Range Commanders Council

IRIG STANDARD 352-85
(Formerly 108-72)

METEOROLOGY GROUP

IRIG STANDARDS FOR RANGE METEOROLOGICAL DATA REDUCTION PART II - ROCKETSONDE

WHITE SANDS MISSILE RANGE
KWAJALEIN MISSILE RANGE
YUMA PROVING GROUND
DUGWAY PROVING GROUND
ELECTRONIC PROVING GROUND
COMBAT SYSTEMS TEST ACTIVITY

ATLANTIC FLEET WEAPONS TRAINING FACILITY
NAVAL AIR WARFARE CENTER WEAPONS DIVISION
NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION
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IRIG STANDARD 352-85

IRIG STANDARDS
FOR
RANGE METEOROLOGICAL DATA REDUCTION

PART II - ROCKETSONDE

Prepared by

Standardization of Range Meteorological
Data Reduction Committee
Meteorology Group
Range Commanders Council

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FOREWORD

The measurement of atmospheric parameters to support activities on National Ranges involves the entire meteorological environment from the most simple observation of data near the surface to the complex and difficult measurements of high altitude parameters by the use of rocket and satellite-borne instrumentation. The needs for accurate assessment of the meteorological environment in which missile and space system operations are conducted do not vary significantly from one range to another, though the frequency and quantity of observations may be considerably different. In recent years, many test programs involved the use of more than one range and required similar types of meteorological measurements from each range participating.

Measurements of the atmospheric environment are, in most cases, made by use of the same type of instruments on several ranges. To ensure the highest quality processed data, the Meteorology Group (MG) of the Range Commanders Council (RCC) is assigned the task of standardizing the methods used in the reduction of range meteorological data. A committee composed of the following members was formed to pursue a task titled "Standardization of Range Meteorological Data Reduction":

Mr. H. C. Herring	ESMC, Chairman
Mr. F. J. Schmidlin	NASA/WFC
Mr. G. Dunaway	WSMR
Mr. E. J. Keppel	AD
Mr. G. G. Boire	WSMC
Mr. D. A. Lea	PMTC
Mr. E. E. Fisher	AFSC
Maj R. S. Noonan	AFFTC
Mr. R. W. Evert	NWC
Mr. R. Titus	NTS/DOE
2Lt M. E. Raffensburger	UTTR
Mr. E. Gibeau	KMR

The original issue of Part I of this document was published as IRIG Document 108-67 in August 1967. Both Parts I and II of the document were later published as IRIG Document 108-72. The current revision of the document is comprised of computer program documentation for two different computer systems. The program in section A is used by a large central computer to process data from either nontransponder or transponder rocketsondes. The program in section B is for the minicomputer (NOVA-3/12) of the Meteorological Sounding System (MSS) and is used for processing data from the transponder rocketsondes.

The U.S. standard computer program for the processing of Robin Falling Sphere data to calculate winds, temperatures, pressures and densities is the 1977 UDRI Robin Program. Other programs should be considered experimental and not used in lieu of the U.S. standard at the present time. In the future, providing adequate comparison experiments are conducted on some of the newly developed falling sphere programs which may show improvements over the U.S. standard,

the RCC MG committee on Standardization of Range Meteorological Data Reduction may recommend a new U.S. standard or approve other programs for use in addition to this standard for certain special applications.

Range meteorological agencies are encouraged to conform to the standard data reduction techniques and to use the formulae contained in this document in an effort to achieve the highest possible degree of standardization of meteorological data at all ranges. In addition, the committee encourages other agencies involved in machine processing of meteorological data to conform to these standardized procedures to the maximum extent possible. The committee and the MG invite and solicit comments and recommendations for improvements in the data reduction techniques and associated information contained in this document. Please forward such inputs to the Secretariat, Range Commanders Council, ATTN: STEWS-SA-R, White Sands Missile Range, New Mexico 88002-5002.

SECTION A

CDC FORTRAN V

ROCKETSONDE PROGRAM

(ROCK 3)

ABSTRACT

The Rocket Reduction Program is designed to process data acquired by standard Loki and Super Loki rocketsondes. This program accepts input data taken from the AN/TMQ-5 record and the strip chart from the MSS Tracking System, a radar and/or AN/GMD-4 Rawin Set, plus co-rawinsonde baseline data. The program processes input data and outputs as its final product rocketsonde data in readily usable tabular format; card decks, if desired; and rocketsonde message code (ROCOB).

1.0 MODULE DESCRIPTION

1.1 Program ROCK

Initializes data control arrays and controls flow of data through the subroutines.

1.2 Subroutine SIMQ

A least squares method of smoothing, provides a best fit of the components by generating a second-degree polynomial equation.

1.3 Subroutine OUTPUT

Formats the data for output.

1.4 Function WDIR

Computes wind direction in polar meteorological coordinates and windspeed in meters/second.

1.5 Function VALUE

Sets missing data to nines or interpolates for value.

1.6 Subroutine GRAVITY

Computes the ratio of the station's acceleration of gravity to gravity at 45 degrees latitude using the expression given at the top of Table 168, *SMT*, List 1968 (Bibliography Number 1).

1.7 Subroutine CHKOUT

Prints the tracking data in quality control format. Converts tracking data to Cartesian coordinates and writes data to a file.

1.8 Subroutine RD46CH

Reads the radar data and converts time to units and format consistent with TAER format.

1.9 Subroutine TMPMERG

Identifies type of temperature data, computes temperature from ordinate ratios, and combines temperature with tracking data versus time.

1.10 Subroutine INTPTMP

Identifies missing temperatures and interpolates to obtain temperatures through layers of less than 3.0 km thickness.

1.11 Subroutine MIDINT

Computes the midpoint of altitude layers and calculates uncorrected component winds and fall rates for the layers between data points. Component winds and fall velocities are assigned to the midpoint of the layers.

1.12 Subroutine BANDTC

Computes ballistic motion corrections for correcting winds according to Eddy (reference 3 in bibliography). Temperature corrections are computed for correcting temperatures as described in Attachment 9 (reference 4 in bibliography).

1.13 Subroutine COMPRSR

Computes and tabulates the difference in temperatures from the co-rawinsonde observation and the rocketsonde observation in the overlap region. Chooses a baseline for barometric pressure computations.

1.14 Subroutine TWOKM

Smooths component wind layer data over 2-km thicknesses producing 2 km-mean layer winds.

1.15 Subroutine PRESCOM

Converts geometric altitude to geopotential units, computes mean virtual temperature, and computes the atmospheric pressure using a standard form of the hypsometric equation.

1.16 Subroutine ONEKILO

Rearranges data in a 1-km array and computes maximum altitude recorded by sounding.

1.17 Subroutine PLOTCH

Plots temperature versus altitude as an aid to quality control.

1.18 Subroutine PUTOUT

Outputs data to the printer file and the disk file.

1.19 Subroutine ETFORM

Formats data for entry into high altitude data formatting routine to develop data for archiving and publication.

1.20 Subroutine CODIT

Corrects units of temperature and converts other data.

1.21 Subroutine RDRAWIN

Reads co-rawinsonde data for input to the archiving and publication formatting program.

1.22 Subroutine INT

Interpolates for missing data in the input data.

1.23 Subroutine ROCOB

Encodes all rocketsonde parameters into the international ROCOB code and stores data for later transmission.

1.24 Subroutine MANDL

Mandatory data level called by ROCOB to place data level into proper place in the code.

2.0 MATHEMATICAL DESCRIPTION

2.1 Program ROCK

None

2.2 Subroutine SIMQ

None

2.3 Subroutine OUTPUT

2.3.1 Computation of the Density of Each Level

$$\varrho = 348.38 \cdot (P/T)$$

where ϱ = density (grams/cubic meter)

P = pressure of the level (millibars)

T = temperature of the level (degrees K)

2.3.2 Computation of the Velocity of Sound (Dry)

$$V_S = 331.45 \cdot (T/273.15)^{1/2}$$

where V_S = velocity of sound (meters/second)

T = temperature (degrees K)

2.3.3 Computation of Vertical Wind Shear

$$WS = [(VX - VXP)^2 + (VY - VYP)^2]^{1/2}/\Delta ALT$$

where WS = vertical wind shear

VX = corrected east-west velocity component

VY = corrected north-south velocity component

VXP = corrected previous east-west velocity component

VYP = corrected previous north-south velocity component

ΔALT = thickness of the shear layer

2.4 Function WDIR

2.4.1 Computation of Wind Direction

$$DC = \tan^{-1} (VY/VX)$$

If VX is positive,

$$D = 90 - DC$$

If VY is negative

$$D = 270 - DC$$

where D = wind direction, meteorological polar coordinates

DC = wind direction, Cartesian coordinates

VX = corrected east-west velocity component

VY = corrected north-south velocity component

2.4.2 Computation of Windspeed

$$C = (VX^2 + VY^2)^{1/2}$$

where C = windspeed (meters/second)

VX = corrected east-west velocity component

VY = corrected north-south velocity component

2.5 Function VALUE

None

2.6 Subroutine GRAVITY

2.6.1 Computation of the Ratio of Local Gravity to Gravity at 45 Degrees Latitude

$$GRAT = 1 - 0.0026373 \cdot \cos (2 \cdot \phi_L) + 0.0000059 \cdot \cos^2 (2 \cdot \phi_L)$$

where GRAT = ratio of local gravity to gravity at 45 degrees latitude

ϕ_L = station latitude (degrees)

2.7 Subroutine CHKOUT

2.7.1 Computation of Differences for Time, Azimuth, Elevation, Range, and Height Between Adjacent Levels

$$\Delta G = 60/(GA - GB)$$

$$\Delta Z = (ZA - ZB) \cdot \Delta G$$

$$\Delta\phi = (\phi A - \phi B) \cdot \Delta G$$

$$\Delta\theta = (\theta A - \theta B) \cdot \Delta G$$

$$\Delta R = (RA - RB) \cdot \Delta G$$

where ΔG = difference in time in fractional parts of minutes

ΔZ = difference in geometric altitudes

$\Delta\phi$ = difference in elevation angles

$\Delta\theta$ = difference in azimuth angles

ΔR = difference in range

GA = time of upper level (seconds)

GB = time of lower level (seconds)

ZA = altitude of upper level (meters)

ZB = altitude of lower level (meters)

ϕA = elevation angle of upper level (degrees)

ϕB = elevation angle of lower level (degrees)

θA = azimuth angle of upper level (degrees)

θB = azimuth angle of lower level (degrees)

RA = range of upper level (meters)

RB = range of lower level (meters)

2.7.2 Computation of Geometric Height

$$Z = [(RE + H_T)^2 + R^2 + 2 \cdot (RE + H_T) \cdot \sin\phi]^{1/2} - RE$$

where Z = geometric height (meters)

RE = radius of the Earth (meters)

H_T = station height (meters) (see paragraph 7.4)

ϕ = elevation angle of the target (degrees)

R = slant range to target (meters)

2.7.3 Correction of Elevation Angle for Curvature of the Earth

$$\phi_c = \phi + \{[Z \cdot \cos\phi/\sin\phi]/\ 2.2 \cdot RE\}$$

where ϕ_c = corrected elevation angle (radians)

ϕ = elevation angle (radians)

Z = geometric height (meters)

RE = radius of the Earth (meters)

2.7.4 Computation of the East–West and North–South Position Components for Each Data Point

$$X = R \cdot \cos \phi_c \cdot \sin \theta$$

$$Y = R \cdot \cos \phi_c \cdot \cos \theta$$

where X = east–west position component

Y = north–south position component

R = slant range to target (meters)

ϕ_c = corrected elevation angle (degrees)

θ = azimuth angle of the target (degrees)

2.8 Subroutine RD46CH

2.8.1 Computation of the Azimuth, Elevation, and Slant Range Factors

$$\theta_A = 0.125 \cdot \theta + IRZ$$

$$\phi_E = 0.125 \cdot \phi + IRZ$$

$$R^2 = 8.0 \cdot R + IRZ$$

where θ_A = azimuth factor

ϕ_E = elevation factor

R^2 = range factor

θ = azimuth angle (degrees)

ϕ = elevation angle (degrees)

R = range (meters)

IRZ = timing factor

2.8.2 Computation of Azimuth Angle, Elevation Angle, and Slant Range of the Data Point

$$\theta = 180 - \theta_A$$

$$\phi = 180 - \phi_E$$

$$R = 1.953125 \cdot R^2$$

where θ = azimuth angle (degrees)

ϕ = elevation angle (degrees)

R = slant range (meters)

ϕ_E = elevation factor

θ_A = azimuth factor

R^2 = range factor

2.9 Subroutine TMPMERG

2.9.1 Computation of Temperature (Steinhart Equation)

$$T = 1/[A + (B \cdot LR) + (C \cdot LR^3)]$$

where T = temperature in degrees Kelvin

LR = log of the thermister resistance value

A, B, C = calibration constants supplied by the instrument manufacturer

2.9.2 Computation of Temperature (Layton–Clark Equation)

$$T = B/(LR - A) - C$$

where T = temperature in degrees Kelvin

LR = log of the thermister resistance value

A, B, C = calibration constants supplied by the instrument manufacturer

2.10 Subroutine INTPTMP

2.10.1 Computation of Interpolation Ratio

$$K = (G_2 - G)/(G_2 - G_1)$$

where K = interpolation ratio

G_2 = time of upper bounding level

G_1 = time of lower bounding level

G = time of interpolated level

2.10.2 Interpolation for Missing Temperatures

$$T = T_2 - K \cdot (T_2 - T_1)$$

where T = interpolated temperature (degrees K)

T_2 = temperature, upper bounding level (degrees K)

T_1 = temperature, lower bounding level (degrees K)

K = interpolation ratio

2.11 Subroutine MIDINT

2.11.1 Computation of the Midinterval VX and VY

$$VX = (X - XA)/(GA - G)$$

$$VY = (Y - YA)/(GA - G)$$

where VX = midinterval east-west velocity component

VY = midinterval north-south velocity component

XA = upper bounding level east-west position component

X = lower bounding level east-west position component

YA = upper bounding level north-south position component

Y = lower bounding level north-south position component

GA = time after launch to upper bounding level (seconds)

G = time after launch to lower bounding level (seconds)

2.11.2 Computation of Fall Rate

$$VZ = (ZA - Z)/(GA - G)$$

where VZ = fall rate (km/seconds)

ZA = altitude, upper bounding level (km)

Z = altitude, lower bounding level (km)

GA = time after launch to upper bounding level (seconds)

G = time after launch to lower bounding level (seconds)

2.11.3 Computation of Mean Temperature, Mean Height, and Mean Time

$$TP = (T + TA)/2$$

$$H = (Z + ZA)/2$$

$$GG = (G + GA)/2$$

where TP = mean temperature

TA = temperature, upper bounding level (degrees K)

T = temperature, lower bounding level (degrees K)

H = mean height

ZA = height, upper bounding level (km)

Z = height, lower bounding level (km)

GG = mean time (seconds)

GA = time, upper bounding level (seconds)

G = time, lower bounding level (seconds)

2.12 Subroutine BANDTC

2.12.1 Computation of a Delta Time

$$\Delta G = G_3 - G_1$$

where ΔG = delta time

G_3 = time of upper bounding level

G_1 = time of lower bounding level

2.12.2 Computation of Local Acceleration of Gravity

$$GL = GRAT \cdot 9.80616$$

where GL = local acceleration of gravity

GRAT = ratio of local gravity to gravity at 45 degrees latitude

9.80616 = acceleration of gravity at 45 degrees latitude

2.12.3 Computation of Ballistic Motion Corrections (reference 2, Bibliography)

2.12.3.1 Correction of East-West and North-South Velocity Components

$$VX = VX_2 - \frac{VX_2 \cdot [(VX_3 - VX_1)/\Delta G]}{[(VZ_3 - VZ_1)/\Delta G] + GL}$$

$$VY = VY_2 - \frac{VY_2 \cdot [(VY_3 - VY_1)/\Delta G]}{[(VZ_3 - VZ_1)/\Delta G] + GL}$$

where VX = corrected east-west velocity component

VY = corrected north-south velocity component

VX_1 = lower level east-west velocity component

VX_2 = intermediate level east-west velocity component

VX_3 = upper level east-west velocity component

VY_1 = lower level north-south velocity component

VY_2 = intermediate level north-south velocity component

VY_3 = upper level north-south velocity component

VZ_1 = fall rate, lower level

VZ_3 = fall rate, upper level

ΔG = delta time

GL = local acceleration of gravity

2.12.3.2 Computation of Ventilation Velocity

$$V = [VZ_2^2 + (VX - VX_2)^2 + (VY - VY_2)^2]^{1/2}$$

where V = ventilation velocity

VZ_2 = intermediate level vertical velocity

VX = corrected east-west velocity component

VX_2 = intermediate level east-west velocity component

VY = corrected north-south velocity component

VY_2 = intermediate level north-south velocity component

2.12.3.3 Computation of Aerodynamic Heating Correction

$$AA = K1_Z \cdot V^2$$

where AA = aerodynamic heating correction

$K1_Z$ = aerodynamic heating term vs altitude (see attachment 8, table 1)

Z = index into K1 table (20—70 km)

V = ventilation velocity

2.12.3.4 Computation of Time Lag Correction

$$AB = K2_Z \cdot (T_3 - T_1)/\Delta G$$

where AB = time lag correction

$K2_Z$ = time lag term vs altitude (see attachment 8, table 1)

T_3 = temperature of upper level (degrees K)

T_1 = temperature of lower level (degrees K)

ΔG = delta time

Z = index into the K2 table

2.12.3.5 Computation of Radiation Heat Loss Correction

$$AD = K3_Z \cdot T^4$$

where AD = radiation heat loss correction

$K3_Z$ = radiation heat loss term vs altitude (see attachment 8, table 1)

Z = index into the K3 table

T = temperature of the thermistor (degrees K)

2.12.3.6 Computation of Radiation and Electrical Correction

$$AC = K4_Z$$

$$AC = K5_Z \text{ if at night}$$

where AC = radiation and electrical correction

$K4_Z$ = radiation and electrical loss term, day

$K5_Z$ = radiation and electrical loss term, night

Z = index into the K4 and K5 tables

2.12.3.7 Computation of Corrected Temperature

$$TC = T - AA + AB - AC + AD$$

where TC = corrected temperature

T = temperature of the thermistor

AA = aerodynamic heating correction

AB = time lag correction

AC = radiation and electrical correction

AD = radiation heat loss correction

2.13 Subroutine COMPRSR

2.13.1 Computation of Interpolating Ratio

$$K = (ZA - Zb)/(ZA - ZB)$$

where K = interpolating ratio

ZA = upper level height

ZB = lower level height

Zb = baseline height

2.13.2 Computation of Baseline Temperature

$$Tb = TA - [K \cdot (TA - TB)] - 273.15$$

where Tb = baseline temperature (degrees C)

TA = upper level temperature (degrees K)

TB = lower level temperature (degrees K)

K = interpolation ratio

2.13.3 Computation of Temperature Difference

$$DIFF = Tb - TMP$$

where DIFF = temperature difference (degrees C)

Tb = baseline temperature (degrees C)

TMP = co-rawinsonde temperature for the level (degrees C)

2.14 Subroutine TWOKM

None

2.15 Subroutine PRESCOM

2.15.1 Computation of Geopotential Height

$$H = GRAT \cdot [(RE \cdot Z)/(RE + Z)]$$

where H = geopotential height

GRAT = gravitational ratio, local gravity to gravity at 45 degrees latitude

RE = radius of the Earth

Z = geometric height

2.15.2 Computation of Mean Virtual Temperature

$$\overline{TV} = (TV + TVP)/2$$

where $\overline{TV}$ = mean virtual temperature

TV = virtual temperature of the level

TVP = virtual temperature of the previous level

2.15.3 Computation of Log of Pressure

$$PL = PPL - (H - HP)/(PC \cdot \overline{TV})$$

where PL = log of pressure of the level

PPL = log of the baseline pressure

PC = 67.442 = metric constant

$\overline{TV}$ = mean virtual temperature of the layer

H = geopotential height of the level

HP = geopotential height of the previous level

2.16 Subroutine ONEKILO

2.16.1 Computation of Next Output Level

$$Hs = [(IH/1000) \cdot 1000] + HINT$$

where Hs = desired output level

IH = height converted to integer

HINT = output interval requested

2.16.2 Computation of Interpolation Ratio

$$K = (Hs - HB)/(HA - HB)$$

where K = interpolation ratio

Hs = output level

HA = height of upper bounding level

HB = height of lower bounding level

2.16.3 Interpolation of Position Components, Temperature, Uncorrected Temperature, Fall Rate, and Log of Pressure

$$Xs = K \cdot (XA - XB) + XB$$

where Xs = interpolated value

K = interpolation ratio

XA = upper level value

XB = lower level value

2.17 Subroutine PLOTCH

None

2.18 Subroutine PUTOUT

None

2.19 Subroutine ETFORM

2.19.1 Computation of Interpolation Ratio for Significant Data

$$K = (Hs - HB)/(HA - HB)$$

where K = interpolation ratio

Hs = output level

HA = height of upper bounding level

HB = height of lower bounding level

2.19.2 Computation of Interpolation Ratio for Mandatory Data

$$K = (PL - PB)/(PA - PB)$$

where K = interpolation ratio

PL = log of pressure at output level

PA = log of pressure, upper bounding level

PB = log of pressure, lower bounding level

2.19.3 Interpolation for Output Data

$$Xs = K \cdot (XA - XB) + XB$$

where Xs = interpolated value

K = interpolation ratio

XA = upper level value

XB = lower level value

2.20 Subroutine CODIT

2.20.1 Computation of Velocity of Sound

$$Vs = 331.45 \cdot (T/273.15)^{1/2}$$

where Vs = velocity of sound (meters/second)

T = temperature (degrees K)

2.20.2 Computation of Pressure

$$P = 10^{PL}$$

where P = barometric pressure (millibars)

PL = log of pressure

2.20.3 Computation of Density

$$\varrho = (P/T) \cdot 348.38$$

where ϱ = density (grams/cubic meter)

P = pressure (millibars)

T = temperature (degrees K)

2.21 Subroutine RDRAWIN

None

2.22 Subroutine INT

2.22.1 Interpolation for Output Data

$$K = (Hs - HB)/(HA - HB)$$

where K = interpolation ratio

Hs = output level

HA = height of upper bounding level

HB = height of lower bounding level

$$Xs = K \cdot (XA - XB) + XB$$

where Xs = interpolated value

K = interpolation ratio

XA = upper level value

XB = lower level value

2.23 Subroutine ROCOB

None

2.24 Subroutine MANDL

None

3.0 INPUT

Input to the rocket program is divided into four groups: temperature data, tracking data, co-rawinsonde data, and control data from the terminal.

3.1 Tracking Data

The program reads two basic formats of input data: the 46-character radar data and the TAER format. The other input formats are converted by editor programs to the TAER format.

3.1.1 Radar Tracking Data, 46-character

The 46-character data is from the tracking radar and is put into a file in the following format (see attachment 6):

7911214124802014250255460000136344346224 62

See attachment 8 for a breakdown of this data.

3.1.2 TAER Format and MATTY File

The TAER format and MATTY file are identical except for the first line of the MATTY file (see attachment 5).

GGGGG.G AAA.AAA EE.EEE RRRRR.R

GGGGG.G = time of data (seconds after midnight)

AAA.AAA = azimuth angle (degrees from true north)

EE.EEE = elevation angle (degrees from horizontal)

RRRRR.R = slant range (yards)

3.2 Temperature Data

Temperature data is in three types of record groups collected by one of two types of tracking systems. The tracking systems are the AN/GMD-4 and the MSS system. The three types of records follow.

3.2.1 Ordinate Ratios (Attachment 2)

Record	Contents
1	Test number (5 digits)
2	Station number (2 digits) Month (2 digits) Day (2 digits) Year (2 digits) Time of launch, GMT (4 digits) Type of instrument (3 digits) Plain language name of motor Type RAEMG group (see attachment 1, tables 1 through 5) (6 digits)
3	Temperature equation constants Three 8-character numbers
4—24	Temperature sensor calibration data Two 8-character numbers each
25	Separator flag
26—end	Ordinate ratio (3 digits) referenced to 95 followed by time in seconds after launch (4 digits)

3.2.2 Coded Temperatures (Attachment 3)

Record	Contents
1	Test number (5 digits)
2	Station number (2 digits) Month (2 digits) Day (2 digits) Year (2 digits) Time of launch, GMT (4 digits) Type of instrument (3 digits) Plain language name of motor Type RAEMG group (see attachment 1, tables 1 through 5) (6 digits)
3—end	Coded temperatures (4 digits) followed by time in seconds after launch (4 digits). Temperature is coded by adding 50 to all negative temperatures and omitting the minus sign.

3.2.3 Missing Temperatures

Records 1 and 2 are the same as in the preceding paragraphs; in this case, they constitute the entire file.

3.3 Co-Rawinsonde Data

The co-rawinsonde input data is the 250-meter output data from the rawinsonde program. Attachment 15 illustrates the format of this file. Its contents are as follows:

Altitude	Meters
Wind direction	Degrees
Windspeed	Meters/second
Temperature	Degrees Celsius
Dewpoint	Degrees Celsius
Pressure	Millibars
Relative humidity	Percent
Absolute humidity	Grams/cubic meter
Density	Grams/cubic meter
Refractive index	Microwave in N units, optical
Velocity of sound	Knots
Shear	$Seconds^{-1}$
Vapor pressure	Millibars
Precipitable water	Millimeters

3.4 Control Data (Operator Dialogue)

A sample of the operator dialogue follows:

```
IS THIS A NIGHT RUN ? YES/NO
? NO
IS THIS A MATTY RUN ? YES/NO
? YES
```

4.0 OUTPUT

The primary output of the program is constant altitude data in kilometer intervals, 250-meter intervals,

Fall Rate	Feet/second or meters/second (determined by height units)
Speed of Sound	Knots or meters/second (determined by height units)
Wind Shear	$Seconds^{-1}$

Additionally, in the printer output, there are three quality control sets of data and a rocketsonde message code. The first quality control data set contains tracking information as follows:

Data point time	Seconds after midnight
Azimuth angle	Degrees from true north
Elevation angle	Degrees from horizontal
Range	Meters
Height	Meters
Data point time	Time of day — hours, minutes, and seconds
Time difference	Time difference between adjacent data points, seconds
Azimuth difference	Change in azimuth angle/minute, degrees
Elevation difference	Change in elevation angle/minute, degrees
Range difference	Change in range/minute, meters
Height difference	Change in height/minute, meters

The second quality control data set contains temperature information as follows:

Height	Meters
Temperature	Temperature of the rocketsonde instrument, degrees Celsius
Temperature	Temperature of the rawinsonde instrument, degrees Celsius
Temperature difference	Difference between above two temperatures at the height indicated

The third quality control data set is a graph of temperature in degrees Kelvin versus height in meters. The graph covers a range of 20,000 to 70,000 meters in height.

The teletype output is the rocketsonde coded message. Attachment 10 shows a sample copy of this output and attachment 11 gives a breakdown of the code.

The High Altitude Meteorological Data (HAMDATA) output is saved on disk for use as input to the HAMD program. A sample copy of this data is shown in attachment 14. The first section of this file consists of:

Column	
1—5	Altitude in geometric decameters
6—8	Wind direction with respect to true north, degrees
9—11	Windspeed in whole meters/second
12—15	Uncorrected y component, with a minus sign indicates northerly component, blank for southerly component
16—19	Uncorrected x component, with a minus sign indicates easterly component, blank for westerly component
20—23	Corrected y component, with a minus sign indicates a northerly component, blank for southerly component
24—27	Corrected x component, with a minus sign indicates an easterly component, blank for westerly component
28—30	Fall rate in whole meters/second
31—34	Temperature in whole degrees Celsius
35—37	Temperature correction, with a minus sign indicates negative temperature correction, blank indicates positive correction, whole degrees
38—44	Pressure in millibars to four significant digits with one digit to the left of the decimal point, three digits to the right of the decimal point, and a signed "exponent" to indicate the power of 10 by which the number is to be multiplied. Col. 38: first significant digit (never zero) Col. 39: decimal point Col. 40—42: three additional significant digits Col. 43: sign of exponent (never blank) Col. 44: power of 10 by which number is to be multiplied
45—51	Density in grams/cubic meter, same format as pressure
52—54	Speed of sound in whole meters/second

The second section of this file contains data as follows:

Height	Meters
Wind direction	Degrees from true north
Windspeed	Meters/second
Temperature	Degrees Celsius
Dewpoint	Degrees Celsius
Barometric pressure	Millibars
Refractive index	N units

5.0 ALGORITHMS

5.1 Subroutine MANDL

Convert mandatory level pressure to whole number for output in rocketsonde code using

$$IPS = (10^{PL(J)} + F1)\ (10^{JS}/10)$$

where IPS = pressure at mandatory level encoded as a whole number

PL(J) = log of the pressure at the mandatory level being converted to a whole number

F1 = round off factor used to move decimal point, this factor is based on PL(J)

If PL(J) $<$ 0, F1 = 0.05
$<$ −1, F1 = 0.005
$<$ −2, F1 = 0.0005
$<$ −3, F1 = 0.00005
$<$ −4, F1 = 0.000005

JS = intermediate factor based on the pressure level indicator J which is set by the number of levels processed

If J $\geq$ 31, JS = 6
$<$ 31, JS = 5
$<$ 26, JS = 4
$<$ 21, JS = 3
$<$ 16, JS = 2
$<$ 10, JS = 1

5.2 Subroutine TWOKM

Set up values that are to be used when calling SIMQ by multiplying elements of the matrix and assigning to proper place in symmetric coefficient matrix (A).

$$AX_{(I,\ J)} = XA_{(I,\ J)} + XC_{(K,\ I)} \cdot SC_{(K,\ J)}$$

$$AY_{(I,\ J)} = YA_{(I,\ J)} + YC_{(K,\ I)} \cdot YC_{(K,\ J)}$$

Set up values that are to be used when calling SIMQ by multiplying elements of the matrix and assigning to proper place in constant vector matrix (B) using

$$BX_{(I)} = XB_I + XC_{(K,\ I)} \cdot X_K$$

$$BY_{(I)} = YB_I + YC_{(K,\ I)} \cdot Y_K$$

Using the coefficients returned from SIMQ, calculate a smoothed x and y from

$$SX = a^2XB_3 + aXB_2 + XB_1$$

$$SY = a^2XB_3 + aYB_2 + YB_1$$

where $a = 5$

XB = coefficients returned from SIMQ

SX = smoothed east-west component

SY = smoothed north-south component

5.4 Subroutine SIMQ

The least squares method provides a best fit of the components by generating a second degree polynomial equation, of general form:

$$y = k_2x^2 + k_1x + k_o$$

and computing an offset from the center of the 9-point range. Two matrices are created designated [A] and [B]. Symmetric coefficient matrix (SCM) [A] is in the form:

$$[A] = \begin{matrix} N & \Sigma X_i & \Sigma X_i^2 \\ \Sigma X_i & \Sigma X_i^2 & \Sigma X_i^3 \\ \Sigma X_i^2 & \Sigma X_i^3 & \Sigma X_i^4 \end{matrix}$$

and constant vector matrix (CVM) [B] is in the form of:

$$[B] = \begin{matrix} = \Sigma Y_i \\ = \Sigma X_i\ Y_i \\ = \Sigma X_i^2\ Y_i \end{matrix}$$

Note: Σ indicates summation from 1 to N. N=9

Basic matric equation [A] [K] = [B] is solved by finding the inverse of [A], $[A]^{-1}$ and performing multiplications:

$$[A]^{-1}\ [A]\ [K] = [A]^{-1}\ [B]$$

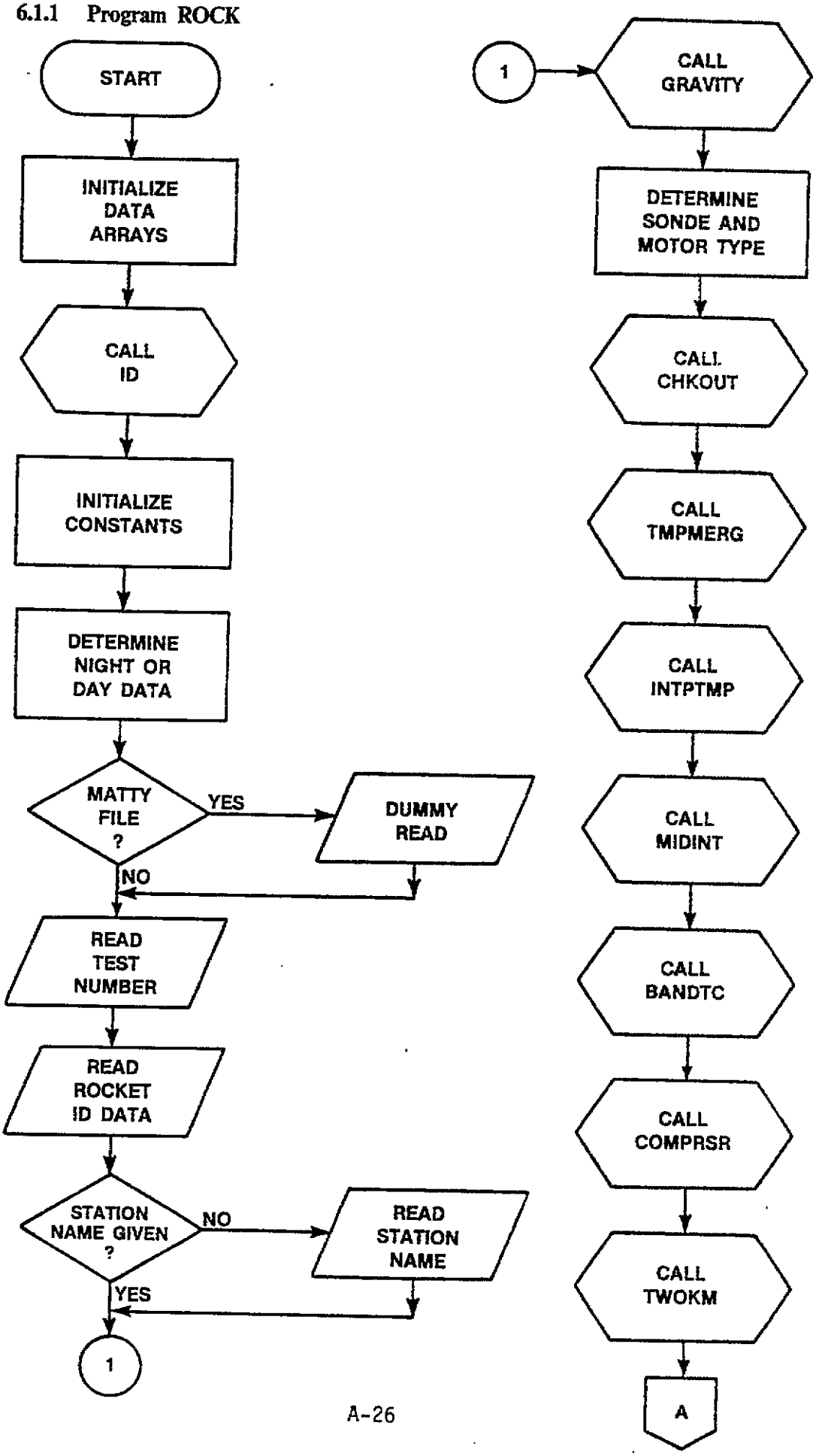
$$[I]\ [K] = [A]^{-1}\ [B]$$

$[A]^{-1}$ is calculated by SIMQ using the GAUSS-JORDAN inplace matrix inversion method. SIMQ returns the appropriate coefficients k_2, k_1, and k_o, which the calling routine incorporates in calculating the appropriate values.

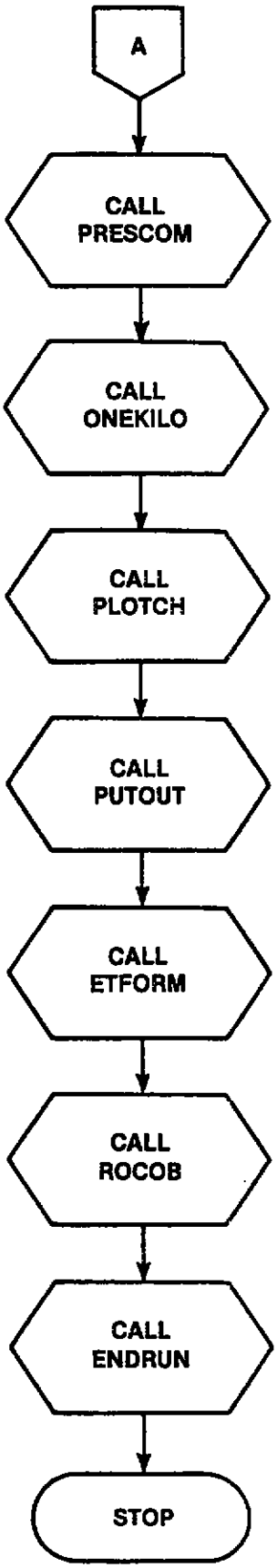
6.0 FLOWCHARTS

See the following pages.

