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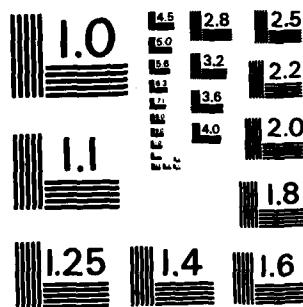
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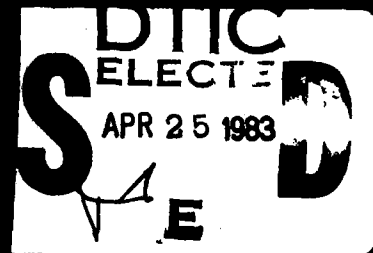
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DESIGN PROGRAM DOCUMENTATION

Volume 7

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Performed for
Ocean Engineering and Construction Project Office
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FLEET MOORING LEG
DESIGN PROGRAM DOCUMENTATION

Volume 7

SOURCE LISTINGS:
TABLE AND GRAPHS

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IV. SOURCE LISTINGS

TABLE AND GRAPHS

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SLACK	59	TSPLIT	122	LENH	213	CSEXHP	295
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```

C      integer*1      cgrp1(44)
C      common /grp1/ cgrp1
C
C      GRP2CN
C
C      integer*1      cgrp21(218),cgrp22(82)
C      common /grp2cn/ cgrp21,      cgrp22
C
C      PRINT TABLES OF INPUT PARAMETERS AND COMPUTED VALUES
C
C      call RWCOM1(1)
C      call ovlink('GRIN1 ')
C      call ovlink('GRIN2 ')
C      call ovlink('GROUT1 ')
C      call ovlink('GROUT2 ')
C      call RWCOM1(2)
C      return
C      end

```

*

12. F

```

common /varin/ nleg,nst,
&  nnca,nncb,
&  ang1a,ang1b,
&  scop1a,scop1b,wgt1a,wgt1b,clmp1a,clmp1b,
&  scop2a,scop2b,wgt2a,wgt2b,clmp2a,clmp2b,
&  scop3a,scop3b,wgt3a,wgt3b,
&  slip,frict,          clmp3,
&  scop4,          wgt4,
&  anksep,
&  plx,plz,p1d,
&  p2x,p2z,p2d,
&  p3x,p3z,p3d,
&  hload,hdir,
&  rbuoy,xbuoy,zbuoy,
&  dep1ho,pdir

C
C  GCB
C
integer*2 gbuff(24),lugraf,lupifl,ludbug
common /gcb/ gbuff ,lugraf,lupifl,ludbug
C
C LOCAL VARIABLES
C
integer*1 legnm(23,3)
integer*2 rdate
integer*2 three,five
integer*2 funkey
C
C DATA INITIALIZATION
C
data three,five/3,5/
data legnm/'simple
& 'compound - spider plate'/
, 'compound - equalizer '
C
C EXECUTABLE PORTION
C
C HEADER
C
call gfini
call date(rdate)
call undate(rdate,ldate)
call time(ihour,imin,isecl)

```

```

write(screen,1005) ihour,imin,isec
1005 format(1x,'SOLUTION COMPLETED AT ',i2,' ',i2,' ',i2)
call readfk(funkey)
call erase
call chrsiz(three)
write(screen,1010) date,ihour,imin,isec
1010 format(1x,'Date ',5a2,38x,'SUMMARY',37x,
& 'Time ',i2,' ',i2,' ',i2,)
write(screen,1011)
1011 format('+','')
call chrsiz(five)
write(screen,1020) title
1020 format(1x,18x,50a1)
write(screen,1030)
1030 format(1x,'INPUT ')
write(screen,1011)
c FILE NAMES
call chrsiz(three)
write(screen,1040) ifile,ofile
1040 format('+',12x,'Original Input From File ',32a1,
& ' Revised to File ',32a1)
c UNITS
write(screen,1050)
1050 format(1x,13x,'Angles - Degrees'//
& 1x,13x,'Distances - Feet'//
& 1x,5x,'Units Linear Weights - Pounds/Foot'//
& 1x,13x,'Weights - Kilopounds'//
& 1x,13x,'Forces - Kilopounds')
c LEC TYPE
write(screen,1110) legnm(1,ileg) 23
1110 format(1x,'LEC '//
& 1x,2x,'Type ',23a1,'---A--- ---B---')
c ANCHOR SEPARATION
write(screen,1120)
1120 format(1x,2x,'Anchor Separation')
if (anksep ne 0000 00) write(screen,1121) anksep
1121 format('+',36x,f7 2)
c SEGMENTS IN BRANCH
write(screen,1130) innca
1130 format(1x,2x,'Segments in Branch',15x,11)
if (ileg ne 1) write(screen,1131) inncb
1131 format('+',43x,11)
c ANGLE TO BOTTOM

```

```

write(screen,1140)
1140 format(1x,2x,'Angle to Bottom')
if (angla ne 9999 99)write(screen,1141)angla
if (anglb ne 9999 99)write(screen,1142)anglb
1141 format(' ',32x,f7 2)
1142 format(' ',40x,f7 2)
c LENGTH OF SEGMENT 1
write(screen,1150)
1150 format(1x,2x,'Length of Segment 1',8x,'S1')
write (screen,1141)scop1a
if (scop1b ne 9999 99)write(screen,1142)scop1b
c LINEAR WEIGHT OF SEGMENT 1
write(screen,1160)
1160 format(1x,2x,'Linear Weight of Segment 1',1x,'W1')
write(screen,1141)wgt1a
if (wgt1b ne 9999 99)write(screen,1142)wgt1b
c WEIGHT OF SINKER 1
write(screen,1170)
1170 format(1x,2x,'Weight of Sinker 1',9x,'C1')
if (clmp1a ne 9999 99)write(screen,1141)clmp1a
if (clmp1b ne 9999 99)write(screen,1142)clmp1b
c LENGTH OF SEGMENT 2
write(screen,1180)
1180 format(1x,2x,'Length of Segment 2',8x,'S2')
if (scop2a ne 9999 99)write(screen,1141)scop2a
if (scop2b ne 9999 99)write(screen,1142)scop2b
c LINEAR WEIGHT OF SEGMENT 2
write(screen,1190)
1190 format(1x,2x,'Linear Weight of Segment 2',1x,'W2')
if (wgt2a ne 9999 99)write(screen,1141)wgt2a
if (wgt2b ne 9999 99)write(screen,1142)wgt2b
c END
return
end
*
```

```

et sys final/i2for/grin2 forff
  subroutine grin2
c
c Print Graph 1 input parameter list
c
  implicit integer*2 (*)
c
c COMMON BLOCK DECLARATIONS
c
c   LUNITS
c
c   integer*2      screen,keybd,lu1,lu2,niv99,siz99,ncpl
c   integer*1 pref1(21),dum1,ex11(4),ex12(4)
c   common /units/ screen,keybd,lu1,lu2,niv99,siz99,ncpl,
c   & pref1,dum1,ex11,ex12
c
c   VARIN
c
c   integer*2 illeg,list
c   integer*4 nnca,nncb
c   real angle,anglb,
c   & scop1a,scop1b,wg1a,wg1b,clmp1a,clmp1b,
c   & scop2a,scop2b,wg12a,wg12b,clmp2a,clmp2b,
c   & scop3a,scop3b,wg13a,wg13b,
c   & slip,frict,      clmp3,
c   & scop4,      wg14,
c   & anksep,
c   & plx,plz,p1d,
c   & p2x,p2z,p2d,
c   & p3x,p3z,p3d,
c   & hload,hdir,
c   & rbuoy,xbuoy,zbuoy,
c   & deptho,pdir
c   common /varin/ illeg,list,
c   & nnca,nncb,
c   & angle,anglb,
c   & scop1a,scop1b,wg1a,wg1b,clmp1a,clmp1b,
c   & scop2a,scop2b,wg12a,wg12b,clmp2a,clmp2b,
c   & scop3a,scop3b,wg13a,wg13b,
c   & slip,frict,      clmp3,
c   & scop4,      wg14,
c   & anksep,
c   & plx,plz,p1d,

```

```

&    p2x,p2z,p2d,
&    p3x,p3z,p3d,
&    hload,hdir,
&    rbuoy,xbuoy,zbuoy,
&    deptho,pdir
C
C    VAROUT
C
&    real ola,olb,ol,
&    oha,ohb,oh,
&    ox1a,ox3a,ox5a,ox1b,ox3b,ox5b,ox7,ox8,
&    oy1a,oy3a,oy5a,oy1b,oy3b,oy5b,oy7,oy8,
&    oz1a,oz3a,oz5a,oz1b,oz3b,oz5b,oz7,oz8,
&    oa1a,oa2a,oa3a,oa4a,oa5a,oa6a,
&    oa1b,oa2b,oa3b,oa4b,oa5b,oa6b,oa7,oa8,
&    ov1a,ov2a,ov3a,ov4a,ov5a,ov6a,
&    ov1b,ov2b,ov3b,ov4b,ov5b,ov6b,ov7,ov8,
&    ot1a,ot2a,ot3a,ot4a,ot5a,ot6a,
&    ot1b,ot2b,ot3b,ot4b,ot5b,ot6b,ot7,ot8,
&    odo,oda,odb,
&    oef,oefdir,oefa,oadir,oafb,obdir,
&    oslp,ocoila,ocoilb
&    integer*2 oisol,obranch
&    common /varout/ ola,olb,ol,
&    oha,ohb,oh,
&    ox1a,ox3a,ox5a,ox1b,ox3b,ox5b,ox7,ox8,
&    oy1a,oy3a,oy5a,oy1b,oy3b,oy5b,oy7,oy8,
&    oz1a,oz3a,oz5a,oz1b,oz3b,oz5b,oz7,oz8,
&    oa1a,oa2a,oa3a,oa4a,oa5a,oa6a,
&    oa1b,oa2b,oa3b,oa4b,oa5b,oa6b,oa7,oa8,
&    ov1a,ov2a,ov3a,ov4a,ov5a,ov6a,
&    ov1b,ov2b,ov3b,ov4b,ov5b,ov6b,ov7,ov8,
&    ot1a,ot2a,ot3a,ot4a,ot5a,ot6a,
&    ot1b,ot2b,ot3b,ot4b,ot5b,ot6b,ot7,ot8,
&    odo,oda,odb,
&    oef,oefdir,oefa,oadir,oafb,obdir,
&    oslp,ocoila,ocoilb,
&    oisol,obranch
C
C    VARG
C
&    double precision lla,llb,ll,
&    lana,lamb,lann,

```

```

&    xx1a,xx3a,xx5a,xx3b,xx5b,xx7,xx8,
&    ga11,ga12,ga21,ga22,ga31,ga32,
&    gb11,gb12,gb21,gb22,gb31,gb32,
&    g1,g2,
&    xfa,xfb,xf
common /varg/ 11a,11b,11,
&    1ana,1anb,1anr,
&    xx1a,xx3a,xx5a,xx3b,xx5b,xx7,xx8,
&    ga11,ga12,ga21,ga22,ga31,ga32,
&    gb11,gb12,gb21,gb22,gb31,gb32,
&    g1,g2,
&    xfa,xfb,xf
c
c LOCAL VARIABLES
c
c    integer*2 i
c    integer*2 gbuff(24)
c    real obmag,xxproj
c
c EXECUTABLE PORTION
c
c LINE 22
c    WEIGHT OF SINKER 2
c    write(screen,110)
110 format(1x,2x,'Weight of Sinker 2',9x,'C2')
c    if (clmp2a ne 9999 99)write(screen,111)clmp2a
c    if (clmp2b ne 9999 99)write(screen,112)clmp2b
111 format('+',32x,(7 2))
112 format('+',40x,(7 2))
c    OCEAN BOTTOM
c    write(screen,120)
120 format('+',48x,'OCEAN BOTTOM ')
c    OCEAN SURFACE
c    write(screen,130)
130 format('+',83x,'OCEAN SURFACE ')
c LINE 23
c    START LENGTH OF SEGMENT 3
c    write(screen,210)
210 format(1x,2x,'Start Length of Segment 3',2x,'S3')
c    if (scop3a ne 9999 99)write(screen,111)scop3a
c    if (scop3b ne 9999 99)write(screen,112)scop3b
c    FLOOR DIRECTION
c    write(screen,220)loafdir

```

```

220 format('+',50x,'Floor Direction',2x,f7 2)
c LINE 24
c LINEAR WEIGHT OF SEGMENT 3
write(screen,310)
310 format(1x,2x,'Linear Weight of Segment 3',1x,'W3')
if (lileg eq 3 and wgt3a ne 9999 99)write(screen,111)wgt3a
if (lileg eq 3 and wgt3b ne 9999 99)write(screen,112)wgt3b
if (lileg ne 3 and wgt3a ne 9999 99)write(screen,311)wgt3a
311 format('+',36x,f7 2)
c FLOOR SLOPE
write(screen,320)loadf
320 format('+',50x,'Floor Slope',6x,f7 2)
c LOAD DIRECTION
write(screen,330)
330 format('+',85x,'Load Direction')
if (hdir ne 9999 99)write(screen,331)hdir
331 format('+',106x,f7 2)
c LINE 25
c FRICTION COEFFICIENT
write(screen,410)
410 format(1x,2x,'Friction Coefficient')
if (frict ne 9999 99)write(screen,311)frict
c X-DEPTH-Z HEADER
write(screen,420)
420 format('+',59x,'---X--- -Depth- ---Z---')
c HORIZONTAL LOAD
write(screen,430)
430 format('+',85x,'Horizontal Load H')
if (hload ne 9999 99)write(screen,331)hload
c LINE 26
c WEIGHT OF EQUALIZER/SPIDER PLATE
write(screen,510)
510 format(1x,2x,'Weight of Equalizer/Spider C3')
if (clmp3 ne 9999 99)write(screen,311)clmp3
c POINT P1
i=1
write(screen,520)i,plx,p1d,p1z
520 format('+',50x,'Point P',i,1,3(1x,f7 2))
c LINE 27
c LENGTH OF SEGMENT 4
write(screen,610)
610 format(1x,2x,'Length of Segment 4',8x,'S4')
if (scop4 ne 9999 99)write(screen,311)scop4

```

