

☆☆☆ A01 ☆☆☆

PAGE 001

***** END OF MBR

*** 801 ***

PAGE 002

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SUBROUTINE CONALB (X,Y,EN,F,J,CP,AK)
C
C      THIS SUBROUTINE DETERMINES WHETHER MAP PROJECTION IS
C      ALBERS EQUAL-AREA CONIC.
C
      IMPLICIT REAL*8 (A-H,O-Z)
      COMMON /A/ CTH,STH,CLONG
      COMMON /C/ XO,YO
      COMMON /E/ DM
      DIMENSION X(9),Y(9),F(3),CLONG(9),FO(2),RHO(3),DRHO(3),DFO(3)
      J=0
      DO 1 I=1,3
      XD=XO-X(I)
      YD=YO-Y(I)
      RHO(I)=DSIGN(DSQRT(XD*XD+YD*YD),EN)
1    CONTINUE
      DO 2 I=1,2
      RHSQ=RHO(I)*RHO(I)-RHO(I+1)*RHO(I+1)
      FO(I)=EN*(F(I+1)*RHO(I)*RHO(I)-F(I)*RHO(I+1)*RHO(I+1))/RHSQ
      DFO(I)=2.00*EN*DM*RHO(I)*RHO(I+1)*(F(I+1)-F(I))*(RHO(I)+
      *RHO(I+1))/RHSQ/RHSQ
2    CONTINUE
      DELT=1.00-FO(2)/FO(1)
      CONV3=(DABS(FO(1)*DFO(2))+DABS(FO(2)*DFO(1)))/FO(1)/FO(1)
      WRITE (6,100) DELT,CONV3
100  FORMAT (1H,2X,'FAILURE TO FIT PROJECTION=' ,F10.6,' TOLERANCE=' ,F10.6)
      *10.6)
      IF (DABS(DELT).GT.(CONV3)) GO TO 10
      CP=(FO(1)+FO(2))/2.00
      J=1
      AK=RHO(1)*EN/DSQRT(CP-EN*F(1))
10  RETURN
      END
***** END OF MBR

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GS/360 DATE=84250 VOLUME=NMD581 DSNAME=V65G30F.GRID.FORT

MEMBER=CONEQD

PAGE 003

***** MEMBER NAME=CONEQD *****

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C      SUBROUTINE CONEQD (X,Y,EN,F,J,G,AK)
C      THIS SUBROUTINE DETERMINES WHETHER MAP PROJECTION
C      IS EQUIDISTANT CONIC.
C      IMPLICIT REAL*8 (A-H,O-Z)
COMMON /A/ CTH,STH,CLONG
COMMON /C/ X0,Y0
COMMON /E/ DM
DIMENSION X(9),Y(9),F(3),CLONG(9),FO(2),RHO(3),DRHO(3),DFO(3)
J=0
DO 1 I=1,3
XD=X0-X(I)
YD=Y0-Y(I)
RHO(I)=DSIGN(DSQRT(XD*XD+YD*YD),EN)
1 CONTINUE
DO 2 I=1,2
RHOD=RHO(I+1)-RHO(I)
FO(I)=(RHO(I+1)*F(I)-RHO(I)*F(I+1))/RHOD
DFO(I)=(F(I+1)-F(I))*DM*(RHO(I)+RHO(I+1))/RHOD/RHOD
2 CONTINUE
DELT=1.D0-FO(2)/FO(1)
CONV3=(DABS(FO(1)*DFO(2))+DABS(FO(2)*DFO(1)))/FO(1)/FO(1)
WRITE (6,100) DELT,CONV3
100 FORMAT (1H,2X,'FAILURE TO FIT PROJECTION=',F10.6,' TOLERANCE=',F10.6)
*10.6)
IF (DABS(DELT).GT.(CONV3)) GO TO 10
G=(FO(1)+FO(2))/2.D0
J=1
AK=RHO(1)/(G-F(1))
10 RETURN
END
***** END OF MBR
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*** 001 ***

PAGE 004

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SUBROUTINE CONJAM (X,Y,EN,F,J,FF)
C
C
C
C
      THIS SUBROUTINE DETERMINES WHETHER MAP PROJECTION IS
      LAMBERT CONFORMAL CONIC.

      IMPLICIT REAL*8 (A-H,O-Z)
      COMMON /A/ CTH,STH,CLONG
      COMMON /B/ PI
      COMMON /C/ XO,YO
      COMMON /E/ DM
      DIMENSION X(9),Y(9),F(3),FO(3),CLONG(9),DFO(3)
      J=0
      DO 1 I=1,3
      XD=XO-X(I)
      YD=YO-Y(I)
      RH=DSQRT(XD*XD+YD*YD)
      FO(I)=DSIGN(RH/F(I),EN)
      DFO(I)=DM/F(I)
      DELT=1.D0-FO(I)/FO(1)
      IF (1.EQ.1) GO TO 1
      CONV3=(DABS(FO(1)*DFO(I))+DABS(FO(I)*DFO(1)))/FO(1)/FO(1)
      WRITE (6,100) DELT,CONV3
100  FORMAT (1H,2X,'FAILURE TO FIT PROJECTION=',F10.6,'  TOLERANCE=',
      *F10.6)
      IF (DABS(DELT).GT.(CONV3)) GO TO 10
      1  CONTINUE
      FF=(FO(1)+FO(2)+FO(3))/3.D0
      J=1
10  RETURN
      END
*****
      END OF MBR

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★★★ E01 ★★★

MEMBER=EFACT

PAGE 005

***** MEMBER NAME=EFACT

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SUBROUTINE EFAC (E2,EF0,EF1,EF2)
C
C   THIS SUBROUTINE COMPUTES COEFFICIENTS FOR DISTANCE ALONG
C   MERIDIAN OF ELLIPSOID.

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00000020
00000030
00000040
00000050
00000060
00000070
00000080
00000090
00000100
00000110
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***** END OF MBR

OS/360 DATE=84250 VOLUME=NM0581 DSNAME=VG5G30F.GRID.FORT

MEMBER=EXEC

PAGE 006

***** MEMBER NAME=EXEC *****

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//00000000 JOB (000000000),SNYDER,CLASS=D,MSGLEVEL=(0,0)          00000010
/*JOBPARM T=1,L=7                                                    00000011
// EXEC FORTXCG,REGION.FORT=400K,TIME.GO=(,15),REGION.GO=300K      00000020
//FORT.SYSIN DD DSN=VG5G30F.GRID.FORT(MAIN),DISP=SHR               00000030
//          DD DSN=VG5G30F.GRID.FORT(CALC),DISP=SHR                00000040
//          DD DSN=VG5G30F.GRID.FORT(CONALB),DISP=SHR              00000050
//          DD DSN=VG5G30F.GRID.FORT(CONEQD),DISP=SHR              00000060
//          DD DSN=VG5G30F.GRID.FORT(CONLAM),DISP=SHR              00000070
//          DD DSN=VG5G30F.GRID.FORT(EFACT),DISP=SHR               00000090
//          CD DSN=VG5G30F.GRID.FORT(MATINV),DISP=SHR              00000095
//          DD DSN=VG5G30F.GRID.FORT(NRME),DISP=SHR                00000100
//          DD DSN=VG5G30F.GRID.FORT(PERSP2),DISP=SHR              00000110
//          DD DSN=VG5G30F.GRID.FORT(PHIM),DISP=SHR                00000120
//          DD DSN=VG5G30F.GRID.FORT(PHIQ),DISP=SHR               00000130
//          DD DSN=VG5G30F.GRID.FORT(PHIT),DISP=SHR               00000140
//          DD DSN=VG5G30F.GRID.FORT(POLYNM),DISP=SHR              00000142
//          DD DSN=VG5G30F.GRID.FORT(SLP),DISP=SHR                 00000150
//          DD DSN=VG5G30F.GRID.FORT(SMLE),DISP=SHR                00000160
//GO.SYSIN DD DSN=VG5G30F.GRID.FORT(POINTS),LABEL=(,,IN),DISP=SHR 00000170
***** END OF MBR
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OS/360 DATE=84250 VOLUME=NMD581 DSNAME=VG5G30F.GRID.FORT

MEMBER=MAIN

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***** MEMBER NAME=MAIN *****

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C      00000010
C      THIS PROGRAM DETERMINES MAP PROJECTION AND PARAMETERS FOR MAP 00000020
C      WITH GRATICULE BUT UNKNOWN PROJECTION OR UNKNOWN PARAMETERS. 00000030
C      00000040
C      IMPLICIT REAL *8 (A-H,O-Z) 00000050
C      COMMON /A/ CTH,STH,CLONG 00000060
C      COMMON /B/ PI 00000070
C      COMMON /C/ XO,YO 00000080
C      COMMON /D/ AA,BB,ZA,AZ,SPO,CPO,ZZ 00000090
C      COMMON /E/ DM 00000100
C      COMMON /F/ CONV2 00000110
C      DIMENSION PHI(9),CLONG(9),X(9),Y(9),F(3),FO(3),RHO(3),W(12) 00000120
C      DIMENSION U(3),V(3),DF(3),CFA(6),CFB(6) 00000130
C      DIMENSION X3(9),Y3(9) 00000140
C      PI=3.14159265D0 00000150
C      RADDG=180.D0/PI 00000160
C      DGRAD=PI/180.D0 00000170
C      E2=0.006768658D0 00000180
C      E=DSQRT(E2) 00000190
C      A=6378206.4D0/0.0254D0 00000200
C      CONV2=0.0001D0 00000210
C      00000220
C      READ X AND Y IN INCHES FOR GRATICULE INTERSECTIONS AT 9 POINTS 00000230
C      ON MAP, SPREAD OVER MAP, BUT ON A 3 X 3 MATRIX OF INTERSECTIONS 00000240
C      IN THE FOLLOWING ORDER: (1-3) SAME LONG., BUT DECREASING LAT., 00000250
C      (4-6) MORE EASTERLY LONG., BUT SAME 3 LAT. IN ORDER, (7-9) STILL 00000260
C      MORE EASTERLY LONG., BUT SAME 3 LAT. IN ORDER. SPACING OF LAT. 00000270
C      AND LONG. (DEGREES AND DECIMALS) DOES NOT NEED TO BE UNIFORM. X 00000280
C      AND Y MAY BE RELATIVE TO ANY FIXED PERPENDICULAR AXES. 00000290
C      DO NOT CHOOSE A POLE FOR ONE OF THE LATITUDES. 00000300
C      00000310
C      10 CONTINUE 00000320
C      READ (5,2880) MM 00000330
C      IF (MM.EQ.0) CONV1=0.0001D0 00000340
C      IF (MM.EQ.0) DM=0.0001D0 00000350
C      IF (MM.NE.0) CONV1=0.01D0 00000360
C      IF (MM.NE.0) DM=0.01D0 00000370
C      A1=0.D0 00000380
C      A2=0.D0 00000390
C      A3=0.D0 00000400
C      A4=0.D0 00000410
C      A5=0.D0 00000420
C      A6=0.D0 00000430
C      NUM=0 00000440
C      NOR=0 00000450
C      WRITE (6,15) 00000460
C      15 FORMAT (1H0,'*****' 00000470
C      *****' 00000480
C      *****') 00000490
C      WRITE (6,20) 00000500
C      20 FORMAT (1H0,10X,'MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 00000510

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OS/360 DATE=84250 VOLUME=NMD581 DSN=V65G30F.GRID.FORT

MEMBER=MAIN

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*POINTS: '(1H0,15X,'LAT.',5X,'LONG.',6X,'X',9X,'Y')')
DO 30 I=1,9
  READ (5,40) PHI(I),CLONG(I),X(I),Y(I)
  IF (MM.NE.0) X(I)=X(I)/2000.D0
  IF (MM.NE.0) Y(I)=Y(I)/2000.D0
  WRITE (6,50) PHI(I),CLONG(I),X(I),Y(I)
  PHI(I)=PHI(I)*DGRAD
  CLONG(I)=CLONG(I)*DGRAD
  IF ((CLONG(I)-CLONG(1)).LT.-CONV2) CLONG(I)=CLONG(I)+2.D0*PI
30 CONTINUE
40 FORMAT (2F10.4,2F10.6)
50 FORMAT (1H ,10X,2F10.4,2F10.6)
  LAST=0
  LOST=0
  X12=X(1)-X(2)
  Y12=Y(1)-Y(2)
  D12=DSQRT(X12*X12+Y12*Y12)
  X25=X(2)-X(5)
  Y25=Y(2)-Y(5)
  D25=DSQRT(X25*X25+Y25*Y25)
  X23=X(2)-X(3)
  Y23=Y(2)-Y(3)
  D23=DSQRT(X23*X23+Y23*Y23)
  X36=X(3)-X(6)
  Y36=Y(3)-Y(6)
  D36=DSQRT(X36*X36+Y36*Y36)
  X45=X(4)-X(5)
  Y45=Y(4)-Y(5)
  D45=DSQRT(X45*X45+Y45*Y45)
  X56=X(5)-X(6)
  Y56=Y(5)-Y(6)
  D56=DSQRT(X56*X56+Y56*Y56)
  X78=X(7)-X(8)
  Y78=Y(7)-Y(8)
  D78=DSQRT(X78*X78+Y78*Y78)
  X89=X(8)-X(9)
  Y89=Y(8)-Y(9)
  D89=DSQRT(X89*X89+Y89*Y89)
  X58=X(5)-X(8)
  Y58=Y(5)-Y(8)
  D58=DSQRT(X58*X58+Y58*Y58)
  X69=X(6)-X(9)
  Y69=Y(6)-Y(9)
  D69=DSQRT(X69*X69+Y69*Y69)
  X14=X(1)-X(4)
  Y14=Y(1)-Y(4)
  D14=DSQRT(X14*X14+Y14*Y14)
  X47=X(4)-X(7)
  Y47=Y(4)-Y(7)
  D47=DSQRT(X47*X47+Y47*Y47)
  X79=X(7)-X(9)
  Y79=Y(7)-Y(9)
  SLOP12=DATAN2(Y12,X12)
  SLOP23=DATAN2(Y23,X23)
  SLOP45=DATAN2(Y45,X45)
  SLOP56=DATAN2(Y56,X56)
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00000520
00000530
00000540
00000550
00000560
00000570
00000580
00000590
00000600
00000610
00000620
00000630
00000640
00000650
00000660
00000670
00000680
00000690
00000700
00000710
00000720
00000730
00000740
00000750
00000760
00000770
00000780
00000790
00000800
00000810
00000820
00000830
00000840
00000850
00000860
00000870
00000880
00000890
00000900
00000910
00000920
00000930
00000940
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00000960
00000970
00000980
00000990
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00001010
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OS/360

DATE=84250

VOLUME=NM0581

DSNAME=VG5G30F.GRID.FORT

MEMBER=MAIN

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SLOP78=DATAN2(Y78,X78)          00001080
SLOP89=DATAN2(Y89,X89)          00001090
SLOP14=DATAN2(Y14,X14)          00001100
SLOP47=DATAN2(Y47,X47)          00001110
SLOP25=DATAN2(Y25,X25)          00001120
SLOP36=DATAN2(Y36,X36)          00001130
SLOP58=DATAN2(Y58,X58)          00001140
SLOP69=DATAN2(Y69,X69)          00001150
CALL SLP (SLOP12,SLOP23,SLP123) 00001160
CALL SLP (SLOP45,SLOP56,SLP456) 00001170
CALL SLP (SLOP78,SLOP89,SLP789) 00001180
CALL SLP (SLOP14,SLOP47,SLP147) 00001190
CALL SLP (SLOP25,SLOP58,SLP258) 00001200
CALL SLP (SLOP36,SLOP69,SLP369) 00001210
CALL SLP (SLOP14,SLOP25,SLP145) 00001220
CALL SLP (SLOP25,SLOP36,SLP256) 00001230
CALL SLP (SLOP12,SLOP45,SLP125) 00001240
CALL SLP (SLOP45,SLOP78,SLP458) 00001250
CALL SLP (SLOP12,SLOP14,SLP124) 00001260
C 00001270
C IF MERIDIANS ARE STRAIGHT, CODE LOST=1. (IF NOT, LOST=0.) 00001280
C 00001290
CONV3=DM*(2.00/D12+2.00/D23)      00001300
WRITE (6,60)                      00001310
60 FORMAT (1H )                   00001320
WRITE (6,70) SLP123,CONV3          00001330
70 FORMAT (1H ,2X,'MERIDIAN CURVATURE=',F10.6,' TOLERANCE=',F10.6) 00001340
IF (DABS(SLP123).GT.CONV3) GO TO 80 00001350
CONV3=DM*(2.00/D45+2.00/D56)      00001360
WRITE (6,70) SLP456,CONV3          00001370
IF (DABS(SLP456).GT.CONV3) GO TO 80 00001380
CONV3=DM*(2.00/D78+2.00/D89)      00001390
WRITE (6,70) SLP789,CONV3          00001400
IF (DABS(SLP789).LT.CONV3) LOST=1 00001410
80 CONTINUE                       00001420
C 00001430
C IF PARALLELS ARE STRAIGHT, CODE LAST=1. (IF NOT, LAST=0.) 00001440
C 00001450
CONV3=DM*(2.00/D14+2.00/D47)      00001460
WRITE (6,90) SLP147,CONV3          00001470
90 FORMAT (1H ,2X,'PARALLEL CURVATURE=',F10.6,' TOLERANCE=',F10.6) 00001480
IF (DABS(SLP147).GT.CONV3) GO TO 100 00001490
CONV3=DM*(2.00/D25+2.00/D58)      00001500
WRITE (6,90) SLP258,CONV3          00001510
IF (DABS(SLP258).GT.CONV3) GO TO 100 00001520
CONV3=DM*(2.00/D36+2.00/D69)      00001530
WRITE (6,90) SLP369,CONV3          00001540
IF (DABS(SLP369).LT.CONV3) LAST=1 00001550
100 CONTINUE                      00001560
IF (LOST.EQ.1.AND.LAST.EQ.1) GO TO 108 00001570
CALL POLYNM (X,Y,PHI,CLONG,CFA,CFB,RES,XA,YA,A,E2) 00001580
IF (MM.EQ.0.AND.RES.GT.0.00200) GO TO 108 00001590
IF (MM.NE.0.AND.RES.GT.1.500) GO TO 108 00001600
WRITE (6,101)                      00001610
101 FORMAT (1H0,2X,'THIS MAP COVERS A SMALL ENOUGH AREA TO FIT A SECOND 00001620
      *D ORDER POLYNOMIAL.')      00001630
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OS/360 DATE=84250 VOLUME=NMD581 DSNAME=VG5G30F.GRID.FORT

MEMBER=MAIN

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102 READ (5,2070) NN,X1,Y1          00001640
    IF (NN.EQ.1) GO TO 2870          00001650
    IF (MM.NE.0) X1=X1/2000.D0      00001660
    IF (MM.NE.0) Y1=Y1/2000.D0      00001670
    XD=X1-XA                          00001680
    YD=Y1-YA                          00001690
    XT=CFA(1)+CFA(2)*XD+CFA(3)*YD+CFA(4)*XD**2+CFA(5)*XD*YD+CFA(6)*YD*00001700
    **2                              00001710
    YT=CFB(1)+CFB(2)*XD+CFB(3)*YD+CFB(4)*XD**2+CFB(5)*XD*YD+CFB(6)*YD*00001720
    **2                              00001730
    CLONGD=XT*RADDG                   00001740
    PHID=YT*RADDG                     00001750
    WRITE (6,2280) X1,Y1,PHID,CLONGD 00001760
    GO TO 102                         00001770
108 IF (LOST.NE.1.AND.LAST.NE.1) GO TO 1030 00001780
C                                     00001790
C   IF MERIDIANS ARE STRAIGHT AND PARALLELS ARE CURVED, TEST FOR 00001800
C   CONICS AND GNOMONIC.          00001810
C                                     00001820
    IF (LOST.EQ.1.AND.LAST.NE.1) GO TO 150 00001830
    CONV3=DM*(2.D0/D14+2.D0/D45)      00001840
110 FORMAT (1H,2X,'SKEWNESS OF STRAIGHT PARALLEL=',F10.6,' TOLERANCE00001850
    *=',F10.6)                      00001860
    WRITE (6,110) SLP145,CONV3        00001870
    IF (DABS(SLP145).GT.CONV3) GO TO 1030 00001880
    CONV3=DM*(2.D0/D25+2.D0/D56)      00001890
    WRITE (6,110) SLP256,CONV3        00001900
    IF (DABS(SLP256).GT.CONV3) GO TO 1030 00001910
C                                     00001920
C   IF PARALLELS ARE STRAIGHT AND PARALLEL, AND MERIDIANS ARE 00001930
C   CURVED, ARE MERIDIANS EQUIDISTANT? IF NOT, TRY EQUATORIAL 00001940
C   ORTHOGRAPHIC. IF SO, TRY PSEUDOCYLINDRICAL. 00001950
C                                     00001960
    DIST14=D14/(CLONG(4)-CLONG(1))    00001970
    DIST47=D47/(CLONG(7)-CLONG(4))    00001980
    DELT=1.D0-DIST14/DIST47           00001990
    DD14=2.D0*DM/(CLONG(4)-CLONG(1)) 00002000
    DD47=2.D0*DM/(CLONG(7)-CLONG(4)) 00002010
    DD14=DD14*DIST47                  00002020
    DD47=DD47*DIST14                  00002030
    CONV3=(DABS(DD14)+DABS(DD47))/(DIST47**2) 00002040
    WRITE (6,120) DELT,CONV3          00002050
120 FORMAT (1H,2X,'UNEQUALITY OF MERIDIAN SPACING=',F10.6,' TOLERANC00002060
    *E=',F10.6)                      00002070
    IF (LOST.NE.1.AND.LAST.EQ.1) GO TO 1790 00002080
    IF (DABS(DELT).GT.CONV3) GO TO 1030 00002090
    CONV3=DM*(2.D0/D12+2.D0/D45)      00002100
    WRITE (6,130) SLP125,CONV3        00002110
130 FORMAT (1H,2X,'SKEWNESS OF STRAIGHT MERIDIAN=',F10.6,' TOLERANCE00002120
    *=',F10.6)                      00002130
    IF (DABS(SLP125).GT.CONV3) GO TO 1030 00002140
    CONV3=DM*(2.D0/D45+2.D0/D78)      00002150
    WRITE (6,130) SLP458,CONV3        00002160
    IF (DABS(SLP458).GT.CONV3) GO TO 1030 00002170
C                                     00002180
C   IF MERIDIANS AND PARALLELS ARE ALL STRAIGHT AND PARALLEL, 00002190
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C	TEST FOR BEING PERPENDICULAR TO OTHER SET.	00002200
C	DELTA=DABS(SLP124)-PI/2.00	00002210
	CONV3=DM*(2.00/D12+2.00/D14)	00002220
	WRITE (6,140) DELTA,CONV3	00002230
140	FORMAT (1H,2X,'LACK OF PERPENDICULARITY OF MERIDIANS AND PARALLEL	00002240
	*S=',F10.6,' TOLERANCE=',F10.6)	00002250
	IF (DABS(DELTA).GT.CONV3) GO TO 1030	00002260
		00002270
C		00002280
C	PARALLELS ARE PERPENDICULAR TO EQUIDISTANT MERIDIANS, AND	00002290
C	PROJECTION IS A REGULAR CYLINDRICAL.	00002300
C		00002310
	GO TO 190	00002320
150	CONTINUE	00002330
		00002340
C		00002350
C	MERIDIANS ARE STRAIGHT AND PARALLELS ARE CURVED, BUT DO	00002360
C	MERIDIANS CONVERGE AT A COMMON POINT? IF MERIDIANS ARE PARALLEL,	00002370
C	TEST FOR TRANSVERSE MERCATOR OR POLYCONIC (LARGE SCALE), THEN	00002380
C	EQUATORIAL GNOMONIC.	00002390
	CONV3=DM*(2.00/D12+2.00/D45)	00002400
	WRITE (6,130) SLP125,CONV3	00002410
	CONV4=DM*(2.00/D45+2.00/D78)	00002420
	WRITE (6,130) SLP458,CONV4	00002430
	IF (DABS(SLP125).LT.CONV3.AND. DABS(SLP458).LT.CONV4) NUM=1	00002440
	IF (DABS(SLP125).LT.CONV3.AND. DABS(SLP458).LT.CONV4) GO TO 1030	00002450
	X46=X(4)-X(6)	00002460
	X13=X(1)-X(3)	00002470
	Y46=Y(4)-Y(6)	00002480
	Y13=Y(1)-Y(3)	00002490
	YX13=Y(1)*X(3)-X(1)*Y(3)	00002500
	YX46=Y(4)*X(6)-X(4)*Y(6)	00002510
	XY=X46*Y13-X13*Y46+1.D-9	00002520
	XX=X46*YX13-X13*YX46	00002530
	YY=Y46*YX13-Y13*YX46	00002540
	X0=XX/XY	00002550
	Y0=YY/XY	00002560
	YX79=Y(7)*X(9)-X(7)*Y(9)	00002570
	Y01=(X0*(Y(7)-Y(9))-YX79)/(X(7)-X(9)+1.D-9)	00002580
	R1=X0-X(1)	00002590
	R2=Y0-Y(1)	00002600
	RAD=DSQRT(R1*R1+R2*R2)	00002610
	DX0=DM*(DABS(XY*(YX13+X13*Y(6))-XX*Y13)+DABS(XY*(YX13+X13*Y(4))	00002620
	*-XX*Y13)+DABS((XY*X(3)-XX)*X46)+DABS(XY*(YX46+X46*Y(3))-XX*Y46))	00002630
	DX0=DX0+DM*(DABS(XY*(YX46+X46*Y(1))-XX*Y46)+DABS((XY*X(1)-XX)*X46)	00002640
	*+DABS((XY*X(6)-XX)*X13)+DABS((XY*X(4)-XX)*X13))	00002650
	DX0=DX0/XY/XY	00002660
	DY0=DM*(DABS(XY*(YX13-Y13*X(6))+YY*X13)+DABS(XY*(YX13-Y13*X(4))+YY	00002670
	**X13)+DABS(XY*(-X(3)*Y46+YX46)+YY*X46)+DABS((XY*Y(3)-YY)*Y46))	00002680
	DY0=DY0+DM*(DABS((XY*Y(1)-YY)*Y46)+DABS((XY*X(1)*Y46+YX46)+YY*X46	00002690
	*)+DABS((XY*Y(6)-YY)*Y13)+DABS((XY*Y(4)-YY)*Y13))	00002700
	DY0=DY0/XY/XY	00002710
	DY01=(DABS(DX0*X79*Y79)+(DABS(X79*(X0-X(9)))+DABS(X79*(X0-X(7)))	00002720
	+DABS(Y79(X0-X(9)))+DABS(Y79*(X0-X(7))))/X79/X79	00002730
	CONV3=DY0+DY01	00002740
	DELTA=Y0-Y01	00002750

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      WRITE (6,160) DELT,CONV3
160  FORMAT (1H,2X,'LACK OF CONVERGENCE OF MERIDIANS=',F10.6,' TOLERANCE=',F10.6)
      IF (DABS(DELT).GT.(CONV3)) GO TO 2000
      MERIDIANS CONVERGE, BUT ARE PARALLELS ARCS OF CONCENTRIC CIRCLES
      CENTERED ON POINT OF MERIDIAN CONVERGENCE?
      CONV3=0.00
      DELT=0.00
      DO 180 I=1,3
      DIST01=(Y0-Y(I))*2+(X0-X(I))*2
      DIST04=(Y0-Y(I+3))*2+(X0-X(I+3))*2
      IF PARALLELS ARE NOT ARCS OF CIRCLES, TEST FOR TRANSVERSE MERCATOR
      OR POLYCONIC (LARGE SCALE), THEN OBLIQUE GNOMONIC.
      DD01=(DABS(Y0-Y(I))+DABS(X0-X(I)))*DM/DSQRT(DIST01)
      DD04=(DABS(Y0-Y(I+3))+DABS(X0-X(I+3)))*DM/DSQRT(DIST04)
      CONV3=2.00*(DD01+DD04)/DSQRT(DIST04)+CONV3
      DELT=1.00-DSQRT(DIST01)/DSQRT(DIST04)+DELT
170  FORMAT (1H,2X,'MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS=',F10.6,
      *6,' TOLERANCE=',F10.6)
      DIST04=(Y0-Y(I+6))*(Y0-Y(I+6))+(X0-X(I+6))*(X0-X(I+6))
      DD04=(DABS(Y0-Y(I+6))+DABS(X0-X(I+6)))*DM/DSQRT(DIST04)
      CONV3=2.00*(DD01+DD04)/DSQRT(DIST04)+CONV3
      DELT=1.00-DSQRT(DIST01)/DSQRT(DIST04)+DELT
180  CONTINUE
      CONV3=CONV3/6.00
      DELT=DELT/6.00
      WRITE (6,170) DELT,CONV3
      IF (DABS(DELT).GT.CONV3) NUM=2
      IF (DABS(DELT).GT.CONV3) GO TO 1030
      PARALLELS ARE CONCENTRIC ARCS. PROJECTION IS REGULAR CONIC.
      GO TO 380
      DETERMINE KIND OF CYLINDRICAL PROJECTION AND PARAMETERS.
      THETA IS INCLINATION OF EQUATOR TO X-AXIS, AK IS SPACING OF
      MERIDIANS.
190  TH=(SLOP14+SLOP47+SLOP25+SLOP58+SLOP36+SLOP69)/6.00+PI
      CTH=DCOS(TH)
      STH=DSIN(TH)
      AK=(DIST14+DIST47)/2.00
      SCALE=A/AK
      TEST FOR SPHERICAL MERCATOR.
      X0=0.00
      Y0=0.00
195  DO 200 I=1,3
      F(I)=DLOG(DTAN(PI/4.00+PHI(I)/2.00))
      X0A=X(I)-AK*CLONG(1)*CTH+AK*F(I)*STH
      Y0A=Y(I)-AK*F(I)*CTH-AK*CLONG(1)*STH

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      XO=XO+XOA                                00003302
      YO=YO+YOA                                00003304
200  CONTINUE                                00003310
      XO=XO/3.D0                                00003312
      YO=YO/3.D0                                00003314
      WRITE (6,270) SCALE                      00003319
220  FORMAT (1H0,2X,'IF MAP PROJECTION IS SPHERICAL MERCATOR. THE SCALE 00003320
      *E AT THE EQUATOR =1/',F10.1)
      N=1                                        00003330
      GO TO 2030                                00003340
C                                          00003350
C      TEST FOR ELLIPSOIDAL MERCATOR.          00003360
C                                          00003370
C                                          00003380
230  XO=0.D0                                00003382
      YO=0.D0                                00003384
      DO 240 I=1,3                             00003390
      ES=E*DSIN(PHI(I))                       00003400
      F(I)=DLOG((DTAN(PI/4.D0+PHI(I)/2.D0))*((1.D0-ES)/(1.D0+ES)))*(E/2. 00003410
      *D0))                                00003420
      XOA=X(I)-AK*CLONG(1)*CTH+AK*F(I)*STH    00003440
      YOA=Y(I)-AK*F(I)*CTH-AK*CLONG(1)*STH    00003450
      XO=XO+XOA                                00003452
      YO=YO+YOA                                00003454
240  CONTINUE                                00003455
      XO=XO/3.D0                                00003456
      YO=YO/3.D0                                00003458
      WRITE (6,260) SCALE                      00003460
260  FORMAT (1H0,2X,'IF MAP PROJECTION IS ELLIPSOIDAL MERCATOR. SCALE 00003470
      *AT EQUATOR=1/',F10.1)
      N=2                                        00003480
      GO TO 2030                                00003490
C                                          00003500
C      TEST FOR MILLER CYLINDRICAL.            00003510
C                                          00003520
C                                          00003530
270  XO=0.D0                                00003532
      YO=0.D0                                00003534
      DO 280 I=1,3                             00003540
      F(I)=DLOG(DTAN(PI/4.D0+0.4D0*PHI(I)))/0.8D0 00003550
      XOA=X(I)-AK*CLONG(1)*CTH+AK*F(I)*STH    00003570
      YOA=Y(I)-AK*F(I)*CTH-AK*CLONG(1)*STH    00003580
      XO=XO+XOA                                00003582
      YO=YO+YOA                                00003584
280  CONTINUE                                00003585
      XO=XO/3.D0                                00003586
      YO=YO/3.D0                                00003588
      WRITE (6,300) SCALE                      00003590
300  FORMAT (1H0,2X,'IF MAP PROJECTION IS MILLER CYLINDRICAL. SCALE=1/ 00003600
      *,F10.1)                                00003610
      N=3                                        00003620
      GO TO 2030                                00003630
C                                          00003640
C      TEST FOR EQUIRECTANGULAR. CPO IS COS OF STANDARD PARALLEL. 00003650
C                                          00003660
C                                          00003670
310  XNM=D14/(CLONG(4)-CLONG(1))              00003670
      DEN=D12/(PHI(1)-PHI(2))                 00003700
      DEN1=D23/(PHI(2)-PHI(3))                00003702
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      DEN=(DEN+DEN1)/2.D0
      CPO=XNM/DEN
      IF (DABS(CPO).GT.1.D0) CPO=DSIGN(1.D0,CPO)
      PHIO=DARCOS(CPO)*RADDG
      AKE=AK/CPO
      XO=X(1)-AK*CLONG(1)*CTH+AKE*PHI(1)*STH
      YO=Y(1)-AKE*PHI(1)*CTH-AK*CLONG(1)*STH
      SCALE=A/AKE
      WRITE (6,330) PHIO,SCALE
330  FORMAT (1H0,2X,'IF MAP PROJECTION IS EQUIRECTANGULAR WITH ',F10.4,
*  ' DEG. LAT. N & S AS STANDARD PARALLELS. SCALE=1/',F10.1)
      N=4
      GO TO 2030
C
C      TEST FOR GALL'S.
C
340  AKE=AK*DSQRT(2.D0)
      CONST=1.D0+1.D0/DSQRT(2.D0)
      XO=0.D0
      YO=0.D0
      DO 350 I=1,3
      F(I)=CONST*DTAN(PHI(I)/2.D0)
      XOA=X(I)-AK*CLONG(1)*CTH+AKE*F(I)*STH
      YOA=Y(I)-AKE*F(I)*CTH-AK*CLONG(1)*STH
      XO=XO+XOA
      YO=YO+YOA
350  CONTINUE
      XO=XO/3.D0
      YO=YO/3.D0
      SCALE=A/AKE
      WRITE (6,370) SCALE
370  FORMAT (1H0,2X,'IF MAP PROJECTION IS GALL'S CYLINDRICAL. SCALE=1/
*  ',F10.1)
      N=5
      GO TO 2030
C
C      DETERMINE KIND OF CONIC PROJECTION. FIRST COMPUTE THE CONE
C      CONSTANT.
C
380  SLOP13=DATAN2(Y13,X13)
      SLOP46=DATAN2(Y46,X46)
      SLOP79=DATAN2(Y79,X79)
      CALL SLP (SLOP13,SLOP46,SLP146)
      EN12=SLP146/(CLONG(1)-CLONG(4))
      CALL SLP (SLOP13,SLOP79,SLP179)
      EN13=SLP179/(CLONG(1)-CLONG(7))
      D30=2.D0*DM/DSQRT((XO-X(3))**2+(YO-Y(3))**2)
      DEN12=D30/(CLONG(1)-CLONG(4))
      DEN13=D30/(CLONG(1)-CLONG(7))
      CONV3=2.D0*(DABS(DEN12)+DABS(DEN13))
C
C      ARE MERIDIANS EQUALLY SPACED?
C
      DELT=EN12-EN13
      WRITE (6,120) DELT,CONV3
      IF (DABS(DELT).GT.CONV3) GO TO 1030
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      EN=(EN12+EN13)/2.D0          00004200
      IF (DABS(EN).GT.1.D0) EN=DSIGN(1.D0,EN) 00004210
      TH=DATAN2(((X(1)-X0)*DSIGN(1.D0,EN)),((Y0-Y(1))*DSIGN(1.D0,EN)))-E 00004220
      *N*CLONG(1)                   00004230
      GO TO 420                     00004240
C                                     00004250
C      TEST FOR SPHERICAL LAMBERT CONFORMAL CONIC OR POLAR STEREOGRAPHIC. 00004260
C                                     00004270
C 385 DO 390 I=1,3                 00004280
      F(I)=(DTAN(PI/4.D0-PHI(I)/2.D0))*EN 00004290
390 CONTINUE                       00004300
      WRITE (6,400)                 00004310
400 FORMAT (1H,2X,'SPHERICAL LAMBERT CONFORMAL CONIC:') 00004320
      CALL CONLAM (X,Y,EN,F,J,FF) 00004330
      IF (J.EQ.0) GO TO 460          00004340
      IF (DABS(DABS(EN)-1.D0).LT.CONV3) GO TO 740 00004350
      PHIO=DARSIN(EN)               00004360
      AK=FF*EN*((DTAN(PI/4.D0-PHI0/2.D0))*EN)/DCOS(PHI0) 00004370
      SCALE=A/AK                   00004380
      PHID=PHIO*RADDG              00004390
      WRITE (6,410) SCALE,PHID      00004400
410 FORM=T (1H0,2X,'IF MAP PROJECTION IS SPHERICAL LAMBERT CONFORMAL 00004410
      *ONIC. SCALE=1/' ,F10.1,' FOR SINGLE STD. LAT.' ,F10.4,' DEG.') 00004420
      N=6                           00004430
      GO TO 2290                    00004440
C                                     00004450
C      TEST FOR ELLIPSOIDAL LAMBERT CONFORMAL CONIC OR POLAR STEREOG - 00004460
C      RAPHC                       00004470
C                                     00004480
C 420 DO 430 I=1,3                 00004490
      ES=E*DSIN(PHI(I))             00004500
      F(I)=(DTAN(PI/4.D0-PHI(I)/2.D0)/((1.D0-ES)/(1.D0+ES)))*(E/2.D0))* 00004510
      *EN                           00004520
430 CONTINUE                       00004530
      WRITE (6,440)                 00004540
440 FORMAT (1H,2X,'ELLIPSOIDAL LAMBERT CONFORMAL CONIC:') 00004550
      CALL CONLAM (X,Y,EN,F,J,FF) 00004560
      IF (J.EQ.0) GO TO 385          00004570
      IF (DABS(DABS(EN)-1.D0).LT.CONV3) GO TO 760 00004580
      PHIO=DARSIN(EN)               00004590
      ES=E*DSIN(PHI0)              00004600
      AK=FF*EN*DSQRT((1.D0-ES*ES)*(DTAN(PI/4.D0-PHI0/2.D0)/((1.D0-ES)/ 00004610
      *(1.D0+ES))**(E/2.D0))*EN/DCOS(PHI0) 00004620
      SCALE=A/AK                   00004630
      PHID=PHIO*RADDG              00004640
      WRITE (6,450) SCALE,PHID      00004650
450 FORMAT (1H0,2X,'IF MAP PROJECTION IS ELLIPSOIDAL LAMBERT CONFORMAL 00004660
      * CONIC. SCALE=1/' ,F10.1,' FOR SINGLE STD. LAT.' ,F10.4,' DEG.') 00004670
      N=7                           00004680
      GO TO 2290                    00004690
C                                     00004700
C      TEST FOR ELLIPSOIDAL ALBERS EQUAL-AREA CONIC OR POLAR LAMBERT 00004710
C      AZIMUTHAL EQUAL-AREA.      00004720
C                                     00004730
C 460 DO 470 I=1,3                 00004740
      ES=E*DSIN(PHI(I))             00004750

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      F(I)=(1.D0-E2)*(DSIN(PHI(I))/(1.D0-ES*ES)-(1.D0/2.D0/E)*DLOG((1.D000004760
      *-ES)/(1.D0+ES))) 00004770
470 CONTINUE 00004780
      WRITE (6,480) 00004790
480 FORMAT (1H,2X,'ELLIPSOIDAL ALBERS EQUAL AREA CONIC:') 00004800
      CALL CONALB (X,Y,EN,F,J,CP,AK) 00004810
      IF (J.EQ.0) GO TO 540 00004820
      SCALE=A/AK 00004830
      IF (DABS(DABS(EN)-1.D0).LT.CONV3) GO TO 780 00004840
      PHI1=DARSIN(EN+DSQRT(EN*EN-CP+1.D0)) 00004850
      M=0 00004860
      L=0 00004870
490 SPH=DSIN(PHI1) 00004880
      CPH=DCOS(PHI1) 00004890
      ES=E*SPH 00004900
      ESP=1.D0-ES*ES 00004910
      F(1)=(1.D0-E2)*(SPH/ESP-(1.D0/2.D0/E)*DLOG((1.D0-ES)/(1.D0+ES))) 00004920
      FPH=CPH*CPH-(CP-EN*F(1))*ESP 00004930
      FPPH=-2.D0*SPH*CPH*(1.D0-E2*(CP-EN*F(1)))+2.D0*EN*(1.D0-E2)*CPH/ES 00004940
      *P 00004950
      DELT=-FPH/FPPH 00004960
      M=M+1 00004970
      IF (M.GT.20) GO TO 520 00004980
      PHI1=PHI1+DELT 00004990
      IF (DABS(DELT).GT.CONV2) GO TO 490 00005000
      IF (L.EQ.1) GO TO 500 00005010
      PHI2=PHI1 00005020
      L=1 00005030
      PHI1=DARSIN(EN-DSQRT(EN*EN-CP+1.D0)) 00005040
      GO TO 490 00005050
500 CONTINUE 00005060
      PHI1D=PHI1*RADDG 00005070
      PHI2D=PHI2*RADDG 00005080
      WRITE (6,510) SCALE,PHI1D,PHI2D 00005090
510 FORMAT (1H0,2X,'IF MAP PROJECTION IS ELLIPSOIDAL ALBERS EQUAL-AREA 00005100
      * CONIC.'/(1H,2X,'SCALE=1/',F10.1,' STANDARD PARALLELS=',F10.4,', ' 00005110
      *,F10.4,' DEG. LAT.')) 00005120
      N=8 00005130
      GO TO 2290 00005140
520 WRITE (6,530) 00005150
530 FORMAT (1H0,2X,'TOO MANY ITERATIONS FOR STANDARD PARALLELS.') 00005160
C 00005170
C TEST FOR SPHERICAL ALBERS EQUAL-AREA CONIC OR POLAR LAMBERT 00005180
C AZIMUTHAL EQUAL-AREA. 00005190
C 00005200
540 DO 550 I=1,3 00005210
      F(I)=2.D0*DSIN(PHI(I)) 00005220
550 CONTINUE 00005230
      WRITE (6,560) 00005240
560 FORMAT (1H,2X,'SPHERICAL ALBERS EQUAL AREA CONIC:') 00005250
      CALL CONALB (X,Y,EN,F,J,CP,AK) 00005260
      IF (J.EQ.0) GO TO 580 00005270
      SCALE=A/AK 00005280
      IF (DABS(DABS(EN)-1.D0).LT.CONV3) GO TO 800 00005290
      CN=EN*EN-CP+1.D0 00005300
      IF (CN.LT.0.D0) CN=0.D0 00005310
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PHI1=DARSIN(EN-DSQRT(CN))
PHI2=DARSIN(EN+DSQRT(CN))
PHI1D=PHI1*RADDG
PHI2D=PHI2*RADDG
WRITE (6,570) SCALE,PHI1D,PHI2D
570 FORMAT (1H0,2X,'IF MAP PROJECTION IS SPHERICAL ALBERS EQUAL-AREA
*ONIC,'/(1H,2X,'SCALE=1/',F10.1,' STANDARD PARALLELS=',F10.4,',',
*F10.4,' DEG. LAT.))
N=9
GO TO 2290
C
C TEST FOR SPHERICAL EQUIDISTANT CONIC AND POLAR AZIMUTHAL EQUIDIST-
C ANT.
C
580 CONTINUE
WRITE (6,590)
590 FORMAT (1H,2X,'SPHERICAL EQUIDISTANT CONIC:')
CALL CONEQD (X,Y,EN,PHI,J,G,AK)
IF (J.EQ.0) GO TO 640
SCALE=A/AK
IF (DABS(DABS(EN)-1.00).LT.CONV3) GO TO 820
PHI1=PI/2.00
M=0
L=0
600 DELT=((G-PHI1)*EN-DCOS(PHI1))/(EN-DSIN(PHI1))
M=M+1
IF (M.GT.20) GO TO 630
PHI1=PHI1+DELT
IF (DABS(DELT).GT.CONV2) GO TO 600
IF (L.EQ.1) GO TO 610
PHI2=PHI1
L=1
PHI1=-PI/2.00
GO TO 600
610 CONTINUE
PHI1D=PHI1*RADDG
PHI2D=PHI2*RADDG
WRITE (6,620) SCALE,PHI1D,PHI2D
620 FORMAT (1H0,2X,'IF MAP PROJECTION IS SPHERICAL EQUIDISTANT CONIC.'
*/(1H,2X,'SCALE=1/',F10.1,' STANDARD PARALLELS=',F10.4,',',F10.4,
*' DEG. LAT.))
N=10
GO TO 2290
630 WRITE (6,530)
C
C TEST FOR ELLIPSOIDAL EQUIDISTANT CONIC AND POLAR AZIMUTHAL
C EQUIDISTANT.
C
640 CALL EFAC (E2,EFO,EF1,EF2)
DO 650 I=1,3
F(I)=EFO*PHI(I)-EF1*DSIN(2.00*PHI(I))+EF2*DSIN(4.00*PHI(I))
650 CONTINUE
660 CONTINUE
WRITE (6,670)
670 FORMAT (1H,2X,'ELLIPSOIDAL EQUIDISTANT CONIC:')
CALL CONEQD (X,Y,EN,F,J,G,AK)
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      IF (J.EQ.0.AND.DABS(DABS(EN)-1.D0).GT.CONV3) GO TO 720
      IF (J.EQ.0) GO TO 860
      SCALE=A/AK
      IF (DABS(DABS(EN)-1.D0).LT.CONV3) GO TO 840
      PHI1=PI/2.D0
      M=0
      L=0
680  SPH=DSIN(PHI1)
      CPH=DCOS(PHI1)
      SQR=DSQRT(1.D0-E2*SPH*SPH)
      F(1)=EF0*PHI1-EF1*DSIN(2.D0*PHI1)+EF2*DSIN(4.D0*PHI1)
      FPH=(G-F(1))*EN*SQR-CPH
      EMPR=EF0-2.D0*EF1*DCOS(2.D0*PHI1)+4.D0*EF2*DCOS(4.D0*PHI1)
      FPPH=EN*(SQR*(-EMPR)-E2*SPH*CPH*(G-F(1)))+SPH
      DELT=-FPH/FPPH
      M=M+1
      (M.GT.20) GO TO 710
      F 1=PHI1+DELT
      IF DABS(DELT).GT.CONV2) GO TO 680
      IF .EQ.1) GO TO 690
      PHI2= 11
      L=1
      PHI1=-PI/2.D0
      GO TO 680
690  CONTINUE
      PHI1D=PHI1*RADDG
      PHI2D=PHI2*RADDG
      WRITE (6,700) SCALE,PHI1D,PHI2D
700  FORMAT (1H0,2X,'IF MAP PROJECTION IS ELLIPSOIDAL EQUIDISTANT CONIC
      *,'/(1H,2X,'SCALE=1/',F10.1,' STANDARD PARA'LELS=',F10.4,',',F10.4)
      *,' DEG. LAT.')
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DATE=84250

