

```
11500      1 GESCHW(I) = EKONS*GESCHW(I)
11600 C    AZIMUTH-WINKEL
11700      DAZ = 3.515625+2.10935
11800      AZO = -11.25 - 10.*DAZ + 3.515625/2.
11900      DO 2 I=1,18
12000          AZIM(I,1) = AZO+DAZ
12100          AZO=AZIM(I,1)
12200      2  AZIM(I,2) = AZIM(I,1)+(11.25-8.4375)
12300 C    VERSCHIEBUNG DES SCHWEPFUNKTES (CORR1 = MITTL.VERSCH.AUS FICHDATEN)
12400 C                                (CORR2 = VERSCH.BEIM EINBAU)
12500      CORR1 = 0.21
12600      CORR2 = -0.042
12700      DO 3 I=1,18
12800          AZIM(I,1) = AZIM(I,1)-CORR1+CORR2
12900      3  AZIM(I,2) = AZIM(I,2)-CORR1+CORR2
13000 C
13100 C    ELEVATION VERSCH BEIM EINBAU
13200      CORR3 = -0.183
13300      DO 4 I=1,11
13400      4  ELEV(I) = ELEV(I) - CORR3
13500 C
13600      IF(.NOT.LPRINT) RETURN
13700      WRITE(6,100) (GESCHW(I),I=1,18)
13800      100 FORMAT(///' KANAEL FUER INSTRUMENT 3 * HOS1 *           '/
13900      *           ' GESCHWINDIGKEITSKANAEL :'/ 3(' ',10F12.4/))
14000      WRITE(6,101) ((AZIM(I,J),I=1,18),J=1,2)
14100      101 FORMAT(' AZIMUTH-KANAL OHNE SHIFT:'/ ' ',10F12.4/' ',8F12.4/
14200      *           ' AZIMUTH-KANAL MIT SHIFT:'/ ' ',10F12.4/' ',8F12.4)
14300      WRITE(6,102) ELEV
14400      102 FORMAT(' ELEVATIONS-KANAL:'/ ' ',11F11.3)
14500 C
14600 C
14700      RETURN
14800      END
14900      SUBROUTINE INIT18
15000 C    INITIALISIEREN DER BLOCKDATA
15100 C
15200      COMMON /KANLIB/ VOLT(34,2)
15300 C
15400      LOGICAL*4 LPRINT/.TRUE./
15500 C
15600 C    AUFBEREITEN DER KANALWERTE
15700 C    VOLT -> KM/SEC
15800      EKONS= 412.50/SQRT(VOLT(14,1))
15900      DO 1 I=1,2
16000          DO 1 J=1,34
16100      1  VOLT(J,I) = EKONS*SQRT(VOLT(J,I))
16200 C
16300      IF(.NOT.LPRINT) RETURN
16400      WRITE(6,100) ((VOLT(I,J),I=1,34),J=1,2)
16500      100 FORMAT(///' KANAEL FUER INSTRUMENT 18 * HOS1 *           '/
16600      *           ' GESCHWINDIGKEITSKANAEL OHNE SHIFT:'/ 3(' ',10F12.4/),
16700      *           ' ',4F12.4/' GESCHWINDIGKEITSKANAEL MIT SHIFT:'/
16800      *           3(' ',10F12.4/),' ',4F12.4)
16900 C
17000      RETURN
17100      END
```

```
17200      SUBROUTINE AZIM
17300 C    DUMMY SUBROUTINE FUER AZIMTH-VORHALTEWINKEL
17400 C    NUR FUER HELIOS B
17500      RETURN
17600      END
```

```

----- KZM:HELIOS3.INITR
100 C
200 /*CONTROL FORM=2929
300 // EXEC F0HCA,USERID=KZM,NAME=0INITR
400 /*.SYSPRINT DD DUMMY
500 //C.SYSIN DD *
600 C COMMON BLOECKE FUER DIE KANAELE VON HELIOS B
700 C
800 C DATA KONSTANTEN AUS ' TEST PROCEDURE ' GENOMMEN  :: DR.2.77
900 C
1000 BLOCK DATA
1100 C KANAL-WERTE > I1A <
1200 COMMON /KANAL/ VOLT(34,2),AZIMUT(18,2),ELEVAT(11)
1300 C VOLT( ,1),AZIM( ,1) NS BIT ISHI 0
1400 C VOLT( ,2),AZIM( ,2) WS BIT ISHI 1
1500 DATA VOLT / 0.191,0.220,0.254,0.293,0.339,0.392,0.450,0.524,
1600 * 0.606,0.699,0.808,0.933,1.080,1.248,1.437,1.674,
1700 * 1.937,2.240,2.589,2.992,3.467,4.006,4.613,5.373,
1800 * 6.219,7.209,8.335,9.628,11.156,12.888,14.840,17.280,,
1900 * 19.997,23.141,
2000 * 0.191,0.220,0.254,0.293,0.339,0.392,0.450,0.524,
2100 * 0.606,0.699,0.808,0.933,1.080,1.248,1.437,1.674,
2200 * 1.937,2.240,2.589,2.992,3.467,4.006,4.613,5.373,
2300 * 6.219,7.209,8.335,9.628,11.156,12.888,14.840,17.280,,
2400 * 19.997,23.141/
2500 C HOSB HAT SPINACHSE NACH UNTEN (ENTGEGEN HOSA) VORZEI.VERTAU IN INIT
2600 DATA ELEVAT / +25.00, +20.83, +15.75, +10.64, +5.60,+0.56,-4.47,
2700 * - 9.58, -14.64, -19.66, -25.00 /
2800 C KANAL-WERTE > I3 <
2900 COMMON /KANAL3/ GESCHW(18),AZIM(18,2),ELEV(11)
3000 DATA GESCHW / 181.9, 198.9, 217.5, 238.0, 260.6, 285.2, 312.1,
3100 * 341.6, 373.8, 409.1,447.7, 489.8, 536.0, 586.6,
3200 * 641.9, 702.4, 768.6, 840.5 /
3300 DATA ELEV /+25.00, +20.845, +15.77, +10.74, +5.71, +0.692,
3400 * -4.397, - 9.48, -14.54, -19.627,-25.00 /
3500 C COMMON BLOECKE FUER HELIOS -> I1B -<
3600 COMMON /KANLIB/ VOLT1B(34,2)
3700 C VOLT( ,1),AZIM( ,1) NS BIT ISHI 0
3800 C VOLT( ,2),AZIM( ,2) WS BIT ISHI 1
3900 DATA VOLT1B/ 0.191,0.220,0.256,0.295,0.341,0.397,0.455,0.530,
4000 * 0.612,0.703,0.817,0.943,1.092,1.266,1.455,1.693,
4100 * 1.957,2.254,2.621,3.022,3.500,4.060,4.668,5.430,
4200 * 6.277,7.246,8.427,9.716,11.254,13.054,15.007,17.456,
4300 * 20.176,23.319,
4400 * 0.191,0.220,0.256,0.295,0.341,0.397,0.455,0.530,
4500 * 0.612,0.703,0.817,0.943,1.092,1.266,1.455,1.693,
4600 * 1.957,2.254,2.621,3.022,3.500,4.060,4.668,5.430,
4700 * 6.277,7.246,8.427,9.716,11.254,13.054,15.007,17.456,
4800 * 20.176,23.319/
4900 C
5000 C
5100 C KONSTANTEN FUER DIE MOMENTE :: VON HOS A BEIHALTEN
5200 COMMON /MOM/ PM,BK,DELEL1,DELAZ1,DELZ1,GMOA1,
5300 * DELEL3,DELAZ3,DELZ3,GMOA3,
5400 * DELEL9,DELAZ9,DELZ9,GMOA9
5500 DATA PM,BK /1.67E-24,1.38E-16/
5600 DATA DELEL1,DELAZ1,DELZ1,GMOA1/0.09727,0.09774,0.01,4.0E-7/
5700 DATA DELEL3,DELAZ3,DELZ3,GMOA3/0.09727,0.09774,0.01,0.1628E-7/

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5800      DATA DELFLB,DELAZB,DELZB,GMOAB/0.08727,0.08774,0.01,0.8775-7/
5900 C    FUER IIR / I3 ANGELICHEN IIR = 4.0E-7/5.53
6000 C    I3      4.0E-7/24.5
6100      END
6200      SUBROUTINE INIT
6300 C    INITIALISIEREN DER BLOCKDATA
6400 C
6500      COMMON /KANAL/ VOLT(34,2),AZIMUT(18,2),ELEVAT(11)
6600 C
6700      LOGICAL*4 LPRINT/.TRUE./
6800 C
6900 C    AUFBEREITEN DER KANALWERTE > IIA <
7000 C    VOLT -> KM/SEC
7100      EKONS= 424.329/SQRT(VOLT(14,1))
7200      EKONSO = 18.602/19.997
7300      DO 1 J=1,34
7400          VOLT(J,1) = EKONS*SQRT(VOLT(J,1))
7500      1  VOLT(J,2) = EKONS* SQRT( EKONSO*VOLT(J,2))
7600 C
7700 C    AZIMUTH-WINKEL
7800      DAZ = 2.52 + 2.1
7900      AZO = -(40.78+37.26)/2. - 2*DAZ
8000      DO 2 I=1,18
8100          AZIMUT(I,1) = AZO+DAZ
8200          AZO=AZIMUT(I,1)
8300      2  AZIMUT(I,2) = AZIMUT(I,1)-2.81
8400 C    VERSCHIEBUNG DES SCHWERPUNKTES (CORR1 = SCHWERPT.AUS FICHDATEN)
8500 C    (CORR2 = VERSCH.BEIM EINBAU)
8600      CORR1 = 0.531
8700      CORR2 = -0.205
8800      DO 3 I=1,18
8900          AZIMUT(I,1) = AZIMUT(I,1)-CORR1+CORR2
9000          AZIMUT(I,2) = AZIMUT(I,2)-CORR1+CORR2
9100 C    UMKEHR DER WINKEL
9200      AZIMUT(I,1) = -AZIMUT(I,1)
9300      3  AZIMUT(I,2) = -AZIMUT(I,2)
9400 C
9500 C    ELEVATIONS VERSCH BEIM EINBAU
9600      CORR3 = 0.0517
9700      DO 4 I=1,11
9800          ELEVAT(I) = ELEVAT(I) - CORR3
9900 C    UMKEHR DER WINKEL
10000     4  ELEVAT(I) = -ELEVAT(I)
10100 C
10200      IF(.NOT.LPPINT) RETURN
10300      WRITE(6,100) ((VOLT(I,J),I=1,34),J=1,2)
10400     100 FORMAT(///' HDS 2 KANAELE FUER INSTRUMENT IA' /
10500      *      ' GESCHWINDIGKEITSKANAELE OHNE SHIFT: '/ 3(' ',10F12.4/),
10600      *      ' ',4F12.4/' GESCHWINDIGKEITSKANAELE MIT SHIFT: '/
10700      *      3(' ',10F12.4/),' ',4F12.4)
10800      WRITE(6,101) ((AZIMUT(I,J),I=1,18 ),J=1,2)
10900     101 FORMAT(' AZIMUTH-KANAL OHNE SHIFT O.V.: '/ ' ',10F12.2/' ',8F12.2/
11000      *      ' AZIMUTH-KANAL MIT SHIFT O.V.: '/ ' ',10F12.2/' ',8F12.2)
11100      WRITE(6,102) ELEVAT
11200     102 FORMAT(' ELEVATIONS-KANAL: '/ ' ',11F11.2)
11300 C
11400 C

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11500      1 GESCHW(I) = EKONS*GESCHW(I)
11600 C    AZIMUTH-WINKEL
11700      DAZ = 3.515625+2.10935
11800      AZO = -11.25 - 10.*DAZ + 3.515625/2.
11900      DO 2 I=1,18
12000          AZIM(I,1) = AZO+DAZ
12100          AZO=AZIM(I,1)
12200      2  AZIM(I,2) = AZIM(I,1)+(11.25-8.4375)
12300 C    VERSCHIEBUNG DES SCHWEPFUNKTES (CORR1 = MITTL.VERSCH.AUS FICHDATEN)
12400 C          (CORR2 = VERSCH.BEIM EINBAU)
12500      CORR1 = 0.21
12600      CORR2 = -0.042
12700      DO 3 I=1,18
12800          AZIM(I,1) = AZIM(I,1)-CORR1+CORR2
12900      3  AZIM(I,2) = AZIM(I,2)-CORR1+CORR2
13000 C
13100 C    ELEVATION VERSCH BEIM EINBAU
13200      CORR3 = -0.183
13300      DO 4 I=1,11
13400      4  ELEV(I) = ELEV(I) - CORR3
13500 C
13600      IF(.NOT.LPRINT) RETURN
13700      WRITE(6,100) (GESCHW(I),I=1,18)
13800      100 FORMAT(///' KANAELE FUER INSTRUMENT 3 * HOS1 *      '//
*          ' GESCHWINDIGKEITSKANAELE :'/ 3(' ',10F12.4/))
13900      WRITE(6,101) ((AZIM(I,J),I=1,18),J=1,2)
14000      101 FORMAT(' AZIMUTH-KANAL OHNE SHIFT: '/ ' ',10F12.4/' ',8F12.4/
*          ' AZIMUTH-KANAL MIT SHIFT: '/ ' ',10F12.4/' ',8F12.4)
14100      WRITE(6,102) ELEV
14200      102 FORMAT(' ELEVATIONS-KANAL: '/ ' ',11F11.3)
14300
14400
14500 C
14600 C
14700      RETURN
14800      END
14900      SUBROUTINE INIT18
15000 C    INITIALISIEREN DER BLOCKDATA
15100 C
15200      COMMON /KANLIB/ VOLT(34,2)
15300 C
15400      LOGICAL*4 LPRINT/.TRUE./
15500 C
15600 C    AUFBEREITEN DER KANALWERTE
15700 C    VOLT -> KM/SEC
15800      EKONS= 412.50/SQRT(VOLT(14,1))
15900      DO 1 I=1,2
16000          DO 1 J=1,34
16100      1  VOLT(J,I) = EKONS*SQRT(VOLT(J,I))
16200 C
16300      IF(.NOT.LPRINT) RETURN
16400      WRITE(6,100) ((VOLT(I,J),I=1,34),J=1,2)
16500      100 FORMAT(///' KANAELE FUER INSTRUMENT 18 * HOS1 *      '//
*          ' GESCHWINDIGKEITSKANAELE OHNE SHIFT: '/ 3(' ',10F12.4/),
*          ' ',4F12.4/' GESCHWINDIGKEITSKANAELE MIT SHIFT: '/
*          3(' ',10F12.4/),' ',4F12.4)
16600
16700
16800
16900 C
17000      RETURN
17100      END

```

```
17200      SUBROUTINE AZIM
17300 C    DUMMY SUBROUTINE FUER AZIMTH-VORHALTEWINKEL
17400 C    NUR FUER HFLIOS B
17500      RETURN
17600      END
```

```

----- KZM:HELIOS3.INITR
100 C
200 /*CONTROL FORM=2929
300 // EXEC F04CA,USERID=KZM,NAME=0INITR
400 //*.SYSPRINT DD DUMMY
500 //C.SYSIN DD *
600 C COMMON BLOECKE FUER DIE KANAELE VON HELIOS B
700 C
800 C DATA KONSTANTEN AUS ' TEST PROCEDURE ' GENOMMEN :: 08.2.77
900 C
1000 BLOCK DATA
1100 C KANAL-WERTE > I1A <
1200 COMMON /KANAL/ VOLT(34,2),AZIM(18,2),ELEVAT(11)
1300 C VOLT(,1),AZIM(,1) NS BIT ISHI 0
1400 C VOLT(,2),AZIM(,2) WS BIT ISHI 1
1500 DATA VOLT / 0.191,0.220,0.254,0.293,0.339,0.392,0.450,0.524,
1600 * 0.606,0.699,0.808,0.933,1.080,1.248,1.437,1.674,
1700 * 1.937,2.240,2.589,2.992,3.467,4.006,4.613,5.373,
1800 * 6.219,7.209,8.335,9.628,11.156,12.888,14.840,17.280,,
1900 * 19.997,23.141,
2000 * 0.191,0.220,0.254,0.293,0.339,0.392,0.450,0.524,
2100 * 0.606,0.699,0.808,0.933,1.080,1.248,1.437,1.674,
2200 * 1.937,2.240,2.589,2.992,3.467,4.006,4.613,5.373,
2300 * 6.219,7.209,8.335,9.628,11.156,12.888,14.840,17.280,,
2400 * 19.997,23.141/
2500 C HOSB HAT SPINACHSE NACH UNTEN (ENTGEGEN HOSA) VORZEI.VERTAU IN INIT
2600 DATA ELEVAT / +25.00, +20.83, +15.75, +10.64, +5.60,+0.56,-4.47,
2700 * - 9.58, -14.64, -19.66, -25.00 /
2800 C KANAL-WERTE > I3 <
2900 COMMON /KANAL3/ GESCHW(18),AZIM(18,2),ELEV(11)
3000 DATA GESCHW / 181.9, 198.9, 217.5, 238.0, 260.6, 285.2, 312.1,
3100 * 341.6, 373.8, 409.1,447.7, 489.8, 536.0, 586.6,
3200 * 641.9, 702.4, 768.6, 840.5 /
3300 DATA ELEV /+25.00, +20.845, +15.77, +10.74, +5.71, +0.692,
3400 * -4.397, - 9.48, -14.54, -19.627,-25.00 /
3500 C COMMON BLOECKE FUER HELIOS -> I1B -<
3600 COMMON /KANLIB/ VOLT1B(34,2)
3700 C VOLT(,1),AZIM(,1) NS BIT ISHI 0
3800 C VOLT(,2),AZIM(,2) WS BIT ISHI 1
3900 DATA VOLT1B/ 0.191,0.220,0.256,0.295,0.341,0.397,0.455,0.530,
4000 * 0.612,0.703,0.817,0.943,1.092,1.266,1.455,1.693,
4100 * 1.957,2.254,2.621,3.022,3.500,4.060,4.668,5.430,
4200 * 6.277,7.246,8.427,9.716,11.254,13.054,15.007,17.456,
4300 * 20.176,23.319,
4400 * 0.191,0.220,0.256,0.295,0.341,0.397,0.455,0.530,
4500 * 0.612,0.703,0.817,0.943,1.092,1.266,1.455,1.693,
4600 * 1.957,2.254,2.621,3.022,3.500,4.060,4.668,5.430,
4700 * 6.277,7.246,8.427,9.716,11.254,13.054,15.007,17.456,
4800 * 20.176,23.319/
4900 C
5000 C
5100 C KONSTANTEN FUER DIE MOMENTE :: VON HOS A BEITRHALTEN
5200 COMMON /MOM/ PM,BK,DELEL1,DELAZ1,DELZ1,GMOA1,
5300 * DELEL3,DELAZ3,DELZ3,GMOA3,
5400 * DELEL8,DELAZ8,DELZ8,GMOA8
5500 DATA PM,BK /1.67E-24,1.38E-16/
5600 DATA DELEL1,DELAZ1,DELZ1,GMOA1/0.08727,0.09774,0.01,4.0E-7/
5700 DATA DELEL3,DELAZ3,DELZ3,GMOA3/0.08727,0.09774,0.01,0.1628E-7/

```

```

5800      DATA  DELFLB,DELAZB,DELZB,GMDAB/0.08727,0.09774,0.01,0.8775-7/
5900 C    FUER I1B / I3 ANGLEICHEN  I1B - 4.0E-7/5.53
6000 C          I3      4.0E-7/24.5
6100      END
6200      SUBROUTINE INIT
6300 C    INITIALISIEREN DER BLOCKDATA
6400 C
6500      COMMON /KANAL/ VOLT(34,2),AZIMUT(18,2),ELEVAT(11)
6600 C
6700      LOGICAL*4 LPRINT/.TRUE./
6800 C
6900 C    AUFBEREITEN DER KANALWERTE  > I1A <
7000 C    VOLT -> KM/SEC
7100      EKONS= 424.329/SQRT(VOLT(14,1))
7200      EKONSO = 18.602/19.997
7300      DO 1 J=1,34
7400          VOLT(J,1) = EKONS*SQRT(VOLT(J,1))
7500      1  VOLT(J,2) = EKONS* SQRT( EKONSO*VOLT(J,2))
7600 C
7700 C    AZIMUTH-WINKEL
7800      DAZ = 3.52 + 2.1
7900      AZO = -(40.78+37.26)/2. - 2*DAZ
8000      DO 2 I=1,18
8100          AZIMUT(I,1) = AZO+DAZ
8200          AZO=AZIMUT(I,1)
8300      2  AZIMUT(I,2) = AZIMUT(I,1)-2.81
8400 C    VERSCHIEBUNG DES SCHWERPUNKTES  (CORR1 = SCHWERPT.AUS FICHDATEN)
8500 C          (CORR2 = VERSCH.BEIM EINBAU)
8600      CORR1 = 0.531
8700      CORR2 = -0.205
8800      DO 3 I=1,18
8900          AZIMUT(I,1) = AZIMUT(I,1)-CORR1+CORR2
9000          AZIMUT(I,2) = AZIMUT(I,2)-CORR1+CORR2
9100 C    UMKEHR DER WINKEL
9200      AZIMUT(I,1) = -AZIMUT(I,1)
9300      3  AZIMUT(I,2) = -AZIMUT(I,2)
9400 C
9500 C    ELEVATIONS VERSCH BEIM EINBAU
9600      CORR3 = 0.0517
9700      DO 4 I=1,11
9800          ELEVAT(I) = ELEVAT(I) - CORR3
9900 C    UMKEHR DER WINKEL
10000      4  ELEVAT(I) = -ELEVAT(I)
10100 C
10200      IF(.NOT.LPRINT) RETURN
10300      WRITE(6,100) ((VOLT(I,J),I=1,34),J=1,2)
10400      100 FORMAT(///' HQS 2  KANAEL FUER INSTRUMENT 1A'//
10500      *      ' GESCHWINDIGKEITSKANAELE OHNE SHIFT:'// 3(' ',10F12.4/),
10600      *      ' ',4F12.4/' GESCHWINDIGKEITSKANAELE MIT  SHIFT:'//
10700      *      3(' ',10F12.4/),' ',4F12.4)
10800      WRITE(6,101) ((AZIMUT(I,J),I=1,18 ),J=1,2)
10900      101 FORMAT(' AZIMUTH-KANAL OHNE SHIFT 0 V.:'// ' ',10F12.2/' ',8F12.2/
11000      *      ' AZIMUTH-KANAL MIT  SHIFT 0 V.:'// ' ',10F12.2/' ',8F12.2)
11100      WRITE(6,102) ELEVAT
11200      102 FORMAT(' ELEVATIONS-KANAL:'// ' ',11F11.2)
11300 C
11400 C

```



```
11500      RETURN
11600      END
11700      SUBROUTINE INITB
11800 C INITIALISIEREN DER BLOCKDATA      > I3 <
11900 C
12000      COMMON /KANAL3/ GESCHW(18),AZIM(18,2),ELEV(11)
12100 C
12200      LOGICAL*4 LPRINT/.TRUE./
12300 C
12400 C VOLT -> KM/SEC (MOMENT FUER KANAL 5 (INDEX 6))
12500      EKONS= 388.4067/(SQRT(2.)*GESCHW( 6))
12600      DO 1 I=1,18
12700      1 GESCHW(I) = EKONS*GESCHW(I)
12800 C AZIMUTH-WINKEL
12900      DAZ = 3.52 + 2.1
13000      AZO = -(40.78+37.26)/2. - 2*DAZ
13100      DO 2 I=1,18
13200      AZIM(I,1) = AZO+DAZ
13300      AZO=AZIM(I,1)
13400      2 AZIM(I,2) = AZIM(I,1)-2.81
13500 C VERSCHIEBUNG DES SCHWEPUNKTES (CORR1 = NULLPT.VERSCH A FICHDATEN)
13600 C (CORR2 = VERSCH BEIM EINBAU)
13700      CORR1 = 0.5472
13800      CORR2 = -0.4167
13900      DO 3 I=1,18
14000      AZIM(I,1) = AZIM(I,1)-CORR1+CORR2
14100      AZIM(I,2) = AZIM(I,2)-CORR1+CORR2
14200 C UMKEHR DER VORZEICHEN
14300      AZIM(I,1) = -AZIM(I,1)
14400      AZIM(I,2) = -AZIM(I,2)
14500      3 CONTINUE
14600 C
14700 C ELEVATIONSVERSCHIEBUNG BEIM EINBAU
14800      CORR3 = 0.297
14900      DO 4 I=1,11
15000      ELEV(I) = ELEV(I) - CORR3
15100 C UMKEHR DER VORZEICHEN
15200      ELEV(I) = -ELEV(I)
15300      4 CONTINUE
15400 C
15500 C
15600      IF(.NOT.LPRINT) RETURN
15700      WRITE(6,100) (GESCHW(I),I=1,18)
15800      100 FORMAT(///' HOS 2 KANAELE FUER INSTRUMENT 3'/
15900      * ' GESCHWINDIGKEITSKANAELE :'/ 3(' ',10F12.4/))
16000      WRITE(6,101) ((AZIM(I,J),I=1,18),J=1,2)
16100      101 FORMAT(' AZIMUTH-KANAL OHNE SHIFT 0 V.:'/ ' ',10F12.4/' ',8F12.4/
16200      * ' AZIMUTH-KANAL MIT SHIFT 0 V.:'/ ' ',10F12.4/' ',8F12.4)
16300      WRITE(6,102) ELEV
16400      102 FORMAT(' ELEVATIONS-KANAL:'/ ' ',11F11.3)
16500 C
16600 C
16700      RETURN
16800      END
16900      SUBROUTINE INITB
17000 C INITIALISIEREN DER BLOCKDATA
17100 C
```

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17200      COMMON /KANLIB/ VOLT(34,2)
17300 C
17400      LOGICAL*4 LPRINT/.TRUE./
17500 C
17600 C   AUFBEREITEN DER KANALWERTE
17700 C   VOLT -> KM/SEC
17800 C           418.0 GESETZT 19.4.77
17900      EKONS= 418.00/SQRT(VOLT(14,1))
18000      EKONS0 = 18.780/20.176
18100      DO 1 J=1,34
18200          VOLT(J,1) = EKONS*SQRT(VOLT(J,1))
18300      1 VOLT(J,2) = EKONS* SQRT(EKONS0*VOLT(J,2))
18400 C
18500      IF(.NOT.LPRINT) RETURN
18600      WRITE(6,100) ((VOLT(I,J),I=1,34),J=1,2)
18700 100  FORMAT(///' HOS 2 KANAELE FUER INSTUMENT 18'/
18800      *           ' GESCHWINDIGKEITSKANAELE OHNE SHIFT:/' 3(' ',10F12.4/),
18900      *           ' ',4F12.4/' GESCHWINDIGKEITSKANAELE MIT  SHIFT:/'
19000      *           3(' ',10F12.4/),' ',4F12.4)
19100 C
19200      RETURN
19300      END
19400      SUBROUTINE AZIM
19500 C   SUBROUTINE FUER AZIMTH-VORHALTEWINKEL
19600 C   NUR FUER HELIOS B
19700      COMMON /KANAL/ VOLT(34,2),AZIMUT(18,2),FLEVAT(11)
19800      COMMON /KANAL3/ GESCHW(18),AZIMM(18,2),FLEV(11)
19900      COMMON /LABL/ JID0(13),JID1(27,4),JSHIF
20000      COMMON /STEUR2/ LONG,TIMDEL,LOA,IFRPR1,IFRTAP,J1,J2,J3,J4
20100 C
20200 C   WORT 9 BIT 7 :: 1 OHNE VORHALTEWINKEL
20300 C           0 MIT
20400 C   LAZIM .FALSE. WENN OHNE VORHALTE
20500 C
20600      REAL*4      Z0/Z200/, Z1/ZFFFF/
20700      LOGICAL*4 LAZIM/.FALSE./, SAZIM/.FALSE./
20800 C
20900 C   QUALITAET DER ID WORTE SCHLECHT
21000 C   WRITE(6,333) (JID1(K,1),K=20,27)
21100 C 333  FORMAT(' ',10(Z8,1X))
21200      IF(AND(JID1(20,1),Z1).EQ.Z1) RETURN
21300 C
21400      LAZIM = .TRUE.
21500      IF(AND(JID1(24,1),Z0).EQ.Z0) LAZIM = .FALSE.
21600      IF(LAZIM.AND.SAZIM .OR. .NOT.LAZIM.AND..NOT.SAZIM) RETURN
21700 C
21800      IF(LAZIM) GO TO 10
21900 C   OHNE VORHALTEWINKEL
22000      SAZIM = LAZIM
22100 C   AZIMUTH-WINKEL      >J1AK
22200      DAZ = 3.52 + 2.1
22300      AZ0 = -(40.78+37.26)/2. - 2*DAZ
22400      DO 2 I=1,18
22500          AZIMUT(I,1) = AZ0+DAZ
22600          AZ0=AZIMUT(I,1)
22700      2  AZIMUT(I,2) = AZIMUT(I,1)-2.81
22800 C   VERSCHIEBUNG DES SCHWERPUNKTES

```

