MASTER

ESTIMATION OF WIND CHARACTERISTICS
AT POTENTIAL WIND ENERGY CONVERSION
SITES: Volume 2, Appendices

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APPENDIX A

CLIMATOLOGY DEVELOPMENT METHODOLOGY PROGRAMS

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Numerical Airflow Model - CORE

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USER'S GUIDE - PROGRAM CORE

The program in this form is set up to run on a CDC-Cyber 72 with only 125 K available core. Therefore, the program is designed to swap layers of the 3-D grid such that only three adjacent layers are being executed on at any one time. The swapping is accomplished with the in-machine functions found in subroutines DRUMU, DRUMV, DRUMW, DRUMC, and DRUMF. Modification to the code to allow it to run complete in a large core may be accomplished by making array dimensions the actual size of the grid area of interest, manipulation of indices and counters in the program, and removal of reference to the above-mentioned subroutines. Care must be taken in these modifications, as the formulation of the code in the CDC-compatible form was quite a task and many subtleties exist in the coding. It may be noted that running the program on such machines as the IBM will require a subroutine similar to ZERO, as arrays are initialized to zero implicitly in the CDC.

Input to Program

The coding format may be found in the program FORMAT statements.

PROGRAM CORE (main program or calling program) - no READs

SUBROUTINE ZERO (array initializer) - no READs

SUBROUTINE INPUT -

READ (5, 502) variables

M : # grid points in E-W grid direction
L : # grid points in N-S grid direction
N : # grid points in the vertical (note - the first level
is a boundary and will be initialized in the
program as solid)

DX: grid size (m) in M direction
DY: grid size (m) in N direction
DZ: grid size (m) in L direction
RELAX, DELT, EPSILON: parameters used in solving
the Poisson equation. I suggest they be around
1.75, 0.1, and 0.001, respectively, for a relatively
fast convergence.

READ (5,608) ((UIPHN (I, J, 1), J = 1, 30, I = 1, 40)
- reads in terrain heights (for a 40 x 30 grid) in
multiples of DY. Level #2 is the first level at which
fluid flow can exist. This READ will allow the terrain
grid to be set up in the program.

READ (5,250) variables

INOPT: input option key (= 1, 2, or 3) corresponding to:

1. sparse data input
2. wind at top grid level input
3. special block input or boundary condition
input

IORD: key to allow option #3 to be used in addition to
1 or 2

If INOPT + 1 (sparse data option) then -

SUBROUTINE OPTN1

READ (5,4000) variables concerning the initial interpolation
of the velocity field.

NRPTS: # of sparse data points

MAXCNT: maximum # of interpolation iterations desired
(around 20 should be enough)

ETEST: convergence criterion for interpolative scheme
(around 0.1 is sufficient)

PARAM, DBAR: parameters used in interpolative scheme. DBAR is roughly the average number of grid points between sparse data points. For a single or dual station input PARAM is set equal to 20.

READ (5, 4001) variables
 FI(I): grid location in the M direction of sparse data point I
 FJ(I) grid location in the L direction of sparse data point I
 FK grid level at which the data point exists
 WNDDIR: direction, with respect to grid north
 = 0 degree, from which wind is blowing
 WNDSPD: wind speed (m/sec)
 A: alphanumeric identifier (may be left blank)
 DTEMP: power law wind profile exponent at point I
 (determine from stability at point I)

If INOPT = 2 (wind at top level initialized) then -

READ (5, 1001) NRPTS, IGO
 NRPTS: # blocks upper level is to be broken into
 (if = 1, then the entire upper level is initialized at once)
 IGO: key to determine if individual values or blocks of data are to be read in

READ (5, 1002) variables
 - same as earlier. If IGO $\neq$ 0, then no interpolation will be made.

PROGRAM CODE

73/73 OPT=2

FTN 4.6+433

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1      PROGRAM CODE (INPUT,OUTPUT,TAPES=INPUT,TAPES=OUTPUT,TAPES=10)
      COMMON /FIELDS/ UTPHN(40,30,3),VJPHN(40,30,3),WKPHN(40,30,3),
2      CCPPCT(40,30,3),FULL(40,30,3)
      COMMON /MATRIX/ YWALL,YROOF,ZBACK,OX,OY,OZ,OXI4,OYI4,OZI4,OXI2H,
3      OXI42,OYI42,OZI42,OXI4I,OYI4I,OZI4I,OXI2I,OYI2I,OZI2I,FRONXI2,FRDY,
4      PLXMI,9LOCKI,UBAFWL,FELAX,OXI,OYI,OZI,CCYY,DELT,EPSLON
      COMMON /CONTRL/ M,N,L,MM1,NM1,LM1,MM2,NM2,LM2,DIVMAX,NCY,AA(5),IKK
      COMMON /ADD/ NITEF,NTESTS,HPASS,NPCISY,IBNDY
5
10     C
      CALL ZERO
      CALL INPUT
      CALL POTENT
      CALL OUTPUT
15     C
      STOP
      END

```

SUBROUTINE ZEPO

73/73 OPT=2

FTN 4,6,437

12/29/77 18.08.27

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```

1      SUBROUTINE ZEPO
      COMMON /FIELDS/ UIPHN(40,30,3),VJPHN(40,30,3),WKPHN(40,30,3),
1      COCPOT(40,30,3),FULL(40,30,3)

5      C
      DATA NAMEU,NAMEV,NAMEW,NAMEC,NAMEF/4HDPHU,4HDPHV,4HDPHW,4HDPHC,
1      4HORMF/
      NAMEU = NAMEU.AND.MASK(24)
      NAMEV = NAMEV.AND.MASK(24)
      NAMEW = NAMEW.AND.MASK(24)
10     NAMEC = NAMEC.AND.MASK(24)
      NAMEF = NAMEF.AND.MASK(24)

      C
      DO 100 I=1, 40
      DO 100 J=1, 30
15     DO 100 K=1, 3
      UIPHN(I,J,K) = 0.
      VJPHN(I,J,K) = 0.
      WKPHN(I,J,K) = 0.
      COCPOT(I,J,K) = 0.
20     100 FULL(I,J,K) = 0.

      C
      DO 200 IX=1, 6
      ISTRT = (IX-1)*3600 +1
25     CALL WDRUMU(NAMEU,UIPHN(1,1,1),ISTRT,36000)
      CALL WDRUMV(NAMEV,VJPHN(1,1,1),ISTRT,36000)
      CALL WDRUMW(NAMEW,WKPHN(1,1,1),ISTRT,36000)
      CALL WDRUMC(NAMEC,COCPOT(1,1,1),ISTRT,36000)
      CALL WDRUMF(NAMEF,FULL(1,1,1),ISTRT,36000)
200    CONTINUE

30     C
      RETURN
      END

```

```

1      SUBROUTINE INPUT
      COMMON /FIELDS/ UIPHN(40,30,3),VJPHN(40,30,3),WKPHN(40,30,3),
2      CC2POT(40,30,3),FULL(40,30,3)
      COMMON /DATAIJ/ DATA(18),DATA1(18),FI(18),FJ(18)
5      COMMON /MATPIX/ XWALL,YPOOF,ZBACK,DX,DY,DZ,DXI4,OYI4,DZI4,DXI2H,
1      DXI42,OYI42,DZI42,DXVI4,OYVI4,DXZI4,DX2I,DY2I,DZ2I,FPDXI2,FPDY,
2      FLXM1,BLOCKI,UBAPWL,RELAX,DXI,OYI,DZI,CCXX,DELT,EPSLON
      COMMON /CONTRL/ M,M,L,MH1,NH1,LM1,MH2,NH2,LM2,DIVMAX,NCY,AA(5),IKK
      COMMON /ADD/ NITER,NTESTS,NPASS,NPOISN,IBNDPY
10     DATA NAMEF/4HORMF/
      NAMEF = NAMEF.AND.MASK(24)

      C
      NITER=0
      NTESTS=0
15     IBNDPY=0
      NPASS =8
      NPOISN=0
      WRITE (6,610) NITER,NPASS,NPOISN,NTESTS,IBNDPY
610    FORMAT(1H0,7HNITER =,I3.8H, NPASS=,I4.11H, NPOISN = ,I4.9H, NTEST=
20     *,I4.11H, IBNDPY = ,I4)
      READ (5,502) M,N,L,DX,DY,DZ,RELAX,DELT,EPSLON
502    FORMAT(3I5,5X,6F6.0)
      WRITE(6,612) M,N,L,DX,DY,DZ,RELAX,DELT,EPSLON
612    FORMAT(1H0,2HM=,I2,3H,N=,I2,3H,L=,I2,4H,DX=,F8.2,4H,DY=,F8.2,
25     *,4H,DZ=,F8.2,7H,RELAX=,F8.2,6H,DELT=,F8.3,9H,EPSILON=,F8.5)
      RLXM1=RELAX-1.0
      MH1=M-1
      NH1=N-1
      LH1=L-1
30     MH2=M-2
      NH2=N-2
      LH2=L-2
      DXI=1./DX
      OYI=1./DY
35     DZI=1./DZ
      DXI4=0.25*DXI
      OYI4=0.25*OYI
      DZI4=0.25*DZI
      DX2I=DXI*DXI
40     DY2I=OYI*OYI
      DZ2I=DZI*DZI
      DXOYI =DXI*OYI
      DXDZI =DXI*DZI
      YOYI=OYI*OYI
45     OYOZI=OYI*DZI
      DXI2H =2.0 * DX2I
      OYI2H =2.0 * DY2I
      DZI2H =2.0 * DZ2I

      C
      C      DEFINE FLUID AND OBSTACLE REGION IN MESH ,FOR FLUID CELLS FULL=1,
      C      FOR OBSTACLE FIELD CELLS FULL=0
      C      READ(10,508) ((UIPHN(I,J,1),I=1,40), J=1,30)
608    FORMAT(40F2.0)
      WRITE(6,49)
49     FORMAT(1H1)
      DO 50 J=1,L
55     DO 50 I=1,40
      WRITE(6,275) (UIPHN(21-I,J,1), I=1,20)
275    FORMAT(1H1,20F6.1)

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SUBROUTINE INPUT

73/73 OPT=2

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        WRITE(6,49)
        DO 60 J= 1, L
60      * WRITE(6,275) (UIPHN(M+21-I,J,1), I= 21,M)
          JJ = 0
1000    CONTINUE
          DO 228 J=1, 3
            JJ = JJ + 1
65      DO 226 I=1, M
          DO 226 K=1, L
            NIJ = IFIX(UIPHN(I,K,1))
            IF (JJ .GT. NIJ) GO TO 10
            FULL(I,K,J) = 0.
70      GO TO 226
          10 FULL(I,K,J) = 1.
          226 CONTINUE
          228 CONTINUE
          GO TO (1000,1000,1003,1000,1000,1003,1000,1000,1003,
75      * 1000,1000,1003,1000,1000,1003), JJ
1003    ISTRT = (JJ-3)*1200 +1
          CALL WORDUMF(NAMEF,FULL(1,1,1),ISTRT,36000)
          IF (JJ .NE. 15) GO TO 1000
          DO 227 I=1, 40
80      DO 227 J=1, 30
          227 UIPHN(I,J,1) = 0.
        C
          IOVRD = 0
        C
          IF IOVRD .NE. 0 THEN ADDITIONAL INPUTS ARE TO BE MADE
85      C
          THROUGH SUBROUTINE OPTN3
          READ(5,250) INOPT,IOVRD
          250 FORMAT( 2I1 )
        C
          SELECT DATA INPUT OPTION (INOPT = 1,2,3,...)
          GO TO (2001,2002,2003), INOPT
90      C
          SPARSE WIND DATA INTERPOLATION
          2001 CALL OPTN1(HIN)
            CALL BUILD(HIN)
            IF (IOVRD .NE. 0) GO TO 2003
            GO TO 2010
95      C
          GEOSTROPHIC WIND INTERPOLATION
          2002 CALL OPTN2(HIN)
            CALL BUILD(HIN)
            IF (IOVRD .NE. 0) GO TO 2003
            GO TO 2010
100     C
          INITIAL AND/OR BOUNDARY CONDITION INPUT
          2003 CALL OPTN3
            GO TO 2010
          2010 CONTINUE
        C
105     500 FORMAT(I5)
          RETURN
        END

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1      SUBROUTINE OPTN1(HIN)
      C      SPARSE WIND DATA INPUT OPTION
      C      GRID NORTH IS IN THE DIRECTION OF INCREASING FIRST INDEX
      C      AND POSITIVE U IS DIRECTED EAST, WHILE POSITIVE V IS DIRECTED
5      C      NORTH
      C      WIND DIRECTIONS MUST BE TRANSFORMED TO THIS SYSTEM.
      C      WIND DIRECTION IS THAT FROM WHICH THE WIND IS BLOWING.
      COMMON /FIELDS/ UIPHN(40,30,3),VJPHN(40,30,3),WKPHN(40,30,3),
1      C      COPROT(40,30,3),FULL(40,30,3)
10     COMMON /MATRIX/ XWALL,YROOF,ZBACK,DX,DY,DZ,DXI4,DYI4,DZI4,DXI2H,
1      C      DXI42,DYI42,DZI42,DXI4,DYI4,DZI4,DXI2I,DYI2I,DZI2I,FPOXI2,FPOY,
2      C      PLXM1,BLOCKI,UBAFWL,RELAX,DXI,DYI,DZI,CCXX,DELT,EPSLON
      COMMON /CONTRL/ M,N,L,MM1,MM1,MM1,MM2,MM2,MM2,L42,DIVMAX,NCY,AA(5),IKK
      COMMON /DATAIJ/ DATA(18),DATA(18),FI(18),FJ(18)
15     COMMON /STUFF/ NRPTS,MAXCNT,DBAR,PARAM,ETEST,SPDMAX,TEMPMAX
      DIMENSION DTEMP(15),A(5)
      MIN = 0.5
      SPDMAX = 0.
      TEMMAX = 10.

20     C
      READ(5,4000) NRPTS,MAXCNT,DBAR,PARAM,ETEST
4000   FORMAT(2I5,3F10.2)
      WRITE(6,4004) NRPTS,MAXCNT,DBAR,PARAM,ETEST
4004   FORMAT(1H1,7HNRPPTS =,I5,10H, MAXCNT =,I5,8H, DBAR =,F6.1,
25     1 9H, PARAM = ,F6.1,9H, ETEST =,F6.1////)
      WRITE(6,4006)
      WRITE(6,4005)
4005   FORMAT(1H0,T10,5HFJ(I),T20,5HFJ(I),T30,5HFJ(I),T38,9HWNODIR(I),
30     1  T50,9HWNOSPD(I),T64,6HU COMP,T75,6HV COMP,T87,8HTEMP(I),
2  15X,10HIDENTIFIER //)
4006   FORMAT(1H0,30HSPARSE WIND DATA INPUT VALUES- )
      READ(5,3998) FI(NRPTS+1), FJ(NRPTS+1), IKK,AA
3998   FORMAT(2F10.2,I2,5A4)
      DO 600 I=1, NRPTS
35     READ(5,4001) FI(I),FJ(I),FK,WNODIP,WNOSPD,DTEMP(I),A
      SPDMAX = AMAX1(SPDMAX,WNOSPD)
      DATA1(I) = WNOSPD *COS((WNODIR+180.)/180.*3.141593)
      DATA(I) = WNOSPD *SIN((WNODIR+180.)/180.*3.141593)
      C      SAN GORN
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600    WRITE(6,4007) FI(I),FJ(I),FK,WNODIP,WNOSPD,DATA(I),
40     1  DATA1(I),DTEMP(I),A
4007   FORMAT(1H0,T9,F6.1,T19,F6.1,T29,F6.1,T39,F6.1,T51,F6.1,T64,F6.1,
1      T75,F6.1,T87,F6.5,8X,5A4)
      C
45     MM = 1
      CALL INTERP(MM, DATA,FI,FJ,M,L,NCNT)
      WRITE(6,4002)
4002   FORM/T(1H1,47HU COMP FIELD OBTAINED FROM INTERPOLATIVE SCHEME //)
      WRITE(6,1001) NCNT
      DO 10 J=1, L
50     10 WRITE(6,1002) (UIPHN(21-I,J,1),I=1, 20)
      DO 11 J=1, L
      11 WRITE(6,1002) (UIPHN(M+21-I,J,1), I=21,M)
      C      SAN GORN
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      C      SAN GORN
      C      SAN GORN
1001   FORMAT(1H0,19H CONVERGENCE AFTER ,I4,12H ITEFATIONS ///)
1002   FORMAT(1H0,20F6.1)
55     MM = 2
      CALL INTERP(MM,DATA1,FI,FJ,M,L,NCNT)
      WRITE(6,4003)

```

SUBROUTINE OPTN1

73/73 OPT=2

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4003 FORMAT(1H1,47HV COMP FIELD OBTAINED FROM INTERPOLATIVE SCHEME /)

WRITE(6,1001) NCNT

DO 20 J=1, L

20 WRITE(6,1002) (WKPHN(21-I,J,1), I=1,20)

DO 21 J=1, L

21 WRITE(6,1002) (WKPHN(M+21-I,J,1), I=21,M)

NCNT = 0

DO 25 I=2, NRPTS

IF(DTEMP(1)-DTEMP(I)) 29,25,29

25 CONTINUE

DO 27 II=1, M

DO 27 JJ=1, L

27 VJPHN(II,JJ, 1) = DTEMP(1)

GO TO 50

29 CONTINUE

DO 30 I=1, NRPTS

30 DTEMP(I) = DTEMP(I) *10.

MM = 3

CALL INTER(MM,DTEMP,FI,FJ,M,L,NCNT)

DO 40 II=1, M

DO 40 JJ=1, L

40 VJPHN(II,JJ, 1) = VJPHN(II,JJ, 1) /10.

50 CONTINUE

WRITE(6,4008)

4008 FORMAT(1H1,56HTEMP LAPSE RATE FIELD OBTAINED FROM INTERPOLATIVE SC

*HEME /)

WRITE(6,1001) NCNT

DO 60 J=1, L

60 WRITE(6,1010) (VJPHN(21-I,J,1), I=1,20)

DO 61 J=1, L

61 WRITE(6,1010) (VJPHN(M+21-I,J,1), I=21,M)

1010 FORMAT(1H0,20F6.3)

4001 FORMAT(6F10.2,5A4)

RETURN

END

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1      SUBROUTINE OPTN2(HIN)
C      IN THIS MODE A UNIFORM WIND FIELD IS SPECIFIED AT THE UPPER
C      LEVEL OF GRID POINTS FOR INTERPOLATION DOWNWARD TO THE SURFACE
      DIMENSION OTEMP(15)
5      COMMON /FIELDS/ UIPHN(40,30,3),VJPHN(40,30,3),WKPHN(40,30,3),
      1      COPPOT(40,30,3),FULL(40,30,3)
      COMMON /MATRIX/ XWALL,YPOOF,ZBACK,DX,DY,DZ,DXI4,DYI4,DZI4,DXI2H,
      1      DXI42,DYI42,DZI42,DXVI4,DYVI4,DXZI4,DXZI,DXZI,DXZI,FPOXI2,FPOY,
      2      PLXM1,BLOCKI,UBAPWL,RELAX,DXI,DYI,DZI,CCXX,DELT,EPSLON
10     COMMON /CONTRL/ M,N,L,MH1,MH2,LM1,MH2,LM2,DIVMAX,NCY,AA(5),IKK
      COMMON /DATAIJ/ DATA(18),DATA1(18),FI(18),FJ(18)
      COMMON /STUFF/ NRPTS,MAXCNT,DBAR,PAPAM,ETEST,SPOMAX,TENMAX
      HIN = MH1 + 0.5

C
15     READ(5,1001) NRPTS,IGO
C      IF IGO IS 0 INDIVIDUAL POINT VALUES ARE INPUT,
C      IF IGO NE 0 THEN BLOCKS OF VALUES ARE INPUT AND NRPTS#
C      IS THE NUMBER OF BLOCKS
1001    FORMAT(2I5)
20     READ(5,1002) MAXCNT,DBAR,PAPAM,ETEST
C      IF NO INTERPOLATIONS ARE TO BE PERFORMED, ANY VALUES FOR
C      MAXCNT, DBAR, PARAM, AND ETEST MAY BE INPUT
1002    FORMAT(I10,3F10.2)
      WRITE(6,1003) NRPTS,MAXCNT,DBAR,PAPAM,ETEST
25     1003    FORMAT(I11,7HNRPTS =,I5,10H, MAXCNT =,I5,8H, DBAR =,F6.1,
      1      9H, PAPAM = ,F6.1,9H, ETEST =,F6.1////)
      IF(IGO .NE. 0) GO TO 99
      WRITE(6,1007)
      WRITE(6,1008)
30     FK = FLOAT(N-1)
      DO 40 I=1, NRPTS
      READ(5,1005) FI(I),FJ(I),WNOOIP,WNOspd,OTEMP(I)
      DATA(I) = WNOspd *COS(WNODIR/180.*3.141593)
      DATA1(I) = -WNOspd *SIN(WNODIR/180.*3.141593)
35     40     WRITE(6,1005) FI(I),FJ(I),FK,WNOOIP,WNOspd,DATA(I),
      1      DATA1(I),OTEMP(I)
1005    FORMAT(6F10.2)
1006    FORMAT(1H0,T3,F6.1,T19,F6.1,T29,F6.1,T39,F6.1,T51,F6.1,T64,F6.1,
      1      T75,F6.1,T87,F8.5)
40     1007    FORMAT(1H0,35HGEOSTROPHIC WIND DATA INPUT VALUES=, )
1008    FORMAT(1H0,T10,5HF1(I),T20,5HFJ(I),T30,5HFK(I),T38,9HWNOOIP(I),
      1      T50,9HWNOspd(I),T64,6HV COMP,T75,6HV COMP,T87,8HOTEMP(I)///)
C
      MH = 1
45     CALL INTERP(MH, DATA,FI,FJ,M,L,NCNT)
      WRITE(6,4002)
4002    FORMAT(1H1,37HCOMP FIELD OBTAINED FROM INTERPOLATIVE SCHEME //)
      WRITE(6,5001) NCNT
      DO 51 JJ=1, L
50     J = L -JJ +1
      51     WRITE(6,5002) (UIPHN(I,J,1), I=1, 20)
      DO 551 JJ=1, L
      J = L -JJ +1
      551    WRITE(6,5002) (UIPHN(I,J,1), I=21, M)
55     5001    FORMAT(1H0,19H CONVERGENCE AFTER ,I4,12H ITERATIONS ///)
      5002    FORMAT(1H0,20F6.1)
      MH = 2

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      CALL INTERP(MM,DATA1,FI,FJ,M,L,NCNT)
      WRITE(6,4003)
60      4003  FORMAT(1H1,47HV COMP FIELD OBTAINED FROM INTERPOLATIVE SCHEME /)
      WRITE(6,5001) NCNT
      DO 52 JJ=1, L
      J = L -JJ +1
      52  WRITE(6,5002) (WKPHN(I,J,1), I=1, 20)
85      DO 552 JJ=1, L
      J = L -JJ +1
      552  WRITE(6,5002) (WKPHN(I,J,1), I=21, M)
      GO TO 999
C
70      99  CONTINUE
      DO 210 K=1, NPPTS
      READ(5,2001) MLIMLO,MLIMUP,LLIMLO,LLIMUP,WND0IP,WNDSPD,OTEMP(K)
      DATA(1) = WNDSPD *COS(WND0IR/180.*3.141593)
      DATA1(1) = -WNDSPD *SIN(WND0IR/180.*3.141593)
75      DO 210 I=MLIMLO, MLIMUP
      DO 210 J=LLIMLO, LLIMUP
      VJPHN(I,J,1) = OTEMP(K)
      UIPHN(I,J,1) = DATA(1)
      210  WKPHN(I,J,1) = DATA1(1)
80      2001  FORMAT(4I5,3F10,2)
      WRITE(6,2002)
      2002  FORMAT(1H1,29HV COMP FIELD INPUT BY BLOCKS- /)
      DO 220 JJ=1, L
      J = L -JJ +1
85      220  WRITE(6,5002) (UIPHN(I,J,1), I=1, 20)
      DO 221 JJ=1, L
      J = L -JJ +1
      221  WRITE(6,5002) (UIPHN(I,J,1), I=21, M)
      WRITE(6,2003)
90      2003  FORMAT(1H1,29HV COMP FIELD INPUT BY BLOCKS- /)
      DO 230 JJ=1, L
      J = L -JJ +1
      230  WRITE(6,5002) (WKPHN(I,J,1), I=1, 20)
95      DO 231 JJ=1, L
      J = L -JJ +1
      231  WRITE(6,5002) (WKPHN(I,J,1), I=21, M)
      GO TO 150
C
100      999  CONTINUE
      NCNT = 0
      IF(NPPTS .EQ. 1) GO TO 126
      DO 125 I=2, NPPTS
      IF(OTEMP(1)-OTEMP(I)) 129,125,129
105      125  CONTINUE
      126  CONTINUE
      DO 127 II=1, M
      DO 127 JJ=1, L
      127  VJPHN(II, 1,JJ) = OTEMP(1)
      GO TO 150
110      129  CONTINUE
      DO 130 I=1, NPPTS
      130  OTEMP(I) = OTEMP(I) *10000.
      MM = 3
      CALL INTERP(MM, OTEMP,FI,FJ,M,L,NCNT)

```

SUBROUTINE OPTN2

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115      DO 140 II=1, M
          DO 140 JJ =1, L
140      VJPHN(II,JJ, 1) = VJPHN(II,JJ, 1) /10000.
150      CONTINUE
          WRITE(6,4003)
120      4008  FORMAT(11F1,22HTEMP LAPSE RATE FIELD- /)
          IF(IGO .EQ. 0) WRITE(6,5001) NCNT
          DO 160 JJ=1, L
              J = L -JJ +1
160      WRITE(6,5012) (VJPHN(I,J,1), I=1, 20)
125      DO 161 JJ=1, L
              J = L -JJ +1
161      WRITE(6,5012) (VJPHN(I,J,1), I=21, M)
5012  FORMAT(1H0,20F6.4)
          RETURN
130      END

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1      SUBROUTINE OPTN3
      C      INITIAL CONDITIONS AND/OR BOUNDARY CONDITIONS MAY BE
      C      SPECIFIED IN THIS INPUT MODE. THIS SUBROUTINE MAY BE
      C      USED TO MAKE SPECIAL ADDITIONS TO PREVIOUS INPUTS.
5      C      WIND DATA MAY ONLY BE INPUT IN BLOCKS.
      COMMON /CONTRL/ M,N,L,MM1,NM1,LM1,MM2,NM2,LM2,DIVMAX,NCY,AA(5),IKK
      COMMON /FIELDS/ UIPHN(40,30,3),VJPHN(40,30,3),WKPHN(40,30,3),
1      COPOT(40,30,3),FULL(40,30,3)
      COMMON /STUFF/ NPPTS,MAXCNT,DBAP,PAPAM,ETEST,SPOMAX,TEMMAX
10     DATA NAMEU,NAMEV,NAMEW,4HORMU,4HORMV,4HORMW/
      NAMEU = NAMEU.AND.MASK(24)
      NAMEV = NAMEV.AND.MASK(24)
      NAMEW = NAMEW.AND.MASK(24)
      C
15     C      READ IN NUMBER OF BLOCKS OF DATA (MRPTS) ....
      READ(5,1001) MRPTS
1001   FORMAT( I5 )
      C
20     WRITE(6,1002)
1002   FORMAT(1H1,45HSPECIAL INITIAL AND/OR BOUNDARY CONDITIONS - //
*      8X,6HMLIMLO,6X,6HMLIMUP,6X,6HLLIMLO,6X,6HLLIMUP,6X,6HNLIMLO,6X,
*6HNLIMUP,2X,7HPOINTER,5X,8HVELOCITY//)
      DO 50 I=1, MRPTS
25     READ(5,1003) MLIMLO,MLIMUP,LLIMLO,LLIMUP,NLIMLO,NLIMUP,IPNTR,VEL
      WRITE(6,104) MLIMLO,MLIMUP,LLIMLO,LLIMUP,NLIMLO,NLIMUP,IPNTR,VEL
      K = NLIMLO
      ISTRT = ((K-1)/3) * 3600 + 1
3000   CONTINUE
      GO TO (3001,3002,3003), IPNTR
30     3001   CALL RDRUMU(NAMEU,UIPHN(1,1,1),ISTRT,36000)
      GO TO 3004
      3002   CALL RDRUMV(NAMEV,VJPHN(1,1,1),ISTRT,36000)
      GO TO 3004
      3003   CALL RDRUMW(NAMEW,WKPHN(1,1,1),ISTRT,36000)
35     3004   CONTINUE
      KM = K - ((K-1)/3) * 3
      DO 20 KK = KM, 3
      IF(K.GT. NLIMUP) GO TO 21
      K = K+1
40     DO 20 II=MLIMLO, MLIMUP
      DO 20 JJ=LLIMLO, LLIMUP
      GO TO (2001,2002,2003), IPNTR
2001   UIPHN(II,JJ,KK) = VEL
      GO TO 20
45     2002   VJPHN(II,JJ,KK) = VEL
      GO TO 20
      2003   WKPHN(II,JJ,KK) = VEL
20     CONTINUE
21     CONTINUE
50     GO TO (4001,4002,4003), IPNTR
4001   CALL RDRUMU(NAMEU,UIPHN(1,1,1),ISTRT,36000)
      GO TO 4004
4002   CALL RDRUMV(NAMEV,VJPHN(1,1,1),ISTRT,36000)
      GO TO 4004
55     4003   CALL RDRUMW(NAMEW,WKPHN(1,1,1),ISTRT,36000)
4004   CONTINUE
      ISTRT = ISTRT + 3600

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SUBROUTINE OPTN3 73/73 OPT=2

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        IF (K .LE. NLMUP) GO TO 3000
50      CONTINUE
60      1003  FORMAT(7I5,F10.2)
        104  FORMAT(1H0,2X,6I6X,I6),7X,I1,F10.2)
        RETURN
        END
```

A-16

```

1      SUBROUTINE INTERP(MARKER,DATA,FI,FJ,M,N,NCNT)
      COMMON /FIELDS/ UIPHN(40,30,3),VJPHN(40,30,3),WKPHN(40,30,3),
1      CCPPOT(40,30,3),FULL(40,30,3)
      COMMON /STUFF/ NRPTS,MAXCNT,DBAP,PARAM,ETEST,SPOMAX,TEMMAX
5      DIMENSION DATA(18),FI(18),FJ(18),DDATA(18)

      C
      NCNT = 0

      C
      DO 9 II=1, M
10     DO 9 JJ=1, N
      COCPOT(II,JJ, 1) = 0.
      9 COCPOT(II,JJ, 2) = 0.
      DO 10 II=1, M
      DO 10 JJ=1, N
15     SDATA = 0.
      SWGT = 0.
      DO 20 I=1, NRPTS
      RANG = SQRT((FI(II)-II)**2 + (FJ(II)-JJ)**2)
      IF(RANG .GT. DBAF) GO TO 20
20     WGT = EXP(-RANG*RANG/(4.*PARAM))
      SDATA = SDATA + DATA(II)*WGT
      SWGT = SWGT + WGT
      20 CONTINUE
      IF(SWGT) 22,23,22
25     22 COCPOT(II,JJ, 1) = SDATA /SWGT
      GO TO 10
      23 COCPOT(II,JJ, 1) = 0.
      10 CONTINUE

      C
30     1005 NCNT = NCNT +1
      C
      DO 30 I=1, NRPTS
      II = FI(I)
      JJ = FJ(I)
35     DI = FI(I) -FLOAT(II)
      DJ = FJ(I) -FLOAT(JJ)
      IF(DI.EQ.0. .AND. DJ.EQ.0.) GO TO 15
      Z1 = COCPOT(II,JJ, 1)
      Z2 = COCPOT(II+1,JJ, 1)
40     Z3 = COCPOT(II,JJ+1, 1)
      Z4 = COCPOT(II+1,JJ+1, 1)
      Z5 = Z1 + (Z2-Z1)*DI
      Z6 = Z3 + (Z4-Z3)*DI
      AVG = Z5 + (Z6-Z5)*DJ
45     GO TO 16
      15 AVG = COCPOT(II,JJ, 1)
      16 CONTINUE
      DDATA(I) = DATA(I) -AVG
      30 CONTINUE

      C
50     DO 19 II=1, M
      DO 19 JJ=1, N
      19 COCPOT(II,JJ, 2) = 0.
      DO 40 II=1, M
      DO 40 JJ=1, N
55     SD = 0.
      SWGT = 0.

```

```

      DO 21 I=1, NRPTS
      RANGE = SQRT((FI(I)-II)**2 + (FJ(I)-JJ)**2)
      IF (RANGE .GT. DBAF) GO TO 21
      WGT = EXP(-RANGE*RANGE/(4.*PARAM))
      SD = SD + DDATA(I)*WGT
      SWGT = SWGT + WGT
21    CONTINUE
      IF (SWGT) 24,25,24
24    CORPOT(II,JJ, 2) = SD /SWGT
      GO TO 40
25    CORPOT(II,JJ, 2) = 0.
40    CONTINUE
70    C
      IGO = 0
      K = 0
      DO 60 I=1, NRPTS
      II = FI(I)
75    JJ = FJ(I)
      DI = FI(I) -FLOAT(II)
      DJ = FJ(I) -FLOAT(JJ)
      IF (DI.EQ.0. .AND. DJ.EQ.0.) GO TO 45
      Z1 = CORPOT(II,JJ, 2)
80    Z2 = CORPOT(II+1,JJ, 2)
      Z3 = CORPOT(II,JJ+1, 2)
      Z4 = CORPOT(II+1,JJ+1, 2)
      Z5 = Z1 + (Z2-Z1)*DI
      Z6 = Z3 + (Z4-Z3)*DI
85    AVG = Z5 + (Z6-Z5)*DJ
      GO TO 46
45    AVG = CORPOT(II,JJ, 2)
46    CONTINUE
60    IF (AVG .LE. ETEST) K = K+1
      IF (K .EQ. NRPTS) IGO = 1
90    DO 50 I=1, M
      DO 50 J=1, N
      CORPOT(I,J,1) = CORPOT(I,J,1) + CORPOT(I,J,2)
      GO TO (91,92,93), MARKER
95    91    UIPHN(I,J,1) = CORPOT(I,J,1)
      IF (ABS(UIPHN(I,J,1)) .GT. SPDMAX) UIPHN(I,J,1) = SIGN(SPDMAX,
      *    UIPHN(I,J,1))
      GO TO 50
92    WKPHN(I,J,1) = CORPOT(I,J,1)
100    IF (ABS(WKPHN(I,J,1)) .GT. SPDMAX) WKPHN(I,J,1) = SIGN(SPDMAX,
      *    WKPHN(I,J,1))
      GO TO 50
93    VJPHN(I,J,1) = CORPOT(I,J,1)
      IF (ABS(VJPHN(I,J,1)) .GT. TEMMAX) VJPHN(I,J,1) = SIGN(TEMMAX,
105    *    VJPHN(I,J,1))
50    CONTINUE
C
      IF (IGO .EQ. 1) RETURN
      IF (NCNT .GT. MAXCNT) GO TO 1009
      GO TO 1005
110 1009  WRITE(6,2001)
2001  FORMAT(1F1,19HNON-CONVERGING CASE )
      RETURN
      END

```

A-18

```

1      SUBROUTINE BUILD(HIN)
      COMMON /DATA1/ DATA(18), DATA1(18), FI(18), FJ(18)
      COMMON /PATRIY/ XHALL,YROOF,ZBACK,DX,DY,DZ,DXI4,DYI4,DZI4,DXI2H,
5      1 DXI42,DYI42,DZI42,DXVI4,DYVI4,DXZI4,DXZI1,DYZI1,DZ2I,FRDXI2,FRDY,
      2 PLXM1,BLOCKI,UBAFWL,RELAX,DXI,DYI,DZI,CCXX,DELT,EPSLON
      COMMON /FIELDS/ UIPHN(40,30,3),VJPHN(40,30,3),WKPHN(40,30,3),
1      CORPOT(40,30,3),FULL(40,30,3)
      COMMON /CONTRL/ M,N,L,MH1,NH1,LM1,MH2,NH2,LM2,DIVMAX,NCY,AA(5),IKK

C
10     DATA NAMEU,NAMEW,NAMEF/4HORMU,4HORMW,4HORMF/
      NAMEU = NAMEU.AND.MASK(24)
      NAMEW = NAMEW.AND.MASK(24)
      NAMEF = NAMEF.AND.MASK(24)

C
15     DO 1020 II=1, M
      DO 1020 JJ=1, L
      VJPHN(II,JJ, 2) = UIPHN(II,JJ, 1)
1020   VJPHN(II,JJ, 3) = WKPHN(II,JJ, 1)
      DO 1030 IX=1, 5
      ISTRT = (IX-1)*3600 +1
      CALL RORUMF(NAMEF, FULL(1,1,1),ISTRT,36000)
      DO 250 II=1, M
      DO 250 JJ=1, L
      DO 260 KK=1, 3
      IF(FULL(II,JJ,KK)) 265,265,260
265     CORPOT(II,JJ, 3) = (IX-1)*3 + KK +1
260     CONTINUE
250     CONTINUE
1030    CONTINUE

C
30     DO 60 IX =1, 5
      ISTRT = (IX-1)*3600 +1
      CALL RORUMU(NAMEU,UIPHN(1,1,1),ISTRT,36000)
      CALL RORUMW(NAMEW,WKPHN(1,1,1),ISTRT,36000)
35     DO 50 II=1, M
      DO 50 JJ=1, L
      DO 50 KK=1, 3
      HT = FLOAT((IX-1)*3 + KK)
      IF(HT-CORPOT(II,JJ, 3)) 50,45,45
40     45 HGTW=(HT-CORPOT(II,JJ,3))*DY+DY/2.
      FACTOR=(0.075)**VJPHN(II,JJ,1)
      IF(HGTW-121.92) 47,47,48
47     FACTOR=(9.144/HGTW)**VJPHN(II,JJ,1)
      GO TO 49
45     48 FACTOR=FACTOR*(121.92/HGTW)**.149
49     UIPHN(II,JJ,KK) = VJPHN(II,JJ, 2) /FACTOR
      WKPHN(II,JJ,KK) = VJPHN(II,JJ, 3) /FACTOR
      OLNU = UIPHN(II,JJ,KK)
      THETA=((HGTW-9.144)/30.48)*1.
50     SPD = SQRT(UIPHN(II,JJ,KK)*UIPHN(II,JJ,KK)+WKPHN(II,JJ,KK)*
1      WKPHN(II,JJ,KK))
      IF(SPD) 46,50,46
46     PHI = ASIN(UIPHN(II,JJ,KK) /SPD) /3.14159*180.
      IF(WKPHN(II,JJ,KK) .GE. 0.) PHI = PHI + THETA
      IF(WKPHN(II,JJ,KK) .LT. 0.) PHI = PHI - THETA
      UIPHN(II,JJ,KK) = SPD *SIN(PHI/180.*3.14)
      PHI = ASIN(WKPHN(II,JJ,KK) /SPD) /3.14159*180.

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SUBROUTINE BUILD

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        IF (OLDDU .GE. 0.) PHI = PHI - THETA
        IF (OLDDU .LT. 0.) PHI = PHI + THETA
60      WKPHN(IJ,JJ,KK) = SPD * SIN(PHI/180.*3.141593)
        50 CONTINUE
        CALL MORLMU(NAHEU,UIPHN(1,1,1),ISTPT,36000)
        CALL MOR(MW(NAHEW,WKPHN(1,1,1),ISTPT,36000)
65      60 CONTINUE
        C
        DO 71 I=1, 4
        DO 71 J=1, L
        COPPOT(I,J,1) = 0.
        COPPOT(I,J,2) = 0.
70      COPPOT(I,J,3) = 0.
        UIPHN(I,J,1) = 0.
        VJPHN(I,J,1) = 0.
        VJPHN(I,J,2) = 0.
        VJPHN(I,J,3) = 0.
75      71 WKPHN(I,J,1) = 0.
        PETURN
        END

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```

1      SUBROUTINE POTENT
      COMMON /FIELDS/ UIPHN(40,30,3),VJPHN(40,30,3),WKPHN(40,30,3),
2      CORPOT(40,30,3),FULL(40,30,3)
      COMMON /PATRIX/ XHALL,YPOOF,ZBACK,DX,DY,DZ,DXI4,DYI4,DZI4,DXI2H,
5      1 DXI42,DYI42,DZI42,DXYI4,DYZI4,DXZI4,DX2I,DY2I,DZ2I,FPOXI2,FPOY,
2      PLXM1,BLOCKI,UBAFWL,FELAX,DXI,DYI,DZI,CCXY,DELT,EPSLON
      COMMON /CONTRL/ M,N,L,MM1,MM1,LM1,MM2,MM2,LM2,DIVMAX,NCY,AA(5),IKK
      COMMON /ADD/ NITEP,NTESTS,NPASS,NPCISH,IBNDPV
C
10     DATA NAMEU,NAMEV,NAMEW,NAMEC,NAMEF/4H0RMU,4H0RMV,4H0RMW,
      * 4H0RMC,4H0RMC/
      NAMEU = NAMEU.AND.MASK(24)
      NAMEV = NAMEV.AND.MASK(24)
      NAMEW = NAMEW.AND.MASK(24)
15     NAMEC = NAMEC.AND.MASK(24)
      NAMEF = NAMEF.AND.MASK(24)
C
      NTESTS=0
      NITER =0
20     210 DO 500 KK=1, NPASS
      DO 400 IX =2, NM1
      ISTRT = (IX-2)*1200 +1
      CALL PDUMU(NAMEU,UIPHN(1,1,1),ISTRT,36000)
      CALL PDUMV(NAMEV,VJPHN(1,1,1),ISTRT,36000)
25     CALL PDUMW(NAMEW,WKPHN(1,1,1),ISTRT,36000)
      CALL PDUMC(NAMEC,CORPOT(1,1,1),ISTRT,36000)
      CALL PDUMF(NAMEF,FULL(1,1,1),ISTRT,36000)
      DO 300 J=2, 2
      DO 300 K=2, LM1
30     DO 300 I=2, MM1
      IF( FULL(I,K,J).GT. 0.5) GO TO 150
      DUMMY1 = 0.
      DUMMY2 = 0.
      DUMMY3 = 0.
35     DUMMY4 = 0.
      GO TO 200
150     DENOM = DX2I * (FULL(I+1,K,J)+FULL(I-1,K,J)) +DY2I*(FULL(I,K,J+1)
      *FULL(I,K,J-1)) +DZ2I*(FULL(I,K+1,J) +FULL(I,K-1,J))
      IF(DENOM.EQ.0.) GO TO 200
      DENOM = 1.0/DENOM
      DUMMY1 = RELAX * DX2I * DENOM
      DUMMY2 = RELAX * DY2I * DENOM
      DUMMY3 = RELAX * DZ2I * DENOM
      DUMMY4 = RELAX * DENOM * (DXI*(UIPHN(I,K,J)-UIPHN(I-1,K,J))
45     + DYI*(VJPHN(I,K,J) -VJPHN(I,K,J-1)) +DZI*(WKPHN(I,K,J)-WKPHN(I,
      2 K-1,J)))
200     CONTINUE
      CORPOT(I,K,J) = DUMMY1 * (CORPOT(I+1,K,J) + CORPOT(I-1,K,J)) +
      1 DUMMY2 * (CORPOT(I,K,J+1) + CORPOT(I,K,J-1)) +
50     2 DUMMY3 * (CORPOT(I,K+1,J) + CORPOT(I,K-1,J)) +
      3 DUMMY4 * RELAX * CORPOT(I,K,J)
300     CONTINUE
      ISTRT = (IX-2)*1200 +1
      CALL PDUMU(NAMEU,UIPHN(1,1,1),ISTRT,36000)
55     CALL PDUMV(NAMEV,VJPHN(1,1,1),ISTRT,36000)
      CALL PDUMW(NAMEW,WKPHN(1,1,1),ISTRT,360)
      CALL PDUMC(NAMEC,CORPOT(1,1,1),ISTRT,36)

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      CALL WDRUMF(NAMEF,FULL(1,1,1),ISTPT,36000)
60    400 CONTINUE
      500 CONTINUE
      NITER = NITER + NPASS
      NTESTS = NTESTS + 1
      DIVMAX = 0.0
      DO 699 IX=2, NM1
65    ISTRT = (IX-2)*1200 +1
      CALL PDRUMU(NAMEU,UIPHN(1,1,1),ISTPT,36000)
      CALL PDRUMV(NAMEV,VJPHN(1,1,1),ISTPT,36000)
      CALL PDRUMW(NAMEW,WKPHN(1,1,1),ISTPT,36000)
      CALL PDRUMC(NAMEC,CORPOT(1,1,1),ISTPT,36000)
70    CALL RDRUMF(NAMEF,FULL(1,1,1),ISTRT,36000)
      DO 600 J=2, 2
      DO 600 K=2,LM1
      DO 600 I=2,NM1
      IF (FULL(I,K,J).LT.0.5) GO TO 600
75    DIV=DXI*(UIPHN(I,K,J)-UIPHN(I-1,K,J))+DYI*(VJPHN(I,K,J)-VJPHN(I,
      1 K,J-1))+DZI*(WKPHN(I,K,J)-WKPHN(I,K-1,J))
      DIV = DIV+DX2I*(FULL(I+1,K,J)*(CORPOT(I+1,K,J)-CORPOT(I,K,J)) +
      1 FULL(I-1,K,J)*(CORPOT(I-1,K,J)-CORPOT(I,K,J)))
      DIV = DIV+DY2I*(FULL(I,K,J+1)*(CORPOT(I,K,J+1)-CORPOT(I,K,J)) +
80    1 FULL(I,K,J-1)*(CORPOT(I,K,J-1)-CORPOT(I,K,J)))
      DIV = DIV+DZ2I*(FULL(I,K+1,J)*(CORPOT(I,K+1,J)-CORPOT(I,K,J)) +
      1 FULL(I,K-1,J)*(CORPOT(I,K-1,J)-CORPOT(I,K,J)))
      DIVMAX=AMAX1 (DIVMAX,ABS(DIV))
85    600 CONTINUE
      ISTRT = (IX-2)*1200 +1
      CALL WDRUMU(NAMEU,UIPHN(1,1,1),ISTPT,36000)
      CALL WDRUMV(NAMEV,VJPHN(1,1,1),ISTPT,36000)
      CALL WDRUMW(NAMEW,WKPHN(1,1,1),ISTPT,36000)
      CALL WDRUMC(NAMEC,CORPOT(1,1,1),ISTPT,36000)
90    CALL RDRUMF(NAMEF,FULL(1,1,1),ISTRT,36000)
      699 CONTINUE
      WRITE(6,250)NITER,DIVMAX
250    FORMAT(6X,6HNITER=,I3,5X,8HDIVMAX=,E12.4)
      DO 799 IX=2, NM1
95    ISTRT = (IX-2)*1200 +1
      CALL PDRUMU(NAMEU,UIPHN(1,1,1),ISTPT,36000)
      CALL PDRUMV(NAMEV,VJPHN(1,1,1),ISTPT,36000)
      CALL PDRUMW(NAMEW,WKPHN(1,1,1),ISTPT,36000)
      CALL PDRUMC(NAMEC,CORPOT(1,1,1),ISTPT,36000)
100    CALL RDRUMF(NAMEF,FULL(1,1,1),ISTRT,36000)
      DO 700 J=2, 2
      DO 700 K=2,LM1
      DO 700 I=2,NM1
      IF (FULL(I,K,J).LT.0.5) GO TO 700
105    IF (FULL(I+1,K,J).GT.0.5) UIPHN(I,K,J)=UIPHN(I,K,J)+DXI*(CORPOT
      1 (I+1,K,J) -CORPOT(I,K,J))
      IF (FULL(I,K,J+1).GT.0.5) VJPHN(I,K,J)=VJPHN(I,K,J)+DYI*(CORPOT
      1 (I,K,J+1) -CORPOT(I,K,J))
      IF (FULL(I,K+1,J).GT.0.5) WKPHN(I,K,J)=WKPHN(I,K,J)+DZI*(CORPOT
110    1 (I,K+1,J) -CORPOT(I,K,J))
      700 CONTINUE
      ISTRT = (IX-2)*1200 +1
      CALL WDRUMU(NAMEU,UIPHN(1,1,1),ISTPT,36000)
      CALL WDRUMV(NAMEV,VJPHN(1,1,1),ISTPT,36000)

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SUBROUTINE POTENT

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```

115      CALL WDRUMH(NAMEH,WKPHH(1,1,1),ISTPT,36000)
      CALL WDRUMC(NAMEC,CORPOT(1,1,1),ISTPT,36000)
      CALL WDRUMF(NAMEF,FULL(1,1,1),ISTPT,36000)
799      CONTINUE
      IF(DIVMAX.GT.1.E C1) GO TO A05
120      IF((DIVMAX.GT.1.E-06).AND.(NITER.LT.50)) GO TO 210
      A05 NPOISN = NPOISN + NITER
      IF (NTESTS.GE. 8) NPASS=IFIX(1.4*FLOAT(NPASS))+1
      IF (NTESTS.LT.3) NPASS= MAX0(1,IFIX(0.7*FLOAT(NPASS)))
C
125      RETURN
      END

```

```

1      SUBROUTINE OUTPUT
      COMMON /FIELDS/ UIPHN(40,30,3),VJPHN(40,30,3),WKPHN(40,30,3),
1      COPOT(40,30,3),FULL(40,30,3)
      COMMON /MATRIX/ XHALL,YROOF,ZBACK,DX,DY,DZ,DXI4,DYI4,DZI4,DXI2H,
5      DXI42,DYI42,DZI42,DXI4I,DYI4I,DZI4I,DXI2I,DYI2I,DZI2I,FDXI2,FDYI,
      FLXMI,BLOCKI,UBAFWL,FELAX,DXI,DYI,DZI,CXX,DELT,FPSLON
      COMMON /CTRL/ M,N,L,MM1,MM1,LM1,MM2,MM2,LM2,DIVMAX,NCY,AA(5),IKK
      COMMON /ADD/ NITEF,NTESTS,NPASS,NPOISN,IGNOPY
      COMMON /DATAIJ/ DATA(18),DATA1(14),FI(18),FJ(18)
10     COMMON /STUFF/ NRPTS,MAXCNT,DRAR,PARAM,ETEST,SPDMAX,TENMAX
      DIMENSION SURF(40,30,2)
      DATA NAMEU,NAMEV,NAMEW,NAMEC,NAMEF/4HDPMU,4HDPV,4HDPW,4HDMC,
      4HDMF/
      NAMEU = NAMEU.AND.MASK(24)
15     NAMEV = NAMEV.AND.MASK(24)
      NAMEW = NAMEW.AND.MASK(24)
      NAMEC = NAMEC.AND.MASK(24)
      NAMEF = NAMEF.AND.MASK(24)

      C
20     HLP=FI(1)
      JLP=FJ(1)
      HLS= FI(NRPTS+1)
      JLS= FJ(NRPTS+1)
      DO 602 I=1,18
25     DATA(I)=0.
      DATA1(I)=0.
      FI(I)=0.
602    FJ(I)=0.
      IF(NITEP.GT.500) WRITE(6,1001)
30     1001 FORMAT(40H VELOCITY DUMP FOR A NON-CONVERGING CASE )
      WRITE (5,610) NITEP,NPASS,NPOISN,NTESTS,IGNOPY
610    FORMAT(1H0,7HNITEP =,I3,8H, NPASS=,I4,11H, NPOISN = ,I4,9H, NTEST=
      ,I4,11H, IGNOPY = ,I4)
      WRITE(6,603)
35     603 FORMAT(//,T5,40H THE FINAL OUTPUT OF THE VELOCITIES ARE- ///)
      DO 605 I=1, 4
      DO 605 J=1, 3
      DO 605 K=1, 2
      SURF(I,J,K) = -999.
40     605 CONTINUE
      C IF NOPT = 1, ALL LEVELS ARE DISPLAYED
      C IF NOPT = 2, SURFACE VALUES ARE DISPLAYED
      READ(5,1002) NOPT
45     1002 FORMAT( I5 )
      JJ = 0
      DO 199 I=1, 6
      ISTPT = (IX-1)*3600 +1
      CALL RDRUMU(NAMEU,UIPHN(1,1,1),ISTPT,36000)
      CALL RDRUMV(NAMEV,VJPHN(1,1,1),ISTPT,36000)
50     CALL RDRUMW(NAMEW,WKPHN(1,1,1),ISTPT,36000)
      CALL RDRUMC(NAMEC,COPOT(1,1,1),ISTPT,36000)
      CALL RDRUMF(NAMEF,FULL(1,1,1),ISTPT,36000)
      DO 100 J=1, 3
      JJ = JJ + 1
55     GO TO (9001,9002), NOPT
9001    CONTINUE
      IF(JJ.GT. 2) GO TO 999

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60 WRITE(6,31) JJ
 DO 200 K=1,L
 WRITE(6,30) (UIPHN(21-I,K,J), I=1,20)
 200 CONTINUE
 DO 201 K=1,L
 WRITE(6,30) (UIPHN(M+21-I,K,J), I=21,M)
 201 CONTINUE
 65 WRITE(6,32) JJ
 DO 300 K=1,L
 WRITE(6,30) (VJPHN(21-I,K,J), I=1,20)
 300 CONTINUE
 DO 301 K=1,L
 WRITE(6,30) (VJPHN(M+21-I,K,J), I=21,M)
 70 301 CONTINUE
 WRITE(6,33) JJ
 DO 400 K=1,L
 WRITE(6,30) (WKPHN(21-I,K,J), I=1,20)
 75 400 CONTINUE
 DO 401 K=1,L
 WRITE(6,30) (WKPHN(M+21-I,K,J), I=21,M)
 401 CONTINUE
 9002 CONTINUE
 80 C
 DO 450 I=1,M
 DO 450 K=1,L
 CORPOT(I,K,J) = SORT(UIPHN(I,K,J)*UIPHN(I,K,J) +
 1 WKPHN(I,K,J)*WKPHN(I,K,J))
 85 IF(I.EQ.MLS.AND.K.EQ.JLS) DATA(JJ)=CORPOT(I,K,J)
 IF(I.EQ.MLP.AND.K.EQ.JLP) FJ(JJ)=CORPOT(I,K,J)
 IF(FULL(I,K,J)) 450,450,402
 IF(SURF(I,K,1)) 403,450,450
 SURF(I,K,1) = CORPOT(I,K,J)
 90 450 CONTINUE
 GO TO (9003,9004), NOPT
 9003 CONTINUE
 WRITE(6,34) JJ
 DO 500 K=1,L
 WRITE(6,30) (CORPOT(21-I,K,J), I=1,20)
 95 500 CONTINUE
 DO 501 K=1,L
 WRITE(6,30) (CORPOT(M+21-I,K,J), I=21,M)
 501 CONTINUE
 100 9004 CONTINUE
 DO 90 I=1,M
 DO 90 K=1,L
 IF (CORPOT(I,K,J)) 79,79,78
 78 CORPOT(I,K,J) = ASIN(UIPHN(I,K,J)/CORPOT(I,K,J))*180./3.141593
 105 IF(UIPHN(I,K,J).LT.0. .AND. WKPHN(I,K,J).GE.0.) CORPOT(I,K,J) =
 * 360. +CORPOT(I,K,J)
 IF(UIPHN(I,K,J).GE.0. .AND. WKPHN(I,K,J).GE.0.) CORPOT(I,K,J) =
 * +CORPOT(I,K,J)
 IF(UIPHN(I,K,J).GE.0. .AND. WKPHN(I,K,J).LT.0.) CORPOT(I,K,J) =
 110 * 180. - CORPOT(I,K,J)
 IF(UIPHN(I,K,J).LT.0. .AND. WKPHN(I,K,J).LT.0.) CORPOT(I,K,J) =
 * 180. - CORPOT(I,K,J)
 GO TO 80
 79 CORPOT(I,K,J) = 999.9

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115      80 IF(I.EQ.MLS.AND.K.EQ.JLS) DATA1(JJ)=CORPOT(I,K,J)
      IF(I.EQ.MLP.AND.K.EQ.JLP) FI(JJ)=CORPOT(I,K,J)
      IF(FULL(I,K,J)) 90,90,81
      81 IF(SUFF(I,K,2)) 82,90,90
      82 SURF(I,K,2)=CORPOT(I,K,J)
120      90 CONTINUE
      GO TO (9005,100), NOPT
      9005 CONTINUE
      WRITE(6,35) JJ
      DO 600 K=1, L
125      WRITE(6,30) (CORPOT(21-I,K,J), I=1,20)
      600 CONTINUE
      DO 601 K=1, L
      WRITE(6,30) (CORPOT(M+21-I,K,J), I=21,M)
      601 CONTINUE
130      100 CONTINUE
      199 CONTINUE
      999 CONTINUE
      WRITE(6,36)
      DO 700 K=1, L
135      WRITE(6,30) (SURF(21-I,K,1), I=1,20)
      700 CONTINUE
      DO 701 K=1, L
      WRITE(6,30) (SURF(M+21-I,K,1), I=21,M)
      701 CONTINUE
140      WRITE(6,37)
      DO 702 K=1, L
      WRITE(6,30) (SURF(21-I,K,2), I=1,20)
      702 CONTINUE
      DO 703 K=1, L
145      WRITE(6,30) (SURF(M+21-I,K,2), I=21,M)
      703 CONTINUE
      WRITE(6,45) AA
      45 FORMAT(1H1,45X,10HSTATION: ,5A4)
      WRITE(6,46) MLS,JLS,IKK
150      46 FORMAT(1H0,45X,21HSTATION COORDINATES (,I2,1H,,I2,1H,,I2,1H) //)
      WRITE(6,47)
      47 FORMAT(1H0,52X,15HPRIMARY STATION,22X,14HCANDIDATE SITE/30X,
      19HMI LEVEL,2(2(9X,4HWINO),7X,4HWINO)/21X,5HLEVEL,4X,9HELEVATION,
      22(6X,9HELEVATION,4X,9HDIPECTION,4X,5HSPEED)/23X,1HE,6X,
155      39H(FT.-ABL),2(6X,9H(FT.-AGL),4X,9H(DEGREES),4X,5H(M/S)) //)
      ELEM=0.
      ELES=0.
      DO 52 I=1,N
      NO=DY*(FLOAT(I-1)/0.3048)+0.5
      IF(ELEM) 210,210,220
160      210 IF(ELEM.EQ.0..AND.FI(I).LT.999.9) ELEM=DY/0.6095
      GO TO 225
      220 ELEM=ELEM+DY/0.3048
      225 NELEM=ELEM+0.5
      IF(ELES) 230,230,235
165      230 IF(ELES.EQ.0..AND.DATA1(I).LT.999.9) ELES=DY/0.6095
      GO TO 240
      235 ELES=ELES+DY/0.3048
      240 NELES=ELES+0.5
170      52 WRITE(6,49) I,NO,NELEM,FI(I),FJ(I),NELES,DATA1(I),DATA(I)
      49 FORMAT(1+0,21X,I2,8X,1F,2X,2(9X,I5,7X,F6.1,5X,F6.1))

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SUBROUTINE OUTPUT 73/73 OPT=2

FTN 4.6+433

12/28/77 18.08.27

