

**COMPUTER PROGRAM
FOR ANALYSIS OF ENERGY UTILIZATION
IN POSTAL FACILITIES**

**VOLUME IV
PROGRAM LISTING**



COMPUTER PROGRAM
FOR ANALYSIS OF ENERGY UTILIZATION
IN POSTAL FACILITIES

The total program consists of seven separate sub-programs, each operating alone and performing a specific function, but with the output of one becoming the input to another. The seven sub-programs include:

- 1) LOAD CALCULATION SUB-PROGRAM - calculates the hourly heat losses and heat gains for each space within the building for an entire year. To make the task easier for the engineer, this book gives the listing of the computer programs for analysis of energy utilization in postal facilities. This program is supported by wall and roof selection programs.
- 2) PUNCH SUB-PROGRAM - prepares the punched card input data required for the offline Thermal Loads Plot Sub-program.
- 3) THERMAL LOADS PLOT SUB-PROGRAM - plots the hourly load profiles for any space for any length of time and enables more compatible grouping of spaces into control zones.
- 4) LOAD EDITING SUB-PROGRAM - aids the engineer in preparing an edited hourly load tape by summing space loads into fan zone loads, thus giving an hourly load tape which can be input directly to the Systems Simulation Sub-program.
- 5) SYSTEM SIMULATION SUB-PROGRAM - simulates the operation of the systems and part load operation of heating and cooling equipment components, thus enabling an accurate determination of the building's hourly energy consumption.
- 6) ECONOMICS ANALYSIS SUB-PROGRAM - calculates the annual owning and operating costs of a building for various combinations of heating and cooling plants.
- 7) PACKAGED SYSTEMS SIMULATION SUB-PROGRAM - simulates the operation of typical packaged unitary heating/cooling systems used in small Post Office buildings, giving the energy consumption as a function of the part load on the packaged system.

The sequence of using the seven sub-programs depends upon what information the engineer wishes to obtain and if he can initially break the buildings into fan system control zones rather than just spaces. Figure 1 illustrates the paths of sub-program sequencing that can be taken as a function of the engineer's decisions. As the engineer becomes more adept at breaking a building directly into control zones, the need for space load plots and re-grouping of zones will diminish.

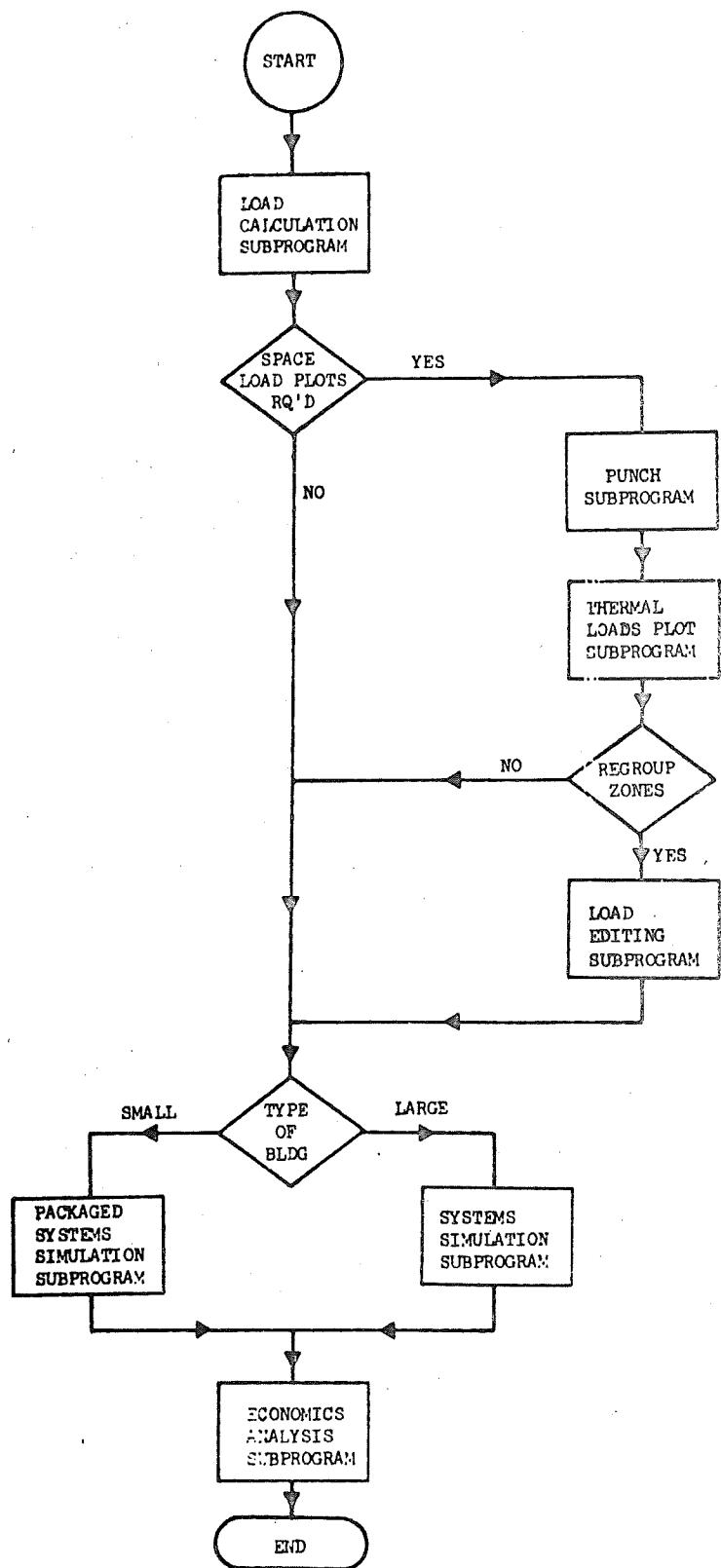


Figure 1 LOGIC FLOW CHART ILLUSTRATING THE SEQUENCE OF USING THE SEVEN SUB-PROGRAMS

The card input data required by some of the sub-programs cannot be prepared until the output of another sub-program has been examined. For example, the proper grouping of spaces into control zones and then control zones into fan systems required for the Systems Simulation Sub-program are reviewed to establish which spaces have similar load profiles. Neither can monthly energy costs be calculated and input to the Economics Analysis Sub-program until the monthly energy consumption summary has been received from the Systems Simulation Sub-program. Nor can the engineer collect the necessary equipment cost data required by the Economics Analysis Sub-program until the Systems Simulation Sub-program tells the engineer the quantity and capacity of the chillers, boilers, cooling towers, etc. Figure 2 illustrates this dependence of input upon output for a large Post Office building analysis. Figure 3 illustrates the same for a small Post Office building analysis where use of all seven sub-programs is probably not required.

For small buildings (below 35,000 square feet), the engineer can elect to use only the Load Calculation Sub-program, the Packaged Systems Simulation Sub-program, and the Economics Analysis Sub-program. If experience indicates no need for economic evaluation of fuels, energy and equipment variations, then the engineer can elect to run only the Load Calculation Sub-program for the peak heating and cooling months to indicate maximum and minimum heating and cooling requirements for good equipment capacity selection.

NOTE: FOR DIFFERENT COMPUTER SYSTEMS, PROPER SUBROUTINES AND CONTROL CARDS SHOULD BE USED.

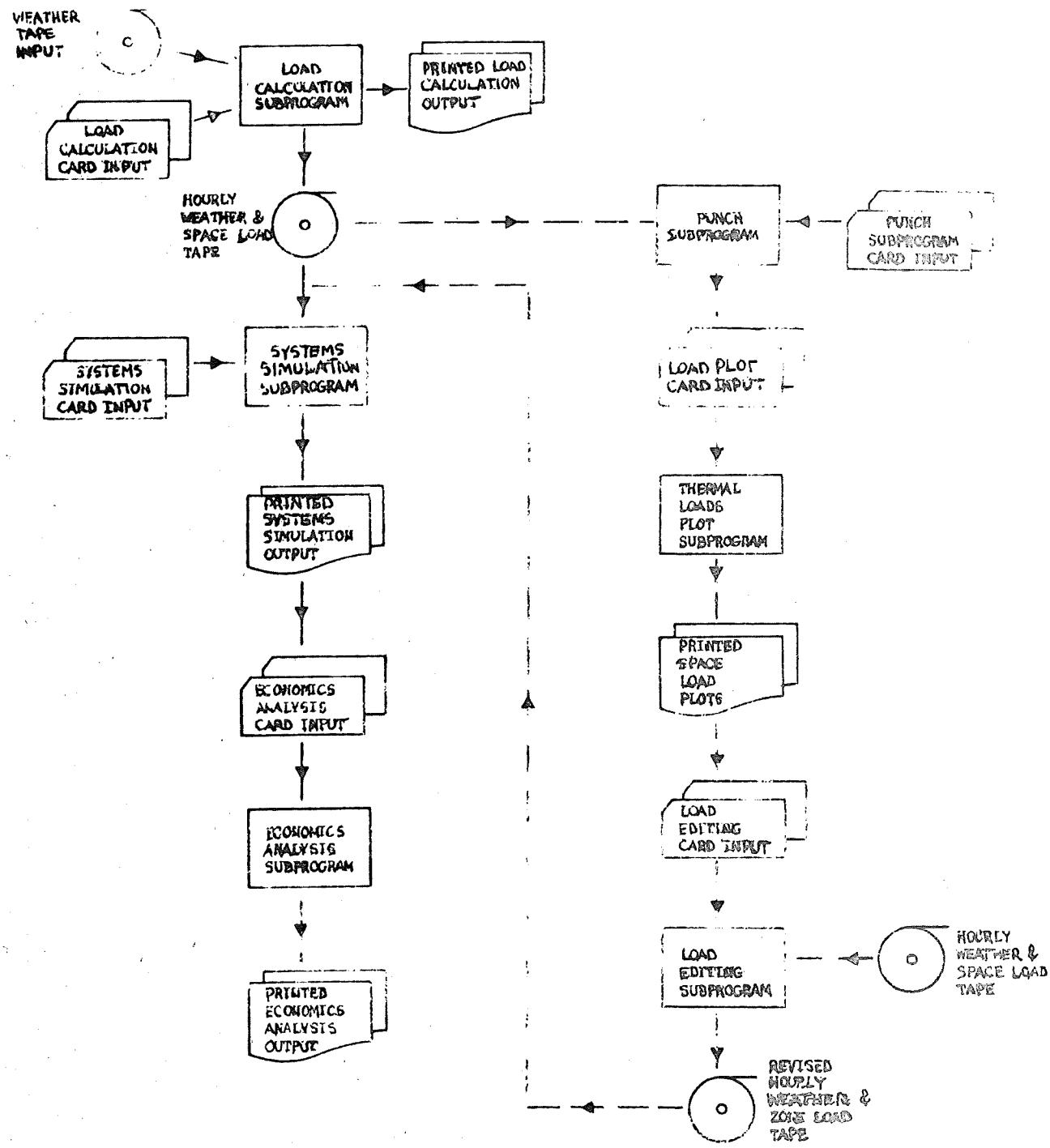


Figure - ANALYSIS FOR LARGE POST OFFICE BUILDING

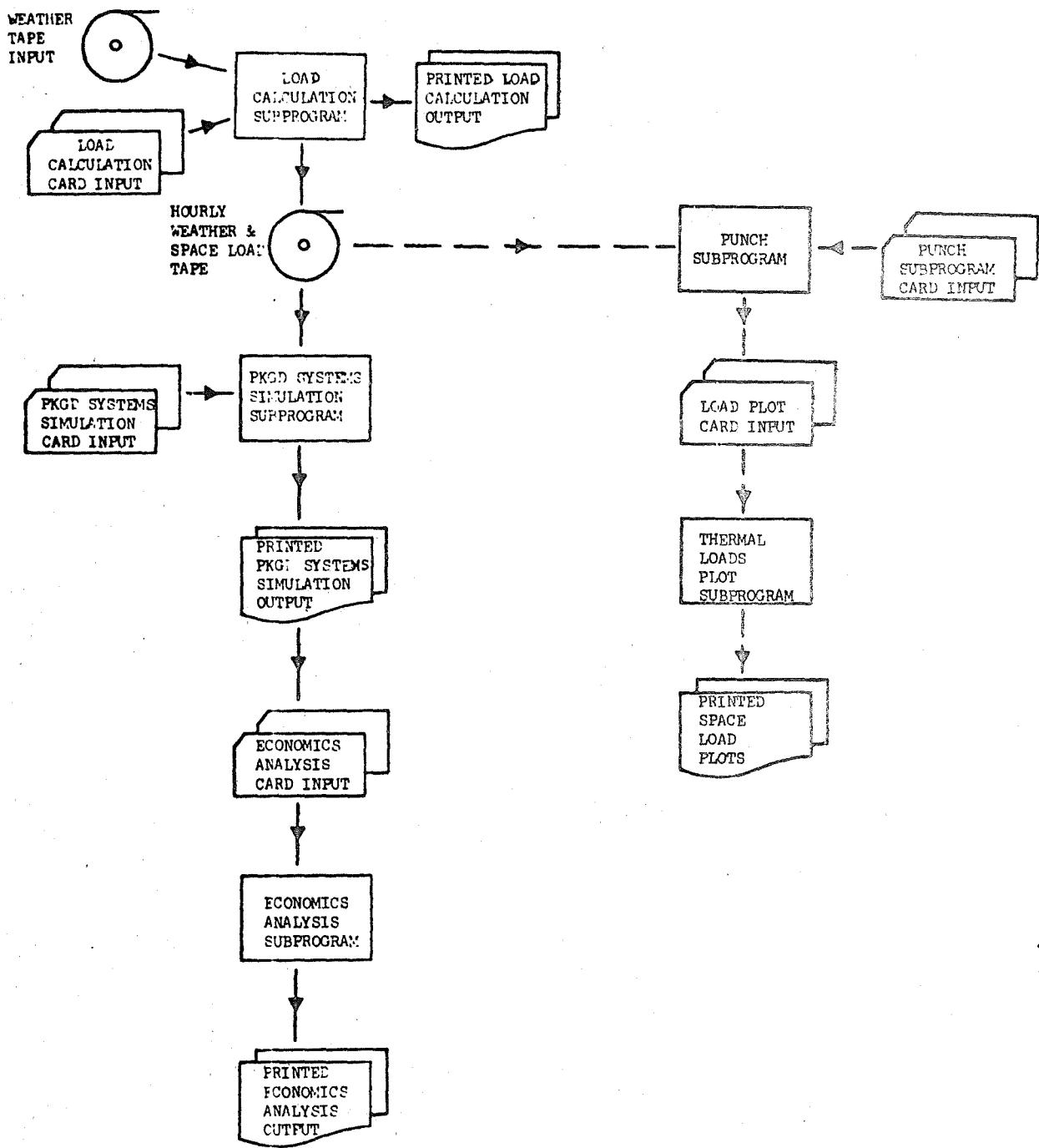


Figure 3 ANALYSIS FOR SMALL POST OFFICE BUILDINGS

CONTROL CARDS
AS NECESSARY

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026/029 CONVERSION PROGRAM
DIMENSION IP(80)
DATA LP/' /,LC/' /,IRP/' /,IRC/' /,
DATA IEQ/' =',IEC/' =',IPL/' &',IPC/' +'
DATA IDT/' ''/,IDC/' ''/
1 READ(5,100,END=99)IP
100 FORMAT(80A1)
DO 10 I=1,80
IF(IP(I)-LP)20,30,20
30 IP(I)=LC
20 IF(IP(I)-IRP)21,31,21
31 IP(I)=IRC
21 IF(IP(I)-IEQ)22,32,22
32 IP(I)=IEC
22 IF(IP(I)-IPL)23,33,23
33 IP(I)=IPC
23 IF(IP(I)-IDT)10,34,10
34 IP(I)=IDC
10 CONTINUE
WRITE(1,100)IP
GO TO 1
99 CALL EXIT
END

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CONTROL CARDS
AS NECESSARY

* COMPUTER PROGRAM FOR * LOAD
* ANALYSIS OF ENERGY UTILIZATION * LOAD
* IN POSTAL FACILITIES * LOAD
* *** * LOAD
* U. S. A. POST OFFICE DEPARTMENT CONTRACT NO. RE 49-67 * LOAD
* GARD-GATX PROJECT NO. 1446 * LOAD
* BY * LOAD
* METIN LOKMANHEKIM * LOAD
* MANAGER, THERMAL SYSTEMS AND COMPUTER APPLICATIONS * LOAD
* AND * LOAD
* ROBERT H. HENNINGER * LOAD
* CHARLES C. GROTH * LOAD
* JAMES Y. SHIH * LOAD
* STEPHEN J. LIS * LOAD
* *** * LOAD
* GENERAL AMERICAN RESEARCH DIVISION - GARD * LOAD
* GENERAL AMERICAN TRANSPORTATION CORPORATION - GATX * LOAD
* 7449 NORTH NATCHEZ AVENUE * LOAD
* NILES, ILLINOIS 60648 U. S. A. * LOAD

* MAIN LOAD SUBPROGRAM * LOAD

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***** LOAD 27
***** LOAD 28
      DIMENSION STATEMENTS LOAD 29
***** LOAD 30
***** LOAD 31
DIMENSION LOAD 32
1   QU( 11), SUMA( 11), SUMB( 11), SUMC( 11), HRLDL( 11), LOAD 33
1   RMRISI( 11), RMRISC( 11), RATRIS( 11), RMKPSI( 11), RMRPSC( 11), LOAD 34
1   RATRPS( 11), RMRX1( 11), RMRXC( 11), RATRX( 11), RMRG1( 11), LOAD 35
1   RMRGC( 11), RATRG( 11), H1( 11), H2( 11), H3( 11), LOAD 36
1   WOF( 11), NIHTS( 11), NQ( 11), ND( 11), NU( 11), LOAD 37
1   HUF( 11), NW( 11), PLITE( 11), IVEVL( 11), NFOLK( 11), LOAD 38
1   HASL( 11), TSPAC( 11), QEQL( 11), IWOO( 11), QIHTS( 11), LOAD 39
1   VOL( 11), SSHMAX( 11), ISSHMA( 11), SSHMIN( 11), ISSHMI( 11), LOAD 40
1   STCMAX( 11), ISTCMA( 11), STCMIN( 11), ISTCMI( 11), INFCDI( 11) LOAD 41
DIMENSION LOAD 42
1   AD( 28), WTD( 28), WAD( 28), NVD( 28), NXD( 28), LOAD 43
1   NYD( 28), NDD( 28), NAD( 28), SHADD( 28,24), ROGD( 28), LOAD 44
1   ISD( 28), ABD( 28), IRF( 28), SUMN( 28), SUMR( 28), LOAD 45
*   QN( 28), QR( 28), QSTORD( 28), ICALD( 28) LOAD 46
DIMENSION LOAD 47
1   AQ( 1), WTQ( 1), WAQ( 1), NVQ( 1), NAQ( 1), LOAD 48
1   NYQ( 1), NDQ( 1), NAQ( 1), SHADQ( 1,24), ROGQ( 1), LOAD 49
1   ISQ( 1), ABQ( 1), UQ( 1), QSTORQ( 1), ICALQ( 1) LOAD 50
DIMENSION LOAD 51
1   Aw( 6), WTW( 6), WAW( 6), NVW( 6), NXW( 6), LOAD 52
1   NYW( 6), NDW( 6), NAW( 6), SHADW( 6,24), ROGW( 6), LOAD 53
1   NPW( 6), IGLASW( 6), FFWS( 6), FFWG( 6), SHACO( 6), LOAD 54
*   QSTORC( 6), QSTORR( 6), ICALW( 6) LOAD 55
DIMENSION LOAD 56
1   RATOS( 2), IR( 2), SXH( 2), SXR( 2), SYH( 2), LOAD 57
1   SYR( 2) LOAD 58
DIMENSION LOAD 59
1   FIHTS( 1), ISPC1( 1), ISPC2( 1), FUW( 1), FUF( 1) LOAD 60
DIMENSION LOAD 61
1   XV( 10), YV( 10), ZV( 10), XX( 10), YY( 10), LOAD 62
1   ZZ( 10), ILETE( 1) LOAD 63
DIMENSION LOAD 64
1   IDD( 28, 1), NVAD( 28, 1), XVD( 28, 10), XAD( 28, 1, 1), LOAD 65
1   TD( 28, 50), PAD( 28, 1), YVD( 28, 10), YAD( 28, 1, 1), LOAD 66
1   FIDD( 1), ZVD( 28, 10), ZAD( 28, 1, 1) LOAD 67
DIMENSION LOAD 68
1   IDQ( 1, 1), NVAQ( 1, 1), XVO( 1, 1), XAQ( 1, 1, 1), LOAD 69
1   PAQ( 1, 1), YVQ( 1, 1), YAQ( 1, 1, 1), LOAD 70
1   FIDQ( 1), ZVQ( 1, 1), ZAQ( 1, 1, 1) LOAD 71
DIMENSION LOAD 72
1   IDW( 6, 1), NVAN( 6, 3), XW( 6, 4), XAW( 6, 3, 4), LOAD 73
1   PAW( 6, 3), YW( 6, 4), YAW( 6, 3, 4), LOAD 74
1   FIDW( 1), ZW( 6, 4), ZAW( 6, 3, 4) LOAD 75
DIMENSION RX( 2, 50),RY( 2, 50) LOAD 76
DIMENSION LOAD 77
1   NVSP( 1), PSP( 1), XSP( 1, 1), YSP( 1, 1), ZSP( 1, 1) LOAD 78
DIMENSION LOAD 79
1   NVA( 3), PA( 3), XA( 3, 4), YA( 3, 4), ZA( 3, 4) LOAD 80
DIMENSION LOAD 81
1   IHTS( 11, 1), IQ( 11, 1), ID( 11, 3), IUW( 11, 1), IUF( 11, 1), LOAD 82
1   IW( 11, 2) LOAD 83

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DIMENSION FFIHTS( 1),FIQ( 1),FID( 3),FIUN( 1),FIUF( 1) LOAD 84
*FIW( 2) LOAD 85
DIMENSION MLOOKD(20),ILOOKD(20),JLOOKD(20) LOAD 86
DIMENSION MLOOKQ(20),ILOOKQ(20),JLOOKQ(20) LOAD 87
DIMENSION MLOOKW(20),ILOOKW(20),JLOOKW(20) LOAD 88
DIMENSION RFX(50),RFY(50),TO(50) LOAD 89
DIMENSION DEABC(5),RAYCOS(3),NOHIEM(12),TGRND(12) LOAD 90
DIMENSION SCHEQ(3,9,24),SCHFLK(3,9,24),SCHLIT(3,9,24) LOAD 91
DIMENSION IDEN1(35),IDEN2(35),IDEN3(35),IDEN4(15),IDEN5(15), LOAD 92
*IDEN(35) LOAD 93
***** LOAD 94
***** LOAD 95
      DATA STATEMENTS LOAD 96
***** LOAD 97
***** LOAD 98
DATA NOHIEM/744,672,744,720,744,720,744,744,720,744,720,744,720,744/ LOAD 99
DATA MO1,MO2,MO3,MO4,MO5,MO6,MO7,MO8,MO9,MO10,MO11,MO12/4HJAN.,9 LOAD 100
*4HFEB.,4HMAR.,4HAPR.,3HMAY,4HJUNE,4HJULY,4HAUG.,4HSEP.,4HUOCT.,9 LOAD 101
*4HNOV.,4HDEC./ LOAD 102
***** LOAD 103
***** LOAD 104
      COMMON STATEMENTS LOAD 105
***** LOAD 106
***** LOAD 107
COMMON/A/XVD,YVD,ZVD,IDD,XAD,YAD,ZAD LOAD 108
COMMON/B/XVQ,YVQ,ZVQ,IDX,XAQ,YAQ,ZAQ LOAD 109
COMMON/C/XVW,YVW,ZVW,IDX,XAW,YAW,ZAW LOAD 110
COMMON/D/JSTAT,JYEAR,JMONTH,JHOUR,LMONTH,LDAY LOAD 111
COMMON/E/IWS,KA,LA,IDP,IATM,ITCA,ITOC LOAD 112
COMMON/F/KOUNT,KTBAD,KTBADA,KTBADB,KTBADD,LOCIDA,LUNFWT, LOAD 113
*KTBBLK LOAD 114
***** LOAD 115
***** LOAD 116
      FORMAT STATEMENTS LOAD 117
***** LOAD 118
***** LOAD 119
11 FORMAT(24F3.2) LOAD 120
12 FORMAT(I4,I1,2I4,I3,F6.4,2F5.2,F4.3) LOAD 121
13 FORMAT(7F10.5) LOAD 122
14 FORMAT(35A1) LOAD 123
16 FORMAT(1H1) LOAD 124
17 FORMAT(/////////) LOAD 125
18 FORMAT(I3,2F10.0,F4.0,F9.2) LOAD 126
21 FORMAT(25X,80(1H*)) LOAD 127
22 FORMAT(25X,1H*,78X,1H*) LOAD 128
23 FORMAT(3X,1H*,2X,I2,9H.HOUR OF ,I2,1X,A4,107X,1H*) LOAD 129
24 FORMAT(7I5) LOAD 130
25 FORMAT(15A1) LOAD 131
26 FORMAT(F10.0) LOAD 132
27 FORMAT(25X,1H*,52H - U. S. WEATHER BUREAU 1440 WEATHER TAPE OF STATION, I6,9H IS USED.,11X,1H*) LOAD 133
28 FORMAT(25X,1H*,51H - THE FIRST DATA OBTAINED FROM WEATHER TAPE IS 1FOR, I2,11HTH HOUR OF ,2(A2+1H/),I4,5H. *) LOAD 134
29 FORMAT(1H0,45X,46HEND OF FILE SENSED ON LAST BUFFER IN OPERATION) LOAD 135
30 FORMAT(25X,1H*,30H - THE LENGTH OF THIS STUDY IS, I4,6H DAYS.,38X,1H*) LOAD 136
31 FORMAT(3X,1H*,32X,63HIN THIS BUILDING NO COOLING IS REQUIRED FOR TLOAD 137
31 FORMAT(3X,1H*,32X,63HIN THIS BUILDING NO COOLING IS REQUIRED FOR TLOAD 138
31 FORMAT(3X,1H*,32X,63HIN THIS BUILDING NO COOLING IS REQUIRED FOR TLOAD 139

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1HE PERIOD OF STUDY,32X,1H*) LOAD 141
 32 FORMAT(3X,1H*,32X,63HIN THIS BUILDING NO HEATING IS REQUIRED FOR TLOAD 142
 1HE PERIOD OF STUDY,32X,1H*) LOAD 143
 35 FORMAT(3X,1H*,18X,I4,14X,F4.0,7X,F8.6,6X,F5.2,20X,F10.0,31X,1H*) LOAD 144
 41 FORMAT(25X,1H*,23X,33HANALYSIS OF ENERGY UTILIZATION OF,22X,1H*) LOAD 145
 112 FORMAT(36X,215,3F5.0,F10.6,2F8.2,F10.6) LOAD 146
 118 FORMAT(36X,I3,4F12.2) LOAD 147
 231 FORMAT(3X,1H*,12X,I2,9H.HOUR OF ,I2,1X,A4,97X,1H*) LOAD 148
 3000 FORMAT(25X,1H*,28X,22HIN THE FOLLOWING PAGES,28X,1H*) LOAD 149
 3001 FORMAT(25X,1H*,18X,43HTHE FIRST LINE OF EACH PRINTED BLOCKS GIVES,LOAD 150
 1 17X,1H*) LOAD 151
 3002 FORMAT(25X,1H*,3X,4HTIME,11X,49H- HOURS, STANDARD TIME FROM FIRST LOAD 152
 1HOUR OF JANUARY,11X,1H*) LOAD 153
 3003 FORMAT(25X,1H*,3X,9HSUN INDEX,6X,57H- IF EQUAL TO ONE SUN IS DOWN,LOAD 154
 1 IF EQUAL TO ZERO SUN IS UP,3X,1H*) LOAD 155
 3004 FORMAT(25X,1H*,3X,35HDRY-BULB TEMP. - DEGREES FAHRENHEIT,40X,1H*) LOAD 156
 3020 FORMAT(25X,1H*,3X,35HWET-BULB TEMP. - DEGREES FAHRENHEIT,40X,1H*) LOAD 157
 3005 FORMAT(25X,1H*,3X,22HWIND VELOCITY - KNOTS,53X,1H*) LOAD 158
 3006 FORMAT(25X,1H*,3X,41HHUMIDITY RATIO - LBS WATER PER LB DRY-AIR,34XLOAD 159
 1,1H*) LOAD 160
 3007 FORMAT(25X,1H*,3X,8HPRESSURE,7X,19H- INCHES OF MERCURY,41X,1H*) LOAD 161
 3008 FORMAT(25X,1H*,3X,8BHENTHALPY,7X,20H- BTU PER LB DRY-AIR,40X,1H*) LOAD 162
 3009 FORMAT(25X,1H*,3X,7HDENSITY,8X,28H- LBS DRY-AIR PER CUBIC FOOT,32XLOAD 163
 1,1H*) LOAD 164
 3010 FORMAT(25X,1H*,15X,48HTHE FOLLOWING LINES OF EACH PRINTED BLOCKS GLOAD 165
 1IVES,15X,1H*) LOAD 166
 3011 FORMAT(25X,1H*,3X,12HSPACE NUMBER,63X,1H*) LOAD 167
 3012 FORMAT(25X,1H*,3X,34HSPACE SENSIBLE LOAD - BTU PER HOUR,41X,1H*) LOAD 168
 3013 FORMAT(25X,1H*,3X,34HSPACE LATENT LOAD - BTU PER HOUR,41X,1H*) LOAD 169
 3014 FORMAT(25X,1H*,3X,49HPLENUM RETURN AIR LIGHTING LOAD - BTU PER LOAD 170
 1HOUR,26X,1H*) LOAD 171
 3015 FORMAT(25X,1H*,3X,46HSPACE LIGHTING AND EQUIPMENT POWER - KILOWATTLOAD 172
 1S,29X,1H*) LOAD 173
 3016 FORMAT(25X,1H*,12X,55HNOTE - THE LOADS EXCLUDES OUTSIDE VENTILATIONLOAD 174
 1N AIR LOADS,11X,1H*) LOAD 175
 3500 FORMAT(3X,129(1H*)) LOAD 176
 3501 FORMAT(3X,1H*,127X,1H*) LOAD 177
 3502 FORMAT(3X,1H*,40X,47HBUILDING THERMAL AND INFILTRATION LOADS SUMMALOAD 178
 1RY,40X,1H*) LOAD 179
 3503 FORMAT(3X,1H*,127H COOLING DESIGN HOUR TEMPERATURE HUM. RAT. LOAD 180
 1 PRESSURE PLENUM LOAD BUILDING THERMAL AND INFILTRATION LOADS LOAD 181
 2 TOTAL LOAD ,1H*) LOAD 182
 3504 FORMAT(3X,1H*,25X,7HDEGREES,5X,9HLBS WATER,4X,6HINCHES,8X,3HBTU,21LOAD 183
 1X,13HBTU PER HOUR,19X,3HBTU,4X,1H*) LOAD 184
 3505 FORMAT(3X,1H*,24X,10HFAHRENHEIT,6X,3HPER,9X,2HOF,10X,3HPER,13X,8HSLOAD 185
 1SENSIBLE,15X,6HLATENT,11X,3HPER,4X,1H*) LOAD 186
 3506 FORMAT(3X,1H*,25X,2HDB,4X,2HWB,4X,10HLB DRY-AIR,3X,7HMERCURY,7X,4HLOAD 187
 1HOUR,5X,24HRAD.+TRAN.+INTER. INF. ,3X,6HPEOPLE,3X,4HINF.,7X,4HLOAD 188
 2R,3X,1H*) LOAD 189
 3507 FORMAT(3X,1H*,78X,7H+PEOPLE,42X,1H*) LOAD 190
 3508 FORMAT(3X,1H*,8X,I4,11X,F4.0,2X,F4.0,4X,F8.6,6X,F5.2,4X,F8.0,7X,
 1F10.0,2X,F9.0,2X,F8.0,1X,F6.0,2X,F11.0,1X,1H*) LOAD 191
 LOAD 192
 3509 FORMAT(3X,1H*,11X,106HHEATING DESIGN HOUR TEMPERATURE HUM. RATLOAD 193
 1. PRESSURE BUILDING THERMAL AND INFILTRATION SENSIBLE LOAD,10XLOAD 194
 2, 1H*) LOAD 195
 3510 FORMAT(3X,1H*,35X,7HDEGREES,5X,9HLBS WATER,4X,6HINCHES,26X,3HBTU,
 132X,1H*) LOAD 196
 LOAD 197

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3511 FORMAT(3X,1H*,34X,10HFARENHEIT,6X,3HPER,9X,2HOF,28X,3HPER,32X,1H*LOAD 198
1) LOAD 199
3512 FORMAT(3X,1H*,38X,2HDB,7X,10HLB DRY-AIR,3X,7HMERCURY,25X,4HHOUR,1 31X,1H*) LOAD 200
1) LOAD 201
5511 FORMAT(25X,1H*,2X,12HPROJECT NO -,1X,15A1,48X,1H*) LOAD 202
5512 FORMAT(25X,1H*,2X,12HENGINEER -,1X,35A1,28X,1H*) LOAD 203
5513 FORMAT(25X,1H*,2X,12HDATE -,1X,15A1,48X,1H*) LOAD 204
5514 FORMAT(25X,1H*,35X,8HFACILITY,35X,1H*) LOAD 205
6000 FORMAT(25X,1H*,45H - THE INITIAL OUTSIDE SURFACE TEMPERATURE IS,I3LOAD 206
1,20H DEGREES FARENHEIT.,10X,1H*) LOAD 207
6001 FORMAT(25X,1H*,33X,11HIN THIS RUN,34X,1H*) LOAD 208
C **** LOAD 209
C **** LOAD 210
KARD=5 LOAD 211
KAGIT=6 LOAD 212
KOUNT=6 LOAD 213
KTBLK=0 LOAD 214
LOCIDA=1 LOAD 215
LUNFWT=1 LOAD 216
IWSP=0 LOAD 217
KAP=0 LOAD 218
LAP=0 LOAD 219
IDPP=0 LOAD 220
IATMP=0 LOAD 221
ITCAP=0 LOAD 222
REWIND LUNFWT LOAD 223
C **** LOAD 224
C **** LOAD 225
C BUILDING IDENTIFICATION LOAD 226
C **** LOAD 227
C **** LOAD 228
C ++++++ LOAD 229
C READING DATA LOAD 230
READ(KARD,14)IDEN1 LOAD 231
C ++++++ LOAD 232
C ++++++ LOAD 233
C READING DATA LOAD 234
READ(KARD,14)IDEN2 LOAD 235
C ++++++ LOAD 236
C ++++++ LOAD 237
C READING DATA LOAD 238
READ(KARD,14)IDEN3 LOAD 239
C ++++++ LOAD 240
C ++++++ LOAD 241
C READING DATA LOAD 242
READ(KARD,14)IDEN4 LOAD 243
C ++++++ LOAD 244
C ++++++ LOAD 245
C READING DATA LOAD 246
READ(KARD,14)IDEN5 LOAD 247
C ++++++ LOAD 248
C **** LOAD 249
C **** LOAD 250
C BASIC DATA LOAD 251
C **** LOAD 252
C **** LOAD 253
C ++++++ LOAD 254

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C ++++++READING DATA+++++LOAD 312
C          READ(KARD,11)((SCHEQ(I,J,K),K=1,24),J=1,9)LOAD 313
C ++++++LOAD 314
C 7771 CONTINUELOAD 315
C          WRITE(KAGIT,16)LOAD 316
C          WRITE(KAGIT,17)LOAD 317
C          WRITE(KAGIT,21)LOAD 318
C          WRITE(KAGIT,22)LOAD 319
C          WRITE(KAGIT,22)LOAD 320
C          WRITE(KAGIT,22)LOAD 321
C          WRITE(KAGIT,22)LOAD 322
C          WRITE(KAGIT,41)LOAD 323
C          WRITE(KAGIT,22)LOAD 324
C          WRITE(KAGIT,22)LOAD 325
C          JOUNT=1LOAD 326
C          IF(JOUNT.NE.1)GO TO 5500LOAD 327
C          DO 9876 I=1,35LOAD 328
C          IDEN(I)=IDEN1(I)LOAD 329
C 9876 CONTINUELOAD 330
C          GO TO 5510LOAD 331
C 5500 DO 9875 I=1,35LOAD 332
C          IDEN(I)=IDEN2(I)LOAD 333
C 9875 CONTINUELOAD 334
C ****CALLING A SUBROUTINE****LOAD 335
C 5510 CALL CENTER(IDEN)LOAD 336
C ****LOAD 337
C          JOUNT=JOUNT+1LOAD 338
C          IF(JOUNT.NE.2)GO TO 5555LOAD 339
C          WRITE(KAGIT,5514)LOAD 340
C          WRITE(KAGIT,22)LOAD 341
C          WRITE(KAGIT,22)LOAD 342
C          WRITE(KAGIT,22)LOAD 343
C 5555 IF(JOUNT.NE.3)GO TO 5500LOAD 344
C          WRITE(KAGIT,5512)IDEN3LOAD 345
C          WRITE(2,14)IDEN3LOAD 346
C          WRITE(KAGIT,5511)IDEN4LOAD 347
C          WRITE(2,25)IDEN4LOAD 348
C          WRITE(KAGIT,5513)IDEN5LOAD 349
C          WRITE(2,25)IDEN5LOAD 350
C          WRITE(KAGIT,22)LOAD 351
C          WRITE(KAGIT,22)LOAD 352
C          WRITE(KAGIT,21)LOAD 353
C ****CALLING A FUNCTION****LOAD 354
C  LEAP=LEEP(JAHR)LOAD 355
C ****LOAD 356
C  IF(LENGTH.EQ.365.AND.LEAP.EQ.1)LENGTH=LENGTH+1LOAD 357
C  JYEAR=JAHR-1900LOAD 358
C ****LOAD 359
C ****CALLING A SUBROUTINE****LOAD 360
C  CALL WEATHRLOAD 361
C ****LOAD 362
C  WRITE(KAGIT,16)LOAD 363
C  WRITE(KAGIT,17)LOAD 364
C  WRITE(KAGIT,21)LOAD 365
C  WRITE(KAGIT,22)LOAD 366
C  WRITE(KAGIT,22)LOAD 367
C  WRITE(KAGIT,22)LOAD 368

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      WRITE(KAGIT,6001)          LOAD 369
      WRITE(KAGIT,22)            LOAD 370
      WRITE(KAGIT,22)            LOAD 371
      WRITE(KAGIT,27) JSTAT     LOAD 372
      WRITE(KAGIT,22)            LOAD 373
      WRITE(KAGIT,22)            LOAD 374
      WRITE(KAGIT,28) JHOUR,LMONTH,LDAY,JAHR   LOAD 375
      WRITE(KAGIT,22)            LOAD 376
      WRITE(KAGIT,22)            LOAD 377
      WRITE(KAGIT,30) LENGTH    LOAD 378
      WRITE(KAGIT,22)            LOAD 379
      WRITE(KAGIT,22)            LOAD 380
      IF(KTBAD.EQ.1) GO TO 1930   LOAD 381
      IF(KTBADA.EQ.1) IWS=IWSP   LOAD 382
      IF(KTBADB.EQ.1) GO TO 930   LOAD 383
  920 IF(KTBADC.EQ.1) IATM=IATMP   LOAD 384
      IF(KTBADD.EQ.1) ITCA=ITCAP   LOAD 385
      GO TO 940                 LOAD 386
  930 KA=KAP                  LOAD 387
      LA=LAP                  LOAD 388
      IDP=IDPP                LOAD 389
      GO TO 920                 LOAD 390
  940 IWSP=IWS                LOAD 391
      KAP=KA                  LOAD 392
      LAP=LA                  LOAD 393
      IDPP=IDP                LOAD 394
      IATMP=IATM               LOAD 395
      ITCA=ITCA                LOAD 396
      IF(KTRADB-1)181,182,182   LOAD 397
  181 TDB=KA+460.0             LOAD 398
      GO TO 183                 LOAD 399
  182 TDB=TDB+460.0             LOAD 400
  183 ITDB=TDB-460.0             LOAD 401
      WRITE(KAGIT,6000) ITDB     LOAD 402
      WRITE(KAGIT,22)            LOAD 403
      WRITE(KAGIT,22)            LOAD 404
      WRITE(KAGIT,21)            LOAD 405
      LENGTH=24*LENGTH          LOAD 406
      NOHIEM(2)=NOHIEM(2)+24*LEAP   LOAD 407
      STALAT=0.01745*STALAT       LOAD 408
      STALON=0.01745*STALON       LOAD 409
      BAZ=0.01745*BAZ            LOAD 410
      SINLAT=SIN(STALAT)         LOAD 411
      COSLAT=COS(STALAT)         LOAD 412
      TANLAT=SINLAT/COSLAT       LOAD 413
      SINBAZ=SIN(BAZ)            LOAD 414
      COSBAZ=COS(BAZ)            LOAD 415
      JSTART=1                  LOAD 416
      IF(JMONTH.EQ.1) GO TO 220   LOAD 417
      JMONTM1=JMONTM1            LOAD 418
      DO 210 JM=1,JMONTM1        LOAD 419
      JSTART=JSTART+NOHIEM(JM)    LOAD 420
  210 CONTINUE                 LOAD 421
  220 JEND=JSTART+LENGTH-1     LOAD 422
      IDOY=(JEND-1)/24.0+1.001   LOAD 423
      *****CALLING A SUBROUTINE***** LOAD 424
      CALLING A SUBROUTINE        LOAD 425

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CALL DAYMO(LEAP, IDOY, IDAY, MONEND) LOAD 426
***** LOAD 427
***** LOAD 428
***** LOAD 429
C COMMON SHADING POLYGONS LOAD 430
C ***** LOAD 431
C ***** LOAD 432
C ++++++ LOAD 433
C ++++++ LOAD 434
C READING DATA LOAD 435
230 READ(KARD,13)FNSP LOAD 436
C ++++++ LOAD 437
NSP=FNSP LOAD 438
IF(NSP.EQ.0) GO TO 280 LOAD 439
DO 270 I=1,NSP LOAD 440
C ++++++ LOAD 441
C READING DATA LOAD 442
READ(KARD,13)FNVSP,PSP(I) LOAD 443
C ++++++ LOAD 444
NVSP(I)=FNVSP LOAD 445
IF(NVSP(I).NE.1) GO TO 250 LOAD 446
C ++++++ LOAD 447
C READING DATA LOAD 448
READ(KARD,13)XCORN,YCORN,ZCORN,H,W,A,B LOAD 449
C ++++++ LOAD 450
A=0.01745*A LOAD 451
B=0.01745*B LOAD 452
***** LOAD 453
C CALLING A SUBROUTINE LOAD 454
CALL RECTAN(XCORN,YCORN,ZCORN,H,W,A,B,XX,YY,ZZ) LOAD 455
C ***** LOAD 456
DO 240 J=1,4 LOAD 457
XSP(I,J)=XX(J) LOAD 458
YSP(I,J)=YY(J) LOAD 459
ZSP(I,J)=ZZ(J) LOAD 460
240 CONTINUE LOAD 461
NVSP(I)=4 LOAD 462
GO TO 270 LOAD 463
250 JLIM=NVSP(I) LOAD 464
DO 260 J=1,JLIM LOAD 465
C ++++++ LOAD 466
C READING DATA LOAD 467
READ(KARD,13)XSP(I,J),YSP(I,J),ZSP(I,J) LOAD 468
C ++++++ LOAD 469
260 CONTINUE LOAD 470
270 CONTINUE LOAD 471
C ***** LOAD 472
C ***** LOAD 473
C PROPERTIES OF WALLS AND ROOFS LOAD 474
C ***** LOAD 475
C ***** LOAD 476
C ++++++ LOAD 477
C READING DATA LOAD 478
280 READ(KARD,13)FMRF LOAD 479
C ++++++ LOAD 480
NRF=FMRF LOAD 481
IF(NRF.EQ.0) GO TO 450 LOAD 482

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DO 320 I=1,NRF                                LOAD 483
C *****CALLING A SUBROUTINE*****LOAD 484
C CALL RESFAC(R1,RFX,RFY)                      LOAD 485
C *****LOAD 486
C RATOS(I)=R1                                  LOAD 487
C DO 290 K=2,50                                 LOAD 488
C IF((ABS (RFX(K)/RFX(K-1)*R1)-1.0).LE.0.015.AND.ABS (RFY(K)/(RFY
C *(K-1)*R1)-1.0).LE.0.015)GO TO 300          LOAD 490
290 CONTINUE                                     LOAD 491
300 IR(I)=K                                      LOAD 492
IRIM1=K-1                                       LOAD 493
UXI=0.0                                         LOAD 494
UYI=0.0                                         LOAD 495
DO 310 J=1,IRIM1                                LOAD 496
RX(I,J)=RFX(J)                                  LOAD 497
RY(I,J)=RFY(J)                                  LOAD 498
UXI=UXI+RFX(J)                                 LOAD 499
UYI=UYI+RFY(J)                                 LOAD 500
310 CONTINUE                                     LOAD 501
RX(I,K)=RFX(K)                                  LOAD 502
RY(I,K)=RFY(K)                                  LOAD 503
TDROP=TDB-535.0                                 LOAD 504
SXRI(I)=UXI*TDROP                               LOAD 505
SYRI(I)=UYI*TDROP                               LOAD 506
SXN(I)=(UXI+RFX(K)/(1.0-R1))*TDROP            LOAD 507
SYN(I)=(UYI+RFY(K)/(1.0-R1))*TDROP            LOAD 508
320 CONTINUE                                     LOAD 509
C *****LOAD 510
C *****LOAD 511
C *****LOAD 512
C *****LOAD 513
C *****LOAD 514
C *****LOAD 515
C *****LOAD 516
C *****LOAD 517
C *****LOAD 518
C *****LOAD 519
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C *****LOAD 536
C *****LOAD 537
C *****LOAD 538
C *****LOAD 539

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SUMN(I)=SXN(IRFI) LOAD 540
QR(I)=SYR(IRFI) LOAD 541
QN(I)=SYN(IRFI) LOAD 542
DO 330 J=1,50 LOAD 543
TD(I,J)=TDB LOAD 544
330 CONTINUE LOAD 545
IF(NVD(I).NE.1)GO TO 350 LOAD 546
+++++READING DATA+++++LOAD 547
C READ(KARD,13)XCORN,YCORN,ZCORN,H,W,A,B LOAD 548
C AD(I)=H*W LOAD 549
C A=0.01745*A LOAD 550
C WAD(I)=A LOAD 551
C R=0.01745*B LOAD 552
C WTD(I)=R LOAD 553
C *****LOAD 554
C *****LOAD 555
C *****LOAD 556
C CALLING A SUBROUTINE LOAD 557
C CALL RECTAN(XCORN,YCORN,ZCORN,H,W,A,B,XX,YY,ZZ) LOAD 558
C *****LOAD 559
DO 340 J=1,4 LOAD 560
XVD(I,J)=XX(J) LOAD 561
YVD(I,J)=YY(J) LOAD 562
ZVD(I,J)=ZZ(J) LOAD 563
340 CONTINUE LOAD 564
NVD(I)=4 LOAD 565
GO TO 370 LOAD 566
350 JLIM=NVD(I) LOAD 567
DO 360 J=1,JLIM LOAD 568
C ++++++READING DATA+++++LOAD 569
C READ(KARD,13)XVD(I,J),YVD(I,J),ZVD(I,J) LOAD 570
C ++++++LOAD 571
C XX(J)=XVD(I,J) LOAD 572
C YY(J)=YVD(I,J) LOAD 573
C ZZ(J)=ZVD(I,J) LOAD 574
360 CONTINUE LOAD 575
C *****LOAD 576
C CALLING A SUBROUTINE LOAD 577
C CALL APOL(JLIM,XX,YY,ZZ,AD(I),WTD(I),WAD(I)) LOAD 578
C *****LOAD 579
C *****LOAD 580
370 JLIM=NDD(I) LOAD 581
IF(JLIM.EQ.0) GO TO 390 LOAD 582
IF(JLIM.NE.NSP)GO TO 375 LOAD 583
DO 372 J=1,NSP LOAD 584
IDD(I,J)=J LOAD 585
372 CONTINUE LOAD 586
GO TO 390 LOAD 587
C ++++++READING DATA+++++LOAD 588
C READ(KARD,13)(FIDD(J),J=1,JLIM) LOAD 589
C ++++++LOAD 590
DO 380 J=1,JLIM LOAD 591
IDD(I,J)=FIDD(J) LOAD 592
380 CONTINUE LOAD 593
390 JLIM=NAD(I) LOAD 594
IF(JLIM.EQ.0) GO TO 440 LOAD 595

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C **** LOAD 654
C **** LOAD 655
C **** LOAD 656
C **** LOAD 657
C      READING DATA
450 READ(KARD,13)FNQB
C **** LOAD 658
C      FNQB=FNQB
C **** LOAD 659
C      IF(NQB.EQ.0) GO TO 570
C **** LOAD 660
C      DO 560 I=1,NQB
C **** LOAD 661
C      READING DATA
C      READ(KARD,13)ABQ(I),ROGQ(I),UQI
C **** LOAD 662
C      UQ(I)=UQI/(1.0+0.5555*UQI)
C **** LOAD 663
C      READING DATA
C      READ(KARD,13)FNVQ,FNXQ,FNYQ,FNDQ,FNAQ,FISQ
C **** LOAD 664
C **** LOAD 665
C **** LOAD 666
C **** LOAD 667
C **** LOAD 668
C **** LOAD 669
C      READING DATA
C      READ(KARD,13)FNVQ,FNXQ,FNYQ,FNDQ,FNAQ,FISQ
C **** LOAD 670
C **** LOAD 671
C      NVQ(I)=FNVQ
C **** LOAD 672
C      NXQ(I)=FNXQ
C **** LOAD 673
C      NYQ(I)=FNYQ
C **** LOAD 674
C      NDQ(I)=FNDQ
C **** LOAD 675
C      NAQ(I)=FNAQ
C **** LOAD 676
C      ISQ(I)=FISQ
C **** LOAD 677
C      IF(NVQ(I).NE.1)GO TO 470
C **** LOAD 678
C **** LOAD 679
C      READING DATA
C      READ(KARD,13)XCORN,YCORN,ZCORN,H,W,A,B
C **** LOAD 680
C **** LOAD 681
C **** LOAD 682
C      AQ(I)=H*W
C **** LOAD 683
C      A=0.01745*A
C **** LOAD 684
C      WAQ(I)=A
C **** LOAD 685
C      B=0.01745*B
C **** LOAD 686
C      WTQ(I)=B
C **** LOAD 687
C **** LOAD 688
C      CALLING A SUBROUTINE
C      CALL RECTAN(XCORN,YCORN,ZCORN,H,W,A,B,XX,YY,ZZ)
C **** LOAD 689
C **** LOAD 690
C **** LOAD 691
C      DO 460 J=1,4
C      XVQ(I,J)=XX(J)
C **** LOAD 692
C      YYQ(I,J)=YY(J)
C **** LOAD 693
C      ZVQ(I,J)=ZZ(J)
C **** LOAD 694
C **** LOAD 695
460 CONTINUE
C **** LOAD 696
C      NVQ(I)=4
C **** LOAD 697
C      GO TO 490
C **** LOAD 698
470 JLIM=NVQ(I)
C **** LOAD 699
C      DO 480 J=1,JLIM
C **** LOAD 700
C      READING DATA
C      READ(KARD,13)XVQ(I,J),YYQ(I,J),ZVQ(I,J)
C **** LOAD 701
C **** LOAD 702
C      XX(J)=XVQ(I,J)
C **** LOAD 703
C      YY(J)=YYQ(I,J)
C **** LOAD 704
C      ZZ(J)=ZVQ(I,J)
C **** LOAD 705
C **** LOAD 706
C **** LOAD 707
480 CONTINUE
C **** LOAD 708
C **** LOAD 709
C      CALLING A SUBROUTINE
C **** LOAD 710

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CALL APOL(JLIM,XX,YY,ZZ,AQ(I),WTQ(I),WAQ(I)) LOAD 711
C ****
490 JLIM=NDQ(I) LOAD 712
    IF(JLIM.EQ.0) GO TO 510 LOAD 713
    IF(JLIM.NE.NSP) GO TO 495 LOAD 714
    DO 492 J=1,NSP LOAD 715
        IDQ(I,J)=J LOAD 716
492 CONTINUE LOAD 717
    GO TO 510 LOAD 718
C ++++++ READING DATA LOAD 719
C
495 READ(KARD,13)(FIDQ(J),J=1,JLIM) LOAD 720
C ++++++ LOAD 721
C DO 500 J=1,JLIM LOAD 722
    IDQ(I,J)=FIDQ(J) LOAD 723
500 CONTINUE LOAD 724
510 JLIM=NAQ(I) LOAD 725
    IF(JLIM.EQ.0) GO TO 560 LOAD 726
    DO 550 J=1,JLIM LOAD 727
C **** LOAD 728
C **** LOAD 729
C **** SHADING POLYGONS ADDED TO LOAD 730
C     QUICK HEAT TRANSFER SURFACES LOAD 731
C **** LOAD 732
C **** LOAD 733
C **** LOAD 734
C **** LOAD 735
C ++++++ LOAD 736
C **** LOAD 737
C     READING DATA LOAD 738
C     READ(KARD,13)FNVAQ,PAQ(I,J) LOAD 739
C ++++++ LOAD 740
NVAQ(I,J)=FNVAQ LOAD 741
    IF(NVAQ(I,J).NE.1) GO TO 530 LOAD 742
C ++++++ LOAD 743
C     READING DATA LOAD 744
C     READ(KARD,13)XCORN,YCORN,ZCORN,H,W,A,B LOAD 745
C ++++++ LOAD 746
A=0.01745*A LOAD 747
B=0.01745*B LOAD 748
C **** CALLING A SUBROUTINE LOAD 749
C     CALL RECTAN(XCORN,YCORN,ZCORN,H,W,A,B,XX,YY,ZZ) LOAD 750
C **** LOAD 751
DO 520 K=1,4 LOAD 752
XAQ(I,J,K)=XX(K) LOAD 753
YAQ(I,J,K)=YY(K) LOAD 754
ZAQ(I,J,K)=ZZ(K) LOAD 755
520 CONTINUE LOAD 756
NVAQ(I,J)=4 LOAD 757
GO TO 550 LOAD 758
530 KLIM=NVAQ(I,J) LOAD 759
DO 540 K=1,KLIM LOAD 760
C ++++++ LOAD 761
C     READING DATA LOAD 762
C     READ(KARD,13)XAQ(I,J,K),YAQ(I,J,K),ZAQ(I,J,K) LOAD 763
C ++++++ LOAD 764
540 CONTINUE LOAD 765
550 CONTINUE LOAD 766
560 CONTINUE LOAD 767

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C   ++++++READING DATA LOAD 768
C   READ(KARD,13)FLOOKQ LOAD 769
C   ++++++LOAD 770
C   NLOOKQ=FLOOKQ LOAD 771
C   IF(NLOOKQ.EQ.0)GO TO 570 LOAD 772
C   DO 6890 I=1,NLOOKQ LOAD 773
C   ++++++LOAD 774
C   READING DATA LOAD 775
C   READ(KARD,13)FMLOKQ,FILOKQ,FJLOKQ LOAD 776
C   ++++++LOAD 777
C   MLOOKQ(I)=FMLOKQ LOAD 778
C   ILOOKQ(I)=FILOKQ LOAD 779
C   JLOOKQ(I)=FJLOKQ LOAD 780
C   8890 CONTINUE LOAD 781
C   **** LOAD 782
C   **** LOAD 783
C   **** LOAD 784
C   **** LOAD 785
C   **** LOAD 786
C   **** LOAD 787
C   ++++++LOAD 788
C   READING DATA LOAD 789
C   570 READ(KARD,13)FNWB LOAD 790
C   ++++++LOAD 791
C   NWB=FNWB LOAD 792
C   IF(NWB.EQ.0) GO TO 690 LOAD 793
C   DO 680 I=1,NWB LOAD 794
C   ++++++LOAD 795
C   READING DATA LOAD 796
C   READ(KARD,13)SHACO(I),FFWS(I),FFWG(I),ROGW(I) LOAD 797
C   ++++++LOAD 798
C   ++++++LOAD 799
C   READING DATA LOAD 800
C   READ(KARD,13)FNWV,FNXW,FNYW,FNDW,FNAW,FNPW,FGLASW LOAD 801
C   ++++++LOAD 802
C   NVW(I)=FNWV LOAD 803
C   NXW(I)=FNXW LOAD 804
C   NYW(I)=FNYW LOAD 805
C   NDW(I)=FNDW LOAD 806
C   NAW(I)=FNAW LOAD 807
C   NPW(I)=FNPW LOAD 808
C   IGLASW(I)=FGLASW LOAD 809
C   IF(NVW(I).NE.1)GO TO 590 LOAD 810
C   ++++++LOAD 811
C   READING DATA LOAD 812
C   READ(KARD,13)XCORN,YCORN,ZCORN,H,W,A,B LOAD 813
C   ++++++LOAD 814
C   AW(I)=H*W LOAD 815
C   A=0.01745*A LOAD 816
C   WAH(I)=A LOAD 817
C   B=0.01745*B LOAD 818
C   WTW(I)=B LOAD 819
C   **** LOAD 820
C   CALL RECTAN(XCORN,YCORN,ZCORN,H,W,A,B,XX,YY,ZZ) LOAD 821
C   **** LOAD 822
C   DO 580 J=1,4 LOAD 823
C   ++++++LOAD 824

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C ***** LOAD 882
DO 640 K=1,4          LOAD 883
XAW(I,J,K)=XX(K)    LOAD 884
YAW(I,J,K)=YY(K)    LOAD 885
ZAW(I,J,K)=ZZ(K)    LOAD 886
640 CONTINUE          LOAD 887
NVAW(I,J)=4          LOAD 888
GO TO 670            LOAD 889
650 KLIM=NVAW(I,J)   LOAD 890
DO 660 K=1,KLIM      LOAD 891
C ++++++ LOAD 892
C      READING DATA
READ(KARD,13)XAW(I,J,K),YAW(I,J,K),ZAW(I,J,K) LOAD 893
C ++++++ LOAD 894
C ++++++ LOAD 895
660 CONTINUE          LOAD 896
670 CONTINUE          LOAD 897
680 CONTINUE          LOAD 898
C ++++++ LOAD 899
C      READING DATA
READ(KARD,13)FLOOKW   LOAD 900
C ++++++ LOAD 901
C ++++++ LOAD 902
NLOOKW=FLOOKW         LOAD 903
IF(NLOOKW.EQ.0)GO TO 690
DO 8892 I=1,NLOOKW   LOAD 904
C ++++++ LOAD 905
C      READING DATA
READ(KARD,13)FMLOKW,FILOKW,FJLOKW   LOAD 906
C ++++++ LOAD 907
C ++++++ LOAD 908
MLOOKW(I)=FMLOKW    LOAD 909
ILOOKW(I)=FILOKW    LOAD 910
JLOOKW(I)=FJLOKW    LOAD 911
LOAD 912
8892 CONTINUE          LOAD 913
C ***** LOAD 914
C ***** LOAD 915
C      INTERNAL HEAT TRANSFER SURFACES
LOAD 916
C ***** LOAD 917
C ***** LOAD 918
C ++++++ LOAD 919
C      READING DATA
LOAD 920
690 READ(KARD,13)FNIHTS   LOAD 921
C ++++++ LOAD 922
C      NIHTSB=FNIHTS
LOAD 923
IF(NIHTSB.EQ.0) GO TO 710
DO 700 J=1,NIHTSB   LOAD 924
C ++++++ LOAD 925
C      READING DATA
LOAD 926
READ(KARD,13)AIHTS,FIHTS(J),SPC1,SPC2   LOAD 927
C ++++++ LOAD 928
ISPC1(J)=SPC1        LOAD 929
ISPC2(J)=SPC2        LOAD 930
FIHTS(J)=AIHTS*FIHTS(J)   LOAD 931
LOAD 932
700 CONTINUE          LOAD 933
C ***** LOAD 934
C ***** LOAD 935
C      UNDERGROUND WALLS
LOAD 936
C ***** LOAD 937
C ***** LOAD 938

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C      ++++++READING DATA+++++LOAD 939
C      READING DATA          LOAD 940
C      READ(KARD,13)FNUWB    LOAD 941
C      NUWB=FNUWB           LOAD 942
C      IF(NUWB.EQ.0) GO TO 730 LOAD 943
C      DO 720 I=1,NUWB       LOAD 944
C      ++++++READING DATA+++++LOAD 945
C      READING DATA          LOAD 946
C      READ(KARD,13)AUW,FUW(I) LOAD 947
C      ++++++LOAD 948
C      FUW(I)=AUW*FUW(I)   LOAD 949
C      ++++++LOAD 950
C      720 CONTINUE          LOAD 951
C      ****UNDERGROUND FLOORS****LOAD 952
C      ****LOAD 953
C      UNDERGROUND FLOORS    LOAD 954
C      ****LOAD 955
C      ****LOAD 956
C      ++++++LOAD 957
C      READING DATA          LOAD 958
C      730 READ(KARD,13)FNUFB  LOAD 959
C      ++++++LOAD 960
C      NUFB=FNUFB            LOAD 961
C      IF(NUFB.EQ.0) GO TO 750 LOAD 962
C      DO 740 I=1,NUFB       LOAD 963
C      ++++++LOAD 964
C      READING DATA          LOAD 965
C      READ(KARD,13)AUF,FUF(I) LOAD 966
C      ++++++LOAD 967
C      FUF(I)=AUF*FUF(I)   LOAD 968
C      740 CONTINUE          LOAD 969
C      750 IF(NUWB+NUFB.EQ.0)GO TO 751 LOAD 970
C      ++++++LOAD 971
C      READING DATA          LOAD 972
C      READ(KARD,13)(TGRND(I),I=JMONTH,MONEND) LOAD 973
C      ++++++LOAD 974
C      ****LOAD 975
C      ****LOAD 976
C      SPACES                LOAD 977
C      ****LOAD 978
C      ****LOAD 979
C      ++++++LOAD 980
C      READING DATA          LOAD 981
C      751 READ(KARD,13)FNS   LOAD 982
C      ++++++LOAD 983
C      NS=FNS                LOAD 984
C      DO 870 I=1,NS         LOAD 985
C      ++++++LOAD 986
C      READING DATA          LOAD 987
C      READ(KARD,13)FND,FNQ,FNW,FINT,FNUV,FNUF LOAD 988
C      ++++++LOAD 989
C      ND(I)=FND             LOAD 990
C      NQ(I)=FNQ             LOAD 991
C      NW(I)=FNW             LOAD 992
C      NIHTS(I)=FINT          LOAD 993
C      NUW(I)=FNUW            LOAD 994
C      NUF(I)=FNUF            LOAD 995

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C   ++++++READING DATA+++++LOAD 996
C   READ(KARD,13)FLORA,VOL(I),WOF(I),TSPAC(I),FOLK,HASSL(I) LOAD 997
C   ++++++LOAD 998
C   ++++++LOAD 999
C   ++++++LOAD1000
C   READING DATA LOAD1001
C   READ(KARD,13)VENT,UINDEX,COLDIT,CODEQ,CODINF LOAD1002
C   ++++++LOAD1003
C   NFOLK(I)=FOLK LOAD1004
C   IVENTL(I)=VENT LOAD1005
C   IWOO(I)=UINDEX LOAD1006
C   INF COD(I)=CODINF LOAD1007
C   IF(COLDIT.GT.0.0)GO TO 6666 LOAD1008
C   ++++++LOAD1009
C   READING DATA LOAD1010
C   READ(KARD,13)WPFSL LOAD1011
C   ++++++LOAD1012
C   PLITE(I)=0.001*WPFSL*FLORA LOAD1013
C   GO TO 6667 LOAD1014
C   ++++++LOAD1015
C   READING DATA LOAD1016
C   6666 READ(KARD,13)PLITE(I) LOAD1017
C   ++++++LOAD1018
C   6667 IF(CODEQ.GT.0.0)GO TO 6668 LOAD1019
C   ++++++LOAD1020
C   READING DATA LOAD1021
C   READ(KARD,13)WPFSE LOAD1022
C   ++++++LOAD1023
C   QEQ(I)=0.001*WPFSE*FLORA LOAD1024
C   GO TO 6669 LOAD1025
C   ++++++LOAD1026
C   READING DATA LOAD1027
C   6668 READ(KARD,13)QEQ(I) LOAD1028
C   ++++++LOAD1029
C   6669 HASSL(I)=0.01*HASSL(I) LOAD1030
C   TSPAC(I)=TSPAC(I)+460.0 LOAD1031
C   *****CALLING A SUBROUTINE*****LOAD1032
C   CALL RMRSS(IVENL(I),WOF(I),RMRIS1(I),RMRISC(I),RATRIS(I),RMRPS1(I) LOAD1034
C   ,RMRPSC(I),RATRPS(I),RMRX1(I),RMRXC(I),RATRX(I),RMRG1(I),RMRGC(I), LOAD1035
C   RATRG(I)). LOAD1036
C   *****LOAD1037
C   JLIM=ND(I) LOAD1038
C   IF(JLIM.EQ.0) GO TO 770 LOAD1039
C   ++++++LOAD1040
C   READING DATA LOAD1041
C   READ(KARD,13)(FID(J),J=1,JLIM) LOAD1042
C   ++++++LOAD1043
C   DO 800 J=1,JLIM LOAD1044
C   ID(I,J)=FID(J) LOAD1045
C   800 CONTINUE LOAD1046
C   770 JLIM=ND(I) LOAD1047
C   IF(JLIM.EQ.0) GO TO 790 LOAD1048
C   ++++++LOAD1049
C   READING DATA LOAD1050
C   READ(KARD,13)(FIQ(J),J=1,JLIM) LOAD1051
C   ++++++LOAD1052

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DO 780 J=1,JLIM LOAD1053
IQ(I,J)=FIQ(J) LOAD1054
780 CONTINUE LOAD1055
790 JLIM=NW(I) LOAD1056
IF(JLIM.EQ.0) GO TO 850 LOAD1057
C ++++++ READ DATA LOAD1058
C READ(KARD,13)(FIW(J),J=1,JLIM') LOAD1059
C ++++++ LOAD1060
C DO 860 J=1,JLIM LOAD1061
Iw(I,J)=FIW(J) LOAD1062
860 CONTINUE LOAD1063
850 JLIM=NIHTS(I) LOAD1064
IF(JLIM.EQ.0) GO TO 810 LOAD1065
C ++++++ READ DATA LOAD1066
C READ(KARD,13)(FFIHTS(J),J=1,JLIM) LOAD1067
C ++++++ LOAD1068
C DO 760 J=1,JLIM LOAD1069
IHTS(I,J)=FFIHTS(J) LOAD1070
760 CONTINUE LOAD1071
810 JLIM=NUW(I) LOAD1072
IF(JLIM.EQ.0) GO TO 830 LOAD1073
C ++++++ READ DATA LOAD1074
C READ(KARD,13)(FIUW(J),J=1,JLIM) LOAD1075
C ++++++ LOAD1076
C DO 820 J=1,JLIM LOAD1077
IUW(I,J)=FIUW(J) LOAD1078
820 CONTINUE LOAD1079
830 JLIM=NUF(I) LOAD1080
IF(JLIM.EQ.0) GO TO 870 LOAD1081
C ++++++ READ DATA LOAD1082
C READ(KARD,13)(FIUF(J),J=1,JLIM) LOAD1083
C ++++++ LOAD1084
C DO 840 J=1,JLIM LOAD1085
IUF(I,J)=FIUF(J) LOAD1086
840 CONTINUE LOAD1087
870 CONTINUE LOAD1088
DO 910 I=1,NS LOAD1089
QIHTS(I)=0.0 LOAD1090
SSHMAX(I)=0.0 LOAD1091
STCMAX(I)=0.0 LOAD1092
STCMIN(I)=1.0E 75 LOAD1093
SSHMIN(I)=1.0E 75 LOAD1094
IF(NIHTSB.EQ.0) GO TO 910 LOAD1095
IF(NIHTS(I).EQ.0) GO TO 910 LOAD1096
JLIM=NIHTS(I) LOAD1097
DO 900 J=1,JLIM LOAD1098
JJ=IHTS(I,J) LOAD1099
IF(ISPC1(JJ)-I) 880, 890, 880 LOAD1100
880 IADJ=ISPC1(JJ) LOAD1101
GO TO 900 LOAD1102
890 IADJ=ISPC2(JJ) LOAD1103
QIHTS(I)=QIHTS(I)+FIHTS(JJ)*(TSPAC(IADJ)-TSPAC(I)) LOAD1104
900 CONTINUE LOAD1105