```

c   POINT P2
    i=2
    write(screen,520),p2x,p2d,p2z
c   PROJECTED EXCURSION
    write(screen,630)
630 format('+',85x,'Projected Excursion')
    obmag=sqrt(xbuoy*xbuoy+zbuoy*zbuoy)
    xxproj=xx8
    if (illeg eq 1) xxproj=obmag
    if (xxproj ne 9999 99)write(screen,331)xxproj
c LINE 28
c   LINEAR WEIGHT OF SEGMENT 4
    write(screen,710)
710 format(1x,2x,'Linear Weight of Segment 4 W4')
    if (wg14 ne 9999 99)write(screen,311)wg14
c   POINT P3
    i=3
    write(screen,520),p3x,p3d,p3z
c LINE 29
c   ANCHOR A
    write(screen,820)
820 format(1x,50x,'Anchor A')
    if (loda ne 9999 99)write(screen,821)lox1a,oda,oz1a
821 format('+',58x,3(1x,f7 2))
c   TRUE EXCURSION
    write(screen,830)
830 format('+',85x,'True Excursion')
    write(screen,331)obmag
c LINE 30
c   ANCHOR B
    write(screen,920)
920 format(1x,50x,'Anchor B')
    if (lodb ne 9999 99)write(screen,821)lox1b,odb,oz1b
c LINE 31
c   ORIGIN
    write(screen,1020)lodo
1020 format(1x,50x,'Origin',6x,'0 00',1x,f7 2,4x,'0 00')
    return
end
*
```

```

ei sys final/12for/grou11 for##
  subroutine grou11
C
C PRINT VALUES FOR THE UNKNOWN INPUTS
C
C   implicit integer*2 (*)
C
C COMMON BLOCK DECLARATIONS
C
C   LUNITS
C
C   integer*2      screen,keyboard,lu1,lu2,niv99,siz99,ncpl
C   integer*1 pref1(121),dum1,ex11(4),ex12(4)
C   common /units/ screen,keyboard,lu1,lu2,niv99,siz99,ncpl,
C   & pref1,dum1,ex11,ex12
C
C   VARIN
C
C   integer*2 i1leg,i1st
C   integer*4 nnca,nncb
C   real param(10)
C   real ang1a,ang1b,
C   & scop1a,scop1b,wg11a,wg11b,clmp1a,clmp1b,
C   & scop2a,scop2b,wg12a,wg12b,clmp2a,clmp2b,
C   & scop3a,scop3b,wg13a,wg13b,
C   & slip,frict,      clmp3,
C   & scop4,      wg14,
C   & anksep,
C   & plx,plz,pld,
C   & p2x,p2z,p2d,
C   & p3x,p3z,p3d,
C   & hload,hdir,
C   & rbuoy,xbuoy,zbuoy,
C   & deptho,pdir
C   common /varin/ i1leg,i1st,
C   & nnca,nncb,
C   & ang1a,ang1b,
C   & scop1a,scop1b,wg11a,wg11b,clmp1a,clmp1b,
C   & scop2a,scop2b,wg12a,wg12b,clmp2a,clmp2b,
C   & scop3a,scop3b,wg13a,wg13b,
C   & slip,frict,      clmp3,
C   & scop4,      wg14,
C   & anksep,

```

```

& p1x,p1z,p1d,
& p2x,p2z,p2d,
& p3x,p3z,p3d,
& hload,hdir,
& rbuoy,xbuoy,zbuoy,
& deptho,pdir
equivalence (param(1),angle)

```

C
C
C

VAROUT

```

real ola,olb,ol,
& oha,ohb,oh,
& ox1a,ox3a,ox5a,ox1b,ox3b,ox5b,ox7,ox8,
& oy1a,oy3a,oy5a,oy1b,oy3b,oy5b,oy7,oy8,
& oz1a,oz3a,oz5a,oz1b,oz3b,oz5b,oz7,oz8,
& oa1a,oa2a,oa3a,oa4a,oa5a,oa6a,
& oa1b,oa2b,oa3b,oa4b,oa5b,oa6b,oa7,oa8,
& ov1a,ov2a,ov3a,ov4a,ov5a,ov6a,
& ov1b,ov2b,ov3b,ov4b,ov5b,ov6b,ov7,ov8,
& oi1a,oi2a,oi3a,oi4a,oi5a,oi6a,
& oi1b,oi2b,oi3b,oi4b,oi5b,oi6b,oi7,oi8,
& odo,ode,odb,
& oaf,oafdir,oafo,oadir,oafo,obdir,
& oslp,ocoila,ocoilb
integer*2 oisol,obranch
common /varout/ ola,olb,ol,
& oha,ohb,oh,
& ox1a,ox3a,ox5a,ox1b,ox3b,ox5b,ox7,ox8,
& oy1a,oy3a,oy5a,oy1b,oy3b,oy5b,oy7,oy8,
& oz1a,oz3a,oz5a,oz1b,oz3b,oz5b,oz7,oz8,
& oa1a,oa2a,oa3a,oa4a,oa5a,oa6a,
& oa1b,oa2b,oa3b,oa4b,oa5b,oa6b,oa7,oa8,
& ov1a,ov2a,ov3a,ov4a,ov5a,ov6a,
& ov1b,ov2b,ov3b,ov4b,ov5b,ov6b,ov7,ov8,
& oi1a,oi2a,oi3a,oi4a,oi5a,oi6a,
& oi1b,oi2b,oi3b,oi4b,oi5b,oi6b,oi7,oi8,
& odo,ode,odb,
& oaf,oafdir,oafo,oadir,oafo,obdir,
& oslp,ocoila,ocoilb,
& oisol,obranch

```

C
C
C

UNKNOWN

```

integer*2      nunk,unk1,unk2,unk3,unk4,unk5
common /unknow/ nunk,unk1,unk2,unk3,unk4,unk5
C
C      GCB
C
integer*2 gbuff(24),lugraf,lupif,ludbug
common /gcb/ gbuff ,lugraf,lupif,ludbug
C
C LOCAL VARIABLES
C
integer*2 itext,ival,unktxi(40),unkval(40)
integer*1 ptext(26,18)
integer*2 three,five
C
C DATA INITIALIZATION
C
data three,five/3,5/

data unkval/
& 41,41,41,41,41,41,41,41,41,41,
& 41,41,34,35,36,
& 41, 1, 3, 5, 7, 9,11,13,15,17,
& 41, 2, 4, 6, 8,10,12,14,16,18,
& 19,20,21,22,23/
data unktxi/
& 18,18,18,18,18,18,18,18,18,18,
& 18,18,15,16,17,
& 18, 1, 2, 3, 4, 5, 6, 7, 8, 9,
& 18, 1, 2, 3, 4, 5, 6, 7, 8, 9,
& 10,11,12,13,14/
data ptext/
& 'Angle to Bottom      ', 'Length of Segment 1',
& 'Linear Weight of Segment 1', 'Weight of Sinker 1',
& 'Length of Segment 2', 'Linear Weight of Segment 2',
& 'Weight of Sinker 2', 'Length of Segment 3',
& 'Linear Weight of Segment 3',
& 'Final Slippage SS', 'Friction Coefficient',
& 'Weight of Equalizer/Spider', 'Length of Segment 4',
& 'Linear Weight of Segment 4',
& 'Horizontal Load Magnitude', 'Horizontal Load Direction',
& 'Buoy Excursion', 'INVALID ELEMENT'
C
C EXECUTABLE PORTION

```

```

c
c OUTPUT
    call chrsiz(five)
    write(screen,100)
100 format('++','OUTPUT ')
    call chrsiz(three)
c UNKNOWN INPUTS
    write(screen,105)
105 format(1x,'UNKNOWN INPUTS ')
    if (oslp eq 9999 99) goto 210
    nunk=nunk+1
    unk3=unk2
    unk2=unk1
210 continue
    write(screen,110)
c FIRST UNKNOWN
    if (oslp eq 9999 99) goto 310
    write(screen,110) oslp,ptext(1,10) 26
    goto 320
310 continue
    itext=unktxt(unk1)
    ival =unkval(unk1)
    write(screen,110) param(ival),ptext(1,itext) 26
320 continue
c SECOND UNKNOWN
    if (nunk eq 1) goto 900
    itext=unktxt(unk2)
    ival =unkval(unk2)
    write(screen,120) param(ival),ptext(1,itext) 26
c THIRD UNKNOWN
    if (nunk eq 2) goto 900
    itext=unktxt(unk3)
    ival =unkval(unk3)
    write(screen,130) param(ival),ptext(1,itext) 26
900 continue
    return
c FORMATS
110 format(1x,f7 2,' = ',26a1)
120 format('++',38x,f7 2,' = ',26a1)
130 format('++',76x,f7 2,' = ',26a1)
140 format(1x)
    end

```

*

```

ei sys final/i2for/grout2 forii
  subroutine grout2
c
c Print computed output values for Graph 1
c
c   implicit integer*2 (*)
c
c COMMON BLOCK DECLARATIONS
c
c   LUNITS
c
c   integer*2      screen,keybd,lu1,lu2,niv99,siz99,ncpl
c   integer*1 pref1(21),dum1,ex11(4),ex12(4)
c   common /units/ screen,keybd,lu1,lu2,niv99,siz99,ncpl,
c   & pref1,dum1,ex11,ex12
c
c   VAROUT
c
c   real ola,olb,ol,
c   & oha,ohb,oh,
c   & ox1a,ox3a,ox5a,ox1b,ox3b,ox5b,ox7,ox8,
c   & oy1a,oy3a,oy5a,oy1b,oy3b,oy5b,oy7,oy8,
c   & oz1a,oz3a,oz5a,oz1b,oz3b,oz5b,oz7,oz8,
c   & oa1a,oa2a,oa3a,oa4a,oa5a,oa6a,
c   & oa1b,oa2b,oa3b,oa4b,oa5b,oa6b,oa7,oa8,
c   & ov1a,ov2a,ov3a,ov4a,ov5a,ov6a,
c   & ov1b,ov2b,ov3b,ov4b,ov5b,ov6b,ov7,ov8,
c   & ot1a,ot2a,ot3a,ot4a,ot5a,ot6a,
c   & ot1b,ot2b,ot3b,ot4b,ot5b,ot6b,ot7,ot8,
c   & odo,oda,odb,
c   & oaf,oa6dir,oa6a,oa6b,oa6c,oa6d,
c   & oalp,ocaila,ocailb
c   integer*2 ois1,obrnc
c   common /varout/ ola,olb,ol,
c   & oha,ohb,oh,
c   & ox1a,ox3a,ox5a,ox1b,ox3b,ox5b,ox7,ox8,
c   & oy1a,oy3a,oy5a,oy1b,oy3b,oy5b,oy7,oy8,
c   & oz1a,oz3a,oz5a,oz1b,oz3b,oz5b,oz7,oz8,
c   & oa1a,oa2a,oa3a,oa4a,oa5a,oa6a,
c   & oa1b,oa2b,oa3b,oa4b,oa5b,oa6b,oa7,oa8,
c   & ov1a,ov2a,ov3a,ov4a,ov5a,ov6a,
c   & ov1b,ov2b,ov3b,ov4b,ov5b,ov6b,ov7,ov8,
c   & ot1a,ot2a,ot3a,ot4a,ot5a,ot6a,

```

```

&      o11b,o12b,o13b,o14b,o15b,o16b,o17,o18,
&      odo,oda,odb,
&      oaf,oafdir,oafa,oadir,oafb,obdir,
&      osp,ocoila,ocoilb,
&      oisol,obranch
C
C LOCAL VARIABLES
C
      integer*1 junix(8,2),tenix(10,3)
      integer*2 rownm(11),junc,tenleg
      data rownm/'HAVAC L H X Y Z A V T '/
      data junix/'on floor','elevated'/
      data tenix/'both legs ','Leg A only','Leg B only'/
C
C EXECUTABLE PORTION
C
C PRINT LEGEND OF ROWS, AND COLUMN HEADERS
      write(screen,1000)
1000 format(/
&1x,'HA - Floor Horizontal Angle      VA - Floor Vertical Angle',2x,
&1x,'C - Chain Coiled on Bottom      L - Length Along Bottom',/
&1x,'H - Horizontal Force              X - X Coordinate',10x,
&1x,'Y - Y Coordinate                  Z - Z Coordinate',/
&1x,'A - Catenary Horizontal Angle    V - Vertical Force',8x,
&1x,'T - Tension',/
&1x,'  --1A--  --2A--  --3A--  --4A--  --5A--  --6A--',
&1x,'  --1B--  --2B--  --3B--  --4B--  --5B--  --6B--',
&1x,'  --7--  --8--',/
C PRINT HA - FLOOR HORIZONTAL ANGLE
      write(screen,1011) rownm(1),oadir
      if (obdir ne 9999 99) write(screen,1070) obdir
C PRINT VA - FLOOR VERTICAL ANGLE
      write(screen,1011) rownm(2),oafa
      if (oafb ne 9999 99) write(screen,1070) oafb
C PRINT C - CHAIN COILED ON THE OCEAN FLOOR
      write(screen,1013) rownm(3)
      if (ocoila ne 9999 99) write(screen,1060) ocoila
      if (ocoilb ne 9999 99) write(screen,1120) ocoilb
C PRINT L - LENGTH ALONG THE OCEAN FLOOR
      write(screen,1012) rownm(4),ola
      if (olb ne 9999 99) write(screen,1070) olb
      if (ol ne 9999 99) write(screen,1130) ol
C PRINT H - HORIZONTAL FORCE AT THE BUOY

```

