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THE ROSCOE MANUAL

Volume 9 - Low-Altitude Fireball Thermal and UV Radiation Models

Mission Research Corporation
735 State Street
Santa Barbara, California 93101

27 December 1974

Final Report

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) A simple analytical model, suitable for use in systems analysis codes, is presented of the thermal radiation intensity from a nuclear burst as a func- tion of time and yield and for an altitude range from near surface to 50 kilometers. The model divides the photon energy into six broad bands including infrared, red, green, blue, near ultraviolet and far ultraviolet.			

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SECTION 1

INTRODUCTION

Several analytical expressions have been developed which allow a rapid and fairly accurate determination of radiation intensity as a function of photon energy, time, weapon yield and burst altitude, and of radiated energy as a function of photon energy, yield, and burst height. The formulations were designed for use in chemistry calculations of photo-detachment and photo-dissociation.

The analytical expressions, contained in subroutine RADOUT (described in detail in Section 2) were obtained through the development of empirical formulations, based primarily on RADFLO code output and on limited MODEL III code data. More specifically, a set of equations was designed to allow the generation of a radiation power-time curve, appropriate for specified weapon yields and burst heights. The fractional contribution of power in each of a set of six photon energy bands is approximated as a function of time over the time period of interest.

On the basis of the power-time curve equations and the fractional energy band contribution versus time equations, an approximation can be made of the output power at any specified time for a particular set of input parameters. If the desired output is in terms of radiated energy, a simple trapezoidal time integration of power in the different energy bands is performed. Final outputs of power and energy are in units of photons/second and photons, respectively.

Ranges of interest for the parameters for use in specifying a case to be calculated were established early during the study, and are as follows:

Power($h\nu, t, Y, h_B$)

Energy($h\nu, Y, h_B$)

where

$h\nu$ 0.44 eV ~ 6 eV

t 10^{-6} sec ~ several sec

Y Few kT ~ several MT

h_B 0 km ~ 100 km

Applications of the power and energy formulations noted above are intended to be used in calculations of photo-detachment and photo-dissociation. Photo-detachment currently applies to several basic negative ions; O_2^- , O^- , O_3^- , CO_3^- , CO_4^- , NO_3^- , $ONOO^-$, and NO_2^- . With respect to photo-dissociation of ions, the power formulation (i.e., $P(h\nu, t, Y, h_B)$) is applicable. However, for the photo-dissociation of neutrals, the formulation reflecting integrated power ($E(h\nu, Y, h_B)$) is appropriate. An area of particular interest was identified which involves the photo-dissociation of O_3 , and a specific band of wavelengths of $2550 \text{ \AA} \pm 250 \text{ \AA}$ was stated as applicable. However, as is described in Section 2, subroutine RADOUT is sufficiently flexible to allow the specification of any particular photon energy of interest, and some range of energies around this point, within certain bounds.

The majority of data used in the formulation of the analytical expressions was obtained from RADFLO code runs. Only limited use was made

of data from MODEL III runs. Format of the RADFLO output data pertinent to the development of the aforementioned equations was as follows:

Real time (seconds)

Power escaping the grid

IR	$0.45 \leq h\nu \leq 1.82$ eV	(27550 Å - 6800 Å)
Red	$1.82 < h\nu \leq 2.137$ eV	(6800 Å - 5800 Å)
Green	$2.137 < h\nu \leq 2.583$ eV	(5800 Å - 4800 Å)
Blue	$2.583 < h\nu \leq 3.265$ eV	(4800 Å - 3800 Å)
Near UV	$3.265 < h\nu \leq 4.13$ eV	(3800 Å - 3000 Å)
Far UV	$4.13 < h\nu \leq 7.25$ eV	(3000 Å - 1710 Å)
Visible	$1.82 < h\nu \leq 3.265$ eV	(6800 Å - 3800 Å)
Thermal	$0.45 < h\nu \leq 4.13$ eV	(27550 Å - 3000 Å)
Total	$0.45 < h\nu \leq 12000$ eV	

Integrated Power

$$\begin{aligned} &\int (IRP) dt \\ &\int (VP) dt \\ &\int (TP) dt \\ &\int (NUVP + FUVVP) dt \end{aligned}$$

The initial set of data used in developing the formulation of equations was the 0 to 25 km, 4 kT to 4 MT set of bursts shown below. It is noted, however, that adjustments of the constants for the power and time equations ultimately included in subroutine RADOUT significantly reflect the 5 kT, 3 through 50 km data runs.

4 kT @ 2,5,10,18 and 25 km
 40 kT @ 0,2,10,18 and 25 km
 400 kT @ 5,10,18, and 25 km
 4000 kT @ 2,5,10,18, and 25 km

10 KT @ 21 km
2000 KT @ 35 km
2000 KT @ 45 km
5 KT @ 3,9,19,27,31,34,37,42 and 50 km
4000 KT @ 60 km

SECTION 2

MODEL DESCRIPTION

The development of subroutine RADOUT, and the referenced power-time curve related equations, were initially implemented in a computer-time-share program called THERMAL1. This program consists of a simple driver, used to provide the case input and other quantities which are calculated in other parts of the overall code, and the radiation output subroutine, RADOUT. Subroutine RADOUT is currently also contained in code "MODEL" and is called by subroutine MODLON. There are some minor differences between the two subroutines, due primarily to operation of the subroutine in two different computer systems. However, the basic operation and structure of the two versions are virtually identical, and the time-share version, being more conveniently tabulated, is used here for purposes of describing the subroutine.

The flow diagram shown in Figure 1 reflects only subroutine RADOUT (Lines 660 to 4200) of the THERMAL1 routine listing shown in Figure 2. The listing is contained in the body of the report because of frequent references to its content.

Arguments in the subroutine call statement are used to establish the parameters for the case to be evaluated. The burst index, INDX, is used to obtain burst time (TB) and burst point density (RHOB) from EVENTX common, and yield (ETGAD) from GADGET common. If power output is to be calculated at a particular time, this is specified by the argument, TCALC. If, however, energy is to be calculated, this is accomplished by setting

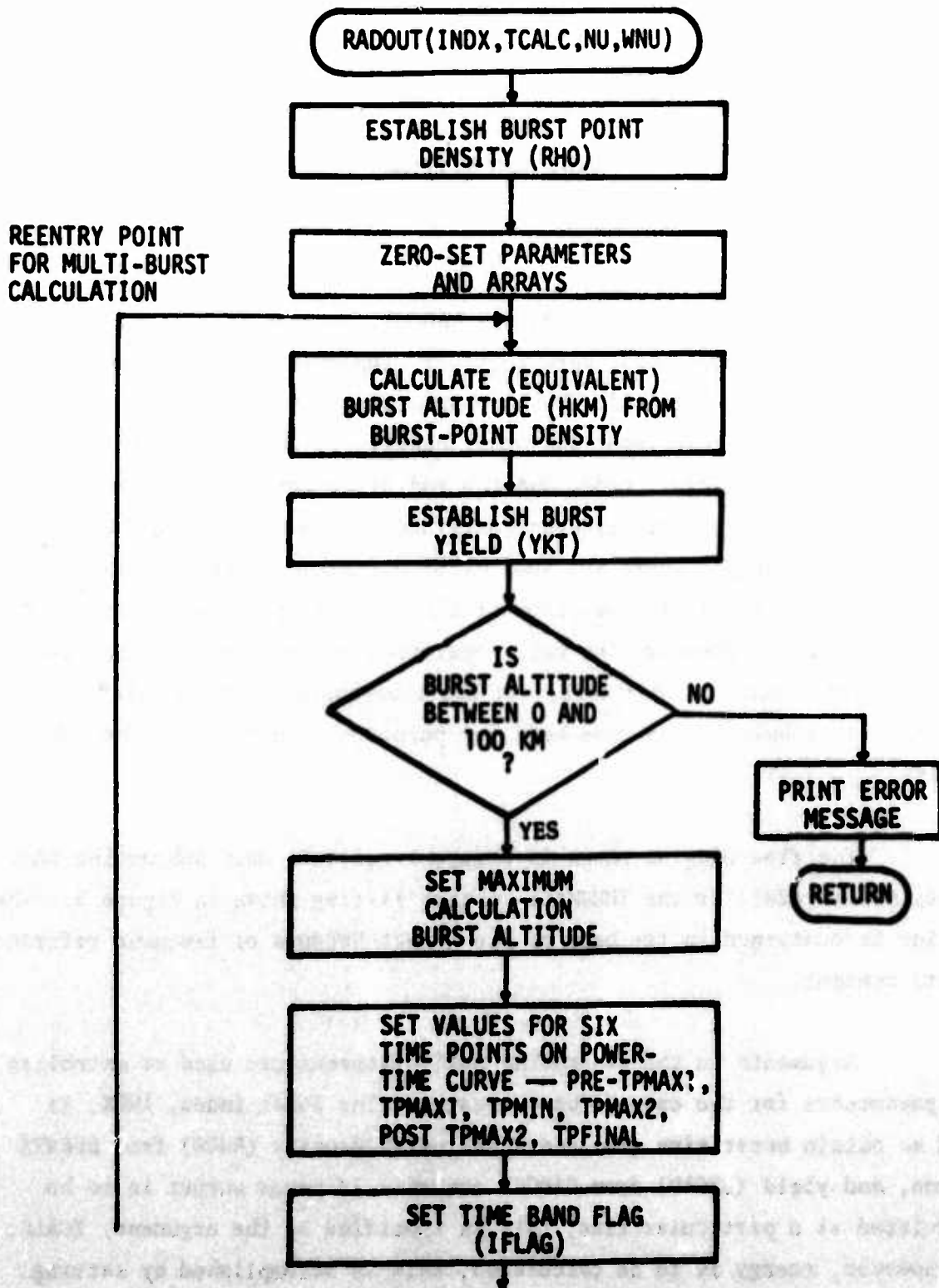


Figure 1. Flow diagram of subroutine RADOUT.

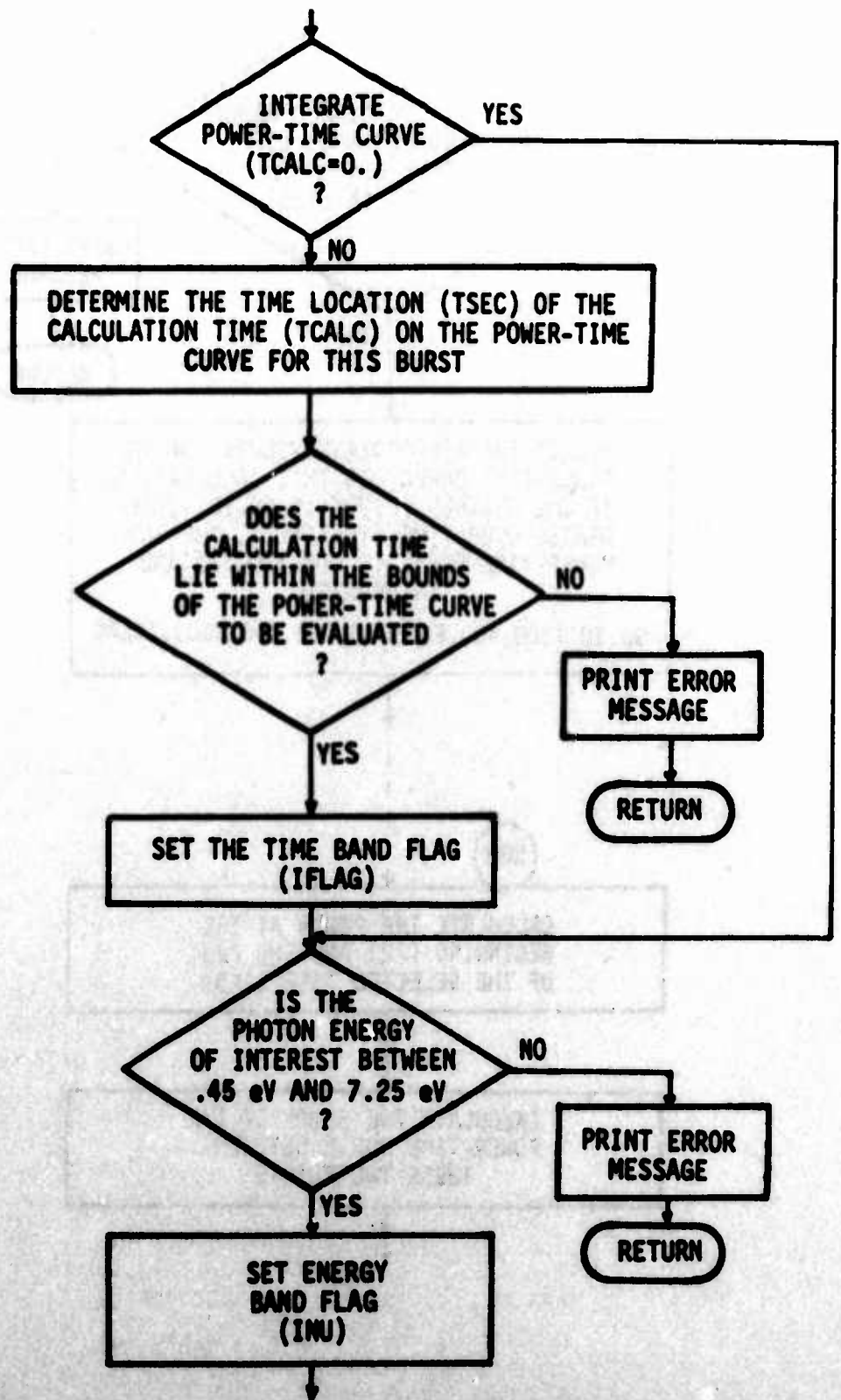


Figure 1 (continued). Flow diagram of subroutine RADOUT.