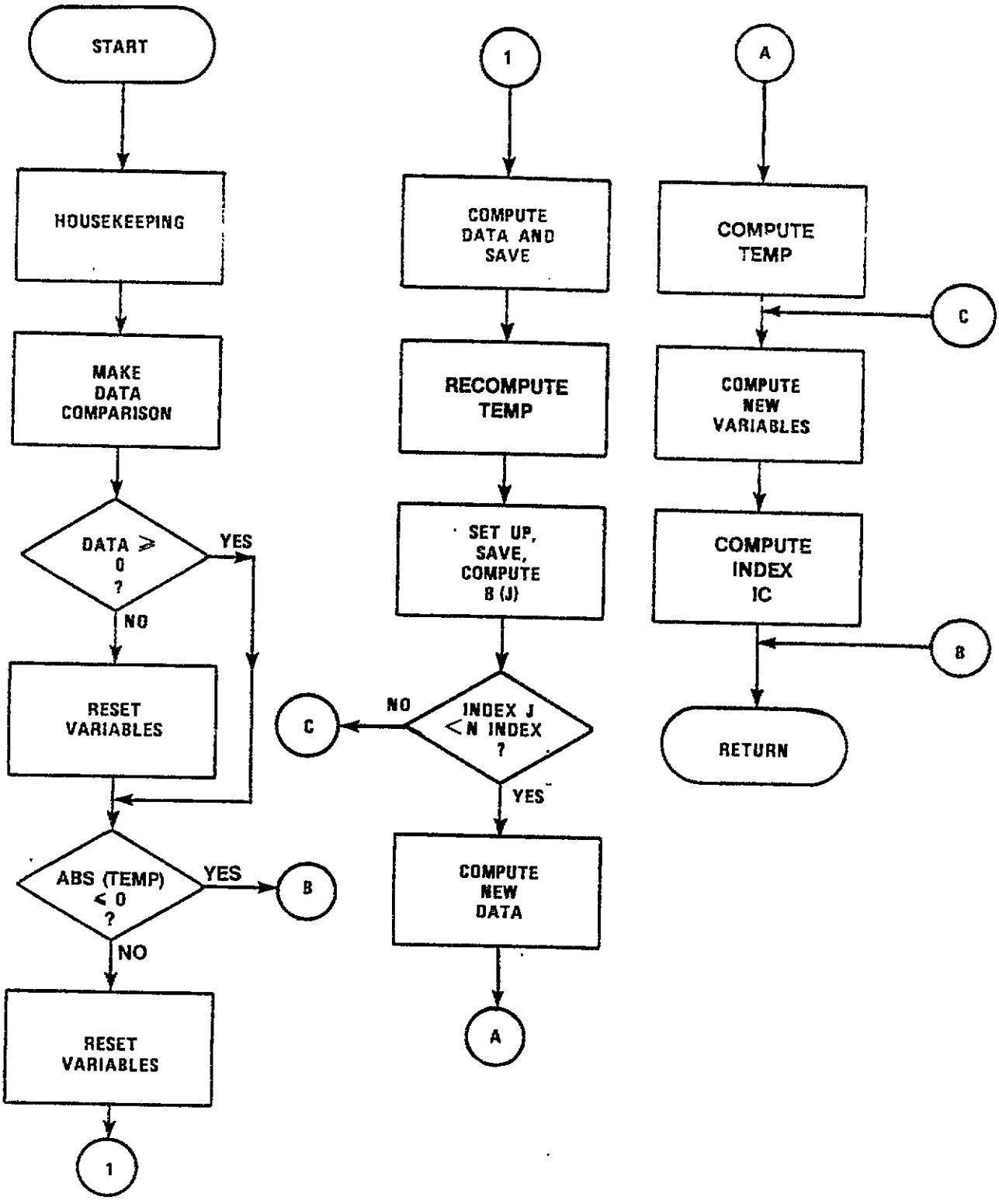
6.1.1 Program ROCK



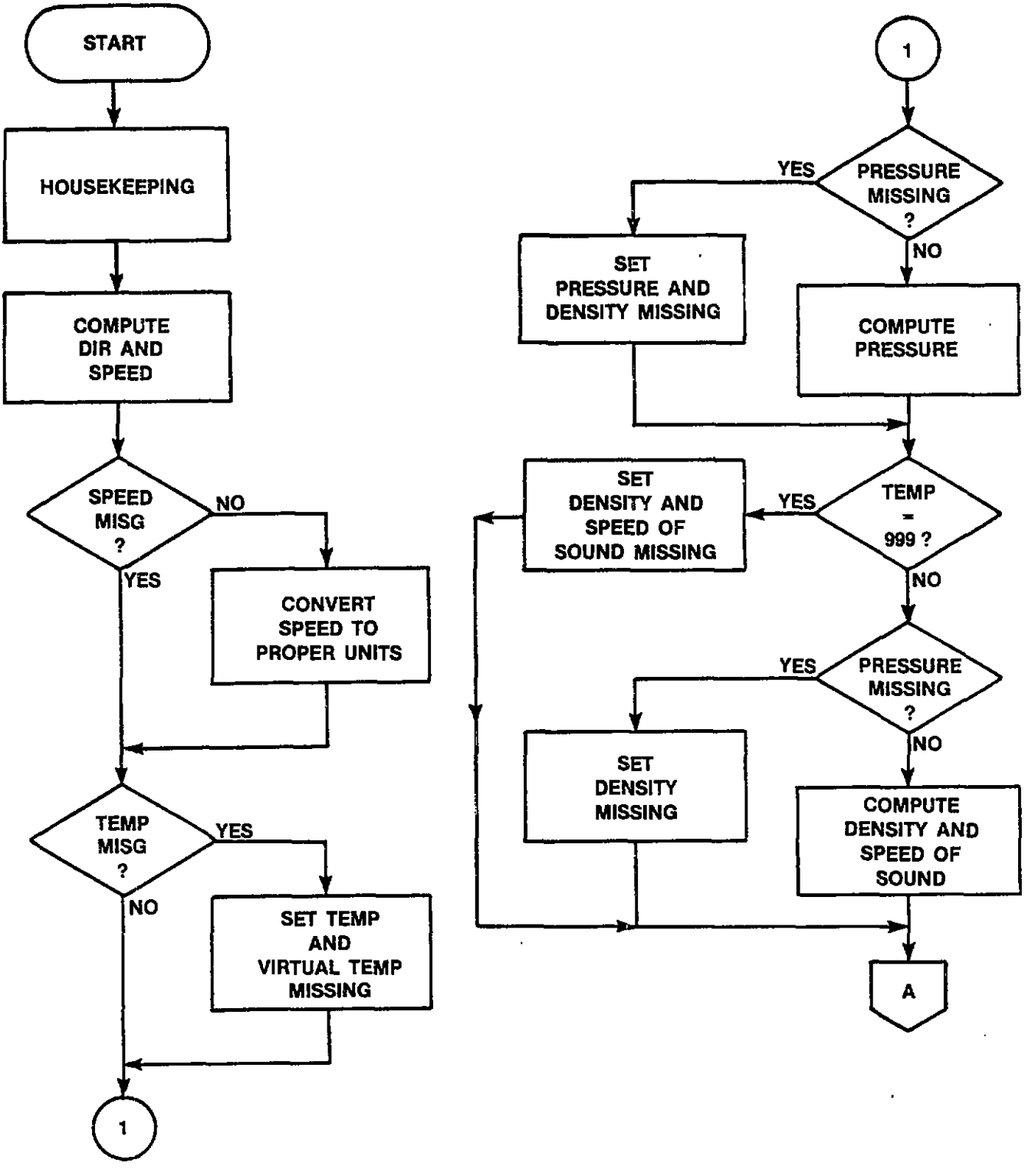
6.1.2 Program ROCK



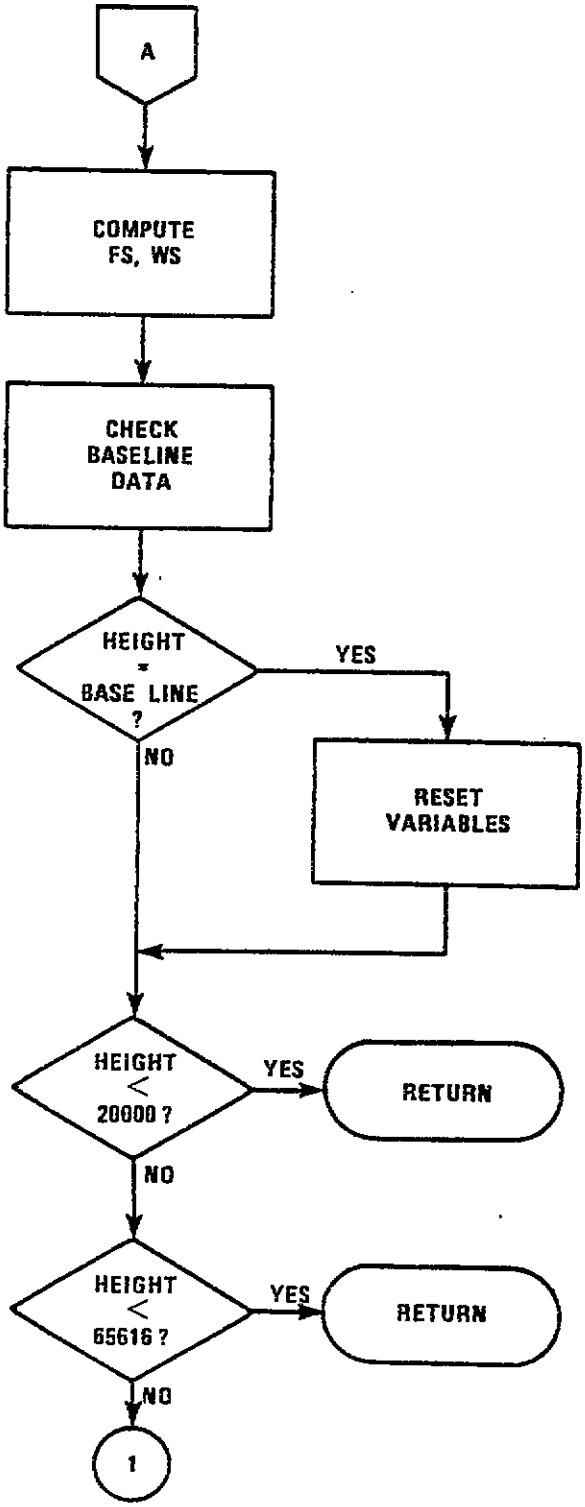
6.2 Subroutine SIMQ

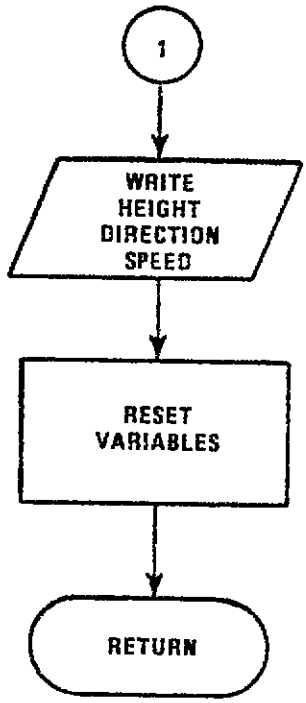


6.3.1 Subroutine OUTPUT

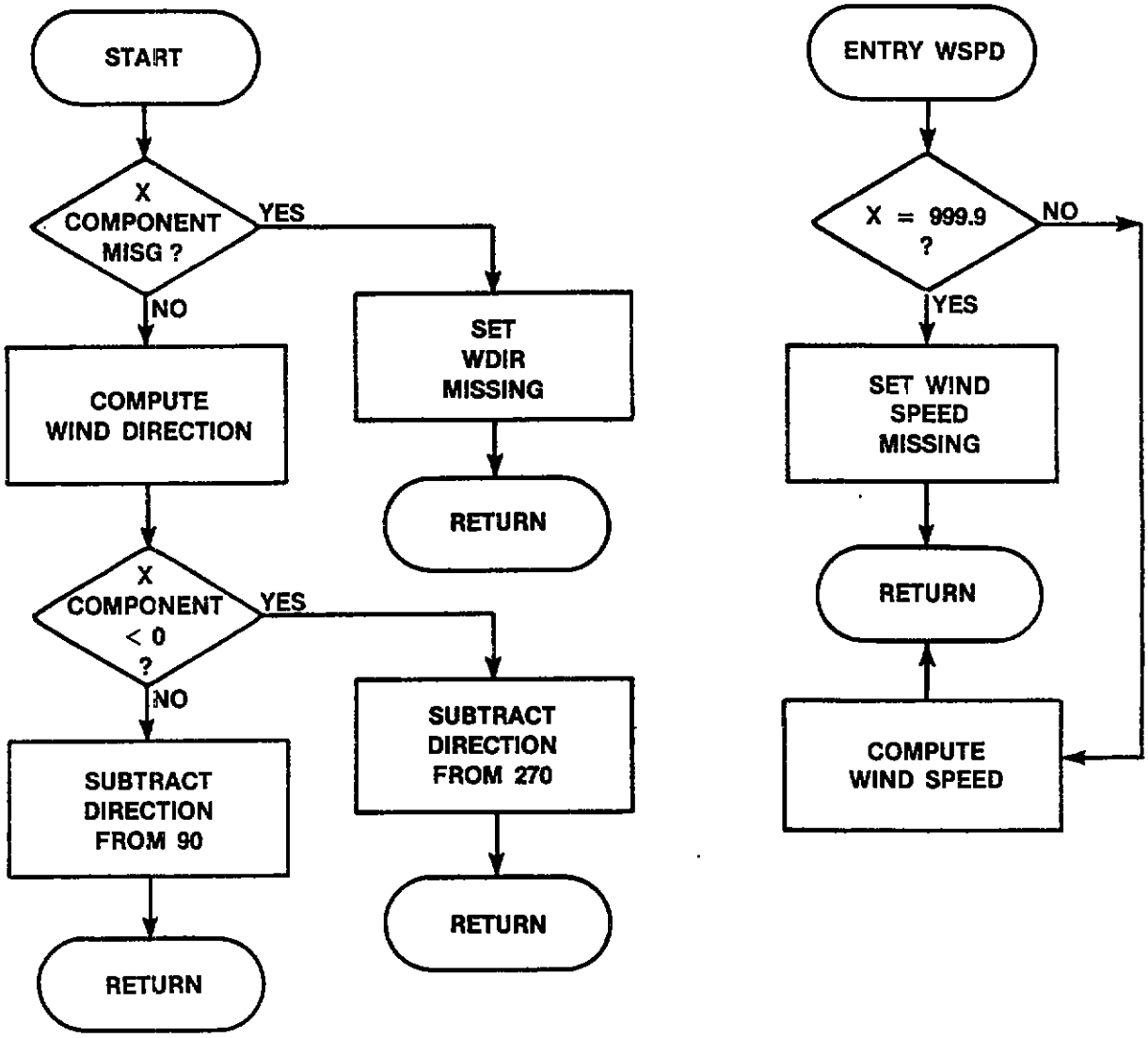


6.3.2 Subroutine OUTPUT

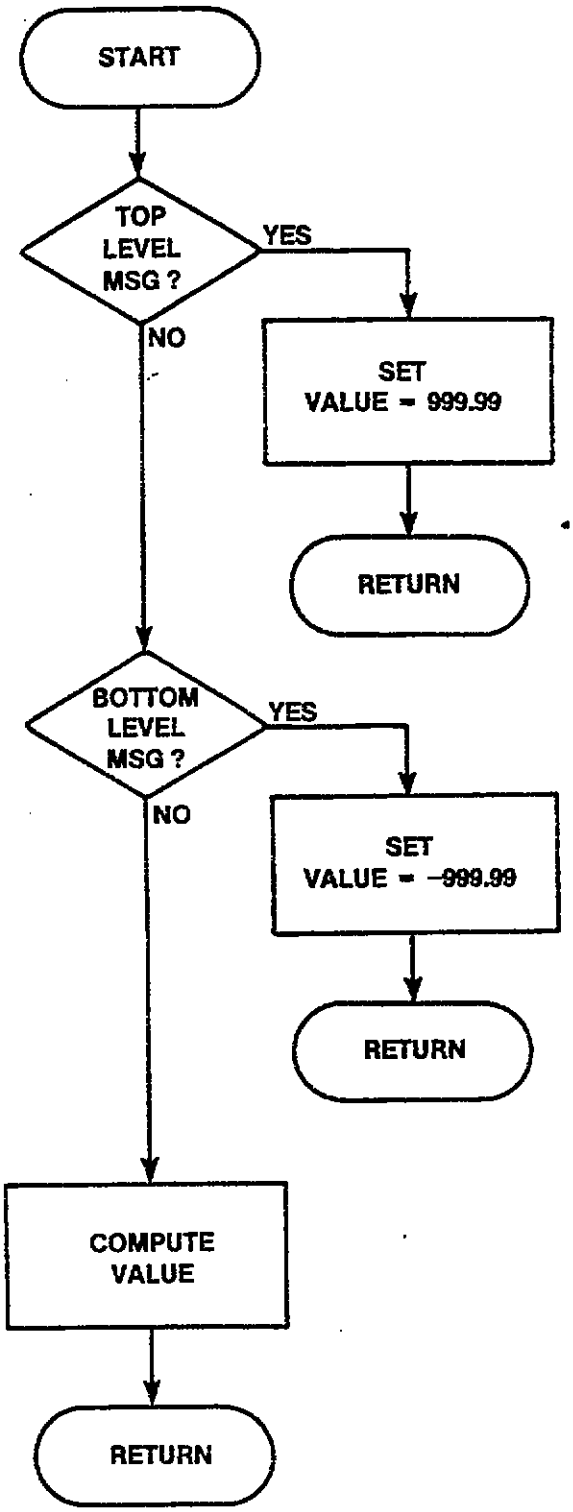




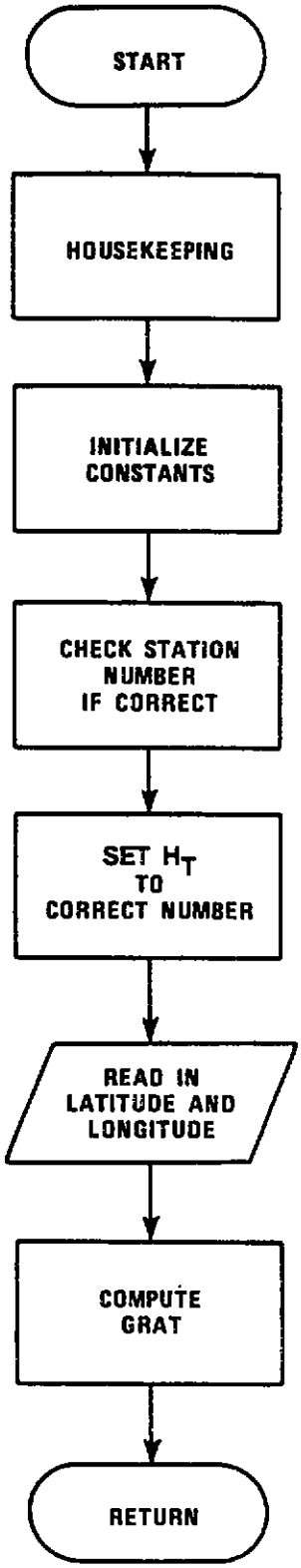
6.4 Function WDIR



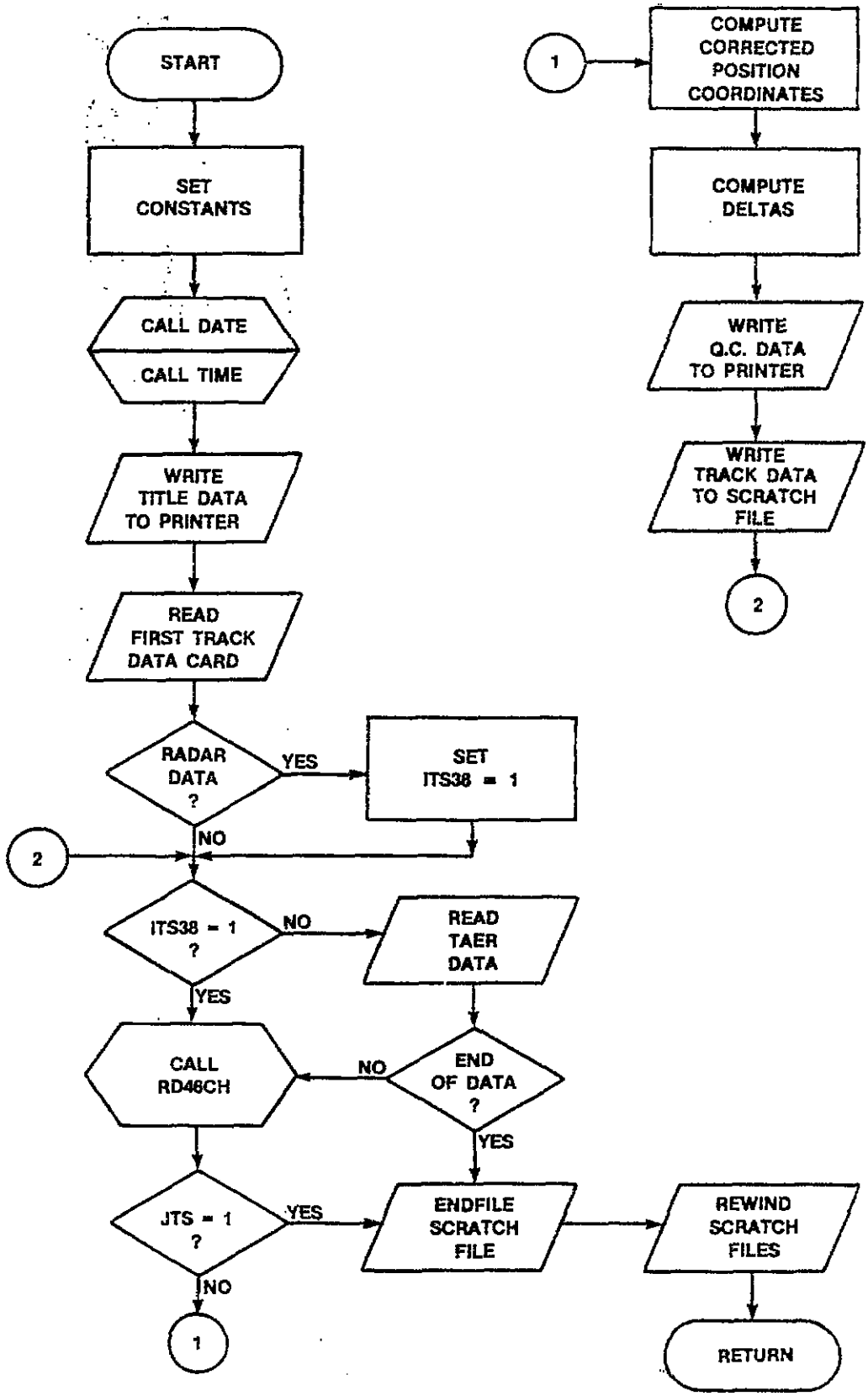
6.5 Function VALUE



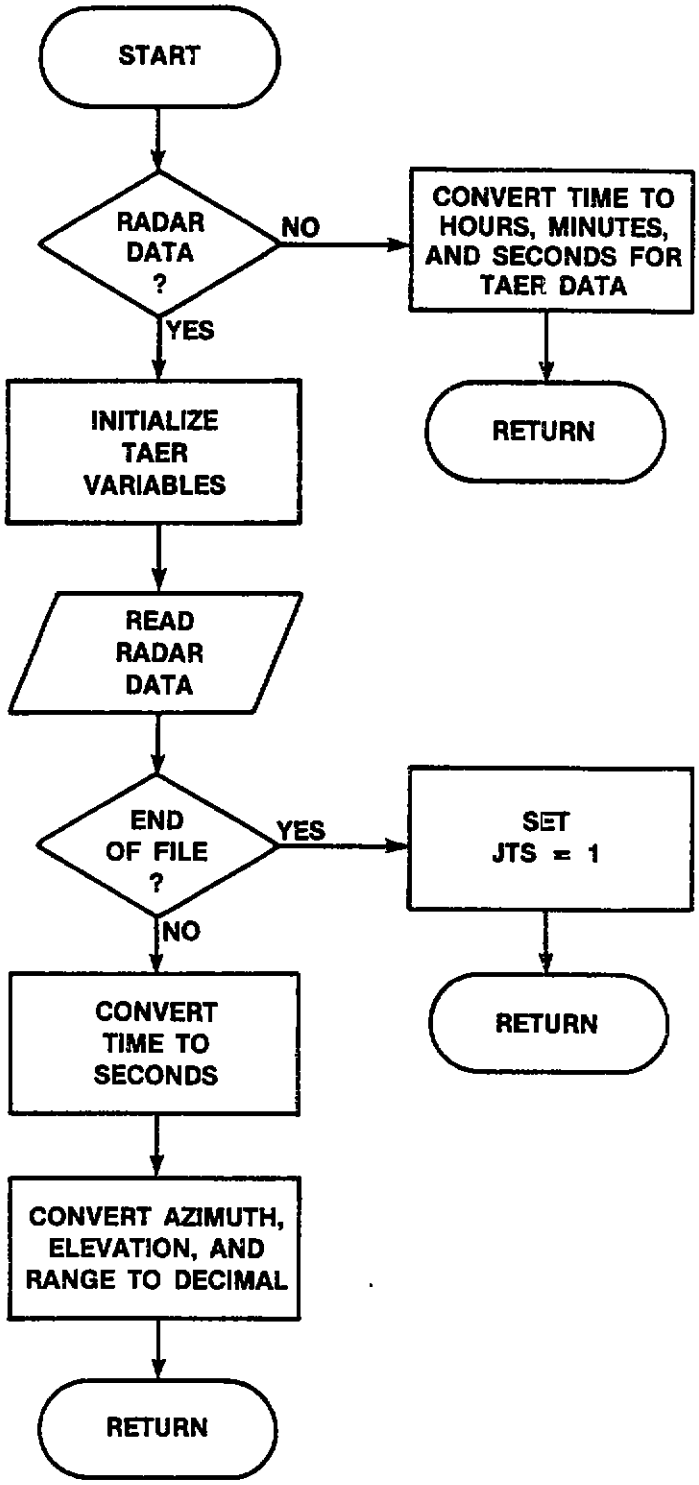
6.6 Subroutine GRAVITY



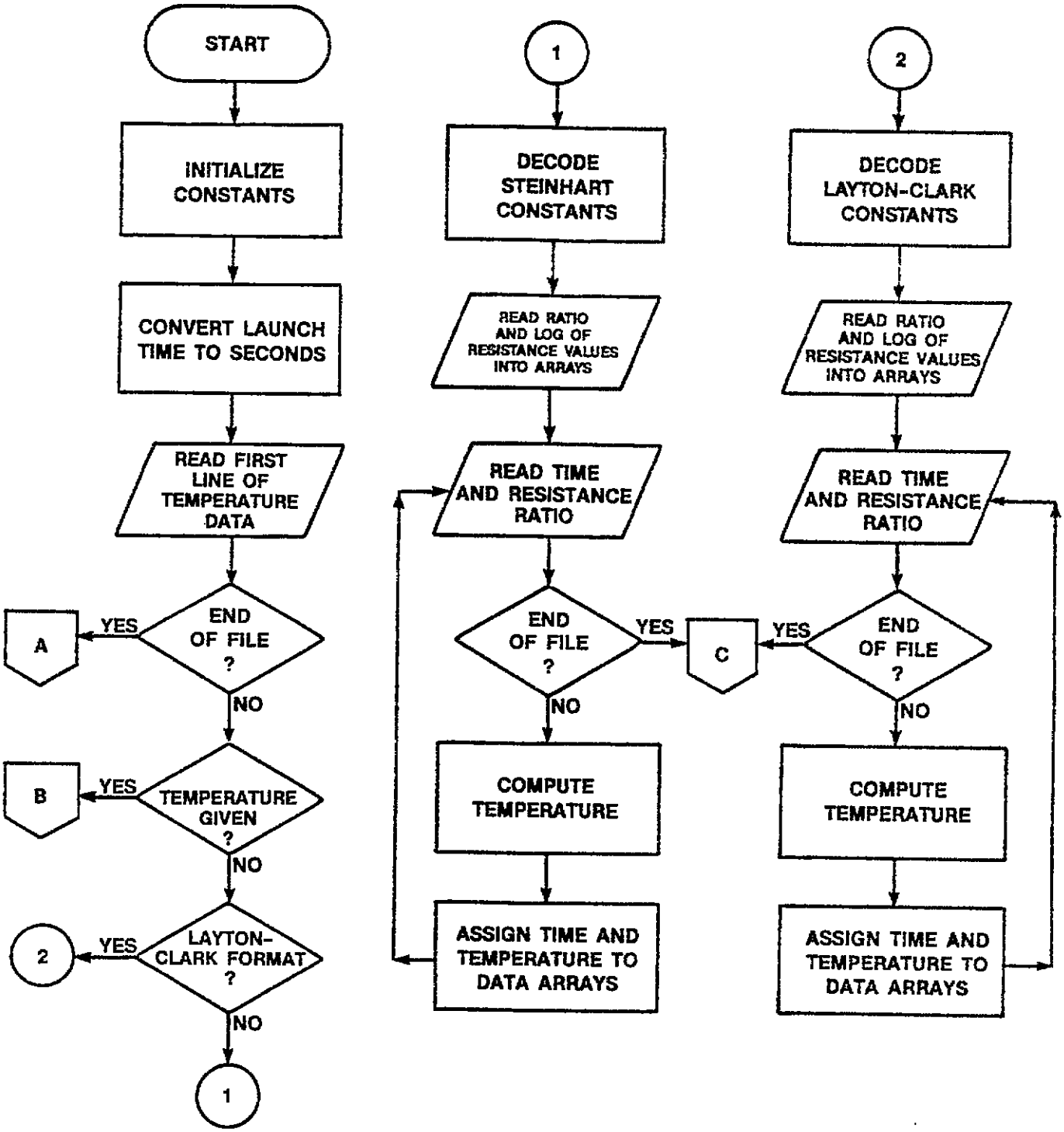
6.7 Subroutine CHKOUT



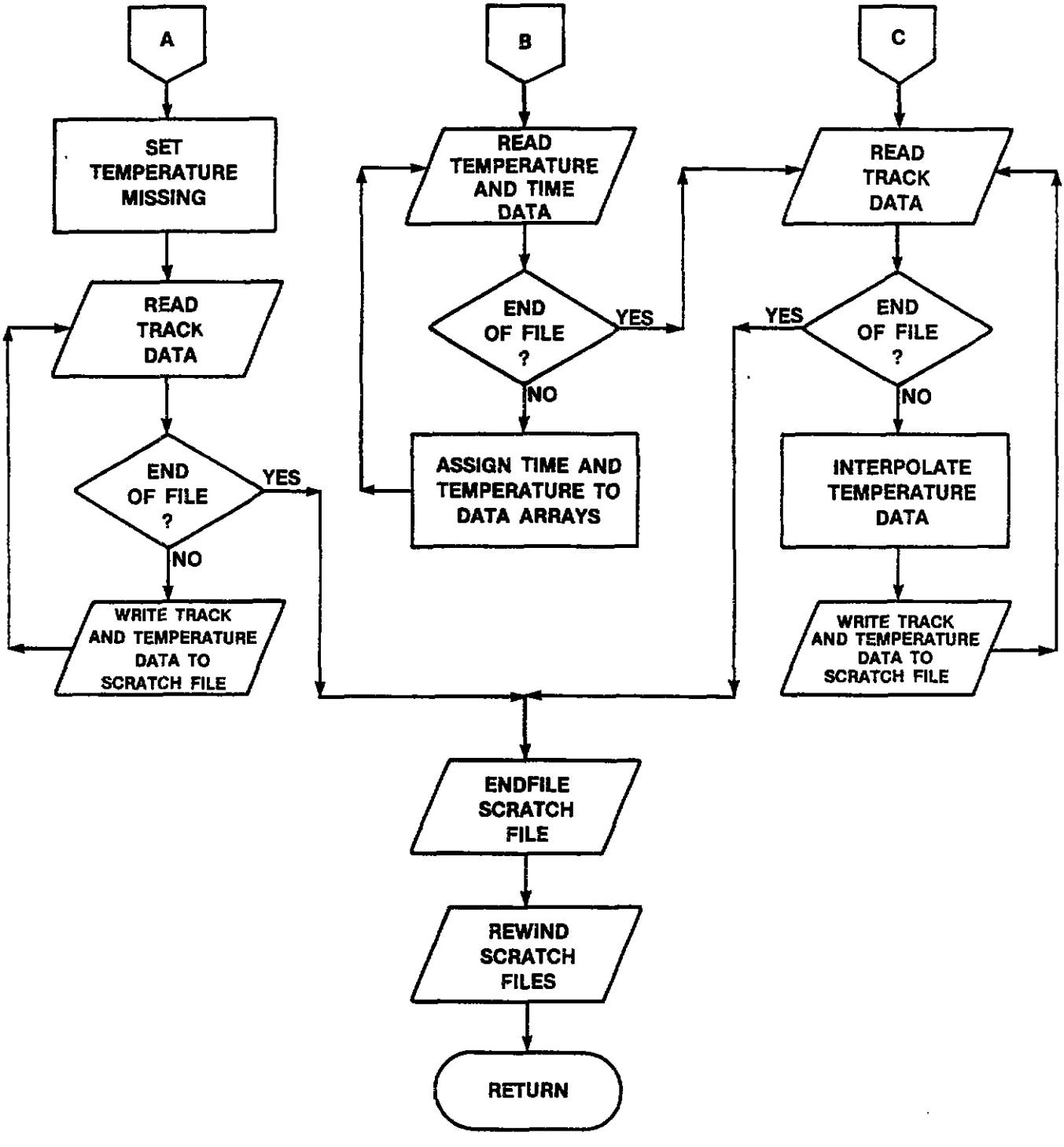
6.8 Subroutine RD46CH



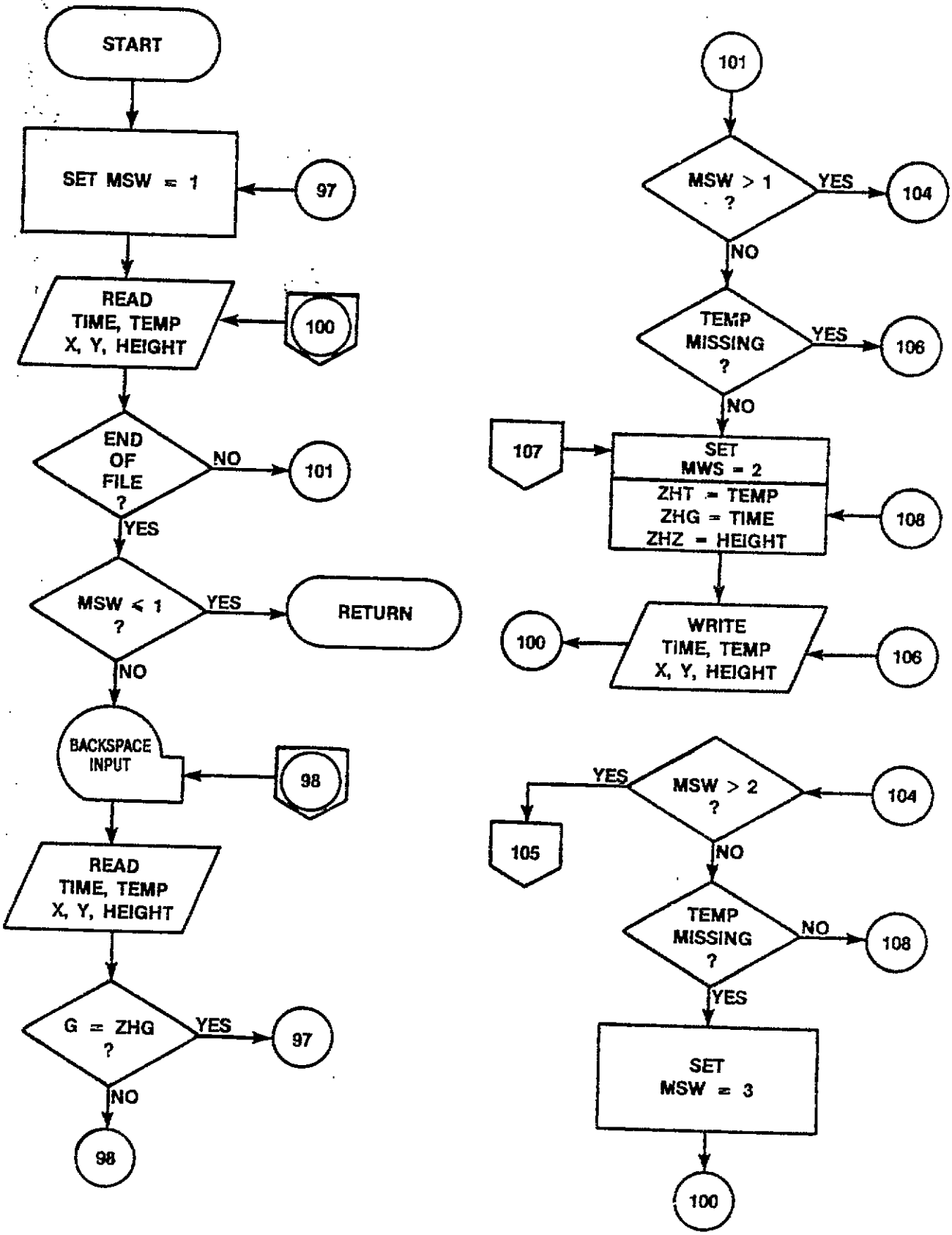
6.9.1 Subroutine TMPMERG



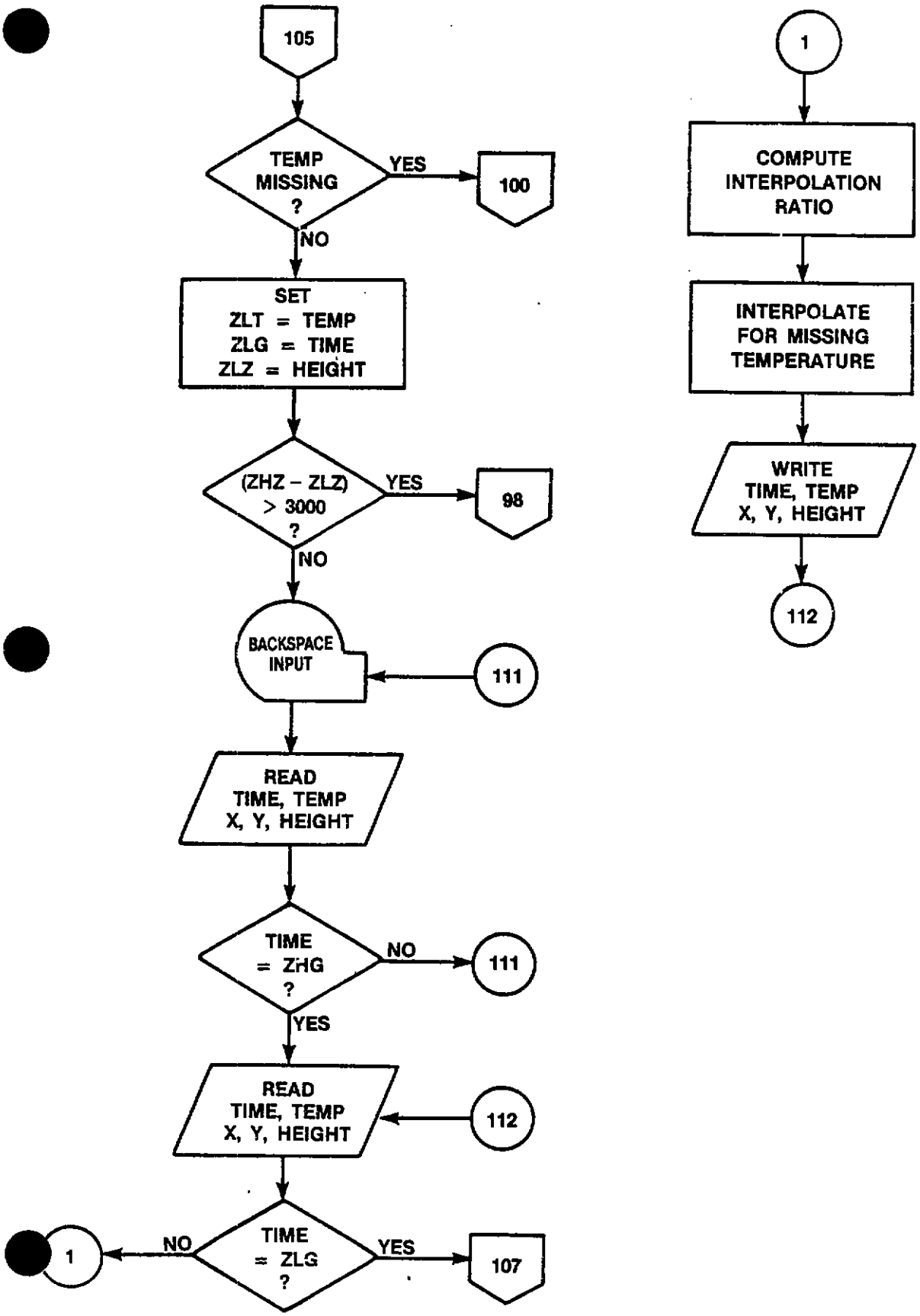
6.9.2 Subroutine TMPMERG



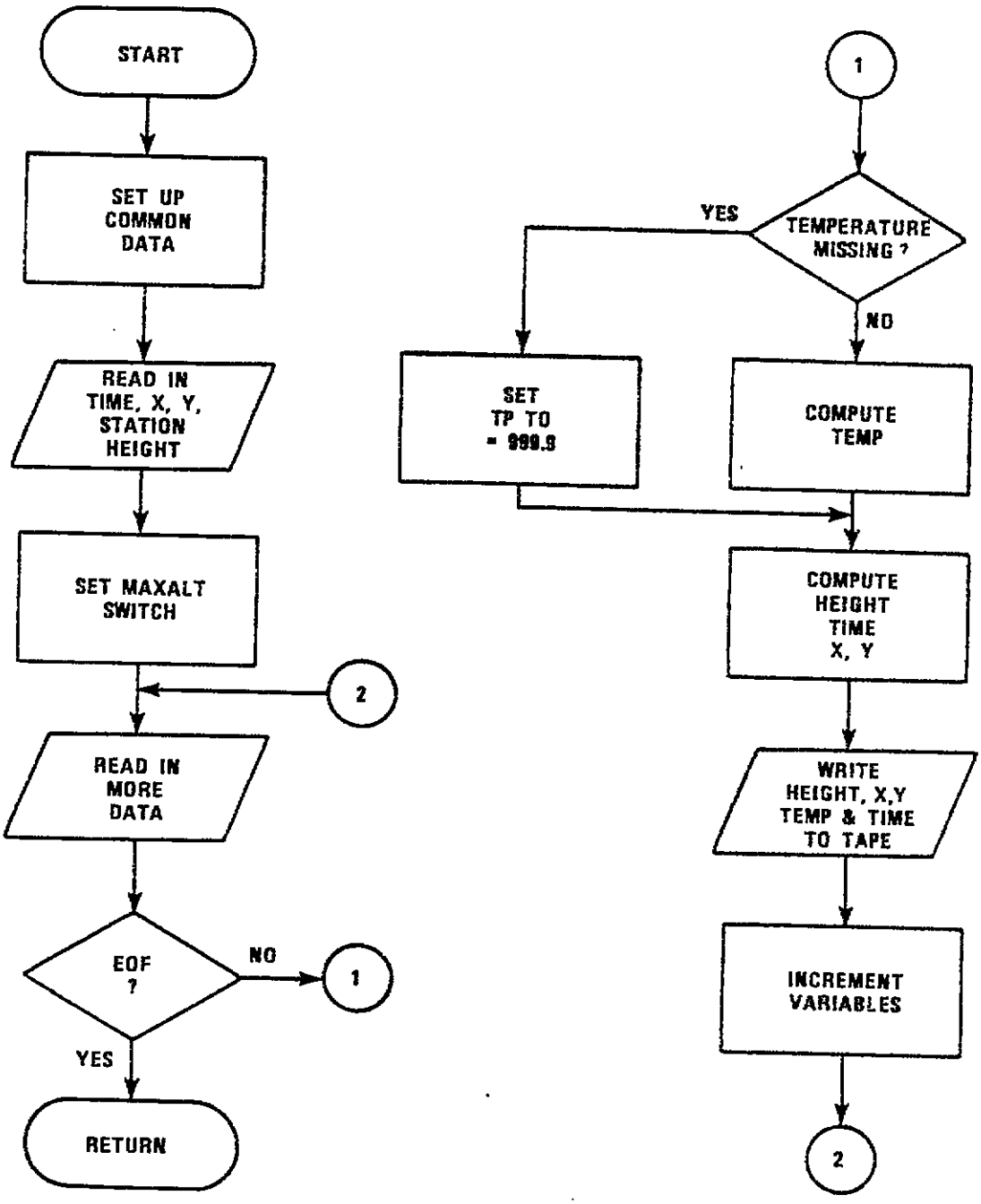
6.10.1 Subroutine INTPTMP



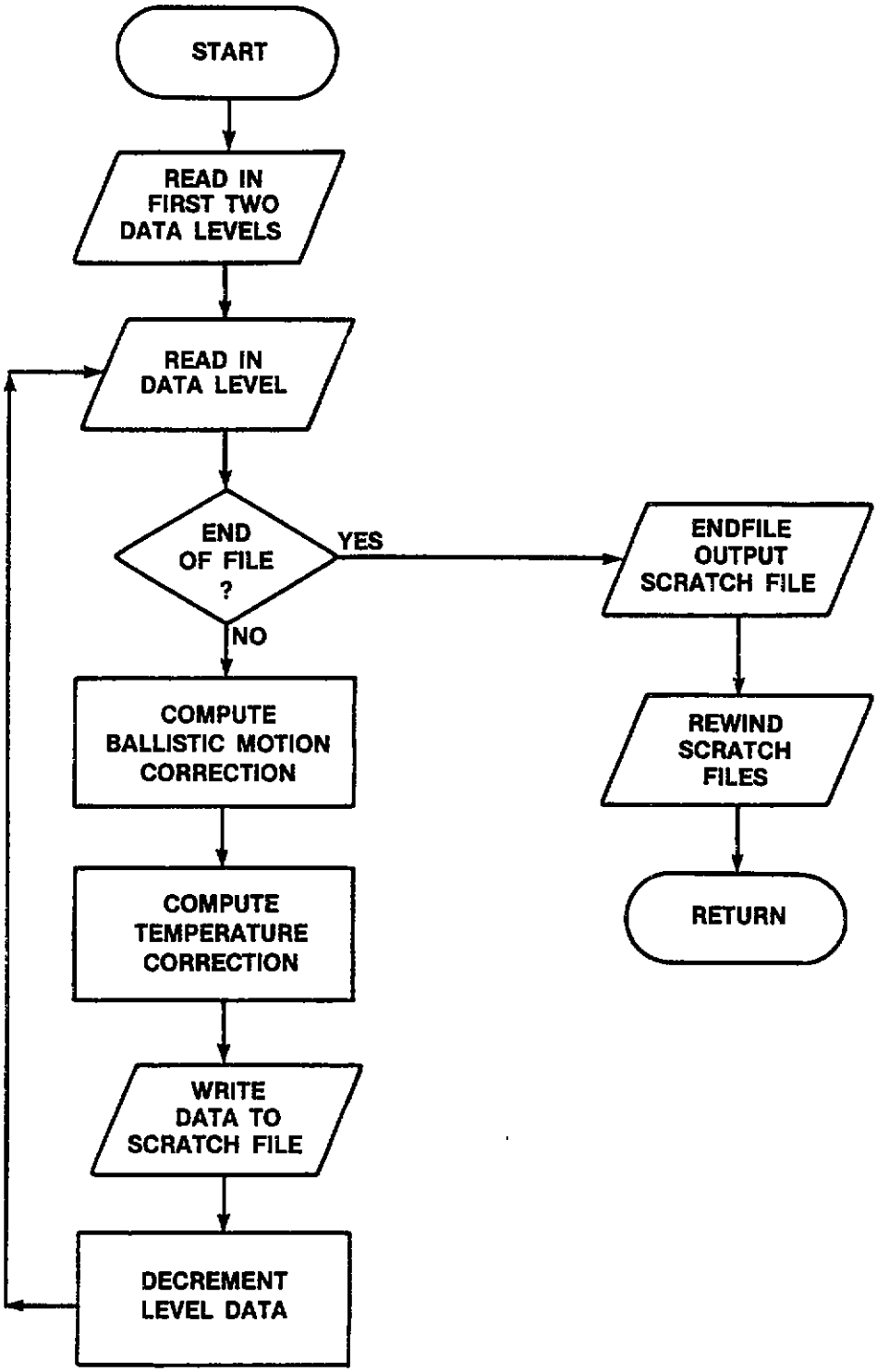
6.10.2 Subroutine INTPTMP



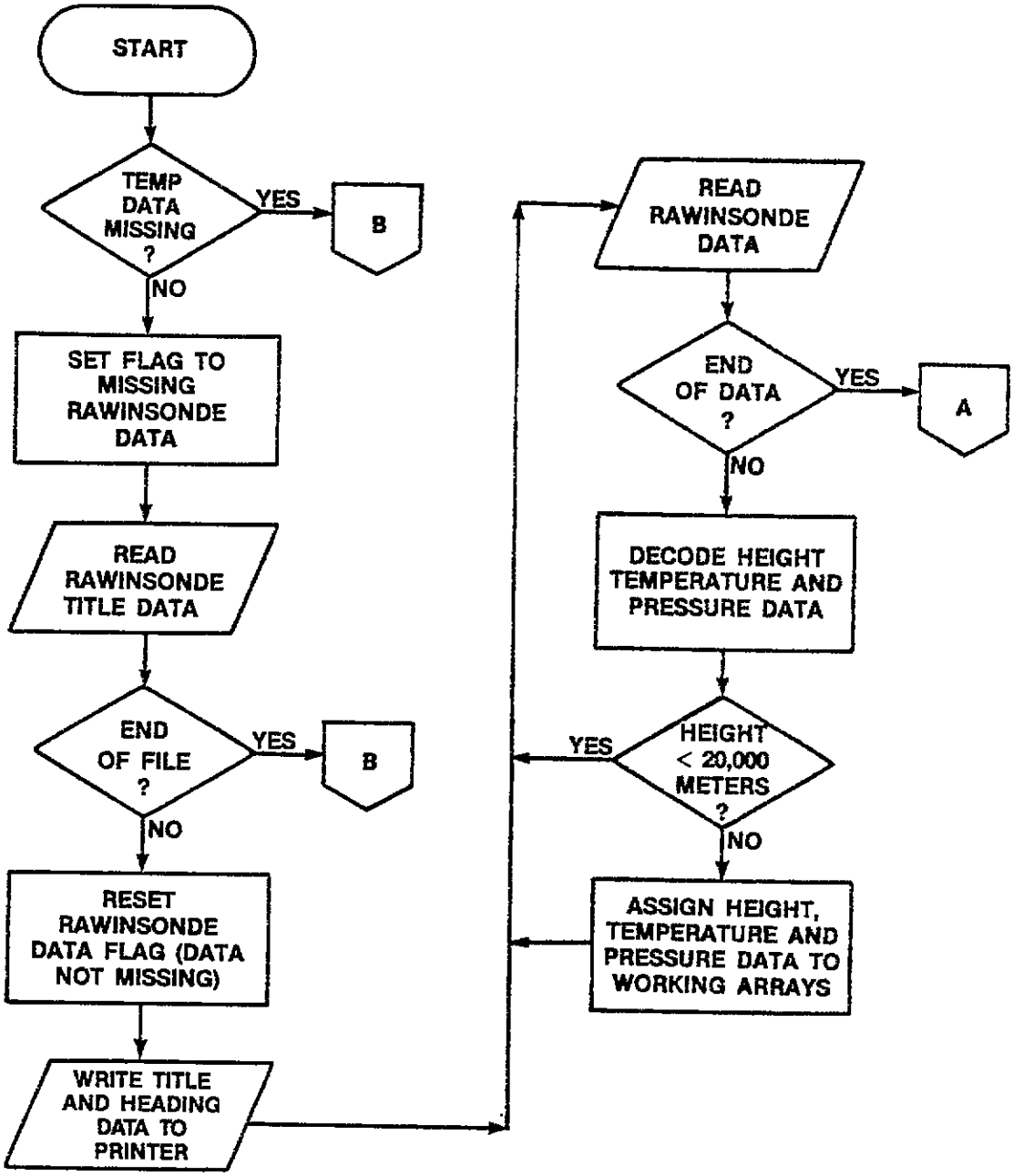
6.11 Subroutine MIDINT



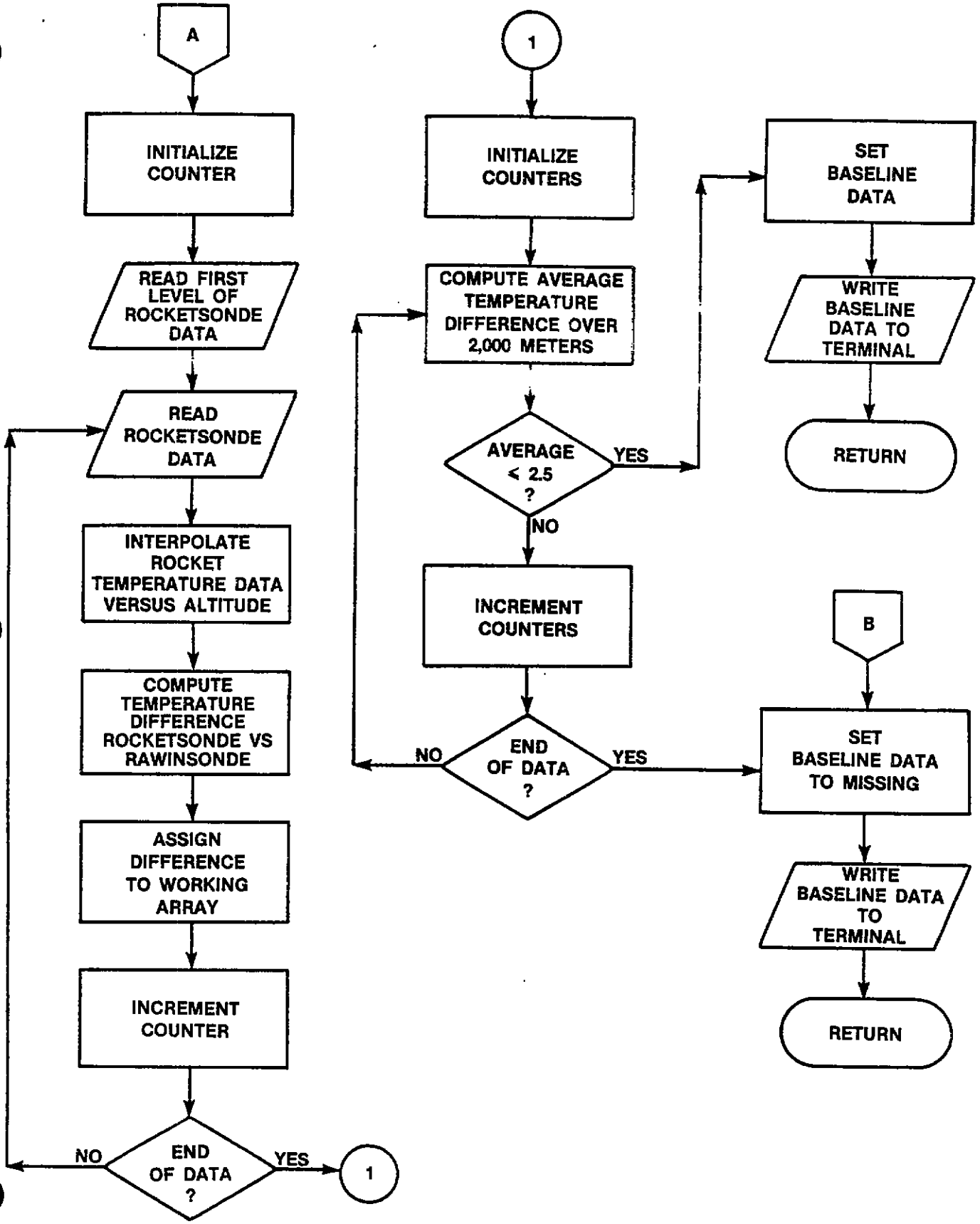
6.12 Subroutine BANDTC



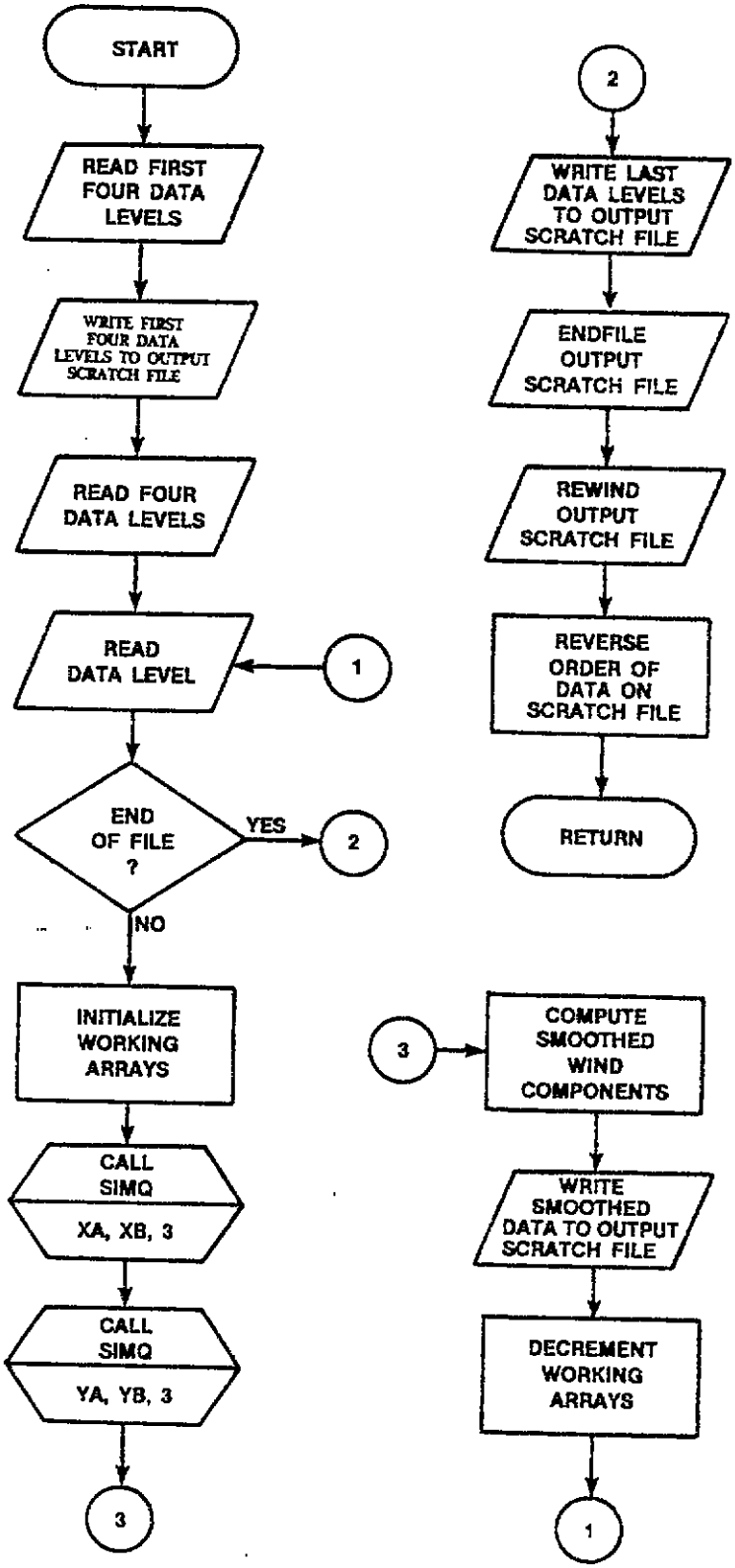
6.13.1 Subroutine COMPRSR



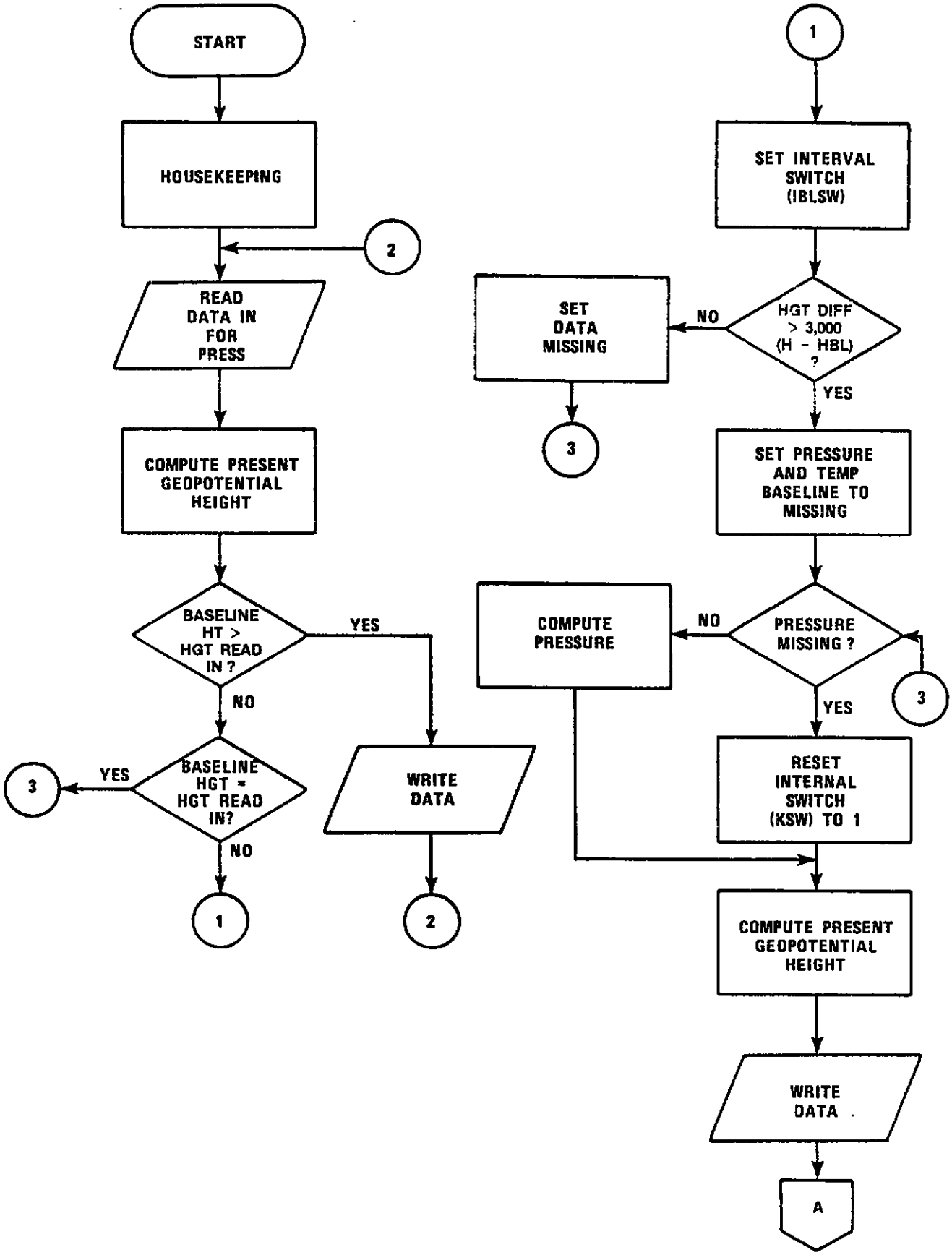
6.13.2 Subroutine COMPRSR



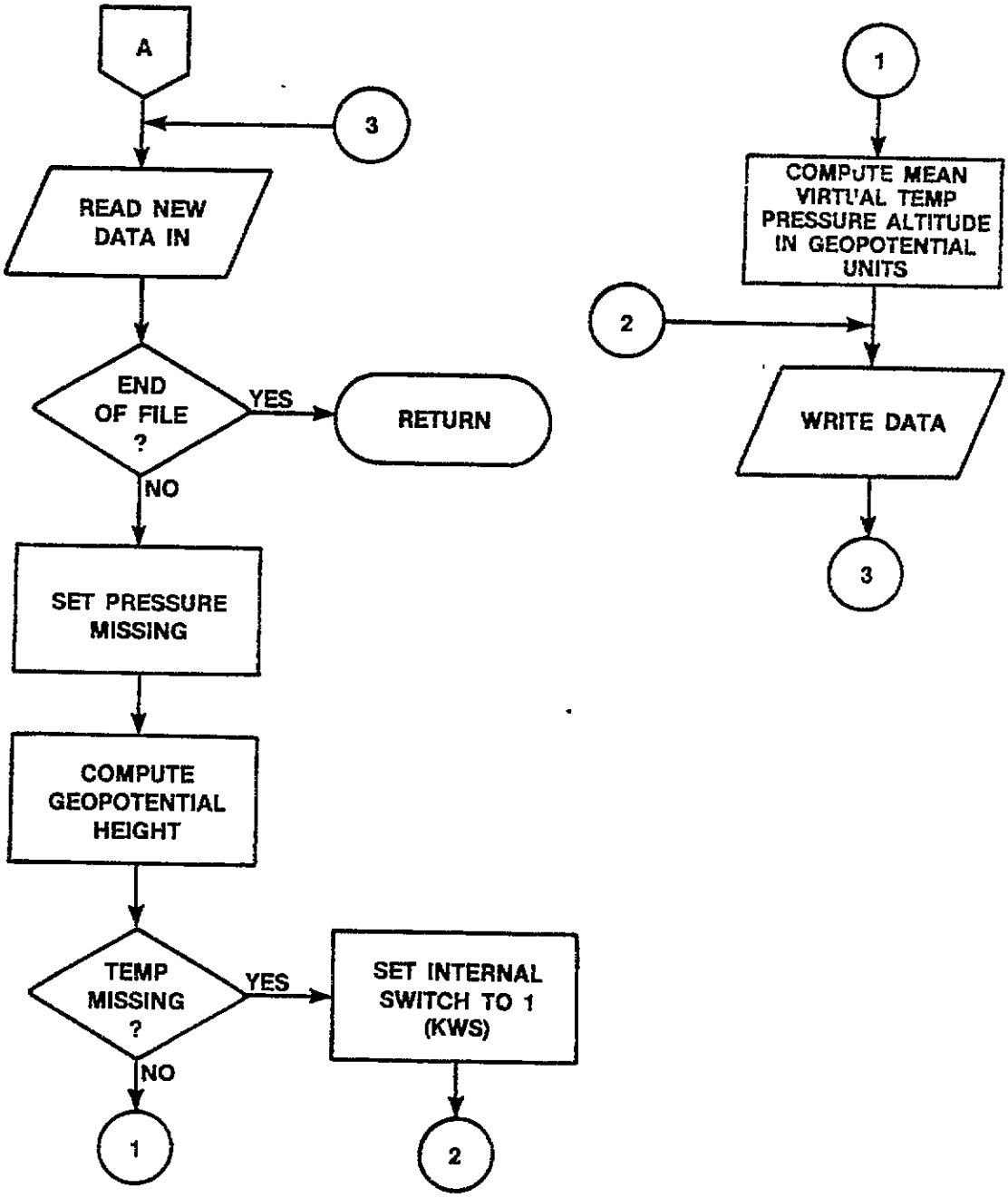
6.14 Subroutine TWOKM



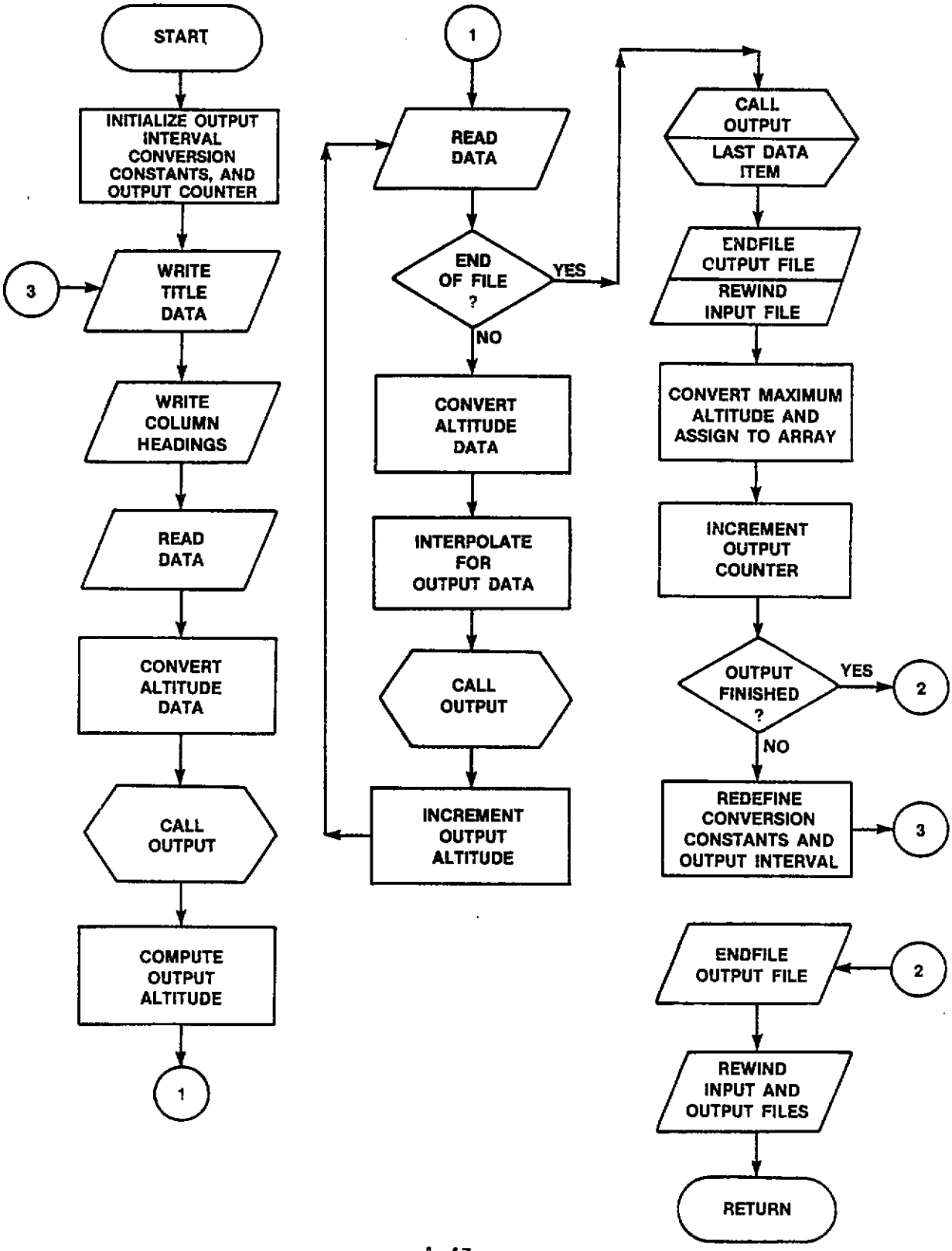
6.15.1 Subroutine PRESCOM



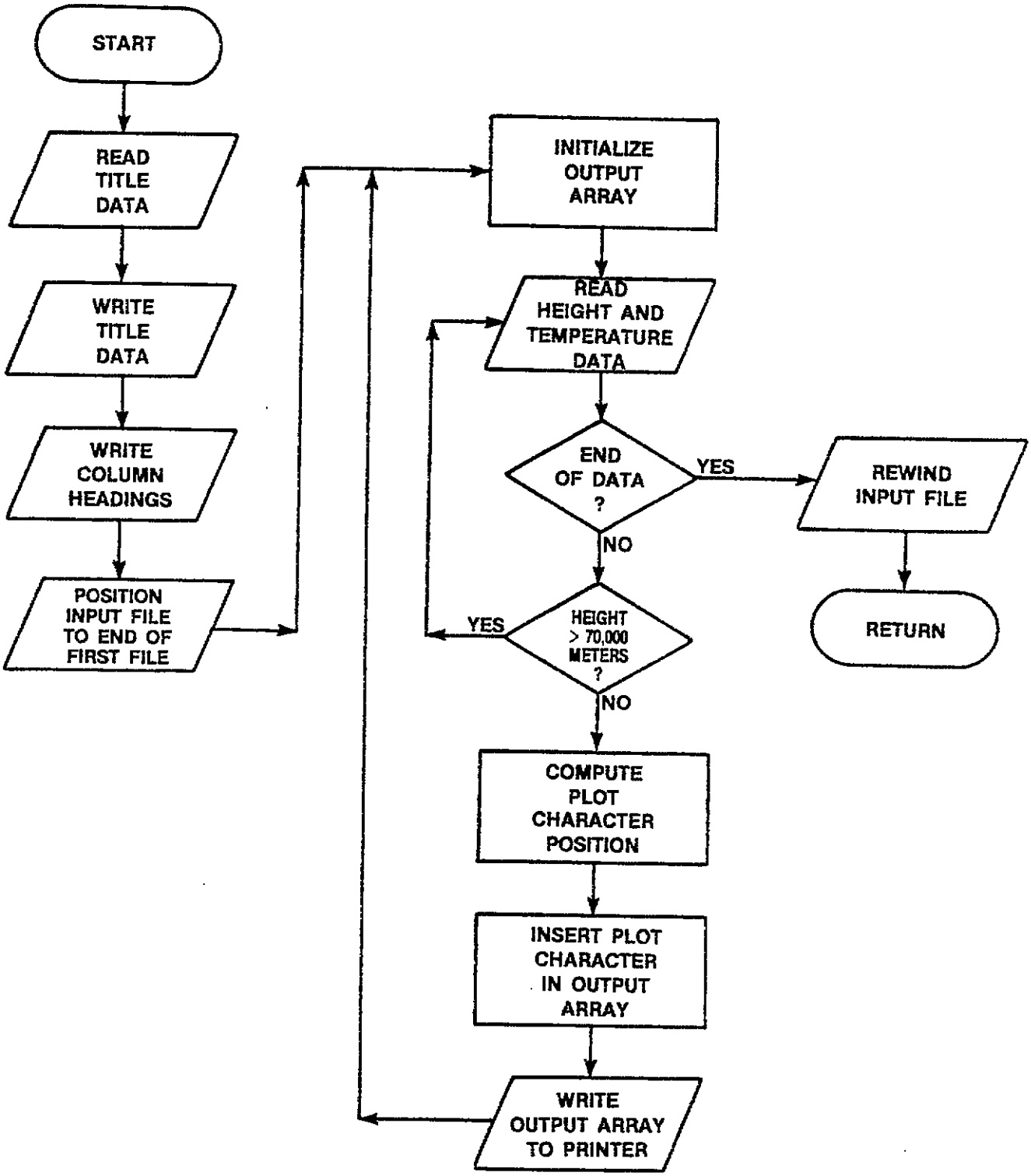
6.15.2 Subroutine PRESCOM



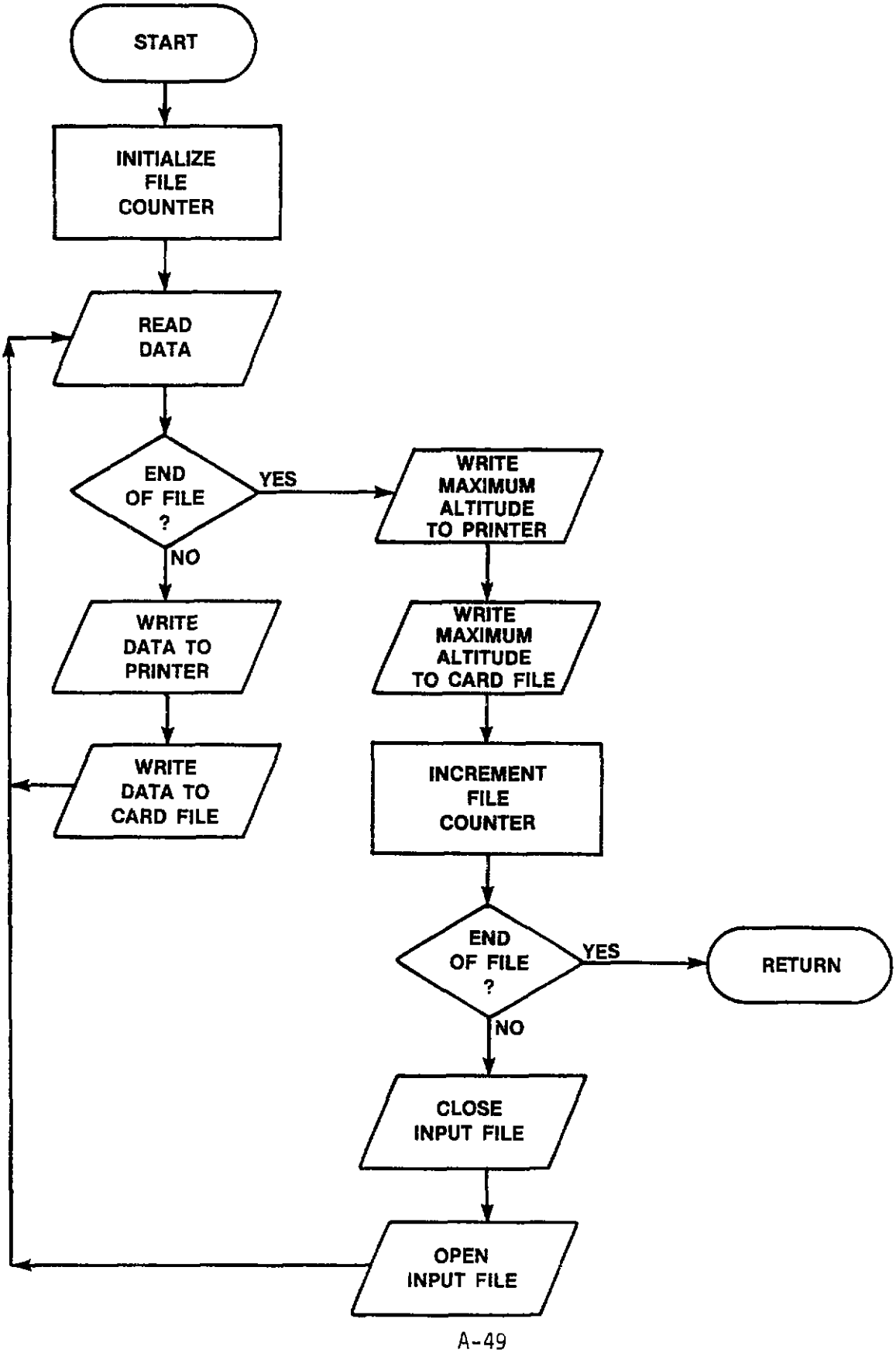
6.16 Subroutine ONEKILO



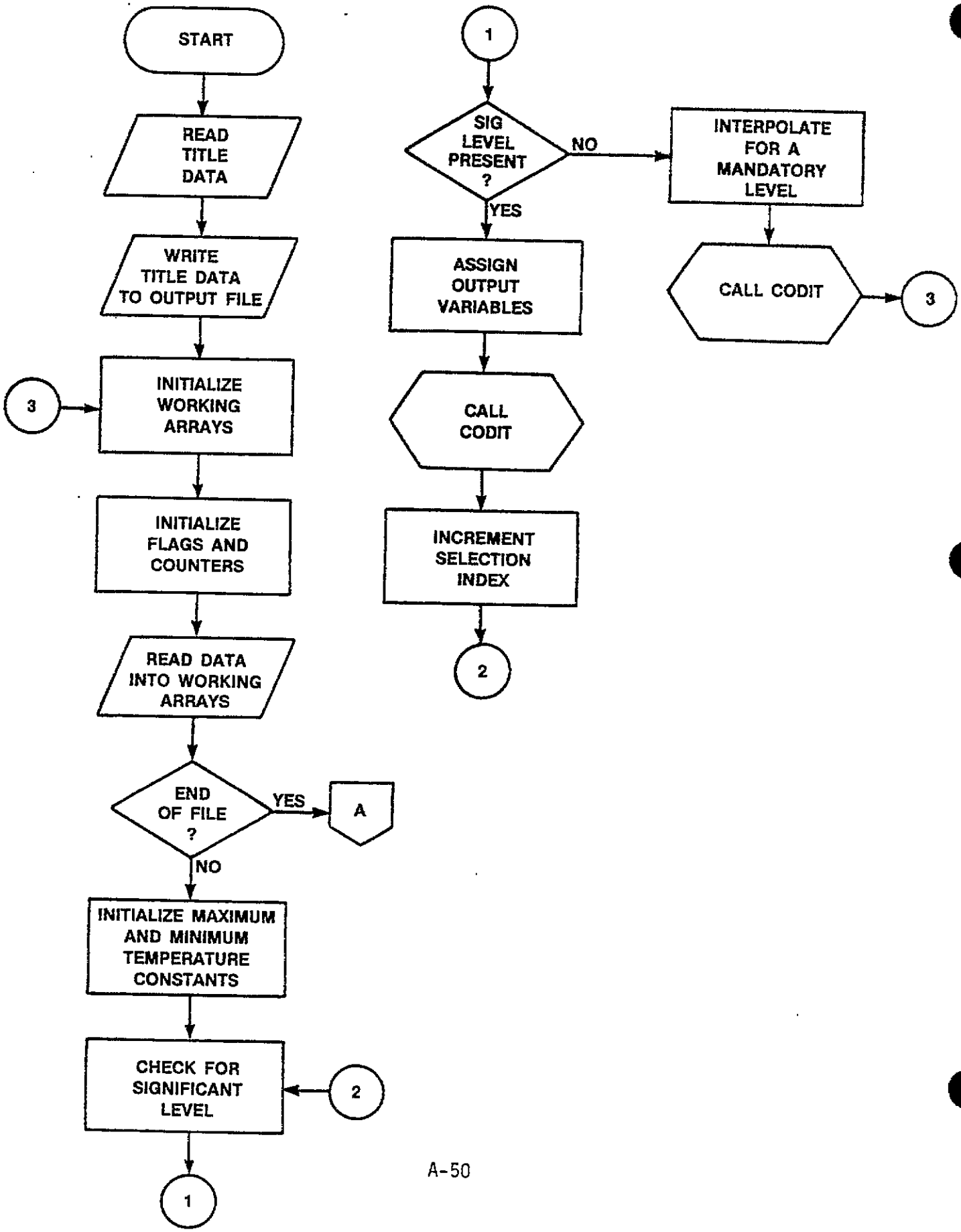
6.17 Subroutine PLOTCH



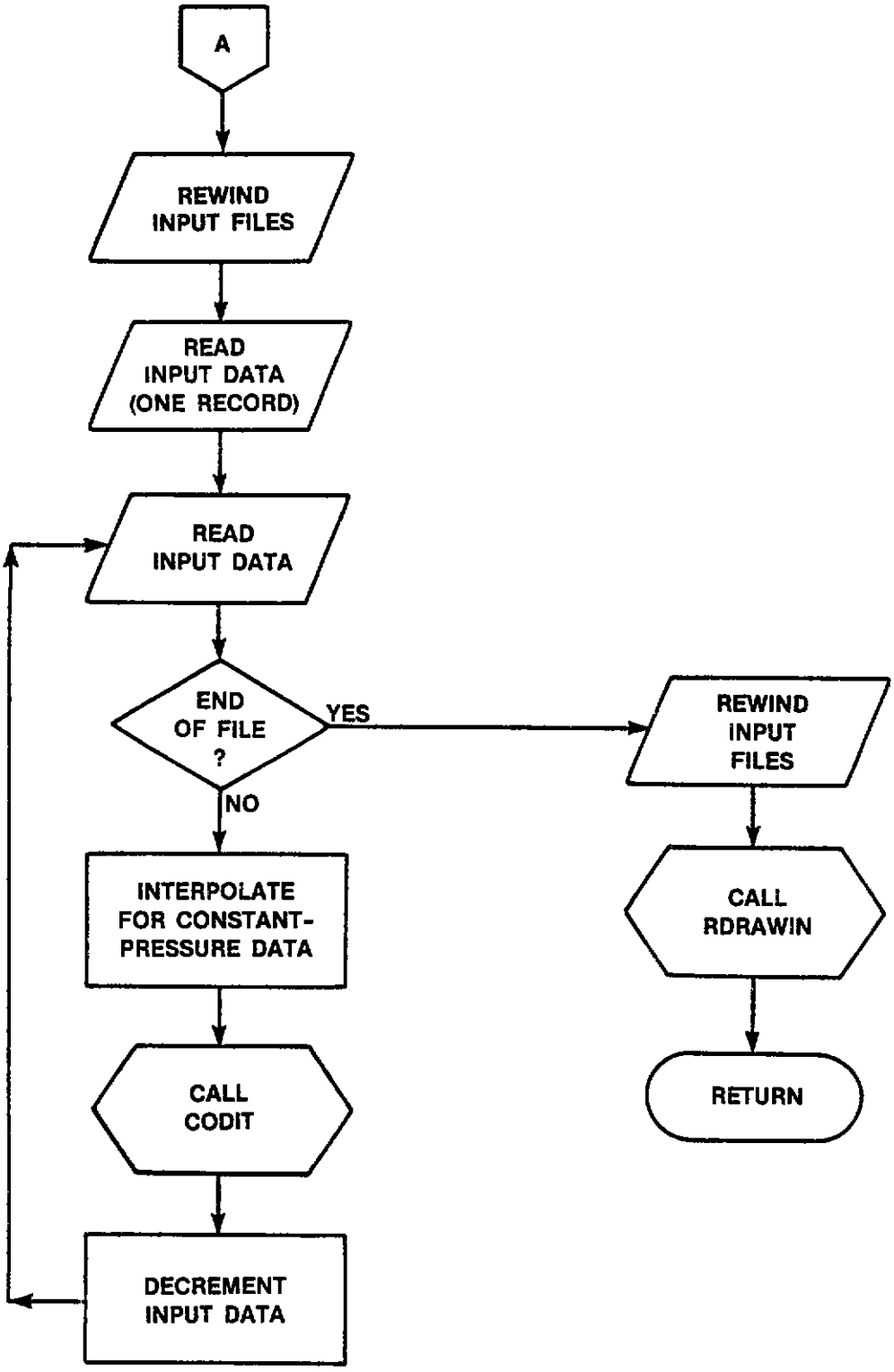
6.18 Subroutine PUTOUT



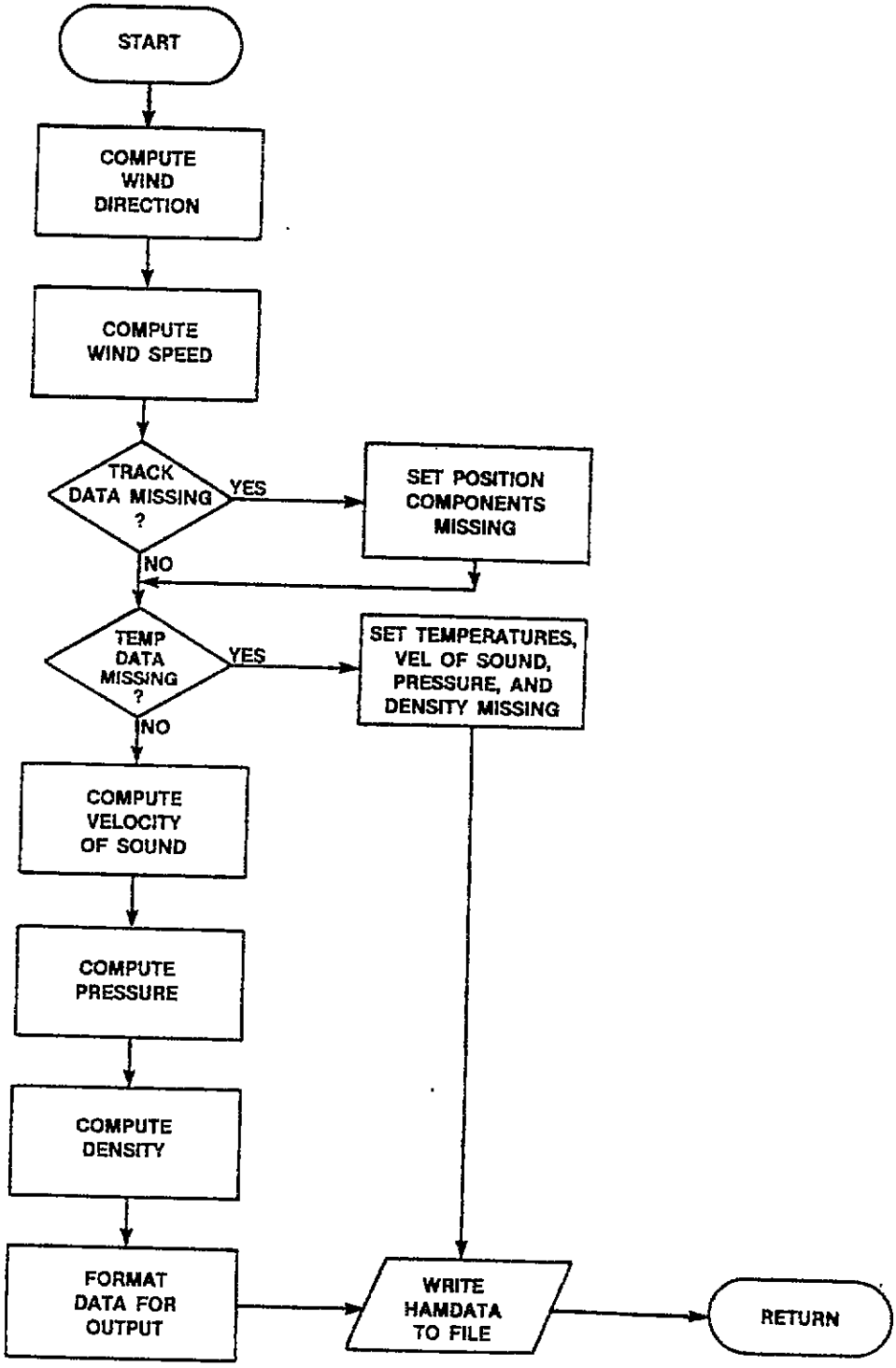
6.19.1 Subroutine ETFORM



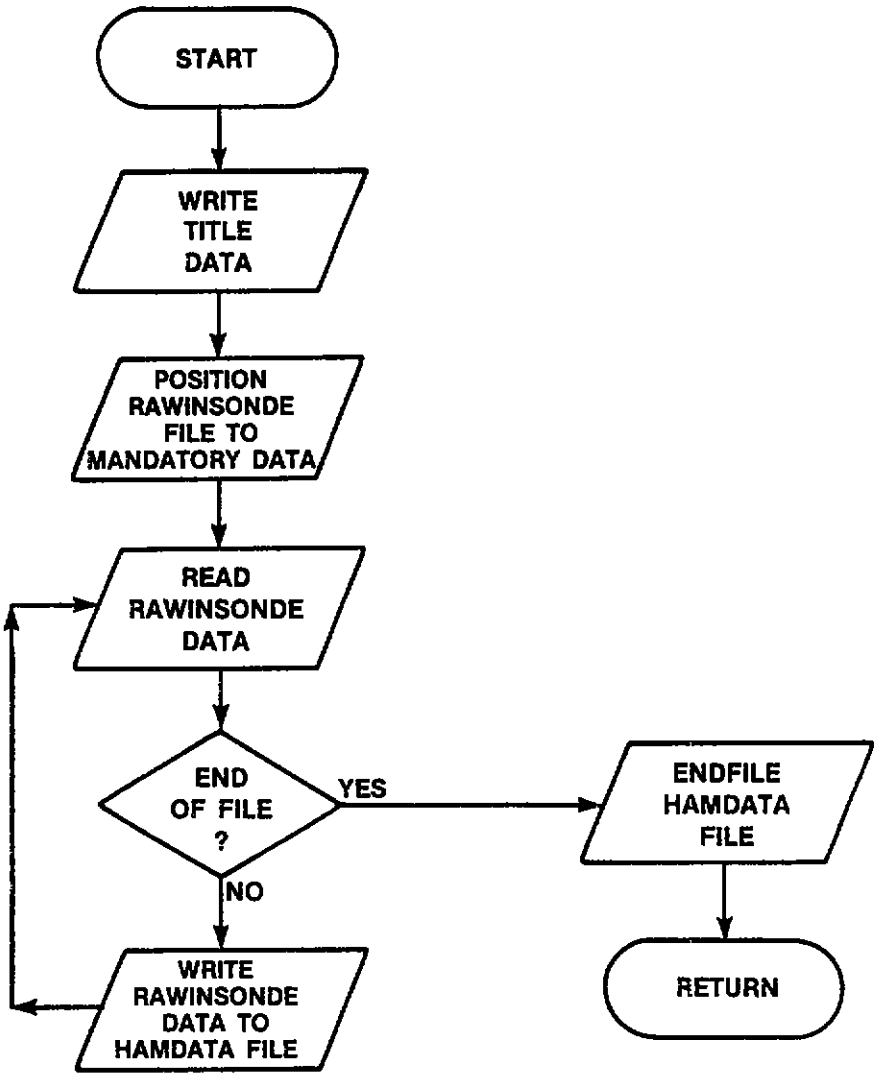
6.19.2 Subroutine ETFORM



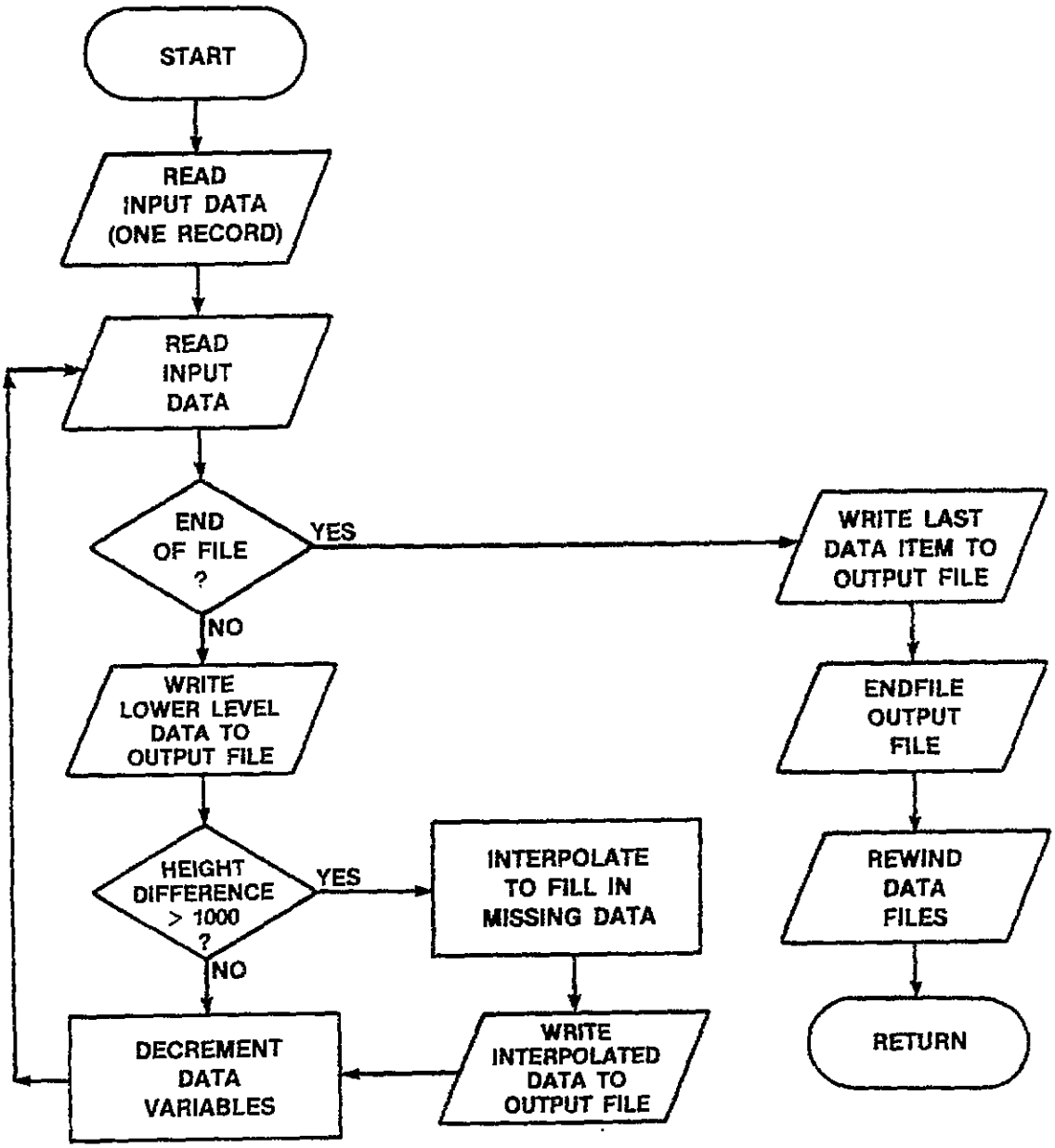
6.20 Subroutine CODIT



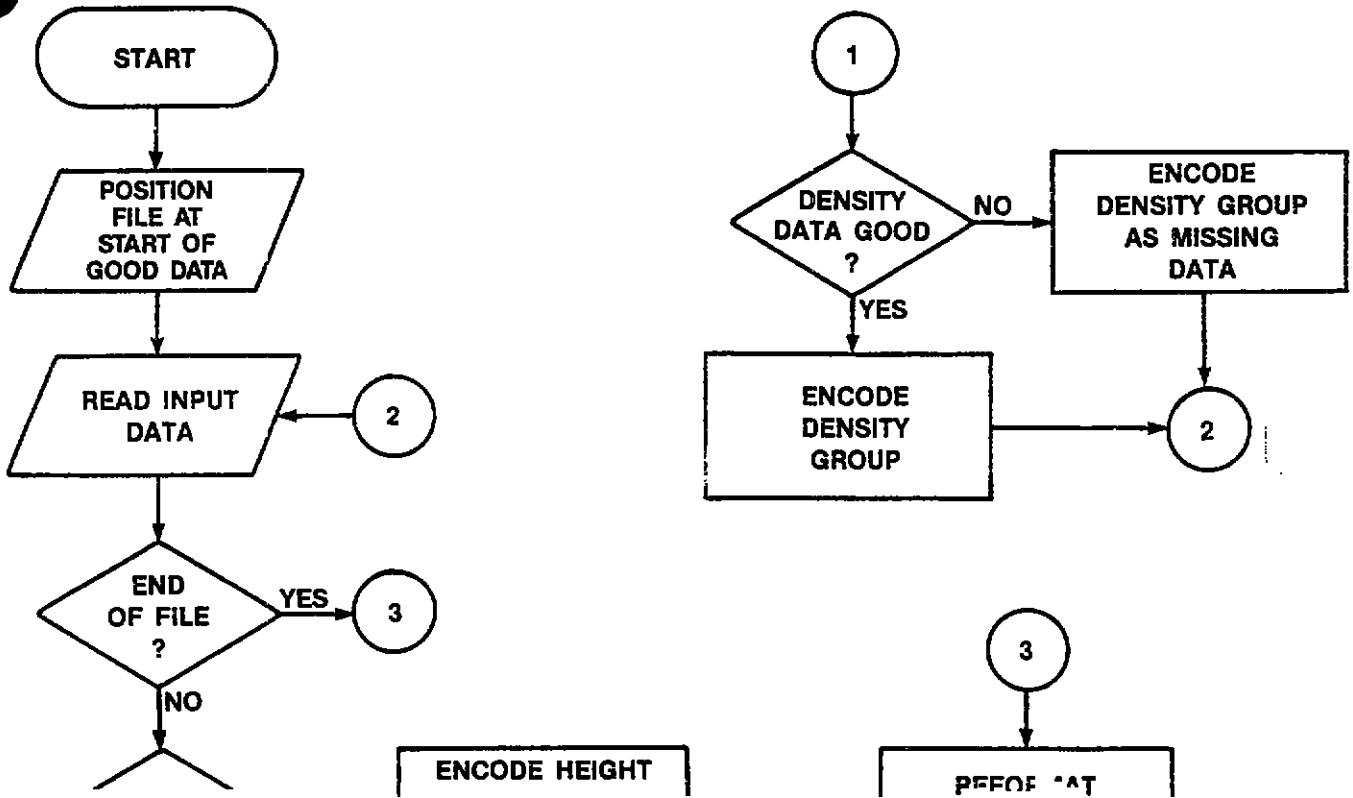
6.21 Subroutine RDRAWIN



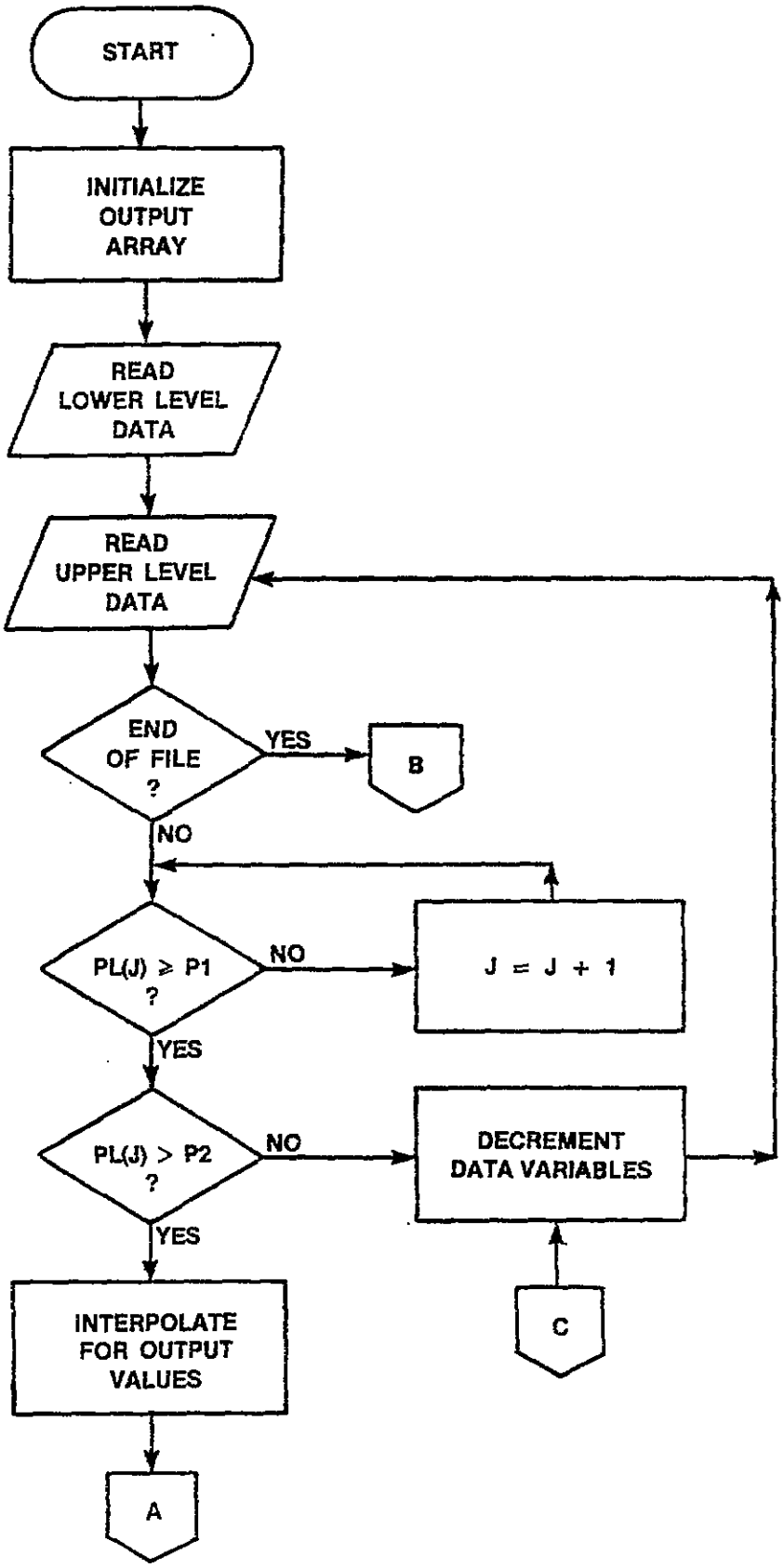
6.22 Subroutine INT



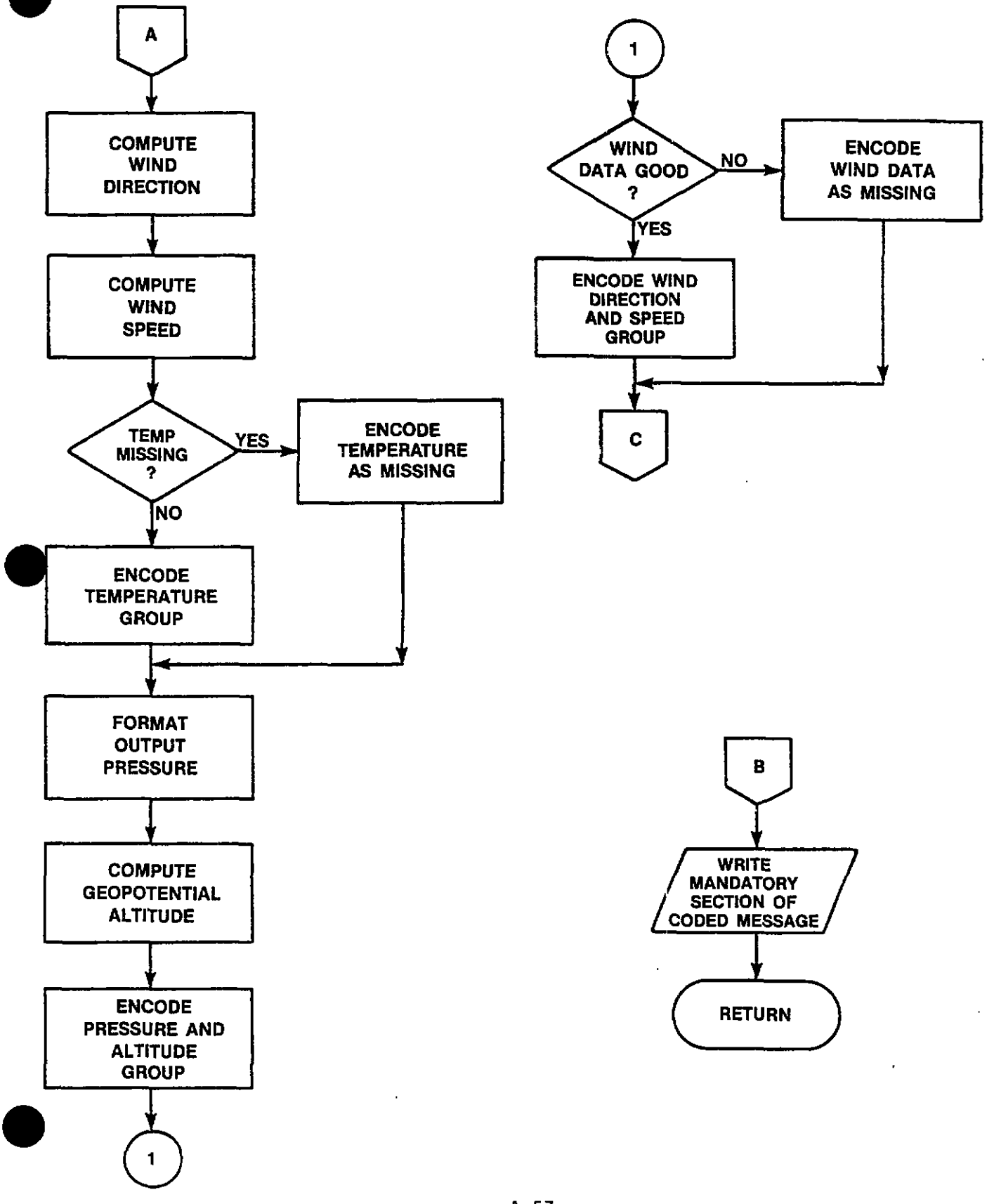
6.23 Subroutine ROCOB



6.24.1 Subroutine MANDL



6.24.2 Subroutine MANDL



7.0 MATHEMATICAL AND PHYSICAL CONSTANTS

7.1 Program ROCK

6371229.315	(Mean Average) radius of the Earth, meters
67.442	Constant in the hypsometric equation, *SMT*, List 1968

See attachment 9, table 1 for constants ATC, BTC, CTC, CTD, and DTC.

See attachment 12 for logs of mandatory pressures.

7.2 Subroutine SIMQ

None

7.3 Subroutine OUTPUT

348.38	Gas constant for dry air with pressure in millibars and density in grams/cubic meter
331.45	Speed of sound at zero degree Celsius, miles/second
273.15	Converts degrees Celsius to degrees Kelvin

7.4 Function WDIR

57.29578	Degrees/radian

7.5 Function VALUE

None

7.6 Subroutine GRAVITY

5	Station height of Cape Canaveral AFS in meters
4	Station height of Antigua AAFB in meters
79	Station height of Ascension AAFB in meters
28.29	Latitude of Cape Canaveral AFS, degrees
17.7	Latitude of Antigua AAFB, degrees
7.58	Latitude of Ascension AAFB, degrees (South)
57.29578	Degrees/radian
0.0026373 }	Gravity ratio constants from *SMT*, equation
0.0000059 }	for Table 168 (Bibliography No. 1)

7.7 Subroutine CHKOUT

0.9144	Yards to meters conversion factor
2.2	Constant used in Earth's curvature correction to elevation angle (Bibliography No. 2)

7.8 Subroutine RD46CH

86400	Number of seconds in a day
3600	Number of seconds in an hour
60	Number of seconds in a minute
0.125	
180	Decodes 46-character
8	Radar encoded data
1.953125	
90	

7.9 Subroutine TMPMERG

3600	Number of seconds in an hour
60	Number of seconds in a minute

7.10 Subroutine INTPTMP

None

7.11 Subroutine MIDINT

None

7.12 Subroutine BANDTC

9.80616	Acceleration of gravity at 45 degrees latitude

7.13 Subroutine COMPRSR

None

7.14 Subroutine TWOKM

None

7.15 Subroutine PRESCOM

None

7.16 Subroutine ONEKILO

1.94254	Meters/second to knots conversion factor
3.280833	Number of feet in a meter

7.17 Subroutine PLOTCH

None

7.18 Subroutine PUTOUT

None

7.19 Subroutine ETFORM

None

7.20 Subroutine CODIT

None

7.21 Subroutine RDRAWIN

None

7.22 Subroutine INT

None

7.23 Subroutine ROCOB

None

7.24 Subroutine MANDL

None

8.0 BIBLIOGRAPHY

1. List, R. J., "Smithsonian Meteorological Tables," Smithsonian Institution, Washington, D.C., Sixth Edition. Smithsonian Miscellaneous Collections, Vol. 114, 1958.

2. Gustafson, A. F., "The Error in Rawin Computations Due to Neglecting the Earth's Curvature," Bull., AMS, Vol 35, No. 7, pp. 295-300, September 1954.

3. Eddy, et al., "Determination of Winds from Meteorological Rocketsondes," University of Texas Report Number 2, University of Texas, November 1965.

4. Krumins, M. V. and Lyons, W.C., "Corrections for the Upper Atmosphere Temperatures Using a Thin Film Loop Mount," NOLTR 72-152, Naval Ordnance Laboratory, 22 June 1972.

ATTACHMENT 1

RAEMG CODE TABLES

RAEMG CODE Tables:

Table 1

Symbol R = reason for no report and ground equipment employed

Code Figures	
0	Launch not scheduled
1	Rocket motor failure
2	Instrument (or telemetry) signal not received
3	Ground tracking equipment failure
4	Range restriction prohibited launch
5	Weather prohibited launch
6	Lack of expendables prohibited launch
7	Radar only employed
8	Radar and telemetry equipment employed
9	Telemetry equipment employed

Tables 2 and 5

Symbol A = thermodynamic correction technique
or
G = wind correction technique

Table 3

Symbol E = method of reducing data

Code Figures	
0	Manually — nomogram
1	Electronic computer
2—8	Unassigned
9	Other method

Table 4

Symbol M = type of wind sensing equipment

Code Figures	
00	No wind sensor
01	Chaff, experimental
02	Chaff, metalized
03—09	Unassigned
10	Parachute, experimental
11	Parachute, 0.5 to 3.5 meters diameter
12	Parachute, 3.6 to 5.5 meters diameter
13	Parachute, greater than 5.5 meters diameter
14	Mesh decelerator, experimental
30	Starute, experimental
31	Starute, 0.5 to 3.5 meters diameter

Table 4 (continued)

Code Figures	
32	Starute, 3.6 to 5.5 meters diameter
33	Starute, greater than 5.5 meters diameter
50	Sphere, experimental
51	Sphere, inflatable
55	Grenade, experimental
60	Chemical trail, experimental
65	Meteor trail, experimental
70	Remote sensing, experimental

ATTACHMENT 2

SAMPLE COPY TEMPERATURE DATA WITH RESISTANCE VALUES

```
05342
01 06 07 84 1300 010000-110 0113[illegible]
-5.14563 2111.244 51.3491[illegible]
.3010300 .9449[illegible]
.6020400 .9191275
.7781508 .9026198
.9030897 .8874129
.9999993 .8736342
1.176090 .8308973
1.301029 .8172766
1.477120 .7507536
1.698969 .6598319
1.845098 .5871825
1.903089 .5501677
1.954242 .5364206
1.999999 .5131541
2.176090 .4242682
2.301029 .3636424
2.477120 .2889158
2.602059 .2443810
2.778151 .1925103
2.903090 .1642095
2.999999 .1460126
3.176090 .1199492
99999999
611 0180
622 0194
756 0251
764 0283
800 0308
750 0345
709 0522
577 0703
599 0737
561 0772
530 0860
550 0948
500 1112
443 1188
430 1380
375 1680
314 1831
320 2004
249 2580
204 3000
```

ATTACHMENT 3

SAMPLE COPY TEMPERATURE DATA WITH CODED TEMPERATURE VALUES

```
01 08 07 14 1300 01UPWN-11A 711311
0779 0128
3768 3194
0666 0522
0789 0797
0896 0944
0931 1112
1037 2304
1135 2580
1147 2700
1159 3000
```

ATTACHMENT 4

SAMPLE COPY OF GMD-4 TAER DATA (ROKE OUTPUT)

49650.0	204.[illegible]	67.590	75015.1
49656.0	202.[illegible]	67.436	74287.[illegible]
49662.0	202.[illegible]	67.312	73583.1
49668.0	201.441	67.217	72817.6
49674.0	200.794	67.133	72224.7
49680.0	200.162	67.065	71[illegible].3
49686.0	199.567	67.006	70956.6
49692.0	198.992	66.957	70329.1
49698.0	198.462	66.904	69739.9
49704.0	197.968	66.832	69175.3
49710.0	197.459	66.749	68646.4
49716.0	196.943	66.642	68127.2
49722.0	196.399	66.541	67697.0
49728.0	195.805	66.419	67171.8
49734.0	195.175	66.264	66729.9
49740.0	194.529	66.134	66305.3
49746.0	193.915	65.989	65897.7
49752.0	193.331	65.849	65507.8
49758.0	192.772	65.720	65119.9
49764.0	192.187	65.602	64737.3
49770.0	191.575	65.486	64350.6
49776.0	190.952	65.371	63974.2
49782.0	190.356	65.259	63603.6
49788.0	189.791	65.161	63257.9
49794.0	189.232	65.075	62916.1
49800.0	188.661	64.994	62581.2
49806.0	188.051	64.908	62233.7
49812.0	187.438	64.813	61891.8
49818.0	186.838	64.716	61559.7
49824.0	186.287	64.623	61240.6
49830.0	185.713	64.546	60928.2
49836.0	185.178	64.472	60612.8
49842.0	184.654	64.395	60301.8
49848.0	184.155	64.304	60003.2
49854.0	183.686	64.201	59721.5
49860.0	183.297	64.103	59454.4
49878.0	182.266	63.820	58650.5
49896.0	181.234	63.573	57874.9
49914.0	180.115	63.360	57096.8
49932.0	178.893	63.166	56344.7
49950.0	177.620	62.956	55622.6
49968.0	176.354	62.717	54939.8
49986.0	175.142	62.459	54300.1
50004.0	173.975	62.211	53695.7
50022.0	172.841	61.957	53140.4
50040.0	171.774	61.697	52623.1
50058.0	170.769	61.438	52136.1
50076.0	169.773	61.224	51646.3
50094.0	168.739	61.041	51159.8
50112.0	167.769	60.842	50690.2
50130.0	167.063	60.584	50261.9
50148.0	166.753	60.274	49861.6
50156.0	166.823	59.956	49486.3
50184.0	167.166	59.671	49105.4
50202.0	167.683	59.452	48712.0
50220.0	168.298	59.288	48295.2
50238.0	168.920	59.152	47876.8
50256.0	169.494	59.020	47474.1
50274.0	169.962	58.909	47073.8
50292.0	170.331	58.827	46655.0
50310.0	170.609	58.815	46201.1
50328.0	170.804	58.858	45737.9
50346.0	170.982	58.906	45292.0
50364.0	171.221	58.939	44875.4

50382.0	171.637	58.941	44486.0
50400.0	172.291	58.892	44126.3
50418.0	173.176	58.762	43814.6
50436.0	174.205	58.528	43560.3
50454.0	175.372	58.218	43353.0
50472.0	176.530	57.167	43172.0
50490.0	177.782	57.505	42957.9
50508.0	179.068	57.156	42826.8
50526.0	180.369	56.832	42648.9
50544.0	181.670	56.[illegible]	42455.0
50562.0	182.976	56.333	42238.7
50580.0	184.292	56.142	42011.6
50598.0	185.625	55.930	41798.1
50616.0	186.966	55.661	41615.0
50634.0	188.270	55.380	41460.1
50652.0	189.491	55.012	41321.3
50670.0	190.605	54.685	41190.2
50688.0	191.641	54.368	41068.2
50706.0	192.631	54.048	40958.0
50724.0	193.600	53.695	40868.9
50742.0	194.569	53.313	40798.1
50760.0	195.557	52.917	40752.2
50820.0	198.777	51.528	40625.7
50880.0	201.706	50.394	40490.9
50940.0	204.274	49.254	40350.6
51000.0	206.471	48.122	40245.1
51060.0	208.288	46.959	40204.9
51120.0	209.689	45.860	40161.6
51180.0	210.580	44.957	40040.0
51240.0	211.006	44.256	39818.7
51300.0	211.050	43.594	39607.7
51360.0	210.982	42.821	39500.0
51420.0	210.855	41.962	39490.1
51480.0	210.731	41.125	39494.4
51540.0	210.506	40.435	39421.6
51600.0	210.192	39.847	39285.9
51660.0	209.828	39.316	39115.0
51720.0	209.485	38.794	38942.4
51780.0	209.226	38.335	38733.9
51840.0	208.950	37.979	38455.2
51900.0	208.810	37.690	38127.0

ATTACHMENT 5

SAMPLE COPY OF MATTY DECK

46965.0	[illegible]	[illegible]	[illegible]
46971.0	[illegible]	69.984	[illegible]
46977.0	74.976	70.141	69427.3
46983.0	75.005	70.2[illegible]	[illegible]
46989.0	75.07[illegible]	70.412	68[illegible]92.6
46995.0	75.120	70.5[illegible]	67[illegible]
47001.0	75.0[illegible]	70.[illegible]94	[illegible]
47007.0	74.[illegible]	70.[illegible]	[illegible]322.4
47013.0	74.[illegible]	70.[illegible]	[illegible]701.9
47019.0	74.34[illegible]	70.[illegible]	65206.6
47025.0	74.109	71.023	64658.7
47031.0	73.[illegible]	71.174	64117.1
47037.0	73.722	71.339	63501.2
47043.0	73.[illegible]	[illegible]	63051.9
47049.0	73.452	71.[illegible]	62527.0
47055.0	73.272	71.850	62040.9
47061.0	73.013	71.980	61[illegible].5
47067.0	72.651	72.118	61089.8
47073.0	72.2[illegible]2	72.238	60638.0
47079.0	71.759	72.323	60203.7
47085.0	71.2[illegible]	72.373	59791.5
47091.0	70.686	72.381	59393.6
47097.0	70.118	72.366	59012.5
47103.0	69.498	72.343	58637.4
47109.0	68.823	72.320	58266.4
47115.0	68.120	72.33[illegible]	57886.6
47121.0	67.[illegible]62	72.387	57509.7
47127.0	66.964	72.451	57132.7
47133.0	66.393	72.539	56759.6
47139.0	65.789	72.667	56378.5
47145.0	65.125	72.835	55996.6
47151.0	64.4[illegible]	73.024	55620.9
47157.0	63.783	73.238	55245.8
47163.0	63.157	73.481	54872.8
47169.0	62.582	73.729	54506.1
47175.0	61.983	73.978	54153.9
47181.0	61.405	74.226	53805.3
47187.0	60.840	74.[illegible]01	53462.6
47193.0	60.319	74.786	53129.3
47199.0	59.851	75.082	52800.5
47205.0	59.465	75.383	52477.3
47211.0	59.111	75.689	52158.2
47217.0	58.[illegible]	76.003	51844.6
47223.0	58.501	76.313	51539.6
47229.0	58.078	76.617	51244.9
47235.0	57.628	76.904	50961.2
47241.0	57.065	77.171	50688.7
47247.0	56.462	77.428	50426.5
47253.0	55.909	77.698	50159.7
47259.0	55.3[illegible]	77.977	49896.0
47265.0	54.[illegible]	78.235	49646.3
47271.0	53.921	78.480	49403.6
47277.0	53.200	78.734	49159.3
47283.0	52.549	78.993	48916.9
47289.0	51.828	79.260	48678.9
47295.0	50.943	79.506	48447.3
47301.0	49.[illegible]33	79.730	48221.7
47307.0	48.528	79.945	47995.8
47313.0	47.237	80.167	47769.6
47319.0	46.028	80.387	47545.0
47325.0	44.918	80.614	47317.0
47331.0	43.864	80.841	47089.1
47337.0	42.778	81.084	46864.5

[illegible]	[illegible]	[illegible]	[illegible]
47355.0	[illegible]	[illegible]	[illegible]
47379.0	[illegible]	[illegible]	[illegible]
47403.0	25.402	[illegible]	[illegible]
47427.0	[illegible].114	[illegible]	[illegible]
47451.0	[illegible]	83.116	[illegible]
47475.0	315.32[illegible]	[illegible]	[illegible]
47499.0	345.[illegible]	82.398	[illegible]
47523.0	[illegible]	[illegible]	[illegible]
47547.0	323.4[illegible]	[illegible]	[illegible]
47571.0	[illegible]	[illegible]	[illegible]
47595.0	323.[illegible]	[illegible]	[illegible]
47619.0	31[illegible].022	79.1[illegible]	40159.3
47643.0	[illegible]	78.375	[illegible]
47657.0	312.793	77.455	[illegible]
47691.0	[illegible]	[illegible]	[illegible]
47715.0	307.[illegible]	[illegible]	[illegible]
47739.0	304.834	74.523	[illegible]
47763.0	302.[illegible]	73.584	38342.4
47737.0	300.604	72.741	38145.9
47811.0	298.[illegible]	[illegible]	37967.4
47835.0	297.[illegible]	[illegible]	37833.4
47883.0	294.[illegible]	[illegible]	37622.6
47931.0	292.375	66.406	37505.7
47979.0	290.652	64.197	37441.2
48027.0	289.037	62.[illegible]	37455.9
48075.0	287.[illegible]	[illegible]	37516.0
48123.0	285.477	58.028	37624.7
48171.0	[illegible]	[illegible]	37790.6
48219.0	284.409	54.253	38088.7
48267.0	283.532	52.548	38355.2
48315.0	282.369	50.786	38683.7
48363.0	[illegible]	49.[illegible]	38980.4
48411.0	[illegible]	47.315	39346.6
48459.0	[illegible]	45.[illegible]	39825.7
48507.0	279.[illegible]	44.014	40369.8
48555.0	278.[illegible]	42.707	40839.5
48603.0	278.[illegible]	41.421	41319.3
48651.0	278.[illegible]	40.139	41821.7
48699.0	277.[illegible]	39.026	42214.1
48747.0	277.773	37.944	42622.3
48795.0	278.052	36.939	43025.2
48843.0	278.444	35.921	43489.5
48891.0	278.514	34.852	44013.6
48939.0	278.[illegible]	33.[illegible]	44479.9
48987.0	278.[illegible]	33.[illegible]	44980.1
49035.0	278.017	32.275	[illegible]
49083.0	277.798	31.427	45932.0
49131.0	277.299	30.[illegible]	46413.2
49179.0	276.[illegible]	29.[illegible]	46854.2
49227.0	276.[illegible]	29.[illegible]	[illegible]
49275.0	276.[illegible]	28.442	47839.
49323.	[illegible]	27.[illegible]	[illegible]
49371.	[illegible]	26.[illegible]	[illegible]
49419.0	27[illegible]	[illegible]	[illegible]
49457.0	275.[illegible]	25.379	[illegible]
49515.0	27[illegible]	24.[illegible]	[illegible]
49563.0	275.731	[illegible]	[illegible]
49611.0	27[illegible].717	23.[illegible]	[illegible]
49659.0	27[illegible]	23.[illegible]	52817.[illegible]
49707.0	275.[illegible]	22.[illegible]	[illegible]
49755.0	27[illegible].631	22.[illegible]	[illegible]

ATTACHMENT 6

SAMPLE COPY OF 46-CHARACTER DATA

791121522000141540020277700005524110924982	65
791121522240140662020162500005543510924982	66
791121522580140193020064000005572410924982	67
791121522320137344017775200005620410924982	68
791121522370137132017777700005503710924982	69
791121524000137100017662100005454510924982	70
791121524240137470017826000005465710924982	71
791121524480140110017557200005430410924982	72
791121525120140530017606400005415510924982	73
791121525360141120017422300005403410924982	74
791121526000141455017327700005374410924982	75
791121526240141570017256400005361210924982	76
791121526480141490017372000005335610924982	77
791121527120141500017216300005315510924982	78
791121527360141427017176000005275710924982	79
791121528000141250017156600005259210924982	80
791121528240141301017134600005234610924982	81
791121528490141615017127000005214610924982	82
791121529120141655017106400005177110924982	83
791121529360141613017051100005164110924982	84
791121530000141662017026100005145510924982	85
791121530240141651016765700005134310924982	86
791121530480141742016732600005121310924982	87
791121531120142137016705000005104210924982	88
791121531360142877016562300005065510924982	89
791121532000142715016622200005055310924982	90
791121532240142561016552100005046310924982	91
791121532480142327016514700005034710924982	92
791121533120142273016456200005024710924982	93
791121533360142035016414100005014010924982	94
791121534000141537016342500005006310924982	95
791121534240141274016301200004776510924982	96
791121534480140613016251700004763510924982	97
791121535120140376016237600004745510924982	98
791121535360140271016204000004734610924982	99
791121536000137661016144200004725110924982	100
791121536240137710016107400004715010924982	101
791121536480136751016060300004703410924982	102
791121537120136743016034300004671210924982	103
791121537360137075016012300004656510924982	104
791121538000135752015774200004643110924982	105
791121538240136375015746300004631710924982	106
791121538480136233015770300004620710924982	107
791121539120136241015666500004611110924982	108
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791121542000140479015346300004535710924982	112
791121542240141635015257300004537010924982	113
791121542480143152015141700004547710924982	114
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791121546000152143014111700004642610924982	122
791121546240153472014057700004637510924982	123
791121546480155127014006600004637710924982	124

ATTACHMENT 7

SAMPLE COPY OF PRINTER OUTPUT
(SEE ATTACHMENT 5 FOR INPUT DATA)

49250	171	24	269.41	-1.65	.6851	1.1445	39.07	329.18	.005
49500	169	25	269.13	-1.77	.8579	1.1105	40.27	329.00	.005
49750	166	25	268.85	-1.88	.8316	1.0775	41.48	328.83	.005
50000	163	26	268.58	-1.99	.8060	1.0455	42.69	328.66	.005
50250	162	26	268.89	-2.05	.7813	1.0123	43.46	328.85	.002
50500	162	26	269.44	-2.08	.7574	.9793	44.06	329.19	.001
50750	161	26	270.00	-2.12	.7343	.9474	44.65	329.53	.001
51000	160	26	270.55	-2.15	.7118	.9166	45.25	329.87	.001
51250	160	26	271.11	-2.19	.6900	.8867	45.84	330.21	.001
51500	160	26	271.44	-2.21	.6689	.8585	46.39	330.41	.000
51750	161	26	271.37	-2.23	.6486	.8326	46.85	330.37	.002
52000	162	26	271.30	-2.24	.6288	.8075	47.32	330.33	.002
52250	163	26	271.23	-2.25	.6097	.7831	47.78	330.28	.002
52500	164	26	271.16	-2.27	.5911	.7595	48.24	330.24	.002
52750	166	26	271.09	-2.28	.5731	.7366	48.70	330.20	.002
53000	167	26	270.95	-2.33	.5557	.7145	49.64	330.11	.002
53250	167	26	270.76	-2.41	.5387	.6931	50.83	330.00	.002
53500	168	26	270.58	-2.48	.5223	.6725	52.03	329.89	.002
53750	169	26	270.40	-2.56	.5063	.6524	53.22	329.78	.002
54000	170	26	270.21	-2.63	.4909	.6329	54.41	329.66	.002
54250	170	27	270.03	-2.71	.4759	.6140	55.61	329.55	.002
54500	171	26	269.77	-2.77	.4614	.5958	56.62	329.39	.003
54750	174	25	269.35	-2.80	.4472	.5784	57.26	329.14	.007
55000	177	24	268.94	-2.84	.4335	.5615	57.90	328.89	.007
55250	180	22	268.52	-2.87	.4201	.5451	58.54	328.63	.007
55500	183	21	268.11	-2.90	.4072	.5292	59.18	328.38	.007
55750	187	20	267.69	-2.94	.3947	.5137	59.82	328.12	.007
56000	191	19	267.28	-2.97	.3826	.4987	60.46	327.87	.007
56250	196	18	266.65	-3.03	.3708	.4844	61.22	327.48	.007
56500	201	17	265.50	-3.16	.3591	.4712	62.29	326.77	.008
56750	207	16	264.35	-3.28	.3478	.4584	63.35	326.07	.008
57000	214	15	263.20	-3.41	.3369	.4460	64.42	325.36	.008
57250	221	14	262.05	-3.53	.3264	.4339	65.49	324.65	.008
57500	229	14	260.90	-3.66	.3161	.4221	66.55	323.93	.008
57750	237	14	259.75	-3.78	.3062	.4107	67.62	323.22	.008
58000	245	14	258.60	-3.91	.2966	.3995	68.68	322.50	.008
58129	249	14	258.01	-3.97	.2917	.3939	69.24	322.13	.008

MAXIMUM ALTITUDE 61559

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-1744.27
47319.00	46.022	80.217	43475.15	42973.79	13	9	39	6.00	-12.61	2.22	-2066.54	-1744.93	
47325.00	44.918	80.814	43284.84	42893.29	13	9	45	6.00	-11.16	2.27	-2084.83	-1774.92	
47331.00	43.854	80.843	43105.14	42814.70	13	9	51	6.00	-10.54	2.34	-2084.83	-1775.92	
47337.00	42.779	81.884	42941.44	42745.44	13	9	57	6.00	-10.82	2.36	-2057.40	-1756.23	
47343.00	41.706	81.335	42648.53	42169.96	13	9	3	6.00	-10.73	2.51	-2039.11	-1731.15	
47349.00	40.769	81.598	42448.23	41999.41	13	9	9	6.00	-9.15	2.53	-2002.54	-1703.50	
47355.00	39.691	81.624	42251.68	41830.04	13	9	15	6.00	-8.98	2.36	-1965.96	-1695.68	
47379.00	34.295	82.492	41499.13	41150.65	13	9	39	24.00	-14.09	1.67	-1881.38	-1698.53	
47403.00	28.402	82.935	40776.75	40474.11	13	10	3	24.00	-19.63	1.11	-1805.94	-1691.32	
47427.00	16.114	84.189	40165.58	39821.60	13	10	27	24.00	-25.72	.39	-1677.92	-1632.76	
47451.00	4.965	83.116	39487.45	39209.53	13	10	51	24.00	-27.87	.07	-1545.34	-1528.69	
47475.00	355.325	82.599	38950.70	38658.74	13	11	15	24.00	875.90	-.54	-1341.88	-1376.95	
47499.00	346.573	82.399	38494.41	38163.10	13	11	39	24.00	-21.88	-1.25	-1140.71	-1239.10	
47523.00	340.194	81.969	38074.70	37708.50	13	12	3	24.00	-15.94	-1.07	-1049.27	-1136.52	
47547.00	333.423	81.362	37706.20	37286.00	13	12	27	24.00	-16.94	-1.52	-921.26	-1056.24	
47571.00	328.183	80.652	37366.78	36880.40	13	12	51	24.00	-13.18	-1.78	-843.53	-1013.99	
47595.00	323.397	79.909	37044.17	36479.41	13	13	15	24.00	-11.88	-1.86	-811.53	-1002.47	
47619.00	319.022	79.164	36721.39	36075.34	13	13	39	24.00	-10.94	-1.86	-806.96	-1010.18	
47643.00	315.505	78.375	36393.12	35655.80	13	14	3	24.00	-8.79	-1.97	-820.67	-1048.85	
47667.00	312.793	77.464	36088.62	35236.69	13	14	27	24.00	-6.78	-2.30	-761.24	-1047.77	
47691.00	309.529	76.575	35786.87	34819.37	13	14	51	24.00	-8.16	-2.20	-754.38	-1043.30	
47715.00	307.224	75.593	35516.21	34410.42	13	15	15	24.00	-5.76	-2.46	-676.66	-1022.38	
47739.00	304.834	74.623	35272.07	34021.22	13	15	39	24.00	-5.97	-2.42	-610.36	-972.99	
47763.00	302.973	73.684	35059.92	33660.53	13	16	3	24.00	-5.65	-2.35	-530.35	-901.74	
47787.00	300.604	72.741	34879.79	33322.63	13	16	27	24.00	-4.92	-2.36	-450.34	-844.74	
47811.00	298.929	71.808	34717.02	32995.89	13	16	51	24.00	-4.19	-2.33	-406.91	-816.85	
47835.00	297.513	70.789	34594.50	32683.16	13	17	15	24.00	-3.54	-2.55	-306.32	-781.83	
47859.00	296.533	69.886	34401.56	32065.78	13	18	3	48.00	-3.73	-2.63	-241.17	-771.72	
47931.00	292.379	66.406	34294.57	31447.42	13	18	51	48.00	-2.70	-2.85	-133.73	-772.96	
47979.00	290.692	64.197	34286.05	30844.92	13	19	39	48.00	-2.15	-2.76	-73.15	-753.12	
48027.00	289.037	62.023	34248.85	30271.56	13	20	27	48.00	-2.02	-2.72	16.60	-716.71	
48075.00	287.653	59.968	34304.63	29727.12	13	21	15	48.00	-1.72	-2.57	69.72	-680.54	
48123.00	286.477	58.028	34403.39	29215.56	13	22	3	48.00	-1.48	-2.43	123.44	-639.44	
48171.00	285.796	56.176	34555.18	28740.66	13	22	51	48.00	-.96	-2.32	189.74	-593.61	
48219.00	284.409	54.253	34827.67	28303.64	13	23	39	48.00	-1.62	-2.40	340.61	-546.28	
48267.00	283.532	52.548	35071.81	27882.76	13	24	27	48.00	-1.10	-2.13	305.18	-526.10	
48315.00	282.369	50.756	35371.74	27438.08	13	25	15	48.00	-1.45	-2.24	374.90	-555.84	
48363.00	281.548	49.062	35643.31	25973.26	13	26	3	48.00	-1.03	-2.12	339.47	-581.02	
48411.00	280.694	47.315	35979.81	26499.98	13	26	51	48.00	-1.07	-2.18	420.62	-591.61	
48459.00	280.149	45.590	36425.12	26076.09	13	27	39	48.00	-.68	-2.16	556.64	-529.86	
48507.00	279.383	44.014	36913.41	25706.78	13	28	27	48.00	-.96	-1.97	610.36	-459.13	
48555.00	278.693	42.707	37343.18	25391.85	13	29	15	48.00	-.72	-1.63	537.21	-396.16	
48603.00	278.525	41.421	37782.09	25063.88	13	30	3	48.00	-.34	-1.61	548.64	-409.97	
48651.00	278.069	40.139	38241.12	24723.73	13	30	51	48.00	-.57	-1.68	573.79	-425.19	
48699.00	277.802	39.026	38600.48	24380.98	13	31	39	48.00	-.33	-1.39	449.20	-428.43	
48747.00	277.773	37.944	38973.56	24043.34	13	32	27	48.00	-.04	-1.35	446.34	-422.05	
48795.00	278.052	36.939	39342.06	23725.49	13	33	15	48.00	.35	-1.26	460.63	-397.32	
48843.00	278.449	35.921	39766.34	23415.78	13	34	3	48.00	.49	-1.27	530.35	-387.14	
48891.00	278.514	34.892	40245.49	23111.89	13	34	51	48.00	.09	-1.29	598.93	-379.86	
48939.00	278.543	33.986	40671.60	22828.38	13	35	39	48.00	.04	-1.13	532.64	-354.39	
48987.00	278.290	33.062	41129.71	22536.08	13	36	27	48.00	-.36	-1.15	572.64	-368.37	
49035.00	278.017	32.278	41502.79	22263.10	13	37	15	48.00	-.29	-.98	466.34	-341.22	
49083.00	277.798	31.427	42000.22	22004.86	13	38	3	48.00	-.27	-1.04	421.79	-322.79	
49131.00	277.299	30.599	42504.06	21745.37	13	38	51	48.00	-.62	-1.04	429.79	-324.37	
49179.00	276.839	29.823	42847.87	21486.91	13	39	39	48.00	-.58	-.85	429.77	-323.07	
49227.00	276.903	29.207	43241.06	21216.61	13	40	27	48.00	-.48	-.90	491.49	-337.88	
49275.00	276.750	28.442	43743.98	20954.62	13	41	15	48.00	-.05	-.96	428.65	-327.48	
49323.00	276.734	27.637	44313.65	20681.25	13	42	3	48.00	-.02	-1.01	712.69	-341.72	
49371.00	276.543	26.755	44837.86	20429.59	13	42	51	48.00	-.24	-1.06	905.26	-314.58	
49419.00	276.358	26.076	45459.88	20224.79	13	43	39	48.00	-.29	-.89	827.53	-255.99	
49467.00	276.017	25.379	46431.40	20043.36	13	44	27	48.00	-.43	-.87	914.40	-226.79	
49515.00	275.733	24.733	47003.82	19813.93	13	45	15	48.00	-.33	-.81	715.52	-287.29	
49563.00	275.731	24.180	47396.10	19564.93	13	46	3	48.00	-.03	.69	490.38	-210.76	
49611.00	275.717	23.642	47956.04	19304.42	13	46	51	48.00	-.02	-.73	474.93	-320.65	

ROCK 3

* * * TEMPERATURE COMPARISON * * *

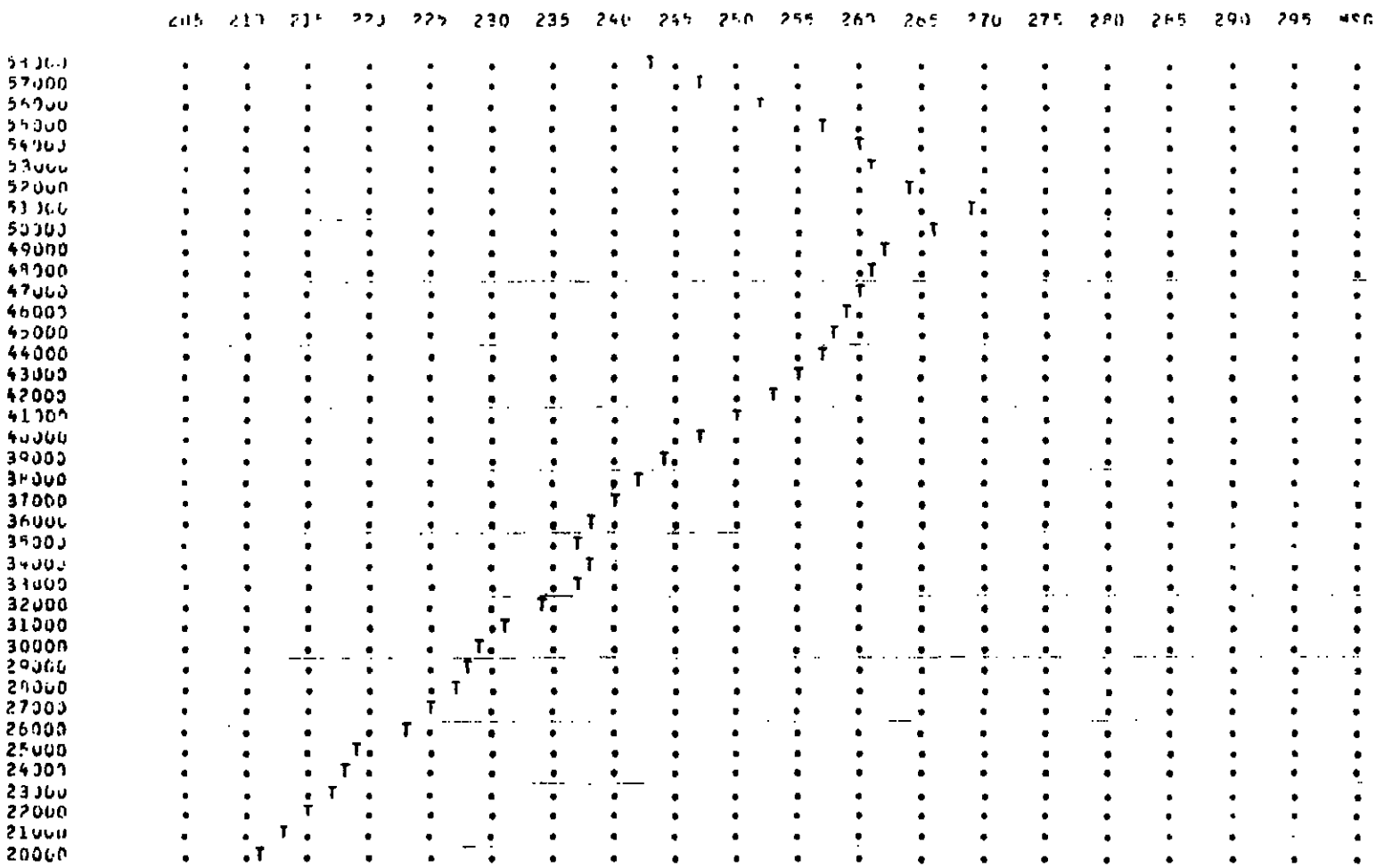
ROCKETSONDE RAWINSONDE

TEST NBR 53F2
ROCKET SHPER LOKT RWN-110
CAPE CANAVERAL AFS,FL. CAPE CANAVERAL AFS, FLORIDA
1300Z 7 AUG 1984 1200Z 7 AUG 1984

ALTITUDE METERS	TEMPERATURE DEGREES C ROCKET	RAWINSONDE	DIFFERENCE
20000	-61.60	-61.70	-.1
20250	-61.33	-60.80	-.5
20500	-60.65	-59.90	-.8
20750	-60.09	-59.10	-1.0
21000	-59.56	-58.60	-1.0
21250	-59.03	-57.70	-1.3
21500	-58.49	-57.00	-1.5
21750	-57.94	-56.50	-1.4
22000	-57.39	-56.70	-.7
22250	-56.85	-56.40	-.5
22500	-56.33	-55.60	-.7
22750	-55.82	-55.70	-.1
23000	-55.33	-55.30	-.0
23250	-54.85	-54.60	-.2
23500	-54.43	-53.90	-.5
23750	-54.23	-53.70	-.5
24000	-54.23	-54.10	-.1
24250	-54.36	-53.80	-.6
24500	-54.48	-53.20	-1.3
24750	-54.28	-53.10	-1.2
25000	-53.70	-52.80	-.9
25250	-52.70	-51.90	-.8
25500	-51.36	-50.80	-.6
25750	-50.22	-49.40	-.8
26000	-49.32	-47.80	-1.5
26250	-48.69	-47.70	-1.0
26500	-48.25	-47.80	-.5
26750	-47.84	-47.10	-.7
27000	-47.46	-46.50	-1.0
27250	-47.07	-46.60	-.5
27500	-46.65	-46.40	-.3
27750	-46.25	-46.00	-.3
28000	-45.83	-45.50	-.3
28250	-45.42	-45.00	-.4
28500	-45.02	-44.60	-.4
28750	-44.75	-44.20	-.6
29000	-44.5[illegible]	-43.90	-.6
29250	-44.39	-43.70	-.7
29500	-44.26	-43.50	-.8
29750	-44.14	-43.30	-.8
30000	-44.02	-43.30	-.7

ROCK 3

TEST NUMBER 53-2
CAPE CANAVERAL AFS,FL.
13JUL 7 AUG 1984



ROCK 3

TEST NUMBER 13 2
CAPE CANAVERAL AFSFLA
13007 7 AUG 1964

SUPER LOKI PWM-11.0

ALT GEOMP	DIP DEG	SPD MPS	TEMP K	TEMP CHGE	PRESS MBS	DENSITY G/M3	RE MPS	VS MPS	SAR /SEC
20000	66	17	211.44	-.43	999.9999	999.9999	3.78	291.63	.999
21000	71	17	213.59	-.44	49.7593	81.1614	5.53	293.09	.002
22000	74	17	215.76	-.45	42.4979	68.6199	5.39	294.58	.003
23000	100	15	217.62	-.46	36.3541	58.1435	5.95	295.99	.005
24000	103	16	219.02	-.47	31.1395	49.5547	6.77	296.73	.001
25000	5	18	219.45	-.50	26.6804	42.3561	7.01	297.00	.008
26000	-4	22	220.13	-.52	22.9055	35.6512	7.97	300.04	.004
27000	93	23	225.69	-.54	19.7078	30.4213	9.76	301.73	.001
28000	84	23	227.32	-.56	16.9755	26.0163	8.88	302.37	.000
29000	87	23	228.64	-.56	14.6877	22.3039	9.93	303.24	.002
30000	90	25	229.14	-.60	12.6293	19.2017	11.34	303.57	.002
31000	91	25	231.05	-.67	10.9041	16.4412	12.40	304.84	.002
32000	90	26	234.76	-.68	9.4334	13.9991	12.87	307.28	.000
33000	88	26	237.16	-.69	8.1761	12.0104	13.32	308.84	.001
34000	89	25	238.57	-.72	7.0957	10.3618	15.53	309.76	.000
35000	92	26	237.40	-.78	6.1584	9.0373	17.36	309.00	.002
36000	93	27	238.15	-.83	5.3437	7.8169	17.27	309.49	.001
37000	94	28	240.80	-.88	4.6415	6.7152	16.86	311.20	.001
38000	97	30	242.14	-.98	4.0380	5.8098	19.17	312.07	.003
39000	98	35	244.56	-1.05	3.5155	5.0079	23.24	313.63	.004
40000	96	36	247.61	-1.18	3.0661	4.3139	26.81	315.57	.002
41000	96	35	250.47	-1.22	2.6784	3.7255	28.22	317.39	.006
42000	71	37	253.28	-1.24	2.3433	3.2234	28.33	319.16	.010
43000	94	42	255.76	-1.26	2.0532	2.7967	29.60	320.73	.010
44000	7-	43	257.25	-1.34	1.8009	2.4389	29.56	321.66	.005
45000	78	46	258.68	-1.41	1.5809	2.1291	31.77	322.55	.005
46000	71	53	259.90	-1.56	1.3887	1.8615	35.39	323.31	.009
47000	70	55	260.97	-1.73	1.2206	1.6295	38.31	323.97	.008
48000	87	53	261.90	-1.91	1.0735	1.4279	43.44	324.56	.009
49000	98	53	262.89	-2.36	.9445	1.2519	47.74	325.13	.009
50000	108	41	266.96	-2.64	.8320	1.0847	51.91	327.68	.015
51000	129	35	269.91	-2.20	.7344	.9479	55.08	329.48	.015
52000	131	32	264.56	-2.27	.6478	.8530	57.48	326.20	.003
53000	108	40	261.93	-2.96	.5702	.7584	59.58	324.57	.017
54000	90	47	260.95	-3.10	.5016	.6696	63.70	323.96	.015
55000	82	53	257.25	-2.99	.4408	.5966	67.25	321.69	.009
56000	81	53	253.35	-3.45	.3865	.5335	71.09	319.28	.003
57000	96	49	247.67	-3.93	.3380	.4756	74.76	315.58	.009
58000	86	42	243.04	-4.53	.2949	.4227	79.20	312.65	.007
59000	49	45	999.99	0.00	999.9999	999.9999	85.58	999.99	.015
60000	58	44	999.99	0.00	999.9999	999.9999	94.29	999.99	.018
60034	57	44	999.99	0.00	999.9999	999.9999	94.56	999.99	.019

MAXIMUM ALTITUDE 60034 GEOMM

TEST [illegible]
CAPE CANAVERAL AFS, FLA.
13 JUL - 7 AUG 1964

SUPER [illegible] SHUTTLE

ALT GEOMM	DIP [illegible]	SPD MACH	TEMP K	TEMP CORR	PRESS MBAR	DENSITY G/M3	VE KNOTS	VC KNOTS	SHR /SEC
20000	[illegible]	17	213.46	-.43	999.9999	999.9999	4.72	291.63	.999
20250	86	17	211.82	-.43	56.0762	92.2149	4.87	291.38	.003
20500	94	17	212.50	-.43	53.6761	88.3285	4.81	291.34	.004
20750	92	17	213.06	-.44	51.7742	84.6576	4.58	292.73	.007
21000	91	17	213.59	-.44	49.7595	81.1814	4.93	293.09	.006
21250	91	17	214.12	-.45	47.8280	77.8167	4.97	293.46	.006
21500	44	17	214.66	-.45	45.9762	74.6152	5.49	293.83	.004
21750	91	16	215.21	-.44	44.2005	71.5506	5.40	294.21	.004
22000	76	16	215.76	-.45	42.4979	68.6199	5.39	294.58	.002
22250	91	16	216.30	-.46	40.8650	65.8188	5.51	294.95	.003
22500	15	15	216.82	-.46	39.2985	63.1429	5.83	295.31	.006
22750	94	16	217.33	-.46	37.7961	60.5877	6.05	295.65	.006
23000	100	15	217.82	-.46	36.3541	58.1435	5.95	295.99	.007
23250	104	16	218.30	-.47	34.9704	55.8084	6.31	296.31	.004
23500	105	16	218.72	-.47	33.6424	53.5869	6.42	296.59	.003
23750	106	16	219.92	-.47	32.3665	51.5076	6.55	296.73	.001
24000	103	15	219.92	-.47	31.1395	49.5547	6.77	296.73	.003
24250	98	16	219.79	-.48	29.9590	47.7036	7.05	296.64	.005
24500	94	16	219.67	-.48	28.8226	45.9188	7.12	296.55	.005
24750	89	17	219.67	-.49	27.7298	44.1380	7.11	296.70	.007
25000	85	18	219.45	-.50	26.6804	42.3561	7.01	297.09	.006
25250	84	20	220.45	-.52	25.6735	40.5712	6.82	297.77	.005
25500	84	21	221.79	-.51	24.7106	38.8148	6.64	298.67	.005
25750	85	21	222.93	-.51	23.7892	37.1754	7.22	299.44	.003
26000	84	22	223.83	-.52	22.9055	35.6512	7.97	300.04	.002
26250	84	22	224.46	-.53	22.0574	34.2351	8.72	300.46	.002
26500	83	23	224.90	-.53	21.2434	32.9070	9.32	300.75	.001
26750	83	23	225.21	-.54	20.4600	31.6363	9.86	301.03	.001
27000	83	23	225.49	-.54	19.7078	30.4213	9.76	301.28	.001
27250	83	23	226.08	-.55	18.9838	29.2532	9.64	301.54	.000
27500	83	23	226.49	-.55	18.2882	28.1306	9.41	301.81	.001
27750	83	23	226.90	-.55	17.6190	27.0520	9.18	302.09	.001
28000	84	23	227.32	-.56	16.9755	26.0163	8.88	302.37	.000
28250	85	23	227.73	-.56	16.3569	25.0230	8.89	302.64	.001
28500	86	23	228.13	-.56	15.7614	24.0694	9.09	302.91	.002
28750	86	23	228.40	-.56	15.1891	23.1684	9.50	303.08	.002
29000	87	23	228.64	-.56	14.6377	22.3039	9.93	303.24	.002
29250	88	23	228.76	-.58	14.1071	21.4837	10.31	303.33	.002
29500	89	24	228.89	-.59	13.5958	20.6938	10.69	303.41	.002
29750	89	24	229.01	-.59	13.1037	19.9338	11.02	303.49	.002
30000	90	25	229.14	-.60	12.6293	19.2017	11.34	303.57	.002
30250	90	25	229.36	-.61	12.1729	18.4899	11.61	303.72	.001
30500	90	25	229.58	-.63	11.7330	17.8046	11.88	303.97	.001
30750	90	26	230.25	-.65	11.3107	17.1139	12.14	304.31	.002
31000	90	26	231.05	-.67	10.9041	16.4412	12.40	304.84	.002
31250	90	26	231.96	-.68	10.5137	15.7900	12.61	305.44	.001
31500	90	26	233.01	-.67	10.1394	15.1598	12.74	306.13	.000
31750	90	27	234.06	-.67	9.7784	14.5544	12.88	306.82	.000
32000	90	26	234.76	-.68	9.4334	13.9991	12.87	307.28	.001
32250	90	26	235.45	-.68	9.1006	13.4657	12.87	307.73	.001
32500	90	26	236.07	-.68	8.7805	12.9575	12.91	308.13	.001
32750	90	26	236.63	-.68	8.4726	12.4738	13.00	308.50	.002
33000	[illegible]	25	237.16	-.69	8.1761	12.0104	13.32	308.84	.002
33250	89	25	237.68	-.71	7.8907	11.5663	13.74	309.16	.001
33500	89	25	238.19	-.71	7.6158	11.1390	14.10	309.51	.001

[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
34500	92	26	236.09	-.74	5.5210	8.8731	16.91	310.45	.002
34750	93	26	237.35	-.71	5.3508	8.3300	17.15	309.23	.002
35000	92	25	237.41	-.75	5.1584	8.0273	17.34	309.01	.001
35250	93	26	237.33	-.70	5.0438	7.7248	17.43	309.0-	.000
35500	93	26	237.27	-.81	4.7362	8.4126	17.47	309.04	.000
35750	93	26	237.73	-.01	4.5383	8.1132	17.44	309.21	.001
36000	93	27	238.15	-.53	4.3437	7.8149	17.27	309.40	.001
36250	93	27	238.63	-.74	4.1580	7.5261	16.85	309.5[illegible]	.002
36500	94	27	239.15	-.85	4.9793	7.2538	16.77	310.14	.001
36750	94	27	239.63	-.81	4.8071	6.9837	16.74	310.5[illegible]	.001
37000	94	27	240.50	-.88	4.6415	6.7152	16.[illegible]	311.20	.002
37250	95	28	241.06	-.88	4.4823	6.4617	17.18	311.78	.002
37500	97	28	241.41	-.84	4.3286	6.2202	17.61	312.27	.003
37750	97	29	242.24	-.86	4.1869	6.0128	18.39	312.13	.003
38000	97	30	242.14	-.88	4.0380	5.8098	19.17	312.07	.004
38250	97	32	242.35	-.94	3.9001	5.6063	20.07	312.21	.005
38500	98	33	242.61	-.98	3.7671	5.4049	21.04	312.50	.005
38750	98	34	243.70	-1.01	3.6390	5.2021	22.14	313.07	.004
39000	98	35	244.56	-1.05	3.5155	5.0079	23.24	313.63	.004
39250	98	35	245.35	-1.08	3.3969	4.8233	24.32	314.19	.002
39500	98	36	246.15	-1.12	3.2823	4.6455	25.41	314.64	.002
39750	97	36	246.88	-1.15	3.1723	4.4766	26.12	315.11	.003
40000	96	36	247.61	-1.18	3.0661	4.3139	26.81	315.57	.003
40250	96	36	248.33	-1.20	2.9637	4.1577	27.36	316.03	.005
40500	95	36	249.05	-1.20	2.8652	4.0060	27.73	316.49	.007
40750	93	35	249.77	-1.21	2.7700	3.8636	28.10	316.95	.007
41000	91	35	250.47	-1.22	2.6784	3.7255	28.22	317.39	.007
41250	88	35	251.17	-1.23	2.5901	3.5926	28.27	317.83	.007
41500	80	34	251.86	-1.24	2.5047	3.4645	28.31	318.27	.007
41750	76	35	252.58	-1.24	2.4226	3.3415	28.28	318.72	.010
42000	71	37	253.26	-1.26	2.3433	3.2234	28.33	319.18	.014
42250	68	40	253.93	-1.29	2.2668	3.1099	28.84	319.56	.013
42500	72	41	254.61	-1.30	2.1931	3.0007	29.40	320.01	.011
42750	78	41	255.26	-1.28	2.1219	2.8960	29.59	320.41	.018
43000	84	42	255.76	-1.26	2.0532	2.7967	29.00	320.73	.017
43250	88	43	256.13	-1.28	1.9869	2.7025	29.09	320.96	.011
43500	86	44	256.53	-1.27	1.9227	2.6112	28.74	321.21	.005
43750	81	43	256.92	-1.28	1.8608	2.5232	29.14	321.45	.015
44000	78	43	257.25	-1.34	1.8009	2.4389	29.56	321.66	.010
44250	77	44	257.63	-1.34	1.7431	2.3571	29.81	321.90	.003
44500	78	45	258.00	-1.35	1.6872	2.2782	30.26	322.13	.003
44750	79	45	258.34	-1.38	1.6331	2.2023	31.49	322.34	.004
45000	78	46	258.68	-1.41	1.5809	2.1291	31.77	322.55	.004
45250	77	47	259.00	-1.45	1.5304	2.0585	32.22	322.75	.005
45500	76	49	259.32	-1.47	1.4816	1.9904	33.13	322.95	.007
45750	73	51	259.63	-1.50	1.4344	1.9247	34.29	323.14	.013
46000	71	53	259.90	-1.56	1.3887	1.8615	35.39	323.31	.012
46250	71	54	260.16	-1.61	1.3446	1.8005	36.27	323.48	.005
46500	72	55	260.46	-1.63	1.3019	1.7413	36.85	323.66	.006
46750	74	55	260.74	-1.65	1.2606	1.6842	37.57	323.84	.012
47000	78	55	260.97	-1.73	1.2208	1.6295	38.31	323.97	.015
47250	82	55	261.20	-1.78	1.1820	1.5765	39.90	324.12	.012
47500	84	55	261.44	-1.83	1.1446	1.5253	41.37	324.27	.009
47750	86	55	261.70	-1.85	1.1084	1.4756	41.85	324.43	.007
48000	88	55	261.90	-1.91	1.0735	1.4279	43.46	324.54	.007
48250	90	56	262.08	-2.01	1.0396	1.3820	44.36	324.65	.006
48500	92	56	262.27	-2.05	1.0068	1.3374	45.51	324.78	.008
48750	95	55	262.43	-2.14	.9751	1.2945	46.44	324.88	.010
49000	98	53	262.83	-2.36	.9445	1.2519	47.74	325.13	.014
49250	100	50	263.68	-2.52	.9148	1.2087	49.06	325.66	.016
49500	102	48	264.74	-2.58	.8862	1.1680	49.95	326.33	.015
49750	104	43	265.71	-2.59	.8586	1.1290	50.63	327.02	.014
50000		41	266.98	-2.64	.8320	1.0857	51.91	327.7[illegible]	.015

[illegible]	[illegible]	[illegible]	257.48	-2.74	.[illegible]	1.[illegible]	[illegible]	[illegible]	[illegible]
49500	11[illegible]	37	258.11	-2.[illegible]	.7[illegible]	.[illegible]127	[illegible].[illegible]	328.00	[illegible].16
49750	124	36	258.[illegible]	-2.48	.7[illegible]6	.[illegible]7[illegible]6	[illegible]4.[illegible]	328.48	.015
50000	124	35	259.31	-2.30	.7344	.9479	[illegible].[illegible]	328.48	.013
50250	123	34	259.[illegible]4	-2.17	.7119	.9225	[illegible].[illegible]	328.92	.010
50500	135	33	260.48	-2.[illegible]	.[illegible]99	.[illegible]9[illegible]	[illegible].91	327.99	.00[illegible]
50750	135	33	260.97	-2.19	.6666	.8756	56.62	327.09	.004
51000	131	32	261.56	-2.27	.6473	.8530	57.48	326.20	.006
51250	125	33	262.34	-2.49	.6275	.8301	57.48	325.47	.016
51500	118	33	262.[illegible]	-2.[illegible]	.[illegible]07[illegible]	.[illegible]1[illegible]	[illegible].37	325.04	.017
51750	113	33	262.22	-2.[illegible]	.5[illegible]87	.7[illegible]22	[illegible]9.22	324.[illegible]	.017
52000	108	40	[illegible]61.93	-2.9[illegible]	.5762	.7[illegible]94	59.58	324.57	.017
52250	103	42	261.59	-3.03	.5522	.7352	[illegible]0.83	324.42	.015
52500	99	44	261.48	-3.[illegible]	.5348	.7126	61.99	324.29	.015
52750	94	45	261.28	-3.11	.5179	.6906	63.03	324.17	.015
53000	90	47	260.[illegible]	-3.1[illegible]	.5016	.6696	63.[illegible]	323.[illegible]	.015
53250	87	48	260.41	-3.[illegible]	.4857	.6498	64.46	323.63	.013
53500	84	50	259.[illegible]	-2.94	.4703	.6310	65.31	323.16	.011
53750	83	51	258.51	-2.94	.4553	.6136	66.27	322.45	.008
54000	82	53	257.29	-2.99	.4408	.5968	67.25	321.69	.006
54250	82	54	256.01	-3.13	.4266	.5805	68.23	320.88	.004
54500	82	54	254.[illegible]0	-3.21	.4129	.5645	69.06	320.12	.002
54750	83	54	253.61	-3.28	.3995	.5488	69.8[illegible]	319.38	.003
55000	85	53	252.35	-3.4[illegible]	.3865	.5334	71.09	318.68	.008
55250	87	52	251.13	-3.58	.3738	.5186	72.23	317.81	.009
55500	90	51	249.99	-3.66	.3615	.5038	73.20	317.09	.011
55750	92	50	248.81	-3.78	.3496	.4895	74.03	316.34	.009
56000	94	49	247.62	-3.93	.3380	.4756	74.76	315.58	.008
56250	94	47	246.47	-4.05	.3267	.4618	76.09	314.85	.007
56500	93	45	245.32	-4.17	.3158	.4485	77.53	314.12	.007
56750	91	44	244.18	-4.33	.3052	.4354	78.30	313.38	.009
57000	88	42	243.04	-4.53	.2949	.4227	79.20	312.65	.010
57250	84	41	241.97	-4.93	.2849	.4101	80.96	311.96	.014
57500	79	41	999.99	0.00	999.9999	999.9999	82.65	999.99	.014
57750	73	43	999.99	0.00	999.9999	999.9999	84.03	999.99	.018
58000	69	46	999.99	0.00	999.9999	999.9999	85.58	999.99	.017
58250	67	50	999.99	0.00	999.9999	999.9999	87.89	999.99	.018
58500	66	54	999.99	0.00	999.9999	999.9999	90.17	999.99	.018
58750	67	59	999.99	0.00	999.9999	999.9999	92.23	999.99	.019
59000	68	64	999.99	0.00	999.9999	999.9999	94.29	999.99	.019
59034	68	64	999.99	0.00	999.9999	999.9999	94.56	999.99	.019

MAXIMUM ALTITUDE 59018 GEOMM

TEST NUMBER [illegible]
CAPE CANAVERAL AFS, FLA.
[illegible] 7 AUG 1964

SUPER LOKI PWN-1120

ALT (FEET)	DIA (FT)	SPD (KTS)	TEMP (K)	TEMP (CORR)	PRESS (MBS)	DENSITY (G/M3)	RF (FPS)	VS (KTS)	SHR (/SEC)
[illegible]	[illegible]	34	211.41	-.43	57.2777	94.3655	12.40	[illegible]	.000
67000	[illegible]	35	212.30	-.43	54.5538	89.5235	12.32	567.63	.004
68000	99	33	213.01	-.44	51.9686	84.9959	12.17	568.58	.006
69000	91	30	213.65	-.44	49.5135	80.7754	12.06	569.44	.006
70000	87	28	214.31	-.45	47.1813	76.6982	12.44	570.31	.004
71000	82	27	214.97	-.44	44.9662	72.8719	12.67	571.19	.004
72000	79	28	215.64	-.45	42.8619	69.2454	12.71	572.09	.004
73000	81	29	216.30	-.46	40.8622	65.8139	12.09	572.96	.002
74000	88	30	216.94	-.46	38.9614	62.5685	12.39	573.80	.006
75000	97	30	217.55	-.46	37.1542	59.4987	12.61	574.61	.008
76000	103	30	218.14	-.47	35.4357	56.5930	20.30	575.39	.005
77000	104	30	218.67	-.47	33.8009	53.8516	21.04	576.08	.003
78000	105	30	219.93	-.47	32.2444	51.3107	21.59	576.43	.001
79000	101	31	218.89	-.47	30.7604	48.9605	22.53	576.36	.004
80000	96	31	218.73	-.48	29.3442	46.7382	23.25	576.16	.005
81000	90	33	218.80	-.49	27.9932	44.5712	23.36	576.26	.006
82000	85	35	219.42	-.50	26.7065	42.4023	23.00	577.08	.007
83000	94	34	220.71	-.51	25.4840	40.2246	22.25	578.77	.005
84000	84	41	222.29	-.51	24.3250	38.1229	22.20	580.84	.004
85000	85	42	223.60	-.51	23.2256	36.1867	25.26	582.54	.002
86000	84	43	224.36	-.53	22.1814	34.4419	28.24	583.54	.002
87000	83	44	224.93	-.53	21.1871	32.8155	30.70	584.27	.001
88000	83	44	225.42	-.54	20.2391	31.2702	32.24	584.91	.001
89000	83	45	225.89	-.55	19.3357	29.8209	31.87	585.52	.001
90000	83	44	226.38	-.55	18.4747	28.4314	31.09	586.15	.001
91000	83	44	226.88	-.55	17.6535	27.1076	30.11	586.80	.001
92000	84	44	227.39	-.56	16.8706	25.8476	28.96	587.46	.000
93000	85	44	227.88	-.56	16.1245	24.6507	29.48	588.10	.002
94000	86	44	228.30	-.56	15.4125	23.5195	30.60	588.63	.002
95000	87	45	228.60	-.56	14.7330	22.4525	32.33	589.03	.002
96000	88	45	228.77	-.58	14.0845	21.4488	33.90	589.24	.002
97000	89	46	228.92	-.59	13.4648	20.4914	35.37	589.43	.002
98000	90	47	229.07	-.59	12.8729	19.5776	36.66	589.63	.002
99000	90	48	229.29	-.61	12.3076	18.6999	37.89	589.91	.002
100000	90	49	229.56	-.63	11.7675	17.8583	38.91	590.26	.001
101000	93	50	230.36	-.65	11.2531	17.0184	39.96	591.29	.002
102000	96	51	231.34	-.67	10.7619	16.2065	40.99	592.54	.002
103000	98	51	232.57	-.67	10.2958	15.4229	41.69	594.11	.001
104000	99	51	233.85	-.67	9.8506	14.6753	42.16	595.74	.000
105000	99	51	234.77	-.68	9.4279	13.9902	42.24	596.92	.000
106000	98	51	235.41	-.68	9.0240	13.3431	42.21	597.99	.001
107000	98	50	236.32	-.68	8.6391	12.7354	42.68	599.89	.001
108000	98	50	236.99	-.69	8.2715	12.1592	43.22	599.74	.002
109000	97	49	237.62	-.71	7.9207	11.6126	44.98	600.53	.002
110000	98	49	238.23	-.71	7.5856	11.0931	46.52	601.30	.001
111000	98	50	238.63	-.70	7.2654	10.6066	49.24	601.81	.002
112000	99	51	238.[illegible]	-.73	6.9589	10.1441	52.39	601.65	.002
113000	98	51	238.16	-.74	6.6651	9.7495	54.74	601.23	.002
114000	92	51	237.75	-.74	6.3833	9.3525	56.27	600.70	.002
115000	92	51	237.36	-.78	6.1131	8.9723	57.04	600.20	.001
116000	92	51	237.31	-.80	5.8540	8.5960	57.24	600.14	.000
117000	93	51	237.60	-.81	5.6061	8.2199	57.32	600.51	.001
118000	93	51	238.09	-.82	5.3691	7.8562	56.83	601.12	.001
119000	94	51	238.66	-.84	5.1425	7.5062	55.27	601.84	.002
120000	[illegible]	51	239.21	-.85	4.9262	7.1715	54.92	602.[illegible]	.001

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BOOK 3

121000	[illegible]	[illegible]	240.37	-.07	4.7157	[illegible]	[illegible]	[illegible]	[illegible]
122000	[illegible]	[illegible]	241.45	-.[illegible]	4.5225	5.2254	[illegible]	[illegible]	.002
123000	97	[illegible]	242.49	-.[illegible]	4.3347	5.2784	[illegible]	[illegible]	.003
124000	97	57	242.20	-.98	4.1540	5.9760	96.74	605.20	.003
125000	97	60	242.22	-.98	3.9822	5.7275	94.05	606.32	.004
126000	98	63	242.49	-.97	3.8170	5.4835	97.88	606.65	.005
127000	98	65	243.58	-1.01	3.6593	5.2343	72.06	607.08	.004
128000	98	67	244.61	-1.05	3.5015	4.9970	76.44	608.30	.004
129000	96	69	245.57	-1.09	3.3647	4.7733	80.79	610.50	.002
130000	96	70	246.51	-1.13	3.2272	4.5606	84.57	611.66	.002
131000	96	70	247.46	-1.17	3.0959	4.3596	87.31	612.76	.003
132000	94	70	248.28	-1.20	2.9762	4.1677	89.70	613.84	.004
133000	91	69	249.16	-1.21	2.8503	3.9854	91.16	614.94	.007
134000	88	68	250.03	-1.21	2.7354	3.8113	92.50	616.01	.007
135000	84	68	250.88	-1.23	2.6258	3.6462	92.68	617.06	.007
136000	81	68	251.73	-1.24	2.5208	3.4883	92.85	618.11	.007
137000	78	69	252.60	-1.24	2.4201	3.3376	92.78	619.17	.010
138000	74	73	253.42	-1.27	2.3239	3.1947	93.09	620.18	.016
139000	70	78	254.25	-1.29	2.2319	3.0582	95.53	621.19	.008
140000	77	80	255.07	-1.29	2.1438	2.9281	97.09	622.19	.016
141000	84	84	255.73	-1.25	2.0595	2.8056	95.10	623.00	.018
142000	88	84	256.18	-1.28	1.9786	2.6907	96.49	623.54	.011
143000	90	85	256.67	-1.27	1.9011	2.5804	94.39	624.14	.009
144000	79	84	257.12	-1.30	1.8267	2.4751	96.72	624.68	.013
145000	77	85	257.56	-1.34	1.7554	2.3744	97.32	625.21	.005
146000	78	87	258.00	-1.35	1.6870	2.2779	99.27	625.76	.003
147000	78	89	258.43	-1.39	1.6213	2.1858	103.88	626.26	.003
148000	77	90	258.82	-1.42	1.5584	2.0976	103.69	626.75	.004
149000	76	94	259.21	-1.46	1.4979	2.0132	107.83	627.22	.006
150000	74	98	259.59	-1.50	1.4399	1.9324	112.06	627.66	.011
151000	71	103	259.92	-1.56	1.3842	1.8553	116.44	628.09	.012
152000	71	106	260.26	-1.62	1.3308	1.7814	119.79	628.49	.004
153000	74	107	260.61	-1.64	1.2795	1.7104	122.05	629.92	.009
154000	78	107	260.92	-1.71	1.2302	1.6426	125.11	629.28	.014
155000	82	107	261.20	-1.78	1.1829	1.5777	130.77	629.62	.013
156000	85	107	261.49	-1.83	1.1374	1.5154	136.01	629.97	.009
157000	87	109	261.78	-1.87	1.0938	1.4556	139.51	630.32	.007
158000	90	108	262.00	-1.97	1.0519	1.3986	144.45	630.59	.008
159000	92	109	262.24	-2.05	1.0116	1.3439	148.75	630.87	.008
160000	95	107	262.44	-2.15	.9729	1.2915	152.59	631.11	.010
161000	98	101	262.97	-2.43	.9357	1.2396	157.99	631.76	.014
162000	101	93	264.22	-2.57	.9001	1.1868	163.08	633.26	.016
163000	103	85	265.61	-2.58	.8660	1.1358	164.94	634.92	.013
164000	107	79	266.93	-2.64	.8333	1.0876	170.19	636.49	.015
165000	114	74	268.15	-2.76	.8021	1.0421	172.43	637.94	.017
166000	121	71	269.56	-2.65	.7721	.9979	177.79	639.62	.016
167000	128	69	270.05	-2.29	.7434	.9590	180.09	640.20	.014
168000	133	67	269.03	-2.09	.7157	.9269	181.92	638.98	.011
169000	134	65	267.42	-2.05	.6890	.8975	183.50	637.07	.006
170000	134	63	265.62	-2.16	.6630	.8696	186.65	634.93	.004
171000	128	63	263.99	-2.38	.6379	.8418	188.58	632.97	.011
172000	120	67	262.85	-2.63	.6136	.8133	190.40	631.61	.017
173000	113	73	262.25	-2.84	.5902	.7840	194.19	630.88	.017
174000	107	77	261.96	-2.98	.5676	.7551	195.94	630.46	.016
175000	102	83	261.61	-3.05	.5459	.7270	201.09	630.12	.015
176000	96	87	261.36	-3.10	.9250	.6998	205.37	629.82	.015
177000	91	90	261.01	-3.10	.5048	.6738	208.54	629.40	.015
178000	87	94	260.40	-3.04	.4854	.6494	211.52	628.66	.013
179000	84	98	259.41	-2.94	.4667	.6268	214.99	627.46	.011
180000	82	101	257.97	-2.95	.4486	.6059	218.89	625.72	.007
181000	82	103	256.43	-3.09	.4312	.5858	222.81	623.85	.005
182000	82	105	254.93	-3.21	.4143	.5662	226.30	622.01	.003
183000	83	105	253.47	-3.30	.3980	.5470	229.64	620.23	.002
184000	85	103	251.93	-3.50	.3822	.5285	234.59	618.35	.008
185000	88	100	250.50	-3.62	.3670	.5104	238.74	616.50	.010
186000	91	97	249.09	-3.74	.3523	.4927	242.32	614.85	.010

187000	94	94	247.63	-3.97	.3382	.4737	[illegible]	[illegible]	[illegible]
188000	94	90	246.23	-4.08	.3244	.4590	256.63	611.31	.007
189000	92	87	244.83	-4.24	.3112	.4432	[illegible]	[illegible]	.007
190000	90	83	243.43	-4.44	.2985	.4271	258.53	607.83	.009
191000	84	80	242.11	-4.33	.2862	.4118	264.45	606.18	.013
192000	74	80	999.99	0.00	999.9999	999.9999	271.54	999.99	.016
193000	72	85	999.99	0.00	999.9999	999.9999	277.68	999.99	.018
194000	58	93	999.99	0.00	999.9999	999.9999	284.76	999.99	.017
195000	66	103	999.99	0.00	999.9999	999.9999	293.98	999.99	.018
196000	67	114	999.99	0.00	999.9999	999.9999	302.34	999.99	.019
196960	68	125	999.99	0.00	999.9999	999.9999	310.24	999.99	.019

MAXIMUM ALTITUDE 199861 GEOMET

```
99XY 0713[illegible] [illegible] 74794 [illegible] [illegible]
20562 09017 9//// [illegible] [illegible] [illegible] 22557 [illegible] [illegible] 23[illegible]
10015 [illegible] 24[illegible] 10016 [illegible] [illegible] [illegible] 91424 [illegible] [illegible]
91357 27547 08023 91304 28546 09023 91260 29545 09023 91223
30544 09025 91192 31542 09026 91164 32528 09026 91140 33535
09026 91120 34535 09026 91104 35536 09026 92904 36535 09027
92782 37532 09025 92672 38531 10030 92[illegible] 39529 10035 92501
40525 10036 92431 41523 09035 92373 42520 07037 92322 43517
08042 92[illegible] 44511 08043 92244 45514 08046 92213 46513 07053
92185 47512 08055 92163 48511 09055 92143 49510 10053 92125
50506 11041 92109 51503 13035 93948 52509 13032 93853 53511
11040 93758 54512 09047 93670 55516 08053 93597 56521 09053
93534 57526 09049 93476 [illegible] 09042 93423 59/// 07046 9////
60/// 07064 9////
11560 [illegible] 09016 11554 30241 10016 11548 20267 08023 11540
10313 09026 11535 07338 09026 11534 05362 09027 11525 03398
10036 11517 02428 09043 11511 01481 09056 22505 07509 13034
22512 05534 09047 22519 04551 08054 22530 03572 09043
JJJ
```

ATTACHMENT 8

BREAKDOWN OF 46-CHARACTER DATA

DATA FORMAT

COMPUTER OCTAL SEMI-RAW TTY OUTPUT

(38/46 CHARACTER)

SOM Line: JJ ↓ <≡↓ or DD ↓ <≡↓

Char. No.	Char. or Range	Content
1		Line Feed
2	↑	Figure Shift
3	↑	Figure Shift
4	(0–9)	Vehicle ID
5	(0–9)	Station ID
6	(0–9)	Station ID
7	(0–9)	Radar ID
8	(0 or 2)	Validity ID
9	(0–2)	Hrs (tens)
10	(0–9)	Hrs (units)
11	(0–5)	Min (tens)
12	(0–9)	Min (units)
13	(0–5)	Sec (tens)
14	(0–9)	Sec (units)
15	(0–7)	Az 21, 20, 19
16	(0–7)	Az 18, 17, 16
17	(0–7)	Az 15, 14, 13
18	(0–7)	Az 12, 11, 10
19	(0–7)	Az 9, 8, 7
20	(0–7)	Az 6, 5, 4
21	(0–7)	Az 3, 2, 1
22	(0–7)	El 21, 20, 19
23	(0–7)	El 18, 17, 16
24	(0–7)	El 15, 14, 13
25	(0–7)	El 12, 11, 10
26	(0–7)	El 9, 8, 7
27	(0–7)	El 6, 5, 4
28	(0–7)	El 3, 2, 1
29	(0–7)	Rng 27, 26, 25
30	(0–7)	Rng 24, 23, 22
31	(0–7)	Rng 21, 20, 19
32	(0–7)	Rng 18, 17, 16
33	(0–7)	Rng 15, 14, 13
34	(0–7)	Rng 12, 11, 10
35	(0–7)	Rng 9, 8, 7
36	(0–7)	Rng 6, 5, 4
37	(0–7)	Rng 3, 2, 1
38	<	Carriage return for end of 38 character data
38	(0–3)	46 char data day of year (100)
39	(0–3)	46 char data day of year (10)
40	(0–9)	46 char data day of year (1)
41	(0–9)	46 char data catalog number (1000)
42	(0–9)	46 char data catalog number (100)
43	(0–9)	46 char data catalog number (10)
44	(0–9)	46 char data catalog number (1)
45	(0–9)	SPACE
46	<	Carriage return for end of 46 character data

Description

Vehicle ID

Beacon	Skin
0	&
1	-
2	
3	
4	.
5	$
6	*
7	)
8	Test Data
9	Last Point

Station ID		Radar ID	No. Char.
01	BDA 67.18	4	TPQ-18	46
02	BDA 67 16	5	FPS-16M	46
08	CRO --	3	FPQ-6	46
12	HAW --	5	FPS-16M	38/46
21	PAT 0.18	3	FPQ-6	38/46
41	GBI 3.13	-	FPQ-13	None
51	GTK 7.18	4	TPQ-18	38/46
63	REDSTONE	5	FPS-16M	38
71	MLA 19.18	4	TPQ-18	38/46
75	ACN 12.16	0	FPS-16	38/46
91	ANT 91.18	3	FPQ-6	38/46
98	CNV 1.16	-	FPS-16	None

EOM Line: ≡ ↑ // ↓

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ATTACHMENT 9

DESCRIPTION OF TEMPERATURE CORRECTION TECHNIQUE

(This attachment was extracted from *Federal Meteorological Handbook* 10)

Description of corrections applied to observed Rocketsonde Temperature

Temperature Corrections for Datasonde Instrument

The Datasonde instrument employes a 10-mil bead thermistor, mounted on a loop of silverized mylar, commonly referred to as the loop mount. The general procedures for applying temperature corrections to film mounted thermistors, as described by Henry (Bibliography Ref. 3) have been expanded and adapted to the specific configuration of the loop mounted thermistor as used in the Datasonde instrument. This work has been done by Krumins and Lyons (Bibliography Ref. 4), and others, and has been adopted as the U.S. standard correction technique. The corrections developed for application to the loop mounted thermistor include acceptable values for incoming radiation heating corrections.

The true atmospheric temperature, T_{atm}, is equal to the observed thermistor temperature, T_t, plus certain correction values described by the following terms: (some rearrangement of the elements of each term has been made from the similar terms used for the Arcasonde instrument and the elements for the incoming radiation corrections have been added to the fourth term.):

Aerodynamic heating term,

$$K_1 = -\left[\frac{A_t h_t r_t + w_f A_f h_f r_f}{A_t h_t + w_f A_f h_f}\right] \frac{V^2}{2c_p}$$

Time lag term,

$$K_2 = +\left[\frac{c_t m_t + w_f c_f m_f}{A_t h_t + w_f A_f h_f}\right] \frac{dT_t}{d_t}$$

Radiation heat loss, term,

$$K_3 = +\left[\frac{A_t \varepsilon_{1t} + w_f A_f \varepsilon_{1f}}{A_t h_t + w_f A_f h_f}\right] \sigma T_t^4$$

Incoming radiation and electric heating term,

$$K_4 = -\frac{\alpha_{st} G_{st}}{A_t h_t + w_f A_f h_f} \quad J$$

$$- \frac{w_f \alpha_{sf} G_{sf}}{A_t h_t + w_f A_f h_f} \; J - \left[\frac{\alpha_{st} G_{st}}{A_t h_t + w_f A_f h_f} + \frac{w_f \alpha_{sf} G_{sf}}{A_t h_t + w_f A_f h_f}\right] \text{Alb. } J$$

$$- \left[\frac{\alpha_{1t} G_{1t} + w_f \alpha_{1f} G_{1f}}{A_t h_t + w_f A_f h_f}\right] \sigma T_{eff}^4 - \frac{W_t}{A_t h_t + w_f A_f h_f}$$

The four correction terms applied to the observed thermistor temperature can be simply identified in a correction expression as follows:

$$T_{atm} = T_t - \left(K_1(Z)V^2\right) + \left[K_2(Z)\left(\frac{dT_t}{d_t}\right)\right] + \left(K_3(Z)T_t^4\right) - \left(K_4(Z)\right)$$

The values of $K_1(Z)$, $K_2(Z)$, $K_3(Z)$ and $K_4(Z)$ are shown in table 1.b. and the values of T_t, V^2, $\frac{dT_t}{dt}$ and T_t^4 versus altitude, (Z), are obtained from each individual sounding.

List of Symbols and Values

The following symbols have been used in the foregoing expressions. The values of some of the constants and also several of the mount/thermistor dimensions which have been used in the computation of data for tables 1.a and 1.b are shown. Where the values differ for the flat plate and the loop mounted thermistor, the system for which the value is applicable is indicated by the letters F and L, respectively.

Symbol	Definition	Value
a	speed of sound	
A	aerodynamic heating term	
A_f	surface area of film	3.944 cm^2
A_t	surface area of thermistor	2.92×10^{-3} cm^2
Alb.	albedo	35 percent assumed
B	time lag term	
c_f	specific heat of film	0.2 cal gm^{-1} $(°K)^{-1}$
c_p	specific heat of air at constant pressure	0.24 cal gm^{-1} $(°K)^{-1}$
C	ohmic and rf heating term	
d	diameter of bead	2.54×10^{-2} cm
D	long wave emission term	
G_{lf}	area of film multiplied by a shape factor subject to long-wave (terrestrial) radiation	3.944×0.5 cm^{-2}
G_{lt}	area of thermistor multiplied by a shape factor subject to long-wave (terrestrial) radiation	$2.923 \times 10^{-3} \times 0.5$ cm^2
G_{sf}	area of film multiplied by a shape factor supplied to short-wave (solar) radiation	3.944×0.25 cm^2
G_{st}	area of thermistor multiplied by a shape factor subject to short-wave (solar) radiation	$5.09 \times 10^{-4} \times 0.25$ cm^2
h_f	convective heat-transfer coefficient for film	See Bibl. 4
h_t	convective heat-transfer coefficient for thermistor	See Bibl. 4
(h_f)local	local convective heat-transfer coefficient for film	See Bibl. 4

Symbol	Definition	Value
J	solar constant	
k	conductivity of lead wires	7.4×10^{-2}cal cm^{-1} sec^{-1} $(°K)^{-1}$
K_1	dynamic heating correction term	
K_2	lag correction term	
K_3	radiation loss correction term	
K_4	radiation and electrical heating correction term	
M	Mach number	
m_f	mass of film	1.4×10^{-2} gm
V	ventilation velocity of sensor system, m sec^{-1}	
w_f	weighting factor	See Bibl. 4
W_t	electrical heating of thermistor due to measuring current and radio-frequency radiation	9.56×10^{-7} cal sec^{-1}
x	length of lead wires	0.33 cm
Z	altitude meters	
α	absorptivity	
α_{lf}	absorptivity of long-wave (terrestrial) radiation of film	0.1
α_{lt}	absorptivity of long-wave (terrestrial) radiation of thermistor	0.1
α_{sf}	absorptivity of short-wave (solar) radiation of film	0.18
α_{st}	absorptivity of short-wave (solar) radiation of thermistor	0.12
β	cross sectional area of lead wires	5.07×10^{-4} cm^2
ε_{lf}	emissivity of film	0.18
ε_{lt}	emissivity of thermistor	0.2
γ	angle of elevation of sun from horizontal	See Bibl. 4
μ	viscosity	

Symbol	Definition	Value
ϱ	density	
ϱ_f	density of film	
σ	Stefan-Boltzman constant	1.38×10^{-12} cal cm^{-2} sec^{-1} $(°K)^{-4}$
m_t	mass of thermistor	See Bibl. 4
N_s	Nusselt number	See Bibl. 4
P_r	Prandlt number	See Bibl. 4
r_f	recovery factor for film	0.85
r_t	recovery factor for thermistor	See Bibl. 4
R_d	Reynolds number based on diameter	See Bibl. 4
R_l	Reynolds number based on length	See Bibl. 4
R_s	Reynolds number based on length along the film	See Bibl. 4
s	distance along the film from stagnation point	See Bibl. 4
S_t	Stanton number	See Bibl. 4
T_{eff}	effective radiation temperature of atmosphere	See Bibl. 4
T_f	temperature of film	
T_t	temperature of thermistor, degrees K	
T_{atm}	temperature of atmosphere corrected, degrees K	
t	time, seconds	
t_f	thickness of film	
u	local velocity	

TABLE 1

Table of values of K_1, K_2, K_3, and K_4 versus altitude for the 10-mil bean thermistor using a loop mount.

Z	K_1	K_2	K_3	K_4	
	$\frac{sec^2 °K}{m^2}$		$\frac{1}{°K^3}$	(°K)	
(m)		(sec)		Day	Night
70×10^3	4.65×10^{-4}	12.77	18.51×10^{-10}	23.2	7.56
69	4.65	10.60	14.63	18.4	6.04
68	4.64	8.92	11.83	15.0	4.93
67	4.64	7.70	9.80	12.5	4.13
66	4.63	6.69	8.18	10.4	3.48
65	4.62	5.93	6.98	8.94	3.00
64	4.61	5.27	5.98	7.70	2.59
63	4.59	4.72	5.17	6.69	2.26
62	4.57	4.27	4.63	5.87	2.00
61	4.55	3.84	3.93	5.13	1.75
60	4.52	3.51	3.49	4.57	1.57
59	4.50	3.23	3.12	4.10	1.41
58	4.48	2.95	2.78	3.66	1.27
57	4.46	2.72	2.49	3.29	1.15
56	4.44	2.51	2.24	2.98	1.04
55	4.43	2.342	2.05	2.73	0.956
54	4.42	2.148	1.87	2.51	0.880
53	4.41	2.053	1.74	2.33	0.820
52	4.40	1.935	1.62	2.17	0.766
51	4.40	1.828	1.51	2.03	0.718
50	4.39	1.728	1.41	1.90	0.673
49	4.39	1.627	1.31	1.77	0.629
48	4.39	1.545	1.23	1.67	0.592
47	4.39	1.469	1.16	1.57	0.559
46	4.40	1.393	1.09	1.48	0.528
45	4.41	1.330	1.03	1.40	0.500
44	4.41	1.271	9.76×10^{-11}	1.33	0.476
43	4.42	1.212	9.24	1.26	0.452
42	4.42	1.160	8.79	1.20	0.430
41	4.43	1.111	8.35	1.14	0.410
40	4.43	1.065	7.95	1.09	0.392
39	4.44	1.019	7.53	1.03	0.372
38	4.44	0.978	7.18	0.986	0.355
37	4.45	0.940	6.85	0.943	0.341
36	4.45	0.903	6.52	0.897	0.323
35×10^3	4.46×10^{-4}	0.868	6.22×10^{-11}	0.858	0.311
34	4.46	0.837	5.96	0.822	0.298
33	4.47	0.804	5.68	0.785	0.285
32	4.47	0.776	5.44	0.753	0.274
31	4.48	0.749	5.22	0.722	0.263
30	4.49	0.724	5.00	0.694	0.253
29	4.49	0.700	4.79	0.666	0.243

TABLE 1 (Continued)

Z	K_1	K_2	K_3	K_4	
	$\frac{sec^2 °K}{m^2}$		$\frac{1}{°K^3}$	(°K)	
(m)		(sec)		Day	Night
28	4.50	0.677	4.60	0.640	0.235
27	4.50	0.656	4.42	0.615	0.225
26	4.51	0.635	4.25	0.593	0.218
25	4.52	0.616	4.09	0.572	0.210
24	4.52	0.597	3.94	0.551	0.203
23	4.52	0.580	3.81	0.533	0.197
22	4.53	0.565	3.69	0.518	0.191
21	4.54	0.550	3.58	0.502	0.185
20	4.55	0.635	3.47	0.487	0.180

$$T_{atm} = T_t - \left(K_1(Z)V^2\right) + \left[K_2(Z)\left(\frac{dT_t}{d_t}\right)\right] + \left(K_3(Z)T_t^4\right) - \left(K_4(Z)\right)$$

ATTACHMENT 10

SAMPLE COPY OF ROCOB DATA
(SEE ATTACHMENT 5 FOR INPUT DATA)

ATTACHMENT 11

BREAKDOWN OF ROCOB CODE

ROCKETSONDE MESSAGE CODE

SECTION A - INTRODUCTION

1.1 A ROCOB report or a bulletin of ROCOB reports from a land rocketsonde station is identified by $M_iM_iM_jM_j$ = RRXX. The identifier for ROCOB SHIP is SSXX. (The same ROCOB or ROCOB SHIP shall not be included in the report.)

1.2 The code form is divided into three sections as follows:

SECTION 1 - Identification data

SECTION 2 - Data for specified geometric altitudes

SECTION 3 - Data for isobaric surfaces (optional)
(Sections 2 and 3 cannot be transmitted as a separate report.)

SECTION B - MESSAGE FORMAT

1.1 FM39.F ROCOB — Upper-level temperature and wind (possibly air density) report from land rocketsonde station.

SECTION 1	$M_iM_iM_jM_j$	$YYCG_g$ MMJJJ	IIiii $a_1e_Te_Tc_Tm_r$ $r_me_we_wc_wm_r$
SECTION 2	HHZ_TTT	ddfff	$(9d_pP_1P_1P_1)$
	HHZ_TTT	ddfff	$(9d_pP_1P_1P_1)$
	.....	.....	.....
SECTION 3	$11Z_TT_1T_1$	$P_1P_1h_1h_1h_1$	ddfff
	.....	.....	.....
	$11Z_TT_nT_n$	$P_nP_nh_nh_nh_n$	$d_nd_nf_nf_nf_n$
	$22Z_TT_1T_1$	$P_1P_1h_1h_1h_1$	$d_1d_1f_1f_1f_1$
	.....	.....	.....
	$22Z_TT_nT_n$	$P_nP_nh_nh_nh_n$	$d_nd_nf_nf_nf_n$
	33...	.....	.....
	44...	.....	.....
	etc.		

SECTION C - DEFINITIONS

1.1 Symbolic form table for land stations

$M_iM_iM_jM_j$ = RRXX - ROCOB report from a land station

YY = Day of the month (GMT) on which the observation was taken.

GG_g = Time of launch in hours and nearest tens of minutes GMT

MM = Month of year (01 = Jan, 12 = Dec. etc.)

JJJ = Year (980 = 1980, 981 = 1981, etc.)

IIiii = International Index Number of the observing station (II = Block Nbr and iii = Station Nbr, both given in H.O Pub. No. 119.)

a_1 = Reason for no report and ground equipment employed (Code Table 1).

e_Te_T = Type of thermodynamic sensing equipment (Code Table 2).

c_T = Thermodynamic correction technique (Code Table 3).

m_r = Method of reducing data in temperature or wind group (Code Table 4).

r_m = Type of rocket.motor (Code Table 5).

e_we_w = Type of wind sensing equipment (Code Table 6).

e_w = Wind correction technique (Code Table 3).

HH = Altitude, in kilometers, of the level for which data are reported.

Z_T = Character of the temperature reported by TT (Code Table 7).

TT = Air temperature in whole degrees Celsius at the altitude given by HH. (For a temperature of -570, the coding is TT=57 and Z_T=5.) When temperature is missing, two solidi (//) are reported for TT.

dd = True direction, in tens of degrees, from which the wind is blowing at the altitude given by HH (Code Table 8). (See note below fff.)

fff = Windspeeds are preferred in meters/sec at the altitude given by HH. If windspeeds are given in knots, 50 will be added to YY.

NOTE: (1) When wind direction or speed are missing, use solidi for ddfff as appropriate.

(2) The thickness of the layer through which wind direction and speed are determined shall be 2 km for both mandatory and significant levels; i.e., 1 km on each side of the altitude reported.

9 = Indicator figure for the density group, $9d_pP_1P_1P_1$.

d_p = Decimal point locator. The number of places to the left of the third significant figure. The decimal point must be so placed as to obtain the actual density in g/m^3 by $P1^P1^P1$.

NOTE: The third significant figure is always included in the value reported for symbol d_p.

EXAMPLE:

Assume 120 g/m^3, the group is coded 90120 (i.e., $d_p = 0$).