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910 CONTINUE                                LOAD1110
   JC=0                                     LOAD1111
   IGNOR=0                                    LOAD1112
   BHMAX=0.0                                  LOAD1113
   BCMAX=0.0                                  LOAD1114
   LENGTH=LENGTH/24                           LOAD1115
   WRITE(2,12)JMONTH                         LOAD1116
   WRITE(2,12)LENGTH                          LOAD1117
   WRITE(2,24)(NOHIEM(I),I=1,6)              LOAD1118
   WRITE(2,24)(NOHIEM(I),I=7,12),NS        LOAD1119
   DO 911 I=1,NS                            LOAD1120
   WRITE(2,26)VOL(I)                         LOAD1121
911 CONTINUE                                LOAD1122
C ****                                         **** LOAD1123
C ****                                         **** LOAD1124
C      STARTING HOUR DO LOOP                LOAD1125
DO 1700 IHOUR=JSTART,JEND                  LOAD1126
C ****                                         **** LOAD1127
C ****                                         **** LOAD1128
IF(NDB.EQ.0)GO TO 932                      LOAD1129
DO 931 I=1,NDB                            LOAD1130
ICALD(I)=0                                 LOAD1131
931 CONTINUE                                LOAD1132
932 IF(NQB.EQ.0)GO TO 922                  LOAD1133
DO 921 I=1,NQB                            LOAD1134
ICALQ(I)=0                                 LOAD1135
921 CONTINUE                                LOAD1136
922 IF(NWB.EQ.0)GO TO 942                  LOAD1137
DO 941 I=1,NWB                            LOAD1138
ICALW(I)=0                                 LOAD1139
941 CONTINUE                                LOAD1140
942 IHOURP=IHOUR-JSTART+1                 LOAD1141
BHEATT=0.0                                 LOAD1142
BCOOLT=0.0                                LOAD1143
BPL=0.0                                   LOAD1144
BSL=0.0                                   LOAD1145
BSIL=0.0                                  LOAD1146
BL=0.0                                    LOAD1147
BLIL=0.0                                  LOAD1148
IDOY=(IHOUR-1)/24.0+1.001                 LOAD1149
IF(IDOY.GE.365+LEAP-IXMAS)JC=1           LOAD1150
ITIME=IHOUR-(IDOY-1)*24                   LOAD1151
IF(ITIME-1) 980, 950, 980                 LOAD1152
C ****                                         **** LOAD1153
C      CALLING A SUBROUTINE                LOAD1154
950 CALL SUN1(IDOY,TANLAT,SUNRAS,DEABC)    LOAD1155
C ****                                         **** LOAD1156
C ****                                         **** LOAD1157
C      CALLING A SUBROUTINE                LOAD1158
CALL DAYMO(LEAP,IDOY,IDAY,MONTH)           LOAD1159
C ****                                         **** LOAD1160
J1=1                                      LOAD1161
IGNOR=IGNOR+1                            LOAD1162
IF(MONTH.LT.11.AND.MONTH.GT.4) GO TO 960   LOAD1163
CN=CNW                                    LOAD1164
GO TO 970                                 LOAD1165
960 CN=CNS                                LOAD1166

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***** CALLING A SUBROUTINE ***** LOAD1167
C 970 CALL DST(JAHR,MONTH,IDAY,IDST) LOAD1168
***** LOAD1169
C IF(IHOURP.NE.1)GO TO 975 LOAD1170
***** LOAD1171
C ***** CALLING A FUNCTION ***** LOAD1172
C NDAY=NDOW(JAHR,MONTH,IDAY) LOAD1173
C ***** LOAD1174
C GO TO 977 LOAD1175
C 975 NDAY=NDAY+1 LOAD1176
C IF(NDAY.GT.7)NDAY=1 LOAD1177
***** LOAD1178
C ***** CALLING A SUBROUTINE ***** LOAD1179
C 977 CALL HOLDAY(MONTH,IDAY,NDAY,IFEAST) LOAD1180
***** LOAD1181
C 980 HANG=0.2618*(ITIME-12.0+NTZ+DEABC(2))-STALON LOAD1182
***** LOAD1183
C ***** CALLING A SUBROUTINE ***** LOAD1184
C CALL SCHED(IDST,ITIME,NDAY,IFEAST,JC,JSC,KSC) LOAD1185
***** LOAD1186
C IF(IHOURP.EQ.1) GO TO 1020 LOAD1187
***** LOAD1188
C ***** CALLING A SUBROUTINE ***** LOAD1189
C CALL WEATHR LOAD1190
***** LOAD1191
C IF(KTBAD.EQ.1) GO TO 1930 LOAD1192
C IF(KTBADA.EQ.1)IWS=IWSP LOAD1193
C IF(KTBADB.EQ.1) GO TO 1000 LOAD1194
C 990 IF(KTBADC.EQ.1)IATM=IATMP LOAD1195
C IF(KTBADD.EQ.1)ITCA=ITCAP LOAD1196
C GO TO 1010 LOAD1197
C 1000 KA=KAP LOAD1198
C LA=LAP LOAD1199
C IDP=IDPP LOAD1200
C GO TO 990 LOAD1201
C 1010 IWSP=IWS LOAD1202
C KAP=KA LOAD1203
C LAP=LA LOAD1204
C IDPP=IDP LOAD1205
C IATMP=IATM LOAD1206
C ITCA=ITCA LOAD1207
C 1020 DBT=KA LOAD1208
C WBT=LA LOAD1209
C DPT=IDP LOAD1210
C PATM=0.01*IATM LOAD1211
C TDB=KA+460.0 LOAD1212
C VEL=IWS LOAD1213
C FTCA=ITCA LOAD1214
***** LOAD1215
C ***** CALLING A SUBROUTINE ***** LOAD1216
C CALL PSY(DBT,WBT,DPT,PATM,HUMRAT,ENTH,DENS) LOAD1217
***** LOAD1218
C IF(ABS(HANG).GT.ABS(SUNRAS))GO TO 1040 LOAD1219
***** LOAD1220
C ***** CALLING A SUBROUTINE ***** LOAD1221
C CALL SUNZ(HANG,DEABC,SINLAT,COSLAT,CN,RAYCOS,RDN,BS,SINBAZ,COSBAZ) LOAD1222

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C **** LOAD1224
C **** LOAD1225
C CALL CCM(ITOC,ITCA,RAYCOS(3),CC) LOAD1226
C **** LOAD1227
C RDN=RDN*CC LOAD1228
C IF(J1) 1030, 1060, 1030 LOAD1229
1030 IRISE=ITIME LOAD1230
J1=0 LOAD1231
GO TO 1060 LOAD1232
1040 RDN=0.0 LOAD1233
AAAA=0.0 LOAD1234
C **** LOAD1235
C CALL CC1(ITOC,ITCA,AAAA,CC) LOAD1236
C **** LOAD1237
C BS=0.0 LOAD1238
BG=0.0 LOAD1239
C IF(J1) 1060, 1050, 1060 LOAD1240
1050 ISET=ITIME LOAD1241
J1=1 LOAD1242
C **** LOAD1243
C **** LOAD1244
C STARTING SPACE DO LOOP LOAD1245
1060 DO 1640 I=1,NS LOAD1246
C **** LOAD1247
C T=TSPAC(I) LOAD1248
C IF(IDAY-1) 1120, 1070, 1120 LOAD1249
1070 QU(I)=0.0 LOAD1250
IF(NUW(I)+NUF(I).EQ.0) GO TO 1120 LOAD1251
TGROND=TGRND('MONTH')+460.0 LOAD1252
1080 JLIM=NUW(I) LOAD1253
IF(JLIM.EQ.0) GO TO 1100 LOAD1254
DO 1090 J=1,JLIM LOAD1255
II=IUW(I,J) LOAD1256
QU(I)=QU(I)+FUW(II)*(TGROND-T) LOAD1257
1090 CONTINUE LOAD1258
1100 JLIM=NUF(I) LOAD1259
IF(JLIM.EQ.0) GO TO 1120 LOAD1260
DO 1110 J=1,JLIM LOAD1261
II=IUF(I,J) LOAD1262
QU(I)=QU(I)+FUF(II)*(TGROND-T) LOAD1263
1110 CONTINUE LOAD1264
1120 QD=0.0 LOAD1265
IF(NRF.EQ.0) GO TO 1260 LOAD1266
JLIM=ND(I) LOAD1267
IF(JLIM.EQ.0) GO TO 1260 LOAD1268
DO 1250 J=1,JLIM LOAD1269
JJ=ID(I,J) LOAD1270
IF(ICALD(JJ).EQ.1) GO TO 1245 LOAD1271
1125 GAMMA=COS(WTD(JJ)) LOAD1272
IF(ABS(HANG).LE.ABS(SUNRAS)) GO TO 1130 LOAD1273
SOLI=0.0 LOAD1274
GO TO 1220 LOAD1275
1130 WT=WTD(JJ) LOAD1276
WA=WAD(JJ) LOAD1277

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C      ROG=ROGD(JJ)                                LOAD1281
C      ****CALLING A SUBROUTINE****                  LOAD1282
C      CALL SUN3(WT,WA,RAYCOS,RDN,BS,ROG,GAMMA,ETA,DIR,DIRFS,DIRFG,RTOT,LOAD1284
C      *BG)                                           LOAD1285
C      ****IF(IDAY.NE.1.AND.ITIME.GE.IRISEL.AND.ITIME.LT.ISETL)GO TO 1200    LOAD1287
C      IF(ETA)1139,1139,1138                          LOAD1288
C      1139 SHADD(JJ,ITIME)=1.0                      LOAD1289
C      GO TO 1200                                     LOAD1290
C      1138 IF(NSP-NDD(JJ)+NAD(JJ))1141,1141,1140   LOAD1291
C      1141 SHADD(JJ,ITIME)=0.0                      LOAD1292
C      GO TO 1200                                     LOAD1293
C      1140 NX=NXD(JJ)                               LOAD1294
C      NY=NYD(JJ)                                 LOAD1295
C      NV=NVD(JJ)                                 LOAD1296
C      IF(NLOOKD.NE.0.AND.IDAY.EQ.1)GO TO 1146     LOAD1297
C      LOOK=0                                       LOAD1298
C      GO TO 1145                                     LOAD1299
C      ****CALLING A SUBROUTINE****                  LOAD1300
C      1146 CALL SEARCH(NLOOKD,MLOOKD,ILOOKD,JLOOKD,MONTH,ITIME,JJ,LOOK)    LOAD1302
C      ****CALLING A SUBROUTINE****                  LOAD1303
C      1145 DO 1150 K=1,NV                           LOAD1304
C      XV(K)=XVD(JJ,K)                            LOAD1305
C      YV(K)=YVD(JJ,K)                            LOAD1306
C      ZV(K)=ZVD(JJ,K)                            LOAD1307
C      1150 CONTINUE                                 LOAD1308
C      NSPD=NDD(JJ)                               LOAD1309
C      IF(NSPD.EQ.0) GO TO 1170                 LOAD1310
C      DO 1160 K=1,NSPD                           LOAD1311
C      ILETE(K)=IDD(JJ,K)                         LOAD1312
C      1160 CONTINUE                                 LOAD1313
C      1170 NSPA=NAD(JJ)                           LOAD1314
C      IF(NSPA.EQ.0) GO TO 1190                 LOAD1315
C      DO 1180 K=1,NSPA                           LOAD1316
C      NVA(K)=NVAD(JJ,K)                         LOAD1317
C      PA(K)=PAD(JJ,K)                           LOAD1318
C      LLIM=NVA(K)                             LOAD1319
C      DO 1180 L=1,LLIM                           LOAD1320
C      XA(K,L)=XAD(JJ,K,L)                       LOAD1321
C      YA(K,L)=YAD(JJ,K,L)                       LOAD1322
C      ZA(K,L)=ZAD(JJ,K,L)                       LOAD1323
C      1180 CONTINUE                                 LOAD1324
C      ****CALLING A SUBROUTINE****                  LOAD1325
C      1190 CALL SHADOW(NV,XV,YV,ZV,NX,NY,NSP,NVSP,PSP,XSP,YSP,ZSP,NSPD,ILETE,LOAD1327
C      INSPA,NVA,PA,XA,YA,ZA,RAYCOS,AREA,SAREA,LOOK)    LOAD1328
C      ****SHADD(JJ,ITIME)=SAREA/AREA****          LOAD1329
C      1200 SOLI=DIRFS+DIRFG+DIR-DIR*SHADD(JJ,ITIME)    LOAD1331
C      1220 IRUF=ISD(JJ)                           LOAD1332
C      ****CALLING A SUBROUTINE****                  LOAD1333
C      CALL FILM(VEL,IRUF,F)                      LOAD1334
C      ****AB=ABD(JJ)****                         LOAD1335
C      ****AB=ABD(JJ)****                         LOAD1336

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CALL SUN3(NT,WA,RAYCOS,RDN,BS,ROG,GAMMA,ETA,DIR,DIRFS,DIRFG,RTOT,LOAD1452
*BG)
C **** LOAD1453
IF(IDAY.NE.1.AND.ITIME.GE.IRISEL.AND.ITIME.LT.ISETLIGO TO 1480 LOAD1454
IF(ETA)1401,1401,1402 LOAD1455
1401 SHADW(JJ,ITIME)=1.0 LOAD1456
GO TO 1480 LOAD1457
1402 IF(NSP-NDW(JJ)+NAW(JJ))1403,1403,1410 LOAD1458
1403 SHADW(JJ,ITIME)=0.0 LOAD1459
GO TO 1480 LOAD1460
1410 NX=NXW(JJ) LOAD1461
NY=NYW(JJ) LOAD1462
NV=NVW(JJ) LOAD1463
IF(NLOOKW.NE.0.AND.IDAY.EQ.1)GO TO 1416 LOAD1464
LOOK=0 LOAD1465
GO TO 1415 LOAD1466
C **** LOAD1467
C . CALLING A SUBROUTINE LOAD1468
C 1416 CALL SEARCH(NLOOKW,MLOOKW,ILOOKW,JLOOKW,MONTH,ITIME,JJ,LOOK) LOAD1469
C **** LOAD1470
1415 DO 1420 K=1,NV LOAD1471
XV(K)=XVW(JJ,K) LOAD1472
YV(K)=YVW(JJ,K) LOAD1473
ZV(K)=ZVW(JJ,K) LOAD1474
1420 CONTINUE LOAD1475
NSPD=IDW(JJ) LOAD1476
IF(NSPD.EQ.0) GO TO 1440 LOAD1477
DO 1430 K=1,NSPD LOAD1478
ILETE(K)=IDW(JJ,K) LOAD1479
1430 CONTINUE LOAD1480
1440 NSPA=NAW(JJ) LOAD1481
IF(NSPA.EQ.0) GO TO 1460 LOAD1482
DO 1450 K=1,NSPA LOAD1483
NVA(K)=NVAW(JJ,K) LOAD1484
PA(K)=PAW(JJ,K) LOAD1485
LLI=4VA(K) LOAD1486
DO 1450 L=1,LLIM LOAD1487
XA(K,L)=XAW(JJ,K,L) LOAD1488
YA(K,L)=YAW(JJ,K,L) LOAD1489
ZA(K,L)=ZAW(JJ,K,L) LOAD1490
1450 CONTINUE LOAD1491
C **** LOAD1492
C . CALLING A SUBROUTINE LOAD1493
C 1460 CALL SHADOW(NV,XV,YV,ZV,NX,NY,NSP,NVSP,PSP,XSP,YSP,ZSP,NSPD,ILETE,LOAD1494
1NSPA,NVA,PA,XA,YA,ZA,RAYCOS,AREA,SAREA,LOOK) LOAD1495
C **** LOAD1496
SHADW(JJ,ITIME)=SAREA/AREA LOAD1497
1480 IG=IGLASW(JJ) LOAD1498
C **** LOAD1499
C . CALLING A SUBROUTINE LOAD1500
CALL TAR(IG,ETA,NPANE,TDIR,TDIF,ADIRO,ADIFO,ADIRI,ADIFI) LOAD1501
C **** LOAD1502
1490 ITYPE=6 LOAD1503
C **** LOAD1504
C . CALLING A SUBROUTINE LOAD1505
CALL FILM(VEL,ITYPE,REO) LOAD1506
C **** LOAD1507
C . **** LOAD1508

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REO=1.0/REQ          LOAD1509
REI=0.5              LOAD1510
IF(NPANE.EQ.1)REA=0.0 LOAD1511
IF(NPANE.NE.1)REA=1.6 LOAD1512
SC=SHACO(JJ)         LOAD1513
FWS=FFWS(JJ)         LOAD1514
FWG=FFWG(JJ)         LOAD1515
SHAW=1.0-SHADW(JJ,ITIME) LOAD1516
*****CALLING A SUBROUTINE*****LOAD1517
C CALL SHG(RDIR,BS,BG,FWS,FWG,REO,REA,REI,SHAW,SC,TDIR,TDIF,ADIRO, LOAD1518
  1ADIRI,ADIFO,ADIFI,TDB,T,QSTORR(JJ),QSTORC(JJ)) LOAD1519
C *****LOAD1520
C 1495 QRAD=QRAD+QSTORR(JJ)*AW(JJ) LOAD1521
  QC=QC+QSTORC(JJ)*AW(JJ)
  ICALW(JJ)=1           LOAD1522
1500 CONTINUE          LOAD1523
1510 QE=3413.0*QE(I)   LOAD1524
  H1NEW=QRAD           LOAD1525
  IF(NFOLK(I).EQ.0)GO TO 1520 LOAD1526
  HASL=HASL(I)          LOAD1527
  QPS=28.0+HASL*(266.4-10.25*HASL)+(T-460.0)*(1.2-HASL*(3.07-0.128* LOAD1528
  *HASL))               LOAD1529
  QPL=206.0-HASL*(214.9-13.8*HASL)-(T-460.0)*(6.7-HASL*(4.44-0.222* LOAD1530
  *HASL))               LOAD1531
1520 IJIJI=IWOO(I)    LOAD1532
  H2NEW=SCHEQ(IJIJI,JSC,KSC)*QE+QQ+QD+QU(I)+QIHTS(I)+SCHFLK(IJIJI, LOAD1533
  1JSC,KSC)*QPS*NFOLK(I)+QC LOAD1534
  H3NEW=3413.0*SCHLIT(IJIJI,JSC,KSC)*PLITE(I) LOAD1535
  HLAT=SCHFLK(IJIJI,JSC,KSC)*QPL*NFOLK(I) LOAD1536
  SPOW=SCHLIT(IJIJI,JSC,KSC)*PLITE(I)+SCHEQ(IJIJI,JSC,KSC)*QE(I) LOAD1537
  IF(IHOURP-1) 1530, 1530, 1540 LOAD1538
1530 H1(I)=H1NEW       LOAD1539
  SUMA(I)=H1(I)          LOAD1540
  H2(I)=H2NEW           LOAD1541
  SUMB(I)=H2(I)          LOAD1542
  SUMC(I)=0.85*H3NEW    LOAD1543
  H3(I)=H3NEW           LOAD1544
  HRLDL(I)=0.15*H3NEW   LOAD1545
  *****CALLING A SUBROUTINE*****LOAD1546
C CALL HL(H1(I),H2(I),H3(I),H1NEW,H2NEW,H3NEW,RMRG1(I),RMRGC(I), LOAD1547
  1RATRG(I),RMRX1(I),RMRXC(I),RATRX(I),RMRIS1(I),RMRISC(I),RATRIS(I), LOAD1548
  1RMRPS1(I),RMRPSC(I),RATRPS(I),HRLDS,HRLDL(I),SUMA(I),SUMB(I), LOAD1549
  1SUMC(I))               LOAD1550
C *****CALLING A SUBROUTINE*****LOAD1551
C IF(INFCOD(I).EQ.0) GO TO 2503 LOAD1552
C *****CALLING A SUBROUTINE*****LOAD1553
C CALL INF(DBT,HUMRAT,DENS,VOL(I),T,QSINF,QLINF) LOAD1554
C *****CALLING A SUBROUTINE*****LOAD1555
C GO TO 2502               LOAD1556
2503 QSINF=0.0            LOAD1557
  QLINF=0.0                LOAD1558
2502 IF(IHOUR.NE.JSTART.OR.I.GT.1.OR.CPRINT.EQ.0.0)GO TO 1545 LOAD1559
  WRITE(KAGIT,16)           LOAD1560
  WRITE(KAGIT,17)           LOAD1561

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      WRITE(KAGIT,21)          LOAD1566
      WRITE(KAGIT,22)          LOAD1567
      WRITE(KAGIT,22)          LOAD1568
      WRITE(KAGIT,3000)        LOAD1569
      WRITE(KAGIT,22)          LOAD1570
      WRITE(KAGIT,22)          LOAD1571
      WRITE(KAGIT,3001)        LOAD1572
      WRITE(KAGIT,22)          LOAD1573
      WRITE(KAGIT,3002)        LOAD1574
      WRITE(KAGIT,3003)        LOAD1575
      WRITE(KAGIT,3004)        LOAD1576
      WRITE(KAGIT,3020)        LOAD1577
      WRITE(KAGIT,3005)        LOAD1578
      WRITE(KAGIT,3006)        LOAD1579
      WRITE(KAGIT,3007)        LOAD1580
      WRITE(KAGIT,3008)        LOAD1581
      WRITE(KAGIT,3009)        LOAD1582
      WRITE(KAGIT,22)          LOAD1583
      WRITE(KAGIT,3010)        LOAD1584
      WRITE(KAGIT,22)          LOAD1585
      WRITE(KAGIT,3011)        LOAD1586
      WRITE(KAGIT,3012)        LOAD1587
      WRITE(KAGIT,3013)        LOAD1588
      WRITE(KAGIT,3014)        LOAD1589
      WRITE(KAGIT,3015)        LOAD1590
      WRITE(KAGIT,22)          LOAD1591
      WRITE(KAGIT,22)          LOAD1592
      WRITE(KAGIT,21)          LOAD1593
      WRITE(KAGIT,3016)        LOAD1594
      WRITE(KAGIT,21)          LOAD1595
      1545 HRLDSP=HRLDS          LOAD1596
      HLATP=HLAT              LOAD1597
      HRLDS=HRLDS+QSINF       LOAD1598
      HLAT=HLAT+QLINF         LOAD1599
      IF(I.GT.1)GO TO 1550     LOAD1600
      WRITE(2,12)I HOUR,J1,KA,LA,IWS,HUMRAT,PATM,ENTH,DENS
      IF(CPRINT.EQ.0.0)GO TO 1550
      IF(IHOUR.NE.JSTART)GO TO 1546
      WRITE(KAGIT,16)
      1546 WRITE(KAGIT,112)I HOUR,J1,DBT,WBT,VEL,HUMRAT,PATM,ENTH,DENS
      1550 IF(ABS(HRLDS).LT.1.0)HRLDS=0.0
      IF(ABS(HLAT).LT.1.0)HLAT=0.0
      IF(ABS(HRLDL(I)).LT.1.0)HRLDL(I)=0.0
      WRITE(2,18)I,HRLDS,HLAT,HRLDL(I),SPOW
      IF(CPRINT.EQ.0.0)GO TO 1559
      WRITE(KAGIT,118)I,HRLDS,HLAT,HRLDL(I),SPOW
      1559 IF(IGNOR.EQ.1.AND.IDAY.EQ.1)GO TO 1640
      IF(HRLDS)1560,1600,1600
      1560 BHEATT=BHEATT+HRLDS
      IF(ABS(SSHMAX(I))-ABS(HRLDS)) 1570, 1580, 1580
      1570 SSHMAX(I)=HRLDS
      ISSHMA(I)=IHOUR
      1580 IF(ABS(SSHMIN(I))-ABS(HRLDS)) 1640, 1590, 1590
      1590 SSHMIN(I)=HRLDS
      ISSHMI(I)=IHOUR
      GO TO 1640
      1600 TOTAL=HRLDS+HLAT

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BCOOLT=BCOOLT+TOTAL LOAD1623
BSL=BSL+HRLDS LOAD1624
BSIL=BSIL+QSINF LOAD1625
BLL=BLL+HLAT LOAD1626
BLIL=BLIL+QLINF LOAD1627
BPL=BPL+HRLDL(I) LOAD1628
IF(STCMAX(I)=TOTAL) 1610, 1620, 1620 LOAD1629
1610 STCMAX(I)=TOTAL LOAD1630
ISTCMA(I)=IHOUR LOAD1631
1620 IF(STCMIN(I)=TOTAL) 1640, 1640, 1630 LOAD1632
1630 STCMIN(I)=TOTAL LOAD1633
ISTCMI(I)=IHOUR LOAD1634
1640 CONTINUE LOAD1635
IF(ITIME=24) 1660, 1650, 1660 LOAD1636
1650 ISETL=ISET LOAD1637
IRISEL=IRISE LOAD1638
1660 IF(ABS(BHMAX)-ABS(BHEATT)) 1670, 1680, 1680 LOAD1639
1670 IHRHB=IHOUR LOAD1640
TOAH=DBT LOAD1641
WOAH=HUMRAT LOAD1642
PATMH=PATM LOAD1643
BHMAX=BHEATT LOAD1644
1680 IF(BCMAY=BCOOLT) 1690, 1700, 1700 LOAD1645
1690 IHRCB=IHOUR LOAD1646
TOAC=DBT LOAD1647
TOACW=WBT LOAD1648
WOAC=HUMRAT LOAD1649
PATMC=PATM LOAD1650
QLITEC=BPL LOAD1651
BSLP=BSL LOAD1652
BSILP=BSIL LOAD1653
BLLP=BLL LOAD1654
BLILP=BLIL LOAD1655
BCMAY=BCOOLT LOAD1656
1700 CONTINUE LOAD1657
END FILE 2 LOAD1658
REWIND 2 LOAD1659
DO 1740 I=1,NS LOAD1660
IF(SSHMAX(I)) 1720, 1710, 1710 LOAD1661
1710 SSHMIN(I)=0.0 LOAD1662
SSHMAX(I)=0.0 LOAD1663
ISSHMI(I)=0 LOAD1664
ISSHMA(I)=0 LOAD1665
1720 IF(STCMAX(I)) 1730, 1730, 1740 LOAD1666
1730 STCMIN(I)=0.0 LOAD1667
STCMAX(I)=0.0 LOAD1668
ISTCMI(I)=0 LOAD1669
ISTCMA(I)=0 LOAD1670
1740 CONTINUE LOAD1671
WRITE(KAGIT,16) LOAD1672
WRITE(KAGIT,17) LOAD1673
WRITE(KAGIT,3500) LOAD1674
WRITE(KAGIT,3501) LOAD1675
WRITE(KAGIT,3501) LOAD1676
WRITE(KAGIT,3502) LOAD1677
WRITE(KAGIT,3501) LOAD1678
WRITE(KAGIT,3501) LOAD1679

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      WRITE(KAGIT,3503) LOAD1680
      WRITE(KAGIT,3504) LOAD1681
      WRITE(KAGIT,3505) LOAD1682
      WRITE(KAGIT,3506) LOAD1683
      WRITE(KAGIT,3507) LOAD1684
      I=1 LOAD1685
      IF(BCMAX.EQ.0.0) GO TO 1890 LOAD1686
      WRITE(KAGIT,3508)IHRCB,TOAC,TOACW,WOAC,PATMC,QLITEC,BSLP,BSILP, LOAD1687
      *BLLP,BLILP,BCMAX LOAD1688
      J=IHRCB LOAD1689
 1750 IDOY=(J-1)/24.0+1.001 LOAD1690
      ITIME=J-(IDOY-1)*24 LOAD1691
  C ****CALLING A SUBROUTINE LOAD1692
  C CALL DAYMO(LEAP,IDOY,IDAY,MONTH) LOAD1693
  C **** LOAD1694
  C GO TO(1760,1770,1780,1790,1800,1810,1820,1830,1840,1850,1860,1870) LOAD1695
      *,MONTH LOAD1696
 1760 MONTH=M01 LOAD1697
      GO TO 1880 LOAD1698
 1770 MONTH=M02 LOAD1699
      GO TO 1880 LOAD1700
 1780 MONTH=M03 LOAD1701
      GO TO 1880 LOAD1702
 1790 MONTH=M04 LOAD1703
      GO TO 1880 LOAD1704
 1800 MONTH=M05 LOAD1705
      GO TO 1880 LOAD1706
 1810 MONTH=M06 LOAD1707
      GO TO 1880 LOAD1708
 1820 MONTH=M07 LOAD1709
      GO TO 1880 LOAD1710
 1830 MONTH=M08 LOAD1711
      GO TO 1880 LOAD1712
 1840 MONTH=M09 LOAD1713
      GO TO 1880 LOAD1714
 1850 MONTH=M010 LOAD1715
      GO TO 1880 LOAD1716
 1860 MONTH=M011 LOAD1717
      GO TO 1880 LOAD1718
 1870 MONTH=M012 LOAD1719
 1880 IF(I.EQ.2)GO TO 1881 LOAD1720
      WRITE(KAGIT,23)ITIME,IDAY,MONTH LOAD1721
      GO TO 1900 LOAD1722
 1881 WRITE(KAGIT,231)ITIME,IDAY,MONTH LOAD1723
      WRITE(KAGIT,3501) LOAD1724
      WRITE(KAGIT,3501) LOAD1725
      WRITE(KAGIT,3500) LOAD1726
      GO TO 1921 LOAD1727
 1890 WRITE(KAGIT,3501) LOAD1728
      WRITE(KAGIT,31) LOAD1729
 1900 IF(I.NE.1) GO TO 1920 LOAD1730
      WRITE(KAGIT,3501) LOAD1731
      WRITE(KAGIT,3501) LOAD1732
      WRITE(KAGIT,3509) LOAD1733
      WRITE(KAGIT,3510) LOAD1734
      WRITE(KAGIT,3511) LOAD1735

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      WRITE(KAGIT,3512)                                LOAD1737
      IF(BHMAX.NE.0.0) GO TO 1910                   LOAD1738
      WRITE(KAGIT,3501)                                LOAD1739
      WRITE(KAGIT,32)                                 LOAD1740
      GO TO 1920                                     LOAD1741
1910  WRITE(KAGIT,35)IHRHB,TOAH,WOAH,PATMH,BHMAX   LOAD1742
      IF(I.EQ.2) GO TO 1920                         LOAD1743
      I=I+1                                         LOAD1744
      J=IHRHB                                      LOAD1745
      GO TO 1750                                     LOAD1746
1920  WRITE(KAGIT,3501)                                LOAD1747
      WRITE(KAGIT,3501)                                LOAD1748
      WRITE(KAGIT,3500)                                LOAD1749
C *****CALLING A SUBROUTINE*****LOAD1750
C
1921  CALL TABMAK(LEAP,NS,SSHMAX,ISSHMA,SSHMIN,ISSHMI,STCMAX,ISTCMA,
      *STCMIN,ISTCMI)                               LOAD1752
C **********LOAD1753
C
      GO TO 1940                                     LOAD1754
1930  WRITE(KAGIT,29)                                LOAD1755
1940  CONTINUE                                     LOAD1756
      REWIND LUNFWT                                LOAD1757
      REWIND 2                                       LOAD1758
      END                                           LOAD1759
      SUBROUTINE APOL(N,X,Y,Z,A,TILT,AZIM)          APOL 1
      DIMENSION X(12),Y(12),Z(12)                  APOL 2
      XCOMP=0.0                                      APOL 3
      YCOMP=0.0                                      APOL 4
      ZCOMP=0.0                                      APOL 5
      M=N-1                                         APOL 6
      DO 100  I=1,M                                 APOL 7
      J=I+1                                         APOL 8
      XCOMP=Y(I)*Z(J)-Y(J)*Z(I)+XCOMP            APOL 9
      YCOMP=Z(I)*X(J)-Z(J)*X(I)+YCOMP            APOL 10
      ZCOMP=X(I)*Y(J)-X(J)*Y(I)+ZCOMP            APOL 11
100   CONTINUE                                     APOL 12
      XCOMP=Y(N)*Z(1)-Y(1)*Z(N)+XCOMP            APOL 13
      YCOMP=Z(N)*X(1)-Z(1)*X(N)+YCOMP            APOL 14
      ZCOMP=X(N)*Y(1)-X(1)*Y(N)+ZCOMP            APOL 15
      A=SQRT(XCOMP*XCOMP+YCOMP*YCOMP+ZCOMP*ZCOMP)/2. APOL 16
      TILT=ARCOS(ZCOMP/(2.*A))                     APOL 17
      PROJ=SQRT(XCOMP*XCOMP+YCOMP*YCOMP)           APOL 18
      IF(PROJ=.0001*A) 110,110,120                APOL 19
      110  AZIM=0.0                                  APOL 20
      RETURN                                         APOL 21
120   IF(XCOMP) 160,130,130                      APOL 22
130   IF(YCOMP) 150,140,140                      APOL 23
140   AZIM=ARSIN(XCOMP/PROJ)                     APOL 24
      RETURN                                         APOL 25
150   AZIM=1.5708&ARSIN(-YCOMP/PROJ)             APOL 26
      RETURN                                         APOL 27
160   IF(YCOMP) 170,180,180                      APOL 28
170   AZIM=3.1416&ARSIN(-XCOMP/PROJ)             APOL 29
      RETURN                                         APOL 30
180   AZIM=4.7124&ARSIN(YCOMP/PROJ)              APOL 31
      RETURN                                         APOL 32
      END                                           APOL 33

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SUBROUTINE CCM(ICLTP,ICLD,AL,CC)
SQ=ICLD*ICLD
J=ICLTP+1
GO TO ( 100, 130, 160),J
100 IF(AL-.707) 110,110,120
110 CC=.598+.00026*ICLD+.00021*SQ-.00035*ICLD*SQ
RETURN
120 CC=.908-.03214*ICLD+.0102*SQ-.00114*ICLD*SQ
RETURN
130 IF(AL-.707) 140,140,150
140 CC=.849-.01277*ICLD+.00360*SQ-.00059*ICLD*SQ
RETURN
150 CC=1.010-.01394*ICLD+.00553*SQ-.00068*ICLD*SQ
RETURN
160 IF(AL-.707) 170,170,180
170 CC=.724-.00652*ICLD+.00191*SQ-.00047*ICLD*SQ
RETURN
180 CC=.959-.02304*ICLD+.00787*SQ-.00091*ICLD*SQ
RETURN
END
SUBROUTINE CENTER(IDEN)
DIMENSION IDEN(35)
DATA IBLNK/1H /
10 FORMAT(35A1)
11 FORMAT(25X,1H*,78X,1H*)
12 FORMAT(25X,1H*,22X,35A1,21X,1H*)
KAGIT=6
DO 100 I=1,35
J=36-I
IF(IDEN(J)-IBLNK) 110,100,110
100 CONTINUE
GO TO 150
110 K=I/2
IF(K) 150,150,120
120 DO 130 I=1,J
L=J+1-I
LL=L+K
IDEN(LL)=IDEN(L)
130 CONTINUE
DO 140 I=1,K
IDEN(I)=IBLNK
140 CONTINUE
150 CONTINUE
WRITE(KAGIT,12)IDEN
WRITE(2,10)IDEN
WRITE(KAGIT,11)
WRITE(KAGIT,11)
RETURN
END
SUBROUTINE DAYMO(LEAP,IDOY,IDAY,MONTH)
IF(IDOY-31) 100,100,110
100 MONTH=1
IDAY=IDOY
GO TO 320
110 IF(IDOY-59-LEAP) 120,120,130
120 MONTH=2
IDAY=IDOY-31

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        GO TO 320
130 IF(IDOY=90-LEAP) 140,140,150
140 MONTH=3
    IDAY=IDOY-59-LEAP
    GO TO 320
150 IF(IDOY=120-LEAP) 160,160,170
160 MONTH=4
    IDAY=IDOY-90-LEAP
    GO TO 320
170 IF(IDOY=151-LEAP) 180,180,190
180 MONTH=5
    IDAY=IDOY-120-LEAP
    GO TO 320
190 IF(IDOY=181-LEAP) 200,200,210
200 MONTH=6
    IDAY=IDOY-151-LEAP
    GO TO 320
210 IF(IDOY=212-LEAP) 220,220,230
220 MONTH=7
    IDAY=IDOY-181-LEAP
    GO TO 320
230 IF(IDOY=243-LEAP) 240,240,250
240 MONTH=8
    IDAY=IDOY-212-LEAP
    GO TO 320
250 IF(IDOY=273-LEAP) 260,260,270
260 MONTH=9
    IDAY=IDOY-243-LEAP
    GO TO 320
270 IF(IDOY=304-LEAP) 280,280,290
280 MONTH=10
    IDAY=IDOY-273-LEAP
    GO TO 320
290 IF(IDOY=334-LEAP) 300,300,310
300 MONTH=11
    IDAY=IDOY-304-LEAP
    GO TO 320
310 MONTH=12
    IDAY=IDOY-334-LEAP
320 RETURN
END
SUBROUTINE DST(JAHR,MONTH,IDAY,IDX)
IF(MONTH=4) 100,130,110
100 IDX=0
    GO TO 310
110 IF(MONTH=10) 120,220,100
120 IDX=1
    GO TO 310
130 IF(IDAY=24) 100,140,140
140 MO=4
    ID=24
    M=NDOW(JAHR,MO,ID)
    GO TO ( 150, 160, 170, 180, 190, 200, 210),M
150 IF(IDAY=24) 100,120,120
160 IF(IDAY=30) 100,120,120
170 IF(IDAY=29) 100,120,120
180 IF(IDAY=28) 100,120,120
        DAYMO 9
        DAYMO 10
        DAYMO 11
        DAYMO 12
        DAYMO 13
        DAYMO 14
        DAYMO 15
        DAYMO 16
        DAYMO 17
        DAYMO 18
        DAYMO 19
        DAYMO 20
        DAYMO 21
        DAYMO 22
        DAYMO 23
        DAYMO 24
        DAYMO 25
        DAYMO 26
        DAYMO 27
        DAYMO 28
        DAYMO 29
        DAYMO 30
        DAYMO 31
        DAYMO 32
        DAYMO 33
        DAYMO 34
        DAYMO 35
        DAYMO 36
        DAYMO 37
        DAYMO 38
        DAYMO 39
        DAYMO 40
        DAYMO 41
        DAYMO 42
        DAYMO 43
        DAYMO 44
        DAYMO 45
        DAYMO 46
        DAYMO 47
        DAYMO 48
        DAYMO 49
        DST 1
        DST 2
        DST 3
        DST 4
        DST 5
        DST 6
        DST 7
        DST 8
        DST 9
        DST 10
        DST 11
        DST 12
        DST 13
        DST 14
        DST 15
        DST 16

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190 IF(IDAY-27) 100,120,220 DST 17
200 IF(IDAY-26) 100,120,120 DST 18
210 IF(IDAY-25) 100,120,120 DST 19
220 IF(IDAY-25) 120,230,230 DST 20
230 MO=10 DST 21
    ID=25 DST 22
    M=NDOW(JAHR,10,1D)
    GO TO ( 240, 250, 260, 270, 280, 290, 300),M DST 23
240 IF(IDAY-25) 120,100,100 DST 24
250 IF(IDAY-31) 120,100,100 DST 25
260 IF(IDAY-30) 120,100,100 DST 26
270 IF(IDAY-29) 120,100,100 DST 27
280 IF(IDAY-28) 120,100,100 DST 28
290 IF(IDAY-27) 120,100,100 DST 29
300 IF(IDAY-26) 120,100,100 DST 30
310 RETURN DST 31
    END DST 32
    SUBROUTINE FILM(V,IS,FO) FILM 1
    GO TO ( 100, 110, 120, 130, 140, 150),IS FILM 2
100 FO=.535*V+2.04 FILM 3
    RETURN FILM 4
    110 FO=(.001329*V+.369)*V+2.20 FILM 5
    RETURN FILM 6
    120 FO=.380*V+1.90 FILM 7
    RETURN FILM 8
    130 FO=(.363-.002658*V)*V+1.45 FILM 9
    RETURN FILM 10
    140 FO=.281*V+1.80 FILM 11
    RETURN FILM 12
    150 FO=(.302-.001661*V)*V+1.45 FILM 13
    RETURN FILM 14
    END FILM 15
    SUBROUTINE HD(FO,X,Y,A,CC,TM,TDB,TO,Q,AB,SOLI,SUMR,QR,SUMN,QN,IR,
*RATOS)
    DIMENSION TO(50),X(50),Y(50) HD 1
    C2=X(1)+FO HD 2
    C3=2.0*A*(10.-CC)-X(1)*TM-FO*TDB-AB*SOLI HD 3
    SRNEW=0.0 HD 4
    QRNEW=0.0 HD 5
    TNEW=TO(1) HD 6
    J=IR-1 HD 7
    DO 100 I=2,J HD 8
    TOLD=TO(I) HD 9
    TO(I)=TNEW HD 10
    DNEW=TNEW-TM HD 11
    TNEW=TOLD HD 12
    SRNEW=SRNEW+X(I)*DNEW HD 13
    QRNEW=QRNEW+Y(I)*DNEW HD 14
100 CONTINUE HD 15
    DJOG=TOLD-TM HD 16
    SUMN=RATOS*(SUMN-SUMR)+SRNEW+X(IR)*DJOG HD 17
    QN=RATOS*(QN-QR)+QRNEW+Y(IR)*DJOG HD 18
    SUMR=SRNEW HD 19
    QR=QRNEW HD 20
    C3=C3+SUMN HD 21
    TO(1)=-C3/C2 HD 22
    Q=QN+Y(1)*(TO(1)-TM) HD 23

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RETURN                               HD   26
END                                 HD   27
SUBROUTINE HL(H1,H2,H3,H1NEW,H2NEW,H3NEW,RMRG1,RMRGC,RATRG,RMRX1,HL   1
*RMRXC,RATRX,RMRIS1,RMRISC,RATRIS,RMRPS1,RMRPSC,RATRPS,HRLDS,HRLDL,HL   2
*SA,SB,SC)                           HL   3
SA=RATRG*SA+RMRG1*H1NEW+RMRGC*H1   HL   4
SB=RATRX*SB+RMRX1*H2NEW+RMRXC*H2   HL   5
SC=RATRIS*SC+RMRIS1*H3NEW+RMRISC*H3  HL   6
HRLDS=SA+SB+SC                      HL   7
HRLDL=RATRPS*HRLDL+RMRPS1*H3NEW+RMRPSC*H3  HL   8
H1=H1NEW                             HL   9
H2=H2NEW                             HL  10
H3=H3NEW                             HL  11
RETURN                               HL  12
END                                 HL  13
SUBROUTINE HOLDAY(MO,JAY,NDAY,JOL)  HOLDA 1
JOL=0                                HOLDA 2
IF(MO.EQ.1.AND.JAY.EQ.1) JOL=1      HOLDA 3
IF(MO.EQ.12.AND.JAY.EQ.31.AND.NDAY.EQ.6) JOL=1  HOLDA 4
IF(MO.EQ.1.AND.JAY.EQ.2.AND.NDAY.EQ.2) JOL=1  HOLDA 5
IF(MO.EQ.2.AND.JAY.EQ.22) JOL=1    HOLDA 6
IF(MO.EQ.2.AND.JAY.EQ.21.AND.NDAY.EQ.6) JOL=1  HOLDA 7
IF(MO.EQ.2.AND.JAY.EQ.23.AND.NDAY.EQ.2) JOL=1  HOLDA 8
IF(MO.EQ.5.AND.JAY.EQ.30) JOL=1    HOLDA 9
IF(MO.EQ.5.AND.JAY.EQ.29.AND.NDAY.EQ.6) JOL=1  HOLDA 10
IF(MO.EQ.5.AND.JAY.EQ.31.AND.NDAY.EQ.2) JOL=1  HOLDA 11
IF(MO.EQ.7.AND.JAY.EQ.4) JOL=1     HOLDA 12
IF(MO.EQ.7.AND.JAY.EQ.3.AND.NDAY.EQ.6) JOL=1  HOLDA 13
IF(MO.EQ.7.AND.JAY.EQ.5.AND.NDAY.EQ.5) JOL=1  HOLDA 14
IF(MO.EQ.12.AND.JAY.EQ.25) JOL=1    HOLDA 15
IF(MO.EQ.12.AND.JAY.EQ.24.AND.NDAY.EQ.6) JOL=1  HOLDA 16
IF(MO.EQ.12.AND.JAY.EQ.26.AND.NDAY.EQ.2) JOL=1  HOLDA 17
IF(MO.EQ.9.AND.JAY.LT.7.AND.NDAY.EQ.2) JOL=1    HOLDA 18
IF(MO.EQ.11.AND.JAY.GT.24.AND.NDAY.EQ.5) JOL=1  HOLDA 19
RETURN                               HOLDA 20
END                                 HOLDA 21
SUBROUTINE HQ(F0,U,A,CC,TM,TDB,Q,AB,SOLI)  HQ   1
TO=(SOLI*AB+F0*TDB-2.*((10.-CC)+U*TM)/(F0+U)  HQ   2
Q=U*(TO-TM)                           HQ   3
RETURN                               HQ   4
END                                 HQ   5
SUBROUTINE INF(DB,HUMRA,DEN,VO,TSPA,QSIN,QLIN)  INF   1
IF(DB.LT.50.0)GO TO 100              INF   2
WRA=(53.2+0.245*(DB-50.0))/7000.0  INF   3
GO TO 110                            INF   4
100 WRA=HUMRA                         INF   5
110 QSIN=14.4*DEN*VO*(DB-TSPA+460.0)/60.0  INF   6
QLIN=3300.0*DEN*VO*(HUMRA-WRA)/60.0  INF   7
RETURN                               INF   8
END                                 INF   9
FUNCTION LEEP(JAHR)                LEEP   1
D=0.25*(JAHR-1900)+0.01             LEEP   2
N=D                                LEEP   3
I=4.0*(D-N)                         LEEP   4
IF(I) 100,110,100                  LEEP   5
100 LEEP=J                           LEEP   6
RETURN                               LEEP   7

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110 LEEP=1          8
RETURN          9
END          10
FUNCTION NDOW(JR,MO,JAY)    NDOW 1
DIMENSION JST(12)    NDOW 2
DATA JST/31,59,90,120,151,181,212,243,273,304,334,365/ NDOW 3
N=JR/4          NDOW 4
ND=N-485          NDOW 5
IY=2          NDOW 6
IF(ND.EQ.0) GO TO 130          NDOW 7
IF(ND.LT.0) GO TO 100          NDOW 8
IADD=2          NDOW 9
GO TO 110          NDOW 10
100 ND=-ND          NDOW 11
IADD=-2          NDOW 12
110 DO 120 J=1,ND          NDOW 13
IY=IY-IADD          NDOW 14
IF(IY.GT.7) IY=IY-7          NDOW 15
IF(IY.EQ.0) IY=7          NDOW 16
IF(IY.LT.0) IY=IY+7          NDOW 17
120 CONTINUE          NDOW 18
130 MD=JR-N*4          NDOW 19
IF(MD.EQ.0) IWK=IY          NDOW 20
IF(MD.EQ.1) IWK=IY+2          NDOW 21
IF(MD.EQ.2) IWK=IY+3          NDOW 22
IF(MD.EQ.3) IWK=IY+4          NDOW 23
IF(IWK.GT.7) IWK=IWK-7          NDOW 24
IF(MO.NE.1) GO TO 140          NDOW 25
JDAY=JAY-1          NDOW 26
GO TO 170          NDOW 27
140 DO 150 J=2,12          NDOW 28
IF(MO.NE.J) GO TO 150          NDOW 29
JDAY=JST(J-1)+JAY-1          NDOW 30
GO TO 160          NDOW 31
150 CONTINUE          NDOW 32
160 IF(MD.EQ.0.AND.MO.GT.2) JDAY=JDAY+1          NDOW 33
170 NTX=JDAY/7          NDOW 34
NDX=JDAY-7*NTX+IWK          NDOW 35
IF(NDX.GT.7) NDX=NDX-7          NDOW 36
NDOW=NDX          NDOW 37
RETURN          NDOW 38
END          NDOW 39
SUBROUTINE PSY(DBT,WBT,DPT,PATM,HUMRAT,ENTH,DENS)          PSY 1
IF(DPT.LT.32.0) GO TO 100          PSY 2
*****          PSY 3
C          CALLING A SUB FUNCTION          PSY 4
PPWV=PPWVMS (WBT)-0.000367*PATM*(DBT-WBT)/(1.0+(WBT-32.0)/1571.0)          PSY 5
C          *****          PSY 6
GO TO 110          PSY 7
C          *****          PSY 8
C          CALLING A SUB FUNCTION          PSY 9
100 PPWV=PPWVMS (DPT)          PSY 10
C          *****          PSY 11
110 HUMRAT=0.622*PPWV/(PATM-PPWV)          PSY 12
ENTH=0.24*DBT+(1061.0+0.444*DBT)*HUMRAT          PSY 13
DENS=1.0/(0.754*(DBT+460.0)*(1.0+7000.0*HUMRAT/4360.0)/PATM)          PSY 14
RETURN          PSY 15

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C          READING DATA             RESF 17
READ(KARD,11)XL(I),XK(I),D(I),SH(I),RES(I)
C          ++++++RESF 18
C          IF(XL(I)) 130,120,130      RESF 19
C          R(I)=RES(I)             RESF 20
120 R(I)=RES(I)                 RESF 21
     BETA(I)=0.0                  RESF 22
     GO TO 150                   RESF 23
130 R(I)=XL(I)/XK(I)           RESF 24
140 BETA(I)=XL(I)*DSQRT(D(I)*SH(I)/XK(I))   RESF 25
150 CONTINUE                    RESF 26
160 DO 180 I=1,M                RESF 27
     IF(XL(I)) 180,170,180       RESF 28
170 RES(I)=0.0                  RESF 29
180 CONTINUE                    RESF 30
     N=100                      RESF 31
     IROOT=0                     RESF 32
     DO 190 I=1,N                RESF 33
     ROOT(I)=0.0                 RESF 34
190 CONTINUE                    RESF 35
C          *****RESF 36
C          CALLING A SUB SUBROUTINE    RESF 37
C          CALL ZERO(R,BETA,RES,M,K0,K1,M1,M4)   RESF 38
C          *****RESF 39
W1=30.0/DT                      RESF 40
W2=100.0/DT                     RESF 41
NN=8                           RESF 42
C          *****RESF 43
C          CALLING A SUB SUBROUTINE    RESF 44
C          CALL FALSE( R,BETA,RES,W1,W2,W3,B1,B2,BP3,M,NN)   RESF 45
C          *****RESF 46
IROOT=1                         RESF 47
LAST=1                          RESF 48
J=2                            RESF 49
200 J=J-1                        RESF 50
     ROOT(J)=W3                  RESF 51
     KK(J+2)=1.0/BP3/W3/W3      RESF 52
     KK(J+1)=KK(J+2)*B1         RESF 53
     KK(J,3)=KK(J+2)*B2         RESF 54
210 IF(LAST-1) 220,220,230      RESF 55
220 W1=0.0001/DT                 RESF 56
     GO TO 240                   RESF 57
230 W1=ROOT(LAST-1)              RESF 58
240 W2=ROOT(LAST)                RESF 59
     W2=W2-0.00001/DT            RESF 60
     W1=W1+0.00001/DT            RESF 61
C          *****RESF 62
C          CALLING A SUB SUBROUTINE    RESF 63
C          CALL SLOPE(R,BETA,RES,W1,W2,M,ICONT,LAST)   RESF 64
C          *****RESF 65
GO TO ( 250, 310),ICONT        RESF 66
250 NN=0                         RESF 67
C          *****RESF 68
C          CALLING A SUB SUBROUTINE    RESF 69
C          CALL FALSE( R,BETA,RES,W1,W2,W3,B1,B2,BP3,M,NN)   RESF 70
C          *****RESF 71
DO 270 I=1,IROOT                RESF 72
     IF(W3-ROOT(I)) 260,260,270   RESF 73

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260 J=I+1          RESF  74
    GO TO 280        RESF  75
270 CONTINUE       RESF  76
280 IROOT=IROOT+1 RESF  77
    LAST=LAST+1      RESF  78
    JJ=IROOT+1       RESF  79
    IF(IROOT-N) 290,290,320 RESF  80
290 DO 300   I=J,IROOT RESF  81
    JJ=JJ-1          RESF  82
    ROOT(JJ)=ROOT(JJ-1) RESF  83
    KK(JJ,1)=KK(JJ-1,1) RESF  84
    KK(JJ,2)=KK(JJ-1,2) RESF  85
    KK(JJ,3)=KK(JJ-1,3) RESF  86
300 CONTINUE       RESF  87
    GO TO 200        RESF  88
310 IF(LAST) 320,320,210 RESF  89
320 BETAX=K1+M4*K0      RESF  90
    BETAZ=K1+M1*K0      RESF  91
    DO 450   I=1,100   RESF  92
    A=0.0            RESF  93
    B=0.0            RESF  94
    C=0.0            RESF  95
    DO 340   J=1,IROOT RESF  96
    IF(ROOT(J)*I*DT-30.0) 330,330,350 RESF  97
330 BETAY=DEXP(-ROOT(J)*I*DT) RESF  98
    A=A+KK(J,1)*BETAY RESF  99
    B=B+KK(J,2)*BETAY RESF 100
    C=C+KK(J,3)*BETAY RESF 101
340 CONTINUE       RESF 102
350 A=(A+(K1+M4*K0)+DT*I*K0)/DT RESF 103
    B=(B+K0*DT*I+K1)/DT   RESF 104
    C=(C+(K1+M1*K0)+DT*I*K0)/DT RESF 105
    IF(I-2) 360,370,380 RESF 106
360 AA=A          RESF 107
    BB=B          RESF 108
    CC=C          RESF 109
    GO TO 390        RESF 110
370 AA=A-2.0*X    RESF 111
    BB=B-2.0*Y    RESF 112
    CC=C-2.0*Z    RESF 113
    GO TO 390        RESF 114
380 AA=A-2.0*X+FA RESF 115
    BB=B-2.0*Y+FB RESF 116
    CC=C-2.0*Z+FC RESF 117
390 RFX(I)=AA     RESF 118
    RFY(I)=BB     RESF 119
    IF(I-2) 430,430,400 RESF 120
400 IF(DABS(XX/FAA-AA/XX)-0.00001) 410,410,430 RESF 121
410 IF(DABS(YY/FBB-BB/YY)-0.00001) 420,420,430 RESF 122
420 IF(DABS(ZZ/FCC-CC/ZZ)-0.00001) 460,460,430 RESF 123
430 IF(DABS(AA)-0.00000001) 460,460,440 RESF 124
440 FA=X          RESF 125
    FB=Y          RESF 126
    FC=Z          RESF 127
    FAA=XX        RESF 128
    FBB=YY        RESF 129
    FCC=ZZ        RESF 130

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XX=AA          RESF 131
YY=BB          RESF 132
ZZ=CC          RESF 133
X=A           RESF 134
Y=B           RESF 135
Z=C           RESF 136
450 CONTINUE   RESF 137
460 R1=DEXP(-DT*ROOT(1))   RESF 138
RETURN         RESF 139
END           RESF 140
SUBROUTINE SLOPE(R,BETA,RES,W1,W2,M,ICONT,LAST)   SLOPE 1
DOUBLE PRECISION R(10),BETA(10),W1,W2,W3,BP1,BP3,FF(2,2),F(2,2),
*RES(10)      SLOPE 2
IC=0           SLOPE 3
J=1           SLOPE 4
DELTA=(W2-W1)/20.0   SLOPE 5
W3=W1+J*DELTA   SLOPE 6
*****          SLOPE 7
C              CALLING A SUB SUBROUTINE   SLOPE 8
C              CALL DER(R,BETA,RES,W1,M,F,FF)   SLOPE 9
C              *****          SLOPE 10
C              B1=FF(1,2)      SLOPE 11
BP1=F(1,2)      SLOPE 12
*****          SLOPE 13
C              CALLING A SUB SUBROUTINE   SLOPE 14
C              CALL DER(R,BETA,RES,W3,M,F,FF)   SLOPE 15
100 CALL DER(R,BETA,RES,W3,M,F,FF)   SLOPE 16
C              *****          SLOPE 17
B3=FF(1,2)      SLOPE 18
BP3=F(1,2)      SLOPE 19
IF(B1) 110,110,120   SLOPE 20
110 IF(B3) 130,130,210   SLOPE 21
120 IF(B3) 210,210,130   SLOPE 22
130 IF(BP1) 140,140,150   SLOPE 23
140 IF(BP3) 170,170,160   SLOPE 24
150 IF(BP3) 160,160,170   SLOPE 25
160 IC=IC+1      SLOPE 26
170 IF(IC-2) 180,210,210   SLOPE 27
180 J=J+1      SLOPE 28
IF(J-20) 190,190,200   SLOPE 29
190 B1=B3      SLOPE 30
BP1=BP3      SLOPE 31
W3=W1+J*DELTA   SLOPE 32
GO TO 100     SLOPE 33
200 ICONT=2    SLOPE 34
LAST=LAST-1   SLOPE 35
RETURN        SLOPE 36
210 ICONT=1    SLOPE 37
W2=W3      SLOPE 38
RETURN        SLOPE 39
END           SLOPE 40
SUBROUTINE FALSE(R,BETA,RES,W1,W2,W3,B1,B2,BP3,M,N)   FALS 1
DOUBLE PRECISION R(10),BETA(10),F(2,2),FF(2,2),W1,W2,W3,B1,B2,B3,
*BP3,A,B,C,FA,FB,FC,RES(10)   FALS 2
*BP3,A,B,C,FA,FB,FC,RES(10)   FALS 3
10 FORMAT(17H NO ROOT IN FALSE)   FALS 4
KAGIT=6      FALS 5
IF(N) 100,100,110   FALS 6
100 N=1      FALS 7

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110 J=1 FALS 8
BP3=W1 FALS 9
C **** FALS 10
C CALLING A SUB SUBROUTINE FALS 11
C CALL MATRIX(R,BETA,RES,W1,M,F) FALS 12
C **** FALS 13
C B1=F(1,2) FALS 14
B2=B1 FALS 15
120 DELTA=(W2-W1)/N/20.0 FALS 16
130 W3=W1+J*DELTA FALS 17
IF(W3-W2) 160,160,140 FALS 18
140 N=N+1 FALS 19
BP3=W1 FALS 20
B2=B1 FALS 21
IF(N=25) 150,150,300 FALS 22
150 J=1 FALS 23
GO TO 120 FALS 24
C **** FALS 25
C CALLING A SUB SUBROUTINE FALS 26
160 CALL MATRIX(R,BETA,RES,W3,M,F) FALS 27
C **** FALS 28
C B3=F(1,2) FALS 29
IF(B1) 170,170,180 FALS 30
170 IF(B3) 190,190,200 FALS 31
180 IF(B3) 200,200,190 FALS 32
190 J=J+1 FALS 33
B2=B3 FALS 34
BP3=W3 FALS 35
GO TO 130 FALS 36
200 A=BP3 FALS 37
B=W3 FALS 38
FA=B2 FALS 39
FB=B3 FALS 40
210 C=(A+B)/2.0 FALS 41
C **** FALS 42
C CALLING A SUB SUBROUTINE FALS 43
CALL MATRIX(R,BETA,RES,C,M,F) FALS 44
C **** FALS 45
C FC=F(1,2) FALS 46
IF(FC) 220,290,250 FALS 47
220 IF(FA) 230,230,240 FALS 48
230 FA=FC FALS 49
A=C FALS 50
GO TO 280 FALS 51
240 FB=FC FALS 52
B=C FALS 53
GO TO 280 FALS 54
250 IF(FA) 260,260,270 FALS 55
260 FB=FC FALS 56
B=C FALS 57
GO TO 280 FALS 58
270 FA=FC FALS 59
A=C FALS 60
280 IF(DABS(A-B)=1.0D-14) 290,290,210 FALS 61
C **** FALS 62
C CALLING A SUB SUBROUTINE FALS 63
290 CALL DER(R,BETA,RES,C,M,F,FF) FALS 64

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C ****FALS 65
W3=C
BP3=F(1,2)
B1=FF(2,2)
B2=FF(1,1)
RETURN
300 WRITE(KAGIT,10)
RETURN
END
SUBROUTINE MATRIX(RR,BETA,RES,W,M,F)
DOUBLE PRECISION RR(10),BETA(10),F1(2,2),F2(2,2),F(2,2),W,P,R,
*RES(10),TEMP
P=DSQRT(W)*BETA(1)
R=RR(1)
IF(P) 110,100,110
100 F1(1,1)=1.0
F1(1,2)=R
F1(2,1)=0.0
F1(2,2)=1.0
GO TO 120
110 F1(1,1)=DCOS(P)
F1(1,2)=+R/P*DSIN(P)
F1(2,1)=-P/R*DSIN(P)
F1(2,2)=DCOS(P)
120 IF(RES(1)) 130,140,130
130 TEMP=1.0/(F1(1,2)+RES(1))
F1(2,1)=(F1(2,1)*RES(1)+2.0*F1(1,1)-2.0)*TEMP
F1(1,1)=(F1(1,1)*RES(1)+F1(1,2))*TEMP
F1(2,2)=F1(1,1)
F1(1,2)=F1(1,2)*RES(1)*TEMP
140 IF(M-1) 170,150,170
150 DO 160 L=1,2
DO 160 LL=1,2
F(L,LL)=F1(L,LL)
160 CONTINUE
GO TO 270
170 DO 250 J=2,M
P=DSQRT(W)*BETA(J)
R=RR(J)
IF(P) 190,180,190
180 F2(1,1)=1.0
F2(1,2)=R
F2(2,1)=0.0
F2(2,2)=1.0
GO TO 200
190 F2(1,1)=DCOS(P)
F2(1,2)=+R/P*DSIN(P)
F2(2,1)=-P/R*DSIN(P)
F2(2,2)=DCOS(P)
200 IF(RES(J)) 210,220,210
210 TEMP=1.0/(F2(1,2)+RES(J))
F2(2,1)=(F2(2,1)*RES(J)+2.0*F2(1,1)-2.0)*TEMP
F2(1,1)=(F2(1,1)*RES(J)+F2(1,2))*TEMP
F2(2,2)=F2(1,1)
F2(1,2)=F2(1,2)*RES(J)*TEMP
220 DO 230 L=1,2
DO 230 LL=1,2
Matri 1
Matri 2
Matri 3
Matri 4
Matri 5
Matri 6
Matri 7
Matri 8
Matri 9
Matri 10
Matri 11
Matri 12
Matri 13
Matri 14
Matri 15
Matri 16
Matri 17
Matri 18
Matri 19
Matri 20
Matri 21
Matri 22
Matri 23
Matri 24
Matri 25
Matri 26
Matri 27
Matri 28
Matri 29
Matri 30
Matri 31
Matri 32
Matri 33
Matri 34
Matri 35
Matri 36
Matri 37
Matri 38
Matri 39
Matri 40
Matri 41
Matri 42
Matri 43
Matri 44
Matri 45
Matri 46
Matri 47
Matri 48

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F(L,LL)=0.0
230 CONTINUE
DO 240 L=1,2
DO 240 LL=1,2
DO 240 LLL=1,2
F(L,LL)=F(L,LL)+F1(L,LLL)*F2(LLL,LL)
240 CONTINUE
DO 250 L=1,2
DO 250 LL=1,2
F1(L,LL)=F(L,LL)
250 CONTINUE
260 CONTINUE
270 RETURN
END
SUBROUTINE DER(RR,BETA,RES,W,M,F,FF)
DOUBLE PRECISION RR(10),BETA(10),F1(10,2,2),F2(10,2,2),F3(10,2,2),
*F(2,2),FF(2,2),P,R,ALPHA,SQ,W,RES(10),TEMP,TEMP1
DO 140 I=1,M
P=DSQRT(W)*BETA(I)
R=RR(I)
ALPHA=BETA(I)
SQ=DSQRT(W)
IF(P) 110,100,110
100 F1(I,1,1)=1.0
F1(I,1,2)=R
F1(I,2,1)=0.0
F1(I,2,2)=1.0
F2(I,1,1)=0.0
F2(I,1,2)=0.0
F2(I,2,1)=0.0
GO TO 120
110 F1(I,1,1)=DCOS(P)
F1(I,1,2)=R/P*DSIN(P)
F1(I,2,1)=-P/R*DSIN(P)
F1(I,2,2)=DCOS(P)
F2(I,1,1)=+ALPHA*DSIN(ALPHA*SQ)/2.0/SQ
F2(I,1,2)=-R*DCOS(ALPHA*SQ)/2.0/W+R*DSIN(ALPHA*SQ)/
*ALPHA/2.0/SQ/SQ
F2(I,2,1)=+ALPHA*ALPHA*DCOS(ALPHA*SQ)/2.0/R+DSIN(ALPHA*SQ)/2.0/SQ
**ALPHA/R
120 F2(I,2,2)=F2(I,1,1)
IF(RES(I)) 130,140,130
130 TEMP=1.0/(F1(I,1,2)+RES(I))
F1(I,2,1)=(F1(I,2,1)*RES(I)+2.0*F1(I,1,1)-2.0)*TEMP
F1(I,1,1)=(F1(I,1,1)*RES(I)+F1(I,1,2))*TEMP
F1(I,2,2)=F1(I,1,1)
F1(I,1,2)=F1(I,1,2)*RES(I)*TEMP
TEMP1=F2(I,1,2)*TEMP
F2(I,2,1)=(F2(I,2,1)*RES(I)+2.0*F2(I,1,1))*TEMP-F1(I,2,1)*TEMP1
F2(I,1,1)=(F2(I,1,1)*RES(I)+F2(I,1,2))*TEMP-F1(I,1,1)*TEMP1
F2(I,2,2)=F2(I,1,1)
F2(I,1,2)=F2(I,1,2)*RES(I)*TEMP-F1(I,1,2)*TEMP1
140 CONTINUE
IF(M-1) 170,150,170
150 DO 160 K=1,2
DO 160 L=1,2
F(K,L)=F2(1,K,L)
Matri 49
Matri 50
Matri 51
Matri 52
Matri 53
Matri 54
Matri 55
Matri 56
Matri 57
Matri 58
Matri 59
Matri 60
Matri 61
Matri 62
DER 1
DER 2
DER 3
DER 4
DER 5
DER 6
DER 7
DER 8
DER 9
DER 10
DER 11
DER 12
DER 13
DER 14
DER 15
DER 16
DER 17
DER 18
DER 19
DER 20
DER 21
DER 22
DER 23
DER 24
DER 25
DER 26
DER 27
DER 28
DER 29
DER 30
DER 31
DER 32
DER 33
DER 34
DER 35
DER 36
DER 37
DER 38
DER 39
DER 40
DER 41
DER 42
DER 43

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FF(K,L)=F1(1,K,L)          DER 44
160 CONTINUE                DER 45
    GO TO 330                DER 46
170 DO 180 K=1,2             DER 47
    DO 180 L=1,2             DER 48
    F(K,L)=0.0               DER 49
180 CONTINUE                DER 50
    DO 280 I=1,M              DER 51
    DO 260 J=1,M              DER 52
    DO 210 K=1,2              DER 53
    DO 210 L=1,2              DER 54
    IF(I-J) 190,200,190       DER 55
190 F3(J,K,L)=F1(J,K,L)     DER 56
    GO TO 210                DER 57
200 F3(J,K,L)=F2(J,K,L)     DER 58
210 CONTINUE                DER 59
    IF(J-1) 220,260,220       DER 60
220 DO 230 K=1,2             DER 61
    DO 230 L=1,2             DER 62
    FF(K,L)=0.0               DER 63
230 CONTINUE                DER 64
    DO 240 K=1,2              DER 65
    DO 240 L=1,2              DER 66
    DO 240 N=1,2              DER 67
    FF(K,L)=FF(K,L)+F3(J-1,K,N)*F3(J,N,L)  DER 68
240 CONTINUE                DER 69
    DO 250 K=1,2              DER 70
    DO 250 L=1,2              DER 71
    F3(J,K,L)=FF(K,L)        DER 72
250 CONTINUE                DER 73
260 CONTINUE                DER 74
    DO 270 K=1,2              DER 75
    DO 270 L=1,2              DER 76
    F(K,L)=FF(K,L)+F(K,L)   DER 77
270 CONTINUE                DER 78
280 CONTINUE                DER 79
    DO 320 I=2,M              DER 80
    DO 290 K=1,2              DER 81
    DO 290 L=1,2              DER 82
    FF(K,L)=0.0               DER 83
290 CONTINUE                DER 84
    DO 300 K=1,2              DER 85
    DO 300 L=1,2              DER 86
    DO 300 N=1,2              DER 87
    FF(K,L)=FF(K,L)+F1(I-1,K,N)*F1(I,N,L)  DER 88
300 CONTINUE                DER 89
    DO 310 K=1,2              DER 90
    DO 310 L=1,2              DER 91
    F1(I,K,L)=FF(K,L)        DER 92
310 CONTINUE                DER 93
320 CONTINUE                DER 94
330 RETURN                  DER 95
    END                      DER 96
SUBROUTINE ZERO(RR,BETA,RES,M,K0,K1,M1,M4)      ZERO 1
DOUBLE PRECISION RR(10),BETA(10),A,B,C,D,AA,BB,CC,DD,F1,F2,F3,  ZERO 2
*F4,M1,M2,M3,M4,K0,K1,P,R,RES(10)            ZERO 3
K0=0.0                                         ZERO 4

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DO 120 I=1,M          ZERO 5
IF(RES(I)) 110,100,110  ZERO 6
100 K0=K0+RR(I)        ZERO 7
GO TO 120             ZERO 8
110 K0=K0+RR(I)*RES(I)/(RR(I)+RES(I))  ZERO 9
120 CONTINUE           ZERO 10
K0=1.0/K0              ZERO 11
M1=0.0                 ZERO 12
M2=0.0                 ZERO 13
M3=0.0                 ZERO 14
M4=0.0                 ZERO 15
DO 260 I=1,M          ZERO 16
P=BETA(1)*BETA(1)      ZERO 17
R=RR(1)                ZERO 18
IF(I-1) 130,150,130    ZERO 19
130 A=1.0               ZERO 20
B=R                   ZERO 21
C=0.0                 ZERO 22
D=1.0                 ZERO 23
IF(RES(1)) 140,190,140  ZERO 24
140 B=R*RES(1)/(R+RES(1))  ZERO 25
GO TO 190              ZERO 26
150 A=+P/2.0            ZERO 27
B=+R*P/6.0             ZERO 28
C=+P/R                ZERO 29
D=+P/2.0               ZERO 30
IF(RES(1)) 160,170,160  ZERO 31
160 A=RES(1)*P/2.0/(R+RES(1))  ZERO 32
B=(1.0-R/(R+RES(1)))*RES(1)*R*P/6.0/(R+RES(1))  ZERO 33
C=(RES(1)*P/R +1.0*P )/(R+RES(1))  ZERO 34
D=A                   ZERO 35
170 IF(M-1) 190,180,190  ZERO 36
180 M1=A               ZERO 37
K1=-K0*K0*B            ZERO 38
M4=D                 ZERO 39
GO TO 270              ZERO 40
190 DO 250 J=2,M        ZERO 41
P=BETA(J)*BETA(J)      ZERO 42
R=RR(J)                ZERO 43
IF(I-J) 200,220,200    ZERO 44
200 AA=1.0               ZERO 45
BB=R                  ZERO 46
CC=J.0                 ZERO 47
DD=1.0                 ZERO 48
IF(RES(J)) 210,240,210  ZERO 49
210 BB=R*RES(J)/(R+RES(J))  ZERO 50
GO TO 240              ZERO 51
220 AA=+P/2.0            ZERO 52
BB=+P*R/6.0             ZERO 53
CC=+P/R                ZERO 54
DD=+P/2.0               ZERO 55
IF(RES(J)) 230,240,230  ZERO 56
230 AA=RES(J)*P/2.0/(R+RES(J))  ZERO 57
BB=(1.0-R/(R+RES(J)))*RES(J)*R*P/6.0/(R+RES(J))  ZERO 58
CC=(RES(J)*P/R +1.0*P )/(R+RES(J))  ZERO 59
DD=AA                 ZERO 60
240 F1=A*AA+B*CC       ZERO 61