```
22900      CORP1 = 0.531
23000      CORP2 = -0.205
23100      DO 3 I=1,18
23200          AZIMUT(I,1) = AZIMUT(I,1)-CORP1+COPR2
23300          AZIMUT(I,2) = AZIMUT(I,2)-CORP1+COPR2
23400 C    UMKEHR DER VORZEICHEN
23500          AZIMUT(I,1) = -AZIMUT(I,1)
23600          AZIMUT(I,2) = -AZIMUT(I,2)
23700      3 CONTINUE
23800 C
23900 C    AZIMUTH-WINKEL >J3<
24000          DAZ = 3.52 + 2.1
24100          AZO = -(40.78+37.26)/2. - 2*DAZ
24200      DO 4 I=1,18
24300          AZIMM(I,1) = AZO+DAZ
24400          AZO=AZIMM(I,1)
24500      4 AZIMM(I,2) = AZIMM(I,1)-2.81
24600 C    VERSCHIEBUNG DES SCHWERPUNKTES
24700          CORR3 = 0.5472
24800          CORR4 = -0.4167
24900      DO 5 I=1,18
25000          AZIMM(I,1) = AZIMM(I,1)-CORP3+COPR4
25100          AZIMM(I,2) = AZIMM(I,2)-CORP3+COPR4
25200 C    UMKEHR DER VORZEICHEN
25300          AZIMM(I,1) = -AZIMM(I,1)
25400          AZIMM(I,2) = -AZIMM(I,2)
25500      5 CONTINUE
25600          WRITE(6,104) J1,J2,J3,J4
25700      104 FORMAT(' UMSCHALTUNG IN INITL.DATEN ERKANNT BEI :',4I4)
25800          WRITE(6,100) ((AZIMUT(I,J),I=1,18 ),J=1,2)
25900      100 FORMAT(' UMSCHALTUNG AUF : OHNE VORHALTEWINKEL: * I1A* '/
26000          *      ' AZIMUTH-KANAL OHNE SHIFT 0 V.: '/ ' ',10F12.3/' ',8F12.3/
26100          *      ' AZIMUTH-KANAL MIT SHIFT 0 V.: '/ ' ',10F12.3/' ',8F12.3)
26200          WRITE(6,101) ((AZIMM(I,J),I=1,18 ),J=1,2)
26300      101 FORMAT(' UMSCHALTUNG AUF : OHNE VORHALTEWINKEL: * J3 */
26400          *      ' AZIMUTH-KANAL OHNE SHIFT 0 V.: '/ ' ',10F12.3/' ',8F12.3/
26500          *      ' AZIMUTH-KANAL MIT SHIFT 0 V.: '/ ' ',10F12.3/' ',8F12.3)
26600 C
26700          RETURN
26800 C
26900      10 CONTINUE
27000 C    MIT VORHALTEWINKEL
27100          SAZIM = LAZIM
27200 C    AZIMUTH-WINKEL >J1A<
27300          DAZ = 3.52 + 2.1
27400          AZO = -(33.75+30.23)/2. - 2*DAZ
27500      DO 6 I=1,18
27600          AZIMUT(I,1) = AZO+DAZ
27700          AZO=AZIMUT(I,1)
27800      6 AZIMUT(I,2) = AZIMUT(I,1)-2.81
27900 C    VERSCHIEBUNG DES SCHWERPUNKTES
28000          CORP1 = 0.531
28100          CORP2 = -0.205
28200      DO 7 I=1,18
28300          AZIMUT(I,1) = AZIMUT(I,1)-CORP1+COPR2
28400          AZIMUT(I,2) = AZIMUT(I,2)-CORP1+COPR2
28500 C    UMKEHR DER VORZEICHEN
```

```
28600      AZIMUT(I,1) = -AZIMUT(I,1)
28700      AZIMUT(I,2) = -AZIMUT(I,2)
28800      7 CONTINUE
28900 C
29000 C AZIMUTH-WINKEL >J3<
29100      DAZ = 3.52 + 2.1
29200      AZO = -(33.75+30.23)/2. - 2*DAZ
29300      DO 8 I=1,18
29400          AZIMM(I,1) = AZO+DAZ
29500          AZO=AZIMM(I,1)
29600      8 AZIMM(I,2) = AZIMM(I,1)-2.81
29700 C VERSCHIEBUNG DES SCHWERPUNKTES
29800      CORR3 = 0.5472
29900      CORR4 = -0.4167
30000      DO 9 I=1,18
30100          AZIMM(I,1) = AZIMM(I,1)-CORR3+CORR4
30200          AZIMM(I,2) = AZIMM(I,2)-CORR3+CORR4
30300 C UMKEHR DER VORZEICHEN
30400      AZIMM(I,1) = -AZIMM(I,1)
30500      AZIMM(I,2) = -AZIMM(I,2)
30600      9 CONTINUE
30700      WRITE(6,104) J1,J2,J3,J4
30800      WRITE(6,102) ((AZIMUT(I,J),I=1,18 ),J=1,2)
30900 102 FORMAT(' UMSCHALTUNG AUF AZIM MIT VORHALTEWINKEL :: *I1A*'/
31000 *      ' AZIMUTH-KANAL OHNE SHIFT M V.:'/ ' ',10F12.3/' ',8F12.3/
31100 *      ' AZIMUTH-KANAL MIT SHIFT M V.:'/ ' ',10F12.3/' ',8F12.3)
31200      WRITE(6,103) ((AZIMM(I,J),I=1,18),J=1,2)
31300 103 FORMAT(' UMSCHALTUNG AUF AZIM MIT VORHALTEWINKEL :: *I3* '/
31400 *      ' AZIMUTH-KANAL OHNE SHIFT M V.:'/ ' ',10F12.3/' ',8F12.3/
31500 *      ' AZIMUTH-KANAL MIT SHIFT M V.:'/ ' ',10F12.3/' ',8F12.3)
31600 C
31700      RETURN
31800 C
31900      END
```



```

100 C----- KZM:HELIOS3.SUB1
200 SUPROUTINE SUB1 (MODE,INST)
300 C BESTIMMUNG DER QUALITAET UND VERSCH. LAUFINDICES
400 C
500 COMMON /LARB/ JID0(12),JID1(27,4),ISHIF
600 COMMON /SEN1/ FINT(32),FI1R(32),FIS1(7,7,32)
700 COMMON /SEN2/ JIS2(256),FE2(6,4)
800 COMMON /STEUR2/ LONG,TIMDEL,LOA,IFRPRI,IFRTAP,JJ1,JJ2,JJ3,JJ4,
900 * LDM7,LMIST
1000 C
1100 COMMON /QUAL1/ IQINT,MAXINT,RATINT,IQ3D(32),MAX3D(3),RAT3D
1200 COMMON /A7/ MEN,MAZ,MEL,LC1,LC2,LC3
1300 C
1400 DIMENSION CSAINT(32),A(5,5),R(5),D(5)
1500 DATA TAU /3.E-5/, TAUZ /5.E-5/
1600 REAL PROZ(32,2)/64*0./
1700 C
1800 C
1900 LOGICAL MODE,TQW,LDM7,LMIST,LCODE
2000 INTEGER*4 BIT1/Z600/
2100 C
2200 C INDICES :: FIS1( ELEV<K>, AZIM<J>, ERG<I> )
2300 C MEN,MAZ,MEL :: INDEX DES ERSTEN KANALS IM 3D SPEKTRUM (OHNE +-1KANL)
2400 C -100 WENN INIL.WORTE SCHLECHT
2500 C LC1,LC2,LC3 :: ANZAHL DER KANAELE (ERG,AZIM,ELV)
2600 C (OHNE SCHWUNGRAD)
2700 C
2800 C
2900 LMIST = .FALSE.
3000 LCODE = .FALSE.
3100 IF(MODE) GO TO 2
3200 C NDM
3300 LC1 = 9
3400 LC2 = 5
3500 LC3 = 5
3600 IF(.NOT. TQW(JID1(15,1),BIT1)) GO TO 4
3700 C INIL OK.-> START-ADRESSE DER KANAELE DEFINIEREN
3800 MEN = JID1(12,1) - 2
3900 MEL = JID1(14,1) - 2
4000 MAZ = JID1(13,1) - 2
4100 IF(MEN.LT. 1) MEN = 1
4200 IF(MEN.GT.23.AND.INST.EQ.1) MEN = 23
4300 IF(MEN.GT. 8.AND.INST.EQ.3) LC1 = 16-MEN+1
4400 IF(MEL.LT. 1) MEL = 1
4500 IF(MEL.GT. 4) MEL = 4
4600 IF(MAZ.LT. 1) MAZ = 1
4700 IF(MAZ.GT.11) MAZ = 11
4800 GO TO 3
4900 C MAX ADDR. NICHT DEFINIERT
5000 4 MEN = -100
5100 MEL = -100
5200 MAZ = -100
5300 GO TO 3
5400 C
5500 C HDM
5600 2 LC1 = 32
5700 IF(INST.EQ.3) LC1 = 16

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5800      LC2 = 7
5900      LC3 = 7
6000      IF(JID0(1).EQ.2 .OR. JID0(1).EQ.3) LC3 = 6
6100      MEN = 1
6200      MEL = 2
6300      MAZ = 5
6400      3 CONTINUE
6500 C
6600      CALL SIGMA
6700 C
6800 C QUALITAET DER INTEGR.DATEN:IQINT,MAXINT(INDEX D MAXKANALES)
6900 C      RATINT(Z-RATE)
7000      LLC1 = 32
7100      IF(INST.EQ.3) LLC1 = 16
7200      IQINT=0
7300      MAXINT = 0
7400      RATINT = 0.
7500      DO 10 I=1,LLC1
7600          IF(FINT(I).GT.-1.) FINT(I) = C165(FINT(I))
7700          IF(FINT(I).LE.-1.) IQINT = IQINT + 1
7800          IF(RATINT.GT.FINT(I) ) GO TO 10
7900          RATINT = FINT(I)
8000          MAXINT = I
8100      10 CONTINUE
8200 C
8300 C QUALITAET DES 3D-SPEKTRUMS:0 OK / >1 BAD
8400      RAT3D = 0.
8500      DO 20 I=1,3
8600      20 MAX3D(I) = 0
8700      DO 21 I=1,LC1
8800          IQ3D(I) = 0
8900      DO 21 J=1,LC2
9000      DO 21 K=1,LC3
9100          FIS1(K,J,I) = C165(FIS1(K,J,I))
9200 C ABFRAGE NACH FEHLERN IN 3D-DATEN
9300      IF(FIS1(K,J,I) .LE.-2. ) LCODE = .TRUE.
9400      IF(FIS1(K,J,I).GT.17000. ) LMIST = .TRUE.
9500      IF(FIS1(K,J,I) .LE.-1. ) IQ3D(I) = IQ3D(I) + 1
9600      IF(RAT3D .GT. FIS1(K,J,I) ) GO TO 21
9700      MAX3D(1) = K
9800      MAX3D(2) = J
9900      MAX3D(3) = I
10000     RAT3D = FIS1(K,J,I)
10100     21 CONTINUE
10200 C
10300     IF(LMIST.AND. .NOT.LCODE) WRITE(6,600) JJ1,JJ2,JJ3,JJ4
10400     600 FORMAT(' 3-D SPEKTUM ENTHAELT FEHLER REI::',4I5)
10500     IF(LCODE) WRITE(6,610) JJ1,JJ2,JJ3,JJ4
10600     610 FORMAT(' 3-D SPEKTUM ENTHAELT CODEWORT REI::',4I5)
10700 C
10800 C      GEANDERT 2.2.79:PPDD,AB 1.77
10900     DO 22 I=1,32
11000     IF(FIIR(I).NE.-1.) FIIR(I) = C165(FIIR(I))
11100     22 CONTINUE
11200 C
11300     RETURN
11400 C

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11500 C
11600 C   CORREKTUR DER INTEGRIERTEN ZAEHLRATEN UND DER EINZELZAEHLRATEN
11700 C
11800 C   ENTRY COPIN
11900 C
12000 C
12100 C
12200 C   DO 100 I=1,32
12300 C   100 CSAINT(I) = FINT(I)
12400 C   LOOP UEBER ALLE ERG-KANAELF      <INDEX I>
12500 C   DO 1000 I=1,32
12600 C   DINT = 0.
12700 C   SUM = 0.
12800 C   KEINE KORREKTUR MOEGlich ODER NOETIG
12900 C   IF(FINT(I).LE.250.) GO TO 1000
13000 C   IF(LMIST) GO TO 200
13100 C   IF(MEN.LE.-100) GO TO 200
13200 C   IF(.NOT.(I.GE.MEN .AND. I.LE.MEN-1+LC1)) GO TO 200
13300 C   II = I-MEN+1
13400 C   WRITE(6,780) II,I
13500 C 780 FORMAT(' ',2I10)
13600 C   IF(IQ3D(II).GE.1) GO TO 200
13700 C   INTEGRATIONSZAEHLER CORREKTUR MOEGlich
13800 C   INDEX DES MAX SUCHEN
13900 C   NEL=0
14000 C   MAZ=0
14100 C
14200 C   X = 0.
14300 C   DO 130 J=1,LC2
14400 C   DO 130 K=1,LC3
14500 C   SUM=SUM+FIS1(K,J,II)
14600 C   IF(X.GT.FIS1(K,J,II)) GO TO 130
14700 C   X = FIS1(K,J,II)
14800 C   MAZ=J
14900 C   NEL=K
15000 C 130 CONTINUE
15100 C
15200 C   IF(SUM.LT.200.) GO TO 1000
15300 C
15400 C   J1 = MAZ-2
15500 C   J2 = MAZ+2
15600 C   K1 = NEL-2
15700 C   K2 = NEL+2
15800 C   PRUEFUNG DER GRENZEN
15900 C   IF(J1.GE.1) GO TO 131
16000 C   J1 = 1
16100 C   J2 = 5
16200 C 131 IF(J2.LE.LC2) GO TO 132
16300 C   J1 = LC2-4
16400 C   J2 = LC2
16500 C 132 IF(K1.GE.1) GO TO 133
16600 C   K1 = 1
16700 C   K2 = 5
16800 C 133 IF(K2.LE.LC3) GO TO 134
16900 C   K1 = LC3-4
17000 C   K2 = LC3
17100 C 134 CONTINUE
```

```
17200 C   AZIMUTH LOOP
17300     DO 140 J=J1,J2
17400 C   ELEVATIONS LOOP
17500     K0=1
17600     DO 150 K=K1,K2
17700       DO 151 L=1,5
17800   151  A(K0,L)=TAU*FIS1(K,J,II) + 0.00001
17900       A(K0,K0) = 1.
18000       R(K0) = FIS1(K,J,II) + 0.00001
18100       K0 = K0+1
18200   150 CONTINUE
18300 C
18400     CALL GELG(R,A,5,1,1.E-5,IERR)
18500 C
18600     DO 160 L=1,5
18700     D(L) = FIS1(K1+L-1,J,II) - R(L)
18800   160 DINT = DINT+D(L)
18900   140 CONTINUE
19000 C
19100 C   KORREKTUR DER EINZELZAEHLRATEN
19200   161 DZ = 0.
19300     DO 162 J=1,LC2
19400     DO 162 K=1,LC3
19500       FN = FIS1(K,J,II)/(1.-TAU*FIS1(K,J,II))
19600       DZ = DZ+(FN-FIS1(K,J,II))
19700   162 FIS1(K,J,II) = FN
19800 C
19900     PROZ(I,ISHIF) = (DZ+DINT)*100./(FINT(I)+0.001)
20000     CSAINT(I) = FINT(I)+DZ+DINT
20100     GO TO 400
20200 C
20300 C
20400 C   KORREKTUR NACH VORGABE
20500   200 CONTINUE
20600     K = MOD(ISHIF,2)+1
20700     CSAINT(I) = FINT(I) + FINT(I)*PROZ(I,K) /100.
20800 C
20900 C
21000   400 CONTINUE
21100 C   700 FORMAT( 16F8.1)
21200   1000 CONTINUE
21300 C   WRITE(6,700) FINT,CSAINT,(PROZ(L,ISHIF),L=1,32 )
21400     MAXINT=0
21500     RATINT = 0.
21600     DO 1001 I=1,32
21700     FINT(I) = CSAINT(I)
21800     IF(RATINT.GT.FINT(I)) GO TO 1001
21900     MAXINT = I
22000     RATINT = FINT(I)
22100   1001 CONTINUE
22200 C
22300     RETURN
22400     END
22500 $$ KZM:HELIOS3.TOW
```



```
100 C----- KZM:HELIOS3.TOW
200 C LOGICAL FUNCTION TQW*4 (QW,BIT)
300 C FUNKTION BILDET LOGISCHES .AND. ZWISCHEN QW+BIT
400 C QW :: ZU PRUEFENDES QUALITAETSWORT
500 C BIT :: PRUEFMUSTER
600 C (QW,BIT) *4 WORTE
700 C
800 C TQW = .FALSE.
900 C IF(AND(QW,BIT).EQ.BIT) TQW = .TRUE.
1000 C RETURN
1100 C END
```

```
100 C-----KZM:HELIOS3.SIGMA
200     SUBROUTINE SIGMA
300     COMMON /SEN1/ FINT(32),FIIR(32),FIS1(32,4)
400     COMMON /SIGMA1/ SFINT(32)
500     DIMENSION DT(11),TI(11),DCT(32),DN(32),CTS(32)
600     DATA DT/.33333,1.33333,5.33333,21.33333,85.3333,341.3333,1365.333,
700     1 5461.333,21845.33,87381.33,349525.33/
800     DATA TI/32.,64.,128.,256.,512.,1024.,2048.,4096.,8192.,16384.,
900     * 32768./
1000    DO 10 I=1,32
1100    IF(FINT(I).LE.-1.) GO TO 10
1200    DCT(I) = 0.03333
1300    DN(I) = .5
1400    IF(FINT(I).LE.0.) GO TO 8
1500    DO 5 K=1,11
1600    IF(FINT(I).LT.TI(K)) GO TO 7
1700    DN(I) =2**-(K-1)
1800    5 DCT(I) = DT(K)
1900    7 CONTINUE
2000    CTS(I) = FINT(I) + DN(I)
2100    SFINT(I) = SQRT(DCT(I) + CTS(I) )/CTS(I)
2200    GO TO 10
2300    8 FINT(I)=0.
2400    CTS(I) = FINT(I)
2500    SFINT(I) = 1./SQRT(0.1)
2600    FINT(I) = CTS(I)
2700    10 CONTINUE
2800 C WRITE(6,100) SFINT
2900 C 100 FORMAT(10(' ',16F8.3//)
3000    RETURN
3100    END
3200    FUNCTION C165(F)
3300 C
3400 C UMWANDLUNG DER DEC.ZAEHLRATEN VON 16. -> 16.5
3500    DIMENSION TI(11)
3600    DATA TI/32.,64.,128.,256.,512.,1024.,2048.,4096.,8192.,16384.,
3700    * 32768./
3800 C
3900    C165 = F
4000    IF (F.LE.0.0) RETURN
4100    DN = 0.5
4200    DO 10 I=1,11
4300    IF(F.LT.TI(I)) GO TO 20
4400    10 DN = 2**-(I-1)
4500 C
4600    20 C165 = F+DN
4700    RETURN
4800    END
```

```

0 C----- KZM:HEL IOS3.PRINT
100 C*****PRINT*****
200 C
300 C INTERPOLATION DER O/A-DATEN FUER DIE GEWUENSCHTE ZEIT JIDO(6-9)
400 C AUS DEN O/A-BLOCKEN ,DIE FUER DIE ZEIT ZWISCHEN START UND ENDE
500 C AUF DER PLATTE STEHEN.
600 C
700 C ORA(1) : NR. DES TAGES AB START VON HELIOS-A. 74:344 => 1
800 C ORA(2) : ECLIPT. LAENGE VON HELIOS ,AB MEAN EQUINOX *GRAD*
900 C ORA(3) : ECLIPT. LAENGE VON HELIOS ,AB ERDE-SONNE-LINIE *GRAD*
1000 C ORA(4) : SONNENABSTAND VON HELIOS *AU*
1100 C ORA(5) : ECLIPT. LAENGE DER ERDE ,AB MEAN EQUINOX *GRAD*
1200 C ORA(6) : ECLIPT. LAENGE DER ERDE ,AB ERDE-SONNE-LINIE /0/
1300 C ORA(7) : SONNENABSTAND DER ERDE *AU*
1400 C ORA(8) : RADIALGESCHW. VON HELIOS *AU/TAG*
1500 C ORA(9) : NORMALGESCHW. VON HELIOS *AU/TAG*
1600 C ORA(10) : HELIOGR. LAENGE VON HELIOS, AB ASCENDING NODE *GRAD*
1700 C ORA(11) : HELIOGR. BREITE VON HELIOS *GRAD*
1800 C ORA(12) : ZAHL DER SONNENROTAT. AB START BEZOGEN AUF DIE ERDE
1900 C ORA(13) : ZAHL DER SONNENROTAT. AB START BEZOGEN AUF HELIOS
2000 C ORA(14) : ENTFERNUNG HELIOS-ERDE *AU*
2100 C ORA(15) : SOLARER ASPEKTWINKEL *GRAD*
2200 C ORA(16) : PITCHWINKEL *GRAD*
2300 C ORA(17) : MITTLERE SPINRATE #UMDREH./MIN/*
2400 C ORA(18) : FREI
2500 C ORA(19) : FREI
2600 C ORA(20) : FREI
2700 C
2800 C VERSION VOM 5.4.76 RRS
2900 C
3000 C*****
3100 C
3200 C SUBROUTINE PRINT
3300 C
3400 C COMMON/ORBIT/OR A(20),START(2),ENDE(2)
3500 C COMMON /HEJAHR/IHEYE(2)
3600 C COMMON /LABL/ JIDO(13),JIDI(27,4),ISHIF
3700 C COMMON /STEUR2/ LONG,TIMDEL,LOA,IFRPRI,IFERTAP,J1,J2,J3,J4
3800 C INTEGER *4 START,ENDE,IAV/0/,NIAV/0/
3900 C LOGICAL LDA
4000 C REAL ORAPL(20,25),ORA
4100 C DEFINE FILE 14 (150,2000,L,IAV)
4200 C
4300 C WRITE(6,910)IHEYE,START,ENDE,J1,J2,NIAV,IAV
4400 C910 FORMAT(' IHEYE,START,ENDE,JIDO(6),JIDO(7),NIAV,IAV :',/,
4500 C *4X,10I4)
4600 C IF (IHEYE(2).LT.START(1)) GOTO 100
4700 C IF (IHEYE(2).GT.START(1)) GOTO 200
4800 C IF (J1 .LT.START(2)) GOTO 100
4900 C IF (J1 .GE.START(2)) GOTO 200
5000 C300 CONTINUE
5100 C IF (NIAV .EQ. IAV) GOTO 320
5200 C IAV = NIAV
5300 C
5400 C FINLESEN DES DA-BLOCKS NR. IAV VON DER PLATTE
5500 C READ(14'IAV)((ORAPL(I,J),I=1,20),J=1,25)
5600 C IAV = IAV-1