Assume 1.20 g/m^3, the group is coded 92120 (i.e., $d_p = 2$).

Assume 0.281 g/m^3, the group is coded 93281 (i.e., $d_p = 3$).

Assume 0.0788 g/m^3, the group is coded 94788 (i.e., $d_p = 4$).

$P_1 P_1 P_1$ = Density in gm/m^3 rounded to three significant figures at the altitude given by HH.

11 = Indicator figures - Standard isobaric surface data follow;

temperature ($Z_TT_1T_1$ ... $Z_TT_nT_n$) is reported in the same manner as in section 2, pressure P_1P_1 .... P_nP_n) is reported in <u>whole</u> millibars, altitude ($h_1h_1h_1$ ... $h_nh_nh_n$) is reported in geopotential hectometers.

22 = Indicator figures - Standard isobaric surface data follow; temperature is reported in the same manner as in section 2, pressure is reported in <u>tenths</u> of a millibar and altitude is reported in geopotential hectometers.

33 = Indicator used for reporting pressure in <u>hundredths</u> of a millibar and altitude in geopotential hectometers.

44 = Indicator used for reporting pressure in <u>thousandths</u> of a millibar and altitude in geopotential hectometers.

55 = Indicator used for reporting pressure in ten-thousandths of a millibar and altitude in geopotential hectometers.

66 = Indicator used for reporting pressure in hundred-thousandths of a millibar and altitude in geopotential kilometers.

d_1d_1 = Wind direction in tens of degrees (Code Table 8) at the reported isobaric surfaces.

$f_1f_1f_1$ = Windspeed in meters/sec at the reported isobaric surfaces.

ATTACHMENT 12

TABLE OF THE LOGS OF MANDATORY PRESSURE LEVELS

LOG OF MANDATORY PRESSURE LEVELS

LEVEL	50 MB	30 MB	20 MB	10 MB	7 MB
LOG	1.69897	1.47712	1.30102	1 0	0.84509
LEVEL	5 MB	3 MB	2 MB	1 MB	
LOG	0.69897	0.47712	0.30102	0.0	
LEVEL	0.7 MB	0.5 MB	0.4 MB	0.3 MB	
LOG	−0.15490	−0.30102	−0.39794	−0.52287	
LEVEL	0.2 MB	0.1 MB			
LOG	−0.699897	−1			
LEVEL	0.07 MB	0.05 MB	0 03 MB	0.02 MB	
LOG	−1.15490	−1.30102	−1 52287	−1.69897	
LEVEL	0.01 MB				
LOG	−2.0				
LEVEL	0.007 MB	0.005 MB	0.003 MB	0.002 MB	
LOG	−2.15490	−2.30102	−2.52287	−2.69897	
LEVEL	0.001 MB				
LOG	−3.0				
LEVEL	0.0007 MB	0.0005 MB	0.0003 MB	0.0002 MB	
LOG	−3.15490	−3.30102	−3.52287	−3.69987	
LEVEL	0.0001 MB				
LOG	−4.0				
LEVEL	0.00007 MB	0.00005 MB	0.00003 MB	0.00002 MB	
LOG	−4.15490	−4.30102	−4.52287	−4.69897	
LEVEL	0.00001 MB				
LOG	−5.0				

ATTACHMENT 13

SAMPLE COPY OF HIGH-ALTITUDE METEOROLOGICAL DATA (SEE ATTACHMENT 5 FOR INPUT DATA)

TEST NUMBER [illegible]
CAPE CANAVERAL AFS,FL.
13DEC 7 APR 1964

SUPER LOAT	PAM-LI						
1900081 15	3 -13	-2 -10	4 -64	09.999+99.999+9250			
2000086 17	-3 -19	-1 -17	4 -62	09.999+99.999+9292			
2100092 15	1 -15	0 -15	5 -60	04.974+14.116+1293			
2200079 15	-3 -15	-3 -14	5 -57	04.250+14.442+1295			
2300100 15	3 -15	3 -15	6 -56	03.639+15.814+1296			
2400103 15	4 -15	3 -15	7 -54	03.114+14.955+1297			
2500085 18	-1 -19	-1 -18	7 -54	-12.669+14.226+1297			
2600084 22	-3 -23	-2 -22	8 -49	-12.291+13.565+1300			
2700093 23	-3 -23	-3 -23 10	-47	-11.971+13.042+1301			
2800084 23	-2 -22	-2 -22	9 -46	-11.698+12.602+1302			
2900087 23	1 -22	-1 -23 10	-45	-11.464+12.230+1303			
3000090 25	-1 -24	0 -25 11	-44	-11.263+11.920+1304			
3100090 25	0 -25	0 -26 12	-42	-11.090+11.644+1305			
3200090 25	0 -27	0 -26 13	-39	-10.433+01.400+1307			
3300088 26	0 -25	-1 -25 13	-38	-10.176+01.201+1309			
3400089 26	-1 -26	-1 -26 16	-36	-17.096+01.036+1310			
3500092 26	-1 -27	1 -26 17	-36	-14.158+09.037+0309			
3600093 27	1 -26	1 -26 17	-35	-15.344+07.817+0309			
3700094 28	3 -28	2 -28 17	-32	-14.642+06.715+0311			
3800097 30	3 -27	4 -30 19	-31	-14.038+05.610+0312			
3900096 33	3 -34	5 -34 23	-29	-13.516+05.008+0314			
4000096 35	2 -37	4 -36 27	-26	-13.066+04.314+0316			
4100086 35	-1 -34	-2 -35 28	-23	-12.678+03.725+0317			
4200071 37	-11 -35	-12 -35 28	-20	-12.343+03.223+0319			
4300084 42	-9 -42	-4 -42 29	-17	-12.053+02.797+0321			
4400078 43	-11 -42	-9 -42 30	-16	-11.801+02.439+0322			
4500079 44	-11 -44	-10 -45 32	-14	-11.581+02.129+0323			
4600071 53	-10 -51	-17 -50 35	-13	-21.389+01.861+0323			
4700075 55	-9 -55	-11 -54 38	-12	-21.221+01.629+0324			
4800088 55	-2 -55	-2 -55 43	-11	-21.073+01.428+0325			
4900098 53	9 -50	7 -52 48	-10	-29.445-11.252+0325			
5000108 41	13 -34	12 -39 52	-6	-38.320-11.086+0328			
5100129 35	25 -24	22 -27 55	-3	-27.344-19.479-1329			
5200131 32	19 -21	21 -24 57	-9	-26.478-18.530-1326			
5300104 40	7 -43	12 -38 60	-11	-35.702-17.584-1325			
5400090 47	-3 -47	0 -47 64	-12	-35.016-16.696-1324			
5500082 53	-8 -54	-7 -52 67	-16	-34.408-15.968-1322			
5600085 58	-1 -61	-5 -58 71	-20	-33.865-15.335-1319			
5700094 49	1 -47	3 -48 75	-26	-43.380-14.756-1316			
5800086 46	-7 -46	-1 -47 79	-30	-52.949-14.227-1313			
5900069 45	-10 -52	-10 -48	86999999999.999+99.999+9999				
6000068 64	-18 -63	-24 -59	94999999999.999+99.999+9999				
6100066 64	-12 -63	-24 -60	95999999999.999+99.999+9999				
2097091 16	1 -16	0 -16	5 -60	05.060+18.156+1293			
2411099 15	3 -15	2 -16	7 -54	02.000+14.777+1297			
2675069 23	-3 -23	-3 -23 10	-48	-12.000+13.089+1301			
3159090 26	1 -27	0 -26 13	-40	-11.000+11.493+1305			
3387065 25	-1 -25	-1 -25 16	-35	-17.000+01.022+1310			
3621094 27	1 -28	2 -27 17	-34	-15.000+07.286+0310			
3985095 35	4 -37	3 -36 27	-25	-13.000+04.213+0316			
4235067 43	-1 -44	-2 -43 29	-17	-12.000+02.721+0321			
4812092 54	4 -54	3 -54 45	-11	-21.000+01.326+0325			
5090135 34	22 -33	24 -24 56	-5	-27.000-19.095-1325			
5349090 47	-3 -47	0 -47 64	-12	-35.000-16.676-1324			
5516083 54	-8 -52	-7 -54 70	-19	-34.000-15.494-1319			
5727090 48	-5 -49	0 -48 79	-30	-43.000-14.290-1313			

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A-131

ROCK 3

000005	000	000	274	262	101729	403	093
000475	330	003	294	248	096511	377	081
000965	003	004	245	221	091337	350	086
001214	019	005	243	170	088803	314	085
001708	032	006	231	141	083922	296	073
001946	037	006	189	110	081648	274	060
002165	044	005	190	02K	079408	234	024
002949	035	004	139	007	072609	226	041
003221	034	004	120	09M	070295	205	021
004039	026	004	08R	04L	063731	19F	041
004311	031	003	045	130	061819	185	032
004826	015	002	002	04P	057634	166	070
005078	002	002	021	07P	056041	178	065
005335	309	001	02L	191	054266	1F2	026
005978	233	002	03P	25L	052630	155	016
007065	155	002	15Q	20C	043433	136	04F
007324	177	003	17J	08P	041975	129	01F
008377	155	00F	23P	41P	036433	114	027
010234	170	011	391	13J	021064	393	020
012496	164	007	55P	04C	019947	077	026
012795	165	001	05N	51P	019129	069	025
014557	162	011	51P	59C	017436	054	999
015147	151	014	71L	99C	016595	05L	999
015434	151	001	67J	999	016319	047	999
016070	033	003	71P	999	015416	043	999
016409	091	00F	72J	999	015501	044	999
021414	331	014	47J	999	018654	017	999
024911	0[illegible]	018	53J	999	022711	013	999
026036	0[illegible]	02A	47J	999	023255	00F	999

000005	000	000	274	262	101729	403	093
000475	330	003	294	24F	096511	377	081
000965	003	004	245	221	091337	350	086
001214	019	005	243	170	088803	314	085
001708	032	006	231	141	083922	296	073
001946	037	006	189	110	081648	274	060
002165	044	005	190	02K	079408	234	024
002949	035	004	139	007	072609	226	041
003221	034	004	120	09M	070295	205	021
004039	026	004	08R	04L	063731	19F	041
004311	031	003	045	130	061819	185	032
004826	015	002	002	04P	057634	166	070
005078	002	002	021	07P	056041	178	065
005335	309	001	02L	191	054266	1F2	026
005978	233	002	03P	25L	052630	155	016
007065	155	002	15Q	20C	043433	136	04F
007324	177	003	17J	08P	041975	129	01F
008377	155	00F	23P	41P	036433	114	027
010234	170	011	391	13J	021064	393	020
012496	164	007	55P	04C	019947	077	026
012795	165	001	05N	51P	019129	069	025
014557	162	011	51P	59C	017436	054	999
015147	151	014	71L	99C	016595	05L	999
015434	151	001	67J	999	016319	047	999
016070	033	003	71P	999	015416	043	999
016409	091	00F	72J	999	015501	044	999
021414	331	014	47J	999	018654	017	999
024911	0[illegible]	018	53J	999	022711	013	999
026036	0[illegible]	02A	47J	999	023255	00F	999

ATTACHMENT 14

SAMPLE COPY OF CARD OUTPUT
(SEE ATTACHMENT 5 FOR INPUT DATA)

TEST NUMBER [illegible]
CAPE CANAVERAL AFS,FL.
13007 7 AUG 1984

SUPER LOKI PWN-110

ALT GEOPM	DIR DEG	SPD MPS	TEMP K	TEMP CORR	PRESS MBS	DENSITY G/M3	RF MPS	VS MPS	SHR /SEC
20000	[illegible]	17	211.46	-.43	999.9999	999.9999	3.75	291.63	.999
21000	91	19	213.59	-.44	49.7595	81.1614	5.63	293.09	.002
22000	79	19	215.76	-.45	42.4979	68.6199	5.39	294.58	.003
23000	100	19	217.82	-.46	35.3541	56.1435	5.05	295.99	.005
24000	103	18	219.92	-.47	31.1395	49.5547	6.77	296.73	.001
25000	95	19	219.45	-.50	26.6804	42.3561	7.01	297.09	.004
26000	94	22	223.63	-.52	22.9055	35.6512	7.97	300.04	.004
27000	93	23	225.66	-.54	19.7078	30.4213	9.76	301.23	.001
28000	94	23	227.32	-.56	16.9755	26.0163	8.88	302.37	.000
29000	97	23	228.64	-.56	14.6377	22.3039	9.93	303.24	.002
30000	90	25	229.14	-.60	12.6293	19.2017	11.34	303.57	.002
31000	90	25	231.05	-.47	10.9241	16.4412	12.40	304.84	.002
32000	90	26	234.76	-.68	9.4334	13.9991	12.87	307.28	.000
33000	88	26	237.11	-.69	8.1701	12.0104	13.32	308.84	.001
34000	89	26	238.57	-.72	7.0957	10.3618	15.53	309.76	.000
35000	92	26	237.40	-.78	6.1584	9.0373	17.96	309.00	.002
36000	93	27	238.15	-.83	5.3437	7.8169	17.27	309.49	.001
37000	94	28	240.76	-.88	4.6415	6.7152	16.86	311.20	.001
38000	97	30	242.14	-.88	4.0380	5.8098	19.17	312.07	.003
39000	98	32	244.56	-1.05	3.5155	5.0079	23.24	313.63	.004
40000	96	35	247.61	-1.16	3.0641	4.3139	26.81	315.57	.002
41000	86	35	250.47	-1.27	2.6784	3.7255	26.27	317.39	.006
42000	71	37	253.26	-1.26	2.3433	3.2234	28.93	319.16	.010
43000	84	42	255.76	-1.26	2.0532	2.7967	29.00	320.93	.010
44000	78	43	257.25	-1.34	1.8009	2.4389	29.56	321.66	.005
45000	73	45	258.68	-1.41	1.5809	2.1291	31.77	322.55	.003
46000	71	53	259.90	-1.56	1.3887	1.8615	35.39	323.31	.009
47000	79	55	260.97	-1.73	1.2206	1.6295	38.31	323.97	.008
48000	85	55	261.90	-1.91	1.0735	1.4279	43.46	324.56	.009
49000	98	53	262.63	-2.36	.9445	1.2519	47.74	325.13	.009
50000	109	41	266.68	-2.64	.8320	1.0857	51.91	327.69	.015
51000	129	35	269.91	-2.20	.7344	.9479	55.08	329.48	.015
52000	131	32	264.56	-2.27	.6478	.8530	57.48	326.23	.003
53000	108	40	261.93	-2.96	.5702	.7584	59.56	324.57	.017
54000	90	47	260.95	-3.10	.5016	.6696	63.70	323.96	.015
55000	92	53	257.29	-3.06	.4408	.5968	67.25	321.69	.009
56000	85	53	252.35	-3.45	.3865	.5335	71.09	318.58	.003
57000	94	49	247.62	-3.93	.3380	.4756	74.76	315.58	.009
58000	88	42	243.04	-4.53	.2949	.4227	79.20	312.75	.007
59000	89	46	999.99	0.00	999.9999	999.9999	85.58	999.99	.015
60000	88	64	999.99	0.00	999.9999	999.9999	94.20	999.99	.018
60334	88	64	999.99	0.00	999.9999	999.9999	94.56	999.99	.019

TEST NUMBER 5342
CAPE CANAVERAL AFS,FL.
13007 7 AUG 1984

SUPER LOKI PWN-110

ALT GEOPM	DIR DEG	SPD MPS	TEMP K	TEMP CORR	PRESS MBS	DENSITY G/M3	RF MPS	VS MPS	SHR /SEC
20000	86	17	211.46	-.43	999.9999	999.9999	3.75	291.63	.999
20250	86	18	211.82	-.43	56.0702	92.2199	4.07	291.88	.003
20500	89	19	212.50	-.43	53.4761	88.3285	5.01	292.34	.004
20750	92	17	213.06	-.44	51.7742	84.6576	5.58	292.73	.007
21000	91	19	213.59	-.44	49.7595	81.1614	5.63	293.09	.006
21250	88	15	214.12	-.45	47.8280	77.8167	5.87	293.46	.005

ROCK 3

21750	[illegible]	[illegible]	[illegible]	-.44	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	-.45	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22250	[illegible]	17	216.96	-.46	40.[illegible]53	85.61 [illegible]	[illegible]	224.[illegible]	.003
22500	[illegible]	17	216.[illegible]2	-.47	[illegible]	84.1429	[illegible]	[illegible]	[illegible]
22750	94	17	217.32	-.48	37.7561	80.8777	[illegible]	[illegible]	[illegible]
23000	95	17	217.68	-.48	36.3541	78.1435	[illegible]	225.00	.007
23250	104	18	218.04	-.47	34.9734	75.0084	[illegible]	225.21	.004
23500	130	18	218.39	-.47	33.6424	73.[illegible]6	[illegible]	225.50	.003
23750	106	18	218.75	-.47	32.3595	[illegible]	[illegible]	225.72	[illegible]
24000	107	18	219.09	-.47	31.1395	66.5547	[illegible]	225.73	.003
24250	98	18	219.79	-.46	29.9890	63.7038	[illegible]	225.66	.005
24500	96	18	219.47	-.48	28.8226	61.2168	[illegible]	225.[illegible]	.005
24750	89	17	219.87	-.49	27.7298	58.1350	[illegible]	225.70	.007
25000	[illegible]	17	219.45	-.50	26.6804	56.3561	[illegible]	225.09	.006
25250	[illegible]	[illegible]	220.[illegible]	-.52	25.6735	54.[illegible]713	[illegible]	225.77	.005
25500	[illegible]	21	221.79	-.51	24.7106	52.6148	[illegible]	225.[illegible]	.004
25750	[illegible]	[illegible]	222.93	-.51	23.7892	50.1754	[illegible]	225.44	.003
26000	[illegible]	22	223.[illegible]	-.52	22.9058	48.6512	[illegible]	225.04	.002
26250	[illegible]	22	224.46	-.53	22.0574	46.2351	[illegible]	225.46	.002
26500	[illegible]	23	224.90	-.53	21.2434	44.9070	[illegible]	225.75	.001
26750	[illegible]	23	225.31	-.54	20.4600	43.6363	[illegible]	225.83	.001
27000	[illegible]	23	225.69	-.54	19.7078	42.4213	[illegible]	225.78	.001
27250	[illegible]	23	226.05	-.55	18.9838	41.2592	[illegible]	225.64	.000
27500	[illegible]	23	226.49	-.55	18.2882	40.1306	[illegible]	225.81	.001
27750	[illegible]	23	226.90	-.55	17.6190	39.0520	[illegible]	225.89	.001
28000	[illegible]	23	227.32	-.56	16.9755	38.0163	[illegible]	225.87	.000
28250	[illegible]	23	227.73	-.56	16.3569	37.0230	[illegible]	225.64	.001
28500	[illegible]	23	228.13	-.56	15.7614	36.0694	[illegible]	225.91	.002
28750	[illegible]	23	228.40	-.56	15.1891	35.1684	[illegible]	225.08	.002
29000	[illegible]	23	228.64	-.56	14.6377	34.3039	[illegible]	225.24	.002
29250	[illegible]	23	228.76	-.58	14.1071	33.4837	[illegible]	225.33	.002
29500	[illegible]	24	226.89	-.59	13.5958	32.6998	[illegible]	225.41	.002
29750	[illegible]	24	229.01	-.59	13.1037	31.9538	[illegible]	225.49	.002
30000	[illegible]	25	229.14	-.60	12.6293	31.2017	[illegible]	225.57	.002
30250	[illegible]	25	229.36	-.61	12.1729	30.4899	[illegible]	225.79	.001
30500	[illegible]	25	229.58	-.63	11.7330	29.8046	[illegible]	225.87	.001
30750	[illegible]	26	230.25	-.65	11.3107	29.1139	[illegible]	226.31	.002
31000	[illegible]	26	231.05	-.67	10.9041	28.4412	[illegible]	226.84	.002
31250	[illegible]	26	231.96	-.68	10.5137	27.7906	[illegible]	227.61	.001
31500	[illegible]	26	232.01	-.67	10.1394	27.1598	[illegible]	227.74	.000
31750	[illegible]	27	234.06	-.67	9.7784	26.5544	[illegible]	227.88	.000
32000	[illegible]	28	234.76	-.68	9.4334	25.9991	[illegible]	227.87	.001
32250	[illegible]	28	235.45	-.68	9.1006	25.4657	[illegible]	227.73	.001
32500	[illegible]	28	236.07	-.68	8.7805	24.9578	[illegible]	227.83	.001
32750	[illegible]	28	236.69	-.68	8.4726	24.4738	[illegible]	227.80	.002
33000	[illegible]	28	237.18	-.69	8.1761	24.0164	[illegible]	227.92	.002
33250	[illegible]	28	237.66	-.71	7.8907	23.5840	[illegible]	227.74	.001
33500	[illegible]	28	238.19	-.71	7.6156	23.1390	[illegible]	227.81	.001
33750	[illegible]	28	238.52	-.71	7.3511	22.7389	[illegible]	227.73	.002
34000	[illegible]	28	238.97	-.72	7.0957	22.3618	[illegible]	227.76	.002
34250	[illegible]	28	239.42	-.73	6.8492	22.0080	[illegible]	227.66	.002
34500	[illegible]	28	239.89	-.74	6.6110	21.6735	[illegible]	227.65	.002
34750	[illegible]	28	240.37	-.75	6.3808	21.3580	[illegible]	227.73	.002
35000	[illegible]	28	240.48	-.78	6.1584	21.0373	[illegible]	227.80	.001
35250	[illegible]	28	240.93	-.79	5.9436	20.7241	[illegible]	227.85	.001
35500	[illegible]	28	241.47	-.81	5.7362	20.4189	[illegible]	227.98	.000
35750	[illegible]	28	241.73	-.81	5.5363	20.1132	[illegible]	227.91	.001
36000	[illegible]	27	242.14	-.83	5.3437	19.8159	[illegible]	227.69	.001
36250	[illegible]	27	242.63	-.84	5.1580	19.5301	[illegible]	227.90	.002
36500	[illegible]	27	243.17	-.85	4.9793	19.2536	[illegible]	228.14	.001
36750	[illegible]	27	243.80	-.86	4.8072	18.9837	[illegible]	228.56	.001
37000	[illegible]	28	244.80	-.88	4.6415	18.7152	[illegible]	229.29	.002
37250	[illegible]	28	245.68	-.88	4.4823	18.4647	[illegible]	229.76	.002
37500	[illegible]	28	246.45	-.86	4.3288	18.2202	[illegible]	229.77	[illegible]
37750	[illegible]	27	247.24	-.85	4.1809	17.9758	[illegible]	229.	[illegible]

ROCK 3

38	7	36	243.34	-.88	[illegible]	[illegible]	[illegible]	[illegible]	.004
38	7	36	243.71	-.94	[illegible]	[illegible]	[illegible]	[illegible]	.005
38	8	33	243.1	-.98	[illegible]	[illegible]	[illegible]	[illegible]	.005
38750	9	34	243.78	-1.01	[illegible]	[illegible]	[illegible]	[illegible]	.004
39000	9	35	244.54	-1.01	[illegible]	[illegible]	[illegible]	[illegible]	.004
39250	8	35	245.31	-1.08	3.3969	4.0232	24.22	314.13	.002
39500	8	35	246.15	-1.12	3.2823	4.0455	25.41	314.44	.002
39750	7	36	246.88	-1.15	3.1723	4.0766	26.12	314.11	.003
40000	7	35	247.61	-1.18	3.0661	4.0139	26.83	314.57	.003
40250	6	35	248.33	-1.20	2.9637	4.1677	27.36	314.93	.005
40500	6	34	249.05	-1.22	2.8652	4.0853	27.73	314.69	.007
40750	5	35	249.77	-1.21	2.7706	3.8638	27.13	314.95	.007
41000	6	35	250.47	-1.22	2.6784	3.7255	26.22	317.30	.007
41250	6	35	251.17	-1.23	2.5901	3.5926	26.27	317.93	.007
41500	6	35	251.86	-1.24	2.5047	3.4644	26.31	318.27	.007
41750	6	35	252.54	-1.24	2.4226	3.3415	26.28	318.72	.010
42000	7	37	253.26	-1.26	2.3433	3.2234	26.33	319.16	.014
42250	8	40	253.93	-1.29	2.2668	3.1099	26.84	319.58	.013
42500	7	41	254.61	-1.30	2.1931	3.0007	29.40	320.01	.011
42750	8	41	255.26	-1.28	2.1219	2.8956	29.59	320.41	.018
43000	8	42	255.76	-1.26	2.0532	2.7967	29.00	320.73	.017
43250	8	43	256.13	-1.26	1.9869	2.7025	29.09	320.96	.011
43500	8	44	256.52	-1.27	1.9227	2.6112	28.74	321.21	.005
43750	8	43	256.92	-1.28	1.8608	2.5232	29.14	321.45	.015
44000	8	43	257.25	-1.34	1.8009	2.4389	29.56	321.66	.010
44250	7	44	257.63	-1.34	1.7431	2.3571	29.61	321.90	.003
44500	7	45	258.00	-1.35	1.6872	2.2782	30.26	322.13	.003
44750	7	45	258.34	-1.38	1.6331	2.2023	31.49	322.34	.004
45000	7	45	258.68	-1.41	1.5809	2.1291	31.77	322.55	.004
45250	7	47	259.00	-1.45	1.5304	2.0585	32.22	322.75	.005
45500	7	49	259.32	-1.47	1.4816	1.9904	33.13	322.95	.007
45750	7	51	259.63	-1.50	1.4344	1.9247	34.29	323.14	.013
46000	7	53	259.90	-1.56	1.3887	1.8615	35.39	323.31	.012
46250	7	54	260.16	-1.61	1.3446	1.8005	36.27	323.48	.005
46500	7	55	260.40	-1.63	1.3019	1.7413	36.85	323.66	.006
46750	7	55	260.74	-1.65	1.2606	1.6842	37.57	323.84	.012
47000	7	55	260.97	-1.73	1.2206	1.6295	38.31	323.97	.015
47250	8	55	261.20	-1.78	1.1820	1.5765	39.90	324.12	.012
47500	8	55	261.44	-1.83	1.1446	1.5253	41.37	324.27	.009
47750	8	55	261.70	-1.85	1.1084	1.4756	41.85	324.43	.007
48000	8	55	261.90	-1.91	1.0735	1.4279	43.46	324.56	.007
48250	9	56	262.06	-2.01	1.0396	1.3820	44.36	324.65	.008
48500	9	56	262.27	-2.05	1.0068	1.3374	45.51	324.78	.008
48750	9	55	262.43	-2.14	.9751	1.2945	46.44	324.88	.010
49000	9	53	262.63	-2.36	.9445	1.2519	47.74	325.13	.014
49250	10	50	263.68	-2.52	.9148	1.2087	49.08	325.46	.016
49500	10	46	264.78	-2.58	.8862	1.1660	49.95	326.33	.015
49750	10	43	265.91	-2.59	.8586	1.1250	50.69	327.02	.014
50000	10	41	266.98	-2.64	.8320	1.0857	51.91	327.68	.015
50250	11	38	267.98	-2.74	.8063	1.0482	52.46	328.30	.017
50500	11	37	269.11	-2.68	.7815	1.0117	53.66	328.99	.016
50750	12	36	269.86	-2.48	.7576	.9780	54.59	329.45	.015
51000	12	35	269.91	-2.20	.7344	.9479	55.06	329.48	.013
51250	13	34	269.86	-2.07	.7119	.9225	55.53	329.82	.010
51500	13	33	267.46	-2.05	.6899	.8986	55.91	327.99	.006
51750	13	31	266.02	-2.13	.6686	.8756	56.62	327.09	.004
52000	13	32	264.56	-2.27	.6478	.8530	57.48	326.20	.008
52250	12	33	263.38	-2.40	.6275	.8301	57.48	325.47	.016
52500	11	34	262.68	-2.46	.6078	.8061	58.27	325.04	.017
52750	11	34	262.22	-2.85	.5887	.7822	59.22	324.75	.017
53000	10	40	261.93	-2.96	.5702	.7584	59.58	324.57	.017
53250	10	42	261.69	-3.03	.5522	.7352	60.83	324.42	.015
53500	9	44	261.48	-3.08	.5348	.7126	61.99	324.29	.015
53750	9	45	261.28	-3.11	.5179	.6906	63.03	324.17	.015
54000	9	47	261.05	-3.10	.5016	.6696	63.70	323.96	.015
54250	8	47	260.41	-3.05	.4857	.6498	64.46	323.53	.013

54[illegible]	[illegible]	[illegible]	[illegible]	-.[illegible]4	.4703	.[illegible]	-.31	333.14	.[illegible]
54750	[illegible]	51	2[illegible].[illegible]	-2.04	.4[illegible]3	.[illegible]130	[illegible].27	333.6[illegible]	.008
55000	52	53	2[illegible].20	-2.[illegible]4	.443[illegible]	.[illegible]45[illegible]	[illegible]7.3[illegible]	331.[illegible]9	.[illegible]
55250	[illegible]	54	2[illegible].01	-3.13	.420[illegible]	.[illegible]2[illegible]5	[illegible].[illegible]3	330.[illegible]	.004
55500	53	54	254.10	-3.21	.4129	.5043	[illegible]4.[illegible]	330.17	.[illegible]2
55750	[illegible]	54	[illegible]3.[illegible]	-3.[illegible]	.[illegible]99[illegible]	.54[illegible]	[illegible]2.[illegible]	313.38	.003
56000	55	53	252.35	-3.4[illegible]	.3[illegible]65	.5335	71[illegible].[illegible]	316.[illegible]	.006
56250	57	52	251.13	-3.5[illegible]	.3738	.[illegible]186	72.[illegible]	317.[illegible]	.009
56500	56	51	249.99	-3.66	.3615	.[illegible]438	73.[illegible]	317.[illegible]	.011
56750	52	50	249.[illegible]	-3.7[illegible]	.349[illegible]	.4[illegible]95	74.[illegible]	317.34	.009
57000	54	49	247.[illegible]	-3.93	.33[illegible]	.47[illegible]	74.[illegible]	317.[illegible]	.[illegible]
57250	54	47	246.47	-4.05	.3247	.4618	76.[illegible]	314.[illegible]	.007
57500	53	49	245.33	-4.17	.3158	.4485	77.[illegible]	314.19	.007
57750	51	44	244.19	-4.33	.3052	.4354	78.30	313.38	.009
58000	50	42	243.04	-4.53	.2949	.4227	79.20	312.[illegible]	.010
58250	46	41	241.87	-4.[illegible]	.2849	.4101	[illegible]0.[illegible]	311.[illegible]	.014
58500	79	41	999.99	0.00	999.9999	999.9999	[illegible]2.[illegible]	999.99	.014
58750	73	43	999.99	0.00	999.9999	999.9999	[illegible]4.03	999.99	.018
59000	69	46	999.99	0.00	999.9999	999.9999	85.[illegible]	999.99	.017
59250	67	[illegible]	999.99	0.00	999.9999	999.9999	87.89	999.99	.018
59500	66	54	999.99	0.00	999.9999	999.9999	90.17	999.99	.018
59750	67	59	999.99	0.00	999.9999	999.9999	92.23	999.99	.019
60000	[illegible]	64	999.99	0.00	999.9999	999.9999	94.29	999.99	.019
60034	[illegible]	64	999.99	0.00	999.9999	999.9999	94.[illegible]	999.99	.019

TEST NUMBER 5382
CAPE CANAVERAL AFS,FL.
13007 7 AUG 1984

SUPER LOKI PWN-110

ALT GEOMET	DIR DEG	SPD KTS	TEMP F	TEMP CORR	PRESS MBS	DENSITY G/M3	RF FPS	VS KTS	SHR /SEC
66000	86	34	211.46	-.43	57.2777	94.3655	12.40	566.51	.999
67000	[illegible]	36	212.30	-.43	54.5538	89.5234	15.92	567.63	.004
68000	92	33	213.01	-.44	51.9686	84.9959	18.17	568.[illegible]	.006
69000	91	30	213.[illegible]	-.44	49.5135	80.7354	18.06	569.44	.006
70000	87	28	214.31	-.45	47.1813	76.6982	18.44	570.31	.004
71000	82	27	214.97	-.44	44.9662	72.8719	17.67	571.19	.004
72000	79	28	215.64	-.45	42.8619	69.2454	17.71	572.09	.004
73000	81	29	216.30	-.46	40.8622	65.8139	18.09	[illegible]72.96	.002
74000	88	30	216.94	-.46	38.9614	62.5685	19.39	573.80	.006
75000	97	30	217.55	-.46	37.1542	59.4987	19.61	574.61	.008
76000	103	30	218.14	-.47	35.4357	56.5930	20.30	575.39	.005
77000	106	30	218.67	-.47	33.8009	53.8516	21.04	576.08	.003
78000	105	30	218.93	-.47	32.2444	51.3107	21.53	576.43	.001
79000	101	31	219.[illegible]	-.47	30.7604	48.9605	22.[illegible]	576.36	.004
80000	97	31	219.[illegible]	-.48	29.3442	46.7382	23.2[illegible]	576.16	.005
81000	90	33	219.80	-.49	27.9932	44.5712	23.36	576.26	.006
82000	85	35	219.42	-.50	26.7065	42.4023	23.00	577.08	.007
83000	84	38	220.71	-.51	25.4840	40.2246	22.25	578.77	.005
84000	84	41	222.29	-.51	24.3250	38.1229	22.20	[illegible]80.84	.004
85000	[illegible]	42	223.62	-.51	23.2256	36.1867	23.2[illegible]	[illegible]82.54	.002
86000	84	43	224.[illegible]	-.53	22.1814	34.4419	23.24	[illegible]83.54	.002
87000	83	44	224.93	-.53	21.1871	32.81[illegible]	30.[illegible]0	584.27	.001
88000	83	44	225.42	-.54	20.2391	31.2742	32.24	584.91	.001
89000	83	45	225.89	-.55	19.3357	29.8209	31.[illegible]7	[illegible]85.[illegible]	.001
90000	83	44	226.38	-.55	18.4747	28.4314	31.[illegible]0	586.15	.001
91000	83	44	226.[illegible]	-.[illegible]	17.6535	27.1076	30.11	[illegible]86.[illegible]	.001
92000	84	44	227.39	-.56	16.8708	25.8478	28.9[illegible]	[illegible]87.46	.000
93000	85	44	227.[illegible]	-.56	16.1245	24.6507	29.42	[illegible]4.10	.002
94000	86	44	228.30	-.56	15.4125	23.5195	30.60	[illegible]88.53	.002
95000	87	45	228.60	-.56	14.7330	22.4525	32.33	[illegible]89.03	.002
96000	88	45	228.77	-.58	14.0845	21.4468	33.90	589.24	.002
97000	89	45	228.92	-.59	13.4648	20.4914	35.37	589.43	.[illegible]02
98000	[illegible]	47	229.07	-.59	12.8729	19.5778	36.66	[illegible]89.63	.[illegible]2
99000	[illegible]	[illegible]	229.29	-.61	12.3076	18.6949	37.[illegible]	[illegible]89.[illegible]	.[illegible]2

100000	[illegible]	[illegible]	[illegible]	-.83	11.7677	17.[illegible]	[illegible]	[illegible]	[illegible]
101000	[illegible]	[illegible]	[illegible]	-.85	11.3931	17.[illegible]	[illegible]	[illegible]	[illegible]
102000	90	51	231.34	-.87	10.7619	16.[illegible]	41.88	597.54	.000
103000	90	51	232.57	-.87	10.3959	14.4226	41.49	596.11	.001
104000	90	51	233.8[illegible]	-.87	9.[illegible]06	14.[illegible]5	42.16	595.74	.001
105000	90	51	234.77	-.88	9.4279	13.[illegible]2	42.24	596.03	.000
106000	90	51	235.61	-.89	9.0240	13.3431	42.21	597.00	.001
107000	89	50	236.32	-.88	8.6391	12.7554	42.48	598.59	.001
108000	88	50	236.99	-.89	8.2715	12.1592	43.22	599.74	.002
109000	87	49	237.62	-.71	7.9207	11.[illegible]26	44.96	600.53	.002
110000	85	49	238.23	-.71	7.5856	11.[illegible]93	44.53	601.30	.001
111000	84	50	238.83	-.76	7.2654	10.[illegible]68	43.24	601.91	.002
112000	84	51	239.50	-.72	6.9589	10.1648	42.39	601.65	.002
113000	90	51	238.16	-.74	6.6651	9.7495	54.74	601.22	.002
114000	92	51	237.76	-.75	6.3833	9.3535	56.27	600.70	.002
115000	92	51	237.36	-.78	6.1131	8.9723	57.38	600.20	.001
116000	92	51	237.31	-.80	5.8540	8.5940	57.24	600.14	.000
117000	93	51	237.60	-.61	5.6061	8.2199	57.39	600.51	.001
118000	93	51	238.09	-.82	5.3691	7.8562	56.83	601.12	.001
119000	94	53	238.68	-.84	5.1429	7.5062	55.27	601.86	.002
120000	94	53	239.31	-.85	4.9262	7.1715	54.92	602.66	.001
121000	94	53	240.02	-.87	4.7197	6.8418	55.13	603.94	.001
122000	95	54	241.46	-.88	4.5226	6.5254	56.02	605.36	.002
123000	97	55	242.43	-.86	4.3345	6.2289	57.72	606.58	.003
124000	97	57	242.70	-.86	4.1546	5.9760	60.74	606.29	.003
125000	97	60	242.22	-.90	3.9822	5.7275	64.08	606.32	.004
126000	98	63	242.49	-.97	3.8170	5.4838	67.68	606.65	.005
127000	98	65	243.96	-1.01	3.6593	5.2343	72.06	607.98	.004
128000	98	67	244.61	-1.05	3.5085	4.9970	76.44	609.30	.004
129000	98	68	245.57	-1.09	3.3647	4.7733	80.79	610.50	.002
130000	98	70	246.51	-1.13	3.2272	4.5608	84.57	611.66	.002
131000	96	70	247.40	-1.17	3.0959	4.3596	87.31	612.76	.003
132000	94	70	248.28	-1.20	2.9702	4.1677	89.70	613.86	.004
133000	91	69	249.16	-1.21	2.8503	3.9854	91.16	614.94	.007
134000	87	68	250.03	-1.21	2.7354	3.8113	92.50	616.01	.007
135000	84	68	250.88	-1.23	2.6258	3.6462	92.68	617.06	.007
136000	81	68	251.73	-1.24	2.5206	3.4883	92.85	618.11	.007
137000	76	69	252.60	-1.24	2.4201	3.3378	92.78	619.17	.010
138000	69	73	253.42	-1.27	2.3239	3.1947	93.09	620.18	.016
139000	70	78	254.25	-1.29	2.2319	3.0582	95.59	621.19	.008
140000	77	80	255.07	-1.29	2.1438	2.9281	97.09	622.19	.016
141000	84	81	255.73	-1.25	2.0595	2.8056	95.10	623.00	.018
142000	88	84	256.18	-1.28	1.9786	2.6907	95.49	623.54	.011
143000	85	85	256.67	-1.27	1.9011	2.5804	94.39	624.14	.009
144000	79	94	257.12	-1.30	1.8267	2.4751	96.72	624.68	.013
145000	77	85	257.55	-1.34	1.7554	2.3744	97.32	625.21	.005
146000	78	87	258.00	-1.35	1.6870	2.2779	99.27	625.76	.003
147000	78	89	258.42	-1.39	1.6213	2.1858	103.88	626.26	.003
148000	77	90	258.82	-1.42	1.5584	2.0976	108.09	626.75	.004
149000	76	94	259.21	-1.46	1.4979	2.0132	107.93	627.22	.006
150000	74	98	259.59	-1.50	1.4399	1.9324	112.06	627.68	.011
151000	71	103	259.92	-1.56	1.3842	1.8553	116.44	628.09	.012
152000	71	105	260.26	-1.62	1.3304	1.7814	119.79	628.49	.004
153000	74	107	260.61	-1.64	1.2795	1.7104	122.05	628.92	.009
154000	78	108	260.92	-1.71	1.2302	1.6426	125.11	629.28	.014
155000	82	107	261.20	-1.78	1.1829	1.5777	130.77	629.62	.013
156000	85	107	261.49	-1.83	1.1374	1.5154	136.01	629.97	.009
157000	87	109	261.78	-1.87	1.0938	1.4556	139.61	630.32	.007
158000	90	108	262.00	-1.97	1.0519	1.3986	144.45	630.59	.008
159000	92	109	262.24	-2.05	1.0116	1.3439	148.75	630.87	.008
160000	95	107	262.44	-2.15	.9729	1.2915	152.59	631.11	.010
161000	98	101	262.97	-2.43	.9357	1.2396	157.99	631.76	.014
162000	101	93	264.22	-2.57	.9001	1.1868	163.38	633.26	.016
163000	103	85	265.61	-2.58	.8660	1.1358	164.94	634.92	.013
164000	107	79	266.93	-2.64	.8333	1.0876	170.19	636.49	.015
165000	114	74	268.15	-2.78	.8021	1.0421	172.43	637.94	.017

[illegible]					.7771				
167000					.7496				.014
168000	113	87	270.04	-2.19	.7157	.8264	191.12	632.98	.014
169000	110	90	267.47	-2.01	.7196	.8371	193.11	637.97	.014
170000	134	63	265.62	-2.16	.6830	.8496	186.65	634.03	.014
171000	127	73	263.09	-1.98	.6374	.8618	174.50	632.07	.011
172000	120	87	261.15	-2.63	.6136	.8133	190.40	631.61	.017
173000	113	73	262.25	-2.44	.5902	.7840	194.19	630.68	.017
174000	107	74	261.90	-2.08	.5674	.7551	195.94	630.64	.016
175000	102	93	261.61	-3.07	.5459	.7270	201.09	630.19	.015
176000	96	7	261.36	-3.10	.5250	.6998	206.37	629.82	.014
177000	91	96	261.00	-3.10	.5048	.6732	206.24	629.43	.015
178000	87	94	260.48	-3.04	.4854	.6494	211.52	628.64	.013
179000	84	98	259.41	-2.94	.4667	.6268	214.99	627.46	.011
180000	82	101	257.97	-2.85	.4486	.6059	218.80	626.72	.007
181000	80	103	256.43	-3.09	.4312	.5858	222.01	623.65	.005
182000	82	105	254.93	-3.21	.4143	.5662	224.30	622.31	.003
183000	83	107	253.47	-3.30	.3980	.5470	229.64	620.23	.003
184000	85	103	251.93	-3.50	.3822	.5285	234.59	618.38	.008
185000	88	100	250.50	-3.62	.3670	.5104	238.74	616.59	.010
186000	91	97	249.09	-3.74	.3523	.4927	242.32	614.65	.010
187000	94	94	247.63	-3.93	.3381	.4757	245.24	613.05	.008
188000	94	90	246.23	-4.05	.3244	.4590	250.63	611.31	.007
189000	92	87	244.83	-4.24	.3112	.4428	255.46	609.58	.007
190000	90	83	243.43	-4.44	.2985	.4271	258.53	607.93	.009
191000	84	90	242.11	-4.86	.2862	.4118	264.85	606.18	.013
192000	79	80	999.99	0.00	999.9999	999.9999	271.54	999.99	.015
193000	72	85	999.99	0.00	999.9999	999.9999	277.08	999.99	.018
194000	68	93	999.99	0.00	999.9999	999.9999	284.76	999.99	.017
195000	65	103	999.99	0.00	999.9999	999.9999	293.98	999.99	.018
196000	67	114	999.99	0.00	999.9999	999.9999	302.34	999.99	.019
196960	68	125	999.99	0.00	999.9999	999.9999	310.24	999.99	.019

ATTACHMENT 15

SAMPLE COPY OF CO-RAWINSONDE 250-METER INPUT

GEOM	DIP	DIR	TEMP	DPT	PRESS	PH	AT	HUM	DEN	IR	VS	SUS	WPB	PE	Q
000250	000	000	274	262	131783	000		2447	11442	4003815	0.03033.93		0		
000500	000	000	273	263	000000	000		2449	11200	3950351	0.11334.20		6		
000750	000	000	272	262	000000	000		2227	10442	3750351	0.03334.97		12		
001000	000	000	264	227	000304	000		1951	10745	3570340	.00327.52		17		
001250	000	000	244	214	000009	000		1954	10534	3450345	.00725.60		22		
001500	000	000	237	171	000442	000		1423	10293	3141347	.00819.50		26		
001750	000	000	216	172	000002	000		1442	10071	3110344	.00519.42		29		
002000	000	000	209	143	000015	000		1214	09941	2920345	.00216.41		33		
002500	000	000	189	000	000134	000		0940	09528	2550344	.00411.32		35		
002250	000	000	146	010	000009	000		0397	09384	2420343	.004	5.36	37		
002500	000	000	171	011	000542	000		0414	09162	2220343	.002	5.55	38		
002750	000	000	159	010	000329	000		0400	08946	2240341	.002	5.33	39		
003000	000	000	135	010	000167	000		0438	08743	2022343	.001	5.80	40		
003250	000	000	118	000	000084	000		0224	08550	2040339	.001	2.95	40		
003500	000	000	103	11M	000000	000		0195	08344	1980339	.000	3.55	41		
003750	000	000	091	08M	000974	000		0251	08157	1970337	.001	3.26	41		
004000	000	000	061	06P	000003	000		0287	07967	1960336	.000	3.70	42		
004250	000	000	048	09P	000081	000		0230	07767	1880335	.000	2.95	43		
004500	000	000	033	09J	000207	000		0241	07572	1840334	.000	3.08	43		
004750	000	000	010	05C	000379	000		0316	07399	1850333	.000	4.00	44		
005000	000	000	011	04C	000591	000		0295	07234	1810331	.000	3.70	45		
005250	000	001	02K	15L	000848	000		0163	07042	1670331	.000	2.04	45		
005500	000	002	03L	23P	000150	000		0075	06856	1580330	.000	.94	46		
005750	000	000	04D	25L	000497	000		0063	06681	1580329	.000	.78	46		
006000	000	000	07I	21I	000885	000		0095	06523	1520328	.000	1.16	46		
006250	000	000	09L	20K	000811	000		0100	06373	1490326	.000	1.22	46		
006500	000	000	11N	19D	000773	000		0107	06220	1460325	.000	1.29	46		
006750	000	000	13L	20P	000274	000		0098	06068	1420324	.000	1.17	47		
007000	000	000	15L	20P	000612	000		0097	05912	1390322	.000	1.16	47		
007250	000	000	18P	32L	000388	000		0044	05756	1310321	.000	.52	47		
007500	000	000	17R	37N	000002	000		0020	05599	1260321	.000	.24	47		
007750	000	000	19N	34K	000665	000		0019	05444	1230320	.000	.22	47		
008000	000	000	21J	39K	000344	000		0017	05298	1190319	.000	.20	47		
008250	000	000	22P	40P	000069	000		0015	05155	1160318	.000	.17	47		
008500	000	000	24J	42K	000827	000		0013	05021	1130316	.000	.15	47		
008750	000	000	27I	43D	000617	000		0011	04898	1100315	.000	.13	47		
009000	000	000	29J	45L	000437	000		0009	04772	1070314	.000	.10	47		
009250	000	000	30P	47L	000289	000		0007	04643	1040312	.000	.08	47		
009500	000	000	32J	48P	000171	000		0006	04517	1010311	.000	.07	47		
009750	000	000	34P	50I	000095	000		0006	04394	0980310	.000	.06	47		
010000	000	000	36J	51M	000028	000		0005	04278	0960309	.000	.05	47		
010250	000	000	39J	53K	000998	000		0004	04169	0930307	.000	.04	47		
010500	000	000	41M	54P	000995	000		0003	04057	0910306	.000	.03	47		
010750	000	000	43K	56I	000020	000		0003	03941	0880304	.000	.03	47		
011000	000	000	46I	57D	000072	000		0002	03829	0860303	.000	.02	47		
011250	000	000	47J	59J	000162	000		0002	03721	0830302	.000	.02	47		
011500	000	000	49P	60P	000257	000		0002	03613	0810300	.000	.02	47		
011750	000	000	50P	62L	000390	000		0001	03508	0780299	.000	.01	47		
012000	000	000	52P	63I	000547	000		0001	03406	0760297	.000	.01	47		
012250	000	000	54D	65N	000729	000		0001	03306	0740297	.000	.01	47		
012500	000	000	56J	66D	000935	000		0001	03209	0720295	.000	.01	47		
012750	000	000	58K	68M	000166	000		0001	03114	0690294	.000	.01	47		
013000	000	000	59P	999	000420	999		9999	03025	0670293	.000	.00	999		
013250	000	000	61I	69P	000700	999		9999	02902	0650292	.000	0.00	999		
013500	000	000	63I	69L	000004	999		9999	02809	0630291	.000	0.00	999		
013750	000	000	64K	69K	000431	999		9999	02722	0610290	.000	0.00	999		
014000	000	000	66M	999	000779	999		9999	02637	0590289	.000	0.00	999		

030750	[illegible]	[illegible]	421	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
031000	[illegible]	[illegible]	421	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
031250	[illegible]	[illegible]	421	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
031500	[illegible]	[illegible]	421	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
031750	[illegible]	[illegible]	421	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
032000	[illegible]	[illegible]	360	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
032250	[illegible]	[illegible]	342	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
032500	[illegible]	[illegible]	348	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
032750	[illegible]	[illegible]	344	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
033000	[illegible]	[illegible]	337	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
033250	[illegible]	[illegible]	351	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
033500	[illegible]	[illegible]	35P	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
033750	[illegible]	[illegible]	37L	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
034000	[illegible]	[illegible]	379	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
034250	[illegible]	[illegible]	379	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
034500	[illegible]	[illegible]	37L	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
034750	[illegible]	[illegible]	389	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
035000	[illegible]	[illegible]	39K	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
035250	[illegible]	[illegible]	39P	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
035500	[illegible]	[illegible]	391	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
035750	[illegible]	[illegible]	394	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
036000	[illegible]	[illegible]	39K	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
036250	[illegible]	[illegible]	39L	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

TERMINATION 14139 GEOPOT 36000 GEOPM 5.2 MBS - 03109

TROPOPAUSE 15147 GEOMM 129.66 MR -71.3 C 99.9 C SUN - 9

MANDATORY LEVELS - 9

GEOPM	DIR	MPS	TEMP	DPT	PRESS	PH	
030158	335	002	283	263	10000	091	
030615	336	003	274	236	09500	080	
031095	013	005	242	194	09000	075	
031594	029	006	209	162	08500	074	
032117	042	005	190	013	08000	033	
032669	041	004	161	020	07500	028	
033250	035	004	118	09P	07000	021	
033865	027	004	071	07N	06500	035	
034518	029	002	031	08P	06000	041	
035216	333	001	02K	14L	05500	042	
035968	199	004	05Q	21M	05000	031	
036779	154	003	13D	21J	04500	053	
037665	145	005	19I	38J	04000	017	
038646	159	008	26K	43J	03500	019	
039741	167	011	34Q	50J	03000	019	
040965	151	009	45K	57R	02500	022	
042437	154	007	56D	66P	02000	026	
043274	141	011	60R	999	01750	999	
044216	153	011	65N	999	01500	999	
045307	151	007	6HJ	999	01250	999	
046533	095	008	69D	999	01000	999	
047975	070	010	65R	999	00800	999	
048791	081	013	63J	999	00700	999	
049739	079	015	62N	999	00600	999	
050874	092	016	59P	999	00500	999	
052287	087	017	56P	999	00410	999	
054125	095	016	53D	999	00300	999	
055305	095	010	51J	999	00250	999	
056774	085	022	4ND	999	00200	999	
058692	092	022	44J	999	00150	999	
061428	089	023	41I	999	00110	999	
063862	090	026	36K	999	00070	999	

SIGNIFICANT LEVELS - 9

GEOMM	DIR	MPS	TEMP	DPT	PRESS	IR	RH	
030305	003	008	274	262	10:729	403	093	
030476	330	003	244	24M	09511	377	091	
030965	003	004	24P	221	09337	350	086	
031214	019	005	240	176	09203	314	065	
031764	032	006	241	1P1	09022	296	072	

A-147

ROCK 3

001745	027	004	24A	24A	001744	174	001
002155	144	002	24A	91	002154	215	002
002769	030	5809	23A	2	002768	276	002
003221	032	004	21A	139	003220	322	002
004329	225	004	09A	09A	004328	195	004
004311	031	003	14A	140	004310	191	003
004926	119	002	13J	04F	004925	148	076
005075	032	002	021	079	005074	175	065
005335	360	001	021	101	005334	192	025
005727	233	002	23J	21A	005726	191	034
007046	194	003	15B	21J	007045	136	065
007324	177	003	17J	24E	007323	199	024
008377	196	006	23P	41F	008376	114	017
010236	170	011	23I	53J	010235	093	020
012405	164	007	56P	66A	012404	072	026
012795	155	004	5FN	66A	012794	069	025
014557	142	011	43A	09C	014556	054	999
015147	151	004	71L	999	015146	050	999
015434	151	001	67J	999	015433	047	999
016070	040	003	71P	999	016069	043	999
016409	091	006	72J	999	016408	041	999
021414	099	014	57J	999	021413	017	999
024911	069	018	53J	999	024910	013	999
026036	065	021	47J	999	026035	008	999
030156	091	023	43L	999	030155	004	999
033148	049	024	35R	999	033147	003	999
036107	030	026	38K	999	036106	002	999
036666	033	031	35N	999	036665	002	999
036265	999	999	34L	999	036264	002	999

ROCK 3

ATTACHMENT 16

PROGRAM LISTING

```
      PROGRAM ROCK(INPUT=65,OUTPUT=65,TAPE1=512,TAPE2=512,TAPE5=65,
     C TAPE6=65,TAPE7=65,TAPE8=OUTPUT,TAPE9=65,TAPE10=65,
     C TAPE16=INPUT,TAPE22=65,TAPE60=65,TAPE61=65,TAPE62=65)
C---------
      COMMON MAXALT,HRL,PRL,TBL,PE,PC,CON1,CON2,HSP,XIP,YIP,ITEST,NM,NO,
     +NY,NT,IND,NS,IX,IA,IB,IC,JD,NOTEMP,NORS,IN(8),INX(18),IPOCK
      COMMON GRAT,ZAT,IAL,IKT,IMR,IEW,ICW,INDI,IDN
      COMMON/DATA/ATC(51),BTC(51),CTC(51),DTC(51),ETC(51)
      COMMON/DATAS/MO(12),NST(12),NRC(2),NTA(3)
      COMMON/PRES/PL(36)
      DIMENSION MAXALTS(3)
C---------
C     TAPE1     SCRATCH FILE (UNFORMATED)
C     TAPE2     SCRATCH FILE (UNFORMATED & FORMATED)
C     TAPE3     SCRATCH FILE (UNFORMATED)
C     TAPE5     INPUT - ROCKET TEMPERATURE DATA
C     TAPE6     INPUT - CORAWINSONDE
C     TAPE7     INPUT - ROCKET TRACKING DATA
C     TAPE8     OUTPUT - TERMINAL
C     TAPE9     OUTPUT - CODE
C     TAPE10    OUTPUT - CARDS
C     TAPE16    INPUT - TERMINAL
C     TAPE61    OUTPUT - PRINTER
C     TAPE62    OUTPUT - HANDATA
C---------
C---- LOG OF MANDATORY PRESSURES
      DATA PL /           1.69897,  1.47712,  1.30102, 1.,
     C          .84509,   .69897,   .47712,   .30102, 0.,
     C         - .15490, - .30102, - .39794, - .52287, - .69897, -1.,
     C        -1.15490, -1.30102,          -1.52287, -1.69897, -2.,
     C        -2.15490, -2.30102,          -2.52287, -2.69897, -3.,
     C        -3.15490, -3.30102,          -3.52287, -3.69897, -4.,
     C        -4.15490, -4.30102,          -4.52287, -4.69897, -5./
      DATA MO/4HJAN ,4HFEB ,4HMAR ,4HAPR ,4HMAY ,4HJUN ,4HJUL ,4HAUG ,
     C 4HSEP ,4HOCT ,4HNOV ,4HDEC /
      DATA NST(1),NST(2),NST(3)/1OHCAPE CANAV,1OHEPAL AFS,F,2HL./
      DATA NST(4),NST(5),NST(6)/1OHANTIGUA AF,1OHS. W. I.  ,1H /
      DATA NST(7),NST(8),NST(9)/1OHASCENSION ,1OHAAFB, SAO ,1H /
      DATA NRC/1OHLOKI      ,1OHSUPER LOKI/
      DATA NTA/1,9,12/
      DATA ATC/.000465,.000465,.000464,.000464,.000463,.000462,.000461,
     C         .000459,.000457,.000455,.000452,.000450,.000448,.000446,
     C         .000444,.000443,.000442,.000441,.000440,.000440,.000439,
     C         .000439,.000439,.000439,.000440,.000441,.000441,.000442,
     C         .000442,.000443,.000443,.000444,.000444,.000445,.000445,
     C         .000446,.000446,.000447,.000447,.000448,.000449,.000449,
     C         .000450,.000450,.000451,.000452,.000452,.000452,.000453,
     C         .000454,.000455/
      DATA BTC/12.77,10.60,08.92,07.70,06.69,05.93,05.27,04.72,04.27,
     C         03.84,03.51,03.23,02.95,02.72,02.51,2.342,2.184,2.053,
     C         1.935,1.828,1.728,1.627,1.545,1.469,1.393,1.330,1.271,
     C         1.212,1.160,1.111,1.065,1.019,0.978,0.940,0.903,0.868,
     C         0.837,0.804,0.776,0.749,0.724,0.700,0.677,0.656,0.635,
     C         0.616,0.597,0.580,0.555,0.550,0.535/
      DATA CTC/23.20,18.40,15.00,12.50,10.40,08.94,07.70,06.69,05.87,
     C         05.13,04.57,04.10,03.66,03.29,02.98,02.73,02.51,02.33,
     C         02.17,02.03,01.90,01.77,01.67,01.57,01.48,01.40,01.33,
```

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      C          01.26,01.20,01.14,01.09,01.03,0.985,0.943,0.897,0.858,
      C          0.822,0.785,0.753,0.722,0.694,0.665,0.640,0.615,0.593,
      C          0.572,0.551,0.533,0.515,0.502,0.487/
       DATA CTD/07.5E,06.04,04.93,04.13,03.48,03.00,02.59,02.26,02.00,
      C          01.75,01.57,01.41,01.27,01.15,01.04,0.956,0.880,0.820,
      C          0.766,0.718,0.673,0.629,0.592,0.559,0.528,0.500,0.476,
      C          0.452,0.430,0.410,0.392,0.372,0.355,0.341,0.323,0.311,
      C          0.298,0.285,0.274,0.263,0.253,0.243,0.235,0.225,0.218,
      C          0.210,0.203,0.197,0.191,0.185,0.180/
       DATA DTD/18.51E-10,14.63E-10,11.83E-10,09.80E-10,08.18E-10,
      C          06.98E-10,05.98E-10,05.17E-10,04.53E-10,03.93E-10,
      C          03.49E-10,03.12E-10,02.78E-10,02.49E-10,02.24E-10,
      C          02.05E-10,01.87E-10,01.74E-10,01.62E-10,01.51E-10,
      C          01.41E-10,01.31E-10,01.23E-10,01.16E-10,01.09E-10,
      C          01.03E-10,09.76E-11,09.24E-11,08.79E-11,08.35E-11,
      C          07.95E-11,07.53E-11,07.18E-11,06.85E-11,06.52E-11,
      C          06.22E-11,05.96E-11,05.68E-11,05.44E-11,05.22E-11,
      C          05.00E-11,04.79E-11,04.60E-11,04.42E-11,04.25E-11,
      C          04.09E-11,03.94E-11,03.81E-11,03.69E-11,03.58E-11,
      C          03.47E-11/
C----------
      DATA NAME/"ROCK3   "/
      CALL ID(NAME)
C----------
      REWIND 61
      ITR=16
      IRDR=7
      ITEMP=5
      NIGHT=0
      RE=6371229.315
      PC=67.4552
      WRITE(6,4)
  110 READ(ITR,5) I
      IF (I.NE.R"Y".AND.I.NE.R"N") GOTO 110
      IF (I.EQ.R"Y") NIGHT=1
      WRITE(6,6)
  120 READ(ITR,5) I
      IF (I.NE.R"Y".AND.I.NE.R"N") GOTO 120
      IF (I.EQ.R"Y") READ(IRDR,7)
      READ(ITEMP,1) ITEST
      READ(ITEMP,2)NS,NM,ND,NY,NT,IHO,IHO1,IROCK,IA1,IKT,IMR,IEW,ICW
      IF(NS.NE.99) GO TO 100
      READ(IRDR,3) (NST(I),I=10,12)
      IX=10
  100 CALL GRAVITY
      NY=NY+1900
C----------SET UP MOTOR TYPE
      IA=IHO
      IF(IHO.EQ.6) IA=2
C----------SET UP TYPE OF SONDE
      IF(NS.EQ.1) IX=1
      IF(NS.EQ.9) IX=4
      IF(NS.EQ.12) IX=7
      NS=IX+2
C----------
      CALL CHKOUT
      CALL THERMERG
```

```
      CALL INTPTMP
      CALL MIDINT(MAXALT)
      CALL RANDTC(NIGHT)
      CALL COMPOSR
      CALL TWOKM
      CALL PRESCOM
      CALL ONEKILO(MAXALTS)
      CALL PLOTCH
      CALL PUTOUT(MAXALTS)
      CALL ETFORM
      CALL ROCOB
C---------
      ENDFILE 61
      CALL ENDRUN
      STOP
C---------
1     FORMAT(I5)
2     FORMAT(I2,3I3,I5,2I2,A8,3I1,I2,I1)
3     FORMAT(3A10)
4     FORMAT("IS THIS A NIGHT RUN ?  YES/NO")
5     FORMAT(F1)
6     FORMAT("IS THIS A MATTY RUN ?  YES/NO")
7     FORMAT(1X)
C---------
      END
```

```
      SUBROUTINE SIPO(A,B,N)
      DIMENSION A(1), B(1)
      JJ = -N
      DO 60 J = 1,N
      JY = J + 1
      JJ = JJ + N + 1
      BIGA = 0
      IT = JJ - J
      DO 30 I = J , N
      IJ = IT + I
      IF (ABS(BIGA).GE.ABS(A(IJ))) GOTO 30
      BIGA = A(IJ)
      IMAX = I
   30 CONTINUE
      IF (ABS(BIGA).EQ.0.0) RETURN
      I1 = J + N*(J-2)
      IT = IMAX-J
      DO 50 K = J,N
      I1 = I1 + N
      I2 = I1 + IT
      SAVE = A(I1)
      A(I1) = A(I2)
      A(I2) = SAVE
   50 A(I1) = A(I1)/BIGA
      SAVE = B(IMAX)
      B(IMAX) = B(J)
      B(J) = SAVE/BIGA
      IF (J.EQ.N) GOTO 70
      IQS = N*(J-1)
      DO 65 IX = JY,N
      IXJ = IQS + IX
      IT = J - IX
      DO 60 JX = JY,N
      IXJX = N*(JX-1)+IX
      JJX = IXJX + IT
   60 A(IXJX) = A(IXJX) - (A(IXJ)*A(JJX))
   65 B(IX) = B(IX) - (B(J)*A(IXJ))
   70 NY = N-1
      IT = N*N
      DO 80 J = 1,NY
      IA = IT-J
      IB = N-J
      IC = N
      DO 80 K = 1,J
      B(IB) = B(IB)-A(IA)*B(IC)
      IA = IA -N
   80 IC = IC-1
      RETURN
      END
```

```
      SUBROUTINE OUTPUT(HS,X,Y,T,UT,P,FS)
      COMMON MAXALT,HBL,PBL,TBL,PG,HC,CON1,CON2,HSP,XIP,YIP,ITEST,NM,ND,
     C NY,NT,IND,NS,JX,IA,IR,IC,ID,NOTEMP,NORS,IN(99),INX(18),IPOCK
      COMMON GRAT,ZAT,IAL,IRT,IHR,IEM,ICW,IND1,IDA
C---------
      IRND(A1)=IFIX(SIGN((ABS(A1)+.5),A1))
C---------
      DIR=WDIR(Y,Y)
      SPD=WSPD(X,Y)
      IF (SPD.NE.999.) SPD=SPD*CON1
      IF (T.LE.999.) GOTO 100
      T=999.99
      UT=999.99
  100 TC=T-UT
      IF (P.LE.999.) GOTO 103
      PS=DS=999.9999
      GO TO 104
  103 PS=10**P
  104 IF (T.LE.999.) GOTO 106
      DS=999.9999
      VS=999.99
      GO TO 110
  106 IF (P.LE.999.) GOTO 108
      DS=999.9999
      GO TO 109
  108 DS=(PS/T)*348.38
  109 VS=(331.45*SQRT(T/273.15))*CON1
  110 IF (FS.GE.-999.) GOTO 117
      FX=999.99
      GO TO 118
  117 FX=-FS*CON2
  118 IF (X.LE.999..AND.XIP.LE.999.) GOTO 112
      WS=.999
      GO TO 113
  112 WS=(SQRT(((X-XIP)*(X-XIP))+((Y-YIP)*(Y-YIP)))*CON2)/(HS-HSP)
  113 IF(HBL.EQ.HS) PS=DS=999.9999
      IF(HS.LT.20000.0)RETURN
      IF(HS.LT.65616.66.AND.CON1.NE.1.) RETURN
      WRITE(2,1) IRND(HS),IRND(DIR),IRND(SPD),T,TC,PS,DS,FX,VS,WS
    1 FORMAT(1H ,I7,2I6,2F8.2,2F9.4,2F6.2,F6.3,4X)
      HSP=HS
      XIP=X
      YIP=Y
      RETURN
      END
```

```
      1            FUNCTION WDIR(X,Y)
      2          C-------/D/ UNCORRECTED WIND DIRECTION (DEGREES)
      3          C------/WDIR/ CORRECTED WIND DIRECTION (DEGREES)
      4          C-----/X/ X WIND COMPONENT
      5          C----/Y/ Y WIND COMPONENT
      6          C-------
      7                IF(X.LE.998.) GO TO 100
      8                WDIR= 999.0
      9                RETURN
     10          C-------
     11           100  IF(X.NE.0.) GO TO 110
     12                IF(Y.GE.0.) WDIR= 360.
     13                IF(Y.LT.0.) WDIR= 180.
     14                RETURN
     15          C-------
     16           110  D=ATAN(Y/X)*57.29578
     17                IF(X.GT.0.)WDIR=90.-D
     18                IF(X.LT.0.)WDIR=270.-D
     19                IF(WDIR.LT.0.5)WDIR=360.
     20                RETURN
     21          C---------
     22                ENTRY WSPD
     23          C---------
     24                IF(X.LE.998.) GO TO 120
     25                WDIR=999.0
     26                RETURN
     27           120  WDIR=SQRT(X*X+Y*Y)
     28                RETURN
     29                END
```

```
      1            FUNCTION VALUE(R,A,B)
      2          C-----INTERPOLATES A VALUE BY RATIO (R) BETWEEN LEVELS A AND B
      3                IF(A.GT.999..OR.B.GT.999.)GO TO 101
      4                GO TO 100
      5            101 VALUE=999.99
      6                RETURN
      7            100 IF(A.LT.-999..OR.B.LT.-999.)GO TO 102
      8                GO TO 103
      9            102 VALUE=-999.99
     10                RETURN
     11            103 VALUE=R*(A-B)+B
     12                RETURN
     13                END
```

```
      SUBROUTINE GRAVITY
      COMMON MAXALT,HBL,PBL,TBL,RE,PC,CON1,CON2,HSP,XIP,YIP,ITEST,NM,ND,
     CNY,NT,IND,NS,IX,IA,IB,IC,ID,NOTEMP,NORS,IN(60),INX(15),IROCK
      COMMON GRAT,ZAT,IA1,IKT,IMP,IEW,ICW,IND1,IDN
C*****COMPUTES A RELATIVE ACCELERATION OF GRAVITY FACTOR FOR EACH STA.
      ZAT = RLAT = RMIN = RLON = 0.0
      IRDR=7
      IF(NS .EQ. 1) GO TO 1
      GO TO 2
    1 ZAT = 5.
      RLAT = 28.29
      GO TO 16
    2 IF(NS .EQ. 9) GO TO 3
      GO TO 4
    3 ZAT = 4.
      RLAT = 17.7
      GO TO 16
    4 IF(NS .EQ. 12) GO TO 6
      GO TO 5
    6 ZAT = 79.
      RLAT = 7.58
      GO TO 16
    5 IF(NS .EQ. 99) GO TO 9
      GO TO 7
 9    READ(IRDR,10) ZAT,RLAT,RMIN,RLON
   10 FORMAT(F3.0,1X,2F2.0,F6.0)
      GO TO 16
 7    NS = 2
      RETURN
 16   RLAT=2*(RLAT/57.29578)
      GRAT = 1-(.0026373*(COS(RLAT)))+(.0000059*(COS(RLAT))**2)
      RETURN
      END
```

ROCK 3

```
      SUBROUTINE CHKOUT
C-----DOES T,A,E,R, AND 38 CHARACTER CHECKOUT ON PRINTER
C-----AND WRITES T,X,Y, AND Z ON DRIVE 1 IN BINARY
      COMMON MAXALT,MBL,PRL,TRL,RE,PC,CON1,CON2,MSP,XIP,YIP,ITEST,NM,ND,
     1NY,NT,IND,NS,IX,IA,IB,IC,ID,NOTEMP,NOPS,IN(99),INX(10),IROCK
      COMMON GRAT,ZAT,IA1,IKT,IMP,IEW,ICW,IND1,IDN
      COMMON/DATAS/MO(12),NST(12),NRC(2),NTA(3)
      COMMON/XY3P/T,A,E,R,IRZ(27),JTS,TIM,ITS38,AL,EL,X,Y,Z
      IRDR=7
      TIM=0.0
      ITS38=0
      CALL DATE(TODAY)
      CALL TIME(CLOCK)
      WRITE(61,10)ITEST,TODAY,CLOCK
      WRITE(61,8)(NST(I),I=IX,NS)
      WRITE(61,9)NT,ND,MO(NM),NY
      WRITE(61,11)NRC(IA),IROCK
      WRITE(61,3)
      DT=DA=DE=DR=DZ=0.0
C-----READ FIRST CARD
      READ(IRDR,4) ITD
      BACKSPACE IRDR
      IF(IGETC(ITD,6).EQ.R".") GOTO 103
      ITS38=1
C     IF 38 CHARACTER DATA ITS38=1 ELSE ITS38=0
C     IF EOF ENCOUNTERED IN RD36CH JTS=1 ELSE JTS=0
  103 DO 112 I=1,1000
      IF (ITS38.EQ.1) GOTO 105
      READ(IRDR,5,END=113) T,A,E,R
  105 CALL RD46CH
      IF (JTS.EQ.1) GOTO 113
      AL=A/57.29578
      EL=E/57.29578
      R=R*0.9144
      REZAT=RE+ZAT
      Z=SQRT(REZAT**2+R**2+2.0*REZAT*R*SIN(EL))-RE
      EC=EL+((Z*(COS(EL)/SIN(EL)))/(2.2*RE))
      X=R*COS(EC)*SIN(AL)
      Y=R*COS(EC)*COS(AL)
      IF(I.EQ.1)GO TO 111
C-----COMPUTE DELTAS
      DT=T-T1
      DX=60./DT
      DZ=(Z-Z1)*DX
      DE=(E-E1)*DX
      DA=(A-A1)*DX
      DR=(R-R1)*DX
  111 WRITE(61,7)T,A,E,R,Z,(IRZ(J),J=2,4),DT,DA,DE,DR,DZ
C-----PRECESS VALUES
      T1=T
      A1=A
      E1=E
      R1=R
      Z1=Z
C-----WRITE TEMP,TIME,X,Y,AND Z ON TAPE
      WRITE(1) T,X,Y,Z
  112 CONTINUE
```

```
      ENDFILE 1
      REWIND 1
      REWIND 2
      RETURN
C-----------
3     FORMAT(3X,"TIME SEC   AZIMUTH  ELEVATION     RNG MTS    HGT MTS"
     C ,"  HR MIN SEC",6X,"TIME      AZIMUTH   ELEVATION",7X,"RANGE     "
     C ,"ALTITUDE",/)
4     FORMAT(A10)
5     FORMAT(F5.0,3X,2F7.3,F7.0)
7     FORMAT(1X,F10.2,2F10.3,2F12.2,3I4,5F12.2)
8     FORMAT(1X,3A10)
9     FORMAT(1X,I4.4,"Z  ",I2,1X,A4,I4,6X,"RADAR TRACKING DATA",/)
10    FORMAT("1TEST NUMBER",4X,I5,50X,"RUN DATE",A10,"   RUN TIME ",A10)
11    FORMAT(1X,A10,5X,"ROCKETSONDE",5X,A10,60X,"DIFFERENCE/MINUTE")
C-----------
      END
```

```
      SUBROUTINE KD46CH
      COMMON MAXALT,HTL,PBI,TBL,PE,PC,CON1,CON2,HSP,YIP,YTP,ITEST,NM,NO,
     1CTY,NT,IND,NS,IX,IA,IB,IC,ID,NOTEMP,NOPS,TN(9),INX(12),IROCK
      COMMON/XY3R/T,A,E,R,IRZ(27),JTS,TIM,ITS3R,AL,EL,X,Y,Z
      DATA JTS/0/
C
      IF (ITS3R.NE.1) GO TO 20
    1 T=A=E=R=0.0
      READ(7,10,END=30) (IRZ(I),I=1,27)
      IF(IRZ(1).EQ.1)GO TO 1
C-----TIME TO SECONDS
      T=(60*IRZ(2)+IRZ(3))*60+IRZ(4)
      IF(JX.EQ.1)GO TO 13
      IF(T.LT.TIM)GO TO 11
      GO TO 12
   11 JX=1
   13 T=T+86400.
      GO TO 15
   12 TIM=T
   15 CONTINUE
C-----ELEVATION AND AZIMUTH ANGLES
      IF(NS.EQ.9)GO TO 8
      DO 5 I=1,7
      J=12-I
      K=19-I
      A=.125*A+IRZ(J)
    5 E=.125*E+IRZ(K)
      A=180.*A
      E=180.*E
C-----RANGE
      DO 6 I=1,9
      J=18+I
    6 R=8.0*R+IRZ(J)
      R=R*1.953125
      RETURN
C---------
    8 DO 25 I=1,6
      J=12-I
      K=19-I
      A=.125*A+IRZ(J)
   25 E=.125*E+IRZ(K)
      A=90.*A
      E=90.*E
      DO 26 I=1,9
      J=18+I
   26 R=8.0*R+IRZ(J)
      RETURN
C-----CONVERT SECS TO HRS ETC. FOR T.A.E.R. DATA
   20 II=T/3600.
      AA=II*3600
      AA=T-AA
      JJ=AA/60.
      BB=JJ*60
      KK=AA-BB
      IRZ(2)=II
      IRZ(3)=JJ
      IRZ(4)=KK
```

```
      RETURN
30    JTS=1
      RETURN
C---------
10    FORMAT(4X,I1,3I2,23I1)
C---------
      END
```

```
      SUBROUTINE TMPMERG
C---------
      COMMON M,XALT,HPL,PBL,TBL,PF,PC,CON1,CON2,HRP,XIP,YIP,ITEST,NP,ND,
     C NY,NT,IND,NS,IX,IA,IB,IC,ID,NOTEMP,NOPS,IN(08),INX(18),IROCK
      DIMENSION RRES(24),RRAT(24)
      DIMENSION TEMP(60),GT(60)
      DATA RRES/24*0.0/
      DATA RRAT/24*0.0/
C---------
      IT=1
      NOTEMP=0
C---------CONVERT LAUNCH TIME
      TA=NT
      TB=NT/100
      TC=TB*100.
      TD=TA-TC
      BTIME=TB*3600.+TD*60.
C---------
      READ(IT,1,END=400) IN
      IF (IGETC(IN,15).EQ.R" ") GOTO 300
      IF (IGETC(IN,1).NE.R".") GOTO 200
C---------STEINHART EQUATION
      DECODE(26,2,IN) A,B,C
      DO 110 I=1,24
      READ(IT,1) IN
      IF (IGETC(IN,1).EQ.R"9".AND.IGETC(IN,2).EQ.R"9") GOTO 120
      DECODE(17,6,IN) RRES(I),RRAT(I)
  110 CONTINUE
  120 DO 100 I=1,60
      READ(IT,3,END=500) R,GT(I)
      GT(I)=GT(I)+BTIME
      R=R/950.
      DO 130 J=1,24
      IF (R.GT.RRAT(J).OR.R.LT.RRAT(J+1)) GOTO 130
      RAT=(RRAT(J)-R)/(RRAT(J)-RRAT(J+1))
      R=RRES(J)-(RRES(J)-RRES(J+1))*RAT
      GOTO 140
  130 CONTINUE
  140 TEMP(I)=1/(A+(B*R)+(C*R**3))
  100 CONTINUE
      GOTO 500
C---------LAYTON CLARK EQUATION
  200 DECODE(26,4,IN) A,B,C
      DO 210 I=1,24
      READ(IT,1) IN
      IF (IGETC(IN,1).EQ.R"9".AND.IGETC(IN,2).EQ.R"9") GOTO 220
      DECODE(17,6,IN) RRES(I),RRAT(I)
  210 CONTINUE
  220 DO 230 I=1,60
      READ(IT,3,END=500) R,GT(I)
      GT(I)=GT(I)+BTIME
      R=R/950.
      DO 240 J=1,24
      IF (R.GT.RRAT(J).OR.R.LT.RRAT(J+1)) GOTO 240
      RAT=(RRAT(J)-R)/(RRAT(J)-RRAT(J+1))
      R=RRES(J)-(RRES(J)-RRES(J+1))*RAT
      GOTO 250
```

```
      240   CONTINUE
      250   TEMP(I)=R/(P-A)-C
      260   CONTINUE
            GOTO 500
C----------TEMPERATURE GIVEN
      300   BACKSPACE IT
            DO 310 I=1,60
            READ(IT,*,END=500) TEMP(I),GT(I)
            IF (TEMP(I).GT.50.0) TEMP(I)=50.-TEMP(I)
            TEMP(I)=TEMP(I)+273.15
            GT(I)=GT(I)+BTIME
      310   CONTINUE
            GOTO 500
C----------NO TEMPERATURES
      400   T=999.9
            NOTEMP=1
      410   READ(1,END=999) G,X,Y,Z
            WRITE(2) G,T,X,Y,Z
            GOTO 410
C----------INTERPOLATE
      500   K=I-1
            J=1
      510   READ(1,END=999) G,X,Y,Z
      520   IF (J.EQ.K) GOTO 530
            IF (G.LE.GT(J).AND.G.LT.GT(J+1)) THEN
            RAT=(GT(J)-G)/(GT(J)-GT(J+1))
            T=TEMP(J)-(TEMP(J)-TEMP(J+1))*RAT
            WRITE(2) G,T,X,Y,Z
            GOTO 510
            ELSE IF (G.GE.GT(J+1)) THEN
            J=J+1
            GOTO 520
            END IF
      530   T=999.9
            WRITE(2) G,T,X,Y,Z
            GOTO 510
C----------
      999   ENDFILE 2
            REWIND 1
            REWIND 2
            RETURN
C----------
      1     FORMAT(8A10)
      2     FORMAT(E8.5,2E9.5)
      3     FORMAT(F3.0,F5.0)
      4     FORMAT(E8.5,2E9.5)
      5     FORMAT(F4.1,F5.0)
      5     FORMAT(F8.7,F9.7)
C----------
            END
```

```
      SUBROUTINE INTPTMP
C-----SCANS TEMPERATURES LOOKING FOR MISSING DATA OR LESS
C-----THAN 2.5 KM TO INTERPOLATE
C
C-----START AT TOP LOOKING FOR FIRST GOOD TEMP
   97 MSW=1
  100 READ(2,END=99)G,T,X,Y,Z
      GOTO 101
   99 IF(MSW.LE.1) GO TO 96
   98 BACKSPACE 2
      BACKSPACE 2
      READ(2)G,T,X,Y,Z
      IF(G.EQ.ZHG)GO TO 97
      GO TO 98
   96 ENDFILE 1
      REWIND 1
      REWIND 2
      RETURN
  101 IF(MSW.GT.1) GO TO 104
      IF(T.EQ.999.9) GO TO 106
  107 MSW=2
  108 ZHT=T
      ZHG=G
      ZHZ=Z
  106 WRITE(1)G,T,X,Y,Z
      GO TO 100
  104 IF(MSW.GT.2) GO TO 105
      IF(T.EQ.999.9) GO TO 109
      GO TO 108
  109 MSW=3
      GO TO 100
  105 IF(T.EQ.999.9)GO TO 100
      ZLT=T
      ZLG=G
      ZLZ=Z
      IF((ZHZ-ZLZ).GT.3000.)GO TO 98
  111 BACKSPACE 2
      BACKSPACE 2
      READ(2)G,T,X,Y,Z
      IF(G.EQ.ZHG)GO TO 112
      GO TO 111
  112 READ(2)G,T,X,Y,Z
      IF(G.EQ.ZLG)GO TO 107
      RAT=(ZHG-G)/(ZHG-ZLG)
      T=ZHT-RAT*(ZHT-ZLT)
      WRITE(1)G,T,X,Y,Z
      GO TO 112
      END
```

```
      SUBROUTINE MIDINT(MAXALT)
      READ(1,1G,T,X,Y,Z
      MAXALT=Z
  100 READ(1,END=110) GA,TA,XA,YA,ZA
      IF (T.EQ.999.9.OR.TA.EQ.999.9) T=999.9
      IF (T.NE.999.9.AND.TA.NE.999.9) T=(T+TA)*.5
      H=(Z+ZA)*.5
      GG=(G+GA)*.5
      D=GA-G
      VX = (X-XA)/D
      VY =. (Y-YA)/D
      VZ=(ZA-Z)/D
      WRITE(2) H,VZ,VX,VY,T8,GG
      G=GA
      T=TA
      X=XA
      Y=YA
      Z=ZA
      GOTO 100
  110 ENDFILE 2
      REWIND 1
      REWIND 2
      END
```

```
      SUBROUTINE BANDTC(NIGHT)
C-----DOES BALLISTIC MOTION AND TEMPERATURE CORRECTION
      COMMON MAXALT,HBL,PHL,TBL,RL,PC,CON1,CON2,HSP,YIP,YIP,ITEST,NM,ND,
     1CITY,NT,IND,NS,IX,IA,IB,IC,ID,NOTEMP,NORS,TN(36),INX(10),IROCK
      COMMON GRAT,ZAT,JA1,IKT,IMR,IEW,ICW,IND),IDN
      COMMON/DATA/ATC(51),BTC(51),CTC(51),DTC(51),CTD(51)
      READ(2) H1,Z1,X1,Y1,T1,G1
      READ(2) H2,Z2,X2,Y2,T2,G2
100   READ(2,END=101) H3,Z3,X3,Y3,T3,G3
      T=999.9
      DT=G3-G1
      GR=GRAT*9.80616
      D=((Z3-Z1)/DT)+GR
      VX = X2 -( (Z2*((X3-X1) / DT )) / D)
      VY = Y2 -( (Z2*((Y3-Y1) / DT )) / D)
      XC=VX-X2
      YC=VY-Y2
      V=SQRT(Z2**2+XC**2+YC**2)
      IF (H2.LT.20000.) GOTO 103
      IF(IND.EQ.2.OR.IND.EQ.3) GO TO 103
      IF((T1.EQ.999.9.OR.T2.EQ.999.9).OR.T3.EQ.999.9) GO TO 108
      I=71-IFIX(H2/1000.)
      IF(H2.GE.70000.) I=1
      T4=T2**4
      AA=ATC(I)*(V*V)
      AB = BTC(I) * ((T3-T1)/DT)
      AC = CTC(I)
      IF (NIGHT.EQ.1) AC=CTD(I)
      AD=DTC(I)*T4
      T = T2 - AA + AB - AC + AD
      GO TO 108
103   T=T2
108   WRITE(1)H2,Z2,VX,VY,X2,Y2,T,T2
      H2=H3
      Z1=Z2
      Z2=Z3
      X1=X2
      X2=X3
      Y1=Y2
      Y2=Y3
      T1=T2
      T2 = T3
      G1=G2
      G2=G3
      GO TO 100
101   ENDFILE 1
      REWIND 1
      REWIND 2
      RETURN
      END
```

```
      SUBROUTINE COMPRSR
      COMMON MAXALT,HBL,PBL,TBL,PE,PC,CON1,CON2,HSP,XIP,YIP,ITEST,NB,ND,
     CNY,NT,IND,NS,IX,IA,IB,IC,IC,NOTEMP,NORS,IN(08),INX(10),IROCK
      COMMON GRAT,ZAT,IA1,IKT,IMR,IEW,ICW,IND1,IDN
      COMMON/DATAS/MO(12),NST(12),NRC(2),NTA(3)
      DIMENSION HEIGHT(41),RSTMP(41),TMPDIF(41),RPRS(41),B(41)
      DATA HEIGHT,TMPDIF/82*0.0/
C---------
      IF (NOTEMP.EQ.1) GOTO 999
      M250=6
      NORS=1
      READ(M250,10,END=999) INX(1),INX(2)
      NORS=0
      READ(M250,1) (INX(I),I=3,18)
      WRITE(61,4)
      WRITE(61,5)ITEST,NRC(IA),IROCK
      WRITE(61,6) (NST(I),I=IX,NS),(INX(I),I=3,10)
      WRITE(61,7)NT,ND,MO(NM),NY,(INX(I),I=11,18)
      WRITE(61,8)
C---------
      DO 100 I=1,41
105   READ(M250,2) IN
      IF (IN(1).EQ."TERMINATION") GOTO 110
      DECODE(41,3,IN) HGT,TMP,ITEN,RPR
      IF (HGT.LT.20000.) GOTO 105
      HEIGHT(I)=HGT
      RPRS(I)=RPR
      IMUL=1
      IF (ITEN.EQ.O"66".OR.ITEN.LT.O"33") IMUL=-1
      IF (ITEN.LT.O"33") ITEN=ITEN-O"11"
      IF (ITEN.EQ.O"66") ITEN=0
      IF (ITEN.GE.O"33") ITEN=ITEN-O"33"
      RSTMP(I)=((TMP*10.+FLOAT(ITEN))*IMUL)/10.
100   CONTINUE
C---------
110   IF (I.LT.10) GOTO 999
      DO 120 I=1,1000
120   READ(1,END=130)
130   KIX=I-2
      BACKSPACE 1
      BACKSPACE 1
      READ(1) Z,H,VX,VY,UX,UY,T,UT
      J=1
      DO 140 I=1,KIX
      BACKSPACE 1
      BACKSPACE 1
      READ(1) Z1,H,VX,VY,UX,UY,T1,UT
      IF (T.GE.999..OR.T1.GE.999.) GOTO 131
132   IF (Z.LE.HEIGHT(J).AND.HEIGHT(J).LT.Z1) THEN
      RAT=(Z-HEIGHT(J))/(Z-Z1)
      B(J)=T-RAT*(T-T1)-273.15
      TMPDIF(J)=B(J)-RSTMP(J)
      WRITE(61,9) IFIX(HEIGHT(J)),B(J),RSTMP(J),TMPDIF(J)
      END IF
      IF (HEIGHT(J).GE.Z1) GOTO 131
      J=J+1
      IF (J.GT.41.OR.HEIGHT(J).EQ.0.0) GOTO 150
```

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```
      GOTO 132
  131 T=T1
      T=T1
  140 CONTINUE
C---------
  150 K=1
      KK=9
  155 A=0
      DO 160 I=K,KK
      IF (HEIGHT(I).EQ.0.0) GOTO 999
  160 A=A+ABS(TMPDIF(I))
      A=A/9.
      IF (A.LE.2.5) THEN
      HBL=HEIGHT(K)
      TBL=PSTMP(K)+273.15
      PBL=PRRS(K)
      IH=((CRAT*(RE*HBL)/(RE+HBL))+5.)/10.
      IP=PBL*100.+.5
      IT=B(K)*10.-.5
      WRITE(8,12) IH,IP,IT
      REWIND 1
      RETURN
      END IF
      K=K+1
      KK=KK+1
      IF (KK.LE.41) GOTO 155
  999 HBL=PBL=TBL=999.9
      WRITE(8,11)
      REWIND 1
      RETURN
C---------
    1 FORMAT(//8A4/8A4///)
    2 FORMAT(8A10)
    3 FORMAT(F6.0,14X,F2.0,R1,12X,E6.2)
    4 FORMAT("1",11X,"* * *  TEMPERATURE COMPARISON  * * *"//
   C       " ROCKETSONDE",24X,"RAWINSONDE"/)
    5 FORMAT(" TEST NBR ",I5/" ROCKET ",A10,2X,A10)
    6 FORMAT(" ",3A10,5X,8A4)
    7 FORMAT(" ",I4,"Z",I4,1X,A4,I4,17X,8A4//)
    8 FORMAT(" ALTITUDE",8X,"TEMPERATURE  DEGREES C"/
   C       "  METERS    ROCKET   RAWINSONDE   DIFFERENCE"/)
    9 FORMAT(" ",I7,F10.2,F11.2,F12.1)
   10 FORMAT(2A4)
   11 FORMAT("9999 9999-999")
   12 FORMAT(I4,I5,I4)
C---------
      END
```

```
      1              SUBROUTINE TWORK
      2              DIMENSION XA(3,3),XB(9),X(9),YC(9,3)
      3              DIMENSION YA(3,3),YB(9),Y(9),YC(9,3)
      4              DIMENSION H(5),F(5),UX(5),UY(5),T(5),UT(5),A(9)
      5              DO 10 I=1,4
      6              READ(1) HA,FA,X(I),Y(I),UXA,UYA,TA,UTA
      7           10 WRITE(2)HA,FA,X(I),Y(I),UXA,UYA,TA,UTA
      8              DO 20 I=1,4
      9           20 READ(1) H(I),F(I),X(I+4),Y(I+4),UX(I),UY(I),T(I),UT(I)
     10           30 READ(1,END=150) H(5),F(5),X(9),Y(9),UX(5),UY(5),T(5),UT(5)
     11              DO 50 I=1,9
     12           50 IF(X(I).EQ.999.9) GO TO 100
     13              DO 60 I=1,9
     14           60 YC(I,1)=YC(I,1)=1.
     15              DO 70 J=2,3
     16              DO 70 I=1,9
     17              XC(I,J)=XC(I,J-1) * I
     18           70 YC(I,J)=YC(I,J-1) * I
     19              DO 80 I=1,3
     20              DO 80 J=1,3
     21              XA(I,J)=YA(I,J)=0.
     22              DO 80 K=1,9
     23              XA(I,J)=XA(I,J)+XC(K,I)*XC(K,J)
     24           80 YA(I,J)=YA(I,J)+YC(K,I)*YC(K,J)
     25              DO 90 I=1,3
     26              XB(I)=YB(I)=0.
     27              DO 90 K=1,9
     28              XB(I)=XB(I)+XC(K,I)*X(K)
     29           90 YB(I)=YB(I)+YC(K,I)*Y(K)
     30              CALL SIMQ(XA,XB,3)
     31              CALL SIMQ(YA,YB,3)
     32              SX=25.*XB(3)+5.*XB(2)+XB(1)
     33              SY=25.*YB(3)+5.*YB(2)+YB(1)
     34              GO TO 110
     35          100 SX=SY=999.9
     36          110 WRITE(2) H(1),F(1),SX,SY,UX(1),UY(1),T(1),UT(1)
     37              DO 130 I=1,8
     38              X(I)=X(I+1)
     39          130 Y(I)=Y(I+1)
     40              DO 140 I=1,4
     41              J=I+1
     42              H(I)=H(J)
     43              F(I)=F(J)
     44              UX(I)=UX(J)
     45              UY(I)=UY(J)
     46              T(I)=T(J)
     47          140 UT(I)=UT(J)
     48              GO TO 30
     49          150 DO 160 I=1,4
     50           160 WRITE(2)H(I),F(I),X(I),Y(I),UX(I),UY(I),T(I),UT(I)
     51              ENDFILE 2
     52              REWIND 1
     53              REWIND 2
     54              DO 200 I=1,1000
     55              READ(2,END=201)
     56           200 CONTINUE
     57           201 I=I-1
```

```
      DO 202 J=1,I
      BACKSPACE 2
      BACKSPACE 2
      READ(2)A
  202 WRITE(1)A
      ENDFILE 1
      REWIND 1
      REWIND 2
      RETURN
      END
```

```
      SUBROUTINE PRESCOM
      COMMON MAXALT,HBL,PBL,TBL,PL,PC,CONI,CONP,HSP,XIP,YIP,ITEST,NN,ND,
     CNY,NT,IND,US,IX,IA,IB,IC,ID,NOTEBP,NORS,IN(CN),INX(IN),IRDCK
      COMMON GRAT,ZAT,IA1,IKT,IMR,IFW,ICW,IND1,IDK
      PPL=999.9
      KSW=0
      IBLSW=0
  100 READ(1)H,F,X,Y,UX,UY,T,UT
      HI=GRAT*((RE*H)/(RE+H))
      IF (HBL.LE.H) GOTO 10
      WRITE(2) H,X,Y,UX,UY,T,UT,PPL,F
      GO TO 100
   10 IF(HBL.EQ.H)GO TO 101
      IBLSW=1
      IF ((H-HBL).LE.3000.) GOTO 101
      KSW=1
      PBL=TBL=999.9
      F=-999.9
  101 IF(PBL.GT.99. )GO TO 109
      PPL=ALOG10(PBL)
      GO TO 110
  109 KSW=1
  110 TP=TBL
      HP=GRAT*((RE*HBL)/(RE+HBL))
      WRITE(2) HBL,X,Y,UX,UY,T,UT,PPL,F
      IF(IBLSW.EQ.1)BACKSPACE 1
C---------
  108 READ(1,END=99)H,F,X,Y,UX,UY,T,UT
      PL=999.9
      IF(KSW.EQ.1)GO TO 107
      HI=GRAT*((RE*H)/(RE+H))
      IF (T.NE.999.9.AND.TP.NE.999.9) GOTO 105
      KSW=1
      GO TO 107
  105 TV=(T+TP)/2.
      PL=PPL-((HI-HP)/(PC*TV))
      HP=HI
      PPL=PL
      TP=T
  107 WRITE(2) H,X,Y,UX,UY,T,UT,PL,F
      GOTO 108
99    ENDFILE 2
      REWIND 1
      REWIND 2
      CALL INT
      RETURN
      END
```


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```
      SUBROUTINE ONEKILO(MAXALTS)
      COMMON MAXALT,HBL,PBL,TBL,RE,PC,CON1,CON2,HSP,XIP,YIP,ITEST,NM,ND,
     CNY,NT,IND,NS,IX,IA,IB,IC,ID,NOTEMP,NORS,IN(DB),INX(IB),IROCK
      COMMON GRAT,ZAT,IA1,IKT,IMP,IEW,ICW,IND1,IDN
      COMMON/DATAS/MO(12),NST(12),NRC(2),NTA(3)
      DIMENSION MAXALTS(3)
      IMAX=0
      NSW=0
      CON1=CON2=1.
      HINT=1000.
  106 WRITE(2,7)ITEST
    7 FORMAT(16H TEST NUMBER     ,I5)
      WRITE(2,8)(NST(I),I=IX,NS)
    8 FORMAT(1H ,3A10,49X)
      WRITE(2,9)NT,ND,MO(NM),NY
    9 FORMAT(1H ,I4.4,3HZ  ,I2,1X,A4,I4,61X,/)
      WRITE(2,18)NRC(IA),IROCK
   18 FORMAT(1H ,A10,2X,A10,57X)
      WRITE(2,4)
      IMAX=IMAX+1
      IF(NSW.EQ.2)GO TO 114
      GO TO 115
  114 WRITE(2,6)
      GO TO 107
  115 WRITE(2,5)
  107 WRITE(2,2)
      NSW=NSW+1
      XIP=999.9
    1 READ(1)HA,XA,YA,UXA,UYA,TA,UTA,PA,FA
      IF(HA.LT.1.) GO TO 1
      HA=HA*CON2
      CALL OUTPUT(HA,XA,YA,TA,UTA,PA,FA)
      IH=HSP=HA
      HS=((IH/1000)*1000)+HINT
  109 IF(HS.GT.HA)GO TO 103
      HS=HS+HINT
      GO TO 109
  103 READ(1,END=99)HB,XB,YB,UXA,UYA,TB,UTB,PB,FB
      HB=HB*CON2
  100 IF(HS.EQ.HB)GO TO 101
      GO TO 102
  101 CALL OUTPUT(HS,XB,YB,TB,UTB,PB,FB)
      HS=HS+HINT
  105 HA=HB
      XA=XB
      YA=YB
      TA=TB
      UTA=UTB
      PA=PB
      FA=FB
      GO TO 103
  102 IF(HS.LT.HB)GO TO 104
      GO TO 105
  104 RAT=(HS-HB)/(HA-HB)
      X=VALUE(RAT,XA,XB)
      Y=VALUE(RAT,YA,YB)
      T=VALUE(RAT,TA,TB)
```

```
      U=VALUE(RAT,UTA,UTB)
      P=VALUE(RAT,PA,PB)
      F=VALUE(RAT,FA,FB)
      CALL OUTPUT(HS,X,Y,T,U,P,F)
      HS=HS+HINT
      GO TO 100
   99 HS=HA
      CALL OUTPUT(HS,XA,YA,TA,UTA,PA,FA)
      MAXALT=MAXALT*CON2
      MAXALTS(IMAX)=MAXALT
      ENDFILE 2
      REWIND 1
      IF(NSW.GT.1) GO TO 112
      HINT=250.
      GO TO 106
  112 IF(NSW.GT.2) GO TO 113
      HINT=1000.
      CON1=1.942569
      CON2=3.280833
      GO TO 106
C---------
2     FORMAT(1H )
4     FORMAT(75H   ALT      DIR   SPD   TEMP      TEMP   PRESS   DENSITY
     C  RF      VS      SHR)
5     FORMAT(76H   GEOMM    DEG   MPS     K       CORR    MBS     G/M3
     C  MPS     MPS     /SEC)
6     FORMAT(76H  GEOMFT    DEG   KTS     K       CORR    MBS     G/M3
     C  FPS     KTS     /SEC)
C---------
113   ENDFILE 2.
      REWIND 1
      REWIND 2
      RETURN
      END
```

```
      SUBROUTINE PLOTCH
      DIMENSION IN(5),ICT(10)
      WRITE(61,565)
  565 FORMAT("1")
      REWIND 2
      DO 100 I=1,4
      READ(2,1) IN
  100 WRITE(61,2)IN
    1 FORMAT(5A10)
    2 FORMAT(1H ,8A10)
      WRITE(61,3)
    3 FORMAT(1H )
      WRITE(61,7)
    7 FORMAT(15X, 96H205  210  215  220  225  230  235  240  245  250  2
     C55  260  265  270  275  280  285  290  295  456)
      WRITE(61,3)
  200 READ(2,1,END=210)
      GOTO 200
  210 BACKSPACE 2
      BACKSPACE 2
      BACKSPACE 2
  110 DO 102 K=1,10
  102 ICT(K)=10H
      DO 108 K=5,100,5
  108 CALL PUTC(ICT,K,R"M)
      BACKSPACE 2
      BACKSPACE 2
      READ(2,4)HS,T
      IF(HS .EQ. 0.) GO TO 103
      IF(HS .GT. 70000.) GOTO 110
    4 FORMAT(1X,F7.0,12X,F8.2)
      KK=T-200
      IF (T.EQ.999.99) KK=100
      IF (KK.LE.0.OR.KK.GE.101) KK=100
      CALL PUTC(ICT,KK,R"T")
      WRITE(61,5) IFIX(HS),ICT
    5 FORMAT(17,5X,10A10)
      GO TO 110
  103 REWIND 2
      RETURN
      END
```

```
      SUBROUTINE PUTOUT(MAXALTS)
      DIMENSION MAXALTS(3),IN(8)
C---------
1     FORMAT(MA10)
2     FORMAT(//," MAXIMUM ALTITUDE ",I6," GEOMM")
3     FORMAT("1")
4     FORMAT(//," MAXIMUM ALTITUDE ",I6," GEOMFT")
C---------
      N=1
      WRITE(61,3)
100   READ(2,1,END=105) IN
      GOTO 110
105   IF (N.NE.3) WRITE(61,2) MAXALTS(N)
      IF (N.EQ.3) WRITE(61,4) MAXALTS(N)
      WRITE(61,3)
      N=N+1
      IF (N.GT.3) RETURN
      CLOSE(2,STATUS='KEEP')
      OPEN(2,BUFL=512)
      GOTO 100
110   WRITE(61,1) IN
      WRITE(10,1) IN
      GOTO 100
C---------
      END
```

```
      SUBROUTINE ETFORM
      DIMENSION H4(20),X4(20),Y4(20),UX4(20),UY4(20),T4(20),UT4(20),
     +P4(20),F4(20)
      COMMON MAX4LT,HBL,PBL,TBL,PC,PC,COM1,COM2,HSP,XIP,YIP,ITEST,NM,ND,
     CNY,NT,IND,NS,IX,IA,IB,IC,ID,NOTEMP,NOBS,TM(08),INX(16),IROCK
      COMMON GRAT,ZAT,IA1,IKT,IMP,IEW,ICW,TNDI,IDN
      COMMON/CODE/H,X,Y,UX,UY,T,UT,P,F
      COMMON/PRES/PL(35)
    5 FORMAT(8A10)
C---------
      REWIND 1
      REWIND 2
      ST=999.9
C---- START HAMDATA
      DO 98 I=1,5
      READ(2,5)IN
   98 WRITE(62,5)IN
C     COMPUTE 1000 METER DATA AND PICK SIGNIFICANT LEVELS
   92 DO 50 I=1,20
   50 H4(I)=X4(I)=Y4(I)=UX4(I)=UY4(I)=T4(I)=UT4(I)=P4(I)=F4(I)=0.0
C---- INITIALIZE
      H=TX=TLP=DT=0.0
      ICNT=IFLAG=JP=0
      IBEG=IP=IEND=IT=1
      DO 51 I=1,20
      READ(1,END=97) H4(I),X4(I),Y4(I),UX4(I),UY4(I),T4(I),UT4(I),
     C P4(I),F4(I)
      IF(H4(I).LT.1.) GO TO 92
      IF(I.NE.1) GO TO 12
C---- INITIALIZE MIN AND MAX TEMPERATURE
      TMX=T4(I)
      TMN=T4(I)
      IS1=IS2=I
      HL=H4(I)
      J=HL/1000.
      HL=J*1000
      H1=HL+1000.
   12 IF(TMX.GE.T4(I)) GO TO 13
      TMX=T4(I)
      IS1=I
   13 IF(TMN.LE.T4(I)) GO TO 15
      TMN=T4(I)
      IS2=I
   15 IF(H4(I).GE.H1) GO TO 30
   51 CONTINUE
   30 IP=IT
      IF(IS1.LT.IS2) GO TO 16
      IF(IS1.EQ.IS2) IFLAG=ICNT=3
C---- MIN TEMPERATURE ROUTINE
   29 IF(IFLAG.EQ.1) GO TO 52
      IF(IFLAG.EQ.3.AND.ICNT.GT.1) GO TO 31
      IT=IS2
      IF(IT.EQ.I) GO TO 28
      IFLAG=1
      IF(IS2.EQ.1.OR.IS2.EQ.1) GO TO 27
      IF(ICNT.GE.1) GO TO 29
      GO TO 16
```

```
      27 ICNT=ICNT+2
C---- MAX TEMPERATURE ROUTINE
      16 IF(IFLAG.EQ.2) GO TO 32
         IF(IFLAG.LQ.3.AND.ICNT.GT.2) GO TO 31
         IT=IS1
         IF(IT.EQ.I) GO TO 28
         IFLAG=2
         IF(IS1.EQ.1.OR.IS1.EQ.I) GO TO 17
         IF(ICNT.GE.1) GO TO 28
         GO TO 18
      17 ICNT=ICNT+2
         GO TO 29
      18 IBEG=1
         GO TO 28
      31 IT=I
         IB=IP
         IBEG=IEND
      28 IB=IP
         IEND=IT
C---- SELECT SIGNIFICANT LEVEL
      54 DO 60 IP=IBEG,IEND
         TX=(H4(IP)-H4(IB))/(H4(IT)-H4(IB))
         TLP=TX*(T4(IT)- T4(IB))+T4(IB)
         DT=ABS(TLP-T4(IP))
         IF(IP.EQ.I) GO TO 53
         IF(DT.GE.2.) GO TO 40
      60 CONTINUE
         IP=IP-1
      40 IB=IP
         IBEG=IB
         IF(H4(IP).GT.H1) GO TO 53
         H=H4(IP)/10.
         PH=H
         PH=PH+.5
         X=X4(IP)
         Y=Y4(IP)
         P=P4(IP)
         R=R4(IP)
         T=T4(IP)
         UX=UX4(IP)
         UY=UY4(IP)
         UT=UT4(IP)
         IF(T4(IP).GT.998.) GO TO 41
         IF((ABS(T4(IP)-ST)).LT.2.) GO TO 41
         CALL CORIT
      41 JP=IP
         ST=T4(IP)
         IF(DT.GE.2.) GO TO 54
         IF(IS1.GT.IT) IEND=IT=IS1
         IF(IS2.GT.IT) IEND=IT=IS1
         IF(IT.NE.I) GO TO 52
         IF (IBEG.EQ.I) GOTO 53
         GOTO 54
      52 IBEG=IEND
         IB=IEND
         IT=I
         IEND=IT
```

```
      GO TO 54
C---- OUTPUT MANDATORY LEVEL
   53 RAT=(H1-H4(IP))/(H4(IP-1)-H4(IP))
      H=H1/10.
      X=VALUE(RAT,X4(IP-1),X4(IP))
      Y=VALUE(RAT,Y4(IP-1),Y4(IP))
      T=VALUE(RAT,T4(IP-1),T4(IP))
      P=VALUE(RAT,P4(IP-1),P4(IP))
      F=VALUE(RAT,F4(IP-1),F4(IP))
      UX=VALUE(RAT,UX4(IP-1),UX4(IP))
      UY=VALUE(RAT,UY4(IP-1),UY4(IP))
      UT=VALUE(RAT,UT4(IP-1),UT4(IP))
      IF(IP.EQ.JP) GO TO 92
      CALL CODIT
      ST=T4(IP)
      BACKSPACE 1
      GO TO 92
C     OUTPUT LAST DATA POINT
   97 BACKSPACE 1
      BACKSPACE 1
      READ(1)H,X,Y,UX,UY,T,UT,P,F
      H = H / 10.
      CALL CODIT
      REWIND 1
      REWIND 2
C---- START CPLEVELS
      J=1
      READ(1)H1,X1,Y1,UX1,UY1,T1,UT1,P1,F1
  100 READ(1,END=106)H2,X2,Y2,UX2,UY2,T2,UT2,P2,F2
  101 IF(P1.GE.999.) GO TO 104
      IF(J .EQ. 24) GO TO 102
      IF(J .EQ. 29) GO TO 102
      IF(J .EQ. 34) GO TO 102
      IF(PL(J) .GT. P1)GO TO 102
      GO TO 103
  102 J=J+1
      GO TO 101
  103 IF(PL(J).LE.P2)GO TO 104
      GO TO 105
  104 H1=H2
      X1=X2
      Y1=Y2
      UX1=UX2
      UY1=UY2
      T1=T2
      UT1=UT2
      P1=P2
      F1=F2
      GO TO 100
  105 RAT=(PL(J)-P2)/(P1-P2)
      H=RAT*(H1-H2)+H2
      X=VALUE(RAT,X1,X2)
      Y=VALUE(RAT,Y1,Y2)
      UX=VALUE(RAT,UX1,UX2)
      UY=VALUE(RAT,UY1,UY2)
      T =VALUE(RAT,T1,T2)
      UT=VALUE(RAT,UT1,UT2)
```

```
      F=VALUE(RAT,F1,F2)
C---- CONVERT GEOMETRIC HEIGHT TO GEOPOTENTIAL
      H = GRAT * (RE * H) / (RE + H) / 10.
      T=PL(J)
      CALL CODIT
      GO TO 104
  106 REWIND 1
      CALL RDRAWIN
      RETURN
      END
```

```
      1            SUBROUTINE CODIT
      2            COMMON/CODE/H,X,Y,UX,UY,T,UT,P,F
      3            DIMENSION IS(9)
      4            DATA IS/"+3","+2","+1","+0","-1","-2","-3","-4",
      5           C "+0"/
      6            IPND(A1)=IFIX(SIGN((ABS(A1)+.5),A1))
      7            IF(PH.EQ.H) RETURN
      8            DIS=WDIS(X,Y)
      9            SPD=WSPD(X,Y)
     10            IF(X.LT.999.)GO TO 102
     11            X=Y=UX=UY=9999.
     12            GO TO 106
     13        102 X=-X
     14            UX=-UX
     15            Y=-Y
     16            UY=-UY
     17        106 IF(T.LT.999.)GO TO 108
     18            T=9999.
     19            TC=VS=999.
     20            GO TO 109
     21        108 VS= 331.45+SQRT(T/273.15)
     22            T1=T
     23            T=T-273.15
     24            UT=UT-273.15
     25            TC=T-UT
     26        109 PS=PS=99.99999
     27            IF(P.LT.999.) PS=10**P
     28            IF(T.NE.9999.) DS=(PS/T1)*348.38
     29            D=PS
     30            K=I1
     31            DO 10 I=1,2
     32            D=D+.00000004
     33            A=10000.
     34            B=1000.
     35            C=.001
     36            IC=0
     37            IF(D.GT.99.)GO TO 1
     38            GO TO 2
     39          1 D=9.999
     40            K=IS(9)
     41            GO TO 5
     42          2 IF(D.LE.A.AND.D.GE.B)GO TO 3
     43            GO TO 4
     44          3 IC=IC+1
     45            D=D*C
     46            K=IS(IC)
     47            GO TO 5
     48          4 A=B
     49            B=B/10.
     50            C=C*10.
     51            IC=IC+1
     52            GO TO 2
     53          5 IF (I.EQ.1) GO TO 6
     54            DS=D
     55            I2=K
     56            GO TO 10
     57          6 PS=D
```

```
58                I1=K
59                J=DS
60                K=I2
61              10 CONTINUE
62                 WRITE(62,110) IRND(H),IRND(DIR),IRND(SPD),IRND(UY),IRND(UX),
63                *IRND(Y),IRND(X),IRND(ABS(F)),IRND(T),IRND(TC),DS,I1,DS,I2,IRND(VS)
64              110 FORMAT(15,I3.3,I3,414,I3.3,I4,I3,2(F5.3,R2),T3)
65                 RH=H
66                 RETURN
67                 END
```

```
      1              SUBROUTINE RDPAWIN
      2              COMMON MAXALT,MBL,PRL,TBL,EE,PC,CON1,CON2,HSP,XIP,YIP,ITEST,NM,ND,
      3             CNY,NT,IND,NS,IY,IA,IB,IC,ID,NCTEMP,NOSS,IN(10),INX(10),IROCK
      4          C----------
      5          1     FORMAT(A4,T1,8A10)
      6          2     FORMAT(2A4///8A4/8A4/)
      7          3     FORMAT(A10)
      8          C----------
      9                M250=6
     10                REWIND M250
     11                WRITE(62,2) INX
     12          C----------
     13                READ(M250,1)
     14          100   READ(M250,1) INC
     15                IF (INC.NE.4H    ) GOTO 100
     16          C----------
     17          110   READ(M250,1,END=99) INC,IN
     18                IF (INC.NE.4H    ) WRITE(62,3) IN
     19                GOTO 110
     20          C----------
     21          99    ENDFILE 62
     22                RETURN
     23                END
```

```
      SUBROUTINE INT
C-----------
      READ(2) H1,X1,Y1,UX1,UY1,T1,UT1,P1,F1
  100 READ(2,END=9999) H2,X2,Y2,UX2,UY2,T2,UT2,P2,F2
      WRITE(1) H1,X1,Y1,UX1,UY1,T1,UT1,P1,F1
      IF ((H2-H1).GT.1000.) GOTO 200
  110 H1=H2
      X1=X2
      Y1=Y2
      UX1=UX2
      UY1=UY2
      T1=T2
      UT1=UT2
      P1=P2
      F1=F2
      GOTO 100
  200 CONTINUE
      IH = (H1/1000)*1000
      HS = IH+1000.
  210 IF ((HS+300).GE.H2) GOTO 110
      RAT = (H2-HS)/(H2-H1)
      X = (RAT*(X1-X2))+X2
      Y = (RAT*(Y1-Y2))+Y2
      UX = (RAT*(UX1-UX2))+UX2
      UY = (RAT*(UY1-UY2))+UY2
      T = (RAT*(T1-T2))+T2
      UT = (RAT*(UT1-UT2))+UT2
      P = (RAT*(P1-P2))+P2
      F = (RAT*(F1-F2))+F2
      WRITE(1) HS,X,Y,UX,UY,T,UT,P,F
      HS = HS+1000.
      GOTO 210
C-----------
 9999 WRITE(1) H2,X2,Y2,UX2,UY2,T2,UT2,P2,F2
      ENDFILE 1
      REWIND 1
      REWIND 2
      RETURN
      END
```

```
      SUBROUTINE RDCOB
      COMMON MAXALT,MAL,PRL,TAL,PE,PC,CON1,CON2,HSP,YIP,YIP,ITEST,MM,ND,
     C NY,NT,IND,NS,IX,IA,IR,IC,ID,NUTEMP,NOBS,IN(20),INX(10),IPOCK
      COMMON GRAT,ZAT,IAL,IKT,IMP,IEV,ICH,IND1,IDN
      COMMON/PRES/PL(35)
      INTEGER HHZTT(100),DDFFF(100),NDPPP(100),HH,DD,FFF
C---------
      IRND(A) = IFIX(SIGN((ABS(A)+.5),A))
C---------
1     FORMAT(I2.2,I3,I2.2,1X)
2     FORMAT(I2.2,"/// ")
3     FORMAT(I2.2,I3.3,1X)
4     FORMAT("///// ")
5     FORMAT("9",I1,I3.3,1X)
6     FORMAT("9//// ")
1000  FORMAT(A10)
1001  FORMAT(1X,I7,2I6,F8.2,17X,F9.4)
20001 FORMAT(4X,A6,A6,A6,A6,A6,A6,A6,A6,A6,A6)
20002 FORMAT(4X,"BRXX",2(1X,I2.2,I3.3),1X,I5,2(1X,I1,I2,2I1))
20003 FORMAT("    JJJ")
C---------
      ICD=9
      LUN=2
      REWIND LUN
      IGROUP=0
C-----GET POSITIONED AT BEGINNING OF THE 1000 METER OUTPUT
100   READ(LUN,1000) MTRS
      IF (MTRS.NE."   GEOMM  ") GOTO 100
      READ(LUN,1001)
C-----GET LOWEST DATA POINT WITH DIR AND SPD AVAILABLE
150   READ(LUN,1001) HH,DD,FFF,TT,PPP
C-----CHECK FOR FIRST GOOD LEVEL
      IF(DD.EQ.999.OR.FFF.EQ.999) GO TO 150
      BACKSPACE LUN
26    READ(LUN,1001,END=27) HH,DD,FFF,TT,PPP
      IF(DD.EQ.999.AND.FFF.EQ.999.AND.TT.EQ.999.99)
     C GOTO 27
      IHH=MOD(HH,1000)
      IF (IHH.NE.0) GOTO 27
      IGROUP=IGROUP+1
      IH = HH/1000.
      IF (TT.GT.998.) GOTO 200
      TT = TT-273.15
      IT = IRND(TT)
      IZ = 6
      IF (IT.GE.-99) IZ=5
      IF (IT.GE.0) IZ=0
      IT = IABS(IT)
      ENCODE(6,1,HHZTT(IGROUP)) IH,IZ,IT
      GOTO 210
200   ENCODE(6,2,HHZTT(IGROUP)) IH
C---------
210   IF (DD.GT.998.OR.FFF.GT.998) GOTO 220
      IF (DD.GT.360)  DD=DD-360
      DD=(DD+5)/10
      IF (DD.EQ.0) DD=36
      ENCODE(6,3,DDFFF(IGROUP)) DD,FFF
```

