```
C
C                                  APPENDIX C: Skeleton Processor Code
C
C
C
      SUBROUTINE DSKEL
  ......second part of project (April 1989) -- new version of
c..       radiometric thermometer
CU    Northrup-Ophir project, adds Ophir \& Cryog. values
C Input buffer.
      INCLUDE '/users/dap/include/file.com'
C Output buffer.
      INCLUDE '/users/dap/include/fileo.com'
C User's buffer.
      INCLUDE '/users/dap/include/users.com'
      LOGICAL SEARCH
C*****************************************************************
      dimension ala(2),bla(2),alla(2),blla(2),clla(2)
      dimension dpc(2),rhot(2)
      integer xor
      integer*2 jtairv,jtref1,jtref2,jtref3,jhyci,jhyvi,jthyge,jthygi
      integer*2 ifrac,isign,ifrac2
      DOUBLE PRECISION C,AM,CFIT
      DIMENSION XFIT(7)
      DIMENSION CFIT(8)
      DIMENSION C(20)
      DATA NCOEF/8/
      data cfit/
     1 -0.26562077D-05,
     2  0.68009788D-06,
     3  0.76928222D+00,
     4 -0.30723631D+00,
     5  0.12907714D-07,
     6  0.47772050D-04,
     7  0.34394904D-06,
     8 -0.31028246D-07/
c    1 -0.11842568D-04,
c    2  0.20791268D-06,
c    3  0.59901375D+00,
c    4 -0.15624474D+00,
c    5  0.61070724D-08,
c    6  0.25985814D-04,
c    7 -0.64791106D-06,
c    8 -0.11002608D-08/
C*****************************************************************
      DATA ALAMB/4.255/
      data rchop/0.98/,coph1/3.7415e4/,coph2/1.4388e4/
      DATA IFRAC/z'7fff'/,ISIGN/z'8000'/,IFRAC2/z'3fff'/
c     data ccal/9.3600/,bcal/16.006/,acal/0.7010/
      data ccal/-15.4687/,bcal/11.43052/,acal/0.4208915/
      data ala/1.0007,1.0003/,bla/3.46e-6,4.18e-6/
      data alla/6.1121,6.1115/,blla/17.502,22.542/
      data clla/240.97,273.48/
c..... new coefficients from Vince 22 Mar 89
      data art/3.30110e-3/,brt/4.17961e-4/,crt/-6.14116e-6/
c     data r/30.959/,v0/1.265/,g/10.052/
      data rccrh/41.675/,v0ccrh/1.2690/,gccrh/8.239/
      DATA RAD / .01745329 /,  DEG / 57.29578 /
      DATA SEARCH / .TRUE. /
      save search,ala,bla,alla,clla
      save rchop,coph1,coph2
      save frac,frac2,isign,art,brt,crt,r,v0,g,rad,deg
C
C
C     * * * * * * * * * * * * * * *
C    *                             *
C   *  Executable code starts here  *
```

```
C     *                                *
C      * * * * * * * * * * * * * * * *
C
      IF (SEARCH) THEN
C
C*****************************************************************
      CALL SERCH('TAIRV ',NAMES,NVAR,ITAIRV,0)
      CALL SERCH('TREF1 ',NAMES,NVAR,ITREF1,0)
      CALL SERCH('TREF2 ',NAMES,NVAR,ITREF2,0)
      CALL SERCH('TREF3 ',NAMES,NVAR,ITREF3,0)
      CALL SERCH('HYCI  ',NAMES,NVAR,IHYCI ,0)
      CALL SERCH('HYVI  ',NAMES,NVAR,IHYVI ,0)
      CALL SERCH('THYGE ',NAMES,NVAR,ITHYGE,0)
      CALL SERCH('THYGI ',NAMES,NVAR,ITHYGI,0)
      CALL SERCH('ATF   ',NAMES,NVAR,IATF  ,0)
      CALL SERCH('VCRH  ',NAMES,NVAR,IVCRH ,0)
      CALL SERCH('PSFDC ',NAMES,NVAR,IPSFDC,0)
      CALL SERCH('CRHT  ',NAMES,NVAR,ICRHT ,0)
      CALL SERCH('CRHP  ',NAMES,NVAR,ICRHP ,0)
      CALL SERCH('DPTC  ',NAMES,NVAR,IDPTC ,0)
      CALL SERCH('DPBC  ',NAMES,NVAR,IDPBC ,0)
      CALL SERCH('TEO3  ',NAMES,NVAR,ITEO3 ,0)
      CALL SERCH('TET   ',NAMES,NVAR,ITET  ,0)
      CALL SERCH('TEP   ',NAMES,NVAR,ITEP  ,0)
      CALL SERCH('PHYG  ',NAMES,NVAR,IPHYG ,0)
      CALL SERCH('DPT   ',NAMES,NVAR,IDPT  ,0)
      CALL SERCH('DPB   ',NAMES,NVAR,IDPB  ,0)
C
        SEARCH = .FALSE.