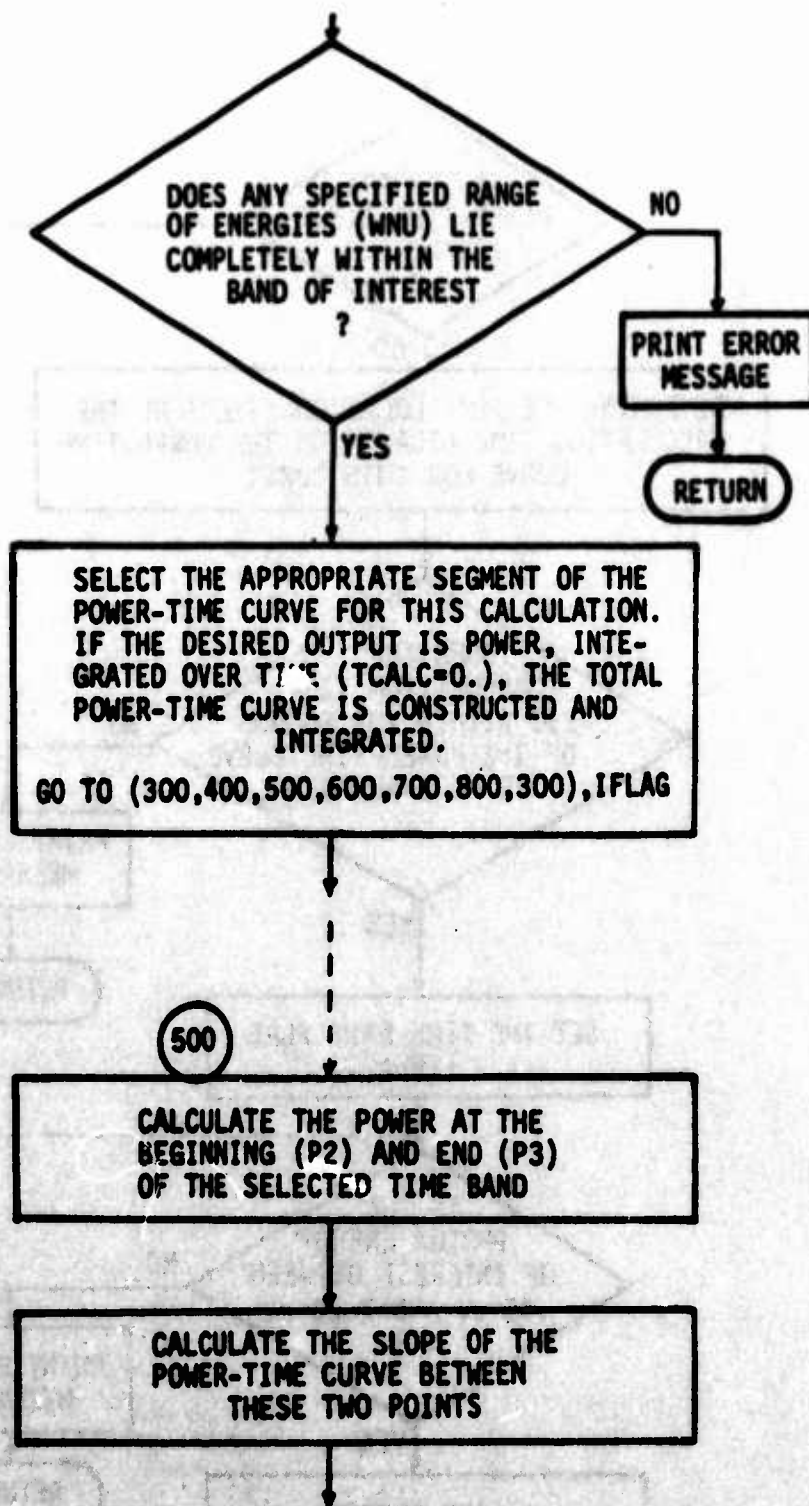


Figure 1 (continued). Flow diagram of subroutine RADOUT.

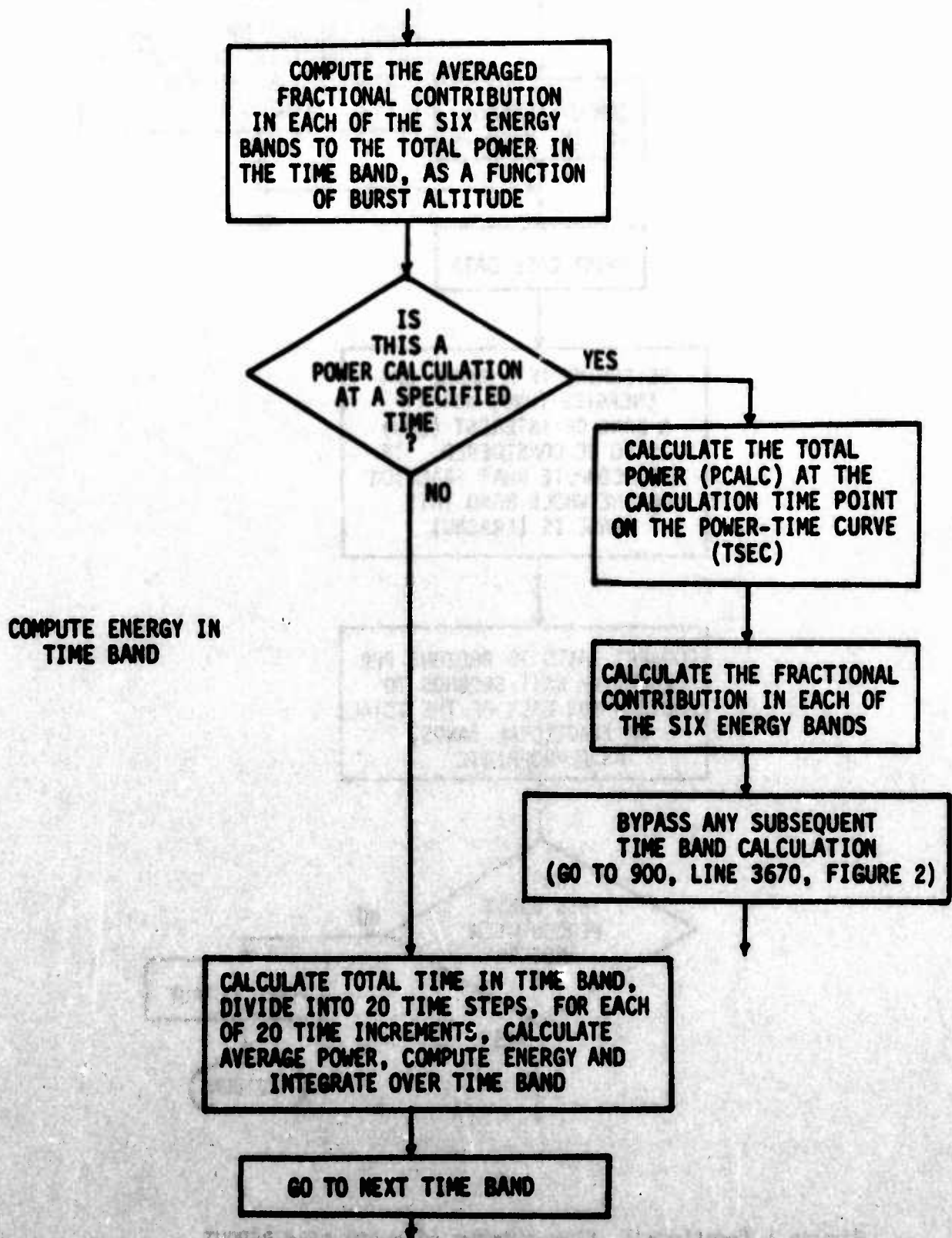


Figure 1 (continued). Flow diagram of subroutine RADOUT.

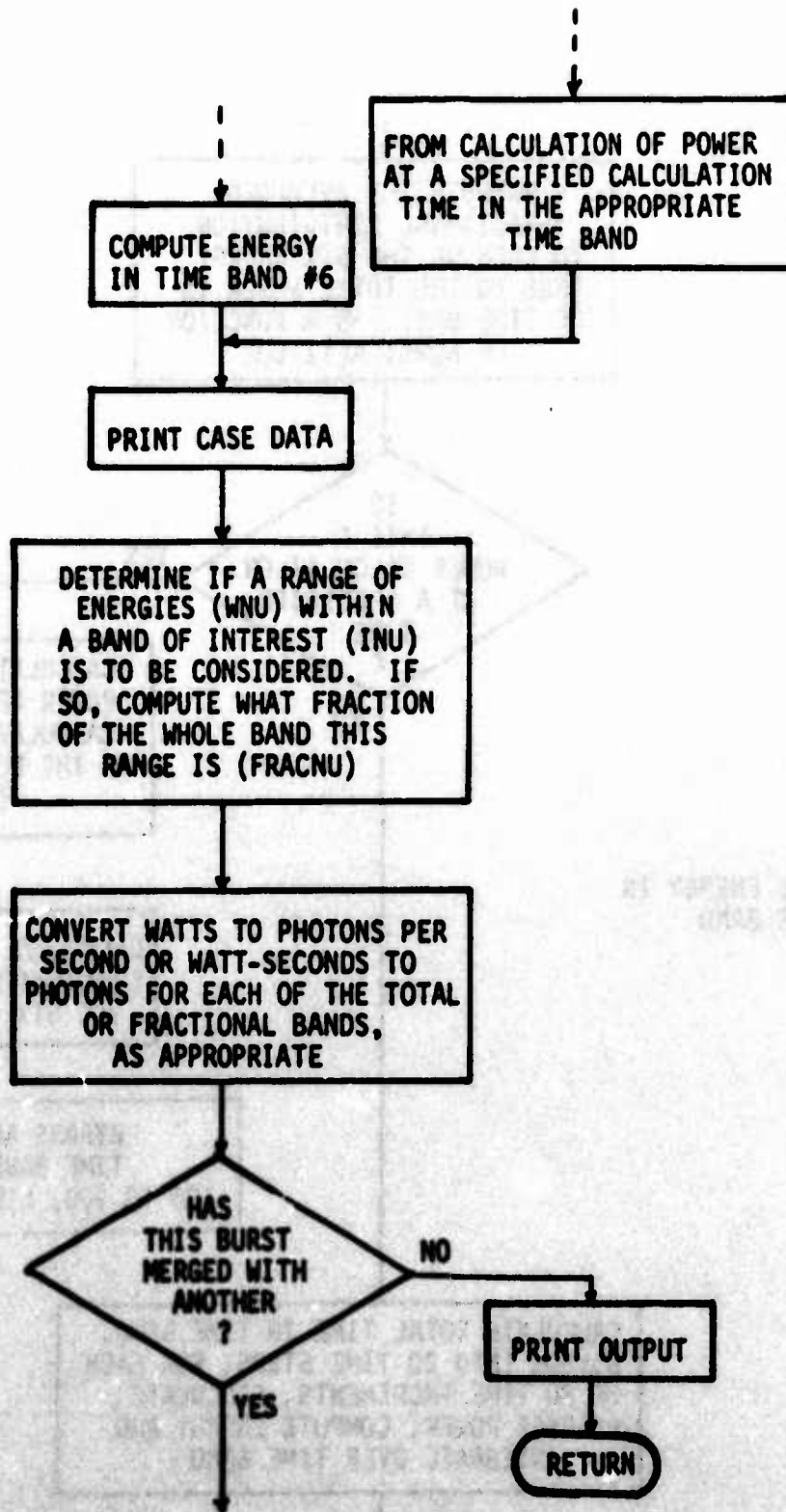


Figure 1 (continued). Flow diagram of subroutine RADOUT.

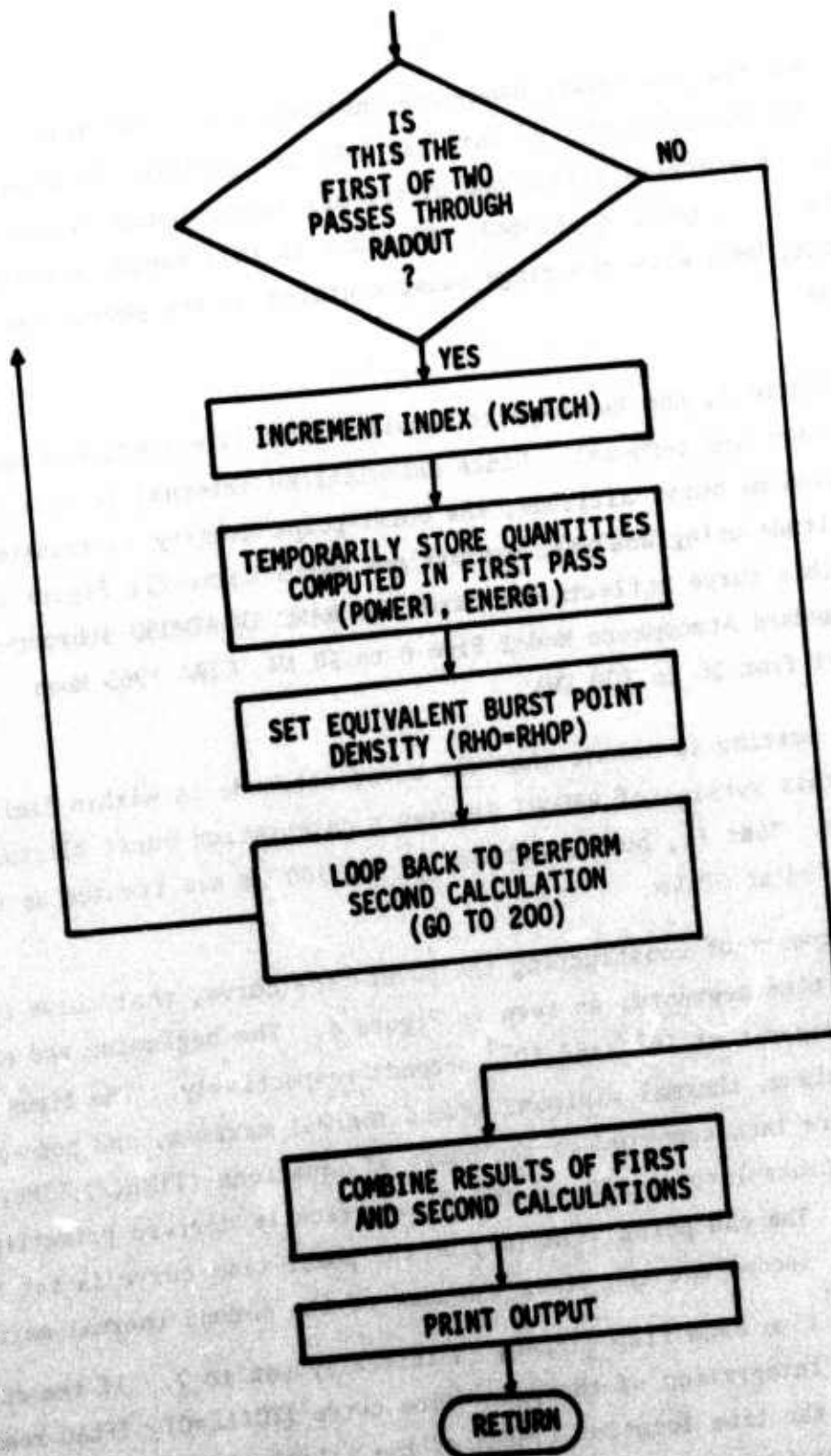


Figure 1 (continued). Flow diagram of subroutine RADOUT.