```
30 FORMAT(1H0,20F6.1)
31 FORMAT (////22H U VELOCITIES AT LEVEL ,2X,I3)
32 FORMAT (////22H W VELOCITIES AT LEVEL ,2X,I3)
33 FORMAT (////22H V VELOCITIES AT LEVEL ,2X,I3)
34 FORMAT(////22H WIND SPEED AT LEVEL ,2X,I3)
35 FORMAT(////22H WIND DIR ANG AT LEVEL ,2X,I3)
36 FORMAT(////20H SURFACE WIND SPEEDS )
37 FORMAT(////24H SURFACE WIND DIRECTIONS )
RETURN
END
```

175

180

SUBROUTINE DRUMU

73/73 OPT=2

FTN 4.6+433

12/28/77 1A.09.27

```

1      SUBROUTINE DRUMU(I1,I2,I4,I3)
        DIMENSION FIT(35)
        DATA IFIRST/0/
        ENTRY RDRUMU
5      ASSIGN 20 TO NEXT
        II = 3LI-0
        IF(IFIRST.EQ.0) GO TO 200
20     CONTINUE
        CALL GET(FIT,I2,I4,DUM,DUM,I3)
10     RETURN
        ENTRY WDRUMU
        ASSIGN 40 TO NEXT
        II = 3LI-0
        IF(IFIRST.EQ.0) GO TO 200
15     40 CONTINUE
        CALL PUT(FIT,I2,I3,I4)
        RETURN
200    CONTINUE
        CALL FILEWA(FIT,3LLFN,I1,2LPT,1LU,3LERL,5,3LMFL,40000)
20     CALL OPENMIFIT,II)
        IFIRST = 77
        GO TO NEXT(20,40)
        END

```

SUBROUTINE DPMV 73/73 OPT=2

FT4 4.6+433

12/28/77 1A.09.27

```
1      SUBROUTINE DPMV(I1,I2,I4,I3)
      DIMENSION FIT(35)
      DATA IFIRST/0/
      ENTRY FORUMV
5      ASSIGN 20 TO NEXT
      II = 3LI-0
      IF(IFIRST.EQ.0) GO TO 200
      20  CONTINUE
      CALL GET(FIT,I2,I4,DUM,DUM,I3)
10      RETURN
      ENTRY WDPUMV
      ASSIGN 40 TO NEXT
      II = 3LI-0
      IF(IFIRST.EQ.0) GO TO 200
15      40  CONTINUE
      CALL PUT(FIT,I2,I3,I4)
      RETURN
      200  CONTINUE
      CALL FILEWA(FIT,3LLFN,I1,2LRT,1LU,3LERL,5,3LMRL,40000)
20      CALL OPENM(FIT,II)
      IFIRST = 77
      GO TO NEXT(20,40)
      END
```

SUBROUTINE DPUMW

73/73 OPT=2

FTN 4.6+433

12/28/77 18.08.27

```
1      SUBROUTINE DPUMW(I1,I2,I4,I3)
      DIMENSION FIT(35)
      DATA IFIRST/0/
      ENTRY PDRUMW
5      ASSIGN 20 TO NEXT
      II = 3LI-C
      IF(IFIRST.EQ.0) GO TO 200
      CONTINUE
      CALL GET(FIT,I2,I4,DUM,DUM,I3)
10     RETURN
      ENTRY WDPUMW
      ASSIGN 40 TO NEXT
      II = 3LI-C
      IF(IFIRST.EQ.0) GO TO 200
15     40 CONTINUE
      CALL PUT(FIT,I2,I3,I4)
      RETURN
      200 CONTINUE
      CALL FILEWA(FIT,3LLFN,I1,2LRT,1LU,3LEPL,5,3LMPL,40000)
20     CALL OPENM(FIT,II)
      IFIRST = 77
      GO TO NEXT(20,40)
      END
```

SUBROUTINE DPUMC

73/73 OPT=2

FTN 4.6+433

12/28/77 18.09.27

```
1      SUBROUTINE DPUMC(I1,I2,I4,I3)
      DIMENSION FIT(35)
      DATA IFIRST/(/
      ENTRY RDRUMC
5      ASSIGN 20 TO NEXT
      II = 3LI-0
      IF(IFIRST.EQ.0) GO TO 200
20     CONTINUE
      CALL GET(FIT,I2,I4,DUM,DUM,I3)
10     RETURN
      ENTRY WDPUMC
      ASSIGN 40 TO NEXT
      II = 3LI-0
      IF(IFIRST.EQ.0) GO TO 200
15     40 CONTINUE
      CALL PUT(FIT,I2,I3,I4)
      RETURN
200    CONTINUE
      CALL FILEWA(FIT,3LLFN,I1,2LPT,1LU,3LERL,5,3LMPL,40000)
20     CALL OPENM(FIT,II)
      IFIRST = 77
      GO TO NEXT(20,40)
      END
```

SUBROUTINE DRUMF

73/73 OPT=2

FTN C.E+433

12/28/77 18.08.27

1 SUBROUTINE DRUMF(I1,I2,I4,I3)
DIMENSION FIT(35)
DATA IFIPST/0/
ENTRY DRUMF
5 ASSIGN 20 TO NEXT
II = 3LI-0
IF(IFIPST.EQ.0) GO TO 200
20 CONTINUE
CALL GETIFIT,I2,I4,DUM,DUM,I3)
10 RETURN
ENTRY WDRUMF
ASSIGN 40 TO NEXT
II = 3LI-0
IF(IFIPST.EQ.0) GO TO 200
15 40 CONTINUE
CALL PUT(FIT,I2,I3,I4)
RETURN
200 CONTINUE
CALL FILEWA(FIT,3LLFN,I1,2LRT,1LU,3LERL,F,3LMPL,40000)
20 CALL OPENM(FIT,II)
IFIPST = 77
GO TO NEXT(20,40)
END

Wind Correlation Program - WNCOR

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FIN4 COMPILER: HP24177 (SEPT. 1974)

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0001 FTN,L,I
0002 PROGRAM WNCOR
0003 C
0004 C
0005 C THIS PROGRAM PRODUCED FOR A PROJECT FOR BATTELLE, PACIFIC NORTHWEST.
0006 C COMPLETED DATE APPROX. 9/16/77, PROJECT NUMBER 9103172877, PROJECT MANAGER
0007 C STEVE HOWARD, PROGRAMMER STEVE HOWARD. THIS PROGRAM CORRELATES WIND
0008 C SPEED AND WIND DIRECTION FROM TWO STATIONS. SURFACE WIND SPEED/DIRECTION
0009 C VALUES ALONG WITH DA,MO,YR,HOOR ARE READ FROM TWO MAGNETIC TAPES TDF14
0010 C 9 TRACK 800 HPI EBCDEK NATIONAL WEATHER SERVICE TAPES ONE TAPE FOR EACH OF
0011 C TWO STATIONS. THE TAPES EMPLOY TWO SUBROUTINES FOR READING OF EACH TAPE
0012 C (TDF14 AND SDF14).
0013 C ONE STATION IS DESIGNATED AS THE "PRIMARY STATION", THE OTHER THE
0014 C "SECONDARY STATION". THE PRIMARY STATION IS RELATED AS THE "X" INPUT
0015 C INTO THE REGRESSION ANALYSIS.
0016 C
0017 C THE MAIN PURPOSE OF THIS PROGRAM IS TO PROVIDE A RELATIONSHIP BETWEEN
0018 C THE WINDS AT THE SECONDARY STATION AS A FUNCTION OF THE PRIMARY STATION.
0019 C ONCE KNOWING THE WINDS AT THE PRIMARY STATION, USING REGRESSION RELATIONS
0020 C DERIVED FROM THIS PROGRAM, THE WINDS, OR PROBABLE WINDS AT THE SECONDARY
0021 C SITE CAN BE DEDUCED.
0022 C
0023 C THIS PROGRAM COMPRISES THE FIRST STEP IN THE ANALYSIS FOR MODELING A
0024 C CLIMATOLOGY OF WINDS AT A CANDIDATE WIND ENERGY SITE SPECIFIED BY BATTELLE.
0025 C ONCE A REGRESSION RELATIONSHIP HAS BEEN DETERMINED FROM TWO WIND DATA SITES,
0026 C MODEL RUNS WILL BE MADE TO DETERMINE THE WIND RELATIONSHIP BETWEEN THE
0027 C PRIMARY DATA STATION AND THE CANDIDATE SITE. SECONDARY REGRESSION RELATION-
0028 C SHIPS RELATING THE WINDS AT THE PRIMARY STATION AND AT THE CANDIDATE SITE
0029 C TO BE INCORPORATED INTO THE THIRD PHASE OF THE PROJECT. THAT PHASE WILL
0030 C PRODUCE A SITE CLIMATOLOGY BY UTILIZING THE REGRESSION RELATIONSHIPS
0031 C DEVELOPED FROM THE MODEL RUNS.
0032 C
0033 C OUTPUTTED IN THIS PROGRAM ARE FOUR GRAPHS BY FOUR PRIMARY STATION WIND
0034 C DIRECTION QUADRANTS. A FIFTH SERIES OF FOUR GRAPHS WILL FOLLOW THE DIRECTION
0035 C SUMMARIES, GIVING STATISTICS FOR ALL PRIMARY WIND DIRECTIONS. FOLLOWING
0036 C THE FIVE SETS OF FOUR GRAPHS WILL BE TWO GRAPHS SUMMARIZING CALM CONDITIONS AT
0037 C THE PRIMARY SITE. IN THE SET OF FOUR GRAPHS ARE 1) A SCATTER DIAGRAM GIVING
0038 C WIND SPEED FOR THE PRIMARY STATION (X AXIS) AND THE SECONDARY STATION
0039 C (Y AXIS) FOLLOWED BY REGRESSION STATISTICS, 2) A DELTA WIND DIRECTION
0040 C FREQUENCY ANALYSIS GIVING THE FREQUENCY OF DIRECTIONAL DIFFERENCES BETWEEN
0041 C THE PRIMARY AND SECONDARY STATIONS, 3) THE THIRD GRAPH GIVES FREQUENCY OF
0042 C OCCURENCE OF SECONDARY STATION WIND DIRECTION, FOR DAY AND NIGHT HOURS.
0043 C 4) THE LAST GRAPH GIVES THE SAME AS 3) ABOVE BUT FOR DAY HOURS ONLY (0700-
0044 C 1800 LST).
0045 C
0046 C TWO DATA CARDS ARE READ AT THE BEGINING OF THE PROGRAM BEFORE TAPE READ
0047 C THE FIRST CARD GIVES NCC (NOT NWS) STATION NUMBERS (APPEARING ON THE TAPES)
0048 C ISITP, FOR THE PRIMAR STATION, AND ISITS FOR THE SECONDARY STATION. FOLLOWED
0049 C BY ISTRT (START TIME (MO,DA,YR)) AND ISTOP (STOP TIME (MO,DA,YR,HR)).
0050 C THE SECOND CARD GIVES THE NAME (ISIPN) OF THE PRIMARY STATION AND (ISTPC)
0051 C THE CALL LETTERS OF THE PRIMARY STATION. THE LAST TWO VALUES, ISTSN AND
0052 C ISTSC ARE THE SAME RESPECTIVELY FOR THE SECONDARY STATION.
0053 C
0054 C
0055 C COMMON ICOM(28),JCOM(28),ISTRT(3),ISITP(3),ISITS(3),ISLAL(6),
0056 C IIPLTU(25,17)

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0057 C
0058     DIMENSION NSCAT(5,26,26),IDIR(12,17),JDFL(5,17),IPLTS(26,26),
0059     IKWIER(4,5),REG(5,6),IDAP(4),IDAS(4),ISMBL(40),IWNR(4,6),
0060     2IHOUR(7,2),ISTOP(4),ISTPN(10),ISTPC(3),ISISN(10),ISISC(3)
0061 C
0062     EQUIVALENCE(ICOM(5),IDAP(1)),(ICOM(11),IPD),(ICOM(12),IP),
0063     1(JCOM(5),IDAS(1)),(JCOM(11),ISD),(JCOM(12),IS)
0064 C
0065     DATA ISMBL/1H1,1H2,1H3,1H4,1H5,1H6,1H7,1H8,1H9,1HA,1HH,1HC,1HD,
0066     1HE,1HF,1HG,1HH,1HI,1HJ,1HK,1HL,1HM,1HN,1HO,1HP,1HQ,1HR,1HS,1HT,
0067     2IHU,1HV,1HW,1HX,1HY,1HZ,1HA,1H ,1H1,1H-,1H+/
0068 C
0069     DATA IWNR/2HNN,2HW-,2H N,2HE ,2HEN,2HE-,2H S,2HE ,2HSS,2HE-,
0070     12H S,2HW ,2HWS,2HW-,2H N,2HW ,2H ,2HAL,2HL ,2H ,2H C,2HAL,2HM ,
0071     22H /
0072 C
0073     DATA IHOUR/2H ,2HAL,2HL ,2HMO,2HUR,2HS ,2H ,2H07,2H00,2H-1,
0074     12H80,2H0 ,2HLS,2H1 /
0075 C
0076     900 FORMAT(2(2A2,A1,1X),7(12,1X))
0077     901 FORMAT(2(10A2,1X,3A2,1X))
0078     905 FORMAT(1H1,46X,"WIND SPEED REGRESSION ANALYSIS")
0079     906 FORMAT(16X,"FOR ",10A2,3A2,"WIND DIRECTIONS: ",4A2,"PERIOD:",
0080     1" FROM ",12,"/",12,"/",12," TO ",12,"/",12,"/",12"/)
0081     910 FORMAT(24X,26(A1,2X)/)
0082     915 FORMAT(21X,12,1X,26(A1,2X)/)
0083     920 FORMAT(4X,"WIND SPEED (M/S)",4X,26(A1,2X)/)
0084     925 FORMAT(2X,10A2,2X,26(A1,2X)/)
0085     930 FORMAT(24X,26(A1,2X))
0086     935 FORMAT(24X,"0",14X,"5",13X,"10",13X,"15",13X,"20",13X,"25"/
0087     139X,10A2,3A2," WIND SPEED (M/S)"/21X,"TOTAL NO. OBS.= ",15)
0088     932 FORMAT(10X,3A2,8X,26(A1,2X)/)
0089     940 FORMAT(3X,"REGRESSION EQUATION: ",3A2," = ",F6.3,3A2," + ",
0090     1F6.3,3X,"CURVEL. COEFF.= ",F5.3,3X,"SIGMA Y=",F6.3,3X,
0091     2"SLOPE ERROR (95%)=",F6.3)
0092     945 FORMAT(1H1,41X,"DELTA WIND DIRECTION FREQUENCY ANALYSIS")
0093     970 FORMAT(24X,"---",16(4H---+),"--")
0094     975 FORMAT(24X,"-180-158-135-113 -90 -68 -45 -23 0 23 45 68 90",
0095     1" 113 135 158 180"/42X,"DELTA WIND DIRECTION ",3A2,"-",3A2/
0096     248X,"TOTAL NO. OBS.= ",15)
0097     980 FORMAT(1H1,26X,10A2,3A2," WIND DIRECTION FREQUENCY ANALYSIS: ",
0098     17A2)
0099     985 FORMAT(24X,"CALM N NNE NE ENE E ESE SE SSE S SSW SW",
0100     1" WSW W WNW NW NNW"/48X,3A2," WIND DIRECTION"/47X,
0101     2"TOTAL NO. OBS.= ",15)
0102     990 FORMAT(1H1,92X,"REGRESSION STATS SUMMARY"/25X,"NDIR",9X,"A",
0103     110X,"B",10X,"R",10X,"E",4X,"BE"/)
0104     995 FORMAT(26X,12,2X,5(5X,F6.3))
0105     996 FORMAT(10X,"TOTAL NUMBER OF OBSERVATIONS USED= ",15)
0106 C
0107 C INITIALIZE AND ZERO ARRAYS FOR CUMULATING THE NUMBER OF OBSERVATIONS
0108 C
0109     DO 2 I=1,5
0110     DO 2 J=1,26
0111     DO 2 K=1,26
0112     NSCAT(I,J,K)=0

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0113 2 CONTINUE
0114 DO 3 I=1,4
0115 DO 3 J=1,5
0116 KNRER(I,J)=0
0117 3 CONTINUE
0118 DO 4 I=1,5
0119 DO 4 J=1,6
0120 REG(I,J)=0.
0121 4 CONTINUE
0122 DO 7 I=1,12
0123 DO 7 J=1,17
0124 IF(I=5) 5,5,6
0125 5 JDEL(I,J)=0
0126 6 IDIR(I,J)=0
0127 7 CONTINUE
0128 ICAL1=0
0129 ICAL2=0
0130 NTOB=0
0131 C
0132 C READ THE STATION NUMBERS AND START AND STOP TIMES
0133 C
0134 READ(5,900) ISITP,ISITS,ISTRT,ISTOP
0135 READ(5,901) ISTPN,ISTPC,ISTSN,ISTSC
0136 YRSTP=ISTOP(3)
0137 STOP=ISTOP(1)+10000.+ISTOP(2)+100.+ISTOP(4) -
0138 C
0139 C BEGIN READING BOTH TAPES AND FIND THE FIRST HOUR AFTER ISTRT
0140 C
0141 9 CALL TDF14(8,ISTAT,LLL)
0142 CALL SDF14(9,JSTAT,MMM)
0143 10 CONTINUE
0144 IF(ISTAT.NE.0) GO TO 9
0145 IF(JSTAT.NE.0) GO TO 9
0146 YRS=IDAS(1)
0147 YRP=IDAP(1)
0148 IF(YRP-YRS)12,11,13
0149 11 HRP=IDAP(2)+10000.+IDAP(3)+100.+IDAP(4)
0150 HRS=IDAS(2)+10000.+IDAS(3)+100.+IDAS(4)
0151 IHR=IDAS(4)
0152 IF(HRP-HRS) 12,14,13
0153 12 CONTINUE
0154 CALL TDF14(8,ISTAT,LLL)
0155 GO TO 10
0156 13 CONTINUE
0157 CALL SDF14(9,JSTAT,MMM)
0158 GO TO 10
0159 C
0160 C TEST FOR MISSING OR INVALID WIND DATA
0161 C
0162 14 IF(IPD.GT.90.OR.IP.GT.90) GO TO 9
0163 IF(ISD.GT.90.OR.IS.GT.90) GO TO 9
0164 C
0165 C COUNT THE NUMBER OF "GOOD" OBSERVATIONS
0166 C
0167 NTOB=NTOB+1
0168 C

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0169 C DETERMINE QUADRANT OF PRIMARY WIND DIRECTION: N,E,S,W +CALM
0170 C
0171     IF(IPD.GT.10.AND.IPD.LT.30) NDIR=1          NORTH
0172     IF(IPD.GT.30.AND.IPD.LT.50) NDIR=2          EAST
0173     IF(IPD.GT.50.AND.IPD.LT.70) NDIR=3          SOUTH
0174     IF(IPD.GT.70.AND.IPD.LT.90) NDIR=4          W+SI
0175     IF(IPD) 15,15,20
0176     15 NDIR=5          CALM
0177 C
0178 C CONVERT KNOTS TO M/S
0179 C
0180     20 P=FLOAT(IP)*0.514791
0181     S=FLOAT(IS)*0.514791
0182 C
0183 C DETERMINE INDICES FOR SCATTER DIAGRAM (BY SPEED VALUES)
0184 C
0185     JP=P+1.5
0186     JS=S+1.5
0187 C
0188 C FILL SCATTER DIAGRAMS ACCORDING TO PRIMARY STATION WIND DIRECTION QUADRANT
0189 C
0190     IF(JP.GT.26.OR.JS.GT.26) GO TO 30
0191     KS=27-JS
0192 C IF CALM, CAN'T INCLUDE IN QUADRANT SCATTER DIAGRAMS
0193 C
0194     IF(NDIR=5) 24,25,25
0195 C
0196 C FOR QUADRANTS: N,E,S,W ALL HOURS
0197 C
0198     24 NSCAT(NDIR,KS,JP)=NSCAT(NDIR,KS,JP)+1
0199 C
0200 C CUMULATE THE TOTAL NUMBER OF OBSERVATIONS GOING INTO EACH QUADRANT
0201 C
0202     KNBER(1,NDIR)=KNBER(1,NDIR)+1
0203 C
0204 C SCATTER DIAGRAM FOR ALL QUADRANTS PLUS CALMS AT PRIMARY STATION
0205 C
0206     25 NSCAT(5,KS,JP)=NSCAT(5,KS,JP) +1
0207     KNBER(1,5) = KNBER(1,5)+1
0208 C
0209 C COMPUTE REGRESSION STATS FOR EACH DIAGRAM
0210 C
0211     30 IF(NDIR=5) 34,40,40
0212     34 JDIR=NDIR
0213     35 REG(JDIR,1)=REG(JDIR,1)+S
0214     REG(JDIR,2)=REG(JDIR,2)+P
0215     PS=P*S
0216     REG(JDIR,3)=REG(JDIR,3)+PS
0217     P2=P**2
0218     S2=S**2
0219     REG(JDIR,4)=REG(JDIR,4)+P2
0220     REG(JDIR,5)=REG(JDIR,5)+S2
0221     IF(JDIR=5) 40,47,47
0222     40 JDIR=5
0223     GO TO 35
0224 C

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0225 C CONVERT WIND DIRECTION CODE TO SEVENTEEN POINT COMPASS (FIRST POINT FOR CALM
0226 C
0227 C NUM=0 FOR SECONDARY WIND DIRECTION, NUM=1 FOR PRIMARY WIND DIRECTION
0228 C
0229 47 NUM=0
0230 48 IF(NUM) 50,50,55
0231 50 MDIR=ISD
0232 50 GO TO 60
0233 55 MDIR=IPD
0234 60 JWND=MUD(MDIR,10)+(MDIR/10)-1
0235 JWND=JWND+1
0236 IF(MDIR.EQ.15) JWND=17
0237 IF(MDIR.LE.10) JWND=1
0238 IF(NUM) 175,175,180
0239 175 KSD=JWND
0240 NUM=1
0241 GO TO 48
0242 180 KPD=JWND
0243 C
0244 C FILL IN FREQUENCY ARRAYS FOR SECONDARY STATION DIRECTION OCCURENCE
0245 C
0246 C LDN= INDEX FOR DAY AND NIGHT ARRAYS (LDN=1 FOR NDIR =1, LDN=3 FOR NDIR=2, ETC
0247 C LD= INDEX FOR DAY TIME ONLY ARRAYS LD= 2,4,6,8,10 FOR NDIR = 1,2,3,4
0248 C
0249 LDN=(NDIR*2)-1
0250 LD=LDN+1
0251 C
0252 C FOR CALM AT PRIMARY STATION CAN HAVE NO DIRECTION SO SKIP GRAPHS BY DIRECTION
0253 IF(KPD=1) 210,210,190
0254 C
0255 190 IDIR(LDN,KSD)=IDIR(LDN,KSD)+1
0256 KNBER(2,NDIR)=KNBER(2,NDIR)+1
0257 IDIR(9,KSD)=IDIR(9,KSD)+1
0258 KNBER(2,5)=KNBER(2,5)+1
0259 C FILL DAY ONLY ARRAYS
0260 IF(IHR.LT.07.OR.IHR.GT.18) GO TO 220
0261 IDIR(LD,KSD)=IDIR(LD,KSD)+1
0262 KNBER(3,NDIR)=KNBER(3,NDIR)+1
0263 IDIR(10,KSD)=IDIR(10,KSD)+1
0264 KNBER(3,5)=KNBER(3,5)+1
0265 GO TO 220
0266 C
0267 C FOR CALMS AT PRIMARY STATION FILL ARRAYS FOR DIRECTION FREQUENCY AT SECONDAR
0268 C
0269 210 IDIR(11,KSD)=IDIR(11,KSD)+1
0270 ICAL1=ICAL1+1
0271 IF(IHR.LT.07.OR.IHR.GT.18) GO TO 220
0272 IDIR(12,KSD)=IDIR(12,KSD)+1
0273 ICAL2=ICAL2+1
0274 C
0275 C FILL IN ARRAYS FOR DIRECTIONAL DIFFERENCE FREQUENCY
0276 C IF BOTH OR ONE STATION HAVE CALMS, CAN'T SUBTRACT THE DIRECTIONS SO SKIP
0277 C
0278 220 IF(KPD.EQ.1.OR.KSD.EQ.1) GO TO 230
0279 NDEL=KSD-KPD
0280 IF(NDEL.LT.-8) NDEL=16+ NDEL

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0281      IF(NDEL.GT.9) NDEL=NDEL-16
0282      NDEL=NDEL+9
0283      JDEL(NDIR,NDEL)=JDEL(NDIR,NDEL)+1
0284      KNBER(4,NDIR)=KNBER(4,NDIR)+1
0285      JDEL(5,NDEL)=JDEL(5,NDEL)+1
0286      KNBER(4,5)=KNBER(4,5)+1
0287      C
0288      C  END OF ARRAY FILLING. TEST IF HOUR MO, ETC. EQUAL STOP TIME IF NOT
0289      C  GO TO THE START AND READ NEW RECORD
0290      C
0291      230 IF(YRSTP=YHR) 9,232,9
0292      232 IF(HRP=STOP) 9,250,250
0293      C
0294      C*****
0295      C  NOW COMES THE OUTPUTTING. TWO SUBROUTINES USED FREQ FOR OUTPUTTING FREQ ARRA
0296      C  YS AND SCAL FOR DETERMINING VARIABLE SCALES
0297      C
0298      250 DO 1000 JJ=1,4
0299          MN=JJ
0300          DO 265 I=1,25
0301              IPLTS(26,I)=ISMHL(39)
0302              IPLTS(1,I)=ISMHL(38)
0303              LIN=(I/5)*5+1
0304              IF(1.EQ.LIN) GO TO 255
0305              GO TO 260
0306      255 IPLTS(1,I)=ISMHL(40)
0307              IPLTS(26,I)=ISMHL(40)
0308      260 II=27-1
0309              DO 265 J=2,26
0310                  IPLTS(1,J)=ISMHL(37)
0311                  IF(11.EQ.J) IPLTS(1,J)=ISMHL(40)
0312      265 CONTINUE
0313                  IPLTS(26,26)=ISMHL(40)
0314                  DO 305 I=1,26
0315                      DO 305 J=1,26
0316                          KPI=NSCAT(JJ,1,J)
0317                          IF(KPI) 305,305,300
0318      300 KPI=KPI/10+1
0319                          IF(KPI.GE.35) KPI=36
0320                          IPLTS(1,J)=ISMHL(KPI)
0321      305 CONTINUE
0322                          WRITE(6,905)
0323                          WRITE(6,906) ISIPN,ISTPC,(1*NDIR(K,MN),K=1,4),ISTRT(1),ISTRT(2),
0324                          1ISTRT(3),ISTOP(1),ISTOP(2),ISTOP(3)
0325                          ISPD=25
0326                          DO 340 I=1,26
0327                              IF(I=12) 309,329,309
0328      309 IF(I=13) 310,330,310
0329      310 IF(I=14) 315,335,315
0330      315 JNU=(I/5)*5+1
0331                              IF(I=JNU) 320,325,320
0332      320 WRITE(6,910) (IPLTS(1,J),J=1,26)
0333                              GO TO 340
0334      325 IF(I=26) 326,328,326
0335      326 WRITE(6,915) ISPD,(IPLTS(1,J),J=1,
0336                              ISPD=ISPD-5

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0337      GO TO 340
0338      328 WRITE(6,930)(IPLTS(I,J),J=1,26)
0339      GO TO 345
0340      329 WRITE(6,932) ISTSC,(IPLTS(I,J),J=1,26)
0341      GO TO 340
0342      330 WRITE(6,920)(IPLTS(I,J),J=1,26)
0343      GO TO 340
0344      335 WRITE(6,925) ISTSN,(IPLTS(I,J),J=1,26)
0345      340 CONTINUE
0346      345 WRITE(6,935)ISTPN,ISTPC,KNBER(1,JJ)
0347      C
0348      C
0349      TN=KNBER(1,JJ)
0350      IF(TN.EQ.0.) GO TO 346
0351      SY=REG(JJ,1)
0352      SX=REG(JJ,2)
0353      SXY=REG(JJ,3)
0354      SY2=REG(JJ,5)
0355      SX2=REG(JJ,4)
0356      CALL REGHS(TN,SY,SX,SY2,SX2,SXY,A,B,K,E,BE,AL,AM,SSY,SSX)
0357      WRITE(6,940) ISTSC,H,ISTPC,A,R,E,BE
0358      REG(JJ,1)=B
0359      REG(JJ,2)=A
0360      REG(JJ,3)=R
0361      REG(JJ,4)=E
0362      REG(JJ,5)=BE
0363      C
0364      C
0365      346 WRITE(6,945)
0366      WRITE(6,906) ISTPN,ISTPC,(IWNR(K,MN),K=1,4),ISTRT(1),ISTRT(2),
0367      1ISTRT(3),ISTOP(1),ISTOP(2),ISTOP(3)
0368      TN=KNBER(4,JJ)
0369      IF(TN.EQ.0.) GO TO 367
0370      ANMX=0
0371      DO 355 I=1,17
0372      ANU=JDEL(JJ,1)
0373      ANU=ANU/TN
0374      IF(ANU.GT.ANMX)ANMX=ANU
0375      355 CONTINUE
0376      DO 357 I=1,25
0377      DO 357 J=1,17
0378      1PLTD(I,J)=0
0379      357 CONTINUE
0380      CALL SCAL(ANMX,GRAD)
0381      DO 365 J=1,17
0382      ANU=JDEL(JJ,J)
0383      ANO=(ANU/TN)*100.
0384      IND=((25.*GRAD)-ANO)/GRAD+1.
0385      IF(IND.GE.26) GO TO 365
0386      DO 360 I=IND,25
0387      360 1PLTD(I,J)=1
0388      365 CONTINUE
0389      CALL FREQ
0390      WRITE(6,970)
0391      WRITE(6,975) ISTSC,ISTPC,TN
0392      367 KANO=0

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0393      LMNO=1
0394      LDN=(JJ+2)-1
0395      370 KK=LDN
0396          TN=KNBER(LMNO+1,JJ)
0397      375 IF(TN.EQ.0.) GO TO 392
0398          WRITE(6,980) ISTN,ISTSC,(1*HOUR(KN,LMNO),KN=1,7)
0399          WRITE(6,906) ISTPN,ISTPC,(1*WNDH(K,MN),K=1,4),ISTRT(1),ISTRT(2),
0400          1ISTRT(3),ISTOP(1),ISTOP(2),ISTOP(3)
0401          ANMX=0
0402          DO 380 I=1,17
0403              ANO=IDIR(KK,I)
0404              ANO=ANO/TN
0405              IF(ANO.GT.ANMX) ANMX=ANO
0406      380 CONTINUE
0407          DO 382 I=1,25
0408              DO 382 J=1,17
0409                  IPLTD(I,J)=0
0410      382 CONTINUE
0411          CALL SCAL(ANMX,GRAD)
0412          DO 390 J=1,17
0413              ANO=IDIR(KK,J)
0414              ANO=(ANO/TN)*100.
0415              IND=((25.*GRAD)-ANO)/GRAD+1.
0416              IF(IND.GE.26) GO TO 390
0417              DO 385 I=IND,25
0418                  385 IPLTD(I,J)=1
0419      390 CONTINUE
0420          CALL FREQ
0421      392 WRITE(6,970)
0422          WRITE(6,985) ISTSC,TN
0423          IF(KANO) 393,393,405
0424      393 IF(LMNO-1) 395,395,400
0425      395 LMNO=LMNO+1
0426          LDN=LDN+1
0427          GO TO 370
0428      400 IF(JJ=5) 1000,405,405
0429      405 IF(KANO-1) 410,415,1010
0430      410 KANO=1
0431          KK=11
0432          LMNO=1
0433          TN=ICAL1
0434          MN=6
0435          GO TO 375
0436      415 KANO=2
0437          KK=12
0438          LMNO=2
0439          TN=ICAL2
0440          GO TO 375
0441      1000 CONTINUE
0442      1010 WRITE(6,990)
0443          DO 1030 I=1,5
0444              WRITE(6,995) I,(REG(I,J),J=1,5)
0445      1030 CONTINUE
0446          WRITE(6,996) NTOH
0447          STOP
0448          END

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FIN4 COMPILER: HP24177 (SEPT. 1974)

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0449      SUBROUTINE FRF0
0450      COMMON ICOM(28),JCOM(28),ISTR1(3),ISITP(3),ISITS(3),ISCAL(6),
0451      1IPLTD(25,17)
0452      DIMENSION IPLTH(34),ISMHX(2)
0453      DATA ISMHX/1HX,1H /
0454      950  FORMAT(24X,"!",34(A1,1X)/)
0455      955  FORMAT(20X,13," +",34(A1,1X)/)
0456      960  FORMAT(6X,"FREQUENCY(X)",6X,"!",34(A1,1X)/)
0457      965  FORMAT(24X,"!",34(A1,1X))
0458      LM=1
0459      M=0
0460      KJ=0
0461      DO 65 I=1,25
0462      DO 30 J=1,17
0463      M=(J-1)*2+1
0464      KJ=J*2
0465      18  IF(M-KJ) 20,20,30
0466      20  IF(IPLTD(I,J)) 25,25,22
0467      22  IPLTH(M)=ISMHX(1)
0468      GO TO 26
0469      25  IPLTH(M)=ISMHX(2)
0470      26  M=M+1
0471      GO TO 18
0472      30  CONTINUE
0473      IF(I-25) 35,60,35
0474      35  IF(I-13) 40,55,40
0475      40  JNO=(I/5)*5+1
0476      IF(I-JNO) 45,50,45
0477      45  WRITE(6,950)(IPLTH(K),K=1,34)
0478      GO TO 65
0479      50  WRITE(6,955) ISCAL(LM),(IPLTH(K),K=1,34)
0480      LM=LM+1
0481      GO TO 65
0482      55  WRITE(6,960)(IPLTH(K),K=1,34)
0483      GO TO 65
0484      60  WRITE(6,965)(IPLTH(K),K=1,34)
0485      65  CONTINUE
0486      RETURN
0487      END

```

NO ERRORS## PROGRAM = 00334 COMMON = 00496

F194 COMPILER: HP24177 (SEPT. 1974)

```
0488      SUBROUTINE SCAL(ANMX,GRAD)
0489      COMMON ICOM(28),JCOM(28),ISIRI(3),ISIPP(3),ISIIS(3),ISCAL(6),
0490      1IPLTD(25,17)
0491      DO 5 I=1,6
0492      5   ISCAL(I)=0
0493      IF(ANMX.LT..1..AND..ANMX.GT..7500) GRAD=4.
0494      IF(ANMX.LT..75..AND..ANMX.GT..5000) GRAD=3.
0495      IF(ANMX.LT..50..AND..ANMX.GT..2500) GRAD=2.
0496      IF(ANMX.LT..25..AND..ANMX.GT..1000) GRAD=1.
0497      IF(ANMX.LT..1000) GRAD=0.4
0498      DO 10 I=1,6
0499      10  U=6-I
0500      10  ISCAL(I)=U*5.*GRAD
0501      RETURN
0502      END
```

*** NO ERRORS*** PROGRAM = 00167 COMMON = 00496

FTN4 COMPILER: HP24177 (SEP1. 1974)

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0503      SUBROUTINE REGRS(TN,SY,SX,SY2,SX2,SXY,A,B,H,F,BE,AL,AH,SSY,SSX)
0504      TN2=TN*2
0505      AY=SY/TN
0506      AX=SX/TN
0507      SSY=SY2-AY*SY
0508      SSX=SX2-AX*SX
0509      SP=SXY-SY*AX/TN
0510      B=SP/SSX
0511      R=SP/SQRT(SSX*SSY)
0512      A=AY-B*AX
0513      E=SQRT((SSY-SP*SP/SSX)/TN2)
0514      BE=E/SQRT(SSX)
0515      AE=E*SQRT((1./TN)+AX*AX/SSX)
0516      AL=A-AE
0517      AH=A+AE
0518      RETURN
0519      END

```

** NO ERRORS** PROGRAM = 00193 COMMON = 00000

FIN4 COMPILER: HP24177 (SEPT. 1974)

```

0001 FIN,L
0002 SUBROUTINE TDF14(LU,ISTAT,KOUNT)
0003 C
0004 C THIS SUBROUTINE READS AND DECODES TDF14 FORMAT TAPES FROM NOAA
0005 C
0006 C ON EACH CALL, ONE HOUR'S WORTH OF DATA IS MOVED INTO THE
0007 C COMMON BUFFER
0008 C
0009 C NOTE:
0010 C 1. ALL MISSING OR INVALID DATA IS RETURNED AS 9999
0011 C 2. SCALING OF SOME PARAMETERS IS NECESSARY, SEE TDF-14
0012 C REFERENCE MANUAL FOR PROPER SCALING
0013 C 3. DATA IS RETURNED IN INTEGER FORMATS ONLY
0014 C
0015 C CALLING SEQUENCE
0016 C CALL TDF14(LU,ISTAT,KOUNT)
0017 C
0018 C WHERE: LU =LOGICAL UNIT OF MAGNETIC TAPE
0019 C KOUNT=NUMBER OF HOURS READ FROM THIS
0020 C TAPE BLOCK
0021 C SET KOUNT=0 IF NEW TAPE BLOCK
0022 C IS DESIRED
0023 C OTHERWISE DO NOT ALTER
0024 C ISTAT=RETURNED STATUS AFTER CALL
0025 C -2=ILLEGAL RECORD LENGTH ENCOUNTERED
0026 C -1=PARITY ERROR ENCOUNTERED
0027 C 0=NO ERRORS
0028 C 1=EOF ENCOUNTERED
0029 C 2=LOT ENCOUNTERED
0030 C
0031 C CONTENTS OF COMMON BUFFER
0032 C
0033 C VARIABLE LOCATION DESCRIPTION
0034 C ICOM(1) 1 TAPE FORMAT ID
0035 C ICOM(2-4) 2-4 STATION NUMBER IN HOLLERITH
0036 C ICOM(5) 5 YEAR <00-99>
0037 C ICOM(6) 6 MONTH <1-12 JAN-DEC>
0038 C ICOM(7) 7 DAY
0039 C ICOM(8) 8 HOUR <0-23> LST
0040 C ICOM(9) 9 CEILING HEIGHT 100'S OF FT.
0041 C ICOM(10) 10 VISIBILITY <IN TDF14 CODING SCHEME>
0042 C ICOM(11) 11 WIND DIRECTION ON 16 PT. ROSE
0043 C < IN TDF14 CODING SCHEME >
0044 C ICOM(12) 12 WIND SPEED IN KNOTS
0045 C ICOM(13) 13 DRY BULB TEMPERATURE IN WHOLE DEG F
0046 C ICOM(14) 14 WET BULB TEMPERATURE IN WHOLE DEG F
0047 C ICOM(15) 15 DEW POINT TEMPERATURE IN WHOLE DEG F
0048 C ICOM(16) 16 RELATIVE HUMIDITY IN WHOLE PERCENT
0049 C ICOM(17) 17 SEA LEVEL PRESSURE IN MILLIBARS*10
0050 C ICOM(18) 18 STATION PRESSURE IN (IN-HG)*100
0051 C ICOM(19) 19 CLOUD COVER IN TENTHS
0052 C ICOM(20) 20 THUNDERSTORM, TORNADO, OR SQUALL
0053 C ICOM(21) 21 RAIN, RAIN SHOWERS, OR FREEZING RAIN
0054 C ICOM(22) 22 DRIZZLE, FREEZING DRIZZLE, OR RAIN SQUALLS
0055 C ICOM(23) 23 SNOW, SNOW PELLETS, OR ICE CRYSTALS
0056 C ICOM(24) 24 SNOW SHOWERS, SNOW GRAINS, OR SNOW SQUALLS

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0057 C      ICOM(25)      25      SLEET, HAIL, OR SMALL HAIL
0058 C      ICOM(26)      26      FOG, BLOWING DUST OR SAND
0059 C      ICOM(27)      27      SMOKE, HAZE, DUST, BLOWING SNOW OR SPRAY
0060 C      ICOM(28)      28      WIND DIRECTION ON A 36 PT. ROSE <10 DEG>
0061 C
0062 C      NOTE: FOR ICOM(20-27) SEE CODING SCHEME IN TDF14 REFERENCE MANUAL
0063 C
0064 C
0065 C      SUBROUTINES USED
0066 C
0067 C      IVAL <INTEGER FUNCTION> DECODES FIELD WITH
0068 C      SIGNED OVER PUNCHES
0069 C
0070 C      MOD <INTEGER LIBRARY FUNCTION> MODULAR REDUCTION
0071 C
0072 C      TOFCD <SUBROUTINE> DECODES THE 80 COLUMN HOURLY DATA
0073 C      WITHIN EACH TDF14 RECORD
0074 C
0075 C
0076 C      COMMON ICOM(28),JCOM(28),IDAT1(3),ISTA(3)
0077 C      DIMENSION IBUF(248),ICARD(40,6),IREG(2),IUP(3),IFLD(21),
0078 C      1      ISGN(21),IZERO(10)
0079 C      EQUIVALENCE (IBUF(9),ICARD),(REG,IREG,IA),(IREG(2),IB),
0080 C      1      (IZERO,IFLD(12))
0081 C      DATA IZERO/10*0/,ISGN(1)/1M0/,IFLD(1)/0/
0082 C      DATA IUP/2HUP,2H,8,2H /
0083 C      DATA IFLAG/0/
0084 C      DATA IFLAG/0/
0085 C      ISTAT=0
0086 C      IF(KOUNT.NE.0) GO TO 100
0087 C      IF(IFLAG.NE.0) GO TO 1
0088 C      9999 ICLAS=0
0089 C      CALL EXEC(17,LU,IBUF(2),248,JD,ID,ICLAS)
0090 C
0091 C      READ NEXT RECORD
0092 C
0093 C      REG=EXEC(21,ICLAS,IBUF(2),248)
0094 C      KOUNT=0
0095 C      IF(IAND(IA,128).EQ.0) GO TO 10
0096 C
0097 C      END OF FILE ENCOUNTERED
0098 C
0099 C      IFLAG=0
0100 C      ISTAT=1
0101 C      RETURN
0102 C
0103 C      10 IF(IAND(IA,40H).EQ.0) GO TO 20
0104 C
0105 C      END OF TAPE DETECTED
0106 C
0107 C      ISTAT=2
0108 C      CALL EXEC(3,LU+500H)
0109 C      WRITE(1,900) LU
0110 C      900 FORMAT(// " TDF14: END OF TAPE #",I4/)
0111 C      PAUSE
0112 C

```

```

0113 20    IF(IAND(IA,2).EQ.0) GO TO 30
0114 C
0115 C    PARITY ERROR ENCOUNTERED
0116 C
0117      I=MESSS(IUP,6)
0118      GO TO 9999
0119 C
0120 30    IF(IB.EQ.248) GO TO 40
0121 C
0122 C    RECORD LENGTH IS ABNORMAL
0123 C
0124      ISTAT=-2
0125 C
0126 C    SHIFT IBUF LEFT 1 BYTE TO ALIGN CULM 16 ON WORD BOUNDARY
0127 C
0128 40    ICLAS=0
0129      LFLAG=1
0130      REG=EXEC(17,LU,IBUF(2),248,JD,10,ICLAS)
0131      CALL ALIGN(IBUF,495)
0132      CALL EBCAS(498,IBUF,IBUF,IS)
0133 C
0134 C    DECODE DATE AND STATION
0135 C
0136      CALL CODE
0137      READ(IBUF,800)(ICOM(1),1=1,7)
0138 800    FORMAT(1X,I4,2A2,A1,3I2)
0139 C
0140 C    CHECK FOR STATION AND DATE
0141 C
0142      DO 50 I=2,4
0143      IF(ISTAT(I-1).NE.ICOM(I)) GO TO 1
0144 50    CONTINUE
0145      IF(IFLAG.NE.0) GO TO 100
0146      IF(IDAT1(3).GT.ICOM(5)) GO TO 1
0147      IF(IDAT1(1).GT.ICOM(6)) GO TO 1
0148      IF(IDAT1(2).GT.ICOM(7)) GO TO 1
0149      IFLAG=1
0150 C
0151 C    DECODE THIS HOURS DATA
0152 C
0153 100    KOUNT=KOUNT+1
0154      CALL TDFCD(ICOM,IFLD,ISGN,ICARD(1,KOUNT))
0155      CALL IVAL(ICOM(9),IFLD(2),ISGN(2),1)
0156      CALL IVAL(ICOM(11),IFLD(4),ISGN(4),3)
0157      CALL IVAL(ICOM(21),IFLD(14),ISGN(14),3)
0158      KOUNT=MOD(KOUNT,6)
0159      RETURN
0160      END

```

NO ERRORS## PROGRAM = 00695 COMMON = 00062

FIN4 COMPILER: HP24177 (SEPT. 1974)

```

0161      SUBROUTINE TDFCD(ICOM,IFLD,ISGN,ICARD)
0162 C
0163 C      THIS SUBROUTINE DECODES THE HOURLY CARD IMAGE WITHIN A TDF14 TAPE
0164 C      SEE THE TDF14 MANUAL AND THE COMMENTS IN SUBROUTINE TDF14 FOR A
0165 C      DESCRIPTION OF THE EXACT FORMAT
0166 C
0167      DIMENSION ICOM(28),IFLD(21),ISGN(21),ICARD(40)
0168      CALL CODE
0169      READ(ICARD,810) ICOM(8),IFLD(2),ISGN(2),(IFLD(1),ISGN(1),I=4,6),
0170 1 (ISGN(J),J=14,16)
0171 810    FORMAT(12,1X,12,A1,4X,11,A1,12,A1,12,A1,49X,3A1)
0172      RETURN
0173      END

```

*** NO ERRORS*** PROGRAM = 00110 COMMON = 00000

FTN4 COMPILER: HP24177 (SEPT. 1974)

```

0001 FIN,L
0002 SUBROUTINE SDF14(LU,ISTAT,KOUNT)
0003 C
0004 C THIS SUBROUTINE READS AND DECODES TDF14 FORMAT TAPES FROM NOAA
0005 C
0006 C ON EACH CALL, ONE HOUR'S WORTH OF DATA IS MOVED INTO THE
0007 C COMMON BUFFER
0008 C
0009 C NOTE:
0010 C 1. ALL MISSING OR INVALID DATA IS RETURNED AS 9999
0011 C 2. SCALING OF SOME PARAMETERS IS NECESSARY, SEE TDF-14
0012 C REFERENCE MANUAL FOR PROPER SCALING
0013 C 3. DATA IS RETURNED IN INTEGER FORMATS ONLY
0014 C
0015 C CALLING SEQUENCE
0016 C CALL SDF14(LU,ISTAT,KOUNT)
0017 C
0018 C WHERE: LU =LOGICAL UNIT OF MAGNETIC TAPE
0019 C KOUNT=NUMBER OF HOURS READ FROM THIS
0020 C TAPE BLOCK
0021 C SET KOUNT=0 IF NEW TAPE BLOCK
0022 C IS DESIRED
0023 C OTHERWISE DO NOT ALTER
0024 C ISTAT=RETURNED STATUS AFTER CALL
0025 C -2=ILLEGAL RECORD LENGTH ENCOUNTERED
0026 C -1=PARITY ERROR ENCOUNTERED
0027 C 0=NO ERRORS
0028 C 1=EOL ENCOUNTERED
0029 C 2=EOT ENCOUNTERED
0030 C
0031 C CONTENTS OF COMMON BUFFER
0032 C
0033 C VARIABLE LOCATION DESCRIPTION
0034 C ICOM(1) 1 TAPE FORMAT ID
0035 C ICOM(2-4) 2-4 STATION NUMBER IN HOLLERITH
0036 C ICOM(5) 5 YEAR <00-99>
0037 C ICOM(6) 6 MONTH <1-12 JAN-DEC>
0038 C ICOM(7) 7 DAY
0039 C ICOM(8) 8 HOUR <0-23> LST
0040 C ICOM(9) 9 CEILING HEIGHT 100'S OF FT.
0041 C ICOM(10) 10 VISIBILITY <IN TDF14 CODING SCHEME>
0042 C ICOM(11) 11 WIND DIRECTION ON 16 PT. ROSE
0043 C < IN TDF14 CODING SCHEME >
0044 C ICOM(12) 12 WIND SPEED IN KNOTS
0045 C ICOM(13) 13 DRY BULB TEMPERATURE IN WHOLE DEGS F
0046 C ICOM(14) 14 WET BULB TEMPERATURE IN WHOLE DEGS F
0047 C ICOM(15) 15 DEW POINT TEMPERATURE IN WHOLE DEGS F
0048 C ICOM(16) 16 RELATIVE HUMIDITY IN WHOLE PERCENT
0049 C ICOM(17) 17 SEA LEVEL PRESSURE IN MILLIBARS*10
0050 C ICOM(18) 18 STATION PRESSURE IN (IN-HG)*100
0051 C ICOM(19) 19 CLOUD COVER IN TENTHS
0052 C ICOM(20) 20 THUNDERSTORM, TORNADO, OR SQUALL
0053 C ICOM(21) 21 RAIN, HAIN SHOWERS, OR FREEZING RAIN
0054 C ICOM(22) 22 DRIZZLE - FREEZING DRIZZLE, OR RAIN SQUALLS
0055 C ICOM(23) 23 SNOW, W PELLETS, OR ICE CRYSTALS
0056 C ICOM(24) 24 SNOW FLAKES, SNOW GRAINS, OR SNOW SQUALLS

