	34*		DIMENSION WW(28), ACDX(12), ACDY(12), BCDY(12), CCEY(12), ECDY(12)	340
00103	35*		1, ARAY(800)	350
00103	36*	C		360
00104	37*		COMMON /TRAN1/ A(1000)	370
00105	38*		COMMON /TAPEV/ Z(1250),L(1250),V(1250),W(1250),T(200),SZ(200),SL(2	380
00105	39*		100),SV(200),SW(200),DUM(100)	390
00106	40*		COMMON /UNITS/ ND1,ND2,ND3,ND4,NFILES,IPL0T,IF0R	400
00107	41*		COMMON /PLSYH/ ISYM	410
00110	42*		DATA (WW(I),I=1,28)/.07365641,.07166239,.06604195,.06404076,.05868813,	420
00110	43*		1390,.05253129,.04579480,.03869666,.03146420,.02431932,.01746935,.0	430
00110	44*		21109891,.00536330,.00038320,-.00375800,-.00701636,-.00938586,-.010	440
00110	45*		389632,-.01160975,-.01161294,-.01101528,-.00993790,-.00850874,-.006	450
00110	46*		485550,-.00509943,-.00335008,-.00170115,.07432916/	460
00110	47*	C		470
00112	48*		WRITE (6,250) NFILES,ND2,ND4,IPL0T	480
00120	49*		IFILE=1	490
00120	50*	C		500
00120	51*	C	WRITE THE WEIGHT ARRAY	510
00121	52*		WRITE (6,260)	520
00123	53*		DO 10 I=1,28	530
00126	54*		I56=56-I	540
00127	55*		I28=28-I	550
00130	56*		IF (I28.EQ.0) I28=28	560
00132	57*	10	WRITE (6,270) I,I56,WW(I28)	570
00140	58*		WMID=WW(28)	580
00140	59*	C		590

00140	60*	C	** REWIND ONLY **	FIL	600
00141	61*		CALL TAPE (ND2,5,0,DUM,IERR)	FIL	610
00142	62*		CALL TAPE (ND4,5,0,DUM,IERR)	FIL	620
00142	63*	C		FIL	630
00142	64*	C		FIL	640
00143	65*		20 NREC=0	FIL	650
00144	66*		WRITE (6,280) IFILE	FIL	660
00147	67*		IF (IPL0T.GE.2) CALL PLOTT (1)	FIL	670
00151	68*		KKM=1000	FIL	680
00152	69*		IEND=0	FIL	690
00153	70*		IT=-1	FIL	700
00154	71*		M=0	FIL	710
00155	72*		IMAX=5	FIL	720
00155	73*	C		FIL	730
00156	74*		30 KC=0	FIL	740
00157	75*		DO 40 ITT=1,200	FIL	750
00152	76*		IT=IT+1	FIL	760
00163	77*		40 T(ITT)=FLOAT(IT)	FIL	770
00165	78*		50 DO 80 I=1,IMAX	FIL	780
00165	79*	C		FIL	790
00170	80*		CALL TAPE (ND2,2,1000,A,IERR)	FIL	800
00171	81*		IF (IERR-2) 70,60,230	FIL	810
00174	92*		60 IEND=1	FIL	820
00175	83*		IPT=250*I	FIL	830
00176	84*		IF (IMAX.EQ.5) IPT=1000	FIL	840
00200	85*		KKM=IPT-50	FIL	850
00201	86*		WRITE (6,290)	FIL	860
00203	87*		WRITE (6,300) ND2,IPT,KKM,IEND,KC,IMAX	FIL	870
00213	88*		GO TO 90	FIL	880
00214	89*		70 K=-3	FIL	890
00215	90*		DO 80 II=1,250	FIL	900
00220	91*		K=K+4	FIL	910
00221	92*		M=M+1	FIL	920
00222	93*		Z(M)=A(K)	FIL	930
00223	94*		U(M)=A(K+1)	FIL	940
00224	95*		V(M)=A(K+2)	FIL	950
00225	96*		80 W(M)=A(K+3)	FIL	960
00225	97*	C		FIL	970
00225	98*	C	FILTER DATA	FIL	980
00230	99*		90 DO 110 I=1,KKM,10	FIL	990
00233	100*		MN=I+27	FIL	1000
00234	101*		SUMZ=Z(MN)*WMID	FIL	1010
00235	102*		SUMU=U(MN)*WMID	FIL	1020
00236	103*		SUMV=V(MN)*WMID	FIL	1030
00237	104*		SUMW=W(MN)*WMID	FIL	1040
00240	105*		DO 100 J=1,27	FIL	1050
00243	106*		K1=MN-J	FIL	1060
00244	107*		K2=MN+J	FIL	1070
00245	108*		SUMZ=SUMZ+WW(J)*(Z(K1)+Z(K2))	FIL	1080
00246	109*		SUMU=SUMU+WW(J)*(U(K1)+U(K2))	FIL	1090
00247	110*		SUMV=SUMV+WW(J)*(V(K1)+V(K2))	FIL	1100
00250	111*		100 SUMW=SUMW+WW(J)*(W(K1)+W(K2))	FIL	1110
00252	112*		KC=KC+1	FIL	1120
00253	113*		SZ(KC)=SUMZ	FIL	1130
00254	114*		SU(KC)=SUMU	FIL	1140
00255	115*		SV(KC)=SUMV	FIL	1150

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00256 116* SW(KC)=SUMW FIL 1160
00257 117* MJ=4*KC-3 FIL 1170
00260 118* ARAY(MJ)=SZ(KC) FIL 1180
00261 119* ARAY(MJ+1)=SU(KC) FIL 1190
00262 120* ARAY(MJ+2)=SV(KC) FIL 1200
00263 121* 110 ARAY(MJ+3)=SW(KC) FIL 1210
00265 122* IF (IEND.EQ.0) GO TO 130 FIL 1220
00267 123* KC1=4*KC+1 FIL 1230
00270 124* WRITE (6,310) KC1 FIL 1240
00273 125* DO 120 MJ=KC1,800 FIL 1250
00276 126* 120 ARAY(MJ)=0. FIL 1260
00300 127* GO TO 150 FIL 1270
00300 128* C FIL 1280
00300 129* C * * * * * FIL 1290
00300 130* C * CARRY OVER THE LAST 250 POINTS AND RETURN TO READ NEXT 1000 * FIL 1300
00300 131* C * POINTS. * FIL 1310
00300 132* C * * * * * FIL 1320
00300 133* C FIL 1330
00301 134* 130 DO 140 I=1,250 FIL 1340
00304 135* M=I+1000 FIL 1350
00305 136* Z(I)=Z(M) FIL 1360
00306 137* U(I)=U(M) FIL 1370
00307 138* V(I)=V(M) FIL 1380
00310 139* 140 W(I)=W(M) FIL 1390
00312 140* M=250 FIL 1400
00313 141* IMAX=4 FIL 1410
00314 142* IF (KC.LT.200) GO TO 50 FIL 1420
00314 143* C FIL 1430
00316 144* 150 NREC=NREC+1 FIL 1440
00317 145* IF (IPL0T.LT.2) GO TO 160 FIL 1450
00321 146* CALL QUIK3V (-2,ISYM,ACDX,ACDY,-KC,T,SZ) FIL 1460
00322 147* CALL QUIK3V (+2,ISYM,ACDX,FCDY,-KC,T,SW) FIL 1470
00323 148* CALL QUIK3V (-2,ISYM,ACDX,PCDY,-KC,T,SU) FIL 1480
00324 149* CALL QUIK3V (+2,ISYM,ACDX,CCDY,-KC,T,SV) FIL 1490
00325 150* 160 K1=1 FIL 1500
00326 151* IK=1 FIL 1510
00327 152* IF (KC.GT.100) GO TO 170 FIL 1520
00331 153* K2=KC/2 FIL 1530
00332 154* KR=K2 FIL 1540
00333 155* GO TO 180 FIL 1550
00334 156* 170 IK=2 FIL 1560
00335 157* K2=50 FIL 1570
00336 158* KR=50 FIL 1580
00337 159* 180 WRITE (6,320) FIL 1590
00341 160* DO 190 I=K1,K2 FIL 1600
00344 161* IKR=I+KR FIL 1610
00345 162* 190 WRITE (6,330) I,SZ(I),SU(I),SV(I),SW(I),T(I),IKR,SZ(IKR),SU(IKR),SV(IKR),SW(IKR),T(IKR) FIL 1620
00345 163* 1V(IKR),SW(IKR),T(IKR) FIL 1630
00364 164* IF (IK.EQ.1) GO TO 200 FIL 1640
00366 165* K1=101 FIL 1650
00367 166* K2=(KC-100)/2+100 FIL 1660
00370 167* KR=K2-100 FIL 1670
00371 168* IK=1 FIL 1680
00372 169* IF (K2-K1) 210,180,180 FIL 1690
00375 170* 200 IR=MOD(KC,2) FIL 1700
00376 171* IF (IR.EQ.0) GO TO 220 FIL 1710

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00400 172* 210 WRITE (6,340) KC,SZ(KC),SU(KC),SV(KC),SW(KC),T(KC) FIL 1720
00410 173* 220 CALL TAPE (ND4,1,800,ARAY,IERR) FIL 1730
00411 174* IF (IEND.EQ.0) GO TO 37 FIL 1740
00411 175* C FIL 1750
00413 176* CALL TAPE (ND4,6,0,DUM,IERR) FIL 1760
00414 177* IF (IPL0T.GE.2) CALL PLOTT (4) FIL 1770
00416 178* WRITE (6,350) IFILE,NREC,ND4 FIL 1780
00423 179* IF (IFILE.EQ.NFILES) GO TO 240 FIL 1790
00425 180* IFILE=IFILE+1 FIL 1800
00426 181* GO TO 20 FIL 1810
00426 182* C FIL 1820
00427 183* 230 WRITE (6,360) ND2,IERR,NREC,IFILE FIL 1830
00435 184* IF (IPL0T.GE.2) CALL PLOTT (4) FIL 1840
00435 185* C FIL 1850
00437 186* 240 CALL TAPE (ND2,5,0,DUM,IERR) FIL 1860
00440 187* CALL TAPE (ND4,5,0,DUM,IERR) FIL 1870
00441 188* RETURN FIL 1880
00441 189* C FIL 1890
00442 190* DATA ACDY/6HALTITU,6HDE *M/,6HSEC* ,9*1H / FIL 1900
00444 191* DATA ACDX/6HTIME (,6HSEC) ,10*1H / FIL 1910
00446 192* DATA BCDY/6HZONAL ,6H*M/SEC,6H* ,9*1H / FIL 1920
00450 193* DATA CCDY/6HMERIDI,6HCNAL *,6HM/SEC*,9*1H / FIL 1930
00452 194* DATA ECDY/6HRISE R,6HATE *M,6H/SEC* ,9*1H / FIL 1940
00452 195* C FIL 1950
00454 196* 250 FORMAT (/1H1,50HNUMBER FILES OF .1 SEC VELOCITY DATA TO PROCESS ISFIL 1960
00454 197* 1I3/15H INPUT UNIT IS I2,16H OUTPUT UNIT IS I2/67H PLOTTING-(0,NCNEFIL 1970
00454 198* 2),(1,TAER),(2,1 SEC VEL),(3,80H 1 AND 2) IPL0T =I2) FIL 1980
00455 199* 260 FORMAT (/26H WEIGHTS FOR MARTIN-GRAHAM/6X,15HLOW-PASS FILTER/) FIL 1990
00456 200* 270 FORMAT (2H (I2,1H,I2,3H) =F16.8) FIL 2000
00457 201* 280 FORMAT (/1H1,43HBEGIN PROCESSING .1 SEC VELOCITY DATA FILE I2/) FIL 2010
00460 202* 290 FORMAT (/1H1) FIL 2020
00461 203* 300 FORMAT (21H ** END OF FILE UNIT I2,3H **/15H THE REMAINING 15,50H FIL 2030
00461 204* 1POINTS WILL BE USED TO ESTABLISH THE LAST RECORD./5H KKM=I5,6H IENFIL 2040
00461 205* 20=I2,4H KC=I4,6H IMAX=I2) FIL 2050
00462 206* 310 FORMAT (11H LOCATIONS I4,46H THROUGH 800 OF LAST RECORD FILLED WITFIL 2060
00462 207* 1H ZEROS.) FIL 2070
00463 208* 320 FORMAT (/1H1,48X,27HONE SECOND VELOCITY DATA//2(2X,2HKC,6X,8HALFIL 2080
00463 209* 1TITUDE,6X,5HZONAL,4X,10HMERIDIONAL,2X9HRISE RATE,2X,4HTIME,5X)/2(1FIL 2090
00463 210* 22X3H(M)8X7H(M/SEC)4X7H(M/SEC)5X7H(M/SEC)2X5H(SEC)5X)/) FIL 2100
00464 211* 330 FORMAT (2(I4,2X,4F11.2,F10.1,5Y)) FIL 2110
00465 212* 340 FORMAT (65X,I4,2X,4F11.2,F10.1) FIL 2120
00466 213* 350 FORMAT (50H END OF ONE SECOND VELOCITY CALCULATIONS FOR FILE I3/7XFIL 2130
00466 214* 1I4,30H RECORDS WERE WRITTEN ON UNIT I2) FIL 2140
00467 215* 360 FORMAT (/36H1** REDUNDANCY ON INPUT/OUTPUT UNIT I2,3H **/6H IERR=IFIL 2150
00467 216* 12,6H NREC=I4,7H IFILE=I3) FIL 2160
00470 217* END FIL 2170

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END OF COMPILATION:

NO DIAGNOSTICS.

@MAP,IS TARSYM,TARWON
MAP 17M1-05/14-10:05 -(,0)

1. LIB SYS\$*MSFC\$

ADDRESS LIMITS 001000 035531 040000 076667
STARTING ADDRESS 034306
WORDS DECIMAL 14682 IBANK 15800 CBANK

SEGMENT MAIN 001000 035531 040000 076667

NEXP64/FOR57	1	001000 001172	2	040000 040051
ALOG6/FOR51	1	001173 001310	2	040052 040112
CSIG6V/SC4020	1	001311 001601	0	040113 040152
			2	BLANK\$COMMON
CERMRK/SC4020	1	001602 001631	0	040153 040166
			2	BLANK\$COMMON
CLABLV/SC4020	1	001632 002676	0	040167 040275
			2	BLANK\$COMMON
CYMODV/SC4020	1	002677 002725	0	040276 040303
			2	BLANK\$COMMON
CACCBY/SC4020	1	002726 002747	0	040304 040314
			2	BLANK\$COMMON
CXMODV/SC4020	1	002750 002776	0	040315 040322
			2	BLANK\$COMMON
CONCAT/MSFC	1	002777 003150	0	040323 040344
SETINT/SC4020	1	003151 003203	0	040345 040352
			2	BLANK\$COMMON
CHOLLV/SC4020	1	003204 003265	0	040353 040367
			2	BLANK\$COMMON
CNONLN/SC4020	1	003266 003674	0	040370 040437
			2	BLANK\$COMMON
CLINRV/SC4020	1	003675 004552	0	040440 040533
	3	666	2	BLANK\$COMMON
CYSCLV/SC4020	1	004553 004755	0	040534 040561
	3	666	2	BLANK\$COMMON
CXSCLV/SC4020	1	004756 005160	0	040562 040607
	3	666	2	BLANK\$COMMON
CERNLV/SC4020	1	005161 005335	0	040610 040622
			2	BLANK\$COMMON
CERPLN/SC4020	1	005336 005452	0	040623 040637
			2	BLANK\$COMMON
CSETCV/SC4020	1	005453 005513	0	040640 040650
			2	BLANK\$COMMON

NEXP5%/FOR57	1	005514 005577	2	040651 040660
CSETMV/SC4020	1	005600 005656	0	040661 040675
			2	BLANK%COMMON
CFRAM/SC4020	1	005657 006076	0	040675 040763
	3	GGG	2	BLANK%COMMON
CXAXIS/SC4020	1	006077 006302	0	040764 041017
			2	BLANK%COMMON
VCHARV/SC4020	1	006303 006546	0	041020 041037
RITE2V/SC4020	1	006547 006777	0	041040 041066
BPLOTK/SC4020	1	007000 007060	0	041067 041445
			2	BLANK%COMMON
CCAMRA/SC4020	1	007061 007135	0	041446 041457
	3	GGG	2	BLANK%COMMON
TABLIV/SC4020			0	041460 042000
NBDCV5/FOR57	1	007136 007271	2	042001 042040
NFTV5/FOR	1	007272 007314		
NCNVT5/FOR57	1	007315 007547	2	042041 042130
NBF005/FOR			2	042131 044332
NININ5/MSFC55	1	007550 010001	2	044333 044354
NINPT5/FOR57	1	010002 010661	2	044355 044377
NCLOS5/MSFC57	1	010662 011025	2	044400 044424
NRBLK5/MSFC55	1	011026 011114	0	044425 044426
NFTCH5/FOR57	1	011115 011414	2	044427 044464
NSWTC5/FOR	1	011415 011436		
NBSRL5/FOR	1	011437 011474		
NUPDA5/FOR	1	011475 011530		
NWBLK5/MSFC57	1	011531 011720	0	044465 044467
NCB05/MSFC	1	011721 012004	2	044470 044500
CPL0TV/SC4020	1	012005 012160	0	044501 044540
	3	GGG	2	BLANK%COMMON
CLINEV/SC4020	1	012161 012544	0	044541 044617
			2	BLANK%COMMON
YSCLV1/SC4020	1	012545 012655	0	044620 044627
	3	GGG	2	BLANK%COMMON
XSCLV1/SC4020	1	012656 012765	0	044630 044637
	3	GGG	2	BLANK%COMMON
CAPLOT/SC4020	1	012766 013233	0	044640 044712
	3	GGG	2	BLANK%COMMON
CAPRNV/SC4020	1	013234 013316	0	044713 044731
			2	BLANK%COMMON
CPRNTV/SC4020	1	013317 013711	0	044732 044765
	3	GGG	2	BLANK%COMMON
CGRD1V/SC4020	1	013712 014620	0	044766 045100
	3	GGG	2	BLANK%COMMON
CDXQYV/SC4020	1	014621 015412	0	045101 045157
			2	BLANK%COMMON
CBRTTV/SC4020	1	015413 015514	0	045160 045173
	3	GGG	2	BLANK%COMMON
CMARGN/SC4020	1	015515 015576	0	045174 045236
			2	BLANK%COMMON
CNBLNK/SC4020	1	015577 015650	0	045237 045253
			2	BLANK%COMMON
BMOV/MSFC			0	045254 045330
CIDFNT/SC4020	1	015651 017016	0	045331 045514
	3	GGG	2	BLANK%COMMON
FRU5/MSFC55				

NOTIN\$/MSFC55	1	017017 017347	2	045515 045525
NOUT\$/FOR57	1	017350 020324	2	045526 045556
NFMT\$/FOR57	1	020325 021231	2	045557 045575
NICER\$/MSFC57	1	021232 021410	2	045576 045720
NFCHK\$/MSFC57	1	021411 022226	2	045721 046075
			4	046076 046147
			2	046150 046236
NTAB\$/MSFC55				
NIBUF\$/FOR52	1	022227 022270		
H\$MONITOR/MSFC55	1	022271 023373	2	046237 047013
SORT\$/FOR55	1	023374 023433	2	047014 047025
ATANS\$/FOR57	1	023434 023635	2	047026 047057
SINCOS\$/FOR57	1	023636 023767	2	047060 047101
NRWNO\$/FOR50	1	023770 024047	2	047102 047113
NWEF\$/MSFC55	1	024050 024306	2	047114 047134
NFINP\$/FOR57	1	024307 024630	2	047135 047221
NFCUT\$/FOR52	1	024631 025127	2	047222 047243
OPEN/CSC	1	025130 025706	0	047244 053237
WRTPED/CSC	1	025707 027052	0	053240 053376
GGG (COMMON BLOCK)				053377 053532
CQUIKL/SC4020	1	027053 027464	0	053533 053615
	3	GGG	2	BLANK\$COMMON
CSCRND/SC4020	1	027465 027745	0	053616 053647
			2	BLANK\$COMMON
IDENT/SC4020	1	027746 030650	0	053650 055311
NERR\$/FOR57	1	030651 031205	2	055312 055466
NIER\$/FOR52	1	031206 031270	2	055467 055616
N0BUF\$/FOR51	1	031271 031330		
CQUIKV/SC4020	1	031331 031523	0	055617 055646
			2	BLANK\$COMMON
				055647 055651
EDIT1 (COMMON BLOCK)				055652 055652
PLSYM (COMMON BLOCK)				055653 055661
UNITS (COMMON BLOCK)				055662 071605
TAPEV (COMMON BLOCK)				071606 073555
TRAN1 (COMMON BLOCK)				
BLANK\$COMMON (COMMON BLOCK)				
FILTER	1	031524 032536	0	073556 075710
	3	TRAN1	2	BLANK\$COMMON
	5	UNITS	4	TAPEV
			6	PLSYM
PLCTT	1	032537 032775	0	075711 076034
	3	TAPEV	2	BLANK\$COMMON
			4	PLSYM
OUTPUT	1	032776 033406	0	076035 076074
	3	TRAN1	2	BLANK\$COMMON
			4	UNITS
CALCOF	1	033407 034305	0	076075 076330
	3	TAPEV	2	BLANK\$COMMON
			4	EDIT1
MAIN	1	034306 035531	0	076331 076657
	3	TAPEV	2	BLANK\$COMMON
	5	TRAN1	4	EDIT1
			6	UNITS

SYS\$*RLIB\$. LEVEL M57-I

END OF COLLECTION - TIME 4.379 SECONDS

Appendix C

SAMPLE DATA CASE

The following values were assigned to input variables to obtain a sample case:

ISKIP = 0
 NDI = 0
 NFILES = 1
 NWPREC = 600
 ND3 = 0
 ITRAN = 1
 ND2 = 0
 IFILTR = 1
 ND4 = 0
 IPLOT = 3
 IFOR = 1
 IEDIT = 2
 NREC = 1

For a discription of these input variables, see the Input Guide, Section 4.
 The resulting printed output and selected graphic examples of edited 0.1-second TAER data and 1-second velocity component output is presented herein.

PRINTED OUTPUT OF
SAMPLE CASE

SKIP 0 FILES FROM TAPE 8 BEFORE PROCESSING
NUMBER OF FILES TO BE PROCESSED IS 1
NUMBER OF WORDS PER PHYSICAL RECORD IS 500
ITRAN = 1-OUTPUT .1 SECOND VELOCITY DATA (ZUVW) ON UNIT 9
IFILTRE = 1-OUTPUT ONE SECOND VELOCITY DATA ON UNIT 11
PLOTING-(0,NONE),(1,TAER),(2,1 SEC VEL),(3,BOTH 1 AND 2) IFLOT = 3
IFOR= 1
IEDIT = 2 FOR PROCESSING FILE 1 OUTPUT DATA ON UNIT 10

TAPE TIME ERROR T(938) = 119.60 DRT = .20

END OF RECCRD 1 FILE 1

END OF RECCRD 2 FILE 1

END OF RECORD 3 FILE 1

END OF RECORD 4 FILE 1

END OF RECORD 5 FILE 1

END OF RECCRD 6 FILE 1

END OF RECCRD 7 FILE 1

END OF RECORD 8 FILE 1

TAPE TIME ERROR T(419) = 267.80 DRT = .20

TAPE TIME ERROR T(483) = 274.30 DRT = .20

TAPE TIME ERROR T(488) = 274.90 DRT = .20

END OF RECORD 9 FILE 1

END OF RECORD 10 FILE 1

END OF RECORD 11 FILE 1

END OF RECORD 12 FILE 1

END OF RECORD 13 FILE 1

END OF RECORD 14 FILE 1

END OF RECORD 15 FILE 1

END OF RECORD 16 FILE 1

END OF RECORD 17 FILE 1

END OF RECORD 18 FILE 1

END OF RECORD 19 FILE 1

END OF RECORD 20 FILE 1

END OF RECORD 21 FILE 1

END OF RECORD 22 FILE 1

END OF RECORD 23 FILE 1

END OF RECORD 24 FILE 1

END OF RECORD 25 FILE 1

END OF RECORD 26 FILE 1

END OF RECORD 27 FILE 1

END OF RECORD 28 FILE 1

END OF RECORD 29 FILE 1

END OF RECORD 30 FILE 1

END OF RECORD 31 FILE 1

END OF RECORD 32 FILE 1

END OF RECORD 33 FILE 1

END OF RECORD 34 FILE 1

END OF RECORD 35 FILE 1

END OF RECORD 36 FILE 1

TAPE TIME ERROR T(541) = 980.30 DRT = .20

TAPE TIME ERROR T(554) = 981.70 DRT = .20

TAPE TIME ERROR T(812) = 1007.60 DRT = .20

END OF RECORD 37 FILE 1

END OF RECORD 38 FILE 1

END OF RECORD 39 FILE 1

END OF RECORD 40 FILE 1

END OF RECORD 41 FILE 1

END OF RECORD 42 FILE 1

END OF RECORD 43 FILE 1

END OF RECORD 44 FILE 1

TAPE TIME ERROR T(113) = 1137.80 DRT = .20

END OF RECORD 45 FILE 1

END OF RECORD 46 FILE 1

END OF RECORD 47 FILE 1

END OF RECORD 48 FILE 1

END OF RECORD 49 FILE 1

END OF RECORD 50 FILE 1

END OF RECORD 51 FILE 1

END OF RECORD 52 FILE 1

END OF RECORD 53 FILE 1

END OF RECORD 54 FILE 1

END OF RECORD 55 FILE 1

END OF RECORD 56 FILE 1

END OF RECORD 57 FILE 1

END OF RECORD 58 FILE 1

END OF RECORD 59 FILE 1

END OF RECORD 60 FILE 1

END OF RECORD 61 FILE 1

END OF RECORD 62 FILE 1

END OF RECORD 63 FILE 1

END OF RECORD 64 FILE 1

END OF RECORD 65 FILE 1

END OF RECORD 66 FILE 1

TAPE TIME ERROR T(365) = 1663.10 DRT = -.20

END OF RECORD 67 FILE 1

END OF RECORD 68 FILE 1

END OF RECORD 69 FILE 1

END OF RECORD 70 FILE 1

END OF RECORD 71 FILE 1

END OF RECORD 72 FILE 1

KCOUNT=	1						
RANGE=	26976.56250	Y=	26513.82568	TIME=	1821.00	DIFO =	457.73682
AZ =	60.71320	X=	60.52231	TIME=	1821.00	DIF10=	.19089
KCOUNT=	2						
RANGE=	26974.60937	Y=	26518.13232	TIME=	1821.10	DIFO =	456.47705
AZ =	60.70533	X=	60.52231	TIME=	1821.10	DIF10=	.18402
KCOUNT=	3						
RANGE=	26974.60937	Y=	26517.24316	TIME=	1821.20	DIFO =	457.36621
AZ =	60.70015	X=	60.52231	TIME=	1821.20	DIF10=	.17764
KCOUNT=	4						
RANGE=	26980.46875	Y=	26516.56445	TIME=	1821.30	DIFO =	463.90430
AZ =	60.69328	X=	60.52230	TIME=	1821.30	DIF10=	.17098
KCOUNT=	5						
RANGE=	26984.37500	Y=	26515.66602	TIME=	1821.40	DIFO =	464.70298
AZ =	60.69122	X=	60.52230	TIME=	1821.40	DIF10=	.16892
KCOUNT=	6						
RANGE=	26978.51562	Y=	26514.94141	TIME=	1821.50	DIFO =	463.57422
AZ =	60.69050	X=	60.52230	TIME=	1821.50	DIF10=	.16824
KCOUNT=	7						
RANGE=	26986.32812	Y=	26513.94580	TIME=	1821.60	DIFO =	472.38232
AZ =	60.68916	X=	60.52230	TIME=	1821.60	DIF10=	.16687
KCOUNT=	8						
RANGE=	26982.42187	Y=	26512.05225	TIME=	1821.70	DIFO =	469.36963
AZ =	60.68348	X=	60.52230	TIME=	1821.70	DIF10=	.16518

TAPE TIME ERROR T(147) = 1841.00 DRT = .20

KCOUNT=	9						
RANGE=	26988.28125	Y=	26512.39062	TIME=	1821.80	DIFO =	475.89062
AZ =	60.68779	X=	60.52229	TIME=	1821.80	DIF10=	.16550
KCOUNT=	10						
RANGE=	26986.28125	Y=	26511.53955	TIME=	1821.90	DIFO =	476.74170
AZ =	60.68642	X=	60.52229	TIME=	1821.90	DIF10=	.16413

TAPE TIME ERROR T(210) = 1847.40 DRT = 8.50

PRINTOUT OF .1 SEC TAER DATA

TAPE TIME ERROR T(808) = 1915.60 DRT = .20

1826.40 26470.70 60.52 22.91

1826.50 26468.75 60.52 22.91

1826.60 26476.56 60.52 22.91

1826.70	26474.61	60.52	22.91	1826.80	26476.56	60.52	22.91	1826.90	26476.56	60.52	22.91
1827.00	26482.42	60.52	22.91	1827.10	26480.47	60.52	22.91	1827.20	26484.37	60.52	22.91
1827.30	26484.37	60.52	22.91	1827.40	26486.33	60.52	22.91	1827.50	26484.37	60.52	22.91
1827.60	26490.23	60.52	22.91	1827.70	26488.28	60.52	22.91	1827.80	26490.23	60.52	22.91
1827.90	26490.23	60.52	22.91	1828.00	26492.19	60.52	22.91	1828.10	26492.19	60.52	22.91
1828.20	26498.05	60.52	22.91	1828.30	26500.00	60.52	22.91	1828.40	26503.91	60.52	22.91
1828.50	26503.91	60.52	22.91	1828.60	26503.91	60.52	22.91	1828.70	26505.86	60.52	22.91
1828.80	26507.91	60.52	22.91	1828.90	26507.81	60.52	22.91	1829.00	26511.72	60.52	22.91
1829.10	26513.67	60.52	22.91	1829.20	26513.67	60.52	22.91	1829.30	26517.58	60.52	22.91
1829.40	26517.58	60.52	22.91	1829.50	26519.53	60.52	22.91	1829.60	26519.53	60.52	22.91
1829.70	26523.44	60.52	22.91	1829.80	26521.48	60.52	22.91	1829.90	26525.39	60.52	22.91
1830.00	26529.30	60.52	22.91	1830.10	26533.20	60.52	22.91	1830.20	26533.20	60.52	22.91
1830.30	26535.16	60.52	22.91	1830.40	26535.16	60.52	22.91	1830.50	26539.06	60.52	22.91
1830.60	26537.11	60.52	22.91	1830.70	26544.92	60.52	22.91	1830.80	26542.97	60.52	22.91
1830.90	26546.87	60.52	22.91	1831.00	26542.97	60.52	22.91	1831.10	26548.83	60.52	22.91
1831.20	26548.83	60.52	22.91	1831.30	26550.78	60.52	22.91	1831.40	26550.78	60.52	22.91
1831.50	26552.73	60.52	22.91	1831.60	26552.73	60.52	22.91	1831.70	26554.69	60.52	22.91
1831.80	26558.59	60.52	22.91	1831.90	26560.55	60.52	22.91	1832.00	26562.50	60.52	22.91
1832.10	26562.50	60.52	22.91	1832.20	26566.41	60.52	22.91	1832.30	26564.45	60.52	22.91
1832.40	26570.31	60.52	22.91	1832.50	26568.36	60.52	22.91	1832.60	26572.27	60.52	22.91
1832.70	26570.31	60.52	22.91	1832.80	26574.22	60.52	22.91	1832.90	26576.17	60.52	22.91
1833.00	26580.08	60.52	22.91	1833.10	26576.17	60.52	22.91	1833.20	26583.98	60.52	22.91
1833.30	26582.03	60.52	22.91	1833.40	26585.94	60.52	22.91	1833.50	26583.98	60.52	22.91
1833.60	26589.84	60.52	22.91	1833.70	26589.84	60.52	22.91	1833.80	26593.75	60.52	22.91
1833.90	26595.70	60.52	22.91	1834.00	26597.66	60.52	22.91	1834.10	26599.61	60.52	22.91
1834.20	26601.56	60.52	22.91	1834.30	26597.66	60.52	22.91	1834.40	26605.47	60.52	22.91
1834.50	26605.47	60.52	22.91	1834.60	26607.42	60.52	22.91	1834.70	26609.37	60.52	22.91
1834.80	26607.42	60.52	22.91	1834.90	26611.33	60.52	22.91	1835.00	26615.23	60.52	22.91
1835.10	26613.28	60.52	22.91	1835.20	26615.23	60.52	22.91	1835.30	26617.19	60.52	22.91
1835.40	26619.14	60.52	22.91	1835.50	26623.05	60.52	22.91	1835.60	26623.05	60.52	22.91
1835.70	26626.95	60.52	22.91	1835.80	26630.86	60.52	22.91	1835.90	26634.77	60.52	22.91
1836.00	26630.86	60.52	22.91	1836.10	26632.81	60.52	22.91	1836.20	26632.81	60.52	22.91
1836.30	26636.72	60.52	22.91	1836.40	26636.72	60.52	22.91	1836.50	26640.62	60.52	22.91
1836.60	26638.67	60.52	22.91	1836.70	26640.62	60.52	22.91	1836.80	26638.67	60.52	22.91
1836.90	26646.48	60.52	22.91	1837.00	26642.58	60.52	22.91	1837.10	26648.44	60.52	22.91
1837.20	26646.48	60.52	22.91	1837.30	26650.39	60.52	22.91	1837.40	26652.34	60.52	22.91
1837.50	26652.34	60.52	22.91	1837.60	26652.34	60.52	22.91	1837.70	26652.34	60.52	22.91
1837.80	26652.34	60.52	22.91	1837.90	26650.39	60.52	22.91	1838.00	26648.44	60.52	22.91
1838.10	26646.48	60.52	22.91	1838.20	26644.53	60.52	22.91	1838.30	26642.58	60.52	22.91
1838.40	26640.62	60.52	22.91	1838.50	26638.67	60.52	22.91	1838.60	26636.72	60.52	22.91
1838.70	26634.77	60.52	22.91	1838.80	26632.81	60.52	22.91	1838.90	26630.86	60.52	22.91
1839.00	26628.91	60.52	22.91	1839.10	26626.95	60.52	22.91	1839.20	26625.00	60.52	22.91
1839.30	26623.05	60.52	22.91	1839.40	26621.09	60.52	22.91	1839.50	26619.14	60.52	22.91
1839.60	26617.19	60.52	22.91	1839.70	26615.23	60.52	22.91	1839.80	26613.28	60.52	22.91
1839.90	26611.33	60.52	22.91	1840.00	26609.37	60.52	22.91	1840.10	26607.42	60.52	22.91
1840.20	26605.47	60.52	22.91	1840.30	26603.52	60.52	22.91	1840.40	26601.56	60.52	22.91
1840.50	26599.61	60.52	22.91	1840.60	26597.66	60.52	22.91	1840.70	26595.70	60.52	22.91
1840.80	26593.75	60.52	22.91	1840.90	26591.80	60.52	22.91	1841.00	26589.84	60.52	22.91
1841.20	26583.98	60.52	22.91	1841.30	26580.08	60.52	22.91	1841.40	26576.17	60.52	22.91
1841.50	26572.27	60.52	22.91	1841.60	26568.36	60.52	22.91	1841.70	26564.45	60.52	22.91
1841.80	26562.50	60.52	22.91	1841.90	26558.59	60.52	22.91	1842.00	26554.69	60.52	22.91
1842.10	26552.73	60.52	22.91	1842.20	26550.78	60.52	22.91	1842.30	26546.87	60.52	22.91
1842.40	26546.87	60.52	22.91	1842.50	26544.92	60.52	22.91	1842.60	26544.92	60.52	22.91
1842.70	26544.92	60.52	22.91	1842.80	26542.97	60.52	22.91	1842.90	26542.97	60.52	22.91
1843.00	26542.97	60.52	22.91	1843.10	26542.97	60.52	22.91	1843.20	26542.97	60.52	22.91
1843.30	26542.97	60.52	22.91	1843.40	26542.97	60.52	22.91	1843.50	26542.97	60.52	22.91