TCALC to 0., and the six energy bands are integrated over the total power-time curve. The photon energy of interest (eV) is specified by argument, NU, and if a range of energies within one of the six energy bands (Lines 780 to 840, Figure 2) is to be evaluated, the width of this range is specified by the argument, WNU, with the range being centered on the photon energy of interest (NU).

In Figure 1, the burst-point density (RHO) is established and various parameters are zero-set. Since calculations internal to this subroutine are based on burst altitude, the burst-point density is translated into burst altitude using analytic expressions which curve-fit Figure 3. The source of this curve reflects data from the RANC IV ATMOSD subroutine (1962 U. S. Standard Atmosphere Model From 0 to 50 KM, CIRA 1965 Mean Atmosphere Model from 50 to 100 KM).

After testing to insure that the burst altitude is within limits (0 to 100 km), this version of RADOUT imposes a calculation burst altitude maximum of 50 km. That is, bursts between 50 and 100 km are treated as if they were detonated at 50 km.

For purposes of constructing the power-time curve, that curve is divided into six time segments, as seen in Figure 4. The beginning and end of time band #1 are set at 10^{-6} and 10^{-4} seconds respectively. The times of first thermal maximum, thermal minimum, second thermal maximum, and post-second thermal maximum are then computed on the basis of equations (TIME(2), TIME(3), TIME(4), TIME(5), Lines 1640 + 1680, Figure 2) empirically derived primarily from RADFLO data. The end point (TIME(6)) of the power-time curve is set to the maximum value of 1 second and ten times the time of the second thermal maximum.

The time band flag (IFLAG) is initially set to 7. If the desired calculation is the integration of the power-time curve (TCALC=0), IFLAG remains set at 7. If not, the time location (TSEC) of the calculation time (TCALC) on the power-time curve for this burst is determined by subtracting burst time (TB) from the calculation time. A test is then made to insure that the calculation

THERMAL1

```

100      REAL NU
110      COMMON /EVENTX/NX,IDX,TB(10),HB(10),GCB(10),GLB(10),
120      &          IDGAD(10),RHOB(10),HSB(10),TEMB(10),URISE(10),
130      &          RDZERO(10),RHZERO(10),RUZERO(10),BXB(10),
140      &          BYB(10),BZB(10),LHUB(10),XALPHA(10),KALCH
150      COMMON /GEOTD /NF,INDXF(10),RTF(10),RLF(10),HF(10),GCF(10),
160      &          GLF(10),HMAXF(10),HMINF(10),KINIF(10),TILTF(10),
170      &          AGE(10),NBTA,INDXD(20),DLABL(20),WDR(20),
180      &          HDR(20),RTBS(20),RLBS(20),HBS(20),RNBS(20),
190      &          GCBTA(20),GLBTA(20),TF(10),TCHAR(10),MRGID(10),
200      &          XFR(10),YFR(10),ZFR(10),ROT(10),POWER(10,6),
210      &          ENERGY(10,6)
220      COMMON /GADGET/IDG,ETGAD(10),EFGAD(10),EHGAD(10),ENGAD(10),
230      &          EXGAD(10),IDFS(10),IDHS(10),IDNS(10),IDXS(10),
240      &          GADMAS(10),GDALPH(10)
250      COMMON /RADFAC/F1(10),F2(10),RHOP(10)
260      I=1
270      INIX=I
280      TCALC=0.
290      NU=6.
300      WNU=.100
310      CALL RADOUT(INDX,TCALC,NU,WNU)
320      DO 49 J=1,6
330      49 PRINT 100,POWER(I,J),ENERGY(I,J)
340      50 CONTINUE
350      100 FORMAT(2(1X,1PE10.3))
360      STOP
370      END
380      BLOCK DATA
390      COMMON /EVENTX/NX,IDX,TB(10),HB(10),GCB(10),GLB(10),
400      &          IDGAD(10),RHOB(10),HSB(10),TEMB(10),URISE(10),
410      &          RDZERO(10),RHZERO(10),RUZERO(10),BXB(10),
420      &          BYB(10),BZB(10),LHUB(10),XALPHA(10),KALCH
430      COMMON /GEOTD /NF,INDXF(10),RTF(10),RLF(10),HF(10),GCF(10),
440      &          GLF(10),HMAXF(10),HMINF(10),KINIF(10),TILTF(10),
450      &          AGE(10),NBTA,INDXD(20),DLABL(20),WDR(20),
460      &          HDR(20),RTBS(20),RLBS(20),HBS(20),RNBS(20),
470      &          GCBTA(20),GLBTA(20),TF(10),TCHAR(10),MRGID(10),
480      &          XFR(10),YFR(10),ZFR(10),ROT(10),POWER(10,6),
490      &          ENERGY(10,6)
500      COMMON /GADGET/IDG,ETGAD(10),EFGAD(10),EHGAD(10),ENGAD(10),
510      &          EXGAD(10),IDFS(10),IDHS(10),IDNS(10),IDXS(10),
520      &          GADMAS(10),GDALPH(10)
530      COMMON /RADFAC/F1(10),F2(10),RHOP(10)
540      DATA TB/0.,1.E-4,1.E-3,5.E-3,1.E-2,5.E-2,7.E-2,1.E-1,5.E-1,7.E-1/
550      DATA RHOB/1.011E-5,8.844E-4,4.609E-4,1.028E-4,2.983E-5,
560      &          1.607E-5,1.011E-5,6.355E-6,3.074E-6,1.077E-6/
570      DATA ETGAD/5.,5.,5.,5.,5.,5.,5.,5.,5.,5./
580      DATA F1/1.,.9,.8,.7,.6,.5,.4,.3,.2,.1/
590      DATA F2/1.0,1.03,1.07,1.1,1.13,1.17,1.2,1.23,1.27,1.3/

```

Figure 2. Listing of time-share program THERMAL1.

THERMAL1

```

600 DATA RHOP/2.983E-5,1.607E-5,1.011E-5,6.355E-6,3.074E-6,
610 8 1.077E-6,1.077E-6,1.077E-6,1.077E-6,1.077E-6/
620 END
6300
6400
6500
660 SUBROUTINE RADOUT(INDX,TCALC,NU,WNU)
670 THIS SUBROUTINE CALCULATES EITHER OF TWO TYPES OF OUTPUT FOR
680 A BURST OF SPECIFIED YIELD AND DETONATION ALTITUDE. THE FIRST
690 TYPE OF OUTPUT APPROXIMATES THE RADIATED POWER IN
700 EACH OF SIX FREQUENCY BANDS COVERING IR (0.45EV)
710 THROUGH FAR UV (7.25EV) AT A SPECIFIED CALCULATION TIME.
720 THE SECOND TYPE OF OUTPUT APPROXIMATES THE RADIATED ENERGY
730 RESULTING FROM THE INTEGRATION OF POWER IN EACH
740 OF THE SIX FREQUENCY BANDS OVER A TIME SPAN FROM 1.0E-6 SECONDS
750 TO APPROXIMATELY TEN TIMES THERMAL MAXIMUM.
760
770
780 THE SIX FREQUENCY BANDS ARE AS FOLLOWS:
790 BAND1 IR 0.45 .LE. HNU .LE. 1.82 EV
800 2 RED 1.82 .LT. HNU .LE. 2.137 EV
810 3 GREEN 2.173 .LT. HNU .LE. 2.583 EV
820 4 BLUE 2.583 .LT. HNU .LE. 3.265 EV
830 5 NEAR UV 3.265 .LT. HNU .LE. 4.13 EV
840 6 FAR UV 4.13 .LT. HNU .LE. 7.25 EV
850
860 INPUTS FROM CALL STATEMENT
870 INIX = INDEX OF BURST
880 TCALC = CALCULATION TIME (SEC). (TCALC=0. RESULTS IN
890 INTEGRATED POWER)
900 NU = CENTER FREQUENCY OF INTEREST (EV).
910 WNU = RANGE OF FREQUENCIES IN BAND OF INTEREST, CENTERED ON
920 CENTER FREQUENCY OF INTEREST (EV)
930
940 INPUTS FROM EVENTX COMMON
950 TB = TIME OF BURST (SEC)
960 RHOB = BURST POINT DENSITY (GM/CM3)
970
980 INPUTS FROM GADGET COMMON
990 ETGAD = YIELD (ERGS)
1000
1010 OUTPUTS TO GEOTD COMMON
1020 POWER = RADIATED POWER (PHOTONS PER SEC) IN ALL BANDS
1030 ENERGY= INTEGRATED POWER (PHOTONS) IN ALL BANDS
1040
1050 NOTES-- 1. BURST ALTITUDE IS CONFINED TO 0-100KM. RESULTS FOR
1060 BURSTS ABOVE 50 KM ARE CURRENTLY BASED ON DATA
1070 CALCULATIONS AT 50 KM.
1080 2. IF A RANGE OF FREQUENCIES WITHIN ONE OF THE SIX
1090 SPECIFIED OVERALL BANDS (I. E. ,IR, RED, GREEN, BLUE,

```

Figure 2 (Continued). Listing of time-share program THERMAL1.

THERMAL1

```

1100C      NEAR UV, FAR UV) IS TO BE EVALUATED--(WNU.GT.0.),
1110C      THAT RANGE MUST LIE COMPLETELY WITHIN ONE OF THE SIX
1120C      SPECIFIED BANDS, AND THE OUTPUT IS ACCORDINGLY
1130C      PROPORTIONED (I.E., (WNU/TOTAL BANDWIDTH)*TOTAL
1140C      PHOTONS IN THE BAND CONTAINING THE SPECIFIED
1150C      FREQUENCY,NU).
1160C
1170      DIMENSION NUBAND(7),FRAC(6),TIME(6),TCOON(20),PCOON(20),PINT(21)
1180      DIMENSION RHOX(3),RFAC1(4),RFAC2(4)
1190      DIMENSION OUT(6),POWINT(6)
1200      DIMENSION ENERG1(6),POWER1(6)
1210      REAL NU,NUBAND,NUBOT,NUTOP
1220      DATA NUBAND/0.45,1.82,2.137,2.583,3.265,4.13,7.25/
1230      DATA TCOON/-8.62,.317,.6,2.25,1.,-5.684,.487,.9,1.7,1.,
1240      &      -3.151,.4617,.9,5.04,1.,-.525,.233,.6,3.4,1./
1250      DATA PCOON/31.35,.618,.9,5.,1.,27.831,.497,.9,13.8,1.,
1260      &      38.249,.582,.9,5.7,1.,26.86,.747,.9,4.,1./
1270      DATA RHOX/4.135E-4,3.996E-6,4.629E-8/
1280      DATA RFAC1/-9.2873,-6.4665,-7.6266,-5.7576/
1290      DATA RFAC2/-61.7332,-40.3799,-54.8889,-23.2363/
1300      COMMON /EVENTY/NX,IDX,TB(10),HB(10),GCB(10),GLB(10),
1310      &      IDGAD(10),RHOB(10),HSB(10),TEMB(10),URISE(10),
1320      &      RIZERO(10),RHZERO(10),RUZERO(10),BXB(10),
1330      &      BYB(10),EZB(10),LHUB(10),XALPHA(10),KALCH
1340      COMMON /GEOTD /NF,INDXF(10),RTF(10),RLF(10),HF(10),GCF(10),
1350      &      GLF(10),HMANF(10),HMINF(10),KINDF(10),TILTF(10),
1360      &      AGE(10),NBTA,ININD(20),DLABL(20),WDR(20),
1370      &      HDR(20),RTBS(20),RLBS(20),HBS(20),RHS(20),
1380      &      GCBTA(20),GLBTA(20),TF(10),TCHAR(10),MRGID(10),
1390      &      XFR(10),YFR(10),ZFR(10),ROT(10),POWER(10,6),
1400      &      ENERGY(10,6)
1410      COMMON /GADGET/IDG,ETGAD(10),EFGAD(10),EHGAD(10),ENGAD(10),
1420      &      EXGAD(10),IDFS(10),IDHS(10),IDNS(10),IDXS(10),
1430      &      GAMMAS(10),GIALPH(10)
1440      COMMON /RADFAC/F1(10),F2(10),RHOF(10)
1450      RHO=RHOB(INDX)
1460      TSEC=0.
1470      KSWTCH=0
1480      DO 100 I=1,6
1490      ENERGY(INDX,I)=0.
1500      POWER(INDX,I)=0.
1510      POWINT(I)=0.
1520      100 OUT(I)=0.
1530      200 JSWTCH=1
1540      DO 205 I=1,3
1550      205 IF(RHO.LT.RHOX(JSWTCH)) JSWTCH=JSWTCH+1
1560      HKM=ALOG(RHO)*RFAC1(JSWTCH)+RFAC2(JSWTCH)
1570      YKT=ETGAD(INDX)
1580C      TEST FOR BURST HEIGHT WITHIN LIMITS
1590      IF(HKM.LT.0.0 .OR. HKM.GT.100.) GO TO 1000

```

Figure 2 (Continued). Listing of time-share program THERMAL1.