```
      GOTO 230
  220 ENCODE(6,4,DDFFF(IGROUP))
C---------
  230 IF (PPP.GT.996.) GOTO 240
      TESTP = 100.
      DO 250 IP=1,10
      IF (PPP.GE.TESTP) GOTO 260
      TESTP = TESTP/10.
  250 CONTINUE
      GOTO 240
  260 IP = IP-1
      IWORKD = PPP*10**IP+.5
      ENCODE(6,5,NDPPP(IGROUP)) IP,IWORKD
      GOTO 26
  240 ENCODE(6,6,NDPPP(IGROUP))
      GOTO 26
C---------
   27 MIN=MOD(NT,100)
      IHR=NT/100
      MIN=MIN+5
      IF(MIN.GE.60) MIN=0
      IF(MIN.EQ.0) IHR=IHR+1
      IF(IHR.EQ.24) IHR=0
      NT=(IHR*10)+(MIN/10)
      INTIND=74794
      NYY = NY-1000
      WRITE(61,20002) ND,NT,NM,NYY,INTIND,IA1,IND1,IKT,IMR,IND,
     C IEW,ICW,IMR
      WRITE(ICD,20002) ND,NT,NM,NYY,INTIND,IA1,IND1,IKT,IMR,IND,
     C IEW,ICW,IMR
      WRITE(61,20001) (HHZTT(K),DDFFF(K),NDPPP(K),K=1,IGROUP)
      WRITE(ICD,20001) (HHZTT(K),DDFFF(K),NDPPP(K),K=1,IGROUP)
C---- STANDARD MANDATORY LEVEL DATA
C---------
      CALL MANDL
C---------
      WRITE(61,20003)
      RETURN
      END
```

```
      SUBROUTINE MANDL
      COMMON MAXALT,HPL,PBL,TBL,PL,PC,CON1,CON2,HSP,XIP,YIP,ITEST,NM,ND,
     C NY,NT,IND,NS,IX,IA,IB,IC,ID,NOTEMP,NOPS,IP(8),INX(16),IPLCK
      COMMON GPAT,ZAT,IA1,IKT,IMP,IFW,ICA,IND1,IDM
      COMMON/PRES/PL(35)
      DIMENSION OUT(108)
      DIMENSION ISIG(6)
C---------
 1    FORMAT(P2,I1,I2.2,1X)
 2    FORMAT(P2,"/// ")
 3    FORMAT(I2.2,I3.3,1X)
 4    FORMAT("///// ")
 5    FORMAT(4X,A6,A6,A6,A6,A6,A6,A6,A6,A6,A6)
C---------
C---- SIGNIFICANT DIGIT TABLE
C---- SET CONSTANTS
      DATA ISIG/R"11",R"22",R"33",R"44",R"55",R"66"/
C
      ICD=9
      REWIND 1
      DO 90 M=1,108
   90 OUT(M)=10H
      J = M = 1
C---- START MANDATORY DATA SELECTION
      READ (1)  H1,X1,Y1,UX1,UY1,T1,UT1,P1,E1
  100 READ(1,END=250)H2,X2,Y2,UX1,UY1,T2,UT1,P2,E1
      IF (P1.GE.999.) GOTO 104
101   IF (PL(J).LE.P1) GOTO 103
      J=J+1
      GO TO 101
103   IF (PL(J).GT.P2) GOTO 105
104   H1=H2
      X1=X2
      Y1=Y2
      T1=T2
      P1=P2
      GO TO 100
105   RAT=(PL(J)-P2)/(P1-P2)
      H  =RAT*(H1-H2)+H2
      X  =VALUE(RAT,X1,X2)
      Y  =VALUE(RAT,Y1,Y2)
      T  =VALUE(RAT,T1,T2)
      DIR=WDIR(X,Y)
      SPD=WSPD(X,Y)
      IF (X.LT.999.) GOTO 202
      DIR = SPD = 9999.
      GO TO 206
202   X=-X
      Y=-Y
206   IF (T.LT.999.) GOTO 208
      T=9999.
      IF(P2 .GE. 999.) GO TO 100
  208 T=T-273.15
      JS = 6
      IF (J.LT.31) JS=5
      IF (J.LT.26) JS=4
      IF (J.LT.21) JS=3
```

```
      IF (J.LT.10) JS=2
      IF (J.LT.1) JS=1
      IF(I .GT. 90.0) GO TO 221
      T=0.5-T
      IT=T
      IF (IT.LE.99) GOTO 217
      KA = 6
      IT = IT-100
      GOTO 218
217   IF (IT.LE.0) GOTO 219
      KA = 5
      GOTO 218
219   KA = 0
      IT = -IT
218   ENCODE(6,1,OUT(M)) ISIG(JS),KA,IT
      GOTO 220
221   ENCODE(6,2,OUT(M)) ISIG(JS)
220   M=M+1
      F1 = .5
      IF(PL(J) .LT. 0.) F1 = .05
      IF(PL(J) .LT.-1.) F1 = .005
      IF(PL(J) .LT.-2.) F1 = .0005
      IF(PL(J) .LT.-3.) F1 = .00005
      IF(PL(J) .LT.-4.) F1 = .000005
      IPS = (10.**PL(J) + F1) * (10 ** JS / 10)
      IH = ((GRAT * (RE * H) / (RE + H)) +5.) / 100.
      IF(JS .EQ. 6) IH = IH / 10
      ENCODE(6,3,OUT(M)) IPS,IH
      M = M+1
C-----
      IDD = (DIR + 5.) / 10
      ISS=SPD+.5
      IF (IDD.LT.999.AND.ISS.LT.999) GOTO 234
      ENCODE(6,4,OUT(M1)
234   IF (IDD.EQ.0) IDD=36
      ENCODE(6,3,OUT(M)) IDD,ISS
      M=M+1
      IF (EOF(1).NE.0) GOTO 252
      GOTO 104
C-----
250   IF (PL(J).NE.P1) GOTO 252
      H2=H1
      X2=X1
      Y2=Y1
      T2=T1
      P2=P1
      GO TO 105
C-----
252   IF (M.EQ.1) GO TO 290
      M = M-1
      WRITE(ICO,5) (OUT(I),I=1,M)
      WRITE(61,5) (OUT(I),I=1,M)
290   REWIND 2
      RETURN
      END
```

SECTION B

METEOROLOGICAL SOUNDING SYSTEM (MSS)
DATA GENERAL NOVA-3/12 FORTRAN V
ROCKETSONDE PROGRAM

(ROCS 3)

ABSTRACT

The MSS rocketsonde reduction procedure is designed for use with transponder sondes only, such as the PWN-10A. It consists of two programs, Pass 1 and Pass 2.

This document is divided into two self-contained sections.

Pass 1

Pass 1 of the MSS rocketsonde reduction procedure reduces the wind and temperature data recorded by the MSS realtime program. Output options and surface data are entered by the operator from the display console. This pass produces quality control data, constant altitude data, and two disk files.

Pass 2

Pass 2 of the MSS rocketsonde reduction procedure extracts the HAMDATA levels from the intermediate scratch file and the co-rawinsonde file. This pass uses the 1,000-meter constant altitude file and the intermediate scratch file to produce the ROCOB coded message.

PASS 1

1.0 Module Description

1.1 Main Routine

Initializes the various control and conversion constants, reads in rocket data from diskette to scratch file, and controls the flow of data through the subroutines.

1.2 Subroutine MIDINT

Computes the midpoint of altitude layers and calculates uncorrected component winds and fall rates for the layers between data points.

1.3 Subroutine BANDTC

Computes ballistic motion corrections for correcting winds according to Eddy (Reference 2 in Bibliography). Temperature corrections are computed as described in FMH 10, Section E of Appendix I.

1.4 Subroutine TWOKM

Smooths component wind data over 2-km thicknesses, producing 2-km mean thickness winds.

1.5 Subroutine SIMQ

Uses a least squares method of smoothing, providing a best fit of the components by generating a second degree polynomial equation in general form.

1.6 Subroutine PRESCOM

Converts geometric altitude to geopotential units, computes mean virtual temperature, and computes atmospheric pressure using a standard form of the hypsometric equation.

1.7 Subroutine ONEKILO

Rearranges data in a 1-km array and computes maximum altitude recorded by the sounding.

1.8 Subroutine OUTPUT

Computes pressure, density, and velocity of sound, and formats tabular data for output.

1.9 Subroutine PLOTCH

Formats temperature data for the printer; plots temperature versus altitude as an aid to quality control.

1.10 Subroutine COMPXYZ

Computes X (east-west component), Y (north-south component), and Z (altitude) as well as an elevation angle correction for the Earth's curvature.

1.11 Subroutine GRAVITY

Computes the ratio of the station's acceleration of gravity to the acceleration of gravity at 45 degrees latitude, using the expression given at the top of Table 168, *Smithsonian Meteorological Tables*, List 1968.

1.12 Subroutine COMPRSR

Computes and tabulates the differences in temperatures from the co-rawinsonde observation and the rocketsonde observation in the overlap region.

1.13 Subroutine CHKOUT

Computes and tabulates the differences in the parameters between data levels as an aid to quality control.

1.14 Function IGETC

Retrieves a character from a word or an array of words.

1.15 Subroutine PUTC

Inserts a character in a word or an array of words.

1.16 Function WDIR

Computes wind direction in meteorological polar coordinate system.

1.17 Function WSPD

Computes windspeed using velocity components as input data.

1.18 Function VALUE

Interpolates for a value or sets missing data to nines.

2.0 MATHEMATICAL DESCRIPTION

2.1 Main Routine

None

2.2 Subroutine MIDINT

2.2.1 Computation of Mean Temperature of Two Adjacent Levels

$$TP = (T + TA)/2$$

where TP = mean temperature (degrees K)

T = temperature, upper level (degrees K)

TA = temperature, lower level (degrees K)

2.2.2 Computation of Mean Height of Two Adjacent Levels

$$H = (Z + ZA)/2$$

where H = mean height (meters)

Z = height, upper level (meters)

ZA = height, lower level (meters)

2.2.3 Computation of Mean Time of Two Adjacent Levels

$$GG = (G + GA)/2$$

where GG = mean time (seconds after launch)

G = time, upper level (seconds after launch)

GA = time, lower level (seconds after launch)

2.2.4 Computation of East-West and North-South Velocity Components

$$V_X = (X - XA)/(GA - G)$$

$$V_Y = (Y - YA)/(GA - G)$$

where V_X = east-west velocity component (meters/second)

V_Y = north-south velocity component (meters/second)

X = east-west position component, upper level (meters)

XA = east-west position component, lower level (meters)

Y = north-south position component, upper level (meters)

YA = north-south position component, lower level (meters)

G = time, upper level (seconds after launch)

GA = time, lower level (seconds after launch)

2.2.5 Computation of Fall Rate

$$V_Z = (ZA - Z)/(GA - G)$$

where V_Z = fall rate (meters/second)

ZA = height, lower level (meters)

Z = height, upper level (meters)

GA = time, lower level (seconds after launch)

G = time, upper level (seconds after launch)

2.3 Subroutine BANDTC

2.3.1 Computation of Local Acceleration of Gravity

$$Gr = GRAT \cdot 9.80616$$

where Gr = local acceleration of gravity

$GRAT$ = ratio of local acceleration of gravity to acceleration of gravity at 45 degrees latitude

9.80616 = acceleration of gravity at 45 degrees latitude

2.3.2 Correction of East-West and North-South Velocity Components

$$V_{X_C} = V_{X_2} - \frac{\{V_{Z_2} \cdot [(V_{X_3} - V_{X_1})/(G_3 - G_1)]\}}{[(V_{Z_3} - V_{Z_1})/(G_3 - G_1)] + Gr}$$

$$V_{Y_C} = V_{Y_2} - \frac{\{V_{Z_2} \cdot [(V_{Y_3} - V_{Y_1})/(G_3 - G_1)]\}}{[(V_{Z_3} - V_{Z_1})/(G_3 - G_1)] + Gr}$$

where V_{X_C} = corrected east-west velocity component

V_{Y_C} = corrected north-south velocity component

1 = upper level

2 = intermediate level

3 = lower level

V_X = east-west velocity component

V_Y = north-south velocity component

V_Z = vertical velocity

G = time after launch (seconds)

Gr = local acceleration of gravity

2.3.3 Computation of Ventilation Velocity

$$XX = X_{X_C} - V_{X_2}$$

$$YY = V_{Y_C} - V_{Y_2}$$

$$V = \sqrt{V_{Z_2}^2 + XX^2 + YY^2}$$

where V = ventilation velocity

V_{X_C} = corrected east-west velocity component

V_{Y_C} = corrected north-south velocity component

V_{X_2} = east-west velocity component, intermediate level

V_{Y_2} = north-south velocity component, intermediate level

V_{Z_2} = vertical velocity, intermediate level

XX,YY = intermediate variables

2.3.4 Aerodynamic Heating Correction to Temperature

$$AA = K_{1(Z)} \cdot V^2$$

where AA = aerodynamic heating correction

Z = 20—70 kilometers

$K_{1(Z)}$ = aerodynamic heating term vs altitude (see paragraph 7.3)

V = ventilation velocity

2.3.5 Time Lag Correction to Temperature

$$AB = K_{2(Z)} \cdot [(T_3 - T_1)/G_3 - G_1)]$$

where AB = time lag correction

Z = 20—70 kilometers

$K_{2(Z)}$ = time lag term vs altitude (see paragraph 7.3)

T_1 = temperature, upper level (degrees K)

T_3 = temperature, lower level, (degrees K)

G_1 = time, upper level (seconds after launch)

G_3 = time, lower level (seconds after launch)

2.3.6 Radiation Heat Loss Correction to Temperature

$$AD = K_{3(Z)} \cdot T_2^4$$

where AD = radiation heat loss correction

Z = 20—70 kilometers

$K_{3(Z)}$ = radiation heat loss term vs altitude (see paragraph 7.3)

T_2 = temperature, intermediate level (degrees K)

2.3.7 Radiation and Electrical Correction to Temperature

$$AC = K_{4(Z)}$$

where AC = radiation and electrical correction

Z = 20—70 kilometers

$K_{4(Z)}$ = radiation and electrical heating term vs altitude (variable between day and night; see paragraph 7.3)

2.3.8 Computation of Corrected Temperature

$$T = T_2 - AA + AB - AC + AD$$

where T = corrected temperature (degrees K)

T_2 = temperature, intermediate level (degrees K)

AA = aerodynamic heating correction

AB = time lag correction

AC = radiation and electrical correction

AD = radiation heat loss correction

2.4 Subroutine TWOKM

None

2.5 Subroutine SIMQ

None

2.6 Subroutine PRESCOM

2.6.1 Computation of Geopotential Height

$$H = GRAT \cdot [(Re \cdot Z)/(Re + Z)]$$

where H = geopotential height (meters)

GRAT = ratio of local acceleration of gravity to acceleration of gravity at 45 degrees latitude

Re = mean radius of the Earth (meters)

Z = geometric height (meters)

2.6.2 Computation of Mean Virtual Temperature

$$TV = (T + T_P)/2$$

where TV = mean virtual temperature (degrees K)

T = temperature of the level (degrees K)

T_P = temperature, previous level (degrees K)

2.6.3 Computation of the Log of the Barometric Pressure

$$P = P_P - [(H - H_P)/(PC \cdot TV)]$$

where P = log of the barometric pressure

P_P = log of the barometric pressure, previous level

H = geopotential height of the level

H_P = geopotential height, previous level

PC = 67.442, a constant in the hypsometric equation when units are meters

TV = mean virtual temperature

2.7 Subroutine ONEKILO

2.7.1 Computation of Initial Output Height

$$HS = [(HI/1000) \cdot 1000] + H_{INT}$$

where HS = initial output height (meters or feet)

HI = lowest input height (meters or feet)

H_{INT} = output interval

2.7.2 Computation of Interpolation Ratio

$$K = (HS - HB)/(HA - HB)$$

where K = interpolation ratio

HS = output level (meters or feet)

HA = upper level height (meters or feet)

HB = lower level height (meters or feet)

2.7.3 Interpolation for East-West Velocity Component, North-South Velocity Component, Temperature, Uncorrected Temperature, and Fall Rate

$$X = K \cdot (XA - XB) + XB$$

where X = parameter interpolated

K = interpolation ratio

XA = lower level parameter

XB = upper level parameter

2.7.4 Interpolation of the Log of Pressure

$$P = K \cdot (PA - PB) + PB$$

where P = interpolated log of pressure

K = interpolation ratio

PA = log of pressure, lower level

PB = log of pressure, upper level

2.8 Subroutine OUTPUT

2.8.1 Computation of Barometric Pressure

$$P = 10^{PL}$$

where P = barometric pressure (millibars)

PL = log of barometric pressure

2.8.3 Computation of Density

$$\varrho = 348.38 \cdot (P/T)$$

where ϱ = density, grams per cubic meter

P = barometric pressure, millibars

T = temperature, degrees Kelvin

348.38 = gas constant for dry air and conversion factors, with pressure in millibars and density in grams/cubic meter

2.8.3 Computation of Velocity of Sound

$$VS = 331.45 \cdot \sqrt{T/273.15}$$

where VS = velocity of sound (meters/second)

T = temperature (degrees K)

273.15 = freezing point of water (degrees K)

331.45 = velocity of sound at 273.15°K (meters/second)

2.8.4 Computation of Vertical Wind Shear

$$WS = \frac{\sqrt{(V_X - V_{X_P})^2 + (V_Y - V_{Y_P})^2}}{HS - HSP}$$

where WS = vertical wind shear (/second)

V_X = corrected east-west velocity component (meters/second)

V_Y = corrected north-south velocity component (meters/second)

V_{X_P} = corrected east-west velocity component, previous level (meters/second)

V_{Y_P} = corrected north-south velocity component, previous level (meters/second)

HS = output height (meters)

HS_P = previous output height (meters)

2.9 Subroutine PLOTCH

None

2.10 Subroutine COMPXYZ

2.10.1 Conversion of Range to Meters

$$R = RR \cdot 0.9144$$

where R = range (meters)

RR = range (yards)

0.9144 = meters in a yard

2.10.2 Computation of Geometric Height

$$Z = \sqrt{[(Re + HA)^2 + R^2 + 2R \cdot (Re + HA) \cdot \sin \phi]} - Re$$

where Z = geometric height (meters)

Re = mean radiús of the Earth (meters)

HA = station height (meters)

R = slant range (meters)

ϕ = elevation angle

2.10.3 Correction of Elevation Angle for Earth's Curvature

$$\phi_C = \phi + \{[Z \cdot (\cos \phi / \sin \phi)] / 2.2 \cdot Re\}$$

where ϕ_C = elevation angle corrected for the Earth's curvature

ϕ = elevation angle, uncorrected

Z = height (meters)

Re = mean radius of the Earth (meters)

2.10.4 Computation of East–West and North–South Position Components

$$X = R \cdot \cos(\phi_C) \cdot \sin(\theta)$$

$$Y = R \cdot \cos(\phi_C) \cdot \cos(\theta)$$

2.12 Subroutine COMPRSR

2.12.1 Computation of Interpolation Ratio

$$K = (ZA - Z)/(ZA - ZB)$$

where K = interpolation ratio

Z = desired output height

ZA = height of the upper level

ZB = height of the lower level

2.12.2 Interpolation for Temperature

$$T = K \cdot (TA - TB) + TB$$

where T = comparison temperature

K = interpolation ratio

TA = upper level temperature

TB = lower level temperature

2.12.3 Computation of Temperature Difference

$$DIFF = TRO - TRA$$

where $DIFF$ = temperature difference (degrees C)

TRO = rocketsonde temperature (degrees C)

TRA = rawinsonde temperature (degrees C)

2.13 Subroutine CHKOUT

2.13.1 Computation of Time Difference Between Levels in Fractional Parts of a Minute

$$\Delta G = 60/(G - G1)$$

where ΔG = time difference

G = time, lower level (seconds after launch)

$G1$ = time, upper level (seconds after launch)

2.13.2 Computation of Azimuth, Elevation, Range, and Height Differences for Each Minute

$$\Delta\theta = (\theta - \theta 1) \cdot \Delta G$$

$$\Delta\phi = (\phi - \phi 1) \cdot \Delta G$$

$$\Delta R = (R - R1) \cdot \Delta G$$

$$\Delta Z = (Z - Z1) \cdot \Delta G$$

where $\Delta\theta$ = azimuth difference/minute

θ = azimuth, lower level

$\theta 1$ = azimuth, upper level

ΔG = time difference between levels

$\Delta\phi$ = elevation difference/minute

ϕ = elevation, lower level

$\phi 1$ = elevation, upper level

ΔR = range difference/minute

R = range, lower level

$R1$ = range, upper level

ΔZ = height difference/minute

Z = height, lower level

$Z1$ = height, upper level

2.14 Function IGETC

None

2.15 Subroutine PUTC

None

2.16 Function WDIR

2.16.1 Computation of Wind Direction

$$D = \tan^{-1}(Y/X) \cdot 57.29578$$

If $X < 0$,

then $WDIR = 270 - D$

If $X > 0$,

then $WDIR = 90 - D$

If $X = 0$ and $Y \geq 0$

then $WDIR = 360$

If $X = 0$ and $Y < 0$

then $WDIR = 180$

where WDIR = wind direction, meteorological polar coordinates

D = wind direction, Cartesian coordinates

X = east-west velocity vector

Y = north-south velocity vector

57.29578 = degrees in a radian

2.17 Function WSPD

2.17.1 Computation of Windspeed

$$WSPD = \sqrt{X^2 + Y^2}$$

where WSPD = windspeed

X = east-west velocity vector

Y = north-south velocity vector

2.18 Function VALUE

None

3.0 INPUT

Raw data input is from the floppy disk which has been recorded and smoothed by the realtime system. Options are input in conversational mode from the display console. The co-rawinsonde data input is from the floppy disk output of the rawinsonde reduction program.

Header Record

Words	Contents
1—5	Flight identification (10 characters)
6	Encoded sonde type
7	Number of points smoothing
8	Smoothed data output rate
9	Hard-copy option
10	Hard-copy output rate
11	Scrolled data output rate
12—13	Station altitude (feet)
14—15	Station temperature (degrees C)
16—17	Station pressure (millibars)
18—20	Sonde identification (6 characters)
21—23	Channel 1 identification (6 characters)
24—25	Calibration constant 1 for channel 1
26—27	Calibration constant 2 for channel 1
28—29	Calibration constant 3 for channel 1
30—32	Channel 3 identification (6 characters)
33—34	Calibration constant 1 for channel 3
35—36	Calibration constant 2 for channel 3
37—38	Calibration constant 3 for channel 3
39—40	Calibration constant for channel 2
41	Hygristor selection
42—89	Temperature log calculation table
90—137	Temperature ratio calculation table
138—140	Q9 sonde identification (6 characters)
141—142	Q9 baseline temperature ordinate
143—144	Q9 baseline relative humidity
145—146	Q9 baseline temperature (degrees C)
147	Q9 hygristor selection
148	Flight date
149—152	Flight starting time (hours, minutes, seconds, tenths of seconds)
153	Number of blocks written
154—256	Unused (zeros)

Data Record

Data records are packed with eight 32-word records into one 256-word block.

Word	Contents
1	Software status word
2	Time (tenths of seconds)
3	Hardware status word 1
4	Hardware status word 2
5—6	X position of instrument (yards)
7—8	Y position of instrument (yards)
9—10	Z position of instrument (yards)
11—12	Slant range (yards)
13—14	Ground range (yards)
15—16	Altitude (yards above MSL)
17—18	Azimuth (degrees from true north)
19—20	Elevation (degrees)
21—22	Temperature channel 1 (degrees C)
23—24	Temperature channel 2 (degrees C)
25—26	Temperature channel 3 (degrees C)
27—32	Unused (zeros)

Sample Options Dialogue

Prompt	Operator Input
WAS THIS A NIGHT LAUNCH (YES/NO)	NO
OUTPUT TO CONSOLE OR PRINTER (CNS/PRT)	PRT
ENTER STATION ID FROM M.D.G.	01
WHAT IS THE FIRST GOOD TIME	192

Co-rawinsonde Data Format

Control File

Word	Contents
1	Units switch (feet/meters)
2	Winds in feet/second switch
3	Interpolation switch
4	Output device indicator

Control File (Continued)

Words	Contents
5	Optical index of refraction units switch
6	Wind shear in knots switch
7—8	Surface wind x component
9—10	Surface wind y component
11—12	Surface wind direction
13—14	Surface windspeed
15	Station number
16	Day
17	Month
18	Year
19—20	Altitude increment (meters)
21	Release time
22—23	Tropopause wind direction (degrees from true north)
24—25	Tropopause time (seconds)
26—27	Tropopause geopotential height (meters)
28—29	Tropopause dewpoint (degrees C)
30—31	Tropopause geometric height (meters)
32—33	Tropopause refractive index (optical/N)
34—35	Tropopause pressure (millibars)
36—37	Tropopause temperature (degrees C)
38—39	Tropopause relative humidity (percent)
40—41	Tropopause windspeed (meters/second)
42—45	Station latitude (double precision) (degrees)
46—47	Termination height (geometric meters)
48—49	Termination pressure (millibars)
50—54	Flight identification
55	Sonde type

Significant File

Words	Contents
1—2	Altitude (meters, geometric)
3	Wind direction (degrees)
4	Windspeed (meters/second)
5—6	Temperature (degrees C)
7—8	Dewpoint (degrees C)
9—10	Pressure (millibars)
11—12	Refractive index (N units)
13—14	Relative humidity (percent)

Mandatory File

Words	Contents
1—2	Altitude (meters, geopotential)
3	Wind direction (degrees)
4	Windspeed (meters/second)
5—6	Temperature (degrees C)
7—8	Dewpoint (degrees C)
9—10	Pressure (millibars)
11—12	Relative humidity (percent)

Tabulation File

Words	Contents
1—2	Altitude (meters, geometric)
3—4	Wind direction (degrees)
5—6	Windspeed (meters/second)
7—8	Temperature (degrees C)
9—10	Dewpoint (degrees C)
11—12	Pressure (millibars)
13—14	Relative humidity (percent)
15—16	Absolute humidity (grams/cubic meter)
17—18	Density (grams/cubic meter)
19—20	Index of refraction (N)
21—22	Velocity of sound (meters/second)
23—24	Shear velocity (seconds^{-1})
25—26	Vapor pressure (millibars)
27—28	Precipitable water (millimeters)

4.0 OUTPUT

The output is in two forms. One is quality control outputs to the printer for use by the operator. The second is constant altitude data in kilometers, 250-meter intervals, and thousands of feet.

The quality control outputs are as follows:

Data Comparison by Level

Time	Seconds after midnight
Azimuth	Degrees from true north
Elevation	Degrees from horizontal
Slant Range	Meters from tracker
Height	Meters above ground level

Data Comparison by Level (Continued)

Hour	Hour of the data level (local)
Minute	Minute of the data level (local)
Seconds	Second of the data level (local)
Time Difference	Seconds between data levels
Azimuth Difference	Degrees/minute between levels
Elevation Difference	Degrees/minute between levels
Slant Range Difference	Meters/minute between levels
Altitude Difference	Meters/minute between levels

Temperature Comparison — Rocketsonde Vs Rawinsonde

Altitude	Meters
Rocketsonde Temperature	Degrees Celsius
Rawinsonde Temperature	Degrees Celsius
Temperature Difference	Degrees Celsius

The scratch file is as follows:

Words	Contents
1—2	Altitude, meters
3—4	East-west velocity component, meters/second
5—6	North-south velocity component, meters/second
7—8	Uncorrected east-west velocity component, meters/second
9—10	Uncorrected north-south velocity component, meters/second
11—12	Temperature (degrees K)
13—14	Uncorrected temperature (degrees K)
15—16	Barometric pressure (millibars)
17—18	Fall rate, meters/second

Constant Altitude Data

Height	Geometric feet or meters at standard intervals of 1 km, 250 meters, and 1,000 feet
Wind Direction	In degrees from true north. Missing data is shown as 999
Windspeed	In knots or meters/second; calm is 000 and missing is 999
Temperature	In degrees Kelvin
Temperature Correction	In degrees Kelvin
Atmospheric Pressure	Millibars
Atmospheric Density	Grams/cubic meter
Fall Rate	In feet/second or meters/second (determined by height units)
Speed of Sound	In knots of meters/second (determined by height units)
Wind Shear	$Seconds^{-1}$

Sample Options Dialogue

Prompt	Operator Input
Output to console or printer (CNS/PRT)	PRT

Plot of Temperature Vs Altitude

Altitude	Meters
Temperature	Degrees Kelvin

Constant Altitude Data

Height	Geometric feet or meters at standard intervals of 1 km, 250 meters, and 1,000 feet
Wind Direction	In degrees from true north. Missing data is shown as 999
Windspeed	In knots or meters/second; calm is 000 and missing is 999
Temperature	In degrees Kelvin
Temperature Correction	In degrees Kelvin
Atmospheric Pressure	Millibars
Atmospheric Density	Grams/cubic meter
Fall Rate	In feet/second or meters/second (determined by height units)
Speed of Sound	In knots or meters/second (determined by height units)
Wind Shear	Seconds^{-1}

A scratch file is output to diskette for Pass 2 of the program. This data is as follows:

Words	Contents
1—2	Altitude (meters)
3—4	East-west velocity component (meters/second)
5—6	North-south velocity component (meters/second)
7—8	Uncorrected east-west velocity component (meters/second)
9—10	Uncorrected north-south velocity component (meters/second)
11—12	Temperature (degrees K)
13—14	Uncorrected temperature (degrees K)
15—16	Barometric pressure (millibars)
17—18	Fall rate (meters/second)

5.0 ALGORITHMS

5.1 Subroutine TWOKM

Set up values that are to be used when calling SIMQ by multiplying elements of the matrix and assigning to proper place in symmetric coefficient matrix [A].

$$A_{X(I,J)} = XA_{(I,J)} + XC_{(K,I)} \cdot SC_{(K,J)}$$

$$A_{Y(I,J)} = YA_{(I,J)} + YC_{(K,I)} \cdot YC_{(K,J)}$$

Set up values that are to be used when calling SIMQ by multiplying elements of the matrix and assigning to proper place in constant vector matrix [B].

$$B_{X_I} = XB_I + XC_{(K,I)} \cdot X_K$$

$$B_{Y_I} = YB_I + YC_{(K,I)} \cdot Y_K$$

Using the coefficients returned from SIMQ, calculate a smoothed X and Y

$$S_X = a^2XB_3 + aXB_2 + XB_1$$

$$S_Y = a^2YB_3 + aYB_2 + YB_1$$

where $a = 5$

XB = coefficients returned from SIMQ

S_X = smoothed east-west component

S_Y = smoothed north-south component

5.2 Subroutine SIMQ

The least squares method provides a best fit of the components by generating a second degree polynomial equation, of general form

$$y = k_2x^2 + k_1x + k_0$$

and computing an offset from the center of the 9- point range. Two matrixes are created, designated [A] and [B]. Symmetric coefficient matrix [A] is

$$[A] = \begin{bmatrix} N & \Sigma X_i & \Sigma X_i^2 \\ \Sigma X_i & \Sigma X_i^2 & \Sigma X_i^3 \\ \Sigma X_i^2 & \Sigma X_i^3 & \Sigma X_i^4 \end{bmatrix}$$

and constant vector matrix [B] is

$$[B] = \begin{bmatrix} \Sigma Y_i \\ \Sigma X_i\ Y_i \\ \Sigma X_i^2\ Y_i \end{bmatrix}$$

Note: Σ indicates summation from 1 to N; N = 9.

Basic matrix equation [A] [K] = [B] is solved by finding the inverse of [A], $[A]^{-1}$, and performing multiplications:

$$[A]^{-1}\ [A]\ [K] = [A]^{-1}\ [B]$$

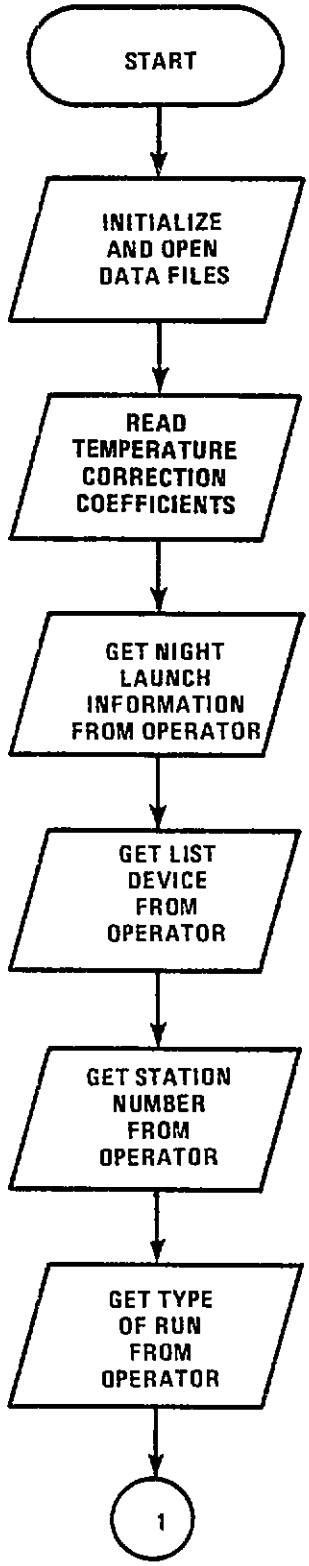
$$[I]\ [K] = [A]^{-1}\ [B]$$

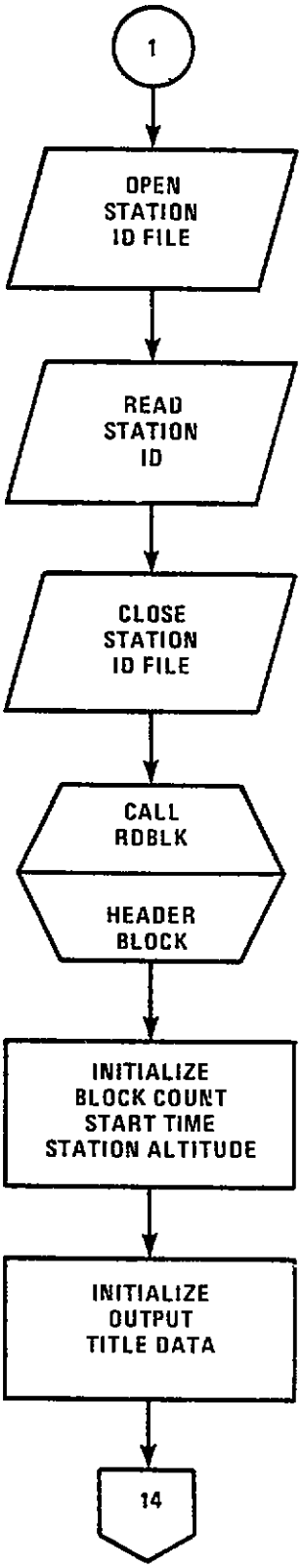
$[A]^{-1}$ is calculated by SIMQ using the Gauss-Jordan inplace matrix inversion method. SIMQ returns the appropriate coefficients k_2, k_1, and k_0, which the calling routine incorporates in calculating the appropriate values.

6.0 FLOWCHARTS

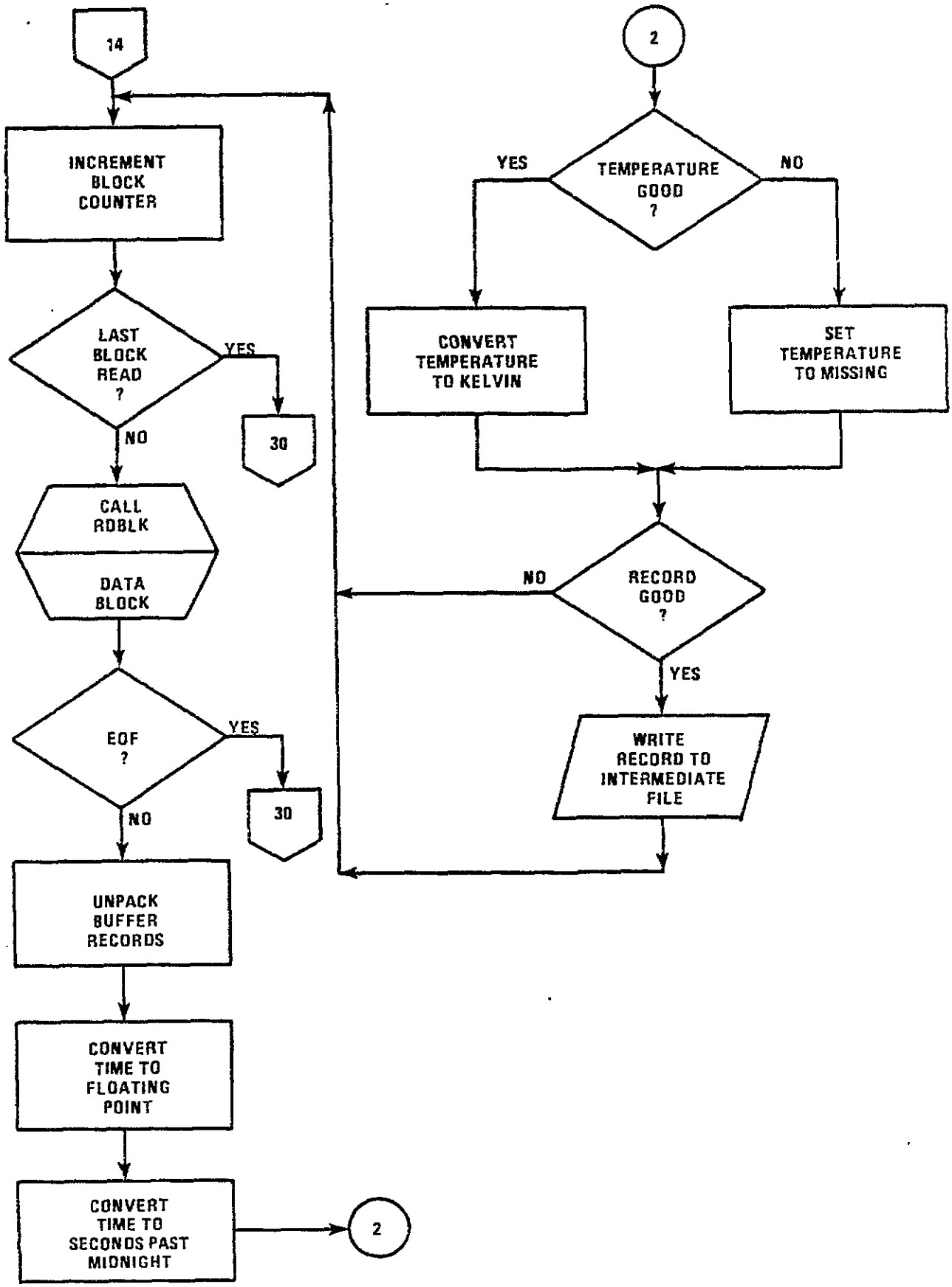
See the following pages.

6.1.1 Main Routine – Pass 1

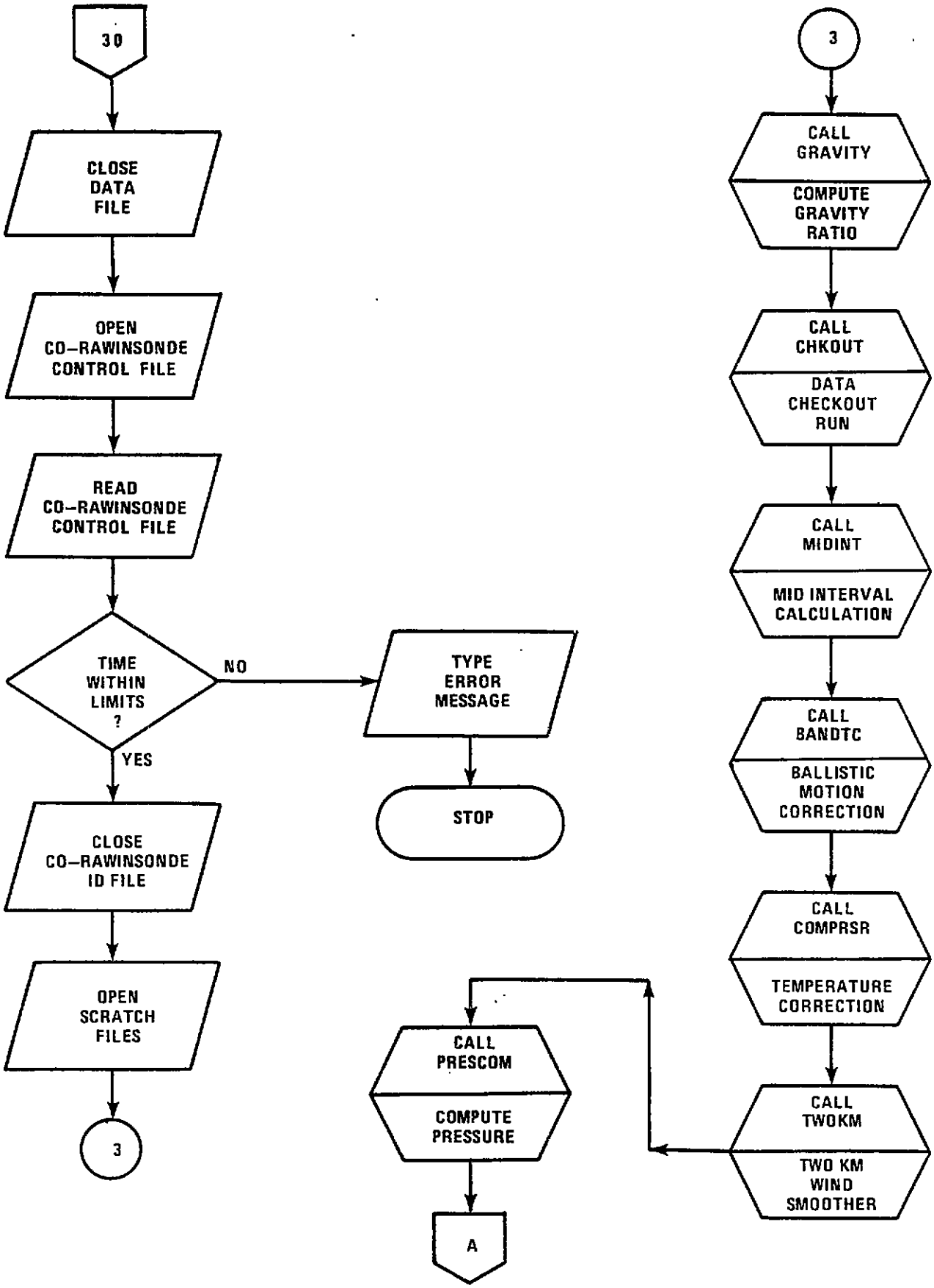




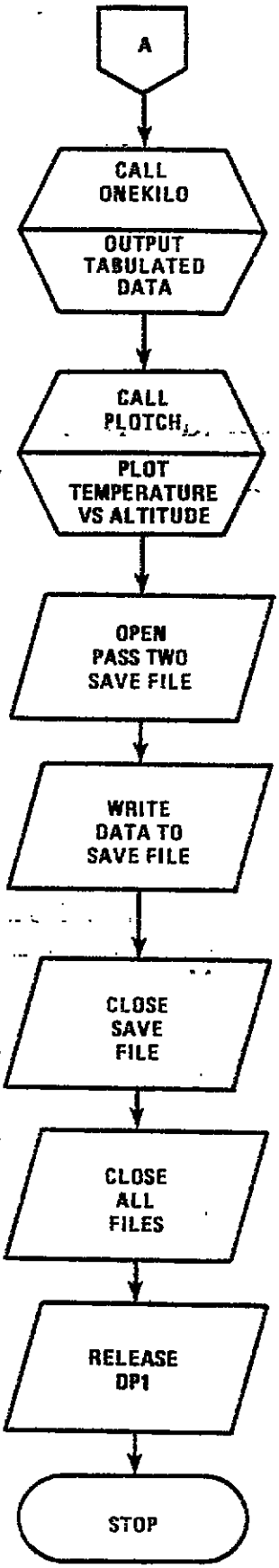
6.1.2 Main Routine – Pass 1



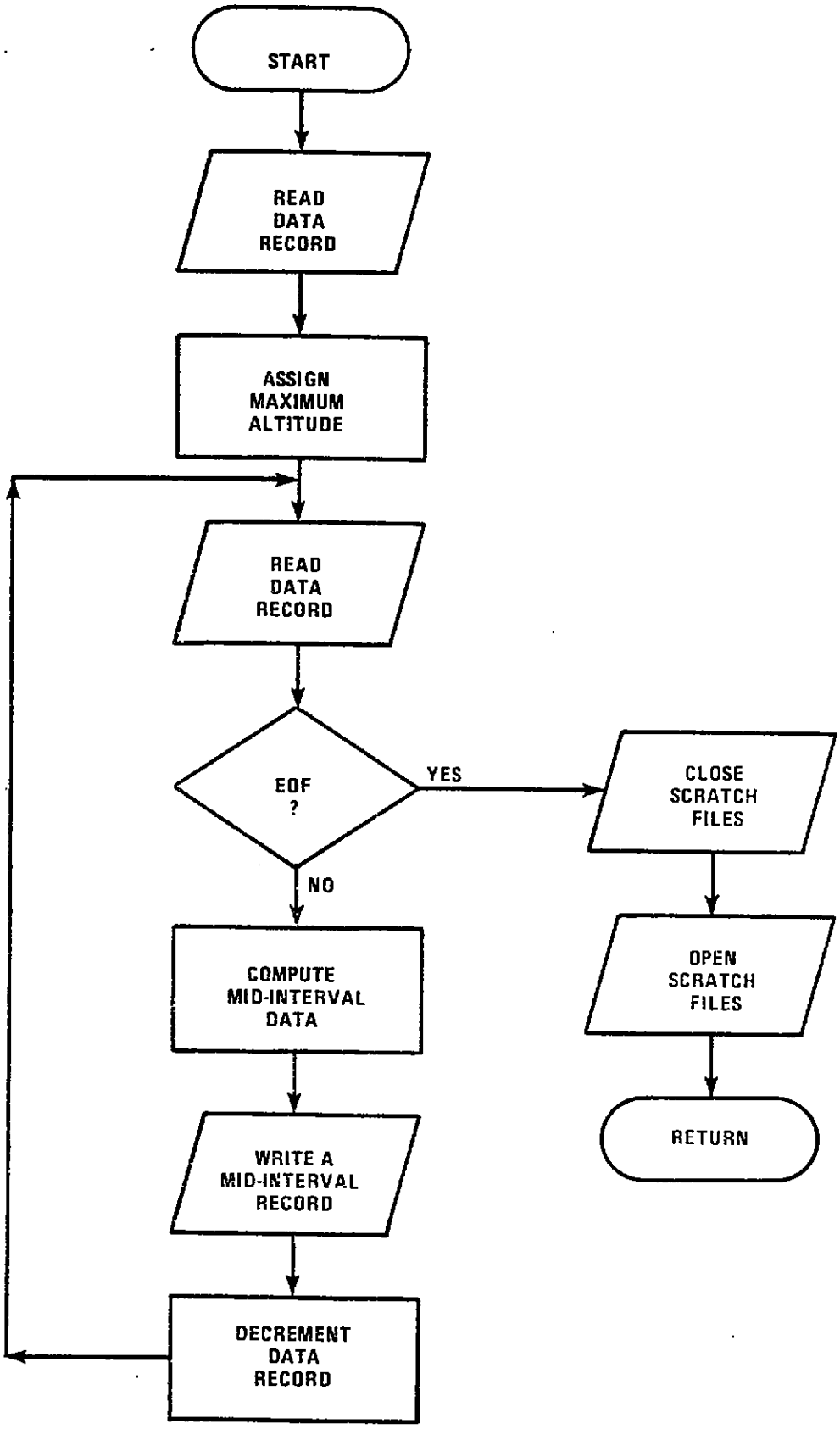
6.1.3 Main Routine – Pass 1



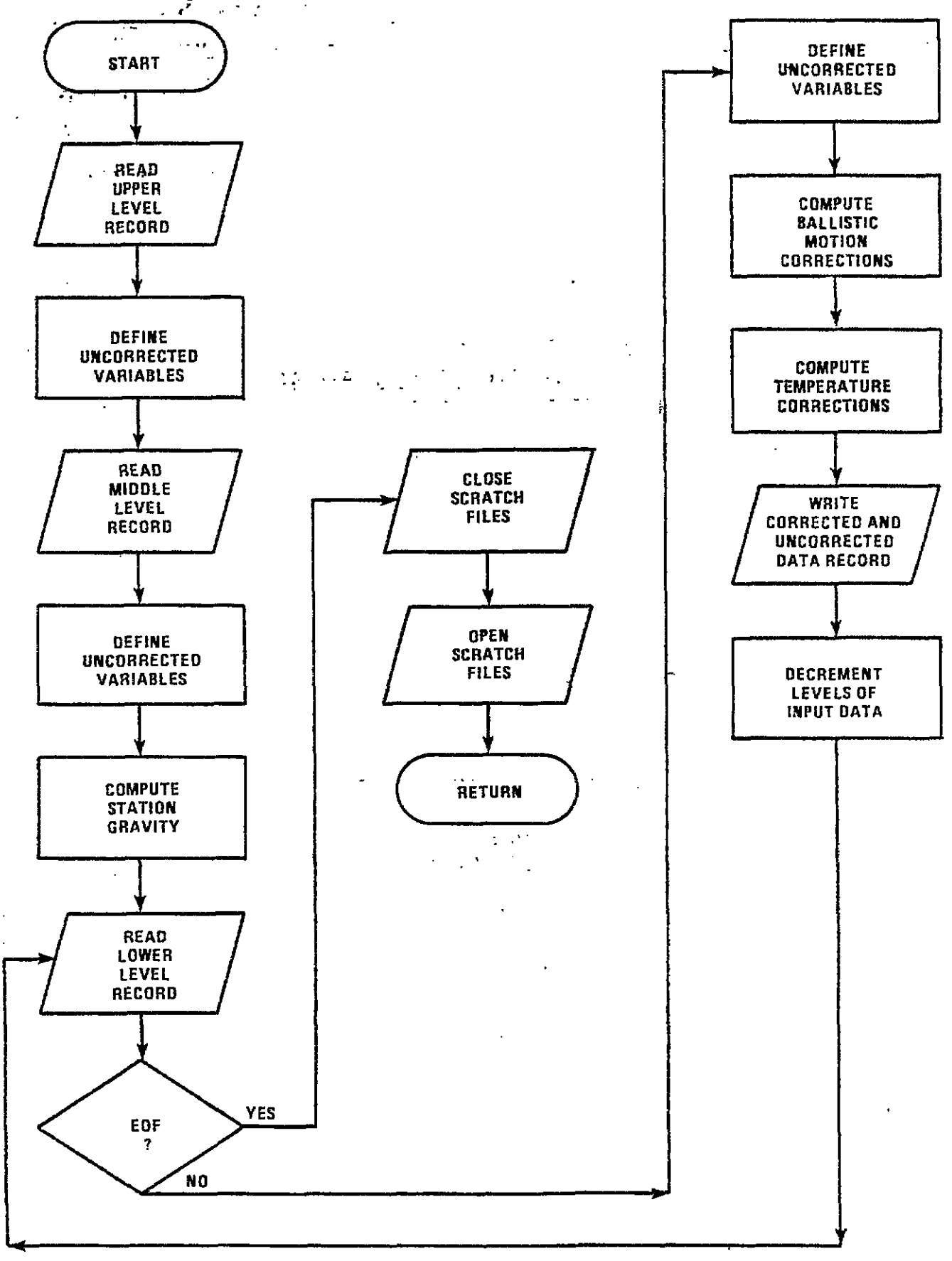
6.1.4 Main Routine – Pass 1



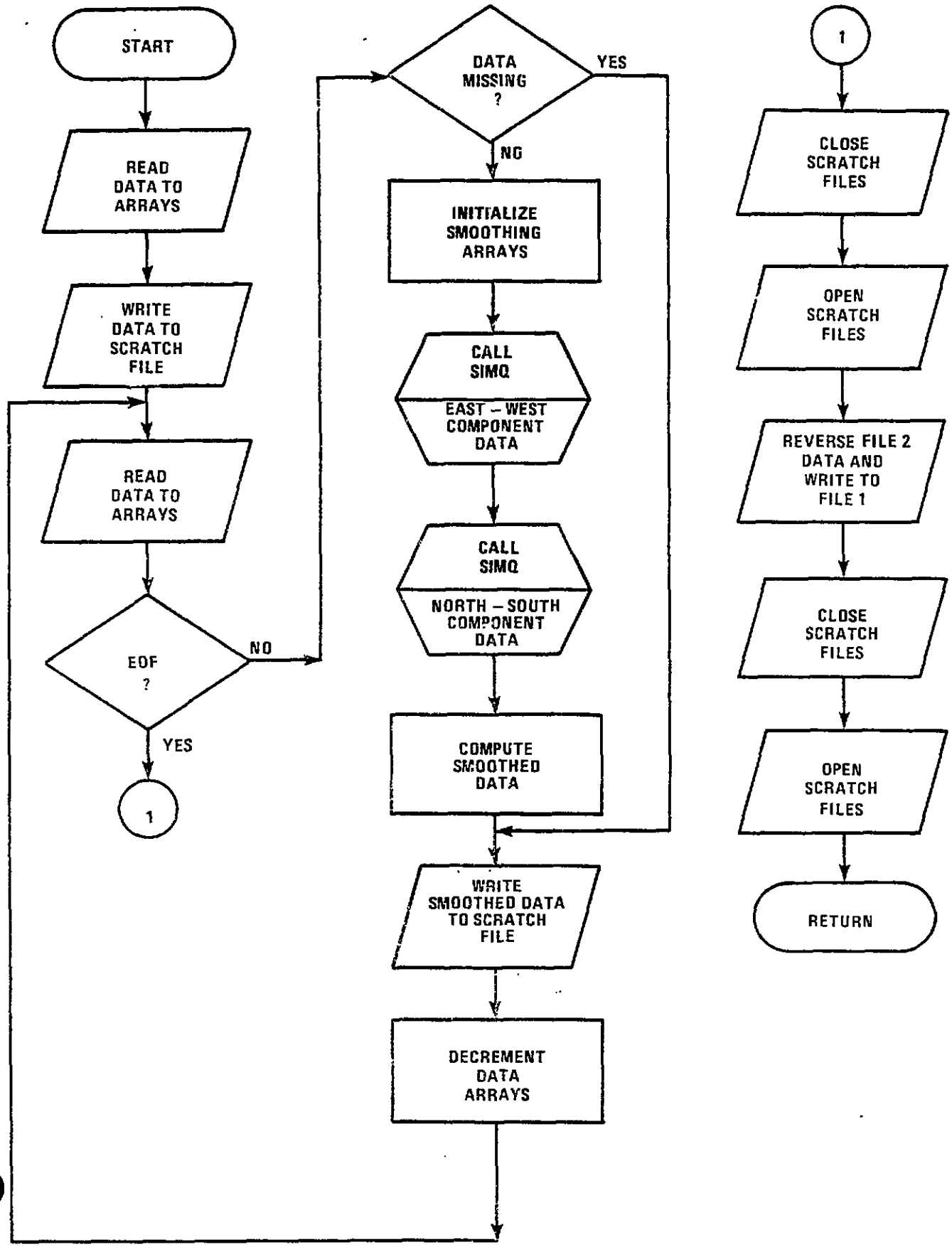
6.2 Subroutine MIDINT



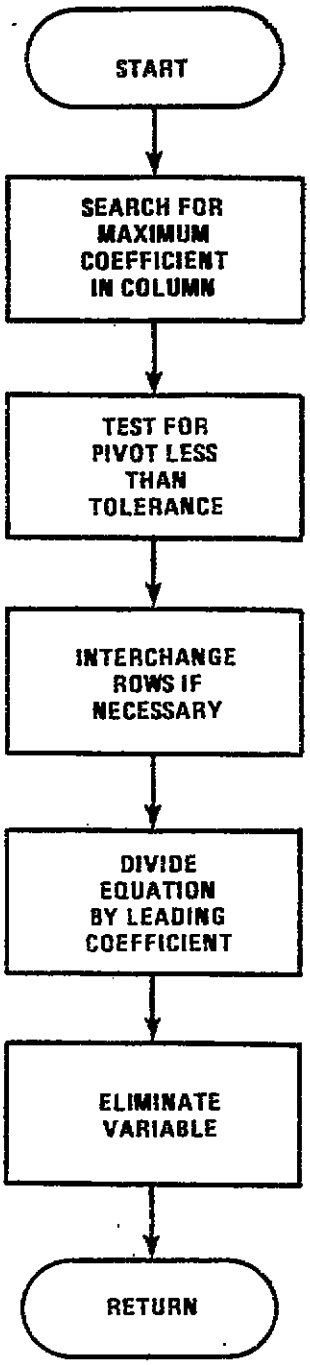
6.3 Subroutine BANDTC



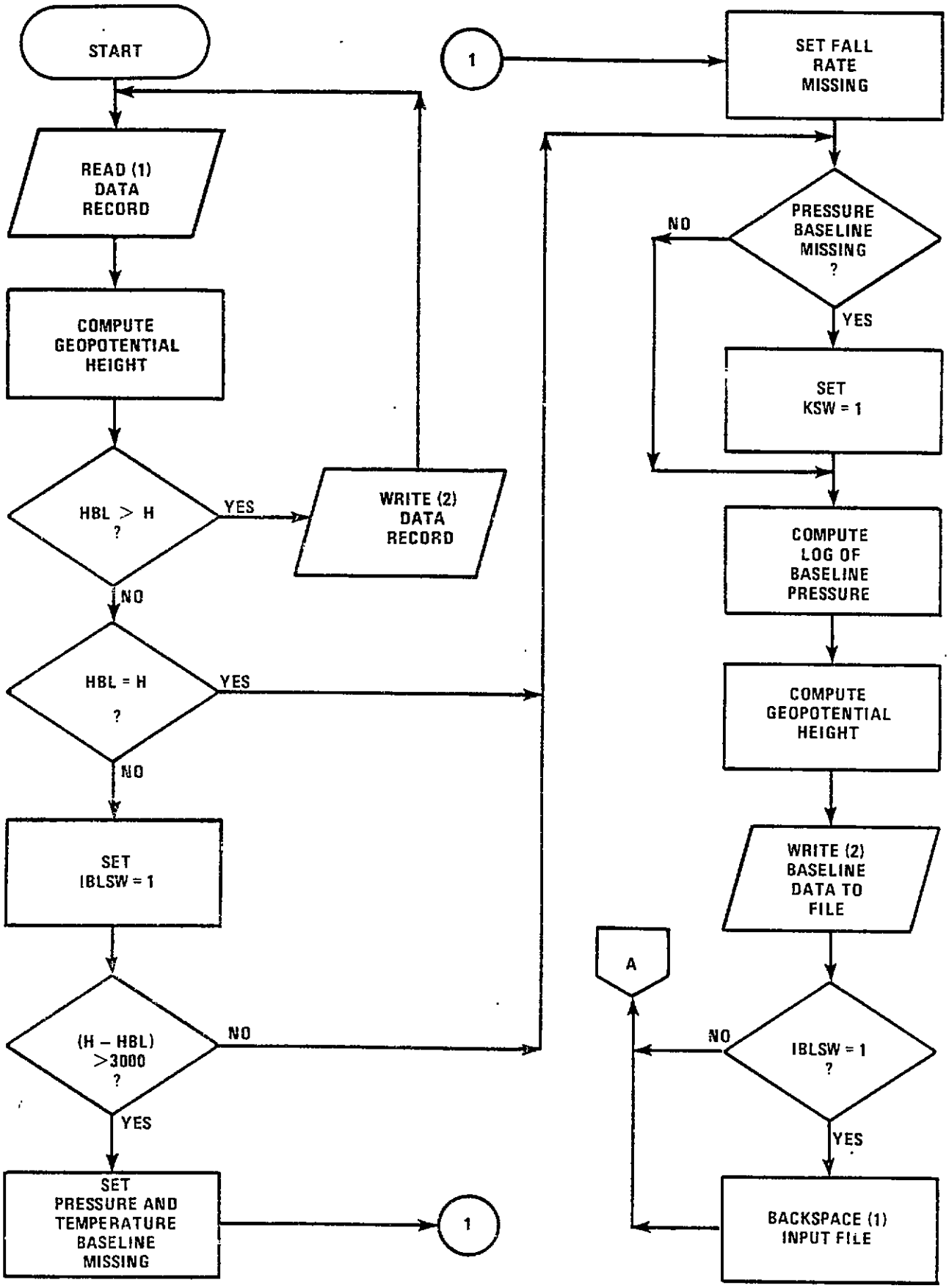
6.4 Subroutine TWOKM



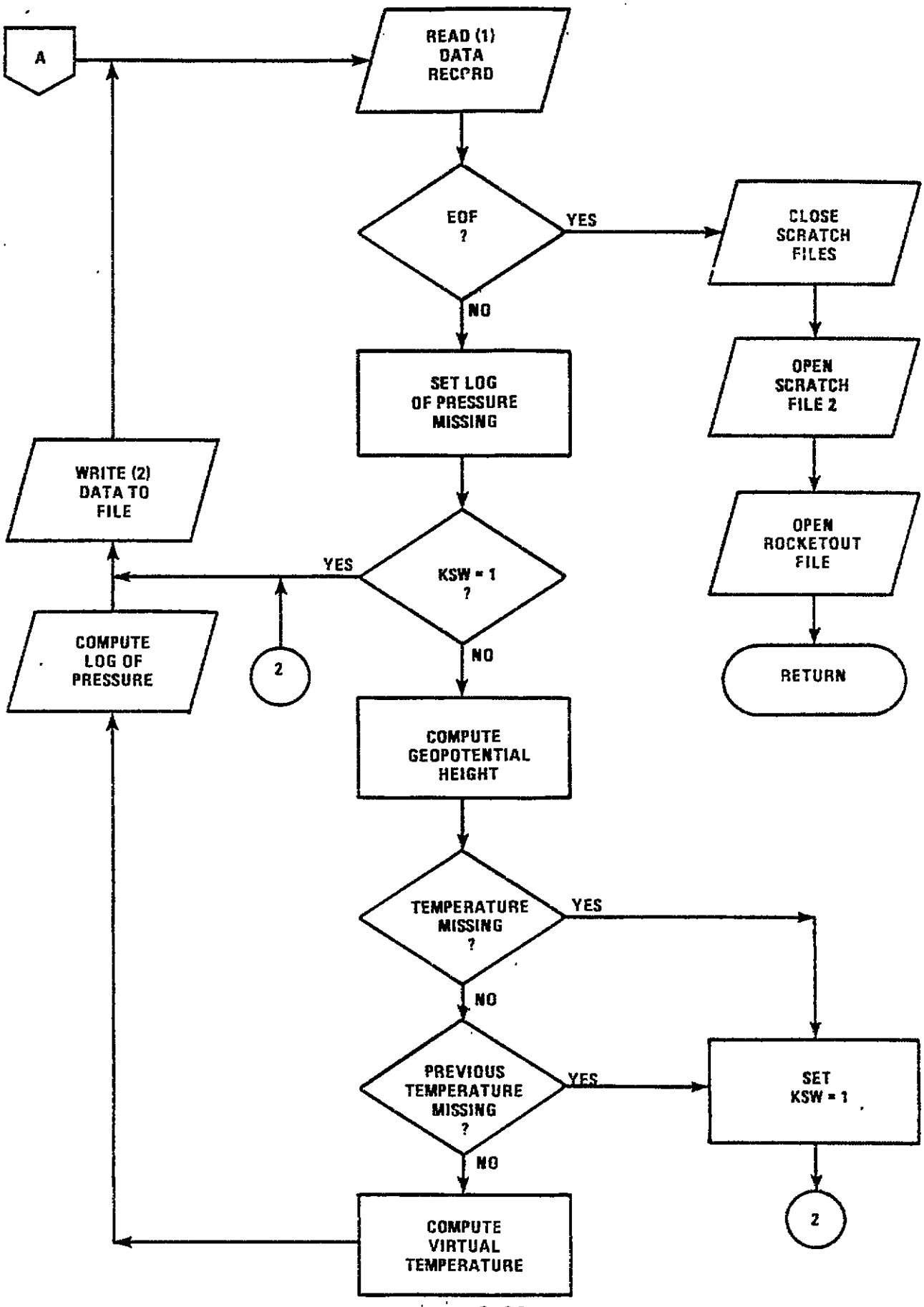
6.5 Subroutine SIMQ



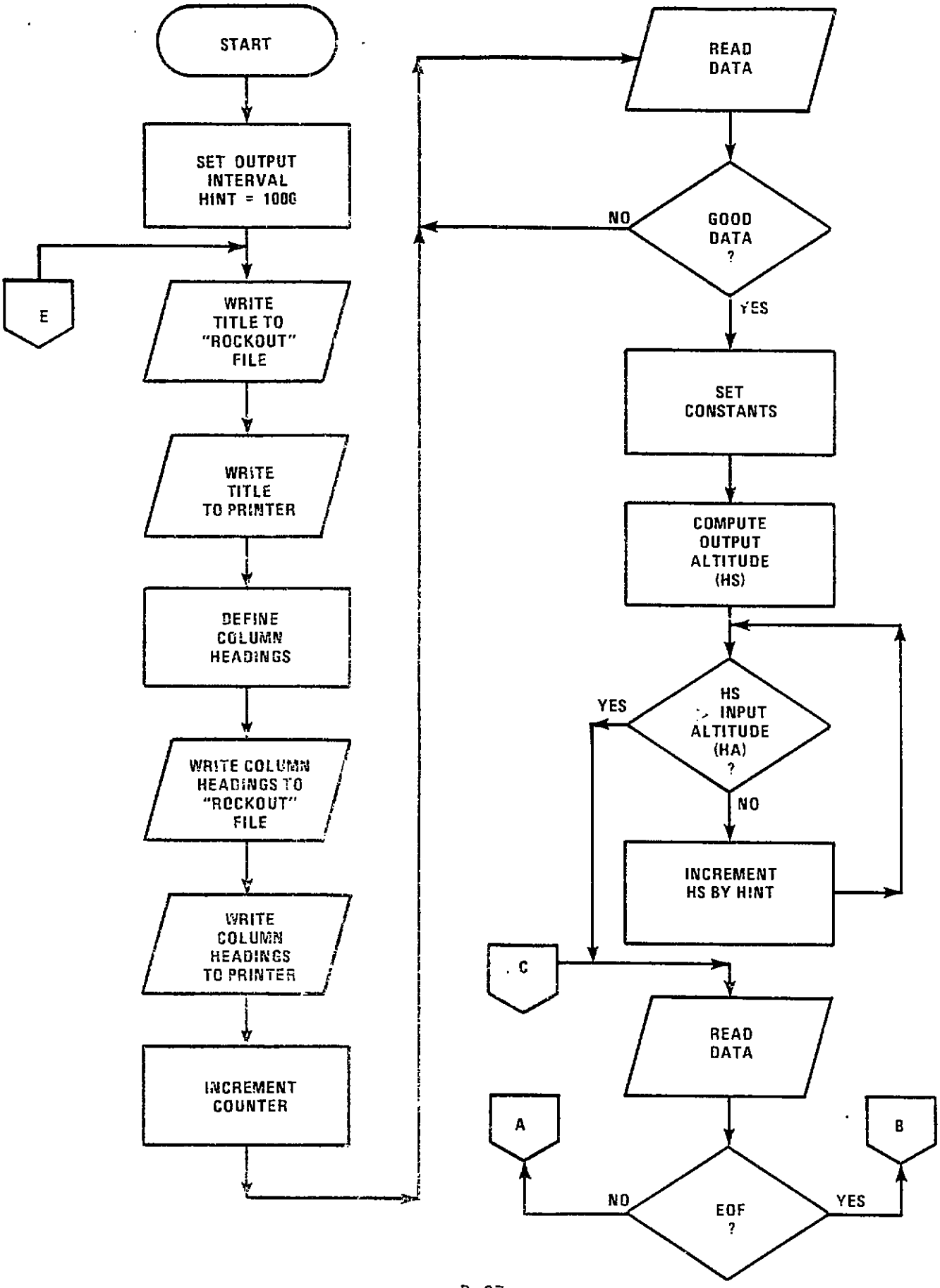
6.6.1 Subroutine. PRESCOM



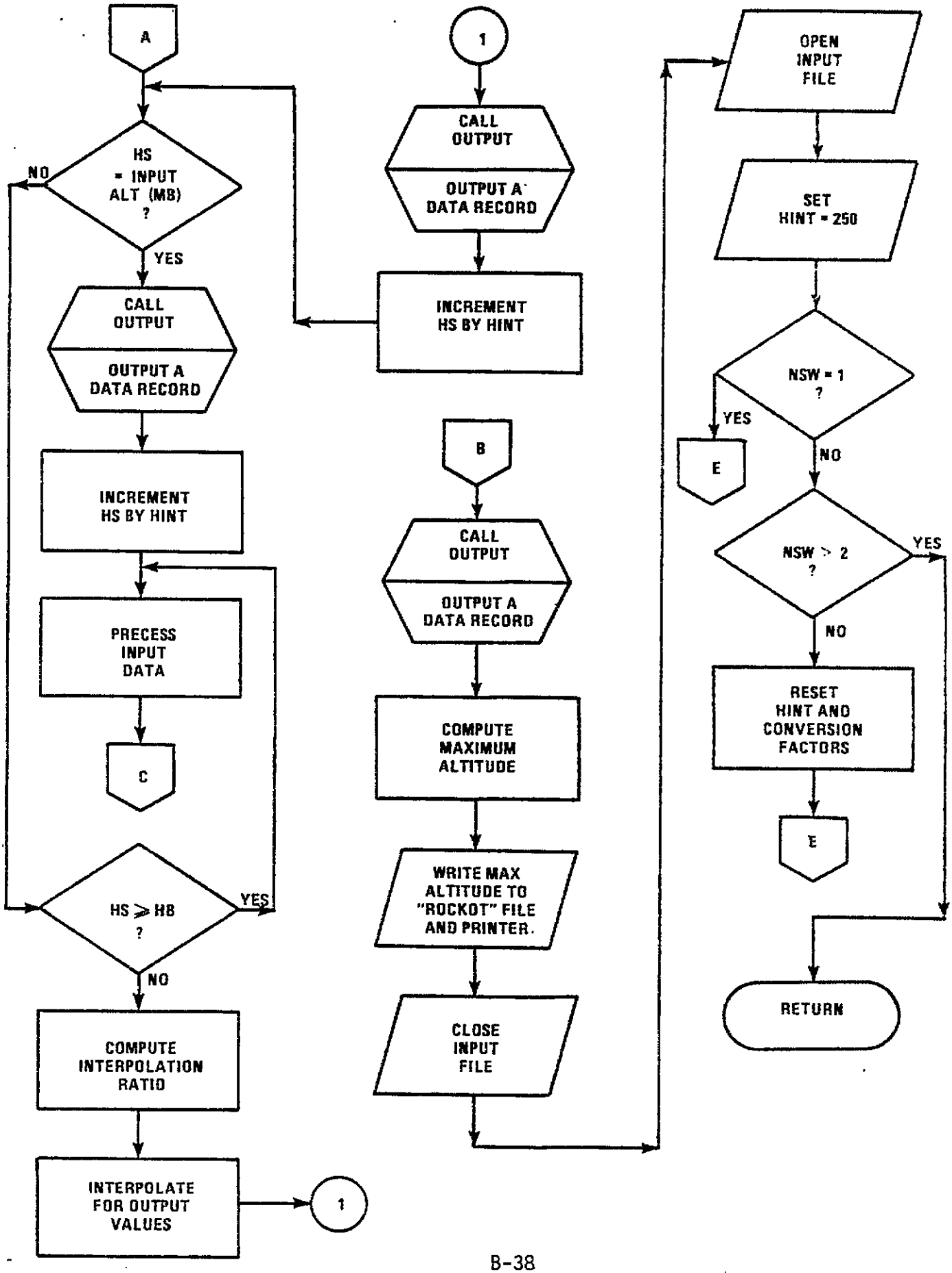
6.6.2 Subroutine PRESCOM



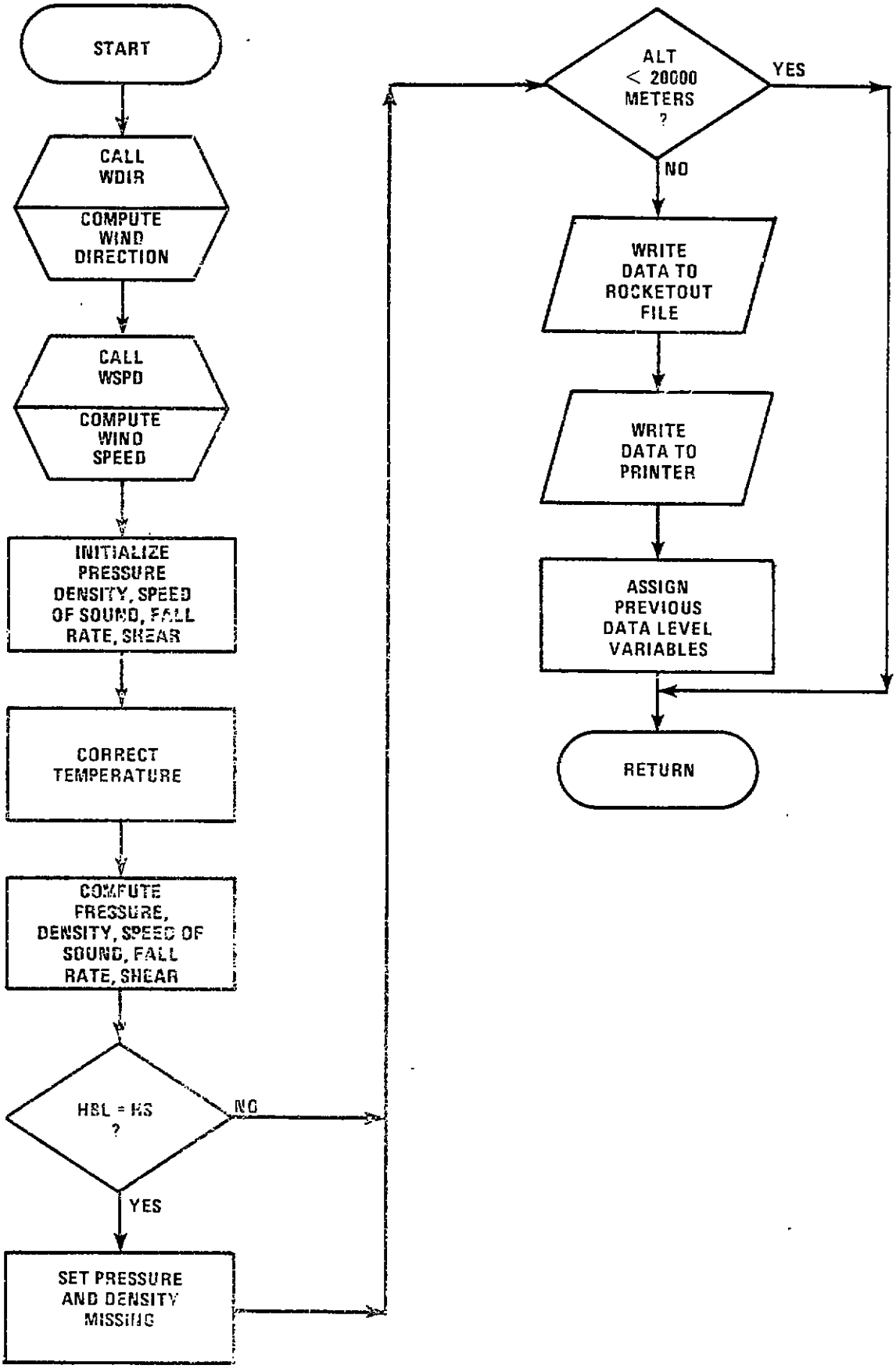
6.7.1 Subroutine ·ONEKILO



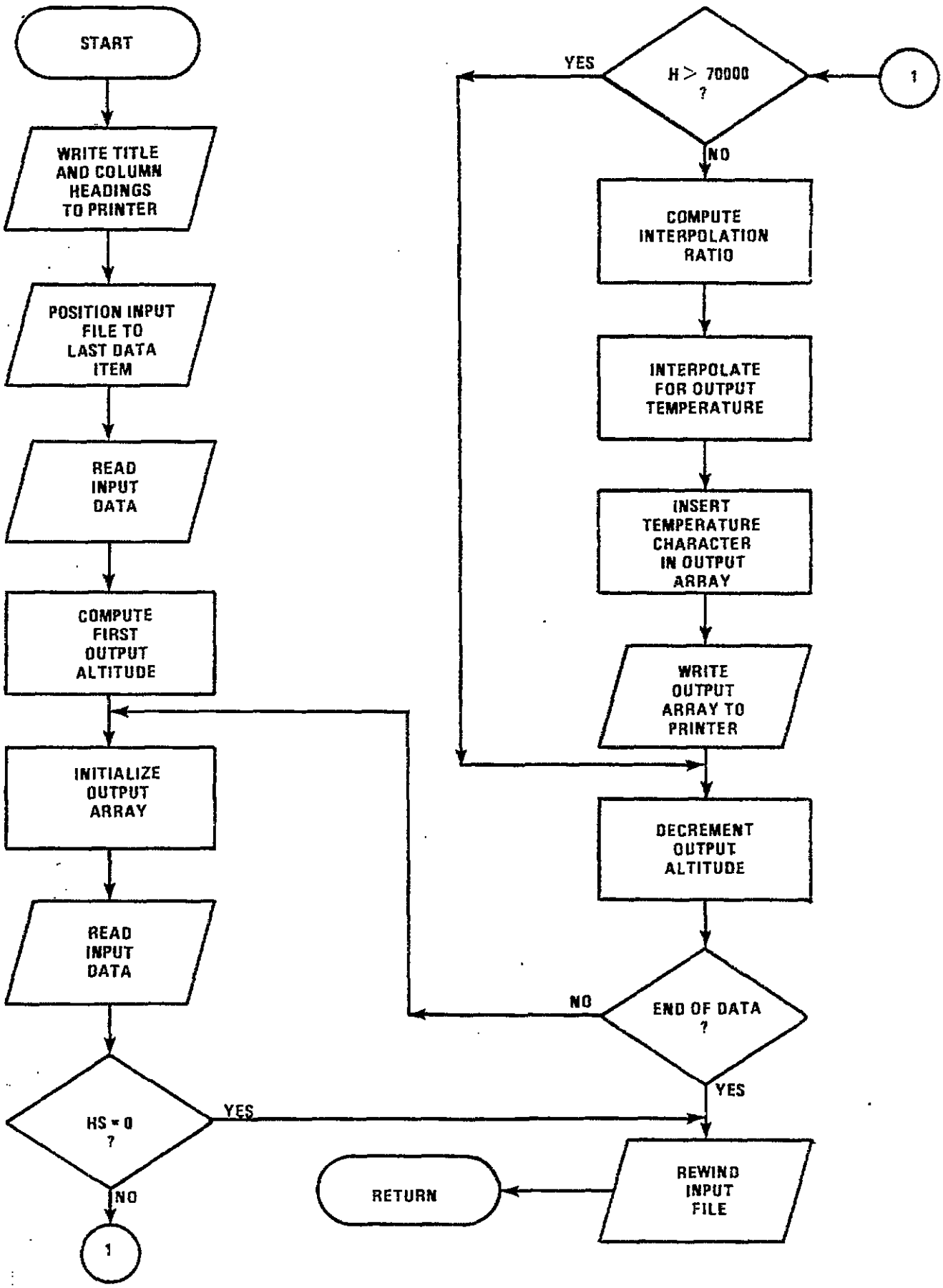
6.7.2 Subroutine ONEKILO



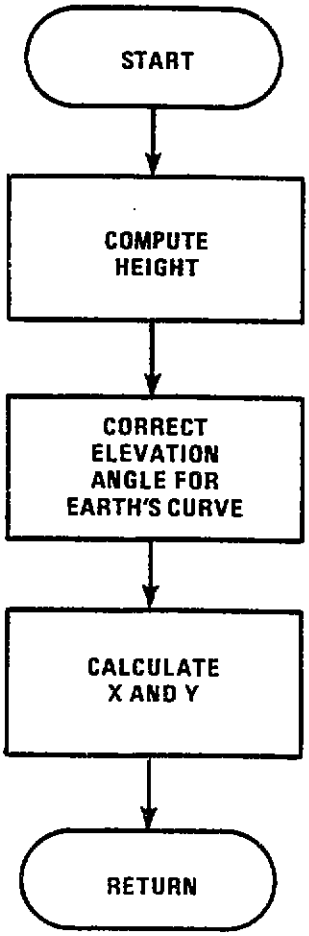
6.8 Subroutine OUTPUT



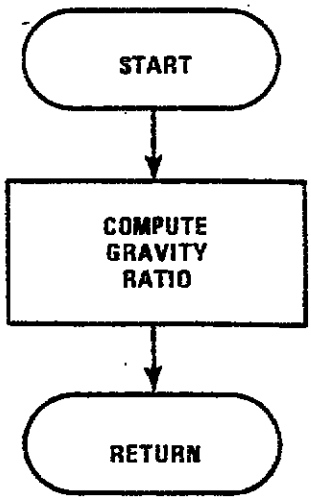
6.9 Subroutine PLOTCH



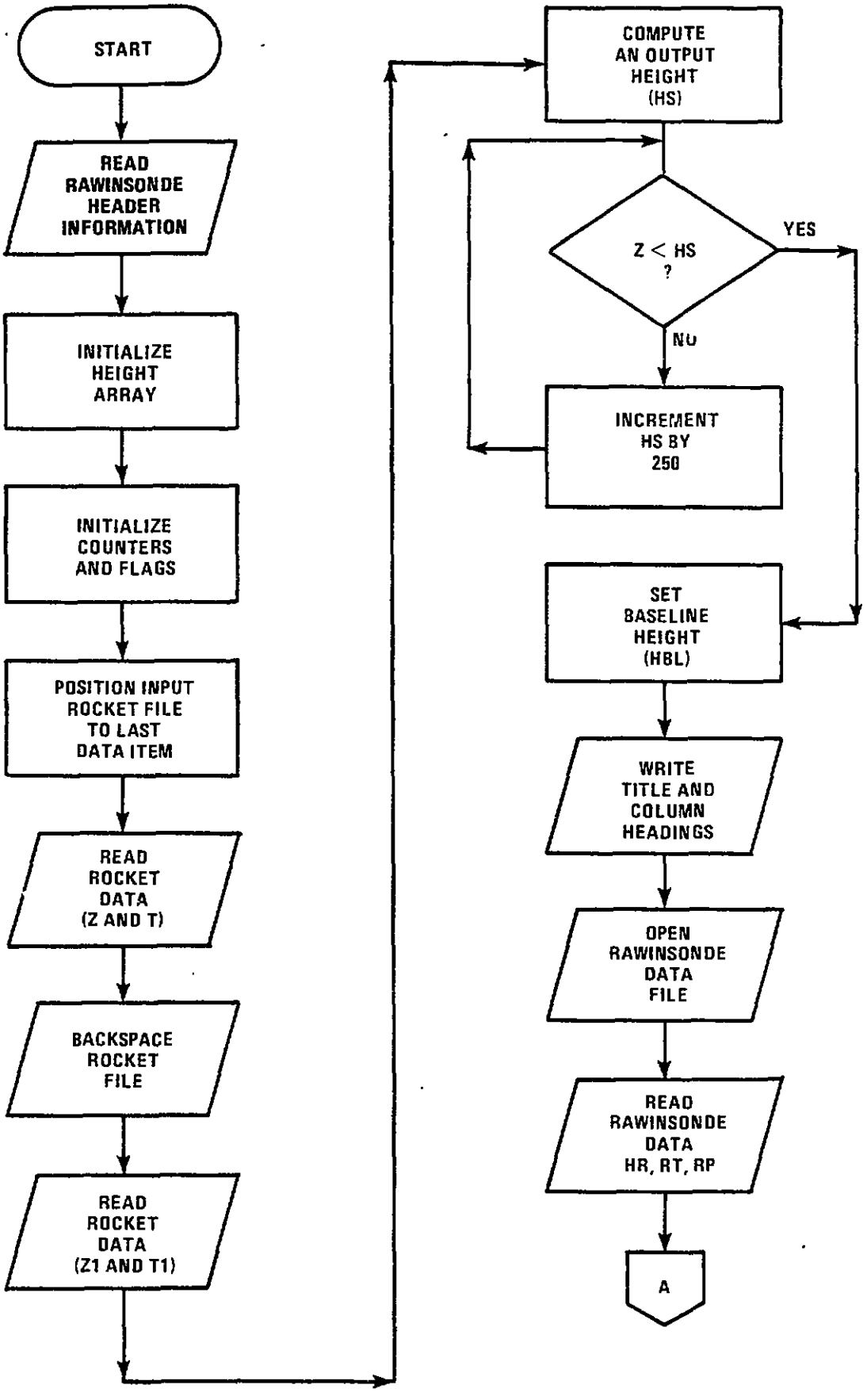
6.10 Subroutine COMPXYZ



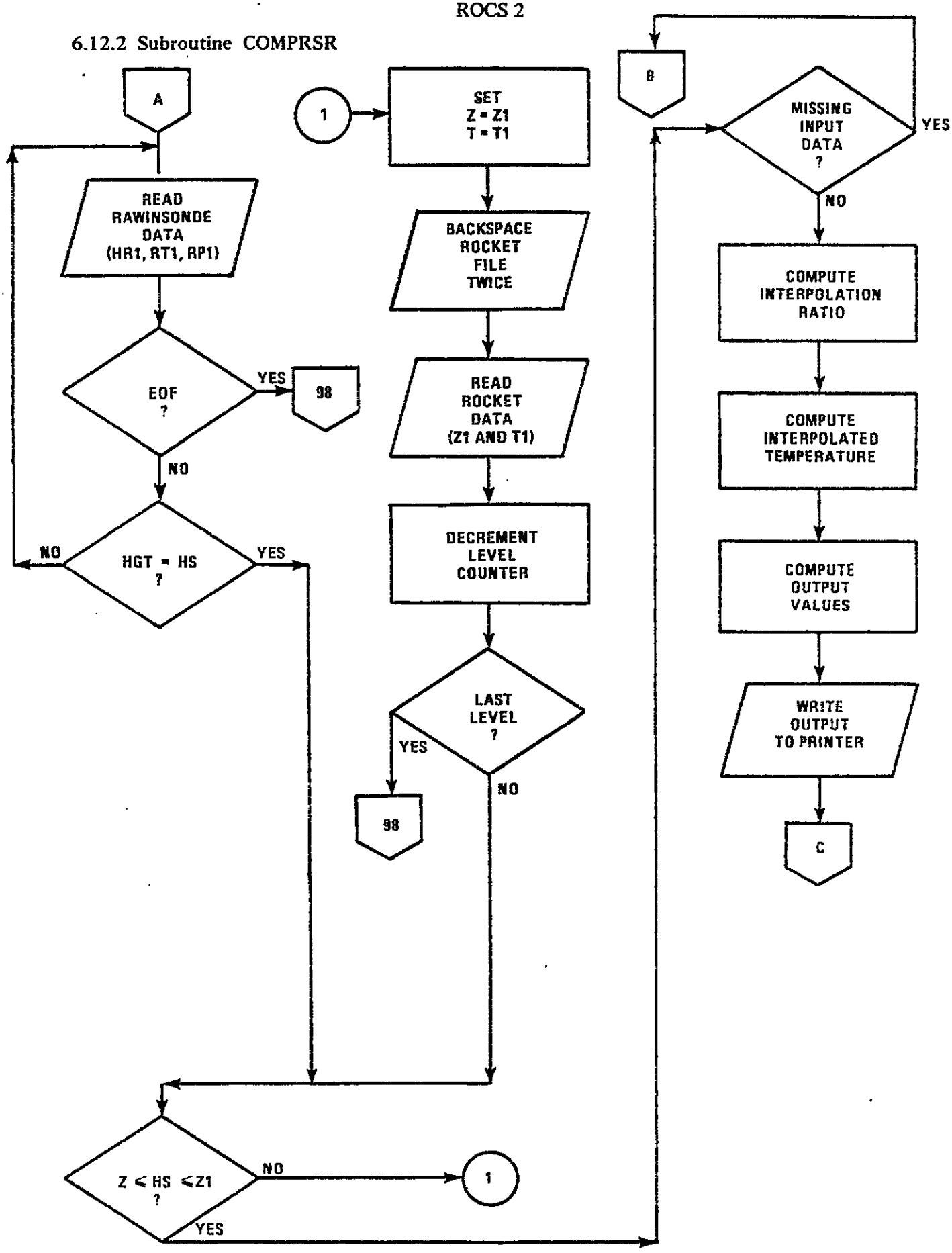
6.11 Subroutine GRAVITY



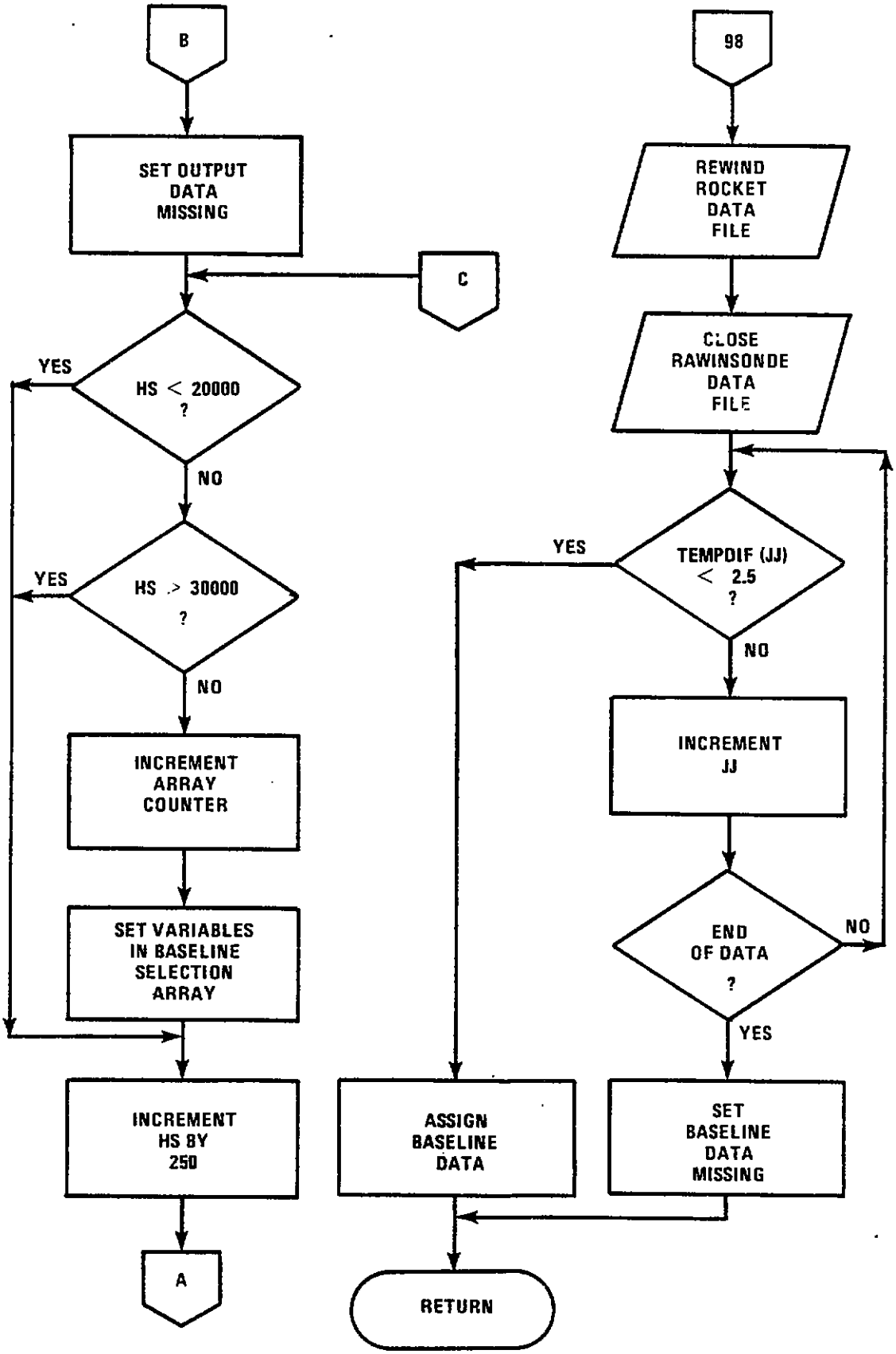
6.12.1 Subroutine COMPRSR



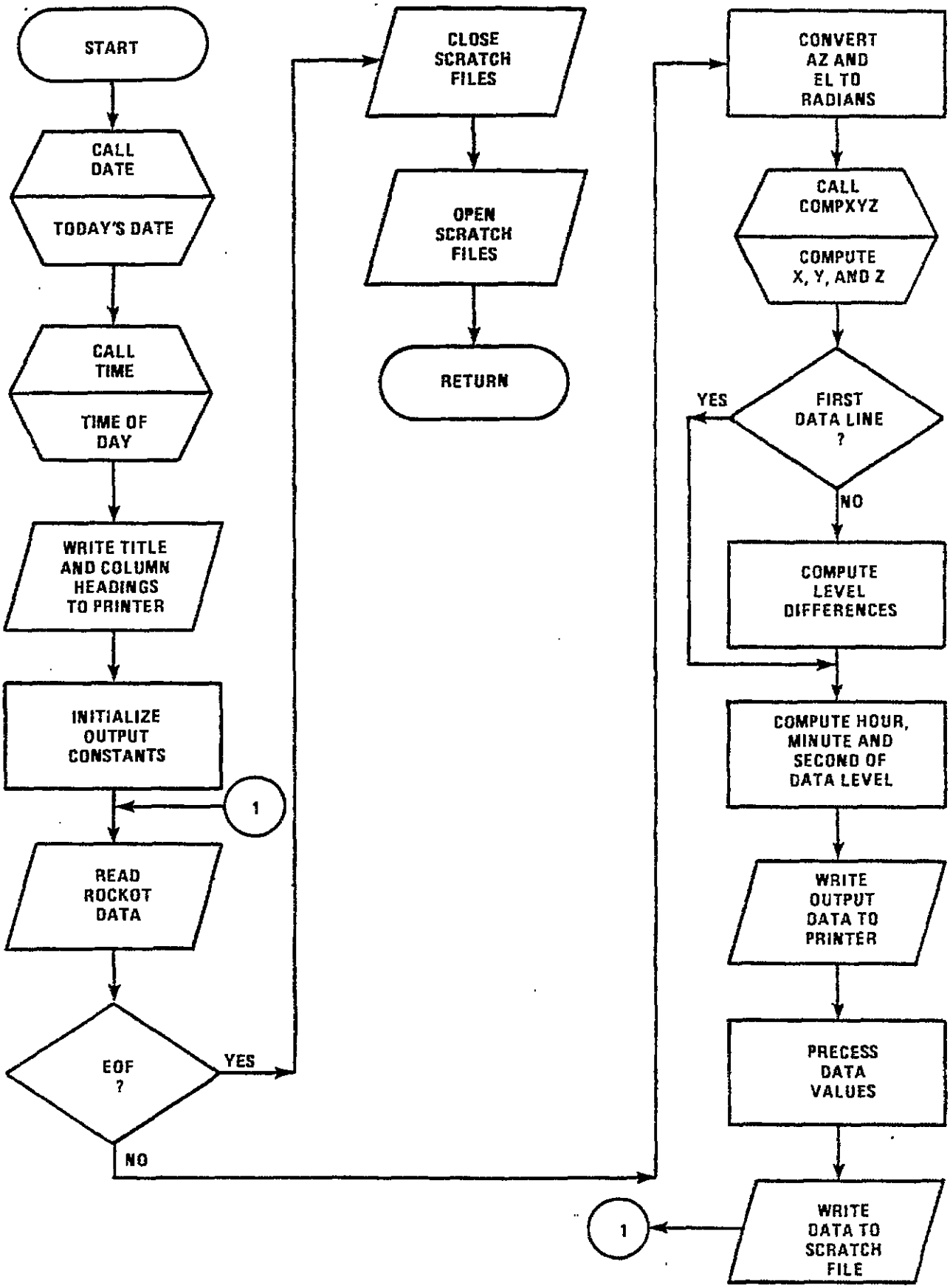
6.12.2 Subroutine COMPRSR



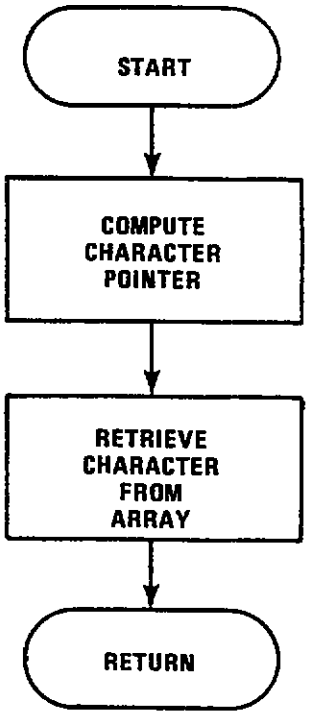
6.12.3 Subroutine COMPRSR



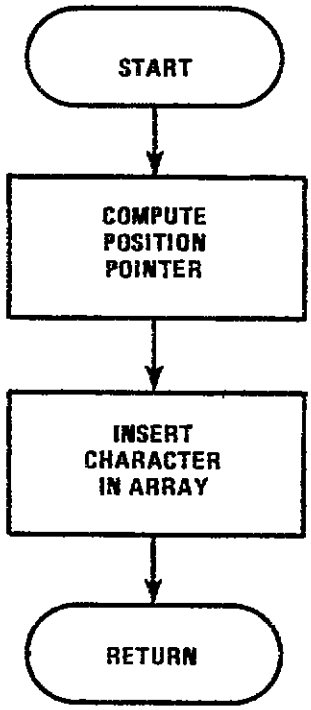
6.13 Subroutine CHKOUT



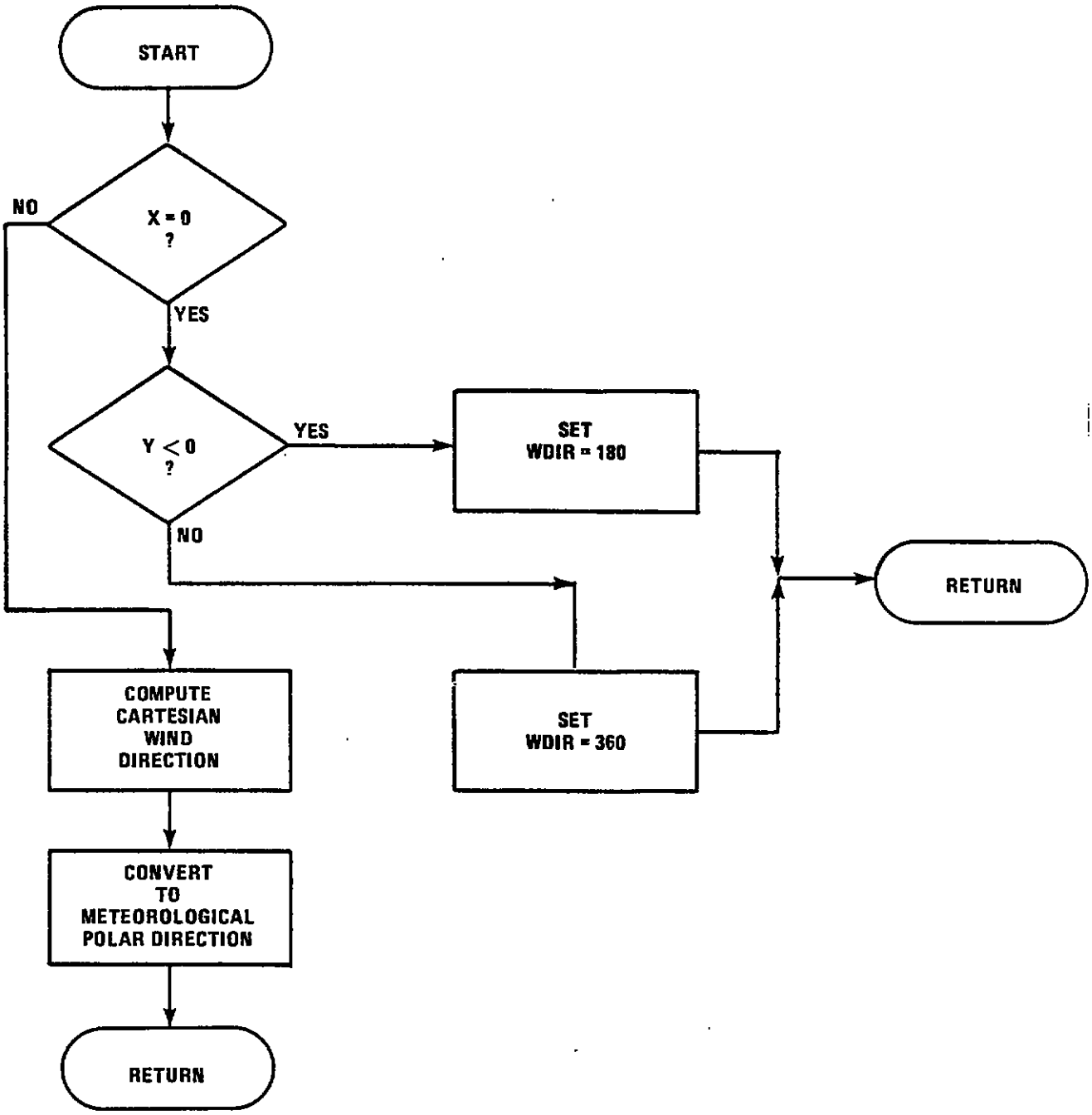
6.14 Function IGETC



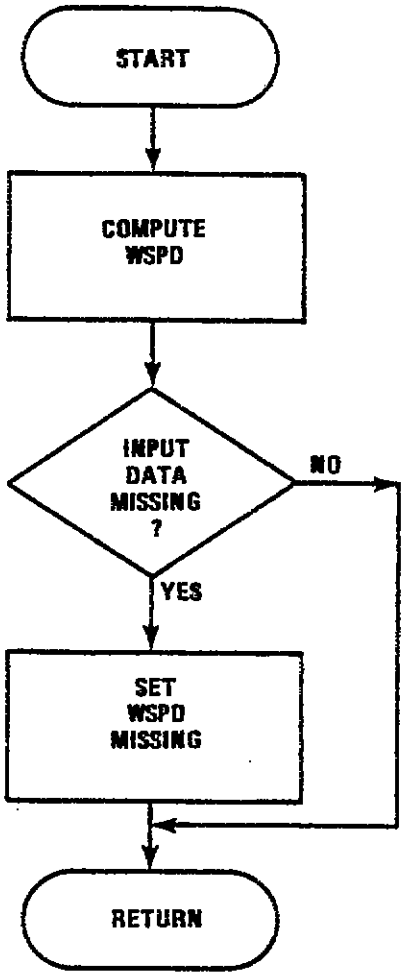
6.15 Subroutine PUTC



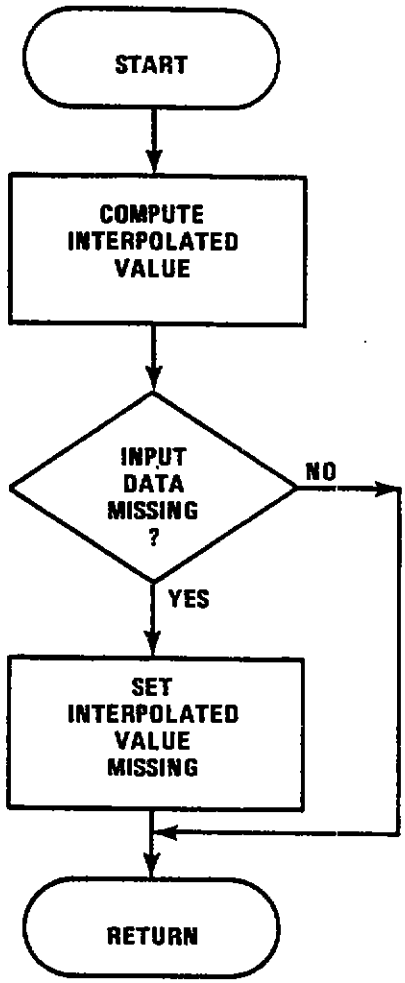
6.16 Function WDIR



6.17 Function WSPD



6.18 Function VALUE



7.0 MATHEMATICAL AND PHYSICAL CONSTANTS

7.1 Main Routine

57.29578	Degrees in a radian
67.442	Constant in hypsometric equation, *Smithsonian Meteorological Tables*, List 1968
6371229.315	Mean radius of the Earth, meters
65536	2^{16}, maximum number in 16 bits + 1
3600	Seconds in an hour
60	Seconds in a minute
273.15	Freezing point of water, degrees K

7.2 Subroutine MIDINT

None

7.3 Subroutine BANDTC

9.80616	Acceleration of gravity at 45 degrees latitude, meters/second^2

TABLE 1

The following table lists values of K_1, K_2, K_3, and K_4 versus altitude for the 10-mil bead thermistor using a loop mount.

Z (m)	K_1 $\left(\frac{s^2\ °K}{m^2}\right)$	K_2 (s)	K_3 $\left(\frac{1}{°K^3}\right)$	K_4 (°K) Day	K_4 (°K) Night
70 x 10^3	4.65 x 10^{-4}	12.77	18.51 x 10^{-10}	23.2	7.56
69	4.65	10.60	14.63	18.4	6.04
68	4.64	8.92	11.83	15.0	4.93
67	4.64	7.70	9.80	12.5	4.13
66	4.63	6.69	8.18	10.4	3.48
65	4.62	5.93	6.98	8.94	3.00
64	4.61	5.27	5.98	7.70	2.59
63	4.59	4.72	5.17	6.69	2.26
62	4.57	4.27	4.53	5.87	2.00
61	4.55	3.84	3.93	5.13	1.75
60	4.52	3.51	3.49	4.57	1.57
59	4.50	3.23	3.12	4.10	1.41

TABLE 1 (Continued)

Z (m)	K_1 $\left(\frac{s^2\ °K}{m^2}\right)$	K^2 (s)	K_3 $\left(\frac{1}{°K^3}\right)$	K_4 (°K) Day	K_4 (°K) Night
58×10^3	4.48×10^{-4}	2.95	2.78×10^{-10}	3.66	1.27
57	4.46	2.72	2.49	3.29	1.15
56	4.44	2.51	2.24	2.98	1.04
55	4.43	2.342	2.05	2.73	0.956
54	4.42	2.148	1.87	2.51	0.880
53	4.41	2.053	1.74	2.33	0.820
52	4.40	1.935	1.62	2.17	0.766
51	4.40	1.828	1.51	2.03	0.718
50	4.39	1.728	1.41	1.90	0.673
49	4.39	1.627	1.31	1.77	0.629
48	4.39	1.545	1.23	1.67	0.592
47	4.39	1.469	1.16	1.57	0.559
46	4.40	1.393	1.09	1.48	0.528
45	4.41	1.330	1.03	1.40	0.500
44	4.41	1.271	9.76×10^{-11}	1.33	0.476
43	4.42	1.212	9.24	1.26	0.452
42	4.42	1.160	8.79	1.20	0.430
41	4.43	1.111	8.35	1.14	0.410
40	4.43	1.065	7.95	1.09	0.392
39	4.44	1.019	7.53	1.03	0.372
38	4.44	0.978	7.18	0.986	0.355
37	4.45	0.940	6.85	0.943	0.341
36	4.45	0.903	6.52	0.897	0.323
35	4.46	0.868	6.22	0.858	0.311
34	4.46	0.837	5.96	0.822	0.298
33	4.47	0.804	5.68	0.785	0.285
32	4.47	0.776	5.44	0.753	0.274
31	4.48	0.749	5.22	0.722	0.263
30	4.49	0.724	5.00	0.694	0.253
29	4.49	0.700	4.79	0.666	0.243
28	4.50	0.677	4.60	0.640	0.235
27	4.50	0.656	4.42	0.615	0.225
26	4.51	0.635	4.25	0.593	0.218
25	4.52	0.616	4.09	0.572	0.210
24	4.52	0.597	3.94	0.551	0.203
23	4.52	0.580	3.81	0.533	0.197
22	4.53	0.565	3.69	0.518	0.191
21	4.54	0.550	3.58	0.502	0.185
20	4.55	0.535	3.47	0.487	0.180

7.4 Subroutine TWOKM

None

7.5 Subroutine SIMQ

None

7.6 Subroutine PRESCOM

None

7.7 Subroutine ONEKILO

1000	Output interval, meters and feet
250	Output interval, meters

7.8 Subroutine OUTPUT

348.38	Gas constant for dry air with pressure in millibars and density in grams/cubic meter, combined with conversion factors
331.45	Speed of sound at zero degree Celsius, meters/second
273.15	Freezing point of water, degrees K

7.9 Subroutine PLOTCH

1000	Output interval, meters
70000	Maximum output altitude

7.10 Subroutine COMPXYZ

0.9144	Meters/yard
2.2	Constant used in correcting elevation angle for the Earth's curvature

7.11 Subroutine GRAVITY

57.29578	Degrees in a radian
0.0026373 0.0000059	Gravity ratio constants from *Smithsonian Meteorological Tables*, page 488, equation 1, List 1951

7.12 Subroutine COMPRSR

0.3048	Conversion factor for meters to feet
273.15	Freezing point of water, degrees K

8.0 BIBLIOGRAPHY

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2. Eddy, et al., "Determiniation of Winds from Meteorological Rocketsondes," University of Texas Report Number 2, University of Texas, November 1965.

3. Henry, R. M., Paper presented to the American Meteorological Society Conference on "High Altitude Meteorology Atmosphere Space Weather," Houston, Texas, 27-31 March 1967.

4. Krumins, M. V. and Lyons, W. C., "Corrections for the Upper Atmosphere Temperatures Using a Thin Film Loop Mount," NOLTR 72-152, Naval Ordnance Laboratory, 22 June 1972.

5. Luers, J. K., "A Method of Computing Wind Density, Temperature, Pressure and Their Associated Errors from the High Altitude Robin Sphere Using an Optimum Filter," AFCRL-70-0366, July 1970. Final report on AFCRL Contract with the University of Dayton Research Institute.

6. Gustafson, A. F., "The Error in Rawin Computations Due to Neglecting the Earth's Curvature," Bull., AMS, Vol. 35, No. 7, pp. 295-300, September 1954.

ATTACHMENT 1

INPUT DATA FILE, DUMP AND BINARY