```

write(screen,1012) rownm(5),oha
if (ohb ne 9999 99) write(screen,1070) ohb
if (oh ne 9999 99) write(screen,1130) oh
c PRINT X - X COORDINATE OF JUNCTION POINT
write(screen,1150)
write(screen,1150)
write(screen,1010) rownm(6),oxla
if (ox3a ne 9999 99) write(screen,1030) ox3a
if (ox5a ne 9999 99) write(screen,1050) ox5a
if (ox1b ne 9999 99) write(screen,1070) ox1b
if (ox3b ne 9999 99) write(screen,1090) ox3b
if (ox5b ne 9999 99) write(screen,1110) ox5b
if (ox7 ne 9999 99) write(screen,1130) ox7
if (ox8 ne 9999 99) write(screen,1140) ox8
c PRINT Y - Y COORDINATE OF JUNCTION POINT
if (oy8 eq 9999 99) write(screen,1150)
write(screen,1010) rownm(7),oyla
if (oy3a ne 9999 99) write(screen,1030) oy3a
if (oy5a ne 9999 99) write(screen,1050) oy5a
if (oy1b ne 9999 99) write(screen,1070) oy1b
if (oy3b ne 9999 99) write(screen,1090) oy3b
if (oy5b ne 9999 99) write(screen,1110) oy5b
if (oy7 ne 9999 99) write(screen,1130) oy7
if (oy8 ne 9999 99) write(screen,1140) oy8
c PRINT Z - Z COORDINATE OF JUNCTION POINT
if (oz8 eq 9999 99) write(screen,1150)
write(screen,1010) rownm(8),ozla
if (oz3a ne 9999 99) write(screen,1030) oz3a
if (oz5a ne 9999 99) write(screen,1050) oz5a
if (oz1b ne 9999 99) write(screen,1070) oz1b
if (oz3b ne 9999 99) write(screen,1090) oz3b
if (oz5b ne 9999 99) write(screen,1110) oz5b
if (oz7 ne 9999 99) write(screen,1130) oz7
if (oz8 ne 9999 99) write(screen,1140) oz8
c PRINT A - ANGLE TO THE HORIZONTAL
if (oa8 eq 9999 99) write(screen,1150)
write(screen,1150)
write(screen,1010) rownm(9),oala
if (oa2a ne 9999 99) write(screen,1020) oa2a
if (oa3a ne 9999 99) write(screen,1030) oa3a
if (oa4a ne 9999 99) write(screen,1040) oa4a
if (oa5a ne 9999 99) write(screen,1050) oa5a
if (oa6a ne 9999 99) write(screen,1060) oa6a

```

```

if (oa1b ne 9999 99) write(screen,1070) oa1b
if (oa2b ne 9999 99) write(screen,1080) oa2b
if (oa3b ne 9999 99) write(screen,1090) oa3b
if (oa4b ne 9999 99) write(screen,1100) oa4b
if (oa5b ne 9999 99) write(screen,1110) oa5b
if (oa6b ne 9999 99) write(screen,1120) oa6b
if (oa7 ne 9999 99) write(screen,1130) oa7
if (oa8 ne 9999 99) write(screen,1140) oa8
c PRINT V - VERTICAL FORCE
if (oa8 eq 9999 99) write(screen,1150)
write(screen,1010) rownm(10),ov1a
if (ov2a ne 9999 99) write(screen,1020) ov2a
if (ov3a ne 9999 99) write(screen,1030) ov3a
if (ov4a ne 9999 99) write(screen,1040) ov4a
if (ov5a ne 9999 99) write(screen,1050) ov5a
if (ov6a ne 9999 99) write(screen,1060) ov6a
if (ov1b ne 9999 99) write(screen,1070) ov1b
if (ov2b ne 9999 99) write(screen,1080) ov2b
if (ov3b ne 9999 99) write(screen,1090) ov3b
if (ov4b ne 9999 99) write(screen,1100) ov4b
if (ov5b ne 9999 99) write(screen,1110) ov5b
if (ov6b ne 9999 99) write(screen,1120) ov6b
if (ov7 ne 9999 99) write(screen,1130) ov7
if (ov8 ne 9999 99) write(screen,1140) ov8
c PRINT T - TENSION
if (ov8 eq 9999 99) write(screen,1150)
write(screen,1010) rownm(11),ot1a
if (ot2a ne 9999 99) write(screen,1020) ot2a
if (ot3a ne 9999 99) write(screen,1030) ot3a
if (ot4a ne 9999 99) write(screen,1040) ot4a
if (ot5a ne 9999 99) write(screen,1050) ot5a
if (ot6a ne 9999 99) write(screen,1060) ot6a
if (ot1b ne 9999 99) write(screen,1070) ot1b
if (ot2b ne 9999 99) write(screen,1080) ot2b
if (ot3b ne 9999 99) write(screen,1090) ot3b
if (ot4b ne 9999 99) write(screen,1100) ot4b
if (ot5b ne 9999 99) write(screen,1110) ot5b
if (ot6b ne 9999 99) write(screen,1120) ot6b
if (ot7 ne 9999 99) write(screen,1130) ot7
if (ot8 ne 9999 99) write(screen,1140) ot8
c PRINT SOLUTION TYPE USED FOR COMPOUND LEC
if (ot8 eq 9999 99) write(screen,1150)
junc = (ot8ot1) / 2

```

```

tenleg = obrnch + 1
if (ox1b ne 9999 99) write(screen,1160) junxt(1,junc) 8,
& tenxt(1,tenleg) 10
return
1010 format(' ',a1,f8 2)
1011 format(1x,a2,f7 2)
1012 format(1x,a1,f8 2)
1013 format(1x,a1)
1020 format(' ',9x,f8 2)
1030 format(' ',17x,f8 2)
1040 format(' ',25x,f8 2)
1050 format(' ',33x,f8 2)
1060 format(' ',41x,f8 2)
1070 format(' ',49x,f8 2)
1080 format(' ',57x,f8 2)
1090 format(' ',65x,f8 2)
1100 format(' ',73x,f8 2)
1110 format(' ',81x,f8 2)
1120 format(' ',89x,f8 2)
1130 format(' ',98x,f8 2)
1140 format(' ',106x,f8 2)
1150 format(1x)
1160 format(1x,'Solution Type      Junction ',8a1,',      tension on ',
& 10a1)
end
*
```

```

c  sys final/i2for/graphs for f#
      subroutine graphs(isw)
      implicit integer*2 (*)
c
c  Produce annotated symbolic depiction of compound leg, tables of
c  parameters input to define it, and tables of computed forces,
c  coordinates, angles and tensions
c
c  PARAMETER
c
c      integer*2 isw
c
c  COMMON BLOCK DECLARATIONS
c
c      TITLES
c
c      integer*1      ctitle(114)
c      common /titles/ ctitle
c
c      DATIME
c
c      integer*1      cdatim(16)
c      common /datime/ cdatim
c
c      VARIN
c
c      integer*1      cvarin(172)
c      common /varin/  cvarin
c
c      VAROUT
c
c      integer*1      cvaro1(240),cvaro2(100)
c      common /varout/ cvaro1,      cvaro2
c
c      VARG
c
c      integer*1      cvarg(240)
c      common /varg/  cvarg
c
c      UNKNOW

```

```

      integer*1      cunkno(12)
      common /unkno/ cunkno
C
C      GROPT
C
      integer*1      cgrp1(44)
      common /grp1/ cgrp1
C
C      GRP2CN
C
      integer*1      cgrp21(218),cgrp22(82)
      common /grp2cn/ cgrp21,      cgrp22
C
C LOCAL
C
      integer*2 funkey
C
C EXECUTABLE PORTION
C
C PRINT TABLES OF INPUT PARAMETERS, COMPUTED VALUES AND STICK FIGURE
      call RVCOM1(1)
      isw=1
      call stick
      call flush
50    call readfk(funkey)
      *      if(funkey NE -32768) go to 100
      CALL ERASE
      *      WRITE(6,9000)
9000  FORMAT('/////////////////,',15X,'PROCESSING AT THIS POINT MAY TAKE
      &,'45 SECONDS  PLEASE BE PATIENT!')
      GO TO 300
100   if(funkey eq 16384) go to 200
      go to 50
200   isw=2
300   continue
      call RVCOM1(2)
      return
      end
      *

```

```

et sys final/12for/stick for00
  SUBROUTINE STICK
C
C THIS ROUTINE WILL PUT OUT THE STICK FIGURE ON THE FIRST GRAPHIC SCREEN
C
  IMPLICIT INTEGER*2 (A-Z,*)
  INTEGER*2 ISW
  INTEGER MINUS, PLUS
  REAL THETA,SCALE
C
C GCB
C
  integer*2 gbuff(24),lugraf,lupfl,ludbug
  common /gcb/ gbuff,lugraf,lupfl,ludbug
  DATA MINUS/'-'/, PLUS/'+'
C
C
C
  call gfini
  CALL VIEWPT(-1150,32766,6984,19316)
  CALL WINDOW(-1200,32767,6900,19400)
C
C INITIALIZATION DONE, SET OUT FIGURE
C
  ISW=0
  THETA = 0 0
  SCALE = 75 0
C
C DRAW THE BOUNDARY LINES
C
  CALL MOVETO(-1149,6985)
  CALL DRAWTO(32765,6985)
  CALL DRAWTO(32765,19315)
  CALL DRAWTO(-1149,19315)
  CALL DRAWTO(-1149,6985)
C
C SET THE LOWER LEFT ANCHOR AND START DRAWING FIGURES
C
  CALL MOVETO(100,10500)
  CALL ANCHOR(THETA,SCALE,ISW)
  CALL DRAW(8000,0)
  CALL SINKER(THETA,SCALE,ISW)
  CALL DRAW(8000,0)

```

```
CALL SINKER(THETA,SCALE,ISW)
CALL DRAW(8000,0)
CALL DASH(0,1600)
CALL DRAW(-8000,0)
CALL SINKER(THETA,SCALE,ISW)
CALL DRAW(-8000,0)
CALL SINKER(THETA,SCALE,ISW)
CALL DRAW(-8000,0)
CALL ANCHOR(THETA,SCALE,ISW)
CALL MOVE(24000,-2300)
CALL ELIZER(THETA,SCALE,ISW)
CALL DRAW(6500,0)
CALL BUOY(THETA,SCALE,ISW)
```

```
C
C END OF PICTURE, NOW TITLE AND BE DONE
C
```

```
CALL MOVETO(-1000,7200)
WRITE(LUGRAF,1000)
1000 FORMAT(' ',20X,'BRANCH B')
CALL MOVETO(-1000,10600)
WRITE(LUGRAF,1001)
1001 FORMAT(' ',3X,'1',11X,'2 3',11X,'4 5',11X,'6')
CALL MOVETO(-1000,15200)
WRITE(LUGRAF,1001)
CALL MOVETO(-1000,14150)
WRITE(LUGRAF,1002) MINUS
1002 FORMAT(' ',6X,'S1 W1 C1 S2 W2 C2 S3',A1,'S5 W3')
CALL MOVETO(-1000,9550)
WRITE(LUGRAF,1002) PLUS
CALL MOVETO(-1000,18500)
WRITE(LUGRAF,1003)
1003 FORMAT(' ',20X,'BRANCH A')
CALL MOVETO(25900,18500)
WRITE(LUGRAF,1004)
1004 FORMAT(' ',COMMON')
CALL MOVETO(25900,17600)
WRITE(LUGRAF,1007)
1007 FORMAT(' ',SECTION')
CALL MOVETO(24800,12950)
WRITE(LUGRAF,1005)
1005 FORMAT(' ',7',8X,'8')
CALL MOVETO(24800,12050)
WRITE(LUGRAF,1006)
```

1006 FORMAT(' ','C3',2X,'S4 W4')
RETURN
END

*

```

C
C THIS ROUTINE WILL DRAW AN SINKER SYMBOL ON THE SCREEN AT THE POINT X,Y
C THE ORIENTATION OF THE SYMBOL WILL BE ABOUT THE ANGLE THETA (MEASURED CLOCKWISE)
C THE SCALE FACTOR WILL EITHER SHRINK OR EXAGGERATE THE SYMBOL WITH 1.0 BEING THE NORM
AL
C THE SYMBOL IS CENTERED ON THE POINT X,Y
C
      IMPLICIT REAL (A-Z)
      INTEGER*2 I,IX,IY,IXSV,IYSV,ISW,JSW
      DIMENSION XPNT(4),YPNT(4)
      DIMENSION XPOINT(4),YPOINT(4)
      COMMON /GROPT/WXL,WXU,WYL,WYU
      DATA XPOINT/ 0.0, 2.5, -5.0, 2.5/
      DATA YPOINT/ 3.5, -7.0, 0.0, 7.0/
      DATA DELVX/64000 /, DELVY/48000 /
      DATA XPNT/0.0,280.5,-561.0,280.5/
      DATA YPNT/421.0,-842.0,0.0,842.0/
C
C CHECK IS THE SCALE VALUE LESS THAN ZERO, YES RETURN
C
      IF (SCALE LE 0.0) GO TO 1000
C
C SAVE THE ORIGINAL VALUES OF THE INPUTS AND DRAW SYMBOL
C
      JSW=ISW+1
      XSC=SCALE
      IF (JSW EQ 2) XSC=1.0
      CT=1.0
      ST=0.0
      IF (THETA EQ 0.0) GO TO 100
      CT = COS(THETA)
      ST = SIN(THETA)
100  CONTINUE
      DO 200 I=1,4
        XP=XPOINT(I)
        YP=YPOINT(I)
        IF (JSW EQ 1) GO TO 125
        DELWX=WXU-WXL
        DELWY=WYU-WYL
        XP=(XPNT(I)*DELWX)/DELVX
        YP=(YPNT(I)*DELWY)/DELVY

```

```
125      XF=(CT*XP + ST*YP) * XSC  
        YF=(-ST*XP + CT*YP) * XSC  
        IX=XF  
        IY=YF  
        IF (I GT 1) GO TO 150  
110      CALL MOVE(IX,IY)  
130      IXSV = IX  
        IYSV = IY  
        GO TO 200  
150      CALL DRAW(IX,IY)  
200      CONTINUE  
        CALL MOVE(-IXSV,-IYSV)  
1000     RETURN  
        END
```

*

```

ei sys final/12for/anchor for**
      SUBROUTINE ANCHOR(THETA,SCALE,ISW)
C
C THIS ROUTINE WILL DRAW AN ANCHOR SYMBOL (X) ON THE SCREEN AT THE POINT X,Y
C THE ORIENTATION OF THE ANCHOR WILL BE ABOUT THE ANGLE THETA (MEASURED CLOCKWISE)
C THE SCALE FACTOR WILL EITHER SHRINK OR EXAGGERATE THE ANCHOR WITH 1.0 BEING THE NORM
AL
C THE SYMBOL IS CENTERED ON THE POINT X,Y
C
      IMPLICIT REAL (A-Z)
      INTEGER*2 I,IX,IY,ISW,JSW
      DIMENSION XPOINT(4), YPOINT(4)
      DIMENSION XPNT(4), YPNT(4)
      COMMON /CROPT/WXL,WXU,WYL,WYU
      DATA DELVX/64000 /, DELVY/48000 /
      DATA XPNT/280 5,280 5,-280 5,-280 5/
      DATA YPNT/421 0,-421 0,-421 0,421 0/
      DATA XPOINT/ 2 5, 2 5, -2 5, -2 5/
      DATA YPOINT/ 3 5,-3 5, -3 5, 3 5/
C
C CHECK IS THE SCALE VALUE LESS THAN ZERO, YES RETURN
C
      IF (SCALE LE 0.0) GO TO 500
C
C SAVE THE ORIGINAL VALUES OF THE INPUTS AND DRAW SYMBOL
C
      JSW=ISW+1
      XSC=SCALE
      IF (JSW EQ 2) XSC=1.0
      CT=1.0
      ST=0.0
      IF (THETA EQ 0.0) GO TO 100
      CT = COS(THETA)
      ST = SIN(THETA)
100  CONTINUE
      DO 200 I=1,4
          XP=XPOINT(I)
          YP=YPOINT(I)
          IF (JSW EQ 1) GO TO 125
          DELWX=WXU-WXL
          DELWY=WYU-WYL
          XP=(XPNT(I)*DELWX)/DELVX
          YP=(YPNT(I)*DELWY)/DELVY

```

125 XF=(CT*XP + ST*YP) * XSC
 YF=(-ST*XP + CT*YP) * XSC
 IX=XF
 IY=YF
 CALL DRAW(IX,IY)
 CALL MOVE(-IX,-IY)
200 CONTINUE
500 RETURN
 END