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F2=A*BB+B*DD      ZERO  62
F3=C*AA+D*CC      ZERO  63
F4=C*BB+D*DD      ZERO  64
A=F1               ZERO  65
B=F2               ZERO  66
C=F3               ZERO  67
D=F4               ZERO  68
250 CONTINUE       ZERO  69
M1=M1+F1          ZERO  70
M2=M2+F2          ZERO  71
M3=M3+F3          ZERO  72
M4=M4+F4          ZERO  73
260 CONTINUE       ZERO  74
K1=-K0*K0*M2      ZERO  75
270 RETURN          ZERO  76
END               ZERO  77
SUBROUTINE RMRSS(IVENT,W,RMRIS1,RMRISC,RATRIS,RMRPS1,RMRPSC,RATRPS) RMRSS  1
1,RMRX1,RMRXC,RATRX,RMRG1,RMRGC,RATRG) RMRSS  2
IF (IVENT.GT.0) GO TO 100 RMRSS  3
A=.8-.0007*W+2.E-6*W*W RMRSS  4
RATRIS=EXP(-.38+.0035*W-1.E-5*W*W) RMRSS  5
RMRIS1=1.-A*RATRIS RMRSS  6
RMRISC=(A-1.)*RATRIS RMRSS  7
RMRPS1=0.0 RMRSS  8
RMRPSC=0.0 RMRSS  9
RATRPS=0.0 RMRSS 10
GO TO 110 RMRSS 11
100 A=.76-.0004*W RMRSS 12
RATRIS=EXP(-15./W) RMRSS 13
RATRPS=RATRIS RMRSS 14
RMRIS1=.85-.85*A*RATRIS RMRSS 15
RMRPS1=.15-.0855*RATRIS RMRSS 16
RMRISC=.85*RATRIS*(A-1.0) RMRSS 17
RMRPSC=-.0645*RATRIS RMRSS 18
110 RMRG1=.400 RMRSS 19
RMRGC=-.0596 RMRSS 20
RATRG=.649 RMRSS 21
RMRX1=.600 RMRSS 22
RMRXC=-.225 RMRSS 23
RATRX=.625 RMRSS 24
RETURN          RMRSS 25
END             RMRSS 26
SUBROUTINE SCHED(IDST,ITIME,IDOW,IFEAST,JC,J,K) SCHED  1
IF(IFEAST-1) 110,100,110
100 J=8           SCHED  2
GO TO 120         SCHED  3
110 J=IDOW        SCHED  4
120 IF(JC) 130,130,140 SCHED  5
130 IF(IDST-1) 150,160,150 SCHED  6
140 J=9           SCHED  7
IF(IDST-1) 150,160,150 SCHED  8
150 K=ITIME        SCHED  9
GO TO 190         SCHED 10
160 IF(ITIME-1) 170,180,170 SCHED 11
170 K=ITIME-1     SCHED 12
GO TO 190         SCHED 13
180 K=24          SCHED 14
                                SCHED 15

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190 RETURN SCHED 16
END SCHED 17
SUBROUTINE SEARCH(N,NA,NB,NC,IA,IB,IC,J)
DIMENSION NA(20),NB(20),NC(20)
J=0 SEARC 1
DO 100 I=1,N SEARC 2
IF(NA(I).NE.IA)GO TO 100 SEARC 3
IF(NB(I).NE.IB)GO TO 100 SEARC 4
IF(NC(I).NE.IC)GO TO 100 SEARC 5
J=1 SEARC 6
GO TO 110 SEARC 7
100 CONTINUE SEARC 8
110 RETURN SEARC 9
END SEARC 10
SUBROUTINE SHADOW(NVERTF,XVERTF,YVERTF,ZVERTF,NUXDIV,NUYDIV,NPOLY,SHADO
INVERT,PERM,XVERT,YVERT,ZVERT,NPOLYD,DELETE,NPOLYA,NVERTA,PERMA,SHADO
2XVERTA,YVERTA,ZVERTA,RAYCOS,ARECI,ASHADE,LOOK) SHADO 2
DIMENSION SHADO 3
1 XVERTF( 10), YVERTF( 10), ZVERTF( 10), DELETE( 1), ANGLE( 15), SHADO 4
1 X1( 15), Y1( 15), Z1( 15) SHADO 5
DIMENSION SHADO 6
1 NVERT( 1), PERM( 1), XVERT( 1, 1), YVERT( 1, 1), SHADO 7
1 ZVERT( 1, 1) SHADO 8
DIMENSION SHADO 9
1 INVERTA( 3), PERMA( 3), XVERTA( 3, 4), YVERTA( 3, 4), SHADO 10
1 ZVERTA( 3, 4) SHADO 11
DIMENSION SHADO 12
1 INVERTS( 3), PERMS( 3), Xverts( 3, 6), Yverts( 3, 6), SHADO 13
1 Zverts( 3, 6) SHADO 14
DIMENSION ISHADE(50,50) SHADO 15
DIMENSION RAYCOS(3), ROTMAT(3,3) SHADO 16
10 FORMAT(3BH POLYGON DELETIONS IMPROPERLY ENTERED ) SHADO 17
11 FORMAT(3H MORE DELETIONS THAN ORIGINAL POLYGONS ) SHADO 18
12 FORMAT(1H ,120A1) SHADO 19
13 FORMAT(1H1) SHADO 20
KAGIT=6 SHADO 21
THE COORDINATES, WITH RESPECT TO THE XYZ SYSTEM, OF THE SHADO 22
ORIGIN OF THE X'Y'Z' SYSTEM, ARE GIVEN BY THE FOLLOWING SHADO 23
STATEMENTS. SHADO 24
DOTADJ=(XVERTF(2)-XVERTF(1))*(XVERTF(2)-XVERTF(3))+ SHADO 25
*(YVERTF(2)-YVERTF(1))*(YVERTF(2)-YVERTF(3))+ SHADO 26
*(ZVERTF(2)-ZVERTF(1))*(ZVERTF(2)-ZVERTF(3)) SHADO 27
DOTSLF=(XVERTF(2)-XVERTF(3))*(XVERTF(2)-XVERTF(3))+ SHADO 28
*(YVERTF(2)-YVERTF(3))*(YVERTF(2)-YVERTF(3))+ SHADO 29
*(ZVERTF(2)-ZVERTF(3))*(ZVERTF(2)-ZVERTF(3)) SHADO 30
ORMEW=DOTADJ/DOTSLF SHADO 31
XO=ORMEW*(XVERTF(3)-XVERTF(2))+XVERTF(2) SHADO 32
YO=ORMEW*(YVERTF(3)-YVERTF(2))+YVERTF(2) SHADO 33
ZO=ORMEW*(ZVERTF(3)-ZVERTF(2))+ZVERTF(2) SHADO 34
COMPUTATION OF ROTATION MATRIX SHADO 35
XP10=XVERTF(3)-XO SHADO 36
YP10=YVERTF(3)-YO SHADO 37
ZP10=ZVERTF(3)-ZO SHADO 38
XP10=XVERTF(1)-XO SHADO 39
YP10=YVERTF(1)-YO SHADO 40
ZP10=ZVERTF(1)-ZO SHADO 41
AP10=SQRT (XP10*XP10+YP10*YP10+ZP10*ZP10) SHADO 42

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AP30=SQRT (XP30*XP30+YP30*YP30+ZP30*ZP30) SHADO 44
ROTMAT(1,1)=XP30/AP30 SHADO 45
ROTMAT(1,2)=YP30/AP30 SHADO 46
ROTMAT(1,3)=ZP30/AP30 SHADO 47
ROTMAT(2,1)=XP10/AP10 SHADO 48
ROTMAT(2,2)=YP10/AP10 SHADO 49
ROTMAT(2,3)=ZP10/AP10 SHADO 50
ROTMAT(3,1)=ROTMAT(1,2)*ROTMAT(2,3)-ROTMAT(1,3)*ROTMAT(2,2) SHADO 51
ROTMAT(3,2)=ROTMAT(1,3)*ROTMAT(2,1)-ROTMAT(1,1)*ROTMAT(2,3) SHADO 52
ROTMAT(3,3)=ROTMAT(1,1)*ROTMAT(2,2)-ROTMAT(2,1)*ROTMAT(1,2) SHADO 53
DO 110 I=1,NVERTF SHADO 54
C      TRANSFORMATION OF RP VERTICES FROM XYZ SYSTEM INTO X'Y'Z'
C      SYSTEM-
X=XVERTF(I)-XO SHADO 55
Y=YVERTF(I)-YO SHADO 56
Z=ZVERTF(I)-ZO SHADO 57
XVERTF(I)=ROTMAT(1,1)*X+ROTMAT(1,2)*Y+ROTMAT(1,3)*Z SHADO 58
YVERTF(I)=ROTMAT(2,1)*X+ROTMAT(2,2)*Y+ROTMAT(2,3)*Z SHADO 59
C      ESTABLISHMENT OF SCAN LIMITS FOR ENCLOSURE BY RP-
IF(I.NE.1) GO TO 100 SHADO 60
A0=XVERTF(I)
B0=YVERTF(I)
A=XVERTF(I)
B=YVERTF(I)
GO TO 110 SHADO 61
100 IF(XVERTF(I).GT.A)A=XVERTF(I)
IF(XVERTF(I).LT.A0) A0=XVERTF(I)
IF(YVERTF(I).GT.B)B=YVERTF(I)
IF(YVERTF(I).LT.B0) B0=YVERTF(I)
110 CONTINUE SHADO 62
C      SIZE OF GRID INCREMENTS-
DELTAX=(A-A0)/NUXDIV SHADO 63
DELTAY=(B-B0)/NUYDIV SHADO 64
SMALL=(DELTAX+DELTAY)*.001 SHADO 65
DELTAR=DELTAX*DELTAY SHADO 66
C      TEST FOR ENCLOSURE BY RP OF ELEMENTS IN THE RP PLANE-
XE=.500*DELTAX+A0 SHADO 67
ARECI=0.0 SHADO 68
DO 170 J=1,NUXDIV SHADO 69
YE=.500*DELTAY+B0 SHADO 70
DO 160 K=1,NUYDIV SHADO 71
DO 120 L=1,NVERTF SHADO 72
X=XVERTF(L)-XE SHADO 73
Y=YVERTF(L)-YE SHADO 74
AMPLIT=ABS (X)+ABS (Y)
IF(AMPLIT.LT.SMALL) GO TO 150
ANGLE(L)=1.0-X/AMPLIT
IF(Y.LT.0.0) ANGLE(L)=4.0-ANGLE(L)
120 CONTINUE SHADO 75
SUM=0.0 SHADO 76
DO 130 L=1,NVERTF SHADO 77
LNEXT=L+1 SHADO 78
IF(L.EQ.NVERTF)LNEXT=1 SHADO 79
CHANGE=ANGLE(LNEXT)-ANGLE(L)
SINGE=1.00 SHADO 80
IF(CHANGE.LE.0.00)SINGE=-1.00 SHADO 81
SUBTAN=CHANGE*SINGE SHADO 82
SHADO 83
SHADO 84
SHADO 85
SHADO 86
SHADO 87
SHADO 88
SHADO 89
SHADO 90
SHADO 91
SHADO 92
SHADO 93
SHADO 94
SHADO 95
SHADO 96
SHADO 97
SHADO 98
SHADO 99
SHADO 100

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IF(SUBTAN.GT.2.0)CHANGE=-(4.0-SUBTAN)*SINGE           SHADO101
SUM=SUM+CHANGE                                         SHADO102
130 CONTINUE                                           SHADO103
140 IF(ABS(SUM).LT.2.0) GO TO 150                   SHADO104
ISHADE(J,K)=0                                         SHADO105
ARECI=ARECI+DELTAR                                    SHADO106
GO TO 160                                             SHADO107
150 ISHADe(J,K)=2                                     SHADO108
YE=YE+DELTAY                                         SHADO109
160 CONTINUE                                           SHADO110
XE=XE+DELTAX                                         SHADO111
170 CONTINUE                                           SHADO112
THE LARGE NUMBER OF STATEMENTS WHICH FOLLOW DELETE THOSE   SHADO113
SP POLYGONS WHICH ARE NOT RELEVANT TO THIS PARTICULAR RP, AND   SHADO114
ADD THOSE SP POLYGONS WHICH ARE PECULIAR TO IT.          SHADO115
IF(NPOLY.NE.0) GO TO 180                           SHADO116
NBAD=1                                               SHADO117
NPOLYF=NPOLYA                                         SHADO118
IF(NPOLYF.EQ.0) GO TO 431                         SHADO119
GO TO 290                                            SHADO120
180 IF(NPOLYD.GT.0) GO TO 190                      SHADO121
IDLETE(1)=1000                                       SHADO122
GO TO 210                                           SHADO123
190 DO 200 I=1,NPOLYD                            SHADO124
IF(I.EQ.1) GO TO 200                               SHADO125
IF(IDLETE(I).GT.IDLETE(I-1)) GO TO 200            SHADO126
WRITE(KAGIT,10)                                      SHADO127
STOP                                                 SHADO128
200 CONTINUE                                         SHADO129
210 NPOLYL=NPOLY-NPOLYD                          SHADO130
IF(NPOLYL.EQ.0) GO TO 270                         SHADO131
IF(NPOLYL.GT.0) GO TO 220                         SHADO132
WRITE(KAGIT,11)                                      SHADO133
STOP                                                 SHADO134
220 I=1                                              SHADO135
L=1                                              SHADO136
DO 260 J=1,NPOLYL                                SHADO137
230 IF(L.NE.IDLETE(I)) GO TO 240                SHADO138
I=I+1                                              SHADO139
L=L+1                                              SHADO140
GO TO 230                                           SHADO141
240 NVERTS(J)=NVERT(L)                           SHADO142
PERMS(J)=PERM(L)                                 SHADO143
I=NVERT(L)                                         SHADO144
DO 250 K=1,II                                     SHADO145
XVERTS(J,K)=XVERT(L,K)                           SHADO146
YVERTS(J,K)=YVERT(L,K)                           SHADO147
ZVERTS(J,K)=ZVERT(L,K)                           SHADO148
250 CONTINUE                                         SHADO149
L=L+1                                              SHADO150
260 CONTINUE                                         SHADO151
270 NPOLYF=NPOLYL+NPOLYA                         SHADO152
NBAD=NPOLYL+1                                     SHADO153
IF(NPOLYA.EQ.0) GO TO 310                         SHADO154
280 III=1                                           SHADO155
DO 300 J=NBAD,NPOLYF                            SHADO156
PERMS(J)=PERMA(III)                             SHADO157

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NVERTS(J)=NVERTA(III) SHADO158
II=NVERTS(J) SHADO159
DO 290 K=1,II SHADO160
XVERTS(J,K)=XVERTA(III,K) SHADO161
YVERTS(J,K)=YVERTA(III,K) SHADO162
ZVERTS(J,K)=ZVERTA(III,K) SHADO163
290 CONTINUE SHADO164
III=III+1 SHADO165
300 CONTINUE SHADO166
310 DO 430 J=1,NPOLYF SHADO167
C THE FOLLOWING STATEMENTS TRANSFORM THE SP VERTICES FROM THE SHADO168
C XYZ SYSTEM TO THE X'Y'Z' SYSTEM. SHADO169
C II=NVERTS(J) SHADO170
DO 320 K=1,II SHADO171
X=XVERTS(J,K)-XO SHADO172
Y=YVERTS(J,K)-YO SHADO173
Z=ZVERTS(J,K)-ZO SHADO174
XVERTS(J,K)=ROTMAT(1,1)*X+ROTMAT(1,2)*Y+ROTMAT(1,3)*Z SHADO175
YVERTS(J,K)=ROTMAT(2,1)*X+ROTMAT(2,2)*Y+ROTMAT(2,3)*Z SHADO176
ZVERTS(J,K)=ROTMAT(3,1)*X+ROTMAT(3,2)*Y+ROTMAT(3,3)*Z SHADO177
320 CONTINUE SHADO178
C THE FOLLOWING STATEMENTS, THROUGH STATEMENT 420, CLIP THE SHADO179
C SP POLYGONS SO THAT THEY DO NOT PROJECT FALSE SHADOWS INTO THE RP SHADO180
C PLANE. SHADO181
II=NVERTS(J) SHADO182
DO 330 I=1,II SHADO183
IF(ZVERTS(J,I).GE.0.0) GO TO 340 SHADO184
330 CONTINUE SHADO185
NVERTS(J)=0 SHADO186
GO TO 430 SHADO187
340 II=NVERTS(J) SHADO188
DO 350 I=1,II SHADO189
IF(ZVERTS(J,I).LT.0.0) GU TO 360 SHADO190
350 CONTINUE SHADO191
GO TO 430 SHADO192
360 II=NVERTS(J) SHADO193
DO 370 I=1,II SHADO194
IJ=I SHADO195
IBELOW=I+1 SHADO196
IF(I.EQ.NVERTS(J))IBELOW=1 SHADO197
IF(ZVERTS(J,IBELOW).LE.0.0.AND.ZVERTS(J,I).GT.0.0) GO TO 380 SHADO198
370 CONTINUE SHADO199
380 IBEFOR=IJ SHADO200
IABOVE=IBELOW+1 SHADO201
NSAVE=NVERTS(J)-1 SHADO202
DO 390 I=1,NSAVE SHADO203
IF(IAbove.EQ.NVERTS(J)+1)IAbove=1 SHADO204
IF(ZVERTS(J,IAbove).GT.0.0) GO TO 400 SHADO205
IAbove=IAbove+1 SHADO206
390 CONTINUE SHADO207
400 IBEmer=IAbove-1 SHADO208
IF(IAbove.EQ.1)IBemer=NVERTS(J) SHADO209
NEWN=NVERTS(J)+2-IAbove+IBelow SHADO210
IF(IAbove.LT.IBbelow)NEWN=IBelow-IAbove+2 SHADO211
XENTRY=(ZVERTS(J,IBelow)*XVERTS(J,IBEFOR)-ZVERTS(J,IBEFOR)*XVERTS(J,IBelow))/ (ZVERTS(J,IBelow)-ZVERTS(J,IBEFOR)) SHADO212
*J,IBelow))/ (ZVERTS(J,IBelow)-ZVERTS(J,IBEFOR)) SHADO213
YENTRY=(ZVERTS(J,IBelow)*YVERTS(J,IBEFOR)-ZVERTS(J,IBEFOR)*YVERTS(J,IBelow))/ (YVERTS(J,IBelow)-YVERTS(J,IBEFOR)) SHADO214

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*J,IBELOW))/ (ZVERTS(J,IBELOW)-ZVERTS(J,IBEFOR)) SHADO215
XEXIT=(ZVERTS(J,IABOVE)*XVERTS(J,IBEMER)-ZVERTS(J,IBEMER)*XVERTS(J)SHADO216
*,IABOVE))/ (ZVERTS(J,IABOVE)-ZVERTS(J,IBEMER)) SHADO217
YEXIT=(ZVERTS(J,IABOVE)*YVERTS(J,IBEMER)-ZVERTS(J,IBEMER)*YVERTS(J)SHADO218
*,IABOVE))/ (ZVERTS(J,IABOVE)-ZVERTS(J,IBEMER)) SHADO219
X1(1)=XEXIT
Y1(1)=YEXIT
Z1(1)=0.0
IROTAT=IABOVE
NSAVE=NEWN-1
DO 410 I=2,NSAVE
X1(I)=XVERTS(J,IROTAT)
Y1(I)=YVERTS(J,IROTAT)
Z1(I)=ZVERTS(J,IROTAT)
IROTAT=IROTAT+1
IF(IROTAT .EQ.NVERTS(J)+1)IROTAT=1
410 CONTINUE
X1(NEWN)=XENTRY
Y1(NEWN)=YENTRY
Z1(NEWN)=0.0
NVERTS(J)=NEWN
II=NVERTS(J)
DO 420 I=1,II
XVERTS(J,I)=X1(I)
YVERTS(J,I)=Y1(I)
ZVERTS(J,I)=Z1(I)
420 CONTINUE
GO TO 340
430 CONTINUE
C TRANSFORMATION OF Z COMPONENT OF SOLAR DIRECTION VECTOR
C FROM XYZ SYSTEM INTO X'Y'Z' SYSTEM-
431 ZS=ROTMAT(3,1)*RAYCOS(1)+ROTMAT(3,2)*RAYCOS(2)+ROTMAT(3,3)*
1RAYCOS(3)
C IF THE Z' COMPONENT OF THE SOLAR DIRECTION VECTOR IS
C NEGATIVE, THE RP IS FACING AWAY FROM THE SUN AND RECEIVES NO
C DIRECT RADIATION. THE FOLLOWING STATEMENT MAKES THIS TEST.
C NOTE THAT THE ANGULAR SIZE OF THE SUN'S RADIUS, SEEN FROM THE
C EARTH, IS .0046 RADIANS.
IF(ZS.GE..0046) GO TO 450
C IF THE RP FACES AWAY FROM THE SUN, THE FOLLOWING STATEMENTS SHADO254
C DENOTE THE RP AS TOTALY SHADED.
DO 440 I=1,NUXDIV
DO 440 J=1,NUYDIV
IF(I SHADE(I,J).EQ.Q) ISHADE(I,J)=1
440 CONTINUE
ASHADE=ARECI
GO TO 630
450 IF(NPOLYF.NE.0)GO TO 460
ASHADE=0.0
GO TO 630
C TRANSFORMATION OF X AND Y COMPONENTS OF THE SOLAR DIRECTION SHADO265
C VECTOR FROM XYZ SYSTEM INTO X'Y'Z' SYSTEM-
460 XS=ROTMAT(1,1)*RAYCOS(1)+ROTMAT(1,2)*RAYCOS(2)+ROTMAT(1,3)*
1RAYCOS(3)
YS=ROTMAT(2,1)*RAYCOS(1)+ROTMAT(2,2)*RAYCOS(2)+ROTMAT(2,3)*
1RAYCOS(3)
C=XS/ZS
SHADO266
SHADO267
SHADO268
SHADO269
SHADO270
SHADO271

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S=YS/ZS SHADO272
INTGRL=0 SHADO273
DO 600 I=1,NPOLYF SHADO274
C THE FOLLOWING STATEMENT ASSUMES THAT THE SP TRANSMITS A CONSTANT SHADO275
C FRACTION OF THE INCIDENT LIGHT. THIS STATEMENT MAY BE REPLACED SHADO276
C BY A FUNCTIONAL RELATIONSHIP BETWEEN THE TRANSMITANCE AND THE SHADO277
C ANGLE OF INCIDENCE. SHADO278
C SHADO279
470 P=PERMS(I) SHADO280
IF(NVERTS(I).EQ.0) GO TO 600 SHADO281
II=NVERTS(I) SHADO282
DO 490 J=1,II SHADO283
C THE FOLLOWING STATEMENTS PROJECT THE SP VERTICES, ALONG THE SHADO284
C SUN'S RAYS, INTO THE PLANE OF THE RP. AS THE PROJECTION IS SHADO285
C BEING DONE, SCAN LIMITS ARE SET UP FOR THIS SP IN THE RP GRID. SHADO286
X1(J)=XVERTS(I,J)-C*ZVERTS(I,J) SHADO287
Y1(J)=YVERTS(I,J)-S*ZVERTS(I,J) SHADO288
IF(J.NE.1) GO TO 480 SHADO289
XMAX=X1(J) SHADO290
XMIN=X1(J) SHADO291
YMAX=Y1(J) SHADO292
YMIN=Y1(J) SHADO293
GO TO 490 SHADO294
480 IF(X1(J).GT.XMAX)XMAX=X1(J)
IF(X1(J).LT.XMIN)XMIN=X1(J)
IF(Y1(J).GT.YMAX)YMAX=Y1(J)
IF(Y1(J).LT.YMIN)YMIN=Y1(J)
490 CONTINUE SHADO295
C THE FOLLOWING STATEMENTS BYPASS THOSE SP'S WHOSE SCAN SHADO296
C LIMITS DO NOT OVERLAP THE SCAN LIMITS OF THE RP. SHADO297
IF(XMIN.GT.A) GO TO 600 SHADO298
IF(XMAX.LT.AO) GO TO 600 SHADO299
IF(YMIN.GT.B) GO TO 600 SHADO300
IF(YMAX.LT.BO) GO TO 600 SHADO301
C IF THERE IS AN OVERLAP, THE FOLLOWING STATEMENTS CONFINE THE SCAN SHADO302
C TO THE AREA OF OVERLAP. SHADO303
IF(XMAX.GT.A)XMAX=A SHADO304
IF(XMIN.LT.AO)XMIN=AO SHADO305
IF(YMAX.GT.B)YMAX=B SHADO306
IF(YMIN.LT.BO)YMIN=BO SHADO307
JMIN=(XMIN-AO)/DELTAX+.50 SHADO308
JMAX=(XMAX-AO)/DELTAX+.50 SHADO309
IF(JMIN.EQ.0)JMIN=1 SHADO310
IF(JMAX.EQ.0)JMAX=1 SHADO311
IF(JMAX.GT.NUXDIV)JMAX=NUXDIV SHADO312
KMIN=(YMIN-BO)/DELTAY+.50 SHADO313
KMAX=(YMAX-BO)/DELTAY+.50 SHADO314
IF(KMIN.EQ.0)KMIN=1 SHADO315
IF(KMAX.EQ.0)KMAX=1 SHADO316
IF(KMAX.GT.NUYDIV)KMAX=NUYDIV SHADO317
XMIN=JMIN*DELTAX-DELTAX/2.0+AO SHADO318
YMIN=KMIN*DELTAY-DELTAY/2.0+BO SHADO319
ACTNO=0.0 SHADO320
DESNO=0.0 SHADO321
XE=XMIN SHADO322
DO 590 J=JMIN,JMAX SHADO323
YE=YMIN SHADO324
DO 580 K=KMIN,KMAX SHADO325
SHADO326
SHADO327
SHADO328

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IF(ISHADE(I,J).NE.0) GO TO 110
IF(I.NE.1.AND.I.NE.MM.AND.J.NE.1.AND.J.NE.NN) GO TO 100
ISHADE(I,J)=1
GO TO 110
100 IF(ISHADE(I-1,J).EQ.2.OR.ISHADE(I+1,J).EQ.2.OR.ISHADE(I,J-1).EQ.
*2.OR.ISHADE(I,J+1).EQ.2) ISHADE(I,J)=1
110 CONTINUE
DO 130 I=1,MM
DO 130 J=1,NN
IF(ISHADE(I,J).EQ.1) GO TO 120
ISHADE(I,J)=IBLNK
GO TO 130
120 ISHADE(I,J)=ISH
130 CONTINUE
RETURN
END

SUBROUTINE SHG(RDIR,BS,BG,FWS,FWG,RO,RA,RI,SHAW,SC,TDIR,TDIF,ADIROSHG
1,ADIRI,ADIFO,ADIFI,TDB,T,QRAY,QCON)
U=1./(RO+RA+RI)
IF(RDIR.EQ.0.0.AND.BS.EQ.0.0.AND.BG.EQ.0.0) GO TO 100
FI=(RO+RA)*U
FO=RO*U
QDIR=SHAW*RDIR
QDIF=BS*FWS+BG*FWG
QTRANS=QDIF*TDIF+QDIR*TDIR
QABS=QDIF*(FO*ADIFO+FI*ADIFI)+QDIR*(FO*ADIRO+FI*ADIRI)
QRAY=SC*QTRANS
QCON=QTRANS-QRAY+QABS+(TDB-T)*U
GO TO 110
100 QCON=U*(TDB-T)
QRAY=0.0
110 RETURN
END

SUBROUTINE SUN1(IDOY,TL,SUNRAS,DEABC)
DIMENSION DEABC(5)
C1=COS(.01721*IDOY)
S1=SIN(.01721*IDOY)
S2=2.*S1*C1
C2=C1*C1-S1*S1
C3=C1*C2-S1*S2
S3=C1*S2+S1*C2
DEABC(1)=-.00527-.4001*C1-.003996*C2-.004240*C3+.0672*S1
DEABC(2)=.696E-4+.706E-2*C1-.0533*C2-.157E-2*C3-.122*S1-.156*S2
*-.556E-2*S3
DEABC(3)=368.44+24.52*C1-1.14*C2-1.09*C3+.58*S1-.18*S2+.28*S3
DEABC(4)=.1717-.0344*C1+.0032*C2+.0024*C3-.0043*S1-.0008*S3
DEABC(5)=.0905-.0410*C1+.0073*C2+.0015*C3-.0034*S1+.0004*S2
*-.0006*S3
SUNRAS=ARCOS(-TL*DEABC(1))
RETURN
END

SUBROUTINE SUN2(H,DEABC,SL,CL,CN,RAYCOS,RDN,BS,SA,CA)
DIMENSION DEABC(5),RAYCOS(3)
DQ=DEABC(1)*DEABC(1)
SD=DEABC(1)*(1.-.16667*DQ)
CD=1.-.5*DQ
SH=SIN(H)

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CH=COS(H)                                SUN2    7
RAYCOS(1)=CD*(SL*CH*SA-SH*CA)-SD*CL*SA   SUN2    8
RAYCOS(2)=CA*(SD*CL-SL*CH*CD)-SH*CD*SA   SUN2    9
RAYCOS(3)=SL*SD+CL*CH*CD                  SUN2   10
IF(RAYCOS(3)) 100,100,110                 SUN2   11
100 RAYCOS(3)=0.0                          SUN2   12
RDN=0.                                     SUN2   13
BS=0.                                       SUN2   14
BG=0.                                       SUN2   15
RETURN                                     SUN2   16
110 RDN=DEABC(3)*CN*EXP(-DEABC(4)/RAYCOS(3)) SUN2   17
BS=DEABC(5)*RDN/(CN*CN)                   SUN2   18
RETURN                                     SUN2   19
END                                         SUN2   20
SUBROUTINE SUN3(WT,WA,RAYCOS,RDN,BS,ROG,GAMMA,ETA,RDIR,RDIFS,RDIFGSUN3
*,RTOT,BG)                                SUN3    2
DIMENSION RAYCOS(3)                         SUN3    3
BG=ROG*(BS+RDN*RAYCOS(3))                 SUN3    4
IF(ABS(WT-0.0)-.002) 130,100,110          SUN3    5
100 GAMMA=1.0                               SUN3    6
ETA=RAYCOS(3)                             SUN3    7
GO TO 240                                  SUN3    8
110 IF(ABS(WT-1.5705)-.0004) 130,120,130  SUN3    9
120 GAMMA=0.0                               SUN3   10
SWT=1.0                                     SUN3   11
GO TO 140                                  SUN3   12
130 GAMMA=COS(WT)                          SUN3   13
SWT=SIN(WT)                                SUN3   14
140 IF(ABS(WA-0.0)-.0002) 150,190,150     SUN3   15
150 IF(ABS(WA-1.5705)-.0004) 160,200,160  SUN3   16
160 IF(ABS(WA-3.1410)-.0008) 170,210,170  SUN3   17
170 IF(ABS(WA-4.7115)-.0010) 180,220,180  SUN3   18
180 SWA=SIN(WA)                            SUN3   19
CWA=COS(WA)                                SUN3   20
GO TO 230                                  SUN3   21
190 SWA=0.0                                 SUN3   22
CWA=1.0                                     SUN3   23
GO TO 230                                  SUN3   24
200 SWA=1.0                                 SUN3   25
CWA=0.0                                     SUN3   26
GO TO 230                                  SUN3   27
210 SWA=0.0                                 SUN3   28
CWA=-1.0                                    SUN3   29
GO TO 230                                  SUN3   30
220 SWA=-1.0                               SUN3   31
CWA=0.0                                     SUN3   32
230 ETA=(RAYCOS(1)*SWA+RAYCOS(2)*CWA)*SWT+RAYCOS(3)*GAMMA  SUN3   33
240 IF(ETA) 250,250,260                      SUN3   34
250 RDIR=0.0                                SUN3   35
GO TO 270                                  SUN3   36
260 RDIR=RDN*ETA                           SUN3   37
270 RDIFS=BS*.5*(1.+GAMMA)                 SUN3   38
RDIFG=BG*.5*(1.-GAMMA)                    SUN3   39
RTOT=RDIR+RDIFS+RDIFG                     SUN3   40
RETURN                                     SUN3   41
END                                         SUN3   42
SUBROUTINE TABMAK(LEAP,NS,SSHMAX,ISSHMA,SSHMIN,ISSHMI,STCMAX,
TABMAK 1

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*ISTCMA,STCMIN,ISTCMI) TABMA 2
  DIMENSION STCMAX(50),ISTCMA (50),STCMIN(50),ISTCMI (50) TABMA 3
  DIMENSION SSHMAX(50),ISSHMA (50),SSHMIN(50),ISSHMI (50) TABMA 4
  DIMENSION ITIM(4),IDA(4),MONT(4) TABMA 5
  DATA MO1,MO2,MO3,MO4,MO5,MO6,MO7,MO8,MO9,MO10,MO11,MO12/4HJAN., TABMA 6
  *4HFEB.,4HMAR.,4HAPR.,3HMAY,4HJUNE,4HJULY,4HAUG.,4HSEP.,4HOCT., TABMA 7
  *4HNOV.,4HDEC./ TABMA 8
10 FORMAT(1H10 TABMA 9
11 FORMAT(// TABMA 10
12 FORMAT(36X,59HSPACE MAXIMUM AND MINIMUM HEATING AND COOLING LOADS TABMA 11
13 1SUMMARY) TABMA 12
13 FORMAT(/,63X,5H* * *) TABMA 13
14 FORMAT(124H SP.NO MAX. HEAT. HOUR MIN. HEAT. TABMA 14
15 1 HOUR MAX. COOL. HOUR MIN. COOL. HTABMA 15
20UR) TABMA 16
15 FORMAT(I5,2(F12.0,2X,I2,9H.HOUR OF ,I2,1X,A4,F11.0,2X,I2,9H.HOUR OF TABMA 17
1F ,I2,1X,A4)) TABMA 18
16 FORMAT(I5,F12.0,2X,I2,9H.HOUR OF ,I2,1X,A4,F11.0,2X,I2,9H.HOUR OF TABMA 19
1,I2,1X,A4,62H IN THIS SPACE NO COOLING IS REQUIRED FOR THE PERIODTABMA 20
2 OF STUDY) TABMA 21
17 FORMAT(I5,63H IN THIS SPACE NO HEATING IS REQUIRED FOR THE PERIODTABMA 22
1 OF STUDY ,F12.0,2X,I2,9H.HOUR OF ,I2,1X,A4,F11.0,2X,I2,9H.HOUR OF TABMA 23
2 ,I2,1X,A4) TABMA 24
18 FORMAT(9X,8HBTU/HOUR,23X,8HBTU/HOUR24X,8HBTU/HOUR,23X,8HBTU/HOUR) TABMA 25
KAGIT=6 TABMA 26
  WRITE(KAGIT,10) TABMA 27
  WRITE(KAGIT,11) TABMA 28
  WRITE(KAGIT,12) TABMA 29
  WRITE(KAGIT,13) TABMA 30
  WRITE(KAGIT,11) TABMA 31
  WRITE(KAGIT,14) TABMA 32
  WRITE(KAGIT,18) TABMA 33
  DO 340 I=1,NS TABMA 34
    IF((STCMAX(I)+STCMIN(I)).EQ.0.0) GO TO 100 TABMA 35
    IF((SSHMAX(I)+SSHMIN(I)).EQ.0.0) GO TO 110 TABMA 36
100 J1=1 TABMA 37
  J2=4 TABMA 38
  K=3 TABMA 39
  GO TO 120 TABMA 40
100 J1=1 TABMA 41
  J2=2 TABMA 42
  K=1 TABMA 43
  GO TO 120 TABMA 44
110 J1=3 TABMA 45
  J2=4 TABMA 46
  K=2 TABMA 47
120 DO 130 IJ=J1,J2 TABMA 48
  GO TO ( 130, 140, 150, 160),IJ TABMA 49
130 J=ISSHMA(I) TABMA 50
  GO TO 170 TABMA 51
140 J=ISSHMI(I) TABMA 52
  GO TO 170 TABMA 53
150 J=ISTCMA(I) TABMA 54
  GO TO 170 TABMA 55
160 J=ISTCMI(I) TABMA 56
170 IDOY=(J-1)/24.+1.001 TABMA 57
  ITIME=J-(IDOY-1)*24 TABMA 58

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***** TABMA 59
      CALLING A SUBROUTINE          TABMA 60
CALL DAYMO(LEAP, IDOY, IDAY, MONTH)   TABMA 61
***** TABMA 62
ITIM(IJ)=ITIME                      TABMA 63
IDA(IJ)=IDAY                         TABMA 64
GO TO (180,190,200,210,220,230,240,250,260,270,280,290),MONTH TABMA 65
180 MONT(IJ)=M01                      TABMA 66
GO TO 300                            TABMA 67
190 MONT(IJ)=M02                      TABMA 68
GO TO 300                            TABMA 69
200 MONT(IJ)=M03                      TABMA 70
GO TO 300                            TABMA 71
210 MONT(IJ)=M04                      TABMA 72
GO TO 300                            TABMA 73
220 MONT(IJ)=M05                      TABMA 74
GO TO 300                            TABMA 75
230 MONT(IJ)=M06                      TABMA 76
GO TO 300                            TABMA 77
240 MONT(IJ)=M07                      TABMA 78
GO TO 300                            TABMA 79
250 MONT(IJ)=M08                      TABMA 80
GO TO 300                            TABMA 81
260 MONT(IJ)=M09                      TABMA 82
GO TO 300                            TABMA 83
270 MONT(IJ)=M010                     TABMA 84
GO TO 300                            TABMA 85
280 MONT(IJ)=M011                     TABMA 86
GO TO 300                            TABMA 87
290 MONT(IJ)=M012                     TABMA 88
300 CONTINUE                         TABMA 89
GO TO ( 310, 320, 330),K             TABMA 90
310 WRITE(KAGIT,16)I,SSHMAX(I),ITIM(1),IDA(1),MONT(1),
*           SSHMIN(I),ITIM(2),IDA(2),MONT(2)          TABMA 91
*           GO TO 340                                TABMA 92
320 WRITE(KAGIT,17)I,STCMAX(I),ITIM(3),IDA(3),MONT(3),
*           STCMIN(I),ITIM(4),IDA(4),MONT(4)          TABMA 93
*           GO TO 340                                TABMA 94
330 WRITE(KAGIT,15)I,SSHMAX(I),ITIM(1),IDA(1),MONT(1),
*           SSHMIN(I),ITIM(2),IDA(2),MONT(2),          TABMA 95
*           STCMAX(I),ITIM(3),IDA(3),MONT(3),          TABMA 96
*           STCMIN(I),ITIM(4),IDA(4),MONT(4)          TABMA 97
340 CONTINUE                         TABMA 98
RETURN                               TABMA 99
END                                  TABMA100
SUBROUTINE TAR(L,C,NPANE,TDIR,TDIF,ADIRO,ADIFO,ADIRI,ADIFI)
IF(NPANE-1) 100,100,220
100 GO TO ( 110, 120, 130, 140, 150, 160, 170, 180),L
110 TDIR=-.01325+C*(3.08716+C*(-3.68232+1.48683*C))
ADIRO=0.077366-.027180*C-.002691/(C+.040548)
TDIF=.79901
ADIFO=.05435
GO TO 190
120 TDIR=-.01782+C*(2.87789+C*(-3.36746+1.34162*C))
ADIRO=0.152995-.052962*C-.007306/(C+.052993)
TDIF=.75422
ADIFO=.10505

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GO TO 190	TAR 13
130 TDIR=-.02042+C*(2.68177+C*(-3.08269+1.21378*C))	TAR 14
ADIRO=0.226635-.077564*C-.013491/(C+.064193)	TAR 15
TDIF=.71209	TAR 16
ADIFO=.15238	TAR 17
GO TO 190	TAR 18
140 TDIR=-.02180+C*(2.49833+C*(-2.82369+1.10017*C))	TAR 19
ADIRO=0.378291-.101216*C-.021047/(C+.074713)	TAR 20
TDIF=.67242	TAR 21
ADIFO=.27664	TAR 22
GO TO 190	TAR 23
150 TDIR=-.02147+C*(1.88493+C*(-2.00686+0.75829*C))	TAR 24
ADIRO=0.562829-.185857*C-.061251/(C+.111426)	TAR 25
TDIF=.53535	TAR 26
ADIFO=.34727	TAR 27
GO TO 190	TAR 28
160 TDIR=-.01805+C*(1.42610+C*(-1.43935+0.53399*C))	TAR 29
ADIRO=0.790545-.255091*C-.110609/(C+.141564)	TAR 30
TDIF=.42683	TAR 31
ADIFO=.46409	TAR 32
GO TO 190	TAR 33
170 TDIR=-.01438+C*(1.08159+C*(-1.03870+0.38277*C))	TAR 34
ADIRO=0.980573-.308654*C-.161730/(C+.165985)	TAR 35
TDIF=.34063	TAR 36
ADIFO=.55547	TAR 37
GO TO 190	TAR 38
180 TDIR=-.01066+C*(0.80798+C*(-0.68760+0.17742*C))	TAR 39
ADIRO=1.135704-.348630*C-.210036/(C+.185579)	TAR 40
TDIF=.25535	TAR 41
ADIFO=.62726	TAR 42
190 ADIRI=0.	TAR 43
ADIFI=0.	TAR 44
IF(TDIR-0.0) 200,210,210	TAR 45
200 TDIR=0.0	TAR 46
210 RETURN	TAR 47
220 GO TO (230, 240, 250, 260, 270, 280, 290, 300),L	TAR 48
230 TDIR=-.04674+C*(2.17782+C*(-1.72519+.34469*C))	TAR 49
ADIRO=.091261-.040933*C-.002004/(C+.025772)	TAR 50
ADIRI=.092996-.033680*C-.020773/(C+.229061)	TAR 51
TDIF=.67971	TAR 52
ADIFO=.05995	TAR 53
ADIFI=.04497	TAR 54
GO TO 310	TAR 55
240 TDIR=-.04689+C*(2.01489+C*(-1.52396+.26890*C))	TAR 56
ADIRO=.176234-.075101*C-.005981/(C+.037488)	TAR 57
ADIRI=.095328-.034882*C-.025446/(C+.270299)	TAR 58
TDIF=.64125	TAR 59
ADIFO=.11507	TAR 60
ADIFI=.04246	TAR 61
GO TO 310	TAR 62
250 TDIR=-.04587+C*(1.86486+C*(-1.34895+.20736*C))	TAR 63
ADIRO=.256012-.104796*C-.011477/(C+.047935)	TAR 64
ADIRI=.096921-.035880*C-.029894/(C+.310028)	TAR 65
TDIF=.60516	TAR 66
ADIFO=.16586	TAR 67
ADIFI=.03994	TAR 68
GO TO 310	TAR 69

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260 TDIR=-.04429+C*(1.72743+C*(-1.19712+.15785*C))          TAR 70
      ADIRO=.331195-.130955*C-.018186/(C+.057561)           TAR 71
      ADIRI=.096889-.035838*C-.033181/(C+.342846)           TAR 72
      TDIF=.57125                                              TAR 73
      ADIFO=.21283                                              TAR 74
      ADIFI=.03770                                              TAR 75
      GO TO 310                                                 TAR 76
270 TDIR=-.03616+C*(1.28133+C*(-0.75498+.03613*C))        TAR 77
      ADIRO=.594925-.213098*C-.053708/(C+.091548)           TAR 78
      ADIRI=.089692-.031983*C-.040842/(C+.453595)           TAR 79
      TDIF=.45447                                              TAR 80
      ADIFO=.36902                                              TAR 81
      ADIFI=.02986                                              TAR 82
      GO TO 310                                                 TAR 83
280 TDIR=-.0.02900+C*(.96842-.50780*C)                      TAR 84
      ADIRO=.811113-.272071*C-.097404/(C+.120594)           TAR 85
      ADIRI=.076972-.025853*C-.041299/(C+.534024)           TAR 86
      TDIF=.36233                                              TAR 87
      ADIFO=.48657                                              TAR 88
      ADIFI=.02371                                              TAR 89
      GO TO 310                                                 TAR 90
290 TDIR=-.02180+C*(0.72090+C*(-0.30812-.03797*C))       TAR 91
      ADIRO=.989201-.315959*C-.143964/(C+.145621)           TAR 92
      ADIRI=.061591-.019100*C-.035739/(C+.577135)           TAR 93
      TDIF=.28922                                              TAR 94
      ADIFO=.57645                                              TAR 95
      ADIFI=.01887                                              TAR 96
      GO TO 310                                                 TAR 97
300 TDIR=-.01667+C*(0.54362+C*(-0.19377-.04389*C))       TAR 98
      ADIRO=1.13449-.348191*C-.189376/(C+.166789)           TAR 99
      ADIRI=.047280-.013172*C-.028599/(C+.601909)           TAR 100
      TDIF=.23107                                              TAR 101
      ADIFO=.64588                                              TAR 102
      ADIFI=.01504                                              TAR 103
310 IF(ADIRI-0.0) 320,320,330                                TAR 104
320 ADIRI=0.0                                              TAR 105
330 IF(TDIR-0.0) 340,340,350                                TAR 106
340 TDIR=0.0                                              TAR 107
350 IF(ADIRO-0.0) 360,360,370                                TAR 108
360 ADIRO=0.0                                              TAR 109
370 RETURN                                                 TAR 110
END
SUBROUTINE WEATHR                                         WEAT 1
C
C          IBM SYSTEM 360 VERSION                           WEAT 2
C
COMMON/D/KSTAT,JYEAR,JMONTH,KHOUR,LMONTH,LDAY               WEAT 3
COMMON/E/IWS,KA,LA,IPD,IATM,ITCA,ITOC                     WEAT 4
COMMON/F/KOUNT,KTBAD,KTBADA,KTBADB,KTBADC,KTBADD,LOCIDA,LUNFWT,*
*KTBLK
DIMENSION BUFA(47),KTBUFA(90),BUFB(47),KTBUFB(90)        WEAT 5
DIMENSION IWSA(6),IWSB(6),IWSL(6),KKA(6),KKB(6),KKL(6)    WEAT 6
DIMENSION LLA(6),LLB(6),LLL(6),IDPA(6),IDPB(6),IDPL(6)   WEAT 7
DIMENSION IATMA(6),ITCAA(6),ITOCA(6)                      WEAT 8
DIMENSION LET(27),NUM(10),SYMBOL(4)                        WEAT 9
DIMENSION KTRUF1(90),KTBUF2(90),III(18)                  WEAT 10
DATA LET/' ','A','B','C','D','E','F','G','H','I','J','K','L',WEAT 11
                                                WEAT 12
                                                WEAT 13
                                                WEAT 14
                                                WEAT 15

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      1'M','N','O','P','Q','R','S','T','U','V','W','X','Y',//, NUM/'0','1',WEAT 16
      2'2','3','4','5','6','7','8','9',//,SYMBOL/' ','*','!','.',WEAT 17
      KTBAD = 0 WEAT 18
      KTBADA = 0 WEAT 19
      KTBADB = 0 WEAT 20
      KTBADC = 0 WEAT 21
      KTBADD = 0 WEAT 22
      IF(KOUNT.NE.6)GO TO 152 WEAT 23
      M=1 WEAT 24
      IF(LOCIDA .EQ. 0) GO TO 116 WEAT 25
C       LOCATE YEAR AND MONTH FOR INITIAL DATA WEAT 26
C
      LOCIDA=0 WEAT 27
      N=LUNFWT WEAT 28
      ISELEC = 1 WEAT 29
100 READ (N,114,END=242,ERR=108)KSTAT,KYEAR,KMONTH,KHOUR,III WEAT 30
114 FORMAT(4X,I5,2I2,2X,I2,18A1,2(230X)) WEAT 31
      IF(KYEAR.NE.JYEAR)GO TO 100 WEAT 32
      IF(KMONTH.NE.JMONTH)GO TO 100 WEAT 33
      IF(KHOUR.NE.0)GO TO 100 WEAT 34
      BACKSPACE N WEAT 35
      READ (N,115,END=242,ERR=108)LMONTH,LDAY,III WEAT 36
115 FORMAT(11X,2A2,18A1,2(231X)) WEAT 37
      IF (ISELEC .EQ. 0) GO TO 136 WEAT 38
C       STORE IN BUFB, DECODE BUFA WEAT 39
C
      ISELEC = 0 WEAT 40
      KTBLK=KTBLK&6 WEAT 41
      BACKSPACE N WEAT 42
116 READ (N,300,END=242,ERR=108) (KTBUFA(I),I=1,90) WEAT 43
300 FORMAT (20X,5(7X,12A1,9X,A4,5X,A1,2X,A1,39X),7X,12A1,9X,A4,
      X5X,A1,2X,A1,34X) WEAT 44
      BACKSPACE N WEAT 45
      READ(N,399,END=242,ERR=108)(KTBUF1(I),I=1,90) WEAT 46
399 FORMAT (20X,5(7X,4(2I1,A1),9X,I4,5X,I1,2X,A1,39X),7X,4(2I1,A1),
      X9X,I4,5X,I1,2X,A1,34X) WEAT 47
      DO 340 I=1,90,15 WEAT 48
      J=(I&15)/15 WEAT 49
      IF(KTBUFA(I).EQ.SYMBOL(1).OR.KTBUFA(I&1).EQ.SYMBOL(1))GOTO310 WEAT 50
      IWSA(J)=KTBUF1(I) WEAT 51
      IWSB(J)=KTBUF1(I&1) WEAT 52
      IWSL(J)=KTBUF1(I&2) WEAT 53
      GO TO 312 WEAT 54
310 IWSL(J) = SYMBOL(2) WEAT 55
312 IF(KTBUFA(I&3).EQ.SYMBOL(1).OR.KTBUFA(I&4).EQ.SYMBOL(1))GOTO 316 WEAT 56
      IF(KTBUFA(I&6).EQ.SYMBOL(1).OR.KTBUFA(I&7).EQ.SYMBOL(1))GO TO 316 WEAT 57
      KKA(J)=KTBUF1(I&3) WEAT 58
      KKB(J)=KTBUF1(I&4) WEAT 59
      KKL(J)=KTBUF1(I&5) WEAT 60
      LLA(J)=KTBUF1(I&6) WEAT 61
      LLB(J)=KTBUF1(I&7) WEAT 62
      LLL(J)=KTBUF1(I&8) WEAT 63
      GO TO 318 WEAT 64
316 KKL(J) = SYMBOL(2) WEAT 65
      LLL(J) = KKL(J) WEAT 66

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318	IF(KTBUFA(I&9).EQ.SYMBOL(1).OR.KTBUFA(I&10).EQ.SYMBOL(1))GO TO 320	WEAT	73
	IDPA(J)=KTBUF1(I&9)	WEAT	74
	IDPB(J)=KTBUF1(I&10)	WEAT	75
	IDPL(J)=KTBUF1(I&11)	WEAT	76
	GO TO 322	WEAT	77
320	IDPL(J) = SYMBOL(2)	WEAT	78
322	IF(KTBUFA(I&12).EQ.SYMBOL(1).OR.KTBUFA(I&12).EQ.SYMBOL(4))GOTO 326	WEAT	79
	IATMA(J)=KTBUF1(I&12)	WEAT	80
	GO TO 328	WEAT	81
326	IATMA(J)=0	WEAT	82
328	CONTINUE	WEAT	83
	IF(KTBUFA(I&13).EQ.SYMBOL(1).OR.KTBUFA(I&13).EQ.SYMBOL(2))GOTO 342	WEAT	84
	DO 502 IJK=1,10	WEAT	85
	IF(KTBUFA(I&13).EQ.NUM(IJK))GOTO 501	WEAT	86
502	CONTINUE	WEAT	87
	GOTO 332	WEAT	88
501	ITCAA(J)=KTBUF1(I&13)	WEAT	89
	GOTO 334	WEAT	90
332	ITCAA(J)=10	WEAT	91
	GO TO 334	WEAT	92
342	ITCAA(J)=11	WEAT	93
334	IF(KTBUFA(I&14).EQ.NUM(3)) GO TO 336	WEAT	94
	IF(KTBUFA(I&14).EQ.NUM(9).OR.KTBUFA(I&14).EQ.NUM(10))GO TO 338	WEAT	95
	ITOCA(J)=2	WEAT	96
	GO TO 340	WEAT	97
336	ITOCA(J)=1	WEAT	98
	GO TO 340	WEAT	99
338	ITOCA(J)=0	WEAT	100
340	CONTINUE	WEAT	101
	GO TO 152	WEAT	102
C	STORE IN BUFA, DECODE BUFB	WEAT	103
C		WEAT	104
C		WEAT	105
136	ISELEC =1	WEAT	106
	READ(N,300,END=242,ERR=108)(KTBUFB(I),I=1,90)	WEAT	107
	BACKSPACE N	WEAT	108
	READ(N,399,END=242,ERR=108)(KTBUF2(I),I=1,90)	WEAT	109
	DO 341 I=1,90,15	WEAT	110
	J=(I&15)/15	WEAT	111
	IF(KTBUFB(I).EQ.SYMBOL(1).OR.KTBUFB(I&1).EQ.SYMBOL(1))GO TO 311	WEAT	112
	IWSA(J)=KTBUF2(I)	WEAT	113
	IWSB(J)=KTBUF2(I+1)	WEAT	114
	IWSL(J)=KTBUF2(I+2)	WEAT	115
	GO TO 313	WEAT	116
311	IWSL(J)=SYMBOL(2)	WEAT	117
313	IF(KTBUFB(I&3).EQ.SYMBOL(1).OR.KTBUFB(I&4).EQ.SYMBOL(1))GO TO 317	WEAT	118
	IF(KTBUFB(I&6).EQ.SYMBOL(1).OR.KTBUFB(I&7).EQ.SYMBOL(1))GO TO 317	WEAT	119
	KK(A(J))=KTBUF2(I&3)	WEAT	120
	KK(B(J))=KTBUF2(I&4)	WEAT	121
	KKL(J)=KTBUF2(I&5)	WEAT	122
	LLA(J)=KTBUF2(I&6)	WEAT	123
	LLB(J)=KTBUF2(I&7)	WEAT	124
	LLL(J)=KTBUF2(I&8)	WEAT	125
	GO TO 319	WEAT	126
317	KKL(J) = SYMBOL(2)	WEAT	127
	LLL(J) = KKL(J)	WEAT	128
319	IF(KTBUFB(I&9).EQ.SYMBOL(1).OR.KTBUFB(I&10).EQ.SYMBOL(1))GO TO 321	WEAT	129

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IDPA(J)=KTBUF2(I&9)          WEAT 130
IDPB(J)=KTBUF2(I&10)          WEAT 131
IDPL(J)=KTBUF2(I&11)          WEAT 132
GO TO 323                      WEAT 133
WEAT 134
321 IDPL(J)=SYMBOL(2)          WEAT 135
323 IF(KTBUF2(I&12).EQ.SYMBOL(1).OR.KTBUF2(I&12).EQ.SYMBOL(4))GOTO 327 WEAT 136
    IATMA(J)=KTBUF2(I&12)
    GO TO 329
327 IATMA(J)=0                 WEAT 137
329 CONTINUE                     WEAT 138
    IF(KTBUF2(I&13).EQ.SYMBOL(1).OR.KTBUF2(I&13).EQ.SYMBOL(2))GOTO 343 WEAT 139
    DO 504 IJK=1,10
    IF(KTBUFR(I&13).EQ.NUM(IJK))GOTO 503
504 CONTINUE                     WEAT 140
    GOTO 333
503 ITCAA(J)=KTBUF2(I&13)
    GOTO 335
333 ITCAA(J)=10                WEAT 141
    GO TO 335
343 ITCAA(J)=11                WEAT 142
335 IF(KTBUF2(I&14).EQ.NUM(3)) GO TO 337 WEAT 143
    IF(KTBUF2(I&14).EQ.NUM(9).OR.KTBUF2(I&14).EQ.NUM(10))GO TO 339 WEAT 144
    ITOCA(J)=2
    GO TO 341
337 ITOCA(J)=1                 WEAT 145
    GO TO 341
339 ITOCA(J)=0                 WEAT 146
341 CONTINUE                     WEAT 147
WEAT 148
C DETERMINE MAGNITUDE AND SIGN OF DATA
C
152 KOUNT=KOUNT-1              WEAT 149
    IF(KOUNT.EQ.0)KOUNT=6
    IF(IWSL(M).EQ.SYMBOL(1).OR.IWSL(J).EQ.SYMBOL(2))GO TO 370 WEAT 150
    DO 350 I=1,10
    IF (IWSL(M) .NE. LET(I) ) GO TO 350 WEAT 151
    IWS=IWSA(M)*100&IWSB(M)*10&(I-1) WEAT 152
    GO TO 372
350 CONTINUE                     WEAT 153
370 IWS=0
    KTBADA=1
372 IF( KKL(M).EQ.SYMBOL(1).OR.KKL(M).EQ.SYMBOL(2))GO TO 444 WEAT 154
    DO 154 I=1,10
    IF(KKL(M) .NE. LET(I)) GO TO 154 WEAT 155
    KA=KKA(M)*100&KKB(M)*10&(I-1) WEAT 156
    GO TO 194
154 CONTINUE                     WEAT 157
156 DO 158 I=11,20
    IF(KKL(M) .NE. LET(I)) GO TO 158 WEAT 158
    KA=-KKA(M)*100-KKB(M)*10-(I-11) WEAT 159
    GO TO 194
158 CONTINUE                     WEAT 160
194 IF(LLL(M).EQ.SYMBOL(1).OR.LLL(M).EQ.SYMBOL(2)) GO TO 444 WEAT 161
    DO 190 I=1,10
    IF(LLL(M) .NE. LET(I))GO TO 196 WEAT 162
    LA=LLA(M)*100&LLB(M)*10&(I-1) WEAT 163
    GO TO 236
WEAT 164
WEAT 165
WEAT 166
WEAT 167
WEAT 168
WEAT 169
WEAT 170
WEAT 171
WEAT 172
WEAT 173
WEAT 174
WEAT 175
WEAT 176
WEAT 177
WEAT 178
WEAT 179
WEAT 180
WEAT 181
WEAT 182
WEAT 183
WEAT 184
WEAT 185
WEAT 186