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```
5700 C WRITE(6,900)(ORAPL(I,J2 +1),I=1,17)
5800 C WRITE(6,900)(ORAPL(I,J2 +2),I=1,17)
5900 C900 FORMAT(4(1X,5E20.8,7))
6000 C
6100 C PRUEFUNG, OB DIE D/A DIE RICHTIGEN SIND
6200 IF (NOTAG .NE.ORAPL(1,J2 +1)) GOTO 110
6300 C INTERPOLATION
6400 320 DO 310 I = 2,17
6500 IF(I.EQ.3 .AND. ORAPL(3,J2+2).GT.350..AND.ORAPL(3,J2+1).LT.10.
6600 * ) ORAPL(3,J2+2) = ORAPL(3,J2+2)-360.
6700 IF(I.EQ.3 .AND. ORAPL(3,J2+2).LT.10..AND.ORAPL(3,J2+1).GT.350.
6800 * ) ORAPL(3,J2+1) = ORAPL(3,J2+1)-360.
6900 ORA(I)=(ORAPL(I,J2 +2)-ORAPL(I,J2 +1))
7000 * *(J3 *60000+J4 )/3600000 +ORAPL(I,J2 +1)
7100 310 CONTINUE
7200 LCA=.TRUE.
7300 GOTO 400
7400 C
7500 C WENN KEINE PASSENDEN ORBITDATEN DA SIND
7600 100 LCA =.FALSE.
7700 GOTO 400
7800 C
7900 110 LCA = .FALSE.
8000 WRITE (6,800) NOSTOA,ORAPL(1,J2 +1),IHEYE,START,ENDE, J1,
8100 *J2,J3,NIIV,IAV
8200 800 FORMAT(1X,'FALSCH E D/A-DATEN NOSTOA,ORAPL(1,J20(7)+1),IHEYE,STA
8300 *PT,ENDE,J20(6-8) :',11I4 )
8400 GOTO 400
8500 C HERAUSSUCHEN DES RICHTIGEN D/A-BLOCKS
8600 200 IF(IHEYE(2).GT. ENDE(1)) GOTO 100
8700 IF(IHEYE(2) .EQ. ENDE(1) .AND. J1 .GT. ENDE(2)) GOTO 100
8800 C UMWANGLUNG DES DATUMS IN TAGE AB START VON HELIOS
8900 IF (IHEYE(2).EQ.74) NOTAG = J1 -344+1
9000 IF (IHEYE(2).EQ.75) NOTAG = J1 +22
9100 IF (IHEYE(2).EQ.76) NOTAG = J1 +22+365
9200 IF (IHEYE(2).EQ.77) NOTAG = J1 +22+365+366
9300 IF (IHEYE(2).EQ.78) NOTAG = J1 +22+365+366+365
9400 C
9500 C UMWANGLUNG DES D/A-BEGINNS IN TAGE AB START VON HELIOS
9600 IF (START(1).EQ.74) NOSTOA = START(2)-344+1
9700 IF (START(1).EQ.75) NOSTOA = START(2)+22
9800 IF (START(1).EQ.76) NOSTOA = START(2)+22+365
9900 IF (START(1).EQ.77) NOSTOA = START(2)+22+365+366
10000 IF (START(1).EQ.78) NOSTOA = START(2)+22+365+366+365
10100 C
10200 C BERECHNUNG DES POINTERS
10300 NIIV= NOTAG - NOSTOA+1
10400 GOTO 300
10500 400 RETURN
10600 END
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100 C----- KZM:HELIOS3.KORORB
200 /*CONTROL FORM=9999
300 // EXEC FDHCA,NAME=OKORORB,USEPID=KZM
400 SUBROUTINE KORORB(PARA,ORA,WFL,WA7,AWEL,AWA7)
500 C*****
600 C
700 C KORREKTUR DER PARAMETER MIT O/A-DATEN
800 C
900 C STAND VOM 2.3.76 (FASCHINGSDIENSTAG...) PS
1000 C VERBESSERT 19.11.76
1100 C UNTERSCHIED HELIOS1/2 FUER DIE WINKEL SOWIE KORREKTUR
1200 C WEGEN DES ENDLICHEN SONNENRADIUS EINGEBAUT. RPS, 7.3.77
1300 C*****
1400 C
1500 COMMON/HEJAHR/ IHEYE(2)
1600 REAL PARA(3),ORA(20)
1700 C
1800 IF(PARA(1).EQ.0.) RETURN
1900 AWEL = 0.
2000 AWAZ = 0.
2100 KWAZ = 1
2200 PAR1 = PARA(1)
2300 IF (ABS(WAZ).LT.50.)GOTO 300
2400 WAZA = 0.
2500 KWAZ = 0
2600 300 WAZA= WAZ*3.14159/180.
2700 ORAL9 =ORA(9)*149590000./24./60./60.
2800 ORAL8 =ORA(8)*149590000./24./60./60.
2900 IF(WAZ.EQ.0.) GO TO 400
3000 PARA(1)=SQRT((PAR1*SIN(WAZA)+ORAL9)**2
3100 * + (PAR1*COS(WAZA)+ORAL8)**2)
3200 PARA(3)=PARA(3)/ORA(17)*60.
3300 WAZB =ATAN(((PAR1*SIN(WAZA))+ORAL9)/((PAR1*COS(WAZA))+ORAL8) )
3400 AWAZ = WAZB/3.14159*180.-0.25646/ORA(4)
3500 IF (IHEYE(1) .EQ. 2) AWAZ= WAZB/3.14159*180.+0.25646/ORA(4)
3600 IF (KWAZ.EQ.0) AWAZ = 99.
3700 IF (ABS(WEL).GT. 50) GOTO 100
3800 350 BWEL =( WEL +ORA(15) -90.)*3.141959/180
3900 IF (IHEYE(1) .EQ. 2) BWEL = (WEL - ORA(15)+ 90.)*3.141959/180.
4000 IF ( ABS(BWEL *PAR1/PARA(1)).GE.1. ) PAR1 = 0.
4100 AWEL = ARSIN(BWEL*PAR1/PARA(1))/3.14159*180
4200 IF(PAR1 .LE. 0.)PARA(1) =0.
4300 GOTO 200
4400 100 AWEL = 99.
4500 200 RETURN
4600 C KOPR. WENN KEINE WINKEL BERECHNET ODER VORHANDEN
4700 400 D = ORAL9/PAR1
4800 IF(D.GT.1.0) D = 1.0
4900 IF(D.LT.-1.0) D = -1.0
5000 WAZA = ARCSIN(D)
5100 PARA(1) = PAR1*COS(WA7A) + ORAL8
5200 PARA(3) = PARA(3)/ORA(17)*60.
5300 IF(WFL.NE.0.) GO TO 350
5400 RETURN
5500 END
```

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100 C----- KZM:HELIOS3.PRINT
200   SUBROUTINE PPINT(INST1A,INST3,INST1B,HDM)
300 C.....
400 C
500 C   PRINTOUT FUER EINDIMENSIONALE PARAMETER AUF FICHE ODER PAPIER
600 C   DATEN IN DEN COMMON BLOECKEN
700 C#  VERSION 15.11.76
800 C
900 C.....
1000  COMMON /PROT/ CFINT(32),PAPMI(3),PAPM2(3),PAPM1(3),FCHI,
1100  *      XMEL,TEL,XMAZ,TAZ,XNZ
1200  COMMON /ALPHA/ PARM1A(3),PARMA(3),FCH1A
1300  COMMON /PROT1B/CFINTB(32),PARMI(3),PARM2B(3),PARMI(3),FCH1B,XNZB
1400  COMMON /LABL/ JID0(13),JID1(27,4),TSHIF
1500  COMMON /ORBIT/ ORA(20),START(2),ENDE(2)
1600  COMMON /STEUER/ MIST(4),EDFPRI,ISHOPT,LPAOUT,LYPLCT,LPAP,LSPEC,
1700  *      LMIKE,LTIME,LMITTL,LFICHE
1800  COMMON /STEUR2/ LONG,TIMDEL,LOA,IFRPRI,IFRTAP,J1,J2,J3,J4
1900  COMMON /HEJAHR/ IHEYE(2)
2000  COMMON /TAPE/ IHOS,ISTAPE,IRTAPE,ITAPE(10),A(6)
2100 C
2200  LOGICAL*4 INST1A,INST1B,INST3,LONG,LOA,LSTRT/.FALSE./,HDM
2300  LOGICAL*4 MSTRT/.FALSE./,LFICHE,DSTRT/.FALSE./
2400  INTEGER*4 IDPZ/0/,JDPZ/0/, IPAGE/100/,JPAGE/100/
2500  INTEGER*4 NDMA/'NNNN'/, HDMA/'HHHH'/
2600  INTEGER*4 IEND1/42/, IEND2/63/, IF/0/
2700 C
2800 C
2900   IF(.NOT.LONG) GO TO 60
3000 C** LARGER PRINTOUT
3100 C .....
3200   IF(MSTRT) GO TO 2
3300   MSTRT = .TRUE.
3400   IRTAP = IRTAPE
3500 2 CONTINUE
3600   IF(IRTAP.NE.IRTAPE) IDRZ = 0
3700   IRTAP = IRTAPE
3800   IDRZ = IDPZ + 1 - (IDPZ/28)*28
3900   IF(.NOT.(IDRZ.EQ.1 .AND. LFICHE)) GO TO 4
4000 C ORGANISATION DER MICRO FICHE UEBERSCHRIFT
4100   IPAGE = IPAGE+1
4200   IF(IPAGE.EQ.IEND1) WRITE(IFRPRI,119) J1,J2,J3
4300   IF(IPAGE.LT.IEND2) GO TO 4
4400   IE = IF+1
4500   IF(IE.NE.2) GO TO 3
4600   IEND1 = 43
4700   IEND2 = 64
4800 3 CONTINUE
4900   IPAGE = 1
5000   IF( DSTRT) WRITE(IFRPRI,115)
5100   WRITE(IFRPRI,116) IHEYE(1)
5200   WRITE(IFRPRI,117)
5300   WRITE(IFRPRI,118) IHOS,ITAPE(IRTAPE),IHEYE(2),J1,J2,J3
5400 115 FORMAT('*COM#')
5500 116 FORMAT('*COM1',' ** H E L I O S ',I1,' ** ')
5600 117 FORMAT('*COM2',' EINDIMENSIONALE PARAMETER ')
5700 119 FORMAT('*COM3 ',T48,'- CA ',I3)

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5800 118 FORMAT('*COM3', ' RAND: ', I1, ': ', I3, ' ZEIT VON 19', I2, I4, 2I3)
5900 C NEUE SFITENUEBERSCHRIFT
6000 4 CONTINUE
6100 C
6200 IF(IDRZ.EQ.1.AND.DSTRT) WRITE(IFRPRI,100) IHEYE(1),IHEYE(2),IHQS,
6300 * ITAPE(IRTAPE),A(5),A(6),A(1),A(2)
6400 IF(IDRZ.EQ.1.AND. .NOT.DSTRT) WRITE(IFRPRI,113) IHEYE(1),IHEYE(2),
6500 * IHQS,ITAPE(IRTAPE),A(5),A(6),A(1),A(2)
6600 DSTRT = .TRUE.
6700 C
6800 C
6900 IF(.NOT.INST1A) GO TO 20
7000 C INSTRUMENT 11A
7100 TTEL=TEL/1000
7200 TTAZ=TAZ/1000
7300 PPARMI=PARMI(2) /1000
7400 PPARM2=PARM2(2)/ 1000
7500 PPAPM1=PARMI(2)/ 1000
7600 PPRMIA=PARMIA(2)/1000
7700 C
7800 IF(LOA)
7900 * WRITE(IFRPRI,102) J1,J2,J3,J4,PARMI(1),PPARMI,PARMI(3),
8000 * PARM2(1),PPARM2,PARM2(3),PARMI(1),PPARM1,PARMI(3),PARMIA(1),
8100 * PPRMIA,PARMIA(3),XMAZ,TTAZ,XMEL,TTEL,ORA(4)
8200 IF (.NOT.LOA)
8300 * WRITE(IFRPRI,103) J1,J2,J3,J4,PARMI(1),PPARMI,PARMI(3),
8400 * PARM2(1),PPARM2,PARM2(3),PARMI(1),PPARM1,PARMI(3),PARMIA(1),
8500 * PPRMIA,PARMIA(3),XMAZ,TTAZ,XMEL,TTEL
8600 GO TO 40
8700 C
8800 20 IF(.NOT.INST3) GO TO 30
8900 C INSTRUMENT 3
9000 TTEL=TEL/1000
9100 TTAZ=TAZ/1000
9200 PPARMI=PARMI(2) /1000
9300 PPARM2=PARM2(2)/ 1000
9400 PPAPM1=PARMI(2)/ 1000
9500 IF(LOA)
9600 * WRITE(IFRPRI,104) J1,J2,J3,J4,PARMI(1),PPARMI,PARMI(3),
9700 * PARM2(1),PPARM2,PARM2(3),PARMI(1),PPARM1,PARMI(3),
9800 * XMAZ,TTAZ,XMEL,TTEL,ORA(4)
9900 IF(.NOT.LOA)
10000 * WRITE(IFRPRI,105) J1,J2,J3,J4,PARMI(1),PPARMI,PARMI(3),
10100 * PARM2(1),PPARM2,PARM2(3),PARMI(1),PPARM1,PARMI(3),
10200 * XMAZ,TTAZ,XMEL,TTEL
10300 GO TO 40
10400 C
10500 C KEINE BRAUCHBAREN DATEN VON I1A ODER I3
10600 30 WRITE(IFRPRI,111) J1,J2,J3,J4,ORA(4)
10700 GO TO 40
10800 C
10900 C INSTRUMENT 11B
11000 40 CONTINUE
11100 PPARMI=PARMI(2) /1000
11200 PPARM2=PARM2(2)/ 1000
11300 PPAPM1=PARMI(2)/ 1000
11400 IF(.NOT.INST1B) WRITE(IFRPRI,112)
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11500      IF(      INST1R)
11600      *      WRITE(IFRPRI,107) PARM1B(1),PPARM1,PARM1R(2),
11700      *      PARM2B(1),PPARM2,PARM2B(3),PARM1B(1),PPARM1,PARM1R(3)
11800 C
11900      RETURN
12000 C
12100 100 FORMAT('1','HELIOS',I2 , ' 19',I2 , '  NUMER. PARAMETER      3-PU
12200 *NKTE-FIT      BREITER FIT      ALPHA-TEILCHEN      WINKE
12300 *L      ORB INSTR' /' ', 'BAND: ',I1,':',I3, '  JOB:',2A4,2A4/
12400 *      14X,'  VP      TP      NP      VP      TP      NP      VP      TP      NP
12500 *      VP      TP      NP      VA      TA      NA      AZIMUT TAZ  FLEVAT TFL
12600 *      RS      ',/,      14X,'  KM/S 1000K CM**=3  KM/S 1000K CM*
12700 **=3 KM/S 1000K CM**=3  KM/S 1000K CM**=3  GRAD 1000K  GRAD 100
12800 *OK AU      ',/)
12900 113 FORMAT(' ', 'HELIOS',I2 , ' 19',I2 , '  NUMER. PARAMETER      3-PU
13000 *NKTE-FIT      BREITER FIT      ALPHA-TEILCHEN      WINKE
13100 *L      ORB INSTR' /' ', 'BAND: ',I1,':',I3, '  JOB:',2A4,2A4/
13200 *      14X,'  VP      TP      NP      VP      TP      NP      VP      TP      NP
13300 *      VP      TP      NP      VA      TA      NA      AZIMUT TAZ  FLEVAT TFL
13400 *      RS      ',/,      14X,'  KM/S 1000K CM**=3  KM/S 1000K CM*
13500 **=3 KM/S 1000K CM**=3  KM/S 1000K CM**=3  GRAD 1000K  GRAD 100
13600 *OK AU      ',/)
13700 102 FORMAT(1X,4I3,3(' *',F6.1,F6.0,OPF6.2),' *',F6.1,F6.0,OPF6.3,' *',
13800 *2(F6.2,F6.0),' *',F4.3,'  I1A')
13900 103 FORMAT(1X,4I3,3(' *',F6.1,F6.0,OPF6.2),' *',F6.1,F6.0,OPF6.3,' *',
14000 *2(F6.2,F6.0),' *NO O/A I1A')
14100 104 FORMAT(1X,4I3,3(' *',F6.1,F6.0,OPF6.2),' *',I8X,      ' *',
14200 *2(F6.2,F6.0),' *',F4.3,'  I3')
14300 105 FORMAT(1X,4I3,3(' *',F6.1,F6.0,OPF6.2),' *',I8X,      ' *',
14400 *2(F6.2,F6.0),' *NO O/A I3')
14500 111 FORMAT(1X,4I3,' *',T120,' *',F4.3 )
14600 112 FORMAT(1H ,T129,' I1R')
14700 107 FORMAT(13X ,3(' *',F6.1,F6.0,OPF6.2),' *',T120,' I1R')
14800 C
14900 C
15000 C** KURZER PRINTOUT
15100 C .....
15200 60 CONTINUE
15300 JF = IFRPRI
15400 IF(LSTRT) GO TO 62
15500 LSTRT = .TRUE.
15600 JS = J4+J3*60+J2*3600+J1*3600*24
15700 GO TO 63
15800 C KONTROLL OB NEUER PRINTOUT
15900 62 JS = J4+J3*60+J2*3600+J1*3600*24
16000 C TIMDEL = 0.0 ALLE DATEN AUSGEDRUCKT
16100 IF(TIMDEL.EQ.0.0) GO TO 63
16200 IF(JS.LT.JSAV) RETURN
16300 C
16400 C
16500 63 CONTINUE
16600 IF(MSTRT) GO TO 64
16700 MSTRT = .TRUE.
16800 IRTAP = IRTAPE
16900 64 CONTINUE
17000 IF(IRTAP.NE.IRTAPE) JDRZ = 0
17100 IRTAP = IRTAPE

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17200      JDRZ = JDP7+1-(JDRZ/55)*55
17300      IF(.NOT.(JDRZ.EQ.1 .AND. LFICHE)) GO TO 66
17400 C    ORGANISATION DER MICRO FICHE UEBERSCHRIFT
17500      JPAGE = JPAGE+1
17600      IF(JPAGE.EQ.IEND1) WRITE(IFRPP1,119) J1,J2,J3
17700      IF(JPAGE.LT.IEND2) GO TO 66
17800      IE = IE+1
17900      IF(IE.NE.2) GO TO 65
18000      IEND1 = 43
18100      IEND2 = 64
18200      65 CONTINUE
18300      JPAGE = 1
18400      IF(OSTR) WRITE(IFRPP1,115)
18500      WRITE(IFRPP1,116) IHEYE(1)
18600      WRITE(IFRPP1,117)
18700      WRITE(IFRPP1,118) IHOS,ITAPE(IRTAPE),IHEYE(2),J1,J2,J3
18800 C    NEUE SEITENUEBERSCHRIFT
18900      66 CONTINUE
19000      IF(JDRZ.EQ.1.AND.OSTR) WRITE(IFRPP1,200) IHEYE(1),IHEYE(2),IHOS,
19100      *          ITAPE(IRTAPE),A(5),A(6),A(1),A(2)
19200      IF(JDRZ.EQ.1.AND. .NOT.OSTR) WRITE(IFRPP1,204) IHEYE(1),IHEYE(2),
19300      *          IHOS,ITAPE(IRTAPE),A(5),A(6),A(1),A(2)
19400      OSTR = .TRUE.
19500      MODE = NDMA
19600      IF(HDM) MODE = HDMA
19700      IF(LOA) WRITE(JF,201) J1,J2,J3,J4,JID0(2),JID0(1),JID0(5),MODE,
19800      *          ORA(4),ORA(3)
19900      IF(.NOT.LOA) WRITE(JF,202) J1,J2,J3,J4,JID0(2),JID0(1),JID0(5),
20000      *          MODE
20100 C
20200      IF(.NOT.INST1A) GO TO 72
20300      TTAZ = TAZ/1000.
20400      TTEL = TEL/1000.
20500      PPARMI = PARM1(2)/1000.
20600      PPRMIA = PARMIA(2)/1000.
20700      WRITE(JF,203) PARM1(1),PPARM1,PARMI(3),PARMIA(1),PPRMIA,
20800      *          PARMIA(3),XMAZ,TTAZ,XMEL,TTEL
20900      GO TO 80
21000 C    INST.13
21100      72 IF(.NOT.INST3) GO TO 80
21200      TTAZ = TAZ/1000.
21300      TTEL = TEL/1000.
21400      PPARMI = PARM1(2)/1000.
21500      WRITE(JF,205) PARM1(1),PPARM1,PARMI(3),XMAZ,TTAZ,XMEL,TTEL
21600      GO TO 80
21700 C
21800      80 IF(.NOT.INST1B) GO TO 82
21900      PPARMI = PARM1B(2)/1000.
22000      WRITE(JF,206) PARM1B(1),PPARM1,PARMI1B(3)
22100 C
22200      82 CONTINUE
22300      JSV = JS + TIMDEL*60.
22400      RETURN
22500      200 FORMAT('1','HELIOS',I2 , ' 19',I2 ,'          PARAMETER DER P
22600      *OSITIVEN KOMONENTEN IM SONNENWIND
22700      *          ',/' ', 'BAND: ',I1,':',I3,' JOB:',2A4,2A4/
22800      * 14X,'          PROTONEN          ALPHATEILCHEN          WINKEL (PROTONEN)

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22900 * INSTRUMENT PROTONEN MODE OPRIT '
23000 * / 14X,' VP TP NP VA TA NA
23100 * AZIMUT TAZ ELEVAT TEL VP TP NP
23200 * ' RS HSE'/ 14X,' KM/S 1000K CM**=3 KM/S 1000K CM**
23300 *-3 GRAD 1000K GRAD 1000K KM/S 1000K CM**=3
23400 * ' AU GRAD'/)
23500 204 FORMAT(' ','HELIGS',I2 ,' 19',I2 ' PARAMETER DER P
23600 *OSITIVEN KOMPONENTEN IM SONNENWIND
23700 * ',/' ','BAND: ',I1,':',I3,' JOB:',2A4,2A4/
23800 * 14X,' PROTONEN ALPHATEILCHEN WINKEL (PROTONEN)
23900 * INSTRUMENT PROTONEN MODE OPRIT '
24000 * / 14X,' VP TP NP VA TA NA
24100 * AZIMUT TAZ ELEVAT TEL VP TP NP
24200 * ' RS HSE'/ 14X,' KM/S 1000K CM**=3 KM/S 1000K CM**
24300 *-3 GRAD 1000K GRAD 1000K KM/S 1000K CM**=3
24400 * ' AU GRAD'/)
24500 201 FORMAT(1H ,4I3,' *',T109,'*',I4,'/',I1,'/',I1,'/',A1,T121,F4.3,
24600 * F7.1)
24700 202 FORMAT(1H ,4I3,' *',T109,'*',I4,'/',I1,'/',I1,'/',A1,T121,
24800 * 'KEINE 0/A')
24900 203 FORMAT(1H+,14X,F6.1,F6.0,OPF6.2, ' *',F6.1,F6.0,OPF6.3,
25000 * T54,'*',2(F6.2,F6.0),T79,'*I1A*')
25100 205 FORMAT(1H+,14X,F6.1,F6.0,OPF6.2,' *',18X,'*',2(F6.2,F6.0),
25200 * T79 ,'*I3** ')
25300 206 FORMAT(1H+,T85,'*I1B*',F6.1,F6.0,OPF6.2)
25400 END

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100 C----- KZM:HELIOS3.PRDM7
200      SUBROUTINE PRDM7 (INST1A,INST3,INST1B,HDM)
300 C.....
400 C
500 C PRINTOUT FUER FIMDIMENSIONALE PARAMETER **NUR DM7 AUF PAPIER**
600 C DATEN IN DEN COMMON BLOECKEN
700 C# VERSION: 15.03.77
800 C
900 C.....
1000 COMMON /PROT/ CFINT(32),PARMI(3),PARM2(3),PARMI(3),FCHI,
1100      * XMEL,TEL,XMAZ,TAZ,XNZ
1200 COMMON /ALPHA/ PARMIA(3),PARMA(3),FCHTA
1300 COMMON /PROT1B/CFINTB(32),PARMB(3),PARM2B(3),PARMB(3),FCHIB,XNZB
1400 COMMON /LABL/ JID0(13),JID1(27,4),JSHIF
1500 COMMON /ORPIT/ ORA(20),START(2),ENDE(2)
1600 COMMON /STEUER/ MIST(4),EDFPRI,ISHORT,LPAOUT,LYPLOT,LPAR,LSPEC,
1700      * LMIKE,LTIME,LMITTL,LFICHE
1800 COMMON /STEUR2/ LONG,TIMDEL,LOA,IFRPRI,IFRTAP,J1,J2,J3,J4
1900 COMMON /HEJAHR/ IHEYF(2)
2000 COMMON /TAPE/ IHQS,ISTAPE,IRTAPE,ITAPE(10),A(6)
2100 C
2200 LOGICAL*4 INST1A,INST1B,INST3,LONG,LOA,HDM
2300 LOGICAL*4 MSTRT/.FALSE./
2400 INTEGER*4 JDRZ/0/
2500 INTEGER*4 NDMA/'NNNN'/, HDMA/'HHHH'/'
2600 INTEGER*4 IFRPR /7/
2700 C
2800      K1 = J1
2900      K2 = J2
3000      K3 = J3
3100      K4 = J4
3200 C@      L1 = JID0(6)
3300 C@      L2 = JID0(7)
3400 C@      L3 = JID0(8)
3500 C@      L4 = JID0(9)/1000
3600 C** KURZER PRINTOUT
3700 C .....
3800      60 CONTINUE
3900      JF = IFRPR
4000 C
4100      63 CONTINUE
4200      IF(MSTRT) GO TO 64
4300      MSTRT = .TRUE.
4400      IRTAP = IRTAPE
4500      64 CONTINUE
4600 C@      IF(IRTAP.NE.IRTAPE) JDRZ = 0
4700      IRTAP = IRTAPE
4800      JDRZ = JDRZ+1-(JDRZ/55)*55
4900      IF(JDRZ.EQ.1 ) WRITE(IFRPR,200) IHEYF(1),IHEYF(2),IHQS,
5000      * ITAPE(IRTAPE),A(5),A(6),A(1),A(2)
5100      MODE = NDMA
5200      IF(HDM) MODE = HDMA
5300      WRITE(JF,201) K1,K2,K3,K4,JID0(2),JID0(1),JID0(5),MODE,
5400      * ORA(4),ORA(3)
5500 C
5600      IF(.NOT.INST1A) GO TO 72
5700      TIAZ = TAZ/1000.

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5800      TTEL = TEL/1000.
5900      PPARMI = PARM(2)/1000.
6000      PPRMIA = PARMIA(2)/1000.
6100      WRITE(JF,203) PARM(1),PPARMI,PARM(3),PARMIA(1),PPRMIA,
6200      * PARMIA(3),XMAZ,TTAZ,XMEL,TTEL
6300      GO TO 80
6400 C    INST.I3
6500      72 IF(.NOT.INST3) GO TO 80
6600      TTAZ = TAZ/1000.
6700      TTEL = TEL/1000.
6800      PPARMI = PARM(2)/1000.
6900      WRITE(JF,205) PARM(1),PPARMI,PARM(3),XMAZ,TTAZ,XMEL,TTEL
7000      GO TO 80
7100 C
7200      80 IF(.NOT.INST1R) GO TO 82
7300      PPARMI = PARMIB(2)/1000.
7400      WRITE(JF,206) PARMIB(1),PPARMI,PARMIB(3)
7500 C
7600      82 CONTINUE
7700      JSAV = JS + TIMDEL*60.
7800      RETURN
7900      200 FORMAT('1','HELIOS',I2 , ' 10',I2 , '          PARAMETER DER P
8000      *OSITIVEN KOMPONENTEN IM SONNENWIND      ** DM7 **
8100      *      , '/' , 'BAND: ',I1,' ',I3,' JOC:',2A4,2A4/
8200      * 14X,'      PROTONEN          ALPHATEILCHEN      WINKEL (PROTONEN)
8300      *      INSTRUMENT          PROTONEN          MODE      P      HSE '
8400      *      / 14X,'      VP      TP      NP      VA      TA      NA
8500      *      AU      GRAD ' /      14X,'      KM/S 1000K CM**-2      KM/S 1000K CM**-3
8600      * -3      GRAD 1000K      GRAD 1000K          KM/S 1000K      CM**-3
8700      *      , '/'
8800
8900      201 FORMAT(IH ,4I3,'*',T108,'*',I4,'/',I1,'/',I1,'/',A1,' ',F4.2,F7.2)
9000      203 FORMAT(IH+,14X,F6.1,F6.0,0PF6.2, ' ',F6.1,F6.0,0PF6.3,
9100      * T54,'*',2(F6.2,F6.0),T79,'*I1A*')
9200      205 FORMAT(IH+,14X,F6.1,F6.0,0PF6.2,' ',18X,'*',2(F6.2,F6.0),
9300      * T79 , '*I3** ')
9400      206 FORMAT(IH+,T85,'*I1R*',F6.1,F6.0,0PF6.2)
9500      END

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190 C----- KZM:HEL IOS3.PAROUT
200 C.....12.11.76.....
300 C  BESCHREIBUNG DER MAGNETBANDES MIT EINDIM.PARAMETERN
400 C
500 C  JEDER BLOCK BESTEHT AUS 17 REAL*4 (=4 BYTE) WORTEN
600 C  DAS ERSTE WORT GIBT DIE IDENTIFIKATION AN. ES GILT::
700 C      10 LABEL (ZEITEN,ORBIT)
800 C      20 PROTONEN
900 C      20 PROTONEN PARAMETER IIA
1000 C      21 22 KORR. INTEGR.DATEN
1100 C      23 24 IIB DATEN
1200 C      25 PROTONEN IIB
1300 C      30 HELIUM PARAMETER + MAGNETFELD DATEN
1400 C
1500 C  SUBROUTINE PAROUT(INST1A,INST3,INST1B,HDM)
1600 C-----
1700 C
1800 C  OUTPUT DER EINDIMENSIONALEN PARAMETER
1900 C  UNTERPROGR ZU FIT1
2000 C
2100 C-----
2200 C
2300 C      COMMON /PROT/ CFINT(32),PARMI(3),PARM2(3),PARM1(3),FCHI,
2400 C      *          XMEL,TEL,XMAZ,TAZ,XNZ
2500 C      COMMON /PROT1B/CFINTB(32),PARMI(3),PARM2B(3),PARM1B(3),FCHIB,XNZB
2600 C      *          ,DXNB
2700 C      COMMON /ORBIT/ ORA(20)
2800 C      COMMON /HEJAHR/ IHEYE(2)
2900 C      COMMON /OUTP/ OUT(17,8)
3000 C      COMMON /ALPHA/ PARMIA(3),PARMA(3),FCHIA
3100 C      COMMON /LABL/ JID0(13),JID1(27,4),TSHIF
3200 C      COMMON /TAPE/ IHOS,ISTAPE,IRTAPE,ITAPE(10),A(6)
3300 C      COMMON /SEN2/ JIS2(256),FF2(6,4)
3400 C
3500 C      DIMENSION EOUT(136)
3600 C      EQUIVALENCE (OUT(1,1),EOUT(1))
3700 C      LOGICAL HDM,INST1A,INST3,INST1B
3800 C      DATA IFR/22/
3900 C
4000 C      DO 1 I=1,136
4100 C      1  EOUT(I) = 0.
4200 C
4300 C  ERSTER BLOCK : LABELS
4400 C      OUT(1,1) = 10.
4500 C      .....
4600 C      OUT(2,1) = IHEYE(2)
4700 C      IF(IHEYE(1).EQ.2) OUT(2,1) = -OUT(2,1)
4800 C      OUT( 3,1) = JID1(8,1)
4900 C      OUT( 4,1) = JID1(6,1)
5000 C      OUT( 5,1) = ITAPE(IPTAPE)
5100 C      OUT( 6,1) = ORA( 2)
5200 C      OUT( 7,1) = ORA( 3)
5300 C      OUT( 8,1) = ORA( 4)
5400 C      OUT( 9,1) = ORA( 5)
5500 C      OUT(10,1) = ORA( 7)
5600 C      OUT(11,1) = ORA(10)
5700 C      OUT(12,1) = ORA(11)

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```
5800      OUT(13,1) = ORA(12)
5900      OUT(14,1) = ORA(13)
6000      OUT(15,1) = JIDO(1) + 100*JIDO(5)
6100      OUT(16,1) = JIDO(2)
6200      IF(INST3) OUT(16,1) = -OUT(16,1)
6300      OUT(17,1) = ISHIF
6400      IF(.NOT.HDM) OUT(17,1) = -OUT(17,1)
6500 C
6600 C   ZWEITER BLOCK :: PROTONEN PARAMETER      IIA/3
6700      OUT( 1,2) = 20.
6800 C   .....
6900      DO 10 I=1,3
7000          OUT(1+I,2) = PARM1(I)
7100          OUT(4+I,2) = PARM2(I)
7200          OUT(7+I,2) = PARM1(I)
7300      10 CONTINUE
7400      OUT(11,2) = FCHI
7500      OUT(12,2) = XMEL
7600      OUT(13,2) = XMAZ
7700      OUT(14,2) = TEL
7800      OUT(15,2) = TAZ
7900      OUT(16,2) = XNZ
8000      OUT(17,2) = 0.0
8100 C   ZWEITER BLOCK :: PROTONEN INT+I18 KORPIGIERTE ZAEHLPATEN
8200      OUT( 1,3) = 21.
8300      OUT( 1,4) = 22.
8400      OUT( 1,5) = 23.
8500      OUT( 1,6) = 24.
8600 C   .....
8700      DO 20 I=1,16
8800          OUT(1+I,3) = CFINT(I)
8900          OUT(1+I,4) = CFINT(I+16)
9000          OUT(1+I,5) = CFINTB(I)
9100          OUT(1+I,6) = CFINTB(I+16)
9200      20 CONTINUE
9300 C
9400 C           :: PROTONEN PARAMETER      IIB
9500      OUT( 1,8) = 25.
9600 C   .....
9700      DO 25 I=1,3
9800          OUT(1+I,8) = PARM1P(I)
9900          OUT(4+I,8) = PARM2P(I)
10000         OUT(7+I,8) = PARM1B(I)
10100      25 CONTINUE
10200      OUT(11,8) = FCHIB
10300      OUT(12,8) = 0.
10400      OUT(13,8) = 0.
10500      OUT(14,8) = 0.
10600      OUT(15,8) = 0.
10700      OUT(16,8) = XNZB
10800      OUT(17,8) = DXNB
10900 C   DRITTER BLOCK :: ALPHAS PARAMETER + MAGNETFELD DATEN
11000      OUT( 1,7) = 30.
11100 C   .....
11200 C   ALPHA'S      AUS IIA
11300      DO 30 I=1,3
11400          OUT(1+I,7) = PARMIA(I)
```

```
11500      OUT(4+I,7) = PAPMA (I)
11600      30 CONTINUE
11700      OUT(8,7) = FCHIA
11800 C    MAGNETFIELD
11900      DO 40 I=10,17
12000      OUT(I,7) = 0.
12100      40 CONTINUE
12200      IF(FE2(1,1) .EQ. -32513.) GO TO 50
12300      DEGRAD = 2.0*3.14159/360.
12400      BX = FE2(1,1)
12500      BY = FE2(2,1) +1.E-5
12600      BZ = FE2(3,1)
12700      BECL = SQRT(BX**2 + BY**2)
12800      R = SQRT(BX**2 + BY**2 + BZ**2)
12900      PHIB = ATAN2(BY,BX)/DEGRAD
13000      EPSIB = ATAN2(BZ,BECL)/DEGRAD
13100      OUT(10,7) = R
13200      OUT(11,7) = PHIB
13300      OUT(12,7) = EPSIB
13400 C    2.2.78 AB PROD.1.77
13500      OUT(13,7) = FE2(1,1)
13600      OUT(14,7) = FE2(2,1)
13700      OUT(15,7) = FE2(3,1)
13800 C
13900      50 CONTINUE
14000 C
14100 C
14200 C
14300 C    OUTPUT
14400 C    .....
14500      WRITE(IFR      ) ((OUT(I,J),I=1,17),J=1,8)
14600 C 100 FORMAT(8(17A4))
14700 C
14800 C
14900      RETURN
15000      END
```



```

100 C----- KZM:HEL IOS3.PRINTPAP
200 /*CONTROL PEGN=130,TAPE=1,REST=Y,LNES=10,BOX=A1-11
300 //*****
400 //* * HELIOS *
500 //* * PRINTOUT DER PARAMETER VOM PARAMETER TAPE
600 //*****
700 // EXFC FORTRANH
800 //C.SYSPRINT DD DUMMY
900 //C.SYSIN DD *
1000 C.....
1100 C *HELIOS*
1200 C PRINTOUT DER PROTONEN-PARAMETER VOM PARAMETER-TAPE
1300 C# VERSION 1.3.77
1400 C.....
1500 C
1600 C
1700 COMMON /PROT/ CFINT(32),PARM1(3),PARM2(3),PARM1P(3),FCHT,
1800 * XMEI,TEL,XMAZ,TAZ,XNZ
1900 COMMON /ALPHA/ PARMIA(3),PARMA(3),FCHIA
2000 COMMON /PROTIB/CFINTB(32),PARMIB(3),PARM2P(3),PARM1P(3),FCHIB,XNZB
2100 COMMON /LABL/ JID0(13),JID1(27,4),JSHIF
2200 COMMON /DRBIT/ OPA(20),START(2),ENDE(2)
2300 COMMON /STEUER/ MIST(4),EDFPRI,ISHOPT,LPAOUT,LYPLOT,LPAP,LSPEC,
2400 * LMIKE,LTIME,LMITTL,LFICHE
2500 COMMON /STEUR2/ LONG,TIMDEL,LOA,IFRPRI,IFPTAP,J1,J2,J3,J4
2600 COMMON /HFJAHR/ IHEYE(2)
2700 COMMON /TAPE/ IHOS,ISTAPE,IRTAPE,ITAPE(10),A(6)
2800 C
2900 LOGICAL*4 INSTIA,INSTIB,INST3,LONG,LOA,LSTRT/.FALSE./,HOM
3000 LOGICAL*4 LFICHE,FORCE/.FALSE./,FIN/.FALSE./
3100 INTEGER*4 TSTRT(4),TEND(4)
3200 C
3300 REAL*4 DAT(17,8),OUT(17,8)
3400 EQUIVALENCE (DAT(1,1),OUT(1,1))
3500 C
3600 C
3700 IFR = 20
3800 IFRPRI = 9
3900 IRTAPE = 1
4000 C
4100 CALL DATE(A)
4200 MFILES = 1
4300 IT1 = ITIME(0)
4400 C
4500 C INPUT STEUERPARAMETER
4600 WRITE(6,200) (A(I),I=5,6),(A(I),I=1,4)
4700 200 FORMAT(1H1 //TIO,'JOB :: ',2A4/TIO,'DATE :: ',2A4/TIO,
4800 * 'TIME :: ',2A4//)
4900 C
5000 READ(5,100) TSTRT,TEND,LONG,TIMDEL,LFICHE
5100 100 FORMAT(' ',2I4,2I3,'-',2I4,2I3,' LONG:',L2,' TIMDEL:',F5.1,
5200 * ' LFICHE:',L2)
5300 READ(5,101) NFILES,NSPEC
5400 101 FORMAT('ANZAHL DER FILES:',I4,' ANZAHL DER SPEKTREN:',I5)
5500 WRITE(6,202) TSTRT,TEND,LONG,TIMDEL,LFICHE
5600 202 FORMAT(' STEUERPARAMETER:',/' START:',2I4,2I3, ' - BIS:',2I4,
5700 * 2I3, '/' LONG:',L2,' TIMDEL:',F5.1,' LFICHE:',L2)

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```
5800      WRITE(6,201) NFILES,NSPEC
5900      201 FORMAT(' ANZAHL DER FILES:',I4,' ANZAHL DER SPEKTREN:',I5)
6000 C
6100 C      SPOOL BIS STARTZEIT
6200      TTTO = (TSTPT(2)-1)*86 400 + TSTRT(3)*3600 + TSTRT(4)*60
6300      TTT1 = (TEND(2)-1)*86 400 + TEND(3)*3600 + TEND(4)*60
6400      IF(TSTRT(1).EQ.0) GO TO 12
6500      10 CONTINUE
6600      CALL IPPGET(IFR,DAT,544,.FALSE.,LRECL,END,810)
6700      TTTI =( DAT(3,1)-1) *86 400 + DAT(4,1)/1000
6800      IF(TSTPT(1).GT.IFIX(ABS(DAT(2,1))) .OR.
6900      *   TSTRT(1).EQ.IFIX(ABS(DAT(2,1))).AND.TTTI.LT.TTTO) GO TO 10
7000      BACKSPACE IFR
7100      12 CONTINUE
7200 C
7300      NSPEC = 0
7400 C
7500 C      VERARBEITUNGSLOOP
7600 C      .....
7700      10000 CONTINUE
7800      CALL IPPGET(IFR,DAT,544,.FALSE.,LRECL,END,87000)
7900 C
8000      TTTI =( DAT(3,1)-1) *86 400. + DAT(4,1)/1000.
8100      IF(TEND (1).LT.IFIX(ABS(DAT(2,1))) .OR.
8200      *   TEND (1).EQ.IFIX(ABS(DAT(2,1))).AND.TTTI.LT.TTTI) FIN = .TRUE.
8300      IF(ITIME(0).LT.10) FORCE = .TRUE.
8400      IF(FIN.OR.FORCE) GO TO 9000
8500 C
8600 C
8700      IHEYE(1) = 1
8800      IF(OUT(2,1).LT.0.) IHEYE(1) = 2
8900      IHOS = IHEYE(1)
9000      IHEYE(2) = OUT(2,1)
9100      ITAPE(IRTAPE) = OUT(5,1)
9200 C
9300      J1 = OUT(3,1)
9400      J2 = OUT(4,1)/3600 000.
9500      J = OUT(4,1)
9600      J3 = MOD(J,3600 000)/60 000
9700      J4 = MOD(J, 60 000)/ 1 000
9800 C
9900      INST1A = .TRUE.
10000      INST3 = .FALSE.
10100      IF(OUT(16,1).GT.0.) GO TO 20
10200      INST1A = .FALSE.
10300      INST3 = .TRUE.
10400      20 CONTINUE
10500 C
10600 C
10700      LOA = .FALSE.
10800      IF(OUT(7,1).NE.0.0) LOA = .TRUE.
10900      ORA(3) = OUT(7,1)
11000      ORA(4) = OUT(8,1)
11100      JIDO(1) = ABS(OUT(15,1))
11200      JIDO(2) = ABS(OUT(16,1))
11300      HDM = .TRUE.
11400      IF(OUT(17,1).LT.0.) HDM = .FALSE.
```

```
11500      JID0(5) = 0
11600      IF(OUT(15,1).LT.0.) JID0(5) = 7.
11700 C
11800 C      IIA/I3
11900      DO 22 I=1,3
12000          PARM1(I) = OUT(1+I,2)
12100          PARM2(I) = OUT(4+I,2)
12200      22  PARM1(I) = OUT(7+I,2)
12300          FCHI = OUT(11,2)
12400          XMEL = OUT(12,2)
12500          TEL = OUT(14,2)
12600          XMAZ = OUT(13,2)
12700          TAZ = OUT(15,2)
12800          XNZ = OUT(16,2)
12900 C
13000 C      IIR DATEN
13100      DO 24 I=1,3
13200          PARM1B(I) = OUT(1+I,8)
13300          PARM2B(I) = OUT(4+I,8)
13400      24  PARM1B(I) = OUT(7+I,8)
13500          FCH1B = OUT(11,8)
13600          XNZB = OUT(16,8)
13700 C
13800 C      ALPHAS
13900      DO 26 I=1,3
14000          PARM1A(I) = OUT(1+I,7)
14100      26  PARMA(I) = OUT(4+I,7)
14200          FCH1A = OUT(8,7)
14300 C
14400 C
14500      CALL PRINT(INST1A,INST3,INST1B,HDM)
14600      NSPEC = NSPEC + 1
14700 C
14800      GO TO 10000
14900 C
15000 C      END OF FILE ODER END OF TAPE
15100      7000 CONTINUE
15200      WRITE(6,111)
15300      111 FORMAT(' ** END OF FILE ** ')
15400      IF(MFILES.EQ.NFILES) GO TO 9000
15500      MFILES = MFILES+1
15600      GO TO 10000
15700 C
15800 C
15900 C      EXIT
16000      9000 CONTINUE
16100 C      ....
16200      IT2 = ITIME(0)
16300      KTEND = IT1-IT2
16400      IT1 = KTEND/100
16500      IT2 = KTEND-IT1*100
16600      WRITE(6,209) IT1,IT2
16700      209 FORMAT(IT10,' VERBRAUCHTE CPU-ZEIT:',I4,'.',I3)
16800      WRITE(6,205) NSPEC,J1,J2,J3,J4
16900      205 FORMAT(IT10,' ANZAHL DER ZYKLEN:',I10/
17000      * /IT10,' ENDZEIT:',I3,'.',I3,'.',I2,'.',I2)
17100      IF(FORCE) WRITE(6,206)
```

```
17200 206 FORMAT(T10,' CPU-ZEIT ERSCHOEPFT')
17300 IF(FIN) WRITE(6,207)
17400 207 FORMAT(T10,' ENDEZEIT ERREICHT')
17500 WRITE(6,208)
17600 208 FORMAT(T10,'***** END OF JOB *****')
17700 C
17800 STOP
17900 END
18000 $$ MOM:ARCH02.PRINT
18100 //G.FT09F001 DD SYSOUT=M,DCB=(RECFM=FRA,LRECL=133,BLKSIZE=2261)
18200 //G.FT20F001 DD UNIT=TAPE,VOL=SFR=CC29B1,DISP=SHR,LABEL=(1,SL),
18300 // DSN=HOS.PARAMF1
18400 //G.SYSIN DD *
18500 0076 357 08 00-0076 362 00 00 LONG: F TIMDEL:000.0 LFICHF: T
18600 ANZAHL DER FILES: 1 ANZAHL DER SPEKTREN:40000
```

```

100 C ----- KZM:HELIOS3.POLFIT
200 C SUBROUTINE POLFIT
300 C LEAST-SQUARE FIT TO DATA WITH A POLYNOMIAL CURVE
400 C Y = A(1) + A(2)*X + A(3)*X**2 + ...
500 C SUBROUTINE POLFIT(X,Y,SIGMAY,NPTS,NTERMS,MODE,A,CHISQR)
600 C DIMENSION X(1),Y(1),SIGMAY(1),A(1)
700 C DIMENSION SUMX(19),SUMY(10),ARRAY(10,10)
800 C DOUBLE PRECISION X,Y,SUMX,SUMY,XTERM,YTERM,ARRAY,CHISQ
900 C DOUBLE PRECISION DETERM,DELTA,A
1000 C
1100 C ACCUMULATE WEIGHTED SUMS
1200 C
1300 11 NMAX = 2*NTERMS - 1
1400 DO 13 N=1,NMAX
1500 13 SUMX(N) = 0.
1600 DO 15 J=1,NTERMS
1700 15 SUMY(J) = 0.
1800 CHISQ = 0.
1900 21 DO 50 I=1,NPTS
2000 XI = X(I)
2100 YI = Y(I)
2200 31 IF(MODE) 32,37,39
2300 32 IF(YI) 35,37,33
2400 33 WEIGHT = 1. / YI
2500 GO TO 41
2600 35 WEIGHT = 1. / (-YI)
2700 GO TO 41
2800 37 WEIGHT = 1.
2900 GO TO 41
3000 39 WEIGHT = 1. / SIGMAY(I)**2
3100 41 XTERM = WEIGHT
3200 DO 44 N=1,NMAX
3300 SUMX(N) = SUMX(N) + XTERM
3400 44 XTERM = XTERM * XI
3500 45 YTERM = WEIGHT* YI
3600 DO 48 N=1,NTERMS
3700 SUMY(N) = SUMY(N) + YTERM
3800 48 YTERM = YTERM * XI
3900 49 CHISQ = CHISQ + WEIGHT*YI**2
4000 50 CONTINUE
4100 C
4200 C CONSTRUCT MATRICES AND CALCULATE COEFFICIENTS
4300 C
4400 51 DO 54 J=1,NTERMS
4500 DO 54 K=1,NTERMS
4600 N = J + K - 1
4700 54 ARRAY(J,K) = SUMX(N)
4800 DELTA = DETERM(ARRAY,NTERMS)
4900 C IF(DELTA.LT.1.E-50) GO TO 57
5000 IF(DELTA) 61,57,61
5100 57 CHISQR = 0.
5200 DO 59 J=1,NTERMS
5300 59 A(J) = 0.
5400 GO TO 80
5500 61 DO 70 L=1,NTERMS
5600 DO 66 J=1,NTERMS
5700 DO 65 K=1,NTERMS