C
C   End of variable search.
C
      END IF
C
C....... GET OPHIR DIGITAL NUMBERS AND CONVERT BACK
      JTAIRV=VALUES(ITAIRV)
      JTREF1=VALUES(ITREF1)
      JTREF2=VALUES(ITREF2)
      JTREF3=VALUES(ITREF3)
      JHYCI =VALUES(IHYCI )
      JHYVI =VALUES(IHYVI )
      JTHYGE=VALUES(ITHYGE)
      JTHYGI=VALUES(ITHYGI)
C
C....... NOW MANIPULATE BITS
      IF(JHYCI.LT.0) THEN
          HYCI=32768.+IAND(JHYCI,IFRAC)
      ELSE
          HYCI=JHYCI
      ENDIF
      IF(JHYVI.LT.0) THEN
          HYVI=32768.+IAND(JHYVI,IFRAC)
      ELSE
          HYVI=JHYVI
      ENDIF
      JTHYGE=IAND(JTHYGE,IFRAC2)
      JTHYGI=IAND(JTHYGI,IFRAC2)
      ATHGE=-0.01223*(16384.-JTHYGE)+113.4
      ATHGI=-0.01210*(16384.-JTHYGI)+100.0
      if(abs(hyci).le.1.e-29) hyci=1.e-29
c     DENOM=-0.0015*THYGI+0.9838
c     DENOM=1.1111
c     if(abs(denom).le.1.e-29) denom=1.e-29
c     RRT=(HYVI/HYCI)/denom
c     IF(abs(RRT).le.1.e-29) RRT=1.e-29
c     if(RRT.gt.1.) RRT=1.
```

```
c     RHOPH=(-1.*ALOG(RRT)/0.1023)**1.3680
c..... cal of Apr 4 89
c..... best fit 1.1030, but 1.106 has slightly better low-q bhvr
      denom=1.103
      rrt=(hyvi/hyci)/denom
      if(abs(rrt).le.1.e-29) rrt=1.e-29
      if(rrt.gt.1.) rrt=1.
      rhoph=(-1./0.0650*alog(rrt))**0.6647
c..... correct for pressure and temperature in the hygrometer
      PHYG=VALUES(IPHYG)
      aphyg=(phyg+10.)*250./20.*68.95
c..... set-up changed from earlier tests:  sensitivity*4
      aphyg=aphyg/4.
      if(aphyg.le.1.e-29) then
          write(6,'(" aphyg=",g13.5)') aphyg
          aphyg=1.e-29
         endif
      ATX=VALUES(IATF)
c     write(6,'(" time,rhocr,atx,psxc=",3i4,3g13.5)') ihr,imin,isec,
c    *   rhocr,atx,psxc
c..... protection
      if(atx.lt.-100. .or. atx.gt.40.) return
      if(atx.lt.-100. .or. atx.gt.40.) atx=0.
      PSXC = VALUES(IPSFDC)
      RHOPH = RHOPH*(PSXC/APHYG)*((ATHGE + 273.15)/(ATX + 273.15))
      if(RHOPH.le.0.) RHOPH=1.e-20
      RHOPH2=RHOPH*100.
c..... get dew point from ophir hygrometer
      e=rhoph*1.e-3*461.51*(atx+273.15)/100.
c     write(6,'(" e,rhoph,atx=",5e13.5)') e,rhoph,atx
      dpophc=dewpt(e)
c     write(6,'(" dp from ophir=",e13.5)') dpophc
      JTAIRV=XOR(JTAIRV,ISIGN)/16
      JTREF1=XOR(JTREF1,ISIGN)/16
      JTREF2=XOR(JTREF2,ISIGN)/16
      JTREF3=XOR(JTREF3,ISIGN)/16
c..... changed as per telecon with Stahm 11 April 89
c     TREF1=0.048156*JTREF1+1.582
c     TREF2=0.048937*JTREF2+2.883
c     TREF3=0.04840*JTREF3
c..... TREF1 is window temperature
      TREF1=0.049227*JTREF1+2.223053
c..... TREF2 is black-body temp
      TREF2=0.048655*JTREF2+2.6909
c..... assume TREF3 is can temp. (need to verify)
      TREF3=0.048618*JTREF1+1.473003
      VAIR=0.0048828*JTAIRV
c..... skip for VAIR large, and set flag
c     if(abs(vair).gt.9.9) then
c        tair=100.