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0057 C      ICOM(25)      25      SLEET, HAIL, OR SMALL HAIL
0058 C      ICOM(26)      26      FOG, BLOWING DUST OR SAND
0059 C      ICOM(27)      27      SMOKE, HAZE, DUST, BLOWING SNOW OR SPRAY
0060 C      ICOM(28)      28      WIND DIRECTION ON A 36 PT. ROSE <10 DEG>
0061 C
0062 C      NOTE: FOR ICOM(20-27) SEE CODING SCHEME IN IDF14 REFERENCE MANUAL
0063 C
0064 C
0065 C      SUBROUTINES USED
0066 C
0067 C      IVAL <INTEGER FUNCTION> DECODES FIELD WITH
0068 C      SIGNED OVER PUNCHES
0069 C
0070 C      MOD <INTEGER LIBRARY FUNCTION> MODULAR REDUCTION
0071 C
0072 C      IDFCO <SUBROUTINE> DECODES THE 80 COLUMN HOURLY DATA
0073 C      WITHIN EACH IDF14 RECORD
0074 C
0075 C
0076 C      COMMON JCOM(28),ICOM(28),IDAT1(3),IDUMY(3),ISTA(3)
0077 C      DIMENSION IBUF(249),ICARD(40,6),IREG(2),IUP(3),IFLD(21),
0078 C      1      ISGN(21),IZERO(10)
0079 C      EQUIVALENCE (IBUF(9),ICARD),(REG,IREG,IA),(IREG(2),IR),
0080 C      1      (IZERO,IFLD(12))
0081 C      DATA IZERO/10*0/,ISGN(1)/1H0/,IFLD(1)/0/
0082 C      DATA IUP/2HUP,2H,8,2H /
0083 C      DATA LFLAG/0/
0084 C      DATA IFLAG/0/
0085 C      ISTAT=0
0086 C      IF(KOUNT.NE.0) GO TO 100
0087 C      IF(LFLAG.NE.0) GO TO 1
0088 C      9999 ICLAS=0
0089 C      CALL EXEC(17,LU,IBUF(2),248,JD,10,ICLAS)
0090 C
0091 C      READ NEXT RECORD
0092 C
0093 C      1      REG=EXEC(21,ICLAS,IBUF(2),248)
0094 C      KOUNT=0
0095 C      IF(IAND(IA,128).EQ.0) GO TO 10
0096 C
0097 C      END OF FILE ENCOUNTERED
0098 C
0099 C      LFLAG=0
0100 C      ISTAT=1
0101 C      RETURN
0102 C
0103 C      10      IF(IAND(IA,408).EQ.0) GO TO 20
0104 C
0105 C      END OF TAPE DETECTED
0106 C
0107 C      ISTAT=2
0108 C      CALL EXEC(5,LU+5008)
0109 C      WRITE(1,900) LU
0110 C      900 FORMAT(// " IDF14: END OF TAPE #",14/)
0111 C      PAUSE
0112 C

```

```

0113 20 IF(IAND(1A,2).EQ.0) GO TO 30
0114 C
0115 C PARITY ERROR ENCOUNTERED
0116 C
0117 I=MESSS(IOP,6)
0118 GO TO 9999
0119 C
0120 50 IF(1B.EQ.248) GO TO 40
0121 C
0122 C RECORD LENGTH IS ABNORMAL
0123 C
0124 ISTAT=-2
0125 C
0126 C SHIFT IBUF LEFT 1 BYTE TO ALIGN CULM 16 ON WORD BOUNDARY
0127 C
0128 40 ICLAS=0
0129 LFLAG=1
0130 REG=EXEC(17,LU,IBUF(2),248,JD,ID,ICLAS)
0131 CALL ALIGN(IBUF,495)
0132 CALL EHCAS(498,IBUF,IBUF,15)
0133 C
0134 C DECODE DATE AND STATION
0135 C
0136 CALL CODE
0137 READ(IBUF,800)(ICOM(1),I=1,/)
0138 800 FORMAT(1X,14,2A2,A1,3I2)
0139 C
0140 C CHECK FOR STATION AND DATE
0141 C
0142 DO 50 I=2,4
0143 IF(1STA(I-1).NE.ICOM(1)) GO TO 1
0144 50 CONTINUE
0145 IF(1FLAG.NE.0) GO TO 100
0146 IF(1DAT1(3).GT.ICOM(5)) GO TO 1
0147 IF(1DAT1(1).GT.ICOM(6)) GO TO 1
0148 IF(1DAT1(2).GT.ICOM(7)) GO TO 1
0149 IFLAG=1
0150 C
0151 C DECODE THIS HOURS DATA
0152 C
0153 100 KOUNT=KOUNT+1
0154 CALL TDFCD(ICOM,IFLD,ISGN,ICARD(1,KOUNT))
0155 CALL IVAL(ICOM(9),IFLD(2),ISGN(2),1)
0156 CALL IVAL(ICOM(11),IFLD(4),ISGN(4),3)
0157 CALL IVAL(ICOM(21),IFLD(14),ISGN(14),5)
0158 KOUNT=MOD(KOUNT,6)
0159 RETURN
0160 END

```

*** NO ERRORS*** PROGRAM = 00096 COMMON = 00065

#01 WBAN/MIAA OVER PUNCH DECODER

```

0004                                SUP
0005*
0006* THIS SUBROUTINE WILL TEST ANY DATA ITEM WITH A POSSIBLE
0007* SIGN OVER THE UNITS POSITION PUNCH READ AS AN A1, AND
0008* THE HIGH ORDER POSITIONS < GREATER THAN UNITS > READ
0009* AS AN I SPEC OF THE PROPER WIDTH
0010*
0011* ON ENTRY
0012*
0013*         IFLD=HIGH ORDER VALUE <IF NOT PRESENT = 0>
0014*         ISGN=UNITS CHARACTER WITH POSSIBLE OVER PUNCH
0015*
0016* ON RETURN
0017*
0018*         ICOM IS THE PROPER SIGNED INTEGER OR 999 IF
0019*         ISGN IS * OR BLANK
0020*
0021* EXAMPLE
0022*
0023*         S
0024*         FIELD ON INPUT      xxxx
0025*         READ WITH FORMAT    13,A1
0026*         INTO VARIABLES      IFLD,ISGN
0027*
0028*         CALLING STATEMENT   CALL IVAL(ICOM,IFLD,ISGN,N)
0029*
0030*         WHERE ICOM,IFLD,ISGN CAN BE ARRAYS OF DIMENSION N
0031*         OR SIMPLE VARIABLES WITH N=1
0032*
0033* NOTE: IT IS THE USERS RESPONSIBILITY TO DO ANY NECESSARY SCALING
0034*
0035* THIS ROUTINE WAS ADAPTED FROM THE ROUTINE IN THE TDF-14 SURFACE
0036* OBSERVATIONS MANUAL, OCT 1975

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#01 WMAN/NOAA OVER PUNCH DECODER

```

0038 00000      A      EQU 0
0039 00001      B      EQU 1
0040              INT IVAL
0041              EXT .ENTH
0042*
0043 00000 000000 ICOM BSS 1      PARAMTER LINKAGE AREA
0044 00001 000000 IFLD BSS 1
0045 00002 000000 ISGN BSS 1
0046 00003 000000 NUM  BSS 1
0047*
0048 00004 000000 IVAL NOP      ENTRY POINT
0049 00005 016001X JSB .ENTH    PICK UP PARAMETER
0050 00006 000000R DEF ICOM     LINKAGE ADDRESSES
0051*
0052 00007 162003H LDA NUM,1     LOAD NUMBER OF FIELDS
0053 00010 003004 CMA,INA       TO DECODE AND MAKE NEGATIVE
0054 00011 072003H STA NUM      SAVE IT
0055*
0056*      LOOP FOR EACH FIELD TO DECODE
0057*
0058 00012 006400 LOOP1 CLH      LOAD HIGH ORDER PART
0059 00013 162001H LDA IFLD,1    OF FIELD INTO BA REGISTER
0060 00014 104400  DST HIGH      PAIR AND SAVE IT
0061 00016 162002R LDA ISGN,1    LOAD OVER PUNCH CHARACTER
0062 00017 052147R CPA =A        CHECK FOR BLANK
0063 00020 026047R JMP MISS      YES - FIELD IS MISSING
0064 00021 052150R CPA =A*       CHECK FOR A
0065 00022 026047R JMP MISS      YES - FIELD IS MISSING
0066*
0067*      SET UP BUFFER ADDRESSES FOR CHARACTER SEARCH LOOP
0068*
0069 00023 066106H LDH ADNUM      LOAD AND SAVE
0070 00024 076103H STH INUM      STARTING ADDRESS
0071 00025 066107R LDB ADPOS      OF OVER PUNCH
0072 00026 076104R STH POSN      CHARACTER BUFFERS
0073 00027 066110R LDB ADNEG
0074 00030 076105H STH NEGN
0075 00031 006400 CLH           SET DIGIT COUNTER TO ZERO
0076*
0077*      DECODE OVER PUNCHED CHARACTER LOOP
0078*
0079 00032 152103H LOOP2 CPA INUM,1 IS IT H ?
0080 00033 026057H JMP POS      YES
0081 00034 152104R CPA POSN,1   IS IT +H ?
0082 00035 026057H JMP POS      YES
0083 00036 152105H CPA NEGN,1   IS IT -H ?
0084 00037 026067H JMP NEG      YES
0085 00040 056151H CPB =D10     END OF SEARCH ?
0086 00041 026047R JMP MISS     YES - CHARACTER IS UNRECOGNIZABLE
0087*
0088 00042 036103R ISZ INUM      INCREMENT BUFFER
0089 00043 036104R ISZ POSN      SEARCH ADDRESS
0090 00044 036105R ISZ NEGN      POINTERS
0091 00045 006004 INB          INCREMENT DIGIT COUNTER
0092 00046 026032H JMP 1        CONTINUE SEARCH
0093*

```

#01 ADAN/00AA OVER PUNCH DECODER

```

0094*      MAKE VALUE MISSING <9999>
0095*
0096 00047 062152R MISS LNA =09999 SET ICOM TO
0097 00050 172000R STA ICOM,I MISSING <9999>
0098*
0099*      END LOOP1 TESTS
0100*
0101 00051 036000R CONT ISZ ICOM INCREMENT LINKAGE
0102 00052 036001R ISZ IFLD BUFFER ADDRESSES
0103 00053 036002R ISZ ISGN
0104*
0105 00054 036003R ISZ NUM DONE YET ?
0106 00055 026012R JMP LOOP1 NO - DO NEXT FIELD
0107 00056 126004R JMP IVAL,I YES - RETURN
0108*
0109*      DIGIT IS POSITIVE - CALCULATE FIELD VALUE
0110*
0111 00057 076100R POS STB TEMP SAVE DIGIT
0112 00050 104200 DLD HIGH RECOVER HIGH ORDER PART
0113 00052 100200 MPY =010 MULTIPLE BY 10
0114 00054 042100R ADA TEMP ADD IN UNITS DIGIT
0115 00055 172000R STA ICOM,I PLACE VALUE IN ICOM
0116 00056 026051R JMP CONT GO TO END LOOP TESTS
0117*
0118*      DIGIT IS NEGATIVE - CALCULATE FIELD VALUE
0119*
0120 00057 076100R NEG STB TEMP SAVE DIGIT
0121 00070 104200 DLD HIGH RECOVER HIGH ORDER PART
0122 00072 100200 MPY =010 MULTIPLE BY 10
0123 00074 042100R ADA TEMP ADD IN UNITS DIGIT
0124 00075 005004 CMA,INA MAKE NEGATIVE
0125 00076 172000R STA ICOM,I PLACE VALUE IN ICOM
0126 00077 026051R JMP CONT GO TO END LOOP TESTS

```

#01 WHAN/00AA OVER PUNCH DECODER

```

0128*    CONSTANT AND DATA STORAGE AREA
0129*
0130 00100 000000 TEMP BSS 1    TEMPORARY STORAGE FOR UNITS DIGIT
0131 00101 000000 HIGH BSS 2    TEMPORARY STORAGE FOR HIGH ORDER PART OF
0132 00103 000000 INUM BSS 1    POINTER INTO UNSIGNED DIGIT BUFFER
0133 00104 000000 POSN BSS 1    POINTER INTO +SIGNED DIGIT BUFFER
0134 00105 000000 NEGN BSS 1    POINTER INTO -SIGNED DIGIT BUFFER
0135 00106 000111R ADNUM DEF N    ADDRESS OF UNSIGNED DIGIT BUFFER
0136 00107 000123R ADPOS DEF PLUS ADDRESS OF +SIGNED DIGIT BUFFER
0137 00110 000135R ADNEG DEF MINUS ADDRESS OF -SIGNED DIGIT BUFFER
0138 00111 030040 N ASC 10,0 1 2 3 4 5 6 7 8 9
0139 00123 075440 PLUS OCT 75440
0140 00124 040440 ASC 9,A H C D E F G H I
0141 00135 076440 MINUS OCT 76440
0142 00136 045040 ASC 9,J K L M N O P Q R
0143                                END
** NO ERRORS *TOTAL **HTL ASMH 760924**

```

#01

```

0001          ASMB,L,C,I
0002 00000          NAM ALIGN,7 10F14 BUFFER ALIGNMENT ROUTINE 11/9/76
0003          ENT ALIGN
0004          EXT JENTR
0005 00000          A      EQU 0
0006 00001          H      EQU 1
0007 00000 000000  IBUF  HSS 1
0008 00001 000000  ILEN  HSS 1
0009 00002 000000  ALIGN NOP          ENTRY POINT
0010 00003 016001X  JSH JENTR      PICK UP PARAMETER ADDRESSES
0011 00004 000000R  DEF IBUF
0012 00005 162001R  LDA ILEN,I      LOAD NUMBER OF BYTES TO MOVE
0013 00006 072001R  STA ILEN        SAVE IT.
0014 00007 062000R  LDA IBUF        CALCULATE ENDING
0015 00010 000066   CLF,ELA        BYTE ADDRESS
0016 00011 070001   STA R          SAVE IN R-REGISTER
0017 00012 002004   INA            CALCULATE BEGINNING BYTE ADDRESS A-REGIS
0018 00013 105765   MBT ILEN        MOVE BYTES
          00014 000001R
          00015 000000
0019 00016 126002R  JMP ALIGN,1     RETURN
0020          END
** NO ERRORS *TOTAL **RTE ASMB 760924**

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Climatology-Generating Program - WIND

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FEN. 12:06 PM TUE., 13 DEC., 1977

```

0001 FEN,L,1,C
0002 PROGRAM SUN
0003 C WRITTEN BY R. L. PEACE M R 1 OCTOBER 1977
0004 C
0005 C THIS PROGRAM COMPUTES THE SOLAR ANGLE FOR EACH DAY OF THE YEAR
0006 C AND EACH HOUR FROM 4AM TO 8PM LST FOR A LOCATION SPECIFIED BY
0007 C IT'S LONGITUDE AND LATITUDE (DEG.&MINUTES). THE PROGRAM THEN
0008 C CLASSIFIES EACH SOLAR ANGLE INTO ONE OF 5 INSOLATION CLASSES BY:
0009 C CLASS SOLAR ALTITUDE
0010 C 0 <=0 DEG
0011 C 1 >0,<=15 DEG
0012 C 2 >15,<=35 DEG
0013 C 3 >35,<=60 DEG
0014 C 4 >60 DEG
0015 C LASTLY THE PROGRAM CONSTRUCTS A 18X31 SIZE TABLE FOR EACH MONTH
0016 C OF THE YEAR AND STORES THEM IN DISK FOR RECALL BY SUBROUTINE
0017 C STAR. BECAUSE OF THE 4AM TO 8PM AND CORRESPONDING OUTPUT ARRAY
0018 C SIZE LIMITATIONS, THIS PROGRAM IS ONLY USABLE FOR LATITUDES OF
0019 C 50 DEG OR LESS IN THE NORTHERN HEMISPHERE. BECAUSE OF THE METHOD
0020 C OF COMPUTING LONGITUDINAL OFFSET FROM THE TIME ZONE MERIDIANS,
0021 C THIS PROGRAM IS CONFINED TO LONGITUDES BETWEEN 64.5 DEG W AND
0022 C 127.5 DEG W. THE VALUES OF SOLAR DECLINATION (DECD&DECM) AND
0023 C "EQUATION OF TIME" (CORM&CONS) ARE FROM THE SMITHSONIAN
0024 C METEOROLOGICAL TABLES PAGES 495&496.
0025 C THIS PROGRAM ALSO PRINTS THE 12 TABLES AFTER RECALL FROM DISK
0026 C
0027 C DIMENSION IDCB(144),NAME(3),DECD(9,12),CORM(9,12),ICLAS(18,31),
0028 C ILECD(9,12),LECM(9,12),MORM(9,12),MOMS(9,12),DECL(32),TMCOR(32)
0029 C REAL LAT,LATM,LONG,LONGM
0030 C DATA NAME /2HST, 2HAR, 2HDF/
0031 C DATA LECD/-23,-22,-22,-21,-20,-20,-19,-18,-17,-17,-16,-14,-13,-12,
0032 C 1-10,-9,-7,-7,-7,-6,-4,-3,-1,-0,1,3,4,4,5,7,8,10,11,12,14,14,14,16,
0033 C 21,18,19,20,20,21,21,22,22,23,23,23,23,23,23,22,22,21,21,20,
0034 C 31,18,18,18,17,16,14,13,12,11,9,8,8,7,5,4,2,1,-0,-2,-2,-2,-4,-5,-7
0035 C 4,-8,-10,-11,-13,-14,-14,-15,-16,-17,-18,-19,-20,-21,-21,-21,-22,
0036 C 5-22,-23,-23,-23,-23,-23,-23,-23/
0037 C DATA LECM/-4,-42,-13,-37,-54,-5,-9,-8,-19,-19,-10,-55,-37,-15,-50,
0038 C 1-23,-53,-53,-53,-21,-48,-14,-39,-5,30,4,14,14,46,17,46,12,35,56,13
0039 C 2,50,50,2,9,11,9,2,49,30,57,57,28,52,10,22,27,25,17,10,10,52,28,57,
0040 C 321,38,50,57,14,14,12,6,55,41,23,2,39,35,35,7,37,6,34,1,-32,-6,-53,
0041 C 4-53,-26,-58,-29,-58,-25,-50,-12,-11,-11,-27,-38,-45,-48,-45,-36,
0042 C 5-21,-41,-41,-16,-45,-6,-20,-26,-25,-17,-4/
0043 C DATA MORM/-3,-5,-6,-8,-9,-11,-12,-13,-13,-13,-14,-14,-14,-14,-13,
0044 C 1-13,-12,-12,-12,-11,-10,-9,-8,-7,-6,-5,-4,-4,-3,-1,-0,0,1,1,2,2,2,
0045 C 23,3,3,3,3,3,2,2,2,1,1,0,-0,-1,-2,-3,-3,-3,-4,-4,-5,-5,-6,-6,-6,-6,
0046 C 3-6,-5,-5,-4,-4,-3,-2,-1,-0,-0,1,2,3,5,6,8,9,10,10,11,12,13,14,15,
0047 C 415,16,16,16,16,15,15,14,13,11,11,11,9,8,6,4,2,0,-1,-3/
0048 C DATA MOMS/-14,-6,-50,-27,-54,-10,-14,-5,-34,-34,-2,-17,-20,-10,-50
0049 C 1,-19,-38,-38,-38,-48,-51,-49,-42,-32,-20,-7,-12,-12,-1,-52,-47,13,
0050 C 26,53,33,50,50,17,35,44,44,34,16,51,27,27,49,6,18,-33,-25,-17,-7,
0051 C 3-31,-31,-16,-56,-30,-57,-15,-24,-23,-17,-17,-59,-33,-57,-12,-19,
0052 C 4-18,-10,-15,-15,2,22,45,10,35,0,22,1,1,17,27,30,25,10,46,10,21,21,
0053 C 523,12,47,10,18,15,59,16,16,43,1,12,17,19,20,-39,-14/
0054 C CALL OPEN (IDCB,IER,NAME)
0055 C IF (IER) 13,1,1

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SUN 12106 PM 10E., 13 DEC., 1977

```

0056 13 WRITE(1,14) IFK
0057 14 FORMAT("OPEN ERROR = ",17)
0058 C READ NORTH LATITUDE AND WEST LONGITUDE OF THE STATION IN DEGREES
0059 C AND MINUTES. IF THE STATION IS WITHIN THE BOUNDRIES OF ITS TIME
0060 C ZONE MOVE = 0
0061 C IF THE STATION IS WEST OF ITS SOLAR TIME ZONE BOUNDRY MOVE = 1
0062 C (NO US STATIONS ARE EAST OF THEIR PROPER TIME ZONES)
0063 C EASTERN TIME ZONE 67.5 TO 82.5 DEG
0064 C CENTRAL TIME ZONE 82.5 TO 97.5 DEG
0065 C MOUNTAIN TIME ZONE 97.5 TO 112.5 DEG
0066 C PACIFIC TIME ZONE 112.5 TO 127.5 DEG
0067 C (IE., MANY LOCATIONS LIKE MICHIGAN, WESTERN GEORGIA AND FLORIDA ARE
0068 C CALLED EASTERN WHEN THEY SHOULD BE CENTRAL; MOST OF THE WESTERN
0069 C PORTIONS OF THE DEKODAS, NEBRASKA, KANSAS, OKLAHOMA AND TEXAS
0070 C USE CENTRAL TIME WHEN THEY SHOULD USE MOUNTAIN TIME)
0071 1 READ (5,*) LAT, LATM, LONG, LONGM,MOVE
0072 ILAT = LAT
0073 ILATM = LATM
0074 ILONG = LONG
0075 ILONGM = LONGM
0076 C CONVERSION FROM DEGREES AND MINUTES TO RADIANS
0077 RADDD=.0174532925
0078 RADMM=.0002908882
0079 C CONVERT LATITUDE AND LONGITUDE TO RADIANS
0080 LAT=LAT*RADDD+LATM*RADMM
0081 LONG=LONG*RADDD+LONGM*RADMM
0082 C CONVERT LONGITUDE TO RADIANS EAST (+) OR WEST (-) OF THE LOCAL
0083 C TIME-ZONE MERIDIAN NEAREST THE STATION (75, 90, 105 OR 120 DEG
0084 C WEST). CHECK WHETHER EAST OR WEST OF 97.5 DEG .
0085 IF (LONG -1.701695) 3, 3, 2
0086 C WEST, CHECK WHETHER EAST OR WEST OF 112.5 DEG
0087 2 IF (LONG -1.963495) 6, 6, 7
0088 C EAST, CHECK WHETHER EAST OR WEST OF 82.5 DEG
0089 3 IF (LONG - 1.439896) 4,4,5
0090 C EAST OF 82.5 DEG SUBTRACT LONG FROM 75 DEG
0091 4 LONG=1.3089969-LONG
0092 GO TO 8
0093 C BETWEEN 82.5 AND 97.5 SUBTRACT LONG FROM 90 DEG
0094 5 LONG=1.5707962-LONG
0095 GO TO 8
0096 C BETWEEN 97.5 AND 112.5 SUBTRACT LONG FROM 105 DEG
0097 6 LONG=1.8325956-LONG
0098 GO TO 8
0099 C WEST OF 112.5 SUBTRACT LONG FROM 120 DEG
0100 7 LONG=2.094395-LONG
0101 C LONG NOW= ANGULAR DEPARTURE FROM THE LOCAL STANDARD MERIDIAN
0102 C EAST =+ WEST =-. CONVERT ALL DECLINATION VALUES TO RADIANS AND
0103 C STORE IN DECD
0104 8 DO 10 I=1,9
0105 DO 9 J=1,12
0106 9 DECD(I,J) = FLOAT(LECD(I,J)) * RADDD + FLOAT(LECM(I,J)) * RADMM
0107 10 CONTINUE
0108 C CONVERT ALL EQUINOX-OF-TIME VALUES TO RADIANS AND STORE IN CORM
0109 DO 12 I=1,9
0110 DO 11 J=1,12

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0111 11 CORM(I,J) = ((FLOAT(MORM(I,J)) + FLOAT(MORS(I,J))/60.) * .25 * RADN) + LONG
0112 12 CONTINUE
0113 MONTH = 1
0114 C FOR THE CURRENT MONTH ONLY (STARTING WITH JANUARY) BUILD A TABLE
0115 C OF DECLINATIONS FOR EACH OF 31 POSSIBLE DAYS BY INTERPOLATION
0116 C (32 ARE COMPUTED FOR SYMETRY ONLY).
0117 C
0118 C RETURN HERE FOR EACH NEW MONTH
0119 15 J=1
0120 DO 16 I=1,8
0121 DELTA = (DECD(I+1, MONTH) - DECD(I, MONTH)) / 4.
0122 DECL(J) = DECD(I, MONTH)
0123 J = J + 1
0124 DECL(J) = DECD(I, MONTH) + DELTA
0125 J = J + 1
0126 DECL(J) = DECD(I, MONTH) + (DELTA * 2.)
0127 J = J + 1
0128 DECL(J) = DECD(I, MONTH) + (DELTA * 3.)
0129 16 J = J + 1
0130 C EACH DAY'S DECLINATION IN RADIAN IN DECL. BUILD A TABLE OF TIME
0131 C CORRECTION FOR EACH DAY OF THE MONTH BY INTERPOLATION
0132 C (32 ARE COMPUTED BECAUSE OF DO LOOP)
0133 J=1
0134 DO 20 I=1,8
0135 DELTA = (CORM(I+1, MONTH) - CORM(I, MONTH)) / 4.
0136 TMCOR(J) = CORM(I, MONTH)
0137 J = J + 1
0138 TMCOR(J) = CORM(I, MONTH) + DELTA
0139 J = J + 1
0140 TMCOR(J) = CORM(I, MONTH) + (DELTA * 2.)
0141 J = J + 1
0142 TMCOR(J) = CORM(I, MONTH) + (DELTA * 3.)
0143 20 J = J + 1
0144 C COMPUTE SIN OF SOLAR ALTITUDE FOR EACH HOUR FROM 4AM UNTIL 8PM
0145 C LST, CONVERT TO INSOLATION FACTORS 0-4. ANGLE = HOURLY ANGULAR
0146 C SOLAR DISPLACEMENT IN RADIAN
0147 ANGLE = 15. * HADD
0148 SLAT = SIN(LAT)
0149 CLAT = COS(LAT)
0150 C LOOP BY DAY (J)
0151 DO 56 J=1,31
0152 SDXL = SIN(DECL(J)) * SLAT
0153 COXL = COS(DECL(J)) * CLAT
0154 TCORH = TMCOR(J)
0155 C LOOP BY HOUR (I) FOR A GIVEN DAY (J)
0156 IFLAG = 0
0157 DO 55 I=1,18
0158 C HOUR STARTS AT 4AM END AT 8PM
0159 HOUR = 1 + J
0160 TIME = (HOUR - 12.) * ANGLE + TCORH
0161 C SNALT = THE SIN OF THE SOLAR ELEVATION
0162 SNALT = SDXL + COXL * COS(TIME)
0163 IF (SNALT) 40, 40, 44
0164 C SOLAR ANGLE 0 OR = (NIGHTTIME) CLASS = 0
0165 C TEST FOR MORNING OR EVENING

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0160      40 IF(IFLAG) 41,41,42
0167 C      BEFORE DAWN, SET CLASS =0 AND CONTINUE
0168      41 ICLAS(I,J)=0
0169      GO TO 55
0170 C      AFTER SUNSET, SET PREVIOUS HOUR AND ALL REMAINING HOURS =0,
0171 C      BRANCH TO NEXT DAY
0172      42 I=I-1
0173      DO 43 K=I,18
0174      43 ICLAS(K,J)=0
0175      GO TO 56
0176 C      SOLAR ANGLE >0, DAYTIME, CHECK FOR DAWN
0177      44 IF (IFLAG) 45,45,46
0178 C      FIRST HOUR OF DAYLIGHT SET CLASS TO 0 AND IFLAG=1
0179      45 ICLAS (I,J)=0
0180      IFLAG=1
0181      GO TO 55
0182 C      NOT FIRST HOUR OF DAYLIGHT COMPUTE SOLAR ELEVATION CLASS
0183 C      1, 2, 3, OR 4
0184 C      TEST FOR ANGLE <=35 DEG OR >35 DEG
0185      46 IF(SNALT=.5735764) 47,47,50
0186 C      ANGLE <=35 DEG, TEST WHETHER <=15 DEG
0187      47 IF(SNALT=.2588190) 48,48,49
0188 C      ANGLE <=15 DEG CLASS=1
0189      48 ICLAS (I,J)=1
0190      GO TO 55
0191 C      ANGLE > 15 DEG AND <= 35 DEG CLASS =2
0192      49 ICLAS (I,J)=2
0193      GO TO 55
0194 C      ANGLE > 35 DEG, TEST WHETHER <= 60 DEG
0195      50 IF(SNALT=.8660254) 51,51,52
0196 C      ANGLE > 35 DEG AND <= 60 DEG CLASS =3
0197      51 ICLAS(I,J) = 3
0198      GO TO 55
0199 C      ANGLE > 60 DEG CLASS=4
0200      52 ICLAS (I,J)=4
0201      55 CONTINUE
0202 C      DAY FINISHED
0203      56 CONTINUE
0204      IF(MOVE,EQ,0) GO TO 60
0205 C      TIME SHIFT FOR STATIONS WEST OF THEIR PROPER SOLAR TIME ZONE
0206      DO 58 I=1,16
0207      DO 57 J=1,31
0208      57 ICLAS(18-I,J) = ICLAS(17-I,J)
0209      58 CONTINUE
0210 C      TABLE FOR MONTH FILLED STORE IN DISK
0211      60 CALL WRITF (IDCB,IER,ICLAS,558 ,MONTH)
0212      IF(IER) 70,62,62
0213 C      READ FILE BACK FROM DISK AND WRITE TO PRINTER
0214      62 DO 163 I = 1,18
0215      DO 162 J = 1,31
0216      162 ICLAS(I,J) = 0
0217      163 CONTINUE
0218      CALL READF(IDCB,IER,ICLAS,558,LEN,MONTH)
0219      IF(IER) 70,63,63
0220      63 WRITE(6,64) MONTH, LAT, ILATM, ILONG, ILONM
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0221      64 FORMAT(1H1,14X,"MONTH ",12/2X,"LAT = ",12,"DEG",15,"MIN LONG = ",
0222      113,"DEG ",12,"MIN")
0223      IF(MOVE) 65,65,67
0224      65 WRITE(6,66)((ICLAS(I,J),I=1,17),J=1,31)
0225      66 FORMAT(7X,"STATION IN SOLAR TIME ZONE"//31(3X,17I2/))
0226 C      STEP MONTH AND TEST FOR COMPLETE SET
0227      MONTH=MONTH+1
0228      IF(MONTH=12)15,15,69
0229      67 WRITE(6,68)((ICLAS(I,J),I=1,17),J=1,31)
0230      68 FORMAT(5X,"STATION WEST OF SOLAR TIME ZONE"//31(3X,17I2/))
0231 C      STEP MONTH AND TEST FOR COMPLETE SET
0232      MONTH=MONTH+1
0233      IF(MONTH=12)15,15,69
0234 C      ALL 12 TABLES IN DISK FOR 12 HOURS FROM 4AM TO 8PM LOCAL STANDARD
0235 C      TIME CLOSE DISK FILE AND END
0236      69 CALL CLOSE (IDCB)
0237      GO TO 75
0238 C      ERROR IN OUTPUT DETECTED WRITE ERROR MESSAGE
0239      70 WRITE(1,72) IER,MONTH
0240      72 FORMAT("DISK FILE ERROR = ",17," ON MONTH ",12/)
0241      75 CONTINUE
0242      END
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FIN4 COMPILER: HP92060-16092 REV. 1726

** NO WARNINGS ** NO ERRORS ** PROGRAM = 02H89 COMMUN = 00000

A-62

[illegible]

FIN. 11:20 AM FRI., 16 DEC., 1977

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0001 FIN,L
0002      PROGRAM OPEN
0003      DIMENSION IDCB(100),ISIZE(2),NAME(3)
0004      DATA ISIZE/70,558/
0005      DATA NAME/2HST,2HAR,2HDF/
0006      CALL CREAT(IDCB,IER,NAME,ISIZE,2)
0007      IF(IER) 10,20,20
0008      10 WRITE(1,11)IER
0009      11 FORMAT(" ERROR FLAG = ",17)
0010      STOP
0011      20 CALL CLOSE(IDCB)
0012      STOP
0013      END
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FIN4 COMPILER: HP42060-16092 REV. 1726

** NO WARNINGS ** , NO ERRORS ** PROGRAM = 00194

COMMON = 00000

FIN. 4:23 PM THU., 22 DEC., 1977

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0001 FIN,L,I,C
0002 PROGRAM WIND2
0003 C MODIFIED BY S HOWARD ON DEC. 9, 1977
0004 C BY R.L. PEACE MKI OCTOBER 1977
0005 C
0006 C THIS IS A SPECIAL-PURPOSE PROGRAM TO GENERATE FREQUENCY
0007 C DISTRIBUTION TABLES OF WIND SPEED DISTRIBUTION BY MONTH, BY DAY
0008 C AND NIGHT AND DIRECTION; THE DURATIONS OF WIND SPEEDS GREATER
0009 C THAN AND LESS THAN OR EQUAL TO 4M/S, THE DURATION OF WIND SPEEDS
0010 C 10-24 M/S AND 25 M/S OR GREATER; AND CALCULATED MAXIMUM 2 SEC.
0011 C GUST VELOCITY. THE DATA SOURCES ARE SURFACE WINDS READ FROM
0012 C MAGNETIC TAPE BY THE SUBROUTINE IDF14, EXTRAPOLATED FROM
0013 C ANEMOMETER HEIGHT TO A HUB HEIGHT OF 150 FT AND CORRECTED FOR THE
0014 C DIFFERENCES BETWEEN THE WEATHER STATION AND THE PROPOSED WIND
0015 C GENERATION SITE.
0016 C THE OBSERVED WIND IS FIRST USED (ALONG WITH MONTH, DAY, HOUR,
0017 C CEILING HEIGHT AND CLOUD COVER) TO COMPUTE THE PASQUILL STABILITY
0018 C CLASS BY SUBROUTINE STAR. IT IS THEN CONVERTED FROM KNOTS TO M/S
0019 C AND EXTRAPOLATED FROM ANEMOMETER HEIGHT TO HUB-HEIGHT OF 150 FT
0020 C USING THE POWER LAW AND A STABILITY-DEPENDENT EXPONENT--P(1STAB)
0021 C AS FOLLOWS:
0022 C
0023 C  $V(HUB\ HT)=V(ANEMOMETER\ HT) * (Z(HUB)/Z(ANAM)) ** P(PASQUILL\ STAB.)$ 
0024 C
0025 C THE 7 VALUES OF P ARE READ FROM A CARD FROM EXTREMELY UNSTABLE
0026 C --P(1)-- TO EXTREMELY STABLE --P(7).
0027 C THIS COMMON IS NEEDED FOR SUBROUTINES STAR AND IDF14
0028 C COMMON /COM(28),IDAT1(3),1STA(3),1STAB
0029 C DIMENSION MONTH(13,15),NOV4(25),PTIME(5),UTIME(3,15),
0030 C 1MNDAY(20),VMNTH(13,15),ITIME(4,3,15),VTIME(5,3,15),IDIR(17,15),
0031 C 2VDIR(17,15),KMNIH(26),LMNIH(4),LNDIR(34),
0032 C 1LTE4(25),NOV9(25),NOV24(25),NGUST(16),COEF(16),NDIR(16),
0033 C 2NAST(21),P(7),CONST(7),NAME(3),IDCH(144)
0034 C
0035 C EQUIVALENCE (ICOM(11),IND), (ICOM(6),MO), (ICOM(8),IMR)
0036 C DATA NAME/2HST,2HAN,2HDF/
0037 C
0038 C DATA KMNIH/2HJA,2HN ,2HFE,2HB ,2HMA,2HR ,2HAP,2HR ,2HMA,2HY ,
0039 C 12HJU,2HN ,2HJU,2HL ,2HAU,2HG ,2HSE,2HP ,2HOC,2HI ,2HNU,2HV ,
0040 C 32HDE,2HC ,2HAN,2HN /
0041 C DATA LNDIR/2H N,2H ,2HNN,2HE ,2H N,2HE ,2HEN,2HE ,2H E,2H ,
0042 C 12HES,2HE ,2H S,2HE ,2HSS,2HE ,2H S,2H ,2HSS,2HW ,2H S,2HW ,
0043 C 22HWS,2HW ,2H W,2H ,2HWN,2HW ,2H N,2HW ,2HNN,2HW ,2HAL,2HL /
0044 C DATA MNDAY/2HDE,2HC-,2HFE,2HB ,2HMA,2HR-,2HMA,2HY ,2HJU,2HN-,
0045 C 12HAU,2HG ,2HSE,2HP-,2HNU,2HV ,2HAN,2HNU,2HAL,2H /
0046 C
0047 C MONTH= WIND SPEED DISTRIBUTION BY MONTH
0048 C ITIME = WIND SPEED DISTRIBUTION BY DAY -- 7 TO 1800 -- AND NIGHT =
0049 C - 19 TO 0600 LST.
0050 C IDIR= WIND SPEED DISTRIBUTION BY DIRECTION
0051 C LTE4= DURATION TABLE FOR SPEEDS LESS THAN OR EQUAL TO 4 M/S
0052 C NOV4= DURATION TABLE FOR SPEEDS GREATER THAN 4 M/S
0053 C NOV9 = DURATION TABLE FOR SPEEDS OF 10 TO 24 M/S
0054 C NOV24= DURATION TABLE FOR SPEEDS GREATER THAN 24 M/S
0055 C NGUST= FREQUENCY TABLE OF ST VELOCITY 25-99 M/S BY 5

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0056 C      NDIR= THE 16 POINT DIRECTION AT THE TEST SITE FOR EACH DIRECTION
0057 C      AT THE STATION STARTING AT NNE (NORTH = 16)
0058 C      COEF= THE COEFFICANTS OF THE 16 EQUATIONS OF SPEED = COEF X SPEED
0059 C      + CNST FOR EACH OF THE 16 DIRECTIONS STARTING AT NNE
0060 C      CNST= THE CONSTANTS IN THE ABOVE 16 EQUATIONS.
0061 C      TLOBS= TOTAL NUMBER OF OBSERVATIONS
0062 C
0063 C      SEE LINES 85 - 109 FOR CONTROL CARDS
0064 C
0065 C      OPEN SUN FILE FOR STAR SUBROUTINE.
0066 C      THE PROPER INDEXES FOR THE STATIONS LAT. AND LONG. SHOULD BE IN
0067 C      DISK PRIOR TO A RUN WITH WIND AND STAR. SUN GENERATES THE TABLES.
0068 C      1 CALL OPEN(1DCH,IER,NAME)
0069 C      IF(IER,LT,0) WRITE(1,2) IER
0070 C      2 FORMAT("OPEN ERROR ",110)
0071 C      ZERO OUT ALL ACCUMULATED ARRAYS
0072 C      DO 10 J=1,15
0073 C      DO 5 I=1,13
0074 C      VMNTH(I,J)=0.
0075 C      5 MONTH(I,J)=0
0076 C
0077 C      DO 7 K=1,5
0078 C      DO 7 I=1,3
0079 C      ITIME(K,I,J)=0
0080 C      VTIME(K,I,J)=0.
0081 C      7 CONTINUE
0082 C
0083 C      DO 9 I=1,17
0084 C      VOIR(I,J)=0.
0085 C      9 IDIR(I,J)=0
0086 C      10 CONTINUE
0087 C      DO 11 I=1,16
0088 C      NGUST(I)=0
0089 C      DO 12 I=1,25
0090 C      LIE4(I) = 0
0091 C      NOV4(I)=0
0092 C      NOV9(I)=0
0093 C      12 NOV24(I)=0
0094 C      UMNTH=0.
0095 C      TLOBS=0
0096 C      NLTS=0
0097 C      NGT4=0
0098 C      NGT9 = 0
0099 C      NGT24=0
0100 C      MWS = 0
0101 C      MWD = 0
0102 C
0103 C      READ CONTROL CARDS
0104 C
0105 C      READ STATION NAME CENTERED ON CARD COLUMN 32 (64 LETTERS MAX.)
0106 C      READ (5,13) (NAST(1),I=1,21)
0107 C      13 FORMAT(21A2)
0108 C      READ 7 P VALUES FOR CORRESPONDING STABILITIES FROM LEAST TO MOST
0109 C      STABLE AND COMPUTE THE 7 CONSTANTS
0110 C      READ(5,*) (P(I),I=1,7)

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0111 C READ STARTING MONTH, DAY, AND YEAR AND STATION NUMBER WITH 1 BLANK
0112 C SPACE BETWEEN YEAR AND STATION NUMBER
0113 READ(5,14)(IDAT1(I),I=1,3),(ISTAT(J),J=1,3)
0114 14 FORMAT(3I2,1X,2A2,A1)
0115 C READ EQUIVALENT DIRECTIONS STARTING WITH NORTH-NORTHEAST
0116 READ(5,313)(NDIR(I),I=1,16)
0117 313 FORMAT(16I2)
0118 C READ COEFFICIENTS OF CONVERSION RELATIONSHIPS TO CALCULATE TEST
0119 C SITE EQUIVALENTS FOR STATION VALUES OF SPEED FOR 16 DIRECTIONS
0120 C STARTING AT NORTH-NORTHEAST
0121 READ(5,16)(COEF(I),I=1,16)
0122 16 FORMAT(16F5,3)
0123 C
0124 C WRITE OUT ALL INPUT VALUES FOR REFERENCE
0125 WRITE(6,200)(NSTAT(I),I=1,21),(P(I),I=1,7),(IDAT1(I),I=1,3),
0126 1(ISTAT(I),I=1,3),(NDIR(I),I=1,16),(COEF(I),I=1,16)
0127 200 FORMAT(1H1,21A2/" P VALUES = ",1F5,2/" STARTING DAY = ",3I2/"
0128 1" STATION NUMBER = ",2A2,A1/" EQUIVALENT DIRECTIONS STARTING AT NN
0129 2E = ",16I3/" THE COEFFICIENTS = ",16F6,3)
0130 C CALL FIRST RECORD FROM DATA TAPE
0131 214 CALL IDF14 (8,ISTAT,KOUNT)
0132 C THE FOLLOWING 8 INSTRUCTIONS ARE REQUIRED TO USE THE OLD VERSION
0133 C OF IDF14 WITHOUT STATION OR DATE CHECKS
0134 C CHECK FOR PROPER STATION NUMBER
0135 IF(ICOM(2).NE.ISTAT(1)) GO TO 214
0136 IF(ICOM(3).NE.ISTAT(2)) GO TO 214
0137 IF(ICOM(4).NE.ISTAT(3)) GO TO 214
0138 GO TO 216
0139 C CORRECT STATION NUMBER FOUND, CHECK FOR STARTING DATE
0140 215 CALL IDF14(6,ISTAT,KOUNT)
0141 216 IF(ICOM(5).LT.IDAT1(3)) GO TO 215
0142 IF(ICOM(6).LT.IDAT1(1)) GO TO 215
0143 IF(ICOM(7).LT.IDAT1(2)) GO TO 215
0144 JNUM=1
0145 C READ FIRST ANEMOMETER HEIGHT (H1) AND YEAR, MONTH AND DAY WHEN
0146 C CHANGED. IF NOT CHANGED USE THE LAST DATE DESIRED
0147 C
0148 C ALWAYS USE DATE OF LAST DATA DESIRED WITH LAST ANEMOMETER HEIGHT.
0149 C
0150 C FOLLOW THIS WITH A CARD WITH 0,0,0,0 TO STOP RUN AFTER THAT DATE
0151 C AND BRANCH TO OUTPUT PART OF PROGRAM
0152 15 READ(5,*)AHI,JYR,JMU,JDY
0153 IFLAG = 0
0154 IF(AHI.EQ.0) GO TO 100
0155 IF(JNUM) 8,8,6
0156 8 CALL IDF14 (8,ISTAT,KOUNT)
0157 IF(ISTAT) 160,6,150
0158 6 JNUM=0
0159 C
0160 C CONTROL CARDS READ
0161 C
0162 KYN=JYR
0163 KMU=JMU
0164 KDY=JDY
0165 C COMPUTE TABLE OF 7 POSSI VALUES OF (150/AHI)**P(ISTAT) FOR 7

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0166 C      VALUES OF STABILITY --ISTAB
0167      DO 18 I=1,7
0168      18 CONST(1) = (150./AH1)**P(1)
0169      WRITE(6,201)AH1,JMU,JDY,JYR,(CONST(1),I=1,7)
0170      201 FORMAT(" ANEMOMETER HEIGHT = ",F5.1," DATE CHANGED = ",12,"/",12,
0171      1"/19",12/" NEW CONSTANTS = ",7F8.5)
0172      GO TO 21
0173      19 WRITE(1,342) ICOM(6),ICOM(7),ICOM(5),ICOM(12),ICOM(11)
0174      342 FORMAT(" BAD DATE= ",2(14,"/"),14,4X,14,2X,14)
0175 C
0176 C      BRANCH HERE FOR EACH NEW RECORD
0177 C
0178 C      READ A RECORD AND CHECK FOR DATE ANEMOMETER HEIGHT WAS CHANGED
0179      20 CALL TDF14 (8,ISTAT,KOUNT)
0180 C      RECORDS WITH PARITY ERRORS OR BAD RECORD LENGTH USED BUT WITH A
0181 C      MESSAGE SENT TO TELETYPE
0182      IF(ISTAT)160,21,150
0183 C      CHECK FOR 2300LST ON LAST DAY DESIRED.
0184 C      YES, SET FLAG FOR BRANCH AT 90
0185      21 IF(ICOM(5).LT.48.OR.ICOM(5).GT.64) GO TO 19
0186      IF(ICOM(5)-JYR) 25,22,19
0187      22 IF(ICOM(6)-JMU) 25,23,19
0188      23 IF(ICOM(7)-JDY) 25,24,19
0189      24 IF(ICOM(8).EQ.23) IFLAG = 1
0190 C      STEP COUNT
0191 C      CHECK FOR CALM WIND. IF SO SET WIND DIRECTION = 17 AND SPEED
0192 C      CATEGORY = 1
0193 C      WIND EQUIVALENT TO ICOM(11)-- WIND DIRECTION
0194      25 TLOBS=TLOBS+1.
0195      IF(ICOM(12)) 31,27,27
0196      27 IF(ICOM(12)-149) 29,29,31
0197      29 IF(IWD-88) 30,30,31
0198      30 IF(MU) 31,31,32
0199      32 IF(MU-12) 34,34,31
0200      34 IF(IWD) 31,26,28
0201      26 IWD=17
0202      IWS=1
0203      JWS=1
0204      WS=0.
0205      GO TO 40
0206      28 CALL STAR(1DCB)
0207      IF(ISTAB-7) 33,33,31
0208      33 IF(ISTAB) 31,31,36
0209      31 TLOBS=TLOBS-1
0210      GO TO 20
0211 C      COMPUTE WIND SPEED AT 150 FT ABOVE WEATHER STATION AND CONVERT
0212 C      FROM KNOTS TO M/S.
0213      36 WS=ICOM(12)
0214      WS = WS * .51479 * CONST(ISTAB)
0215 C      CONVERT STATION DIRECTION TO SITE DIRECTION
0216 C      SET IWD=1 FOR NNE, AND IWD=16 FOR N
0217      JWD=MOD(IWD,10)+(IWD/10)-1
0218      IF(IWD.EQ.11) JWD=17
0219      IF(IWD.EQ.18) JWD=16
0220      JWD=JWD-1

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0221      IWD = NDIR(JWD)
0222 C      CONVERT FROM 150 FT. WIND ABOVE STATION TO WIND 150 FT. ABOVE SITE
0223 C      THE 16 COEFFICIENTS AND CONSTANTS OF THE SPEED CONVERSION ARE
0224 C      INDEXED BY THE OBSERVED WIND DIRECTION
0225      WS = COEF(IWD)*WS
0226 C      ROUND OFF TO WHOLE M/S, CONVERT TO INTEGER AND THEN CATEGORY
0227 C      IWS = WIND SPEED CATEGORY 0-4,5-9,10-14,15-19,20-24,25+ M/S
0228 C      SET IWD=1 AT N (FOR PLOTTING PURPOSES), AND IWD= 16 AT NNW
0229      IWD=IWD+1
0230      IF(IWD.EQ.17) IWD=1
0231      IWS = WS + .5
0232      IWSC = (IWS/5)+1
0233      IF(IWSC.GT.6) IWSC = 6
0234      JWSC=((IWS+1)/2)+1
0235      IF(JWSC.GT.14) JWSC=14
0236 C      SITE WIND SPEED -- IWS -- SPEED CATEGORY -- IWSC -- AND DIRECTION
0237 C      -- IWD -- ALL CALCULATED, BEGIN CLASSIFICATION.
0238 C      CHECK FOR GUSTS ABOVE 24 M/S. CATEGORIZE AND TABULATE IF FOUND
0239      IF(IWS-19) 40,35,35
0240 C      STEADY WIND >= 19 AND A 2 SECOND GUST FACTOR OF 1.3 RESULTS IN A
0241 C      2 SECOND GUST OF 24.7 M/S OR GREATER. COMPUTE GUST VELOCITY CLASS
0242 35      IGUST=(WS*1.3)-24.5
0243      IGUST=(IGUST/5)+1
0244      IF(IGUST.GT.16) IGUST = 16
0245 C      INCREMENT PROPER GUST CLASS
0246      NGUST(IGUST) = NGUST(IGUST) + 1
0247 C      INCREMENT WIND SPEED BY MONTH FOR PROPER 5 M/S CATEGORY
0248 40      MONTH(MO,JWSC)=MONTH(MO,JWSC)+1
0249      VMNTH(MO,JWSC)=VMNTH(MO,JWSC)+WS
0250      ISEA=MO/3+1
0251      IF(MO.EQ.12) ISEA=1
0252 C      DETERMINE TIME BETWEEN 07-1800 LST OR 19-0600 LST
0253 C      INCREMENT WIND SPEED BY TIME OF DAY
0254      IF(IHR-7) 47,45,43
0255 43      IF(IHR-18) 45,45,47
0256 C      TIME BETWEEN 7 AND 1800 LST (DAY)
0257 45      ITIME(ISEA,1,JWSC)=ITIME(ISEA,1,JWSC)+1
0258      VTIME(ISEA,1,JWSC)=VTIME(ISEA,1,JWSC)+WS
0259      GO TO 50
0260 C      TIME BETWEEN 19 AND 0600 LST (NIGHT)
0261 47      ITIME(ISEA,2,JWSC)=ITIME(ISEA,2,JWSC)+1
0262      VTIME(ISEA,2,JWSC)=VTIME(ISEA,2,JWSC)+WS
0263 C      INCREMENT WIND SPEED BY DIRECTION
0264 50      IDIR(IWD,JWSC)=IDIR(IWD,JWSC)+1
0265      VDIR(IWD,JWSC)=VDIR(IWD,JWSC)+WS
0266 C      TEST FOR WIND SPEED EQUAL TO OR LESS THAN 4 M/S (CATEGORY 1)
0267      IF(IWSC-1) 56,56,62
0268 C      WIND SPEED < 5 M/S, TEST DURATION. IF ZERO STORE DURATION
0269 C      > 4 M/S, ZERO AND SET COUNT OF <5=1
0270 C      IF FIRST ONE, CLEAR AND STORE NUMBER > 4 M/S
0271 56      IF(NG14) 60,60,57
0272 C      IF DURATION EXCEEDS 72 HOURS INCREMENT 73+
0273 57      CALL SUBRM(NG14,INDEX)
0274      NOV4(INDEX)=NOV4(INDEX)+1
0275      NG14=0

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0276      60 NL15=NL15+1
0277 C      GO TO CLEAR AND STORE WIND DURATIONS OF GREATER SPEEDS
0278      GO TO 80
0279 C      WIND SPEED >4M/S, TEST DURATION, IF ZERO STORE DURATION OF
0280 C      <5M/S, ZERO AND SET COUNT OF >4=1
0281 C      IF FIRST ONE, CLEAR AND STORE NUMBER <5 M/S
0282      62 IF(NL15) 64,64,63
0283 C      IF OVER 72 HOURS SET TO 73+
0284      63 CALL SUMNN(NL15,INDEX)
0285 C      STORE DURATION OF LESS THAN 5 AND ZERO OUT NO OF HOURS <5 M/S
0286      LIE4(INDEX)=LIE4(INDEX)+1
0287      NL15=0
0288 C      INCREMENT DURATION OF >4
0289      64 NG14=NG14+1
0290 C      TEST FOR SPEED >=10 M/S (CATAGORY 3)
0291      65 IF(IWSC=3) 80,66,66
0292 C      IF YES TEST WHETHER OVER 24 M/S (CATAGORY 6)
0293      66 IF(IWSC=6) 70,72,72
0294 C      SPEED 10 TO 24 M/S
0295      70 NG19=NG19+1
0296      GO TO 85
0297 C      SPEED 25 M/S OR GREATER
0298      72 NG124=NG124+1
0299 C      IF SPEED 10 TO 24 IS ACCUMULATING STORE NUMBER OF HOURS, IF NOT
0300 C      SKIP
0301      IF(NG19) 90,90,74
0302      74 CALL SUMNN(NG19,INDEX)
0303      NOV9(INDEX)=NOV9(INDEX)+1
0304      NG19=0
0305      GO TO 90
0306 C      IF SPEED < 10 M/S CHECK ACCUMULATION AND CLEAR
0307      80 IF(NG19) 85,85,82
0308      82 CALL SUMNN(NG19,INDEX)
0309      NOV9(INDEX)=NOV9(INDEX)+1
0310      NG19=0
0311 C      IF SPEED <24 M/S CHECK ACCUMULATION AND CLEAR
0312      85 IF(NG124) 90,90,87
0313      87 CALL SUMNN(NG124,INDEX)
0314      NOV24(INDEX)=NOV24(INDEX)+1
0315      NG124=0
0316 C      ALL TESTS MADE AND CATAGORIES UPDATED OR COUNTS STORED RETURN TO
0317 C      READ ANOTHER HOUR UNLESS LAST HOUR READ. 2F SO BRANCH TO 15 FOR
0318 C      THE NEXT ANAMOMETER HEIGHT OR END-PRINT COMMAND
0319 C
0320      90 IF(IFLAG) 20,20,15
0321      100 DO 820 J=1,14
0322      DO 800 I=1,12
0323      MONTH(13,J)=MONTH(13,J)+MONTH(I,J)
0324      VMNTH(13,J)=VMNTH(13,J)+VMNTH(I,J)
0325      MONTH(1,15)=MONTH(1,15)+MONTH(I,J)
0326      800 VMNTH(1,15)=VMNTH(1,15)+VMNTH(I,J)
0327 C
0328      DO 810 K=1,4
0329      DO 805 I=1,2
0330      VTIME(K,I,15)=VTIME(K,I,15)+VTIME(K,I,J)

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0331      ITIME(K,1,15)=ITIME(K,1,15)+ITIME(K,1,J)
0332      VTIME(5,1,J)=VTIME(5,1,J)+VTIME(K,1,J)
0333      UTIME(1,J)=UTIME(1,J)+ITIME(K,1,J)
0334      VTIME(K,3,J)=VTIME(K,1,J)+VTIME(K,2,J)
0335      ITIME(K,3,J)=ITIME(K,1,J)+ITIME(K,2,J)
0336      UTIME(3,J)=UTIME(3,J)+ITIME(K,3,J)
0337      VTIME(5,3,J)=VTIME(5,3,J)+VTIME(K,3,J)
0338      810  CONTINUE
0339      C
0340      DO 815 I=1,16
0341      UDIR(1,15)=UDIR(1,15)+UDIR(1,J)
0342      VDIR(1,15)=VDIR(1,15)+VDIR(1,J)
0343      IF(J.EQ.1) GO TO 815
0344      VDIR(17,J)=VDIR(17,J)+VDIR(1,J)
0345      UDIR(17,J)=UDIR(17,J)+UDIR(1,J)
0346      815  CONTINUE
0347      820  CONTINUE
0348      C
0349      C
0350      DO 825 I=1,12
0351      UMNTH=UMNTH+MONTH(1,15)
0352      VMNTH(13,15)=VMNTH(13,15)+VMNTH(1,15)
0353      825  CONTINUE
0354      C
0355      DO 830 J=1,14
0356      DO 830 I=1,2
0357      UTIME(1,15)=UTIME(1,15)+UTIME(1,J)
0358      VTIME(5,1,15)=VTIME(5,1,15)+VTIME(5,1,J)
0359      830  CONTINUE
0360      C
0361      DO 835 I=1,2
0362      UTIME(3,15)=UTIME(3,15)+UTIME(1,15)
0363      DO 835 K=1,5
0364      VTIME(K,3,15)=VTIME(K,3,15)+VTIME(K,1,15)
0365      835  CONTINUE
0366      C
0367      DO 840 I=1,16
0368      UDIR=UDIR+UDIR(1,15)
0369      VDIR(17,15)=VDIR(17,15)+VDIR(1,15)
0370      840  CONTINUE
0371      UDIR=UDIR+UDIR(17,1)
0372      C
0373      DO 850 K=1,4
0374      850  PTIME(K)=FLOAT(ITIME(K,1,15))+ITIME(K,2,15)
0375      C
0376      C
0377      C
0378      DO 590 I=1,13
0379      DO 590 J=1,15
0380      IF(MONTH(1,J).LT.1) GO TO 590
0381      VMNTH(1,J)=VMNTH(1,J)/MONTH(1,J)
0382      590  CONTINUE
0383      VMNTH(13,15)=VMNTH(13,15)/UMNTH
0384      WRITE(6,310)
0385      310  FORMAT(1H1,//////////, //)

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0386      1"  05-08  09-10",
0387      2"  07-08  09-10  11-12  13-14  15-16  17-18  19-20  ",
0388      3" 21-22  23-24  25+ PER MO. ")
0389      WRITE(6,312)
0390      312 FORMAT(1X," MONTH      ",5X,13(3X,"(M/S)"))/
0391  C
0392      DO 600 I=1,13
0393      L=(2*I)-1
0394      LMNTH(1)=KMNTH(L)
0395      LMNTH(2)=KMNTH(L+1)
0396      WRITE(6,315)(LMNTH(K),K=1,2),(VMNTH(I,J),J=1,15)
0397      WRITE(9,315)(LMNTH(K),K=1,2),(VMNTH(I,J),J=1,15)
0398      315 FORMAT(3X,2A2,4X,15(F6.2,2X))
0399      600 CONTINUE
0400      WRITE(6,320) ILUHS,(NAST(I),I=1,21)
0401      320 FORMAT(/1X,"TOTAL OBSERVATIONS READ= ",F8.0//45X,21A2)
0402      WRITE(6,308)
0403      308 FORMAT(45X,"AVERAGE WIND SPEED BY MONTH, BY WIND SPEED GROUP")
0404      WRITE(6,322) IDAT1,KMD,KDY,KYK
0405      322 FORMAT(45X,"PERIOD OF RECORD: ",12,"/",12,"/",12," TO ",12,
0406      1"/",12,"/",12)
0407  C
0408  C
0409      DO 610 I=1,12
0410      DO 610 J=1,15
0411      IF(MONTH(1,15),LT,1) GO TO 610
0412      VMNTH(1,J)=(100.*MONTH(1,J))/MONTH(1,15)
0413      610 CONTINUE
0414  C
0415      DO 615 K=1,14
0416      615 VMNTH(13,K)=(MONTH(13,K)/OMNTH)*100.
0417      VMNTH(13,15)=100.
0418      WRITE(6,310)
0419      WRITE(6,312)
0420  C
0421      DO 620 I=1,13
0422      L=(2*I)-1
0423      LMNTH(1)=KMNTH(L)
0424      LMNTH(2)=KMNTH(L+1)
0425      WRITE(6,315)(LMNTH(K),K=1,2),(VMNTH(I,J),J=1,15)
0426      WRITE(9,315)(LMNTH(K),K=1,2),(VMNTH(I,J),J=1,15)
0427      620 CONTINUE
0428  C
0429  C
0430      WRITE(6,320) ILUHS,(NAST(I),I=1,21)
0431      WRITE(6,323)
0432      323 FORMAT(45X,"PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS, BY",
0433      1" MONTH")
0434      WRITE(6,322) IDAT1,KMD,KDY,KYK
0435  C
0436      WRITE(6,310)
0437      WRITE(6,312)
0438  C
0439      DO 630 I=1,12
0440      L=(2*I)-1

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0441      LMNTH(1)=KMNTH(L)
0442      LMNTH(2)= KMNTH(L+1)
0443      WRITE(9,330) (LMNTH(K),K=1,2), (MONTH(1,J),J=1,15)
0444      630 WRITE(6,330) (LMNTH(K),K=1,2), (MONTH(1,J),J=1,15)
0445      330 FORMAT(3X,2A2,4X,15(16,2X))
0446      LMNTH(1)=KMNTH(25)
0447      LMNTH(2)=KMNTH(26)
0448      WRITE(9,335) (LMNTH(K),K=1,2), (MONTH(13,J),J=1,14), OMNTH
0449      WRITE(6,335) (LMNTH(K),K=1,2), (MONTH(13,J),J=1,14), OMNTH
0450      335 FORMAT(3X,2A2,4X,14(16,2X),F8.0)
0451      WRITE(6,320) TLOBS, (NAST(1),I=1,21)
0452      WRITE(6,324)
0453      324 FORMAT(45X,"NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS, HY",
0454      1" MONTH")
0455      WRITE(6,322) IDAT1,KMU,KDY,KYR
0456      WRITE(6,311)
0457      311 FORMAT(1H1,//////////////////////          CALM    01-02",
0458      1" 03-04 05-06",
0459      2" 07-08 09-10 11-12 13-14 15-16 17-18 19-20 ",
0460      3"21-22 23-24 25+ PER DIR ")
0461      WRITE(6,327)
0462      327 FORMAT(1X,"DIRECTION ",5X,13(3X,"(M/S)"))
0463      C
0464      C
0465      DO 635 I=1,17
0466      DO 635 J=1,15
0467      IF (DIR(1,J).LT.1) GO TO 635
0468      VDIR(1,J)=VDIR(1,J)/DIR(1,J)
0469      635 CONTINUE
0470      VDIR(17,15)=VDIR(17,15)/DIR
0471      C
0472      C
0473      DO 640 I=1,17
0474      L=(2*I)-1
0475      LMNTH(1)=LNDIR(L)
0476      LMNTH(2)=LNDIR(L+1)
0477      WRITE(6,315) (LMNTH(K),K=1,2), (VDIR(1,J),J=1,15)
0478      WRITE(9,315) (LMNTH(K),K=1,2), (VDIR(1,J),J=1,15)
0479      640 CONTINUE
0480      C
0481      WRITE(6,320) TLOBS, (NAST(1),I=1,21)
0482      WRITE(6,328)
0483      328 FORMAT(45X,"AVERAGE ANNUAL WIND SPEED BY DIRECTION, HY WIND",
0484      1" SPEED GROUP")
0485      WRITE(6,322) IDAT1,KMU,KDY,KYR
0486      C
0487      C
0488      DO 645 I=1,16
0489      DO 645 J=1,15
0490      IF (DIR(1,15).LT.1) GO TO 645
0491      VDIR(1,J)=(100.*DIR(1,J))/DIR(1,15)
0492      645 CONTINUE
0493      C
0494      C
0495      DO 650 K=1,14

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0496      VDIR(17,K)=(IDIR(17,K)/ODIR)*100.
0497      050  CONTINUE
0498      VDIR(17,15)=100.
0499      WRITE(6,311)
0500      WRITE(6,327)
0501      C
0502      C
0503      C
0504      DO 055 I=1,17
0505      L=(2*I)-1
0506      LMNTH(1)=LNDIR(L)
0507      LMNTH(2)=LNDIR(L+1)
0508      WRITE(6,315)(LMNTH(K),K=1,2),(VDIR(1,J),J=1,15)
0509      WRITE(9,315)(LMNTH(K),K=1,2),(VDIR(1,J),J=1,15)
0510      055  CONTINUE
0511      C
0512      C
0513      WRITE(6,320) TLUBS,(NAST(1),I=1,21)
0514      WRITE(6,329)
0515      329  FORMAT(45X,"ANNUAL PERCENT FREQUENCY OF HOURLY WIND SPEED",
0516      1" GROUPS, BY DIRECTION")
0517      WRITE(6,322) DAT1,KMU,KDY,KYR
0518      WRITE(6,311)
0519      WRITE(6,327)
0520      C
0521      DO 060 I=1,16
0522      L=(2*I)-1
0523      LMNTH(1)=LNDIR(L)
0524      LMNTH(2)=LNDIR(L+1)
0525      WRITE(9,330)(LMNTH(K),K=1,2),(IDIR(1,J),J=1,15)
0526      WRITE(6,330)(LMNTH(K),K=1,2),(IDIR(1,J),J=1,15)
0527      060  CONTINUE
0528      LMNTH(1)=LNDIR(33)
0529      LMNTH(2)=LNDIR(34)
0530      WRITE(9,335)(LMNTH(K),K=1,2),(IDIR(17,J),J=1,14),ODIR
0531      WRITE(6,335)(LMNTH(K),K=1,2),(IDIR(17,J),J=1,14),ODIR
0532      WRITE(6,320) TLUBS,(NAST(1),I=1,21)
0533      WRITE(6,331)
0534      331  FORMAT(45X,"ANNUAL NUMBER FREQUENCY OF HOURLY WIND SPEED",
0535      1" GROUPS, BY DIRECTION")
0536      WRITE(6,322) DAT1,KMU,KDY,KYR
0537      C
0538      C
0539      DO /20 K=1,5
0540      L=(4*K)-4
0541      DO 063 N=1,4
0542      LMNTH(N)=MNDAY(L+N)
0543      063  CONTINUE
0544      C
0545      WRITE(9,374)(LMNTH(M),M=1,4)
0546      374  FORMAT(2X,4A2,1X,120X)
0547      C
0548      WRITE(6,314)
0549      314  FORMAT(1H1,//////////)
0550      1" 05=04 05=06",

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0551      2"  07-08  09-10  11-12  13-14  15-16  17-18  19-20  ",
0552      3"21-22  23-24  25+ BY DA/NT")
0553      WRITE(6,381)
0554 381  FORMAT(1X," TIME ",6X,13(3X,"(M/S)"))/
0555      IF(K.EQ.5) GO TO 670
0556      DO 665 I=1,3
0557      DO 665 J=1,15
0558      IF(11IME(K,I,J).LT.1) GO TO 665
0559      VTIME(K,I,J)=VTIME(K,I,J)/11IME(K,I,J)
0560 665  CONTINUE
0561      IF(P1IME(K).LT.1) GO TO 680
0562 C
0563 C
0564      VTIME(K,3,15)=VTIME(K,3,15)/P1IME(K)
0565      GO TO 680
0566 670  DO 675 I=1,3
0567      DO 675 J=1,15
0568      IF(UTIME(I,J).LT.1) GO TO 675
0569      VTIME(K,I,J)=VTIME(K,I,J)/UTIME(I,J)
0570 675  CONTINUE
0571 C
0572 680  WRITE(6,380)(VTIME(K,I,J),J=1,15)
0573      WRITE(9,380)(VTIME(K,I,J),J=1,15)
0574 380  FORMAT(2X,"07-18LSI",15F8.1)
0575      WRITE(6,385)(VTIME(K,2,J),J=1,15)
0576      WRITE(9,385)(VTIME(K,2,J),J=1,15)
0577 385  FORMAT(2X,"19-06LST",15F8.1)
0578      WRITE(6,390)(VTIME(K,3,J),J=1,15)
0579      WRITE(9,390)(VTIME(K,3,J),J=1,15)
0580 390  FORMAT(2X,"ALL HRS ",15F8.1)
0581      WRITE(6,316)
0582 316  FORMAT(1X,///" CALM 01-02",
0583      1"  03-04  05-06",
0584      2"  07-08  09-10  11-12  13-14  15-16  17-18  19-20  ",
0585      3"21-22  23-24  25+ BY DA/NT")
0586      WRITE(6,381)
0587      IF(K.EQ.5) GO TO 695
0588      DO 690 I=1,3
0589      DO 690 J=1,15
0590      ANUND=1IME(K,I,15)
0591      IF(1.EQ.5) ANUND=P1IME(K)
0592      IF(ANUND.LT.1) GO TO 690
0593      VTIME(K,I,J)=(1IME(K,I,J)/ANUND)*100.
0594 690  CONTINUE
0595      VTIME(K,3,15)=100.
0596      GO TO 697
0597 695  DO 696 I=1,3
0598      DO 696 J=1,15
0599      IF(UTIME(I,15).LT.1) GO TO 696
0600      VTIME(K,I,J)=(UTIME(I,J)/UTIME(I,15))*100.
0601 696  CONTINUE
0602 697  WRITE(6,380)(VTIME(K,I,J),J=1,15)
0603      WRITE(9,380)(VTIME(K,I,J),J=1,15)
0604      WRITE(6,385)(VTIME(K,2,J),J=1,15)
0605      WRITE(9,385)(VTIME(K,2,J),J=1,15)

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0606      WRITE(6,390)(VTIME(K,3,J),J=1,15)
0607      WRITE(9,390)(VTIME(K,3,J),J=1,15)
0608      WRITE(6,310)
0609      WRITE(6,381)
0610      IF(K,EN,5) GO TO 698
0611      WRITE(6,425)(ITIME(K,1,J),J=1,15)
0612      WRITE(9,425)(ITIME(K,1,J),J=1,15)
0613  425  FORMAT(2X,"0-18LSI",2X,15(16,2X))
0614      WRITE(6,430)(ITIME(K,2,J),J=1,15)
0615      WRITE(9,430)(ITIME(K,2,J),J=1,15)
0616  430  FORMAT(2X,"19-06LSI",2X,15(16,2X))
0617      WRITE(6,435)(ITIME(K,3,J),J=1,14),PTIME(K)
0618      WRITE(9,435)(ITIME(K,3,J),J=1,14),PTIME(K)
0619  435  FORMAT(2X,"ALL HRS ",2X,14(16,2X),F6.2)
0620      GO TO 699
0621  C
0622  698  WRITE(6,380)(UTIME(1,J),J=1,15)
0623      WRITE(9,380)(UTIME(1,J),J=1,15)
0624      WRITE(6,385)(UTIME(2,J),J=1,15)
0625      WRITE(9,385)(UTIME(2,J),J=1,15)
0626      WRITE(6,390)(UTIME(3,J),J=1,15)
0627      WRITE(9,390)(UTIME(3,J),J=1,15)
0628  C
0629  699  WRITE(6,320) ILUHS,(NAST(1),1=1,21)
0630      WRITE(6,332)
0631  332  FORMAT(45X,"A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT,"
0632      1" BY WIND SPEED GROUP")
0633      WRITE(6,334)
0634  334  FORMAT(45X,"B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS",
0635      1" BY SEASON, BY DAY/NIGHT")
0636      WRITE(6,341)
0637  341  FORMAT(45X,"C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS",
0638      1" BY SEASON, BY DAY/NIGHT")
0639      WRITE(6,333)(LMNTH(1),1=1,4)
0640  333  FORMAT(45X,"SEASON: ",4A2)
0641      WRITE(6,322) IDAT1,KMU,KDY,KYR
0642  C
0643  720  CONTINUE
0644  C
0645  C
0646      WRITE(6,115)
0647  115  FORMAT(1H1,//////////3X,"SPEED",49X,
0648      2"NUMBER OF CONSECUTIVE HOURS"/15X,"1  2  3  4  5  6  7
0649      3  8  9  10 11 12 13 15 17 19 21 23 25 31 3
0650      47 48 49 61 73" / 74X,"14  16  18  20  22  24 30 36 42
0651      5 48 60 72 +"/)
0652      WRITE(6,120)(LIE4(1),1=1,25)
0653  120  FORMAT(" <5 M/S ",1815,714//)
0654      WRITE(6,121)(NOV4(1),1=1,25)
0655  121  FORMAT(" >4 M/S ",1815,714//)
0656      WRITE(6,122)(NOV9(1),1=1,25)
0657  122  FORMAT(" 10-24 M/S ",1815,714//)
0658      WRITE(6,123)(NOV24(1),1=1,25)
0659  123  FORMAT(" 25+ M/S ",1815,714//)
0660      WRITE(6,320) ILUHS,(NAST(1),1=1,21)

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0661      WRITE(6,361)
0662 361  FORMAT(45X,"FREQUENCY DISTRIBUTION OF THE NUMBER OF CONSECUTIV",
0663      1" E HOURS"/45X,"WITH WIND WITHIN SELECTED SPEED RANGE(S)")
0664      WRITE(6,322) IDAT1,KMU,KDY,KYK
0665  C
0666  C
0667      WRITE(6,116)(NGUST(1),I=1,16)
0668 116  FORMAT(1H1,//////////4X," GUST SPEED (M/S) 25",
0669      1"-29 30-34 35-39 40-44 45-49 50-54 55-59 60-64 65-69 70-74 75-",
0670      2"79 80-84 85-89 90-94 95-99 100+"/4X," NUMBER OF CASES ",1616/)
0671      WRITE(6,362) 1LUBS,(NAS1(1),I=1,21)
0672 362  FORMAT(/5X,"TOTAL OBSERVATIONS READ= ",F8.0///45X,21A2)
0673      WRITE(6,363)
0674 363  FORMAT(45X,"THE FREQUENCY DISTRIBUTION OF CALCULATED WIND GUST",
0675      1"S EXCEEDING 24 M/S")
0676      WRITE(6,322) IDAT1,KMU,KDY,KYK
0677      WRITE(6,384)
0678 384  FORMAT(1H1)
0679      GO TO 170
0680  C
0681  C
0682  C
0683 150  WRITE(1,156)
0684 156  FORMAT(" NEW TAPE ON 8?, TYPE 1:  OUTPUT WANTED?, TYPE 2")
0685      READ(1,101) IANS
0686 101  FORMAT(I1)
0687      IF(IANS.LE.0.OR.IANS.GT.2) IANS=2
0688      GO TO (20,100) IANS
0689  C
0690 160  IF(ISTAT+1)162,164,164
0691 162  WRITE(1,163)
0692 163  FORMAT(" ILLEGAL RECORD LENGTH")
0693      GO TO 20
0694 164  WRITE(1,165)
0695 165  FORMAT(" PARITY ERROR")
0696      GO TO 20
0697  C
0698 170  CALL CLOSE(1DCB)
0699      END