```

```
5800      N = J + K - 1
5900      65  ARRAY(J,K) = SUMX(N)
6000      66  ARRAY(J,L) = SUMY(J)
6100      70  A(L) = DETERM (ARRAY,NTERMS) / DELTA
6200 C
6300 C      CALCULATE CHI SQUARE
6400 C
6500      IF(NPTS.LE.NTERMS) GO TO 90
6600      71  DO 75 J=1,NTERMS
6700          CHISQ = CHISQ - 2.*A(J)*SUMY(J)
6800          DO 75 K=1,NTERMS
6900              N = J + K - 1
7000          75  CHISQ = CHISQ + A(J)*A(K)*SUMX(N)
7100      76  FREE = NPTS - NTERMS
7200      77  CHISQR = CHISQ / FREE
7300      80  RETURN
7400      90  CHISQR = 1.E5
7500      RETURN
7600      END
7700 C FUNCTION DETERM
7800 C
7900      REAL FUNCTION DETERM*8 (ARRAY,NORDER)
8000      DOUBLE PRECISION ARRAY,SAVE
8100      DIMENSION ARRAY(10,10)
8200 C
8300      10  DETERM = 1.DO
8400      11  DO 50 K=1,NORDER
8500 C
8600 C      INTERCHANGE COLUMNS IF DIAGONAL ELEMENTS IS ZERO
8700 C
8800      IF(ARRAY(K,K)) 41,21,41
8900      21  DO 23 J=K,NORDER
9000          IF(ARRAY(K,J)) 31,23,31
9100      23  CONTINUE
9200          DETERM = 0.DO
9300          GO TO 60
9400      31  DO 34 I=K,NORDER
9500          SAVE = ARRAY(I,J)
9600          ARRAY(I,J) = ARRAY(I,K)
9700      34  ARRAY(I,K) = SAVE
9800          DETERM = -DETERM
9900 C
10000 C      SUBSTRACT PAW K FROM LOWER ROWS TO GET DIAGONAL MATRIX
10100      41  DETERM = DETERM * ARRAY(K,K)
10200          IF(K-NORDER) 43,50,50
10300      43  K1 = K + 1
10400          DO 46 I=K1,NORDER
10500          DO 46 J=K1,NORDER
10600          46  ARRAY(I,J) = ARRAY(I,J) - ARRAY(I,K)*ARRAY(K,J)/ARRAY(K,K)
10700      50  CONTINUE
10800      60  RETURN
10900      END
```

```
100 C ----- KZM:HEL IOS3.PPAROUT
200 C .....19.11.76.....
300 C  BESCHREIBUNG DES MAGNETBANDES MIT EINDIM.PARAMETERN
400 C .....
500 C  INTERNES FORMAT: MPF
600 C    DCB=(RECFM=VBS,LRECL=543,BLKSIZE=5484,DEFN=3)
700 C    DSN=HOS.PARAMF1
800 C
900 C  EXTERNES FORMAT: IM AUSTAUSCH .....
1000 C  .
1100 C  .
1200 C  .
1300 C  JEDER BLOCK BESTEHT AUS 17 REAL*4 (=4 BYTE) WORTEN
1400 C    IBM BINARY FLOAT
1500 C  DAS ERSTE WORT GIBT DIE IDENTIFIKATION AN. ES GILT::
1600 C    10 LABEL (ZEITEN,ORBIT)
1700 C    2.  PROTONEN
1800 C    20 PROTONEN PARAMETER  I1A
1900 C    21 22 KORR. INTEGR.DATEN
2000 C    23 24    I1B    DATEN
2100 C    25  PROTONEN I1B
2200 C    30  HELIUM PARAMETER + MAGNETFELD DATEN
2300 C
2400 C    SUBROUTINE PAROUT(INST1A,INST3,INST1B,HDM)
2500 C .....
2600 C
2700 C  OUTPUT DER EINDIMENSIONALEN PARAMETER
2800 C  UNTERPROGR ZU FIT1
2900 C
3000 C .....
3100 C
3200 C    COMMON /PROT/ CFINT(32),PARMI(3),PAPM2(3),PARMI(3),FCHI,
3300 C    *      XMEL,TEL,XMAZ,TAZ,XNZ
3400 C    COMMON /PROT1B/CFINTB(32),PARMI(3),PAPM2B(3),PARMI(3),FCHI3,XN2B
3500 C    *      ,DXNR
3600 C    COMMON /ORBIT/ ORA(20)
3700 C    COMMON /HEJAHR/ IHEYF(2)
3800 C    COMMON /OUTP/ OUT(17,8)
3900 C    COMMON /ALPHA/ PARMJA(3),PARMA(3),FCHIA
4000 C    COMMON /LABL/ JID0(13),JID1(27,4),JSHIF
4100 C    COMMON /TAPE/  IHOS,ISTAPE,IRTAPE,ITAPE(10),A(6)
4200 C    COMMON /SEN2/ JIS2(256),FF2(6,4)
4300 C
4400 C    DIMENSION EOUT(136)
4500 C    EQUIVALENCE (OUT(1,1),EOUT(1))
4600 C    LOGICAL HDM,INST1A,INST3,INST1B
4700 C    DATA IFR/22/
4800 C
4900 C    DO 1 I=1,136
5000 C  1  EOUT(I) = 0.
5100 C
5200 C
5300 C
5400 C  ERSTER BLOCK : LABELS
5500 C  1  OUT(1,1) = 10.          LABEL IDENTIFICATION
5600 C  .....
5700 C  2  OUT(2,1) = IHEYF(2)    YEAR (WITHOUT 19..)
```



```

5800      IF(IHEYE(1).EQ.2) OUT(2,1) = -OUT(2,1)      + HELIOS-1
5900                                          - HELIOS-2
6000  3   OUT( 3,1) = JID1(8,1)   NUMBER OF DAY
6100  4   OUT( 4,1) = JID1(6,1)   MILLISEC. OF DAY
6200  5   OUT( 5,1) = ITAPE(1,TAPE) INTERNAL TAPENUMBER
6300  6   OUT( 6,1) = ORA(2)      ECLIPT.LONG OF HOS (MEAN EQUINOX)
6400  7   OUT( 7,1) = ORA( 3)     ECLIPT.LONG OF HOS (EARTH-SUN LINE)
6500  8   OUT( 8,1) = ORA( 4)     DISTANCE OF HOS FROM SUN (AU)
6600  9   OUT( 9,1) = ORA( 5)     ECLIPT.LONG OF EARTH
6700 10   OUT(10,1) = ORA( 7)     DISTANCE OF EARTH (AU)
6800 11   OUT(11,1) = ORA(10)     HELIOGR.LONG OF HOS (ASCENDING NODE)
6900 12   OUT(12,1) = ORA(11)     HELIOGR.LAT. OF HOS
7000 13   OUT(13,1) = ORA(12)     NUMBER OF ROTATION OF SUN (REF.TO EARTH)
7100                                          SINCE START OF HOS
7200 14   OUT(14,1) = ORA(13)     NUMBER OF ROTATION OF SUN (REF.TO HELIOS)
7300 15   OUT(15,1) = JID0(1) + 100*JID0(5)
7400                                          FORMAT + 100*( DISTRIBUTION MODE)
7500 16   OUT(16,1) = JID0(2)     BITRATE
7600      IF(INST3) OUT(16,1) = -OUT(16,1) + I1A ON
7700                                          - I3 ON
7800 17   OUT(17,1) = ISHIF      1 / 2 WITHOUT / WITH SHIFT
7900      IF(.NOT.HDM) OUT(17,1) = -OUT(17,1) + HIGH DATA MODE
8000                                          - NORMAL DATA MODE
8100 C
8200 C
8300 C
8400 C   ZWEITER BLOCK :: PROTONEN PARAMETER I1A/3
8500 18   OUT( 1,2) = 20.         IDENTIFICATION LABEL
8600 C   .....
8700      DO 10 I=1,3             PLASMAPARAMETER OF I1A / I3
8800 19-21 OUT(1+I,2) = PARM1(I) NUMERICAL INTEGRATION (1) VELOCITY(KM/SEC)
8900                                          (2) TEMP (K)
9000                                          (3) DENSITY (CM-3)
9100 22-24 OUT(4+I,2) = PARM2(I) THREE POINT FIT
9200 25-27 OUT(7+I,2) = PARM1(I) MAXWELL FIT
9300 10 CONTINUE
9400 28   OUT(11,2) = FCHI        CHI**2 OF MAXWELLFIT
9500                                          FLOW DIRECTION:
9600 29   OUT(12,2) = XMEL        ELEVATION ANGLE
9700 30   OUT(13,2) = XMAZ        AZIMUT ANGLE
9800                                          LESS 9 : PARTICLE FROM
9900                                          RIGHT(NORTH) AS SEEN FROM HELIOS
10000 31   OUT(14,2) = TEL         ELEV.TEMPERATURE
10100 32   OUT(15,2) = TAZ         AZIMUT TEMP
10200 33   OUT(16,2) = XNZ -      ZERO COUNT LEVEL
10300 34   OUT(17,2) = 0.0
10400 C   ZWEITER BLOCK :: PROTONEN INT+I1B KORRIGIERTE ZAHLRATEN
10500 35   OUT( 1,3) = 21.
10600 52   OUT( 1,4) = 22.
10700 69   OUT( 1,5) = 23.
10800 86   OUT( 1,6) = 24.
10900 C   .....
11000      DO 20 I=1,16
11100 36-51 OUT(1+I,3) = CFINT(I)  I1A INTEG.COUNT RATES
11200 53-68 OUT(1+I,4) = CFINT(I+16)
11300 70-85 OUT(1+I,5) = CFINTR(I) I1B COUNT RATES
11400 87-102 OUT(1+I,6) = CFINTR(I+16)

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11500      20 CONTINUE
11600 C
11700 C
11800 C
11900 C          :: PROTONEN PARAMETER      IIB
12000 120 OUT( 1,8) = 25.
12100 C          .....
12200      DO 25 I=1,3          PLASMAPARAMETER OF IIB
12300 121-123
12400      OUT(1+I,8) = PARMIB(I) NUMERICAL INTEGRATION (1) VELOCITY(KM/SEC)
12500          (2) TEMP (K)
12600 124-126
12700          (3) DENSITY (CM-3)
12800 124-126 OUT(4+I,8) = PARM2B(I) THREE POINT FIT
12900 127-129 OUT(7+I,8) = PARM1B(I) MAXWELL FIT
13000      25 CONTINUE
13100 130 OUT(11,8) = FCHIB          CHI**2 OF MAXWELLFIT
13200 131 OUT(12,8) = 0.
13300 132 OUT(13,8) = 0.
13400 133 OUT(14,8) = 0.
13500 134 OUT(15,8) = 0.
13600 135 OUT(16,8) = XNZB          ZERO COUNT LEVEL
13700 136 OUT(17,8) = DXNB          STANDART-DEVIATION OF ZERO COUNT LEVEL
13800 C
13900 C
14000 C
14100 C DITTER PLOCK :: ALPHAS PARAMETER + MAGNETFELD DATEN
14200 103 OUT( 1,7) = 30.
14300 C          .....
14400 C ALPHA'S      AUS I1A
14500      DO 30 I=1,3
14600 104-106 OUT(1+I,7) = PARMIA(I) NUMERICAL INTEGRATION
14700 107-109 OUT(4+I,7) = PARMA (I) MAXWELL FIT
14800      30 CONTINUE
14900 110 OUT(8,7) = FCHIA          CHI**2 OF MAXWELLFIT
15000 C MAGNETFELD
15100      DO 40 I=10,17
15200 111,118-119
15300      OUT(I,7) = 0.
15400      40 CONTINUE
15500      IF (FE2(1,1) .EQ. -32513.) GO TO 50
15600      DEGRAD = 2.0*3.14159/360.          PRELIMINARY MAGNETIC FIELD
15700      BX = FE2(1,1)
15800      BY = FE2(2,1) +1.E-5
15900      BZ = FE2(3,1)
16000      BECL = SQRT(BX**2 + BY**2)
16100      B = SQRT(BX**2 + BY**2 + BZ**2)
16200      PHIB = ATAN2(BY,BX)/DEGRAD
16300      EPSIB = ATAN2(BZ,BECL)/DEGRAD
16400 112 OUT(10,7) = B          MAGNITUDE (GAMMA*10)
16500 113 OUT(11,7) = PHIB          PHI (C.OUTWARD / COUNTERCLOCK)
16600 114 OUT(12,7) = EPSIB          EPSILON (GT.ZERO:NORTH OF ECL)
16700 C 2.2.78 AB PROD.1.77
16800 115 OUT(13,7) = FE2(1,1)          BX (10*GAMMA)
16900 116 OUT(14,7) = FE2(2,1)          BY
17000 117 OUT(15,7) = FE2(3,1)          BZ
17100 C

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```
17200 50 CONTINUE
17300 C
17400 C
17500 C
17600 C OUTPUT
17700 C .....
17800 WRITE(IFR ) ((OUT(I,J),I=1,17),J=1,8)
17900 C
18000 C
18100 RETURN
18200 END
```

*KZM:HEL IOS2.HOSINP

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100 C-----KZM:HEL IOS2.HOSINP
200 SUBROUTINE HOSINP(PRINT,IEXP,ITIME,IEND,IBACK,HDMM,HDMC)
300 C.....
400 C INPUTORGANISATION DER HELIOSDATEN
500 C UEBERGABE JEWEILS EIN VOLLST. ODER UNVOLLST (HDM) MESSCYCLUS
600 C
700 C INPUT SORTED DATA TAPE (INPUT-UNIT : 15)
800 C
900 C PRINT : .TRUE. PRINTOUT DER 4 EDF'S EINES BLOCKES
1000 C IEXP : 1-I1 2-I2 3- 4 ALLE EXP UERFERGREN
1100 C JID0,JID1,FINT,FIB1,FE2 WERDEN IMMER UEBERGEREN
1200 C WENN NEGATIV,DANN WIRD NACH DER IN ITIME ANGEGERENEN
1300 C GESUCHT
1400 C ITIME : (1 TAG), (2 STD), (3 MIN)
1500 C
1600 C IBACK(4) : (1),(2),(3),(4) WENN OK <FUER HDM>
1700 C 0 AN ENTSPRECHENDER STELLE WENN NICHT VORHANDEN
1800 C IEND : 0-OK 1-LESEFEHLER 2-EOF 3-FOT (5-INITL START)
1900 C HDMM : .TRUE. WENN HDM (MIT EVT. SCHWUNGRAD)
2000 C HDMC : .TRUE. WENN HDM VOLLSTAENDIG
2100 C
2200 C.....
2300 COMMON /STEUER/ MIST(4)
2400 LOGICAL MIST
2500 COMMON /INP16/ ID0(13),ID1(27,4),I1(4),INT(32,4),I2(4),IS1(32,4),
2600 * I3(4),I1B(32,4),I4(4),IS2(12,4),IF2(22,4)
2700 INTEGER*2 ID0,ID1,I1,I2,I3,I4,INT,IS1,I1B,IS2,IE2
2800 C
2900 COMMON /LABL/ JID0(13),JID1(27,4),ISHIF
3000 COMMON /SEN1/ FINT(32),FI1B(32),FIS1(7,7,32)
3100 COMMON /SEN2/ JIS2(256),FE2(6,4)
3200 C
3300 DIMENSION FINH(8,4),FI1BH(8,4),JIS2H(64,4),FIS1H(7,7,8,4)
3400 EQUIVALENCE (FINH(1,1),FINT(1)),(JIS2H(1,1),JIS2(1)),
3500 * (FI1BH(1,1),FI1B(1)),(FIS1(1,1,1),FIS1H(1,1,1,1))
3600 C
3700 C
3800 LOGICAL HDM/.FALSE./,NDM/.FALSE./,FOT/.FALSE./,EOF/.FALSE./,GAP
3900 * /.FALSE./, PRINT,TEST,HDM,HDMC,STRT/.TRUE./,TQW
4000 LOGICAL*4 T(7),T5/.FALSE./,LSHIF
4100 DATA IMX4 /5/
4200 INTEGER*4 TEST1(16)/0,0,0,0,0,1,1,9,1,9,9,9,0,9,0,0/, IPACK(4)
4300 INTEGER*4 IHMDA /5/,BIT1/Z680/
4400 DIMENSION ITIME(3)
4500 C
4600 C INITL.RESET
4700 DO 1 I=1,1632
4800 1 FINT(I) = -1.
4900 DO 2 I=1,256
5000 2 JIS2(I) = -1
5100 C
5200 LINE = 0
5300 IF(STRT.OR.IFND.EQ.5) GO TO 1000
5400 C VERTEILER
5500 IF(EOF.AND.IEND.EQ.3) RETURN
5600 EOF = .FALSE.
5700 IF(HDM) GO TO 500

```

```
5800      IF(IMX4.NE.5) GO TO 200
5900 C
6000 C   INITIAL INPUT UND INPUT BEI NDM
6100 C
6200 1000 CALL HOSIN (IEXP,ITIME,IEND)
6300      IF(IEND.EQ.3) GO TO 5
6400      STRT = .FALSE.
6500      IF(IEND.EQ.1) GO TO 1000
6600 C   EOT / EOF
6700      IF(.NOT.(IEND.EQ.2.AND.EOF)) GO TO 10
6800 C END OF TAPE (BEI WEITEREM INPUT MUSS IEND=3 GEFSETZT WERDEN)
6900      5 HDM = .FALSE.
7000      HDMM = .FALSE.
7100      NDM = .FALSE.
7200      IMX4 = 5
7300      EOT = .TRUE.
7400      IEND = 3
7500      RETURN
7600 C
7700      10 CONTINUE
7800      EOF = .FALSE.
7900      IF(IEND.EQ.2) EOF = .TRUE.
8000      IF(EOF.AND.NDM) GO TO 1000
8100      IF(EOF.AND.HDM) GO TO 1000
8200      IMX4 = 1
8300 C
8400 C   MODE BESTIMMEN WENN ID OK
8500      DO 12 J=1,4
8600      ID = ID1(15,J)
8700      IF(.NOT. TQW(ID,BIT1)) GO TO 12
8800      IF(ID1(10,J).EQ.0) GO TO 200
8900      GO TO 500
9000      12 CONTINUE
9100 C   ID BAD : SCHWUNGRAD EFFEKT MOEGLICH
9200      IF(NDM) GO TO 200
9300      IF(HDM) GO TO 500
9400 C
9500      GO TO 1000
9600 C
9700 C
9800 C   NORMAL DATA MODE
9900 C   .....
10000 C
10100      200 CONTINUE
10200      HDM = .FALSE.
10300      HDMM = .FALSE.
10400      NDM = .TRUE.
10500      DO 202 J=1,4
10600      202 IBACK(J) = 0
10700 C
10800 C
10900 C   MIST ABFRAGE
11000      203 IF(.NOT.MIST(IMX4)) GO TO 205
11100 C   WRITE(6,100) (ID0(I),I=1,13)
11200 C 100 FORMAT(' EDF IN ID0(IMX4) SCHLECHT:',13I6)
11300      204 IMX4 = IMX4+1
11400      IF(IMX4.EQ.5) GO TO 1000
```

```
11500      GO TO 203
11600      205 CONTINUE
11700      C
11800      IF(IDO(5).NE.7) CALL TIME1(T,FAC,IMX4,HDM,LINF)
11900      IF(.NOT.T(5) ) T5 = .FALSE.
12000      IF((T(5).OR.T5).AND.IDO(5).NE.7)
12100      *      CALL NDMDBL(IEXP,IMX4,FAC,T,T5,&204,&220)
12200      C
12300      C
12400      C      MODEAENDERUNG IM BLOCK
12500      IF(I1(IMX4).EQ.32) GO TO 208
12600      IF(ID1(10,IMX4).NE.0) WRITE(6,108) IMX4,(ID1(10,I),I=1,4),
12700      *      (IDO(I),I=1,4),(IDJ(I),I=10,12)
12800      108 FORMAT(T10,' @@ HDM IN NDM GEFUNDEN:',I1,4I2,4I4,3I6)
12900      GAP = .FALSE.
13000      IHMOA = 5
13100      IF(ID1(10,IMX4).NE.0) IX4 = IMX4
13200      IF(ID1(10,IMX4).NE.0) GO TO 506
13300      C      NDM : DATEN ABER IN HDM FORMAT
13400      C      WRITE(6,101) (IDO(I),I=1,5),(IDO(I),I=10,13),ID1(10,IMX4)
13500      C      101 FORMAT(T10,' @@ NDM DATEN STEHEN IN HDM FORMAT :',5I5,4I6,15)
13600      GO TO 204
13700      C      SHIFT EVENTUELL MIT SCHWUNGR,WENN INITL BAD
13800      208 CONTINUE
13900      ISHIF = 1
14000      IF(ID1(11,IMX4).LT.0 .AND. TQW(ID,BIT1) ) ISHIF = 2
14100      IF(TQW(ID,BIT1)) GO TO 211
14200      ISHIF = MOD (ISHIF,2) + 1
14300      211 CONTINUE
14400      C      TRANSFER DER DATEN
14500      CALL IDCONV(0,0,IDO,ID1,JIDO,JID1)
14600      CALL IDCONV(IMX4,1,IDO,ID1,JIDO,JID1)
14700      C      ZEIT AUSREISSER MIT T=0 BIS 1MIN
14800      IF(.NOT.(JID1(8,1).EQ.0
14900      WRITE(6,102) IDO
15000      102 FORMAT(T10,' @@ ZEIT AUSREISSER:',I3I7)
15100      GO TO 204
15200      209 CONTINUE
15300      C
15400      DO 212 I=1,6
15500      212 FE2(I,1) = IE2(I,IMX4)
15600      DO 213 I=1,32
15700      FINT(I) = FCONV(INT(I,IMX4))
15800      213 FI1B(I) = FCONV(I1B(I,IMX4))
15900      C
16000      C
16100      IF(ABS(IEXP).EQ.2) GO TO 215
16200      I = 1
16300      DO 214 M=1,9
16400      DO 214 L=1,5
16500      DO 214 K=1,5
16600      FIS1(K,L,M) = FCONV(IS1(I,IMX4))
16700      214 I = I+1
16800      IF(ABS(IEXP).EQ.1) GO TO 220
16900      C
17000      215 DO 216 I=1,128
17100      216 JIS2(I) = JCONV(IS2(I,IMX4))
```