THERMAL1

```

1600      IF(HKM.GT.50.) HKM=50.
1610C      SET VALUES FOR SIX TIMES (I.E., PRE TMAX1, TMAX1, TMIN,
1620C      TMAX2, POST TMAX2, TFINAL)
1630      TIME(1)=-9.21034
1640      TIME(2)=TCO(1)+TCO(2)*ALOG(YKT)+(((HKM/100.)*TCO(3))*TCO(4))
1650      TIME(3)=TCO(6)+TCO(7)*ALOG(YKT)-(((HKM/100.)*TCO(8))*TCO(9))
1660      TIME(4)=TCO(11)+TCO(12)*ALOG(YKT)-(((HKM/100.)*TCO(13))*
1670      & TCO(14))
1680      TIME(5)=TCO(16)+TCO(17)*ALOG(YKT)-(((HKM/100.)*TCO(18))*
1690      & TCO(19))
1700      TIME(6)=TMAX1(0.,TIME(4)+ALOG(10.))
1710C      SET THE TIME BAND FLAG
1720      IFLAG=7
1730      IF(TCALC.EQ.0.) GO TO 240
1740      TSEC=TCALC-TB(INDX)
1750C      TEST CALCULATION TIME FOR LIMITS
1760      IF(TSEC.LT.1.E-6 .OR. TSEC.GT.EXP(TIME(6))) GO TO 1030
1770      DO 235 I=1,6
1780      IFLAG=1
1790 235 IF(TSEC.LT.EXP(TIME(I))) GO TO 240
1800 240 CONTINUE
1810C      TEST FREQUENCY OF INTEREST FOR LIMITS
1820      IF(NU.LT.0.45 .OR. NU.GT.7.25) GO TO 1040
1830C      SET FREQUENCY BAND OF INTEREST
1840      DO 265 I=2,7
1850      INU=I-1
1860 265 IF(NU.LT.NUBAND(INU).OR.NUTOP.GT.NUBAND(INU+1))GO TO 1020
1870C      INSURE THAT ANY RANGE OF FREQUENCIES BEING EVALUATED IS
1880C      COMPLETELY WITHIN ONE OF THE SPECIFIED BANDS
1890 272 CONTINUE
1900      NUBOT=NU-NUU/2.
1910      NUTOP=NU+NUU/2.
1920      IF(NUBOT.LT.NUBAND(INU).OR.NUTOP.GT.NUBAND(INU+1))GO TO 1020
1930C      SELECT APPROPRIATE SEGMENT OF THE POWER-TIME CURVE FOR
1940C      THIS CALCULATION. IF THE DESIRED OUTPUT IS INTEGRATED
1950C      POWER OVER TIME (TCALC=0.), THE TOTAL POWER-TIME CURVE
1960C      WILL BE CONSTRUCTED AND INTEGRATED
1970 280 CONTINUE
1980C
1990      GO TO (300,400,500,600,700,800,900), IFLAG
2000 300 P1=PCO(1)+PCO(2)*ALOG(YKT)+(((HKM/100.)*PCO(3))*PCO(4))
2010      FRAC(1)=.22
2020      IF(HKM.GT.20.) FRAC(1)=AMAX1(.04,.40-(.36*HKM/37.))
2030      FRAC(2)=.11
2040      IF(HKM.GT.20.)FRAC(2)=AMAX1(.02,.19-(.17*HKM/40.))
2050      IF(HKM.GT.40.)FRAC(2)=AMIN1(.06,.62+(.04*((HKM-40.)/10.)))
2060      FRAC(3)=.23
2070      IF(HKM.GT.20.) FRAC(3)=AMAX1(.05,.42-(.37*HKM/39.))
2080      FRAC(4)=.30
2090      IF(HKM.GT.27.)FRAC(4)=AMAX1(.10,.62-(.52*HKM/40.))

```

Figure 2 (Continued). Listing of time-share program THERMAL1.

THERMAL1

```

2100      FRAC(5)=.10
2110      IF (HKM.GT.14.)FRAC(5)=AMIN1(.32,.10+ (.22*((HKM-14.)/18.)))
2120      IF (HKM.GT.38.)FRAC(5)=AMAX1(.18,.32- (.14*((HKM-38.)/5.)))
2130      FRAC(6)=1.0-(FRAC(1)+FRAC(2)+FRAC(3)+FRAC(4)+FRAC(5))
2140      IF (FRAC(6).LT.0.) FRAC(6)=0.
2150      DO 330 I=1,6
2160 330 OUT(I)=FRAC(I)*EXP(P1)
2170      IF (IFLAG.NE.7)GO TO 900
2180      DO 340 I=1,6
2190 340 POWINT(I)=OUT(I)*((EXP(TIME(1))-1.0E-6))
2200C
2210 400 P2=PCON(1)+PCON(2)*ALOG(YKT)+(((HKM/100.))*PCON(3))*PCON(4))
2220      FRAC(1)=AMIN1(.13,.13*(HKM/19.))
2230      IF (HKM.GT.27.)FRAC(1)=AMAX1(.05,.45- (.40*HKM/34.))
2240      FRAC(2)=.12*HKM/31.
2250      IF (HKM.GT.31.)FRAC(2)=AMAX1(.04,.13- (.09*((HKM-31.)/3.)))
2260      FRAC(3)=FRAC(1)+.01
2270      FRAC(4)=AMIN1(.29,.29*HKM/15.)
2280      IF (HKM.GT.27.)FRAC(4)=AMAX1(.11,.78- .67*(HKM/37.))
2290      FRAC(5)=AMIN1(.37,.09+.28*(HKM/19.))
2300      IF (HKM.GT.29.)FRAC(5)=AMAX1(.16,.88- (.72*HKM/40.))
2310      FRAC(6)=1.0-(FRAC(1)+FRAC(2)+FRAC(3)+FRAC(4)+FRAC(5))
2320      IF (FRAC(6).LT.0.)FRAC(6)=0.
2330      DO 421 I=1,6
2340 421 OUT(I)=FRAC(I)*EXP(P2)
2350      IF (IFLAG.NE.7)GO TO 900
2360      DO 440 I=1,6
2370 440 POWINT(I)=POWINT(I)+OUT(I)*(EXP(TIME(2))-EXP(TIME(1)))
2380C
2390 500 P3=PCON(6)+PCON(7)*ALOG(YKT)+(((HKM/100.))*PCON(8))*PCON(9))
2400      IF (IFLAG.EQ.7)GO TO 505
2410      P2=PCON(1)+PCON(2)*ALOG(YKT)+(((HKM/100.))*PCON(3))*PCON(4))
2420 505 SLOPE3=(P3-P2)/(TIME(3)-TIME(2))
2430      FRAC(1)=.23-.17*HKM/36.
2440      IF (HKM.GT.36.)FRAC(1)=AMIN1(.17,.06+ (.11*((HKM-36.)/14.))
2450      FRAC(2)=.07
2460      FRAC(3)=.10
2470      FRAC(4)=.14
2480      IF (HKM.GT.15.)FRAC(4)=.07+.12*HKM/27.
2490      IF (HKM.GT.27.)FRAC(4)=.44-.32*HKM/36.
2500      IF (HKM.GT.36.)FRAC(4)=AMIN1(.19,.12+ (.07*((HKM-36.)/14.)))
2510      FRAC(5)=.15
2520      IF (HKM.GT.13.)FRAC(5)=.02+.26*HKM/27.
2530      IF (HKM.GT.27.)FRAC(5)=AMAX1(.17,.63- (.46*HKM/34.))
2540      FRAC(6)=1.0-(FRAC(1)+FRAC(2)+FRAC(3)+FRAC(4)+FRAC(5))
2550      IF (FRAC(6).LT.0.)FRAC(6)=0.
2560      IF (IFLAG.EQ.7) GO TO 540
2570      PCALC=EXP(SLOPE3*(ALOG(TSEC)-TIME(2)))+P2)
2580      DO 536 I=1,6
2590 536 OUT(I)=FRAC(I)*PCALC

```

Figure 2 (Continued). Listing of time-share program THERMAL1.

THERMAL1

```

2600      GO TO 900
2610 540 TDELΤ=(TIME(3)-TIME(2))/20.
2620      TDELΤS=(EXP(TIME(3))-EXP(TIME(2)))/20.
2630      PINT(1)=P2
2640      DO 580 I=2,21
2650      PINT(I)=SLOPE3*(FLOAT(I-1)*TDELΤ)+P2
2660      PCALC=(PINT(I)+PINT(I-1))/2.
2670      DO 575 J=1,6
2680      OUT(J)=FRAC(J)*EXP(PCALC)
2690 575 POWINT(J)=POWINT(J)+OUT(J)*TDELΤS
2700 580 CONTINUE
2710C
2720 600 P4=PCON(11)+PCON(12)*ALOG(YKT)+(((HKM/100.))**PCON(13))*PCON(14))
2730      IF(IFLAG.EQ.7)GO TO 605
2740      P3=PCON(6)+PCON(7)*ALOG(YKT)+(((HKM/100.))**PCON(8))*PCON(9))
2750 605 SLOPE4=(P4-P3)/(TIME(4)-TIME(3))
2760      FRAC(1)=AMAX1(.12,.68-(.68*(HKM/38.)))
2770      IF(HKM.GT.37.)FRAC(1)=AMIN1(.25,.12+(.13*((HKM-37.)/13.)))
2780      FRAC(2)=.15
2790      IF(HKM.GT.22.)FRAC(2)=AMAX1(.07,.37-(.37*(HKM/37.)))
2800      FRAC(3)=AMIN1(.25,.13+.12*(HKM/15.))
2810      IF(HKM.GT.22.)FRAC(3)=AMAX1(.11,.60-(.60*(HKM/37.)))
2820      FRAC(4)=.05+.21*(HKM/27.)
2830      IF(HKM.GT.27.)FRAC(4)=AMAX1(.16,.80-(.80*(HKM/40.)))
2840      FRAC(5)=.01
2850      IF(HKM.GT.19.)FRAC(5)=AMIN1(.20,.01+.19*((HKM-19.)/12.))
2860      FRAC(6)=1.0-(FRAC(1)+FRAC(2)+FRAC(3)+FRAC(4)+FRAC(5))
2870      IF(FRAC(6).LT.0)FRAC(6)=0.
2880      IF(IFLAG.EQ.7) GO TO 640
2890      PCALC=EXP(SLOPE4*(ALOG(TSEC)-TIME(3))+P3)
2900      DO 634 I=1,6
2910 634 OUT(I)=FRAC(I)*PCALC
2920      GO TO 900
2930 640 TDELΤ=(TIME(4)-TIME(3))/20.
2940      TDELΤS=(EXP(TIME(4))-EXP(TIME(3)))/20.
2950      PINT(1)=P3
2960      DO 680 I=2,21
2970      PINT(I)=SLOPE4*(FLOAT(I-1)*TDELΤ)+P3
2980      PCALC=(PINT(I)+PINT(I-1))/2.
2990      DO 675 J=1,6
3000      OUT(J)=FRAC(J)*EXP(PCALC)
3010 675 POWINT(J)=POWINT(J)+OUT(J)*TDELΤS
3020 680 CONTINUE
3030C
3040 700 P5=PCON(16)+PCON(17)*ALOG(YKT)+(((HKM/100.))**PCON(18))*PCON(19))
3050      IF(IFLAG.EQ.7)GO TO 705
3060      P4=PCON(11)+PCON(12)*ALOG(YKT)+(((HKM/100.))**PCON(13))*PCON(14))
3070 705 SLOPE5=(P5-P4)/(TIME(5)-TIME(4))
3080      FRAC(1)=.40-.19*(HKM/41.)
3090      IF(HKM.GT.41.)FRAC(1)=AMIN1(.30,.21+.09*((HKM-41.)/9.))

```

Figure 2 (Continued). Listing of time-share program THERMAL1.

THERMAL1

```

3100      FRAC(2)=AMAX1(.04,.10-.06*(HKM/50.))
3110      FRAC(3)=FRAC(2)+.02
3120      FRAC(4)=.22-.05*(HKM/50.)
3130      IF (HKM.GT.32.)FRAC(4)=AMAX1(.13,.58-(.58*HKM/47.))
3140      FRAC(5)=AMIN1(.32,.17+.15*(HKM/22.))
3150      IF (HKM.GT.34.)FRAC(5)=AMAX1(.24,.32-.08*((HKM-34.)/4.))
3160      FRAC(6)=1.0-(FRAC(1)+FRAC(2)+FRAC(3)+FRAC(4)+FRAC(5))
3170      IF (FRAC(6).LT.0.)FRAC(6)=0.
3180      IF (IFLAG.EQ.7) GO TO 740
3190      PCALC=EXP(SLOPE5*(ALOG(TSEC)-TIME(4)))+P4
3200      DO 734 I=1,6
3210 734 OUT(I)=FRAC(I)*PCALC
3220      GO TO 900
3230 740 TDELT=(TIME(5)-TIME(4))/20.
3240      TDELTS=(EXP(TIME(5))-EXP(TIME(4)))/20.
3250      PINT(1)=P4
3260      DO 780 I=2,21
3270      PINT(I)=SLOPE5*(FLOAT(I-1)*TDELT)+P4
3280      PCALC=(PINT(I)+PINT(I-1))/2.
3290      DO 775 J=1,6
3300      OUT(J)=FRAC(J)*EXP(PCALC)
3310 775 POWINT(J)=POWINT(J)+OUT(J)*TDELTS
3320 780 CONTINUE
3330C
3340 800 IF (IFLAG.EQ.7)GO TO 810
3350      P4=PCON(11)+PCON(12)*ALOG(YKT)+(((HKM/100.))**PCON(13))*PCON(14))
3360      P5=PCON(16)+PCON(17)*ALOG(YKT)+(((HKM/100.))**PCON(18))*PCON(19))
3370      SLOPE5=(P5-P4)/(TIME(5)-TIME(4))
3380 810 SLOPE6=SLOPE5
3390      P6=SLOPE6*(TIME(6)-TIME(5))+P5
3400      FRAC(1)=.32
3410      IF (HKM.GT.9)FRAC(1)=AMAX1(.15,.40-(.40*(HKM/45.)))
3420      FRAC(2)=AMAX1(.03,.08-.08*(HKM/36.))
3430      FRAC(3)=FRAC(2)
3440      FRAC(4)=.24-.24*(HKM/40.)
3450      IF (HKM.GT.31.)FRAC(4)=AMIN1(.14,.06+.03*((HKM-31.)/19.))
3460      FRAC(5)=AMIN1(.36,.27+.09*(HKM/9.))
3470      IF (HKM.GT.15.)FRAC(5)=AMAX1(.18,.53-(.53*(HKM/45.)))
3480      IF (HKM.GT.35.)FRAC(5)=AMIN1(.29,.18+.11*((HKM-35.)/11.))
3490      FRAC(6)=1.0-(FRAC(1)+FRAC(2)+FRAC(3)+FRAC(4)+FRAC(5))
3500      IF (FRAC(6).LT.0.)FRAC(6)=0.
3510      IF (IFLAG.EQ.7) GO TO 840
3520      PCALC=EXP(SLOPE6*(ALOG(TSEC)-TIME(5)))+P5
3530      DO 834 I=1,6
3540 834 OUT(I)=FRAC(I)*PCALC
3550      GO TO 900
3560 840 TDELT=(TIME(6)-TIME(5))/20.
3570      TDELTS=(EXP(TIME(6))-EXP(TIME(5)))/20.
3580      PINT(1)=P5
3590      DO 880 I=2,21

```

Figure 2 (Continued). Listing of time-share program THERMAL1.