```
* * * MSS HEADER DUMP * * *
TEST NUMBER: 000000 ASCENT NUMBER: 4029 SONDE TYPE: 10D
NUMBER OF POINTS SMOOTHING: 120 SMOOTHED OUTPUT RATE: 15
HARDCOPY OPTION: BOTH HARDCOPY OUTPUT RATE: 15 SCROLLED OUTPUT RATE: 10
STATION ALTITUDE:   16 STATION PRESSURE:      .0 STATION TEMPERATURE:     .0
MSS SONDE ID: 4566   CHANNEL 1 ID: 4566   CHANNEL 3 ID: 4566
SENSOR COEFFICIENTS:        A              B              C
          CHANNEL 1:      -5.16500    2123.50000     60.20499
          CHANNEL 3:      -5.16500    2123.50000     60.20499
HYGRISTOR SELECTION: 13  R33:     .000
                                  XLOGZ DATA
          .30103     .60206     .77815     .90308     .99999    1.17600
         1.30100    1.47710    1.69890    1.84500    1.90300    1.95420
         1.99990    2.17600    2.30100    2.47710    2.60200    2.77810
         2.90300    2.99990    3.17600    5.00000     .00000     .00000
                                  RATIO DATA
          .93516     .91877     .90308     .88778     .87312     .83852
          .80689     .75078     .66027     .59099     .56187     .53613
          .51256     .42336     .36372     .28865     .24349     .19185
          .16296     .14466     .11877     .07530     .00000     .00000
AN/AMQ-9 SONDE ID: TSTRGT  TO: 25.0 FC: 25.0 TC: 25.0 HYGRISTOR SEL: 13
RELEASE DATE:  1/18/84 RELEASE TIME: 15:15:34: 0 BLOCKS WRITTEN:  15
```

MSS DATA DUMP

SOFTWR STATUS	TIME	HARDW1 STATUS	HARDW2 STATUS	X	Y	Z	SLANT RANGE	GROUND RANGE	ALTITUDE	AZ	EL	TEMP1	RH	TEMP2
000170	0	010512	002041	999999.00	999999.00	999999.00	999999.00	999999.00	999999.00	122.01	-1.62	-11.0	-6.4	-9.9
000170	30	004312	002041	999999.00	999999.00	999999.00	999999.00	999999.00	999999.00	102.87	72.09	-69.3	999.9	-69.3
000170	60	004312	002041	999999.00	999999.00	999999.00	999999.00	999999.00	999999.00	99.60	71.91	-69.3	999.9	-69.3
000170	90	004312	002041	999999.00	999999.00	999999.00	999999.00	999999.00	999999.00	98.13	69.70	32.3	-36.1	33.9
001170	120	004312	002041	397653.40	-52845.89	916011.40	999999.00	401149.60	926214.00	97.57	66.36	-75.8	-64.5	999.9
011170	150	004312	002041	32790.87	-4507.65	70353.25	77750.25	33099.16	70436.25	97.83	64.80	-75.8	-64.5	999.9
001170	180	004312	002041	33289.36	-4512.53	67234.69	75161.62	33593.68	67322.06	97.72	63.45	-11.5	-12.4	-13.0
001170	210	004312	002041	33779.44	-3937.24	64620.06	73022.31	34007.99	64707.48	96.65	62.24	-15.7	-15.8	-14.7
001170	240	004312	002041	34240.57	-3763.81	62346.33	71229.19	34446.68	62435.93	96.27	61.08	-8.5	-6.3	-6.0
001170	270	004312	002041	34443.41	-3250.43	60347.19	69560.37	34596.32	60437.52	95.39	60.17	-.0	1.3	.5
011170	300	004312	002041	34334.13	-2406.48	58497.34	67871.31	34418.25	58586.82	94.01	59.53	-3.3	-.8	-.6
011170	330	004312	002041	34136.53	-1591.12	56895.21	66369.17	34173.47	56983.55	92.67	59.01	2.5	3.0	.4
001170	360	004312	002041	33948.32	-734.05	55379.52	64960.62	33956.14	55466.82	91.24	58.49	-.4	-.6	-1.7
001170	390	004312	002041	33632.67	67.58	53968.83	63590.64	33632.63	54054.59	89.88	58.07	-3.5	-3.8	-5.8
043170	420	004312	002041	33345.07	530.60	52748.86	62406.68	33349.18	52833.27	88.09	57.70	-1.7	1.1	2.2
001170	450	004312	002041	33307.10	1525.31	51555.36	61397.20	33341.89	51639.74	87.38	57.11	5.0	3.8	999.9
001170	480	004312	002041	33693.19	2527.17	50461.66	60725.22	33781.53	50548.18	85.62	56.20	-5.0	-5.4	-5.1
001170	510	004312	002041	34106.76	3286.71	49428.64	60143.50	34264.62	49517.50	84.50	55.27	-3.3	-1.8	-1.5
001170	540	004312	002041	33851.94	4366.93	48501.46	59307.61	34132.34	48589.49	82.65	54.86	-4.3	-5.1	-7.2
011170	570	004312	002041	33647.04	5207.17	47613.45	58534.25	34047.45	47701.29	81.20	54.43	-6.4	-5.6	-8.9
041170	600	004312	002041	33773.45	5838.05	46745.81	57964.46	34274.19	46834.75	80.19	53.75	-9.7	-9.4	-7.9
001170	630	004312	002041	34100.31	6209.82	45999.85	57596.45	34660.98	46090.68	79.68	53.00	-5.3	-5.8	-6.2
001170	660	004312	002041	34776.95	6193.50	45258.81	57411.94	35324.02	45352.96	79.90	52.03	-6.2	-5.9	-6.4
001170	690	004312	002041	35622.87	6193.55	44489.32	57329.08	36157.15	44587.71	80.14	50.90	-9.3	-9.4	-10.5
001170	720	004312	002041	36458.37	6092.57	43749.25	57289.21	36963.80	43871.89	80.51	49.82	-13.4	-14.1	-14.2
001170	750	004312	002041	37314.21	6139.77	43101.87	57339.24	37815.85	43209.04	80.66	48.74	-13.9	-14.8	999.9
001170	780	004312	002041	38199.36	6330.43	42440.21	57449.24	38720.24	42552.32	80.59	47.62	-14.8	-14.7	-14.2
043170	810	004312	002041	39107.69	6758.04	41786.62	57629.64	39687.19	41904.14	80.20	46.48	-14.5	-13.7	-13.8
001170	840	004312	002041	40229.84	7316.12	41096.74	57923.12	40889.55	41221.19	79.69	45.14	-17.6	-18.2	-20.5
001170	870	004312	002041	41487.08	7617.90	40558.22	58516.27	42180.57	40690.32	79.60	43.88	-24.3	-24.2	-24.2
001170	900	004312	002041	42767.70	7793.93	40068.23	59134.28	43471.94	40228.21	79.47	42.68	-25.2	-24.9	-24.3
001170	930	004312	002041	44226.54	8249.93	39475.23	59852.48	44989.27	39624.78	79.43	41.26	-24.3	-24.8	-26.9
043170	960	004312	002041	45456.08	8662.94	38985.74	60507.52	46274.04	39143.66	79.21	40.11	-30.7	-31.1	-32.6
053170	990	004312	002041	46615.38	9081.65	38465.71	61115.11	47491.59	38631.80	78.98	39.01	-33.5	-32.6	-33.9
041170	1020	004312	002041	47761.71	9623.54	37952.35	61758.79	48721.38	38126.96	78.41	37.92	-37.5	-37.0	-37.2
043170	1050	004312	002041	48840.92	10266.72	37520.50	62438.81	49908.12	37703.37	78.13	36.94	-37.7	-37.9	-38.2
001170	1080	004312	002041	49876.11	10931.50	37036.44	63077.68	51059.78	37227.43	77.64	35.96	-41.9	-41.8	-41.0
011170	1110	004312	002041	50744.33	11538.70	36655.86	63653.35	52039.43	36854.24	77.19	35.16	-42.1	-42.2	-42.9
001170	1140	004312	002041	51740.47	12261.12	36237.42	64346.93	53173.19	36444.33	76.67	34.27	-43.6	-43.0	-42.9
001170	1170	004312	002041	52768.51	12696.13	35919.41	65083.61	54274.16	36134.75	76.47	33.50	-44.8	-44.0	-44.0
001170	1200	004312	002041	53723.57	13470.91	35401.62	65733.75	55386.48	35625.20	75.92	32.59	-45.1	-44.9	-45.2
001170	1230	004312	002041	54906.71	14067.00	34965.32	66597.00	56679.82	35199.74	75.63	31.67	-50.4	-50.7	-50.6
001170	1260	004312	002041	55689.53	14341.41	34738.14	67192.44	57516.06	34979.39	75.56	31.13	-49.9	-49.7	-50.1
001170	1290	004312	002041	56787.14	14717.10	34421.31	68015.87	58662.99	34672.05	75.47	30.40	-51.2	-50.4	-49.5
001170	1320	004312	002041	57872.12	15088.93	34112.87	68851.31	59806.60	34373.29	75.39	29.70	-49.3	-48.7	-49.3
013170	1350	004312	002041	58983.82	15629.26	33617.07	69666.56	61019.20	33887.98	75.16	28.85	-49.3	-48.5	-48.1
001170	1380	004312	002041	59937.45	16084.76	33376.28	70463.75	62057.94	33656.32	74.98	28.27	-47.2	-47.2	-47.1
011170	1410	004312	002041	60934.29	16586.23	33003.71	71255.06	63151.09	33293.52	74.77	27.59	-45.3	-44.5	-44.4
051170	1440	004312	002041	61881.90	17032.28	32738.56	72050.19	64182.84	33037.73	74.61	27.03	-45.2	-44.0	-44.2
051170	1470	004312	002041	62911.07	17235.20	32426.30	72844.12	65228.96	32735.18	74.68	26.43	-42.9	-42.6	-42.8

MSS DATA DUMP

SOFTWR STATUS	TIME	HARDW1 STATUS	HARDW2 STATUS	X	Y	Z	SLANT RANGE	GROUND RANGE	ALTITUDE	AZ	EL	TEMP1	RH	TEMP2
001170	1500	004312	002041	64037.96	17340.14	32034.11	73672.75	66343.81	32353.45	74.85	25.77	-46.5	-46.2	-45.8
001170	1530	004312	002041	65089.79	17521.93	31734.85	74503.37	67406.62	32064.34	74.93	25.21	-45.4	-45.9	-45.8
001170	1560	004312	002041	66201.87	17668.59	31437.02	75386.31	68518.75	31777.30	75.06	24.65	-47.1	-46.6	-46.2
001170	1590	004312	002041	67197.75	17778.00	31258.12	76214.25	69509.31	31608.18	75.18	24.21	-46.1	-45.8	-45.6
001170	1620	004312	002041	68230.25	18132.48	30795.15	77022.37	70598.25	31156.12	75.12	23.57	-46.3	-46.0	-46.5
053170	1650	004312	002041	69187.00	18396.13	30576.25	77846.75	71590.56	30947.30	75.11	23.13	-46.7	-47.0	-47.2
001170	1680	004312	002041	70195.50	18839.54	30255.33	78725.25	72629.31	30637.61	74.98	22.60	-47.4	-47.0	-47.3
001170	1710	004312	002041	71231.00	19050.36	29994.22	79601.31	73734.19	30387.54	75.03	22.14	-49.3	-49.7	-49.8
001170	1740	004312	002041	72216.00	19303.59	29723.04	80443.69	74751.12	30122.15	75.03	21.68	-50.8	-51.1	-50.9
001170	1770	004312	002041	73154.44	19639.16	29489.21	81282.37	75744.44	29904.00	74.97	21.27	-51.5	-51.1	-50.7
001170	1800	004312	002041	74042.37	19930.03	29275.27	82076.00	76677.44	29700.20	74.93	20.90	-51.2	-50.7	-50.4
001170	1830	004312	002041	74869.94	20224.56	29066.76	82821.31	77553.12	29501.34	74.88	20.55	-50.6	-50.7	-50.3
001170	1860	004312	002041	75681.69	20522.45	28870.27	83560.31	78414.50	29314.46	74.83	20.21	-50.4	-50.3	-50.8
001170	1890	004312	002041	76582.75	20778.39	28512.62	84318.31	79351.19	28967.59	74.82	19.76	-50.8	-50.5	-50.9
001170	1920	004312	002041	77369.87	21036.29	28318.25	85032.25	80178.37	28782.45	74.79	19.45	-51.0	-50.6	-50.9
001170	1950	004312	002041	78168.81	21279.32	28076.23	85758.44	81032.37	28550.28	74.78	19.11	-53.0	-52.1	-52.1
001170	1980	004312	002041	79019.94	21519.87	27881.85	86513.50	81897.50	28365.98	74.77	18.80	-52.9	-53.2	-53.0
001170	2010	004312	002041	79829.12	21652.95	27748.01	87243.50	82713.31	28241.73	74.82	18.55	-52.6	-52.1	-52.9
001170	2040	004312	002041	80642.81	21884.63	27431.38	87951.25	83564.06	27935.23	74.82	18.17	-52.8	-53.0	-52.8
001170	2070	004312	002041	81452.25	22046.50	27150.39	88643.12	84362.81	27664.08	74.85	17.84	-54.2	-53.8	-54.0
001170	2100	004312	002041	82213.19	22302.23	26882.71	89327.44	85184.19	27413.14	74.82	17.52	-54.3	-53.9	-53.8
001170	2130	004312	002041	82873.75	22630.34	26764.34	89980.31	85907.75	27296.60	74.73	17.30	-55.4	-55.4	-55.3
001170	2160	004312	002041	83602.37	22823.98	26557.29	90639.44	86661.62	27098.87	74.73	17.04	-55.6	-55.3	-55.1
001170	2190	004312	002041	84299.06	22942.88	26363.04	91255.94	87365.00	26913.37	74.78	16.79	-56.0	-55.6	-55.4
001170	2220	004312	002041	85031.31	22919.62	26112.73	91855.50	88065.25	26671.86	74.91	16.52	-55.4	-55.2	-55.0
001170	2250	004312	002041	85673.50	23036.59	25934.87	92429.31	88716.25	26502.23	74.95	16.30	-56.0	-55.7	-55.6
001170	2280	004312	002041	86334.31	23081.52	25747.78	93001.25	89366.12	26323.41	75.03	16.07	-56.0	-55.5	-55.8
001170	2310	004312	002041	86998.69	23252.07	25543.42	93604.50	90052.00	26127.65	75.04	15.84	-56.6	-56.9	-56.9
001170	2340	004312	002041	87657.87	23392.57	25408.37	94215.81	90725.12	26001.50	75.06	15.65	-57.6	-57.5	-57.2
001170	2370	004312	002041	88327.50	23605.07	25175.09	94829.56	91426.94	25777.36	75.04	15.40	-56.9	-56.8	-57.3
001170	2400	004312	002041	88895.37	23822.68	24996.33	95365.69	92031.56	25606.56	75.00	15.20	-58.6	-58.3	-58.1
001170	2430	004312	002041	89380.56	23990.43	24835.90	95818.37	92543.81	25452.69	74.98	15.02	-58.5	-58.1	-58.0
001170	2460	004312	002041	89827.62	23949.85	24621.66	96216.94	93013.37	25244.89	75.08	14.83	-59.9	-59.9	-60.1
001170	2490	004312	002041	90418.62	23925.32	24430.58	96668.00	93530.00	25060.71	75.18	14.64	-59.7	-59.4	-59.5
001170	2520	004312	002041	90993.75	23875.56	24321.59	97166.56	94073.50	24959.01	75.30	14.50	-60.1	-59.8	-59.7
001170	2550	004312	002041	91561.31	23864.14	24136.70	97649.62	94619.75	24781.50	75.39	14.31	-59.7	-60.2	-60.6
001170	2580	004312	002041	92119.37	23964.54	23972.34	98157.25	95185.00	24624.81	75.42	14.14	-61.0	-60.4	-60.6
001170	2610	004312	002041	92730.69	24016.31	23680.35	98721.44	95769.75	24541.09	75.48	14.00	-60.8	-60.9	-61.0
001170	2640	004312	002041	93311.87	24166.84	23665.57	99252.75	96390.06	24334.58	75.48	13.79	-61.5	-61.7	-61.6
003170	2670	004312	002041	93783.00	24386.46	23469.96	99703.00	96901.25	24146.05	75.42	13.62	-61.3	-60.9	-60.7
001170	2700	004312	002041	94214.62	24557.89	23444.71	100145.10	97362.19	24127.18	75.39	13.54	-62.1	-61.7	-61.6
003170	2730	004312	002041	94721.06	24748.25	23174.20	100605.70	97900.31	23864.21	75.36	13.32	-61.4	-60.9	-60.8
001170	2760	004312	002041	95302.19	24947.37	23034.94	101174.80	98517.69	23733.61	75.33	13.16	-61.6	-61.5	-61.7
001170	2790	004312	002041	95902.00	25171.20	22900.28	101759.90	99149.81	23607.89	75.29	13.01	-63.5	-63.6	-63.9
001170	2820	004312	002041	96447.25	25505.37	22663.30	102304.00	99762.19	23379.64	75.19	12.80	-64.1	-63.9	-63.8
001170	2850	004312	002041	96931.62	25627.79	22571.31	102821.10	100313.10	23295.54	75.08	12.68	-64.6	-64.5	-64.5
001170	2880	004312	002041	97446.12	26090.30	22487.05	103353.70	100877.80	23219.40	75.01	12.57	-64.9	-65.0	-65.1
001170	2910	004312	002041	97927.25	26497.05	22308.38	103872.00	101448.10	23049.00	74.86	12.40	-66.4	-66.1	-66.1
001170	2940	004312	002041	98301.62	26845.48	22133.00	104276.80	101900.80	22880.21	74.73	12.25	-66.0	-65.9	-66.3
001170	2970	004312	002041	98603.75	27036.27	22091.44	104602.00	102242.60	22843.64	74.67	12.19	-65.8	-65.5	-65.4

MSS DATA DUMP

SOFTWR STATUS	TIME	HARDW1 STATUS	HARDW2 STATUS	X	Y	Z	SLANT RANGE	GROUND RANGE	ALTITUDE	AZ	EL	TEMP1	RH	TEMP2
001170	3000	004312	002041	98853.81	27144.20	21921.21	104829.90	102512.30	22677.38	74.65	12.07	-65.9	-66.7	-65.8
001170	3030	004312	002041	99116.94	27212.62	21824.25	105075.60	102784.20	22584.42	74.65	11.99	-66.4	-66.3	-66.9
001170	3060	004312	002041	99386.25	27524.47	21652.63	105375.30	103126.70	22417.85	74.52	11.86	-67.3	-67.0	-67.0
001170	3090	004312	002041	99728.75	27776.04	21435.94	105720.00	103524.00	22207.06	74.44	11.70	-68.1	-68.0	-68.1
001170	3120	004312	002041	100109.20	28002.98	21323.98	106116.10	103951.40	22101.44	74.37	11.59	-67.7	-68.7	-68.9
001170	3150	004312	002041	100506.90	28187.42	21209.29	106517.00	104384.20	21993.20	74.33	11.49	-70.3	-70.2	-70.4
001170	3180	004312	002041	100827.10	28594.09	20965.52	106879.20	104802.80	21755.72	74.17	11.31	-70.1	-70.4	-71.3
001170	3210	004312	002041	101026.90	29042.70	20802.20	107156.60	105118.10	21597.15	73.96	11.19	-70.6	-70.5	-71.5
001170	3240	004312	002041	101193.40	29129.42	20766.68	107330.10	105302.00	21564.40	73.94	11.16	-71.6	-72.6	-73.0
001170	3270	004312	002041	101421.00	29133.98	20708.75	107534.80	105522.00	21509.79	73.97	11.10	-75.4	-75.2	-75.8
001170	3300	004312	002041	101727.20	29025.59	20574.95	107816.10	105834.70	21380.73	74.08	11.00	-76.4	-75.8	-75.7
001170	3330	004312	002041	102185.00	29127.48	20371.09	108189.80	106254.70	21183.25	74.09	10.85	-75.3	-75.2	-75.7
001170	3360	004312	002041	102681.10	29242.02	20200.27	108657.40	106763.20	21020.19	74.10	10.71	-75.5	-75.5	-75.4
001170	3390	004312	002041	103238.90	29438.89	20165.25	109231.10	107353.60	20994.21	74.08	10.64	-76.5	-76.0	999.9
001170	3420	004312	002041	103776.10	29704.03	20154.99	109808.40	107942.90	20993.03	74.03	10.58	-76.1	-75.6	-75.6
001170	3450	004312	002041	104190.70	30127.21	20036.02	110293.60	108458.40	20882.04	73.87	10.47	-75.9	-75.9	-76.4
001170	3480	004312	002041	104513.90	30506.52	19860.76	110671.20	108874.70	20713.27	73.73	10.34	-76.2	-76.0	-76.3
001170	3510	004312	002041	104805.40	30897.55	19639.32	111015.40	109264.40	20497.92	73.57	10.19	-76.5	-76.3	-76.2
001170	3540	004312	002041	105162.70	31110.75	19621.97	111409.10	109667.40	20486.89	73.52	10.14	-76.6	-76.4	-76.3
001170	3570	004312	002041	105600.90	31307.21	19598.93	111871.70	110143.40	20461.34	73.49	10.08	-76.8	-76.7	-76.4

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  18  000A  4210  0001  0000  0000  0000  0000  3435 ..B............45
  20  3636  2020  3435  3636  2020  C152  A3DA  4384 66  4566  AR#ZC.
  28  B2FE  423C  347A  3435  3636  2020  C152  A3DA 7.B(4.4566  AR#Z
  30  4384  B7FF  423C  347A  0000  0000  000D  404D C.7.B(4.......@M
  38  104D  409A  209B  40C7  34E0  40E7  304A  40FF .M@. .GG4`@GOJ@.
  40  1F62  4112  D0E5  4114  D0E5  4117  A233  411B .bA.PeA.PeA.'3A.
  48  2EB2  411D  651E  411E  72B0  411F  4467  411F .2A...A.rOA.DgA.
  50  FF97  4122  D0E5  4124  D0E5  4127  A233  4129 ..A'PeA$PeA''3A)
  58  A1CA  412C  7319  412E  72B0  412E  FF97  4132 !JA.s.A.rOA/..A2
  60  D0E5  4150  0000  0000  0000  0000  0000  40EF PeAP..........@o
  68  66AF  40EB  346C  40E7  304A  40E3  4596  40DF F/@k4.GGOJ@cE.@_
  70  84D4  40D6  A949  40CE  9061  40C0  3328  40A9 .T@V)I@N.A@@3(@)
  78  077E  4097  4B1F  40BF  D6B6  4089  3FD1  4083 ..@.K.@.V6@.?G@.
  80  3722  406C  6152  405D  1CC1  4049  E4F7  403E 7"@laR@].A@IpW@)
  88  555C  4031  1D15  4029  B2BF  4025  0B70  401E U\@1..@)22G%.p@.
  90  67B6  4013  46BD  0000  0000  0000  0000  5453 g6@.F]........TS
  98  5452  4754  4219  0001  4219  0001  4219  0001 TRGTB...B...B...
  A0  000D  90D4  000F  000F  0022  0000  000F  0000 ...T.....".....
  A8  0000  0000  0000  0000  0000  0000  0000  0000 ................
  B0  0000  07E8  0884  0000  0002  0000  000D  08BF ...H............?
  B8  0E93  000D  000A  0000  A663  A00A  21E3  6201 .........&C##!sb.
  C0  2103  62DB  0102  0200  2104  400D  4000  0102 !.bL....!.@.@...
  C8  04D7  2133  AD00  0C0E  1801  0CD7  2132  AD00 .W13=......W12=..
  D0  0C0F  1802  0CD7  2131  AD00  0C0F  1803  0CD7 .....W11-......W
  D8  213C  AD50  0C0E  1804  0CD7  213B  AD00  0C0F !(=P.....W1;=....
  E0  1805  0CD7  2126  AD00  0C0F  1806  0CD7  2125 ...W1&-......W1%
  E8  AD00  0C0E  1807  0CD7  2130  AD00  0C0E  1809 -.....W10=......
  F0  0CD7  212F  AD00  0C0F  180A  0CD7  211A  AD00 .W1/-......W1.-.
  F8  0C0E  1808  0CD7  0129  1068  2454  5449  0000 .....W.).H$TTI...
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 110  114A  0421  45F4  23F0  45F4  23F0  45F4  23F0 .J.!ET#pET#pET#pET#p
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 130  08CA  0421  45F4  23F0  45F4  23F0  45F4  23F0 .J.!ET#pET#pET#p
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 140  4248  170B  C245  420A  433E  7E67  C245  420A BH..DEB.C).gBER.
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 178  45F4  23E0  45F4  23E0  45E4  23E0  4262  214A ET#pET#pET#pBb!J
 180  4245  D333  4220  4BE6  C274  17EA  4221  DA26 BE33R KfD$.JB!Z&
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 1A0  4242  5998  C24B  D0EA  C240  87FA  433E  7E67 BBY.BKPJB@..C).g
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 1B8  4512  EB64  4481  4B20  4511  3244  4261  D3C4 E..dD.K(E.2DBaSD
 1C0  4240  CDE9  C24B  D0EA  C240  87FA  433E  7E67 B@MiBKPJB@..C).g
```

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1C8  0000 0000 0000 0000 0000 0000 0278 0708 ..............x..
1D0  08CA 0421 4482 0958 C411 A087 4510 6A4A .J.!D..XD. .E.jJ
1D8  4512 599A 4483 39AF 4510 6FA1 4261 B83C E.Y.D.9/E.o!Ba8<
1E0  423F 73A2 C1B7 FBA0 6166 C0A0 C1CF D2A0 B?s"A7. aF@ AOR
1E8  0000 0000 0000 0000 0000 0000 0278 0834 ..............x.4
1F0  08CA 0421 4483 F370 C3F6 13BA 44FC 6C0F .J.!D.spCv.ZD.l.
1F8  4511 D3E5 4484 D7FD 44FC C378 4260 A5F4 E.SeD.W.D.C.B`%t
200  423F 3E41 C1FA CCA0 C1FD 66A0 C1EA E6A0 B?>AA.L A.F AJF
208  0000 0000 0000 0000 0000 0000 0278 0960 ..............x.`
210  08CA 0421 4485 C093 C3ER 3CE4 44F3 8A55 .J.!D.@.Ck<dDs.U
218  4511 63D3 4486 8EAF 44F3 E3EF 4260 45DB E.cSD.?/DscoB`EC
220  423D 143C C187 AFA0 C164 D9A0 C160 A3A0 B=.<A.. AnY A`#
228  0000 0000 0000 0000 0000 0000 0278 0ABC ..............x..
230  08CA 0421 4486 8B69 C3CB 26EA 44EB BB31 .J.!D..iCK&JDk;1
238  4510 F886 4487 2451 44EC 1586 425F 641D E...D.$QDL..B_d.
240  423C 2CC2 DE95 A000 A114 B160 A086 5600 B<,B^. .A..`&.V.
248  0000 0000 0000 0000 0000 0000 1278 0BB8 ..............x.8
250  08CA 0421 4486 1E22 C396 67A5 44E4 B156 .J.!D..^C.g%Dd.V
258  4510 91F5 4486 723F 44E4 BAD3 425E 0261 E..uD.n?DdZSB^.A
260  423B B74E C134 A8A0 C0C6 BAB0 C097 9A00 B;.NA4(.BF:.@...
268  0000 0000 0000 0000 0000 0000 1278 0CE4 ..............x.D
270  08CA 0421 4485 5887 C363 71EC 44DE 3E36 .J.!D.X.Ccql D^26
278  4510 3412 4465 7D79 44DE 978D 425C AB2E E.4.D.}yD^..B\+.
280  423B 0260 4127 E960 412F EC60 405E E600 B;.`A'i`A/l`@^f.
288  0000 0000 0000 0000 0000 0000 0278 0E10 ..............x..
290  08CA 0421 4484 9C52 C32D E0D2 44D8 5385 .J.!D..RC-`DDXS.
298  44FD C09E 4484 A423 44D8 AAD3 425B 3D1B D.@.D.$#DX*SB[=.
2A0  423A 7C36 C068 5A00 C097 9A00 C11B 06A0 B:.|6@hZ.@...A..
2A8  0000 0000 0000 0000 0000 0000 0278 0F3C ..............x.<
2B0  08CA 0421 4483 60AB 4243 948D 44D2 D0D5 .J.!D.`+BC..DRPU
2B8  44F8 66A4 4483 60A2 44D3 2697 4259 E265 Dxf$D.``DS&.BYb.
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2C8  0000 0000 0000 0000 0000 0000 4678 1068 ............Fx.H
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2D8  44F3 C6AE 4482 452D 44CE 6144 4259 169D DsF.D.E-DNaDBY..
2E0  4239 B265 C11B 00A0 4111 7660 412B 2A60 B92eA... A.v`A+*`
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2F0  08CA 0421 4482 1B1A 435F 54E5 44C9 635D .J.!D...C_TuDIc]
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300  4239 1BC1 4150 9460 413C 0E60 433E 7E67 B9.AAP.`A<.`C>~g
308  0000 0000 0000 0000 0000 0000 0278 12C0 ..............x.@
310  08CA 0421 4483 9331 4361 12BA 44C5 1DAA .J.!D.3C1.:DE.*
318  44ED 3539 4483 F587 44C5 742E 4255 9FEA Dm59D.u.DEt.BU.j
320  4238 331E C1AF BDA0 C15A 01A0 C151 B5A0 B83.A=. AV. A05
328  0000 0000 0000 0000 0000 0000 0278 13EC ..............x.L
330  08CA 0421 4485 3AC2 43CB 6B4C 44C1 1AA4 .J.!D.:BCKkLDA.$
338  44EA EF7F 4485 D89E 44C1 6D80 4294 7EE0 Djo.D.X.DAm.Bt.`
340  4237 456D C134 05A0 C11D 43A0 C112 2BA0 B7E.A4. A.C A+.
348  0000 0000 0000 0000 0000 0000 0278 1518 ..............x..
350  08CA 0421 4484 3BF0 4411 0EEE 44BD 2577 .J.!D.;pD..nD=%W
358  44E7 A89B 4485 5456 44BD CDB0 4252 A63A Dg+.D.TVD=M0BR&:
360  4236 DD4D C1A4 B6A0 C151 B5A0 C123 65A0 B6]MAD6 A05.A#e
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378  44E4 A641 4484 FF73 44BA 5548 4251 33E7 Dd&AD..sD:UKBQ3g
380  4236 6EA1 C166 F2A0 C15A 42A0 C18D A7A0 B6n!AfR AZB A.'
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 380  4235  C03F  C19B  F640  C196  1AA0  C12E  27A0  B5@?A.v A.. A.'
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 398  44E0  FC74  4487  64FA  44B4  0AAF  424F  ADE2  D`.tD.d.D4./BO-b
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 478  44E2  751E  449F  B98D  44A1  0531  424F  B161  Dbu.D.9.D!.1BOIa
 480  422D  2510  C211  9ADA  C212  AB7A  C214  7A6A  B-%.B.:.B.+.B.zj
 488  0000  0000  0000  0000  0000  0000  0278  21FC  ..............x!.
 490  08CA  0421  44A2  0F15  4411  C1E7  449E  6E38  .J.!D.".D.AgD.n8
 498  44E4  9444  44A4  C492  449E  F251  424F  9G5B  Dd.DD$D.D.rQBO.C
 4A0  422B  E06D  C218  455A  C218  37AA  C218  29EA  B+`mB.EZD.7*B.).j
 4A8  0000  0000  0000  0000  0000  0000  0278  2328  ..............x#(
 4B0  08CA  0421  44A7  0EB3  441E  71EF  449C  983A  .J.!D.3D.qoD..:
 4B8  44E6  FE47  44A9  CFF1  449D  2435  424F  ABFB  Df.GD)OqD.$5BO+.
 4C0  422A  AE5C  C219  29EA  C218  DA2A  C218  455A  B*.\B.)jB.Z*B.EZ
 4C8  0000  0000  0000  0000  0000  0000  0278  2454  ..............x$T
 4D0  08CA  0421  44AC  C28B  4420  39ED  449A  333C  .J.!D.+B.D 9mD.3<
 4D8  44E9  CC7A  44AF  BD44  449A  C8C7  424F  6EFE  DiL.D/=DD.HGBOn.
 4E0  422Y  43D0  C218  530A  C218  CCBA  C21A  DC2A  B)CPB.S.B.L:B.\*
 4E8  0000  0000  0000  0000  0000  0000  4678  2580  ..............Fx%.
 4F0  08CA  0421  44D1  9015  4421  D6F1  4498  49BD  .J.!D1..D!VqD.I=
 4F8  44EC  5B91  44B4  C209  4498  E7A8  424F  35C4  DlC.D4B.D.g(BO5D
 500  4228  1D31  C21F  BECA  C21F  180A  C220  A21A  B(.1B.?JB... B ".
 508  0000  0000  0000  0000  0000  0000  5678  26AC  ..............Vx&,
 510  08CA  0421  44B6  1761  4423  Z9A7  4496  41D6  .J.!D6.aD#Y'D.A6
 518  44EE  BB1B  44B9  8396  4496  E7C0  424E  F9C2  Dn;.D9..D.gMBNyB
 520  4227  0173  C221  87EA  C220  A21A  C221  EE9A  B'.sB!.jB ".B!n.
```

```
548  0000  0000  0000  0000  0000  0000  4278  2700  ..............Bx'X
550  08CA  0421  44BA  91B7  4425  978A  4494  4059  .J.!D1.7D%..D.@Y
558  44F1  3EC8  44BE  5161  4494  EEDC  424E  9BA1  Dq)KD)QAD.n\BN.!
560  4225  EADB  C225  8C3A  C225  069A  C225  2A1A  B%.!B%.:B%..D%*.
568  0000  0000  0000  0000  0000  0000  4678  2904  ..............Fx).
570  08CA  0421  44BE  C8EC  4428  1AB9  4492  9081  .J.!H)HLD(.9D...
578  44F3  E6CF  44C2  F420  4493  4760  424E  20F8  DsrODBT D.G'BN x
580  4224  EF7E  C226  BC7A  C226  F30A  C226  3CFA  B$o.B&(.Rz%.B&(.
588  0000  0000  0000  0000  0000  0000  0278  2A30  ..............x*0
590  08CA  0421  44C2  D41C  442A  B37E  4490  AC70  .J.!DBT.D*3.D.~p
598  44F6  65AE  44C7  73C8  4491  68A1  424D  A345  Dve.DGsHD.h!BM#E
5A0  4223  E496  C229  E37A  C229  CBEA  C229  06BA  B#d.B)c.B)MJB).:
5A8  0000  0000  0000  0000  0000  0000  1278  285C  ..............x+\
5B0  08CA  0421  44C6  3855  442D  12B2  448F  2FDC  .J.!DF8UD-.2D./\
5B8  44FB  A55A  44CB  476F  446F  F63D  424D  307B  DxZZDKGoD.v=BM0.
5C0  4223  296R  C22A  1E1A  C22A  333A  C22A  E18A  B#).Ra..B*3:B*a.
5C8  0000  0000  0000  0000  0000  0000  0278  2C88  ..............x,.
5D0  08CA  0421  44CA  1C29  442F  E51E  448D  8B6C  .J.!DJ.)D/e.D..l
5D8  44FB  5AEF  44CF  B531  446E  5C54  424C  AB17  D.ZoDG51D.\TBL+.
5E0  4222  463B  C22B  A23A  C22A  EB8A  C22A  EC8A  B"F;B+":B*..B*L.
5E8  0000  0000  0000  0000  0000  0000  0278  2DB4  ..............x-4
5F0  08CA  0421  44CE  2083  4431  9B22  448C  4E68  .J.!DN .D1."D.Nh
5F8  44FE  389C  44D4  0228  448D  26C1  424C  78C3  D.!.DT.(D.&ABLxC
600  4221  7E45  C22C  CECA  C22C  010A  C22C  0A5A  B!.ER.0JB*..B*.Z
608  0000  0000  0000  0000  0000  0000  0278  2EE0  ..............x.`
610  08CA  0421  44D1  DB93  4434  9EEA  448A  499E  .J.!DQC.D4.JD.I.
618  4510  0C5C  44D8  5A7A  448B  29B4  424B  EC6E  E..\DXZ.D.)4BKLN
620  4220  95EE  C22D  13EA  C22C  EEBA  C22D  342A  B..nB-..JB.n!B-4*
628  0000  0000  0000  0000  0000  0000  0278  300C  ..............x0.
630  08CA  0421  44D6  7AB6  4436  E300  4488  9553  .J.!DV.6D6c.D..S
638  4510  4250  44DD  67D2  4489  7F5E  424B  A145  E.BPD]gRD..)BK!E
640  421F  ABBB  C232  62DA  C232  A95A  C232  A5DA  B.+.B2eZB2)ZB2%Z
648  0000  0000  0000  0000  0000  0000  0278  3138  ..............x18
650  08CA  0421  44D9  9388  4438  059C  4487  B225  .J.!DY..D8..D.2%
658  4510  6787  44E0  AC10  4488  A365  424B  8F9B  E.g.D`,.D.#eBK..
660  421F  217E  C231  EB4A  C231  A85A  C232  139A  B.!.B1kJB1(ZB2..
668  0000  0000  0000  0000  0000  0000  0278  3264  ..............x2d
670  08CA  0421  44DD  D325  4439  7D1A  4486  254E  .J.!DI92D9..D.uD
678  4510  9AFE  44E5  26FD  4487  700E  424B  787F  E...De&.D.p.BKx.
680  421E  6721  C233  2BCA  C232  634A  C231  B23A  B.g!B3+JB2cJB1.:
688  0000  0000  0000  0000  0000  0000  0278  3390  ..............x3.
690  08CA  0421  44E2  1020  443A  F0ED  4485  40E0  .J.!Hm. D:pmD.@`
698  4510  CF35  44E9  9E9A  4486  454A  4248  62FB  E.O5Di..D.EJBKe,
6A0  421D  B329  C231  457A  C230  AF8A  C231  54DA  B.3)B1E.B0/.B1TZ
6A8  0000  0000  0000  0000  0000  0000  1678  34BC  ..............x4(
6B0  08CA  0421  44E6  67D3  4430  0D43  4483  5111  .J.!DfgSDm.CD.Q.
6B8  4511  0229  44EE  5B34  4484  5FFB  424B  2BB9  E..)DnC4D._.BK(9
6C0  421C  D9EC  C231  54DA  C230  8B6A  C230  190A  B.Y.B1TZB0.jB0..
6C8  0000  0000  0000  0000  0000  0000  0278  35E8  ..............x5h
6D0  08CA  0421  44EA  2173  443E  D4C3  4482  6048  .J.!DJ!sD)TCD.`H
6D8  4511  33FC  44F2  69F1  4483  7851  424A  FA61  E.3.Dryq.xQBJ.a
6E0  421C  45DF  C22F  B61A  C22E  345A  C22E  244A  B.E?B/6.B/4ZB/$J
6E8  0000  0000  0000  0000  0000  0000  1278  3714  ..............x7.
6F0  08CA  0421  44EE  064A  4440  CA3A  4480  ERB7  .J.!Dn.JD@J:D.k7
6F8  4511  6571  44F6  AF16  4482  0DB6  424A  C5E5  E.eqDv/.D...BJEe
700  421B  979B  C22D  519A  C22C  752A  C22C  666A  B...R-Q.B,u*B,fj
```

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708  0000 0000 0000 0000 0000 0000 5278 3840 ..........Rx8@
710  08CA 0421 44F1 B9E7 4442 8848 447F E290 .J.!Dq9gDB.HD.B.
718  4511 9723 44FA B6D8 4481 0DBC 424A 9C68 E..#D.6XD..<BJ.H
720  421B 067C C22D 362A C22D 0A5A C22C 310A B...B-6*B..ZB.1.
728  0000 0000 0000 0000 0000 0000 5278 396C ..........Rx9L
730  08CA 0421 44F5 BF11 4443 5333 447E AA4D .J.!DU?.DCS3D.*M
738  4511 C8C2 44FE CCF6 447F DF2D 424A AD06 E.HB.LvD..-BJ-V
740  4216 6EC3 C22A E60A C22A 99EA C22A C2BA B.nC.*F.D*..JB*B:
748  0000 0000 0000 0000 0000 0000 1278 3A98 ..........x:.
750  08CA 0421 44F6 25E6 4443 BC23 442D 221D .J.!D.%vDC<#D."
758  4511 FC8C 4510 327D 447E 6173 424A D948 E...E.2.D.asBJYH
760  4219 C602 C22E 83FA C22E 379A C22D C1EA B.F.B...B.7.B-AJ
768  0000 0000 0000 0000 0000 0000 0278 38C4 ..........x?D
770  08CA 0421 44FE 41CA 4444 71ED 447B F6D7 .J.!D.AJDDqmD.vY
778  4512 3076 4510 74EA 447D 4056 424A EEEC E.0vE.tJD.GVBJnL
780  4219 35FF C22D 6856 C22D E0CA C22D D2EA B.5.B=hZB=`JB=R.
788  0000 0000 0000 0000 0000 0000 0278 3CF0 ..........x<p
790  08CA 0421 4510 299E 4445 0492 447A CD04 .J.!E.).DE..D.M.
798  4512 67A5 4510 BA6C 447C 214E 4248 0E7E E.gZE.:LD.!NBK..
7A0  4218 A565 C22E 204A C22E A146 C22E 379A B.%eB/..JB.!JB.7.
7A8  0000 0000 0000 0000 0000 0000 0278 3E1C ..........x>.
7B0  08CA 0421 4510 67DC 4445 71FF 447A 1A1E .J.!E.g\DEq.D.z..
7B8  4512 9B64 4510 F855 447B 782D 424B 2E5F E...pE.xUD.x-BK._
7C0  4218 369B C22E 1B8A C22D B16A C22D A0BA B.6.B...B=QJB=:.
7C8  0000 0000 0000 0000 0000 0000 1278 3F48 ..........x?H
7D0  08CA 0421 4510 A864 4446 DA7C 4478 4B26 .J.!E.(pDET.DxK&
7D8  4512 CDE6 4511 3C64 4479 8420 424B 1E0C E.MfE.<pDy4 BK..
7E0  4217 9124 C22E 533A C22D ED3A C22E 7516 B..$B.S:B=-:B.u.
7E8  0000 0000 0000 0000 0000 0000 5678 4074 ..........Vx@t
7F0  08CA 0421 4510 E430 4447 DC22 4477 7040 .J.!E.nQDG\"Dwp@
7F8  4513 016C 4511 7A69 4478 E34C 424B 1C30 E...E.xDxcLBK.0
800  4217 2095 C22E A82A C22E 09BA C22E 31EA B.. B.*.B/.:B/1.
808  0000 0000 0000 0000 0000 0000 1278 41A0 ..........xA
810  08CA 0421 4511 2338 4449 9289 447A 2F55 .J.!E.#8DI..Dz/U
818  4513 3854 4511 BE75 4477 AD9B 424A FA00 E.8TE.)uDw-.BJ..
820  4216 99ER C22E 6D2A C22E 05A6 C22E 55CA B..uB/m.B/.&B/UJ
828  0000 0000 0000 0000 0000 0000 0278 42CC ..........xBL
830  08CA 0421 4511 63E6 4446 6A5B 4475 2638 .J.!E.cfDJJ[Du&8
838  4513 6F15 4512 0063 4476 B38B 424B 06E6 E.o.E..cDv3.BK.F
840  4216 22DC C231 495A C231 BB1A C231 C2BA B."\1IZB;.B1B:
848  0000 0000 0000 0000 0000 0000 0278 43F8 ..........xCx
850  08CA 0421 4511 A189 444B 679H 4474 1P0B .J.!E.!.DKg.Dt..
858  4513 A38B 4512 3FF2 4475 AF26 424B 08D4 E.#E.?rDu/&BK.T
860  4215 AF29 C232 D67A C233 1ABA C232 D2EA B./.B2V.B3.:B2Y.j
868  0000 0000 0000 0000 0000 0000 0278 4524 ..........xE$
870  08CA 0421 4511 DC27 444C B72B 4473 3136 .J.!E.\'DLz(Ds16
878  4513 D826 4512 7E07 4474 D001 424A F8F8 E.X&E...DtP.BJx.
880  4215 45B0 C233 782A C233 1AEA C232 A9BA B.E0B3x*B3.jB2):
888  0000 0000 0000 0000 0000 0000 0278 4650 ..........xFP
890  08CA 0421 4512 13A6 444D D008 4472 5B46 .J.!E..&DMz.DrEF
898  4514 09C0 4512 B657 4474 0434 424A EF45 E..@E.6WDt.4BJoE
8A0  4214 E591 C233 2EF0 C232 ACUA C232 6D7A B.e.B3..B2:ZB2m.
8A8  0000 0000 0000 0000 0000 0000 0278 477C ..........x@.
8B0  08CA 0421 4512 47SF 444E 008F 4471 8AC3 .J.!E.G_DN..Dq.C
8B8  4514 3855 4512 EF12 4473 3D58 424A E22A E.8UE.o.Ds=XBJ*
8C0  4214 88C0 C232 9ED0 C232 BACA C232 429A B..@B2.ZB2:JB2B.
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8C8  0000 0000 0000 0000 0000 0000 0678 48A8 ..............xH(
8D0  08CA 0421 4512 7A1B 4450 2A72 4470 C645 .J.!E...DP*rDpFE
8D8  4514 6685 4513 24E8 4472 8276 424A D3F7 E.f.E.$hDr.vBJSw
8E0  4214 3443 C232 69FA C232 463A C232 C8AA B.4cB2i.B2F:B2H*
8E8  0000 0000 0000 0000 0000 0000 0278 49D4 .............xI.
8F0  08CA 0421 4512 B26C 4451 2A63 446F 60B1 .J.!E.2lDQ*cDo`0
8F8  4514 95E5 4513 5F73 4471 2797 424A D1E5 E...eE._sDq'.BJQe
900  4214 C3BD C232 C1BA C232 89DA C232 E0CA B.C=B2A:B2.JB2`J
908  0000 0000 0000 0000 0000 0000 1278 4B00 .............xK.
910  08CA 0421 4512 E3YE 4452 2C4A 446E 9E3F .J.!E.c.DR,JDn.?
918  4514 C284 4513 9326 4470 6E73 424A CA14 E.B.E..&DpnsBJJ.
920  4213 73E2 C233 033A C232 9BDA C232 E85A B.sgB3.:B2.:B2kZ
928  0000 0000 0000 0000 0000 0000 0278 4C2C .............xL,
930  08CA 0421 4513 16CD 4453 1F53 446D AC3R .J.!E..MDS.SDm,R
938  4514 EFE7 4513 C686 446F 8648 424A C682 E.ogE.H.Do.HBJF.
940  4213 1C3A C234 EBZA C234 250A C234 21FA B..:B4..B4%.B4!.
948  0000 0000 0000 0000 0000 0000 0278 4D58 .............xMX
950  08CA 0421 4513 4ABF 4454 0FEQ 446C E9D9 .J.!E.J?DT.`DlIY
958  4515 1F18 4513 FE98 446E CDFC 424A C409 E...E...DnM.BJD.
960  4212 CD11 C234 E9EA C235 2CCA C235 015A B.M.B4x.B5;.B5.Z
968  0000 0000 0000 0000 0000 0000 0278 4E84 .............xN.
970  08CA 0421 4513 7D52 4454 94E4 446C 6403 .J.!E..RDT.tDl.d
978  4515 4C9B 4514 3195 446E 51BB 424A D2F9 E.L.E.1.DnQ;BJRy
980  4212 8B90 C234 99EA C234 1594 C234 ED3A B...B4..B4..B4m:
988  0000 0000 0000 0000 0000 0000 0278 4FB0 .............xO0
990  08CA 0421 4513 B0ZD 4455 7CA2 446B 2761 .J.!E.0.DU.|Dk'a
998  4515 76F4 4514 66C1 446D 1F3C 424A D156 E.vtE.fADm.<BJQV
9A0  4212 2C60 C234 CK5A C234 F5AA C234 D83A B..`B4UZB4u*B4X:
9A8  0000 0000 0000 0000 0000 0000 0278 50DC .............xP\
9B0  08CA 0421 4513 E2C4 4456 1L90 446A 0E45 .J.!E.bDV..Dj.E
9B8  4515 A432 4514 99ED 446C 1015 424A DACE E.$2E..mDl...BJZN
9C0  4211 D5E2 C236 2DAA C235 D7AA C236 003A B.UnB6-*B5W*B6.:
9C8  0000 0000 0000 0000 0000 0000 0278 5200 .............xR.
9D0  08CA 0421 4514 1253 4457 1E3A 4469 09B7 .J.!E..RDW.:Di.7
9D8  4515 CEF7 4514 CC03 446B 1523 424A D28A E.NwE.L.Dk.#BJR.
9E0  4211 84E5 C236 4AAA C235 E53A C235 C47A B..eB6J*B5e:B5D.
9E8  0000 0000 0000 0000 0000 0000 0278 5334 .............xS4
9F0  08CA 0421 4514 3R9C 4458 6656 446B 8C57 .J.!E.$.DXfVDk.W
9F8  4515 F7C5 4514 F93C 446A A09A 424A B9FD E.wEE.y<Dj .BJ9.
A00  4211 4DE6 C237 5C0A C237 59A6 C237 4DAA B.MfB2\.B2Y&B2Mx
A08  0000 0000 0000 0000 0000 0000 0278 5460 .............xT`
A10  08CA 0421 4514 6926 4459 27FA 446Z BD49 .J.!E.i&DY'.Dg=I
A18  4516 20F7 4515 285A 4469 DADE 424A BADF E. w(.(ZDiZ^BJ:_
A20  4211 099E C237 995A C237 4D3A C237 183A B...B7.ZB7M:B7.:
A28  0000 0000 0000 0000 0000 0000 0278 558C .............xU.
A30  08CA 0421 4514 94B1 4459 9EE2 4466 EB0A .J.!E..1DY.bDf..
A38  4516 477F 4515 5450 4469 215E 424A C669 E.G.E.TPDi!^BJFi
A40  4210 C6A5 C237 F4EA C237 8F9A C237 703A B.JZB7tJB7..B7p:
A48  0000 0000 0000 0000 0000 0000 0278 56B8 .............xV8
A50  08CA 0421 4514 C275 4459 B79F 4466 00BA .J.!E.BuDY..Df.:
A58  4516 6CF8 4515 801C 4468 2FDC 424A EA2E E.lxE...Dh/\BJJ.
A60  4210 B40E C237 60DA C237 29BA C236 F82A B...B7`ZB7):B6x*
A68  0000 0000 0000 0000 0000 0000 0278 57E4 .............xWd
A70  08CA 0421 4514 EA9B 4459 FC9B 4465 4EDE .J.!E.j.DY..DeN^
A78  4516 90D5 4515 A6C4 4467 863A 424A F322 E..UE.(DDg.:BJs"
A80  4210 4BA6 C238 00FA C237 A9EA C237 969A B.K&B8..B7)jB7..
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A88  0000  0000  0000  0000  0000  0000  0278  5910  ..............xY.
A90  08CA  0421  4515  13E5  445A  2986  4464  93C7  .J.!E..eDZ).Dd.G
A98  4516  B494  4515  D162  4466  D368  424D  082F  E.4.E.QbDfSHBK./
AA0  4210  1291  C232  F37A  C237  831A  C237  C29A  B...B7s.B7..B7B.
AA8  0000  0000  0000  0000  0000  0000  0278  5A3C  .............xZ<
AB0  08CA  0421  4515  3D6B  445A  D412  4463  C76C  .J.!E.=kDZT.DcGL
AB8  4516  DA48  4515  FC40  4466  0FDA  424D  094A  E.ZHE..@Df.ZBK.J
AC0  41FD  60AB  C238  A0BA  C238  DAFA  C238  E27A  A.`+B8 :B8Z.B8b.
AC8  0000  0000  0000  0000  0000  0000  0278  5B68  .............xEh
AD0  08CA  0421  4515  669E  445B  6091  4463  405E  .J.!E.f.DL`.Dc@^
AD8  4517  007D  4516  2652  4465  9181  424B  0E0F  E..}E.&RDe..BK..
AE0  41EA  5378  C239  A1BA  C239  B54A  C239  382A  A.SxB9!:B9.JB98*
AE8  0000  0000  0000  0000  0000  0000  0278  5C94  .............x\.
AF0  08CA  0421  4515  9078  445C  3512  4462  5716  .J.!E..xD\5.DbW.
AF8  4517  26D9  4516  522F  4464  B15D  424B  09A0  E.&YE.R/Dd1]BK.
B00  41E6  5323  C238  E4EA  C238  DB7A  C239  4C5A  AvS#B8d.B8X.B9LZ
B08  0000  0000  0000  0000  0000  0000  0278  5DC0  .............x]@
B10  08CA  0421  4515  B3F6  445D  0E14  4461  6455  .J.!E.3vD]..Da$U
B18  4517  4658  4516  77F9  4464  068F  424A  FF95  E.HXE.wyDd..BJ..
B20  41E3  2004  C23A  8DEA  C23A  406A  C23A  182A  As .B:.jB:@*B:.*
B28  0000  0000  0000  0000  0000  0000  0278  5EEC  .............x^l
B30  08CA  0421  4515  D249  445D  B66F  4461  03E7  .J.!E.RID]6oDa..g
B38  4517  64A6  4516  97FD  4463  6CE3  424A  F9B5  E.d&E...DclcBJy5
B40  41E0  58E9  C23A  82B6  C23A  10EA  C23A  0C5A  A`XiB:.6B:.jB:.Z
B48  0000  0000  0000  0000  0000  0000  0278  6018  .............x`.
B50  08CA  0421  4515  F15A  445D  8DD9  4460  2DA9  .J.!E.qZD]..Y`)-
B58  4517  70BF  4516  B556  4462  9CE4  424B  1437  E...E.5VDb.bBK.7
B60  41ED  3659  C23B  DEEA  C23B  E6BA  C23C  20EA  Am6YB;^.B;f:B<.j
B68  0000  0000  0000  0000  0000  0000  0278  6144  .............xaD
B70  08CA  0421  4516  132A  445D  7553  445E  6E95  .J.!E..*D]uSD^n.
B78  4517  99C0  4516  D5A0  4461  E4B6  424B  2DC5  E..@E.U Da`6BK-E
B80  41EA  38F1  C23B  BBDA  C23B  6E4A  C23B  765A  AJ8qB;;ZB;nJB;vZ
B88  0000  0000  0000  0000  0000  0000  0278  6270  .............xbp
B90  08CA  0421  4516  371C  445D  438F  445E  0198  .J.!E.7.D]C.D^..
B98  4517  B8E9  4516  F798  4461  7F02  424B  4C36  E.8iE.w.Da..BKL6
BA0  41E7  EEB0  C23C  20EA  C23B  D35A  C23B  B406  Agn.B<. .B;SZB;4.
BA8  0000  0000  0000  0000  0000  0000  0278  639C  .............xc.
BB0  08CA  0421  4516  5A95  445D  3823  445E  48H4  .J.!E.Z.D]8#D^H4
BB8  4517  D71A  4517  198C  4460  CD80  424B  6441  E.W.E..<D`M.BKbA
BC0  41E4  F70F  C23B  8C2A  C23C  3CEA  C23C  9F46  Adw.B;.*B<<.j<.J
BC8  0000  0000  0000  0000  0000  0000  0278  64C8  .............xdH
BD0  08CA  0421  4516  7D76  445D  9C8A  445D  A457  .J.!E..vD]..D]$W
BD8  4517  F6D4  4517  3D10  4460  30D0  424B  6AF8  E.vTE.=.D`0PBKjx
BE0  41E2  2CDA  C23D  99BA  C23C  6D5A  C23C  8D36  Ab:ZB=.:B<mZB<.6
BE8  0000  0000  0000  0000  0000  0000  0278  65F4  .............xet
BF0  08CA  0421  4516  A36D  445D  1104F  445D  4856  .J.!E.#`D]PODJHZ
BF8  4518  1A17  4517  62DC  445F  DD1B  424B  7AE0  E...E.b\D_].BK.`
C00  41DF  F9B3  C23C  CC1A  C23C  E236  C23C  FECA  A_y3B<L.B<b:B<.J
C08  0000  0000  0000  0000  0000  0000  0278  6720  .............xg
C10  08CA  0421  4516  C2EE  445E  66D7  445C  7193  .J.!E.B.D^fWD\q.
C18  4518  384C  4517  6861  445F  0E95  424B  7AE0  E.8LE..hD_..BK.`
C20  41DC  B591  C23D  8C2A  C23D  B7DA  C23D  A10A  A\5.B=.*B=ZZB=!.
C28  0000  0000  0000  0000  0000  0000  0678  684C  .............xhL
C30  08CA  0421  4516  E579  445E  4276  445B  6DF7  .J.!E.eyD^Bv[Dm~W
C38  4518  5770  4517  A854  445E  520C  424B  6C90  E.WpE.(TD^R.BKl.
C40  41D9  D786  C23D  4CAA  C23C  E8DA  C23C  B7FA  AYW.B=L*B<hZB<7.
```

```
C48  0000 0000 0000 0000 0000 0000 0278 6978 ..............xix
C50  08CA 0421 4517 006A 445F EDE3 445N 94R2 .J.IE..JD_mcDL.7
C58  4518 7311 4517 C523 445E 3F2E 4248 63EF E.s.E.E#D^?.BKco
C60  41D8 9:8D C23E 0D6A C23R 4F8A C23D A31A AX.=R).JB=/.R=$.
C68  0000 0000 0000 0000 0000 0000 0278 6AA4 .............xJ$
C70  08CA 0421 4512 2011 4460 AC3F 445A B633 .J.IE. .D`,7DZ.3
C78  4518 8FD8 4517 E6C5 4450 3837 424B 5B78 E..IE.FED.J8/BKEx
C80  41D5 1451 C23D 41FA C23C E6AA C23C C0EA AU.IR=A.B(F*B(@J
C88  0000 0000 0000 0000 0000 0000 0278 6BD0 .............xkP
C90  08CA 0421 4512 44B3 4461 735E 4459 FAE0 .J.IE.D3Da$^DY.F
C98  4518 B360 4518 005B 445C B59D 424B 54DB E.3mE..[D\5.BKTE
CA0  41D2 9026 C23D 9EFA C23D 750A C23D BE0A AN.&R=..B=u.R=).
CA8  0000 0000 0000 0000 0000 0000 0278 6CFC .............xL.
CB0  08CA 0421 4517 69E0 4462 5333 4459 7447 .J.IE.i`DbS3DYtG
CB8  4518 D7FF 4518 34DD 445C 37E4 424B 481B E.W.E.4JD\7dBKK.
CC0  41D0 15D2 C23F 73BA C23F 98CA C23F E70A AP.RB2?.B7.JB7g.
CC8  0000 0000 0000 0000 0000 0000 0278 6E28 .............xn(
CD0  08CA 0421 4517 BBF4 4463 A15E 4458 B74E .J.IE..;Dc!^DX.N
CD8  4518 FA00 4518 5B23 445B 53A5 424B 2FF0 E...E.[#D[SZBK/p
CE0  41DC C80B C240 1F2A C23F BB0A C23F CA8A ALH.H@.*B?L.B?J.
CE8  0000 0000 0000 0000 0000 0000 0278 6F54 .............xoT
CF0  08CA 0421 4517 6A3A 4464 E3CA 4458 2D50 .J.IE.*:DdcJDX+P
CF8  4519 1A51 4518 7D92 445A FF89 424B 1477 E..QE...DZ..BK.w
D00  41D6 E4B8 C240 9A9A C240 B0BA C240 BA6A AJ@HD@..R@.:B@.J
D08  0000 0000 0000 0000 0000 0000 0278 7080 .............xp.
D10  08CA 0421 4517 CA62 4465 EA4C 4457 D70E .J.IE.J@De.LDWW.
D18  4519 3B9C 4518 A0DD 445A B366 424B 02D7 E.;.E. ]DZ3fBK.W
D20  41C9 1097 C240 EEA6 C241 07BA C241 24CA AI..B@n*BA..BA$J
D28  0000 0000 0000 0000 0000 0000 0278 71AC .............xq,
D30  08CA 0421 4517 E874 4467 B10E 4457 2462 .J.IE.htDq..DW$b
D38  4519 5C00 4518 C482 445A 08FF 424A 0C06 E.\.E.D.DZ..BJ\.
D40  41C6 6E38 C242 666A C242 222A C242 1EA4 AFn8BBf*BB":BB.$
D48  0000 0000 0000 0000 0000 0000 0278 72D8 .............xrX
D50  08CA 0421 4517 EEDA 4468 DD7A 4456 74FF .J.IE..ZDhJ.DVt.
D58  4519 7540 4518 E0CD 4459 6036 424A B9AF E.uME.`HDY`6BJ9/
D60  41CA 11E4 C241 EECA C241 DE2A C242 455A AD.*BA.JBA.*BBEZ
D68  0000 0000 0000 0000 0000 0000 0278 7404 .............xt.
D70  08CA 0421 4518 12BC 4469 9C45 4456 4B70 .J.IE..(Dx.EDVKp
D78  4519 89A0 4518 F629 4459 3BA3 424A AA83 E.. E.v)DY;#BJ*3
D80  41C3 1406 C241 C55A C241 7C3A C241 71C4 AC..BAEZBA.:BAqJ
D88  0000 0000 0000 0000 0000 0000 0278 7530 .............xu0
D90  08CA 0421 4518 225D 446A 0834 4455 A137 .J.IE."]DJ.4DU!7
D98  4519 970E 4519 0705 4458 9561 424A A542 E..^E...DX.eBJZB
DA0  41C1 2004 C241 DC4A C241 B56A C241 B51A AA .BA\JBA5JBA..
DA8  0000 0000 0000 0000 0000 0000 0278 765C .............xv\
DB0  08CA 0421 4518 32CF 4464 4CA0 4455 4041 .J.IE.2OdJL DUA@
DB8  4519 A739 4519 1803 4458 3868 424A A5CB E.'9E...DX8hBJZK
DC0  41BE CD44 C242 6B5A C242 48DA C242 E40A A2MDBBm/BBH7RB.
DC8  0000 0000 0000 0000 0000 0000 1278 7788 .............xw.
DD0  08CA 0421 4518 43A4 446B B478 4454 9462 .J.IE.C$Dk.xDT."
DD8  4519 69F5 4519 206B 4457 91DA 424A 8528 E.9uE. kDW.ZBJ.(
DE0  41BD 1BE5 C243 518A C243 0B6A C243 G03A A=BuBCQ.BC.JBC.:
DE8  0000 0000 0000 0000 0000 0000 0278 78B4 .............xx4
DF0  08CA 0421 4518 590C 446C B00B 4453 BBF1 .J.IE.Y.DL..DSfq
DF8  4519 CF80 4519 4640 4456 BF10 424A 6FC5 E.O.E.F@DV?.BJoE
E00  41BB 2CF7 C244 217A C244 104A C244 217A A;,wBD!.BD.ZBD!.
```

```
E08  0000 0000 0000 0000 0000 0000 0278 79E0 ..............xy`
E10  08CA 0421 4518 7013 446D 62FC 4453 4DFB .J.!E.pSDmb.D8K.
E18  4519 E841 4519 60F7 4456 5571 424A 5F52 E.hAE.`wDVUqBJ_R
E20  41B9 7AD4 C243 B9CA C244 B24A C244 F05A A9.zTC9JBD2JBDpZ
E28  0000 0000 0000 0000 0000 0000 5278 7B0C ..............Rx..
E30  08CA 0421 4518 89AE 446E 1B6B 4452 D94B .J.!E...Dn.kDRYK
E38  451A 0150 4519 7C03 4455 E934 424A 556A E..PE...DUi4BJUJ
E40  41B7 C3B5 C246 436A C246 26AA C246 661A A7C5BFCJBF&*BFf.
E48  0000 0000 0000 0000 0000 0000 0278 7C38 ..............x.8
E50  08CA 0421 4518 90B2 446F D219 4451 E504 .J.!E..2Po2.DQe.
E58  451A 17F3 4519 962D 4454 FBB8 424A 2AB5 E..sE..-DT.BBJ*5
E60  41B3 001D C246 242A C246 6F0A C247 4AAA A5..BF$*BFo.BGJ*
E68  0000 0000 0000 0000 0000 0000 1278 7D64 ..............x.d
E70  08CA 0421 4518 AA2E 4471 72B2 4451 4234 .J.!E.*/DqR2DQB4
E78  451A 2949 4519 A9E1 4454 5B27 4249 F619 E.)!E.)aDT['BIv.
E80  41B3 19F4 C246 BE5A C246 BB5A C247 76EA A3.tBF+ZBF.ZBGv.
E88  0000 0000 0000 0000 0000 0000 0278 7E90 ..............x..
E90  08CA 0421 4518 B496 4471 C96C 4451 1EAE .J.!E.4.DqIlDQ..
E98  451A 3421 4519 B560 4454 3C67 4249 F0E5 E.4!E.5`DT<gBIpe
EA0  41B2 7EB1 C247 9BEA C248 9C7A C248 EC3A A2.1BG.;BH.|BH.:
EA8  0000 0000 0000 0000 0000 0000 0278 7FBC ..............x.(
EB0  08CA 0421 4518 C2D0 4471 CDE4 4450 E4BE .J.!E.BPDqM.DPd?
EB8  451A 40ED 4519 C320 4454 05CA 4249 F909 E.@mE.C DT.JBIv.
EC0  41B1 A6BE C24B 6E5A C24B 296A C24B C88A A1&?BKnZBKjBKH.
EC8  0000 0000 0000 0000 0000 0000 0278 80E8 ..............x.H
ED0  08CA 0421 4518 D914 4471 6196 4450 5EF4 .J.!E.Y.Daa.DP^t
ED8  451A 5281 4519 B6AC 4453 B4BB 424A 151C E.R.E.V.D8.)BJ..
EE0  41B0 05BF C24C 6776 C24B D504 C24B B6EA A0..BLg.BKU.BK6.
EE8  0000 0000 0000 0000 0000 0000 0678 6214 ..............x..
EF0  08CA 0421 4518 E290 4471 C77H 444E 9316 .J.!E.b.DqG.DD..
EF8  451A 69DD 4519 F0EB 4452 BF3F 424A 1703 E.iJE.pkDR??BJ..
F00  41AD A5EB C24B 44EA C24B 2EEA C24B A7DA A-%kBKDjBK/.BK!Z
F08  0000 0000 0000 0000 0000 0000 0678 8340 ..............x.@
F10  08CA 0421 4519 1192 4472 3A05 444E EB44 .J.!E...Dr:.DNkD
F18  451A 8717 451A 10B4 4452 1C30 424A 1A91 E...E..4DR.0BJ..
F20  41AB 6CC3 C24B 8BDA C24B 29EA C24B 723A A+lCBK.ZBKv.BKr:
F28  0000 0000 0000 0000 0000 0000 0278 846C ..............x.L
F30  08CA 0421 4519 346E 4472 FEE4 444E C53E .J.!E.4nDr.DNE?
F38  451A AAF1 451A 359A 4452 0235 424A 1593 E.*qE.5.DR.5BJ..
F40  41AA 3708 C24C 7BA6 C24B FF3A 433E 7E67 A*7.BL.&BK.:C>.g
F48  0000 0000 0000 0000 0000 0000 0278 8598 ..............x..
F50  08CA 0421 4519 5601 4474 080B 444E B4EE .J.!E.V.Dt..DNt.
F58  451A CF07 451A 5A6E 4452 0107 424A 06F1 E.O.E.ZnDR..BJ.q
F60  41A9 3902 C24C 141A C24B 9DA6 C24B A40A A)9.BL..BK.&BK$.
F68  0000 0000 0000 0000 0000 0000 0278 86C4 ..............x.D
F70  08CA 0421 4519 6FEB 4475 8F36 444E 4406 .J.!E.okDu/6DND.
F78  451A E059 451A 7AA7 4451 920A 4249 DF5B E.mYE..'DQ..BI_[
F80  41A7 76CC C24B EF26 C24B ECA6 C24C 663A A'vLBKo&BKl&BLf:
F88  0000 0000 0000 0000 0000 0000 1278 87F0 ..............x.p
F90  08CA 0421 4519 841E 4477 '2B4 444D 94C3 .J.!E...Dw*.DM.C
F98  451B 04F4 451A 94AB 4450 E945 4249 BA5B E..tE..+DPiEBI:[
FA0  41A5 6BEE C24C 362A C24C 0554 C24C 437A A%k.BL6*BL.ZBLC.
FA8  0000 0000 0000 0000 0000 0000 5678 891C ..............Vx..
FB0  08CA 0421 4519 9656 4478 B10E 444C B752 .J.!E..Vqx1.DL7R
FB8  451B 1A76 451A AD06 4450 11EB 4249 92F0 E..vE.-.DP.kBI.p
FC0  41A3 08A1 C24C 748A C24C 4E4A C24C 3EAA A#.!BLt.BLNJBL.>*
```

```
FC8  0000  0000  0000  0000  0000  0000  0278  8A48 ..............x.H
FD0  08CA  0421  4519  ACAB  4479  86C0  444C  A5F9 .J.!E.,+Dy.¢¥L%y
FD8  451B  3311  451A  C637  4450  06E5  4249  8517 E.3.E.F7DP.æBI..
FE0  41A2  4E2A  C24C  A28A  C24C  650A  C24C  4246 A"NvBL",BLe.BLBJ
FE8  0000  0000  0000  0000  0000  0000  0278  8874 ..............x.r
FF0  08CA  0421  4519  C80E  447A  4B35  444C  84EF .J.!E.H.D.K5DL.o
FF8  451B  4FFC  451A  E3F6  444F  ED56  4249  7C6E E.O.E.cvDOmVBI..
1000  41A1  5A65  C24C  D6BA  C24C  BC2A  C24C  5R7A A!ZeBLV:BL(¼BL{
1008  0000  0000  0000  0000  0000  0000  0000  2580 ..............%.
1010  0000  0000  C328  63D1  4381  4703  4417  7402 ....C(cQC.G.D.v.
1018  4418  F100  4387  70A3  4417  7980  4315  6A66 D.q.C.p#D.y.C.jf
1020  4246  28F6  4522  2F31  2D2D  2054  4522  2F31 BF(vE"/1-- TE"/1
1028  0000  0000  0000  0000  0000  0000  0000  2580 ..............%P
1030  0000  0000  C327  4997  4381  R6E0  4417  A87A ....C'I.C.6pD.(.
1038  4419  2100  4387  88A1  4417  A8C0  4315  7266 D.!.C..!D.+8C.rf
1040  4246  4CCD  4522  2F31  2D2D  2054  4522  2F31 BFLME"/1-- TE"/1
1048  0000  0000  0000  0000  0000  0000  0000  2620 ..............&
1050  0000  0000  C326  6EEE  4384  630E  4417  CD10 ....C&nnC.c.D.M.
1058  4419  5000  4389  DA9F  4417  D080  4315  7CF6 D.P.C.Z.D.P.C.|v
1060  4246  192A  4522  2E31  2D2D  2054  4522  2F31 BF..E"/1-- TE"/1
1068  0000  0000  0000  0000  0000  0000  0000  2670 ..............&p
1070  0000  0000  C325  CDA7  4386  6B2A  4417  F6C6 ....C%M'C.+*D..F
1078  4419  8600  4388  DF8D  4417  FE80  4315  851F D...C._=D...C...
1080  4245  E852  4522  2F31  2D2D  2054  4522  2F31 BExRE"/1-- TE"/1
1088  0000  0000  0000  0000  0000  0000  0000  26C0 ..............&@
1090  0000  0000  C324  1C92  4388  18BB  4418  2DC0 ....C$..C..!D.-@
1098  4419  BB00  438C  CE57  4418  31C0  4315  923D D.;.C.NWD.1@C..=
10A0  4246  0000  4522  2F31  2D2D  2054  4522  2F31 BF..E"/1-- TE"/1
10A8  0000  0000  0000  0000  0000  0000  0000  2710 ..............'.
10B0  0000  0000  C322  DE1B  438B  6DC9  4418  5C8E ....C"^.C.mID.\.
10B8  4419  F700  438F  B8F5  4418  5FC0  4315  9F5C D.w.C.8uD._@C..\
10C0  4245  C28E  4522  2F31  2D2D  2054  4522  2F31 BEB.E"/1-- TE"/1
10C8  0000  0000  0000  0000  0000  0000  0000  2760 ..............'`
10D0  0000  0000  C320  7E93  438E  6CFD  4418  866E ....C ..C..D..
10D8  441A  2D00  4392  5448  4418  89C0  4315  B2B8 D.-.C.TKD..@C.2¸
10E0  4245  BCCD  4522  2E31  2D2D  2054  4522  2E31 BE.ME"/1-- TE"/1
10E8  0000  0000  0000  0000  0000  0000  0000  27B0 ..............'0
10F0  0000  0000  C31F  CE8A  4391  A1B7  4418  BB7D ....C.N.C.!7D.;}
10F8  441A  6800  4395  106C  4418  88C0  4315  BAE1 D.h.C...D.!@C.:á
1100  4245  5996  4522  2F31  2D2D  2054  4522  2F31 BEY.E"/1-- TE"/1
1108  0000  0000  0000  0000  0000  0000  0000  2800 ..............(.
1110  0000  0000  C31E  D244  4393  45E2  4418  E9C2 ....C.RDC.EâD.éB
1118  441A  A100  4396  76A0  4418  EC80  4315  C2E1 D.!.C.v-D.l.C.Bá
1120  4245  51EC  4522  2E31  2D2D  2054  4522  2F31 BEQlE"/1-- TE"/1
1128  0000  0000  0000  0000  0000  0000  0000  2850 ..............(P
1130  0000  0000  C31D  935C  4396  310C  4419  17F0 ....C..\C.1.D...p
1138  441A  DB00  4399  136F  4419  18C0  4315  CDC3 D.[.C..oD..@C.MC
1140  4245  2148  4522  2F31  2D2D  2054  4522  2F31 BE!HE"/1-- TE"/1
1148  0000  0000  0000  0000  0000  0000  0000  28A0 ..............(
1150  0000  0000  C31C  E450  4398  C1C0  4419  4FFA ....C.dPC.A@D.O.
1158  4418  1D00  439B  7710  4419  5300  4315  D4A4 D...C.w.D.S.C.T¤
1160  4245  0000  4522  2E31  2D2D  2054  4522  2F31 BE..E"/1-- TE"/1
1168  0000  0000  0000  0000  0000  0000  0000  28F0 ..............(p
1170  0000  0000  C31C  12DC  439B  DE44  4419  7E4F ....C..\C.^DD..O
1178  4418  5900  439E  6052  4419  8100  4315  DCA4 D.Y.C.`RD...C.\¤
1180  4244  C7AE  4522  2F31  2D2D  2054  4522  2F31 BDG.E"/1-- TE"/1
```

ATTACHMENT 2

INPUT CO-RAWINSONDE FILE (CONTROL AND TAB)

UNITS SWITCH = 1
WINDS SWITCH = 0
OUTPUT SWITCH = 0
DEVICE SWITCH = 1
I.R. SWITCH = 0
SHEAR SWITCH = 0
SURFACE VX = .00000 FT/SEC
SURFACE VY = .00000 FT/SEC
SURFACE WIND DIRECTION = .00000 DEGREES
SURFACE WIND SPEED = .00000 FT/SEC
STATION NUMBER = 1
DAY = 18
MONTH = 1
YEAR = 1984
ALTITUDE INCREMENT = 820.21
RELEASE TIME = 1015.2010
TROPOPAUSE WIND DIRECTION = 260.0 DEGREES
TROPOPAUSE TIME = 3660.0 SECONDS
TROPOPAUSE GEOPOTENTIAL HEIGHT = 56307.22 FEET
TROPOPAUSE DEW POINT = -99.90 DEG. C
TROPOPAUSE GEOMETRIC HEIGHT = 56540.71 FEET
TROPOPAUSE I.R. = 35.23
TROPOPAUSE PRESSURE = 68.91 MBS
TROPOPAUSE TEMPERATURE = -72.30 DEG. C
TROPOPAUSE RELATIVE HUMIDITY = 999.00 %
TROPOPAUSE WIND SPEED = 51.87 KNOTS
STATION LATITUDE = 28.4833
TERMINATION GEOPOTENTIAL HEIGHT = 113912.50 FEET
TERMINATION PRESSURE = 5.46 MBS
FLIGHT IDENTIFICATION = 0074120018
SONDE TYPE = 101

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ROCS 3

ALTITUDE FEET	DIR DEG	SPD KTS	TEMP DEG C	DEW PT DEG C	PRESSURE MBS	RH PCT	AB HUM G/M3	DENSITY G/M3	IR N.	VS KTS	SHR /SEC	VPR MBS	PW MM
5.00	.0	.0	16.60	16.60	1018.30	100.0	14.13	1215.76	356.7	342.8	.000	18.90	.0
250.00	211.9	8.1	20.32	20.32	989.81	100.0	17.70	1164.24	365.6	345.3	.032	23.98	4.0
500.00	210.4	10.3	20.09	20.03	961.71	99.6	17.33	1132.00	356.2	345.2	.009	23.45	8.4
750.00	212.7	10.4	18.47	18.32	934.32	99.0	15.66	1106.67	341.1	344.1	.002	21.08	12.6
1000.00	219.7	10.5	16.94	16.89	907.56	99.7	14.39	1081.18	328.2	343.2	.005	19.27	16.4
1250.00	224.0	10.2	15.47	15.42	881.41	100.0	13.23	1055.86	315.9	342.2	.003	17.62	19.9
1500.00	224.9	9.7	14.21	13.73	855.91	97.1	11.69	1030.45	302.4	341.3	.002	15.76	23.0
1750.00	220.4	9.6	13.48	11.25	831.05	86.4	10.10	1003.95	285.7	340.8	.003	13.35	25.8
2000.00	229.4	10.7	12.50	10.62	806.80	88.3	9.72	978.08	277.8	340.2	.008	12.81	28.3
2250.00	232.7	11.8	11.66	7.19	783.19	74.8	7.84	953.26	260.8	339.5	.005	10.30	30.5
2500.00	232.6	12.1	10.87	4.98	760.19	67.0	6.65	928.40	248.1	338.9	.001	8.72	32.3
2750.00	229.1	11.9	10.08	3.50	737.79	63.9	6.06	903.81	239.0	338.4	.003	7.92	33.9
3000.00	220.9	12.3	9.09	.78	715.99	56.3	4.97	880.76	227.2	337.7	.007	6.47	35.3
3250.00	208.8	14.1	6.93	-.46	694.69	64.0	4.98	861.06	223.1	336.4	.013	6.44	36.5
3500.00	206.6	14.8	4.95	-4.15	673.88	52.0	3.50	842.04	209.7	335.1	.004	4.49	37.6
3750.00	202.6	13.8	3.51	-10.39	653.55	43.7	2.66	821.37	199.9	334.1	.006	3.40	38.4
4000.00	198.5	13.2	3.45	-23.29	633.76	11.9	.73	797.79	182.4	333.8	.005	.93	38.8
4250.00	196.3	13.8	2.27	-23.44	614.52	12.8	.72	776.87	177.7	333.1	.003	.92	39.0
4500.00	206.1	14.2	.46	-24.18	595.77	13.6	.68	758.16	173.3	332.0	.010	.86	39.1
4750.00	226.1	16.3	-1.24	-23.82	577.45	16.8	.71	740.78	169.6	330.7	.023	.89	39.3
5000.00	235.9	18.8	-3.69	-22.09	559.57	22.7	.84	722.96	166.5	329.5	.016	1.04	39.5
5250.00	236.7	19.5	-5.65	-21.19	542.13	28.6	.91	705.48	163.2	328.3	.003	1.13	39.7
5500.00	236.0	19.8	-7.64	-23.99	525.10	25.7	.73	688.56	158.2	327.1	.001	.89	39.9
5750.00	236.6	19.7	-9.30	-24.21	508.50	12.9	.45	671.15	152.5	326.0	.001	.54	40.1
6000.00	238.6	19.1	-10.88	-32.77	492.32	14.5	.32	653.77	147.8	325.0	.004	.39	40.2
6250.00	243.0	18.9	-12.90	-34.55	476.54	14.2	.27	637.25	143.9	323.8	.006	.32	40.2
6500.00	247.9	19.8	-15.06	-26.32	461.16	45.7	.69	622.06	143.3	322.5	.008	.82	40.4
6750.00	250.0	21.4	-16.82	-24.45	446.17	52.7	.74	605.93	140.1	321.4	.007	.88	40.5
7000.00	248.1	23.5	-18.41	-30.48	431.57	34.3	.43	589.94	134.4	320.3	.009	.50	40.7
7250.00	244.0	25.7	-20.24	-36.41	417.36	22.1	.23	574.75	129.7	319.2	.011	.27	40.8
7500.00	241.7	27.5	-22.02	-40.21	403.51	18.0	.16	559.67	125.8	318.0	.008	.18	40.8
7750.00	241.8	28.2	-23.81	-34.99	390.03	35.8	.27	544.79	123.3	316.9	.003	.31	40.9
8000.00	242.0	29.1	-25.45	-41.65	376.91	22.3	.16	530.02	119.2	315.8	.003	.18	40.9
8250.00	242.5	30.1	-27.11	-40.36	364.15	33.4	.18	515.50	116.2	314.8	.004	.21	41.0
8500.00	243.2	31.2	-28.85	-35.02	351.75	55.1	.28	501.45	113.7	313.7	.005	.31	41.0
8750.00	244.1	32.2	-30.69	-39.50	339.67	42.1	.18	487.95	110.0	312.5	.004	.20	41.1
9000.00	245.3	32.2	-32.30	-44.54	327.94	28.1	.10	474.29	106.4	311.4	.003	.11	41.1
9250.00	246.3	30.4	-34.52	-45.82	316.52	30.3	.09	462.03	103.6	310.0	.007	.10	41.1
9500.00	248.0	29.1	-36.57	-48.08	305.40	29.0	.07	449.68	100.7	308.7	.006	.08	41.2
9750.00	249.0	28.7	-38.22	-52.40	294.59	20.8	.04	436.82	97.6	307.6	.003	.05	41.2
10000.00	247.9	28.2	-40.25	-52.85	284.07	24.3	.04	424.90	95.0	306.2	.003	.04	41.2
10250.00	247.4	28.0	-42.00	-54.72	273.85	23.2	.03	412.23	92.2	305.1	.001	.04	41.2
10500.00	247.0	28.3	-44.09	-56.36	263.93	23.8	.03	401.40	89.6	303.7	.002	.03	41.2
10750.00	247.1	29.6	-46.14	-57.36	254.27	26.3	.02	390.21	87.1	302.3	.005	.02	41.2
11000.00	248.9	31.3	-47.95	-58.38	244.90	28.4	.02	378.85	84.6	301.1	.008	.02	41.2
11250.00	252.0	32.4	-50.14	-59.49	235.79	31.6	.02	368.34	82.2	299.7	.008	.02	41.2
11500.00	254.7	31.7	-52.58	-61.43	226.94	32.7	.01	358.42	80.0	298.0	.007	.01	41.2
11750.00	258.0	29.9	-54.64	-63.41	218.33	32.3	.01	348.08	77.6	296.6	.010	.01	41.2
12000.00	262.8	28.9	-56.91	-65.03	209.96	34.3	.01	338.25	75.4	295.1	.011	.01	41.2
12250.00	266.6	29.2	-58.88	-66.70	201.83	34.9	.01	328.15	73.2	293.7	.008	.01	41.2
12500.00	268.1	30.6	-60.17	99.90	193.97	999.0	99.99	317.27	70.7	292.9	.006	99.99	999.0
12750.00	266.4	33.0	-60.79	99.90	186.38	999.0	99.99	305.75	68.1	292.4	.010	99.99	999.0

13000.00	261.5	35.0	-61.58	99.90	179.06	999.0	99.99	294.85	65.7	291.9	.014	99.99	999.0
13250.00	259.4	34.4	-62.23	99.90	172.01	999.0	99.99	284.11	63.3	291.4	.006	99.99	999.0
13500.00	257.4	33.9	-62.69	99.90	165.22	999.0	99.99	273.49	60.9	291.1	.005	99.99	999.0
13750.00	257.2	35.2	-63.29	99.90	158.68	999.0	99.99	263.42	58.7	290.7	.005	99.99	999.0
14000.00	262.3	35.9	-64.14	99.90	152.38	999.0	99.99	253.97	56.6	290.1	.013	99.99	999.0
14250.00	265.3	36.7	-65.17	99.90	146.29	999.0	99.99	245.05	54.6	289.4	.008	99.99	999.0
14500.00	265.4	37.6	-65.20	99.90	140.45	999.0	99.99	235.29	52.4	289.4	.004	99.99	999.0
14750.00	260.9	38.0	-63.93	99.90	134.85	999.0	99.99	224.55	50.0	290.2	.012	99.99	999.0
15000.00	256.7	37.7	-64.27	99.90	129.49	999.0	99.99	215.96	48.1	290.0	.011	99.99	999.0
15250.00	256.6	36.9	-66.22	99.90	124.31	999.0	99.99	209.28	46.6	288.7	.004	99.99	999.0
15500.00	257.5	36.0	-67.96	99.90	119.29	999.0	99.99	202.54	45.1	287.4	.005	99.99	999.0
15750.00	257.0	35.7	-69.68	99.90	114.45	999.0	99.99	195.95	43.6	286.2	.002	99.99	999.0
16000.00	253.3	35.1	-71.35	99.90	109.75	999.0	99.99	189.47	42.2	285.1	.009	99.99	999.0
16250.00	250.4	34.6	-72.62	99.90	105.22	999.0	99.99	182.80	40.7	284.2	.007	99.99	999.0
16500.00	250.2	33.9	-74.13	99.90	100.84	999.0	99.99	176.52	39.3	283.1	.003	99.99	999.0
16750.00	251.8	32.3	-75.38	99.90	96.63	999.0	99.99	170.21	37.9	282.2	.007	99.99	999.0
17000.00	256.4	29.4	-76.21	99.90	92.56	999.0	99.99	163.74	36.5	281.6	.015	99.99	999.0
17250.00	259.9	26.5	-77.23	99.90	88.66	999.0	99.99	157.64	35.1	280.9	.013	99.99	999.0
17500.00	257.7	24.2	-76.17	99.90	84.91	999.0	99.99	150.17	33.5	281.6	.010	99.99	999.0
17750.00	254.8	20.9	-75.94	99.90	81.34	999.0	99.99	143.68	32.0	281.8	.014	99.99	999.0
18000.00	251.8	19.5	-75.96	99.90	77.91	999.0	99.99	137.65	30.7	281.8	.007	99.99	999.0
18250.00	250.4	18.4	-76.15	99.90	74.63	999.0	99.99	131.99	29.4	281.4	.005	99.99	999.0
18500.00	251.7	16.8	-76.53	99.90	71.49	999.0	99.99	126.67	28.2	281.4	.007	99.99	999.0
18750.00	252.8	14.5	-77.26	99.90	68.47	999.0	99.99	121.76	27.1	280.9	.009	99.99	999.0
19000.00	251.1	13.7	-77.55	99.90	65.57	999.0	99.99	116.78	26.0	280.6	.003	99.99	999.0
19250.00	246.5	15.3	-72.09	99.90	62.79	999.0	99.99	111.57	24.9	281.0	.008	99.99	999.0
19500.00	255.6	16.6	-74.38	99.90	60.16	999.0	99.99	105.44	23.5	282.9	.011	99.99	999.0
19750.00	265.5	13.2	-73.45	99.90	57.65	999.0	99.99	100.57	22.4	283.6	.015	99.99	999.0
20000.00	260.1	12.1	-72.43	99.90	55.27	999.0	99.99	95.92	21.4	284.3	.008	99.99	999.0
20250.00	254.4	11.8	-71.68	99.90	52.98	999.0	99.99	91.62	20.4	284.8	.005	99.99	999.0
20500.00	256.6	12.9	-71.61	99.90	50.80	999.0	99.99	87.62	19.6	284.9	.005	99.99	999.0
20750.00	258.1	15.1	-69.44	99.90	48.73	999.0	99.99	83.34	18.6	286.4	.009	99.99	999.0
21000.00	256.8	16.7	-67.99	99.90	46.75	999.0	99.99	79.39	17.7	287.4	.007	99.99	999.0
21250.00	253.3	17.8	-67.40	99.90	44.86	999.0	99.99	75.96	16.9	287.8	.006	99.99	999.0
21500.00	252.0	18.3	-65.56	99.90	43.06	999.0	99.99	72.27	16.1	289.1	.003	99.99	999.0
21750.00	254.3	18.2	-62.98	99.90	41.35	999.0	99.99	68.54	15.3	290.9	.003	99.99	999.0
22000.00	258.3	18.3	-61.53	99.90	39.72	999.0	99.99	65.39	14.6	291.9	.005	99.99	999.0
22250.00	257.1	18.6	-61.70	99.90	38.16	999.0	99.99	62.88	14.0	291.8	.002	99.99	999.0
22500.00	253.4	19.3	-62.12	99.90	36.66	999.0	99.99	60.53	13.5	291.5	.005	99.99	999.0
22750.00	254.2	19.1	-62.12	99.90	35.22	999.0	99.99	58.15	13.0	291.5	.002	99.99	999.0
23000.00	259.9	18.3	-61.44	99.90	33.84	999.0	99.99	55.69	12.4	292.0	.007	99.99	999.0
23250.00	265.6	17.1	-59.77	99.90	32.52	999.0	99.99	53.09	11.8	293.1	.008	99.99	999.0
23500.00	255.6	17.2	-59.37	99.90	31.26	999.0	99.99	50.94	11.3	293.4	.012	99.99	999.0
23750.00	251.9	18.1	-60.03	99.90	30.04	999.0	99.99	49.11	10.9	292.9	.006	99.99	999.0
24000.00	253.4	19.0	-60.60	99.90	28.87	999.0	99.99	47.32	10.5	292.6	.004	99.99	999.0
24250.00	262.6	19.7	-60.22	99.90	27.75	999.0	99.99	45.40	10.1	292.8	.013	99.99	999.0
24500.00	266.0	20.2	-59.13	99.90	26.67	999.0	99.99	43.41	9.7	293.6	.005	99.99	999.0
24750.00	263.9	20.4	-58.17	99.90	25.64	999.0	99.99	41.55	9.3	294.2	.003	99.99	999.0
25000.00	258.7	21.1	-57.75	99.90	24.65	999.0	99.99	39.87	8.9	294.5	.008	99.99	999.0
25250.00	259.8	22.9	-56.22	99.90	23.70	999.0	99.99	38.08	8.5	295.5	.008	99.99	999.0
25500.00	259.9	24.7	-54.11	99.90	22.80	999.0	99.99	36.27	8.1	297.0	.007	99.99	999.0
25750.00	259.6	26.4	-51.53	99.90	21.94	999.0	99.99	34.49	7.7	298.7	.007	99.99	999.0
26000.00	259.0	26.2	-51.80	99.90	21.12	999.0	99.99	33.24	7.4	298.5	.002	99.99	999.0
26250.00	258.3	26.0	-51.91	99.90	20.33	999.0	99.99	32.01	7.1	298.5	.001	99.99	999.0
26500.00	257.5	25.9	-51.66	99.90	19.57	999.0	99.99	30.78	6.9	298.6	.001	99.99	999.0
26750.00	256.6	26.4	-52.05	99.90	18.83	999.0	99.99	29.67	6.6	298.4	.002	99.99	999.0

27000.00	283.7	27.0	-52.65	99.90	18.13	999.0	99.99	28.64	6.4	298.0	.003	99.99	999.0	
27250.00	257.9	27.7	-52.76	99.90	17.44	999.0	99.99	27.57	6.1	297.9	.005	99.99	999.0	
27500.00	259.4	28.8	-52.54	99.90	16.79	999.0	99.99	26.51	5.9	298.0	.005	99.99	999.0	
27750.00	258.8	30.5	-51.75	99.90	16.16	999.0	99.99	25.43	5.7	298.6	.007	99.99	999.0	
28000.00	255.9	32.0	-51.47	99.90	15.55	999.0	99.99	24.44	5.4	298.8	.009	99.99	999.0	
28250.00	251.5	33.6	-51.59	99.90	14.97	999.0	99.99	23.54	5.2	298.7	.012	99.99	999.0	
28500.00	248.2	33.9	-50.86	99.90	14.41	999.0	99.99	22.59	5.0	299.2	.008	99.99	999.0	
28750.00	246.5	34.4	-50.11	99.90	13.88	999.0	99.99	21.67	4.8	299.7	.005	99.99	999.0	
29000.00	247.6	35.8	-49.55	99.90	13.36	999.0	99.99	20.82	4.6	300.1	.006	99.99	999.0	
29250.00	249.6	35.9	-49.52	99.90	12.87	999.0	99.99	20.04	4.5	300.1	.005	99.99	999.0	
29500.00	252.4	35.2	-49.90	99.90	12.39	999.0	99.99	19.33	4.3	299.8	.008	99.99	999.0	
29750.00	255.8	33.9	-49.35	99.90	11.93	999.0	99.99	18.57	4.1	300.2	.010	99.99	999.0	
30000.00	259.0	33.3	-48.40	99.90	11.49	999.0	99.99	17.81	4.0	300.8	.008	99.99	999.0	
30250.00	260.4	35.1	-47.12	99.90	11.02	999.0	99.99	17.06	3.8	301.6	.008	99.99	999.0	
30500.00	260.1	36.7	-46.47	99.90	10.66	999.0	99.99	16.38	3.7	302.1	.006	99.99	999.0	
30750.00	257.8	38.1	-46.41	99.90	10.27	999.0	99.99	15.78	3.5	302.2	.008	99.99	999.0	
31000.00	254.1	37.2	-46.58	99.90	9.90	999.0	99.99	15.22	3.4	302.0	.010	99.99	999.0	
31250.00	250.1	36.3	-46.72	99.90	9.53	999.0	99.99	14.67	3.3	301.9	.011	99.99	999.0	
31500.00	247.7	35.2	-48.25	99.90	9.18	999.0	99.99	14.22	3.2	300.9	.008	99.99	999.0	
31750.00	245.2	34.1	-49.81	99.90	8.84	999.0	99.99	13.80	3.1	299.9	.007	99.99	999.0	
32000.00	244.8	34.7	-50.99	99.90	8.51	999.0	99.99	13.35	3.0	299.1	.002	99.99	999.0	
32250.00	244.7	35.5	-52.12	99.90	8.20	999.0	99.99	12.92	2.9	298.3	.003	99.99	999.0	
32500.00	244.2	35.9	-52.74	99.90	7.89	999.0	99.99	12.47	2.8	297.9	.002	99.99	999.0	
32750.00	243.4	36.1	-53.10	99.90	7.59	999.0	99.99	12.02	2.7	297.7	.002	99.99	999.0	
33000.00	242.0	37.3	-52.10	99.90	7.31	999.0	99.99	11.52	2.6	298.3	.006	99.99	999.0	
33250.00	240.8	38.9	-50.55	99.90	7.04	999.0	99.99	11.01	2.5	299.4	.007	99.99	999.0	
33500.00	243.1	40.2	-48.87	99.90	6.78	999.0	99.99	10.52	2.3	300.5	.008	99.99	999.0	
33750.00	245.4	40.6	-47.23	99.90	6.53	999.0	99.99	10.06	2.2	301.6	.007	99.99	999.0	
34000.00	247.7	40.5	-45.60	99.90	6.29	999.0	99.99	9.63	2.1	302.7	.006	99.99	999.0	
34250.00	247.1	40.9	-43.61	99.90	6.06	999.0	99.99	9.20	2.1	304.0	.002	99.99	999.0	
34500.00	999.0	999.0	-41.48	99.90	5.84	999.0	99.99	8.79	2.0	305.4	.999	99.99	999.0	
34750.00	999.0	999.0	-39.71	99.90	5.63	999.0	99.99	8.41	1.9	306.6	.999	99.99	999.0	

BOS 3
8-78

ATTACHMENT 3

OUTPUT TABULAR FILE

TEST NI[redacted]000000 ASCENT NUMBER: 4029 CAPE CANAVERAL, A[redacted]LORIDA RUN DATE 29 MAR 1984 RUN TIME 14:49[redacted]
1515Z [redacted]AN 1984 SUPER LOKI DATASONDE FWN-10[redacted]

MSS TRACKING DATA									DIFFERENCE/MINUTE				
TIME SEC	AZIMUTH	ELEVATION	RNG MTS	MSL MTS	HR	MIN	SEC	TIME	AZIMUTH	ELEVATION	RANGE	ALTITUDE
54964.00	97.220	63.452	68727.75	61559.18	15	16	4	.00	.00	.00	.00	.00
54994.00	96.648	62.243	66771.56	59168.38	15	16	34	30.00	-2.14	-2.42	-3912.38	-4781.59
55024.00	96.273	61.079	65131.97	57091.23	15	17	4	30.00	-1.75	-2.33	-3279.19	-4154.31
55054.00	95.391	60.175	63606.01	55263.92	15	17	34	30.00	-1.76	-1.81	-3051.92	-3654.63
55084.00	94.009	59.529	62061.53	53571.64	15	18	4	30.00	-2.76	-1.29	-3088.96	-3384.56
55114.00	92.669	59.009	60687.93	52105.62	15	18	34	30.00	-2.68	-1.04	-2747.20	-2932.02
55144.00	91.239	58.485	59398.99	50718.74	15	19	4	30.00	-2.86	-1.05	-2575.88	-2773.22
55174.00	89.685	58.069	58147.28	49427.45	15	19	34	30.00	-2.71	-.83	-2505.41	-2582.59
55204.00	89.088	57.698	57064.67	48310.71	15	20	4	30.00	-1.59	-.74	-2165.23	-2233.48
55234.00	87.378	57.108	56141.60	47219.36	15	20	34	30.00	-3.42	-1.18	-1846.14	-2182.70
55264.00	85.625	56.200	55527.14	46221.23	15	21	4	30.00	-3.51	-1.82	-1220.91	-1994.24
55294.00	84.496	55.270	54995.21	45278.80	15	21	34	30.00	-2.26	-1.86	-1063.86	-1884.86
55324.00	82.649	54.844	54230.87	44330.41	15	22	4	30.00	-3.69	-.81	-1528.68	-1696.80
55354.00	81.203	54.432	53533.72	43618.07	15	22	34	30.00	-2.89	-.86	-1414.31	-1624.67
55384.00	80.193	53.751	53092.70	42825.20	15	23	4	30.00	-2.02	-1.36	-1042.05	-1584.23
55414.00	79.679	53.092	52666.20	42145.32	15	23	34	30.00	-1.03	-1.50	-673.01	-1360.77
55444.00	79.902	52.408	52497.48	41426.27	15	24	4	30.00	.45	-1.95	-337.43	-1349.10
55474.00	80.137	50.859	52421.71	40771.03	15	24	34	30.00	.47	-2.26	-151.54	-1399.48
55504.00	80.513	49.618	52385.96	40114.11	15	25	4	30.00	.75	-2.16	-72.91	-1309.14
55534.00	80.454	48.759	52431.40	39510.54	15	25	34	30.00	.29	-2.16	91.49	-1212.23
55564.00	80.596	47.624	52541.59	38909.88	15	26	4	30.00	.13	-2.23	201.16	-1200.92
55594.00	80.196	46.476	52596.54	38317.18	15	26	34	30.00	-.79	-2.30	329.91	-1185.39
55624.00	79.693	45.165	52710.62	37692.20	15	27	4	30.00	-1.01	-2.66	628.15	-1248.98
55654.00	79.595	43.877	52867.27	37207.27	15	27	34	30.00	-.20	-2.54	993.31	-970.84
55684.00	79.672	42.601	54072.28	36784.75	15	28	4	30.00	.15	-2.39	1130.22	-845.04
55714.00	79.434	41.265	54729.11	36233.03	15	28	34	30.00	-.48	-2.83	1313.45	-1103.45
55744.00	79.210	40.114	55329.12	35793.10	15	29	4	30.00	-.45	-2.30	1198.03	-879.86
55774.00	78.976	39.006	55883.65	35325.06	15	29	34	30.00	-.47	-2.22	1111.06	-936.08
55804.00	78.608	37.912	56472.24	34843.28	15	30	4	30.00	-.24	-2.18	1127.18	-923.37
55834.00	78.129	36.936	57094.05	34476.15	15	30	34	30.00	-.96	-1.96	1243.61	-774.46
55864.00	77.638	35.955	57678.23	34041.12	15	31	4	30.00	-.98	-1.96	1168.32	-870.05
55894.00	77.109	35.160	58204.62	33679.72	15	31	34	30.00	-.90	-1.59	1052.79	-682.81
55924.00	76.668	34.274	58838.84	33324.87	15	32	4	30.00	-1.04	-1.77	1268.42	-749.69
55954.00	76.472	33.497	59512.45	33041.81	15	32	34	30.00	-.39	-1.55	1347.23	-566.13
55984.00	75.924	32.586	60106.94	32576.33	15	33	4	30.00	-1.10	-1.82	1188.98	-930.96
56014.00	75.630	31.670	60896.30	32186.84	15	33	34	30.00	-.59	-1.83	1578.71	-778.98
56044.00	75.561	31.131	61440.77	31985.36	15	34	4	30.00	-.14	-1.08	1088.94	-402.95
56074.00	75.471	30.403	62193.72	31704.35	15	34	34	30.00	-.18	-1.46	1505.91	-562.02
56104.00	75.387	29.700	62957.64	31431.18	15	35	4	30.00	-.17	-1.11	1527.84	-546.34
56134.00	75.159	28.852	63703.11	30987.38	15	35	34	30.00	-.46	-1.70	1490.93	-887.61
56164.00	74.978	28.272	64432.05	30775.55	15	36	4	30.00	-.36	-1.16	1457.20	-423.65
56194.00	74.773	27.592	65155.63	30443.84	15	36	34	30.00	-.41	-1.36	1447.15	-663.43
56224.00	74.611	27.025	65882.69	30209.97	15	37	4	30.00	-.32	-1 13	1454.12	-467.74
56254.00	74.679	26.433	66608.62	29933.32	15	37	34	30.00	.14	-1.19	1451.68	-553.30
56284.00	74.849	25.774	67366.31	29584.32	15	38	4	30.00	.34	-1.32	1515.38	-698.01
56314.00	74.933	25.211	68125.87	29319.99	15	38	34	30.00	.17	-1.13	1519.13	-528.65
56344.00	75.057	24.646	68933.19	29057.51	15	39	4	30.00	.25	-1.13	1614.63	-524.96
56374.00	75.181	24.213	69690.31	28902.90	15	39	34	30.00	.25	-.87	1514.25	-309.22
56404.00	75.117	23.567	70429.25	28489.53	15	40	4	30.00	-.13	-1.29	1477.88	-826.75
56434.00	75.110	23.127	71183.06	28298.62	15	40	34	30.00	-.01	-.88	1507.63	-381.82
56464.00	74.977	22.601	71986.31	28015.44	15	41	4	30.00	-.27	-1.05	1606.50	-566.36
56494.00	75.027	22.136	72787.44	27786.75	15	41	34	30.00	.10	-.93	1602.25	-457.37
56524.00	75.034	21.684	73557.69	27548.69	15	42	4	30.00	.02	-.90	1540.50	-426.13
56554.00	74.973	21.272	74324.56	27344.65	15	42	34	30.00	-.12	-.82	1533.75	-408.07
56584.00	74.935	20.897	75050.25	27158.34	15	43	4	30.00	-.08	-.75	1451.38	-372.62
56614.00	74.883	20.546	75731.75	26976.53	15	43	34	30.00	-.10	-.70	1363.00	-363.63
56644.00	74.828	20.212	76407.50	26805.63	15	44	4	30.00	-.11	-.67	1351.50	-341.80

BOCS 3

56674.00	74.820	19.765	77100.62	26488.43	15	44	34	30.00	-.02	-.90	1386.25	-434.39
56704.00	74.789	19.453	77753.44	26319.16	15	45	4	30.00	-.06	-.62	1305.63	-338.55
56734.00	74.775	19.110	78417.50	26106.87	15	45	34	30.00	-.03	-.68	1328.13	-424.59
56764.00	74.766	18.801	79107.94	25938.34	15	46	4	30.00	-.02	-.62	1380.88	-337.05
56794.00	74.624	18.545	79775.44	25824.74	15	46	34	30.00	-.12	-.51	1335.00	-227.20
56824.00	74.818	18.173	80422.62	25544.50	15	47	4	30.00	-.01	-.74	1294.38	-560.48
56854.00	74.855	17.836	81055.25	25296.59	15	47	34	30.00	.07	-.68	1265.25	-495.81
56884.00	74.822	17.519	81681.00	25067.11	15	48	4	30.00	-.06	-.63	1251.50	-458.97
56914.00	74.727	17.304	82278.00	24960.55	15	48	34	30.00	-.19	-.43	1194.00	-213.12
56944.00	74.730	17.038	82880.69	24779.73	15	49	4	30.00	.01	-.53	1205.38	-361.63
56974.00	74.725	16.792	83444.37	24610.15	15	49	34	30.00	-.09	-.49	1127.38	-439.16
57004.00	74.915	16.516	83992.62	24389.32	15	50	4	30.00	.28	-.55	1096.50	-441.67
57034.00	74.950	16.296	84517.31	24234.22	15	50	34	30.00	.07	-.44	1049.38	-310.20
57064.00	75.037	16.073	85040.31	24070.71	15	51	4	30.00	.16	-.45	1046.00	-327.02
57094.00	75.036	15.836	85591.94	23891.90	15	51	34	30.00	.01	-.47	1103.25	-357.63
57124.00	75.058	15.645	86150.94	23776.39	15	52	4	30.00	.04	-.38	1118.00	-231.02
57154.00	75.038	15.395	86712.12	23571.44	15	52	34	30.00	-.04	-.50	1122.38	-409.91
57184.00	74.998	15.195	87202.37	23415.27	15	53	4	30.00	-.08	-.40	980.50	-312.34
57214.00	74.975	15.022	87616.31	23224.75	15	53	34	30.00	-.05	-.35	827.88	-281.03
57244.00	75.079	14.827	87980.75	23084.55	15	54	4	30.00	.21	-.39	728.88	-380.41
57274.00	75.129	14.639	88393.19	22916.14	15	54	34	30.00	.20	-.38	824.88	-336.80
57304.00	75.298	14.496	88849.06	22823.15	15	55	4	30.00	.24	-.29	911.75	-185.99
57334.00	75.392	14.310	89290.81	22640.83	15	55	34	30.00	.19	-.37	883.50	-324.67
57364.00	75.418	14.136	89754.94	22517.58	15	56	4	30.00	.05	-.35	928.25	-286.50
57394.00	75.480	13.998	90270.87	22441.02	15	56	34	30.00	.12	-.22	1031.88	-153.13
57424.00	75.480	13.794	90756.69	22252.21	15	57	4	30.00	.00	-.41	971.63	-377.60
57454.00	75.424	13.615	91168.37	22029.83	15	57	34	30.00	-.11	-.36	823.38	-344.27
57484.00	75.390	13.539	91572.62	22062.58	15	58	4	30.00	-.07	-.15	808.50	-34.50
57514.00	75.357	13.317	91993.81	21822.12	15	58	34	30.00	-.07	-.44	842.38	-480.92
57544.00	75.331	13.160	92514.25	21702.73	15	59	4	30.00	-.05	-.31	1040.88	-238.78
57574.00	75.293	13.005	93048.28	21582.76	15	59	34	30.00	-.08	-.31	1070.00	-229.93
57604.00	75.187	12.799	93546.75	21379.07	16	0	4	30.00	-.21	-.41	995.00	-417.38
57634.00	75.080	12.681	94019.56	21302.16	16	0	34	30.00	-.21	-.24	945.63	-153.82
57664.00	75.011	12.567	94506.62	21232.57	16	1	4	30.00	-.14	-.23	974.13	-139.18
57694.00	74.859	12.402	94980.50	21076.77	16	1	34	30.00	-.30	-.33	947.25	-311.41
57724.00	74.725	12.254	95350.69	20922.43	16	2	4	30.00	-.27	-.30	740.38	-308.67
57754.00	74.667	12.192	95648.06	20889.00	16	2	34	30.00	-.12	-.12	594.75	-66.88
57784.00	74.646	12.070	95856.44	20736.96	16	3	4	30.00	-.04	-.24	416.75	-304.08
57814.00	74.648	11.988	96081.06	20651.95	16	3	34	30.00	.00	-.17	449.25	-170.01
57844.00	74.520	11.858	96355.19	20499.68	16	4	4	30.00	-.25	-.26	548.25	-304.55
57874.00	74.437	11.698	96670.31	20306.92	16	4	34	30.00	-.17	-.32	630.25	-385.52
57904.00	74.372	11.592	97032.50	20210.36	16	5	4	30.00	-.13	-.21	724.38	-193.12
57934.00	74.334	11.485	97399.12	20111.37	16	5	34	30.00	-.08	-.21	733.25	-197.97
57964.00	74.167	11.313	97730.31	19894.22	16	6	4	30.00	-.33	-.35	662.38	-434.31
57994.00	73.941	11.194	97983.94	19749.24	16	6	34	30.00	-.41	-.24	507.25	-269.95
58024.00	73.941	11.156	98142.56	19719.29	16	7	4	30.00	-.04	-.08	317.25	-59.91
58054.00	73.923	11.103	98329.81	19669.36	16	7	34	30.00	.06	-.11	374.50	-99.84
58084.00	74.082	11.001	98587.00	19551.35	16	8	4	30.00	.22	-.20	514.38	-236.02
58114.00	74.090	10.853	98928.75	19320.79	16	8	34	30.00	.01	-.30	683.50	-361.12
58144.00	74.104	10.714	99356.31	19221.70	16	9	4	30.00	.03	-.28	855.13	-298.18
58174.00	74.084	10.638	99880.87	19192.95	16	9	34	30.00	-.04	-.15	1049.13	-47.51
58204.00	74.027	10.576	100408.80	19196.89	16	10	4	30.00	-.11	-.12	1055.88	-2.12
58234.00	73.872	10.462	100852.40	19095.40	16	10	34	30.00	-.31	-.22	887.25	-202.98

* * * TEMPERATURE COMPARISON * * *

ROCKETSONDE RAWINSONDE

TEST NBR 000000

ROCKET SUBER LOKI DATASONDE SWN=100

CAPE CANAVERAL AFS, FLOR DA 1015Z 18 JAN 1984

1515Z 18 JAN 1984

ALTITUDE METERS	TEMPERATURE DEGREES C ROCKET	RAWINSONDE	DIFFERENCE
19250	-75.66	-77.09	1.4
19500	-75.69	-74.38	-1.3
19750	-71.42	-73.45	2.0
20000	-70.91	-72.43	1.5
20250	-68.82	-71.68	2.9
20500	-67.62	-71.61	4.0
20750	-64.33	-69.44	3.1
21000	-66.57	-67.99	1.4
21250	-65.37	-62.40	2.6
21500	-64.13	-65.56	1.4
21750	-61.90	-62.98	1.1
22000	-61.85	-61.53	-.3
22250	-61.75	-61.70	-.0
22500	-61.17	-62.12	1.0
22750	-60.47	-62.12	1.6
23000	-60.23	-61.44	1.2
23250	-59.21	-59.77	.6
23500	-58.11	-59.37	1.3
23750	-57.65	-60.03	2.4
24000	-56.69	-60.60	3.9
24250	-56.05	-60.22	4.2
24500	-55.90	-59.13	3.2
24750	-55.92	-58.17	2.3
25000	-55.22	-57.75	2.5
25250	-54.35	-56.27	1.9
25500	-53.74	-54.11	.4
25750	-53.24	-51.53	-1.7
26000	-53.25	-51.80	-1.4
26250	-52.00	-51.91	-.1
26500	-51.24	-51.66	.4
26750	-51.09	-52.05	1.0
27000	-51.11	-52.65	1.5
27250	-51.44	-52.76	1.3
27500	-51.37	-52.54	1.2
27750	-50.18	-51.75	1.6
28000	-48.49	-51.47	3.0
28250	-47.49	-51.59	4.1
28500	-46.99	-50.86	3.9
28750	-46.68	-50.11	3.4
29000	-46.78	-49.55	2.8
29250	-46.71	-49.52	2.8
29500	-46.30	-49.90	3.6
29750	-45.12	-49.35	4.2

TEST NUMBER 0000
CAPE CANAVERAL AFS, FLORIDA
1515Z 18 JAN 1984

SUPER LONI PWN-1010

ALT GEOMM	DIR DEG	SPD MPS	TEMP K	TEMP CORR	PRESS MBS	DENSITY G/M3	RF MPS	VS MPS	SHR /SEC
20000	274	13	202.24	-.46	999.9999	999.9999	7.24	285.20	.999
21000	236	14	204.58	-.44	44.6581	79.0216	5.14	288.35	.003
22000	249	17	211.30	-.45	39.8551	65.7097	4.69	291.52	.005
23000	221	16	212.92	-.47	33.9738	55.5876	5.61	292.64	.004
24000	260	21	216.46	-.48	29.0207	46.7066	5.90	295.06	.006
25000	253	23	217.93	-.50	24.8342	39.7002	3.79	296.06	.003
26000	256	26	219.90	-.51	21.2844	33.7199	5.32	297.39	.003
27000	251	27	222.04	-.51	18.2718	28.6684	5.92	298.84	.003
28000	252	32	224.66	-.57	15.6962	24.3400	8.32	300.59	.005
29000	259	32	226.32	-.53	13.5159	20.8008	5.49	301.24	.003
30000	256	32	228.74	-.60	11.6488	17.7414	9.77	303.31	.001
31000	245	35	224.24	-.59	10.0374	15.5944	9.86	300.31	.002
32000	247	34	222.31	-.65	8.6278	13.5207	7.66	299.02	.001
33000	249	35	228.23	-.73	7.4280	11.3387	12.41	302.97	.005
34000	237	36	231.15	-.75	6.4130	9.6655	12.42	304.90	.001
35000	243	38	236.51	-.83	5.5516	8.1276	14.84	308.42	.004
36000	253	41	243.75	-.87	4.8231	6.8933	14.69	313.11	.008
37000	254	41	247.90	-.79	4.2062	5.9119	14.10	315.76	.001
38000	251	36	255.67	-.99	3.6791	5.0131	20.78	320.67	.006
39000	254	30	257.91	-.87	3.2276	4.3598	19.92	322.07	.006
40000	267	27	258.77	-.95	2.8329	3.8140	20.68	322.61	.007
41000	272	24	263.45	-1.07	2.4900	3.2922	23.06	325.51	.004
42000	252	17	265.83	-.95	2.1929	2.8739	22.54	326.98	.010
43000	199	16	264.26	-1.08	1.9314	2.5462	25.29	326.01	.015
44000	183	23	265.60	-1.24	1.7010	2.2312	27.06	326.84	.009
45000	183	29	268.07	-1.25	1.4997	1.9490	28.79	328.36	.006
46000	185	29	268.92	-1.41	1.3233	1.7142	31.89	328.88	.001
47000	185	22	272.06	-1.49	1.1687	1.4966	34.10	330.79	.002
48000	182	25	273.31	-1.45	1.0332	1.3170	36.56	331.55	.002
49000	174	24	269.69	-1.54	.9131	1.1795	37.86	329.35	.003
50000	163	26	268.58	-1.99	.8060	1.0455	42.69	328.66	.005
51000	160	26	270.55	-2.15	.7118	.9166	45.25	329.82	.001
52000	162	26	271.30	-2.24	.6288	.8075	47.32	330.33	.001
53000	167	26	270.95	-2.33	.5557	.7145	49.44	330.11	.002
54000	170	26	270.21	-2.63	.4909	.6329	54.41	329.66	.002
55000	177	24	268.94	-2.84	.4335	.5615	57.90	328.89	.004
56000	191	19	267.28	-2.97	.3826	.4987	60.46	327.87	.007
57000	214	15	263.20	-3.41	.3369	.4460	64.42	325.36	.008
58000	245	14	258.60	-3.91	.2966	.3995	68.68	322.50	.008
58129	249	14	258.01	-3.97	.2917	.3939	69.24	322.13	.008

MAXIMUM ALTITUDE 61559

TEST NUMB 0000
CAPE CANAVERAL AFS, FLORIDA
15:5Z 18 JAN 1984

SUPER LOKI PWN-10D

ALT GEOMM	DIR DEG	SPD MPS	TEMP K	TEMP CORR	PRESS MBS	DENSITY G/M3	RF MPS	VS MPS	SHR /SEC
20000	224	13	202.24	-.46	999.9999	999.9999	7.24	285.20	.999
20250	230	14	204.33	-.45	53.0085	90.3721	3.23	286.67	.008
20500	240	11	205.53	-.45	50.8632	86.2151	5.67	287.51	.015
20750	236	10	206.82	-.44	48.8160	82.2270	3.88	288.42	.006
21000	236	14	206.58	-.44	46.8581	79.0216	5.14	288.25	.016
21250	234	18	207.78	-.45	44.9806	75.4182	2.76	289.08	.017
21500	244	19	209.02	-.47	43.1908	71.9885	6.64	289.94	.013
21750	247	18	211.25	-.45	41.4843	68.4129	3.96	291.49	.007
22000	249	17	211.30	-.45	39.8551	65.7097	4.69	291.52	.005
22250	253	17	211.40	-.46	38.2206	63.1007	6.00	291.59	.004
22500	261	18	211.98	-.45	36.7891	60.4611	2.97	291.99	.010
22750	272	18	212.68	-.46	35.3516	57.9083	5.22	292.47	.013
23000	271	16	212.92	-.47	33.9738	55.5876	5.61	292.64	.008
23250	263	16	213.94	-.48	32.6534	53.1739	5.64	293.33	.009
23500	253	18	215.04	-.47	31.3901	50.8551	5.27	294.09	.013
23750	253	20	215.50	-.47	30.1807	48.7912	5.42	294.40	.007
24000	260	21	216.46	-.48	29.0207	46.7066	5.90	295.06	.010
24250	264	21	217.10	-.48	27.9103	44.7882	5.28	295.49	.007
24500	263	21	217.25	-.49	26.8442	43.0470	7.36	295.60	.002
24750	258	22	217.23	-.48	25.8191	41.4024	5.77	295.58	.008
25000	253	23	217.93	-.50	24.8342	39.7002	3.79	296.06	.010
25250	252	24	218.80	-.52	23.8911	38.0410	7.82	296.64	.004
25500	254	25	219.41	-.52	22.9868	36.4983	8.59	297.06	.005
25750	256	25	219.91	-.51	22.1187	35.0402	7.50	297.40	.004
26000	256	26	219.90	-.51	21.2844	33.7199	5.32	297.39	.002
26250	254	26	221.15	-.53	20.4840	32.2684	6.80	298.24	.004
26500	252	26	221.91	-.53	19.7173	30.9546	7.59	298.75	.003
26750	251	27	222.06	-.53	18.9807	29.7784	8.52	298.85	.002
27000	251	27	222.04	-.51	18.2718	28.6684	5.92	298.84	.003
27250	253	29	221.71	-.52	17.5890	27.6380	6.21	298.61	.006
27500	253	30	221.78	-.54	16.9313	26.5959	7.07	298.66	.006
27750	253	31	222.97	-.56	16.3000	25.4677	7.83	299.46	.005
28000	252	32	224.66	-.57	15.6962	24.3400	8.32	300.59	.003
28250	253	32	225.66	-.57	15.1182	23.3394	8.23	301.27	.002
28500	255	32	226.16	-.57	14.5633	22.4331	8.96	301.60	.003
28750	256	32	226.47	-.59	14.0297	21.5823	12.15	301.80	.003
29000	259	32	226.37	-.53	13.5159	20.8008	5.49	301.74	.007
29250	263	33	226.44	-.58	13.0210	20.0326	8.76	301.78	.010
29500	262	33	226.85	-.60	12.5448	19.2657	9.25	302.05	.001
29750	261	34	228.03	-.62	12.0873	18.4670	11.55	302.84	.004
30000	256	32	228.74	-.60	11.6488	17.7414	9.77	303.31	.009
30250	251	32	228.28	-.57	11.2261	17.1325	8.23	303.00	.011
30500	248	33	227.10	-.57	10.8174	16.5943	9.79	302.22	.009
30750	245	34	225.53	-.56	10.4213	16.0978	8.99	301.18	.007
31000	245	35	224.24	-.59	10.0374	15.5944	9.86	300.31	.002
31250	246	34	223.52	-.66	9.6661	15.0652	14.15	299.83	.005
31500	249	34	222.96	-.62	9.3074	14.5432	10.18	299.45	.006
31750	248	34	222.54	-.62	8.9614	14.0289	9.28	299.17	.002
32000	247	34	222.31	-.65	8.6278	13.5207	7.66	299.02	.003
32250	245	34	223.54	-.72	8.3075	12.9470	10.19	299.84	.004
32500	243	34	225.44	-.76	8.0014	12.3648	13.68	301.12	.006
32750	241	35	227.27	-.76	7.7084	11.8159	15.17	302.34	.006
33000	239	35	228.23	-.73	7.4280	11.3387	12.41	302.97	.005
33250	237	36	228.91	-.70	7.1588	10.8951	10.06	303.42	.004