*

```

e1 sys final/12for/elizer for11
SUBROUTINE ELIZER(THETA,SCALE,ISW)
C
C THIS ROUTINE WILL DRAW AN ELIZER SYMBOL ON THE SCREEN AT THE POINT X,Y
C THE ORIENTATION OF THE SYMBOL WILL BE ABOUT THE ANGLE THETA (MEASURED CLOCKWISE)
C THE SCALE FACTOR WILL EITHER SHRINK OR EXAGGERATE THE SYMBOL WITH 1 0 BEING THE NORM
AL
C THE SYMBOL IS CENTERED ON THE POINT X,Y
C
  IMPLICIT REAL (A-Z)
  INTEGER*2 I,IX,IY,IXSV,IYSV,ISW,JSW
  DIMENSION XPOINT(4), YPOINT(4)
  DIMENSION XPNT(4),YPNT(4)
  COMMON /GROPT/WXL,WXU,WYL,WYU
  DATA DELVX/64000 /, DELVY/48000 /
  DATA XPNT/561 0,-561 0,0 0,561 0/
  DATA YPNT/0 0,-421 0,842 0,-421 0/
  DATA XPOINT/ 5 0, -5 0, 0 0, 5 0/
  DATA YPOINT/ 0 0,-3 5, 7 0, -3 5/
C
C CHECK IS THE SCALE VALUE LESS THAN ZERO, YES RETURN
C
  IF (SCALE LE 0 0) GO TO 1000
C
C SAVE THE ORIGINAL VALUES OF THE INPUTS AND DRAW SYMBOL
C
  JSW=ISW+1
  XSC=SCALE
  IF(JSW EQ 2) XSC=1 0
  CT=1 0
  ST=0 0
  IF (THETA EQ 0 0) GO TO 100
  CT = COS(THETA)
  ST = SIN(THETA)
100 CONTINUE
DO 200 I=1,4
  XP=XPOINT(I)
  YP=YPOINT(I)
  IF(JSW EQ 1) GO TO 125
  DELWX=WXU-WXL
  DELWY=WYU-WYL
  XP=(XPNT(I)*DELWX)/DELVX
  YP=(YPNT(I)*DELWY)/DELVY

```

```

125    XF-(CT*XP + ST*YP) * XSC
      YF-(-ST*XP + CT*YP) * XSC
      IX=XF
      IY=YF
      IF (I NE 1) GO TO 150
110    CALL MOVE(IX,IY)
130    IXSV = IX
      IYSV = IY
      GO TO 200
150    CALL DRAW(IX,IY)
200    CONTINUE
210    CALL MOVE(-IXSV,-IYSV)
1000   RETURN
      END
*
```

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e1 sys final/12for/buoy for##
SUBROUTINE BUOY(THETA,SCALE,ISW)
C
C THIS ROUTINE WILL DRAW AN BUOY SYMBOL ON THE SCREEN AT THE POINT X,Y
C THE ORIENTATION OF THE SYMBOL WILL BE ABOUT THE ANGLE THETA (MEASURED CLOCKWISE)
C THE SCALE FACTOR WILL EITHER SHRINK OR EXAGGERATE THE SYMBOL WITH 1.0 BEING THE NORM
AL
C THE SYMBOL IS CENTERED ON THE POINT X,Y
C
IMPLICIT REAL (A-Z)
INTEGER*2 I,IX,IY,IXSV,IYSV,ISW,JSW
DIMENSION XPOINT(5), YPOINT(5)
DIMENSION XPNT(5),YPNT(5)
COMMON /GROPT/WXL,WXU,WYL,WYU
DATA XPOINT/2.5, 0.0, -5.0, 0.0, 5.0/
DATA YPOINT/ 3.5, -7.0, 0.0, 7.0, 0.0/
DATA DELVX/64000 /, DELVY/48000 /
DATA XPNT/280.5, 0.0, -561.0, 0.0, 561.0/
DATA YPNT/421.0, -842.0, 0.0, 842.0, 0.0/
C
C CHECK IS THE SCALE VALUE LESS THAN ZERO, YES RETURN
C
IF (SCALE LE 0.0) GO TO 1000
C
C SAVE THE ORIGINAL VALUES OF THE INPUTS AND DRAW SYMBOL
C
JSW=ISW+1
XSC=SCALE
IF (JSW EQ 2) XSC=1.0
CT=1.0
ST=0.0
IF (THETA EQ 0.0) GO TO 100
CT = COS(THETA)
ST = SIN(THETA)
100 CONTINUE
DO 200 I=1,5
XP=XPOINT(I)
YP=YPOINT(I)
IF (JSW EQ 1) GO TO 125
DELWX=WXU-WXL
DELWY=WYU-WYL
XP=(XPNT(I)*DELWX)/DELVX
YP=(YPNT(I)*DELWY)/DELVY

```

```

125    XF=ICT*XP + ST*YP) * XSC
      YF=(-ST*XP + CT*YP) * XSC
      IX=XF
      IY=YF
      IF (I NE 1) GO TO 150
110    CALL MOVE(IX,IY)
      IXSV = IX
      IYSV = IY
      GO TO 200
150    CALL DRAW(IX,IY)
200    CONTINUE
210    CALL MOVE(-IXSV,-IYSV)
1000   RETURN
      END
*
```

```

ei sys final/i2for/elvpnt forii
  subroutine ELVPNT(iov,ifil,isw)
  *****
  implicit integer*2 (n)
  implicit double precision (a-z)

  integer*2 iov,ifil,isw

  integer*2 screen,keybd,lul,lu2,niv99,siz99,ncpl
  integer*1 pref1(21),dum1,ext1(4),ext2(4),ext3(4)
  common /LUNITS/ screen,keybd,lul,lu2,niv99,siz99,ncpl,
& pref1,dum1,ext1,ext2,ext3

  integer*2 ileg,ist,nca,ncb,nwa,nwb,isol,ibrnch,uz(5)
  double precision z(67),cz,cx,d,ta,tb
  common /VGLOB/ ileg,ist,nca,ncb,z,cz,cx,d,ta,tb,nwa,nwb,
& isol,ibrnch,uz
  double precision za(25),zb(25)
  equivalence (z(1),za(1)),(z(26),zb(1))
  double precision ha,ala,va,sla,wla,cla,s2a,w2a,c2a,s3a,w3a,
& xa,ya,x1a,x2a,x3a,y1a,y2a,y3a,
& tana2a,tana3a,tana4a,tana5a,tana6a,la,phia
  equivalence (za(1),ha),(za(2),ala,va),
& (za(3),sla),(za(4),wla),(za(5),cla),
& (za(6),s2a),(za(7),w2a),(za(8),c2a),
& (za(9),s3a),(za(10),w3a),(za(11),xa),(za(12),ya),
& (za(13),x1a),(za(14),x2a),(za(15),x3a),
& (za(16),y1a),(za(17),y2a),(za(18),y3a),
& (za(19),tana2a),(za(20),tana3a),(za(21),tana4a),
& (za(22),tana5a),(za(23),tana6a),(za(24),la),(za(25),phia)
  double precision hb,alb,vb,s1b,w1b,c1b,s2b,w2b,c2b,s3b,w3b,
& xb,yb,x1b,x2b,x3b,y1b,y2b,y3b,
& tana2b,tana3b,tana4b,tana5b,tana6b,lb,phib
  equivalence (zb(1),hb),(zb(2),alb,vb),
& (zb(3),s1b),(zb(4),w1b),(zb(5),c1b),
& (zb(6),s2b),(zb(7),w2b),(zb(8),c2b),
& (zb(9),s3b),(zb(10),w3b),(zb(11),xb),(zb(12),yb),
& (zb(13),x1b),(zb(14),x2b),(zb(15),x3b),
& (zb(16),y1b),(zb(17),y2b),(zb(18),y3b),
& (zb(19),tana2b),(zb(20),tana3b),(zb(21),tana4b),
& (zb(22),tana5b),(zb(23),tana6b),(zb(24),lb),(zb(25),phib)
  double precision coil,slp,frct,c3,s4,w4,x4,y4,tana7,tana8,l,
& h,phih,rtot,xtot,ztot,do

```

```

equivalence (z(51),coi1),(z(52),slp),(z(53),frcr),(z(54),c3),
& (z(55),s4),(z(56),w4),(z(57),x4),(z(58),y4),
& (z(59),tana7),(z(60),tana8),(z(61),l),
& (z(62),h),(z(63),phih),
& (z(64),rtot),(z(65),xtot),(z(66),ztot),(z(67),do)
integer*2 nc(2)
equivalence (nca,nc)
double precision ix(2)
equivalence (ia,ix)

double precision pi,halfpi,degrad,raddeg,zero,one,half
integer*2 izero,ione,itywo
common /VCONST/ pi,halfpi,degrad,raddeg,zero,one,half,
& izero,ione,itywo

double precision tnaf,phif
common /VOFLR/ tnaf,phif

double precision delyk,twod,halfd,dsq
common /VANCH/ delyk,twod,halfd,dsq

integer*1 i1file(50),i1file(32),o1file(32)
common /TITLES/ i1file,i1file,o1file
integer*2 i2file(16),o2file(16)
equivalence (i1file,i2file),(o1file,o2file)

integer*2 idate(5),ihour,imin,isec
common /DATIME/ idate,ihour,imin,isec

integer*1 cvarin(172)
common /VARIN/ cvarin

integer*1 cvaro1(240),cvaro2(100)
common /VAROUT/ cvaro1,cvaro2

double precision ddum1(13),
& ga11,ga12,ga21,ga22,ga31,ga32,
& gb11,gb12,gb21,gb22,gb31,gb32,
& g1,g2,ddum2(13)
common /VARC/ ddum1
& ga11,ga12,ga21,ga22,ga31,ga32,
& gb11,gb12,gb21,gb22,gb31,gb32,
& g1,g2,ddum2

```

```

double precision gcff(12)
equivalence (gall,gcff)

integer*1 cunkno(12)
common /UNKNOWN/ cunkno

integer*1 cgroup(44)
common /GROUP/ cgroup

integer*1 cgrp21(218),cgrp22(82)
common /GRP2CN/ cgrp21,cgrp22

double precision cosdp,xk,yk,xg,yg,gx1,gx2,lx,seglen,xmin,ymin,
& xmax,ssum0,ssum1,xsum0,xsum1,ysum0,ysum1
real xout,yout
integer*2 isym,npt,ib,ncx,ioff,ic,ix,iy,iz,incomp,npoint(5)
common /VELVPT/cosdp,xk,yk,xg,yg,gx1,gx2,lx,seglen,xmin,ymin,
& xmax,ssum0,ssum1,xsum0,xsum1,ysum0,ysum1,xout,yout,
& isym,npt,ib,ncx,ioff,ic,ix,iy,iz,incomp,npoint

integer*2 nbr,ibc,icurv,ibent,ip,
& iend,iver,ils,ig,igtyp,ij,n,igc
double precision xf(2,2),yf(2,2)

integer*1 ans(1),yes
data yes/'Y'/
*****
* BEGIN EXECUTABLE CODE
*****
if (ifil eq 1) goto 30
write(screen,*) 'Do you want to save output for elevation views?'
read(keybd,*) ans
if (ans(1) eq yes) goto 20
isw=1
goto 9000
20 continue
write(screen,*) 'Enter segment increment length (feet) '
read(keybd,*) seglen
call RWCOM1(1)
goto 100
30 continue
if (isw eq 1) goto 9000

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```

    if (iiov eq 1) goto 50
    call ADDEXT(1,file,31,ext3)
    call file(12file,lul,3)
    goto 55
50 continue
    call ADDEXT(1ofile,31,ext3)
    call fileto2file,lul,3)
55 continue
    igtyp=2
    write(lul,4) igtyp
    write(lul,1) title
    write(lul,2) idate
    write(lul,3) ihour,imin,isec
    xout=xmax
    yout=do
    if (ileg eq 1) yout=yo
    write(lul,7) xout,yout
    xout=xmin
    yout=ymin
    write(lul,7) xout,yout
    write(lul,5) ncomp
100 continue

    phip=phih
    if (ileg eq 1) goto 120
    nbr=2
    xk=half*d*dsin(hip)
    yk=half*delyk
    goto 150
120 continue
    nbr=1
    xk=zero
    yk=zero
150 continue
    ibc=3-ibrnch
    xmin=zero
    ymin=zero
    ncomp=0
    igc=0

    do 5000 ib=1,nbr
        icurv=0
        if (ileg eq 1 or isol eq 1) icurv=1

```

```

      if (isol eq 3 and ix(1bc) ne zero and ib eq 1brnch)
&      icurv=1
      ibent=1
      if (ileg eq 1 or isol ne 3) ibent=0
      if (ix(1bc) eq zero or ib eq 1brnch) ibent=0
      ncx=nc(ib)
      ioff=25*(ib-1)
      ip=ioff+25
      lx=z(ip-1)
      phix=z(ip)
      if (ileg eq 1) phix=phih
      inafx=dcos(phix-phih)*inaf
      csafx=one/SECNT(inafx)
      snafx=inafx*csafx
      cosdp=dcos(phix-phip)

      sf=zero
      do 210 ic=1,ncx
          is=ioff+3*ic
          sf=sf+z(is)
210      continue
      sf=sf*1.0d-1
      xf(1,ib)=xi-sf*csafx*cosdp
      yf(1,ib)=yi-sf*snafx
      xf(2,ib)=xi+(1x+sf)*csafx*cosdp
      yf(2,ib)=yi+(1x+sf)*snafx
      xmin=dmini(xmin,xf(1,ib))
      do 250 i=1,2
          ymin=dmini(ymin,yf(i,ib))
250      continue

      if (ifil eq 0) goto 300
      igc=igc+1
      write(1ul,6) npoint(igc)
300      continue
      npt=0
      xg=zero
      yg=zero
      isym=5
      call WELVPT(1fil)

      xsum0=zero
      ysum0=zero