VOLUME=NMD581

DSNAME=VG5G30F.GRID.FORT

MEMBER=MAIN

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-----
      N=8
      GO TO 2290
800 WRITE (6,810) SCALE
810 FORMAT (1H0,2X,'IF MAP PROJECTION IS SPHERICAL POLAR LAMBERT AZIMU
      *THAL EQUAL-AREA. SCALE=1/',F10.1)
      N=9
      GO TO 2290
820 WRITE (6,830) SCALE
830 FORMAT (1H0,2X,'IF MAP PROJECTION IS SPHERICAL POLAR AZIMUTHAL EQU
      *IDISTANT. SCALE=1/',F10.1)
      N=10
      GO TO 2290
840 WRITE (6,850) SCALE
850 FORMAT (1H0,2X,'IF MAP PROJECTION IS ELLIPSOIDAL POLAR AZIMUTHAL E
      *QUIDISTANT. SCALE=1/',F10.1)
      N=11
      GO TO 2290
C
C   TEST FOR POLAR ORTHOGRAPHIC.
C
860 EN=DSIGN(1.00,EN)
      AK=D.00
      DO 870 I=1,3
      XD=X0-X(I)
      YD=Y0-Y(I)
      F(I)=DSQRT(XD*XD+YD*YD)
      FO(I)=DCOS(PHI(I))
      AK=AK+DABS(F(I)/FO(I))
870 CONTINUE
      AK=AK/3.00
      SCALE=A/AK
      WRITE (6,900) SCALE
900 FORMAT (1H0,2X,'IF MAP PROJECTION IS POLAR ORTHOGRAPHIC. SCALE=
      *1/',F10.1)
      N=12
      GO TO 2290
C
C   TEST FOR POLAR GNOMONIC.
C
910 AK=DABS(F(1))
      SCALE=A/AK
      WRITE (6,940) SCALE
940 FORMAT (1H0,2X,'IF MAP PROJECTION IS POLAR GNOMONIC. SCALE=1/',F1
      *0.1)
      N=13
      GO TO 2290
C
C   TEST FOR POLAR PERSPECTIVE.
C
950 SP1=DSIN(PHI(1))
      SP2=DSIN(PHI(2))
      SP3=DSIN(PHI(3))
      FF1=F(1)*FO(2)-F(2)*FO(1)
      FF2=F(1)*FO(3)-F(3)*FO(1)
      P=(SP1*FO(2)*F(1)-SP2*FO(1)*F(2))*EN/FF1
      P13=(SP1*FO(3)*F(1)-SP3*FO(1)*F(3))*EN/FF2
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-----
      P=(P+P13)/2.D0
      AK=F(1)*(P-EN*SP1)/(P-1.D0)/F0(1)
      SCALE=A/AK
      WRITE (6,970) P,SCALE
970  FORMAT (1H0,2X,'IF MAP PROJECTION IS POLAR PERSPECTIVE, WITH POINT
* OF PROJ.',F10.4,' TIMES RADIUS FROM CENTER OF SPHERE.',(1H,2X,'S
*CALE=1/',F10.1))
      N=14
      GO TO 2290
C
C      TEST FOR SPHERICAL POLYCONIC.
C
990  CONTINUE
      N=15
      EE=0.D0
      CALL EFAC (0.D0,EF0,EF1,EF2)
      GO TO 1210
C
C      TEST FOR ELLIPSOIDAL POLYCONIC.
C
1010 CONTINUE
      N=16
      EE=E2
      CALL EFAC (E2,EF0,EF1,EF2)
      GO TO 1210
C
C      PARALLELS ARE CURVED AND MERIDIANS ARE CURVED OR STRAIGHT (LARGE
C      SCALE).
C      TEST FOR ELLIPSOIDAL TRANSVERSE MERCATOR.
C
1030 CONTINUE
      N=17
      CALL EFAC (E2,EF0,EF1,EF2)
      EPR=E2/(1.D0-E2)
      GO TO 1210
1050 CONTINUE
      IF (N.EQ.15.AND.NUM.EQ.1) GO TO 1140
      IF (N.EQ.15.AND.NUM.EQ.2) GO TO 1160
      IF (N.EQ.15) GO TO 1080
      IF (N.EQ.16) GO TO 1060
      IF (N.EQ.17) GO TO 1010
      IF (N.EQ.18) GO TO 990
      IF (N.EQ.19) GO TO 1100
      IF (N.EQ.20) GO TO 1120
      IF (N.EQ.21) GO TO 1180
      IF (N.EQ.22) GO TO 2000
      IF (N.EQ.23) GO TO 1680
      IF (N.EQ.24) GO TO 1700
      IF (N.EQ.30) GO TO 1800
      IF (N.EQ.31) GO TO 1900
      IF (N.EQ.25) GO TO 2000
C
C      TEST FOR SPHERICAL TRANSVERSE MERCATOR
C
1060 CONTINUE
      N=18
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-----
      GO TO 1210                                00007590
C                                           00007600
C      TEST FOR LAMBERT AZIMUTHAL EQUAL-AREA.  00007610
C                                           00007620
C      1080 CONTINUE                          00007630
C      N=19                                  00007640
C      L=0                                   00007650
C      GO TO 1210                             00007660
C                                           00007670
C      TEST FOR AZIMUTHAL EQUIDISTANT.        00007680
C                                           00007690
C      1100 CONTINUE                          00007700
C      N=20                                  00007710
C      L=0                                   00007720
C      GO TO 1210                             00007730
C                                           00007740
C      TEST FOR ORTHOGRAPHIC                 00007750
C                                           00007760
C      1120 CONTINUE                          00007770
C      N=21                                  00007780
C      L=0                                   00007790
C      GO TO 1210                             00007800
C                                           00007810
C      TEST FOR EQUATORIAL GNOMONIC.          00007820
C                                           00007830
C      1140 CONTINUE                          00007840
C      N=22                                  00007850
C      DIST14=(X14*Y45-Y14*X45)/D45          00007860
C      DIST47=(X47*Y78-Y47*X78)/D78          00007870
C      FF=DIST14/DIST47                      00007880
C      D1=DABS(DIST14)/D78                   00007890
C      FFA=DTAN(CLONG(1))                     00007900
C      FFC=DTAN(CLONG(4))                     00007910
C      FFD=DTAN(CLONG(7))                     00007920
C      FFE=FFA-FFC                           00007930
C      FFG=FF*(FFD-FFC)                       00007940
C      DEN=-FFD*FFE-FFA*FFG                   00007950
C      TLO=(FFE+FFG)/DEN                      00007960
C      CLONGO=DATAN(TLO)                      00007970
C      IF ((CLONGO-CLONG(4)).GT.(PI/2.D0)) CLONGO=CLONGO+PI 00007980
C      IF (CLONGO.GT.PI) CLONGO=CLONGO-2.D0*PI 00007990
C      TL1=DTAN(CLONG(1)-CLONGO)              00008000
C      CL1=DCOS(CLONG(1)-CLONGO)              00008010
C      TP1=DTAN(PHI(1))                       00008020
C      TL4=DTAN(CLONG(4)-CLONGO)              00008030
C      CL4=DCOS(CLONG(4)-CLONGO)              00008040
C      AK=DIST14/(TL1-TL4)                     00008050
C      TH=-DATAN2(X45,Y45)                    00008060
C      CTH=DCOS(TH)                           00008070
C      STH=DSIN(TH)                           00008080
C      XO=X(1)-AK*(TL1*CTH-TP1*STH/CL1)       00008090
C      YO=Y(1)-AK*(TP1*CTH/CL1+TL1*STH)       00008100
C      SPO=0.D0                                00008110
C      CPO=1.D0                                00008120
C      SCALE=A/AK                             00008130
C      PHI0D=0.D0                             00008140
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CLNGOD=CLONGO*RADDG          00008150
GO TO 1640                    00008160
C                              00008170
C TEST FOR OBLIQUE GNOMONIC.  00008180
C                              00008190
1160 CONTINUE                 00008200
N=22                          00008210
L=0                            00008220
WRITE (6,1170)                00008230
1170 FORMAT (1H,2X,'OBLIQUE GNOMONIC:') 00008240
GO TO 1210                    00008250
C                              00008260
C TEST FOR VERTICAL PERSPECTIVE, INCLUDING STEREOGRAPHIC. 00008270
C                              00008280
1180 CONTINUE                 00008290
N=23                          00008300
CALL PERSP (X,Y,PHI,CLONG,0.00,W) 00008310
XO=W(4)                       00008320
YO=W(11)                      00008330
CLONGO=DATAN2(-W(6),-W(5))     00008340
SQR=DSQRT(W(5)*W(5)+W(6)*W(6)) 00008350
PHIO=DATAN(-W(7)/SQR)          00008360
P=1.00/DSQRT(W(5)*W(5)+W(6)*W(6)+W(7)*W(7)) 00008370
CPO=DCOS(PHIO)                00008380
FAC=DSIN(PHIO)*DSIN(PHI(5))+CPO*DCOS(PHI(5))*DCOS(CLONG(5)-CLONGO) 00008390
IF (FAC.GE.0.00) GO TO 1200    00008400
IF (CLONGO.LT.0.00) CLONGO=CLONGO+PI 00008410
IF (CLONGO.GT.0.00) CLONGO=CLONGO-PI 00008420
PHIO=-PHIO                    00008430
P=-P                          00008440
1200 CONTINUE                 00008450
FAC=W(3)-W(4)*W(7)            00008460
FAC1=W(10)-W(11)*W(7)         00008470
AK=DSQRT(FAC*FAC+FAC1*FAC1)/SQR/DABS(P-1.00) 00008480
TH=-DATAN2(FAC,FAC1)          00008490
CTH=DCOS(TH)                  00008500
STH=DSIN(TH)                  00008510
SPO=DSIN(PHIO)                00008520
CLO=DCOS(CLONGO)              00008530
SLO=DSIN(CLONGO)              00008540
WW=(-AK*(P-1.00)*(SLO*CTH-CLO*SPO*STH)-XO*CLO*CPO)/P 00008550
SCALE=A/AK                    00008560
CLNGOD=CLONGO*RADDG          00008570
PHIOD=PHIO*RADDG             00008580
IF (DABS(P+1.00).LT.CONV1*5.00) GO TO 1620 00008590
GO TO 1660                    00008600
1210 CONTINUE                 00008610
M=0                           00008620
CLONGO=CLONG(4)+0.0200        00008630
IF (NOR.EQ.1) PHIO=0.0200     00008640
IF (NOR.EQ.1) GO TO 1220      00008650
PHIO=PHI(4)+0.0200           00008660
1220 FF=SLP123                00008670
D23SQ=D23*D23                00008680
FF1=D12*D12/D23SQ            00008690
J=1                           00008700
```

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DATE=84250

VOLUME=NMD581

DSNAME=VG5G30F.GRID.FORT

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1230 CONTINUE                                00008710
      K=0                                    00008720
      JJ=J+2                                00008730
      IF (N.EQ.17) GO TO 1250                00008740
      IF (N.EQ.15.OR.N.EQ.16) GO TO 1270    00008750
      IF (N.GE.19) GO TO 1290                00008760
      DO 1240 I=J,JJ                          00008770
      K=K+1                                    00008780
      CALL CALC (PHI,CLONGO,PHIO,I)          00008790
      F(K)=DATAN2(ZZ,AA)                      00008800
      FO(K)=0.5D0*DLOG((1.D0+BB)/(1.D0-BB))  00008810
      RHO(K)=-ZZ*BB/(AA*AA+ZZ*ZZ)            00008820
      W(K)=-AA/(1.D0-BB*BB)                  00008830
1240 CONTINUE                                00008840
      GO TO 1360                              00008850
1250 CONTINUE                                00008860
      DO 1260 I=J,JJ                          00008870
      K=K+1                                    00008880
      SPH=DSIN(PHI(I))                        00008890
      CPH=DCOS(PHI(I))                        00008900
      TPH=SPH/CPH                             00008910
      FE=DSQRT(1.D0-E2*SPH*SPH)              00008920
      AA=(CLONG(I)-CLONGO)*CPH                00008930
      CC=EPR*CPH*CPH                          00008940
      T=TPH*TPH                               00008950
      FI=1.D0-T+CC                           00008960
      F2=5.D0-18.D0*T+T*T+72.D0*CC-58.D0*EPR 00008970
      F3=5.D0-T+9.D0*CC+4.D0*CC*CC           00008980
      F4=61.D0-58.D0*T+T*T+600.D0*CC-330.D0*EPR 00008990
      F(K)=EFO*PHI(I)-EF1*DSIN(2.D0*PHI(I))+EF2*DSIN(4.D0*PHI(I))+TPH/ 00009000
      *FE)*(AA**2)/2.D0+F3*(AA**4)/24.D0+F4*(AA**6)/720.D0 00009010
      FO(K)=(1.D0/FE)*(AA*FI*(AA**3)/6.D0+F2*(AA**5)/120.D0) 00009020
      W(K)=-((CPH/FE)*(1.D0+FI*(AA**2)/2.D0+F2*(AA**4)/24.D0) 00009030
      RHO(K)=-((SPH/FE)*(AA+F3*(AA**3)/6.D0+F4*(AA**5)/120.D0) 00009040
1260 CONTINUE                                00009050
      GO TO 1360                              00009060
1270 CONTINUE                                00009070
      DO 1280 I=J,JJ                          00009080
      K=K+1                                    00009090
      IF (DABS(PHI(I)).LT.1.D-7) GO TO 1275  00009100
      SPHI=DSIN(PHI(I))                       00009110
      EM=DCOS(PHI(I))/DSQRT(1.D0-EE*SPHI*SPHI) 00009120
      BIGEM=EFO*PHI(I)-EF1*DSIN(2.D0*PHI(I))+EF2*DSIN(4.D0*PHI(I)) 00009130
      T=(CLONG(I)-CLONGO)*SPHI                 00009140
      RHO(K)=-EM*DSIN(T)                       00009150
      FO(K)=-RHO(K)/SPHI                       00009160
      W(K)=-EM*DCOS(T)                         00009170
      F(K)=BIGEM+EM/SPHI+W(K)/SPHI             00009180
      GO TO 1280                              00009190
1275 RHO(K)=0.D0                             00009200
      FO(K)=CLONG(I)-CLONGO                    00009210
      W(K)=-1.D0                              00009220
      F(K)=0.D0                              00009230
1280 CONTINUE                                00009240
      GO TO 1360                              00009250
1290 CONTINUE                                00009260
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DO 1350 I=J,JJ                                00009270
K=K+1                                           00009280
CALL CALC (PHI,CLONGO,PHIO,I)                  00009290
IF (N.EQ.20) GO TO 1300                        00009300
IF (N.EQ.21) GO TO 1310                        00009310
IF (N.EQ.22) GO TO 1330                        00009320
PK=DSQRT(2.D0/(1.D0+ZA))                       00009330
FFF=-1.D0/2.D0/(1.D0+ZA)                      00009340
GO TO 1340                                     00009350
1300 Z=DARCOS(ZA)                              00009360
SZ=DSIN(Z)                                    00009370
PK=Z/SZ                                       00009380
FFF=(Z*ZA-SZ)/Z/SZ/SZ                        00009390
GO TO 1340                                     00009400
1310 PK=1.D0                                  00009410
FFF=0.D0                                     00009420
GO TO 1340                                     00009430
1330 PK=1.D0/ZA                               00009440
FFF=-1.D0/ZA                                 00009450
1340 CONTINUE                                00009460
FO(K)=BB*PK                                  00009470
F(K)=AZ*PK                                   00009480
DKDL=FO(K)*FFF*CPO                           00009490
DKDP=F(K)*FFF                                00009500
RHO(K)=-BB*PK*SPO+AZ*DKDL                   00009510
W(K)=-PK*AA+BB*DKDL                         00009520
U(K)=-PK*ZA+AZ*DKDP                         00009530
V(K)=BB*DKDP                                00009540
1350 CONTINUE                                00009550
1360 CONTINUE                                00009560
G12=F(1)-F(2)                                00009570
H12=FO(1)-FO(2)                              00009580
G23=F(2)-F(3)                                00009590
H23=FO(2)-FO(3)                              00009600
IF (N.EQ.22) GO TO 1390                       00009610
FLO=FF-DATAN2(G12,H12)+DATAN2(G23,H23)        00009620
IF (FLO.GT.PI) FLO=FLO-2.D0*PI               00009630
IF (FLO.LT.(-PI)) FLO=FLO+2.D0*PI            00009640
FPL01=(H12*(RHO(1)-RHO(2))-G12*(W(1)-W(2)))/(G12*G12+H12*H12) 00009650
FPL02=(H23*(RHO(2)-RHO(3))-G23*(W(2)-W(3)))/(G23*G23+H23*H23) 00009660
FPL0=FPL02-FPL01                             00009670
IF (N.GE.19) GO TO 1430                      00009680
DLO=-FLO/FPL0                                00009690
1370 CONTINUE                                00009700
IF (DLO.GT.PI) DLO=DLO-2.D0*PI               00009710
IF (DLO.LT.(-PI)) DLO=DLO+2.D0*PI            00009720
IF (DLO.LT.(-PI).OR.DLO.GT.PI) GO TO 1370    00009730
CLONGO=CLONGO+DLO                            00009740
IF (CLONGO.GT.PI) CLONGO=CLONGO-2.D0*PI       00009750
IF (CLONGO.LT.(-PI)) CLONGO=CLONGO+2.D0*PI   00009760
M=M+1                                         00009770
IF (M.GT.20) WRITE (6,1470) N                00009780
IF (M.GT.20) GO TO 1050                      00009790
IF (DABS(DLO).GT.COMV2) GO TO 1230           00009800
IF (J.EQ.4) GO TO 1410                      00009810
IF (J.EQ.7) GO TO 1480                      00009820
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VOLUME=NMD581

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1380 CLONG1=CLONGO                                00009830
      FF=SLP456                                    00009840
      D56SQ=D56*D56                                00009850
      J=4                                            00009860
      GO TO 1230                                    00009870
1390 HG12=H12*H12+G12*G12                          00009880
      HG23=H23*H23+G23*G23                        00009890
      FLO=FF1-HG12/HG23                           00009900
      FPL0=-2.D0*(HG23*(H12*(W(1)-W(2))+G12*(RH0(1)-RH0(2)))-HG12*(H23*(
      *W(2)-W(3))+G23*(RH0(2)-RH0(3))))/(HG23*HG23) 00009910
      FPP0=-2.D0*(HG23*(H12*(V(1)-V(2))+G12*(U(1)-U(2)))-HG12*(H23*(V(2)
      *-V(3))+G23*(U(2)-U(3))))/(HG23*HG23)        00009920
      GO TO 1440                                    00009930
1400 D89SQ=D89*D89                                00009940
      FF1=D78*D78/D89SQ                            00009950
      J=7                                            00009960
      GO TO 1230                                    00009970
1410 CLONG2=CLONGO                                00009980
1420 FF=SLP789                                    00009990
      D89SQ=D89*D89                                00010000
      J=7                                            00010010
      GO TO 1230                                    00010020
1430 CONTINUE                                    00010030
      FPP01=(H12*(U(1)-U(2))-G12*(V(1)-V(2)))/(G12*G12+H12*H12) 00010040
      FPP02=(H23*(U(2)-U(3))-G23*(V(2)-V(3)))/(G23*G23+H23*H23) 00010050
      FPP0=FPP02-FPP01                             00010060
1440 CONTINUE                                    00010070
      IF (J.GE.4) GO TO 1460                        00010080
      FLO1=FLO                                       00010090
      FPL03=FPL0                                     00010100
      FPP03=FPP0                                     00010110
      IF (L.EQ.1.AND.N.EQ.22) GO TO 1400            00010120
      IF (L.EQ.1) GO TO 1420                        00010130
      IF (N.EQ.22) GO TO 1450                       00010140
      GO TO 1380                                    00010150
1450 D56SQ=D56*D56                                00010160
      FF1=D45*D45/D56SQ                            00010170
      J=4                                            00010180
      GO TO 1230                                    00010190
1460 CONTINUE                                    00010200
      DEN=FPL03*FPP0-FPL0*FPP03                    00010210
      IF (DABS(DEN).LT.1.D-20) WRITE (6,1465) N     00010220
1465 FORMAT (1H0,2X,'PROJECTION N=',I2,' FAILED.') 00010230
      IF (DABS(DEN).LT.1.D-20) GO TO 1050           00010240
      DLO=(-FLO1*FPP0+FLO*FPP03)/DEN               00010250
      DPO=(FLO1*FPL0-FLO*FPL03)/DEN               00010260
      DELT=DABS(DLO)+DABS(DPO)                     00010270
      CLONGO=CLONGO+DLO                             00010280
      IF (CLONGO.GT.PI) CLONGO=CLONGO-2.D0*PI      00010290
      IF (CLONGO.LT.(-PI)) CLONGO=CLONGO+2.D0*PI   00010300
      PHIO=PHIO+DPO                                 00010310
      M=M+1                                          00010320
      IF (M.GT.20) WRITE (6,1470) N                 00010330
1470 FORMAT (1H0,2X,'TOO MANY ITERATIONS TO CONVERGE FOR PROJ. N=',I2) 00010340
      IF (M.GT.20) GO TO 1050                       00010350
      IF (DELT.GT.CONV2) GO TO 1220                00010360
      00010370
      00010380
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VOLUME=NMD581

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      IF (L.EQ.1) GO TO 1480
      L=1
      CLONG1=CLONG0
      PHI01=PHI0
      GO TO 1210
1480  CONTINUE
      X78=X(7)-X(8)
      Y78=Y(7)-Y(8)
      X7=X(7)
      Y7=Y(7)
      AK=DSQRT((X78*X78+Y78*Y78)/(H12*H12+G12*G12))
      SCALE=A/AK
      TH=ATAN2((Y78*H12-X78*G12),(X78*H12+Y78*G12))
      CTH=DCOS(TH)
      STH=DSIN(TH)
      XO=X7-(FO(1)*CTH-F(1)*STH)*AK
      YO=Y7-(F(1)*CTH+FO(1)*STH)*AK
      IF (N.LT.19) CLONG0=(CLONG0+CLONG1+CLONG2)/3.00
      IF (N.GE.19) CLONG0=(CLONG0+CLONG1)/2.00
      CLNG0D=CLONG0*RADDG
      IF (N.EQ.15) GO TO 1520
      IF (N.EQ.16) GO TO 1540
      IF (N.EQ.17) GO TO 1500
      IF (N.EQ.18) GO TO 1485
      PHI0=(PHI0+PHI01)/2.00
      PHI0D=PHI0*RADDG
      IF (N.EQ.19) GO TO 1560
      IF (N.EQ.20) GO TO 1580
      IF (N.EQ.21) GO TO 1600
      IF (N.EQ.22) GO TO 1640
1485  WRITE (6,1490) CLNG0D,SCALE
1490  FORMAT (1H0,2X,'IF MAP PROJECTION IS SPHERICAL TRANSVERSE MERCATOR
*, CENTRAL MERIDIAN=',F10.4,' LONG. SCALE AT CENT. MER.=1/',F10.1)
      GO TO 2030
1500  WRITE (6,1510) CLNG0D,SCALE
1510  FORMAT (1H0,2X,'IF MAP PROJECTION IS ELLIPSOIDAL TRANSVERSE MERCATOR
*, OR, CENTRAL MERIDIAN=',F10.4,' LONG. SCALE AT CENT. MER.=1/',F10.1)
      GO TO 2030
1520  WRITE (6,1530) CLNG0D,SCALE
1530  FORMAT (1H0,2X,'IF MAP PROJECTION IS SPHERICAL POLYCONIC, CENTRAL
*, MERIDIAN=',F10.4,' LONG. SCALE=1/',F10.1)
      GO TO 2030
1540  WRITE (6,1550) CLNG0D,SCALE
1550  FORMAT (1H0,2X,'IF MAP PROJECTION IS ELLIPSOIDAL POLYCONIC, CENTRAL
*, MERIDIAN=',F10.4,' LONG. SCALE=1/',F10.1)
      GO TO 2030
1560  WRITE (6,1570)
1570  FORMAT (1H0,2X,'IF MAP PROJECTION IS LAMBERT AZIMUTHAL EQUAL-AREA
*,
      GO TO 2430
1580  WRITE (6,1590)
1590  FORMAT (1H0,2X,'IF MAP PROJECTION IS AZIMUTHAL EQUIDISTANT')
      GO TO 2430
1600  WRITE (6,1610)
1610  FORMAT (1H0,2X,'IF MAP PROJECTION IS ORTHOGRAPHIC')
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      GO TO 2430                                00010950
1620 WRITE (6,1630)                            00010960
1630 FORMAT (1H0,2X,'IF MAP PROJECTION IS SPHERICAL STEREOGRAPHIC') 00010970
      P=-1.00                                00010980
      GO TO 2430                                00010990
1640 WRITE (6,1650)                            00011000
1650 FORMAT (1H0,2X,'IF MAP PROJECTION IS GNOMONIC') 00011010
      P=0.00                                00011020
      GO TO 2430                                00011030
1660 WRITE (6,1670) P                          00011040
1670 FORMAT (1H0,2X,'IF MAP PROJECTION IS VERTICAL PERSPECTIVE, WITH P 00011050
      *INT OF PROJ.,',F10.4,' TIMES RADIUS FROM CENTER OF SPHERE') 00011060
      GO TO 2430                                00011070
1680 CONTINUE                                00011080
      WRITE (6,1690)                            00011090
1690 FORMAT (1H0,2X,'IF MAP PROJECTION IS PERSPECTIVE (TILTED OR VERTIC 00011100
      *AL) OF SPHERE, BUT NOT AZIMUTHAL,') 00011110
      N=24                                00011120
      EE=0.00                                00011130
      GO TO 1720                                00011140
C                                              00011150
C      TEST FOR PERSPECTIVE OF ELLIPSOID.        00011160
C                                              00011170
C 1700 CALL PERSP (X,Y,PHI,CLONG,E2,W)          00011180
      N=25                                00011190
      WRITE (6,1710)                            00011200
1710 FORMAT (1H0,2X,'IF MAP PROJECTION IS PERSPECTIVE (TILTED OR VERTIC 00011210
      *AL) OF ELLIPSOID,') 00011220
      EE=E2                                00011230
C                                              00011240
C 1720 CONTINUE                                00011250
C      COMPUTE LAT/LONG FOR OTHER X,Y POINTS, BASED ON PARAMETERS FOR 00011260
C      PERSPECTIVE PROJECTIONS.                00011270
C 1730 CONTINUE                                00011280
      MP=3                                00011290
      SX=0.00                                00011300
      SY=0.00                                00011310
      SX1=0.00                                00011320
      SY1=0.00                                00011330
      DO 1730 I=1,9                            00011340
      SP=DSIN(PHI(I))                          00011350
      CP=DCOS(PHI(I))                          00011360
      ENN=1.00/DSQRT(1.00-EE*SP*SP)            00011370
      XX=ENN*CP*DCOS(CLONG(I))                00011380
      YY=ENN*CP*DSIN(CLONG(I))                00011390
      ZZ=ENN*(1.00-EE)*SP                      00011400
      DEN=XX*W(5)+YY*W(6)+ZZ*W(7)+1.00        00011410
      X3(I)=(XX*W(1)+YY*W(2)+ZZ*W(3)+W(4))/DEN 00011420
      Y3(I)=(XX*W(8)+YY*W(9)+ZZ*W(10)+W(11))/DEN 00011430
1730 CONTINUE                                00011440
      GO TO 2670                                00011450
1740 CONTINUE                                00011460
      A1=1.00                                00011470
      A5=1.00                                00011480
1750 CONTINUE                                00011490
      READ (5,2070) NN,X1,Y1                  00011500
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      IF (NN.EQ.1) GO TO 2870
      IF (MM.NE.0) X1=X1/2000.D0
      IF (MM.NE.0) Y1=Y1/2000.D0
1760  CONTINUE
      XR=A1*X1+A2*Y1+A3
      YR=A4*X1+A5*Y1+A6
      AA2=XR*W(5)-W(1)
      AA1=XR*W(6)-W(2)
      AA3=XR*W(7)-W(3)
      AA4=W(4)-XR
      AA6=YR*W(5)-W(8)
      AA5=YR*W(6)-W(9)
      AA7=YR*W(7)-W(10)
      AA8=W(11)-YR
      AA9=AA2*AA8-AA4*AA6
      AA10=AA2*AA7-AA3*AA6
      AA11=AA1*AA6-AA2*AA5
      AA12=AA1*AA7-AA3*AA5
      AA13=AA1*AA8-AA4*AA5
      AA14=AA10*AA10+AA11*AA11/(1.D0-EE)+AA12*AA12
      AA15=AA9*AA10+AA12*AA13
      AA16=AA9*AA9-AA11*AA11+AA13*AA13
      A145=AA15/AA14
      FAC=1.D0
      FAC2=A145*A145-AA16/AA14
      IF (FAC2.LT.0.D0) FAC2=0.D0
      M=0
1770  S=A145+FAC*DSQRT(FAC2)
      PHIR=DARSIN(S/DSQRT((1.D0-EE)*(1.D0-EE)+EE*S*S))
      DEN=AA12*S-AA13
      CLONGR=DATAN((AA9-AA10*S)/DEN)+PI*(1.D0+DSIGN(1.D0,(DEN*AA11)))/
      *2.D0
      FAC1=DSIN(PHIR)*DSIN(PHI(5))+DCOS(PHIR)*DCOS(PHI(5))*DCOS(CLONG(5)
      *-CLONGR)
      M=M+1
      IF (M.GE.5) GO TO 1780
      IF (FAC1.LT.-0.5D0) FAC=-1.D0
      IF (FAC1.LT.-0.5D0) GO TO 1770
1780  CONTINUE
      IF (CLONGR.GT.PI) CLONGR=CLONGR-2.D0*PI
      PHID=PHIR*RADDG
      CLONGD=CLONGR*RADDG
      WRITE (6,2280) X1,Y1,PHID,CLONGD
      GO TO 1750
1790  IF (DABS(DELTA).GT.CONV3) NOR=1
      IF (DABS(DELTA).GT.CONV3) GO TO 1120
      TH=DATAN2((-Y14),(-X14))
      CTH=DCOS(TH)
      STH=DSIN(TH)
C
C      TEST FOR SINUSOIDAL.
C
      F(1)=PHI(1)
      F(2)=PHI(2)
      F(3)=PHI(3)
      FO(1)=DCOS(PHI(1))
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      FO(2)=DCOS(PHI(2))
      FO(3)=DCOS(PHI(3))
      N=30
      GO TO 1830
C
C   TEST FOR MOLLWEIDE.
C
1800 DO 1820 I=1,3
      M=0
      THF=PHI(I)
      PSPH=PI*DSIN(PHI(I))
1810 DELT=(PSPH-2.00*THF-DSIN(2.00*THF))/2.00/(1.00+DCOS(2.00*THF))
      THF=THF+DELT
      M=M+1
      IF (M.GT.20) GO TO 1880
      IF (DABS(DELT).GT.CONV2) GO TO 1810
      SQ2=DSQRT(2.00)
      F(I)=SQ2*DSIN(THF)
      FO(I)=2.00*SQ2*DCOS(THF)/PI
1820 CONTINUE
      N=N+1
1830 A=(X12*Y25-Y12*X25)/DSQRT(X25*X25+Y25*Y25)/(F(1)-F(2))
      AK=(X23*Y36-Y23*X36)/DSQRT(X36*X36+Y36*Y36)/(F(2)-F(3))
      AK=(AK+AK1)/2.00
      SCALE=A/AK
      CLONG1=(STH*(F(1)-F(2))+X12/AK)/CTH/(FO(2)-FO(1))+CLONG(1)
      CLONG2=(STH*(F(1)-F(2))+X45/AK)/CTH/(FO(2)-FO(1))+CLONG(4)
      CLONG3=(STH*(F(1)-F(2))+X78/AK)/CTH/(FO(2)-FO(1))+CLONG(7)
      CLONG4=(STH*(F(2)-F(3))+X23/AK)/CTH/(FO(3)-FO(2))+CLONG(1)
      CLONG5=(STH*(F(2)-F(3))+X56/AK)/CTH/(FO(3)-FO(2))+CLONG(4)
      CLONG6=(STH*(F(2)-F(3))+X89/AK)/CTH/(FO(3)-FO(2))+CLONG(7)
      CLONG0=(CLONG1+CLONG2+CLONG3)/3.00
      CLONG1=(CLONG4+CLONG5+CLONG6)/3.00
      CLONG0=(CLONG0+CLONG1)/2.00
      XO=X(1)-(FO(1)*CTH*(CLONG(1)-CLONG0)-F(1)*STH)*AK
      YO=Y(1)-(F(1)*CTH+FO(1)*STH*(CLONG(1)-CLONG0))*AK
      CLNG0D=CLONG0*RADDG
      IF (N.EQ.31) GO TO 1860
      WRITE (6,1850) SCALE,CLNG0D
1850 FORMAT (1H0,2X,'IF MAP PROJECTION IS SINUSOIDAL. SCALE=1/',F10.1,
* ' CENTRAL MERIDIAN=',F10.4,' DEG. LONG.')
      GO TO 2030
1860 WRITE (6,1870) SCALE,CLNG0D
1870 FORMAT (1H0,2X,'IF MAP PROJECTION IS MOLLWEIDE. SCALE=1/',F10.1,
* ' CENTRAL MERIDIAN=',F10.4,' DEG. LONG.')
      GO TO 2030
1880 WRITE (6,1890)
1890 FORMAT (1H0,2X,'TOO MANY ITERATIONS IN MOLLWEIDE.')
1900 WRITE (6,1910)
1910 FORMAT (1H0,2X,'MAP PROJECTION IS PSEUDOCYLINDRICAL, BUT DOES NOT
* FIT PROJECTIONS CURRENTLY PROGRAMMED.')
      GO TO 2020
1920 WRITE (6,1930)
1930 FORMAT (1H0,2X,'THIS PROJECTION IS CYLINDRICAL, BUT DOES NOT APPEA
* R TO FIT PROJECTIONS CURRENTLY PROGRAMMED.')
      GO TO 2020
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1940 WRITE (6,1950) 00012630
1950 FORMAT (1H0,2X,'THIS PROJECTION IS A POLAR AZIMUTHAL, BUT DOES NOT GO TO 00012640
      * FIT PROJECTIONS CURRENTLY PROGRAMMED.') 00012650
      GO TO 2020 00012660
2000 WRITE (6,2010) 00012670
2010 FORMAT (1H0,2X,'THIS PROGRAM CANNOT CURRENTLY DETERMINE THE MAP PROJECTION FITTING THESE POINTS.') 00012680
2020 CONTINUE 00012690
      READ (5,2880) NN 00012700
      IF (NN.EQ.0) GO TO 2020 00012710
      GO TO 2870 00012720
C 00012730
C COMPUTE LAT/LONG FOR OTHER X,Y POINTS, BASED ON PARAMETERS FOR 00012740
C CYLINDRICAL, POLYCONIC, OR TRANSVERSE MERCATOR PROJECTIONS. 00012750
C 00012760
2030 CONTINUE 00012770
      MP=0 00012780
      SX=0.00 00012790
      SY=0.00 00012800
      SX1=0.00 00012810
      SY1=0.00 00012820
      DO 2040 I=1,9 00012830
      PHI1=PHI(I) 00012840
      CLONG1=CLONG(I) 00012850
      GO TO 2540 00012860
2040 CONTINUE 00012870
      GO TO 2670 00012880
2050 CONTINUE 00012890
      A1=1.00 00012900
      A5=1.00 00012910
2060 CONTINUE 00012920
      READ (5,2070) NN,X1,Y1 00012930
2070 FORMAT (I1,9X,2F10.6) 00012940
      IF (NN.EQ.1) GO TO 2870 00012950
      IF (MM.NE.0) X1=X1/2000.00 00012960
      IF (MM.NE.0) Y1=Y1/2000.00 00012970
      XR=A1*X1+A2*Y1+A3 00012980
      YR=A4*X1+A5*Y1+A6 00012990
      DX=XR-X0 00013000
      DY=YR-Y0 00013010
      XP=DX*CTH+DY*STH 00013020
      YP=DY*CTH-DX*STH 00013030
      IF (N.EQ.1) GO TO 2075 00013040
      IF (N.EQ.2) GO TO 2080 00013050
      IF (N.EQ.3) GO TO 2090 00013060
      IF (N.EQ.4) GO TO 2100 00013070
      IF (N.EQ.5) GO TO 2110 00013080
      IF (N.EQ.15.OR.N.EQ.16) GO TO 2140 00013090
      IF (N.EQ.17) GO TO 2190 00013100
      IF (N.EQ.18) GO TO 2120 00013110
      IF (N.EQ.30) GO TO 2240 00013120
      IF (N.EQ.31) GO TO 2250 00013130
2075 T=DEXP(-YP/AK) 00013140
      PHID=90.00-360.00*DATAN(T)/PI 00013150
      GO TO 2260 00013160
2080 T=DEXP(-YP/AK) 00013170
      00013180
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VOLUME=NMD581

DSNAME=VG5G30F.GRID.FORT

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CALL PHIT (T,E,PHID)
GO TO 2260
2090 T=DEXP(0.8D0*YP/AK)
PHIR=2.5D0*DATAN(T)-5.D0*PI/8.D0
PHID=PHIR*RADDG
GO TO 2260
2100 PHID= (YP/AKE)*RADDG
GO TO 2260
2110 PHID=360.D0*DATAN(YP/AKE/CONST)/PI
GO TO 2260
2120 FX=DEXP(XP/AK)
G=(FX-1.D0/FX)/2.D0
H=DCOS(YP/AK)
PHIF=DSQRT((1.D0-H*H)/(G*G+1.D0))
PHID=DSIGN(DARSIN(PHIF),YP)*RADDG
IF (DABS(G).GT.CONV2.OR.DABS(H).GT.CONV2) GO TO 2130
CLONGD=CLNGOD
GO TO 2270
2130 CLONGR=DATAN2(G,H)+CLONGO
CLONGD=CLONGR*RADDG
GO TO 2270
2140 AA=YP/AK
BB=XP*XP/AK/AK+AA*AA
PHIR=AA
2150 SPH=DSIN(PHIR)
S2PH=DSIN(2.D0*PHIR)
CC=DSQRT(1.D0-EE*SPH*SPH)*DTAN(PHIR)
BIGEM=EF0*PHIR-EF1*S2PH+EF2*DSIN(4.D0*PHIR)
EMPR=EF0-2.D0*EF1*DCOS(2.D0*PHIR)+4.D0*EF2*DCOS(4.D0*PHIR)
DPH=-(2.D0*AA*(CC*BIGEM+1.D0)-2.D0*BIGEM-(BIGEM*BIGEM+BB)*CC)/(EE*
*S2PH*(BIGEM*BIGEM+BB-2.D0*AA*BIGEM)/2.D0/CC+2.D0*(AA-BIGEM)*(CC*EM
*PR-2.D0/S2PH)-2.D0*EMPR)
PHIR=PHIR+DPH
IF (DABS(DPH).LT.CONV2) GO TO 2180
M=M+1
IF (M.GT.20) GO TO 2160
GO TO 2150
2160 WRITE (6,2170)
2170 FORMAT (1H0,2X,'TOO MANY ITERATIONS IN INVERSE POLYCONIC.')
GO TO 2060
2180 PHID=PHIR*RADDG
CLONGR=DARSIN(XP*CC/AK)/SPH+CLONGO
CLONGD=CLONGR*RADDG
GO TO 2270
2190 PH11=YP/AK
M=0
2200 DELT=(YP/AK+EF1*DSIN(2.D0*PH11)-EF2*DSIN(4.D0*PH11))/EF0-PH11
PH11=PH11+DELT
IF (DABS(DELT).LT.CONV2) GO TO 2230
M=M+1
IF (M.GT.20) GO TO 2210
GO TO 2200
2210 WRITE (6,2220)
2220 FORMAT (1H0,2X,'TOO MANY ITERATIONS IN INVERSE ELLIPSOIDAL TRANSVE
*RSE MERCATOR.')
GO TO 2060

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00013190
00013200
00013210
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00013250
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00013740

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2230 SPH=DSIN(PHI1)          00013750
    CPH=DCOS(PHI1)          00013760
    TPH=SPH/CPH              00013770
    FF=DSQRT(1.00-E2*SPH*SPH) 00013780
    CC=EPR*CPH*CPH           00013790
    T=TPH*TPH                00013800
    EN=AK/FF                  00013810
    RR=AK*(1.00-E2)/(FF**3)   00013820
    DD=XP/EN                  00013830
    F1=5.00+3.00*T+10.00*CC-4.00*CC*CC-9.00*EPR 00013840
    F2=61.00+90.00*T+298.00*CC+45.00*T*T-252.00*EPR-3.00*CC*CC 00013850
    F3=1.00+2.00*T*CC         00013860
    F4=5.00-2.00*CC+28.00*T-3.00*CC*CC+8.00*EPR+24.00*T*T 00013870
    PHIR=PHI1-(EN*TPH/RR)*(DD*DD/2.00-F1*(DD**4)/24.00+F2*(DD**6)/720.00 00013880
    *DD)                      00013890
    PHID=PHIR*RADDG           00013900
    CLNGR=CLONGD+(DD-F3*(DD**3)/6.00+F4*(DD**5)/120.00)/CPH 00013910
    CLONGD=CLNGR*RADDG        00013920
    GO TO 2270                00013930
2240 PHIR=YP/AK              00013940
    PHID=PHIR*RADDG           00013950
    CLONGD=CLNGD+XP*180.00/(AK*PI*DCOS(PHIR)) 00013960
    GO TO 2270                00013970
2250 THF=DARSIN(YP/AK/SQ2)    00013980
    PHIF=(2.00*THF+DSIN(2.00*THF))/PI 00013990
    PHID=DARSIN(PHIF)*RADDG   00014000
    CLONGD=(XP/AK)*90.00/SQ2/DCOS(THF)+CLNGD 00014010
    GO TO 2270                00014020
2260 CONTINUE                00014030
    CLONGD=XP*RADDG/AK        00014040
2270 CONTINUE                00014050
    IF (CLONGD.LT.-180)       00014060
        CLONGD=CLONGD+360.00
    IF (CLONGD.GT.180)        00014070
        CLONGD=CLONGD-360.00
    WRITE (6,2280) X1,Y,PHID,CLONGD 00014080
2280 FORMAT (1H,2X,'X=',10.6,' Y=',F10.6,' LAT=',F10.4,' DEG. LONGD 00014090
    *=',F10.4,' DEG.')
    GO TO 2060                00014100
C                               00014110
C                               00014120
C COMPUTE LAT/LONG FOR OTHER X,Y POINTS, BASED ON PARAMETERS FOR 00014130
C CONIC PROJECTIONS.         00014140
C                               00014150
2290 CONTINUE                00014160
    MP=2                      00014170
    SX=0.00                   00014180
    SY=0.00                   00014190
    SX1=0.00                  00014200
    SY1=0.00                  00014210
    DO 2300 I=1,9             00014220
        PHI1=PHI(I)           00014230
        CLONG1=CLONG(I)        00014240
        GO TO 2770             00014250
2300 CONTINUE                00014260
    GO TO 2670                00014270
2310 CONTINUE                00014280
    A1=1.00                   00014290
    A5=1.00                   00014300

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2320 CONTINUE                                00014310
      READ (5,2070) NN,X1,Y1                00014320
      IF (NN.EQ.1) GO TO 2870                00014330
      IF (MM.NE.0) X1=X1/2000.D0            00014340
      IF (MM.NE.0) Y1=Y1/2000.D0            00014350
2330 CONTINUE                                00014360
      IF (DABS(DABS(EN)-1.D0).LT.CONV1*5.D0) EN=DSIGN(1.D0,EN) 00014370
      XR=A1*X1+A2*Y1+A3                     00014380
      YR=A4*X1+A5*Y1+A6                     00014390
      DX=XR-X0                               00014400
      DY=YR-Y0                               00014410
      CLONGR=DATAN2((DX*DSIGN(1.D0,EN)),(-DY*DSIGN(1.D0,EN)))- 00014420
      *TH)/EN                                00014430
      CLONGD=CLONGR*RADDG                     00014440
      IF (CLONGD.LT.-180.D0) CLONGD=CLONGD+360.D0 00014450
      IF (CLONGD.GT.180.D0) CLONGD=CLONGD-360.D0 00014460
      IF (N.EQ.6) GO TO 2335                  00014470
      IF (N.EQ.7) GO TO 2340                  00014480
      IF (N.EQ.8) GO TO 2350                  00014490
      IF (N.EQ.9) GO TO 2360                  00014500
      IF (N.EQ.10) GO TO 2370                 00014510
      IF (N.EQ.11) GO TO 2380                 00014520
      IF (N.EQ.12) GO TO 2390                 00014530
      IF (N.EQ.13) GO TO 2400                 00014540
      IF (N.EQ.14) GO TO 2410                 00014550
2335 RHI=DSIGN(DSQR(DX*DX+DY*DY),EN)          00014560
      T=(RHI/FF)**(1.D0/EN)                  00014570
      PHID=90.D0-360.D0*DATAN(T)/PI           00014580
      GO TO 2420                              00014590
2340 CONTINUE                                00014600
      RHI=DSIGN(DSQR(DX*DX+DY*DY),EN)          00014610
      T=(RHI/FF)**(1.D0/EN)                  00014620
      CALL PHIT (T,E,PHID)                   00014630
      GO TO 2420                              00014640
2350 CONTINUE                                00014650
      RHOSQ=DX*DX+DY*DY                      00014660
      Q=(CP-RHOSQ*EN*EN/AK/AK)/EN            00014670
      CALL PHIQ (Q,E,PHID)                   00014680
      GO TO 2420                              00014690
2360 CONTINUE                                00014700
      RHOSQ=DX*DX+DY*DY                      00014710
      Q=(CP-RHOSQ*EN*EN/AK/AK)/EN            00014720
      PHID=180.D0*DARSIN(Q/2.D0)/PI          00014730
      GO TO 2420                              00014740
2370 CONTINUE                                00014750
      RHI=DSIGN(DSQR(DX*DX+DY*DY),EN)          00014760
      PHIR=G-RHI/AK                          00014770
      PHID=180.D0*PHIR/PI                    00014780
      GO TO 2420                              00014790
2380 CONTINUE                                00014800
      RHI=DSIGN(DSQR(DX*DX+DY*DY),EN)          00014810
      EM=G-RHI/AK                            00014820
      CALL PHIM (EM,PHID,EFO,EF1,EF2)         00014830
      GO TO 2420                              00014840
2390 CONTINUE                                00014850
      RHI=DSQR(DX*DX+DY*DY)                  00014860
```


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```
PHID=180.D0*EN*DARCOS(RHI/AK)/PI      00014870
GO TO 2420                              00014880
2400 CONTINUE                          00014890
RHI=DSQRT(DX*DX+DY*DY)                 00014900
PHID=EN*(90.D0-180.D0*DATAN(RHI/AK)/PI 00014910
GO TO 2420                              00014920
2410 CONTINUE                          00014930
RHI=DSQRT(DX*DX+DY*DY)/AK              00014940
SINZ=(P-DSQRT(1.D0-RHI*RHI*(P+1.D0)/(P-1.D0)))/((P-1.D0)/RHI+RHI/(00014950
*P-1.D0))                              00014960
Z=DARSIN(SINZ)                         00014970
RHI1=(P-1.D0)*SINZ/(P-DCOS(Z))          00014980
IF (DABS(RHI1-RHI).GT.CONV2) Z=PI-Z     00014990
PHID=(90.D0-Z*RADDG)*EN                00015000
2420 CONTINUE                          00015010
WRITE (6,2280) X1,Y1,PHID,CLONGD        00015020
GO TO 2320                              00015030
C                                       00015040
C COMPUTE LAT/LONG FOR OTHER X,Y POINTS, BASED ON PARAMETERS FOR 00015050
C AZIMUTHAL PROJECTIONS.              00015060
C                                       00015070
2430 CONTINUE                          00015080
WRITE (6,2440) PHID,CLNGD,SCALE         00015090
2440 FORMAT (1H,2X,'CENTERED AT',F10.4,' LAT. AND',F10.4,' LONG. SCAL00015100
*E=1/',F10.1)                          00015110
MP=1                                    00015120
SX=0.D0                                00015130
SY=0.D0                                00015140
SX1=0.D0                               00015150
SY1=0.D0                               00015160
DO 2450 I=1,9                          00015170
PHI1=PHI(I)                            00015180
CLONG1=CLONG(I)                        00015190
GO TO 2720                              00015200
2450 CONTINUE                          00015210
GO TO 2673                              00015220
2460 CONTINUE                          00015230
A1=1.D0                                00015240
A5=1.D0                                00015250
2470 CONTINUE                          00015260
READ (5,2070) NN,X1,Y1                 00015270
IF (NN.EQ.1) GO TO 2870                 00015280
IF (MM.NE.0) X1=X1/2000.D0             00015290
IF (MM.NE.0) Y1=Y1/2000.D0             00015300
2480 CONTINUE                          00015310
XR=A1*X1+A2*Y1+A3                      00015320
YR=A4*X1+A5*Y1+A6                     00015330
DX=XR-X0                                00015340
DY=YR-Y0                                00015350
XP=DX*CTH+DY*STH                       00015360
YP=DY*CTH-DX*STH                       00015370
RHI=DSQRT(DX*DX+DY*DY)/AK              00015380
IF (RHI.LT.CONV2) PHIR=PHI0            00015390
IF (RHI.LT.CONV2) CLONGR=CLONG0        00015400
IF (RHI.LT.CONV2) GO TO 2530            00015410
IF (N.EQ.19) GO TO 2500                 00015420
```

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```
-----
      IF (N.EQ.20) GO TO 2510
      IF (N.EQ.21) GO TO 2485
      IF (N.EQ.22.OR.N.EQ.23) GO TO 2490
2485  Z=DARSIN(RHI)
      GO TO 2520
2490  Z=DARSIN((P-DSQRT(1.D0-RHI*RHI*(P+1.D0)/(P-1.D0)))/(P-1.D0)/RHI+
      *RHI/(P-1.D0)))
      GO TO 2520
2500  Z=2.D0*DARSIN(RHI/2.D0)
      GO TO 2520
2510  Z=RHI
2520  CONTINUE
      SPHIR=DCOS(Z)*SPO*YP*DSIN(Z)*CPO/RHI/AK
      PHIR=DARSIN(SPHIR)
      B=DCOS(Z)-SPO*SPHIR
      IF (DABS(B).LT.CONV2.AND.DABS(XP).LT.CONV2) GO TO 2530
      CLONGR=CLONGO+DATAN2((XP*DSIN(Z)*CPO),(B*RHI*AK))
2530  CLONGD=CLONGR*RADDG
      IF (CLONGD.LT.-180.D0) CLONGD=CLONGD+360.D0
      IF (CLONGD.GT.180.D0) CLONGD=CLONGD-360.D0
      PHID=PHIR*RADDG
      IF (DABS(B).LT.CONV2.AND.DABS(XP).LT.CONV1) CLONGR=CLONGO
      WRITE (6,2280) X1,Y1,PHID,CLONGD
      GO TO 2470
C
C      COMPUTE LEAST-SQUARES FIT FOR CYLINDRICAL, POLYCONIC,
C      TRANSVERSE MERCATOR OR PSEUDOCYLINDRICAL PROJECTIONS.
C
2540  IF (N.EQ.1) GO TO 2545
      IF (N.EQ.2) GO TO 2550
      IF (N.EQ.3) GO TO 2560
      IF (N.EQ.4) GO TO 2570
      IF (N.EQ.5) GO TO 2580
      IF (N.EQ.15.OR.N.EQ.16) GO TO 2600
      IF (N.EQ.17) GO TO 2610
      IF (N.EQ.18) GO TO 2590
      IF (N.EQ.30) GO TO 2620
      IF (N.EQ.31) GO TO 2630
2545  YP=-AK*DLOG(DTAN(PI/4.D0-PHI1/2.D0))
      GO TO 2650
2550  ES=E*DSIN(PHI1)
      YP=AK*DLOG((DTAN(PI/4.D0+PHI1/2.D0))*((1.D0-ES)/(1.D0+ES))**((E/2.D0
      *0)))
      GO TO 2650
2560  YP=1.25D0*AK*DLOG(DTAN(PI/4.D0+0.4D0*PHI1))
      GO TO 2650
2570  YP=AKE*PHI1
      GO TO 2650
2580  YP=AKE*CONST*DTAN(PHI1/2.D0)
      GO TO 2650
2590  BB=DCOS(PHI1)*DSIN(CLONG1-CLONG0)
      XP=0.5D0*AK*DLOG((1.D0+BB)/(1.D0-BB))
      YP=AK*DATAN2(DTAN(PHI1),DCOS(CLONG1-CLONG0))
      GO TO 2660
2600  IF (DABS(PHI1).LT.1.D-7) GO TO 2605
      SPH=DSIN(PHI1)
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-----
      CC=DSQRT(1.D0-EE*SPH*SPH)*DTAN(PHI1)          00015990
      XP=AK*DSIN((CLONG1-CLONG0)*SPH)/CC             00016000
      BIGEM=EF0*PHI1-EF1*DSIN(2.D0*PHI1)+EF2*DSIN(4.D0*PHI1) 00016010
      YP=AK*(BIGEM+(1.D0-DCOS((CLONG1-CLONG0)*SPH))/CC) 00016020
      GO TO 2660                                       00016030
2605  XP=AK*(CLONG1-CLONG0)                          00016040
      YP=0.D0                                         00016050
      GO TO 2660                                       00016060
2610  SPH=DSIN(PHI1)                                  00016070
      CPH=DCOS(PHI1)                                  00016080
      TPH=SPH/CPH                                     00016090
      FE=DSQRT(1.D0-E2*SPH*SPH)                      00016100
      AA=(CLONG1-CLONG0)*CPH                         00016110
      CC=EPR*CPH*CPH                                 00016120
      T=TPH*TPH                                       00016130
      FI=1.D0-T+CC                                   00016140
      F2=5.D0-18.D0*T+T*T+72.D0*CC-58.D0*EPR        00016150
      F3=5.D0-T+9.D0*CC+4.D0*CC*CC                 00016160
      F4=61.D0-58.D0*T+T*T+600.D0*CC-330.D0*EPR      00016170
      YP=AK*(EF0*PHI1-EF1*DSIN(2.D0*PHI1)+EF2*DSIN(4.D0*PHI1)+(TPH/ 00016180
      *FE)*((AA**2)/2.D0+F3*(AA**4)/24.D0+F4*(AA**6)/720.D0)) 00016190
      XP=AK*(1.D0/FE)*(AA+FI*(AA**3)/6.D0+F2*(AA**5)/120.D0) 00016200
      GO TO 2660                                       00016210
2620  XP=AK*DCOS(PHI1)*(CLONG1-CLONG0)               00016220
      YP=AK*PHI1                                     00016230
      GO TO 2660                                       00016240
2630  M=0                                              00016250
      THF=PHI1                                        00016260
      PSPH=PI*DSIN(PHI1)                             00016270
2640  DELT=(PSPH-2.D0*THF-DSIN(2.D0*THF))/2.D0/(1.D0+DCOS(2.D0*THF)) 00016280
      THF=THF+DELT                                   00016290
      M=M+1                                           00016300
      IF (M.GT.20) GO TO 2060                         00016310
      IF (DABS(DELT).GT.CONV2) GO TO 2640             00016320
      SQ2=DSQRT(2.D0)                                00016330
      YP=AK*SQ2*DSIN(THF)                            00016340
      XP=AK*2.D0*SQ2*DCOS(THF)*(CLONG1-CLONG0)/PI    00016350
      GO TO 2660                                       00016360
2650  CONTINUE                                       00016370
      XP=AK*CLONG1                                    00016380
2660  CONTINUE                                       00016390
      X3(I)=XP*CTH-YP*STH+X0                          00016400
      Y3(I)=YP*CTH+XP*STH+Y0                          00016410
      SX=SX+X(I)                                       00016420
      SY=SY+Y(I)                                       00016430
      SX1=SX1+X3(I)                                   00016440
      SY1=SY1+Y3(I)                                   00016450
      IF (MP.EQ.0) GO TO 2040                         00016460
      IF (MP.EQ.1) GO TO 2450                         00016470
C                                           00016480
C  COMPUTE AFFINE FIT FOR 9 GIVEN POINTS AND CALCULATED PARAMETERS. 00016490
C                                           00016500
2670  CONTINUE                                       00016510
      SX=SX/9.D0                                       00016520
      SY=SY/9.D0                                       00016530
      SX1=SX1/9.D0                                     00016540
```

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DATE=84250

VOLUME=NMD581

DSNAME=VG5G30F.GRID.FORT

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```
SY1=SY1/9.D0
SXSQ=0.D0
SYSQ=0.D0
SX1X=0.D0
SX1Y=0.D0
SY1X=0.D0
SY1Y=0.D0
SXY=0.D0
DO 2680 I=1,9
DX=X(I)-SX
DY=Y(I)-SY
DX1=X3(I)-SX1
DY1=Y3(I)-SY1
SXSQ=SXSQ+DX*DX
SYSQ=SYSQ+DY*DY
SX1X=SX1X+DX1*DX
SX1Y=SX1Y+DY1*DY
SY1X=SY1X+DY1*DX
SY1Y=SY1Y+DY1*DY
SXY=SXY+DX*DY
2680 CONTINUE
DD=SXSQ*SYSQ-SXY*SXY
A1=(SYSQ*SX1X-SXY*SX1Y)/DD
A2=(SXSQ*SX1Y-SXY*SX1X)/DD
A3=SX1-A1*SX-A2*SY
A4=(SYSQ*SY1X-SXY*SY1Y)/DD
A5=(SXSQ*SY1Y-SXY*SY1X)/DD
A6=SY1-A4*SX-A5*SY
WRITE (6,2690) A1,A2,A3,A4,A5,A6
2690 FORMAT (1H,2X,'AFFINE CONSTANTS A1 TO A6:',6F12.8)
REST=0.D0
DO 2700 I=1,9
X2=A1*X(I)+A2*Y(I)+A3
Y2=A4*X(I)+A5*Y(I)+A6
RES=(X3(I)-X2)**2+(Y3(I)-Y2)**2
REST=REST+RES
2700 CONTINUE
RES=DSQRT(REST/9.D0)*25.4D0
WRITE (6,2710) RES
2710 FORMAT (1H,2X,'MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS',
*,F10.3,' MM. ')
IF (MM.EQ.0.AND.RES.LT.0.01D0) GO TO 2712
IF (MM.NE.0.AND.RES.LT.1.5D0) GO TO 2712
IF (N.EQ.1) GO TO 230
IF (N.EQ.2) GO TO 270
IF (N.EQ.3) GO TO 310
IF (N.EQ.4) GO TO 340
IF (N.EQ.5) GO TO 1920
IF (N.EQ.6) GO TO 460
IF (N.EQ.7) GO TO 385
IF (N.EQ.8) GO TO 540
IF (N.EQ.9) GO TO 560
IF (N.EQ.10) GO TO 640
IF (N.EQ.11.AND.DABS(DABS(EN)-1.D0).LT.CONV3) GO TO 860
IF (N.EQ.11) GO TO 720
IF (N.EQ.12) GO TO 910
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00017100
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00017120
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OS/360 DATE=84250 VOLUME=NMD581 DSNAME=VG5G30F.GRID.FORT

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-----
      IF (N.EQ.13) GO TO 950
      IF (N.EQ.14) GO TO 1940
      IF (N.GE.15) GO TO 1050
2712 CONTINUE
      WRITE (6,2715)
2715 FORMAT (1H )
      IF (MP.EQ.0) GO TO 2060
      IF (MP.EQ.1) GO TO 2470
      IF (MP.EQ.2) GO TO 2320
      IF (MP.EQ.3) GO TO 1750
2720 CONTINUE
C
C      COMPUTE LEAST-SQUARES FIT FOR AZIMUTHAL PROJECTIONS.
C
      SPH=DSIN(PHI1)
      CPH=DCOS(PHI1)
      CLG=DCOS(CLONG1-CLONG0)
      G=SP0*SPH+CPO*CPH*CLG
      IF (N.EQ.22.OR.N.EQ.23) GO TO 2730
      IF (N.EQ.19) GO TO 2740
      IF (N.EQ.20) GO TO 2750
      FAC=1.D0
      GO TO 2760
2730 FAC=(P-1.D0)/(P-G)
      GO TO 2760
2740 FAC=DSQRT(2.D0/(1.D0+G))
      GO TO 2760
2750 FAC=DARCOS(G)/DSQRT(1.D0-G*G)
2760 CONTINUE
      XP=AK*FAC*CPH*DSIN(CLONG1-CLONG0)
      YP=AK*FAC*(CPO*SPH-SP0*CPH*CLG)
      GO TO 2660
2770 CONTINUE
C
C      COMPUTE LEAST-SQUARES FIT FOR CONIC PROJECTIONS.
C
      IF (N.EQ.6) GO TO 2775
      IF (N.EQ.7) GO TO 2780
      IF (N.EQ.8) GO TO 2790
      IF (N.EQ.9) GO TO 2800
      IF (N.EQ.10) GO TO 2810
      IF (N.EQ.11) GO TO 2820
      IF (N.EQ.12) GO TO 2830
      IF (N.EQ.13) GO TO 2840
      IF (N.EQ.14) GO TO 2850
2775 T=DTAN(PI/4.D0-PHI1/2.D0)
      RHI=FF*(T**EN)
      GO TO 2860
2780 ESP=E*DSIN(PHI1)
      T=DTAN(PI/4.D0-PHI1/2.D0)/(((1.D0-ESP)/(1.D0+ESP))**(E/2.D0))
      RHI=FF*(T**EN)
      GO TO 2860
2790 SP=DSIN(PHI1)
      ESP=E*SP
      Q=((1.D0-E2)*(SP/(1.D0-ESP*ESP)-(0.5D0/E)*DLOG((1.D0-ESP)/(1.D0+ESP
      *)))
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	RHI=AK*DSQRT(CP-EN*Q)/EN	00017690
	GO TO 2860	00017700
2800	Q=2.D0*DSIN(PHI1)	00017710
	RHI=AK*DSQRT(CP-EN*Q)/EN	00017720
	GO TO 2860	00017730
2810	RHI=AK*(G-PHI1)	00017740
	GO TO 2860	00017750
2820	EM=EF0*PHI1-EF1*DSIN(2.D0*PHI1)+EF2*DSIN(4.D0*PHI1)	00017760
	RHI=AK*(G-EM)	00017770
	GO TO 2860	00017780
2830	RHI=AK*DCOS(PHI1)*EN	00017790
	GO TO 2860	00017800
2840	RHI=AK*DTAN(PI/2.D0-PHI1)	00017810
	GO TO 2860	00017820
2850	RHI=AK*(P-1.D0)*DCOS(PHI1)/(P-DSIN(PHI1))	00017830
2860	CONTINUE	00017840
	ANG=EN*CLONG1+TH	00017850
	X3(I)=RHI*DSIN(ANG)+X0	00017860
	Y3(I)=-RHI*DCOS(ANG)+Y0	00017870
	SX=SX+X(I)	00017880
	SY=SY+Y(I)	00017890
	SX1=SX1+X3(I)	00017900
	SY1=SY1+Y3(I)	00017910
	GO TO 2860	00017920
2870	CONTINUE	00017930
	READ (5,2880) NM	00017940
2880	FORMAT (I)	00017950
	IF (NM.EQ.0) GO TO 10	00017960
2890	WRITE (6,2900)	00017970
2900	FORMAT (1H0,2X,'NORMAL END OF JOB.')	00017980
	STOP	00017990
	END	00018000
*****	END OF MBR	

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C
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C
C
SUBROUTINE MATINV (C,N,B)

      THIS SUBROUTINE COMPUTES THE INVERSE OF A SYMMETRICAL SQUARE
      MATRIX.

      DOUBLE PRECISION A(6,6),B(6,6),C(6,6),PIVOT
      DO 1 I=1,N
      DO 1 J=1,N
1     A(I,J)=C(I,J)
      DO 2 I=1,N
2     A(I,1)=A(1,I)
      DO 3 I=1,N
      PIVOT=A(I,I)
      A(I,I)=-1.00
      DO 4 J=1,N
4     A(I,J)=A(I,J)/PIVOT
      DO 5 K=1,N
      IF (I.EQ.K) GO TO 5
      IF (A(K,I).EQ.0.00) GO TO 5
      DO 6 J=K,N
      IF (I.EQ.J) GO TO 6
      A(K,J)=A(K,J)-A(K,I)*A(I,J)
      A(J,K)=A(K,J)
6     CONTINUE
5     CONTINUE
      DO 3 K=1,N
3     A(K,1)=A(1,K)
      DO 7 K=1,N
      DO 7 J=1,N
7     B(K,J)=-A(K,J)
90    RETURN
      END
***** END OF MBR

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END OF MBR

OS/360 DATE=84250 VOLUME=NMD581 DSNAME=VG5G30F.GRID.FORT

MEMBER=PERSP2

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***** MEMBER NAME=PERSP2 *****

```
      SUBROUTINE PERSP (X,Y,PHI,CLONG,E2,D)      00000010
C      THIS SUBROUTINE DETERMINES WHETHER THE PROJECTION IS PERSPECTIVE.      00000020
C      00000030
C      00000040
      IMPLICIT REAL*8 (A-H,O-Z)      00000050
      DIMENSION C(77),D(12),OBEQ(1,12),X(9),Y(9),PHI(9),CLONG(9)      00000070
      DO 10 I=1,77      00000090
      C(I)=0.00      00000100
10  CONTINUE      00000110
      DO 3 I=1,6      00000120
      SP=DSIN(PHI(I))      00000130
      CP=DCOS(PHI(I))      00000140
      ENN=1.00/DSQRT(1.00-E2*SP*SP)      00000150
      XX=ENN*CP*DCOS(CLONG(I))      00000160
      YY=ENN*CP*DSIN(CLONG(I))      00000170
      ZZ=ENN*(1.00-E2)*SP      00000180
      OBEQ(1,1)=XX      00000190
      OBEQ(1,2)=YY      00000200
      OBEQ(1,3)=ZZ      00000210
      OBEQ(1,4)=1.00      00000220
      OBEQ(1,5)=-X(I)*XX      00000230
      OBEQ(1,6)=-X(I)*YY      00000240
      OBEQ(1,7)=-X(I)*ZZ      00000250
      DO 1 J=8,11      00000260
      OBEQ(1,J)=0.00      00000270
1  CONTINUE      00000280
      OBEQ(1,12)=X(I)      00000290
      CALL NRME (OBEQ,1,11,0,C,11,1,0)      00000300
      IF (1.EQ.6) GO TO 3      00000310
      DO 2 J=1,4      00000320
      OBEQ (1,J)=0.00      00000330
2  CONTINUE      00000340
      OBEQ(1,5)=-Y(I)*XX      00000350
      OBEQ(1,6)=-Y(I)*YY      00000360
      OBEQ(1,7)=-Y(I)*ZZ      00000370
      OBEQ(1,8)=XX      00000380
      OBEQ(1,9)=YY      00000390
      OBEQ(1,10)=ZZ      00000400
      OBEQ(1,11)=1.00      00000410
      OBEQ(1,12)=Y(I)      00000420
      CALL NRME (OBEQ,1,11,0,C,11,1,0)      00000430
3  CONTINUE      00000440
      CALL SMLE (C,11,D,IERR)      00000450
      DO 6 I=1,11      00000451
      IF (DABS(D(I)).LT.1.D-10) D(I)=1.D-10      00000452
6  CONTINUE      00000453
      RETURN      00000454
      END      00000455
***** END OF MBR      00000460
```

*** M03 ***

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```

C      SUBROUTINE PHIM (EM,PHID,EFO,EF1,EF2)
C
C      THIS SUBROUTINE COMPUTES LATITUDE FOR A GIVEN DISTANCE ALONG
C      MERIDIAN IN ELLIPSOIDAL PROJECTIONS.
C
      IMPLICIT REAL*8 (A-H,O-Z)
      COMMON /B/ PI
      COMMON /F/ CONV2
      N=0
      PHIR=EM
1     PHIT=(EM+EF1*DSIN(2.00*PHIR)-EF2*DSIN(4.00*PHIR))/EFO
      N=N+1
      IF (DABS(PHIT-PHIR).LT.CONV2) GO TO 4
      IF (N.GT.20) GO TO 2
      PHIR=PHIT
      GO TO 1
2     WRITE (6,3)
3     FORMAT (1H0,2X,'TOO MANY ITERATIONS IN COMPUTING LAT. FROM "M".')
      STOP
4     PHID=PHIT*180.00/PI
      RETURN
      END
***** END OF MBR

```

OS/360 DATE=84250 VOLUME=NMD581 DSNAME=VG5G30F.GRID.FORT

MEMBER=PHIQ

PAGE 044

***** MEMBER NAME=PHIQ *****

```

SUBROUTINE PHIQ (Q,E,PHID)
C
C THIS SUBROUTINE COMPUTES LAT. FROM "Q" IN ELLIPSOIDAL EQUAL-
C AREA PROJECTIONS.
C
IMPLICIT REAL*8 (A-H,O-Z)
COMMON /B/ PI
COMMON /F/ CONV2
N=0
PHIR=DARSIN(Q/Z.DO)
IF (E.LT.1.D-7) GO TO 4
1 SP=DSIN(PHIR)
ESS=E*SP
ESS=1.D-ESS*ES
CORR=(ESS*ESS/Z.DO/DCOS(PHIR))*(Q/(1.D-E*E)-SP/ESS+(0.5D0/E)*DLOG
*(1.D-ESS)/(1.D+ESS))
N=N+1
PHIR=PHIR+CORR
IF (DABS(CORR).LT.CONV2) GO TO 4
IF (N.GT.20) GO TO 2
GO TO 1
2 WRITE (6,3)
3 FORMAT (1H0,2X,'TOO MANY ITERATIONS IN COMPUTING LAT. FROM "Q".')
STOP
4 PHID=PHIR*180.D0/PI
RETURN
END
***** END OF MBR

```

OS/360 DATE=84250 VOLUME=NM0581 DSNAME=VG5G30F.GRID.FORT

MEMBER=PHIT

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***** MEMBER NAME=PHIT *****