```

FIN4 COMPILER: MP92060-16092 REV. 1726

** NO WARNINGS ** NO ERRORS ** PROGRAM = 09319 CUMMUN = 00035

FIN. 4:23 PM THU., 22 DEC., 1977

```

0700      SUBROUTINE STAR(IDCH)
0701 C      BY H.L. PEACE   MRI   OCTOBER 1977
0702 C
0703 C      THIS SUBROUTINE COMPUTES THE PASQUILL STABILITY CLASSIFICATION BY
0704 C      THE STAR METHOD OUTLINED BY TURNER (JAN FEB 1964). IT REQUIRES A
0705 C      SOLAR ANGLE FACTOR TABLE FOR EACH POSSIBLE DAYLIGHT HOUR FOR EVERY
0706 C      DAY OF THE YEAR STORED IN DISK BY THE SUN PROGRAM. THIS TABLE IS
0707 C      CALLED INTO CORE 1 MONTH AT A TIME AND IS STORED AS ISUN(HOUR,DAY).
0708 C      THIS SUBPROGRAM ASSUMES THAT, WHEN CALLED, A SURFACE WEATHER
0709 C      OBSERVATION HAS BEEN READ BY THE MAIN PROGRAM USING SUBROUTINE
0710 C      TDF14 AND THE NEEDED PARAMETERS ARE STORED IN COMMON AS:-
0711 C      MU = MONTH = ICOM(6)
0712 C      IDY= DAY = ICOM(7)
0713 C      IHR = HOUR = ICOM(8)
0714 C      ICLNG = CEILING = ICOM(9)
0715 C      IWIND = WIND SPEED = ICOM(12)
0716 C      ICLD = TOTAL CLOUD COVER = ICOM(19)
0717 C      THE DESIRED PASQUILL INDEX IS RETURNED AS ISTAB
0718 C
0719 C      THIS SUBROUTINE IS CALLED BY "CALL STAR(IDCH)"
0720 C      THE CALLING PROGRAM MUST CONTAIN A COMPARIBLE COMMON; DIMENSIONS =
0721 C      NAME(3) AND IDCH(144); DATA = NAME/2HST,2HAR,2HDF; AND THE FILE
0722 C      OPEN AND CLOSE STATEMENTS
0723 C      CALL OPEN(IDCH,IER,NAME)
0724 C      CALL CLOSE(IDCH)
0725 C
0726 C      THIS PROGRAM CHECKS FOR VALID MONTHS, DAYS AND HOURS PASSED BY THE
0727 C      PROGRAM TDF14. IF INVALID IT RETURNS ISTAB = 10
0728 C
0729 C      COMMON ICOM(28),IDAT1(3),ISIA(3),ISTAB
0730 C      DIMENSION ISTBL(7,12),ISUN(18,31),IDCH(144)
0731 C      EQUIVALENCE (MU,ICOM(6)), (IDY,ICOM(7)), (IHR,ICOM(8)),
0732 C      1(ICLNG,ICOM(9)), (IWIND,ICOM(12)), (ICLD,ICOM(19))
0733 C
0734 C      DATA CONTAINS THE TABLE OF STABILITY INDEX AS A FUNCTION OF
0735 C      WIND SPEED AND SOLAR INDEX CORRECTED FOR CLOUD COVER ( 7 NET
0736 C      RADIATION INDEX BY 12 WIND SPEEDS) INDEX FOR NET RADIATION (7)=
0737 C      TURNER INDEX +3-- TURNER -2=1 TURNER 4=7.
0738 C      INDEX FOR WIND SPEED BY KNOTS (0=1 AND 12=12 OR MORE)
0739 C
0740 C      DATA ISTBL/ 7,6,4,3,2,1,1,7,6,4,3,2,2,1,1,6,4,3,2,2,1,6,5,4,4,3,2,
0741 C      11,6,5,4,4,3,2,1,6,5,4,4,3,2,2,5,4,4,4,3,2,2,5,4,4,4,3,3,2,5,4,4,4,
0742 C      23,3,2,5,4,4,4,3,3,4,4,4,4,4,3,3,4,4,4,4,4,4,3,
0743 C      DATA MONTH /0/
0744 C
0745 C      1 IF (MONTH) 2,2,3
0746 C      TEST FOR A VALID MONTH. IF NOT EXIT
0747 C      2 IF(MU.EQ.0.OR.MU.GT.12) GO TO 65
0748 C      MONTH = MU
0749 C      CALL READP(IDCH,IER,ISUN,SSB,LEN,MONTH)
0750 C      IF(IER.LT.0) WRITE(1,5)IER,MU,IDY,IHR
0751 C      IF THE SUN TABLE IS DESIRED EACH MONTH REMOVE THE NEXT C
0752 C      WRITE(6,12) MONTH,((ISUN(1,J),J=1,17),J=1,31)
0753 C      GO TO 6
0754 C      TEST FOR A VALID MONTH. IF NOT EXIT

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0755      3 IF(MU.EQ.0,OK,MU.GI,12) GO TO 65
0756 C      TEST FOR PROPER MONTHS SOLAR INDEXES IN CORE
0757      IF(MONTH=MO) 4,6,4
0758 C      NO, READ PROPER MONTHS INDEXES INTO CORE
0759      4 MONTH = MU
0760      CALL READP(IDCH,IER,ISUN,558,LEN,MONTH)
0761      IF(IER.LI,0) WRITE(1,5)IER,MU,1DY,1HR
0762      5 FORMAT(110,513)
0763 C      IF THE SUN TABLE IS DESIRED EACH MONTH REMOVE THE NEXT TWO C'S
0764 C      WRITE(6,12) MONTH,((ISUN(1,J),J=1,17),J=1,31)
0765      12 FORMAT(1H1,17X,12//31(1H,17/2//))
0766 C      CHECK FOR INVALID HOUR (<0 OR>23), IF SO EXIT
0767      6 IF(1HR.LI,0,OK,1HR.GI,23) GO TO 65
0768 C      CHECK WHETHER HOUR IS WITHIN SUN TABLE (4AM-8PM)
0769      IF(1HR-4)10,9,7
0770      7 IF(1HR-20)9,9,10
0771 C      HOUR FALLS WITHIN THE TABLE, EXTRACT NET RADIATION INDEX FOR
0772 C      HOUR AND DAY
0773 C      JHR = TABLE INDEX FOR 1HR
0774      9 JHR = 1HR-3
0775 C      CHECK WHETHER DAY IS VALID, IF NOT EXIT
0776      IF(1DY.EJ,0,OK,1DY.GI,31) GO TO 65
0777      INDEX = ISUN(JHR,1DY)
0778      IF(INDEX)10,15,30
0779 C      HOUR 0 TO 3 OR 21 TO 23 (NIGHTIME)
0780      10 INDEX=0
0781 C      NIGHT, CORRECT FOR NIGHTTIME CLOUD COVER
0782      15 IF(1CLO-4)21,21,17
0783 C      CLOUD COVER>4/10 IS IT OVERCAST?
0784      17 IF(1CLO-10)23,19,19
0785 C      OVERCAST CHECK FOR CEILING < 7000 FT IF SO LEAVE INDEX = 0
0786      19 IF(1CLNG-70)50,23,23
0787 C      CLOUD COVER <= 4/10 (SCATTERED)
0788      21 INDEX = -2
0789      GO TO 50
0790 C      CLOUD COVER > 4/10 (BROKEN OR OVERCAST ABOVE 7000 FT)
0791      23 INDEX = -1
0792      GO TO 50
0793 C      DAYTIME, CORRECT FOR DAYTIME CLOUD COVER
0794 C      CHECK FOR CLOUD COVER <= 5/10 IF SO, INDEX UNMODIFIED
0795      30 IF(1CLO-5)50,50,32
0796 C      CLOUD COVER > 5/10, CHECK FOR OVERCAST BELOW 7000 FT
0797      32 IF(1CLO-10)40,34,34
0798      34 IF(1CLNG-70)50,46,46
0799 C      OVERCAST BELOW 7000 FT
0800      36 INDEX=0
0801      GO TO 50
0802 C      CLOUD COVER > 5/10 BUT NOT OVERCAST
0803      40 IF(1CLNG-70)42,44,44
0804 C      CEILING < 7000 FT
0805      42 INDEX = INDEX-2
0806      GO TO 48
0807 C      CEILING >= 7000 FT TEST FOR <16000 FT
0808      44 IF(1CLNG-160)46,50,50
0809 C      CEILING >= 7000 FT < 16000 FT OR OVERCAST ABOVE 7000 FT

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STAR 4:23 PM THU., 22 DEC., 1977

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0810      46 INDEX = INDEX+1
0811 C      IF INDEX < 1 SET J1 EQUAL TO 1
0812      48 IF (INDEX, L1, 1) INDEX = 1
0813 C      INDEX SET TO PROPER VALUE, CONVERT TO TABLE INDEX VALUE AND SET
0814 C      J1ND INDEX
0815      50 INDEX = INDEX + 3
0816      IF (J1ND) 52, 52, 54
0817      52 J1ND = 1
0818      GO TO 60
0819      54 IF (J1ND - 12) 59, 59, 58
0820      58 J1ND = 12
0821      GO TO 60
0822      59 J1ND = J1ND
0823      60 ISTAB = ISTAB (INDEX, J1ND)
0824      GO TO 70
0825 C      IF MONTH, DAY OR HOUR IS INVALID WRITE AN ERROR MESSAGE AND RETURN
0826 C      TO MAIN WITH ISTAB = 10
0827      65 WRITE (1, 66) MO, DY, JHR
0828      66 FORMAT (" INVALID MONTH, DAY OR HOUR PASSED TO STAR = ", 2(I5, "/"),
0829      115)
0830      70 RETURN
0831      END
```

FIN4 COMPILER: HP92060-16092 REV. 1726

** NO WARNINGS ** NO ERRORS ** PROGRAM = 01040 COMMON = 00035

FIN. 4:23 PM THU., 22 DEC., 1977

```
0832      SUBROUTINE SURRN(NUMB,INDEX)
0833      C
0834      C
0835      IF (NUMB=13) 10,20,20
0836      10  INDEX=NUMB
0837          GO TO 70
0838      20  IF (NUMB=25) 30,40,40
0839      30  INDEX=((NUMB-13)/2)+13
0840          GO TO 70
0841      40  IF (NUMB=49) 50,60,60
0842      50  INDEX=((NUMB-25)/6)+19
0843          GO TO 70
0844      60  INDEX=((NUMB-49)/12)+23
0845      IF (INDEX.GT.25) INDEX=25
0846      70  RETURN
0847      END
```

FIN4 COMPILER: HP92060-16092 REV. 1726

** NO WARNINGS ** NO ERRORS ** PROGRAM = 00078 COMMON = 00000

FIN. 4:26 PM THU., 22 DEC., 1977

```

0001 FIN,L,C,I
0002 SUBROUTINE TDF14(LU,ISTAT)
0003 C
0004 C THIS SUBROUTINE READS AND DECODES TDF14 FORMAT TAPES FROM NOAA
0005 C
0006 C ON EACH CALL, ONE HOURS WORTH OF DATA IS MOVED INTO THE
0007 C COMMON BUFFER
0008 C
0009 C NOTE:
0010 C 1. ALL MISSING OR INVALID DATA IS RETURNED AS 9999
0011 C 2. SCALING OF SOME PARAMETERS IS NECESSARY, SEE TDF-14
0012 C REFERENCE MANUAL FOR PROPER SCALING
0013 C 3. DATA IS RETURN IN INTEGER FORMATS ONLY
0014 C
0015 C CALLING SEQUENCE
0016 C CALL TDF14(LU,ISTAT)
0017 C
0018 C WHERE: LU =LOGICAL UNIT OF MAGNETIC TAPE
0019 C ISTAT=RETURNED STATUS AFTER CALL
0020 C -2=ILLEGAL RECORD LENGTH ENCOUNTERED
0021 C -1=PARITY ERROR ENCOUNTERED
0022 C 0=NO ERRORS
0023 C 1=EOF ENCOUNTERED
0024 C 2=EOT ENCOUNTERED
0025 C
0026 C CONTENTS OF COMMON BUFFER
0027 C
0028 C VARIABLE LOCATION DESCRIPTION
0029 C ICOM(1) 1 TAPE FORMAT ID
0030 C ICOM(2-4) 2-4 STATION NUMBER IN HOLLERITH
0031 C ICOM(5) 5 YEAR <00-99>
0032 C ICOM(6) 6 MONTH <1-12 JAN-DEC>
0033 C ICOM(7) 7 DAY
0034 C ICOM(8) 8 HOUR <0-23> LST
0035 C ICOM(9) 9 CEILING HEIGHT 100'S OF FT.
0036 C ICOM(10) 10 VISIBILITY <IN TDF14 CODING SCHEME>
0037 C ICOM(11) 11 WIND DIRECTION ON 16 PT. ROSE
0038 C < IN TDF14 CODING SCHEME >
0039 C ICOM(12) 12 WIND SPEED IN KNOTS
0040 C ICOM(13) 13 DRY BULB TEMPERATURE IN WHOLE DEG F
0041 C ICOM(14) 14 WET BULB TEMPERATURE IN WHOLE DEG F
0042 C ICOM(15) 15 DEW POINT TEMPERATURE IN WHOLE DEG F
0043 C ICOM(16) 16 RELATIVE HUMIDITY IN WHOLE PERCENT
0044 C ICOM(17) 17 SEA LEVEL PRESSURE IN MILLIBARS*10
0045 C ICOM(18) 18 STATION PRESSURE IN (IN-HG)*100
0046 C ICOM(19) 19 CLOUD COVER IN TENTHS
0047 C ICOM(20) 20 THUNDERSTORM, TORNADO, OR SQUALL
0048 C ICOM(21) 21 RAIN, RAIN SHOWERS, OR FREEZING RAIN
0049 C ICOM(22) 22 DRIZZLE, FREEZING DRIZZLE, OR RAIN SQUALLS
0050 C ICOM(23) 23 SNOW, SNOW PELLETS, OR ICE CRYSTALS
0051 C ICOM(24) 24 SNOW SHOWERS, SNOW GRAINS, OR SNOW SQUALLS
0052 C ICOM(25) 25 SLEET, HAIL, OR SMALL HAIL
0053 C ICOM(26) 26 FOG, BLOWING DUST OR SAND
0054 C ICOM(27) 27 SMOKE, HAZE, DUST, BLOWING SNOW OR SPRAY
0055 C ICOM(28) 28 WIND DIRECTION ON A 36 PT. ROSE <10 DEG>

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TDF14 4:26 PM THU., 22 DEC., 1977

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0056 C
0057 C   NOTE: FOR ICOM(20-27) SEE CODING SCHEME IN TDF14 REFERENCE MANUAL
0058 C
0059 C
0060 C   SUBROUTINES USED
0061 C
0062 C           IVAL <INTEGER FUNCTION> DECODES FIELD WITH
0063 C                   SIGNED OVER PUNCHES
0064 C
0065 C           MOD <INTEGER LIBRARY FUNCTION> MODULAR REDUCTION
0066 C
0067 C           TDFCD <SUBROUTINE> DECODES THE 80 COLUMN HOURLY DATA
0068 C                   WITHIN EACH TDF14 RECORD
0069 C
0070 C
0071 C   COMMON ICOM(28)
0072 C   DIMENSION IBUF(249),ICARD(40,6),IREG(2),IUP(3),IFLD(21),
0073 C   1           ISGN(21),IZERO(10)
0074 C   EQUIVALENCE (IBUF(9),ICARD),(REG,IREG,IA),(IREG(2),IB),
0075 C   1           (IZERO,IFLD(12))
0076 C   DATA IZERO/10*0/,ISGN(1)/1H0/,IFLD(1)/0/
0077 C   DATA KUUNT/0/,IUP/2HUP,2H,8,2H /
0078 C   ISTAT=0
0079 C   IF(KUUNT.NE.0) GO TO 100
0080 C
0081 C   READ NEXT RECORD
0082 C
0083 C   REG=EXEC(1,LU,IBUF(2),248)
0084 C   IF(IAND(IA,128).EQ.0) GO TO 10
0085 C
0086 C   END OF FILE ENCOUNTERED
0087 C
0088 C   ISTAT=1
0089 C   RETURN
0090 C
0091 C 10   IF(IAND(IA,408).EQ.0) GO TO 20
0092 C
0093 C   END OF TAPE DETECTED
0094 C
0095 C   ISTAT=2
0096 C   CALL EXEC(3,LU+5008)
0097 C   WRITE(1,900)
0098 C 900  FORMAT(// " TDF14: END OF TAPE " /)
0099 C
0100 C 20   IF(IAND(IA,2).EQ.0) GO TO 30
0101 C
0102 C   PARITY ERROR ENCOUNTERED
0103 C
0104 C   I=MESSS(IUP,6)
0105 C   ISTAT=-1
0106 C
0107 C 30   IF(IB.EQ.248) GO TO 40
0108 C
0109 C   RECORD LENGTH IS ABNORMAL
0110 C

```


IDF14 4:26 PM THU., 22 DEC., 1977

```

0111      ISTA1=-2
0112 L
0113 L      SHIFT IRUF LEFT 1 BYTE TO ALIGN CULM 16 ON WORD BOUNDARY
0114 L
0115 40      CALL ALIGN(IRUF,495)
0116      CALL EBCAS(498,IRUF,IRUF,IS)
0117 C
0118 C      DECODE DATE AND STATION
0119 C
0120      CALL CODE
0121      READ(IRUF,800)(ICUM(I),I=1,7)
0122 800      FORMAT(1X,14,2A2,A1,3I2)
0123 C
0124 C      DECODE THIS HOURS DATA
0125 C
0126 100      KOUNT=KOUNT+1
0127      CALL IDFCD(ICUM,IFLD,ISGN,ICAND(1,KOUNT))
0128 C
0129 C      MODIFICATION FOR ASSEMBLY VERSION OF 'IVAL' 11/3/77 R.H.
0130 C
0131      CALL IVAL(ICUM(9),IFLD(2),ISGN(2),20)
0132      IF(ISGN(12).EQ.1H-) ICOM(19)=10
0133      KOUNT=MOD(KOUNT,6)
0134      RETURN
0135      END

```

FIN4 COMPILER: HP92060-16092 REV. 1/76

** NO WARNINGS ** NO ERRORS ** PROGRAM = 00522 COMMON = 00028

FIN. 4:26 PM THU., 22 DEC., 1977

```

0136      SUBROUTINE TDFCD(ICOM,IFLD,ISGN,ICARD)
0137 C
0138 C      THIS SUBROUTINE DECODES THE HOURLY CARD IMAGE WITHIN A TDF14 TAPE
0139 C      SEE THE TDF14 MANUAL AND THE COMMENTS IN SUBROUTINE TDF14 FOR A
0140 C      DESCRIPTION OF THE EXACT FORMAT
0141 C
0142      DIMENSION ICOM(28),IFLD(21),ISGN(21),ICARD(40)
0143      CALL CODE
0144      READ(ICARD,810)ICOM(8),(IFLD(1),ISGN(1),I=2,11),
0145      1      (ISGN(J),J=12,20),IFLD(21),ISGN(21)
0146 810    FORMAT(12,2(1X,12,A1),11,A1,12,A1,3(12,A1),1X,12,A1,14,A1,
0147      1      13,A1,5X,A1,23X,8A1,11,A1)
0148      RETURN
0149      END

```

FIN4 COMPILER: HP42060-1b092 REV. 1726

** NO WARNINGS ** NO ERRORS ** PROGRAM = 00121 COMMON = 00000

#01 WBAN/NOAA OVER PUNCH DECODER

```

0004          SUP
0005*
0006*  THIS SUBROUTINE WILL TEST ANY DATA ITEM WITH A POSSIBLE
0007*  SIGN OVER THE UNITS POSITION PUNCH READ AS AN A1, AND
0008*  THE HIGH ORDER POSITIONS < GREATER THAN UNITS > READ
0009*  AS AN I SPEC OF THE PROPER WIDTH
0010*
0011*  UN ENTRY
0012*
0013*          IFLD=HIGH ORDER VALUE <IE NOT PRESENT = 0>
0014*          ISGN=UNITS CHARACTER WITH POSSIBLE OVER PUNCH
0015*
0016*  UN RETURN
0017*
0018*          ICOM IS THE PROPER SIGNED INTEGER OR 999 IF
0019*          ISGN IS * OR BLANK
0020*
0021*  EXAMPLE
0022*
0023*          FIELD ON INPUT      S
0024*          READ WITH FORMAT    I3,A1
0025*          INTO VARIABLES      IFLD,ISGN
0026*
0027*          CALLING STATEMENT   CALL IVAL(ICOM,IFLD,ISGN,N)
0028*
0029*          WHERE ICOM,IFLD,ISGN CAN BE ARRAYS OF DIMENSION N
0030*          OR SIMPLE VARIABLES WITH N=1
0031*
0032*  NOTE: IT IS THE USERS RESPONSIBILITY TO DO ANY NECESSARY SCALING
0033*
0034*  THIS ROUTINE WAS ADAPTED FROM THE ROUTINE IN THE TOF-14 SURFACE
0035*  OBSERVATIONS MANUAL, OCT 1975
0036*

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#01 ABAN/NOAA OVER PUNCH DECODER

```

0038 00000      A      EQU 0
0039 00001      B      EQU 1
0040              ENT IVAL
0041              EXT .ENTR
0042*
0043 00000 000000  ICOM BSS 1      PARAMTER LINKAGE AREA
0044 00001 000000  IFLD BSS 1
0045 00002 000000  ISGN BSS 1
0046 00003 000000  NUM  BSS 1
0047*
0048 00004 000000  IVAL NOP      ENTRY POINT
0049 00005 016001X JSB .ENTR    PICK UP PARAMETER
0050 00006 000000H DEF ICOM     LINKAGE ADDRESSES
0051*
0052 00007 162003H LDA NUM,1     LOAD NUMBER OF FIELDS
0053 00010 003004  CMA,INA      TO DECODE AND MAKE NEGATIVE
0054 00011 072003H STA NUM      SAVE IT
0055*
0056*      LOOP FOR EACH FIELD TO DECODE
0057*
0058 00012 006400  LOUPL CLB      LOAD HIGH ORDER PART
0059 00013 162001H LDA IFLD,1    OF FIELD INTO BA REGISTER
0060 00014 104400  DST HIGH      PAIR AND SAVE IT
0061 00016 162002H LDA ISGN,1    LOAD OVER PUNCH CHARACTER
0062 00017 052147H CPA =A        CHECK FOR BLANK
0063 00020 026047H JMP MISS      YES - FIELD IS MISSING
0064 00021 052150H CPA =A*       CHECK FOR *
0065 00022 026047H JMP MISS      YES - FIELD IS MISSING
0066*
0067*      SET UP BUFFER ADDRESSES FOR CHARACTER SEARCH LOOP
0068*
0069 00023 066106H LDB ADNUM     LOAD AND SAVE
0070 00024 076103H STB INUM      STARTING ADDRESS
0071 00025 066107H LDB ADPOS     OF OVER PUNCH
0072 00026 076104H STB POSN     CHARACTER BUFFERS
0073 00027 066110H LDB ADNEG
0074 00030 076105H STB NEGN*
0075 00031 006400  CLB          SET DIGIT COUNTER TO ZERO
0076*
0077*      DECODE OVER PUNCHED CHARACTER LOOP
0078*
0079 00032 152103H LOUPL2 CPA INUM,1  IS IT B ?
0080 00033 026057H JMP POS      YES
0081 00034 152104H CPA POSN,1        IS IT +B ?
0082 00035 026057H JMP POS          YES
0083 00036 152105H CPA NEGN,1        IS IT -B ?
0084 00037 026067H JMP NEG          YES
0085 00040 056151H CPH =010        END OF SEARCH ?
0086 00041 026047H JMP MISS          YES - CHARACTER IS UNRECOGNIZABLE
0087*
0088 00042 036103H ISZ INUM        INCREMENT BUFFER
0089 00043 036104H ISZ POSN        SEARCH ADDRESS
0090 00044 036105H ISZ NEGN        POINTERS
0091 00045 006004  INB            INCREMENT DIGIT COUNTER
0092 00046 026032H JMP LOUPL2      CONTINUE SEARCH
0093*

```

#01 WBAN/NDAA OVER PUNCH DECODER

```

0094*      MAKE VALUE MISSING <9999>
0095*
0096 00047 062152R MISS LDA =09999 SET ICOM TO
0097 00050 172000R STA ICOM,I MISSING <9999>
0098*
0099*      END LOOP1 TESTS
0100*
0101 00051 036000R CONT ISZ ICOM INCREMENT LINKAGE
0102 00052 036001R ISZ IFLD BUFFER ADDRESSES
0103 00053 036002R ISZ ISGN
0104*
0105 00054 036003R ISZ NUM DONE YET ?
0106 00055 026012R JMP LOOP1 NO - DO NEXT FIELD
0107 00056 126004R JMP IVAL,I YES - RETURN
0108*
0109*      DIGIT IS POSITIVE - CALCULATE FIELD VALUE
0110*
0111 00057 076100R POS STB TEMP SAVE DIGIT
0112 00060 104200 DLD HIGH RECOVER HIGH UNDER PART
0113 00062 100200 MPY =010 MULTIPLE BY 10
0114 00064 042100R ADA TEMP ADD IN UNITS DIGIT
0115 00065 172000R STA ICOM,I PLACE VALUE IN ICOM
0116 00066 026051R JMP CONT GO TO END LOOP TESTS
0117*
0118*      DIGIT IS NEGATIVE - CALCULATE FIELD VALUE
0119*
0120 00067 076100R NEG STB TEMP SAVE DIGIT
0121 00070 104200 DLD HIGH RECOVER HIGH UNDER PART
0122 00072 100200 MPY =010 MULTIPLE BY 10
0123 00074 042100R ADA TEMP ADD IN UNITS DIGIT
0124 00075 003004 CMA,INA MAKE NEGATIVE
0125 00076 172000R STA ICOM,I PLACE VALUE IN ICOM
0126 00077 026051R JMP CONT GO TO EN LOOP TESTS

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#01 NHAN/NOAA OVER PUNCH DECODER

0128* CONSTANT AND DATA STORAGE AREA

0129*

0130	00100	000000	TEMP	BSS 1	TEMPORARY STORAGE FOR UNITS DIGIT
0131	00101	000000	HIGH	BSS 2	TEMPORARY STORAGE FOR HIGH ORDER PART OF
0132	00103	000000	INUM	BSS 1	POINTER INTO UNSIGNED DIGIT BUFFER
0133	00104	000000	POSN	BSS 1	POINTER INTO +SIGNED DIGIT BUFFER
0134	00105	000000	NEGN	BSS 1	POINTER INTO -SIGNED DIGIT BUFFER
0135	00106	000111R	ADNUM	DEF N	ADDRESS OF UNSIGNED DIGIT BUFFER
0136	00107	000123R	ADPOS	DEF PLUS	ADDRESS OF +SIGNED DIGIT BUFFER
0137	00110	000135R	ADNEG	DEF MINUS	ADDRESS OF -SIGNED DIGIT BUFFER
0138	00111	030040	N	ASC 10,0	1 2 3 4 5 6 7 8 9
0139	00123	075440	PLUS	UCT 75440	
0140	00124	040440		ASC 9,A	B C D E F G H I
0141	00135	076440	MINUS	UCT 76440	
0142	00136	045040		ASC 9,J	K L M N O P Q R
0143				END	

** NO ERRORS ATOTAL **KIE ASMB 760924**

#01

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0001          ASMB,L,C,I
0002 00000      NAM ALIGN,7 TDF14 BUFFER ALIGNMENT ROUTINE 11/9/76
0003          ENT ALIGN
0004          EXT .ENTR
0005 00000      A      EQU 0
0006 00001      B      EQU 1
0007 00000 000000 IBUF  BSS 1
0008 00001 000000 ILEN  BSS 1
0009 00002 000000 ALIGN NUP      ENTRY POINT
0010 00003 016001X     JSB .ENTR  PICK UP PARAMETER ADDRESSES
0011 00004 000000K     DEF IBUF
0012 00005 162001K     LDA ILEN,1  LOAD NUMBER OF BYTES TO MOVE
0013 00006 072001K     STA ILEN    SAVE IT.
0014 00007 062000K     LDA IBUF    CALCULATE ENDING
0015 00010 000066      CLE,ELA     BYTE ADDRESS
0016 00011 070001      STA B       SAVE IN B-REGISTER
0017 00012 002004      INA         CALCULATE BEGINNING BYTE ADDRESS A-REGIS
0018 00013 105765      MBT ILEN    MOVE BYTES
      00014 000001K
      00015 000000
0019 00016 126002K     JMP ALIGN,1  RETURN
0020          END
**  NO ERRORS *TOTAL **RTE ASMB 760924**

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APPENDIX B

APPENDIX B

DUAL STATION WIND CORRELATION ANALYSES

	<u>Page</u>
Boardman, Oregon	B- 1
Boone, North Carolina	B- 25
Holyoke, Massachusetts	B- 49
Ludington, Michigan	B- 73
Montauk Point, New York	B- 97
San Geronio Pass, California	B-121

Boardman, Oregon

WIND SPEED REGRESSION ANALYSIS
FOR PENDLETON, OREGON(PDT) WIND DIRECTIONS: NNW- NE ;PERIOD: FROM 1/ 1/57 TO 12/31/60

TOTAL NO. OBS.= 3399
REGRESSION EQUATION: (DLS) = .370(PDT) + 2.155 CORREL. COEFF.= .229 SIGMA Y= 2.453 SLOPE ERROR = .027

DELTA WIND DIRECTION FREQUENCY ANALYSIS
 FOR PENDLETON, OREGON(PDT) WIND DIRECTIONS: NNW- NE ;PERIOD: FROM 1/ 1/57 TO 12/31/60

B-3

WIND SPEED REGRESSION ANALYSIS
FOR PENDLETON, OREGON(PDT) WIND DIRECTIONS: ENE- SE ;PERIOD: FROM 1/ 1/57 TO 12/31/60

TOTAL NO. OBS.= 6668
REGRESSION EQUATION: (DLS) = .189(PDT) + 1.936 CORREL. COEFF.= .105 SIGMA Y= 2.231 SLOPE ERROR = .022

DALESPORT, WASH (DLS) WIND DIRECTION FREQUENCY ANALYSIS: ALL HOURS
 FOR PENDELTON, OREGON (PD) WIND DIRECTIONS: ENE- SE ;PERIOD: FROM 1/ 1/57 TO 12/31/60

TOTAL NO. OBS.= 6668

DALESPORT, WASH (DLS) WIND DIRECTION FREQUENCY ANALYSIS: 0700-1800 LST
 FOR PENDLETON, OREGON(PDT) WIND DIRECTIONS: ENE- SE ;PERIOD: FROM 1/ 1/57 TO 12/31/60

TOTAL , OBS.= 2113

WIND SPEED REGRESSION ANALYSIS
 FOR PENDLETON, OREGON(PDT) WIND DIRECTIONS: SSE- SW ;PERIOD: FROM 1/ 1/57 TO 12/31/60

TOTAL NO. OBS. = 5946
 REGRESSION EQUATION: (DLS) = .176(PDT) + 2.716 CORREL. COEFF. = .129 SIGMA Y = 2.629 SLOPE ERROR = .018

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(DLS) WIND DIRECTION

TOTAL NO. OBS. = 5946

WIND SPEED REGRESSION ANALYSIS
FOR PENDLETON, OREGON(PDT) WIND DIRECTIONS: WSW- NW ;PERIOD: FROM 1/ 1/57 TO 12/31/60

TOTAL NO. OBS.= 9864
REGRESSION EQUATION: (OLS) = .424(PDT) + 2.817 CORREL. COEFF.= .420 SIGMA Y= 2.910 SLOPE ERROR = .009

DALESPORT, WASH (DLS) WIND DIRECTION FREQUENCY ANALYSIS: ALL HOURS
 FOR PENDLETON, OREGON(PDT) WIND DIRECTIONS: WSW- NW ;PERIOD: FROM 1/ 1/57 TO 12/31/60

TOTAL NO. OBS.= 9867

DALESPORT, WASH (DLS) WIND DIRECTION FREQUENCY ANALYSIS: 0700-1800 LST
 FOR PENDLETON, OREGON(PDT) WIND DIRECTIONS: WSW- NW ;PERIOD: FROM 1/ 1/57 TO 12/31/60

TOTAL NO. = 6177

WIND SPEED REGRESSION ANALYSIS
FOR PENDLETON, OREGON(PDT) WIND DIRECTIONS: ALL PERIOD: FROM 1/ 1/57 TO 12/31/60

TOTAL NO. OBS. = 26275

REGRESSION EQUATION: (DLS) = .488(PDT) + 1.792 CORREL. COEFF. = .437 SIGMA Y = 2.703 SLOPE ERROR = .006

DELTA WIND DIRECTION FREQUENCY ANALYSIS
 FOR PENDLETON, OREGON(PDT) WIND DIRECTIONS: ALL ;PERIOD: FROM 1/ 1/57 TO 12/31/60

B-18

B-19

TOTAL NO. OBS. = 25880

B-21

NDIR	A	B	R	E	BE
1	.370	2.155	.229	2.453	.027
2	.189	1.936	.105	2.231	.022
3	.176	2.716	.129	2.629	.018
4	.424	2.817	.420	2.910	.009
5	.488	1.792	.437	2.703	.006

TOTAL NUMBER OF OBSERVATIONS USED= 26278

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Boone, North Carolina

WIND SPEED REGRESSION ANALYSIS
FOR BRISTOL/TRI CITY, IN (TRI) WIND DIRECTIONS: NNW- NE PERIOD: FROM 1/ 1/49 TO 1/ 1/52

TOTAL NO. OBS.= 4306
REGRESSION EQUATION: (HKY) = .466 (TRI) + 1.149 CORREL. COEFF.= .407 SIGMA Y= 1.841 SLOPE ERROR = .016

B-27

[illegible]

TOTAL NO. HRS. = 4306

HICKORY, N. CAROLINA (HKY) WIND DIRECTION FREQUENCY ANALYSIS: 0700-1800 LST
 FOR BRISTOL/TRI CITY, TN (TRI) WIND DIRECTIONS: NNW- NE ; PERIOD: FROM 1/ 1/49 TO 1/ 1/52

TOTAL NO. = 1699

WIND SPEED REGRESSION ANALYSIS
FOR BRISTOL/TRI CITY, TN (TRI) WIND DIRECTIONS: ENE - SE : PERIOD: FROM 1/ 1/49 TO 1/ 1/52

REGRESSION EQUATION: (HKY) = .545 (TRI) + 1.334 CORREL. COEFF. = .341 SIGMA Y = 1.622 SLOPE ERROR = .012

B-32

WIND SPEED REGRESSION ANALYSIS
 FOR BRISTOL/TRI CITY, TN (TRI) WIND DIRECTIONS: SE - SW PERIOD: FROM 1/ 1/49 TO 1/ 1/52

TOTAL NO. OBS. = 4000
 REGRESSION EQUATION: (HKY) = .259 (TRI) + 1.762 CORREL. COEFF. = .284 SIGMA Y = 2.059 SLOPE ERROR = .014