1843.60	26542.97	60.52	22.91	1843.70	26541.02	60.52	22.91	1843.80	26541.02	60.52	22.91
1843.90	26541.02	60.52	22.91	1844.00	26541.02	60.52	22.91	1844.10	26541.02	60.52	22.91
1844.20	26541.02	60.52	22.91	1844.30	26541.02	60.52	22.91	1844.40	26539.06	60.52	22.91
1844.50	26539.06	60.52	22.91	1844.60	26539.06	60.52	22.91	1844.70	26539.06	60.52	22.91
1844.80	26539.06	60.52	22.91	1844.90	26537.11	60.52	22.91	1845.00	26537.11	60.52	22.91
1845.10	26537.11	60.52	22.91	1845.20	26537.11	60.52	22.91	1845.30	26535.16	60.52	22.91
1845.40	26535.16	60.52	22.91	1845.50	26535.16	60.52	22.91	1845.60	26533.20	60.52	22.91
1845.70	26533.20	60.52	22.91	1845.80	26533.20	60.52	22.91	1845.90	26531.25	60.52	22.91
1846.00	26531.25	60.52	22.91	1846.10	26531.25	60.52	22.91	1846.20	26529.30	60.52	22.91
1846.30	26529.30	60.52	22.91	1846.40	26529.30	60.52	22.91	1846.50	26527.34	60.52	22.91
1846.60	26527.34	60.52	22.91	1846.70	26525.39	60.52	22.91	1846.80	26525.39	60.52	22.91
1846.90	26523.44	60.52	22.91	1847.00	26523.44	60.52	22.91	1847.10	26521.48	60.52	22.91
1847.20	26521.48	60.52	22.91	1847.30	26521.48	60.52	22.91	1847.40	*****		
1855.90	26976.56	60.71	22.81	1856.00	26974.61	60.71	22.81	1856.10	26974.61	60.70	22.81
1856.20	26980.47	60.69	22.81	1856.30	26984.37	60.69	22.81	1856.40	26978.52	60.69	22.81
1856.50	26986.33	60.69	22.81	1856.60	26982.42	60.69	22.81	1856.70	26983.28	60.69	22.81
1856.80	26988.28	60.69	22.81	1856.90	26990.23	60.68	22.81	1857.00	26992.19	60.68	22.81
1857.10	26992.19	60.68	22.81	1857.20	26996.09	60.68	22.81	1857.30	26999.05	60.68	22.81
1857.40	27001.95	60.67	22.81	1857.50	27001.95	60.67	22.81	1857.60	27005.86	60.67	22.81
1857.70	27003.91	60.67	22.81	1857.80	27009.77	60.67	22.81	1857.90	27009.77	60.67	22.81
1858.00	27013.67	60.67	22.81	1858.10	27009.77	60.67	22.81	1858.20	27013.67	60.67	22.81
1858.30	27015.62	60.67	22.81	1858.40	27017.59	60.67	22.81	1858.50	27015.62	60.67	22.81
1858.60	27019.53	60.67	22.81	1858.70	27017.58	60.67	22.81	1858.80	27023.44	60.67	22.81
1858.90	27021.48	60.67	22.81	1859.00	27025.39	60.67	22.81	1859.10	27025.39	60.67	22.81
1859.20	27027.34	60.67	22.81	1859.30	27031.25	60.67	22.81	1859.40	27033.20	60.67	22.81
1859.50	27037.11	60.67	22.81	1859.60	27037.11	60.67	22.81	1859.70	27039.06	60.67	22.81
1859.80	27041.02	60.67	22.81								

PRINTOUT OF .1 SEC VEL DATA

9461.50	21.42	12.11	10.62	9464.31	21.42	12.11	10.31	9463.56	.00	.00	.00
9464.31	7.14	4.04	3.75	9464.31	21.42	12.11	10.31	9466.37	14.28	8.07	7.19
9465.75	7.14	4.04	3.44	9467.06	14.28	8.07	6.56	9467.06	7.14	4.04	3.75
9467.81	.00	.00	.00	9467.06	14.28	8.07	6.56	9469.12	14.28	8.07	7.19
9468.50	.00	.00	.00	9469.12	7.14	4.04	3.13	9469.12	7.14	4.04	4.06
9469.94	7.14	4.04	4.06	9469.94	21.42	12.11	10.62	9472.06	28.56	16.14	14.06
9472.75	21.42	12.11	10.31	9474.12	14.28	8.07	6.88	9474.12	.00	.00	.00
9474.12	7.14	4.04	3.44	9474.81	14.28	8.07	7.19	9475.56	7.14	4.04	3.75
9475.56	14.28	8.07	6.88	9476.94	21.42	12.11	10.31	9477.62	7.14	4.04	3.44
9477.62	14.28	8.07	7.19	9479.06	14.28	8.07	7.19	9479.06	7.14	4.04	3.44
9479.75	7.14	4.04	3.44	9479.75	14.28	8.07	7.19	9481.19	7.14	4.04	3.13
9480.37	7.14	4.04	3.13	9481.81	28.56	16.14	14.37	9483.25	28.56	16.14	13.75
9484.56	14.28	8.07	6.56	9484.56	7.14	4.04	3.75	9485.31	7.14	4.04	3.75
9485.31	14.28	8.07	7.19	9486.75	7.14	4.04	3.44	9486.00	21.42	12.11	10.31
9488.81	21.42	12.11	10.62	9488.12	7.14	4.04	3.44	9489.50	.00	.00	.00
9488.12	7.14	4.04	3.44	9490.19	21.42	12.11	10.31	9490.19	7.14	4.04	3.44
9490.87	7.14	4.04	3.44	9490.87	7.14	4.04	3.75	9491.62	7.14	4.04	3.75
9491.62	7.14	4.04	3.75	9492.37	21.42	12.11	10.94	9493.81	21.42	12.11	10.62
9494.50	14.28	8.07	6.56	9495.12	7.14	4.04	3.13	9495.12	14.28	8.07	7.19
9496.56	7.14	4.04	3.44	9495.81	14.28	8.07	7.19	9498.00	14.28	8.07	7.19
9497.25	7.14	4.04	3.44	9498.69	7.14	4.04	3.75	9498.00	7.14	4.04	3.44
9499.37	21.42	12.11	10.31	9500.06	21.42	12.11	10.31	9501.44	.00	.00	.00
9500.06	14.28	8.07	6.88	9502.81	21.42	12.11	10.31	9502.12	7.14	4.04	3.75
9503.56	7.14	4.04	3.44	9502.81	14.28	8.07	6.88	9504.94	21.42	12.11	10.62
9504.94	14.28	8.07	7.19	9506.37	21.42	12.11	10.62	9507.06	14.28	8.07	6.88
9507.75	14.28	8.07	6.88	9508.44	14.28	8.07	7.19	9509.19	-7.14	-4.04	-3.44
9507.75	14.28	8.07	6.88	9510.56	28.56	16.14	14.06	9510.56	7.14	4.04	3.44
9511.25	14.28	8.07	7.19	9512.00	.00	.00	.00	9511.25	7.14	4.04	3.44

9512.69	28.56	16.14	14.06
9514.06	14.28	8.07	7.19
9516.87	14.28	8.07	6.88
9519.69	28.55	16.14	14.06
9520.44	7.14	4.03	3.75
9521.81	14.28	8.07	6.88
9523.19	.00	.00	.00
9523.87	7.14	4.03	3.44
9526.75	21.42	12.11	10.62
9527.44	.00	.00	.00
9526.75	-14.28	-8.07	-7.19
9524.56	-14.28	-8.07	-7.19
9522.50	-14.28	-8.07	-6.88
9520.44	-14.28	-8.07	-7.19
9518.31	-14.28	-8.07	-7.19
9516.19	-14.28	-8.07	-6.88
9514.06	-14.28	-8.07	-7.19
9512.00	-14.28	-8.07	-7.19
9509.87	-14.28	-8.07	-6.88
9507.75	-14.28	-8.07	-6.88
9505.69	-14.28	-8.07	-7.19
9501.44	-28.56	-16.14	-13.75
9497.25	-28.56	-16.14	-14.37
9493.81	-28.56	-16.14	-13.75
9490.87	-21.42	-12.11	-10.62
9488.81	-7.14	-4.04	-3.44
9488.12	-7.14	-4.04	-3.44
9488.12	.00	.00	.00
9488.12	.00	.00	.00
9487.44	-7.14	-4.04	-3.44
9487.44	.00	.00	.00
9487.44	-7.14	-4.04	-3.44
9486.75	.00	.00	.00
9486.00	-7.14	-4.03	-3.75
9486.00	-7.14	-4.04	-3.44
9485.31	-7.14	-4.04	-3.75
9484.56	-7.14	-4.04	-3.13
9483.94	-7.14	-4.04	-3.44
9483.25	-7.14	-4.04	-3.44
9481.81	-7.14	-4.04	-3.75
9481.19	-7.14	-4.03	-4.06

9514.06	7.14	4.03	3.44
9514.81	14.28	8.07	7.19
9516.87	14.28	8.07	7.19
9521.12	.00	.00	.00
9520.44	14.28	8.07	6.88
9523.19	7.14	4.04	3.44
9522.50	21.42	12.11	10.62
9526.00	14.28	8.07	7.19
9527.44	7.14	4.04	3.44
9527.44	.00	.00	.00
9526.00	-14.28	-8.07	-7.19
9523.87	-14.28	-8.07	-6.88
9521.81	-14.28	-8.07	-6.88
9519.69	-14.28	-8.07	-7.19
9517.56	-14.28	-8.07	-7.19
9515.50	-14.28	-8.07	-6.88
9513.37	-14.28	-8.07	-6.88
9511.25	-14.28	-8.07	-7.19
9509.19	-14.28	-8.07	-7.19
9507.06	-14.28	-8.07	-6.88
9504.94	-28.56	-16.14	-14.37
9500.06	-28.55	-16.14	-13.75
9495.81	-21.42	-12.11	-10.62
9492.37	-21.42	-12.11	-10.94
9489.50	-14.28	-8.07	-6.88
9488.81	.00	.00	.00
9488.12	.00	.00	.00
9488.12	.00	.00	.00
9488.12	.00	.00	.00
9487.44	.00	.00	.00
9487.44	.00	.00	.00
9486.75	-7.14	-4.04	-3.44
9486.75	.00	.00	.00
9486.00	.00	.00	.00
9485.31	-7.14	-4.04	-3.44
9484.56	-7.14	-4.04	-3.75
9483.94	-7.14	-4.04	-3.13
9483.25	-7.14	-4.04	-3.44
9482.56	-7.14	-4.04	-3.44
9481.81	-7.14	-4.04	-3.13
9480.37	-7.14	-4.03	-4.00

9513.37	.00	.00	.00
9515.50	21.42	12.11	10.31
9518.31	29.56	16.14	14.06
9519.69	-7.14	-4.04	-3.44
9521.81	14.28	8.07	6.88
9522.50	.00	.00	.00
9525.31	14.28	8.07	6.88
9525.31	7.14	4.04	3.75
9527.44	.00	.00	.00
9527.44	-7.14	-4.04	-3.44
9525.31	-14.28	-8.07	-7.19
9523.19	-14.28	-8.07	-6.88
9521.12	-14.28	-8.07	-6.88
9519.00	-14.28	-8.07	-6.88
9516.87	-14.28	-8.07	-6.88
9514.81	-14.28	-8.07	-7.19
9512.69	-14.28	-8.07	-6.88
9510.56	-14.28	-8.07	-6.88
9508.44	-14.28	-8.07	-7.19
9506.37	-14.28	-8.07	-6.88
9502.81	-35.70	-20.18	-17.50
9498.69	-28.56	-16.14	-14.06
9495.12	-21.42	-12.11	-10.00
9491.62	-14.28	-8.07	-7.50
9489.50	-7.14	-4.04	-3.44
9488.81	-7.14	-4.04	-3.44
9488.12	.00	.00	.00
9488.12	.00	.00	.00
9488.12	-7.14	-4.04	-3.44
9487.44	.00	.00	.00
9487.44	.00	.00	.00
9486.75	.00	.00	.00
9486.75	-7.14	-4.03	-3.75
9486.00	.00	.00	.00
9485.31	.00	.00	.00
9484.56	.00	.00	.00
9483.94	.00	.00	.00
9483.25	.00	.00	.00
9432.56	-7.14	-4.04	-3.75
9481.19	-7.14	-4.04	-3.13
9430.37	.00	.00	.00

9603.37	-19.80	18.53	-3.44
9606.87	-9.82	.73	-3.44
9605.69	6.83	6.96	.63
9608.19	10.82	15.44	5.94
9610.25	17.97	19.46	9.06
9612.06	12.98	10.41	6.88
9614.62	20.23	12.97	11.87
9614.62	-.67	1.19	.00
9617.12	-.67	1.19	.00
9616.61	14.81	8.32	5.63
9619.31	15.32	8.61	4.06
9621.37	21.30	13.53	9.06
9622.34	6.99	5.49	2.19
9624.37	8.00	6.66	-.63

9603.37	8.82	34.59	10.31
9604.75	5.16	7.58	3.44
9607.69	19.47	15.61	10.00
9608.87	2.49	12.33	3.44
9610.69	18.63	18.28	9.38
9613.50	6.32	6.67	2.19
9614.87	13.64	9.23	6.88
9616.00	21.30	13.53	9.06
9616.44	6.49	5.21	3.44
9618.94	13.14	8.95	8.44
9619.31	7.15	4.02	3.75
9621.87	21.30	13.53	9.38
9623.69	15.32	8.61	4.38

9605.44	27.13	35.51	17.50
9607.56	13.32	12.16	4.69
9607.69	4.33	10.23	2.50
9608.87	8.98	17.53	6.88
9612.12	11.64	12.79	6.83
9612.50	13.48	10.70	5.63
9616.00	-1.16	1.47	-1.25
9616.44	14.81	8.32	5.63
9617.81	7.66	4.30	1.83
9618.50	6.99	5.49	1.88
9620.06	20.80	13.25	10.31
9623.25	13.48	10.70	5.31
9623.81	23.32	14.67	3.44

END OF RECORD 73 FILE 1

PRINTOUT OF .1 SEC TAER DATA

1859.90	27044.92	60.67	22.80	1860.00	27042.97	60.67	22.80	1860.10	27044.92	60.67	22.80
1860.20	27046.87	60.67	22.80	1860.30	27050.79	60.67	22.80	1860.40	27048.83	60.67	22.80
1860.50	27050.78	60.67	22.30	1860.60	27052.73	60.66	22.80	1860.70	27056.64	60.66	22.80
1860.80	27056.64	60.66	22.80	1860.90	27060.55	60.66	22.80	1861.00	27062.50	60.66	22.79
1861.10	27068.36	60.66	22.79	1861.20	27068.36	60.66	22.79	1861.30	27070.31	60.66	22.79
1861.40	27070.31	60.66	22.79	1861.50	27072.27	60.66	22.79	1861.60	27072.27	60.66	22.79
1861.70	27076.17	60.66	22.79	1861.80	27078.12	60.66	22.79	1861.90	27082.03	60.66	22.79
1862.00	27082.03	60.66	22.79	1862.10	27080.08	60.66	22.79	1862.20	27083.98	60.66	22.79
1862.30	27083.98	60.66	22.79	1862.40	27087.89	60.66	22.79	1862.50	27089.84	60.66	22.79
1862.60	27093.75	60.66	22.79	1862.70	27093.75	60.66	22.79	1862.80	27095.70	60.66	22.79
1862.90	27095.70	60.67	22.79	1863.00	27099.61	60.67	22.79	1863.10	27097.66	60.67	22.79
1863.20	27103.52	60.67	22.79	1863.30	27101.56	60.67	22.79	1863.40	27105.47	60.67	22.79
1863.50	27103.52	60.67	22.79	1863.60	27107.42	60.67	22.79	1863.70	27109.37	60.67	22.79
1863.80	27111.33	60.67	22.79	1863.90	27109.37	60.67	22.79	1864.00	27115.23	60.67	22.79
1864.10	27113.28	60.67	22.79	1864.20	27117.19	60.67	22.78	1864.30	27119.14	60.67	22.78
1864.40	27121.09	60.67	22.78	1864.50	27125.00	60.67	22.78	1864.60	27128.91	60.67	22.78
1864.70	27128.91	60.67	22.78	1864.80	27130.86	60.67	22.78	1864.90	27132.81	60.68	22.78
1865.00	27132.81	60.68	22.78	1865.10	27138.67	60.68	22.78	1865.20	27136.72	60.68	22.78
1865.30	27138.67	60.68	22.78	1865.40	27140.62	60.68	22.78	1865.50	27144.53	60.68	22.78
1865.60	27142.58	60.68	22.78	1865.70	27144.53	60.68	22.78	1865.80	27144.53	60.68	22.77
1865.90	27152.34	60.68	22.77	1866.00	27152.34	60.68	22.77	1866.10	27156.25	60.68	22.77
1866.20	27154.30	60.68	22.77	1866.30	27160.16	60.69	22.77	1866.40	27160.16	60.69	22.77
1866.50	27162.11	60.69	22.77	1866.60	27164.06	60.69	22.77	1866.70	27166.02	60.69	22.77
1866.80	27166.02	60.69	22.77	1866.90	27169.92	60.69	22.77	1867.00	27169.92	60.69	22.77
1867.10	27171.87	60.69	22.77	1867.20	27171.87	60.70	22.77	1867.30	27173.83	60.70	22.77
1867.40	27175.78	60.70	22.77	1867.50	27175.78	60.70	22.77	1867.60	27175.78	60.70	22.77
1867.70	27177.73	60.70	22.77	1867.80	27179.69	60.70	22.77	1867.90	27179.69	60.70	22.77
1868.00	27185.55	60.70	22.77	1868.10	27187.50	60.70	22.77	1868.20	27191.41	60.70	22.77
1868.30	27189.45	60.70	22.77	1868.40	27195.31	60.70	22.77	1868.50	27195.31	60.70	22.77
1868.60	27197.27	60.70	22.77	1868.70	27197.27	60.70	22.77	1868.80	27203.12	60.70	22.77
1868.90	27199.22	60.70	22.77	1869.00	27205.08	60.70	22.77	1869.10	27205.08	60.70	22.77
1869.20	27208.98	60.70	22.77	1869.30	27208.98	60.70	22.77	1869.40	27210.94	60.70	22.77
1869.50	27212.89	60.70	22.77	1869.60	27214.84	60.70	22.77	1869.70	27218.75	60.70	22.77
1869.80	27220.70	60.70	22.76	1869.90	27226.56	60.70	22.76	1870.00	27226.56	60.70	22.76
1870.10	27226.56	60.70	22.76	1870.20	27228.52	60.70	22.76	1870.30	27232.42	60.70	22.76
1870.40	27232.42	60.70	22.76	1870.50	27234.37	60.70	22.76	1870.60	27236.33	60.70	22.76
1870.70	27238.28	60.70	22.76	1870.80	27238.23	60.70	22.76	1870.90	27240.23	60.70	22.76
1871.00	27240.23	60.70	22.76	1871.10	27246.09	60.70	22.76	1871.20	27246.09	60.70	22.76
1871.30	27246.09	60.70	22.76	1871.40	27248.05	60.70	22.76	1871.50	27248.05	60.70	22.76
1871.60	27251.95	60.71	22.76	1871.70	27253.91	60.71	22.76	1871.80	27253.91	60.71	22.76
1871.90	27253.91	60.71	22.75	1872.00	27259.77	60.71	22.75	1872.10	27257.81	60.71	22.75
1872.20	27261.72	60.71	22.75	1872.30	27261.72	60.71	22.75	1872.40	27265.62	60.71	22.75
1872.50	27263.67	60.71	22.75	1872.60	27269.53	60.71	22.75	1872.70	27267.58	60.71	22.75
1872.80	27273.44	60.71	22.75	1872.90	27271.48	60.71	22.75	1873.00	27277.34	60.71	22.75
1873.10	27277.34	60.71	22.75	1873.20	27279.30	60.71	22.75	1873.30	27283.20	60.71	22.75
1873.40	27285.16	60.71	22.75	1873.50	27287.11	60.71	22.75	1873.60	27291.02	60.71	22.75
1873.70	27291.02	60.71	22.75	1873.80	27294.92	60.71	22.75	1873.90	27292.97	60.71	22.75
1874.00	27296.87	60.71	22.75	1874.10	27296.87	60.71	22.75	1874.20	27300.78	60.71	22.75
1874.30	27302.73	60.71	22.75	1874.40	27302.73	60.71	22.75	1874.50	27304.69	60.71	22.75
1874.60	27304.69	60.71	22.75	1874.70	27306.64	60.71	22.74	1874.80	27310.55	60.71	22.74
1874.90	27314.45	60.71	22.74	1875.00	27314.45	60.71	22.74	1875.10	27320.31	60.71	22.74
1875.20	27320.31	60.72	22.74	1875.30	27320.31	60.72	22.74	1875.40	27322.27	60.72	22.74

1875.50	27326.17	60.72	22.74	1875.60	27324.22	60.72	22.74	1875.70	27330.08	60.72	22.74
1875.80	27328.12	60.72	22.74	1875.90	27332.03	60.72	22.74	1876.00	27330.08	60.72	22.74
1876.10	27333.98	60.73	22.74	1876.20	27330.08	60.73	22.74	1876.30	27333.98	60.73	22.74
1876.40	27335.94	60.73	22.74	1876.50	27341.80	60.73	22.74	1876.60	27341.80	60.73	22.74
1876.70	27343.75	60.73	22.74	1876.80	27343.75	60.73	22.74	1876.90	27345.70	60.73	22.74
1877.00	27351.56	60.73	22.74	1877.10	27351.56	60.73	22.74	1877.20	27355.47	60.73	22.74
1877.30	27351.56	60.73	22.74	1877.40	27355.47	60.73	22.74	1877.50	27357.42	60.73	22.74
1877.60	27363.28	60.73	22.74	1877.70	27361.33	60.73	22.74	1877.80	27363.28	60.73	22.74
1877.90	27361.33	60.73	22.74	1878.00	27367.19	60.73	22.73	1878.10	27367.19	60.73	22.73
1878.20	27375.00	60.73	22.73	1878.30	27375.00	60.73	22.73	1878.40	27378.91	60.73	22.73
1878.50	27376.95	60.73	22.73	1878.60	27382.81	60.73	22.73	1878.70	27382.81	60.73	22.73
1878.80	27386.72	60.73	22.73	1878.90	27386.72	60.73	22.73	1879.00	27386.72	60.73	22.73
1879.10	27390.62	60.73	22.73	1879.20	27392.58	60.73	22.73	1879.30	27392.58	60.73	22.73
1879.40	27394.53	60.73	22.73	1879.50	27396.48	60.73	22.73	1879.60	27400.39	60.73	22.72
1879.70	27402.34	60.73	22.72	1879.80	27402.34	60.73	22.72	1879.90	27404.30	60.73	22.72
1880.00	27404.30	60.73	22.72	1880.10	27410.16	60.73	22.72	1880.20	27408.20	60.73	22.72
1880.30	27412.11	60.73	22.72	1880.40	27410.16	60.73	22.72	1880.50	27414.06	60.73	22.72
1880.60	27414.06	60.73	22.72	1880.70	27417.97	60.73	22.72	1880.80	27416.02	60.73	22.72
1880.90	27419.92	60.73	22.72	1881.00	27419.92	60.73	22.72	1881.10	27425.78	60.73	22.72
1881.20	27423.93	60.74	22.72	1881.30	27427.73	60.74	22.72	1881.40	27425.78	60.74	22.72
1881.50	27431.64	60.74	22.72	1881.60	27433.59	60.74	22.72	1881.70	27435.55	60.74	22.72
1881.80	27437.50	60.74	22.72	1881.90	27443.36	60.74	22.72	1882.00	27443.36	60.74	22.72
1882.10	27445.31	60.74	22.72	1882.20	27447.27	60.74	22.72	1882.30	27449.22	60.74	22.72
1882.40	27451.17	60.74	22.72	1882.50	27451.17	60.74	22.72	1882.60	27453.12	60.74	22.72
1882.70	27453.12	60.74	22.71	1882.80	27458.98	60.74	22.71	1882.90	27458.98	60.74	22.71
1883.00	27460.94	60.74	22.71	1883.10	27458.98	60.74	22.71	1883.20	27466.80	60.74	22.71
1883.30	27464.84	60.74	22.71	1883.40	27472.66	60.74	22.71	1883.50	27468.75	60.74	22.71
1883.60	27470.70	60.74	22.71	1883.70	27474.61	60.74	22.70	1883.80	27478.52	60.74	22.70
1883.90	27478.52	60.74	22.70	1884.00	27482.42	60.74	22.70	1884.10	27480.47	60.74	22.70
1884.20	27482.42	60.74	22.70	1884.30	27484.37	60.74	22.70	1884.40	27488.28	60.75	22.70
1884.50	27488.28	60.75	22.70	1884.60	27490.23	60.75	22.70	1884.70	27492.19	60.75	22.70
1884.80	27490.23	60.75	22.70								

PRINTOUT OF .1 SEC VEL DATA

9623.69	.50	.23	-1.25	9624.12	16.49	7.70	2.81	9624.25	24.98	9.35	6.56
9625.44	9.00	1.93	2.50	9624.75	.50	.28	-1.25	9625.19	12.14	13.08	5.63
9625.97	20.30	17.67	6.56	9626.50	15.82	8.89	3.13	9626.50	14.81	8.33	5.31
9627.56	22.47	12.63	7.19	9627.94	29.13	16.37	12.19	9630.00	21.97	12.35	9.06
9629.75	7.66	4.30	2.19	9630.44	7.15	4.02	3.44	9630.44	7.16	4.02	3.75
9631.19	7.66	4.30	2.50	9630.94	15.32	8.61	4.38	9632.06	21.97	12.35	9.06
9632.75	21.97	12.35	8.75	9633.81	14.82	8.33	5.31	9633.81	-6.65	-3.74	-4.69
9632.87	7.66	4.30	2.19	9634.25	14.31	8.04	6.88	9634.25	14.31	8.04	6.88
9635.62	21.46	12.06	10.31	9636.31	21.47	12.06	10.62	9637.75	15.32	8.61	4.69
9637.25	8.67	4.87	-.63	9637.62	10.84	-.18	.63	9637.37	15.99	7.42	4.38
9638.50	5.65	7.88	2.19	9637.81	14.98	6.85	6.88	9639.87	16.16	5.94	5.31
9638.87	9.00	1.92	2.19	9640.31	9.00	1.92	2.19	9639.31	9.00	1.92	2.19
9640.75	22.81	9.68	10.62	9641.44	15.65	5.65	6.88	9642.12	1.50	-3.86	1.56
9641.75	16.82	4.75	5.63	9643.25	16.66	6.22	4.06	9642.56	9.00	1.92	2.19
9643.69	22.64	11.15	9.06	9644.37	14.98	6.85	6.88	9645.06	22.64	11.15	9.38
9646.25	29.13	16.36	12.81	9647.62	15.99	7.42	4.06	9647.06	9.34	3.68	-.63
9647.50	16.83	4.74	5.63	9648.19	8.50	1.63	3.44	9648.19	21.98	12.34	9.06
9650.00	16.83	4.74	5.63	9649.31	1.34	-2.39	.00	9650.00	16.00	7.41	4.06
9650.12	23.82	10.24	7.81	9651.56	7.83	2.82	3.44	9650.81	2.69	-.06	-5.31
9650.50	13.05	4.19	-8.75	9649.06	32.84	16.87	4.06	9651.31	30.98	14.26	11.25
9651.31	17.59	3.54	5.63	9652.44	9.69	.72	2.19	9651.75	16.33	4.45	6.88
9653.81	24.83	6.08	10.31	9653.81	9.84	-.76	3.44	9654.50	15.66	5.65	6.88
9655.19	16.33	4.45	6.88	9655.87	9.17	.43	3.44	9655.87	16.33	4.45	7.19

9657.31	17.00	3.26	7.19	9657.31	9.17	.43	3.44	9658.00	8.50	1.63	3.44
9658.00	9.17	.43	3.44	9658.69	16.37	4.45	6.88	9659.37	9.17	.43	3.44
9659.37	.67	-1.20	.00	9659.37	6.49	5.21	3.44	9660.06	14.99	6.84	7.19
9660.81	7.83	2.82	3.75	9660.81	21.48	12.05	10.62	9662.94	28.63	16.07	14.06
9663.62	22.82	9.66	10.31	9665.00	7.83	2.82	3.44	9664.31	13.64	9.23	6.88
9666.37	21.47	12.05	10.31	9666.37	7.16	4.02	3.44	9667.06	7.16	4.02	3.44
9667.05	21.48	12.05	10.31	9669.12	7.16	4.02	3.44	9667.75	7.66	4.30	2.50
9669.62	21.98	12.33	9.38	9669.62	14.32	8.04	6.88	9671.00	14.82	8.32	5.31
9670.69	8.68	4.87	-.94	9670.81	15.84	8.89	3.13	9671.31	16.51	7.69	3.13
9671.44	24.17	11.99	4.69	9672.25	22.83	14.39	4.69	9672.37	29.99	18.40	8.44
9673.94	23.16	11.42	7.81	9673.94	1.18	-.91	-1.56	9673.62	8.18	4.59	.63
9674.06	22.49	12.62	7.81	9675.19	15.37	8.60	4.06	9674.87	8.17	4.59	.94
9675.37	15.33	8.60	4.69	9675.81	15.50	7.12	5.63	9676.50	7.33	2.53	4.69
9676.75	7.67	4.30	1.88	9676.87	8.85	3.39	.63	9676.87	23.33	9.94	5.38
9678.75	23.16	11.42	8.13	9678.50	1.69	-.63	-3.13	9678.12	9.69	.71	1.88
9678.87	9.68	.70	2.50	9678.62	16.84	4.72	5.94	9680.06	24.17	7.25	10.31
9680.69	8.51	1.62	3.13	9680.69	1.18	-.91	-1.25	9680.44	23.33	9.94	9.06
9682.50	17.52	3.52	5.31	9681.50	9.01	1.90	2.19	9682.94	14.32	8.03	7.19
9682.94	15.67	5.63	7.19	9684.37	7.83	2.82	3.44	9683.62	15.50	7.12	5.31
9685.44	16.01	7.40	4.38	9684.50	14.83	8.32	5.63	9686.56	14.32	8.03	6.88
9685.87	14.32	8.03	6.88	9687.94	21.48	12.05	10.31	9687.94	7.16	4.02	3.44
9688.62	21.99	12.33	9.06	9689.75	21.99	12.33	9.38	9690.50	14.83	8.32	5.31
9690.81	21.99	12.33	8.75	9692.75	14.83	8.32	5.94	9692.00	14.83	8.32	5.63
9693.37	7.67	4.30	1.88	9692.37	7.67	4.30	2.19	9693.81	14.32	8.03	7.19
9693.81	14.32	8.03	6.56	9695.12	22.50	12.62	7.50	9695.31	8.85	3.38	.94
9695.31	8.34	3.10	2.19	9695.75	8.69	4.87	-.63	9695.19	9.70	5.44	-3.13
9695.12	25.04	14.05	.94	9695.37	32.37	16.57	5.63	9696.25	16.01	7.40	4.38
9696.25	22.16	10.85	10.62	9698.37	22.83	9.64	10.62	9698.37	1.86	-2.12	-1.88
9698.00	9.02	1.90	1.88	9698.75	23.51	3.44	10.62	9700.12	10.53	-2.00	3.44
9699.44	17.70	2.02	6.88	9701.50	17.02	3.22	6.56	9700.75	10.87	-.23	1.25
9701.75	9.69	.69	2.50	9701.25	8.68	.12	4.38	9702.62	2.02	-3.61	.00
9701.75	1.35	-2.41	.00	9702.62	22.83	9.64	10.31	9703.31	30.60	13.65	13.75
9705.37	22.16	10.84	10.31	9705.37	7.67	4.30	2.19	9705.81	7.67	4.30	2.19
9705.81	7.67	4.30	2.50	9706.31	29.16	16.34	12.81	9708.37	21.49	12.04	10.31
9708.37	14.33	8.03	6.88	9709.75	.51	.29	-1.56	9708.06	.51	.29	-1.56
9709.44	21.49	12.04	10.31	9710.12	30.34	15.42	11.25	9711.69	16.18	5.90	5.63
9711.25	.17	-1.49	1.25	9711.94	.51	.29	-1.25	9711.00	16.36	9.17	1.56
9712.25	24.38	15.24	.94	9711.19	31.03	18.97	5.63	9713.37	29.50	18.12	9.69
9713.12	16.53	7.68	2.81	9713.94	8.86	3.38	.63	9713.25	14.16	9.52	9.94
9715.12	22.00	12.33	9.38	9715.12	14.32	8.03	6.88	9716.50	14.32	8.03	6.88
9716.50	.51	.29	-1.56	9716.19	14.84	8.32	5.31	9717.56	21.49	12.05	10.31
9718.25	7.16	4.01	3.44	9718.25	7.67	4.30	2.19	9718.69	14.84	8.31	5.63
9719.37	22.00	12.33	9.38	9720.56	22.51	12.62	7.50	9720.87	7.67	4.30	1.56
9720.87	7.16	4.01	3.75	9721.62	7.67	4.30	2.50	9721.37	22.00	12.33	9.06
9723.44	14.32	8.03	6.56	9722.69	7.16	4.01	3.44	9724.12	8.35	3.09	2.50
9723.19	11.05	-1.73	2.19	9724.56	15.51	7.11	5.31	9724.25	13.48	10.73	5.31
9725.62	8.52	1.60	3.44	9724.94	9.03	1.88	2.19	9726.06	16.19	5.90	5.63
9726.06	22.84	9.63	10.31	9728.12	15.68	5.61	7.19	9727.50	8.52	1.60	3.44
9728.81	10.54	-2.02	3.13	9728.12	15.51	7.11	5.94	9730.00	27.14	19.96	12.81
9730.69	15.00	6.82	7.19	9731.44	15.52	7.11	5.63	9731.81	30.35	15.42	10.62
9733.56	23.19	11.40	7.81	9733.37	8.18	4.59	.63	9733.69	15.35	8.60	4.06
9734.19	14.84	8.31	6.25	9734.94	14.84	8.32	5.31	9735.25	8.35	3.09	1.56
9735.25	8.35	3.09	2.19	9735.69	9.72	5.44	-3.44	9734.56	25.58	14.33	-.63
9735.56	24.55	13.76	2.19	9735.00	8.69	4.87	-.94	9735.37	.51	.29	-1.56
9734.69	22.01	12.33	9.38	9737.25	22.52	12.61	7.81	9736.25	22.00	12.33	9.06
9739.06	14.33	8.03	6.88	9737.62	-5.98	-4.94	-5.00	9738.06	23.70	11.69	6.25

9738.87	29.68	16.63	10.94	9740.25	15.01	6.82	6.88	9740.25	15.69	5.61	6.88
9741.62	9.03	1.88	2.50	9740.75	2.54	-3.34	-1.25	9741.37	17.04	3.19	6.88
9742.12	24.21	7.20	10.62	9743.50	17.04	3.19	6.88	9743.50	9.88	-8.3	3.13
9744.12	16.36	4.39	6.88	9744.87	1.52	-3.92	1.25	9744.37	9.20	.38	3.44
9745.56	24.38	10.47	6.56								