c        goto 9100
c     endif
c..... correct (April 1989) for offset
      vair=vair-0.1
c..... black body temperature (K)
      atr=tref2+273.15
      pref=coph1/(alamb**5*(exp(coph2/(alamb*atr))-1.))
c..... window temp (K)
      atp=tref1+273.15
  ..... can temperature
      atc=tref3+273.15
      pcan=coph1/(alamb**5*(exp(coph2/(alamb*atc))-1.))
      tccan=tref3
      pped=coph1/(alamb**5*(exp(coph2/(alamb*atp))-1.))
c..... radiometer gain (Sept chamber test)
      tcped=tref1
```

```
      if(tcped.le.-20.) tcped=-20.
c     grad=-65474.04+tcped*(351.7519+tcped*3.718527)
c     grad=-19000.+52.944*tccan+0.52222*tccan**2
c..... new instrument April 1989, increased gain, no T dep:
      grad=-242000.
      ptar=vair/grad+rchop*pref+(1.-rchop)*pped
      ptar=vair/grad+rchop*pref+(1.-rchop)*pcan
      coop=coph1/(ptar*alamb**5)
      if(coop.le.-1.) coop=-0.9
      tair=coph2/(alamb*alog(coop+1.))-273.15
c     write(6,'(" tair,tref1,tref2,tref3,vair=",5e15.7)')
c    *           tair,tref2,tref2,tref3,vair
      XFIT(1)=TREF1
      XFIT(2)=TREF2
      XFIT(3)=TREF3
      XFIT(4)=VAIR
      XFIT(5)=PPED
      XFIT(6)=PREF
      XFIT(7)=PCAN
c..... suppress fit correction for now
c     PM=FUNCT(NCOEF,CFIT,XFIT)
c    *   +PREF+VAIR/GRAD
c     AA=COPH1/(ALAMB**5*PM)+1.
c     if(aa.le.0.) then
c        tair=100.
c        goto 9100
c     endif
c     TAIR=COPH2/(ALAMB*ALOG(COPH1/(ALAMB**5*PM)+1.))-273.15
9100  continue
      VALUEO(1)=TAIR
      VALUEO(2)=TREF1
      VALUEO(3)=TREF2
      VALUEO(4)=TREF3
      VALUEO(5)=HYCI
      VALUEO(6)=HYVI
      VALUEO(7)=ATHGE
      VALUEO(8)=ATHGI
      VALUEO(9)=PTAR
      VALUEO(10)=PREF
      VALUEO(11)=TREF
      VALUEO(12)=VAIR
      VALUEO(13)=RHOPH
C..... cryogenic hygrometer and ozone
      CRHF=VALUES(ICRHF)
      VCRH=VALUES(IVCRH)
c..... undo original cal coefficients (acal,bcal,ccal)
9732  continue
      cc=ccal-vcrh
      rad=bcal**2-4.*acal*cc
      if(rad.lt.0.) then
         write(6,'(" neg radical, forced=0, rad=",g13.5)') rad
         rad=0.
      endif
      v=(sqrt(rad)-bcal)/(2.*acal)
c     write(6,'(" v,vcrh,cc,acal,bcal,ccal=",6g13.5)')
c    *           v,vcrh,cc,acal,bcal,ccal
c..... invert for cal coefs of (0,-1,0)
c     vcrh=-1.*v
c..... code from AJS 16 Sept 88
      vdmb=vcrh
c     if(vcrh.lt.0.001) vdmb=0.001
cc    rt=(r*vdmb/g)/(v0-vdmb/g)
c..... code from Vince 22 Mar 89:
c     rt=rccrh*(v0ccrh*gccrh/vdmb-1.)