DELTA WIND DIRECTION FREQUENCY ANALYSIS
 FOR BRISTOL/TRI CITY, IN (TRI)WIND DIRECTIONS: SSE- SW :PERIOD: FROM 1/ 1/49 TO 1/ 1/52

B-35

B-37

DELTA WIND DIRECTION FREQUENCY ANALYSIS
 FOR BRISTOL/TRI CITY, TN (TRI) WIND DIRECTIONS: WSW- NW PERIOD: FROM 1/ 1/49 TO 1/ 1/52

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(HEKY) WIND DIRECTION

TOTAL NO. OBS. = 7810

WIND SPEED REGRESSION ANALYSIS
FOR BRISTOL/TRI CITY, IN (TRI) WIND DIRECTIONS: ALL PERIOD: FROM 1/ 1/49 TO 1/ 1/52

TOTAL NO. OBS.= 2619H
REGRESSION EQUATION: (HKY) = .456 (TRI) + 1.369 CORREL. COEFF.= .485 SIGMA Y= 1.952 SLOPE ERROR = .005

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(HKY) WIND DIRECTION

TOTAL NO. OBS.=22449

HICKORY, N. CAROLINA (HKY) WIND DIRECTION FREQUENCY ANALYSIS: 0700-1800 LST
 FOR BRISTOL/IRI CITY, IN (IRI) WIND DIRECTIONS: ALL :PERIOD: FROM 1/ 1/49 TO 1/ 1/52

TOTAL NO. = 12089

B-45

NDIR	A	B	R	E	HF
1	.466	1.149	.407	1.841	.016
2	.345	1.334	.341	1.622	.012
3	.259	1.762	.284	2.059	.014
4	.533	1.413	.503	2.251	.010
5	.456	1.369	.485	1.952	.005

TOTAL NUMBER OF OBSERVATIONS USED= 26198

Holyoke, Massachusetts

WIND SPEED REGRESSION ANALYSIS
FOR CHICOPEE FALLS, MASS (CHI) WIND DIRECTIONS: NNW- NE PERIOD: FROM 1/ 1/49 TO 1/ 1/52

TOTAL NO. OBS. = 6830
REGRESSION EQUATION: (WES) = .617 (CHI) + .908 CORREL. COEFF. = .700 SIGMA Y = 1.636 SLOPE ERROR = .008

DELTA WIND DIRECTION FREQUENCY ANALYSIS
 FOR CHICUPEE FALLS, MASS (CH) WIND DIRECTIONS: NNW- NE PERIOD: FROM 1/ 1/49 TO 1/ 1/52

WESTFIELD, MASS. (WES) WIND DIRECTION FREQUENCY ANALYSIS: ALL HOURS
 FOR CHICOPEE FALLS, MASS (CHI) WIND DIRECTIONS: NNW- NE ; PERIOD: FROM 1/ 1/49 TO 1/ 1/52

B-51

TOTAL NO. OBS. = 6830

WIND SPEED REGRESSION ANALYSIS
FOR CHICOPEE FALLS, MASS (CHI) WIND DIRECTIONS: ENE- SE ; PERIOD: FROM 1/ 1/49 TO 1/ 1/52

TOTAL NO. OBS. = 1867

REGRESSION EQUATION: (WES) = .675 (CHI) + .188 CORREL. COEFF. = .697 SIGMA Y = 1.572 SLOPE ERROR = .016

DELTA WIND DIRECTION FREQUENCY ANALYSIS
 FOR CHICUPEE FALLS, MASS (CHI) WIND DIRECTIONS: ENL- SE ; PERIOD: FROM 1/ 1/49 TO 1/ 1/52

WIND SPEED REGRESSION ANALYSIS
FOR CHICOPEE FALLS, MASS (CHI) WIND DIRECTIONS: SSE - SW ; PERIOD: FROM 1/ 1/49 TO 1/ 1/52

TOTAL NO. OBS. = 7749
REGRESSION EQUATION: (WES) = .563 (CHI) + .724 CORREL. COEFF. = .607 SIGMA Y = 1.387 SLOPE ERROR = .008

DELTA WIND DIRECTION FREQUENCY ANALYSIS
 FOR CHICOPEE FALLS, MASS (CHI) WIND DIRECTIONS: SSE- SW ; PERIOD: FROM 1/ 1/49 TO 1/ 1/52

B-58

WIND SPEED REGRESSION ANALYSIS
FOR CHICOPEE FALLS, MASS (CHI) WIND DIRECTIONS: WSW- NW ; PERIOD: FROM 1/ 1/49 TO 1/ 1/52

B-61

REGRESSION EQUATION: (WES) = .683 (CHI) + .979 CORREL. COEFF. = .687 SIGMA Y = 1.857 SLOPE ERROR = .010

DELTA WIND DIRECTION FREQUENCY ANALYSIS
 FOR CHICOPEE FALLS, MASS (CHI) WIND DIRECTIONS: WSW- NW ; PERIOD: FROM 1/ 1/49 TO 1/ 1/52

B-62

WESTFIELD, MASS. (WFS) WIND DIRECTION FREQUENCY ANALYSIS: ALL HOURS
 FOR CHICOPEE FALLS, MASS (CHI) WIND DIRECTIONS: WSW- NW ; PERIOD: FROM 1/ 1/49 TO 1/ 1/52

B-63

TOTAL NO. OBS. = 5517

WESTFIELD, MASS. (WES) WIND DIRECTION FREQUENCY ANALYSIS: 0700-1800 LST
 FOR CHICOPEE FALLS, MASS (CHI) WIND DIRECTIONS: WSW- NW ; PERIOD: FROM 1/ 1/49 TO 1/ 1/52

TOTAL NO. OBS. =

REGRESSION EQUATION: $(WFS) = .583 (CHI) + 1.064$ CORREL. COEFF. = .721 SIGMA Y = 1.622 SLOPE ERROR = .003

DELTA WIND DIRECTION FREQUENCY ANALYSIS
 FOR CHICOPEE FALLS, MASS (CHI) WIND DIRECTIONS: ALL PERIOD: FROM 1/ 1/49 TO 1/ 1/52

B-66

B-67

CALM N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW
(WES) WIND DIRECTION

[illegible][illegible]

WESTFIELD, MASS. (WES) WIND DIRECTION FREQUENCY ANALYSIS: 0700-1800 LST
 FOR CHICUPEE FALLS, MASS (CHI) WIND DIRECTIONS: ALL PERIOD: FROM 1/ 1/49 TO 1/ 1/52

B-68

FREQUENCY(%)

TOTAL NO. OBS.=111

NDIR	A	H	H	L	Hf
1	.617	.408	.700	1.636	.008
2	.675	.188	.697	1.572	.016
3	.563	.724	.647	1.387	.008
4	.683	.979	.687	1.857	.010
5	.563	1.069	.721	1.622	.003

TOTAL NUMBER OF OBSERVATIONS USED= 26147

Ludington, Michigan

WIND SPEED REGRESSION ANALYSIS
 FOR MUSKEGON, MICHIGAN (MSK) WIND DIRECTIONS: NNW- NE ; PERIOD: FROM 1/ 1/61 TO 12/31/62

B-73

TOTAL NO. OBS. = 1709
 REGRESSION EQUATION: (MAN) = .771 (MSK) + .093 CORREL. COEFF. = .611 SIGMA Y = 2.0202 SLOPE ERROR = .0238
 ALB = -.0203 AME = .2057 SBY = 11500. SSX = 7222.2

DELTA WIND DIRECTION FREQUENCY ANALYSIS
 FOR MUSKEGON, MICHIGAN (MSK) WIND DIRECTIONS: NNE-NE ; PERIOD: FROM 1/ 1/61 TO 12/31/62

MANISTEE, MICHIGAN (MAN) WIND DIRECTION FREQUENCY ANALYSIS: ALL HOURS
 FOR MUSKOGON, MICHIGAN (MSK) WIND DIRECTIONS: NNW- NE ; PERIOD: FROM 1/ 1/61 TO 12/31/62

B-75

TOTAL NO. OBS.= 1769

WIND SPEED REGRESSION ANALYSIS
 FOR MUSKEGON, MICHIGAN (MSK) WIND DIRECTIONS: ENT - SE PERIOD: FROM 1/1/61 TO 12/31/62

B-77

TOTAL NO. OBS. = 2223
 REGRESSION EQUATION: (MAN) = .654 (MSK) + -.713 CORREL. COEFF. = .676 SIGMA Y = 1.9061 SLOPE ERROR = .0198

B-78

DELTA WIND DIRECTION FREQUENCY ANALYSIS
 FOR MUSKEGON, MICHIGAN (MSK) WIND DIRECTIONS: ENE - SE ; PERIOD: FROM 1/ 1/61 TO 12/31/62

MANISTEE, MICHIGAN (MAN) WIND DIRECTION FREQUENCY ANALYSIS: ALL HOURS
 FOR MUSKEGON, MICHIGAN (MSK) WIND DIRECTIONS: FNE - SE ; PERIOD: FROM 1/1/61 TO 12/31/62

TOTAL NO. OBS. = 2223

WIND SPEED REGRESSION ANALYSIS
FOR MUSKEGON, MICHIGAN (MSK) WIND DIRECTIONS: SSE- SW ; PERIOD: FROM 1/ 1/61 TO 12/31/62

B-81

TOTAL NO. OBS. = 2865
REGRESSION EQUATION: (MAN) = .669 (MSK) + .279 CORREL. COEFF. = .592 SIGMA Y = 2.1522 SLOPE ERROR = .0170
AL = .178n AN = .470n

DELTA WIND DIRECTION FREQUENCY ANALYSIS
 FOR MUSKEGON, MICHIGAN (MSK) WIND DIRECTIONS: SSE- SW ; PERIOD: FROM 1/ 1/61 TO 12/31/62

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(MAN) WIND DIRECTION

TOTAL NU. OBS. 6834

WIND SPEED REGRESSION ANALYSIS
 FOR MUSKEGON, MICHIGAN (MSK) WIND DIRECTIONS: WSW- NW , PERIOD: FROM 1/ 1/61 TO 12/31/62

B-85

(MAN)
 WIND SPEED (M/S)
 MANISTEE, MICHIGAN

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:			1	2	3	3	5	3	2	1	
:		1	1	4	8	8	8	5	2	1	1
5 +	1	2	5	F	L	C	9	6	2	1	1
:	1	3	6	B	D	A	5	3	1	1	
:	1	5	A	H	H	7	4	2	1	1	
:	1	2	5	7	3	2	1	1			
:	+				1			1			
+	2	D	H	G	7	4	2	1	1	1	1
0					5						

MUSKEGON, MICHIGAN (MSK) WIND SPEED (M/S)

TOTAL NO. OBS. = 3206
 REGRESSION EQUATION: (MAN) = .704 (MSK) + .351 CORREL. COEFF. = .566 SIGMA Y = 2.0093 SLOPE ERROR = .0181
 AL = .2548 AH = .4480 SSY = 19034. SSX = 12315

DELTA WIND DIRECTION FREQUENCY ANALYSIS
 FOR MUSKEGON, MICHIGAN (MSK) WIND DIRECTIONS: WSW- NW ; PERIOD: FROM 1/ 1/61 TO 12/31/62

MANISTEE, MICHIGAN (MAN) WIND DIRECTION FREQUENCY ANALYSIS: ALL HOURS
 FOR MUSKEGON, MICHIGAN (MSK) WIND DIRECTIONS: ASA- NW ; PERIOD: FROM 1/ 1/61 TO 12/31/62

TOTAL NO. OBS. = 5206

MANISTEE, MICHIGAN (MAN) WIND DIRECTION FREQUENCY ANALYSIS: 0700-1800 LST
 FOR MUSKEGON, MICHIGAN (MSK) WIND DIRECTIONS: WSW- NW ; PERIOD: FROM 1/ 1/61 TO 12/31/62

B-88

TOTAL NO. OBS. = 2514

WIND SPEED REGRESSION ANALYSIS
FOR MUSKIEGON, MICHIGAN (MSK) WIND DIRECTIONS: ALL PERIOD: FROM 1/1/61 TO 12/31/62

B-89

DELTA WIND DIRECTION FREQUENCY ANALYSIS
 FOR MUSKOGON, MICHIGAN (MSK) WIND DIRECTIONS: ALL ; PERIOD: FROM 1/ 1/61 TO 12/31/62

MANISTEE, MICHIGAN (MAN) WIND DIRECTION FREQUENCY ANALYSIS: 0700-1800 LST
 FOR MUSKIEGON, MICHIGAN (MSK) WIND DIRECTIONS: ALL ; PERIOD: FROM 1/ 1/61 TO 12/31/62

TOTAL NO. OBS. 283

MANISTEE, MICHIGAN (MAN) WIND DIRECTION FREQUENCY ANALYSIS: ALL HOURS
 FOR MUSKEGON, MICHIGAN (MSK) WIND DIRECTIONS: CALM PERIOD: FROM 1/ 1/61 TO 12/31/62

TOTAL NO. OBS. = 552

B-94

FREQUENCY (%)

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 (MAN) WIND DIRECTION

TOTAL NO. DRS. = 15

NDIR	A	B	R	E	HE
1	.771	.093	.611	2.020	.024
2	.854	-.713	.676	1.906	.020
3	.669	.279	.592	2.152	.017
4	.704	.351	.566	2.009	.018
5	.705	.213	.636	2.020	.008

TOTAL NUMBER OF OBSERVATIONS USED= 10615

Montauk Point, New York

B-97

WIND SPEED REGRESSION ANALYSIS
FOR WESTHAMPTON, NY. (WHM) WIND DIRECTIONS: NNA= NE PERIOD: FROM 5/ 1/51 TO 12/31/54

TOTAL NO. OBS.= 2292
REGRESSION EQUATION: (NLD) = .575(WHM) + 1.105 CORREL. COEFF.= .580 SIGMA Y= 2.200 SLOPE ERROR = .017

B-98

[illegible]

DELTA WIND DIRECTION (NLD) - (WHM)
TOTAL NO. OF 2085

NEW LONDON, CONN. (NLD) WIND DIRECTION FREQUENCY ANALYSIS: ALL HOURS
 WESTHAMPTON, NY. (WHM) WIND DIRECTIONS: NNE-NE; PERIOD: FROM 5/ 1/51 TO 12/31/54

TOTAL NO. DHS. = 2292

NEW LONDON, CONN. (NLD) WIND DIRECTION FREQUENCY ANALYSIS: 0700-1800 LST
 FOR WESTHAMPTON, NY. (WHM) WIND DIRECTIONS: NNW-NE PERIOD: FROM 5/ 1/51 TO 12/31/54

TOTAL NO. OBS 969

WIND SPEED REGRESSION ANALYSIS
FOR WESTHAMPTON, NY. (WNN) WIND DIRECTIONS: EN - SE (PERIOD FROM 5/1/51 TO 12/31/54)

TOTAL NO. OBS. = 1456

REGRESSION EQUATION (MLD) = .595 (XMM) + .613 CORREL. COEFF. = .603 SIGMA Y = 2.044 SLOPE ERROR = .021

B-103

TOTAL NO. UHS. = 1434

NEW LONDON, CONN. (NLD) WIND DIRECTION FREQUENCY ANALYSIS: 0700-1800 LST
 FOR WESTHAMPTON, NY. (WHM) WIND DIRECTIONS: ENE - SE ; PERIOD: FROM 5/ 1/51 TO 12/31/54

TOTAL NO. OBS. 264

WIND SPEED REGRESSION ANALYSIS
FOR WESTHAMPTON, NY. (WHM) WIND DIRECTIONS: SSE - SW PERIOD: FROM 5/1/51 TO 12/31/54

TOTAL NO. OBS. = 2199
REGRESSION EQUATION: (NLD) = .526(WHM) + 1.158 CORREL. COEFF. = .497 SIGMA Y = 2.019 SLOPE ERROR = .020

DELTA WIND DIRECTION FREQUENCY ANALYSIS
 FOR WESTHAMPTON, NY. (WHM) WIND DIRECTIONS: SSE- SW ; PERIOD: FROM 5/ 1/51 TO 12/31/54

B-107

NFA LONDON, CONN. (NLD) WIND DIRECTION FREQUENCY ANALYSIS: 0700-1800 LST
 FOR WESTHAMPTON, NY. (WHM) WIND DIRECTIONS: SSE-SW PERIOD: FROM 5/ 1/51 TO 12/31/54

TOTAL NO. OBS 1931

B-109

REGRESSION EQUATION: (NLD) = .549(WHM) + 1.650 CORREL. COEFF. = .508 SIGMA Y = 2.331 SLOPE ERROR = .017

B-110

DELTA WIND DIRECTION FREQUENCY ANALYSIS
 FOR WESTHAMPTON, NY, (WHM) WIND DIRECTIONS: WSW- NW ; PERIOD: FROM 5/ 1/51 TO 12/31/54

B-111

NEW LONDON, CONN. (NLD) WIND DIRECTION FREQUENCY ANALYSIS: 0700-1800 LST
 FOR WESTHAMPTON, NY. (WHM) WIND DIRECTIONS: WSW- NW ; PERIOD: FROM 5/ 1/51 TO 12/31/54

TOTAL NO. OBS. = 13

WIND SPEED REGRESSION ANALYSIS
 FOR WESTHAMPTON, NY. (WHM) WIND DIRECTIONS: ALL PERIOD: FROM 5/ 1/51 TO 12/31/54

(NLD)
 WIND SPEED (M/S)
 NEW LONDON, CONN.

TOTAL NO. OBS. = 9375
 REGRESSION EQUATION: (NLD) = .548(WHM) + 1.280 CORREL. COEFF. = .553 SIGMA Y = 2.186 SLOPE ERROR = .009

DELTA WIND DIRECTION FREQUENCY ANALYSIS
 FOR WESTHAMPTON, NY. (WHM) WIND DIRECTIONS: ALL PERIOD: FROM 5/ 1/51 TO 12/31/54

B-114

B-115

NEW LONDON, CONN. (NLD) WIND DIRECTION FREQUENCY ANALYSIS: ALL HOURS
 FOR WESTHAMPTON, NY. (WHM) WIND DIRECTIONS: (CALM) PERIOD: FROM 5/ 1/51 TO 12/31/54

TOTAL NO. OBS. = 447

NEW LONDON, CONN. (NLD) WIND DIRECTION FREQUENCY ANALYSIS: 0700-1400 LST
 FOR WESTHAMPTON, NY. (WHM) WIND DIRECTIONS: CALM PERIOD: FROM 5/ 1/51 TO 12/31/54

TOTAL NO. OBS.: 54

NDIR	A	B	H	E	HE
1	.575	1.105	.580	2.200	.017
2	.593	.613	.603	2.044	.021
3	.526	1.138	.497	2.039	.020
4	.549	1.650	.508	2.331	.017
5	.548	1.280	.553	2.186	.009
TOTAL NUMBER OF OBSERVATIONS USED= 9374					

San Geronio Pass, California

WIND SPEED REGRESSION ANALYSIS
FOR MARCH AFH, RIVERSIDE(RIV) WIND DIRECTIONS: NNW- NE PERIOD: FROM 1/ 1/61 TO 12/31/62

TOTAL NO. OBS. = 963
REGRESSION EQUATION: (PSP) = .314(RIV) + .700 CORREL. COEFF. = .503 SIGMA Y = 1.9401 SLOPE ERROR = .0318
AL = .5747 AH = .0246 SSY = 3483.7 SSX = 3724.7

DATA WIND DIRECTION FREQUENCY ANALYSIS
FOR MARCON AFB, KANSAS (KIV) WIND DIRECTIONS: NW-NW-NE; PERIOD: FROM 1/1/61 TO 12/31/62

[illegible]

WIND SPEED REGRESSION ANALYSIS
FOR MARCH AFB, RIVERSIDE(RIV) WIND DIRECTIONS: ENL- SE ;PERIOD: FROM 1/1/61 TO 12/31/62

TOTAL NO. OBS.= 815
REGRESSION EQUATION: (PSP) = .115(RIV) + .742 CORRIL. COEFF.= .139 SIGMA Y=1.6282 SLOPE ERROR = .0286
AL= .6333 AM= .8517 SSY= 2197.8 SSX= 3234.2

B-127

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(PSP) WIND DIRECTION

TOTAL NO. DHS. = 815

WIND SPEED REGRESSION ANALYSIS

FOR MARCH AFB, RIVERSIDE (RIV) WIND DIRECTIONS: SSE - SW ; PERIOD: FROM 1/1/61 TO 12/31/62

TOTAL NO. OBS. = 655

REGRESSION EQUATION: (PSP) = .293(RIV) + .762 CORREL. COEFF. = .246 SIGMA Y = 1.9311 SLOPE ERROR = .0453
AL = .0165 AN = .9072 SSV = 2545.6 SSA = 1821.1

B-130

FREQUENCY (%)		DELTA WIND DIRECTION (PSP)-(KIV)																
		-180	-158	-135	-113	-90	-68	-45	-23	0	23	45	68	90	113	135	158	180
25	:																	
20	:																	
15	:																	
10	:																	
5	:																	
TOTAL NO. OBS. =		282																

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CA	AL	M	N	NE	SE	E	SE	SE	SE	S	SS	S	SS	N	NE	NE	NE
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
28	28	28	28	2													

(PSP) WIND DIRECTION

10141. NO. DHS. = 654

B-131

WIND SPEED REGRESSION ANALYSIS
FOR MARCH AFB, RIVERSIDE(RIV) WIND DIRECTIONS: WSW- NW ; PERIOD: FROM 1/ 1/61 TO 12/31/62

TOTAL NO. OBS. = 5129
REGRESSION EQUATION: (PSP) = .500(RIV) + .498 CORREL. COEFF. = .261 SIGMA Y = 1.9571 SLOPE ERROR = .0199
AL = .9064 AH = 1.0903 SSY = 12850. SSX = 9675.5

PALEMSPRINGS, CALIF. (PSP) WIND DIRECTION FREQUENCY ANALYSIS: ALL HOURS
 FOR MARCH APR, RIVERSIDE(RIV) WIND DIRECTIONS: WSW- NW ;PERIOD: FROM 1/ 1/61 TO 12/31/62

TOTAL NO. OBS. = 5129

WIND SPEED REGRESSION ANALYSIS

FOR MARCH AFB, RIVERSIDE (MIV) WIND DIRECTIONS: ALL PERIOD: FROM 1/1/61 TO 12/31/62

(PSP)

WIND SPEED (M/S)

PALMSPRINGS, CALIF.

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:
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1 1 1 1 1 1
1 1 1 3 3 4 2 2 1 1
5 6 2 6 8 9 A 9 5 3 1 1 1
A 3 H E H J F 8 3 1 1 1
1 9 M P P P F 8 3 2 1
6 2 4 3 4 4 1 1 1
1 +

0 5 10 15 20 25
MARCH AFB, RIVERSIDE (MIV) WIND SPEED (M/S)

TOTAL NO. OBS. = 7627

REGRESSION EQUATION: (PSP) = .308(MIV) + .766 CORREL. COEFF. = .370 SIGMA Y = 1.8139 SLOPE ERROR = .0089
AL = .7559 AM = .7981 SSY = 29070. SSX = 41969.

PALMSPRINGS, CALIF. (PSP) WIND DIRECTION FREQUENCY ANALYSIS: 0700-1800 LST
 FOR MARCH APR, RIVERSIDE(RIV) WIND DIRECTIONS: ALL PERIOD: FROM 1/1/61 TO 12/31/62

TOTAL NO. OF 5515

PALMSPRINGS, CALIF. (PSP) WIND DIRECTION FREQUENCY ANALYSIS: ALL HOURS
 FOR MARCH AFB, RIVERSIDE(RIV) WIND DIRECTIONS: CALM ;PERIOD: FROM 1/ 1/61 TO 12/31/62

TOTAL NO. OBS.= 2067

INDEX	A	H	K	L	HE
1	.514	.700	.503	1.940	.032
2	.115	.742	.139	1.624	.029
3	.293	.762	.246	1.931	.045
4	.300	.998	.261	1.957	.020
5	.306	.766	.570	1.814	.009
TOTAL NUMBER OF OBSERVATIONS USED= 7627					

APPENDIX C

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APPENDIX C

WIND CHARACTER ESTIMATES: THE CANDIDATE SITE WIND CLIMATOLOGIES

	<u>Page</u>
Boardman, Oregon (Observed, from PGE Data Base)	C- 1
Boardman, Oregon (Estimated, from Pendleton)	C- 15
Boone, North Caroline (Estimated, from Hickory)	C- 29
Holyoke, Massachusetts (Estimated, from Chicopee Falls)	C- 43
Huron, South Dakota (Estimated, from Huron Airport)	C- 57
Ludington, Michigan (Estimated, from Muskegon)	C- 71
Montauk Point, New York (Estimated, from Westhampton)	C- 85
Russell, Kansas (Estimated, from Russell Airport)	C- 99
San Geronimo Pass, California (Estimated, from March AFB, Riverside)	C-113

Boardman, Oregon
(Observed, from PGE Data Base)

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	.38	1.52	3.35	5.43	7.50	9.54	11.44	13.41	15.36	17.31	19.28	20.79	22.74	0.00	4.90
FEB	.40	1.67	3.42	5.40	7.42	9.38	11.41	13.35	15.43	17.48	19.58	21.53	23.36	24.68	5.58
MAR	.19	1.78	3.45	5.50	7.47	9.33	11.41	13.30	15.33	17.38	19.46	20.95	0.00	0.00	6.42
APR	.02	1.74	3.50	5.46	7.44	9.45	11.44	13.39	15.37	17.48	19.30	21.36	23.18	25.08	7.24
MAY	0.00	1.82	3.45	5.54	7.49	9.46	11.41	13.32	15.42	17.38	19.28	21.36	23.49	25.60	7.45
JUN	0.00	1.89	3.45	5.51	7.63	9.48	11.38	13.41	15.31	17.37	19.52	21.35	22.89	0.00	7.45
JUL	0.00	1.90	3.52	5.47	7.46	9.42	11.31	13.37	15.25	17.17	0.00	0.00	0.00	0.00	6.62
AUG	0.00	1.85	3.44	5.55	7.43	9.42	11.40	13.28	15.33	17.11	19.32	20.74	0.00	0.00	6.66
SEP	.12	1.71	3.46	5.39	7.46	9.54	11.40	13.18	15.47	17.43	19.41	21.21	23.42	0.00	5.70
OCT	.19	1.73	3.43	5.39	7.48	9.44	11.38	13.43	15.34	17.48	19.26	21.67	23.16	25.57	5.43
NOV	.44	1.55	3.36	5.42	7.51	9.38	11.52	13.42	15.58	17.37	19.60	21.26	23.07	0.00	4.74
DEC	.38	1.51	3.37	5.44	7.42	9.45	11.42	13.44	15.21	17.36	19.07	20.79	22.53	24.94	4.74
ANN	.29	1.65	3.43	5.47	7.47	9.44	11.40	13.36	15.37	17.39	19.38	21.32	23.23	25.33	6.19

TOTAL OBSERVATIONS READ= 33380.

BOAFOMAN, ORE. (130 FT.) FROM PGE DATA BASE
 AVERAGE WIND SPEED BY MONTH, BY WIND SPEED GROUP
 PERIOD OF RECORD: 4/ 1/73 TO 9/30/77

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER HO.
JAN	.74	41.13	21.53	9.22	6.88	6.17	5.76	4.13	2.60	1.12	.52	.15	.04	0.00	100.00
FEB	.50	28.54	24.19	13.92	11.62	6.86	6.11	3.15	2.55	.90	.60	.75	.25	.05	100.00
MAR	.14	16.89	20.88	18.52	15.78	11.97	7.70	4.83	1.30	1.48	.32	.19	0.00	0.00	100.00
APR	.32	11.06	19.16	19.48	17.32	12.44	7.64	5.16	3.46	2.89	.92	.78	.14	.04	100.00
MAY	.03	8.94	16.98	18.69	18.25	15.88	10.85	5.67	2.75	1.10	.38	.26	.12	.12	100.00
JUN	0.00	8.88	17.51	18.59	16.75	15.56	12.33	6.25	2.77	.93	.23	.17	.03	0.00	100.00
JUL	.17	8.38	20.72	22.59	20.52	15.02	8.01	2.92	1.54	.13	0.00	0.00	0.00	0.00	100.00
AUG	.03	9.78	19.59	22.51	20.79	13.28	8.23	3.79	1.52	.32	.11	.06	0.00	0.00	100.00
SEP	.59	17.75	27.34	22.00	12.45	8.60	5.73	2.12	1.53	1.26	.31	.24	.08	0.00	100.00
OCT	.19	24.19	27.29	16.49	12.36	8.69	4.59	3.64	1.49	.61	.23	.15	.04	.04	100.00
NOV	.75	38.56	23.85	11.90	8.74	4.74	3.95	3.56	2.55	.75	.40	.18	.09	0.00	100.00
DEC	.89	37.91	19.45	13.73	10.56	8.11	4.87	2.70	1.07	.50	.11	.04	.04	.04	100.00
ANN	.33	19.76	21.15	17.63	14.81	11.10	7.46	4.09	2.11	.91	.33	.23	.06	.02	100.00
TOTAL OBSERVATIONS READ=		33380.													

BOARDMAN, ORE. (130 FT.) FROM PGE DATA BASE
 PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS, BY MONTH
 PERIOD OF RECORD: 4/ 1/73 TO 9/30/77

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	20	1106	579	248	185	166	155	111	70	30	14	4	1	0	2689
FEB	10	570	483	278	232	137	122	63	51	18	12	15	5	1	1997
MAR	3	364	450	399	340	258	166	104	28	32	7	4	0	0	2155
APR	9	313	542	551	490	352	216	146	98	59	26	22	4	1	2829
MAY	1	309	587	646	631	549	375	196	95	38	13	9	4	4	3457
JUN	0	314	619	657	592	550	436	221	98	33	8	6	1	0	3535
JUL	5	250	618	674	612	448	239	87	46	4	0	0	0	0	2983
AUG	1	341	683	785	725	463	287	132	53	11	4	2	0	0	3487
SEP	15	452	696	560	317	219	146	54	39	32	8	6	2	0	2546
OCT	5	632	713	431	323	227	120	95	39	16	6	4	1	1	2613
NOV	17	878	543	271	199	108	90	81	58	17	9	4	2	0	2277
DEC	25	1066	547	386	297	228	137	76	30	14	3	1	1	1	2812
ANN	111	6595	7060	5886	4943	3705	2489	1366	705	304	110	77	21	8	33380.
TOTAL OBSERVATIONS READ=		33380.													

BOARDMAN, ORE. (130 FT.) FROM PGE DATA BASE
NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS, BY MONTH
PERIOD OF RECORD: 4/ 1/73 TO 9/30/77

C-4

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	.40	1.64	3.22	5.31	7.32	9.74	11.80	12.64	0.00	0.00	0.00	0.00	0.00	0.00	2.86
NNE	.39	1.68	3.40	5.37	7.22	9.40	11.44	13.78	0.00	0.00	0.00	0.00	0.00	0.00	3.60
NE	.30	1.70	3.45	5.27	7.23	9.35	11.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.53
ENE	.43	1.68	3.37	5.11	7.07	10.10	10.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.88
E	.37	1.57	3.42	5.26	7.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.76
ESE	.42	1.62	3.39	5.20	7.07	9.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86
SE	.39	1.56	3.25	5.25	6.97	0.00	0.00	13.50	0.00	0.00	0.00	0.00	0.00	0.00	2.51
SSE	.46	1.60	3.30	5.45	7.49	8.95	11.21	13.28	15.35	0.00	0.00	0.00	0.00	0.00	2.95
S	.41	1.65	3.48	5.34	7.32	9.44	11.28	13.23	15.17	18.06	19.62	21.06	23.11	0.00	4.40
SSW	.27	1.63	3.54	5.51	7.31	9.37	11.45	13.36	15.25	17.26	19.94	21.77	23.02	0.00	5.26
SW	.28	1.66	3.57	5.50	7.45	9.37	11.37	13.36	15.30	17.24	19.23	20.90	22.74	0.00	6.55
WSW	.44	1.72	3.56	5.57	7.56	9.48	11.39	13.35	15.36	17.40	19.45	21.34	23.45	25.06	8.73
W	.31	1.67	3.48	5.56	7.51	9.46	11.45	13.38	15.41	17.42	19.33	21.32	23.18	25.50	8.63
WNW	.39	1.69	3.34	5.50	7.46	9.43	11.33	13.39	15.54	16.93	19.15	21.01	0.00	0.00	5.06
NW	.38	1.67	3.26	5.30	7.39	9.00	11.13	13.13	15.51	16.54	18.82	21.46	0.00	0.00	3.03
NNW	.43	1.64	3.17	5.34	7.62	9.34	11.25	13.04	0.00	0.00	0.00	0.00	0.00	0.00	2.84
ALL	0.00	1.65	3.43	5.47	7.47	9.44	11.40	13.36	15.37	17.39	19.38	21.32	23.23	25.33	6.19

TOTAL OBSERVATIONS READ= 33380.

BOARDMAN, ORE. (130 FT.) FROM PGE DATA BASE
 AVERAGE ANNUAL WIND SPEED BY DIRECTION, BY WIND SPEED GROUP
 PERIOD OF RECORD: 4/ 1/73 TO 9/30/77

C-5

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	.48	49.34	35.98	9.15	3.97	.72	.12	.24	0.00	0.00	0.00	0.00	0.00	0.00	100.00
NNE	.46	36.72	36.04	16.24	6.68	2.43	1.14	.30	0.00	0.00	0.00	0.00	0.00	0.00	100.00
NE	.42	32.68	39.80	20.64	4.86	1.30	.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
ENE	.14	43.46	43.26	12.19	.82	.07	.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
E	.55	46.65	41.82	10.10	.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
ESE	.59	47.44	36.90	12.15	2.78	.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
SE	1.06	59.15	27.87	9.79	1.91	0.00	0.00	.21	0.00	0.00	0.00	0.00	0.00	0.00	100.00
SSE	.59	57.48	25.00	7.87	5.31	2.36	.98	.20	.20	0.00	0.00	0.00	0.00	0.00	100.00
S	.48	29.51	28.27	22.64	11.37	3.72	2.29	.76	.29	.29	.19	.10	.10	0.00	100.00
SSW	.14	14.70	23.76	33.86	19.34	4.57	1.80	1.01	.50	.22	.04	.04	.04	0.00	100.00
SW	.10	8.32	16.56	28.02	24.76	12.29	5.30	2.71	1.28	.42	.18	.04	.02	0.00	100.00
WSW	.06	5.08	8.78	13.87	20.33	22.05	14.86	8.23	4.07	1.58	.66	.39	.07	.04	100.00
W	.15	8.29	11.65	13.97	15.94	16.40	15.04	8.88	5.18	2.67	.75	.75	.23	.10	100.00
WNW	.32	26.58	27.85	15.89	12.15	8.42	5.44	2.15	.89	.19	.06	.06	0.00	0.00	100.00
NW	.60	47.66	39.02	6.48	2.88	1.20	1.08	.36	.12	.12	.36	.12	0.00	0.00	100.00
NNW	1.76	56.39	29.52	4.26	3.52	2.64	1.47	.44	0.00	0.00	0.00	0.00	0.00	0.00	100.00
ALL	.08	19.76	21.15	17.63	14.81	11.10	7.46	4.09	2.11	.91	.33	.23	.06	.02	100.00

TOTAL OBSERVATIONS READ= 33380.

BOARDMAN, ORE. (130 FT.) FROM PGE DATA BASE
ANNUAL PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS, BY DIRECTION
PERIOD OF RECORD: 4/ 1/73 TO 9/30/77

C-6

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	4	410	299	76	33	6	1	2	0	0	0	0	0	0	831
NNE	6	484	475	214	88	32	15	4	0	0	0	0	0	0	1318
NE	7	551	671	348	82	22	5	0	0	0	0	0	0	0	1686
ENE	2	638	635	179	12	1	1	0	0	0	0	0	0	0	1468
E	5	425	381	92	8	0	0	0	0	0	0	0	0	0	911
ESE	4	324	252	83	19	1	0	0	0	0	0	0	0	0	683
SE	5	278	131	46	9	0	0	1	0	0	0	0	0	0	470
SSE	3	292	127	40	27	12	5	1	1	0	0	0	0	0	508
S	5	309	296	237	119	39	24	8	3	3	2	1	1	0	1047
SSW	4	409	661	942	538	127	50	28	14	6	1	1	1	0	2782
SW	5	421	838	1418	1253	622	268	137	65	21	9	2	1	0	5060
WSW	5	421	721	1149	1684	1827	1231	682	337	131	55	32	6	3	8284
W	8	432	607	728	831	855	784	463	270	139	39	39	12	5	5212
WNW	5	420	440	251	192	133	86	34	14	3	1	1	0	0	1580
NW	5	397	325	54	24	10	9	3	1	1	3	1	0	0	833
NNW	12	384	281	29	24	18	10	3	0	0	0	0	0	0	681
ALL	26	6595	7060	5886	4943	3705	2489	1366	705	304	110	77	21	8	33380.
TOTAL OBSERVATIONS READ=		33380.													

BOARDMAN, ORE. (130 FT.) FROM PGE DATA BASE
ANNUAL NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS, BY DIRECTION
PERIOD OF RECORD: 6/ 1/73 TO 9/30/77

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NT
07-18LST	.4	1.6	3.4	5.4	7.4	9.5	11.4	13.4	15.4	17.3	19.4	21.3	23.2	24.9	5.1
19-06LST	.4	1.5	3.4	5.4	7.5	9.5	11.4	13.4	15.3	17.5	19.4	21.5	22.7	24.7	5.0
ALL HRS	.4	1.5	3.4	5.4	7.4	9.5	11.4	13.4	15.4	17.4	19.4	21.3	23.2	24.8	5.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NT
07-18LST	.8	37.1	22.1	11.4	8.2	7.0	5.6	3.8	2.1	.9	.5	.4	.2	.0	100.0
19-06LST	.7	36.0	20.8	12.9	10.9	7.2	5.5	2.9	1.9	.8	.3	.1	.0	.0	100.0
ALL HRS	.7	36.6	21.5	12.2	9.5	7.1	5.5	3.3	2.0	.8	.4	.3	.1	.0	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NT
07-18LST	30	1383	825	426	304	260	207	140	79	33	19	15	6	1	3728
19-06LST	25	1359	784	486	410	271	207	110	72	29	10	5	1	1	3770
ALL HRS	55	2742	1609	912	714	531	414	250	151	62	29	20	7	2	7498

TOTAL OBSERVATIONS READ= 33380.

BOARDMAN, ORE. (130 FT.) FROM PGE DATA BASE

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: DEC-FEB

PERIOD OF RECORD: 4/ 1/73 TO 9/30/77

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NT
07-18LST	0.0	1.9	3.4	5.5	7.4	9.5	11.5	13.3	15.4	17.4	19.3	21.3	23.3	25.5	7.2
19-06LST	.1	1.7	3.5	5.5	7.5	9.4	11.4	13.3	15.4	17.4	19.3	21.4	23.5	0.0	7.0
ALL HRS	.1	1.8	3.5	5.5	7.5	9.4	11.4	13.3	15.4	17.4	19.3	21.3	23.3	25.5	7.1

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NT
07-18LST	.1	13.2	22.3	16.7	13.1	11.0	9.5	6.5	3.6	2.1	.9	.6	.1	.1	100.0
19-06LST	.2	10.2	15.2	21.0	21.4	16.4	8.5	4.1	1.6	1.0	.2	.2	.1	0.0	100.0
ALL HRS	.2	11.7	18.7	18.9	17.3	13.7	9.0	5.3	2.6	1.5	.5	.4	.1	.1	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NT
07-18LST	5	552	929	698	548	461	395	271	152	87	37	27	5	5	4172
19-06LST	8	434	650	898	913	698	362	175	69	42	9	8	3	8	4269
ALL HRS	13	986	1579	1596	1461	1159	757	446	221	129	46	35	8	5	8441

TOTAL OBSERVATIONS READ= 33380.

BOARDMAN, ORE. (130 FT.) FROM PGE DATA BASE

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: MAR-MAY

PERIOD OF RECORD: 4/ 1/73 TO 9/30/77

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	0.0	2.8	3.4	5.5	7.5	9.4	11.4	13.4	15.3	17.3	19.5	21.2	0.0	0.0	6.6
19-06LST	0.0	1.7	3.6	5.5	7.5	9.4	11.3	13.3	15.2	17.4	19.4	21.1	22.9	0.0	7.3
ALL HRS	0.0	1.9	3.5	5.5	7.5	9.4	11.4	13.4	15.3	17.3	19.5	21.2	22.9	0.0	6.9

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.1	11.9	26.1	17.9	15.0	10.8	9.3	5.2	2.5	.8	.2	.1	0.0	0.0	100.0
19-06LST	.0	6.3	12.4	24.3	23.4	18.4	9.9	3.6	1.4	.2	.0	.1	.0	0.0	100.0
ALL HRS	.1	9.0	19.2	21.1	19.3	14.6	9.6	4.4	2.0	.5	.1	.1	.0	0.0	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	5	589	1296	887	746	533	463	259	124	40	10	5	0	0	4957
19-06LST	1	316	624	1229	1183	928	499	181	73	8	2	3	1	0	5048
ALL HRS	6	905	1920	2116	1929	1461	962	440	197	48	12	8	1	0	10005

TOTAL OBSERVATIONS READ= 33380.

BOARDMAN, ORE. (130 FT.) FROM PGE DATA BASE

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: JUN-AUG

PERIOD OF RECORD: 4/ 1/73 TO 9/30/77

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	.3	1.7	3.4	5.4	7.5	9.5	11.4	13.4	15.4	17.4	19.6	21.4	23.1	25.6	5.3
19-06LST	.3	1.6	3.4	5.4	7.5	9.4	11.4	13.4	15.6	17.4	19.3	21.2	23.4	0.0	5.3
ALL HRS	.3	1.6	3.4	5.4	7.5	9.5	11.4	13.4	15.5	17.4	19.4	21.4	23.2	25.6	5.3

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	.5	28.2	27.6	14.8	8.1	7.5	5.6	3.6	2.2	1.1	.4	.2	.1	.0	100.0
19-06LST	.5	24.6	24.9	19.1	14.3	7.4	4.0	2.6	1.4	.6	.3	.1	.1	0.0	100.0
ALL HRS	.5	26.4	26.3	17.0	11.3	7.5	4.8	3.1	1.8	.9	.3	.2	.1	.0	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	17	1037	1015	544	299	275	205	131	82	41	13	9	3	1	3672
19-06LST	20	925	937	718	540	279	151	99	54	24	10	5	2	0	3764
ALL HRS	37	1962	1952	1262	839	554	356	230	136	65	23	14	5	1	7436

TOTAL OBSERVATIONS READ= 33380.

BOARDMAN, ORE. (130 FT.) FROM PGE DATA BASE

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: SEP-NOV

PERIOD OF RECORD: 4/ 1/73 TO 9/30/77

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.3	1.7	3.4	5.4	7.4	9.5	11.4	13.4	15.4	17.4	19.4	21.3	23.2	25.4	6.1
19-06LST	.3	1.6	3.5	5.5	7.5	9.4	11.4	13.3	15.3	17.4	19.4	21.4	23.3	24.7	6.3
ALL HRS	.3	1.7	3.4	5.5	7.5	9.4	11.4	13.4	15.4	17.4	19.4	21.3	23.2	25.3	6.2

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.3	21.5	24.6	15.5	11.5	9.3	7.7	4.8	2.6	1.2	.5	.3	.1	.0	100.0
19-06LST	.3	18.0	17.8	19.3	18.1	12.9	7.2	3.4	1.6	.6	.2	.1	.0	.0	100.0
ALL HRS	.3	19.8	21.2	17.6	14.8	11.1	7.5	4.1	2.1	.9	.3	.2	.1	.0	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	57.0	3561.0	4065.0	2555.0	1897.0	1529.0	1270.0	801.0	437.0	201.0	79.0	56.0	14.0	7.0	16529.0
19-06LST	54.0	3034.0	2995.0	3331.0	3046.0	2176.0	1219.0	565.0	268.0	103.0	31.0	21.0	7.0	1.0	16851.0
ALL HRS	111.0	6595.0	7060.0	5886.0	4943.0	3705.0	2489.0	1366.0	705.0	304.0	110.0	77.0	21.0	8.0	33380.0

TOTAL OBSERVATIONS READ= 33380.

BOARDMAN, ORE. (130 FT.) FROM PGE DATA BASE

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: ANNUAL

PERIOD OF RECORD: 4/ 1/73 TO 9/30/77

SPEED	NUMBER OF CONSECUTIVE HOURS																								
	1	2	3	4	5	6	7	8	9	10	11	12	13 14	15 16	17 18	19 20	21 22	23 24	25 30	31 36	37 42	43 48	49 60	61 72	73 +
<5 M/S	407	189	118	88	64	82	73	47	40	55	50	52	68	47	36	24	10	15	33	18	12	8	7	9	15
>4 M/S	350	217	127	102	66	65	43	48	37	34	44	15	33	41	31	27	26	27	56	46	28	20	24	19	41
10-24 M/S	345	168	117	100	62	57	44	37	22	18	21	21	33	21	27	13	8	11	20	7	5	3	3	0	0
25+ M/S	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TOTAL OBSERVATIONS READ= 33380.

BOARDMAN, ORE. (130 FT.) FROM PGE DATA BASE
 FREQUENCY DISTRIBUTION OF THE NUMBER OF CONSECUTIVE HOURS
 WITH WIND WITHIN SELECTED SPEED RANGES
 PERIOD OF RECORD: 4/ 1/78 TO 9/30/77

GUST SPEED (M/S)	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-99	100+
NUMBER OF CASES	581	167	50	7	0	0	0	0	0	0	0	0	0	0	0	0

TOTAL OBSERVATIONS READ= 33380.

BOAFDMAN, ORE. (130 FT.) FROM PGE DATA BASE
 THE FREQUENCY DISTRIBUTION OF CALCULATED WIND GUSTS EXCEEDING 24 M/S
 PERIOD OF RECORD: 4/ 1/73 TO 9/30/77

Boardman, Oregon
(Estimated, from Pendleton)

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	.00	1.85	3.44	5.30	7.37	9.34	11.26	13.53	15.30	17.35	19.41	21.36	23.23	27.71	4.77
FEB	.00	1.84	3.47	5.39	7.35	9.36	11.27	13.47	15.34	17.42	19.38	21.33	23.16	25.73	5.26
MAR	.00	1.92	3.51	5.39	7.39	9.40	11.34	13.52	15.33	17.40	19.40	21.35	23.11	25.98	5.94
APR	.00	1.94	3.53	5.40	7.40	9.39	11.35	13.48	15.29	17.31	19.27	21.23	23.14	26.27	6.15
MAY	.00	1.93	3.54	5.40	7.40	9.40	11.37	13.46	15.26	17.42	19.48	21.12	23.43	.00	5.78
JUN	.00	1.94	3.52	5.44	7.44	9.42	11.38	13.44	15.25	17.45	19.32	21.33	23.30	25.97	6.04
JUL	.00	1.94	3.57	5.43	7.43	9.41	11.29	13.45	15.30	17.36	19.52	21.32	23.14	26.32	5.61
AUG	.00	1.98	3.57	5.43	7.37	9.41	11.34	13.54	15.32	17.46	19.32	21.55	.00	26.83	5.40
SEP	.00	1.98	3.58	5.36	7.36	9.45	11.33	13.44	15.34	17.42	19.34	21.53	23.29	26.23	5.26
OCT	.00	1.96	3.48	5.34	7.33	9.35	11.32	13.49	15.33	17.43	19.35	21.35	23.22	25.42	4.82
NOV	.00	1.92	3.44	5.32	7.40	9.42	11.35	13.50	15.30	17.40	19.32	21.41	23.29	27.36	4.94
DEC	.00	1.91	3.44	5.33	7.42	9.42	11.26	13.45	15.29	17.40	19.32	21.41	23.34	28.23	4.95
ANN	.00	1.93	3.51	5.38	7.39	9.40	11.33	13.48	15.30	17.40	19.36	21.35	23.24	26.72	5.41

TOTAL OBSERVATIONS READ= 149031.

BOARDMAN, OREGON FROM PENDLETON, OREGON
 AVERAGE WIND SPEED BY MONTH, BY WIND SPEED GROUP
 PERIOD OF RECORD: 1/ 1/48 TO 12/31/64

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	5.50	21.76	31.21	19.96	8.65	4.97	3.67	1.84	1.31	.66	.42	.10	.09	.06	100.00
FEB	4.75	17.51	30.41	20.03	10.39	6.19	5.04	2.29	1.82	.91	.37	.13	.11	.05	100.00
MAR	2.74	15.16	28.49	20.55	10.87	7.50	6.33	3.08	2.64	1.45	.74	.31	.07	.06	100.00
APR	2.26	12.68	27.43	22.14	11.88	8.07	7.21	3.65	2.48	1.23	.60	.21	.05	.11	100.00
MAY	2.49	12.86	29.13	23.51	12.14	7.41	6.50	2.96	1.79	.76	.32	.12	.01	.00	100.00
JUN	1.87	12.49	27.07	22.70	13.84	8.88	6.65	3.11	2.03	.75	.38	.14	.02	.07	100.00
JUL	1.61	12.31	24.98	25.32	14.26	7.58	5.14	1.87	1.04	.54	.23	.06	.04	.02	100.00
AUG	2.04	12.59	32.51	26.20	11.74	6.38	4.70	1.98	1.13	.54	.14	.03	.00	.01	100.00
SEP	2.06	13.40	36.34	24.30	10.66	4.80	3.89	1.83	1.28	.92	.25	.12	.08	.07	100.00
OCT	3.91	15.12	38.70	22.17	8.76	4.34	3.51	1.60	.93	.44	.28	.13	.03	.09	100.00
NOV	5.96	17.93	34.55	19.43	6.34	4.39	3.63	2.16	1.55	1.02	.48	.19	.17	.20	100.00
DEC	6.04	18.57	31.94	20.39	8.50	5.38	4.07	1.98	1.45	.73	.45	.24	.15	.10	100.00
ANN	3.41	15.19	31.49	22.24	10.83	6.32	5.02	2.36	1.62	.83	.39	.15	.07	.07	100.00

TOTAL OBSERVATIONS READ= 149031.

HOARDMAN, OREGON FROM PENDLETON, OREGON
 PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS, BY MONTH
 PERIOD OF RECORD: 1/ 1/48 TO 12/31/64

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	670	2752	3947	2525	1094	629	464	233	166	63	53	13	12	7	12648
FEB	548	2021	3511	2312	1199	715	582	264	210	105	43	15	13	6	11544
MAR	347	1916	3604	2599	1375	949	801	390	334	183	93	39	9	7	12648
APR	277	1552	3357	2710	1454	988	882	447	303	151	74	26	6	13	12240
MAY	315	1627	3684	2974	1535	937	822	374	227	96	41	15	1	0	12648
JUN	229	1529	3313	2779	1694	1087	814	381	249	92	46	17	2	8	12240
JUL	204	1556	3790	3201	1802	958	650	236	131	68	29	8	5	3	12641
AUG	258	1593	4112	3314	1485	807	594	251	143	68	18	4	0	1	12648
SEP	252	1640	4448	2974	1305	586	476	224	157	113	30	15	10	8	12240
OCT	495	1912	4895	2804	1108	549	444	202	117	56	35	16	4	11	12648
NOV	730	2195	4228	2375	1021	537	444	264	190	125	59	23	21	24	12239
DEC	764	2349	4040	2579	1075	680	515	250	184	92	57	30	19	13	12647
ANN	5089	22644	46929	33149	16147	9424	7488	3516	2411	1232	578	221	102	101	149031.

TOTAL OBSERVATIONS MADE= 149031.

BOARDMAN, OREGON FROM PENDLETON, OREGON
NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS, BY MONTH
PERIOD OF RECORD: 1/ 1/48 TO 12/31/64

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	.00	1.89	3.46	5.32	7.25	9.27	11.19	13.60	14.92	16.86	19.06	.00	.00	.00	4.28
NNE	.00	1.87	3.50	5.39	7.26	9.24	11.15	13.39	15.49	17.11	18.92	.00	.00	.00	4.54
NE	.00	1.90	3.45	5.40	7.27	9.20	11.24	12.84	15.20	17.30	.00	.00	.00	.00	4.37
ENE	.00	1.93	3.46	5.41	7.26	9.16	11.40	12.86	14.68	.00	.00	.00	.00	.00	4.09
E	.00	1.92	3.43	5.28	7.09	9.35	11.17	.00	15.33	.00	.00	.00	.00	.00	3.69
ESE	.00	1.92	3.47	5.27	7.24	9.53	10.99	13.50	15.05	.00	.00	.00	.00	.00	3.78
SE	.00	1.98	3.57	5.29	7.13	9.37	11.20	13.31	15.44	17.36	19.12	.00	23.25	25.19	3.91
SSE	.00	1.94	3.46	5.29	7.29	9.51	11.34	13.67	15.26	17.07	19.53	.00	23.16	.00	4.10
S	.00	1.92	3.40	5.23	7.24	9.27	11.26	13.67	15.41	17.31	19.77	21.53	23.50	26.62	4.43
SSW	.00	1.94	3.51	5.35	7.32	9.39	11.19	13.34	15.34	17.29	19.30	21.32	23.41	30.90	5.22
SW	.00	1.92	3.53	5.42	7.31	9.25	11.25	13.40	15.20	17.42	19.20	21.89	23.30	27.11	5.51
WSW	.00	1.93	3.53	5.51	7.47	9.40	11.31	13.34	15.23	17.25	19.20	21.34	23.46	26.98	8.49
W	.00	1.87	3.50	5.51	7.51	9.42	11.38	13.56	15.36	17.48	19.47	21.33	23.15	26.58	9.57
WNW	.00	1.91	3.52	5.48	7.54	9.51	11.33	13.49	15.28	17.32	19.31	21.21	22.94	26.57	6.66
NW	.00	1.91	3.60	5.50	7.42	9.42	11.26	13.46	15.16	16.98	19.04	.00	.00	.00	4.85
NNW	.00	1.89	3.48	5.39	7.42	9.44	11.18	13.83	15.08	18.18	.00	.00	.00	.00	4.31
ALL	.00	1.93	3.51	5.38	7.39	9.40	11.33	13.48	15.30	17.40	19.36	21.35	23.24	26.72	5.41

TOTAL OBSERVATIONS READ= 149031.