END OF RECORD 74 FILE 1

PRINTOUT OF .1 SEC TAER DATA

1884.90	27494.14	60.75	22.70	1885.00	27496.09	60.75	22.70	1885.10	27500.00	60.75	22.70
1885.20	27500.00	60.75	22.70	1885.30	27503.91	60.75	22.70	1885.40	27503.91	60.75	22.70
1885.50	27509.77	60.75	22.70	1885.60	27507.81	60.75	22.70	1885.70	27511.72	60.75	22.70
1885.80	27509.77	60.76	22.70	1885.90	27513.67	60.76	22.70	1886.00	27515.62	60.76	22.70
1886.10	27513.67	60.76	22.70	1886.20	27515.62	60.76	22.70	1886.30	27521.48	60.76	22.70
1886.40	27521.48	60.76	22.70	1886.50	27519.53	60.76	22.70	1886.60	27523.44	60.76	22.70
1886.70	27529.30	60.76	22.70	1886.80	27533.20	60.76	22.70	1886.90	27533.20	60.76	22.70
1887.00	27537.11	60.76	22.70	1887.10	27533.20	60.76	22.70	1887.20	27541.02	60.76	22.70
1887.30	27539.06	60.76	22.70	1887.40	27544.92	60.76	22.70	1887.50	27542.97	60.76	22.69
1887.60	27546.87	60.76	22.69	1887.70	27548.83	60.76	22.69	1887.80	27552.73	60.76	22.69
1887.90	27548.83	60.76	22.69	1888.00	27550.78	60.76	22.69	1888.10	27552.73	60.76	22.69
1888.20	27558.59	60.76	22.69	1888.30	27558.59	60.76	22.69	1888.40	27564.45	60.76	22.69
1888.50	27564.45	60.76	22.69	1888.60	27568.36	60.76	22.69	1888.70	27568.36	60.76	22.69
1888.80	27568.36	60.76	22.68	1888.90	27570.31	60.76	22.68	1889.00	27570.31	60.76	22.68
1889.10	27574.22	60.76	22.68	1889.20	27576.17	60.76	22.68	1889.30	27578.12	60.76	22.68
1889.40	27578.12	60.76	22.68	1889.50	27578.12	60.76	22.68	1889.60	27580.08	60.76	22.68
1889.70	27582.03	60.76	22.68	1889.80	27583.98	60.76	22.68	1889.90	27587.89	60.76	22.68
1890.00	27587.89	60.76	22.68	1890.10	27591.80	60.76	22.68	1890.20	27591.80	60.76	22.68
1890.30	27595.70	60.76	22.68	1890.40	27597.66	60.76	22.68	1890.50	27601.56	60.76	22.68
1890.60	27601.56	60.76	22.68	1890.70	27601.56	60.76	22.68	1890.80	27605.47	60.76	22.68
1890.90	27605.47	60.76	22.68	1891.00	27607.42	60.76	22.68	1891.10	27609.37	60.76	22.68
1891.20	27611.33	60.76	22.68	1891.30	27611.33	60.76	22.68	1891.40	27615.23	60.76	22.67
1891.50	27613.28	60.76	22.67	1891.60	27619.14	60.76	22.67	1891.70	27617.19	60.76	22.67
1891.80	27625.00	60.76	22.67	1891.90	27626.95	60.76	22.67	1892.00	27630.86	60.76	22.67
1892.10	27630.86	60.76	22.67	1892.20	27634.77	60.76	22.67	1892.30	27634.77	60.76	22.67
1892.40	27634.77	60.76	22.67	1892.50	27636.72	60.76	22.67	1892.60	27640.62	60.76	22.67
1892.70	27640.62	60.76	22.67	1892.80	27638.67	60.76	22.67	1892.90	27642.58	60.76	22.67
1893.00	27646.48	60.76	22.67	1893.10	27648.44	60.76	22.67	1893.20	27646.48	60.76	22.67
1893.30	27652.34	60.76	22.67	1893.40	27652.34	60.76	22.67	1893.50	27658.20	60.76	22.67
1893.60	27658.20	60.76	22.67	1893.70	27660.16	60.76	22.67	1893.80	27656.25	60.76	22.67
1893.90	27662.11	60.77	22.67	1894.00	27662.11	60.77	22.66	1894.10	27667.97	60.77	22.66
1894.20	27666.02	60.77	22.66	1894.30	27666.02	60.77	22.66	1894.40	27669.92	60.77	22.66
1894.50	27671.87	60.77	22.66	1894.60	27671.87	60.77	22.66	1894.70	27673.83	60.77	22.66
1894.80	27677.73	60.77	22.66	1894.90	27675.78	60.77	22.66	1895.00	27679.69	60.77	22.66
1895.10	27679.69	60.77	22.66	1895.20	27685.55	60.77	22.66	1895.30	27685.55	60.77	22.66
1895.40	27691.41	60.77	22.66	1895.50	27689.45	60.77	22.66	1895.60	27693.36	60.77	22.66
1895.70	27695.31	60.77	22.66	1895.80	27697.27	60.77	22.66	1895.90	27699.22	60.77	22.66
1896.00	27701.17	60.77	22.66	1896.10	27701.17	60.77	22.66	1896.20	27705.08	60.77	22.65
1896.30	27707.03	60.77	22.65	1896.40	27705.08	60.77	22.65	1896.50	27708.98	60.77	22.65
1896.60	27708.98	60.77	22.65	1896.70	27710.94	60.77	22.65	1896.80	27712.89	60.77	22.65
1896.90	27715.90	60.77	22.65	1897.00	27720.70	60.77	22.65	1897.10	27726.56	60.77	22.65
1897.20	27724.61	60.77	22.65	1897.30	27730.47	60.77	22.65	1897.40	27728.52	60.77	22.65
1897.50	27732.42	60.77	22.65	1897.60	27730.47	60.77	22.65	1897.70	27734.38	60.77	22.65
1897.80	27734.38	60.77	22.65	1897.90	27738.28	60.77	22.65	1898.00	27736.33	60.77	22.65
1898.10	27740.23	60.77	22.65	1898.20	27740.23	60.77	22.65	1898.30	27742.19	60.77	22.65
1898.40	27744.14	60.77	22.65	1898.50	27746.09	60.77	22.65	1898.60	27748.05	60.77	22.65
1898.70	27750.00	60.77	22.65	1898.80	27750.00	60.77	22.65	1898.90	27751.95	60.77	22.65

1899.00	27755.86	60.77	22.65
1899.30	27761.72	60.77	22.64
1899.60	27767.58	60.77	22.64
1899.90	27769.53	60.77	22.64
1900.20	27775.39	60.77	22.64
1900.50	27787.11	60.77	22.64
1900.80	27787.11	60.77	22.54
1901.10	27794.92	60.77	22.63
1901.40	27798.83	60.77	22.63
1901.70	27804.69	60.77	22.63
1902.00	27812.50	60.77	22.63
1902.30	27816.41	60.77	22.63
1902.60	27822.27	60.77	22.63
1902.90	27822.27	60.77	22.63
1903.20	27830.08	60.77	22.63
1903.50	27833.98	60.77	22.63
1903.80	27841.80	60.77	22.63
1904.10	27849.61	60.77	22.63
1904.40	27853.52	60.77	22.63
1904.70	27857.42	60.77	22.63
1905.00	27863.28	60.77	22.62
1905.30	27865.23	60.77	22.62
1905.60	27878.91	60.77	22.62
1905.90	27880.86	60.77	22.62
1906.20	27886.72	60.77	22.62
1906.50	27890.62	60.77	22.62
1906.80	27892.58	60.76	22.62
1907.10	27900.39	60.76	22.61
1907.40	27904.30	60.76	22.61
1907.70	27910.16	60.76	22.61
1908.00	27914.06	60.76	22.61
1908.30	27919.92	60.76	22.61
1908.60	27927.73	60.76	22.61
1908.90	27929.69	60.76	22.61
1909.20	27935.55	60.75	22.61
1909.50	27941.41	60.75	22.61
1909.80	27947.27	60.75	22.60

PRINTOUT OF .1 SEC VEL DATA

9745.69	23.88	10.19	7.31
9746.81	13.82	7.74	8.44
9750.19	7.17	4.01	3.44
9752.25	21.50	12.04	10.62
9753.00	29.17	16.33	12.81
9753.81	7.68	4.30	1.56
9757.81	15.87	8.83	2.50
9757.00	15.87	8.88	2.50
9760.06	16.89	9.46	.00
9760.06	22.52	12.61	7.50
9759.62	16.89	9.46	.00
9761.00	22.01	12.32	9.38
9764.50	14.33	8.02	6.88
9764.87	7.17	4.01	3.44
9766.94	14.33	8.02	7.19
9767.44	9.89	-8.85	3.44
9769.25	21.50	12.04	10.31
9771.69	15.53	7.10	5.31

1899.10	27753.91	60.77	22.65
1899.40	27761.72	60.77	22.64
1899.70	27765.62	60.77	22.64
1900.00	27771.48	60.77	22.64
1900.30	27779.30	60.77	22.64
1900.60	27783.20	60.77	22.64
1900.90	27791.02	60.77	22.64
1901.20	27796.87	60.77	22.63
1901.50	27800.78	60.77	22.63
1901.80	27806.64	60.77	22.63
1902.10	27814.45	60.77	22.63
1902.40	27820.31	60.77	22.63
1902.70	27822.27	60.77	22.63
1903.00	27828.12	60.77	22.63
1903.30	27832.03	60.77	22.63
1903.60	27835.94	60.77	22.63
1903.90	27843.75	60.77	22.63
1904.20	27849.61	60.77	22.63
1904.50	27857.42	60.77	22.63
1904.80	27859.37	60.77	22.63
1905.10	27861.33	60.77	22.62
1905.40	27873.05	60.77	22.62
1905.70	27876.95	60.77	22.62
1906.00	27884.77	60.77	22.62
1906.30	27895.72	60.77	22.62
1906.60	27892.58	60.77	22.62
1906.90	27896.48	60.76	22.62
1907.20	27900.39	60.76	22.62
1907.50	27904.30	60.76	22.61
1907.80	27912.11	60.76	22.61
1908.10	27912.11	60.76	22.61
1908.40	27919.92	60.76	22.61
1908.70	27923.83	60.76	22.61
1909.00	27933.59	60.75	22.61
1909.30	27939.45	60.75	22.61
1909.60	27945.31	60.75	22.61

9747.12	16.37	4.39	7.19
9748.81	22.18	10.83	10.31
9751.56	7.85	2.80	3.44
9753.00	.00	.00	.00
9754.81	22.01	12.32	9.06
9755.12	36.34	20.35	15.94
9757.50	14.84	8.31	5.63
9759.44	22.52	12.61	7.50
9758.50	9.22	5.15	-2.19
9761.12	1.02	.57	-2.81
9759.50	30.71	17.20	8.13
9763.12	21.50	12.04	10.62
9764.50	.51	.29	-1.56
9764.87	14.33	8.03	6.88
9767.69	5.64	7.94	2.50
9768.12	14.84	8.31	5.63
9770.62	14.33	8.02	6.88
9771.69	14.33	8.02	7.19

1899.20	27759.77	60.77	22.65
1899.50	27761.72	60.77	22.64
1899.80	27771.48	60.77	22.64
1900.10	27773.44	60.77	22.64
1900.40	27783.20	60.77	22.64
1900.70	27789.06	60.77	22.64
1901.00	27791.02	60.77	22.63
1901.30	27796.87	60.77	22.63
1901.60	27802.73	60.77	22.63
1901.90	27808.59	60.77	22.63
1902.20	27816.41	60.77	22.63
1902.50	27816.41	60.77	22.63
1902.80	27826.17	60.77	22.63
1903.10	27826.17	60.77	22.63
1903.40	27833.98	60.77	22.63
1903.70	27841.80	60.77	22.63
1904.00	27847.65	60.77	22.63
1904.30	27853.52	60.77	22.63
1904.60	27853.52	60.77	22.63
1904.90	27861.33	60.77	22.62
1905.20	27867.19	60.77	22.62
1905.50	27875.00	60.77	22.62
1905.80	27880.86	60.77	22.62
1906.10	27884.77	60.77	22.62
1906.40	27889.67	60.77	22.62
1906.70	27894.53	60.76	22.62
1907.00	27892.58	60.76	22.62
1907.30	27902.34	60.77	22.62
1907.60	27906.25	60.76	22.61
1907.90	27914.06	60.76	22.61
1908.20	27917.97	60.76	22.61
1908.50	27919.92	60.76	22.61
1908.80	27929.69	60.76	22.61
1909.10	27931.64	60.75	22.61
1909.40	27941.41	60.75	22.61
1909.70	27947.27	60.75	22.61

9747.12	15.17	5.32	3.44
9750.87	15.01	6.81	6.88
9750.87	7.84	2.80	3.44
9752.25	.00	.00	.00
9754.81	-6.65	-3.73	-5.00
9757.00	37.36	20.92	13.44
9758.94	1.02	.57	-2.50
9758.50	15.87	8.88	3.13
9759.62	22.52	12.61	7.81
9759.50	-5.63	-3.15	-7.50
9761.25	22.52	12.61	7.50
9763.12	14.33	8.02	6.88
9764.19	7.68	4.30	1.98
9766.25	21.50	12.04	10.31
9767.44	1.19	-.93	-1.25
9768.56	14.85	8.31	5.63
9770.62	15.53	7.10	5.31
9773.12	21.50	12.04	10.31

9773.75	21.50	12.04	10.00	9775.12	15.53	7.10	5.94	9774.94	1.19	- .93	- .94
9774.94	15.36	8.60	4.06	9775.75	14.85	8.31	5.31	9776.00	7.17	4.01	3.13
9776.37	15.87	8.89	2.50	9776.50	16.39	9.17	1.88	9776.75	9.73	5.45	-2.81
9775.94	16.90	9.46	.00	9776.75	8.19	4.59	.63	9776.06	14.85	8.31	5.31
9777.81	14.84	8.31	5.31	9777.12	22.53	12.61	7.50	9779.31	37.89	21.21	11.87
9779.50	23.04	12.90	6.25	9780.56	15.36	8.60	4.06	9780.31	13.31	7.45	10.00
9782.56	14.85	8.31	5.31	9781.37	2.56	1.44	-7.19	9781.12	8.19	4.59	.63
9781.50	22.02	12.33	9.06	9782.94	14.85	8.31	5.94	9782.69	-6.65	-3.73	-4.69
9782.00	7.68	4.30	1.88	9783.06	29.87	15.12	12.19	9784.44	22.19	10.82	10.31
9785.12	.63	-1.22	.00	9784.44	15.70	5.59	6.88	9786.50	23.38	9.89	9.06
9786.25	24.75	7.45	9.06	9788.31	24.23	7.16	10.31	9788.31	9.90	- .86	3.75
9789.06	-5.12	-7.67	-3.44	9787.62	7.85	2.79	3.44	9789.75	23.38	9.89	9.38
9789.50	23.38	9.89	9.06	9791.56	15.02	6.80	6.56	9790.81	-5.97	-4.94	-5.00
9790.56	16.05	7.38	4.38	9791.69	22.02	12.32	9.06	9792.37	7.68	4.30	1.83
9792.06	7.68	4.30	1.88	9792.75	21.51	12.04	10.62	9794.19	7.17	4.01	3.75
9793.50	7.68	4.30	2.19	9794.62	14.85	8.31	5.63	9794.62	21.51	12.04	10.31
9796.69	22.02	12.32	8.75	9796.37	22.02	12.32	9.06	9798.50	14.34	8.02	6.88
9797.75	7.17	4.01	3.44	9799.19	21.51	12.04	10.31	9799.81	14.85	8.31	5.63
9800.31	16.79	9.17	1.56	9800.12	17.94	10.04	-3.13	9799.69	9.74	5.45	-3.44
9799.44	15.37	8.60	4.38	9800.56	23.56	13.19	5.00	9800.44	2.06	1.15	-5.63
9799.44	8.20	4.59	.63	9800.56	15.37	8.60	4.38	9800.31	7.68	4.30	1.88
9800.94	14.85	8.31	5.31	9801.37	22.02	12.32	8.75	9802.69	29.71	16.62	10.94
9803.56	37.39	20.92	13.75	9805.44	15.37	8.60	4.38	9804.44	14.85	8.31	5.31
9806.50	14.34	8.02	6.88	9805.81	7.68	4.30	1.88	9806.87	7.68	4.30	2.19
9806.25	7.17	4.01	3.75	9807.62	14.34	8.02	6.88	9807.62	14.34	8.02	6.88
9809.00	7.17	4.01	3.44	9808.31	7.85	2.79	3.44	9809.69	14.85	8.31	5.31
9809.37	7.00	5.52	2.19	9810.12	15.02	6.80	6.88	9810.75	14.34	8.03	6.56
9811.44	13.65	9.25	7.19	9812.19	14.34	8.03	6.88	9812.81	7.17	4.01	3.13
9812.81	7.17	4.01	3.44	9813.50	21.51	12.04	10.62	9814.94	7.85	2.79	3.44
9814.19	14.34	8.02	6.88	9816.31	29.19	16.34	12.81	9816.75	8.37	3.08	2.19
9816.75	- .68	1.22	.00	9816.75	21.51	12.04	10.31	9818.81	14.34	8.03	6.88
9818.12	14.17	9.54	5.31	9819.97	15.37	8.60	4.06	9818.94	- .04	.06	.00
9819.87	16.05	7.38	4.06	9819.75	18.15	9.46	-1.56	9819.56	22.02	12.32	9.06
9821.56	27.48	16.99	15.63	9822.69	29.20	16.34	12.50	9824.06	.00	.00	.00
9822.69	6.48	5.24	3.44	9824.75	15.37	8.60	4.38	9823.56	11.46	4.81	-6.25
9823.50	19.66	9.39	-5.94	9822.37	17.26	11.27	-2.81	9822.94	23.92	14.99	1.88
9822.75	9.40	3.65	- .94	9822.75	7.17	4.01	3.44	9823.44	13.65	9.25	6.88
9824.12	14.86	8.31	5.63	9824.56	14.86	8.31	5.63	9825.25	14.34	8.02	7.19
9826.00	14.34	8.02	6.88	9826.62	22.20	10.81	10.31	9826.06	21.51	12.04	10.31
9828.69	13.65	9.25	6.56	9829.37	7.06	2.79	3.44	9829.37	15.03	6.80	7.19
9830.81	.00	.00	.00	9829.37	6.48	5.24	3.13	9831.44	20.83	13.27	10.31
9831.44	14.34	8.02	7.19	9832.87	.00	.00	.00	9831.44	7.17	4.01	3.75
9833.62	15.03	6.80	7.19	9832.87	7.17	4.01	3.13	9834.25	21.51	12.04	10.31
9834.94	15.03	6.80	7.19	9835.69	6.48	5.24	3.75	9835.69	6.48	5.24	3.44
9836.37	28.68	16.05	14.06	9838.50	22.20	10.81	10.62	9838.50	7.86	2.78	3.44
9839.19	20.83	13.27	10.31	9840.56	20.82	13.27	10.31	9841.25	7.17	4.01	3.44
9841.25	14.26	8.31	5.31	9842.31	14.86	8.31	5.31	9842.31	14.34	8.03	6.56
9843.62	.00	.00	.00	9842.31	.00	.00	.00	9843.62	23.06	12.91	6.25
9843.56	16.41	9.18	1.56	9843.94	16.41	9.18	1.25	9843.81	2.06	1.16	-5.63
9842.81	16.41	9.18	1.25	9844.06	17.44	9.76	-1.56	9842.50	23.06	12.91	5.94
9845.25	35.85	20.06	17.50	9846.00	21.51	12.04	10.62	9847.37	7.69	4.30	1.88
9846.37	7.69	4.30	1.88	9847.75	14.34	8.03	6.88	9847.75	13.65	9.25	7.19
9849.19	13.65	9.25	7.19	9849.19	6.48	5.24	3.44	9849.87	6.48	5.24	3.44
9849.87	6.48	5.24	3.44	9850.56	14.17	9.54	5.31	9850.94	14.86	8.32	5.63
9851.69	13.65	9.26	7.19	9852.37	- .69	1.23	.00	9851.69	6.48	5.24	3.44
9853.06	- .69	1.23	.00	9851.69	15.89	8.89	2.81	9853.62	29.72	16.63	10.94

9853.87	8.72	.03	4.69	9854.56	14.69	9.83	4.06	9854.69	5.97	9.80	- .94
9854.37	7.69	4.30	1.88	9855.06	21.51	12.04	10.62	9856.50	21.86	13.85	7.81
9856.62	14.69	9.84	4.06	9857.31	7.69	4.30	2.19	9857.06	-7.34	-2.50	-4.69
9856.37	13.65	9.26	6.88	9858.44	28.00	17.29	13.75	9859.12	5.80	6.47	3.44
9859.12	-1.55	3.98	-1.56	9858.81	27.30	18.52	13.75	9861.87	12.96	10.49	6.88
9860.19	5.62	7.99	2.19	9862.31	20.65	14.80	9.06	9862.00	12.10	13.24	5.31
9863.37	4.24	10.46	2.19	9862.44	5.45	9.52	.63	9863.50	27.65	20.33	10.94
9864.62	20.65	14.80	9.06	9865.31	5.79	6.48	3.44	9865.31	13.48	10.78	5.31
9866.37	22.20	15.67	5.00	9866.31	8.32	7.93	-3.13	9865.75	9.38	7.93	-3.75
9865.56	1.21	3.91	-7.19								

END OF RECORD 75 FILE 1

PRINTOUT OF .1 SEC TAER DATA

1909.99	27949.22	60.75	22.60	1910.00	27947.27	60.75	22.60	1910.10	27955.08	60.75	22.60
1910.20	27953.12	60.74	22.60	1910.30	27957.03	60.74	22.60	1910.40	27957.03	60.74	22.60
1910.50	27958.93	60.74	22.60	1910.60	27958.98	60.74	22.60	1910.70	27960.94	60.74	22.60
1910.80	27962.89	60.74	22.60	1910.90	27964.84	60.74	22.60	1911.00	27968.75	60.74	22.60
1911.10	27972.66	60.74	22.60	1911.20	27974.61	60.74	22.60	1911.30	27974.61	60.74	22.60
1911.40	27974.61	60.74	22.60	1911.50	27974.61	60.74	22.60	1911.60	27978.52	60.74	22.60
1911.70	27974.61	60.74	22.60	1911.80	27980.47	60.74	22.60	1911.90	27980.47	60.74	22.60
1912.00	27982.42	60.74	22.60	1912.10	27984.37	60.74	22.60	1912.20	27986.33	60.74	22.60
1912.30	27988.28	60.74	22.60	1912.40	27988.28	60.74	22.60	1912.50	27990.23	60.74	22.60
1912.60	27990.23	60.74	22.60	1912.70	27994.14	60.74	22.60	1912.80	27998.05	60.74	22.60
1912.90	28001.95	60.74	22.60	1913.00	27998.05	60.74	22.60	1913.10	28005.86	60.74	22.60
1913.20	28003.91	60.74	22.60	1913.30	28007.81	60.74	22.60	1913.40	28007.81	60.74	22.60
1913.50	28013.67	60.74	22.60	1913.60	28011.72	60.74	22.60	1913.70	28015.62	60.74	22.60
1913.80	28013.67	60.74	22.60	1913.90	28019.53	60.74	22.60	1914.00	28017.58	60.74	22.60
1914.10	28021.48	60.74	22.60	1914.20	28019.53	60.74	22.60	1914.30	28025.39	60.74	22.60
1914.40	28029.30	60.74	22.60	1914.50	28029.30	60.74	22.60	1914.60	28029.30	60.74	22.60
1914.70	28029.30	60.74	22.59	1914.80	28037.11	60.74	22.59	1914.90	28033.20	60.73	22.59
1915.00	28037.11	60.73	22.59	1915.10	28037.11	60.73	22.59	1915.20	28042.97	60.73	22.59
1915.30	28039.06	60.73	22.59	1915.40	28044.92	60.73	22.59	1915.50	28044.92	60.73	22.59
1915.60	28048.83	60.73	22.59	1915.80	28048.83	60.73	22.59	1915.90	28050.78	60.73	22.59
1916.00	28052.73	60.73	22.59	1916.10	28052.73	60.73	22.59	1916.20	28054.69	60.73	22.59
1916.30	28058.59	60.73	22.59	1916.40	28060.55	60.73	22.59	1916.50	28064.45	60.73	22.59
1916.60	28060.55	60.73	22.59	1916.70	28068.36	60.73	22.59	1916.80	28068.36	60.73	22.59
1916.90	28070.31	60.73	22.59	1917.00	28070.31	60.73	22.59	1917.10	28074.22	60.73	22.59
1917.20	28072.27	60.73	22.59	1917.30	28076.17	60.73	22.59	1917.40	28078.12	60.73	22.59
1917.50	28078.12	60.73	22.59	1917.60	28080.08	60.73	22.59	1917.70	28083.98	60.73	22.59
1917.80	28083.98	60.73	22.58	1917.90	28083.98	60.73	22.58	1918.00	28089.84	60.73	22.58
1918.10	28087.89	60.73	22.58	1918.20	28091.80	60.73	22.58	1918.30	28091.80	60.73	22.58
1918.40	28097.66	60.73	22.58	1918.50	28095.70	60.73	22.58	1918.60	28099.61	60.73	22.58
1918.70	28099.61	60.72	22.58	1918.80	28105.47	60.72	22.58	1918.90	28101.56	60.72	22.58
1919.00	28105.47	60.72	22.58	1919.10	28105.47	60.72	22.58	1919.20	28107.42	60.72	22.58
1919.30	28111.73	60.72	22.58	1919.40	28111.73	60.72	22.58	1919.50	28113.28	60.72	22.58
1919.60	28113.28	60.72	22.58	1919.70	28115.23	60.72	22.58	1919.80	28115.23	60.71	22.58
1919.90	28119.14	60.71	22.58	1920.00	28119.14	60.71	22.58	1920.10	28125.00	60.71	22.58
1920.20	28126.95	60.71	22.58	1920.30	28128.91	60.71	22.58	1920.40	28128.91	60.71	22.58
1920.50	28130.86	60.71	22.58	1920.60	28128.91	60.71	22.58	1920.70	28132.81	60.71	22.57
1920.80	28132.81	60.71	22.57	1920.90	28136.72	60.71	22.57	1921.00	28136.72	60.71	22.57
1921.10	28138.67	60.71	22.57	1921.20	28138.67	60.71	22.57	1921.30	28140.62	60.71	22.57
1921.40	28144.53	60.71	22.57	1921.50	28142.59	60.71	22.57	1921.60	28146.48	60.71	22.57
1921.70	28146.48	60.71	22.57	1921.80	28148.44	60.71	22.57	1921.90	28148.44	60.71	22.57
1922.00	28156.25	60.71	22.57	1922.10	28154.30	60.71	22.57	1922.20	28160.16	60.71	22.57
1922.30	28158.20	60.71	22.57	1922.40	28162.11	60.71	22.57	1922.50	28162.11	60.71	22.57

1922.60	28164.06	60.71	22.57	1922.70	28167.97	60.71	22.57	1922.80	28169.92	60.71	22.57
1922.90	28169.92	60.71	22.57	1923.00	28169.92	60.71	22.57	1923.10	28171.87	60.71	22.57
1923.20	28175.78	60.71	22.57	1923.30	28177.73	60.71	22.57	1923.40	28175.78	60.71	22.57
1923.50	28177.73	60.71	22.57	1923.60	28177.73	60.71	22.57	1923.70	28183.59	60.71	22.57
1923.80	28185.55	60.71	22.57	1923.90	28191.41	60.71	22.56	1924.00	28189.45	60.71	22.56
1924.10	28193.36	60.70	22.56	1924.20	28193.36	60.70	22.56	1924.30	28197.27	60.70	22.56
1924.40	28197.27	60.70	22.56	1924.50	28201.17	60.70	22.56	1924.60	28199.22	60.70	22.56
1924.70	28201.17	60.70	22.56	1924.80	28201.17	60.70	22.56	1924.90	28205.08	60.70	22.56
1925.00	28207.03	60.70	22.56	1925.10	28208.98	60.70	22.56	1925.20	28208.98	60.70	22.56
1925.30	28208.98	60.70	22.56	1925.40	28210.94	60.70	22.56	1925.50	28210.94	60.70	22.56
1925.60	28216.80	60.70	22.56	1925.70	28214.84	60.70	22.56	1925.80	28220.70	60.70	22.56
1925.90	28220.70	60.70	22.56	1926.00	28222.66	60.70	22.56	1926.10	28222.66	60.70	22.56
1926.20	28226.56	60.70	22.56	1926.30	28226.56	60.70	22.56	1926.40	28230.47	60.70	22.56
1926.50	28228.52	60.70	22.56	1926.60	28232.42	60.70	22.56	1926.70	28232.42	60.70	22.56
1926.80	28236.33	60.70	22.56	1926.90	28236.33	60.70	22.56	1927.00	28238.28	60.70	22.56
1927.10	28238.28	60.70	22.56	1927.20	28242.19	60.70	22.56	1927.30	28242.19	60.70	22.56
1927.40	28246.09	60.70	22.56	1927.50	28250.00	60.70	22.56	1927.60	28251.95	60.70	22.56
1927.70	28253.91	60.70	22.56	1927.80	28251.95	60.70	22.56	1927.90	28253.91	60.70	22.56
1928.00	28255.86	60.70	22.56	1928.10	28261.72	60.70	22.56	1928.20	28255.86	60.70	22.56
1928.30	28261.72	60.70	22.56	1928.40	28261.72	60.70	22.56	1928.50	28267.58	60.70	22.56
1928.60	28265.62	60.69	22.55	1928.70	28269.53	60.69	22.55	1928.80	28269.53	60.69	22.55
1928.90	28269.53	60.69	22.55	1929.00	28273.44	60.69	22.55	1929.10	28273.44	60.69	22.55
1929.20	28273.44	60.69	22.55	1929.30	28273.44	60.69	22.55	1929.40	28281.25	60.69	22.55
1929.50	28283.20	60.69	22.55	1929.60	28283.20	60.69	22.55	1929.70	28285.16	60.69	22.55
1929.80	28289.06	60.69	22.55	1929.90	28289.06	60.69	22.55	1930.00	28291.02	60.69	22.55
1930.10	28291.02	60.69	22.55	1930.20	28294.92	60.69	22.55	1930.30	28294.92	60.69	22.55
1930.40	28296.87	60.69	22.55	1930.50	28294.92	60.69	22.55	1930.60	28300.78	60.69	22.55
1930.70	28300.78	60.69	22.55	1930.80	28302.73	60.69	22.55	1930.90	28302.73	60.69	22.55
1931.00	28306.64	60.69	22.54	1931.10	28308.59	60.69	22.55	1931.20	28306.64	60.69	22.54
1931.30	28312.50	60.69	22.54	1931.40	28314.45	60.69	22.54	1931.50	28316.41	60.69	22.54
1931.60	28316.41	60.69	22.54	1931.70	28322.27	60.69	22.54	1931.80	28320.31	60.69	22.54
1931.90	28324.22	60.69	22.54	1932.00	28322.27	60.69	22.54	1932.10	28330.08	60.69	22.54
1932.20	28328.12	60.69	22.55	1932.30	28330.08	60.69	22.55	1932.40	28328.12	60.68	22.54
1932.50	28333.98	60.68	22.54	1932.60	28330.08	60.68	22.54	1932.70	28333.98	60.68	22.54
1932.80	28330.08	60.68	22.54	1932.90	28341.80	60.68	22.54	1933.00	28343.75	60.68	22.54
1933.10	28345.70	60.68	22.54	1933.20	28343.75	60.68	22.54	1933.30	28347.66	60.68	22.54
1933.40	28349.61	60.68	22.54	1933.50	28349.61	60.67	22.54	1933.60	28355.47	60.67	22.54
1933.70	28355.47	60.67	22.54	1933.80	28355.47	60.67	22.54	1933.90	28355.47	60.67	22.54
1934.00	28363.26	60.67	22.54	1934.10	28361.33	60.67	22.54	1934.20	28367.19	60.67	22.54
1934.30	28363.26	60.67	22.54	1934.40	28367.19	60.67	22.54	1934.50	28367.19	60.67	22.54
1934.60	28369.14	60.67	22.54	1934.70	28371.09	60.67	22.53	1934.80	28376.95	60.67	22.53
1934.90	28376.95	60.67	22.53								

PRINTOUT OF .1 SEC VEL DATA

9864.31	22.20	15.67	4.69	9866.50	21.17	15.09	7.50	9865.81	6.48	5.25	3.44
9867.19	13.65	9.26	6.88	9867.19	6.31	6.77	1.88	9867.56	7.00	5.54	1.88
9867.55	7.86	2.79	3.44	9868.25	13.65	9.27	6.88	9868.94	12.96	10.50	6.88
9869.62	21.51	12.05	10.62	9871.06	28.68	16.07	14.06	9872.44	21.51	12.05	10.31
9873.12	7.17	4.02	3.44	9873.12	.00	.00	.00	9873.12	.00	.00	.00
9873.12	14.34	8.03	6.88	9874.50	-.69	1.23	.00	9873.12	7.69	4.31	2.50
9875.00	22.03	12.34	9.38	9875.00	6.44	5.25	3.44	9875.69	14.34	8.03	6.88
9876.37	14.34	8.03	6.56	9877.00	14.34	8.03	6.56	9877.69	7.17	4.02	3.44
9877.69	7.17	4.02	3.44	9878.37	7.17	4.02	3.44	9878.37	14.34	8.03	6.88
9879.75	28.68	16.07	13.75	9881.12	28.68	16.07	14.06	9882.56	.00	.00	.00
9881.12	14.34	8.03	6.56	9883.97	21.51	12.05	10.31	9883.19	7.17	4.02	3.75
9884.62	14.34	8.03	7.19	9884.62	21.51	12.05	10.00	9886.62	14.34	8.03	6.56
9885.94	7.17	4.02	3.75	9887.37	8.38	3.07	2.50	9886.44	14.17	9.56	5.63