c     z=alog(rt)
c     t=art+brt*z+crt*z*z
```

```
c     dpcr=1./t-273.15
9731  continue
c     write(6,'(" dpcr,vcrh,rad=",3g13.5)') dpcr,vcrh,rad
c..... apply new cubic equation to voltage
      dpcr=-0.632e1+v*(0.187386e2+v*(0.2086581e1+v*0.11424365))
      write(6,'(" vcrh,v,dpcr=",3e15.7)') vcrh,v,dpcr
c..... avoid bad values before operating
      if(dpcr.gt.40.) dpcr=40.
c     write(6,'(" dpcr,vcrh,rad=",3g13.5)') dpcr,vcrh,rad
c
c..... now get vapor pressure and dew point from frost point
c..... ******** ERROR IN ORIGINAL PROCESSING ********
c     e=vapi(vcrh)
c..... should have been:
      e=vapi(dpcr)
c..... correct for pressure and temperature in cryo
      CRHP = VALUES(ICRHP)
      if(crhp.le.50.) crhp=50.
      e=e*psxc/crhp
c     write(6,'(" e,psxc,crhp=",3g13.5)') e,psxc,crhp
      dpcrc=dewpt(e)
c     write(6,'(" corr cryo=",g13.5,", e,psxc,crhp=",3g13.5)')
c    *   dpcrc,e,psxc,crhp
c..... absolute humidity
      rhocr=e*100./(461.51*(atx+273.15))*1.e3
      RHOCR2=RHOCR*100.
c     DPCR=VCRH
c     IF(DPCR.LT.0.) DPCR=0.0091+DPCR*(1.134+DPCR*0.00104)
c     DPXC = DPCR
      CRHT = VALUES(ICRHT)
c..... correct other variables to use same code
      DPB=values(IDPB)
      DPT=values(IDPT)
      e=vapi(dpb)
      rhot(2)=e*100./(461.51*(atx+273.15))*1.e3
      DPBC=dewpt(e)
      if(dpb.gt.0.) dpbc=dpb
      e=vapi(dpt)
      rhot(1)=e*100./(461.51*(atx+273.15))*1.e3
      DPTC=dewpt(e)
      if(dpt.gt.0.) dptc=dpt
c     write(6,'(" corr b,tdp=",4g13.5)') dpbc,dptc,values(idpbc),
c    *   values(idptc)
c..... correct in output data
      CALL SERCH('DPBC  ',NAMEO,NVARO,IDPBCO,0)
      if(IDPBCO.gt.0) VALUEO(IDPBCO)=DPBC
      CALL SERCH('DPTC  ',NAMEO,NVARO,IDPTCO,0)
c     write(6,'(" dptc(n,o)=",2f7.2,i5)') dptc,values(idptc),idptco
      if(IDPTCO.gt.0) VALUEO(IDPTCO)=DPTC
      DPC(1) = DPTC
      DPC(2) = DPBC
c..... now get saturation vapor density wrt ice
      e=vapi(atx)
      rhoi=e*100./(461.51*(atx+273.15))*1.e3
      e=vapor(atx)
      rhow=e*100./(461.51*(atx+273.15))*1.e3
      if(atx.gt.0.) rhoi=rhow
c     write(6,'(" rhoi,rhow=",2g13.5)') rhoi,rhow
c

C   Calculate absolute humidities from external hygrometers
C
      DO 42 ISET = 1,2
C
CP******RHOT(I)  ABSOLUTE HUMIDITY                (g/m3)
C                 REQUIRES --- ATX, EDPC, DPC(I), PSXC
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C VAPOR PRESSURE (EDPC IN MB) IS AN INTERMEADIATE VARAIBLE
      K = 1
      IF(DPC(ISET).LT.0.) K=2
      F = ALA(K) + BLA(K)*PSXC
      ex=b1la(K)*dpc(iset)
      denom=c1la(K)+dpc(iset)
      if(abs(denom).lt.1.e-29) write(6,'(" denom2=",g13.5)') denom
      if(abs(denom).lt.1.e-29) denom=1.e-29
      ex=ex/denom
      if(abs(ex).gt.30.) write(6,'(" ex2=",g13.5)') ex
      if(ex.gt.30.) ex=30.
      if(ex.lt.-30.) ex=-30.