33500	236	36	229.60	-.72	6.9001	10.4699	12.38	303.88	.004
33750	236	36	230.16	-.72	6.6517	10.0681	11.75	304.25	.003
34000	237	36	231.15	-.75	6.4130	9.6658	12.42	304.90	.002
34250	239	36	232.53	-.80	6.1836	9.2644	14.43	305.81	.004
34500	239	36	233.86	-.79	5.9644	8.8851	13.57	306.69	.002
34750	240	37	235.19	-.79	5.7536	8.5227	13.38	307.56	.004
35000	243	38	236.51	-.83	5.5516	8.1776	14.84	308.42	.008
35250	245	39	237.96	-.85	5.3580	7.8442	15.46	309.37	.008
35500	248	40	239.50	-.86	5.1719	7.5231	15.57	310.36	.008
35750	250	40	241.55	-.86	4.9942	7.2030	15.21	311.69	.008
36000	253	41	243.75	-.87	4.8231	6.8933	14.69	313.11	.008
36250	254	41	245.48	-.86	4.6603	6.6137	16.45	314.22	.004
36500	255	42	247.19	-.86	4.5031	6.3466	18.32	315.30	.004
36750	255	41	247.56	-.82	4.3524	6.1250	16.26	315.54	.002
37000	254	41	247.90	-.79	4.2067	5.9119	14.10	315.76	.002
37250	253	40	249.44	-.86	4.0669	5.6801	15.26	316.74	.005
37500	252	39	251.13	-.92	3.9322	5.4550	16.60	317.81	.005
37750	252	38	253.40	-.95	3.8035	5.2292	18.69	319.24	.006
38000	251	36	255.62	-.99	3.6791	5.0131	20.28	320.62	.006
38250	252	34	256.65	-.94	3.5604	4.8330	20.39	321.28	.008
38500	252	32	257.59	-.89	3.4455	4.6599	19.95	321.87	.008
38750	253	31	257.98	-.87	3.3347	4.5031	19.82	322.12	.006
39000	254	30	257.91	-.87	3.2276	4.3598	19.92	322.07	.004
39250	255	29	257.86	-.88	3.1239	4.2205	20.03	322.04	.005
39500	259	28	257.98	-.89	3.0236	4.0832	20.11	322.11	.008
39750	263	27	258.09	-.91	2.9266	3.9503	20.18	322.19	.008
40000	267	27	258.77	-.95	2.8329	3.8140	20.48	322.61	.007
40250	270	26	259.64	-1.00	2.7424	3.6798	21.32	323.15	.007
40500	273	25	260.63	-1.04	2.6550	3.5490	21.94	323.76	.005
40750	272	25	262.04	-1.06	2.5712	3.4184	22.50	324.64	.003
41000	272	24	263.45	-1.02	2.4900	3.2927	23.06	325.51	.003
41250	270	23	264.53	-1.05	2.4118	3.1763	23.17	326.18	.006
41500	267	21	265.29	-1.01	2.3365	3.0682	22.86	326.65	.009
41750	262	19	266.06	-.96	2.2635	2.9639	22.56	327.12	.009
42000	252	17	265.83	-.95	2.1929	2.8739	22.54	326.98	.016
42250	238	15	265.31	-.95	2.1245	2.7897	22.61	326.66	.017
42500	222	14	264.80	-.95	2.0583	2.7079	22.75	326.35	.017
42750	210	15	264.53	-1.02	1.9938	2.6258	24.02	326.18	.012
43000	199	16	264.26	-1.08	1.9314	2.5462	25.29	326.01	.012
43250	191	18	264.08	-1.14	1.8710	2.4682	26.44	325.90	.012
43500	188	19	264.59	-1.17	1.8125	2.3865	26.64	326.21	.008
43750	185	21	265.09	-1.21	1.7559	2.3075	26.85	326.52	.008
44000	183	23	265.60	-1.24	1.7010	2.2312	27.06	326.84	.008
44250	183	25	266.30	-1.24	1.6482	2.1562	27.40	327.27	.007
44500	183	26	267.03	-1.23	1.5971	2.0837	27.77	327.72	.007
44750	183	28	267.76	-1.23	1.5474	2.0136	28.13	328.16	.007
45000	183	29	268.07	-1.25	1.4997	1.9490	28.79	328.36	.003
45250	184	29	268.09	-1.29	1.4535	1.8868	29.66	328.36	.001
45500	185	29	268.10	-1.33	1.4086	1.8304	30.54	328.37	.001
45750	185	29	268.11	-1.37	1.3651	1.7738	31.41	328.38	.001
46000	185	29	268.92	-1.41	1.3233	1.7142	31.89	328.88	.002
46250	185	28	269.74	-1.44	1.2827	1.6567	32.37	329.37	.002
46500	185	28	270.55	-1.48	1.2433	1.6010	32.85	329.87	.002
46750	185	27	271.35	-1.51	1.2053	1.5474	33.36	330.36	.002
47000	185	27	272.06	-1.49	1.1687	1.4966	34.10	330.79	.002
47250	184	26	272.78	-1.48	1.1333	1.4474	34.85	331.22	.002
47500	184	26	273.49	-1.46	1.0989	1.3998	35.59	331.66	.002
47750	184	25	274.21	-1.45	1.0656	1.3538	36.33	332.09	.002
48000	182	25	273.31	-1.45	1.0332	1.3170	36.56	331.55	.003
48250	180	25	272.31	-1.46	1.0018	1.2817	36.75	330.94	.003
48500	179	24	271.31	-1.47	.9714	1.2473	36.94	330.33	.003
48750	177	24	270.32	-1.48	.9419	1.2139	37.13	329.73	.003
49000	174	24	269.69	-1.54	.9131	1.1795	37.86	329.75	.004

49250	171	24	269.41	-1.65	.6851	1.1445	39.07	329.18	.005
49500	169	25	269.13	-1.77	.8579	1.1105	40.27	329.00	.005
49750	166	25	268.85	-1.88	.8316	1.0775	41.48	328.83	.005
50000	163	26	268.58	-1.99	.8060	1.0455	42.69	328.66	.005
50250	162	26	268.89	-2.05	.7813	1.0123	43.46	328.85	.002
50500	162	26	269.44	-2.08	.7574	.9793	44.06	329.19	.001
50750	161	26	270.00	-2.12	.7343	.9474	44.65	329.53	.001
51000	160	26	270.55	-2.15	.7118	.9166	45.25	329.87	.001
51250	160	26	271.11	-2.19	.6900	.8867	45.84	330.21	.001
51500	160	26	271.44	-2.21	.6689	.8585	46.39	330.41	.000
51750	161	26	271.32	-2.23	.6486	.8326	46.85	330.32	.002
52000	162	26	271.30	-2.24	.6288	.8075	47.32	330.33	.002
52250	163	26	271.23	-2.25	.6097	.7831	47.78	330.28	.002
52500	164	26	271.16	-2.27	.5911	.7595	48.24	330.24	.002
52750	166	26	271.09	-2.28	.5731	.7366	48.70	330.20	.002
53000	167	26	270.95	-2.33	.5557	.7145	49.64	330.11	.002
53250	167	26	270.76	-2.41	.5387	.6931	50.83	330.00	.002
53500	168	26	270.58	-2.48	.5223	.6725	52.03	329.89	.002
53750	169	26	270.40	-2.56	.5063	.6524	53.22	329.78	.002
54000	170	26	270.21	-2.63	.4909	.6329	54.41	329.66	.002
54250	170	27	270.03	-2.71	.4759	.6140	55.61	329.55	.002
54500	171	26	269.77	-2.77	.4614	.5958	56.62	329.39	.003
54750	174	25	269.35	-2.80	.4472	.5784	57.26	329.14	.007
55000	177	24	268.94	-2.84	.4335	.5615	57.90	328.89	.007
55250	180	22	268.52	-2.87	.4201	.5451	58.54	328.63	.007
55500	183	21	268.11	-2.90	.4072	.5292	59.18	328.38	.007
55750	187	20	267.69	-2.94	.3947	.5137	59.82	328.12	.007
56000	191	19	267.28	-2.97	.3826	.4987	60.46	327.87	.007
56250	196	18	266.65	-3.03	.3708	.4844	61.22	327.48	.007
56500	201	17	265.50	-3.16	.3591	.4712	62.29	326.77	.008
56750	207	16	264.35	-3.28	.3478	.4584	63.35	326.07	.008
57000	214	15	263.20	-3.41	.3369	.4460	64.42	325.36	.008
57250	221	14	262.05	-3.53	.3264	.4339	65.49	324.65	.008
57500	229	14	260.90	-3.66	.3161	.4221	66.55	323.93	.008
57750	237	14	259.75	-3.78	.3062	.4107	67.62	323.22	.008
58000	245	14	258.60	-3.91	.2966	.3995	68.68	322.50	.008
58129	249	14	258.01	-3.97	.2917	.3939	69.24	322.13	.008

MAXIMUM ALTITUDE 61559

TEST NUMBER 0000
CAPE CANAVERAL AFS, FLORIDA
1515Z 18 JAN 1984

SUPER LUNI FWN-10D

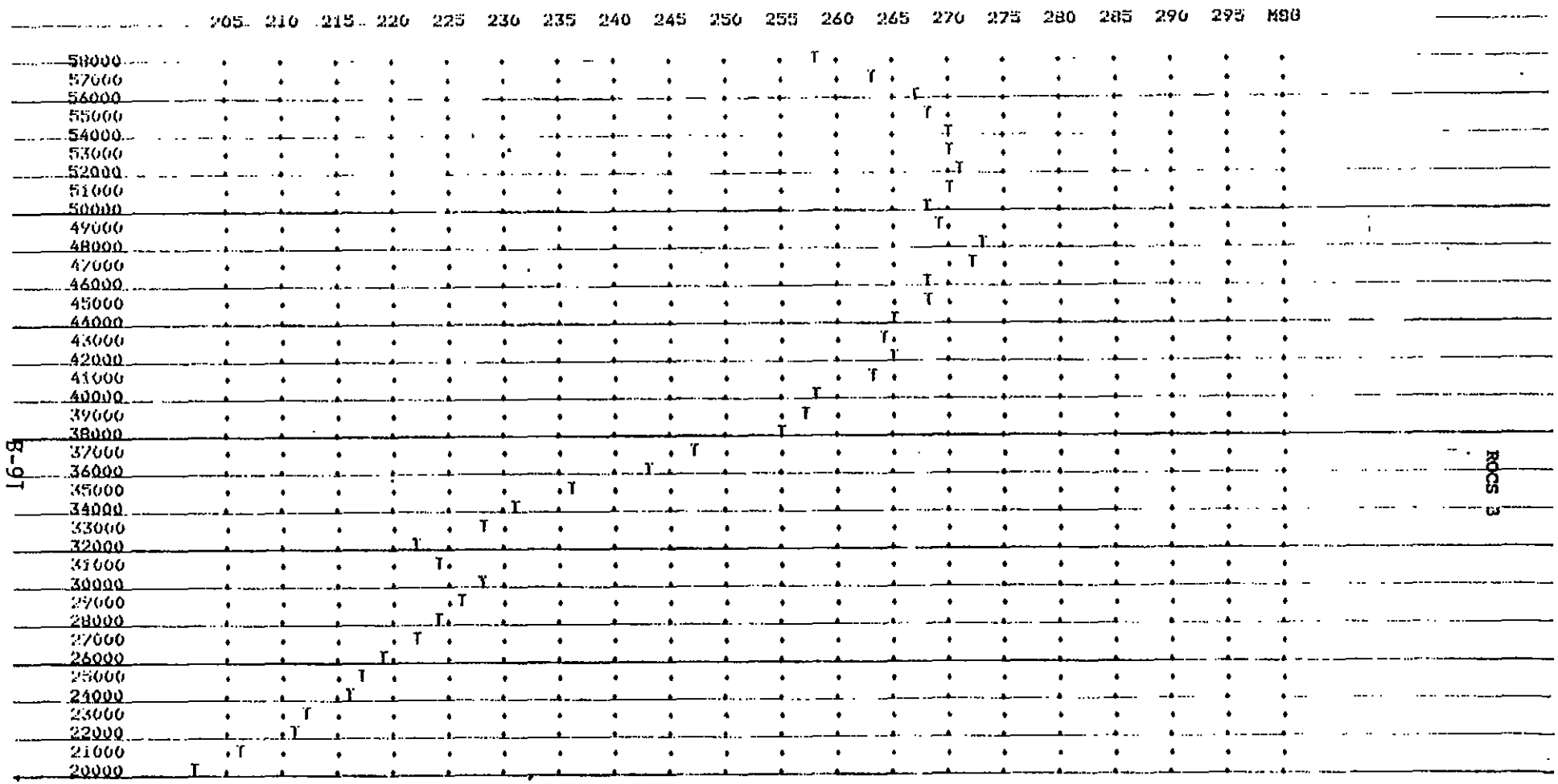
ALT GEOMFT	HDR DEG	SPD KTS	TEMP K	TEMP CORR	PRESS MBS	DENSITY G/M3	RF KTS	VS KTS	BHR /SEC
66000	225	27	203.03	-.46	54.1967	92.9960	14.42	555.10	.999
67000	239	23	205.17	-.46	51.5245	87.4883	20.61	558.02	.012
68000	236	19	206.73	-.44	49.0046	82.5830	11.28	560.14	.007
69000	235	28	206.68	-.44	46.6190	78.5813	16.91	560.07	.015
70000	238	37	208.44	-.45	44.3550	74.1346	8.36	562.45	.016
71000	242	36	210.03	-.46	42.2184	70.0286	12.85	564.59	.009
72000	248	33	211.29	-.46	40.2037	66.2887	25.67	566.28	.005
73000	253	32	211.40	-.46	38.2878	63.0961	19.69	566.43	.005
74000	263	35	212.16	-.46	36.4660	59.8804	13.41	567.44	.011
75000	273	33	212.96	-.45	34.7381	56.8221	10.74	568.52	.010
76000	266	31	213.52	-.48	33.0963	53.9993	20.60	569.27	.007
77000	254	35	214.92	-.47	31.5406	51.1254	16.81	571.13	.013
78000	253	39	215.52	-.47	30.0649	48.5998	16.28	571.92	.007
79000	261	40	216.70	-.48	28.6637	46.0815	18.60	573.49	.010
80000	265	41	217.23	-.48	27.3334	43.8364	19.73	574.18	.004
81000	259	42	217.18	-.48	26.0661	41.8120	18.72	574.13	.002
82000	253	45	217.90	-.50	24.8587	39.7446	12.79	575.07	.010
83000	253	47	218.91	-.52	23.7130	37.7380	26.08	576.40	.004
84000	255	49	219.70	-.52	22.6240	35.8754	29.56	577.44	.004
85000	257	50	219.89	-.49	21.5875	34.2022	13.55	577.69	.003
86000	254	51	220.98	-.53	20.6005	32.4768	23.21	579.13	.004
87000	252	51	221.92	-.53	19.6643	30.8699	26.08	580.35	.003
88000	251	52	222.10	-.51	18.7724	29.4464	23.19	580.58	.002
89000	251	54	221.89	-.52	17.9210	28.1366	20.04	580.32	.004
90000	252	58	221.62	-.53	17.1074	26.8927	22.17	579.96	.006
91000	253	61	222.82	-.56	16.3324	25.5302	25.23	581.58	.005
92000	252	62	224.87	-.57	15.5982	24.1654	28.28	584.20	.003
93000	254	62	225.88	-.56	14.9014	22.9826	22.90	585.51	.003
94000	255	62	226.41	-.60	14.2379	21.9077	41.59	586.20	.002
95000	258	63	226.38	-.54	13.6048	20.9369	19.31	586.15	.005
96000	263	64	226.45	-.58	12.9999	19.9994	28.76	586.25	.010
97000	262	64	227.16	-.60	12.4230	19.0525	32.33	587.16	.002
98000	259	63	228.38	-.61	11.8739	18.1130	35.34	588.74	.006
99000	253	63	228.56	-.58	11.3508	17.3017	28.36	588.97	.010
100000	248	64	227.20	-.57	10.8495	16.6360	31.37	587.22	.010
101000	245	67	225.28	-.56	10.3670	16.0312	22.82	584.23	.007
102000	245	67	223.97	-.63	9.9027	15.4037	39.28	583.02	.001
103000	248	66	223.19	-.64	9.4572	14.7416	38.90	582.02	.005
104000	249	66	222.61	-.62	9.0306	14.1325	30.28	581.26	.002
105000	247	66	222.31	-.65	8.6225	13.5125	24.99	580.86	.003
106000	245	67	224.00	-.74	8.2340	12.8059	37.54	583.07	.005
107000	242	67	226.27	-.76	7.8668	12.1120	47.11	586.02	.006
108000	239	68	228.00	-.74	7.5181	11.4873	45.07	588.25	.005
109000	237	69	228.83	-.70	7.1870	10.9416	32.17	589.33	.005
110000	236	71	229.67	-.72	6.8717	10.4236	40.83	590.40	.004
111000	236	69	230.35	-.72	6.5713	9.9385	32.72	591.22	.003
112000	238	70	231.91	-.78	6.2856	9.4425	44.38	593.27	.004
113000	239	71	233.55	-.79	6.0141	8.9709	45.24	595.32	.003
114000	240	72	235.17	-.79	5.7559	8.5266	43.83	597.43	.003
115000	243	74	236.78	-.83	5.5104	8.1076	49.48	599.42	.008
116000	246	76	238.62	-.85	5.2776	7.7052	50.88	601.79	.008
117000	249	78	240.77	-.86	5.0560	7.3158	50.49	604.50	.008
118000	253	79	243.46	-.87	4.8457	6.9340	48.43	607.87	.008
1190[illegible]	254	80	245.63	-.86	4.6467	6.5905	54.40	[illegible].57	.004

120000	255	81	247.33	-.85	4.4566	6.2774	58.39	[illegible]	.002
121000	254	80	247.72	-.81	4.2755	6.0127	49.55	[illegible]	.002
122000	253	79	249.04	-.84	4.1024	5.7388	49.08	614.79	.004
123000	252	76	251.04	-.92	3.9372	5.4638	54.20	617.25	.005
124000	252	72	253.81	-.96	3.7807	5.1893	62.55	620.65	.006
125000	251	68	256.08	-.97	3.6311	4.9399	67.75	623.42	.007
126000	252	64	257.23	-.91	3.4888	4.7250	66.01	624.82	.008
127000	253	60	257.99	-.87	3.3523	4.5267	64.95	625.75	.007
128000	254	58	257.90	-.87	3.2215	4.3516	65.39	625.64	.004
129000	257	56	257.69	-.88	3.0958	4.1820	65.78	625.63	.006
130000	261	54	258.03	-.90	2.9750	4.0162	66.02	625.80	.008
131000	266	52	258.52	-.94	2.8592	3.8530	67.26	626.39	.008
132000	270	51	259.58	-1.00	2.7482	3.6884	69.82	627.67	.007
133000	273	49	260.85	-1.04	2.6419	3.5265	72.28	629.20	.005
134000	272	48	262.52	-1.06	2.5406	3.3709	74.50	631.22	.003
135000	272	46	264.22	-1.07	2.4432	3.2214	76.42	633.25	.003
136000	267	41	265.15	-1.01	2.3505	3.0883	75.19	634.37	.009
137000	262	37	266.08	-.96	2.2613	2.9607	73.97	635.48	.009
138000	249	32	265.70	-.95	2.1756	2.8526	74.01	635.03	.016
139000	230	28	265.06	-.95	2.0932	2.7511	74.30	634.26	.017
140000	213	29	264.62	-1.00	2.0137	2.6511	77.51	633.73	.014
141000	200	31	264.29	-1.07	1.9371	2.5535	82.58	633.33	.012
142000	190	35	264.15	-1.14	1.8635	2.4527	86.82	633.16	.011
143000	187	39	264.76	-1.19	1.7927	2.3589	87.65	633.90	.008
144000	184	43	265.38	-1.23	1.7246	2.2641	88.48	634.64	.008
145000	183	47	266.15	-1.24	1.6595	2.1722	89.65	635.56	.007
146000	183	51	267.03	-1.23	1.5969	2.0834	91.10	636.62	.007
147000	183	56	267.92	-1.23	1.5368	1.9983	92.55	637.67	.007
148000	184	57	268.08	-1.27	1.4791	1.9222	95.22	637.86	.002
149000	184	57	268.09	-1.32	1.4236	1.8500	99.22	637.88	.001
150000	185	57	268.11	-1.36	1.3703	1.7805	102.72	637.90	.001
151000	185	56	269.01	-1.41	1.3192	1.7084	104.79	638.96	.002
152000	185	55	270.00	-1.45	1.2700	1.6387	106.70	640.14	.002
153000	185	54	270.98	-1.50	1.2227	1.5719	108.62	641.31	.002
154000	185	52	271.89	-1.50	1.1775	1.5087	111.29	642.38	.002
155000	184	51	272.76	-1.48	1.1341	1.4485	114.27	643.41	.002
156000	184	50	273.63	-1.46	1.0923	1.3907	117.24	644.43	.002
157000	183	49	273.90	-1.45	1.0521	1.3381	119.57	644.74	.002
158000	181	48	272.68	-1.46	1.0132	1.2945	120.34	643.31	.003
159000	179	47	271.46	-1.47	.9758	1.2523	121.11	641.87	.003
160000	177	46	270.24	-1.48	.9398	1.2115	121.87	640.43	.003
161000	173	47	269.61	-1.57	.9048	1.1692	125.36	639.68	.004
162000	170	48	269.27	-1.71	.8711	1.1270	130.19	639.28	.005
163000	167	49	268.93	-1.85	.8386	1.0863	135.02	638.87	.005
164000	163	50	268.59	-1.99	.8073	1.0471	139.86	638.47	.005
165000	162	51	268.98	-2.06	.7773	1.0067	142.93	638.93	.002
166000	161	51	269.66	-2.10	.7484	.9668	145.31	639.74	.001
167000	160	51	270.34	-2.14	.7205	.9286	147.69	640.54	.001
168000	160	51	271.01	-2.18	.6938	.8918	150.07	641.34	.001
169000	160	51	271.44	-2.21	.6680	.8574	152.27	641.85	.000
170000	161	50	271.36	-2.23	.6433	.8259	154.12	641.75	.002
171000	163	50	271.27	-2.25	.6195	.7956	155.97	641.64	.002
172000	164	50	271.18	-2.26	.5966	.7664	157.82	641.54	.002
173000	166	50	271.10	-2.28	.5745	.7383	159.67	641.44	.002
174000	167	50	270.92	-2.34	.5532	.7114	163.41	641.23	.002
175000	168	50	270.70	-2.44	.5327	.6856	168.18	640.97	.002
176000	169	51	270.47	-2.53	.5130	.6607	172.96	640.70	.002
177000	169	51	270.25	-2.62	.4940	.6368	177.74	640.44	.002
178000	170	52	270.03	-2.71	.4757	.6137	182.51	640.17	.002
179000	172	51	269.67	-2.78	.4580	.5916	186.26	639.75	.003
180000	175	47	269.17	-2.82	.4409	.5706	188.82	639.15	.007
181000	179	44	268.66	-2.86	.4244	.5503	191.37	638.55	.007
182000	183	41	268.15	-2.90	.4086	.5308	193.93	637.95	.007

183000	182	38	267.64	-2.94	.3933	.5120	196.49	637.34	.007
184000	193	36	267.14	-2.98	.3786	.4938	199.05	636.74	.007
185000	199	33	266.01	-3.10	.3643	.4771	202.78	635.40	.008
186000	205	31	264.61	-3.25	.3504	.4613	207.05	633.72	.008
187000	211	29	263.21	-3.41	.3370	.4461	211.32	632.04	.008
188000	222	27	261.81	-3.56	.3242	.4314	215.58	630.36	.008
189000	232	27	260.41	-3.71	.3118	.4171	219.85	628.67	.008
190000	242	27	259.01	-3.86	.2999	.4034	224.11	626.97	.008
190714	249	27	258.01	-3.97	.2917	.3939	227.16	625.76	.008

MAXIMUM ALTITUDE 201965

CAPE CANAVERAL AFS, FLORIDA
15157 18 JAN 1984
SUPER LOKI-DATASONDE PWN-100
TEST NUMBER 000000
ASCENT NBR. 4029



B-9T

RDCS 3

1

TEST NUMBER 0000
CAPE CANAVERAL AFS, FLORIDA
1515Z 18 JAN 1984

SUPER LOKI PWN=100

ALT GEOMM	DIR DEG	SPD MPS	TEMP K	TEMP CORR	PRESS MBS	DENSITY G/M3	RF MPS	VS MPS	SHR /SEC
20000	224	13	202.24	-.46	999.9999	999.9999	2.24	285.20	.999
21000	236	14	206.58	-.44	46.6581	79.0216	5.14	288.25	.003
22000	249	17	211.30	-.45	39.8551	65.7097	4.69	291.52	.005
23000	271	16	212.92	-.47	33.9738	55.5876	5.61	292.64	.006
24000	260	21	216.46	-.48	29.0207	46.7066	5.90	295.06	.006
25000	253	23	217.93	-.50	24.8342	39.7002	3.79	296.06	.003
26000	256	26	219.90	-.51	21.2844	33.7199	5.32	297.39	.003
27000	251	27	222.04	-.51	18.2718	28.6684	5.92	298.84	.003
28000	252	32	224.66	-.57	15.6962	24.3400	8.32	300.59	.005
29000	259	32	226.37	-.53	13.5159	20.8008	5.49	301.74	.003
30000	256	32	228.74	-.60	11.6488	17.7414	9.77	303.31	.001
31000	245	35	224.24	-.59	10.0374	15.5944	9.86	300.31	.007
32000	247	34	222.31	-.65	8.6278	13.5207	7.66	299.02	.001
33000	239	35	228.23	-.73	7.4280	11.3387	12.41	302.97	.005
34000	237	36	231.15	-.75	6.4130	9.6655	12.42	304.90	.001
35000	243	38	236.51	-.83	5.5516	8.1776	14.84	308.42	.004
36000	253	41	243.75	-.87	4.8231	6.8933	14.69	313.11	.008
37000	254	41	247.90	-.79	4.2067	5.9119	14.10	315.76	.001
38000	251	36	255.67	-.99	3.6791	5.0131	20.78	320.67	.006
39000	254	30	257.91	-.87	3.2276	4.3598	19.92	322.07	.006
40000	262	27	258.22	-.95	2.8329	3.8140	20.68	322.61	.007
41000	272	24	263.45	-1.07	2.4900	3.2927	23.06	325.51	.004
42000	252	12	265.83	-.95	2.1929	2.8739	22.54	326.98	.010
43000	199	16	264.26	-1.08	1.9314	2.5462	25.29	326.01	.015
44000	183	23	265.60	-1.24	1.7010	2.2312	27.06	326.84	.009
45000	183	29	268.07	-1.25	1.4997	1.9490	28.79	328.36	.006
46000	185	29	268.92	-1.41	1.3233	1.7142	31.82	328.88	.001
47000	185	27	272.06	-1.49	1.1687	1.4966	34.10	330.79	.002
48000	182	25	273.31	-1.45	1.0332	1.3170	36.56	331.55	.002
49000	174	24	269.69	-1.54	.9131	1.1795	37.86	329.35	.003
50000	163	26	268.58	-1.99	.8060	1.0455	42.69	328.66	.005
51000	160	26	270.55	-2.15	.7118	.9166	45.25	329.87	.001
52000	162	26	271.30	-2.24	.6288	.8025	47.32	330.33	.001
53000	167	26	270.95	-2.33	.5557	.7145	49.64	330.11	.002
54000	170	26	270.21	-2.63	.4909	.6329	54.41	329.64	.002
55000	177	24	268.94	-2.84	.4335	.5615	57.90	328.89	.004
56000	191	19	267.28	-2.97	.3826	.4987	60.46	327.87	.007
57000	214	15	263.20	-3.41	.3369	.4460	64.42	325.36	.008
58000	245	14	258.60	-3.91	.2966	.3995	68.68	322.50	.008
58129	249	14	258.01	-3.97	.2917	.3939	69.24	322.13	.008

MAXIMUM ALTITUDE 61559

1

TEST NUMBER 0000
CAPE CANAVERAL AFS, FLORIDA
1515Z 18 JAN 1984

B-92

ROCS 3

SUPER LOKI -PWN-10D

ALT GEOMH	DIR DEG	SPD MPS	TEMP K	TEMP CORR	PRESS MBS	DENSITY G/M3	RF MPS	VS MPS	SHR /SEC
20000	224	13	202.24	-.46	999.9999	999.9999	7.24	285.20	-.999
20250	230	14	204.33	-.45	53.0085	90.3771	3.23	286.67	.008
20500	240	13	205.53	-.45	50.8632	86.2151	5.67	287.51	.015
20750	236	10	206.62	-.44	48.8160	82.2270	3.88	288.42	.006
21000	234	14	206.58	-.44	46.9581	79.0216	5.14	288.25	.016
21250	234	18	207.78	-.45	44.9806	75.4187	2.76	289.08	.017
21500	244	19	209.02	-.47	43.1908	71.9885	6.64	289.94	.013
21750	247	18	211.25	-.45	41.4843	68.4129	3.96	291.49	.007
22000	249	12	211.30	-.45	39.8551	65.7097	4.69	291.52	.005
22250	253	17	211.40	-.46	38.2906	63.1007	6.00	291.59	.004
22500	261	18	211.98	-.45	36.7891	60.4611	2.97	291.99	.010
22750	272	18	212.68	-.46	35.3516	57.9083	5.27	292.47	.013
23000	271	16	212.92	-.47	33.9738	55.5876	5.61	292.64	.008
23250	263	16	213.94	-.48	32.6534	53.1739	5.64	293.33	.009
23500	253	18	215.04	-.47	31.3901	50.8551	5.27	294.09	.013
23750	253	20	215.50	-.47	30.1807	48.7912	5.42	294.40	.007
24000	260	21	216.46	-.48	29.0207	46.7066	5.90	295.06	.010
24250	264	21	217.10	-.48	27.9103	44.7882	5.28	295.49	.007
24500	263	21	217.25	-.49	26.8442	43.0470	7.36	295.60	.002
24750	258	22	217.23	-.48	25.8191	41.4074	5.77	295.58	.008
25000	253	23	217.93	-.50	24.8342	39.7002	3.79	296.06	.010
25250	252	24	218.80	-.52	23.8911	38.0410	7.62	296.64	.004
25500	254	25	219.41	-.52	22.9868	36.4983	8.59	297.06	.005
25750	256	25	219.91	-.51	22.1187	35.0402	7.50	297.40	.004
26000	256	26	219.90	-.51	21.2844	33.7199	5.32	297.39	.002
26250	254	26	221.15	-.53	20.4840	32.2684	6.80	298.24	.004
26500	252	26	221.91	-.53	19.7173	30.9546	7.59	298.75	.003
26750	251	27	222.06	-.53	18.9807	29.7784	8.52	298.85	.002
27000	251	27	222.04	-.51	18.2718	28.6686	5.92	298.84	.003
27250	253	29	221.71	-.52	17.5890	27.6380	6.21	298.61	.006
27500	253	30	221.78	-.54	16.9313	26.5959	7.07	298.66	.006
27750	253	31	222.97	-.56	16.3000	25.4677	7.83	299.46	.005
28000	252	32	224.66	-.57	15.6962	24.3400	8.32	300.59	.003
28250	253	32	225.66	-.57	15.1182	23.3394	8.23	301.27	.002
28500	255	32	226.16	-.57	14.5633	22.4331	8.96	301.60	.003
28750	256	32	226.47	-.59	14.0297	21.5823	12.15	301.80	.003
29000	259	32	226.37	-.53	13.5159	20.8008	5.49	301.74	.007
29250	263	33	226.44	-.58	13.0210	20.0326	8.76	301.78	.010
29500	262	33	226.85	-.60	12.5448	19.2657	9.25	302.05	.001
29750	261	33	228.03	-.62	12.0873	18.4670	11.55	302.84	.004
30000	256	32	228.74	-.60	11.6488	17.7414	9.77	303.31	.009
30250	251	32	228.28	-.57	11.2261	17.1325	8.23	303.00	.011
30500	248	33	227.10	-.57	10.8174	16.5943	9.79	302.22	.009
30750	245	34	225.53	-.56	10.4213	16.0978	8.99	301.18	.007
31000	245	35	224.24	-.59	10.0374	15.5944	9.86	300.31	.002
31250	246	34	223.52	-.66	9.6661	15.0659	14.15	299.83	.005
31500	249	34	222.96	-.62	9.3074	14.5432	10.18	299.45	.006
31750	248	34	222.54	-.62	8.9614	14.0289	9.28	299.17	.002
32000	247	34	222.31	-.65	8.6278	13.5207	7.66	299.02	.003
32250	245	34	223.54	-.72	8.3075	12.9470	10.19	299.84	.004
32500	243	34	225.44	-.76	8.0014	12.3648	13.68	301.12	.006

32750	241	35	227.27	-.76	7.7084	11.8159	15.17	302.34	.006
33000	239	35	228.23	-.73	7.4280	11.3387	12.41	302.97	.005
33250	237	36	228.91	-.70	7.1588	10.8951	10.06	303.42	.004
33500	236	36	229.40	-.72	6.9001	10.4699	12.38	303.88	.004
33750	236	36	230.16	-.72	6.6517	10.0681	11.75	304.25	.003
34000	237	34	231.15	-.75	6.4130	9.6855	12.42	304.90	.002
34250	239	36	232.53	-.80	6.1836	9.2644	14.43	305.81	.004
34500	239	36	233.86	-.79	5.9644	8.8851	13.57	306.69	.002
34750	240	37	235.19	-.79	5.7536	8.5227	13.38	307.56	.004
35000	243	38	236.51	-.83	5.5516	8.1776	14.84	308.42	.008
35250	245	39	237.96	-.85	5.3580	7.8442	15.46	309.37	.008
35500	248	40	239.50	-.86	5.1719	7.5231	15.57	310.36	.008
35750	250	40	241.55	-.86	4.9942	7.2030	15.21	311.69	.008
36000	253	41	243.75	-.87	4.8231	6.8733	14.69	313.11	.008
36250	254	41	245.48	-.86	4.6603	6.6137	16.45	314.22	.004
36500	255	42	247.19	-.86	4.5031	6.3466	18.32	315.30	.004
36750	255	41	247.56	-.82	4.3524	6.1250	16.26	315.54	.002
37000	254	41	247.90	-.29	4.2062	5.9119	14.10	315.76	.002
37250	253	40	249.44	-.86	4.0669	5.6801	15.26	316.74	.005
37500	252	39	251.13	-.92	3.9322	5.4550	16.60	317.81	.005
37750	252	38	253.40	-.95	3.8035	5.2292	18.69	319.24	.006
38000	251	36	255.67	-.99	3.6791	5.0131	20.78	320.67	.006
38250	252	34	256.65	-.94	3.5604	4.8330	20.39	321.28	.008
38500	252	32	257.59	-.89	3.4455	4.6599	19.95	321.87	.008
38750	253	31	257.98	-.87	3.3347	4.5031	19.82	322.12	.006
39000	254	30	257.91	-.87	3.2276	4.3598	19.92	322.07	.004
39250	255	29	257.86	-.88	3.1239	4.2205	20.03	322.04	.005
39500	259	28	257.98	-.89	3.0236	4.0832	20.11	322.11	.008
39750	263	27	258.09	-.91	2.9266	3.9503	20.18	322.19	.008
40000	267	27	258.77	-.95	2.8329	3.8160	20.68	322.61	.007
40250	270	26	259.64	-1.00	2.7424	3.6798	21.32	323.15	.007
40500	273	25	260.63	-1.04	2.6550	3.5490	21.94	323.76	.005
40750	272	25	262.04	-1.06	2.5712	3.4184	22.50	324.64	.003
41000	272	24	263.45	-1.07	2.4900	3.2922	23.06	325.51	.003
41250	270	23	264.53	-1.05	2.4118	3.1763	23.17	326.18	.006
41500	267	21	265.29	-1.01	2.3365	3.0682	22.86	326.65	.009
41750	262	19	266.06	-.96	2.2635	2.9639	22.56	327.12	.009
42000	252	17	265.83	-.95	2.1929	2.8739	22.54	326.98	.016
42250	238	15	265.31	-.95	2.1245	2.7897	22.61	326.66	.017
42500	222	14	264.80	-.95	2.0583	2.7079	22.75	326.35	.017
42750	210	15	264.53	-1.02	1.9938	2.6258	24.02	326.18	.012
43000	199	16	264.26	-1.08	1.9314	2.5462	25.29	326.01	.012
43250	191	18	264.08	-1.14	1.8710	2.4682	26.44	325.90	.012
43500	188	19	264.59	-1.17	1.8125	2.3865	26.44	326.21	.008
43750	185	21	265.09	-1.21	1.7559	2.3075	26.85	326.52	.008
44000	183	23	265.60	-1.24	1.7010	2.2312	27.06	326.84	.008
44250	183	25	266.30	-1.24	1.6482	2.1562	27.40	327.27	.007
44500	183	26	267.03	-1.23	1.5971	2.0837	27.77	327.72	.007
44750	183	28	267.76	-1.23	1.5476	2.0136	28.13	328.16	.007
45000	183	29	268.02	-1.25	1.4997	1.9490	28.79	328.36	.003
45250	184	29	268.09	-1.29	1.4535	1.8888	29.66	328.36	.001
45500	185	29	268.10	-1.33	1.4086	1.8304	30.54	328.37	.001
45750	185	29	268.11	-1.37	1.3651	1.7738	31.41	328.38	.001
46000	185	29	268.92	-1.41	1.3233	1.7142	31.89	328.88	.002
46250	185	28	269.74	-1.44	1.2827	1.6567	32.37	329.37	.002
46500	185	28	270.55	-1.48	1.2433	1.6010	32.85	329.87	.002

46750	185	27	271.35	-1.51	1.2053	1.5474	33.36	330.36	.002
47000	185	27	272.06	-1.49	1.1687	1.4966	34.10	330.79	.002
47250	184	26	272.78	-1.48	1.1333	1.4474	34.85	331.22	.002
47500	184	26	273.49	-1.46	1.0989	1.3998	35.59	331.66	.002
47750	184	25	274.21	-1.45	1.0656	1.3538	36.33	332.09	.002
48000	182	25	273.41	-1.45	1.0332	1.3170	36.56	331.55	.003
48250	180	25	272.31	-1.46	1.0018	1.2817	36.75	330.94	.003
48500	179	24	271.31	-1.47	.9714	1.2473	36.94	330.33	.003
48750	177	24	270.32	-1.48	.9419	1.2139	37.13	329.73	.003
49000	174	24	269.69	-1.54	.9131	1.1795	37.86	329.35	.004
49250	171	24	269.41	-1.65	.8851	1.1445	39.07	329.18	.005
49500	169	25	269.13	-1.77	.8579	1.1105	40.27	329.00	.005
49750	166	25	268.85	-1.88	.8316	1.0775	41.48	328.83	.005
50000	163	26	268.58	-1.99	.8060	1.0455	42.69	328.66	.005
50250	162	26	268.89	-2.05	.7813	1.0123	43.46	328.85	.002
50500	162	26	269.44	-2.08	.7574	.9793	44.06	329.19	.001
50750	161	26	270.00	-2.12	.7343	.9474	44.65	329.53	.001
51000	160	26	270.55	-2.15	.7118	.9166	45.25	329.87	.001
51250	160	26	271.11	-2.19	.6900	.8867	45.84	330.21	.001
51500	160	26	271.44	-2.21	.6689	.8585	46.39	330.41	.000
51750	161	26	271.37	-2.23	.6486	.8326	46.85	330.37	.002
52000	162	26	271.30	-2.24	.6288	.8075	47.32	330.33	.002
52250	163	26	271.23	-2.25	.6097	.7831	47.78	330.28	.002
52500	164	26	271.16	-2.27	.5911	.7595	48.24	330.24	.002
52750	166	26	271.09	-2.28	.5731	.7366	48.70	330.20	.002
53000	167	26	270.95	-2.33	.5557	.7145	49.64	330.11	.002
53250	167	26	270.76	-2.41	.5387	.6931	50.83	330.00	.002
53500	168	26	270.58	-2.48	.5223	.6725	52.03	329.89	.002
53750	169	26	270.40	-2.56	.5063	.6524	53.22	329.78	.002
54000	170	26	270.21	-2.63	.4909	.6329	54.41	329.66	.002
54250	170	27	270.03	-2.71	.4759	.6140	55.61	329.55	.002
54500	171	26	269.77	-2.77	.4614	.5958	56.62	329.39	.003
54750	174	25	269.35	-2.80	.4472	.5784	57.26	329.14	.007
55000	177	24	268.94	-2.84	.4335	.5615	57.90	328.89	.007
55250	180	22	268.52	-2.87	.4201	.5451	58.54	328.63	.007
55500	183	21	268.11	-2.90	.4072	.5292	59.18	328.38	.007
55750	187	20	267.69	-2.94	.3947	.5137	59.82	328.12	.007
56000	191	19	267.28	-2.97	.3826	.4987	60.46	327.87	.007
56250	196	18	266.65	-3.03	.3708	.4844	61.22	327.48	.007
56500	201	17	265.50	-3.16	.3591	.4712	62.29	326.77	.008
56750	207	16	264.35	-3.28	.3478	.4584	63.35	326.07	.008
57000	214	15	263.20	-3.41	.3369	.4460	64.42	325.36	.008
57250	221	14	262.05	-3.53	.3264	.4339	65.49	324.65	.008
57500	229	14	260.90	-3.66	.3161	.4221	66.55	323.93	.008
57750	237	14	259.75	-3.78	.3062	.4107	67.62	323.22	.008
58000	245	14	258.60	-3.91	.2966	.3995	68.68	322.50	.008
58129	249	14	258.01	-3.97	.2917	.3939	69.24	322.13	.008

MAXIMUM ALTITUDE 61559

1

TEST NUMBER 0000

CAPE CANAVERAL AFS, FLORIDA

1515Z 18 JAN 1984

SUPER LOKI EWN-10D

ALT FEET	DIR DEG	SPD KTS	TEMP K	TEMP CORR	PRESS MBS	DENSITY G/M3	RF KTS	VS KTS	SHR /SEC
66000	225	27	203.03	-.46	54.1967	92.9960	14.42	555.10	.999
67000	239	23	205.17	-.46	51.5245	87.4883	20.61	558.02	.012
68000	236	19	206.73	-.44	49.0046	82.5830	11.28	560.14	.007
69000	235	28	206.68	-.44	46.6190	78.5813	16.91	560.07	.015
70000	238	37	208.44	-.45	44.3550	74.1346	8.36	562.45	.016
71000	247	36	210.03	-.46	42.2184	70.0286	12.85	564.59	.009
72000	248	33	211.29	-.46	40.2037	66.2887	25.62	566.28	.005
73000	253	32	211.40	-.46	38.2878	63.0961	19.69	566.43	.005
74000	263	35	212.16	-.46	36.4660	59.6804	13.41	567.44	.011
75000	273	33	212.96	-.45	34.7381	56.8271	10.74	568.52	.010
76000	266	31	213.52	-.48	33.0963	53.5993	20.60	569.27	.007
77000	254	35	214.92	-.47	31.5406	51.1254	16.81	571.13	.013
78000	253	39	215.52	-.47	30.0642	48.5998	16.28	571.92	.007
79000	261	40	216.70	-.48	28.6637	46.0815	18.60	573.49	.010
80000	265	41	217.23	-.48	27.3336	43.8364	19.23	574.18	.004
81000	259	42	217.18	-.48	26.0661	41.8120	18.72	574.13	.007
82000	253	45	217.90	-.50	24.8587	39.7446	12.79	575.07	.010
83000	253	47	218.91	-.52	23.7130	37.7380	26.08	576.40	.004
84000	255	49	219.70	-.52	22.6240	35.8754	29.56	577.44	.004
85000	257	50	219.89	-.49	21.5875	34.2022	13.55	577.69	.003
86000	254	51	220.98	-.53	20.6005	32.4768	23.21	579.13	.004
87000	252	51	221.92	-.53	19.6643	30.8699	26.08	580.35	.003
88000	251	52	222.10	-.51	18.7724	29.4464	23.19	580.58	.002
89000	251	54	221.89	-.52	17.9210	28.1366	20.04	580.32	.004
90000	252	58	221.62	-.53	17.1074	26.8927	22.17	579.96	.004
91000	253	61	222.87	-.56	16.3324	25.5302	25.73	581.59	.005
92000	252	62	224.87	-.57	15.5982	24.1654	28.28	584.20	.003
93000	254	62	225.88	-.56	14.9014	22.9826	22.90	585.51	.003
94000	255	62	226.41	-.60	14.2379	21.9077	41.59	586.20	.002
95000	258	63	226.38	-.54	13.6048	20.9369	19.31	586.15	.005
96000	263	64	226.45	-.58	12.9999	19.9994	28.76	586.25	.010
97000	262	64	227.16	-.60	12.4230	19.0525	32.33	587.16	.002
98000	259	63	228.38	-.61	11.8739	18.1130	35.34	588.74	.006
99000	253	63	228.56	-.58	11.3508	17.3017	28.36	588.97	.010
100000	248	64	227.20	-.57	10.8495	16.6360	31.37	587.22	.010
101000	245	67	225.28	-.56	10.3670	16.0317	27.82	584.73	.007
102000	245	67	223.97	-.63	9.9027	15.4037	39.28	583.02	.001
103000	248	66	223.19	-.64	9.4572	14.7616	38.90	582.02	.005
104000	249	66	222.61	-.62	9.0306	14.1325	30.28	581.26	.002
105000	247	66	222.31	-.65	8.6225	13.5125	24.99	580.86	.003
106000	245	67	224.00	-.74	8.2340	12.8059	37.54	583.07	.005
107000	242	67	226.27	-.76	7.8668	12.1120	47.11	586.02	.006
108000	239	68	228.00	-.74	7.5181	11.4873	45.07	588.25	.005
109000	237	69	228.83	-.70	7.1870	10.9416	32.17	589.33	.005
110000	236	71	229.67	-.72	6.8717	10.4236	40.83	590.40	.004
111000	236	69	230.35	-.72	6.5713	9.9385	37.72	591.27	.003
112000	238	70	231.91	-.78	6.2856	9.4425	44.38	593.27	.004
113000	239	71	233.55	-.79	6.0141	8.9709	45.24	595.37	.003
114000	240	72	235.17	-.79	5.7559	8.5266	43.83	597.43	.003
115000	243	74	236.78	-.83	5.5104	8.1076	49.68	599.47	.008
116000	246	76	238.62	-.85	5.2776	7.7052	50.88	601.79	.008
117000	249	78	240.77	-.86	5.0560	7.3158	50.49	604.50	.008
118000	253	79	243.46	-.87	4.8457	6.9340	48.43	607.87	.008

119000	254	80	245.63	-.86	4.6467	6.5905	54.48	610.57	.004
120000	255	81	247.33	-.85	4.4566	6.2774	58.39	612.68	.002
121000	254	80	247.72	-.81	4.2755	6.0127	49.56	613.17	.002
122000	253	79	249.04	-.84	4.1024	5.7388	49.08	614.79	.004
123000	252	76	251.04	-.92	3.9372	5.4638	54.20	617.25	.005
124000	252	72	253.81	-.96	3.7807	5.1893	62.55	620.65	.006
125000	251	68	256.08	-.97	3.6311	4.9399	67.75	623.42	.007
126000	252	64	257.23	-.91	3.4888	4.7250	66.01	624.82	.008
127000	253	60	257.99	-.87	3.3523	4.5267	64.95	625.75	.007
128000	254	58	259.90	-.87	3.2215	4.3516	65.39	625.64	.004
129000	257	56	257.89	-.88	3.0958	4.1820	65.78	625.63	.006
130000	261	54	258.03	-.90	2.9750	4.0167	66.09	625.80	.008
131000	266	52	258.52	-.94	2.8592	3.8530	67.26	626.39	.008
132000	270	51	259.58	-1.00	2.7482	3.6884	69.82	627.67	.007
133000	273	49	260.85	-1.04	2.6419	3.5265	72.28	629.20	.005
134000	272	48	262.57	-1.06	2.5406	3.3709	74.50	631.27	.003
135000	272	46	264.22	-1.07	2.4432	3.2214	76.42	633.25	.003
136000	267	41	265.15	-1.01	2.3505	3.0883	75.19	634.37	.009
137000	262	37	266.08	-.96	2.2613	2.9607	73.97	635.48	.009
138000	249	32	265.70	-.95	2.1756	2.8526	74.01	635.03	.016
139000	230	28	265.06	-.95	2.0932	2.7511	74.30	634.26	.017
140000	213	29	264.62	-1.00	2.0137	2.6511	77.51	633.73	.014
141000	200	31	264.29	-1.07	1.9371	2.5535	82.58	633.33	.012
142000	190	35	264.15	-1.14	1.8635	2.4577	86.82	633.16	.011
143000	187	39	264.76	-1.19	1.7927	2.3589	87.65	633.90	.008
144000	184	43	265.38	-1.23	1.7246	2.2641	88.48	634.64	.008
145000	183	47	266.15	-1.24	1.6595	2.1722	89.65	635.56	.007
146000	183	51	267.03	-1.23	1.5969	2.0834	91.10	636.62	.007
147000	183	56	267.92	-1.23	1.5368	1.9983	92.55	637.67	.007
148000	184	57	268.08	-1.27	1.4791	1.9222	95.72	637.86	.002
149000	184	57	268.09	-1.32	1.4236	1.8500	99.22	637.88	.001
150000	185	57	268.11	-1.36	1.3703	1.7805	102.72	637.90	.001
151000	185	56	269.01	-1.41	1.3192	1.7084	104.79	638.96	.002
152000	185	55	270.00	-1.45	1.2700	1.6397	106.70	640.14	.002
153000	185	54	270.98	-1.50	1.2227	1.5719	108.62	641.31	.002
154000	185	52	271.89	-1.50	1.1775	1.5087	111.29	642.38	.002
155000	184	51	272.76	-1.48	1.1341	1.4485	114.27	643.41	.002
156000	184	50	273.63	-1.46	1.0923	1.3907	117.24	644.43	.002
157000	183	49	273.90	-1.45	1.0521	1.3381	119.57	644.74	.002
158000	181	48	272.68	-1.46	1.0132	1.2945	120.34	643.31	.003
159000	179	47	271.46	-1.47	.9758	1.2523	121.11	641.87	.003
160000	177	46	270.24	-1.48	.9398	1.2115	121.87	640.43	.003
161000	173	47	269.61	-1.57	.9048	1.1692	125.36	639.68	.004
162000	170	48	269.27	-1.71	.8711	1.1270	130.19	639.28	.005
163000	167	49	268.93	-1.85	.8386	1.0863	135.02	638.87	.005
164000	163	50	268.59	-1.99	.8073	1.0471	139.86	638.47	.005
165000	162	51	268.98	-2.06	.7773	1.0067	142.93	638.93	.002
166000	161	51	269.66	-2.10	.7484	.9668	145.31	639.74	.001
167000	160	51	270.34	-2.14	.7205	.9286	147.69	640.54	.001
168000	160	51	271.01	-2.18	.6938	.8918	150.07	641.34	.001
169000	160	51	271.44	-2.21	.6680	.8574	152.27	641.85	.000
170000	161	50	271.36	-2.23	.6433	.8259	154.12	641.75	.002
171000	163	50	271.27	-2.25	.6195	.7956	155.97	641.64	.002
172000	164	50	271.18	-2.26	.5966	.7664	157.82	641.54	.002
173000	166	50	271.10	-2.28	.5745	.7383	159.67	641.44	.002
174000	167	50	270.92	-2.34	.5532	.7114	163.41	641.23	.002

175000	168	50	270.70	-2.44	.5327	.6656	168.18	640.97	.002
176000	169	51	270.47	-2.53	.5130	.6607	172.96	640.70	.002
177000	169	51	270.25	-2.62	.4940	.6368	177.74	640.44	.002
178000	170	52	270.03	-2.71	.4757	.6132	182.51	640.17	.002
179000	172	51	269.67	-2.78	.4580	.5916	186.26	639.75	.003
180000	175	47	269.17	-2.82	.4409	.5706	188.82	639.15	.007
181000	179	44	268.66	-2.86	.4244	.5503	191.37	638.55	.007
182000	183	41	268.15	-2.90	.4086	.5308	193.93	637.95	.007
183000	187	38	267.64	-2.94	.3933	.5120	196.49	637.34	.007
184000	193	36	267.14	-2.98	.3786	.4938	199.05	636.74	.007
185000	199	33	266.01	-3.10	.3643	.4771	202.78	635.40	.008
186000	205	31	264.61	-3.25	.3504	.4613	207.05	633.72	.008
187000	213	29	263.21	-3.41	.3370	.4461	211.32	632.04	.008
188000	222	27	261.81	-3.56	.3242	.4314	215.58	630.36	.008
189000	232	27	260.41	-3.71	.3118	.4171	219.85	628.67	.008
190000	242	27	259.01	-3.86	.2999	.4034	224.11	626.97	.008
190714	249	27	258.01	-3.97	.2917	.3939	227.16	625.76	.008

MAXIMUM ALTITUDE 201965

ATTACHMENT 4

OUTPUT DISK FILE

PASS 1

1

TEST NUMBER 0000
CAPE CANAVERAL AFS, FLORIDA
1515Z 18 JAN 1984

SUPER LOKI PWN-100

ALT GEOMM	DIR DEG	SPD MPS	TEMP K	TEMP CORR	PRESS MBS	DENSITY G/M3	RF MPS	VS MPS	SHR /SEC
20000	224	13	202.24	-.46	999.9999	999.9999	2.24	285.20	.999
21000	236	14	206.58	-.44	46.6581	79.0216	5.14	288.25	.003
22000	249	17	211.30	-.45	39.8551	65.7097	4.69	291.52	.005
23000	271	16	212.92	-.47	33.9738	55.5876	5.61	292.64	.006
24000	260	21	216.46	-.48	29.0207	46.7066	5.90	295.06	.006
25000	253	23	217.93	-.50	24.8342	39.7002	3.79	296.06	.003
26000	256	26	219.90	-.51	21.2844	33.7199	5.32	297.39	.003
27000	251	27	222.04	-.51	18.2718	28.6684	5.92	298.84	.003
28000	252	32	224.66	-.57	15.6962	24.3400	8.32	300.59	.005
29000	259	32	226.37	-.53	13.5159	20.8008	5.49	301.74	.003
30000	256	32	228.74	-.60	11.6488	17.7414	9.77	303.31	.001
31000	245	35	224.24	-.59	10.0374	15.5944	9.86	300.31	.007
32000	247	34	222.31	-.65	8.6278	13.5207	7.66	299.02	.001
33000	239	35	228.23	-.73	7.4280	11.3387	12.41	302.97	.005
34000	237	36	231.15	-.75	6.4130	9.6655	12.42	304.90	.001
35000	243	38	236.51	-.83	5.5516	8.1776	14.84	308.42	.004
36000	253	41	243.25	-.87	4.8231	6.8933	14.69	313.11	.008
37000	254	41	247.90	-.79	4.2067	5.9119	14.10	315.76	.001
38000	251	36	255.67	-.99	3.6791	5.0131	20.78	320.67	.006
39000	254	30	257.91	-.87	3.2276	4.3598	19.92	322.07	.006
40000	262	27	258.72	-.95	2.8329	3.8140	20.68	322.61	.007
41000	272	24	263.45	-1.07	2.4900	3.2927	23.06	325.51	.004
42000	282	17	265.83	-.95	2.1929	2.8239	22.54	326.98	.010
43000	199	16	264.26	-1.08	1.9314	2.5462	25.29	326.01	.015
44000	183	23	265.60	-1.24	1.7010	2.2312	27.06	326.84	.009
45000	183	29	268.07	-1.25	1.4997	1.9490	28.79	328.36	.006
46000	185	29	268.92	-1.41	1.3233	1.7142	31.89	328.88	.001
47000	185	27	272.06	-1.49	1.1687	1.4966	34.10	330.79	.002
48000	182	25	273.31	-1.45	1.0332	1.3170	36.56	331.55	.002
49000	174	24	269.69	-1.54	.9131	1.1795	37.86	329.35	.003
50000	163	26	268.58	-1.99	.8060	1.0455	42.69	328.66	.005
51000	160	26	270.55	-2.15	.7118	.9166	45.25	329.87	.001
52000	162	26	271.30	-2.24	.6288	.8025	47.32	330.33	.001
53000	167	26	270.95	-2.33	.5557	.7145	49.64	330.11	.002
54000	170	26	270.21	-2.63	.4909	.6329	54.41	329.66	.002
55000	177	24	268.94	-2.84	.4335	.5615	57.90	328.69	.004
56000	191	19	267.28	-2.97	.3826	.4987	60.46	327.82	.002
57000	214	15	263.20	-3.41	.3369	.4460	64.42	325.36	.008
58000	245	14	258.60	-3.91	.2966	.3995	68.68	322.50	.008
58129	249	14	258.01	-3.97	.2917	.3939	69.24	322.13	.008

MAXIMUM ALTITUDE 61559

1

TEST NUMBER 0000
CAPE CANAVERAL AFS, FLORIDA
1515Z 18 JAN 1984

B-101
ROCS 3

SUPER LOKI PWR=100

ALT GEOMM	DIR DEG	SPD MPS	TEMP K	TEMP CORR	PRESS MBS	DENSITY G/M3	RF MPS	VS MPS	SHR /SEC
20000	224	13	202.24	-.46	999.9999	999.9999	7.24	285.20	.999
20250	230	14	204.33	-.45	53.0065	90.3771	3.23	286.67	.008
20500	240	11	205.53	-.45	50.8632	86.2151	5.67	287.51	.015
20750	236	10	206.82	-.44	48.8160	82.2270	3.88	288.42	.006
21000	236	14	206.58	-.44	46.8581	79.0216	5.14	288.25	.016
21250	234	18	207.78	-.45	44.9806	75.4187	2.76	289.08	.017
21500	244	19	209.02	-.47	43.1908	71.9885	6.64	289.94	.013
21750	247	18	211.25	-.45	41.4843	68.4129	3.96	291.49	.007
22000	249	17	211.30	-.45	39.8551	65.2092	4.69	291.52	.005
22250	253	17	211.40	-.46	38.2906	63.1007	6.00	291.59	.004
22500	261	18	211.98	-.45	36.7821	60.4611	2.97	291.99	.010
22750	272	18	212.68	-.46	35.3516	57.9083	5.27	292.47	.013
23000	271	16	212.92	-.47	33.9738	55.5826	5.61	292.64	.008
23250	265	16	213.94	-.48	32.6534	53.1739	5.64	293.33	.009
23500	253	18	215.04	-.47	31.3901	50.8551	5.22	294.09	.013
23750	253	20	215.50	-.47	30.1807	48.7912	5.42	294.40	.007
24000	260	21	216.46	-.48	29.0207	46.7066	5.90	295.06	.010
24250	264	21	217.10	-.48	27.9103	44.7862	5.28	295.49	.007
24500	263	21	217.25	-.49	26.8442	43.0420	7.36	295.60	.002
24750	258	22	217.23	-.48	25.8191	41.4074	5.77	295.58	.008
25000	253	23	217.93	-.50	24.8342	39.7002	3.79	296.06	.010
25250	252	24	218.80	-.52	23.8911	38.0410	7.82	296.64	.004
25500	254	25	219.41	-.52	22.9868	36.4983	8.59	297.06	.005
25750	256	25	219.91	-.51	22.1187	35.0402	7.50	297.40	.004
26000	256	26	219.90	-.51	21.2844	33.7199	5.32	297.39	.002
26250	254	26	221.15	-.53	20.4840	32.2684	6.80	298.24	.004
26500	252	26	221.91	-.53	19.7173	30.9546	7.59	298.75	.003
26750	251	27	222.06	-.53	18.9807	29.7784	8.52	298.85	.002
27000	251	27	222.04	-.51	18.2718	28.6684	5.92	298.84	.003
27250	253	29	221.71	-.52	17.5890	27.6380	6.21	298.61	.006
27500	253	30	221.78	-.54	16.9313	26.5959	7.07	298.66	.006
27750	253	31	222.97	-.56	16.3000	25.4677	7.83	299.46	.005
28000	252	32	224.66	-.57	15.6962	24.3406	8.32	300.59	.003
28250	253	32	225.66	-.57	15.1182	23.3394	8.23	301.27	.002
28500	255	32	226.16	-.57	14.5633	22.4331	8.96	301.60	.003
28750	256	32	226.47	-.59	14.0297	21.5823	12.15	301.80	.003
29000	259	32	226.37	-.53	13.5159	20.8008	5.49	301.74	.007
29250	263	33	226.44	-.58	13.0210	20.0326	8.76	301.78	.010
29500	262	33	226.85	-.60	12.5448	19.2657	9.25	302.05	.001
29750	261	33	228.03	-.62	12.0873	18.4670	11.55	302.84	.004
30000	256	32	228.74	-.60	11.6488	17.7414	9.77	303.31	.009
30250	251	32	228.28	-.57	11.2261	17.1325	8.23	303.00	.011
30500	248	33	227.10	-.57	10.8174	16.5943	9.79	302.22	.009
30750	245	34	225.53	-.56	10.4213	16.0978	8.99	301.18	.007
31000	245	35	224.24	-.59	10.0374	15.5944	9.86	300.31	.002
31250	246	34	223.52	-.66	9.6661	15.0659	14.15	299.83	.005
31500	247	34	222.96	-.62	9.3074	14.5432	10.18	299.45	.006
31750	248	34	222.54	-.62	8.9614	14.0289	9.28	299.17	.002
32000	247	34	222.31	-.65	8.6278	13.5207	7.66	299.02	.003
32250	245	34	223.54	-.72	8.3075	12.9470	10.19	299.84	.004
32500	243	34	225.44	-.76	8.0014	12.3648	13.68	301.12	.006

32750	241	35	227.27	-.76	7.7084	11.8159	15.17	302.34	.006
33000	239	35	228.23	-.73	7.4280	11.3387	12.41	302.97	.005
33250	237	36	228.91	-.70	7.1568	10.8951	10.06	303.42	.004
33500	236	36	229.60	-.72	6.9001	10.4699	12.38	303.88	.004
33750	236	36	230.16	-.72	6.6517	10.0681	11.75	304.25	.003
34000	237	36	231.15	-.75	6.4130	9.6655	12.42	304.90	.002
34250	239	36	232.53	-.80	6.1836	9.2644	14.43	305.81	.004
34500	239	36	233.86	-.79	5.9644	8.8851	13.57	306.69	.002
34750	240	37	235.19	-.79	5.7536	8.5227	13.38	307.56	.004
35000	243	38	236.51	-.83	5.5516	8.1776	14.84	308.42	.008
35250	245	39	237.96	-.85	5.3580	7.8442	15.46	309.37	.008
35500	248	40	239.50	-.86	5.1719	7.5231	15.57	310.36	.008
35750	250	40	241.55	-.86	4.9942	7.2030	15.21	311.69	.008
36000	253	41	243.75	-.87	4.8231	6.8933	14.69	313.11	.008
36250	254	41	245.48	-.86	4.6603	6.6137	16.45	314.22	.004
36500	255	42	247.19	-.86	4.5031	6.3466	18.32	315.30	.004
36750	255	41	247.56	-.82	4.3524	6.1250	16.26	315.54	.002
37000	254	41	247.90	-.79	4.2062	5.9119	14.10	315.76	.002
37250	253	40	249.44	-.86	4.0669	5.6801	15.26	316.74	.005
37500	252	39	251.13	-.92	3.9322	5.4550	16.40	317.81	.005
37750	252	38	253.40	-.95	3.8035	5.2292	18.69	319.24	.006
38000	251	36	255.62	-.99	3.6791	5.0131	20.78	320.62	.006
38250	252	34	256.65	-.94	3.5604	4.8330	20.39	321.28	.008
38500	252	32	257.59	-.89	3.4455	4.6599	19.95	321.87	.008
38750	253	31	257.98	-.87	3.3347	4.5031	19.62	322.12	.006
39000	254	30	257.91	-.87	3.2276	4.3598	19.92	322.02	.004
39250	255	29	257.86	-.88	3.1239	4.2205	20.03	322.04	.005
39500	259	28	257.98	-.89	3.0236	4.0832	20.11	322.11	.008
39750	263	27	258.09	-.91	2.9266	3.9503	20.18	322.19	.008
40000	267	27	258.22	-.95	2.8329	3.8140	20.68	322.61	.007
40250	270	26	259.64	-1.00	2.7424	3.6798	21.32	323.15	.007
40500	273	25	260.63	-1.04	2.6550	3.5490	21.94	323.76	.005
40750	272	25	262.04	-1.06	2.5712	3.4184	22.50	324.64	.003
41000	272	24	263.45	-1.07	2.4900	3.2922	23.06	325.51	.003
41250	270	23	264.53	-1.05	2.4118	3.1763	23.17	326.18	.006
41500	267	21	265.29	-1.01	2.3365	3.0682	22.86	326.65	.009
41750	262	19	266.06	-.96	2.2635	2.9639	22.56	327.12	.009
42000	252	17	265.83	-.95	2.1929	2.8739	22.54	326.98	.016
42250	238	15	265.31	-.95	2.1245	2.7897	22.61	326.66	.017
42500	222	14	264.80	-.95	2.0583	2.7079	22.75	326.35	.012
42750	210	15	264.53	-1.02	1.9938	2.6258	24.02	326.18	.012
43000	199	16	264.26	-1.08	1.9314	2.5462	25.29	326.01	.012
43250	191	18	264.08	-1.14	1.8710	2.4682	26.44	325.90	.012
43500	188	19	264.59	-1.17	1.8125	2.3865	26.64	326.21	.008
43750	185	21	265.09	-1.21	1.7559	2.3075	26.86	326.52	.008
44000	183	23	265.60	-1.24	1.7010	2.2312	27.06	326.84	.008
44250	183	25	266.30	-1.24	1.6482	2.1562	27.40	327.27	.007
44500	183	26	267.03	-1.23	1.5971	2.0837	27.77	327.72	.007
44750	183	28	267.76	-1.23	1.5476	2.0136	28.13	328.16	.007
45000	183	29	268.07	-1.25	1.4997	1.9490	28.79	328.36	.003
45250	184	29	268.09	-1.29	1.4535	1.8868	29.66	328.36	.001
45500	185	29	268.10	-1.33	1.4086	1.8304	30.54	328.37	.001
45750	185	29	268.11	-1.37	1.3651	1.7738	31.41	328.38	.001
46000	185	29	268.92	-1.41	1.3233	1.7142	31.89	328.88	.002
46250	185	28	269.74	-1.44	1.2827	1.6567	32.37	329.37	.002
46500	185	28	270.55	-1.48	1.2433	1.6010	32.85	329.87	.002

46750	185	27	271.35	-1.51	1.2053	1.5474	33.36	330.36	.002
47000	185	27	272.06	-1.49	1.1687	1.4966	34.10	330.79	.002
47250	184	26	272.78	-1.48	1.1333	1.4474	34.85	331.22	.002
47500	184	26	273.49	-1.46	1.0989	1.3998	35.59	331.66	.002
47750	184	25	274.21	-1.45	1.0656	1.3538	36.33	332.09	.002
48000	182	25	273.31	-1.45	1.0332	1.3170	36.56	331.55	.003
48250	180	25	272.31	-1.46	1.0018	1.2817	36.75	330.94	.003
48500	179	24	271.31	-1.47	.9714	1.2473	36.94	330.33	.003
48750	177	24	270.32	-1.48	.9419	1.2139	37.13	329.73	.003
49000	174	24	269.62	-1.54	.9131	1.1795	37.86	329.35	.004
49250	171	24	269.41	-1.65	.8851	1.1445	39.07	329.18	.005
49500	169	25	269.13	-1.77	.8579	1.1105	40.27	329.00	.005
49750	166	25	268.85	-1.88	.8316	1.0775	41.48	328.83	.005
50000	163	26	268.58	-1.99	.8060	1.0455	42.69	328.66	.005
50250	162	26	268.89	-2.05	.7813	1.0123	43.46	328.65	.002
50500	162	26	269.44	-2.08	.7574	.9293	44.06	329.19	.001
50750	161	26	270.00	-2.12	.7343	.9474	44.65	329.53	.001
51000	160	26	270.55	-2.15	.7118	.9166	45.25	329.87	.001
51250	160	26	271.11	-2.19	.6900	.8867	45.84	330.21	.001
51500	160	26	271.44	-2.21	.6689	.8585	46.39	330.41	.000
51750	161	26	271.37	-2.23	.6486	.8326	46.85	330.37	.002
52000	162	26	271.30	-2.24	.6288	.8025	47.32	330.33	.002
52250	163	26	271.23	-2.25	.6097	.7831	47.78	330.28	.002
52500	164	26	271.16	-2.27	.5911	.7595	48.24	330.24	.002
52750	166	26	271.09	-2.28	.5731	.7366	48.70	330.20	.002
53000	167	26	270.95	-2.33	.5557	.7145	49.64	330.11	.002
53250	167	26	270.76	-2.41	.5387	.6931	50.83	330.00	.002
53500	168	26	270.58	-2.48	.5223	.6725	52.03	329.89	.002
53750	169	26	270.40	-2.56	.5063	.6524	53.22	329.78	.002
54000	170	26	270.21	-2.63	.4909	.6329	54.41	329.66	.002
54250	170	27	270.03	-2.71	.4759	.6140	55.61	329.55	.002
54500	171	26	269.77	-2.77	.4614	.5958	56.62	329.39	.003
54750	174	25	269.35	-2.80	.4472	.5784	57.26	329.14	.007
55000	177	24	268.94	-2.86	.4335	.5615	57.90	328.89	.007
55250	180	22	268.52	-2.87	.4201	.5451	58.54	328.63	.007
55500	183	21	268.11	-2.90	.4072	.5292	59.18	328.38	.007
55750	187	20	267.69	-2.94	.3947	.5137	59.82	328.12	.007
56000	191	19	267.28	-2.97	.3826	.4987	60.46	327.87	.007
56250	196	18	266.65	-3.03	.3708	.4844	61.22	327.48	.007
56500	201	17	265.50	-3.16	.3591	.4712	62.29	326.72	.008
56750	207	16	264.35	-3.28	.3478	.4584	63.35	326.07	.008
57000	214	15	263.20	-3.41	.3369	.4460	64.42	325.36	.008
57250	221	14	262.05	-3.53	.3264	.4339	65.49	324.65	.008
57500	229	14	260.90	-3.66	.3161	.4221	66.55	323.93	.008
57750	237	14	259.75	-3.78	.3062	.4107	67.62	323.22	.008
58000	245	14	258.60	-3.91	.2966	.3995	68.68	322.50	.008
58129	249	14	258.01	-3.97	.2917	.3939	69.24	322.13	.008

MAXIMUM ALTITUDE 61359

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TEST NUMBER 0000

CAPE CANAVERAL AFS, FLORIDA

1515Z 19 JAN 1984

SUPER LOKI PWN-10D

ALT GEOMET	DIR DEG	SPD KTS	TEMP K	TEMP CORR	PRESS MBR	DENSITY G/M3	RF KTS	VS KTS	SNR /SEC
66000	225	27	203.03	-.46	54.1962	92.9960	14.42	555.10	.999
67000	239	23	205.17	-.46	51.5245	87.4883	20.61	558.02	.012
68000	236	19	206.73	-.44	49.0046	82.5830	11.28	560.14	.007
69000	235	28	206.68	-.44	46.6190	78.5813	16.91	560.07	.015
70000	238	37	208.44	-.45	44.3550	74.1346	8.36	562.45	.016
71000	247	36	210.03	-.46	42.2184	70.0286	12.85	564.59	.009
72000	248	33	211.29	-.46	40.2032	66.2687	25.67	566.28	.005
73000	253	32	211.40	-.46	38.2878	63.0961	19.69	566.43	.005
74000	263	35	212.16	-.46	36.4660	59.8804	13.41	567.44	.011
75000	273	33	212.96	-.45	34.7381	56.8271	10.74	568.52	.010
76000	266	31	213.52	-.48	33.0963	53.9993	20.60	569.27	.007
77000	254	35	214.92	-.47	31.5406	51.1254	16.81	571.13	.013
78000	253	39	215.52	-.42	30.0649	48.5998	16.28	571.92	.007
79000	261	40	216.70	-.48	28.6637	46.0815	18.60	573.49	.010
80000	265	41	217.23	-.48	27.3334	43.8364	19.73	574.18	.004
81000	259	42	217.18	-.48	26.0661	41.8120	18.72	574.13	.007
82000	253	45	217.90	-.50	24.8587	39.7446	12.79	575.02	.010
83000	253	47	218.91	-.52	23.7130	37.7380	26.08	576.40	.004
84000	255	49	219.70	-.52	22.6240	35.8754	29.56	577.44	.004
85000	257	50	219.89	-.49	21.5875	34.2022	13.55	577.69	.003
86000	254	51	220.98	-.53	20.6005	32.4768	23.21	579.13	.004
87000	252	51	221.92	-.53	19.6643	30.8699	26.08	580.35	.003
88000	251	52	222.10	-.51	18.7724	29.4464	23.19	580.58	.002
89000	251	54	221.89	-.52	17.9210	28.1366	20.04	580.32	.004
90000	252	58	221.62	-.53	17.1076	26.8927	22.12	579.96	.006
91000	253	61	222.87	-.56	16.3324	25.5302	25.73	581.59	.005
92000	252	62	224.82	-.57	15.5982	24.1654	28.28	584.20	.003
93000	254	62	225.88	-.56	14.9014	22.9826	22.90	585.51	.003
94000	255	62	226.41	-.60	14.2379	21.9077	41.59	586.20	.002
95000	258	63	226.38	-.54	13.6048	20.9369	19.31	586.15	.005
96000	263	64	226.45	-.58	12.9999	19.9994	28.76	586.25	.010
97000	262	64	227.16	-.60	12.4230	19.0525	32.33	587.16	.002
98000	259	63	228.38	-.61	11.8739	18.1130	35.34	588.74	.006
99000	253	63	228.56	-.58	11.3508	17.3017	28.36	588.97	.010
100000	248	64	227.20	-.57	10.8495	16.6360	31.37	587.22	.010
101000	245	67	225.28	-.56	10.3670	16.0317	27.82	584.73	.007
102000	245	67	223.92	-.63	9.9027	15.4032	39.28	583.02	.001
103000	248	66	223.19	-.64	9.4572	14.7616	38.90	582.02	.005
104000	249	66	222.61	-.62	9.0306	14.1325	30.28	581.26	.002
105000	247	66	222.31	-.65	8.6225	13.5125	24.99	580.86	.003
106000	245	67	224.00	-.74	8.2340	12.8059	37.54	583.07	.005
107000	242	67	226.27	-.76	7.8668	12.1120	47.11	586.02	.006
108000	239	68	228.00	-.74	7.5181	11.4873	45.02	588.25	.005
109000	237	69	228.83	-.70	7.1870	10.9416	32.17	589.33	.005
110000	236	71	229.67	-.72	6.8717	10.4236	40.83	590.40	.004
111000	236	69	230.35	-.72	6.5713	9.9385	37.72	591.27	.003
112000	238	70	231.91	-.78	6.2856	9.4425	44.38	593.27	.004
113000	239	71	233.55	-.79	6.0141	8.9709	45.24	595.37	.003
114000	240	72	235.17	-.79	5.7559	8.5266	43.83	597.43	.003
115000	243	74	236.78	-.83	5.5104	8.1076	49.68	599.47	.008
116000	246	76	238.62	-.85	5.2776	7.7052	50.88	601.79	.008
117000	249	78	240.77	-.86	5.0560	7.3158	50.49	604.50	.008
118000	253	79	243.46	-.87	4.8457	6.9340	48.43	607.87	.008

119000	254	80	245.63	-.86	4.6467	6.5905	54.48	610.57	.004
120000	255	81	247.33	-.85	4.4566	6.2774	58.39	612.68	.002
121000	254	80	247.72	-.81	4.2755	6.0127	49.55	613.17	.002
122000	253	79	249.04	-.84	4.1024	5.7388	49.08	614.79	.004
123000	252	76	251.04	-.92	3.9372	5.4638	54.20	617.25	.005
124000	252	77	253.81	-.96	3.7807	5.1893	62.55	620.65	.006
125000	251	68	256.08	-.97	3.6311	4.9399	67.75	623.42	.007
126000	252	64	257.23	-.91	3.4888	4.7250	66.01	624.82	.008
127000	253	60	257.99	-.87	3.3523	4.5267	64.95	625.75	.007
128000	254	58	257.90	-.87	3.2215	4.3514	65.39	625.64	.004
129000	257	56	257.89	-.88	3.0958	4.1820	65.78	625.63	.006
130000	261	54	258.03	-.90	2.9750	4.0167	66.09	625.80	.008
131000	266	52	258.52	-.94	2.8592	3.8530	67.26	626.39	.008
132000	270	51	259.58	-1.00	2.7482	3.6884	69.82	627.67	.007
133000	273	49	260.85	-1.04	2.6419	3.5285	72.28	629.20	.005
134000	272	48	262.57	-1.06	2.5406	3.3709	74.50	631.27	.003
135000	272	46	264.22	-1.07	2.4432	3.2214	76.42	633.25	.003
136000	267	41	265.15	-1.01	2.3505	3.0883	75.19	634.37	.009
137000	262	37	266.08	-.96	2.2613	2.9607	73.97	635.48	.009
138000	249	32	265.70	-.95	2.1756	2.8526	74.01	635.03	.016
139000	230	28	265.06	-.95	2.0932	2.7511	74.30	634.26	.017
140000	213	29	264.62	-1.00	2.0137	2.6511	72.51	633.73	.014
141000	200	31	264.29	-1.07	1.9371	2.5535	82.58	633.33	.012
142000	190	35	264.15	-1.14	1.8635	2.4572	86.82	633.16	.011
143000	187	39	264.76	-1.19	1.7927	2.3589	87.65	633.90	.008
144000	184	43	265.38	-1.23	1.7246	2.2641	88.48	634.64	.008
145000	183	47	266.15	-1.24	1.6595	2.1722	89.65	635.56	.007
146000	183	51	267.03	-1.23	1.5969	2.0834	91.10	636.62	.007
147000	183	56	267.92	-1.23	1.5368	1.9983	92.55	637.67	.007
148000	184	57	268.08	-1.22	1.4791	1.9222	95.72	637.86	.002
149000	184	57	268.09	-1.32	1.4236	1.8500	99.22	637.68	.001
150000	185	52	268.11	-1.36	1.3703	1.7805	102.72	637.90	.001
151000	185	56	269.01	-1.41	1.3192	1.7084	104.79	638.96	.002
152000	185	55	270.00	-1.45	1.2700	1.6387	106.70	640.14	.002
153000	185	54	270.98	-1.50	1.2227	1.5719	108.62	641.31	.002
154000	185	52	271.89	-1.50	1.1775	1.5087	111.29	642.38	.002
155000	184	51	272.76	-1.48	1.1341	1.4485	114.27	643.41	.002
156000	184	50	273.63	-1.46	1.0923	1.3907	117.24	644.43	.002
157000	183	49	273.90	-1.45	1.0521	1.3381	119.57	644.74	.002
158000	181	48	272.68	-1.46	1.0132	1.2945	120.34	643.31	.003
159000	179	47	271.46	-1.47	.9758	1.2523	121.11	641.87	.003
160000	177	46	270.24	-1.48	.9398	1.2115	121.87	640.43	.003
161000	173	47	269.61	-1.57	.9048	1.1692	125.36	639.68	.004
162000	170	48	269.27	-1.71	.8711	1.1220	130.19	639.28	.005
163000	167	49	268.93	-1.85	.8386	1.0863	135.02	638.87	.005
164000	163	50	268.59	-1.99	.8073	1.0471	139.86	638.42	.005
165000	162	51	268.98	-2.06	.7773	1.0067	142.93	638.93	.002
166000	161	51	269.66	-2.10	.7484	.9668	145.31	639.74	.001
167000	160	51	270.34	-2.14	.7205	.9286	147.69	640.54	.001
168000	160	51	271.01	-2.18	.6938	.8918	150.07	641.34	.001
169000	160	51	271.44	-2.21	.6680	.8574	152.27	641.85	.000
170000	161	50	271.36	-2.23	.6433	.8259	154.12	641.75	.002
171000	163	50	271.27	-2.25	.6195	.7956	155.97	641.64	.002
172000	164	50	271.18	-2.26	.5966	.7664	157.82	641.54	.002
173000	166	50	271.10	-2.28	.5745	.7383	159.67	641.44	.002
174000	167	50	270.92	-2.34	.5532	.7114	163.41	641.23	.002

175000	168	50	270.70	-2.44	.5327	.6856	168.18	640.97	.002
176000	169	51	270.47	-2.53	.5130	.6607	172.96	640.70	.002
177000	169	51	270.25	-2.62	.4940	.6368	177.74	640.44	.002
178000	170	52	270.03	-2.71	.4757	.6137	182.51	640.17	.002
179000	172	51	269.67	-2.78	.4580	.5916	186.26	639.75	.003
180000	175	47	269.17	-2.82	.4409	.5706	188.82	639.15	.007
181000	179	44	268.66	-2.86	.4244	.5503	191.37	638.55	.007
182000	183	41	268.15	-2.90	.4086	.5308	193.93	637.95	.007
183000	187	38	267.64	-2.94	.3933	.5120	196.49	637.34	.007
184000	193	36	267.14	-2.98	.3786	.4938	199.05	636.74	.007
185000	199	33	266.01	-3.10	.3643	.4771	202.78	635.40	.008
186000	205	31	264.61	-3.25	.3504	.4613	207.05	633.72	.008
187000	213	29	263.21	-3.41	.3370	.4461	211.32	632.04	.008
188000	222	27	261.81	-3.56	.3242	.4314	215.58	630.36	.008
189000	232	27	260.41	-3.71	.3118	.4171	219.85	628.67	.008
190000	242	27	259.01	-3.86	.2999	.4034	224.11	626.97	.008
190714	249	27	258.01	-3.97	.2917	.3939	227.16	625.76	.008

MAXIMUM ALTITUDE 201965

ATTACHMENT 5

INTERMEDIATE SCRATCH FILE, DUMP AND BINARY

INTERMEDIATE FILE, ROCKETSONDE PROGRAM

HEIGHT MTS	CORRECTED X COMPONENT	CORRECTED Y COMPONENT	UN-CORRECTED X COMPONENT	UN-CORRECTED Y COMPONENT	CORRECTED TEMP DEGREES-C	UN-CORR TEMP DEGREES-C	PRESSURE MBS	FALL-RATE MPS
19197.42	-10.91	3.27	-16.35	-8.07	197.1	197.1	999.900	-.04
19209.82	-6.96	-.13	-16.98	-5.99	197.3	197.3	999.900	-.79
19296.25	-5.07	-2.62	-15.13	-3.50	197.7	197.7	999.900	-4.97
19461.07	-6.07	-13.58	-12.45	-3.11	197.5	197.5	999.900	-6.02
19610.36	-9.78	-.29	-10.87	3.29	197.4	197.4	999.900	-3.93
19694.32	-7.51	-2.62	-6.94	-.14	199.2	199.2	999.900	-1.66
19734.26	-6.88	-5.02	-5.07	-2.64	201.5	201.5	999.900	-1.00
19821.23	-2.50	-7.21	-6.11	-13.66	202.4	202.4	999.900	-4.83
20000.00	-8.87	-9.19	-9.79	-12.39	202.2	202.7	1.742	-7.24
20002.80	-8.82	-9.19	-9.79	-12.39	202.2	202.7	1.742	-7.24
20160.87	-10.32	-10.09	-12.12	-5.62	203.3	203.8	1.731	-3.30
20258.64	-10.99	-9.01	-11.60	-6.91	204.4	204.9	1.724	-3.22
20403.30	-10.39	-6.30	-10.46	-7.66	205.1	205.5	1.713	-6.43
20575.81	-9.06	-5.03	-8.23	-9.50	205.9	206.3	1.701	-5.08
20694.45	-8.05	-5.22	-8.03	-2.09	206.6	207.0	1.693	-2.83
20812.98	-8.33	-5.94	-2.64	-3.30	207.1	207.5	1.684	-5.07
20905.71	-9.77	-6.64	-9.20	-5.81	206.9	207.3	1.677	-1.11
20999.60	-11.53	-7.78	-11.43	-10.61	206.6	207.0	1.671	-5.14
21154.67	-13.20	-10.14	-14.67	-12.39	207.1	207.5	1.660	-5.19
21267.37	-14.93	-10.66	-15.67	-7.99	207.9	208.4	1.652	-2.32
21340.62	-16.37	-9.97	-14.76	-9.82	208.5	208.9	1.647	-2.56
21403.42	-17.19	-8.55	-16.64	-10.18	208.9	209.4	1.637	-6.96
21645.24	-16.91	-7.26	-18.12	-6.82	210.1	210.5	1.625	-3.83
21762.42	-16.18	-6.97	-17.86	-6.06	211.4	211.8	1.617	-3.98
21942.35	-15.74	-6.28	-15.46	-5.81	211.3	211.7	1.604	-8.02
22071.20	-15.51	-5.32	-13.14	-5.22	211.3	211.8	1.596	-.58
22166.02	-15.52	-5.23	-14.37	-6.69	211.4	211.8	1.589	-5.75
22346.61	-16.08	-4.44	-17.72	-4.59	211.4	211.9	1.576	-6.29
22479.30	-17.15	-3.05	-18.62	-1.58	211.9	212.4	1.567	-2.55
22589.21	-12.98	-1.62	-17.01	-3.06	212.3	212.7	1.560	-4.78
22741.99	-17.77	.43	-17.30	.34	212.7	213.1	1.549	-5.41
22869.64	-16.66	.94	-17.52	1.51	213.0	213.4	1.540	-3.10
23000.34	-15.81	.19	-16.50	.74	212.9	213.4	1.531	-5.61
23122.65	-15.97	-1.25	-15.16	1.23	213.6	214.1	1.519	-4.34
23345.01	-16.45	-3.23	-14.79	-5.13	214.4	214.9	1.507	-4.68
23493.35	-17.38	-5.18	-17.31	-6.61	215.0	215.5	1.497	-5.21
23673.91	-18.71	-5.69	-20.41	-6.48	215.4	215.9	1.485	-6.83
23834.14	-19.61	-5.89	-20.08	-4.28	215.6	216.0	1.474	-3.85
23961.30	-20.44	-3.94	-20.25	-5.20	216.4	216.9	1.464	-5.96
24152.46	-20.54	-2.50	-20.14	-1.32	216.9	212.4	1.452	-5.45
24311.77	-20.80	-1.68	-19.57	-3.57	217.2	217.7	1.442	-5.17
24499.73	-20.89	-2.53	-22.32	.70	217.3	217.7	1.429	-7.36
24694.94	-21.08	-4.04	-21.22	-3.63	217.2	217.7	1.416	-5.65
24870.14	-21.58	-5.61	-22.20	-5.90	217.3	217.8	1.404	-6.03
25013.83	-22.30	-6.88	-20.12	-9.99	218.0	218.5	1.394	-3.55
25181.85	-22.75	-7.54	-23.19	-2.79	218.6	219.2	1.383	-7.65
25420.55	-23.73	-6.92	-24.52	-4.94	219.2	219.7	1.367	-8.26
25484.62	-24.57	-6.28	-24.96	-7.06	219.9	220.4	1.349	-9.34
25681.54	-24.92	-5.82	-24.64	-4.05	219.9	220.4	1.336	-3.79
26022.61	-25.11	-6.29	-25.31	-7.33	219.9	220.4	1.327	-5.62

26213.01	-25.18	-7.14	-24.95	-7.40	221.0	221.5	1.314	-7.08
26404.80	-25.12	-7.65	-23.97	-7.85	221.9	222.4	1.301	-6.64
26647.03	-25.20	-8.38	-27.46	-7.80	222.0	222.5	1.285	-10.57
26891.08	-25.44	-8.75	-24.72	-9.07	222.1	222.6	1.269	-5.70
27067.43	-26.11	-9.21	-25.21	-8.97	222.0	222.5	1.257	-6.06
27251.50	-27.29	-8.51	-27.04	-8.86	221.7	222.2	1.245	-6.21
27446.67	-28.40	-9.01	-28.58	-10.22	221.6	222.1	1.232	-6.80
27667.72	-29.63	-8.84	-30.00	-7.71	222.3	222.9	1.218	-7.94
27901.09	-30.48	-9.75	-31.54	-6.42	224.2	224.7	1.202	-7.62
28152.03	-30.43	-9.58	-30.22	-13.50	225.5	226.0	1.186	-9.44
28394.07	-30.77	-8.71	-29.13	-8.03	226.0	226.5	1.170	-6.36
28696.21	-30.83	-8.21	-31.47	-10.80	226.5	227.1	1.151	-13.78
28980.21	-31.54	-6.64	-30.32	-3.33	226.4	226.9	1.132	-5.15
29188.25	-32.56	-4.01	-33.86	-4.47	226.4	227.0	1.119	-8.25
29452.15	-32.78	-4.15	-32.03	-5.54	226.6	227.2	1.102	-8.81
29758.82	-32.37	-5.42	-34.32	-3.21	228.1	228.7	1.082	-11.63
30071.64	-31.32	-8.24	-31.34	-6.18	228.9	229.5	1.062	-9.22
30326.90	-30.41	-11.18	-28.85	-13.58	228.0	228.5	1.045	-7.80
30609.70	-30.43	-13.42	-30.36	-15.26	226.5	227.1	1.027	-11.06
30881.46	-31.45	-15.18	-29.03	-13.86	224.6	225.1	1.009	-7.06
31209.28	-30.95	-13.78	-33.87	-16.45	223.6	224.3	.988	-14.79
31567.77	-31.80	-11.81	-33.03	-11.32	222.8	223.4	.964	-9.11
31844.86	-31.54	-13.01	-33.11	-11.43	222.4	223.0	.946	-9.37
32086.10	-31.38	-13.44	-24.13	-8.36	222.3	222.9	.930	-6.72
32381.59	-30.91	-15.03	-36.02	-18.14	224.6	225.3	.911	-12.98
32809.07	-30.14	-17.35	-29.09	-23.57	227.7	228.5	.883	-15.52
33183.34	-29.81	-19.07	-31.29	-13.24	228.7	229.4	.859	-9.44
33512.30	-30.29	-20.42	-30.33	-21.98	229.6	230.3	.838	-12.49
33870.42	-29.42	-19.77	-26.44	-18.47	230.4	231.2	.815	-11.38
34258.64	-30.86	-18.87	-31.52	-20.22	232.6	233.4	.791	-14.50
34669.76	-31.48	-18.52	-32.85	-19.56	234.8	235.5	.765	-12.91
35094.22	-34.34	-16.87	-34.90	-16.48	237.0	237.8	.739	-15.39
35559.08	-37.24	-14.87	-35.29	-12.74	239.9	240.7	.710	-15.60
36013.07	-38.91	-11.60	-37.42	-12.56	243.9	244.7	.683	-14.46
36508.89	-40.28	-10.50	-44.40	-13.87	247.2	248.1	.653	-18.39
36996.01	-39.65	-11.24	-38.97	-5.36	247.9	248.7	.624	-14.08
37449.98	-37.54	-11.93	-38.26	-9.18	250.7	251.6	.598	-16.18
38004.94	-34.06	-11.57	-34.17	-16.92	255.7	256.7	.565	-20.82
38613.53	-29.93	-9.47	-27.66	-13.01	258.0	258.9	.531	-19.76
39210.11	-28.07	-7.57	-26.95	-5.80	257.8	258.7	.497	-20.02
39813.40	-26.95	-2.64	-26.06	-1.44	258.1	259.0	.463	-20.20
40443.74	-25.59	1.26	-25.44	3.06	260.3	261.4	.427	-21.82
41120.89	-23.63	.85	-25.76	-.01	264.1	265.2	.389	-23.32
41808.04	-18.61	-2.88	-20.61	.49	266.2	267.2	.352	-22.49
42485.51	-9.75	-10.70	-9.98	-11.31	264.8	265.8	.314	-22.68
43221.89	-3.34	-17.16	-3.90	-19.18	264.0	265.2	.276	-24.41
44024.24	-1.09	-22.86	6.17	-25.54	265.6	266.9	.229	-27.08
44854.61	-1.59	-29.06	7.68	-32.83	268.1	269.3	.184	-28.28
45750.02	-2.69	-28.99	-12.94	-21.56	268.1	269.5	.135	-31.41
46720.29	-2.33	-27.31	-11.50	-31.96	271.3	272.8	.083	-33.27
47765.03	-1.57	-25.40	1.08	-30.22	274.3	275.7	.027	-36.38
48869.07	1.70	-23.60	8.65	-14.06	269.8	271.3	-.032	-32.22
50073.09	7.77	-24.86	9.49	-24.35	268.5	270.5	-.098	-43.04
51412.18	9.33	-24.48	5.61	-26.02	271.5	273.7	-.170	-46.23
52838.63	6.09	-24.79	5.89	-24.75	271.1	273.4	-.246	-48.87
54417.28	4.33	-26.48	3.19	-25.61	269.9	272.7	-.331	-56.41

ROCS 3

-.427 -60.91
-.536 -69.24

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 8   ----  ----  ----  ----  ----  ----  444A  FD6B  ..........DJ.R
10   C1AE  6271  4134  5C51  C210  5999  C181  2000  A...A4\BD.Y.A. F
18   42C5  2415  42C5  2415  433E  7E67  BF90  6888  BE$.BE$.C).g?...
20   444B  09D3  C16E  4C27  C020  4F4F  C210  FB33  DK.SAoL'@ OOB..3
28   C15F  E199  42C5  490A  42C5  490A  433E  7E67  A_A.BEI.BEI.C).g
30   C0CA  B33C  444B  603F  C151  27DC  C179  C1DB  ÐJ33DK`?AQ'\A)AÉ
38   C1F2  2222  C137  ED55  42C5  B84E  42C5  B84E  Ar""A7mUBE8NBE8N
40   433F  7E67  C14F  83BB  444C  0512  C161  2F59  C).gAO.;DL..Aa/Y
48   C1D9  514F  C1C7  2AAA  C131  D2AA  42C5  7911  AYQOAG**A1R*BEy.
50   42C5  7911  433E  7E67  C160  4C44  444C  9A5B  BEy.C).gA`LDDL.L
58   C19C  702B  C04A  9990  C1AD  EEEE  4134  AE66  A.p(@J..A-nnA4.f
60   42C5  6DCE  42C5  6DCE  433E  2E67  C13E  F088  BEmNBEmNC).gA)p.
68   444C  EE53  C178  2981  C129  F053  C16F  0B8B  DLnSAx)1A)pSAo..
70   C024  6222  42C7  3849  42C7  3849  433E  7E67  @$""BG8IBG8IC).g
78   C11A  A000  444D  1643  C16E  170E  C150  47B0  A. .DM.CAn..APG0
80   C151  2222  C12A  3E77  42C9  B58E  42C9  B58E  AQ""A*>wBI..BI..
88   433E  7E67  C0FF  A222  444D  6DBB  C178  0CF3  C).g@."`DMm}Ax.s
90   C173  6200  C161  CCCC  C1DA  9666  A2CA  6959  Asa.AaLLAZ.rBJiY
98   42CA  6959  433E  7E67  C14D  5222  444E  2000  BJiYC).gAMR`DN .
A0   C18D  DB98  C193  183E  C19C  B333  C1C6  4666  A.C.A..?A.33AFFf
A8   42CA  3DDC  42CA  B419  4118  E115  C173  D111  BJ=\BJ4.A.a.AsQ.
B0   444E  22CC  C18D  DB98  C193  183E  C19C  B333  DN"LA.C.A..?A.33
B8   C1C6  4666  42CA  3D2D  42CA  B419  4118  E03F  AFFfBJ=-BJ4.A.`?
C0   C173  D111  444E  C0DE  C1A5  2BBB  C1A1  ZBAE  AsQ.DN@^AZ+!A!.Z
C8   C1C1  F777  C159  E5DD  42CB  5617  42CB  C9AC  AAwwAYeIBKV.BKI,
D0   4118  B145  C134  CAAA  444F  22A3  C16E  C485  A.1EA4J"DO"¤A/D.
D8   C190  1D08  C189  9999  C16E  9F77  42CC  6E29  A...A9..AN.wBLN)
E0   42CC  F066  4118  945E  C133  7F77  444E  B34C  BL`fA..^A3.wDD3L
E8   C1A6  382C  C164  D13B  C1A7  6666  C17A  A2AA  A&8;AdQ!A'ffA.`*
F0   42CD  16B2  42CD  BB21  4118  69CB  C166  CDDD  BM..BM.gA.iKAfM]
F8   4450  5FB0  C190  F73D  C150  6969  C183  8888  DP_PA.w=AP..A.!!
100  C198  0B0D  42CD  E00E  42CE  5309  4118  3733  A...BM`.BNS.A.73
108  C151  36EE  4450  D674  C180  CD62  C153  833E  AQ6nDPVtA.MbAS.)
110  C180  6666  C121  6111  42CE  98EA  42CE  08EE  A.ffA!a.BN.jBO.n
118  4118  1489  C12D  55DD  4451  4CFA  C185  546A  A...A-U]DQL.A.Tj
120  C15E  EDEB  C17A  3BBB  C134  B888  42CF  14D9  A^mkA.!!A4B.BO.Y
128  42CF  94BE  4118  F202  C151  1666  4451  A987  BO.)A.a.AQ.rDQ)7
130  C19C  5F15  C16A  416E  C193  3BBB  C15C  EB33  A._.AjAnA.!!A\k3
138  42CE  EC91  42CF  57D3  4118  D703  C111  D555  BNl.BOWSA.W.A.UU
140  4452  D29A  C188  B5BB  C17C  79D3  C1B6  DDDD  DR..AB.BA.ySA6]]
148  C1A9  D444  42CE  94A8  42CF  0483  4118  BBA7  A)TDBN.(BO..A.!'
150  C152  5000  4452  A2AC  C1D3  2651  C1A2  51C7  ARP.DR"`AS&QA"QG
158  C1EA  C444  C1C6  32AA  42CF  1045  42CF  B611  AjDDAF2*BO.EBU..
160  4117  8E7A  C153  1B88  4453  135E  C1EF  E798  A...AB..DS.^ANg.
168  C1AF  9923  C1FA  BBBB  C17F  E3B8  42CF  E683  A*.#A.!!A.c?8OH.
170  42D0  5BA6  4118  6DC1  C125  1D55  4453  5C9E  BP[&A.mAA%.UDS\.
178  C210  5DA6  C19F  77EB  C1EC  1999  C190  12AA  B.]&A.wkAL..A..*
180  42D0  78D6  42D0  ER06  4118  588E  C129  04CC  BPxVDPk.A.X.A).L
188  4453  E868  C211  2F5F  C188  C776  C210  A333  DShkB./_A.GvB.#3
190  C182  E2A6  42D0  E5CB  42D1  5E16  4118  2F55  A`b*BPeKBQ^.A./U
198  C16F  4CCC  4454  8D3E  C210  E92E  C174  1E2E  AoLLDT.)B.i.At..
1A0  C212  1E66  C16D  1000  42D2  0F83  42D2  8589  B..fAm..BR..BR..
1A8  4118  00CC  C130  5088  4455  026C  C210  2E6A  A..LA=P.DU.lB..J
1B0  C16E  2703  C211  DD55  C161  088B  42D3  6464  Aow.B.]UAa..BSdd
1B8  4203  D728  4119  DF4D  C13F  ACCC  4455  B659  BSW+A._MA?,LDU6Y
1C0  C1FB  C9D5  C164  6C39  C1F7  5DDD  C15C  E888  A.IUAdL9Aw]]A\h.
```

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1C8  42D3  4A1F  42D3  BF81  4119  AC05  C180  3EEE  GSJ.B57.A.,.A.)N
1D0  4454  3734  C1F8  2160  C155  EC9D  C1D2  3333  ÑV74Ax!^AUL.AK33
1D8  C153  78B8  42D3  5248  42D3  C42E  4119  874A  AS.7BSRKBSD.A..J
1E0  C093  3333  4456  9605  C1F8  655F  C153  9D45  @.33ÑV..AxE_AS.E
1E8  C1E5  EEEE  C16B  1777  42D3  62F9  42D3  D8AE  AENNAK.wBSBvBSX.
1F0  4317  6C45  C15R  F088  4457  4A9D  C210  1475  A.LEALP.ÑWJ.B..U
1F8  C147  1759  C211  B999  C149  73BB  42D3  6BFE  AG.YB.9.AIs7BSK.
200  42D3  E369  4119  38D2  C164  B199  4457  CF4C  RBcIA.BRAni.ÑWOL
208  C211  26CC  C130  D086  C212  9E66  C119  3D55  B.&LA0].B..FA.=U
210  42D3  EA08  42D4  5E33  4119  1311  C128  D5ÑD  BSJ.RT^3A..+A(UJ
218  4458  3D35  C211  FB4E  C119  FQ15  C211  0222  DX=5B..NA.P.B..
220  C131  0111  42D4  43F1  42D4  B9A9  4118  FAUR  Ai..BTCaRT9)A.sE
228  C14C  6666  4458  D5FD  C211  C54E  406E  C320  ALFFDXU.B.ENGnC
230  C211  4D55  4057  0000  42D4  A816  42D5  1E51  B.MUGW..BT(.BU.Q
238  4118  C68D  C156  9199  4459  55A5  C210  A9D8  A.H.AV..DYUZB.)X
240  40F1  D3B0  C211  8444  4118  2800  42D4  ECDZ  GaSOD..DA.(.BT.W
248  42D5  6FA1  4118  A46E  C131  9911  4459  D658  BUo(A.$NAL..DYXX
250  C1EC  F221  402F  B010  C210  7EEE  40BC  7777  A.R!@/O.B..N@(WW
258  42D4  EBD2  42D5  653E  4118  7F79  C159  D068  BTkRBUE)A..vAYP.
260  445A  8BA6  C1FF  95C1  C113  E9A7  C1E2  8888  DZ.&A..AA.v'AR..
268  4113  A333  42D5  93A8  42D6  0FFE  4118  4CD8  A.#3BU.(BV..A.LX
270  C165  7199  445B  3103  C210  7380  C133  6A4C  AEa.DLi.B.s.A3*L
278  C1EC  AAAA  C152  1999  42D6  6B96  42D6  E551  AL**AR..BVK.BVEQ
280  4118  1E52  C14A  F111  445R  C55A  C211  6214  A..RAJa.DCEZD.a.
288  C152  E0C7  C211  4EEE  C169  C444  42D7  0546  AR^GB.NnAIDDBW.F
290  42D7  7E59  4117  F4BA  C153  4A22  445C  79E4  BW.YA.I:ASJ"D\vJ
298  C212  B579  C15B  125A  C214  6999  C167  A3BB  B.5vAC.ZB.I.AG$J
2A0  42D7  70AD  42D7  EA66  4117  C239  C16D  4EEE  BWrHDW.EA.B9AmNn
2A8  445D  1A25  C213  9D31  C15E  44E5  C214  14CC  DJ.ZB..lA^DEB..L
2B0  C144  7AAA  42D7  BFBE  42D8  06E1  4117  9527  AD.*BW..BX.AA..W
2B8  C13D  9AAA  445D  AD4E  C214  70AC  C13F  05E1  A=.*DJ-NB.P.A?.A
2C0  C214  3F77  C153  3000  42D8  6828  42D8  E28B  B.?wA80.BXH(BXa.
2C8  4117  6C73  C15F  5DDD  445E  5877  C214  8940  A.LsA_]]D^XwB..@
2D0  C128  0598  C214  32AA  C115  F227  42D8  ED51  A(..B.=A.WWBXkQ
2D8  42D9  6753  4117  3CE6  C157  3444  445E  F7C4  BYGSA.(FAW4DD^WD
2E0  C214  CC58  C11A  D295  C213  9111  C139  14CC  B.LXA.R.B...A9.L
2E8  42D9  35B7  42D9  B011  4117  10BA  C152  B800  BY57BY0.A..:AR8.
2F0  445E  B3BC  C214  E514  C128  7974  C216  5222  D_3(R.E.A(YTB.R"
2F8  40B2  5DDD  42D9  4045  42D9  BCDB  4116  DCA6  G2]]BYGEBY(CA.\&
300  C175  C7Z7  4460  Z6F1  C215  13D8  C140  9251  AuGwD^vaB..XA@.Q
308  C215  3999  C13A  0666  42D9  2E87  42D9  A8D9  B.9.A:.FBY..BY(Y
310  4116  A690  C15A  Z199  4461  2624  C215  9368  A.&.AZa.Da&$R..H
318  C159  C80B  C216  32AA  C15E  5CCC  42D9  5468  AYH.B.2*A^\LBYTH
320  42D9  D114  4116  Z608  C160  6F77  4461  B5D4  BYQ.A.v.A^owDa5T
328  C216  4D79  C16E  0A0E  C214  1E66  C19F  D868  B.MvAN..B..FA.X.
330  42D9  FD9A  42DA  ZU26  4116  4E4E  C138  D4CC  BY..BZ.&&.NNA8Il
338  4462  5DDA  C216  BFE0  C178  9655  C217  3088  DaIZB.?^Ax.UB.0.
340  C1ZC  A4CC  42DA  A32E  42DB  2773  4116  1FFE  A.$LBZ$/BL'sA...
348  C17A  6444  4463  4C8C  C217  BB7D  C16E  BF74  A.DDcL.B.J.AN?T
350  C218  8A44  C14E  FA22  42DB  30A4  42DB  B5F9  B..DAN."BLO$BL5v
358  4115  0E63  C184  3777  4464  549F  C218  929B  A.^cA.7wDaT.B...
360  C164  Z7ZE  C218  F555  C171  6088  42DB  EC25  AaR.B.uUAa..BL.
368  42DC  721C  4115  9606  C195  7666  4465  198B  B\R.A...A.vFDE..
370  C218  EC17  C15D  0D71  C218  A2AA  C140  D999  B.L.AJ.aB."*A@Y.
378  42DB  E24B  42DC  5DA4  4115  6027  C13C  9666  BCaKB\]$A.`?A(.F
380  4465  A69B  C21Y  1CA3  C164  6F8D  C219  5088  DE&.B..$Aa/.B.P.
```

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388  C175  3555  42D8  E7CB  42DC  6CAE  4115  398F  AU5UBEdKB\L.A.9.
390  C359  E151  4466  6503  0219  2F6C  C172  3A94  A)A;DFE.R..LAR'
398  C218  F333  C176  7AAA  42DC  FBA7  42DD  844E  B.s3Av.*B\.7B].N
3A0  4115  059A  C171  3911  4467  23CC  C219  11AC  A...AA9.Dd$LA.
3A8  C17A  79FF  C217  F911  C17D  A222  4200  D9AC  A.Y.B.Y.A.""BIY.
3B0  42D8  5D56  4114  D1C6  C15A  4777  4468  1708  R"3VA.QFA7GWDH..
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3E8  4114  1BFF  C160  F800  446A  737F  C21B  4AEB  A...A`x.DJs.B.Jk
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400  C21C  6696  C190  1DF3  C21C  93DB  C1A3  74CC  B.F.A..sB..tA$tL
408  42DD  9C0F  42DE  251E  4113  B729  C16C  D199  BJ..B"%.A.7)AlQ.
410  446C  13B8  C21D  A0FF  C18D  7C40  C21D  FF6E  DL.8R..,A..@R..N
418  C17B  6999  42DE  536E  42DE  E36B  4113  7B48  A.x.B^SnB^CkA..H
420  C17E  E800  446C  FD18  C21E  7AAA  C19B  F0AF  A.x.DL..B..*A.p/
428  C21F  6911  C166  C199  42E0  2907  42E0  B91E  B...AFA.B`).B`9.
430  4113  3C6E  C179  F6EE  446D  FD07  C21E  6EFD  A.(NAYvnDm..B.n.
438  C199  422F  C21E  B75D  C1D7  FA22  42E1  747A  A.B/B.7]AW."Bat.
440  42E2  0916  4112  F7EB  C197  07ZZ  446E  EA12  Bn..A.w.A..wDnJ.
448  C21E  C63B  C18B  490E  C21D  214C  C180  7000  B.FJA.I.B.!LA.p.
450  42E1  FD1B  42F2  8946  4112  B8DC  C165  D199  Ba..Bn.&A.8\AaQ.
458  4470  1837  C21E  04AC  C183  6026  C21F  7799  Dp.7B.T.A.`&B.w.
460  C16C  C199  42E2  7D23  4263  1891  4112  4895  A.A.Bn.$Bc..A.H.
468  C1DC  7777  4471  3435  C21F  8AAD  C16A  33E1  A\wwDq45B..-AJ3a
470  C21E  506A  C135  5BBB  42E2  5DFB  42E2  E54C  B.P=A5C[Bn].BnL
478  4112  1D33  C152  7555  4472  04C0  C220  9058  A..3ARuUDn.@B .X
480  C140  2B69  C221  DC08  C142  8222  42E2  63AF  A@+iB!\.AG.'Bnc/
488  42E2  F764  4111  E5D6  C188  FD55  4473  0C27  BnwDA.eVA..UDs.'
490  C220  C84A  C142  6019  C220  07D5  C158  6222  B HJAB`.B .UAX"
498  42E2  9EC8  42E3  36AC  4111  9FF4  C18C  F911  Bn.HBc6;A..tA.Y.
4A0  4474  3ED1  C220  5EA1  C156  CG19  C222  525B  Dr)QB ^!AVB.B"R[
4A8  C133  4999  42E4  11A3  42E4  B114  4111  4EE6  A3I.Bn.#Bn!.A.Nf
4B0  C1BA  22AA  4475  77A5  C21F  50BA  C183  DDC3  A!"uDuwXB.P!A.]C
4B8  C21F  564C  C162  E222  42E4  F0EE  42E5  8866  B.VLAnn"BnpnBe.F
4C0  4110  EC85  C193  8BBB  4476  76E7  C21E  6990  A..ZA..!DvvgB.i.
4C8  C1B2  F5AE  C21C  D9CC  C1D9  3666  42E3  FDB1  A2u.B.YLAY6rBc.]
4D0  42E4  BBF1  4110  B986  C17C  BB33  4477  91B2  Bn.qA.9.A.!3Dw.2
4D8  C21E  6E88  C1D6  B0AE  C21E  5C44  C1F4  3555  B.n.AVU.B.\DAt5U
4E0  42E2  8941  42E3  1C69  4110  6EC6  C1B0  EA22  Bn.ABc.zA.nFAQ."
4E8  4478  A177  C21F  7381  C1F2  CDF0  C21D  06D5  Dx!wB.s.AnMrB..U
4F0  C1DD  C444  42E0  9Z5B  42E1  2519  4110  2667  A]DDB`.[Bn%.A.&g
4F8  C170  F911  4479  E948  C21E  F355  C1DC  841D  Arv.DyrHB.sUA\..
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508  40FC  E88A  C1EC  B222  4478  4FC4  C21F  CD88  Q.H!AL2"D.OD8.MB
510  C1BD  0559  C221  0733  C1B5  QCCC  42DE  CFAE  A=.YB!.3A5.LR^N.
518  42DF  688E  40F6  E189  C191  B088  447C  64DB  B_K)@vA.A.O.D.pC
520  C21E  8A1B  C1BD  1DA6  C221  1R92  C1B6  D555  B_..AP.&R!..A6UU[
528  420E  6698  42DF  06D9  40F2  359F  C195  DF77  B^F.B_.Y@n5.A._w
530  447D  561A  C21F  603E  C1D7  1935  C218  2280  L.V.B.`)AW.5B.".
538  C165  BAAA  420E  41B7  420E  ECE3  40EE  2333  A.!nB^A78^LcBn#3
540  C16B  7444  447C  7D96  C21F  E85E  C1F0  89CD  AktDD...B.H'Ar.M
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548  C224  0600  C212  235D  42E0  9260  42E1  54F6  B$..B.*]B`.mBaTv
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578  4482  E84C  C21E  4AA7  C214  6C8C  C21E  54AA  D.HL.B.J'B.L.B.T*
580  C215  F9E6  42E5  A1BB  42F6  5993  40U6  8807  B.yFDE!$BFY.@V.7
588  C1C7  EAAA  4484  4E6C  C21D  6BBB  C213  C631  AGJ*D.NLB.K*B.F1
590  C21A  6E80  C212  7091  42E6  6E9E  42E7  2746  B.o.B.x.BFN.Bg'F
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5A8  42E9  6056  40CA  6AF5  C1E8  0333  4487  60C3  Bt`V@JJUAH.3D.mC
5B0  C21F  7A2E  C212  8629  C220  DA6E  C213  9099  B...B..)B ZNB...
5B8  42EA  C36F  42EB  8A33  40C3  D208  C1CE  6500  BJC?Bk.3@CR.AN.J
5C0  4489  1638  C222  550B  C210  DE14  C222  E644  D..8B!UEB.^.B!FD
5C8  C210  7BF6  42ED  0140  42E0  D62E  40BD  12ED  B..FBm.@BmX.@=.m
5D0  C1F6  3B33  448A  E715  C225  3CE7  C1EB  ECEF  Av!3D.G.BZ(GAmLo
5D8  C223  4A99  C1CB  D444  42EF  DD2B  42F0  B8AE  B$J.AKTDBo]+BpB.
5E0  40B5  C3EB  C1F9  9EEE  448C  ADii  C226  E91B  @SCnAv.ND.~.BAr.
5E8  C169  9122  C225  6C19  C1C9  06EE  42F3  BEC2  A9.'BZL.AI.NBs^B
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600  42F2  3ED8  42F8  1AE1  40A7  29AF  C212  6408  Bw)ZRx.a@!)/R.D.
608  4490  8403  C227  A5F5  C1B3  C6B7  C226  F800  D...B'ZuA3F7B&x.
610  C155  B999  42E2  DE3B  42E8  A9QC  409E  CA2C  AU9.Bw_!Bx).@.J.
618  C1E1  5800  4492  49FC  C225  8999  C1BE  D992  AaX.D.I.BZ..A)Y.
620  C226  42DD  C192  E888  42FA  8R97  42EB  94D2  B&BJA.M.B.+.B..Y
628  4098  F773  C210  2E44  4494  74F0  C222  0E84  @.wsB..DD.tpB".4
630  C1B2  0C3C  C222  2A44  C210  F92A  42EE  B7CE  A9.(B!*DB.y*D.ZN
638  4310  0B43  4090  C19A  C214  D0F7  4496  D568  C..CG.A.B.PwD.U.
640  C21D  ECFA  C197  B23D  C21B  ABii  C1D0  1A22  B.L.A..=B.(.AP.
648  4310  2062  4310  2E4D  4087  E201  C213  C1AA  C. BC..H@.B.B.A*
650  4499  2A1C  C21C  1158  C179  2941  C21A  E45D  D.*.B..XAy)AB.I]
658  C15C  DBBB  4310  1D7E  4310  2B77  407F  38D8  A\[!C..,C.+w@.8X
660  C214  03EE  4498  8566  C216  F2DD  C12A  29F4  B..ND..FB.B]A*)I
668  C21A  0F55  C117  1333  4310  21F6  4310  30A2  B..UA..3C.!vC.0"
670  4076  7798  C214  3433  449D  ERBE  C219  96DC  @vW.B.43D..)B..\
678  4114  1A68  C219  7177  4130  F666  4310  44FC  A..HB.QWA0vFC.D.
680  4310  559E  406D  5DZ6  C215  D1AA  44A0  A0E5  C.U.@mJeR.Q*D. E
688  C217  A239  40D8  C9C0  C219  C2EE  BF2C  CCCC  B.`9@XI@B.BN?,LL
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6A0  407D  9111  4310  63BF  4310  B2EE  405A  0185  @...C.*7C.2N@Z..
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6B0  C19F  B26A  C1B4  E2AA  4310  8B10  4310  9C44  A.2*A4B*C...C..D
6B8  4050  762D  C216  ADF7  44A8  B5E3  C135  792B  GFv-B.-wD(UcA5y+
6C0  C211  2967  C13E  6199  C213  2E11  4310  8065  B.)GA)A.D...C..E
6C8  4310  9280  4046  0BE1  C21A  6988  44AB  F83D  C...GF.AB.I.D+x=
6D0  C111  83BC  C216  DBAD  4162  A6EE  C219  89A6  A..(D.[-AB&ND..&
6D8  4310  9A58  4310  AE48  403A  B7F3  C21B  13EE  C..XC..H@:7SB..N
6E0  44AE  3B2B  C119  7B25  C21D  0F93  417A  DD55  DZ6.A..%N...A.JU
6E8  C220  D39C  4310  C109  4310  D4A2  402F  163E  B S.C.A.C.T"@/.)
6F0  C21C  47AA  44B2  B605  C12B  0441  C21C  FDFD  B.B*D26.At.AB...
6F8  C1CF  0000  C215  8FFA  4310  C1CF  4310  D7BA  AO..B...C.AOC.W:
700  4022  9AE8  C21F  6A11  44B6  B04B  C125  34BE  @",HB.J.D6.KA24)
```

708	C21B	4E48	C1B7	F800	C21F	F530	4310	F437	B.NKA7x.B.uOC.T7
710	4311	0C59	4015	29F4	C221	454C	44BA	9508	C..Y@.)TB!ELD!..
718	C119	311A	C219	66B4	4111	4199	C21E	37D8	A.1.B.F4A.A.B.7X
720	4311	2405	4311	3B2A	3F6D	BC93	C224	60DB	C.$.C.;*?A<.B$^3
728	44DE	E513	411B	33A2	C217	9A14	418A	75DD	D)E.A.3"B..A.U]
730	C1E1	0768	4310	DD70	4310	F519	BF84	B1C7	AA.HC.]PC.U.?.1G
738	C225	3980	44C3	9918	417C	5B77	C218	DD36	BZ9.DC..A.[WB.]6
740	4197	D6EF	C218	5890	4310	C7E6	4310	E853	A.VNB.X.C.BFC.HS
748	C018	FCF6	C22B	0B11	44C8	D42F	4195	4A2A	@..vB+..DHT/A.J*
750	C218	7A2A	4159	CE66	C21A	062C	4310	F784	B..*AYNFB..C.W.
758	4311	1ADF	C02B	7E07	C22E	3A8B	44CE	66A1	C..@+..B.:?DNF!
760	4161	709E	C218	C8FB	415E	44CC	C218	C064	AAP.B.H.A^DLB.@D
768	4310	F113	4311	159D	C03F	1A0A	C230	DDF7	C.Q.C..@?..B0]W
770	44D4	91C7	4145	5BE1	C21A	7A34	4133	04CC	DT.GAF[AB..4A3.L
778	C219	9D12	4310	DE85	4311	0AB2	C054	DCDF	B..C.^.C..2@T_
780	C238	68CC	44DB	7193	C148	84CD	C211	A2F1	D@HLDLQ.AH.MB.^Q
788	C164	AAAA	C1F9	1FAA	4310	AFB1	4310	DF97	AD**AY.*C./1C..
790	C06D	4901	C23C	E911	44E3	11CE	C1D2	6BF5	@AI.D(z.Dc.NARKU
798	C150	8D97	C1E2	6AAA	C153	F6F7	4310	201B	AP..AmJ*ASVWC. .
740	4310	5EB0	C088	F9F0	C245	3D08	----	----	C.@@.VPBE=.....

ATTACHMENT 6

PROGRAM LISTING