BOARDMAN, OREGON FROM PENDLETON, OREGON
 AVERAGE ANNUAL WIND SPEED BY DIRECTION, BY WIND SPEED GROUP
 PERIOD OF RECORD: 1/ 1/48 TO 12/31/64

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	.00	21.03	38.67	26.25	9.63	3.17	.81	.19	.19	.03	.02	.00	.00	.00	100.00
NNE	.00	20.70	33.17	27.84	13.06	3.43	1.29	.20	.23	.05	.05	.00	.00	.00	100.00
NE	.00	22.58	34.20	27.31	11.14	3.47	.88	.20	.15	.08	.00	.00	.00	.00	100.00
ENE	.00	24.96	37.08	26.72	8.64	1.90	.61	.07	.03	.00	.00	.00	.00	.00	100.00
E	.00	27.05	43.44	24.30	4.50	.43	.21	.00	.06	.00	.00	.00	.00	.00	100.00
ESE	.00	22.59	49.03	23.25	3.50	1.01	.46	.12	.03	.00	.00	.00	.00	.00	100.00
SE	.00	19.99	52.07	21.46	5.11	.64	.40	.16	.11	.03	.02	.00	.01	.01	100.00
SSE	.00	22.02	43.55	24.69	6.35	1.29	1.01	.62	.25	.14	.07	.00	.01	.00	100.00
S	.00	24.12	39.24	20.71	6.43	4.51	2.65	.92	.80	.34	.14	.07	.04	.02	100.00
SSW	.00	17.25	32.41	24.29	12.98	6.10	3.65	1.36	1.08	.35	.38	.07	.07	.01	100.00
SW	.00	15.20	28.82	25.60	14.08	8.71	4.11	1.46	.96	.42	.21	.07	.13	.03	100.00
WSW	.00	5.76	12.39	16.88	17.67	16.41	14.83	6.71	5.38	1.96	1.27	.42	.15	.17	100.00
W	.00	4.47	9.60	13.11	15.62	15.43	17.88	9.88	6.57	4.22	1.72	.80	.31	.38	100.00
WNW	.00	8.49	20.20	26.91	19.37	11.53	7.37	3.10	1.62	.91	.26	.07	.06	.05	100.00
NW	.00	13.54	37.55	29.79	12.88	4.31	1.38	.40	.13	.02	.02	.00	.00	.00	100.00
NNW	.00	16.40	38.60	31.69	8.22	1.92	.67	.18	.06	.01	.00	.00	.00	.00	100.00
ALL	3.41	15.19	31.49	22.24	10.83	6.32	5.02	2.36	1.62	.83	.39	.15	.07	.07	100.00

TOTAL OBSERVATIONS READ= 149031.

HOARDMAN, OREGON FROM PENDLETON, OREGON
ANNUAL PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS, BY DIRECTION
PERIOD OF RECORD: 1/ 1/48 TO 12/31/64

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	0	1221	2245	1524	559	184	47	11	11	2	1	0	0	0	5805
NNE	0	916	1408	1232	578	152	57	9	10	2	2	0	0	0	4426
NE	0	698	1360	1080	443	138	35	8	6	3	0	0	0	0	3977
ENE	0	737	1095	789	255	56	18	2	1	0	0	0	0	0	2953
E	0	883	1418	793	147	14	7	0	2	0	0	0	0	0	3264
ESE	0	1472	3195	1515	228	66	30	8	2	0	0	0	0	0	6516
SE	0	3851	10031	4134	985	124	77	30	21	6	3	0	2	1	19265
SSE	0	2583	5104	2896	745	151	118	73	29	17	8	0	1	0	11730
S	0	2357	3635	2024	628	441	254	90	78	33	14	7	4	2	9772
SSW	0	1183	2223	1600	890	418	250	93	74	24	26	5	5	1	6858
SW	0	1075	2039	1625	996	616	291	103	68	30	15	5	9	2	7074
WSW	0	821	1767	2408	2521	2341	2116	957	768	279	181	60	21	24	14264
W	0	757	1625	2221	2645	2613	3028	1674	1113	715	292	135	52	65	16935
WNW	0	1098	2621	3481	2506	1491	953	401	209	118	34	9	8	6	12935
NW	0	1534	4255	3375	1454	488	156	45	15	2	2	0	0	0	11331
NNW	0	1258	2643	2180	562	131	46	12	4	1	0	0	0	0	6837
ALL	5059	22644	46929	33149	16147	9424	7488	3516	2411	1232	576	221	102	101	149031.

TOTAL OBSERVATIONS READ= 149031.

BOARDMAN, OREGON FROM PENDLETON, OREGON

ANNUAL NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS, BY DIRECTION
PERIOD OF RECORD: 1/ 1/48 TO 12/31/64

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NT
07-18LST	.0	1.8	3.4	5.4	7.4	9.4	11.3	13.5	15.3	17.4	19.4	21.4	23.4	27.1	5.2
19-06LST	.0	1.9	3.5	5.5	7.4	9.4	11.3	13.5	15.3	17.4	19.3	21.4	23.1	27.9	4.8
ALL HRS	.0	1.9	3.5	5.4	7.4	9.4	11.3	13.5	15.3	17.4	19.4	21.4	23.3	27.5	5.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NT
07-18LST	5.1	20.0	29.0	19.2	9.9	6.0	4.8	2.4	1.8	.9	.5	.2	.1	.1	100.0
19-06LST	5.6	18.7	33.4	21.0	8.4	5.0	3.7	1.7	1.2	.6	.4	.1	.1	.1	100.0
ALL HRS	5.4	19.33	31.21	20.13	9.1	5.5	4.2	2.0	1.5	.8	.4	.2	.1	.1	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NT
07-18LST	945	3678	5339	3545	1827	1110	882	440	336	163	85	33	24	13	18420
19-06LST	1037	3444	6154	3871	1541	914	679	307	224	117	68	25	20	13	18419
ALL HRS	1982	7122	11493	7416	3368	2024	1561	747	560	280	153	58	44	26	36839

TOTAL OBSERVATIONS READ= 149031.

BOARDMAN, OREGON FROM PENDLETON, OREGON

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: DEC-FEB

PERIOD OF RECORD: 1/ 1/48 10 12/31/64

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LSI	.0	1.9	3.5	5.4	7.4	9.4	11.3	13.5	15.3	17.4	19.4	21.3	23.1	25.6	6.3
19-06LSI	.0	2.0	3.6	5.4	7.4	9.3	11.4	13.5	15.3	17.3	19.4	21.3	23.2	27.1	5.6
ALL HRS	.0	1.9	3.5	5.4	7.4	9.4	11.4	13.5	15.3	17.4	19.4	21.3	23.1	26.2	6.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LSI	1.8	14.4	24.4	20.9	12.7	9.2	7.8	3.7	2.7	1.3	.7	.3	.1	.1	100.0
19-06LSI	3.2	12.7	32.3	23.2	10.6	6.1	5.6	2.8	2.0	1.0	.4	.1	.0	.0	100.0
ALL HRS	2.5	13.6	28.4	22.1	11.6	7.7	6.7	3.2	2.3	1.1	.6	.2	.0	.1	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LSI	345	2711	4584	3427	2377	1722	1461	692	498	244	130	53	10	14	18768
19-06LSI	594	2386	6061	4356	1987	1152	1044	519	366	186	78	27	6	6	18768
ALL HRS	939	5097	10645	8283	4364	2874	2505	1211	864	430	208	80	16	20	37536

TOTAL OBSERVATIONS READ= 149031.

BOARDMAN, OREGON FROM PENDLETON, OREGON

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: MAR-MAY

PERIOD OF RECORD: 1/ 1/48 TO 12/31/64

C-22

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	1.8	5.5	5.5	7.5	9.4	11.3	13.5	15.3	17.4	19.4	21.3	23.2	26.1	5.9
19-06LST	.0	2.1	5.6	5.4	7.4	9.4	11.3	13.5	15.3	17.5	19.4	21.4	23.2	26.8	5.4
ALL HRS	.0	2.0	3.6	5.4	7.4	9.4	11.3	13.5	15.3	17.4	19.4	21.4	23.2	26.1	5.7

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	1.4	13.8	25.4	24.0	14.6	9.4	6.3	2.5	1.5	.6	.2	.1	.0	.1	100.0
19-06LST	2.3	11.1	34.4	25.6	11.9	5.8	4.6	2.1	1.3	.6	.3	.1	.0	.0	100.0
ALL HRS	1.8	12.5	29.9	24.8	13.3	7.6	5.5	2.3	1.4	.6	.2	.1	.0	.0	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	257	2594	4764	4498	2747	1761	1191	476	278	115	45	19	6	11	18762
19-06LST	434	2084	6451	4796	2234	1091	867	392	245	113	48	10	1	1	18767
ALL HRS	691	4678	11215	9294	4981	2852	2058	868	523	228	93	29	7	12	37529

TOTAL OBSERVATIONS READ= 149031.

BOARDMAN, OREGON FROM PENDLETON, OREGON

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: JUN-AUG

PERIOD OF RECORD: 1/ 1/48 TO 12/31/64

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	1.9	3.5	5.4	7.4	9.4	11.3	13.5	15.3	17.5	19.3	21.4	23.2	26.5	5.2
19-06LST	.0	2.1	3.5	5.3	7.3	9.4	11.4	13.5	15.3	17.3	19.5	21.5	23.4	27.3	4.8
ALL HRS	.0	2.0	3.5	5.3	7.4	9.4	11.3	13.5	15.3	17.4	19.3	21.4	23.3	26.7	5.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	3.7	17.7	32.1	20.7	10.0	5.6	4.4	2.4	1.5	1.0	.4	.2	.1	.2	100.0
19-06LST	4.2	13.2	41.0	23.3	8.5	3.4	3.0	1.3	1.0	.6	.3	.1	.1	.0	100.0
ALL HRS	4.0	15.5	36.6	22.0	9.2	4.5	3.7	1.9	1.2	.8	.3	.1	.1	.1	100.0

C-24

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	642	3292	5463	3836	1851	1048	813	445	277	180	77	35	21	34	18564
19-06LST	785	2455	7008	4320	1583	626	551	245	187	114	47	19	14	9	18563
ALL HRS	1477	5747	13571	8156	3434	1674	1364	690	464	294	124	54	35	43	37127

TOTAL OBSERVATIONS READ= 149031.

BOARDMAN, OREGON FROM PENDLETON, OREGON

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: SEP-NOV

PERIOD OF RECORD: 1/ 1/48 TO 12/31/64

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	1.9	3.5	5.4	7.4	9.4	11.3	13.5	15.3	17.4	19.3	21.3	23.2	26.4	5.7
19-06LST	.0	2.0	3.5	5.4	7.4	9.4	11.3	13.5	15.3	17.4	19.4	21.4	23.2	27.5	5.2
ALL HRS	.0	1.9	3.5	5.4	7.4	9.4	11.3	13.5	15.3	17.4	19.4	21.3	23.2	26.7	5.4

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	3.0	16.5	27.7	21.2	11.8	7.6	5.8	2.8	1.9	.9	.5	.2	.1	.1	100.0
19-06LST	3.8	13.9	35.3	23.3	9.9	5.1	4.2	2.0	1.4	.7	.3	.1	.1	.0	100.0
ALL HRS	3.4	15.2	31.5	22.2	10.8	6.3	5.0	2.4	1.6	.8	.4	.1	.1	.1	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	2239.0	12275.0	20650.0	15806.0	8802.0	5641.0	4347.0	2053.0	1389.0	702.0	337.0	140.0	61.0	72.0	74514.0
19-06LST	2850.0	10369.0	26274.0	17343.0	7345.0	3783.0	3141.0	1463.0	1022.0	530.0	241.0	81.0	41.0	29.0	74517.0
ALL HRS	5089.0	22644.0	46929.0	33149.0	16147.0	9424.0	7488.0	3516.0	2411.0	1232.0	578.0	221.0	102.0	101.0	149031.0

TOTAL OBSERVATIONS READ: 149031.

BOARDMAN, OREGON FROM PENDLETON, OREGON

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: ANNUAL

PERIOD OF RECORD: 1/ 1/48 TO 12/31/64

C-26

SPEED	NUMBER OF CONSECUTIVE HOURS																								
	1	2	3	4	5	6	7	8	9	10	11	12	13 14	15 16	17 18	19 20	21 22	23 24	25 30	31 36	37 42	43 48	49 60	61 72	73 +
<5 M/S	5981	2675	1663	1207	876	652	509	392	328	259	235	219	341	249	181	129	86	53	91	52	27	23	15	4	29
>4 M/S	6333	2908	1637	1054	710	559	409	350	288	251	181	182	294	232	177	150	103	85	142	92	69	30	33	8	2
10-24 M/S	2765	1040	598	346	272	193	145	126	76	67	71	41	84	49	47	14	20	13	14	9	3	0	0	0	0
25+ M/S	44	7	4	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TOTAL OBSERVATIONS READ= 149031.

BOARDMAN, OREGON FROM PENDLETON, OREGON
 FREQUENCY DISTRIBUTION OF THE NUMBER OF CONSECUTIVE HOURS
 WITH WIND WITHIN SELECTED SPEED RANGES
 PERIOD OF RECORD: 1/ 1/48 TO 12/31/64

GUST SPEED (M/S)	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-99	100+
NUMBER OF CASES	807	152	35	7	1	0	0	0	0	0	0	0	0	0	0	0

TOTAL OBSERVATIONS READ= 149031.

BOARDMAN, OREGON FROM PENDLETON, OREGON
 THE FREQUENCY DISTRIBUTION OF CALCULATED WIND GUSTS EXCEEDING 24 M/S
 PERIOD OF RECORD: 1/ 1/48 TO 12/31/64

Boone, North Carolina
(Estimated, from Hickory)

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	.00	2.03	3.28	5.41	7.49	9.48	11.50	13.12	15.43	17.90	19.22	.00	.00	.00	4.08
FEB	.00	2.01	3.28	5.40	7.48	9.46	11.47	13.08	15.39	17.73	19.22	20.72	.00	.00	4.19
MAR	.00	1.99	3.32	5.46	7.43	9.49	11.45	13.14	15.48	17.48	19.77	21.97	.00	.00	4.77
APR	.00	2.01	3.31	5.51	7.37	9.51	11.47	13.12	15.30	17.72	19.24	22.00	.00	.00	5.02
MAY	.00	2.00	3.30	5.42	7.35	9.42	11.38	13.07	15.37	17.26	19.22	22.31	.00	.00	3.82
JUN	.00	2.01	3.28	5.37	7.37	9.45	11.51	13.07	.00	.00	.00	.00	.00	24.50	3.19
JUL	.00	1.98	3.24	5.41	7.34	9.51	11.38	12.89	15.89	18.39	19.12	.00	.00	.00	2.88
AUG	.00	2.00	3.28	5.36	7.39	9.33	11.30	13.35	.00	17.53	.00	.00	.00	25.35	2.72
SEP	.00	1.98	3.29	5.39	7.32	9.61	11.32	13.13	15.21	17.53	.00	.00	.00	.00	2.91
OCT	.00	1.96	3.32	5.44	7.42	9.48	11.26	13.17	15.15	.00	19.43	.00	.00	.00	3.24
NOV	.00	1.96	3.25	5.46	7.47	9.58	11.47	12.96	15.62	17.47	19.56	.00	23.76	.00	3.58
DEC	.00	1.98	3.28	5.36	7.48	9.48	11.40	13.09	15.50	17.16	.00	.00	.00	.00	3.28
ANN	.00	1.99	3.29	5.42	7.41	9.49	11.44	13.10	15.43	17.54	19.48	21.83	23.76	24.92	3.64

TOTAL OBSERVATIONS READ= 43700.

BOONE, N.C. FROM HICKORY, N.C.
 AVERAGE WIND SPEED BY MONTH, BY WIND SPEED GROUP
 PERIOD OF RECORD: 1/ 1/49 TO 12/31/53

C-30

	CALM	01-02	03-04	05-06	07-08	09-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25+	PER MO.
MONTH		(M/S)	(M/S)	(M/S)	(M/S)	(M/S)	(M/S)	(M/S)	(M/S)	(M/S)	(M/S)	(M/S)	(M/S)	(M/S)	
JAN	22.62	11.83	28.29	14.01	10.46	7.50	2.88	1.88	.46	.33	.03	.00	.00	.00	100.00
FEB	18.65	12.03	33.63	13.39	9.66	6.94	2.54	2.10	.68	.21	.15	.03	.00	.00	100.00
MAR	16.70	9.96	29.84	15.19	11.85	8.03	3.82	2.75	.92	.07	.24	.03	.00	.00	100.00
APR	15.13	8.47	28.54	16.00	13.68	9.23	4.68	3.09	.75	.25	.08	.08	.00	.00	100.00
MAY	17.21	12.34	38.38	15.22	9.35	4.61	1.72	.83	.24	.05	.03	.03	.00	.00	100.00
JUN	24.44	13.28	37.58	12.78	7.57	2.87	1.20	.25	.00	.00	.00	.00	.00	.03	100.00
JUL	29.21	14.60	35.21	10.79	6.35	2.74	.78	.19	.08	.03	.03	.00	.00	.00	100.00
AUG	31.11	15.66	33.82	10.59	6.16	1.87	.49	.24	.00	.03	.00	.00	.00	.03	100.00
SEP	30.24	12.97	35.09	10.77	7.10	2.50	.86	.42	.03	.03	.00	.00	.00	.00	100.00
OCT	25.77	12.75	35.25	13.31	8.08	3.24	.89	.57	.05	.00	.03	.00	.00	.00	100.00
NOV	27.00	12.20	31.05	11.73	7.74	5.95	2.57	1.23	.34	.08	.08	.00	.03	.00	100.00
DEC	31.48	12.74	28.41	11.23	7.27	4.98	2.29	1.19	.30	.11	.00	.00	.00	.00	100.00
ANN	24.17	12.41	32.92	12.92	8.76	5.03	2.05	1.22	.32	.12	.05	.01	.00	.00	100.00
TOTAL OBSERVATIONS READ		43700.													

BOONE, N.C. FROM HICKORY, N.C.
 PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS, BY MONTH
 PERIOD OF RECORD: 1/ 1/49 TO 12/31/53

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	841	440	1052	521	389	279	107	70	17	1	1	0	0	0	3718
FEB	631	407	1138	453	327	235	86	71	23	7	5	1	0	0	3384
MAR	620	370	1108	564	440	298	142	102	34	25	9	1	0	0	3713
APR	543	304	1024	574	491	331	168	111	27	9	3	3	0	0	3588
MAY	639	458	1425	565	347	171	64	31	9	2	1	1	0	0	3713
JUN	878	477	1350	459	272	103	43	9	0	0	0	0	0	1	3592
JUL	1086	543	1309	401	236	102	29	7	3	1	1	0	0	0	3718
AUG	1146	577	1246	390	227	69	18	9	0	1	0	0	0	1	3684
SEP	1087	466	1261	387	255	90	31	15	1	1	0	0	0	0	3594
OCT	954	472	1305	495	299	120	33	21	2	0	1	0	0	0	3702
NOV	967	437	1112	420	277	213	92	44	12	3	3	0	1	0	3581
DEC	1169	473	1055	417	270	185	85	44	11	4	0	0	0	0	3713
ANN	10561	5424	14385	5646	3830	2196	898	534	139	54	24	6	1	2	43700.
TOTAL OBSERVATIONS READ		43700.													

BOONE, N.C. FROM HICKORY, N.C.
NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS, BY MONTH
PERIOD OF RECORD: 1/ 1/49 TO 12/31/53

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	.00	1.96	3.28	5.43	7.14	9.26	11.53	.00	.00	.00	.00	.00	.00	.00	3.82
NNE	.00	2.08	3.39	5.28	7.38	9.51	11.36	12.82	.00	.00	.00	.00	.00	.00	4.58
NE	.00	2.04	3.29	5.41	7.56	9.54	11.07	13.41	.00	.00	.00	.00	.00	.00	4.77
ENE	.00	2.02	3.42	5.52	7.44	9.16	11.26	13.04	15.51	.00	.00	.00	.00	.00	4.94
E	.00	2.04	3.26	5.41	7.46	9.69	11.26	13.94	.00	.00	.00	.00	.00	24.92	3.97
ESE	.00	2.10	3.34	5.37	7.40	9.36	11.63	13.55	.00	.00	.00	.00	.00	.00	3.64
SE	.00	1.97	3.22	5.49	7.24	9.49	11.56	13.42	15.41	.00	.00	.00	.00	.00	3.49
SSE	.00	1.94	3.23	5.46	7.24	9.13	11.36	.00	.00	.00	.00	.00	.00	.00	3.82
S	.00	1.93	3.29	5.43	7.19	9.38	11.33	12.73	15.65	16.94	.00	.00	.00	.00	4.38
SSW	.00	2.04	3.39	5.38	7.43	9.57	11.42	12.94	15.26	17.50	19.36	21.97	.00	.00	6.43
SW	.00	2.03	3.29	5.44	7.57	9.58	11.16	13.14	15.77	18.18	19.46	21.73	.00	.00	5.19
WSW	.00	2.11	3.38	5.46	7.49	9.21	11.40	13.14	14.99	.00	.00	.00	.00	.00	4.97
W	.00	2.05	3.28	5.42	7.72	9.60	11.20	13.33	15.42	.00	19.43	21.97	.00	.00	4.90
WNW	.00	2.07	3.35	5.35	7.41	9.59	11.61	13.22	15.42	17.54	19.52	21.78	.00	.00	5.71
W	.00	1.96	3.24	5.46	7.48	9.59	11.62	13.08	15.60	17.55	19.39	.00	.00	.00	4.64
NNW	.00	1.92	3.20	5.46	7.28	9.17	11.30	13.52	15.38	17.28	20.16	.00	23.76	.00	4.58
ALL	.00	1.99	3.29	5.42	7.41	9.49	11.44	13.10	15.43	17.54	19.48	21.83	23.76	24.92	3.64

TOTAL OBSERVATIONS READ= 43700.

BOONE, N.C. FROM HICKORY, N.C.
 AVERAGE ANNUAL WIND SPEED BY DIRECTION, BY WIND SPEED GROUP
 PERIOD OF RECORD: 1/ 1/49 TO 12/31/53

C-33

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	.00	25.45	47.59	14.15	9.33	2.92	.55	.00	.00	.00	.00	.00	.00	.00	100.00
NNE	.00	18.65	37.01	24.72	12.88	5.11	1.18	.44	.00	.00	.00	.00	.00	.00	100.00
NE	.00	10.93	45.12	20.45	17.01	4.26	1.66	.58	.00	.00	.00	.00	.00	.00	100.00
ENE	.00	8.71	45.75	22.45	12.75	7.79	1.91	.50	.14	.00	.00	.00	.00	.00	100.00
E	.00	19.64	53.58	14.06	9.94	1.94	.36	.24	.00	.00	.00	.00	.00	.24	100.00
ESE	.00	32.74	45.44	13.19	5.70	1.95	.81	.16	.00	.00	.00	.00	.00	.00	100.00
SE	.00	31.33	49.47	10.39	6.40	1.96	.15	.08	.23	.00	.00	.00	.00	.00	100.00
SSE	.00	24.42	48.10	17.07	6.05	3.13	1.22	.00	.00	.00	.00	.00	.00	.00	100.00
S	.00	18.27	44.25	17.62	13.42	5.03	.93	.27	.12	.09	.00	.00	.00	.00	100.00
SSW	.00	9.00	23.60	20.31	22.60	13.87	4.81	4.36	1.04	.30	.09	.03	.00	.00	100.00
SW	.00	16.95	35.45	20.50	13.97	5.37	3.95	2.78	.26	.26	.45	.06	.00	.00	100.00
WSW	.00	14.20	39.35	24.38	10.96	6.17	2.62	1.54	.77	.00	.00	.00	.00	.00	100.00
W	.00	20.82	39.09	15.61	11.63	5.20	4.65	2.21	.44	.00	.22	.11	.00	.00	100.00
WNW	.00	13.08	36.02	18.20	11.18	12.01	3.29	4.15	.97	.80	.21	.10	.00	.00	100.00
NW	.00	14.84	52.58	12.74	7.00	6.45	3.73	1.86	.57	.17	.07	.00	.00	.00	100.00
NNW	.00	16.83	46.06	16.32	9.22	6.22	4.10	.60	.51	.05	.05	.00	.05	.00	100.00
ALL	24.17	12.41	32.92	12.92	8.76	5.03	2.05	1.22	.32	.12	.05	.01	.00	.00	100.00

TOTAL OBSERVATIONS READ= 43700.

BUONE, N.C. FROM HICKORY, N.C.
ANNUAL PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS, BY DIRECTION
PERIOD OF RECORD: 1/ 1/49 TO 12/31/53

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	0	322	602	179	118	37	7	0	0	0	0	0	0	0	1265
NNE	0	252	500	334	174	69	16	6	0	0	0	0	0	0	1351
NE	0	264	1090	494	411	103	40	14	0	0	0	0	0	0	2416
ENE	0	123	646	317	180	110	27	7	2	0	0	0	0	0	1412
E	0	162	442	116	82	16	3	2	0	0	0	0	0	2	825
ESE	0	201	279	81	35	12	5	1	0	0	0	0	0	0	614
SE	0	416	657	138	85	26	2	1	3	0	0	0	0	0	1328
SSE	0	359	707	251	89	46	18	0	0	0	0	0	0	0	1470
S	0	610	1477	588	448	168	31	9	4	3	0	0	0	0	3338
SSW	0	303	795	684	761	467	162	147	35	10	3	1	0	0	3368
SW	0	262	548	317	216	83	61	43	4	4	7	1	0	0	1546
WSW	0	92	255	158	71	40	17	10	5	0	0	0	0	0	648
W	0	188	353	141	105	47	42	20	4	0	2	1	0	0	903
WNW	0	378	1041	526	323	347	95	120	28	23	6	3	0	0	2890
NW	0	1127	3994	468	532	490	283	141	43	13	5	0	0	0	7596
NNW	0	365	999	354	200	135	89	13	11	1	1	0	1	0	2169
ALL	10561	5424	14385	5646	3830	2196	898	534	139	54	24	6	1	2	43700.

TOTAL OBSERVATIONS READ* 43700.

BOONE, N.C. FROM HICKORY, N.C.
ANNUAL NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS, BY DIRECTION
PERIOD OF RECORD: 1/ 1/49 TO 12/31/53

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LSI	.0	2.0	3.4	5.4	7.5	9.5	11.5	13.1	15.4	17.6	19.1	.0	.0	.0	4.5
19-06LSI	.0	2.1	3.2	5.4	7.5	9.4	11.5	13.1	15.6	17.2	19.9	20.7	.0	.0	3.2
ALL HRS	.0	2.0	3.3	5.4	7.5	9.5	11.5	13.1	15.4	17.6	19.2	20.7	.0	.0	3.8

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LSI	16.6	15.3	27.9	13.6	11.3	8.3	3.6	2.4	.8	.2	.1	.0	.0	.0	100.0
19-06LSI	32.3	9.1	32.1	12.1	6.9	4.6	1.6	1.1	.2	.0	.0	.0	.0	.0	100.0
ALL HRS	24.4	12.2	30.0	12.9	9.1	6.5	2.6	1.7	.5	.1	.1	.0	.0	.0	100.0

C-35

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LSI	895	825	1508	734	613	450	194	128	42	11	5	0	0	0	5405
19-06LSI	1746	495	1737	657	373	249	84	57	9	1	1	1	0	0	5410
ALL HRS	2641	1320	3245	1391	986	699	278	185	51	12	6	1	0	0	10815.

TOTAL OBSERVATIONS READ= 43700.

BOONE, N.C. FROM HICKORY, N.C.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: DEC-FEB

PERIOD OF RECORD: 1/ 1/49 TO 12/31/53

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	.0	2.0	3.4	5.5	7.3	9.6	11.4	13.1	15.4	17.5	19.6	22.0	.0	.0	5.5
19-06LST	.0	2.0	3.2	5.4	7.5	9.3	11.5	13.2	15.6	17.7	19.6	22.3	.0	.0	3.6
ALL HRS	.0	2.0	3.3	5.5	7.4	9.5	11.4	13.1	15.4	17.5	19.6	22.1	.0	.0	4.5

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	8.3	14.9	25.0	15.5	14.8	11.0	5.2	3.5	1.1	.5	.2	.1	.0	.0	100.0
19-06LST	24.5	5.6	39.6	15.4	8.4	3.6	1.6	.9	.2	.1	.1	.0	.0	.0	100.0
ALL HRS	16.4	10.3	32.3	15.5	11.6	7.3	3.4	2.2	.6	.3	.1	.0	.0	.0	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	456	822	1375	853	818	604	287	194	59	28	9	4	0	0	5509
19-06LST	1346	310	2182	850	460	196	87	50	11	8	4	1	0	0	5505
ALL HRS	1802	1132	3557	1703	1278	800	374	244	70	36	13	5	0	0	11014.

TOTAL OBSERVATIONS HEAD 43700.

BOONE, N.C. FROM HICKORY, N.C.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: MAR-MAY

PERIOD OF RECORD: 1/ 1/49 TO 12/31/53

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	.0	2.0	3.4	5.4	7.4	9.4	11.4	13.1	15.6	18.4	19.1	.0	.0	24.9	3.7
19-06LST	.0	2.0	3.2	5.3	7.4	9.5	11.4	13.1	16.4	17.5	.0	.0	.0	.0	2.2
ALL MHS	.0	2.0	3.3	5.4	7.4	9.4	11.4	13.1	15.9	18.0	19.1	.0	.0	24.9	2.9

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	15.1	24.0	30.0	14.5	10.4	4.0	1.4	.4	.0	.0	.0	.0	.0	.0	100.0
19-06LST	41.5	5.0	41.0	8.2	2.9	.9	.3	.1	.0	.0	.0	.0	.0	.0	100.0
ALL MHS	28.3	14.5	35.5	11.4	6.7	2.5	.8	.2	.0	.0	.0	.0	.0	.0	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	831	1320	1651	797	574	222	76	22	2	1	1	0	0	2	5499
19-06LST	2279	277	2254	453	161	52	14	3	1	1	0	0	0	0	5495
ALL MHS	3110	1597	3905	1250	735	274	90	25	3	2	1	0	0	2	10994.

TOTAL OBSERVATIONS READ# 43700.

BOONE, N.C. FROM HICKORY, N.C.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: JUN-AUG

PERIOD OF RECORD: 1/ 1/49 TO 12/31/53

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	2.0	3.3	5.4	7.4	9.6	11.4	13.0	15.2	17.7	19.6	.0	23.8	.0	3.9
19-06LST	.0	2.0	3.3	5.4	7.5	9.5	11.5	13.1	16.1	16.9	19.4	.0	.0	.0	2.6
ALL HRS	.0	2.0	3.3	5.4	7.4	9.6	11.4	13.0	15.5	17.5	19.5	.0	23.8	.0	3.2

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	16.4	19.1	31.1	13.6	10.5	5.8	2.2	1.0	.2	.1	.1	.0	.0	.0	100.0
19-06LST	38.9	6.2	36.6	10.3	4.8	2.0	.6	.5	.1	.0	.0	.0	.0	.0	100.0
ALL HRS	27.7	12.6	33.8	12.0	7.6	3.9	1.4	.7	.1	.0	.0	.0	.0	.0	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	890	1039	1688	741	570	316	121	53	10	3	3	0	1	0	5435
19-06LST	2118	336	1990	561	261	107	35	27	5	1	1	0	0	0	5442
ALL HRS	3008	1375	3678	1302	831	423	156	80	15	4	4	0	1	0	10877.

TOTAL OBSERVATIONS READ# 45700.

BOONE, N.C. FROM WICKORY, N.C.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: SEP-NOV

PERIOD OF RECORD: 1/ 1/49 TO 12/31/53

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	2.0	3.4	5.4	7.4	9.5	11.4	13.1	15.4	17.5	19.4	22.0	23.8	24.9	4.4
19-06LST	.0	2.0	3.2	5.4	7.5	9.4	11.5	13.1	15.7	17.6	19.6	21.5	.0	.0	2.9
ALL HRS	.0	2.0	3.3	5.4	7.4	9.5	11.4	13.1	15.4	17.5	19.5	21.8	23.8	24.9	3.6

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	14.1	18.3	28.5	14.3	11.8	7.3	3.1	1.8	.5	.2	.1	.0	.0	.0	100.0
19-06LST	34.3	6.5	37.4	11.5	5.7	2.8	1.0	.6	.1	.1	.0	.0	.0	.0	100.0
ALL HRS	24.2	12.4	32.9	12.9	8.8	5.0	2.1	1.2	.3	.1	.1	.0	.0	.0	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	3072.0	4006.0	6222.0	3125.0	2575.0	1592.0	678.0	397.0	113.0	43.0	18.0	4.0	1.0	2.0	21848.0
19-06LST	7489.0	1418.0	8163.0	2521.0	1255.0	604.0	220.0	137.0	26.0	11.0	6.0	2.0	.0	.0	21852.0
ALL HRS	10561.0	5424.0	14385.0	5646.0	3830.0	2196.0	898.0	534.0	139.0	54.0	24.0	6.0	1.0	2.0	43700.0

TOTAL OBSERVATIONS READ# 43700.

BOONE, N.C. FROM HICKORY, N.C.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: ANNUAL

PERIOD OF RECORD: 1/ 1/49 TO 12/31/53

SPEED	NUMBER OF CONSECUTIVE HOURS																								
	1	2	3	4	5	6	7	8	9	10	11	12	13 14	15 16	17 18	19 20	21 22	23 24	25 30	31 36	37 42	43 48	49 60	61 72	73 +
<5 M/S	1214	556	319	201	153	167	130	129	74	78	73	78	141	120	110	107	95	67	60	41	30	28	14	11	11
>4 M/S	1952	683	340	226	153	142	87	66	60	44	47	26	52	42	30	16	8	3	15	3	8	2	2	1	0
10-24 M/S	652	229	90	63	36	29	17	19	11	14	8	4	1	3	2	1	1	0	0	0	0	0	0	0	0
25+ M/S	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TOTAL OBSERVATIONS READ# 43700.

BOONE, N.C. FROM HICKORY, N.C.
 FREQUENCY DISTRIBUTION OF THE NUMBER OF CONSECUTIVE HOURS
 WITH WIND WITHIN SELECTED SPEED RANGES
 PERIOD OF RECORD: 1/ 1/49 TO 12/31/53

GUST SPEED (M/S)	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-99	100+
NUMBER OF CASES	30	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TOTAL OBSERVATIONS READ= 43700.

BOONE, N.C. FROM HICKORY, N.C.
 THE FREQUENCY DISTRIBUTION OF CALCULATED WIND GUSTS EXCEEDING 24 M/S
 PERIOD OF RECORD: 1/ 1/49 TO 12/31/53

Holyoke, Massachusetts
(Estimated, from Chicopee Falls)

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	.00	2.12	3.63	5.53	7.46	9.46	11.45	13.49	15.56	17.62	19.56	21.59	23.54	28.49	8.43
FEB	.00	2.08	3.66	5.55	7.46	9.44	11.49	13.48	15.58	17.59	19.58	21.67	23.40	28.70	8.67
MAR	.00	2.22	3.65	5.56	7.51	9.46	11.52	13.51	15.58	17.59	19.59	21.60	23.49	27.75	9.36
APR	.00	2.18	3.70	5.57	7.52	9.42	11.50	13.56	15.56	17.55	19.63	21.59	23.49	28.57	9.52
MAY	.00	2.15	3.70	5.49	7.47	9.46	11.48	13.53	15.58	17.53	19.57	21.61	23.45	27.50	8.01
JUN	.00	2.19	3.66	5.54	7.49	9.44	11.47	13.53	15.48	17.42	19.65	21.54	23.52	27.32	7.24
JUL	.00	2.15	3.66	5.52	7.48	9.41	11.49	13.49	15.49	17.38	19.45	21.51	23.51	26.79	6.36
AUG	.00	2.18	3.65	5.50	7.47	9.40	11.44	13.53	15.45	17.40	19.54	21.62	23.69	26.89	6.11
SEP	.00	2.11	3.69	5.53	7.44	9.43	11.50	13.50	15.45	17.35	19.60	21.64	23.41	27.22	6.36
OCT	.00	2.12	3.69	5.54	7.48	9.44	11.46	13.50	15.59	17.48	19.58	21.57	23.42	27.66	6.88
NOV	.00	2.15	3.67	5.53	7.47	9.43	11.49	13.48	15.66	17.39	19.54	21.58	23.47	28.33	7.85
DEC	.00	1.99	3.63	5.54	7.51	9.44	11.50	13.48	15.52	17.50	19.59	21.60	23.50	28.27	7.91
ANN	.00	2.14	3.67	5.53	7.48	9.44	11.48	13.51	15.55	17.51	19.58	21.60	23.48	28.19	7.72

TOTAL OBSERVATIONS READ* 131343.

HOLYUKE, MASS. FROM CHICOPEE FALLS, MASS.
 AVERAGE WIND SPEED BY MONTH, BY WIND SPEED GROUP
 PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	23.81	.66	7.05	10.80	11.70	11.11	8.69	7.05	6.22	4.54	3.15	1.63	1.39	2.20	100.00
FEB	22.67	.71	6.82	11.45	11.72	10.96	8.57	6.87	5.86	5.24	3.31	1.57	1.73	2.53	100.00
MAR	18.66	.39	5.02	10.51	12.43	12.08	10.53	8.82	7.08	5.33	3.52	2.08	1.43	2.14	100.00
APR	16.81	.31	5.09	10.54	12.71	13.14	11.35	8.99	7.21	5.06	3.33	1.84	1.46	2.15	100.00
MAY	20.22	.51	7.27	13.65	14.51	12.40	10.15	7.35	5.31	3.57	2.34	1.20	.75	.77	100.00
JUN	21.89	.93	8.52	13.70	15.33	13.95	9.13	7.26	4.07	2.47	1.31	.71	.43	.31	100.00
JUL	26.21	.84	9.83	15.65	15.27	12.39	7.46	5.63	2.96	1.77	.99	.51	.24	.25	100.00
AUG	27.47	1.12	10.39	15.11	15.39	11.88	7.49	5.04	2.97	1.42	.94	.33	.22	.24	100.00
SEP	28.13	.94	9.06	14.78	13.88	11.76	8.16	6.00	3.07	2.04	1.22	.44	.23	.30	100.00
OCT	28.12	.56	7.96	13.16	13.03	11.65	8.35	6.40	4.46	2.81	1.62	.79	.56	.53	100.00
NOV	23.27	.77	7.43	12.51	13.32	12.37	8.81	6.94	4.88	3.68	2.72	.98	.95	1.37	100.00
DEC	25.10	.68	7.12	12.05	11.65	11.72	8.73	6.97	5.53	3.62	2.84	1.25	1.03	1.71	100.00
ANN	23.55	.70	7.64	12.84	13.42	12.12	8.95	6.94	4.96	3.45	2.27	1.11	.86	1.20	100.00

TOTAL OBSERVATIONS READ= 131343.

HOLYOKE, MASS. FROM CHICUPEL FALLS, MASS.
 PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS, BY MONTH
 PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	2651	73	785	1202	1303	1237	968	785	692	506	351	181	155	245	11134
FEB	2298	72	691	1161	1188	1111	869	696	594	531	335	159	175	256	10136
MAR	2080	43	559	1172	1385	1346	1174	983	789	594	392	232	159	238	11146
APR	1815	34	550	1138	1372	1419	1225	970	778	546	359	199	158	232	10795
MAY	2254	57	810	1521	1617	1382	1131	819	592	398	261	134	84	86	11146
JUN	2364	100	920	1479	1655	1506	986	784	440	267	142	77	46	33	10799
JUL	2923	94	1096	1745	1703	1382	832	628	330	197	110	57	27	28	11152
AUG	3066	125	1159	1686	1717	1326	836	563	331	158	105	37	24	27	11160
SEP	3037	101	978	1596	1498	1269	881	648	331	220	132	47	25	32	10795
OCT	3137	62	888	1468	1454	1300	932	714	498	314	181	88	62	59	11157
NOV	2505	83	800	1347	1434	1332	949	747	525	396	293	106	102	147	10766
DEC	2800	76	794	1344	1300	1308	974	778	617	404	317	139	115	191	11157
ANN	30930	920	10030	16859	17626	15918	11757	9115	6517	4531	2978	1456	1132	1574	131343.

TOTAL OBSERVATIONS READ= 131343.

HOLYOKI, MASS. FROM CHICUPEE FALLS, MASS.
NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS, BY MONTH
PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	.00	2.06	3.58	5.49	7.51	9.43	11.46	13.46	15.48	17.49	19.51	21.57	22.97	25.65	7.99
NNE	.00	2.23	3.73	5.59	7.40	9.39	11.48	13.74	15.79	17.32	19.61	21.60	23.08	27.68	8.97
NE	.00	2.20	3.69	5.53	7.57	9.34	11.35	13.36	15.54	17.82	19.43	21.73	23.69	29.71	9.00
ENE	.00	2.10	3.58	5.32	7.35	9.48	11.55	13.45	15.60	17.37	19.44	21.63	23.62	30.14	9.84
E	.00	2.13	3.61	5.35	7.46	9.65	11.60	13.61	15.52	17.16	19.14	21.22	23.95	29.93	9.05
ESE	.00	2.10	3.57	5.40	7.31	9.46	11.52	13.34	15.41	17.30	19.70	21.59	23.30	26.87	8.83
SE	.00	2.22	3.66	5.51	7.43	9.32	11.31	13.24	15.39	17.71	19.78	21.60	23.40	27.20	7.75
SSE	.00	2.18	3.70	5.60	7.39	9.27	11.53	13.73	15.52	17.27	19.55	21.69	23.57	25.92	7.75
S	.00	2.09	3.63	5.52	7.53	9.43	11.49	13.47	15.42	17.47	19.46	21.64	23.79	27.03	7.96
SSW	.00	2.16	3.79	5.62	7.47	9.43	11.54	13.72	15.68	17.23	19.60	21.50	23.20	26.71	10.18
SW	.00	2.30	3.68	5.58	7.50	9.34	11.24	13.34	15.52	17.78	19.40	21.61	23.63	27.31	9.63
WSW	.00	2.14	3.64	5.49	7.45	9.52	11.49	13.36	15.47	17.40	19.73	21.69	23.50	27.82	10.42
W	.00	2.14	3.67	5.52	7.50	9.47	11.56	13.43	15.33	17.08	19.48	21.12	23.45	28.30	11.57
WNW	.00	2.08	3.68	5.51	7.52	9.52	11.52	13.38	15.53	17.62	19.65	21.61	23.51	28.65	14.05
NW	.00	2.13	3.68	5.54	7.54	9.46	11.43	13.40	15.49	17.72	19.51	21.78	23.61	27.96	12.13
NNW	.00	2.14	3.72	5.57	7.44	9.41	11.54	13.65	15.71	17.59	19.65	21.55	23.21	26.69	10.13
ALL	.00	2.14	3.67	5.53	7.48	9.44	11.48	13.51	15.55	17.51	19.58	21.60	23.48	28.19	7.72

TOTAL OBSERVATIONS READ: 131343.

HOLYOKE, MASS. FROM CHICOPEE FALLS, MASS.
 AVERAGE ANNUAL WIND SPEED BY DIRECTION, BY WIND SPEED GROUP
 PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

C-47

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	.00	2.22	16.90	22.80	20.81	15.90	9.40	7.76	2.55	2.03	.87	.38	.23	.15	100.00
NNE	.00	1.51	14.89	20.15	17.67	15.16	10.10	8.80	5.10	2.74	1.47	1.04	.29	1.08	100.00
NE	.00	1.23	14.24	23.86	15.17	14.77	10.23	6.87	6.17	3.17	1.43	1.18	.50	1.18	100.00
ENE	.00	.37	8.80	18.86	20.26	17.14	10.48	7.82	6.10	3.82	2.61	.42	1.16	2.14	100.00
E	.00	.55	10.49	20.31	21.32	20.11	9.35	6.14	4.42	3.60	1.88	.86	.27	.70	100.00
ESE	.00	.45	11.64	18.36	22.90	19.64	9.66	6.91	4.80	2.94	1.34	.26	.45	.64	100.00
SE	.00	1.63	17.46	28.33	20.32	13.43	7.76	3.78	2.81	1.68	.71	.82	.51	.77	100.00
SSE	.00	1.58	17.55	23.80	22.79	16.44	7.29	4.40	3.19	1.41	.54	.57	.13	.30	100.00
S	.00	1.64	14.45	23.80	23.40	15.49	9.53	7.40	1.59	1.35	.63	.34	.21	.17	100.00
SSW	.00	.51	7.65	13.32	18.47	19.30	14.17	11.60	5.80	4.16	2.67	1.21	.42	.72	100.00
SW	.00	1.02	8.72	19.37	17.57	16.77	13.15	8.37	6.55	3.78	1.80	1.47	.61	.82	100.00
WSW	.00	.15	6.54	15.42	18.74	17.70	13.03	9.34	7.22	4.15	4.39	1.08	1.26	.98	100.00
W	.00	.19	6.51	12.54	13.80	16.51	13.24	9.95	7.88	6.83	5.81	1.99	2.05	2.69	100.00
WNW	.00	.08	2.59	6.47	10.17	12.47	13.04	11.49	12.94	9.37	8.67	2.57	4.34	5.80	100.00
NW	.00	.40	4.71	11.26	13.02	14.28	13.84	10.76	11.07	8.66	4.01	3.53	1.80	2.67	100.00
NNW	.00	.76	9.88	15.42	17.06	17.01	12.46	8.89	7.85	4.46	2.41	2.05	.86	.88	100.00
ALL	23.55	.70	7.64	12.84	13.42	12.12	8.95	6.94	4.96	3.45	2.27	1.11	.86	1.20	100.00

TOTAL OBSERVATIONS READ= 131343.

HOLYOKE, MASS. FROM CHICOPEE FALLS, MASS.
ANNUAL PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS, BY DIRECTION
PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

C-48

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	0	239	1823	2459	2245	1499	1014	837	275	219	94	41	25	16	10786
NNE	0	93	920	1245	1092	937	624	544	315	169	91	64	18	67	6179
NE	0	44	508	851	541	527	365	245	220	113	51	42	18	42	3567
ENE	0	8	184	405	435	368	225	168	131	82	56	9	25	46	2147
E	0	14	268	519	545	514	239	157	113	42	48	22	7	18	2556
ESE	0	7	182	267	358	307	151	108	75	46	21	4	7	10	1563
SE	0	32	342	555	398	263	152	74	55	33	14	16	10	15	1959
SSE	0	47	522	708	678	489	217	131	95	42	16	17	4	9	2975
S	0	183	1610	2652	2607	1726	1062	824	177	150	70	38	23	19	11141
SSW	0	72	1078	1877	2603	2721	1998	1635	818	566	376	171	59	102	14096
SW	0	55	470	1044	947	904	709	451	353	204	97	79	33	44	5390
WSW	0	5	213	502	610	576	424	304	235	135	143	35	41	32	3255
W	0	9	305	587	646	773	620	466	369	320	272	93	96	126	4682
WNW	0	9	304	771	1213	1487	1555	1570	1543	1117	1034	307	518	692	11925
NW	0	39	462	1104	1277	1400	1357	1055	1085	849	393	346	176	262	9805
NNW	0	64	829	1293	1431	1427	1045	746	658	374	202	172	72	74	8387
ALL	30930	920	10030	16854	17626	15918	11757	9115	6517	4531	2978	1456	1132	1574	131343.

TOTAL OBSERVATIONS READ: 131343.

HOLYOKE, MASS. FROM CHICOPEE FALLS, MASS.

ANNUAL NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS, BY DIRECTION
PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NT
07-18LST	.0	2.1	3.6	5.0	7.5	9.5	11.5	13.5	15.6	17.6	19.6	21.6	23.4	28.4	9.0
19-06LST	.0	2.0	3.7	5.5	7.5	9.4	11.5	13.4	15.5	17.6	19.6	21.6	23.5	28.6	7.6
ALL HRS	.0	2.1	3.6	5.5	7.5	9.4	11.5	13.5	15.6	17.6	19.6	21.6	23.5	28.5	8.3

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NT
07-18LST	20.3	.7	7.2	11.0	11.3	11.4	9.1	7.5	6.7	5.2	3.5	1.9	1.6	2.6	100.0
19-06LST	27.5	.7	6.8	11.9	12.1	11.1	8.3	6.4	5.0	3.7	2.7	1.0	1.2	1.7	100.0
ALL HRS	23.9	.7	7.0	11.4	11.7	11.3	8.7	7.0	5.9	4.4	3.1	1.5	1.4	2.1	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NT
07-18LST	3286	115	1172	1783	1830	1852	1469	1222	1086	843	564	309	256	418	16205
19-06LST	4463	106	1098	1924	1961	1804	1342	1037	817	598	439	170	189	274	16222
ALL HRS	7749	221	2270	3707	3791	3656	2811	2259	1903	1441	1003	479	445	692	32427.

TOTAL OBSERVATIONS READ: 131343.

HOLYOKE, MASS. FROM CHICOPEE FALLS, MASS.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: DEC-FEB

PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	2.2	3.7	5.5	7.5	9.4	11.5	13.6	15.6	17.5	19.6	21.6	23.5	28.1	10.6
19-06LST	.0	2.1	3.7	5.5	7.5	9.5	11.5	13.4	15.5	17.6	19.6	21.6	23.5	28.0	7.3
ALL HRS	.0	2.2	3.7	5.5	7.5	9.4	11.5	13.5	15.6	17.6	19.6	21.6	23.5	28.1	9.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	11.2	.5	5.8	10.1	11.9	12.3	11.6	10.2	8.6	6.4	4.4	2.6	1.8	2.6	100.0
19-06LST	26.0	.3	5.8	13.1	14.5	12.7	9.7	6.6	4.5	2.9	1.7	.8	.6	.8	100.0
ALL HRS	18.6	.4	5.8	11.6	13.2	12.5	10.7	8.4	6.5	4.6	3.1	1.7	1.2	1.7	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	1846	91	963	1669	1974	2039	1926	1680	1416	1053	734	427	303	426	16547
19-06LST	4303	43	956	2162	2400	2108	1604	1092	743	435	278	138	98	130	16540
ALL HRS	6149	134	1919	3831	4374	4147	3530	2772	2159	1538	1012	565	401	556	33087

TOTAL OBSERVATIONS READ: 131343.

HOLYOKE, MASS. FROM CHICOPEE FALLS, MASS.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: MAR-MAY

PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	2.2	3.6	5.5	7.5	9.4	11.5	13.5	15.5	17.4	19.6	21.6	23.6	27.0	8.3
19-06LST	.0	2.1	3.7	5.5	7.5	9.4	11.4	13.5	15.4	17.5	19.5	21.5	23.4	26.7	4.9
ALL HRS	.0	2.2	3.7	5.5	7.5	9.4	11.5	13.5	15.5	17.4	19.6	21.5	23.6	27.0	6.6

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	13.0	1.3	10.0	14.3	15.4	14.6	10.4	8.8	5.3	3.1	1.8	.9	.5	.5	100.0
19-06LST	37.5	.6	9.2	15.3	15.3	10.8	5.6	3.2	1.4	.6	.3	.1	.1	.0	100.0
ALL HRS	25.2	1.0	9.6	14.8	15.3	12.7	8.0	6.0	3.3	1.9	1.1	.5	.3	.3	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	2148	223	1656	2371	2545	2422	1730	1452	874	518	300	151	86	81	16557
19-06LST	6205	96	1519	2539	2530	1792	924	523	227	104	57	20	11	7	16554
ALL HRS	8353	319	3175	4910	5075	4214	2654	1975	1101	622	357	171	97	88	33111

TOTAL OBSERVATIONS READ= 131343.

HOLYOKE, MASS. FROM CHICOPEE FALLS, MASS.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT
SEASON: JUN-AUG

PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	2.1	3.7	5.5	7.5	9.4	11.5	13.5	15.6	17.4	19.6	21.6	23.5	27.9	8.4
19-06LST	.0	2.1	3.7	5.5	7.5	9.4	11.5	13.4	15.5	17.4	19.6	21.6	23.4	28.4	5.7
ALL HRS	.0	2.1	3.7	5.5	7.5	9.4	11.5	13.5	15.6	17.4	19.6	21.6	23.4	28.0	7.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	17.7	.8	8.5	13.5	13.0	13.1	10.0	8.2	5.4	4.0	2.7	1.1	.9	1.1	100.0
19-06LST	35.4	.7	7.8	13.5	13.8	10.7	6.9	4.7	2.9	1.6	1.0	.4	.3	.3	100.0
ALL HRS	26.5	.8	8.1	13.5	13.4	11.9	8.4	6.4	4.1	2.8	1.9	.7	.6	.7	100.0

C-52

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	2894	129	1393	2207	2123	2147	1638	1344	879	652	436	182	140	186	16360
19-06LST	5785	117	1273	2204	2263	1754	1124	765	475	258	170	59	49	52	16358
ALL HRS	8679	246	2666	4411	4386	3901	2762	2109	1354	930	606	241	189	238	32718.

TOTAL OBSERVATIONS READ* 131343.

HOLYOKE, MASS. FROM CHICUPEE FALLS, MASS.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: SEP-NOV

PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	2.2	3.6	5.5	7.5	9.4	11.5	13.6	15.6	17.5	19.6	21.6	23.5	28.1	9.1
19-06LST	.0	2.1	3.7	5.5	7.5	9.4	11.5	13.4	15.5	17.6	19.6	21.6	23.5	28.4	6.4
ALL HRS	.0	2.1	3.7	5.5	7.5	9.4	11.5	13.5	15.6	17.5	19.6	21.6	23.5	28.2	7.7

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	15.5	.8	7.9	12.2	12.9	12.9	10.3	8.7	6.5	4.7	3.1	1.6	1.2	1.7	100.0
19-06LST	31.6	.6	7.4	13.4	13.9	11.4	7.6	5.2	3.4	2.2	1.4	.6	.5	.7	100.0
ALL HRS	23.5	.7	7.6	12.8	13.4	12.1	9.0	6.9	5.0	3.4	2.3	1.1	.9	1.2	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	10174.0	558.0	5184.0	8030.0	8472.0	8460.0	6763.0	5698.0	4255.0	3076.0	2034.0	1069.0	785.0	1111.0	65669.0
19-06LST	20756.0	362.0	4846.0	8829.0	9154.0	7458.0	4994.0	3417.0	2262.0	1455.0	944.0	387.0	347.0	463.0	65674.0
ALL HRS	30930.0	920.0	10030.0	16859.0	17626.0	15918.0	11757.0	9115.0	6517.0	4531.0	2978.0	1456.0	1132.0	1574.0	131343.0

TOTAL OBSERVATIONS READ= 131343.