```
17200 C
17300 220 IBACK(IMX4) = IMX4
17400     IMX4 = IMX4 + 1
17500 C   RETURN INS CALLING PROGRAMM
17600     RETURN
17700 C
17800 C
17900 C
18000 C   HIGH DATA MODE
18100 C   .....
18200 C
18300 500 CONTINUE
18400     IX4 = 1
18500 506 CONTINUE
18600     NDM = .FALSE.
18700     HDM = .TRUE.
18800     DO 501 J=1,4
18900 501 IBACK(J) = 0
19000     IF(GAP) GO TO 540
19100 C
19200 C SUCH NACH HDMO
19300     IHDMO = IX4
19400     DO 502 J=IX4,4
19500         ID = ID1(15,J)
19600         IF(ID1(10,J).EQ.0 ) GO TO 590
19700         IF(ID1(10,J).EQ.1 .AND. TEST(ID,TEST1)) GO TO 503
19800 502 IHDMO = IHDMO + 1
19900 C FEHLER : KEIN HDMO GEFUNDEN (SCHWUNGRAD)
20000     IF(IHDMOA.EQ.5) GO TO 1000
20100     IHDMO = IHDMOA
20200 C
20300 503 IHDMOA = IHDMO
20400 C TRANSFER VON IHDMO-4 (LOOP UEBER J)
20500     CALL IDCONV(0,0,IDO, ID1, JIDO, JID1)
20600     IHDM = 1
20700     DO 520 J=IHDMO,4
20800 C MIST ABFRAGE
20900     IF(MIST(J)) GO TO 599
21000 C TEST OB MODE AENDERUNG (WENN ID OK)
21100     ID = ID1(15,J)
21200 C     IF(ID1(10,J).EQ.0 .AND. TQW(ID,BIT1)) GO TO 590
21300     IF(ID1(10,J).EQ.0 ) GO TO 590
21400 C
21500 505 CONTINUE
21600     IF(IDO(5).NE.7) CALL TIME1(T,FAC,J,HDM,LINE)
21700     IF(.NOT.T(5)) T5 = .FALSE.
21800     CALL IDCONV(J,IHDM,IDO, ID1, JIDO, JID1)
21900     IF(.NOT.TQW(JID1(15,IHDM),BIT1).OR.IHDM.EQ.JID1(10,IHDM))GOTO 510
22000 C IHDM STIMMT NICHT MIT INITL-HDM UEBEREIN
22100     WRITE(6,105) J,IHDM,JID1(10,IHDM),JIDO
22200 105 FORMAT(T10,' @@ FEHLER IN IHDM-JID1(10,J):',3I3,2X,5I5,8I6)
22300     GO TO 599
22400 510 CONTINUE
22500 C
22600     DO 512 I=1,6
22700 512 FE2(I,IHDM) = IE2(I,J)
22800     DO 513 I=1,8
```

```
22900      FINTH(I,IHDM) = FCONV(INT(I,J))
23000  513  FI1BH(I,IHDM) = FCONV(I1B(I,J))
23100 C
23200      IF(IABS(IEXP).EQ.2) GO TO 515
23300      III = 7
23400      IF(I2(J).EQ.336) III = 6
23500      I = 1
23600      DO 514 M=1,8
23700      DO 514 L=1,7
23800      DO 514 K=1,III
23900      FIS1H(K,L,M,IHDM) = FCONV(IS1(I,J))
24000  514  I = I+1
24100      IF(IABS(IEXP).EQ.1) GO TO 519
24200 C
24300  515  DO 516 I=1,64
24400  516  JIS2H(I,IHDM) = JCONV(IS2(I,J))
24500 C
24600  519  CONTINUE
24700      IBACK(IHDM) = IHDM
24800      IHDM = IHDM+1
24900  520  CONTINUE
25000 C
25100 C
25200 C
25300 C      INPUT NEUEN BLOCK
25400 C
25500  2000 CALL HOSIN (IEXP,ITIME,IEND)
25600      IF(IEND.EQ.3) GO TO 5
25700 C
25800      IF(IEND.EQ.1) GO TO 2000
25900      IF(.NOT.(IEND.EQ.2 .AND. EOF) ) GO TO 531
26000      GO TO 5
26100 C
26200  531  CONTINUE
26300      EOF = .FALSE.
26400      IF(IEND.NE.2) GO TO 533
26500      EOF = .TRUE.
26600      GO TO 2000
26700 C MODE AENDERUNG
26800  533  J = 1
26900      ID = ID1(15,1)
27000      IF(ID1(10,1).EQ.0) GO TO 590
27100      IF(ID1(10,1).EQ.0 .AND. TEST(ID,TEST1)) GO TO 590
27200 C      SUICHE NACH HDMO
27300      IHDMO = 1
27400      DO 535 J=1,4
27500      ID = ID1(15,J)
27600      IF(ID1(10,J).EQ.1 .AND. TEST(ID,TEST1)) GO TO 539
27700  535  IHDMO = IHDMO + 1
27800 C      HDMO NICHT GEFUNDEN (SCHWUNGRAD)
27900      IHDMO = IHDMOA
28000      GO TO 540
28100 C
28200 C      HDMO GEFUNDEN : TEST OB LUECKE
28300  539  IHDMOA = IHDMO
28400      IF(IHDMO.EQ.IHDMO0) GO TO 540
28500 C      LUECKE : UEBERGABE DER BISHERIGEN WERTE
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28600      GAP = .TRUE.
28700      GO TO 600
28800 C
28900 C    TRANSFER DER DATEN
29000      540 CONTINUE
29100      IF(IHDM00.EQ.1 .AND. .NOT.GAP) GO TO 600
29200      IF (GAP) CALL IDCONV(0,0,IDO,ID1,JIDO,JID1)
29300      GAP = .FALSE.
29400      IS = IHDM00-1
29500      IF(IHDM00.EQ.1) IS = 4
29600      IHDM = 5-IS
29700      DO 560 J=1,IS
29800      IF(MIST(J)) GO TO 599
29900 C    TEST OB MODE AEDERUNG
30000      ID = ID1(15,J)
30100      IF(ID1(10,J).EQ.0 .AND. TEST(ID,TEST1)) GO TO 590
30200      IF(ID1(10,J).EQ.0 ) GO TO 590
30300      IF(IDO(5).NE.7) CALL TIME1(T,FAC,J,HDM,LINE)
30400      CALL IDCONV(J,IHDM,IDO,ID1,JIDO,JID1)
30500      IF(.NOT.TQW(JID1(15,IHDM),BIT1).OR.IHDM.EQ.JID1(10,IHDM))GOTO 543
30600 C    IHDM STIMMT NICHT
30700      WRITE(6,105) J,IHDM,JID1(10,J),JIDO
30800      GO TO 599
30900      543 CONTINUE
31000 C
31100      DO 544 I=1,6
31200      544 FE2(I,IHDM) = IE2(I,J)
31300      DO 546 I=1,8
31400      FINTH(I,IHDM) = FCONV(INT(I,J))
31500      546 FI1BH(I,IHDM) = FCONV(I1B(I,J))
31600 C
31700      IF(IABS(IEXP).EQ.2) GO TO 550
31800 C
31900      III = 7
32000      IF(I2(J).EQ.336) III = 6
32100      I = 1
32200      DO 548 M=1,8
32300      DO 548 L=1,7
32400      DO 548 K=1,III
32500      FIS1H(K,L,M,IHDM) = FCONV(IS1(I,J))
32600      548 I = I+1
32700      IF(IABS(IEXP).EQ.1) GO TO 555
32800 C
32900      550 DO 556 I=1,64
33000      556 JIS2H(I,IHDM) = JCONV(IS2(I,J))
33100 C
33200      555 CONTINUE
33300      IBACK(IHDM) = IHDM
33400      IHDM = IHDM + 1
33500      560 CONTINUE
33600 C
33700      GO TO 600
33800 C
33900 C    NEVER START
34000      599 CONTINUE
34100      HDM = .FALSE.
34200      NDM = .FALSE.

```

```
34300      GO TO 1000
34400 C    VERARBEITUNG BEI MODE AENDERUNG
34500      590 NDM = .TRUE.
34600      HDM = .FALSE.
34700      IMX4 = J
34800      WRITE(6,109)IMX4,((ID1(I),I=1,4),(ID2(I),I=1,4),(ID3(I),I=10,13)
34900      109 FORMAT(T10,' @@ NDM IM HDM GEFUNDEN:',I1,4I2,4I4,4I6)
35000      GO TO 205
35100 C
35200      600 CONTINUE
35300 C    RETURN HDM : SHIFT BESTIMMUNG (EVENTUELL SCHWUNGRAD)
35400      LSHIF = .FALSE.
35500      HDMC = .TRUE.
35600      HDMM = .TRUE.
35700      DO 601 J=1,4
35800          IF(IBACK(J).EQ.0) HDMC = .FALSE.
35900          IF(IBACK(J).EQ.0) GO TO 601
36000          IF(.NOT. (TEST(JID1(15,J),TEST1))) GO TO 601
36100          ISHIF = 1
36200          IF(JID1(11,J).LT.0) ISHIF = 2
36300          LSHIF = .TRUE.
36400      601 CONTINUE
36500 C    ALLES BAD
36600      IF(.NOT.LSHIF) ISHIF = MOD(ISHIF,2) + 1
36700 C
36800      602 CONTINUE
36900 C    ZEIT AUSREISSER MIT T = 0 BIS 1MIN
37000      IF(.NOT.(JID1(8,1).EQ.0 .AND. JID1(6,1).LT.60 000)) GO TO 603
37100      WRITE(6,102 ) ID0
37200      GO TO 1000
37300 C    RETURN INS CALLING PROGRAMM
37400      603 CONTINUE
37500      RETURN
37600      END
```



```

100 C-----KZM:HEL IOS2.HOSIN
200 SUBROUTINE HOSIN (IEXP,ITIME,IEND)
300 C .....10.11.76.....
400 C INPUT 1 RECORD = 4 EDF VOM SORTED DATA TAPE
500 C
600 C PRINTOUT : PRINT=.TRUE.
700 C RETURN IEND : 0 OK
800 C 1 LESEFEHLER
900 C 2 END OF FILE
1000 C <3 END OF TAPE>
1100 C
1200 Ca IEXP : 1-I1 2-I2 3-I3
1300 C IEXP WENN NEGATIV DANN WIRD NACH DER ZFIT IN ITIME GESUCHT
1400 C ITIME : ITIME(1):TAG,ITIME(2):HOURE,ITIME(3):MIN
1500 C MIST(4) : .TRUE. WENN IM EDF NUR (-1 = -32513) STEHEN
1600 C IPROG:1 HOSIN WIRD VON FITPROGR VERWENDET (DM7) (IDO(1)=999)
1700 C DM7 NICHT GERECHNET
1800 C IPROG:2 HOSIN WIRD VON LOGBUCH-JOB VERWENDET
1900 C IDO(1) = 998 DM7 GERECHNET
2000 C
2100 C UP : HPRINT INPNOH (NOH INPUTROUTINE UEBER MEHRERE TAPES)
2200 C
2300 C .....
2400 COMMON IDAT(2500)
2500 INTEGER*2 IDAT
2600 COMMON /STEUER/ MIST(4),PRINT,LSHORT
2700 LOGICAL MIST,PRINT,LSHORT
2800 COMMON /INP16/ ID0(13),ID1(27,4),I1(4),INT(32,4),I2(4),IS1(392,4),
2900 * I3(4),I1B(32,4),I4(4),IS2(128,4),IE2(22,4)
3000 COMMON /INP32/ JINT(32,4),JIS1(392,4),JI1B(32,4),JIS2(128,4),
3100 * JIE2(22,4),
3200 * JI1(4),JI2(4),JI3(4),JI4(4),JID0(13),JID1(27,4)
3300 COMMON /STEUR2/ LONG,TIMDEL,LOA,IFRPRI,IFRTAP,J1,J2,J3,J4,
3400 * LLDM7,LMIST
3500 INTEGER*2 ID0,ID1,I1,I2,I3,I4,INT,IS1,I1B,IS2,IE2
3600 INTEGER*4 JID0,JID1,JI1,JI2,JI3,JI4,JINT,JIS1,JI1B,JIS2,JIE2
3700 C
3800 LOGICAL*4 FEOF,FRED,FEOT
3900 DIMENSION ITIME(3)
4000 INTEGER*4 IPROG /2/
4100 LOGICAL LDM7/.FALSE./, LPRI1/.TRUE./,LLDM7,LMIST
4200 C
4300 C
4400 IF(IDO(1).EQ.999) IPROG=1
4500 C
4600 C
4700 1 IEND = 0
4800 CALL INPNOH (FEOF,FRED,FEOT)
4900 C
5000 IF(FEOT) GO TO 1002
5100 C
5200 IF(IEXP.GT.0) GO TO 2
5300 C SUCH NACH DER ZEIT
5400 C IF(ITIME(1).LT.200 .AND. IDAT(10).GT.200) GO TO 1
5500 IF(ITIME(1).GT.IDAT(10) ) GO TO 1
5600 IF(ITIME(1).LT.IDAT(10) ) GO TO 2
5700 IF(ITIME(2).GT.IDAT(11) ) GO TO 1

```

```
5800      IF(ITIME(2).LT.IDAT(11) ) GO TO 2
5900      IF(ITIME(3).GT.IDAT(12) ) GO TO 1
6000 C
6100      2 CONTINUE
6200      IF(FEOF) GO TO 1000
6300      IF(FRED) GO TO 1001
6400 C
6500      8600 CONTINUE
6600 C      START: DISTR.MODE 7 UEBERSPRINGEN
6700      IF(IDAT(5).NE.7) GO TO 5
6800      IF(LDM7.AND.IPROG.EQ.1) GO TO 1
6900      IF(LDM7.AND.IPROG.EQ.2) GO TO 6
7000      LDM7 = .TRUE.
7100      WRITE(6,203) (IDAT(I),I=1,13)
7200      203  FORMAT(T10,' @@ START DM7:',13I7)
7300      IF(IPROG.EQ.1) GO TO 1
7400      GO TO 6
7500      5 CONTINUE
7600 C      ENDE : DISTR.MODE 7
7700      IF(.NOT.LDM7) GO TO 6
7800      LDM7 = .FALSE.
7900      WRITE(6,204) (IDAT(I),I=1,13)
8000      204  FORMAT(T10,' @@ ENDE  DM7:',13I7)
8100      6 CONTINUE
8200      LDM7 = LDM7
8300 C
8400      DO 3 I=1,4
8500      3  MIST(I) = .TRUE.
8600 C
8700 C      TRANSFER DER DATEN VON IDAT -> COMMON /INP16/
8800 C      LABEL
8900      DO 10 I=1,13
9000      10  IDO(I) = IDAT(I)
9100      KI = 13
9200      DO 11 J=1,4
9300      DO 12 I=1,19
9400      K = KI+I
9500      12  ID1(I,J) = IDAT(K)
9600      KI = K
9700      11 CONTINUE
9800 C      JIA INTEGR.DATEN
9900      K = 90
10000     DO 13 J=1,4
10100     III = K+1
10200     II2 = (K+1+IDAT(K)) - 1
10300     I1(J) = IDAT(K)
10400     I = 1
10500     DO 14 II=III,II2
10600     IF(IDAT(II).NE.-32513) MIST(J) = .FALSE.
10700     INT(I,J) = IDAT(II)
10800     14  I = I+1
10900     13  K = K+1+IDAT(K)
11000 C      JIA 3D-DATEN
11100     DO 15 J=1,4
11200     III = K+1
11300     II2 = K+IDAT(K)
11400     I2(J) = IDAT(K)
```



```
11500      I = 1
11600      DO 16 II=III,II2
11700          IF(IDAT(II).NE.-32513) MIST(J) = .FALSE.
11800          IS1(I,J) = IDAT(II)
11900      16 I = I+1
12000      15 K = K+1+IDAT(K)
12100 C     J18 DATEN
12200          DO 17 J=1,4
12300              III = K+1
12400              II2 = K+IDAT(K)
12500              I3(J) = IDAT(K)
12600              I = 1
12700          DO 18 II=III,II2
12800              IF(IDAT(II).NE.-32513) MIST(J) = .FALSE.
12900              I1B(I,J) = IDAT(II)
13000      18 I = I+1
13100      17 K = K+1+IDAT(K)
13200 C     J2 DATEN
13300          DO 19 J=1,4
13400              III = K+1
13500              II2 = K+IDAT(K)
13600              I4(J) = IDAT(K)
13700              I = 1
13800          DO 20 II=III,II2
13900              IF(IDAT(II).NE.-32513) MIST(J) = .FALSE.
14000              IS2(I,J) = IDAT(II)
14100      20 I = I+1
14200      19 K = K+1+IDAT(K)
14300 C     INITIAL WORDS
14400          DO 22 J=1,4
14500          DO 22 I=20,27
14600              ID1(I,J) = IDAT(K)
14700      22 K=K+1
14800 C     MAGNETFELD DATEN
14900          DO 21 J=1,4
15000          DO 21 I=1,22
15100              IE2(I,J) = IDAT(K)
15200      21 K = K+1
15300 C.....
15400 C
15500 C     BITRATEN KORREKTUR
15600          IF(IDO(1).EQ.5 .AND. IDO(2).EQ.32) IDO(2) = 4096
15700          IF(IDO(1).EQ.1 .AND. IDO(2).EQ. 0) IDO(2) = 2048
15800          IF(.NOT.(IDO(1).EQ.1 .AND. IDO(2).EQ.256)) GO TO 28
15900          IF(LPRI1) WRITE(6,103) (IDO(I),I=1,13)
16000      103 FORMAT(T10,' @@ FM:1/BR:256->KORR:2048 ',3I4,10I6)
16100          IDO(2) = 2048
16200          LPRI1 = .FALSE.
16300          GO TO 29
16400      28 LPRI1 = .TRUE.
16500      29 CONTINUE
16600 C
16700 C
16800 C
16900          L = 0
17000          DO 30 J=1,4
17100              IF(MIST(J)) L = L+1
```

```
17200      30 CONTINUE
17300 C
17400      LIM = 4
17500 C      IF(IDAT(2).LE.256) LIM = 4
17600 C
17700 C      BLOCK SCHLECHT
17800      IF(L.GE.LIM) WRITE(6,200) (IDO(I),I=1,13)
17900      200 FORMAT(' BLOCK SCHLECHT BEI IDO:',13I6)
18000 C
18100 C
18200 C      ZEITKONTROLLE NUR WENN MINDESTENS LIM-4 BLÖCKE OK
18300      IF(L.LT.LIM .AND. IDAT(5).NE.7) CALL TIME0
18400      IF(L.LT.LIM) CALL TIME7
18500 C
18600 C      PRINTOUT DER 4 EDF'S
18700      JK = 0
18800      IF(PRINT) CALL HPRINT (JK)
18900 C
19000      IF(L.GE.LIM) GO TO 1
19100      31 CONTINUE
19200      RETURN
19300 C
19400 C      END OF FILE EXIT
19500      1000 IEND=2
19600      RETURN
19700 C      READ ERROR EXIT
19800      1001 IEND=1
19900      WRITE(6,201) (IDO(I),I=1,13)
20000      201 FORMAT(' LESEFEHLER BEI ODER NACH BLOCK:',13I6)
20100      WRITE(6,202)
20200      202 FORMAT(' STOP DES JOBS *****')
20300      STOP
20400 C      END OF TAPE EXIT
20500      1002 IEND=3
20600      RETURN
20700      END
20800      SUBROUTINE INPNOH (FEOF,FRED,FEOT)
20900 C      INPUT DER DATEN UEBER MEHRERE TAPES
21000 C
21100      COMMON LRECL,IN
21200      COMMON /TAPE/ IHOS,ISTAPE,IRTAPE,ITAPE(10),A(6)
21300      INTEGER*2 IN(2500),INP(1)
21400      EQUIVALENCE (LRECL,INP(1))
21500      INTEGER*4 ICARD(20) /' ',':FIL','E=1:', ' 50:',16*' /
21600      INTEGER*4 INT(10) /'INO ','IN1 ','IN2 ','IN3 ','IN4 ','IN5 ','
21700      * 'IN6 ','IN7 ','IN8 ','IN9 '/
21800      INTEGER*2 IVOL(3)
21900      LOGICAL*4 EDF/.FALSE./,LSTRT/.FALSE./,MSTRT/.FALSE./
22000      LOGICAL*4 FEOF,FRED,FEOT
22100      INTEGER*4 ITAP/1/, ISTAP/10/
22200 C
22300      IF(.NOT.MSTRT) GO TO 10
22400      IF(FEOT)      GO TO 8600
22500      IF(FEOF)      GO TO 1000
22600      GO TO 2000
22700 C
22800 C
```

```
22900      10 MSTRT = .TRUE.
23000      FEOF = .FALSE.
23100      FRED = .FALSE.
23200      FEOT = .FALSE.
23300      IRTAPE = 1
23400      DO 100 I=1,10
23500      ICARD(I) = INT(I)
23600      CALL FLTB(ICODE,ICARD,&4000)
23700      100 CONTINUE
23800      ITCPU1 = ITIME(0)
23900 C
24000 C
24100      1000 CALL IPDS(IRTAPE-1,ICODE,IFILE,IVOL,&4000,&9999)
24200      WRITE(6,610) IVOL,IHOS,ITAPE(IRTAPE)
24300      610 FORMAT(T10,' @@ VOLUME:',3A2,' HOS',I1,':',I3)
24400      ICBUF = 0
24500      LSTRT = .FALSE.
24600 C
24700 C
24800      2000 CALL ITPR(IRTAPE-1,ICODE,LRECL,&4000,&8000)
24900      IF(LSTRT) GO TO 5
25000      LSTRT = .TRUE.
25100      WRITE(6,620) IFILE,(INP(I),I=10,12)
25200      620 FORMAT(1H+,T50,' @@ START FILE:',I3,' FIRST TIME:',I3)
25300      IFCPU1 = ITIME(0)
25400      5 CONTINUE
25500      ICBUF = ICBUF+1
25600      EOF = .FALSE.
25700      FEOF = .FALSE.
25800      RETURN
25900 C
26000 C      1.EOF
26100      8000 CONTINUE
26200      IF(EOF) GO TO 8500
26300      IFCPU2 = ITIME(0)
26400      IFCPU2 = IFCPU1-IFCPU2
26500      IFCPU1 = IFCPU2/100
26600      IFCPU2 = IFCPU2-IFCPU1*100
26700      WRITE(6,101) IFILE,(INP(I),I=10,12),ICBUF,IFCPU1,IFCPU2
26800      101 FORMAT(T50,' @@ STOP FILE:',I3,' LAST TIME:',I3,' ANZAHL:',
26900      *      15,' CPU-TIME:',I4,'.',I3)
27000      ICBUF = 0
27100      EOF = .TRUE.
27200      FEOF = .TRUE.
27300      RETURN
27400 C
27500      8500 CONTINUE
27600      ITCPU2 = ITIME(0)
27700      ITCPU2 = ITCPU1-ITCPU2
27800      ITCPU1 = ITCPU2/100
27900      ITCPU2 = ITCPU2-ITCPU1*100
28000      WRITE(6,103) IVOL,IHOS,ITAPE(IRTAPE),ITCPU1,ITCPU2
28100      103 FORMAT(T10,' @@ *** END OF TAPE *** VOLUME:',3A2,' HOS',I1,':',I3,
28200      *      ' CPU-TIME:',I4,'.',I3)
28300      EOF = .FALSE.
28400      FEOF = .FALSE.
28500      FEOT = .TRUE.
```

```
28600      ITCPU1 = ITIME(0)
28700      RETURN
28800 C    NEUES TAPE
28900 8600 FEQT = .FALSE.
29000      IF(ITAP.EQ.ISTAP ) GO TO 9999
29100      CALL FRTPI(IRTAPE-1,ICODE,&4000)
29200      IRTAPE = IRTAPE+1
29300      ITAP  = ITAP + 1
29400      ICBUF = 0
29500      GO TO 1000
29600 C
29700 4000 WRITE(6,105) ICODE
29800 105  FORMAT(' ** TAPE ERROR **',Z8)
29900      GO TO 9999
30000 C
30100 9999 CALL IOFND
30200      WRITE(6,106)
30300 106  FORMAT(' ***** END OF JOB ** STOP IN INPNCH *****')
30400      STOP
30500      END
```

```

100 C-----KZM:HELIOS2.ZEITO
200     SUPROUTINE TIMEO
300 C.....
400 C
500 C     TEST DB SC EVENT TIME DES ERSTEN EDF IM BLOCK OK
600 C     KORREKTUR FALLS NOETIG VON SDTEF
700 C
800 C     LTEST : .TRUE. KORREKTUR WAR NOTWENDIG
900 C
1000 C.....
1100     LOGICAL INFO/.FALSE./,LTIME,HDM ,LEROR
1200     COMMON /INP16/ IDO(13),ID1(27,4),I1(4),INT(32,4),I2(4),IS1(302,4),
1300     *           I3(4),I1B(32,4),I4(4),IS2(128,4),IE2(22,4)
1400     INTEGER*2 IDO, ID1, I1, I2, I3, I4, INT, IS1, I1B, IS2, IE2
1500     COMMON /STEUER/ MIST(4),PRINT,LSHORT,LPAOUT,LYPLOT,LPARPI,LSPEC,
1600     *           LMIKE,LTIME,LMITTL,LFICHE
1700     LOGICAL HDM,HDMC,TINT,TEST,MIST,PRINT,LSHORT,LPAOUT,LYPLOT,
1800     *           LPARPI,LSPEC,LMIKE,LTIME,ISTR1/.FALSE./
1900     LOGICAL LMITTL,LFICHE
2000     LOGICAL*4 T(7),ISTR/.FALSE./,MSTRT/.FALSE./,LSTRT/.TRUE./
2100     INTEGER*4 IDTI,SIDTI,SCEF,SSCEF
2200 C
2300     INTEGER*4 JT1,JT2,JT3,JT4,JTT1,JTT2,JTT3,JTT4,SJT1
2400     INTEGER*2 IID1(2,4),IID2(2,4)
2500     DIMENSION JT(4),JTT(4)
2600     EQUIVALENCE (IID1(1,1),JT(1),JTT1),(IID1(1,2),JT(2),JTT2),
2700     * (IID1(1,3),JT(3),JTT3),(IID1(1,4),JT(4),JTT4),(IID2(1,1),JTT(1)),
2800     * JTT1),(IID2(1,2),JTT(2),JTT2),(IID2(1,3),JTT(3),JTT3),
2900     * (IID2(1,4),JTT(4),JTT4)
3000     DIMENSION IFROR(4),ITC1(4),ITC2(4)
3100     DATA SAVFAC /1./,IFR/11/
3200 C
3300     LOGICAL TPRINT/.FALSE./,LTAG
3400 C
3500     INTEGER*4 BITRAT(10) /4096 ,2048 ,1024 ,512 ,256 ,128 ,64 ,32 ,
3600     *           16 ,8 /
3700     REAL*4 FACT(2,4,10)/0.00,0.00, 0.00,0.00, 0.00,0.00,1.0,0.25
3800     *           ,1.00,0.25, 0.50,0.125, 1.00,0.25,2.0,0.50
3900     *           ,2.00,0.50, 1.00,0.25, 2.00,0.50,4.0,1.00
4000     *           ,4.00,1.00, 2.00,0.50, 4.00,1.00,0.0,0.00
4100     *           ,8.00,2.00, 4.00,1.00, 8.00,2.00,0.0,0.00
4200     *           ,16.00,4.00, 8.00,2.00, 16.00,4.00,0.0,0.00
4300     *           ,32.00,8.00, 16.0,4.00, 32.0,8.00,0.0,0.00
4400     *           ,0.00,0.00, 32.0,8.00, 64.0,16.0,0.0,0.00
4500     *           ,0.00,0.00, 0.00,0.00, 128.,32.0,0.0,0.00
4600     *           ,0.00,0.00, 0.00,0.00, 256.,64.0,0.0,0.00/
4700 C
4800     IF(IDO(5).EQ.7) RETURN
4900     IFR = 11
5000     IF(LFICHE) IFR = 12
5100 C
5200     LINI = 0
5300     LTIME = .FALSE.
5400     I CONTINUE
5500     MXTIM = 86400 000
5600     LTAG = .FALSE.
5700 C     SOLL ZEITDIFFERENZ AUS FORMAT UND BITRATE

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5800 C .....
5900     MOD=2
6000     IFM=ID0(1)
6100     IF(IFM.EQ.5) IFM=4
6200     DO 22 I=1,13
6300         IF(ID0(2).NE.BITRAT(I)) GO TO 22
6400         FAC = FACT(MOD,IFM,I)
6500         IF(FAC.EQ.0.) GO TO 24
6600         SAVFAC = FAC
6700         IBIT=I
6800         GO TO 26
6900     22 CONTINUE
7000 C     BITRATEN FEHLER
7100     24 CONTINUE
7200     WRITE(IFR,110) (ID0(I),I=1,13),HDM
7300     110 FORMAT(' FEHLER IN BITRATE:',13I5,L4)
7400     FAC = SAVFAC
7500 C
7600     26 CONTINUE
7700 C     SAVE EVENT TAG NUMMER
7800     DO 25 J=1,4
7900     25 ID1(8,J) = ID0(10)
8000     DEL = FAC*40.5
8100     IDELO = DEL*1000.
8200     IDEL1 = DEL*1000.-DEL*100.
8300     IDEL2 = DEL*1000.+DEL*100.
8400     LIM1 = MXTIM-IDELO-IDELO/10
8500     LIM2 = IDELO+IDELO/10
8600 C
8700     DO 28 J=1,4
8800     DO 28 I=1,2
8900         IID1(I,J) = ID1(I+2,J)
9000     28 IID2(I,J) = ID1(I+5,J)
9100     IF(LSTR) ID105 = ID0(10)
9200     LSTR = .FALSE.
9300 C
9400 C
9500     ID = ID0(13)
9600     IF(ID.LT.0) ID = 65536+ID
9700     ISCT0 = ID0(11)*3600*1000 + ID0(12)*60*1000 + ID
9800 C     WRITE(6,666) ID0,JT,JTT,ISCT0,IDELO,IDEL1,DEL,(ID1(I,L),L=1,4)
9900 C 666 FORMAT( 13I8/11I10/' ',F5.1,4I7)
10000 C FEHLER:ALLE ID0 UND EF ZEITEN IM BLOCK GLEICH
10100     DO 6 I=2,4
10200         IF(ISCT0.NE.JT(I)) GO TO 7
10300     6 CONTINUE
10400     IF(INFO) GO TO 17
10500 C     WRITE(IFR,113)
10600 C 113 FORMAT(' KORREKTUR DER SDTEF ZEIT:ALLE ID0 UND SCFF ZEITEN GLEICH'
10700 C * )
10800     INFO = .TRUE.
10900     GO TO 17
11000     7 CONTINUE
11100 C FEHLER : ID0 UND EF1 NICHT GLEICH
11200     IF(IABS(ISCT0-JT1).GT.1) GO TO 10
11300 C ERSTE BLOCKZEIT OK
11400     LTIME = .FALSE.

```