```
C
C     PWN-10A/C/D ROCKET REDUCTION
C
C     ROCKETP1
C
      INCLUDE 'DATAS'
      INTEGER BUFFER(256),RECORD(32)
      INTEGER RAWINDAY,RAWINMONTH,RAWINYEAR
      DATA MNTAB/'JAN ','FEB ','MAR ','APR ','MAY ','JUN ','JUL ',
     *'AUG ','SEP ','OCT ','NOV ','DEC '/
      DATA BUFFER,RECORD,TIME10,TIMELAST,ROLLOVER,TIME,PREVTIME,
     * RADIAN,IOU1,IOU2,IOU3,PC,RE,ORDINAT
     * /268*0,5*0.0,57.29578,1,2,3,47.442,6371229.315,
     * 0.25/
      EQUIVALENCE (SALT,BUFFER(12)),(STEMP,BUFFER(14)),(SPRESS,BUFFER(16)),
     * (ITIME,RECORD(2)),(SLANTRANGE,RECORD(11)),
     * (AZIMUTH,RECORD(17)),(ELEVATION,RECORD(19)),(TEMP1,RECORD(21)),
     * (TEMP2,RECORD(23)),(TEMP3,RECORD(25))
C
C     INITIALIZE THE INTERMEDIATE AND OUTPUT FILES
C
      DELETE "TAPE1"
      DELETE "TAPE2"
      DELETE "ROCKETOUT"
C
C     INITIALIZE THE RAW DATA INPUT FILE
C
      TYPE "(32)(36)  ROCKET REDUCTION(12)(12)(12)"
      PAUSE "MOUNT DATA DISK ON DRIVE 1"
      CALL INIT ("DP1")
      OPEN IOU2,"TAPE2",LEN=20
      OPEN IOU1,'DP1:MSSDATA',ATT="R",ERR=130
C
C     READ THE TEMPERATURE CORRECTION COEFFICIENTS
C
      OPEN 3,"ROCKETABLE.PM",ATT="L",LEN=208,ERR=110
      READ(3,ERR=110,END=110)(ATC(I),BTC(I),CTC(I),DTC(I),I=1,51)
      READ(3,ERR=110,END=110)(CTD(I),I=1,51)
      CLOSE 3
C
C     ASK THE OPERATOR IF THIS WAS A NIGHT LAUNCH
C
2     WRITE(10,200)
      READ(11,201,ERR=2,END=2)INPUT
      NIGHT=.FALSE.
      IF(INPUT.EQ."YE")NIGHT=.TRUE.
      IF(.NOT.NIGHT.AND.INPUT.NE."NO")GOTO 2
C
C     ASK THE OPERATOR FOR THE LIST DEVICE
C
4     WRITE(10,204)
      READ(11,201,ERR=4,END=4)INPUT
      IF(INPUT.EQ."CN")IOU3=10
      IF(INPUT.EQ."PR")OPEN IOU3,"QTY:2",ATT="FL",LEN=221
      IF(INPUT.NE."CN".AND.INPUT.NE."PR")GOTO 4
C
```

```
C       ASK THE OPERATOR FOR THE STATION NUMBER
C
5       WRITE(10,205)
        READ(11,206,END=5,ERR=5)STANUM
        IF(STANUM.LT.1)GOTO 5
C
C       ASK OPERATOR FOR FIRST GOOD TIME
C
6       WRITE(10,202)
        READ(11,207,END=6,ERR=6)STIME
C
C       READ THE STATION NAME FROM THE STATION NAME FILE
C       IF THE STATION IS UNLISTED, ASK THE OPERATOR FOR THE STATION NAME
C
        IF(STANUM.GT.97)GOTO 9
        OPEN 4,"STATIONIDS.RM",ATT="L",LEN=30
        DO 8 J=1,STANUM+1
        READ(4,209)(STATIONID(J),J=1,15)
8       CONTINUE
        CLOSE 4
        GOTO 10
9       WRITE(10,210)
        READ(11,209,END=9,ERR=9)(STATIONID(I),I=1,15)
C
C       READ THE HEADER BLOCK AND GET THE RUNTIME AND SIZE INFORMATION
C
10      IBLK=0
        CALL RDBLK(IUN1,IBLK,BUFFER,1,IER)
        IF(IER.NE.1)GOTO 100
        NBLKS=BUFFER(153)
        IHR=BUFFER(149)
        IMIN=BUFFER(150)
        ISEC=BUFFER(151)
        I1=IHR/10
        I2=IHR-I1*10
        I3=IMIN/10
        I4=IMIN-I3*10
        ENCODE(BOCKTIME,1)I1,I2,I3,I4
        ZAT=SALT*.3048
C
C       GET THE TEST NUMBER AND THE DATE, AND CONVERT THE START
C       TIME TO SECONDS SINCE MIDNIGHT.
C
        DO 13 I=1,5
        IDTYPE(I)=BUFFER(I)
13      CONTINUE
        IDAY=FLD(BUFFER(148),1,5)
        IMON=FLD(BUFFER(148),6,9)
        MONTH=MNTAB(IMON)
        IYR=FLD(BUFFER(148),10,16)+1900
        PTIM=FLOAT(IHR)*3600.0+FLOAT(IMIN)*60.0+FLOAT(ISEC)
        SONDE="
        ISONDE="10"
        SONDETYPE=BUFFER(6)
        IF(SONDETYPE.EQ.102)SONDE="A "
        IF(SONDETYPE.EQ.103)SONDE="C "
```

```
            IF(SONDETYPE.EQ.104)SONDE='B '
C
C       READ A BLOCK OF DATA FROM THE DATA FILE
C
   14       IBLK=IBLK+1
            CALL RDBLK(IGU1,IBLK,BUFFER,1,IER)
            IF(IER.EQ.9.OR.IBLK.GT.NBLKS)GOTO 30
            IF(IER.NE.1)GOTO 100
C
C       UNPACK A RECORD FROM THE BUFFER
C
            DO 20 I=0,7
            DO 15 J=1,32
   15       RECORD(J)=BUFFER(I*32+J)
C
C       RECORD GOOD?
C
            IF(ELEVATION.LE.0.0.OR.SLANTRANGE.EQ.999999.0)GOTO 20
C
C       CONVERT TIME TO FLOATING POINT
C
            PREVTIME=TIME
            TIMELAST=TIME10
            TIME10=TIME
            TIMEX=TIME10
            IF(TIME10.LT.0.0)TIMEX=65536.0+TIME10
            IF(TIME10.GE.0.0.AND.TIMELAST.LT.0.0)ROLLOVER=ROLLOVER+1.0
            TIME=TIMEX+ROLLOVER*65536.0
            TIME=TIME/10.0
            IF(TIME.LT.STIME)GOTO 20
C
C       CONVERT THE TIME TO SECONDS SINCE MIDNIGHT
C
            ISEC=ISEC+IFIX(TIME-PREVTIME)
            IF(ISEC.LT.60)GOTO 16
            ISEC=ISEC-60
            IMIN=IMIN+1
   16       IF(IMIN.LT.60)GOTO 17
            IMIN=IMIN-60
            IHR=IHR+1
   17       TTIM=FLOAT(IHR)*3600.0+FLOAT(IMIN)*60.0+FLOAT(ISEC)
C
C       TEMPERATURE CHECK
C
C       1=GOOD, 0=BAD
C
C       TEMP      7     6     5     4     3     2     1     0
C       ------------------------------------------------------
C       TEMP1   |  1  |  1  |  1  |  1  |  1  |  0  |  0  |  0  |
C       TEMP2   |  1  |  1  |  0  |  0  |  1  |  1  |  0  |  0  |
C       TEMP3   |  1  |  0  |  1  |  0  |  1  |  0  |  1  |  0  |
C       ------------------------------------------------------
C
            ICT=1
            IF(TEMP1.LT.999.0)ICT=ICT+4
            IF(TEMP2.LT.999.0)ICT=ICT+2
```

```
      IF(TEMP3.LT.999.0)ICT=ICT+1
      GOTO (40,41,42,43,44,45,46,47),ICT
   40 TMP=999.9
      GOTO 19
   41 TMP=TEMP3
      GOTO 19
   42 TMP=TEMP2
      GOTO 19
   43 TMP=(TEMP2+TEMP3)/2.0
      GOTO 19
   44 TMP=TEMP1
      GOTO 19
   45 TMP=(TEMP1+TEMP3)/2.0
      GOTO 19
   46 TMP=(TEMP1+TEMP2)/2.0
      GOTO 19
   47 TMP=(TEMP1+TEMP2+TEMP3)/3.0
C
C     CONVERT THE TEMPERATURE TO KELVIN
C
   19 IF(TMP.NE.999.9)TMP=TMP+273.15
      WRITE(IOU2)TTIM,TMP,AZIMUTH,ELEVATION,SLANTRANGE
   20 CONTINUE
      GOTO 14
   30 CONTINUE
C
C     ASK THE OPERATOR TO REMOVE THE DATA DISKETTE AND REPLACE IT
C     WITH THE S DISKETTE
C
      CLOSE IOU1
      CALL RELEASE("DP1",IER)
      PAUSE 'REMOVE DATA DISK FROM DP1 AND MOUNT CORAWINSONDE DISK IN DP1:'
      CALL INIT("DP1")
C
C     READ THE ID FILE TO GET THE START TIME OF THE CO-RAWIN
C     AND CHECK TO MAKE SURE IT'S WITHIN LIMITS
C
      OPEN IOU1,"DP1:CONTROLFILE",ATT="L",LEN=110,ERR=120
      READ(IOU1)(X,I=1,7),I,ID,IM,IY,X,IT,(X,I=1,10),RLAT,X,X,X,X,X
      RPTIM=FLOAT(IT/100)*3600.0+FLOAT(MOD(IT,100))*60.0
      IF(ID.NE.IDAY.OR.IM.NE.IMON.OR.IY.NE.IYR.OR.ABS(PTIM-RPTIM).GT.21600.0)
     * GOTO 140
      CLOSE IOU1
      CLOSE IOU2
      OPEN IOU1,"TAPE1",LEN=20
      OPEN IOU2,"TAPE2",LEN=20
C
C     CALCULATE THE GEOPOTENTIAL GRAVITY COEFFICIENT
C     AND OUTPUT THE RUN CHECKOUT TAB
C
      CALL GRAVITY
      CALL CHKOUT(ROCKTIME)
C
C     CALCULATE THE MID-POINT OF ALL THE DATA LEVELS
C     AND CORRECT THE TEMPERATUR
C
```

```
            CALL MIDINT
            CALL RANDTC
      C
      C     COMPARE THE ROCKET OBSERVATION TO THE CO--RAWINSONDE
      C     TO GET A PRESSURE BASELINE AND CALCULATE THE TWO KILOMETER WIND LAYERS
      C
            CALL COMPRSR(IH1,IH2,IM1,IM2,RAWINDAY,RAWINMONTH,RAWINYEAR,
     *      ROCKTIME)
            CALL TWOKM
      C
      C     CALCULATE THE PRESSURE AND DENSITY, OUTPUT THE TABULATED DATA AND
      C     PLOT THE TEMPERATUR CURVE
      C
            CALL PRESCON
            CALL ONEKILO(ROCKTIME)
            IF(IOU3.EQ.3)CALL PLOTCH(ROCKTIME)
            DELETE "ROCKSAVE"
            OPEN 20,"ROCKSAVE",ATT="L",LEN=80
            WRITE(20)IH1,IH2,IM1,IM2,RAWINDAY,RAWINMONTH,RAWINYEAR,
     *      (IDTYPE(I),I=1,3),(STATIONID(I),I=1,15),ROCKTIME,IDAY,
     *      MONTH,IYR,GRAT,RE,ISONDE,IOU3,STANUM,IMON
            CLOSE 20
      C
      C     CLOSE THE FILES AND QUIT
      C
            CLOSE IOU2
            CLOSE IOU1
            CALL RELEASE("DP1",IER)
            STOP
      C
      C     ERROR MESSAGES
      C
      100   TYPE "ERROR",IER," ON MSS DATA FILE - ABORT"
            STOP
      110   TYPE "ERROR OR END OF FILE ON ROCKET TABLES -- ABORT"
            STOP
      120   TYPE "ERROR ON OPEN OF CO-RAWINSONDE FILES - ABORT"
            STOP
      130   TYPE "ERROR ON OPEN OF MSS DATA FILE - ABORT"
            STOP
      140   TYPE "CO-RAWINSONDE TAKEN MORE THAN 6 HOURS BEFORE LAUNCH - ABORT"
            STOP
      C
      1     FORMAT(4I1)
      200   FORMAT(/"(13)WAS THIS A NIGHT LAUNCH (YES/NO): ...(10)(10)(10)",Z)
      201   FORMAT(A2)
      202   FORMAT(/"(13)WHAT IS THE FIRST GOOD TIME: XXX(10)(10)(10)",Z)
      203   FORMAT(F5.1)
      204   FORMAT(/"(13)OUTPUT TO CONSOLE OR PRINTER (CNS/PRT): ...",
     *      3("(10)"),Z)
      205   FORMAT(/"(13)ENTER STATION NUMBER FROM M.D.G.: XX(10)(10)",Z)
      206   FORMAT(I2)
      207   FORMAT(F3.0)
      208   FORMAT(15A2)
      210   FORMAT(/"(13)ENTER STATION ID(MAXIMUM 30 CHARACTERS): ",
     *      30(",")/41X,"(13)",Z)
```

```
END
```

```
      REAL MAXALT,MONTH,MNTAB(12)
      LOGICAL NIGHT
      DOUBLE PRECISION GRAT,PC,RE
      INTEGER STATIONID(15),SONDE
      COMMON/DATA/RE,ZAT,MAXALT,HBL,TBL,YIP,XIP,HSP,MNTAB,RLAT,
     > X,Y,Z,AIC(51),BIC(51),CIC(51),DIC(51),CID(51),PC,GRAT,PBL,
     * CON1,CON2,IND,NS,IX,IA,IB,IC,ID,NOTEMP,NOKS,STATIONID,RIS,
     * IN(8),INX(18),IROCK,IA1,IKT,IHR,IEW,ICW,IND1,IDN,IDAY,MONTH,
     * IHR,IMIN,IDTYPE(5),IOU1,IOU2,IOU3,DEBUG,ORDINAL,NIGHT,IYR,
     * MXALTS,II,UX,UY,T,UT,P,
     * F,SONDE,ISONDE
```

```
      SUBROUTINE MIDIN1
      INCLUDE 'DATA5'
      READ(IGU1)B,T,XX,YY,ZZ
      MAXAUT=77
   98 READ(IGU1,END=99)BA,TA,XA,YA,ZA
      TP=(T+TA)/2.0
      IF(T.EQ.999.9.OR.TA.EQ.999.9)TP=999.9
      H=(ZZ+ZA)/2.0
      BB=(B+BA)/2.0
      D=BA-B
      VX=(XX-XA)/D
      VY=(YY-YA)/D
      VZ=(ZA-ZZ)/D
      WRITE(IGU2)H,VZ,VX,VY,TP,BB
      B=BA
      T=TA
      XX=XA
      YY=YA
      ZZ=ZA
      GOTO 98
   99 CLOSE IGU1
      CLOSE IGU2
      OPEN IGU1,'TAPE1',LEN=32
      OPEN IGU2,'TAPE2',LEN=24
      RETURN
      END
```

```
      SUBROUTINE BAND1C
      INCLUDE 'DATAS'
      DATA AA,AB,AC,AD,I,IPAGE/4*0.0,2*0/
      READ(1002)H1,Z1,X1,Y1,T1,G1
      UX1=X1
      UY1=Y1
      UT1=T1
      READ(1002)H2,Z2,X2,Y2,T2,G2
      UX2=X2
      UY2=Y2
      UT2=T2
      GR=SNGL(GRAT*9.80616D0)
   10 READ(1002,END=50)H3,Z3,X3,Y3,T3,G3
      UX3=X3
      UY3=Y3
      UT3=T3
      T=999.9
      DG=G3-G1
      D=((Z3-Z1)/DT)+GR
      VX=X2-((Z2*((X3-X1)/DT))/D)
      VY=Y2-((Z2*((Y3-Y1)/DT))/D)
      XC=VX-X2
      YC=VY-Y2
      V=SQRT(Z2**2+XC**2+YC**2)
      IF(H2.LT.20000.0)GOTO 30
      IF(T1.EQ.999.9.OR.T2.EQ.999.9.OR.T3.EQ.999.9)GOTO 40
      I=71-IFIX(H2/1000.)
      IF(H2.GE.70000.)I=1
      T4=T2**4
      AA=ATC(I)*(V*V)
      AB=BTC(I)*((T3-T1)/DT)
      AC=CTC(I)
      IF(NIGHT)AC=CTD(I)
      AD=DTC(I)*T4
      T=T2-AA+AB-AC+AD
      GOTO 40
   30 T=T2
   40 UT1=UT2
      IF(T.EQ.999.9)UT=999.9
      WRITE(1001)H2,Z2,VX,VY,UX2,UY2,T,UT1
      YC=T-UT2
      H1=H2
      H2=H3
      Z1=Z2
      Z2=Z3
      X1=X2
      X2=X3
      Y1=Y2
      Y2=Y3
      UX1=UX2
      UX2=UX3
      UY1=UY2
      UY2=UY3
      T1=T2
      T2=T3
      UT1=UT2
```

```
            UT2=UT3
            G1=G2
            G2=G3
            GOTO 10
     50     CLOSE IOU1
            CLOSE IOU2
            OPEN IOU1,"TAPE1",LEN=32
            OPEN IOU2,"TAPE2",LEN=32
            RETURN
            END
```

```
      SUBROUTINE TWOKM
      REAL  XA(3,3),XB(9),XX(9),XC(9,3),YA(3,3),YB(9),YY(9),YC(9,4)
      REAL  HEIGHT(5),FALLRT(5),CORDX(5),CORDY(5),TEMP(5),TMPCOR(5),A(8)
      INCLUDE 'DATA5'
      DO 10 I=1,4
      READ(10U1)HA,FA,XX(I),YY(I),UXA,UYA,TA,UTA
   10 WRITE(10U2)HA,FA,XX(I),YY(I),UXA,UYA,TA,UTA
      DO 20 I=1,4
   20 READ(10U1)HEIGHT(I),FALLRT(I),XX(I+4),YY(I+4),CORDX(1),CORDY(1),
     * TEMP(I),TMPCOR(I)
   30 READ(10U1,END=150)HEIGHT(5),FALLRT(5),XX(9),YY(9),CORDX(5),CORDY(5),
     * TEMP(5),TMPCOR(5)
      SX=999.9
      SY=999.9
      DO 50 I=1,9
      IF(XX(I).EQ.999.9)GOTO 110
   50 CONTINUE
      DO 60 I=1,9
      XC(I,1)=1.
   60 YC(I,1)=1.
      DO 70 J=2,3
      DO 70 I=1,9
      XC(I,J)=XC(I,J-1)*I
   70 YC(I,J)=YC(I,J-1)*I
      DO 80 I=1,3
      DO 80 J=1,3
      XA(I,J)=0.
      YA(I,J)=0.
      DO 80 K=1,9
      XA(I,J)=XA(I,J)+XC(K,I)*XC(K,J)
   80 YA(I,J)=YA(I,J)+YC(K,I)*YC(K,J)
      DO 90 I=1,3
      XB(I)=0.
      YB(I)=0.
      DO 90 K=1,9
      XB(I)=XB(I)+XC(K,I)*XX(K)
   90 YB(I)=YB(I)+YC(K,I)*YY(K)
      CALL SIMQ(XA,XB,3)
      CALL SIMQ(YA,YB,3)
      SX=25.*XB(3)+5.*XB(2)+XB(1)
      SY=25.*YB(3)+5.*YB(2)+YB(1)
  110 WRITE(10U2)HEIGHT(1),FALLRT(1),SX,SY,CORDX(1),CORDY(1),TEMP(1),
     * TMPCOR(1)
      DO 130 I=1,8
      XX(I)=XX(I+1)
  130 YY(I)=YY(I+1)
      DO 140 I=1,4
      J=I+1
      HEIGHT(I)=HEIGHT(J)
      FALLRT(I)=FALLRT(J)
      CORDX(I)=CORDX(J)
      CORDY(I)=CORDY(J)
      TEMP(I)=TEMP(J)
  140 TMPCOR(I)=TMPCOR(J)
      GOTO 30
  150 DO 160 I=1,4
```

```
  160     WRITE(IOU2)HEIGHT(I),FALLRT(I),XX(I),YY(I),CORDX(I),CORDY(I),TEMP(I),
         * TMPCOR(I)
          CLOSE IOU1
          CLOSE IOU2
          OPEN IOU1,"TAPE1",LEN=32
          OPEN IOU2,"TAPE2",LEN=32
          DO 200 I=1,1000
          READ(IOU2,END=201)A
  200     CONTINUE
  201     I=I-1
          IF(1.GT.I)GOTO 205
          DO 202 J=1,I
          IF(J.NE.1)BACKSPACE IOU2
          BACKSPACE IOU2
          READ(IOU2)HA,FA,X,Y,UXA,UYA,TA,UTA
          IF(HA.GT.70249.0)TA=999.9
  202     WRITE(IOU1)HA,FA,X,Y,UXA,UYA,TA,UTA
  205     CLOSE IOU1
          CLOSE IOU2
          OPEN IOU1,"TAPE1",LEN=32
          OPEN IOU2,"TAPE2",LEN=36
          RETURN
          END
```

```
      SUBROUTINE SIMQ(A,B,N)
      DIMENSION A(1),B(1)
      JJ=-N
      DO 65 J=1,N
      JY=J+1
      JJ=JJ+N+1
      BIGA=0
      ITEST=J
      DO 30 I=J,N
      IJ=IT+I
      IF(ABS(BIGA).GE.ABS(A(IJ)))GOTO 30
      BIGA=A(IJ)
      IMAX=I
   30 CONTINUE
      IF(ABS(BIGA).LE.0.0)RETURN
      I1=J+N*(J-2)
      IT=IMAX-J
      DO 50 K=J,N
      I1=I1+N
      I2=I1+IT
      SAVE=A(I1)
      A(I1)=A(I2)
      A(I2)=SAVE
      A(I1)=A(I1)/BIGA
   50 CONTINUE
      SAVE=B(IMAX)
      B(IMAX)=B(J)
      B(J)=SAVE/BIGA
      IF(J.EQ.N)GOTO 70
      IGS=N*(J-1)
      DO 63 IX=JY,N
      IXJ=IGS+IX
      JT=J-IX
      DO 60 JX=JY,N
      IXJX=N*(JX-1)+IX
      JJX=IXJX+IT
      A(IXJX)=A(IXJX)-(A(IXJ)*A(JJX))
   60 CONTINUE
      B(IX)=B(IX)-(B(J)*A(IXJ))
   63 CONTINUE
   65 CONTINUE
   70 NY=N-1
      IT=N*N
      DO 90 J=1,NY
      IA=IT-J
      IB=N-J
      IC=N
      DO 80 K=1,J
      B(IB)=B(IB)-A(IA)*B(IC)
      IA=IA-N
      IC=IC-1
   80 CONTINUE
   90 CONTINUE
      RETURN
      END
```

```
      SUBROUTINE PRESCOM
      INCLUDE "DATA8"
      PPL=999.9
      KSW=0
      IBLSW=0
  100 READ(IOU1,END=99)H,F,XX,YY,UX,UY,T,UT
      HI=SNGL(GRAT*((RE*DBLE(H))/(RE+DBLE(H))))
      IF(HBL.LE.H)GOTO 10
      WRITE(IOU2)H,XX,YY,UX,UY,T,UT,PPL,F
      GOTO 100
   10 IF(HBL.EQ.H)GOTO 101
      IBLSW=1
      IF((H-HBL).LE.3000.)GOTO 101
      KSW=1
      PBL=999.9
      TBL=999.9
      F=-999.9
  101 IF(PBL.GT.99.)GOTO 109
      PPL=ALOG10(PBL)
      GOTO 110
  109 KSW=1
  110 TP=TBL
      HP=SNGL(GRAT*((RE*DBLE(HBL))/(RE+DBLE(HBL))))
      WRITE(IOU2)HBL,XX,YY,UX,UY,TP,UT,PPL,F
      IF(IBLSW.EQ.1)BACKSPACE IOU1
  108 READ(IOU1,END=99)H,F,XX,YY,UX,UY,T,UT
      PRBLG=999.9
      IF(KSW.EQ.1)GOTO 107
      HI=SNGL(GRAT*((RE*DBLE(H))/(RE+DBLE(H))))
      IF(T.NE.999.9.AND.TP.NE.999.9)GOTO 105
      KSW=1
      GOTO 107
  105 TV=(T+TP)/2.
      PRBLG=PPL-((HI-HP)/(SNGL(PC)*TV))
      HP=HI
      PPL=PRBLG
      TP=T
  102 WRITE(IOU2)H,XX,YY,UX,UY,T,UT,PRBLG,F
      GOTO 108
   99 CLOSE IOU1
      CLOSE IOU2
      OPEN IOU1,"ROCKET0UT",LEN=80,ATT='L'
      OPEN IOU2,"TAPE2",LEN=36
      RETURN
      END
```

```
      SUBROUTINE ONEKILO(ROCKTIME)
      INCLUDE "DATAS"
      NSW=0
      CON1=1
      CON2=1
      HINT=1000.
  106 WRITE(IOU3,8)(IDTYPE(I),I=2,3),STATIONID,ROCKTIME,IDAY,
     * MONTH,IYR,ISONDE,SONDE
      WRITE(IOU1,8)(IDTYPE(I),I=2,3),STATIONID,ROCKTIME,IDAY,
     * MONTH,IYR,ISONDE,SONDE
    8 FORMAT("1"/" TEST NUMBER",5X,2A2,/1X,15A2/1X,A4,"Z  ",I2,
     * 1X,A4,I4//," SUPER LOKI  PWN-",A2,A1)
      SPDUNITS="MPS "
      IALT=" B"
      ALTUNITS="EDMM"
      IF(NSW.NE.2)GOTO 50
      SPDUNITS="KTS "
      IALT="GE"
      ALTUNITS="OMFT"
   50 WRITE(IOU1,4)IALT,ALTUNITS,(SPDUNITS,I=1,3)
      WRITE(IOU3,4)IALT,ALTUNITS,(SPDUNITS,I=1,3)
      NSW=NSW+1
      XTP=999.9
   51 READ(IOU2)HA,XA,YA,UXA,UYA,TA,UTA,PA,FA
      IF(HA.LT.1.)GOTO 51
      HA=HA*CON2
      HSP=HA
      HS=AINT(HA/1000.0)*1000.0+HINT
  109 IF(HS.GT.HA)GOTO 103
      HS=HS+HINT
      GOTO 109
  103 READ(IOU2,END=99)HB,XB,YB,UXA,UYA,TB,UTB,PB,FB
      HB=HB*CON2
  100 IF(HS.NE.HB)GOTO 102
      CALL OUTPUT(HS,XB,YB,TB,UTB,PB,FB)
      HS=HS+HINT
  105 HA=HB
      XA=XB
      YA=YB
      TA=TB
      UTA=UTB
      PA=PB
      FA=FB
      GOTO 103
  102 IF(HS.GE.HB)GOTO 105
      RAT=(HS-HB)/(HA-HB)
      XX=VALUE(RAT,XA,XB)
      YY=VALUE(RAT,YA,YB)
      T=VALUE(RAT,TA,TB)
      U=VALUE(RAT,UTA,UTB)
      P=VALUE(RAT,PA,PB)
      F=VALUE(RAT,FA,FB)
      CALL OUTPUT(HS,XX,YY,T,U,P,F)
      HS=HS+HINT
      GOTO 100
   99 HS=HA
```

```
      CALL OUTPUT(HB,XA,YA,TA,UYA,PA,FA)
      MAXALT=MAXALT*CON2
      WRITE(IOU1,1)MAXALT
      WRITE(IOU3,1)MAXALT
    1 FORMAT(//' MAXIMUM ALTITUDE',I10)
      REWIND IOU2
      HINT=250.
      IF(NSW.LE.1)GOTO 106
      IF(NSW.GT.2)RETURN
      HINT=1000.
      CON1=1.942569
      CON2=3.280833
      GOTO 106
    4 FORMAT('   ALT      DIR   SPD   TEMP      TEMP   PRESS   DENSITY',
     *  '    RF      VS      SHR*/2X,A2,A4,'   DEG   ',A4,'    K      CORR ',
     *  '   MBS      G/M3       ',A4,3X,A4,'   /SEC '/)
      END
```

```
      SUBROUTINE OUTPUT(HS,XX,YY,TEMP,TMPCOR,PRESS,FS)
      INCLUDE 'DATA5'
      DOUBLE PRECISION FS,DS
C
      RRND(X)=AINT(X+SIGN(0.5,X))
C
      DIR=WDIR(XX,YY)
      SPD=WSPD(XX,YY)
      IF(SPD.NE.999)SPD=SPD*CON1
      FS=9.999999D2
      DS=9.999999D2
      VS=999.99
      FX=999.99
      WS=.999
      IF(TEMP.NE.999.)GOTO 101
      TEMP=999.99
      TMPCOR=999.99
  101 TC=TEMP-TMPCOR
      IF(PRESS.NE.999.9)FS=1.001**DBLE(PRESS)
      IF(TEMP.EQ.999.99.OR.PRESS.EQ.999.9)GOTO 110
      DS=(FS/DBLE(TEMP))*3.483802
      VS=(331.45*SQRT(TEMP/273.15))*CON1
  110 IF(FS.NE.-999.9)FX=-FS*CON2
      IF(XX.NE.999.9.AND.XIP.NE.999.9)
     * WS=(SQRT((XX-XIP)*(XX-XIP)+(YY-YIP)*(YY-YIP))*CON2)/(HS-HSP)
      IF(HBL.NE.HS)GOTO 114
      DS=9.999999D2
      FS=9.999999D2
  114 IF(HS.LT.20000.0)RETURN
      IF(HS.LT.65616.66.AND.CON1.NE.1)RETURN
      WRITE(IOU1,1)HS,RRND(DIR),RRND(SPD),TEMP,TC,FS,DS,FX,VS,WS
      WRITE(IOU3,1)HS,RRND(DIR),RRND(SPD),TEMP,TC,FS,DS,FX,VS,WS
    1 FORMAT(1X,I7,2I6,2F8.2,2F9.4,2F8.2,F6.3)
      HSP=HS
      XIP=XX
      YIP=YY
      RETURN
      END
```

```
      SUBROUTINE PLOTCH(ROCKTIME)
      INTEGER ICT(50)
      INCLUDE "DATAS"
C
1     FORMAT(")",15A2/1X,A4,"Z  ",I2,1X,A4,I4/
     *  ' SUPER LOKI DATASONDE FWN-",A2,A1/" TEST NUMBER ",3A2/
     *  ' ASCENT NBR. ",2A2//15X,"205  210  215  220  225  230  235  ",
     *  "240  245  250  255  260  265  270  275  280  285  290  295  MSG"/)
5     FORMAT(I7,5X,50A2)
C
      WRITE(IOU3,1)STATIONID,ROCKTIME,IDAY,MONTH,IYR,
     *  ISONDE,SONDE,IDTYPE
      REWIND IOU2
      NRECS=0
100   READ(IOU2,END=110)HS,X,X,X,X,T,X,X,X
      NRECS=NRECS+1
      GOTO 100
110   BACKSPACE IOU2
      READ(IOU2)HS,X,X,X,X,T,X,X,X
      H=HS-AMOD(HS,1000.0)
      DO 120 I=1,NRECS
      HSP=HS
      TP=T
      BACKSPACE IOU2
      BACKSPACE IOU2
      READ(IOU2,END=150)HS,X,X,X,X,T,X,X,X
      IF(HS.GT.70000.)GOTO 160
125   IF(H.GT.HSP.OR.H.LT.HS)GOTO 120
      RATIO=(H-HS)/(HSP-HS)
      TINT=999.9
      IF(T.NE.999.9.AND.TP.NE.999.9)TINT=RATIO*(TP-T)+T
      KK=100
      IF(TINT.NE.999.9)KK=TINT-200.0
      IF(KK.LE.0.OR.KK.GT.100)KK=100
      DO 130 K=1,50
130   ICT(K)="  "
      DO 140 K=5,100,5
140   CALL PUTC(ICT,K,1R.)
      CALL PUTC(ICT,KK,1RT)
      WRITE(IOU3,5)H,ICT
160   H=H-1000.0
      GOTO 125
120   CONTINUE
150   REWIND IOU2
      RETURN
      END
```

```
      SUBROUTINE COMPXYZ
C
C     COMPUTES X, Y AND Z FROM AZ, EL AND RANGE
C     AZIMUTH AND ELEVATION MUST BE IN RADIANS, RANGE MUST BE IN YARDS
C
      INCLUDE 'DATAS'
      COMMON/XYZ/R,AL,EL
      DOUBLE PRECISION DBLR,DZAT,REZAT
C
C     CONVERT RANGE TO METERS AND PERFORM SINGLE TO DOUBLE CONVERSIONS
C
      R=R*.9144
      DBLR=DBLE(R)
      DZAT=DBLE(ZAT)
      REZAT=RE+DZAT
C
C     CALCULATE Z
C
      Z=SNGL(DSQRT(REZAT**2+DBLR**2+2.0D0*DBLR*RFZAT*
     * DSIN(DBLE(EL)))-RE)
C
C     CORRECT ELEVATION ANGLE FOR EARTH'S CURVE
C
      EC=EL+((Z*(COS(EL)/SIN(EL)))/SNGL(2.2*RE))
C
C     CALCULATE X & Y
C
      X=R*COS(EC)*SIN(AL)
      Y=R*COS(EC)*COS(AL)
      RETURN
      END
```

```
      SUBROUTINE GRAVITY
C     COMPUTES A RELATIVE ACCELERATION OF GRAVITY FACTOR
      INCLUDE 'DATA8'
      N6=2
      RLAT=2*(RLAT/57.29578)
      GRAT=1-(.0026373*(COS(RLAT)))+(.0000059*(COS(RLAT))**2)
      RETURN
      END
```


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ROCS 3

```
      SUBROUTINE COMPRSR(IH1,IH2,IM1,IM2,RAWINDAY,RAWINMONTH,RAWINYEAR,
     *  ROCKTIME)
C
      INTEGER RAWINTIME,RAWINDAY,RAWINMONTH,RAWINYEAR
      REAL HEIGHT(41),RSTMP(41),TMPDIF(41),RPRS(41)
      INCLUDE 'DATA5'
C
      OPEN 4,'DPI:CONTROLFIL',ATT="L",LEN=110
      READ(4)(X,I=1,7),I,RAWINDAY,RAWINMONTH,RAWINYEAR,X,
     *       RAWINTIME,(X,I=1,17)
   95 CLOSE 4
      DO 96 I=1,41
   96 HEIGHT(I)=0.0
      JJ=1
      KNTR=1
      I=0
      DO 100 I=1,1000
      READ(IOU1,END=101)Z,H2,VX,VY,UX2,UY2,T,UT2
  100 CONTINUE
  101 KIX=I-1
      BACKSPACE IOU1
      BACKSPACE IOU1
      READ(IOU1)Z,H2,VX,VY,UX2,UY2,T,UT2
      BACKSPACE IOU1
      BACKSPACE IOU1
      READ(IOU1)Z1,H2,VX,VY,UX2,UY2,T1,UT2
      KIX=KIX-1
      HS=AINT(Z-AMOD(Z,1000.0))
  102 IF(Z.LT.HS)GOTO 104
      HS=HS+250.
      GOTO 102
  104 HBI=HS
      WRITE(IOU3,4)
    4 FORMAT(1H1,11X,"* * *  TEMPERATURE COMPARISON  * * *"//
     *  " ROCKETSONDE",24X,"RAWINSONDE")
      WRITE(IOU3,5)(ID(TYPE(I),I=1,3),ISONDE,SONDE
    5 FORMAT(" TEST NBR ",3A2/" ROCKET SUPER LOKI DATASONDE PWN-",
     *  A2,A1)
      IH1=RAWINTIME/1000
      IH2=MOD(RAWINTIME,1000)/100
      IM1=MOD(RAWINTIME,100)/10
      IM2=MOD(RAWINTIME,10)
      WRITE(IOU3,6)(STATIONID(I),I=1,19),IH1,IH2,IM1,IM2,RAWINDAY,
     *  MNTAB(RAWINMONTH),RAWINYEAR
    6 FORMAT(1X,15A2,5X,4I1,"Z  ",12,1X,A4,I4)
      WRITE(IOU3,7)ROCKTIME,IDAY,MONTH,IYR
    7 FORMAT(1X,A4,"Z",I4,1X,A4,I4//)
      WRITE(IOU3,8)
    8 FORMAT(" ALTITUDE",8X,"TEMPERATURE  DEGREES C"/
     *  "  METERS     ROCKET    RAWINSONDE   DIFFERENCE"/)
      I=KIX
      OPEN 5,"DPI:TARDATA",ATT="R",LEN=56
  107 READ(5,END=98)HGT1,X,X,TMP1,X,RPR1,X,X,X,X,X,X,X,X
      IF(HGT1.NE.HS)GOTO 107
  109 IF(HS.GE.Z.AND.HS.LT.Z1)GOTO 111
      Z=Z1
```

```
      T=T1
      BACKSPACE 1
      BACKSPACE 1
      READ(1)Z1,HZ,VX,VY,UX2,UY2,T1,UT2
      I=I-1
      IF(I.EQ.0)GOTO 98
      GOTO 109
  111 IF(I.NE.999..AND.T1.NE.999.)GOTO 113
      A=999.9
      DIFF=99.9
      GOTO 114
  113 RAT=(Z-HS)/(Z-Z1)
      A=T-RAT*(T-T1)-273.15
      DIFF=A-TMP1
      WRITE(IOU3,9)HS,A,TMP1,DIFF
    9 FORMAT(1X,I7,F10.2,F11.2,F12.1)
  114 IF(HS.LT.20000.0)GOTO 116
      J=J+1
      HEIGHT(J)=HS
      RSTMP(J)=A
      TMPDIF(J)=DIFF
      RPRS(J)=RPR1
      KNTR=J
  116 HS=HS+250.
      IF(HS.LT.30000.0)GOTO 107
   20 REWIND 1
      CLOSE 5
  200 IF(HEIGHT(1).GT.30000.)GOTO 210
      DO 201 JJ=1,KNTR
      IF(ABS(TMPDIF(JJ)).LT.2.50)GOTO 205
  201 CONTINUE
  210 HBL=HEIGHT(1)
      PBL=999.9
      TBL=999.9
      RETURN
    0 SELECT BASELINE
  205 HBL=HEIGHT(JJ)
      PBL=RPRS(JJ)
      TBL=RSTMP(JJ)+273.15
      RETURN
      END
```

```
      S.    UTINE COMPRSR(IH1,IH2,IM1,IM2,RAWINDAY,RAWINMONTH,RAWI    AR,
     *  RC    IME)
C
      INTEGER RAWINTIME,RAWINDAY,RAWINMONTH,RAWINYEAR
      REAL HEIGHT(41),RSTMP(41),TMPDIF(41),RPRS(41)
      INCLUDE "DATAS"
      DATA HEIGHT,TMPDIF/82*0.0/
C
      OPEN 4,"DP1:CONTROLFIL",ATT="L",LEN=110
      READ(4)(X,I=1,7),I,RAWINDAY,RAWINMONTH,RAWINYEAR,X,
     *       RAWINTIME,(X,I=1,17)
95    CLOSE 4
C-----------
      WRITE(IOU3,4)
4     FORMAT(1H1,11X,"* * *  TEMPERATURE COMPARISON * * *"//
     *  " ROCKETSONDE",24X,"RAWINSONDE")
      WRITE(IOU3,5)(IDTYPE(I),I=1,3),ISONDE,SONDE
5     FORMAT(" TEST NBR ",3A2/" ROCKET SUPER LOKI DATASONDE PWN-",
     *  A2,A1)
      IH1=RAWINTIME/1000
      IH2=MOD(RAWINTIME,1000)/100
      IM1=MOD(RAWINTIME,100)/10
      IM2=MOD(RAWINTIME,10)
      WRITE(IOU3,6)(STATIONID(I),I=1,15),IH1,IH2,IM1,IM2,RAWINDAY,
     *  MNTAB(RAWINMONTH),RAWINYEAR
6     FORMAT(1X,15A2,5X,4I1,"Z  ",I2,1X,A4,I4)
      WRITE(IOU3,7)ROCKTIME,IDAY,MONTH,IYR
7     FORMAT(1X,A4,"Z",I4,1X,A4,I4//)
      WRITE(IOU3,8)
8     FORMAT(" ALTITUDE",8X,"TEMPERATURE  DEGREES C"/
     *  "  METERS     ROCKET    RAWINSONDE   DIFFERENCE"/)
C---------
      OPEN 5,"DP1:TABDATA",ATT="R",LEN=56
      DO 100 I=1,41
105   READ(5,END=110)HEIGHT(I),X,X,RSTMP(I),X,RPRS(I),X,X,X,X,X,X,X,X
      IF (HEIGHT(I).LT.20000.) GOTO 105
100   CONTINUE
C----------
110   CLOSE 5
      IF (I.LT.10) GOTO 999
      DO 120 I=1,1000
120   READ(IOU1,END=130)X,X,X,X,X,X,X,X
130   KIX=I-2
      BACKSPACE IOU1
      BACKSPACE IOU1
      READ(IOU1)Z,X,X,X,X,X,T,X
      J=1
      DO 140 I=1,KIX
      BACKSPACE IOU1
      BACKSPACE IOU1
      READ(IOU1)Z1,X,X,X,X,X,T1,X
      IF(T.GE.999..OR.T1.GE.999.) GOTO 131
132   IF(Z.GT.HEIGHT(J).OR.HEIGHT(J).GE.Z1)GOTO 133
      RAT=(Z-HEIGHT(J))/(Z-Z1)
      A=T-RAT*(T-T1)-273.15
```

```
      TMPDIF(J)=A-RSTMP(J)
      WRITE(IOU3,9)HEIGHT(J),A,RSTMP(J),TMPDIF(J)
9     FORMAT(1X,I7,F10.2,F11.2,F12.1)
133   IF(HEIGHT(J).GE.Z1)GOTO 131
      J=J+1
      IF(J.GT.41.OR.HEIGHT(J).EQ.0.0)GOTO 150
      GOTO 132
131   Z=Z1
      I=I1
140   CONTINUE
C-----
150   K=1
      KK=9
155   A=0.0
      DO 160 I=K,KK
      IF(HEIGHT(I).EQ.0.0)GOTO 999
160   A=A+ABS(TMPDIF(I))
      A=A/9.
      IF(A.GT.2.5)GOTO 170
      HBL=HEIGHT(K)
      TBL=RSTMP(K)+273.15
      PBL=RPRS(K)
      REWIND IOU1
      RETURN
170   K=K+1
      KK=KK+1
      IF(KK.LE.41)GOTO 155
999   HBL=HEIGHT(I)
      PBL=TBL=999.9
      REWIND IOU1
      RETURN
      END
```

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```
      SUBROUTINE CHKOUT(ROCKTIME)
C     DOES T,A,E,R, CHECKOUT ON PRINTER
C     AND WRITES T,TMP,X,Y, AND Z ON DRIVE 1 IN BINARY
      INTEGER TODAY(3),CLOCK(3)
      INCLUDE "DATAS"
      COMMON/XYZ/R,AL,EL
    3 FORMAT('   TIME SEC   AZIMUTH  ELEVATION    RNG MTS     HGT MTS",
     *  "  HR MIN SEC",8X,"TIME     AZIMUTH   ELEVATION",/X,"RANGE    AL",
     *  "TITUDE"/)
      IF(IOU3.NE.3)GOTO 110
      CALL DATE(TODAY,IER)
      CALL TIME(CLOCK,IER)
      WRITE(IOU3,10)IDTYPE,STATIONID,TODAY(2),MNTAB(TODAY(1)),TODAY(3),CLOCK
   10 FORMAT("TEST NUMBER: ",3A2," ASCENT NUMBER: ",3A2,9X,15A2,9X,
     *"RUN DATE ",I2,1X,A4,I4,"  RUN TIME ",I2,":",I2,":",I2)
  110 CONTINUE
      IF(IOU3.NE.3)GOTO 120
      WRITE(IOU3,9)ROCKTIME,IDAY,MONTH,IYR,ISONDE,SONDE
    9 FORMAT(1X,A4,'Z  ',I2,1X,A4,I4,80X,"SUPER LOKI DATASONDE PWN-"
     *A2,A1/)
      WRITE(IOU3,11)
   11 FORMAT(26X,"NSS TRACKING DATA",51X,'DIFFERENCE/MINUTE")
      WRITE(IOU3,3)
  120 CONTINUE
      DT=0.0
      DA=0.0
      DE=0.0
      DR=0.0
      DO 112 I=1,1000
      DZ=0.0
      READ(IOU2,END=113)T,TMP,A,E,R
      AL=A/57.29578
      EL=E/57.29578
C     CALL COMPXYZ
C
      IF(Z.LT.19000.)GOTO 113
      IF(I.EQ.1)GOTO 111
C     COMPUTE DELTAS
      DT=T-T1
      DX=60./DT
      DZ=(Z-Z1)*DX
      DE=(E-E1)*DX
      DA=(A-A1)*DX
      DR=(R-R1)*DX
  111 IH1=T/3600.0
      HOLD=AMOD(T,3600.0)
      IM1=HOLD/60.0
      IS1=AMOD(HOLD,60.0)
      IF(IOU3.EQ.3)WRITE(IOU3,7)T,A,E,R,Z,IH1,IM1,IS1,DT,DA,DE,DR,DZ
    7 FORMAT(1H ,F10.2,2F10.3,2F12.2,3I4,5F12.2)
C     PROCESS VALUES
      T1=T
      A1=A
      E1=E
      R1=R
```

```
            Z1=Z
            WRITE (TIME,TEMP,X,Y,AND Z ON TAPE
            WRITE(IOU1) (,TMP,X,Y,Z
  112       CONTINUE
  113       CLOSE IOU1
            CLOSE IOU2
            OPEN IOU1,'TAPE1',LEN=20
            OPEN IOU2,'TAPE2',LEN=24
            RETURN
            END
```

```
      FUNCTION IGETC(CHARAY,INDEX)
      INTEGER CHARAY(1)
      IPOINT=(INDEX+1)/2
      IGETC=IABS(CHARAY(IPOINT))/256
      IF(MOD(INDEX,2).EQ.1)RETURN
      IGETC=MOD(IABS(CHARAY(IPOINT)),256)
      RETURN
      END
```

```
      SUBROUTINE PUTC(CHARAY,INDEX,IVALUE)
      INTEGER CHARAY(1)
      IPOINT=(INDEX+1)/2
      IF(MOD(INDEX,2).EQ.0)GOTO 1
      CHARAY(IPOINT)=MOD(IABS(CHARAY(IPOINT)),256)+IVALUE*256
      RETURN
    1 CHARAY(IPOINT)=(CHARAY(IPOINT)/256)*256+IVALUE
      RETURN
      END
```

```
      FUNCTION WDIR(XX,YY)
      IF(XX.NE.0.0)GOTO 100
      IF(YY.GE.0.0)WDIR=360.0
      IF(YY.LT.0.0)WDIR=180.0
      RETURN
  100 D=ATAN(YY/XX)*57.29578
      WDIR=270.0-D
      IF(XX.GT.0.0)WDIR=90.0-D
      IF(WDIR.LT.0.5)WDIR=360.0
      RETURN
      END
```

```
      FUNCTION WSPD(X,Y)
      WSPD=(X**2+Y**2)**0.5
      IF(X.EQ.999.9.OR.Y.EQ.999.9)WSPD=999.
      RETURN
      END
```

```
FUNCTION VALUE(R,A,B)
VALUE=R*(A-B)+B
IF(A.EQ.999.9.OR.B.EQ.999.9)VALUE=999.9
IF(A.EQ.-999.9.OR.B.EQ.-999.9)VALUE=-999.9
RETURN
END
```

```
      REAL ATC(51),BTC(51),CTC(51),DTC(51),CTD(51)
      DATA ATC/
     *  2*4.6E-4,2*4.64E-4,4.63E-4,4.62E-4,4.61E-4,4.59E-4,4.57E-4,
     *  4.55E-4,4.52E-4,4.5E-4,4.48E-4,4.46E-4,4.44E-4,4.43E-4,4.42E-4,
     *  4.41E-4,2*4.4E-4,4*4.39E-4,4.4E-4,2*4.41E-4,2*4.42E-4,2*4.43E-4,
     *  2*4.44E-4,2*4.45E-4,2*4.46E-4,2*4.47E-4,4.48E-4,2*4.49E-4,
     *  2*4.5E-4,4.51E-4,3*4.52E-4,4.53E-4,4.54E-4,4.55E-4/
      DATA BTC/12.77,
     *  10.6,8.92,7.7,6.69,5.93,5.27,4.72,4.27,3.84,3.51,3.23,2.95,
     *  2.72,2.51,2.342,2.184,2.053,1.935,1.828,1.728,1.627,1.545,
     *  1.469,1.393,1.33,1.271,1.212,1.16,1.111,1.065,1.019,.978,.94,
     *  .903,.868,.837,.804,.776,.749,.724,.7,.677,.656,.635,.616,.597,
     *  .58,.565,.55,.535/
      DATA CTC/23.2,18.4,15.0,12.5,
     *  10.4,8.94,7.7,6.69,5.87,5.13,4.57,4.1,3.66,3.29,2.98,2.73,2.51,
     *  2.33,2.17,2.03,1.9,1.77,1.67,1.57,1.48,1.4,1.33,1.26,1.2,1.14,
     *  1.09,1.03,.984,.943,.897,.858,.822,.785,.753,.722,.694,.666,.64,
     *  .615,.593,.572,.551,.533,.518,.502,.487/
      DATA CTD/7.56,6.04,4.93,4.13,3.48,3.,2.59,2.26,2.,1.75,1.57,1.41,
     *  1.27,1.15,1.04,.956,.88,.82,.766,.718,.673,.629,.592,.559,.528,
     *  .5,.476,.452,.43,.41,.392,.372,.355,.341,.323,.311,.298,.285,
     *  .274,.263,.253,.243,.235,.225,.218,.21,.203,.197,.191,.185,.18/
      DATA DTC/18.51E-10,14.63E-10,
     *  11.83E-10,9.8E-10,8.18E-10,6.98E-10,5.98E-10,5.17E-10,4.53E-10,
     *  3.93E-10,3.49E-10,3.12E-10,2.78E-10,2.49E-10,2.24E-10,2.05E-10,
     *  1.87E-10,1.74E-10,1.62E-10,1.51E-10,1.41E-10,1.31E-10,1.23E-10,
     *  1.16E-10,1.09E-10,1.03E-10,9.76E-11,9.24E-11,8.79E-11,8.35E-11,
     *  7.95E-11,7.53E-11,7.18E-11,6.85E-11,6.52E-11,6.22E-11,5.96E-11,
     *  5.68E-11,5.44E-11,5.22E-11,5.E-11,4.79E-11,4.6E-11,4.42E-11,
     *  4.25E-11,4.09E-11,3.94E-11,3.81E-11,3.69E-11,3.58E-11,3.47E-11/
C
      DELETE "ROCKETABLE.PM"
      OPEN 1,"ROCKETABLE.PM",ATT="L",LEN=208
      WRITE(1)(ATC(I),BTC(I),CTC(I),DTC(I),I=1,51)
      WRITE(1)(CTD(I),I=1,51)
      CLOSE 1
      STOP
      END
```

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PASS 2

1.0 Module Description

1.1 Main Routine

Initializes the various control and conversion constants, and controls the flow of data through the subroutines.

1.2 Subroutine ETFORM

Formats data for entry into the high altitude data formatting routine to develop data for archiving and publication.

1.3 Subroutine CODIT

Final formatting and output routine for data developed in Subroutine ETFORM.

1.4 Subroutine RDRAWIN

Reads co-rawinsonde data for input into the archiving and publication formatting program.

1.5 Subroutine ROCOB

Encodes all rocketsonde parameters into the international ROCOB code and stores data for later transmission.

1.6 Subroutine MANDL

Mandatory data level inserter called by ROCOB to place data levels into the proper place in the code.

1.7 Subroutine LEFTZERO

Inserts leading zeros on integer numbers when required for output.

1.8 Subroutine TSIGN

Converts a decimal integer to a positive or negative character.

1.9 Function VALUE

Interpolates for a value or sets missing data to nines.

1.10 Function WDIR

Computes wind direction in meteorological polar coordinate system.

1.11 Function WSPD

Computes wind velocity using velocity components as input data.

2.0 MATHEMATICAL DESCRIPTION

2.1 Main Routine

None

2.2 Subroutine ETFORM

2.2.1 Conversion of Baseline Height to Nearest Geopotential Decameter

$$H = \{[GRAT \cdot (Re \cdot Z)/(Re + Z)] + 5\}/10$$

where H = baseline height, geopotential decameters

GRAT = ratio of local acceleration of gravity to acceleration of gravity at 45 degrees latitude

Re = mean radius of the Earth, meters

Z = geometric height, meters

5 = rounding factor

10 = converts meters to decameters

2.2.2 Computation of Baseline Pressure

$$P = (10^{PL} \cdot 100) + 0.5$$

where P = baseline pressure

PL = log of baseline pressure

100 = formats pressure for output

0.5 = rounding factor

2.2.3 Computation of an Interpolation Ratio for Significant Level Checking

$$K = (H - HB)/(HA - HB)$$

where K = interpolation ratio

H = height of level being checked

HA = height, upper level

HB = height, lower level

2.2.4 Interpolation for Significant Level Test Temperature

$$ST = K \cdot (TA - TB) + TB$$

where ST = significant level test temperature, degrees Kelvin

K = interpolation ratio

TA = temperature, upper level, degrees Kelvin

TB = temperature, lower level, degrees Kelvin

2.2.5 Computation of an Interpolation Ratio for Obtaining Even Decameter Data

$$K = (H1 - HB)/(HA - HB)$$

where K = interpolation ratio

H1 = output height, meters

HA = height, lower level, meters

HB = height, upper level, meters

2.2.6 Conversion of Output Height to Decameters

$$H = H1/10$$

where H = height, decameters

H1 = height, meters

10 = conversion factor

2.2.7 Interpolation for Output Parameters

$$X = K \cdot (XA - XB) + XB$$

$$Y = K \cdot (YA - YB) + YB$$

$$T = K \cdot (TA - TB) + TB$$

$$P = K \cdot (PA - PB) + PB$$

$$F = K \cdot (FA - FB) + FB$$

$$UX = K \cdot (UXA - UXB) + UXB$$

$$UY = K \cdot (UYA - UYB) + UYB$$

where X = output east-west position component

XA = lower level east-west position component

XB = upper level east-west position component

Y = output north-south position component

YA = lower level north-south position component

YB = upper level north-south position component

T = output temperature

TA = lower level temperature

TB = upper level temperature

P = output log of pressure

PA = lower level log of pressure

PB = upper level log of pressure

F = output fall rate

FA = lower level fall rate

FB = upper level fall rate

UX = output uncorrected east-west position component

UXA = lower level uncorrected east-west position component

UXB = upper level uncorrected east-west position component

UY = output uncorrected north-south position component

UYA = lower level uncorrected north-south position component

UYB = upper level uncorrected north-south position component

K = interpolation ratio

2.2.8 Computation of an Interpolation Ratio for Obtaining the Constant Pressure Output Data

$$K = (P - PB)/(PA - PB)$$

where K = interpolation ratio

P = log of pressure, mandatory output levels

PA = log of pressure, lower level

PB = log of pressure, upper level

2.2.9 Interpolation for Height, East-West Position Component, North-South Position Component, Uncorrected East-West Position Component, Uncorrected North-South Position Component, Temperature, Uncorrected Temperature, and Fall Rate

$$X = K \cdot (XA - XB) + XB$$

$$Y = K \cdot (YA - YB) + YB$$

$$T = K \cdot (TA - TB) + TB$$

$$P = K \cdot (PA - PB) + PB$$

$$F = K \cdot (FA - FB) + FB$$

$$UX = K \cdot (UXA - UXB) + UXB$$

$$UY = K \cdot (UYA - UYB) + UYB$$

where

X = output east-west position component

XA = lower level east-west position component

XB = upper level east-west position component

Y = output north-south position component

YA = lower level north-south position component

YB = upper level north-south position component

T = output temperature

TA = lower level temperature

TB = upper level temperature

P = output log of pressure

PA = lower level log of pressure

PB = upper level log of pressure

F = output fall rate

FA = lower level fall rate

FB = upper level fall rate

UX = output uncorrected east-west position component

UXA = lower level uncorrected east-west position component

UXB = upper level uncorrected east-west position component

UY = output uncorrected north-south position component

UYA = lower level uncorrected north-south position component

UYB = upper level uncorrected north-south position component

K = interpolation ratio

2.3 Subroutine CODIT

2.3.1 Computation of Velocity of Sound

$$VS = 331.45 \cdot (T/273.15)^{1/2}$$

where VS = velocity of sound, meters per second

T = temperature, degrees Kelvin

331.45 = speed of sound at zero degree Celsius, meters/second

2.3.2 Computation of Barometric Pressure

$$P = 10^{PL}$$

where P = barometric pressure (millibars)

PL = log of barometric pressure

2.3.3 Computation of Density

$$\varrho = 348.38 \cdot (P/T)$$

where ϱ = density, grams per cubic meter

P = barometric pressure, millibars

T = temperature, degrees Kelvin

348.38 = gas constant for dry air and conversion factors, with pressure in millibars and density in grams/cubic meter

2.4 Subroutine RDRAWIN

None

2.5 Subroutine ROCOB

None

2.6 Subroutine MANDL

None

2.7 Subroutine LEFTZERO

None

2.8 Subroutine TSIGN

None

2.9 Function VALUE

None

2.10 Function WDIR

2.10.1 Computation of Wind Direction

$$D = \tan^{-1}(Y/X) \cdot 57.29578$$

If $X < 0$,

then $WDIR = 270 - D$

If $X > 0$,

then $WDIR = 90 - D$

If $X = 0$ and $Y \geq 0$

then $WDIR = 360$

If $X = 0$ and $Y < 0$

then $WDIR = 180$

where WDIR = wind direction, meteorological polar coordinates

D = wind direction, Cartesian coordinates

X = east-west velocity vector

Y = north-south velocity vector

57.29578 = degrees in a radian

2.11 Function WSPD

2.11.1 Computation of Windspeed

$$WSPD = \sqrt{X^2 + Y^2}$$

where WSPD = windspeed

X = east-west velocity vector

Y = north-south velocity vector

3.0 INPUT

Input to Pass 2 is from four sources. First is the scratch file output from Pass 1, second is for the constant altitude data output from Pass 1, third is the options that are input in conversational mode, and fourth is the co-rawinsonde data.

The scratch file is as follows:

Words	Contents
1—2	Altitude, meters
3—4	East-west velocity component, meters/second
5—6	North-south velocity component, meters/second
7—8	Uncorrected east-west velocity component, meters/second
9—10	Uncorrected north-south velocity component, meters/second
11—12	Temperature (degrees K)
13—14	Uncorrected temperature (degrees K)
15—16	Barometric pressure, millibars
17—18	Fall rate, meters/second

Constant Altitude Data

Height	Geometric feet or meters at standard intervals of 1 km, 250 meters, and 1,000 feet
Wind Direction	In degrees from true north. Missing data is shown as 999
Windspeed	In knots or meters/second; calm is 000 and missing is 999
Temperature	In degrees Kelvin
Temperature Correction	In degrees Kelvin
Atmospheric Pressure	Millibars
Atmospheric Density	Grams/cubic meter
Fall Rate	In feet/second or meters/second (determined by height units)
Speed of Sound	In knots or meters/second (determined by height units)
Wind Shear	Seconds^{-1}

Sample Options Dialogue

Prompt	Operator Input
Output to console or printer (CNS/PRT)	PRT

Co-Rawinsonde Data Format

Control File

Word	Contents
1	Units switch (feet/meters)
2	Winds in feet/second switch
3	Interpolation switch
4	Output device indicator
5	Optical index of refraction units switch
6	Wind shear in knots switch
7—8	Surface wind x component
9—10	Surface wind y component
11—12	Surface wind direction
13—14	Surface windspeed
15	Station number
16	Day
17	Month
18	Year
19—20	Altitude increment (feet)
21	Release time
22—23	Tropopause wind direction (degrees from true north)
24—25	Tropopause time (seconds)
26—27	Tropopause geopotential height (feet)
28—29	Tropopause dewpoint (degrees C)
30—31	Tropopause geometric height (feet)
32—33	Tropopause refractive index (optical/N)
34—35	Tropopause pressure (millibars)
36—37	Tropopause temperature (degrees C)
38—39	Tropopause relative humidity (percent)
40—41	Tropopause wind speed (knots/feet/second/meters/second)
42—45	Station latitude (double precision) (degrees)
46—47	Termination height (geometric feet)
48—49	Termination pressure (millibars)
50—54	Flight identification
55	Sonde type

Significant File

Words	Contents
1—2	Altitude (feet, geometric)
3	Wind direction (degrees)
4	Windspeed (meters/second)
5—6	Temperature (degrees C)
7—8	Dewpoint (degrees C)
9—10	Pressure (millibars)
11—12	Refractive index (N units)
13—14	Relative humidity (percent)

Mandatory File

Words	Contents
1—2	Altitude (feet, geopotential)
3	Wind direction (degrees)
4	Windspeed (meters/second)
5—6	Temperature (degrees C)
7—8	Dewpoint (degrees C)
9—10	Pressure (millibars)
11—12	Relative humidity (percent)

Tabulation File

Words	Contents
1—2	Altitude (feet, geometric)
3—4	Wind direction (degrees)
5—6	Windspeed (meters/second)
7—8	Temperature (degrees C)
9—10	Dewpoint (degrees C)
11—12	Pressure (millibars)
13—14	Relative humidity (percent)
15—16	Absolute humidity (grams/cubic meter)
17—18	Density (grams/cubic meter)
19—20	Index of refraction (N)
21—22	Velocity of sound (knots)
23—24	Shear velocity ($seconds^{-1}$)
25—26	Vapor pressure (millibars)
27—28	Precipitable water (millimeters)

4.0 OUTPUT

Output consists of the HAMDATA file and the ROCOB file. The first part of the HAMDATA file is as follows:

Words	Contents
1	Height, geometric decameters for the significant and mandatory data levels, geopotential decameters for the constant pressure levels
2—4	Wind direction (degrees from true north)
5	Windspeed (meters/second)
6	Uncorrected north-south velocity component (meters/second)
7	Uncorrected east-west velocity component (meters/second)
8	North-south velocity component (meters/second)
9	East-west velocity component (meters/second)
10	Fall rate (meters/second)
11	Temperature (degrees C)
12	Temperature (degrees C)
13—15	Barometric pressure (millibars)
16—18	Density (grams/cubic meter)
19	Velocity of sound (meters/second)

The second part of the HAMDATA file consists of the data in the mandatory and significant parts of the co-rawinsonde data and is as follows:

Mandatory File

Words	Contents
1—2	Altitude (feet, geopotential)
3	Wind direction (degrees)
4	Windspeed (knots)
5—6	Temperature (degrees C)
7—8	Dewpoint (degrees C)
9—10	Pressure (millibars)
11—12	Relative humidity (percent)

Significant File

Words	Contents
1-2	Altitude (feet)
3	Wind direction (degrees)
4	Windspeed (meters/second)
5—6	Temperature (degrees C)
7—8	Dewpoint (degrees C)
9—10	Pressure (millibars)
11—12	Refractive index (N units)

The ROCOB file is described in *Federal Meteorological Handbook 10* as follows:

ROCKETSONDE MESSAGE CODE

SECTION A - INTRODUCTION

1.1 A ROCOB report or a bulletin of ROCOB reports from a land rocketsonde station is identified by $M_iM_ii_jM_j$ = RRXX. The identifier for ROCOB SHIP is SSXX. (The name ROCOB or ROCOB SHIP shall not be included in the report.)

1.2 The code form is divided into three sections as follows:

SECTION 1 - Identification data

SECTION 2 - Data for specified geometric altitudes

SECTION 3 - Data for isobaric surfaces (optional)
(Sections 2 and 3 cannot be transmitted as a separate report.)

SECTION B - MESSAGE FORMAT

1.1 FM39.F ROCOB — Upper-level temperature and wind (possibly air density) report from land rocketsonde station.

SECTION 1	$M_iM_ii_jM_j$	$YYCG_g$	IIiii	$a_1e_Tc_Tm_r$ $r_me_we_wc_wm_r$
SECTION 2	HHZ_TTT	ddfff	$(9d_pP_1P_1P_1)$	
	HHZ_TTT	ddfff	$(9d_pP_1P_1P_1)$	
	.....	.....	.....	

SECTION 3	$11Z_TT_1T_1$	$P_1P_1h_1h_1h_1$	ddfff
	.....	.....	.....
	$11Z_TT_nT_n$	$P_nP_nh_nh_nh_n$	$d_nd_nf_nf_nf_n$
	$22Z_TT_1T_1$	$P_1P_1h_1h_1h_1$	$d_1d_1f_1f_1f_1$
	.....	.....	.....
	$22Z_TT_nT_n$	$P_nP_nh_nh_nh_n$	$d_nd_nf_nf_nf_n$
	33...	.....	.....
	44...	.....	.....
	etc.		

SECTION C - DEFINITIONS

1.1 Symbolic form table for land stations

$M_iM_iM_iM_i$ = RRXX - ROCOB report from a land station

YY = Day of the month (GMT) on which the observation was taken.

GG_g = Time of launch in hours and nearest tens of minutes GMT

MM = Month of year (01 = Jan, 12 = Dec. etc.)

JJJ = Year (980 = 1980, 981 = 1981, etc.)

IIiii = International Index Number of the observing station (II = Block Nbr and iii = Station Nbr, both given in H.O. Pub. No. 119.)

a_1 = Reason for no report and ground equipment employed (Code Table 1).

e_Te_T = Type of thermodynamic sensing equipment (Code Table 2).

c_T = Thermodynamic correction technique (Code Table 3).

m_r = Method of reducing data in temperature or wind group (Code Table 4).

r_m = Type of rocket motor (Code Table 5).

e_we_w = Type of wind sensing equipment (Code Table 6).

e_w = Wind correction technique (Code Table 3).

HH = Altitude, in kilometers, of the level for which data are reported.

Z_T = Character of the temperature reported by TT (Code Table 7).

TT = Air temperature in whole degrees Celsius at the altitude given by HH. (For a temperature of -570, the coding is TT=57 and Z_T=5.) When temperature is missing, two solidi (//) are reported for TT.

dd = True direction, in tens of degrees, from which the wind is blowing at the altitude given by HH (Code Table 8). (See note below fff.)

fff = Windspeeds are preferred in meters/sec at the altitude given by HH. If windspeeds are given in knots, 50 will be added to YY.

NOTE: (1) When wind direction or speed are missing, use solidi for ddfff as appropriate.

(2) The thickness of the layer through which wind direction and speed are determined shall be 2 km for both mandatory and significant levels; i.e., 1 km on each side of the altitude reported.

9 = Indicator figure for the density group, $9d_pP_1P_1P_1$.

d_p = Decimal point locator. The number of places to the left of the third significant figure. The decimal point must be so placed as to obtain the actual density in g/m^3 by $P_1P_1P_1$.

NOTE: The third significant figure is always included in the value reported for symbol d_p.

EXAMPLE:

Assume 120 g/m^3, the group is coded 90120 (i.e., d_p = 0).

Assume 1.20 g/m^3, the group is coded 92120 (i.e., d_p = 2).

Assume 0.281 g/m^3, the group is coded 93281 (i.e., d_p = 3).

Assume 0.0788 g/m^3, the group is coded 94788 (i.e., d_p = 4).

$P_1 P_1 P_1$ = Density in gm/m^3 rounded to three significant figures at the altitude given by HH.

11 = Indicator figures - Standard isobaric surface data follow;

temperature ($Z_T T_1 T_1$ ... $Z_T T_n T_n$) is reported in the same manner as in section 2, pressure $P_1 P_1$ .... $P_n P_n$) is reported in <u>whole</u> millibars, altitude ($h_1 h_1 h_1$ ... $h_n h_n h_n$) is reported in geopotential hectometers.

22 = Indicator figures - Standard isobaric surface data follow; temperature is reported in the same manner as in Section 2, pressure is reported in <u>tenths</u> of a millibar and altitude reported in geopotential hectometers.

33 = Indicator used for reporting pressure in <u>hundredths</u> of a millibar and altitude in geopotential hectometers.

44 = Indicator used for reporting pressure in <u>thousandths</u> of a millibar and altitude in geopotential hectometers.

55 = Indicator used for reporting pressure in <u>ten-thousandths</u> of a millibar and altitude in geopotential hectometers.

66 = Indicator used for reporting pressure in <u>hundred-thousandths</u> of a millibar and altitude in geopotential kilometers.

$d_1 d_1$ = Wind direction in tens of degrees (Code Table 8) at the reported isobaric surfaces.

$f_1 f_1 f_1$ = Windspeed in meters/sec at the reported isobaric surfaces.

5.0 ALGORITHMS

5.1 Subroutine MANDL

Convert mandatory level pressure to whole number for output in Rocket code using

$$IPS = (10^{PL(J)} + F1)\ (10^{JS}/10)$$

where IPS = pressure at mandatory level encoded as a whole number

PL(J) = log of the pressure at the mandatory level being converted to a whole number

F1 = round off factor used to move decimal point; this factor is based on PL(J)

If PL(J) < 0, F1 = 0.05
< −1, F1 = 0.005
< −2, F1 = 0.0005
< −3, F1 = 0.00005
< −4, F1 = 0.000005

JS = intermediate factor based on the pressure level indicator J which is set by the number of levels processed

If J ⩾ 31, JS = 6
< 31, JS = 5
< 26, JS = 4
< 21, JS = 3
< 16, JS = 2
< 10, JS = 1

5.2 Subroutine TSIGN

Convert the tenths value of temperature to a positive or negative character.

The temperature is read as a positive or negative real number. If it is positive the tenths value is converted to a character number. If it is negative the tenths value is converted to a coded character.

Numeric Value	Character
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7

Numeric Value	Character
8	8
9	9
−0	!
−1	J
−2	K
−3	L
−4	M
−5	N
−6	O
−7	P
−8	Q
−9	R

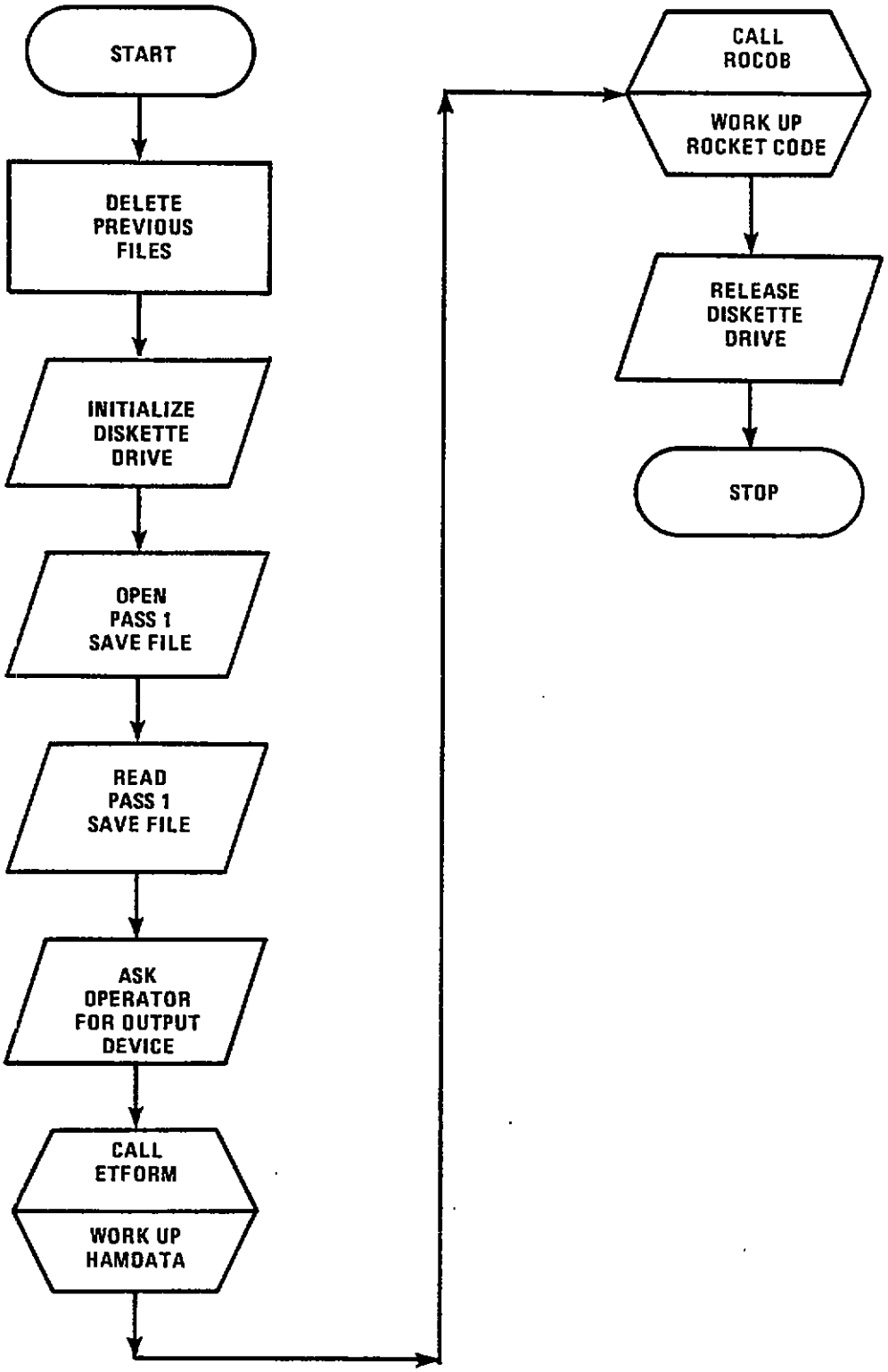
5.3 Subroutine LEFTZERO

Generate an array of single digit numbers from successive divisions of the input integer number. This routine is used to put leading zeros on integer numbers for output formatting.

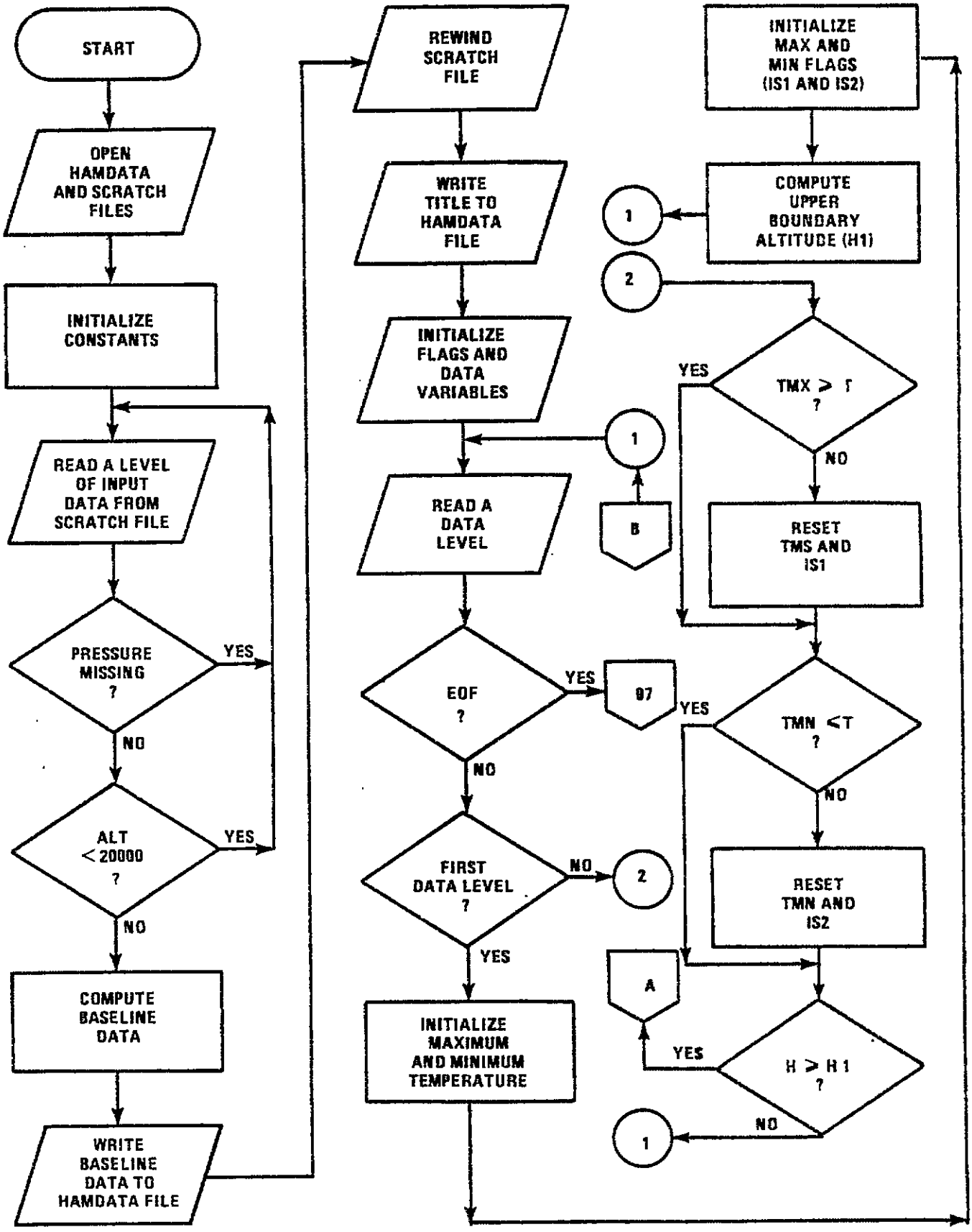
6.0 FLOWCHARTS

See the following pages.

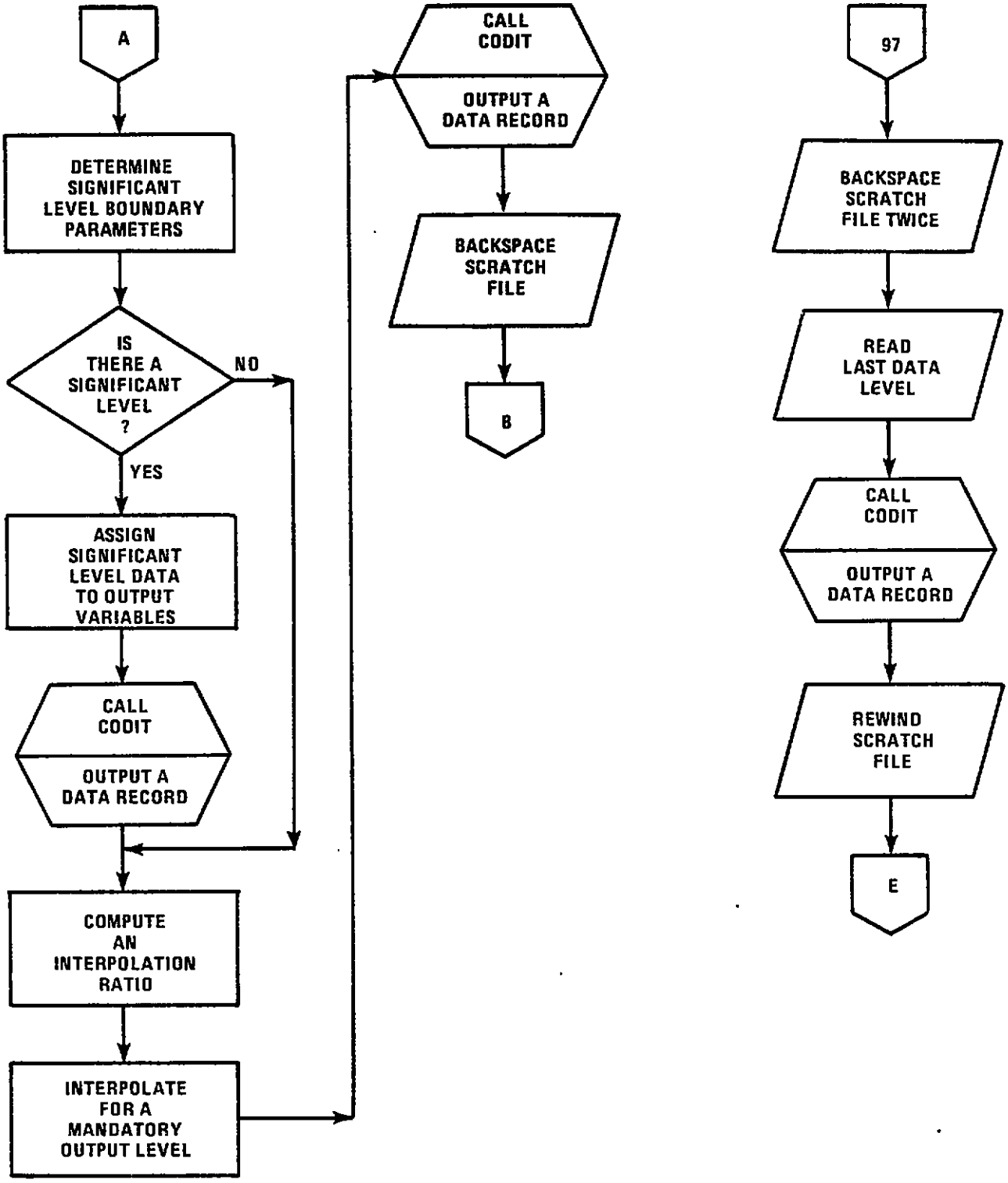
6.1 Main Routine – Pass 2



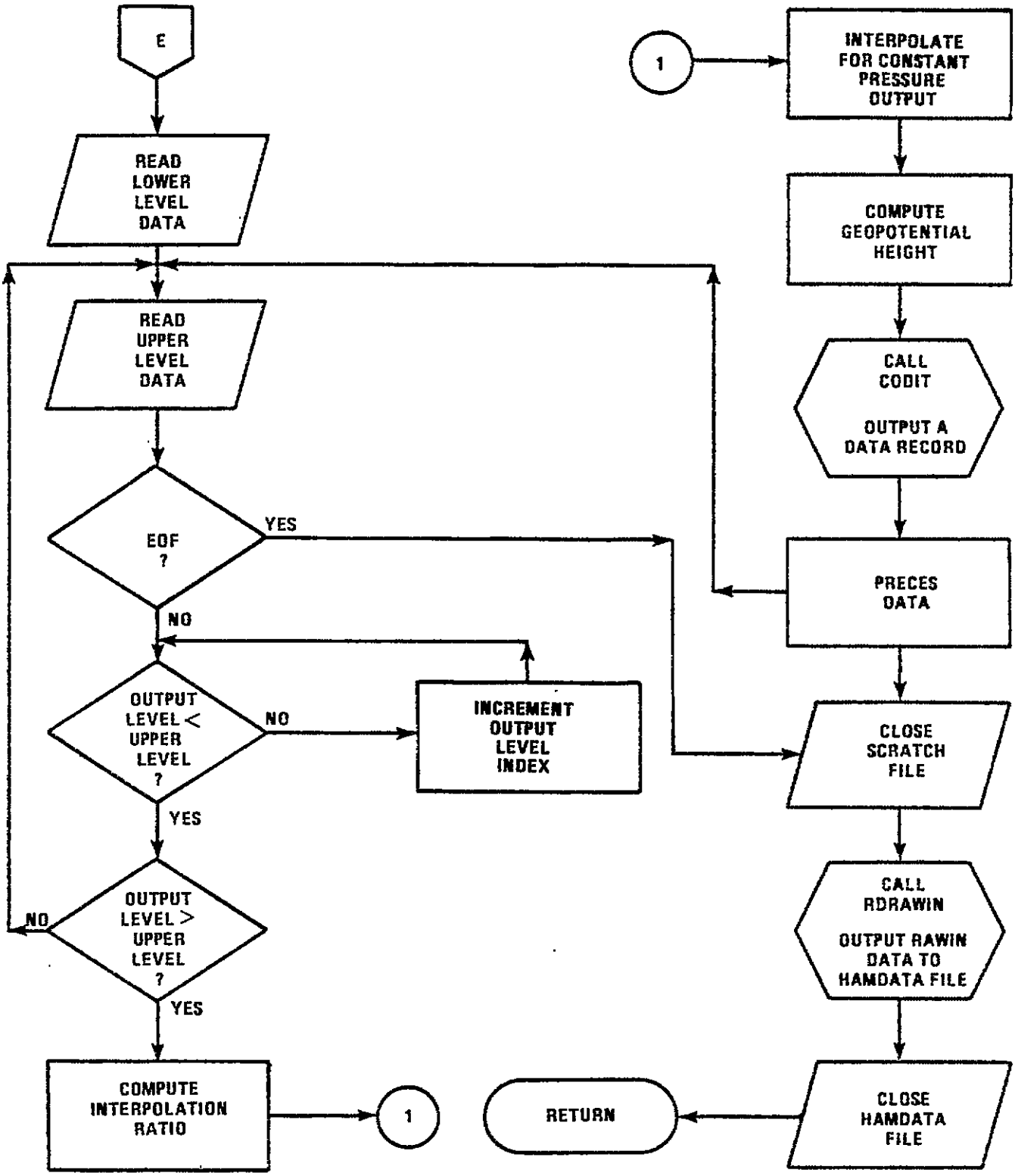
6.2.1 Subroutine ETFORM



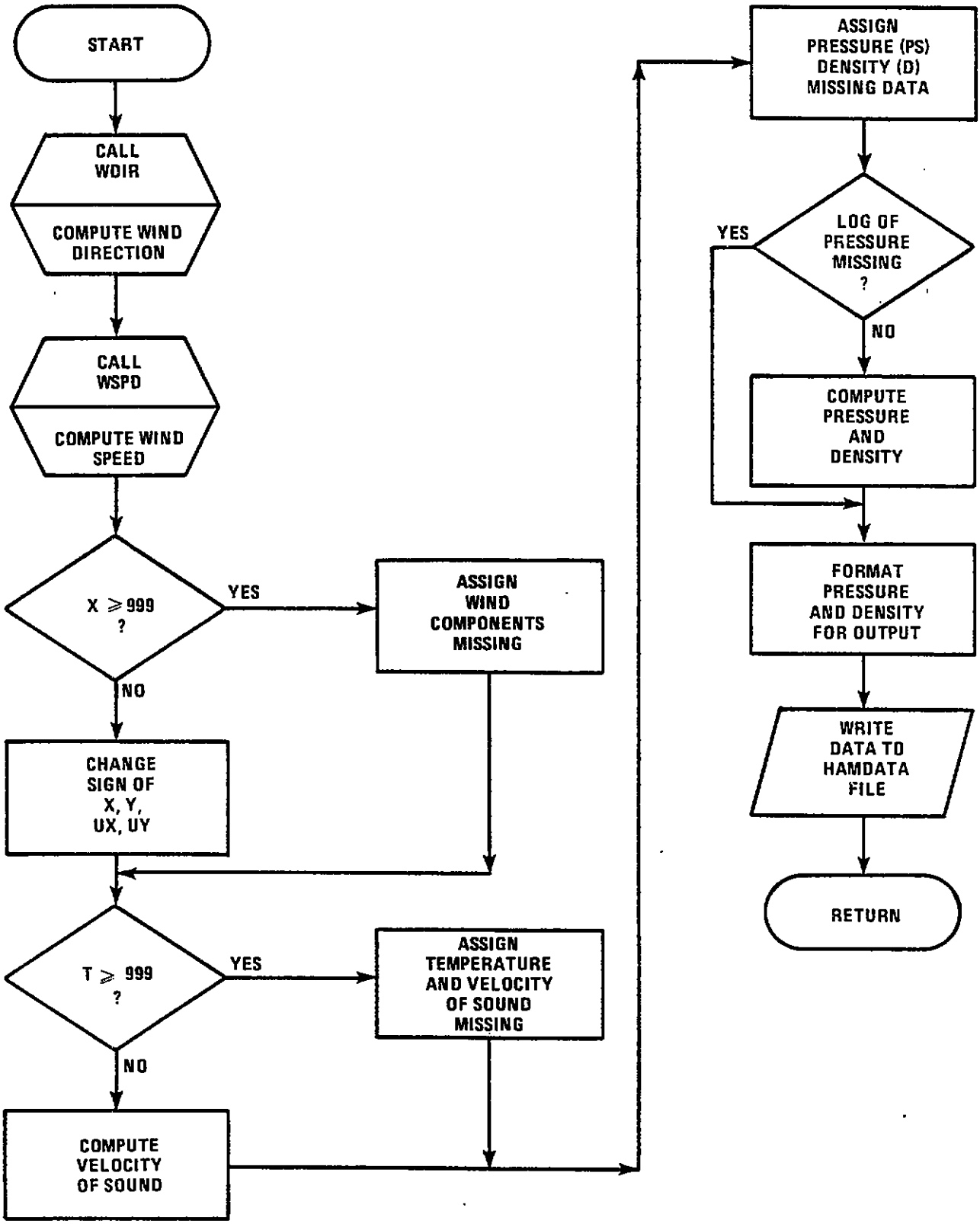
6.2.2 Subroutine ETFORM



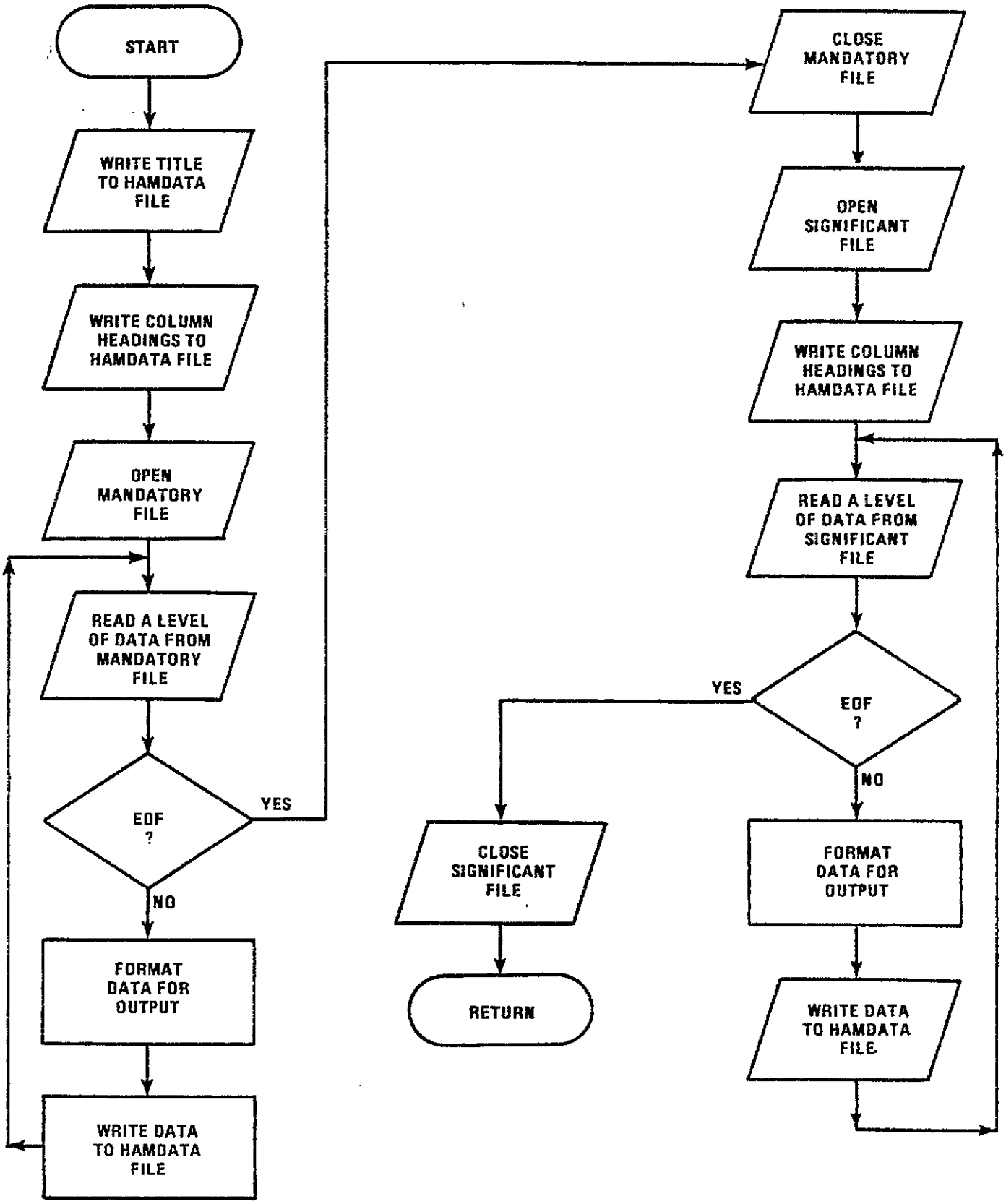
6.2.3 Subroutine ETFORM



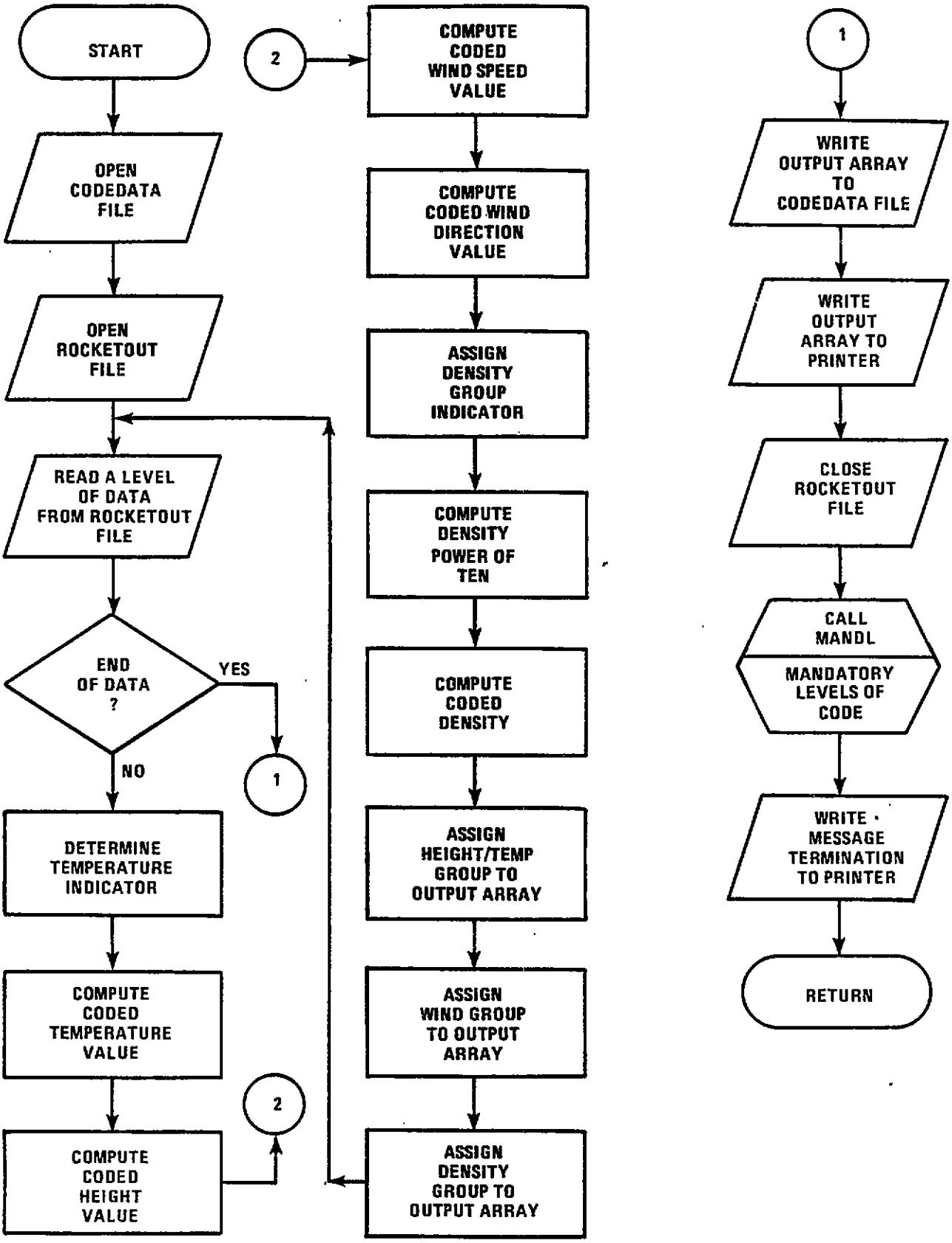
6.3 Subroutine CODIT



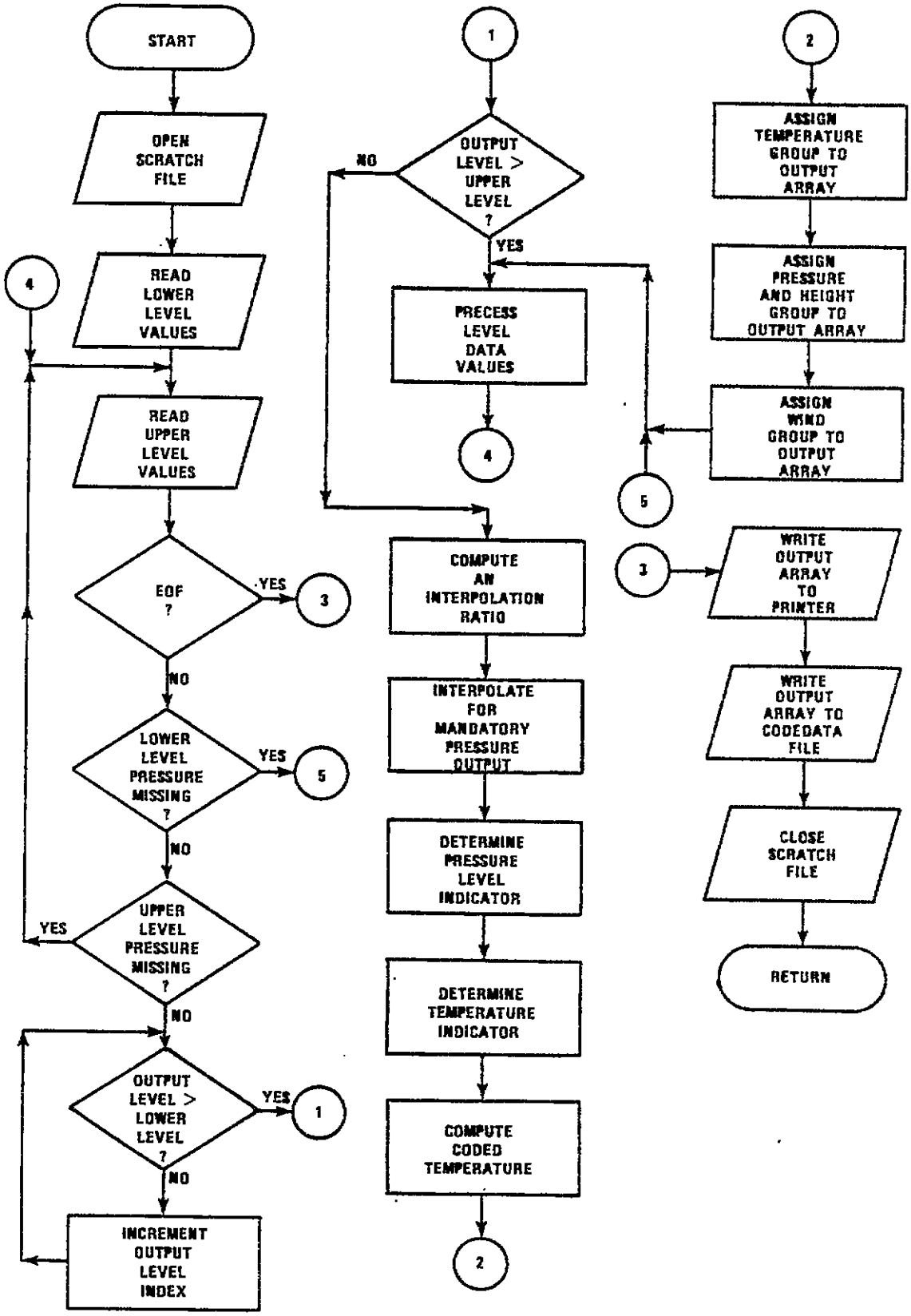
6.4 Subroutine RDRAWIN



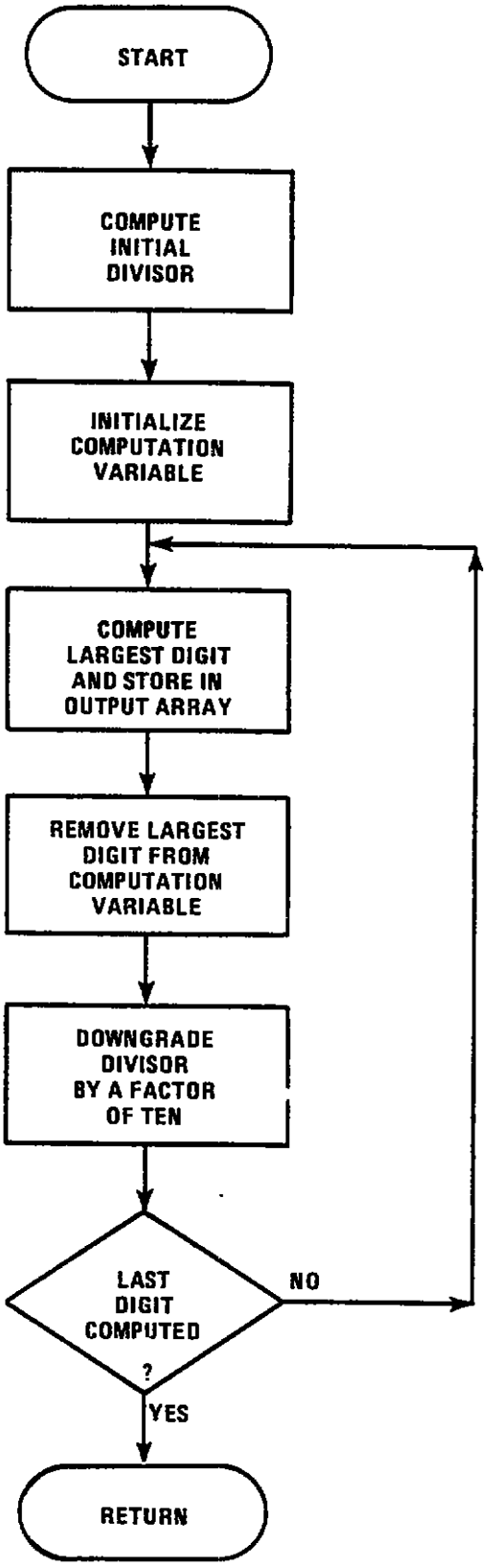
6.5 Subroutine ROCOB



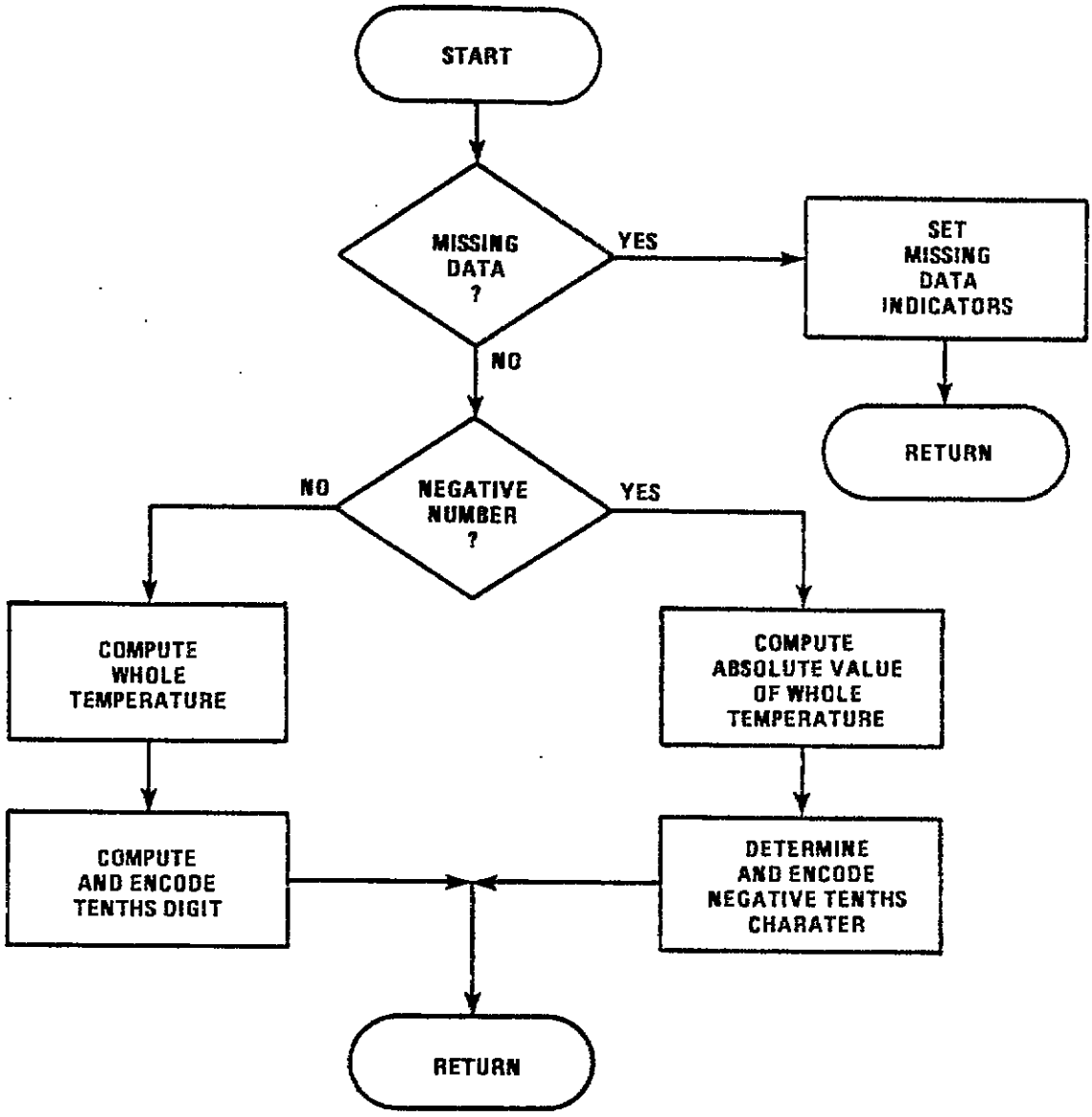
6.6 Subroutine MANDL



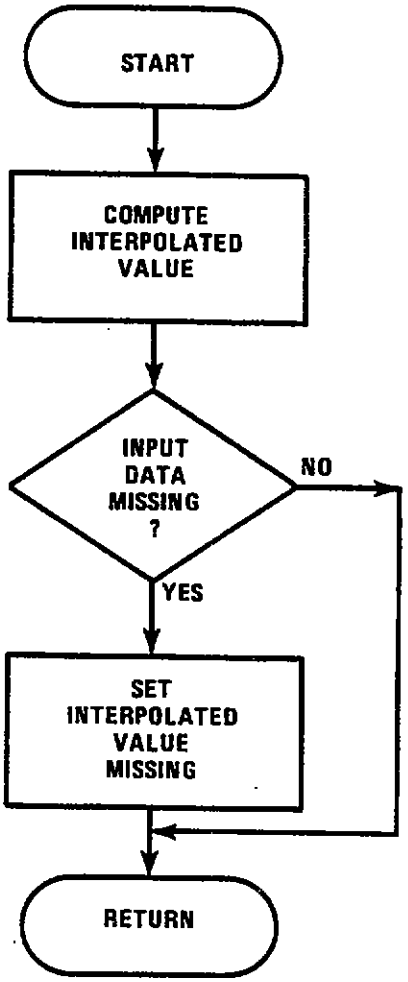
6.7 Subroutine LEFTZERO



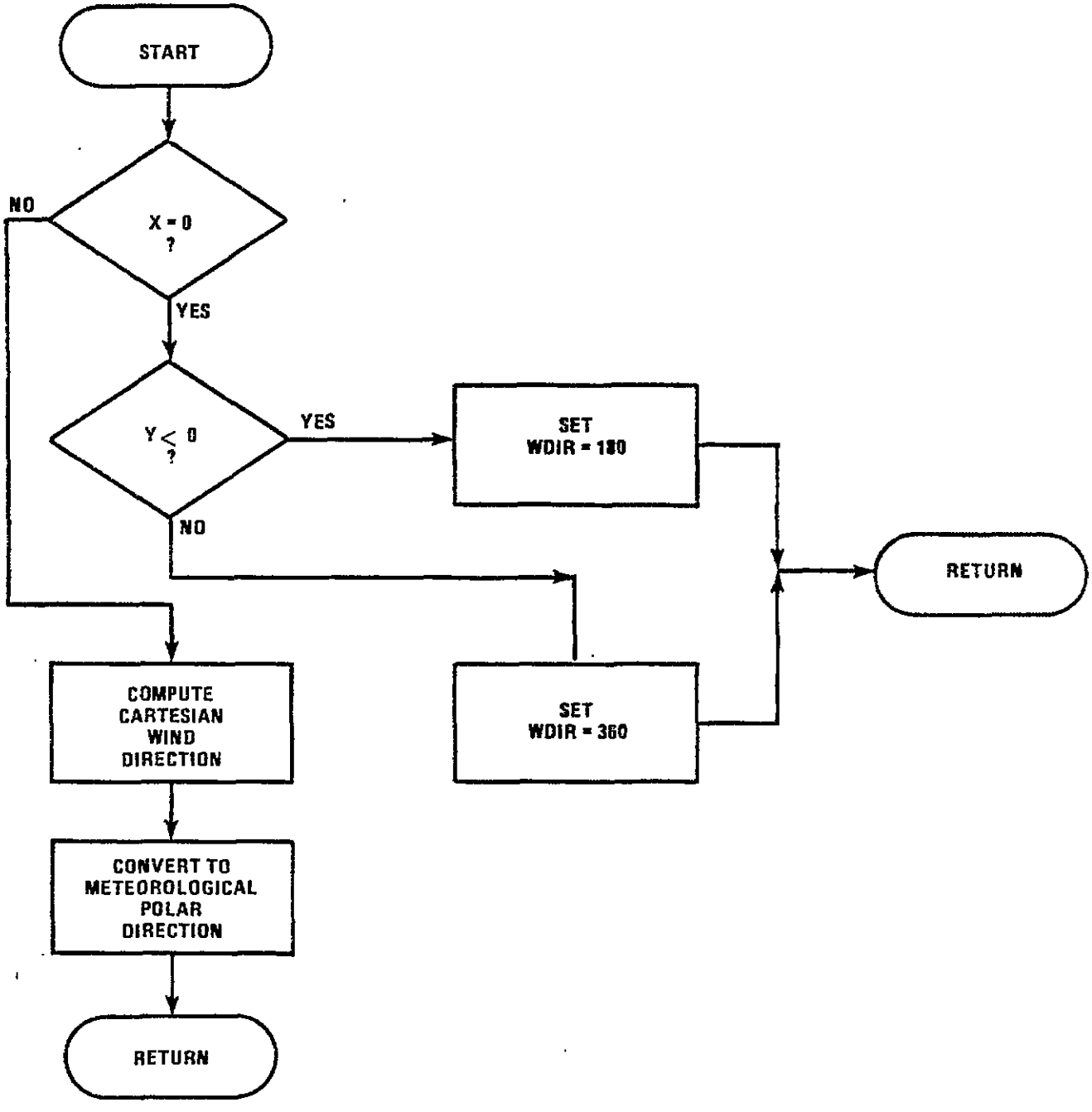
6.8 Subroutine TSIGN



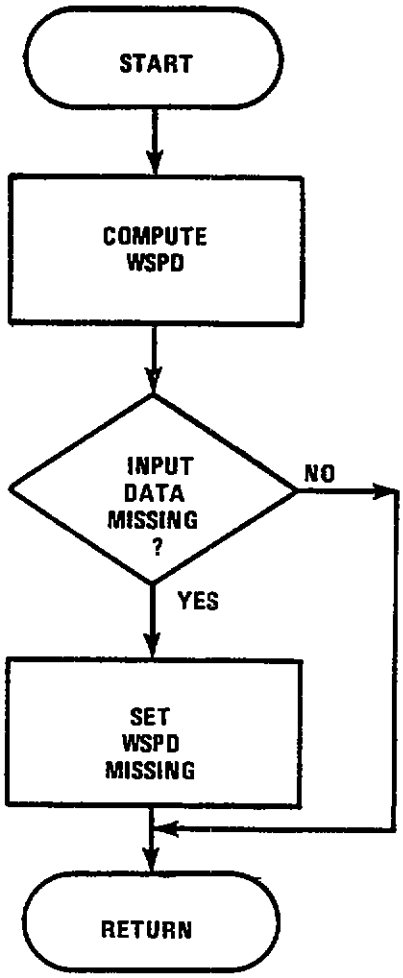
6.9 Function VALUE



6.10 Function WDIR



6.11 Function WSPD



7.0 MATHEMATICAL AND PHYSICAL CONSTANTS

7.1 Main Routine

Log of Mandatory Pressure Levels

LEVEL	50 MB	30 MB	20 MB	10 MB	7 MB
LOG	1.69897	1.47712	1.30102	1.0	0.84509
LEVEL	5 MB	3 MB	2 MB	1 MB	
LOG	0.69897	0.47712	0.30102	0.0	
LEVEL	0.7 MB	0.5 MB	0.4 MB	0.3 MB	
LOG	−0.15490	−0.30102	−0.39794	−0.52287	
LEVEL	0.2 MB	0.1 MB			
LOG	−0.699897	−1.0			
LEVEL	0.07 MB	0.05 MB	0.03 MB	0.02 MB	
LOG	−1.15490	−1.30102	−1.52287	−1.69897	
LEVEL	0.01 MB				
LOG	−2.0				
LEVEL	0.007 MB	0.005 MB	0.003 MB	0.002 MB	
LOG	−2.15490	−2.30102	−2.52287	−2.69897	
LEVEL	0.001 MB				
LOG	−3.0				
LEVEL	0.0007 MB	0.0005 MB	0.0003 MB	0.0002 MB	
LOG	−3.15490	−3.30102	−3.52287	−3.69987	
LEVEL	0.0001 MB				
LOG	−4.0				
LEVEL	0.00007 MB	0.00005 MB	0.00003 MB	0.00002 MB	
LOG	−4.15490	−4.30102	−4.52287	−4.69897	
LEVEL	0.00001 MB				
LOG	−5.0				