```
      SUBROUTINE PHIT (T,E,PHID)                                00000010
C      THIS SUBROUTINE COMPUTES LAT. FRO "T" IN ELLIPSOIDAL CONFORMAL 00000020
C      PROJECTIONS.                                              00000030
C                                                                00000040
C      IMPLICIT REAL*8 (A-H,O-Z)                                00000050
C      COMMON /B/ PI                                             00000060
C      COMMON /F/ CONV2                                          00000070
C      N=0                                                        00000080
C      PHIR=PI/2.D0-2.D0*DATAN(T)                                00000090
1    ES=E*DSIN(PHIR)                                             00000100
C      PHIT=PI/2.D0-2.D0*DATAN(T*((1.D0-ES)/(1.D0+ES))* (E/2.D0)) 00000110
C      N=N+1                                                      00000120
C      IF (DABS(PHIT-PHIR).LT.CONV2) GO TO 4                      00000130
C      PHIR=PHIT                                                  00000140
C      IF (N.GT.20) GO TO 2                                       00000150
C      GO TO 1                                                     00000160
2    WRITE (6,3)                                                 00000170
3    FORMAT (1H0,2X,'TOO MANY ITERATIONS IN COMPUTATIONS OF LAT. FROM " 00000180
C      "T".')                                                    00000190
C      STOP                                                       00000200
4    PHID=PHIT*180.D0/PI                                         00000210
C      RETURN                                                      00000220
C      END                                                         00000230
***** END OF MBR                                              00000240
```

OS/360

DATE=84250

VOLUME=NMD581

DSNAME=VG5G30F.GRID.FORT

MEMBER=POINTS

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***** MEMBER NAME=POINTS *****

50.	-100.	-1.745329	20.213664	00000010
41.	-100.	-1.745329	15.717259	00000020
30.	-100.	-1.745329	10.986123	00000030
50.	-80.	5.235988	20.213664	00000040
41.	-80.	5.235988	15.717259	00000050
30.	-80.	5.235988	10.986123	00000060
50.	-55.	13.962634	20.213664	00000070
41.	-55.	13.962634	15.717259	00000080
30.	-55.	13.962634	10.986123	00000090
	-5.235988	9.017507		00000100
	-5.235988	-9.017507		00000110
1				00000120
				00000130
				00000140
				00000150
50.	-100.	-1.745329	20.109824	00000160
41.	-100.	-1.745329	15.628360	00000170
30.	-100.	-1.745329	10.918398	00000180
50.	-80.	5.235988	20.109824	00000190
41.	-80.	5.235988	15.628360	00000200
30.	-80.	5.235988	10.918398	00000210
50.	-55.	13.962634	20.109824	00000220
41.	-55.	13.962634	15.628360	00000230
30.	-55.	13.962634	10.918398	00000240
	-5.235988	8.960272		00000250
	-5.235988	-8.960272		00000260
1				00000270
				00000280
				00000290
50.	-100.	-1.136937	10.223556	00000300
41.	-100.	-1.310072	7.079944	00000310
30.	-100.	-1.520784	3.254046	00000320
50.	-80.	3.397060	10.473267	00000330
41.	-80.	3.914370	7.367681	00000340
30.	-80.	4.543957	3.588062	00000350
50.	-55.	8.809085	12.162877	00000360
41.	-55.	10.150548	9.314589	00000370
30.	-55.	11.783162	5.848110	00000380
	-4.834881	1.841545		00000390
	-8.536835	-20.382509		00000400
1				00000410
				00000420
				00000430
50.	-100.	-1.139151	10.183982	00000440
41.	-100.	-1.312010	7.045465	00000450
30.	-100.	-1.522024	3.232351	00000460
50.	-80.	3.403673	10.434186	00000470
41.	-80.	3.920160	7.333636	00000480
30.	-80.	4.547661	3.566650	00000490
50.	-55.	8.826219	12.127135	00000500
41.	-55.	10.165545	9.283480	00000510

OS/360

DATE=84250

VOLUME=NMD581

DSNAME=VGS630F.GRID.FORT

MEMBER=POINTS

PAGE 047

30.	-55.	11.792748	5.828606	00000520
	-4.837232	1.828313		00000530
	-8.510364	-20.222047		00000540
1				00000550
				00000560
				00000570
50.	-100.	-1.745329	19.072741	00000580
41.	-100.	-1.745329	15.164253	00000590
30.	-100.	-1.745329	10.792368	00000600
50.	-80.	5.235988	19.072741	00000610
41.	-80.	5.235988	15.164253	00000620
30.	-80.	5.235988	10.792368	00000630
50.	-55.	13.962634	19.072741	00000640
41.	-55.	13.962634	15.164253	00000650
30.	-55.	13.962634	10.792368	00000660
	-5.235988	8.909463		00000670
	-5.235988	-8.909463		00000680
1				00000690
				00000700
				00000710
50.	-100.	-1.337000	17.453293	00000720
41.	-100.	-1.337000	14.311700	00000730
30.	-100.	-1.337000	10.471976	00000740
50.	-80.	4.010999	17.453293	00000750
41.	-80.	4.010999	14.311700	00000760
30.	-80.	4.010999	10.471976	00000770
50.	-55.	10.695998	17.453293	00000780
41.	-55.	10.695998	14.311700	00000790
30.	-55.	10.695998	10.471976	00000800
	-4.010999	8.726646		00000810
	-4.010999	-8.726646		00000820
1				00000830
				00000840
				00000850
50.	-100.	-1.234134	15.920739	00000860
41.	-100.	-1.234134	12.765221	00000870
30.	-100.	-1.234134	9.148358	00000880
50.	-80.	3.702402	15.920739	00000890
41.	-80.	3.702402	12.765221	00000900
30.	-80.	3.702402	9.148358	00000910
50.	-55.	9.873073	15.920739	00000920
41.	-55.	9.873073	12.765221	00000930
30.	-55.	9.873073	9.148358	00000940
	-3.702402	7.569129		00000950
	-3.702402	-7.569129		00000960
1				00000970
				00000980
				00000990
50.	-100.	-1.268884	-14.503409	00001000
41.	-100.	-1.588766	-18.159683	00001010
30.	-100.	-2.012776	-23.006131	00001020
50.	-80.	3.768097	-14.062730	00001030
41.	-80.	4.718025	-17.607910	00001040
30.	-80.	5.977170	-22.307101	00001050
50.	-55.	9.358222	-11.152695	00001060
41.	-55.	11.717408	-13.964263	00001070

OS/360 DATE=84250 VOLUME=NMD581 DSNAME=VG5G30F.GRID.FORT MEMBER=POINTS PAGE 048

30.	-55.	14.844544	-17.691039	00001080
41.	-6.595437	-24.614505		00001090
	-16.250581	-60.647994		00001100
1				00001110
				00001120
				00001130
50.	-100.	-1.271175	-14.529594	00001140
41.	-100.	-1.590446	-18.178885	00001150
30.	-100.	-2.012772	-23.006087	00001160
50.	-80.	3.774900	-14.088119	00001170
41.	-80.	4.723014	-17.626528	00001180
30.	-80.	5.977158	-22.307059	00001190
50.	-55.	9.375118	-11.172831	00001200
41.	-55.	11.729797	-13.979028	00001210
30.	-55.	14.844516	-17.691005	00001220
	-6.591965	-24.601550		00001230
	-16.149334	-60.270134		00001240
1				00001250
				00001260
				00001270
-30.	20.	-6.840403	18.793852	00001281
-41.	20.	-5.673338	15.587367	00001290
-50.	20.	-4.679111	12.855752	00001300
-30.	35.	-1.743115	19.923894	00001311
-41.	35.	-1.445716	16.524608	00001320
-50.	35.	-1.192361	13.628746	00001330
-30.	70.	10.000000	17.320508	00001341
-41.	70.	8.293865	14.365395	00001350
-50.	70.	6.840403	11.847925	00001360
	-16.867829	-29.215937		00001370
	-10.745992	-18.612604		00001380
1				00001390
				00001400
				00001410
50.	-100.	-0.806124	-9.214039	00001420
45.	-100.	-0.828252	-9.466969	00001430
41.	-100.	-0.836204	-9.557856	00001440
50.	-80.	2.393878	-8.934075	00001450
45.	-80.	2.459591	-9.179320	00001460
41.	-80.	2.483205	-9.267446	00001470
50.	-55.	5.945294	-7.085325	00001480
45.	-55.	6.108495	-7.279821	00001490
41.	-55.	6.167139	-7.349711	00001500
	4.395131	-4.395131		00001510
	-2.115760	-7.896125		00001520
1				00001530
				00001540
				00001550
50.	-100.	-1.140793	9.459533	00001560
41.	-100.	-1.305748	6.326836	00001570
30.	-100.	-1.509174	2.463538	00001580
50.	-80.	3.409761	9.699147	00001590
41.	-80.	3.902803	6.601098	00001600
30.	-80.	4.510831	2.780528	00001610
50.	-55.	8.863392	11.322667	00001620
41.	-55.	10.145013	8.459374	00001630

OS/360	DATE=84250	VOLUME=NMD581	DSNAME=VG5G30F.GRID.FORT	MEMBER=POINTS	PAGE 049
30.	-55.	11.725532	4.928310	00001640	
	-4.783746	1.065655		00001650	
	-7.112783	-13.568947		00001660	
1				00001670	
				00001680	
				00001690	
50.	-100.	-1.142992	9.430035	00001700	
41.	-100.	-1.307699	6.302399	00001710	
30.	-100.	-1.510460	2.452156	00001720	
50.	-80.	3.416331	9.670138	00001730	
41.	-80.	3.908631	6.577101	00001740	
30.	-80.	4.514670	2.769451	00001750	
50.	-55.	8.880420	11.296961	00001760	
41.	-55.	10.160104	8.438352	00001770	
30.	-55.	11.735445	4.919292	00001780	
	-4.786363	1.062449		00001790	
	-7.103124	-13.493386		00001800	
1				00001810	
				00001820	
				00001830	
50.	-100.	-1.139608	9.454957	00001840	
41.	-100.	-1.305884	6.317768	00001850	
30.	-100.	-1.509110	2.483425	00001860	
50.	-80.	3.406054	9.695884	00001870	
41.	-80.	3.903019	6.593848	00001880	
30.	-80.	4.510420	2.802470	00001890	
50.	-55.	8.850764	11.327987	00001900	
41.	-55.	10.142145	8.464085	00001910	
30.	-55.	11.720501	4.963760	00001920	
	-4.786511	1.079116		00001930	
	-7.547426	-16.154420		00001940	
1				00001950	
				00001960	
				00001970	
50.	-100.	-1.141813	9.425478	00001980	
41.	-100.	-1.307834	6.293361	00001990	
30.	-100.	-1.510396	2.471857	00002000	
50.	-80.	3.412642	9.666891	00002010	
41.	-80.	3.908844	6.569876	00002020	
30.	-80.	4.514261	2.791199	00002030	
50.	-55.	8.867845	11.302283	00002040	
41.	-55.	10.157239	8.443055	00002050	
30.	-55.	11.730432	4.954504	00002060	
	-4.789102	1.075796		00002070	
	-7.533256	-16.051683		00002080	
1				00002090	
				00002100	
				00002110	
-30.	20.	-6.844259	18.804448	00002121	
-41.	20.	-5.680858	15.608029	00002130	
-50.	20.	-4.688141	12.880560	00002140	
-30.	35.	-1.744098	19.935127	00002151	
-41.	35.	-1.447632	16.546513	00002160	
-50.	35.	-1.194662	13.655046	00002170	
-30.	70.	10.005638	17.330273	00002181	
-41.	70.	8.304859	14.384438	00002190	

OS/360 DATE=84250 VOLUME=NMD581 DSNAME=VG5G30F.GRID.FORT MEMBER=POINTS PAGE 050

-50.	70.	6.853603	11.870789	00002200
	-16.839460	-29.166801		00002210
	-10.748436	-18.616837		00002220
1				00002230
				00002240
				00002250
50.	-100.	-1.216924	-13.909502	00002260
41.	-100.	-1.490732	-17.039140	00002270
30.	-100.	-1.825386	-20.864253	00002280
50.	-80.	3.613796	-13.486869	00002290
41.	-80.	4.426900	-16.521414	00002300
30.	-80.	5.420693	-20.230303	00002310
50.	-55.	8.975008	-10.695998	00002320
41.	-55.	10.994385	-13.102598	00002330
30.	-55.	13.462512	-16.043997	00002340
	-5.872418	-21.916162		00002350
	-10.389662	-38.774748		00002360
1				00002370
				00002380
				00002390
50.	-100.	-1.120453	-12.806832	00002400
41.	-100.	-1.315545	-15.036754	00002410
30.	-100.	-1.509582	-17.254598	00002420
50.	-80.	3.327314	-12.417703	00002430
41.	-80.	3.706664	-14.579869	00002440
30.	-80.	4.482877	-16.730326	00002450
50.	-55.	8.263518	-9.848078	00002460
41.	-55.	9.702359	-11.562822	00002470
30.	-55.	11.133408	-13.268279	00002480
	-4.691394	-17.508522		00002490
	-19.245004	-1.683720		00002500
1				00002510
				00002520
				00002530
40.	-100.	-1.337293	14.000193	00002540
32.	-100.	-1.480946	11.204403	00002550
20.	-100.	-1.641669	7.005859	00002560
40.	-80.	4.018558	14.305012	00002570
32.	-80.	4.462426	11.484032	00002580
20.	-80.	4.963670	7.207126	00002590
40.	-55.	10.784573	16.617599	00002600
32.	-55.	12.228084	13.684930	00002610
20.	-55.	13.989133	8.871078	00002620
	-4.780396	8.995169		00002630
	-4.780396	-8.995169		00002640
1				00002650
				00002660
				00002670
45.	-100.	-1.236229	1.779772	00002680
42.	-100.	-1.299176	0.734430	00002690
40.	-100.	-1.339171	0.037612	00002700
45.	-98.	-0.741737	1.755318	00002710
42.	-98.	-0.779439	0.710108	00002720
40.	-98.	-0.803388	0.013526	00002730
45.	-97.	-0.494491	1.747685	00002740
42.	-97.	-0.519612	0.702517	00002750

OS/360

DATE=84250

VOLUME=NMD581

DSNAME=VG5G30F.GRID.FORT

MEMBER=POINTS

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40.	-97.	-0.535568	0.006010	00002760
	-0.767105	1.058467		00002770
1	0.826356	-0.682878		00002780
				00002790
				00002800
				00002810
40.	-100.	-1.336299	3.528147	00002820
32.	-100.	-1.479596	0.732349	00002830
20.	-100.	-1.639830	-3.466185	00002840
40.	-80.	3.992095	3.827351	00002850
32.	-80.	4.426139	1.005650	00002860
20.	-80.	4.913647	-3.270526	00002870
40.	-55.	10.340608	5.850571	00002880
32.	-55.	11.572724	2.863571	00002890
20.	-55.	12.996264	-1.931652	00002900
	-4.735741	-1.483078		00002910
1	-4.735741	-19.460873		00002920
				00002930
				00002940
				00002950
40.	-100.	-1.338171	3.516217	00002960
32.	-100.	-1.481004	0.729528	00002970
20.	-100.	-1.640479	-3.448902	00002980
40.	-80.	3.997689	3.815840	00002990
32.	-80.	4.430352	1.003089	00003000
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	160373.	135980.		00007480
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37.	-75.	123151.	113987.	00007570
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33.	-99.	+135299.	+115760.	00000580
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39.	-84.	+157589.	+128900.	00000600
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44.	-122.	105727.	117844.	00002770
40.	-122.	106631.	100309.	00002780
48.	-116.	122528.	136836.	00002790
44.	-116.	124533.	119441.	00002800
40.	-116.	126538.	102056.	00002810
48.	-108.	145874.	140572.	00002820
44.	-108.	149328.	123361.	00002830
40.	-108.	152768.	106129.	00002840
	138332.	112513.		00002850
1				00002860
0				00002870
1				00002880
24.	-90.	099143.	134520.	00002890
18.	-90.	100564.	122993.	00002900
12.	-90.	101985.	111416.	00002910
24.	-78.	120326.	137825.	00002920
18.	-78.	122486.	126397.	00002930
12.	-78.	124651.	114975.	00002940
24.	-66.	141177.	142541.	00002950
18.	-66.	144105.	131281.	00002960
12.	-66.	147041.	120007.	00002970
	108470.	106347.		00002980
1				00002990
0				00003000
1				00003010
58.	-92.	102374.	146698.	00003020
50.	-92.	103392.	123365.	00003030
42.	-92.	104380.	100121.	00003040
58.	-84.	114834.	147918.	00003050
50.	-84.	118335.	124829.	00003060
42.	-84.	121789.	101821.	00003070
58.	-76.	127077.	150451.	00003080
50.	-76.	133019.	127836.	00003090
42.	-76.	138912.	105345.	00003100
	110322.	129693.		00003110
1				00003120
0				00003130
1				00003140
50.	-140.	126994.	145469.	00003150
0.	-140.	121219.	136891.	00003160
-50.	-140.	121818.	125007.	00003170
50.	-70.	134425.	142428.	00003180
0.	-70.	134823.	133212.	00003190
-50.	-70.	134842.	123987.	00003200
50.	0.	141389.	146366.	00003210
0.	0.	148119.	138150.	00003220
-50.	0.	147749.	125456.	00003230
	137821.	145415.		00003235
1				00003240
0				00003250
1				00003260
60.	-120.	101737.	117589.	00003270
40.	-120.	101083.	112061.	00003280
10.	-120.	101451.	103333.	00003290
60.	-90.	105759.	117925.	00003300
40.	-90.	107260.	112752.	00003310

OS/360

DATE=84250

VOLUME=NMD581

DSNAME=VG5G30F.GRID.FORT

MEMBER=POINT2

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10.	-90.	109278.	104876.	00003320
60.	-70.	108172.	119043.	00003330
40.	-70.	111063.	114299.	00003340
10.	-70.	114434.	106316.	00003350
	105682.	109592.		00003360
1				00003370
0				00003380
1				00003390
70.	-120.	103299.	116520.	00003400
60.	-120.	102229.	111749.	00003410
50.	-120.	101110.	106980.	00003420
70.	-90.	108214.	116518.	00003430
60.	-90.	109340.	111760.	00003440
50.	-90.	110486.	107011.	00003450
70.	-50.	113793.	119854.	00003460
60.	-50.	117473.	116611.	00003470
50.	-50.	121148.	113383.	00003480
	113488.	107943.		00003490
1				00003500
2				00003510

***** END OF MBR

OS/360 DATE=84250 VOLUME=NMD581 DSNAME=VG5G30F.GRID.FORT

MEMBER=POLYNM

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***** MEMBER NAME=POLYNM *****

```

C      SUBROUTINE POLYNM (X,Y,PHI,CLON,CFA,CFB,RESA,XA,YA,A,EZ)      00000010
C                                                                    00000020
C      THIS PROGRAM DETERMINES COEFFICIENTS FOR POLYNOMIALS FOR DIRECT  00000030
C      TRANSFORMATION OF QUADRANGLES FROM GEODETIC TO RECTANGULAR      00000040
C      COORDINATES, RECTANGULAR TO GEODETIC, OR RECTANGULAR TO        00000050
C      RECTANGULAR.                                                    00000060
C                                                                    00000070
C      IMPLICIT REAL *8 (A-F,O-Z)                                       00000080
C      DIMENSION X(9),Y(9),PHI(9),CLON(9)                             00000090
C      DIMENSION BA(10,6)                                               00000100
C      DIMENSION BB(6,6),DD(6,10),CFA(6)                             00000110
C      DIMENSION CFB(6)                                                00000120
C                                                                    00000130
C      OBTAIN AVERAGES OF COORDINATES TO REDUCE ROUND OFF ERRORS.      00000140
C                                                                    00000150
C      XA=0.00                                                         00000160
C      YA=0.00                                                         00000170
C      DO 10 I=1,9                                                      00000180
C      XA=XA+X(I)                                                       00000190
C      YA=YA+Y(I)                                                       00000200
10  CONTINUE                                                            00000210
C      XA=XA/9.00                                                       00000220
C      YA=YA/9.00                                                       00000230
C      WRITE (6,20) XA,YA                                              00000240
C 20  FORMAT (1H0,2X,'AVE. COORD. FOR INPUT: X=',F14.8,' Y=',F14.8)  00000250
C      WRITE (6,30)                                                     00000260
C 30  FORMAT (1H0,2X,'THESE AVERAGE COORDINATES MUST BE SUBTRACTED FROM  00000270
C      *INPUT USING THESE POLYNOMIAL COEFFICIENTS:')                 00000280
C      DO 40 I=1,9                                                      00000290
C      XD=X(I)-XA                                                       00000300
C      YD=Y(I)-YA                                                       00000310
C      IF (DABS(XD).LT.1.0-15) XD=0.00                                00000320
C      IF (DABS(YD).LT.1.0-15) YD=0.00                                00000330
C      BA(I,1)=1.00                                                     00000340
C      BA(I,2)=XD                                                       00000350
C      BA(I,3)=YD                                                       00000360
C      BA(I,4)=XD**2                                                    00000370
C      BA(I,5)=XD*YD                                                    00000380
C      BA(I,6)=YD**2                                                    00000390
40  CONTINUE                                                            00000400
C                                                                    00000410
C      BA IS MATRIX OF ELEMENTS (9 X 6).                               00000420
C                                                                    00000430
C      DO 50 I=1,6                                                      00000440
C      DO 50 J=1,6                                                      00000450
C      BB(I,J)=0.00                                                     00000460
C      DO 50 II=1,9                                                      00000470
C      IF (BA(II,I).EQ.0.00.OR.BA(II,J).EQ.0.00) GO TO 50             00000480
C      IF ((DLOG10(DABS(BA(II,I)))+DLOG10(DABS(BA(II,J))))).LT.-50.00)  00000490
C      *GO TO 50                                                         00000500
C      BB(I,J)=BB(I,J)+BA(II,I)*BA(II,J)                             00000510

```

OS/360 DATE=84250 VOLUME=NMD581 DSNAME=VG5G30F.GRID.FORT

MEMBER=POLYNM

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```
50 CONTINUE
C
C   BB (6 X 6) IS PRODUCT OF TRANSPOSE OF BA, X BA.
C
C   CALL MATINV (BB,6,BB)
C
C   NEW BB IS INVERSE OF OLD BB.
C
C   DO 60 I=1,6
C   DO 60 J=1,9
C   DD(I,J)=0.00
C   DO 60 II=1,6
C   IF (BB(I,II).EQ.0.00.OR.BA(J,II).EQ.0.00) GO TO 60
C   IF ((DLOG10(DABS(BB(I,II)))+DLOG10(DABS(BA(J,II))))).LT.-50.00)
C   *GO TO 60
C   DD(I,J)=DD(I,J)+BB(I,II)*BA(J,II)
60 CONTINUE
C
C   DD (6 X 9) IS PRODUCT OF BB X BA TRANSPOSE.
C
C
C   DO 70 I=1,6
C   CFA(I)=0.00
C   CFB(I)=0.00
C   DO 70 II=1,9
C   CFA(I)=CFA(I)+DD(I,II)*COS(II)
C   CFB(I)=CFB(I)+DD(I,II)*PHI(II)
70 CONTINUE
C
C   LIST FINAL POLYNOMIAL COEFFICIENTS.
C
C
C   WRITE (6,80)
C 80 FORMAT (1H0,2X,'COEFFICIENTS FOR LONGITUDE IN RADIANS'//)
C   N1=3
C   N2=1
C   N3=1
C   DO 100 I=1,3
C   N4=I-1
C   WRITE (6,90) N4,(CFA(J),J=N2,N3)
C 90 FORMAT (1H ,2X,'ORDER=',I2,2X,6D15.7)
C   N2=N3+1
C   N3=N2+I
100 CONTINUE
C   WRITE (6,110)
C 110 FORMAT (1H0,2X,'COEFFICIENTS FOR LATITUDE IN RADIANS'//)
C   N2=1
C   N3=1
C   DO 120 I=1,3
C   N4=I-1
C   WRITE (6,90) N4,(CFB(J),J=N2,N3)
C   N2=N3+1
C   N3=N2+I
120 CONTINUE
C
C   CALCULATE RESIDUALS USING POLYNOMIALS.
C
C   RESA=0.00
```

```
00000520
00000530
00000540
00000550
00000560
00000570
00000580
00000590
00000600
00000610
00000620
00000630
00000640
00000650
00000660
00000670
00000680
00000690
00000700
00000710
00000720
00000730
00000740
00000750
00000760
00000770
00000780
00000790
00000800
00000810
00000820
00000830
00000840
00000850
00000860
00000870
00000880
00000890
00000900
00000910
00000920
00000930
00000940
00000950
00000960
00000970
00000980
00000990
00001000
00001010
00001020
00001030
00001040
00001050
00001060
00001070
```

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MEMBER=POLYNM

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```
-----
      DO 130 I=1,9
      XD=X(I)-XA
      YD=Y(I)-YA
      XT=CFA(1)+CFA(2)*XD+CFA(3)*YD
      *CFA(4)*XD**2+CFA(5)*XD*YD+CFA(6)*YD**2
      YT=CFB(1)+CFB(2)*XD+CFB(3)*YD
      *CFB(4)*XD**2+CFB(5)*XD*YD+CFB(6)*YD**2
      RESS=((XT-CLON(I))*DCOS(YT))**2+(YT-PHI(I))**2
      RESA=RESA+RESS
130  CONTINUE
      FAC1=DSQRT((Y(4)-Y(6))**2+(X(4)-X(6))**2)/(PHI(4)-PHI(6))
      FAC=FAC1*25.4D0
      RESA=DSQRT(RESA/9.D0)*FAC
      R=A*(1.D0-E2)/(1.D0-E2*DSIN(PHI(5))**2)**1.5D0
      SCALE=R/FAC1
      WRITE (6,135) SCALE
135  FORMAT (1H0,2X,'IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCA
      *LE=1/,F10.1)
      WRITE (6,140) RESA
140  FORMAT (1H,2X,'MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS'
      *,F10.3,' MM.'/)
      RETURN
      END
***** END OF MBR
```

```
00001080
00001090
00001100
00001110
00001120
00001130
00001140
00001150
00001160
00001170
00001180
00001190
00001200
00001210
00001220
00001230
00001240
00001250
00001260
00001270
00001280
00001290
00001300
```

☆☆☆ L05 ☆☆☆

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[illegible]

GS/360 DATE=84250 VOLUME=MMD581 DSNAME=VG5G30F.GRID.FORT

MEMBER=SMLE

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***** MEMBER NAME=SMLE *****

```
      SUBROUTINE SMLE (A,N,B,IERR)
      DIMENSION A(1),B(1)
      REAL*8 A,B,FAC,FMUL
C
C      BEGIN FORWARD SOLUTION
C
      N1=N+1
      DO 5 I=1,N
      II=1+((I-1)*(2*N+4-1))/2
      IF (A(II)) 1,1,2
1      IERR=II
      GO TO 10
2      FMUL=1.00/A(II)
      JCOL=I+1
      DO 5 J=JCOL,N1
      IIJI=II+J-I
      FAC=A(IIJI)
      A(IIJI)=FAC*FMUL
      JJ=J
      IF (JCOL-N1) 2002,5,5
2002  IF (N-JJ) 1002,3,3
1002  JJ=N
3      DO 4 K=JCOL,JJ
      KJ=1+J-K+((K-1)*(2*N+4-K))/2
      IIKI=II+K-I
4      A(KJ)=A(KJ)-FAC*A(IIKI)
5      CONTINUE
C
C      BEGIN BACK SOLUTION
C
      I=N+1
      I=I-1
6      IJ=(I*(2*N+3-1))/2
      B(I)=A(IJ)
      J=N
      L=2+((I-1)*(2*N+4-1))/2
7      IJ=IJ-1
      IF (L-IJ) 1007,1007,8
1007  B(I)=B(I)-A(IJ)*B(J)
      J=J-1
      GO TO 7
8      IF (I-1) 9,9,6
9      IERR=0
10     RETURN
      END
***** END OF MBR
```

```
00000010
00000020
00000040
00000042
00000050
00000060
00000070
00000080
00000090
00000100
00000110
00000120
00000130
00000140
00000150
00000160
00000170
00000180
00000190
00000200
00000210
00000220
00000230
00000240
00000250
00000260
00000270
00000280
00000290
00000300
00000310
00000320
00000330
00000340
00000350
00000360
00000370
00000380
00000390
00000400
00000410
00000420
00000430
00000440
00000450
```

TABLE OF CONTENTS FOR PARTITIONED DATA SET VG5G30F.GRID.FORT

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CONEQD	...	003					
CONLAM	...	004					
EFACT	...	005					
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MATINV	...	040					
NRME	...	041					
PERSP2	...	042					
PHIM	...	043					
PHIQ	...	044					
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PAGE 1

REQUESTED OPTIONS:

OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)
 SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(1)

```

C      THIS PROGRAM DETERMINES MAP PROJECTION AND PARAMETERS FOR MAP
C      WITH GRATICULE BUT UNKNOWN PROJECTION OR UNKNOWN PARAMETERS.
C
ISN 0002      IMPLICIT REAL *8 (A-H,O-Z)
ISN 0003      COMMON /A/ CTH,STH,CLONG
ISN 0004      COMMON /B/ PI
ISN 0005      COMMON /C/ XO,YO
ISN 0006      COMMON /D/ AA,BB,ZA,AZ,SPO,CPO,ZZ
ISN 0007      COMMON /E/ DM
ISN 0008      COMMON /F/ CONV2
ISN 0009      DIMENSION PHI(9),CLONG(9),X(9),Y(9),F(3),FC(3),RHO(3),W(12)
ISN 0010      DIMENSION U(3),V(3),DF(3),CFA(6),CFB(6)
ISN 0011      DIMENSION X3(9),Y3(9)
ISN 0012      PI=3.1415926500
ISN 0013      RADDG=180.00/PI
ISN 0014      DGRAD=PI/180.00
ISN 0015      E2=0.00676865800
ISN 0016      E=DSQRT(E2)
ISN 0017      A=6378206.400/0.025400
ISN 0018      CONV2=0.000100

C
C      READ X AND Y IN INCHES FOR GRATICULE INTERSECTIONS AT 9 POINTS
C      ON MAP, SPREAD OVER MAP, BUT ON A 3 X 3 MATRIX OF INTERSECTIONS
C      IN THE FOLLOWING ORDER: (1-3) SAME LONG., BUT DECREASING LAT.,
C      (4-6) MORE EASTERLY LONG., BUT SAME 3 LAT. IN ORDER, (7-9) STILL
C      MORE EASTERLY LONG., BUT SAME 3 LAT. IN ORDER. SPACING OF LAT.
C      AND LONG. (DEGREES AND DECIMALS) DOES NOT NEED TO BE UNIFORM. X
C      AND Y MAY BE RELATIVE TO ANY FIXED PERPENDICULAR AXES.
C      DO NOT CHOOSE A POLE FOR ONE OF THE LATITUDES.
C
ISN 0019      10 CONTINUE
ISN 0020      READ (5,2880) MM
ISN 0021      IF (MM.EQ.0) CONV1=0.000100
ISN 0023      IF (MM.EQ.0) DM=0.000100
ISN 0025      IF (MM.NE.0) CONV1=0.0100
ISN 0027      IF (MM.NE.0) DM=0.0100
ISN 0029      A1=0.00
ISN 0030      A2=0.00
ISN 0031      A3=0.00
ISN 0032      A4=0.00
ISN 0033      A5=0.00
ISN 0034      A6=0.00
ISN 0035      NUM=0
ISN 0036      NOR=0
ISN 0037      WRITE (6,15)
ISN 0038      15 FORMAT (1H0,'*****0000470

```

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MAIN

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PAGE 2