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196 CONTINUE                               WEAT 187
198 DO 200 I=11,20                         WEAT 188
    IF(LLL(M) .NE. LET(I))GO TO 200
    LA=-LLA(M)*100-LLB(M)*10-(I-11)
    GO TO 236
200 CONTINUE                               WEAT 189
236 IF(KA-LA)444,240,240                  WEAT 190
240 IF(IDPL(M) .EQ. SYMBOL(1) .OR. IDPL(M) .EQ. SYMBOL(2))GO TO 444
    DO 400 I=1,10                          WEAT 191
    IF(IDPL(M) .NE. LET(I)) GO TO 400
    IDP=IDPA(M)*100&IDPB(M)*10&(I-1)
    GO TO 442
400 CONTINUE                               WEAT 192
402 DO 404 I=11,20                         WEAT 193
    IF(IDPL(M) .NE. LET(I)) GO TO 404
    IDP=-IDPA(M)*100-IDPB(M)*10-(I-11)
    GO TO 442
404 CONTINUE                               WEAT 194
442 IF(LA-IDP)444,446,446                  WEAT 195
444 KA=0                                    WEAT 196
    LA=0
    IDP=0
    KTBADB=1
446 IF(IATMA(M).EQ.0)KTBADC=1
    IATM=IATMA(M)
    IF(ITCAA(M).EQ.11)KTBADD=1
    ITCA=ITCAA(M)
    ITOC=ITOCA(M)
    M=M&1
    RETURN
C
C      END OF FILE SENSED DURING BUFFER IN OPERATION
C
242 KTBAD=1                                WEAT 201
    REWIND N
    RETURN
108 PRINT 110,N
110 FORMAT(' PARITY ERROR ON TAPE ',I2)
    END

```

CONTROL CARDS
AS NECESSARY

DATA

CONTROL CARDS
AS NECESSARY

TILT=ACOS(ZCOMP/(2.*A))	APOL 17
140 AZIM=ASIN(XCOMP/PROJ)	APOL 24
150 AZIM=1.5708+ASIN(-YCOMP/PROJ)	APOL 26
170 AZIM=3.1416+ASIN(-XCOMP/PROJ)	APOL 29
180 AZIM=4.712+ASIN(YCOMP/PROJ)	APOL 31
SUNRAS=ACOS(-TL*DEABC(1))	SUN1 16

SUBROUTINE WEATHR

C	CDC 6600 VERSION	WEATH 1
C	COMMON/D/KSTAT,JYEAR,JMONTH,KHOUR,LMONTH,LDAY	WEATH 2
C	COMMON/E/IWSA,KA,LA,IPD,IATM,ITCA,ITOC	WEATH 3
C	COMMON/F/KOUNT,KTBAD,KTBADA,KTBADB,KTBADC,KTBADD,LOCIDA,LUNFWT,	WEATH 4
C	*KTBAD	WEATH 5
C	DIMENSION BUFA(47),KTBUFA(90),BUFB(47),KTBUFB(90)	WEATH 6
C	DIMENSION IWSA(6),IWSB(6),IWSL(6),KKA(6),KKB(6),KKL(6)	WEATH 7
C	DIMENSION LLA(6),LLB(6),LLL(6),IDPA(6),IDPB(6),IDPL(6)	WEATH 8
C	DIMENSION IATMA(6),ITCAA(6),ITOCA(6)	WEATH 9
C	KTBAD=0 \$ KTBADA=0 \$ KTBADB=0 \$ KTBADC=0 \$ KTBADD=0	WEATH 10
C	KAGIT=6	WEATH 11
C	IF(KOUNT.NE.6)GO TO 152	WEATH 12
C	M=1	WEATH 13
C	IF(LOCIDA.EQ.0)GO TO 116	WEATH 14
C	LOCATE YEAR AND MONTH FOR INITIAL DATA	WEATH 15
C	LOCIDA=0	WEATH 16
C	N=LUNFWT	WEATH 17
C	ISELEC=1	WEATH 18
100	NK=5	WEATH 19
102	BUFFER IN(N,0)(BUFA(1),BUFA(47))	WEATH 20
104	IF(UNIT,N)104,112,242,106	WEATH 21
106	IF(NK.EQ.0)GO TO 108	WEATH 22
	NK=NK-1	WEATH 23
	BACKSPACE N	WEATH 24
	GO TO 102	WEATH 25
108	WRITE(KAGIT,110) N	WEATH 26
110	FORMAT(* PARITY ERROR ON TAPE *,I2)	WEATH 27
	GO TO 100	WEATH 28
112	DECODE(24,114,BUFA(1))KSTAT,KYEAR,KMONTH,KHOUR	WEATH 29
114	FORMAT(4X,I5,2I2,2X,I2,7X)	WEATH 30
	IF(KYEAR.NE.JYEAR)GO TO 100	WEATH 31
		WEATH 32
		WEATH 33
		WEATH 34
		WEATH 35
		WEATH 36

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IF(KMONTH.NE.JMONTH)GO TO 100          WEATH 37
IF(KHOUR.NE.0)GO TO 100              WEATH 38
DECODE(15,115,BUFA(1))LMONTH,LDAY   WEATH 39
115 FORMAT(11X,2A2)                  WEATH 40
116 NK=5                            WEATH 41
IF(ISELEC.EQ.0)GO TO 136            WEATH 42
C
C      STORE IN BUFB, DECODE BUFA    WEATH 43
C
C      ISELEC=0                      WEATH 44
118 IF(UNIT,N)118,124,242,120       WEATH 45
120 IF(NK.EQ.0)GO TO 123            WEATH 46
NK=NK-1
BACKSPACE N
122 BUFFER IN(N,0)(BUFA(1),BUFA(47)) WEATH 51
GO TO 118
123 WRITE(KAGIT,110) N             WEATH 52
KTBLK=KTBLK&6
NK=5
GO TO 122
124 BUFFER IN(N,0)(BUFB(1),BUFB(47))
DECODE(100,300,BUFA(1))(KTBUFA(I),I=1,15) WEATH 57
300 FORMAT(27X,12A1,9X,A4,5X,A1,2X,A1,39X) WEATH 58
DO 302 I=1,4
WEATH 60
J=8*(I-1)&11
WEATH 61
K=15*(I-1)&16
WEATH 62
302 DECODE(80,304,BUFA(J))KTBUFA(K),KTBUFA(K&1),KTBUFA(K&2),KTBUFA(K&3)WEATH 63
1,KTBUFA(K&4),KTBUFA(K&5),KTBUFA(K&6),KTBUFA(K&7),KTBUFA(K&8),KTBUFA(K&9),KTBUFA(K&10),KTBUFA(K&11),KTBUFA(K&12),KTBUFA(K&13),KTBUFA(K&14)WEATH 64
2FA(K&9),KTBUFA(K&10),KTBUFA(K&11),KTBUFA(K&12),KTBUFA(K&13),KTBUFA(K&14)WEATH 65
3(K&14)WEATH 66
WEATH 67
304 FORMAT(7X,12A1,9X,A4,5X,A1,2X,A1,39X)
DECODE(50,306,BUFA(43))(KTBUFA(I),I=76,90)WEATH 68
306 FORMAT(7X,12A1,9X,A4,5X,A1,2X,A1,9X)
DO 340 I=1,90,15
WEATH 69
WEATH 70
J=(I&15)/15
WEATH 71
IF(KTBUFA(I).EQ.10H)                 .O.KTBUFA(I&1).EQ.10H
)GO TOWEATH 72
1 310
WEATH 73
DECODE(30,308,KTBUFA(I))IWSA(J),IWSB(J),IWSL(J)WEATH 74
308 FORMAT(11,9X,I1,9X,A1,9X)         WEATH 75
GO TO 312
WEATH 76
310 IWSL(J)=10H*
WEATH 77
312 IF(KTBUFA(I&3).EQ.10H)           .O.KTBUFA(I&4).EQ.10H
)GO WEATH 78
1TO 310
WEATH 79
IF(KTBUFA(I&6).EQ.10H)               .O.KTBUFA(I&7).EQ.10H
)GO WEATH 80
1TO 310
WEATH 81
DECODE(60,314,KTBUFA(I&3))KKA(J),KKB(J),KKL(J),LLA(J),LLB(J),LLL(J)WEATH 82
1)WEATH 83
WEATH 84
314 FORMAT(2(I1,9X,11,9X,A1,9X))     WEATH 85
GO TO 318
WEATH 86
316 KKL(J)=LLL(J)=10H*
WEATH 87
318 IF(KTBUFA(I&9).EQ.10H)           .O.KTBUFA(I&10).EQ.10H
)GO WEATH 88
1 TO 320
WEATH 89
DECODE(30,308,KTRUFA(I&9))IDPA(J),IDPB(J),IDPL(J)
GO TO 322
WEATH 90
320 IDPL(J)=10H*
WEATH 91
322 IF(KTBUFA(I&12).EQ.10H)           .O.KTBUFA(I&12).EQ.10H *
)GWEATH 92
10 TO 326
WEATH 93

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        DECODE(10,324,KTBUFA(I&12))IATMA(J)          WEATH 94
324 FORMAT(I4,6X)          WEATH 95
        GO TO 328          WEATH 96
326 IATMA(J)=0          WEATH 97
328 IF(KTBUFA(I&13).EQ.10H-          )GO TO 332          WEATH 98
        IF(KTBUFA(I&13).EQ.10H          .O.KTBUFA(I&13).EQ.10H*          )GWEATH 99
        10 TO 342          WEATH100
        DECODE(10,330,KTBUFA(I&13))ITCAA(J)          WEATH101
330 FORMAT(I1,9X)          WEATH102
        GO TO 334          WEATH103
332 ITCAA(J)=10 $ GO TO 334          WEATH104
342 ITCAA(J)=11          WEATH105
334 IF(KTBUFA(I&14).EQ.10H2          )GO TO 336          WEATH106
        IF(KTBUFA(I&14).EQ.10H8          .O.KTBUFA(I&14).EQ.10H9          )GWEATH107
        10 TO 338          WEATH108
        ITOCA(J)=2          WEATH109
        GO TO 340          WEATH110
336 ITOCA(J)=1 $ GO TO 340          WEATH111
338 ITOCA(J)=0          WEATH112
340 CONTINUE          WEATH113
        GO TO 152          WEATH114
C
C      STORE IN BUFA, DECODE BUFB          WEATH115
C
136 ISELEC=1          WEATH116
138 IF(UNIT,N)138,146,242,140          WEATH117
140 IF(NK.EQ.0)GO TO 144          WEATH118
    NK=NK-1          WEATH119
    BACKSPACE N          WEATH120
142 BUFFER IN(N,0)(BUFB(1),BUFB(47))          WEATH121
    GO TO 138          WEATH122
144 WRITE(KAGIT,110) N          WEATH123
    KTBLK=KTBLK&6          WEATH124
    NK=5          WEATH125
    GO TO 142          WEATH126
146 BUFFER IN(N,0)(BUFA(1),BUFA(47))          WEATH127
    DECODE(100,300,BUFB(1))(KTBUFB(I),I=1,15)          WEATH128
    DO 303 I=1,4          WEATH129
    J=8*(I-1)&11          WEATH130
    K=15*(I-1)&16          WEATH131
303 DECODE(80,304,BUFB(J))(KTBUFB(K),KTBUFB(K&1),KTBUFB(K&2),KTBUFB(K&3)WEATH132
    1),KTBUFB(K&4),KTBUFB(K&5),KTBUFB(K&6),KTBUFB(K&7),KTBUFB(K&8),KTBUFB(K&9),KTBUFB(K&10),KTBUFB(K&11),KTBUFB(K&12),KTBUFB(K&13),KTBUFB(K&14)WEATH133
    DECODE(50,306,BUFB(43))(KTBUFB(I),I=76,90)          WEATH134
    DO 341 I=1,90,15          WEATH135
    J=(I&15)/15          WEATH136
    IF(KTBUFB(I).EQ.10H          .O.KTBUFB(I&1).EQ.10H          )GO TO 141
    1 311          WEATH137
    DECODE(30,308,KTBUFB(I))IWSA(J),IWSB(J),IWSL(J)          WEATH138
    GO TO 313          WEATH139
311 IWSL(J)=10H*          WEATH140
313 IF(KTBUFB(I&3).EQ.10H          .O.KTBUFB(I&4).EQ.10H          )GO TO 142
    1TO 317          WEATH143
    IF(KTBUFB(I&6).EQ.10H          .O.KTBUFB(I&7).EQ.10H          )GO TO 144
    1TO 317          WEATH145
    DECODE(60,314,KTBUFB(I&3))KKA(J),KKB(J),KKL(J),LLA(J),LLB(J),LLL(JWEATH146

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1) WEATH151
 GO TO 319 WEATH152
 317 KKL(J)=LLL(J)=10H* WEATH153
 319 IF(KTBUFB(I&9).EQ.10H .O.KTBUFB(I&10).EQ.10H)GWEATH154
 1 TO 321 WEATH155
 DECODE(30,308,KTBUFB(I&9))IDPA(J),IDPB(J),IDPL(J)
 GO TO 323 WEATH156
 321 IDPL(J)=10H* WEATH157
 323 IF(KTBUFB(I&12).EQ.10H .O.KTBUFB(I&12).EQ.10H *)GWEATH159
 10 TO 327 WEATH160
 DECODE(10,324,KTBUFB(I&12))IATMA(J)
 GO TO 329 WEATH161
 327 IATMA(J)=0 WEATH162
 329 IF(KTBUFB(I&13).EQ.10H-)GO TO 333 WEATH163
 IF(KTBUFR(I&13).EQ.10H .O.KTBUFB(I&13).EQ.10H*)GWEATH165
 10 TO 343 WEATH166
 DECODE(10,330,KTBUFB(I&13))ITCAA(J)
 GO TO 335 WEATH167
 333 ITCAA(J)=10 \$ GO TO 335 WEATH168
 343 ITCAA(J)=11)GO TO 337 WEATH169
 335 IF(KTBUFB(I&14).EQ.10H2 .O.KTBUFB(I&14).EQ.10H9)GWEATH172
 IF(KTBUFB(I&14).EQ.10H8 WEATH173
 10 TO 339 WEATH174
 ITOCA(J)=2 WEATH175
 GO TO 341 WEATH176
 337 ITOCA(J)=1 \$ GO TO 341 WEATH177
 339 ITOCA(J)=0 WEATH178
 341 CONTINUE WEATH179
 C WEATH180
 C DETERMINE MAGNITUDE AND SIGN OF DATA WEATH181
 C
 152 KOUNT=KOUNT-1 WEATH182
 IF(KOUNT.EQ.0)KOUNT=6 WEATH183
 IF(IWSL(M).EQ.10H .O.IWSL(J).EQ.10H*)GO TO 370 WEATH184
 IF(IWSL(M).EQ.10H)GO TO 350 WEATH185
 IF(IWSL(M).EQ.10HA)GO TO 352 WEATH186
 IF(IWSL(M).EQ.10HB)GO TO 354 WEATH187
 IF(IWSL(M).EQ.10HC)GO TO 356 WEATH188
 IF(IWSL(M).EQ.10HD)GO TO 358 WEATH189
 IF(IWSL(M).EQ.10HE)GO TO 360 WEATH190
 IF(IWSL(M).EQ.10HF)GO TO 362 WEATH191
 IF(IWSL(M).EQ.10HG)GO TO 364 WEATH192
 IF(IWSL(M).EQ.10HH)GO TO 366 WEATH193
 IF(IWSL(M).EQ.10HI)GO TO 368 WEATH194
 350 IWS=IWSA(M)*100&IWSB(M)*10&0 \$ GO TO 372 WEATH195
 352 IWS=IWSA(M)*100&IWSB(M)*10&1 \$ GO TO 372 WEATH196
 354 IWS=IWSA(M)*100&IWSB(M)*10&2 \$ GO TO 372 WEATH197
 356 IWS=IWSA(M)*100&IWSB(M)*10&3 \$ GO TO 372 WEATH198
 358 IWS=IWSA(M)*100&IWSB(M)*10&4 \$ GO TO 372 WEATH199
 360 IWS=IWSA(M)*100&IWSB(M)*10&5 \$ GO TO 372 WEATH200
 362 IWS=IWSA(M)*100&IWSB(M)*10&6 \$ GO TO 372 WEATH201
 364 IWS=IWSA(M)*100&IWSB(M)*10&7 \$ GO TO 372 WEATH202
 366 IWS=IWSA(M)*100&IWSB(M)*10&8 \$ GO TO 372 WEATH203
 368 IWS=IWSA(M)*100&IWSB(M)*10&9 \$ GO TO 372 WEATH204
 370 IWS=0 \$ KTBADA=1)GO TO 444 WEATH205
 372 IF(KKL(M).EQ.10H .O.KKL(M).EQ.10H*)GO TO 444 WEATH206
 IF(KKL(M).EQ.10H)GO TO 154 WEATH207

IF(KKL(M).EQ.10HA	IGO TO 156	WEATH208
IF(KKL(M).EQ.10HB	IGO TO 158	WEATH209
IF(KKL(M).EQ.10HC	IGO TO 160	WEATH210
IF(KKL(M).EQ.10HD	IGO TO 162	WEATH211
IF(KKL(M).EQ.10HE	IGO TO 164	WEATH212
IF(KKL(M).EQ.10HF	IGO TO 166	WEATH213
IF(KKL(M).EQ.10HG	IGO TO 168	WEATH214
IF(KKL(M).EQ.10HH	IGO TO 170	WEATH215
IF(KKL(M).EQ.10HI	IGO TO 172	WEATH216
IF(KKL(M).EQ.10H	IGO TO 174	WEATH217
IF(KKL(M).EQ.10HJ	IGO TO 176	WEATH218
IF(KKL(M).EQ.10HK	IGO TO 178	WEATH219
IF(KKL(M).EQ.10HL	IGO TO 180	WEATH220
IF(KKL(M).EQ.10HM	IGO TO 182	WEATH221
IF(KKL(M).EQ.10HN	IGO TO 184	WEATH222
IF(KKL(M).EQ.10HO	IGO TO 186	WEATH223
IF(KKL(M).EQ.10HP	IGO TO 188	WEATH224
IF(KKL(M).EQ.10HQ	IGO TO 190	WEATH225
IF(KKL(M).EQ.10HR	IGO TO 192	WEATH226
154 KA= KKA(M)*100&KKB(M)*1060 \$ GO TO 194		WEATH227
156 KA= KKA(M)*100&KKB(M)*1061 \$ GO TO 194		WEATH228
158 KA= KKA(M)*100&KKB(M)*1062 \$ GO TO 194		WEATH229
160 KA= KKA(M)*100&KKB(M)*1063 \$ GO TO 194		WEATH230
162 KA= KKA(M)*100&KKB(M)*1064 \$ GO TO 194		WEATH231
164 KA= KKA(M)*100&KKB(M)*1065 \$ GO TO 194		WEATH232
166 KA= KKA(M)*100&KKB(M)*1066 \$ GO TO 194		WEATH233
168 KA= KKA(M)*100&KKB(M)*1067 \$ GO TO 194		WEATH234
170 KA= KKA(M)*100&KKB(M)*1068 \$ GO TO 194		WEATH235
172 KA= KKA(M)*100&KKB(M)*1069 \$ GO TO 194		WEATH236
174 KA=-KKA(M)*100-KKB(M)*10-0 \$ GO TO 194		WEATH237
176 KA=-KKA(M)*100-KKB(M)*10-1 \$ GO TO 194		WEATH238
178 KA=-KKA(M)*100-KKB(M)*10-2 \$ GO TO 194		WEATH239
180 KA=-KKA(M)*100-KKB(M)*10-3 \$ GO TO 194		WEATH240
182 KA=-KKA(M)*100-KKB(M)*10-4 \$ GO TO 194		WEATH241
184 KA=-KKA(M)*100-KKB(M)*10-5 \$ GO TO 194		WEATH242
186 KA=-KKA(M)*100-KKB(M)*10-6 \$ GO TO 194		WEATH243
188 KA=-KKA(M)*100-KKB(M)*10-7 \$ GO TO 194		WEATH244
190 KA=-KKA(M)*100-KKB(M)*10-8 \$ GO TO 194		WEATH245
192 KA=-KKA(M)*100-KKB(M)*10-9 \$ GO TO 194		WEATH246
194 IF(LLL(M).EQ.10H .0.LLL(M).EQ.10H*	IGO TO 444	WEATH247
IF(LLL(M).EQ.10H	IGO TO 196	WEATH248
IF(LLL(M).EQ.10HA	IGO TO 198	WEATH249
IF(LLL(M).EQ.10HB	IGO TO 200	WEATH250
IF(LLL(M).EQ.10HC	IGO TO 202	WEATH251
IF(LLL(M).EQ.10HD	IGO TO 204	WEATH252
IF(LLL(M).EQ.10HE	IGO TO 206	WEATH253
IF(LLL(M).EQ.10HF	IGO TO 208	WEATH254
IF(LLL(M).EQ.10HG	IGO TO 210	WEATH255
IF(LLL(M).EQ.10HH	IGO TO 212	WEATH256
IF(LLL(M).EQ.10HI	IGO TO 214	WEATH257
IF(LLL(M).EQ.10H	IGO TO 216	WEATH258
IF(LLL(M).EQ.10HJ	IGO TO 218	WEATH259
IF(LLL(M).EQ.10HK	IGO TO 220	WEATH260
IF(LLL(M).EQ.10HL	IGO TO 222	WEATH261
IF(LLL(M).EQ.10HM	IGO TO 224	WEATH262
IF(LLL(M).EQ.10HN	IGO TO 226	WEATH263
IF(LLL(M).EQ.10HO	IGO TO 228	WEATH264

IF(LLL(M).EQ.10HP) GO TO 230	WEATH265
IF(LLL(M).EQ.10HQ) GO TO 232	WEATH266
IF(LLL(M).EQ.10HR) GO TO 234	WEATH267
196 LA= LLA(M)*100&LLB(M)*10&0 \$ GO TO 236		WEATH268
198 LA= LLA(M)*100&LLB(M)*10&1 \$ GO TO 236		WEATH269
200 LA= LLA(M)*100&LLB(M)*10&2 \$ GO TO 236		WEATH270
202 LA= LLA(M)*100&LLB(M)*10&3 \$ GO TO 236		WEATH271
204 LA= LLA(M)*100&LLB(M)*10&4 \$ GO TO 236		WEATH272
206 LA= LLA(M)*100&LLB(M)*10&5 \$ GO TO 236		WEATH273
208 LA= LLA(M)*100&LLB(M)*10&6 \$ GO TO 236		WEATH274
210 LA= LLA(M)*100&LLB(M)*10&7 \$ GO TO 236		WEATH275
212 LA= LLA(M)*100&LLB(M)*10&8 \$ GO TO 236		WEATH276
214 LA= LLA(M)*100&LLB(M)*10&9 \$ GO TO 236		WEATH277
216 LA=-LLA(M)*100-LLB(M)*10-0 \$ GO TO 236		WEATH278
218 LA=-LLA(M)*100-LLB(M)*10-1 \$ GO TO 236		WEATH279
220 LA=-LLA(M)*100-LLB(M)*10-2 \$ GO TO 236		WEATH280
222 LA=-LLA(M)*100-LLB(M)*10-3 \$ GO TO 236		WEATH281
224 LA=-LLA(M)*100-LLB(M)*10-4 \$ GO TO 236		WEATH282
226 LA=-LLA(M)*100-LLB(M)*10-5 \$ GO TO 236		WEATH283
228 LA=-LLA(M)*100-LLB(M)*10-6 \$ GO TO 236		WEATH284
230 LA=-LLA(M)*100-LLB(M)*10-7 \$ GO TO 236		WEATH285
232 LA=-LLA(M)*100-LLB(M)*10-8 \$ GO TO 236		WEATH286
234 LA=-LLA(M)*100-LLB(M)*10-9 \$ GO TO 236		WEATH287
236 IF(KA-LA)444,240,240		WEATH288
240 IF(IDPL(M).EQ.10H	.O. IDPL(M).EQ.10H*) GO TO 444 WEATH289
IF(IDPL(M).EQ.10H) GO TO 400	WEATH290
IF(IDPL(M).EQ.10HA) GO TO 402	WEATH291
IF(IDPL(M).EQ.10HB) GO TO 404	WEATH292
IF(IDPL(M).EQ.10HC) GO TO 406	WEATH293
IF(IDPL(M).EQ.10HD) GO TO 408	WEATH294
IF(IDPL(M).EQ.10HE) GO TO 410	WEATH295
IF(IDPL(M).EQ.10HF) GO TO 412	WEATH296
IF(IDPL(M).EQ.10HG) GO TO 414	WEATH297
IF(IDPL(M).EQ.10HH) GO TO 416	WEATH298
IF(IDPL(M).EQ.10HI) GO TO 418	WEATH299
IF(IDPL(M).EQ.10H) GO TO 420	WEATH300
IF(IDPL(M).EQ.10HJ) GO TO 422	WEATH301
IF(IDPL(M).EQ.10HK) GO TO 424	WEATH302
IF(IDPL(M).EQ.10HL) GO TO 426	WEATH303
IF(IDPL(M).EQ.10HM) GO TO 428	WEATH304
IF(IDPL(M).EQ.10HN) GO TO 430	WEATH305
IF(IDPL(M).EQ.10HO) GO TO 432	WEATH306
IF(IDPL(M).EQ.10HP) GO TO 434	WEATH307
IF(IDPL(M).EQ.10HQ) GO TO 436	WEATH308
IF(IDPL(M).EQ.10HR) GO TO 438	WEATH309
400 IDP= IDPA(M)*100&IDPB(M)*10&0 \$ GO TO 442		WEATH310
402 IDP= IDPA(M)*100&IDPB(M)*10&1 \$ GO TO 442		WEATH311
404 IDP= IDPA(M)*100&IDPB(M)*10&2 \$ GO TO 442		WEATH312
406 IDP= IDPA(M)*100&IDPB(M)*10&3 \$ GO TO 442		WEATH313
408 IDP= IDPA(M)*100&IDPB(M)*10&4 \$ GO TO 442		WEATH314
410 IDP= IDPA(M)*100&IDPB(M)*10&5 \$ GO TO 442		WEATH315
412 IDP= IDPA(M)*100&IDPB(M)*10&6 \$ GO TO 442		WEATH316
414 IDP= IDPA(M)*100&IDPB(M)*10&7 \$ GO TO 442		WEATH317
416 IDP= IDPA(M)*100&IDPB(M)*10&8 \$ GO TO 442		WEATH318
418 IDP=-IDPA(M)*100&IDPB(M)*10&9 \$ GO TO 442		WEATH319
420 IDP=-IDPA(M)*100-IDPB(M)*10-0 \$ GO TO 442		WEATH320
422 IDP=-IDPA(M)*100-IDPB(M)*10-1 \$ GO TO 442		WEATH321

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424 IDP=-IDPA(M)*100-IDPB(M)*10-2 $ GO TO 442 WEATH322
426 IDP=-IDPA(M)*100-IDPB(M)*10-3 $ GO TO 442 WEATH323
428 IDP=-IDPA(M)*100-IDPB(M)*10-4 $ GO TO 442 WEATH324
430 IDP=-IDPA(M)*100-IDPB(M)*10-5 $ GO TO 442 WEATH325
432 IDP=-IDPA(M)*100-IDPB(M)*10-6 $ GO TO 442 WEATH326
434 IDP=-IDPA(M)*100-IDPB(M)*10-7 $ GO TO 442 WEATH327
436 IDP=-IDPA(M)*100-IDPB(M)*10-8 $ GO TO 442 WEATH328
438 IDP=-IDPA(M)*100-IDPB(M)*10-9 $ GO TO 442 WEATH329
442 IF(LA-IDP)444,446,446 WEATH330
444 KA=LA=IDP=0 $ KTBADB=1 WEATH331
446 IF(IATMA(M).EQ.0)KTBADC=1 WEATH332
    IATM=IATMA(M)
    IF(ITCHAA(M).EQ.11)KTBADD=1 WEATH333
    ITCA=ITCHAA(M)
    ITOC=ITCHOC(M)
    M=M&1 WEATH334
    RETURN WEATH335
C      END OF FILE SENSED DURING BUFFER IN OPERATION
C
242 KTBAD=1 WEATH340
    REWIND N WEATH341
    RETURN WEATH342
    END WEATH343

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CONTROL CARDS
AS NECESSARY

C 026/029 CONVERSION PROGRAM

```
DIMENSION IP(80)
DATA LP/'1',LC/'1',IRP/'1',IRC/'1'
DATA IEQ/'=1',IEC/'=1',IPL/'&1',IPC/'+1'
DATA IDT/'1',IDC/'1'
1 READ(5,100,END=99)IP
100 FORMAT(80A1)
DO 10 I=1,80
IF(IP(I)=LP)20,30,20
30 IP(I)=LC
20 IF(IP(I)=IRP)21,31,21
31 IP(I)=IRC
21 IF(IP(I)=IEC)22,32,22
32 IP(I)=IEC
22 IF(IP(I)=IPL)23,33,23
33 IP(I)=IPC
23 IF(IP(I)=IDT)10,34,10
34 IP(I)=IDC
10 CONTINUE
WRITE(1,100)IP
GO TO 1
99 CALL EXIT
END
```

CONTROL CARDS
AS NECESSARY

C WALL SELECTION PROGRAM

```
DIMENSION THKNS(10),CTVTY(10),DNSTY(10),SPCHT(10),RES(10)
3 FORMAT(15,2F10.3,15)
KARD=5
20 READ(KARD,3)IS,UMAX,TINS,KOLD
IF(IS) 90,90,30
30 CALL WALLS(IS,UMAX,TINS,KOLD,LAYER,THKNS,CTVTY,DNSTY,SPCHT,RES)
GO TO 20
90 CALL EXIT
END
SUBROUTINE WALLS(IS,UMAX,TINS,KOLD,LAYER,THKNS,CTVTY,DNSTY,SPCHT, WALLE 1
1RES)                                                 WALLS 2
  INTEGER FILEA(35,3), FILEB(51,3), FILEC(23,3), FILED(11,3)          WALLS 3
  DIMENSION THKNS(10),CTVTY(10),DNSTY(10),SPCHT(10),RES(10)          WALLS 4
  DIMENSION WLMSP(41,15), WLMDT(41,3), WALLT(5,7)                      WALLS 5
WALLS 6
WALLS 7
WALLS 8
WALLS 9
WALLS 10
WALLS 11
WALLS 12
WALLS 13
WALLS 14
WALLS 15
WALLS 16
A SUBROUTINE FOR CHOOSING STANDARD ASHRAE EXTERIOR WALLS
USER MUST SPECIFY
  -IS    WALL CODE
    IS=1  STUCCO
    IS=2  BRICK OR ROUGH PLASTER
    IS=3  CONCRETE
    IS=4  CLEAR PINE
  -UMAX MAXIMUM OVERALL HEAT TRANSFER COEFFICIENT (BTU/HR-FT2-F)
  -TINS THICKNESS OF INSULATION (INCHES)
```

-KOLD SEASON CODE
 KOLD=1 WINTER CONDITIONS
 KOLD=2 SUMMER CONDITIONS

		WALLS 17
C		WALLS 18
C		WALLS 19
C		WALLS 20
C		WALLS 21
	DATA WALLT(1,1),WALLT(1,2),WALLT(1,3),WALLT(1,4),WALLT(1,5), 1 WALLT(1,6),WALLT(1,7),WALLT(2,1),WALLT(2,2),WALLT(2,3), 2 WALLT(2,4),WALLT(2,5),WALLT(2,6),WALLT(2,7),WALLT(3,1), 3 WALLT(3,2),WALLT(3,3),WALLT(3,4),WALLT(3,5),WALLT(3,6), 4 WALLT(3,7),WALLT(4,1),WALLT(4,2),WALLT(4,3),WALLT(4,4), 5 WALLT(4,5),WALLT(4,6),WALLT(4,7),WALLT(5,1),WALLT(5,2), 6 WALLT(5,3),WALLT(5,4),WALLT(5,5),WALLT(5,6),WALLT(5,7)/ 74HSTUC,4HCO ,1H ,1H ,1H ,1H ,1H , 84HBRIC,4HK OR,4H ROU,4HGHI ,4HPLAS,4HTER ,1H , 94HCOUNC,4HRETE,1H ,1H ,1H ,1H ,1H , A4HCLEA,4HR PI,4HNE ,1H ,1H ,1H ,1H , B4HSMOO,4HTH P,4HLAST,4HER ,1H ,1H ,1H / C DATA *WLMSP(1, 1),WLMSP(1, 2),WLMSP(1, 3),WLMSP(1, 4),WLMSP(1, 5), WLMSP(1, 6),WLMSP(1, 7),WLMSP(1, 8),WLMSP(1, 9),WLMSP(1,10), WLMSP(1,11),WLMSP(1,12),WLMSP(1,13),WLMSP(1,14),WLMSP(1,15)/ 2WLMSP(1,11),WLMSP(1,12),WLMSP(1,13),WLMSP(1,14),WLMSP(1,15)/ 14HBUIL,4HDING,4H BOA,4HRD,G,4HYPNU,4HM OR,4H PLA,4HSTER,4H BOA, 24HRD ,4H ,4H ,4H ,4H ,4H / DATA *WLMSP(2, 1),WLMSP(2, 2),WLMSP(2, 3),WLMSP(2, 4),WLMSP(2, 5), WLMSP(2, 6),WLMSP(2, 7),WLMSP(2, 8),WLMSP(2, 9),WLMSP(2,10), WLMSP(2,11),WLMSP(2,12),WLMSP(2,13),WLMSP(2,14),WLMSP(2,15)/ 14HBUIL,4HDING,4H BOA,4HRD, ,4HPLYW,4HOOD ,4H ,4H ,4H / 24H ,4H ,4H ,4H ,4H ,4H / DATA *WLMSP(3, 1),WLMSP(3, 2),WLMSP(3, 3),WLMSP(3, 4),WLMSP(3, 5), WLMSP(3, 6),WLMSP(3, 7),WLMSP(3, 8),WLMSP(3, 9),WLMSP(3,10), WLMSP(3,11),WLMSP(3,12),WLMSP(3,13),WLMSP(3,14),WLMSP(3,15)/ 14HBUIL,4HDING,4H BOA,4HRD, ,4HSHEA,4HTHIN,4HG, W,4HOOD ,4HFIBE, 24HR ,4H ,4H ,4H ,4H ,4H / DATA *WLMSP(4, 1),WLMSP(4, 2),WLMSP(4, 3),WLMSP(4, 4),WLMSP(4, 5), WLMSP(4, 6),WLMSP(4, 7),WLMSP(4, 8),WLMSP(4, 9),WLMSP(4,10), WLMSP(4,11),WLMSP(4,12),WLMSP(4,13),WLMSP(4,14),WLMSP(4,15)/ 14HBUIL,4HDING,4H BOA,4HRD, ,4HWOOD,4H ,4H ,4H ,4H / 24H ,4H ,4H ,4H ,4H ,4H / DATA *WLMSP(5, 1),WLMSP(5, 2),WLMSP(5, 3),WLMSP(5, 4),WLMSP(5, 5), WLMSP(5, 6),WLMSP(5, 7),WLMSP(5, 8),WLMSP(5, 9),WLMSP(5,10), WLMSP(5,11),WLMSP(5,12),WLMSP(5,13),WLMSP(5,14),WLMSP(5,15)/ 14HBUIL,4HDING,4H PAP,4HER ,4H VAP,4HOR-P,4HERME,4HABLE,4H FEL, 24HT ,4H ,4H ,4H ,4H ,4H / DATA *WLMSP(6, 1),WLMSP(6, 2),WLMSP(6, 3),WLMSP(6, 4),WLMSP(6, 5), WLMSP(6, 6),WLMSP(6, 7),WLMSP(6, 8),WLMSP(6, 9),WLMSP(6,10), WLMSP(6,11),WLMSP(6,12),WLMSP(6,13),WLMSP(6,14),WLMSP(6,15)/ 14HINSU,4HLATI,4HNG M,4HAT'L,4H BLA,4HNKET,4H, MI,4HNERA,4HL WO, 24HOL, ,4HFIBR,4HOUS ,4H ,4H ,4H ,4H / DATA *WLMSP(7, 1),WLMSP(7, 2),WLMSP(7, 3),WLMSP(7, 4),WLMSP(7, 5), WLMSP(7, 6),WLMSP(7, 7),WLMSP(7, 8),WLMSP(7, 9),WLMSP(7,10), WLMSP(7,11),WLMSP(7,12),WLMSP(7,13),WLMSP(7,14),WLMSP(7,15)/	

14HINSU,4HLATI,4HNG M,4HAT'L,4H BOA,4HRD, ,4HCELL,4HULAR,4H GLA, WALLS 74
 24HSS ,4H ,4H ,4H ,4H ,4H / WALLS 75
 DATA
 *WLMSP(8, 1),WLMSP(8, 2),WLMSP(8, 3),WLMSP(8, 4),WLMSP(8, 5), WALLS 77
 1WLMSP(8, 6),WLMSP(8, 7),WLMSP(8, 8),WLMSP(8, 9),WLMSP(8,10), WALLS 78
 2WLMSP(8,11),WLMSP(8,12),WLMSP(8,13),WLMSP(8,14),WLMSP(8,15)/ WALLS 79
 14HCONC,4HRETE,4H, LI,4HGHTW,4HEIGHT,4HT AG,4HGREG,4HATE ,4H 30 , WALLS 80
 24HLB/F,4HT3 ,4H ,4H ,4H ,4H / WALLS 81
 DATA
 *WLMSP(9, 1),WLMSP(9, 2),WLMSP(9, 3),WLMSP(9, 4),WLMSP(9, 5), WALLS 83
 1WLMSP(9, 6),WLMSP(9, 7),WLMSP(9, 8),WLMSP(9, 9),WLMSP(9,10), WALLS 84
 2WLMSP(9,11),WLMSP(9,12),WLMSP(9,13),WLMSP(9,14),WLMSP(9,15)/ WALLS 85
 14HCONC,4HRETE,4H, LI,4HGHTW,4HEIGHT,4HT AG,4HGREG,4HATE ,4H 80 , WALLS 86
 24HLB/F,4HT3 ,4H ,4H ,4H ,4H / WALLS 87
 DATA
 *WLMSP(10, 1),WLMSP(10, 2),WLMSP(10, 3),WLMSP(10, 4),WLMSP(10, 5), WALLS 89
 1WLMSP(10, 6),WLMSP(10, 7),WLMSP(10, 8),WLMSP(10, 9),WLMSP(10,10), WALLS 90
 2WLMSP(10,11),WLMSP(10,12),WLMSP(10,13),WLMSP(10,14),WLMSP(10,15)/ WALLS 91
 14HCONC,4HRETE,4H, SA,4HND &,4H GRA,4HVEL ,4HAGGR,4HEGAT,4HE (N, WALLS 92
 24HOT D,4HRIED,4H) 1,4H40 L,4HB/FT,4HT3 / WALLS 93
 DATA
 *WLMSP(11, 1),WLMSP(11, 2),WLMSP(11, 3),WLMSP(11, 4),WLMSP(11, 5), WALLS 95
 1WLMSP(11, 6),WLMSP(11, 7),WLMSP(11, 8),WLMSP(11, 9),WLMSP(11,10), WALLS 96
 2WLMSP(11,11),WLMSP(11,12),WLMSP(11,13),WLMSP(11,14),WLMSP(11,15)/ WALLS 97
 14HCONC,4HRETE,4H, SA,4HND &,4H GRA,4HVEL ,4HAGGR,4HEGAT,4HE (O, WALLS 98
 24HVEN ,4HDRIE,4HD) ,4H140 ,4HLB/F,4HT3 / WALLS 99
 DATA
 *WLMSP(12, 1),WLMSP(12, 2),WLMSP(12, 3),WLMSP(12, 4),WLMSP(12, 5), WALLS101
 1WLMSP(12, 6),WLMSP(12, 7),WLMSP(12, 8),WLMSP(12, 9),WLMSP(12,10), WALLS102
 2WLMSP(12,11),WLMSP(12,12),WLMSP(12,13),WLMSP(12,14),WLMSP(12,15)/ WALLS103
 14HCONC,4HRETE,4H, ST,4HUCCO,4H ,4H ,4H ,4H ,4H / WALLS104
 24H ,4H ,4H ,4H ,4H / WALLS105
 DATA
 *WLMSP(13, 1),WLMSP(13, 2),WLMSP(13, 3),WLMSP(13, 4),WLMSP(13, 5), WALLS107
 1WLMSP(13, 6),WLMSP(13, 7),WLMSP(13, 8),WLMSP(13, 9),WLMSP(13,10), WALLS108
 2WLMSP(13,11),WLMSP(13,12),WLMSP(13,13),WLMSP(13,14),WLMSP(13,15)/ WALLS109
 14HMASO,4HNRY,,4H BRI,4HCK, ,4HCOMM,4HON ,4H ,4H ,4H ,4H / WALLS110
 24H ,4H ,4H ,4H ,4H / WALLS111
 DATA
 *WLMSP(14, 1),WLMSP(14, 2),WLMSP(14, 3),WLMSP(14, 4),WLMSP(14, 5), WALLS113
 1WLMSP(14, 6),WLMSP(14, 7),WLMSP(14, 8),WLMSP(14, 9),WLMSP(14,10), WALLS114
 2WLMSP(14,11),WLMSP(14,12),WLMSP(14,13),WLMSP(14,14),WLMSP(14,15)/ WALLS115
 14HMASO,4HNRY,,4H BRI,4HCK, ,4HFACE,4H ,4H ,4H ,4H / WALLS116
 24H ,4H ,4H ,4H ,4H / WALLS117
 DATA
 *WLMSP(15, 1),WLMSP(15, 2),WLMSP(15, 3),WLMSP(15, 4),WLMSP(15, 5), WALLS119
 1WLMSP(15, 6),WLMSP(15, 7),WLMSP(15, 8),WLMSP(15, 9),WLMSP(15,10), WALLS120
 2WLMSP(15,11),WLMSP(15,12),WLMSP(15,13),WLMSP(15,14),WLMSP(15,15)/ WALLS121
 14HMASO,4HNRY,,4H CL,4HAY T,4HILE, ,4H HOL,4HLOW ,4H 4 I,4HN. , WALLS122
 24H ,4H ,4H ,4H ,4H / WALLS123
 DATA
 *WLMSP(16, 1),WLMSP(16, 2),WLMSP(16, 3),WLMSP(16, 4),WLMSP(16, 5), WALLS125
 1WLMSP(16, 6),WLMSP(16, 7),WLMSP(16, 8),WLMSP(16, 9),WLMSP(16,10), WALLS126
 2WLMSP(16,11),WLMSP(16,12),WLMSP(16,13),WLMSP(16,14),WLMSP(16,15)/ WALLS127
 14HMASO,4HNRY,,4H CL,4HAY T,4HILE, ,4H HOL,4HLOW ,4H 8 I,4HN. , WALLS128
 24H ,4H ,4H ,4H ,4H / WALLS129
 DATA

*WLMSP(17, 1), WLMSP(17, 2), WLMSP(17, 3), WLMSP(17, 4), WLMSP(17, 5), WALLS131
 1WLMSP(17, 6), WLMSP(17, 7), WLMSP(17, 8), WLMSP(17, 9), WLMSP(17, 10), WALLS132
 2WLMSP(17, 11), WLMSP(17, 12), WLMSP(17, 13), WLMSP(17, 14), WLMSP(17, 15)/ WALLS133
 14HMASO, 4HNRY, ,4H CL, 4HAY T, 4HILE, ,4H HOL, 4HLOW, 4H10 I, 4HN. , WALLS134
 24H ,4H ,4H ,4H ,4H ,4H / WALLS135
 DATA
 *WLMSP(18, 1), WLMSP(18, 2), WLMSP(18, 3), WLMSP(18, 4), WLMSP(18, 5), WALLS137
 1WLMSP(18, 6), WLMSP(18, 7), WLMSP(18, 8), WLMSP(18, 9), WLMSP(18, 10), WALLS138
 2WLMSP(18, 11), WLMSP(18, 12), WLMSP(18, 13), WLMSP(18, 14), WLMSP(18, 15)/ WALLS139
 14HMASO, 4HNRY, ,4H CL, 4HAY T, 4HILE, ,4H HOL, 4HLOW, 4H12 I, 4HN. , WALLS140
 24H ,4H ,4H ,4H ,4H ,4H / WALLS141
 DATA
 *WLMSP(19, 1), WLMSP(19, 2), WLMSP(19, 3), WLMSP(19, 4), WLMSP(19, 5), WALLS143
 1WLMSP(19, 6), WLMSP(19, 7), WLMSP(19, 8), WLMSP(19, 9), WLMSP(19, 10), WALLS144
 2WLMSP(19, 11), WLMSP(19, 12), WLMSP(19, 13), WLMSP(19, 14), WLMSP(19, 15)/ WALLS145
 14HMASO, 4HNRY, ,4H CON, 4HCRET, 4HE BL, 4HOCK, ,4H SAN, 4HD & ,4HGRAV,
 24HEL A, 4HGGR, ,4H 4, 4H IN, ,4H ,4H / WALLS146
 DATA
 *WLMSP(20, 1), WLMSP(20, 2), WLMSP(20, 3), WLMSP(20, 4), WLMSP(20, 5), WALLS149
 1WLMSP(20, 6), WLMSP(20, 7), WLMSP(20, 8), WLMSP(20, 9), WLMSP(20, 10), WALLS150
 2WLMSP(20, 11), WLMSP(20, 12), WLMSP(20, 13), WLMSP(20, 14), WLMSP(20, 15)/ WALLS151
 14HMASO, 4HNRY, ,4H CON, 4HCRET, 4HE BL, 4HOCK, ,4H SAN, 4HD & ,4HGRAV,
 24HEL A, 4HGGR, ,4H 8, 4H IN, ,4H ,4H / WALLS152
 DATA
 *WLMSP(21, 1), WLMSP(21, 2), WLMSP(21, 3), WLMSP(21, 4), WLMSP(21, 5), WALLS155
 1WLMSP(21, 6), WLMSP(21, 7), WLMSP(21, 8), WLMSP(21, 9), WLMSP(21, 10), WALLS156
 2WLMSP(21, 11), WLMSP(21, 12), WLMSP(21, 13), WLMSP(21, 14), WLMSP(21, 15)/ WALLS157
 14HMASO, 4HNRY, ,4H CON, 4HCRET, 4HE BL, 4HOCK, ,4H SAN, 4HD & ,4HGRAV,
 24HEL A, 4HGGR, ,4H 12, 4H IN, ,4H ,4H / WALLS158
 DATA
 *WLMSP(22, 1), WLMSP(22, 2), WLMSP(22, 3), WLMSP(22, 4), WLMSP(22, 5), WALLS161
 1WLMSP(22, 6), WLMSP(22, 7), WLMSP(22, 8), WLMSP(22, 9), WLMSP(22, 10), WALLS162
 2WLMSP(22, 11), WLMSP(22, 12), WLMSP(22, 13), WLMSP(22, 14), WLMSP(22, 15)/ WALLS163
 14HMASO, 4HNRY, ,4H CON, 4HCRET, 4HE BL, 4HOCK, ,4H CI, 4HNDER, 4H AGG,
 24HREGA, 4HTE , ,4H 4 I, 4HN. ,4H ,4H / WALLS164
 DATA
 *WLMSP(23, 1), WLMSP(23, 2), WLMSP(23, 3), WLMSP(23, 4), WLMSP(23, 5), WALLS167
 1WLMSP(23, 6), WLMSP(23, 7), WLMSP(23, 8), WLMSP(23, 9), WLMSP(23, 10), WALLS168
 2WLMSP(23, 11), WLMSP(23, 12), WLMSP(23, 13), WLMSP(23, 14), WLMSP(23, 15)/ WALLS169
 14HMASO, 4HNRY, ,4H CON, 4HCRET, 4HE BL, 4HOCK, ,4H CI, 4HNDER, 4H AGG,
 24HREGA, 4HTE , ,4H 8 I, 4HN. ,4H ,4H / WALLS170
 DATA
 *WLMSP(24, 1), WLMSP(24, 2), WLMSP(24, 3), WLMSP(24, 4), WLMSP(24, 5), WALLS173
 1WLMSP(24, 6), WLMSP(24, 7), WLMSP(24, 8), WLMSP(24, 9), WLMSP(24, 10), WALLS174
 2WLMSP(24, 11), WLMSP(24, 12), WLMSP(24, 13), WLMSP(24, 14), WLMSP(24, 15)/ WALLS175
 14HMASO, 4HNRY, ,4H CON, 4HCRET, 4HE BL, 4HOCK, ,4H CI, 4HNDER, 4H AGG,
 24HREGA, 4HTE , ,4H12 I, 4HN. ,4H ,4H / WALLS176
 DATA
 *WLMSP(25, 1), WLMSP(25, 2), WLMSP(25, 3), WLMSP(25, 4), WLMSP(25, 5), WALLS179
 1WLMSP(25, 6), WLMSP(25, 7), WLMSP(25, 8), WLMSP(25, 9), WLMSP(25, 10), WALLS180
 2WLMSP(25, 11), WLMSP(25, 12), WLMSP(25, 13), WLMSP(25, 14), WLMSP(25, 15)/ WALLS181
 14HMASO, 4HNRY, ,4H CON, 4HCRET, 4HE BL, 4HOCK, ,4H LIG, 4HHTWE, 4HIGHT,
 24H AGG, 4HR. , ,4H 4 I, 4HN. ,4H ,4H / WALLS182
 DATA
 *WLMSP(26, 1), WLMSP(26, 2), WLMSP(26, 3), WLMSP(26, 4), WLMSP(26, 5), WALLS185
 1WLMSP(26, 6), WLMSP(26, 7), WLMSP(26, 8), WLMSP(26, 9), WLMSP(26, 10), WALLS186
 2WLMSP(26, 11), WLMSP(26, 12), WLMSP(26, 13), WLMSP(26, 14), WLMSP(26, 15)/ WALLS187

14HMASO,4HNRY,,4H CON,4HCRET,4HE BL,4HOCK,,4H LIG,4HHTWE,4HIGHT, WALLS188
 24H AGG,4HR.,,4H 8 I,4HN.,,4H ,4H / WALLS189
 DATA WALLS190
 *WLMSP(27, 1),WLMSP(27, 2),WLMSP(27, 3),WLMSP(27, 4),WLMSP(27, 5), WALLS191
 1WLMSP(27, 6),WLMSP(27, 7),WLMSP(27, 8),WLMSP(27, 9),WLMSP(27, 10), WALLS192
 2WLMSP(27,11),WLMSP(27,12),WLMSP(27,13),WLMSP(27,14),WLMSP(27,15)/ WALLS193
 14HMASO,4HNRY,,4H CON,4HCRET,4HE BL,4HOCK,,4H LIG,4HHTWE,4HIGHT, WALLS194
 24H AGG,4HR.,,4H12 I,4HN.,,4H ,4H / WALLS195
 DATA WALLS196
 *WLMSP(28, 1),WLMSP(28, 2),WLMSP(28, 3),WLMSP(28, 4),WLMSP(28, 5), WALLS197
 1WLMSP(28, 6),WLMSP(28, 7),WLMSP(28, 8),WLMSP(28, 9),WLMSP(28, 10), WALLS198
 2WLMSP(28,11),WLMSP(28,12),WLMSP(28,13),WLMSP(28,14),WLMSP(28,15)/ WALLS199
 14HMASO,4HNRY,,4H STO,4HNE,,4HLIME,4H OR ,4HSAND,4H ,4H / WALLS200
 24H ,4H ,4H ,4H ,4H / WALLS201
 DATA WALLS202
 *WLMSP(29, 1),WLMSP(29, 2),WLMSP(29, 3),WLMSP(29, 4),WLMSP(29, 5), WALLS203
 1WLMSP(29, 6),WLMSP(29, 7),WLMSP(29, 8),WLMSP(29, 9),WLMSP(29, 10), WALLS204
 2WLMSP(29,11),WLMSP(29,12),WLMSP(29,13),WLMSP(29,14),WLMSP(29,15)/ WALLS205
 14HGYPS,4HUM P,4HLAST,4HER,,4HLIGH,4HTWEI,4HGHT ,4HAGGR,4HEGAT, WALLS206
 24HE ,4H ,4H ,4H ,4H / WALLS207
 DATA WALLS208
 *WLMSP(30, 1),WLMSP(30, 2),WLMSP(30, 3),WLMSP(30, 4),WLMSP(30, 5), WALLS209
 1WLMSP(30, 6),WLMSP(30, 7),WLMSP(30, 8),WLMSP(30, 9),WLMSP(30, 10), WALLS210
 2WLMSP(30,11),WLMSP(30,12),WLMSP(30,13),WLMSP(30,14),WLMSP(30,15)/ WALLS211
 14HGYPS,4HUM P,4HLAST,4HER,,4HLIGH,4HTWEI,4HGHT ,4HAGGR,4HEGAT, WALLS212
 24HE ON,4H MET,4HAL L,4HATH ,4H ,4H / WALLS213
 DATA WALLS214
 *WLMSP(31, 1),WLMSP(31, 2),WLMSP(31, 3),WLMSP(31, 4),WLMSP(31, 5), WALLS215
 1WLMSP(31, 6),WLMSP(31, 7),WLMSP(31, 8),WLMSP(31, 9),WLMSP(31, 10), WALLS216
 2WLMSP(31,11),WLMSP(31,12),WLMSP(31,13),WLMSP(31,14),WLMSP(31,15)/ WALLS217
 14HGYPS,4HUM P,4HLAST,4HER,,4HSAND,4H AGG,4HREGA,4HTE ,4H / WALLS218
 24H ,4H ,4H ,4H ,4H / WALLS219
 DATA WALLS220
 *WLMSP(32, 1),WLMSP(32, 2),WLMSP(32, 3),WLMSP(32, 4),WLMSP(32, 5), WALLS221
 1WLMSP(32, 6),WLMSP(32, 7),WLMSP(32, 8),WLMSP(32, 9),WLMSP(32, 10), WALLS222
 2WLMSP(32,11),WLMSP(32,12),WLMSP(32,13),WLMSP(32,14),WLMSP(32,15)/ WALLS223
 14HGYPS,4HUM P,4HLAST,4HER,,4HSAND,4H AGG,4HREGA,4HTE O,4HN ME, WALLS224
 24HTAL ,4HLATH,4H ,4H ,4H ,4H / WALLS225
 DATA WALLS226
 *WLMSP(33, 1),WLMSP(33, 2),WLMSP(33, 3),WLMSP(33, 4),WLMSP(33, 5), WALLS227
 1WLMSP(33, 6),WLMSP(33, 7),WLMSP(33, 8),WLMSP(33, 9),WLMSP(33, 10), WALLS228
 2WLMSP(33,11),WLMSP(33,12),WLMSP(33,13),WLMSP(33,14),WLMSP(33,15)/ WALLS229
 14HGYPS,4HUM P,4HLAST,4HER,,4HSAND,4H AGG,4HREGA,4HTE O,4HN WO, WALLS230
 24HOD L,4HATH ,4H ,4H ,4H ,4H / WALLS231
 DATA WALLS232
 *WLMSP(34, 1),WLMSP(34, 2),WLMSP(34, 3),WLMSP(34, 4),WLMSP(34, 5), WALLS233
 1WLMSP(34, 6),WLMSP(34, 7),WLMSP(34, 8),WLMSP(34, 9),WLMSP(34, 10), WALLS234
 2WLMSP(34,11),WLMSP(34,12),WLMSP(34,13),WLMSP(34,14),WLMSP(34,15)/ WALLS235
 14HSIDI,4HNG M,4HATER,4HIALS,4H, SH,4HINGL,4HES,W,4HOOD,,4H 16 , WALLS236
 24HIN.,,4H7.5 ,4HIN.,,4HEXPO,4HSURE,4H / WALLS237
 DATA WALLS238
 *WLMSP(35, 1),WLMSP(35, 2),WLMSP(35, 3),WLMSP(35, 4),WLMSP(35, 5), WALLS239
 1WLMSP(35, 6),WLMSP(35, 7),WLMSP(35, 8),WLMSP(35, 9),WLMSP(35, 10), WALLS240
 2WLMSP(35,11),WLMSP(35,12),WLMSP(35,13),WLMSP(35,14),WLMSP(35,15)/ WALLS241
 14HSIDI,4HNG M,4HATER,4HIALS,4H, SH,4HINGL,4HES,W,4HOOD ,4HPLUS, WALLS242
 24H INS,4HUL.,,4HBACK,4HER B,4HOARD,4H / WALLS243
 DATA WALLS244

F 0.224, 0.224, 0.156, 0.156, 0.156, 0.156, 0.156, 0.156, 0.156, WALLS302
 G 0.156, 0.156, 0.156, 0.200, 0.200, 0.200, 0.200, 0.200, 0.200, WALLS303
 H 0.200, 0.650, 0.650, 0.185, 0.400, 0.400, 0.650, 0.650, 0.650, WALLS304
 I 0.650/ WALLS305
 WALLS306
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 WALLS357
 WALLS358

C DATA FILEA /
 1 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 50, 1, 2, 3, 4, WALLS308
 2 4, 5, 6, 50, 1, 2, 3, 3, 4, 4, 5, 6, 7, 8, 8, 9, WALLS309
 3 10, 11, 50, WALLS310
 4 32, 16, 32, 24, 128, 12, 10, 16, 8, 32, 4, 0, 2, 16, 10, 25, WALLS311
 5 2, 16, 25, 0, -31, 12, 12, 16, 12, 16, 24, 24, 16, 16, 16, 8, WALLS312
 6 24, 24, 0, WALLS313
 7 39, 40, 34, 2, 14, 2, 35, 38, 36, 12, 37, 41, 5, 1, 2, 4, WALLS314
 8 5, 3, 3, 41, 0, 1, 1, 29, 1, 31, 30, 32, 7, 7, 31, 2, WALLS315
 9 2, 33, 41/ WALLS316
 WALLS317

C DATA FILEB /
 1 1, 2, 2, 3, 3, 4, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, WALLS319
 2 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, WALLS320
 3 30, 31, 32, 50, 1, 2, 3, 4, 5, 6, 7, 7, 8, 8, 9, 10, WALLS321
 4 10, 11, 50, WALLS322
 5 176, 128, 128, 128, 256, 128, 384, 256, 384, 512, 256, 384, 512, 768, 256, 320, WALLS323
 6 384, 128, 192, 256, 320, 192, 256, 320, 384, 192, 256, 320, 384, 256, 384, 256, WALLS324
 7 384, 256, 384, 0, -31, 20, 20, 24, 24, 12, 12, 16, 12, 16, 16, 16, WALLS325
 8 16, 24, 0, WALLS326
 9 14, 14, 13, 14, 13, 14, 13, 13, 13, 28, 28, 28, 28, 28, 16, 17, WALLS327
 A 18, 8, 8, 8, 9, 9, 9, 9, 10, 10, 10, 10, 10, 20, 21, 23, WALLS328
 B 24, 26, 27, 41, 0, 31, 29, 32, 30, 1, 1, 31, 1, 29, 7, 7, WALLS329
 C 31, 33, 41/ WALLS330
 WALLS331

C DATA FILEC /
 1 1, 2, 3, 4, 5, 6, 50, 1, 2, 3, 4, 5, 6, 7, 8, 9, WALLS332
 2 10, 11, 12, 13, 14, 15, 50, WALLS333
 3 128, 128, 128, 192, 128, 256, 0, 128, 256, 384, 128, 256, 384, 128, 256, 384, WALLS334
 4 128, 256, 384, 128, 192, 256, 0, WALLS335
 5 14, 28, 10, 10, 13, 10, 41, 22, 23, 24, 25, 26, 27, 19, 20, 21, WALLS336
 6 15, 16, 18, 10, 10, 10, 41/ WALLS337
 WALLS338
 WALLS339
 WALLS340
 WALLS341
 WALLS342
 WALLS343
 WALLS344

DATA FILED /
 1 1, 2, 3, 4, 50, 1, 2, 3, 4, 5, 50,
 2 128, 128, 128, 128, 0, 128, 128, 128, 128, 0,
 3 14, 13, 19, 22, 41, 19, 22, 25, 13, 15, 41/
 10 FORMAT(1H1,20HWALL SPECIFICATIONS-,5X,9HEXTERIOR-,2X,7A4,
 1 //,26X,15HMAX. OVERALL U=,F7.3,13H BTU/HR-FT2-F)
 11 FORMAT(1H ,4X,25HWINTER CONDITIONS OUTSIDE,
 1 //,1X,40HSTD. ASHRAE WALL SELECTION IS AS FOLLOWS)
 12 FORMAT(1H ,4X,25HSUMMER CONDITIONS OUTSIDE,
 1 //,1X,40HSTD. ASHRAE WALL SELECTION IS AS FOLLOWS)
 13 FORMAT(1H0,5HLAYER,25X,11HDESCRIPTION, 37X,16HTHKNS CONDTVTY,
 1 3X,23HDNSTY SP HT RESISTANCE,/,.81X,
 2 //40HFT. B/HR-FT-F LB/FT3 B/LB-F HR-FT2-F/B)
 14 FORMAT(1H0,I3,F10.3,5H IN.,15A4,F5.3,F10.3,F8.2,F8.3,F9.2)
 15 FORMAT(1H0,I3,15X,9HAIR SPACE,51X,F5.3,F10.3,F8.2,F8.3,F9.2)
 16 FORMAT(1H0,I3,15X,24HINSIDE SURFACE STILL AIR,36X,
 1 F5.3,F10.3,F8.2,F8.3,F9.2,/,19X,10HOVERALL U=,F8.3,
 2 13H BTU/HR-FT2-F)

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17 FORMAT(1H0,15X,20HTHERE IS NO SOLUTION)          WALLS359
18 FORMAT(1H0,I3,5X,23H0.500 IN. CEMENT MORTAR,47X,F5.3,F10.3,F8.2.  WALLS360
   1 F8.3,F9.2)                                     WALLS361
   KAGIT=6                                         WALLS362
   IF(IS=5) 120,110,110                           WALLS363
110 IS=4                                         WALLS364
120 WRITE(KAGIT,10)(WALLT(IS,J),J=1,7),UMAX      WALLS365
   GO TO ( 130, 140),KOLD                         WALLS366
130 WRITE(KAGIT,11)                                WALLS367
   RO=0.17                                         WALLS368
   GO TO 150                                       WALLS369
140 WRITE(KAGIT,12)                                WALLS370
   RO=0.25                                         WALLS371
150 WRITE(KAGIT,13)                                WALLS372
   GO TO ( 160, 380, 810, 900),IS                 WALLS373
C
160       CALL STUCO(UMAX,TINS,RO,WLMDT,FILEA,K1,L1,M1)    WALLS374
C
   IF(K1) 930,930,170                            WALLS375
170 IF(L1) 930,930,180                            WALLS376
180 IF(M1) 930,930,190                            WALLS377
190 LAYER=1
   I1=FILEA(K1,1)                                 WALLS378
   I2=FILEA(K1,2)                                 WALLS379
   I3=FILEA(K1,3)                                 WALLS380
   AI=I2                                         WALLS381
   THK=AI/32.
   CTVTY(LAYER)=WLMDT(I3,1)                      WALLS382
   DNSTY(LAYER)=WLMDT(I3,2)                      WALLS383
   SPCHT(LAYER)=WLMDT(I3,3)                      WALLS384
   THKNS(LAYER)=THK/12.0                          WALLS385
   RES(LAYER)=0.0                                  WALLS386
   WRITE(KAGIT,14)LAYER,THK,(WLMSP(I3,J),J=1,15),THKNS(LAYER),    WALLS387
   1           CTVTY(LAYER), DNSTY(LAYER), SPCHT(LAYER), RES(LAYER)  WALLS388
200 N10=12
   DO 240   L=1,6                                WALLS389
210 N10=N10+1
   I1=FILEA(N10,1)                               WALLS390
   I2=FILEA(N10,2)                               WALLS391
   I3=FILEA(N10,3)                               WALLS392
   IF(I1-L) 210,220,250                          WALLS393
220 IF(L1-L) 240,230,240                        WALLS394
230 LAYER=LAYER + 1
   CTVTY(LAYER)=WLMDT(I3,1)                      WALLS395
   DNSTY(LAYER)=WLMDT(I3,2)                      WALLS396
   SPCHT(LAYER)=WLMDT(I3,3)                      WALLS397
   AI=I2                                         WALLS398
   THK=AI/32.0                                    WALLS399
   THKNS(LAYER)=THK/12.0                          WALLS400
   RES(LAYER)=0.0                                  WALLS401
   WRITE(KAGIT,14)LAYER,THK,(WLMSP(I3,J),J=1,15),THKNS(LAYER),    WALLS402
   1           CTVTY(LAYER), DNSTY(LAYER), SPCHT(LAYER), RES(LAYER)  WALLS403
240 GO TO 210
240 CONTINUE
250 LAYER=LAYER + 1
   THKNS(LAYER)=0.0                               WALLS404
   CTVTY(LAYER)=0.0                               WALLS405

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DNSTY(LAYER)=0.0          WALLS416
SPCHT(LAYER)=0.0          WALLS417
RES(LAYER)=0.97           WALLS41"
N10=20                     WALLS41
DO 330      M=1,11        WALLS420
KODE=0                     WALLS421
260 N10=N10+1             WALLS422
I1=FILEA(N10,1)            WALLS423
I2=FILEA(N10,2)            WALLS424
I3=FILEA(N10,3)            WALLS425
IF(I1=M) 260,270,340       WALLS426
270 IF(I1=M) 330,280,330       WALLS427
280 IF(I3) 340,340,290       WALLS428
290 IF(KODE) 300,300,320       WALLS429
300 KODE=1                 WALLS430
      WRITE(KAGIT,15)LAYER,THKNS(LAYER),CTVTY(LAYER),DNSTY(LAYER),
1 ISPCHT(LAYER),RES(LAYER)
      LAYER=LAYER + 1
      IF(TINS) 320,320,310       WALLS431
310 CTVTY(LAYER)=WLMDT( 6,1)   WALLS432
      DNSTY(LAYER)=WLMDT( 6,2)   WALLS433
      SPCHT(LAYER)=WLMDT( 6,3)   WALLS434
      THK IS(LAYER)=TINS/12.0    WALLS435
      RES(LAYER)=0.0              WALLS436
      WRITE(KAGIT,14)LAYER,TINS,(WLMSP(6,J),J=1,15),THKNS(LAYER),
1 CTVTY(LAYER),DNSTY(LAYER),SPCHT(LAYER),RES(LAYER)
      LAYER=LAYER + 1
320 AI=12                  WALLS441
      THK=AI/32.0                WALLS442
      CTVTY(LAYER)=WLMDT(13,1)   WALLS443
      DNSTY(LAYER)=WLMDT(13,2)   WALLS444
      SPCHT(LAYER)=WLMDT(13,3)   WALLS445
      THKNS(LAYER)=THK/12.0      WALLS446
      RES(LAYER)=0.0              WALLS447
      WRITE(KAGIT,14)LAYER,THK,(WLMSP(13,J),J=1,15),THKNS(LAYER),
1 CTVTY(LAYER),DNSTY(LAYER),SPCHT(LAYER),RES(LAYER)
      LAYER=LAYER + 1
      GO TO 260
330 CONTINUE
340 THKNS(LAYER)=0.0          WALLS454
      CTVTY(LAYER)=0.0          WALLS455
      DNSTY(LAYER)=0.0          WALLS456
      SPCHT(LAYER)=0.0          WALLS457
      RES(LAYER)=0.68           WALLS458
      U1=J,0
      DO 370      I=1,LAYER
      IF(THKNS(I)) 350,350,360
350 U1=U1 + TFS(I)
      GO TO 370
360 U1=U1 + THKIS(I)/CTVTY(I)
370 CONTINUE
      U1=1.0/U1
      WRITE(KAGIT,16)LAYER,THKNS(LAYER),CTVTY(LAYER),DNSTY(LAYER),
1 ISPCHT(LAYER),RES(LAYER), U1
      GO TO 940
380 CALL BRICK(IMAX,TINS,0,WLMDT,FILEA,FILEB,FILEC,FILED,K1,L1,M1)   WALLS472

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      LAYER=1          WALLS473
      IF(K1) 930,930,390  WALLS474
  390 IF(M1) 930,930,400  WALLS475
  400 IF(L1) 930,440,410  WALLS476
  410 IF(K1-1) 420,420,430  WALLS477
  420 I1=FILEA(5,1)  WALLS478
      I2=FILEA(5,2)  WALLS479
      I3=FILEA(5,3)  WALLS480
      CTVTY(LAYER)=WLMDT(I3,1)  WALLS481
      DNSTY(LAYER)=WLMDT(I3,2)  WALLS482
      SPCHT(LAYER)=WLMDT(I3,3)  WALLS483
      AI=I2  WALLS484
      THK=AI/32.0  WALLS485
      THKNS(LAYER)=THK/12.0  WALLS486
      RES(LAYER)=0.0  WALLS487
      WRITE(KAGIT,14)LAYER,THK,(WLMSP(I3,J),J=1,15),THKNS(LAYER),
  1          CTVTY(LAYER), DNSTY(LAYER), SPCHT(LAYER), RES(LAYER)  WALLS488
      GO TO 200  WALLS489
  430 IF(K1-21) 440,440,640  WALLS490
  440 IF(K1-15) 450,450,460  WALLS491
  450 KMIN=1  WALLS492
      KK=1  WALLS493
      KMAX=14  WALLS494
      N20=0  WALLS495
      GO TO 470  WALLS496
  460 KMIN=27  WALLS497
      KMAX=32  WALLS498
      KK=-11  WALLS499
      N20=29  WALLS500
  470 DO 510 K=KMIN,KMAX  WALLS501
  480 N20=N20+1  WALLS502
      I1=FILEB(N20,1)  WALLS503
      I2=FILEB(N20,2)  WALLS504
      I3=FILEB(N20,3)  WALLS505
      IF(I1-K) 480,490,520  WALLS506
  490 IF(K1-K-KK) 510,500,510  WALLS507
  500 CTVTY(LAYER)=WLMDT(I3,1)  WALLS508
      DNSTY(LAYER)=WLMDT(I3,2)  WALLS509
      SPCHT(LAYER)=WLMDT(I3,3)  WALLS510
      AI=I2  WALLS511
      THK=AI/32.0  WALLS512
      THKNS(LAYER)=THK/12.0  WALLS513
      RES(LAYER)=0.0  WALLS514
      WRITE(KAGIT,14)LAYER,THK,(WLMSP(I3,J),J=1,15),THKNS(LAYER),
  1          CTVTY(LAYER), DNSTY(LAYER), SPCHT(LAYER), RES(LAYER)  WALLS515
      LAYER=LAYER + 1  WALLS516
      GO TO 480  WALLS517
  510 CONTINUE  WALLS518
  520 THKNS(LAYER)=0.0  WALLS519
      CTVTY(LAYER)=0.0  WALLS520
      DNSTY(LAYER)=0.0  WALLS521
      SPCHT(LAYER)=0.0  WALLS522
      RES(LAYER)=0.97  WALLS523
      N20=30  WALLS524
      DO 630 M=1,11  WALLS525
      KODE=0  WALLS526

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530 N20=N20+1          WALLS530
    I1=FILEB(N20,1)      WALLS531
    I2=FILEB(N20,2)      WALLS532
    I3=FILEB(N20,3)      WALLS533
    IF(I1-M) 530,540,340 WALLS534
540 IF(M1-M) 630,550,630 WALLS535
550 IF(I3) 340,340,560 WALLS536
560 IF(KODE) 570,570,620 WALLS537
570 KODE=1              WALLS538
    IF(K1-1) 600,600,580 WALLS539
580 IF(M-2) 620,620,590 WALLS540
590 IF(M-3) 620,620,600 WALLS541
600 WRITE(KAGIT,15) LAYER,THKNS(LAYER),CTVTY(LAYER),DNSTY(LAYER),
    SPCHT(LAYER),RES(LAYER) WALLS542
    LAYER=LAYER + 1       WALLS543
    IF(TINS) 620,620,610 WALLS544
610 CTVTY(LAYER)=WLMDT( 6,1) WALLS545
    DNSTY(LAYER)=WLMDT( 6,2) WALLS546
    SPCHT(LAYER)=WLMDT( 6,3) WALLS547
    THKNS(LAYER)=TINS/12.0 WALLS548
    RES(LAYER)=0.0         WALLS549
    WRITE(KAGIT,14) LAYER,TINS,(WLMSP(6,J),J=1,15),THKNS(LAYER),
    1                  CTVTY(LAYER), DNSTY(LAYER), SPCHT(LAYER), RES(LAYER) WALLS550
    LAYER=LAYER + 1       WALLS551
620 AI=I2               WALLS552
    THK=AI/32.0           WALLS553
    CTVTY(LAYER)=WLMDT( I3,1) WALLS554
    DNSTY(LAYER)=WLMDT( I3,2) WALLS555
    SPCHT(LAYER)=WLMDT( I3,3) WALLS556
    THKNS(LAYER)=THK/12.0 WALLS557
    RES(LAYER)=0.0         WALLS558
    WRITE(KAGIT,14) LAYER,THK,(WLMSP(I3,J),J=1,15),THKNS(LAYER),
    1                  CTVTY(LAYER), DNSTY(LAYER), SPCHT(LAYER), RES(LAYER) WALLS559
    LAYER=LAYER + 1       WALLS560
    GO TO 530             WALLS561
630 CONTINUE            WALLS562
640 IF(K1-24) 650,650,730 WALLS563
650 K=K1-21              WALLS564
    GO TO ( 660, 660, 670),K WALLS565
660 N30=K               WALLS566
    GO TO 680             WALLS567
670 N30=5               WALLS568
680 I1=FILEC(N30,1)      WALLS569
    I2=FILEC(N30,2)      WALLS570
    I3=FILEC(N30,3)      WALLS571
    CTVTY(LAYER)=WLMDT( I3,1) WALLS572
    DNSTY(LAYER)=WLMDT( I3,2) WALLS573
    SPCHT(LAYER)=WLMDT( I3,3) WALLS574
    AI=I2               WALLS575
    THK=AI/32.0           WALLS576
    THKNS(LAYER)=THK/12.0 WALLS577
    RES(LAYER)=0.0         WALLS578
    WRITE(KAGIT,14) LAYER,THK,(WLMSP(I3,J),J=1,15),THKNS(LAYER),
    1                  CTVTY(LAYER), DNSTY(LAYER), SPCHT(LAYER), RES(LAYER) WALLS579
    LAYER=LAYER + 1       WALLS580
690 THKNS(LAYER)=0.0      WALLS581
    CTVTY(LAYER)=0.0      WALLS582

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DNSTY(LAYER)=0.0          WALLS587
SPCHT(LAYER)=0.0          WALLS588
RES(LAYER)=0.10           WALLS589
WRITE(KAGIT,18)LAYER,THKNS(LAYER),CTVTY(LAYER),DNSTY(LAYER),
1SPCHT(LAYER),RES(LAYER)  WALLS590
LAYER=LAYER + 1           WALLS591
N30=7                      WALLS592
DO 710 L=1,15              WALLS593
N30=N30+1                  WALLS594
I1=FILEC(N30,1)            WALLS595
I2=FILEC(N30,2)            WALLS596
I3=FILEC(N30,3)            WALLS597
IF(I1-I1) 710,700,720      WALLS598
700 CTVTY(LAYER)=WLMDT(I3,1) WALLS599
DNSTY(LAYER)=WLMDT(I3,2)   WALLS600
SPCHT(LAYER)=WLMDT(I3,3)   WALLS601
AI=I2                      WALLS602
THK=AI/32.0                 WALLS603
THKNS(LAYER)=THK/12.0       WALLS604
RES(LAYER)=0.0               WALLS605
WRITE(KAGIT,14)LAYER,THK,(WLMSP(I3,J),J=1,15),THKNS(LAYER),
1                   CTVTY(LAYER), DNSTY(LAYER), SPCHT(LAYER), RES(LAYER) WALLS606
GO TO 720                  WALLS607
710 CONTINUE                WALLS608
720 LAYER=LAYER + 1         WALLS609
GO TO 520                  WALLS610
730 N40=0                    WALLS611
DO 770 K=1,4                WALLS612
740 N40=N40+1                WALLS613
I1=FILED(N40,1)             WALLS614
I2=FILED(N40,2)             WALLS615
I3=FILED(N40,3)             WALLS616
IF(I1-K) 740,750,780        WALLS617
750 IF(K1-K-24) 770,760,770 WALLS618
760 CTVTY(LAYER)=WLMDT(I3,1) WALLS619
DNSTY(LAYER)=WLMDT(I3,2)   WALLS620
SPCHT(LAYER)=WLMDT(I3,3)   WALLS621
AI=I2                      WALLS622
THK=AI/32.0                 WALLS623
THKNS(LAYER)=THK/12.0       WALLS624
RES(LAYER)=0.0               WALLS625
WRITE(KAGIT,14)LAYER,THK,(WLMSP(I3,J),J=1,15),THKNS(LAYER),
1                   CTVTY(LAYER), DNSTY(LAYER), SPCHT(LAYER), RES(LAYER) WALLS626
LAYER=LAYER + 1             WALLS627
GO TO 740                  WALLS628
770 CONTINUE                WALLS629
780 THKNS(LAYER)=0.0          WALLS630
CTVTY(LAYER)=0.0             WALLS631
DNSTY(LAYER)=0.0             WALLS632
SPCHT(LAYER)=0.0             WALLS633
RES(LAYER)=0.97              WALLS634
WRITE(KAGIT,15)LAYER,THKNS(LAYER),CTVTY(LAYER),DNSTY(LAYER),
1SPCHT(LAYER),RES(LAYER)    WALLS635
LAYER=LAYER + 1             WALLS636
N40=5                      WALLS637
DO 800 L=1,5                WALLS638
N40=N40+1                  WALLS639

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I1=FILED(N40,1)          WALLS644
I2=FILED(N40,2)          WALLS645
I3=FILED(N40,3)          WALLS646
IF(I1-L1) 800,790,520    WALLS647
790 CTVTY(LAYER)=WLMDT(I3,1) WALLS648
DNSTY(LAYER)=WLMDT(I3,2) WALLS649
SPCHT(LAYER)=WLMDT(I3,3) WALLS650
AI=I2                     WALLS651
THK=AI/32.0               WALLS652
THKNS(LAYER)=THK/12.0     WALLS653
RES(LAYER)=0.0             WALLS654
WRITE(KAGIT,14)LAYER,THK,(WLMSP(I3,J),J=1,15),THKNS(LAYER),
1           CTVTY(LAYER), DNSTY(LAYER), SPCHT(LAYER), RES(LAYER) WALLS655
LAYER=LAYER + 1           WALLS656
800 CONTINUE               WALLS657
GO TO 520                 WALLS658
WALLS659
WALLS660
C
810 CALL CONCR(UMAX,TINS,RO,WLMDT,FILEB,FILEC,K1,L1,M1) WALLS661
C
LAYER=1                   WALLS662
IF(K1) 930,930,820         WALLS663
820 IF(M1) 930,930,830     WALLS664
830 IF(L1) 930,840,870     WALLS665
840 N20=17                  WALLS666
DO 860 K=1,12              WALLS667
N20=N20+1                  WALLS668
I1=FILEB(N20,1)            WALLS669
I2=FILEB(N20,2)            WALLS670
I3=FILEB(N20,3)            WALLS671
IF(I1-K1-14) 860,850,520    WALLS672
850 CTVTY(LAYER)=WLMDT(I3,1) WALLS673
DNSTY(LAYER)=WLMDT(I3,2)    WALLS674
SPCHT(LAYER)=WLMDT(I3,3)    WALLS675
AI=I2                     WALLS676
THK=AI/32.0               WALLS677
THKNS(LAYER)=THK/12.0      WALLS678
RES(LAYER)=0.0              WALLS679
WRITE(KAGIT,14)LAYER,THK,(WLMSP(I3,J),J=1,15),THKNS(LAYER),
1           CTVTY(LAYER), DNSTY(LAYER), SPCHT(LAYER), RES(LAYER) WALLS680
LAYER=LAYER + 1           WALLS681
GO TO 520                 WALLS682
WALLS683
WALLS684
860 CONTINUE               WALLS685
870 K=K1 - 12              WALLS686
K1=22                     WALLS687
GO TO ( 880, 890, 890),K    WALLS688
880 N30=K + 2              WALLS689
GO TO 680                 WALLS690
890 N30=6                  WALLS691
GO TO 680                 WALLS692
WALLS693
900 CALL PINE(UMAX,TINS,RO,WLMDT,FILEA,K1,L1,M1) WALLS694
IF(K1) 930,930,901          WALLS695
901 IF(L1) 930,930,902      WALLS696
902 IF(M1) 930,930,903      WALLS697
903 LAYER=1                  WALLS698
N10=0                      WALLS699
WALLS700

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DO 920 K=1,11
N10=N10+1
I1=FILEA(N10,1)
I2=FILEA(N10,2)
I3=FILEA(N10,3)
IF(I1-K1) 920,910,200
910 CTVTY(LAYER)=WLMDT(I3,1)
DNSTY(LAYER)=WLMDT(I3,2)
SPCHT(LAYER)=WLMDT(I3,3)
AI=12
THK=AI/32.0
THKNS(LAYER)=THK/12.0
RES(LAYER)=0.0
WRITE(KAGIT,14)LAYER,THK,(WLMSP(I3,J),J=1,15),THKNS(LAYER),
1 CTVTY(LAYER), DNSTY(LAYER), SPCHT(LAYER), RES(LAYER)
GO TO 200
920 CONTINUE
930 WRITE(KAGIT,17)
940 RETURN
END
SUBROUTINE BRICK(UMAX,TINS,RO,WLMDT,FILEA,FILEB,FILEC,FILED,
1 K1,L1,M1)
INTEGER FILEA(35,3), FILEB(51,3), FILEC(23,3), FILED(11,3)
DIMENSION WLMDT(41,3), REX(28)
CINS=WLMDT(6,1)
K1=0
L1=0
M1=0
RR=RO + 1.65
I=1
I1=FILEA(5,1)
I2=FILEA(5,2)
I3=FILEA(5,3)
AK=WLMDT(I3,1)
AI=I2
THK=AI/384.
KMIN=1
KMAX=14
NK20=-1
100 DO 140 K=KMIN,KMAX
RR1=RR
N20=NK20 + K
110 N20=N20+1
I1=FILEB(N20,1)
I2=FILEB(N20,2)
I3=FILEB(N20,3)
IF(I1-K) 130,120,130
120 AI=I2
THK=AI/384.
AK=WLMDT(I3,1)
RR1=RR1 + THK/ AK
GO TO 110
130 NK20=N20 - K - 2
I=I+1
REX(I)=RR1
140 CONTINUE
IF(KMAX-14) 150,150,160
WALLS701
WALLS702
WALLS703
WALLS704
WALLS705
WALLS706
WALLS707
WALLS708
WALLS709
WALLS710
WALLS711
WALLS712
WALLS713
WALLS714
WALLS715
WALLS716
WALLS717
WALLS718
WALLS719
WALLS720
BRICK 1
BRICK 2
BRICK 3
BRICK 4
BRICK 5
BRICK 6
BRICK 7
BRICK 8
BRICK 9
BRICK 10
BRICK 11
BRICK 12
BRICK 13
BRICK 14
BRICK 15
BRICK 16
BRICK 17
BRICK 18
BRICK 19
BRICK 20
BRICK 21
BRICK 22
BRICK 23
BRICK 24
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BRICK 30
BRICK 31
BRICK 32
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BRICK 34
BRICK 35
BRICK 36
BRICK 37

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150	KMIN=27	BRICK 38
	KMAX=32	BRICK 39
	NK20=2	BRICK 40
	GO TO 100	BRICK 41
160	DO 180 K=1,5	BRICK 42
	GO TO (170, 170, 180, 180, 170),K	BRICK 43
170	RR1=RR	BRICK 44
	I1=FILEC(K,1)	BRICK 45
	I2=FILEC(K,2)	BRICK 46
	I3=FILEC(K,3)	BRICK 47
	AI=I2	BRICK 48
	THK=AI/384.	BRICK 49
	AK=WLMDT(I3,1)	BRICK 50
	RR1=RR1 + THK/AK	BRICK 51
	I=I+1	BRICK 52
	REX(I)=RR1	BRICK 53
180	CONTINUE	BRICK 54
	DO 190 K=1,4	BRICK 55
	RR1=RR	BRICK 56
	I1=FILED(K,1)	BRICK 57
	I2=FILED(K,2)	BRICK 58
	I3=FILED(K,3)	BRICK 59
	AI=I2	BRICK 60
	THK=AI/384.	BRICK 61
	AK=WLMDT(I3,1)	BRICK 62
	RR1=RR1 + THK/AK	BRICK 63
	I=I+1	BRICK 64
	REX(I)=RR1	BRICK 65
190	CONTINUE	BRICK 66
	U1=0.0	BRICK 67
	DO 770 K=1,28	BRICK 68
	RR=REX(K)	BRICK 69
	IF(K-1) 200,200,330	BRICK 70
200	NL10=11	BRICK 71
	DO 320 L=1,6	BRICK 72
	RR1=RR	BRICK 73
	N10=NL10 + L	BRICK 74
210	N10=N10+1	BRICK 75
	I1=FILEA(N10,1)	BRICK 76
	I2=FILEA(N10,2)	BRICK 77
	I3=FILEA(N10,3)	BRICK 78
	IF(I1-L) 230,220,230	BRICK 79
220	AI=I2	BRICK 80
	THK=AI/384.	BRICK 81
	AK=WLMDT(I3,1)	BRICK 82
	RR1=RR1 + THK/AK	BRICK 83
	GO TO 210	BRICK 84
230	NL10=N10 - L - 2	BRICK 85
	NM10=19	BRICK 86
	DO 320 M=1,11	BRICK 87
	R=RR1	BRICK 88
	N10=NM10 + M	BRICK 89
240	N10=N10+1	BRICK 90
	I1=FILEA(N10,1)	BRICK 91
	I2=FILEA(N10,2)	BRICK 92
	I3=FILEA(N10,3)	BRICK 93
	AI=I2	BRICK 94

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    IF(I1-M) 280,250,280          BRICK 95
250 IF(I3) 270,270,260          BRICK 96
260 AK=WLMDT(I3,1)              BRICK 97
    THK= AI/384.
    R=R + THK/AK
    GO TO 240
270 R=R + AI/32.0               BRICK100
    IF(TINS) 320,290,320         BRICK101
280 NM10=N10 - M - 2           BRICK102
290 UU1=1.0/(R + TINS/(12.0*CINS)) BRICK103
    IF(UU1-UMAX) 300,300,320     BRICK104
300 IF(U1-UU1) 310,320,320     BRICK105
310 U1=UU1                      BRICK106
    K1=K                         BRICK107
    L1=L                         BRICK108
    M1=M                         BRICK109
320 CONTINUE                     BRICK110
    GO TO 770
330 IF(K=21) 340,340,440        BRICK111
340 NM20=35                      BRICK112
    DO 430 M=1,11
    R=RR
    IF(M=2) 345,342,341         BRICK113
341 IF(M=3) 345,342,345         BRICK114
342 R=R - 0.97                  BRICK115
    IF(TINS) 430,345,430         BRICK116
345 N20=NM20 + M                BRICK117
350 N20=N20+1                   BRICK118
    I1=FILEB(N20,1)              BRICK119
    I2=FILEB(N20,2)              BRICK120
    I3=FILEB(N20,3)              BRICK121
    AI=I2
    IF(I1-M) 390,360,390         BRICK122
360 IF(I3) 380,380,370          BRICK123
370 AK=WLMDT(I3,1)              BRICK124
    THK=AI/384.
    R=R+THK/AK
    GO TO 350
380 R=R + AI/32.0               BRICK125
    IF(TINS) 430,400,430         BRICK126
390 NM20=N20 - M - 2           BRICK127
400 UU1=1.0/(R + TINS/(12.0*CINS)) BRICK128
    IF(UU1-UMAX) 410,410,430     BRICK129
410 IF(U1-UU1) 420,430,430     BRICK130
420 U1=UU1                      BRICK131
    K1=K                         BRICK132
    L1=0                          BRICK133
    M1=M                         BRICK134
430 CONTINUE                     BRICK135
    GO TO 770
440 IF(K=24) 450,450,610        BRICK136
450 NL30=6
    DO 600 L=1,15
    RR1=RR + 0.10
    N30=NL30 + L
460 N30=N30+1
    I1=FILEC(N30,1)              BRICK137
    BRICK138
    BRICK139
    BRICK140
    BRICK141
    BRICK142
    BRICK143
    BRICK144
    BRICK145
    BRICK146
    BRICK147
    BRICK148
    BRICK149
    BRICK150
    BRICK151

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I2=FILEC(N30,2) BRICK152
I3=FILEC(N30,3) BRICK153
IF(I1-L) 480,470,480 BRICK154
470 AI=I2 BRICK155
    THK=AI/384.
    AK=WLMDT(I3,1) BRICK156
    RR1=RR1 + THK/AK BRICK157
    GO TO 460 BRICK158
480 NL30=N30 - L - 2 BRICK159
    NM20=35, BRICK160
    DO 600 M=1,11 BRICK161
    R=RR1 BRICK162
    IF(M-2) 510,500,490 BRICK163
490 IF(M-3) 510,500,510 BRICK164
500 R=R-0.97 BRICK165
    IF(TINS) 600,510,600 BRICK166
510 N20=NM20 + M BRICK167
520 N20=N20+1 BRICK168
    I1=FILEB(N20,1) BRICK169
    I2=FILEB(N20,2) BRICK170
    I3=FILEB(N20,3) BRICK171
    AI=I2 BRICK172
    IF(I1-M) 560,530,560 BRICK173
530 IF(I3) 550,550,540 BRICK174
540 AK=WLMDT(I3,1) BRICK175
    THK=AI/384.
    R=R+THK/AK BRICK176
    GO TO 520 BRICK177
550 R=R+AI/32.0 BRICK178
    IF(TINS) 600,570,600 BRICK179
560 NM20=N20 - M - 2 BRICK180
570 UU1=1.0/(R + TINS/(12.0*CINS)) BRICK181
    IF(UU1-UMAX) 580,580,600 BRICK182
580 IF(U1-UU1) 590,600,600 BRICK183
590 U1=UU1 BRICK184
    K1=K BRICK185
    L1=L BRICK186
    M1=M BRICK187
600 CONTINUE BRICK188
    GO TO 770 BRICK189
610 NL40=4 BRICK190
    DO 750 L=1,5 BRICK191
    RR1=RR + 0.97 BRICK192
    N40 =NL40 + L BRICK193
620 N40=N40+1 BRICK194
    I1=FILED(N40,1) BRICK195
    I2=FILED(N40,2) BRICK196
    I3=FILED(N40,3) BRICK197
    IF(I1-L) 640,630,640 BRICK198
630 AI=I2 BRICK199
    THK=AI/384.
    AK=WLMDT(I3,1) BRICK200
    RR1=RR1 + THK/AK BRICK201
    GO TO 620 BRICK202
640 NL40=N40 - L - 2 BRICK203
    NM20=35, BRICK204
    DO 760 M=1,11 BRICK205
    R=RR1 BRICK206
    IF(M-2) 660,650,650 BRICK207
    R=R+AI/32.0 BRICK208

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R=RRI
    IF(M-2) 670,660,650
650 IF(M-3) 670,660,670
660 R=R - 0.97
    IF(TINS) 760,670,760
670 N20=N20 + M
680 N20=N20+1
    I1=FILEB(N20,1)
    I2=FILEB(N20,2)
    I3=FILEB(N20,3)
    AI=I2
    IF(I1-M) 720,690,720
690 IF(I3) 710,710,700
700 AK=WLMDT(I3,1)
    THK=AI/384.
    R=R + THK/AK
    GO TO 680
710 R=R + AI/32.0
    IF(TINS) 760,730,760
720 NM20=N20 - M - 2
730 UU1=1.0/(R + TINS/(12.0*CINS))
    IF(UU1-UMAX) 740,740,760
740 IF(U1-UU1) 750,760,760
750 U1=UU1
    K1=K
    L1=L
    M1=M
760 CONTINUE
770 CONTINUE
    RETURN
END
SUBROUTINE STUCO(UMAX,TINS,RO,WLMDT,FILEA,K1,L1,M1)
INTEGER FILEA(35,3)
DIMENSION WLMDT(41,3)
CINS=WLMDT(6,1)
K1=0
L1=0
M1=0
RR=RO + 1.65
I1=FILEA(10,1)
I2=FILEA(10,1)
I3=FILEA(10,1)
AI=I2
THK=AI/384.
AK=WLMDT(I3,1)
RR=RR + THK/AK
K1=10
U1=0.0
NL10=11
DO 210 L=1,6
    RR1=RR
    N10=NL10 + L
100 N10=N10+1
    I1=FILEA(N10,1)
    I2=FILEA(N10,2)
    I3=FILEA(N10,3)
    IF(I1-L) 120,110,120
    BRICK209
    BRICK210
    BRICK211
    BRICK212
    BRICK213
    BRICK214
    BRICK215
    BRICK216
    BRICK217
    BRICK218
    BRICK219
    BRICK220
    BRICK221
    BRICK222
    BRICK223
    BRICK224
    BRICK225
    BRICK226
    BRICK227
    BRICK228
    BRICK229
    BRICK230
    BRICK231
    BRICK232
    BRICK233
    BRICK234
    BRICK235
    BRICK236
    BRICK237
    BRICK238
    BRICK239
    STUCO 1
    STUCO 2
    STUCO 3
    STUCO 4
    STUCO 5
    STUCO 6
    STUCO 7
    STUCO 8
    STUCO 9
    STUCO 10
    STUCO 11
    STUCO 12
    STUCO 13
    STUCO 14
    STUCO 15
    STUCO 16
    STUCO 17
    STUCO 18
    STUCO 19
    STUCO 20
    STUCO 21
    STUCO 22
    STUCO 23
    STUCO 24
    STUCO 25
    STUCO 26

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110 AI=I2
    THK=AI/384.
    AK=WLMDT(I3,1)
    RR1=RR1 + THK/AK
    GO TO 100
120 NL10=N10 - L - 2
    NM10=19
    DO 210 M=1,11
    R=RR1
    N10=NM10 + M
130 N10=N10+1
    I1=FILEA(N10,1)
    I2=FILEA(N10,2)
    I3=FILEA(N10,3)
    AI=I2
    IF(I1-M) 170,140,170
140 IF(I3) 160,160,150
150 AK=WLMDT(I3,1)
    THK=AI/384.
    R=R + THK/AK
    GO TO 130
160 R=R + AI/32.0
    IF(TINS) 210,180,210
170 NM10=N10 - M - 2
180 UU1=1.0/(R + TINS/(12.0*CINS))
    IF(UU1-UMAX) 190,190,210
190 IF(U1-UU1) 200,210,210
200 U1=UU1
    L1=L
    M1=M
210 CONTINUE
    RETURN
END
SUBROUTINE CONCR(UMAX,TINS,RO,WLMDT,FILEB,FILEC,K1,L1,M1)
INTEGER FILEB(51,3), FILEC(23,3)
DIMENSION WLMDT(41,3), REX(15)
CINS=WLMDT(6,1)
K1=0
L1=0
M1=0
RR=RO + 1.65
I=0
NK20=16
DO 120 K=1,12
    RR1=RR
    N20=NK20+ K
100 N20=N20+1
    I1=FILEB(N20,1)
    I2=FILEB(N20,2)
    I3=FILEB(N20,3)
    IF(I1-K-14) 120,110,120
110 AI=I2
    THK=AI/384.
    AK=WLMDT(I3,1)
    RR1=RR1 + THK/AK
    I=I+1
    REX(I)=RR1

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STUCO	27
STUCO	28
STUCO	29
STUCO	30
STUCO	31
STUCO	32
STUCO	33
STUCO	34
STUCO	35
STUCO	36
STUCO	37
STUCO	38
STUCO	39
STUCO	40
STUCO	41
STUCO	42
STUCO	43
STUCO	44
STUCO	45
STUCO	46
STUCO	47
STUCO	48
STUCO	49
STUCO	50
STUCO	51
STUCO	52
STUCO	53
STUCO	54
STUCO	55
STUCO	56
STUCO	57
STUCO	58
STUCO	59
CONCR	1
CONCR	2
CONCR	3
CONCR	4
CONCR	5
CONCR	6
CONCR	7
CONCR	8
CONCR	9
CONCR	10
CONCR	11
CONCR	12
CONCR	13
CONCR	14
CONCR	15
CONCR	16
CONCR	17
CONCR	18
CONCR	19
CONCR	20
CONCR	21
CONCR	22
CONCR	23
CONCR	24

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120 CONTINUE          CONCR 25
DO 140 K=1,6        CONCR 26
GO TO ( 140, 140, 130, 130, 140, 130),K
130 RR1=RR          CONCR 27
N30=K              CONCR 28
I1=FILEC(N30,1)    CONCR 29
I2=FILEC(N30,2)    CONCR 30
I3=FILEC(N30,3)    CONCR 31
AI=I2              CONCR 32
THK=AI/384.         CONCR 33
AK=WLMDT(I3,1)     CONCR 34
RR1=RR1 + THK/AK   CONCR 35
I=I+1              CONCR 36
REX(I)=RR1         CONCR 37
140 CONTINUE         CONCR 38
U1=0.0.             CONCR 39
DO 410 K=1,15       CONCR 40
RR=REX(K)           CONCR 41
IF(K-12) 150,150,250 CONCR 42
150 NM20=35          CONCR 43
DO 240 M=1,11       CONCR 44
R=RR               CONCR 45
N20=NM20 + M       CONCR 46
160 N20=N20+1        CONCR 47
I1=FILEB(N20,1)     CONCR 48
I2=FILEB(N20,2)     CONCR 49
I3=FILEB(N20,3)     CONCR 50
AI=I2              CONCR 51
IF(I1-M) 200,170,200 CONCR 52
170 IF(I3) 190,190,180 CONCR 53
180 AK=WLMDT(I3,1)   CONCR 54
THK=AI/384.          CONCR 55
R=R+THK/AK          CONCR 56
GO TO 160            CONCR 57
190 R=R+AI/32.0      CONCR 58
IF(TINS) 240,210,240 CONCR 59
200 NM20=N20 - M - 2 CONCR 60
210 UU1=1.0/(R + TINS/(12.0*CINS)) CONCR 61
IF(UU1-UMAX) 220,220,240 CONCR 62
220 IF(U1-UU1) 230,240,240 CONCR 63
230 U1=UU1            CONCR 64
K1=K               CONCR 65
CONCR 66
L1=0               CONCR 67
M1=M               CONCR 68
240 CONTINUE         CONCR 69
GO TO 410            CONCR 70
250 NL30=6            CONCR 71
DO 400 L=1,15        CONCR 72
RR1=RR +0.10          CONCR 73
N30=NL30 + L          CONCR 74
260 N30=N30+1          CONCR 75
I1=FILEC(N30,1)      CONCR 76
I2=FILEC(N30,2)      CONCR 77
I3=FILEC(N30,3)      CONCR 78
IF(I1-L) 280,270,280 CONCR 79
270 AI=I2              CONCR 80
THK=AI/384.            CONCR 81

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AK=WLMDT(I3,1)
RR1=RR1 + THK/AK
GO TO 260
280 NL30=N30 - L - 2
NM20=35
DO 400 M=1,11
R=RR1
IF(M-2) 310,300,290
290 IF(M-3) 310,300,310
300 R=R - 0.97
IF(TINS) 400,310,400
310 N20=NM20 + M
320 N20=N20+1
I1=FILEB(N20,1)
I2=FILEB(N20,2)
I3=FILEB(N20,3)
AI=I2
IF(I1-M) 360,330,360
330 IF(I3) 350,350,340
340 AK=WLMDT(I3,1)
THK=AI/384.
R=R + THK/AK
GO TO 320
350 R=R + AI/32.0
IF(TINS) 400,370,400
360 NM20=N20 - M - 2
370 UU1=1.0/(R + TINS/(12.0*CINS))
IF(UU1-UMAX) 380,380,400
380 IF(U1-UU1) 390,400,400
390 U1=UU1
K1=K
L1=L
M1=M
400 CONTINUE
410 CONTINUE
RETURN
END
SUBROUTINE PINE(UMAX,TINS,RO,WLMDT,FILEA,K1,L1,M1)
INTEGER FILEA(35,3)
DIMENSION WLMDT(41,3)
CINS=WLMDT(6,1)
K1=0
L1=0
M1=0
RR=RO + 1.65
U1=0.0
DO 220 K=1,7
RR1=RR
IF(K-5) 100,220,100
100 N10=K
I1=FILEA(N10,1)
I2=FILEA(N10,2)
I3=FILEA(N10,3)
AI=I2
THK=AI/384.
AK=WLMDT(I3,1)
RR1=RR1 + THK/AK
CONCR 82
CONCR 83
CONCR 84
CONCR 85
CONCR 86
CONCR 87
CONCR 88
CONCR 89
CONCR 90
CONCR 91
CONCR 92
CONCR 93
CONCR 94
CONCR 95
CONCR 96
CONCR 97
CONCR 98
CONCR 99
CONCR100
CONCR101
CONCR102
CONCR103
CONCR104
CONCR105
CONCR106
CONCR107
CONCR108
CONCR109
CONCR110
CONCR111
CONCR112
CONCR113
CONCR114
CONCR115
CONCR116
CONCR117
CONCR118
PINE 1
PINE 2
PINE 3
PINE 4
PINE 5
PINE 6
PINE 7
PINE 8
PINE 9
PINE 10
PINE 11
PINE 12
PINE 13
PINE 14
PINE 15
PINE 16
PINE 17
PINE 18
PINE 19
PINE 20

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NL10=11          PINE 21
DO 220 L=1,6    PINE 22
RR2=RR1          PINE 23
N10=NL10 + L    PINE 24
110 N10=N10+1   PINE 25
I1=FILEA(N10,1) PINE 26
I2=FILEA(N10,2) PINE 27
I3=FILEA(N10,3) PINE 28
IF(I1-L) 130,120,130 PINE 29
120 AI=I2       PINE 30
THK=AI/384.      PINE 31
AK=WLMDT(I3,1)   PINE 32
RR2=RR2 + THK/AK PINE 33
GO TO 110       PINE 34
130 NL10=N10 - L - 2 PINE 35
NM10=19          PINE 36
DO 220 M=1,11    PINE 37
R=RR2            PINE 38
N10=NM10 + M    PINE 39
140 N10=N10+1   PINE 40
I1=FILEA(N10,1) PINE 41
I2=FILEA(N10,2) PINE 42
I3=FILEA(N10,3) PINE 43
AI=I2            PINE 44
IF(I1-M) 180,150,180 PINE 45
150 IF(I3) 170,170,160 PINE 46
160 AK=WLMDT(I3,1) PINE 47
THK=AI/384.      PINE 48
R=R+THK/AK      PINE 49
GO TO 140       PINE 50
170 R=R + AI/32.0 PINE 51
IF(TINS) 220,190,220 PINE 52
180 NM10=N10 - M - 2 PINE 53
190 UU1=1.0/(R + TINS/(12.0*CINS)) PINE 54
IF(UU1-UMAX) 200,200,220 PINE 55
200 IF(U1-UU1) 210,220,220 PINE 56
210 U1=UU1       PINE 57
K1=K             PINE 58
L1=L             PINE 59
M1=M             PINE 60
220 CONTINUE     PINE 61
RETURN          PINE 62
END             PINE 63