```

```

ssum0=zero
lend=0
iver1=0
do 1000 ic=1,ncx
    ix=ioff+12+ic
    iy=ix+3
    is=ioff+3*ic
    xsum1=xsum0+z(ix)
    ysum1=ysum0+z(iy)
    ssum1=ssum0+z(is)
    isym=0
    if (ibent eq 1) goto 2000

    if (ix le ssum0) goto 1500
    if (ix ge ssum1) goto 1200
    ils=1
    xg=ix
    if (icurv eq 1) goto 1120
    lend=1
    continue
    goto 1300
1200    continue
    ils=2
    xg=ssum1
    if (ic eq ncx) goto 1250
    if (z(ix+1) eq zero) goto 1250
    call SYMSNK
    goto 1300
1250    continue
    lend=1
1300    continue
    if (lend ne 1) goto 1400
    if (ib ne 2) goto 1400
    if (isol ne 2 and isol ne 3) goto 1320
    isym=3
    goto 1400
1320    continue
    if (ileg eq 3) goto 1330
    isym=4
    goto 1400
1330    continue
    isym=2
1400    continue

```

```

      xg=xg*csafx
      yg=yg*inafx
      call VELVPT(,f,1)
      if (iend eq 1) goto 4100
      if (ils eq 2) goto 3000
1500  continue
      ig=6*(ib-1)+2*(ic-1)+1
      gx1=gcff(ig)
      gx2=gcff(ig+1)
      call ELVCA(0,1,f,1)
      goto 3000

2000  continue
      if (ic ne 1) goto 2100
      if (ibrnch ne 1) goto 2020
      lh=LENH(ib,ncb,zb)
      goto 2100
2020  continue
      lh=LENH(ia,nca,za)
2100  continue
      ssum2=zero
      do 2150 i=1,ncx
          j=ncx+1-i
          if (j le ic) goto 2150
          j=i+off+15+j
          ssum2=ssum2+z(j)
2150  continue
      if (ivert eq 1) goto 2500
      if (ix lt ssum1) goto 2400
      xg=ssum1*csafx
      yg=xg*inafx
      if (ix eq ssum1) goto 2220
      call SYMSNK
      goto 2250
2220  continue
      ivert=1
      isym=3
2250  continue
      call VELVPT(,f,1)
      goto 3000
2400  continue
      xg=ix*csafx
      yg=xg*inafx

```

```

            iver1=1
            isym=3
            call WELVPT(,fil)
2500      continue
            if (ssum2 ge 1h) goto 3000
            yg=ysum1
            if (ic eq ncx) goto 2520
            call SYMSNK
            goto 2600
2520      continue
            if (ib eq 2) goto 2530
            isym=0
            goto 2600
2530      continue
            if (ileg ne 2) goto 2540
            isym=4
            goto 2600
2540      continue
            isym=2
2600      continue
            call WELVPT(,fil)

3000      continue
            xsum0=xsum1
            ysum0=ysum1
            ssum0=ssum1
            ymin=dmin1(ymin,yk+yg)
4000      continue

4100      continue
            ncomp=ncomp+1
            npoint(ncomp)=npt
            xk=-xk
            yk=-yk
5000      continue

            if (ileg eq 1) goto 6000
            xk=-xk+xg*cosdp
            yk=-yk+yg
            cosdp=dcos(phih-phi)
            if (,fil eq 0) goto 5100
            igc=igc+1

```

```

write(lul,6) npoint(igc)
5100 continue
npt=0
xg=zero
yg=zero
isym=0
call WELVPT(1,1)
if (1 eq zero) goto 5200
tnafx=dcos(phi1h-phi1f)*tnaf
csafx=one/SECNT(tnafx)
xg=1*csafx
yg=xg*tnafx
call WELVPT(1,1)
5200 continue
gx1=g1
gx2=g2
lx=1
ssum0=zero
ssum1=s4
xsum0=zero
xsum1=x4
ysum1=y4
is=55
loff=61
call ELVCAT(1,1,1)
ncomp=ncomp+1
npoint(ncomp)=npt

6000 continue
xmex=xout

isym=7
do 6200 ib=1,nbr
  if (1fil eq 0) goto 6130
  igc=igc+1
  write(lul,6) npoint(igc)
  do 6120 i=1,2
    xout=xf(i,ib)
    yout=yf(i,ib)
    write(lul,8) xout,yout,isym
6120 continue
6130 continue
ncomp=ncomp+1

```

```
        npoint(ncomp)-2
6200    continue
        call close(1ul)

9000    continue
        return

1 format(50a1)
2 format(5a2)
3 format(i2,' ',i2,' ',i2)
4 format(i1)
5 format(i2)
6 format(i5)
7 format(f8 2,1x,f8 2)
8 format(f8 2,1x,f8 2,i2)
9 format(19a1)
        end
```

*

```

c! sys final/i2for/symsnk for!!
      subroutine SYMSNK
*****
      implicit integer*2 (*)
      implicit double precision (a-z)

      integer*2 ileg,ist,ncs,ncb,nwa,nwb,isol,ibrnch,uz(5)
      double precision z(67),cz,cx,d,ta,fb
      common /VCL08/ ileg,ist,ncs,ncb,z,cz,cx,d,ta,fb,nwa,nwb,
& isol,ibrnch,uz

      double precision pi,halfpi,degrad,raddeg,zero,one,half
      integer*2 izero,ione,itywo
      common /VCONST/ pi,halfpi,degrad,raddeg,zero,one,half,
& izero,ione,itywo

      double precision cosdp,xk,yk,xg,yg,gx1,gx2,lx,seglen,xmin,ymin,
& xmax,ssum0,ssum1,xsum0,xsum1,ysum0,ysum1
      real xout,yout
      integer*2 isym,npt,ib,ncx,loff,lc,lx,ly,ls,ncomp,npoint(5)
      common /VELVPT/cosdp,xk,yk,xg,yg,gx1,gx2,lx,seglen,xmin,ymin,
& xmax,ssum0,ssum1,xsum0,xsum1,ysum0,ysum1,xout,yout,
& isym,npt,ib,ncx,loff,lc,lx,ly,ls,ncomp,npoint
*****
* BEGIN EXECUTABLE CODE
*****
      clmp=z(ist+2)
      if (clmp ge zero) goto 10
      isym=4
      goto 100
10  continue
      if (clmp gt zero) goto 20
      isym=1
      goto 100
20  continue
      isym=2
100 continue
      return
      end

```

*

```

e! sys final/i2for/welvpt for##
subroutine WELVPT(i,fil)
*****
implicit integer*2 (*)

integer*2 i,fil

integer*2 screen,keybd,iu1,iu2,niv99,siz99,ncpl
integer*1 pref1(211),dum1,exi1(4),exi2(4)
common /LUNITS/ screen,keybd,iu1,iu2,niv99,siz99,ncpl,
& pref1,dum1,exi1,exi2

double precision cosdp,xk,yk,xg,yg,gx1,gx2,lx,seglen,xmin,ymin,
& xmax,ssum0,ssum1,xsum0,xsum1,ysum0,ysum1
real xout,yout
integer*2 isym,np1,ib,ncx,ioff,ic,ix,iy,is,ncomp,npoint(5)
common /VELVPT/cosdp,xk,yk,xg,yg,gx1,gx2,lx,seglen,xmin,ymin,
& xmax,ssum0,ssum1,xsum0,xsum1,ysum0,ysum1,xout,yout,
& isym,np1,ib,ncx,ioff,ic,ix,iy,is,ncomp,npoint
*****
* BEGIN EXECUTABLE CODE
*****
xout=xk+xg*cosdp
yout=yk+yg
if (i,fil) eq 01 goto 100
write(iu1,8) xout,yout,isym
100 continue
np1=np1+1
return

8 format(f8.2,lx,f8.2,lx)
end
*

```

```

et sys final/i2for/elvcat for##
  subroutine ELVCAT(iris,ifil)
*****
  implicit integer*2 (*)
  implicit double precision (a-z)

  integer*2 iris,ifil

  integer*2 ileg,ist,nca,ncb,nwa,nwb,isol,ibrnch,uz(5)
  double precision z(67),cz,cx,d,ta,tb
  common /VGL0B/ ileg,ist,nca,ncb,z,cz,cx,d,ta,tb,nwa,nwb,
& isol,ibrnch,uz

  double precision pi,halfpi,degrad,raddeg,zero,one,half
  integer*2 izero,ione,ltwo
  common /VCONST/ pi,halfpi,degrad,raddeg,zero,one,half,
& izero,ione,ltwo

  double precision cosdp,xk,yk,xg,yg,gx1,gx2,lx,seglen,xmin,ymin,
& xmax,ssum0,ssum1,xsum0,xsum1,ysum0,ysum1
  real xout,yout
  integer*2 isym,npt,ib,ncx,loff,ic,ix,iy,is,incomp,npoin(5)
  common /VELVPT/cosdp,xk,yk,xg,yg,gx1,gx2,lx,seglen,xmin,ymin,
& xmax,ssum0,ssum1,xsum0,xsum1,ysum0,ysum1,xout,yout,
& isym,npt,ib,ncx,loff,ic,ix,iy,is,incomp,npoin

  integer*2 nsegs,i
*****
* BEGIN EXECUTABLE CODE
*****
  lngx1=dlog(gx1)
  scop=ssum1-dmax1(lx,ssum0)
  nsegs=(scop*0.999999d0)/seglen+1
  sgl=scop/nsegs
  wx=z(1s+1)
  hx=z(1off+1)
  hw=hw/wx
  wh=wx/hx
  isym=0
  xgoff=xg
  xxg=xg-xgoff
  do 1000 i=1,nsegs
    if (i.ne.1) goto 1510

```

```

temp= -hw*lngxl
if (temp lt xxg or temp gt xsuml-xgoff) goto 1510
ymin-dminl(ymin,yk+hw+gx2)
1510 continue
if (ifil eq 0) goto 1700
if (i eq nsegs) goto 1520
temp-gx1*dexp(wh*xxg)
temp-wh*sgl+half*(temp-one/temp)
temp=temp+SECNT(temp)
xxg-hw*(dlog(temp)-lngxl)
xg=xgoff+xxg
yg-hw*half*(temp+one/temp)+gx2
goto 1580
1520 continue
xg=xsuml
yg=ysuml
if (iris ne 1) goto 1550
isym=3
goto 1580
1550 continue
if (ic eq ncx) goto 1560
call SYMSNK
goto 1580
1560 continue
if (ileg ne 1) goto 1570
isym=3
goto 1580
1570 continue
if (ib ne 2) goto 1580
if (ileg ne 2) goto 1575
isym=4
goto 1580
1575 continue
isym=2
1580 continue
call WELVPT(ifil)
1600 continue
goto 1800
1700 continue
npt=npt+nsegs
xg=xsuml
yg=ysuml

```

```
xout=xk+xg*cosdp  
yout=yk+yg  
1800 continue
```

```
return  
end
```

*

```

et sys final/i2for/plnpnt for#
  subroutine PLNPNT(iov,ifil,ism)
*****
  implicit integer*2 (*)
  implicit double precision (a-z)

  integer*2 iov,ifil,ism

  integer*2 screen,keybd,lul,lu2,niv99,siz99,ncpl
  integer*1 pref1(21),dum1,ex11(4),ex12(4),ex13(4),ex14(4)
  common /LUNITS/ screen,keybd,lul,lu2,niv99,siz99,ncpl,
& pref1,dum1,ex11,ex12,ex13,ex14

  integer*2 ileg,ist,nca,ncb,nwa,nwb,isol,ibrnch,uz(5)
  double precision z(67),cz,cx,d,ta,tb
  common /VGL08/ ileg,ist,nca,ncb,z,cz,cx,d,ta,tb,nwa,nwb,
& isol,ibrnch,uz
  double precision za(25),zb(25)
  equivalence (z(1),za(1)),(z(26),zb(1))
  double precision ha,ala,va,sla,wla,cla,s2a,w2a,c2a,s3a,w3a,
& xa,ya,x1a,x2a,x3a,y1a,y2a,y3a,
& tana2a,tana3a,tana4a,tana5a,tana6a,la,phia
  equivalence (za(1),ha),(za(2),ala,va),
& (za(3),sla),(za(4),wla),(za(5),cla),
& (za(6),s2a),(za(7),w2a),(za(8),c2a),
& (za(9),s3a),(za(10),w3a),(za(11),xa),(za(12),ya),
& (za(13),x1a),(za(14),x2a),(za(15),x3a),
& (za(16),y1a),(za(17),y2a),(za(18),y3a),
& (za(19),tana2a),(za(20),tana3a),(za(21),tana4a),
& (za(22),tana5a),(za(23),tana6a),(za(24),la),(za(25),phia)
  double precision hb,alb,vb,slb,wlb,clb,s2b,w2b,c2b,s3b,w3b,
& xb,yb,x1b,x2b,x3b,y1b,y2b,y3b,
& tana2b,tana3b,tana4b,tana5b,tana6b,lb,phib
  equivalence (zb(1),hb),(zb(2),alb,vb),
& (zb(3),slb),(zb(4),wlb),(zb(5),clb),
& (zb(6),s2b),(zb(7),w2b),(zb(8),c2b),
& (zb(9),s3b),(zb(10),w3b),(zb(11),xb),(zb(12),yb),
& (zb(13),x1b),(zb(14),x2b),(zb(15),x3b),
& (zb(16),y1b),(zb(17),y2b),(zb(18),y3b),
& (zb(19),tana2b),(zb(20),tana3b),(zb(21),tana4b),
& (zb(22),tana5b),(zb(23),tana6b),(zb(24),lb),(zb(25),phib)
  double precision coil,slp,frct,c3,s4,w4,x4,y4,tana7,tana8,l,
& h,phih,rioi,xtoi,ztoi,do