      edpc=f*a1la(K)*exp(ex)
c     EDPC = F*A1LA(K)*EXP(B1LA(K)*DPC(ISET)/(C1LA(K) + DPC(ISET)))
      RHOT(ISET) = 216.68*EDPC/(ATX+273.16)
42    CONTINUE
C
CP******TEO3C    CORRECTED OZONE CONCENTRATION      (PPB)
c....... not on aircraft for this project
C
c     TETX= -13.559 + TET *(.005659 - TET *0.00000014907)
c     TEPX= 38.778 + TEP *(0.09339 + TEP *0.00000035275)
c     if(abs(tepx).lt.1.e-29) write(6,'(" tepx=",g13.5)') tepx
c     if(abs(tepx).lt.1.e-29) tepx=1.e-29
cc    write(6,'(" teo3,tepx,tetx=",3g13.5)') teo3,tepx,tetx
c     TEO3C = TEO3*(1013.16/TEPX)*((TETX+273.15)/273.15)
C
C   Put new parameters into output arry
C
      VALUEO(14) = ATX
      VALUEO(15) = PSXC
      VALUEO(16) = DPCR
      VALUEO(17) = DPCRC
      VALUEO(18) = RHOCR
      VALUEO(19) = CRHT
      VALUEO(20) = CRHP
      VALUEO(21) = VCRH
      VALUEO(22) = RHOT(1)
      VALUEO(23) = RHOT(2)
c     VALUEO(24) = TET
c     VALUEO(25) = TEP
c     VALUEO(26) = TEO3C
      VALUEO(24)=RHOPH2
      VALUEO(25)=RHOCR2
      valueo(26)=aphyg
      valueo(27)=dpophc
      valueo(28)=rhoi
      valueo(29)=rhow
C*****************************************************************
C
C     DPCR  : RAW CRYOGENIC FROST POINT
C     DPCRC : CRYOGENIC DEW POINT CORRECTED TO AMBIENT
C     RHOCR : CORRECTED CRYOGENIC ABSOLUTE HUMIDITY
C     CRHT  : CRYOGENIC MANIFOLD TEMPERATURE
C     CRHP  : CRYOGENIC MANIFOLD PRESSURE
C     CRHF  : CRYOGENIC MANIFOLD FLOW
C     VCRH  : RAW CRYOGENIC OUTPUT IN VDC
C     TET   : OZONE CHAMBER TEMP
      TEP   : OZONE CHAMBER PRESS
      TEO3C : CORRECTED OZONE CONCENTRATION
C     RHOGO : OUTSIDE GE ABSOLUTE HUMIDITY
C     RHOBD : STD EG\&G ABSOLUTE HUMIDITY
C
C*****************************************************************
C
C
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C   END OF COMPUTATIONS
C
C*****************************************************************
C
      RETURN
      END
C
      BLOCK DATA
C
C
C User's buffer.
      INCLUDE '/users/dap/include/users.com'
C
C     DATA SPECNM / 50*'      '/
C     DATA SPECUN / 50*'    ' /
C     DATA VALIN  / 50*'      ' /
C     DATA VCOEF  / 50*0.0     /
C
C*****************************************************************
CU  WARNING:  SPECNM names MUST be capitalized.
      DATA SPECNM(1)/'ATAIR '/,SPECUN(1)/' C  '/
      DATA SPECNM(2)/'ATREF1'/,SPECUN(2)/' C  '/
      DATA SPECNM(3)/'ATREF2'/,SPECUN(3)/' C  '/
      DATA SPECNM(4)/'ATIREF'/,SPECUN(4)/' C  '/
      DATA SPECNM(5)/'AHYCI '/,SPECUN(5)/'    '/
      DATA SPECNM(6)/'AHYVI '/,SPECUN(6)/'    '/
      DATA SPECNM(7)/'ATHGE '/,SPECUN(7)/' C  '/
      DATA SPECNM(8)/'ATHGI '/,SPECUN(8)/' C  '/
      DATA SPECNM(9)/'PTAR  '/,SPECUN(9)/'    '/
      DATA SPECNM(10)/'PREF  '/,SPECUN(10)/'    '/
      DATA SPECNM(11)/'TREF  '/,SPECUN(11)/'    '/
      DATA SPECNM(12)/'VAIR  '/,SPECUN(12)/'    '/
      DATA SPECNM(13)/'RHOPH '/,SPECUN(13)/'g/m3'/
      DATA SPECNM(14) /'ATX   '/,  SPECUN(14) /'C   '/