```
11500      GO TO 20
11600 C
11700 C
11800 C      KORREKTUR NOTWENDIG
11900 C      .....
12000      10 CONTINUE
12100      LTIME = .TRUE.
12200 C
12300      IF(JT1.LE.-1)GO TO 14
12400 C
12500      DO 9 I=1,4
12600      ID= JT(I)-JTT(I)
12700      IF(ID.LT.0) ID = ID+MXTIM
12800      IF(IABS(ID-IDELO).GT.(2000+14.*8.*1000./IDO(2))) GO TO 16
12900      9 CONTINUE
13000 C
13100      JL = JT1
13200      IF(ISCTO.GT.LIM1      .AND. JT1.LT.LIM2      ) JL = MXTIM+JT1
13300      IDEL = JL -ISCTO
13400      DO 11 I=1,4
13500      JT(I) = JT(I)-IDEL
13600      IF(JT (I).LT.0) JT (I) = JT (I)+MXTIM
13700      JTT(I) = JTT(I)-IDEL
13800 C      IF(JTT(I).LT.0) ID1(8,I) = ID1(8,I)-1
13900      IF(JTT(I).LT.0) JTT(I) = JTT(I)+MXTIM
14000      11 CONTINUE
14100 C
14200      IF(INFO) GO TO 12
14300      INFO = .TRUE.
14400      WRITE(IFR,100) IDEL
14500      100 FORMAT(' KORREKTUR DER SDTEF ZEIT : ID0-SCEF1 VERSCHIEDEN',I10)
14600      12 CONTINUE
14700      DO 13 J=1,4
14800      DO 13 I=1,2
14900      ID1(I+2,J) = IID1(I,J)
15000      13 ID1(I+5,J) = IID2(I,J)
15100      GO TO 20
15200 C
15300 C      FALSCHER BLOCKZEIT : KORR NACH ANNAHME
15400      14 CONTINUE
15500      WRITE(IFR,101) DEL,ISCTO,JT1,JTT1
15600      101 FORMAT(' *** FALSCHER BLOCKZEIT : KORR MIT AHNNAME:',F6.1,3I10)
15700      LINI = 1
15800      17 CONTINUE
15900 C      ZEITEN REKONSTRUIEREN
16000      MXTIM = 86400 000
16100      J = 0
16200      DO 18 JJ=1,4
16300      IF(.NOT.MIST(JJ)) J = J+1
16400      JT(JJ) = ISCTO + FLOAT(J-1)*DEL*1000.
16500      IF(JT(JJ).LT.0) JT(JJ) = JT(JJ) + MXTIM
16600      JTT(JJ) = ISCTO + FLOAT(J-2)*DEL*1000.
16700      IF(JTT(JJ).GT.0) GO TO 198
16800      JTT(JJ) = JTT(JJ)+MXTIM
16900 C      ID1(8,J) = ID1(8,J)-1
17000      198 IF(JTT(JJ).LT.MXTIM) GO TO 18
17100      JTT(JJ) = JTT(JJ)-MXTIM
```

```
17200 C      ID1(8,J) = ID1(8,J)+1
17300 18      CONTINUE
17400      IF(TPRINT) WRITE(IFR,980) ISCT0,JT,JTT
17500 980    FORMAT(' ',9I10)
17600 C
17700      DO 15 J=1,4
17800      DO 15 I=1,2
17900      ID1(I+2,J) = IID1(I,J)
18000 15    ID1(I+5,J) = IID2(I,J)
18100      GO TO 21
18200 C
18300 C      INKONSISTENT EPRECHNETE SDT-TIME
18400 16    CONTINUE
18500      IF(TPRINT)
18600      *WRITE(IFR,106) ISCT0,(JT(L),JTT(L),L=1,4)
18700 106    FORMAT(' SDT ZEIT INKONSISTENT:',9I10)
18800      GO TO 17
18900 C
19000 20    CONTINUE
19100 C
19200 C      TEST OB ID0-ZEIT KONSISTENT
19300 C      .....
19400      IF(ISTR1) GO TO 34
19500      SJT1=JT1
19600      ISTR1 = .TRUE.
19700      GO TO 37
19800 34    CONTINUE
19900      IL = SJT1+4.*IDEL0
20000      IF(IL.GT.MXTIM) IL = IL-MXTIM
20100      IF(ABS(IL-JT1).LT.5000) GO TO 36
20200      IF(TPRINT)
20300      * WRITE(IFR,108) IDELO,SJT1,JT1
20400 108    FORMAT(' INKONSISTENTE ID0-ZEIT:',3I10)
20500      WRITE(IFR,116)
20600 116    FORMAT(1H+,T130,1HI)
20700 36    SJT1 = JT1
20800 37    CONTINUE
20900 C
21000 C      TEST OB SDTEF-ZEIT KONSISTENT (T4)
21100 C      .....
21200 C
21300      LEROR = .FALSE.
21400      DO 30 I=1,4
21500 30    IEROR(I) = 0
21600      J = JTT2-JTT1
21700      IF(JTT1.GT.LIM1 .AND. JTT2.LT.LIM2 ) J = J+MXTIM
21800      IF(J.LT.IDEL1 .OR. J.GT.IDEL2) IEROP(1) = J
21900      J = JTT3-JTT2
22000      IF(JTT2.GT.LIM1 .AND. JTT3.LT.LIM2 ) J = J+MXTIM
22100      IF(J.LT.IDEL1 .OR. J.GT.IDEL2) IEROP(2) = J
22200      J = JTT4-JTT3
22300      IF(JTT3.GT.LIM1 .AND. JTT4.LT.LIM2 ) J = J+MXTIM
22400      IF(J.LT.IDEL1 .OR. J.GT.IDEL2) IEROP(3) = J
22500      DO 32 I=1,3
22600 32    IF(IEROR(I).NE.0) LEROR = .TRUE.
22700      IF(.NOT.TPRINT) GO TO 33
22800      IF(LEROR) WRITE(IFR,111) IEROR,JTT1,JTT2,JTT3,JTT4,IDEF1,IDEF2
```

```
22900 111 FORMAT(' KONSISTENZFELHLER:',9I12)
23000 33 IF(LEROR) GO TO 17
23100 C
23200 21 CONTINUE
23300 C
23400 IF(MSTRT) GO TO 35
23500 MSTRT = .TRUE.
23600 35 CONTINUE
23700 C
23800 DO 38 I=2,4
23900 IF(MIST(I-1).OR.MIST(I)) GO TO 38
24000 IF(.NOT.(JTT(I-1).GT.80 000 000 .AND. JTT(I).LT.3 000 000))
24100 * GO TO 38
24200 IF(IDIOS.EQ.ID1(8,1)) GO TO 337
24300 DO 338 II=1,4
24400 338 ID1(8,II) = ID1(8,II)-1
24500 IF(TPRINT) WRITE(6,145) (ID1(8,II),JTT(II),II=1,4)
24600 145 FORMAT( 8I10)
24700 337 CONTINUE
24800 K = I
24900 DO 339 J =K,4
25000 339 ID1(8,J) = ID1(8,J)+1
25100 IF(TPRINT) WRITE(6,144) ISTAG,(ID1(8,L),JTT(L),L=1,4),I
25200 144 FORMAT(' TAGKORREKTUR',9I10,I15)
25300 GO TO 39
25400 38 CONTINUE
25500 39 IDIOS = ID1(8,4)
25600 C
25700 RETURN
25800 C
25900 ENTRY TIME1(T,FACC,IDX,HDM,LINE)
26000 IF(IDO(5).EQ.7) GO TO 47
26100 C .....
26200 C
26300 C ZEITPRUEFUNGEN AUF LUECKEN USW...
26400 C T(1) .TRUE. ID TIME BAD
26500 C T(2) ID TIME SEQUENCE ERROR
26600 C T(3) SCT=SDT SEQUENCE ERROR
26700 C T(4) GAP
26800 C T(5) MEHRFACH AUSGELESENE ZYKLEN (ID GLEICH)
26900 C T(6) MEHRFACH AUSGELESENE ZYKLEN (ID GEANDERT)
27000 C T(7)
27100 C .....
27200 C
27300 LINE = LINE+LINI
27400 LINI = 0
27500 FACC = FAC
27600 C INITIAL SAVE
27700 IF(ISTR) GO TO 49
27800 47 DO 48 I=1,7
27900 48 T(I) = .FALSE.
28000 IF(IDO(5).EQ.7) RETURN
28100 IF(ID1(9,IDX).EQ.-32513.OR.ID1(9,IDX).EQ.-1) RETURN
28200 ISTR = .TRUE.
28300 SIDTI = ID1(9,IDX)
28400 IF(SIDTI.LT.0) SIDTI = 65536+SIDTI
28500 SSCEF = ID1632(ID1(6,IDX),ID1(7,IDX))
```

[Faint, illegible text]

[Faint, illegible text]

```
34300      IF(T(1).OR.T(2).OR.T(3) ) GO TO 52
34400 C    ALLES OK
34500 10000 SSCEF = SCEF
34600      SIDTI = IDTI
34700      GO TO 9000
34800 C
34900      52 CONTINUE
35000      CALL KONV(SSCEF,ITC1)
35100      CALL KONV( SCEF,ITC2)
35200      F1 = IDSC/1000.
35300      F2 = IDIN/1000.
35400      F0 = IDELO/1000.
35500      IF(T(2).AND.T(3)) GO TO 55
35600      WRITE(IFR,303) ISDAY,(ITC1(I),I=1,4),ID1(8,IDX),(ITC2(I),I=1,4),
35700      * F1,F0,SIDTI,IDTI,F2
35800 303 FORMAT(' *** ',T3 ,4I3,I4,'-',4I3,I4,' (DIF',F10.2,' SEC)',
35900      * ' SOLL:',F7.2,T70,'LUECKENFEHLER IN ID ODER SC ',
36000      * T97,2I6,'(',F10.2,')' )
36100      LINE = LINE + 1
36200 C    FEHLER REKONSTRUIEREN
36300 C    IF(T(2)) IDTI = SIDTI+FAC*40.5*16./1000.
36400 C    IF(T(3)) SCEF = SSCEF+IDELO
36500      GO TO 10 000
36600 C    ECHE LUECKE
36700      55 CONTINUE
36800      IF(T(1)) GO TO 40
36900      WRITE(IFR,302) ISDAY,(ITC1(I),I=1,4),ID1(8,IDX),(ITC2(I),I=1,4),
37000      * F1,F0,SIDTI,IDTI,F2
37100 302 FORMAT(' **** ',T3 ,4I3,I4,'-',4I3,I4,' (DIF',F10.2,' SEC)',
37200      * ' SOLL:',F7.2,T70,'ECHE LUECKE',T97,2I6,'(',F10.2,')' )
37300      LINE = LINE+1
37400      T(4) = .TRUE.
37500      GO TO 10 000
37600 C    MEHRFACHE AUSLESUNG
37700 C    .....
37800      56 CONTINUE
37900      CALL KONV(SSCEF,ITC1)
38000      CALL KONV( SCEF,ITC2)
38100      F1 = IDSC/1000.
38200      F2 = IDIN/1000.
38300      F0 = IDELO/1000.
38400 C    WRITE(IFR,304) SIDTI, IDTI, SSCEF, SCEF, DEL
38500 C 304 FORMAT(' MEHRFACHE AUSLESUNG:',4I10,F10.2)
38600      IF(IDTI.NE.SIDTI) GO TO 58
38700      T(6) = .FALSE.
38800      IF(.NOT.T(3)) GO TO 10000
38900      57 WRITE(IFR,306) ISDAY,(ITC1(I),I=1,4),ID1(8,IDX),(ITC2(I),I=1,4),
39000      * F1,F0,SIDTI,IDTI,F2
39100 306 FORMAT(' *** ',T3 ,4I3,I4,'-',4I3,I4,' (DIF',F10.2,' SEC)',
39200      * ' SOLL:',F7.2,T70,'SC ERROR (DBL)',
39300      * T97,2I6,'(',F10.2,')' )
39400      LINE = LINE+1
39500      ISTR=.FALSE.
39600      GO TO 9000
39700 C
39800      58 CONTINUE
39900      T(6) = .TRUE.
```

```
40000      ICYC = 1./FAC + 0.1
40100      IDDEL = FAC*40.5*1000.*ICYC
40200      IDD1 = IDDEL-IDDEL/10.
40300      IDD2 = IDDEL+IDDEL/10.
40400      IDDIN = (IDTI-SIDTI)/16. * 1000.
40500      IF(IDDIN.LT.0) IDDIN = FLOAT(IDTI+65535-SIDTI)/16.*1000.
40600      IF(IDDIN.LT.IDD1 .OR. IDDIN.GT.IDD2) GO TO 59
40700      IF(.NOT.T(3)) GO TO 10 000
40800      GO TO 57
40900 C
41000 C
41100      59 CONTINUE
41200      CALL KONV(SSCEF,ITC1)
41300      CALL KONV( SCEF,ITC2)
41400      F1 = IDSC/1000.
41500      F2 = IDDIN/1000.
41600      F0 = IDDEL/1000.
41700      WRITE(IFR,310) ISDAY,(ITC1(I),I=1,4),ID1(8,IDX),(ITC2(I),I=1,4),
41800      * F1,F0,SIDTI,IDTI,F2
41900      310 FORMAT(' *** ',T3 ,4I3,I4,'-',4I3,I4,' (DIF',F10.2,' SEC)',
42000      * ' SOLL:',F7.2,T70,'LUECKE BEI DBL AUSLFSUNG',
42100      * T97,2I6,'( ',F10.2,' )' )
42200      LINE = LINE+1
42300      ISTR = .FALSE.
42400      GO TO 9000
42500 C
42600 C      ID ZEIT SCHLECHT
42700 C      .....
42800      40 CONTINUE
42900 C      WRITE(IFR,312) SIDTI,IDTI,SSCEF,SCEF
43000 C      312 FORMAT(' ID BAD:',4I10)
43100 C      ZEIT REKONSTRUIEREN
43200      IF(T(5)) IDTI = SIDTI
43300      IF(T(5)) IDIN = 0
43400      IF(.NOT.T(5)) IDTI = SIDTI+FAC*40.5*16.
43500      IF(.NOT.T(3)) GO TO 10000
43600      CALL KONV(SSCEF,ITC1)
43700      CALL KONV( SCEF,ITC2)
43800      F1 = IDSC/1000.
43900      F2 = IDIN/1000.
44000      F0 = IDELO/1000.
44100      WRITE(IFR,313) ISDAY,(ITC1(I),I=1,4),ID1(8,IDX),(ITC2(I),I=1,4),
44200      * F1,F0,SIDTI,IDTI
44300      313 FORMAT(' *** ',T3 ,4I3,I4,'-',4I3,I4,' (DIF',F10.2,' SEC)',
44400      * ' SOLL:',F7.2,T70,'LUECKE IN SC (ID BAD) ',
44500      * T97,2I6)
44600      LINE = LINE+1
44700      ISTR = .FALSE.
44800      GO TO 9000
44900 C
45000 C
45100      9000 CONTINUE
45200      ISDAY = ID1(8,IDX)
45300 C      WRITE(IFR,316) SIDTI,SSCEF,ISTR
45400 C      316 FORMAT(' RETURN:',2I10,L4)
45500      RETURN
45600      END
```



```
45700      INTEGER FUNCTION ID1632*4 (J1,J2)
45800      INTEGER*2 J1,J2,J(2)
45900      INTEGER*4 JJ
46000      EQUIVALENCE ( JJ,J(1))
46100      J(1) = J1
46200      J(2) = J2
46300      ID1632=JJ
46400      RETURN
46500      END
46600      SUBROUTINE KONV(IMSEC,ITC)
46700      DIMENSION ITC(4)
46800      ITC(1) = IMSEC/3600 000
46900      ITC(2) = MOD(IMSEC,3600 000)/60 000
47000      ITC(3) = MOD(IMSEC,60 000 )/1000
47100      ITC(4) = MOD(IMSEC,1000  )
47200      RETURN
47300      END
```

```

100 C -----KZM:HEL IOS2.ZEIT7
200     SUBROUTINE TIME7
300 C
400 C     DM7
500 C     ZEITPRUEFUNGEN
600 C
700     COMMON /STEUER/ MIST(4)
800     COMMON /INP16/ ID0(13),ID1(27,4),I1(4),INT(32,4),I2(4),IS1(392,4),
900     *           I3(4),I1B(32,4),I4(4),IS2(128,4),IF2(22,4)
1000    INTEGER*2 ID0,ID1,I1,I2,I3,I4,INT,IS1,I1B,IS2,IE2
1100 C
1200    INTEGER*4 ITG(4),IT(4),ITT(4), JHOUR(4),JMIN(4),JSEC(4),JMSEC(4)
1300    INTEGER*2 IIDG(2,4),IID1(2,4),IID2(2,4)
1400    EQUIVALENCE (IIDG(1,1),ITG(1)),(IID1(1,2),IT(2)),
1500    * (IIDG(1,3),ITG(3)),(IIDG(1,4),ITG(4)), ( IID1(1,1),IT(1)),
1600    * (IID1(1,2),IT(2)),(IID1(1,3),IT(3)),(IID1(1,4),IT(4)),
1700    * (IID2(1,1),ITT(1)),(IID2(1,2),ITT(2)),(IID2(1,3),ITT(3)),
1800    * (IID2(1,4),ITT(4))
1900    INTEGER*4 BITRAT(10) /4096 ,2048 ,1024 ,512 ,256 ,128 ,64 ,32 ,
2000    *           16 ,8 /
2100    REAL*4 FACT(2,4,10)/0.00,0.00, 0.00,0.00, 0.00,0.00,1.0,0.25
2200    *           ,1.00,0.25, 0.50,0.125, 1.00,0.25,2.0,0.50
2300    *           ,2.00,0.50, 1.00,0.25, 2.00,0.50,4.0,1.00
2400    *           ,4.00,1.00, 2.00,0.50, 4.00,1.00,2.0,0.00
2500    *           ,8.00,2.00, 4.00,1.00, 8.00,2.00,0.0,0.00
2600    *           ,16.00,4.00, 8.00,2.00, 16.00,4.00,0.0,0.00
2700    *           ,32.00,8.00, 16.0,4.00, 32.0,8.00,0.0,0.00
2800    *           ,0.00,0.00, 32.0,8.00, 64.0,16.0,0.0,0.00
2900    *           ,0.00,0.00, 0.00,0.00, 128.,32.0,0.0,0.00
3000    *           ,0.00,0.00, 0.00,0.00, 256.,64.0,0.0,0.00/
3100 C
3200    DATA SAVFAC /1./
3300    LOGICAL LSTRT/.FALSE./, LPRINT/.FALSE./ ,MIST
3400 C
3500    ITCH0(IT) = IT/3600 000
3600    ITCH1(IT) = MOD(IT,3600 000)/60 000
3700    ITCH2(IT) = MOD(IT,60 000 )/1000
3800    ITCH3(IT) = MOD (IT,1000)
3900 C
4000    IF(ID0(5).EQ.7) GO TO 2
4100    LSTRT = .FALSE.
4200    RETURN
4300    2 CONTINUE
4400 C
4500    MXTIM = 86 400 000
4600 C
4700    DO 10 J=1,4
4800        ID1(8,J) = ID0(10)
4900    DO 10 I=1,2
5000        IIDG(I,J) = ID1(I ,J)
5100        IID1(I,J) = ID1(I+2,J)
5200    10    IID2(I,J) = ID1(I+5,J)
5300 C
5400 C     SOLL ZEITDIFFERENZ AUS FORMAT UND BITRATE
5500 C     .....
5600     MODD = 2
5700     IFM=ID0(1)

```

```
5800      IF(IFM.EQ.5) IFM=4
5900      DO 22 I=1,10
6000          IF(IDO(2).NE.BITRAT(I)) GO TO 22
6100          FAC = FACT(MODD,IFM,I)
6200          IF(FAC.EQ.0.) GO TO 24
6300          SAVFAC = FAC
6400          IBIT=I
6500          GO TO 26
6600      22 CONTINUE
6700 C      BITRATEN FEHLER
6800      24 CONTINUE
6900          WRITE( 6 ,100) (IDO(I),I=1,13),HDM
7000      100 FORMAT(' FEHLER IN BITRATE:',13I5,L4)
7100          FAC = SAVFAC
7200      26 CONTINUE
7300          DEL = FAC*40.5
7400 C
7500 C
7600 C
7700          ID = IDO(13)
7800          IF(ID.LT.0) ID = ID+65536
7900          ISCTO = IDO(11)*3600*1000 + IDO(12)*60*1000 + ID
8000 C
8100          J = 0
8200          DO 30 I=1,4
8300              ITT(I) = 0
8400              IF(MIST(I)) GO TO 30
8500              J = J+1
8600              ITT(I) = ISCTO + (J-2)*DEL*1000
8700              IF(ITT(I).LT.MXTIM) GO TO 32
8800              ITT(I) = ITT(I)-MXTIM
8900              ID1(8,I) = ID1(8,I)+1
9000              GO TO 30
9100      32      IF(ITT(I).GT.0) GO TO 30
9200              ITT(I) = ITT(I)+MXTIM
9300              ID1(8,I) = ID1(8,I)-1
9400      30 CONTINUE
9500 C
9600 C
9700          DO 40 J=1,4
9800              DO 40 I=1,2
9900                  ID1(I ,J) = IIDG(I ,J)
10000             ID1(I+2,J) = IID1(I ,J)
10100      40      ID1(I+5,J) = IID2(I ,J)
10200 C
10300             IF(.NOT.LPRINT) GO TO 42
10400             WRITE(6,101) (IDO(I),I=1,13),DEL,ISCTO,(ITT(I),I=1,4),
10500             * (MIST(I),ID1(8,I),ITT(I),I=1,4)
10600      101 FORMAT(' DM7:',13I6,' DEL:',F12.2,' ISCTO:',I15 /4(11X,I10)/
10700             * ' ',4(L2,I4,4X,I10) )
10800      42 CONTINUE
10900 C
11000             RETURN
11100             END
```

```
100 C-----KZM:HELIOS2.NDMDBL
200 SUBROUTINE NDMDBL(IFXP,IMX4,FAC,T,T5,*,*)
300 C.....
400 C
500 C BEARBEITUNG MFHRFACH AUSGELESENER NDM ZYKLEN
600 C RETURN1 : LIES NAECHSTEN ZYCLUS
700 C RETURN2 : EXIT IN USER PROGRAMM
800 C RETURN : EXIT BEI AENDERUNGEN AUS DIESEM MOD
900 C
1000 C.....
1100 C
1200 COMMON /INP16/ ID0(13),ID1(27,4),I1(4),INT(32,4),I2(4),IS1(392,4),
1300 * I3(4),I1B(32,4),I4(4),IS2(128,4),IF2(22,4)
1400 INTEGER*2 ID0,ID1,I1,I2,I3,I4,INT,IS1,I1B,IS2,IE2
1500 C
1600 COMMON /LABL/ JID0(13),JID1(27,4),ISHIF
1700 COMMON /SEN1/ FINT(32),FI1B(32),FIS1(7,7,32)
1800 COMMON /SEN2/ JIS2(256),FE2(6,4)
1900 C
2000 DIMENSION TID0(13),TID1(27),TINT(32),TIS1(392),TI1B(32),
2100 * TIS2(128),TIE2(6)
2200 INTEGER*2 TID0,TID1,TINT,TIS1,TI1B,TIS2,TIF2
2300 LOGICAL T(7),STRT/.FALSE./, RET/.TRUE./,LQW ,T5,TQW
2400 INTEGER*4 BIT1/Z600/, BIT2/Z66/, BIT3/Z360/
2500 INTEGER*4 IFR/11/
2600 LOGICAL NPRINT/.TRUE. /
2700 C
2800 IF(FAC.GE.1.) RETURN
2900 IF(.NOT.T5) STRT = .FALSE.
3000 C
3100 III = 0
3200 MODERR = 0
3300 C
3400 IF(RET) GO TO 2
3500 RET = .TRUE.
3600 STRT = .FALSE.
3700 T5 = .FALSE.
3800 RETURN
3900 C
4000 C
4100 2 CONTINUE
4200 IF(STRT) GO TO 10
4300 C INITIAL SAVE
4400 C .....
4500 DO 12 I=1,13
4600 12 TID0(I) = ID0(I)
4700 DO 13 I=1,27
4800 13 TID1(I) = ID1(I,IMX4)
4900 DO 14 I=1,32
5000 TINT(I) = INT(I,IMX4)
5100 14 TI1B(I) = I1B(I,IMX4)
5200 DO 15 I=1,225
5300 15 TIS1(I) = IS1(I,IMX4)
5400 DO 16 I=1,128
5500 16 TIS2(I) = IS2(I,IMX4)
5600 DO 17 I=1,6
5700 17 TIE2(I) = IE2(I,IMX4)
```

```
5800 C
5900     STRT=.TRUE.
6000 C
6100     T5 = .TRUE.
6200     IF(FAC.EQ.0.125) ICYC=8
6300     IF(FAC.EQ.0.25) ICYC = 4
6400     IF(FAC.EQ.0.50) ICYC = 2
6500     SFAC = FAC
6600     NCYC = 1
6700     III = 1
6800     GO TO 1000
6900 C
7000     10 CONTINUE
7100         IF(T(4) .OR. T(6) .OR.(FAC.NE.SFAC).OR.(NCYC.GT.ICYC)) GO TO 50
7200 C     DATEN VERGLEICHEN UND BESSERE RETTEN
7300 C     WENN DATEN OK : AUCH GLEICH?
7400         LQW = .FALSE.
7500         JQW = 0
7600         L16 = ID1(16,IMX4)
7700         LT16 = TID1(16)
7800         L17 = ID1(17,IMX4)
7900         LT17 = TID1(17)
8000         L15 = ID1(15,IMX4)
8100         LT15 = TID1(15)
8200         L18 = ID1(18,IMX4)
8300         LT18 = TID1(18)
8400         IF(.NOT.(TQW(L16,BIT2).AND.TQW(LT16,BIT2))) GO TO 20
8500         LQW = .TRUE.
8600         DO 21 I=1,32
8700             IF(INT(I,IMX4).EQ.TINT(I)) GO TO 21
8800             JQW=JQW+1
8900     21 CONTINUE
9000     20 IF(.NOT.(TQW(L16,BIT3).AND.TQW(LT16,BIT3))) GO TO 23
9100         LQW = .TRUE.
9200         DO 22 I=1,225
9300             IF(IS1(I,IMX4).EQ.TIS1(I)) GO TO 22
9400             JQW = JQW+1
9500     22 CONTINUE
9600     23 IF(.NOT.(TQW(L17,BIT3).AND.TQW(LT17,BIT3))) GO TO 25
9700         LQW = .TRUE.
9800         DO 24 I=1,128
9900             IF(IS2(I,IMX4).EQ.TIS2(I)) GO TO 24
10000        JQW = JQW+1
10100     24 CONTINUE
10200 C
10300 25     IF(.NOT.LQW) GO TO 42
10400         IF(JQW.LT.20) GO TO 28
10500 C     MODE-AENDERUNG UEBERSEHEN
10600         IF(NPRINT) WRITE(IFP,101) FAC,ICYC,NCYC,JQW,IDO
10700     101 FORMAT(' MODE-AENDERUNG UEBERSEHEN:',F10.3,3I10/13I9)
10800         MODERR = 1
10900         GO TO 50
11000 C
11100     28 CONTINUE
11200 C     SAVE GUTE DATEN
11300         KQW = 0
11400         IF(TQW(LT15,BIT1).OR. .NOT.(TQW(L15,BIT1))) GO TO 30
```

```
11500      KWQ = KQW+1
11600      DO 31 I=9,27
11700      31  TID1(I) = ID1(I,IMX4)
11800      30  IF(TQW(LT16,BIT2).OR. .NOT.TQW(L16,BIT2)) GO TO 32
11900      KQW = KQW+1
12000      DO 35 I=1,32
12100      35  TINT(I) = INT(I,IMX4)
12200      32  IF(TQW(LT16,BIT3).OR. .NOT.TQW(L16,BIT3)) GO TO 36
12300      KQW = KQW+1
12400      DO 37 I=1,225
12500      37  TIS1(I) = IS1(I,IMX4)
12600      36  IF(TQW(LT17,BIT3).OR. .NOT.TQW(L17,BIT3)) GO TO 38
12700      KQW = KQW+1
12800      DO 39 I=1,32
12900      39  TI1B(I) = I1B(I,IMX4)
13000      38  IF(TQW(LT18,BIT3).OR. .NOT.TQW(L18,BIT3)) GO TO 40
13100      KQW = KQW+1
13200      DO 41 I=1,32
13300      41  TIS2(I) = IS2(I,IMX4)
13400      40  CONTINUE
13500 C
13600      IF(KQW.GT.0.AND. NPRINT) WRITE(IFR,120) IMX4,JQW,LQW,KQW
13700      120 FORMAT(' SAVE GUTER DATEN:',2I10,L4,I10)
13800 C
13900 C
14000      42  NCYC = NCYC+1
14100      GO TO 1000
14200 C
14300 C
14400      50  CONTINUE
14500 C      MEHRFACHE AUSLESUNG BEENDET ODER AENDERUNG IM FORMAT USW
14600 C      SHIFT EVENTUELL MIT SCHWUNGR,WENN INITL BAD
14700      208 CONTINUE
14800      ISHIF = 1
14900      ID = ID1(15,IMX4)
15000      IF(TID1(11).LT.0 .AND. TQW(ID,BIT1) ) ISHIF = 2
15100      IF(TQW(ID,BIT1)) GO TO 52
15200      ISHIF = MOD (ISHIF,2) + 1
15300      52  CONTINUE
15400 C      TRANSFER DER DATEN
15500      CALL IDCONV(0,0,TID0,TID1,JID0,JID1)
15600      CALL IDCONV(1,1,TID0,TID1,JID0,JID1)
15700      DO 54 I=1,6
15800      54  FE2(I,1) = TIE2(I)
15900      DO 55 I=1,32
16000      FINT(I) = FCONV(TINT(I))
16100      55  FI1B(I) = FCONV(TI1B(I))
16200 C
16300 C
16400      IF(IABS(IEXP).EQ.2) GO TO 57
16500      I = 1
16600      DO 56 M=1,9
16700      DO 56 L=1,5
16800      DO 56 K=1,5
16900      FIS1(K,L,M) = FCONV(TIS1(I))
17000      56  I = I+1
17100      IF(IABS(IEXP).EQ.1) GO TO 60
```