```

CONTROL CARDS
AS NECESSARY

DATA

CONTROL CARDS
AS NECESSARY

CONTROL CARDS
AS NECESSARY

```
C 026/029 CONVERSION PROGRAM
DIMENSION IP(80)
DATA LP/'(/,LC/'(/,IRP/'(/,IRC/'(/'
DATA IEQ/'=/,IEC/'=/,IPL/'&/,IPC/'+/
DATA IDT/'(/,IDC/'(/'
1 READ(5,100,END=99)IP
100 FORMAT(80A1)
DO 10 I=1,80
IF(IP(I)=LP)20,30,20
30 IP(I)=LC
20 IF(IP(I)=IRP)21,31,21
31 IP(I)=IRC
21 IF(IP(I)=IEQ)22,32,22
32 IP(I)=IEC
22 IF(IP(I)=IPL)23,33,23
33 IP(I)=IPC
23 IF(IP(I)=IDT)10,34,10
34 IP(I)=IDC
10 CONTINUE
WRITE(1,100)IP
GO TO 1
99 CALL EXIT
END
```

CONTROL CARDS
AS NECESSARY

```
C ROOF SELECTION PROGRAM
DIMENSION THKNS(10),CTVTY(10),DNSTY(10),SPCHT(10),RES(10)
3 FORMAT(15,2F10.3,I5)
KARD=5
20 READ(KARD,3)IR,UMAX,TINS,KOLD
IF(IR)90,90,30
30 CALL ROOFS(IR,UMAX,TINS,KOLD,LAYER,THKNS,CTVTY,DNSTY,SPCHT,RES)
GO TO 20
90 CALL EXIT
END
```

```
SUBROUTINE ROOFS(IR,UMAX,TINS,KOLD,LAYER,THKNS,CTVTY,DNSTY,
1 SPCHT,RES)
DIMENSION THKNS(10),CTVTY(10),DNSTY(10),SPCHT(10),RES(10)
DIMENSION SPEC(23,15),PROP(23,3)
DIMENSION IMSRY(38,3),IWOOD(33,3),IPTCH(30,3)
```

A SUBROUTINE FOR CHOOSING STANDARD ASHRAE ROOFS
USER MUST SPECIFY

-IR	ROOF CODE	ROOFS	1
IR=1	FLAT MASONRY ROOF	ROOFS	2
IR=2	WOOD OR METAL CONSTRUCTION FLAT ROOF	ROOFS	3
IR=3	PITCHED ROOF	ROOFS	4
-UMAX	MAXIMUM OVERALL HEAT TRANSFER COEFFICIENT (BTU/HR-FT ² -F)	ROOFS	5
-TINS	THICKNESS OF INSULATION (INCHES)	ROOFS	6
-KOLD	SEASON CODE	ROOFS	7
		ROOFS	8
		ROOFS	9
		ROOFS	10
		ROOFS	11
		ROOFS	12
		ROOFS	13
		ROOFS	14
		ROOFS	15
		ROOFS	16

C	KOLD=1	WINTER CONDITIONS	ROOFS	17
C	KOLD=2	SUMMER CONDITIONS	ROOFS	18
C			ROOFS	19
	DATA SPEC(1, 1),SPEC(1, 2),SPEC(1, 3),SPEC(1, 4),SPEC(1, 5),ROOFS	20		
1	SPEC(1, 6),SPEC(1, 7),SPEC(1, 8),SPEC(1, 9),SPEC(1,10),	ROOFS	21	
2	SPEC(1,11),SPEC(1,12),SPEC(1,13),SPEC(1,14),SPEC(1,15)/	ROOFS	22	
14HBUIL,4HDING,4H BOA,4HRD, ,4HASBE,4HSROS,4H CEM,4MENT ,4H		ROOFS	23	
24H ,4H ,4H ,4H ,4H /		ROOFS	24	
	DATA SPEC(2, 1),SPEC(2, 2),SPEC(2, 3),SPEC(2, 4),SPEC(2, 5),ROOFS	25		
1	SPEC(2, 6),SPEC(2, 7),SPEC(2, 8),SPEC(2, 9),SPEC(2,10),	ROOFS	26	
2	SPEC(2,11),SPEC(2,12),SPEC(2,13),SPEC(2,14),SPEC(2,15)/	ROOFS	27	
14HBUIL,4HDING,4H BOA,4HRD,G,4HYPUS,4HM OR,4H PLA,4HSTER,4H BOA,		ROOFS	28	
24HRD ,4H ,4H ,4H ,4H /		ROOFS	29	
	DATA SPEC(3, 1),SPEC(3, 2),SPEC(3, 3),SPEC(3, 4),SPEC(3, 5),ROOFS	30		
1	SPEC(3, 6),SPEC(3, 7),SPEC(3, 8),SPEC(3, 9),SPEC(3,10),	ROOFS	31	
2	SPEC(3,11),SPEC(3,12),SPEC(3,13),SPEC(3,14),SPEC(3,15)/	ROOFS	32	
14HBUIL,4HDING,4H BOA,4HRD, ,4HPLYW,4HOOD ,4H ,4H ,4H /		ROOFS	33	
24H ,4H ,4H ,4H ,4H /		ROOFS	34	
	DATA SPEC(4, 1),SPEC(4, 2),SPEC(4, 3),SPEC(4, 4),SPEC(4, 5),ROOFS	35		
1	SPEC(4, 6),SPEC(4, 7),SPEC(4, 8),SPEC(4, 9),SPEC(4,10),	ROOFS	36	
2	SPEC(4,11),SPEC(4,12),SPEC(4,13),SPEC(4,14),SPEC(4,15)/	ROOFS	37	
14HBUIL,4HDING,4H BOA,4HRD, ,4HWOOD,4H FIB,4HER B,4HOURD,4H		ROOFS	38	
24H ,4H ,4H ,4H ,4H /		ROOFS	39	
	DATA SPEC(5, 1),SPEC(5, 2),SPEC(5, 3),SPEC(5, 4),SPEC(5, 5),ROOFS	40		
1	SPEC(5, 6),SPEC(5, 7),SPEC(5, 8),SPEC(5, 9),SPEC(5,10),	ROOFS	41	
2	SPEC(5,11),SPEC(5,12),SPEC(5,13),SPEC(5,14),SPEC(5,15)/	ROOFS	42	
14HBUIL,4HDING,4H PAP,4HER ,4H VAP,4HOR=P,4HERME,4HABLE,4H FEL,		ROOFS	43	
24HT ,4H ,4H ,4H ,4H /		ROOFS	44	
	DATA SPEC(6, 1),SPEC(6, 2),SPEC(6, 3),SPEC(6, 4),SPEC(6, 5),ROOFS	45		
1	SPEC(6, 6),SPEC(6, 7),SPEC(6, 8),SPEC(6, 9),SPEC(6,10),	ROOFS	46	
2	SPEC(6,11),SPEC(6,12),SPEC(6,13),SPEC(6,14),SPEC(6,15)/	ROOFS	47	
14HINSU,4HLATI,4HNG M,4HAT'L,4H BLA,4HNKET,4H, MI,4HNERA,4HL WO,		ROOFS	48	
24HOL ,4HFIBR,4HOUS ,4H ,4H ,4H /		ROOFS	49	
	DATA SPEC(7, 1),SPEC(7, 2),SPEC(7, 3),SPEC(7, 4),SPEC(7, 5),ROOFS	50		
1	SPEC(7, 6),SPEC(7, 7),SPEC(7, 8),SPEC(7, 9),SPEC(7,10),	ROOFS	51	
2	SPEC(7,11),SPEC(7,12),SPEC(7,13),SPEC(7,14),SPEC(7,15)/	ROOFS	52	
14HINSU,4HLATI,4HNG M,4HAT'L,4H BOA,4HRD, ,4HCELL,4HULAR,4H GLA,		ROOFS	53	
24HSS ,4H ,4H ,4H ,4H /		ROOFS	54	
	DATA SPEC(8, 1),SPEC(8, 2),SPEC(8, 3),SPEC(8, 4),SPEC(8, 5),ROOFS	55		
1	SPEC(8, 6),SPEC(8, 7),SPEC(8, 8),SPEC(8, 9),SPEC(8,10),	ROOFS	56	
2	SPEC(8,11),SPEC(8,12),SPEC(8,13),SPEC(8,14),SPEC(8,15)/	ROOFS	57	
14HINSU,4HLATI,4HNG M,4HAT'L,4H, BO,4HARD, ,4H GLA,4HSS F,4HIBER,		ROOFS	58	
24H ,4H ,4H ,4H ,4H /		ROOFS	59	
	DATA SPEC(9, 1),SPEC(9, 2),SPEC(9, 3),SPEC(9, 4),SPEC(9, 5),ROOFS	60		
1	SPEC(9, 6),SPEC(9, 7),SPEC(9, 8),SPEC(9, 9),SPEC(9,10),	ROOFS	61	
2	SPEC(9,11),SPEC(9,12),SPEC(9,13),SPEC(9,14),SPEC(9,15)/	ROOFS	62	
14HINSU,4HLATI,4HNG M,4HAT'L,4H, AC,4HOUST,4HICAL,4H TIL,4HE (W,		ROOFS	63	
24HOOD ,4HOR C,4HANE ,4HFIBE,4HRBOA,4HRD /		ROOFS	64	
	DATA SPEC(10, 1),SPEC(10, 2),SPEC(10, 3),SPEC(10, 4),SPEC(10, 5),ROOFS	65		
1	SPEC(10, 6),SPEC(10, 7),SPEC(10, 8),SPEC(10, 9),SPEC(10,10),	ROOFS	66	
2	SPEC(10,11),SPEC(10,12),SPEC(10,13),SPEC(10,14),SPEC(10,15)/	ROOFS	67	
14HINSU,4HLATI,4HNG M,4HAT'L,4H, BO,4HARD, ,4H ROO,4HF DE,4HCK ,		ROOFS	68	
24H ,4H ,4H ,4H ,4H /		ROOFS	69	
	DATA SPEC(11, 1),SPEC(11, 2),SPEC(11, 3),SPEC(11, 4),SPEC(11, 5),ROOFS	70		
1	SPEC(11, 6),SPEC(11, 7),SPEC(11, 8),SPEC(11, 9),SPEC(11,10),	ROOFS	71	
2	SPEC(11,11),SPEC(11,12),SPEC(11,13),SPEC(11,14),SPEC(11,15)/	ROOFS	72	
14HINSU,4HLATI,4HNG M,4HAT'L,4H, RO,4HOF I,4HNSUL,4HATIO,4MN, P,		ROOFS	73	

24HREF0,4HRMED,4H ,4H ,4H ,4H / ROOFS 74
 DATA SPEC(12, 1),SPEC(12, 2),SPEC(12, 3),SPEC(12, 4),SPEC(12, 5),ROOFS 75
 1 SPEC(12, 6),SPEC(12, 7),SPEC(12, 8),SPEC(12, 9),SPEC(12, 10), ROOFS 76
 2 SPEC(12, 11),SPEC(12, 12),SPEC(12, 13),SPEC(12, 14),SPEC(12, 15)/ ROOFS 77
 14HCONC,4HRETE,4H, GY,4HPSUM,4H 87 ,4H1/2,4H GYP,4HSU1,4H 12 , ROOFS 78
 24H1/2,4H WOO,4HD CH,4HIPS ,4H ,4H / ROOFS 79
 DATA SPEC(13, 1),SPEC(13, 2),SPEC(13, 3),SPEC(13, 4),SPEC(13, 5),ROOFS 80
 1 SPEC(13, 6),SPEC(13, 7),SPEC(13, 8),SPEC(13, 9),SPEC(13, 10), ROOFS 81
 2 SPEC(13, 11),SPEC(13, 12),SPEC(13, 13),SPEC(13, 14),SPEC(13, 15)/ ROOFS 82
 14HCONC,4HRETE,4H, LI,4HGHTW,4HEIGH,4HT AG,4HGREG,4HATE ,4H 30 , ROOFS 83
 24HLB/F,4HT3 ,4H ,4H ,4H / ROOFS 84
 DATA SPEC(14, 1),SPEC(14, 2),SPEC(14, 3),SPEC(14, 4),SPEC(14, 5),ROOFS 85
 1 SPEC(14, 6),SPEC(14, 7),SPEC(14, 8),SPEC(14, 9),SPEC(14, 10), ROOFS 86
 2 SPEC(14, 11),SPEC(14, 12),SPEC(14, 13),SPEC(14, 14),SPEC(14, 15)/ ROOFS 87
 14HCONC,4HRETE,4H, SA,4HND &,4H GRA,4HVEL ,4HAGGR,4HEGAT ,4HE (N, ROOFS 88
 24HOT D,4HRIED,4H) 1,4H40 L,4HB/FT,4H3 / ROOFS 89
 DATA SPEC(15, 1),SPEC(15, 2),SPEC(15, 3),SPEC(15, 4),SPEC(15, 5),ROOFS 90
 1 SPEC(15, 6),SPEC(15, 7),SPEC(15, 8),SPEC(15, 9),SPEC(15, 10), ROOFS 91
 2 SPEC(15, 11),SPEC(15, 12),SPEC(15, 13),SPEC(15, 14),SPEC(15, 15)/ ROOFS 92
 14HGYPS,4HUM P,4HLAST,4HER, ,4HLIGH,4HTWEI,4HGHT ,4HAGGR,4HEGAT, ROOFS 93
 24HE ,4H ,4H ,4H ,4H / ROOFS 94
 DATA SPEC(16, 1),SPEC(16, 2),SPEC(16, 3),SPEC(16, 4),SPEC(16, 5),ROOFS 95
 1 SPEC(16, 6),SPEC(16, 7),SPEC(16, 8),SPEC(16, 9),SPEC(16, 10), ROOFS 96
 2 SPEC(16, 11),SPEC(16, 12),SPEC(16, 13),SPEC(16, 14),SPEC(16, 15)/ ROOFS 97
 14HGYPS,4HUM P,4HLAST,4HER, ,4HLIGH,4HTWEI,4HGHT ,4HAGGR,4HEGAT, ROOFS 98
 24HE ON,4H MET,4HAL L,4HATH ,4H ,4H / ROOFS 99
 DATA SPEC(17, 1),SPEC(17, 2),SPEC(17, 3),SPEC(17, 4),SPEC(17, 5),ROOFS100
 1 SPEC(17, 6),SPEC(17, 7),SPEC(17, 8),SPEC(17, 9),SPEC(17, 10), ROOFS101
 2 SPEC(17, 11),SPEC(17, 12),SPEC(17, 13),SPEC(17, 14),SPEC(17, 15)/ ROOFS102
 14HGYPS,4HUM P,4HLAST,4HER, ,4HSAND,4H AGG,4HREGA,4HTE ,4H , ROOFS103
 24H ,4H ,4H ,4H ,4H / ROOFS104
 DATA SPEC(18, 1),SPEC(18, 2),SPEC(18, 3),SPEC(18, 4),SPEC(18, 5),ROOFS105
 1 SPEC(18, 6),SPEC(18, 7),SPEC(18, 8),SPEC(18, 9),SPEC(18, 10), ROOFS106
 2 SPEC(18, 11),SPEC(18, 12),SPEC(18, 13),SPEC(18, 14),SPEC(18, 15)/ ROOFS107
 14HGYPS,4HUM P,4HLAST,4HER, ,4HSAND,4H AGG,4HREGA,4HTE O,4HN ME, ROOFS108
 24HTAL ,4HLATH,4H ,4H ,4H ,4H / ROOFS109
 DATA SPEC(19, 1),SPEC(19, 2),SPEC(19, 3),SPEC(19, 4),SPEC(19, 5),ROOFS110
 1 SPEC(19, 6),SPEC(19, 7),SPEC(19, 8),SPEC(19, 9),SPEC(19, 10), ROOFS111
 2 SPEC(19, 11),SPEC(19, 12),SPEC(19, 13),SPEC(19, 14),SPEC(19, 15)/ ROOFS112
 14HGYPS,4HUM P,4HLAST,4HER, ,4HSAND,4H AGG,4HREGA,4HTE O,4HN WO, ROOFS113
 24HOD L,4HATH ,4H ,4H ,4H / ROOFS114
 DATA SPEC(20, 1),SPEC(20, 2),SPEC(20, 3),SPEC(20, 4),SPEC(20, 5),ROOFS115
 1 SPEC(20, 6),SPEC(20, 7),SPEC(20, 8),SPEC(20, 9),SPEC(20, 10), ROOFS116
 2 SPEC(20, 11),SPEC(20, 12),SPEC(20, 13),SPEC(20, 14),SPEC(20, 15)/ ROOFS117
 14HROOF,4HING,4H ASB,4HESTO,4HS-CE,4HMENT,4H SLA,4HTE S,4HHING, ROOFS118
 24HLES ,4H ,4H ,4H ,4H / ROOFS119
 DATA SPEC(21, 1),SPEC(21, 2),SPEC(21, 3),SPEC(21, 4),SPEC(21, 5),ROOFS120
 1 SPEC(21, 6),SPEC(21, 7),SPEC(21, 8),SPEC(21, 9),SPEC(21, 10), ROOFS121
 2 SPEC(21, 11),SPEC(21, 12),SPEC(21, 13),SPEC(21, 14),SPEC(21, 15)/ ROOFS122
 14HROOF,4HING,4H ASP,4HHALT,4H SHI,4HNGLE,4HS ,4H ,4H , ROOFS123
 24H ,4H ,4H ,4H ,4H / ROOFS124
 DATA SPEC(22, 1),SPEC(22, 2),SPEC(22, 3),SPEC(22, 4),SPEC(22, 5),ROOFS125
 1 SPEC(22, 6),SPEC(22, 7),SPEC(22, 8),SPEC(22, 9),SPEC(22, 10), ROOFS126
 2 SPEC(22, 11),SPEC(22, 12),SPEC(22, 13),SPEC(22, 14),SPEC(22, 15)/ ROOFS127
 14HROOF,4HING,4H WOO,4HD SH,4HINGL,4HES ,4H ,4H ,4H , ROOFS128
 24H ,4H ,4H ,4H ,4H / ROOFS129
 DATA SPEC(23, 1),SPEC(23, 2),SPEC(23, 3),SPEC(23, 4),SPEC(23, 5),ROOFS130

1 SPEC(23, 6),SPEC(23, 7),SPEC(23, 8),SPEC(23, 9),SPEC(23,10),
2 SPEC(23,11),SPEC(23,12),SPEC(23,13),SPEC(23,14),SPEC(23,15)/
14HWOOD,4HS,FI,4HR, P,4HINE, ,4H & S,4HIMIL,4HAR S,4HOFTW,4HOODS,
24H , ,4H , ,4H , ,4H , ,4H /

ROOFS131

ROOFS132

ROOFS133

ROOFS134

ROOFS135

ROOFS136

ROOFS137

ROOFS138

ROOFS139

ROOFS140

ROOFS141

ROOFS142

ROOFS143

ROOFS144

ROOFS145

ROOFS146

ROOFS147

ROOFS148

ROOFS149

ROOFS150

ROOFS151

ROOFS152

ROOFS153

ROOFS154

ROOFS155

ROOFS156

ROOFS157

ROOFS158

ROOFS159

ROOFS160

ROOFS161

ROOFS162

ROOFS163

ROOFS164

ROOFS165

ROOFS166

ROOFS167

ROOFS168

ROOFS169

ROOFS170

ROOFS171

ROOFS172

ROOFS173

ROOFS174

ROOFS175

ROOFS176

ROOFS177

ROOFS178

ROOFS179

ROOFS180

ROOFS181

ROOFS182

ROOFS183

ROOFS184

ROOFS185

ROOFS186

ROOFS187

C PROP IS THERMAL PROPERTIES DATA

C IMSRY IS THE MAKEUP OF FLAT MASONRY ROOFS

C IWOOD IS THE MAKEUP OF WOOD OR METAL CONSTRUCTION FLAT ROOFS

C IPTCH IS THE MAKEUP OF PITCHED ROOFS

C DATA PROP/

1 0.3156, 0.0938, 0.0667, 0.0458, 0.0868, 0.0267, 0.0292, 0.0208,
2 0.0350, 0.0300, 0.0300, 0.1383, 0.0750, 1.0417, 0.1300, 0.1320,
3 0.4700, 0.4810, 0.1560, 0.8330, 0.0710, 0.0718, 0.0660,
4 120.00, 50.00, 34.00, 33.00, 44.00, 0.50, 9.00, 6.50,
5 15.00, 9.00, 22.00, 51.00, 30.00, 140.00, 45.00, 45.00,
6 105.00, 90.00, 90.00, 120.00, 70.00, 32.00, 32.00,
7 0.2500, 0.2590, 0.6500, 0.6000, 0.3240, 0.1570, 0.3000, 0.3000,
8 0.2000, 0.3000, 0.2000, 0.1560, 0.1560, 0.2500, 0.2000, 0.2000,
9 0.2000, 0.2000, 0.2000, 0.2000, 0.3500, 0.6500, 0.6500/

C DATA IMSRY/

1 1, 2, 3, 4, 5, 6, 7, 8, 9, 50,
2 1, 2, 3, 4, 5, 6, 50, 1, 2, 3,
3 4, 5, 6, 7, 8, 9, 9, 10, 10, 11,
4 12, 13, 14, 15, 15, 16, 16, 50,
5 128, 192, 256, 64, 96, 128, 64, 96, 128, 0,
6 0, 16, 32, 48, 8, 32, 0,-27, 16, 32,
7 48, 64, 80, 96, 12, 12, 16, 12, 16, 24,
8 24, 16, 24, 12, 16, 12, 24, 0,
9 14, 14, 14, 13, 13, 13, 12, 12, 12, 23,
A 0, 2, 10, 10, 1, 8, 23, 0, 11, 11,
B 11, 11, 11, 11, 2, 2, 15, 2, 17, 16,
C 18, 9, 9, 2, 9, 2, 9, 23/

C DATA IWOOD/

1 1, 2, 3, 4, 5, 6, 50, 1, 2, 3, 4,
2 5, 6, 7, 50, 1, 2, 3, 3, 4, 4, 5,
3 6, 7, 8, 8, 9, 10, 11, 11, 12, 12, 50,
4 25, 52, 84, 64, 96, 0, 0, 0, 16, 32, 48,
5 64, 80, 96, 0,-27, 12, 12, 16, 12, 16, 24,
6 24, 16, 16, 16, 16, 24, 12, 16, 12, 24, 0,
7 23, 23, 23, 4, 4, 0, 23, 11, 11, 11, 11,
8 11, 11, 11, 23, 0, 2, 2, 15, 2, 17, 16,
9 18, 7, 7, 17, 9, 9, 2, 9, 2, 9, 23/

C DATA IPTCH/

1 1, 1, 1, 2, 2, 2, 3, 3, 3, 4,
2 50, 1, 2, 3, 3, 4, 4, 5, 6, 7,
3 8, 8, 9, 9, 10, 11, 11, 12, 13, 50,
4 12, 2, 10, 12, 2, 25, 16, 2, 25, 24,
5 0,-27, 12, 12, 16, 12, 16, 24, 24, 16,
6 16, 16, 12, 16, 16, 12, 24, 24, 24, 0,
7 21, 5, 3, 21, 5, 3, 20, 5, 3, 22,
8 23, 0, 2, 2, 15, 2, 17, 16, 18, 7,
9 7, 17, 2, 9, 9, 2, 9, 9, 19, 23/

10 FORMAT(1H1,20HROOF SPECIFICATIONS-,5X,24H FLAT MASONRY ROOF WITH,ROOFS188
 1 17H BUILT UP ROOFING) ROOFS189
 11 FORMAT(1H1,20HROOF SPECIFICATIONS-,5X,25H WOOD OR METAL FLAT ROOF,ROOFS190
 1) ROOFS191
 12 FORMAT(1H1,20HROOF SPECIFICATIONS-,5X,14H PITCHED ROOF) ROOFS192
 13 FORMAT(1H ,27X,16HMAX. OVERALL U=,F7.3,13H BTU/HR-FT2-F) ROOFS193
 14 FORMAT(1H ,4X,25HINTER CONDITIONS OUTSIDE, ROOFS194
 1 //,1X,40HSTD. ASHRAE ROOF SELECTION IS AS FOLLOWS) ROOFS195
 15 FORMAT(1H ,4X,25HSUMMER CONDITIONS OUTSIDE, ROOFS196
 1 //,1X,40HSTD. ASHRAE ROOF SELECTION IS AS FOLLOWS) ROOFS197
 16 FORMAT(1H0,5HLAYER,25X,11HDESCRIPTION,37X,16HTHKNS CONDTVTY, ROOFS198
 1 3X,23HDNSTY SP HT RESISTANCE,/,81X, ROOFS199
 2 40HFT. B/HR-FT-F LB/FT3 B/LB-F HR-FT2-F/B) ROOFS200
 17 FORMAT(1H0,13,F10.3,5H IN. ,15A4,F5.3,F10.3,F8.2,F8.3,F9.2) ROOFS201
 18 FORMAT(1H0,13,F10.3,5H IN. ,16HBUILT-UP ROOFING,44X, ROOFS202
 1 F5.3,F10.3,F8.2,F8.3,F9.2) ROOFS203
 19 FORMAT(1H0,18X,18HNO ROOF INSULATION) ROOFS204
 20 FORMAT(1H0,13,15X,9HAIR SPACE,51X,F5.3,F10.3,F8.2,F8.3,F9.2) ROOFS205
 21 FORMAT(1H0,13,15X,25HINSIDE SURFACE, STILL AIR,35X, ROOFS206
 1 F5.3,F10.3,F8.2,F8.3,F9.2,/,19X,10HOVERALL U=,F8.3, ROOFS207
 2 13H BTU/HR-FT2-F) ROOFS208
 22 FORMAT(1H0,18X,20HFLAT METAL ROOF DECK) ROOFS209
 23 FORMAT(1H0,15X,20HTHERE IS NO SOLUTION) ROOFS210
 24 FORMAT(1H0,18X,39HCORRUGATED METAL OR TEMPORARY ROOF FORM) ROOFS211
 ROOFS212

C KAGIT=6

100 IF(IR=4) 120,110,110
 110 IR=3
 120 GO TO (130, 140, 150),IR
 130 WRITE(KAGIT,10)
 GO TO 160
 140 WRITE(KAGIT,11)
 GO TO 160
 150 WRITE(KAGIT,12)
 160 WRITE(KAGIT,13) UMAX
 GO TO (170, 180),KOLD
 170 WRITE(KAGIT,14)
 RO=0.17
 GO TO 190
 180 WRITE(KAGIT,15)
 RO=0.25
 190 WRITE(KAGIT,16)
 GO TO (200, 500, 670),IR

C 200 CALL MSNRY(KOLD,UMAX,TINS,RO,PROP,IMSRY,K1,L1,M1)

C
 LAYER=1
 KODE=1
 IF(K1) 820,820,210
 210 IF(L1) 820,820,220
 220 IF(11) 820,820,230
 230 THKNS(LAYER)=0.0
 CTVTY(LAYER)=0.0
 DNSTY(LAYER)=0.0
 SPCHT(LAYER)=0.0
 RES(LAYER)=0.33
 THK=0.375

ROOFS189
 ROOFS190
 ROOFS191
 ROOFS192
 ROOFS193
 ROOFS194
 ROOFS195
 ROOFS196
 ROOFS197
 ROOFS198
 ROOFS199
 ROOFS200
 ROOFS201
 ROOFS202
 ROOFS203
 ROOFS204
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 ROOFS238
 ROOFS239
 ROOFS240
 ROOFS241
 ROOFS242
 ROOFS243
 ROOFS244

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      WRITE(KAGIT,18) LAYER,THK,THKNS(LAYER),CTVTY(LAYER),DNSTY(LAYER), ROOFS245
1SPCHT(LAYER),RES(LAYER) ROOFS246
      LAYER=LAYER + 1 ROOFS247
      GO TO (- 240, 550),IR ROOFS248
240 IF(M1=7) 250,250,260 ROOFS249
250 IF(M1=11) 260,260,270 ROOFS250
260 WRITE(KAGIT,19) ROOFS251
      GO TO 290 ROOFS252
270 I1=IMSRY(M1+17,1) ROOFS253
    AI=IMSRY(M1+17,2) ROOFS254
    I3=IMSRY(M1+17,3) ROOFS255
280 THK=AI/32.0 ROOFS256
    THKNS(LAYER)=THK/12.0 ROOFS257
    CTVTY(LAYER)=PROP(I3,1) ROOFS258
    DNSTY(LAYER)=PROP(I3,2) ROOFS259
    SPCHT(LAYER)=PROP(I3,3) ROOFS260
    RES(LAYER)=0.0 ROOFS261
    N1=I3 ROOFS262
    WRITE(KAGIT,17) LAYER,THK,(SPEC(N1,J),J=1,15),THKNS(LAYER), ROOFS263
1CTVTY(LAYER),DNSTY(LAYER),SPCHT(LAYER),RES(LAYER) ROOFS264
      LAYER=LAYER + 1 ROOFS265
      GO TO (- 290, 300, 350, 400, 400, 400, 400),KODE ROOFS266
290 I1=IMSRY(K1,1) ROOFS267
    AI=IMSRY(K1,2) ROOFS268
    I3=IMSRY(K1,3) ROOFS269
    KODE=2 ROOFS270
      GO TO 280 ROOFS271
300 IF(L1=7) 320,310,310 ROOFS272
310 WRITE(KAGIT,24) ROOFS273
    KODE=3 ROOFS274
      GO TO 350 ROOFS275
320 IF(L1=1) 330,330,340 ROOFS276
330 WRITE(KAGIT,24) ROOFS277
    KODE=3 ROOFS278
      GO TO 350 ROOFS279
340 I1=IMSRY(L1+10,1) ROOFS280
    AI=IMSRY(L1+10,2) ROOFS281
    I3=IMSRY(L1+10,3) ROOFS282
    KODE=3 ROOFS283
      GO TO 280 ROOFS284
350 IF(M1=7) 430,430,360 ROOFS285
360 THKNS(LAYER)=0.0 ROOFS286
    CTVTY(LAYER)=0.0 ROOFS287
    DNSTY(LAYER)=0.0 ROOFS288
    SPCHT(LAYER)=0.0 ROOFS289
    RES(LAYER)=0.85 ROOFS290
    WRITE(KAGIT,20) LAYER,THKNS(LAYER),CTVTY(LAYER),DNSTY(LAYER), ROOFS291
1SPCHT(LAYER),RES(LAYER) ROOFS292
      LAYER=LAYER + 1 ROOFS293
      IF(TINS) 380,380,370 ROOFS294
370 THKNS(LAYER)=TINS/12.0 ROOFS295
    CTVTY(LAYER)=PROP(6,1) ROOFS296
    DNSTY(LAYER)=PROP(6,2) ROOFS297
    SPCHT(LAYER)=PROP(6,3) ROOFS298
    RES(LAYER)=0.0 ROOFS299
    N1=6 ROOFS300
    WRITE(KAGIT,17) LAYER,TINS,(SPEC(N1,J),J=1,15),THKNS(LAYER), ROOFS301

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1CTVTY(LAYER),DNSTY(LAYER),SPCHT(LAYER),RES(LAYER)          ROOFS302
    LAYER=LAYER + 1                                         ROOFS303
380 GO TO ( 390, 640, 790),IR                           ROOFS304
390 MM=M1 + 1                                         ROOFS305
400 I1=IMSRY(MM,1)                                     ROOFS306
    IF(I1-M1) 410,420,430                               ROOFS307
410 MM=M1 + 1                                         ROOFS308
    GO TO 400                                         ROOFS309
420 AI=IMSRY(MM,2)                                     ROOFS310
    I3=IMSRY(MM,3)                                     ROOFS311
    KODE=KODE + 1                                     ROOFS312
    MM=M1+ 1                                         ROOFS313
    GO TO 280                                         ROOFS314
430 GO TO ( 440, 450),KOLD                           ROOFS315
440 RES(LAYER)=0.61                                    ROOFS316
    GO TO 460                                         ROOFS317
450 RES(LAYER)=0.92                                    ROOFS318
460 THKNS(LAYER)=0.0                                  ROOFS319
    CTVTY(LAYER)=0.0                                 ROOFS320
    DNSTY(LAYER)=0.0                                 ROOFS321
    SPCHT(LAYER)=0.0                                 ROOFS322
    U1=0.0                                         ROOFS323
    DO 490   I=1,LAYER                                ROOFS324
    IF(THKNS(I)) 470,470,480                         ROOFS325
470 U1=U1 + RES(I)                                    ROOFS326
    GO TO 490                                         ROOFS327
480 U1=U1 + THKNS(I)/CTVTY(I)                      ROOFS328
490 CONTINUE                                         ROOFS329
    U1=1.0/U1                                         ROOFS330
    WRITE(KAGIT,21) LAYER,THKNS(LAYER),CTVTY(LAYER),DNSTY(LAYER),
    1SPCHT(LAYER),RES(LAYER),U1                         ROOFS331
    GO TO 830                                         ROOFS332
500 CALL WOOD(KOLD,UMAX,TINS,RO,PROP,IWOOD,K1,L1,M1)      ROOFS333
    LAYER=1                                         ROOFS334
    KODE=1                                         ROOFS335
    IF(K1) 820,820,510                            ROOFS336
510 IF(L1) 820,820,520                            ROOFS337
520 IF(L1-8) 540,530,530                          ROOFS338
530 L1=1                                         ROOFS339
540 IF(M1) 820,820,230                            ROOFS340
550 IF(L1-1) 560,560,570                          ROOFS341
560 WRITE(KAGIT,19)                                ROOFS342
    GO TO 590                                         ROOFS343
570 I1=IWOOD(L1+7,1)                                ROOFS344
    AI=IWOOD(L1+7,2)                                ROOFS345
    I3=IWOOD(L1+7,3)                                ROOFS346
580 THK=AI/32.0                                     ROOFS347
    THKNS(LAYER)=THK/12.0                           ROOFS348
    CTVTY(LAYER)=PROP(I3,1)                          ROOFS349
    DNSTY(LAYER)=PROP(I3,2)                          ROOFS350
    SPCHT(LAYER)=PROP(I3,3)                          ROOFS351
    RES(LAYER)=0.0                                   ROOFS352
    N1=I3                                         ROOFS353
    WRITE(KAGIT,17) LAYER,THK,(SPEC(N1,J),J=1,15),THKNS(LAYER),
    1CTVTY(LAYER),DNSTY(LAYER),SPCHT(LAYER),RES(LAYER)  ROOFS354
                                                ROOFS355
                                                ROOFS356
                                                ROOFS357
                                                ROOFS358

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      LAYER=LAYER + 1
      GO TO ( 590, 620, 640, 640, 640, 640, 640, 640),KODE
  590 I1=IWOOD(K1,1)
    IF(I1=6) 610,600,610
  600 WRITE(KAGIT,22)
    KODE=2
    GO TO 620
  610 AI=IWOOD(K1,2)
    I3=IWOOD(K1,3)
    KODE=2
    GO TO 580
  620 MM=M1 + 15
  630 I1=IWOOD(MM,1)
    IF(I1=1) 430,430,360
  640 I1=IWOOD(MM,1)
    IF(I1=M1) 650,660,430
  650 MM=MM + 1
    GO TO 640
  660 AI=IWOOD(MM,2)
    I3=IWOOD(MM,3)
    KODE=KODE + 1
    MM=MM + 1
    GO TO 580
C   670 CALL PITCH(KOLD,UMAX,TINS,RO,PROP,IPTCH,K1,L1,M1)
C
      LAYER=1
      KODE=0
      IF(K1) 820,820,680
  680 IF(M1) 820,820,690
  690 KK=K1
  700 I1=IPTCH(KK,1)
    IF(I1=K1) 710,720,740
  710 KK=KK + 1
    GO TO 700
  720 AI=IPTCH(KK,2)
    I3=IPTCH(KK,3)
    KODE=KODE + 1
    KK=KK + 1
  730 THK=AI/32.0
    THKNS(LAYER)=THK/12.0
    CTVTY(LAYER)=PROP(I3,1)
    DNSTY(LAYER)=PROP(I3,2)
    SPCHT(LAYER)=PROP(I3,3)
    RES(LAYER)=0.0
    N1=I3
    WRITE(KAGIT,17) LAYER,THK,(SPEC(N1,J),J=1,15),THKNS(LAYER),
    1CTVTY(LAYER),DNSTY(LAYER),SPCHT(LAYER),RES(LAYER)
    LAYER=LAYER + 1
    GO TO ( 700, 700, 700, 790, 790, 790, 790),KODE
  740 KODE=3
    MM=M1 + 11
  750 I1=IPTCH('M,1)
    IF(I1=1) 750,760,360
  760 GO TO ( 770, 780),KOLD
  770 RES(LAYER)=0.62
    GO TO 460
      ROOFS359
      ROOFS360
      ROOFS361
      ROOFS362
      ROOFS363
      ROOFS364
      ROOFS365
      ROOFS366
      ROOFS367
      ROOFS368
      ROOFS369
      ROOFS370
      ROOFS371
      ROOFS372
      ROOFS373
      ROOFS374
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      ROOFS404
      ROOFS405
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      ROOFS410
      ROOFS411
      ROOFS412
      ROOFS413
      ROOFS414
      ROOFS415

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780 RES(LAYER)=0.76
    GO TO 460
790 I1=IPTCH(MM,1)
    IF(I1=M1) 800,810,430
800 MM=MM + 1
    GO TO 790
810 AI=IPTCH(MM,2)
    I3=IPTCH(MM,3)
    KODE=KODE + 1
    MM=MM + 1
    GO TO 730
820 WRITE(KAGIT,23)
830 RETURN
END
SUBROUTINE IWOOD(KOLD,UMAX,TINS,RO,PROP,IWOOD,K1,L1,M1)
DIMENSION PROP(23,3),IWOOD(33,3)
CINS=PROP(6,1)
K1=0
L1=0
M1=0
GO TO ( 100, 110),KOLD
100 RR=RO + 1.79
    GO TO 120
110 RR=RO + 2.10
120 U1=0.0
    DO 290 K=1,6
    IF(K=5) 140,130,130
130 RR1=RR
    GO TO 170
140 AI=IWOOD(K,2)
    I3=IWOOD(K,3)
    THK=AI/384.0
    RR1=RR + THK/PROP(I3,1)
    IF(K=5) 150,160,170
150 IF(K=4) 170,160,170
160 RR2=RR1
    L=8
    GO TO 200
170 DO 290 L=1,7
    AI=IWOOD(L+7,2)
    I3=IWOOD(L+7,3)
    IF(I3) 190,190,180
180 THK=AI/384.0
    RR2=RR1 + THK/PROP(I3,1)
    GO TO 200
190 RR2=RR1 + AI/32.0
200 MM=15
    DO 290 M=1,12
    R=RR2
    MM=MM + 1
210 I1=IWOOD(MM,1)
    AI=IWOOD(MM,2)
    I3=IWOOD(MM,3)
    IF(I1=M) 250,220,250
220 IF(I3) 240,240,230
230 THK=AI/384.0
    R=R + THK/PROP(I3,1)

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ROOFS416
ROOFS417
ROOFS418
ROOFS419
ROOFS420
ROOFS421
ROOFS422
ROOFS423
ROOFS424
ROOFS425
ROOFS426
ROOFS427
ROOFS428
ROOFS429
WOOD 1
WOOD 2
WOOD 3
WOOD 4
WOOD 5
WOOD 6
WOOD 7
WOOD 8
WOOD 9
WOOD 10
WOOD 11
WOOD 12
WOOD 13
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WOOD 15
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WOOD 20
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WOOD 36
WOOD 37
WOOD 38
WOOD 39
WOOD 40
WOOD 41
WOOD 42
WOOD 43

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      MM=MM + 1
      GO TO 210
240 R=R + AI/32.0
      IF(TINS) 290,260,290
250 NM=MM - M = 1
260 UU1=1.0/(R + TINS/(12.0*CINS))
      IF(UU1=UMAX) 270,270,290
270 IF(U1=UU1) 280,290,290
280 U1=UU1
      K1=K
      L1=L
      M1=M
290 CONTINUE
      RETURN
      END
      SUBROUTINE PITCH(KOLD,UMAX,TINS,RO,PROP,IPTCH,K1,L1,M1)
      DIMENSION PROP(23,3),IPTCH(30,3)
      CINS=PROP(6,1)
      K1=0
      L1=0
      M1=0
      GO TO ( 100, 110),KOLD
100 RR=RO + 1.52
      GO TO 120
110 RR=RO + 1.66
120 U1=0.0
      NK=0
      DO 240 K=1,4
      RR1=RR
      KK=NK + K
130 I1=IPTCH(KK,1)
      AI=IPTCH(KK,2)
      I3=IPTCH(KK,3)
      IF(I1-K) 150,140,150
140 THK=AI/384.0
      RR1=RR1 + THK/PROP(I3,1)
      KK=KK + 1
      GO TO 130
150 NK=KK - K = 1
      NM=11
      DO 240 M=1,13
      R=RR1
      MM=NM + M
160 I1=IPTCH(MM,1)
      AI=IPTCH(MM,2)
      I3=IPTCH(MM,3)
      IF(I1-M) 200,170,200
170 IF(I3) 190,190,180
180 THK=AI/384.0
      R=R + THK/PROP(I3,1)
      MM=MM + 1
      GO TO 160
190 R=R + AI/32.0
      IF(TINS) 240,210,240
200 NM=MM - M = 1
210 UU1=1.0/(R + TINS/(12.0*CINS))
      IF(UU1=UMAX) 220,220,240
      WOOD 44
      WOOD 45
      WOOD 46
      WOOD 47
      WOOD 48
      WOOD 49
      WOOD 50
      WOOD 51
      WOOD 52
      WOOD 53
      WOOD 54
      WOOD 55
      WOOD 56
      WOOD 57
      WOOD 58
      PITCH 1
      PITCH 2
      PITCH 3
      PITCH 4
      PITCH 5
      PITCH 6
      PITCH 7
      PITCH 8
      PITCH 9
      PITCH 10
      PITCH 11
      PITCH 12
      PITCH 13
      PITCH 14
      PITCH 15
      PITCH 16
      PITCH 17
      PITCH 18
      PITCH 19
      PITCH 20
      PITCH 21
      PITCH 22
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      PITCH 26
      PITCH 27
      PITCH 28
      PITCH 29
      PITCH 30
      PITCH 31
      PITCH 32
      PITCH 33
      PITCH 34
      PITCH 35
      PITCH 36
      PITCH 37
      PITCH 38
      PITCH 39
      PITCH 40
      PITCH 41
      PITCH 42

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220 IF(U1=UU1) 230,240,240
230 U1=UU1
    K1=K
    M1=M
240 CONTINUE
    RETURN
    END
    SUBROUTINE MSNRY(KOLD,UMAX,TINS,RO,PROP,IMSRY,K1,L1,M1)
    DIMENSION PROP(23,3),IMSRY(38,3)
    CINS=PROP(6,1)
    K1=0
    L1=0
    M1=0
    GO TO ( 100, 110),KOLD
100 RR=RO + 1.79
    GO TO 120
110 RR=RO + 2.10
120 U1=0.0
    DO 320 K=1,9
    AI=IMSRY(K,2)
    I3=IMSRY(K,3)
    THK=AI/384.0
    RR1=RR + THK/PROP(I3,1)
    IF(K=3) 130,130,140
130 RR2=RR1
    L=7
    GO TO 200
140 DO 320 L=1,6
    IF(K=6) 150,150,180
150 GO TO ( 160, 320, 170, 170, 320, 170),L
160 RR2=RR1
    GO TO 200
170 I3=IMSRY(L+10,3)
    AI=IMSRY(L+10,2)
    THK=AI/384.0
    RR2=RR1 + THK/PROP(I3,1)
    GO TO 200
180 IF(L=1) 320,320,190
190 I3=IMSRY(L+10,3)
    AI=IMSRY(L+10,2)
    THK=AI/384.0
    RR2=RR1 + THK/PROP(I3,1)
200 NM=17
    DO 320 M=1,16
    IF(M=7) 210,210,220
210 R=RR2 - 0.85
    GO TO 230
220 R=RR2
230 MM=NM + M
240 I1=IMSRY(MM,1)
    AI=IMSRY(MM,2)
    I3=IMSRY(MM,3)
    IF(I1=M) 280,250,280
250 IF(I3) 270,270,260
260 THK=AI/384.0
    R=R + THK/PROP(I3,1)
    MM=MM + 1
    PITCH 43
    PITCH 44
    PITCH 45
    PITCH 46
    PITCH 47
    PITCH 48
    PITCH 49
    MSNRY 1
    MSNRY 2
    MSNRY 3
    MSNRY 4
    MSNRY 5
    MSNRY 6
    MSNRY 7
    MSNRY 8
    MSNRY 9
    MSNRY 10
    MSNRY 11
    MSNRY 12
    MSNRY 13
    MSNRY 14
    MSNRY 15
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    MSNRY 40
    MSNRY 41
    MSNRY 42
    MSNRY 43
    MSNRY 44
    MSNRY 45
    MSNRY 46
    MSNRY 47
    MSNRY 48
    MSNRY 49
    MSNRY 50

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GO TO 240
270 IF(TINS) 320,290,320
280 NM=MM - M = 1
290 UU1=1.0/(R + TINS/(12.0*CINS))
IF(UU1=UMAX) 300,300,320
300 IF(U1=UU1) 310,320,320
310 U1=UU1
K1=K
L1=L
M1=M
320 CONTINUE
RETURN
END

MSNRY 51
MSNRY 52
MSNRY 53
MSNRY 54
MSNRY 55
MSNRY 56
MSNRY 57
MSNRY 58
MSNRY 59
MSNRY 60
MSNRY 61
MSNRY 62
MSNRY 63

CONTROL CARDS
AS NECESSARY

DATA

CONTROL CARDS
AS NECESSARY

CONTROL CARDS
AS NECESSARY

*****	SYSI	1
*	SYSI	2
COMPUTER PROGRAM FOR	*	3
* ANALYSIS OF ENERGY UTILIZATION IN POSTAL FACILITIES	*	4
***	*	5
* U. S. A. POST OFFICE DEPARTMENT CONTRACT NO. RE 49-67	*	6
GARD-GATX PROJECT NO. 1446	*	7
BY	*	8
METIN LOKMANHEKIM	*	9
MANAGER, THERMAL SYSTEMS AND COMPUTER APPLICATIONS	*	10
AND	*	11
ROBERT H. HENNINGER	*	12
JAMES Y. SHIH	*	13
CHARLES C. GROTH	*	14
STEPHEN J. LIS	*	15
***	*	16
GENERAL AMERICAN RESEARCH DIVISION - GARD	*	17
GENERAL AMERICAN TRANSPORTATION CORPORATION - GATX	*	18
7449 NORTH NATCHEZ AVENUE	*	19
RILES, ILLINOIS 60648 U. S. A.	*	20
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AND	*	23
ENERGY ANALYSIS PROGRAM	*	24
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* TO CALCULATE THE HOURLY HEATING AND/OR COOLING LOADS	*	27
* IMPOSED ON THE HEATING AND COOLING COILS OF EACH FAN	*	28
* SYSTEM WITHIN A BUILDING AND THEN CALCULATE THE ASSOCIATED	*	29
* HOURLY ENERGY CONSUMPTION NEEDED TO SATISFY THESE LOADS.	*	30
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* SZRHT - SINGLE ZONE/SUBZONE REHEAT FAN SYSTEM	*	36
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DIMENSION SYSNO(20),BLDG(20),REHT(20),AM1(20),AM2(20),AM3(20)	SYSI	50
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DIMENSION ENGY(12,2,17),IM(12)	SYSI	52
	SYSI	53