9888.50	12.96	10.50	6.88	9887.81	7.00	5.54	1.88	9888.87	6.30	6.78	1.88
9888.19	13.47	10.79	5.63	9890.00	34.99	22.85	15.94	9891.37	12.96	10.50	6.89
9891.37	-2.08	3.70	.00	9891.37	-1.56	3.99	-1.25	9891.12	28.33	19.12	11.25
9893.62	13.99	11.09	4.06	9891.94	-.35	3.05	-3.13	9893.00	12.44	10.22	8.44
9893.62	20.64	14.81	9.06	9894.81	8.03	6.13	-.63	9893.50	7.17	4.02	3.44
9895.50	21.34	13.58	8.44	9895.19	14.17	9.56	5.31	9896.56	15.38	8.62	4.06
9896.00	8.21	4.60	.94	9896.75	14.86	8.33	5.63	9897.12	8.21	4.60	.63
9896.87	7.69	4.31	2.19	9897.56	22.03	12.35	8.75	9898.62	21.86	13.87	7.50
9899.05	21.86	13.87	7.50	9900.12	.52	.29	-1.56	9898.75	14.86	8.33	5.63
9901.25	29.20	16.36	12.50	9901.25	7.17	4.02	3.75	9902.00	7.17	4.02	3.75
9902.00	14.34	8.04	6.56	9903.31	7.17	4.02	3.44	9902.69	7.17	4.02	3.44
9904.00	21.51	12.06	10.31	9904.75	7.69	4.31	2.50	9904.50	7.69	4.31	1.88
9905.12	21.51	12.06	10.00	9906.50	15.55	7.09	5.63	9906.25	-.17	1.53	-1.56
9906.19	20.65	14.82	8.75	9908.00	14.16	9.56	5.94	9907.37	6.99	5.55	2.19
9908.44	14.17	9.57	5.31	9908.44	20.64	14.82	8.75	9910.19	13.30	12.33	4.06
9909.25	5.95	9.84	-.63	9910.06	13.12	13.86	2.50	9909.75	20.47	16.36	7.50
9911.56	6.54	8.61	-.94	9909.56	-2.26	5.24	-1.25	9911.31	12.78	12.05	5.94
9910.75	6.82	7.08	.63	9911.44	20.12	14.54	10.62	9912.87	12.95	10.52	7.19
9912.87	5.61	8.03	1.88	9913.25	5.61	8.03	1.88	9913.25	5.78	6.50	3.13
9913.87	6.30	6.79	1.88	9913.62	13.47	10.81	5.31	9914.94	13.65	9.28	6.56
9914.94	20.81	13.30	10.62	9917.06	27.98	17.32	14.06	9917.75	14.34	8.04	6.88
9918.44	7.17	4.02	3.44	9918.44	7.17	4.02	3.44	9919.12	.00	.00	.00
9918.44	8.21	4.60	.63	9919.25	15.38	8.62	4.06	9919.25	14.34	8.04	6.88
9920.62	14.86	8.33	5.63	9920.37	7.69	4.31	2.50	9921.12	7.17	4.02	3.75
9921.12	7.17	4.02	3.13	9921.75	21.51	12.06	10.00	9923.12	7.17	4.02	3.44
9922.44	7.17	4.02	3.13	9923.75	14.86	8.33	5.63	9923.56	7.69	4.31	2.50
9924.25	7.17	4.02	3.44	9924.25	28.68	16.08	13.75	9927.00	21.51	12.06	10.31
9926.31	14.34	8.04	7.19	9928.44	14.34	8.04	7.19	9927.75	7.17	4.02	3.44
9929.12	14.34	8.04	6.38	9929.12	7.17	4.02	3.44	9929.81	21.51	12.06	10.00
9931.12	22.03	12.35	8.75	9931.56	7.69	4.31	2.19	9931.56	.52	.29	-1.56
9931.25	8.21	4.60	.63	9931.69	21.85	13.89	7.50	9932.75	21.85	13.89	7.81
9933.25	1.04	.58	-2.50	9932.25	1.04	.58	-3.13	9932.62	4.21	10.52	1.88
9932.62	20.46	16.37	7.19	9934.06	32.85	13.53	7.81	9934.19	26.76	23.17	9.69
9936.00	10.50	17.32	4.38	9935.06	4.90	9.28	2.19	9936.44	10.85	14.25	6.88
9936.44	12.07	13.31	5.63	9937.56	12.77	12.06	5.63	9937.56	12.94	10.53	6.88
9938.94	5.78	6.51	3.44	9938.25	-.17	1.54	-1.56	9938.62	6.99	5.56	1.88
9938.62	13.64	9.29	6.88	9940.00	21.50	12.07	10.31	9940.69	14.86	8.34	5.63
9941.12	6.99	5.56	2.19	9941.12	-.70	1.24	.00	9941.12	7.17	4.02	3.75
9941.87	7.17	4.02	3.75	9941.87	22.03	12.36	8.75	9943.62	15.90	8.92	2.19
9942.31	14.86	8.34	5.31	9944.69	20.99	11.78	11.87	9944.69	7.17	4.02	3.13
9945.31	7.69	4.32	1.88	9945.06	15.38	8.63	4.38	9946.19	15.38	8.63	4.38
9945.94	14.86	8.34	5.31	9947.25	7.17	4.02	3.44	9946.62	8.21	4.61	.63
9947.37	15.38	8.63	3.75	9947.37	14.34	8.05	6.88	9948.75	14.34	8.05	6.88
9948.75	7.17	4.02	3.44	9949.44	7.17	4.02	3.44	9949.44	14.34	8.05	7.19
9950.87	14.34	8.05	7.19	9950.87	14.34	8.05	6.88	9952.25	28.68	16.09	13.75
9953.62	21.51	12.07	10.31	9954.31	11.73	6.58	14.06	9956.44	.52	.29	-1.25
9954.06	3.83	.51	-8.44	9954.75	13.64	9.29	6.56	9955.37	27.28	18.58	14.06
9957.56	-.18	1.54	-1.25	9955.12	-.18	1.54	-1.56	9957.25	20.81	13.31	10.62
9957.25	20.63	14.86	8.75	9959.00	12.06	13.32	5.31	9958.31	6.99	5.56	1.88
9959.37	12.76	12.08	5.31	9959.37	-4.37	9.01	-1.25	9959.12	13.11	13.91	2.50
9959.87	13.11	13.91	2.50	9959.62	-1.58	4.03	-1.25	9959.62	-.70	1.25	.00
9959.62	27.97	17.34	14.06	9962.44	35.14	21.37	17.50	9963.12	7.69	4.32	1.88
9962.81	7.69	4.32	1.88	9963.50	21.50	12.07	10.31	9964.87	13.64	9.30	6.88
9964.87	6.47	5.27	3.44	9965.56	7.69	4.32	1.88	9965.25	14.86	8.34	5.31
9966.62	14.86	8.34	5.94	9966.44	7.69	4.32	2.50	9967.12	.00	.00	.00
9966.44	13.29	7.46	9.69	9969.06	22.55	12.66	7.19	9967.87	10.83	6.08	-6.56

9967.75	9.26	5.20	-2.19	9967.44	15.38	8.64	3.75	9968.50	21.51	12.08	10.31
9969.50	.00	.00	.00	9968.50	14.86	8.34	5.63	9970.62	28.67	15.10	14.06
9971.31	14.34	8.05	6.88	9972.00	7.17	4.02	3.44	9972.00	21.51	12.08	10.31
9974.06	14.34	8.05	6.88	9973.37	7.17	4.03	3.44	9974.75	7.17	4.03	3.44
9974.06	21.51	12.08	10.31	9976.81	20.98	11.78	11.56	9976.37	-.52	-.29	1.25
9977.05	.34	1.84	-2.81	9975.81	14.68	9.89	4.06	9977.87	6.47	5.27	3.75
9976.56	-1.58	4.04	-.94	9977.69	-1.58	4.04	-1.25	9976.31	26.57	19.85	13.44
9980.37	48.08	31.93	23.75	9981.06	13.46	10.84	5.63	9981.50	-.88	2.79	-1.25
9980.81	5.59	8.06	2.19	9981.94	19.75	17.66	7.50	9982.31	5.59	8.07	1.88
9982.31	21.15	15.16	7.50	9983.81	21.15	15.17	7.50	9983.81	-.18	1.54	-1.25
9983.56	.34	1.84	-2.81	9983.25	27.79	18.90	12.19	9986.00	21.33	13.62	8.75
9985.00	14.96	8.35	5.63	9987.12	8.21	4.62	.63	9985.12	1.39	2.43	-5.94
9985.94	14.68	9.89	4.06	9985.94	7.17	4.03	3.44	9986.62	14.86	8.35	5.31
9987.00	29.20	16.40	12.19	9989.06	21.51	12.08	10.31	9989.06	7.17	4.03	3.44
9989.75	7.69	4.32	2.19								

END OF RECORD 76 FILE 1

END OF RECORD 77 FILE 1

END OF RECORD 78 FILE 1

END OF RECORD 79 FILE 1

END OF RECORD 80 FILE 1

TAPE TIME ERROR T(809) = 2115.80 DRT = .20

END OF RECORD 81 FILE 1

END OF RECORD 82 FILE 1

END OF RECORD 83 FILE 1

END OF RECORD 84 FILE 1

END OF RECORD 85 FILE 1

END OF RECORD 86 FILE 1

END OF RECORD 87 FILE 1

END OF RECORD 88 FILE 1

END OF RECORD 89 FILE 1

END OF RECORD 90 FILE 1

END OF RECORD 91 FILE 1

END OF RECORD 92 FILE 1

END OF RECORD 93 FILE 1

END OF RECORD 94 FILE 1

END OF RECORD 95 FILE 1

END OF RECORD 96 FILE 1

END OF RECORD 97 FILE 1

END OF RECORD 98 FILE 1

END OF RECORD 99 FILE 1

END OF RECORD100 FILE 1

PROCESSING OF FILE NUMBER 1 OF INPUT TAPE IS COMPLETE.
THE REMAINING 5 RECORDS WERE NOT USED.
THE NUMBER OF RECORDS CREATED ON OUTPUT TAPE(S) IS 100

NUMBER FILES OF .1 SEC VELOCITY DATA TO PROCESS IS 1
INPUT UNIT IS 9 OUTPUT UNIT IS 11
PLOTING-(0,NONE),(1,TAER),(2,1 SEC VEL),(3,BOTH 1 AND 2) IPLIT = 3

WEIGHTS FOR MARTIN-GRAHAM
LOW-PASS FILTER

(1,55) = -.17011500-02
(2,54) = -.33500800-02
(3,53) = -.50994300-02
(4,52) = -.68555000-02
(5,51) = -.85087400-02
(6,50) = -.99779000-02
(7,49) = -.11015290-01
(8,48) = -.11612940-01
(9,47) = -.11609350-01
(10,46) = -.10396320-01
(11,45) = -.93958599-02
(12,44) = -.70163600-02
(13,43) = -.37580000-02
(14,42) = .38329000-03
(15,41) = .53633000-02
(16,40) = .11098910-01
(17,39) = .17469350-01
(18,38) = .24319320-01
(19,37) = .31464200-01
(20,36) = .38696660-01
(21,35) = .45794800-01
(22,34) = .52531290-01
(23,33) = .50683000-01
(24,32) = .64040760-01
(25,31) = .66418650-01
(26,30) = .71662390-01
(27,29) = .73656410-01
(28,28) = .74329160-01