THERMAL1

```

3600      PINT(I)=SLOPE6*(FLOAT(I-1)*TDELT)+P5
3610      PCALC=(PINT(I)+PINT(I-1))/2.
3620      DO 875 J=1,6
3630      OUT(J)=FRAC(J)*EXP(PCALC)
3640 875  POWINT(J)=POWINT(J)+OUT(J)*TDELTS
3650 880  CONTINUE
3660C
3670 900  PRINT,"      H          Y          T          NU          WNU"
3680      PRINT 1160,HKM,YKT,TSEC,NU,WNU
3690      PRINT," TIME(1)  TIME(2)  TIME(3)  TIME(4)  TIME(5)  TIME(6)"
3700      PRINT 1180,EXP(TIME(1)),EXP(TIME(2)),EXP(TIME(3)),EXP(TIME(4)),
3710      &EXP(TIME(5)),EXP(TIME(6))
3720      PRINT,"      P1          P2          P3          P4          P5",
3730      &"      P6"
3740      PRINT 1195,EXP(P1),EXP(P2),EXP(P3),EXP(P4),EXP(P5),EXP(P6)
3750      PRINT 1250,SLOPE3,SLOPE4,SLOPE5,SLOPE6
3760      DO 910 I=1,6
3770      FRACNU=1.
3780      FJOPFH=(1.602*10.**(-19))*((NUBAND(I+1)+NUBAND(I))/2.)
3790      IF(I.EQ.INU.AND.WNU.GT.0.) FRACNU=WNU/(NUBAND(I+1)-NUBAND(I))
3800      ENERGY(INDX,I)=POWINT(I)/(FJOPFH*FRACNU)
3810      POWER(INDX,I)=OUT(I)/(FJOPFH*FRACNU)
3820      PRINT 1230,POWER(INDX,I),ENERGY(INDX,I)
3830 910  CONTINUE
3840      IF(F1(INDX).EQ.1.) GO TO 940
3850      KSWTCH=KSWTCH+1
3860      GO TO(920,930),KSWTCH
3870 920  DO 925 I=1,6
3880      ENERGI(I)=ENERGY(INDX,I)
3890 925  POWER1(I)=POWER(INDX,I)
3900      RHO=RHOP(INDX)
3910      GO TO 200
3920 930  DO 935 I=1,6
3924      FRACNU=1.
3926      FJOPFH=(1.602*10.**(-19))*((NUBAND(I+1)+NUBAND(I))/2.)
3928      IF(I.EQ.INU.AND.WNU.GT.0.) FRACNU=WNU/(NUBAND(I+1)-NUBAND(I))
3930      ENERGY(INDX,I)=F1(INDX)*ENERGI(I)+
3940      &((1.-F1(INDX))*F2(INDX)*(POWINT(I)/(FJOPFH*FRACNU)))
3950      POWER(INDX,I)=F1(INDX)*POWER1(I)+
3960      &((1.-F1(INDX))*F2(INDX)*(OUT(I)/(FJOPFH*FRACNU)))
3970      PRINT 1230,POWER(INDX,I),ENERGY(INDX,I)
3980 935  CONTINUE
3990      GO TO 9999
4000 940  DO 945 I=1,6
4010 945  PRINT 1230,POWER(INDX,I),ENERGY(INDX,I)
4020      GO TO 9999
4030 1000 PRINT," BURST ALTITUDE OUTSIDE OF LIMITS"
4040      GO TO 9999
4050 1020 PRINT," SEGMENT IN MORE THAN ONE OF SPECIFIED BANDS"
4060      GO TO 9999
4070 1030 PRINT," CALCULATION TIME OUTSIDE OF LIMITS"
4080      GO TO 9999
4090 1040 PRINT," CALCULATION FREQUENCY BEYOND LIMITS"

```

Figure 2 (Continued). Listing of time-share program THERMAL1.

THERMAL1

```
4100      GO TO 9999
4110 1160 FORMAT(1P5E10.2)
4120 1180 FORMAT(1P6E10.2)
4130 1195 FORMAT(1P6E10.2)
4140 1200 FORMAT(6(5X,F3.2))
4150 1210 FORMAT(6(1X,1PE10.3))
4160 1230 FORMAT(2(1X,1PE10.3))
4170 1220 FORMAT(6(1X,1PE10.3))
4180 1250 FORMAT(4(3X,1PE10.3))
4190 9999 RETURN
4200      END
```

Figure 2 (Continued). Listing of time-share program THERMAL1.

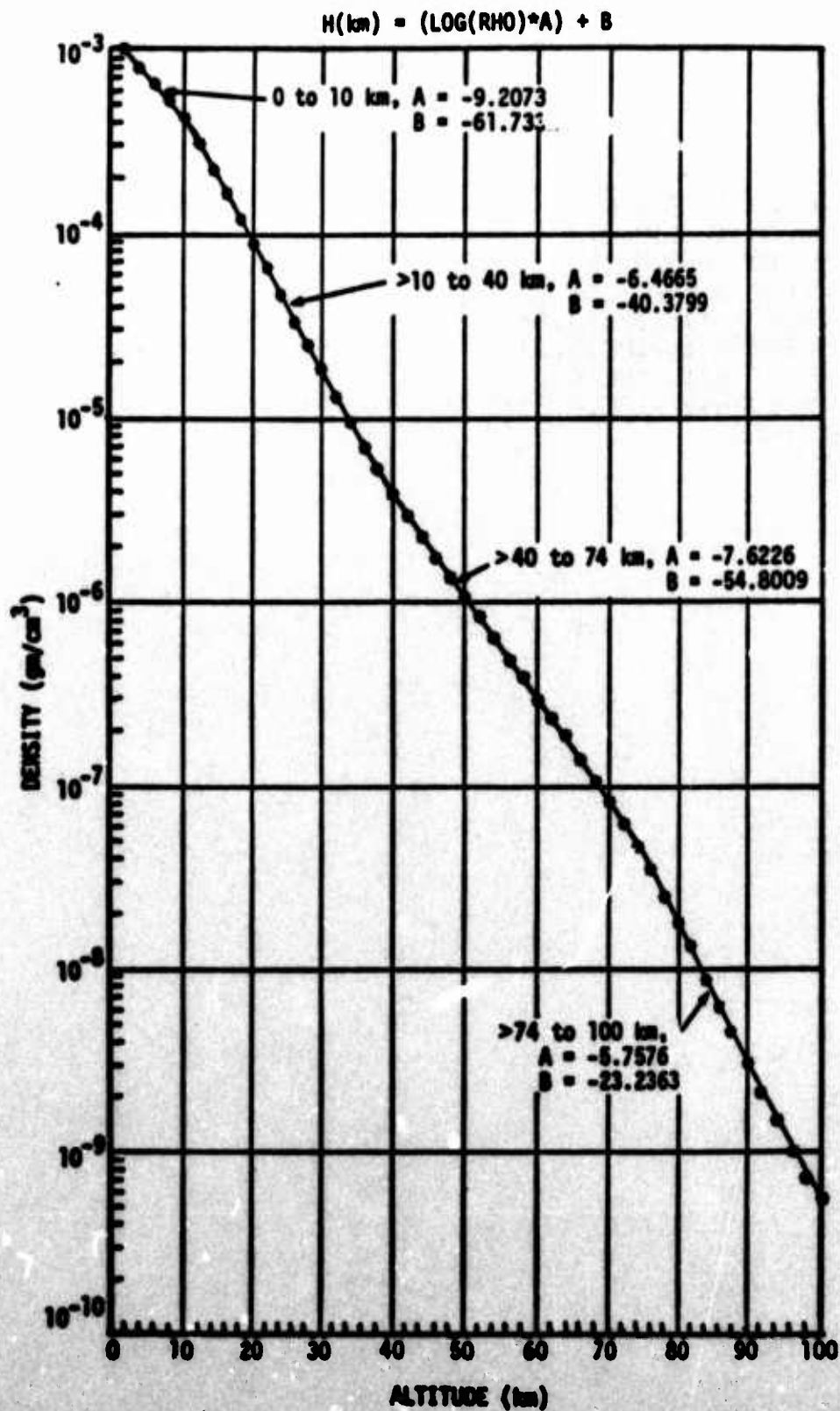


Figure 3. Burst point altitude versus burst point density.

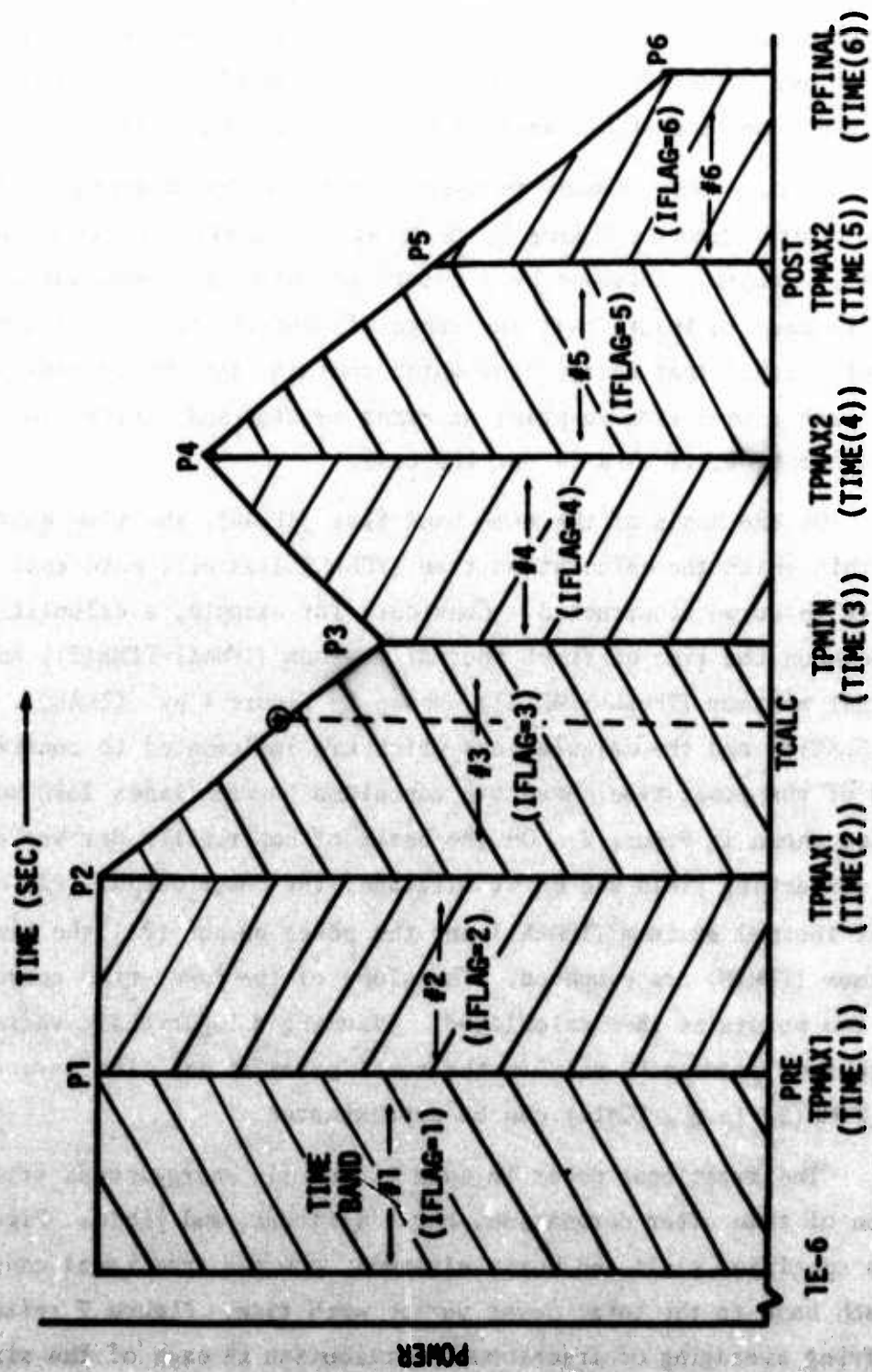


Figure 4. Power-time curve time segments.

time lies within the bounds ($1E-6$ to $TIME(6)$, Figure 4) of the applicable power-time curve. If not, an error message is printed, and control is returned to the calling subroutine. Otherwise, the time band flag (IFLAG) is set to the specific power-time curve time band within which the calculation time lies.

Next, a test is made to insure that the photon energy of interest is within the limits shown in Figure 5, (0.45 eV 7.25 eV). If it is not, an error message is printed, followed by a return to the calling subroutine. Otherwise, a test is made to insure that any range of energies to be considered lies completely within that energy band which contains the photon energy of interest, with a provision to print an error message and return to the calling subroutine, if this is not the case.

On the basis of the time band flag (IFLAG), the time band (see Figure 4) within which the calculation time (TCALC) lies will have that portion of the power-time curve constructed. Consider, for example, a calculation time which lies between the time of first thermal maximum (TPMAX1=TIME(2)) and the time of thermal minimum (TPMIN=TIME(3)), shown in Figure 4 by (TCALC). In this case, IFLAG=3, and the calculations which are implemented to construct this portion of the power-time curve are contained between lines 2390 and 2700 of the listing shown in Figure 2. On the basis of empirically derived analytical expressions reflecting yield and burst altitude, the power output (P2) at the time of first thermal maximum (TPMAX1) and the power output (P3) the time of thermal minimum (TPMIN) are computed. The slope of the power-time curve between the two points is then calculated. Assuming a logarithmic variation of power with time between P2 and P3, the total power at any time between TIME(2) and TIME(3) (e.g., TCALC) can be approximated.