```
*****00000480
*****')00000490
      WRITE (6,20)00000500
      20 FORMAT (1H0,10X,'MAP PROJECTION DETERMINATION FOR THE FOLLOWING 900000510
      *POINTS: '(1H0,15X,'LAT.',5X,'LONG.',6X,'X',9X,'Y'/))00000520
      DO 30 I=1,900000530
      READ (5,40) PHI(I),CLONG(I),X(I),Y(I)00000540
      IF (MM.NE.0) X(I)=X(I)/2000.00000550
      IF (MM.NE.0) Y(I)=Y(I)/2000.00000560
      WRITE (6,50) PHI(I),CLONG(I),X(I),Y(I)00000570
      PHI(I)=PHI(I)*DGRAD00000580
      CLONG(I)=CLONG(I)*DGRAD00000590
      IF ((CLONG(I)-CLONG(1)).LT.-CONV2) CLONG(I)=CLONG(I)+2.00*PI00000600
      30 CONTINUE00000610
      40 FORMAT (2F10.4,2F10.6)00000620
      50 FORMAT (1H,10X,2F10.4,2F10.6)00000630
      LAST=00000640
      LOST=00000650
      X12=X(1)-X(2)00000660
      Y12=Y(1)-Y(2)00000670
      D12=DSQRT(X12*X12+Y12*Y12)00000680
      X25=X(2)-X(5)00000690
      Y25=Y(2)-Y(5)00000700
      D25=DSQRT(X25*X25+Y25*Y25)00000710
      X23=X(2)-X(3)00000720
      Y23=Y(2)-Y(3)00000730
      D23=DSQRT(X23*X23+Y23*Y23)00000740
      X36=X(3)-X(6)00000750
      Y36=Y(3)-Y(6)00000760
      D36=DSQRT(X36*X36+Y36*Y36)00000770
      X45=X(4)-X(5)00000780
      Y45=Y(4)-Y(5)00000790
      D45=DSQRT(X45*X45+Y45*Y45)00000800
      X56=X(5)-X(6)00000810
      Y56=Y(5)-Y(6)00000820
      D56=DSQRT(X56*X56+Y56*Y56)00000830
      X78=X(7)-X(8)00000840
      Y78=Y(7)-Y(8)00000850
      D78=DSQRT(X78*X78+Y78*Y78)00000860
      X89=X(8)-X(9)00000870
      Y89=Y(8)-Y(9)00000880
      D89=DSQRT(X89*X89+Y89*Y89)00000890
      X58=X(5)-X(8)00000900
      Y58=Y(5)-Y(8)00000910
      D58=DSQRT(X58*X58+Y58*Y58)00000920
      X69=X(6)-X(9)00000930
      Y69=Y(6)-Y(9)00000940
      D69=DSQRT(X69*X69+Y69*Y69)00000950
      X14=X(1)-X(4)00000960
      Y14=Y(1)-Y(4)00000970
      D14=DSQRT(X14*X14+Y14*Y14)00000980
      X47=X(4)-X(7)00000990
```


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MAIN

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```
ISN 0091      Y47=Y(4)-Y(7)                      00001000
ISN 0092      D47=DSQRT(Y47*X47+Y47*Y47)          00001010
ISN 0093      X79=X(7)-X(9)                      00001020
ISN 0094      Y79=Y(7)-Y(9)                      00001030
ISN 0095      SLOP12=DATAN2(Y12,X12)              00001040
ISN 0096      SLOP23=DATAN2(Y23,X23)              00001050
ISN 0097      SLOP45=DATAN2(Y45,X45)              00001060
ISN 0098      SLOP56=DATAN2(Y56,X56)              00001070
ISN 0099      SLOP78=DATAN2(Y78,X78)              00001080
ISN 0100      SLOP89=DATAN2(Y89,X89)              00001090
ISN 0101      SLOP14=DATAN2(Y14,X14)              00001100
ISN 0102      SLOP47=DATAN2(Y47,X47)              00001110
ISN 0103      SLOP25=DATAN2(Y25,X25)              00001120
ISN 0104      SLOP36=DATAN2(Y36,X36)              00001130
ISN 0105      SLOP58=DATAN2(Y58,X58)              00001140
ISN 0106      SLOP69=DATAN2(Y69,X69)              00001150
ISN 0107      CALL SLP (SLOP12,SLOP23,SLP123)      00001160
ISN 0108      CALL SLP (SLOP45,SLOP56,SLP456)      00001170
ISN 0109      CALL SLP (SLOP78,SLOP89,SLP789)      00001180
ISN 0110      CALL SLP (SLOP14,SLOP47,SLP147)      00001190
ISN 0111      CALL SLP (SLOP25,SLOP58,SLP258)      00001200
ISN 0112      CALL SLP (SLOP36,SLOP69,SLP369)      00001210
ISN 0113      CALL SLP (SLOP14,SLOP25,SLP145)      00001220
ISN 0114      CALL SLP (SLOP25,SLOP36,SLP256)      00001230
ISN 0115      CALL SLP (SLOP12,SLOP45,SLP125)      00001240
ISN 0116      CALL SLP (SLOP45,SLOP78,SLP458)      00001250
ISN 0117      CALL SLP (SLOP12,SLOP14,SLP124)      00001260
C
C      IF MERIDIANS ARE STRAIGHT, CODE LOST=1. (IF NOT, LOST=0.)
C
ISN 0118      CONV3=DM*(2.00/D12+2.00/D23)          00001300
ISN 0119      WRITE (6,60)                          00001310
ISN 0120      60 FORMAT (1H )                      00001320
ISN 0121      WRITE (6,70) SLP123,CONV3             00001330
ISN 0122      70 FORMAT (1H ,2X,'MERIDIAN CURVATURE=',F10.6,' TOLERANCE=',F10.6) 00001340
ISN 0123      IF (DABS(SLP123).GT.CONV3) GO TO 80    00001350
ISN 0125      CONV3=DM*(2.00/D45+2.00/D56)          00001360
ISN 0126      WRITE (6,70) SLP456,CONV3             00001370
ISN 0127      IF (DABS(SLP456).GT.CONV3) GO TO 80    00001380
ISN 0129      CONV3=DM*(2.00/D78+2.00/D89)          00001390
ISN 0130      WRITE (6,70) SLP789,CONV3             00001400
ISN 0131      IF (DABS(SLP789).LT.CONV3) LOST=1      00001410
ISN 0133      80 CONTINUE                          00001420
C
C      IF PARALLELS ARE STRAIGHT, CODE LAST=1. (IF NOT, LAST=0.)
C
ISN 0134      CONV3=DM*(2.00/D14+2.00/D47)          00001460
ISN 0135      WRITE (6,90) SLP147,CONV3             00001470
ISN 0136      90 FORMAT (1H ,2X,'PARALLEL CURVATURE=',F10.6,' TOLERANCE=',F10.6) 00001480
ISN 0137      IF (DABS(SLP147).GT.CONV3) GO TO 100  00001490
ISN 0139      CONV3=DM*(2.00/D25+2.00/D58)          00001500
ISN 0140      WRITE (6,90) SLP258,CONV3             00001510
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ISN 0141      IF (DABS(SLP258).GT.CONV3) GO TO 100      00001520
ISN 0143      CONV3=DM*(2.D0/D36+2.D0/D69)      00001530
ISN 0144      WRITE (6,90) SLP369,CONV3      00001540
ISN 0145      IF (DABS(SLP369).LT.CONV3) LAST=1      00001550
ISN 0147      100 CONTINUE      00001560
ISN 0148      IF (LOST.EQ.1.AND.LAST.EQ.1) GO TO 108      00001570
ISN 0150      CALL POLYNM (X,Y,PHI,CLONG,CFA,CFB,RES,XA,YA,A,E2)      00001580
ISN 0151      IF (MM.EQ.0.AND.RES.GT.0.002D0) GO TO 108      00001590
ISN 0153      IF (MM.NE.0.AND.RES.GT.1.5D0) GO TO 108      00001600
ISN 0155      WRITE (6,101)      00001610
ISN 0156      101 FORMAT (1H,2X,'THIS MAP COVERS A SMALL ENOUGH AREA TO FIT A SECON00001620
      *D ORDER POLYNOMIAL.')      00001630
ISN 0157      102 READ (5,2070) NN,X1,Y1      00001640
ISN 0158      IF (NN.EQ.1) GO TO 2870      00001650
ISN 0160      IF (MM.NE.0) X1=X1/2000.D0      00001660
ISN 0162      IF (MM.NE.0) Y1=Y1/2000.D0      00001670
ISN 0164      XD=X1-XA      00001680
ISN 0165      YD=Y1-YA      00001690
ISN 0166      XT=CFA(1)+CFA(2)*XD+CFA(3)*YD+CFA(4)*XD**2+CFA(5)*XD*YD+CFA(6)*YD*00001700
      **2      00001710
ISN 0167      YT=CFB(1)+CFB(2)*XD+CFB(3)*YD+CFB(4)*XD**2+CFB(5)*XD*YD+CFB(6)*YD*00001720
      **2      00001730
ISN 0168      CLONGD=XT*RADDG      00001740
ISN 0169      PHID=YT*RADDG      00001750
ISN 0170      WRITE (6,2280) X1,Y1,PHID,CLONGD      00001760
ISN 0171      GO TO 102      00001770
ISN 0172      108 IF (LOST.NE.1.AND.LAST.NE.1) GO TO 1030      00001780
C      00001790
C      IF MERIDIANS ARE STRAIGHT AND PARALLELS ARE CURVED, TEST FOR      00001800
C      CONICS AND GNOMONIC.      00001810
C      00001820
ISN 0174      IF (LOST.EQ.1.AND.LAST.NE.1) GO TO 150      00001830
ISN 0176      CONV3=DM*(2.D0/D14+2.D0/D45)      00001840
ISN 0177      110 FORMAT (1H,2X,'SKEWNESS OF STRAIGHT PARALLEL=' ,F10.6,' TOLERANCE00001850
      *=' ,F10.6)      00001860
ISN 0178      WRITE (6,110) SLP145,CONV3      00001870
ISN 0179      IF (DABS(SLP145).GT.CONV3) GO TO 1030      00001880
ISN 0181      CONV3=DM*(2.D0/D25+2.D0/D56)      00001890
ISN 0182      WRITE (6,110) SLP256,CONV3      00001900
ISN 0183      IF (DABS(SLP256).GT.CONV3) GO TO 1030      00001910
C      00001920
C      IF PARALLELS ARE STRAIGHT AND PARALLEL, AND MERIDIANS ARE      00001930
C      CURVED, ARE MERIDIANS EQUIDISTANT? IF NOT, TRY EQUATORIAL      00001940
C      ORTHOGRAPHIC. IF SO, TRY PSEUDOCYLINDRICAL.      00001950
C      00001960
ISN 0185      DIST14=D14/(CLONG(4)-CLONG(1))      00001970
ISN 0186      DIST47=D47/(CLONG(7)-CLONG(4))      00001980
ISN 0187      DELT=1.D0-DIST14/DIST47      00001990
ISN 0188      DD14=2.D0*DM/(CLONG(4)-CLONG(1))      00002000
ISN 0189      DD47=2.D0*DM/(CLONG(7)-CLONG(4))      00002010
ISN 0190      DD14=DD14*DIST47      00002020
ISN 0191      DD47=DD47*DIST14      00002030
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ISN 0192      CONV3=(DABS(DD14)+DABS(DD47))/(DIST47**2)      00002040
ISN 0193      WRITE (6,120) DELT,CONV3      00002050
ISN 0194      120 FORMAT (1H,2X,'UNEQUALITY OF MERIDIAN SPACING=',F10.6,' TOLERANC 00002060
               *E=',F10.6)      00002070
ISN 0195      IF (LOST.NE.1.AND.LAST.EQ.1) GO TO 1790      00002080
ISN 0197      IF (DABS(DELT).GT.CONV3) GO TO 1030      00002090
ISN 0199      CONV3=DM*(2.D0/D12+2.D0/D45)      00002100
ISN 0200      WRITE (6,130) SLP125,CONV3      00002110
ISN 0201      130 FCRMAT (1H,2X,'SKEWNESS OF STRAIGHT MERIDIAN=',F10.6,' TOLERANCE 00002120
               *S=',F10.6)      00002130
ISN 0202      IF (DABS(SLP125).GT.CONV3) GO TO 1030      00002140
ISN 0204      CONV3=DM*(2.D0/D45+2.D0/D78)      00002150
ISN 0205      WRITE (6,130) SLP458,CONV3      00002160
ISN 0206      IF (DABS(SLP458).GT.CONV3) GO TO 1030      00002170
C      00002180
C      IF MERIDIANS AND PARALLELS ARE ALL STRAIGHT AND PARALLEL,      00002190
C      TEST FOR BEING PERPENDICULAR TO OTHER SET.      00002200
C      00002210
ISN 0208      DELT=DABS(SLP124)-PI/2.D0      00002220
ISN 0209      CONV3=DM*(2.D0/D12+2.D0/D14)      00002230
ISN 0210      WRITE (6,140) DELT,CONV3      00002240
ISN 0211      140 FORMAT (1H,2X,'LACK OF PERPENDICULARITY OF MERIDIANS AND PARALLEL 00002250
               *S=',F10.6,' TOLERANCE=',F10.6)      00002260
ISN 0212      IF (DABS(DELT).GT.CONV3) GO TO 1030      00002270
C      00002280
C      PARALLELS ARE PERPENDICULAR TO EQUIDISTANT MERIDIANS, AND      00002290
C      PROJECTION IS A REGULAR CYLINDRICAL.      00002300
C      00002310
ISN 0214      GO TO 190      00002320
ISN 0215      150 CONTINUE      00002330
C      00002340
C      MERIDIANS ARE STRAIGHT AND PARALLELS ARE CURVED, BUT DO      00002350
C      MERIDIANS CONVERGE AT A COMMON POINT? IF MERIDIANS ARE PARALLEL,      00002360
C      TEST FOR TRANSVERSE MERCATOR OR POLYCONIC (LARGE SCALE), THEN      00002370
C      EQUATORIAL Gnomonic.      00002380
C      00002390
ISN 0216      CONV3=DM*(2.D0/D12+2.D0/D45)      00002400
ISN 0217      WRITE (6,130) SLP125,CONV3      00002410
ISN 0218      CONV4=DM*(2.D0/D45+2.D0/D78)      00002420
ISN 0219      WRITE (6,130) SLP458,CONV4      00002430
ISN 0220      IF (DABS(SLP125).LT.CONV3.AND. DABS(SLP458).LT.CONV4) NUM=1      00002440
ISN 0222      IF (DABS(SLP125).LT.CONV3.AND. DABS(SLP458).LT.CONV4) GO TO 1030      00002450
ISN 0224      X46=X(4)-X(6)      00002460
ISN 0225      X13=X(1)-X(3)      00002470
ISN 0226      Y46=Y(4)-Y(6)      00002480
ISN 0227      Y13=Y(1)-Y(3)      00002490
ISN 0228      YX13=Y(1)*X(3)-X(1)*Y(3)      00002500
ISN 0229      YX46=Y(4)*X(6)-X(4)*Y(6)      00002510
ISN 0230      XY=X46*Y13-X13*Y46+1.D-9      00002520
ISN 0231      XX=X46*YX13-X13*YX46      00002530
ISN 0232      YY=Y46*YX13-Y13*YX46      00002540
ISN 0233      XO=XX/XY      00002550

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ISN 0234      Y0=YY/XY                      00002560
ISN 0235      YX79=Y(7)*X(9)-X(7)*Y(9)      00002570
ISN 0236      Y01=(X0*(Y(7)-Y(9))-YX79)/(X(7)-X(9)+1.D-9) 00002580
ISN 0237      R1=X0-X(1)                    00002590
ISN 0238      R2=Y0-Y(1)                    00002600
ISN 0239      RAD=DSQRT(R1*R1+R2*R2)          00002610
ISN 0240      DX0=DM*(DABS(XY*(YX13+X13*Y(6))-XX*Y13)+DABS(XY*(YX13+X13*Y(4))
*-XX*Y13)+DABS((XY*X(3)-XX)*X46)+DABS(XY*(YX46+X46*Y(3))-XX*Y46)) 00002620
ISN 0241      DX0=DX0+DM*(DABS(XY*(YX46+X46*Y(1))-XX*Y46)+DABS((XY*X(1)-XX)*X46)
*DABS((XY*X(6)-XX)*X13)+DABS((XY*X(4)-XX)*X13)) 00002630
ISN 0242      DX0=DX0/XY/XY                  00002640
ISN 0243      DY0=DM*(DABS(XY*(YX13-Y13*X(6))+YY*X13)+DABS(XY*(YX13-Y13*X(4))+YY
*X13)+DABS(XY*(-X(3)*Y46+YX46)+YY*X46)+DABS((XY*Y(3)-YY)*Y46)) 00002650
ISN 0244      DY0=DY0+DM*(DABS((XY*Y(1)-YY)*Y46)+DABS(-XY*(X(1)*Y46+YX46)+YY*X46)
*DABS((XY*Y(6)-YY)*Y13)+DABS((XY*Y(4)-YY)*Y13)) 00002660
ISN 0245      DY0=DY0/XY/XY                  00002670
ISN 0246      DY01=(DABS(DX0*X79*Y79)+(DABS(X79*(X0-X(9)))+DABS(X79*(X0-X(7)))
*DABS(Y79*(X0-X(9)))+DABS(Y79*(X0-X(7))))*DM)/X79/X79 00002680
ISN 0247      CONV3=DY0+DY01                 00002690
ISN 0248      DELT=Y0-Y01                   00002700
ISN 0249      WRITE (6,160) DELT,CONV3       00002710
ISN 0250      160 FORMAT (1H,2X,'LACK OF CONVERGENCE OF MERIDIANS=',F10.6,' TOLERA
*NCE=',F10.6) 00002720
ISN 0251      IF (DABS(DELT).GT.(CONV3)) GO TO 2000 00002730
C          00002740
C          MERIDIANS CONVERGE, BUT ARE PARALLELS ARCS OF CONCENTRIC CIRCLES 00002750
C          CENTERED ON POINT OF MERIDIAN CONVERGENCE? 00002760
C          00002770
ISN 0253      CONV3=0.D0                     00002780
ISN 0254      DELT=0.D0                      00002790
ISN 0255      DO 180 I=1,3                   00002800
ISN 0256      DIST01=(Y0-Y(I))*2+(X0-X(I))*2 00002810
ISN 0257      DIST04=(Y0-Y(I+3))*2+(X0-X(I+3))*2 00002820
C          00002830
C          00002840
C          00002850
C          IF PARALLELS ARE NOT ARCS OF CIRCLES, TEST FOR TRANSVERSE MERCATOR 00002860
C          OR POLYCONIC (LARGE SCALE), THEN OBLIQUE GNOMONIC. 00002870
C          00002880
ISN 0258      DD01=(DABS(Y0-Y(I))+DABS(X0-X(I)))*DM/DSQRT(DIST01) 00002890
ISN 0259      DD04=(DABS(Y0-Y(I+3))+DABS(X0-X(I+3)))*DM/DSQRT(DIST04) 00002900
ISN 0260      CONV3=2.D0*(DD01+DD04)/DSQRT(DIST04)+CONV3 00002910
ISN 0261      DELT=1.D0-DSQRT(DIST01)/DSQRT(DIST04)+DELT 00002920
ISN 0262      170 FORMAT (1H,2X,'MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS=',F10.
*6,' TOLERANCE=',F10.6) 00002930
ISN 0263      DIST04=(Y0-Y(I+6))*2+(X0-X(I+6))*2 00002940
ISN 0264      DD04=(DABS(Y0-Y(I+6))+DABS(X0-X(I+6)))*DM/DSQRT(DIST04) 00002950
ISN 0265      CONV3=2.D0*(DD01+DD04)/DSQRT(DIST04)+CONV3 00002960
ISN 0266      DELT=1.D0-DSQRT(DIST01)/DSQRT(DIST04)+DELT 00002970
ISN 0267      180 CONTINUE                   00002980
ISN 0268      CONV3=CONV3/6.D0               00002990
ISN 0269      DELT=DELT/6.D0                00003000
ISN 0270      WRITE (6,170) DELT,CONV3      00003010
ISN 0271      IF (DABS(DELT).GT.CONV3) NUM=2 00003020
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      *AT EQUATOR=1/','F10.1)
ISN 0310      N=2
ISN 0311      GO TO 2030
C
C      TEST FOR MILLER CYLINDRICAL.
C
ISN 0312      270 X0=0.00
ISN 0313      Y0=0.00
ISN 0314      DO 280 I=1,3
ISN 0315      F(I)=DLOG(DTAN(PI/4.00+0.400*PHI(I)))/0.800
ISN 0316      X0A=X(I)-AK*CLONG(1)*CTH+AK*F(I)*STH
ISN 0317      Y0A=Y(I)-AK*F(I)*CTH-AK*CLONG(1)*STH
ISN 0318      X0=X0+X0A
ISN 0319      Y0=Y0+Y0A
ISN 0320      280 CONTINUE
ISN 0321      X0=X0/3.00
ISN 0322      Y0=Y0/3.00
ISN 0323      WRITE (6,300) SCALE
ISN 0324      300 FORMAT (1H0,2X,'IF MAP PROJECTION IS MILLER CYLINDRICAL. SCALE=1/','F10.1)
ISN 0325      N=3
ISN 0326      GO TO 2030
C
C      TEST FOR EQUIRECTANGULAR. CPO IS COS OF STANDARD PARALLEL.
C
ISN 0327      310 XNM=D14/(CLONG(4)-CLONG(1))
ISN 0328      DEN=D12/(PHI(1)-PHI(2))
ISN 0329      DEN1=D23/(PHI(2)-PHI(3))
ISN 0330      DEN=(DEN+DEN1)/2.00
ISN 0331      CPO=XNM/DEN
ISN 0332      IF (DABS(CPO).GT.1.00) CPO=DSIGN(1.00,CPO)
ISN 0333      PHIO=DARCOS(CPO)*RADDS
ISN 0334      AKE=AK/CPO
ISN 0335      X0=X(1)-AK*CLONG(1)*CTH+AKE*PHI(1)*STH
ISN 0336      Y0=Y(1)-AKE*PHI(1)*CTH-AK*CLONG(1)*STH
ISN 0337      SCALE=A/AKE
ISN 0338      WRITE (6,330) PHIO,SCALE
ISN 0339      330 FORMAT (1H0,2X,'IF MAP PROJECTION IS EQUIRECTANGULAR WITH ','F10.4,
ISN 0340      *' DEG. LAT. N & S AS STANDARD PARALLELS. SCALE=1/','F10.1)
ISN 0341      N=4
ISN 0342      GO TO 2030
C
C      TEST FOR GALL'S.
C
ISN 0343      340 AKE=AK*DSQRT(2.00)
ISN 0344      CONST=1.00+1.00/DSQRT(2.00)
ISN 0345      X0=0.00
ISN 0346      Y0=0.00
ISN 0347      DO 350 I=1,3
ISN 0348      F(I)=CONST*DTAN(PHI(I)/2.00)
ISN 0349      X0A=X(I)-AK*CLONG(1)*CTH+AKE*F(I)*STH
ISN 0350      Y0A=Y(I)-AKE*F(I)*CTH-AK*CLONG(1)*STH
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ISN 0351      XO=XO+XOA                      00003922
ISN 0352      YO=YO+YOA                      00003924
ISN 0353      350 CONTINUE                   00003925
ISN 0354      XO=XO/3.D0                    00003926
ISN 0355      YO=YO/3.D0                    00003928
ISN 0356      SCALE=A/AKE                   00003930
ISN 0357      WRITE (6,370) SCALE            00003940
ISN 0358      370 FORMAT (1H0,2X,'IF MAP PROJECTION IS GALLIES CYLINDRICAL. SCALE=1/ 00003950
            *',F10.1)                       00003960
ISN 0359      N=5                           00003970
ISN 0360      GO TO 2030                     00003980
            C                               00003990
            C      DETERMINE KIND OF CONIC PROJECTION. FIRST COMPUTE THE CONE 00004000
            C      CONSTANT.               00004010
            C                               00004020
ISN 0361      380 SLOP13=DATAN2(Y13,X13)      00004030
ISN 0362      SLOP46=DATAN2(Y46,X46)         00004040
ISN 0363      SLOP79=DATAN2(Y79,X79)         00004050
ISN 0364      CALL SLP (SLOP13,SLOP46,SLP146) 00004060
ISN 0365      EN12=SLP146/((CLONG(1)-CLONG(4)) 00004070
ISN 0366      CALL SLP (SLOP13,SLOP79,SLP179) 00004080
ISN 0367      EN13=SLP179/((CLONG(1)-CLONG(7)) 00004090
ISN 0368      D30=2.D0*DM/DSQRT((XO-X(3))**2+(YO-Y(3))**2) 00004100
ISN 0369      DEN12=D30/((CLONG(1)-CLONG(4)) 00004110
ISN 0370      DEN13=D30/((CLONG(1)-CLONG(7)) 00004120
ISN 0371      CONV3=2.D0*(DABS(DEN12)+DABS(DEN13)) 00004130
            C                               00004140
            C      ARE MERIDIANS EQUALLY SPACED? 00004150
            C                               00004160
ISN 0372      DELT=EN12-EN13                 00004170
ISN 0373      WRITE (6,120) DELT,CONV3       00004180
ISN 0374      IF (DABS(DELT).GT.CONV3) GO TO 1030 00004190
ISN 0375      EN=(EN12+EN13)/2.D0           00004200
ISN 0376      IF (DABS(EN).GT.1.D0) EN=DSIGN(1.D0,EN) 00004210
ISN 0377      TH=DATAN2(((X(1)-XO)*DSIGN(1.D0,EN)),((YO-Y(1))*DSIGN(1.D0,EN)))-E 00004220
ISN 0378      *M*CLONG(1)                   00004230
ISN 0380      GO TO 420                       00004240
            C                               00004250
            C      TEST FOR SPHERICAL LAMBERT CONFORMAL CONIC OR POLAR STEREOGRAPHIC. 00004260
            C                               00004270
ISN 0381      385 DO 390 I=1,3               00004280
ISN 0382      F(I)=(DTAN(PI/4.D0-PHI(I)/2.D0))**EN 00004290
ISN 0383      390 CONTINUE                   00004300
ISN 0384      WRITE (6,400)                  00004310
ISN 0385      400 FORMAT (1H,2X,'SPHERICAL LAMBERT CONFORMAL CONIC:') 00004320
ISN 0386      CALL CONLAM (X,Y,EN,F,J,FF)    00004330
ISN 0387      IF (J.EQ.0) GO TO 460          00004340
ISN 0388      IF (DABS(DABS(EN)-1.D0).LT.CONV3) GO TO 740 00004350
ISN 0389      PHI0=DARSIN(EN)                00004360
ISN 0390      AK=FF*EN*((DTAN(PI/4.D0-PHI0/2.D0))**EN)/DCOS(PHI0) 00004370
ISN 0391      SCALE=A/AK                     00004380
ISN 0392      PHID=PHI0*RADDG                00004390
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ISN 0395      WRITE (6,410) SCALE,PHID                      00004400
ISN 0396      410 FORMAT (1H,2X,'IF MAP PROJECTION IS SPHERICAL LAMBERT CONFORMAL CONIC. SCALE=1/',F10.1,' FOR SINGLE STD. LAT.',F10.4,' DEG.') 00004410
ISN 0397      N=6                                           00004420
ISN 0398      GO TO 2290                                     00004430
C                                                     00004440
C                                                     00004450
C      TEST FOR ELLIPSOIDAL LAMBERT CONFORMAL CONIC OR POLAR STEREOG - 00004460
C      RAPHC                                               00004470
C                                                     00004480
ISN 0399      420 DO 430 I=1,3                               00004490
ISN 0400      ES=E*DSIN(PHI(I))                             00004500
ISN 0401      F(I)=(DTAN(PI/4.D0-PHI(I)/2.D0)/((1.D0-ES)/(1.D0+ES)))*(E/2.D0))* 00004510
ISN 0402      *EN                                           00004520
ISN 0403      430 CONTINUE                                   00004530
ISN 0404      WRITE (6,440)                                  00004540
ISN 0405      440 FORMAT (1H,2X,'ELLIPSOIDAL LAMBERT CONFORMAL CONIC:') 00004550
ISN 0406      CALL CONLAM(X,Y,EN,F,J,FF)                   00004560
ISN 0407      IF (J.EQ.0) GO TO 385                          00004570
ISN 0408      IF (DABS(DABS(EN)-1.D0).LT.CONV3) GO TO 760   00004580
ISN 0409      PHIO=DARSIN(EN)                               00004590
ISN 0410      ES=E*DSIN(PHIO)                               00004600
ISN 0411      AK=FF*EN*DSQRT(1.D0-ES*ES)*(DTAN(PI/4.D0-PHIO/2.D0)/((1.D0-ES)/ 00004610
ISN 0412      *(1.D0+ES)))*(E/2.D0))*EN/DCOS(PHIO)         00004620
ISN 0413      SCALE=A/AK                                    00004630
ISN 0414      PHID=PHIO*RADDG                                00004640
ISN 0415      WRITE (6,450) SCALE,PHID                      00004650
ISN 0416      450 FORMAT (1H,2X,'IF MAP PROJECTION IS ELLIPSOIDAL LAMBERT CONFORMAL CONIC. SCALE=1/',F10.1,' FOR SINGLE STD. LAT.',F10.4,' DEG.') 00004660
ISN 0417      N=7                                           00004670
ISN 0418      GO TO 2290                                     00004680
C                                                     00004690
C                                                     00004700
C      TEST FOR ELLIPSOIDAL ALBERS EQUAL-AREA CONIC OR POLAR LAMBERT 00004710
C      AZIMUTHAL EQUAL-AREA.                               00004720
C                                                     00004730
C                                                     00004740
ISN 0419      460 DO 470 I=1,3                               00004750
ISN 0420      ES=E*DSIN(PHI(I))                             00004760
ISN 0421      F(I)=(1.D0-E2)*(DSIN(PHI(I))/(1.D0-ES*ES)-(1.D0/2.D0/E)*DLOG((1.D0 00004770
ISN 0422      *-ES)/(1.D0+ES)))                             00004780
ISN 0423      470 CONTINUE                                   00004790
ISN 0424      WRITE (6,480)                                  00004800
ISN 0425      480 FORMAT (1H,2X,'ELLIPSOIDAL ALBERS EQUAL AREA CONIC:') 00004810
ISN 0426      CALL CONALB(X,Y,EN,F,J,CP,AK)                00004820
ISN 0427      IF (J.EQ.0) GO TO 540                          00004830
ISN 0428      SCALE=A/AK                                    00004840
ISN 0429      IF (DABS(DABS(EN)-1.D0).LT.CONV3) GO TO 780   00004850
ISN 0430      PH11=DARSIN(EN+DSQRT(EN*EN-CP+1.D0))          00004860
ISN 0431      M=0                                           00004870
ISN 0432      L=0                                           00004880
ISN 0433      490 SPH=DSIN(PH11)                             00004890
ISN 0434      CPH=DCOS(PH11)                               00004900
ISN 0435      ES=E*SPH                                     00004910
ISN 0436      ESP=1.D0-ES*ES                                00004920
ISN 0437
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ISN 0438      F(1)=(1.D0-E2)*(SPH/ESP-(1.D0/2.D0/E)*DLOG((1.D0-ES)/(1.D0+ES))) 00004920
ISN 0439      FPH=CPH*CPH-(CP-EN*F(1))*ESP 00004930
ISN 0440      FPPH=-2.D0*SPH*CPH*(1.D0-E2*(CP-EN*F(1)))+2.D0*EN*(1.D0-E2)*CPH/ES 00004940
              *P 00004950
ISN 0441      DELT=-FPH/FPPH 00004960
ISN 0442      M=M+1 00004970
ISN 0443      IF (M.GT.20) GO TO 520 00004980
ISN 0445      PHI1=PHI1+DELT 00004990
ISN 0446      IF (DABS(DELT).GT.CONV2) GO TO 490 00005000
ISN 0448      IF (L.EQ.1) GO TO 500 00005010
ISN 0450      PHI2=PHI1 00005020
ISN 0451      L=1 00005030
ISN 0452      PHI1=DARSIN(EN-DSQRT(EN*EN-CP+1.D0)) 00005040
ISN 0453      GO TO 490 00005050
ISN 0454      500 CONTINUE 00005060
ISN 0455      PHI1D=PHI1*RADDG 00005070
ISN 0456      PHI2D=PHI2*RADDG 00005080
ISN 0457      WRITE (6,510) SCALE,PHI1D,PHI2D 00005090
ISN 0458      510 FORMAT (1H0,2X,'IF MAP PROJECTION IS ELLIPSOIDAL ALBERS EQUAL-AREA 00005100
              * CONIC.'/(1H,2X,'SCALE=1/',F10.1,' STANDARD PARALLELS=',F10.4,',',00005110
              *,F10.4,' DEG. LAT.')) 00005120
              N=8 00005130
ISN 0459      GO TO 2290 00005140
ISN 0460      520 WRITE (6,530) 00005150
ISN 0461      530 FORMAT (1H0,2X,'TOO MANY ITERATIONS FOR STANDARD PARALLELS.') 00005160
ISN 0462      C 00005170
              C TEST FOR SPHERICAL ALBERS EQUAL-AREA CONIC OR POLAR LAMBERT 00005180
              C AZIMUTHAL EQUAL-AREA. 00005190
              C 00005200
ISN 0463      540 DO 550 I=1,3 00005210
ISN 0464      F(I)=2.D0*DSIN(PHI(I)) 00005220
ISN 0465      550 CONTINUE 00005230
ISN 0466      WRITE (6,560) 00005240
ISN 0467      560 FORMAT (1H,2X,'SPHERICAL ALBERS EQUAL AREA CONIC:') 00005250
ISN 0468      CALL CONALB (X,Y,EN,F,J,CP,AK) 00005260
ISN 0469      IF (J.EQ.0) GO TO 580 00005270
ISN 0471      SCALE=A/AK 00005280
ISN 0472      IF (DABS(DABS(EN)-1.D0).LT.CONV3) GO TO 800 00005290
ISN 0474      CN=EN*EN-CP+1.D0 00005300
ISN 0475      IF (CN.LT.0.D0) CN=0.D0 00005310
ISN 0477      PHI1=DARSIN(EN-DSQRT(CN)) 00005320
ISN 0478      PHI2=DARSIN(EN+DSQRT(CN)) 00005330
ISN 0479      PHI1D=PHI1*RADDG 00005340
ISN 0480      PHI2D=PHI2*RADDG 00005350
ISN 0481      WRITE (6,570) SCALE,PHI1D,PHI2D 00005360
ISN 0482      570 FORMAT (1H0,2X,'IF MAP PROJECTION IS SPHERICAL ALBERS EQUAL-AREA 00005370
              * ONIC.'/(1H,2X,'SCALE=1/',F10.1,' STANDARD PARALLELS=',F10.4,',',00005380
              *,F10.4,' DEG. LAT.')) 00005390
              N=9 00005400
ISN 0483      GO TO 2290 00005410
ISN 0484      C 00005420
              C TEST FOR SPHERICAL EQUIDISTANT CONIC AND POLAR AZIMUTHAL EQUIDIST-00005430

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C      ANT.
C
ISN 0485      580 CONTINUE
ISN 0486      WRITE (6,590)
ISN 0487      590 FORMAT (1H,2X,'SPHERICAL EQUIDISTANT CONIC:')
ISN 0488      CALL CONEQD (X,Y,EN,PHI,J,G,AK)
ISN 0489      IF (J.EQ.0) GO TO 640
ISN 0491      SCALE=A/AK
ISN 0492      IF (DABS(DABS(EN)-1.00).LT.CONV3) GO TO 820
ISN 0494      PHI1=PI/2.00
ISN 0495      M=0
ISN 0496      L=0
ISN 0497      600 DELT=((G-PHI1)*EN-DCOS(PHI1))/(EN-DSIN(PHI1))
ISN 0498      M=M+1
ISN 0499      IF (M.GT.20) GO TO 630
ISN 0501      PHI1=PHI1+DELT
ISN 0502      IF (DABS(DELT).GT.CONV2) GO TO 600
ISN 0504      IF (L.EQ.1) GO TO 610
ISN 0506      PHI2=PHI1
ISN 0507      L=1
ISN 0508      PHI1=-PI/2.00
ISN 0509      GO TO 600
ISN 0510      610 CONTINUE
ISN 0511      PHI1D=PHI1*RADDG
ISN 0512      PHI2D=PHI2*RADDG
ISN 0513      WRITE (6,620) SCALE,PHI1D,PHI2D
ISN 0514      620 FORMAT (1H0,2X,'IF MAP PROJECTION IS SPHERICAL EQUIDISTANT CONIC.'
* / (1H,2X,'SCALE=1/' ,F10.1,' STANDARD PARALLELS=' ,F10.4,' ,',F10.4,'
*' DEG. LAT.))
ISN 0515      N=10
ISN 0516      GO TO 2290
ISN 0517      630 WRITE (6,530)
C
C      TEST FOR ELLIPSOIDAL EQUIDISTANT CONIC AND POLAR AZIMUTHAL
C      EQUIDISTANT.
C
ISN 0518      640 CALL EFAC (E2,EFO,EF1,EF2)
ISN 0519      DO 650 I=1,3
ISN 0520      F(I)=EFO*PHI(I)-EF1*DSIN(2.00*PHI(I))+EF2*DSIN(4.00*PHI(I))
ISN 0521      650 CONTINUE
ISN 0522      660 CONTINUE
ISN 0523      WRITE (6,670)
ISN 0524      670 FORMAT (1H,2X,'ELLIPSOIDAL EQUIDISTANT CONIC:')
ISN 0525      CALL CONEQD (X,Y,EN,F,J,G,AK)
ISN 0526      IF (J.EQ.0.AND.DABS(DABS(EN)-1.00).GT.CONV3) GO TO 720
ISN 0528      IF (J.EQ.0) GO TO 860
ISN 0530      SCALE=A/AK
ISN 0531      IF (DABS(DABS(EN)-1.00).LT.CONV3) GO TO 840
ISN 0533      PHI1=PI/2.00
ISN 0534      M=0
ISN 0535      L=0
ISN 0536      680 SPH=DSIN(PHI1)
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ISN 0537      CPH=DCOS(PHI1)                                00005960
ISN 0538      SQR=DSQRT(1.D0-E2*SPH*SPH)                    00005970
ISN 0539      F(1)=EFO*PHI1-EF1*DSIN(2.D0*PHI1)+EF2*DSIN(4.D0*PHI1) 00005980
ISN 0540      FPH=(G-F(1))*EN*SQR-CPH                        00005990
ISN 0541      EMPR=EFO-2.D0*EF1*DCOS(2.D0*PHI1)+4.D0*EF2*DCOS(4.D0*PHI1) 00006000
ISN 0542      FPPH=EN*(SQR*(-EMPR)-E2*SPH*CPH*(G-F(1)))+SPH 00006010
ISN 0543      DELT=-FPH/FPPH                                00006020
ISN 0544      M=M+1                                          00006030
ISN 0545      IF (M.GT.20) GO TO 710                          00006040
ISN 0547      PHI1=PHI1+DELT                                  00006050
ISN 0548      IF (DABS(DELT).GT.CONV2) GO TO 680              00006060
ISN 0550      IF (L.EQ.1) GO TO 690                          00006070
ISN 0552      PHI2=PHI1                                      00006080
ISN 0553      L=1                                            00006090
ISN 0554      PHI1=-PI/2.D0                                  00006100
ISN 0555      GO TO 680                                       00006110
ISN 0556      690 CONTINUE                                    00006120
ISN 0557      PHI1D=PHI1*RADDG                                00006130
ISN 0558      PHI2D=PHI2*RADDG                                00006140
ISN 0559      WRITE (6,700) SCALE,PHI1D,PHI2D               00006150
ISN 0560      700 FORMAT (1H0,2X,'IF MAP PROJECTION IS ELLIPSOIDAL EQUIDISTANT CONIC 00006160
*',(1H,2X,'SCALE=1/',F10.1,' STANDARD PARALLELS=',F10.4,',',F10.4,
*,' DEG. LAT.'))                                           00006180
ISN 0561      N=11                                           00006190
ISN 0562      GO TO 2290                                       00006200
ISN 0563      710 WRITE (6,530)                               00006210
ISN 0564      720 WRITE (6,730)                               00006220
ISN 0565      730 FORMAT (1H0,2X,'THIS PROJECTION MAY BE CONIC, BUT DOES NOT APPEAR 00006230
*TO FIT PROJECTIONS CURRENTLY PROGRAMMED.')               00006240
ISN 0566      GO TO 2020                                       00006250
ISN 0567      740 AK=DABS(FF/2.D0)                             00006260
ISN 0568      SCALE=A/AK                                       00006270
ISN 0569      WRITE (6,750) SCALE                             00006280
ISN 0570      750 FORMAT (1H0,2X,'IF MAP PROJECTION IS SPHERICAL POLAR STEREOGRAPHIC 00006290
*SCALE=1/',F10.1,' AT POLE.')                             00006300
ISN 0571      N=6                                             00006310
ISN 0572      GO TO 2290                                       00006320
ISN 0573      760 E03=DSQRT(((1.D0+E)**(1.D0+E))*((1.D0-E)**(1.D0-E))) 00006330
ISN 0574      AK=DABS(FF)*E03/2.D0                           00006340
ISN 0575      SCALE=A/AK                                       00006350
ISN 0576      WRITE (6,770) SCALE                             00006360
ISN 0577      770 FORMAT (1H0,2X,'IF MAP PROJECTION IS ELLIPSOIDAL POLAR STEREOGRAPH 00006370
*IC. SCALE=1/',F10.1,' AT POLE.')                         00006380
ISN 0578      N=7                                             00006390
ISN 0579      GO TO 2290                                       00006400
ISN 0580      780 WRITE (6,790) SCALE                         00006410
ISN 0581      790 FORMAT (1H0,2X,'IF MAP PROJECTION IS ELLIPSOIDAL POLAR LAMBERT AZI 00006420
*MUTHAL EQUAL-AREA. SCALE=1/',F10.1)                     00006430
ISN 0582      N=8                                             00006440
ISN 0583      GO TO 2290                                       00006450
ISN 0584      800 WRITE (6,810) SCALE                         00006460
ISN 0585      810 FORMAT (1H0,2X,'IF MAP PROJECTION IS SPHERICAL POLAR LAMBERT AZIMU 00006470
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      *THAL EQUAL-AREA. SCALE=1/','F10.1)
      N=9
      GO TO 2290
      ISN 0586
      ISN 0587      820 WRITE (6,830) SCALE
      ISN 0588      830 FORMAT (1H0,2X,'IF MAP PROJECTION IS SPHERICAL POLAR AZIMUTHAL EQU
      ISN 0589      *IDISTANT. SCALE=1/','F10.1)
      N=10
      GO TO 2290
      ISN 0590
      ISN 0591      840 WRITE (6,850) SCALE
      ISN 0592      850 FORMAT (1H0,2X,'IF MAP PROJECTION IS ELLIPSOIDAL POLAR AZIMUTHAL EQU
      ISN 0593      *QUIDISTANT. SCALE=1/','F10.1)
      N=11
      GO TO 2290
      ISN 0594
      ISN 0595
      C
      C      TEST FOR POLAR ORTHOGRAPHIC.
      C
      ISN 0596      860 EN=DSIGN(1.D0,EN)
      ISN 0597      AK=0.D0
      ISN 0598      DO 870 I=1,3
      ISN 0599      XD=X0-X(I)
      ISN 0600      YD=Y0-Y(I)
      ISN 0601      F(I)=DSQRT(XD*XD+YD*YD)
      ISN 0602      FO(I)=DCOS(PHI(I))
      ISN 0603      AK=AK+DABS(F(I)/FO(I))
      ISN 0604      870 CONTINUE
      ISN 0605      AK=AK/3.D0
      ISN 0606      SCALE=A/AK
      ISN 0607      WRITE (6,900) SCALE
      ISN 0608      900 FORMAT (1H0,2X,'IF MAP PROJECTION IS POLAR ORTHOGRAPHIC. SCALE=
      *1/','F10.1)
      N=12
      GO TO 2290
      ISN 0609
      ISN 0610
      C
      C      TEST FOR POLAR GNOMONIC.
      C
      ISN 0611      910 AK=DABS(F(1))
      ISN 0612      SCALE=A/AK
      ISN 0613      WRITE (6,940) SCALE
      ISN 0614      940 FORMAT (1H0,2X,'IF MAP PROJECTION IS POLAR GNOMONIC. SCALE=1/','F10.1)
      N=13
      GO TO 2290
      ISN 0615
      ISN 0616
      C
      C      TEST FOR POLAR PERSPECTIVE.
      C
      ISN 0617      950 SP1=DSIN(PHI(1))
      ISN 0618      SP2=DSIN(PHI(2))
      ISN 0619      SP3=DSIN(PHI(3))
      ISN 0620      FF1=F(1)*FO(2)-F(2)*FO(1)
      ISN 0621      FF2=F(1)*FO(3)-F(3)*FO(1)
      ISN 0622      P=(SP1*FO(2)*F(1)-SP2*FO(1)*F(2))*EN/FF1
      ISN 0623      P13=(SP1*FO(3)*F(1)-SP3*FO(1)*F(3))*EN/FF2

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ISN 0624      P=(P+P13)/2.00                      00006990
ISN 0625      AK=F(1)*(P-EN*SP1)/(P-1.00)/F0(1)    00007000
ISN 0626      SCALE=A/AK                          00007010
ISN 0627      WRITE (6,970) P,SCALE               00007020
ISN 0628      970 FORMAT (1H0,2X,'IF MAP PROJECTION IS POLAR PERSPECTIVE, WITH POINT',F10.4,2X,'S',F10.1)) 00007030
              * OF PROJ.' F10.4,' TIMES RADIUS FROM CENTER OF SPHERE.'/(1H,2X,'S',F10.1)) 00007040
              *CALE=1/' F10.1)) 00007050
ISN 0629      N=14                                00007060
ISN 0630      GO TO 2290                          00007070
              C                                  00007140
              C      TEST FOR SPHERICAL POLYCONIC. 00007150
              C                                  00007160
ISN 0631      990 CONTINUE                        00007170
ISN 0632      N=15                                00007180
ISN 0633      EE=0.00                             00007190
ISN 0634      CALL EFAC (0.00,EFO,EF1,EF2)         00007200
ISN 0635      GO TO 1210                          00007210
              C                                  00007220
              C      TEST FOR ELLIPSOIDAL POLYCONIC. 00007230
              C                                  00007240
ISN 0636      1010 CONTINUE                       00007250
ISN 0637      N=16                                00007260
ISN 0638      EE=E2                               00007270
ISN 0639      CALL EFAC (E2,EFO,EF1,EF2)           00007280
ISN 0640      GO TO 1210                          00007290
              C                                  00007300
              C      PARALLELS ARE CURVED AND MERIDIANS ARE CURVED OR STRAIGHT (LARGE 00007310
              C      SCALE). 00007320
              C      TEST FOR ELLIPSOIDAL TRANSVERSE MERCATOR. 00007321
              C                                  00007322
ISN 0641      1030 CONTINUE                       00007330
ISN 0642      N=17                                00007340
ISN 0643      CALL EFAC (E2,EFO,EF1,EF2)           00007350
ISN 0644      EPR=E2/(1.00-E2)                    00007360
ISN 0645      GO TO 1210                          00007370
ISN 0646      1050 CONTINUE                       00007380
ISN 0647      IF (N.EQ.15.AND.NUM.EQ.1) GO TO 1140 00007390
ISN 0649      IF (N.EQ.15.AND.NUM.EQ.2) GO TO 1160 00007400
ISN 0651      IF (N.EQ.15) GO TO 1080              00007410
ISN 0653      IF (N.EQ.16) GO TO 1060              00007420
ISN 0655      IF (N.EQ.17) GO TO 1010              00007430
ISN 0657      IF (N.EQ.18) GO TO 990               00007440
ISN 0659      IF (N.EQ.19) GO TO 1100              00007450
ISN 0661      IF (N.EQ.20) GO TO 1120              00007460
ISN 0663      IF (N.EQ.21) GO TO 1180              00007470
ISN 0665      IF (N.EQ.22) GO TO 2000              00007480
ISN 0667      IF (N.EQ.23) GO TO 1680              00007490
ISN 0669      IF (N.EQ.24) GO TO 1700              00007500
ISN 0671      IF (N.EQ.30) GO TO 1800              00007510
ISN 0673      IF (N.EQ.31) GO TO 1900              00007520
ISN 0675      IF (N.EQ.25) GO TO 2000              00007530
              C                                  00007540
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C      TEST FOR SPHERICAL TRANSVERSE MERCATOR
C
ISN 0677      1060 CONTINUE
ISN 0678      N=18
ISN 0679      GO TO 1210
C
C      TEST FOR LAMBERT AZIMUTHAL EQUAL-AREA.
C
ISN 0680      1080 CONTINUE
ISN 0681      N=19
ISN 0682      L=0
ISN 0683      GO TO 1210
C
C      TEST FOR AZIMUTHAL EQUIDISTANT.
C
ISN 0684      1100 CONTINUE
ISN 0685      N=20
ISN 0686      L=0
ISN 0687      GO TO 1210
C
C      TEST FOR ORTHOGRAPHIC
C
ISN 0688      1120 CONTINUE
ISN 0689      N=21
ISN 0690      L=0
ISN 0691      GO TO 1210
C
C      TEST FOR EQUATORIAL GNOMONIC.
C
ISN 0692      1140 CONTINUE
ISN 0693      N=22
ISN 0694      DIST14=(X14*Y45-Y14*X45)/D45
ISN 0695      DIST47=(X47*Y78-Y47*X78)/D78
ISN 0696      FF=DIST14/DIST47
ISN 0697      D1=DABS(DIST14)/D78
ISN 0698      FFA=DTAN(CLONG(1))
ISN 0699      FFC=DTAN(CLONG(4))
ISN 0700      FFD=DTAN(CLONG(7))
ISN 0701      FFE=FFA-FFC
ISN 0702      FFG=FF*(FFD-FFC)
ISN 0703      DEN=-FFD*FFE-FFA*FFG
ISN 0704      TLO=(FFE+FFG)/DEN
ISN 0705      CLONGO=DATAN(TLO)
ISN 0706      IF ((CLONGO-CLONG(4)).GT.(PI/2.D0)) CLONGO=CLONGO+PI
ISN 0707      IF ((CLONGO-CLONG(4)).GT.(PI/2.D0)) CLONGO=CLONGO-2.D0*PI
ISN 0708      TL1=DTAN(CLONG(1)-CLONGO)
ISN 0709      CL1=DCOS(CLONG(1)-CLONGO)
ISN 0710      TP1=DTAN(PI(1))
ISN 0711      TL4=DTAN(CLONG(4)-CLONGO)
ISN 0712      CL4=DCOS(CLONG(4)-CLONGO)
ISN 0713      AK=DIST14/(TL1-TL4)
ISN 0714      TH=-DATAN2(X45,Y45)
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ISN 0717      CTH=DCOS(TH)                00008070
ISN 0718      STH=DSIN(TH)                00008080
ISN 0719      XO=X(1)-AK*(TL1*CTH-TP1*STH/CL1) 00008090
ISN 0720      YO=Y(1)-AK*(TP1*CTH/CL1+TL1*STH) 00008100
ISN 0721      SPO=0.D0                    00008110
ISN 0722      CPO=1.D0                    00008120
ISN 0723      SCALE=A/AK                  00008130
ISN 0724      PHI0D=0.D0                  00008140
ISN 0725      CLNG0D=CLONG0*RADDG         00008150
ISN 0726      GO TO 1640                  00008160

C
C      TEST FOR OBLIQUE GNOMONIC.
C
ISN 0727      1160 CONTINUE                00008200
ISN 0728      N=22                        00008210
ISN 0729      L=0                        00008220
ISN 0730      WRITE (6,1170)              00008230
ISN 0731      1170 FORMAT (1H,2X,'OBLIQUE GNOMONIC:') 00008240
ISN 0732      GO TO 1210                  00008250

C
C      TEST FOR VERTICAL PERSPECTIVE, INCLUDING STEREOGRAPHIC.
C
ISN 0733      1180 CONTINUE                00008290
ISN 0734      N=23                        00008300
ISN 0735      CALL PERSP (X,Y,PHI,CLONG,0.D0,W) 00008310
ISN 0736      XO=W(4)                    00008320
ISN 0737      YO=W(11)                   00008330
ISN 0738      CLONG0=DATAN2(-W(6),-W(5)) 00008340
ISN 0739      SQR=DSQRT(W(5)*W(5)+W(6)*W(6)) 00008350
ISN 0740      PHIO=DATAN(-W(7)/SQR)       00008360
ISN 0741      P=1.D0/DSQRT(W(5)*W(5)+W(6)*W(6)+W(7)*W(7)) 00008370
ISN 0742      CPO=DCOS(PHIO)              00008380
ISN 0743      FAC=DSIN(PHIO)*DSIN(PHI(5))+CPO*DCOS(PHI(5))*DCOS(CLONG(5)-CLONG0) 00008390
ISN 0744      IF (FAC.GE.0.D0) GO TO 1200 00008400
ISN 0746      IF (CLONG0.LT.0.D0) CLONG0=CLONG0+PI 00008410
ISN 0748      IF (CLONG0.GT.0.D0) CLONG0=CLONG0-PI 00008420
ISN 0750      PHIO=-PHIO                  00008430
ISN 0751      P=-P                        00008440
ISN 0752      1200 CONTINUE                00008450
ISN 0753      FAC=W(3)-W(4)*W(7)          00008460
ISN 0754      FAC1=W(10)-W(11)*W(7)       00008470
ISN 0755      AK=DSQRT(FAC*FAC+FAC1*FAC1)/SQR/DABS(P-1.D0) 00008480
ISN 0756      TH=-DATAN2(FAC,FAC1)        00008490
ISN 0757      CTH=DCOS(TH)                00008500
ISN 0758      STH=DSIN(TH)                00008510
ISN 0759      SPO=DSIN(PHIO)              00008520
ISN 0760      CLO=DCOS(CLONG0)            00008530
ISN 0761      SLO=DSIN(CLONG0)            00008540
ISN 0762      WW=(-AK*(P-1.D0))*(SLO*CTH-CLO*SPO*STH)-XO*CLO*CPO)/P 00008550
ISN 0763      SCALE=A/AK                  00008560
ISN 0764      CLNG0D=CLONG0*RADDG         00008570
ISN 0765      PHI0D=PHIO*RADDG            00008580
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ISN 0766      IF (DABS(P+1.D0).LT.CONV1*5.D0) GO TO 1620      00008590
ISN 0768      GO TO 1660      00008600
ISN 0769      1210 CONTINUE      00008610
ISN 0770      M=0      00008620
ISN 0771      CLONGO=CLONG(4)+0.02D0      00008630
ISN 0772      IF (NOR.EQ.1) PHIO=0.02D0      00008640
ISN 0774      IF (NOR.EQ.1) GO TO 1220      00008650
ISN 0776      PHIO=PHI(4)+0.02D0      00008660
ISN 0777      1220 FF=SLP123      00008670
ISN 0778      D23SQ=D23*D23      00008680
ISN 0779      FF1=D12*D12/D23SQ      00008690
ISN 0780      J=1      00008700
ISN 0781      1230 CONTINUE      00008710
ISN 0782      K=0      00008720
ISN 0783      JJ=J+2      00008730
ISN 0784      IF (N.EQ.17) GO TO 1250      00008740
ISN 0786      IF (N.EQ.15.OR.N.EQ.16) GO TO 1270      00008750
ISN 0788      IF (N.GE.19) GO TO 1290      00008760
ISN 0790      DO 1240 I=J,JJ      00008770
ISN 0791      K=K+1      00008780
ISN 0792      CALL CALC (PHI,CLONGO,PHIO,I)      00008790
ISN 0793      F(K)=DATAN2(ZZ,AA)      00008800
ISN 0794      FO(K)=0.5D0*DLOG((1.D0+BB)/(1.D0-BB))      00008810
ISN 0795      RHO(K)=-ZZ*BB/(AA*AA+ZZ*ZZ)      00008820
ISN 0796      W(K)=-AA/(1.D0-BB*BB)      00008830
ISN 0797      1240 CONTINUE      00008840
ISN 0798      GO TO 1360      00008850
ISN 0799      1250 CONTINUE      00008860
ISN 0800      DO 1260 I=J,JJ      00008870
ISN 0801      K=K+1      00008880
ISN 0802      SPH=DSIN(PHI(I))      00008890
ISN 0803      CPH=DCOS(PHI(I))      00008900
ISN 0804      TPH=SPH/CPH      00008910
ISN 0805      FE=DSQRT(1.D0-E2*SPH*SPH)      00008920
ISN 0806      AA=(CLONG(I)-CLONGO)*CPH      00008930
ISN 0807      CC=EPR*CPH*CPH      00008940
ISN 0808      T=TPH*TPH      00008950
ISN 0809      FI=1.D0-T+CC      00008960
ISN 0810      F2=5.D0-18.D0*T+T*T+72.D0*CC-58.D0*EPR      00008970
ISN 0811      F3=5.D0-T+9.D0*CC+4.D0*CC*CC      00008980
ISN 0812      F4=61.D0-58.D0*T+T*T+600.D0*CC-330.D0*EPR      00008990
ISN 0813      F(K)=EFO*PHI(I)-EF1*DSIN(2.D0*PHI(I))+EF2*DSIN(4.D0*PHI(I))+(TPH/      00009000
      *FE)*((AA**2)/2.D0+F3*(AA**4)/24.D0+F4*(AA**6)/720.D0)      00009010
ISN 0814      FO(K)=(1.D0/FE)*(AA+FI*(AA**3)/6.D0+F2*(AA**5)/120.D0)      00009020
ISN 0815      W(K)=-((CPH/FE)*(1.D0+FI*(AA**2)/2.D0+F2*(AA**4)/24.D0)      00009030
ISN 0816      RHO(K)=-((SPH/FE)*(AA+F3*(AA**3)/6.D0+F4*(AA**5)/120.D0)      00009040
ISN 0817      1260 CONTINUE      00009050
ISN 0818      GO TO 1360      00009060
ISN 0819      1270 CONTINUE      00009070
ISN 0820      DO 1280 I=J,JJ      00009080
ISN 0821      K=K+1      00009090
ISN 0822      IF (DABS(PHI(I)).LT.1.D-7) GO TO 1275      00009100

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ISN 0824      SPHI=DSIN(PHI(I))                00009110
ISN 0825      EM=DCOS(PHI(I))/DSQRT(1.00-EE*SPHI*SPHI) 00009120
ISN 0826      BIGEM=EFO*PHI(I)-EF1*DSIN(2.00*PHI(I))+EF2*DSIN(4.00*PHI(I)) 00009130
ISN 0827      T=(CLONG(I)-CLONG0)*SPHI          00009140
ISN 0828      RHO(K)=-EM*DSIN(T)                00009150
ISN 0829      FO(K)=-RHO(K)/SPHI                00009160
ISN 0830      W(K)=-EM*DCOS(T)                  00009170
ISN 0831      F(K)=BIGEM+EM/SPHI+W(K)/SPHI       00009180
ISN 0832      GO TO 1280                        00009190
ISN 0833      1275 RHO(K)=0.00                   00009200
ISN 0834      FO(K)=CLONG(I)-CLONG0             00009210
ISN 0835      W(K)=-1.00                        00009220
ISN 0836      F(K)=0.00                         00009230
ISN 0837      1280 CONTINUE                      00009240
ISN 0838      GO TO 1360                        00009250
ISN 0839      1290 CONTINUE                      00009260
ISN 0840      DO 1350 I=J,JJ                    00009270
ISN 0841      K=K+1                             00009280
ISN 0842      CALL CALC (PHI,CLONG0,PHI0,I)      00009290
ISN 0843      IF (N.EQ.20) GO TO 1300            00009300
ISN 0845      IF (N.EQ.21) GO TO 1310            00009310
ISN 0847      IF (N.EQ.22) GO TO 1330            00009320
ISN 0849      PK=DSQRT(2.00/(1.00+ZA))           00009330
ISN 0850      FFF=-1.00/2.00/(1.00+ZA)          00009340
ISN 0851      GO TO 1340                        00009350
ISN 0852      1300 Z=DARCOS(ZA)                  00009360
ISN 0853      SZ=DSIN(Z)                        00009370
ISN 0854      PK=Z/SZ                           00009380
ISN 0855      FFF=(Z*ZA-SZ)/Z/SZ/SZ             00009390
ISN 0856      GO TO 1340                        00009400
ISN 0857      1310 PK=1.00                       00009410
ISN 0858      FFF=0.00                          00009420
ISN 0859      GO TO 1340                        00009430
ISN 0860      1330 PK=1.00/ZA                    00009440
ISN 0861      FFF=-1.00/ZA                      00009450
ISN 0862      1340 CONTINUE                      00009460
ISN 0863      FO(K)=BB*PK                       00009470
ISN 0864      F(K)=AZ*PK                        00009480
ISN 0865      DKDL=FO(K)*FFF*CPO                00009490
ISN 0866      DKDP=F(K)*FFF                     00009500
ISN 0867      RHO(K)=-BB*PK*SPO+AZ*DKDL         00009510
ISN 0868      W(K)=-PK*AA+BB*DKDL              00009520
ISN 0869      U(K)=-PK*ZA+AZ*DKDP              00009530
ISN 0870      V(K)=BB*DKDP                      00009540
ISN 0871      1350 CONTINUE                      00009550
ISN 0872      1360 CONTINUE                      00009560
ISN 0873      G12=F(1)-F(2)                     00009570
ISN 0874      H12=FO(1)-FO(2)                   00009580
ISN 0875      G23=F(2)-F(3)                     00009590
ISN 0876      H23=FO(2)-FO(3)                   00009600
ISN 0877      IF (N.EQ.22) GO TO 1390            00009610
ISN 0879      FLO=FF-DATAN2(G12,H12)+DATAN2(G23,H23) 00009620
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ISN 0880      IF (FLO.GT.PI) FLO=FLO-2.D0*PI          00009630
ISN 0882      IF (FLO.LT.(-PI)) FLO=FLO+2.D0*PI        00009640
ISN 0884      FPL01=(H12*(RHO(1)-RHO(2))-G12*(W(1)-W(2)))/(G12*G12+H12*H12) 00009650
ISN 0885      FPL02=(H23*(RHO(2)-RHO(3))-G23*(W(2)-W(3)))/(G23*G23+H23*H23) 00009660
ISN 0886      FPL0=FPL02-FPL01                        00009670
ISN 0887      IF (N.GE.19) GO TO 1430                  00009680
ISN 0889      DLO=-FLO/FPL0                            00009690
ISN 0890      1370 CONTINUE                            00009700
ISN 0891      IF (DLO.GT.PI) DLO=DLO-2.D0*PI          00009710
ISN 0893      IF (DLO.LT.(-PI)) DLO=DLO+2.D0*PI        00009720
ISN 0895      IF (DLO.LT.(-PI).OR.DLO.GT.PI) GO TO 1370 00009730
ISN 0897      CLONGO=CLONGO+DLO                        00009740
ISN 0898      IF (CLONGO.GT.PI) CLONGO=CLONGO-2.D0*PI  00009750
ISN 0900      IF (CLONGO.LT.(-PI)) CLONGO=CLONGO+2.D0*PI 00009760
ISN 0902      M=M+1                                    00009770
ISN 0903      IF (M.GT.20) WRITE (6,1470) M            00009780
ISN 0905      IF (M.GT.20) GO TO 1050                  00009790
ISN 0907      IF (DABS(DLO).GT.CONV2) GO TO 1230        00009800
ISN 0909      IF (J.EQ.4) GO TO 1410                  00009810
ISN 0911      IF (J.EQ.7) GO TO 1480                  00009820
ISN 0913      CLONG1=CLONGO                            00009830
ISN 0914      1380 FF=SLP456                          00009840
ISN 0915      D56SQ=D56*D56                          00009850
ISN 0916      J=4                                      00009860
ISN 0917      GO TO 1230                              00009870
ISN 0918      1390 HG12=H12*H12+G12*G12                00009880
ISN 0919      HG23=H23*H23+G23*G23                    00009890
ISN 0920      FLO=FF1-HG12/HG23                      00009900
ISN 0921      FPL0=-2.D0*(HG23*(H12*(W(1)-W(2))+G12*(RHO(1)-RHO(2)))-HG12*(H23*(W(2)-W(3))+G23*(RHO(2)-RHO(3))))/(HG23*HG23) 00009910
ISN 0922      FPP0=-2.D0*(HG23*(H12*(V(1)-V(2))+G12*(U(1)-U(2)))-HG12*(H23*(V(2)-V(3))+G23*(U(2)-U(3))))/(HG23*HG23) 00009920
ISN 0923      GO TO 1440                              00009930
ISN 0924      1400 D89SQ=D89*D89                      00009940
ISN 0925      FF1=D78*D78/D89SQ                      00009950
ISN 0926      J=7                                      00009960
ISN 0927      GO TO 1230                              00009970
ISN 0928      1410 CLONG2=CLONGO                      00009980
ISN 0929      1420 FF=SLP789                          00009990
ISN 0930      D89SQ=D89*D89                          00010000
ISN 0931      J=7                                      00010010
ISN 0932      GO TO 1230                              00010020
ISN 0933      1430 CONTINUE                            00010030
ISN 0934      FPP01=(H12*(U(1)-U(2))-G12*(V(1)-V(2)))/(G12*G12+H12*H12) 00010040
ISN 0935      FPP02=(H23*(U(2)-U(3))-G23*(V(2)-V(3)))/(G23*G23+H23*H23) 00010050
ISN 0936      FPP0=FPP02-FPP01                      00010060
ISN 0937      1440 CONTINUE                            00010070
ISN 0938      IF (J.GE.4) GO TO 1460                  00010080
ISN 0940      FLO1=FLO                                00010090
ISN 0941      FPL03=FPL0                              00010100
ISN 0942      FPP03=FPP0                              00010110
ISN 0943      IF (L.EQ.1.AND.N.EQ.22) GO TO 1400      00010120
ISN 0943      IF (L.EQ.1.AND.N.EQ.22) GO TO 1400      00010130
ISN 0943      IF (L.EQ.1.AND.N.EQ.22) GO TO 1400      00010140
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ISN 0945      IF (L.EQ.1) GO TO 1420      00010150
ISN 0947      IF (N.EQ.22) GO TO 1450      00010160
ISN 0949      GO TO 1380                    00010170
ISN 0950      1450 D56SQ=D56*D56            00010180
ISN 0951      FF1=D45*D45/D56SQ           00010190
ISN 0952      J=4                          00010200
ISN 0953      GO TO 1230                    00010210
ISN 0954      1460 CONTINUE                 00010220
ISN 0955      DEN=FPL03*FPP0-FPLO*FPP03    00010230
ISN 0956      IF (DABS(DEN).LT.1.D-20) WRITE (6,1465) N 00010240
ISN 0958      1465 FORMAT (1H0,2X,'PROJECTION N=',I2,' FAILED.') 00010250
ISN 0959      IF (DABS(DEN).LT.1.D-20) GO TO 1050 00010260
ISN 0961      DLO=(-FLO1*FPP0+FLO*FPP03)/DEN 00010270
ISN 0962      DPO=(FLO1*FPLO-FLO*FPL03)/DEN 00010280
ISN 0963      DELT=DABS(DLO)+DABS(DPO)      00010290
ISN 0964      CLONGO=CLONGO+DLO            00010300
ISN 0965      IF (CLONGO.GT.PI) CLONGO=CLONGO-2.D0*PI 00010310
ISN 0967      IF (CLONGO.LT.(-PI)) CLONGO=CLONGO+2.D0*PI 00010320
ISN 0969      PHIO=PHIO+DPO                00010330
ISN 0970      M=M+1                        00010340
ISN 0971      IF (M.GT.20) WRITE (6,1470) N 00010350
ISN 0973      1470 FORMAT (1H0,2X,'TOO MANY ITERATIONS TO CONVERGE FOR PROJ. N=',I2) 00010360
ISN 0974      IF (M.GT.20) GO TO 1050      00010370
ISN 0976      IF (DELT.GT.CONV2) GO TO 1220 00010380
ISN 0978      IF (L.EQ.1) GO TO 1480      00010390
ISN 0980      L=1                          00010400
ISN 0981      CLONG1=CLONGO                00010410
ISN 0982      PHIO1=PHIO                   00010420
ISN 0983      GO TO 1210                    00010430
ISN 0984      1480 CONTINUE                 00010440
ISN 0985      X78=X(7)-X(8)                00010450
ISN 0986      Y78=Y(7)-Y(8)                00010460
ISN 0987      X7=X(7)                      00010470
ISN 0988      Y7=Y(7)                      00010480
ISN 0989      AK=DSQRT((X78*X78+Y78*Y78)/(H12*H12+G12*G12)) 00010490
ISN 0990      SCALE=A/AK                   00010500
ISN 0991      TH=DATAN2((Y78*H12-X78*G12),(X78*H12+Y78*G12)) 00010510
ISN 0992      CTH=DCOS(TH)                  00010520
ISN 0993      STH=DSIN(TH)                  00010530
ISN 0994      XO=X7-(F0(1)*CTH-F(1)*STH)*AK 00010540
ISN 0995      YO=Y7-(F(1)*CTH+F0(1)*STH)*AK 00010550
ISN 0996      IF (N.LT.19) CLONGO=(CLONGO+CLONG1+CLONG2)/3.D0 00010560
ISN 0998      IF (N.GE.19) CLONGO=(CLONGO+CLONG1)/2.D0 00010570
ISN 1000      CLNGO=CLONGO*RADDG           00010580
ISN 1001      IF (N.EQ.15) GO TO 1520      00010590
ISN 1003      IF (N.EQ.16) GO TO 1540      00010600
ISN 1005      IF (N.EQ.17) GO TO 1500      00010610
ISN 1007      IF (N.EQ.18) GO TO 1485      00010620
ISN 1009      PHIO=(PHIO+PHIO1)/2.D0      00010630
ISN 1010      PHIOD=PHIO*RADDG             00010640
ISN 1011      IF (N.EQ.19) GO TO 1560      00010650
ISN 1013      IF (N.EQ.20) GO TO 1580      00010660
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ISN 1015      IF (N.EQ.21) GO TO 1600                      00010670
ISN 1017      IF (N.EQ.22) GO TO 1640                      00010680
ISN 1019      1485 WRITE (6,1490) CLNGOD,SCALE              00010690
ISN 1020      1490 FORMAT (1H0,2X,'IF MAP PROJECTION IS SPHERICAL TRANSVERSE MERCATOR
*, CENTRAL MERIDIAN=',F10.4,' LONG. SCALE AT CENT. MER.=1/',F10.1)00010700
ISN 1021      GO TO 2030                                    00010710
ISN 1022      1500 WRITE (6,1510) CLNGOD,SCALE              00010720
ISN 1023      1510 FORMAT (1H0,2X,'IF MAP PROJECTION IS ELLIPSOIDAL TRANSVERSE MERCAT
*,OR, CENTRAL MERIDIAN=',F10.4,' LONG. SCALE AT CENT. MER.=1/',F10.1)00010730
*,1)00010740
ISN 1024      GO TO 2030                                    00010750
ISN 1025      1520 WRITE (6,1530) CLNGOD,SCALE              00010760
ISN 1026      1530 FORMAT (1H0,2X,'IF MAP PROJECTION IS SPHERICAL POLYCONIC, CENTRAL
*, MERIDIAN=',F10.4,' LONG. SCALE=1/',F10.1)00010770
ISN 1027      GO TO 2030                                    00010780
ISN 1028      1540 WRITE (6,1550) CLNGOD,SCALE              00010790
ISN 1029      1550 FORMAT (1H0,2X,'IF MAP PROJECTION IS ELLIPSOIDAL POLYCONIC, CENT
*,RAL MERIDIAN=',F10.4,' LONG. SCALE=1/',F10.1)00010800
ISN 1030      GO TO 2030                                    00010810
ISN 1031      1560 WRITE (6,1570)                          00010820
ISN 1032      1570 FORMAT (1H0,2X,'IF MAP PROJECTION IS LAMBERT AZIMUTHAL EQUAL-AREA
*)00010830
ISN 1033      GO TO 2430                                    00010840
ISN 1034      1580 WRITE (6,1590)                          00010850
ISN 1035      1590 FORMAT (1H0,2X,'IF MAP PROJECTION IS AZIMUTHAL EQUIDISTANT')00010860
ISN 1036      GO TO 2430                                    00010870
ISN 1037      1600 WRITE (6,1610)                          00010880
ISN 1038      1610 FORMAT (1H0,2X,'IF MAP PROJECTION IS ORTHOGRAPHIC')00010890
ISN 1039      GO TO 2430                                    00010900
ISN 1040      1620 WRITE (6,1630)                          00010910
ISN 1041      1630 FORMAT (1H0,2X,'IF MAP PROJECTION IS SPHERICAL STEREOGRAPHIC')00010920
ISN 1042      P=-1.00                                      00010930
ISN 1043      GO TO 2430                                    00010940
ISN 1044      1640 WRITE (6,1650)                          00010950
ISN 1045      1650 FORMAT (1H0,2X,'IF MAP PROJECTION IS GNOMONIC')00010960
ISN 1046      P=0.00                                       00010970
ISN 1047      GO TO 2430                                    00010980
ISN 1048      1660 WRITE (6,1670) P                        00010990
ISN 1049      1670 FORMAT (1H0,2X,'IF MAP PROJECTION IS VERTICAL PERSPECTIVE, WITH P
*,INT OF PROJ.,',F10.4,' TIMES RADIUS FROM CENTER OF SPHERE')00011000
ISN 1050      GO TO 2430                                    00011010
ISN 1051      1680 CONTINUE                                00011020
ISN 1052      WRITE (6,1690)                               00011030
ISN 1053      1690 FORMAT (1H0,2X,'IF MAP PROJECTION IS PERSPECTIVE (TILTED OR VERTIC
*,AL) OF SPHERE, BUT NOT AZIMUTHAL,')00011040
ISN 1054      N=24                                          00011050
ISN 1055      EE=0.00                                       00011060
ISN 1056      GO TO 1720                                    00011070
C
C      TEST FOR PERSPECTIVE OF ELLIPSOID.                  00011080
C
ISN 1057      1700 CALL PERSP (X,Y,PHI,CLONG,E2,W)         00011090

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ISN 1058      N=25                                00011190
ISN 1059      WRITE (6,1710)                      00011200
ISN 1060      1710 FORMAT (1H0,2X,'IF MAP PROJECTION IS PERSPECTIVE (TILTED OR VERTIC 00011210
               *AL) OF ELLIPSOID,')                00011220
ISN 1061      EE=E2                                00011230
               C                                    00011240
               C COMPUTE LAT/LONG FOR OTHER X,Y POINTS, BASED ON PARAMETERS FOR 00011250
               C PERSPECTIVE PROJECTIONS.          00011260
               C                                    00011270
ISN 1062      1720 CONTINUE                        00011280
ISN 1063      MP=3                                  00011290
ISN 1064      SX=0.D0                              00011300
ISN 1065      SY=0.D0                              00011310
ISN 1066      SX1=0.D0                             00011320
ISN 1067      SY1=0.D0                             00011330
ISN 1068      DO 1730 I=1,9                        00011340
ISN 1069      SP=DSIN(PHI(I))                      00011350
ISN 1070      CP=DCOS(PHI(I))                      00011360
ISN 1071      ENN=1.D0/DSQRT(1.D0-EE*SP*SP)         00011370
ISN 1072      XX=ENN*CP*DCOS(CLONG(I))             00011380
ISN 1073      YY=ENN*CP*DSIN(CLONG(I))             00011390
ISN 1074      ZZ=ENN*(1.D0-EE)*SP                  00011400
ISN 1075      DEN=XX*W(5)+YY*W(6)+ZZ*W(7)+1.D0     00011410
ISN 1076      X3(I)=(XX*W(1)+YY*W(2)+ZZ*W(3)+W(4))/DEN 00011420
ISN 1077      Y3(I)=(XX*W(8)+YY*W(9)+ZZ*W(10)+W(11))/DEN 00011430
ISN 1078      1730 CONTINUE                        00011440
ISN 1079      GO TO 2670                            00011450
ISN 1080      1740 CONTINUE                        00011460
ISN 1081      A1=1.D0                              00011470
ISN 1082      A5=1.D0                              00011480
ISN 1083      1750 CONTINUE                        00011490
ISN 1084      READ (5,2070) MN,X1,Y1               00011500
ISN 1085      IF (MN.EQ.1) GO TO 2870              00011510
ISN 1087      IF (MM.NE.0) X1=X1/2000.D0           00011520
ISN 1089      IF (MM.NE.0) Y1=Y1/2000.D0           00011530
ISN 1091      1760 CONTINUE                        00011540
ISN 1092      XR=A1*X1+A2*Y1+A3                    00011550
ISN 1093      YR=A4*X1+A5*Y1+A6                    00011560
ISN 1094      AA2=XR*W(5)-W(1)                     00011570
ISN 1095      AA1=XR*W(6)-W(2)                     00011580
ISN 1096      AA3=XR*W(7)-W(3)                     00011590
ISN 1097      AA4=W(4)-XR                          00011600
ISN 1098      AA6=YR*W(5)-W(8)                     00011610
ISN 1099      AA5=YR*W(6)-W(9)                     00011620
ISN 1100      AA7=YR*W(7)-W(10)                    00011630
ISN 1101      AA8=W(11)-YR                         00011640
ISN 1102      AA9=AA2*AA8-AA4*AA6                  00011650
ISN 1103      AA10=AA2*AA7-AA3*AA6                 00011660
ISN 1104      AA11=AA1*AA6-AA2*AA5                 00011670
ISN 1105      AA12=AA1*AA7-AA3*AA5                 00011680
ISN 1106      AA13=AA1*AA8-AA4*AA5                 00011690
ISN 1107      AA14=AA10*AA10+AA11*AA11/(1.D0-EE)+AA12*AA12 00011700
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ISN 1108      AA15=AA9*AA10+AA12*AA13      00011710
ISN 1109      AA16=AA9*AA9-AA11*AA11+AA13*AA13 00011720
ISN 1110      A145=AA15/AA14      00011730
ISN 1111      FAC=1.00      00011740
ISN 1112      FAC2=A145*A145-AA16/AA14      00011750
ISN 1113      IF (FAC2.LT.0.00) FAC2=0.00      00011760
ISN 1115      M=0      00011770
ISN 1116      1770 S=A145+FAC*DSQRT(FAC2)      00011780
ISN 1117      PHIR=DARSIN(S/DSQRT((1.00-EE)*(1.00-EE)+EE*S*S))      00011790
ISN 1118      DEN=AA12*S-AA13      00011800
ISN 1119      CLONGR=DATAN((AA9-AA10*S)/DEN)+PI*(1.00+DSIGN(1.00,(DEN*AA11)))/      00011810
            *2.00      00011820
ISN 1120      FAC1=DSIN(PHIR)*DSIN(PHI(5))+DCOS(PHIR)*DCOS(PHI(5))*DCOS(CLONG(5)      00011830
            *-CLONGR)      00011840
ISN 1121      M=M+1      00011850
ISN 1122      IF (M.GE.5) GO TO 1780      00011860
ISN 1124      IF (FAC1.LT.-0.500) FAC=-1.00      00011870
ISN 1126      IF (FAC1.LT.-0.500) GO TO 1770      00011880
ISN 1128      1780 CONTINUE      00011890
ISN 1129      IF (CLONGR.GT.PI) CLONGR=CLONGR-2.00*PI      00011900
ISN 1131      PHID=PHIR*RADDG      00011910
ISN 1132      CLONGD=CLONGR*RADDG      00011920
ISN 1133      WRITE (6,2280) X1,Y1,PHID,CLONGD      00011930
ISN 1134      GO TO 1750      00011940
ISN 1135      1790 IF (DABS(DELT).GT.CONV3) NOR=1      00011950
ISN 1137      IF (DABS(DELT).GT.CONV3) GO TO 1120      00011960
ISN 1139      TH=DATAN2((-Y14),(-X14))      00011970
ISN 1140      CTH=DCOS(TH)      00011980
ISN 1141      STH=DSIN(TH)      00011990
            C      00012000
            C      TEST FOR SINUSOIDAL.      00012010
            C      00012020
ISN 1142      F(1)=PHI(1)      00012030
ISN 1143      F(2)=PHI(2)      00012040
ISN 1144      F(3)=PHI(3)      00012050
ISN 1145      FO(1)=DCOS(PHI(1))      00012060
ISN 1146      FO(2)=DCOS(PHI(2))      00012070
ISN 1147      FO(3)=DCOS(PHI(3))      00012080
ISN 1148      N=30      00012090
ISN 1149      GO TO 1830      00012100
            C      00012110
            C      TEST FOR MOLLWEIDE.      00012120
            C      00012130
ISN 1150      1800 DO 1820 I=1,3      00012140
ISN 1151      M=0      00012150
ISN 1152      THF=PHI(I)      00012160
ISN 1153      PSPH=PI*DSIN(PHI(I))      00012170
ISN 1154      1810 DELT=(PSPH-2.00*THF-DSIN(2.00*THF))/2.00/(1.00+DCOS(2.00*THF))      00012180
ISN 1155      THF=THF+DELT      00012190
ISN 1156      M=M+1      00012200
ISN 1157      IF (M.GT.20) GO TO 1880      00012210
ISN 1159      IF (DABS(DELT).GT.CONV2) GO TO 1810      00012220

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ISN 1161      SQ2=DSQRT(2.00)                                00012230
ISN 1162      F(1)=SQ2*DSIN(THF)                             00012240
ISN 1163      FO(1)=2.00*SQ2*DCOS(THF)/PI                     00012250
ISN 1164      1820 CONTINUE                                   00012260
ISN 1165      N=31                                            00012270
ISN 1166      1830 AK=(X12*Y25-Y12*X25)/DSQRT(X25*X25+Y25*Y25)/(F(1)-F(2)) 00012280
ISN 1167      AK1=(X23*Y36-Y23*X36)/DSQRT(X36*X36+Y36*Y36)/(F(2)-F(3)) 00012290
ISN 1168      AK=(AK+AK1)/2.00                                00012300
ISN 1169      SCALE=A/AK                                       00012310
ISN 1170      CLONG1=(STH*(F(1)-F(2))+X12/AK)/CTH/(FO(2)-FO(1))+CLONG(1) 00012320
ISN 1171      CLONG2=(STH*(F(1)-F(2))+X45/AK)/CTH/(FO(2)-FO(1))+CLONG(4) 00012330
ISN 1172      CLONG3=(STH*(F(1)-F(2))+X78/AK)/CTH/(FO(2)-FO(1))+CLONG(7) 00012340
ISN 1173      CLONG4=(STH*(F(2)-F(3))+X23/AK)/CTH/(FO(3)-FO(2))+CLONG(1) 00012350
ISN 1174      CLONG5=(STH*(F(2)-F(3))+X56/AK)/CTH/(FO(3)-FO(2))+CLONG(4) 00012360
ISN 1175      CLONG6=(STH*(F(2)-F(3))+X89/AK)/CTH/(FO(3)-FO(2))+CLONG(7) 00012370
ISN 1176      CLONG0=(CLONG1+CLONG2+CLONG3)/3.00              00012380
ISN 1177      CLONG1=(CLONG4+CLONG5+CLONG6)/3.00              00012390
ISN 1178      CLONG0=(CLONG0+CLONG1)/2.00                     00012400
ISN 1179      XO=X(1)-(FO(1)*CTH*(CLONG(1)-CLONG0)-F(1)*STH)*AK 00012410
ISN 1180      YO=Y(1)-(F(1)*CTH+FO(1)*STH*(CLONG(1)-CLONG0))*AK 00012420
ISN 1181      CLNGOD=CLONG0*RADDG                               00012430
ISN 1182      IF (N.EQ.31) GO TO 1860                          00012440
ISN 1184      WRITE (6,1850) SCALE,CLNGOD                      00012450
ISN 1185      1850 FORMAT (1H0,2X,'IF MAP PROJECTION IS SINUSOIDAL. SCALE=1/',F10.1, 00012460
          * ' CENTRAL MERIDIAN=',F10.4,' DEG. LONG. ')        00012470
ISN 1186      GO TO 2030                                         00012480
ISN 1187      1860 WRITE (6,1870) SCALE,CLNGOD                  00012490
ISN 1188      1870 FORMAT (1H0,2X,'IF MAP PROJECTION IS MOLLWEIDE. SCALE=1/',F10.1, 00012500
          * ' CENTRAL MERIDIAN=',F10.4,' DEG. LONG. ')        00012510
ISN 1189      GO TO 2030                                         00012520
ISN 1190      1880 WRITE (6,1890)                               00012530
ISN 1191      1890 FORMAT (1H0,2X,'TOO MANY ITERATIONS IN MOLLWEIDE. ') 00012540
ISN 1192      1900 WRITE (6,1910)                               00012550
ISN 1193      1910 FORMAT (1H0,2X,'MAP PROJECTION IS PSEUDOCYLINDRICAL, BUT DOES NOT 00012560
          * FIT PROJECTIONS CURRENTLY PROGRAMMED. ')          00012570
ISN 1194      GO TO 2020                                         00012580
ISN 1195      1920 WRITE (6,1930)                               00012590
ISN 1196      1930 FORMAT (1H0,2X,'THIS PROJECTION IS CYLINDRICAL, BUT DOES NOT APPEA 00012600
          * R TO FIT PROJECTIONS CURRENTLY PROGRAMMED. ')      00012610
ISN 1197      GO TO 2020                                         00012620
ISN 1198      1940 WRITE (6,1950)                               00012630
ISN 1199      1950 FORMAT (1H0,2X,'THIS PROJECTION IS A POLAR AZIMUTHAL, BUT DOES NOT 00012640
          * FIT PROJECTIONS CURRENTLY PROGRAMMED. ')          00012650
ISN 1200      GO TO 2020                                         00012660
ISN 1201      2000 WRITE (6,2010)                               00012670
ISN 1202      2010 FORMAT (1H0,2X,'THIS PROGRAM CANNOT CURRENTLY DETERMINE THE MAP PRO 00012680
          * OJECTION FITTING THESE POINTS. ')                 00012690
ISN 1203      2020 CONTINUE                                       00012700
ISN 1204      READ (5,2880) NN                                    00012710
ISN 1205      IF (NN.EQ.0) GO TO 2020                           00012720
ISN 1207      GO TO 2870                                         00012730

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C      COMPUTE LAT/LONG FOR OTHER X,Y POINTS, BASED ON PARAMETERS FOR
C      CYLINDRICAL, POLYCONIC, OR TRANSVERSE MERCATOR PROJECTIONS.
C
ISN 1208 2030 CONTINUE
ISN 1209      MP=0
ISN 1210      SX=0.D0
ISN 1211      SY=0.D0
ISN 1212      SX1=0.D0
ISN 1213      SY1=0.D0
ISN 1214      DO 2040 I=1,9
ISN 1215          PHI1=PHI(I)
ISN 1216          CLONG1=CLONG(I)
ISN 1217          GO TO 2540
ISN 1218 2040 CONTINUE
ISN 1219          GO TO 2670
ISN 1220 2050 CONTINUE
ISN 1221          A1=1.D0
ISN 1222          A5=1.D0
ISN 1223 2060 CONTINUE
ISN 1224          READ (5,2070) NN,X1,Y1
ISN 1225 2070 FORMAT (I1,9X,2F10.6)
ISN 1226          IF (NN.EQ.1) GO TO 2870
ISN 1228          IF (MM.NE.0) X1=X1/2000.D0
ISN 1230          IF (MM.NE.0) Y1=Y1/2000.D0
ISN 1232          XR=A1*X1+A2*Y1+A3
ISN 1233          YR=A4*X1+A5*Y1+A6
ISN 1234          DX=XR-X0
ISN 1235          DY=YR-Y0
ISN 1236          XP=DX*CTH+DY*STH
ISN 1237          YP=DY*CTH-DX*STH
ISN 1238          IF (N.EQ.1) GO TO 2075
ISN 1240          IF (N.EQ.2) GO TO 2080
ISN 1242          IF (N.EQ.3) GO TO 2090
ISN 1244          IF (N.EQ.4) GO TO 2100
ISN 1246          IF (N.EQ.5) GO TO 2110
ISN 1248          IF (N.EQ.15.OR.N.EQ.16) GO TO 2140
ISN 1250          IF (N.EQ.17) GO TO 2190
ISN 1252          IF (N.EQ.18) GO TO 2120
ISN 1254          IF (N.EQ.30) GO TO 2240
ISN 1256          IF (N.EQ.31) GO TO 2250
ISN 1258 2075 T=DEXP(-YP/AK)
ISN 1259          PHID=90.D0-360.D0*DATAN(T)/PI
ISN 1260          GO TO 2260
ISN 1261 2080 T=DEXP(-YP/AK)
ISN 1262          CALL PHIT (T,E,PHID)
ISN 1263          GO TO 2260
ISN 1264 2090 T=DEXP(0.800*YP/AK)
ISN 1265          PHIR=2.500*DATAN(T)-5.D0*PI/8.D0
ISN 1266          PHID=PHIR*RADDG
ISN 1267          GO TO 2260
ISN 1268 2100 PHID= (YP/AKE)*RADDG
ISN 1269          GO TO 2260
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00012750
00012760
00012770
00012780
00012790
00012800
00012810
00012820
00012830
00012840
00012850
00012860
00012870
00012880
00012890
00012900
00012910
00012920
00012930
00012940
00012950
00012960
00012970
00012980
00012990
00013000
00013010
00013020
00013030
00013040
00013050
00013060
00013070
00013080
00013090
00013100
00013110
00013120
00013130
00013140
00013150
00013160
00013170
00013180
00013190
00013200
00013210
00013220
00013230
00013240
00013250
00013260
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ISN 1270      2110 PHID=360.D0*DATAN(YP/AKE/CONST)/PI      00013270
ISN 1271      GO TO 2260      00013280
ISN 1272      2120 FX=DEXP(XP/AK)      00013290
ISN 1273      G=(FX-1.D0/FX)/2.D0      00013300
ISN 1274      H=DCOS(YP/AK)      00013310
ISN 1275      PHIF=DSQRT((1.D0-H*H)/(G*G+1.D0))      00013320
ISN 1276      PHID=DSIGN(DARSIN(PHIF),YP)*RADDG      00013330
ISN 1277      IF (DABS(G).GT.CONV2.OR.DABS(H).GT.CONV2) GO TO 2130      00013340
ISN 1279      CLONGO=CLNGOD      00013350
ISN 1280      GO TO 2270      00013360
ISN 1281      2130 CLONGR=DATAN2(G,H)+CLNGO      00013370
ISN 1282      CLONGO=CLONGR*RADDG      00013380
ISN 1283      GO TO 2270      00013390
ISN 1284      2140 AA=YP/AK      00013400
ISN 1285      BB=XP*XP/AK/AK+AA*AA      00013410
ISN 1286      PHIR=AA      00013420
ISN 1287      2150 SPH=DSIN(PHIR)      00013430
ISN 1288      S2PH=DSIN(2.D0*PHIR)      00013440
ISN 1289      CC=DSQRT(1.D0-EE*SPH*SPH)*DTAN(PHIR)      00013450
ISN 1290      BIGEM=EFO*PHIR-EF1*S2PH+EF2*DSIN(4.D0*PHIR)      00013460
ISN 1291      EMPR=EFO-2.D0*EF1*DCOS(2.D0*PHIR)+4.D0*EF2*DCOS(4.D0*PHIR)      00013470
ISN 1292      DPH=-(2.D0*AA*(CC*BIGEM+1.D0)-2.D0*BIGEM-(BIGEM*BIGEM+BB)*CC)/(EE*00013480
      *S2PH*(BIGEM*BIGEM+BB-2.D0*AA*BIGEM)/2.D0/CC+2.D0*(AA-BIGEM)*(CC*EM00013490
      *PR-2.D0/S2PH)-2.D0*EMPR)      00013500
ISN 1293      PHIR=PHIR+DPH      00013510
ISN 1294      IF (DABS(DPH).LT.CONV2) GO TO 2180      00013520
ISN 1296      M=M+1      00013530
ISN 1297      IF (M.GT.20) GO TO 2160      00013540
ISN 1299      GO TO 2150      00013550
ISN 1300      2160 WRITE (6,2170)      00013560
ISN 1301      2170 FORMAT (1H0,2X,'TOO MANY ITERATIONS IN INVERSE POLYCONIC.')      00013570
ISN 1302      GO TO 2060      00013580
ISN 1303      2180 PHID=PHIR*RADDG      00013590
ISN 1304      CLONGR=DARSIN(XP*CC/AK)/SPH+CLONGO      00013600
ISN 1305      CLONGO=CLONGR*RADDG      00013610
ISN 1306      GO TO 2270      00013620
ISN 1307      2190 PHI1=YP/AK      00013630
ISN 1308      M=0      00013640
ISN 1309      2200 DELT=(YP/AK+EF1*DSIN(2.D0*PHI1)-EF2*DSIN(4.D0*PHI1))/EFO-PHI1      00013650
ISN 1310      PHI1=PHI1+DELT      00013660
ISN 1311      IF (DABS(DELT).LT.CONV2) GO TO 2230      00013670
ISN 1313      M=M+1      00013680
ISN 1314      IF (M.GT.20) GO TO 2210      00013690
ISN 1316      GO TO 2200      00013700
ISN 1317      2210 WRITE (6,2220)      00013710
ISN 1318      2220 FORMAT (1H0,2X,'TOO MANY ITERATIONS IN INVERSE ELLIPSOIDAL TRANSVE00013720
      *RSE MERCATOR.')      00013730
ISN 1319      GO TO 2060      00013740
ISN 1320      2230 SPH=DSIN(PHI1)      00013750
ISN 1321      CPH=DCOS(PHI1)      00013760
ISN 1322      TPH=SPH/CPH      00013770
ISN 1323      FF=DSQRT(1.D0-E2*SPH*SPH)      00013780

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ISN 1324      CC=EPR*CPH*CPH                      00013790
ISN 1325      T=TPH*TPH                          00013800
ISN 1326      EN=AK/FF                          00013810
ISN 1327      RR=AK*(1.D0-E2)/(FF**3)            00013820
ISN 1328      DD=XP/EN                          00013830
ISN 1329      F1=5.D0+3.D0*T+10.D0*CC-4.D0*CC*CC-9.D0*EPR 00013840
ISN 1330      F2=61.D0+90.D0*T+298.D0*CC+45.D0*T*T-252.D0*EPR-3.D0*CC*CC 00013850
ISN 1331      F3=1.D0+2.D0*T+CC                00013860
ISN 1332      F4=5.D0-2.D0*CC+28.D0*T-3.D0*CC*CC+8.D0*EPR+24.D0*T*T 00013870
ISN 1333      PHIR=PHI1-(EN*TPH/RR)*(DD*DD/2.D0-FI*(DD**4)/24.D0+F2*(DD**6)/720.D0) 00013880
ISN 1334      PHID=PHIR*RADDG                    00013890
ISN 1335      CLNGR=CLONG0+(DD-F3*(DD**3)/6.D0+F4*(DD**5)/120.D0)/CPH 00013910
ISN 1336      CLONGD=CLNGR*RADDG                 00013920
ISN 1337      GO TO 2270                         00013930
ISN 1338      2240 PHIR=YP/AK                    00013940
ISN 1339      PHID=PHIR*RADDG                   00013950
ISN 1340      CLONGD=CLNG0D+XP*180.D0/(AK*PI*DCOS(PHIR)) 00013960
ISN 1341      GO TO 2270                         00013970
ISN 1342      2250 THF=DARSIN(YP/AK/SQ2)          00013980
ISN 1343      PHIF=(2.D0*THF+DSIN(2.D0*THF))/PI 00013990
ISN 1344      PHID=DARSIN(PHIF)*RADDG            00014000
ISN 1345      CLONGD=(XP/AK)*90.D0/SQ2/DCOS(THF)+CLNG0D 00014010
ISN 1346      GO TO 2270                         00014020
ISN 1347      2260 CONTINUE                      00014030
ISN 1348      CLONGD=XP*RADDG/AK                 00014040
ISN 1349      2270 CONTINUE                      00014050
ISN 1350      IF (CLONGD.LT.-180.D0) CLONGD=CLONGD+360.D0 00014060
ISN 1352      IF (CLONGD.GT.180.D0) CLONGD=CLONGD-360.D0 00014070
ISN 1354      WRITE (6,2280) X1,Y1,PHID,CLONGD 00014080
ISN 1355      2280 FORMAT (1H,2X,'X=',F10.6,' Y=',F10.6,' LAT=',F10.4,' DEG. LONG 00014090
ISN 1356      *='F10.4,' DEG.')
ISN 1356      GO TO 2060                         00014100
C                                                    00014110
C                                                    00014120
C COMPUTE LAT/LONG FOR OTHER X,Y POINTS, BASED ON PARAMETERS FOR 00014130
C CONIC PROJECTIONS.                               00014140
C                                                    00014150
ISN 1357      2290 CONTINUE                      00014160
ISN 1358      MP=2                              00014170
ISN 1359      SX=0.D0                          00014180
ISN 1360      SY=0.D0                          00014190
ISN 1361      SX1=0.D0                        00014200
ISN 1362      SY1=0.D0                        00014210
ISN 1363      DO 2300 I=1,9                   00014220
ISN 1364      PHI1=PHI(I)                     00014230
ISN 1365      CLONG1=CLONG(I)                  00014240
ISN 1366      GO TO 2770                       00014250
ISN 1367      2300 CONTINUE                     00014260
ISN 1368      GO TO 2670                       00014270
ISN 1369      2310 CONTINUE                     00014280
ISN 1370      A1=1.D0                         00014290
ISN 1371      A5=1.D0                         00014300

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ISN 1372	2320	CONTINUE	00014310
ISN 1373		READ (5,2070) NN,X1,Y1	00014320
ISN 1374		IF (NN.EQ.1) GO TO 2870	00014330
ISN 1376		IF (MM.NE.0) X1=X1/2000.DO	00014340
ISN 1378		IF (MM.NE.0) Y1=Y1/2000.DO	00014350
ISN 1380	2330	CONTINUE	00014360
ISN 1381		IF (DABS(DABS(EN)-1.DO).LT.CONV1*5.DO) EN=DSIGN(1.DO,EN)	00014370
ISN 1383		XR=A1*X1+A2*Y1+A3	00014380
ISN 1384		YR=A4*X1+A5*Y1+A6	00014390
ISN 1385		DX=XR-X0	00014400
ISN 1386		DY=YR-Y0	00014410
ISN 1387		CLONGR=(DATAN2((DX*DSIGN(1.DO,EN)),(-DY*DSIGN(1.DO,EN)))-	00014420
		*TH)/EN	00014430
ISN 1388		CLONGD=CLONGR*RADDG	00014440
ISN 1389		IF (CLONGD.LT.-180.DO) CLONGD=CLONGD+360.DO	00014450
ISN 1391		IF (CLONGD.GT.180.DO) CLONGD=CLONGD-360.DO	00014460
ISN 1393		IF (N.EQ.6) GO TO 2335	00014470
ISN 1395		IF (N.EQ.7) GO TO 2340	00014480
ISN 1397		IF (N.EQ.8) GO TO 2350	00014490
ISN 1399		IF (N.EQ.9) GO TO 2360	00014500
ISN 1401		IF (N.EQ.10) GO TO 2370	00014510
ISN 1403		IF (N.EQ.11) GO TO 2380	00014520
ISN 1405		IF (N.EQ.12) GO TO 2390	00014530
ISN 1407		IF (N.EQ.13) GO TO 2400	00014540
ISN 1409		IF (N.EQ.14) GO TO 2410	00014550
ISN 1411	2335	RHI=DSIGN(DSQRT(DX*DX+DY*DY),EN)	00014560
ISN 1412		T=(RHI/FF)**(1.DO/EM)	00014570
ISN 1413		PHID=90.DO-360.DO*DATAN(TX/PI)	00014580
ISN 1414		GO TO 2420	00014590
ISN 1415	2340	CONTINUE	00014600
ISN 1416		RHI=DSIGN(DSQRT(DX*DX+DY*DY),EN)	00014610
ISN 1417		T=(RHI/FF)**(1.DO/EN)	00014620
ISN 1418		CALL PHIT (T,E,PHID)	00014630
ISN 1419		GO TO 2420	00014640
ISN 1420	2350	CONTINUE	00014650
ISN 1421		RHOSQ=DX*DX+DY*DY	00014660
ISN 1422		Q=(CP-RHOSQ*EN*EN/AK/AK)/EM	00014670
ISN 1423		CALL PHIQ (Q,E,PHID)	00014680
ISN 1424		GO TO 2420	00014690
ISN 1425	2360	CONTINUE	00014700
ISN 1426		RHOSQ=DX*DX+DY*DY	00014710
ISN 1427		Q=(CP-RHOSQ*EN*EN/AK/AK)/EN	00014720
ISN 1428		PHID=180.DO*DARSIN(Q/2.DO)/PI	00014730
ISN 1429		GO TO 2420	00014740
ISN 1430	2370	CONTINUE	00014750
ISN 1431		RHI=DSIGN(DSQRT(DX*DX+DY*DY),EN)	00014760
ISN 1432		PHIR=G-RHI/AK	00014770
ISN 1433		PHID=180.DO*PHIR/PI	00014780
ISN 1434		GO TO 2420	00014790
ISN 1435	2380	CONTINUE	00014800
ISN 1436		RHI=DSIGN(DSQRT(DX*DX+DY*DY),EN)	00014810
ISN 1437		EM=G-RHI/AK	00014820

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ISN 1438	CALL PHIM (EM,PHID,EFO,EF1,EF2)	00014830
ISN 1439	GO TO 2420	00014840
ISN 1440	2390 CONTINUE	00014850
ISN 1441	RHI=DSQRT(DX*DX+DY*DY)	00014860
ISN 1442	PHID=180.D0*EN*DARCOS(RHI/AK)/PI	00014870
ISN 1443	GO TO 2420	00014880
ISN 1444	2400 CONTINUE	00014890
ISN 1445	RHI=DSQRT(DX*DX+DY*DY)	00014900
ISN 1446	PHID=EN*(90.D0-180.D0*DATAN(RHI/AK)/PI)	00014910
ISN 1447	GO TO 2420	00014920
ISN 1448	2410 CONTINUE	00014930
ISN 1449	RHI=DSQRT(DX*DX+DY*DY)/AK	00014940
ISN 1450	SINZ=(P-DSQRT(1.D0-RHI*RHI*(P+1.D0)/(P-1.D0)))/((P-1.D0)/RHI+RHI/(P-1.D0))	00014950
ISN 1451	Z=DARSIN(SINZ)	00014960
ISN 1452	RHI1=(P-1.D0)*SINZ/(P-DCOS(Z))	00014970
ISN 1453	IF (DABS(RHI1-RHI).GT.CONV2) Z=PI-Z	00014980
ISN 1454	PHID=(90.D0-Z*RADDG)*EN	00014990
ISN 1455	2420 CONTINUE	00015000
ISN 1456	WRITE (6,2280) X1,Y1,PHID,CLONGD	00015010
ISN 1457	GO TO 2320	00015020
ISN 1458		00015030
	C	00015040
	C COMPUTE LAT/LONG FOR OTHER X,Y POINTS, BASED ON PARAMETERS FOR	00015050
	C AZIMUTHAL PROJECTIONS.	00015060
	C	00015070
ISN 1459	2430 CONTINUE	00015080
ISN 1460	WRITE (6,2440) PHIOD,CLNGOD,SCALE	00015090
ISN 1461	2440 FORMAT (1H,2X,'CENTERED AT',F10.4,' LAT. AND',F10.4,' LONG. SCALE	00015100
	*E=1/' ,F10.1)	00015110
ISN 1462	MP=1	00015120
ISN 1463	SX=0.D0	00015130
ISN 1464	SY=0.D0	00015140
ISN 1465	SX1=0.D0	00015150
ISN 1466	SY1=0.D0	00015160
ISN 1467	DO 2450 I=1,9	00015170
ISN 1468	PHI1=PHI(I)	00015180
ISN 1469	CLONG1=CLONG(I)	00015190
ISN 1470	GO TO 2720	00015200
ISN 1471	2450 CONTINUE	00015210
ISN 1472	GO TO 2670	00015220
ISN 1473	2460 CONTINUE	00015230
ISN 1474	A1=1.D0	00015240
ISN 1475	A5=1.D0	00015250
ISN 1476	2470 CONTINUE	00015260
ISN 1477	READ (5,2070) NN,X1,Y1	00015270
ISN 1478	IF (NN.EQ.1) GO TO 2870	00015280
ISN 1480	IF (MM.NE.0) X1=X1/2000.D0	00015290
ISN 1482	IF (MM.NE.0) Y1=Y1/2000.D0	00015300
ISN 1484	2480 CONTINUE	00015310
ISN 1485	XR=A1*X1+A2*Y1+A3	00015320
ISN 1486	YR=A4*X1+A5*Y1+A6	00015330
ISN 1487	DX=XR-X0	00015340

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ISN 1488      DY=YR-YO                      00015350
ISN 1489      XP=DX*CTH+DY*STH              00015360
ISN 1490      YP=DY*CTH-DX*STH              00015370
ISN 1491      RHI=DSQRT(DX*DX+DY*DY)/AK      00015380
ISN 1492      IF (RHI.LT.CONV2) PHIR=PHIO    00015390
ISN 1494      IF (RHI.LT.CONV2) CLONGR=CLONGO 00015400
ISN 1496      IF (RHI.LT.CONV2) GO TO 2530    00015410
ISN 1498      IF (N.EQ.19) GO TO 2500        00015420
ISN 1500      IF (N.EQ.20) GO TO 2510        00015430
ISN 1502      IF (N.EQ.21) GO TO 2485        00015440
ISN 1504      IF (N.EQ.22.OR.N.EQ.23) GO TO 2490 00015450
ISN 1506      2485 Z=DARSIN(RHI)              00015460
ISN 1507      GO TO 2520                     00015470
ISN 1508      2490 Z=DARSIN((P-DSQRT(1.D0-RHI*RHI*(P+1.D0)/(P-1.D0)))/((P-1.D0)/RHI+ 00015480
                *RHI/(P-1.D0)))              00015490
ISN 1509      GO TO 2520                     00015500
ISN 1510      2500 Z=2.D0*DARSIN(RHI/2.D0)    00015510
ISN 1511      GO TO 2520                     00015520
ISN 1512      2510 Z=RHI                     00015530
ISN 1513      2520 CONTINUE                  00015540
ISN 1514      SPHIR=DCOS(Z)*SPO+YP*DSIN(Z)*CPO/RHI/AK 00015550
ISN 1515      PHIR=DARSIN(SPHIR)             00015560
ISN 1516      B=DCOS(Z)-SPO*SPHIR            00015570
ISN 1517      IF (DABS(B).LT.CONV2.AND.DABS(XP).LT.CONV2) GO TO 2530 00015580
ISN 1519      CLONGR=CLONGO+DATAN2((XP*DSIN(Z)*CPO),(B*RHI*AK)) 00015590
ISN 1520      2530 CLONGD=CLONGR*RADDG        00015600
ISN 1521      IF (CLONGD.LT.-180.D0) CLONGD=CLONGD+360.D0 00015610
ISN 1523      IF (CLONGD.GT.180.D0) CLONGD=CLONGD-360.D0 00015620
ISN 1525      PHID=PHIR*RADDG                00015630
ISN 1526      IF (DABS(B).LT.CONV2.AND.DABS(XP).LT.CONV1) CLONGR=CLONGO 00015640
ISN 1528      WRITE (6,2280) X1,Y1,PHID,CLONGD 00015650
ISN 1529      GO TO 2470                     00015660
C                                                 00015670
C      COMPUTE LEAST-SQUARES FIT FOR CYLINDRICAL, POLYCONIC, 00015680
C      TRANSVERSE MERCATOR OR PSEUDOCYLINDRICAL PROJECTIONS. 00015690
C                                                 00015700
ISN 1530      2540 IF (N.EQ.1) GO TO 2545     00015710
ISN 1532      IF (N.EQ.2) GO TO 2550         00015720
ISN 1534      IF (N.EQ.3) GO TO 2560         00015730
ISN 1536      IF (N.EQ.4) GO TO 2570         00015740
ISN 1538      IF (N.EQ.5) GO TO 2580         00015750
ISN 1540      IF (N.EQ.15.OR.N.EQ.16) GO TO 2600 00015760
ISN 1542      IF (N.EQ.17) GO TO 2610        00015770
ISN 1544      IF (N.EQ.18) GO TO 2590        00015780
ISN 1546      IF (N.EQ.30) GO TO 2620        00015790
ISN 1548      IF (N.EQ.31) GO TO 2630        00015800
ISN 1550      2545 YP=-AK*DLOG(DTAN(PI/4.D0-PHI1/2.D0)) 00015810
ISN 1551      GO TO 2650                     00015820
ISN 1552      2550 ES=E*DSIN(PHI1)           00015830
ISN 1553      YP=AK*DLOG((DTAN(PI/4.D0+PHI1/2.D0))*((1.D0-ES)/(1.D0+ES)))*(E/2.D0 00015840
                *0))                       00015850
ISN 1554      GO TO 2650                     00015860

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ISN 1555	2560	YP=1.25D0*AK*DLOG(DTAN(PI/4.D0+0.4D0*PHI1))	00015870
ISN 1556		GO TO 2650	00015880
ISN 1557	2570	YP=AKE*PHI1	00015890
ISN 1558		GO TO 2650	00015900
ISN 1559	2580	YP=AKE*CONST*DTAN(PHI1/2.D0)	00015910
ISN 1560		GO TO 2650	00015920
ISN 1561	2590	BB=DCOS(PHI1)*DSIN(CLONG1-CLONG0)	00015930
ISN 1562		XP=0.5D0*AK*DLOG((1.D0+BB)/(1.D0-BB))	00015940
ISN 1563		YP=AK*DATAN2(DTAN(PHI1),DCOS(CLONG1-CLONG0))	00015950
ISN 1564		GO TO 2660	00015960
ISN 1565	2600	IF (DABS(PHI1).LT.1.D-7) GO TO 2605	00015970
ISN 1567		SPH=DSIN(PHI1)	00015980
ISN 1568		CC=DSQRT(1.D0-EE*SPH*SPH)*DTAN(PHI1)	00015990
ISN 1569		XP=AK*DSIN((CLONG1-CLONG0)*SPH)/CC	00016000
ISN 1570		BIGEM=EF0*PHI1-EF1*DSIN(2.D0*PHI1)+EF2*DSIN(4.D0*PHI1)	00016010
ISN 1571		YP=AK*(BIGEM+(1.D0-DCOS((CLONG1-CLONG0)*SPH))/CC)	00016020
ISN 1572		GO TO 2660	00016030
ISN 1573	2605	XP=AK*(CLONG1-CLONG0)	00016040
ISN 1574		YP=0.D0	00016050
ISN 1575		GO TO 2660	00016060
ISN 1576	2610	SPH=DSIN(PHI1)	00016070
ISN 1577		CPH=DCOS(PHI1)	00016080
ISN 1578		TPH=SPH/CPH	00016090
ISN 1579		FE=DSQRT(1.D0-E2*SPH*SPH)	00016100
ISN 1580		AA=(CLONG1-CLONG0)*CPH	00016110
ISN 1581		CC=EPR*CPH*CPH	00016120
ISN 1582		T=TPH*TPH	00016130
ISN 1583		FI=1.D0-T+CC	00016140
ISN 1584		F2=5.D0-18.D0*T+T*T+72.D0*CC-58.D0*EPR	00016150
ISN 1585		F3=5.D0-T+9.D0*CC+4.D0*CC*CC	00016160
ISN 1586		F4=61.D0-58.D0*T+T*T+600.D0*CC-330.D0*EPR	00016170
ISN 1587		YP=AK*(EF0*PHI1-EF1*DSIN(2.D0*PHI1)+EF2*DSIN(4.D0*PHI1)+(TPH/	00016180
		FE)((AA**2)/2.D0+F3*(AA**4)/24.D0+F4*(AA**6)/720.D0))	00016190
ISN 1588		XP=AK*(1.D0/FE)*(AA+FI*(AA**3)/6.D0+F2*(AA**5)/120.D0)	00016200
ISN 1589		GO TO 2660	00016210
ISN 1590	2620	XP=AK*DCOS(PHI1)*(CLONG1-CLONG0)	00016220
ISN 1591		YP=AK*PHI1	00016230
ISN 1592		GO TO 2660	00016240
ISN 1593	2630	M=0	00016250
ISN 1594		THF=PHI1	00016260
ISN 1595		PSPH=PI*DSIN(PHI1)	00016270
ISN 1596	2640	DELT=(PSPH-2.D0*THF-DSIN(2.D0*THF))/2.D0/(1.D0+DCOS(2.D0*THF))	00016280
ISN 1597		THF=THF+DELT	00016290
ISN 1598		M=M+1	00016300
ISN 1599		IF (M.GT.20) GO TO 2060	00016310
ISN 1601		IF (DABS(DELT).GT.CONV2) GO TO 2640	00016320
ISN 1603		SQ2=DSQRT(2.D0)	00016330
ISN 1604		YP=AK*SQ2*DSIN(THF)	00016340
ISN 1605		XP=AK*2.D0*SQ2*DCOS(THF)*(CLONG1-CLONG0)/PI	00016350
ISN 1606		GO TO 2660	00016360
ISN 1607	2650	CONTINUE	00016370
ISN 1608		XP=AK*CLONG1	00016380

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ISN 1609      2660 CONTINUE                                00016390
ISN 1610      X3(I)=XP*CTH-YP*STH+XO                      00016400
ISN 1611      Y3(I)=YP*CTH+XP*STH+YO                      00016410
ISN 1612      SX=SX+X(I)                                  00016420
ISN 1613      SY=SY+Y(I)                                  00016430
ISN 1614      SX1=SX1+X3(I)                               00016440
ISN 1615      SY1=SY1+Y3(I)                               00016450
ISN 1616      IF (MP.EQ.0) GO TO 2040                     00016460
ISN 1618      IF (MP.EQ.1) GO TO 2450                     00016470
C                                                     00016480
C                                                     00016490
C      COMPUTE AFFINE FIT FOR 9 GIVEN POINTS AND CALCULATED PARAMETERS. 00016500
ISN 1620      2670 CONTINUE                                00016510
ISN 1621      SX=SX/9.00                                  00016520
ISN 1622      SY=SY/9.00                                  00016530
ISN 1623      SX1=SX1/9.00                                00016540
ISN 1624      SY1=SY1/9.00                                00016550
ISN 1625      SXSQ=0.00                                    00016560
ISN 1626      SYSQ=0.00                                    00016570
ISN 1627      SX1X=0.00                                    00016580
ISN 1628      SX1Y=0.00                                    00016590
ISN 1629      SY1X=0.00                                    00016600
ISN 1630      SY1Y=0.00                                    00016610
ISN 1631      SXY=0.00                                     00016620
ISN 1632      DO 2680 I=1,9                               00016630
ISN 1633      DX=X(I)-SX                                   00016640
ISN 1634      DY=Y(I)-SY                                   00016650
ISN 1635      DX1=X3(I)-SX1                               00016660
ISN 1636      DY1=Y3(I)-SY1                               00016670
ISN 1637      SXSQ=SXSQ+DX*DX                             00016680
ISN 1638      SYSQ=SYSQ+DY*DY                             00016690
ISN 1639      SX1X=SX1X+DX1*DX                             00016700
ISN 1640      SX1Y=SX1Y+DX1*DY                             00016710
ISN 1641      SY1X=SY1X+DY1*DX                             00016720
ISN 1642      SY1Y=SY1Y+DY1*DY                             00016730
ISN 1643      SXY=SXY+DX*DY                               00016740
ISN 1644      2680 CONTINUE                                00016750
ISN 1645      DD=SXSQ*SYSQ-SXY*SXY                         00016760
ISN 1646      A1=(SYSQ*SX1X-SXY*SX1Y)/DD                  00016770
ISN 1647      A2=(SXSQ*SY1Y-SXY*SY1X)/DD                  00016780
ISN 1648      A3=SX1-A1*SX-A2*SY                           00016790
ISN 1649      A4=(SYSQ*SY1X-SXY*SY1Y)/DD                  00016800
ISN 1650      A5=(SXSQ*SY1Y-SXY*SY1X)/DD                  00016810
ISN 1651      A6=SY1-A4*SX-A5*SY                           00016820
ISN 1652      WRITE (6,2690) A1,A2,A3,A4,A5,A6            00016830
ISN 1653      2690 FORMAT (1H,2X,'AFFINE CONSTANTS A1 TO A6:',6F12.8) 00016840
ISN 1654      REST=0.00                                    00016850
ISN 1655      DO 2700 I=1,9                               00016860
ISN 1656      X2=A1*X(I)+A2*Y(I)+A3                       00016870
ISN 1657      Y2=A4*X(I)+A5*Y(I)+A6                       00016880
ISN 1658      RES=(X3(I)-X2)**2+(Y3(I)-Y2)**2             00016890
ISN 1659      REST=REST+RES                               00016920

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ISN 1660      2700 CONTINUE                                00016930
ISN 1661      RES=DSQRT(REST/9.D0)*25.400                00016940
ISN 1662      WRITE (6,2710) RES                        00016950
ISN 1663      2710 FORMAT (1H,2X,'MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS' 00016960
              * F10.3,' MM.')
ISN 1664      IF (MM.EQ.0.AND.RES.LT.0.01D0) GO TO 2712  00016970
ISN 1666      IF (MM.NE.0.AND.RES.LT.1.5D0) GO TO 2712  00016980
ISN 1668      IF (N.EQ.1) GO TO 230                      00016990
ISN 1670      IF (N.EQ.2) GO TO 270                      00017000
ISN 1672      IF (N.EQ.3) GO TO 310                      00017010
ISN 1674      IF (N.EQ.4) GO TO 340                      00017020
ISN 1676      IF (N.EQ.5) GO TO 1920                    00017030
ISN 1678      IF (N.EQ.6) GO TO 460                     00017040
ISN 1680      IF (N.EQ.7) GO TO 385                     00017050
ISN 1682      IF (N.EQ.8) GO TO 540                     00017060
ISN 1684      IF (N.EQ.9) GO TO 580                     00017070
ISN 1686      IF (N.EQ.10) GO TO 640                    00017080
ISN 1688      IF (N.EQ.11.AND.DABS(DABS(EN)-1.D0).LT.CONV3) GO TO 860 00017090
ISN 1690      IF (N.EQ.11) GO TO 720                    00017100
ISN 1692      IF (N.EQ.12) GO TO 910                    00017110
ISN 1694      IF (N.EQ.13) GO TO 950                    00017120
ISN 1696      IF (N.EQ.14) GO TO 1940                   00017130
ISN 1698      IF (N.GE.15) GO TO 1050                   00017140
ISN 1700      2712 CONTINUE                              00017150
ISN 1701      WRITE (6,2715)                             00017160
ISN 1702      2715 FORMAT (1H )                          00017170
ISN 1703      IF (MP.EQ.0) GO TO 2060                    00017180
ISN 1705      IF (MP.EQ.1) GO TO 2470                    00017190
ISN 1707      IF (MP.EQ.2) GO TO 2320                    00017200
ISN 1709      IF (MP.EQ.3) GO TO 1750                    00017210
ISN 1711      2720 CONTINUE                              00017220
C                                                     00017230
C                                                     00017240
C      COMPUTE LEAST-SQUARES FIT FOR AZIMUTHAL PROJECTIONS. 00017250
C                                                     00017260
ISN 1712      SPH=DSIN(PHI1)                             00017270
ISN 1713      CPH=DCOS(PHI1)                             00017280
ISN 1714      CLG=DCOS(CLONG1-CLONG0)                    00017290
ISN 1715      G=SP0*SPH+CP0*CPH*CLG                     00017300
ISN 1716      IF (N.EQ.22.OR.N.EQ.23) GO TO 2730         00017310
ISN 1718      IF (N.EQ.19) GO TO 2740                    00017320
ISN 1720      IF (N.EQ.20) GO TO 2750                    00017330
ISN 1722      FAC=1.D0                                   00017340
ISN 1723      GO TO 2760                                  00017350
ISN 1724      2730 FAC=(P-1.D0)/(P-G)                     00017360
ISN 1725      GO TO 2760                                  00017370
ISN 1726      2740 FAC=DSQRT(2.D0/(1.D0+G))               00017380
ISN 1727      GO TO 2760                                  00017390
ISN 1728      2750 FAC=DARCOS(G)/DSQRT(1.D0-G*G)          00017400
ISN 1729      2760 CONTINUE                              00017410
ISN 1730      XP=AK*FAC*CPH*DSIN(CLONG1-CLONG0)          00017420
ISN 1731      YP=AK*FAC*(CP0*SPH-SP0*CPH*CLG)           00017430
ISN 1732      GO TO 2660                                  00017440

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ISN 1733	2770	CONTINUE	00017450
	C		00017460
	C	COMPUTE LEAST-SQUARES FIT FOR CONIC PROJECTIONS.	00017470
	C		00017480
ISN 1734		IF (N.EQ.6) GO TO 2775	00017490
ISN 1736		IF (N.EQ.7) GO TO 2780	00017500
ISN 1738		IF (N.EQ.8) GO TO 2790	00017510
ISN 1740		IF (N.EQ.9) GO TO 2800	00017520
ISN 1742		IF (N.EQ.10) GO TO 2810	00017530
ISN 1744		IF (N.EQ.11) GO TO 2820	00017540
ISN 1746		IF (N.EQ.12) GO TO 2830	00017550
ISN 1748		IF (N.EQ.13) GO TO 2840	00017560
ISN 1750		IF (N.EQ.14) GO TO 2850	00017570
ISN 1752	2775	T=DTAN(PI/4.D0-PHI1/2.D0)	00017580
ISN 1753		RHI=FF*(T**EN)	00017590
ISN 1754		GO TO 2860	00017600
ISN 1755	2780	ESP=E*DSIN(PHI1)	00017610
ISN 1756		T=DTAN(PI/4.D0-PHI1/2.D0)/(((1.D0-ESP)/(1.D0+ESP))**(E/2.D0))	00017620
ISN 1757		RHI=FF*(T**EN)	00017630
ISN 1758		GO TO 2860	00017640
ISN 1759	2790	SP=DSIN(PHI1)	00017650
ISN 1760		ESP=E*SP	00017660
ISN 1761		Q=(1.D0-E2)*(SP/(1.D0-ESP*ESP)-(0.5D0/E)*DLOG((1.D0-ESP)/(1.D0+ESP	00017670
		*)	00017680
ISN 1762		RHI=AK*DSQRT(CP-EN*Q)/EN	00017690
ISN 1763		GO TO 2860	00017700
ISN 1764	2800	Q=2.D0*DSIN(PHI1)	00017710
ISN 1765		RHI=AK*DSQRT(CP-EN*Q)/EN	00017720
ISN 1766		GO TO 2860	00017730
ISN 1767	2810	RHI=AK*(G-PHI1)	00017740
ISN 1768		GO TO 2860	00017750
ISN 1769	2820	EM=EF0*PHI1-EF1*DSIN(2.D0*PHI1)+EF2*DSIN(4.D0*PHI1)	00017760
ISN 1770		RHI=AK*(G-EM)	00017770
ISN 1771		GO TO 2860	00017780
ISN 1772	2830	RHI=AK*DCOS(PHI1)*EN	00017790
ISN 1773		GO TO 2860	00017800
ISN 1774	2840	RHI=AK*DTAN(PI/2.D0-PHI1)	00017810
ISN 1775		GO TO 2860	00017820
ISN 1776	2850	RHI=AK*(P-1.D0)*DCOS(PHI1)/(P-DSIN(PHI1))	00017830
ISN 1777	2860	CONTINUE	00017840
ISN 1778		ANG=EN*CLONG1+TH	00017850
ISN 1779		X3(I)=RHI*DSIN(ANG)+X0	00017860
ISN 1780		Y3(I)=-RHI*DCOS(ANG)+Y0	00017870
ISN 1781		SX=SX+X(I)	00017880
ISN 1782		SY=SY+Y(I)	00017890
ISN 1783		SX1=SX1+X3(I)	00017900
ISN 1784		SY1=SY1+Y3(I)	00017910
ISN 1785		GO TO 2300	00017920
ISN 1786	2870	CONTINUE	00017930
ISN 1787		READ (5,2880) NN	00017940
ISN 1788	2880	FORMAT (I1)	00017950
ISN 1789		IF (NN.EQ.0) GO TO 10	00017960

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ISN 1791 2890 WRITE (6,2900)
 ISN 1792 2900 FORMAT (1H0,2X,'NORMAL END OF JOB.')

00017970
 00017980
 00017990
 00018000

3-

END

/ MAIN / SIZE OF PROGRAM 00ADE0 HEXADECIMAL BYTES

NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
A SFA		R*8	001DC8	B SFA		R*8	001DD0	E SFA		R*8	001DD8	F SFA		R*8	002708
G SFA		R*8	001DE0	H SFA		R*8	001DE8	I SFA		I*4	001D90	J SFA		I*4	001D94
K SF		I*4	001D98	L S		I*4	001D9C	M SF		I*4	001DA0	N SF		I*4	001DA4
P SFA		R*8	001DF0	Q SFA		R*8	001DF8	S SFA		R*8	001E00	T SFA		R*8	001E08
U SF		R*8	002720	V SF		R*8	002738	W SFA		R*8	002750	X SFA		R*8	0027B0
Y SFA		R*8	0027F8	Z SFA		R*8	001E10	AA SFA	C	R*8	000000	AK SFA		R*8	001E18
AZ F	C	R*8	000018	A1 SF		R*8	001E20	A2 SF		R*8	001E28	A3 SF		R*8	001E30
A4 SF		R*8	001E38	A5 SF		R*8	001E40	A6 SF		R*8	001E48	BB SFA	C	R*8	000008
CC SFA		R*8	001E50	CN SFA		R*8	001E58	CP SFA		R*8	001E60	DD SF		R*8	001E68
DF		R*8	NR	DM SF	C	R*8	000000	DX SFA		R*8	001E70	DY SFA		R*8	001E78
D1 S		R*8	001E80	EE SFA		R*8	001E88	EM SFA		R*8	001E90	EN SFA		R*8	001E98
ES SFA		R*8	001EA0	E2 SFA		R*8	001EA8	FE SF		R*8	001EB0	FF SFA		R*8	001EB8
FI SF		R*8	001EC0	FO SFA		R*8	002840	FX SF		R*8	001EC8	F2 SF		R*8	001ED0
F3 SF		R*8	001ED8	F4 SF		R*8	001EE0	JJ SF		I*4	001DA8	MM S		I*4	001DAC
MP S		I*4	001DB0	NN S		I*4	001DB4	PI SFA	C	R*8	000000	PK SF		R*8	001EE8
RR SF		R*8	001EF0	R1 SFA		R*8	001EF8	R2 SFA		R*8	001F00	SP SFA		R*8	001F08
SX SF		R*8	001F10	SY SF		R*8	001F18	SZ SF		R*8	001F20	TH SFA		R*8	001F28
WW S		R*8	001F30	XA SFA		R*8	001F38	XD SFA		R*8	001F40	XO SFA	C	R*8	000000
XP SFA		R*8	001F48	XR SF		R*8	001F50	XT SF		R*8	001F58	XX SFA		R*8	001F60
XY SFA		R*8	001F68	X1 SF		R*8	001F70	X2 SF		R*8	001F78	X3 SF		R*8	002858
X7 SF		R*8	001F80	YA SFA		R*8	001F88	YD SFA		R*8	001F90	YO SFA	C	R*8	000008
YP SFA		R*8	001F98	YR SF		R*8	001FA0	YT SF		R*8	001FA8	YY SFA		R*8	001FB0
Y1 SF		R*8	001FB8	Y2 SF		R*8	001FC0	Y3 SF		R*8	0028A0	Y7 SF		R*8	001FC8
ZA FA	C	R*8	000010	ZZ SFA	C	R*8	000030	AA1 SF		R*8	001FD0	AA2 SF		R*8	001FD8
AA3 SF		R*8	001FE0	AA4 SF		R*8	001FE8	AA5 SF		R*8	001FF0	AA6 SF		R*8	001FF8
AA7 SF		R*8	002000	AA8 SF		R*8	002008	AA9 SFA		R*8	002010	AKE SFA		R*8	002018
AK1 SF		R*8	002020	ANG SFA		R*8	002028	CFA SFA		R*8	0028E8	CFB SFA		R*8	002918
CLG SF		R*8	002030	CLO SF		R*8	002038	CL1 SF		R*8	002040	CL4 S		R*8	002048
CPH SF		R*8	002050	CP0 SFA	C	R*8	000028	CTH SFA	C	R*8	000000	DEN SFA		R*8	002058
DLO SFA		R*8	002060	DPH SFA		R*8	002068	DP0 SFA		R*8	002070	DX0 SFA		R*8	002078
DX1 SF		R*8	002080	DY0 SF		R*8	002088	DY1 SF		R*8	002090	D12 SF		R*8	002098
D14 SF		R*8	0020A0	D23 SF		R*8	0020A8	D25 SF		R*8	0020B0	D30 SF		R*8	0020B8
D36 SF		R*8	0020C0	D45 SF		R*8	0020C8	D47 SF		R*8	0020D0	D56 SF		R*8	0020D8
D58 SF		R*8	0020E0	D69 SF		R*8	0020E8	D78 SF		R*8	0020F0	D89 SF		R*8	0020F8
EF0 SFA		R*8	002100	EF1 SFA		R*8	002108	EF2 SFA		R*8	002110	ENN SF		R*8	002118
EPR SF		R*8	002120	ESP SFA		R*8	002128	E03 SF		R*8	002130	FAC SFA		R*8	002138
FFA SF		R*8	002140	FFC SF		R*8	002148	FFD SF		R*8	002150	FFE SF		R*8	002158
FFF SF		R*8	002160	FFG SF		R*8	002168	FF1 SF		R*8	002170	FF2 SF		R*8	002178
FLO SF		R*8	002180	FPH SF		R*8	002188	G12 SFA		R*8	002190	G23 SFA		R*8	002198
H12 SFA		R*8	0021A0	H23 SFA		R*8	0021A8	NOR S	I*4	001DB8	NUM S		I*4	001DBC	
PHI SFA		R*8	002948	P13 SF		R*8	0021B0	RAD S		R*8	0021B8	RES SFA		R*8	0021C0
RHI SFA		R*8	0021C8	RHO SF		R*8	002990	SLO SF		R*8	0021D0	SLP SF	XF		000000
SPH SFA		R*8	0021D8	SPO SF	C	R*8	000020	SP1 SF		R*8	0021E0	SP2 SF		R*8	0021E8

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SP3 SF	R*8	0021F0	SQR SFA	R*8	0021F8	SQ2 SFA	R*8	002200	STH SF	C	R*8	000008
SX1 SF	R*8	002208	SX1 SF	R*8	002210	SY1 SF	R*8	002218	THF SFA		R*8	002220
TLO SFA	R*8	002228	TL1 SF	R*8	002230	TL4 SF	R*8	002238	TPH SF		R*8	002240
TP1 SF	R*8	002248	XNM SF	R*8	002250	XOA SF	R*8	002258	X12 SFA		R*8	002260
X13 SFA	R*8	002268	X14 SFA	R*8	002270	X23 SFA	R*8	002278	X25 SFA		R*8	002280
X36 SFA	R*8	002288	X45 SFA	R*8	002290	X46 SFA	R*8	002298	X47 SFA		R*8	0022A0
X56 SFA	R*8	0022A8	X58 SFA	R*8	0022B0	X69 SFA	R*8	0022B8	X78 SFA		R*8	0022C0
X79 SFA	R*8	0022C8	X89 SFA	R*8	0022D0	YOA SF	R*8	0022D8	Y01 SF		R*8	0022E0
Y12 SFA	R*8	0022E8	Y13 SFA	R*8	0022F0	Y14 SFA	R*8	0022F8	Y23 SFA		R*8	002300
Y25 SFA	R*8	002308	Y36 SFA	R*8	002310	Y45 SFA	R*8	002318	Y46 SFA		R*8	002320
Y47 SFA	R*8	002328	Y56 SFA	R*8	002330	Y58 SFA	R*8	002338	Y69 SFA		R*8	002340
Y78 SFA	R*8	002348	Y79 SFA	R*8	002350	Y89 SFA	R*8	002358	AA10 SFA		R*8	002360
AA11 SFA	R*8	002368	AA12 SF	R*8	002370	AA13 SF	R*8	002378	AA14 SF		R*8	002380
AA15 SF	R*8	002388	AA16 SF	R*8	002390	A145 SF	R*8	002398	CALC SF	XF		000000
DCOS FA	XF	000000	DD01 SF	R*8	0023A0	DD04 SF	R*8	0023A8	DD14 SFA		R*8	0023B0
DD47 SFA	R*8	0023B8	DELT SFA	R*8	0023C0	DEN1 SF	R*8	0023C8	DEXP F	XF	R*8	000000
DKDL SF	R*8	0023D0	DKDP SF	R*8	0023D8	DLOG F	XF	000000	DSIN FA	XF	R*8	000000
DTAN FA	XF	000000	DY01 SF	R*8	0023E0	EMPR SF	R*8	0023E8	EN12 SF		R*8	0023F0
EN13 SF	R*8	0023F8	FAC1 SFA	R*8	002400	FAC2 SFA	R*8	002408	FL01 SF		R*8	002410
FPL0 SF	R*8	002418	FPPH SF	R*8	002420	FPP0 SF	R*8	002428	HG12 SF		R*8	002430
HG23 SF	R*8	002438	LAST S	I*4	001D0C	LOST S	I*4	001D0C	PHID SFA		R*8	002440
PHIF SFA	R*8	002448	PHIM SF	XF	000000	PHIO SFA	R*8	002450	PHIQ SF	XF		000000
PHIR SFA	R*8	002458	PHIT SF	XF	000000	PHI1 SFA	R*8	002460	PHI2 SF		R*8	002468
PSPH SF	R*8	002470	REST SFA	R*8	002478	RH11 S A	R*8	002480	SINZ SFA		R*8	002488
SPHI SFA	R*8	002490	SXSQ SF	R*8	002498	SX1X SF	R*8	0024A0	SX1Y SF		R*8	0024A8
SYSQ SF	R*8	0024B0	SY1X SF	R*8	0024B8	SY1Y SF	R*8	0024C0	S2PH SF		R*8	0024C8
YX13 SFA	R*8	0024D0	YX46 SFA	R*8	0024D8	YX79 SF	R*8	0024E0	BIGEM SF		R*8	0024E8
CLNGR SF	R*8	0024F0	CLONG SFA	C	000010	CONST SFA	R*8	0024F8	CONV1 S		R*8	002500
CONV2 S	C	000000	CONV3 SF	R*8	002508	CONV4 SF	R*8	002510	DATAN F	XF	R*8	000000
DEN12 SFA	R*8	002518	DEN13 SFA	R*8	002520	DGRAD SF	R*8	002528	DSQRT FA	XF	R*8	000000
D23SQ SF	R*8	002530	D56SQ SF	R*8	002538	D89SQ SF	R*8	002540	EFACT SF	XF		000000
FPL01 SF	R*8	002548	FPL02 SF	R*8	002550	FPL03 SF	R*8	002558	FPP01 SF		R*8	002560
FPP02 SF	R*8	002568	FPP03 SF	R*8	002570	PERSP SF	XF	000000	PHI0D SF		R*8	002578
PHI01 SF	R*8	002580	PHI1D SF	R*8	002588	PHI2D SF	R*8	002590	RADDG SF		R*8	002598
RHOSQ SF	R*8	0025A0	SCALE SF	R*8	0025A8	SPHIR SFA	R*8	0025B0	FDXPD#	XF	R*8	000000
CLNGOD SF	R*8	0025B8	CLONGD SF	R*8	0025C0	CLONG0 SFA	R*8	0025C8	CLONGR SFA		R*8	0025D0
CLONG1 SFA	R*8	0025D8	CLONG2 SF	R*8	0025E0	CLONG3 SF	R*8	0025E8	CLONG4 SF		R*8	0025F0
CLONG5 SF	R*8	0025F8	CLONG6 SF	R*8	002600	CONALB SF	XF	000000	CONEQD SF	XF		000000
CONLAM SF	XF	000000	DARCOS F	XF	000000	DARSIN FA	XF	000000	DATAN2 F	XF	R*8	000000
DIST01 SFA	R*8	002608	DIST04 SFA	R*8	002610	DIST14 SFA	R*8	002618	DIST47 SF		R*8	002620
IBCOM# F	XF	000000	POLYNM SF	XF	000000	SLOP12 SFA	R*8	002628	SLOP13 SFA		R*8	002630
SLOP14 SFA	R*8	002638	SLOP23 SFA	R*8	002640	SLOP25 SFA	R*8	002648	SLOP36 SFA		R*8	002650
SLOP45 SFA	R*8	002658	SLOP46 SFA	R*8	002660	SLOP47 SFA	R*8	002668	SLOP56 SFA		R*8	002670
SLOP58 SFA	R*8	002678	SLOP69 SFA	R*8	002680	SLOP78 SFA	R*8	002688	SLOP79 SFA		R*8	002690
SLOP89 SFA	R*8	002698	SLP123 SFA	R*8	0026A0	SLP124 SFA	R*8	0026A8	SLP125 SFA		R*8	0026B0
SLP145 SFA	R*8	0026B8	SLP146 SFA	R*8	0026C0	SLP147 SFA	R*8	0026C8	SLP179 SFA		R*8	0026D0
SLP256 SFA	R*8	0026D8	SLP258 SFA	R*8	0026E0	SLP369 SFA	R*8	0026E8	SLP456 SFA		R*8	0026F0
SLP458 SFA	R*8	0026F8	SLP789 SFA	R*8	002700							

***** COMMON INFORMATION *****

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NAME OF COMMON BLOCK *			A*	SIZE OF BLOCK 000058 HEXADECIMAL BYTES								
VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	
CTH	R*8	000000	STH	R*8	000008	CLONG	R*8	000010				
NAME OF COMMON BLOCK *			B*	SIZE OF BLOCK 000008 HEXADECIMAL BYTES								
VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	
PI	R*8	000000										
NAME OF COMMON BLOCK *			C*	SIZE OF BLOCK 000010 HEXADECIMAL BYTES								
VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	
XO	R*8	000000	YO	R*8	000008							
NAME OF COMMON BLOCK *			D*	SIZE OF BLOCK 000038 HEXADECIMAL BYTES								
VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	
AA	R*8	000000	BB	R*8	000008	ZA	R*8	000010	AZ	R*8	000018	
SPO	R*8	000020	CPO	R*8	000028	ZZ	R*8	000030				
NAME OF COMMON BLOCK *			E*	SIZE OF BLOCK 000008 HEXADECIMAL BYTES								
VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	
DM	R*8	000000										
NAME OF COMMON BLOCK *			F*	SIZE OF BLOCK 000008 HEXADECIMAL BYTES								
VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	
CONV2	R*8	000000										

SOURCE STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
10	19	003010	30	52	003246	80	133	003802	100	147	0038FA
102	157	003960	108	172	003AC0	150	215	003D8A	180	267	004486
190	276	0044FC	195	283	004570 NR	200	289	00464A	230	296	00469A
240	305	0047E2	270	312	004832	280	320	00491E	310	327	00496E
340	343	004A7E	350	353	004B7E	380	341	004BDA	385	381	004DA6
390	383	004DFC	420	399	004F0E	430	402	004FCE	460	419	00515E
470	422	005228	490	434	0052CE	500	454	005460	520	461	005482
540	463	0054C8	550	465	005504	580	465	00562A	600	497	005694
610	510	005734	630	517	005786	640	518	00579C	650	521	005830
660	522	005844	680	536	0058CA	690	556	005A90	710	563	005AE2
720	564	005AF8	740	567	005B12	760	573	005B56	780	580	005C06

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800 584 005C32	820 588 005C5E	840 592 005C8A	860 596 005CB6
870 604 005D7E	910 611 005DCE	950 617 005E0E	990 631 005F4E
1010 636 005F70	1030 641 005F92	1050 646 005FBE	1060 677 006096
1080 680 0060A2	1100 684 0060B6	1120 688 0060CA	1140 692 0060DE
1160 727 006392	1180 733 0063BC	1200 752 00656C	1210 769 0066B8
1220 777 0066F8	1230 781 006722	1240 797 00681A	1250 799 006834
1260 817 006808	1270 819 006824	1275 833 006CE4	1280 837 006D32
1290 839 006D4E	1300 852 006DDC	1310 857 006E30	1330 860 006E46
1340 862 006E60	1350 871 006F28	1360 872 006F3E	1370 890 007084
1380 914 0071C6	1390 918 0071E4	1400 924 0072C4	1410 928 0072EA
1420 929 0072F2	1430 933 007310	1440 937 007378	1450 950 0073DC
1460 954 007402	1480 984 007572	1485 1019 007752	1500 1022 00777E
1520 1025 0077AA	1540 1028 0077D6	1560 1031 007802	1580 1034 00781E
1600 1037 00783A	1620 1040 007856	1640 1044 00787C	1660 1048 00789E
1680 1051 0078C2	1700 1057 0078EE	1720 1062 007920	1730 1078 007AC6
1740 1080 007AE2 NR	1750 1083 007AEE	1760 1091 007B5A	1770 1116 007D28
1780 1128 007ED8	1790 1135 007F52	1800 1150 008042	1810 1154 008090
1820 1164 00818A	1830 1166 0081A8	1860 1187 00842E	1880 1190 00845A
1900 1192 008470	1920 1195 00848A	1940 1198 0084A6	2000 1201 0084C2
2020 1203 0084D8	2030 1208 008506	2040 1218 008550	2050 1220 00856C NR
2060 1223 008578	2075 1258 0086EE	2080 1261 00873A	2090 1264 00876E
2100 1268 0087C8	2110 1270 0087DE	2120 1272 008814	2130 1281 0088EE
2140 1284 008916	2150 1287 00893E	2160 1300 008926	2180 1303 008B42
2190 1307 008B8E	2200 1309 008BA2	2210 1317 008C3E	2230 1320 008C5A
2240 1338 008E72	2250 1342 008ECA	2260 1347 008F6E	2270 1349 008F7E
2290 1357 008FEE	2300 1367 009038	2310 1369 009054 NR	2320 1372 009060
2330 1380 0090CA	2335 1411 009256	2340 1415 0092DA	2350 1420 009346
2360 1425 009392	2370 1430 0093FC	2380 1435 009452	2390 1440 0094A6
2400 1444 009506	2410 1448 009564	2420 1456 009662	2430 1459 00969E
2450 1471 009716	2460 1473 009732 NR	2470 1476 00973E	2480 1484 0097AA
2485 1506 0098CC	2490 1508 0098E4	2500 1510 009956	2510 1512 00997E
2520 1513 009986	2530 1520 009A62	2540 1530 009B12	2545 1550 009BAC
2550 1552 009BF8	2560 1555 009C8E	2570 1557 009CE2	2580 1559 009CF4
2590 1561 009D28	2600 1565 009DDE	2605 1573 009F02	2610 1576 009F20
2620 1590 00A11A	2630 1593 00A14E	2640 1596 00A178	2650 1607 00A280
2660 1609 00A28C	2670 1620 00A33A	2680 1644 00A44A	2700 1660 00A5F4
2712 1700 00A756	2720 1711 00A7A2	2730 1724 00A844	2740 1726 00A862
2750 1728 00A88C	2760 1729 00A8CC	2770 1733 00A928	2775 1752 00A9A6
2780 1755 00A9EE	2790 1759 00AA8C	2800 1764 00AB46	2810 1767 00AB90
2820 1769 00ABA6	2830 1772 00AC1A	2840 1774 00AC3C	2850 1776 00AC6C
2860 1777 00ACB0	2870 1786 00AD62	2890 1791 00AD8A	

COMPILER GENERATED LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100000	1	002FB0	100001	22	003036	100002	23	00303E	100003	24	003048
100004	25	003054	100005	26	00305E	100006	27	003066	100007	28	003070
100008	29	00307C	100009	42	003086	100010	44	003132	100011	45	00314E
100012	46	003158	100013	47	003174	100014	51	003220	100015	53	00325A
200001	75	0033E6	200002	94	003574	200003	111	003692	100016	125	00375A
100017	129	0037AA	100018	132	0037FA	100019	139	003852	100020	143	0038A2
100021	146	0038F2	200004	149	003906	100022	150	003912	200005	152	00392A

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100023	153	003936	200006	154	003940	100024	155	00394C	100025	160	00399A
100026	161	0039A4	100027	162	0039B0	100028	163	0039BA	100029	164	0039C6
200007	173	003ACC	100030	174	003AD8	200008	175	003AE4	100031	176	003AF0
100032	181	003B42	100033	185	003B92	200009	196	003C60	100034	197	003C6E
100035	199	003C7C	100036	204	003CCE	100037	208	003D1E	100038	214	003D86
200010	221	003E1E	100039	221	003E2C	100040	222	003E34	200011	223	003E42
100041	224	003E50	200012	241	004004	200013	245	004162	100042	253	004220
100043	256	004234	200014	265	004426	100044	268	00449A	100045	272	0044E2
100046	273	0044EA	100047	275	0044F8	100048	284	004578	100049	290	00465E
100050	299	0046AE	100051	306	0047F6	100052	315	004846	100053	321	004932
100054	333	0049C2	100055	334	0049D6	100056	348	004AC6	100057	354	004B92
100058	376	004D12	100059	378	004D2C	100060	379	004D42	100061	382	004DAE
100062	384	004E10	100063	389	004E3C	100064	391	004E50	100065	400	004F16
100066	403	004FE2	100067	408	005010	100068	410	005024	100069	420	005166
100070	423	00523C	100071	428	005268	100072	431	005288	100073	445	0053F0
100074	448	005408	100075	450	005414	100076	464	0054D0	100077	466	005518
100078	471	005544	100079	474	005564	100080	476	00557C	100081	477	005584
100082	491	005658	100083	494	005678	100084	501	0056EE	100085	504	005706
100086	506	005712	100087	520	0057B2	200015	527	005870	100089	528	005884
100090	530	00588E	100091	533	0058AE	100092	547	005A4A	100093	550	005A62
100094	552	005ACE	100095	599	005CDA	100096	605	005D92	200016	648	005FCA
100097	649	005F06	200017	650	005FE2	100098	651	005FEE	100099	653	005FFA
100100	655	006006	100101	657	006012	100102	659	00601E	100103	661	00602A
100104	663	006036	100105	665	006042	100106	667	006050	100107	669	00605E
100108	671	00606C	100109	673	00607A	100110	675	006088	100111	707	006206
100112	708	006212	100113	709	006222	100114	710	006238	100115	746	006524
100116	747	00652E	100117	748	00653E	100118	749	006548	100119	750	006558
100120	768	006662	100121	773	0066D8	100122	774	0066E0	100123	776	0066EC
100124	786	006742	200018	787	006750	100125	788	00675E	100126	790	00676C
100127	791	006774	100128	798	00682E	100129	801	00683C	200019	814	006A46
100130	818	006B1E	100131	821	006B2C	100132	824	006B50	100133	838	006D48
100134	841	006D56	100135	845	006D7E	100136	847	006D8C	100137	849	006D9A
100139	879	006F84	100140	881	006FC0	100141	882	006FD6	100142	883	006FEA
100143	884	007000	100144	889	007076	100145	892	007096	100146	893	0070AC
100147	894	0070C0	100148	895	0070D6	200020	896	0070EA	100149	897	0070FC
100150	899	007116	100151	900	007128	100152	901	00713C	100153	902	007150
100154	904	007166	100155	905	007184	100156	907	007190	100157	909	0071A2
100158	911	0071B0	100159	913	0071BE	100160	940	007386	200021	944	0073AC
100161	945	0073BA	100162	947	0073C8	100163	949	0073D6	100164	957	007424
100165	959	007440	100166	961	00744E	100167	966	0074B2	100168	967	0074C4
100169	968	0074D8	100170	969	0074EC	100171	972	00750E	100172	974	00752C
100173	976	007538	100174	978	007548	100175	980	007556	100176	997	00768A
100177	998	00769E	100178	999	0076AC	100179	1000	0076BC	100180	1003	0076D6
100181	1005	0076E4	100182	1007	0076F2	100183	1009	007700	100184	1013	007728
100185	1015	007736	100186	1017	007744	100187	1069	007944	100188	1079	007ADC
100189	1087	007B2A	100190	1088	007B36	100191	1089	007B42	100192	1090	007B4E
100193	1114	007D18	100194	1115	007D20	100195	1124	007EAE	100196	1125	007EBE
100197	1126	007EC8	100198	1130	007EEA	100199	1131	007F00	100200	1136	007F62
100201	1137	007F6A	100202	1139	007F78	100203	1151	00804A	100204	1159	008114
100205	1161	008124	100206	1165	0081A0	200022	1174	008304	100207	1184	008402
100208	1207	008500	100209	1215	00852A	100210	1219	008566	100211	1228	0085B2
100212	1229	0085BE	100213	1230	0085CA	100214	1231	0085D6	100215	1232	0085E2

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100216 1240 008662	100217 1242 008670	100218 1244 00867E	100219 1246 00868C
100220 1248 00869A	200023 1249 0086A8	100221 1250 0086B6	100222 1252 0086C4
100223 1254 008602	100224 1256 0086E0	200024 1278 0088CC	100225 1279 0088E0
100226 1296 008B0A	100227 1299 008B20	100228 1313 008C22	100229 1316 008C38
200025 1335 008E24	100230 1351 008F8E	100231 1352 008F9A	100232 1353 008FA8
100233 1354 008FB4	100234 1364 009012	100235 1368 00904E	100236 1376 00909A
100237 1377 0090A6	100238 1378 0090B2	100239 1379 0090BE	100240 1382 0090E6
100241 1383 0090FC	100242 1390 0091B6	100243 1391 0091BE	100244 1392 0091CC
100245 1393 0091B8	100246 1395 0091E6	100247 1397 0091F4	100248 1399 009202
100249 1401 009210	100250 1403 00921E	100251 1405 00922C	100252 1407 00923A
100253 1409 009248	100254 1454 00963C	100255 1455 00964C	100256 1468 0096F0
100257 1472 00972C	100258 1480 00977A	100259 1481 009786	100260 1482 009792
100261 1483 00979E	100262 1493 009852	100263 1494 00985A	100264 1495 00986C
100265 1496 009874	100266 1498 009886	100267 1500 009894	100268 1502 0098A2
100269 1504 0098B0	200026 1505 0098BE	200027 1518 009A0C	100270 1519 009A20
100271 1522 009A7C	100272 1523 009A8A	100273 1524 009A92	100274 1525 009A9E
200028 1527 009ABE	100275 1527 009ACE	100276 1528 009AD6	100277 1532 009B20
100278 1534 009B2E	100279 1536 009B3C	100280 1538 009B4A	100281 1540 009B58
200029 1541 009B66	100282 1542 009B74	100283 1544 009B82	100284 1546 009B90
100285 1548 009B9E	100286 1567 009DEE	200030 1589 00A114	100287 1601 00A1FC
100288 1603 00A20C	100289 1618 00A32C	100290 1633 00A392	100291 1645 00A460
100292 1656 00A568	100293 1661 00A60A	200031 1665 00A654	100294 1666 00A662
200032 1667 00A66E	100295 1668 00A67C	100296 1670 00A688	100297 1672 00A694
100298 1674 00A6A0	100299 1676 00A6AC	100300 1678 00A6BA	100301 1680 00A6C6
100302 1682 00A6B2	100303 1684 00A6DE	100304 1686 00A6EA	100305 1688 00A6F6
200033 1689 00A704	100306 1690 00A718	100307 1692 00A724	100308 1694 00A730
100309 1696 00A73C	100310 1698 00A74A	100311 1705 00A778	100312 1707 00A786
100313 1709 00A794	200034 1717 00A80C	100314 1718 00A81A	100315 1720 00A828
100316 1722 00A836	100317 1736 00A936	100318 1738 00A944	100319 1740 00A952
100320 1742 00A960	100321 1744 00A96E	100322 1746 00A97C	100323 1748 00A98A
100324 1750 00A998			

FORMAT STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
15	38	000028	20	40	0000A8	40	53	00010F	50	54	00011B
60	120	00012C	70	122	000131	90	136	000161	101	156	000191
110	177	0001DF	120	194	00021A	130	201	000256	140	211	000291
160	250	0002E2	170	262	000320	220	293	000369	260	309	0003BB
300	324	000406	330	340	000444	370	358	0004B0	400	385	0004EE
410	396	000519	440	404	000587	450	416	0005B4	480	424	000624
510	458	000651	530	462	0006D4	560	467	000708	570	482	000733
590	487	0007B5	620	514	0007DA	670	524	000856	700	560	00087D
730	565	0008FA	750	570	00095D	770	577	0009B1	790	581	000A07
810	585	000A61	830	589	000AB9	850	593	000B0A	900	608	000B5D
940	614	000B9D	970	628	000BD7	1170	731	000C5A	1465	958	000C74
1470	973	000C96	1490	1020	000CCD	1510	1023	000D41	1530	1026	000DB8
1550	1029	000E15	1570	1032	000E75	1590	1035	000EAF	1610	1038	000EE2
1630	1041	000F0C	1650	1045	000F41	1670	1049	000F67	1690	1053	000FD7
1710	1060	001035	1850	1185	00107F	1870	1188	0010D9	1890	1191	001132
1910	1193	00115C	1930	1196	0011BC	1950	1199	001221	2010	1202	001282
2070	1225	0012DB	2170	1301	0012E6	2220	1318	001318	2280	1355	001360

*** K08 ***

*** K08 ***

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2440 1461 00139A	2690 1653 001304	2710 1663 0013FC	2715 1702 00143F		
2880 1788 001444	2900 1792 001448				

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(I)

STATISTICS SOURCE STATEMENTS = 1793, PROGRAM SIZE = 44512, SUBPROGRAM NAME = MAIN

STATISTICS NO DIAGNOSTICS GENERATED

***** END OF COMPILATION *****

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REQUESTED OPTIONS:

OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)
 SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(1)