7.2 Subroutine ETFORM

20000	Minimum output altitude, meters
273.15	Freezing point of water (degrees K)
1000	Mandatory output interval
100 10 0.5	Output formatting constants

7.3 Subroutine CODIT

331.45	Speed of sound at zero degree Celsius, meters/second
273.15	Freezing point of water (degrees K)
348.38	Gas constant for dry air with pressure in millibars and density in grams per cubic meter, combined with conversion factors
10000 1000 10 0.001 0.000009	Output formatting constants

7.4 Subroutine RDRAWIN

0.3048	Number of meters per foot
0.514792	Converts knots to per second
10 100	Output formatting constants

7.5 Subroutine ROCOB

60	Octal number used to convert numeric numbers to character numbers

7.6 Subroutine MANDL

10 0.5 0.05 0.005 0.0005 0.00005 0.000005	Constants used to format output data

7.7 Subroutine LEFTZERO

None

7.8 Subroutine TSIGN

None

7.9 Function VALUE

None

7.10 Function WDIR

90	True east, degrees
180	True south, degrees
270	True west, degrees
360	True north, degrees
57.29578	Degrees in a radian

7.11 Function WSPD

None

ATTACHMENT 1

INTERMEDIATE SCRATCH FILE (FROM PASS 1)

HEIGHT MTS	CORRECTED X COMPONENT	CORRECTED Y COMPONENT	UN-CORRECTED X COMPONENT	UN-CORRECTED Y COMPONENT	CORRECTED TEMP DEGREES-C	UN-CORR TEMP DEGREES-C	PRESSURE MBS	FALL RATE MPS
19197.42	-10.91	3.27	-16.35	-8.07	197.1	197.1	999.900	-.04
19209.82	-6.96	-.13	-16.98	-5.99	197.3	197.3	999.900	-.79
19296.25	-5.07	-2.62	-15.13	-3.50	197.7	197.7	999.900	-4.97
19461.07	-6.07	-13.58	-12.45	-3.11	197.5	197.5	999.900	-6.02
19610.36	-9.78	-.29	-10.87	3.29	197.4	197.4	999.900	-3.93
19694.32	-7.51	-2.62	-6.94	-.14	199.2	199.2	999.900	-1.66
19734.26	-6.88	-5.09	-5.07	-2.64	201.5	201.5	999.900	-1.00
19821.73	-7.50	-7.21	-6.11	-13.66	202.4	202.4	999.900	-4.83
20000.00	-8.87	-9.19	-9.79	-12.39	202.2	202.7	1.742	-7.24
20002.80	-8.87	-9.19	-9.79	-12.39	202.2	202.7	1.742	-7.24
20160.87	-10.32	-10.09	-12.12	-5.62	203.3	203.8	1.731	-3.30
20258.64	-10.99	-9.01	-11.60	-6.91	204.4	204.9	1.724	-3.22
20603.30	-10.39	-6.30	-10.46	-7.66	205.1	205.5	1.713	-6.43
20575.81	-9.06	-5.03	-8.23	-9.50	205.9	206.3	1.701	-5.08
20694.45	-8.05	-5.22	-8.03	-2.09	206.6	207.0	1.693	-2.83
20812.98	-8.33	-5.94	-7.64	-3.30	207.1	207.5	1.684	-5.07
20905.21	-9.27	-6.64	-9.20	-5.81	206.9	207.3	1.677	-1.11
20999.60	-11.53	-7.78	-11.43	-10.61	206.6	207.0	1.671	-5.14
21154.67	-13.20	-10.14	-14.67	-12.39	207.1	207.5	1.660	-5.19
21267.37	-14.93	-10.66	-15.67	-7.99	207.9	208.4	1.652	-2.32
21340.62	-16.32	-9.97	-14.76	-9.82	208.5	208.9	1.647	-2.56
21483.42	-17.19	-8.55	-16.64	-10.18	208.9	209.4	1.637	-6.96
21645.24	-16.91	-7.26	-18.12	-6.82	210.1	210.5	1.625	-3.83
21762.42	-16.18	-6.97	-17.86	-6.06	211.4	211.8	1.617	-3.98
21942.35	-15.74	-6.28	-15.46	-5.81	211.3	211.7	1.604	-8.02
22071.20	-15.51	-5.37	-13.14	-5.22	211.3	211.8	1.596	-.58
22166.02	-15.52	-5.23	-14.37	-6.69	211.4	211.8	1.589	-5.75
22346.61	-16.08	-4.44	-17.72	-4.59	211.4	211.9	1.576	-6.29
22479.30	-17.15	-3.05	-18.62	-1.58	211.9	212.4	1.567	-2.55
22589.21	-17.98	-1.62	-17.01	-3.06	212.3	212.7	1.560	-4.78
22741.99	-17.77	.43	-17.30	.34	212.7	213.1	1.549	-5.41
22869.64	-16.66	.94	-17.52	1.51	213.0	213.4	1.540	-3.10
23000.34	-15.81	.19	-16.50	.74	212.9	213.4	1.531	-5.61
23179.65	-15.97	-1.25	-15.16	1.23	213.6	214.1	1.519	-6.34
23345.01	-16.45	-3.23	-14.79	-5.13	214.4	214.9	1.507	-4.68
23493.35	-17.38	-5.18	-17.31	-6.61	215.0	215.5	1.497	-5.21
23673.91	-18.71	-5.69	-20.41	-6.48	215.4	215.9	1.485	-6.83
23834.14	-19.61	-5.89	-20.08	-4.28	215.6	216.0	1.474	-3.85
23981.50	-20.44	-3.94	-20.25	-5.20	216.4	216.9	1.464	-5.96
24152.46	-20.54	-2.50	-20.14	-1.37	216.9	217.4	1.452	-5.45
24311.77	-20.80	-1.68	-19.57	-3.57	217.2	217.7	1.442	-5.12
24499.73	-20.69	-2.53	-22.32	.70	217.3	217.7	1.429	-7.36
24694.94	-21.08	-4.04	-21.22	-3.63	217.2	217.7	1.416	-5.65
24870.14	-21.58	-5.61	-22.20	-5.90	217.3	217.8	1.404	-6.03
25013.83	-22.30	-6.88	-20.12	-9.99	218.0	218.5	1.394	-3.55
25161.65	-22.75	-7.54	-23.19	-7.79	218.6	219.2	1.383	-7.65
25420.55	-23.23	-6.92	-24.52	-4.94	219.2	219.7	1.367	-8.26
25684.62	-24.57	-6.28	-24.96	-7.06	219.9	220.4	1.349	-9.34
25881.54	-24.92	-5.82	-24.64	-4.05	219.9	220.4	1.336	-3.29
26022.61	-25.11	-6.29	-25.31	-7.33	219.9	220.4	1.327	-5.62

26213.01	-25.18	-7.14	-24.95	-7.40	221.0	221.5	1.314	-7.08
26403.80	-25.17	-7.65	-23.97	-7.85	221.9	222.4	1.301	-5.64
26647.03	-25.20	-8.38	-27.46	-7.80	222.0	222.5	1.285	-10.57
26891.08	-25.44	-8.75	-24.72	-9.07	222.1	222.6	1.269	-5.70
27067.43	-26.11	-9.21	-25.21	-8.97	222.0	222.5	1.257	-6.06
27261.50	-27.29	-8.51	-27.04	-8.86	221.7	222.2	1.245	-6.21
27446.67	-28.40	-9.01	-28.58	-10.22	221.6	222.1	1.232	-6.80
27667.72	-29.63	-8.84	-30.00	-7.71	222.3	222.9	1.218	-7.94
27901.09	-30.48	-9.75	-31.54	-6.42	224.2	224.7	1.202	-7.62
28152.63	-30.43	-9.58	-30.72	-13.50	225.5	226.0	1.186	-9.44
28394.07	-30.77	-8.71	-29.13	-8.03	226.0	226.5	1.170	-6.36
28696.21	-30.83	-8.21	-31.47	-10.80	226.5	227.1	1.151	-13.78
28980.21	-31.54	-6.64	-30.32	-3.33	226.4	226.9	1.132	-5.15
29188.25	-32.56	-4.01	-33.86	-4.47	226.4	227.0	1.119	-8.75
29452.15	-32.78	-4.15	-32.03	-5.54	226.6	227.2	1.102	-8.81
29758.82	-32.32	-5.42	-34.32	-3.21	228.1	228.7	1.082	-11.63
30071.64	-31.32	-8.24	-31.34	-6.18	228.9	229.5	1.062	-9.22
30326.90	-30.41	-11.18	-28.85	-13.58	228.0	228.5	1.045	-7.80
30609.70	-30.43	-13.42	-30.36	-15.26	226.5	227.1	1.027	-11.06
30881.46	-31.45	-15.18	-29.03	-13.86	224.6	225.1	1.009	-7.06
31209.28	-30.95	-13.78	-33.87	-16.45	223.6	224.3	.988	-14.79
31562.27	-31.80	-11.81	-33.03	-11.32	222.8	223.4	.964	-9.11
31844.86	-31.54	-13.01	-33.11	-11.43	222.4	223.0	.946	-9.37
32086.10	-31.38	-13.44	-24.13	-8.36	222.3	222.9	.930	-6.72
32381.59	-30.91	-15.03	-36.02	-18.14	224.6	225.3	.911	-12.98
32809.07	-30.14	-12.35	-29.09	-23.52	227.7	228.5	.883	-15.52
33183.34	-29.81	-19.07	-31.29	-13.24	228.7	229.4	.859	-9.44
33512.30	-30.29	-20.42	-30.33	-21.98	229.6	230.3	.838	-12.49
33870.42	-29.42	-19.77	-26.44	-18.47	230.4	231.2	.815	-11.38
34258.66	-30.86	-18.87	-31.52	-20.22	232.6	233.4	.791	-14.50
34669.76	-31.48	-18.52	-32.85	-19.56	234.8	235.5	.765	-12.91
35094.22	-34.34	-16.87	-34.90	-16.48	237.0	237.8	.739	-15.39
35559.08	-37.24	-14.87	-35.29	-12.74	239.9	240.7	.710	-15.60
36013.07	-38.91	-11.60	-37.42	-12.56	243.9	244.7	.683	-14.66
36508.89	-40.28	-10.50	-44.40	-13.87	247.2	248.1	.653	-18.39
36926.01	-39.65	-11.24	-38.97	-5.36	247.9	248.7	.624	-14.08
37449.98	-37.54	-11.93	-38.26	-9.18	250.7	251.6	.598	-16.18
38004.94	-34.06	-11.57	-34.17	-16.92	255.7	256.7	.565	-20.82
38613.53	-29.93	-9.47	-27.66	-13.01	258.0	258.9	.531	-19.76
39210.11	-28.07	-7.57	-26.95	-5.80	257.8	258.7	.497	-20.02
39813.40	-26.95	-2.64	-26.06	-1.44	258.1	259.0	.463	-20.20
40443.74	-25.59	1.26	-25.44	3.06	260.3	261.4	.427	-21.82
41120.89	-23.63	.65	-25.76	-.01	264.1	265.2	.389	-23.32
41808.04	-18.61	-2.88	-20.61	.49	266.2	267.2	.352	-22.49
42485.51	-9.75	-10.70	-9.98	-11.31	264.8	265.8	.314	-22.68
43221.84	-3.34	-17.16	-3.90	-19.18	264.0	265.2	.274	-26.41
44024.24	-1.09	-22.86	6.17	-25.54	265.6	266.9	.229	-27.08
44854.61	-1.59	-29.06	7.68	-32.83	268.1	269.3	.184	-28.28
45750.02	-2.69	-28.99	-12.94	-21.56	268.1	269.5	.135	-31.41
46720.29	-2.33	-27.31	-11.50	-31.96	271.3	272.8	.083	-33.27
47745.03	-1.57	-25.40	1.08	-30.22	274.3	275.7	.027	-36.38
48869.07	-1.70	-23.60	8.65	-14.06	269.8	271.3	-.032	-37.22
50073.09	7.77	-24.86	9.49	-24.35	268.5	270.5	-.098	-43.04
51412.18	9.33	-24.48	5.61	-26.02	271.5	273.7	-.170	-46.23
52838.63	6.09	-24.79	5.89	-24.75	271.1	273.4	-.246	-48.87
54417.78	4.33	-26.48	3.19	-25.61	269.9	272.7	-.331	-56.41

PASS 2

IB-190

ROCS 3

56177.57	-4.53	-17.64	-6.29	-15.57	267.0	270.0	-.427	-60.91
56129.80	-13.15	-5.03	-14.15	-5.25	258.0	262.0	-.535	-69.24

PASS 2
B-191

ECS 3

```
      8  ----  ----  ----  ----  ----  ----  444A  FD6B  ..........DJ.K
     10  C0AF  87JE  4134  5C51  C210  5999  C181  2000  A...A4\QR.Y.A. .
     18  42C5  2415  42C5  2415  433E  7E67  BF90  BE$.BE$.C).G7..
     20  444B  09B3  C16F  4C27  C020  4F4F  C210  FB33  DK.BAoL'@ OOR..3
     28  C15F  E199  42C5  490A  42C5  490A  433E  7E67  A_A.BEI.BEI.C).G
     30  C0CA  B333  444B  603F  C151  27DC  C129  E1DB  @J33DK'?AQ'\A)AL
     38  C1F2  2222  C137  ED55  42C5  B84E  42C5  884E  AR""A7mUBEGNBEGN
     40  433E  7E67  C14F  83BB  444C  0512  C161  2F59  C).GAO.FDL..Aa/Y
     48  C1D9  514F  C1C7  2AAA  C131  D2AA  42C5  7911  AYGOAG**A1K*BEy.
     50  42C5  7911  433E  7E67  C160  4C44  444C  9A5B  BEy.C).GA`LDDL.L
     58  C19C  7028  C04A  9990  C1A0  EEEE  4134  AE66  A.P(@J..A-NNA4.F
     60  42C5  6BCE  42C5  6BCE  433E  7E67  C13E  F088  BEkNBEkNC).GA)P.
     68  444C  EE53  C178  2981  C129  F053  C16F  0888  DLnSAx)1A)PSAo..
     70  C024  A222  42C7  3849  42C7  3849  433E  7E67  B$""BBIBBIC).G
     78  C11A  A000  444D  1643  C16E  170E  C150  4780  A. .DM.CAn..APGO
     80  C151  2222  C12A  3F77  42C9  858E  42C9  858E  AQ""A*?wRI..BI..
     88  433E  7E67  C0FF  A222  444D  6D88  C178  0CF3  C).G@.""DMm}Ax.s
     90  C173  670B  C161  CCCC  C1DA  9666  42CA  6959  AsG.AaLLAZ.FBJiY
     98  42CA  6959  433E  7E67  C14D  5222  444E  2000  BJiYC).GAMR"DN .
     A0  C18D  DB98  C193  183F  C19C  B333  C1C6  4666  A.D.A..?A.33AFFf
     A8  42CA  3DDC  42CA  B419  411B  E115  C173  D111  BJ=\BJ4.A.A.AsQ.
     B0  444E  22CC  C18D  DB98  C193  183F  C19C  B333  DNDLA.D.A..?A.33
     B8  C1C6  4666  42CA  3D2D  42CA  B419  411B  E03F  AFFfBJ=-BJ4.A.`?
     C0  C173  D111  444E  CODE  C1A5  2BBB  C1A1  7BAF  AsQ.DNB"A%+!A!./
     C8  C1C1  F777  C159  E5DD  42CB  5617  42CB  C9AC  AAwwAYe]BKV.BKI,
     D0  411B  B145  C134  CAAA  444E  2263  C1AE  C485  A.1E44J*DQ"$A/D.
     D8  C190  1008  C1B9  9999  C16E  9F77  42CC  6E29  A...A9..An.wBLn)
     E0  42CC  E06A  411B  945E  C133  7F77  444E  B34C  BL`$A..`3A3.wDD3L
     E8  C1A6  382C  C164  D13B  C1A7  6666  C17A  A2AA  A&8,A8Q!A'ffA.`*
     F0  42CD  1682  42CD  8871  411B  69CB  C166  CDDD  BM..BM.aA.xNAfM1
     F8  4450  5FD0  C190  F73D  C150  8989  C183  8888  DP_PA.w=AP..A.77
    100  C19B  0B00  42CD  E00E  42CE  5302  411B  3733  A...BM`.BNS.A.73
    108  C151  36EE  4450  D674  C180  CD62  C153  833E  AQ6nDPVtA.MbAS.>
    110  C18D  6666  C121  6111  42CE  98E0  42CF  0BEE  A.ffA!a.BN.JBO.n
    118  411B  1489  C12D  55DD  4451  4CFA  C185  546A  A...A-UIDQL.A.TJ
    120  C15E  EDEB  C17A  3BBB  C134  B888  42CE  14D2  A^.kA.77A4B.BU.Y
    128  42CF  84BE  411A  F202  C151  1666  4451  A9B7  BO.)A.A.AQ.FDQ)7
    130  C19C  5F15  C16A  416E  C193  3DDB  C15C  EB33  A._.AJAnA.77A\k3
    138  42CE  EC91  42CF  5703  411A  D703  C111  D555  BNL.BOWSA.W.A.UU
    140  4452  0Z9A  C1B8  85B8  C17C  79D3  C1B6  DDDD  DK..AB.BA.yBA611
    148  C1A9  D444  42CE  94AB  42CF  0483  411A  BBA7  A)TDBN.(BO..A.7'
    150  C152  5000  4452  A2AC  C1D3  2651  C1A2  51C7  ARP.DR"?AB&QA"QG
    158  C1EA  C444  C1C6  32AA  42CF  1045  42CF  8611  AJDDAF2*BO.EBO.,
    160  411A  8E7A  C153  1888  4453  135E  C1EF  E798  A...AB..DS.^Awa.
    168  C1AA  9923  C1FA  BBBB  C17F  E3BB  42CF  E683  A*.*A.77A.c)BOh.
    170  42D0  5BA6  411A  6DC1  C125  1D55  4453  5C9E  DPE&A.mAA%.UDS\.
    178  C210  5BA6  C19F  77EB  C1EC  1999  C19D  12AA  B.JAA.wkAL..A..*
    180  42D0  78D6  42D0  EB06  411A  588E  C12y  04CC  BPxVBPk.A.x.A).L
    188  4453  EB68  C211  2F5F  C188  C776  C210  A333  DSkkB./_A.GvB.#3
    190  C1A2  E2AA  42D0  C5CB  42D1  5E16  411A  2F55  A"b*BPEANQ"`A./U
    198  C16F  4CCC  4454  8D3E  C210  E92E  C174  1E2E  AoLLDT.)B.i.At..
    1A0  C212  1E66  C16D  1000  42D2  0F83  42D2  8589  B..fAm..Bk..Bk..
    1A8  411A  00CC  C13D  5088  4455  026C  C210  2E6A  A..LA=P.DU.lB..J
    1B0  C16F  7703  C211  BD55  C161  0888  42D3  6464  Aow.B.JUAa..BBdd
    1B8  42D3  072B  4119  0F4D  C13F  ACCC  4455  8659  BSW+A._MA?,LDU6Y
    1C0  C1FB  C9D5  C164  6C39  C1F7  5DDD  C15C  E8d8  A.IUAnL9AwJJA\H.
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1C8   42D3   4A1F   42D3   BF81   4119   AC05   C180   3EEE  BSJ.BS?.A.,.A.)N
1D0   4456   3734   C1F8   2160   C155   EC9B   C1D2   3333  DV74Ax!`AUL.AR33
1D8   C153   7B8B   42D3   5248   42D3   C42E   4119   874A  AS.;BSRKBSD.A..J
1E0   C093   3333   4456   9605   C1F8   655F   C153   9D45  @.33DV..AxE_AS.E
1E8   C1E5   EEEE   C16B   1777   42D3   62F9   42D3   D8AE  AENNAK.WBSBYBSX.
1F0   4119   6C45   C15B   F08B   4457   4A9B   C210   1475  A.LEA[P.DWJ.B..U
1F8   C147   1759   C211   B999   C149   73BB   42D3   6BFE  AG.YB.9.AIs;BSK.
200   42D3   E369   4119   38D2   C164   B199   4457   CF4C  DScIA.BRAD1.DWGL
208   C211   26CC   C130   DD86   C212   9E66   C119   3D55  B.&LAO].B..FA.=U
210   42D3   EA08   42D4   5E33   4119   1311   C128   D5DD  BSJ.BI^3A...A(U]
218   4458   3D35   C211   FB4E   C119   F015   C211   0222  DX=5B..NA.P.B..
220   C131   0111   42D4   43F1   42D4   B2A9   4118   F3DB  A1..BICqBI9)A.sI
228   C14C   6666   4458   D5FD   C211   C54E   406E   C320  ALFFDXU.B.EN@nC
230   C211   4D55   4057   0000   42D4   A816   42D5   1E51  B.MUGW..BI(.BU.Q
238   4118   C68D   C156   9199   4459   55A5   C210   A9D8  A.H.AV..DYUZB.)X
240   40E1   D3B0   C211   8444   4118   2800   42D4   ECDZ  @qSOB..DA.(.BI.W
248   42D5   6FA1   4118   A46E   C131   9911   4459   D858  BUo!A.$NA!..DYXX
250   C1EC   F221   402F   BQ16   C210   7EEE   40BC   7772  A.B!@/Q.B..N@(ww
258   42D4   EBD2   42D5   653E   4118   7F79   C159   D088  BIkRBUE)A..vAYP.
260   445A   8BA6   C1EF   95C1   C113   F9A7   C1E2   8888  DZ.&A..AA.y!AB..
268   4113   A333   42D5   93A8   42D6   0FFE   4118   4CD8  A.#3BU.(BV..A.LX
270   C165   7199   445B   3103   C210   7380   C133   AA4C  AEQ.DC1.B.s.A3*L
278   C1EC   AAAA   C152   1999   42D6   6B96   42D6   E551  AL**AR..BVk.BVeQ
280   4118   1E52   C14A   F111   445N   C55A   C211   6214  A..RAJa.DLEZR.B.
288   C152   E0C7   C211   4EEE   C169   C444   42D7   0546  AR`GB.NNAIDDBW.F
290   42D7   7E59   4117   F4RA   C153   4A22   445C   79EA  BW.YA.I:ASJ`D\YJ
298   C212   B579   C15B   125A   C214   6999   C167   A3BB  B.SvAC.ZB.I.Ag#j
2A0   42D7   7D4D   42D7   EA46   4117   C239   C16D   4EEE  BWeMBWJEA.BYAmNn
2A8   445D   1A25   C213   9D31   C15E   44E5   C214   14CC  DJ.ZB..IA^DeB.`L
2B0   C144   ZAAA   42D7   BF8E   42D8   06E1   4117   9577  AD.*BW..BX.aA..w
2B8   C13D   9AAA   445D   AD4E   C214   70AC   C13F   05E1  A=.*DJ-NB.P.A?.A
2C0   C214   3F77   C153   3006   42D8   6828   42D8   E28N  B.?wASO.BXH(BXB.
2C8   4117   6C73   C15F   5DDD   445E   5877   C214   6940  A.LsA_]]D^XWB..@
2D0   C128   0598   C214   22AA   C115   F777   42D8   EB51  A(..B."kA.wwBXwQ
2D8   42D9   6753   4117   3CE6   C157   3444   445E   F7C4  BYgSA.(FAW4DD^wD
2E0   C214   CC58   C116   D295   C213   9111   C139   14CC  B.IXA.R.B...A9.L
2E8   42D9   35B7   42D9   B011   4117   10BA   C152   6800  BY5/BYO.A..:AR8.
2F0   445F   B3RC   C214   E514   C128   7974   C216   5222  D_3(B.E.A(YIB.R"
2F8   40B2   5DDD   42D9   4045   42D9   BCDB   4116   DCA6  @2]]BY@EBY(CA.\&
300   C125   C777   4460   76F1   C215   13D8   C140   9251  AuBwD`vBB..XA@.Q
308   C215   3999   C13A   0666   42D9   2E87   42D9   A8D9  B.9.A:.FBY..BY(Y
310   4116   A690   C15A   7199   4461   2624   C215   9368  A.&.AZa.Da&$B..H
318   C159   C80B   C216   32AA   C15E   5CCC   42D9   5468  AYH.B.2*A^\LBYTH
320   42D9   D114   4116   7608   C160   6F77   4461   B5D4  BYQ.A.v.A`ovDa5T
328   C216   4D79   C16E   0A0E   C214   1E66   C19F   D080  B.MyAN..B..FA.X.
330   42D9   FD96   42DA   7D26   4116   4F4E   C138   D4CC  BY..BZ.&A.NNA8TL
338   4462   5DDA   C216   BFE0   C178   9655   C217   3088  Db]ZB.?`Ax.UB.0.
340   C17C   64CC   42DA   A32F   42DB   2773   4116   1FFE  A.$LBZ$/BL!sA...
348   C17A   6444   4463   4C8C   C217   BB7D   C16E   8F74  A.DDcL.B.;.AN?T
350   C218   B444   C14E   FA22   42DB   30A4   42DB   B5F9  B.,DAN."BL0$BL5Y
358   4115   DE63   C184   3777   4464   549F   C218   929B  A.^cA.7wDbT.B...
360   C164   72ZE   C218   F555   C171   0088   42DB   EC95  ADB.B.uUAa..BL..
368   42DC   721C   4115   9606   C195   7666   4465   1988  B\B.A...A.vFDE..
370   C21B   EC17   C15D   0D71   C218   02A6   C140   D722  B.L.AJ.aD."*ABY.
378   42D8   E24B   420C   5DA4   4115   6027   C13C   9666  BCBKB\]$A.`?A(.F
380   4465   A69B   C219   1CA3   C164   AFBB   C219   5088  De&.B..$AD/.B.P.
```

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388  C178  3555  42DB  E7CB  42DC  6CAE  4115  398F  Au5UBEgKB\L;A;9.
390  C159  F111  4466  6503  C219  2E6C  C172  3A94  AYA;DFE.B.;LAB*;
398  C218  F333  C176  7AAA  42DC  FBA7  42D0  844E  B.s3Av.*B\.'BJ.N
3A0  4115  059A  C171  3911  4467  23CC  C219  1DAC  A...Ag9.Dg$I B..;
3A8  C17A  79FF  C217  F911  C17D  A222  42DD  D9AC  A;Y;B.Y.A."'B]{;
3B0  42DE  5B56  4114  D1C6  C15A  4777  4468  1708  B"JVA.QFA7GwIH..
3B8  C219  323F  C186  1CF6  C218  7666  C17C  CC44  B.2?A..vB.vFA.LD
3C0  42DE  0024  42DE  8AE9  4114  8FDA  C1A9  2RRR  B"\$B"\IA..ZA)4$
3C8  4469  0814  C219  71A2  C18B  F132  C218  B888  D;..B.G"A.G2B.8.
3D0  C191  3CCC  42DE  2235  42DE  A2EB  4114  4DC2  A..LB"'5B"'KA.MB
3D8  C15B  2555  4469  BB6F  C21A  1CF7  C193  67D2  ACZUDI;oB..wA.gR
3E0  C219  34CC  C18F  7C44  42DB  FB61  42DE  B02E  B.4LA..DBJ.AB"..
3E8  4114  1DFF  C160  F800  446A  737F  C21B  4AEB  A...A'x.DJs.B.Jk
3F0  C18B  1504  C21B  0A22  C18B  B999  42DD  B576  A...N.."A.9.DJ5v
3F8  42DE  3AC1  4113  EC1B  C163  5055  4469  36AB  B"!AA.L.AC'JUDk6+
400  C21C  6696  C190  1DF3  C21C  93BB  C1A3  74CC  H.F.A..sB..}A$tL
408  42DB  9C0F  42DE  251E  4113  B729  C16C  0199  BJ..B"X.A.7)ALQ.
410  446C  13B8  C21D  A0FF  C18D  7C40  C21D  FF6E  DL.8B. .A..BD.+N
418  C178  6999  42DE  536E  42DE  E36B  4113  7B48  A.x.B^SnB^CkA..H
420  C17E  F8C0  446C  FD18  C21F  7AAA  C19B  F0AF  A.x.DL..R..*A.P/
428  C21F  8911  C166  C199  42E0  2907  42E0  B91E  B...AFA.B'),B'9.
430  4113  3C6E  C179  F6EE  446D  FD07  C21E  6EEB  A.(NAYWNDm..B.N.
438  C199  422F  C21E  B75D  C1D7  FA22  42E1  747A  A.B/B.7]AW."BAt.
440  42F2  0916  4112  F7FD  C197  0722  446E  EA12  Bm..A.w.A..wDNJ.
448  C21E  C638  C18D  490E  C21D  214C  C18D  7000  B.F]A.I.B.!LA.p.
450  42E1  FD18  42E2  8966  4112  88DC  C165  D199  Bm..Bm.&A.8\AEQ.
458  4470  1837  C21E  D4AC  C183  6026  C21F  7799  Dp./B.T;A.'&B.w.
460  C1AC  C199  42E2  7D23  42E3  1891  4112  6895  A.A.Bm.#Rc..A.H.
468  C1DC  7777  4471  3435  C21F  8AAD  C16A  33E1  A\wwDq45B..-AJ3A
470  C21E  50AA  C135  5BBB  42E2  5DEB  42E2  E54C  B.P*A5[;Bm].BmeL
478  4112  1D33  C152  7555  4472  04C0  C220  9058  A..3ARuUDn.@8 .X
480  C140  2B69  C221  DC0B  C142  8222  42E2  63AF  AQtiBI\.AG."BmC/
488  42E2  F764  4111  E506  C18B  FB55  4473  0C27  BmwDA.eVA..UDs.'
490  C220  C84A  C142  6019  C220  07D5  C158  A222  B.HUAR\.B .UAX"'
498  42E2  9EC8  42E3  36AC  4111  9FF4  C18C  F911  Bm.HRc6;A..tA.Y.
4A0  4474  3ED1  C220  5EA1  C156  C019  C222  525D  Dt]QB.^IAVB.B"R]
4A8  C133  4999  42E4  11A3  42E4  8114  4111  4EE6  A3I.Bp.#Bp!.A.Nf
4B0  C1BA  22AA  4475  77A5  C21F  50BA  C183  DDC3  At"*DuwXB.P!A.]C
4B8  C21F  564C  C162  E222  42E4  F0EE  42E5  8866  B.VLAbm"BpnBe.f
4C0  4110  EC65  C193  8BBB  4476  76E7  C21E  699B  A..lA..;DvvgD.i.
4C8  C1B2  F5AE  C21C  D9CC  C1D9  3666  42E3  FD81  A2u.B.YLAY6FBc.i
4D0  42E4  8BF1  4110  B986  C17C  BB33  4477  91B2  Bp.gA.9.A.;3Dw.2
4D8  C21E  6E8B  C1D6  B0AE  C21E  9C44  C1F4  3555  B.n.AVO.B.\DAt5U
4E0  42E2  8941  42E3  1C69  4110  6EC6  C1B0  EA22  Bm.ABc.iA.nFAOJ'
4E8  4478  A177  C21F  7381  C1F2  CDF0  C21D  06D5  Dx!wB.s.AmMpB..U
4F0  C1DD  C444  42E0  975M  42E1  2B19  4110  2667  A1DDR\.IRmZ.A.&G
4F8  C170  F911  4479  E948  C21E  F355  C1DC  8410  Apy.DyiHB.sUA\..
500  C221  DD91  C210  7277  42DF  9B4B  42E0  45E9  B!J.B.nwB_.kR'Ex
508  40FC  E8BA  C1EC  6222  4478  4FC4  C21F  CD88  @.H!AL2"0.QDB.M8
510  C18D  0559  C221  0733  C1B5  0CCC  42DE  CEAE  A=.YH!.3A5.LR"N.
518  420F  68BE  40F6  E169  C191  8088  447C  6408  B_k)@vA.A.O.@.dC
520  C21F  8A18  C1D0  1DA6  C221  1B99  C1B6  B555  B...AP.kB!..A6UU
528  42DE  6698  420F  0609  40F2  359F  C195  DF77  B^F.B_.Y@m5.A._w
530  447B  561A  C21F  603E  C1D7  1935  C218  2280  D.V.B.`)AW.5B.'.
538  C185  BAAA  42DE  4187  420E  ECE3  40EC  2333  A.!*B^A7B^Lc@N#3
540  C16B  7444  447F  7D96  C21E  E85E  C1F0  89CD  AktBD...B.H"Ap.H
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548	C224	0600	C212	2350	42E0	926D	42E1	54F6	0$..B.#1B`.mBAfv
550	40F9	2CB9	C1CF	BAAA	4480	2912	C21E	234D	@I,9A0:*D.).B.#N
558	C211	5A07	C210	1844	C217	92CC	42E3	B4DF	B.Z.B..DB..LBC4_
560	42E4	78C6	40E2	150E	C1F8	4199	4481	9F58	BnxF@B..AxA.D..X
568	C21D	B060	C213	1108	C21F	4AC4	C103	C333	0.PmB...B.JDASC3
570	42E4	B98B	42E5	6ADB	40BB	EF0C	C196	F777	BD9.BEJL@EN.A.WW
578	4482	E84C	C21E	4AA7	C214	6C6C	C21E	54AA	D.HLB.J'B.L.B.I*
580	C215	F9E6	42E5	A1DB	42E6	5993	4006	8BB7	B.YFBE!5BFY.@V.7
588	C1C7	EAAA	4484	4E6C	C21D	6B88	C213	C631	AGJ*D.NLB.KJB.F1
590	C21A	6F80	C212	7891	42E6	6E9F	42E7	2746	B.o.B.x.BFN.BG'F
598	4000	B4E2	C1B6	1555	4485	D2A3	C21E	D8E0	@P4BA6.UD.R*B.Cm
5A0	C212	DE51	C21F	8555	C214	3899	42E8	937C	B."QB..UB.8.BH..
5A8	42E9	6056	40CA	6AF5	C1E8	0333	4487	60C3	Bx`V@JJuAH.3D.mC
5B0	C21F	7A2E	C212	8629	C220	DA6E	C213	9099	B...B..)B ZNB...
5B8	42EA	C38F	42E8	8A33	40C3	D208	C1CE	85DD	BJC?Bk.3@CR.AN.I
5C0	4489	163A	C222	55DD	C210	DE14	C222	E644	B..8B"UCB.^.B"FD
5C8	C210	7BE6	42E0	0140	42E8	D82E	40BD	12ED	B..FBm.@BmX.@=.m
5D0	C1F6	3B33	448A	E215	C225	3CE7	C1E8	ECEF	Av;3D.G.BZ(GAmLO
5D8	C223	4A99	C1CB	D444	42EF	DD28	42F0	B8AE	B*J.AKTD8O]FBpB.
5E0	40B5	C3E8	C1F9	9EEF	448C	AD11	C226	E91D	@5ChAY.ND.~.B&I.
5E8	C1B9	9122	C225	6C19	C1C9	06EE	42F3	DEC2	A9."BZL.AI.NBs^B
5F0	42EA	DD76	40AF	BADD	C1EA	A111	448E	9CE4	BT=V@.#JAJ!.B..B
5F8	C228	48DA	C1A8	0BD6	C22C	66A2	C1DD	F4CC	B(HZA(.VB;F"A]TL
600	42F7	3ED6	42F8	1AE1	40A7	29AF	C212	6408	Bw)ZBx.A@!)/B.D.
608	4490	8403	C227	A5F5	C1B3	C6B7	C226	F800	D...B'ZuA3F7B&x.
610	C155	B999	42E7	DE3B	42F8	A90C	409F	CA2C	AU9.Bw_5Bx).@.J.
618	C1E1	5800	4492	49FC	C225	6999	C1BE	D992	AaX.D.I.BZ..A)Y.
620	C226	42DD	C192	E888	42FA	AB92	42EB	94D9	B&BJA.H.B.t.B..Y
628	4098	F773	C210	2E44	4494	74F0	C222	0EB4	@.wsB..DD.tpB".4
630	C1B9	0C3C	C222	2A44	C210	E92A	42EF	B7CE	A9.(B=*DB.Y*B.ZN.
638	4310	0B43	4090	C19A	C214	B0F7	4496	D588	C..C@.A.B.FwD.U.
640	C21D	ECFA	C192	8730	C21B	A811	C1D0	1A22	B.L.A..=B.(.AP.'
648	4310	2062	4310	2E4D	4087	E201	C213	C1AA	C. BC..M@.B.B.A*
650	4499	2A1C	C21C	1158	C179	2941	C21A	E45D	D.*.B..XAV)AD.Y]
658	C15C	0B88	4310	1D7E	4310	2B77	407F	3BD8	A\C}C...C.+w@.8X
660	C214	03EE	449B	8566	C21A	F2DD	C12A	29F4	B..nD..FB.BJA*)T
668	C21A	0F55	C117	1433	4310	21F6	4310	30A2	B..UA..3C.!vC.0"
670	4076	7798	C214	3433	449D	EBBE	C219	96DC	@vw.B.43D..)B..\
678	4114	1A68	C219	7177	4130	F666	4310	44FC	A..hB.qwA0vFC.D.
680	4310	559F	406D	5D70	C215	D106	4480	A0E5	C.U.@mJpR.Q&D..E
688	C217	A239	40D8	C9C0	C219	C2EE	BF2C	CCCC	B."9@XI@B.8N?,LL
690	4310	822F	4310	9366	4063	B373	C217	5312	C..,/C..F@c3sR.S.
698	44A3	500A	C212	9D0C	C12E	25C1	C214	9D00	D#P.B...A.ZAB...
6A0	407C	9111	4310	A3BF	4310	B2EE	405A	0185	@...C.#?C.2N@Z..
6A8	C216	7C2A	44A5	F582	C19B	F702	C1A8	3718	B..*DZu.A.w.A+7.
6B0	C19E	B20A	C1B4	E2AA	4310	8D10	4310	9C44	A.2*A4B*C...C..D
6B8	4050	7620	C216	A0F7	44AB	B5E3	C135	792B	@Pv~B.~WD(UcA5y+
6C0	C211	2967	C13E	6199	C213	2E11	4310	8065	B.)GA)A.B...C..E
6C8	4310	928D	4046	08E1	C21A	6988	44AB	F830	C...@F.AB.I.D+x=
6D0	C111	83BC	C216	DBAD	4162	A6EE	C219	89A6	A..(B.C-AB&NB..&
6D8	4310	9A58	4310	AE48	403A	B7F3	C21B	13EE	C..XC..H@:7sB..N
6E0	446F	369B	C119	7B25	C21D	0E93	417A	0D55	D/6.A..ZB...A.JU
6E8	C220	D39C	4310	C109	4310	B4A2	402F	163E	B S.C.A.C.F"@/.)
6F0	C21C	47AA	44B2	B605	C12B	0441	C21C	FDFB	B.G*D26.A+.AB...
6F8	C1CF	0000	C215	BFFA	4310	C1CF	4310	B7BA	AO..B...C.AOC.W:
700	402D	90FB	C21F	6A11	44B6	8Q4B	C125	34DE	@".HB.J.D6.NA%4)

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708   C21B   4E4B   C1B7   F800   C21F   F530   4310   F437 B.NKA7x.B.UOC.T7
710   4311   0C59   4015   29F4   C221   454C   44BA   9508 C..YQ.)TB!ELR:..
718   C119   311A   C219   66B4   4111   4199   C21E   3708 A.1.B.F4A.A.B.7X
720   4311   2405   4311   3B2A   3F6D   BC93   C224   60DD C.$.C.;*?A(.B$?]
728   448E   E513   411B   33A2   C217   9A14   418A   75DD D)E.A.3^B..A.U]
730   C1E1   0768   4310   DD70   4310   F519   BF84   B1C7 AA.HC.]PC.U.?.1G
738   C225   3980   44C3   9918   417C   5877   C218   DD36 BZ9.DC..A.[WB.]6
740   4197   D6EF   C218   5890   4310   C7E6   4310   E853 A.VWB.X.C.BFC.HS
748   C018   FCF6   C22B   0811   44C8   D42F   4195   4A2A B..vB+..DHT/A.J*
750   C218   7A2A   4159   CE66   C21A   062C   4310   F784 B..*AYNFB..,C.W.
758   4311   1ADF   C02B   7E07   C22E   3ABB   44CE   66A1 C..@+..B.:]DNF!
760   4161   709E   C218   C8FD   415E   44CC   C218   C064 AAP.B.H.A^DLB.@n
768   4310   F113   4311   159D   C03F   1A0A   C230   DDF7 C.Q.C...B?..B0]W
770   44D4   91C7   4145   5BE1   C21A   7A34   4133   04CC DT.BAE[AB..4A3.L
778   C219   9D12   4310   0EB5   4311   0AB2   C054   DC0F B...C.^.C..2@[\_
780   C238   68CC   44DD   7193   C148   84CD   C211   A2F1 BBWLDLQ.AH.MB.^Q
788   C164   AAAA   C1F9   1FAA   4310   AFB1   4310   DF97 AD**AY.*C./1C.._
790   C06D   4901   C23C   E911   44E3   11CE   C1D2   6BF5 QMI.D(z.DC.NARRU
798   C150   8D97   C1E2   6AAA   C153   F6F7   4310   201B AP..ABJ*ASVWC. .
7A0   4310   5FB0   C088   F9F0   C245   3D08   ----   ----- C._OQ.VPDE=.....
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ATTACHMENT 2

OUTPUT DISK FILE (FROM PASS 1)

TEST NUMBER 0000
CAPE CANAVERAL AFS, FLORIDA
1515Z 18 JAN 1984

SUPER LORI FWN-100

ALT GEOMM	DIR DEG	SPD MPS	TEMP K	TEMP CORR	PRESS MBS	DENSITY G/M3	RE MPS	VS MPS	SHR /SEC
20000	224	13	202.24	-.46	999.9999	999.9999	7.24	285.20	.999
21000	236	14	206.58	-.44	46.8581	79.0214	5.14	288.25	.003
22000	249	17	211.30	-.45	39.8551	65.7097	4.69	291.52	.005
23000	221	16	212.92	-.47	33.9738	55.5876	5.61	292.64	.006
24000	260	21	216.46	-.48	29.0207	46.7066	5.90	295.06	.006
25000	253	23	217.93	-.50	24.8342	39.7002	3.79	296.06	.003
26000	256	26	219.90	-.51	21.2844	33.7199	5.32	297.39	.003
27000	251	27	222.04	-.51	18.2218	28.6684	5.92	298.84	.003
28000	252	32	224.66	-.57	15.6962	24.3400	8.32	300.59	.005
29000	259	32	226.37	-.53	13.5159	20.8008	5.49	301.74	.003
30000	256	32	228.74	-.60	11.6488	17.7414	9.77	303.31	.001
31000	245	35	224.24	-.59	10.0374	15.5944	9.86	300.31	.007
32000	247	34	222.31	-.65	8.6278	13.5207	7.66	299.02	.001
33000	239	35	228.23	-.73	7.4280	11.3387	12.41	302.97	.005
34000	237	36	231.15	-.75	6.4130	9.6655	12.42	304.90	.001
35000	243	38	236.51	-.83	5.5516	8.1776	14.84	308.42	.004
36000	253	41	243.75	-.87	4.8231	6.8933	14.69	313.11	.008
37000	254	41	247.90	-.79	4.2067	5.9119	14.10	315.76	.001
38000	251	36	255.67	-.99	3.6791	5.0131	20.78	320.67	.006
39000	254	30	257.81	-.82	3.2276	4.3598	19.92	322.07	.006
40000	267	27	258.77	-.95	2.8329	3.8140	20.68	322.61	.007
41000	272	24	263.45	-1.02	2.4900	3.2927	23.06	325.51	.004
42000	252	17	265.83	-.95	2.1929	2.8739	22.54	326.98	.010
43000	199	16	264.26	-1.08	1.9314	2.5462	25.29	326.01	.015
44000	183	23	265.60	-1.24	1.7010	2.2312	27.06	326.84	.009
45000	183	29	268.07	-1.25	1.4997	1.9490	28.29	328.36	.006
46000	185	29	268.92	-1.41	1.3233	1.7142	31.89	328.88	.001
47000	185	22	272.06	-1.49	1.1687	1.4964	34.10	330.79	.002
48000	182	25	273.31	-1.45	1.0332	1.3170	36.56	331.55	.002
49000	174	24	269.69	-1.54	.9131	1.1795	37.86	329.35	.003
50000	163	26	268.58	-1.99	.8060	1.0455	42.69	328.66	.005
51000	160	26	270.55	-2.15	.7118	.9166	45.25	329.87	.001
52000	162	26	271.30	-2.24	.6288	.8075	47.32	330.33	.001
53000	167	26	270.95	-2.33	.5557	.7145	49.64	330.11	.002
54000	170	26	270.21	-2.63	.4909	.6329	54.41	329.66	.002
55000	177	24	268.94	-2.84	.4335	.5615	57.90	328.69	.004
56000	191	19	267.28	-2.97	.3826	.4987	60.46	327.87	.007
57000	214	15	263.20	-3.41	.3369	.4460	64.42	325.36	.008
58000	245	14	258.60	-3.91	.2966	.3995	68.68	322.50	.008
58129	249	14	258.01	-3.97	.2917	.3939	69.24	322.13	.008

MAXIMUM ALTITUDE 61559

TEST NUMBER 0000
CAPE CANAVERAL AFS, FLORIDA
1515Z 18 JAN 1984

PASS 2

ROCS 3

SUPER LOKI PWN=10D

ALT GEOAM	DIR DEG	SPD MPS	TEMP K	TEMP CORR	PRESS MBS	DENSITY G/M3	RF MPS	VS MPS	SHR /SEC
20000	224	13	202.24	-.46	999.9999	999.9999	2.24	285.20	.999
20250	230	14	204.33	-.45	53.0085	90.3771	3.23	286.67	.008
20500	240	11	205.53	-.45	50.8632	86.2151	5.67	287.51	.015
20750	236	10	206.82	-.44	48.8160	82.2270	3.88	288.42	.006
21000	236	14	206.58	-.44	46.8581	79.0216	5.14	288.25	.016
21250	234	18	207.78	-.45	44.9806	75.4187	2.76	289.08	.017
21500	244	19	209.02	-.47	43.1908	71.9885	6.64	289.94	.013
21750	247	18	211.25	-.45	41.4843	68.4129	3.96	291.49	.007
22000	249	17	211.30	-.45	39.8551	65.7097	4.69	291.52	.005
22250	253	17	211.40	-.46	38.2906	63.1007	6.00	291.59	.004
22500	261	18	211.98	-.45	36.7897	60.4611	2.97	291.99	.010
22750	272	18	212.68	-.46	35.3516	57.9083	5.27	292.47	.013
23000	271	16	212.92	-.47	33.9738	55.5876	5.61	292.64	.008
23250	263	16	213.94	-.48	32.6534	53.1739	5.64	293.33	.009
23500	253	18	215.04	-.47	31.3901	50.8551	5.27	294.09	.013
23750	253	20	215.50	-.47	30.1807	48.7912	5.42	294.40	.007
24000	260	21	216.46	-.48	29.0207	46.7066	5.90	295.06	.010
24250	264	21	217.10	-.48	27.9103	44.7882	5.28	295.49	.007
24500	263	21	217.25	-.49	26.8442	43.0470	7.36	295.60	.002
24750	258	22	217.23	-.48	25.8191	41.4074	5.77	295.58	.008
25000	253	23	217.93	-.50	24.8342	39.7002	3.79	296.06	.010
25250	252	24	218.80	-.52	23.8911	38.0410	7.82	296.64	.004
25500	254	25	219.41	-.52	22.9868	36.4983	8.59	297.06	.005
25750	256	25	219.91	-.51	22.1187	35.0402	7.50	297.40	.004
26000	256	26	219.90	-.51	21.2844	33.7199	5.32	297.39	.002
26250	254	26	221.15	-.53	20.4840	32.2684	6.80	298.24	.004
26500	252	26	221.91	-.53	19.7173	30.9546	7.59	298.75	.003
26750	251	27	222.06	-.53	18.9807	29.7784	8.52	298.85	.002
27000	251	27	222.04	-.51	18.2719	28.6684	5.92	298.84	.003
27250	253	29	221.71	-.52	17.5890	27.6380	6.21	298.61	.006
27500	253	30	221.28	-.54	16.9313	26.5959	7.07	298.66	.006
27750	253	31	222.97	-.56	16.3000	25.4677	7.83	299.46	.005
28000	252	32	224.66	-.57	15.6962	24.3400	8.32	300.59	.003
28250	253	32	225.66	-.57	15.1182	23.3394	8.23	301.27	.002
28500	255	32	226.16	-.57	14.5633	22.4331	8.96	301.60	.003
28750	256	32	226.47	-.59	14.0297	21.5823	12.15	301.80	.003
29000	259	32	226.37	-.53	13.5159	20.8008	5.49	301.74	.007
29250	263	33	226.44	-.58	13.0210	20.0326	8.76	301.78	.010
29500	262	33	226.85	-.60	12.5448	19.2657	9.25	302.05	.001
29750	261	33	228.03	-.62	12.0873	18.4670	11.55	302.84	.004
30000	256	32	228.74	-.60	11.6488	17.7414	9.77	303.31	.009
30250	251	32	228.28	-.57	11.2261	17.1325	8.23	303.00	.011
30500	248	33	227.10	-.57	10.8174	16.5943	9.79	302.22	.009
30750	245	34	225.53	-.56	10.4213	16.0978	8.99	301.18	.007
31000	245	35	224.24	-.59	10.0374	15.5944	9.86	300.31	.002
31250	246	34	223.52	-.66	9.6661	15.0659	14.15	299.83	.005
31500	249	34	222.96	-.62	9.3074	14.5432	10.18	299.45	.006
31750	248	34	222.54	-.62	8.9614	14.0289	9.28	299.17	.002
32000	247	34	222.31	-.65	8.6278	13.5207	7.66	299.02	.003
32250	245	34	223.54	-.72	8.3075	12.9470	10.19	299.84	.004
32500	243	34	225.44	-.76	8.0014	12.3648	13.68	301.12	.006

PASS 2

B-200

ROCS 3

32750	241	35	227.27	-.76	7.7084	11.8159	15.17	302.34	.006
33000	239	35	228.23	-.73	7.4280	11.3387	12.41	302.97	.005
33250	237	36	228.91	-.70	7.1588	10.8951	10.06	303.42	.004
33500	236	36	229.60	-.72	6.9001	10.4699	12.38	303.88	.004
33750	236	36	230.16	-.72	6.6517	10.0681	11.75	304.25	.003
34000	237	36	231.15	-.75	6.4130	9.6655	12.42	304.90	.002
34250	239	36	232.53	-.80	6.1836	9.2644	14.43	305.81	.004
34500	239	36	233.06	-.79	5.9644	8.8851	13.57	306.69	.002
34750	240	37	235.19	-.79	5.7536	8.5227	13.38	307.56	.004
35000	243	38	236.51	-.83	5.5514	8.1776	14.84	308.42	.008
35250	245	39	237.96	-.85	5.3580	7.8442	15.46	309.37	.008
35500	248	40	239.50	-.86	5.1719	7.5231	15.57	310.36	.008
35750	250	40	241.55	-.86	4.9942	7.2030	15.21	311.69	.008
36000	253	41	243.75	-.87	4.8231	6.8933	14.69	313.11	.008
36250	254	41	245.48	-.86	4.6603	6.6137	16.45	314.22	.004
36500	255	42	247.19	-.86	4.5031	6.3466	18.32	315.30	.004
36750	255	41	247.56	-.82	4.3524	6.1250	16.26	315.54	.002
37000	254	41	247.90	-.79	4.2067	5.9119	14.10	315.76	.002
37250	253	40	249.44	-.86	4.0669	5.6801	15.26	316.74	.005
37500	252	39	251.13	-.92	3.9322	5.4550	16.60	317.81	.005
37750	252	38	253.40	-.95	3.8035	5.2292	18.69	319.24	.006
38000	251	36	255.67	-.99	3.6791	5.0131	20.78	320.67	.006
38250	252	34	256.65	-.94	3.5604	4.8330	20.39	321.28	.008
38500	252	32	257.59	-.89	3.4455	4.6599	19.95	321.87	.008
38750	253	31	257.98	-.87	3.3347	4.5031	19.82	322.12	.006
39000	254	30	257.91	-.87	3.2276	4.3598	19.92	322.07	.004
39250	255	29	257.86	-.88	3.1239	4.2205	20.03	322.04	.005
39500	259	28	257.98	-.89	3.0236	4.0832	20.11	322.11	.008
39750	263	27	258.09	-.91	2.9266	3.9503	20.18	322.19	.008
40000	267	27	258.77	-.95	2.8329	3.8140	20.68	322.61	.007
40250	270	26	259.64	-1.00	2.7424	3.6798	21.32	323.15	.007
40500	273	25	260.63	-1.04	2.6550	3.5490	21.94	323.76	.005
40750	272	25	262.04	-1.06	2.5712	3.4184	22.50	324.64	.003
41000	272	24	263.45	-1.07	2.4906	3.2927	23.06	325.51	.003
41250	270	23	264.53	-1.05	2.4118	3.1763	23.17	326.18	.006
41500	267	21	265.29	-1.01	2.3365	3.0682	22.86	326.65	.009
41750	262	19	266.06	-.96	2.2635	2.9639	22.56	327.12	.009
42000	252	17	265.83	-.95	2.1929	2.8739	22.54	326.98	.016
42250	238	15	265.31	-.95	2.1245	2.7897	22.61	326.66	.017
42500	222	14	264.80	-.95	2.0583	2.7079	22.75	326.35	.017
42750	210	15	264.53	-1.02	1.9938	2.6258	24.02	326.18	.012
43000	199	16	264.26	-1.08	1.9314	2.5462	25.29	326.01	.012
43250	191	18	264.08	-1.14	1.8710	2.4682	26.44	325.90	.012
43500	188	19	264.59	-1.17	1.8125	2.3865	26.64	326.21	.008
43750	185	21	265.09	-1.21	1.7559	2.3075	26.65	326.52	.008
44000	183	23	265.60	-1.24	1.7010	2.2312	27.06	326.84	.008
44250	183	25	266.30	-1.24	1.6482	2.1562	27.40	327.27	.007
44500	183	26	267.03	-1.23	1.5971	2.0832	27.77	327.72	.007
44750	183	28	267.76	-1.23	1.5476	2.0136	28.13	328.16	.007
45000	183	29	268.07	-1.25	1.4997	1.9490	28.79	328.36	.003
45250	184	29	268.09	-1.29	1.4535	1.8888	29.66	328.36	.001
45500	185	29	268.10	-1.33	1.4086	1.8304	30.54	328.37	.001
45750	185	29	268.11	-1.37	1.3651	1.7738	31.41	328.38	.001
46000	185	29	268.92	-1.41	1.3233	1.7142	31.89	328.88	.002
46250	185	28	269.74	-1.44	1.2827	1.6567	32.37	329.37	.002
46500	185	28	270.55	-1.48	1.2433	1.6010	32.83	329.87	.002

46750	185	27	271.35	-1.51	1.2053	1.5474	33.36	330.36	.002
47000	185	27	272.06	-1.49	1.1687	1.4966	34.10	330.79	.002
47250	184	26	272.78	-1.48	1.1333	1.4474	34.85	331.22	.002
47500	184	26	273.49	-1.46	1.0989	1.3998	35.59	331.66	.002
47750	184	25	274.21	-1.45	1.0656	1.3538	36.33	332.09	.002
48000	182	25	273.31	-1.45	1.0332	1.3170	36.56	331.55	.003
48250	180	25	272.31	-1.46	1.0018	1.2817	36.75	330.94	.003
48500	179	24	271.31	-1.47	.9714	1.2473	36.94	330.33	.003
48750	177	24	270.32	-1.48	.9419	1.2139	37.13	329.73	.003
49000	174	24	269.69	-1.54	.9131	1.1795	37.86	329.35	.004
49250	171	24	269.41	-1.65	.8851	1.1445	39.07	329.18	.005
49500	169	25	269.13	-1.77	.8579	1.1105	40.27	329.00	.005
49750	166	25	268.85	-1.88	.8316	1.0775	41.48	328.83	.005
50000	163	26	268.58	-1.99	.8060	1.0455	42.69	328.66	.005
50250	162	26	268.89	-2.05	.7813	1.0123	43.46	328.85	.002
50500	162	26	269.44	-2.08	.7574	.9793	44.06	329.19	.001
50750	161	26	270.00	-2.12	.7343	.9474	44.65	329.53	.001
51000	160	26	270.55	-2.15	.7118	.9166	45.25	329.87	.001
51250	160	26	271.11	-2.19	.6900	.8867	45.84	330.21	.001
51500	160	26	271.44	-2.21	.6689	.8585	46.39	330.41	.000
51750	161	26	271.37	-2.23	.6486	.8326	46.85	330.37	.002
52000	162	26	271.30	-2.24	.6288	.8075	47.32	330.33	.002
52250	163	26	271.23	-2.25	.6097	.7831	47.78	330.28	.002
52500	164	26	271.16	-2.27	.5911	.7595	48.24	330.24	.002
52750	166	26	271.09	-2.28	.5731	.7366	48.70	330.20	.002
53000	167	26	270.95	-2.33	.5557	.7145	49.64	330.11	.002
53250	167	26	270.76	-2.41	.5387	.6931	50.83	330.00	.002
53500	168	26	270.58	-2.48	.5223	.6725	52.03	329.89	.002
53750	169	26	270.40	-2.56	.5063	.6524	53.22	329.78	.002
54000	170	26	270.21	-2.63	.4909	.6329	54.41	329.66	.002
54250	170	27	270.03	-2.71	.4759	.6140	55.61	329.55	.002
54500	171	26	269.77	-2.77	.4614	.5958	56.62	329.39	.003
54750	174	25	269.35	-2.80	.4472	.5784	57.26	329.14	.007
55000	177	24	268.94	-2.84	.4335	.5615	57.90	328.89	.007
55250	180	22	268.52	-2.87	.4201	.5451	58.54	328.63	.007
55500	183	21	268.11	-2.90	.4072	.5292	59.18	328.38	.007
55750	187	20	267.69	-2.94	.3947	.5137	59.82	328.12	.007
56000	191	19	267.28	-2.97	.3826	.4987	60.46	327.87	.007
56250	196	18	266.65	-3.03	.3708	.4844	61.22	327.48	.007
56500	201	17	265.50	-3.16	.3591	.4712	62.29	326.77	.008
56750	207	16	264.35	-3.28	.3478	.4584	63.35	326.07	.008
57000	214	15	263.20	-3.41	.3369	.4460	64.42	325.36	.008
57250	221	14	262.05	-3.53	.3264	.4339	65.49	324.65	.008
57500	229	14	260.90	-3.66	.3161	.4221	66.55	323.93	.008
57750	237	14	259.75	-3.78	.3062	.4107	67.62	323.22	.008
58000	245	14	258.60	-3.91	.2966	.3995	68.68	322.50	.008
58129	249	14	258.01	-3.97	.2917	.3939	69.24	322.13	.008

MAXIMUM ALTITUDE 61559

TEST NUMBER 0000
CAPE CANAVERAL AFS, FLORIDA
1515Z 18 JAN 1984

SUPER LOKI PWN-10D

ALT (FEET)	DIR DEG	SPD KTS	TEMP -K	TEMP CORR	PRESS MBS	DENSITY G/M3	RF KTS	VS KTS	SHR /SEC
66000	225	37	203.03	-.46	54.1967	92.9960	14.42	555.10	.999
67000	239	23	205.17	-.46	51.5245	87.4883	20.61	558.02	.012
68000	236	19	206.73	-.44	49.0046	82.5830	11.28	560.14	.007
69000	235	28	206.68	-.44	46.6190	78.5813	16.91	560.07	.015
70000	238	37	208.44	-.45	44.3550	74.1346	8.36	562.45	.016
71000	247	36	210.03	-.46	42.2184	70.0286	12.85	564.59	.009
72000	248	33	211.39	-.46	40.2037	66.2887	25.67	566.28	.005
73000	253	32	211.40	-.46	38.2878	63.0961	19.69	566.43	.005
74000	263	35	212.16	-.46	36.4660	59.8804	13.41	567.44	.011
75000	273	33	212.96	-.45	34.7381	56.8271	10.74	568.52	.010
76000	266	31	213.52	-.48	33.0963	53.9993	20.60	569.27	.007
77000	254	35	214.92	-.47	31.5406	51.1254	16.81	571.13	.013
78000	253	39	215.52	-.47	30.0649	48.5998	16.28	571.92	.007
79000	261	40	216.70	-.48	28.6637	46.0815	18.60	573.49	.010
80000	265	41	217.23	-.48	27.3334	43.8364	19.73	574.18	.004
81000	259	42	217.18	-.48	26.0661	41.8120	18.72	574.13	.007
82000	253	45	217.90	-.50	24.8587	39.7446	12.79	575.07	.010
83000	253	47	218.91	-.52	23.7130	37.7380	26.08	576.40	.004
84000	255	49	219.70	-.52	22.6240	35.8754	29.56	577.44	.004
85000	257	50	219.89	-.49	21.5875	34.2022	13.55	577.69	.003
86000	254	51	220.98	-.53	20.6005	32.4768	23.21	579.13	.004
87000	252	51	221.92	-.53	19.6643	30.8699	26.08	580.35	.003
88000	251	52	222.10	-.51	18.7724	29.4464	23.19	580.58	.002
89000	251	54	221.89	-.52	17.9210	28.1366	20.04	580.32	.004
90000	252	58	221.62	-.53	17.1074	26.8927	22.17	579.96	.006
91000	253	61	222.87	-.56	16.3324	25.5302	25.73	581.59	.005
92000	252	62	224.87	-.57	15.5982	24.1654	28.28	584.20	.003
93000	254	62	225.88	-.56	14.9014	22.9826	22.90	585.51	.003
94000	255	62	226.41	-.60	14.2379	21.9077	41.59	586.20	.002
95000	258	63	226.38	-.54	13.6048	20.9369	19.31	586.15	.005
96000	263	64	226.45	-.58	12.9999	19.9994	28.76	586.25	.010
97000	262	64	227.16	-.60	12.4230	19.0525	32.33	587.16	.002
98000	259	63	228.38	-.61	11.8739	18.1130	35.34	588.74	.006
99000	253	63	228.56	-.58	11.3508	17.3017	28.36	588.97	.010
100000	248	64	227.20	-.57	10.8495	16.6360	31.37	587.22	.010
101000	245	67	225.28	-.56	10.3670	16.0317	27.82	584.73	.007
102000	245	67	223.97	-.63	9.9027	15.4037	39.28	583.02	.001
103000	248	66	223.19	-.64	9.4572	14.7616	38.90	582.02	.005
104000	249	66	222.61	-.62	9.0306	14.1325	30.28	581.26	.002
105000	247	66	222.31	-.65	8.6225	13.5125	24.99	580.86	.003
106000	245	67	224.00	-.74	8.2340	12.8059	32.54	583.07	.005
107000	242	67	226.27	-.76	7.8668	12.1120	47.11	586.02	.006
108000	239	68	228.00	-.74	7.5181	11.4873	45.07	588.25	.005
109000	237	69	228.83	-.70	7.1870	10.9416	32.17	589.33	.005
110000	236	71	229.67	-.72	6.8717	10.4236	40.83	590.40	.004
111000	236	69	230.35	-.72	6.5713	9.9385	37.72	591.27	.003
112000	238	70	231.91	-.78	6.2856	9.4425	44.38	593.27	.004
113000	239	71	233.55	-.79	6.0141	8.9709	45.24	595.37	.003
114000	240	72	235.17	-.79	5.7559	8.5266	43.83	597.43	.003
115000	243	74	236.78	-.83	5.5104	8.1076	49.68	599.47	.008
116000	246	76	238.62	-.85	5.2776	7.7052	50.88	601.79	.008
117000	249	78	240.77	-.86	5.0560	7.3158	50.49	604.50	.008
118000	253	79	243.46	-.87	4.8457	6.9340	48.43	607.87	.008

PASS 2
B-203

ROCS 3

119000	254	80	245.63	-.86	4.6467	6.5905	54.48	610.57	.004
120000	255	81	247.33	-.85	4.4566	6.2774	58.39	612.68	.002
121000	254	80	247.72	-.81	4.2755	6.0127	49.55	613.17	.002
122000	253	79	249.04	-.84	4.1024	5.7388	49.08	614.79	.004
123000	252	76	251.04	-.92	3.9372	5.4638	54.20	617.25	.005
124000	252	77	253.81	-.96	3.7807	5.1893	62.55	620.65	.006
125000	251	68	256.08	-.97	3.6311	4.9399	67.75	623.42	.007
126000	252	64	257.23	-.91	3.4888	4.7250	66.01	624.82	.008
127000	253	60	257.99	-.87	3.3523	4.5267	64.95	625.75	.007
128000	254	58	257.90	-.82	3.2215	4.3516	65.39	625.64	.004
129000	257	56	257.89	-.88	3.0958	4.1820	65.78	625.63	.006
130000	261	54	258.03	-.90	2.9750	4.0162	66.09	625.80	.008
131000	266	52	258.52	-.94	2.8592	3.8530	67.26	626.39	.008
132000	270	51	259.58	-1.00	2.7482	3.6884	69.82	627.67	.007
133000	273	49	260.85	-1.04	2.6419	3.5285	72.28	629.20	.005
134000	272	48	262.57	-1.06	2.5406	3.3709	74.50	631.27	.003
135000	272	46	264.22	-1.07	2.4432	3.2214	76.42	633.25	.003
136000	267	41	265.15	-1.01	2.3505	3.0883	75.19	634.37	.009
137000	262	37	266.08	-.96	2.2613	2.9607	73.97	635.48	.009
138000	249	32	265.70	-.95	2.1756	2.8526	74.01	635.03	.016
139000	230	28	265.06	-.95	2.0932	2.7511	74.30	634.26	.017
140000	213	29	264.62	-1.00	2.0132	2.6511	72.51	633.23	.014
141000	200	31	264.29	-1.07	1.9371	2.5535	82.58	633.33	.012
142000	190	35	264.15	-1.14	1.8635	2.4572	86.82	633.16	.011
143000	187	39	264.76	-1.19	1.7927	2.3589	87.65	633.90	.008
144000	184	43	265.38	-1.23	1.7246	2.2641	88.48	634.64	.008
145000	183	47	266.15	-1.24	1.6595	2.1722	89.65	635.56	.007
146000	183	51	267.03	-1.23	1.5969	2.0834	91.10	636.62	.007
147000	183	56	267.92	-1.23	1.5368	1.9983	92.55	637.67	.007
148000	184	57	268.08	-1.27	1.4791	1.9222	95.72	637.86	.002
149000	184	57	268.09	-1.32	1.4236	1.8500	99.22	637.88	.001
150000	185	57	268.11	-1.36	1.3703	1.7805	102.72	637.90	.001
151000	185	56	269.01	-1.41	1.3192	1.7084	104.79	638.96	.002
152000	185	55	270.00	-1.45	1.2700	1.6387	106.70	640.14	.002
153000	185	54	270.98	-1.50	1.2227	1.5719	108.62	641.31	.002
154000	185	52	271.89	-1.50	1.1775	1.5087	111.29	642.38	.002
155000	184	51	272.76	-1.48	1.1341	1.4485	114.27	643.41	.002
156000	184	50	273.63	-1.46	1.0923	1.3907	117.24	644.43	.002
157000	183	49	273.90	-1.45	1.0521	1.3381	119.57	644.74	.002
158000	181	48	272.68	-1.46	1.0132	1.2945	120.34	643.31	.003
159000	179	47	271.46	-1.47	.9758	1.2523	121.11	641.87	.003
160000	177	46	270.24	-1.48	.9398	1.2115	121.87	640.43	.003
161000	173	47	269.61	-1.57	.9048	1.1692	125.36	639.68	.004
162000	170	48	269.27	-1.71	.8711	1.1270	130.19	639.28	.005
163000	167	49	268.93	-1.85	.8386	1.0863	135.02	638.87	.005
164000	163	50	268.59	-1.99	.8073	1.0471	139.86	638.47	.005
165000	162	51	268.98	-2.06	.7773	1.0067	142.93	638.93	.002
166000	161	51	269.66	-2.10	.7484	.9668	145.31	639.74	.001
167000	160	51	270.34	-2.14	.7205	.9286	147.69	640.54	.001
168000	160	51	271.01	-2.18	.6938	.8918	150.07	641.34	.001
169000	160	51	271.44	-2.21	.6680	.8574	152.27	641.85	.000
170000	161	50	271.36	-2.23	.6433	.8259	154.12	641.75	.002
171000	163	50	271.27	-2.25	.6195	.7956	155.97	641.64	.002
172000	164	50	271.18	-2.26	.5966	.7664	157.82	641.54	.002
173000	166	50	271.10	-2.28	.5745	.7383	159.67	641.44	.002
174000	167	50	270.92	-2.34	.5532	.7114	163.41	641.23	.002

PASS 2
B-204
ROCS 3

ATTACHMENT 3

CO-RAWINSONDE FILE (SIGNIFICANT AND MANDATORY)

ALTITUDE (M-F)	WIND DIR (DEG.)	WIND SPD (KTS)	TEMPERATURE (DEG. C)	DEW POINT (DEG. C)	PRESSURE (MBS)	REF. INDEX (N-UNITS)	REL. HUM. (%)
4.88	0	0	16.60	16.60	1018.30	356.72	100.00
302.92	212	10	21.20	21.20	983.19	367.67	100.00
1433.84	226	10	14.40	14.40	862.62	306.86	100.00
2076.18	232	11	12.20	10.43	799.56	275.39	88.94
2363.82	233	12	11.30	5.07	772.66	251.24	65.48
2965.91	223	13	9.40	-.50	718.94	227.07	53.70
3184.36	209	14	7.40	2.31	700.25	227.90	70.04
3423.93	208	15	5.70	-4.42	680.18	210.41	48.05
3668.55	204	14	3.30	-3.55	660.12	208.25	60.69
3906.37	199	13	3.90	-23.36	641.27	184.12	11.48
4372.75	195	14	1.70	-23.71	605.27	175.33	13.01
5184.53	237	19	-5.10	-20.63	546.67	164.39	28.22
6322.50	244	19	-13.50	-34.98	472.06	142.79	14.31
6607.43	250	20	-16.00	-21.07	454.68	143.62	64.78
7469.68	242	27	-21.80	-40.84	405.18	126.09	15.84
7790.53	242	28	-24.10	-34.15	387.89	122.88	38.64
8100.28	242	29	-26.10	-45.24	371.76	117.41	14.46
8442.27	243	31	-28.40	-34.08	354.59	114.53	57.27
8978.05	245	32	-32.10	-44.43	328.96	106.64	27.89
9276.90	249	29	-38.40	-52.87	293.44	92.30	19.86
10911.19	248	31	-47.20	-58.05	248.21	85.41	27.14
12381.90	268	29	-59.90	-67.58	197.66	71.98	35.14
12692.06	268	32	-60.60	99.90	188.12	68.68	999.00
14422.55	262	37	-65.90	99.90	142.23	53.25	999.00
14643.37	263	38	-63.90	99.90	137.20	50.88	999.00
14965.16	262	38	-64.00	99.90	130.22	48.32	999.00
17233.61	260	27	-77.30	99.90	88.91	35.23	999.00
18899.58	254	13	-77.70	99.90	66.22	26.49	999.00
19240.20	246	15	-77.20	99.90	62.90	24.91	999.00
19562.20	258	17	-73.70	99.90	59.52	23.16	999.00
20524.18	257	13	-71.60	99.90	50.60	19.48	999.00
21956.46	258	18	-61.50	99.90	40.00	14.67	999.00
23930.12	251	19	-60.70	99.90	29.19	10.66	999.00
24924.05	259	21	-57.90	99.90	24.75	8.92	999.00
25752.40	260	26	-51.50	99.90	21.93	7.68	999.00
27418.86	260	28	-52.80	99.90	17.00	5.99	999.00
30390.43	261	36	-46.50	99.90	10.84	3.71	999.00
31267.98	250	36	-46.80	99.90	9.51	3.26	999.00
32334.12	245	36	-52.50	99.90	8.09	2.85	999.00
32820.56	243	36	-53.20	99.90	7.51	2.65	999.00
34481.99	246	41	-41.60	99.90	5.86	1.96	999.00
34962.79	999	999	-38.20	99.90	5.46	1.80	999.00

PASS 2

B-209

ROCS 3

ALTITUDE (FT)	WIND DIR (DEG.)	WIND SPD (KTS)	TEMPERATURE (DEG. C)	DEW POINT (DEG. C)	PRESSURE (MBS)	REL. HUM. (%)
161.30	212	5	18.98	18.98	1000.00	100.00
605.25	211	10	19.42	19.32	950.00	99.39
1070.19	222	11	16.51	16.51	900.00	99.99
1556.21	224	10	14.04	13.14	850.00	94.51
2067.89	232	11	12.22	10.44	800.00	88.91
2608.17	232	12	10.52	4.91	750.00	68.21
3181.16	209	14	7.38	2.22	700.00	69.77
3786.60	202	14	3.62	-14.12	650.00	34.44
4433.61	201	14	1.01	-23.97	600.00	13.36
5124.98	232	19	-4.73	-21.01	550.00	26.78
5866.51	238	19	-10.13	-31.07	500.00	16.13
6660.96	250	21	-16.45	-22.92	450.00	58.14
7544.52	242	28	-22.48	-38.86	400.00	22.57
8512.14	243	31	-29.14	-35.60	350.00	53.40
9595.38	248	29	-37.39	-50.22	300.00	24.93
10829.11	248	30	-46.88	-57.84	250.00	26.89
12266.09	267	29	-59.33	-67.08	200.00	35.01
13096.92	260	35	-61.96	99.90	175.00	999.00
14045.16	264	36	-64.52	99.90	150.00	999.00
15158.04	256	37	-65.95	99.90	125.00	999.00
16482.56	250	34	-74.43	99.90	100.00	999.00
17270.89	254	20	-75.91	99.90	80.00	999.00
18540.82	252	16	-76.89	99.90	70.00	999.00
19432.60	256	17	-74.21	99.90	60.00	999.00
20499.48	257	14	-70.92	99.90	50.00	999.00
21849.51	258	18	-61.50	99.90	40.00	999.00
23636.10	252	18	-60.06	99.90	30.00	999.00
24776.98	260	21	-52.98	99.90	25.00	999.00
26209.96	258	26	-51.81	99.90	20.00	999.00
28072.48	252	33	-51.58	99.90	15.00	999.00
30735.69	255	38	-46.52	99.90	10.00	999.00
33062.78	241	39	-50.32	99.90	7.00	999.00

PASS 2
8-210

ROCS B

ATTACHMENT 4

HAMDATA OUTPUT FILE

TEST NUMBER 000000
CAPE CANAVERAL AFS, FLORIDA
1515Z 18 JAN 1984

SUPER LOKI DATASONDE FWN-10A

1961268	10	-3	11	0	10	4	-26	09.999-99.999-9282	
1982226	10	14	6	7	8	5	-71	09.999-99.999-9285	
2000224	14	12	10	9	9	7	-71	09.999-99.999-9285	
2000224	13	12	10	9	9	7	-71	05.524+19.516+1285	
2100236	14	11	11	8	12	5	-67	04.686+17.902+1288	
2176247	18	6	18	7	16	4	-62	04.140+16.823+1292	
2200249	17	6	14	6	16	5	-62	03.986+16.571+1292	
2287273	17	-2	18	-1	17	3	-60	03.469+15.673+1293	
2300271	16	-1	16	0	16	6	-60	03.392+15.559+1293	
2400260	21	5	20	4	20	6	-57	02.902+14.671+1295	
2500253	23	10	20	7	22	4	-55	02.483+13.920+1296	
2568256	25	7	25	6	25	9	-53	-12.234+13.539+1297	
2600256	26	7	25	6	25	5	-53	-12.128+13.372+1297	
2689251	27	9	25	9	25	6	-51	-11.858+12.914+1299	
2700251	27	9	25	9	26	6	-51	-11.827+12.867+1299	
2745252	30	10	29	9	28	7	-52	-11.707+12.683+1299	
2800252	32	9	31	10	30	8	-48	-11.570+12.434+1301	
2870255	32	11	31	8	31	14	-47	-11.414+12.175+1302	
2900259	32	3	31	6	32	5	-47	-11.352+12.080+1302	
3000256	32	5	32	8	32	10	-44	-11.165+11.774+1303	
3100245	35	15	31	15	31	10	-49	-11.004+11.559+1300	
3200247	34	9	27	13	31	8	-51	-18.628+01.352+1299	
3300239	35	18	30	18	30	12	-45	-17.428+01.134+1303	
3400237	36	19	28	19	30	12	-42	-16.413+09.665+0305	
3500243	38	17	34	17	34	15	-37	-15.552+08.178+0308	
3600253	41	13	37	12	39	15	-29	-14.823+06.893+0313	
3700254	41	5	39	11	40	14	-25	-14.207+05.912+0316	
3800251	36	17	34	12	34	21	-17	-13.679+05.013+0321	
3861252	31	13	28	9	30	20	-15	-13.395+04.583+0322	
3900254	30	8	27	8	29	20	-15	-13.228+04.360+0322	
4000267	27	0	26	1	27	21	-14	-12.833+03.814+0323	
4100272	24	-1	26	-1	24	23	-10	-12.490+03.293+0326	
4181261	19	0	21	3	19	22	-7	-12.247+02.940+0327	
4200252	17	3	18	5	16	23	-7	-12.193+02.874+0327	
4300199	16	17	6	15	5	25	-9	-11.931+02.546+0326	
4400183	23	25	-6	23	1	27	-8	-11.701+02.231+0327	
4500183	29	31	-4	29	2	29	-5	-11.500+01.949+0328	
4600185	29	24	13	29	3	32	-4	-11.323+01.714+0329	
4700185	27	31	8	27	2	34	-1	-11.169+01.497+0331	
4800182	25	27	-3	25	1	37	0	-11.033+01.317+0332	
4900174	24	15	-9	24	-2	38	-3	-29.131-11.180+0329	
5100160	26	26	-7	25	-9	45	-3	-27.118-19.166-1330	
5200162	26	25	-6	25	-8	47	-2	-26.289-18.075-1330	
5300167	26	25	-6	25	-6	50	-2	-25.557-17.145-1330	
5500177	24	22	0	24	-1	58	-4	-34.335-15.615-1329	
5700214	15	11	10	12	8	64	-10	-33.369-14.460-1325	
5618194	18	16	6	18	5	61	-6	-33.742-14.883-1328	
2051240	10	8	8	5	9	5	-67	05.000+18.454+1288	
2367253	20	5	20	6	19	5	-58	03.000+14.849+1294	
2626253	26	8	24	8	25	6	-51	-12.000+13.141+1299	

PASS 2
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RDCS 3

```
3083245 34  15  31  15  31 10 -49 -11.000+11.554+1300
3310236 36 -19  31  20  30 11 -44 -17.000+01.063+1304
3549250 40  13  36  14  38 15 -32 -15.000+07.214+0312
3926260 28  -3  26   5  27 20 -15 -13.000+04.051+0322
4236211 15  14   8  13   8 24  -9 -12.000+02.634+0326
4283180 25  23  -5  25   0 37  -1 -11.000+01.280+0331
5065160 26  26  -6  25  -9 46  -2 -27.000-19.004-1330
5332169 26  25  -4  26  -5 54  -3 -35.000-16.444-1330
5508185 20  19   3  20   2 60  -5 -34.000-15.202-1328
5231242 14  -6  13   6  12 68 -14 -43.000-14.035-1323
   01
```

CAPE CANAVERAL AFS, FLORIDA
1015Z 18 JAN 1984

ALT	MI	WDIR	WSPD	TEMP	DEW PT	PRESS	RH
000049		212	002	189	189	10000	100
000184		211	005	194	193	09500	099
000326		222	005	165	165	09000	099
000474		224	005	140	131	08500	094
000630		232	005	122	104	08000	088
000794		232	006	105	049	07500	068
000969		209	007	073	022	07000	069
001154		202	007	036	14J	06500	034
001351		201	007	010	23R	06000	013
001562		237	009	04P	211	05500	026
001788		238	009	10J	311	05000	016
002032		250	010	16M	22R	04500	058
002299		243	014	22M	380	04000	022
002594		243	015	29J	350	03500	053
002924		248	014	37L	50K	03000	024
003300		248	015	46Q	570	02500	026
003738		267	014	59L	621	02000	035
004291		260	018	61R	999	01750	999
004280		264	018	64N	999	01500	999
004620		256	019	65R	999	01250	999
005023		250	017	74M	999	01000	999
005416		254	010	75R	999	00800	999
005651		252	008	76Q	999	00700	999
005921		256	008	74K	999	00600	999
006248		257	007	70R	999	00500	999
006659		258	009	61N	999	00400	999
007204		252	009	601	999	00300	999
007852		260	010	57R	999	00250	999
007988		258	013	51Q	999	00200	999
008556		252	016	51N	999	00150	999
009368		255	019	46N	999	00100	999
010077		241	020	50L	999	00070	999

ALT	MI	WDIR	WSPD	TEMP	DEW PT	PRESS	IR
000001		000	000	166	166	101830	356
000093		212	005	211	212	098319	367
000437		226	005	143	144	086261	306
000632		232	005	121	104	079955	275
000720		233	006	113	050	077265	251
000904		223	006	093	004	071893	227

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ROCS 3

000970	209	007	073	023	070025	227
001063	208	007	056	04M	068017	210
001118	204	007	033	03N	066012	208
001190	199	006	038	23L	064126	184
001332	195	007	016	23P	060526	175
001580	232	009	05J	20Q	054666	164
001927	244	009	13N	34R	047205	142
002013	250	010	16I	21I	045468	143
002276	242	013	21Q	40Q	040517	126
002374	242	014	24J	34J	038788	122
002468	242	014	26J	45K	037176	117
002573	243	015	28L	34I	035459	114
002736	245	016	32J	44M	032896	106
002980	242	014	38L	52Q	029344	097
003325	248	015	47J	58I	024820	085
003724	248	014	52Q	67N	019765	071
003868	268	016	60Q	999	018811	068
004395	267	019	65Q	999	014222	053
004463	263	019	63Q	999	013720	050
004561	257	019	64I	999	013022	048
005252	260	013	77L	999	008890	035
005760	254	006	77Q	999	006671	026
005864	246	007	77J	999	006269	024
005962	258	008	73Q	999	005951	023
006255	257	006	71Q	999	005059	019
006692	258	009	61N	999	003929	014
007293	251	009	60Q	999	002919	010
007612	259	010	57Q	999	002424	009
007849	260	013	51N	999	002193	007
008357	260	014	52Q	999	001692	005
009263	261	018	46N	999	001083	003
009530	250	010	46Q	999	000950	003
009855	245	018	52N	999	000809	002
010003	243	018	53J	999	000751	002
010510	246	021	41Q	999	000585	001
010656	999	514	38J	999	000546	001

PASS 2
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ROCS 3

ATTACHMENT 5

ROCOB OUTPUT FILE

```
RRXX 18151 01984 74794 91011 63111
20524 22013 97777 21567 24014 91790 22562 25017 91657 23560
27016 91556 24557 26021 91467 25555 25023 91397 26553 26026
91337 27551 25027 91287 28548 25032 91243 29547 26032 91208
30544 26032 91177 31549 25035 91156 32551 25034 91135 33545
24035 91113 34542 24036 92967 35537 24038 92818 36529 25041
92669 37525 25041 92591 38517 25036 92501 39515 25030 92436
40514 27027 92381 41510 27024 92329 42507 25017 92287 43509
20016 92255 44508 18023 92223 45505 18029 92195 46504 19029
92171 47501 19027 92150 48000 18025 92132 49503 17024 92118
50505 16026 92105 51503 16026 93917 52502 16026 93808 53502
17026 93715 54503 17026 93633 55504 18024 93562 56506 19019
93499 57510 21015 93446 58515 25014 93400
11567 50205 24010 11558 30236 25020 11551 20262 25026 11549
10308 24034 11544 07331 24036 11532 05354 25040 11515 03392
26028 11509 02423 21015 11501 01478 18025 22502 07504 16026
22503 05533 17026 22505 04550 19020 22514 03573 24014
```

PASS 2
B-219

ROCS 13

ATTACHMENT 6

PROGRAM LISTING

```
C
C     ROCKET#2
C     PASS 2 OF THE ROCKET REDUCTION PROGRAM. OUTPUTS THE HAMDATA
C     FILE AND THE TELETYPE (CODER) FILE.
C
      INCLUDE "DATAS2"
      DATA IOU1,IOU2,IOU3,IOU4/1,2,3,4/
      DATA PL/1.69897,1.47712,1.30102,1.0,
     * 0.84509,0.69897,0.47712,0.30102,0.0,
     * -0.1549,-0.30102,-0.39794,-0.52287,-0.69897,-1.0,
     * -1.1549,-1.30102,-1.52287,-1.69897,-2.0,
     * -2.1549,-2.30102,-2.52287,-2.69897,-3.0,
     * -3.1549,-3.30102,-3.52287,-3.69897,-4.0,
     * -4.1549,-4.30102,-4.52287,-4.69897,-5.0/
      DATA IA1,IKT,IMR,IEW,ICW/9,1,1,31,1/
      DATA IND,INDI/6,10/
C
C     INITIALIZE THE FILES
C
      DELETE "HAMDATA"
      DELETE "CODEDATA"
      TYPE "(32)(36)          ROCKET REDUCTION - PASS 2(12)(12)(12)"
      PAUSE "MOUNT REDUCTION DISK ON DRIVE 1"
      CALL INIT("DP1")
C
C     READ SAVE FILE
C
      OPEN 20,"ROCKSAVE",LEN=80,ATT="L"
      READ(20)IH1,IH2,IM1,IM2,RAWINDAY,RAWINMONTH,RAWINYEAR,
     * (IDTYPE(I),I=1,3),(STATIONID(I),I=1,15),ROCKTIME,IDAY,
     * MONTH,IYR,GRAT,RE,ISONDE,IOU3,STANUM,IMON
      CLOSE 20
      IF(ISONDE.EQ."8B")IND=1
  100 WRITE(10,1)
      READ(11,2)INPUT
      IF(INPUT.EQ."CN")IOU3=10
      IF(INPUT.EQ."PR")OPEN IOU3,"QTY:2",ATT="PL",LEN=221
      IF(INPUT.NE."CN".AND.INPUT.NE."PR")GOTO 100
C
C     COMPUTE AND OUTPUT HAMDATA
C
      CALL ETFORM(ROCKTIME)
C
C     COMPUTE AND OUTPUT TELETYPE (CODER) DATA
C
      CALL ROCOR(ROCKTIME)
C
      CALL RELEASE("DP1",IER)
      STOP
C
    1 FORMAT(/"(13)OUTPUT TO CONSOLE OR PRINTER (CNS/PRT): ...",
     * 3("(10)"),Z)
    2 FORMAT(A2)
C
      END
```

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```
      REAL MONTH
      DOUBLE PRECISION GRAT,RE
      INTEGER STATIONID(15),RAWINDAY,RAWINMONTH,RAWINYEAR
      COMMON/DATA/X,Y,Z,IND,IND1,IA1,STATIONID,IKT,IMR,
     * ICW,IEW,IH1,IH2,IM1,IM2,RAWINDAY,RAWINMONTH,RAWINYEAR,
     * IDTYPE(3),IHR,IMIN,IDAY,MONTH,IYR,GRAT,RF,IOU1,IOU2,IOU3,
     * IOU4,PL(35),H,UX,UY,T,UT,P,F,IMON,STANUM
```

```
      SUBROUTINE ETFORM(ROCKTIME)
      INCLUDE "DATA62"
      DIMENSION H4(20),X4(20),Y4(20),UX4(20),UY4(20),T4(20),UT4(20),
     *  P4(20),E4(20)
C
C     OUTPUT BASELINE DATA
C
      OPEN(IOU4,"HANDATA",LEN=80,ATT="L")
      OPEN IOU2,"TAPE2",LEN=36
      IU=II=9999
      IP=99999
  100 READ(IOU2)H,X,Y,UX,UY,T,UT,P,E
      IF(P.GT.999..OR.H.LT.20000.)GOTO 100
      IH=((GRAT*(RE+H)/(RE+H))+5.)/10.
      IF(P.LT.999.)IP=10.**P*100.+.5
      IF(T.LT.999.)IT=(T-273.15)*10.+.5
      WRITE(10,1)IH,IP,IT
    1 FORMAT(I4,I5,I4)
      REWIND IOU2
      WRITE(IOU4,5)
    5 FORMAT(1X)
C
C     WRITE HEADER DATA
C
      WRITE(IOU4,2)(IDTYPE(I),I=1,3),STATIONID,ROCKTIME,IDAY,
     *  MONTH,IYR
    2 FORMAT("TEST NUMBER  "3A2/15A2/A4"Z  "I2,1X,A4,I4,//
     *  "SUPER LOKI  DATASONDE PWN-10A")
C
C     COMPUTE 1000 METER DATA AND PICK SIGNIFICANT LEVELS
C
C     INITIALIZE
C
  115 CONTINUE
      H=0.0
      TX=0.0
      TLP=0.0
      DT=0.0
      ICNT=0
      IFLAG=0
      JP=0
      IBEG=1
      IP=1
      IEND=1
      IT=1
      ST=999.9
C
      DO 51 I=1,20
  300 READ(IOU2,END=97)H4(I),X4(I),Y4(I),UX4(I),UY4(I),T4(I),UT4(I),
     *  P4(I),E4(I)
      IF(I.GT.1.AND.H4(I).LE.H4(I-1))GOTO 300
      IF(H4(I).LT.1.)GOTO 115
      IF(I.NE.1)GOTO 12
C
C     INITIALIZE MAXIMUM AND MINIMUM TEMPERATURES
C
```

```
      TMX=T4(I)
      TMN=T4(I)
      IS1=I
      IS2=I
      J=H4(I)/1000.
      HL=J
      H1=HL*1000.+1000.
   12 IF(TMX.GE.T4(I))GOTO 13
      TMX=T4(I)
      IS1=I
   13 IF(TMN.LE.T4(I))GOTO 15
      TMN=T4(I)
      IS2=I
   15 IF(H4(I).GE.H1)GOTO 30
   51 CONTINUE
C
   30 IB=IF
      IF(IS1.LT.IS2)GOTO 16
      IF(IS1.EQ.IS2)IFLAG=ICNT=3
C
C     MINIMUM TEMPERATURE ROUTINE
C
   29 IF(IFLAG.EQ.1)GOTO 52
      IF(IFLAG.EQ.3.AND.ICNT.GT.1)GOTO 31
      IT=IS2
      IF(IT.EQ.I)GOTO 28
      IFLAG=1
      IF(IS2.EQ.1.OR.IS2.EQ.I)GOTO 27
      IF(ICNT.GE.1)GOTO 28
      GOTO 18
   27 ICNT=ICNT+2
C
C     MAXIMUM TEMPERATURE ROUTINE
C
   16 IF(IFLAG.EQ.2)GOTO 52
      IF(IFLAG.EQ.3.AND.ICNT.GT.1)GOTO 31
      IT=IS1
      IF(IT.EQ.I)GOTO 28
      IFLAG=2
      IF(IS1.EQ.1.OR.IS1.EQ.I)GOTO 17
      IF(ICNT.GE.1)GOTO 28
      GOTO 18
   17 ICNT=ICNT+2
      GOTO 29
   18 IBEG=1
      GOTO 28
   31 IT=I
      IB=IF
      IBEG=IEND
   28 IB=IF
      IEND=IT
C
C     SELECT A SIGNIFICANT LEVEL
C
   54 CONTINUE
      DO 60 IF=IBEG,IEND
```

```
            TX=(H4(IP)-H4(IB))/(H4(IT)-H4(IB))
            TLP=TX*(T4(IT)-T4(IB))+T4(IB)
            DT=ABS(TLP-T4(IP))
            IF(IP.EQ.I)GOTO 53
            IF(DT.GE.2.)GOTO 40
   40       CONTINUE
            IP=IP-1
   40       IB=IP
            IBEG=IB
            IF(H4(IP).GT.H1)GOTO 53
            H=H4(IP)/10.
            PH=H4.5
            X=X4(IP)
            Y=Y4(IP)
            P=P4(IP)
            E=E4(IP)
            T=T4(IP)
            UX=UX4(IP)
            UY=UY4(IP)
            UT=UT4(IP)
            IF(T4(IP).GT.998.)GOTO 41
            IF((ABS(T4(IP)-ST)).LT.2.)GOTO 41
      C
            CALL CODIT
      C
   41       JP=IP
            ST=T4(IP)
            IF(DT.GE.2.)GOTO 54
            IF(IS1.GT.IT.OR.IS2.GT.IT)IEND=IS1
            IF(IS1.GT.IT.OR.IS2.GT.IT)I1=IS1
            IF(IT.NE.I)GOTO 52
            IF(IBEG.EQ.I)GOTO 53
            GOTO 54
   52       IBEG=IEND
            IB=IEND
            IEND=I
            IT=I
            GOTO 54
      C
      C     OUTPUT A MANDATORY LEVEL
      C
   53       RAT=(H1-H4(IP))/(H4(IP-1)-H4(IP))
            H=H1/10.
            X=VALUE(RAT,X4(IP-1),X4(IP))
            Y=VALUE(RAT,Y4(IP-1),Y4(IP))
            T=VALUE(RAT,T4(IP-1),T4(IP))
            P=VALUE(RAT,P4(IP-1),P4(IP))
            E=VALUE(RAT,E4(IP-1),E4(IP))
            UX=VALUE(RAT,UX4(IP-1),UX4(IP))
            UY=VALUE(RAT,UY4(IP-1),UY4(IP))
            UT=VALUE(RAT,UT4(IP-1),UT4(IP))
            IF(IP.EQ.IB)GOTO 115
      C
            CALL CODIT
      C
            ST=T4(IP)
```

```
      BACKSPACE IOU2
      GOTO 115
C
C     OUTPUT LAST DATA POINT
C
97    BACKSPACE IOU2
      BACKSPACE IOU2
      READ(IOU2)H,X,Y,UX,UY,T,UT,P,F
      H=H/10.
C
      CALL CONIT
C
      REWIND IOU2
C
C     START CONSTANT PRESSURE LEVELS
C
      J=1
      READ(IOU2)H1,X1,Y1,UX1,UY1,T1,UT1,P1,F1
200   READ(IOU2,END=206)H2,X2,Y2,UX2,UY2,T2,UT2,P2,F2
201   IF(P1.GE.999.)GOTO 204
      IF(J.EQ.24.OR.J.EQ.29.OR.J.EQ.34)GOTO 202
      IF(PL(J).GT.P1)GOTO 202
      GOTO 203
202   J=J+1
      GOTO 201
203   IF(PL(J).GT.P2)GOTO 205
204   H1=H2
      X1=X2
      Y1=Y2
      UX1=UX2
      UY1=UY2
      T1=T2
      UT1=UT2
      P1=P2
      F1=F2
      GOTO 200
205   RAT=(PL(J)-P2)/(P1-P2)
      H=VALUE(RAT,H1,H2)
      X=VALUE(RAT,X1,X2)
      Y=VALUE(RAT,Y1,Y2)
      UX=VALUE(RAT,UX1,UX2)
      UY=VALUE(RAT,UY1,UY2)
      T=VALUE(RAT,T1,T2)
      UT=VALUE(RAT,UT1,UT2)
      F=VALUE(RAT,F1,F2)
C
C     CONVERT GEOMETRIC HEIGHT TO GEOPOTENTIAL HEIGHT
C
      H=GRAT*(RE*H)/(RE+H)/10.
      P=PL(J)
C
      CALL CONIT
C
      GOTO 204
206   CLOSE IOU2
C
```

```
      CALL RDRAWIN
C
      CLOSE 10014
      RETURN
      END
```


PASS 2

ROCS 3

```
      SUBROUTINE CODIT
      INCLUDE 'DATAS2'
      DIMENSION IS(9)
      INTEGER OUT(3)
      DATA IS/'+3','+2','+1','+0','-1','-2','-3','-4','-9'/
      IRND(A)=IFIX(SIGN((ABS(A)+.5),A))
      IF(PH.EQ.H)RETURN
      DIR=WDIR(X,Y)
      SPD=WSPD(X,Y)
      IF(X.LT.999.)GOTO 102
      X=9999.
      Y=9999.
      UX=9999.
      UY=9999.
      GOTO 106
  102 X=-X
      UX=-UX
      Y=-Y
      UY=-UY
  106 IF(T.LT.999.)GOTO 108
      T=9999.
      TC=999.
      VS=999.
      GOTO 109
  108 CONTINUE
      VS=331.45*SQRT(T/273.15)
      T1=T
      T=T-273.15
      UT=UT-273.15
      TC=T-UT
  109 PS=DS=99.99999
      IF(P.LT.999.)PS=10.**P
      IF(T.NE.9999.)DS=(PS/T1)*348.38
      D=PS
      K=0
      DO 10 I=1,2
      D=D+.000009
      A=10000.
      B=1000.
      C=.001
      IC=0
      IF(D.LE.99.)GOTO 2
      D=9.999
      K=IS(9)
      GOTO 5
    2 IF(D.LE.A.AND.D.GE.B)GOTO 3
      GOTO 4
    3 IC=IC+1
      D=D*C
      K=IS(IC)
      GOTO 5
    4 A=A/10.
      B=B/10.
      C=C*10.
      IC=IC+1
      GOTO 2
```

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```
5       IF(I.EQ.1)GOTO 6
        DS=D
        I2=K
        GOTO 10
6       PS=D
        I1=K
        D=DS
        K=0
10      CONTINUE
        IDIR=IRND(DIR)
        CALL LEFTZERO(IDIR,3,OUT(1))
        WRITE(IOUA,110)IRND(H),OUT,IRND(SPD),IRND(DY),IRND(DX),
     *  IRND(Y),IRND(X),IRND(ABS(F)),IRND(T),IRND(TC),FS,I1,DS,I2,
     *  IRND(VS)
110     FORMAT(I5,3I1,I3,4I4,I3,I4,I3,2(F5.3,A2),I3)
        EH=H
        RETURN
        END
```

```
      SUBROUTINE RDRAWIN
      INCLUDE 'DATAS2'
      INTEGER OUTARRAY(27)
C
C     READS CO-RAWINSONDE DATA FOR INPUT TO THE ARCHIVING AND
C     PUBLICATION FORMATTING PROGRAM. OUTPUTS MANDATORY AND
C     SIGNIFICANT DATA ONLY.
C
      WRITE(IOU4,1)(STATIONID(I),I=1,15),IH1,IH2,IM1,IM2,RAWINDAY,
     #MONTH,RAWINYEAR
    1 FORMAT(4X,"01"///15A2/4I1"Z"2X,I2,1X,A4,1X,I4/)
C
C     OPEN MANDATORY FILE, WRITE MANDATORY COLUMN HEADINGS, READ
C     AND WRITE MANDATORY DATA.
C
      WRITE(IOU4,2)
    2 FORMAT('ALT   MT   WDIR   MPS    TEMP   DEW PT   PRESS   RH',
     #T80,"9")
      OPEN 5,"DPI:MANDATORY",ATT="R",LEN=24
      DO 100 I=1,300
      READ(5,END=110)XH,IXD,IXS,XT,XDP,XP,XRH
      XH=XH*0.3048
      IXH1=XH/100.
      IXH2=AMOD(XH,100.)
      IXS=IXS*0.514792
      JT=XT*10.
      JTD=XDP*10.
      IXP=XP*10.
      IXRH=XRH
      CALL TSIGN(JT,JT1)
      CALL TSIGN(JTD,JTD1)
      CALL LEFTZERO(IXH1,4,OUTARRAY(1))
      CALL LEFTZERO(IXH2,2,OUTARRAY(5))
      CALL LEFTZERO(IXD,3,OUTARRAY(7))
      CALL LEFTZERO(IXS,3,OUTARRAY(10))
      CALL LEFTZERO(JT,2,OUTARRAY(13))
      OUTARRAY(15)=JT1
      CALL LEFTZERO(JTD,2,OUTARRAY(16))
      OUTARRAY(18)=JTD1
      CALL LEFTZERO(IXP,5,OUTARRAY(19))
      CALL LEFTZERO(IXRH,3,OUTARRAY(24))
      WRITE(IOU4,3)(OUTARRAY(J),J=1,26)
    3 FORMAT(611,3X,3I1,2X,3I1,3X,2I1,R1,5X,2I1,R1,4X,5I1,
     #2X,3I1,T79,"1")
  100 CONTINUE
  110 CLOSE 5
C
C     OPEN SIGNIFICANT FILE, WRITE SIGNIFICANT COLUMN HEADINGS,
C     READ AND WRITE SIGNIFICANT DATA.
C
      OPEN 5,"DPI:SIGNIFICAN",ATT="R",LEN=28
      WRITE(IOU4,4)
    4 FORMAT("ALT   MT   WDIR   MPS    TEMP   DEW PT   PRESS   IR",
     #T80,"9")
      DO 200 I=1,300
      READ(5,END=210)XH,IXD,IXS,XT,XDP,XP,RIR,RH
```

```
      XH=XH*0.3048
      IXH1=XH/100.
      IXH2=AMOD(XH,100.)
      IXS=IXS*0.514792
      JT=XT*10.
      JTD=XDP*10.
      XP=XP*100.
      IXP1=XP/100.
      IXP2=AMOD(XP,100.)
      IR=RIR
      CALL TSIGN(JT,JT1)
      CALL TSIGN(JTD,JTD1)
      CALL LEFTZERO(IXH1,4,OUTARRAY(1))
      CALL LEFTZERO(IXH2,2,OUTARRAY(5))
      CALL LEFTZERO(IXD,3,OUTARRAY(7))
      CALL LEFTZERO(IXS,3,OUTARRAY(10))
      CALL LEFTZERO(JT,2,OUTARRAY(13))
      OUTARRAY(15)=JT1
      CALL LEFTZERO(JTD,2,OUTARRAY(16))
      OUTARRAY(18)=JTD1
      CALL LEFTZERO(IXP1,4,OUTARRAY(19))
      CALL LEFTZERO(IXP2,2,OUTARRAY(23))
      CALL LEFTZERO(IR,3,OUTARRAY(25))
      WRITE(IOU4,5)(OUTARRAY(J),J=1,27)
5     FORMAT(6I1,3X,3I1,2X,3I1,3X,2I1,R1,5X,2I1,R1,4X,6I1,
     * 2X,3I1,T78,"1")
200   CONTINUE
210   CLOSE 5
      RETURN
      END
```

```
      SUBROUTINE ROCOB(ROCKTIME)
      INCLUDE "DATA52"
      DIMENSION TT(6),PPP(6),HH(6),INTIND(3,4)
      INTEGER HHZTT(5),DDFFF(5),NDPPP(5),DD(7),FFF(4),WORD,OUT(1200)
      LOGICAL FINIS
      DATA FINIS,WORD/.FALSE.,0/
      DATA (INTIND(I,1),I=1,3)/" 9","99","99"/
      DATA (INTIND(I,2),I=1,3)/" 7","47","94"/
      DATA (INTIND(I,3),I=1,3)/" 7","80","61"/
      DATA (INTIND(I,4),I=1,3)/" 6","19","02"/
C
      IRND(A)=IFIX(SIGN((ABS(A)+.5),A))
C
      OPEN IOU4,"CODEDATA",LEN=80,ATT="L"
      OPEN IOU1,"ROCKETOUT",LEN=80,ATT="L"
C
C     GET POSITIONED AT THE BEGINNING OF THE 1000 METER OUTPUT
C
  150 READ(IOU1,1001)HH(1),DD(1),FFF(1),TT(1),PPP(1)
 1001 FORMAT(//////////1X,F7.0,2I6,F8.2,17X,F9.4)
C
      ITOP2=2
      IBOT=2
      ITOP=2
   26 CONTINUE
      DO 35 IPNTR=IBOT,ITOP
      READ(IOU1,1000,END=30)HH(IPNTR),DD(IPNTR),FFF(IPNTR),
     * TT(IPNTR),PPP(IPNTR)
 1000 FORMAT(1X,F7.0,2I6,F8.2,17X,F9.4)
      TEST=AMOD(HH(IPNTR),1000.)
      IF(TEST.GT.0.9)GOTO 30
      IF(DD(IPNTR).NE.999.OR.FFF(IPNTR).NE.999.OR.
     * TT(IPNTR).NE.999.99)GOTO 35
   30 FINIS=.TRUE.
      ITOP2=IPNTR-1
      IF(ITOP2.LT.1)GOTO 12
      GOTO 36
   35 CONTINUE
C
   36 DO 16 INDX=1,ITOP2
C
C     HHZTT - HEIGHT, TEMP INDICATOR, AND TEMPERATURE
C
      IF(TT(INDX).GT.998.)GOTO 10005
      WORKT=TT(INDX)-273.15
      IT=IRND(WORKT)
      IZ=' 6'
      IF(IT.GE.-99)IZ=' 5'
      IF(IT.GE.0)IZ=' 0'
      HHZTT(3)=IZ
      IT=IABS(IT)
      HHZTT(5)=HDD(I,10)+60K
      HHZTT(4)=IT/10+60K
      GOTO 10007
10005 HHZTT(5)=" /"
      HHZTT(4)=" /"
```

```
            HHZTT(3)=' /'
      10007 IH=HH(INDX)/1000.
            HHZTT(2)=MOD(IH,10)+60K
            HHZTT(1)=IH/10+60K
C
C     DDFFF - WIND DIRECTION AND SPEED
C
            IF(FFF(INDX).GT.998)GOTO 10011
            IWORKF=FFF(INDX)
            DDFFF(5)=MOD(IWORKF,10)+60K
            IWORKF=IWORKF/10
            DDFFF(4)=MOD(IWORKF,10)+60K
            DDFFF(3)=IWORKF/10+60K
            GOTO 10018
      10011 DDFFF(5)=' /'
            DDFFF(4)=' /'
            DDFFF(3)=' /'
      10018 IF(DD(INDX).GT.998)GOTO 10008
            IWORKD=DD(INDX)+5.
            IF(IWORKD.GT.360)IWORKD=IWORKD-360
            IWORKD=IWORKD/10
            IF(IWORKD.EQ.0)IWORKD=36
            DDFFF(2)=MOD(IWORKD,10)+60K
            DDFFF(1)=IWORKD/10+60K
            GOTO 10013
      10008 DDFFF(2)=' /'
            DDFFF(1)=' /'
C
C     NDPPP - GROUP INDICATOR, POWER OF 10 INDICATOR, AND DENSITY
C
      10013 NDPPP(1)=' 9'
            IF(PPP(INDX).GT.998.)GOTO 10016
            TESTP=100.
            DO 10014 IP=1,10
            IF(PPP(INDX).GE.TESTP)GOTO 10015
            TESTP=TESTP/10.
      10014 CONTINUE
            GOTO 10016
      10015 IP=IP-1
            IWORKD=PPP(INDX)*10.**IP+0.5
            IP=IP+60K
            NDPPP(2)=IP
            NDPPP(5)=MOD(IWORKD,10)+60K
            IWORKD=IWORKD/10
            NDPPP(4)=MOD(IWORKD,10)+60K
            NDPPP(3)=IWORKD/10+60K
            GOTO 15
      10016 NDPPP(5)=' /'
            NDPPP(4)=' /'
            NDPPP(3)=' /'
            NDPPP(2)=' /'
      15    CONTINUE
            DO 200 I=1,5
            WORD=WORD+1
      200   OUT(WORD)=HHZTT(I)
            DO 210 I=1,5
```

```
            WORD=WORD+1
  210       OUT(WORD)=DBFFF(1)
            DO 220 I=1,5
            WORD=WORD+1
  220       OUT(WORD)=NDPPP(I)
  16        CONTINUE
            IBOT=1
            ITOP=2
            IF(.NOT.FINIS)GOTO 26
  12        DECODE(ROCKTIME,1)NT
  1         FORMAT(I4)
            NT=NT/10
            KK=1
            IF(STANUM.EQ.1)KK=2
            IF(STANUM.EQ.9)KK=3
            IF(STANUM.EQ.12)KK=4
            NYY=IYR-1000
            CALL LEFTZERO(IDAY,2,DD(1))
            CALL LEFTZERO(NT,3,DD(3))
            CALL LEFTZERO(IMON,2,DD(6))
C
            WRITE(IOU3,20004)
20004       FORMAT("1")
            WRITE(IOU3,20002)(DD(I),I=1,7),NYY,(INTIND(I,KK),I=1,3)
            WRITE(IOU4,20002)(DD(I),I=1,7),NYY,(INTIND(I,KK),I=1,3)
20002       FORMAT(4X,'RRXX "5I1,1X,2I1,I3,3R2," 91011 63111")
C
            IBEG=1
            IEND=50
  300       WRITE(IOU3,20001)(OUT(I),I=IBEG,IEND)
            WRITE(IOU4,20001)(OUT(I),I=IBEG,IEND)
            IBEG=IBEG+50
            IEND=IEND+50
            IF(IEND.GT.WORD)IEND=WORD
            IF(IBEG.LT.WORD)GOTO 300
20001       FORMAT(4X,5R1,1X,5R1,1X,5R1,1X,5R1,1X,5R1,1X,5R1,1X,5R1,
           *  1X,5R1,1X,5R1,1X,5R1,1X,5R1)
            CLOSE IOU1
C
            CALL MANDL
C
            WRITE(IOU3,20003)
20003       FORMAT(4X,"JJJ")
            RETURN
            END
```

```
      SUBROUTINE MANDL
      INCLUDE "DATA62"
      INTEGER OUT(400),SIG(6)
C
      DATA SIG/11,22,33,44,55,66/
C
      OPEN (IOU2,"TAPE2",LEN=36
C
      J=1
      H=1
C
      READ(IOU2)H1,X1,Y1,UX1,UY1,T1,UT1,P1,F1
  100 READ(IOU2,END=250)H2,X2,Y2,UX2,UY2,T2,UT2,P2,F2
      IF(P1.GE.998.)GOTO 104
      IF(P2.GE.998.)GOTO 100
  101 IF(PL(J).LE.P1)GOTO 103
      J=J+1
      GOTO 101
  103 IF(PL(J).GT.P2)GOTO 105
  104 H1=H2
      X1=X2
      Y1=Y2
      T1=T2
      P1=P2
      GOTO 100
  105 RAT=(PL(J)-P2)/(P1-P2)
      H=VALUE(RAT,H1,H2)
      X=VALUE(RAT,X1,X2)
      Y=VALUE(RAT,Y1,Y2)
      T=VALUE(RAT,T1,T2)
      DIR=WDIR(X,Y)
      SPD=WSPD(X,Y)
      IF(X.LT.998.)GOTO 202
      DIR=9999.
      SPD=9999.
      GOTO 206
  202 X=-X
      Y=-Y
  206 IF(T.GE.999.)T=9999.
      T=T-273.15
      JS=6
      IF(J.LT.31)JS=5
      IF(J.LT.26)JS=4
      IF(J.LT.21)JS=3
      IF(J.LT.16)JS=2
      IF(J.LT.10)JS=1
      IF(T.GT.9000.)GOTO 218
      IT=0.5+T
      IF(IT.LE.99)GOTO 217
      KA=6
      IT=IT-100
      GOTO 218
  217 IF(IT.LE.0)GOTO 219
      KA=5
      GOTO 218
  219 KA=0
```

```
      IT=-IT
C
C     SIGNIFICANT INDICATOR, TEMPERATURE INDICATOR, AND TEMPERATURE
C
  218 CALL LEFTZERO(SIG(JS),2,OUT(M))
      DO 300 I=1,2
      OUT(M)=OUT(M)+60K
  300 M=M+1
      IF(T.GT.9000.)GOTO 221
      OUT(M)=KA+60K
      M=M+1
      CALL LEFTZERO(IT,2,OUT(M))
      DO 310 I=1,2
      OUT(M)=OUT(M)+60K
  310 M=M+1
      GOTO 220
  221 DO 320 I=1,3
      OUT(M)=' '
  320 M=M+1
  220 CONTINUE
      F1=.5
      IF(PL(J).LT. 0.)F1=.05
      IF(PL(J).LT.-1.)F1=.005
      IF(PL(J).LT.-2.)F1=.0005
      IF(PL(J).LT.-3.)F1=.00005
      IF(PL(J).LT.-4.)F1=.000005
      IPS=(10.**PL(J)+F1)*(10.**JS/10.)
      IH=((GRAT*(RE*H)/(RE+H))+5.)/100.
      IF(JS.EQ.6)IH=IH/10
C
C     PRESSURE AND HEIGHT
C
      CALL LEFTZERO(IPS,2,OUT(M))
      DO 330 I=1,2
      OUT(M)=OUT(M)+60K
  330 M=M+1
      CALL LEFTZERO(IH,3,OUT(M))
      DO 340 I=1,3
      OUT(M)=OUT(M)+60K
  340 M=M+1
      IDD=(DIR+5.)/10.
      ISS=SPD+.5
      IF(IDD.GT.998.OR.ISS.GT.998)GOTO 233
      IF(IDD.EQ.0)IDD=36
C
C     WIND DIRECTION AND SPEED
C
      CALL LEFTZERO(IDD,2,OUT(M))
      DO 350 I=1,2
      OUT(M)=OUT(M)+60K
  350 M=M+1
      CALL LEFTZERO(ISS,3,OUT(M))
      DO 360 I=1,3
      OUT(M)=OUT(M)+60K
  360 M=M+1
      GOTO 244
```

1,1X,

ROCS 3

```
C       ROUTINE TO PAD NUMBERS WITH LEADING ZEROS
C
        SUBROUTINE LEFTZERO(NUMBER,DIGITS,OUTPUT)
C
        INTEGER OUTPUT(5),DIVISOR,HOLD,DIGITS
C
C       GENERATES AN ARRAY OF SINGLE DIGITS FROM SUCCESSIVE DIVISIONS.
C       VALID FOR INTEGERS IN THE RANGE ZERO TO 2**(WORDSIZE).
C
        DIVISOR=10**(DIGITS-1)
        HOLD=NUMBER
        DO 100 INDEX=1,DIGITS
        OUTPUT(INDEX)=HOLD/DIVISOR
        HOLD=MOD(HOLD,DIVISOR)
        DIVISOR=DIVISOR/10
  100   CONTINUE
        RETURN
        END
```

```
      SUBROUTINE ISIGN(I,K)
C
C     CONVERTS DECIMAL INTEGER TO POSITIVE OR NEGATIVE CHARACTER
C
      INTEGER CODE(0:9),NCODE(0:9)
      DATA CODE/' I',' J',' K',' L',' M',' N',' O',' P',' Q',' R'/
      DATA NCODE/' 0',' 1',' 2',' 3',' 4',' 5',' 6',' 7',' 8',' 9'/
C
      IF(I.LT.990)GOTO 50
      I=99
      K=1R9
      RETURN
   50 II=I/10
      KK=I-II*10
      IF(I.GE.0)GOTO 200
      II=IABS(II)
      KK=IABS(KK)
      DO 100 J=0,9
      IF(J.NE.KK)GOTO 100
      K=CODE(J)
      I=II
      RETURN
  100 CONTINUE
C
  200 DO 210 J=0,9
      IF(J.NE.KK)GOTO 210
      K=NCODE(J)
      I=II
      RETURN
  210 CONTINUE
      END
```

```
      FUNCTION VALUE(R,A,B)
      VALUE=R*(A-B)+B
      IF(A.EQ.999.9.OR.B.EQ.999.9)VALUE=999.9
      IF(A.EQ.-999.9.OR.B.EQ.-999.9)VALUE=-999.9
      RETURN
      END
```

```
      FUNCTION WDIR(XX,YY)
      IF(XX.NE.0.0)GOTO 100
      IF(YY.GE.0.0)WDIR=360.0
      IF(YY.LT.0.0)WDIR=180.0
      RETURN
100   D=ATAN(YY/XX)*57.2957B
      WDIR=270.0-D
      IF(XX.GT.0.0)WDIR=90.0-D
      IF(WDIR.LT.0.5)WDIR=360.0
      RETURN
      END
```

```
      FUNCTION WSPD(X,Y)
      WSPD=(X*X+Y*Y)**0.5
      IF(X.EQ.999.9.OR.Y.EQ.999.9)WSPD=999.
      RETURN
      END
```