The fractional power in each of the six energy bands varies as a function of time after detonation, burst altitude, and yield. Figure 6 shows, for a specified yield and burst altitude, how the fractional contribution of each band to the total power varies with time. Figure 7 reflects some simplifying averaging of fractional contribution in each of the six time

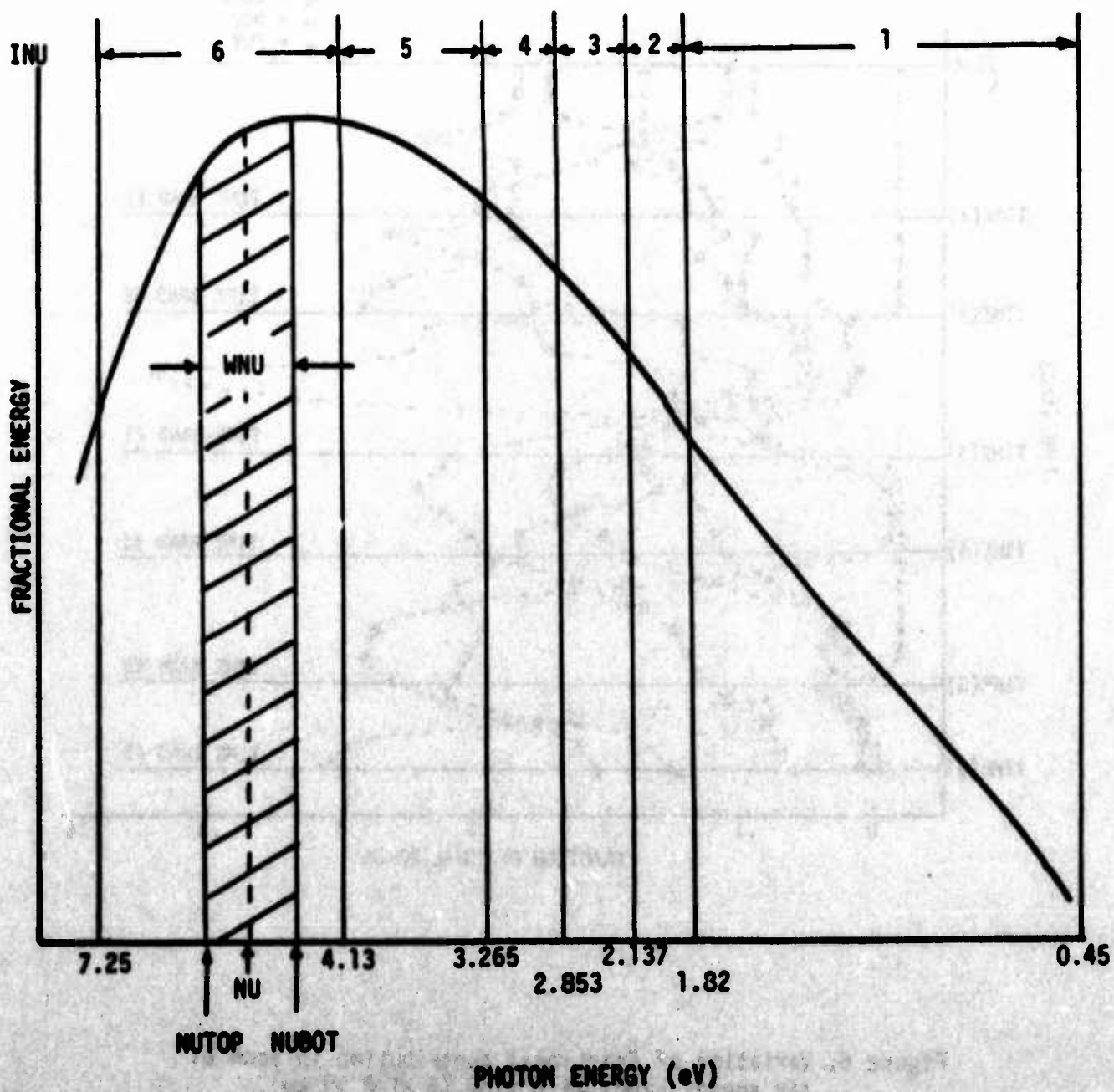


Figure 5. Limits of photon energies, specific bands and range of energies within a specific band.

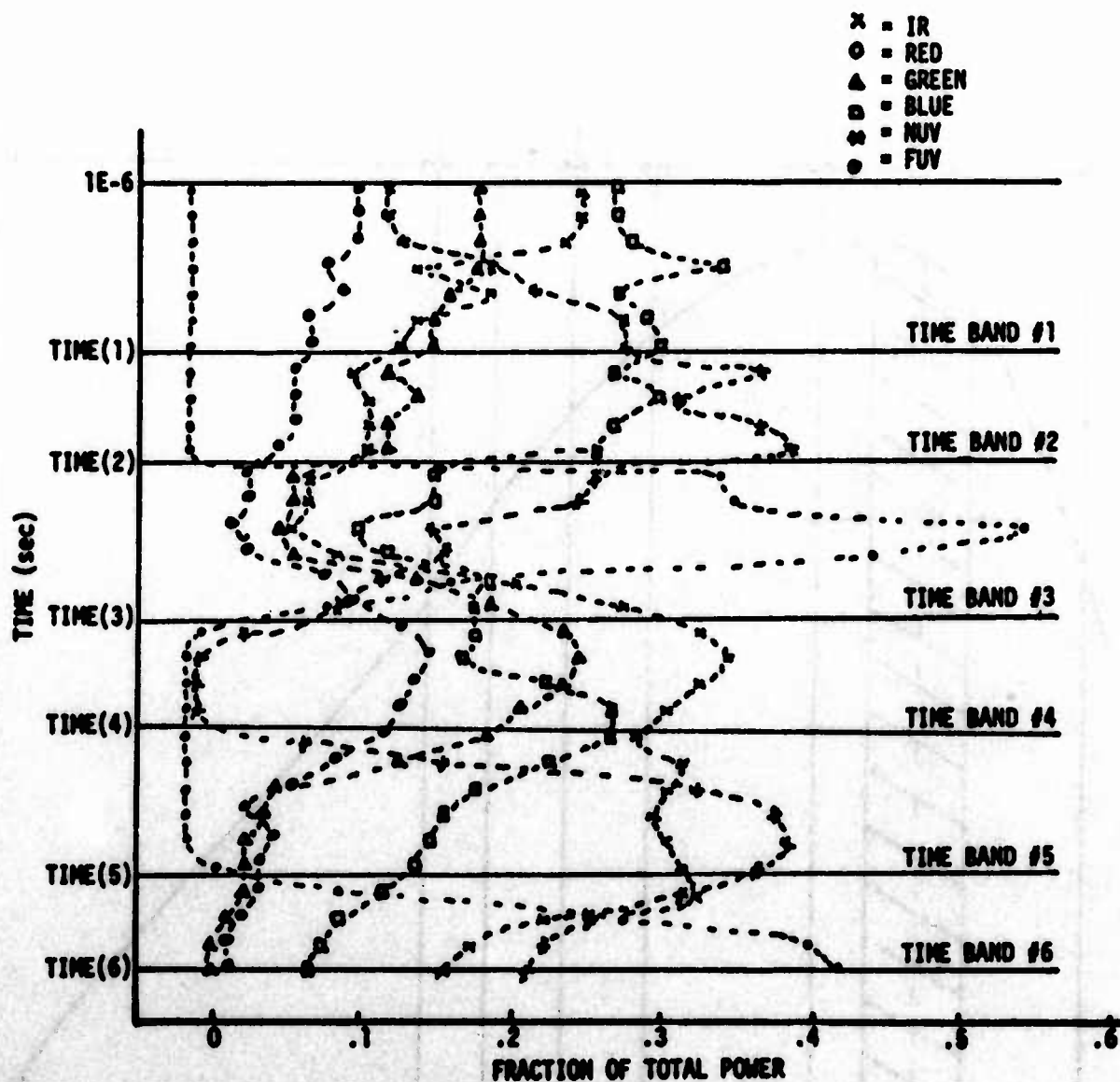


Figure 6. Variation of fractional contribution in each of six energy bands with time (5 kt @ 19 km).

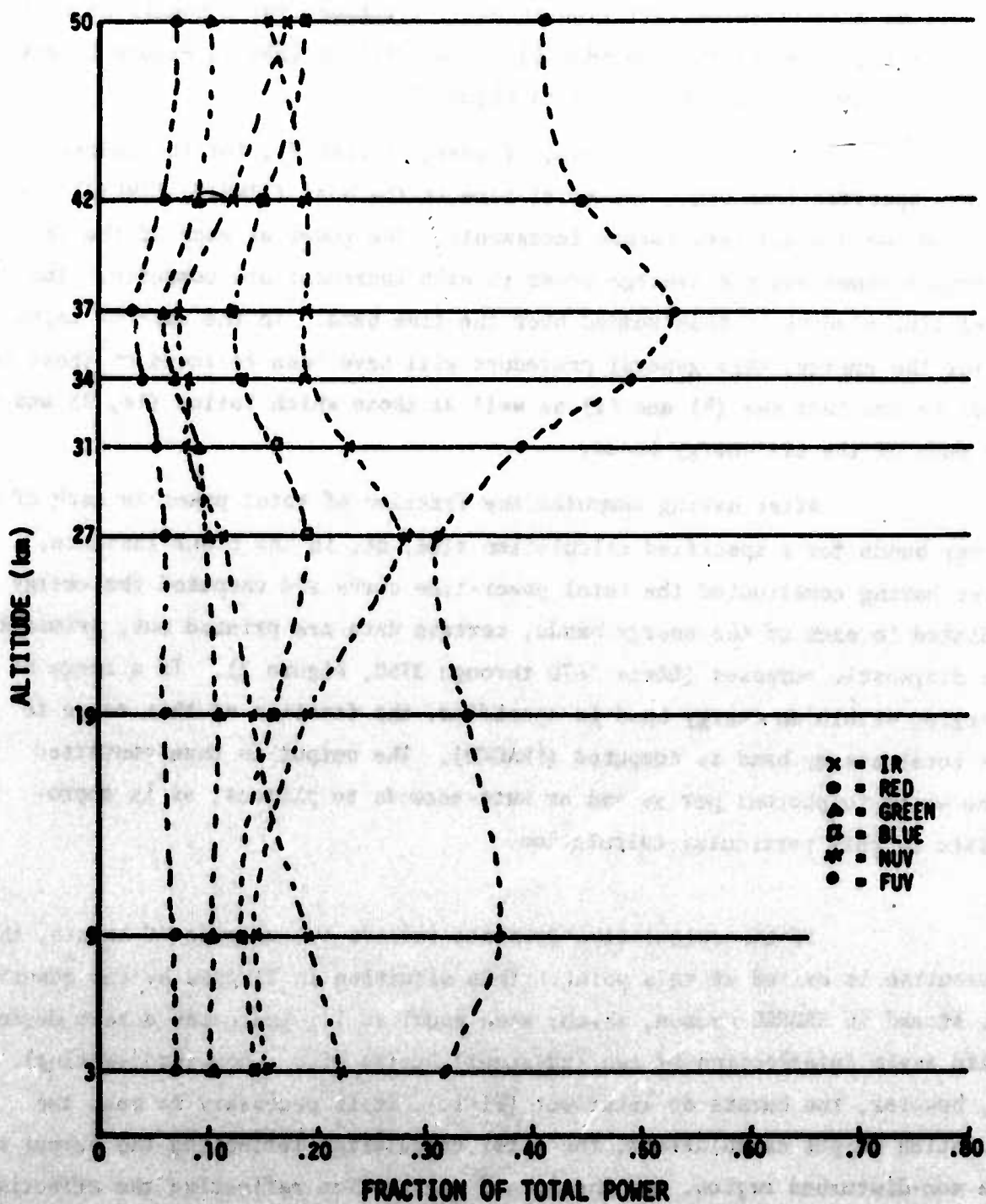


Figure 7. Variation of fractional contribution in each of six energy bands with altitude, time band #3.

bands, and shows the variation of averaged fractional contribution in time band #3, as a function of variation in burst altitude, for a specified yield. The quantities FRAC(1) through FRAC(6), lines 2430 to 2550 in Figure 2, are designed to approximate the curves in Figure 7.

If the desired output is energy (IFLAG=7), for the calculation of this specific time band, the total time in the band (TIME(3)-TIME(2)) is computed and divided into twenty increments. The power at each of the incremental times and the average power in each increment are computed. The power-time product is then summed over the time band. In the case of calculating the energy, this general procedure will have been followed on those time bands before this one (#1 and #2) as well as those which follow (#4, #5 and #6), for each of the six energy bands.

After having computed the fraction of total power in each of the energy bands for a specified calculation time, or, in the other instance, after having constructed the total power-time curve and computed the energy radiated in each of the energy bands, certain data are printed out, primarily for diagnostic purposes (Lines 3670 through 3750, Figure 2). If a range of energies within an energy band is specified, the fraction of this range to the total energy band is computed (FRACNU). The output is then converted from watts to photons per second or watt-seconds to photons, as is appropriate to this particular calculation.

If the calculation does not involve the merging of bursts, the subroutine is exited at this point. This situation is flagged by the quantity F1, stored in RADFAC common, which, when equal to 1., indicates a zero degree solid angle intersection of two (adjacent) bursts (i.e., non-intersecting). If, however, two bursts do intersect ($F1 < 1.$), it is necessary to make two radiation output calculations, the first calculation reflecting the output in the non-disturbed region, and the second calculation reflecting the effective radiated output in the previous-burst-modified environment.

In the first pass through RADOUT (KSWTCH=1, Line 3850) in a merged-burst case ($F1 < 1.$), the calculations reflect the non-disturbed region calculation. The calculation results of this first pass are temporarily stored (ENERG1,POWER1), and the equivalent burst point density (RHOP) for the second-pass calculation is set.

After the second set of calculations, the results of the two calculations are combined (Lines 3930-3960), the results are printed out and control is returned to the calling subroutine, the values of the current calculation having been stored in GEOTD common (i.e., POWER(10,6), ENERGY(10,6)).

SECTION 3 APPLICATION AND RESULTS

Subroutine RADOUT is currently structured so as to cause the power and energy arrays for a specific burst to initially be set to zero each time the subroutine is called. Thus, it is anticipated that the results of a calculation for a particular burst will be used before the subroutine is called to do another calculation for the same burst at, for example, a different calculation time, or in a different part of the frequency spectrum.

Although a particular photon energy is specified when a calculation is to be performed, the subroutine is currently set up to calculate power or energy, as the case may be, in all six energy bands. The results of the calculations are in units of photons per second or photons in each of the six total bands, except, as indicated in Section 2, when a range of energies within the band of interest is specified. The output, in this case, is then modified to reflect the fraction of the total band that the specified range of energies represents.