HOLYOKE, MASS. FROM CHICOPEE FALLS, MASS.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: ANNUAL

PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

SPEED	NUMBER OF CONSECUTIVE HOURS																																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	30	36	42	48	60	72	+	
<5 M/S	3839	1595	984	562	423	342	280	262	222	208	166	172	254	165	116	70	50	25	29	20	13	5	0	4	0								
>4 M/S	3072	1269	718	470	367	281	258	247	231	235	192	201	393	302	228	169	135	105	224	194	162	102	107	75	70								
10-24 M/S	4256	1784	1022	700	545	402	327	303	237	199	173	164	237	165	100	68	58	34	61	32	10	5	5	0	0								
25+ M/S	544	159	65	32	18	13	10	4	6	0	2	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TOTAL OBSERVATIONS READ= 131343.

HOLYOKE, MASS. FROM CHICOPEE FALLS, MASS.
 FREQUENCY DISTRIBUTION OF THE NUMBER OF CONSECUTIVE HOURS
 WITH WIND WITHIN SELECTED SPEED RANGES
 PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

GUST SPEED (M/S)	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-99	100+
NUMBER OF CASES	4544	1720	534	254	40	34	3	5	0	1	0	0	0	0	0	0

TOTAL OBSERVATIONS READ= 131343.

MOLYKKE, MASS. FROM CHICOPEE FALLS, MASS.
 THE FREQUENCY DISTRIBUTION OF CALCULATED WIND GUSTS EXCEEDING 24 M/S
 PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

Huron, South Dakota
(Estimated, from Huron Airport)

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	.00	1.75	3.48	5.54	7.45	9.54	11.51	13.27	15.39	17.41	19.20	21.41	23.30	59.94	8.01
FEB	.00	1.78	3.50	5.52	7.51	9.53	11.46	13.25	15.43	17.43	19.36	21.56	23.35	26.40	7.93
MAR	.00	1.80	3.54	5.53	7.47	9.52	11.48	13.27	15.48	17.41	19.23	21.41	23.30	26.93	8.96
APR	.00	1.83	3.54	5.56	7.48	9.58	11.51	13.27	15.49	17.45	19.20	21.47	23.34	27.09	9.64
MAY	.00	1.76	3.49	5.52	7.49	9.56	11.45	13.27	15.49	17.42	19.29	21.50	23.38	28.66	8.62
JUN	.00	1.78	3.51	5.50	7.44	9.56	11.46	13.28	15.43	17.43	19.30	21.33	23.21	27.93	7.82
JUL	.00	1.76	3.49	5.48	7.46	9.54	11.42	13.22	15.49	17.32	19.18	21.31	23.21	27.77	7.16
AUG	.00	1.78	3.46	5.52	7.47	9.52	11.41	13.19	15.47	17.40	19.23	21.46	23.64	26.84	7.25
SEP	.00	1.77	3.50	5.55	7.47	9.58	11.44	13.23	15.44	17.38	19.17	21.45	23.18	26.75	7.88
OCT	.00	1.80	3.51	5.51	7.47	9.55	11.44	13.24	15.47	17.43	19.25	21.38	23.25	26.53	8.04
NOV	.00	1.80	3.52	5.52	7.49	9.54	11.47	13.32	15.47	17.42	19.31	21.44	23.33	26.96	8.57
DEC	.00	1.75	3.52	5.53	7.47	9.54	11.47	13.31	15.46	17.42	19.28	21.39	23.32	26.56	7.93
ANN	.00	1.77	3.50	5.52	7.47	9.55	11.46	13.26	15.46	17.42	19.25	21.43	23.31	29.76	8.15

TOTAL OBSERVATIONS READ# 131044.

HURON, S.D. FROM HURON/APT., S.D.
 AVERAGE WIND SPEED BY MONTH, BY WIND SPEED GROUP
 PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MU.
JAN	1.25	7.10	15.91	16.66	19.63	13.74	10.79	7.49	3.34	1.84	1.07	.67	.25	.27	100.00
FEB	1.28	6.68	14.91	16.75	20.15	14.35	11.53	8.07	3.19	1.46	.78	.51	.19	.16	100.00
MAR	1.15	4.73	11.62	15.03	19.10	14.28	11.66	10.81	4.96	2.91	1.71	.94	.66	.43	100.00
APR	.91	2.93	10.10	13.58	17.64	14.58	14.60	11.85	5.81	3.12	2.00	1.42	.55	.90	100.00
MAY	1.08	5.10	12.58	15.33	18.18	15.94	13.56	9.16	4.19	2.31	1.43	.63	.31	.21	100.00
JUN	1.47	6.44	15.11	18.53	19.05	14.19	11.66	7.39	3.32	1.39	.73	.49	.14	.10	100.00
JUL	1.67	7.69	18.08	19.20	19.59	14.33	10.19	5.83	2.04	.76	.26	.19	.09	.07	100.00
AUG	1.48	7.37	17.87	19.03	20.03	13.61	10.53	6.71	1.92	.77	.44	.17	.05	.03	100.00
SEP	1.62	6.25	16.24	16.81	18.40	14.01	12.31	8.23	3.25	1.40	.79	.37	.19	.12	100.00
OCT	1.60	5.80	15.27	16.45	20.07	14.35	11.64	7.64	3.28	1.59	1.10	.51	.34	.35	100.00
NOV	1.34	4.54	13.37	16.17	19.97	13.60	11.94	9.25	4.43	2.57	1.36	.78	.37	.32	100.00
DEC	1.41	7.51	15.67	17.29	19.32	12.57	11.14	7.40	3.12	2.02	1.01	.75	.44	.35	100.00
ANN	1.36	6.02	14.74	16.74	19.26	14.13	11.79	8.31	3.57	1.84	1.06	.62	.30	.28	100.00

TOTAL OBSERVATIONS READ= 131044.

HURON, S.D. FROM HURON/APT., S.D.
 PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS, BY MONTH
 PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

C-59

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MU.
JAN	139	791	1773	1857	2188	1532	1203	835	372	205	119	75	28	30	11147
FEB	130	678	1513	1700	2045	1457	1170	819	324	148	79	52	19	16	10150
MAR	128	526	1293	1673	2125	1589	1298	1203	552	324	190	105	74	48	11128
APR	98	315	1084	1458	1894	1565	1568	1272	624	335	215	153	59	97	10737
MAY	120	567	1399	1705	2022	1773	1508	1019	466	257	159	70	34	23	11122
JUN	158	693	1625	1993	2049	1526	1254	795	357	149	79	53	15	11	10757
JUL	186	855	2009	2133	2177	1592	1132	648	227	85	29	21	10	8	11112
AUG	164	819	1985	2113	2224	1512	1170	745	213	85	49	19	5	3	11106
SEP	174	671	1744	1805	1976	1504	1322	884	349	150	85	40	20	13	10737
OCT	178	646	1700	1831	2234	1597	1296	850	365	177	122	57	38	39	11130
NOV	144	489	1441	1745	2152	1466	1287	997	477	277	147	84	40	34	10778
DEC	157	837	1746	1926	2152	1400	1241	824	348	225	112	84	49	39	11140
ANN	1776	7887	19312	21937	25238	18513	15449	10891	4674	2417	1385	813	391	361	131044.

TOTAL OBSERVATIONS READ 131044.

MURON, S.D. FROM MURON/APT., S.D.
NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS, BY MONTH
PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

C-60

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	.00	1.76	3.45	5.51	7.36	9.50	11.37	13.17	15.44	17.40	19.29	21.49	23.92	25.40	6.97
NNE	.00	1.80	3.53	5.50	7.42	9.58	11.37	13.10	15.46	17.47	18.99	22.02	23.90	28.07	6.82
NE	.00	1.76	3.40	5.43	7.45	9.49	11.33	13.37	15.46	17.42	19.24	21.34	22.85	.00	6.04
ENE	.00	1.82	3.48	5.44	7.34	9.46	11.58	13.55	15.39	17.86	19.22	22.03	23.30	77.68	6.51
E	.00	1.78	3.48	5.48	7.42	9.54	11.49	13.19	15.57	17.52	19.18	21.15	23.32	78.32	6.63
ESE	.00	1.86	3.53	5.43	7.38	9.52	11.52	13.48	15.30	17.24	19.32	21.34	23.39	38.54	7.39
SE	.00	1.79	3.49	5.50	7.51	9.53	11.39	13.32	15.39	17.59	19.57	21.19	23.12	32.70	8.04
SSE	.00	1.76	3.55	5.61	7.56	9.62	11.45	13.18	15.49	17.47	19.14	21.52	23.61	34.82	9.40
S	.00	1.67	3.46	5.56	7.46	9.53	11.43	13.12	15.45	17.34	19.10	21.45	23.76	34.64	8.54
SSW	.00	1.73	3.48	5.57	7.53	9.58	11.46	13.18	15.51	17.58	19.16	21.57	23.90	38.69	7.64
SW	.00	1.72	3.49	5.49	7.46	9.50	11.37	13.36	15.53	17.62	19.27	21.31	22.85	51.69	6.18
WSW	.00	1.78	3.58	5.48	7.33	9.37	11.63	13.57	15.28	17.21	19.41	22.02	23.35	35.91	6.87
W	.00	1.76	3.56	5.52	7.45	9.54	11.55	13.36	15.46	17.17	19.23	21.60	23.70	30.82	7.25
WNW	.00	1.84	3.57	5.50	7.47	9.45	11.67	13.49	15.41	17.29	19.27	21.53	23.28	27.04	9.47
NW	.00	1.82	3.50	5.51	7.53	9.54	11.50	13.42	15.47	17.40	19.41	21.27	23.19	27.01	9.74
NNW	.00	1.82	3.52	5.56	7.47	9.60	11.39	13.16	15.52	17.54	19.14	21.50	23.70	26.67	8.76
ALL	.00	1.77	3.50	5.52	7.47	9.55	11.46	13.26	15.46	17.42	19.25	21.43	23.31	29.76	8.15

TOTAL OBSERVATIONS READ= 131044.

HURON, S.D. FROM HURON/APT., S.D.
 AVERAGE ANNUAL WIND SPEED BY DIRECTION, BY WIND SPEED GROUP
 PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

DIRECTION	CALM	01-02 (M/8)	03-04 (M/8)	05-06 (M/8)	07-08 (M/8)	09-10 (M/8)	11-12 (M/8)	13-14 (M/8)	15-16 (M/8)	17-18 (M/8)	19-20 (M/8)	21-22 (M/8)	23-24 (M/8)	25+ (M/8)	PER DIR
N	.00	9.27	20.71	17.51	19.64	15.43	9.70	4.96	1.82	.57	.25	.10	.01	.03	100.00
NNE	.00	8.26	21.95	21.54	19.06	13.91	8.38	4.30	1.61	.49	.23	.09	.02	.15	100.00
NE	.00	14.25	24.34	21.93	17.66	9.24	7.92	3.00	.79	.52	.22	.07	.05	.00	100.00
ENE	.00	10.42	23.65	21.88	18.94	11.18	7.41	3.95	1.52	.42	.45	.07	.03	.07	100.00
E	.00	10.65	21.44	22.41	19.48	11.53	6.86	5.31	1.23	.56	.29	.03	.15	.06	100.00
ESE	.00	7.88	17.61	19.38	20.84	14.79	10.14	5.28	1.84	.91	.76	.17	.19	.19	100.00
SE	.00	5.89	14.63	18.53	21.84	11.32	13.56	8.18	3.34	1.63	.33	.35	.25	.16	100.00
SSE	.00	2.60	8.15	13.29	18.51	19.18	15.77	13.98	5.27	1.74	.96	.43	.06	.06	100.00
S	.00	4.34	11.84	16.20	20.77	17.36	12.97	8.79	4.47	1.48	1.06	.50	.10	.12	100.00
SSW	.00	7.38	17.70	19.84	18.83	14.13	8.93	7.50	3.08	.93	.99	.52	.02	.16	100.00
SW	.00	12.57	23.79	22.74	22.08	7.84	5.81	2.77	1.00	.42	.45	.24	.18	.11	100.00
WSW	.00	8.01	20.90	22.20	24.52	10.39	6.81	3.28	1.49	.81	.69	.24	.34	.32	100.00
W	.00	10.00	20.41	19.03	20.81	11.48	6.26	5.90	2.44	1.35	.79	.74	.36	.43	100.00
WNW	.00	3.90	10.88	13.61	20.08	14.93	13.80	9.07	5.06	3.10	2.69	1.25	.83	.80	100.00
NW	.00	4.48	10.73	14.23	18.77	10.34	14.43	10.81	4.70	5.53	2.26	1.67	1.18	.87	100.00
NNW	.00	4.47	15.30	15.36	15.98	16.02	13.13	9.60	4.85	1.96	1.48	1.22	.26	.36	100.00
ALL	1.36	6.02	14.74	16.74	19.26	14.13	11.79	8.31	3.57	1.84	1.06	.62	.30	.28	100.00

TOTAL OBSERVATIONS READ# 131044.

HURON, S.D. FROM HURON/APT., S.D.
ANNUAL PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS, BY DIRECTION
PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	0	830	1854	1567	1758	1381	868	444	163	51	22	9	1	3	8951
NNE	0	534	1420	1393	1233	900	542	278	104	32	15	6	1	10	6468
NE	0	574	980	883	711	372	319	121	32	21	9	3	2	0	4027
ENE	0	301	683	632	547	323	214	114	44	12	13	2	1	2	2888
E	0	363	731	764	664	393	234	181	42	19	10	1	5	2	3409
ESE	0	364	813	895	962	683	468	244	85	42	35	8	9	9	4617
SE	0	616	1529	1937	2283	1183	1418	855	349	170	34	37	26	17	10454
SSE	0	548	1715	2795	3894	4035	3318	2941	1108	365	202	91	13	12	21037
S	0	629	1715	2348	3010	2516	1880	1274	648	214	153	72	14	17	14490
SSW	0	372	892	1000	949	712	450	378	155	47	50	26	1	8	5040
SW	0	476	901	861	836	297	220	105	38	16	17	9	7	4	3787
WSW	0	327	853	906	1001	424	278	134	61	33	28	10	14	13	4082
W	0	393	802	748	818	451	246	232	96	53	31	29	14	17	3930
WNW	0	377	1051	1315	1940	1443	1333	876	489	300	260	121	80	77	9662
NW	0	657	1574	2087	2753	1516	2117	1585	690	811	332	245	173	128	14668
NNW	0	526	1799	1806	1879	1884	1544	1129	570	231	174	144	30	42	11758
ALL	1776	7887	19312	21937	25238	18513	15449	10891	4674	2417	1385	813	391	361	131044.

TOTAL OBSERVATIONS READ: 131044.

HURON, S.D. FROM HURON/APT., S.D.
ANNUAL NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS, BY DIRECTION
PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	.0	1.8	3.6	5.5	7.5	9.5	11.5	13.3	15.4	17.4	19.3	21.4	23.3	30.9	8.3
19-06LST	.0	1.7	3.5	5.5	7.5	9.5	11.5	13.2	15.4	17.4	19.2	21.4	23.3	46.6	7.7
ALL HRS	.0	1.8	3.5	5.5	7.5	9.5	11.5	13.3	15.4	17.4	19.3	21.4	23.3	38.3	8.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	1.1	8.0	13.9	15.9	18.3	13.7	11.7	8.6	3.9	2.1	1.3	.8	.5	.3	100.0
19-06LST	1.5	6.2	17.1	17.9	21.1	13.4	10.5	6.6	2.6	1.5	.7	.5	.1	.2	100.0
ALL HRS	1.3	7.1	15.5	16.9	19.7	13.5	11.1	7.6	3.2	1.8	1.0	.7	.3	.3	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	176	1300	2251	2569	2959	2220	1903	1400	625	338	203	137	76	45	16202
19-06LST	250	1006	2781	2914	3426	2169	1711	1078	419	240	107	74	20	40	16235
ALL HRS	426	2306	5032	5483	6385	4389	3614	2478	1044	578	310	211	96	85	32437.

TOTAL OBSERVATIONS READ: 131044.

HURON, S.D. FROM HURON/APT., S.D.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: DEC-FEB

PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	1.8	3.6	5.5	7.5	9.6	11.5	13.3	15.5	17.4	19.2	21.4	23.3	27.4	10.1
19-06LST	.0	1.8	3.5	5.5	7.5	9.5	11.5	13.2	15.5	17.4	19.3	21.5	23.3	26.7	8.0
ALL MHS	.0	1.8	3.5	5.5	7.5	9.6	11.5	13.3	15.5	17.4	19.2	21.5	23.3	27.3	9.1

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.6	4.3	7.9	11.3	15.1	15.7	15.7	13.3	6.5	4.0	2.5	1.5	.8	.8	100.0
19-06LST	1.5	4.2	15.0	18.1	21.6	14.2	10.8	7.9	3.4	1.6	.9	.5	.3	.2	100.0
ALL MHS	1.0	4.3	11.4	14.7	16.3	14.9	13.3	10.6	5.0	2.8	1.7	1.0	.5	.5	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	98	716	1304	1856	2487	2585	2595	2193	1074	660	420	250	125	134	16497
19-06LST	248	692	2472	2980	3554	2342	1779	1301	568	256	144	78	42	34	16490
ALL MHS	346	1408	3776	4836	6041	4927	4374	3494	1642	916	564	328	167	168	32987.

TOTAL OBSERVATIONS READ# 131044.

HURON, S.D. FROM HURON/APT., S.D.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: MAR-MAY

PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

C-64

C-65

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	1.8	3.5	5.5	7.5	9.5	11.4	13.2	15.5	17.4	19.3	21.3	23.3	26.5	8.2
19-06LST	.0	1.7	3.5	5.5	7.5	9.5	11.4	13.2	15.3	17.5	19.2	21.5	23.3	28.8	6.6
ALL HRS	.0	1.8	3.5	5.5	7.5	9.5	11.4	13.2	15.5	17.4	19.3	21.4	23.3	27.7	7.4

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.6	7.5	12.6	16.4	16.8	16.1	14.2	9.2	3.7	1.6	.7	.4	.1	.1	100.0
19-06LST	2.5	6.9	21.5	21.4	22.3	12.0	7.4	4.1	1.2	.4	.2	.1	.1	.1	100.0
ALL HRS	1.5	7.2	17.0	18.9	19.6	14.0	10.8	6.6	2.4	1.0	.5	.3	.1	.1	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	99	1234	2080	2708	2774	2657	2335	1511	603	257	122	73	21	10	16484
19-06LST	409	1133	3539	3531	3676	1973	1221	677	194	62	35	20	9	12	16491
ALL HRS	508	2367	5619	6239	6450	4630	3556	2188	797	319	157	93	30	22	32975.

TOTAL OBSERVATIONS READ* 131044.

HURON, S.D. FROM HURON/APT., S.D.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: JUN-AUG

PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	1.8	3.6	5.5	7.5	9.6	11.5	13.3	15.5	17.4	19.3	21.4	23.3	26.7	8.9
19-06LST	.0	1.7	3.5	5.5	7.5	9.5	11.4	13.3	15.4	17.4	19.3	21.4	23.3	26.7	7.4
ALL MRS	.0	1.8	3.5	5.5	7.5	9.6	11.4	13.3	15.5	17.4	19.3	21.4	23.3	26.7	8.2

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	1.0	6.2	12.1	14.4	15.6	14.7	14.4	10.6	5.0	2.8	1.6	.8	.4	.4	100.0
19-06LST	2.0	4.9	17.9	18.5	23.4	13.2	9.5	6.2	2.3	.9	.5	.3	.2	.2	100.0
ALL MRS	1.5	5.5	15.0	16.5	19.5	14.0	12.0	8.4	3.6	1.9	1.1	.6	.3	.3	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	170	1009	1971	2358	2549	2407	2354	1725	815	451	266	129	64	61	16329
19-06LST	326	797	2914	3021	3813	2160	1551	1006	376	153	88	52	34	25	16316
ALL MRS	496	1806	4885	5379	6362	4567	3905	2731	1191	604	354	181	98	86	32645.

TOTAL OBSERVATIONS READ= 131044.

HURON, S.D. FROM HURON/APT., S.D.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: SEP-NOV

PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	1.8	3.6	5.5	7.5	9.6	11.5	13.3	15.5	17.4	19.3	21.4	23.3	27.8	8.9
19-06LST	.0	1.7	3.5	5.5	7.5	9.5	11.4	13.2	15.4	17.4	19.3	21.5	23.3	34.1	7.4
ALL HRS	.0	1.8	3.5	5.5	7.5	9.5	11.5	13.3	15.5	17.4	19.3	21.4	23.3	29.8	8.1

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.8	6.5	11.6	14.5	16.4	15.1	14.0	10.4	4.8	2.6	1.5	.9	.4	.4	100.0
19-06LST	1.9	5.5	17.9	19.0	22.1	13.2	9.6	6.2	2.4	1.1	.6	.3	.2	.2	100.0
ALL HRS	1.4	6.0	14.7	16.7	19.3	14.1	11.8	8.3	3.6	1.8	1.1	.6	.3	.3	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	543.0	4259.0	7606.0	9491.0	10769.0	9869.0	9187.0	6829.0	3117.0	1706.0	1011.0	589.0	286.0	250.0	65512.0
19-06LST	1233.0	3628.0	11706.0	12446.0	14469.0	8644.0	6262.0	4062.0	1557.0	711.0	374.0	224.0	105.0	111.0	65532.0
ALL HRS	1776.0	7887.0	19312.0	21937.0	25238.0	18513.0	15449.0	10891.0	4674.0	2417.0	1385.0	813.0	391.0	361.0	131044.0

TOTAL OBSERVATIONS READ# 131044.

HURON, S.D. FROM HURON/APT., S.D.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: ANNUAL

PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

C-68

SPEED	NUMBER OF CONSECUTIVE HOURS																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	30	36	42	48	60	72	+
<5 M/S	4050	1702	948	611	392	309	253	196	135	126	86	74	103	67	48	26	13		5	13	3	1	1	0						0	1	0
>4 M/S	2851	1197	664	445	341	290	246	184	181	139	150	137	260	198	210	141	158	116	273	204	191	135	153	119	180							
10-24 M/S	3472	1396	726	558	381	285	256	235	190	156	158	136	203	160	135	100	83	69	99	59	37	22	22	3	2							
25+ M/S	110	32	11	7	8	5	2	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TOTAL OBSERVATIONS READ* 131044.

HURON, S.D. FROM HURON/APT., S.D.
 FREQUENCY DISTRIBUTION OF THE NUMBER OF CONSECUTIVE HOURS
 WITH WIND WITHIN SELECTED SPEED RANGES
 PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

C-69

GUST SPEED (M/S)	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-99	100+
NUMBER OF CASES	2211	546	144	26	2	1	0	0	0	0	0	0	0	0	8	12

TOTAL OBSERVATIONS READ# 131044.

HURON, S.D. FROM HURON/APT., S.D.
THE FREQUENCY DISTRIBUTION OF CALCULATED WIND GUSTS EXCEEDING 24 M/S
PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

Ludington, Michigan
(Estimated, from Muskegon, Michigan)

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	.00	1.91	3.61	5.66	7.55	9.56	11.33	13.30	15.18	17.20	19.27	22.27	23.25	63.99	6.04
FEB	.00	1.92	3.61	5.65	7.58	9.56	11.34	13.29	15.23	17.13	19.55	21.12	23.04	.00	5.91
MAR	.00	1.98	3.63	5.61	7.60	9.56	11.31	13.38	15.07	17.51	19.22	21.33	23.36	27.84	6.31
APR	.00	2.00	3.62	5.64	7.60	9.57	11.32	13.26	15.18	17.20	18.83	21.18	.00	.00	6.34
MAY	.00	1.92	3.61	5.56	7.54	9.50	11.34	13.29	15.14	17.05	19.36	21.97	23.68	.00	5.66
JUN	.00	1.90	3.56	5.52	7.49	9.50	11.23	13.26	15.07	16.64	19.20	.00	.00	.00	5.03
JUL	.00	1.88	3.54	5.51	7.45	9.42	11.16	13.25	15.00	17.06	.00	21.12	23.04	.00	4.62
AUG	.00	1.90	3.52	5.50	7.48	9.52	11.21	13.23	14.67	.00	.00	.00	.00	.00	4.45
SEP	.00	1.95	3.53	5.50	7.56	9.55	11.30	13.24	14.95	17.15	19.13	21.12	24.32	.00	5.12
OCT	.00	1.93	3.58	5.53	7.55	9.57	11.36	13.29	14.93	16.90	19.19	21.54	23.04	.00	5.35
NOV	.00	1.92	3.62	5.60	7.60	9.59	11.37	13.33	15.17	17.43	19.35	21.28	23.75	26.52	6.63
DEC	.00	1.85	3.65	5.63	7.57	9.62	11.39	13.32	15.26	17.42	19.31	21.84	23.68	26.23	6.26
ANN	.00	1.92	3.59	5.56	7.55	9.55	11.33	13.30	15.15	17.30	19.29	21.50	23.54	31.94	5.65

TOTAL OBSERVATIONS READ: 112442.

LUDINGTON, MI. FROM MUSKEGON, MI.
 AVERAGE WIND SPEED BY MONTH, BY WIND SPEED GROUP
 PERIOD OF RECORD: 1/ 1/48 TO 12/31/62

C-72

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	3.54	11.87	25.28	21.43	16.14	10.76	5.52	2.57	1.82	.61	.27	.05	.06	.02	100.00
FEB	4.01	12.17	24.00	21.96	17.75	10.44	5.50	2.38	1.37	.24	.15	.02	.01	.00	100.00
MAR	3.62	9.82	22.27	22.61	17.90	11.76	6.39	2.88	1.83	.52	.22	.12	.05	.01	100.00
APR	2.93	9.64	20.82	23.04	20.26	12.17	6.73	2.79	1.24	.30	.07	.01	.00	.00	100.00
MAY	3.99	12.12	23.60	24.91	18.87	9.97	4.22	1.43	.61	.21	.04	.03	.01	.00	100.00
JUN	5.72	14.67	26.35	24.88	16.95	7.94	2.50	.76	.21	.01	.01	.00	.00	.00	100.00
JUL	8.08	16.37	27.22	25.67	13.70	6.27	1.80	.71	.13	.03	.00	.01	.01	.00	100.00
AUG	7.78	18.54	28.93	23.83	12.72	6.32	1.51	.35	.02	.00	.00	.00	.00	.00	100.00
SEP	5.45	14.96	27.57	23.40	15.10	8.78	3.06	1.10	.33	.11	.10	.02	.01	.00	100.00
OCT	6.66	15.12	25.13	20.80	14.23	10.74	4.53	1.93	.65	.11	.05	.03	.01	.00	100.00
NOV	3.95	9.20	22.03	19.69	16.77	13.64	7.74	2.89	2.29	.72	.56	.27	.13	.11	100.00
DEC	4.11	10.72	22.69	20.97	17.07	11.90	6.86	3.42	1.46	.42	.21	.12	.05	.01	100.00
ANN	4.99	12.92	24.65	22.77	16.46	10.06	4.70	1.94	1.00	.27	.14	.06	.03	.01	100.00

TOTAL OBSERVATIONS READ= 112442.

LUDINGTON, MI. FROM MUSKEGON, MI.
 PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS, BY MONTH
 PERIOD OF RECORD: 1/ 1/48 TO 12/31/62

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	347	1149	2446	2074	1562	1041	534	249	176	59	26	5	6	2	9676
FEB	354	1073	2116	1936	1565	921	485	210	121	21	13	2	1	0	8818
MAR	350	950	2154	2187	1731	1137	618	279	177	50	21	12	5	1	9672
APR	274	902	1949	2156	1896	1139	630	261	116	28	7	1	0	0	9359
MAY	386	1172	2283	2409	1825	964	408	138	59	20	4	3	1	0	9672
JUN	522	1338	2403	2269	1546	724	228	69	19	1	1	0	0	0	9120
JUL	761	1543	2565	2419	1291	591	170	67	12	3	0	1	1	0	9424
AUG	733	1747	2726	2246	1199	596	142	33	2	0	0	0	0	0	9424
SEP	497	1364	2514	2134	1377	801	279	100	30	10	9	2	1	0	9118
OCT	628	1425	2368	1960	1341	1012	427	182	61	10	5	3	1	0	9423
NOV	360	839	2009	1796	1529	1244	706	264	209	66	51	25	12	10	9120
DEC	395	1031	2182	2016	1641	1144	660	329	140	40	20	12	5	1	9616
ANN	5607	14533	27715	25602	18503	11314	5287	2181	1122	308	157	66	33	14	112442.

TOTAL OBSERVATIONS READ: 112442.

LUDINGTON, MI. FROM MUSKEGON, MI.
 NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS, BY MONTH
 PERIOD OF RECORD: 1/ 1/48 TO 12/31/62

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	.00	1.92	3.54	5.52	7.44	9.47	11.28	12.84	.00	.00	.00	.00	.00	.00	4.41
NNE	.00	1.97	3.54	5.48	7.38	9.36	11.06	12.80	.00	.00	.00	.00	.00	.00	4.20
NE	.00	1.94	3.51	5.52	7.49	9.43	11.41	13.31	14.64	.00	.00	.00	.00	.00	3.97
ENE	.00	1.94	3.62	5.55	7.55	9.56	11.34	13.33	15.09	17.38	20.16	.00	23.04	.00	5.52
E	.00	1.91	3.57	5.57	7.50	9.55	11.28	13.21	15.19	17.30	19.42	21.12	.00	63.99	5.00
ESE	.00	1.95	3.51	5.44	7.39	9.44	11.27	13.17	15.32	.00	.00	.00	.00	.00	4.56
SE	.00	1.92	3.50	5.42	7.47	9.44	11.23	13.07	.00	.00	.00	.00	.00	.00	3.95
SSE	.00	1.93	3.62	5.53	7.47	9.41	11.33	13.62	15.08	17.05	20.48	.00	.00	.00	4.95
S	.00	1.88	3.55	5.57	7.57	9.54	11.38	13.24	15.22	17.32	18.96	21.12	23.34	.00	5.73
SSW	.00	1.86	3.65	5.61	7.67	9.61	11.32	13.29	15.11	17.22	19.11	21.47	23.49	25.76	8.13
SW	.00	1.87	3.63	5.65	7.61	9.58	11.34	13.33	15.19	17.44	19.28	21.67	24.00	25.92	7.52
WSW	.00	1.91	3.66	5.59	7.54	9.59	11.37	13.31	15.07	17.21	19.45	21.63	23.39	25.92	7.53
W	.00	1.88	3.65	5.63	7.55	9.56	11.31	13.35	15.14	17.14	19.03	21.26	23.63	26.24	6.69
WNW	.00	1.94	3.67	5.62	7.58	9.52	11.35	13.36	15.25	17.48	19.53	21.12	23.31	27.84	6.63
NNW	.00	1.93	3.60	5.57	7.53	9.50	11.22	13.21	15.46	17.69	.00	.00	.00	.00	5.45
N	.00	1.98	3.63	5.63	7.51	9.52	11.32	13.11	15.28	17.23	18.90	20.75	.00	.00	5.58
ALL	.00	1.92	3.59	5.58	7.55	9.55	11.33	13.30	15.15	17.30	19.29	21.50	23.54	31.94	5.65

TOTAL OBSERVATIONS READ# 112442.

LUDINGTON, MI. FROM MUSKEGON, MI.
 AVERAGE ANNUAL WIND SPEED BY DIRECTION, BY WIND SPEED GROUP
 PERIOD OF RECORD: 1/ 1/48 TO 12/31/62

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PEN DIH
N	.00	22.05	37.08	24.81	11.42	3.63	.87	.15	.00	.00	.00	.00	.00	.00	100.00
NNE	.00	21.14	42.17	25.03	9.07	2.23	.33	.03	.00	.00	.00	.00	.00	.00	100.00
NE	.00	29.49	39.35	20.03	8.00	2.25	.66	.14	.08	.00	.00	.00	.00	.00	100.00
ENE	.00	14.07	30.79	24.37	16.30	8.59	3.91	1.18	.57	.17	.03	.00	.02	.00	100.00
E	.00	19.64	33.18	23.21	13.46	6.60	2.23	.92	.55	.09	.07	.01	.00	.02	100.00
ESE	.00	18.23	39.34	24.78	11.58	4.27	1.21	.49	.09	.00	.00	.00	.00	.00	100.00
SE	.00	27.84	41.27	19.92	7.88	2.47	.52	.10	.00	.00	.00	.00	.00	.00	100.00
SSE	.00	16.10	33.93	27.98	14.10	5.58	1.66	.39	.20	.03	.03	.00	.00	.00	100.00
S	.00	17.36	25.52	21.61	16.70	11.20	4.41	1.89	.89	.29	.08	.02	.03	.00	100.00
SSW	.00	4.49	11.36	17.50	22.41	21.56	13.23	5.78	2.65	.52	.27	.12	.05	.05	100.00
SW	.00	7.43	13.39	20.84	22.76	17.55	10.22	4.45	2.21	.62	.33	.12	.06	.02	100.00
WSW	.00	5.63	14.53	24.66	21.99	15.13	8.61	4.52	2.94	.91	.62	.32	.11	.02	100.00
W	.00	7.54	18.78	28.43	21.08	13.09	6.50	2.31	1.34	.47	.25	.13	.06	.03	100.00
WNW	.00	5.93	19.82	28.07	23.42	14.28	4.95	2.03	1.03	.33	.09	.01	.04	.01	100.00
NW	.00	14.67	28.24	26.45	17.88	8.25	3.17	.94	.34	.06	.00	.00	.00	.00	100.00
NNW	.00	12.05	30.71	25.81	17.10	9.82	2.78	1.18	.40	.09	.04	.02	.00	.00	100.00
ALL	4.99	12.92	24.65	22.77	16.46	10.06	4.70	1.94	1.00	.27	.14	.06	.03	.01	100.00

TOTAL OBSERVATIONS READ# 112442.

LUDINGTON, MI. FROM MUSKEGON, MI.
ANNUAL PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS, BY DIRECTION
PERIOD OF RECORD: 1/ 1/48 TO 12/31/62

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	0	1161	1952	1306	601	191	46	8	0	0	0	0	0	0	5265
NNE	0	702	1400	831	301	74	11	1	0	0	0	0	0	0	3320
NE	0	1923	2566	1306	522	147	43	9	5	0	0	0	0	0	6521
ENE	0	896	1961	1552	1038	547	249	75	36	11	2	0	1	0	6368
E	0	1744	2946	2061	1195	586	198	82	49	8	6	1	0	2	8878
ESE	0	631	1362	858	401	148	42	17	3	0	0	0	0	0	3462
SE	0	1343	1991	961	380	119	25	5	0	0	0	0	0	0	4824
SSE	0	571	1203	992	500	198	59	14	7	1	1	0	0	0	3546
S	0	1068	1570	1329	1027	689	271	116	55	18	5	1	2	0	6151
SSW	0	364	921	1419	1817	1748	1073	469	215	42	22	10	4	4	8108
SW	0	736	1327	2066	2256	1740	1013	441	219	61	33	12	6	2	9912
WSW	0	454	1171	1988	1773	1220	694	364	237	73	50	26	9	2	8061
W	0	830	2068	3131	2321	1441	716	254	148	52	27	14	7	3	11012
WNW	0	619	2069	2930	2445	1491	517	212	108	34	9	1	4	1	10440
NW	0	950	1829	1713	1358	534	205	61	22	4	0	0	0	0	6476
NNW	0	541	1379	1159	768	441	125	53	18	4	2	1	0	0	4491
ALL	5607	14533	27715	25602	18503	11314	5287	2181	1122	308	157	66	33	14	112442.

TOTAL OBSERVATIONS HEAD# 112442.

LUDINGTON, MI. FROM MUSKEGON, MI.
ANNUAL NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS, BY DIRECTION
PERIOD OF RECORD: 1/ 1/48 TO 12/31/62

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	1.9	3.6	5.6	7.6	9.6	11.4	13.3	15.2	17.4	19.3	21.9	23.0	45.1	6.3
19-06LST	.0	1.9	3.6	5.7	7.5	9.6	11.3	13.3	15.2	17.2	19.3	21.9	23.4	64.0	5.8
ALL HRS	.0	1.9	3.6	5.6	7.6	9.6	11.4	13.3	15.2	17.3	19.3	21.9	23.4	51.4	6.1

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	2.8	9.6	22.9	23.1	18.4	12.1	6.3	2.9	1.5	.4	.2	.0	.0	.0	100.0
19-06LST	5.4	14.3	25.5	19.2	15.1	9.6	5.5	2.7	1.7	.5	.2	.1	.1	.0	100.0
ALL HRS	3.9	11.6	24.0	21.4	17.0	11.0	6.0	2.8	1.6	.4	.2	.1	.0	.0	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	450	1557	3716	3747	2983	1964	1021	464	238	62	37	8	1	2	16250
19-06LST	646	1696	3028	2279	1785	1142	658	324	199	58	22	11	11	1	11860
ALL HRS	1096	3253	6744	6026	4768	3106	1679	788	437	120	59	19	12	3	28110.

TOTAL OBSERVATIONS READ= 112442.

LUDINGTON, MI. FROM MUSKEGON, MI.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: DEC-FEB

PERIOD OF RECORD: 1/ 1/48 TO 12/31/62

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	.0	1.9	3.6	5.6	7.6	9.6	11.3	13.3	15.1	17.4	19.1	21.5	23.5	27.8	6.8
19-06LST	.0	2.0	3.6	5.6	7.5	9.5	11.3	13.4	15.1	17.3	19.2	21.2	23.0	.0	5.1
ALL HRS	.0	2.0	3.6	5.6	7.6	9.5	11.3	13.3	15.1	17.3	19.2	21.4	23.4	27.8	6.1

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	1.4	5.9	17.1	26.5	23.0	14.2	7.2	2.9	1.3	.4	.1	.1	.0	.0	100.0
19-06LST	6.4	16.9	29.3	19.5	13.6	7.3	3.9	1.7	1.1	.3	.1	.0	.0	.0	100.0
ALL HRS	3.5	10.5	22.2	23.5	19.0	11.3	5.8	2.4	1.2	.3	.1	.1	.0	.0	100.0

C-78

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	231	976	2825	4390	3805	2352	1188	475	214	65	21	12	5	1	16560
19-06LST	779	2048	3561	2362	1647	888	468	203	138	33	11	4	1	0	12143
ALL HRS	1010	3024	6386	6752	5452	3240	1656	678	352	98	32	16	6	1	28703.

TOTAL OBSERVATIONS READ= 112442.

LUDINGTON, MI. FROM MUSKEGON, MI.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: MAR-MAY

PERIOD OF RECORD: 1/ 1/48 TO 12/31/62

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	1.8	3.6	5.5	7.5	9.5	11.2	13.2	15.0	17.3	19.2	.0	.0	.0	5.5
19-06LST	.0	1.9	3.5	5.5	7.5	9.5	11.1	13.3	15.0	16.6	.0	21.1	23.0	.0	3.5
ALL HRS	.0	1.9	3.5	5.5	7.5	9.5	11.2	13.2	15.0	17.0	19.2	21.1	23.0	.0	4.7

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	2.2	10.6	23.8	31.9	19.0	9.2	2.4	.8	.2	.0	.0	.0	.0	.0	100.0
19-06LST	14.5	25.1	32.9	14.5	7.8	3.4	1.2	.3	.1	.0	.0	.0	.0	.0	100.0
ALL HRS	7.2	16.5	27.5	24.8	14.4	6.8	1.9	.6	.1	.0	.0	.0	.0	.0	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	357	1761	3936	5277	3143	1520	404	133	26	2	1	0	0	0	16560
19-06LST	1659	2867	3758	1657	893	391	136	36	7	2	0	1	1	0	11408
ALL HRS	2016	4628	7694	6934	4036	1911	540	169	33	4	1	1	1	0	27968.

TOTAL OBSERVATIONS READ: 112442.

LUDINGTON, MI. FROM MUSKEGON, MI.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: JUN-AUG

PERIOD OF RECORD: 1/ 1/48 TO 12/31/62

C-79

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	1.9	3.6	5.5	7.6	9.6	11.3	13.3	15.1	17.3	19.4	21.0	23.9	26.1	6.2
19-06LST	.0	2.0	3.5	5.6	7.6	9.6	11.4	13.3	15.1	17.4	19.2	21.5	23.4	30.3	5.0
ALL HRS	.0	1.9	3.6	5.5	7.6	9.6	11.4	13.3	15.1	17.3	19.3	21.3	23.7	26.5	5.7

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	2.7	9.8	22.4	24.4	17.7	13.0	5.9	2.1	1.2	.3	.2	.1	.1	.1	100.0
19-06LST	9.2	17.9	28.5	16.7	12.0	8.3	4.0	1.8	.9	.3	.2	.2	.0	.0	100.0
ALL HRS	5.4	13.1	24.9	21.3	15.4	11.1	5.1	2.0	1.1	.3	.2	.1	.1	.0	100.0

C-80

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	443	1611	3671	4004	2895	2121	962	346	203	51	39	13	9	9	16377
19-06LST	1042	2017	3220	1886	1352	936	450	200	97	35	26	17	5	1	11284
ALL HRS	1485	3628	6891	5890	4247	3057	1412	546	300	86	65	30	14	10	27661.

TOTAL OBSERVATIONS READ= 112442.

LUDINGTON, MI. FROM MUSKEGON, MI.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: SEP-NOV

PERIOD OF RECORD: 1/ 1/48 TO 12/31/62

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	1.9	3.6	5.6	7.6	9.5	11.3	13.3	15.1	17.3	19.3	21.4	23.7	29.4	6.2
19-06LST	.0	2.0	3.6	5.6	7.5	9.6	11.3	13.3	15.2	17.2	19.3	21.6	23.4	47.1	4.9
ALL HRS	.0	1.9	3.6	5.6	7.6	9.6	11.3	13.3	15.2	17.3	19.3	21.5	23.5	31.9	5.6

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	2.3	9.0	21.5	26.5	19.5	12.1	5.4	2.2	1.0	.3	.1	.1	.0	.0	100.0
19-06LST	8.8	18.5	29.1	17.5	12.2	7.2	3.7	1.6	.9	.3	.1	.1	.0	.0	100.0
ALL HRS	5.0	12.9	24.6	22.8	16.5	10.1	4.7	1.9	1.0	.3	.1	.1	.0	.0	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	1481.0	5905.0	14148.0	17418.0	12826.0	7957.0	3575.0	1418.0	681.0	180.0	98.0	33.0	15.0	12.0	65747.0
19-06LST	4126.0	8628.0	13567.0	8184.0	5677.0	3357.0	1712.0	763.0	441.0	128.0	59.0	33.0	18.0	2.0	46695.0
ALL HRS	5607.0	14533.0	27715.0	25602.0	18503.0	11314.0	5287.0	2181.0	1122.0	308.0	157.0	66.0	33.0	14.0	112442.0

TOTAL OBSERVATIONS READ= 112442.

LUDINGTON, MI. FROM MUSKEGON, MI.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: ANNUAL

PERIOD OF RECORD: 1/ 1/48 TO 12/31/62

SPEED	NUMBER OF CONSECUTIVE HOURS																																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	30	36	42	48	60	72	+	
<5 M/S	3331	1405	795	625	476	437	332	317	255	185	156	152	265	258	191	129	79	40	36	23	9	19	6	0	0								
>4 M/S	3138	1358	756	583	410	387	363	300	298	209	173	146	257	206	116	91	89	78	195	121	81	73	43	21	29								
10-24 M/S	2150	704	370	248	169	133	95	66	68	56	49	33	79	46	44	29	19	20	19	14	6	0	0	0	0								
25+ M/S	3	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

TOTAL OBSERVATIONS READ: 112442.

LUDINGTON, MI. FROM MUSKEGON, MI.
 FREQUENCY DISTRIBUTION OF THE NUMBER OF CONSECUTIVE HOURS
 WITH WIND WITHIN SELECTED SPEED RANGES
 PERIOD OF RECORD: 1/ 1/48 TO 12/31/62

GUST SPEED (M/S)	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-99	100+
NUMBER OF CASES	223	41	4	0	0	0	0	0	0	0	0	2	0	0	0	0

TOTAL OBSERVATIONS READ= 112442.

LUDINGTON, MI. FROM MUSKEGON, MI.
 THE FREQUENCY DISTRIBUTION OF CALCULATED WIND GUSTS EXCEEDING 24 M/S
 PERIOD OF RECORD: 1/ 1/48 TO 12/31/62

Montauk Point, New York
(Estimated, from Westhampton)

MUNTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	.00	1.97	3.58	5.59	7.47	9.47	11.57	13.35	15.17	17.05	19.09	21.91	23.66	26.62	6.47
FEB	.00	2.05	3.58	5.58	7.44	9.53	11.60	13.33	15.14	17.11	19.32	21.60	23.71	26.08	6.67
MAR	.00	2.03	3.58	5.55	7.47	9.55	11.61	13.31	15.25	17.10	19.27	21.61	23.20	27.09	7.36
APR	.00	2.00	3.60	5.58	7.48	9.53	11.60	13.33	15.16	17.16	19.10	21.62	23.55	29.18	7.09
MAY	.00	2.05	3.60	5.55	7.44	9.47	11.55	13.27	15.18	17.14	18.79	20.95	.00	.00	6.02
JUN	.00	2.01	3.59	5.51	7.41	9.49	11.52	13.23	15.08	17.20	19.18	.00	.00	.00	5.50
JUL	.00	2.02	3.59	5.46	7.41	9.48	11.50	13.30	15.17	17.09	19.34	.00	.00	.00	5.28
AUG	.00	2.01	3.56	5.50	7.38	9.50	11.55	13.21	15.29	17.25	19.34	20.95	.00	43.51	5.20
SEP	.00	2.00	3.55	5.49	7.43	9.44	11.60	13.24	15.42	17.59	19.45	20.93	23.34	28.00	5.55
OCT	.00	2.04	3.55	5.55	7.49	9.44	11.65	13.28	15.36	17.16	19.41	21.18	23.41	25.90	6.11
NOV	.00	2.01	3.52	5.55	7.46	9.44	11.62	13.34	15.33	17.16	19.09	21.75	23.60	29.99	6.10
DEC	.00	2.00	3.54	5.59	7.50	9.48	11.65	13.32	15.20	17.33	19.10	21.67	23.99	26.86	6.12
ANN	.00	2.01	3.57	5.54	7.45	9.49	11.59	13.30	15.23	17.16	19.21	21.61	23.60	28.38	6.12

TOTAL OBSERVATIONS READ# 113659.

MONTAUK PT, N.Y. FROM WESTHAMPTON, N.Y.
 AVERAGE WIND SPEED BY MONTH, BY WIND SPEED GROUP
 PERIOD OF RECORD: 5/ 1/51 TO 4/29/64

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	12.52	6.54	16.13	19.20	15.85	14.14	6.08	4.45	2.52	1.04	.97	.24	.19	.12	100.00
FEB	11.56	4.34	16.75	20.87	16.23	13.86	6.83	4.17	2.29	1.14	1.35	.31	.29	.02	100.00
MAR	7.93	4.50	15.54	18.60	17.11	15.42	8.54	5.28	3.30	1.56	1.40	.41	.24	.18	100.00
APR	8.14	4.56	16.00	19.38	17.02	16.36	7.88	5.85	2.52	1.10	.86	.14	.16	.03	100.00
MAY	9.59	6.11	19.29	23.02	18.89	13.26	5.11	3.17	1.01	.40	.12	.02	.00	.00	100.00
JUN	10.40	7.67	21.90	25.16	17.55	9.87	4.22	2.25	.64	.30	.04	.00	.00	.00	100.00
JUL	11.71	7.00	22.94	25.49	17.93	9.21	3.12	1.89	.55	.11	.04	.00	.00	.00	100.00
AUG	12.25	7.52	23.89	25.69	15.66	8.88	3.46	1.66	.61	.22	.14	.01	.00	.03	100.00
SEP	12.28	6.54	22.16	22.37	17.15	11.34	4.54	2.11	.86	.36	.19	.04	.01	.04	100.00
OCT	12.67	5.71	18.61	20.97	16.15	13.10	6.21	3.22	1.91	.52	.68	.08	.12	.04	100.00
NOV	12.16	6.41	20.33	20.42	15.04	12.90	5.63	2.92	1.99	.96	.76	.11	.14	.25	100.00
DEC	13.38	6.59	19.18	18.42	15.18	14.17	6.24	3.27	1.76	.70	.59	.14	.22	.18	100.00
ANN	11.22	6.13	19.40	21.63	16.65	12.71	5.65	3.35	1.66	.70	.59	.12	.11	.07	100.00

TOTAL OBSERVATIONS READ= 113659.

MCNTAUK PT, N.Y. FROM WESTHAMPTON, N.Y.
 PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS, BY MONTH
 PERIOD OF RECORD: 5/ 1/51 TO 4/29/64

C-87

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MU.
JAN	1211	633	1560	1857	1533	1368	588	430	244	101	94	23	18	12	9672
FEB	1021	383	1479	1843	1433	1224	603	368	202	101	119	27	26	2	8831
MAR	767	435	1503	1799	1655	1491	826	511	319	151	135	40	23	17	9672
APR	760	426	1494	1809	1589	1527	736	546	235	103	80	13	15	3	9336
MAY	927	591	1865	2225	1826	1282	494	306	98	39	12	2	0	0	9667
JUN	945	697	1990	2286	1595	897	383	204	58	27	4	0	0	0	9086
JUL	1132	677	2218	2465	1734	891	302	183	53	11	4	0	0	0	9670
AUG	1184	727	2309	2483	1514	858	334	160	59	21	14	1	0	3	9667
SEP	1149	612	2073	2093	1605	1061	425	197	80	34	18	4	1	4	9356
OCT	1225	552	1800	2028	1562	1267	601	311	185	50	66	8	12	4	9671
NOV	1138	600	1903	1911	1408	1207	527	273	186	90	71	10	13	23	9360
DEC	1294	637	1855	1781	1468	1370	603	316	170	68	57	14	21	17	9671
ANN	12753	6970	22049	24580	18922	14443	6422	3805	1889	796	674	142	129	85	113659.

TOTAL OBSERVATIONS READ= 113659.

MONTAUK PT, N.Y. FROM WESTHAMPTON, N.Y.
NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS, BY MONTH
PERIOD OF RECORD: 5/ 1/51 TO 4/29/64

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	.00	2.00	3.51	5.53	7.46	9.40	11.59	13.38	15.21	17.11	19.10	21.50	23.70	26.02	6.40
NNE	.00	2.01	3.51	5.51	7.46	9.47	11.59	13.23	15.28	17.29	19.09	21.29	23.39	28.22	6.73
NE	.00	2.01	3.60	5.51	7.45	9.48	11.63	13.29	15.32	17.28	19.30	21.66	23.59	30.42	7.33
ENE	.00	2.09	3.60	5.54	7.45	9.44	11.64	13.31	15.36	17.37	19.35	21.75	23.51	30.93	7.64
E	.00	2.00	3.59	5.54	7.50	9.55	11.62	13.31	15.34	17.25	19.50	20.95	22.75	.00	7.28
ESE	.00	2.06	3.63	5.51	7.44	9.53	11.60	13.27	15.09	17.16	18.99	20.95	22.56	25.24	7.08
SE	.00	2.05	3.63	5.47	7.41	9.54	11.57	13.33	15.16	17.13	19.18	20.95	22.56	.00	6.15
SSE	.00	2.05	3.61	5.47	7.37	9.58	11.64	13.33	15.38	17.16	18.57	20.95	23.76	26.32	6.01
S	.00	2.03	3.60	5.48	7.43	9.44	11.59	13.31	15.21	17.03	19.42	21.65	23.53	26.08	6.17
SSW	.00	2.07	3.63	5.50	7.39	9.45	11.58	13.33	15.17	17.20	18.91	22.35	23.63	27.32	6.58
SW	.00	2.02	3.65	5.58	7.45	9.50	11.62	13.26	15.20	17.13	19.17	21.65	24.19	.00	7.00
WSW	.00	2.00	3.57	5.57	7.46	9.50	11.54	13.24	15.13	17.14	19.17	21.62	23.75	29.03	6.74
W	.00	1.96	3.51	5.53	7.42	9.44	11.61	13.34	15.22	17.01	19.23	21.23	23.79	.00	5.92
WNW	.00	1.99	3.49	5.56	7.47	9.55	11.60	13.31	15.16	17.29	19.27	21.91	23.55	26.50	7.11
NW	.00	1.96	3.54	5.56	7.46	9.49	11.60	13.35	15.18	17.06	19.18	21.70	23.68	28.03	7.54
NNW	.00	2.07	3.55	5.55	7.46	9.47	11.53	13.33	15.23	17.07	19.24	21.71	23.71	26.86	7.71
ALL	.00	2.01	3.57	5.54	7.45	9.49	11.59	13.30	15.23	17.16	19.21	21.61	23.60	28.38	6.12

TOTAL OBSERVATIONS READ= 113659.

MONTAUK PT, N.Y. FROM WESTHAMPTON, N.Y.
 AVERAGE ANNUAL WIND SPEED BY DIRECTION, BY WIND SPEED GROUP
 PERIOD OF RECORD: 5/ 1/51 TO 4/29/64

C-89

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	.00	8.87	25.36	23.99	18.02	13.34	5.32	2.49	1.08	.61	.61	.08	.17	.08	100.00
NNE	.00	7.83	25.07	23.27	16.59	13.42	5.86	3.55	2.07	1.13	.86	.19	.05	.10	100.00
NE	.00	8.14	20.12	22.19	18.09	13.18	6.98	4.56	3.19	1.49	1.18	.29	.27	.33	100.00
ENE	.00	7.72	19.84	19.09	17.25	15.06	8.49	4.93	3.98	1.27	1.32	.35	.37	.32	100.00
E	.00	8.41	18.16	21.50	18.94	14.96	7.99	5.36	2.80	.95	.76	.07	.10	.00	100.00
ESE	.00	7.64	19.64	23.19	20.32	13.51	6.40	5.04	2.20	1.08	.62	.22	.06	.09	100.00
SE	.00	9.92	25.16	27.40	17.41	10.72	4.90	2.75	.86	.48	.22	.13	.03	.00	100.00
SSE	.00	9.28	26.81	28.75	17.66	9.24	4.14	2.50	.99	.20	.23	.03	.07	.10	100.00
S	.00	9.57	26.24	25.23	18.72	10.76	5.13	2.37	1.10	.44	.21	.08	.11	.02	100.00
SSW	.00	5.94	22.31	27.49	20.81	12.08	5.62	2.74	1.69	.33	.32	.07	.05	.05	100.00
SW	.00	4.07	17.49	27.75	22.81	16.31	6.42	3.31	1.21	.35	.26	.01	.01	.00	100.00
WSW	.00	5.65	22.55	25.33	20.42	14.59	5.59	3.67	1.18	.62	.25	.04	.04	.06	100.00
W	.00	9.37	30.97	25.58	14.83	10.90	4.33	1.87	1.24	.44	.37	.06	.05	.00	100.00
WNW	.00	7.46	21.13	21.79	17.73	15.90	7.12	4.46	2.37	.91	.71	.24	.10	.07	100.00
NW	.00	6.09	18.91	22.00	16.38	17.60	8.35	4.93	2.57	1.11	1.32	.27	.35	.12	100.00
NNW	.00	4.49	18.09	21.94	18.78	17.08	7.69	5.69	2.58	1.54	1.45	.27	.24	.16	100.00
ALL	11.22	6.13	19.40	21.63	16.65	12.71	5.65	3.35	1.66	.70	.59	.12	.11	.07	100.00

TOTAL OBSERVATIONS READ= 113659.