BEGIN PROCESSING .1 SEC VELOCITY DATA FILE 1

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
1	149.93	.59	6.66	3.09	.0	51	411.61	-3.57	9.43	5.07	50.0
2	152.72	.14	2.63	3.59	1.0	52	416.57	-.90	10.47	5.01	51.0
3	158.59	-2.97	3.38	7.64	2.0	53	421.70	.42	5.82	5.12	52.0
4	165.85	-5.04	7.85	5.92	3.0	54	426.73	.40	3.16	5.15	53.0
5	170.31	-1.36	9.80	3.65	4.0	55	432.32	-1.98	6.10	5.93	54.0
6	174.35	1.20	4.90	4.60	5.0	56	438.13	-2.50	10.95	5.59	55.0
7	179.25	-1.88	2.75	4.95	6.0	57	443.54	-.31	8.69	5.30	56.0
8	184.06	-4.01	5.53	4.69	7.0	58	448.80	.54	3.23	5.30	57.0
9	189.80	-3.36	8.40	4.92	8.0	59	454.44	-1.23	3.78	6.03	58.0
10	194.00	-.15	7.37	5.48	9.0	60	460.45	-4.27	7.44	5.74	59.0
11	199.90	.19	3.79	6.45	10.0	61	465.86	-3.13	9.79	5.23	60.0
12	205.59	-3.22	4.46	6.52	11.0	62	471.07	.99	8.00	5.16	61.0
13	212.16	-5.23	7.51	4.59	12.0	63	476.10	1.69	3.98	4.95	62.0
14	216.36	-.47	3.30	4.14	13.0	64	481.10	-2.18	3.95	5.15	63.0
15	220.71	3.33	6.53	4.60	14.0	65	486.49	-3.47	7.89	5.60	64.0
16	225.77	-.42	4.37	5.68	15.0	66	492.05	1.07	10.56	5.29	65.0
17	231.92	-4.39	4.96	6.20	16.0	67	497.01	1.59	6.74	4.79	66.0
18	237.41	-3.63	7.79	4.70	17.0	68	502.02	-1.84	2.37	5.28	67.0
19	241.85	.75	8.85	4.60	18.0	69	507.33	-2.67	4.89	5.23	68.0
20	247.09	.46	4.97	5.85	19.0	70	512.56	-1.57	9.04	5.27	69.0
21	253.10	-2.66	3.25	5.87	20.0	71	517.95	.29	9.32	5.56	70.0
22	258.47	-3.84	6.55	4.86	21.0	72	523.75	.75	5.20	5.97	71.0
23	263.06	-2.52	9.15	4.57	22.0	73	529.49	.41	2.86	5.39	72.0
24	268.02	-.55	7.51	5.32	23.0	74	534.73	-1.93	5.11	5.26	73.0
25	273.35	-.03	3.71	5.18	24.0	75	540.14	-1.71	8.95	5.40	74.0
26	278.37	-3.10	3.77	4.98	25.0	76	545.36	1.82	8.20	5.11	75.0
27	283.59	-4.67	7.10	5.44	26.0	77	550.49	1.05	3.31	5.14	76.0
28	289.01	-1.45	9.98	5.44	27.0	78	555.60	-1.40	2.75	5.13	77.0
29	294.69	1.42	7.48	5.90	28.0	79	560.88	-2.41	7.01	5.39	78.0
30	300.45	.26	4.16	5.45	29.0	80	566.15	-.28	10.04	5.16	79.0
31	305.57	-2.85	4.66	4.97	30.0	81	571.55	2.42	7.43	5.68	80.0
32	310.74	-4.05	7.75	5.47	31.0	82	577.00	1.58	2.79	4.96	81.0
33	316.32	-.06	9.57	5.53	32.0	83	581.70	-.54	3.19	4.88	82.0
34	321.72	.96	6.27	5.29	33.0	84	587.19	-1.86	7.16	5.88	83.0
35	326.93	-1.84	3.79	5.16	34.0	85	592.80	.61	9.67	5.21	84.0
36	332.12	-4.15	5.70	5.33	35.0	86	597.83	1.93	6.73	4.97	85.0
37	337.75	-2.44	9.77	5.78	36.0	87	602.77	.46	2.48	5.02	86.0
38	343.18	.69	9.27	4.99	37.0	88	608.22	-.83	3.39	5.87	87.0
39	348.31	-.76	4.57	5.61	38.0	89	613.96	-2.14	7.60	5.33	88.0
40	354.35	-3.01	3.60	6.11	39.0	90	619.04	1.65	10.65	5.17	89.0
41	359.94	-3.62	6.64	5.04	40.0	91	624.66	3.44	6.56	5.95	90.0
42	364.81	-.23	10.23	4.92	41.0	92	630.55	.92	1.86	5.71	91.0
43	369.80	2.20	9.46	4.95	42.0	93	636.00	-1.52	4.80	5.15	92.0
44	374.59	-.61	5.01	4.70	43.0	94	640.89	-1.68	8.39	4.82	93.0
45	379.60	-3.41	4.05	5.53	44.0	95	645.98	1.49	8.25	5.39	94.0
46	385.42	-3.07	8.23	5.59	45.0	96	651.36	2.86	5.09	5.20	95.0
47	390.50	-.39	10.34	4.68	46.0	97	656.43	1.69	3.51	5.01	96.0
48	395.58	.15	6.67	5.56	47.0	98	661.31	-1.19	5.86	4.77	97.0
49	401.15	-.50	3.49	5.36	48.0	99	666.36	-.94	9.25	5.57	98.0
50	406.38	-2.80	4.84	5.25	49.0	100	672.46	1.26	8.07	6.26	99.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
101	678.22	1.32	3.18	5.24	100.0	151	943.07	-2.02	4.83	5.50	150.0
102	683.27	-.27	2.95	5.01	101.0	152	948.36	-1.13	8.83	5.04	151.0
103	688.16	-2.65	6.12	4.77	102.0	153	953.50	.77	7.64	5.55	152.0
104	693.32	.13	9.59	5.80	103.0	154	959.50	1.23	3.30	6.14	153.0
105	699.35	3.44	7.82	5.76	104.0	155	965.16	-.75	3.23	5.10	154.0
106	704.46	1.24	3.39	4.76	105.0	156	970.02	-2.82	6.62	4.90	155.0
107	709.65	-1.57	2.72	5.71	106.0	157	975.15	.78	10.28	5.32	156.0
108	715.39	-2.69	6.60	5.50	107.0	158	980.53	3.04	7.42	5.35	157.0
109	720.66	.53	9.18	5.28	108.0	159	985.51	.79	1.91	4.56	158.0
110	726.10	1.98	6.63	5.46	109.0	160	990.15	-1.15	3.30	5.03	159.0
111	731.27	-.25	2.28	4.86	110.0	161	995.57	-2.74	7.09	5.51	160.0
112	735.99	-2.33	2.41	4.72	111.0	162	1000.91	-.49	8.81	5.20	161.0
113	741.00	-2.01	7.30	5.37	112.0	163	1006.27	1.74	5.99	5.60	162.0
114	746.53	2.57	10.25	5.40	113.0	164	1011.76	.16	2.14	5.19	163.0
115	751.53	2.20	6.07	4.70	114.0	165	1016.64	-2.47	3.69	4.89	164.0
116	756.47	-.35	1.71	5.43	115.0	166	1022.07	-.77	8.81	5.97	165.0
117	762.07	-2.04	3.19	5.41	116.0	167	1027.94	2.57	10.03	5.50	166.0
118	767.21	-2.57	7.51	5.25	117.0	168	1033.15	.79	5.28	5.13	167.0
119	773.03	.84	8.57	6.19	118.0	169	1038.22	-1.08	2.91	4.81	168.0
120	778.79	1.52	4.55	5.16	119.0	170	1042.65	-1.59	4.22	4.23	169.0
121	783.75	-.37	1.91	5.05	120.0	171	1047.40	-.44	7.50	5.37	170.0
122	789.21	-3.09	3.35	5.84	121.0	172	1052.96	.66	8.32	5.54	171.0
123	795.22	-1.37	7.41	5.92	122.0	173	1058.52	.42	4.71	5.67	172.0
124	800.57	2.73	8.19	4.77	123.0	174	1064.22	-.13	4.30	5.65	173.0
125	805.41	1.29	2.84	5.29	124.0	175	1069.78	-.10	6.74	5.42	174.0
126	811.03	-.53	1.33	5.53	125.0	176	1075.04	1.25	8.81	5.27	175.0
127	815.96	-1.69	5.29	4.54	126.0	177	1080.75	-.21	7.06	6.11	176.0
128	820.67	-.11	9.93	4.95	127.0	178	1086.59	-.80	4.06	5.22	177.0
129	825.77	2.43	7.00	5.26	128.0	179	1091.35	-1.07	3.34	4.79	178.0
130	831.39	.48	2.09	5.87	129.0	180	1096.85	.04	7.04	6.07	179.0
131	836.91	-2.24	1.88	4.98	130.0	181	1102.73	2.32	10.89	5.50	180.0
132	841.69	-2.94	5.68	4.92	131.0	182	1108.12	.83	6.57	5.50	181.0
133	847.01	1.12	9.98	5.55	132.0	183	1113.64	.66	2.61	5.42	182.0
134	852.42	3.38	7.95	5.28	133.0	184	1119.11	.02	4.51	5.65	183.0
135	857.84	.83	2.46	5.62	134.0	185	1124.76	-.43	9.12	5.40	184.0
136	863.37	-2.26	3.09	5.37	135.0	186	1129.92	.24	10.26	5.28	185.0
137	868.77	-2.87	6.96	5.47	136.0	187	1135.64	.65	6.44	5.97	186.0
138	874.06	.56	9.65	4.91	137.0	188	1141.25	1.25	3.56	5.14	187.0
139	878.67	1.15	5.38	4.60	138.0	189	1146.46	.88	6.18	5.56	188.0
140	883.75	.39	2.61	5.57	139.0	190	1152.08	.50	10.53	5.34	189.0
141	889.58	-1.05	4.65	5.95	140.0	191	1157.15	-1.08	8.86	5.16	190.0
142	895.55	-1.66	8.24	5.89	141.0	192	1162.79	1.27	6.37	5.90	191.0
143	901.09	1.86	9.98	5.10	142.0	193	1168.62	3.65	5.00	5.81	192.0
144	905.86	2.07	5.54	4.64	143.0	194	1174.61	.64	7.15	6.10	193.0
145	910.82	.42	1.95	5.42	144.0	195	1180.25	-1.60	11.10	5.17	194.0
146	916.60	-2.55	4.72	5.92	145.0	196	1185.70	.19	10.77	6.03	195.0
147	922.11	-3.57	8.23	4.98	146.0	197	1191.78	2.26	6.40	5.57	196.0
148	926.90	2.10	8.31	4.89	147.0	198	1196.72	1.57	3.94	4.90	197.0
149	932.10	3.09	5.18	5.44	148.0	199	1202.34	-.74	7.93	6.11	198.0
150	937.57	-.48	2.63	5.46	149.0	200	1207.92	-2.09	10.81	4.92	199.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
1	1213.00	.89	9.09	5.64	200.0	51	1485.34	2.14	.86	5.19	250.0
2	1218.73	4.25	6.25	5.33	201.0	52	1490.73	.34	2.75	5.67	251.0
3	1223.72	2.47	5.22	5.13	202.0	53	1496.53	-.95	7.07	5.74	252.0
4	1229.47	-1.09	7.75	6.13	203.0	54	1501.93	2.02	7.42	5.05	253.0
5	1235.57	-2.07	10.35	6.08	204.0	55	1506.84	4.06	3.36	4.92	254.0
6	1241.73	2.99	9.55	6.01	205.0	56	1511.93	2.28	.96	5.30	255.0
7	1247.03	5.34	6.15	4.63	206.0	57	1517.73	-.83	3.37	6.32	256.0
8	1252.00	.82	4.62	5.72	207.0	58	1523.95	.59	7.56	5.55	257.0
9	1257.94	-1.66	7.21	5.66	208.0	59	1528.36	3.12	6.14	3.60	258.0
10	1263.25	-.14	8.63	5.36	209.0	60	1532.33	2.20	2.11	4.73	259.0
11	1268.88	4.37	8.52	5.56	210.0	61	1538.04	.38	.85	6.55	260.0
12	1273.91	5.55	6.64	4.69	211.0	62	1544.76	.19	4.75	6.47	261.0
13	1279.00	2.33	4.87	5.60	212.0	63	1550.24	3.70	8.50	4.51	262.0
14	1284.64	-.32	6.11	5.42	213.0	64	1554.78	4.28	5.45	5.11	263.0
15	1290.14	1.12	9.10	5.81	214.0	65	1560.49	1.44	1.22	5.88	264.0
16	1296.01	5.74	10.20	5.64	215.0	66	1565.90	1.26	.75	4.89	265.0
17	1301.36	4.43	6.36	5.33	216.0	67	1570.83	1.10	5.92	5.41	266.0
18	1306.99	.84	7.85	5.85	217.0	68	1576.61	2.74	8.87	5.81	267.0
19	1312.64	.44	6.43	5.37	218.0	69	1581.93	4.04	4.39	4.82	268.0
20	1318.04	3.75	9.91	5.65	219.0	70	1586.72	2.56	1.13	5.09	269.0
21	1323.88	5.95	8.18	5.81	220.0	71	1592.33	-.22	3.22	5.95	270.0
22	1329.24	3.81	3.59	4.85	221.0	72	1598.10	.42	7.42	5.44	271.0
23	1333.84	1.49	3.30	4.60	222.0	73	1603.16	4.56	8.36	4.82	272.0
24	1338.79	.34	6.67	5.39	223.0	74	1608.18	3.72	4.13	5.40	273.0
25	1344.21	4.52	9.89	5.43	224.0	75	1613.88	1.46	.84	5.78	274.0
26	1349.61	5.90	7.19	5.40	225.0	76	1619.62	.51	3.85	5.77	275.0
27	1355.13	3.69	2.67	5.57	226.0	77	1625.34	1.28	7.95	5.53	276.0
28	1360.51	2.41	2.63	5.22	227.0	78	1630.65	3.27	6.75	5.09	277.0
29	1365.96	2.07	6.68	5.88	228.0	79	1635.66	3.02	2.58	5.05	278.0
30	1372.05	4.81	9.75	6.02	229.0	80	1640.92	2.37	.73	5.62	279.0
31	1377.86	4.74	5.97	5.68	230.0	81	1647.02	1.74	4.64	6.35	280.0
32	1383.34	2.61	1.16	5.09	231.0	82	1652.69	1.50	9.02	4.71	281.0
33	1388.00	1.42	2.71	4.61	232.0	83	1657.05	2.91	6.08	4.58	282.0
34	1393.36	2.91	8.65	6.06	233.0	84	1662.13	3.15	1.55	5.44	283.0
35	1399.31	4.44	9.20	5.40	234.0	85	1667.47	2.36	1.39	5.18	284.0
36	1404.11	3.74	4.49	4.53	235.0	86	1672.81	2.16	6.28	5.66	285.0
37	1409.00	2.85	1.55	5.29	236.0	87	1678.65	2.62	8.55	5.79	286.0
38	1414.52	.64	3.65	5.66	237.0	88	1684.22	2.70	3.88	5.34	287.0
39	1420.33	2.28	8.14	6.00	238.0	89	1689.46	1.48	-.14	5.21	288.0
40	1426.22	4.59	7.75	5.52	239.0	90	1694.72	.58	2.00	5.38	289.0
41	1431.11	3.03	3.29	4.51	240.0	91	1700.24	3.11	9.21	5.61	290.0
42	1436.08	2.00	.55	5.73	241.0	92	1705.87	3.97	8.20	5.64	291.0
43	1442.25	.45	3.23	6.26	242.0	93	1711.47	2.63	2.34	5.53	292.0
44	1448.20	2.47	7.94	5.69	243.0	94	1716.83	1.57	.83	5.14	293.0
45	1453.54	4.30	6.54	4.84	244.0	95	1721.71	-1.11	3.37	4.75	294.0
46	1458.05	2.89	2.26	4.59	245.0	96	1726.89	2.03	9.09	5.73	295.0
47	1463.56	1.58	1.77	6.49	246.0	97	1732.80	5.93	8.40	5.79	296.0
48	1470.19	-.12	5.73	6.19	247.0	98	1738.14	2.63	2.04	4.96	297.0
49	1475.49	2.72	8.90	4.65	248.0	99	1743.30	.85	.52	5.54	298.0
50	1480.23	4.05	5.08	4.98	249.0	100	1749.05	.52	4.73	5.83	299.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
101	1754.70	2.61	8.89	5.44	300.0	151	2025.12	4.10	3.49	5.35	350.0
102	1759.97	4.61	6.80	5.13	301.0	152	2030.43	1.99	1.09	5.44	351.0
103	1765.03	2.92	2.32	5.06	302.0	153	2035.92	1.61	3.87	5.35	352.0
104	1770.24	.67	2.25	5.51	303.0	154	2041.14	4.10	7.53	5.27	353.0
105	1776.02	-1.42	5.11	5.85	304.0	155	2046.75	6.08	5.69	5.88	354.0
106	1781.53	2.31	8.26	5.04	305.0	156	2052.45	4.27	2.69	5.44	355.0
107	1786.37	5.60	6.83	4.87	306.0	157	2057.81	2.75	1.94	5.35	356.0
108	1791.48	3.09	1.78	5.35	307.0	158	2063.05	4.75	3.47	4.99	357.0
109	1796.98	.49	1.17	5.54	308.0	159	2067.95	7.18	5.26	5.02	358.0
110	1802.44	.34	6.64	5.29	309.0	160	2073.29	5.58	4.09	5.59	359.0
111	1807.64	3.32	8.75	5.31	310.0	161	2078.89	3.34	2.13	5.46	360.0
112	1813.20	4.80	4.41	5.60	311.0	162	2084.14	2.75	2.06	5.07	361.0
113	1818.59	2.00	1.19	5.31	312.0	163	2089.53	3.53	5.72	6.05	362.0
114	1824.20	.33	3.52	5.96	313.0	164	2096.10	6.01	8.06	6.52	363.0
115	1829.96	1.04	7.58	5.27	314.0	165	2101.39	5.52	4.71	3.93	364.0
116	1834.88	2.86	7.19	4.90	315.0	166	2104.97	2.72	1.75	4.02	365.0
117	1840.16	4.59	4.28	5.58	316.0	167	2110.18	3.58	2.58	6.23	366.0
118	1845.76	4.52	2.31	5.56	317.0	168	2116.55	7.94	5.81	6.09	367.0
119	1851.27	1.85	3.03	5.44	318.0	169	2121.89	6.87	5.03	4.64	368.0
120	1856.56	.51	6.82	5.19	319.0	170	2126.49	2.60	1.90	4.87	369.0
121	1861.71	3.24	7.41	5.15	320.0	171	2131.90	2.63	1.80	5.83	370.0
122	1866.88	5.99	4.80	5.17	321.0	172	2137.82	6.35	4.63	6.05	371.0
123	1872.23	3.78	2.03	5.72	322.0	173	2143.90	6.14	6.04	5.94	372.0
124	1878.40	.13	3.42	6.39	323.0	174	2149.28	3.19	4.23	4.73	373.0
125	1884.47	2.63	8.18	5.43	324.0	175	2153.95	2.54	2.04	5.00	374.0
126	1889.28	6.45	3.05	4.53	325.0	176	2159.38	2.87	1.82	5.80	375.0
127	1894.31	4.96	3.84	5.59	326.0	177	2165.29	5.00	3.66	5.83	376.0
128	1899.95	1.47	1.62	5.51	327.0	178	2170.77	6.26	4.60	5.02	377.0
129	1905.43	.78	5.45	5.54	328.0	179	2175.58	4.03	2.95	4.94	378.0
130	1910.92	4.16	8.66	5.34	329.0	180	2181.02	2.66	1.95	5.74	379.0
131	1916.00	5.52	5.49	4.96	330.0	181	2186.30	3.11	2.29	4.62	380.0
132	1921.18	3.06	1.37	5.34	331.0	182	2190.98	5.14	3.75	5.10	381.0
133	1926.40	1.61	2.28	5.09	332.0	183	2196.45	5.92	4.26	5.67	382.0
134	1931.62	2.06	7.18	5.52	333.0	184	2202.14	2.84	2.15	5.72	383.0
135	1937.35	4.88	8.43	5.74	334.0	185	2207.80	2.04	1.44	5.50	384.0
136	1942.70	5.18	4.37	4.93	335.0	186	2213.00	4.35	2.94	5.05	385.0
137	1947.44	2.53	.97	4.87	336.0	187	2218.15	6.65	5.00	5.25	386.0
138	1952.78	1.70	1.84	5.82	337.0	188	2223.43	5.34	3.82	5.23	387.0
139	1958.70	3.19	7.38	5.82	338.0	189	2228.61	2.49	1.79	5.08	388.0
140	1964.42	3.85	8.05	5.63	339.0	190	2233.58	1.98	1.36	4.98	389.0
141	1969.89	2.99	3.15	5.15	340.0	191	2238.96	4.75	3.07	5.84	390.0
142	1974.73	2.73	1.49	4.70	341.0	192	2244.80	7.51	5.68	5.56	391.0
143	1979.84	2.30	1.23	5.63	342.0	193	2249.79	5.47	3.77	4.71	392.0
144	1985.69	3.77	4.40	5.84	343.0	194	2255.43	3.02	-.04	7.05	393.0
145	1991.36	5.10	6.94	5.60	344.0	195	2263.02	3.81	.90	6.86	394.0
146	1997.05	3.80	3.67	5.84	345.0	196	2267.94	5.26	3.94	3.52	395.0
147	2002.92	2.51	1.45	5.82	346.0	197	2271.93	6.13	4.73	4.90	396.0
148	2008.54	2.48	1.67	5.39	347.0	198	2277.11	4.15	3.09	4.74	397.0
149	2013.80	5.23	3.95	5.30	348.0	199	2281.57	2.99	2.46	4.87	398.0
150	2019.45	6.27	5.50	5.89	349.0	200	2287.54	3.47	4.53	6.80	399.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
1	2294.24	4.04	6.48	6.31	400.0	51	2559.43	2.50	1.70	4.87	450.0
2	2299.79	4.05	5.74	4.78	401.0	52	2564.46	4.39	3.22	5.17	451.0
3	2304.20	4.65	4.12	4.33	402.0	53	2569.53	5.85	4.97	4.88	452.0
4	2308.77	2.79	1.30	5.06	403.0	54	2574.26	4.00	3.51	4.66	453.0
5	2314.69	3.79	2.27	6.76	404.0	55	2579.16	1.47	.67	5.16	454.0
6	2321.57	7.31	5.44	6.46	405.0	56	2584.32	2.17	2.79	5.02	455.0
7	2326.96	6.10	4.49	4.44	406.0	57	2589.12	4.12	7.24	4.83	456.0
8	2331.45	5.42	3.38	4.95	407.0	58	2594.37	5.22	6.15	5.57	457.0
9	2336.85	3.30	1.44	5.65	408.0	59	2599.87	3.58	2.27	5.38	458.0
10	2342.46	4.71	3.10	5.48	409.0	60	2605.46	1.77	1.13	6.00	459.0
11	2347.75	7.05	5.27	5.10	410.0	61	2611.54	2.83	2.07	5.79	460.0
12	2352.59	5.46	4.05	4.55	411.0	62	2616.63	5.42	4.09	4.42	461.0
13	2357.24	3.71	2.68	5.05	412.0	63	2621.04	5.25	3.82	4.75	462.0
14	2362.65	4.29	3.00	5.55	413.0	64	2626.42	3.29	1.26	5.90	463.0
15	2368.20	7.56	5.49	5.54	414.0	65	2632.36	3.04	.89	5.72	464.0
16	2373.72	7.61	5.83	5.44	415.0	66	2637.69	4.61	3.16	5.02	465.0
17	2378.89	4.54	3.04	4.93	416.0	67	2642.71	5.11	3.87	5.15	466.0
18	2384.01	3.44	.46	5.61	417.0	68	2648.06	4.13	3.08	5.53	467.0
19	2390.14	5.74	2.65	6.39	418.0	69	2653.64	2.41	1.62	5.46	468.0
20	2396.26	8.62	6.50	5.67	419.0	70	2658.85	2.78	1.74	5.08	469.0
21	2401.38	6.00	4.65	4.77	420.0	71	2663.94	5.48	3.99	5.04	470.0
22	2406.34	3.25	1.35	5.23	421.0	72	2668.90	3.71	2.90	4.95	471.0
23	2411.84	4.57	1.61	5.59	422.0	73	2673.93	2.94	1.49	5.09	472.0
24	2417.30	7.34	4.90	5.23	423.0	74	2679.00	3.94	1.47	5.05	473.0
25	2422.46	7.29	5.64	5.11	424.0	75	2684.12	4.05	2.43	5.29	474.0
26	2427.62	4.09	3.13	5.20	425.0	76	2689.58	5.31	4.01	5.31	475.0
27	2432.73	3.57	1.21	5.07	426.0	77	2694.33	3.11	2.32	4.37	476.0
28	2438.00	5.38	2.22	5.57	427.0	78	2699.14	1.44	1.06	5.57	477.0
29	2443.59	7.19	5.17	5.27	428.0	79	2705.32	3.19	2.21	6.31	478.0
30	2448.45	5.93	4.58	4.73	429.0	80	2711.09	5.76	4.10	5.25	479.0
31	2453.72	3.48	2.39	6.00	430.0	81	2716.26	5.69	4.18	5.19	480.0
32	2460.06	3.46	1.65	6.28	431.0	82	2721.18	2.55	1.89	4.57	481.0
33	2465.99	4.74	2.75	5.57	432.0	83	2725.76	.66	.49	4.92	482.0
34	2471.24	6.36	4.76	4.93	433.0	84	2731.06	1.99	1.32	5.47	483.0
35	2476.05	5.34	4.07	4.85	434.0	85	2736.18	6.38	4.57	4.79	484.0
36	2481.12	4.22	2.05	5.20	435.0	86	2741.10	5.51	4.06	5.23	485.0
37	2486.18	3.78	1.18	4.73	436.0	87	2746.51	2.40	1.74	5.36	486.0
38	2490.67	5.55	3.63	4.50	437.0	88	2751.59	1.27	.90	4.93	487.0
39	2495.37	6.52	4.93	4.88	438.0	89	2756.78	2.36	1.74	5.56	488.0
40	2500.54	5.43	3.99	5.48	439.0	90	2762.55	5.08	3.84	5.71	489.0
41	2506.17	3.47	2.54	5.70	440.0	91	2767.84	3.78	2.87	4.94	490.0
42	2511.78	2.83	2.07	5.51	441.0	92	2773.03	2.89	2.11	5.70	491.0
43	2517.16	6.24	4.61	5.26	442.0	93	2778.98	1.42	1.00	5.80	492.0
44	2522.28	6.31	4.70	4.98	443.0	94	2784.24	2.61	1.92	4.83	493.0
45	2527.25	4.59	2.51	5.05	444.0	95	2789.11	6.58	5.05	4.95	494.0
46	2532.39	4.33	.89	5.25	445.0	96	2793.95	4.05	3.18	4.72	495.0
47	2537.73	4.22	2.10	5.79	446.0	97	2798.95	.94	.68	5.47	496.0
48	2543.16	5.82	4.68	5.54	447.0	98	2804.74	2.12	1.54	5.85	497.0
49	2548.90	5.74	4.25	5.85	448.0	99	2810.26	4.84	3.57	5.10	498.0
50	2554.49	3.30	2.45	5.19	449.0	100	2814.90	5.43	3.83	4.48	499.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
101	2819.76	4.00	2.76	5.39	500.0	151	3085.75	4.65	3.83	5.21	550.0
102	2825.22	1.99	1.32	5.26	501.0	152	3091.33	3.47	-1.77	5.63	551.0
103	2830.33	2.03	1.53	5.32	502.0	153	3096.21	3.96	-3.94	4.09	552.0
104	2836.12	4.77	3.55	5.95	503.0	154	3100.42	3.40	-1.42	4.81	553.0
105	2841.36	4.04	2.89	4.47	504.0	155	3105.93	5.27	4.30	6.00	554.0
106	2846.05	2.92	2.44	5.41	505.0	156	3111.83	4.85	4.18	5.59	555.0
107	2852.21	2.28	1.54	6.43	506.0	157	3117.00	3.55	-0.81	4.86	556.0
108	2858.14	2.89	1.55	5.34	507.0	158	3121.90	3.26	-3.04	5.05	557.0
109	2863.15	5.58	3.51	4.82	508.0	159	3127.07	2.13	-0.04	5.23	558.0
110	2868.01	5.24	.77	4.94	509.0	160	3132.43	4.08	3.95	5.59	559.0
111	2873.06	3.87	-1.50	5.06	510.0	161	3138.35	4.99	2.35	6.02	560.0
112	2877.96	2.74	.55	4.80	511.0	162	3143.84	4.76	-1.81	4.71	561.0
113	2882.92	3.93	3.27	5.23	512.0	163	3148.17	2.69	-1.78	4.58	562.0
114	2888.35	5.14	4.15	5.31	513.0	164	3153.85	2.31	1.60	6.55	563.0
115	2893.19	3.03	.77	4.57	514.0	165	3159.79	3.97	3.38	4.69	564.0
116	2898.14	1.91	-2.17	5.47	515.0	166	3163.64	2.57	2.10	3.93	565.0
117	2904.08	4.33	.69	6.25	516.0	167	3168.95	3.21	-0.56	6.65	566.0
118	2910.25	7.39	3.84	5.81	517.0	168	3175.56	3.44	-1.09	5.85	567.0
119	2915.43	5.22	1.44	4.64	518.0	169	3180.64	3.11	2.16	4.81	568.0
120	2919.95	2.13	-1.63	4.72	519.0	170	3185.93	3.16	3.13	5.69	569.0
121	2925.37	2.00	-1.69	6.10	520.0	171	3191.32	3.60	-0.28	4.82	570.0
122	2931.67	3.28	1.25	6.16	521.0	172	3195.73	3.79	-3.02	4.34	571.0
123	2937.01	5.53	3.79	4.51	522.0	173	3200.50	1.80	-0.75	5.19	572.0
124	2941.33	5.56	1.27	4.65	523.0	174	3205.75	3.34	3.16	5.29	573.0
125	2946.57	3.13	-2.24	5.66	524.0	175	3211.12	4.16	3.53	5.47	574.0
126	2952.21	1.98	-1.21	5.59	525.0	176	3216.56	2.87	-0.24	5.37	575.0
127	2957.63	5.25	3.24	5.10	526.0	177	3222.06	2.25	-3.09	5.77	576.0
128	2962.78	6.08	2.44	4.69	527.0	178	3228.01	3.16	.78	5.79	577.0
129	2967.55	3.76	-2.42	5.53	528.0	179	3232.92	3.96	4.01	4.03	578.0
130	2972.91	3.15	-2.65	5.12	529.0	180	3236.99	2.78	.40	4.64	579.0
131	2978.31	4.29	1.15	5.93	530.0	181	3242.58	2.10	-3.95	6.24	580.0
132	2984.40	5.43	3.84	5.82	531.0	182	3248.70	2.82	-1.25	5.80	581.0
133	2989.70	4.81	2.13	5.06	532.0	183	3254.33	4.85	3.72	5.62	582.0
134	2995.04	4.50	-1.70	5.63	533.0	184	3259.79	3.99	3.45	5.01	583.0
135	3000.65	2.63	-3.10	5.56	534.0	185	3264.35	2.67	-0.47	4.40	584.0
136	3006.35	3.56	1.13	5.85	535.0	186	3269.12	2.07	-3.34	5.30	585.0
137	3012.10	7.10	5.47	5.43	536.0	187	3274.63	1.75	-0.27	5.44	586.0
138	3017.26	5.50	1.49	5.07	537.0	188	3279.88	3.47	3.32	5.20	587.0
139	3022.70	3.26	-3.23	4.91	538.0	189	3285.21	4.47	.59	5.38	588.0
140	3027.10	2.35	-1.97	4.89	539.0	190	3290.45	3.62	-3.13	5.02	589.0
141	3032.42	3.55	2.25	5.76	540.0	191	3295.32	2.81	-0.92	4.88	590.0
142	3038.30	5.06	3.84	5.78	541.0	192	3300.76	3.48	2.92	6.12	591.0
143	3043.59	4.92	-0.34	4.78	542.0	193	3306.93	2.88	2.75	5.82	592.0
144	3048.21	3.98	-2.90	4.73	543.0	194	3312.23	3.17	-0.90	5.00	593.0
145	3053.49	3.43	.30	5.77	544.0	195	3317.37	3.52	-4.09	5.34	594.0
146	3059.10	3.89	3.53	5.14	545.0	196	3322.44	1.30	-1.91	4.74	595.0
147	3064.11	4.44	1.30	5.22	546.0	197	3327.29	3.06	3.14	5.15	596.0
148	3069.70	4.15	-3.60	5.83	547.0	198	3332.63	4.69	3.55	5.26	597.0
149	3075.50	3.32	-2.16	5.69	548.0	199	3337.65	3.71	-1.89	4.92	598.0
150	3080.84	5.05	3.74	4.92	549.0	200	3342.63	2.34	-4.28	5.02	599.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
1	3347.75	1.78	.02	5.23	600.0	51	3609.04	2.75	-4.89	5.53	650.0
2	3353.30	3.00	3.28	5.86	601.0	52	3614.31	1.75	-1.65	5.07	651.0
3	3358.86	2.73	1.06	4.96	602.0	53	3619.47	2.19	1.03	5.32	652.0
4	3363.24	2.64	-3.69	4.22	603.0	54	3624.70	4.03	-.94	4.97	653.0
5	3369.24	2.49	-3.12	5.89	604.0	55	3629.50	3.95	-5.58	4.81	654.0
6	3374.50	4.05	2.45	6.27	605.0	56	3634.57	1.91	-4.88	5.27	655.0
7	3380.24	4.50	4.04	5.18	606.0	57	3639.77	1.14	-.52	5.09	656.0
8	3385.20	2.55	-.03	4.94	607.0	58	3645.01	4.44	1.48	5.40	657.0
9	3390.41	2.36	-3.30	5.40	608.0	59	3650.36	6.41	-2.29	5.10	658.0
10	3395.71	1.81	-1.21	5.13	609.0	60	3655.23	3.70	-5.79	4.88	659.0
11	3400.99	2.40	2.45	5.48	610.0	61	3660.52	1.18	-2.95	5.66	660.0
12	3406.19	3.26	2.40	4.46	611.0	62	3666.25	1.71	.71	5.68	661.0
13	3409.80	3.33	-1.82	3.26	612.0	63	3671.74	4.29	.26	5.25	662.0
14	3413.94	2.84	-3.43	5.42	613.0	64	3676.72	4.76	-4.74	4.92	663.0
15	3420.47	2.84	.85	7.16	614.0	65	3681.99	2.87	-5.67	5.49	664.0
16	3427.04	3.65	3.56	5.42	615.0	66	3687.10	.38	-1.63	4.60	665.0
17	3431.18	3.96	.59	3.41	616.0	67	3691.64	2.55	1.45	4.94	666.0
18	3435.28	4.31	-4.09	5.22	617.0	68	3697.17	5.64	-.59	5.75	667.0
19	3441.28	2.61	-3.47	6.18	618.0	69	3702.45	4.86	-4.60	4.81	668.0
20	3446.96	1.94	1.50	5.30	619.0	70	3707.29	1.64	-4.42	5.09	669.0
21	3452.36	4.41	3.44	5.61	620.0	71	3712.58	1.23	-.29	5.33	670.0
22	3458.05	6.22	-.43	5.62	621.0	72	3717.88	4.62	1.84	5.25	671.0
23	3463.45	4.25	-4.41	5.12	622.0	73	3723.05	4.28	-2.91	5.07	672.0
24	3468.15	2.02	-2.12	4.44	623.0	74	3728.04	1.69	-5.88	4.90	673.0
25	3472.83	3.07	2.65	5.07	624.0	75	3733.06	.84	-3.36	5.25	674.0
26	3477.94	4.36	1.55	4.85	625.0	76	3738.55	2.71	.30	5.61	675.0
27	3482.59	4.82	-3.83	4.79	626.0	77	3743.82	3.65	-.05	4.98	676.0
28	3487.94	2.42	-4.75	5.86	627.0	78	3749.93	3.44	-4.06	5.37	677.0
29	3493.83	2.17	.58	5.81	628.0	79	3754.43	1.73	-5.90	5.34	678.0
30	3499.66	4.71	3.42	5.97	629.0	80	3759.44	.48	-2.94	4.82	679.0
31	3505.16	5.27	-1.11	5.04	630.0	81	3764.40	3.08	.78	5.15	680.0
32	3510.01	4.58	-4.35	4.81	631.0	82	3769.58	5.19	-.51	5.06	681.0
33	3514.72	.91	-2.58	4.66	632.0	83	3774.45	3.42	-5.73	4.69	682.0
34	3519.75	1.29	1.07	5.51	633.0	84	3779.33	.94	-6.30	5.28	683.0
35	3525.38	5.04	.46	5.30	634.0	85	3785.01	1.87	.02	5.87	684.0
36	3530.14	4.78	-3.29	4.52	635.0	86	3790.46	3.57	2.01	4.92	685.0
37	3535.19	2.58	-3.75	5.76	636.0	87	3795.14	4.06	-2.73	4.66	686.0
38	3541.32	2.01	-1.72	6.20	637.0	88	3800.01	3.23	-5.50	5.07	687.0
39	3547.30	4.53	2.27	5.72	638.0	89	3805.36	.17	-4.24	5.65	688.0
40	3552.55	5.52	-.14	4.68	639.0	90	3811.12	1.10	-.52	5.70	689.0
41	3556.84	3.97	-3.88	4.19	640.0	91	3816.36	4.10	.14	4.60	690.0
42	3561.11	1.37	-4.14	4.30	641.0	92	3820.72	3.93	-4.10	4.58	691.0
43	3565.75	1.19	-.75	5.16	642.0	93	3825.89	2.58	-6.03	5.55	692.0
44	3571.37	4.00	1.13	5.93	643.0	94	3831.33	.21	-3.34	5.23	693.0
45	3577.14	4.46	-2.66	5.43	644.0	95	3836.52	1.66	1.01	5.24	694.0
46	3582.39	4.11	-4.11	5.24	645.0	96	3841.67	4.49	-.40	4.87	695.0
47	3587.66	1.79	-3.30	5.18	646.0	97	3846.19	3.81	-4.62	4.47	696.0
48	3592.59	2.19	.29	5.03	647.0	98	3851.17	1.12	-4.55	5.52	697.0
49	3597.84	4.92	1.59	5.30	648.0	99	3856.86	.44	-1.11	5.71	698.0
50	3603.36	4.01	-3.50	5.70	649.0	100	3862.35	3.21	1.11	5.29	699.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
101	3867.61	4.25	-2.37	5.31	700.0	151	4127.44	1.66	.82	5.65	750.0
102	3872.87	2.93	-4.89	5.13	701.0	152	4132.78	3.47	-2.09	4.79	751.0
103	3878.04	.12	-3.26	5.38	702.0	153	4137.24	3.82	-5.94	4.54	752.0
104	3883.76	.80	.41	5.87	703.0	154	4142.38	1.35	-4.65	5.77	753.0
105	3889.16	4.03	.30	4.64	704.0	155	4148.27	.15	-1.05	5.70	754.0
106	3893.21	2.73	-4.48	3.86	705.0	156	4153.61	2.67	-.65	5.13	755.0
107	3897.67	1.02	-5.22	5.09	706.0	157	4158.77	5.33	-3.63	5.22	756.0
108	3903.04	1.06	-1.66	5.49	707.0	158	4164.01	3.58	-5.56	5.30	757.0
109	3908.64	3.99	2.92	5.61	708.0	159	4169.45	.32	-4.63	5.55	758.0
110	3914.03	4.13	-.09	5.27	709.0	160	4174.98	2.07	-.86	5.52	759.0
111	3919.42	3.06	-4.67	5.54	710.0	161	4180.66	5.05	.48	5.89	760.0
112	3924.82	2.39	-3.71	5.15	711.0	162	4186.18	4.52	-4.28	5.04	761.0
113	3929.83	.71	-1.01	5.14	712.0	163	4191.16	2.33	-6.89	5.26	762.0
114	3935.26	2.44	1.65	5.47	713.0	164	4196.52	.68	-3.14	5.06	763.0
115	3940.41	3.57	-1.10	5.02	714.0	165	4201.00	1.49	.71	4.25	764.0
116	3945.78	2.54	-4.94	5.73	715.0	166	4205.68	4.34	-.69	5.12	765.0
117	3951.35	.71	-4.07	5.15	716.0	167	4210.83	4.29	-5.48	4.92	766.0
118	3956.31	1.19	.11	5.03	717.0	168	4215.65	1.46	-5.77	4.84	767.0
119	3961.67	3.17	1.44	5.53	718.0	169	4220.52	-.01	-2.21	4.94	768.0
120	3966.85	3.60	-2.95	4.80	719.0	170	4225.66	3.23	.33	5.36	769.0
121	3971.41	2.65	-5.22	4.54	720.0	171	4231.11	6.03	-1.71	5.51	770.0
122	3976.53	.47	-2.60	5.90	721.0	172	4236.73	3.79	-5.36	5.72	771.0
123	3982.91	3.33	1.97	6.28	722.0	173	4242.34	.98	-3.94	5.45	772.0
124	3987.97	6.06	.80	3.78	723.0	174	4247.69	1.61	-.12	5.21	773.0
125	3991.74	3.97	-4.45	4.54	724.0	175	4252.51	4.00	-.83	4.40	774.0
126	3997.34	1.74	-4.39	6.02	725.0	176	4257.01	4.58	-5.03	4.91	775.0
127	4002.83	1.01	-.74	4.89	726.0	177	4262.40	2.68	-5.99	5.67	776.0
128	4007.53	2.95	.68	4.75	727.0	178	4267.99	.58	-3.28	5.53	777.0
129	4012.52	4.34	-2.30	5.28	728.0	179	4273.42	2.33	.04	5.21	778.0
130	4018.12	3.16	-5.14	5.73	729.0	180	4278.12	4.66	-1.71	4.25	779.0
131	4023.52	1.29	-3.57	5.04	730.0	181	4282.51	4.20	-6.22	4.77	780.0
132	4028.66	2.87	1.54	5.63	731.0	182	4287.50	1.76	-6.16	4.95	781.0
133	4034.60	4.87	1.29	6.00	732.0	183	4292.56	2.71	-1.19	5.39	782.0
134	4039.94	4.66	-4.03	4.61	733.0	184	4298.52	6.82	1.47	6.30	783.0
135	4044.67	2.90	-5.19	5.23	734.0	185	4304.55	5.87	-2.74	5.55	784.0
136	4050.41	.93	-2.36	5.97	735.0	186	4309.77	3.82	-6.43	5.15	785.0
137	4056.20	2.30	.96	5.35	736.0	187	4315.28	2.70	-4.89	5.92	786.0
138	4060.93	3.93	-.77	4.03	737.0	188	4321.16	2.43	-.92	5.51	787.0
139	4065.02	3.53	-5.35	4.77	738.0	189	4325.74	4.16	-.56	3.85	788.0
140	4070.48	2.43	-5.03	5.78	739.0	190	4329.80	6.27	-4.71	4.80	789.0
141	4075.93	1.31	-1.07	5.10	740.0	191	4335.29	4.70	-6.03	5.85	790.0
142	4081.13	3.10	1.09	5.49	741.0	192	4340.99	2.55	-2.39	5.54	791.0
143	4086.46	4.83	-1.98	4.88	742.0	193	4346.42	5.58	.96	5.30	792.0
144	4091.16	3.34	-5.51	4.79	743.0	194	4351.41	6.91	-1.40	4.60	793.0
145	4096.52	1.15	-4.38	6.02	744.0	195	4355.97	5.87	-4.89	4.73	794.0
146	4102.69	1.46	.19	5.84	745.0	196	4361.03	3.07	-5.05	5.25	795.0
147	4107.53	3.91	1.06	3.95	746.0	197	4366.04	1.85	-1.13	4.60	796.0
148	4111.55	4.57	-4.12	4.50	747.0	198	4370.60	6.62	1.47	4.94	797.0
149	4116.70	2.33	-6.25	5.50	748.0	199	4376.33	8.03	-2.68	6.21	798.0
150	4122.01	.39	-2.46	5.16	749.0	200	4382.23	4.06	-5.10	5.44	799.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
1	4387.36	2.05	-2.49	5.06	800.0	51	4643.28	2.88	-3.40	4.93	850.0
2	4392.39	4.82	.58	4.71	801.0	52	4648.39	2.13	.88	5.45	851.0
3	4396.76	6.26	-1.46	4.33	802.0	53	4654.23	5.54	4.08	5.96	852.0
4	4401.54	4.97	-5.77	5.23	803.0	54	4659.69	6.05	1.02	4.80	853.0
5	4407.07	5.14	-4.04	5.87	804.0	55	4664.33	3.38	-3.83	4.92	854.0
6	4413.29	6.02	1.33	6.30	805.0	56	4669.80	1.64	-2.10	5.80	855.0
7	4418.97	6.24	2.19	4.90	806.0	57	4675.37	1.90	1.56	5.10	856.0
8	4423.44	6.49	-2.80	4.46	807.0	58	4679.93	4.85	2.02	4.23	857.0
9	4428.28	4.98	-5.68	5.14	808.0	59	4684.64	6.39	-.94	5.53	858.0
10	4433.54	2.45	-3.52	5.43	809.0	60	4690.74	3.53	-2.81	6.22	859.0
11	4438.94	5.24	1.28	4.87	810.0	61	4696.29	1.45	-.64	4.78	860.0
12	4443.38	7.73	1.24	4.61	811.0	62	4700.76	2.73	2.42	4.36	861.0
13	4448.67	6.70	-3.55	5.86	812.0	63	4705.36	3.27	1.43	5.01	862.0
14	4454.27	4.29	-0.81	5.03	813.0	64	4710.67	3.13	-3.06	5.32	863.0
15	4459.05	2.15	-1.85	4.91	814.0	65	4715.74	2.11	-3.13	4.99	864.0
16	4464.41	4.90	1.54	5.48	815.0	66	4721.15	3.34	1.67	5.89	865.0
17	4469.50	7.21	-.21	4.76	816.0	67	4727.08	4.65	3.60	5.56	866.0
18	4474.33	6.43	-4.31	4.99	817.0	68	4731.78	2.81	.40	4.08	867.0
19	4479.58	3.41	-4.47	5.52	818.0	69	4736.06	1.31	-3.23	4.96	868.0
20	4485.24	2.41	.61	5.55	819.0	70	4741.90	.96	-2.02	6.34	869.0
21	4490.30	5.34	2.03	4.56	820.0	71	4747.58	2.70	1.54	4.58	870.0
22	4494.77	7.07	-2.54	4.71	821.0	72	4751.41	3.51	2.64	3.77	871.0
23	4499.92	5.85	-4.03	5.50	822.0	73	4756.13	3.06	-.06	5.78	872.0
24	4505.45	2.62	-1.67	5.49	823.0	74	4762.35	2.16	-2.70	6.15	873.0
25	4510.76	4.44	1.26	5.06	824.0	75	4768.01	2.37	-.08	5.10	874.0
26	4515.60	7.31	.19	4.71	825.0	76	4772.79	3.65	2.71	4.76	875.0
27	4520.32	5.72	-3.76	4.78	826.0	77	4777.81	2.50	1.89	5.23	876.0
28	4525.16	3.38	-3.55	4.93	827.0	78	4783.10	1.66	-1.70	5.22	877.0
29	4530.23	3.70	.20	5.10	828.0	79	4788.07	1.47	-3.19	4.71	878.0
30	4535.50	6.51	2.13	5.44	829.0	80	4792.65	2.02	.35	4.54	879.0
31	4540.78	6.93	-1.23	4.95	830.0	81	4797.44	4.38	3.28	5.29	880.0
32	4545.50	5.37	-4.28	4.72	831.0	82	4803.26	3.34	2.45	5.98	881.0
33	4550.45	2.47	-2.79	5.06	832.0	83	4808.80	1.04	-1.38	5.07	882.0
34	4555.49	3.02	.91	5.19	833.0	84	4813.77	1.40	-2.63	5.11	883.0
35	4561.28	7.92	2.62	6.31	834.0	85	4819.10	3.41	1.18	5.37	884.0
36	4567.30	7.50	-2.21	5.33	835.0	86	4824.11	3.07	2.58	4.71	885.0
37	4572.11	3.50	-4.93	4.70	836.0	87	4828.83	.55	-.43	4.74	886.0
38	4576.88	1.49	-1.41	4.65	837.0	88	4833.42	.32	-2.90	4.56	887.0
39	4581.39	3.70	2.27	4.60	838.0	89	4838.72	3.12	.13	6.31	888.0
40	4586.60	7.50	1.16	5.86	839.0	90	4845.46	5.73	4.30	6.44	889.0
41	4592.60	6.89	-3.06	5.85	840.0	91	4850.69	4.26	1.81	4.22	890.0
42	4598.00	2.99	-3.42	4.95	841.0	92	4855.08	2.51	-2.59	5.01	891.0
43	4602.64	2.37	.77	4.44	842.0	93	4860.57	1.22	-1.81	5.63	892.0
44	4607.20	3.97	2.40	4.71	843.0	94	4865.90	2.02	1.55	5.04	893.0
45	4611.90	4.65	-1.87	4.75	844.0	95	4870.66	4.00	3.11	4.44	894.0
46	4617.22	6.19	-2.55	6.15	845.0	96	4875.06	4.39	2.01	4.64	895.0
47	4623.83	4.86	.80	6.48	846.0	97	4880.40	4.21	-1.41	5.96	896.0
48	4629.38	2.78	2.43	4.65	847.0	98	4886.36	3.11	-.80	5.64	897.0
49	4633.80	3.89	1.18	4.47	848.0	99	4891.38	3.36	2.41	4.45	898.0
50	4638.41	4.86	-3.14	4.76	849.0	100	4895.82	2.97	2.24	4.70	899.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
101	4900.91	2.65	-0.22	5.44	900.0	151	5154.93	4.00	1.02	4.44	950.0
102	4906.59	3.96	-1.01	5.82	901.0	152	5159.23	3.58	-1.03	4.41	951.0
103	4912.12	4.90	1.86	5.12	902.0	153	5164.48	5.53	1.93	6.33	952.0
104	4917.00	4.41	3.33	4.73	903.0	154	5171.30	5.89	3.87	6.47	953.0
105	4921.88	3.28	1.15	4.96	904.0	155	5176.37	3.33	2.36	3.79	954.0
106	4926.54	3.11	-1.75	4.36	905.0	156	5180.04	1.43	.03	4.10	955.0
107	4931.17	3.87	-0.18	5.38	906.0	157	5184.74	3.32	.25	5.18	956.0
108	4937.43	5.59	3.73	6.65	907.0	158	5190.41	6.17	3.55	6.22	957.0
109	4943.43	4.83	3.22	5.16	908.0	159	5196.75	5.52	3.44	5.98	958.0
110	4948.00	3.41	-1.08	4.19	909.0	160	5201.82	4.23	-.87	4.39	959.0
111	4952.01	2.15	-2.68	3.93	910.0	161	5206.18	2.49	-2.42	4.67	960.0
112	4956.40	3.25	1.36	5.15	911.0	162	5211.41	3.42	1.55	5.72	961.0
113	4962.27	6.41	4.44	6.11	912.0	163	5217.37	6.26	4.67	6.00	962.0
114	4967.77	5.48	3.57	4.82	913.0	164	5222.91	5.22	2.45	4.85	963.0
115	4972.29	2.13	.79	4.50	914.0	165	5227.23	3.43	-1.85	4.11	964.0
116	4976.97	.96	-.92	4.90	915.0	166	5231.70	2.48	-1.54	5.02	965.0
117	4982.25	4.48	1.99	5.59	916.0	167	5237.27	5.04	3.22	5.84	966.0
118	4987.84	7.23	4.54	5.46	917.0	168	5242.79	6.33	4.19	5.02	967.0
119	4993.11	5.29	1.08	5.10	918.0	169	5247.48	4.31	-.17	4.53	968.0
120	4998.06	2.77	-1.80	4.87	919.0	170	5252.13	2.54	-1.93	4.85	969.0
121	5003.07	2.59	.49	5.24	920.0	171	5257.27	3.84	1.86	5.39	970.0
122	5008.51	5.84	3.87	5.46	921.0	172	5262.88	7.53	5.30	5.64	971.0
123	5013.57	5.82	3.73	4.61	922.0	173	5268.17	5.76	2.91	4.86	972.0
124	5017.95	2.81	1.78	4.40	923.0	174	5272.90	3.03	-1.41	4.90	973.0
125	5022.69	1.76	.47	5.12	924.0	175	5278.19	3.31	-.73	5.57	974.0
126	5028.01	3.51	1.62	5.28	925.0	176	5283.49	6.16	3.45	4.87	975.0
127	5033.31	5.64	3.58	5.51	926.0	177	5288.14	5.81	4.12	4.69	976.0
128	5039.07	5.83	1.35	5.86	927.0	178	5293.15	2.68	1.72	5.26	977.0
129	5044.47	3.52	-1.27	4.74	928.0	179	5298.36	2.93	-.11	5.21	978.0
130	5048.95	1.74	.09	4.35	929.0	180	5303.93	6.53	2.11	5.73	979.0
131	5053.45	4.73	2.99	4.95	930.0	181	5309.35	7.43	4.67	5.07	980.0
132	5058.80	5.79	3.29	5.73	931.0	182	5314.03	4.43	2.88	4.61	981.0
133	5064.46	3.51	2.20	5.23	932.0	183	5319.04	3.36	-.59	5.41	982.0
134	5068.98	2.14	1.53	4.05	933.0	184	5324.23	2.62	-1.57	4.86	983.0
135	5073.36	3.32	1.95	4.96	934.0	185	5329.21	6.45	3.46	5.33	984.0
136	5078.68	4.34	2.71	5.44	935.0	186	5334.67	6.96	4.79	5.21	985.0
137	5084.10	4.05	2.77	5.39	936.0	187	5339.41	1.86	.84	4.53	986.0
138	5089.23	2.85	1.78	4.85	937.0	188	5344.26	3.17	-.76	5.11	987.0
139	5094.23	2.60	1.09	5.41	938.0	189	5349.33	5.87	1.29	4.97	988.0
140	5099.94	4.41	2.52	5.57	939.0	190	5354.57	7.68	4.99	5.54	989.0
141	5104.45	4.63	3.14	3.44	940.0	191	5359.98	6.18	3.48	4.92	990.0
142	5107.88	4.35	1.00	4.18	941.0	192	5364.61	3.84	-.76	4.63	991.0
143	5113.42	3.81	-.66	6.63	942.0	193	5369.70	3.21	-.80	5.57	992.0
144	5120.20	4.13	1.67	6.46	943.0	194	5375.46	5.24	3.01	5.71	993.0
145	5125.65	5.30	3.61	4.34	944.0	195	5380.43	7.60	5.20	4.04	994.0
146	5129.41	4.23	2.77	3.70	945.0	196	5383.82	4.95	2.64	3.55	995.0
147	5133.91	2.58	1.30	5.38	946.0	197	5388.53	2.55	-1.23	5.78	996.0
148	5139.64	3.10	.96	5.68	947.0	198	5394.66	4.02	.31	6.11	997.0
149	5145.06	4.80	2.58	5.28	948.0	199	5400.38	7.33	4.62	5.18	998.0
150	5150.23	5.02	3.46	4.97	949.0	200	5404.76	6.08	4.03	3.70	999.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
1	5408.47	2.87	1.70	4.04	1000.0	51	5666.57	4.93	2.89	4.91	1050.0
2	5413.39	3.63	1.15	5.89	1001.0	52	5671.34	2.06	.74	4.84	1051.0
3	5419.91	6.67	3.01	6.74	1002.0	53	5676.61	3.96	5.47	5.69	1052.0
4	5425.79	6.30	4.15	4.59	1003.0	54	5682.46	6.05	9.20	5.78	1053.0
5	5429.37	5.23	2.54	3.32	1004.0	55	5687.74	4.56	4.41	4.70	1054.0
6	5433.75	6.59	.66	5.53	1005.0	56	5692.34	3.35	1.03	4.91	1055.0
7	5439.62	5.88	1.15	5.80	1006.0	57	5697.73	3.19	2.93	5.63	1056.0
8	5445.04	5.23	3.15	5.03	1007.0	58	5703.09	4.00	7.02	5.08	1057.0
9	5449.86	5.35	3.47	4.77	1008.0	59	5708.20	5.17	6.68	5.25	1058.0
10	5454.77	6.12	3.77	5.10	1009.0	60	5713.44	4.61	2.73	5.06	1059.0
11	5460.15	4.74	2.90	5.70	1010.0	61	5718.35	3.91	1.73	4.97	1060.0
12	5465.94	3.06	1.88	5.73	1011.0	62	5723.88	4.57	4.39	6.11	1061.0
13	5471.14	6.10	3.75	4.51	1012.0	63	5730.02	4.56	7.24	5.62	1062.0
14	5475.25	7.42	4.63	4.20	1013.0	64	5734.47	3.62	4.85	3.40	1063.0
15	5480.30	4.25	2.38	5.93	1014.0	65	5738.06	3.29	2.03	4.64	1064.0
16	5486.38	2.26	.79	5.74	1015.0	66	5744.26	4.08	2.18	7.20	1065.0
17	5491.39	5.51	3.17	4.48	1016.0	67	5750.75	5.70	3.82	5.16	1066.0
18	5496.18	7.47	4.57	5.34	1017.0	68	5754.95	4.93	4.93	3.99	1067.0
19	5501.69	4.71	2.55	5.25	1018.0	69	5759.70	4.24	3.95	5.62	1068.0
20	5506.51	2.54	1.55	4.60	1019.0	70	5765.77	4.57	2.51	6.12	1069.0
21	5511.44	4.43	2.94	5.40	1020.0	71	5771.48	3.26	2.02	5.16	1070.0
22	5516.94	7.06	4.30	5.29	1021.0	72	5776.26	4.02	4.34	4.70	1071.0
23	5521.78	6.12	3.76	4.52	1022.0	73	5781.27	5.93	5.47	5.37	1072.0
24	5526.29	3.77	2.24	4.66	1023.0	74	5786.63	4.85	3.14	5.09	1073.0
25	5531.29	2.89	1.28	5.38	1024.0	75	5791.56	2.76	1.57	5.00	1074.0
26	5536.93	5.60	4.55	5.81	1025.0	76	5796.67	3.52	2.16	5.07	1075.0
27	5542.68	5.96	7.19	5.44	1026.0	77	5801.56	6.43	3.98	4.76	1076.0
28	5547.64	3.84	4.13	4.56	1027.0	78	5806.37	5.88	3.63	4.93	1077.0
29	5552.13	2.12	.80	4.62	1028.0	79	5811.55	2.61	1.61	5.39	1078.0
30	5557.16	3.15	3.72	5.49	1029.0	80	5816.82	2.90	1.79	5.02	1079.0
31	5562.95	6.27	7.37	5.76	1030.0	81	5821.74	5.78	3.57	5.00	1080.0
32	5568.22	6.21	5.06	4.83	1031.0	82	5826.84	6.87	4.24	5.13	1081.0
33	5572.92	2.75	1.39	4.79	1032.0	83	5831.79	4.28	2.67	4.89	1082.0
34	5577.98	2.78	1.36	5.13	1033.0	84	5837.21	1.29	.77	6.12	1083.0
35	5583.14	6.32	4.83	5.31	1034.0	85	5843.62	4.14	2.42	6.24	1084.0
36	5588.29	5.42	5.63	4.89	1035.0	86	5849.16	8.18	5.27	4.91	1085.0
37	5593.09	3.33	2.94	4.95	1036.0	87	5853.93	6.25	3.42	4.84	1086.0
38	5598.34	4.10	2.01	5.48	1037.0	88	5859.02	3.68	-.39	5.15	1087.0
39	5604.05	4.99	4.62	5.91	1038.0	89	5863.85	3.22	-.18	4.65	1088.0
40	5609.94	4.12	6.28	5.62	1039.0	90	5868.88	6.46	3.77	5.54	1089.0
41	5614.89	4.82	4.63	4.40	1040.0	91	5874.49	7.61	4.73	5.24	1090.0
42	5619.38	4.91	2.66	4.96	1041.0	92	5878.98	4.33	2.72	3.95	1091.0
43	5625.10	3.09	1.60	6.28	1042.0	93	5883.40	2.89	1.66	5.33	1092.0
44	5631.12	3.69	4.54	5.40	1043.0	94	5889.49	4.94	3.04	6.31	1093.0
45	5635.67	6.23	7.20	4.06	1044.0	95	5895.16	6.77	4.89	4.85	1094.0
46	5640.11	6.17	4.37	5.66	1045.0	96	5899.59	5.41	4.07	4.46	1095.0
47	5645.76	3.21	1.22	6.01	1046.0	97	5904.72	3.73	2.35	5.87	1096.0
48	5651.52	2.21	2.37	5.26	1047.0	98	5911.03	4.10	2.38	6.51	1097.0
49	5656.42	4.18	6.59	4.81	1048.0	99	5917.10	6.31	4.64	5.37	1098.0
50	5661.47	6.72	7.09	5.20	1049.0	100	5921.80	6.12	5.00	4.32	1099.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
101	5926.31	4.67	3.22	4.96	1100.0	151	6193.18	7.98	2.26	4.18	1150.0
102	5931.80	3.92	2.30	5.82	1101.0	152	6197.69	4.84	-5.1	5.02	1151.0
103	5937.36	4.55	2.79	5.13	1102.0	153	6203.07	4.01	1.71	5.66	1152.0
104	5942.27	7.02	4.34	4.94	1103.0	154	6208.94	7.67	5.13	5.95	1153.0
105	5947.47	6.43	4.00	5.23	1104.0	155	6214.25	7.75	4.84	4.44	1154.0
106	5952.37	3.80	2.34	4.54	1105.0	156	6218.30	5.25	1.62	4.23	1155.0
107	5957.16	3.19	1.97	5.36	1106.0	157	6223.51	4.21	.03	6.25	1156.0
108	5963.06	6.67	4.12	6.13	1107.0	158	6230.18	7.48	4.04	6.65	1157.0
109	5968.74	8.94	5.52	5.08	1108.0	159	6236.14	7.32	5.10	5.11	1158.0
110	5973.56	5.29	3.27	4.87	1109.0	160	6240.60	5.68	1.95	4.15	1159.0
111	5978.88	2.17	1.34	5.81	1110.0	161	6245.09	6.57	.23	5.03	1160.0
112	5984.98	5.17	3.20	6.13	1111.0	162	6250.74	5.44	1.46	6.24	1161.0
113	5990.72	8.50	5.25	5.32	1112.0	163	6257.08	5.50	3.99	5.97	1162.0
114	5995.89	5.98	3.74	5.07	1113.0	164	6262.25	6.96	4.15	4.45	1163.0
115	6000.84	3.06	1.88	4.90	1114.0	165	6266.61	7.32	1.11	4.75	1164.0
116	6006.05	4.76	2.59	5.78	1115.0	166	6272.14	5.52	-6.8	6.08	1165.0
117	6012.24	7.39	4.40	6.20	1116.0	167	6278.18	5.65	2.69	5.68	1166.0
118	6017.83	6.93	3.75	5.03	1117.0	168	6283.46	7.22	5.15	5.12	1167.0
119	6022.93	6.79	.95	5.32	1118.0	169	6288.89	6.45	1.42	5.79	1168.0
120	6028.22	5.70	.17	5.26	1119.0	170	6294.63	4.74	-1.27	5.46	1169.0
121	6033.61	4.40	2.12	5.51	1120.0	171	6299.86	4.74	1.83	5.09	1170.0
122	6038.88	7.24	4.71	4.88	1121.0	172	6304.92	7.41	4.97	5.15	1171.0
123	6043.88	7.62	5.18	5.50	1122.0	173	6310.11	6.57	4.16	5.14	1172.0
124	6049.85	5.30	2.29	6.08	1123.0	174	6315.24	3.71	1.47	5.21	1173.0
125	6055.38	4.34	-4.5	5.06	1124.0	175	6320.75	3.52	.12	5.82	1174.0
126	6060.51	6.58	2.79	5.46	1125.0	176	6326.69	6.89	3.43	5.94	1175.0
127	6066.22	8.42	5.95	5.69	1126.0	177	6332.46	8.22	4.94	5.39	1176.0
128	6071.22	6.18	2.97	4.25	1127.0	178	6337.08	5.60	-0.1	3.93	1177.0
129	6075.41	5.06	-2.27	4.79	1128.0	179	6341.19	4.32	-1.52	5.02	1178.0
130	6081.48	7.63	2.15	6.97	1129.0	180	6347.68	5.35	2.21	7.43	1179.0
131	6087.90	8.08	5.07	5.29	1130.0	181	6354.55	6.84	4.67	5.68	1180.0
132	6092.20	5.79	3.92	3.95	1131.0	182	6359.03	5.42	3.40	3.92	1181.0
133	6096.92	6.99	1.48	5.60	1132.0	183	6363.54	5.87	.23	5.27	1182.0
134	6102.74	6.80	.56	5.65	1133.0	184	6368.24	5.93	-4.6	5.83	1183.0
135	6108.13	5.11	2.59	5.56	1134.0	185	6374.96	5.05	2.54	5.55	1184.0
136	6114.09	7.26	4.95	6.03	1135.0	186	6380.23	5.14	3.92	5.11	1185.0
137	6119.56	7.73	4.74	4.70	1136.0	187	6385.49	6.59	1.84	5.52	1186.0
138	6123.94	4.52	.95	4.41	1137.0	188	6391.28	6.44	-1.08	5.88	1187.0
139	6128.82	4.31	.70	5.37	1138.0	189	6397.07	4.26	.38	5.65	1188.0
140	6134.59	7.94	4.91	5.95	1139.0	190	6402.31	4.98	3.62	4.66	1189.0
141	6140.40	3.42	4.21	5.63	1140.0	191	6406.59	5.69	4.00	4.38	1190.0
142	6145.82	5.23	-4.1	5.17	1141.0	192	6411.83	5.73	1.06	6.09	1191.0
143	6150.90	4.07	-2.25	4.96	1142.0	193	6418.09	4.79	-1.51	5.99	1192.0