      DATA SPECNM(15) /'PSXC  '/,  SPECUN(15) /'mbar'/
      DATA SPECNM(16) /'DPCR  '/,  SPECUN(16) /'C   '/
      DATA SPECNM(17) /'DPCRC '/,  SPECUN(17) /'C   '/
      DATA SPECNM(18) /'RHOCR '/,  SPECUN(18) /'gm-3'/
      DATA SPECNM(19) /'ACRHT '/,  SPECUN(19) /'C   '/
      DATA SPECNM(20) /'ACRHP '/,  SPECUN(20) /'mbar'/
      DATA SPECNM(21) /'VCRH  '/,  SPECUN(21) /'degC'/
      DATA SPECNM(22) /'RHOGO '/,  SPECUN(22) /'gm-3'/
      DATA SPECNM(23) /'RHOBD '/,  SPECUN(23) /'gm-3'/
c     DATA SPECNM(24) /'TETX  '/,  SPECUN(24) /'C   '/
c     DATA SPECNM(25) /'TEPX  '/,  SPECUN(25) /'mb  '/
c     DATA SPECNM(26) /'TEO3C '/,  SPECUN(26) /'PPB '/
      DATA SPECNM(24) /'RHOPH2'/,  SPECUN(24) /'g m3'/
      DATA SPECNM(25) /'RHOCR2'/,  SPECUN(25) /'g m3'/
      DATA SPECNM(26) /'APHYG '/,  SPECUN(26) /' mb '/
      DATA SPECNM(27) /'DPOPHC'/,  SPECUN(27) /'deg '/
      DATA SPECNM(28) /'RHOI  '/,  SPECUN(28) /'g m3'/
      DATA SPECNM(29) /'RHOW  '/,  SPECUN(29) /'g m3'/
      DATA NSPCNM / 29 /
C
      DATA VALIN( 1) /'QECOEF'/,  VCOEF( 1) /       1.0       /
      DATA VALIN( 2) /'QNCOEF'/,  VCOEF( 2) /       1.0       /
C     DATA VALIN(  ) /'      '/,  VCOEF(  ) /                 /
CU  Set NVAL to the number of coefficients defined above.
      The maximum number is 50.
      DATA NVAL /  2 /
      END
      function dewpt(e)
      common/subf/es
      external etodw
      tol=0.001
      es=e
```

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      tdew=-20.
      call newtn(etodw,tdew,tol,tdw)
      dewpt=tdw
      return
      end
      function etodw(tdw)
      common/subf/es
      etodw=es-vapor(tdw)
      return
      end
      FUNCTION VAPI(TFP)
C INPUT IS IN DEGREES C, assumed to be frost point.
C ROUTINE CODES GOFF-GRATCH FORMULA
      if(TFP.lt.-200. .or. tfp.gt.200.) then
         vapi=1.e-20
         return
      endif
      T=273.16+TFP
C THIS IS ICE SATURATION VAPOR PRESSURE
      E=-9.09718*(273.16/T-1.)-3.56654*ALOG10(273.16/T)
     *  +0.876793*(1.-T/273.16)
      VAPI=6.1071*10.**E
      RETURN
      END
      FUNCTION FUNCT(N,C,X)
      DIMENSION C(1),X(7)
      DOUBLE PRECISION C,A
C....... XFIT(1) - ATREF1
C....... XFIT(2) - ATREF2
C....... XFIT(3) - ATREF3
C....... XFIT(4) - VAIRC
C....... XFIT(5) - PPED
C....... XFIT(6) - PREF
C....... XFIT(7) - PCAN
C....... C(1) - P OFFSET
C..     C(2) - P LINEAR (T2-TZERO)
C       C(3) - P(T1)-P(T2)
C       C(4) - P(T3)-T(T2)
C       C(5) - QUADRATIC TERM IN P CALIBR (T2-TZERO)**2
C       C(6) - GAIN TERM, VOLTAGE
C       C(7) - LINEAR CORRECTION TO GAIN (T3-TZERO)
C       C(8) - QUADRATIC GAIN TERM (T3-TZERO)
      A=C(1)
      IF(N.GT.1) A=A+X(2)*C(2)
      IF(N.GT.2) A=A+(X(5)-X(6))*C(3)
      IF(N.GT.3) A=A+C(4)*(X(7)-X(6))
      IF(N.GT.4) A=A+C(5)*X(2)**2
      IF(N.GT.5) A=A+X(4)*C(6)
      IF(N.GT.6) A=A+C(7)*X(4)*X(3)
      IF(N.GT.7) A=A+C(8)*X(4)*X(3)**2
5     FUNCT=A
      RETURN
      END
C               END OF SKELETON PROCESSOR ROUTINE
C
```