MONTAUK PT, N.Y. FROM WESTHAMPTON, N.Y.
ANNUAL PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS, BY DIRECTION
PERIOD OF RECORD: 5/ 1/51 TO 4/29/64

C-90

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	0	584	1669	1579	1186	878	350	164	71	40	40	5	11	5	6582
NNE	0	326	1044	969	691	559	244	148	86	47	36	8	2	4	4164
NE	0	393	971	1071	873	636	337	220	154	72	57	14	13	16	4827
ENE	0	310	797	767	693	605	341	198	160	51	53	14	15	13	4017
E	0	345	745	882	777	614	328	220	115	39	31	3	4	0	4103
ESE	0	247	635	750	657	437	207	163	71	35	20	7	2	3	3234
SE	0	310	786	856	544	335	153	86	27	15	7	4	1	0	3124
SSE	0	282	815	874	537	281	126	76	30	6	7	1	2	3	3040
S	0	452	1239	1191	884	508	242	112	52	21	10	4	5	1	4721
SSW	0	356	1337	1677	1247	724	337	164	101	20	19	4	3	3	5992
SW	0	573	2463	3909	3213	2297	904	466	171	49	37	2	2	0	14086
WSW	0	540	2157	2423	1953	1395	535	351	113	59	24	4	4	6	9564
W	0	766	2532	2091	1212	891	354	153	101	36	30	5	4	0	8175
WNW	0	518	1468	1514	1232	1105	495	310	165	63	49	17	7	5	6948
NW	0	554	1722	2003	1491	1602	760	449	234	101	120	25	32	11	9104
NNW	0	414	1669	2024	1732	1576	709	525	238	142	134	25	22	15	9225
ALL	12753	6970	22049	24580	18922	14443	6422	3805	1889	796	674	142	129	85	113659.

TOTAL OBSERVATIONS READ= 113659.

MONTAUK PT, N.Y. FROM WESTHAMPTON, N.Y.
 ANNUAL NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS, BY DIRECTION
 PERIOD OF RECORD: 5/ 1/51 TO 4/29/64

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	2.0	3.6	5.6	7.4	9.5	11.6	13.3	15.2	17.1	19.2	21.8	23.7	27.0	7.1
19-06LST	.0	2.0	3.5	5.6	7.5	9.5	11.6	13.3	15.2	17.1	19.2	21.5	23.8	26.3	5.7
ALL HRS	.0	2.0	3.6	5.6	7.5	9.5	11.6	13.3	15.2	17.1	19.2	21.7	23.8	26.7	6.4

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	8.3	5.8	15.1	19.5	17.4	15.5	7.6	4.9	2.7	1.2	1.3	.3	.2	.1	100.0
19-06LST	16.7	5.9	19.6	19.4	14.1	12.6	5.1	3.0	1.7	.7	.6	.1	.2	.1	100.0
ALL HRS	12.5	5.9	17.4	19.5	15.7	14.1	6.4	4.0	2.2	1.0	1.0	.2	.2	.1	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	1172	817	2127	2741	2448	2180	1077	692	379	173	180	49	32	19	14086
19-06LST	2354	836	2767	2740	1986	1782	717	422	237	97	90	15	33	12	14088
ALL HRS	3526	1653	4894	5481	4434	3962	1794	1114	616	270	270	64	65	31	28174.

TOTAL OBSERVATIONS READ= 113659.

MONTAUK PT, N.Y. FROM WESTHAMPTON, N.Y.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: DEC-FEB

PERIOD OF RECORD: 5/ 1/51 TO 4/29/64

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	2.1	3.7	5.5	7.4	9.5	11.6	13.3	15.2	17.1	19.2	21.6	23.4	27.0	8.0
19-06LST	.0	2.0	3.6	5.6	7.5	9.5	11.5	13.3	15.1	17.1	19.2	21.6	23.3	30.7	5.6
ALL HRS	.0	2.0	3.6	5.6	7.5	9.5	11.6	13.3	15.2	17.1	19.2	21.6	23.3	27.4	6.8

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	3.0	4.0	11.8	19.0	20.5	18.3	9.8	6.7	3.4	1.6	1.2	.3	.2	.1	100.0
19-06LST	14.1	6.1	22.1	21.7	14.8	11.7	4.5	2.8	1.2	.5	.4	.1	.1	.0	100.0
ALL HRS	8.6	5.1	17.0	20.3	17.7	15.0	7.2	4.8	2.3	1.0	.8	.2	.1	.1	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	433	577	1699	2718	2945	2629	1412	966	485	224	168	41	23	18	14338
19-06LST	2021	875	3163	3115	2125	1671	644	397	167	69	59	14	15	2	14337
ALL HRS	2454	1452	4862	5833	5070	4300	2056	1363	652	293	227	55	38	20	28675.

TOTAL OBSERVATIONS READ# 113659.

MONTAUK PT, N.Y. FROM WESTHAMPTON, N.Y.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: MAR-MAY

PERIOD OF RECORD: 5/ 1/51 TO 4/29/64

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	2.1	3.6	5.4	7.4	9.5	11.5	13.2	15.2	17.1	19.3	20.9	.0	48.3	6.4
19-06LST	.0	2.0	3.5	5.5	7.4	9.4	11.6	13.3	15.2	17.4	19.5	.0	.0	33.8	4.2
ALL HRS	.0	2.0	3.6	5.5	7.4	9.5	11.5	13.2	15.2	17.2	19.3	20.9	.0	43.5	5.3

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	3.6	6.0	18.2	26.2	22.9	13.1	5.5	2.9	.9	.3	.1	.0	.0	.0	100.0
19-06LST	19.4	8.7	27.6	24.7	11.1	5.5	1.6	.9	.3	.1	.0	.0	.0	.0	100.0
ALL HRS	11.5	7.4	22.9	25.5	17.0	9.3	3.6	1.9	.6	.2	.1	.0	.0	.0	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	509	859	2594	3728	3259	1868	788	417	127	45	17	1	0	2	14214
19-06LST	2752	1242	3923	3506	1584	778	231	130	43	14	5	0	0	1	14209
ALL HRS	3261	2101	6517	7234	4843	2646	1019	547	170	59	22	1	0	3	28423.

TOTAL OBSERVATIONS READ* 113659.

MONTAUK PT, N.Y. FROM WESTHAMPTON, N.Y.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: JUN-AUG

PERIOD OF RECORD: 5/ 1/51 TO 4/29/64

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	2.0	3.6	5.5	7.4	9.5	11.6	13.3	15.4	17.3	19.2	21.4	23.4	27.7	6.8
19-06LST	.0	2.0	3.5	5.5	7.5	9.4	11.6	13.3	15.3	17.2	19.4	21.4	23.7	30.4	5.1
ALL HRS	.0	2.0	3.5	5.5	7.5	9.4	11.6	13.3	15.4	17.2	19.3	21.4	23.5	29.2	5.9

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	6.0	6.2	17.3	21.0	20.0	14.5	7.2	3.6	2.2	.9	.7	.1	.1	.1	100.0
19-06LST	18.8	6.2	23.4	21.5	12.2	10.4	3.7	2.0	1.0	.3	.4	.1	.1	.1	100.0
ALL HRS	12.4	6.2	20.3	21.2	16.1	12.5	5.5	2.8	1.6	.6	.5	.1	.1	.1	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	848	884	2455	2987	2843	2062	1025	504	313	126	100	14	18	14	14193
19-06LST	2664	880	3321	3045	1732	1473	528	277	138	48	55	8	8	17	14194
ALL HRS	3512	1764	5776	6032	4575	3535	1553	781	451	174	155	22	26	31	28387.

TOTAL OBSERVATIONS READ= 113659.

MONTAUK PT, N.Y. FROM WESTHAMPTON, N.Y.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: SEP-NOV

PERIOD OF RECORD: 5/ 1/51 TO 4/29/64

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	2.0	3.6	5.5	7.4	9.5	11.6	13.3	15.2	17.2	19.2	21.7	23.6	28.0	7.1
19-06LST	.0	2.0	3.5	5.6	7.5	9.5	11.6	13.3	15.2	17.2	19.2	21.5	23.7	29.0	5.2
ALL HRS	.0	2.0	3.6	5.5	7.4	9.5	11.6	13.3	15.2	17.2	19.2	21.6	23.6	28.4	6.1

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	5.2	5.5	15.6	21.4	20.2	15.4	7.6	4.5	2.3	1.0	.8	.2	.1	.1	100.0
19-06LST	17.2	6.7	23.2	21.8	13.1	10.0	3.7	2.2	1.0	.4	.4	.1	.1	.1	100.0
ALL HRS	11.2	6.1	19.4	21.6	16.6	12.7	5.7	3.3	1.7	.7	.6	.1	.1	.1	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	2962.0	3137.0	8875.0	12174.0	11495.0	8739.0	4302.0	2579.0	1304.0	568.0	465.0	105.0	73.0	53.0	56831.0
19-06LST	9791.0	3813.0	13174.0	12406.0	7427.0	5704.0	2120.0	1226.0	585.0	228.0	209.0	37.0	56.0	32.0	56828.0
ALL HRS	12753.0	6970.0	22049.0	24580.0	18922.0	14443.0	6422.0	3805.0	1889.0	796.0	674.0	142.0	129.0	85.0	113659.0

TOTAL OBSERVATIONS READ= 113659.

MONTAUK PT, N.Y. FROM WESTHAMPTON, N.Y.

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: ANNUAL

PERIOD OF RECORD: 5/ 1/51 TO 4/29/64

C-96

SPEED	NUMBER OF CONSECUTIVE HOURS																																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	30	36	42	48	60	72	+	
<5 M/S	3195	1290	794	513	394	271	258	208	176	153	138	117	238	223	163	103	65	34	36	32	30	15	6	6	2								
>4 M/S	2584	1121	692	485	347	291	266	237	213	186	186	164	271	212	175	144	115	87	168	131	111	74	95	53	51								
10-24 M/S	2441	934	470	337	213	190	136	117	112	77	49	45	93	45	41	27	21	16	24	29	5	6	7	2	1								
25+ M/S	19	10	4	1	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TOTAL OBSERVATIONS READ= 113659.

MONTAUK PT, N.Y. FROM WESTHAMPTON, N.Y.
FREQUENCY DISTRIBUTION OF THE NUMBER OF CONSECUTIVE HOURS
WITH WIND WITHIN SELECTED SPEED RANGES
PERIOD OF RECORD: 5/ 1/51 TO 4/29/64

GUST SPEED (M/S)	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-99	100+
NUMBER OF CASES	836	144	35	9	3	1	1	0	1	0	0	0	0	0	0	0

TOTAL OBSERVATIONS READ= 113659.

MONTAUK PT, N.Y. FROM WESTHAMPTON, N.Y.
THE FREQUENCY DISTRIBUTION OF CALCULATED WIND GUSTS EXCEEDING 24 M/S
PERIOD OF RECORD: 5/ 1/51 TO 4/29/64

Russell, Kansas
(Estimated, from Russell Airport)

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	.00	2.03	3.60	5.60	7.58	9.46	11.58	13.38	15.37	17.45	19.40	21.17	23.45	26.66	8.55
FEB	.00	2.04	3.62	5.59	7.59	9.46	11.52	13.35	15.34	17.42	19.46	21.28	23.58	27.88	9.14
MAR	.00	2.07	3.58	5.61	7.61	9.50	11.55	13.39	15.33	17.46	19.50	21.45	23.36	28.46	10.14
APR	.00	2.03	3.58	5.60	7.59	9.54	11.53	13.33	15.34	17.38	19.57	21.26	23.25	26.68	9.92
MAY	.00	2.01	3.56	5.60	7.63	9.57	11.47	13.30	15.25	17.22	19.52	21.08	23.13	27.82	9.25
JUN	.00	2.00	3.62	5.61	7.63	9.57	11.49	13.30	15.27	17.29	19.48	21.23	23.30	27.07	9.33
JUL	.00	2.04	3.61	5.63	7.63	9.55	11.47	13.26	15.23	17.14	19.57	21.25	23.62	33.17	8.86
AUG	.00	2.03	3.57	5.62	7.61	9.55	11.46	13.25	15.16	17.05	19.71	21.33	23.00	26.45	8.77
SEP	.00	1.99	3.58	5.61	7.63	9.55	11.45	13.28	15.23	17.19	19.49	21.21	23.33	25.21	9.21
OCT	.00	1.92	3.60	5.61	7.60	9.50	11.48	13.26	15.22	17.24	19.50	21.05	23.17	26.40	8.91
NOV	.00	1.91	3.61	5.62	7.58	9.44	11.52	13.30	15.28	17.31	19.63	21.34	23.33	26.13	9.03
DEC	.00	2.02	3.64	5.60	7.57	9.46	11.54	13.37	15.26	17.36	19.53	21.19	23.18	26.22	8.51
ANN	.00	2.01	3.60	5.61	7.60	9.51	11.50	13.31	15.28	17.30	19.52	21.26	23.33	27.38	9.13

TOTAL OBSERVATIONS READ# 130657.

RUSSEL, KANSAS FROM RUSSEL/APT., KANSAS
 AVERAGE WIND SPEED BY MONTH, BY WIND SPEED GROUP
 PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	4.49	2.70	10.22	17.50	18.50	15.91	10.31	9.40	5.83	2.22	1.34	.42	.41	.23	100.00
FEB	3.61	1.59	8.64	16.38	19.10	15.46	11.66	10.71	6.46	3.12	1.28	.48	.58	.43	100.00
MAR	2.92	1.51	7.21	13.75	16.67	14.47	11.64	12.73	8.84	4.71	2.56	1.25	.95	.79	100.00
APR	3.37	1.45	7.25	12.86	17.49	14.14	12.64	14.01	8.45	4.27	1.85	1.07	.65	.51	100.00
MAY	2.49	2.30	9.03	14.65	18.28	14.82	12.77	13.15	6.36	3.45	.91	.63	.35	.30	100.00
JUN	2.63	1.54	8.06	15.76	18.27	14.97	12.89	15.22	5.73	3.37	.79	.41	.17	.19	100.00
JUL	2.53	1.20	9.28	16.93	20.67	16.27	12.58	12.17	5.18	2.47	.43	.21	.05	.03	100.00
AUG	3.02	2.25	9.20	16.66	19.53	15.53	12.39	13.09	5.47	2.23	.31	.23	.06	.02	100.00
SEP	2.43	1.61	8.50	15.38	19.20	16.55	11.89	13.61	6.28	3.03	.74	.43	.21	.14	100.00
OCT	3.48	1.84	9.07	16.92	17.96	17.74	11.30	11.26	5.60	2.96	.98	.51	.28	.12	100.00
NOV	4.06	1.58	7.86	16.91	18.09	17.03	12.39	10.34	6.76	2.69	1.24	.43	.48	.15	100.00
DEC	3.81	2.08	9.78	18.99	19.47	16.68	11.48	9.03	5.18	1.78	.89	.31	.36	.16	100.00
ANN	3.32	1.81	8.68	16.06	18.61	15.83	12.00	12.06	6.34	3.42	1.11	.53	.38	.26	100.00

TOTAL OBSERVATIONS READ# 130657.

RUSSEL, KANSAS FROM RUSSEL/APT., KANSAS
 PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS, BY MONTH
 PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	557	301	1140	1953	2064	1775	1150	1049	651	248	150	47	46	26	11157
FEB	366	161	876	1062	1938	1619	1183	1086	655	316	130	49	59	44	10144
MAR	326	169	804	1534	1860	1615	1299	1420	986	526	286	139	106	88	11158
APR	364	156	783	1388	1868	1526	1365	1512	912	461	200	115	70	55	10745
MAY	334	257	1007	1635	2040	1653	1425	1467	710	385	101	70	39	34	11157
JUN	284	166	870	1702	1973	1616	1392	1643	619	364	85	44	18	21	10797
JUL	282	134	1036	1389	2307	1816	1404	1358	578	276	48	23	6	3	11160
AUG	336	250	1023	1353	2172	1727	1378	1456	608	248	34	26	7	2	11120
SEP	262	174	918	1661	2073	1787	1284	1470	678	327	80	46	23	15	10798
OCT	362	192	944	1762	1870	1847	1177	1172	583	308	102	53	29	12	10413
NOV	438	171	849	1826	1953	1839	1338	1116	730	290	134	46	52	16	10798
DEC	425	232	1091	2119	2173	1862	1281	1008	578	199	99	35	40	18	11160
ANN	4336	2363	11341	20984	24311	20682	15676	15757	8288	3948	1449	693	495	334	130657.

TOTAL OBSERVATIONS READ# 130657.

RUSSEL, KANSAS FROM RUSSEL/APT., KANSAS
NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS, BY MONTH
PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	.00	2.02	3.63	5.72	7.64	9.54	11.76	13.25	15.29	17.52	19.31	21.21	23.35	28.13	10.54
NNE	.00	2.00	3.62	5.68	7.59	9.53	11.65	13.63	15.78	17.63	19.74	21.73	23.75	26.51	10.00
NE	.00	2.04	3.58	5.57	7.52	9.39	11.52	13.39	15.67	17.39	19.44	21.67	.00	.00	8.17
ENE	.00	2.05	3.61	5.49	7.45	9.46	11.46	13.34	15.22	17.71	19.24	21.36	22.82	27.72	8.10
E	.00	2.14	3.68	5.56	7.54	9.53	11.61	13.59	15.00	15.91	19.24	20.71	23.19	24.85	7.40
ESE	.00	1.98	3.58	5.58	7.65	9.62	11.35	13.12	15.14	17.23	19.54	20.92	23.43	25.11	7.78
SE	.00	1.94	3.57	5.64	7.65	9.59	11.37	13.20	15.26	17.28	19.71	21.86	23.54	25.22	8.26
SSE	.00	1.93	3.57	5.67	7.69	9.62	11.38	13.26	15.29	17.36	19.58	21.42	23.13	25.50	9.67
S	.00	1.44	3.59	5.63	7.71	9.58	11.34	13.23	15.19	17.17	19.58	21.15	23.36	26.48	10.41
SSW	.00	1.95	3.55	5.67	7.70	9.55	11.36	13.20	15.17	17.20	19.54	21.10	23.23	26.38	11.00
SW	.00	1.99	3.57	5.59	7.61	9.51	11.72	13.62	15.08	17.06	19.48	21.08	23.31	25.81	9.12
WSW	.00	1.99	3.61	5.61	7.55	9.44	11.58	13.53	15.02	17.10	19.54	21.12	23.15	28.15	8.00
W	.00	2.00	3.58	5.55	7.49	9.38	11.59	13.44	15.57	17.86	19.36	21.25	23.16	24.07	7.09
WNW	.00	1.97	3.60	5.49	7.50	9.34	11.53	13.43	15.49	17.70	19.54	21.56	22.98	27.72	8.01
NW	.00	2.04	3.60	5.48	7.43	9.34	11.50	13.43	15.43	17.81	19.59	21.51	22.98	29.40	8.71
NNW	.00	2.09	3.66	5.72	7.63	9.32	11.50	13.32	15.31	17.64	19.56	21.33	23.47	27.73	10.79
ALL	.00	2.01	3.60	5.61	7.60	9.51	11.50	13.31	15.28	17.30	19.52	21.26	23.33	27.38	9.13

TOTAL OBSERVATIONS HEAD# 130657.

RUSSEL, KANSAS FROM RUSSEL/APT., KANSAS
 AVERAGE ANNUAL WIND SPEED BY DIRECTION, BY WIND SPEED GROUP
 PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	.00	1.49	7.88	13.55	14.52	17.13	11.77	11.04	13.95	3.62	2.93	.79	1.22	.32	100.00
NNE	.00	1.84	7.43	14.51	15.18	18.03	14.76	17.27	5.59	2.97	1.37	.74	.34	.15	100.00
NE	.02	2.85	13.49	21.63	18.58	17.17	11.92	10.37	2.61	.92	.32	.12	.00	.00	100.00
ENE	.00	2.25	12.48	20.42	26.13	13.16	13.91	5.78	4.92	.52	.27	.09	.04	.04	100.00
E	.00	3.21	16.92	22.65	27.80	13.07	9.77	3.51	1.87	.92	.19	.04	.02	.02	100.00
ESE	.00	2.19	12.21	24.83	26.54	15.19	8.45	8.31	1.41	.57	.16	.08	.03	.03	100.00
SE	.00	1.90	10.09	20.17	27.21	18.99	8.56	9.32	2.16	1.24	.31	.02	.02	.02	100.00
SSE	.00	1.00	6.03	13.83	21.40	19.62	12.74	16.46	5.08	2.73	.55	.26	.17	.14	100.00
S	.00	.75	4.88	11.22	18.05	17.82	13.10	19.89	7.89	4.56	.90	.53	.26	.15	100.00
SSW	.00	1.03	4.05	10.55	14.87	16.21	12.64	20.95	9.15	7.12	1.41	1.06	.53	.44	100.00
SW	.00	2.33	8.34	18.31	20.26	18.00	15.06	7.26	5.32	3.52	.66	.55	.20	.19	100.00
WSW	.00	3.11	12.46	23.46	23.55	15.32	11.59	4.06	2.83	1.81	.37	.46	.12	.37	100.00
W	.00	4.04	18.94	27.39	24.11	12.19	6.64	2.82	2.25	.60	.11	.27	.24	.41	100.00
WNW	.00	3.79	16.96	23.45	19.45	12.92	9.80	5.95	3.58	1.24	.94	.30	.61	1.00	100.00
NW	.00	2.58	13.28	20.30	19.89	13.86	11.93	6.77	6.68	1.62	1.52	.41	.51	.65	100.00
NNW	.00	1.44	7.44	14.26	13.72	12.79	15.42	10.61	13.64	3.16	4.07	1.45	1.37	.62	100.00
ALL	3.32	1.81	8.68	16.06	18.61	15.83	12.00	12.06	6.34	3.02	1.11	.53	.38	.26	100.00

TOTAL OBSERVATIONS READ# 130657.

RUSSEL, KANSAS FROM RUSSEL/APT., KANSAS
 ANNUAL PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS, BY DIRECTION
 PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	0	145	766	1317	1392	1665	1144	1073	1356	352	285	77	119	31	9722
NNE	0	161	649	1267	1325	1574	1289	1508	471	259	120	65	30	13	8731
NE	2	260	1229	1971	1693	1565	1086	945	238	84	29	11	0	0	9113
ENE	0	126	698	1142	1461	736	778	323	275	29	15	5	2	2	5592
E	0	151	795	1064	1306	614	459	165	88	43	9	2	1	1	4698
ESE	0	81	451	917	980	561	312	307	52	21	6	3	1	1	3693
SE	0	111	588	1176	1586	1107	499	543	126	72	18	1	1	1	5829
SSE	0	95	571	1310	2027	1859	1207	1559	481	259	52	25	16	13	9474
S	0	123	798	1836	2955	2917	2144	3255	1292	747	148	86	43	24	16368
SSW	0	178	701	1826	2572	2805	2186	3624	1583	1232	244	183	91	76	17301
SW	0	234	838	1840	2036	1809	1514	730	535	354	66	55	20	19	10050
WSW	0	162	648	1246	1225	797	603	211	147	94	19	24	6	19	5201
W	0	149	699	1011	890	450	245	104	83	22	4	10	9	15	3691
WNW	0	125	559	773	641	426	323	196	118	41	31	10	20	33	3296
NW	0	151	777	1188	1164	811	698	396	391	95	89	24	30	38	5852
NNW	0	111	574	1100	1058	986	1189	818	1052	244	314	112	106	48	7712
ALL	4334	2363	11341	20984	24311	20682	15676	15757	8288	3948	1449	693	495	334	130657.

TOTAL OBSERVATIONS READ 130657.

RUSSEL, KANSAS FROM RUSSEL/APT., KANSAS
 ANNUAL NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS, BY DIRECTION
 PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LSI	.0	2.0	3.6	5.6	7.6	9.6	11.6	13.4	15.3	17.5	19.4	21.2	23.3	27.3	9.2
19-06LSI	.0	2.0	3.6	5.6	7.5	9.4	11.5	13.3	15.4	17.3	19.5	21.3	23.5	26.9	8.2
ALL HRS	.0	2.0	3.6	5.6	7.6	9.5	11.5	13.4	15.3	17.4	19.5	21.2	23.4	27.2	8.7

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LSI	3.5	2.9	9.2	14.8	18.5	13.5	12.7	11.4	7.5	3.0	1.5	.4	.5	.4	100.0
19-06LSI	4.8	1.3	10.0	20.5	19.5	18.9	9.5	8.0	4.1	1.7	.8	.4	.4	.2	100.0
ALL HRS	4.2	2.1	9.6	17.7	19.0	16.2	11.1	9.7	5.8	2.4	1.2	.4	.4	.3	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LSI	576	477	1492	2408	3004	2190	2068	1850	1217	493	245	69	80	63	16232
19-06LSI	772	217	1615	3326	3171	3066	1546	1293	667	270	134	62	65	25	16229
ALL HRS	1348	694	3107	5734	6175	5256	3614	3143	1884	763	379	131	145	88	32461.

TOTAL OBSERVATIONS READ: 130657.

RUSSEL, KANSAS FROM RUSSEL/APT., KANSAS

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: DEC-FEB

PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	.0	2.0	3.6	5.6	7.7	9.7	11.5	13.4	15.3	17.4	19.5	21.3	23.2	28.0	10.6
19-06LST	.0	2.1	3.6	5.6	7.6	9.4	11.5	13.3	15.3	17.3	19.5	21.3	23.5	27.1	8.9
ALL HRS	.0	2.0	3.6	5.6	7.6	9.5	11.5	13.3	15.3	17.4	19.5	21.3	23.3	27.0	9.8

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	2.2	2.3	6.9	9.9	16.2	11.9	14.3	15.6	10.1	5.2	2.4	1.5	.9	.9	100.0
19-06LST	4.0	1.2	8.8	17.7	18.8	17.1	10.4	11.0	5.7	3.1	1.2	.5	.4	.2	100.0
ALL HRS	3.1	1.8	7.8	13.8	17.5	14.5	12.3	13.3	7.9	4.1	1.8	1.0	.6	.5	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	363	377	1142	1632	2682	1966	2363	2578	1664	864	390	242	152	141	16556
19-06LST	661	205	1452	2925	3106	2828	1726	1821	944	508	197	82	63	36	16554
ALL HRS	1024	582	2594	4557	5788	4794	4089	4399	2608	1372	587	324	215	177	33110.

TOTAL OBSERVATIONS READ# 130657.

RUSSEL, KANSAS FROM RUSSEL/API., KANSAS

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: MAR-MAY

PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	.0	2.0	3.6	5.6	7.7	9.7	11.5	13.3	15.2	17.2	19.5	21.3	23.3	25.7	9.6
19-06LST	.0	2.1	3.6	5.6	7.6	9.5	11.4	13.2	15.2	17.2	19.6	21.2	23.2	30.5	8.4
ALL HRS	.0	2.0	3.6	5.6	7.6	9.6	11.5	13.3	15.2	17.2	19.6	21.3	23.3	27.7	9.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	1.9	2.1	8.8	13.4	17.7	12.8	15.1	15.9	7.2	3.9	.7	.4	.1	.1	100.0
19-06LST	3.6	1.2	9.0	19.5	21.3	18.4	10.1	11.1	3.7	1.5	.3	.2	.1	.1	100.0
ALL HRS	2.7	1.7	8.9	16.5	19.5	15.6	12.6	13.5	5.5	2.7	.5	.3	.1	.1	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	306	354	1448	2217	2928	2111	2496	2625	1190	642	117	63	20	15	16532
19-06LST	596	196	1481	3227	3524	3048	1678	1832	615	246	50	30	11	11	16545
ALL HRS	902	550	2929	5444	6452	5159	4174	4457	1805	888	167	93	31	26	33077.

TOTAL OBSERVATIONS READ= 130657.

RUSSEL, KANSAS FROM RUSSEL/APT., KANSAS

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: JUN-AUG

PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	.0	1.9	3.6	5.6	7.7	9.6	11.5	13.3	15.2	17.3	19.6	21.2	23.3	25.6	9.7
19-06LST	.0	2.0	3.6	5.6	7.5	9.4	11.4	13.2	15.2	17.1	19.5	21.3	23.3	26.7	8.4
ALL HRS	.0	1.9	3.6	5.6	7.6	9.5	11.5	13.3	15.2	17.2	19.6	21.2	23.3	25.9	9.1

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	2.8	2.3	8.2	13.1	17.7	12.9	13.3	14.1	8.5	4.4	1.4	.7	.5	.2	100.0
19-06LST	3.9	1.1	8.7	19.7	19.1	21.3	10.5	9.4	4.0	1.4	.5	.2	.2	.1	100.0
ALL HRS	3.3	1.7	8.5	16.4	18.4	17.1	11.9	11.7	6.2	2.9	1.0	.5	.3	.1	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DAY/NIGHT
07-18LST	443	361	1316	2099	2838	2062	2122	2259	1353	699	232	116	73	33	16006
19-06LST	619	176	1395	3150	3058	3411	1677	1499	638	226	84	29	31	10	16003
ALL HRS	1062	537	2711	5249	5896	5473	3799	3758	1991	925	316	145	104	43	32009.

TOTAL OBSERVATIONS READ: 130657.

RUSSEL, KANSAS FROM RUSSEL/APT., KANSAS

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: SEP-NOV

PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	2.0	3.6	5.6	7.7	9.6	11.5	13.3	15.3	17.3	19.5	21.2	23.3	27.4	9.8
19-06LST	.0	2.1	3.6	5.6	7.6	9.4	11.5	13.3	15.3	17.3	19.5	21.3	23.4	27.4	8.5
ALL MHS	.0	2.0	3.6	5.6	7.6	9.5	11.5	13.3	15.3	17.3	19.5	21.3	23.3	27.4	9.1

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	2.6	2.4	8.3	12.8	17.5	12.7	13.9	14.3	8.3	4.1	1.5	.8	.5	.4	100.0
19-06LST	4.1	1.2	9.1	19.3	19.7	18.9	10.1	9.9	4.4	1.9	.7	.3	.3	.1	100.0
ALL MHS	3.3	1.8	8.7	16.1	18.6	15.8	12.0	12.1	6.3	3.0	1.1	.5	.4	.3	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	1688.0	1569.0	5398.0	8356.0	11452.0	8329.0	9049.0	9312.0	5424.0	2698.0	984.0	490.0	325.0	252.0	65326.0
19-06LST	2648.0	794.0	5943.0	12628.0	12859.0	12353.0	6627.0	6445.0	2864.0	1250.0	465.0	203.0	170.0	82.0	65331.0
ALL MHS	4336.0	2363.0	11341.0	20984.0	24311.0	20682.0	15676.0	15757.0	8288.0	3948.0	1449.0	693.0	495.0	334.0	130657.0

TOTAL OBSERVATIONS READ= 130657.

RUSSEL, KANSAS FROM RUSSEL/API., KANSAS

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: ANNUAL

PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

SPEED	NUMBER OF CONSECUTIVE HOURS																									
	1	2	3	4	5	6	7	8	9	10	11	12	13 14	15 16	17 18	19 20	21 22	23 24	25 30	31 36	37 42	43 48	49 60	51 72	73 +	
<5 M/S	3162	1221	713	410	267	160	129	90	76	65	63	43	47	35	9	12	11	2	7	5	0	0	0	0	0	0
>4 M/S	1580	742	419	355	243	191	156	135	126	110	86	115	174	172	148	143	103	113	235	234	173	131	193	124	325	
10-24 M/S	3215	1391	822	573	441	386	306	259	248	213	182	139	230	183	141	136	98	70	128	100	65	41	21	16	20	
25+ M/S	120	27	14	5	2	5	1	1	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TOTAL OBSERVATIONS READ: 130657.

RUSSEL, KANSAS FROM RUSSEL/APT., KANSAS
 FREQUENCY DISTRIBUTION OF THE NUMBER OF CONSECUTIVE HOURS
 WITH WIND WITHIN SELECTED SPEED RANGES.
 PERIOD OF RECORD: 1/1/50 TO 12/31/64

GUST SPEED (M/S)	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-99	100+
NUMBER OF CASES	2246	555	131	22	11	4	2	0	0	0	0	0	0	0	0	0

TOTAL OBSERVATIONS READ: 130657.

RUSSEL, KANSAS FROM RUSSEL/APT., KANSAS
 THE FREQUENCY DISTRIBUTION OF CALCULATED WIND GUSTS EXCEEDING 24 M/S
 PERIOD OF RECORD: 1/ 1/50 TO 12/31/64

San Geronio Pass, California
(Estimated, from March AFB, Riverside)

C-113

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MU.
JAN	.00	1.93	3.47	5.42	7.28	9.51	11.46	13.67	15.42	17.34	19.66	21.59	22.98	.00	2.62
FEB	.00	1.94	3.47	5.46	7.28	9.39	11.34	13.67	15.43	17.33	19.27	21.38	22.98	24.89	2.75
MAR	.00	1.87	3.53	5.49	7.29	9.52	11.41	13.53	15.41	17.14	19.15	.00	.00	.00	2.79
APR	.00	1.86	3.50	5.44	7.34	9.44	11.40	13.57	15.49	17.57	19.15	21.68	23.31	25.33	3.21
MAY	.00	1.89	3.55	5.50	7.37	9.41	11.29	13.68	15.64	17.47	.00	.00	.00	.00	3.45
JUN	.00	1.89	3.50	5.47	7.45	9.38	11.31	13.78	15.51	17.23	.00	.00	.00	.00	3.55
JUL	.00	1.88	3.52	5.54	7.52	9.38	11.41	13.67	15.55	17.51	19.39	21.06	.00	.00	3.47
AUG	.00	1.90	3.55	5.55	7.48	9.41	11.40	13.63	15.47	17.47	.00	.00	.00	.00	3.24
SEP	.00	1.88	3.54	5.52	7.41	9.30	11.30	13.63	15.51	17.23	.00	.00	22.98	.00	2.71
OCT	.00	1.96	3.53	5.47	7.31	9.35	11.35	13.58	15.66	17.35	19.15	21.06	22.98	.00	2.35
NOV	.00	1.95	3.52	5.44	7.32	9.35	11.35	13.69	15.42	17.60	19.40	21.68	23.84	26.80	2.26
DEC	.00	1.93	3.51	5.37	7.27	9.43	11.41	13.67	15.54	17.41	19.28	21.50	22.79	24.89	2.47
ANN	.00	1.90	3.52	5.48	7.37	9.41	11.37	13.65	15.49	17.40	19.37	21.47	23.32	25.92	2.91

TOTAL OBSERVATIONS READ= 131424.

SAN GORGONIO PASS FROM MARCH AFB/RIVERSIDE
 AVERAGE WIND SPEED BY MONTH, BY WIND SPEED GROUP
 PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MO.
JAN	51.45	8.67	14.35	10.90	7.65	3.01	2.31	.66	.56	.24	.14	.03	.01	.00	100.00
FEB	48.23	8.88	14.78	12.99	8.61	3.23	1.85	.67	.42	.20	.08	.03	.02	.01	100.00
MAR	46.48	9.37	15.64	13.57	8.29	3.87	2.02	.46	.25	.03	.03	.00	.00	.00	100.00
APR	42.04	9.29	15.81	13.71	9.91	4.73	2.96	1.05	.39	.03	.05	.02	.01	.01	100.00
MAY	36.87	10.21	17.09	16.26	9.82	5.18	3.61	.82	.11	.04	.00	.00	.00	.00	100.00
JUN	37.68	9.18	16.23	15.47	10.73	5.09	4.14	1.08	.34	.06	.00	.00	.00	.00	100.00
JUL	42.08	8.13	14.01	13.22	10.99	5.43	4.28	1.38	.38	.06	.04	.01	.00	.00	100.00
AUG	45.21	8.19	13.37	12.58	9.71	5.30	4.08	1.22	.28	.07	.00	.00	.00	.00	100.00
SEP	51.31	7.56	13.17	11.69	8.68	3.84	2.73	.88	.13	.02	.00	.00	.01	.00	100.00
OCT	54.86	8.58	13.23	10.96	6.84	2.76	1.63	.59	.30	.18	.02	.02	.02	.00	100.00
NOV	56.26	9.41	12.57	10.04	6.12	2.53	1.83	.56	.25	.17	.17	.02	.05	.03	100.00
DEC	53.86	8.99	13.55	9.87	7.08	2.98	1.94	.69	.46	.24	.22	.09	.01	.01	100.00
ANN	47.19	8.87	14.48	12.60	8.70	4.00	2.79	.84	.32	.11	.06	.02	.01	.00	100.00

TOTAL OBSERVATIONS READ= 131424.

SAN GORGONIO PASS FROM MARCH AFB/RIVERSIDE
 PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS, BY MONTH
 PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

C-115

MONTH	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER MU.
JAN	5742	968	1602	1216	854	336	258	74	63	27	16	3	1	0	11160
FEB	4893	901	1499	1318	873	328	188	68	43	20	8	3	2	1	10145
MAR	5183	1045	1744	1513	925	432	225	51	28	3	3	0	0	0	11152
APR	4538	1003	1706	1480	1070	511	319	113	42	3	5	2	1	1	10794
MAY	4114	1139	1907	1815	1096	578	403	91	12	4	0	0	0	0	11159
JUN	4069	991	1753	1671	1159	550	447	117	37	6	0	0	0	0	10800
JUL	4693	907	1562	1474	1226	606	477	154	42	7	4	1	0	0	11153
AUG	5045	914	1492	1404	1084	591	455	136	31	8	0	0	0	0	11160
SEP	5541	816	1422	1262	937	415	295	95	14	2	0	0	1	0	10800
OCT	6116	956	1475	1222	763	308	182	66	34	20	2	2	2	0	11148
NOV	6072	1016	1357	1084	661	273	197	60	27	18	18	2	5	3	10793
DEC	6011	1003	1512	1102	790	333	217	77	51	27	25	10	1	1	11160
ANN	62017	11659	19031	16561	11438	5261	3663	1102	424	145	81	23	13	6	131424.

TOTAL OBSERVATIONS READ= 131424.

SAN GORGONIO PASS FROM MARCH AFB/RIVERSIDE
NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS, BY MONTH
PER 100 OF RECORD: 1/ 1/49 TO 12/31/63

C-116

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	.00	1.89	3.50	5.43	7.40	9.38	11.24	13.76	15.59	17.34	19.35	21.54	22.98	24.89	5.24
NNE	.00	1.97	3.42	5.38	7.36	9.56	11.47	13.49	15.28	17.68	19.25	20.74	.00	26.35	5.22
NE	.00	1.99	3.47	5.35	7.39	9.63	11.69	13.45	15.07	16.88	19.04	.00	22.79	.00	5.27
ENE	.00	1.92	3.45	5.47	7.37	9.63	11.62	13.89	15.72	17.67	19.90	21.79	23.31	25.33	6.32
E	.00	1.87	3.45	5.44	7.26	9.28	11.45	13.60	15.69	17.30	19.39	22.02	23.45	.00	5.40
ESE	.00	1.88	3.44	5.37	7.25	9.48	11.39	13.40	15.96	.00	.00	.00	.00	.00	4.11
SE	.00	1.88	3.46	5.40	7.16	9.43	11.54	13.60	15.32	17.55	.00	.00	.00	.00	4.22
SSE	.00	1.90	3.47	5.37	7.19	9.30	11.38	13.65	15.18	.00	19.15	22.02	.00	.00	4.54
S	.00	1.86	3.49	5.41	7.26	9.39	11.39	13.71	15.56	.00	20.10	.00	.00	.00	4.64
SSW	.00	1.85	3.39	5.47	7.55	9.76	11.60	13.30	.00	.00	.00	.00	.00	.00	4.50
SW	.00	1.91	3.49	5.34	7.44	9.61	11.41	13.33	15.41	16.96	.00	.00	.00	.00	4.40
WSW	.00	1.84	3.42	5.46	7.49	9.55	11.46	13.47	15.21	18.24	.00	22.29	23.98	25.33	5.24
W	.00	1.92	3.56	5.48	7.33	9.42	11.42	13.72	15.51	17.81	19.15	21.06	.00	28.72	5.13
NNW	.00	1.92	3.56	5.51	7.35	9.35	11.33	13.64	15.50	17.38	19.40	21.06	.00	.00	5.73
NW	.00	1.91	3.56	5.52	7.43	9.40	11.34	13.66	15.49	17.37	19.32	22.02	22.98	.00	6.19
NNW	.00	1.88	3.49	5.48	7.35	9.35	11.30	13.59	15.58	17.40	19.23	21.06	22.98	.00	5.14
ALL	.00	1.90	3.52	5.48	7.37	9.41	11.37	13.65	15.49	17.40	19.37	21.47	23.32	25.92	5.80

TOTAL OBSERVATIONS READ= 131424.

SAN GORGONIO PASS FROM MARCH AFB/RIVERSIDE
 AVERAGE ANNUAL WIND SPEED BY DIRECTION, BY WIND SPEED GROUP
 PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

C-117

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	.00	22.01	31.48	20.74	11.48	5.08	4.39	1.76	1.52	.56	.59	.25	.09	.06	100.00
NNE	.00	21.22	27.48	22.41	16.09	5.78	4.16	1.08	1.13	.38	.05	.16	.00	.05	100.00
NE	.00	22.37	26.85	20.48	17.69	4.64	4.97	.82	1.23	.62	.29	.00	.04	.00	100.00
ENE	.00	14.63	21.87	22.07	20.39	8.18	6.21	2.46	2.22	1.18	.54	.10	.10	.05	100.00
E	.00	21.43	28.23	20.25	13.16	6.60	5.58	2.54	1.13	.73	.20	.05	.10	.00	100.00
ESE	.00	30.65	34.90	19.47	8.67	4.18	1.52	.38	.23	.00	.00	.00	.00	.00	100.00
SE	.00	26.94	35.31	22.36	9.80	3.74	1.31	.42	.03	.09	.00	.00	.00	.00	100.00
SSE	.00	25.09	32.03	22.59	12.31	4.28	2.58	.76	.29	.00	.04	.04	.00	.00	100.00
S	.00	23.36	32.64	22.74	12.31	5.55	2.18	.81	.37	.00	.04	.00	.00	.00	100.00
SSW	.00	27.36	31.81	20.62	11.99	4.99	2.29	.94	.00	.00	.00	.00	.00	.00	100.00
SW	.00	29.43	34.82	17.87	9.07	4.47	1.71	1.84	.66	.13	.00	.00	.00	.00	100.00
WSW	.00	21.91	28.33	22.49	12.56	6.33	5.26	1.36	1.17	.10	.00	.10	.29	.10	100.00
W	.00	17.52	30.60	25.91	15.00	6.48	2.90	.96	.35	.10	.13	.02	.00	.02	100.00
WNW	.00	12.67	26.47	25.88	18.91	8.24	5.52	1.77	.39	.09	.05	.01	.00	.00	100.00
NW	.00	11.31	22.85	24.25	19.92	10.66	8.02	2.20	.60	.13	.05	.01	.00	.00	100.00
NNW	.00	17.97	30.47	26.06	13.80	5.60	4.08	1.05	.38	.29	.21	.05	.02	.00	100.00
ALL	47.19	8.87	14.48	12.60	8.70	4.00	2.79	.84	.32	.11	.06	.02	.01	.00	100.00

TOTAL OBSERVATIONS READ 131424.

SAN GORGONIO PASS FROM MARCH AFB/RIVERSIDE
ANNUAL PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS, BY DIRECTION
PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

C-118

DIRECTION	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	PER DIR
N	0	711	1017	670	371	164	142	57	49	18	19	8	3	2	3231
NNE	0	393	509	415	298	107	77	20	21	7	1	3	0	1	1852
NE	0	545	654	499	431	113	121	20	30	15	7	0	1	0	2436
ENE	0	297	444	448	414	166	126	50	45	24	11	2	2	1	2030
E	0	438	577	414	269	135	114	52	23	15	4	1	2	0	2044
ESE	0	403	459	256	114	55	20	5	3	0	0	0	0	0	1315
SE	0	907	1189	753	330	126	44	14	1	3	0	0	0	0	3367
SSE	0	691	882	622	339	118	71	21	8	0	1	1	0	0	2754
S	0	632	883	615	333	150	59	22	10	0	1	0	0	0	2705
SSW	0	203	236	153	89	37	17	7	0	0	0	0	0	0	742
SW	0	224	265	136	69	34	13	14	5	1	0	0	0	0	761
WSW	0	225	291	231	129	65	54	14	12	1	0	1	3	1	1027
W	0	911	1591	1347	780	337	151	50	18	5	7	1	0	1	5199
WNW	0	1633	3411	3335	2437	1062	712	228	50	11	7	1	0	0	12887
NW	0	2407	4861	5160	4237	2268	1706	467	127	28	11	2	1	0	21275
NNW	0	1039	1762	1507	798	324	236	61	22	17	12	3	1	0	5782
ALL	62017	11659	19031	16561	11438	5261	3663	1102	424	145	81	23	13	6	131424

TOTAL OBSERVATIONS READ* 131424.

SAN GORGONIO PASS FROM MARCH AFB/RIVERSIDE
ANNUAL NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS, BY DIRECTION
PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	1.9	3.5	5.4	7.3	9.5	11.4	13.7	15.4	17.4	19.5	21.4	22.9	24.9	3.4
19-06LST	.0	2.0	3.5	5.4	7.3	9.4	11.4	13.6	15.5	17.3	19.1	22.0	23.0	.0	1.8
ALL HRS	.0	1.9	3.5	5.4	7.3	9.4	11.4	13.7	15.5	17.4	19.4	21.5	22.9	24.9	2.6

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	37.9	11.3	16.9	13.9	10.3	4.5	2.8	1.0	.7	.3	.3	.1	.0	.0	100.0
19-06LST	64.6	6.4	11.5	8.5	5.2	1.6	1.3	.4	.3	.2	.0	.0	.0	.0	100.0
ALL HRS	51.3	8.8	14.2	11.2	7.8	3.1	2.0	.7	.5	.2	.2	.0	.0	.0	100.0

C-119

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	6154	1851	2750	2260	1675	730	449	157	114	49	41	14	3	2	16229
19-06LST	10492	1041	1863	1376	842	267	214	62	43	25	8	2	1	0	16236
ALL HRS	16646	2872	4613	3636	2517	997	663	219	157	74	49	16	4	2	32465.

TOTAL OBSERVATIONS HEAD= 131424.

SAN GORGONIO PASS FROM MARCH AFB/RIVERSIDE

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: DEC-FEB

PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	1.9	3.6	5.5	7.4	9.5	11.4	13.6	15.5	17.4	19.1	21.7	23.3	25.3	4.4
19-06LST	.0	1.9	3.5	5.4	7.2	9.1	11.1	13.5	15.0	.0	.0	.0	.0	.0	1.9
ALL HRS	.0	1.9	3.5	5.5	7.3	9.4	11.4	13.6	15.5	17.4	19.1	21.7	23.3	25.3	3.1

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	25.0	10.4	18.1	18.2	13.9	7.4	5.0	1.5	.5	.1	.0	.0	.0	.0	100.0
19-06LST	58.5	8.9	14.2	10.9	4.8	1.8	.7	.1	.0	.0	.0	.0	.0	.0	100.0
ALL HRS	41.8	9.6	16.2	14.5	9.3	4.6	2.9	.8	.2	.0	.0	.0	.0	.0	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	4142	1714	3001	3004	2296	1220	827	242	78	10	8	2	1	1	16546
19-06LST	9693	1473	2356	1804	795	301	120	13	4	0	0	0	0	0	16559
ALL HRS	13835	3187	5357	4808	3091	1521	947	255	82	10	8	2	1	1	33105.

TOTAL OBSERVATIONS READ= 131424.

SAN GORGONIO PASS FROM MARCH AFB/RIVERSIDE

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP
 B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT
 C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT
 SEASON: MAR-MAY
 PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

C-120

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	1.9	3.6	5.6	7.5	9.5	11.4	13.7	15.5	17.4	19.4	21.1	.0	.0	5.0
19-06LST	.0	1.9	3.4	5.4	7.3	9.0	11.0	13.8	15.3	.0	.0	.0	.0	.0	1.9
ALL HRS	.0	1.9	3.5	5.5	7.5	9.4	11.4	13.7	15.5	17.4	19.4	21.1	.0	.0	3.4

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	23.6	8.7	15.2	17.3	16.5	8.3	7.1	2.4	.7	.1	.0	.0	.0	.0	100.0
19-06LST	59.7	8.3	13.8	10.2	4.5	2.2	1.2	.1	.0	.0	.0	.0	.0	.0	100.0
ALL HRS	41.7	8.5	14.5	13.7	10.5	5.3	4.2	1.2	.3	.1	.0	.0	.0	.0	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	3914	1440	2519	2865	2729	1382	1174	396	109	21	4	1	0	0	16554
19-06LST	9893	1372	2288	1684	740	365	205	11	1	0	0	0	0	0	16559
ALL HRS	13807	2812	4807	4549	3469	1747	1379	407	110	21	4	1	0	0	33113.

TOTAL OBSERVATIONS READ= 131424.

SAN GORGONIO PASS FROM MARCH AFB/RIVERSIDE

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: JUN-AUG

PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	1.9	3.6	5.5	7.4	9.4	11.3	13.6	15.6	17.5	19.4	21.5	23.5	26.8	3.8
19-06LST	.0	2.0	3.4	5.3	7.3	9.2	11.3	13.6	15.4	17.4	19.1	21.1	.0	.0	1.1
ALL HRS	.0	1.9	3.5	5.5	7.4	9.3	11.3	13.6	15.5	17.5	19.4	21.4	23.5	26.8	2.4

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	33.9	10.9	16.6	15.9	11.8	5.2	3.5	1.2	.4	.2	.1	.0	.0	.0	100.0
19-06LST	74.4	6.1	9.4	5.9	2.6	.9	.6	.1	.1	.0	.0	.0	.0	.0	100.0
ALL HRS	54.1	8.5	13.0	10.9	7.2	3.0	2.1	.7	.2	.1	.1	.0	.0	.0	100.0

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	5552	1791	2718	2606	1939	854	576	204	63	34	18	3	8	3	16369
19-06LST	12177	997	1536	962	422	142	98	17	12	6	2	1	0	0	16372
ALL HRS	17729	2788	4254	3568	2361	996	674	221	75	40	20	4	8	3	32741,

TOTAL OBSERVATIONS READ* 131424.

SAN GORGONIO PASS FROM MARCH AFB/RIVERSIDE

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP

B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT

SEASON: SEP-NOV

PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

C-122

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	.0	1.9	3.6	5.5	7.4	9.5	11.4	13.7	15.5	17.4	19.4	21.4	23.3	25.9	4.2
19-06LST	.0	1.9	3.5	5.4	7.3	9.2	11.2	13.6	15.5	17.3	19.1	21.7	23.0	.0	1.7
ALL HRS	.0	1.9	3.5	5.5	7.4	9.4	11.4	13.7	15.5	17.4	19.4	21.5	23.3	25.9	2.9

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	30.1	10.3	16.7	16.3	13.1	6.4	4.6	1.5	.6	.2	.1	.0	.0	.0	100.0
19-06LST	64.3	7.4	12.2	8.9	4.3	1.6	1.0	.2	.1	.0	.0	.0	.0	.0	100.0
ALL HRS	47.2	8.9	14.5	12.6	8.7	4.0	2.8	.8	.3	.1	.1	.0	.0	.0	100.0

C-123

TIME	CALM	01-02 (M/S)	03-04 (M/S)	05-06 (M/S)	07-08 (M/S)	09-10 (M/S)	11-12 (M/S)	13-14 (M/S)	15-16 (M/S)	17-18 (M/S)	19-20 (M/S)	21-22 (M/S)	23-24 (M/S)	25+ (M/S)	BY DA/NT
07-18LST	19762.0	6776.0	10988.0	10735.0	8639.0	4186.0	3026.0	999.0	364.0	114.0	71.0	20.0	12.0	6.0	65698.0
19-06LST	42255.0	4883.0	8043.0	5826.0	2799.0	1075.0	637.0	103.0	60.0	31.0	10.0	3.0	1.0	.0	65726.0
ALL HRS	62017.0	11659.0	19031.0	16561.0	11438.0	5261.0	3663.0	1102.0	424.0	145.0	81.0	23.0	13.0	6.0	131424.0

TOTAL OBSERVATIONS READ= 131424.

SAN GORGONIO PASS FROM MARCH AFB/RIVERSIDE

A) AVERAGE WIND SPEED BY SEASON, BY DAY/NIGHT, BY WIND SPEED GROUP
 B) PERCENT FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT
 C) NUMBER FREQUENCY OF HOURLY WIND SPEED GROUPS BY SEASON, BY DAY/NIGHT
 SEASON: ANNUAL
 PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

SPEED	NUMBER OF CONSECUTIVE HOURS																																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	30	36	42	48	60	72	+	
<5 M/S	2373	1043	612	387	280	187	161	147	161	147	170	197	608	850	870	636	297	121	66	27	45	62	30	30	36								
>4 M/S	3352	1306	836	689	619	585	536	451	337	275	196	115	111	47	32	19	12	7	4	7	4	2	1	0	0								
10-24 M/S	1463	600	468	319	189	109	54	32	10	8	6	3	10	3	2	0	1	0	1	0	1	0	0	0	0								
25+ M/S	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TOTAL OBSERVATIONS READ= 131424.

SAN GORGONIO PASS FROM MARCH AFB/RIVERSIDE
 FREQUENCY DISTRIBUTION OF THE NUMBER OF CONSECUTIVE HOURS
 WITH WIND WITHIN SELECTED SPEED RANGES
 PERIOD OF RECORD: 1/ 1/49 TO 12/31/63

C-124

GUST SPEED (M/S)	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-99	100+
NUMBER OF CASES	104	18	1	0	0	0	0	0	0	0	0	0	0	0	0	0

TOTAL OBSERVATIONS READ* 131424.

SAN GORGONIO PASS FROM MARCH AFB/RIVERSIDE
THE FREQUENCY DISTRIBUTION OF CALCULATED WIND GUSTS EXCEEDING 24 M/S
PERIOD OF RECORD: 1/ 1/49 TO 12/31/63