144	6156.27	7.31	4.08	6.09	1143.0	194	6423.35	3.96	.95	4.65	1193.0
145	6162.39	7.54	5.06	5.42	1144.0	195	6427.82	4.99	4.17	4.58	1194.0
146	6166.45	5.28	3.71	3.26	1145.0	196	6432.96	7.07	3.30	5.72	1195.0
147	6170.62	5.13	1.90	5.52	1146.0	197	6439.03	5.91	-1.28	6.23	1196.0
148	6177.01	5.67	1.37	6.67	1147.0	198	6445.07	3.19	-1.07	5.73	1197.0
149	6183.21	6.27	3.58	5.76	1148.0	199	6450.25	4.40	2.99	4.62	1198.0
150	6188.66	6.96	4.44	5.07	1149.0	200	6454.66	6.17	4.06	4.42	1199.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
1	6459.51	5.94	1.08	5.41	1200.0	51	6724.71	5.83	3.42	3.45	1250.0
2	6465.28	4.72	-.82	5.85	1201.0	52	6729.13	7.35	3.38	5.75	1251.0
3	6470.88	4.23	1.35	5.33	1202.0	53	6735.54	7.24	3.38	6.35	1252.0
4	6476.14	6.30	4.33	5.26	1203.0	54	6740.90	7.34	4.65	4.44	1253.0
5	6481.48	6.85	3.96	5.33	1204.0	55	6745.22	8.38	5.03	4.61	1254.0
6	6486.50	4.77	-.18	4.67	1205.0	56	6750.39	5.90	1.54	5.63	1255.0
7	6491.25	3.38	-.49	5.17	1206.0	57	6756.13	5.53	1.42	5.69	1256.0
8	6497.04	5.73	3.50	6.05	1207.0	58	6761.57	8.67	5.23	5.12	1257.0
9	6502.59	6.95	4.75	5.01	1208.0	59	6766.31	8.07	5.25	4.44	1258.0
10	6507.71	4.86	1.28	5.49	1209.0	60	6770.84	5.93	3.13	4.85	1259.0
11	6513.44	3.25	-1.24	5.74	1210.0	61	6776.19	6.92	2.82	5.83	1260.0
12	6519.16	5.54	2.36	5.75	1211.0	62	6782.03	7.27	3.93	5.66	1261.0
13	6524.52	7.86	5.20	4.61	1212.0	63	6787.55	7.18	4.84	5.62	1262.0
14	6528.30	5.53	3.64	3.56	1213.0	64	6793.21	9.77	3.57	5.37	1263.0
15	6532.88	4.32	1.08	5.74	1214.0	65	6797.89	8.00	.46	4.18	1264.0
16	6539.21	5.19	.31	6.51	1215.0	66	6802.63	6.15	2.33	5.71	1265.0
17	6545.38	6.61	3.09	5.71	1216.0	67	6809.05	8.89	5.87	6.56	1266.0
18	6550.55	5.86	4.06	4.70	1217.0	68	6814.70	7.81	5.12	4.52	1267.0
19	6555.22	5.78	3.34	4.95	1218.0	69	6818.71	5.29	2.54	4.16	1268.0
20	6560.87	6.61	2.19	6.17	1219.0	70	6824.00	8.38	2.59	6.39	1269.0
21	6566.71	5.43	1.93	5.11	1220.0	71	6830.18	8.68	4.09	5.18	1270.0
22	6571.63	4.88	3.05	5.64	1221.0	72	6834.17	7.48	4.63	3.44	1271.0
23	6579.02	6.07	3.81	8.67	1222.0	73	6838.54	9.15	2.54	5.46	1272.0
24	6586.58	6.43	3.89	5.33	1223.0	74	6844.32	6.66	.32	5.64	1273.0
25	6599.45	4.94	2.97	1.31	1224.0	75	6849.64	6.30	3.03	5.26	1274.0
26	6591.50	6.20	3.76	3.69	1225.0	76	6855.17	9.66	6.09	5.73	1275.0
27	6596.94	8.63	5.24	6.72	1226.0	77	6860.68	7.73	5.06	5.10	1276.0
28	6603.46	6.20	3.77	5.61	1227.0	78	6865.44	5.89	2.16	4.68	1277.0
29	6609.36	3.13	1.91	4.95	1228.0	79	6870.56	7.38	.91	5.77	1278.0
30	6614.49	5.71	3.25	7.10	1229.0	80	6876.74	7.24	2.89	6.20	1279.0
31	6621.03	7.73	5.22	5.26	1230.0	81	6882.24	7.97	5.33	4.60	1280.0
32	6624.79	6.48	5.84	2.92	1231.0	82	6886.26	9.36	3.98	3.83	1281.0
33	6628.52	5.63	4.81	5.07	1232.0	83	6890.38	5.98	.47	4.55	1282.0
34	6634.63	4.83	2.30	6.55	1233.0	84	6895.64	5.68	1.99	6.61	1283.0
35	6640.65	5.29	3.72	5.33	1234.0	85	6901.99	9.38	5.99	6.13	1284.0
36	6645.73	8.41	6.33	5.15	1235.0	86	6907.21	8.91	3.57	4.32	1285.0
37	6651.10	7.40	5.05	5.36	1236.0	87	6911.25	5.44	-1.03	4.25	1286.0
38	6656.07	3.72	2.13	4.67	1237.0	88	6916.35	6.15	1.01	5.97	1287.0
39	6661.13	5.29	3.15	5.69	1238.0	89	6922.58	8.67	5.04	5.98	1288.0
40	6667.15	8.97	5.50	6.00	1239.0	90	6927.68	7.60	5.27	4.29	1289.0
41	6672.73	7.21	4.70	5.22	1240.0	91	6931.85	7.38	3.73	4.46	1290.0
42	6677.80	6.65	2.91	4.91	1241.0	92	6936.73	6.97	-.02	5.11	1291.0
43	6682.52	6.78	1.43	4.70	1242.0	93	6941.78	5.92	.40	4.97	1292.0
44	6687.68	6.25	2.84	5.71	1243.0	94	6946.83	7.59	4.81	5.11	1293.0
45	6693.47	7.86	5.09	5.53	1244.0	95	6951.95	8.14	5.63	5.15	1294.0
46	6698.73	8.84	5.43	5.10	1245.0	96	6957.11	6.15	2.14	5.10	1295.0
47	6703.77	5.14	2.99	4.94	1246.0	97	6962.21	5.73	-.49	5.26	1296.0
48	6708.77	4.07	2.34	5.29	1247.0	98	6967.78	8.03	3.10	5.80	1297.0
49	6714.77	8.93	5.41	6.49	1248.0	99	6973.40	7.71	5.25	5.22	1298.0
50	6720.79	8.21	5.02	4.98	1249.0	100	6978.17	6.50	3.91	4.55	1299.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
101	6983.20	7.90	1.98	5.68	1300.0	151	7234.54	4.82	2.89	3.01	1350.0
102	6989.10	6.43	.66	5.68	1301.0	152	7238.59	7.42	4.45	5.63	1351.0
103	6994.18	6.21	3.32	4.52	1302.0	153	7245.10	9.42	5.66	6.41	1352.0
104	6998.63	8.16	5.51	4.58	1303.0	154	7250.14	7.31	4.39	3.76	1353.0
105	7003.52	6.47	3.04	5.18	1304.0	155	7253.90	7.34	4.41	4.35	1354.0
106	7008.84	5.15	.15	5.47	1305.0	156	7259.09	7.17	4.30	5.72	1355.0
107	7014.48	7.38	2.78	5.69	1306.0	157	7264.85	6.79	4.08	5.76	1356.0
108	7019.93	7.94	5.21	5.08	1307.0	158	7270.54	9.20	5.52	5.53	1357.0
109	7024.38	6.62	3.82	3.89	1308.0	159	7275.62	8.55	5.12	4.47	1358.0
110	7028.33	6.71	1.50	4.47	1309.0	160	7279.60	5.59	3.28	3.88	1359.0
111	7033.54	6.75	1.41	5.91	1310.0	161	7284.19	6.50	3.93	5.54	1360.0
112	7039.27	6.47	3.86	5.27	1311.0	162	7290.12	7.67	5.70	5.79	1361.0
113	7044.23	7.21	4.39	4.74	1312.0	163	7295.28	7.77	6.06	4.64	1362.0
114	7049.30	8.95	2.00	5.38	1313.0	164	7299.85	8.64	5.39	4.56	1363.0
115	7054.73	6.48	-.09	5.36	1314.0	165	7304.23	6.73	3.82	4.24	1364.0
116	7060.06	5.18	2.24	5.41	1315.0	166	7308.82	7.40	4.65	5.21	1365.0
117	7065.52	7.86	5.38	5.34	1316.0	167	7314.56	9.38	6.34	5.84	1366.0
118	7070.36	7.79	4.64	4.25	1317.0	168	7319.61	7.46	4.97	4.12	1367.0
119	7074.16	6.06	.32	3.69	1318.0	169	7323.37	6.27	3.51	3.95	1368.0
120	7078.51	5.93	.07	5.23	1319.0	170	7328.21	7.22	4.14	5.65	1369.0
121	7084.33	7.93	4.81	6.00	1320.0	171	7334.12	8.27	6.55	5.85	1370.0
122	7089.80	8.05	5.09	4.87	1321.0	172	7339.62	9.25	7.50	5.09	1371.0
123	7094.50	7.69	1.14	4.86	1322.0	173	7343.99	7.52	4.76	3.68	1372.0
124	7099.80	6.66	-.24	5.70	1323.0	174	7347.80	4.82	2.56	4.60	1373.0
125	7105.76	5.00	2.03	6.07	1324.0	175	7353.77	7.92	5.41	7.04	1374.0
126	7111.45	6.98	4.90	5.07	1325.0	176	7360.36	9.35	7.54	5.55	1375.0
127	7115.86	8.78	4.87	3.91	1326.0	177	7364.76	8.00	5.86	3.55	1376.0
128	7119.77	6.66	.30	4.25	1327.0	178	7368.37	6.72	3.68	4.04	1377.0
129	7124.74	4.14	-.42	5.74	1328.0	179	7373.31	5.44	3.62	5.88	1378.0
130	7130.90	7.69	4.77	6.19	1329.0	180	7379.65	8.51	7.65	6.39	1379.0
131	7136.62	9.33	5.87	5.11	1330.0	181	7386.35	9.05	7.70	4.77	1380.0
132	7140.95	5.42	2.18	3.55	1331.0	182	7389.37	6.24	3.79	3.51	1381.0
133	7144.47	5.60	.58	4.12	1332.0	183	7393.11	6.29	3.60	4.43	1382.0
134	7150.01	8.54	3.46	6.65	1333.0	184	7398.46	7.29	6.43	5.90	1383.0
135	7156.15	7.76	4.86	4.96	1334.0	185	7403.93	7.05	7.79	4.87	1384.0
136	7160.03	5.90	3.65	3.42	1335.0	186	7408.38	8.31	6.32	4.35	1385.0
137	7164.03	5.29	2.36	4.83	1336.0	187	7413.21	6.62	3.53	5.25	1386.0
138	7169.74	6.12	2.42	6.36	1337.0	188	7418.52	5.79	3.42	5.30	1387.0
139	7175.87	7.42	4.13	5.41	1338.0	189	7423.85	8.95	7.41	5.31	1388.0
140	7180.36	8.08	5.05	3.94	1339.0	190	7428.71	7.05	6.59	4.36	1389.0
141	7184.76	6.09	3.62	5.04	1340.0	191	7433.11	5.88	3.85	4.82	1390.0
142	7190.07	4.26	2.23	5.30	1341.0	192	7438.83	6.59	3.67	6.47	1391.0
143	7195.13	7.72	4.41	4.89	1342.0	193	7445.13	5.10	5.05	5.80	1392.0
144	7200.10	8.59	5.20	5.17	1343.0	194	7450.36	6.60	8.51	4.84	1393.0
145	7205.41	5.36	3.23	5.20	1344.0	195	7454.85	8.38	7.39	3.98	1394.0
146	7210.09	5.89	3.54	4.33	1345.0	196	7458.36	5.38	2.87	3.39	1395.0
147	7214.87	7.28	4.37	5.52	1346.0	197	7462.69	5.91	3.29	5.69	1396.0
148	7220.87	7.02	4.22	5.99	1347.0	198	7469.17	8.21	7.04	6.47	1397.0
149	7226.38	8.12	4.83	5.10	1348.0	199	7474.48	6.22	7.69	4.05	1398.0
150	7231.11	7.08	4.25	4.20	1349.0	200	7478.07	5.49	4.90	3.66	1399.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
1	7482.59	6.06	3.18	5.37	1400.0	51	7731.50	6.54	4.22	6.02	1450.0
2	7488.15	5.82	4.69	5.40	1401.0	52	7736.56	6.34	4.55	3.99	1451.0
3	7493.31	7.09	7.41	5.12	1402.0	53	7739.99	6.98	4.71	3.46	1452.0
4	7498.65	8.11	6.56	5.41	1403.0	54	7744.33	5.46	3.29	5.16	1453.0
5	7503.69	5.22	2.79	4.61	1404.0	55	7749.59	4.23	2.50	5.12	1454.0
6	7508.35	4.81	4.22	5.11	1405.0	56	7754.71	8.23	5.11	5.31	1455.0
7	7513.85	6.78	8.72	5.46	1406.0	57	7760.19	8.48	5.34	5.47	1456.0
8	7518.57	6.29	7.41	3.89	1407.0	58	7765.18	3.82	2.34	4.45	1457.0
9	7522.27	6.71	4.38	4.19	1408.0	59	7769.79	4.43	2.67	5.20	1458.0
10	7527.69	6.76	3.56	6.45	1409.0	60	7775.62	9.24	5.62	6.11	1459.0
11	7534.16	5.06	5.34	5.97	1410.0	61	7780.96	6.90	4.19	4.16	1460.0
12	7539.36	5.97	8.10	4.67	1411.0	62	7784.31	4.52	2.74	3.34	1461.0
13	7543.92	7.63	6.62	4.24	1412.0	63	7789.04	6.58	4.00	6.29	1462.0
14	7547.73	5.50	2.92	3.71	1413.0	64	7795.90	6.21	3.80	6.72	1463.0
15	7551.91	5.76	4.29	4.90	1414.0	65	7801.65	7.14	4.43	4.83	1464.0
16	7557.42	8.13	8.18	5.91	1415.0	66	7806.17	8.35	5.12	4.39	1465.0
17	7563.30	5.85	5.80	5.72	1416.0	67	7810.58	5.42	1.71	4.59	1466.0
18	7568.75	5.21	2.90	5.09	1417.0	68	7815.85	4.53	-0.01	6.07	1467.0
19	7573.57	6.32	4.76	4.67	1418.0	69	7822.30	8.49	4.29	6.24	1468.0
20	7578.48	5.45	7.54	5.36	1419.0	70	7827.40	8.34	5.57	3.81	1469.0
21	7584.47	6.87	7.51	6.43	1420.0	71	7830.38	4.89	2.58	2.70	1470.0
22	7590.47	7.05	4.49	4.97	1421.0	72	7834.07	4.80	1.53	5.19	1471.0
23	7593.92	4.62	2.38	2.43	1422.0	73	7840.68	7.21	3.73	7.40	1472.0
24	7597.01	6.31	6.44	4.51	1423.0	74	7847.19	7.10	4.52	4.98	1473.0
25	7602.95	7.25	9.01	6.73	1424.0	75	7850.70	5.55	3.45	2.75	1474.0
26	7608.93	5.06	4.64	4.70	1425.0	76	7854.23	6.78	3.32	4.70	1475.0
27	7612.57	4.94	2.29	3.21	1426.0	77	7859.79	7.08	3.20	5.86	1476.0
28	7616.67	7.08	4.71	5.24	1427.0	78	7865.17	5.36	3.07	4.99	1477.0
29	7622.37	6.67	7.25	5.39	1428.0	79	7870.42	6.71	4.29	5.68	1478.0
30	7627.01	5.53	6.82	4.47	1429.0	80	7875.98	6.67	3.89	5.02	1479.0
31	7632.36	7.11	5.17	6.13	1430.0	81	7880.33	4.62	2.04	4.01	1480.0
32	7638.05	4.95	2.73	4.79	1431.0	82	7884.72	6.95	3.70	4.91	1481.0
33	7642.53	4.77	3.96	4.95	1432.0	83	7889.79	8.51	5.33	4.92	1482.0
34	7648.44	8.37	8.49	6.34	1433.0	84	7894.31	5.85	3.44	4.14	1483.0
35	7653.54	7.07	7.02	3.67	1434.0	85	7898.59	3.52	.61	4.88	1484.0
36	7656.37	4.22	2.67	2.60	1435.0	86	7904.47	6.97	2.78	6.59	1485.0
37	7660.32	5.81	3.41	5.58	1436.0	87	7910.55	8.60	5.20	4.93	1486.0
38	7666.53	7.35	6.54	5.86	1437.0	88	7914.23	6.09	3.94	2.95	1487.0
39	7671.19	5.53	6.67	3.93	1438.0	89	7917.86	6.78	3.52	4.76	1488.0
40	7675.77	5.97	4.76	5.52	1439.0	90	7923.70	5.84	2.16	6.48	1489.0
41	7681.63	5.74	3.08	5.57	1440.0	91	7929.70	4.84	2.27	5.28	1490.0
42	7686.52	5.37	4.22	4.48	1441.0	92	7934.50	7.93	5.08	4.57	1491.0
43	7691.23	8.86	7.11	4.93	1442.0	93	7938.87	8.81	5.18	4.23	1492.0
44	7696.09	7.92	5.56	4.73	1443.0	94	7943.28	5.05	1.39	4.72	1493.0
45	7700.71	3.77	2.16	4.73	1444.0	95	7948.46	4.12	1.16	5.59	1494.0
46	7706.11	5.92	3.70	6.23	1445.0	96	7954.15	8.52	5.12	5.55	1495.0
47	7712.56	8.43	7.01	6.87	1446.0	97	7959.34	8.51	5.26	4.63	1496.0
48	7717.37	5.94	5.48	3.56	1447.0	98	7963.40	4.80	2.54	3.84	1497.0
49	7720.54	4.21	2.65	3.67	1448.0	99	7967.82	5.70	1.77	5.28	1498.0
50	7725.38	5.34	3.05	5.71	1449.0	100	7973.86	7.19	3.00	6.58	1499.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
101	7980.33	6.68	4.19	5.93	1500.0	151	8229.19	10.19	5.66	5.51	1550.0
102	7985.15	7.31	4.08	3.74	1501.0	152	8233.79	9.56	.98	3.59	1551.0
103	7988.50	6.56	1.68	3.46	1502.0	153	8236.70	8.46	-2.72	2.83	1552.0
104	7992.64	4.57	.98	4.85	1503.0	154	8240.70	9.67	.30	5.38	1553.0
105	7998.17	7.24	4.39	6.15	1504.0	155	8246.93	8.33	3.35	6.59	1554.0
106	8004.37	8.96	5.60	5.83	1505.0	156	8253.30	8.49	1.98	6.08	1555.0
107	8009.01	5.18	3.18	3.32	1506.0	157	8258.96	11.69	-.88	5.01	1556.0
108	8012.14	2.94	1.49	3.93	1507.0	158	8263.01	9.11	-1.47	3.46	1557.0
109	8017.88	6.86	3.75	7.17	1508.0	159	8267.06	7.09	1.88	5.10	1558.0
110	8024.66	8.68	5.50	5.40	1509.0	160	8272.94	9.63	4.05	6.06	1559.0
111	8028.20	5.47	3.24	2.20	1510.0	161	8278.12	10.72	.45	4.32	1560.0
112	8030.82	5.14	1.34	3.91	1511.0	162	8282.41	10.77	-2.26	4.76	1561.0
113	8036.66	6.78	2.59	7.18	1512.0	163	8287.78	8.74	.71	5.72	1562.0
114	8043.40	6.76	4.01	5.64	1513.0	164	8293.34	7.01	3.58	5.31	1563.0
115	8047.63	6.69	4.18	3.50	1514.0	165	8298.58	9.38	3.39	5.33	1564.0
116	8051.76	5.77	3.53	5.01	1515.0	166	8303.83	12.38	-.11	4.84	1565.0
117	8057.05	4.28	2.46	5.12	1516.0	167	8307.94	9.94	-1.80	3.58	1566.0
118	8061.95	5.39	3.17	4.97	1517.0	168	8312.02	8.11	3.17	5.13	1567.0
119	8067.59	6.78	4.41	6.31	1518.0	169	8318.27	9.55	5.56	6.74	1568.0
120	8073.68	7.54	3.51	5.21	1519.0	170	8324.29	10.57	1.30	5.09	1569.0
121	8077.44	5.27	-.12	2.75	1520.0	171	8328.78	11.73	-.63	4.09	1570.0
122	8080.98	5.88	1.35	5.11	1521.0	172	8332.53	7.82	.63	3.50	1571.0
123	8087.43	8.38	5.04	6.95	1522.0	173	8336.67	7.38	4.07	5.33	1572.0
124	8093.26	6.92	4.59	4.31	1523.0	174	8343.23	10.99	4.94	7.08	1573.0
125	8096.41	4.99	2.00	2.70	1524.0	175	8349.26	9.83	-.34	4.55	1574.0
126	8100.33	5.55	.73	5.73	1525.0	176	8353.01	9.17	-2.05	3.68	1575.0
127	8107.47	8.15	3.40	7.56	1526.0	177	8357.68	9.57	2.44	5.65	1576.0
128	8113.38	7.16	4.07	3.96	1527.0	178	8363.53	8.91	5.25	5.65	1577.0
129	8116.40	7.46	2.23	2.92	1528.0	179	8368.82	11.06	3.52	4.99	1578.0
130	8119.86	8.90	.61	4.26	1529.0	180	8373.49	10.68	-.82	4.29	1579.0
131	8125.06	7.19	1.22	6.12	1530.0	181	8377.83	7.52	-.98	5.01	1580.0
132	8131.58	7.96	4.25	6.48	1531.0	182	8384.04	9.68	5.20	6.96	1581.0
133	8137.53	8.37	5.23	5.34	1532.0	183	8390.20	10.17	4.42	4.97	1582.0
134	8142.21	5.39	1.02	3.93	1533.0	184	8394.60	11.79	.29	4.39	1583.0
135	8145.77	6.52	-.88	3.90	1534.0	185	8399.12	10.47	.98	4.24	1584.0
136	8151.07	10.01	3.38	6.56	1535.0	186	8402.84	6.92	3.38	3.63	1585.0
137	8157.39	7.95	4.70	5.18	1536.0	187	8407.41	11.05	5.79	5.59	1586.0
138	8161.19	6.96	2.26	3.15	1537.0	188	8412.93	11.85	2.58	4.89	1587.0
139	8165.27	8.74	-.33	5.36	1538.0	189	8417.11	10.78	-.39	4.02	1588.0
140	8171.37	7.97	.02	6.20	1539.0	190	8422.11	10.06	1.75	6.14	1589.0
141	8176.99	8.24	3.37	4.70	1540.0	191	8428.73	7.97	4.18	6.62	1590.0
142	8181.35	9.32	4.30	4.54	1541.0	192	8434.89	10.60	5.35	5.74	1591.0
143	8186.11	7.85	-.01	4.87	1542.0	193	8440.11	11.73	1.79	4.57	1592.0
144	8191.27	7.25	-2.74	5.77	1543.0	194	8444.02	9.76	-.34	3.49	1593.0
145	8197.84	11.09	2.73	6.97	1544.0	195	8447.85	10.09	3.78	4.41	1594.0
146	8203.81	9.65	5.19	4.47	1545.0	196	8452.68	10.11	6.10	5.06	1595.0
147	8207.04	6.94	1.74	2.68	1546.0	197	8457.73	11.56	3.29	4.99	1596.0
148	8210.38	8.91	-1.40	4.43	1547.0	198	8462.25	10.47	-.35	3.81	1597.0
149	8216.02	3.82	-1.75	6.63	1548.0	199	8465.75	8.56	1.86	3.76	1598.0
150	8222.95	8.62	3.11	6.84	1549.0	200	8470.56	10.82	6.67	5.70	1599.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
1	8476.13	10.43	4.17	5.12	1600.0	51	8727.50	12.97	4.70	4.81	1650.0
2	8480.96	11.80	-1.18	4.95	1601.0	52	8731.82	12.51	1.79	4.02	1651.0
3	8485.26	10.44	-1.15	5.47	1602.0	53	8736.16	11.82	3.74	4.99	1652.0
4	8491.77	8.29	3.81	5.71	1603.0	54	8741.87	12.10	7.31	6.16	1653.0
5	8497.70	11.22	6.09	5.86	1604.0	55	8747.79	11.16	6.86	5.46	1654.0
6	8502.98	11.47	1.67	4.56	1605.0	56	8752.81	11.79	2.93	4.50	1655.0
7	8507.18	10.72	-1.30	4.09	1606.0	57	8756.79	11.56	1.51	3.78	1656.0
8	8511.34	8.85	2.14	4.24	1607.0	58	8761.29	12.22	6.22	5.41	1657.0
9	8516.04	9.86	5.70	5.42	1608.0	59	8767.03	11.22	7.27	5.60	1658.0
10	8522.16	12.98	4.38	6.38	1609.0	60	8772.23	11.66	4.06	4.92	1659.0
11	8527.79	11.28	-1.29	4.70	1610.0	61	8776.93	11.63	1.24	4.53	1660.0
12	8532.07	10.24	1.27	4.33	1611.0	62	8781.56	11.24	3.64	4.99	1661.0
13	8536.94	10.02	4.16	5.38	1612.0	63	8787.05	12.01	7.26	5.81	1662.0
14	8542.69	11.19	6.03	6.09	1613.0	64	8792.83	12.33	6.92	5.63	1663.0
15	8548.61	12.60	3.63	5.45	1614.0	65	8797.95	11.79	2.62	4.44	1664.0
16	8553.22	11.22	-1.58	4.04	1615.0	66	8802.06	11.27	1.78	4.27	1665.0
17	8557.51	11.18	2.89	4.83	1616.0	67	8807.05	11.72	5.88	5.53	1666.0
18	8562.78	10.25	6.49	5.39	1617.0	68	8812.36	11.12	6.37	5.01	1667.0
19	8568.00	10.35	4.75	4.97	1618.0	69	8817.21	12.49	3.65	4.70	1668.0
20	8572.35	9.46	.96	3.71	1619.0	70	8821.58	11.26	.93	4.10	1669.0
21	8575.95	9.66	1.72	3.94	1620.0	71	8825.99	11.11	3.81	4.97	1670.0
22	8580.86	11.68	5.70	5.87	1621.0	72	8831.44	11.32	6.86	5.73	1671.0
23	8587.20	12.81	6.95	6.49	1622.0	73	8837.32	12.68	5.39	5.89	1672.0
24	8593.23	12.57	2.99	5.21	1623.0	74	8842.75	12.16	1.10	4.77	1673.0
25	8597.51	10.27	-1.43	3.71	1624.0	75	8847.24	10.84	2.68	4.69	1674.0
26	8601.76	11.19	3.92	5.01	1625.0	76	8852.48	11.07	6.77	5.62	1675.0
27	8607.21	10.91	7.10	5.62	1626.0	77	8857.91	12.20	6.11	5.22	1676.0
28	8612.97	11.92	6.84	5.93	1627.0	78	8862.82	13.40	2.37	4.58	1677.0
29	8618.61	12.05	2.34	4.99	1628.0	79	8867.13	11.78	1.19	4.22	1678.0
30	8622.87	10.30	.78	4.00	1629.0	80	8871.74	11.20	5.40	5.12	1679.0
31	8627.64	11.57	6.23	5.69	1630.0	81	8877.08	12.04	7.62	5.42	1680.0
32	8633.80	12.96	6.95	6.36	1631.0	82	8882.39	13.61	4.37	5.04	1681.0
33	8639.85	13.08	2.50	5.44	1632.0	83	8887.04	12.26	1.35	4.29	1682.0
34	8644.43	9.80	.66	3.80	1633.0	84	8891.21	10.36	3.80	4.34	1683.0
35	8648.09	8.28	3.57	3.85	1634.0	85	8896.33	12.14	7.65	6.07	1684.0
36	8652.51	9.85	6.38	5.05	1635.0	86	8902.85	13.30	7.42	6.38	1685.0
37	8658.08	11.74	6.59	5.83	1636.0	87	8908.37	12.63	2.63	4.61	1686.0
38	8663.49	11.36	2.56	4.79	1637.0	88	8912.59	11.80	1.87	4.20	1687.0
39	8668.12	11.90	1.97	4.86	1638.0	89	8917.27	11.27	5.55	5.22	1688.0
40	8673.62	12.64	6.05	6.05	1639.0	90	8922.82	12.17	7.53	5.39	1689.0
41	8679.83	11.87	7.40	6.19	1640.0	91	8927.21	11.66	3.91	3.38	1690.0
42	8685.61	12.12	3.96	5.18	1641.0	92	8930.61	12.75	.99	3.94	1691.0
43	8689.85	13.14	1.85	3.36	1642.0	93	8935.32	11.78	3.81	5.30	1692.0
44	8692.75	12.23	4.99	2.86	1643.0	94	8940.95	11.38	7.22	5.90	1693.0
45	8696.35	11.89	7.73	4.60	1644.0	95	8946.95	12.69	6.02	6.04	1694.0
46	8701.57	11.78	7.22	5.36	1645.0	96	8952.87	13.76	2.71	5.72	1695.0
47	8706.54	11.37	3.49	4.66	1646.0	97	8958.16	11.45	1.82	4.83	1696.0
48	8711.26	11.77	2.22	4.89	1647.0	98	8962.85	10.27	5.27	4.71	1697.0
49	8715.45	11.39	5.56	5.49	1648.0	99	8967.33	11.94	7.49	4.14	1698.0
50	8722.16	12.68	7.38	5.76	1649.0	100	8971.31	13.79	4.26	4.19	1699.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
101	8975.87	12.75	1.42	4.72	1700.0	151	9225.53	12.96	5.97	6.06	1750.0
102	8980.53	10.55	4.47	4.74	1701.0	152	9231.37	13.82	8.29	5.35	1751.0
103	8985.69	11.70	7.27	5.65	1702.0	153	9235.79	12.52	7.20	3.60	1752.0
104	8991.55	14.17	4.81	5.91	1703.0	154	9239.24	11.89	4.74	3.75	1753.0
105	8997.11	13.23	2.05	4.90	1704.0	155	9243.69	12.32	4.93	5.16	1754.0
106	9001.43	9.88	3.51	4.03	1705.0	156	9249.42	13.05	7.56	6.13	1755.0
107	9005.76	11.10	6.61	4.72	1706.0	157	9255.53	13.61	7.25	5.97	1756.0
108	9010.64	13.35	5.57	4.92	1707.0	158	9260.86	12.55	4.14	4.74	1757.0
109	9015.60	14.20	2.66	4.87	1708.0	159	9265.28	11.26	3.90	4.30	1758.0
110	9020.18	11.18	2.01	4.33	1709.0	160	9269.79	11.86	6.55	4.81	1759.0
111	9024.74	10.25	5.16	5.07	1710.0	161	9274.78	13.05	7.92	5.14	1760.0
112	9030.46	12.44	7.57	6.19	1711.0	162	9279.95	13.64	6.53	5.14	1761.0
113	9036.70	13.99	4.49	5.91	1712.0	163	9284.94	12.64	3.38	4.85	1762.0
114	9041.71	11.77	.44	4.14	1713.0	164	9289.89	12.17	4.22	5.18	1763.0
115	9045.74	10.89	3.67	4.35	1714.0	165	9295.30	12.87	7.28	5.57	1764.0
116	9050.89	11.82	7.48	5.80	1715.0	166	9300.49	12.80	7.80	4.57	1765.0
117	9056.85	12.67	7.50	5.77	1716.0	167	9304.57	11.89	5.06	3.86	1766.0
118	9061.76	12.80	3.26	3.94	1717.0	168	9308.72	11.52	2.99	4.60	1767.0
119	9065.23	11.56	1.35	3.55	1718.0	169	9313.99	12.52	5.57	5.88	1768.0
120	9069.68	11.78	5.97	5.43	1719.0	170	9319.93	12.60	7.63	5.62	1769.0
121	9075.56	12.04	7.76	6.06	1720.0	171	9324.79	12.65	5.63	4.14	1770.0
122	9081.31	12.34	4.27	5.38	1721.0	172	9328.82	12.77	3.39	4.33	1771.0
123	9086.39	12.81	1.76	4.80	1722.0	173	9333.76	12.43	5.07	5.53	1772.0
124	9090.97	11.79	4.31	4.44	1723.0	174	9339.51	13.04	7.63	5.61	1773.0
125	9095.48	12.16	7.61	4.64	1724.0	175	9344.53	13.65	6.44	4.46	1774.0
126	9100.16	12.24	7.11	4.68	1725.0	176	9348.77	12.85	2.78	4.21	1775.0
127	9104.80	11.87	3.74	4.64	1726.0	177	9353.31	11.77	3.25	4.97	1776.0
128	9109.44	11.34	2.90	4.73	1727.0	178	9358.86	12.23	6.87	6.03	1777.0
129	9114.52	11.58	6.24	5.61	1728.0	179	9364.83	12.86	7.96	5.63	1778.0
130	9120.55	12.69	7.43	6.18	1729.0	180	9369.69	13.29	4.82	4.13	1779.0
131	9126.32	12.78	3.71	5.21	1730.0	181	9373.73	12.67	1.84	4.32	1780.0
132	9130.99	11.44	1.61	4.38	1731.0	182	9378.71	12.65	4.96	5.49	1781.0
133	9135.80	11.72	5.51	5.47	1732.0	183	9384.17	13.42	8.32	5.17	1782.0
134	9141.66	13.20	8.32	5.77	1733.0	184	9388.79	13.72	6.50	4.17	1783.0
135	9146.71	12.87	6.67	4.34	1734.0	185	9392.89	13.25	2.28	4.18	1784.0
136	9150.60	11.43	2.61	3.48	1735.0	186	9397.41	11.97	2.99	4.89	1785.0
137	9153.98	10.82	3.45	3.64	1736.0	187	9402.87	12.59	7.13	6.12	1786.0
138	9158.65	13.89	8.22	5.74	1737.0	188	9409.10	14.30	8.25	5.79	1787.0
139	9164.69	13.48	8.18	5.79	1738.0	189	9413.81	14.65	4.57	3.63	1788.0
140	9169.67	11.07	5.05	4.30	1739.0	190	9417.05	12.18	1.68	3.27	1789.0
141	9174.01	11.30	3.25	4.63	1740.0	191	9421.09	11.69	5.38	5.02	1790.0
142	9179.30	12.43	5.41	5.92	1741.0	192	9426.86	13.41	8.40	6.24	1791.0
143	9185.43	13.04	7.70	6.09	1742.0	193	9432.96	13.60	5.41	5.70	1792.0
144	9190.92	13.69	6.55	4.74	1743.0	194	9438.17	12.65	2.82	4.75	1793.0
145	9195.14	12.18	3.48	4.01	1744.0	195	9442.85	10.72	4.93	4.85	1794.0
146	9199.61	11.55	4.42	5.22	1745.0	196	9448.26	12.10	7.41	6.12	1795.0
147	9205.65	13.07	7.25	6.47	1746.0	197	9454.76	13.29	7.52	6.56	1796.0
148	9211.66	12.58	7.55	5.13	1747.0	198	9460.88	11.60	6.56	5.67	1797.0
149	9215.94	12.69	6.66	3.75	1748.0	199	9466.31	10.91	6.17	5.35	1798.0
150	9219.98	12.71	4.73	4.75	1749.0	200	9471.73	11.51	6.51	5.69	1799.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
1	9477.85	13.26	7.50	6.50	1800.0	51	9759.91	16.05	9.17	3.15	1850.0
2	9484.35	12.89	7.28	6.28	1801.0	52	9763.69	13.05	7.27	4.79	1851.0
3	9490.29	11.28	6.39	5.57	1802.0	53	9769.36	12.88	6.63	5.97	1852.0
4	9495.80	11.64	6.58	5.73	1803.0	54	9774.69	15.04	8.03	4.46	1853.0
5	9502.00	13.25	7.49	6.48	1804.0	55	9778.54	15.71	9.19	3.66	1854.0
6	9508.49	13.16	7.44	6.47	1805.0	56	9782.84	14.75	6.69	4.99	1855.0
7	9514.95	13.15	7.44	6.48	1806.0	57	9788.06	13.27	4.25	5.38	1856.0
8	9521.62	13.53	7.67	6.67	1807.0	58	9793.62	13.87	6.88	5.48	1857.0
9	9526.87	5.51	3.11	2.70	1808.0	59	9798.38	15.71	9.19	4.02	1858.0
10	9525.56	-10.62	-6.00	-5.22	1809.0	60	9802.18	16.12	9.05	4.06	1859.0
11	9518.45	-15.50	-8.76	-7.62	1810.0	61	9807.03	12.97	7.21	5.55	1860.0
12	9510.98	-16.68	-9.43	-6.20	1811.0	62	9812.81	11.73	6.49	5.96	1861.0
13	9500.67	-24.19	-13.67	-11.89	1812.0	63	9818.66	14.66	8.18	5.20	1862.0
14	9490.28	-14.66	-9.29	-7.20	1813.0	64	9822.48	15.87	8.93	2.80	1863.0
15	9487.04	-6.00	-3.34	-2.27	1814.0	65	9825.69	13.74	7.68	4.21	1864.0
16	9487.06	-1.11	-0.63	-0.56	1815.0	66	9831.27	12.01	6.69	6.75	1865.0
17	42357.32	32561.64	32563.00	32563.80	1816.0	67	9838.05	13.29	7.46	6.14	1866.0
18	-43918.14	-52894.59	-52892.12	-52891.01	1817.0	68	9843.08	15.19	8.50	4.06	1867.0
19	-212210.84	-219650.07	-219647.12	-219647.98	1818.0	69	9847.03	13.54	8.15	4.32	1868.0
20	-85772.64	-94471.15	-94465.06	-94474.52	1819.0	70	9851.61	10.80	6.76	4.49	1869.0
21	44065.00	34130.45	34129.50	34124.68	1820.0	71	9855.99	11.71	8.10	4.69	1870.0
22	9618.36	11.53	6.95	4.75	1821.0	72	9861.13	12.84	11.43	5.00	1871.0
23	9622.72	14.13	8.46	4.09	1822.0	73	9865.24	13.09	11.24	3.39	1872.0
24	9626.90	14.95	8.94	4.54	1823.0	74	9868.94	11.82	7.75	4.37	1873.0
25	9631.95	13.84	8.10	5.31	1824.0	75	9874.07	11.20	6.21	5.71	1874.0
26	9636.81	12.36	5.78	4.39	1825.0	76	9880.18	13.59	7.28	6.51	1875.0
27	9641.51	14.12	5.29	5.28	1826.0	77	9886.74	13.35	8.98	6.17	1876.0
28	9646.83	16.06	6.66	4.90	1827.0	78	9891.97	11.84	9.70	4.45	1877.0
29	9651.03	16.58	5.63	3.71	1828.0	79	9896.26	13.51	8.65	4.44	1878.0
30	9655.14	13.93	2.91	4.88	1829.0	80	9901.18	13.63	7.08	5.35	1879.0
31	9660.92	12.21	4.80	6.47	1830.0	81	9906.39	12.34	8.63	4.63	1880.0
32	9667.42	15.18	8.81	6.15	1831.0	82	9910.43	11.06	10.95	3.81	1881.0
33	9672.58	16.26	9.34	4.12	1832.0	83	9914.68	10.88	8.93	4.70	1882.0
34	9676.22	13.67	5.88	3.52	1833.0	84	9919.56	11.53	6.33	5.09	1883.0
35	9680.08	12.78	3.77	4.49	1834.0	85	9925.03	12.84	6.43	5.79	1884.0
36	9685.66	15.01	7.22	6.49	1835.0	86	9930.56	13.01	8.73	4.94	1885.0
37	9691.91	15.40	9.31	5.43	1836.0	87	9934.88	12.30	11.28	4.09	1886.0
38	9696.20	15.42	6.60	3.56	1837.0	88	9939.28	10.86	8.91	4.62	1887.0
39	9700.18	14.10	3.27	4.87	1838.0	89	9943.74	11.93	6.36	4.44	1888.0
40	9705.71	13.47	5.50	5.69	1839.0	90	9948.75	13.56	6.95	5.70	1889.0
41	9710.86	16.01	9.24	4.61	1840.0	91	9954.51	12.09	8.45	5.39	1890.0
42	9715.40	15.47	9.08	4.74	1841.0	92	9959.35	10.97	10.19	4.51	1891.0
43	9720.32	12.24	6.41	4.91	1842.0	93	9963.84	12.14	8.36	4.49	1892.0
44	9725.44	13.54	5.35	5.59	1843.0	94	9968.34	13.42	6.71	4.58	1893.0
45	9731.21	16.25	7.64	5.33	1844.0	95	9973.39	12.47	7.57	5.60	1894.0
46	9735.38	15.56	8.87	3.21	1845.0	96	9979.07	12.05	10.38	5.36	1895.0
47	9738.91	15.01	5.84	4.51	1846.0	97	9983.87	13.63	10.56	4.41	1896.0
48	9744.52	14.43	3.63	6.31	1847.0	98	9988.23	12.22	6.98	4.50	1897.0
49	9750.92	13.65	6.20	6.29	1848.0	99	9993.30	11.45	6.07	5.75	1898.0
50	9756.40	15.50	9.04	4.36	1849.0	100	9999.31	13.97	7.86	5.91	1899.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
101	10004.63	14.32	9.23	4.68	1900.0	151	10249.93	12.91	13.47	3.53	1950.0
102	10009.04	11.99	7.97	4.40	1901.0	152	10253.00	14.30	10.58	2.83	1951.0
103	10013.66	11.77	6.59	4.78	1902.0	153	10256.63	12.13	6.66	4.79	1952.0
104	10018.70	13.00	7.12	5.34	1903.0	154	10262.43	11.80	8.57	6.54	1953.0
105	10023.95	13.99	9.30	4.84	1904.0	155	10269.26	12.09	12.63	6.77	1954.0
106	10028.41	13.65	9.97	4.40	1905.0	156	10275.05	13.14	11.56	4.58	1955.0
107	10033.09	11.67	7.26	5.02	1906.0	157	10278.80	14.16	8.05	3.32	1956.0
108	10038.55	12.56	6.83	5.87	1907.0	158	10282.30	11.88	6.85	4.09	1957.0
109	10044.46	14.31	7.95	5.62	1908.0	159	10287.30	11.50	10.99	5.70	1958.0
110	10049.22	14.54	8.24	3.91	1909.0	160	10293.07	12.35	12.95	5.59	1959.0
111	10052.94	13.28	7.92	3.99	1910.0	161	10298.13	13.57	9.61	4.52	1960.0
112	10057.44	11.23	6.62	4.87	1911.0	162	10302.31	12.96	6.93	4.02	1961.0
113	10062.80	12.10	7.66	5.94	1912.0	163	10306.63	11.22	9.51	4.88	1962.0
114	10068.86	12.51	10.43	5.83	1913.0	164	10312.34	11.40	12.67	6.21	1963.0
115	10074.17	13.46	10.43	4.93	1914.0	165	10317.62	12.64	10.25	3.94	1964.0
116	10079.06	13.24	7.71	4.89	1915.0	166	10320.69	13.28	7.59	2.76	1965.0
117	10084.04	12.20	6.71	5.04	1916.0	167	10324.42	11.54	8.14	5.10	1966.0
118	10089.03	13.53	7.33	5.11	1917.0	168	10320.64	11.33	12.04	6.87	1967.0
119	10094.24	14.46	8.63	5.06	1918.0	169	10337.25	12.25	13.17	6.07	1968.0
120	10098.90	13.91	9.76	4.20	1919.0	170	10342.37	12.84	9.32	4.22	1969.0
121	10102.67	11.72	7.50	3.54	1920.0	171	10346.43	12.64	7.23	4.37	1970.0
122	10106.85	12.00	6.43	5.28	1921.0	172	10351.40	10.18	10.26	5.42	1971.0
123	10112.91	13.48	9.86	6.12	1922.0	173	10356.42	10.98	13.09	4.11	1972.0
124	10117.88	13.83	12.02	3.65	1923.0	174	10359.72	13.34	11.90	3.08	1973.0
125	10121.12	13.15	9.41	3.70	1924.0	175	10363.67	13.00	8.73	4.90	1974.0
126	10125.94	12.49	6.81	5.62	1925.0	176	10369.08	10.73	7.66	5.60	1975.0
127	10131.77	13.19	7.03	5.93	1926.0	177	10374.74	10.05	11.60	5.85	1976.0
128	10137.60	13.14	9.50	5.49	1927.0	178	10380.80	12.74	13.49	6.06	1977.0
129	10142.50	13.11	11.75	4.49	1928.0	179	10386.46	13.37	10.33	5.17	1978.0
130	10146.82	12.03	8.64	4.25	1929.0	180	10390.89	11.83	8.13	3.57	1979.0
131	10151.19	11.68	5.97	4.57	1930.0	181	10394.01	10.80	9.67	3.32	1980.0
132	10156.27	12.66	9.64	5.72	1931.0	182	10398.48	11.47	12.96	5.66	1981.0
133	10162.21	12.78	13.11	5.71	1932.0	183	10404.73	13.46	11.88	6.40	1982.0
134	10167.39	13.43	10.99	4.81	1933.0	184	10410.67	13.28	8.23	5.33	1983.0
135	10172.09	12.76	7.24	4.57	1934.0	185	10415.28	10.43	8.35	3.94	1984.0
136	10176.46	11.87	7.28	4.23	1935.0	186	10419.35	10.35	11.97	4.84	1985.0
137	10180.66	12.35	11.50	4.29	1936.0	187	10425.10	12.43	13.67	5.90	1986.0
138	10185.39	13.70	12.56	5.15	1937.0	188	10429.92	13.80	10.90	3.72	1987.0
139	10190.85	12.86	8.23	5.69	1938.0	189	10433.39	13.02	7.52	3.79	1988.0
140	10196.30	11.85	6.75	4.87	1939.0	190	10438.13	10.42	9.28	5.79	1989.0
141	10200.63	12.73	9.96	4.07	1940.0	191	10444.40	10.86	13.64	6.10	1990.0
142	10204.95	12.79	12.25	4.70	1941.0	192	10449.32	14.08	13.21	3.46	1991.0
143	10210.13	13.65	11.55	5.50	1942.0	193	10452.08	13.41	8.59	3.03	1992.0
144	10215.41	12.57	7.65	5.01	1943.0	194	10456.38	10.20	8.12	5.49	1993.0
145	10220.50	11.52	6.77	5.16	1944.0	195	10462.64	10.88	12.24	6.87	1994.0
146	10225.39	13.16	11.68	4.43	1945.0	196	10469.81	12.03	12.23	7.12	1995.0
147	10229.38	14.00	12.78	3.91	1946.0	197	10476.01	13.31	10.33	4.95	1996.0
148	10234.24	13.34	8.69	5.93	1947.0	198	10479.27	13.68	9.18	1.81	1997.0
149	10240.36	11.69	6.42	5.80	1948.0	199	10481.08	11.26	8.71	2.68	1998.0
150	10245.68	10.86	10.09	4.94	1949.0	200	10485.77	11.50	12.42	6.72	1999.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
1	10493.25	12.69	12.99	7.28	2000.0	51	10737.52	14.47	11.60	4.85	2050.0
2	10499.20	12.13	9.69	4.58	2001.0	52	10742.21	12.85	8.48	4.72	2051.0
3	10503.14	11.15	9.44	3.80	2002.0	53	10747.33	12.74	10.05	5.62	2052.0
4	10507.77	10.56	10.67	5.55	2003.0	54	10753.04	13.31	14.35	5.32	2053.0
5	10513.48	12.81	13.18	5.32	2004.0	55	10757.25	15.47	12.87	3.36	2054.0
6	10517.93	14.70	10.97	3.67	2005.0	56	10760.82	14.64	8.85	4.20	2055.0
7	10521.60	12.32	8.29	4.08	2006.0	57	10765.73	11.58	9.39	5.32	2056.0
8	10526.34	10.04	10.10	5.34	2007.0	58	10771.02	12.57	13.31	5.24	2057.0
9	10531.99	11.85	13.42	5.77	2008.0	59	10775.97	14.50	13.51	4.44	2058.0
10	10537.40	13.89	12.58	4.85	2009.0	60	10780.04	15.54	10.65	4.14	2059.0
11	10541.76	14.54	8.98	4.01	2010.0	61	10784.89	13.53	8.51	5.62	2060.0
12	10545.65	12.05	7.36	4.03	2011.0	62	10791.02	11.39	10.13	6.45	2061.0
13	10550.38	10.59	11.30	5.76	2012.0	63	10797.29	12.45	13.70	5.90	2062.0
14	10557.16	13.03	14.22	7.20	2013.0	64	10802.28	14.09	12.81	4.05	2063.0
15	10563.03	13.71	11.45	4.04	2014.0	65	10805.99	15.38	9.60	3.69	2064.0
16	10565.87	12.66	9.43	2.57	2015.0	66	10809.99	13.54	8.61	4.47	2065.0
17	10569.61	11.39	9.38	5.07	2016.0	67	10814.91	11.54	11.74	5.11	2066.0
18	10575.25	11.96	12.93	5.75	2017.0	68	10819.67	13.59	14.11	4.28	2067.0
19	10580.85	14.82	12.39	5.45	2018.0	69	10824.06	15.68	12.23	5.00	2068.0
20	10585.88	14.02	9.58	4.51	2019.0	70	10829.93	13.70	9.19	6.10	2069.0
21	10590.20	11.61	9.35	4.43	2020.0	71	10835.14	10.26	10.30	4.22	2070.0
22	10595.09	11.91	12.47	5.31	2021.0	72	10838.99	13.23	14.58	3.85	2071.0
23	10600.31	13.01	13.52	4.79	2022.0	73	10843.32	16.32	13.07	4.83	2072.0
24	10604.67	13.55	9.87	4.19	2023.0	74	10848.51	13.67	8.45	5.60	2073.0
25	10609.08	13.45	7.49	4.83	2024.0	75	10854.46	12.07	8.97	6.13	2074.0
26	10614.54	12.15	9.80	5.95	2025.0	76	10860.43	12.67	12.54	5.72	2075.0
27	10620.48	12.16	13.87	5.75	2026.0	77	10865.69	14.82	14.18	4.85	2076.0
28	10625.56	14.24	12.06	4.19	2027.0	78	10870.59	15.32	12.10	5.29	2077.0
29	10628.96	13.71	7.52	3.00	2028.0	79	10876.10	14.05	10.68	5.21	2078.0
30	10632.47	12.33	7.95	4.37	2029.0	80	10880.30	13.28	12.29	3.40	2079.0
31	10637.90	11.68	12.58	6.23	2030.0	81	10884.44	13.25	12.69	5.77	2080.0
32	10644.14	11.81	13.89	6.08	2031.0	82	10891.77	14.93	12.83	7.89	2081.0
33	10649.95	13.65	10.34	5.34	2032.0	83	10898.00	14.80	10.52	4.08	2082.0
34	10654.75	13.32	7.65	4.40	2033.0	84	10901.13	12.82	9.47	3.40	2083.0
35	10659.21	11.92	9.72	4.78	2034.0	85	10906.04	13.51	14.03	5.98	2084.0
36	10664.32	12.88	13.65	5.11	2035.0	86	10911.12	14.84	14.71	3.61	2085.0
37	10668.78	14.55	12.28	3.77	2036.0	87	10914.16	14.37	11.52	3.50	2086.0
38	10672.50	14.13	8.24	4.04	2037.0	88	10919.10	12.50	9.76	6.08	2087.0
39	10677.31	12.32	8.16	5.66	2038.0	89	10925.21	13.30	11.70	5.80	2088.0
40	10687.33	11.75	11.95	6.00	2039.0	90	10930.79	15.05	14.80	5.33	2089.0
41	10688.88	13.39	13.50	4.95	2040.0	91	10935.35	14.18	12.32	3.75	2090.0
42	10693.31	13.63	10.36	4.20	2041.0	92	10938.92	13.17	8.61	3.89	2091.0
43	10697.80	12.91	8.24	4.87	2042.0	93	10943.85	12.66	9.67	5.94	2092.0
44	10703.16	11.84	10.80	5.71	2043.0	94	10949.80	13.73	13.75	5.37	2093.0
45	10708.57	12.49	14.57	4.70	2044.0	95	10954.33	15.52	14.40	4.06	2094.0
46	10712.33	14.93	13.10	3.13	2045.0	96	10958.92	15.24	11.93	5.35	2095.0
47	10715.89	14.81	8.64	4.51	2046.0	97	10964.45	12.84	9.47	5.27	2096.0
48	10721.31	12.60	8.51	5.89	2047.0	98	10969.32	12.84	11.08	4.83	2097.0
49	10727.06	12.06	12.57	5.53	2048.0	99	10974.05	14.81	14.59	4.23	2098.0
50	10732.40	14.39	14.07	5.25	2049.0	100	10977.70	15.51	13.12	3.56	2099.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
101	10982.42	14.65	9.29	6.20	2100.0	151	11230.91	14.72	9.56	3.35	2150.0
102	10989.50	12.84	9.70	7.42	2101.0	152	11234.18	12.79	11.41	3.59	2151.0
103	10996.57	13.33	13.87	6.33	2102.0	153	11238.42	13.63	14.91	4.74	2152.0
104	11001.21	15.39	15.60	2.85	2103.0	154	11243.16	14.52	13.38	4.55	2153.0
105	11003.49	15.60	12.02	2.65	2104.0	155	11247.30	14.55	9.90	3.73	2154.0
106	11007.20	14.27	7.98	4.52	2105.0	156	11251.05	13.02	10.68	4.13	2155.0
107	11012.02	13.91	9.79	5.28	2106.0	157	11256.14	13.11	13.31	6.12	2156.0
108	11018.42	13.93	14.24	7.55	2107.0	158	11262.56	14.06	13.67	6.21	2157.0
109	11025.91	15.23	14.24	6.54	2108.0	159	11268.05	14.73	12.45	4.84	2158.0
110	11030.84	15.96	10.35	3.52	2109.0	160	11272.32	14.07	9.52	3.64	2159.0
111	11033.98	14.18	9.08	3.33	2110.0	161	11275.63	12.09	9.45	3.52	2160.0
112	11038.27	14.29	12.95	5.18	2111.0	162	11280.32	12.14	14.06	5.97	2161.0
113	11043.89	15.55	14.68	5.86	2112.0	163	11286.90	13.14	14.94	6.60	2162.0
114	11049.58	15.43	12.09	5.38	2113.0	164	11292.74	13.74	11.54	4.88	2163.0
115	11054.46	14.07	9.76	4.28	2114.0	165	11297.05	12.71	9.11	4.20	2164.0
116	11058.41	14.49	9.89	4.11	2115.0	166	11301.77	12.52	11.92	5.25	2165.0
117	11063.40	15.92	12.49	5.80	2116.0	167	11306.77	13.57	14.48	4.30	2166.0
118	11068.89	16.03	13.74	4.64	2117.0	168	11310.29	14.91	12.31	3.17	2167.0
119	11072.68	14.73	10.58	3.51	2118.0	169	11313.99	14.03	10.13	4.43	2168.0
120	11077.12	13.55	8.30	5.61	2119.0	170	11319.17	11.22	11.54	5.94	2169.0
121	11083.41	14.77	12.07	6.29	2120.0	171	11325.48	11.64	14.78	6.19	2170.0
122	11088.57	16.36	14.70	3.75	2121.0	172	11330.88	14.54	14.07	4.45	2171.0
123	11091.71	16.51	12.62	3.36	2122.0	173	11334.89	14.49	10.58	4.04	2172.0
124	11096.40	13.76	9.00	5.84	2123.0	174	11339.50	11.98	9.08	5.21	2173.0
125	11102.58	13.06	10.12	6.17	2124.0	175	11344.87	11.71	12.04	5.28	2174.0
126	11108.71	15.17	13.97	6.18	2125.0	176	11349.87	13.33	14.76	4.74	2175.0
127	11114.41	16.39	13.27	4.79	2126.0	177	11354.51	14.80	12.54	4.60	2176.0
128	11118.18	16.00	10.45	3.26	2127.0	178	11359.01	13.82	9.91	4.29	2177.0
129	11122.08	13.89	8.80	4.77	2128.0	179	11363.34	12.02	11.20	4.71	2178.0
130	11127.15	14.00	12.20	4.91	2129.0	180	11368.58	12.27	14.70	5.41	2179.0
131	11131.87	14.79	13.95	4.91	2130.0	181	11373.46	14.43	14.31	4.41	2180.0
132	11137.47	14.94	10.93	5.98	2131.0	182	11377.95	14.92	10.06	4.96	2181.0
133	11142.76	14.13	9.10	4.26	2132.0	183	11383.47	12.12	8.57	5.76	2182.0
134	11146.23	13.95	11.25	3.10	2133.0	184	11388.69	11.25	12.09	4.53	2183.0
135	11149.69	15.21	14.45	4.18	2134.0	185	11392.53	12.95	15.41	3.29	2184.0
136	11155.02	15.66	12.69	6.36	2135.0	186	11395.96	13.55	12.73	3.92	2185.0
137	11161.39	14.19	8.81	5.75	2136.0	187	11400.51	12.78	8.75	4.99	2186.0
138	11166.14	13.25	9.97	4.28	2137.0	188	11405.68	12.07	10.87	5.30	2187.0
139	11170.87	14.66	13.14	5.10	2138.0	189	11411.51	11.78	13.41	6.40	2188.0
140	11175.81	15.14	13.24	4.62	2139.0	190	11417.51	12.74	12.62	4.99	2189.0
141	11180.28	14.82	11.80	4.42	2140.0	191	11421.35	14.08	10.72	3.21	2190.0
142	11184.51	13.64	9.28	3.96	2141.0	192	11425.02	12.45	7.77	4.43	2191.0
143	11188.50	13.26	9.87	4.50	2142.0	193	11430.00	10.78	11.35	5.19	2192.0
144	11194.18	14.62	12.97	6.64	2143.0	194	11435.15	11.64	15.79	5.19	2193.0
145	11200.73	15.77	13.75	5.89	2144.0	195	11440.34	13.02	13.17	5.11	2194.0
146	11205.35	15.29	10.86	3.42	2145.0	196	11445.46	13.15	9.88	5.06	2195.0
147	11208.41	14.18	9.32	3.30	2146.0	197	11450.28	12.15	8.80	4.57	2196.0
148	11212.85	12.65	13.01	5.91	2147.0	198	11454.92	11.87	12.46	4.85	2197.0
149	11219.79	13.11	14.40	7.52	2148.0	199	11460.10	12.25	14.13	5.51	2198.0
150	11226.60	15.98	11.67	5.59	2149.0	200	11465.46	12.62	11.41	5.08	2199.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
1	11470.40	11.68	9.59	4.75	2200.0	51	11708.08	13.27	9.27	3.64	2250.0
2	11474.39	11.25	11.35	3.05	2201.0	52	11711.89	11.99	7.51	4.05	2251.0
3	11477.04	11.89	14.70	2.85	2202.0	53	11716.46	13.07	10.56	5.12	2252.0
4	11481.22	12.31	12.46	5.65	2203.0	54	11721.82	13.11	11.93	5.33	2253.0
5	11487.50	12.21	8.44	6.22	2204.0	55	11726.63	13.08	9.67	4.03	2254.0
6	11493.30	11.25	9.03	5.72	2205.0	56	11730.21	12.35	7.68	3.68	2255.0
7	11499.18	10.58	11.72	5.90	2206.0	57	11734.80	13.42	8.56	5.62	2256.0
8	11504.39	11.78	13.44	4.14	2207.0	58	11741.11	13.38	11.22	6.60	2257.0
9	11507.33	14.00	12.11	2.17	2208.0	59	11747.28	11.53	10.71	5.49	2258.0
10	11509.90	12.44	8.76	3.38	2209.0	60	11751.65	12.91	8.87	3.01	2259.0
11	11514.43	9.75	10.59	5.63	2210.0	61	11753.66	12.69	7.80	1.84	2260.0
12	11520.71	10.75	13.30	6.70	2211.0	62	11757.00	12.87	9.33	5.02	2261.0
13	11527.63	13.03	11.92	6.97	2212.0	63	11763.04	12.86	11.42	6.50	2262.0
14	11534.11	12.61	9.74	5.63	2213.0	64	11769.26	12.78	10.51	5.76	2263.0
15	11538.77	11.56	8.79	4.03	2214.0	65	11774.54	12.37	8.12	4.88	2264.0
16	11543.08	11.50	11.53	4.93	2215.0	66	11779.18	11.98	7.42	4.62	2265.0
17	11547.99	11.56	13.76	4.17	2216.0	67	11783.92	13.50	9.71	4.56	2266.0
18	11551.06	13.37	12.11	2.49	2217.0	68	11787.77	14.41	11.63	3.34	2267.0
19	11554.28	13.37	9.07	4.33	2218.0	69	11791.48	13.80	10.14	4.42	2268.0
20	11559.58	11.34	8.71	5.85	2219.0	70	11796.58	11.83	7.43	5.51	2269.0
21	11565.70	11.47	12.38	6.11	2220.0	71	11801.69	11.44	6.88	4.60	2270.0
22	11571.21	13.79	13.31	4.60	2221.0	72	11806.22	13.78	9.00	4.67	2271.0
23	11574.94	14.03	10.47	3.20	2222.0	73	11811.11	15.03	11.21	5.10	2272.0
24	11578.12	11.32	8.67	3.37	2223.0	74	11816.13	13.43	9.91	4.61	2273.0
25	11582.17	12.01	10.53	4.93	2224.0	75	11820.15	11.56	7.24	3.76	2274.0
26	11588.08	12.84	13.36	6.60	2225.0	76	11824.37	13.17	8.32	4.94	2275.0
27	11594.06	12.80	11.88	4.68	2226.0	77	11830.24	14.57	10.41	6.58	2276.0
28	11597.38	13.58	9.43	2.53	2227.0	78	11836.52	12.80	9.43	5.60	2277.0
29	11600.56	11.57	10.57	4.35	2228.0	79	11841.35	12.20	7.98	4.20	2278.0
30	11606.24	11.03	13.00	6.67	2229.0	80	11845.45	12.65	7.70	4.36	2279.0
31	11612.97	12.98	12.89	6.50	2230.0	81	11850.37	13.30	7.75	5.14	2280.0
32	11618.69	14.24	10.58	4.67	2231.0	82	11854.95	14.75	9.15	3.77	2281.0
33	11622.48	12.91	8.12	3.37	2232.0	83	11858.08	13.42	8.82	2.86	2282.0
34	11626.48	11.66	9.68	5.10	2233.0	84	11861.61	11.52	7.09	4.50	2283.0
35	11632.66	12.85	13.28	6.59	2234.0	85	11867.01	13.47	8.17	6.15	2284.0
36	11638.18	14.22	13.28	4.21	2235.0	86	11873.56	14.69	8.99	6.56	2285.0
37	11641.69	14.58	10.09	3.45	2236.0	87	11879.33	13.21	8.08	4.71	2286.0
38	11646.06	12.09	8.18	5.31	2237.0	88	11882.95	13.65	8.35	2.71	2287.0
39	11651.64	11.41	12.94	5.44	2238.0	89	11885.50	14.68	8.98	3.17	2288.0
40	11656.40	13.84	14.57	3.99	2239.0	90	11889.74	14.04	8.60	5.00	2289.0
41	11659.97	15.14	10.68	3.60	2240.0	91	11895.16	13.59	8.42	5.62	2290.0
42	11664.24	13.79	8.43	4.96	2241.0	92	11900.79	13.21	7.96	5.71	2291.0
43	11669.53	12.01	9.14	5.42	2242.0	93	11906.51	13.14	6.81	5.64	2292.0
44	11675.00	12.82	11.91	5.64	2243.0	94	11911.98	13.86	6.42	5.30	2293.0
45	11680.57	14.06	11.71	5.05	2244.0	95	11916.74	15.32	7.82	4.08	2294.0
46	11684.58	14.44	9.50	3.15	2245.0	96	11920.49	16.37	9.09	3.74	2295.0
47	11687.76	13.01	8.01	3.76	2246.0	97	11924.38	13.97	6.63	3.90	2296.0
48	11692.69	13.59	8.82	5.98	2247.0	98	11927.96	12.41	5.76	3.25	2297.0
49	11698.97	13.63	11.16	6.16	2248.0	99	11931.42	14.13	8.45	4.17	2298.0
50	11704.29	13.68	11.69	4.33	2249.0	100	11936.64	15.13	9.22	5.97	2299.0

ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
101	11942.81	13.86	8.35	6.17	2300.0	151	12175.81	17.43	8.93	4.11	2350.0
102	11948.61	12.87	7.21	5.23	2301.0	152	12179.34	18.36	4.51	3.50	2351.0
103	11953.16	13.34	7.43	3.87	2302.0	153	12183.51	16.24	3.07	4.87	2352.0
104	11956.67	14.63	9.01	3.50	2303.0	154	12188.81	14.77	6.80	5.37	2353.0
105	11960.70	15.39	9.46	4.51	2304.0	155	12193.51	16.80	9.21	3.78	2354.0
106	11965.45	13.71	7.42	4.88	2305.0	156	12196.64	18.68	8.07	3.21	2355.0
107	11970.14	13.04	5.98	4.41	2306.0	157	12200.96	17.21	4.28	5.37	2356.0
108	11974.59	14.61	7.79	4.77	2307.0	158	12206.55	15.19	4.23	5.49	2357.0
109	11979.55	15.41	9.31	4.81	2308.0	159	12212.06	15.22	7.89	5.87	2358.0
110	11983.77	15.55	9.51	3.65	2309.0	160	12218.11	16.85	9.49	5.65	2359.0
111	11987.43	13.29	7.39	4.15	2310.0	161	12222.35	18.73	6.48	2.91	2360.0
112	11992.42	12.96	5.99	5.77	2311.0	162	12224.94	17.05	2.95	2.97	2361.0
113	11998.73	14.95	9.01	6.71	2312.0	163	12229.32	15.29	4.67	5.79	2362.0
114	12004.99	15.07	9.41	5.24	2313.0	164	12235.56	16.88	8.40	6.09	2363.0
115	12008.97	14.42	8.54	2.96	2314.0	165	12240.77	18.29	7.60	4.28	2364.0
116	12011.98	13.20	6.10	3.63	2315.0	166	12244.68	17.68	4.39	3.96	2365.0
117	12016.66	14.47	6.83	5.59	2316.0	167	12248.79	16.22	3.57	3.97	2366.0
118	12022.65	15.56	9.36	6.10	2317.0	168	12252.41	15.41	5.16	3.53	2367.0
119	12028.12	14.62	8.82	4.47	2318.0	169	12256.70	16.89	8.43	5.46	2368.0
120	12031.41	15.06	6.26	2.35	2319.0	170	12263.05	18.08	8.06	6.64	2369.0
121	12034.22	15.52	5.79	4.09	2320.0	171	12268.79	17.55	4.54	4.50	2370.0
122	12039.63	15.81	8.41	6.08	2321.0	172	12272.19	15.79	2.97	2.83	2371.0
123	12045.19	16.15	10.23	4.88	2322.0	173	12275.59	15.52	5.26	4.40	2372.0
124	12049.91	14.46	8.28	4.94	2323.0	174	12281.06	16.88	8.01	6.13	2373.0
125	12055.15	14.13	5.53	5.27	2324.0	175	12286.93	17.19	6.60	5.28	2374.0
126	12060.10	15.71	6.32	4.77	2325.0	176	12291.65	16.53	3.16	4.13	2375.0
127	12064.49	16.40	9.45	3.76	2326.0	177	12295.04	16.33	3.95	2.71	2376.0
128	12067.65	16.42	8.88	2.84	2327.0	178	12297.85	17.53	7.61	3.47	2377.0
129	12070.97	15.56	7.04	4.22	2328.0	179	12302.66	17.05	7.66	5.88	2378.0
130	12076.06	14.57	5.32	5.63	2329.0	180	12308.45	16.93	5.07	5.26	2379.0
131	12081.83	14.76	6.61	5.86	2330.0	181	12313.07	16.62	3.65	4.29	2380.0
132	12087.84	16.35	8.73	6.07	2331.0	182	12317.60	16.06	5.28	4.97	2381.0
133	12093.52	17.15	8.50	5.01	2332.0	183	12322.84	16.94	6.83	5.07	2382.0
134	12097.93	15.70	6.13	4.82	2333.0	184	12327.88	17.89	7.88	3.34	2383.0
135	12101.59	14.33	5.48	3.24	2334.0	185	12330.37	18.11	5.57	3.94	2384.0
136	12104.83	15.71	8.75	3.71	2335.0	186	12335.36	15.91	3.04	5.81	2385.0
137	12109.62	16.75	9.95	5.81	2336.0	187	12341.59	14.87	4.97	6.56	2386.0
138	12115.39	16.50	6.32	5.09	2337.0	188	12348.16	16.19	7.39	6.19	2387.0
139	12119.72	16.25	3.92	4.18	2338.0	189	12353.04	18.63	7.17	3.36	2388.0
140	12124.63	15.35	6.87	5.73	2339.0	190	12355.66	18.03	3.66	2.62	2389.0
141	12130.70	14.62	9.08	5.97	2340.0	191	12359.27	15.26	3.44	4.77	2390.0
142	12135.92	16.72	7.66	4.45	2341.0	192	12364.87	15.46	7.32	6.06	2391.0
143	12139.74	17.75	4.40	3.36	2342.0	193	12370.78	17.70	7.93	5.62	2392.0
144	12142.99	15.65	4.55	3.22	2343.0	194	12375.93	18.58	5.20	4.62	2393.0
145	12146.21	15.74	9.43	3.39	2344.0	195	12379.83	17.38	3.98	3.21	2394.0
146	12150.27	16.69	9.60	4.92	2345.0	196	12382.69	16.01	4.15	3.04	2395.0
147	12155.91	17.92	7.21	5.94	2346.0	197	12386.93	15.41	5.01	5.68	2396.0
148	12161.15	15.73	3.81	4.38	2347.0	198	12393.71	16.79	7.78	7.41	2397.0
149	12165.36	14.24	4.87	4.56	2348.0	199	12400.57	17.61	5.40	5.92	2398.0
150	12170.67	16.15	8.72	5.77	2349.0	200	12405.35	17.52	3.65	3.74	2399.0

** END OF FILE UNIT 9 **

THE REMAINING 1000 POINTS WILL BE USED TO ESTABLISH THE LAST RECORD.