```

```

equivalence (z(51),co11),(z(52),slp),(z(53),fnc1),(z(54),c3),
& (z(55),s4),(z(56),w4),(z(57),x4),(z(58),y4),
& (z(59),tana7),(z(60),tana8),(z(61),l),
& (z(62),h),(z(63),phih),
& (z(64),r1ot),(z(65),x1ot),(z(66),z1ot),(z(67),do)
integer*2 nc(2)
equivalence (nca,nc)
double precision ix(2)
equivalence (ia,ix)

double precision pi,halfpi,degrad,raddeg,zero,one,half
integer*2 izero,ione,iiwo
common /VCONST/ pi,halfpi,degrad,raddeg,zero,one,half,
& izero,ione,iiwo

double precision tnaf,phif
common /VOFLR/ tnaf,phif

double precision delyk,twod,halfd,dsq
common /VANCH/ delyk,twod,halfd,dsq

integer*1 i1ile(50),i1ile(32),ofile(32)
common /TTILES/ i1ile,i1ile,ofile
integer*2 i2file(16),o2file(16)
equivalence (i1ile,i2file),(ofile,o2file)

integer*2 idate(5),ihour,imin,isec
common /DATEIME/ idate,ihour,imin,isec

integer*1 cvarin(172)
common /VARIN/ cvarin

integer*1 cvaro1(240),cvaro2(100)
common /VAROUT/ cvaro1,cvaro2

double precision ddum1(13),
& ga11,ga12,ga21,ga22,ga31,ga32,
& gb11,gb12,gb21,gb22,gb31,gb32,
& g1,g2,ddum2(3)
common /VARC/ ddum1,
& ga11,ga12,ga21,ga22,ga31,ga32,
& gb11,gb12,gb21,gb22,gb31,gb32,
& g1,g2,ddum2

```

```

double precision gcff(12)
equivalence (gall,gcff)

integer*1 cunkno(12)
common /UNKNOV/ cunkno

integer*1 cgroup(44)
common /GROPT/ cgroup

integer*1 cgrp21(218),cgrp22(82)
common /GRP2CN/ cgrp21,cgrp22

double precision cospx,sinpx,xk,zk,xxg,lx,zmin,zmax,
& ssum0,ssum1,xsum0,xsum1
real xout,zout
integer*2 isym,npt,ib,ncx,ioff,ic,ix,is,incomp,npoint(15)
common /VELVPT/cospx,sinpx,xk,zk,xxg,lx,zmin,zmax,
& ssum0,ssum1,xsum0,xsum1,xout,zout,
& isym,npt,ib,ncx,ioff,ic,ix,is,incomp,npoint

integer*2 nbr,ibc,icurv,ibent,ip,
& iend,iverf,ils,ig,igtvp,ij,in,igc

integer*1 ans(1),yes
data yes/'Y'/
*****
* BEGIN EXECUTABLE CODE
*****
if (ifil eq 1) goto 30
write(screen,*) 'Do you want to save output for plan views?'
read(keybd,*) ans
if (ans(1) eq yes) goto 20
isw=1
goto 9000
20 continue
call RWCOM1(1)
goto 100

30 continue
if (isw eq 1) goto 9000
if (ioy eq 1) goto 50
call ADDEXT(1,file,31,ext4)
call file(12file,1ul,3)

```

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```

      goto 55
50  continue
      call ADDEXT(ofile,31,ex14)
      call file(o2file,lul,3)
55  continue
      igt=3
      write(lul,4) igt
      write(lul,1) title
      write(lul,2) idate
      write(lul,3) ihour,imin,isec
      xout=xmax
      zout=zmax
      write(lul,7) xout,zout
      xout=0
      zout=zmin
      write(lul,7) xout,zout
      write(lul,5) ncomp
100 continue

      if (ileg eq 1) goto 120
      nbr=2
      zk=halfd
      goto 150
120 continue
      nbr=1
      zk=zero
150 continue
      xk=zero
      ibc=3-ibrnch
      zmin=-halfd
      zmax=halfd
      ncomp=0
      igr=0

      do 5000 ib=1,nbr
         icurv=0
         if (ileg eq 1 or isol eq 4) icurv=1
         if (isol eq 3 and ix(ibr) ne zero and ib eq ibrnch)
&          icurv=1
         ibent=1
         if (ileg eq 1 or isol ne 3) ibent=0
         if (ix(ibr) eq zero or ib eq ibrnch) ibent=0
         ncx=nc(ib)

```

```

      ioff=25*(ib-1)
      ip=ioff+25
      lx=z(ip-1)
      phix=z(ip)
      if (ileg eq 1) phix=phix
      cospx=dcos(phix)
      sinpx=dsin(phix)
      tnofx=dcos(phix-phif)*tnof
      csafx=one/SECNT(tnofx)
      snafx=tnofx*csafx

      if (ifil eq 0) goto 300
      igc=igc+1
      write(lul,6) npoint(igc)
      continue
      npt=0
      xxg=zero
      isym=5
      call WPLNPT(ifil)

      xsum0=zero
      ssum0=zero
      iend=0
      iver1=0
      do 4000 ic=1,ncx
         ix=ioff+12+ic
         is=ioff+3*ic
         xsum1=xsum0+z(ix)
         ssum1=ssum0+z(is)
         isym=0
         if (ibent eq 1) goto 2000

         if (lx le ssum0) goto 1500
         if (lx ge ssum1) goto 1200
         ils=1
         xxg=lx
         if (icurv eq 1) goto 1120
         iend=1
      1120      continue
      1200      goto 1300
      continue
      ils=2
      xxg=ssum1

```

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```

      if (ic eq ncx) goto 1250
      if (z(ix+1) eq zero) goto 1250
      call PLNSNK
      goto 1300
1250  continue
      iend=1
1300  continue
      if (iend ne 1) goto 1400
      if (ib ne 2) goto 1400
      if (isol ne 2 and isol ne 3) goto 1320
      isym=3
1320  goto 1400
      continue
      if (ileg eq 3) goto 1330
      isym=4
1330  goto 1400
      continue
      isym=2
1400  continue
      xxg=xxg*csafx
      call WPLNPT(,f,1)
      if (iend eq 1) goto 4100
      if (ils eq 2) goto 3000
1500  continue
      call PLNCAT(0,,f,1)
      goto 3000

2000  continue
      if (ic ne 1) goto 2100
      if (ibrnch ne 1) goto 2020
      lh=LENH(ib,ncb,zb)
      goto 2100
2020  continue
      lh=LENH(ia,nca,za)
2100  continue
      ssum2=zero
      do 2150 i=1,ncx
         j=ncx+1-i
         if (j le ic) goto 2150
         j=i-off+15+j
         ssum2=ssum2+z(j)
2150  continue
      if (lvert eq 1) goto 2500

```

```

if (lx lt ssum1) goto 2400
xxg=ssum1*csafx
if (lx eq ssum1) goto 2220
call PLNSNK
goto 2250
2220 continue
iveri=1
isym=3
2250 continue
call WPLNPT(,f,1)
goto 3000
2400 continue
xxg=lx*csafx
iveri=1
isym=3
call WPLNPT(,f,1)
2500 continue
if (ssum2 ge lh) goto 3000
if (lic eq ncx) goto 2520
call PLNSNK
goto 2600
2520 continue
if (lib eq 2) goto 2530
isym=0
goto 2600
2530 continue
if (ileg ne 2) goto 2540
isym=4
goto 2600
2540 continue
isym=2
2600 continue
call WPLNPT(,f,1)
3000 continue
xsum0=xsum1
ssum0=ssum1
4000 continue
4100 continue
zz=zout
zmin=dmin1(zmin,zz)

```

```

                zmax=dmax1(zmax,zz)
                ncomp=ncomp+1
                npoint(ncomp)=npt
                zk= -zk
5000          continue

                zdott=zero
                if (ileg eq 1) goto 6000
                xk= xxg*cospx
                zk= -zk+xxg*sinpx
                cospx=dcos(phi1)
                sinpx=dsin(phi1)
                zdott=zk-xk*sinpx/cospx
                if (ifil eq 0) goto 5100
                igc=igc+1
                write(lu1,6) npoint(igc)
5100          continue
                npt=0
                xxg=zero
                isym=0
                call WPLNPT(ifil)
                if (l eq zero) goto 5200
                inafx=dcos(phi1h-phi1f)*inaf
                csafx=one/SECNT(inafx)
                xxg=1*csafx
                call WPLNPT(ifil)
5200          continue
                xsum)=x4
                call PLNCAT(1,ifil)
                ncomp=ncomp+1
                npoint(ncomp)=npt

6000          continue
                xx=xout
                zz=zout
                xmax=xx
                zmin=dmin1(zmin,zz)
                zmax=dmax1(zmax,zz)

                isym=7
                if (ifil eq 0) goto 6130
                igc=igc+1
                write(lu1,6) npoint(igc)

```

```
xout=0 0
zout=zdot1
write(lul,8) xout,zout,lsym
xout=xx
zout=zz
write(lul,8) xout,zout,lsym
6130 continue
ncomp=ncomp+1
npoint(ncomp)=2
call close(lul)
```

```
9000 continue
return
```

```
1 format(50a1)
2 format(5a2)
3 format(i2,' ',i2,' ',i2)
4 format(i1)
5 format(i2)
6 format(i5)
7 format(f8 2,1x,f8 2)
8 format(f8 2,1x,f8 2,i2)
9 format(19a1)
end
```

*

```

ei sys final/i2for/plnsnk for ii
  subroutine PLNSNK
  *****
  implicit integer*2 (*)
  implicit double precision (a-z)

  integer*2 ileg,ist,nca,ncb,nwa,nwb,isol,ibrnch,uz(5)
  double precision z(67),cz,cx,d,ta,tb
  common /VCL0B/ ileg,ist,nca,ncb,z,cz,cx,d,ta,tb,nwa,nwb,
    & isol,ibrnch,uz

  double precision pi,halfpi,degrad,raddeg,zero,one,half
  integer*2 izero,ione,iiwo
  common /VCONST/ pi,halfpi,degrad,raddeg,zero,one,half,
    & izero,ione,iiwo

  double precision cospx,sinpx,xk,zk,xxg,lx,zmin,zmax,
    & ssum0,ssum1,xsum0,xsum1
  real xout,zout
  integer*2 isym,npt,ib,ncx,loff,ic,ix,is,ncomp,npoint(5)
  common /VELVPT/ cospx,sinpx,xk,zk,xxg,lx,zmin,zmax,
    & ssum0,ssum1,xsum0,xsum1,xout,zout,
    & isym,npt,ib,ncx,loff,ic,ix,is,ncomp,npoint
  *****
  * BEGIN EXECUTABLE CODE
  *****
  clmp=z/(is+2)
  if (clmp ge zero) goto 10
  isym=4
  goto 100
10 continue
  if (clmp gt zero) goto 20
  isym=1
  goto 100
20 continue
  isym=2
100 continue
  return
  end

```

*

```

e1 sys final/i2for/wplnpt for i1
  subroutine WPLNPT(i1,i1)
  *****
  implicit integer*2 (=)

  integer*2 i11

  integer*2 screen,keyboard,lul,lu2,niv99,siz99,ncpl
  integer*1 pref1(21),dum1,ex11(4),ex12(4)
  common /LUNITS/ screen,keyboard,lul,lu2,niv99,siz99,ncpl
  & pref1,dum1,ex11,ex12

  double precision cospx,sinpx,xk,zk,xxg,lx,zmin,zmax,
  & ssum0,ssum1,xsum0,xsum1
  real xout,zout
  integer*2 isym,npt,ib,ncx,loff,lc,lx,ls,ncomp,npoint(5)
  common /VELVPT/cospx,sinpx,xk,zk,xxg,lx,zmin,zmax,
  & ssum0,ssum1,xsum0,xsum1,xout,zout,
  & isym,npt,ib,ncx,loff,lc,lx,ls,ncomp,npoint
  *****
  * BEGIN EXECUTABLE CODE
  *****
  xout=xk+xxg*cospx
  zout=zk+xxg*sinpx
  if (i11 eq 0) goto 100
  write(lul,8) xout,zout,isym
100 continue
  npt=npt+1
  return

  8 format(f8.2,lx,f8.2,i2)
  end
  *

```

```

PI sys final/i2for/plncat for##
  subroutine PLNCAT(liris,ifil)
*****
  implicit integer*2 (*)
  implicit double precision (a-z)

  integer*2 liris,ifil

  integer*2 ileg,ist,nca,ncb,nwa,nwb,isol,ibrnch,uz(5)
  double precision z(67),cz,cx,d,ta,ib
  common /VCL08/ ileg,ist,nca,ncb,z,cz,cx,d,ta,ib,nwa,nwb,
& isol,ibrnch,uz

  double precision pi,halfpi,degrad,raddeg,zero,one,half
  integer*2 izero,ione,itywo
  common /VCONST/ pi,halfpi,degrad,raddeg,zero,one,half,
& izero,ione,itywo

  double precision cospx,sinpx,xk,zk,xxg,lx,zmin,zmax,
& ssum0,ssum1,xsum0,xsum1
  real xout,zout
  integer*2 isym,npt,ib,ncx,ioff,ic,ix,its,incomp,npoin(5)
  common /VELVPT/cospx,sinpx,xk,zk,xxg,lx,zmin,zmax,
& ssum0,ssum1,xsum0,xsum1,xout,zout,
& isym,npt,ib,ncx,ioff,ic,ix,its,incomp,npoin
*****
* BEGIN EXECUTABLE CODE
*****
  isym=0
  xxg=xsum1
  if (liris ne 1) goto 1550
  isym=3
  goto 1580
1550 continue
  if (ic eq ncx) goto 1560
  call PLNSNK
  goto 1580
1560 continue
  if (ileg ne 1) goto 1570
  isym=3
  goto 1580
1570 continue
  if (ib ne 2) goto 1580