```

ISN 0002      SUBROUTINE CALC (PHI,CLONGO,PHIO,I)                00000010
C                                                     00000020
C THIS SUBROUTINE DETERMINES CERTAIN TERMS FOR AZIMUTHAL COMPUTAT'S. 00000030
C                                                     00000040
ISN 0003      IMPLICIT REAL*8 (A-H,O-Z)                        00000050
ISN 0004      COMMON /A/ CTH,STH,CLONG                        00000060
ISN 0005      COMMON /D/ AA,BB,ZA,AZ,SPO,CPO,ZZ                00000070
ISN 0006      DIMENSION PHI(9),CLONG(9)                        00000080
ISN 0007      CP=DCOS(PHI(I))                                  00000090
ISN 0008      XX=CP*DCOS(CLONG(I))                              00000100
ISN 0009      YY=CP*DSIN(CLONG(I))                              00000110
ISN 0010      ZZ=DSIN(PHI(I))                                  00000120
ISN 0011      SPO=DSIN(PHIO)                                    00000130
ISN 0012      CPO=DCOS(PHIO)                                    00000140
ISN 0013      SCLO=DSIN(CLONGO)                                00000150
ISN 0014      CCLO=DCOS(CLONGO)                                00000160
ISN 0015      AA=YY*SCLO+XX*CCLO                                00000170
ISN 0016      BB=YY*CCLO-XX*SCLO                                00000180
ISN 0017      ZA=ZZ*SPO+AA*CPO                                  00000190
ISN 0018      AZ=ZZ*CPO-AA*SPO                                  00000200
ISN 0019      RETURN                                           00000210
ISN 0020      END                                              00000220
  
```

/				CALC /				SIZE OF PROGRAM 0002B0 HEXADECIMAL BYTES							
NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
I	FA	I*4	000088	AA	SF	C	R*8	AZ	S	C	R*8	BB	S	C	R*8
CP	SF	R*8	000090	XX	SF	R*8	000098	YY	SF	R*8	0000A0	ZA	S	C	R*8
ZZ	SF	C	R*8	CPO	SF	C	R*8	CTH		C	R*8	PHI	FA	XR	R*8
SPO	SF	C	R*8	STH		C	R*8	CALC		R*8	0000A8	CCLO	SF	R*8	0000B0
DCOS	F	XF	R*8	DSIN	F	XF	R*8	PHIO	FA	R*8	0000B8	SCLO	SF	R*8	0000C0
CLONG	FA	C	R*8	CLONGO	FA	R*8	0000C8								

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK *				A*	SIZE OF BLOCK				000058 HEXADECIMAL BYTES					
VAR. NAME	TYPE	REL. ADDR.		VAR. NAME	TYPE	REL. ADDR.		VAR. NAME	TYPE	REL. ADDR.		VAR. NAME	TYPE	REL. ADDR.
CTH	R*8	000000	NR	STH	R*8	000008	NR	CLONG	R*8	000010				

NAME OF COMMON BLOCK *				D*	SIZE OF BLOCK				000038 HEXADECIMAL BYTES					
VAR. NAME	TYPE	REL. ADDR.		VAR. NAME	TYPE	REL. ADDR.		VAR. NAME	TYPE	REL. ADDR.		VAR. NAME	TYPE	REL. ADDR.
AA	R*8	000000		BB	R*8	000008		ZA	R*8	000010		AZ	R*8	000018

*** M08 ***

*** M08 ***

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 SPO R*8 000020 CPO R*8 000028 ZZ R*8 000030

COMPILER GENERATED LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100001	2	0000E8									

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(1)

STATISTICS SOURCE STATEMENTS = 19, PROGRAM SIZE = 688, SUBPROGRAM NAME = CALC

STATISTICS NO DIAGNOSTICS GENERATED

***** END OF COMPILATION *****

258K BYTES OF CORE NOT USED

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REQUESTED OPTIONS:

OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)
 SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(1)