The basic equations for calculating the times and powers are generally of the form:

$$\text{Power or Time} = e^{(a + b \times \ln(y)) \pm ((h/100)^c) \times d}$$

where a , b , c , and d are constants

y = yield (kt), and

h = burst altitude (km)

The specific equations and constants currently in RADOUT are:

$$\begin{aligned} \text{TIME}(1) &= e^{-9.21034} \\ \text{TIME}(2) &= e^{((-8.62 + .317 \times \ln(y)) + ((h/100)^6 \times 2.25)} \\ \text{TIME}(3) &= e^{((-5.684 + .407 \times \ln(y)) - ((h/100)^9 \times 1.7)} \\ \text{TIME}(4) &= e^{((-3.151 + .4617 \times \ln(y)) - ((h/100)^9 \times 5.04)} \end{aligned}$$

$$\text{TIME}(5) = e^{((-0.525 + .233 \times \ln(y)) - ((h/100)^6 \times 3.4)}$$

$$\text{TIME}(6) = \text{Maximum of } 10 \times \text{TIME}(4) \text{ and } 1 \text{ second}$$

$$P1 = e^{((31.35 + .610 \times \ln(y)) + ((h/100)^9 \times 5.0)}$$

$$P2 = e^{((31.35 + .610 \times \ln(y)) + ((h/100)^9 \times 5.0)}$$

$$P3 = e^{((27.031 + .497 \times \ln(y)) + ((h/100)^9 \times 13.8)}$$

$$P4 = e^{((30.249 + .582 \times \ln(y)) + ((h/100)^9 \times 5.7)}$$

$$P5 = e^{((26.86 + .747 \times \ln(y)) + ((h/100)^9 \times 4.0)}$$

$$P6 = \text{Extrapolation of curve from } P5, \text{ on the basis of slope } P4 - P5, \text{ out to } \text{TIME}(6)$$

The values currently assigned to each of the constants reflect an attempt to reasonably match the empirical data over a relatively broad range of burst altitudes and yields. It is noted that the constants can easily be modified to match more recent or higher confidence data.

Figure 8 provides a comparison between the results of a specific case calculated by the RADFLO code, and the same case resulting from the analytical expressions contained in subroutine RADOUT. The dashed curve in Figure 8 shows the total power (watts) versus time after detonation (seconds) for a 5 kT burst at a burst altitude of 9 kilometers, based on data generated by the RADFLO code. The solid curve reflects the same case as calculated by subroutine RADOUT. In comparing the curves, it is seen that the times of P_{MAX1}, P_{MIN}, and P_{MAX2} correspond fairly well, as do the general shapes of the overall power-time curves, although the magnitude of the synthesized power at P_{MIN} ($\sim 6 \times 10^{-3}$ seconds) is high by a factor of about 2. As previously noted, the coefficients which control the location and magnitude of the time and power points have been selected so as to cover a wide range of yield and burst altitude parameters. Additionally, in cases of integrating power over time, an adjustment of some of the coefficients has been made to cause the energy obtained by a simple trapezoidal integration of the synthesized curve to approximate the RADFLO code output. Consequently, differences do exist. However, it appears that the approximations of power and energy provided by subroutine RADOUT are not unreasonable, when considered in the context of uncertainties in the source data.

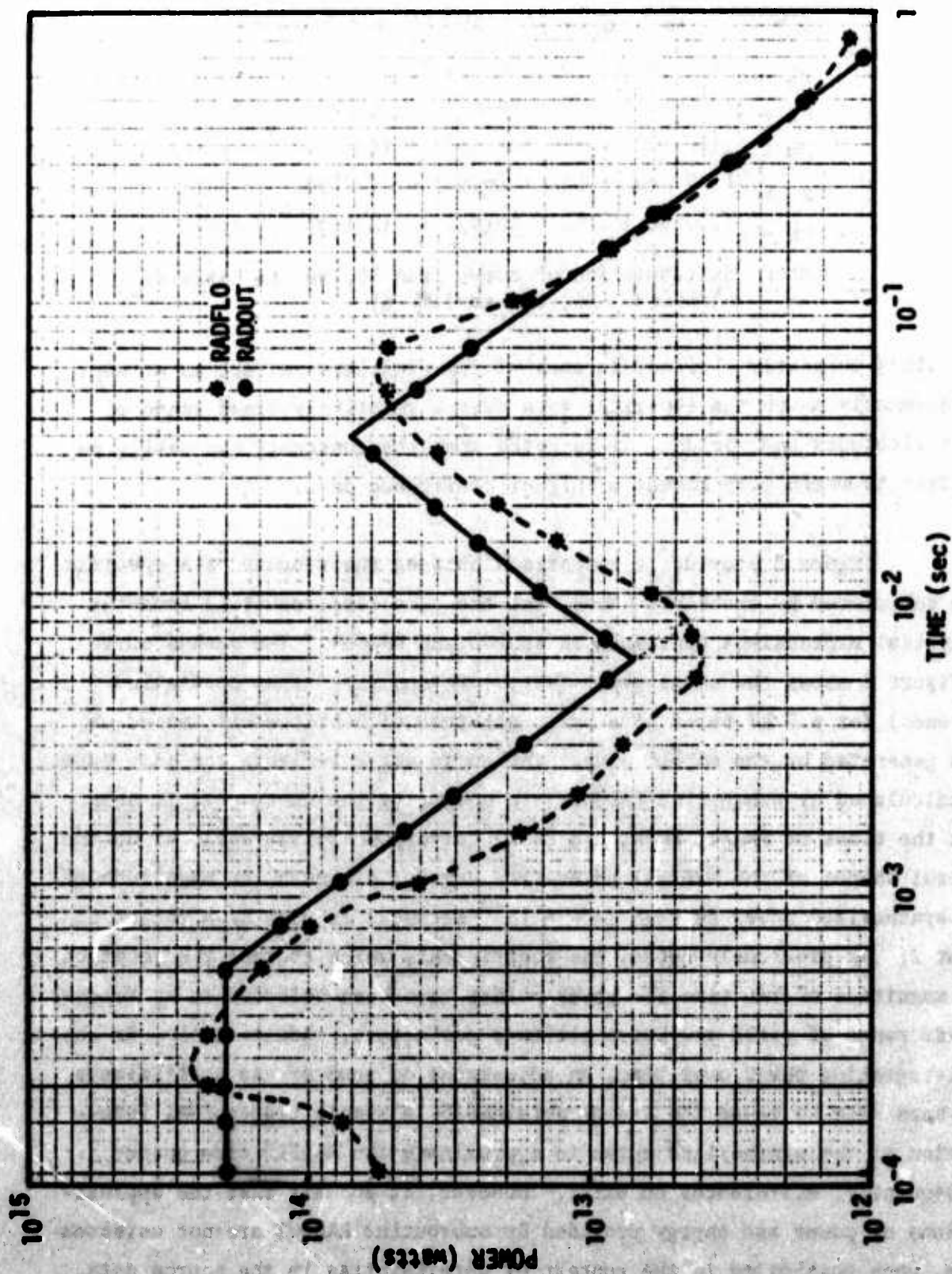


Figure 8. Comparison between RADFLO and RADOUT calculations.

APPENDIX A

DATA BASE

The data contained in this appendix were extracted from some of the RADFLO code calculations identified in Section 1 of this report. The data for various yields and burst altitudes were set up in individual data files to facilitate the data manipulation required for the development and verification of the analytical expressions contained in subroutine RADOUT. For each of the events described in this appendix, three pages of data are presented. The format is as follows:

CASE	weapon yield/burst altitude
TIME	time after detonation, seconds
IRP	power radiated in the IR band, watts
VISP	power radiated in the visible (red, green, and blue) band, watts
NRUV	power radiated in the near UV band, watts
FRUV	power radiated in the far UV band, watts
TOTP	total power escaping the grid, watts
INTI	energy radiated in the IR band, kilotons
INTV	energy radiated in the visible (red, green, and blue) band, kilotons
INTN	energy radiated in the near UV band, kilotons
INTF	energy radiated in the far UV band, kilotons
INTT	total energy escaping the grid (kilotons)

The third page of each set of data is a coarse plot of the power-time curve for that case, in which the powers (watts) for only the three highest decades are presented.

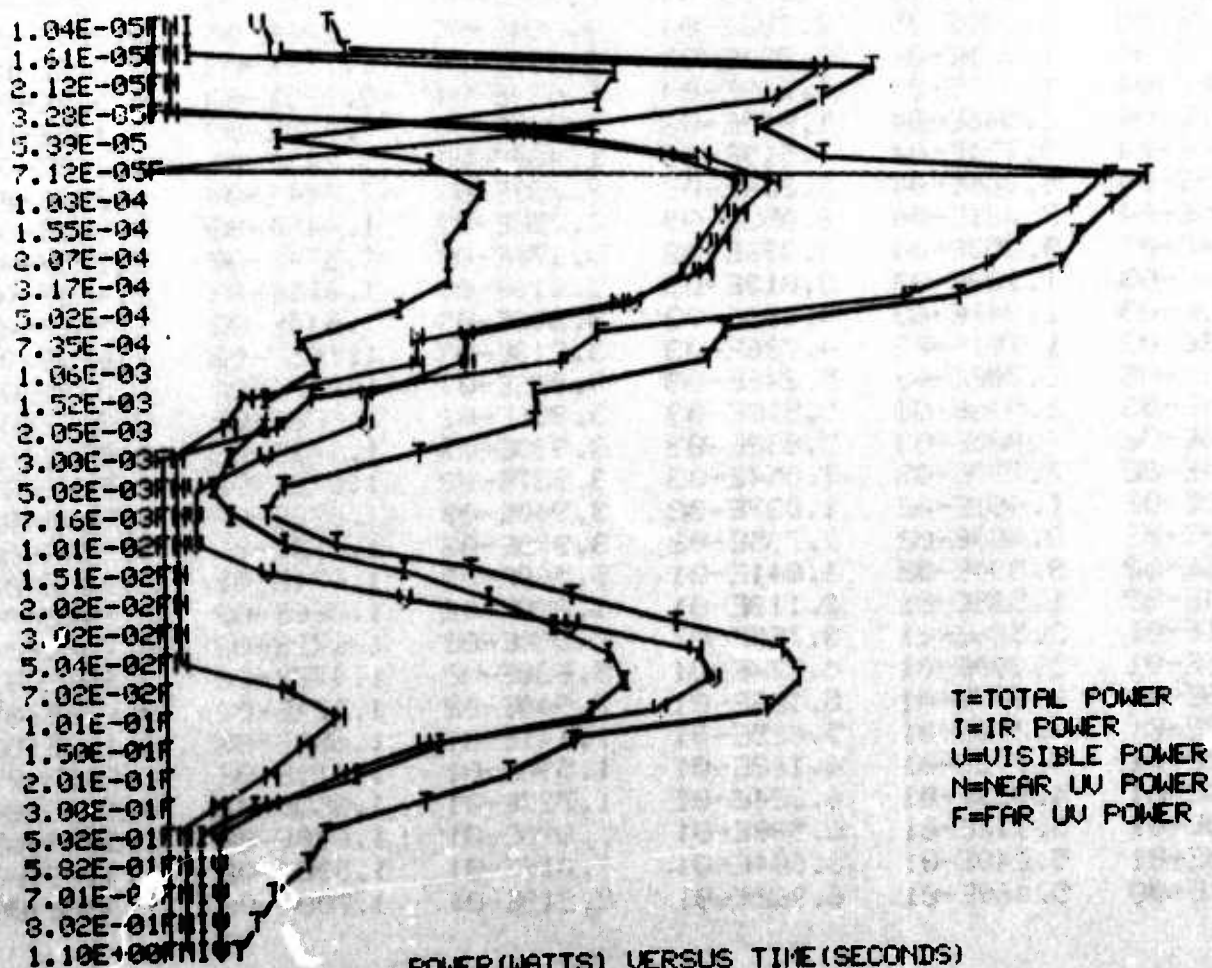
CASE 5 / 3

TIME	IRP	UISP	NRUU	FRUU	TOTP
1.042E-05	6.680E+11	1.810E+12	1.300E+09	1.050E+08	2.480E+12
1.612E-05	7.260E+11	2.010E+12	1.310E+09	1.060E+08	2.740E+12
2.125E-05	1.390E+13	4.740E+13	2.380E+09	2.190E+08	6.130E+13
3.278E-05	1.290E+13	3.330E+13	1.030E+10	1.440E+09	4.620E+13
5.393E-05	1.850E+12	7.520E+12	8.240E+12	1.280E+13	3.040E+13
7.122E-05	4.550E+12	1.980E+13	2.240E+13	7.030E+04	4.670E+13
1.029E-04	6.450E+12	2.940E+13	3.470E+13	2.510E+14	3.210E+14
1.548E-04	5.790E+12	2.580E+13	2.970E+13	2.040E+14	2.650E+14
2.067E-04	5.160E+12	2.220E+13	2.490E+13	1.600E+14	2.120E+14
3.170E-04	5.060E+12	2.090E+13	2.260E+13	1.340E+14	1.830E+14
5.019E-04	3.980E+12	1.490E+13	1.480E+13	7.400E+13	1.080E+14
7.355E-04	2.140E+12	5.930E+12	4.410E+12	1.220E+13	2.460E+13
1.064E-03	2.270E+12	5.880E+12	4.100E+12	1.020E+13	2.240E+13
1.524E-03	1.640E+12	3.150E+12	1.610E+12	2.360E+12	3.780E+12
2.049E-03	1.780E+12	3.140E+12	1.480E+12	1.940E+12	3.330E+12
3.002E-03	1.430E+12	1.800E+12	5.920E+11	4.910E+11	4.300E+12
5.021E-03	1.160E+12	7.130E+11	7.730E+10	2.940E+10	1.980E+12
7.164E-03	1.350E+12	4.400E+11	9.980E+09	1.930E+09	1.810E+12
1.005E-02	2.000E+12	5.510E+11	1.670E+09	5.100E+07	2.550E+12
1.514E-02	3.980E+12	1.710E+12	9.100E+08	7.850E+05	5.700E+12
2.022E-02	6.390E+12	3.990E+12	3.110E+09	6.070E+04	1.040E+13
3.023E-02	9.640E+12	1.010E+13	5.240E+10	1.300E+05	1.980E+13
5.035E-02	1.280E+13	2.030E+13	7.400E+11	1.170E+06	3.330E+13
7.024E-02	1.410E+13	2.400E+13	1.870E+12	5.040E+06	4.000E+13
1.011E-01	1.190E+13	1.810E+13	2.630E+12	6.770E+06	3.260E+13
1.505E-01	4.550E+12	4.370E+12	2.020E+12	2.890E+07	1.090E+13
2.010E-01	2.710E+12	2.570E+12	1.750E+12	4.700E+07	7.030E+12
3.003E-01	1.500E+12	1.510E+12	1.230E+12	6.100E+07	4.230E+12
5.015E-01	8.140E+11	8.900E+11	7.380E+11	9.350E+07	2.440E+12
5.823E-01	6.980E+11	7.810E+11	6.350E+11	9.390E+07	2.110E+12
7.010E-01	5.800E+11	6.740E+11	5.340E+11	8.900E+07	1.790E+12
8.020E-01	5.170E+11	6.200E+11	4.830E+11	8.310E+07	1.620E+12
1.101E+00	4.280E+11	5.470E+11	4.140E+11	8.750E+07	1.390E+12