```

if (ileg ne 2) goto 1575
isym=1
goto 1580
1575 continue
isym=2
1580 continue
call VPI:PT(fil)

return
end

```

e1 sys final/t2for/moor04 fortt
  program MOOR04
  *****
  implicit integer*2 (*)

  integer*2 screen,keybd,lul,lu2,niv99,siz99,ncpl
  integer*1 pref1(21),dum1,ex11(4),ex12(4),ex13(4),ex14(4)
  common /LUNITS/ screen,keybd,lul,lu2,niv99,siz99,ncpl,
& pref1,dum1,ex11,ex12,ex13,ex14

  integer*2 gbuff(24),lugraf,lupifl,ludbug
  common /GCB/ gbuff,lugraf,lupifl,ludbug

  integer*2 ileg,ist,ncs,ncb,nwa,nwb,isol,ibrnch,uz(5)
  double precision z(67),cz,cx,d,ta,tb
  common /VGLOBAL/ ileg,ist,ncs,ncb,z,cz,cx,d,ta,tb,nwa,nwb,
& isol,ibrnch,uz

  integer*2 npoint
  real hmin,hmax,hsym
  common /VHXCVR/ hmin,hmax,hsym,npoint

  double precision pi,halfpi,degrad,raddeg,zero,one,half
  integer*2 izero,ione,itywo
  common /VCONST/ pi,halfpi,degrad,raddeg,zero,one,half,
& izero,ione,itywo

  double precision tnaf,phif
  common /VOFLR/ tnaf,phif

  double precision delyk,twod,halfd,dsq
  common /VANCH/ delyk,twod,halfd,dsq

  integer*2 ilib,itykey,ityov
  integer*1 ons(1)

  integer*1 yes
  data yes/'Y'/
  *****
  * BEGIN EXECUTABLE CODE
  *****
  call bfact(0,'M4OLY')
  ilib=1

```

```
key=1
100 continue
call ovlink('QUERY ',ilib,key,iov,0,1,0,1)
ilib=0
call ovlink('PRSLV ')
call ovlink('HXCALC ')
write(screen,*) 'Do you want to compute another curve?'
read(keybd,*) ans
if (ans(1) eq yes) goto 100
stop
end
```

*

```

et sys final/12for/hxcalc for!!
subroutine HXCALC
*****
implicit integer*2 (*)

integer*2 ileg,ist,nca,ncb,nwa,nwb,isol,ibrnch,uz(5)
double precision z(67),cz,cx,d,ta,tb
common /VGLOBAL/ ileg,ist,nca,ncb,z,cz,cx,d,ta,tb,nwa,nwb,
& isol,ibrnch,uz

integer*2 iscopa,iscopb,itanb,itanb,itt,is
double precision epsy,gamma,se
common /VCMPD/ epsy,gamma,se,iscopa,iscopb,itanb,itanb,itt,is

integer*2 itold
double precision ss0,dten0,ss1,dten1,ss2,dten2,slp0,sa0,smin(2)
common /VEQUAL/ ss0,dten0,ss1,dten1,ss2,dten2,slp0,sa0,smin,
& itold
equivalence (smin(1),samin),(smin(2),sbmin)

double precision sa,sb,ca,cb,vc0a(6),vc0b(6),
& eex0,eez0,eev0,a0,b0,phia0,phib0
integer*2 icase
common /VSPID/ sa,sb,ca,cb,vc0a,vc0b,
& eex0,eez0,eev0,a0,b0,phia0,phib0,
& icase

double precision snphih,csphih,snafh,csafh,tnafh,scafh,dsnph
common /VHDIR/ snphih,csphih,snafh,csafh,tnafh,scafh,dsnph

double precision htnafh,hw4,w4h,s4w4h,c3h
common /VHVEC/ htnafh,hw4,w4h,s4w4h,c3h

double precision epsxz,xztru(2),xzbas(2),hbas(2),scrat(10)
common /VCSSXZ/ epsxz,xztru,xzbas,hbas,scrat
double precision xtru,ztru,xbas,zbas,hbasx,hbasz
equivalence (xztru(1),xtru),(xztru(2),ztru),
& (xzbas(1),xbas),(xzbas(2),zbas),
& (hbas(1),hbasx),(hbas(2),hbasz)

integer*2 itant
double precision o,b,snph,tnafa,tnafb,
& seca7,seca8,ut,st,ykt,zkt,eex,eez,eev,ybuov

```

```

common /VCSSHP/ a,b,snph,lnafa,lnafb,
& seco7,seco8,ut,st,ykt,zkt,eex,eez,eev,ybuoy,ifant

```

```

integer*2 ivs
double precision v0,v1,v2,f0,f1,f2,f,eps
common /VSEC/ v0,v1,v2,f0,f1,f2,f,eps,ivs
double precision varray(3),farray(3)
equivalence (v0,varray),(f0,farray)

```

```

integer*2 ilh0,ilh1,ilh2,il
double precision lh0,ilh1,ilh2,ce
common /VSC0IL/ lh0,ilh1,ilh2,ce,ilh0,ilh1,ilh2,il
integer*2 ilh(3)
double precision lh(3)
equivalence (ilh,ilh0),(ilh,ilh0)

```

```

double precision xred
integer*2 isidf,nerra,nerrb
common /VSTAB/ xred,isidf,nerra,nerrb

```

```

*****
* BEGIN EXECUTABLE CODE
*****
      if (ileg ne 1) goto 100
      call avlink('HXCLC1 ')
      goto 200
100  continue
      call avlink('CPREP0 ')
      if (ileg eq 3) call CPREP1
      call CPREP2
      call avlink('HXCLC2 ')
200  continue
      return
      end

```

*

```

ei sys final/i2for/hxc1cl forff
  subroutine HXC1C1
*****
  implicit integer*2 (*)
  implicit double precision (a-z)

  integer*2 screen,keybd,lu1,lu2,niv99,siz99,ncpl
  integer*1 pref1(21),dum1,ex11(4),ex12(4)
  common /LUNITS/ screen,keybd,lu1,lu2,niv99,siz99,ncpl,
& pref1,dum1,ex11,ex12

  integer*2 ileg,ist,nca,ncb,nwa,nwb,isol,ibrnch,uz(5)
  double precision z(67),cz,cx,d,fa,fb
  common /VCL08/ ileg,ist,nca,ncb,z,cz,cx,d,fa,fb,nwa,nwb,
& isol,ibrnch,uz
  double precision za(25),zb(25)
  equivalence (z(1),za(1)),(z(26),zb(1))
  double precision ha,da,va,sla,wla,cla,s2a,w2a,c2a,s3a,w3a,
& xa,ya,yla,x2a,x3a,y1a,y2a,y3a,
& tana2a,tana3a,tana4a,tana5a,tana6a,la,phia
  equivalence (za(1),ha),(za(2),da,va),
& (za(3),sla),(za(4),wla),(za(5),cla),
& (za(6),s2a),(za(7),w2a),(za(8),c2a),
& (za(9),s3a),(za(10),w3a),(za(11),xa),(za(12),ya),
& (za(13),yla),(za(14),x2a),(za(15),x3a),
& (za(16),y1a),(za(17),y2a),(za(18),y3a),
& (za(19),tana2a),(za(20),tana3a),(za(21),tana4a),
& (za(22),tana5a),(za(23),tana6a),(za(24),la),(za(25),phia)
  double precision hb,ab,vb,s1b,w1b,c1b,s2b,w2b,c2b,s3b,w3b,
& xb,yb,x1b,x2b,x3b,y1b,y2b,y3b,
& tana2b,tana3b,tana4b,tana5b,tana6b,lb,phib
  equivalence (zb(1),hb),(zb(2),ab,vb),
& (zb(3),s1b),(zb(4),w1b),(zb(5),c1b),
& (zb(6),s2b),(zb(7),w2b),(zb(8),c2b),
& (zb(9),s3b),(zb(10),w3b),(zb(11),xb),(zb(12),yb),
& (zb(13),x1b),(zb(14),x2b),(zb(15),x3b),
& (zb(16),y1b),(zb(17),y2b),(zb(18),y3b),
& (zb(19),tana2b),(zb(20),tana3b),(zb(21),tana4b),
& (zb(22),tana5b),(zb(23),tana6b),(zb(24),lb),(zb(25),phib)
  double precision co1,slp,frct,c3,s4,w4,x4,y4,tana7,tana8,l,
& h,phih,rtot,xtot,ztot,do
  equivalence (z(51),co1),(z(52),slp),(z(53),frct),(z(54),c3),
& (z(55),s4),(z(56),w4),(z(57),x4),(z(58),y4),

```

```

& (z(59),tana7),(z(60),tana8),(z(61),1),
& (z(62),h),(z(63),phi),
& (z(64),r1ot1),(z(65),x1ot1),(z(66),z1ot1),(z(67),do)
double precision b,sinb,cosb,tanb,secb
equivalence (z(25),b),(z(26),sinb),(z(27),cosb),(z(28),tanb),
& (z(29),secb)

integer*2 npoint
real hmin,hmax,hsym
common /VHRCRV/ hmin,hmax,hsym,npoint

double precision pi,halfpi,degrad,raddeg,zero,one,half
integer*2 izero,ione,itywo
common /VCONST/ pi,halfpi,degrad,raddeg,zero,one,half,
& izero,ione,itywo

double precision sa,sb,ca,cb,vc0a(6),vc0b(6),
& eex0,eez0,eeey0,a0,b0,phia0,phib0
integer*2 icase
common /VSPID/ sa,sb,ca,cb,vc0a,vc0b,
& eex0,eez0,eeey0,a0,b0,phia0,phib0,
& icase

integer*2 ncomp,np1,k,jsq,iws
real xmax,xmin,xcoord,delh,dhmax,hcoord
equivalence (ncomp,np1,k),(dhmax,hcoord)
*****
* BEGIN EXECUTABLE CODE
*****
eps=va*1 0d-10
delh=(hmax-hmin)/(npoint-1)

ho=hmax*1 0d3
call SECIV(nca,za,sinb,cosb,tanb,secb,eps,0)
xmax=xa
write(1,7) xmax,hmax

if (hmin eq 0 0) goto 120
ho=hmin*1 0d3
call SECIV(nca,za,sinb,cosb,tanb,secb,eps,0)
xmin=xa
goto 190
120 continue

```

```

call SUMSC(nca,za,sa,ca)
xmin=(sa-ya)*cosb/(one-sinb)
190 continue
write(1ul,7) xmin,hmin

ncomp=1
write(1ul,5) ncomp

dhmax=delh*1 0e-2
if (hsym ge hmin and hsym le hmax) goto 220
isg= -1
goto 255
220 continue
isg=0
do 250 k=1,npoint
    if (abs(hsym-hmin-(k-1)*delh) ge dhmax) goto 250
    isg=k
    goto 255
250 continue
255 continue

npt=npoint
if (isg eq 0) npt=npoint+1
write(1ul,6) npt

iws=0
do 1000 k=1,npoint
    hcoord=hmin+(k-1)*delh
    if (iws ne 0 or isg ne 0 or hsym ge hcoord) goto 500
    ha=hsym*1 0d3
    call SECIV(nca,za,sinb,cosb,tanb,secb,eps,0)
    xcoord=xa
    isym=5
    write(1ul,8) xcoord,hsym,isym
    iws=1
500 continue
    isym=0
    if (isg eq k) isym=5
    if (k ne 1) goto 550
    xcoord=xmin
    goto 900
550 continue
    if (k ne npoint) goto 600

```

```

        xcoord=xmax
        goto 900
600    continue
        ha=hcoord*1 0d3
        call SECIV(nca,za,sinb,cosb,tanb,secb,eps,0)
        xcoord=xa
900    continue
        write(lul,8) xcoord,hcoord,tsym
        if (k ne 100*(k/100)) goto 1000
        write(screen,10) k
1000    continue

        call close(lul)
        return

5    format(i,2)
6    format(i,5)
7    format(f8 2,1x,f8 2)
8    format(f8 2,1x,f8 2,i2)
10   format(1x,'JUST COMPLETED POINT',i4)
        end

```

*

```

e1 sys final/i2for/hxclc2 forii
subroutine HXCLC2
*****
implicit integer*2 (i)
implicit double precision (a-z)

integer*2 screen,keybd,lul,lu2,niv99,siz99,ncpl
integer*1 pref1(21),dum1,ex11(4),ex12(4)
common /LUNITS/ screen,keybd,lul,lu2,niv99,siz99,ncpl,
& pref1,dum1,ex11,ex12

integer*2 ileg,ist,nca,ncb,nwa,nwb,isol,ibrnch,uz(5)
double precision z(67),cz,cx,d,ra,rb
common /VCL08/ ileg,ist,nca,ncb,z,cz,cx,d,ra,rb,nwa,nwb,
& isol,ibrnch,uz
double precision za(25),zb(25)
equivalence (z(1),za(1)),(z(26),zb(1))
double precision ha,a1a,va,sla,wla,cla,s2a,w2a,c2a,s3a,w3a,
& xa,ya,x1a,x2a,x3a,y1a,y2a,y3a,
& tana2a,tana3a,tana4a,tana5a,tana6a,la,phia
equivalence (za(1),ha),(za(2),a1a,va),
& (za(3),sla),(za(4),wla),(za(5),cla),
& (za(6),s2a),(za(7),w2a),(za(8),c2a),
& (za(9),s3a),(za(10),w3a),(za(11),xa),(za(12),ya),
& (za(13),x1a),(za(14),x2a),(za(15),x3a),
& (za(16),y1a),(za(17),y2a),(za(18),y3a),
& (za(19),tana2a),(za(20),tana3a),(za(21),tana4a),
& (za(22),tana5a),(za(23),tana6a),(za(24),la),(za(25),phia)
double precision hb,alb,vb,slb,wlb,clb,s2b,w2b,c2b,s3b,w3b,
& xb,yb,x1b,x2b,x3b,y1b,y2b,y3b,
& tana2b,tana3b,tana4b,tana5b,tana6b,lb,phib
equivalence (zb(1),hb),(zb(2),alb,vb),
& (zb(3),slb),(zb(4),wlb),(zb(5),clb),
& (zb(6),s2b),(zb(7),w2b),(zb(8),c2b),
& (zb(9),s3b),(zb(10),w3b),(zb(11),xb),(zb(12),yb),
& (zb(13),x1b),(zb(14),x2b),(zb(15),x3b),
& (zb(16),y1b),(zb(17),y2b),(zb(18),y3b),
& (zb(19),tana2b),(zb(20),tana3b),(zb(21),tana4b),
& (zb(22),tana5b),(zb(23),tana6b),(zb(24),lb),(zb(25),phib)
double precision coil,slp,frct,c3,s4,w4,x4,y4,tana7,tana8,l,
& h,phih,r1ot,x1ot,z1ot,do
equivalence (z(51),coil),(z(52),slp),(z(53),frct),(z(54),c3),
& (z(55),s4),(z(56),w4),(z(57),x4),(z(58),y4),