```

ISN 0002      SUBROUTINE CONALB (X,Y,EN,F,J,CP,AK)
C              THIS SUBROUTINE DETERMINES WHETHER MAP PROJECTION IS
C              ALBERS EQUAL-AREA CONIC.
C
ISN 0003      IMPLICIT REAL*8 (A-H,O-Z)
ISN 0004      COMMON /A/ CTH,STH,CLONG
ISN 0005      COMMON /C/ X0,Y0
ISN 0006      COMMON /E/ DM
ISN 0007      DIMENSION X(9),Y(9),F(3),CLONG(9),FO(2),RHO(3),DRHO(3),DFO(3)
ISN 0008      J=0
ISN 0009      DO 1 I=1,3
ISN 0010      XD=X0-X(I)
ISN 0011      YD=Y0-Y(I)
ISN 0012      RHO(I)=DSIGN(DSQRT(XD*XD+YD*YD),EN)
ISN 0013      1 CONTINUE
ISN 0014      DO 2 I=1,2
ISN 0015      RHSQ=RHO(I)*RHO(I)-RHO(I+1)*RHO(I+1)
ISN 0016      FO(I)=EN*(F(I+1)*RHO(I)*RHO(I)-F(I)*RHO(I+1)*RHO(I+1))/RHSQ
ISN 0017      DFO(I)=2.00*EN*DM*RHO(I)*RHO(I+1)*(F(I+1)-F(I))*(RHO(I)+
      *RHO(I+1))/RHSQ/RHSQ
ISN 0018      2 CONTINUE
ISN 0019      DELT=1.00-FO(2)/FO(1)
ISN 0020      CONV3=(DABS(FO(1)*DFO(2))+DABS(FO(2)*DFO(1)))/FO(1)/FO(1)
ISN 0021      WRITE (6,100) DELT,CONV3
ISN 0022      100 FORMAT (1H,2X,'FAILURE TO FIT PROJECTION=',F10.6,' TOLERANCE=',F10.6)
ISN 0023      IF (DABS(DELT).GT.(CONV3)) GO TO 10
ISN 0025      CP=(FO(1)+FO(2))/2.00
ISN 0026      J=1
ISN 0027      AK=RHO(1)*EN/DSQRT(CP-EN*F(1))
ISN 0028      10 RETURN
ISN 0029      END

```

/ CONALB / SIZE OF PROGRAM 000492 HEXADECIMAL BYTES

NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
F	FA XR	R*8	000000	I	SF	I*4	0000E0	J	S	I*4	0000E4	X	F XR	R*8	000000
Y	F XR	R*8	000000	AK	S	R*8	0000E8	CP	SFA	R*8	0000F0	DM	F C	R*8	000000
EN	FA	R*8	0000F8	FO	SFA	R*8	000130	XD	SFA	R*8	000100	XO	F C	R*8	000000
YD	SFA	R*8	000108	YO	F C	R*8	000008	CTH	C	R*8	NR	DFO	SFA	R*8	000140
RHO	SF	R*8	000158	STH	C	R*8	NR	DELT	SFA	R*8	000110	DRHO		R*8	NR
RHSQ	SF	R*8	000118	CLONG	C	R*8	NR	CONV3	SF	R*8	000120	DSQRT	FA XF	R*8	000000
CONALB		R*8	000128	IBCOM#	F XF	I*4	000090								

***** COMMON INFORMATION *****

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CONALB

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NAME OF COMMON BLOCK * A* SIZE OF BLOCK 000058 HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
CTH	R*8	000000 NR	STH	R*8	000008 NR	CLONG	R*8	000010 NR			

NAME OF COMMON BLOCK * C* SIZE OF BLOCK 000010 HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
X0	R*8	000000	Y0	R*8	000008						

NAME OF COMMON BLOCK * E* SIZE OF BLOCK 000008 HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
DM	R*8	000000									

SOURCE STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
1	13	000234	2	18	000316	10	28	0003D0			

COMPILER GENERATED LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100001	2	00018C	100002	10	0001DE	100003	14	00023E	100004	15	000240
100005	19	000320	100006	25	000386						

FORMAT STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100	22	000028									

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(I)

STATISTICS SOURCE STATEMENTS = 28, PROGRAM SIZE = 1170, SUBPROGRAM NAME =CONALB

STATISTICS NO DIAGNOSTICS GENERATED

***** END OF COMPIATION *****

258K BYTES OF CORE NOT USED

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REQUESTED OPTIONS:

OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)
 SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(I)

```

ISN 0002      SUBROUTINE CONEQD (X,Y,EN,F,J,G,AK)                00000010
C              THIS SUBROUTINE DETERMINES WHETHER MAP PROJECTION 00000020
C              IS EQUIDISTANT CONIC.                             00000030
C              00000040
C              00000050
ISN 0003      IMPLICIT REAL*8 (A-H,O-Z)                        00000060
ISN 0004      COMMON /A/ CTH,STH,CLONG                          00000070
ISN 0005      COMMON /C/ XO,YO                                00000075
ISN 0006      COMMON /E/ DH                                    00000080
ISN 0007      DIMENSION X(9),Y(9),F(3),CLONG(9),FO(2),RHO(3),DRHO(3),DFO(3) 00000090
ISN 0008      J=0                                              00000100
ISN 0009      DO 1 I=1,3                                       00000110
ISN 0010      XD=XO-X(I)                                       00000120
ISN 0011      YD=Y0-Y(I)                                       00000130
ISN 0012      RHO(I)=DSIGN(DSQRT(XD*XD+YD*YD),EN)              00000140
ISN 0013      1 CONTINUE                                       00000150
ISN 0014      DO 2 I=1,2                                       00000160
ISN 0015      RHOD=RHO(I+1)-RHO(I)                             00000161
ISN 0016      FO(I)=(RHO(I+1)*F(I)-RHO(I)*F(I+1))/RHOD        00000170
ISN 0017      DFO(I)=(F(I+1)-F(I))*DH*(RHO(I)+RHO(I+1))/RHOD/RHOD 00000171
ISN 0018      2 CONTINUE                                       00000180
ISN 0019      DELT=1.00-FO(2)/FO(1)                            00000190
ISN 0020      CONV3=(DABS(FO(1)*DFO(2))+DABS(FO(2)*DFO(1)))/FO(1)/FO(1) 00000191
ISN 0021      WRITE (6,100) DELT,CONV3                        00000200
ISN 0022      100 FORMAT (1H,2X,'FAILURE TO FIT PROJECTION=',F10.6,' TOLERANCE=',F00000210
          *10.6)                                              00000211
ISN 0023      IF (DABS(DELT).GT.(CONV3)) GO TO 10              00000220
ISN 0025      G=(FO(1)+FO(2))/2.00                             00000230
ISN 0026      J=1                                              00000240
ISN 0027      AK=RHO(1)/(G-F(1))                               00000250
ISN 0028      10 RETURN                                       00000280
ISN 0029      END                                             00000290

```

/ CONEQD /

SIZE OF PROGRAM 000404 HEXADECIMAL BYTES

NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	
F	F	XR	R*8 000000	G	SF	R*8 0000E0	I	SF	I*4 0000D8	J	S	I*4 0000DC				
X	F	XR	R*8 000000	Y	F	XR	R*8 000000	AK	S	R*8 0000E8	DH	F	C	R*8 000000		
EN	FA	R*8 0000F0	FO	SFA	R*8 000128	XD	SFA	R*8 0000F8	XO	F	C	R*8 000000				
YD	SFA	R*8 000100	YO	F	C	R*8 000008	CTH	C	R*8 NR	DFO	SFA	R*8 000138				
RHO	SF	R*8 000150	STH	C	R*8 NR	DELT	SFA	R*8 000108	DRHO		R*8 NR					
RHOD	SF	R*8 000110	CLONG	C	R*8 NR	CONV3	SF	R*8 000118	DSQRT	FA	XF	R*8 000000				
CONEQD		R*8 000120	IBCOM#	F	XF	I*4 000000										

***** COMMON INFORMATION *****

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CONEQD

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NAME OF COMMON BLOCK * A* SIZE OF BLOCK 000058 HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
CTH	R*8	000000 NR	STH	R*8	000008 NR	CLONG	R*8	000010 NR			

NAME OF COMMON BLOCK * C* SIZE OF BLOCK 000010 HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
XO	R*8	000000	YO	R*8	000008						

NAME OF COMMON BLOCK * E* SIZE OF BLOCK 000008 HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
DM	R*8	000000									

SOURCE STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
1	13	00021C	2	18	0002B2	10	28	000342			

COMPILER GENERATED LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100001	2	0001A4	100002	10	0001C6	100003	14	000226	100004	15	000228
100005	19	0002BC	100006	25	000322						

FORMAT STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100	22	000028									

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(I)

STATISTICS SOURCE STATEMENTS = 28, PROGRAM SIZE = 1028, SUBPROGRAM NAME =CONEQD

STATISTICS NO DIAGNOSTICS GENERATED

***** END OF COMPILATION *****

258K BYTES OF CORE NOT USED

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REQUESTED OPTIONS:

OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)
 SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(I)

```

ISN 0002      SUBROUTINE CONLAM (X,Y,EN,F,J,FF)                                00000010
C                                                     00000020
C THIS SUBROUTINE DETERMINES WHETHER MAP PROJECTION IS 00000030
C LAMBERT CONFORMAL CONIC.                                00000040
C                                                     00000050
ISN 0003      IMPLICIT REAL*8 (A-H,O-Z)                                00000060
ISN 0004      COMMON /A/ CTH,STH,CLONG                                00000070
ISN 0005      COMMON /B/ PI                                           00000080
ISN 0006      COMMON /C/ X0,Y0                                         00000085
ISN 0007      COMMON /E/ DM                                           00000090
ISN 0008      DIMENSION X(9),Y(9),F(3),FO(3),CLONG(9),DFO(3)         00000100
ISN 0009      J=0                                                       00000110
ISN 0010      DO 1 I=1,3                                                00000120
ISN 0011      XD=X0-X(I)                                                00000130
ISN 0012      YD=Y0-Y(I)                                                00000140
ISN 0013      RH=DSQRT(XD*XD+YD*YD)                                     00000141
ISN 0014      FO(I)=DSIGN(RH/F(I),EN)                                   00000150
ISN 0015      DFO(I)=DM/F(I)                                           00000151
ISN 0016      DELT=1.D0-FO(I)/FO(1)                                     00000152
ISN 0017      IF (I.EQ.1) GO TO 1                                       00000160
ISN 0019      CONV3=(DABS(FO(1)*DFO(I))+DABS(FO(I)*DFO(1)))/FO(1)/FO(1) 00000161
ISN 0020      WRITE (6,100) DELT,CONV3                                  00000180
ISN 0021      100 FORMAT (1H,2X,'FAILURE TO FIT PROJECTION=',F10.6,' TOLERANCE=', 00000190
          *F10.6)                                                       00000191
ISN 0022      IF (DABS(DELT).GT.(CONV3)) GO TO 10                       00000200
ISN 0024      1 CONTINUE                                                00000210
ISN 0025      FF=(FO(1)+FO(2)+FO(3))/3.D0                             00000220
ISN 0026      J=1                                                       00000230
ISN 0027      10 RETURN                                                00000260
ISN 0028      END                                                       00000270

```

/ CONLAM / SIZE OF PROGRAM 000374 HEXADECIMAL BYTES

NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.		
F	FA	XR	R*8	000000	I	SFA	I*4	000008	J	S	I*4	00000C	X	F	XR	R*8	000000
Y	F	XR	R*8	000000	DM	F	C	R*8	000000	EN	FA	R*8	0000E0	FF	S	R*8	0000E8
FO	SFA	R*8	000120	PI	C	R*8	NR	RH	SFA	R*8	0000F0	XD	SFA	R*8	0000F8		
X0	F	C	R*8	000000	YD	SFA	R*8	000100	YO	F	C	R*8	000008	CTH	C	R*8	NR
DFO	SFA	R*8	000138	STH	C	R*8	NR	DELT	SFA	R*8	000108	CLONG	C	R*8	NR		
CONV3	SF	R*8	000110	DSQRT	F	XF	R*8	000000	CONLAM	R*8	000118	IBCOM#	F	XF	I*4	000000	

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * A* SIZE OF BLOCK 000058 HEXADECIMAL BYTES

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CONLAM

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VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
CTH	R*8	000000 NR	STH	R*8	000008 NR	CLONG	R*8	000010 NR			

NAME OF COMMON BLOCK * B* SIZE OF BLOCK 000008 HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
PI	R*8	000000 NR									

NAME OF COMMON BLOCK * C* SIZE OF BLOCK 000010 HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
X0	R*8	000000	Y0	R*8	000008						

NAME OF COMMON BLOCK * E* SIZE OF BLOCK 000008 HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
DM	R*8	000000									

SOURCE STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
1	24	0002A6	10	27	0002C6						

COMPILER GENERATED LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100001	2	000188	100002	11	0001AA	100003	19	000246	100004	25	0002B0

FORMAT STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100	21	000028									

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(1)

STATISTICS SOURCE STATEMENTS = 27, PROGRAM SIZE = 884, SUBPROGRAM NAME =CONLAM

STATISTICS NO DIAGNOSTICS GENERATED

***** END OF COMPILATION *****

258K BYTES OF CORE NOT USED

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REQUESTED OPTIONS:

OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)
 SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(1)

ISN 0002		SUBROUTINE EFAC (E2,EF0,EF1,EF2)	00000010
	C		00000020
	C	THIS SUBROUTINE COMPUTES COEFFICIENTS FOR DISTANCE ALONG	00000030
	C	MERIDIAN OF ELLIPSOID.	00000040
	C		00000050
ISN 0003		IMPLICIT REAL*8 (A-H,O-Z)	00000060
ISN 0004		EF0=1.00-E2/4.00-(E2*E2/64.00)*(3.00+1.2500*E2)	00000070
ISN 0005		EF1=0.37500*E2+(3.00*E2*E2/32.00)*(1.00+15.00*E2/32.00)	00000080
ISN 0006		EF2=15.00*E2*E2*(1.00+0.7500*E2)/256.00	00000090
ISN 0007		RETURN	00000100
ISN 0008		END	00000110

				/	EFAC /	SIZE OF PROGRAM 0001E2 HEXADECIMAL BYTES									
NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
E2	F	R*8	0000D0	EF0 S		R*8	0000D8	EF1 S		R*8	0000E0	EF2 S		R*8	0000E8
EFAC		R*8	0000F0												

COMPILER GENERATED LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100001	2	0000F8									

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(1)

STATISTICS SOURCE STATEMENTS = 7, PROGRAM SIZE = 482, SUBPROGRAM NAME = EFAC

STATISTICS NO DIAGNOSTICS GENERATED

***** END OF COMPILATION *****

258K BYTES OF CORE NOT USED

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REQUESTED OPTIONS:

OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)
 SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(I)

```

ISN 0002      SUBROUTINE MATINV (C,N,B)                                00000010
C                                                     00000020
C THIS SUBROUTINE COMPUTES THE INVERSE OF A SYMMETRICAL SQUARE  00000030
C MATRIX.                                                     00000040
C                                                     00000050
ISN 0003      DOUBLE PRECISION A(6,6),B(6,6),C(6,6),PIVOT        00000060
ISN 0004      DO 1 I=1,N                                           00000070
ISN 0005      DO 1 J=1,N                                           00000080
ISN 0006      1 A(I,J)=C(I,J)                                       00000090
ISN 0007      DO 2 I=1,N                                           00000100
ISN 0008      2 A(I,1)=A(1,I)                                       00000110
ISN 0009      DO 3 I=1,N                                           00000120
ISN 0010      PIVOT=A(I,1)                                          00000130
ISN 0011      A(I,I)=-1.00                                          00000140
ISN 0012      DO 4 J=1,N                                           00000150
ISN 0013      4 A(I,J)=A(I,J)/PIVOT                                00000160
ISN 0014      DO 5 K=1,N                                           00000170
ISN 0015      IF (I.EQ.K) GO TO 5                                    00000180
ISN 0017      IF (A(K,I).EQ.0.00) GO TO 5                          00000190
ISN 0019      DO 6 J=K,N                                           00000200
ISN 0020      IF (I.EQ.J) GO TO 6                                    00000210
ISN 0022      A(K,J)=A(K,J)-A(K,I)*A(I,J)                        00000220
ISN 0023      A(J,K)=A(K,J)                                         00000230
ISN 0024      6 CONTINUE                                           00000240
ISN 0025      5 CONTINUE                                           00000250
ISN 0026      DO 3 K=1,N                                           00000260
ISN 0027      3 A(K,I)=A(I,K)                                       00000270
ISN 0028      DO 7 K=1,N                                           00000280
ISN 0029      DO 7 J=1,N                                           00000290
ISN 0030      7 B(K,J)=-A(K,J)                                       00000300
ISN 0031      90 RETURN                                           00000310
ISN 0032      END                                                  00000320

```

/ MATINV / SIZE OF PROGRAM 000422 HEXADECIMAL BYTES

NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
A	SF	R*8	0000B8	B	S	XR	R*8	C	F	XR	R*8	I	SF	I*4	000098
J	SF	I*4	00009C	K	SF	I*4	0000A0	N	F	I*4	0000A4	PIVOT	SF	R*8	0000B0
MATINV		I*4	0000A8												

SOURCE STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
1	6	000208	2	8	00023E	4	13	000282	6	24	000334

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5 25 00033C 3 27 000346 7 30 00037A 90 31 0003B0

COMPILER GENERATED LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100001	2	0001E8	100002	5	000206	100003	7	000234	100004	7	00023C
100005	9	000258	100006	10	00025A	100007	14	0002AC	100008	15	0002AE
100009	17	0002B4	100010	19	0002CA	100011	20	0002CC	100012	22	0002D2
100014	26	000344	100015	28	00036E	100016	28	000376	100017	29	000378
100018	31	0003A8									

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(I)

STATISTICS SOURCE STATEMENTS = 31, PROGRAM SIZE = 1058, SUBPROGRAM NAME =MATINV

STATISTICS NO DIAGNOSTICS GENERATED

***** END OF COMPILATION *****

254K BYTES OF CORE NOT USED

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REQUESTED OPTIONS:

OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)
 SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(I)

```

ISN 0002      SUBROUTINE NRME (OBEQ,N,M,M1,A,NT,ICOL,JCOL)      00000010
ISN 0003      REAL*8 OBEQ,A      00000020
ISN 0004      DIMENSION OBEQ(1,12),A(1)      00000030
ISN 0005      II=(ICOL-1)*(2*NT+4-ICOL)/2      00000040
ISN 0006      IK=(ICOL*(2*NT+3-ICOL)/2)      00000050
ISN 0007      MM=M*M1+1      00000060
ISN 0008      IJ=II+JCOL-ICOL      00000070
ISN 0009      DO 206 IN=1,N      00000080
ISN 0010      ICT=II      00000090
ISN 0011      IIK=IK      00000100
ISN 0012      DO 201 IM=1,M      00000110
ISN 0013      DO 200 JM=IM,M      00000120
ISN 0014      ICT=ICT+1      00000130
ISN 0015      200 A(ICT)=A(ICT)+OBEQ(IN,IM)*OBEQ(IN,JM)      00000140
ISN 0016      A(IIK)=A(IIK)+OBEQ(IN,IM)*OBEQ(IN,MM)      00000150
ISN 0017      ICT=(ICOL+IM-1)*(2*NT+4-ICOL-IM)/2      00000160
ISN 0018      201 IIK=ICT-ICOL-IM+NT+2      00000170
ISN 0019      IF (M1) 206,206,202      00000180
ISN 0020      202 KM=M+1      00000190
ISN 0021      KM1=M*M1      00000200
ISN 0022      IIJ=IJ      00000210
ISN 0023      DO 203 IM=1,M      00000220
ISN 0024      DO 2202 JM=KM,KM1      00000230
ISN 0025      IIJ=IIJ+1      00000240
ISN 0026      2202 A(IIJ)=A(IIJ)+OBEQ(IN,IM)*OBEQ(IN,JM)      00000250
ISN 0027      203 IIJ=IJ+((2*NT+3-2*ICOL-IM)*IM)/2      00000260
ISN 0028      JJ=(JCOL-1)*(2*NT+4-JCOL)/2      00000270
ISN 0029      JK=(JCOL*(2*NT+3-JCOL)/2)      00000280
ISN 0030      ICT=JJ      00000290
ISN 0031      IIK=JK      00000300
ISN 0032      DO 205 LM=KM,KM1      00000310
ISN 0033      DO 204 JM=LM,KM1      00000320
ISN 0034      ICT=ICT+1      00000330
ISN 0035      204 A(ICT)=A(ICT)+OBEQ(IN,LM)*OBEQ(IN,JM)      00000340
ISN 0036      A(IIK)=A(IIK)+OBEQ(IN,LM)*OBEQ(IN,MM)      00000350
ISN 0037      ICT=(JCOL+LM-KM)*(2*NT-JCOL-LM+KM+3)/2      00000360
ISN 0038      205 IIK=ICT-JCOL-LM+KM+NT+1      00000370
ISN 0039      206 CONTINUE      00000380
ISN 0040      RETURN      00000390
ISN 0041      END      00000400

```

NAME				/ NRME /				SIZE OF PROGRAM 00052C HEXADECEMAL BYTES			
NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
A SF	XR	R*8	000000	M F		I*4	000094	N F		I*4	000098
IJ SF		I*4	0000A0	IK SF		I*4	0000A4	IM SF		I*4	0000A8
								II SF		I*4	00009C
								IN SF		I*4	0000AC

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NRME

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JJ SF	I*4	0000B0	JK SF	I*4	0000B4	JM SF	I*4	0000B8	KM SF	I*4	0000BC
LM SF	I*4	0000C0	MM SF	I*4	0000C4	M1 F	I*4	0000C8	NT F	I*4	0000CC
ICT SF	I*4	0000D0	IIJ SF	I*4	0000D4	IIK SF	I*4	0000D8	KM1 SF	I*4	0000DC
ICOL F	I*4	0000E0	JCOL F	I*4	0000E4	NRME	I*4	0000E8	OBEQ F XR	R*8	000000

SOURCE STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
200	15	00019E	201	18	00025A	202	20	000282	2202	26	0002B0
203	27	0002FA	204	35	000398	205	38	000462	206	39	00048C

COMPILER GENERATED LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100001	2	000108	100002	10	000180	100003	13	000192	100004	14	000194
100005	16	0001E8	100006	19	000278	100007	24	0002A2	100008	25	0002A6
100010	28	000330	100011	33	00038A	100012	34	00038E	100013	36	0003E4
100015	40	00049E									

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(I)

STATISTICS SOURCE STATEMENTS = 40, PROGRAM SIZE = 1324, SUBPROGRAM NAME = NRME

STATISTICS NO DIAGNOSTICS GENERATED

***** END OF COMPILATION *****

250K BYTES OF CORE NOT USED

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REQUESTED OPTIONS:

OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)
SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(1)

```
ISN 0002      SUBROUTINE PERSP (X,Y,PHI,CLONG,E2,D)                00000010
C                                                     00000020
C      THIS SUBROUTINE DETERMINES WHETHER THE PROJECTION IS PERSPECTIVE. 00000030
C                                                     00000040
ISN 0003      IMPLICIT REAL*8 (A-H,O-Z)                        00000050
ISN 0004      DIMENSION C(77),D(12),OBEQ(1,12),X(9),Y(9),PHI(9),CLONG(9) 00000070
ISN 0005      DO 10 I=1,77                                     00000090
ISN 0006      C(I)=0.D0                                         00000100
ISN 0007      10 CONTINUE                                       00000110
ISN 0008      DO 3 I=1,6                                         00000120
ISN 0009      SP=DSIN(PHI(I))                                    00000130
ISN 0010      CP=DCOS(PHI(I))                                    00000140
ISN 0011      ENN=1.D0/DSQRT(1.D0-E2*SP*SP)                    00000150
ISN 0012      XX=ENN*CP*DCOS(CLONG(I))                         00000160
ISN 0013      YY=ENN*CP*DSIN(CLONG(I))                         00000170
ISN 0014      ZZ=ENN*(1.D0-E2)*SP                               00000180
ISN 0015      OBEQ(1,1)=XX                                       00000190
ISN 0016      OBEQ(1,2)=YY                                       00000200
ISN 0017      OBEQ(1,3)=ZZ                                       00000210
ISN 0018      OBEQ(1,4)=1.D0                                     00000220
ISN 0019      OBEQ(1,5)=-X(I)*XX                                00000230
ISN 0020      OBEQ(1,6)=-X(I)*YY                                00000240
ISN 0021      OBEQ(1,7)=-X(I)*ZZ                                00000250
ISN 0022      DO 1 J=8,11                                       00000260
ISN 0023      OBEQ(1,J)=0.D0                                     00000270
ISN 0024      1 CONTINUE                                       00000280
ISN 0025      OBEQ(1,12)=X(I)                                    00000290
ISN 0026      CALL NRME (OBEQ,1,11,0,C,11,1,0)                00000300
ISN 0027      IF (1.EQ.6) GO TO 3                                00000310
ISN 0028      DO 2 J=1,4                                         00000320
ISN 0029      OBEQ (1,J)=0.D0                                    00000330
ISN 0030      2 CONTINUE                                       00000340
ISN 0031      OBEQ(1,5)=-Y(I)*XX                                00000350
ISN 0032      OBEQ(1,6)=-Y(I)*YY                                00000360
ISN 0033      OBEQ(1,7)=-Y(I)*ZZ                                00000370
ISN 0034      OBEQ(1,8)=XX                                       00000380
ISN 0035      OBEQ(1,9)=YY                                       00000390
ISN 0036      OBEQ(1,10)=ZZ                                       00000400
ISN 0037      OBEQ(1,11)=1.D0                                    00000410
ISN 0038      OBEQ(1,12)=Y(I)                                    00000420
ISN 0039      CALL NRME (OBEQ,1,11,0,C,11,1,0)                00000430
ISN 0040      3 CONTINUE                                       00000440
ISN 0041      CALL SMLE (C,11,D,IERR)                          00000450
ISN 0042      DO 6 I=1,11                                       00000451
ISN 0043      IF (DABS(D(I)).LT.1.D-10) D(I)=1.D-10          00000452
ISN 0044      6 CONTINUE                                       00000453
ISN 0045      RETURN                                           00000454
ISN 0046                                           00000455
ISN 0047                                           00000456
```

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PERSP

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ISN 0048

END

00000660

/ PERSP / SIZE OF PROGRAM 0007C2 HEXADECIMAL BYTES

NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
C	SFA	R*8	000158	D	SFA XR	R*8	000000	I	SFA	I*4	000108	J	SF	I*4	00010C
X	F XR	R*8	000000	Y	F XR	R*8	000000	CP	SF	R*8	000118	E2	FA	R*8	000120
SP	SFA	R*8	000128	XX	SF	R*8	000130	YY	SF	R*8	000138	ZZ	SF	R*8	000140
ENN	SF	R*8	000148	PHI	FA XR	R*8	000000	DCOS	F XF	R*8	000000	DSIN	F XF	R*8	000000
IERR	SFA	I*4	000110	NRME	SF XF		000000	OBEQ	SFA	R*8	0003C0	SMLE	SF XF		000000
CLONG	FA XR	R*8	000000	DSQRT	F XF	R*8	000000	PERSP		R*8	000150				

SOURCE STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
10	7	0004A2	1	24	000600	2	31	000640	3	41	0006C2
6	46	000700									

COMPILER GENERATED LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100001	2	00046C	100002	6	000494	100003	8	0004AE	100004	9	0004B2
100005	23	0005F2	100006	25	00060C	100007	29	00062E	100008	30	000632
100009	32	00064A	100010	42	0006CC	100011	44	0006DE	100012	45	0006F2
100013	47	00070C									

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(I)

STATISTICS SOURCE STATEMENTS = 47, PROGRAM SIZE = 1986, SUBPROGRAM NAME = PERSP

STATISTICS NO DIAGNOSTICS GENERATED

***** END OF COMPILATION *****

250K BYTES OF CORE NOT USED

PAGE 1

OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)
SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(I)

```

ISN 0002      SUBROUTINE PHIM (EM,PHID,EFO,EF1,EF2)      00000010
C              C                                         00000020
C              THIS SUBROUTINE COMPUTES LATITUDE FOR A GIVEN DISTANCE ALONG 00000030
C              MERIDIAN IN ELLIPSOIDAL PROJECTIONS.      00000040
C              C                                         00000050
ISN 0003      IMPLICIT REAL*8 (A-H,0-Z)                00000060
ISN 0004      COMMON /B/ PI                             00000070
ISN 0005      COMMON /F/ CONV2                          00000080
ISN 0006      N=0                                         00000090
ISN 0007      PHIR=EM                                    00000100
ISN 0008      1 PHIT=(EM*EF1*DSIN(2.D0*PHIR)-EF2*DSIN(4.D0*PHIR))/EFO      00000110
ISN 0009      N=N+1                                       00000120
ISN 0010      IF (DABS(PHIT-PHIR).LT.CONV2) GO TO 4      00000130
ISN 0011      IF (N.GT.20) GO TO 2                       00000140
ISN 0012      PHIR=PHIT                                   00000150
ISN 0013      GO TO 1                                     00000160
ISN 0014      2 WRITE (6,3)                              00000170
ISN 0015      3 FORMAT (1H0,2X,'TOO MANY ITERATIONS IN COMPUTING LAT. FROM "M".') 00000180
ISN 0016      STOP                                       00000190
ISN 0017      4 PHID=PHIT*180.D0/PI                    00000200
ISN 0018      RETURN                                     00000210
ISN 0019      END                                       00000220

```

[illegible]

***** COMMON INFORMATION *****

[illegible]

LEVEL 2.3.0 (JUNE 78) PHIM OS/360 FORTRAN H EXTENDED DATE 84.250/13.01.48 PAGE 2

SOURCE STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
1	8	00016A	2	16	0001E4	4	19	000206			

COMPILER GENERATED LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100001	2	000150	100002	12	0001D6	100003	14	0001DC			

FORMAT STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
3	17	000028									

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(I)

STATISTICS SOURCE STATEMENTS = 20, PROGRAM SIZE = 634, SUBPROGRAM NAME = PHIM

STATISTICS NO DIAGNOSTICS GENERATED

***** END OF COMPILATION *****

258K BYTES OF CORE NOT USED

PAGE 1

OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)
SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(I)

```

ISN 0002      SUBROUTINE PHIQ (Q,E,PHID)
C
C      THIS SUBROUTINE COMPUTES LAT. FROM "Q" IN ELLIPSOIDAL EQUAL-
C      AREA PROJECTIONS.
C
ISN 0003      IMPLICIT REAL*8 (A-H,O-Z)
ISN 0004      COMMON /B/ PI
ISN 0005      COMMON /F/ CONV2
ISN 0006      N=0
ISN 0007      PHIR=DARSIN(Q/2.D0)
ISN 0008      IF (E.LT.1.D-7) GO TO 4
ISN 0010      1 SP=DSIN(PHIR)
ISN 0011      ES=E*SP
ISN 0012      ESS=1.D0-ES*ES
ISN 0013      CORR=(ESS*ESS/2.D0/DCOS(PHIR))*(Q/(1.D0-E*E)-SP/ESS+(0.5D0/E)*DLOG
* ((1.D0-ES)/(1.D0+ES)))
ISN 0014      N=N+1
ISN 0015      PHIR=PHIR+CORR
ISN 0016      IF (DABS(CORR).LT.CONV2) GO TO 4
ISN 0018      IF (N.GT.20) GO TO 2
ISN 0020      GO TO 1
ISN 0021      2 WRITE (6,3)
ISN 0022      3 FORMAT (1H0,2X,'TOO MANY ITERATIONS IN COMPUTING LAT. FROM "Q".')
ISN 0023      STOP
ISN 0024      4 PHID=PHIR*180.D0/PI
ISN 0025      RETURN
ISN 0026      END

```

[illegible][illegible]

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
PI	R*8	000000									

LEVEL 2.3.0 (JUNE 78) PHIQ OS/360 FORTRAN H EXTENDED DATE 84.250/13.01.49 PAGE 2

NAME OF COMMON BLOCK * F* SIZE OF BLOCK 000008 HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
CONV2	R*8	000000									

SOURCE STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
1	10	0001C8	2	21	00029E	4	24	0002C2			

COMPILER GENERATED LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100001	2	00018C	100002	18	000294	100003	20	00029A			

FORMAT STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
3	22	000028									

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(1)

STATISTICS SOURCE STATEMENTS = 25, PROGRAM SIZE = 818, SUBPROGRAM NAME = PHIQ

STATISTICS NO DIAGNOSTICS GENERATED

***** END OF COMPILATION *****

258K BYTES OF CORE NOT USED

LEVEL 2.3.0 (JUNE 78)

OS/360 FORTRAN H EXTENDED

DATE 84.250/13.01.50

PAGE 1

REQUESTED OPTIONS:

OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)
 SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(1)

```

ISN 0002      SUBROUTINE PHIT (T,E,PHID)                                00000010
C                                                     00000020
C THIS SUBROUTINE COMPUTES LAT. FRO "T" IN ELLIPSOIDAL CONFORMAL  00000030
C PROJECTIONS.                                                     00000040
C                                                     00000050
ISN 0003      IMPLICIT REAL*8 (A-H,O-Z)                             00000060
ISN 0004      COMMON /B/ PI                                           00000070
ISN 0005      COMMON /F/ CONV2                                         00000080
ISN 0006      N=0                                                       00000090
ISN 0007      PHIR=PI/2.D0-2.D0*DATAN(T)                               00000100
ISN 0008      1 ES=E*DSIN(PHIR)                                         00000110
ISN 0009      PHIT=PI/2.D0-2.D0*DATAN(T*((1.D0-ES)/(1.D0+ES)))*(E/2.D0)) 00000120
ISN 0010      N=N+1                                                     00000130
ISN 0011      IF (DABS(PHIT-PHIR).LT.CONV2) GO TO 4                    00000140
ISN 0013      PHIR=PHIT                                                 00000150
ISN 0014      IF (N.GT.20) GO TO 2                                       00000160
ISN 0016      GO TO 1                                                    00000170
ISN 0017      2 WRITE (6,3)                                              00000180
ISN 0018      3 FORMAT (1H0,2X,'TOO MANY ITERATIONS IN COMPUTATIONS OF LAT. FROM " 00000190
      *T".')                                                             00000200
ISN 0019      STOP                                                       00000210
ISN 0020      4 PHID=PHIT*180.D0/PI                                       00000220
ISN 0021      RETURN                                                    00000230
ISN 0022      END                                                       00000240

```

/ PHIT /				SIZE OF PROGRAM 0002E2 HEXADECIMAL BYTES												
NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	
E	FA	R*8	0000F8	N	SF	I*4	0000F4	T	FA	R*8	000100	ES	SFA	R*8	000108	
PI	F	C	R*8	DSIN	F	XF	R*8	PHID	S	R*8	000110	PHIR	SFA	R*8	000118	
PHIT	SFA	R*8	000120	CONV2	C	R*8	000000	DATAN	F	XF	R*8	000000	FDXPD#	XF	R*8	000000
IBCOM#	F	XF	I*4													

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK *				B* SIZE OF BLOCK 000008 HEXADECIMAL BYTES			
VAR. NAME	TYPE	REL. ADDR.		VAR. NAME	TYPE	REL. ADDR.	
PI	R*8	000000					

NAME OF COMMON BLOCK *				F* SIZE OF BLOCK 000008 HEXADECIMAL BYTES			
VAR. NAME	TYPE	REL. ADDR.		VAR. NAME	TYPE	REL. ADDR.	
CONV2	R*8	000000					

LEVEL 2.3.0 (JUNE 78)

PHIT

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SOURCE STATEMENT LABELS

LABEL	ISN	ADDR
1	8	0001A0

LABEL	ISN	ADDR
2	17	000242

LABEL	ISN	ADDR
4	20	000266

LABEL	ISN	ADDR
-------	-----	------

COMPILER GENERATED LABELS

LABEL	ISN	ADDR
100001	2	000160

LABEL	ISN	ADDR
100002	13	000230

LABEL	ISN	ADDR
100003	16	00023E

LABEL	ISN	ADDR
-------	-----	------

FORMAT STATEMENT LABELS

LABEL	ISN	ADDR
3	18	000028

LABEL	ISN	ADDR
-------	-----	------

LABEL	ISN	ADDR
-------	-----	------

LABEL	ISN	ADDR
-------	-----	------

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(1)

STATISTICS SOURCE STATEMENTS = 21, PROGRAM SIZE = 738, SUBPROGRAM NAME = PHIT

STATISTICS NO DIAGNOSTICS GENERATED

***** END OF COMPILATION *****

258K BYTES OF CORE NOT USED

LEVEL 2.3.0 (JUNE 78)

OS/360 FORTRAN H EXTENDED

DATE 84.250/13.01.51

PAGE 1

REQUESTED OPTIONS:

OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)
 SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(I)

```

ISN 0002      SUBROUTINE POLYNM (X,Y,PHI,CLON,CFA,CFB,RESA,XA,YA,A,E2)      00000010
C                                                     00000020
C THIS PROGRAM DETERMINES COEFFICIENTS FOR POLYNOMIALS FOR DIRECT      00000030
C TRANSFORMATION OF QUADRANGLES FROM GEODETIC TO RECTANGULAR      00000040
C COORDINATES, RECTANGULAR TO GEODETIC, OR RECTANGULAR TO      00000050
C RECTANGULAR.      00000060
C                                                     00000070
ISN 0003      IMPLICIT REAL *8 (A-F,O-Z)      00000080
ISN 0004      DIMENSION X(9),Y(9),PHI(9),CLON(9)      00000090
ISN 0005      DIMENSION BA(10,6)      00000100
ISN 0006      DIMENSION BB(6,6),DD(6,10),CFA(6)      00000110
ISN 0007      DIMENSION CFB(6)      00000120
C                                                     00000130
C OBTAIN AVERAGES OF COORDINATES TO REDUCE ROUND OFF ERRORS.      00000140
C                                                     00000150
ISN 0008      XA=0.D0      00000160
ISN 0009      YA=0.D0      00000170
ISN 0010      DO 10 I=1,9      00000180
ISN 0011      XA=XA+X(I)      00000190
ISN 0012      YA=YA+Y(I)      00000200
ISN 0013      10 CONTINUE      00000210
ISN 0014      XA=XA/9.D0      00000220
ISN 0015      YA=YA/9.D0      00000230
C WRITE (6,20) XA,YA      00000240
C 20 FORMAT (1H0,2X,'AVE. COORD. FOR INPUT: X=',F14.8,' Y=',F14.8)      00000250
C WRITE (6,30)      00000260
C 30 FORMAT (1H0,2X,'THESE AVERAGE COORDINATES MUST BE SUBTRACTED FROM      00000270
C *INPUT USING THESE POLYNOMIAL COEFFICIENTS:')      00000280
ISN 0016      DO 40 I=1,9      00000290
ISN 0017      XD=X(I)-XA      00000300
ISN 0018      YD=Y(I)-YA      00000310
ISN 0019      IF (DABS(XD).LT.1.D-15) XD=0.D0      00000320
ISN 0021      IF (DABS(YD).LT.1.D-15) YD=0.D0      00000330
ISN 0023      BA(I,1)=1.D0      00000340
ISN 0024      BA(I,2)=XD      00000350
ISN 0025      BA(I,3)=YD      00000360
ISN 0026      BA(I,4)=XD**2      00000370
ISN 0027      BA(I,5)=XD*YD      00000380
ISN 0028      BA(I,6)=YD**2      00000390
ISN 0029      40 CONTINUE      00000400
C                                                     00000410
C BA IS MATRIX OF ELEMENTS (9 X 6).      00000420
C                                                     00000430
ISN 0030      DO 50 I=1,6      00000440
ISN 0031      DO 50 J=1,6      00000450
ISN 0032      BB(I,J)=0.D0      00000460
ISN 0033      DO 50 II=1,9      00000470

```

LEVEL 2.3.0 (JUNE 78)	POLYNM	OS/360 FORTRAN H EXTENDED	DATE 84.250/13.01.51	PAGE 2
ISN 0034	IF (BA(II,I).EQ.0.D0.OR.BA(II,J).EQ.0.D0) GO TO 50		00000480	
ISN 0036	IF ((DLOG10(DABS(BA(II,I))))+DLOG10(DABS(BA(II,J)))) .LT. -50.D0)		00000490	
	*GO TO 50		00000500	
ISN 0038	BB(I,J)=BB(I,J)+BA(II,I)*BA(II,J)		00000510	
ISN 0039	50 CONTINUE		00000520	
	C		00000530	
	C	BB (6 X 6) IS PRODUCT OF TRANSPOSE OF BA, X BA.	00000540	
	C		00000550	
ISN 0040	CALL MATINV (BB,6,BB)		00000560	
	C		00000570	
	C	NEW BB IS INVERSE OF OLD BB.	00000580	
	C		00000590	
ISN 0041	DO 60 I=1,6		00000600	
ISN 0042	DO 60 J=1,9		00000610	
ISN 0043	DD(I,J)=0.D0		00000620	
ISN 0044	DO 60 II=1,6		00000630	
ISN 0045	IF (BB(I,II).EQ.0.D0.OR.BA(J,II).EQ.0.D0) GO TO 60		00000640	
ISN 0047	IF ((DLOG10(DABS(BB(I,II))))+DLOG10(DABS(BA(J,II)))) .LT. -50.D0)		00000650	
	*GO TO 60		00000660	
ISN 0049	DD(I,J)=DD(I,J)+BB(I,II)*BA(J,II)		00000670	
ISN 0050	60 CONTINUE		00000680	
	C		00000690	
	C	DD (6 X 9) IS PRODUCT OF BB X BA TRANSPOSE.	00000700	
	C		00000710	
ISN 0051	DO 70 I=1,6		00000720	
ISN 0052	CFA(I)=0.D0		00000730	
ISN 0053	CFB(I)=0.D0		00000740	
ISN 0054	DO 70 II=1,9		00000750	
ISN 0055	CFA(I)=CFA(I)+DD(I,II)*CLON(II)		00000760	
ISN 0056	CFB(I)=CFB(I)+DD(I,II)*PHI(II)		00000770	
ISN 0057	70 CONTINUE		00000780	
	C		00000790	
	C	LIST FINAL POLYNOMIAL COEFFICIENTS.	00000800	
	C		00000810	
	C	WRITE (6,80)	00000820	
	C	80 FORMAT (1H0,2X,'COEFFICIENTS FOR LONGITUDE IN RADIANs'/)	00000830	
ISN 0058	N1=3		00000840	
ISN 0059	N2=1		00000850	
ISN 0060	N3=1		00000860	
ISN 0061	DO 100 I=1,3		00000870	
ISN 0062	N4=I-1		00000880	
	C	WRITE (6,90) N4,(CFA(J),J=N2,N3)	00000890	
	C	90 FORMAT (1H,2X,'ORDER=',I2,2X,6D15.7)	00000900	
ISN 0063	N2=N3+1		00000910	
ISN 0064	N3=N2+I		00000920	
ISN 0065	100 CONTINUE		00000930	
	C	WRITE (6,110)	00000940	
	C	110 FORMAT (1H0,2X,'COEFFICIENTS FOR LATITUDE IN RADIANs'/)	00000950	
ISN 0066	N2=1		00000960	
ISN 0067	N3=1		00000970	
ISN 0068	DO 120 I=1,3		00000980	
ISN 0069	N4=I-1		00000990	

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POLYNM

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```

      C      WRITE (6,90) N4,(CFB(J),J=N2,N3)
      ISN 0070      N2=N3+1
      ISN 0071      N3=N2+1
      ISN 0072      120 CONTINUE
      C
      C      CALCULATE RESIDUALS USING POLYNOMIALS.
      C
      ISN 0073      RESA=0.00
      ISN 0074      DO 130 I=1,9
      ISN 0075      XD=X(I)-XA
      ISN 0076      YD=Y(I)-YA
      ISN 0077      XT=CFA(1)+CFA(2)*XD+CFA(3)*YD
      *CFA(4)*XD**2+CFA(5)*XD*YD+CFA(6)*YD**2
      YT=CFB(1)+CFB(2)*XD+CFB(3)*YD
      *CFB(4)*XD**2+CFB(5)*XD*YD+CFB(6)*YD**2
      ISN 0078      RESS=((XT-CLON(I))*DCOS(YT))**2+(YT-PHI(I))**2
      RESA=RESA+RESS
      ISN 0079      130 CONTINUE
      ISN 0082      FAC1=DSQRT((Y(4)-Y(6))**2+(X(4)-X(6))**2)/(PHI(4)-PHI(6))
      ISN 0083      FAC=FAC1*25.400
      ISN 0084      RESA=DSQRT(RESA/9.00)*FAC
      ISN 0085      R=A*(1.00-E2)/(1.00-E2*DSIN(PHI(5))**2)**1.500
      ISN 0086      SCALE=R/FAC1
      ISN 0087      WRITE (6,135) SCALE
      ISN 0088      135 FORMAT (1H0,2X,'IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCA00001240
      *LE=1/'F10.1)
      ISN 0089      WRITE (6,140) RESA
      ISN 0090      140 FORMAT (1H,2X,'MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS'00001270
      *F10.3,' MM.'/)
      ISN 0091      RETURN
      ISN 0092      END

```

/ POLYNM / SIZE OF PROGRAM 000F00 HEXADECIMAL BYTES

NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
A	F	R*8	0001B0	I	SFA	I*4	000194	J	SFA	I*4	000198	R	SF	R*8	0001B8
X	FA XR	R*8	000000	Y	FA XR	R*8	000000	BA	SFA	R*8	000228	BB	SFA	R*8	000408
DD	SF	R*8	000528	E2	F	R*8	0001C0	II	SFA	I*4	00019C	N1	S	I*4	0001A0
N2	SF	I*4	0001A4	N3	SF	I*4	0001A8	N4	S	I*4	0001AC	XA	SF	R*8	0001C8
XD	SFA	R*8	0001D0	XT	SF	R*8	0001D8	YA	SF	R*8	0001E0	YD	SFA	R*8	0001E8
YT	SFA	R*8	0001F0	CFA	SF XR	R*8	000000	CFB	SF XR	R*8	000000	FAC	SF	R*8	0001F8
PHI	FA XR	R*8	000000	CLON	F XR	R*8	000000	DCOS	F XF	R*8	000000	DSIN	F XF	R*8	000000
FAC1	SF	R*8	000200	RESA	SFA	R*8	000208	RESS	SF	R*8	000210	DSQRT	F XF	R*8	000000
SCALE	SF	R*8	000218	FDXPD#	XF	R*8	000000	DLOG10	XF	R*8	000000	IBCOM#	F XF	R*8	000000
MATINV	SF XF		000000	POLYNM		R*8	000220								

SOURCE STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
-------	-----	------	-------	-----	------	-------	-----	------	-------	-----	------

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10	13	0007C6	40	29	000892	50	39	000994	60	50	000AB8
70	57	000B62	100	65	000BA0	120	72	000BCC	130	81	000CEA

COMPILER GENERATED LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100001	2	000774	100002	11	00079A	100003	14	0007D0	100004	17	0007E2
100005	20	000818	100006	21	000820	100007	22	00082E	100008	23	000836
100009	30	00089C	100010	31	00089E	100011	32	0008A0	100012	34	0008B8
200001	35	0008D0	100013	36	0008E8	100014	38	00094A	100015	40	00099E
100016	40	0009A8	100017	40	0009B2	100018	42	0009C2	100019	43	0009C4
100020	45	0009DC	200002	46	0009F4	100021	47	000A0C	100022	49	000A6E
100023	51	000AC2	100024	51	000ACC	100025	51	000AD6	100026	52	000AD8
100027	55	000AF6	100028	58	000B6C	100029	58	000B76	100030	62	000B88
100031	66	000BAA	100032	69	000BB4	100033	73	000BD6	100034	75	000BE0
100035	82	000CF4									

FORMAT STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
135	88	000028	140	90	00006B						

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(1)

STATISTICS SOURCE STATEMENTS = 91, PROGRAM SIZE = 3840, SUBPROGRAM NAME =POLYNM

STATISTICS NO DIAGNOSTICS GENERATED

***** END OF COMPILATION *****

238K BYTES OF CORE NOT USED

LEVEL 2.3.0 (JUNE 78)

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REQUESTED OPTIONS:

OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)
 SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(I)

```

ISN 0002      SUBROUTINE SLP (SLOP1,SLOP2,SLOP3)      00000010
              C                                     00000020
              C THIS SUBROUTINE PLACES ANGLE DIFFERENCES BETWEEN + AND - PI. 00000030
              C                                     00000035
ISN 0003      IMPLICIT REAL*8 (A-H,O-Z)               00000040
ISN 0004      COMMON /B/ PI                           00000050
ISN 0005      SLOP3=SLOP1-SLOP2                       00000060
ISN 0006      IF (SLOP3.GT.PI) SLOP3=SLOP3-2.00*PI    00000070
ISN 0008      IF (SLOP3.LT.(-PI)) SLOP3=SLOP3+2.00*PI 00000080
ISN 0010      RETURN                                   00000090
ISN 0011      END                                     00000100
  
```

/ SLP / SIZE OF PROGRAM 000140 HEXADECIMAL BYTES

NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
PI	F	C	R*8 000000	SLP		R*8 000088		SLOP1	F	R*8 000090		SLOP2	F	R*8 000098	
SLOP3	SF		R*8 0000A0												

***** COMMON INFORMATION *****

NAME OF COMMON BLOCK * B* SIZE OF BLOCK 000008 HEXADECIMAL BYTES

VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.	VAR. NAME	TYPE	REL. ADDR.
PI	R*8	000000									

COMPILER GENERATED LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100001	2	0000AC	100002	7	0000C4	100003	8	0000D2	100004	9	0000E2
100005	10	0000F0									

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(I)

STATISTICS SOURCE STATEMENTS = 10, PROGRAM SIZE = 320, SUBPROGRAM NAME = SLP

STATISTICS NO DIAGNOSTICS GENERATED

***** END OF COMPILATION *****

258K BYTES OF CORE NOT USED

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REQUESTED OPTIONS:

OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)
SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(I)

```
ISN 0002      SUBROUTINE SMLE (A,N,B,IERR)          00000010
ISN 0003      DIMENSION A(1),B(1)                  00000020
ISN 0004      REAL*8 A,B,FAC,FMUL                   00000040
C              BEGIN FORWARD SOLUTION               00000042
C              N1=N+1                                00000050
C              DO 5 I=1,N                            00000060
ISN 0005      II=1+((I-1)*(2*N+4-1))/2             00000070
ISN 0006      IF (A(II)) 1,1,2                      00000080
ISN 0007      1 IERR=II                             00000090
ISN 0008      GO TO 10                              00000100
ISN 0009      2 FMUL=1.00/A(II)                     00000110
ISN 0010      JCOL=I+1                              00000120
ISN 0011      DO 5 J=JCOL,N1                        00000130
ISN 0012      IIJI=II+J-I                           00000140
ISN 0013      FAC=A(IIJI)                           00000150
ISN 0014      A(IIJI)=FAC*FMUL                      00000160
ISN 0015      JJ=J                                  00000170
ISN 0016      IF (JCOL-N1) 2002,5,5                 00000180
ISN 0017      2002 IF (N-JJ) 1002,3,3                00000190
ISN 0018      1002 JJ=N                             00000200
ISN 0019      DO 4 K=JCOL,JJ                        00000210
ISN 0020      KJ=1+J-K+((K-1)*(2*N+4-K))/2          00000220
ISN 0021      IIKI=II+K-I                           00000230
ISN 0022      4 A(KJ)=A(KJ)-FAC*A(IIKI)             00000240
ISN 0023      5 CONTINUE                            00000250
C              BEGIN BACK SOLUTION                  00000260
C              I=N+1                                 00000270
C              I=I-1                                 00000280
ISN 0026      IJ=(I*(2*N+3-1))/2                    00000290
ISN 0027      B(I)=A(IJ)                            00000300
ISN 0028      J=N                                    00000310
ISN 0029      L=2+((I-1)*(2*N+4-1))/2               00000320
ISN 0030      7 IJ=IJ-1                              00000330
ISN 0031      IF (L-IJ) 1007,1007,8                 00000340
ISN 0032      1007 B(I)=B(I)-A(IJ)*B(J)             00000350
ISN 0033      J=J-1                                  00000360
ISN 0034      GO TO 7                                00000370
ISN 0035      8 IF (I-1) 9,9,6                      00000380
ISN 0036      9 IERR=0                               00000390
ISN 0037      10 RETURN                             00000400
ISN 0038      END                                    00000410
ISN 0039      00000420
ISN 0040      00000430
ISN 0040      00000440
ISN 0040      00000450
```

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SMLE

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/ SMLE / SIZE OF PROGRAM 000388 HEXADECIMAL BYTES

NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
A SF	XR	R*8	000000	B SF	XR	R*8	000000	I SF		I*4	00009C	J SF		I*4	0000A0
K SF		I*4	0000A4	L S		I*4	0000A8	N F		I*4	0000AC	II SF		I*4	0000B0
IJ SF		I*4	0000B4	JJ SF		I*4	0000B8	KJ SF		I*4	0000BC	N1 SF		I*4	0000C0
FAC SF		R*8	0000D8	FMUL SF		R*8	0000E0	IIERR S		I*4	0000C4	IIJI SF		I*4	0000C8
IIKI SF		I*4	0000CC	JCOL SF		I*4	0000D0	SMLE		R*4	0000D4				

SOURCE STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
1	9	000156	2	11	00015E	2002	19	0001B2	1002	20	0001BC
3	21	0001C4	4	24	00020A	5	25	00023A	6	27	000254
7	32	0002B6	1007	34	0002CA	8	37	0002FC	9	38	000304
10	39	00030C									

COMPILER GENERATED LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100001	2	000100	100002	7	000120	100003	14	00017C	100004	22	0001CC
100006	26	000244	100007	26	00024E						

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(54) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT GOSTMT NOXREF NOALC NOANSF NOTERM IBM FLAG(I)

STATISTICS SOURCE STATEMENTS = 39, PROGRAM SIZE = 904, SUBPROGRAM NAME = SMLE

STATISTICS NO DIAGNOSTICS GENERATED

***** END OF COMPILATION *****

258K BYTES OF CORE NOT USED

STATISTICS NO DIAGNOSTICS THIS STEP

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.745329	20.213664
41.0000	-100.0000	-1.745329	15.717259
30.0000	-100.0000	-1.745329	10.986123
50.0000	-80.0000	5.235988	20.213664
41.0000	-80.0000	5.235988	15.717259
30.0000	-80.0000	5.235988	10.986123
50.0000	-55.0000	13.962634	20.213664
41.0000	-55.0000	13.962634	15.717259
30.0000	-55.0000	13.962634	10.986123

MERIDIAN CURVATURE=	0.0	TOLERANCE=	0.000087
MERIDIAN CURVATURE=	0.0	TOLERANCE=	0.000087
MERIDIAN CURVATURE=	0.0	TOLERANCE=	0.000087
PARALLEL CURVATURE=	0.0	TOLERANCE=	0.000052
PARALLEL CURVATURE=	0.0	TOLERANCE=	0.000052
PARALLEL CURVATURE=	0.0	TOLERANCE=	0.000052

SKWENESS OF STRAIGHT PARALLEL= 0.0 TOLERANCE= 0.000073
SKWENESS OF STRAIGHT PARALLEL= 0.0 TOLERANCE= 0.000071
UNEQUALITY OF MERIDIAN SPACING= -0.000000 TOLERANCE= 0.000052
SKWENESS OF STRAIGHT MERIDIAN= 0.0 TOLERANCE= 0.000089
SKWENESS OF STRAIGHT MERIDIAN= 0.0 TOLERANCE= 0.000089
LACK OF PERPENDICULARITY OF MERIDIANS AND PARALLELS= 0.000000 TOLERANCE= 0.000073

IF MAP PROJECTION IS SPHERICAL MERCATOR. THE SCALE AT THE EQUATOR =1/12555524.6
AFFINE CONSTANTS A1 TO A6: 1.00000000 0.00000000 -0.00000009 -0.00000000 0.99999997 0.00000050
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -5.235988 Y= 9.017507 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
X= -5.235988 Y= -9.017507 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.745329	20.109824
41.0000	-100.0000	-1.745329	15.628360
30.0000	-100.0000	-1.745329	10.918398
50.0000	-80.0000	5.235988	20.109824
41.0000	-80.0000	5.235988	15.628360
30.0000	-80.0000	5.235988	10.918398
50.0000	-55.0000	13.962634	20.109824
41.0000	-55.0000	13.962634	15.628360
30.0000	-55.0000	13.962634	10.918398

MERIDIAN CURVATURE= 0.0 TOLERANCE= 0.000087
MERIDIAN CURVATURE= 0.0 TOLERANCE= 0.000087
MERIDIAN CURVATURE= 0.0 TOLERANCE= 0.000087
PARALLEL CURVATURE= 0.0 TOLERANCE= 0.000052
PARALLEL CURVATURE= 0.0 TOLERANCE= 0.000052
PARALLEL CURVATURE= 0.0 TOLERANCE= 0.000052
SKWENESS OF STRAIGHT PARALLEL= 0.0 TOLERANCE= 0.000073
SKWENESS OF STRAIGHT PARALLEL= 0.0 TOLERANCE= 0.000071
UNEQUALITY OF MERIDIAN SPACING= -0.000000 TOLERANCE= 0.000052
SKWENESS OF STRAIGHT MERIDIAN= 0.0 TOLERANCE= 0.000089
SKWENESS OF STRAIGHT MERIDIAN= 0.0 TOLERANCE= 0.000089
LACK OF PERPENDICULARITY OF MERIDIANS AND PARALLELS= 0.000000 TOLERANCE= 0.000073

IF MAP PROJECTION IS SPHERICAL MERCATOR. THE SCALE AT THE EQUATOR =1/12555524.6
AFFINE CONSTANTS A1 TO A6: 1.00000000 0.00000000 -0.00000009 -0.00000000 1.00393399 -0.06118206
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.032 MM.