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DIMENSION NCODE(11)           SYSI 54
DIMENSION QS(200),QL(200),QLITE(200),SLPOW(200)   SYSI 55
COMMON TCO,KBLDG,KMAX,IZNMX,MSTRT,N DAYS,MEND,SNOWF(366)   SYSI 56
COMMON KFAN(50),JMAX(50),TSP(50),FPRES(50),FBHP(50),IMAX(12)   SYSI 57
COMMON CFM(50,20),VOL(50,20),CFMAX(50),CFMEX(50),ALFAM(50)   SYSI 58
COMMON PLOC(50),PAREA(50),PERIM(50),KFLCV,CINSL,DINSL   SYSI 59
COMMON KREHT   SYSI 60
COMMON CFMX(50,20)   SYSI 61
COMMON TLCLH,TPS,PPS,TESTM,SZT,NUMT,RPM,SZE,FFLMN   SYSI 62
COMMON DDF,HVDF,DHO,HVHO   SYSI 63
COMMON CFMBN,CFMBX,CFMBE   SYSI 64
COMMON TFBHP,EFF   SYSI 65
COMMON PWBL,PWOL   SYSI 66
COMMON TLCNM,TCLMN,TCWIN,TWWIN,TECMN   SYSI 67
COMMON QSCBM,QLBCM,TOAC,WOAC,PATMC,QLITC   SYSI 68
COMMON QSBHM,QLBHM,TOAH,WOAH,PATMH,QLITH   SYSI 69
COMMON KSNOW,QSNOW,SAREA   SYSI 70
COMMON HDCLP,HDCNP,HDBLP,HDWWP   SYSI 71
COMMON GPMCL,GPMCN,GPMBL,GPMWW   SYSI 72
COMMON HPCLP,HPCNP,HPBLP,HPWWP,HPCTF,HPBLA,CFMCT   SYSI 73
DATA FAN/4HSZS,4HMZS,4HDDS,4HSZRH,4HUVT,4HUHT,4HFPH/   SYSI 74
DATA NCODE/1H0,1H1,1H2,1H3,1H4,1H5,1H6,1H7,1H8,1H9,1H-/   SYSI 75
10 FORMAT (35A1)           SYSI 76
11 FORMAT (15A1)           SYSI 77
12 FORMAT (14)           SYSI 78
13 FORMAT (7I5)           SYSI 79
14 FORMAT (F10.0)           SYSI 80
15 FORMAT (14,I1,2I4,I3,F6.4,2F5.2,F4.3)   SYSI 81
16 FORMAT (13,2F10.0,F4.0,F9.2)   SYSI 82
17 FORMAT (2IX,I2,A1)           SYSI 83
18 FORMAT (1H0,/)           SYSI 84
19 FORMAT (1H1)           SYSI 85
20 FORMAT (7F10.0)           SYSI 86
21 FORMAT (F10.4)           SYSI 87
22 FORMAT (2F10.0,F10.5,4F10.0)   SYSI 88
23 FORMAT (1H0,33HRECAPITULATION OF CARD INPUT DATA///)   SYSI 89
24 FORMAT (1H1)           SYSI 90
25 FORMAT (1H,35A1,5X,35A1,5X,15A1,5X,15A1,/,1X,37HSYSTEM SIMULATIONS)   SYSI 91
1 AND ENERGY ANALYSIS)   SYSI 92
26 FORMAT (1H,//,5X,26HSUMMARY OF EQUIPMENT SIZES)   SYSI 93
27 FORMAT (1H,9X,15HTYPE OF CHILLER,9X,1H=)   SYSI 94
28 FORMAT (1H,9X,15HNO. OF CHILLERS,9X,1H=,I10,/,10X,16HSIZE OF CHIL)   SYSI 95
1LERS,8X,1H=,F10.1,5H TONS)   SYSI 96
29 FORMAT (1H,9X,14HTYPE OF BOILER,10X,1H=)   SYSI 97
30 FORMAT (1H,9X,14HNO. OF BOILERS,10X,1H=,I10,/,10X,15HSIZE OF BOIL)   SYSI 98
1ERS,9X,1H=,F10.1,5H MBTU)   SYSI 99
31 FORMAT (1H,9X,37HTYPE OF HEAT CONSERVATION MACHINE =)   SYSI 100
32 FORMAT (1H,9X,37HNO. OF HEAT CONSERVATION MACHINES =,I10,   SYSI 101
1,10X,37HSIZE OF HEAT CONSERVATION MACHINES =,F10.1,5H TONS)   SYSI 102
33 FORMAT (1H,9X,23HONSITE GENERATION PLANT,/,1H,14X,38HTYPE OF INT)   SYSI 103
1ERNAL COMBUSTION ENGINE =)   SYSI 104
34 FORMAT (1H,14X,38HNO. OF ENGINE / GENERATOR SETS =,I10,5X,   SYSI 105
1 60H(NO STANDBY ENGINE / GENERATOR SETS INCLUDED IN THIS NUMBER),   SYSI 106
2,15X,38HSIZE OF ENGINE / GENERATOR SETS =,F10.0,   SYSI 107
3,3H KW)   SYSI 108
35 FORMAT (1H0,/,10X,26HNO. OF STEAM TURBINES =,I10,/,   SYSI 109
1 10X,26HSIZE OF STEAM TURBINES =,F10.1,3H HP,/,   SYSI 110

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2	10X,26HSPEED OF STEAM TURBINES =,F10.0,4H RPM)	SYSI 111
36	FORMAT (1H , 9X,29HTYPE OF AUXILIARY CHILLER =)	SYSI 112
37	FORMAT (1H , 9X,29HNO. OF AUXILIARY CHILLERS =,I10.,,10X,29HSIZE	SYSI 113
1OF	AUXILIARY CHILLERS =,F10.1,5H TONS)	SYSI 114
38	FORMAT (1H , 9X,29HTYPE OF SUPPLEMENTARY HEAT -)	SYSI 115
39	FORMAT (1H , 9X,60HSIZE OF SUPPLEMENTARY HEAT UNIT IN CHILLED WATER	SYSI 116
1	CIRCUIT =,F10.1,5H MBTU)	SYSI 117
40	FORMAT (1H0.,,10X,39HTOTAL FAN PLANT HORSEPOWER FOR BUILDING,	SYSI 118
1	29X,F10.1,4H BHP)	SYSI 119
41	FORMAT (1H0.,,10X,22HTOTAL HEATING CAPACITY,8X,1H=,F10.1,5H MBTU,	SYSI 120
1	/,10X,22HTOTAL COOLING CAPACITY,8X,1H=,F10.1,5H TONS,	SYSI 121
2	/,15X,21HPEAK SENSIBLE COOLING,4X,1H=,F10.1,5H MBTU,	SYSI 122
3	/,15X,19HPEAK LATENT COOLING,6X,1H=,F10.1,5H MBTU)	SYSI 123
42	FORMAT (1H0.,,10X,23HNO TERMINAL REHEAT USED)	SYSI 124
43	FORMAT (1H , 9X,26HTYPE OF TERMINAL REHEAT -)	SYSI 125
44	FORMAT (1H+,40X,22HHERMETIC RECIPROCATING)	SYSI 126
45	FORMAT (1H+,40X,20HHERMETIC CENTRIFUGAL)	SYSI 127
46	FORMAT (1H+,40X,16HOPEN CENTRIFUGAL)	SYSI 128
47	FORMAT (1H+,40X,16HSTEAM ABSORPTION)	SYSI 129
48	FORMAT (1H+,40X,37HSTEAM TURBINE DRIVEN OPEN CENTRIFUGAL)	SYSI 130
49	FORMAT (1H+,40X,3HGAS)	SYSI 131
50	FORMAT (1H+,40X,3HOIL)	SYSI 132
51	FORMAT (1H+,40X,5HSTEAM)	SYSI 133
52	FORMAT (1H+,40X,3HELECTRIC)	SYSI 134
53	FORMAT (1H+,55X,6HDIESEL)	SYSI 135
54	FORMAT (1H+,55X,3HGAS)	SYSI 136
55	FORMAT (1H0.,,10X,29HCOOLING TOWER FAN REQUIREMENT,2X,F10.0,4H CFM	SYSI 137
1	,6X,12H1.0 IN. S.P.,5X,F10.1,4H BHP)	SYSI 138
56	FORMAT (1H0.,,10X,57HBOILER AUXILIARY HORSEPOWER REQUIREMENT (FAN,	SYSI 139
1	BLOWER,PUMP),11X,F10.1,4H BHP)	SYSI 140
57	FORMAT (1H0.,,10X,21HSUMMARY OF PUMP SIZES,/,20X,8HLOCATION,12X,	SYSI 141
1	10HTOTAL GPM,7X,15HTOTAL HEAD (FT),8X,10HTOTAL BHP)	SYSI 142
58	FORMAT (1H ,16X,13HCHILLED WATER,F20.0,2F20.1,/,17X,15HCONDENSER W	SYSI 143
1	ATER,8X,F10.0,2F20.1,/,17X,13HHEATING WATER,10X,F10.0,2F20.1)	SYSI 144
59	FORMAT (1H ,16X,10HWELL WATER,13X,F10.0,2F20.0)	SYSI 145
60	FORMAT (1H+,50X,22HHERMETIC RECIPROCATING)	SYSI 146
61	FORMAT (1H+,50X,20HHERMETIC CENTRIFUGAL)	SYSI 147
62	FORMAT (1H+,50X,16HOPEN CENTRIFUGAL)	SYSI 148
63	FORMAT (1H1,124HSIZE OF CHILLERS REQUIRED FOR PEAK COOLING HOUR ISSYSI 149	
1	BELLOW 50 TONS - ANALYSIS WILL NOT CONTINUE SINCE CHILLER PERFORMASYSI 150	
2	NCE DATA,/,1X,84HCANNOT BE EXTRAPOLATED BELOW THIS POINT - USE PACSYSI 151	
3	KAGED SYSTEMS SIMULATION SUBPROGRAM)	SYSI 152
64	FORMAT (1H1,41HNNEGATIVE SNOW FALL - PROCESSES TERMINATED)	SYSI 153
IT=1		SYSI 154
IC=5		SYSI 155
KO=6		SYSI 156
READ (IT,10) FAC		SYSI 157
READ (IT,10) CITY		SYSI 158
READ (IT,10) ENGR		SYSI 159
READ (IT,11) PROJ		SYSI 160
READ (IT,11) DATE		SYSI 161
READ (IT,12) MSTRT		SYSI 162
READ (IT,12) NDAY		SYSI 163
READ (IT,13, (IMAX(M),M=1,6)		SYSI 164
READ (IT,13, (IMAX(M),M=7,12),IZNMX		SYSI 165
IACT=NDAYS*24		SYSI 166
ISUM=0		SYSI 167

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DO 120 M=MSTRT,12
ISUM=ISUM+IMAX(M)
IF (IACT=ISUM) 110,100,120
100 MEND=M
GO TO 130
110 MEND=M
IMAX(M)=IACT+IMAX(M)-ISUM
GO TO 130
120 CONTINUE
130 WRITE (KO,19 )
WRITE (KO,23 )
READ (IC,20 ) TCO
WRITE (KO,20 ) TCO
READ (IC,20 ) TLCHL
WRITE (KO,20 ) TLCHL
READ (IC,20 ) TECMN
WRITE (KO,20 ) TECMN
READ (IC,20 ) TLCNM
WRITE (KO,20 ) TLCNM
READ (IC,20 ) HVDF
WRITE (KO,20 ) HVDF
DDF=1.0
READ (IC,20 ) HVHO
WRITE (KO,20 ) HVHO
DHO=1.0
READ (IC,20 ) TCLMN
WRITE (KO,20 ) TCLMN
READ (IC,20 ) TCWIN
WRITE (KO,20 ) TCWIN
READ (IC,20 ) TWWIN
WRITE (KO,20 ) TWWIN
READ (IC,20 ) PESTM
WRITE (KO,20 ) PESTM
READ (IC,20 ) TESTM
WRITE (KO,20 ) TESTM
READ (IC,20 ) PPS
WRITE (KO,20 ) PPS
READ (IC,20 ) TPS
WRITE (KO,20 ) TPS
READ (IC,20 ) EFF
WRITE (KO,20 ) EFF
EFF=EFF/100.
READ (IC,20 ) RPM
WRITE (KO,20 ) RPM
READ (IC,20 ) HDCLP
WRITE (KO,20 ) HDCLP
READ (IC,20 ) HDCNP
WRITE (KO,20 ) HDCNP
READ (IC,20 ) HDBLP
WRITE (KO,20 ) HDBLP
READ (IC,20 ) HDWWP
WRITE (KO,20 ) HDWWP
READ (IC,20 ) PWOL
WRITE (KO,20 ) PWOL
READ (IC,20 ) ANUMB
WRITE (KO,20 ) ANUMB
NUMB=ANUMB
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READ (IC,20) FFLMN           SYSI 225
WRITE (KO,20) FFLMN           SYSI 226
FFLMN=FFLMN/100.              SYSI 227
READ (IC,20) SNOWK            SYSI 228
WRITE (KO,20) SNOWK            SYSI 229
KSNOW=SNOWK                   SYSI 230
READ (IC,20) QSNOW             SYSI 231
WRITE (KO,20) QSNOW             SYSI 232
READ (IC,20) SAREA              SYSI 233
WRITE (KO,20) SAREA              SYSI 234
READ (IC,20) FLCV               SYSI 235
WRITE (KO,20) FLCV               SYSI 236
KFLCV=FLCV                     SYSI 237
READ (IC,20) CINSL              SYSI 238
WRITE (KO,21) CINSL              SYSI 239
READ (IC,20) DINSL              SYSI 240
WRITE (KO,21) DINSL              SYSI 241
READ (IC,20) AKMAX              SYSI 242
WRITE (KO,20) AKMAX              SYSI 243
KMAX=AKMAX                      SYSI 244
READ (IC,20) CASES              SYSI 245
WRITE (KO,20) CASES              SYSI 246
NCASE=CASES                      SYSI 247
READ (IC,20) HCST                SYSI 248
WRITE (KO,20) HCST                SYSI 249
KHCST=HCST                      SYSI 250
KBLDG=KHCST                     SYSI 251
KHCNT=KHCST                     SYSI 252
READ (IC,20) HRMC,TOAC,WOAC,PATMC,QSBCM,QLBCM,QLITC   SYSI 253
WRITE (KO,22) HRMC,TOAC,WOAC,PATMC,QSBCM,QLBCM,QLITC   SYSI 254
READ (IC,20) HRMH,TOAH,WOAH,PATMH,QSBHM                 SYSI 255
WRITE (KO,22) HRMH,TOAH,WOAH,PATMH,QSBHM                 SYSI 256
DO 140 K=1,KMAX                  SYSI 257
READ (IC,20) F,Z,TSP(K),FPRES(K),PLOC(K),PAREA(K),PERIM(K)  SYSI 258
WRITE (KO,20) F,Z,TSP(K),FPRES(K),PLOC(K),PAREA(K),PERIM(K)  SYSI 259
KFAN(K)=F                         SYSI 260
JMAX(K)=Z                         SYSI 261
140 CONTINUE                      SYSI 262
DO 150 K=1,KMAX                  SYSI 263
JMAXK=JMAX(K)                     SYSI 264
DO 150 J=1,JMAXK                  SYSI 265
READ (IC,20) CFMX(K,J)             SYSI 266
WRITE (KO,20) CFMX(K,J)             SYSI 267
READ (IT,14) VOL(K,J)              SYSI 268
150 CONTINUE                      SYSI 269
DO 160 N=1,NCASE                  SYSI 270
READ (IC,20) SYSNO(N),BLDG(N),AM1(N),AM2(N),AM3(N),REHT(N),AM6(N)  SYSI 271
READ (IC,20) AM7(N),AM4(N),AM5(N)      SYSI 272
WRITE (KO,20) SYSNO(N),BLDG(N),AM1(N),AM2(N),AM3(N),REHT(N),AM6(N)  SYSI 273
WRITE (KO,20) AM7(N),AM4(N),AM5(N)      SYSI 274
160 CONTINUE                      SYSI 275
KSN=KSN+1                         SYSI 276
GO TO ( 270, 170, 170 ),KSN        SYSI 277
170 IF (IMAX(2)-28) 180,180,190    SYSI 278
180 IDAY=365                        SYSI 279
GO TO 200                          SYSI 280
190 IDAY=366                        SYSI 281

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200 DO 260 I=1, IDAY           SYSI 282
      READ (IC,17) ISS,MCODE
      DO 210 J=1,11             SYSI 283
          IF (MCODE=NCODE(J)) 210,220,210
210 CONTINUE                   SYSI 284
220 IF (J=10) 230,230,240     SYSI 285
230 SNOWF(I)=ISS+(J-1)/10.0   SYSI 286
C
240 SNOWF(I)=0.05            SYSI 287
C
260 CONTINUE                   SYSI 288
270 NRUN=1                     SYSI 289
      CALL FSIZE (FAC,CITY,ENGR,PROJ,DATE,FAN,NRUN)  SYSI 290
280 ISYS=SYSNO(NRUN)           SYSI 291
      KBLDG=BLDG(NRUN)          SYSI 292
      M1=AM1(NRUN)              SYSI 293
      M2=AM2(NRUN)              SYSI 294
      M3=AM3(NRUN)              SYSI 295
      M4=AM4(NRUN)              SYSI 296
      M5=AM5(NRUN)              SYSI 297
      M6=AM6(NRUN)              SYSI 298
      M7=AM7(NRUN)              SYSI 299
      KREHT=REHT(NRUN)          SYSI 300
      GO TO ( 330, 290),KBLDG  SYSI 301
290 GO TO ( 300, 320),KHCNT   SYSI 302
300 KHCNT=2                    SYSI 303
      READ (IT,10) FAC          SYSI 304
      READ (IT,10) CITY          SYSI 305
      READ (IT,10) ENGR          SYSI 306
      READ (IT,11) PROJ          SYSI 307
      READ (IT,11) DATE          SYSI 308
      READ (IT,12) MSTRT         SYSI 309
      READ (IT,12) NDAYS         SYSI 310
      READ (IT,13) (IM(M),M=1,6)  SYSI 311
      READ (IT,13) (IM(M),M=7,12),IZNMX  SYSI 312
      DO 310 K=1,KMAX           SYSI 313
      JMAXK=JMAX(K)             SYSI 314
      DO 310 J=1,JMAXK          SYSI 315
      READ (IT,14) VOL(K,J)      SYSI 316
310 CONTINUE                   SYSI 317
      CALL FSIZE (FAC,CITY,ENGR,PROJ,DATE,FAN,NRUN)  SYSI 318
320 CALL HTCON (1,M2,M3,M4,M5,M6,M7,NUMHC,SZHC,CAPH,NUMB,SZB,  SYSI 319
      1NUMC,SZC,CAPC,QSC,QLC,SZSCL,ENGY)           SYSI 320
      GO TO 1200                  SYSI 321
330 CALL PSYCH (TOAC,WOAC,PATMC,HOAC,DOAC)           SYSI 322
      WRA=(53.2+0.245*(TOAC-50.0))/7000.0          SYSI 323
      QSOA=14.4*DOAC*CFMBN*(TOAC-75.0)             SYSI 324
      QLOA=53300.0*DOAC*CFMBN*(WOAC-WRA)           SYSI 325
      IF (TOAC-TCO) 340,350,350                      SYSI 326
340 QLOA=0.0                     SYSI 327
      GO TO 370                  SYSI 328
350 IF (QLOA) 360,370,370        SYSI 329
360 QLOA=0.0                     SYSI 330
370 QLITM=QLITC*(CFMBX-CFMBN)/(CFMBX-CFMBE)       SYSI 331
      QSC=(QSRCM+QSOA+QLITM)/1000.0                SYSI 332
      QLC=(QLBCM+QLOA)/1000.0                       SYSI 333
      CAPC=1.0*(QSRCM+QLBCM+QSOA+QLOA+QLITM)/12000.0  SYSI 334
                                         SYSI 335
                                         SYSI 336
                                         SYSI 337
                                         SYSI 338

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NUMC=2
380 SZC=CAPC/NUMC
    IF (SZC=2000.0) 400,400,390
390 NUMC=NUMC+1
    GO TO 380
400 IF (SZC=50.0) 410,420,420
410 WRITE (KO,63)
    GO TO 1670
420 CAPC=NUMC*SZC
    SZT=SZC
    NUMT=NUMC
    CALL PSYCH (TOAH,WUAH,PATMH,HOAH,DOAH)
    IF (M1=4) 430,440,430
430 QSOA=14.4*DOAH*CF'BN*(TOAH-75.0)
    CAPH=-1.0*(QSBHM+QSOA+QSNOW)/1000.0
    GPMCN=3.0*CAPC
    CFMCT=300.0*CAPC
    HPCTF=CAPC*300.0*1.0/(6346.0*EFF)
    GO TO 480
440 CAPH1=CAPC*20.0*33.472/34.5
    QSOA=14.4*DOAH*CF'BN*(TOAH-75.0)
    CAPH2=-1.0*(QSBHM+QSOA+QSNOW)/1000.0
    IF (CAPH1-CAPH2) 450,450,460
450 CAPH=CAPH2
    GO TO 470
460 CAPH=CAPH1
470 GPMCN=3.5*CAPC
    CFMCT=350.0*CAPC
    HPCTF=CAPC*350.0*1.0/(6346.0*EFF)
480 SZB=CAPH/NUMB
    GPMCL=2.4*CAPC
    GPMBL=CAPH*1000.0/(500.0*20.0)
    HPCLP=GPMCL*HDCLP/(3962.0*EFF*0.6)
    HPCNP=GPMCN*HDCNP/(3962.0*EFF*0.6)
    HPBLP=GPMBL*HDRLP/(3962.0*EFF*0.6)
    HPBLA=CAPH*1000.0/(33472.0*20.0)
    HPHEQ=HPBLA+HPBLP
    HPCEQ=HPCTF+HPCLP+HPCNP
    BKWDM=PWBIL+PWOL+(TFBHP+HPCEQ+HPHEQ)*0.7457
    SZE=0.0
    IF (M5) 550,550,490
490 IF (M4) 510,510,500
500 NUME=M4
    GO TO 520
510 NUME=2
520 SZE=BKWDM/NUME
    IF (SZE=500.0) 540,540,530
530 NUME=NUME+1
    GO TO 520
540 M4=NUME
550 DO 560      M=1,12
    DO 560      L=1,2
    DO 560      N=1,17
    ENGY(M,L,N)=0.0
560 CONTINUE
    KCTF=0
    READ (IT,10) FAC

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      READ (IT,10) CITY           SYSI 396
      READ (IT,10) ENGR          SYSI 397
      READ (IT,11) PROJ          SYSI 398
      READ (IT,11) DATE          SYSI 399
      READ (IT,12) MSTRT         SYSI 400
      READ (IT,12) NDAY$         SYSI 401
      READ (IT,13) (IM(M),M=1,6)   SYSI 402
      READ (IT,13) (IM(M),M=7,12),IZNMX
      DO 570 K=1,KMAX           SYSI 403
      JMAXK=JMAX(K)              SYSI 404
      DO 570 J=1,JMAXK           SYSI 405
      READ (IT,14) VOL(K,J)       SYSI 406
  570 CONTINUE                 SYSI 407
      DO 1190 M=MSTRT,MEND       SYSI 408
      IMAXM=IMAX(M)              SYSI 409
      DO 1190 I=1,IMAXM           SYSI 410
      READ (IT,15) IHOUR,ISUN,ITOA,ITWB,IVEL,WOA,PATM,HOA,DOA
      TOA=ITOA                     SYSI 411
      TWB=ITWB                     SYSI 412
      VEL=IVEL                     SYSI 413
      IF (M=MSTRT) 574,572,574    SYSI 414
  572 IF (I=24) 573,573,574    SYSI 415
  573 READ (IT,16) (IS,QS(IZ),QL(IZ),QLITE(IZ),SLPOW(IZ),IZ=1,IZNMX)
      GO TO 1190                 SYSI 416
  574 VWIND=VEL*1.151           SYSI 417
  600 IF (ISUN=1) 610,620,620
  610 PWEL=0.0                  SYSI 418
      GO TO 630
  620 PWEL=PWOL                SYSI 419
  630 QHRC=0.0                  SYSI 420
      QHBH=0.0                    SYSI 421
      QHBRH=0.0                    SYSI 422
      PWILM=0.0                    SYSI 423
      DO 690 K=1,KMAX             SYSI 424
      JMAXK=JMAX(K)               SYSI 425
      KFANK=KFAN(K)               SYSI 426
      GO TO 640,640,640,650,660,660,670,KFANK
  640 CALL SZMZD (TOA,WOA,PATM,HOA,DOA,K,JMAXK,M4,QFPC,QFPH,QFPRH,PWL)  SYSI 427
      GO TO 680
  650 CALL SZRHT (TOA,WOA,PATM,HOA,DOA,K,JMAXK,M4,QFPC,QFPH,QFPRH,PWL)  SYSI 428
      GO TO 680
  660 CALL UVENT (TOA,DOA,K,JMAXK,QFPC,QFPH,QFPRH,PWL)                   SYSI 429
      GO TO 680
  670 CALL FHEAT (K,JMAXK,TOA,QFPC,QFPH,QFPRH,PWL)                         SYSI 430
  680 QHBH=QHBH+QFPH             SYSI 431
      QHBC=QHBC+QFPC             SYSI 432
      QHBRH=QHBRH+QFPRH           SYSI 433
      PWILM=PWILM+PWL             SYSI 434
  690 CONTINUE
      IF (TOA-TCO) 700,710,710
  700 ELDEM=PWILM+PWEL+(TFBHP+HPHEQ)*0.7457
      GO TO 790
  710 TECON=TWB+7.0
      IF (TECON=85.0) 730,720,720
  720 KCTF=1
      GO TO 780
  730 IF (TECON=(TECMN+10.0)) 740,740,750

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740 KCTF=0	SYSI 453
GO TO 780	SYSI 454
750 IF (KCTF) 760,760,770	SYSI 455
760 KCTF=0	SYSI 456
GO TO 780	SYSI 457
770 KCTF=1	SYSI 458
780 ELDEM=PAILM+PWEL+(TFBHP+HPCLP+HPCNP+HPCTF*KCTF)*0.7457	SYSI 459
790 KSN=KS40W+1	SYSI 460
GO TO (840, 800, 800),KSN	SYSI 461
800 ID=1+IHOUR/24	SYSI 462
SNOW=0.1*SNOWF (ID)/24.0	SYSI 463
IF (SNOW) 810,840,820	SYSI 464
810 WRITE (K0,64)	SYSI 465
GO TO 1670	SYSI 466
820 CALL SNOM (SAREA,PATM,WUA,VWIND,SNOW,TOA,QTOT)	SYSI 467
GO TO (840, 830, 850),KSN	SYSI 468
830 QHBRH=QHBRH-QTOT	SYSI 469
840 ELEH=0.0	SYSI 470
GO TO 860	SYSI 471
850 ELEH=QTOT/3413.0	SYSI 472
860 CALL EQUIP (M1,M12,M13,M4,M5,M6,M7,NUMC,SZC,0,0.0,QHBC,QHBRH, 1TECON,ELDEM,GASC,GASH,OILC,OILH,STMC,STMH,ELEC,ELEH,FUEL,GASG)	SYSI 473
ENGY(M,2,3)=ENGY(M,2,3)+PWILM+TFBHP*0.7457	SYSI 474
ENGY(M,2,4)=ENGY(M,2,4)+PWEL	SYSI 475
IF (TOA=TCO) 870,880,880	SYSI 476
870 PWHEQ=HPHEQ*0.7457	SYSI 477
PWCEQ=0.0	SYSI 478
GO TO 890	SYSI 479
880 PWHEQ=0.0	SYSI 480
PWCEQ=(HPCLP+HPCNP+HPCTF*KCTF)*0.7457	SYSI 481
890 ENGY(M,2,5)=ENGY(M,2,5)+ELEH+PWHEQ	SYSI 482
ENGY(M,2,6)=ENGY(M,2,6)+ELEC+PWCEQ	SYSI 483
ENGY(M,2,7)=ENGY(M,2,7)+GASH	SYSI 484
ENGY(M,2,8)=ENGY(M,2,8)+GASC	SYSI 485
ENGY(M,2,9)=ENGY(M,2,9)+GASG	SYSI 486
ENGY(M,2,10)=ENGY(M,2,10)+STMH/1000.0	SYSI 487
ENGY(M,2,11)=ENGY(M,2,11)+STMC/1000.0	SYSI 488
ENGY(M,2,12)=ENGY(M,2,12)+OILH/1000.0	SYSI 489
ENGY(M,2,13)=ENGY(M,2,13)+OILC/1000.0	SYSI 490
ENGY(M,2,14)=ENGY(M,2,14)+FUEL/1000.0	SYSI 491
ENGY(M,2,15)=ENGY(M,2,15)+(QHBRH+QHBRH)/1000.0	SYSI 492
ENGY(M,2,16)=ENGY(M,2,16)+12.0*QHBC	SYSI 493
IF ((QHBRH+QHBRH)/1000.0) 900,930,930	SYSI 494
900 IF (ENGY(M,1,15)) 920,910,910	SYSI 495
910 ENGY(M,1,15)=(QHBRH+QHBRH)/1000.0	SYSI 496
GO TO 930	SYSI 497
920 IF (ENGY(M,1,15)-(QHBRH+QHBRH)/1000.0) 910,930,930	SYSI 498
930 IF (QHBC) 970,970,940	SYSI 499
940 IF (ENGY(M,1,16)) 950,950,960	SYSI 500
950 ENGY(M,1,16)=12.0*QHHC	SYSI 501
GO TO 970	SYSI 502
960 IF (ENGY(M,1,16)=12.0*QHBC) 970,970,950	SYSI 503
970 IF (ENGY(M,1,9)=GASG) 980,990,990	SYSI 504
980 ENGY(M,1,9)=GASH	SYSI 505
990 IF (ENGY(M,1,7)=GASH) 1000,1010,1010	SYSI 506
1000 ENGY(M,1,7)=GASH	SYSI 507
1010 IF (ENGY(M,1,8)=GASC) 1020,1030,1030	SYSI 508
	SYSI 509

1020 ENGY(M,1,8)=GASC	SYSI 510
1030 IF (ENGY(M,1,10)=STMH/1000.0) 1040,1050,1050	SYSI 511
1040 ENGY(M,1,10)=STMH/1000.0	SYSI 512
1050 IF (ENGY(M,1,11)=STMC/1000.0) 1060,1070,1070	SYSI 513
1060 ENGY(M,1,11)=STMC/1000.0	SYSI 514
1070 IF (ENGY(M,1,5)=ELEH-PWHEQ) 1080,1090,1090	SYSI 515
1080 ENGY(M,1,5)=ELEH+PWHEQ	SYSI 516
1090 IF (ENGY(M,1,6)=ELEC-PWCEQ) 1100,1110,1110	SYSI 517
1100 ENGY(M,1,6)=ELEC+PWCEQ	SYSI 518
1110 IF (ENGY(M,1,3)=PWILM-TFBHP*0.7457) 1120,1130,1130	SYSI 519
1120 ENGY(M,1,3)=PWILM+TFBHP*0.7457	SYSI 520
1130 IF (ENGY(M,1,4)=PWEL) 1140,1150,1150	SYSI 521
1140 ENGY(M,1,4)=PWEL	SYSI 522
1150 IF (ENGY(M,1,1)=(QHBH+QHBRH)/1000.0) 1170,1170,1160	SYSI 523
1160 ENGY(M,1,1)=(QHBH+QHBRH)/1000.0	SYSI 524
1170 IF (ENGY(M,1,2)=12.0*QHBC) 1180,1190,1190	SYSI 525
1180 ENGY(M,1,2)=12.0*QHBC	SYSI 526
IF (CAPC=QHBC) 1181,1190,1190	SYSI 527
1181 CAPC=QHBC	SYSI 528
SZC=CAPC/NUMC	SYSI 529
1190 CONTINUE	SYSI 530
1200 WRITE (K0,24)	SYSI 531
GO TO (1210,1230),KBLDG	SYSI 532
1210 WRITE (K0,25) FAC,CITY,DATE,PROJ	SYSI 533
WRITE (K0,26)	SYSI 534
WRITE (K0,18)	SYSI 535
WRITE (K0,27)	SYSI 536
INDEX=1	SYSI 537
GO TO (1290,1300,1310,1320,1330),M1	SYSI 538
1220 WRITE (K0,28) NUMC,SZC	SYSI 539
GO TO 1360	SYSI 540
1230 WRITE (K0,25) FAC,CITY,DATE,PROJ	SYSI 541
WRITE (K0,26)	SYSI 542
WRITE (K0,18)	SYSI 543
WRITE (K0,31)	SYSI 544
GO TO (1240,1250,1260,1670,1670),M1	SYSI 545
1240 WRITE (K0,60)	SYSI 546
GO TO 1270	SYSI 547
1250 WRITE (K0,61)	SYSI 548
GO TO 1270	SYSI 549
1260 WRITE (K0,62)	SYSI 550
1270 WRITE (K0,32) NUMHC,SZHC	SYSI 551
WRITE (K0,18)	SYSI 552
IF (SZC) 1360,1360,1280	SYSI 553
1280 WRITE (K0,36)	SYSI 554
INDEX=3	SYSI 555
GO TO (1290,1300,1310,1320,1330),M6	SYSI 556
1290 WRITE (K0,44)	SYSI 557
GO TO 1340	SYSI 558
1300 WRITE (K0,45)	SYSI 559
GO TO 1340	SYSI 560
1310 WRITE (K0,46)	SYSI 561
GO TO 1340	SYSI 562
1320 WRITE (K0,47)	SYSI 563
GO TO 1340	SYSI 564
1330 WRITE (K0,48)	SYSI 565
1340 GO TO (1220,1270,1350),INDEX	SYSI 566

1350	WRITE (KO,37) NUMC,SZC	SYSI 567
1360	WRITE (KO,18)	SYSI 568
	WRITE (KO,29)	SYSI 569
	GO TO (1370,1380,1390,1400),M3	SYSI 570
1370	WRITE (KO,49)	SYSI 571
	GO TO 1410	SYSI 572
1380	WRITE (KO,50)	SYSI 573
	GO TO 1410	SYSI 574
1390	WRITE (KO,51)	SYSI 575
	GO TO 1410	SYSI 576
1400	WRITE (KO,52)	SYSI 577
1410	WRITE (KO,30) NUMB,SZB	SYSI 578
	IF (M7) 1670,1490,1420	SYSI 579
1420	WRITE (KO,18)	SYSI 580
	WRITE (KO,38)	SYSI 581
	GO TO (1430,1440,1450,1460,1470),M7	SYSI 582
1430	WRITE (KO,49)	SYSI 583
	GO TO 1480	SYSI 584
1440	WRITE (KO,50)	SYSI 585
	GO TO 1480	SYSI 586
1450	WRITE (KO,52)	SYSI 587
	GO TO 1480	SYSI 588
1460	WRITE (KO,55)	SYSI 589
	GO TO 1480	SYSI 590
1470	WRITE (KO,56)	SYSI 591
1480	WRITE (KO,39) SZSCL	SYSI 592
1490	IF (M1-5) 1510,1500,1670	SYSI 593
1500	WRITE (KO,35) NUMT,SZT,RPM	SYSI 594
1510	IF (M4) 1670,1560,1520	SYSI 595
1520	WRITE (KO,18)	SYSI 596
	WRITE (KO,33)	SYSI 597
	GO TO (1530,1540),M5	SYSI 598
1530	WRITE (KO,53)	SYSI 599
	GO TO 1550	SYSI 600
1540	WRITE (KO,54)	SYSI 601
1550	WRITE (KO,34) M4,SZE	SYSI 602
1560	WRITE (KO,41) CAPH,CAPC,QSC,QLC	SYSI 603
	KRH=KREHT+1	SYSI 604
	IF (KREHT) 1670,1570,1580	SYSI 605
1570	WRITE (KO,42)	SYSI 606
	GO TO 1630	SYSI 607
1580	WRITE (KO,18)	SYSI 608
	WRITE (KO,43)	SYSI 609
	GO TO (1570,1590,1600,1610,1620),KRH	SYSI 610
1590	WRITE (KO,49)	SYSI 611
	GO TO 1630	SYSI 612
1600	WRITE (KO,50)	SYSI 613
	GO TO 1630	SYSI 614
1610	WRITE (KO,51)	SYSI 615
	GO TO 1630	SYSI 616
1620	WRITE (KO,52)	SYSI 617
1630	WRITE (KO,55) CFMCT,HPCTF	SYSI 618
	WRITE (KO,56) HPBLA	SYSI 619
	WRITE (KO,40) TFBHP	SYSI 620
	WRITE (KO,57)	SYSI 621
	WRITE (KO,58) GPMCL,HDCLP,HPCLP,GPMCN,HDCNP,HPCNP,GPMBL,HDBLP, 1HPBLP	SYSI 622 SYSI 623

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1 IF (M7=4) 1650,1640,1650          SYSI 624
2 1640 WRITE (KO,59) GPMWW,HDWWP,HPWWP   SYSI 625
3 1650 CALL ENGYC (FAC,CITY,PROJ,DATE,ENGR,ISYS,ENGY)   SYSI 626
4 REWIND IT                          SYSI 627
5 IF (NRUN=NCASE) 1660,1670,1670      SYSI 628
6 1660 NRUN=NRUN+1                  SYSI 629
7 GO TO 280                         SYSI 630
8 1670 CONTINUE                      SYSI 631
9 END                               SYSI 632
10 SUBROUTINE HTCON (M1,M2,M3,M4,M5,M6,M7,NUMHC,SZHC,CAPH,
11 INUMB,SZB,NUMC,SZC,CAPC,QSC,QLC,SZSCL,ENGY)           HTCO 1
12 ***** SYSTEM SIMULATION AND ENERGY ANALYSIS PROGRAM FOR   HTCO 2
13 ***** HEAT CONSERVATION APPLICATION                         HTCO 3
14 ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** HTCO 4
15 DIMENSION FAC(35),CITY(35),ENGR(35),PROJ(15),DATE(15)    HTCO 5
16 DIMENSION QS(200),QL(200),QLITE(200),TS(200),SLPOW(200)   HTCO 6
17 DIMENSION GAMA(50)                                         HTCO 7
18 DIMENSION ENGY(12,2,17),IM(12)                           HTCO 8
19 COMMON TCO,KBLDG,KMAX,IZNMX,MSTRT,NDAYS,MEND,SNOWF(366)  HTCO 9
20 COMMON KFAN(50),JMAX(50),TSP(50),FPRES(50),FBHP(50),IMAX(12) HTCO 10
21 COMMON CPM(50,20),VOL(50,20),CFMAX(50),CFMEX(50),ALFAM(50) HTCO 11
22 COMMON PLOC(50),PAREA(50),PERIM(50),KFLCV,CINSL,DINSL     HTCO 12
23 COMMON KREHT                                         HTCO 13
24 COMMON CFMX(50,20)                                     HTCO 14
25 COMMON TLCHL,TPS,PPS,TESTM,PESTM,SZT,NUMT,RPM,SZE,FFLMN   HTCO 15
26 COMMON DDF,HVDF,DHO,HVHO                                HTCO 16
27 COMMON CFMBN,CFMBX,CFMBE                                HTCO 17
28 COMMON TFBHP,EFF                                       HTCO 18
29 COMMON PWRIL,PWOL                                      HTCO 19
30 COMMON TLCNM,TCLMN,TCWIN,TCWIN,TECMN                 HTCO 20
31 COMMON QSBGM,QLBCM,TOAC,WOAC,PATMC,QLITC             HTCO 21
32 COMMON QSRHM,QLBHM,TOAH,WOAH,PATMH,QLITH              HTCO 22
33 COMMON KSNOW,GSNOW,SAREA                                HTCO 23
34 COMMON HDCLP,HDCNP,HDBLP,HDWWP                         HTCO 24
35 COMMON GPMCL,GPMCN,GPMBL,GPMWW                         HTCO 25
36 COMMON HPCLP,HPCNP,HPBLP,HPWWP,HPCTF,HPBLA,CFMCT       HTCO 26
37 10 FORMAT (35A1)                                         HTCO 27
38 11 FORMAT (15A1)                                         HTCO 28
39 12 FORMAT (I4)                                           HTCO 29
40 13 FORMAT (7I5)                                         HTCO 30
41 14 FORMAT (F10.0)                                         HTCO 31
42 15 FORMAT (I4,1I,2I4,I3,F6.4,2F5.2,F4.3)            HTCO 32
43 16 FORMAT (I3,2F10.0,F4.0,F9.2)                         HTCO 33
44 17 FORMAT (4F15.5)                                         HTCO 34
45 18 FORMAT (1H1,41HNEGATIVE SNOW FALL - PROCESSES TERMINATED) HTCO 35
46 19 FORMAT (1H0,60HNOT ENOUGH HEAT CONSERVATION MACHINES - PROCESSES THTCO 36
47 20 FORMAT (1H1,124HREQUIRED SIZE OF AUXILIARY CHILLER IS LESS THAN 50HTCO 37
48 21 FORMAT (1H1,124HTONS - CHILLER PERFORMANCE DATA CANNOT BE EXTRAPOLATED BELOW THHTCO 38
49 22 FORMAT (1H1,124HPOINT,/,1X,62H - ANALYSIS WILL CONTINUE WITH NO AUXILIARY CHILLHTCO 39
50 23 FORMAT (1H1,124HIN SYSTEM)                            HTCO 40
51 24 FORMAT (1H1,126HSIZE OF HEAT CONSERVATION MACHINES REQUIRED FOR PEHTCO 41
52 25 FORMAT (1H1,126H1AK HOUR IS BELOW 50 TONS - ANALYSIS WILL NOT CONTINUE SINCE PERFORHTCO 42
53 26 FORMAT (1H1,126H2MANCE DATA,/,1X,92HCANNOT BE EXTRAPOLATED BELOW THIS POINT - USE PHTCO 43

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BACKAGED SYSTEMS SIMULATION SUBPROGRAM INSTEAD) HTCO 49
 IT=1 HTCO 50
 KO=6 HTCO 51
 AH=108.0=0.485*PESTM HTCO 52
 BH=0.432+0.000953*PESTM HTCO 53
 CH=0.00036=0.00000496*PESTM HTCO 54
 HESTM=AH+BH*TESTM+CH*TESTM*TESTM HTCO 55
 HLSTM=180.07 HTCO 56
 CALL PSYCH (TOAC,WOAC,PATMC,HOAC,DOAC) HTCO 57
 WRA=(53.2+0.245*(TOAC-50.0))/7000.0 HTCO 58
 QSOA=14.4*DOAC*CFMBN*(TOAC-75.0) HTCO 59
 QLOA=0.3300.0*DOAC*CFMBN*(WOAC-WRA) HTCO 60
 IF (TOAC-TCO) 100,110,110 HTCO 61
 100 QLOA=0.0 HTCO 62
 GO TO 130 HTCO 63
 110 IF (QLOA) 120,130,130 HTCO 64
 120 QLOA=0.0 HTCO 65
 130 QLITM=QLITC*(CFMBX-CFMBN)/(CFMBX-CFMBE) HTCO 66
 QSC=(QSBM+QSOA+QLITM)/1000.0 HTCO 67
 QLC=(QLBCM+QLOA)/1000.0 HTCO 68
 QCR=1.0*(QSBM+QLBCM+QSOA+QLOA+QLITM) HTCO 69
 QHR=1.0*(QSBHM+QSNOW) HTCO 70
 IF (QCR+QHR/(1.3*0.5)) 140,200,200 HTCO 71
 140 NUMHC=2 HTCO 72
 CAPC=QCR/12000.0 HTCO 73
 150 SZHC=CAPC*1.3*0.5/NUMHC HTCO 74
 IF (SZHC=600.0) 170,170,160 HTCO 75
 160 NUMHC=NUMHC+1 HTCO 76
 GO TO 150 HTCO 77
 170 IF (SZHC=50.0) 180,190,190 HTCO 78
 180 WRITE (KO,21) HTCO 79
 GO TO 1480 HTCO 80
 190 CAPH=SZHC*NUMHC*12000.0/1000.0 HTCO 81
 QHR=-1.0*(QSBHM+QSNOW)/1000.0 HTCO 82
 SZB=(QHR-CAPH)/NUMB HTCO 83
 CAPH=QHR HTCO 84
 SZSCL=CAPH/1.3 HTCO 85
 NUMC=0 HTCO 86
 SZC=0.0 HTCO 87
 GO TO 380 HTCO 88
 200 NUMHC=2 HTCO 89
 CAPH=-QHR/1000.0 HTCO 90
 210 SZHC=CAPH/(12.0*NUMHC) HTCO 91
 IF (SZHC=600.0) 230,230,220 HTCO 92
 220 NUMHC=NUMHC+1 HTCO 93
 GO TO 210 HTCO 94
 230 IF (SZHC=50.0) 240,250,250 HTCO 95
 240 WRITE (KO,21) HTCO 96
 GO TO 1480 HTCO 97
 250 QCA=(SZHC*NUMHC)*12000.0/(0.5*1.3) HTCO 98
 QDIF1=QCA-QCR HTCO 99
 IF (QDIF1) 270,260,260 HTCO 100
 260 NUMC=1 HTCO 101
 SZC=0.0 HTCO 102
 GO TO 320 HTCO 103
 270 NUMC=1 HTCO 104
 280 SZC=-QDIF1/(12000.0*NUMC) HTCO 105

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      IF (S2HIF (SZC=2000.0) 300,300,290          HTCO 106
      290 NUMC=NUMC+1                            HTCO 107
      GO TO 280                                HTCO 108
      300 IF (SZC=50.0) 310,320,320            HTCO 109
      310 SZC=0.0                                HTCO 110
      C
      WRITE (KO,20)                               HTCO 111
      320 CAPC=QCA/12000.0+NUMC*SZC           HTCO 112
      CAPH=SZHC*NUMHC*12000.0/1000.0          HTCO 113
      SZSCL=CAPH/1.3                           HTCO 114
      SZB=0.0                                  HTCO 115
      330 GPMCL=2.4*CAPC                      HTCO 116
      GPMCN=3.0*CAPC                         HTCO 117
      GPMBL=CAPH*1000.0/(500.0*20.0)          HTCO 118
      GPMWW=SZSCL*1000.0/(60.0*8.3*1.0*(TWWIN-TCLMN)) HTCO 119
      HPCLP=GPMCL*HDCLP/(3962.0*EFF*0.6)    HTCO 120
      HPCNP=GPMCN*HDCNP/(3962.0*EFF*0.6)    HTCO 121
      HPBLP=GPMBL*HDBLP/(3962.0*EFF*0.6)    HTCO 122
      HPWWP=GPMWW*HDWWP/(3962.0*EFF*0.6)    HTCO 123
      CFMCT=300.0*CAPC                      HTCO 124
      HPCTF=CFMCT*1.0/(6346.0*EFF)           HTCO 125
      HPBLA=SZB*NUMB*1000.0/(33472.0*20.0)   HTCO 126
      PWCLP=HPCLP*0.7457                     HTCO 127
      PWBLP=HPBLP*0.7457                     HTCO 128
      DO 340 M=1,12                           HTCO 129
      DO 340 L=1,2                           HTCO 130
      DO 340 N=1,17                           HTCO 131
      ENGY(M,L,N)=0.0                         HTCO 132
      340 CONTINUE                            HTCO 133
      READ (IT,10) FAC                      HTCO 134
      READ (IT,10) CITY                      HTCO 135
      READ (IT,10) ENGR                      HTCO 136
      READ (IT,11) PROJ                      HTCO 137
      READ (IT,11) DATE                      HTCO 138
      READ (IT,12) MSTRT                     HTCO 139
      READ (IT,12) NDAYS                     HTCO 140
      READ (IT,13) (IM(M),M=1,6)             HTCO 141
      READ (IT,13) (IM(M),M=7,12),IZNMX     HTCO 142
      DO 350 K=1,KMAX                      HTCO 143
      JMAXK=JMAX(K)                         HTCO 144
      DO 350 J=1,JMAXK                     HTCO 145
      READ (IT,14) VOL(K,J)                 HTCO 146
      350 CONTINUE                            HTCO 147
      DO 1460 M=MSTRT,MEND                HTCO 148
      IMAXM=IMAX(M)                         HTCO 149
      DO 1460 I=1,IMAXM                   HTCO 150
      GASH=0.0                               HTCO 151
      GASC=0.0                               HTCO 152
      OILH=0.0                               HTCO 153
      OILC=0.0                               HTCO 154
      STMH=0.0                               HTCO 155
      STMC=0.0                               HTCO 156
      ELEH=0.0                               HTCO 157
      ELEC=0.0                               HTCO 158
      FUEL=0.0                               HTCO 159
      GASG=0.0                               HTCO 160
      POWER=0.0                             HTCO 161
      HTCO 162

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GALCW=0.0	HTCO 163
QHBRH=0.0	HTCO 164
QSHCL=0.0	HTCO 165
QSHCN=0.0	HTCO 166
QLITB=0.0	HTCO 167
READ (IT,15) IHOUR,ISUN,ITOA,ITWB,IVEL,WOA,PATM,HOA,DOA	HTCO 168
TOA=ITOA	HTCO 169
TWB=ITWB	HTCO 170
VEL=IVEL	HTCO 171
IF (M=MSTRRT) 354,352,354	HTCO 172
352 IF (I=24) 353,353,354	HTCO 173
353 READ (IT,16) IS,QS(I),QL(I),QLITE(I),SLPOW(I),IZ=1,IZNMX)	HTCO 174
GO TO 1460	HTCO 175
354 VWIND=VEL*1.151	HTCO 176
380 IF (ISUN=1) 390,400,400	HTCO 177
390 PWEL=0.0	HTCO 178
GO TO 410	HTCO 179
400 PWEL=PWOL	HTCO 180
410 QHBC=0.0	HTCO 181
QHBRH=0.0	HTCO 182
PWILM=0.0	HTCO 183
IF (TOA=TCO) 490,420,420	HTCO 184
420 DO 480 K=1,KMAX	HTCO 185
JMAXK=JMAX(K)	HTCO 186
KFANK=KFAN(K)	HTCO 187
GO TO (430, 430, 430, 440, 450, 450, 460),KFANK	HTCO 188
430 CALL SZMZD (TOA,WOA,PATM,HOA,DOA,K,JMAXK,M4,QFPC,QFPH,QFPRH,PWL)	HTCO 189
GO TO 470	HTCO 190
440 CALL SZRHT (TOA,WOA,PATM,HOA,DOA,K,JMAXK,M4,QFPC,QFPH,QFPRH,PWL)	HTCO 191
GO TO 470	HTCO 192
450 CALL UVENT (TOA,DOA,K,JMAXK,QFPC,QFPH,QFPRH,PWL)	HTCO 193
GO TO 470	HTCO 194
460 CALL FHEAT (K,JMAXK,TOA,QFPC,QFPH,QFPRH,PWL)	HTCO 195
470 QHBRH=QHBRH+QFPH	HTCO 196
QHBC=QHBC+QFPC	HTCO 197
QHBRH=QHBRH+QFPRH	HTCO 198
PWILM=PWILM+PWL	HTCO 199
480 CONTINUE	HTCO 200
SZHCC=SZHC/(1.3*0.5)	HTCO 201
CALL EQUIP (M1,M2,M3,M4,M5,M6,M7,NUMHC,SZHCC,NUMC,SZC,QHBC,QHBRH,	HTCO 202
1QHBRH,TECON,ELDEM,GASC,GASH,OILC,OILH,STMC,STMH,ELEC,ELEH,FUEL,	HTCO 203
2GASG)	HTCO 204
QHBC=QHBC*12000.0	HTCO 205
GO TO 1030	HTCO 206
490 DO 580 K=1,KMAX	HTCO 207
JMAXK=JMAX(K)	HTCO 208
QSUMH=0.0	HTCO 209
QSUMC=0.0	HTCO 210
SUMGX=0.0	HTCO 211
SUMCT=0.0	HTCO 212
DO 530 J=1,JMAXK	HTCO 213
READ (IT,16) IS,QS(J),QL(J),QLITE(J),SLPOW(J)	HTCO 214
QT=QS(J)+QL(J)	HTCO 215
PWILM=PWILM+SLPOW(J)	HTCO 216
IF (QT) 500,510,510	HTCO 217
500 QSUMH=QSUMH+QT	HTCO 218
	HTCO 219

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GO TO 520
510 QSUMC=QSUMC+QT
520 TS(J)=TSP(K)-QS(J)/(14.4*DOA*CFM(K,J))
  SUMCT=SUMCT+CFM(K,J)*TS(J)
  QLITB=QLITB+QLITE(J)
530 CONTINUE
  TLCON=TLCON-22.5*(1.0-(QSUMH/QSBHM))
  TLCHL=44.0+((65.0-TOA)/5.0)
  IF (TLCHL=44.0) 540,540,550
540 TLCHL=44.0
  GO TO 570
550 IF (TLCHL=50.0) 570,560,560
560 TLCHL=50.0
570 GAMA(K)=(CFMAX(K)*(TLCON-5.0)-SUMCT)/(CFMAX(K)*(TLCON-TLCHL-10.0))HTCO 233
  SUMGX=SUMGX+GAMA(K)*CFMAX(K)
580 CONTINUE
  GAMAB=SUMGX/CFMBX
  TPLB=75.0+QLITB/(14.4*DOA*(CFMBX-CFMBE))
  THDB=TLCON-5.0*(1.0-GAMAB)
  TCDB=TLCHL+5.0*GAMAB
  ALFAC=TPLB/(TPLB-TOA)-(THDB*(1.0-GAMAB)+1.3*GAMAB*TCDB)/((TPLB-TOA)HTCO 240
  1)*(1.0+0.3*GAMAB))
  IF (ALFAC) 590,590,600
590 ALFA=0.0
  GO TO 630
600 IF (ALFAC=1.0) 610,620,620
610 ALFA=ALFAC
  GO TO 630
620 ALFA=1.0
630 TMAB=TOA*ALFA+(1.0-ALFA)*TPLB
  QHBM=14.4*DOA*CFMBX*(1.0-GAMAB)*(TMAB-THDB)
  KSN=KSN+1
  GO TO ( 680, 640, 640),KSN
640 ID=1+IHOUR/24
  SNOW=0.1*SNOWF(ID)/24.0
  IF (SNOW) 650,680,660
650 WRITE (KO,18)
  GO TO 1480
660 CALL SNOWM(SAREA,PATM,WOA,VWIND,SNOW,TOA,QTOT)
  GO TO ( 680, 670, 690),KSN
670 QHBM=QHBM-QTOT
680 ELEM=0.0
  GO TO 700
690 ELEM=QTOT/3413.0
700 QHBC=14.4*DOA*CFMBX*GAMAB*(TMAB-TCDB)
  CAPHC=SZHC*NUMHC*12000.0
  IF (ABS(QHBC)=ABS(CAPHC)) 770,770,710
710 QSHCN=QHBM+CAPHC
  IF (ABS(QHBC)=ABS(CAPHC/1.3)) 720,730,730
720 QSHCL=-(CAPHC/1.3-QHBC)
  GO TO 740
730 QSHCL=0.0
740 TECON=TLCON-16.0
  TDIF=TECON-TLCHL
  FFL=1.0
  QEVAP=QHBC/12000.0
  GO TO ( 750, 760, 765, 760, 760),M1

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HTCO 220
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 HTCO 274
 HTCO 275
 HTCO 276

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750 POWER=QEVP*(0.3371+0.01223*TECON-0.00974*TLCHL)*(0.868+0.0133*FFLHTCO 277
    1*16.0)
    GO TO 890
    HTCO 278
    HTCO 279
760 POWER=QEVP*(1.74-1.0234*FFL+0.3707*FFL*FFL-0.010025*TDIF+0.000175HTCO 280
    1*TDIF*TDIF)
    GO TO 890
    HTCO 281
    HTCO 282
765 POWER=QEVP*(1.74-1.0234*FFL+0.3707*FFL*FFL-0.010025*TDIF+0.000175HTCO 283
    1*TDIF*TDIF)
    POWER=POWER/(1.0+0.02133*POWER/QEVP)
    GO TO 890
    HTCO 284
    HTCO 285
    HTCO 286
    HTCO 287
770 IF (QHBC=ABS(QHBH/1.3)) 780,790,790
    HTCO 288
780 QSHCL=QHBH/1.3+QHBC
    GO TO 800
    HTCO 289
790 QSHCL=0.0
    HTCO 290
800 QSHCN=0.0
    TECON=TLCON-16.0*QHBH/QSBHM
    TDIF=TECON-TLCHL
    QDIF2=(-QHBH/1.3-QHBC)/12000.0
    ENHCM=-QHBH/(1.3*12000.0*0.9*SZHC)
    NHCON=ENHCM
    IF (ENHCM-NHCON) 1470,820,810
    HTCO 291
    HTCO 292
    HTCO 293
    HTCO 294
    HTCO 295
    HTCO 296
    HTCO 297
810 NHCON=NHCQN+1
    HTCO 298
820 QEVP=QHBH/12000.0+QDIF2
    FFL=QEVP/(NHCON*SZHC/1.3)
    GO TO (830,840,845,840,840),M1
    HTCO 299
    HTCO 300
    HTCO 301
830 POWER=QEVP*(0.3371+0.01223*TECON-0.00974*TLCHL)*(0.868+0.0133*FFLHTCO 302
    1*16.0)
    GO TO 850
    HTCO 303
    HTCO 304
840 POWER=QEVP*(1.74-1.0234*FFL+0.3707*FFL*FFL-0.010025*TDIF+0.000175HTCO 305
    1*TDIF*TDIF)
    GO TO 850
    HTCO 306
    HTCO 307
845 POWER=QEVP*(1.74-1.0234*FFL+0.3707*FFL*FFL-0.010025*TDIF+0.000175HTCO 308
    1*TDIF*TDIF)
    POWER=POWER/(1.0+0.02133*POWER/QEVP)
    HTCO 309
    HTCO 310
850 QWORK=0.2844*POWER
    QCOND=QEVP+QWORK
    ERROR=0.5*(-QHBH/12000.0-QCOND)
    IF (ABS(ERROR)=ABS(0.005*SZHC)) 870,870,860
    HTCO 311
    HTCO 312
    HTCO 313
    HTCO 314
    HTCO 315
860 QDIF2=QDIF2+ERROR
    GO TO 820
    HTCO 316
870 IF (FFL=FFLMN) 880,890,890
    HTCO 317
880 POWER=0.0
    HTCO 318
    QSHCL=0.0
    HTCO 319
    QHBH=0.0
    HTCO 320
    QHBC=0.0
    HTCO 321
    QHBRH=0.0
    HTCO 322
    GO TO 1030
    HTCO 323
890 ELEH=ELEH+POWER
    IF (QSHCN) 900,950,950
    HTCO 324
    HTCO 325
900 GO TO ( 910, 920, 930, 940),M3
    HTCO 326
910 GASH=GASH-QSHCN/80000.0
    GO TO 950
    HTCO 327
    HTCO 328
920 OILH=OILH-QSHCN/(0.8*DHO*HVHO)
    GO TO 950
    HTCO 329
    HTCO 330
930 STMH=STMH-QSHCN/(HESTM-HLSTM)
    GO TO 950
    HTCO 331
    HTCO 332
940 ELEH=ELEH-QSHCN/3413.0
    HTCO 333

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950 IF (QSHCL) 960,1030,1030	HTCO 334
960 IF (M7) 1480,1030,970	HTCO 335
970 GO TO (980, 990,1000,1010,1020),M7	HTCO 336
980 GASH=GASH-QSHCL/80000.0	HTCO 337
GO TO 1030	HTCO 338
990 OILH=OILH-QSHCL/(0.8*DHO*HVHO)	HTCO 339
GO TO 1030	HTCO 340
1000 ELEH=ELEH-QSHCL/3413.0	HTCO 341
GO TO 1030	HTCO 342
1010 ELEH=ELEH+HPWWP*0.7457	HTCO 343
GO TO 1030	HTCO 344
1020 GALCW=-QSHCL/(8.3*(TCWIN-TCLMN))	HTCO 345
1030 ENGY(M,2,15)=ENGY(M,2,15)+(QHBH+QHBRH)/1000.0	HTCO 346
ENGY(M,2,16)=ENGY(M,2,16)+(QHBC-QSHCL)/1000.0	HTCO 347
ENGY(M,2,3)=ENGY(M,2,3)+PWILM+TFBHP*0.7457	HTCO 348
ENGY(M,2,4)=ENGY(M,2,4)+PWEL	HTCO 349
IF (QSHCN) 1040,1050,1050	HTCO 350
1040 PWBLA=HPBLA*0.7457	HTCO 351
GO TO 1060	HTCO 352
1050 PWBLA=0.0	HTCO 353
1060 ENGY(M,2,5)=ENGY(M,2,5)+ELEH+PWBLP+PWBLA	HTCO 354
IF (TOA=TCO) 1150,1070,1070	HTCO 355
1070 TECON=TWB+7.0	HTCO 356
IF (TECON=85.0) 1090,1080,1080	HTCO 357
1080 KCTF=1	HTCO 358
GO TO 1140	HTCO 359
1090 IF (TECON=(TECMN+10.0)) 1100,1100,1110	HTCO 360
1100 KCTF=0	HTCO 361
GO TO 1140	HTCO 362
1110 IF (KCTF) 1120,1120,1130	HTCO 363
1120 KCTF=0	HTCO 364
GO TO 1140	HTCO 365
1130 KCTF=1	HTCO 366
1140 PWCNP=HPCNP*0.7457	HTCO 367
PWCTF=(HPCTF*KCTF)*0.7457	HTCO 368
GO TO 1180	HTCO 369
1150 IF (TECON=85.0) 1160,1170,1170	HTCO 370
1160 PWCNP=0.0	HTCO 371
PWCTF=0.0	HTCO 372
GO TO 1180	HTCO 373
1170 PWCNP=HPCNP*0.7457	HTCO 374
PWCTF=HPCTF*0.7457	HTCO 375
1180 ENGY(M,2,6)=ENGY(M,2,6)+ELEC+PWCLP+PWCNP+PWCTF	HTCO 376
ENGY(M,2,7)=ENGY(M,2,7)+GASH	HTCO 377
ENGY(M,2,10)=ENGY(M,2,10)+STMH/1000.0	HTCO 378
ENGY(M,2,12)=ENGY(M,2,12)+OILH/1000.0	HTCO 379
ENGY(M,2,17)=ENGY(M,2,17)+GALCW/1000.0	HTCO 380
IF (ENGY(M,1,1)-(QHBH+QHBRH)/1000.0) 1200,1200,1190	HTCO 381
1190 ENGY(M,1,1)=(QHBH+QHBRH)/1000.0	HTCO 382
1200 IF (ENGY(M,1,2)-(QHBC-QSHCL)/1000.0) 1210,1220,1220	HTCO 383
1210 ENGY(M,1,2)=QHBC/1000.0-QSHCL/1000.0	HTCO 384
IF (CAPC=QHBC/12000.0) 1211,1220,1220	HTCO 385
1211 CAPC=QHBC/12000.0	HTCO 386
SZC=SZC+(QHBC/12000.0-CAPC)/NUMC	HTCO 387
1220 IF (ENGY(M,1,3)-PWILM-TFBHP*0.7457) 1230,1240,1240	HTCO 388
1230 ENGY(M,1,3)=PWILM+TFBHP*0.7457	HTCO 389
1240 IF (ENGY(M,1,4)-PWEL) 1250,1260,1260	HTCO 390

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1250 ENGY(M,1,4)=PWEL          HTCO 391
1260 IF (ENGY(M,1,5)=ELEH-PWBLP-PWBLA) 1270,1280,1280  HTCO 392
1270 ENGY(M,1,5)=ELEH+PWBLP+PWBLA          HTCO 393
1280 IF (ENGY(M,1,6)=ELEC-PWCCLP-PWCNP-PWCTF) 1290,1300,1300  HTCO 394
1290 ENGY(M,1,6)=ELEC+PWCLP+PWCNP+PWCTF          HTCO 395
1300 IF (ENGY(M,1,7)=GASH) 1310,1320,1320          HTCO 396
1310 ENGY(M,1,7)=GASH          HTCO 397
1320 IF (ENGY(M,1,10)=STMH/1000.0) 1330,1340,1340  HTCO 398
1330 ENGY(M,1,10)=STMH/1000.0          HTCO 399
1340 IF (ENGY(M,1,12)=OILH/1000.0) 1350,1360,1360  HTCO 400
1350 ENGY(M,1,12)=OILH/1000.0          HTCO 401
1360 IF ((QHBH+QHBRH)/1000.0) 1370,1400,1400  HTCO 402
1370 IF (ENGY(M,1,15)) 1390,1380,1380          HTCO 403
1380 ENGY(M,1,15)=(QHBH+QHBRH)/1000.0          HTCO 404
      GO TO 1400          HTCO 405
1390 IF (ENGY(M,1,15)-(QHBH+QHBRH)/1000.0) 1380,1400,1400  HTCO 406
1400 IF (QHBH-QSHCL) 1440,1440,1410               ?          HTCO 407
1410 IF (ENGY(M,1,16)) 1420,1420,1430          HTCO 408
1420 ENGY(M,1,16)=(QHBC-QSHCL)/1000.0          HTCO 409
      GO TO 1440          HTCO 410
1430 IF (ENGY(M,1,16)-(QHBC-QSHCL)/1000.0) 1440,1440,1420  HTCO 411
1440 IF (ENGY(M,1,17)=GALCW/1000.0) 1450,1460,1460          HTCO 412
1450 ENGY(M,1,17)=GALCW/1000.0          HTCO 413
1460 CONTINUE          HTCO 414
      RETURN          HTCO 415
1470 WRITE (KO,19)          HTCO 416
1480 CONTINUE          HTCO 417
      END          HTCO 418
      SUBROUTINE FSIZE (FAC,CITY,ENGR,PROJ,DATE,FAN,NRUN)
C
C ***** FAN PLANT SIZING PROGRAM ***** FSIZ 1
C ***** FSIZ 2
C ***** FSIZ 3
C ***** FSIZ 4
C ***** FSIZ 5
C ***** FSIZ 6
C ***** FSIZ 7
C ***** FSIZ 8
C ***** FSIZ 9
C ***** FSIZ 10
C ***** FSIZ 11
C ***** FSIZ 12
C ***** FSIZ 13
C ***** FSIZ 14
C ***** FSIZ 15
C ***** FSIZ 16
C ***** FSIZ 17
C ***** FSIZ 18
C ***** FSIZ 19
C ***** FSIZ 20
C ***** FSIZ 21
C ***** FSIZ 22
C ***** FSIZ 23
C ***** FSIZ 24
C ***** FSIZ 25
C ***** FSIZ 26
C ***** FSIZ 27
C ***** FSIZ 28
C ***** FSIZ 29
C
C DIMENSION CFMIN(200),SLPOW(200)          FSIZ 7
C DIMENSION QSZC1(200),QSZHM(200),QS(200),QL(200),QLITE(200),QT(200)FSIZ 8
C DIMENSION FAC(35),CITY(35),DATE(15),PROJ(15),FAN(7)          FSIZ 9
C DIMENSION ENGR(35)          FSIZ 10
C COMMON TCO,KBLDG,K1AX,IZNMX,MSTRT,NDAYS,MEND,SNOWF(366)          FSIZ 11
C COMMON KFAN(50),JMAX(50),TSP(50),FPRES(50),FBHP(50),IMAX(12)          FSIZ 12
C COMMON CFM(50,20),VOL(50,20),CFMAX(50),CFMEX(50),ALFAM(50)          FSIZ 13
C COMMON PLOC(50),PAREA(50),PERIM(50),KFLCV,CINSL,DINSL          FSIZ 14
C COMMON KREHT          FSIZ 15
C COMMON CFMX(50,20)          FSIZ 16
C COMMON TLCNL,TPS,PPS,TESTM,PESTM,SZT,NUMT,RPM,SZE,FFLMN          FSIZ 17
C COMMON DDF,HVDF,DHD,HVHO          FSIZ 18
C COMMON CFMBN,CFMBX,CFMBE          FSIZ 19
C COMMON TFBHP,EFF          FSIZ 20
C COMMON PWBLI,PWBL          FSIZ 21
C COMMON TLCNM,TCLIN,TCWIN,TWWIN,TECMN          FSIZ 22
C COMMON QSBCH,QLBCH,TOAC,WOAC,PATMC,QLITC          FSIZ 23
C COMMON QSBHM,QLBHM,TOAH,WOAH,PATMH,QLITH          FSIZ 24
C 10 FORMAT (I4,I1,2I4,I3,F6.4,2F5.2,F4.3)          FSIZ 25
C 11 FORMAT (I3,2F10.0,F4.0,F9.2)          FSIZ 26
C 12 FORMAT (1H1)          FSIZ 27
C 13 FORMAT (/////////////)          FSIZ 28
C 14 FORMAT (25X,8J(1H*))          FSIZ 29