```
17200 C
17300 57 DO 58 I=1,128
17400 58 JIS2(I) = JCONV(TIS2(I))
17500 C
17600 60 CONTINUE
17700 C
17800     IF(MODEPR.EQ.1) GO TO 61
17900     IF(.NOT.(FAC.GE.1.)) GO TO 70
18000 C  MODE-AENDERUNG
18100 61 IMX4 = IMX4-1
18200     STRT = .FALSE.
18300     RET = .FALSE.
18400     GO TO 2000
18500     C
18600 C
18700 70 CONTINUE
18800 C  SAVE DATEN NACH TI..
18900 C
19000 C  INITIAL SAVE
19100     DO 72 I=1,13
19200 72 TID0(I) = ID0(I)
19300     DO 73 I=1,27
19400 73 TID1(I) = ID1(I,IMX4)
19500     DO 74 I=1,32
19600     TINT(I) = INT(I,IMX4)
19700 74 TI1B(I) = I1B(I,IMX4)
19800     DO 75 I=1,225
19900 75 TIS1(I) = IS1(I,IMX4)
20000     DO 76 I=1,128
20100 76 TIS2(I) = IS2(I,IMX4)
20200     DO 77 I=1,6
20300 77 TIE2(I) = IE2(I,IMX4)
20400     WRITE(IFR,778) NCYC,FAC
20500 778 FORMAT(' SAVE FUER WEITEREN GEBRAUCH',I10,F10.4)
20600 C
20700     NCYC = 1
20800     IF(SFAC.EQ.FAC) GO TO 2000
20900     SFAC = FAC
21000     IF(FAC.EQ.0.125) ICYC=8
21100     IF(FAC.EQ.0.25) ICYC = 4
21200     IF(FAC.EQ.0.5) ICYC = 2
21300     GO TO 2000
21400 C
21500 1000 CONTINUE
21600     IF(NPRINT)
21700     * WRITE(IFR,121) T,IMX4,FAC,SFAC,NCYC,ICYC,LQW,JQW,RET,STRT
21800     RETURN 1
21900 C
22000 2000 CONTINUE
22100     IF(NPRINT)
22200     * WRITE(IFR,122) T,IMX4,FAC,SFAC,NCYC,ICYC,LQW,JQW,RET,STRT
22300     RETURN 2
22400 C
22500 121 FORMAT(' RETURN 1:',7L2,I10,2F5.1,2I10,L2,I10,L2,L2 )
22600 122 FORMAT(' RETURN 2:',7L2,I10,2F5.1,2I10,L2,I10,L2,L2 )
22700     END
```

C7

```
100 C----- KZM:HEL IOS2.TEST
200 LOGICAL FUNCTION TEST*4 (JQW,JQWBIT)
300 C TEST DES QUALITAETSWORTES
400 C INPUT : JQW QUALITAETSWORT INTEGER*4
500 C : JBIT 16 INT*4 ARRAY MIT 1 (ENTSPR BIT IN IQW MUSS 1 SEIN)
600 C : 0 ( 0 )
700 C : -0,-1 ( ENTSPR BIT BLEIBT UNGEPRUEFT)
800 C RETURN : .TRUE. BEDINGUNGEN ERFUELLT
900 C : .FALSE. BEDG NICHT ERFUELLT
1000 C
1100 C INTEGER*4 JQW,JBIT(16),JQWBIT(16)
1200 C
1300 CALL BITS(JQW,16,JBIT(1),17,JBIT(2),1,JBIT(3),1,JBIT(4),1,JBIT(5),
1400 * 1,JBIT(6),1,JBIT(7),1,JBIT(8),1,JBIT(9),1,JBIT(10),1,
1500 * JBIT(11),1,JBIT(12),1,JBIT(13),1,JBIT(14),1,JBIT(15),1 ,
1600 * JBIT(16),1)
1700 DO 1 I=4,16
1800 IF((JQWBIT(I).NE.1.AND.JQWBIT(I).NE.0).OR.JBIT(I).EQ.JQWBIT(I) )
1900 * GO TO 1
2000 TEST = .FALSE.
2100 RETURN
2200 1 CONTINUE
2300 TEST = .TRUE.
2400 RETURN
2500 END
```

```
100 C----- KZM:HELIDS2.TOW
200      LOGICAL FUNCTION TQW*4 (QW,BIT)
300 C      FUNKTION BILDET LOGISCHES .AND. ZWISCHEN QW+BIT
400 C      QW :: ZU PRUEFENDES QUALITAETSWORT
500 C      BIT :: PRUEFMUSTER
600 C      (QW,BIT) *4 WORTE
700 C
800      TQW = .FALSE.
900      IF(AND(QW,BIT).EQ.BIT) TQW = .TRUE.
1000     RETURN
1100     END
```

```
100 C-----KZM:HELIOS2.FCONV
200     REAL FUNCTION FCONV*4 (IN)
300 C   ZAEHLRATEN IN FLOAT UMWANDELN
400 C   PRUEFUNG UND KORREKTUR DER NEGATIVEN ZAHLEN
500 C
600     INTEGER*2 IN
700     FCONV = IN
800     IF(IN.GE.0) RETURN
900     FCONV = 65536. + IN
1000    IF(ABS(FCONV-32768.).LT.0.5 .OR. (FCONV-34816).GT.-0.5) RETURN
1100    IF(IN.EQ.-32513) FCONV = -1
1200    IF(IN.EQ.-32528) FCONV = -2.
1300 Ca IF(IN.NE.-32513) FCONV = IN
1400    RETURN
1500    END
1600    INTEGER FUNCTION JCONV*4 (IN)
1700 C   ZAEHLRATEN IN INTEGER UMWANDELN
1800 C   PRUEFUNG UND KORREKTUR DER NEGATIVEN ZAHLEN
1900    INTEGER*2 IN
2000    JCONV = IN
2100    IF(IN.GE.0) RETURN
2200    JCONV = 65536. + IN
2300    IF(JCONV.EQ.32768 .OR. JCONV.GE.34816) RETURN
2400    IF(IN.EQ.-32513) JCONV = -1
2500 Ca IF(IN.NE.-32513) JCONV = IN
2600    RETURN
2700    END
3000    SUBROUTINE IDCONV(IMX4,IHDM,IDO,IDI,JIDO,JIDI)
3100 C   KONVERSION DER ID-DATEN UND KORREKTUR DER NEGATIVEN ZAHLEN
3200 C   IMX4 :0 (IDO-DATEN)
3300 C       :IMX4 (IDI( ,IMX4)-DATEN)
3400 C   IHDM : ABSPEICHERN NACH JIDI( ,IHDM)
3500 C
3600     INTEGER*2 IDO(13),IDI(27,4)
3700     INTEGER*4 JIDO(13),JIDI(27,4)
3800 C
3900 C
4000     IF(IMX4.NE.0) GO TO 2
4100     DO 1 I=1,13
4200       JIDO(I) = IDO(I)
4300     1 IF(IDO(I).LT.0) JIDO(I) = 65536 + IDO(I)
4400     RETURN
4500 C
4600     2 CONTINUE
4700 C
4800 C
4900     JIDI(5,IHDM) = IDI(5,IMX4)
5000     DO 3 I=8,19
5100       JIDI(I,IHDM) = IDI(I,IMX4)
5200     3 IF(JIDI(I,IHDM).LT.0 .AND. I.NE.11)JIDI(I,IHDM)=65536+IDI(I,IMX4)
5300     J1 = IDI(1,IMX4)
5400     J2 = IDI(2,IMX4)
5500     IF(J1.LT.0) J1 = 65536 + IDI(1,IMX4)
5600     IF(J2.LT.0) J2 = 65536 + IDI(2,IMX4)
5700     JIDI(1,IHDM) = J1*2**16 + J2
5800     JIDI(2,IHDM) = JIDI(1,IHDM)
5900     J1 = IDI(3,IMX4)
```

```
6000      J2 = ID1(4,IMX4)
6100      IF(J1.LT.0) J1 = 65536 + ID1(3,IMX4)
6200      IF(J2.LT.0) J2 = 65536 + ID1(4,IMX4)
6300      JID1(3,IHDM) = J1*2**16 + J2
6400      JID1(4,IHDM) = JID1(3,IHDM)
6500      J1 = ID1(6,IMX4)
6600      J2 = ID1(7,IMX4)
6700      IF(J1.LT.0) J1 = 65536 + ID1(6,IMX4)
6800      IF(J2.LT.0) J2 = 65536 + ID1(7,IMX4)
6900
7000      JID1(6,IHDM) = J1*2**16 + J2
7100      JID1(7,IHDM) = JID1(6,IHDM)
7200 C
7300      DO 4 I=20,27
7400          JID1(I,IHDM) = ID1(I,IMX4)
7500          IF(ID1(I,IMX4).LT.0) JID1(I,IHDM) = 65 536 + ID1(I,IMX4)
7600      4 CONTINUE
7700 C
7800      RETURN
7900      END
```

```
100 C----- KZM:HELIOS2.CONV
200     SUBROUTINE CONV
300 C.....
400 C KONVERSION ALLER ZAHLEN IN 32-BIT WORTE
500 C KORREKTUR DER SDT-ZAEHLRATEN
600 C NEGATIVE ZAHLEN: LEGAL >=34816 ODER =32768
700 C ILLEGAL MISSING FRAMES(=33023) OR EXP>12
800 C
900 C.....
1000    COMMON /INP16/ ID0(13),ID1(27,4),I1(4),INT(32,4),I2(4),IS1(392,4),
1100    *              I3(4),I1B(32,4),I4(4),IS2(128,4),IF2(22,4)
1200    COMMON /INP32/ JINT(32,4),JIS1(392,4),JI1B(32,4),JIS2(128,4),
1300    *              JIE2(22,4),
1400    *              JI1(4),JI2(4),JI3(4),JI4(4),JIDO(13),JIDI(27,4)
1500    INTEGER*2 ID0, ID1, I1, I2, I3, I4, INT, IS1, I1B, IS2, IF2
1600    INTEGER*4 JIDO, JIDI, JI1, JI2, JI3, JI4, JINT, JIS1, JI1B, JIS2, JIF2
1700 C
1800     DO 8 I=1,13
1900         JIDO(I) = ID0(I)
2000     8 IF(ID0(I).LT.0) JIDO(I) = 65536 + ID0(I)
2100 C
2200 C LOOP UEBER DIE 4 EDF'S (INDEX J )
2300     J = 1
2400 C
2500 1000 CONTINUE
2600     JIDI(5,J) = ID1(5,J)
2700     IF(ID1(5,J).LT.0) JIDI(5,J) = 65536 + ID1(5,J)
2800     DO 9 I=8,19
2900         JIDI(I,J) = ID1(I,J)
3000     9 IF(ID1(I,J).LT.0.AND.I.NE.11) JIDI(I,J) = 65536 + ID1(I,J)
3100     J1 = ID1(1,J)
3200     J2 = ID1(2,J)
3300     IF(J1.LT.0) J1 = 65536 + ID1(1,J)
3400     IF(J2.LT.0) J2 = 65536 + ID1(2,J)
3500     JIDI(1,J ) = J1*2**16 + J2
3600     JIDI(2,J ) = JIDI(1,J)
3700     J1 = ID1(3,J)
3800     J2 = ID1(4,J)
3900     IF(J1.LT.0) J1 = 65536 + ID1(3,J)
4000     IF(J2.LT.0) J2 = 65536 + ID1(4,J)
4100     JIDI(3,J ) = J1*2**16 + J2
4200     JIDI(4,J ) = JIDI(3,J)
4300     J1 = ID1(6,J)
4400     J2 = ID1(7,J)
4500     IF(J1.LT.0) J1 = 65536 + ID1(6,J)
4600     IF(J2.LT.0) J2 = 65536 + ID1(7,J)
4700     JIDI(6,J ) = J1*2**16 + J2
4800     JIDI(7,J ) = JIDI(6,J)
4900 C
5000 C
5100     DO 7 I=20,27
5200         JIDI(I,J) = ID1(I,J)
5300         IF(ID1(I,J).LT.0) JIDI(I,J) = 65 536 + ID1(I,J)
5400     7 CONTINUE
5500 C
5600     JI1(J) = I1(J)
5700     JI2(J) = I2(J)
```



```
5800      JI3(J) = I3(J)
5900      JI4(J) = I4(J)
6000 C
6100      II=I1(J)
6200      DO 10 I=1,II
6300          JINT(I,J) = INT(I,J)
6400          IF(JINT(I,J).GE.0) GO TO 10
6500          JINT(I,J) = 65536 + INT(I,J)
6600          IF(JINT(I,J).EQ.32768 .OR. JINT(I,J).GE.34816) GO TO 10
6700          IF(JINT(I,J).EQ.33023) JINT(I,J) = -1
6800          IF(INT(I,J).NE.-32513) JINT(I,J) = INT(I,J)
6900      10 CONTINUE
7000 C
7100 C
7200      II=I3(J)
7300      DO 11 I=1,II
7400          JI1B(I,J) = I1B(I,J)
7500          IF(JI1B(I,J).GE.0) GO TO 11
7600          JI1B(I,J) = 65536 + I1B(I,J)
7700          IF(JI1B(I,J).EQ.32768 .OR. JI1B(I,J).GE.34816) GO TO 11
7800          IF(JI1B(I,J).EQ.33023) JI1B(I,J) = -1
7900          IF(I1B(I,J).NE.-32513) JI1B(I,J) = I1B(I,J)
8000      11 CONTINUE
8100 C
8200 C
8300      II=I2(J)
8400      DO 12 I=1,II
8500          JIS1(I,J) = IS1(I,J)
8600          IF(JIS1(I,J).GE.0) GO TO 12
8700          JIS1(I,J) = 65536 + IS1(I,J)
8800          IF(JIS1(I,J).EQ.32768 .OR. JIS1(I,J).GE.34816) GO TO 12
8900          IF(JIS1(I,J).EQ.33023) JIS1(I,J) = -1
9000          IF(IS1(I,J).NE.-32513) JIS1(I,J) = IS1(I,J)
9100      12 CONTINUE
9200 C
9300 C
9400      II=I4(J)
9500      DO 13 I=1,II
9600          JIS2(I,J) = IS2(I,J)
9700          IF(JIS2(I,J).GE.0) GO TO 13
9800          JIS2(I,J) = 65536 + IS2(I,J)
9900          IF(JIS2(I,J).EQ.32768 .OR. JIS2(I,J).GE.34816) GO TO 13
10000         IF(JIS2(I,J).EQ.33023) JIS2(I,J) = -1
10100         IF(IS2(I,J).NE.-32513) JIS2(I,J) = IS2(I,J)
10200      13 CONTINUE
10300 C
10400         DO 14 I=1,22
10500      14  JIE2(I,J) = IE2(I,J)
10600 C
10700         J = J+1
10800         IF(J.LE.4) GO TO 1000
10900         RETURN
11000        END
```

```
100 C----- KZM:HELIOS2.HPRINT
200     SUBROUTINE HPRINT (JK)
300 C.....
400 C PRINTOUT DER 4 EDF'S
500 C PRINT-UNIT :: IFR=10
600 C STEUERPARAMETER :: ISHORT : .TRUE. KURZER PRINTOUT
700 C                      .FALSE. LANGER PRINTOUT
800 C                      JK      : WENN 0 DANN ALLE 4 EDF , SONST JK-EDF
900 C UP :: CONV
1000 C      JBIT16
1100 C
1200 C.....
1300     COMMON /INP16/ ID0(13),ID1(27,4),I1(4),INT(32,4),I2(4),IS1(392,4),
1400     *                I3(4),I1B(32,4),I4(4),IS2(128,4),IE2(22,4)
1500     INTEGER*2 ID0, ID1, I1, I2, I3, I4, INT, IS1, I1B, IS2, IE2
1600 C
1700     COMMON /INP32/ JINT(32,4),JIS1(392,4),JI1B(32,4),JIS2(128,4),
1800     *                JIE2(22,4),
1900     *                JI1(4),JI2(4),JI3(4),JI4(4),JID1(13),JID1(27,4)
2000     INTEGER*4 JID0, JID1, JI1, JI2, JI3, JI4, JINT, JIS1, JI1B, JIS2, JIE2
2100     COMMON /STEUER/ MIST(4),PRINT,LSHORT,LT(5),LTIME
2200 C
2300     DIMENSION IT(4,3),IQW(16,5),MODE(5),ISHIF(2),ERG(32),AZI(16),
2400     *           ELV(9),ENW(8),ENWD(2),MOJ2(2),IQWTD(16,8)
2500     DIMENSION JIS1N(5,5,9,4),JIS1H1(7,7,8,4),JIS1H2(6,7,8,4),
2600     *           JIS2N(8,16,4)
2700     EQUIVALENCE (JIS1H1(1,1,1,1),JIS1(1,1)),(JIS2N(1,1,1),JIS2(1,1))
2800 C
2900     DATA IFR/10/,
3000     *     MODE /'NDM ', 'HDM1', 'HDM2', 'HDM3', 'HDM4'/, ISHIF /'NS ',
3100     *     'WS ' /, MOJ2 /'J2A ', 'J29 ' /
3200     DATA AZI /'AZ1 ', 'AZ2 ', 'AZ3 ', 'AZ4 ', 'AZ5 ', 'AZ6 ', 'AZ7 ',
3300     *     'AZ8 ', 'AZ9 ', 'AZ10', 'AZ11', 'AZ12', 'AZ13', 'AZ14',
3400     *     'AZ15', 'AZ16' /, ELV /'EL1 ', 'FL2 ', 'FL3 ',
3500     *     'EL4 ', 'EL5 ', 'EL6 ', 'FL7 ', 'FL8 ', 'FL9 ' /,
3600     *     ERG /'EN1 ', 'EN2 ', 'EN3 ', 'EN4 ', 'EN5 ', 'EN6 ', 'EN7 ',
3700     *     'EN8 ', 'EN9 ', 'EN10', 'EN11', 'EN12', 'EN13', 'EN14',
3800     *     'EN15', 'EN16', 'EN17', 'EN18', 'EN19', 'EN20', 'EN21',
3900     *     'EN22', 'EN23', 'EN24', 'EN25', 'EN26', 'EN27', 'EN28',
4000     *     'EN29', 'EN30', 'EN31', 'EN32' /
4100     DATA ENW /'EN1-', '8 ', 'EN9-', '16 ', 'EN17-', '-24 ', 'EN25-', '-32 ' /
4200     DATA IPAG /1/
4300     INTEGER KT(3)/1,3,6/
4400     LOGICAL MIST,PRINT,LSHORT,LTIME,LSTPT/.FALSE./
4500 C
4600     IF(.NOT.PRINT) RETURN
4700 C
4800 C KONVERSION UND KORREKTUR DER TL DATEN
4900     CALL CONV
5000 C
5100 C
5200 C LOOP UEBER DIE 4 EDF'S (INDEX J)
5300     J = 1
5400     IF(JK.NE.0) J=JK
5500 C
5600 C PRINTOUT KOPF
5700 C .....
```

```

5800 1000 IF( LSTRT) WRITE(IFR,100) J,IPAG
5900 IF(.NOT.LSTRT) WRITE(IFR,112) J,IPAG
6000 LSTRT = .TRUE.
6100 IPAG = IPAG+1
6200 ISEC = JIDO(9)/1000
6300 IMSEC = MOD(JIDO(9),1000)
6400 ISEC1 = JIDO(13)/1000
6500 IMSEC1 = MOD(JIDO(13),1000)
6600 C
6700 DO 10 I=1,3
6800 K = KT(I)
6900 IT(1,I) = JID1(K,J)/3600 000
7000 IT(2,I) = MOD(JID1(K,J),3600 000) / 60 000
7100 IT(3,I) = MOD(JID1(K,J),60 000) / 1000
7200 IT(4,I) = MOD(JID1(K,J),1000)
7300 10 CONTINUE
7400 I = JID1(10,J)+1
7500 MODD = MODE(I)
7600 ISHIFT = ISHIF(1)
7700 IF(JID1(11,J).LT.0) ISHIFT = ISHIF(2)
7800 WRITE(IFR,101) (JIDO(I),I=6,8),ISEC,IMSEC,(JIDO(I),I=10,12),
7900 * ISEC1,IMSEC1,JIDO(2),JIDO(1),JIDO(5),JIDO(3),
8000 * ((IT(K,I),K=1,4),I=1,2),MODD,ISHIFT,JID1(5,J)
8100 C
8200 IF(LTIME) WRITE(IFR,139)
8300 DO 12 I=20,27
8400 12 CALL JBIT16(JID1(I,J),IQWID(I,I-19) )
8500 C
8600 DO 11 I=1,5
8700 11 CALL JBIT16(JID1(14+I,J),IQW(1,I))
8800 WRITE(IFR,132)JID1(9,J),(IT(1,3),I=1,4),((IQWID(I,K),I=1,16),K=1,7
8900 * ),(IQWID(I,8),I=1,8),((IQW(I,K),I=1,16),K=1,5)
9000 C
9100 IF(.NOT.MIST(J)) GO TO 13
9200 C ALLE DATEN SCHLECHT
9300 WRITE(IFR,103)
9400 GO TO 70
9500 C
9600 C
9700 C SHORT PRINT OUT :: LSHORT=.TRUE.
9800 13 IF(LSHORT) GO TO 70
9900 C
10000 C
10100 WRITE(IFR,110) JIE2(1,J),JIE2(4,J),JIE2(2,J),JIE2(5,J),JIE2(3,J),
10200 * JIE2(6,J),JIDO(4)
10300 C
10400 C
10500 IF(JID1(10,J) .GT. 0) GO TO 50
10600 C
10700 C NDM PRINTOUT
10800 C .....
10900 MODJ2 = MOJ2(2)
11000 IF(MOD(JID1(17,J),2).EQ.1) MODJ2 = MOJ2(1)
11100 J1 = JID1(12,J)
11200 J2 = JID1(14,J)
11300 J3 = JID1(13,J)
11400 C

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```
11500      IF(JI3(J).EQ.1) WRITE(IFR,104)
11600      IF(JI3(J).NE.1) WRITE(IFR,105) (JI1B (I,J),I=1,32)
11700      IF(JI1(J).EQ.1) WRITE(IFR,106)
11800      IF(JI1(J).NE.1) WRITE(IFR,107) (JINT (I,J),I=1,32)
11900      IF(JI4(J).EQ.1) WRITE(IFR,108)
12000      IF(JI4(J).NE.1) WRITE(IFR,109) MODJ2,(AZI(K1),(JIS2N(K1,K2,J),
12100      *      K2=1,16),K1=1,8)
12200 C
12300      MASS = IABS(JID1(11,J) )
12400      IF(.NOT.(J1.EQ.32 .AND. J2.EQ.15 .AND.J3.EQ.16) ) GO TO 19
12500      WRITE(IFR,138) MASS
12600      GO TO 20
12700 19 WRITE(IFR,111) ERG(J1),ELV(J2),AZI(J3),MASS
12800 20 CONTINUE
12900 C
13000 C
13100 15 CONTINUE
13200      IF(JI2(J).EQ.1) GO TO 18
13300      DO 17 K=1,9,3
13400          KK = K+2
13500          WRITE(IFR,120) (ERG(J1-3+I),I=1,3)
13600          J1 = J1+3
13700          IF(K.EQ.1) WRITE(IFR,121) ((ELV(J2-3+I),I=1,5),II=1,3)
13800 C
13900      L=1
14000      DO 21 L1=1,9
14100          DO 21 L2=1,5
14200              DO 21 L3=1,5
14300                  JIS1N(L3,L2,L1,J) = JIS1(L,J)
14400 21 L = L+1
14500 C
14600      WRITE(IFR,122) ((AZI(J3-3+I),((JIS1N(K1,I,K3,J),K1=1,5),
14700      *      K3=K,KK) ) ,I=1,5)
14800 17 CONTINUE
14900      GO TO 70
15000 C
15100 18 WRITE(IFR,123)
15200      GO TO 70
15300 C
15400 C
15500 C
15600 C      HDM PRINTOUT
15700 C      .....
15800 50 CONTINUE
15900      MODJ2 = MOJ2(1)
16000      IF(JID1(10,J).EQ.3 .OR. JID1(10,J).EQ.4) MODJ2 = MOJ2(2)
16100      I = JID1(10,J)*2-1
16200      ENWD(1) = ENW(I)
16300      ENWD(2) = ENW(I+1)
16400      IF(JI3(J).EQ.1) WRITE(IFR,104)
16500      IF(JI3(J).NE.1) WRITE(IFR,130) (ENWD(I),I=1,2),(JI1B (I,J),I=1,P)
16600      IF(JI1(J).EQ.1) WRITE(IFR,106)
16700      IF(JI1(J).NE.1) WRITE(IFR,131) (ENWD(I),I=1,2),(JINT (I,J),I=1,8)
16800      IF(JI4(J).EQ.1) WRITE(IFR,108)
16900      IF(JI4(J).NE.1) WRITE(IFR,132) MODJ2,(AZI(K1),(JIS2N(K1,K2,J),
17000      *      K2=1,8),K1=1,8)
17100 C
```

```

17200 C
17300     J1 = JID1(12,J)
17400     J2 = JID1(14,J)
17500     J3 = JID1(13,J)
17600     MASS = IABS(JID1(11,J) )
17700     IF(.NOT.(J1.EQ.32 .AND. J2.EQ.15 .AND. J3.EQ.16) ) GO TO 54
17800     WRITE(IFR,138) MASS
17900     GO TO 55
18000 54 WRITE(IFR,111) ERG(J1),ELV(J2),AZI(J3),MASS
18100 55 CONTINUE
18200 C
18300     IF(JI2(J).EQ.1) GO TO 53
18400 C
18500     J1 = (JID1(10,J)-1)*8
18600     DO 51 K=1,8,2
18700     WRITE(IFR,133) (ERG(J1+I),I=1,2)
18800     J1 = J1+2
18900     IF(JID0(1).EQ.2 .OR. JID0(1).EQ.3) GO TO 52
19000     IF(K.EQ.1) WRITE(IFR,134) ((ELV(I),I=2,8),II=1,2)
19100 C
19200     WRITE(IFR,135) ((AZI(I+4),((JIS1H1(K1,I,K-1+K2,J),K1=1,7),
19300 *           K2=1,2)), I=1,7)
19400     GO TO 51
19500 52 IF(K.EQ.1) WRITE(IFR,136) ((ELV(I),I=2,7),II=1,2)
19600     L=1
19700     DO 56 L1=1,8
19800     DO 56 L2=1,7
19900     DO 56 L3=1,6
20000     JIS1H2(L3,L2,L1,J) = JIS1(L,J)
20100 56 L = L+1
20200 C
20300     WRITE(IFR,137) ((AZI(I+4),((JIS1H2(K1,I,K-1+K2,J),K1=1,6),
20400 *           K2=1,2)), I=1,7)
20500 51 CONTINUE
20600     GO TO 70
20700 C
20800 53 WRITE(IFR,123)
20900 C
21000 C
21100 C
21200 C
21300 C
21400 70 CONTINUE
21500     IF(JK.NE.0) RETURN
21600     J = J+1
21700     IF(J.LE.4) GO TO 1000
21800     RETURN
21900 C
22000 C
22100 C
22200 100 FORMAT(1H1,
22300 *           , ' **HELIOS/A** MPE-PRINTOUT DER EDF''2 VOM SORTED',
22400 *           ' DATA TAPE',T100,'EDF IN RECORD:',I2,' PAGE:',I3)
22500 112 FORMAT(1H ,
22600 *           , ' **HELIOS/A** MPE-PRINTOUT DER EDF''2 VOM SORTED',
22700 *           ' DATA TAPE',T100,'EDF IN RECORD:',I2,' PAGE:',I3)
22800 101 FORMAT(T5,'GRT ',I3,1X,I2,':',I2,':',I2,':',I3, T30,'SCT ',

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22900 * I3,I4,I2,':',I2,':',I2,':',I3, T55,'8/R',I5,4X,'FM',I2,7X,
23000 * 'DM',I2,7X,'MISSING EI DATA:',I6/
23100 * T5,'GPTEF ',4X ,I2,':',I2,':',I2,':',I3, T30,'SCTEF ',
23200 * 4X ,I2,':',I2,':',I2,':',I3,T55,A4,8X,A4,18X,'BIT ERROP RATE: ',
23300 * I6)
23400 102 FORMAT(T5,'INITL.TIME:',I8,T30,'SDTEF ',4X,I2,':',I2,':',I2,':',
23500 * I3/ , ' INITIAL DATA',T15,'WI- 8',2X,
23600 * 8(8I1,1X)/ T15,'W9-15',2X,7(8I1,1X) / T9,' ALLGEM. QW',T22,
23700 * 2(8I1,1X)/T9, ' IIA QW',T22,2(8I1,1X)/T9,' I2 QW',
23800 * T22,2(8I1,1X) /T9, ' I3 QW',T22,2(8I1,1X) / T9,
23900 * ' IIB QW',T22,2(8I1,1X) )
24000 103 FORMAT(1H ,T50,23(1H*),/T50,'*ALLES SCHLECHTE DATEN*/
24100 * T50,23(1H*)/ )
24200 104 FORMAT(/' I1R',T15,'NO DATA')
24300 105 FORMAT(/' I1R',T15,'ENI -16',16I6/T15,'EN17-32',16I6)
24400 106 FORMAT(/' I1A.INTEGR.',T15,'NO DATA')
24500 107 FORMAT(/' I1A INTEGR.',T15,'ENI -16',16I6/T15,'EN17-32',16I6)
24600 108 FORMAT(/' I2',T15,'NO DATA')
24700 109 FORMAT(/' ',A4,8(T15,A4,3X,16I6/))
24800 110 FORMAT(/' E2',T15,'X:',I5,'(',I3,')',3X,'Y:',I5,'(',I3,')',
24900 * 3X,'Z:',I5,'(',I3,')',5X,'NR.OF VALUE IN AVEPAGE:',I3)
25000 111 FORMAT( ' IIA/3',T17,'MAX ADR: ',3(A4,2X),' MASS CHNL.NR.:',I4)
25100 C
25200 120 FORMAT(T37,A4,T68,A4,T099,A4)
25300 121 FORMAT(T25,3(5(A4,2X),1X) )
25400 122 FORMAT(5(T15,A4,3X,5I6,1X,5I6,1X,5I6/) )
25500 123 FORMAT( T15,'NO DATA')
25600 130 FORMAT(/' I1R',T15,2A4,8I6)
25700 131 FORMAT( ' I1A INTEGR.',T15,2A4,8I6)
25800 132 FORMAT(/' ',A4,8(T15,A4,4X,8I6/))
25900 133 FORMAT(T36,A4,T80,A4)
26000 134 FORMAT(T21,2(7(A4,2X),2X) )
26100 135 FORMAT(7(T15,A4,2(7I6,2X)/) )
26200 136 FORMAT(T21,2(6(A4,2X),6X) )
26300 137 FORMAT(7(T15,A4,2(6I6,6X)/) )
26400 138 FORMAT(' IIA/3',T17,'MAX ADR: ',3('XXX',2X),' MASS CHNL.NR.',
26500 * [4)
26600 139 FORMAT(1H ,T55,'** SCTEF UND SDTEF WURDEN KORPIGIERT **')
26700 END