IF MAP PROJECTION IS ELLIPSOIDAL MERCATOR. SCALE AT EQUATOR=1/12555524.6
AFFINE CONSTANTS A1 TO A6: 1.00000000 0.00000000 -0.00000009 -0.00000000 1.00000000 -0.00000006
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -5.235988 Y= 8.960272 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
X= -5.235988 Y= -8.960272 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.136937	10.223556

41.0000	-100.0000	-1.310072	7.079944
30.0000	-100.0000	-1.520784	3.254046
50.0000	-80.0000	3.397060	10.473267
41.0000	-80.0000	3.914370	7.367681
30.0000	-80.0000	4.543957	3.588062
50.0000	-55.0000	8.809085	12.162877
41.0000	-55.0000	10.150548	9.314589
30.0000	-55.0000	11.783162	5.848110

MERIDIAN CURVATURE= -0.000000 TOLERANCE= 0.000116
 MERIDIAN CURVATURE= -0.000000 TOLERANCE= 0.000116
 MERIDIAN CURVATURE= -0.000000 TOLERANCE= 0.000116
 PARALLEL CURVATURE= -0.247588 TOLERANCE= 0.000079

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12527467.6
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.501 MM.

SKEWNESS OF STRAIGHT MERIDIAN= -0.220078 TOLERANCE= 0.000127
 SKEWNESS OF STRAIGHT MERIDIAN= -0.275098 TOLERANCE= 0.000127
 LACK OF CONVERGENCE OF MERIDIANS= 0.000007 TOLERANCE= 0.011213
 MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= -0.000000 TOLERANCE= 0.000019
 UNEQUALITY OF MERIDIAN SPACING= -0.000000 TOLERANCE= 0.000060
 ELLIPSOIDAL LAMBERT CONFORMAL CONIC:
 FAILURE TO FIT PROJECTION= -0.000471 TOLERANCE= 0.000009
 SPHERICAL LAMBERT CONFORMAL CONIC:
 FAILURE TO FIT PROJECTION= 0.000000 TOLERANCE= 0.000009
 FAILURE TO FIT PROJECTION= 0.000000 TOLERANCE= 0.000008

IF MAP PROJECTION IS SPHERICAL LAMBERT CONFORMAL CONIC. SCALE=1/12624738.4 FOR SINGLE STD. LAT. 39.0854 DEG.
 AFFINE CONSTANTS A1 TO A6: 1.00000015 0.00000003 -0.00000001 0.00000002 1.00000011 -0.00000090
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -4.834881 Y= 1.841545 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
 X= -8.536835 Y= -20.382509 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.139151	10.183982
41.0000	-100.0000	-1.312010	7.045465
30.0000	-100.0000	-1.522024	3.232351
50.0000	-80.0000	3.403673	10.434186
41.0000	-80.0000	3.920160	7.333636
30.0000	-80.0000	4.547661	3.566650
50.0000	-55.0000	8.826219	12.127135
41.0000	-55.0000	10.165545	9.283480
30.0000	-55.0000	11.792748	5.828606

MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000116
 MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000116
 MERIDIAN CURVATURE= -0.000000 TOLERANCE= 0.000116
 PARALLEL CURVATURE= -0.247595 TOLERANCE= 0.000079

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12559688.5
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.483 MM.

SKEWNESS OF STRAIGHT MERIDIAN= -0.220085 TOLERANCE= 0.000127
 SKEWNESS OF STRAIGHT MERIDIAN= -0.275106 TOLERANCE= 0.000127

LACK OF CONVERGENCE OF MERIDIANS= 0.000013 TOLERANCE= 0.011255
 MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= -0.000000 TOLERANCE= 0.000019
 UNEQUALITY OF MERIDIAN SPACING= -0.000000 TOLERANCE= 0.000060
 ELLIPSOIDAL LAMBERT CONFORMAL CONIC:
 FAILURE TO FIT PROJECTION= 0.000000 TOLERANCE= 0.000009
 FAILURE TO FIT PROJECTION= 0.000000 TOLERANCE= 0.000008

IF MAP PROJECTION IS ELLIPSOIDAL LAMBERT CONFORMAL CONIC. SCALE=1/12624452.6 FOR SINGLE STD. LAT. 39.0867 DEG.
 AFFINE CONSTANTS A1 TO A6: 1.00000027 0.00000003 0.00000005 -0.00000006 1.00000020 -0.00000134
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -4.837232 Y= 1.828313 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
 X= -8.510364 Y= -20.222047 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.745329	19.072741
41.0000	-100.0000	-1.745329	15.164253
30.0000	-100.0000	-1.745329	10.792368
50.0000	-80.0000	5.235988	19.072741
41.0000	-80.0000	5.235988	15.164253
30.0000	-80.0000	5.235988	10.792368
50.0000	-55.0000	13.962634	19.072741
41.0000	-55.0000	13.962634	15.164253
30.0000	-55.0000	13.962634	10.792368

MERIDIAN CURVATURE= 0.0 TOLERANCE= 0.000097
 MERIDIAN CURVATURE= 0.0 TOLERANCE= 0.000097
 MERIDIAN CURVATURE= 0.0 TOLERANCE= 0.000097
 PARALLEL CURVATURE= 0.0 TOLERANCE= 0.000052
 PARALLEL CURVATURE= 0.0 TOLERANCE= 0.000052
 PARALLEL CURVATURE= 0.0 TOLERANCE= 0.000052
 SKEWNESS OF STRAIGHT PARALLEL= 0.0 TOLERANCE= 0.000080
 SKEWNESS OF STRAIGHT PARALLEL= 0.0 TOLERANCE= 0.000074
 UNEQUALITY OF MERIDIAN SPACING= -0.000000 TOLERANCE= 0.000052
 SKEWNESS OF STRAIGHT MERIDIAN= 0.0 TOLERANCE= 0.000102
 SKEWNESS OF STRAIGHT MERIDIAN= 0.0 TOLERANCE= 0.000102
 LACK OF PERPENDICULARITY OF MERIDIANS AND PARALLELS= 0.000000 TOLERANCE= 0.000080

IF MAP PROJECTION IS SPHERICAL MERCATOR. THE SCALE AT THE EQUATOR =1/12555524.6
 AFFINE CONSTANTS A1 TO A6: 1.00000000 0.00000000 -0.00000010 -0.00000000 1.11375319 -1.70741103
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.685 MM.

IF MAP PROJECTION IS ELLIPSOIDAL MERCATOR. SCALE AT EQUATOR=1/12555524.6
 AFFINE CONSTANTS A1 TO A6: 1.00000000 0.00000000 -0.00000010 -0.00000000 1.10938222 -1.64180387
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.711 MM.

IF MAP PROJECTION IS MILLER CYLINDRICAL. SCALE=1/12555524.6
 AFFINE CONSTANTS A1 TO A6: 1.00000000 0.00000000 -0.00000009 -0.00000000 1.00000000 0.00000003
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -5.235988 Y= 8.909463 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
 X= -5.235988 Y= -8.909463 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.337000	17.453293
41.0000	-100.0000	-1.337000	14.311700
30.0000	-100.0000	-1.337000	10.471976
50.0000	-80.0000	4.010999	17.453293
41.0000	-80.0000	4.010999	14.311700
30.0000	-80.0000	4.010999	10.471976
50.0000	-55.0000	10.695998	17.453293
41.0000	-55.0000	10.695998	14.311700
30.0000	-55.0000	10.695998	10.471976

MERIDIAN CURVATURE=	0.0	TOLERANCE=	0.000116
MERIDIAN CURVATURE=	0.0	TOLERANCE=	0.000116
MERIDIAN CURVATURE=	0.0	TOLERANCE=	0.000116
PARALLEL CURVATURE=	0.0	TOLERANCE=	0.000067
PARALLEL CURVATURE=	0.0	TOLERANCE=	0.000067
PARALLEL CURVATURE=	0.0	TOLERANCE=	0.000067
SKEWNESS OF STRAIGHT PARALLEL=	0.0	TOLERANCE=	0.000101
SKEWNESS OF STRAIGHT PARALLEL=	0.0	TOLERANCE=	0.000089
UNEQUALITY OF MERIDIAN SPACING=	0.000000	TOLERANCE=	0.000067
SKEWNESS OF STRAIGHT MERIDIAN=	0.0	TOLERANCE=	0.000127
SKEWNESS OF STRAIGHT MERIDIAN=	0.0	TOLERANCE=	0.000127
LACK OF PERPENDICULARITY OF MERIDIANS AND PARALLELS=	0.000000	TOLERANCE=	0.000101

IF MAP PROJECTION IS SPHERICAL MERCATOR. THE SCALE AT THE EQUATOR =1/16390073.1
 AFFINE CONSTANTS A1 TO A6: 1.00000000 0.00000000 -0.00000001 -0.00000000 1.01000948 -0.14092323
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 3.150 MM.

IF MAP PROJECTION IS ELLIPSOIDAL MERCATOR. SCALE AT EQUATOR=1/16390073.1
 AFFINE CONSTANTS A1 TO A6: 1.00000000 0.00000000 -0.00000001 -0.00000000 1.00603713 -0.08499665
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 3.162 MM.

IF MAP PROJECTION IS MILLER CYLINDRICAL. SCALE=1/16390073.1
 AFFINE CONSTANTS A1 TO A6: 1.00000000 0.00000000 -0.00000001 -0.00000000 0.90725772 1.30571761
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.670 MM.

IF MAP PROJECTION IS EQUIRECTANGULAR WITH 40.0000 DEG. LAT. N & S AS STANDARD PARALLELS. SCALE=1/12555524.0
 AFFINE CONSTANTS A1 TO A6: 1.00000000 0.00000000 -0.00000003 -0.00000000 1.00000003 -0.00000044
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -4.010999 Y= 8.726646 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
 X= -4.010999 Y= -8.726646 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.234134	15.920739
41.0000	-100.0000	-1.234134	12.765221
30.0000	-100.0000	-1.234134	9.148358
50.0000	-80.0000	3.702402	15.920739
41.0000	-80.0000	3.702402	12.765221
30.0000	-80.0000	3.702402	9.148358
50.0000	-55.0000	9.873073	15.920739
41.0000	-55.0000	9.873073	12.765221
30.0000	-55.0000	9.873073	9.148358

MERIDIAN CURVATURE= 0.0 TOLERANCE= 0.000119

MERIDIAN CURVATURE= 0.0 TOLERANCE= 0.000119
 MERIDIAN CURVATURE= 0.0 TOLERANCE= 0.000119
 PARALLEL CURVATURE= 0.0 TOLERANCE= 0.000073
 PARALLEL CURVATURE= 0.0 TOLERANCE= 0.000073
 PARALLEL CURVATURE= 0.0 TOLERANCE= 0.000073
 SKEWNESS OF STRAIGHT PARALLEL= 0.0 TOLERANCE= 0.000104
 SKEWNESS OF STRAIGHT PARALLEL= 0.0 TOLERANCE= 0.000096
 UNEQUALITY OF MERIDIAN SPACING= 0.000000 TOLERANCE= 0.000073
 SKEWNESS OF STRAIGHT MERIDIAN= 0.0 TOLERANCE= 0.000127
 SKEWNESS OF STRAIGHT MERIDIAN= 0.0 TOLERANCE= 0.000127
 LACK OF PERPENDICULARITY OF MERIDIANS AND PARALLELS= 0.000000 TOLERANCE= 0.000104

IF MAP PROJECTION IS SPHERICAL MERCATOR. THE SCALE AT THE EQUATOR =1/17756193.6
 AFFINE CONSTANTS A1 TO A6: 0.99999999 0.00000000 0.00000011 -0.00000000 0.96251853 0.47269529
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.666 MM.

IF MAP PROJECTION IS ELLIPSOIDAL MERCATOR. SCALE AT EQUATOR=1/17756193.6
 AFFINE CONSTANTS A1 TO A6: 0.99999999 0.00000000 0.00000011 -0.00000000 0.95873885 0.52036248
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.682 MM.

IF MAP PROJECTION IS MILLER CYLINDRICAL. SCALE=1/17756193.6
 AFFINE CONSTANTS A1 TO A6: 0.99999999 0.00000000 0.00000011 -0.00000000 0.86431844 1.71113980
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.426 MM.

IF MAP PROJECTION IS EQUIRECTANGULAR WITH 43.3994 DEG. LAT. N & S AS STANDARD PARALLELS. SCALE=1/12901333.3
 AFFINE CONSTANTS A1 TO A6: 0.99999999 0.00000000 0.00000009 -0.00000000 1.00394521 -0.02431307
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.296 MM.

IF MAP PROJECTION IS GALLS CYLINDRICAL. SCALE=1/12555524.9
 AFFINE CONSTANTS A1 TO A6: 0.99999999 0.00000000 0.00000010 -0.00000000 1.00000006 -0.00000072
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -3.702402 Y= 7.569129 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
 X= -3.702402 Y= -7.569129 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.268884	-14.503409
41.0000	-100.0000	-1.588766	-18.159683
30.0000	-100.0000	-2.012776	-23.006131
50.0000	-80.0000	3.768097	-14.062730
41.0000	-80.0000	4.718025	-17.607910
30.0000	-80.0000	5.977170	-22.307101
50.0000	-55.0000	9.358222	-11.152695
41.0000	-55.0000	11.717408	-13.964263
30.0000	-55.0000	14.844544	-17.691039

MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000096
 MERIDIAN CURVATURE= -0.000000 TOLERANCE= 0.000096
 MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000096
 PARALLEL CURVATURE= -0.392699 TOLERANCE= 0.000071

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/10244942.0
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 5.024 MM.

SKEWNESS OF STRAIGHT MERIDIAN= -0.349066 TOLERANCE= 0.000109
 SKEWNESS OF STRAIGHT MERIDIAN= -0.436332 TOLERANCE= 0.000109

LACK OF CONVERGENCE OF MERIDIANS= -0.000003 TOLERANCE= 0.004485
MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= 0.000000 TOLERANCE= 0.000027
UNEQUALITY OF MERIDIAN SPACING= 0.000000 TOLERANCE= 0.000072
ELLIPSOIDAL LAMBERT CONFORMAL CONIC:
FAILURE TO FIT PROJECTION= -0.000747 TOLERANCE= 0.000012
SPHERICAL LAMBERT CONFORMAL CONIC:
FAILURE TO FIT PROJECTION= -0.000000 TOLERANCE= 0.000012
FAILURE TO FIT PROJECTION= -0.000000 TOLERANCE= 0.000011

IF MAP PROJECTION IS SPHERICAL POLAR STEREOGRAPHIC. SCALE=1/12555526.6 AT POLE.
AFFINE CONSTANTS A1 TO A6: 0.99999981 0.00000003 0.00000020 -0.00000001 0.99999985 -0.00000276
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.030 MM.

X= -6.595437 Y=-24.614505 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
X=-16.250581 Y=-60.647994 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.271175	-14.529594
41.0000	-100.0000	-1.590446	-18.178885
30.0000	-100.0000	-2.012772	-23.006087
50.0000	-80.0000	3.774900	-14.088119
41.0000	-80.0000	4.723014	-17.626528
30.0000	-80.0000	5.977158	-22.307059
50.0000	-55.0000	9.375118	-11.172831
41.0000	-55.0000	11.729797	-13.979028
30.0000	-55.0000	14.844516	-17.691005

MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000096
MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000096
MERIDIAN CURVATURE= -0.000000 TOLERANCE= 0.000096
PARALLEL CURVATURE= -0.392699 TOLERANCE= 0.000071

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/10276642.1
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 4.975 MM.

SKWENESS OF STRAIGHT MERIDIAN= -0.349066 TOLERANCE= 0.000109
SKWENESS OF STRAIGHT MERIDIAN= -0.436332 TOLERANCE= 0.000109
LACK OF CONVERGENCE OF MERIDIANS= 0.000004 TOLERANCE= 0.004502
MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= -0.000000 TOLERANCE= 0.000027
UNEQUALITY OF MERIDIAN SPACING= -0.000000 TOLERANCE= 0.000072
ELLIPSOIDAL LAMBERT CONFORMAL CONIC:
FAILURE TO FIT PROJECTION= 0.000000 TOLERANCE= 0.000012
FAILURE TO FIT PROJECTION= 0.000000 TOLERANCE= 0.000011

IF MAP PROJECTION IS ELLIPSOIDAL POLAR STEREOGRAPHIC. SCALE=1/12555523.0 AT POLE.
AFFINE CONSTANTS A1 TO A6: 1.00000009 0.00000001 0.00000025 0.00000000 1.00000010 0.00000157
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -6.591965 Y=-24.601550 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
X=-16.149334 Y=-60.270134 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
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-30.0000	20.0000	-6.840403	18.793852
-41.0000	20.0000	-5.673338	15.587367
-50.0000	20.0000	-4.679111	12.855752
-30.0000	35.0000	-1.743115	19.923894
-41.0000	35.0000	-1.445716	16.524608
-50.0000	35.0000	-1.192361	13.628746
-30.0000	70.0000	10.000000	17.320508
-41.0000	70.0000	8.293865	14.365395
-50.0000	70.0000	6.840403	11.847925

MERIDIAN CURVATURE= -0.000000 TOLERANCE= 0.000127
 MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000127
 MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000127
 PARALLEL CURVATURE= 0.436332 TOLERANCE= 0.000055

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/13837624.5
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 2.575 MM.

SKewNESS OF STRAIGHT MERIDIAN= 0.261799 TOLERANCE= 0.000117
 SKewNESS OF STRAIGHT MERIDIAN= 0.610865 TOLERANCE= 0.000117
 LACK OF CONVERGENCE OF MERIDIANS= 0.000007 TOLERANCE= 0.007902
 MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= 0.000000 TOLERANCE= 0.000031
 UNEQUALITY OF MERIDIAN SPACING= -0.000000 TOLERANCE= 0.000145
 ELLIPSOIDAL LAMBERT CONFORMAL CONIC:
 FAILURE TO FIT PROJECTION= -0.049621 TOLERANCE= 0.000012
 SPHERICAL LAMBERT CONFORMAL CONIC:
 FAILURE TO FIT PROJECTION= -0.050733 TOLERANCE= 0.000012
 ELLIPSOIDAL ALBERS EQUAL AREA CONIC:
 FAILURE TO FIT PROJECTION= -0.000798 TOLERANCE= 0.000044
 SPHERICAL ALBERS EQUAL AREA CONIC:
 FAILURE TO FIT PROJECTION= 0.000000 TOLERANCE= 0.000044

IF MAP PROJECTION IS SPHERICAL POLAR LAMBERT AZIMUTHAL EQUAL-AREA. SCALE=1/12555526.3
 AFFINE CONSTANTS A1 TO A6: 0.99999971 -0.00000003 -0.00000118 0.00000007 0.99999994 0.00000118
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X=-16.867829 Y=-29.215937 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
 X=-10.745992 Y=-18.612604 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-0.806124	-9.214039
45.0000	-100.0000	-0.828252	-9.466969
41.0000	-100.0000	-0.836204	-9.557856
50.0000	-80.0000	2.373878	-8.934075
45.0000	-80.0000	2.459591	-9.179320
41.0000	-80.0000	2.483205	-9.267446
50.0000	-55.0000	5.945294	-7.085325
45.0000	-55.0000	6.108495	-7.279821
41.0000	-55.0000	6.167139	-7.349711

MERIDIAN CURVATURE= 0.000007 TOLERANCE= 0.002980
 MERIDIAN CURVATURE= -0.000008 TOLERANCE= 0.002980
 MERIDIAN CURVATURE= 0.000004 TOLERANCE= 0.002980
 PARALLEL CURVATURE= -0.392699 TOLERANCE= 0.000112

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/*****
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.701 MM.

SKWNESS OF STRAIGHT MERIDIAN= -0.349063 TOLERANCE= 0.001575
SKWNESS OF STRAIGHT MERIDIAN= -0.436331 TOLERANCE= 0.001575
LACK OF CONVERGENCE OF MERIDIANS= -0.000077 TOLERANCE= 0.055513
MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= 0.000001 TOLERANCE= 0.000051
UNEQUALITY OF MERIDIAN SPACING= 0.000007 TOLERANCE= 0.000173
ELLIPSOIDAL LAMBERT CONFORMAL CONIC:
FAILURE TO FIT PROJECTION= 0.096816 TOLERANCE= 0.000019
SPHERICAL LAMBERT CONFORMAL CONIC:
FAILURE TO FIT PROJECTION= 0.097177 TOLERANCE= 0.000019
ELLIPSOIDAL ALBERS EQUAL AREA CONIC:
FAILURE TO FIT PROJECTION= -0.837349 TOLERANCE= 0.004076
SPHERICAL ALBERS EQUAL AREA CONIC:
FAILURE TO FIT PROJECTION= -0.837235 TOLERANCE= 0.004071
SPHERICAL EQUIDISTANT CONIC:
FAILURE TO FIT PROJECTION= -0.988608 TOLERANCE= 0.005199
ELLIPSOIDAL EQUIDISTANT CONIC:
FAILURE TO FIT PROJECTION= -0.987879 TOLERANCE= 0.005199

IF MAP PROJECTION IS POLAR ORTHOGRAPHIC. SCALE=1/18581859.1
AFFINE CONSTANTS A1 TO A6: 1.04504291 -0.12669531 -1.19567150 -0.13719346 1.42847629 4.00508109
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 11.315 MM.

IF MAP PROJECTION IS POLAR GNOMONIC. SCALE=1/27149419.8
AFFINE CONSTANTS A1 TO A6: 1.06526309 -0.27284689 -2.57495232 -0.29545547 1.89101317 8.62525295
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 24.699 MM.

IF MAP PROJECTION IS POLAR PERSPECTIVE, WITH POINT OF PROJ. 1.6000 TIMES RADIUS FROM CENTER OF SPHERE.
SCALE=1/12555576.6
AFFINE CONSTANTS A1 TO A6: 0.99999668 -0.00000020 -0.00000074 -0.00000012 0.99999685 -0.00002944
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= 4.395131 Y= -4.395131 LAT= 70.0000 DEG. LONG= -50.0000 DEG.
X= -2.115760 Y= -7.896125 LAT= 60.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.140793	9.459533
41.0000	-100.0000	-1.305748	6.326836
30.0000	-100.0000	-1.509174	2.463538
50.0000	-80.0000	3.409761	9.699147
41.0000	-80.0000	3.902803	6.601098
30.0000	-80.0000	4.510831	2.780528
50.0000	-55.0000	8.863392	11.322667
41.0000	-55.0000	10.145013	8.459374
30.0000	-55.0000	11.725532	4.92310

MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000115
MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000115
MERIDIAN CURVATURE= -0.000000 TOLERANCE= 0.000115
PARALLEL CURVATURE= -0.236734 TOLERANCE= 0.000079

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12481666.0
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.443 MM.

SKEWNESS OF STRAIGHT MERIDIAN= -0.210430 TOLERANCE= 0.000128
 SKEWNESS OF STRAIGHT MERIDIAN= -0.263037 TOLERANCE= 0.000128
 LACK OF CONVERGENCE OF MERIDIANS= 0.000001 TOLERANCE= 0.012087
 MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= 0.000000 TOLERANCE= 0.000018
 UNEQUALITY OF MERIDIAN SPACING= -0.000000 TOLERANCE= 0.000058
 ELLIPSOIDAL LAMBERT CONFORMAL CONIC:
 FAILURE TO FIT PROJECTION= 0.000027 TOLERANCE= 0.000009
 SPHERICAL LAMBERT CONFORMAL CONIC:
 FAILURE TO FIT PROJECTION= 0.000477 TOLERANCE= 0.000009
 ELLIPSOIDAL ALBERS EQUAL AREA CONIC:
 FAILURE TO FIT PROJECTION= 0.000961 TOLERANCE= 0.000048
 SPHERICAL ALBERS EQUAL AREA CONIC:
 FAILURE TO FIT PROJECTION= -0.000000 TOLERANCE= 0.000048

IF MAP PROJECTION IS SPHERICAL ALBERS EQUAL-AREA CONIC.
 SCALE=1/1255524.8 STANDARD PARALLELS= 29.5000, 45.5000 DEG. LAT.
 AFFINE CONSTANTS A1 TO A6: 1.00000001 -0.00000001 0.00000001 0.00000002 1.00000003 -0.00000008
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -4.783746 Y= 1.065655 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
 X= -7.112783 Y= -13.568947 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.142992	9.430035
41.0000	-100.0000	-1.307699	6.302399
30.0000	-100.0000	-1.510460	2.452156
50.0000	-80.0000	3.416331	9.670138
41.0000	-80.0000	3.908631	6.577101
30.0000	-80.0000	4.514670	2.769451
50.0000	-55.0000	8.880420	11.296961
41.0000	-55.0000	10.160104	8.438352
30.0000	-55.0000	11.735445	4.919292

MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000116
 MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000116
 MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000116
 PARALLEL CURVATURE= -0.236760 TOLERANCE= 0.000079

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12514066.1
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.426 MM.

SKEWNESS OF STRAIGHT MERIDIAN= -0.210453 TOLERANCE= 0.000128
 SKEWNESS OF STRAIGHT MERIDIAN= -0.263066 TOLERANCE= 0.000128
 LACK OF CONVERGENCE OF MERIDIANS= -0.000002 TOLERANCE= 0.012132
 MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= -0.000000 TOLERANCE= 0.000018
 UNEQUALITY OF MERIDIAN SPACING= 0.000000 TOLERANCE= 0.000058
 ELLIPSOIDAL LAMBERT CONFORMAL CONIC:
 FAILURE TO FIT PROJECTION= 0.000475 TOLERANCE= 0.000009
 SPHERICAL LAMBERT CONFORMAL CONIC:
 FAILURE TO FIT PROJECTION= 0.000925 TOLERANCE= 0.000009
 ELLIPSOIDAL ALBERS EQUAL AREA CONIC:
 FAILURE TO FIT PROJECTION= 0.000000 TOLERANCE= 0.000048

IF MAP PROJECTION IS ELLIPSOIDAL ALBERS EQUAL-AREA CONIC.
 SCALE=1/1255524.8 STANDARD PARALLELS= 29.5000, 45.5000 DEG. LAT.
 AFFINE CONSTANTS A1 TO A6: 0.99999997 -0.00000001 -0.00000006 -0.00000006 0.99999999 -0.00000013

MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -4.786363 Y= 1.062449 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
X= -7.103124 Y=-13.493386 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.139608	9.454957
41.0000	-100.0000	-1.305884	6.317768
30.0000	-100.0000	-1.509110	2.483425
50.0000	-80.0000	3.406054	9.695884
41.0000	-80.0000	3.903019	6.593848
30.0000	-80.0000	4.510420	2.802470
50.0000	-55.0000	8.850764	11.327987
41.0000	-55.0000	10.142145	8.464085
30.0000	-55.0000	11.720501	4.963760

MERIDIAN CURVATURE= -0.000000 TOLERANCE= 0.000116
MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000116
MERIDIAN CURVATURE= -0.000000 TOLERANCE= 0.000116
PARALLEL CURVATURE= -0.238284 TOLERANCE= 0.000079

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12525236.3
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.415 MM.

SKWESS OF STRAIGHT MERIDIAN= -0.211808 TOLERANCE= 0.000127
SKWESS OF STRAIGHT MERIDIAN= -0.264760 TOLERANCE= 0.000127
LACK OF CONVERGENCE OF MERIDIANS= -0.000005 TOLERANCE= 0.011978
MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= 0.000000 TOLERANCE= 0.000019
UNEQUALITY OF MERIDIAN SPACING= 0.000000 TOLERANCE= 0.000058
ELLIPSOIDAL LAMBERT CONFORMAL CONIC:
FAILURE TO FIT PROJECTION= -0.000232 TOLERANCE= 0.000009
SPHERICAL LAMBERT CONFORMAL CONIC:
FAILURE TO FIT PROJECTION= 0.000222 TOLERANCE= 0.000009
ELLIPSOIDAL ALBERS EQUAL AREA CONIC:
FAILURE TO FIT PROJECTION= -0.002570 TOLERANCE= 0.000048
SPHERICAL ALBERS EQUAL AREA CONIC:
FAILURE TO FIT PROJECTION= -0.003525 TOLERANCE= 0.000048
SPHERICAL EQUIDISTANT CONIC:
FAILURE TO FIT PROJECTION= 0.000000 TOLERANCE= 0.000073

IF MAP PROJECTION IS SPHERICAL EQUIDISTANT CONIC.
SCALE=1/12555523.9 STANDARD PARALLELS= 29.5000, 45.5000 DEG. LAT.
AFFINE CONSTANTS A1 TO A6: 0.99999993 -0.00000004 0.00000011 -0.00000003 1.00000007 -0.00000060
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -4.786511 Y= 1.079116 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
X= -7.547426 Y=-16.154420 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.141813	9.425478
41.0000	-100.0000	-1.307834	6.293361

30.0000 -100.0000 -1.510396 2.471857
 50.0000 -80.0000 3.412642 9.666891
 41.0000 -80.0000 3.908844 6.569876
 30.0000 -80.0000 4.514261 2.791199
 50.0000 -55.0000 8.867845 11.302283
 41.0000 -55.0000 10.157239 8.443055
 30.0000 -55.0000 11.730432 4.954504

MERIDIAN CURVATURE= -0.000000 TOLERANCE= 0.000116
 MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000116
 MERIDIAN CURVATURE= -0.000000 TOLERANCE= 0.000116
 PARALLEL CURVATURE= -0.238304 TOLERANCE= 0.000079

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12557493.7
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.399 MM.

SKWENESS OF STRAIGHT MERIDIAN= -0.211826 TOLERANCE= 0.000128
 SKWENESS OF STRAIGHT MERIDIAN= -0.264782 TOLERANCE= 0.000128
 LACK OF CONVERGENCE OF MERIDIANS= -0.000002 TOLERANCE= 0.012022
 MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= 0.000000 TOLERANCE= 0.000019
 UNEQUALITY OF MERIDIAN SPACING= 0.000000 TOLERANCE= 0.000058
 ELLIPSOIDAL LAMBERT CONFORMAL CONIC:
 FAILURE TO FIT PROJECTION= 0.000221 TOLERANCE= 0.000009
 SPHERICAL LAMBERT CONFORMAL CONIC:
 FAILURE TO FIT PROJECTION= 0.000674 TOLERANCE= 0.000009
 ELLIPSOIDAL ALBERS EQUAL AREA CONIC:
 FAILURE TO FIT PROJECTION= -0.003529 TOLERANCE= 0.000048
 SPHERICAL ALBERS EQUAL AREA CONIC:
 FAILURE TO FIT PROJECTION= -0.004484 TOLERANCE= 0.000048
 SPHERICAL EQUIDISTANT CONIC:
 FAILURE TO FIT PROJECTION= -0.001101 TOLERANCE= 0.000074
 ELLIPSOIDAL EQUIDISTANT CONIC:
 FAILURE TO FIT PROJECTION= 0.000000 TOLERANCE= 0.000074

IF MAP PROJECTION IS ELLIPSOIDAL EQUIDISTANT CONIC.
 SCALE=1/12555525.0 STANDARD PARALLELS= 29.5000, 45.5000 DEG. LAT.
 AFFINE CONSTANTS A1 TO A6: 0.99999995 -0.00000000 0.00000004 -0.00000003 0.99999995 0.00000044
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -4.789102 Y= 1.075796 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
 X= -7.533256 Y= -16.051683 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
-30.0000	20.0000	-6.844259	18.804448
-41.0000	20.0000	-5.680858	15.608029
-50.0000	20.0000	-4.688141	12.880560
-30.0000	35.0000	-1.744098	19.935127
-41.0000	35.0000	-1.447632	16.546513
-50.0000	35.0000	-1.194662	13.655046
-30.0000	70.0000	10.005638	17.330273
-41.0000	70.0000	8.304859	14.384438
-50.0000	70.0000	6.853603	11.870789

MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000128
 MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000128
 MERIDIAN CURVATURE= -0.000000 TOLERANCE= 0.000128

PARALLEL CURVATURE= 0.436332 TOLERANCE= 0.000055

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/13870623.3
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 2.546 MM.

SKEWNESS OF STRAIGHT MERIDIAN= 0.261799 TOLERANCE= 0.000118
SKEWNESS OF STRAIGHT MERIDIAN= 0.610866 TOLERANCE= 0.000118
LACK OF CONVERGENCE OF MERIDIANS= -0.000012 TOLERANCE= 0.007930
MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= -0.000000 TOLERANCE= 0.000031
UNEQUALITY OF MERIDIAN SPACING= 0.000000 TOLERANCE= 0.000145
ELLIPSOIDAL LAMBERT CONFORMAL CONIC:
FAILURE TO FIT PROJECTION= -0.050420 TOLERANCE= 0.000012
SPHERICAL LAMBERT CONFORMAL CONIC:
FAILURE TO FIT PROJECTION= -0.051533 TOLERANCE= 0.000012
ELLIPSOIDAL ALBERS EQUAL AREA CONIC:
FAILURE TO FIT PROJECTION= 0.000000 TOLERANCE= 0.000044

IF MAP PROJECTION IS ELLIPSOIDAL POLAR LAMBERT AZIMUTHAL EQUAL-AREA. SCALE=1/12555523.5
AFFINE CONSTANTS A1 TO A6: 1.00000017 -0.00000002 0.00000150 -0.00000002 -0.00000066
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X=-16.839460 Y=-29.166801 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
X=-10.748436 Y=-18.616837 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.216924	-13.909502
41.0000	-100.0000	-1.490732	-17.039140
30.0000	-100.0000	-1.825386	-20.864253
50.0000	-80.0000	3.613796	-13.486869
41.0000	-80.0000	4.426900	-16.521414
30.0000	-80.0000	5.420693	-20.230303
50.0000	-55.0000	8.975008	-10.695998
41.0000	-55.0000	10.994385	-13.102598
30.0000	-55.0000	13.462512	-16.043997

MERIDIAN CURVATURE= -0.000000 TOLERANCE= 0.000116
MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000116
MERIDIAN CURVATURE= -0.000000 TOLERANCE= 0.000116
PARALLEL CURVATURE= -0.392699 TOLERANCE= 0.000074

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12525236.6
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 3.111 MM.

SKEWNESS OF STRAIGHT MERIDIAN= -0.349066 TOLERANCE= 0.000127
SKEWNESS OF STRAIGHT MERIDIAN= -0.436332 TOLERANCE= 0.000127
LACK OF CONVERGENCE OF MERIDIANS= 0.000005 TOLERANCE= 0.005084
MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= -0.000000 TOLERANCE= 0.000028
UNEQUALITY OF MERIDIAN SPACING= -0.000000 TOLERANCE= 0.000079
ELLIPSOIDAL LAMBERT CONFORMAL CONIC:
FAILURE TO FIT PROJECTION= 0.020911 TOLERANCE= 0.000013
SPHERICAL LAMBERT CONFORMAL CONIC:
FAILURE TO FIT PROJECTION= 0.021642 TOLERANCE= 0.000013
ELLIPSOIDAL ALBERS EQUAL AREA CONIC:
FAILURE TO FIT PROJECTION= 0.018214 TOLERANCE= 0.000037
SPHERICAL ALBERS EQUAL AREA CONIC:
FAILURE TO FIT PROJECTION= 0.017421 TOLERANCE= 0.000037

SPHERICAL EQUIDISTANT CONIC:
FAILURE TO FIT PROJECTION= -0.000000 TOLERANCE= 0.000063

IF MAP PROJECTION IS SPHERICAL POLAR AZIMUTHAL EQUIDISTANT. SCALE=1/12555524.4
AFFINE CONSTANTS A1 TO A6: 1.00000017 0.00000006 0.00000125 -0.00000003 1.00000005 0.00000086
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -5.872418 Y=-21.916162 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
X=-10.389662 Y=-38.774748 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.120453	-12.806832
41.0000	-100.0000	-1.315545	-15.036754
30.0000	-100.0000	-1.509582	-17.254598
50.0000	-80.0000	3.327314	-12.417703
41.0000	-80.0000	3.906664	-14.579869
30.0000	-80.0000	4.482877	-16.730326
50.0000	-55.0000	8.263518	-9.848078
41.0000	-55.0000	9.702359	-11.562822
30.0000	-55.0000	11.133408	-13.268279

MERIDIAN CURVATURE= 0.000001 TOLERANCE= 0.000179
MERIDIAN CURVATURE= -0.000000 TOLERANCE= 0.000179
MERIDIAN CURVATURE= -0.000000 TOLERANCE= 0.000179
PARALLEL CURVATURE= -0.392699 TOLERANCE= 0.000081

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/19585089.7
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.949 MM.

SKEWNESS OF STRAIGHT MERIDIAN= -0.349065 TOLERANCE= 0.000179
SKEWNESS OF STRAIGHT MERIDIAN= -0.436333 TOLERANCE= 0.000179
LACK OF CONVERGENCE OF MERIDIANS= 0.000013 TOLERANCE= 0.006872
MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= -0.000000 TOLERANCE= 0.000032
UNEQUALITY OF MERIDIAN SPACING= -0.000001 TOLERANCE= 0.000096
ELLIPSOIDAL LAMBERT CONFORMAL CONIC:
FAILURE TO FIT PROJECTION= 0.061577 TOLERANCE= 0.000014
SPHERICAL LAMBERT CONFORMAL CONIC:
FAILURE TO FIT PROJECTION= 0.062278 TOLERANCE= 0.000014
ELLIPSOIDAL ALBERS EQUAL AREA CONIC:
FAILURE TO FIT PROJECTION= -0.086423 TOLERANCE= 0.000080
SPHERICAL ALBERS EQUAL AREA CONIC:
FAILURE TO FIT PROJECTION= -0.087237 TOLERANCE= 0.000079
SPHERICAL EQUIDISTANT CONIC:
FAILURE TO FIT PROJECTION= -0.136596 TOLERANCE= 0.000127
ELLIPSOIDAL EQUIDISTANT CONIC:
FAILURE TO FIT PROJECTION= -0.135521 TOLERANCE= 0.000127

IF MAP PROJECTION IS POLAR ORTHOGRAPHIC. SCALE=1/12555515.8
AFFINE CONSTANTS A1 TO A6: 1.00000070 0.00000037 -0.00000018 -0.00000039 1.00000075 0.00001115
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -4.691394 Y=-17.508522 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
X=-19.245004 Y= -1.683720 LAT= 15.0000 DEG. LONG= 180.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
40.0000	-100.0000	-1.337293	14.000193
32.0000	-100.0000	-1.480946	11.204403
20.0000	-100.0000	-1.641669	7.005859
40.0000	-80.0000	4.018558	14.305012
32.0000	-80.0000	4.462426	11.484032
20.0000	-80.0000	4.963670	7.207126
40.0000	-55.0000	10.784573	16.617599
32.0000	-55.0000	12.228084	13.684930
20.0000	-55.0000	13.989133	8.871078

MERIDIAN CURVATURE= -0.013075 TOLERANCE= 0.000119
 PARALLEL CURVATURE= -0.272494 TOLERANCE= 0.000065

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12193172.6
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 3.105 MM.

IF MAP PROJECTION IS ELLIPSOIDAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -94.7422 LONG. SCALE AT CENT. MER.=1/12458396.3
 AFFINE CONSTANTS A1 TO A6: 1.00808599 -0.00608666 0.14746165 0.00829580 1.00334495 -0.07099778
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.146 MM.

IF MAP PROJECTION IS ELLIPSOIDAL POLYCONIC, CENTRAL MERIDIAN= -95.5847 LONG. SCALE=1/12517834.8
 AFFINE CONSTANTS A1 TO A6: 0.94742115 -0.04257473 0.97534821 0.03037496 0.99539346 -0.37995663
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 4.089 MM.

IF MAP PROJECTION IS SPHERICAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -95.0000 LONG. SCALE AT CENT. MER.=1/12555527.3
 AFFINE CONSTANTS A1 TO A6: 0.99999980 0.00000023 -0.00000595 -0.00000018 0.99999972 0.00000409
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -4.780396 Y= 8.995169 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
 X= -4.780396 Y= -8.995169 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
45.0000	-100.0000	-1.236229	1.779772
42.0000	-100.0000	-1.299176	0.734430
40.0000	-100.0000	-1.339171	0.037612
45.0000	-98.0000	-0.741737	1.755318
42.0000	-98.0000	-0.779439	0.710108
40.0000	-98.0000	-0.803388	0.013526
45.0000	-97.0000	-0.494491	1.747685
42.0000	-97.0000	-0.519612	0.702517
40.0000	-97.0000	-0.535568	0.006010

MERIDIAN CURVATURE= -0.002810 TOLERANCE= 0.000478
 PARALLEL CURVATURE= -0.018550 TOLERANCE= 0.001212

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12545030.2
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.010 MM.

IF MAP PROJECTION IS ELLIPSOIDAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -95.0003 LONG. SCALE AT CENT. MER.=1/12555524.2
 AFFINE CONSTANTS A1 TO A6: 0.99999930 -0.00001028 0.00023563 0.00001073 0.99999986 0.00000027

MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -0.767105 Y= 1.058467 LAT= 43.0000 DEG. LONG= -98.0000 DEG.
X= 0.826356 Y= -0.682878 LAT= 38.0000 DEG. LONG= -92.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
40.0000	-100.0000	-1.336299	3.528147
32.0000	-100.0000	-1.479596	0.732349
20.0000	-100.0000	-1.639830	-3.466185
40.0000	-80.0000	3.992095	3.827351
32.0000	-80.0000	4.426139	1.005650
20.0000	-80.0000	4.913647	-3.270526
40.0000	-55.0000	10.340608	5.850571
32.0000	-55.0000	11.572724	2.863571
20.0000	-55.0000	12.996264	-1.931652

MERIDIAN CURVATURE= -0.013064 TOLERANCE= 0.000119
PARALLEL CURVATURE= -0.252422 TOLERANCE= 0.000067

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12198420.4
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 2.828 MM.

IF MAP PROJECTION IS ELLIPSOIDAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -94.2596 LONG. SCALE AT CENT. MER.=1/12474056.7
AFFINE CONSTANTS A1 TO A6: 1.06334488 0.03195884 -0.42150597 -0.02211599 1.00427680 0.36025706
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 4.110 MM.

IF MAP PROJECTION IS ELLIPSOIDAL POLYCONIC, CENTRAL MERIDIAN= -95.0006 LONG. SCALE=1/12522142.1
AFFINE CONSTANTS A1 TO A6: 1.00340589 0.00063075 -0.04186391 0.00077301 0.99892751 -0.00567333
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.079 MM.

IF MAP PROJECTION IS SPHERICAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -94.4592 LONG. SCALE AT CENT. MER.=1/12555534.6
AFFINE CONSTANTS A1 TO A6: 1.05564675 0.03617420 -0.47417954 -0.02847672 1.00183171 0.38940567
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 4.120 MM.

IF MAP PROJECTION IS SPHERICAL POLYCONIC, CENTRAL MERIDIAN= -95.0000 LONG. SCALE=1/12555519.9
AFFINE CONSTANTS A1 TO A6: 1.00000032 -0.00000039 0.00000953 0.00000035 1.00000028 0.00000008
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -4.735741 Y= -1.483078 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
X= -4.735741 Y= -19.460873 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
40.0000	-100.0000	-1.338171	3.516217
32.0000	-100.0000	-1.481004	0.729528
20.0000	-100.0000	-1.640479	-3.448902
40.0000	-80.0000	3.997689	3.815840
32.0000	-80.0000	4.430352	1.003089
20.0000	-80.0000	4.915593	-3.253166
40.0000	-55.0000	10.355098	5.841895
32.0000	-55.0000	11.583738	2.862778

20.0000 -55.0000 13.001412 -1.913762

MERIDIAN CURVATURE= -0.013063 TOLERANCE= 0.000120
PARALLEL CURVATURE= -0.252422 TOLERANCE= 0.000067

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12248218.6
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 2.808 MM.

IF MAP PROJECTION IS ELLIPSOIDAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -94.2591 LONG. SCALE AT CENT. MER.=1/12507306.6
AFFINE CONSTANTS A1 TO A6: 1.05970373 0.03132996 -0.37859784 -0.02281633 1.00537794 0.36493229
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 4.109 MM.

IF MAP PROJECTION IS ELLIPSOIDAL POLYCONIC, CENTRAL MERIDIAN= -95.0000 LONG. SCALE=1/12555530.6
AFFINE CONSTANTS A1 TO A6: 0.99999951 0.00000087 -0.00002151 -0.00000092 0.99999950 0.00000241
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -4.738606 Y= -1.474871 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
X= -4.738606 Y= -19.345611 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.125264	3.519457
41.0000	-100.0000	-1.316320	0.386196
30.0000	-100.0000	-1.516313	-3.445894
50.0000	-80.0000	3.354231	3.784909
41.0000	-80.0000	3.926199	0.683046
30.0000	-80.0000	4.525848	-3.123255
50.0000	-55.0000	8.546825	5.591608
41.0000	-55.0000	10.048491	2.712401
30.0000	-55.0000	11.640329	-0.907773

MERIDIAN CURVATURE= -0.008760 TOLERANCE= 0.000116
PARALLEL CURVATURE= -0.275646 TOLERANCE= 0.000081

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12479660.9
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 2.379 MM.

IF MAP PROJECTION IS ELLIPSOIDAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -90.6774 LONG. SCALE AT CENT. MER.=1/12924296.0
AFFINE CONSTANTS A1 TO A6: 1.01421856 -0.05953657 1.51268046 0.05386908 0.99474764 0.21085277
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 3.627 MM.

IF MAP PROJECTION IS ELLIPSOIDAL POLYCONIC, CENTRAL MERIDIAN= -90.3088 LONG. SCALE=1/12855824.5
AFFINE CONSTANTS A1 TO A6: 0.98674793 -0.08465887 1.89769492 0.06747158 0.99781837 0.11758182
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 2.494 MM.

IF MAP PROJECTION IS SPHERICAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -90.6896 LONG. SCALE AT CENT. MER.=1/12944177.0
AFFINE CONSTANTS A1 TO A6: 1.01109505 -0.06005975 1.53337417 0.05277034 0.99541885 0.21298395
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 3.609 MM.

IF MAP PROJECTION IS SPHERICAL POLYCONIC, CENTRAL MERIDIAN= -90.3094 LONG. SCALE=1/12874314.4
AFFINE CONSTANTS A1 TO A6: 0.98423483 -0.08534722 1.92104182 0.06652060 0.99858462 0.12171980
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 2.499 MM.

IF MAP PROJECTION IS LAMBERT AZIMUTHAL EQUAL-AREA
CENTERED AT 40.0001 LAT. AND -95.0000 LONG. SCALE=1/12555520.1

AFFINE CONSTANTS A1 TO A6: 1.00000026 0.00000092 -0.00001041 -0.00000003 1.00000029 -0.00000400
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -4.760606 Y= -4.849883 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
X= -5.609370 Y= -21.198249 LAT= -25.0001 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.120453	3.504409
41.0000	-100.0000	-1.315545	0.385969
30.0000	-100.0000	-1.509582	-3.430598
50.0000	-80.0000	3.327314	3.754536
41.0000	-80.0000	3.906664	0.679648
30.0000	-80.0000	4.482877	-3.093602
50.0000	-55.0000	8.263518	5.406260
41.0000	-55.0000	9.702359	2.618969
30.0000	-55.0000	11.133408	-0.868241

MERIDIAN CURVATURE= -0.011682 TOLERANCE= 0.000116
PARALLEL CURVATURE= -0.266726 TOLERANCE= 0.000083

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12590824.9
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 2.368 MM.

IF MAP PROJECTION IS ELLIPSOIDAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -94.9087 LONG. SCALE AT CENT. MER.=1/14054810.5
AFFINE CONSTANTS A1 TO A6: 0.97884945 0.03848186 0.09269883 -0.04835083 0.93963363 0.52449206
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 6.442 MM.

IF MAP PROJECTION IS ELLIPSOIDAL POLYCONIC, CENTRAL MERIDIAN= -94.0231 LONG. SCALE=1/13832593.4
AFFINE CONSTANTS A1 TO A6: 0.95297742 -0.02376900 0.88105353 0.00447304 0.95327773 0.19028728
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 4.571 MM.

IF MAP PROJECTION IS SPHERICAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -95.1293 LONG. SCALE AT CENT. MER.=1/14113252.0
AFFINE CONSTANTS A1 TO A6: 0.97314279 0.04345301 0.02837893 -0.05468010 0.93803159 0.53870427
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 6.425 MM.

IF MAP PROJECTION IS SPHERICAL POLYCONIC, CENTRAL MERIDIAN= -94.0247 LONG. SCALE=1/13851066.9
AFFINE CONSTANTS A1 TO A6: 0.95059408 -0.02431087 0.90470063 0.00368300 0.95412767 0.19411760
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 4.572 MM.

IF MAP PROJECTION IS LAMBERT AZIMUTHAL EQUAL-AREA
CENTERED AT 17.5931 LAT. AND -95.0508 LONG. SCALE=1/13177192.1
AFFINE CONSTANTS A1 TO A6: 1.01242359 -0.01176473 -0.15390551 -0.03719985 0.95212012 0.51049735
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 4.263 MM.

IF MAP PROJECTION IS AZIMUTHAL EQUIDISTANT
CENTERED AT 6.2462 LAT. AND -94.9948 LONG. SCALE=1/13862108.7
AFFINE CONSTANTS A1 TO A6: 1.01509919 -0.03034098 -0.16527302 -0.01542229 0.93269457 0.37981173
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 6.148 MM.

IF MAP PROJECTION IS ORTHOGRAPHIC
CENTERED AT 40.0007 LAT. AND -95.0001 LONG. SCALE=1/12555520.7
AFFINE CONSTANTS A1 TO A6: 0.99999986 -0.00000069 0.00001757 0.00000213 1.00000032 -0.00001425
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -4.691394 Y= -4.779374 LAT= 25.0000 DEG. LONG= -110.0000 DEG.

X= -4.691394 Y=-17.729148 LAT= -25.0005 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.121876	17.453293
41.0000	-100.0000	-1.317217	14.311700
30.0000	-100.0000	-1.511499	10.471976
50.0000	-80.0000	3.365628	17.453293
41.0000	-80.0000	3.951650	14.311700
30.0000	-80.0000	4.534498	10.471976
50.0000	-55.0000	8.975008	17.453293
41.0000	-55.0000	10.537734	14.311700
30.0000	-55.0000	12.091996	10.471976

MERIDIAN CURVATURE=	-0.011544	TOLERANCE=	0.000116
PARALLEL CURVATURE=	0.0	TOLERANCE=	0.000080
PARALLEL CURVATURE=	0.0	TOLERANCE=	0.000068
PARALLEL CURVATURE=	0.0	TOLERANCE=	0.000060

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12353287.1
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 2.135 MM.

SKWENESS OF STRAIGHT PARALLEL=	0.0	TOLERANCE=	0.000107
SKWENESS OF STRAIGHT PARALLEL=	0.0	TOLERANCE=	0.000089
UNEQUALITY OF MERIDIAN SPACING=	0.0	TOLERANCE=	0.000080

IF MAP PROJECTION IS SINUSOIDAL. SCALE=1/12555524.3 CENTRAL MERIDIAN= -95.0000 DEG. LONG.
AFFINE CONSTANTS A1 TO A6: 1.00000000 0.00000000 0.00000013 0.00000001 -0.00000011
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -4.745416 Y= 8.726646 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
X= -4.745416 Y= -8.726646 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.192563	18.417516
41.0000	-100.0000	-1.319177	15.367702
30.0000	-100.0000	-1.437424	11.426075
50.0000	-80.0000	3.577690	18.417516
41.0000	-80.0000	3.957531	15.367702
30.0000	-80.0000	4.312272	11.426075
50.0000	-55.0000	9.540506	18.417516
41.0000	-55.0000	10.553415	15.367702
30.0000	-55.0000	11.499392	11.426075

MERIDIAN CURVATURE=	-0.011501	TOLERANCE=	0.000116
PARALLEL CURVATURE=	0.0	TOLERANCE=	0.000075
PARALLEL CURVATURE=	0.0	TOLERANCE=	0.000068
PARALLEL CURVATURE=	0.0	TOLERANCE=	0.000063

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12438629.0
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.354 MM.

*** M11 ***

*** M11 ***

SKWNESS OF STRAIGHT PARALLEL= 0.0 TOLERANCE= 0.000107
 SKWNESS OF STRAIGHT PARALLEL= 0.0 TOLERANCE= 0.000088
 UNEQUALITY OF MERIDIAN SPACING= -0.000000 TOLERANCE= 0.000075

IF MAP PROJECTION IS SINUSOIDAL. SCALE=1/12572339.9 CENTRAL MERIDIAN= -88.8207 DEG. LONG.
 AFFINE CONSTANTS A1 TO A6: 1.00239674 0.00013252 -0.32964092 -0.00005931 0.99604733 0.03712361
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 5.623 MM.

IF MAP PROJECTION IS MOLLWEIDE. SCALE=1/12555524.0 CENTRAL MERIDIAN= -95.0000 DEG. LONG.
 AFFINE CONSTANTS A1 TO A6: 1.00000002 0.00000000 0.00000012 0.00000000 1.00000002 -0.00000018
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -4.435751 Y= 9.574342 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
 X= -4.435751 Y= -9.574342 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
20.0000	-100.0000	-1.749773	7.307211
5.0000	-100.0000	-1.749773	1.756457
-25.0000	-100.0000	-1.749773	-9.361778
20.0000	-80.0000	5.358984	7.536194
5.0000	-80.0000	5.358984	1.811499
-25.0000	-80.0000	5.358984	-9.655144
20.0000	-55.0000	16.781993	9.502588
5.0000	-55.0000	16.781993	2.284167
-25.0000	-55.0000	16.781993	-12.174428

MERIDIAN CURVATURE= 0.0 TOLERANCE= 0.000054
 MERIDIAN CURVATURE= 0.0 TOLERANCE= 0.000052
 MERIDIAN CURVATURE= 0.0 TOLERANCE= 0.000042
 PARALLEL CURVATURE= -0.138272 TOLERANCE= 0.000045

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/11395384.0
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 5.143 MM.

SKWNESS OF STRAIGHT MERIDIAN= 0.0 TOLERANCE= 0.000071
 SKWNESS OF STRAIGHT MERIDIAN= 0.0 TOLERANCE= 0.000063

IF MAP PROJECTION IS ELLIPSOIDAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -78.3333 LONG. SCALE AT CENT. MER.=1/ 9050468.8
 AFFINE CONSTANTS A1 TO A6: 1.12771567 0.00317722 9.13213730 0.00238695 1.21202711 0.00968944
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 31.227 MM.

IF MAP PROJECTION IS ELLIPSOIDAL POLYCONIC, CENTRAL MERIDIAN= -78.3333 LONG. SCALE=1/ 9050468.8
 AFFINE CONSTANTS A1 TO A6: 1.10127727 0.00279715 9.29476210 0.00232259 1.20873922 0.00783223
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 30.953 MM.

IF MAP PROJECTION IS SPHERICAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -78.3333 LONG. SCALE AT CENT. MER.=1/ 9107334.2
 AFFINE CONSTANTS A1 TO A6: 1.12014638 0.00317278 9.18325594 0.00238381 1.21160235 0.00957541
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 31.181 MM.

IF MAP PROJECTION IS SPHERICAL POLYCONIC, CENTRAL MERIDIAN= -78.3333 LONG. SCALE=1/ 9107334.1
 AFFINE CONSTANTS A1 TO A6: 1.09403730 0.00279355 9.34399012 0.00232133 1.20836644 0.00773982
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 30.910 MM.

IF MAP PROJECTION IS GNOMONIC
 CENTERED AT 0.0 LAT. AND -95.0000 LONG. SCALE=1/12555524.7
 AFFINE CONSTANTS A1 TO A6: 1.00000000 0.00000000 0.00000000 -0.00000002 0.99999999 0.00000042

MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -5.358984 Y= 9.655144 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
X= -5.358984 Y= -9.655144 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.139906	3.565253
41.0000	-100.0000	-1.318647	0.386879
30.0000	-100.0000	-1.536809	-3.492473
50.0000	-80.0000	3.437203	3.878535
41.0000	-80.0000	3.985790	0.693414
30.0000	-80.0000	4.658975	-3.215126
50.0000	-55.0000	9.502588	6.216899
41.0000	-55.0000	11.221941	3.029151
30.0000	-55.0000	13.420238	-1.046580

MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000114
MERIDIAN CURVATURE= -0.000000 TOLERANCE= 0.000112
MERIDIAN CURVATURE= 0.000000 TOLERANCE= 0.000098
PARALLEL CURVATURE= -0.299628 TOLERANCE= 0.000074

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12148004.0
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 3.063 MM.

SKEWNESS OF STRAIGHT MERIDIAN= -0.226738 TOLERANCE= 0.000125
SKEWNESS OF STRAIGHT MERIDIAN= -0.324079 TOLERANCE= 0.000117
LACK OF CONVERGENCE OF MERIDIANS= 0.000003 TOLERANCE= 0.009906
MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= 0.004049 TOLERANCE= 0.000020

IF MAP PROJECTION IS ELLIPSOIDAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -78.3334 LONG. SCALE AT CENT. MER.=1/10873009.0
AFFINE CONSTANTS A1 TO A6: 1.00658542 -0.32267696 6.70881621 0.30993691 1.05904379 0.67682614
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 7.800 MM.

IF MAP PROJECTION IS ELLIPSOIDAL POLYCONIC, CENTRAL MERIDIAN= -78.3334 LONG. SCALE=1/10873009.0
AFFINE CONSTANTS A1 TO A6: 0.99292538 -0.32475044 6.77881029 0.30124131 1.05858407 0.69592668
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 7.803 MM.

IF MAP PROJECTION IS SPHERICAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -78.3334 LONG. SCALE AT CENT. MER.=1/10890614.2
AFFINE CONSTANTS A1 TO A6: 1.00396936 -0.32371018 6.72432499 0.30824763 1.05949002 0.68025642
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 7.784 MM.

IF MAP PROJECTION IS SPHERICAL POLYCONIC, CENTRAL MERIDIAN= -78.3334 LONG. SCALE=1/10890614.2
AFFINE CONSTANTS A1 TO A6: 0.99042397 -0.32576622 6.79372671 0.29962956 1.05902745 0.69923337
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 7.785 MM.
OBLIQUE GNOMONIC:

IF MAP PROJECTION IS GNOMONIC
CENTERED AT 40.0001 LAT. AND -94.9998 LONG. SCALE=1/12555498.5
AFFINE CONSTANTS A1 TO A6: 1.00000066 -0.00000114 0.00001462 0.00000099 1.00000133 -0.00000635
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -4.978827 Y= -5.072196 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
X= -11.759015 Y= -44.438242 LAT= -24.9999 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
45.0000	-100.0000	-1.223460	1.419865
42.0000	-100.0000	-1.290469	0.384687
37.0000	-100.0000	-1.381226	-1.344654
45.0000	-80.0000	3.538643	1.654416
42.0000	-80.0000	3.727140	0.660110
37.0000	-80.0000	3.981588	-0.999784
45.0000	-70.0000	5.496380	2.082424
42.0000	-70.0000	5.774164	1.160687
37.0000	-70.0000	6.146862	-0.376373

MERIDIAN CURVATURE= -0.012209 TOLERANCE= 0.000308
 PARALLEL CURVATURE= -0.166023 TOLERANCE= 0.000142

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/13000535.7
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.492 MM.

IF MAP PROJECTION IS ELLIPSOIDAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -115.5253 LONG. SCALE AT CENT. MER.=1/19655289.6
 AFFINE CONSTANTS A1 TO A6: 0.64476627 0.37455892 -3.60123094 -0.38627659 0.63211433 2.68409547
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 4.280 MM.

IF MAP PROJECTION IS ELLIPSOIDAL POLYCONIC, CENTRAL MERIDIAN= -111.1351 LONG. SCALE=1/17283741.4
 AFFINE CONSTANTS A1 TO A6: 0.77412861 0.14253056 -2.19200236 -0.14141907 0.80339952 0.29699957
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 3.229 MM.

TOO MANY ITERATIONS TO CONVERGE FOR PROJ. N=18

IF MAP PROJECTION IS SPHERICAL POLYCONIC, CENTRAL MERIDIAN= -111.1425 LONG. SCALE=1/17306639.0
 AFFINE CONSTANTS A1 TO A6: 0.77192982 0.14245824 -2.17131072 -0.14149205 0.80405033 0.29905675
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 3.223 MM.