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15 FORMAT (25X,1H*,78X,1H*) FSIZ 30
16 FORMAT (25X,1H*,23X,33HANALYSIS OF ENERGY UTILIZATION IN,22X,1H*) FSIZ 31
17 FORMAT (25X,1H*,22X,35A1,21X,1H*) FSIZ 32
18 FORMAT (25X,1H*,35X,8HFACILITY,35X,1H*) FSIZ 33
19 FORMAT (25X,1H*,2X,12HENGINEER -,1X,35A1,28X,1H*) FSIZ 34
20 FORMAT (25X,1H*,2X,12HPROJECT NO -,1X,15A1,48X,1H*) FSIZ 35
21 FORMAT (25X,1H*,2X,12HDATE -,1X,15A1,48X,1H*) FSIZ 36
22 FORMAT (1H1) FSIZ 37
23 FORMAT (1H ,35A1,5X,35A1,5X,15A1,5X,15A1,/,1X,37HSYSTEM SIMULATIONFSIZ 38
1 AND ENERGY ANALYSIS) FSIZ 39
24 FORMAT (1H0,/,5X,37HSUMMARY OF FAN SYSTEM CHARACTERISTICS) FSIZ 40
25 FORMAT (1H0,7X,10HFAN SYSTEM,3X,4HTYPE,3A,7HFAN BHP,3X,12HNO. OF ZFSIZ 41
1ONES,3X,9HSET POINT,3X,9HTOTAL CFM,3X,13HMIN. O.A. CFM,3X,8HEXH. CFSIZ 42
2FM,3X,17HPERCENT VENT. AIR) FSIZ 43
26 FORMAT (1H ) FSIZ 44
27 FORMAT (8X,I5,8X,A4,F9.1,I10,F15.1,F13.0,F12.0,F14.0,F16.1) FSIZ 45
28 FORMAT (1H0,/,5X,25HSUMMARY OF ZONE AIR FLOWS) FSIZ 46
29 FORMAT (1H0, 10X,10HFAN SYSTEM,5X,4HZONE,6X,10HSUPPLY CFM,5X,11HFSIZ 47
1EXHAUST CFM) FSIZ 48
30 FORMAT (10X,I6,I12,F18.0,F16.0) FSIZ 49
31 IT=1 FSIZ 50
32 IC=5 FSIZ 51
33 KO=6 FSIZ 52
34 IRUNT=0 FSIZ 53
35 TFBHP=0.0 FSIZ 54
36 DO 100 IZ=1,IZNMX FSIZ 55
37 QSZCM(IZ)=0.0 FSIZ 56
38 QSZHM(IZ)=0.0 FSIZ 57
39 100 CONTINUE FSIZ 58
40 CALL PSYCH (TOAC,WOAC,PATMC,HOAC,DOAC), FSIZ 59
41 CALL PSYCH (TOAH,WOAH,PATMH,HOAH,DOAH) FSIZ 60
42 PWBL=0.0 FSIZ 61
43 DO 180 M=MSTRT,MEND FSIZ 62
44 IMAXM=IMAX(M) FSIZ 63
45 DO 180 I=1,IMAXM FSIZ 64
46 PWL=0.0 FSIZ 65
47 READ (IT,10) IHOUR,ISUN,ITOA,ITWB,IVEL,WOA,PATM,HOA,DOA FSIZ 66
48 TOA=ITOA FSIZ 67
49 TWB=ITWB FSIZ 68
50 VEL=IVEL FSIZ 69
51 READ (IT,11) (IS,QS(IZ),QL(IZ),QLITE(IZ),SLPOW(IZ),IZ=1,IZNMX) FSIZ 70
52 IF (M=MSTRT) 106,105,106 FSIZ 71
53 105 IF (I=24) 180,180,106 FSIZ 72
54 106 DO 160 IZ=1,IZNMX FSIZ 73
55 QT(IZ)=QS(IZ)+QL(IZ) FSIZ 74
56 PWL=PWL+SLPOW(IZ) FSIZ 75
57 IF (QS(IZ)) 140,110,110 FSIZ 76
58 110 IF (QSZCM(IZ)-QS(IZ)) 120,130,130 szmz 25 FSIZ 77
59 120 QSZCM(IZ)=QS(IZ) FSIZ 78
60 130 GO TO 160 FSIZ 79
61 140 IF (QSZHM(IZ)-QS(IZ)) 160,160,150 FSIZ 80
62 150 QSZHM(IZ)=QS(IZ) FSIZ 81
63 160 CONTINUE FSIZ 82
64 IF (PWL-PWBL) 180,180,170 FSIZ 83
65 170 PWBL=PWL FSIZ 84
66 IRUNT=IRUNT+1 FSIZ 85
67 180 CONTINUE FSIZ 86

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IZ=0
DO 400 K=1,KMAX
KFANK=KFAN(K)
JMAXK=JMAX(K)
CFMIN(K)=0.0
CFMAX(K)=0.0
DO 310 J=1,JMAXK
IZ=IZ+1
GO TO ( 190, 190, 190, 250, 190, 190, 300),KFANK
190 GO TO ( 200, 250),KBLDG
200 IF (ABS(QSZCM(IZ)/23.0)-ABS(QSZHM(IZ)/60.0)) 220,210,210
210 CFM(K,J)=QSZCM(IZ)/(14.4*DOAC*23.0)
GO TO 230
220 CFM(K,J)==QSZHM(IZ)/(14.4*DOAH*60.0)
230 IF (CFM(K,J)-CFMX(K,J)) 240,310,310
240 CFM(K,J)=CFMX(K,J)
GO TO 310
250 IF (ABS(QSZHM(IZ)/30.0)-ABS(QSZCM(IZ)/23.0)) 260,270,270
260 CFM(K,J)=QSZCM(IZ)/(14.4*DOAC*23.0)
GO TO 280
270 CFM(K,J)==QSZHM(IZ)/(14.4*DOAH*30.0)
280 IF (CFM(K,J)-CFMX(K,J)) 290,310,310
290 CFM(K,J)=CFMX(K,J)
GO TO 310
300 CFM(K,J)=0.0
310 CONTINUE
CFMEX(K)=0.0
DO 390 J=1,JMAXK
CFMEX(K)=CFMEX(K)+CFMX(K,J)
GO TO ( 320, 320, 320, 320, 320, 380, 390),KFANK
320 IF (VOL(K,J)/60.0-CFM(K,J)/10.0) 340,330,330
330 CFMOA=VOL(K,J)/60.0
GO TO 350
340 CFMOA=CFM(K,J)/10.0
350 IF (CFM(K,J)-CFMOA) 360,370,370
360 CFM(K,J)=CFMOA
370 CFMIN(K)=CFMIN(K)+CFMOA+CFMX(K,J)
380 CFMAX(K)=CFMAX(K)+CFM(K,J)
390 CONTINUE
ALFAM(K)=CFMIN(K)/CFMAX(K)
FAHP=CFMAX(K)*FPRES(K)/6346.0
FBHP(K)=FAHP/EFF
TFBHP=TFBHP+FBHP(K)

400 CONTINUE
IF (NRUM=1) 410,410,420
410 WRITE (KO,12)
WRITE (KO,13)
WRITE (KO,14)
WRITE (KO,15)
WRITE (KO,15)
WRITE (KO,15)
WRITE (KO,16)
WRITE (KO,15)
WRITE (KO,15)
WRITE (KO,17) FAC
WRITE (KO,15)
WRITE (KO,15)

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FSIZ 87
 FSIZ 88
 FSIZ 89
 FSIZ 90
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 FSIZ 92
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 FSIZ 135
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 FSIZ 137
 FSIZ 138
 FSIZ 139
 FSIZ 140
 FSIZ 141
 FSIZ 142
 FSIZ 143

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      WRITE (KO,18)
      WRITE (KO,15)
      WRITE (KO,15)
      WRITE (KO,17) CITY
      WRITE (KO,15)
      WRITE (KO,15)
      WRITE (KO,19) ENGR
      WRITE (KO,20) PROJ
      WRITE (KO,21) DATE
      WRITE (KO,15)
      WRITE (KO,15)
      WRITE (KO,14)
420   WRITE (KO,22)
      WRITE (KO,23) FAC,CITY,DATE,PROJ
430   WRITE (KO,24)
      WRITE (KO,25)
      WRITE (KO,26)
      LINE=0
      DO 480 K=1,KMAX
      LINE=LINE+1
      IF (LINE=45) 450,450,440
440   WRITE (KO,22)
      WRITE (KO,25)
      WRITE (KO,26)
      LINE=1
450   KF=KFAN(K)
      ALPCT=ALFAM(K)*100.0
      WRITE (KO,27) K,FAN(KF),FBHP(K),JMAX(K),TSP(K),CFMAX(K),CFMIN(K),
      1CFMEX(K),ALPCT
460   CONTINUE
      WRITE (KO,22)
      WRITE (KO,23) FAC,CITY,DATE,PROJ
470   WRITE (KO,28)
      WRITE (KO,29)
      WRITE (KO,26)
      LINE=0
      DO 500 K=1,KMAX
      JMAXK=JMAX(K)
      DO 500 J=1,JMAXK
      LINE=LINE+1
      IF (LINE=45) 490,490,480
480   WRITE (KO,22)
      WRITE (KO,29)
      WRITE (KO,26)
      LINE=1
490   WRITE (KO,30) K,J,CFM(K,J),CFMX(K,J)
500   CONTINUE
      CFMBE=0.0
      CFMBX=0.0
      CFMBN=0.0
      DO 510 K=1,KMAX
      CFMBE=CFMBE+CFMEX(K)
      CFMBX=CFMBX+CFMAX(K)
      CFMBN=CFMBN+CFMIN(K)
510   CONTINUE
      REWIND IT
      RETURN

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FSIZ 144
 FSIZ 145
 FSIZ 146
 FSIZ 147
 FSIZ 148
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 FSIZ 150
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 FSIZ 190
 FSIZ 191
 FSIZ 192
 FSIZ 193
 FSIZ 194
 FSIZ 195
 FSIZ 196
 FSIZ 197
 FSIZ 198
 FSIZ 199
 FSIZ 200

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END FSIZE 201
SUBROUTINE SZMZD (TOA, WOA, PATM, HOA, DOA, K, JMAXK, M4, QFPC, QFPH, QFPRH, SZMZ 1
1PWL) SZMZ 2
1PWL) SZMZ 3
C **** SYSTEM SIMULATION AND ENERGY ANALYSIS FOR SZMZ 4
C SINGLE ZONE FAN SYSTEMS SZMZ 5
C MULTI ZONE FAN SYSTEMS SZMZ 6
C DUAL DUCT FAN SYSTEMS SZMZ 7
C **** SZMZ 8
C **** SZMZ 9
C **** SZMZ 10
C DIMENSION QS(20), QL(20), QLITE(20), TS(20), SLPow(20) SZMZ 11
C COMMON TCO, KRLDG, KMAX, IZNMX, MSTRT, NDAYS, MEND, SNOWF(366) SZMZ 12
C COMMON KFAN(50), JMAX(50), TSP(50), FPRES(50), FBHP(50), INAX(12) SZMZ 13
C COMMON CFM(50,20), VOL(50,20), CFMAX(50), CFMEX(50), ALFAM(50) SZMZ 14
10 FORMAT(I3,2F10.0,F4.0,F9.2) SZMZ 15
IT=1 SZMZ 16
QSLIT=0.0 SZMZ 17
QSUMC=0.0 SZMZ 18
QSUMH=0.0 SZMZ 19
PWL=0.0 SZMZ 20
QSFAN=0.4014*CFMAX(K)*FPRES(K) SZMZ 21
DO 130 J=1,JMAXK SZMZ 22
READ (IT,10) IS, QS(J), QL(J), QLITE(J), SLPow(J) SZMZ 23
IF (QS(J)) 110, 100, 100 SZMZ 24
100 QSUMC=QSUMC+QS(J)+QL(J) FSIZE 77 SZMZ 25
GO TO 120 SZMZ 26
110 QSUMH=QSUMH+QS(J) SZMZ 27
120 QSLIT=QSLIT+QLITE(J) SZMZ 28
PWL=PWL+SLPow(J) SZMZ 29
130 CONTINUE SZMZ 30
TRA=TSP(K)+QSLIT/(14.4*DOA*CFMAX(K)) SZMZ 31
WRA=(53.2+0.245*(TOA-50.0))/700.0 SZMZ 32
CALL PSYCH (TRA, WRA, PATM, HRA, DRA) SZMZ 33
IF (TOA=TCO) 140, 270, 270 SZMZ 34
140 IF (M4) 160, 160, 150 SZMZ 35
150 ALFA=ALFAM(K) SZMZ 36
GO TO 220 SZMZ 37
160 TSMIN=500.0 SZMZ 38
DO 180 J=1,JMAXK SZMZ 39
TS(J)=TSP(K)-QS(J)/(14.4*DOA*CFM(K,J)) SZMZ 40
IF (TS(J)=TSMIN) 170, 180, 180 SZMZ 41
170 TSMIN=TS(J) SZMZ 42
180 CONTINUE SZMZ 43
IF (TOA=TSMIN) 200, 190, 190 SZMZ 44
190 ALFA=1.0 SZMZ 45
GO TO 220 SZMZ 46
200 ALFA=(TRA-TSMIN)/(TRA-TOA) SZMZ 47
IF (ALFA=ALFAM(K)) 210, 220, 220 SZMZ 48
210 ALFA=ALFAM(K) SZMZ 49
220 QSOA=14.4*DOA*ALFA*CFMAX(K)*(TOA-TSP(K)) SZMZ 50
IF (ABS(QSOA)=1.0) 230, 240, 240 SZMZ 51
230 QSOA=0.0 SZMZ 52
240 QFPH=QSUMH+QSOA+QSFAN+QSLIT*CFMAX(K)*(1.0-ALFA)/(CFMAX(K)-CFMEX(K)) SZMZ 53
1) SZMZ 54
IF (QFPH) 260, 260, 250 SZMZ 55
250 QFPH=0.0 SZMZ 56

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260 QFPC=0.0 SZMZ 57
    GO TO 470 SZMZ 58
270 IF (M4) 280,280,290 SZMZ 59
280 IF (HOA-HRA) 300,300,290 SZMZ 60
290 ALFA=ALFAM(K) SZMZ 61
    GO TO 380 SZMZ 62
300 IF (QSUMH) 350,305,305 SZMZ 63
305 TSMAX=0.0 SZMZ 64
    DO 320 J=1,JMAXK SZMZ 65
        TS(J)=TSP(K)-QS(J)/(14.4*DOA*CFM(K,J))
        IF (TSMAX=TS(J)) 310,320,320 SZMZ 66
310 TSMAX=TS(J) SZMZ 67
320 CONTINUE SZMZ 68
    IF (TOA-TSMAX) 360,330,330 SZMZ 69
330 IF (TOA-TRA) 340,350,350 SZMZ 70
340 ALFA=1.0 SZMZ 71
    GO TO 380 SZMZ 72
350 ALFA=ALFAM(K) SZMZ 73
    GO TO 380 SZMZ 74
360 ALFA=(TRA-TSMAX)/(TRA-TOA) SZMZ 75
    IF (ALFA-ALFAM(K)) 370,380,380 SZMZ 76
370 ALFA=ALFAM(K) SZMZ 77
380 QSOA=14.4*DOA*ALFA*CFMAX(K)*(TOA-TSP(K)) SZMZ 78
    IF (ABS(QSOA)=1.0) 390,400,400 SZMZ 79
390 QSOA=0.0 SZMZ 80
400 QLOA=0.3300.0*DOA*ALFA*CFMAX(K)*(WOA-WRA) SZMZ 81
    IF (TOA-TCO) 410,420,420 SZMZ 82
410 QLOA=0.0 SZMZ 83
    GO TO 440 SZMZ 84
420 IF (QLOA) 430,440,440 SZMZ 85
430 QLOA=0.0 SZMZ 86
440 QFPC=QSUMC+QSOA+QLOA+QSFAN+QSLIT*CFMAX(K)*(1.0-ALFA)/(CFMAX(K)-CFMS) SZMZ 87
    1EX(K)
    IF (QFPC) 450,460,460 SZMZ 88
450 QFPC=0.0 SZMZ 89
460 QFPH=0.0 SZMZ 90
470 QFPRH=0.0 SZMZ 91
    RETURN SZMZ 92
    END SZMZ 93
    SUBROUTINE SZRHT (TOA,WOA,PATM,HOA,DOA,K,JMAXK,M4,QFPC,QFPH,QFPRH,SZRH
1PWL) SZRH 94
    SZRH 1
    SZRH 2
    SZRH 3
C **** SYSTEM SIMULATION AND ENERGY ANALYSIS FOR SZRH 4
C SINGLE ZONE FAN SYSTEM WITH SUBZONES SZRH 5
C **** SZRH 6
C **** SZRH 7
C DIMENSION QS(20),QL(20),QLITE(20),TS(20),TPL(20),HPL(20) SZRH 8
C DIMENSION DPL(20),BETA(20),QSUPH(20) SZRH 9
C DIMENSION SLPow(20) SZRH 10
C COMMON TCO,KBLDG,KMAX,IZNMX,MSTRT,NDAYS,MEND,SNOWF(366) SZRH 11
C COMMON KFAN(50),JMAX(50),TSP(50),FPRES(50),FBHP(50),IMAX(12) SZRH 12
C COMMON CFM(50,20),VOL(50,20),CFMAX(50),CFMEX(50),ALFAM(50) SZRH 13
C COMMON PLOC(50),PAREA(50),PERIM(50),KFLCV,CINSL,DINSL SZRH 14
C COMMON KREHT SZRH 15
C COMMON CFMX(50,20) SZRH 16
10 FORMAT(I3,2F10.0,F4.0,F9.2) SZRH 17
    SZRH 18

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IT=1 SZRH 19
QSML=0.0 SZRH 20
QFPC=0.0 SZRH 21
QFPH=0.0 SZRH 22
QFPRH=0.0 SZRH 23
PWL=0.0 SZRH 24
QSFAN=0.4014*CFMAX(K)*FPRES(K) SZRH 25
CFMT=CFM(K,1) SZRH 26
WPL=(53.2+0.245*(TOA-50.01))/7000.0 SZRH 27
DO 100 J=1,JMAXK SZRH 28
READ (IT,10) IS,QS(J),QL(J),QLITE(J),SLPOW(J) SZRH 29
TS(J)=TSP(K)-QS(J)/(14.4*DOA*CFM(K,J)) SZRH 30
TPL(J)=TSP(K)+QLITE(J)/(14.4*DOA*(CFM(K,J)-CFMX(K,J))) SZRH 31
TPLL=TPL(J) SZRH 32
CALL PSYCH (TPLL,WPL,PATM,HPLL,DPLL) SZRH 33
DPL(J)=DPLL SZRH 34
HPL(J)=HPLL SZRH 35
QSML=QSML+QL(J) SZRH 36
PWL=PWL+SLPOW(J) SZRH 37
100 CONTINUE SZRH 38
IF (M4) 110,110,120 SZRH 39
110 IF (HOA-HPL(1)) 130,120,120 SZRH 40
120 ALFA=ALFAM(K) SZRH 41
GO TO 190 SZRH 42
130 IF (TOA-TS(1)) 170,140,140 SZRH 43
140 IF (TOA-TPL(1)) 150,150,160 SZRH 44
150 ALFA=1.0 SZRH 45
GO TO 190 SZRH 46
160 ALFA=ALFAM(K) SZRH 47
GO TO 190 SZRH 48
170 IF (QS(1)) 180,180,175 SZRH 49
175 ALFA=(TPL(1)-TS(1))/(TPL(1)-TOA) SZRH 50
IF (ALFA=ALFAM(K)) 180,190,190 SZRH 51
180 ALFA=ALFAM(K) SZRH 52
190 DO 250 J=2,JMAXK SZRH 53
BETA(J)=(TSP(K)-QS(J)/(14.4*DOA*CFM(K,J))-TPL(J))/(TS(1)-TPL(J)) SZRH 54
IF (BETA(J)=0.5) 230,200,200 SZRH 55
200 IF (BETA(J)=1.0) 220,210,210 SZRH 56
210 BETA(J)=1.0 SZRH 57
220 QSUPH(J)=0.0 SZRH 58
GO TO 240 SZRH 59
230 BETA(J)=0.5 SZRH 60
QSUPH(J)=14.4*DOA*CFM(K,J)*(0.5*(TPL(J)+TS(1))-TS(J)) SZRH 61
240 CFMT=CFMT+BETA(J)*CFM(K,J) SZRH 62
QFPRH=QFPRH+QSUPH(J) SZRH 63
250 CONTINUE SZRH 64
QSML=14.4*DOA*CFMT*(TOA*ALFA+(1.0-ALFA)*TPL(1)-TS(1)) SZRH 65
IF (ABS(QSML)=1.0) 260,270,270 SZRH 66
260 QSML=0.0 SZRH 67
270 QLML=4747.5*CFMT*ALFA*(WOA-WPL)+QSML*CFMT*(1.0-ALFA)/(CFMT-CFMEX(1K)) SZRH 68
IF (TOA-TCO) 280,290,290 SZRH 69
280 QLML=0.0 SZRH 70
GO TO 310 SZRH 71
290 IF (QLML) 300,310,310 SZRH 72
300 QLML=0.0 SZRH 73
310 QTML=QSML+QLML+QSFAN SZRH 74

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      IF (TOA-TCO) 320,350,350          SZRH  76
320 IF (QTML) 330,340,340          SZRH  77
330 QFPH=QTML          SZRH  78
      GO TO 380          SZRH  79
340 QFPH=0.0          SZRH  80
      GO TO 380          SZRH  81
350 IF (QTML) 360,370,370          SZRH  82
360 QFPC=0.0          SZRH  83
      GO TO 380          SZRH  84
370 QFHC=QTML          SZRH  85
380 KRH=KREHT+1          SZRH  86
      GO TO ( 400, 390, 390, 390, 410 ), KRH
390 IF (TOA-TCO) 410,410,400          SZRH  87
400 QFPRH=0.0          SZRH  88
410 RETURN          SZRH  89
      END          SZRH  90
      SUBROUTINE UVENT (TOA,DOA,K,JMAXK,QFPC,QFPH,QFPRH,PWL)
      DIMENSION QS(20),QL(20),QLITE(20),SLPOW(20)
      COMMON TCO,KBLDG,KMAX,IZNMX,MSTRT,NDAYS,MEND,SNOWF(366)
      COMMON KFAN(50),JMAX(50),TSP(50),FPRES(50),FBHP(50),IMAX(12)
      COMMON CFM(50,20),VOL(50,20),CFMAX(50),CFMEX(50),ALFAM(50)
10 FORMAT(I3,2F10.0,F4.0,F9.2)          UVEN  1
      IT=1          UVEN  2
      QSUMH=0.0          UVEN  3
      KFANK=KFAN(K)
      PWL=0.0          UVEN  4
      DO 110 J=1,JMAXK          UVEN  5
      READ (IT,10) IS,QS(J),QL(J),QLITE(J),SLPOW(J)
      PWL=PWL+SLPOW(J)
      IF (QS(J)) 100,110,110          UVEN  6
100 QSUMH=QSUMH+QS(J)
110 CONTINUE          UVEN  7
      IF (TOA-TCO) 130,120,120          UVEN  8
120 QFPH=0.0          UVEN  9
      GO TO 180          UVEN 10
130 IF (QSUMH) 140,120,120          UVEN 11
140 GO TO ( 190, 190, 190, 190, 150, 160, 190 ), KFANK          UVEN 12
150 QSOA=14.4*DOA*CFMAX(K)*ALFAM(K)*(TOA-TSP(K))
      GO TO 170          UVEN 13
160 QSOA=0.0          UVEN 14
170 QFPH=QSUMH+QSOA          UVEN 15
180 QFPC=0.0          UVEN 16
      QFPRH=0.0          UVEN 17
      RETURN          UVEN 18
190 CONTINUE          UVEN 19
      END          UVEN 20
      SUBROUTINE FHEAT (K,JMAXK,TOA,QFPC,QFPH,QFPRH,PWL)
      DIMENSION QS(20),QL(20),QLITE(20),SLPOW(20)
      COMMON TCO,KBLDG,KMAX,IZNMX,MSTRT,NDAYS,MEND,SNOWF(366)
      COMMON KFAN(50),JMAX(50),TSP(50),FPRES(50),FBHP(50),IMAX(12)
      COMMON CFM(50,20),VOL(50,20),CFMAX(50),CFMEX(50),ALFAM(50)
      COMMON PLOC(50),PAREA(50),PERIM(50),KFLCV,CINSL,DINSL
10 FORMAT(I3,2F10.0,F4.0,F9.2)          FHEA  1
      IT=1          FHEA  2
      QSSUM=0.0          FHEA  3
      PWL=0.0          FHEA  4
      DO 110 J=1,JMAXK          FHEA  5

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READ (IT,10) IS,QS(J),QL(J),QLITE(J),SLPOW(J) FHEA 12
PWL=PWL+SLPOW(J)
IF (QS(J)) 100,110,110 FHEA 13
100 QSSUM=QSSUM+QS(J) FHEA 14
110 CONTINUE FHEA 15
    IF (TOA=TCO) 130,120,120 FHEA 16
120 QFPH=0.0 FHEA 17
    QFPC=0.0 FHEA 18
    QFPRH=0.0 FHEA 19
    GO TO 320 FHEA 20
130 IF (QSSUM) 140,120,120 FHEA 21
140 QPAN=-QSSUM/PAREA(K) FHEA 22
    TPAN=76.0 FHEA 23
150 QCALC=0.15*((TPAN+460.0)/100.0)**4.0-0.15*((TSP(K)+460.0)/100.0) FHEA 24
    1**4.0+0.32*(TPAN-TSP(K))**1.31 FHEA 25
    ERROR=QPAN-QCALC FHEA 26
    IF (ABS(ERROR)=0.01*ABS(QPAN)) 170,170,160 FHEA 27
160 TPAN=TPAN+0.5*ERROR FHEA 28
    GO TO 150 FHEA 29
170 CONTINUE FHEA 30
    GO TO ( 180, 190, 200 ),KFLCV FHEA 31
180 TSUR=TPAN FHEA 32
    GO TO 210 FHEA 33
190 TSUR=TPAN+Q PAN*0.05 FHEA 34
    GO TO 210 FHEA 35
200 TSUR=TPAN+Q PAN*1.4 FHEA 36
210 IF (TSUR=85.0) 230,230,220 FHEA 37
220 TSUR=85.0 FHEA 38
230 LOCP=PLOC(K) FHEA 39
    GO TO ( 240, 300 ),LOCP FHEA 40
240 IF (CINSL) 250,250,260 FHEA 41
250 C3=1.8 FHEA 42
    GO TO 290 FHEA 43
260 IF (DINSL) 270,270,280 FHEA 44
270 C3=1.32+0.25*CINSL FHEA 45
    GO TO 290 FHEA 46
280 C3=0.932+0.523*CINSL=0.479*CINSL**2.0-0.271*DINSL+0.046*DINSL**2.0 FHEA 47
    1+0.786*CINSL*DINSL=0.72*DINSL*CINSL**2.0-0.182*CINSL*DINSL**2.0 FHEA 48
    2+0.24*(DINSL*CINSL)**2.0 FHEA 49
290 QLOSS=PERIM(K)*C3*(TPAN-TOA)/PAREA(K) FHEA 50
    GO TO 310 FHEA 51
300 QLOSS=0.15*((TPAN+460.0)/100.0)**4.0-0.15*((TSP(K)+460.0)/100.0) FHEA 52
    1**4.0+0.021*(TPAN-TSP(K))**1.25 FHEA 53
310 QFPH=-1.0*(Q PAN+QLOSS)*PAREA(K) FHEA 54
    QFPC=0.0 FHEA 55
    QFPRH=0.0 FHEA 56
320 RETURN FHEA 57
END FHEA 58
SUBROUTINE EQUIP (M1,M2,M3,M4,M5,M6,M7,NUMC,SZC,NUMAC,SZAC, EQUI 1
1QHAC,QHBRH,QHBRH,TECON,ELDEM,GASC,GASH,OILC,OILH,STMC,STMH,ELEC, EQUI 2
2ELEH,FUEL,GASG) EQUI 3
EQUI 4
***** SYSTEM SIMULATION AND ENERGY ANALYSIS FOR EQUI 5
HEATING EQUIPMENT EQUI 6
COOLING EQUIPMENT EQUI 7
***** EQUI 8
***** EQUI 9

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COMMON TCO,KBLDG,KMAX,IZNMX,MSTRT,N DAYS,MEND,SNOWF(366) EQUI 10
COMMON KFAN(50),JMAX(50),TSP(50),FPRES(50),FBHP(50),IMAX(12) EQUI 11
COMMON CFM(50,20),VOL(50,20),CFMAX(50),CFMEX(50),ALFAM(50) EQUI 12
COMMON PLOC(50),PAREA(50),PERIM(50),KFLCV,CINSL,DINSL EQUI 13
COMMON KREHT EQUI 14
COMMON CFMX(50,20) EQUI 15
COMMON TLCHL,TPS,PPS,TESTM,PESTM,SZT,NUMT,RPM,SZE,FFLMN EQUI 16
COMMON DDF,HVDF,DHO,HVHO EQUI 17
10 FORMAT(1H0,42HNEGATIVE COOLING LOAD-PROCESSES TERMINATED) EQUI 18
11 FORMAT(1H0,43HPOSITIVE HEATING LOAD- PROCESSES TERMINATED) EQUI 19
12 FORMAT(1H0,59HNOT ENOUGH CHILLERS TO MEET FULL LOAD- PROCESSES TEREQUI EQUI 20
13 FORMAT(1H0,60HNOT ENOUGH ENGINES TO MEET PEAK DEMAND- PROCESSES TEEQUI EQUI 21
14 FORMAT(1H0,63HWRONG TYPE CHILLERS FOR ONSITE GENERATION- PROCESSESEQUI EQUI 22
15 FORMAT (1H0,56HWRONG TYPE OF CHILLERS FOR HEAT CONSERVATION APPLICEQUI EQUI 23
16 FORMAT (1H1,50HWRONG TYPE OF HEATING ENERGY FOR ONSITE GENERATION) EQUI EQUI 24
KO=6 EQUI
GASG=0.0 EQUI
GASC=0.0 EQUI
GASH=0.0 EQUI
OILC=0.0 EQUI
OILH=0.0 EQUI
STMC=0.0 EQUI
STMH=0.0 EQUI
ELEC=0.0 EQUI
FUEL=0.0 EQUI
QHBC=QHBC/12000.0 EQUI
HLSTM=180.07 EQUI
AH=1068.0-0.485*PESTM EQUI
BH=0.432+0.000953*PESTM EQUI
CH=0.000036-0.000000496*PESTM EQUI
HESTM=AH+BH*TESTM+CH*TESTM*TESTM EQUI
IF (M4) 100,100,590 EQUI
100 IF (QHBC) 110,450,120 EQUI
110 WRITE (KO,10) EQUI
GO TO 890 EQUI
120 IF (1.0-QHBC/(0.9*NUMC*SZC)) 125,130,130 EQUI
125 IF (NUMAC) 130,130,300 EQUI
130 DO 140 NC=1,NUMC EQUI
FFL=QHBC/(NC*SZC) EQUI
IF (FFL=0.9) 160,160,140 EQUI
140 CONTINUE EQUI
IF (FFL=1.1) 180,180,150 EQUI
150 WRITE (KO,12) EQUI
GO TO 890 EQUI
160 IF (FFL=FFLMN) 170,180,180 EQUI
170 QHBC=0.0 EQUI
GO TO 450 EQUI
180 NCHON=NC EQUI
GO TO ( 190, 200, 210, 220, 230),M1 EQUI
190 CALL RECIP (QHBC,TECON,TLCHL,FFL,ELEC) EQUI
GO TO 450 EQUI
200 CALL CENT (QHBC,TECON,TLCHL,FFL,ELEC) EQUI

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GO TO 450	EQUI 67
210 CALL CENT (QHBC,TECON,TLCHL,FFL,ELEC)	EQUI 68
ELEC=ELEC/(1.0+0.02133*ELEC/QHBC)	EQUI 69
GO TO 450	EQUI 70
220 CALL ABSOR (QHBC,TECON,TLCHL,10.0,FFL,PESTM,STMC,H1,H2)	EQUI 71
QHMC=STMC*(H1-H2)	EQUI 72
GO TO 240 <i>CENT?</i>	EQUI 73
230 CALL RECIP (QHBC,TECON,TLCHL,FFL,POWER)	EQUI 74
POWER=0.925*POWER/(1.0+0.02133*POWER/QHBC)	EQUI 75
CALL STTUR (PPS,TPS,RPM,SZT,NCHON,RPM,POWER,STMC,H1,H2)	EQUI 76
QHMC=STMC*(H1-H2)	EQUI 77
240 GO TO (250, 260, 290, 270, 290),M2	EQUI 78
250 GASC=QHMC/80000.0	EQUI 79
GO TO 280	EQUI 80
260 OILC=QHMC/(0.8*DHO*HVHO)	EQUI 81
GO TO 280	EQUI 82
270 ELEC=QHMC/3413.0	EQUI 83
280 STMC=0.0	EQUI 84
290 GO TO 450	EQUI 85
300 DO 310 NAC=1,NUMAC	EQUI 86
FFL=QHBC/(NUMC*SZC+NAC*SZAC)	EQUI 87
IF (FFL-0.9) 330,330,310	EQUI 88
310 CONTINUE	EQUI 89
IF (FFL-1.1) 330,330,320	EQUI 90
320 FFL=1.1	EQUI 91
330 NACon=NAC	EQUI 92
QCC=NUMC*SZC*FFL	EQUI 93
QCAC=NACon*SZAC*FFL	EQUI 94
GO TO (340, 350, 360, 370, 370),M1	EQUI 95
340 CALL RECIP (QCC,TECON,TLCHL,FFL,PW1)	EQUI 96
GO TO 380	EQUI 97
350 CALL CENT (QCC,TECON,TLCHL,FFL,PW1)	EQUI 98
GO TO 380	EQUI 99
360 CALL CENT (QCC,TECON,TLCHL,FFL,PW1)	EQUI 100
PW1=PW1/(1.0+0.02133*PW1/QCC)	EQUI 101
GO TO 380	EQUI 102
370 WRITE (K0,15)	EQUI 103
GO TO 890	EQUI 104
380 IF (M5) 390,390,400	EQUI 105
390 PW2=0.0	EQUI 106
GO TO 440	EQUI 107
400 GO TO (410, 420, 430),M6	EQUI 108
410 CALL RECIP (QCAC,TECON,TLCHL,FFL,PW2)	EQUI 109
GO TO 440	EQUI 110
420 CALL CENT (QCAC,TECON,TLCHL,FFL,PW2)	EQUI 111
GO TO 440	EQUI 112
430 CALL CENT (QCAC,TECON,TLCHL,FFL,PW2)	EQUI 113
PW2=PW2/(1.0+0.02133*PW2/QCAC)	EQUI 114
440 ELEC=PW1+PW2	EQUI 115
450 IF (QHBH) 470,520,460	EQUI 116
460 WRITE (K0,11)	EQUI 117
GO TO 890	EQUI 118
470 GO TO (480, 490, 500, 510),M3	EQUI 119
480 GASH=-QHBH/80000.0	EQUI 120
GO TO 530	EQUI 121
490 OILH=-QHBH/(0.8*DHO*HVHO)	EQUI 122
GO TO 530	EQUI 123

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500 STMH=QHBH/(HESTM-HLSTM) EQUI 124
510 GO TO 530 EQUI 125
510 ELEH=ELEH-QHBH/3413.0 EQUI 126
520 IF (QHBRH) 530,550,460 EQUI 127
530 KRH=KREHT+1 EQUI 128
530 GO TO ( 550, 540, 560, 570, 580 ),KRH EQUI 129
540 GASH=GASH-QHBRH/80000.0 EQUI 130
550 RETURN EQUI 131
560 OILH=OILH-QHBRH/(0.8*DHO*HVHO) EQUI 132
560 RETURN EQUI 133
570 STMH=STMH-QHBRH/(HESTM-HLSTM) EQUI 134
570 RETURN EQUI 135
580 ELEH=ELEH-QHBRH/3413.0 EQUI 136
580 RETURN EQUI 137
590 DO 600 NE=1,M4 EQUI 138
591 FFLE=ELDEM/(NE*SZE) EQUI 139
592 IF (FFLE=1.0) 620,620,600 EQUI 140
600 CONTINUE EQUI 141
601 IF (FFLE=1.1) 620,620,610 EQUI 142
610 WRITE (KO,13) EQUI 143
610 GO TO 890 EQUI 144
620 NENON=NE EQUI 145
620 GO TO ( 630, 640 ),M5 EQUI 146
630 QEN=(59.2+21.2*FFLE)*ELDEM EQUI 147
630 FUEL=(8900.0+2000.0/FFLE)/(DDF*HVDF) EQUI 148
630 GO TO 650 EQUI 149
640 QEN=(60.51+16.64/FFLE+14.0*FFLE)*ELDEM EQUI 150
640 GASG=0.085+0.0289/FFLE EQUI 151
650 IF (QHBC) 660,670,680 EQUI 152
660 WRITE (KO,10) EQUI 153
660 GO TO 890 EQUI 154
670 QHMC=0.0 EQUI 155
670 GO TO 770 EQUI 156
680 DO 690 NC=1,NUMC EQUI 157
680 FFL=QHBC/(NC*SZC) EQUI 158
680 IF (FFL=0.9) 710,710,690 EQUI 159
690 CONTINUE EQUI 160
690 IF (FFL=1.1) 730,730,700 EQUI 161
700 WRITE (KO,12) EQUI 162
700 GO TO 890 EQUI 163
710 IF (FFL=FFLMN) 720,730,730 EQUI 164
720 QHBC=0.0 EQUI 165
720 GO TO 770 EQUI 166
730 NCHON=NC EQUI 167
730 GO TO ( 740, 740, 740, 750, 760 ),M1 EQUI 168
740 WRITE (KO,14) EQUI 169
740 GO TO 890 EQUI 170
750 CALL ABSOR (QHBC,TECON,TLCHL,10.0,FFL,PESTM,STMC,H1+H2) EQUI 171
750 QHMC=STMC*(H1-H2) EQUI 172
750 GO TO 770 EQUI 173
760 CALL CENT (QHBC,TECON,TLCHL,FFL,POWER) EQUI 174
760 POWER=0.925*POWER/(1.0+0.0213*POWER/QHBC) EQUI 175
760 CALL STTUR (PPS,TPS,RPM,SZT,NCHON,RPM,POWER,STMC,H1+H2) EQUI 176
760 QHMC=STMC*(H1-H2) EQUI 177
770 IF (QHBH) 780,780,460 EQUI 178
780 GO TO ( 790, 820, 880, 880 ),M3 EQUI 179
790 GASH=(QHMC-QHBH-QEN)/80000.0 EQUI 180

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IF (GASH) 800,800,810
800 GASH=0.0
810 QHBH=-GASH*80000.0
    STMC=0.0
    GO TO 850
820 OILH=(QHMC-QHBRH-QEN)/(0.8*DHO*HVHO)
    IF (OILH) 830,830,840
830 OILH=0.0
840 QHBH=-OILH*0.8*DHO*HVHO
    STMC=0.0
850 KRH=KREHT+1
    GO TO ( 870, 860, 880, 880, 880),KRH
860 GASH=GASH-QHBRH/80000.0
    QHBH=-GASH*80000.0
870 RETURN
880 WRITE (KO,16 )
890 CONTINUE
END
SUBROUTINE RECIP (QHBC,TECON,TLCHL,FFL,POWER)
C **** SYSTEM SIMULATION AND ENERGY ANALYSIS FOR
C     HERMETIC RECIPROCATING WATER CHILLER
C ****
C
C DELTA=FFL*10.0
C DMULT=0.868+0.0133*DELTA
C POPTN=(0.3371+0.01223*TECON-0.009749*TLCHL)*DMULT
C POWER=QHBC*POPTN
C RETURN
C END
SUBROUTINE CENT (QHBC,TECON,TLCHL,FFL,POWER)
C **** SYSTEM SIMULATION AND ENERGY ANALYSIS FOR
C     HERMETIC CENTRIFUGAL WATER CHILLER
C ****
C
C TLCON=TECON+10.0
C POPTN=0.049*ALOG(TLCON/TLCHL)*TLCHL**0.8
C ERROR=2.4531-0.041229*TLCON-0.0273842*TLCHL+0.000118191*TLCON*TLCOCENT
C 1N+0.00047537*TLCHL*TLCON-0.000197535*TLCHL*TLCHL
C POPTN=POPTN-ERROR
C POWER=(0.1641/FFL+0.2543+0.73965*FFL-0.15835*FFL*FFL)*POPTN*QHBC
C RETURN
C END
SUBROUTINE ABSOR (QHBC,TECON,TLCHL,TDROP,FFL,PESTM,STEAM,H1,H2)
C **** SYSTEM SIMULATION AND ENERGY ANALYSIS FOR
C     STEAM ABSORPTION WATER CHILLER
C ****
C
C RATE=-2.8246+0.06575*TECON-0.06011*PESTM+0.06433*TLCHL+0.0011862*
C 1TECON*PESTM+0.00023232*TECON*TLCHL+0.00025421*PESTM*TLCHL-
C 20.0006438*TECON*TECON-0.0015887*PESTM*PESTM-0.0006199*TLCHL*TLCHL
C IF(RAT<1.15) 110,110,100

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100 RAT=1.18 ABSOR 12
110 CMULT=0.9190+0.010333*TDROP-0.0002222*TDROP*TDROP ABSOR 13
      RAT=0.91*CMULT*RAT ABSOR 14
      SRATE=22.169+0.592*PESTM-0.0196*PESTM*PESTM-6.9384*RAT ABSOR 15
      STEAM=SRATE*(0.0136/FFL+0.7928+0.11843*FFL+0.0752*FFL*FFL)*QHBC ABSOR 16
      TSAT=1.0/(0.0017887-0.00011429*ALOG(PESTM))-460.0 ABSOR 17
      H1=0.35333*TSAT+1075.66667 ABSOR 18
      H2=TSAT-32.0 ABSOR 19
      RETURN ABSOR 20
      END ABSOR 21
      SUBROUTINE STTUR (PPS,TPS,RPM,SZT,NSTON,SPEED,POWER,STEAM,H1,H2) STTUR 1
C ***** SYSTEM SIMULATION AND ENERGY ANALYSIS FOR STTUR 2
C STEAM TURBINE STTUR 3
C ***** STTUR 4
C ***** STTUR 5
C ***** STTUR 6
C ***** STTUR 7
C ***** STTUR 8
C ***** STTUR 9
C ***** STTUR 10
C ***** STTUR 11
C ***** STTUR 12
C ***** STTUR 13
C ***** STTUR 14
C ***** STTUR 15
C ***** STTUR 16
C ***** STTUR 17
C ***** STTUR 18
C ***** STTUR 19
C ***** STTUR 20
C ***** STTUR 21
C ***** STTUR 22
C ***** STTUR 23
C ***** STTUR 24
C ***** STTUR 25
C ***** STTUR 26
C ***** STTUR 27
C ***** STTUR 28
C ***** STTUR 29
C ***** STTUR 30
C ***** STTUR 31
C ***** STTUR 32
C ***** STTUR 33
C ***** STTUR 34
C ***** STTUR 35
C ***** STTUR 36
C ***** STTUR 37
C ***** STTUR 38
C ***** STTUR 39
C ***** STTUR 40
C ***** STTUR 41
C ***** STTUR 42
C ***** STTUR 43
C ***** STTUR 44
C ***** STTUR 45
C ***** STTUR 46
C ***** STTUR 47
      POWER=POWER*1.341/NSTON
      AH=1068.0-0.485*PPS
      BH=0.432+0.000953*PPS
      CH=0.000036-0.00000496*PPS
      H1=AH+BH*TPS+CH*TPS*TPS
      TSAT1=1.0/(0.0017887-0.00011429*ALOG(PPS))-460.0
      S=2.385-0.004398*TSAT1+0.000008146*TSAT1*TSAT1-0.0000000626*TSAT1*TSAT1
      1*TSAT1*TSAT1+2.0*CH*(TPS-TSAT1)+(BH-920.0*CH)*ALOG((TPS+460.0)/(TSAT1*TSAT1+460.0))
      T2=1.0/(0.0017887-0.00011429*ALOG(2.0))-460.0
      H2=1.0045*T2-32.448+(T2+460.0)*(S-1.0045*ALOG(T2+460.0)+6.2264)
      TSR=3413.0/(H1-H2)
      SIZE=SZT
      IF (SZT=910.0) 100,110,110
100 SZT=910.0 STTUR 22
110 B0=84.0-0.017*SZT+1.5625*((SZT/1000.0)**2.0) STTUR 23
      B1=-19.7+0.001025*SZT STTUR 24
      B2=1.4 STTUR 25
      B=B0+B1*RPM/1000.0+B2*((RPM/1000.0)**2.0) STTUR 26
      S0=3.88-0.0011865*SZT+0.1173*((SZT/1000.0)**2.0) STTUR 27
      S1=-1.1+0.000533*SZT-0.0581*((SZT/1000.0)**2.0) STTUR 28
      S2=0.116-0.000057*SZT+0.00709*((SZT/1000.0)**2.0) STTUR 29
      SLOPE=S0+S1*RPM/1000.0+S2*((RPM/1000.0)**2.0) STTUR 30
      BSR=SLOPE*TSR+B STTUR 31
      SZT=SIZE STTUR 32
      HPLSS=0.0334*((RPM/1000.0)**2.42)*((SZT/1000.0)**1.47) STTUR 33
      SH=TPS-TSAT1 STTUR 34
      SCEN=1.00017+.0003658*SH-.0000002907*SH*SH STTUR 35
      IF (TSR=12.0) 120,120,130 STTUR 36
120 SC=SCEN STTUR 37
      GO TO 480 STTUR 38
130 IF (TSR=15.0) 140,140,170 STTUR 39
140 IF (SH=260.0) 120,120,150 STTUR 40
150 SCHI=1.04575+.000115*SH STTUR 41
      W=(15.0-TSR)/3.0 STTUR 42
160 SC=(SCEN-SCHI)*W+SCHI STTUR 43
      GO TO 480 STTUR 44
170 FITSR=TSR/5.-1.99999 STTUR 45
      ITSR=FITSR STTUR 46
      W=1.0-FITSR+ITSR STTUR 47

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GO TO (180, 220, 250, 280, 310, 340, 370, 400, 430, 460),ITSR
 180 IF(SH-220.) 120,120,190 STTUR 48
 190 SCHI=.9206+.0012037*SH-.0000024792*SH*SH STTUR 49
 190 IF(SH-260.) 160,160,200 STTUR 50
 200 SCLO=1.04575+.000115*SH STTUR 51
 210 SC=(SCLO-SCHI)*W+SCHI STTUR 52
 GO TO 480 STTUR 53
 220 IF(SH-150.) 120,120,230 STTUR 54
 230 SCHI=1.0045+.0004615*SH-.0000010996*SH*SH STTUR 55
 230 IF(SH-220.) 160,160,240 STTUR 56
 240 SCLO=.9206+.0012037*SH-.0000024792*SH*SH STTUR 57
 GO TO 210 STTUR 58
 250 IF(SH-120.) 120,120,260 STTUR 59
 260 SCHI=1.0236+.0002345*SH-.0000007305*SH*SH STTUR 60
 260 IF(SH-150.) 160,160,270 STTUR 61
 270 SCLO=1.0045+.0004615*SH-.0000010996*SH*SH STTUR 62
 GO TO 210 STTUR 63
 280 IF(SH-110.) 120,120,290 STTUR 64
 290 SCHI=1.0339+.00009044*SH-.0000005169*SH*SH STTUR 65
 290 IF(SH-120.) 160,160,300 STTUR 66
 300 SCLO=1.0236+.0002345*SH-.0000007305*SH*SH STTUR 67
 GO TO 210 STTUR 68
 310 IF(SH-90.) 120,120,320 STTUR 69
 320 SCHI=1.0320+.00005287*SH-.0000005085*SH*SH STTUR 70
 320 IF(SH-110.) 160,160,330 STTUR 71
 330 SCLO=1.0339+.00009044*SH-.0000005169*SH*SH STTUR 72
 GO TO 210 STTUR 73
 340 IF(SH-70.) 120,120,350 STTUR 74
 350 SCHI=1.0263+.00006819*SH-.0000007357*SH*SH STTUR 75
 350 IF(SH-90.) 160,160,360 STTUR 76
 360 SCLO=1.0320+.00005287*SH-.0000005085*SH*SH STTUR 77
 GO TO 210 STTUR 78
 370 IF(SH-60.) 120,120,380 STTUR 79
 380 SCHI=1.0268+.00002149*SH-.0000009673*SH*SH STTUR 80
 380 IF(SH-70.) 160,160,390 STTUR 81
 390 ICLO=1.0263+.00006819*SH-.0000007357*SH*SH STTUR 82
 GO TO 210 STTUR 83
 400 IF(SH-40.) 120,120,410 STTUR 84
 410 SCHI=1.0204+.00001357*SH-.0000001258*SH*SH STTUR 85
 410 IF(SH-60.) 160,160,420 STTUR 86
 420 SCLO=1.0268+.00002149*SH-.0000009673*SH*SH STTUR 87
 GO TO 210 STTUR 88
 430 IF(SH-20.) 120,120,440 STTUR 89
 440 SCHI=1.0112+.000004085*SH-.000002011*SH*SH STTUR 90
 440 IF(SH-40.) 160,160,450 STTUR 91
 450 SCLO=1.0204+.00001357*SH-.0000001258*SH*SH STTUR 92
 GO TO 210 STTUR 93
 460 SCHI=1.00215+.0001519*SH-.000004035*SH*SH STTUR 94
 460 IF(SH-20.) 160,160,470 STTUR 95
 470 SCLO=1.0112+.000004085*SH-.000002011*SH*SH STTUR 96
 GO TO 210 STTUR 97
 480 IF(SC-SCEN) 500,500,490 STTUR 98
 490 SC=SCEN STTUR 99
 500 CONTINUE STTUR 100
 FLSR=(BSR/SC)*((SZT+HPLSS)/SZT) STTUR 101
 PLR=0.09163+.0404*(RPM/SPEED)-0.00706*((RPM/SPEED)**2.0)
 1+0.0003167*((RPM/SPEED)**3.0) STTUR 102
 STTUR 103
 STTUR 104

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PLM=5.219-14.627*(RPM/SPEED)+16.62*((RPM/SPEED)**2.0) STTUR105
1-6.2524*((RPM/SPEED)**3.0) STTUR106
STEAM=FLSR*NSTON*SZT STTUR107
STEAM=STEAM*(PLB+PLM*POWER/SZT) STTUR108
H2=69.10 STTUR109
RETURN STTUR110
END STTUR111
SUBROUTINE PSYCH (T,W,PATM,H,DEN)
C PSYCH 1
C *****PSYCH***** PSYCH 2
C PSYCHROMETRIC PROGRAM PSYCH 3
C *****PSYCH***** PSYCH 4
C *****PSYCH***** PSYCH 5
C *****PSYCH***** PSYCH 6
C H=0.24*T+W*(1061.0+0.444*T) PSYCH 7
C V=0.754*(T+459.688)*(1.0+7000.0*W/4360.0)/PATM PSYCH 8
C DEN=1.0/V PSYCH 9
C RETURN PSYCH 10
C END PSYCH 11
SUBROUTINE SNOWM (SAREA,PATM,WOA,VWIND,SNOW,TOA,QTOT) SNOWM 1
C SNOWM 2
C *****SNOWM***** SNOWM 3
C SYSTEM SIMULATION AND ENERGY ANALYSIS FOR SNOWM 4
C SNOW MELTING SYSTEM SNOWM 5
C *****SNOWM***** SNOWM 6
C *****SNOWM***** SNOWM 7
C VP=(WOA/0.622*PATM)/(1.0+WOA/0.622) SNOWM 8
100 IF (VP=0.185) 120,110,110 SNOWM 9
110 VP=0.185 SNOWM 10
120 QSEN=2.6*SNOW*(33.0-TOA) SNOWM 11
QLAT=746.0*SNOW SNOWM 12
QEVAR=1075.0*(0.0201*VWIND+0.055)*(0.185-VP) SNOWM 13
QCONV=11.4*(0.0201*VWIND+0.055)*(33.0-TOA) SNOWM 14
QTOT=(SAREA*(QSEN+QLAT+0.5*QEVAR+0.5*QCONV))/0.7 SNOWM 15
IF (QTOT) 130,140,140 SNOWM 16
130 QTOT=0.0 SNOWM 17
140 RETURN SNOWM 18
END SNOWM 19
SUBROUTINE ENGYC (FAC,CITY,PROJ,DATE,ENGR,ISYS,ENGY) ENGYC 1
DIMENSION FAC(35),CITY(35),PROJ(15),DATE(15),ENGR(35) ENGYC 2
DIMENSION ENGY(12,2,17),AMTH(5,13) ENGYC 3
DIMENSION SD(12),SC(12),S(12) ENGYC 4
DIMENSION SSD(12),SSC(12),SS(12) ENGYC 5
DATA AMTH/1HJ,1HA,1HN,1H.,1H,1HF,1HE,1HB,1H.,1H,1HM,1HA,1HR,1HC,ENGYC 6
11HH,1HA,1HP,1HR,1HI,1HL,1H,1HM,1HA,1HY,1H,1HJ,1HU,1HN,1HE,1H,1HEN/ENGYC 7
2J,1HU,1HL,1HY,1H,1HA,1HU,1HG,1H.,1H,1HS,1HE,1HP,1HT,1H.,1HO,ENGYC 8
31HC,1HT,1H.,1H,1HN,1HO,1HV,1H.,1H,1HD,1HE,1HC,1H.,1H,1HT,1HO,1HEN/ENGYC 9
4T,1HA,1HL/ENGYC 10
10 FORMAT(1H1,2X,22HPOST OFFICE DEPARTMENT,1X,1HI,17H FACILITY/ADDRESE/ENGYC 11
1S,20X,1HI,13H DATE/PROJECT,4X,1HI,31H ENGINEER/SYSTEM IDENTIFICATION/ENGYC 12
20N,/4X,20HEQUIPMENT AND ENERGY,2X,1HI,1X,35A1,1X,1HI,1X,15A1,1X,ENGYC 13
31HI,1X,35A1,/,4X,20HCONSUMPTION ANALYSIS,2X,1HI,1X,35A1,1X,1HI,1X,ENGYC 14
415A1,1X,1HI,1X,11H SYSTEM NO. ,1I0,/,1X,25(1H-),1HI,37(1H-),1HI,ENGYC 15
517(1H-),1HI,38(1H-)) ENGYC 16
11 FORMAT(1H,61X,18HENERGY CONSUMPTION) ENGYC 17
12 FORMAT(1H,23X,6(7X,5A1,2X),7X,5A1,/,1X,120(1H-)) ENGYC 18
13 FORMAT(1H+,21X,7F14.1) ENGYC 19
14 FORMAT(1H0,16HMONTHLY BTU/1000) ENGYC 20

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15 FORMAT(1H ,1X,10HHEAT (MHB),/, 3X,11HMIN. DEMAND) ENGYC 21
16 FORMAT (1H ,2X,11HMAX. DEMAND) ENGYC 22
17 FORMAT (1H ,2X,11HCONSUMPTION) ENGYC 23
18 FORMAT (1H ,1X,10HCOOL (MCB),/, 3X,11HMIN. DEMAND) ENGYC 24
19 FORMAT(1H0,11HELECTRICITY,/,2X,17HLIGHTS AND MOTORS,/,3X,8HINTERNAL ENGYC 25
   1L)
20 FORMAT (1H ,3X,10HDEMAND(KW),3X) ENGYC 26
21 FORMAT (1H ,3X,10HCONS.(KWH),3X) ENGYC 27
22 FORMAT(1H ,2X,8HEXTERNAL) ENGYC 28
23 FORMAT(1H ,1X,4HHEAT) ENGYC 29
24 FORMAT (1H ,2X,1CHDEMAND(KW),4X) ENGYC 30
25 FORMAT (1H ,2X,10HCONS.(KWH),4X) ENGYC 31
26 FORMAT(1H ,1X,4HCOOL) ENGYC 32
27 FORMAT(1H ,1X,5HTOTAL) ENGYC 33
28 FORMAT(1H0,3HGAS,/,2X,4HHEAT) ENGYC 34
29 FORMAT (1H ,2X,14HDEMAND(THERMS)) ENGYC 35
30 FORMAT (1H ,2X,13HCONS.(THERMS),1X) ENGYC 36
31 FORMAT(1H ,1X,4HCOOL) ENGYC 37
32 FORMAT(1H ,1X,10HGENERATION) ENGYC 38
33 FORMAT(1H ,1X,5HTOTAL) ENGYC 39
34 FORMAT(1H0,5HSTEAM,/,2X,4HHEAT) ENGYC 40
35 FORMAT (1H ,2X,13HDEMAND(K LBS),1X) ENGYC 41
36 FORMAT (1H ,2X,12HCONS.(K LBS),2X) ENGYC 42
37 FORMAT(1H0,3HOIL,/,2X,4HHEAT) ENGYC 43
38 FORMAT (1H ,2X,13HCONS.(K GALS),1X) ENGYC 44
39 FORMAT(1H0,11HDIESEL FUEL) ENGYC 45
40 FORMAT(1H0,10HCITY WATER) ENGYC 46
41 FORMAT (1H ,1X,15HDEMAND (K GALS)) ENGYC 47
42 FORMAT (1H ,1X,14HCONS. (K GALS))
DO 100 I=1,12
SD(I)=0.0
SC(I)=0.0
100 S(I)=0.0
KO=6
DO 820           JJ=1,2
DO 820           III=1,2
110 WRITE (KO,10) (FAC(I),I=1,35),DATE,(ENGR(I),I=1,35),CITY,PROJ,
1ISYS
WRITE(KO,11)
GO TO ( 120, 130),III
120 WRITE(KO,12) ((AMTH(J,I),J=1,5),I=1,6),(AMTH(5,I),I=1,2),
  1 (AMTH(5,I),I=5,7)
GO TO 140
130 WRITE(KO,12) ((AMTH(J,I),J=1,5),I=7,12),(AMTH(J,13),J=1,5)
140 GO TO ( 150, 560),JJ
150 WRITE(KO,14)
WRITE(KO,15)
GO TO ( 160, 180),III
160 SS1=0.0
SS2=0.0
SS3=0.0
SS4=0.0
DO 170           I=1,12
S(I)=S(I)+ENGY(I,1,1)
SS1=SS1+ENGY(I,1,15)
SS2=SS2+ENGY(I,2,15)
SS3=SS3+ENGY(I,1,16)
ENGYC 50
ENGYC 51
ENGYC 52
ENGYC 53
ENGYC 54
ENGYC 55
ENGYC 56
ENGYC 57
ENGYC 58
ENGYC 59
ENGYC 60
ENGYC 61
ENGYC 62
ENGYC 63
ENGYC 64
ENGYC 65
ENGYC 66
ENGYC 67
ENGYC 68
ENGYC 69
ENGYC 70
ENGYC 71
ENGYC 72
ENGYC 73
ENGYC 74
ENGYC 75
ENGYC 76
ENGYC 77

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SS4=SS4+ENGY(I,2,16)          ENGYC 78
170 S(2)=S(2)+ENGY(I,1,2)      ENGYC 79
    WRITE(KO,13) (ENGY(I,1,15),I=1,6)  ENGYC 80
    WRITE(KO,16)                   ENGYC 81
    WRITE(KO,13) (ENGY(I,1,1),I=1,6)  ENGYC 82
    WRITE(KO,17)                   ENGYC 83
    WRITE(KO,13) (ENGY(I,2,15),I=1,6)  ENGYC 84
    WRITE(KO,18)                   ENGYC 85
    WRITE(KO,13) (ENGY(I,1,16),I=1,6)  ENGYC 86
    WRITE(KO,16)                   ENGYC 87
    WRITE(KO,13) (ENGY(I,1,2),I=1,6)  ENGYC 88
    WRITE(KO,17)                   ENGYC 89
    WRITE(KO,13) (ENGY(I,2,16),I=1,6)  ENGYC 90
    GO TO 190                   ENGYC 91
180 WRITE(KO,13) (ENGY(I,1,15),I=7,12)  ENGYC 92
    WRITE(KO,16)                   ENGYC 93
    WRITE(KO,13) (ENGY(I,1,1),I=7,12)  ENGYC 94
    WRITE(KO,17)                   ENGYC 95
    WRITE(KO,13) (ENGY(I,2,15),I=7,12)  ENGYC 96
    WRITE(KO,18)                   ENGYC 97
    WRITE(KO,13) (ENGY(I,1,16), I=7,12)  ENGYC 98
    WRITE(KO,16)                   ENGYC 99
    WRITE(KO,13) (ENGY(I,1,2), I=7,12)  ENGYC100
    WRITE(KO,17)                   ENGYC101
    WRITE(KO,13) (ENGY(I,2,16), I=7,12)  ENGYC102
    GO TO 330                   ENGYC103
190 DO 240           I=1,12          ENGYC104
    DO 240           K=3,6          ENGYC105
    IF(K=5) 200,210,240          ENGYC106
200 SD(I)=SD(I)+ENGY(I,1,K)      ENGYC107
    GO TO 240                   ENGYC108
210 IF(ENGY(I,1,5)-ENGY(I,1,6)) 220,220,230  ENGYC109
220 SD(I)=SD(I)+ENGY(I,1,6)      ENGYC110
    GO TO 240                   ENGYC111
230 SD(I)=SD(I)+ENGY(I,1,5)      ENGYC112
240 SC(I)=SC(I)+ENGY(I,2,K)      ENGYC113
    K=2
    DO 250           II=3,9,2        ENGYC114
    K=K+1
    DO 250           I=1,12          ENGYC115
    S(II)=S(II)+ENGY(I,1,K)      ENGYC116
250 S(II+1)=S(II+1)+ENGY(I,2,K)  ENGYC117
    DO 260           I=1,12          ENGYC118
    S(11)=S(11)+SD(I)          ENGYC119
260 S(12)=S(12)+SC(I)          ENGYC120
    WRITE(KO,19)
    K=3
270 WRITE(KO,20)
    WRITE(KO,13) (ENGY(I,1,K),I=1,6)  ENGYC121
    WRITE(KO,21)
    WRITE(KO,13) (ENGY(I,2,K),I=1,6)  ENGYC122
    IF(K=3) 280,280,290          ENGYC123
280 K=4
    WRITE(KO,22)
    GO TO 270                   ENGYC124
290 WRITE(KO,23)
    K=5

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```

300 WRITE(K0,24) ENGC135
  WRITE(K0,13)(ENGY(I,1,K),I=1,6) ENGC136
  WRITE(K0,25) ENGC137
  WRITE(K0,13)(ENGY(I,2,K),I=1,6) ENGC138
  IF(K-5) 310,310,320 ENGC139
310 K=6 ENGC140
  WRITE(K0,26) ENGC141
  GO TO 300 ENGC142
320 WRITE(K0,27) ENGC143
  WRITE(K0,24) ENGC144
  WRITE(K0,13)(SD(I),I=1,6) ENGC145
  WRITE(K0,25) ENGC146
  WRITE(K0,13)(SC(I),I=1,6) ENGC147
  GO TO 400 ENGC148
330 WRITE(K0,19) ENGC149
  K=3 ENGC150
  KK=3 ENGC151
340 WRITE(K0,20) ENGC152
  WRITE(K0,13)(ENGY(I,1,K), I=7,12) ENGC153
  WRITE(K0,21) ENGC154
  WRITE(K0,13)(ENGY(I,2,K), I=7,12),S(KK+1) ENGC155
  IF(K-3) 350,350,360 ENGC156
350 K=4 ENGC157
  KK=KK+2 ENGC158
  WRITE(K0,22) ENGC159
  GO TO 340 ENGC160
360 WRITE(K0,23) ENGC161
  K=5 ENGC162
  KK=7 ENGC163
370 WRITE(K0,24) ENGC164
  WRITE(K0,13)(ENGY(I,1,K), I= 7,12) ENGC165
  WRITE(K0,25) ENGC166
  WRITE(K0,13)(ENGY(I,2,K), I=7,12),S(KK+1) ENGC167
  IF(K-5) 380,380,390 ENGC168
380 K=6 ENGC169
  KK=9 ENGC170
  WRITE(K0,26) ENGC171
  GO TO 370 ENGC172
390 WRITE(K0,27) ENGC173
  WRITE(K0,24) ENGC174
  WRITE(K0,13)(SD(I), I=7,12) ENGC175
  WRITE(K0,25) ENGC176
  WRITE(K0,13)(SC(I), I=7,12),S(12) ENGC177
  GO TO 500 ENGC178
400 DO 410      I=1,12 ENGC179
  SS(I)=0.0 ENGC180
  SSD(I)=0.0 ENGC181
410 SSC(I)=0.0 ENGC182
  DO 420      I=1,12 ENGC183
  DO 420      K=7,9 ENGC184
  SSD(I)=SSD(I)+ENGY(I,1,K) ENGC185
420 SSC(I)=SSC(I)+ENGY(I,2,K) ENGC186
  K=6 ENGC187
  DO 430      II=1,5,2 ENGC188
  K=K+1 ENGC189
  DO 430      I=1,12 ENGC190
  SS(II)=SS(II)+ENGY(I,1,K) ENGC191

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```

430 SS(II+1)=SS(II+1)+ENGY(I,2,K)          ENGYC192
    DO 440           I=1,12                 ENGYC193
    SS(7)=SS(7)+SSD(I)                      ENGYC194
440 SS(8)=SS(8)+SSC(I)                      ENGYC195
    WRITE(KO,28)
    K=7
450 WRITE(KO,29)
    WRITE(KO,13)(ENGY(I,1,K),I=1,6)        ENGYC196
    WRITE(KO,30)
    WRITE(KO,13)(ENGY(I,2,K),I=1,6)        ENGYC197
    IF(K=8) 460,470,490
460 WRITE(KO,31)
    GO TO 480
470 WRITE(KO,32)
480 K=K+1
    GO TO 450
490 WRITE(KO,33)
    WRITE(KO,29)
    WRITE(KO,13)(SSD(I),I=1,6)            ENGYC198
    WRITE(KO,30)
    WRITE(KO,13)(SSC(I),I=1,6)            ENGYC199
    GO TO 820
500 WRITE(KO,28)
    K=7
    KK=1
510 WRITE(KO,29)
    WRITE(KO,13)(ENGY(I,1,K), I=7,12)      ENGYC200
    WRITE(KO,30)
    WRITE(KO,13)(ENGY(I,2,K), I=7,12),SS(KK+1) ENGYC201
    IF(K=8) 520,530,550
520 WRITE(KO,31)
    GO TO 540
530 WRITE(KO,32)
540 K=K+1
    KK=KK+2
    GO TO 510
550 WRITE(KO,33)
    WRITE(KO,29)
    WRITE(KO,13)(SSD(I), I=7,12)          ENGYC202
    WRITE(KO,30)
    WRITE(KO,13)(SSC(I), I=7,12),SS(8)    ENGYC203
    GO TO 820
560 GO TO ( 570, 660),III
570 DO 580           I=1,12               ENGYC204
    S(I)=0.0
    SD(I)=0.0
580 SC(I)=0.0
    DO 590           I=1,12               ENGYC205
    DO 590           K=10,11              ENGYC206
    SD(I)=SD(I)+ENGY(I,1,K)                ENGYC207
590 SC(I)=SC(I)+ENGY(I,2,K)                ENGYC208
    K=9
    DO 610           II=1,11,2             ENGYC209
    IF (II-5) 600,610,600
600 K=K+1
    DO 610           I=1,12               ENGYC210
    S(II)=S(II)+ENGY(I,1,K)                ENGYC211

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S(II+1)=S(II+1)+ENGY(I,2,K)          ENGYC249
610 CONTINUE                           ENGYC250
DO 620      I=1,12                   ENGYC251
S(5)=S(5)+SD(I)                      ENGYC252
620 S(6)=S(6)+SC(I)                  ENGYC253
WRITE(KO,34)                           ENGYC254
K=10                                  ENGYC255
630 WRITE(KO,35)                      ENGYC256
WRITE(KO,13) (ENGY(I,1,K),I=1,6)      ENGYC257
WRITE(KO,36)                           ENGYC258
WRITE(KO,13) (ENGY(I,2,K),I=1,6)      ENGYC259
IF(K-10) 650,640,650                 ENGYC260
640 K=11                               ENGYC261
WRITE(KO,31)                           ENGYC262
GO TO 630                            ENGYC263
650 WRITE(KO,33)                      ENGYC264
WRITE(KO,35)                           ENGYC265
WRITE(KO,13) (SD(I),I=1,6)            ENGYC266
WRITE(KO,36)                           ENGYC267
WRITE(KO,13) (SC(I),I=1,6)            ENGYC268
GO TO 700                            ENGYC269
660 WRITE(KO,34)                      ENGYC270
K=10                                 ENGYC271
KK=1                                ENGYC272
670 WRITE(KO,35)                      ENGYC273
WRITE(KO,13) (ENGY(I,1,K), I=7,12)    ENGYC274
WRITE(KO,36)                           ENGYC275
WRITE(KO,13) (ENGY(I,2,K), I=7,12),S(KK+1) , ENGYC276
IF(K-10) 690,680,690                 ENGYC277
680 K=11                               ENGYC278
KK=3                                ENGYC279
WRITE(KO,31)                           ENGYC280
GO TO 670                            ENGYC281
690 WRITE(KO,33)                      ENGYC282
WRITE(KO,35)                           ENGYC283
WRITE(KO,13) (SD(I), I=7,12)          ENGYC284
WRITE(KO,36)                           ENGYC285
WRITE(KO,13) (SC(I), I=7,12),S(6)     ENGYC286
GO TO 780                            ENGYC287
700 DO 710      I=1,12               ENGYC288
SSD(I)=0.0                            ENGYC289
710 SSC(I)=0.0                         ENGYC290
S1=0.0                               ENGYC291
DO 730      I=1,12
DO 720      K=12,13
720 SSC(I)=SSC(I)+ENGY(I,2,K)        ENGYC292
730 S1=S1+SSC(I)                     ENGYC293
WRITE(KO,37)                           ENGYC294
K=12                                  ENGYC295
740 WRITE(KO,38)                      ENGYC296
WRITE(KO,13) (ENGY(I,2,K),I=1,6)      ENGYC297
IF(K-12) 760,750,760                 ENGYC298
750 K=13                               ENGYC299
WRITE(KO,31)                           ENGYC300
GO TO 740                            ENGYC301
760 WRITE(KO,33)                      ENGYC302
WRITE(KO,38)                           ENGYC303
                                         ENGYC304
                                         ENGYC305

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```

      WRITE(KU,13) (SSC(I), I=1,6)          ENGYC306
      WRITE(KO,39)                          ENGYC307
      WRITE(KU,32)                          ENGYC308
      WRITE(KO,38)                          ENGYC309
      WRITE(KU,13) (ENGY(I,2,K+1),I=1,6)    ENGYC310
      S2=0.0                                ENGYC311
      S3=0.0                                ENGYC312
      DO 770      I=1,12                   ENGYC313
      S2=S2+ENGY(I,1,17)                    ENGYC314
770   S3=S3+ENGY(I,2,17)                  ENGYC315
      WRITE(KO,40)                          ENGYC316
      WRITE(KO,41)                          ENGYC317
      WRITE(KU,13) (ENGY(I,1,17), I=1,6)    ENGYC318
      WRITE(KU,42)                          ENGYC319
      WRITE(KU,13) (ENGY(I,2,17), I=1,6)    ENGYC320
      GO TO 820                           ENGYC321
780   WRITE(KU,37)
      K=12                                ENGYC322
      KK=8                                ENGYC323
      790  WRITE(KO,38)                    ENGYC324
      WRITE(KU,13) (ENGY(I,2,K), I=7,12),S(KK) ENGYC325
      IF(K=12) 810,800,810                ENGYC326
800   K=13                                ENGYC327
      KK=10                               ENGYC328
      WRITE(KU,31)                          ENGYC329
      GO TO 790                           ENGYC330
810   WRITE(KO,33)                          ENGYC331
      WRITE(KU,38)                          ENGYC332
      WRITE(KU,13) (SSC(I), I=7,12),S1     ENGYC333
      WRITE(KO,39)                          ENGYC334
      WRITE(KU,32)                          ENGYC335
      WRITE(KO,38)                          ENGYC336
      WRITE(KU,13) (ENGY(I,2,K+1), I=7,12),S(12) ENGYC337
      WRITE(KO,40)                          ENGYC338
      WRITE(KO,41)                          ENGYC339
      WRITE(KU,13) (ENGY(I,1,17), I=7,12)    ENGYC340
      WRITE(KU,42)                          ENGYC341
      WRITE(KU,13) (ENGY(I,2,17), I=7,12),S3  ENGYC342
      820  CONTINUE                         ENGYC343
      RETURN                             ENGYC344
      END                                ENGYC345
                                         ENGYC346

```

CONTROL CARDS
AS NECESSARY

DATA

CONTROL CARDS
AS NECESSARY

CONTROL CARDS
AS NECESSARY