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100 C----- KZM:HELIOS2.JBIT16
200     SUBROUTINE JBIT16(IN,IBIT)
300 C
400 C     UMWANDLUNG EINER INTEGERZAHT IN EINEN
500 C     16KKOMPONENTEN-VEKTOR DER BINAERDARSTELLUNG
600 C
700 C     DIMENSION  IBIT(16)
800 C
900     INT=IN
1000    IF(INT) 2,2,3
1100    2 DO 22 I=1,16
1200    22 IBIT(I)=0
1300    RETURN
1400 C
1500    3 DO 33 I=1,16
1600    J=17-I
1700    IBIT(J)=INT-(INT/2)*2
1800    33 INT=INT/2
1900    RETURN
2000    END
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100 C*** MITTELWERT PROGRAMM : MAIN
200 C.....
300 C MITTELUNG DER PARAMETER
400 C VERSION 30.7.76 RRS
500 C 18.10.76 RRS
600 C 30.03.77 KZM MIT IIB IM AUSDRUCK
700 C.....
800 C
900 COMMON /PARAM/ FINT(32),F1B(32),CAT(136)
1000 COMMON /CARRI/ CLONG(2),CLAT(2),CRCT(2),HELICS
1100 COMMON/ZEIT/ S,IYR,IJA,ITA,IST,IMI,ISE
1200 DIMENSION DDAT(17,8)
1300 EQUIVALENCE (DDAT(1,1),CAT(1))
1400 REAL*8 SUM(200),SUMSQ(200)
1500 REAL*4 PAR(200),FSUM(200),FSUMSQ(200)
1600 REAL*4 A(6),F(50)
1700 INTEGER*4 TSTRT(4),TEND(4),TIME(2),TTT0,TTT1,TTTI,TDEL,S
1800 INTEGER*4 IFR/20/,JFR/ 8/,KFR/21/, NP(200), ILINE/29/, JLINE/30/
1900 INTEGER*4 IPAGE/0/,IDAT3/0/,IDAT4/0/
2000 LOGICAL*4 FIN/.FALSE./,FORCE/.FALSE./, LMITTL,LTAPE,FCRM
2100 LOGICAL*4 LLTAPE/.FALSE./, LST/.TRUE./ ,LSTRT/.FALSE./
2200 C
2300 C
2400 CALL DATE(A)
2500 NFILE = 1
2600 ITI = ITIME(0)
2700 C
2800 WRITE(6,200) (A(I),I=5,6),(A(I),I=1,4)
2900 200 FORMAT(1H1 ////////////// T10,'JOB :: ',2A4/T10,'DATE :: ',2A4/T10,
3000 * 'TIME :: ',2A4////////)
3100 C
3200 READ(5,100) TSTRT,TEND,TDEL,CREFF,LTAPE
3300 100 FORMAT(' ',2I4,2I3,'-',2I4,2I3,' TDEL:',I5,1X ,' CREFF:',F5.3,
3400 * ' LTAPE:',L2)
3500 READ(5,102) NTAPES
3600 102 FORMAT('ANZAHL DER BAENDER:',I2)
3700 WRITE(6,202) TSTRT,TEND,TDEL,CREFF,LTAPE
3800 202 FORMAT(' STEUERPARAMETER:',/' START:',2I4,2I3, ' - BIS:',2I4 ,
3900 * 2I3 ,/' TDEL:',I5,1X ,' CREFF:',F5.3,' LTAPE:',L2,/)
4000 WRITE(6,203) NTAPES
4100 203 FORMAT(' ANZAHL DER BAENDER:',I2)
4200 C
4300 C SPCOL BIS STARTZEIT
4400 TTT0 = (TSTRT(2)-1)*86 400 + TSTRT(3)*3600 + TSTRT(4)*60
4500 TTT1 = (TEND(2)-1)*86 400 + TEND(3)*3600 + TEND(4)*60
4600 IF(TSTRT(1).EQ.0) GC TO 12
4700 10 CONTINUE
4800 READ(IFR,END=9000 )DAT
4900 TTTI =( DAT(3)-1) *86 400 + DAT(4)/1000
5000 IF(TSTRT(1).GT.IFIX(ABS(DAT(2)))) .CR.
5100 * TSTRT(1).EQ.IFIX(ABS(DAT(2))).AND.TTTI.LT.TTT0) GC TO 10
5200 BACKSPACE IFR
5300 C
5400 12 NPAR = 15
5500 NSPEC = 0
5600 NMITTL = 0
5700 NIA = 0

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5800      N3 = 0
5900 C
6000 C   VERARBEITUNGSLCCP
6100 C   .....
6200 10000 CONTINUE
6300 C   READ (IFR,END=7000)DAT
6400      CALL IPPGET(IFR,DAT,544,.FALSE.,LRECL,END,37000)
6500 C
6600      IF(DAT(19).EQ.0.) GO TO 10000
6700      IF(DAT(3) .LT. IDAT3) GOTO 10000
6800      IF(DAT(4) .LT. IDAT4) GOTO 10000
6900 20 CONTINUE
7000      NSPEC = NSPEC + 1
7100      TIME(1) = ABS(CAT(2))
7200      TIME(2) = ( CAT(3)-1)*86400 + DAT(4)/1000
7300 C
7400 C   PAR(1) ABSTAND IN AU   PAR(2)  CL(ENTSPR CREFF)   PAR(3)  LATITUDE
7500 C   PAR(4) PROTONEN GESCHW PAR(5)  TEMP/1000.       PAR(6)  DICHTE
7600 C   PAR(7) ALPHA(AZIM)    PAR(8)  PHI(EPSYL)
7700 C   PAR(9) ALPHAS  GESCHW PAR(10) TEMP/1000.        PAR(11) DICHTE
7800 C   PAR(12) I1B VP        PAR(13) TP/1000.          PAR(14)  NP
7900 C   PAR(15)              PAR(16)  RCTATICN NR.
8000 C
8100      PAR(1) = DAT(8)
8200      PAR( 2) = DAT( 7)
8300      PAR( 3) = DAT(12)
8400      DC 20 I=1,3
8500      PAR(I+3) = CAT(18+I)
8600      PAR(I+8) = CAT(103+I)
8700      PAR(I+11) = DDAT(1+I,8)
8800 20 CONTINUE
8900 C
9000      PAR( 7) = DAT(30)
9100      PAR( 8) = DAT(29)
9200 C   KORREKTUR DER DICHTEN
9300      IF(CREFF.EQ.0.) GO TO 22
9400      PAR(6) = PAR(6)* (PAR(1)/CREFF)**2
9500      IF(CREFF.EQ.0.1) PAR(6)=PAR(6)/100
9600      PAR(14) = PAR(14)* (PAR(1)/CREFF)**2
9700      IF(CREFF.EQ.0.1) PAR(14)=PAR(14)/100
9800      PAR(11) = PAR(11)* (PAR(1)/CREFF)**2
9900      IF(CREFF.EQ.0.1) PAR(11)=PAR(11)/100
10000 22 CONTINUE
10100 C
10200 C   AUSREISSER
10300 C   C.1*<DICHTE> < DICHTE < 10*<DICHTE>
10400      IF(LST) GO TO 21
10500      IF(NP(6).LE.1) GO TO 21
10600      S1 = 10.*SUM(6)/NP(6)
10700      S2 = 0.1*SUM(6)/NP(6)
10800      IF(PAR(6).GT.S2.AND.PAR(6).LT.S1) GO TO 21
10900      J1 = TIME(1)
11000      J2 = TIME(2)/86400 +1
11100      J3 = MOD(TIME(2),86400)/3600
11200      J = J3-J3S
11300      IF(J.LT.0) J = 24+J
11400      IF(J.GT.3) GO TO 21
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11500      J4 = MOD(TIME(2),3600)/ 60
11600      WRITE(6,218) J1,J2,J3,J4,PAR(6),S1,S2
11700 218  FORMAT('          AUSREISSER BEI ',4I6, '  DICHTE:',E15.5,
11800      *      '  GRENZEN:',2E20.5)
11900      GO TO 10000
12000 C
12100      21 CONTINUE
12200      LST = .FALSE.
12300      J35 = MOD (TIME(2),86400)/3600
12400 C
12500      PAR (5) = PAR( 5)/1000.
12600      PAR(10) = PAR(10)/1000.
12700      PAR(13) = PAR(13)/1000.
12800 C
12900 C
13000 C
13100      CALL MITTL (PAR,NPAR,TIME,TDEL, SUM,SUMSQ,AP,LMITTL,LSTRT)
13200 C      .....
13300 C
13400      IF(PAR(4).NE.0 .AND. DAT(16).GT.0.) N1A = N1A+1
13500      IF(PAR(4).NE.0 .AND. DAT(16).LT.0.) N3 = N3 +1
13600 C
13700      IF(FIN .OR. FORCE ) GO TO 54
13800      IF(ITIME(0).LT.100) FORCE = .TRUE.
13900      IF(TIME(1).GT.TEND(1) .OR.
14000      *      TIME(1).EQ.TEND(1).AND.TIME(2).GT.TTT1) FIN = .TRUE.
14100      IF(.NOT.FORCE .OR. .NOT.FIN ) GC TO 54
14200 8000  DAT(2) = 99
14300      GO TO 30
14400 C
14500 C      END FILE
14600 7000 CONTINUE
14700      WRITE(6,222)
14800 222  FORMAT(' **** END OF FILE *****')
14900      NFILE = NFILE+1
15000      IF(NFILE.GT.NTAPES) FIN = .TRUE.
15100      IF(FIN) GO TO 9000
15200      GO TO 10000
15300 C
15400 C
15500      54 IF(.NOT.LMITTL) GO TO 10000
15600 C
15700 C
15800 C      NEUER MITTELWERT
15900 C      .....
16000 C
16100 C
16200 C      UMRECHNUNG IN CARRINGTON-LAENGE
16300 C
16400      IYR =      TIME(1)
16500      ITIM = TIME(2)/86400
16600      ISEC = TIME(2)-ITIM*86400          +TDEL*30
16700      ITIM=(ITIM+1)*100000
16800 C      WRITE(6,334) TIME,IYR,ITIM,ISEC
16900 C334  FORMAT('  TIME: ',2I10, '  IYR, ITIM, ISEC :', 3I10)
17000      IF(ISEC.LT.86400) GC TO 56
17100      ISEC = ISEC-86400
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17200          ITIM = ITIM+100000
17300          56 CONTINUE
17400          HELICS = SUM(2)
17500          DE = 0.
17600          CALL CARRY(IYR,ITIM,ISEC,DE)
17700 C        ZURUECKRECHNUNG DER CARR.LCNG AUF XX AU
17800          AE = 149.598E+06
17900          CLO = CLCNG(1)
18000          CLAD= CLAT(1)
18100          DE= (SUM(1)-CREFF)*AE / SUM(4) /86400.
18200 C        WRITE(6,335) HELICS,SUM(2),SUM(1),SUM(4),DE
18300 C335     FORMAT(' ',5E12.4)
18400          IF(CREFF.NE.0.)CALL CARRY(IYR,ITIM,ISEC,DE)
18500          CLCR =CLONG(1)
18600          CLACR=CLAT(1)
18700          RCTNO = CROT(1)
18800 C        ZEITKORREKTUR BEI CREFF .NE. 0.0
18900          IF(CREFF.EQ.0.0) GO TO 63
19000          S = TIME(2) + TDEL*30 + (CREFF-SUM(1))*AE/SUM(4)
19100          CALL DATUM
19200 C
19300          63 CONTINUE
19400 C
19500          NMITTL = NMITTL + 1
19600          ILINE = ILINE + 1
19700          IF(ILINE.LT.JLINE) GO TO 60
19800 C        NEUE SEITE          : UEBERSCHRIFTEN
19900          IPAGE = IPAGE + 1
20000          ILINE = 1
20100          IHCS = 1
20200          IF(DAT(2).LT.0.) IHCS = 2
20300          WRITE(JFR,210) IHCS,TDEL,(A(I),I=5,6),(A(I),I=1,2)
20400          210  FORMAT(1H1, ' HELICS ',11,'-E1 MITTELWERTE UEBER ',15,
20500          * ' MIN. EINDIMENSIONALE AUSWERTUNG VON IIA-DATEN ',
20600          * T110,'JOB: ',2A4,1X,2A4)
20700          IF(CREFF.NE.0.0) WRITE(JFR,212) CREFF
20800          212  FORMAT(1H+,186,' , BEZOGEN AUF ',F5.3,' AU' / )
20900          WRITE(JFR,211) RCTNO
21000          211  FORMAT(T18,'KCOORDINATEN',T50,' PROTONEN',T77,' ALPHA-TEILCHEN',
21100          * T110,'ROTATION: ',F6.0/
21200          * ' CATUM          R      LONG      LAT      IIA:VP      TP      NP ',
21300          * ' ALPHA      EPS          VA      TA      NA      IIB:VP      TP      NP ',
21400          * ' ',
21500          * '          AU      GRAD      GRAD      KM/S      1000K      CM**-3',
21600          * ' GRAD      GRAD      KM/S      1000K      CM**-3      KM/S      1000K      CM**-3 ',
21700          * ' ')
21800          60 CONTINUE
21900 C
22000 C        PRINT NEUEN MITTELWERT
22100          DO 62 I=1,NPAR
22200          FSUM(I) = SUM(I)
22300          62  FSUMSQ(I) = SUMSQ(I)
22400          J1 = TIME(1)
22500          J2 = TIME(2)/86400 +1
22600          J3 = MOD(TIME(2),86400)/3600
22700          J4 = MOD(TIME(2),3600)/ 60
22800          FSUM(2) =CLCR

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22900 C
23000      NP(4) = N1A
23100      NP(7) = N3
23200      NP(8) = NP(12)
23300      NP(9) = NP( 9)
23400 C
23500      FSUM(3) =CLACR
23600 C
23700      WRITE(JFR,213) J1,J2,J3,J4,(FSUM(I),I=1,14)
23800 213  FORMAT(' ',I2,I4,2I3,' ',F6.4,1X,F6.2,1X,F6.3,' ',
23900      * F6.1,1X,F6.1,1X,F6.2,1X,F6.2,1X,F6.2,' ',F6.1,1X,F6.1,1X,
24000      * F6.3,' ',F6.1,1X,F6.1,2X,F6.2,2X )
24100      WRITE(JFR,214) NP(4),NP( 7),NP(8),NP(9),(FSUMSQ(I),I=4,14)
24200 214  FORMAT(T15 ,4I5,' ',
24300      * F6.1,1X,F6.1,1X,F6.2,1X,F6.2,1X,F6.2,' ',F6.1,1X,F6.1,1X,
24400      * F6.3,' ',F6.1,1X,F6.1,2X,F6.2,2X )
24500      IF(CREFF.NE.0.0) WRITE(JFR,215) ITA,IST,IMI
24600 215  FORMAT(1H+,2X,I4,2I3)
24700 C
24800      IF(.NOT.LTAPE) GO TO 64
24900      IF(LLTAPE) GO TO 65
25000      LLTAPE = .TRUE.
25100      WRITE(6,220) J1,J2,J3,J4,TDDEL,CREFF
25200 220  FORMAT(//' **OUTPUT AUF TAPE ',T30,' STARTZEIT:',4I4/
25300      *      ' MITTELUNG UEBER:',I4,' (MIN)' //' CREFF:',F5.3)
25400 65  CONTINUE
25500 C  OUTPUT AUF TAPE
25600      F(1) = J1
25700      F(2) = J2
25800      F(3) = J3
25900      F(4) = J4
26000      IF(CREFF.NE.0.0) GO TO 68
26100      F(5) = J1
26200      F(6) = J2
26300      F(7) = J3
26400      F(8) = J4
26500      GO TO 69
26600 C
26700 68  F(5) = IJA
26800      F(6) = ITA
26900      F(7) = IST
27000      F(8) = IMI
27100 C
27200 69  DO 66 I=1,15
27300      66  F(I+8) = FSUM(I)
27400      F(23) = 0.
27500      F(24) = NP(4)
27600      F(25) = NP(7)
27700      F(26) = NP(8)
27800      F(27) = NP(9)
27900      DO 67 I=1,12
28000 67  F(27+I) = FSUMSQ(I+3)
28100      F(39) = 0.
28200      F(40) = RCTND
28300 C
28400      LRECL = 160
28500      FORM = .TRUE.

```



```
28600      CALL IPPPUT(KFR,F ,LRECL,FCRM)
28700      64 CONTINUE
28800      IF(FIN.OR.FORCE) GO TO 9000
28900      N1A = 0
29000      N3 = 0
29100      LST = .TRUE.
29200      GO TO 30
29300 C
29400 C      EXIT
29500      9000 CONTINUE
29600 C      ....
29700      IT2 = ITIME(0)
29800      KTEND = IT1-IT2
29900      IT1 = KTEND/100
30000      IT2 = KTEND-IT1*100
30100      IF(LTAPE) WRITE(6,221) J1,J2,J3,J4
30200      221 FORMAT(' **OUTPUT AUF TAPE BEENDET:',I30,'      ENDZEIT:',4I4)
30300      IF(LTAPE) ENCFILE KFR
30400      WRITE(6,209) IT1,IT2
30500      209 FORMAT(T10,' VERBRAUCHTE CPU-ZEIT:',I4,'.',I3)
30600      WRITE(6,205) NSPEC,NMITTL,J1,J2,J3,J4
30700      205 FORMAT(T10,' ANZAHL DER ZYKLEN:',I10/T10,' ANZAHL C MITTELWERTE:',
30800      * I5/T10,' ENDZEIT:',I3,':',I3,'.',I2,'.',I2)
30900      IF(FORCE) WRITE(6,206)
31000      206 FORMAT(T10,' CPU-ZEIT ERSCHOEPFT')
31100      IF(FIN) WRITE(6,207)
31200      207 FORMAT(T10,' ENDZEIT ERREICHT')
31300      WRITE(6,208)
31400      208 FORMAT(T10,'***** END CF JCB *****')
31500 C
31600      STOP
31700      END
```

```
100      SUBROUTINE MITTL(PAR,NPAR,TIME,TDEL,  SUM,SUMSQ,NP,LMITTL)
200 C .....
300 C  MITTEL VON PARAMETERN UBER TDEL-ZEITINTEVALL
400 C  NACH JEDEM NEUEN MITTELWERT MUESSEN D PARAM UND ZEIT NOCHMALS
500 C                                     EINGEGEBEN WERDEN (CALL AUFRUF)
600 C
700 C  NPAR      : ANZAHL DER PARAMETER
800 C  PAR(NPAR) : PARAMETER
900 C  TIME(2)   : ZEIT::JAHR-SEC OF JAHR
1000 C          WENN NEUER MITTELWERT,DANN ENTHAELT TIME DIE STARTZEIT
1100 C          DES MITTELUNGSINTERVALLS
1200 C  TDEL      : MITTELUNGS-ZEIT INTEVALL (MINUTEN)
1300 C
1400 C  SUM(NPAR)  : MITTELUNGSWERT (WENN LMITTL.FALSE,DANN NUR SUMME)
1500 C  SUMSQ(NPAR): STANDART ABWEICHUNG
1600 C  NP(NPAR)  : ANZAHL DER PUNKTE
1700 C  LMITTL    : .TRUE. WENN NEUER MITTELUNGSWERT
1800 C
1900 C .....
2000 C
2100 C      REAL*8 SUM(1),SUMSQ(1),SU
2200 C      REAL*4 PAR(1)
2300 C      INTEGER*4 TIME(2),TSTRT(2),TEND(2),TDEL
2400 C      INTEGER*4 NP(1),ISCHLT
2500 C      LOGICAL*4 LMITTL,LSTRT /.FALSE./
2600 C
2700 C
2800 C      IF(LSTRT) GO TO 50
2900 C      LSTRT = .TRUE.
3000 C  ERSTER WERT:INITIALISIERUNG
3100 C  START-ENDZEIT::
3200 C      TSTRT(1) = TIME(1)
3300 C      TSTRT(2) = TIME(2)
3400 C  START-ZEIT AUF VIELFACHEN VON MINUTEN RUNDEN
3500 C      TSTRT(2) = (TSTRT(2)/(60*TDEL)) * (60*TDEL)
3600 C      TEND(1) = TSTRT(1)
3700 C      TEND(2) = TSTRT(2) + TDEL*60
3800 C      ISCHLT = MOD(TEND(1),4)
3900 C      IF(.NOT.(ISCHLT.NE.0 .AND. TEND(2).GT.31 536 000
4000 C      *      .OR. ISCHLT.EQ.0 .AND. TEND(2).GT.31 622 400)) GO TO 10
4100 C  NEUES JAHR
4200 C      TEND(1) = TEND(1) + 1
4300 C      IF(ISCHLT.NE.0) TEND(2) = TEND(2)-31 536 000.
4400 C      IF(ISCHLT.EQ.0) TEND(2) = TEND(2)-31 622 400.
4500 C 10 CONTINUE
4600 C      DO 12 I=1,NPAR
4700 C          NP(I) = 1
4800 C          IF(PAR(I).EQ.0) NP(I) = 0
4900 C          SUM(I) = PAR(I)
5000 C 12  SUMSQ(I) = PAR(I)**2
5100 C      LMITTL = .FALSE.
5200 C      WRITE(6,888) TIME,TSTRT,TEND
5300 C 888 FORMAT(6I10)
5400 C      RETURN
5500 C
5600 C
5700 C 50 CONTINUE
```

```
5800 C   ENDZEIT ERREICHT
5900     IF(TIME(1).GT.TEND(1) .OR.
6000     *   TIME(1).EQ.TEND(1).AND.TIME(2).GT.TEND(2)) GO TO 60
6100     IF(TIME(1).LT.TSTRT(1) .OR.
6200     *   TIME(1).EQ.TSTRT(1) .AND. TIME(2).LT.TSTRT(2)) GO TO 60
6300 C   AUFSUMMIEREN
6400     DO 52 I=1,NPAR
6500     IF(PAR(I).EQ.0.) GO TO 52
6600     NP(I) = NP(I) + 1
6700     SUM(I) = SUM(I) + PAR(I)
6800     SUMSQ(I) = SUMSQ(I) + PAR(I)**2
6900 52 CONTINUE
7000 C
7100     RETURN
7200 C
7300 C
7400 C   NEUER MITTELWERT
7500 60 CONTINUE
7600     LMITTL = .TRUE.
7700     LSTRT = .FALSE.
7800     DO 62 I=1,NPAR
7900     SU = 0.
8000     IF(NP(I).LE.1) GO TO 61
8100     SUM(I) = SUM(I)/NP(I)
8200     SU    = (SUMSQ(I)-SUM(I)**2*NP(I))
8300     IF(SU.LT.0.00) SU = 0.00
8400     SU = DSQRT(SU/(NP(I)-1))
8500 61 SUMSQ(I) = SU
8600 62 CONTINUE
8700     TIME(1) = TSTRT(1)
8800     TIME(2) = TSTRT(2)
8900 C   WRITE(6,888)TIME,TSTRT,TEND
9000 C
9100     RETURN
9200     END
```

```
100 C-----MIM:HELICS.DATUM
200 SUBROUTINE DATUM
300 C*****
400 C
500 C BERECHNUNG DES DATUMS AUS DER SEKUNDENZAHL S DES JAHRES IYR
600 C S DARF AUCH NEGATIV SEIN ,ABER NICHT MEHR ALS EIN JAHR .
700 C DAS ERGEBNIS STEHT IN IJA,ITA,IST,IMI,ISE
800 C
900 C*****
1000 C
1100 INTEGER S,ST
1200 COMMON/ZEIT/ S,IYR,IJA,ITA,IST,IMI,ISE
1300 IJA=IYR
1400 ST=S
1500 IF(S .GE. 0.)GOTO 302
1600 C ZUERST BEHANDLUNG VON NEGATIVEM S
1700 J=0
1800 300 IF (ST .GT. 0 ) GOTO 301
1900 ST = ST + 86400
2000 J = J+1
2100 GOTO 300
2200 301 IJA =IYR -1
2300 IF (MOD(IJA,4) .EQ. 0 ) GOTO 3011
2400 ITA = 365-J+1
2500 GOTO 302
2600 3011 ITA = 366-J+1
2700 C
2800 C FALLS S POSITIV
2900 302 NMI = ST/60
3000 ISE = ST- NMI *60
3100 NST = NMI/60
3200 IMI = NMI - NST*60
3300 NTA = NST/24
3400 IST = NST - NTA*24
3500 IF (S .LT. 0 )GOTO 310
3600 ITA = NTA+1
3700 IF (NTA .LT. 365) GOTO 310
3800 C
3900 C KOMPLIKATIONEN ,WENN DAS JAHRESENDE UEBERSCHRITTEN WIRD
4000 C ES KANN JA GERADE EIN SCHALTJAHR SEIN
4100 IF (MOD(IYR,4) .NE. 0 )GOTO 304
4200 C SCHALTJAHR
4300 IF (NTA .NE. 365) GOTO 305
4400 GOTO 310
4500 305 IJA = IYR +1
4600 ITA = ITA -366 +1
4700 GOTO 310
4800 C KEIN SCHALTJAHR
4900 304 IJA = IYR +1
5000 ITA = ITA -365 +1
5100 GOTO 310
5200 C KEIN JAHRESENDE
5300 310 CONTINUE
5400 RETURN
5500 END
```

```

100 C-----MIM:HELIOS.CARRY
200 SUBROUTINE CARRY(IYR,ITIM,ISEC,DE)
300 COMMON /CARRI/ CLONG(2),CLAT(2),CROT(2),HELICS
400 DATA IYLIST,IDLST/0,0/
500 C
600 C THIS SUBROUTINE CALCULATES THE CARRINGTON LONGITUDE USING
700 C THE QUANTITIES YEAR (IYR), THE DAY NUMBER IN THE YEAR (ID),
800 C BEGINNING WITH JAN.1=1. HELICS CONTAINS THE ANGLE BETWEEN
900 C THE EARTH-SUN LINE AND THE HELICS SPACECRAFT
1000 C
1100 C VERSION VOM 18.10.76 RRS
1200 C
1300 ID=ITIM/100000
1400 IDY=ID
1500 IF(ID.EQ.IDLST.AND.IYR.EQ.IYLIST) GO TO 5
1600 DAY=DA64(IDY,IYR)
1700 5 CCNTINUE
1800 C PRINT 5032,IYR,ID,ISEC,CLONG(1),HELIOS,CLAT(1),CROT(1)
1900 IF(HELIOS.GE.180.)HELIOS=HELIOS-360.
2000 C=DAY+ISEC/86400. - DE
2100 CALL SCLAR(D,HELICS)
2200 IDLST=IDY
2300 IYLIST=IYR
2400 C PRINT 5032,IYR,ID,ISEC,CLONG(1),HELIOS,CLAT(1),CROT(1)
2500 C5032 FORMAT(1X,3I15,5F15.3)
2600 IF(CLONG(1).GT.360.) CLONG(1)=CLONG(1)-360.
2700 RETURN
2800 C DEBUG INIT
2900 END
3000 FUNCTION DA64(NDA,NYR)
3100 C DA64=NUMBER OF DAYS SINCE JAN.1,1964 TO NDA/NYR
3200 N=NYR
3300 IF(N.LT.100) N=N+1900
3400 IF((N.GT.2000).OR.(N.LT.1964)) GO TO 22
3500 ADD=0.
3600 2 IF(N.EQ.1964) GO TO 21
3700 NN=N-1
3800 ADD=ADD+365.
3900 IF(MOD(NN,4).EQ.0) ADD=ADD+1.
4000 N=N-1
4100 GO TO 2
4200 21 DA64=ADD+NDA
4300 RETURN
4400 22 PRINT 9,N,N
4500 9 FORMAT(1HQ///26HQNYR.GT.2000 OR .LT. 1964 ,120)
4600 RETURN
4700 C DEBUG INIT
4800 END
4900 SUBROUTINE SCLAR(D,DELL)
5000 DATA IFST,D0,D1,D2/0,2715.5,2558.,1096./
5100 C
5200 C THIS ROUTINE CALCULATES THE CARRINGTON LONGITUDE, LATITUDE
5300 C AND SOLAR ROTATION NUMBER AND STORES THE RESULTS, RESPECTIVELY,
5400 C IN THE FIRST WORD OF THE ARRAYS CLONG,CLAT,CROT
5500 C
5600 C VERSION VOM 18.10.76 RRS
5700 C

```

```
5800      COMMON/CARRI/CLONG(2),CLAT(2),CRCT(2),HELICS
5900      IF(IFST.GT.0) GO TO 5
6000      IFST=1
6100      5 CONTINUE
6200      CLONG(1)=-230.38-(D-D1)*360./27.2753
6300      CLONG(1)=CLONG(1)+2.31*SIN(0.0172024*(D-D2))
6400      L=-CLONG(1)/360.
6500      IF(CLONG(1).GT.0.) L=L-1
6600      CLONG(1)=CLONG(1)+(L+1)*360.
6700      CLAT(1)=7.25*SIN((D-D2) *0.01720242 + CELL *0.0174533)
6800      CRCT(1)=1569+L
6900      CLONG(1)= CLONG(1) + HELICS
7000      IF(CLONG(1) .LE. 360.) GOTO 10
7100      CLONG(1) = CLONG(1)- 360.
7200      CRCT(1) = CRCT(1) - 1
7300      10 IF (CLONG(1) .GE. 0.) GOTO 11
7400      CLONG(1) = CLONG(1) + 360.
7500      CRCT(1) = CRCT(1) + 1
7600      11 RETURN
7700 C     DEBUG INIT
7800      END
```


Die Autoren dieses Berichts werden auf schriftliche Anforderung interessierter Leser weitere Programmlisten gern zur Verfügung stellen.