IF MAP PROJECTION IS LAMBERT AZIMUTHAL EQUAL-AREA
 CENTERED AT -113.4019 LAT. AND 85.0670 LONG. SCALE=1/ 6377063.9
 AFFINE CONSTANTS A1 TO A6: 4.41937191 0.27504769 -20.76467570 0.95590854 0.97096844 -4.84935928
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 32.949 MM.

TOO MANY ITERATIONS TO CONVERGE FOR PROJ. N=20

IF MAP PROJECTION IS ORTHOGRAPHIC
 CENTERED AT -71.1079 LAT. AND -95.4110 LONG. SCALE=1/ 6240901.7
 AFFINE CONSTANTS A1 TO A6: -1.37175110 -0.66431292 14.88210681 -1.66930105 0.43416161 10.36280670
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 10.407 MM.

IF MAP PROJECTION IS VERTICAL PERSPECTIVE, WITH POINT OF PROJ. 1.6000 TIMES RADIUS FROM CENTER OF SPHERE
 CENTERED AT 41.0000 LAT. AND -94.9999 LONG. SCALE=1/12555550.3
 AFFINE CONSTANTS A1 TO A6: 0.99999905 -0.00000049 0.00001428 0.00000049 0.99999834 0.00004550
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -2.266722 Y= 2.507556 LAT= 48.0000 DEG. LONG= -105.0000 DEG.
 X= -2.872191 Y= -3.479419 LAT= 30.0000 DEG. LONG= -105.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
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20.0000	-100.0000	-1.692039	7.066106
5.0000	-100.0000	-1.743102	1.749761
-25.0000	-100.0000	-1.660447	-8.883859
20.0000	-80.0000	5.099622	7.171461
5.0000	-80.0000	5.255888	1.776649
-25.0000	-80.0000	5.003017	-9.013808
20.0000	-55.0000	14.048297	7.954668
5.0000	-55.0000	14.527388	1.977297
-25.0000	-55.0000	13.753716	-9.977577

MERIDIAN CURVATURE= -0.017377 TOLERANCE= 0.000056
PARALLEL CURVATURE= -0.071789 TOLERANCE= 0.000052

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12103500.3
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 3.794 MM.

IF MAP PROJECTION IS ELLIPSOIDAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -86.8957 LONG. SCALE AT CENT. MER.=1/11593793.6
AFFINE CONSTANTS A1 TO A6: 1.05413258 0.00260497 3.67969358 0.00104125 1.07649074 0.00486250
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 5.052 MM.

IF MAP PROJECTION IS ELLIPSOIDAL POLYCONIC, CENTRAL MERIDIAN= -87.3581 LONG. SCALE=1/11647377.4
AFFINE CONSTANTS A1 TO A6: 1.01019278 0.00145299 3.62354167 0.00054664 1.06652589 0.00416041
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 4.868 MM.

IF MAP PROJECTION IS SPHERICAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -86.9006 LONG. SCALE AT CENT. MER.=1/11662318.4
AFFINE CONSTANTS A1 TO A6: 1.04742097 0.00268140 3.74462346 0.00105667 1.07643315 0.00472164
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 5.050 MM.

IF MAP PROJECTION IS SPHERICAL POLYCONIC, CENTRAL MERIDIAN= -87.3593 LONG. SCALE=1/11715842.5
AFFINE CONSTANTS A1 TO A6: 1.00396261 0.00152259 3.68780574 0.00053200 1.06655087 0.00425490
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 4.857 MM.

IF MAP PROJECTION IS LAMBERT AZIMUTHAL EQUAL-AREA
CENTERED AT 1798.7967 LAT. AND -95.1582 LONG. SCALE=1/ 9441163.0
AFFINE CONSTANTS A1 TO A6: 1.55988279 0.20483078 -7.96745537 -0.20694350 0.93790226 2.78279404
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 42.687 MM.

IF MAP PROJECTION IS AZIMUTHAL EQUIDISTANT
CENTERED AT 358.8083 LAT. AND -95.1259 LONG. SCALE=1/11261117.3
AFFINE CONSTANTS A1 TO A6: 1.30162737 0.18940740 -4.31581890 -0.14850249 1.03384056 1.60978699
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 34.329 MM.

TOO MANY ITERATIONS TO CONVERGE FOR PROJ. N=21

IF MAP PROJECTION IS SPHERICAL STEREOGRAPHIC
CENTERED AT -0.0000 LAT. AND -95.0000 LONG. SCALE=1/12555523.3
AFFINE CONSTANTS A1 TO A6: 1.00000003 -0.00000005 -0.00001748 0.00000003 1.00000002 -0.00000891
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -5.003017 Y= 9.013808 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
X= -5.003017 Y= -9.013808 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
20.0000	-100.0000	-1.637992	6.840403
5.0000	-100.0000	-1.736482	1.743115

-25.0000	-100.0000	-1.579799	-8.452365
20.0000	-80.0000	4.864207	6.840403
5.0000	-80.0000	5.156683	1.743115
-25.0000	-80.0000	4.691394	-8.452365
20.0000	-55.0000	12.080455	6.840403
5.0000	-55.0000	12.806832	1.743115
-25.0000	-55.0000	11.651268	-8.452365

MERIDIAN CURVATURE=	-0.034686	TOLERANCE=	0.000059
PARALLEL CURVATURE=	0.0	TOLERANCE=	0.000058
PARALLEL CURVATURE=	0.0	TOLERANCE=	0.000055
PARALLEL CURVATURE=	0.0	TOLERANCE=	0.000061

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12809282.9
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 5.562 MM.

SKWNESS OF STRAIGHT PARALLEL=	0.0	TOLERANCE=	0.000070
SKWNESS OF STRAIGHT PARALLEL=	0.0	TOLERANCE=	0.000049
UNEQUALITY OF MERIDIAN SPACING=	-0.126312	TOLERANCE=	0.000066

IF MAP PROJECTION IS ORTHOGRAPHIC
CENTERED AT -540.0004 LAT. AND -95.0000 LONG. SCALE=1/12555486.7
AFFINE CONSTANTS A1 TO A6: 1.00000305 0.00000033 -0.00003989 -0.00000604 1.00000413 0.00006389
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X=	-4.691394	Y=	8.452365	LAT=	25.0002 DEG.	LONG=	-110.0000 DEG.
X=	-4.691394	Y=	-8.452365	LAT=	-24.9999 DEG.	LONG=	-110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
40.0000	-100.0000	-1.347238	3.533414
32.0000	-100.0000	-1.480765	0.731506
20.0000	-100.0000	-1.653109	-3.468927
40.0000	-80.0000	4.041721	3.805914
32.0000	-80.0000	4.446815	0.999770
20.0000	-80.0000	4.970886	-3.221916
40.0000	-55.0000	10.765289	5.755544
32.0000	-55.0000	11.930943	2.935100
20.0000	-55.0000	13.464504	-1.420519

MERIDIAN CURVATURE=	-0.006613	TOLERANCE=	0.000119
PARALLEL CURVATURE=	-0.231706	TOLERANCE=	0.000066

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12316231.0
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.990 MM.

IF MAP PROJECTION IS ELLIPSOIDAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -86.7678 LONG. SCALE AT CENT. MER.=1/11929052.8
AFFINE CONSTANTS A1 TO A6: 1.04503159 -0.11756932 3.30908655 0.11123809 1.05051362 0.10774781
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.347 MM.

IF MAP PROJECTION IS ELLIPSOIDAL POLYCONIC, CENTRAL MERIDIAN= -86.8629 LONG. SCALE=1/11930792.8
AFFINE CONSTANTS A1 TO A6: 1.01441909 -0.11965072 3.40301073 0.10299643 1.04828456 0.08113102
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 2.258 MM.

IF MAP PROJECTION IS SPHERICAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -86.7683 LONG. SCALE AT CENT. MER.=1/11966153.9
AFFINE CONSTANTS A1 TO A6: 1.04087119 -0.11849491 3.34523977 0.10997676 1.05113616 0.11319054

MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.363 MM.

IF MAP PROJECTION IS SPHERICAL POLYCONIC, CENTRAL MERIDIAN= -86.8624 LONG. SCALE=1/11967733.1
 AFFINE CONSTANTS A1 TO A6: 1.01064573 -0.12047192 3.43838990 0.10180115 1.04899731 0.08712176
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 2.253 MM.

IF MAP PROJECTION IS LAMBERT AZIMUTHAL EQUAL-AREA
 CENTERED AT 58.4229 LAT. AND -95.0918 LONG. SCALE=1/11381404.7
 AFFINE CONSTANTS A1 TO A6: 1.08223140 0.06483196 -1.10176910 0.00224100 1.03839908 -0.20203400
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 6.943 MM.

IF MAP PROJECTION IS AZIMUTHAL EQUIDISTANT
 CENTERED AT 51.0367 LAT. AND -95.0863 LONG. SCALE=1/11868554.4
 AFFINE CONSTANTS A1 TO A6: 1.04250674 0.04668503 -0.58687676 -0.01243713 1.03327723 -0.00081133
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 4.908 MM.

IF MAP PROJECTION IS ORTHOGRAPHIC
 CENTERED AT 78.7751 LAT. AND 444.9773 LONG. SCALE=1/ 8139194.8
 AFFINE CONSTANTS A1 TO A6: -1.45126559 -0.08944389 2.96757434 -0.12491686 -0.48639239 50.43958967
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 20.316 MM.

IF MAP PROJECTION IS SPHERICAL STEREOGRAPHIC
 CENTERED AT 30.0000 LAT. AND -94.9999 LONG. SCALE=1/12555503.4
 AFFINE CONSTANTS A1 TO A6: 1.00000151 0.00000229 -0.00007663 -0.00000226 1.00000155 -0.00006466
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -4.764166 Y= -1.456546 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
 X= -0.065809 Y= -20.783411 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

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MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-100.0000	-1.126870	3.524481
41.0000	-100.0000	-1.316578	0.386271
30.0000	-100.0000	-1.518560	-3.451002
50.0000	-80.0000	3.363232	3.795066
41.0000	-80.0000	3.932723	0.684181
30.0000	-80.0000	4.540226	-3.133178
50.0000	-55.0000	8.642531	5.654222
41.0000	-55.0000	10.165482	2.743980
30.0000	-55.0000	11.812302	-0.921185

MERIDIAN CURVATURE= -0.007789 TOLERANCE= 0.000116
 PARALLEL CURVATURE= -0.278408 TOLERANCE= 0.000080

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/12442907.2
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 2.410 MM.

IF MAP PROJECTION IS ELLIPSOIDAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -89.3650 LONG. SCALE AT CENT. MER.=1/12619013.6
 AFFINE CONSTANTS A1 TO A6: 1.02118369 -0.08856904 1.98233452 0.08339290 1.00866078 0.16522990
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 2.666 MM.

IF MAP PROJECTION IS ELLIPSOIDAL POLYCONIC, CENTRAL MERIDIAN= -89.1024 LONG. SCALE=1/12575340.1
 AFFINE CONSTANTS A1 TO A6: 0.99499510 -0.10596574 2.27474813 0.08917568 1.01035208 0.11078041
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.912 MM.

IF MAP PROJECTION IS SPHERICAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -89.3666 LONG. SCALE AT CENT. MER.=1/12637535.0

AFFINE CONSTANTS A1 TO A6: 1.01818424 -0.08934790 2.00695761 0.08241114 1.00937890 0.16818233
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 2.657 MM.

IF MAP PROJECTION IS SPHERICAL POLYCONIC, CENTRAL MERIDIAN= -89.1028 LONG. SCALE=1/12593806.4
 AFFINE CONSTANTS A1 TO A6: 0.99244926 -0.10669814 2.29780585 0.08816629 1.01108728 0.11500495
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.918 MM.

IF MAP PROJECTION IS LAMBERT AZIMUTHAL EQUAL-AREA
 CENTERED AT 47.3351 LAT. AND -95.0117 LONG. SCALE=1/12290172.3
 AFFINE CONSTANTS A1 TO A6: 1.01034354 0.01067752 -0.11938038 0.00576516 1.01230388 -0.09979172
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.401 MM.

IF MAP PROJECTION IS AZIMUTHAL EQUIDISTANT
 CENTERED AT 40.0000 LAT. AND -94.9999 LONG. SCALE=1/12555515.5
 AFFINE CONSTANTS A1 TO A6: 1.00000065 0.00000112 -0.00001689 -0.00000058 1.00000046 0.00000013
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

X= -4.783812 Y= -4.873524 LAT= 25.0000 DEG. LONG= -110.0000 DEG.
 X= -5.936907 Y= -22.436038 LAT= -25.0000 DEG. LONG= -110.0000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
40.1250	-95.0000	0.0	22.767773
40.0625	-95.0000	0.0	11.383824
40.0000	-95.0000	0.0	0.0
40.1250	-94.9375	8.739356	22.770845
40.0625	-94.9375	8.747354	11.386895
40.0000	-94.9375	8.755341	0.003069
40.1250	-94.8750	17.478708	22.780061
40.0625	-94.8750	17.494703	11.396107
40.0000	-94.8750	17.510678	0.012278

MERIDIAN CURVATURE= 0.0 TOLERANCE= 0.000035
 MERIDIAN CURVATURE= 0.000001 TOLERANCE= 0.000035
 MERIDIAN CURVATURE= 0.000002 TOLERANCE= 0.000035
 PARALLEL CURVATURE= -0.000703 TOLERANCE= 0.000046

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 24000.0
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

THIS MAP COVERS A SMALL ENOUGH AREA TO FIT A SECOND ORDER POLYNOMIAL.
 X= 13.988088 Y= 18.222042 LAT= 40.1000 DEG. LONG= -94.9000 DEG.
 X= 7.002229 Y= 3.644775 LAT= 40.0200 DEG. LONG= -94.9500 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
40.1250	-95.0000	-79.669158	25.914163
40.0625	-95.0000	-79.925215	14.529018
40.0000	-95.0000	-80.180937	3.143982
40.1250	-94.9375	-70.928916	25.720540
40.0625	-94.9375	-71.176964	14.335468
40.0000	-94.9375	-71.424687	2.950506

40.1250 -94.8750-62.188730 25.533069
 40.0625 -94.8750-62.428769 14.148068
 40.0000 -94.8750-62.668494 2.763179

MERIDIAN CURVATURE= -0.000029 TOLERANCE= 0.000035
 MERIDIAN CURVATURE= -0.000028 TOLERANCE= 0.000035
 MERIDIAN CURVATURE= -0.000027 TOLERANCE= 0.000035
 PARALLEL CURVATURE= -0.000703 TOLERANCE= 0.000046

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 23991.9
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.000 MM.

THIS MAP COVERS A SMALL ENOUGH AREA TO FIT A SECOND ORDER POLYNOMIAL.
 X=-65.782133 Y= 21.053294 LAT= 40.1000 DEG. LONG= -94.9000 DEG.
 X=-73.096185 Y= 6.631890 LAT= 40.0200 DEG. LONG= -94.9500 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
48.0000	-117.0000	56.767500	73.383500
39.0000	-117.0000	54.833000	65.030000
33.0000	-117.0000	53.550000	59.446000
48.0000	-96.0000	70.269500	71.901500
39.0000	-96.0000	70.310000	63.319500
33.0000	-96.0000	70.345000	57.619500
48.0000	-81.0000	79.955500	72.749500
39.0000	-81.0000	81.414500	64.310000
33.0000	-81.0000	82.386500	58.687000

MERIDIAN CURVATURE= -0.001724 TOLERANCE= 0.005823
 MERIDIAN CURVATURE= -0.001421 TOLERANCE= 0.005839
 MERIDIAN CURVATURE= 0.000016 TOLERANCE= 0.005840
 PARALLEL CURVATURE= -0.196650 TOLERANCE= 0.003529

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 4590261.8
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.952 MM.

SKWENESS OF STRAIGHT MERIDIAN= -0.232287 TOLERANCE= 0.004663
 SKWENESS OF STRAIGHT MERIDIAN= -0.166466 TOLERANCE= 0.004666
 LACK OF CONVERGENCE OF MERIDIANS= -0.043836 TOLERANCE= 2.384850
 MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= -0.000365 TOLERANCE= 0.000694 -
 UNEQUALITY OF MERIDIAN SPACING= -0.000098 TOLERANCE= 0.002369
 ELLIPSOIDAL LAMBERT CONFORMAL CONIC:
 FAILURE TO FIT PROJECTION= 0.000632 TOLERANCE= 0.000319
 SPHERICAL LAMBERT CONFORMAL CONIC:
 FAILURE TO FIT PROJECTION= 0.001121 TOLERANCE= 0.000319
 ELLIPSOIDAL ALBERS EQUAL AREA CONIC:
 FAILURE TO FIT PROJECTION= 0.000840 TOLERANCE= 0.002512

IF MAP PROJECTION IS ELLIPSOIDAL ALBERS EQUAL-AREA CONIC.
 SCALE=1/ 4578264.4 STANDARD PARALLELS= 35.6072, 43.2121 DEG. LAT.
 AFFINE CONSTANTS A1 TO A6: 0.99983693 -0.00018804 0.02330594 -0.00100479 1.00174097 -0.06669834
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.197 MM.

X= 61.050000 Y= 61.030000 LAT= 36.0121 DEG. LONG= -108.0059 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-140.0000	59.491500	85.354000
10.0000	-140.0000	54.461500	77.310000
-30.0000	-140.0000	54.371000	68.478000
50.0000	-80.0000	67.817000	84.017500
10.0000	-80.0000	67.188500	75.288000
-30.0000	-80.0000	65.555500	66.695500
50.0000	-40.0000	73.360500	83.133000
10.0000	-40.0000	75.671500	73.939000
-30.0000	-40.0000	72.999000	65.509500

MERIDIAN CURVATURE= -0.548576 TOLERANCE= 0.004372
 PARALLEL CURVATURE= -0.000950 TOLERANCE= 0.005935
 PARALLEL CURVATURE= 0.000145 TOLERANCE= 0.003880
 PARALLEL CURVATURE= -0.000038 TOLERANCE= 0.004419

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/19941024.9
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 27.758 MM.

SKWENESS OF STRAIGHT PARALLEL= -0.001615 TOLERANCE= 0.004657
 SKWENESS OF STRAIGHT PARALLEL= 0.000485 TOLERANCE= 0.003839
 UNEQUALITY OF MERIDIAN SPACING= -0.001385 TOLERANCE= 0.005943

IF MAP PROJECTION IS SINUSOIDAL. SCALE=1/20069885.0 CENTRAL MERIDIAN= -90.0665 DEG. LONG.
 AFFINE CONSTANTS A1 TO A6: 1.00136454 0.00119590 -0.20051867 -0.00135899 1.00028186 0.06377588
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.271 MM.

X= 60.134500 Y= 80.839500 LAT= 30.0607 DEG. LONG= -120.1240 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
70.0000	-170.0000	63.072500	77.002500
64.0000	-170.0000	57.972000	70.926500
58.0000	-170.0000	52.816500	64.786500
70.0000	-150.0000	70.942500	72.205000
64.0000	-150.0000	67.874500	64.864500
58.0000	-150.0000	64.790500	57.485000
70.0000	-130.0000	79.913000	69.949500
64.0000	-130.0000	79.159500	62.037500
58.0000	-130.0000	78.409500	54.064000

MERIDIAN CURVATURE= 0.000122 TOLERANCE= 0.005016
 MERIDIAN CURVATURE= -0.000035 TOLERANCE= 0.005014
 MERIDIAN CURVATURE= -0.001163 TOLERANCE= 0.005014
 PARALLEL CURVATURE= -0.301115 TOLERANCE= 0.004332

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 3301262.4
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 5.794 MM.

SKWENESS OF STRAIGHT MERIDIAN= -0.302449 TOLERANCE= 0.005035
 SKWENESS OF STRAIGHT MERIDIAN= -0.300940 TOLERANCE= 0.005030
 LACK OF CONVERGENCE OF MERIDIANS= 0.644874 TOLERANCE= 3.379028
 MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= 0.000548 TOLERANCE= 0.001392
 UNEQUALITY OF MERIDIAN SPACING= 0.001463 TOLERANCE= 0.003694

ELLIPSOIDAL LAMBERT CONFORMAL CONIC:
FAILURE TO FIT PROJECTION= 0.002495 TOLERANCE= 0.000585
SPHERICAL LAMBERT CONFORMAL CONIC:
FAILURE TO FIT PROJECTION= 0.002736 TOLERANCE= 0.000585
ELLIPSOIDAL ALBERS EQUAL AREA CONIC:
FAILURE TO FIT PROJECTION= 0.000403 TOLERANCE= 0.000552

IF MAP PROJECTION IS ELLIPSOIDAL ALBERS EQUAL-AREA CONIC.
SCALE=1/ 3299348.3 STANDARD PARALLELS= 55.1289, 65.7022 DEG. LAT.
AFFINE CONSTANTS A1 TO A6: 0.99885754 0.00049611 0.02761175 0.00141457 0.99991956 -0.08476687
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.241 MM.

X= 72.756500 Y= 60.439000 LAT= 61.9997 DEG. LONG= -140.0184 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
40.0000	-50.0000	65.531500	61.463500
10.0000	-50.0000	64.846500	58.875000
-40.0000	-50.0000	65.638500	54.526500
40.0000	20.0000	70.000500	61.293500
10.0000	20.0000	70.324500	58.891500
-40.0000	20.0000	70.104500	54.839000
40.0000	60.0000	72.402500	61.688000
10.0000	60.0000	73.324000	59.054000
-40.0000	60.0000	72.509500	54.503500

MERIDIAN CURVATURE= -0.438859 TOLERANCE= 0.011994
PARALLEL CURVATURE= -0.200806 TOLERANCE= 0.012688

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/53963066.5
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 8.762 MM.

IF MAP PROJECTION IS ELLIPSOIDAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= 3.0806 LONG. SCALE AT CENT. MER.=1/56998638.2
AFFINE CONSTANTS A1 TO A6: 1.03549192 0.00234524 -1.44691000 -0.00475127 1.14545367 -8.09546788
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 11.503 MM.

IF MAP PROJECTION IS ELLIPSOIDAL POLYCONIC, CENTRAL MERIDIAN= 1.8829 LONG. SCALE=1/59905856.5
AFFINE CONSTANTS A1 TO A6: 0.87954105 0.00061276 9.26596576 -0.00478387 1.04260768 -2.14818071
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 6.222 MM.

IF MAP PROJECTION IS SPHERICAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= 3.1037 LONG. SCALE AT CENT. MER.=1/57150071.5
AFFINE CONSTANTS A1 TO A6: 1.03130797 0.00262416 -1.15924271 -0.00442881 1.14542954 -8.11230631
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 11.843 MM.

IF MAP PROJECTION IS SPHERICAL POLYCONIC, CENTRAL MERIDIAN= 1.8808 LONG. SCALE=1/60128351.3
AFFINE CONSTANTS A1 TO A6: 0.87558145 0.00063130 9.55011144 -0.00489736 1.04298703 -2.16297784
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 6.203 MM.

IF MAP PROJECTION IS LAMBERT AZIMUTHAL EQUAL-AREA
CENTERED AT -1.3980 LAT. AND -0.1328 LONG. SCALE=1/54291480.4
AFFINE CONSTANTS A1 TO A6: 0.99491760 -0.00541355 0.69043941 0.00579261 0.99346439 -0.01705323
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.516 MM.

X= 66.549500 Y= 60.501500 LAT= 29.9034 DEG. LONG= -29.8812 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
45.0000	-114.0000	57.561500	70.209000
39.0000	-114.0000	56.582000	64.574500
33.0000	-114.0000	55.601500	58.944500
45.0000	-99.0000	67.723000	69.307500
39.0000	-99.0000	67.681000	63.596500
33.0000	-99.0000	67.649500	57.880000
45.0000	-84.0000	77.897000	70.088500
39.0000	-84.0000	78.794500	64.450000
33.0000	-84.0000	79.701500	58.803000

MERIDIAN CURVATURE= 0.000307 TOLERANCE= 0.006997
 MERIDIAN CURVATURE= -0.001844 TOLERANCE= 0.007001
 MERIDIAN CURVATURE= -0.001407 TOLERANCE= 0.007000
 PARALLEL CURVATURE= -0.165100 TOLERANCE= 0.003921

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 4589467.8
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.062 MM.

THIS MAP COVERS A SMALL ENOUGH AREA TO FIT A SECOND ORDER POLYNOMIAL.
 X= 65.117500 Y= 55.064000 LAT= 30.0340 DEG. LONG= -101.9300 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
40.0000	-82.0000	75.148500	102.854500
39.0000	-82.0000	74.028000	98.010000
37.0000	-82.0000	71.795000	88.328500
40.0000	-79.0000	86.155500	100.490000
39.0000	-79.0000	85.189500	95.611500
37.0000	-79.0000	83.251500	85.852000
40.0000	-76.0000	97.247500	98.446000
39.0000	-76.0000	96.438500	93.564500
37.0000	-76.0000	94.806500	83.748000

MERIDIAN CURVATURE= -0.000614 TOLERANCE= 0.006035
 MERIDIAN CURVATURE= 0.000543 TOLERANCE= 0.006032
 MERIDIAN CURVATURE= 0.000509 TOLERANCE= 0.006052
 PARALLEL CURVATURE= -0.029369 TOLERANCE= 0.003550

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 878614.3
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.134 MM.

THIS MAP COVERS A SMALL ENOUGH AREA TO FIT A SECOND ORDER POLYNOMIAL.
 X= 88.011500 Y= 90.006000 LAT= 38.0005 DEG. LONG= -78.0003 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
47.0000	-113.0000	58.824000	75.996000

37.0000 -113.0000 58.862000 65.993500
 27.0000 -113.0000 58.895500 55.998500
 47.0000 -95.0000 73.210000 76.040500
 37.0000 -95.0000 73.243500 66.044000
 27.0000 -95.0000 73.279500 56.044000
 47.0000 -76.0000 88.370000 76.086500
 37.0000 -76.0000 88.403000 66.101500
 27.0000 -76.0000 88.443000 56.090000

MERIDIAN CURVATURE= 0.000447 TOLERANCE= 0.004000
 MERIDIAN CURVATURE= -0.000249 TOLERANCE= 0.004001
 MERIDIAN CURVATURE= -0.000690 TOLERANCE= 0.004001
 PARALLEL CURVATURE= 0.000059 TOLERANCE= 0.002709
 PARALLEL CURVATURE= -0.000282 TOLERANCE= 0.002710
 PARALLEL CURVATURE= 0.000130 TOLERANCE= 0.002709
 SKEWNESS OF STRAIGHT PARALLEL= -0.000418 TOLERANCE= 0.003391
 SKEWNESS OF STRAIGHT PARALLEL= 0.000348 TOLERANCE= 0.003391
 UNEQUALITY OF MERIDIAN SPACING= -0.001664 TOLERANCE= 0.002714
 SKEWNESS OF STRAIGHT MERIDIAN= 0.000448 TOLERANCE= 0.004000
 SKEWNESS OF STRAIGHT MERIDIAN= 0.000046 TOLERANCE= 0.004004
 LACK OF PERPENDICULARITY OF MERIDIANS AND PARALLELS= -0.000706 TOLERANCE= 0.003390

IF MAP PROJECTION IS SPHERICAL MERCATOR. THE SCALE AT THE EQUATOR =1/ 5488244.6
 AFFINE CONSTANTS A1 TO A6: 1.00006676 0.00025967 -0.02471709 -0.00003583 1.01112314 -0.73191925
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 8.092 MM.

IF MAP PROJECTION IS ELLIPSOIDAL MERCATOR. SCALE AT EQUATOR=1/ 5488244.6
 AFFINE CONSTANTS A1 TO A6: 1.00006672 0.00027376 -0.02564405 -0.00002173 1.00681717 -0.44857268
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 8.126 MM.

IF MAP PROJECTION IS MILLER CYLINDRICAL. SCALE=1/ 5488244.6
 AFFINE CONSTANTS A1 TO A6: 1.00006583 0.00054628 -0.04357648 0.00025044 0.92351712 5.03287657
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 4.455 MM.

IF MAP PROJECTION IS EQUIRECTANGULAR WITH 36.9347 DEG. LAT. N & S AS STANDARD PARALLELS. SCALE=1/ 4386868.2
 AFFINE CONSTANTS A1 TO A6: 1.00006664 0.00029867 -0.03109972 0.00000233 0.99920359 0.06203221
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.163 MM.

X= 80.436500 Y= 65.062000 LAT= 35.9953 DEG. LONG= -85.9885 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
41.0000	-76.0000	57.028000	75.064500
40.0000	-76.0000	55.628500	66.474000
39.0000	-76.0000	54.228000	57.894000
41.0000	-75.0000	63.540000	74.040000
40.0000	-75.0000	62.233000	65.435500
39.0000	-75.0000	60.928500	56.831500
41.0000	-74.0000	70.055500	73.089500
40.0000	-74.0000	68.838500	64.458000
39.0000	-74.0000	67.632500	55.850000

MERIDIAN CURVATURE= 0.000308 TOLERANCE= 0.004598
 MERIDIAN CURVATURE= -0.000275 TOLERANCE= 0.004596
 MERIDIAN CURVATURE= -0.000876 TOLERANCE= 0.004595
 PARALLEL CURVATURE= -0.011185 TOLERANCE= 0.006071

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 502296.1
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.061 MM.

THIS MAP COVERS A SMALL ENOUGH AREA TO FIT A SECOND ORDER POLYNOMIAL.
X= 62.232000 Y= 65.433500 LAT= 40.0002 DEG. LONG= -75.0001 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
36.0000	-115.0000	58.311500	67.602500
34.0000	-115.0000	56.872500	63.434500
32.0000	-115.0000	55.437500	59.274000
36.0000	-109.0000	68.380500	64.471000
34.0000	-109.0000	67.207500	60.220000
32.0000	-109.0000	66.036000	55.975500
36.0000	-103.0000	78.622000	61.992500
34.0000	-103.0000	77.721500	57.672500
32.0000	-103.0000	76.818500	53.366000

MERIDIAN CURVATURE=	-0.000303	TOLERANCE=	0.009080
MERIDIAN CURVATURE=	0.000064	TOLERANCE=	0.009077
MERIDIAN CURVATURE=	0.001182	TOLERANCE=	0.009078
PARALLEL CURVATURE=	-0.064081	TOLERANCE=	0.003795

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 1982009.2
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.115 MM.

THIS MAP COVERS A SMALL ENOUGH AREA TO FIT A SECOND ORDER POLYNOMIAL.
X= 66.080500 Y= 62.829500 LAT= 34.9999 DEG. LONG= -109.9991 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
38.7500	-77.5000	59.030000	69.205000
38.5000	-77.5000	58.042000	64.949000
38.2500	-77.5000	57.061500	60.693000
38.7500	-77.0000	65.690000	67.681500
38.5000	-77.0000	64.725000	63.420000
38.2500	-77.0000	63.767500	59.166000
38.7500	-76.5000	72.372000	66.183500
38.5000	-76.5000	71.433500	61.931000
38.2500	-76.5000	70.497000	57.674000

MERIDIAN CURVATURE=	-0.001673	TOLERANCE=	0.009157
MERIDIAN CURVATURE=	-0.001298	TOLERANCE=	0.009164
MERIDIAN CURVATURE=	-0.000671	TOLERANCE=	0.009181
PARALLEL CURVATURE=	-0.004346	TOLERANCE=	0.005848
PARALLEL CURVATURE=	-0.006502	TOLERANCE=	0.005828

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 250304.3
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.041 MM.

THIS MAP COVERS A SMALL ENOUGH AREA TO FIT A SECOND ORDER POLYNOMIAL.
X= 69.027500 Y= 66.921500 LAT= 38.7496 DEG. LONG= -76.7499 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
-78.0000	-200.0000	56.948500	70.387000
-81.0000	-200.0000	59.341000	64.977500
-84.0000	-200.0000	61.718500	59.594000
-78.0000	-180.0000	64.873000	72.350000
-81.0000	-180.0000	65.270500	66.448000
-84.0000	-180.0000	65.666500	60.572500
-78.0000	-160.0000	72.991500	71.472000
-81.0000	-160.0000	71.346500	65.792500
-84.0000	-160.0000	69.712500	60.135000

MERIDIAN CURVATURE= 0.000544 TOLERANCE= 0.006780
MERIDIAN CURVATURE= -0.000048 TOLERANCE= 0.006777
MERIDIAN CURVATURE= -0.000755 TOLERANCE= 0.006779
PARALLEL CURVATURE= 0.350554 TOLERANCE= 0.004899

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 2234719.7
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 7.206 MM.

SKEWNESS OF STRAIGHT MERIDIAN= 0.349165 TOLERANCE= 0.006762
SKEWNESS OF STRAIGHT MERIDIAN= 0.349172 TOLERANCE= 0.006763
LACK OF CONVERGENCE OF MERIDIANS= 0.007915 TOLERANCE= 0.787976
MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= 0.000365 TOLERANCE= 0.003041
UNEQUALITY OF MERIDIAN SPACING= -0.000072 TOLERANCE= 0.014672
ELLIPSOIDAL LAMBERT CONFORMAL CONIC:
FAILURE TO FIT PROJECTION= 0.000676 TOLERANCE= 0.000993
FAILURE TO FIT PROJECTION= 0.001371 TOLERANCE= 0.001277
SPHERICAL LAMBERT CONFORMAL CONIC:
FAILURE TO FIT PROJECTION= 0.000611 TOLERANCE= 0.000993
FAILURE TO FIT PROJECTION= 0.001259 TOLERANCE= 0.001277

IF MAP PROJECTION IS SPHERICAL POLAR STEREOGRAPHIC. SCALE=1/ 2249116.5 AT POLE.
AFFINE CONSTANTS A1 TO A6: 0.99953662 0.00011584 0.01871976 -0.00021418 0.99790047 0.14553597
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.078 MM.

X= 75.079000 Y= 66.451000 LAT= -79.9857 DEG. LONG= -149.8949 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
-25.0000	-65.0000	52.962000	77.716000
-50.0000	-65.0000	55.852000	66.418500
-75.0000	-65.0000	59.290000	55.374000
-25.0000	-45.0000	61.521500	78.698000
-50.0000	-45.0000	61.601500	67.250000
-75.0000	-45.0000	61.704000	55.782000
-25.0000	-25.0000	70.082000	77.816000
-50.0000	-25.0000	67.355000	66.515000
-75.0000	-25.0000	64.122000	55.419500

MERIDIAN CURVATURE= -0.051340 TOLERANCE= 0.003444
PARALLEL CURVATURE= 0.216896 TOLERANCE= 0.004645

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 9554385.1
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 17.963 MM.

IF MAP PROJECTION IS ELLIPSOIDAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -44.5408 LONG. SCALE AT CENT. MER.=1/ 9481519.1
AFFINE CONSTANTS A1 TO A6: 0.99378254 0.13679787 -6.04478028 -0.13544274 1.00725587 7.76584579
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 3.345 MM.

IF MAP PROJECTION IS ELLIPSOIDAL POLYCONIC, CENTRAL MERIDIAN= -44.5508 LONG. SCALE=1/ 9479503.3
AFFINE CONSTANTS A1 TO A6: 0.98049920 0.13909916 -5.34171740 -0.13590203 1.00788704 7.75804775
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 3.722 MM.

IF MAP PROJECTION IS SPHERICAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -44.5411 LONG. SCALE AT CENT. MER.=1/ 9509414.6
AFFINE CONSTANTS A1 TO A6: 0.98964120 0.13657818 -5.75690681 -0.13496197 1.00521247 7.88735264
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 3.406 MM.

IF MAP PROJECTION IS SPHERICAL POLYCONIC, CENTRAL MERIDIAN= -44.5509 LONG. SCALE=1/ 9507428.2
AFFINE CONSTANTS A1 TO A6: 0.97648092 0.13884215 -5.05963552 -0.13539692 1.00583462 7.87861496
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 3.756 MM.

IF MAP PROJECTION IS LAMBERT AZIMUTHAL EQUAL-AREA
CENTERED AT -65.4381 LAT. AND -44.1306 LONG. SCALE=1/ 9130784.2
AFFINE CONSTANTS A1 TO A6: 1.06449288 -0.01768407 -3.14379044 0.02112206 1.01836615 -2.72526868
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 4.082 MM.

IF MAP PROJECTION IS AZIMUTHAL EQUIDISTANT
CENTERED AT -61.5074 LAT. AND -44.1307 LONG. SCALE=1/ 9466718.2
AFFINE CONSTANTS A1 TO A6: 1.03265589 -0.01456011 -1.17498565 0.01671749 1.00200535 -1.23979850
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 2.645 MM.

IF MAP PROJECTION IS ORTHOGRAPHIC
CENTERED AT -74.8681 LAT. AND -44.1336 LONG. SCALE=1/ 7360250.2
AFFINE CONSTANTS A1 TO A6: 1.25592812 -0.02465473 -15.82145408 0.03374175 1.12171814 -11.14495997
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 17.669 MM.

IF MAP PROJECTION IS SPHERICAL STEREOGRAPHIC
CENTERED AT -49.5109 LAT. AND -43.4418 LONG. SCALE=1/ 9662590.2
AFFINE CONSTANTS A1 TO A6: 1.00484976 -0.01063109 0.19601968 0.00942543 1.00563556 -0.80555157
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.243 MM.

X= 60.152000 Y= 67.196000 LAT= -49.9832 DEG. LONG= -49.9775 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
-6.0000	-122.0000	57.920000	73.810000
-10.0000	-122.0000	57.152000	64.561500
-12.0000	-122.0000	56.768500	59.929500
-6.0000	-120.0000	62.547500	73.410000
-10.0000	-120.0000	61.737500	64.150500
-12.0000	-120.0000	61.318000	59.519000
-6.0000	-118.0000	67.187500	72.972000
-10.0000	-118.0000	66.326000	63.684500
-12.0000	-118.0000	65.878500	59.036000

MERIDIAN CURVATURE= -0.000245 TOLERANCE= 0.006458
MERIDIAN CURVATURE= 0.003073 TOLERANCE= 0.006452
MERIDIAN CURVATURE= 0.003477 TOLERANCE= 0.006427
PARALLEL CURVATURE= 0.007892 TOLERANCE= 0.008597
PARALLEL CURVATURE= 0.011820 TOLERANCE= 0.008681

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 1873479.0
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.108 MM.

THIS MAP COVERS A SMALL ENOUGH AREA TO FIT A SECOND ORDER POLYNOMIAL.
X= 57.540000 Y= 69.182000 LAT= -8.0017 DEG. LONG= -122.0003 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
-5.0000	-130.0000	58.776500	68.240500
-10.0000	-130.0000	58.156500	63.106000
-15.0000	-130.0000	57.527500	57.883500
-5.0000	-125.0000	63.944000	67.616500
-10.0000	-125.0000	63.323500	62.482500
-15.0000	-125.0000	62.694000	57.264000
-5.0000	-115.0000	74.249000	66.366000
-10.0000	-115.0000	73.626500	61.230000
-15.0000	-115.0000	72.992000	56.005000

MERIDIAN CURVATURE= -0.000307 TOLERANCE= 0.007669
MERIDIAN CURVATURE= -0.000229 TOLERANCE= 0.007672
MERIDIAN CURVATURE= 0.000229 TOLERANCE= 0.007666
PARALLEL CURVATURE= 0.000586 TOLERANCE= 0.005769
PARALLEL CURVATURE= 0.000884 TOLERANCE= 0.005770
PARALLEL CURVATURE= 0.002316 TOLERANCE= 0.005771
SKEWNESS OF STRAIGHT PARALLEL= -0.000084 TOLERANCE= 0.007710
SKEWNESS OF STRAIGHT PARALLEL= -0.000752 TOLERANCE= 0.007648
UNEQUALITY OF MERIDIAN SPACING= -0.002840 TOLERANCE= 0.005785
SKEWNESS OF STRAIGHT MERIDIAN= 0.000108 TOLERANCE= 0.007735
SKEWNESS OF STRAIGHT MERIDIAN= 0.000337 TOLERANCE= 0.007733
LACK OF PERPENDICULARITY OF MERIDIANS AND PARALLELS= -0.000003 TOLERANCE= 0.007710

IF MAP PROJECTION IS SPHERICAL MERCATOR. THE SCALE AT THE EQUATOR =1/ 4216029.5
AFFINE CONSTANTS A1 TO A6: 1.00105656 0.00166470 -0.17102099 0.00174322 1.01296537 -0.92054386
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.149 MM.

X= 68.471000 Y= 61.856500 LAT= -9.9971 DEG. LONG= -120.0017 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
47.7500	-121.7500	57.140500	66.210000
47.5000	-121.7500	56.559500	61.916000
47.2500	-121.7500	55.962000	57.597500
47.7500	-121.0000	65.903000	65.050000
47.5000	-121.0000	65.354000	60.741500
47.2500	-121.0000	64.797500	56.413500
47.7500	-120.2500	74.677500	63.971500

47.5000 -120.2500 74.168000 59.656000
47.2500 -120.2500 73.650500 55.315500

MERIDIAN CURVATURE= 0.002997 TOLERANCE= 0.009203
MERIDIAN CURVATURE= 0.001140 TOLERANCE= 0.009188
MERIDIAN CURVATURE= 0.001147 TOLERANCE= 0.009178
PARALLEL CURVATURE= -0.009317 TOLERANCE= 0.004525

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 251360.5
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.030 MM.

THIS MAP COVERS A SMALL ENOUGH AREA TO FIT A SECOND ORDER POLYNOMIAL.
X= 71.224500 Y= 60.008000 LAT= 47.5000 DEG. LONG= -120.5004 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
39.2500	-77.5000	54.928000	70.957500
38.7500	-77.5000	56.460500	62.389500
38.2500	-77.5000	57.995000	53.808000
39.2500	-76.7500	64.935500	72.788000
38.7500	-76.7500	66.541500	64.232000
38.2500	-76.7500	68.150000	55.675500
39.2500	-76.0000	74.913500	74.708000
38.7500	-76.0000	76.600000	66.168000
38.2500	-76.0000	78.283000	57.623000

MERIDIAN CURVATURE= 0.670047 TOLERANCE= 0.004592
MERIDIAN CURVATURE= -0.000272 TOLERANCE= 0.004595
MERIDIAN CURVATURE= 0.003505 TOLERANCE= 0.004594
PARALLEL CURVATURE= -0.009187 TOLERANCE= 0.003934

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 251003.0
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.053 MM.

THIS MAP COVERS A SMALL ENOUGH AREA TO FIT A SECOND ORDER POLYNOMIAL.
X= 69.080500 Y= 69.142000 LAT= 38.9998 DEG. LONG= -76.5000 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
41.7500	-73.7500	58.017000	66.359500
41.5000	-73.7500	57.459500	62.031500
41.2500	-73.7500	56.904000	57.696000
41.7500	-73.0000	67.747000	65.155500
41.5000	-73.0000	67.228500	60.818000
41.2500	-73.0000	66.707500	56.479500
41.7500	-72.2500	77.491500	64.028500
41.5000	-72.2500	77.011500	59.686500
41.2500	-72.2500	76.527000	55.342500

MERIDIAN CURVATURE= -0.000673 TOLERANCE= 0.009159
MERIDIAN CURVATURE= 0.000541 TOLERANCE= 0.009155

MERIDIAN CURVATURE= 0.000973 TOLERANCE= 0.009154
 PARALLEL CURVATURE= -0.007972 TOLERANCE= 0.004079

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 250199.6
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.025 MM.

THIS MAP COVERS A SMALL ENOUGH AREA TO FIT A SECOND ORDER POLYNOMIAL.
 X= 70.484500 Y= 60.432000 LAT= 41.4999 DEG. LONG= -72.7502 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
-2.0000	12.0000	52.167000	66.602500
-8.0000	12.0000	52.236000	59.577500
-14.0000	12.0000	52.315000	52.451500
-2.0000	20.0000	61.507500	66.701500
-8.0000	20.0000	61.581500	59.679000
-14.0000	20.0000	61.659000	52.561500
-2.0000	28.0000	70.837000	66.807000
-8.0000	28.0000	70.923000	59.790000
-14.0000	28.0000	71.000500	52.666000

MERIDIAN CURVATURE= -0.001264 TOLERANCE= 0.005653
 MERIDIAN CURVATURE= -0.000351 TOLERANCE= 0.005658
 MERIDIAN CURVATURE= 0.001377 TOLERANCE= 0.005657
 PARALLEL CURVATURE= -0.000709 TOLERANCE= 0.004285
 PARALLEL CURVATURE= -0.001021 TOLERANCE= 0.004281
 PARALLEL CURVATURE= 0.000586 TOLERANCE= 0.004281
 SKEWNESS OF STRAIGHT PARALLEL= -0.000262 TOLERANCE= 0.004989
 SKEWNESS OF STRAIGHT PARALLEL= -0.000911 TOLERANCE= 0.004950
 UNEQUALITY OF MERIDIAN SPACING= -0.001171 TOLERANCE= 0.004290
 SKEWNESS OF STRAIGHT MERIDIAN= -0.000715 TOLERANCE= 0.005695
 SKEWNESS OF STRAIGHT MERIDIAN= -0.001718 TOLERANCE= 0.005698
 LACK OF PERPENDICULARITY OF MERIDIANS AND PARALLELS= 0.000777 TOLERANCE= 0.004988

IF MAP PROJECTION IS SPHERICAL MERCATOR. THE SCALE AT THE EQUATOR =1/ 3755707.9
 AFFINE CONSTANTS A1 TO A6: 0.99942073 -0.00038132 0.05199587 -0.00002497 1.00162666 -0.09496805
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.112 MM.

X= 56.956000 Y= 54.904000 LAT= -11.9948 DEG. LONG= 15.9951 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
26.5000	-78.5000	52.826500	62.675000
26.0000	-78.5000	53.997000	58.506000
25.5000	-78.5000	55.165000	54.353000
26.5000	-78.0000	56.578000	63.727500
26.0000	-78.0000	57.759500	59.563500
25.5000	-78.0000	58.942500	55.417500
26.5000	-77.0000	64.055000	65.893500
26.0000	-77.0000	65.271500	61.734000
25.5000	-77.0000	66.485000	57.596500

MERIDIAN CURVATURE= -0.000445 TOLERANCE= 0.009255
MERIDIAN CURVATURE= -0.001474 TOLERANCE= 0.009259
MERIDIAN CURVATURE= -0.000764 TOLERANCE= 0.009253
PARALLEL CURVATURE= -0.008447 TOLERANCE= 0.007702

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 504817.6
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.034 MM.

THIS MAP COVERS A SMALL ENOUGH AREA TO FIT A SECOND ORDER POLYNOMIAL.
X= 61.517500 Y= 60.647500 LAT= 26.0009 DEG. LONG= -77.4999 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
66.0000	-170.0000	58.483000	73.003500
62.0000	-170.0000	56.424000	66.300000
58.0000	-170.0000	54.359500	59.592000
66.0000	-150.0000	72.543500	70.901000
62.0000	-150.0000	72.563000	63.886500
58.0000	-150.0000	72.580000	56.869500
66.0000	-130.0000	86.595000	73.081500
62.0000	-130.0000	88.692500	66.390500
58.0000	-130.0000	90.791000	59.696500

MERIDIAN CURVATURE= 0.000561 TOLERANCE= 0.005702
MERIDIAN CURVATURE= 0.000357 TOLERANCE= 0.005701
MERIDIAN CURVATURE= -0.000008 TOLERANCE= 0.005703
PARALLEL CURVATURE= -0.302384 TOLERANCE= 0.002813

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 2501633.6
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 3.777 MM.

SKEWNESS OF STRAIGHT MERIDIAN= -0.300786 TOLERANCE= 0.005703
SKEWNESS OF STRAIGHT MERIDIAN= -0.300998 TOLERANCE= 0.005703
LACK OF CONVERGENCE OF MERIDIANS= 0.034771 TOLERANCE= 1.434756
MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= 0.000037 TOLERANCE= 0.000883
UNEQUALITY OF MERIDIAN SPACING= -0.000420 TOLERANCE= 0.002797
ELLIPSOIDAL LAMBERT CONFORMAL CONIC:
FAILURE TO FIT PROJECTION= -0.000516 TOLERANCE= 0.000395
SPHERICAL LAMBERT CONFORMAL CONIC:
FAILURE TO FIT PROJECTION= -0.000336 TOLERANCE= 0.000395
FAILURE TO FIT PROJECTION= -0.001051 TOLERANCE= 0.000374
ELLIPSOIDAL ALBERS EQUAL AREA CONIC:
FAILURE TO FIT PROJECTION= -0.000109 TOLERANCE= 0.000722

IF MAP PROJECTION IS ELLIPSOIDAL ALBERS EQUAL-AREA CONIC.
SCALE=1/ 2509045.7 STANDARD PARALLELS= 54.7181 65.2343 DEG. LAT.
AFFINE CONSTANTS A1 TO A6: 1.00010780 -0.00003718 -0.00309703 -0.00014855 0.99979916 0.02724575
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.148 MM.

X= 80.186500 Y= 67.990000 LAT= 63.9923 DEG. LONG= -140.0020 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
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39.0000	-77.0000	55.626500	66.346000
38.0000	-77.0000	55.131000	62.030000
37.0000	-77.0000	54.637000	57.712000
39.0000	-75.0000	62.376000	65.652500
38.0000	-75.0000	61.977000	61.324000
37.0000	-75.0000	61.575500	56.993500
39.0000	-73.0000	69.151500	65.102500
38.0000	-73.0000	68.843500	60.762500
37.0000	-73.0000	68.532500	56.421500

MERIDIAN CURVATURE= -0.000395 TOLERANCE= 0.009205
MERIDIAN CURVATURE= 0.000530 TOLERANCE= 0.009200
MERIDIAN CURVATURE= 0.000671 TOLERANCE= 0.009192
PARALLEL CURVATURE= -0.021392 TOLERANCE= 0.005890

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 1005033.2
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.035 MM.

THIS MAP COVERS A SMALL ENOUGH AREA TO FIT A SECOND ORDER POLYNOMIAL.
X= 58.552000 Y= 61.660000 LAT= 38.0003 DEG. LONG= -75.9999 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
48.0000	-122.0000	52.420500	67.679000
44.0000	-122.0000	52.863500	58.922000
40.0000	-122.0000	53.315500	50.154500
48.0000	-116.0000	61.264000	68.418000
44.0000	-116.0000	62.266500	59.720500
40.0000	-116.0000	63.269000	51.028000
48.0000	-108.0000	72.937000	70.286000
44.0000	-108.0000	74.664000	61.680500
40.0000	-108.0000	76.384000	53.064500

MERIDIAN CURVATURE= -0.000963 TOLERANCE= 0.004559
MERIDIAN CURVATURE= -0.000065 TOLERANCE= 0.004570
MERIDIAN CURVATURE= 0.001016 TOLERANCE= 0.004555
PARALLEL CURVATURE= -0.075311 TOLERANCE= 0.003946

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 1999156.1
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.613 MM.

THIS MAP COVERS A SMALL ENOUGH AREA TO FIT A SECOND ORDER POLYNOMIAL.
X= 69.166000 Y= 56.256500 LAT= 42.0084 DEG. LONG= -112.0024 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
24.0000	-90.0000	49.571500	67.260000
18.0000	-90.0000	50.282000	61.496500
12.0000	-90.0000	50.992500	55.708000
24.0000	-78.0000	60.163000	68.912500

18.0000	-78.0000	61.243000	63.198500
12.0000	-78.0000	62.325500	57.487500
24.0000	-66.0000	70.588500	71.270500
18.0000	-66.0000	72.052500	65.640500
12.0000	-66.0000	73.520500	60.003500

MERIDIAN CURVATURE= 0.000524 TOLERANCE= 0.006873
 MERIDIAN CURVATURE= -0.000518 TOLERANCE= 0.006880
 MERIDIAN CURVATURE= -0.000362 TOLERANCE= 0.006872
 PARALLEL CURVATURE= -0.067660 TOLERANCE= 0.003737

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 4496715.8
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.253 MM.

THIS MAP COVERS A SMALL ENOUGH AREA TO FIT A SECOND ORDER POLYNOMIAL.
 X= 54.235000 Y= 53.173500 LAT= 8.9766 DEG. LONG= -86.9833 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
58.0000	-92.0000	51.187000	73.349000
50.0000	-92.0000	51.696000	61.682500
42.0000	-92.0000	52.190000	50.060500
58.0000	-84.0000	57.417000	73.959000
50.0000	-84.0000	59.167500	62.414500
42.0000	-84.0000	60.894500	50.910500
58.0000	-76.0000	63.538500	75.225500
50.0000	-76.0000	66.509500	63.918000
42.0000	-76.0000	69.456000	52.672500

MERIDIAN CURVATURE= 0.001122 TOLERANCE= 0.003432
 MERIDIAN CURVATURE= 0.001475 TOLERANCE= 0.003432
 MERIDIAN CURVATURE= 0.000683 TOLERANCE= 0.003431
 PARALLEL CURVATURE= -0.106413 TOLERANCE= 0.006394

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/ 3005902.7
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 2.083 MM.

SKEWNESS OF STRAIGHT MERIDIAN= -0.106883 TOLERANCE= 0.003426
 SKEWNESS OF STRAIGHT MERIDIAN= -0.106454 TOLERANCE= 0.003424
 LACK OF CONVERGENCE OF MERIDIANS= 0.064463 TOLERANCE= 2.506172
 MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= -0.000113 TOLERANCE= 0.000643
 UNEQUALITY OF MERIDIAN SPACING= -0.000515 TOLERANCE= 0.005240
 ELLIPSOIDAL LAMBERT CONFORMAL CONIC:
 FAILURE TO FIT PROJECTION= 0.000438 TOLERANCE= 0.000312
 SPHERICAL LAMBERT CONFORMAL CONIC:
 FAILURE TO FIT PROJECTION= 0.000864 TOLERANCE= 0.000312
 ELLIPSOIDAL ALBERS EQUAL AREA CONIC:
 FAILURE TO FIT PROJECTION= -0.000799 TOLERANCE= 0.000899

IF MAP PROJECTION IS ELLIPSOIDAL ALBERS EQUAL-AREA CONIC.
 SCALE=1/ 3002257.8 STANDARD PARALLELS= 46.6713 53.2754 DEG. LAT.
 AFFINE CONSTANTS A1 TO A6: 1.00068996 0.00021194 -0.05239407 -0.00019612 0.99943476 0.05413657
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.292 MM.

X= 55.161000 Y= 64.846500 LAT= 51.9841 DEG. LONG= -87.9934 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
50.0000	-140.0000	63.497000	72.734500
0.0	-140.0000	60.609500	68.445500
-50.0000	-140.0000	60.909000	62.503500
50.0000	-70.0000	67.212500	71.214000
0.0	-70.0000	67.411500	66.606000
-50.0000	-70.0000	67.421000	61.993500
50.0000	0.0	70.694500	73.183000
0.0	0.0	74.059500	69.075000
-50.0000	0.0	73.874500	62.728000

MERIDIAN CURVATURE= -0.642897 TOLERANCE= 0.007230
PARALLEL CURVATURE= -0.903089 TOLERANCE= 0.009982

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/47198387.0
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 23.166 MM.

IF MAP PROJECTION IS ELLIPSOIDAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -72.2433 LONG. SCALE AT CENT. MER.=1/52031776.3
AFFINE CONSTANTS A1 TO A6: 0.84222968 -0.31827152 35.06144039 0.24037962 1.03504382 -18.38830386
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 45.399 MM.

IF MAP PROJECTION IS ELLIPSOIDAL POLYCONIC, CENTRAL MERIDIAN= -73.2579 LONG. SCALE=1/55428276.5
AFFINE CONSTANTS A1 TO A6: 0.65544394 -0.28999499 45.47874441 0.18186565 0.91945568 -6.71795798
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 30.679 MM.

IF MAP PROJECTION IS SPHERICAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -72.2103 LONG. SCALE AT CENT. MER.=1/52135106.7
AFFINE CONSTANTS A1 TO A6: 0.86657452 -0.31379901 33.16215724 0.24928590 1.03119875 -18.71351857
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 48.536 MM.

IF MAP PROJECTION IS SPHERICAL POLYCONIC, CENTRAL MERIDIAN= -73.2584 LONG. SCALE=1/55616770.2
AFFINE CONSTANTS A1 TO A6: 0.65267871 -0.29000579 45.67726323 0.18095390 0.91922224 -6.63682845
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 30.622 MM.

IF MAP PROJECTION IS LAMBERT AZIMUTHAL EQUAL-AREA
CENTERED AT -89.5797 LAT. AND 15.7715 LONG. SCALE=1/35992253.6
AFFINE CONSTANTS A1 TO A6: -0.79853902 -0.61148286161.94969367 0.98489101 -0.01031827 -9.32290762
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 124.071 MM.

IF MAP PROJECTION IS AZIMUTHAL EQUIDISTANT
CENTERED AT 42.2316 LAT. AND -74.0407 LONG. SCALE=1/47250675.0
AFFINE CONSTANTS A1 TO A6: 1.01156842 0.01235538 -1.68528572 -0.01150968 1.00396925 0.52999783
MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 1.221 MM.

X= 68.910500 Y= 72.707500 LAT= 59.9822 DEG. LONG= -29.4702 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
60.0000	-120.0000	50.868500	58.794500
40.0000	-120.0000	50.541500	56.030500
10.0000	-120.0000	50.725500	51.666500
60.0000	-90.0000	52.879500	58.962500

40.0000 -90.0000 53.630000 56.376000
 10.0000 -90.0000 54.639000 52.438000
 60.0000 -70.0000 54.086000 59.521500
 40.0000 -70.0000 55.531500 57.149500
 10.0000 -70.0000 57.217000 53.158000

MERIDIAN CURVATURE= -0.159898 TOLERANCE= 0.011765
 PARALLEL CURVATURE= -0.350531 TOLERANCE= 0.024952

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/32344139.1
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 5.294 MM.

IF MAP PROJECTION IS ELLIPSOIDAL TRANSVERSE MERCATOR, CENTRAL MERIDIAN= -94.4072 LONG. SCALE AT CENT. MER.=1/32726145.6
 AFFINE CONSTANTS A1 TO A6: 1.01418105 0.01741287 -1.79789555 -0.01223318 0.99136127 1.16086853
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.566 MM.

X= 52.841000 Y= 54.796000 LAT= 30.0385 DEG. LONG= -100.1494 DEG.

MAP PROJECTION DETERMINATION FOR THE FOLLOWING 9 POINTS:

LAT.	LONG.	X	Y
70.0000	-120.0000	51.649500	58.260000
60.0000	-120.0000	51.114500	55.874500
50.0000	-120.0000	50.555000	53.490000
70.0000	-90.0000	54.107000	58.259000
60.0000	-90.0000	54.670000	55.880000
50.0000	-90.0000	55.243000	53.505500
70.0000	-50.0000	56.896500	59.927000
60.0000	-50.0000	58.736500	58.305500
50.0000	-50.0000	60.574000	56.691500

MERIDIAN CURVATURE= 0.009850 TOLERANCE= 0.016347
 MERIDIAN CURVATURE= -0.004408 TOLERANCE= 0.016369
 MERIDIAN CURVATURE= -0.001625 TOLERANCE= 0.016333
 PARALLEL CURVATURE= -0.539323 TOLERANCE= 0.014292

IF SECOND-ORDER POLYNOMIAL IS APPLIED, APPROX. SCALE=1/17949982.6
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 4.664 MM.

SKEWNESS OF STRAIGHT MERIDIAN= -0.453000 TOLERANCE= 0.016362
 SKEWNESS OF STRAIGHT MERIDIAN= -0.616059 TOLERANCE= 0.016336
 LACK OF CONVERGENCE OF MERIDIANS= 0.021278 TOLERANCE= 0.861871
 MEAN LACK OF CONCENTRICITY OF PARALLEL ARCS= 0.002178 TOLERANCE= 0.006849
 UNEQUALITY OF MERIDIAN SPACING= -0.000947 TOLERANCE= 0.010620
 ELLIPSOIDAL LAMBERT CONFORMAL CONIC:
 FAILURE TO FIT PROJECTION= -0.007018 TOLERANCE= 0.003158
 SPHERICAL LAMBERT CONFORMAL CONIC:
 FAILURE TO FIT PROJECTION= -0.006575 TOLERANCE= 0.003156
 ELLIPSOIDAL ALBERS EQUAL AREA CONIC:
 FAILURE TO FIT PROJECTION= 0.001892 TOLERANCE= 0.002265

IF MAP PROJECTION IS ELLIPSOIDAL ALBERS EQUAL-AREA CONIC.
 SCALE=1/17997522.0 STANDARD PARALLELS= 53.1177 73.4463 DEG. LAT.
 AFFINE CONSTANTS A1 TO A6: 1.00216567 -0.00112452 -0.05405217 0.00171082 1.00572881 -0.42263944
 MEAN LEAST-SQUARES RESIDUAL FOR 9 GIVEN POINTS IS 0.228 MM.

X= 56.744000 Y= 53.971500 LAT= 49.9364 DEG. LONG= -80.0451 DEG.