```

C ***** EDIT 1
C ***** EDIT 2
C LOAD EDITING SUBPROGRAM EDIT 3
C ***** EDIT 4
C ***** EDIT 5
C ***** EDIT 6
C INTEGER FANZN(50,20,20) EDIT 7
C DIMENSION FAC(35),CITY(35),ENGR(35),PROJ(15),DATE(15) EDIT 8
C DIMENSION QS(200),QL(200),QLITE(200),SLPOW(200) EDIT 9
C DIMENSION QQS(50,20),QQL(50,20),QQLIT(50,20),SSPOW(50,20) EDIT 10
C DIMENSION VOLs(200),VOL(50,20) EDIT 11
C DIMENSION I'MAX(12),JMAX(50),ISPMX(50,20) EDIT 12
C DIMENSION ASPMX(50),AFANZ(50) EDIT 13
10 FORMAT (35A1) EDIT 14
11 FORMAT (15A1) EDIT 15
12 FORMAT (I4) EDIT 16
13 FORMAT (7I5) EDIT 17
14 FORMAT (F10.0) EDIT 18
15 FORMAT (I4,I1,2F5.0,F6.4,2F5.2,F5.3) EDIT 19
16 FORMAT (I3,2F10.0,F4.0,F9.2) EDIT 20
17 FORMAT (7F10.0) EDIT 21
    IT=1
    IC=5
    KO=2
    READ (IC,17) AKMAX,ASBMX
    KMAX=AK'MAX
    ISBMX=ASBMX
    DO 150 K=1,KMAX
    READ (IC,17) AJMAX,(ASPMX(J),J=1,6)
    JMAX(K)=AJMAX
    DO 150 J=1,6
    ISPMX(K,J)=ASPMX(J)
100 CONTINUE
    IF (JMAX(K)-6) 150,150,110
110 READ (IC,17) (ASPMX(J),J=7,13)
    DO 120 J=7,13
    ISPMX(K,J)=ASPMX(J)
120 CONTINUE
    IF (JMAX(K)-13) 150,150,130
130 READ (IC,17) (ASPMX(J),J=14,20)
    DO 140 J=14,20
    ISPMX(K,J)=ASPMX(J)
140 CONTINUE
150 CONTINUE
    DO 210 K=1,KMAX
    JMAXK=JMAX(K)
    DO 210 J=1,JMAXK
    READ (IC,17) (AFANZ(L),L=1,7)
    DO 160 L=1,7
    FANZN(K,J,L)=AFANZ(L)
160 CONTINUE
    IF (ISPMX(K,J)-7) 210,210,170
170 READ (IC,17) (AFANZ(L),L=8,15)
    DO 180 L=8,15
    EDIT 22
    EDIT 23
    EDIT 24
    EDIT 25
    EDIT 26
    EDIT 27
    EDIT 28
    EDIT 29
    EDIT 30
    EDIT 31
    EDIT 32
    EDIT 33
    EDIT 34
    EDIT 35
    EDIT 36
    EDIT 37
    EDIT 38
    EDIT 39
    EDIT 40
    EDIT 41
    EDIT 42
    EDIT 43
    EDIT 44
    EDIT 45
    EDIT 46
    EDIT 47
    EDIT 48
    EDIT 49
    EDIT 50
    EDIT 51
    EDIT 52
    EDIT 53

```

```

FANZN(K,J,L)=AFANZ(L)          EDIT 54
180 CONTINUE                      EDIT 55
    IF (ISPMX(K,J)-15) 210,210,190 EDIT 56
190 READ (IC,17) (AFANZ(L),L=16,20) EDIT 57
    DO 200 L=16,20
    FANZN(K,J,L)=AFANZ(L)          EDIT 58
200 CONTINUE                      EDIT 59
210 CONTINUE                      EDIT 60
    READ (IT,10) FAC               EDIT 61
    READ (IT,10) CITY              EDIT 62
    READ (IT,10) ENGR              EDIT 63
    READ (IT,11) PROJ              EDIT 64
    READ (IT,11) DATE              EDIT 65
    READ (IT,12) MSTRT             EDIT 66
    READ (IT,12) NDAYS             EDIT 67
    READ (IT,13) (IMAX(M),M=1,6)   EDIT 68
    READ (IT,13) (IMAX(M),M=7,12),ISBMX EDIT 69
    READ (IT,14) (VOLS(IS),IS=1,ISBMX) EDIT 70
    IJBMX=0                         EDIT 71
    DO 220 K=1,KMAX               EDIT 72
    JMAXK=JMAX(K)                  EDIT 73
    IJBMX=IJBMX+JMAXK             EDIT 74
    DO 220 J=1,JMAXK               EDIT 75
    A=0                            EDIT 76
    ISMX=ISPMX(K,J)                EDIT 77
    DO 220 L=1,ISMX                EDIT 78
    KJ=FANZN(K,J,L)                EDIT 79
    A=A+VOLS(KJ)                  EDIT 80
    VOL(K,J)=A                     EDIT 81
220 CONTINUE                      EDIT 82
    WRITE (KO,10) FAC               EDIT 83
    WRITE (KO,10) CITY              EDIT 84
    WRITE (KO,10) ENGR              EDIT 85
    WRITE (KO,11) PROJ              EDIT 86
    WRITE (KO,11) DATE              EDIT 87
    WRITE (KO,12) MSTRT             EDIT 88
    WRITE (KO,12) NDAYS             EDIT 89
    WRITE (KO,13) (IMAX(M),M=1,6)   EDIT 90
    WRITE (KO,13) (IMAX(M),M=7,12),IJBMX EDIT 91
    DO 230 K=1,KMAX               EDIT 92
    JMAXK=JMAX(K)                  EDIT 93
    DO 230 J=1,JMAXK               EDIT 94
    WRITE (KO,14) VOL(K,J)          EDIT 95
230 CONTINUE                      EDIT 96
    IHRMX=NDAYS*24                 EDIT 97
    DO 260 I=1,IHRMX               EDIT 98
    READ (IT,15) IHOUR,ISUN,TOA,VEL,WOA,PATM,HOA,DOA EDIT 99
    WRITE (KO,15) IHOUR,ISUN,TOA,VEL,WOA,PATM,HOA,DOA EDIT 100
    DO 240 IS=1,ISBMX               EDIT 101
    READ (IT,16) NS,QS(IS),QL(IS),QLITE(IS),SLPOW(IS) EDIT 102
240 CONTINUE                      EDIT 103
    DO 250 K=1,KMAX               EDIT 104
    JMAXK=JMAX(K)                  EDIT 105
    DO 250 J=1,JMAXK               EDIT 106
    C=0.0                          EDIT 107
    D=0.0                          EDIT 108
    E=0.0                          EDIT 109

```

```

F=0.0          EDIT 111
ISMX=ISPMX(K,J) EDIT 112
DO 250 L=1,ISMX EDIT 113
KJ=FANZN(K,J,L) EDIT 114
C=C+QS(KJ)      EDIT 115
QQS(K,J)=C      EDIT 116
D=D+QL(KJ)      EDIT 117
QQL(K,J)=D      EDIT 118
E=E+QLITE(KJ)   EDIT 119
QQLIT(K,J)=E    EDIT 120
F=F+SLPOW(KJ)   EDIT 121
SSPOW(K,J)=F    EDIT 122
250 CONTINUE    EDIT 123
NZ=0           EDIT 124
DO 250 K=1,KMAX EDIT 125
JMAXK=JMAX(K)   EDIT 126
DO 250 J=1,JMAXK EDIT 127
NZ=NZ+1         EDIT 128
WRITE (KO,16) NZ,QQS(K,J),QQL(K,J),QQLIT(K,J),SSPOW(K,J) EDIT 129
260 CONTINUE    EDIT 130
END FILE 2     EDIT 131
REWIND IT       EDIT 132
REWIND KO       EDIT 133
END             EDIT 134

```

CONTROL CARDS
AS NECESSARY

DATA

CONTROL CARDS
AS NECESSARY

CONTROL CARDS
AS NECESSARY

C		PUNC	1
C	*****	PUNC	2
C	PUNCH SUBPROGRAM FOR GENERATING CARD INPUT REQUIRED FOR PLOT SUBPR	PUNC	3
C	*****	PUNC	4
C	DIMENSION ALOAD(8)	PUNC	5
C	DIMENSION SPACE(50),ALENTH(50),DAYN(50),DAYI(50),AMNTH(50)	PUNC	6
C	DIMENSION YEAR(50)	PUNC	7
C	DIMENSION FAC(35),CITY(35),ENGR(35),PROJ(15),DATE(15)	PUNC	8
C	DIMENSION IMAX(12),VOL(200)	PUNC	9
C		PUNC	10
C		PUNC	11
C	NSPACE SPACE NUMBER FOR WHICH DATA IS DESIRED	PUNC	12
C	NDAY DAY OF WEEK ON WHICH DATA DESIRED STARTS	PUNC	13
C	LENGTH NUMBER OF DAYS FOR WHICH DATA IS DESIRED	PUNC	14
C	IDAY DAY OF MONTH *	PUNC	15
C	MONTH MONTH OF YEAR * DATE ON WHICH DATA DESIRED IS TO START	PUNC	16
C	IYEAR YEAR *	PUNC	17
C	NS NUMBER OF SPACES ON INPUT DATA TAPE	PUNC	18
C	IHOUR HOUR OF YEAR FOR WHICH DATA IS DESIRED	PUNC	19
C	KSPACE SPACE NUMBER FROM INPUT DATA TAPE	PUNC	20
C	AL OUTPUT DATA TEMPORARY	PUNC	21
C	ALOAD(8) OUTPUT DATA VECTOR	PUNC	22
C		PUNC	23
10	FORMAT (35A1)	PUNC	24
11	FORMAT (15A1)	PUNC	25
12	FORMAT (I4)	PUNC	26
13	FORMAT (7I5)	PUNC	27
14	FORMAT (F10.0)	PUNC	28
15	FORMAT (I4,I1,2F5.0,F6.4,2F5.2,F5.3)	PUNC	29
16	FORMAT (I3,2F10.0,F4.0,F9.2)	PUNC	30
17	FORMAT (2H ,38HSPACE NUMBERS DO NOT MATCH, CHECK TAPE)	PUNC	31
18	FORMAT (3F10.0)	PUNC	32
19	FORMAT (7F10.0)	PUNC	33
20	FORMAT (1H ,30HHOURS DO NOT MATCH, CHECK TAPE)	PUNC	34
21	FORMAT (6I5)	PUNC	35
	IT=1	PUNC	36
	IC=5	PUNC	37
	KP=7	PUNC	38
	KO=6	PUNC	39
	REWIND IT	PUNC	40
		READ INPUT DATA	
C	READ (IC,19) APOINT	PUNC	41
	WRITE (KP,19) APOINT	PUNC	42
	NPOINT=APOINT	PUNC	43
	DO 100 NP=1,NPOINT	PUNC	44
	READ (IC,19) SPACE(NP),ALENTH(NP),DAYN(NP),DAYI(NP),AMNTH(NP),	PUNC	45
	1YEAR(NP)	PUNC	46
100	CONTINUE	PUNC	47
	DO 350 NP=1,NPOINT	PUNC	48
	NSPACE=SPACE(NP)	PUNC	49
	LENGTH=ALENTH(NP)	PUNC	50
	NDAY=DAYN(NP)	PUNC	51
	IDAY=DAYI(NP)	PUNC	52
		PUNC	53

```

MONTH=AMNTH(NP)
IYEAR=YEAR(NP)
READ (IT,10) FAC
READ (IT,10) CITY
READ (IT,10) ENGR
READ (IT,11) PROJ
READ (IT,11) DATE
READ (IT,12) MSTRT
READ (IT,12) NDAY$S
READ (IT,13) (IMAX(M),M=1,6)
READ (IT,13) (IMAX(M),M=7,12),NS
READ (IT,14) (VOL(I),I=1..NS)

```

PUNC	54
PUNC	55
PUNC	56
PUNC	57
PUNC	58
PUNC	59
PUNC	60
PUNC	61
PUNC	62
PUNC	63
PUNC	64
PUNC	65
PUNC	66

PUNCH OUTPUT HEADER CARD

```
WRITE (KP,19) SPACE(NP),ALENTH(NP),DAYN(NP),DAYI(NP),AMNTH(NP),  
1YEAR(NP)
```

PUNC 68
PUNC 69
PUNC 70
PUNC 71

```

KARDSP=1
MSPACE=NSPACE-1
LSPACE=NSPACE+1
IHOUR=0
DO .110      M=1,MONTH
IHOUR=IHOUR+IMAX(M)
CONTINUE
IHOUR=IHOUR-IMAX(M)
JHOUR=IHOUR-1
LIMIT=JHOUR+24*LENG

```

PUNC 71
PUNC 72
PUNC 73
PUNC 74
PUNC 75
PUNC 76
PUNC 77
PUNC 78
PUNC 79
PUNC 80
PUNC 81

SKIP TAPE TO DESIRED HOUR

```

READ (IT,15) KH,ISUN,TOA,VEL,WOA,PATM,HOA,DOA
IF (JHOUR-KH) 180,120,140
DO 130      J=1,NS
READ (IT,16) KSPACE,QS,QL,QLITE,SLPOW
CONTINUE
READ (IT,15) KH,ISUN,TOA,VEL,WOA,PATM,HOA,DOA
GO TO 180
DO 150      J=1,NS
READ (IT,16) KSPACE,QS,QL,QLITE,SLPOW
CONTINUE
DO 160      I=KH1,JHOUR
KH1=KH+1
READ (IT,15) KH,ISUN,TOA,VEL,WOA,PATM,HOA,DOA
DO 180      J=1,NS
READ (IT,16) KSPACE,QS,QL,QLITE,SLPOW
CONTINUE
READ (IT,15) KH,ISUN,TOA,VEL,WOA,PATM,HOA,DOA
IF (KH-IHOUR) 190,200,190

```

PUNC 84
PUNC 85
PUNC 86
PUNC 87
PUNC 88
PUNC 89
PUNC 90
PUNC 91
PUNC 92
PUNC 93
PUNC 94
PUNC 95
PUNC 96
PUNC 97
PUNC 98
PUNC 99
PUNC 100
PUNC 101
PUNC 102

ERROR MESSAGE 1

190 WRITE (K0,20)
REWIND IT
GO TO 360

PUNC 105
PUNC 106
PUNC 107
PUNC 108
PUNC 109
PUNC 110

SKIP TAPE TO DESIRED SPACE

C
C 200 IF (MSPACE) 230,230,210
210 DO 220 J=1,MSPACE
READ (IT,16) KSPACE,QS,QL,QLITE,SLPOW
220 CONTINUE
230 READ (IT,16) KSPACE,QS,QL,QLITE,SLPOW
IF (KSPACE-NSPACE) 240,250,240

PUNC 111
PUNC 112
PUNC 113
PUNC 114
PUNC 115
PUNC 116
PUNC 117
PUNC 118
PUNC 119
PUNC 120
PUNC 121
PUNC 122
PUNC 123

C
C 240 WRITE (KO,17)
REWIND IT
GO TO 360

ERROR MESSAGE 2

PUNC 124
PUNC 125
PUNC 126
PUNC 127
PUNC 128
PUNC 129
PUNC 130
PUNC 131
PUNC 132
PUNC 133
PUNC 134
PUNC 135
PUNC 136
PUNC 137
PUNC 138
PUNC 139
PUNC 140
PUNC 141

C
AC 250 IF (QS) 260,270,270
260 AL=QS
GO TO 280
270 AL=QS+QL
280 IF (KARDSP=8) 300,300,290

PUNCH OUTPUT DATA CARD

PUNC 142
PUNC 143
PUNC 144
PUNC 145
PUNC 146
PUNC 147
PUNC 148
PUNC 149
PUNC 150

C
AC 290 WRITE (KP,18) (ALOAD(I),I=1,8)
KARDSP=1
300 ALLOAD(KARDSP)=AL
KARDSP=KARDSP+1
IF (LSPACE-NS) 310,310,330

SKIP REMAINING SPACES

C
AC 310 DO 320 J=LSPACE,NS
READ (IT,16) KSPACE,QS,QL,QLITE,SLPOW
320 CONTINUE
330 IHOUR=IHOUR+1
IF (IHOUR-LIMIT) 170,170,340
340 REWIND IT
350 CONTINUE
360 CONTINUE
END

DATA

CONTROL CARDS AS NECESSARY

CONTROL CARDS AS NECESSARY

```

// JOB
// DUP
*DELETE          SJLLP
// FOR
*ONE WORD INTEGERS
*EXTENDED PRECISION
*LIST ALL
*IOCS(CARD,1132PRINTER,DISK,TYPEWRITER,KEYBOARD,PLOTTER)
C
C
C INPUT DATA
C
C CARD 1- CONTROL CARD (FORMAT(6I5) )
C     -IMAX = MAX. NO. OF DAYS TO BE PLOTTED
C     -IDAY = DAY OF THE WEEK OF BEGINNING DAY
C       IDAY=1 IS SUNDAY
C       IDAY=2 IS MONDAY
C       IDAY=3 IS TUESDAY
C       IDAY=4 IS WEDNESDAY
C       IDAY=5 IS THURSDAY
C       IDAY=6 IS FRIDAY
C       IDAY=7 IS SATURDAY
C
C     -IDATE   )
C     -MO      ) NUMERIC BEGINNING DATE OF PLOT
C     -IYR    )
C       MO=1 IS JANUARY
C       MO=2 IS FEBRUARY
C       MO=3 IS MARCH
C       MO=4 IS APRIL
C       MO=5 IS MAY
C       MO=6 IS JUNE
C       MO=7 IS JULY
C       MO=8 IS AUGUST
C       MO=9 IS SEPTEMBER
C       MO=10 IS OCTOBER
C       MO=11 IS NOVEMBER
C       MO=12 IS DECEMBER
C
C
C CARDS 2,3,+4- SET OF THREE HOURLY THERMAL LOADS (FORMAT (8F10.0))
C
C CARDS 5,6, ETC.- SETS OF THREE HOURLY THERMAL LOADS FOR EACH OF IMAX DPLOT
C
C NOTES-
C
C     IMAX=1 A SINGLE DAY'S PLOT RESULTS
C     IMAX=7 A SINGLE DAY'S PLOT RESULTS FOR THE FIRST DAY ONLY
C     IMAX=7 A WEEK'S PLOT RESULTS
C     7) IMAX=31 A MONTH'S PLOT RESULTS UP TO IMAX DAYS
C     31)IMAX=366 A YEAR'S PLOT RESULTS UP TO IMAX/28 + 1 MONTHS
C
C     IMAX=366 A LEAP YEAR. FEBRUARY HAS 29 DAYS
C
C DIMENSION MTH(12),DAY(24),ICAP(9)
DATA MTH/31,28,31,30,31,30,31,31,30,31,30,31/
DEFINE FILE 1(366,72,U,N1), 2(12,9,U,N2), 3(7,9,U,N3)

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9 FORMAT (6F10.0) PLOT 50
10 FORMAT (6I5) PLOT 51
11 FORMAT(8F10.0,/,8F10.0,/,8F10.0) PLOT 52
12 FORMAT('HEAT LOSS (B/HR)') PLOT 53
13 FORMAT('HEAT GAIN (B/HR)') PLOT 54
14 FORMAT('PLOT OF THERMAL LOADS FOR SPACE NUMBER',I5) PLOT 55
15 FORMAT('BEGINNING DATE-',9A1,I3,'.',I5) PLOT 56
16 FORMAT('MAX. HEAT LOSS=',F10.0,', B/HR') PLOT 57
17 FORMAT('MAX. HEAT GAIN=',F10.0,', B/HR') PLOT 58
18 FORMAT('HOUR OF THE DAY') PLOT 59
19 FORMAT('DAY OF THE WEEK') PLOT 60
20 FORMAT(9A1) PLOT 61
21 FORMAT('WEEK OF THE MONTH') PLOT 62
22 FORMAT('DAY OF THE MONTH') PLOT 63
PI=3.14159 PLOT 64
PLOT 65
C READ (2,9) FPMAX PLOT 66
NPMAX=FPMAX PLOT 67
DO 900 NP=1,NPMAX PLOT 68
READ (2,9) ANMBR,AIMAX,AIDAY,ADATE,AMO,AIYR PLOT 69
NMBR=ANMBR PLOT 70
IMAX=AIMAX PLOT 71
IDAY=AIDAY PLOT 72
IDATE=ADATE PLOT 73
MO=AMO PLOT 74
IYR=AIYR PLOT 75
NMBR=ANMBR PLOT 76
IMAX=AIMAX PLOT 77
IDAY=AIDAY PLOT 78
IDATE=ADATE PLOT 79
MO=AMO PLOT 80
IYR=AIYR PLOT 81
PLOT 82
C IF(IMAX=7) 100,110,120 PLOT 83
100 SX=10./24. PLOT 84
II=1 PLOT 85
U=1.0 PLOT 86
NX=24 PLOT 87
GO TO 150 PLOT 88
110 SX=10./168. PLOT 89
II=2 PLOT 90
U=24. PLOT 91
NX=7 PLOT 92
GO TO 150 PLOT 93
120 SX=10./730. PLOT 94
U=168. PLOT 95
IF(IMAX=31) 130,130,140 PLOT 96
130 II=3 PLOT 97
NX=6 PLOT 98
GO TO 150 PLOT 99
140 II=4 PLOT 100
NX=54 PLOT 101
150 IF(IMAX=365) 170,170,160 PLOT 102
160 MTH(2)=29 PLOT 103
170 N1=1 PLOT 104
HMIN=0.0 PLOT 105
HMAX=0.0 PLOT 106

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DO 230 I=1,IMAX          PLOT 107
C
READ(2,11) DAY           PLOT 108
C
DO 220 J=1,24             PLOT 109
IF(DAY(J)) 200,180,180   PLOT 110
180 IF(HMAX=DAY(J)) 190,190,220
190 HMAX=DAY(J)
GO TO 220
200 IF(HMIN=DAY(J)) 220,210,210
210 HMIN=DAY(J)
220 CONTINUE
WRITE(1*N1) DAY
230 CONTINUE
N1MAX=N1 - 1
IF(HMAX+HMIN) 240,250,250
240 H=-HMIN
GO TO 260
250 H=HMAX
260 IFCT=0.4342944819*ALOG(H)
FCT=1.0/(10.**IFCT)
270 IPY=HMAX*FCT
INY=-HMIN*FCT
IF(IPY-2) 290,280,280
280 IF(INY-2) 290,320,320
290 IF(IPY-20) 300,300,320
300 IF(INY-20) 310,310,320
310 FCT=FCT*5.
GO TO 270
320 IPY=IPY + 1
AIPY=IPY
INY=INY + 1
AINY=INY
SY=7.0/((AINY+AIPY)/FCT)
IF(SY/FCT=0.4) 330,340,340
330 UT=5.0
GO TO 350
340 UT=1.0
350 X0=0.0
Y0=0.0
PX=X0-2.0/SX
PY=Y0-AINY/FCT-2.0/SY
CALL SCALE(SX,SY,PX,PY)
UY=1.0/FCT
IF(AINY-UT) 360,370,370
360 INNY=UT
GO TO 380
370 INNY=INY
380 IF(AIPY-UT) 390,400,400
390 IPPY=UT
GO TO 410
400 IPPY=IPY
410 CALL EGRID(1,X0,Y0,UY,IPPY)
CALL EGRID(3,X0,Y0,UY,INNY)
X=X0 - 1.05/SX
Y=Y0
YD=0.050/SY

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    YY=0.0          PLOT 164
    IF(UT-1.0) 420,420,430
420 IPPY=IPY + 1          PLOT 165
    GO TO 440          PLOT 166
430 IPPY=IPY/5 + 1          PLOT 167
440 DO 450 I=1,IPPY          PLOT 168
    CALL ECHAR(X,Y-YD,.1,.1,0.)          PLOT 169
    WRITE(7,11) YY          PLOT 170
    Y=Y + UT/FCT          PLOT 171
450 YY=Y + 0.5          PLOT 172
    Y=-UT/FCT          PLOT 173
    YY=Y - 0.5          PLOT 174
    IF(UT-1.0) 460,460,470          PLOT 175
460 INNY=INY          PLOT 176
    GO TO 480          PLOT 177
470 INNY=INY/5          PLOT 178
480 DO 490 I=1,INNY          PLOT 179
    CALL ECHAR(X,Y-YD,.1,.1,0.)          PLOT 180
    WRITE(7,11) YY          PLOT 181
    Y=Y - UT/FCT          PLOT 182
490 YY=Y - 0.5          PLOT 183
    T=PI/2.0          PLOT 184
    X=XO - 1.0/SX          PLOT 185
    Y=-0.5*AINY/FCT - 1.2/SY          PLOT 186
    CALL ECHAR(X,Y,.15,.15,T)          PLOT 187
    WRITE(7,12)          PLOT 188
    Y=0.5*AIPY/FCT - 1.2/SY          PLOT 189
    CALL ECHAR(X,Y,.15,.15,T)          PLOT 190
    WRITE(7,13)          PLOT 191
    Y=AIPY/FCT + 1.5/SY          PLOT 192
    X=0.5/SX          PLOT 193
    CALL ECHAR(X,Y,.2,.2,0.)          PLOT 194
    WRITE(7,14) NMBR          PLOT 195
    Y=Y - 0.5/SY          PLOT 196
    CALL ECHAR(X,Y,.2,.2,0.)          PLOT 197
    N2=40          PLOT 198
    READ(2,I2) ICAP          PLOT 199
    WRITE(7,15) ICAP,IDATE,IYR          PLOT 200
    Y=Y - 0.5/SY          PLOT 201
    CALL ECHAR(X,Y,.15,.15,0.)          PLOT 202
    WRITE(7,16) HMIN          PLOT 203
    Y=Y - 0.5/SY          PLOT 204
    CALL ECHAR(X,Y,.15,.15,0.)          PLOT 205
    WRITE(7,17) HMAX          PLOT 206
    IF(II = 3) 500,500,650          PLOT 207
500 CALL EPLOT(1,X0,Y0)          PLOT 208
    CALL EGGRID(0,X0,Y0,U,NX)          PLOT 209
    GO TO ( 510, 540, 590),II          PLOT 210
510 XD=0.45/SX          PLOT 211
    X=1.0          PLOT 212
    Y=-0.2/SY          PLOT 213
    XSTRT=1.0          PLOT 214
    DO 530 I=1,24          PLOT 215
    CALL ECHAR(X-XD,Y,.1,.1,0.)          PLOT 216
    WRITE(7,10) I          PLOT 217
    IF(I=9) 530,520,520          PLOT 218
520 XD=0.40/SX          PLOT 219

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530 X=X + 1.0          PLOT 221
X=3.875/SX            PLOT 222
Y=0.1/SY              PLOT 223
CALL ECHAR(X,Y,.15,.15,0.) PLOT 224
WRITE(7,18)             PLOT 225
GO TO 610               PLOT 226
540 XD=0.45/SX         PLOT 227
X=24.0                 PLOT 228
Y=-0.2/SY              PLOT 229
XSTART=1.0              PLOT 230
DO 550 I=1,7             PLOT 231
CALL ECHAR(X-XD,Y,.1,.1,0.) PLOT 232
WRITE(7,10) I             PLOT 233
550 X= X + 24.0          PLOT 234
X=3.875/SX            PLOT 235
Y=0.3/SY              PLOT 236
CALL ECHAR(X,Y,.15,.15,0.) PLOT 237
WRITE(7,19)             PLOT 238
Y=0.1/SY              PLOT 239
X=0.5*(24.0 - 0.9/SX)  PLOT 240
N3=IDAY                PLOT 241
DO 560 I=IDAY,7          PLOT 242
READ(3,N3) ICAP          PLOT 243
CALL ECHAR(X,Y,.1,.1,0.) PLOT 244
WRITE(7,20) ICAP          PLOT 245
560 X=X + 24.0          PLOT 246
IF(IDAY - 1) 610,610,570 PLOT 247
570 N3=1                 PLOT 248
IDDAY=IDAY - 1           PLOT 249
DO 580 I=1,IDDAY          PLOT 250
READ(3,N3) ICAP          PLOT 251
CALL ECHAR(X,Y,.1,.1,0.) PLOT 252
WRITE(7,20) ICAP          PLOT 253
580 X=X + 24.0          PLOT 254
GO TO 610               PLOT 255
590 XD=0.45/SX         PLOT 256
X=168.                  PLOT 257
Y=-0.2/SY              PLOT 258
XSTART=168*(IDAY-1)/7   PLOT 259
DO 600 I=1,5              PLOT 260
CALL ECHAR(X-XD,Y,.1,.1,0.) PLOT 261
WRITE(7,10) I             PLOT 262
600 X=X + 168.            PLOT 263
X=3.725/SX            PLOT 264
Y=0.1/SY              PLOT 265
CALL ECHAR(X,Y,.15,.15,0.) PLOT 266
WRITE(7,21)             PLOT 267
610 N1=1                 PLOT 268
X=XSTART                PLOT 269
READ(1,N1) DAY           PLOT 270
Y=DAY(1)                PLOT 271
CALL EPLOT(1,X,Y)        PLOT 272
CALL EPLOT(2,X,Y)        PLOT 273
DO 620 J=2,24             PLOT 274
X=X + 1.0                PLOT 275
Y=DAY(J)                PLOT 276
620 CALL EPLOT(0,X,Y)      PLOT 277

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```

XE=X
IF(I'MAX - 2) 800,630,630
630 DO 640 I=2,IMAX
  READ(1'N1) DAY
  DO 640 J=1,24
    X=X + 1.0
    Y=DAY(J)
  640 CALL EPLOT(0,X,Y)
  XE=X
  GO TO 800
  650 CALL EPLOT(1,X0,Y0)
  XE=X0
  U=24.0
  N1=1
  XSTRT=24*(IDAY-1)
  XR=XSTRT
  IMO=MO
  NNX=MTH(IMO) + IDAY
  I2=IMAX/28+1
  IF(I2-12) 670,670,660
  660 I2=12
  670 DO 790 I=1,I2
    CALL EGRID(0,XE,Y0,U,NNX)
    XD=0.45/SX
    X=XR + 24.0
    Y=-0.2/SY
    JJ=MTH(IMO)
    DO 690 J=1,JJ
      CALL ECHAR(X-XD,Y,.1,.1,0.)
      WRITE(7,10) J
      IF(J=9) 690,680,680
  680 XD=0.40/SX
  690 X=X+24.0
    YD=U.2/SY
    XL=XR
    CALL EPLOT(1,XL,Y0)
    CALL EPLOT(2,XL,Y0)
    CALL EPLOT(0,XL,Y0+YD)
    XR=XL + 24*MTH(IMO)
    XE=XR
    CALL EPLOT(1,XR,Y0)
    CALL EPLOT(2,XR,Y0)
    CALL EPLOT(0,XR,Y0+YD)
    X=XL + 0.5*(XR-XL-1.35/SX)
    Y=Y0+0.2/SY
    N2=IMO
    READ(2'N2) ICAP
    CALL ECHAR(X,Y,.15,.15,0.)
    WRITE(7,20) ICAP
    X=XSTRT
    READ(1'N1) DAY
    IF(I=1) 710,710,700
  700 Y=YSTRT
    CALL EPLOT(1,X,Y)
    CALL EPLOT(2,X,Y)
    Y=DAY(1)
    X=X + 1.0

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PLOT 278
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 PLOT 333
 PLOT 334

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CALL EPLOT(0,X,Y) PLOT 335
GO TO 720 PLOT 336
710 Y=DAY(1) PLOT 337
    CALL EPLOT(1,X,Y)
    CALL EPLOT(2,X,Y)
720 DO 730 J=2,24 PLOT 338
    X=X + 1.0 PLOT 339
    Y=DAY(J) PLOT 340
730 CALL EPLOT(0,X,Y) PLOT 341
    DO 760 K=2,JJ PLOT 342
    READ(1,N1)DAY PLOT 343
    IF(N1 - N1MAX) 750,750,740 PLOT 344
740 K=JJ + 1 PLOT 345
750 DO 760 J=1,24 PLOT 346
    X=X + 1.0 PLOT 347
    Y=DAY(J) PLOT 348
760 CALL EPLOT(0,X,Y) PLOT 349
    IMO=IMO+1 PLOT 350
    IF(IMO-12) 780,780,770 PLOT 351
770 IMO=1 PLOT 352
780 XSTRT=X PLOT 353
    YSTRT=Y PLOT 354
    NNX=MTH(IMO) PLOT 355
790 CONTINUE PLOT 356
800 X= XE + 4.0/SX PLOT 357
    Y=YU-AINY/FCT-2.0/SY PLOT 358
    CALL EPLOT(1,X,Y) PLOT 359
900 CONTINUE PLOT 360
    CALL EXIT PLOT 361
    END PLOT 362
// DUP PLOT 363
*STORE WS UA SJLLP PLOT 364

// JOB
// FOR
*ONE WORD INTEGERS
*EXTENDED PRECISION
*LIST ALL
*IOCS(CARD,1132PRINTER,DISK,TYPEWRITER)
  DEFINE FILE 1(366,72,U,N1),2(12,9,U,N2),3(7,9,U,N3)
  DIMENSION ID(9)
 1 FORMAT(9A1)
  N2=1
  N3=1
  DO 20 I=1,12
    READ(2,1) ID
 20 WRITE(2,N2) ID
  DO 30 I=1,7
    READ(2,1) ID
 30 WRITE(3,N3) ID
  CALL EXIT
  END

// XEQ
JANUARY
FEBRUARY
MARCH
APRIL

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MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
SUNDAY
MONDAY
TUESDAY
WEDNESDAY
THURSDAY
FRIDAY
SATURDAY
// DUP
*STOREDATA WS UA SJLY1 92
*STOREDATA WS UA SJLY2 1
*STOREDATA WS UA SJLY3 1

DATA

**CONTROL CARDS
AS NECESSARY**

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***** ECON 1
ECONICS ANALYSIS SUBPROGRAM ***** ECON 2
***** ECON 3
***** ECON 4
***** ECON 5
INTEGER SV(5),OHPD(5) ECON 6
DIMENSION FAC(35),CITY(35),ENGR(35),PROJ(15),DATE(15) ECON 7
DIMENSION COST(5),LIFE(5),AML(5),AMM(5) ECON 8
DIMENSION OHL(5),OHM(5),FLR(5),P(5),A(5) ECON 9
DIMENSION ENGY(12,6),TENGY(6) ECON 10
DIMENSION ALIFE(5),ASV(5),AOHPD(5) ECON 11
10 FORMAT (35A1) ECON 12
11 FORMAT (15A1) ECON 13
12 FORMAT (4X,35A1,/,4X,35A1,/,4X,35A1,/,4X,15A1,/,4X,15A1) ECON 14
13 FORMAT (7F10.0) ECON 15
14 FORMAT (6F10.0,/,6F10.0) ECON 16
15 FORMAT (1H1,7X,58HECONOMIC ANALYSIS FOR AIR CONDITIONING EQUIPMENTECON 17
   1 SELECTION,/,3X,70(1H*),///) ECON 18
16 FORMAT (1H0,36HCONVENTIONAL AIR CONDITIONING SYSTEM,/,1X,36(1H*)) ECON 19
17 FORMAT (1H0,24HHEAT CONSERVATION SYSTEM,/,1X,24(1H*)) ECON 20
18 FORMAT (1H0,25HON-SITE GENERATION SYSTEM,/,1X,26(1H*)) ECON 21
19 FORMAT(1H0,116H NOTE -- ANNUITY IS CONSTRUED TO MEAN THE UNIFORM AECON 22
INNUAL COST, CONSIDERING ALL THE LISTED COSTS, TO THE OWNER DURING,ECON 23
 2/,40H           THE LIFE TIME OF THE BUILDING.) ECON 24
20 FORMAT (1H0,31H ****INPUT ASSUMPTIONS**** ,/,14H BUILDING LIFECON 25
 1E,30X,F7.2,6H YEARS,/,21H ANNUAL INTEREST RATE,24X,F6.2,8H PERCENTECON 26
 2) ECON 27
21 FORMAT (45H ESTIMATED LABOR WAGE ANNUAL INCREASE, ,F6.2, ECON 28
 1 8H PERCENT) ECON 29
22 FORMAT (41H ESTIMATED MATERIAL COST ANNUAL INCREASE ,4X,F6.2, ECON 30
 1 8H PERCENT) ECON 31
23 FORMAT (44H ESTIMATED FLOOR SPACE COST ANNUAL INCREASE ,1X,F6.2, ECON 32
 1 8H PERCENT) ECON 33
24 FORMAT (1H0,/,50X,13H ENERGY COST ,/,46X,20(1H*)) ECON 34
25 FORMAT (1H0,24X,3HJAN,4X,3HFEB,4X,3HMAR,4X,3HAPR,4X,3HMAY,4X,3HJUNECON 35
 1,4X,3HJUL,4X,3HAUG,4X,3HSEP,4X,3HOCT,4X,3HNNOV,4X,3HDEC,5X,5HTOTAL)ECON 36
26 FORMAT (15H FUEL OIL COST ,7X,12(1X,F6.0),F9.0) ECON 37
27 FORMAT (10H GAS COST ,12X,12(1X,F6.0),F9.0) ECON 38
28 FORMAT (18H ELECTRICITY COST ,4X,12(1X,F6.0),F9.0) ECON 39
29 FORMAT (22H PURCHASED STEAM COST ,12(1X,F6.0),F9.0) ECON 40
30 FORMAT (17H CITY WATER COST ,5X,12(1X,F6.0),F9.0) ECON 41
31 FORMAT (18H DIESEL FUEL COST ,4X,12(1X,F6.0),F9.0) ECON 42
32 FORMAT (1H0,50(1H*),24H ANNUAL ENERGY COST ,30(1H*),F10.0) ECON 43
33 FORMAT (1H0,/,40X,26HMACHINE AND EQUIPMENT COST,/,37X,32(1H*)) ECON 44
34 FORMAT (1H0,20X,101H INITIAL ANTICIPATED SALVAGE      MAJOR OECON 45
 1VERHAUL      ANNUAL MAINTENANCE FLOOR SPACE ANNUITY,/,22X,86H ECON 46
 2COST        LIFE      CONSID. PERIOD, LABOR MATERIAL LABOR ECON 47
 3MATERIAL      COST) ECON 48
35 FORMAT (1H ,20HCOOLING SIDE EQUIP. ,F8.0,I8,9X,3HYES,I10,F9.0,F8.0ECON 49
 1,2F10.0,F14.0,F12.0) ECON 50
36 FORMAT (1H ,20HCOOLING SIDE EQUIP. ,F8.0,I8,9X,3H NO,I10,F9.0,F8.0ECON 51
 1,2F10.0,F14.0,F12.0) ECON 52
37 FORMAT (1H ,20HHEATING SIDE EQUIP. ,F8.0,I8,9X,3HYES,I10,F9.0,F8.0ECON 53

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1,2F10.0,F14.0,F12.0)	ECON	54
38 FORMAT (1H ,20HHEATING SIDE EQUIP. ,F8.0,I8,9X,3H NO,I10,F9.0,F8.0ECON	ECON	55
1,2F10.0,F14.0,F12.0)	ECON	56
39 FORMAT (1H ,20HAIR SIDE EQUIP. ,F8.0,I8,9X,3HYES,I10,F9.0,F8.0ECON	ECON	57
1,2F10.0,F14.0,F12.0)	ECON	58
40 FORMAT (1H ,20HAIR SIDE EQUIP. ,F8.0,I8,9X,3H NO,I10,F9.0,F8.0ECON	ECON	59
1,2F10.0,F14.0,F12.0)	ECON	60
41 FORMAT (1H ,20HONSITE GEN. ENGINES ,F8.0,I8,9X,3HYES,I10,F9.0,F8.0ECON	ECON	61
1,2F10.0,F14.0,F12.0)	ECON	62
42 FORMAT (1H ,20HONSITE GEN. ENGINES ,F8.0,I8,9X,3H NO,I10,F9.0,F8.0ECON	ECON	63
1,2F10.0,F14.0,F12.0)	ECON	64
43 FORMAT (1H ,20HSTEAM TURBINES ,F8.0,I8,9X,3HYES,I10,F9.0,F8.0ECON	ECON	65
1,2F10.0,F14.0,F12.0)	ECON	66
44 FORMAT (1H ,20HSTEAM TURBINES ,F8.0,I8,9X,3H NO,I10,F9.0,F8.0ECON	ECON	67
1,2F10.0,F14.0,F12.0)	ECON	68
45 FORMAT (1H ,20HCOOLING SIDE EQUIP. ,F8.0,I8,9X,3HYES,27X,	ECON	69
1,2F10.0,F14.0,F12.0)	ECON	70
46 FORMAT (1H ,20HCOOLING SIDE EQUIP. ,F8.0,I8,9X,3H NO,27X,	ECON	71
1,2F10.0,F14.0,F12.0)	ECON	72
47 FORMAT (1H ,20HHEATING SIDE EQUIP. ,F8.0,I8,9X,3HYES,27X,	ECON	73
1,2F10.0,F14.0,F12.0)	ECON	74
48 FORMAT (1H ,20HHEATING SIDE EQUIP. ,F8.0,I8,9X,3H NO,27X,	ECON	75
1,2F10.0,F14.0,F12.0)	ECON	76
49 FORMAT (1H ,20HAIR SIDE EQUIP. ,F8.0,I8,9X,3HYES,27X,	ECON	77
1,2F10.0,F14.0,F12.0)	ECON	78
50 FORMAT (1H ,20HAIR SIDE EQUIP. ,F8.0,I8,9X,3H NO,27X,	ECON	79
1,2F10.0,F14.0,F12.0)	ECON	80
51 FORMAT (1H ,20HONSITE GEN. ENGINES ,F8.0,I8,9X,3HYES,27X,	ECON	81
1,2F10.0,F14.0,F12.0)	ECON	82
52 FORMAT (1H ,20HONSITE GEN. ENGINES ,F8.0,I8,9X,3H NO,27X,	ECON	83
1,2F10.0,F14.0,F12.0)	ECON	84
53 FORMAT (1H ,20HSTEAM TURBINES ,F8.0,I8,9X,3HYES,27X,	ECON	85
1,2F10.0,F14.0,F12.0)	ECON	86
54 FORMAT (1H ,20HSTEAM TURBINES ,F8.0,I8,9X,3H NO,27X,	ECON	87
1,2F10.0,F14.0,F12.0)	ECON	88
55 FORMAT (1H ,/,1X,50(1H*),35HTOTAL MACHINE AND EQUIPMENT ANNUITY,	ECON	89
124(1H*),F12.0)	ECON	90
56 FORMAT (1H ,//,20X,70(1H*),/,20X,35H*TOTAL OWNING AND OPERATING AECOM	ECON	91
INNUITY,15X,F10.0,10H DOLLARS *,/,20X,70(1H*))	ECON	92
IC=5	ECON	93
KO=6	ECON	94
	ECON	95
READ (IC,10) FAC	ECON	96
READ (IC,10) CITY	ECON	97
READ (IC,11) PROJ	ECON	98
READ (IC,11) DATE	ECON	99
READ (IC,10) ENGR	ECON	100
READ (IC,13) SYSTM	ECON	101
READ (IC,13) BLGLF	ECON	102
READ (IC,13) RINT,RINL,RINM,RINF	ECON	103
RINT=RINT/100.0	ECON	104
RINL=RINL/100.0	ECON	105
RINM=RINM/100.0	ECON	106
RINF=RINF/100.0	ECON	107
100 ISYS=SYSTM	ECON	108
DO 110 J=1,6	ECON	109
READ (IC,14) (ENGY(I,J),I=1,12)	ECON	110

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110 CONTINUE          ECON 111
DO 120      I=1,5    ECON 112
READ (IC,13) COST(I),ALIFE(I),ASV(I),AOHPD(I)
OHPD(I)=AOHPD(I)
SV(I)=ASV(I)
LIFE(I)=ALIFE(I)
READ (IC,13) AML(I),AMM(I),OHL(I),OHM(I),FLR(I)
120 CONTINUE          ECON 113
UA=0.0              ECON 114
DO 140      J=1,6    ECON 115
TENGY(J)=0.0         ECON 116
DO 130      I=1,12   ECON 117
TENGY(J)=TENGY(J)+ENGY(I,J)
130 CONTINUE          ECON 118
UA=UA+TENGY(J)
140 CONTINUE          ECON 119
UP=UA*(1.0-(1.0+RINT)**(-1.0*BLGLF))/RINT
LF=BLGLF
TP=0.0
DO 390      I=1,5   ECON 120
PC=0.0              ECON 121
PF=0.0              ECON 122
PAML=0.0             ECON 123
PAMM=0.0             ECON 124
POHL=0.0             ECON 125
POHM=0.0             ECON 126
IF (COST(I)) 840,150,150
150 IF (ALIFE(I)) 840,170,160
160 IF (BLGLF=ALIFE(I)) 180,170,180
170 L=1               ECON 127
AL=1.0              ECON 128
GO TO 190            ECON 129
180 AL=BLGLF/ALIFE(I)
L=AL+1.0            ECON 130
190 DO 200      J=1,L  ECON 131
PC=PC+COST(I)*((1.0+RINM)/(1.0+RINT))**((J-1)*LIFE(I))
200 CONTINUE          ECON 132
IF (SV(I)=1) 220,210,210
210 AAL=L            ECON 133
PC=PC-COST(I)*(AAL-AL)/((1.0+RINT)**BLGLF)
220 IF (FLR(I)) 250,250,230
230 DO 240      J=1,LF  ECON 134
PF=PF+FLR(I)*((1.0+RINF)/(1.0+RINT))**J
240 CONTINUE          ECON 135
250 IF (AML(I)) 280,280,260
260 DO 270      J=1,LF  ECON 136
PAML=PAML+AML(I)*((1.0+RINL)/(1.0+RINT))**J
270 CONTINUE          ECON 137
280 IF (AMM(I)) 310,310,290
290 DO 300      J=1,LF  ECON 138
PAMM=PAMM+AMM(I)*((1.0+RINM)/(1.0+RINT))**J
300 CONTINUE          ECON 139
310 IF (OHPD(I)) 380,380,320
320 AK=BLGLF/OHPD(I)
K=AK
IF (OHL(I)) 350,350,330
330 DO 340      J=1,K  ECON 140

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      POHL=POHL+OHL(I)*((1.0+RINL)/(1.0+RINT))**(J*OHPD(I))          ECON 168
340 CONTINUE
350 IF (OHM(I)) 380,380,360
360 DO 370      J=1,K
      POHM=POHM+OHM(I)*((1.0+RINM)/(1.0+RINT))**(J*OHPD(I))          ECON 170
370 CONTINUE
380 P(I)=PC+PF+PAML+PAMM+POHL+POHM
      A(I)=P(I)*(RINT/(1.0-1.0/(1.0+RINT)**BLGLF))                  ECON 171
390 CONTINUE
      WRITE (KO,15)
      WRITE (KO,12) FAC,CITY,ENGR,PROJ,DATE
      GO TO ( 400, 410, 420),ISYS
400 WRITE (KO,16)
      GO TO 430
410 WRITE (KO,17)
      GO TO 430
420 WRITE (KO,18)
430 R=RINT*100.0+0.000001
      WRITE (KO,20) BLGLF,R
      RL=RINL*100.0+0.000001
      WRITE (KO,21) RL
      RM=RINM*100.0+0.000001
      WRITE (KO,22) RM
      RF=RINF*100.0+0.000001
      WRITE (KO,23) RF
      WRITE (KO,24)
      WRITE (KO,25)
      IF (TENGY(1)) 840,450,440
440 WRITE (KO,26) (ENGY(I,1),I=1,12),TENGY(1)                      ECON 196
450 IF (TENGY(2)) 840,470,460
460 WRITE (KO,27) (ENGY(I,2),I=1,12),TENGY(2)                      ECON 197
470 IF (TENGY(3)) 840,490,480
480 WRITE (KO,28) (ENGY(I,3),I=1,12),TENGY(3)                      ECON 198
490 IF (TENGY(4)) 840,510,500
500 WRITE (KO,29) (ENGY(I,4),I=1,12),TENGY(4)                      ECON 199
510 IF (TENGY(5)) 840,530,520
520 WRITE (KO,30) (ENGY(I,5),I=1,12),TENGY(5)                      ECON 200
530 IF (TENGY(6)) 840,550,540
540 WRITE (KO,31) (ENGY(I,6),I=1,12),TENGY(6)                      ECON 201
550 WRITE (KO,32) UA
      WRITE (KO,33)
      WRITE (KO,34)
      DO 830      I=1,5
      IF (A(I)) 840,830,560
560 IF (OHPD(I)) 840,570,700
570 IF (SV(I)) 840,580,640
580 GO TO ( 590, 600, 610, 620, 630),I
590 WRITE (KO,46) COST(1),LIFE(1),AML(1),AMM(1),FLR(1),A(1)        ECON 214
      GO TO 830
600 WRITE (KO,48) COST(2),LIFE(2),AML(2),AMM(2),FLR(2),A(2)        ECON 215
      GO TO 830
610 WRITE (KO,50) COST(3),LIFE(3),AML(3),AMM(3),FLR(3),A(3)        ECON 216
      GO TO 830
620 WRITE (KO,52) COST(4),LIFE(4),AML(4),AMM(4),FLR(4),A(4)        ECON 217
      GO TO 830
630 WRITE (KO,54) COST(5),LIFE(5),AML(5),AMM(5),FLR(5),A(5)        ECON 218
      GO TO 830

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640 GO TO ( 650, 660, 670, 680, 690),I ECON 225
650 WRITE (K0,45) COST(1),LIFE(1),AML(1),AMM(1),FLR(1),A(1) ECON 226
    GO TO 830 ECON 227
660 WRITE (K0,47) COST(2),LIFE(2),AML(2),AMM(2),FLR(2),A(2) ECON 228
    GO TO 830 ECON 229
670 WRITE (K0,49) COST(3),LIFE(3),AML(3),AMM(3),FLR(3),A(3) ECON 230
    GO TO 830 ECON 231
680 WRITE (K0,51) COST(4),LIFE(4),AML(4),AMM(4),FLR(4),A(4) ECON 232
    GO TO 830 ECON 233
690 WRITE (K0,53) COST(5),LIFE(5),AML(5),AMM(5),FLR(5),A(5) ECON 234
    GO TO 830 ECON 235
700 IF (SV(I)) 840,710,770 ECON 236
710 GO TO ( 720, 730, 740, 750, 760),I ECON 237
720 WRITE (K0,36) COST(1),LIFE(1),OHPD(1),OHL(1),OHM(1),AML(1),AMM(1),ECON 238
    1FLR(1),A(1) ECON 239
    GO TO 830 ECON 240
730 WRITE (K0,38) COST(2),LIFE(2),OHPD(2),OHL(2),OHM(2),AML(2),AMM(2),ECON 241
    1FLR(2),A(2) ECON 242
    GO TO 830 ECON 243
740 WRITE (K0,40) COST(3),LIFE(3),OHPD(3),OHL(3),OHM(3),AML(3),AMM(3),ECON 244
    1FLR(3),A(3) ECON 245
    GO TO 830 ECON 246
750 WRITE (K0,42) COST(4),LIFE(4),OHPD(4),OHL(4),OHM(4),AML(4),AMM(4),ECON 247
    1FLR(4),A(4) ECON 248
    GO TO 830 ECON 249
760 WRITE (K0,44) COST(5),LIFE(5),OHPD(5),OHL(5),OHM(5),AML(5),AMM(5),ECON 250
    1FLR(5),A(5) ECON 251
    GO TO 830 ECON 252
770 GO TO ( 780, 790, 800, 810, 820),I ECON 253
780 WRITE (K0,35) COST(1),LIFE(1),OHPD(1),OHL(1),OHM(1),AML(1),AMM(1),ECON 254
    1FLR(1),A(1) ECON 255
    GO TO 830 ECON 256
790 WRITE (K0,37) COST(2),LIFE(2),OHPD(2),OHL(2),OHM(2),AML(2),AMM(2),ECON 257
    1FLR(2),A(2) ECON 258
    GO TO 830 ECON 259
800 WRITE (K0,39) COST(3),LIFE(3),OHPD(3),OHL(3),OHM(3),AML(3),AMM(3),ECON 260
    1FLR(3),A(3) ECON 261
    GO TO 830 ECON 262
810 WRITE (K0,41) COST(4),LIFE(4),OHPD(4),OHL(4),OHM(4),AML(4),AMM(4),ECON 263
    1FLR(4),A(4) ECON 264
    GO TO 830 ECON 265
820 WRITE (K0,43) COST(5),LIFE(5),OHPD(5),OHL(5),OHM(5),AML(5),AMM(5),ECON 266
    1FLR(5),A(5) ECON 267
830 CONTINUE ECON 268
    ANTYM=A(1)+A(2)+A(3)+A(4)+A(5) ECON 269
    WRITE (K0,55) ANTYM ECON 270
    TOOAA=UA+ANTYM ECON 271
    WRITE (K0,56) TOOAA ECON 272
    WRITE (K0,19) ECON 273
    READ (IC,13) SYSTM ECON 274
    IF (SYSTM) 840,840,100 ECON 275
840 CONTINUE ECON 276
    END ECON 277

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CONTROL CARDS
AS NECESSARY

DATA

CONTROL CARDS
AS NECESSARY

CONTROL CARDS
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        JM(J)=AJM(J)
120 CONTINUE
        IF (JMAX=14) 170,170,130
130 READ (IC,17) (AJM(J),J=15,21)
        DO 140 J=15,21
        JM(J)=AJM(J)
140 CONTINUE
        IF (JMAX=21) 170,170,150
150 READ (IC,17) (AJM(J),J=22,28)
        DO 160 J=22,28
        JM(J)=AJM(J)
160 CONTINUE
170 READ (IT,10) FAC
        READ (IT,10) CITY
        READ (IT,10) ENGP
        READ (IT,11) PROJ
        READ (IT,11) DATE
        READ (IT,12) MSTRT
        READ (IT,12) NDAYS
        READ (IT,13) (IMAX(M),M=1,12),ISBMX
        READ (IT,14) (VOL(IS),IS=1,ISBMX)
        IACT=NDAYS*24
        ISUM=0
        DO 200 M=MSTRT,MEND
        ISUM=ISUM+IMAX(1)
        IF (IACT-ISUM) 190,180,200
180 MEND=M
        GO TO 210
190 MEND=M
        IMAX(M)=IACT+IMAX(M)-ISUM
        GO TO 210
200 CONTINUE
210 MN=0
        DO 220 M=1,12
        L=IMAX(1)
        MN=MN+L
        IMAXR(M)=MN
220 CONTINUE
        ICHR=IMAXR(10)+24*14+1
        DO 230 I=1,12
        DO 230 J=1,2
        DO 230 K=1,17
        ENGY(I,J,K)=0.0
230 CONTINUE
        DO 240 IS=1,ISBMX
        QTZCM(IS)=0.0
        QSZHM(IS)=0.0
        TOAC(IS)=0.0
        TOAH(IS)=0.0
        WOAC(IS)=0.0
        QLTC(IG)=0.0
240 CONTINUE
        DC 300 M=MSTRT,MEND
        IMAX=IMAX(M)
        DO 300 I=1,IMAX
        READ (IT,15) IHOUR,ISUN,TOA,VEL,WOA,PATM,HOA,DOA
        DO 300 IS=1,ISBMX

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READ (IT,16) NS,QS(IS),QL(IS),QLITE(IS),SLPOW(IS) PKGS 111
  QT(IS)=QS(IS)+QL(IS)
  IF (QS(IS)) 280,250,250 PKGS 112
250 IF (QTZCM(IS)-QT(IS)) 260,270,270 PKGS 113
260 QTZCM(IS)=QT(IS)
  TOAC(J)=TOA PKGS 114
  WOAC(J)=WOA PKGS 115
  QLITC(J)=QLITE(IS) PKGS 116
270 GO TO 300 PKGS 117
280 IF (QSZHM(IS)-QS(IS)) 300,300,290 PKGS 118
290 QSZHM(IS)=QS(IS) PKGS 119
  TOAH(J)=TOA PKGS 120
300 CONTINUE PKGS 121
  REWIND IT PKGS 122
  READ (IT,10) FAC PKGS 123
  READ (IT,10) CITY PKGS 124
  READ (IT,10) ENGR PKGS 125
  READ (IT,11) PROJ PKGS 126
  READ (IT,11) DATE PKGS 127
  READ (IT,12) MSTRT PKGS 128
  READ (IT,12) NDAYS PKGS 129
  READ (IT,13) (IM(M),M=1,12),ISBMX PKGS 130
  READ (IT,14) (VOL(IS),IS=1,ISBMX) PKGS 131
  DO 410 J=1,ISRMX PKGS 132
    IF (QSZHM(J)+QTZCM(J)) 310,310,320 PKGS 133
310 CFCMX(J)=QSZHM(J)/30.0 PKGS 134
  GO TO 330 PKGS 135
320 CFMX(J)=QTZCM(J)/30.0 PKGS 136
330 QSOAC=1.08*0.1*CFMX(J)*(TOAC(J)-75.0) PKGS 137
  QSOAH=1.08*0.1*CFMX(J)*(TOAH(J)-75.0) PKGS 138
  QLOAC=4747.5*0.1*CFMX(J)*(WOAC(J)-0.009) PKGS 139
  QLIT=QLITC(J)*0.9 PKGS 140
  IF (QLOAC) 340,340,350 PKGS 141
340 QLOAC=0.0 PKGS 142
350 IF (QTZCM(J)) 1110,360,370 PKGS 143
360 QCMAX(J)=0.0 PKGS 144
  GO TO 380 PKGS 145
370 QCMAX(J)=(QTZCM(J)+QSOAC+QLOAC+QLIT)/12000.0 PKGS 146
380 IF (QSZHM(J)) 400,390,1110 PKGS 147
390 QHMAX(J)=0.0 PKGS 148
  GO TO 410 PKGS 149
400 QHMAX(J)=(QSZHM(J)+QSOAH)/1000.0 PKGS 150
410 CONTINUE PKGS 151
  WRITE (KO,18)
  WRITE (KO,19)
  WRITE (KO,20)
  WRITE (KO,21)
  WRITE (KO,23) FAC PKGS 152
  WRITE (KO,21)
  WRITE (KO,21)
  WRITE (KO,24)
  WRITE (KO,21) PKGS 153
  PKGS 154
  PKGS 155
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        WRITE (KO,21)
        WRITE (KO,23) CITY
        WRITE (KO,21)
        WRITE (KO,21)
        WRITE (KO,25) ENGR
        WRITE (KO,26) PROJ
        WRITE (KO,27) DATE
        WRITE (KO,21)
        WRITE (KO,21)
        WRITE (KO,20)
        WRITE (KO,18)
        WRITE (KO,28) FAC,CITY,DATE,PROJ
        WRITE (KO,29)
        WRITE (KO,30)
DO 420 J=1,JMAX
        WRITE (KO,31) J,JM(J),CFMX(J),QCMAX(J),QHMAX(J)
420 CONTINUE
        DO 1100 M=MSTRT,MEND
        DMCB=0.0
        DMHB=0.0
        AKWX=0.0
        AKWI=0.0
        DNHB=0.0
        DNCB=0.0
        HKWT=0.0
        CKWT=0.0
        UKWXT=0.0
        UKWIT=0.0
        HGAST=0.0
        CGAST=0.0
        HOILT=0.0
        AMCB=0.0
        AMHB=0.0
        HKWD=0.0
        CKWD=0.0
        HGASD=0.0
        CGASD=0.0
        IMAXJ=IMAXR(M)
        IMAXI=IMAXR(M)-IMAX(1)+1
DO 1090 I=IMAXI,IMAXJ
        IWHR=1
        READ (IT,15) IHOUR,ISUN,TOA,VEL,WOA,PATM,HOA,DOA
        AHKW=0.
        ACKW=0.
        AHGAS=0.
        ACGAS=0.
        AHOIL=0.
        AFANP=0.
        AI=I
        JI=AI/24.
        IHRDY=I-JI*24
        HRDY=IHRDY
        IDY=JI+1
        DAY=IDY
        IFSDW=FSDW
        IF (ICHR-I) 460,430,430
430 IF (CHRWH) 610,610,440

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PKGS 168
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440 IF (HRDY-CHRST) 610,450,450	PKGS 225
450 IF (HRDY-CHRST-CHRWH) 640,640,610	PKGS 226
460 IF (FSDW=1.0) 1110,470,480	PKGS 227
470 JH=I	PKGS 228
GO TO 510	PKGS 229
480 IF(AI-(8.-FSDW)*24.) 500,500,490	PKGS 230
490 JH=I-(8-IFSDW)*24	PKGS 231
GO TO 510	PKGS 232
500 IF(I-(7-IFSDW)*24) 590,590,560	PKGS 233
510 AJH=JH	PKGS 234
JHR=AJH/168.	PKGS 235
IHRWK=JH-JHR*168	PKGS 236
IF(IHRWK-24) 520,520,550	PKGS 237
520 IF(SUDWH) 1110,610,530	PKGS 238
530 ISUST=SUDST	PKGS 239
IF(IHRDY-ISUST) 610,540,540	PKGS 240
540 ISUWH=SUDWH	PKGS 241
IF(IHRDY-ISUWH) 640,640,610	PKGS 242
550 IF(IHRWK-144) 590,590,560	PKGS 243
560 IF(SADRH) 1110,610,570	PKGS 244
570 ISAST=SADST	PKGS 245
IF(IHRDY-ISAST) 610,580,580	PKGS 246
580 ISAWH=SADWH	PKGS 247
IF(IHRDY-ISAWH) 640,640,610	PKGS 248
590 IW DST=WK DST	PKGS 249
IF(IHRDY-IWDST) 610,600,600	PKGS 250
600 IWDWH=WKDWH	PKGS 251
IF(IHRDY-IWDST-IWDWH) 640,640,610	PKGS 252
610 UKWXT=UKVXT+UKWNX	PKGS 253
UKWIT=UKWIT+UKWNI	PKGS 254
IWHR=0	PKGS 255
IF (TOA=60.0) 640,620,620	PKGS 256
620 DO 630 J=1,JMAX	PKGS 257
READ (IT,16) NS,QS(J),QL(J),QLITE(J),SLPOW(J)	PKGS 258
630 CONTINUE	PKGS 259
GO TO 1090	PKGS 260
640 DO 800 J=1,JMAX	PKGS 261
READ (IT,16) NS,QS(J),QL(J),QLITE(J),SLPOW(J)	PKGS 262
CQ=0.0	PKGS 263
HQ=0.0	PKGS 264
HKW=0.	PKGS 265
CKW=0.	PKGS 266
HGAS=0. &&&& &&	PKGS 267
CGAS=0.	PKGS 268
HOIL=0.	PKGS 269
FAMP=0.	PKGS 270
IF(QS(J)) 650,690,690	PKGS 271
650 CFM=.1*CFMX(J)	PKGS 272
QOA=1.08*CFM*(TOA-75.0)	PKGS 273
AQ=QS(J)+QOA	PKGS 274
Q=AQ+QLITE(J)*(CFMX(J)-CFM)/CFMX(J)	PKGS 275
IF(Q) 660,850,850	PKGS 276
660 IF(J=1) 1110,670,680	PKGS 277
680 HQ=HQ+Q	PKGS 278
AMHB=AMHB+Q	PKGS 279
SLG=ABS(Q)	PKGS 280
	PKGS 281

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      JMJ=JM(J)          PKGS 282
      GO TO ( 800, 810, 820, 800),JMJ  PKGS 283
  390 IF(TOA-70.) 710,700,700  PKGS 284
  700 CFM=.1*CFMX(J)  PKGS 285
      GO TO 750  PKGS 286
  710 IF(TOA-40.) 740,740,720  PKGS 287
  720 TSA=75.0-QS(J)/(1.08*CFMX(J))  PKGS 288
      IF(TSA-TOA) 730,850,850  PKGS 289
  730 CFM=CFMX(J)  PKGS 290
      GO TO 750  PKGS 291
  740 CFM=.1*CFMX(J)  PKGS 292
  750 QOA=1.08*CFM*(TOA-75.)  PKGS 293
      JMJ=JM(J)  PKGS 294
      AQ=QS(J)+QL(J)+QOA  PKGS 295
      Q=AQ+QLITE(J)*(CFMX(J)-CFM)/CFMX(J)  PKGS 296
      AMCR=AMCB+Q  PKGS 297
      IF(J-1) 1110,760,770  PKGS 298
  760 CQ=0.  PKGS 299
  770 CQ=CQ+Q  PKGS 300
      GO TO ( 780, 780, 780, 790),JMJ  PKGS 301
  780 CKW=.166*Q*.001  PKGS 302
      GO TO 850  PKGS 303
  790 CGAS=Q/25000.  PKGS 304
      FANP=CGAS*1.1  PKGS 305
      GO TO 850  PKGS 306
  800 HGAS=Q/75000.  PKGS 307
      FANP=HGAS*1.1  PKGS 308
      GO TO 850  PKGS 309
  810 HOIL =Q/(0.7*HVHO)  PKGS 310
      FANP=HOIL*HVHO*1.1/1000.0  PKGS 311
      GO TO 850  PKGS 312
  820 IF(TOA) 830,830,840  PKGS 313
  830 HKW=Q*.29*.001  PKGS 314
      GO TO 850  PKGS 315
  840 HKW=Q* (.1+.215*2.71828**((-1.)*(TOA+10.)/24.))* .001  PKGS 316
  850 CONTINUE  PKGS 317
      AFANP=AFANP+FANP  PKGS 318
      AHKW=AHKW+HKW  PKGS 319
      ACKW=ACKW+CKW  PKGS 320
      AHGAS=AHGAS+HGAS  PKGS 321
      ACGAS=ACGAS+CGAS  PKGS 322
      AHOIL=AHOIL+HOIL  PKGS 323
  860 CONTINUE  PKGS 324
      IF (IWHR) 880,870,880  PKGS 325
  870 UKWIT=UKWIT+AFANP  PKGS 326
      GO TO 885  PKGS 327
  880 AKWX=AKWX+UKWBX  PKGS 328
      AKWI=AKWI+UKWBI+AFANP  PKGS 329
  885 IF (CQ) 920,920,890  PKGS 330
  890 IF (DNCB) 900,900,910  PKGS 331
  900 DNCB=CQ  PKGS 332
      GO TO 920  PKGS 333
  910 IF (DNCB-CQ) 920,920,900  PKGS 334
  920 IF (HQ) 930,960,960  PKGS 335
  930 IF (DNHB) 950,940,940  PKGS 336
  940 DNHR=HQ  PKGS 337
      GO TO 960  PKGS 338

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950 IF (DNHB-HQ) 940,960,960	PKGS 339
960 IF (DMHB-HQ) 980,980,970	PKGS 0
970 DMHB=HQ	PKGS 1
980 IF (DMCB-CQ) 990,1000,1000	PKGS 342
990 DMCB=CQ	PKGS 343
1000 IF (HKWD-AHKW) 1010,1020,1020	PKGS 344
1010 HKWD=AHKW	PKGS 345
1020 IF (CKWD-ACKW) 1030,1040,1040	PKGS 346
1030 CKW=ACKW	PKGS 347
1040 IF (CGASD-ACGAS) 1050,1060,1060	PKGS 348
1050 CGASD=ACGAS	PKGS 349
1060 IF (HGASD-AHGAS) 1070,1080,1080	PKGS 350
1070 HGASD=AHGAS	PKGS 351
1080 HKWT=HKWT+AHKW	PKGS 352
CKWT=CKWT+ACKW	PKGS 353
UKWX=UKWX+AKWX	PKGS 354
UKWI=UKWI+AKWI	PKGS 355
HGAST=HGAST+AHGAS	PKGS 356
CGAST=CGAST+ACGAS	PKGS 357
HOILT=HOILT+AHOIL	PKGS 358
1090 CONTINUE	PKGS 359
ENGY(M,1,1)=DMHB*0.001	PKGS 360
ENGY(M,1,2)=DMCB*0.001	PKGS 361
ENGY(M,1,3)=UKWBI	PKGS 362
ENGY(M,1,4)=UKWBX	PKGS 363
ENGY(M,1,5)=HKWD	PKGS 364
ENGY(M,1,6)=CKWD	PKGS 365
ENGY(M,1,7)=HGASD	PKGS 366
ENGY(M,1,8)=CGASD	PKGS 367
ENGY(M,1,15)=DNHB*0.001	PKGS 368
ENGY(M,1,16)=DNCB*0.001	PKGS 369
ENGY(M,2,15)=AMHB*0.001	PKGS 370
ENGY(M,2,16)=AMCB*0.001	PKGS 371
ENGY(M,2,3)=AKWI+UKWIT	PKGS 372
ENGY(M,2,4)=AKWX+UKWXT	PKGS 373
ENGY(M,2,5)=HKWT	PKGS 374
ENGY(M,2,6)=CKWT	PKGS 375
ENGY(M,2,7)=HGAST	PKGS 376
ENGY(M,2,8)=CGAST	PKGS 377
ENGY(M,2,12)=HOILT*0.001	PKGS 378
1100 CONTINUE	PKGS 379
CALL ENGYC (FAC,CITY,PROJ,DATE,ENGR,ISYS,ENGY)	PKGS 380
1110 CONTINUE	PKGS 381
END	PKGS 382

SUBROUTINE ENGYC

CONTROL CARDS
AS NECESSARY

DATA

CONTROL CARDS
AS NECESSARY