KKM= 950 IEND= 1 KC= 0 IMAX= 4

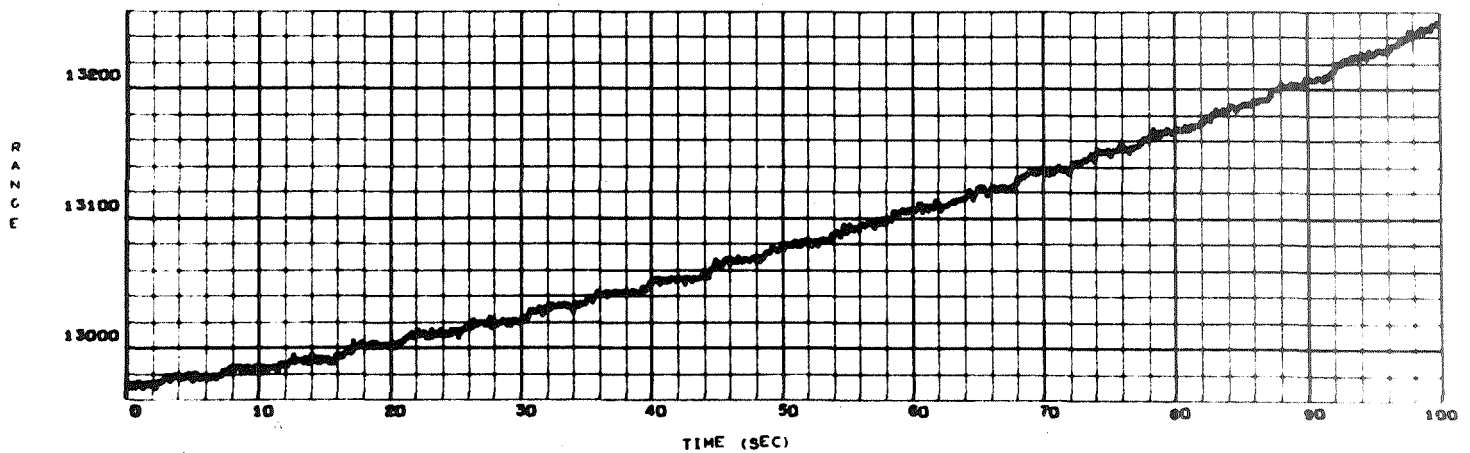
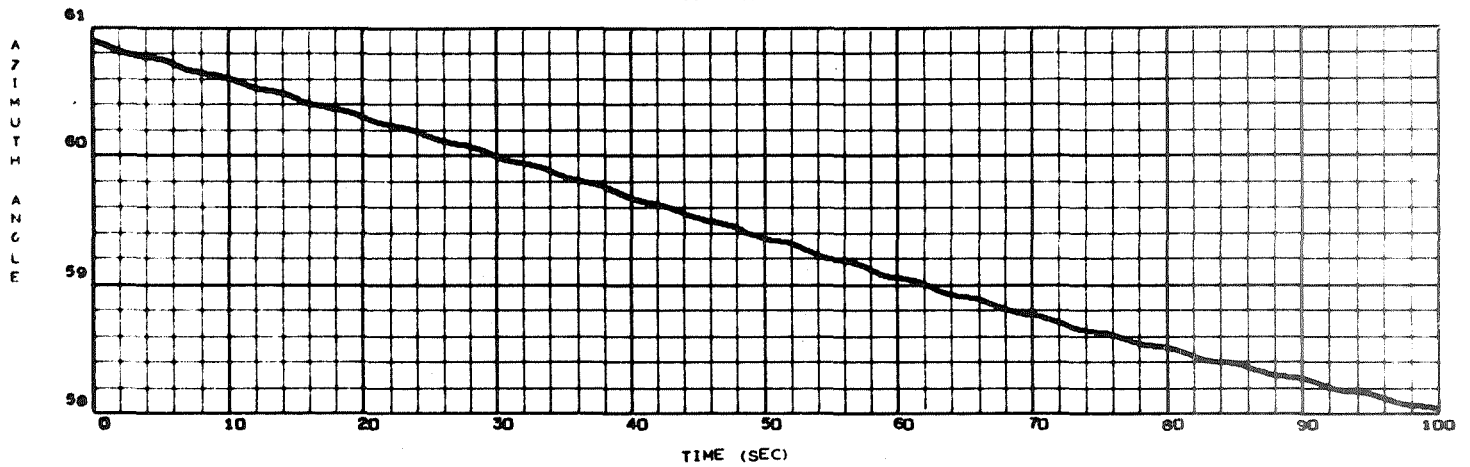
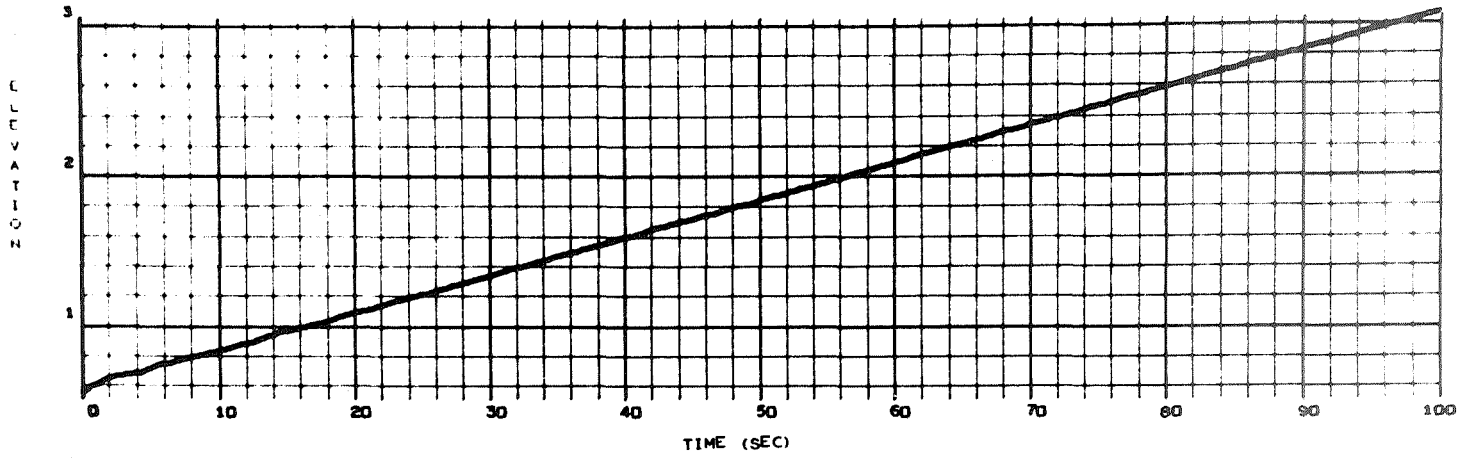
LOCATIONS 381 THROUGH 800 OF LAST RECORD FILLED WITH ZEROS.

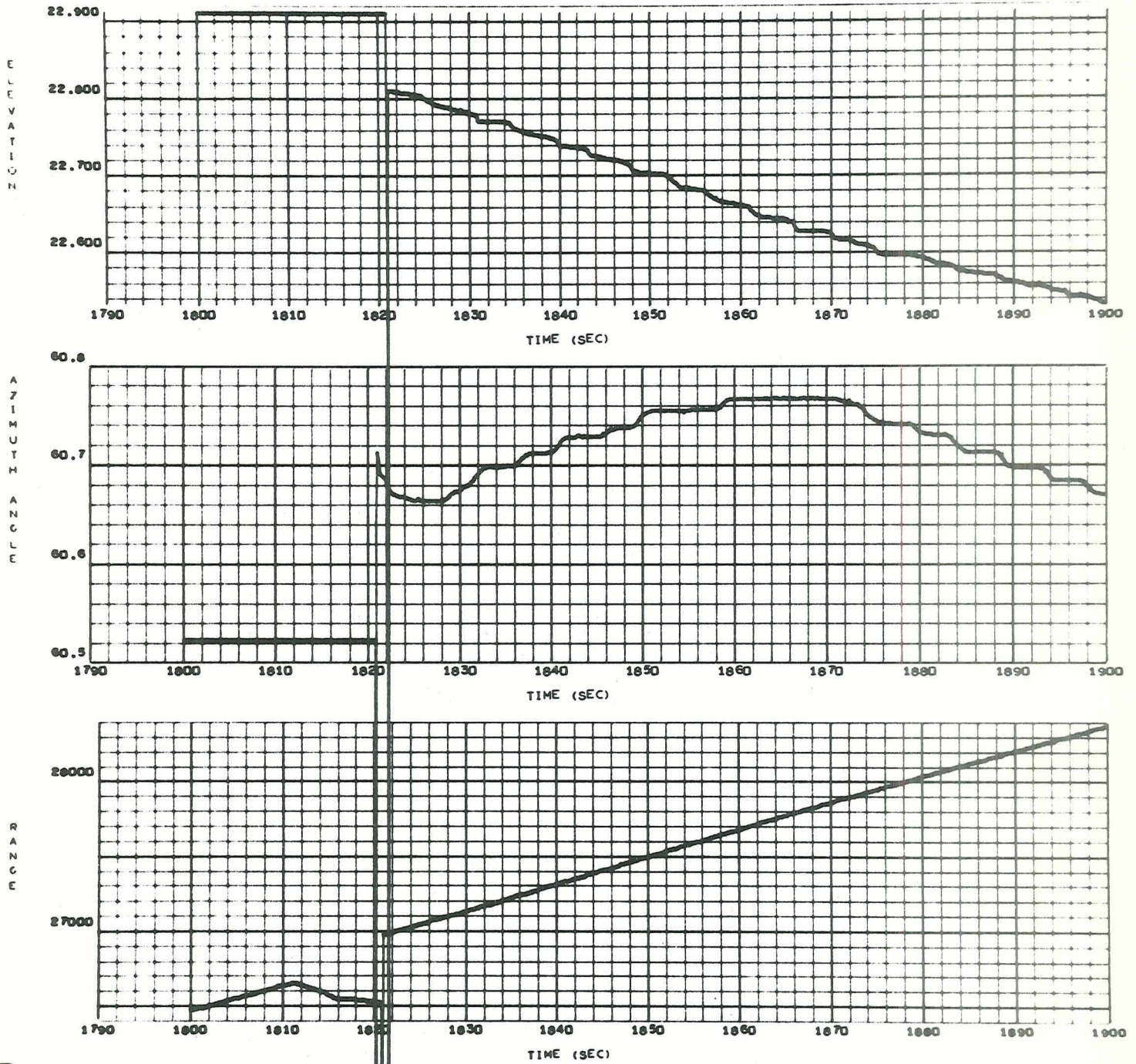
ONE SECOND VELOCITY DATA

KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)	KC	ALTITUDE (M)	ZONAL (M/SEC)	MERIDIONAL (M/SEC)	RISE RATE (M/SEC)	TIME (SEC)
1	12408.72	15.74	4.78	3.49	2400.0	48	12625.35	14.80	6.83	5.69	2447.0
2	12413.00	15.81	6.91	5.00	2401.0	49	12631.57	16.75	8.69	6.57	2448.0
3	12418.14	17.86	5.92	4.83	2402.0	50	12637.78	18.49	7.09	5.42	2449.0
4	12422.26	17.16	2.58	3.74	2403.0	51	12642.03	17.32	4.27	3.29	2450.0
5	12426.53	16.59	4.05	4.96	2404.0	52	12645.38	16.67	4.01	3.83	2451.0
6	12432.07	15.43	7.43	5.93	2405.0	53	12649.93	16.76	5.97	5.12	2452.0
7	12437.55	16.06	7.05	4.59	2406.0	54	12655.18	17.52	7.63	5.24	2453.0
8	12441.21	18.49	5.67	3.10	2407.0	55	12660.13	18.13	5.95	4.63	2454.0
9	12444.80	17.01	3.80	4.47	2408.0	56	12664.65	16.80	3.36	4.53	2455.0
10	12450.13	14.88	4.17	5.77	2409.0	57	12669.27	15.14	4.96	4.64	2456.0
11	12455.82	15.59	7.12	5.57	2410.0	58	12673.56	16.84	7.69	3.74	2457.0
12	12461.12	17.01	6.44	5.07	2411.0	59	12677.07	18.60	7.44	3.66	2458.0
13	12466.11	18.90	4.28	4.66	2412.0	60	12681.39	16.93	4.55	5.09	2459.0
14	12469.61	17.48	3.51	2.24	2413.0	61	12686.80	16.38	3.43	5.27	2460.0
15	12471.51	15.14	5.87	2.44	2414.0	62	12691.38	16.48	6.26	3.97	2461.0
16	12475.74	15.44	2.31	6.03	2415.0	63	12695.45	16.96	7.94	4.52	2462.0
17	12482.56	16.95	6.68	7.03	2416.0	64	12700.54	18.71	5.79	5.35	2463.0
18	12489.09	17.84	3.76	5.71	2417.0	65	12705.47	18.41	3.51	4.38	2464.0
19	12493.68	16.59	2.84	3.68	2418.0	66	12709.71	16.12	4.19	4.24	2465.0
20	12497.12	15.65	5.98	3.46	2419.0	67	12713.99	15.58	6.87	4.05	2466.0
21	12500.72	16.47	8.11	3.64	2420.0	68	12717.56	17.66	8.12	3.38	2467.0
22	12504.50	18.46	6.38	4.17	2421.0	69	12721.51	19.53	4.74	4.68	2468.0
23	12509.15	17.61	3.28	4.89	2422.0	70	12726.59	17.85	2.37	5.19	2469.0
24	12514.07	14.46	3.11	5.11	2423.0	71	12731.59	15.59	5.12	4.91	2470.0
25	12519.70	14.98	7.66	6.13	2424.0	72	12736.80	15.16	7.54	5.61	2471.0
26	12525.64	17.53	8.77	5.23	2425.0	73	12742.43	17.29	7.85	5.37	2472.0
27	12529.81	19.48	4.56	3.47	2426.0	74	12746.82	19.55	5.25	3.23	2473.0
28	12533.18	16.61	2.17	3.44	2427.0	75	12749.41	17.31	3.06	2.55	2474.0
29	12536.89	15.17	4.44	4.11	2428.0	76	12753.01	15.17	5.06	4.89	2475.0
30	12541.64	15.87	8.15	5.50	2429.0	77	12759.00	16.80	7.91	6.86	2476.0
31	12547.61	16.98	7.52	6.10	2430.0	78	12766.27	18.09	6.90	7.21	2477.0
32	12553.51	18.57	3.81	5.73	2431.0	79	12772.24	17.58	3.71	4.26	2478.0
33	12558.82	16.98	3.14	4.59	2432.0	80	12775.22	17.43	3.40	2.49	2479.0
34	12562.46	14.96	6.26	2.91	2433.0	81	12778.75	17.34	6.28	4.86	2480.0
35	12565.86	16.71	9.05	4.61	2434.0	82	12784.07	16.70	7.94	5.08	2481.0
36	12571.59	18.20	6.87	6.16	2435.0	83	12788.51	18.23	7.17	4.03	2482.0
37	12576.99	17.15	2.62	4.45	2436.0	84	12792.58	18.85	4.50	4.25	2483.0
38	12580.98	16.17	3.26	4.00	2437.0	85	12796.88	16.17	3.09	4.37	2484.0
39	12585.27	16.86	7.34	4.39	2438.0	86	12801.62	16.10	6.13	5.30	2485.0
40	12589.44	17.56	9.39	3.99	2439.0	87	12807.03	17.74	8.50	5.06	2486.0
41	12593.63	17.41	5.98	4.62	2440.0	88	12811.36	18.13	5.41	3.86	2487.0
42	12598.95	17.02	2.92	5.92	2441.0	89	12815.61	18.79	.66	4.86	2488.0
43	12605.05	15.76	4.30	6.11	2442.0	90	12820.61	16.46	2.95	4.70	2489.0
44	12610.99	14.61	7.20	5.55	2443.0	91	12824.98	16.56	8.86	4.38	2490.0
45	12615.67	17.23	8.21	3.57	2444.0	92	12829.86	18.55	9.57	5.09	2491.0
46	12618.10	19.44	3.94	1.95	2445.0	93	12834.43	17.41	5.08	4.01	2492.0
47	12620.61	16.97	2.71	3.56	2446.0	94	12838.62	17.69	2.12	4.80	2493.0
						95	12844.20	17.37	4.35	6.01	2494.0

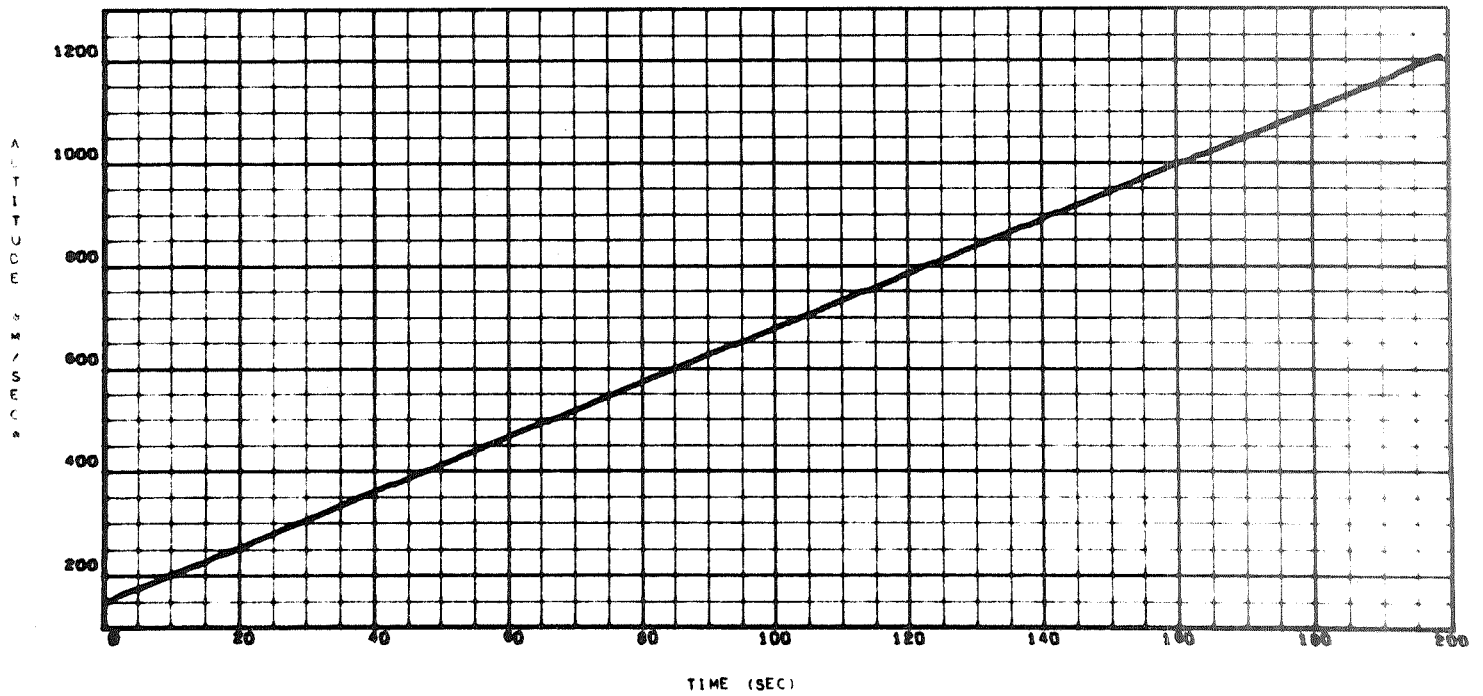
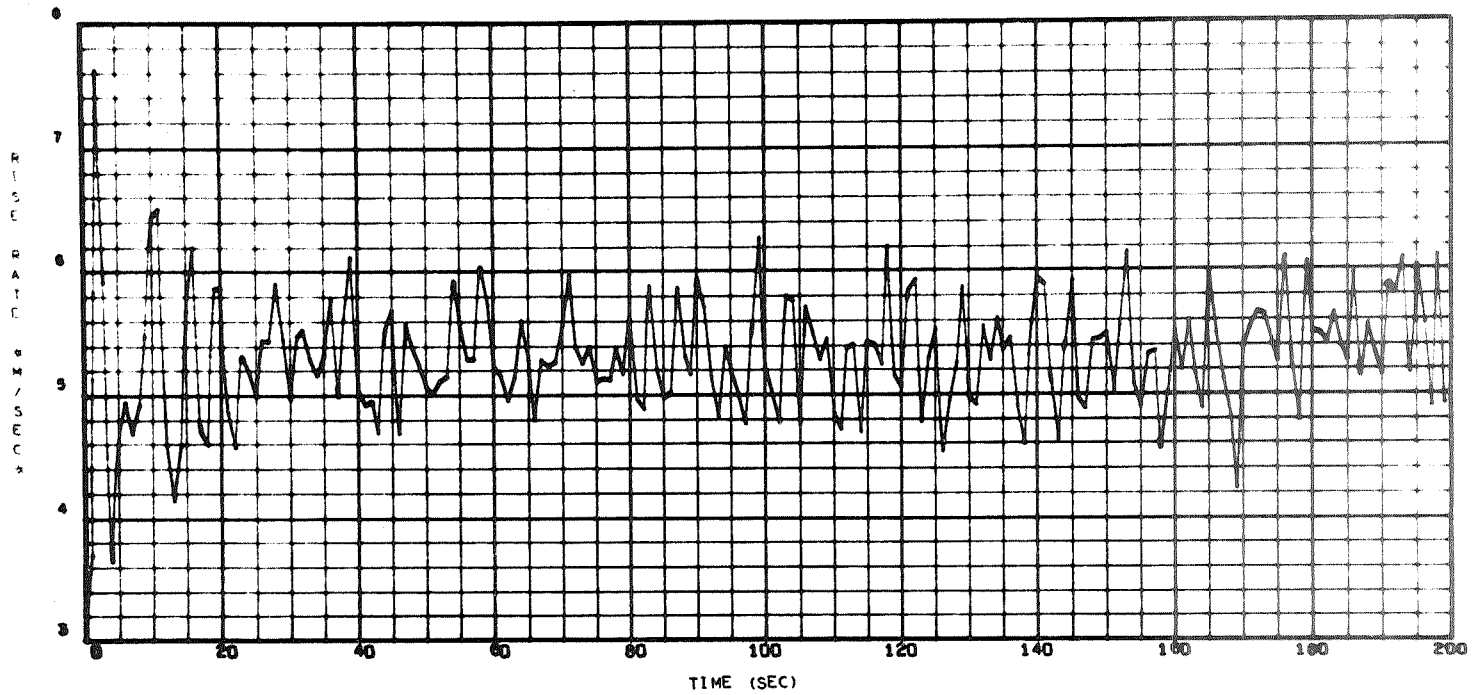
END OF ONE SECOND VELOCITY CALCULATIONS FOR FILE 1
13 RECORDS WERE WRITTEN ON UNIT 11

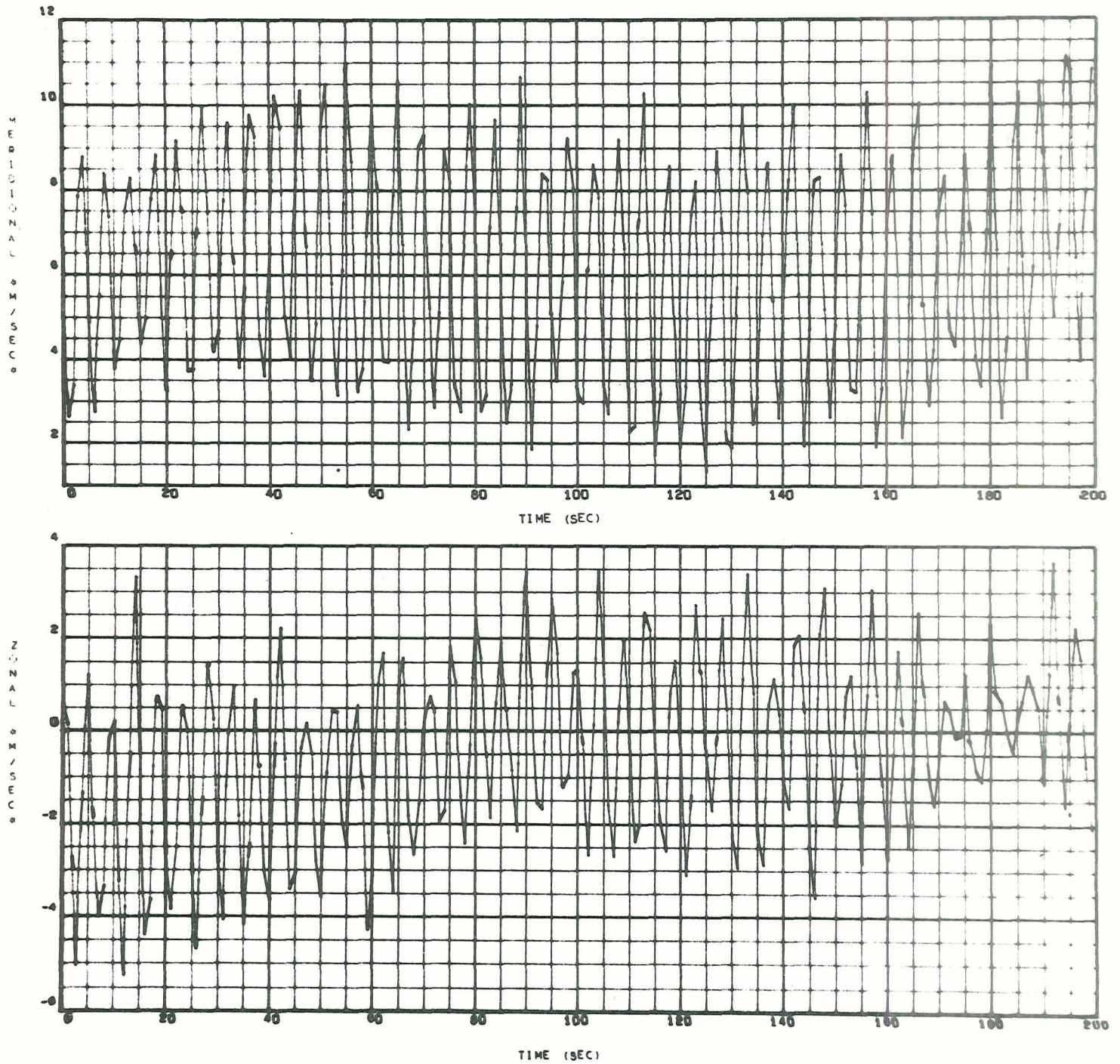
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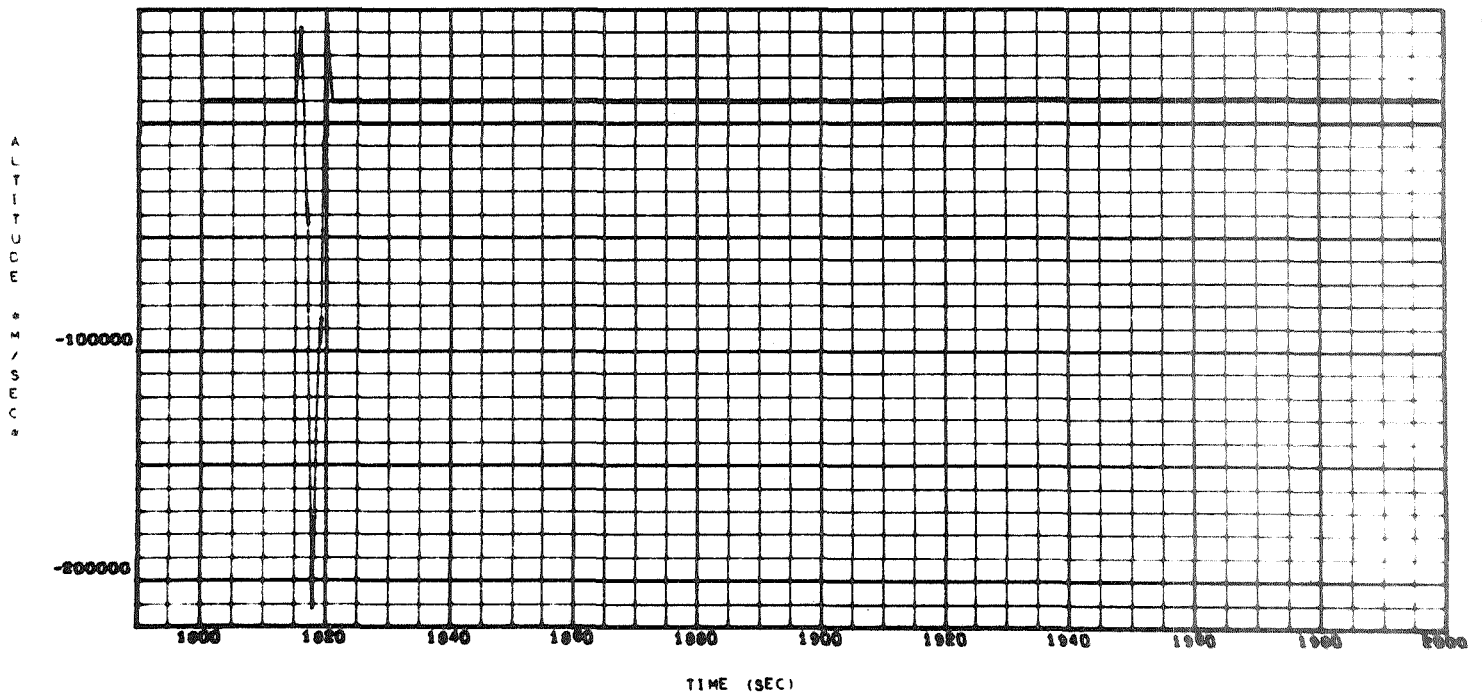
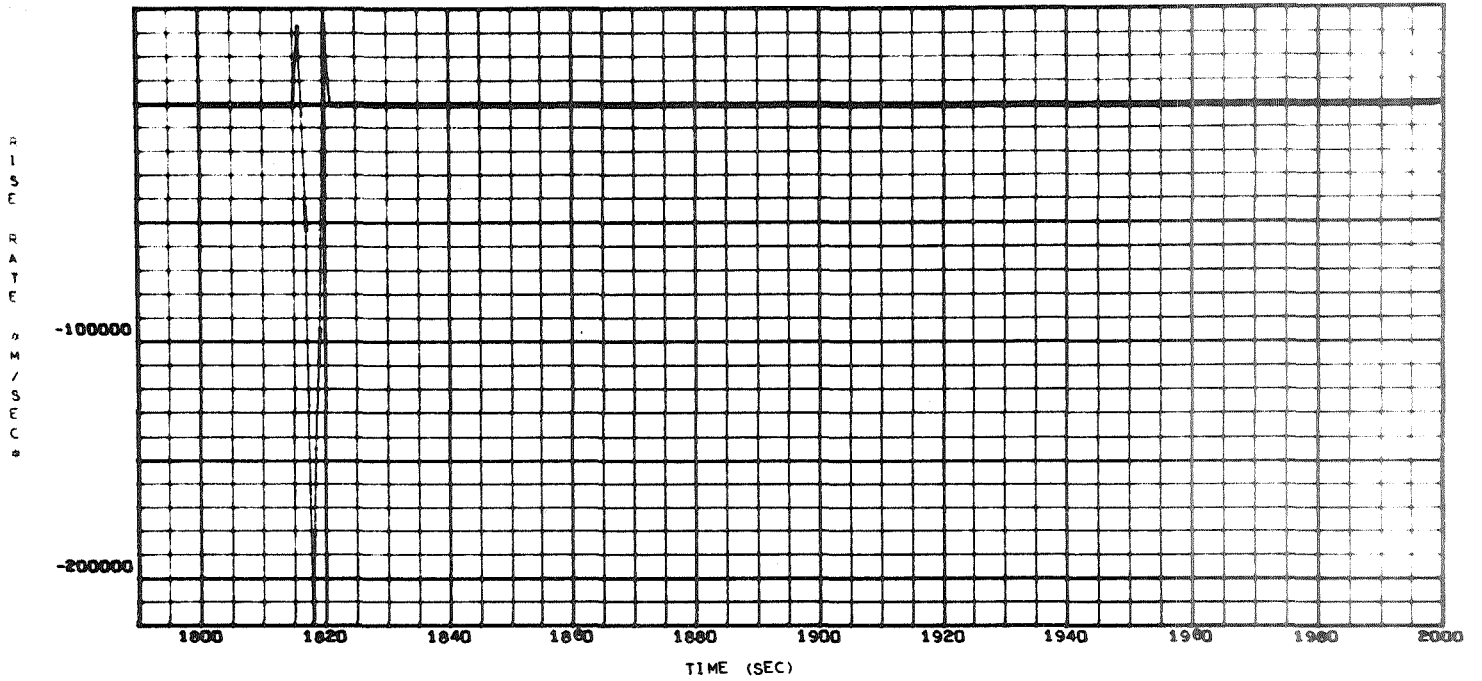




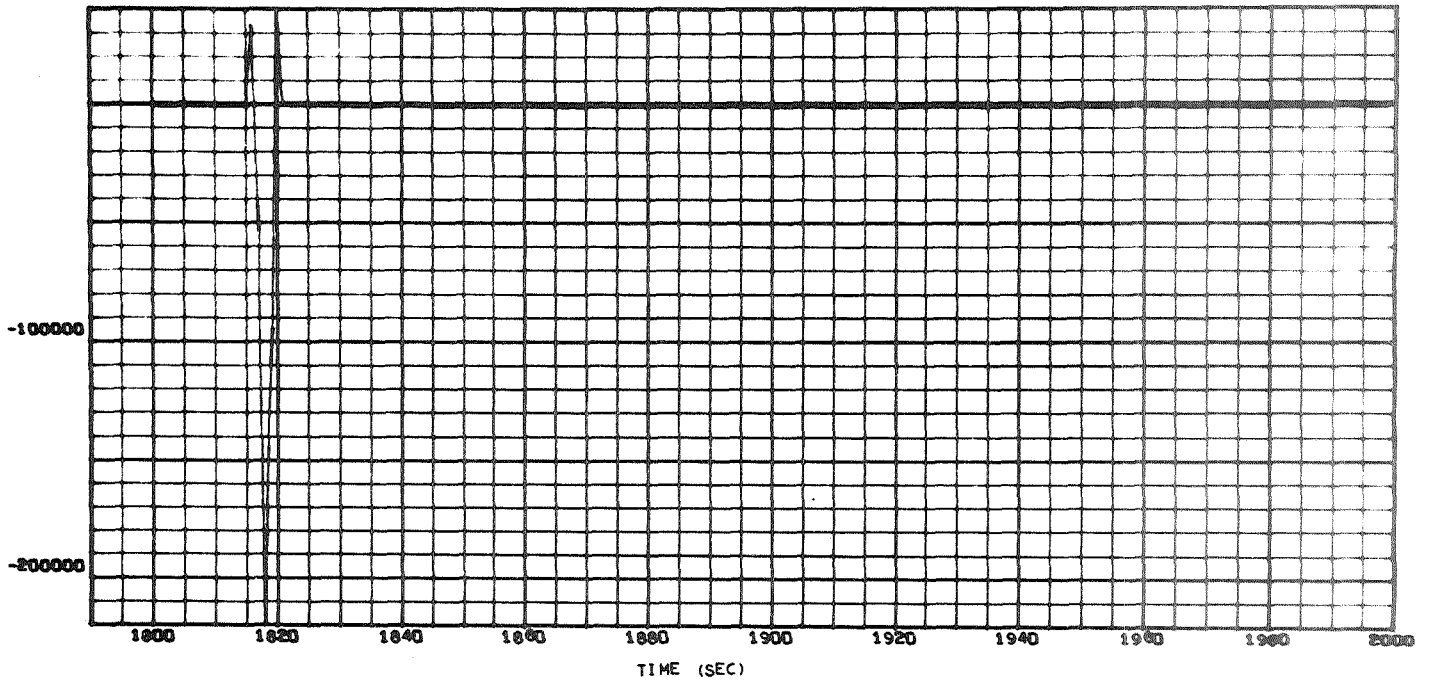
ONE-SECOND VELOCITY DATA PLOT OUTPUT







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