```

```

& (z(59),tana7),(z(60),tana8),(z(61),1),
& (z(62),h),(z(63),phih),
& (z(64),rtot),(z(65),xtot),(z(66),z1ot),(z(67),do)
double precision b,sinb,cosb,tanb,secb
equivalence (z(25),b),(z(26),sinb),(z(27),cosb),(z(28),tanb),
& (z(29),secb)

integer*2 npoint
real hmin,hmax,hsym
common /VHCRV/ hmin,hmax,hsym,npoint

double precision pi,halphi,degrad,raddeg,zero,one,half
integer*2 izero,ione,itywo
common /VCONST/ pi,halphi,degrad,raddeg,zero,one,half,
& izero,ione,itywo

double precision sa,sb,ca,cb,vc0a(6),vc0b(6),
& eex0,eez0,eev0,a0,b0,phia0,phib0
integer*2 icase
common /VSPID/ sa,sb,ca,cb,vc0a,vc0b,
& eex0,eez0,eev0,a0,b0,phia0,phib0,
& icase

integer*2 ncomp,npt,k,istg,iws,istart
real xmax,xmin,xcoord,delh,dhmax,hcoord
equivalence (ncomp,npt,k),(dhmax,hcoord)
*****
* BEGIN EXECUTABLE CODE
*****
delh=(hmax-hmin)/(npoint-1)

h=hmax*1.0d3
call CSXHP(0)
xmax=rtot
write(1,7) xmax,hmax

if (hmin eq 0.0) goto 120
h=hmin*1.0d3
call CSXHP(0)
xmin=rtot
goto 190
120 continue
h=delh*0.5e3

```

```

h=dmin1(h,(ca+cb+c3+s4*w4)*1 0d-4)
call CSXHP(0)
xmin=rioi
h=half*h
call CSXHP(1)
xmin=rioi+rioi-xmin
190 continue
write(lul,7) xmin,hmin

ncomp=1
write(lul,5) ncomp

dhmax=delh*1 0e-2
if (hsym ge hmin and hsym le hmax) goto 220
isg= -1
goto 255
220 continue
isg=0
do 250 k=1,npoini
    if (abs(hsym-hmin-(k-1)*delh) ge dhmax) goto 250
    isg=k
    goto 255
250 continue
255 continue

npt=npoini
if (isg eq 0) npt=npoini+1
write(lul,6) npt

iws=0
do 1000 k=1,npoini
    hcoord=hmin+(k-1)*delh
    if (iws ne 0 or isg ne 0 or hsym ge hcoord) goto 500
    h=hsym*1 0d3
    call CSXHP(1)
    xcoord=rioi
    isym=5
    write(lul,8) xcoord,hsym,isym
    iws=1
    continue
    isym=0
    if (isg eq k) isym=5
    if (k ne 1) goto 550
500

```

```

xcoord=xmin
goto 900
550 continue
   if (k ne npoint) goto 600
xcoord=xmax
600 goto 900
   continue
   h=hcoord*10d3
   istart=0
   if (k ge 3) istart=1
   call CSXHP(istart)
   xcoord=riot
900 continue
   write(lul,8) xcoord,hcoord,ism
   if (ileg eq 3 and k ne 10*(k/10)) goto 1000
   write(screen,10) k
1000 continue

call close(lul)
return

5 format(i2)
6 format(i5)
7 format(f8.2,1x,f8.2)
8 format(f8.2,1x,f8.2,i2)
10 format(1x,'JUST COMPLETED POINT',i4)
end

```

*

```

e! sys final/i2for/csxhp for!!
  subroutine CSXHP(istart)
*****
  implicit integer*2 (*)

  integer*2 istart

  integer*2 ileg,ist,nca,ncb,nwa,nwb,isol,ibrnch,uz(5)
  double precision z(67),cz,cx,d,fa,fb
  common /VGL08/ ileg,ist,nca,ncb,z,cz,cx,d,fa,fb,nwa,nwb,
& isol,ibrnch,uz
*****
* BEGIN EXECUTABLE CODE
*****
  call CPREP3
  if (ileg eq 2) goto 100
  call CSSHP
  goto 500
100 continue
  call CSEHP(istart)
500 continue
  return
end
*

```

```

e! sys final/12for/moor05 for!!
  program MOOR05
*****
implicit integer*2 (1-n,*)
integer*1 ifile(32),ans(1),ititle(52),idate(10),itime(8)
integer*2 igrname(11),ldc(11),lvw(11),pvw(11),
& iver(18),kips(18),yfeet(18),zfeet(18)
dimension x(250),y(250),isym(250),lfile(16)
equivalence (lfile(1),lfile(11))
integer*2 ifirst,ingo
integer*1 pref1(21),ex12(4),ex13(4),ex14(4),blank,slash,yes
data ex12/' LDC'/,ex13/' ELV'/,ex14/' PLN'/,blank/' '/,slash/'/'/
data yes/'Y'/,keybd/9/,iscren/10/,lu/8/
data ldc/'LOAD DEFLECTION CURVE '/,lvw/'ELEVATION VIEW '/,
& pvw/'PLAN VIEW '/
data kips/'Vertical Axis h in kips divided by '/
data yfeet/'Vertical Axis y in feet divided by '/
data zfeet/'Vertical Axis z in feet divided by '/
*****
* BEGIN EXECUTABLE CODE
*****
* Assign display screen to lu 10
*****
call assign('dc',10)
call glui(scren)
*****
* Read user input file
*****
call chrsiz(3)
call erase
write(iscren,*) 'Enter library name '
read(keybd,*) pref1
do 5 i=1,21
  j=22-i
  if (pref1(j) eq blank) goto 5
  ncpl=j+1
  pref1(ncpl)=slash
  goto 6
5 continue
  ncpl=0
6 continue
do 8 i=1,32
  ifile(i)=blank

```

```

8      continue
      if (ncpl eq 0) goto 10
      do 9 i=1,ncpl
        ifile(i)=pref1(i)
9      continue

      ifirst=1
10     continue
      write(iscren,*) 'Enter file name '
      j=31-ncpl
      read(keybd,*) ifile(ncpl+1) j
      write(iscren,*) 'Enter graph type '
      write(iscren,*) ' 1 - load displacement curve'
      write(iscren,*) ' 2 - elevation view'
      write(iscren,*) ' 3 - plan view'
      read(keybd,*) igraph
      if (igraph ne 1) goto 11
      call ADDEXT(ifile,31,ex12)
      goto 13
11     continue
      if (igraph ne 2) goto 12
      call ADDEXT(ifile,31,ex13)
      goto 13
12     continue
      call ADDEXT(ifile,31,ex14)
13     continue
      call file(ifile,lu,2,istat)
      if (istat eq 0) go to 15
      write(iscren,14)(ifile(i),i=1,301,lu,istat)
14     format(1x,30a1,i3,i3)
      go to 400

15     continue
      read(lu,18) igraph
18     format(i1)
      read(lu,19) title
19     format(50a1)
      read(lu,33) idate
33     format(10a1)
      read(lu,34) itime
34     format(8a1)
      read(lu,*) xxmax,ymax
      read(lu,*) xxmin,ymin

```

```

11
29.12

      read(lu,*) ncomp
*****
* Initialize titles depending on type of graph
*****
      goto (20,23,26), igrph
20 continue
   do 21 i=1,11
       igrname(i)=lhc(i)
   21 continue
   do 22 i=1,18
       iver1(i)=hips(i)
   22 continue
   goto 29
23 continue
   do 24 i=1,11
       igrname(i)=lvw(i)
   24 continue
   do 25 i=1,18
       iver1(i)=yfeet(i)
   25 continue
   goto 29
26 continue
   do 27 i=1,11
       igrname(i)=pvw(i)
   27 continue
   do 28 i=1,18
       iver1(i)=zfeet(i)
   28 continue
29 continue
*****
* Display first 7 records for verification
*****
      ingo=0
30 continue
      call chrsiz(4)
      call hibrn8(10)
      write(iscren,31)(igrname(i),i=1,11)
31 format(///5x,11a2)
      call chrsiz(3)
      call hibrn8(10)
      write(iscren,*) ' output title ',title
      write(iscren,*) ' date ',idate, ' time ',itime
      write(iscren,*) ' # of segments ', ncomp

```

```

        write(iscren,*)' xmin ',xxmin,'      xmax ',xxmax
        write(iscren,*)' ymin ',yymin,'      ymax ',ymax
*****
* Allow user to alter x,y min/max
*****
        if ((first eq 1) or (ngo eq 1)) goto 35
        write(iscren,*)
        write(iscren,*) 'Do you want to use your previous selection of gra
&ph options?'
        read(keybd,*) ans
        if (ans(1) eq yes) goto 45
35 continue
        write(iscren,*)
        write(iscren,*)'enter desired xmin '
        read(keybd,*) xmin
        write(iscren,*)'enter desired xmax '
        read(keybd,*) xmax
        write(iscren,*)'enter desired ymin '
        read(keybd,*) ymin
        write(iscren,*)'enter desired ymax '
        read(keybd,*) ymax
*****
* User enters step, scaling & ticks for x,y
*****
        write(iscren,*)'enter step size for x axis '
        read(keybd,*) xstep
        write(iscren,*)'enter scaling factor for x axis '
        read(keybd,*) ixscal
        write(iscren,*)'enter step size for y axis '
        read(keybd,*) ystep
        write(iscren,*)'enter scaling factor for y axis '
        read(keybd,*) iyscal
        write(iscren,*)'enter number of minor tick intervals per step for
&x axis '
        read(keybd,*) ixtik
        write(iscren,*)'enter number of minor tick intervals per step for
&y axis '
        read(keybd,*) iytik
        write(iscren,*)'do you want a grid? (y or n)'
        read(keybd,*) ans
        igrd=3
        if (ans(1) ne yes) igrd=0
        write(iscren,*)

```

```

write(iscreen,*) 'Do you want to modify the graph options you have
& just selected?'
read(keybd,*) ans
if (ans(1) ne yes) goto 40
call erase
ingo-1
goto 30
40 continue
*****
* Apply scaling factors
*****
xmin=xmin/ixscal
xmax=xmax/ixscal
xstep=xstep/ixscal
ymin=ymin/iyscal
ymax=ymax/iyscal
ystep=ystep/iyscal
*****
* Expand plot window boundaries to coincide with major ticks marks
*****
xmin=xmin/xstep
xym=int(xmin)
if (xmin lt 0 0 and xmin ne xym) xym=xym-1 0
xmin=xym*xstep
xmax=xmax/xstep
xym=int(xmax)
if (xmax gt 0 0 and xmax ne xym) xym=xym+1 0
xmax=xym*xstep
ymin=ymin/ystep
xym=int(ymin)
if (ymin lt 0 0 and ymin ne xym) xym=xym-1 0
ymin=xym*ystep
ymax=ymax/ystep
xym=int(ymax)
if (ymax gt 0 0 and ymax ne xym) xym=xym+1 0
ymax=xym*ystep
*****
* Erase screen and write titles on screen
*****
45 continue
ifirst=0
call erase
write(iscreen,1)(idate(1),i-1,10),(iname(1),i-1,11),

```

```

& (time(i),i-1,8)
call chrsiz(4)
call hibrn8(10)
write(iscreen,2)(title(i),i-1,50)
call chrsiz(3)
call hibrn8(10)
write(iscreen,3)(iver(i),i-1,18),yscal,ixscal
1 format(1x,'Date ',10a1,25x,11a2,25x,'Time ',8a1)
2 format(/25x,50a1/)
3 format(1x,18a2,14,26x,
& 'Horizontal Axis x in feet divided by ',14)
*****
* Draw axis, labels, tick marks & grid by plotting a dummy data point
*****
call init
call page(-30500,32000,-24000,23000)
call line(1)
call grid(igrd)
call xticks(1xtik)
call yticks(1ytik)
call xylim(xmin,xstep,xmax,ymin,ystep,ymax)
call xlab(1,4,-1,3)
call ylab(1,4,-1,3)
call plot(xmin,1,ymin,1,1)
*****
* Iteration to plot all segments including ocean floor
* Npoint is the # of data points within one segment
*****
do 250 i=1,ncomp
  read(lu,*) npoint
  n=0
50  continue
  isave=0
  if (npoint le 250) go to 60
  isave=npoint-249
  npoint=250
60  continue
*****
* Read data points and symbol value, normalize x,y with scaling factor
*****
  npt=npoint-n
  continue
100 do 150 j=1,npt

```

```

      k=j+n
      read(lu,*) x(k),y(k),isym(k)
      x(k)=x(k)/ixscal
      y(k)=y(k)/iyscal
150    continue
*****
* Plot data points, symbol 7 represents ocean floor
*****
      if (isym(1) eq 7) call line(4)
      call symbol(0)
      call plot2(x(1),1,y(1),1,npoint)
      if (isym(1) eq 7) go to 250
*****
* Place symbols on line just drawn,
* save y data point for ocean surface if buoy (sym = 5)
*****
      do 200 j=1,npoint
         isymj=isym(j)
         if (isymj eq 0) goto 200
         call symbol(isymj)
         call plot2(x(j),1,y(j),1,1)
         if (isymj eq 3 and igrph eq 2) ysave=y(j)
200    continue
*****
* If more than 250 data points, save last x,y,symbol
* Reset npoint to remaining # of points
*****
      if (isave eq 0) go to 250
      npoint=isave
      n=1
      x(1)=x(250)
      y(1)=y(250)
      isym(1)=0
      go to 50
250    continue
*****
* If elevation view, draw ocean surface
*****
      if (igrph ne 2) go to 300
      call line(3)
      x(1)=xmin
      y(1)=ysave
      x(2)=xmax

```

```

        y(2)=ysave
        call plot2(x(1),1,y(1),1,2)
300 continue
*****
* Display and frame graph
*****
        call frame
*****
* Replot same file?
*****
        call readfk(keys)
        if (keys eq 0) go to 400
        call erase
        write(iscren,*) 'do you wish to plot this file again? (y or n)'
        read(keybd,*) ans
        if (ans(1) ne yes) go to 350
        rewind lu
        go to 15
*****
* Plot a different file?
*****
350 continue
        write(iscren,*) 'do you wish to plot another file? (y or n)'
        read(keybd,*) ans
        if (ans(1) ne yes) go to 400
        call close(lu)
        go to 10
400 continue
        call close(lu)
        stop
        end
*

```

END

DATE
FILMED

5-83

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