TIME	INTI	INTU	INTN	INTF	INTT
1.042E-05	5.910E-07	1.292E-06	3.000E-09	1.720E-10	1.886E-06
1.612E-05	1.550E-06	3.929E-06	6.000E-09	-9.020E-10	5.484E-06
2.125E-05	1.836E-05	6.302E-05	2.000E-08	-1.243E-08	8.139E-05
3.278E-05	5.527E-05	1.712E-04	3.000E-08	-4.311E-10	2.265E-04
5.393E-05	7.212E-05	2.192E-04	2.008E-05	3.235E-05	3.437E-04
7.122E-05	8.636E-05	2.803E-04	8.904E-05	3.236E-05	4.881E-04
1.029E-04	1.361E-04	5.034E-04	3.399E-04	1.112E-03	2.092E-03
1.548E-04	1.997E-04	7.849E-04	6.634E-04	3.325E-03	4.973E-03
2.067E-04	2.546E-04	1.019E-03	9.234E-04	4.978E-03	7.175E-03
3.170E-04	3.751E-04	1.518E-03	1.466E-03	8.243E-03	1.160E-02
5.019E-04	5.666E-04	2.264E-03	2.231E-03	-7.744E-04	4.288E-03
7.355E-04	7.421E-04	2.853E-03	2.758E-03	1.449E-02	2.085E-02
1.064E-03	9.353E-04	3.398E-03	3.176E-03	1.574E-02	2.325E-02
1.524E-03	1.129E-03	3.813E-03	3.416E-03	1.618E-02	2.454E-02
2.049E-03	1.342E-03	4.198E-03	3.602E-03	1.644E-02	2.558E-02
3.002E-03	1.701E-03	4.726E-03	3.813E-03	1.665E-02	2.689E-02
5.021E-03	2.302E-03	5.246E-03	3.922E-03	1.672E-02	2.819E-02
7.164E-03	2.946E-03	5.518E-03	3.936E-03	1.672E-02	2.912E-02
1.005E-02	4.085E-03	5.832E-03	3.933E-03	1.673E-02	3.058E-02
1.514E-02	7.729E-03	7.054E-03	3.937E-03	1.672E-02	3.544E-02
2.022E-02	1.401E-02	1.037E-02	3.940E-03	1.672E-02	4.504E-02
3.023E-02	3.403E-02	2.785E-02	3.980E-03	1.673E-02	8.259E-02
5.035E-02	8.894E-02	1.041E-01	5.560E-03	1.671E-02	2.153E-01
7.024E-02	1.535E-01	2.118E-01	1.200E-02	1.666E-02	3.940E-01
1.011E-01	2.523E-01	3.755E-01	2.950E-02	1.672E-02	6.740E-01
1.505E-01	3.389E-01	4.774E-01	5.630E-02	1.677E-02	8.894E-01
2.010E-01	3.807E-01	5.168E-01	7.940E-02	1.671E-02	9.936E-01
3.003E-01	4.274E-01	5.625E-01	1.141E-01	1.650E-02	1.120E+00
5.015E-01	4.792E-01	6.168E-01	1.590E-01	1.710E-02	1.272E+00
5.823E-01	4.933E-01	6.324E-01	1.723E-01	1.650E-02	1.315E+00
7.010E-01	5.112E-01	6.528E-01	1.890E-01	1.630E-02	1.369E+00
8.020E-01	5.240E-01	6.684E-01	2.016E-01	1.590E-02	1.410E+00
1.101E+00	5.469E-01	6.962E-01	2.219E-01	1.700E-02	1.482E+00

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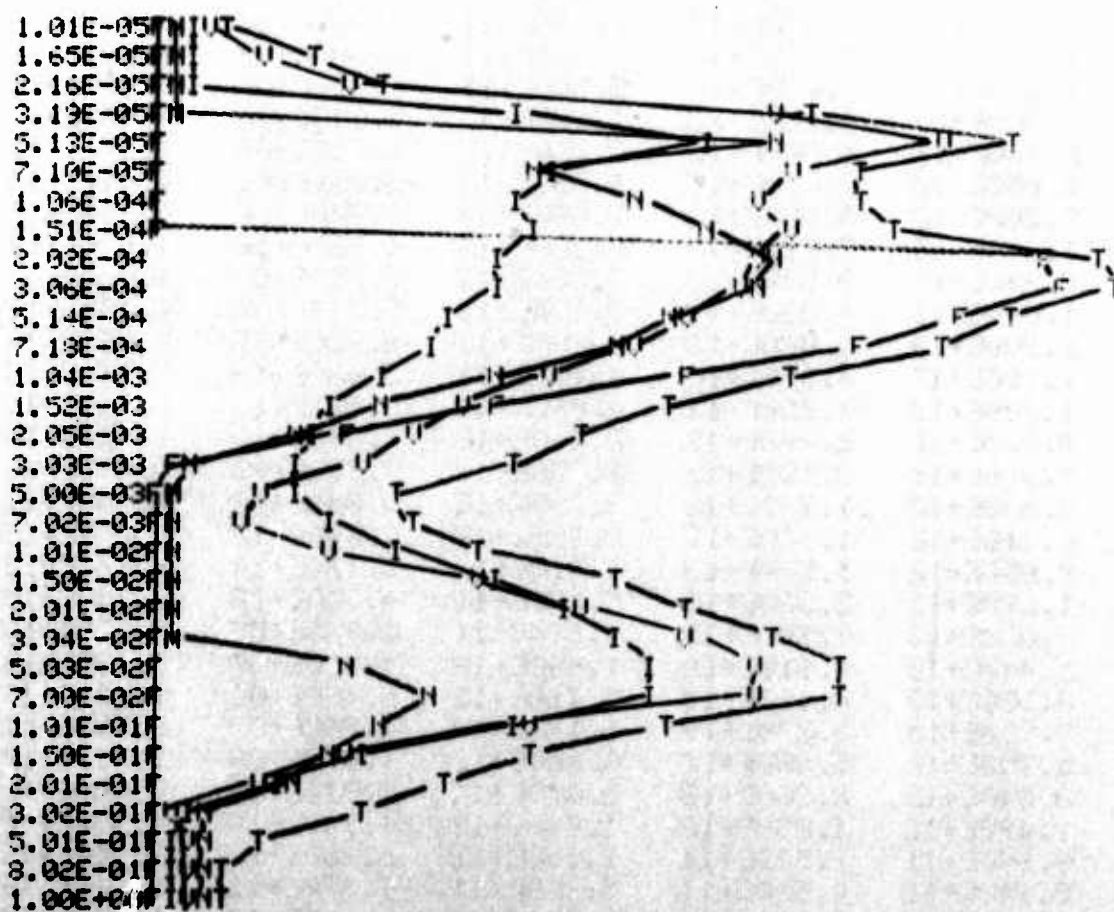
TIME	IRP	UISP	NRUU	FRUU	TOTF
1.008E-05	3.320E+11	6.800E+11	2.430E+10	3.870E+05	1.040E+12
1.649E-05	6.170E+11	1.770E+12	2.430E+10	3.870E+05	2.410E+12
2.161E-05	8.470E+11	2.720E+12	2.440E+10	3.870E+05	3.590E+12
3.186E-05	7.690E+12	3.540E+13	3.490E+10	3.880E+05	4.310E+13
5.134E-05	2.340E+13	9.030E+13	3.320E+13	3.890E+05	1.470E+14
7.095E-05	9.830E+12	3.800E+13	8.570E+12	3.900E+05	5.640E+13
1.055E-04	7.990E+12	3.310E+13	1.620E+13	4.010E+05	5.730E+13
1.505E-04	8.730E+12	3.710E+13	2.360E+13	1.010E+08	6.940E+13
2.024E-04	7.030E+12	3.000E+13	3.360E+13	1.680E+14	2.380E+14
3.062E-04	6.810E+12	2.830E+13	3.080E+13	1.950E+14	2.610E+14
5.138E-04	5.390E+12	2.020E+13	1.990E+13	1.020E+14	1.480E+14
7.182E-04	4.570E+12	1.530E+13	1.370E+13	5.710E+13	9.080E+13
1.039E-03	3.440E+12	9.530E+12	7.060E+12	2.020E+13	4.030E+13
1.521E-03	2.660E+12	5.820E+12	3.450E+12	6.880E+12	1.880E+13
2.046E-03	2.370E+12	4.260E+12	2.050E+12	2.900E+12	1.160E+13
3.032E-03	2.220E+12	3.200E+12	1.090E+12	1.060E+12	7.580E+12
5.002E-03	2.030E+12	1.650E+12	2.330E+11	1.140E+11	4.020E+12
7.022E-03	2.510E+12	1.590E+12	4.930E+10	1.460E+10	4.170E+12
1.013E-02	3.840E+12	2.570E+12	5.720E+09	6.320E+08	6.410E+12
1.500E-02	7.160E+12	6.500E+12	2.860E+09	7.320E+06	1.370E+13
2.015E-02	1.010E+13	1.130E+13	1.960E+10	4.270E+05	2.150E+13
3.039E-02	1.410E+13	2.120E+13	4.090E+11	2.720E+05	3.570E+13
5.034E-02	1.800E+13	3.260E+13	2.920E+12	2.390E+06	5.350E+13
7.004E-02	1.750E+13	3.130E+13	4.670E+12	7.270E+06	5.350E+13
1.014E-01	7.800E+12	8.310E+12	3.660E+12	2.210E+07	1.980E+13
1.502E-01	3.220E+12	2.970E+12	2.610E+12	6.150E+07	8.800E+12
2.007E-01	1.840E+12	1.720E+12	1.850E+12	1.350E+08	5.420E+12
3.017E-01	1.040E+12	9.990E+11	1.110E+12	8.840E+08	3.150E+12
5.012E-01	5.740E+11	5.790E+11	6.310E+11	3.690E+09	1.790E+12
8.017E-01	3.750E+11	4.080E+11	4.350E+11	6.060E+09	1.220E+12
1.001E+00	3.240E+11	3.730E+11	4.010E+11	4.830E+09	1.100E+12

TIME	INTI	INTU	INTN	INTF	INTT
1.008E-05	7.200E-07	1.476E-06	5.300E-08	-2.001E-11	2.249E-06
1.649E-05	1.315E-06	2.989E-06	1.260E-07	-3.576E-08	4.394E-06
2.161E-05	2.266E-06	5.806E-06	1.200E-07	1.000E-10	8.192E-06
3.186E-05	2.698E-05	1.153E-04	2.200E-07	-2.760E-08	1.425E-04
5.134E-05	5.347E-05	2.430E-04	2.793E-05	-5.000E-08	3.243E-04
7.095E-05	8.404E-05	3.579E-04	5.636E-05	-1.000E-08	4.983E-04
1.055E-04	1.721E-04	7.241E-04	1.638E-04	5.000E-07	1.060E-03
1.505E-04	2.687E-04	1.136E-03	4.913E-04	1.000E-07	1.896E-03
2.024E-04	3.658E-04	1.555E-03	9.232E-04	2.307E-03	5.151E-03
3.062E-04	5.369E-04	2.277E-03	1.717E-03	7.209E-03	1.174E-02
5.138E-04	8.265E-04	3.411E-03	2.887E-03	1.384E-02	2.097E-02
7.182E-04	1.050E-03	4.184E-03	3.600E-03	1.703E-02	2.586E-02
1.009E-03	1.353E-03	5.112E-03	4.365E-03	1.977E-02	3.060E-02
1.521E-03	1.690E-03	5.931E-03	4.899E-03	2.107E-02	3.359E-02
2.046E-03	1.996E-03	6.524E-03	5.210E-03	2.157E-02	3.530E-02
3.032E-03	2.535E-03	7.381E-03	5.564E-03	2.200E-02	3.748E-02
5.002E-03	3.554E-03	8.544E-03	5.872E-03	2.224E-02	4.021E-02
7.022E-03	4.647E-03	9.317E-03	5.926E-03	2.225E-02	4.214E-02
1.013E-02	7.005E-03	1.086E-02	5.925E-03	2.228E-02	4.607E-02
1.500E-02	1.353E-02	1.608E-02	5.940E-03	2.226E-02	5.781E-02
2.015E-02	2.437E-02	2.694E-02	5.940E-03	2.227E-02	7.952E-02
3.009E-02	5.463E-02	6.794E-02	6.330E-03	2.229E-02	1.512E-01
5.034E-02	1.332E-01	2.023E-01	1.400E-02	2.229E-02	3.718E-01
7.004E-02	2.183E-01	3.572E-01	3.320E-02	2.218E-02	6.309E-01
1.014E-01	3.156E-01	5.010E-01	6.540E-02	2.223E-02	9.042E-01
1.502E-01	3.711E-01	5.546E-01	1.013E-01	2.190E-02	1.049E+00
2.007E-01	3.998E-01	5.812E-01	1.270E-01	2.270E-02	1.131E+00
3.017E-01	4.326E-01	6.122E-01	1.612E-01	2.270E-02	1.229E+00
5.012E-01	4.685E-01	6.476E-01	2.009E-01	2.240E-02	1.339E+00
8.017E-01	5.011E-01	6.816E-01	2.373E-01	2.270E-02	1.443E+00
1.001E+00	5.177E-01	7.002E-01	2.571E-01	2.300E-02	1.498E+00

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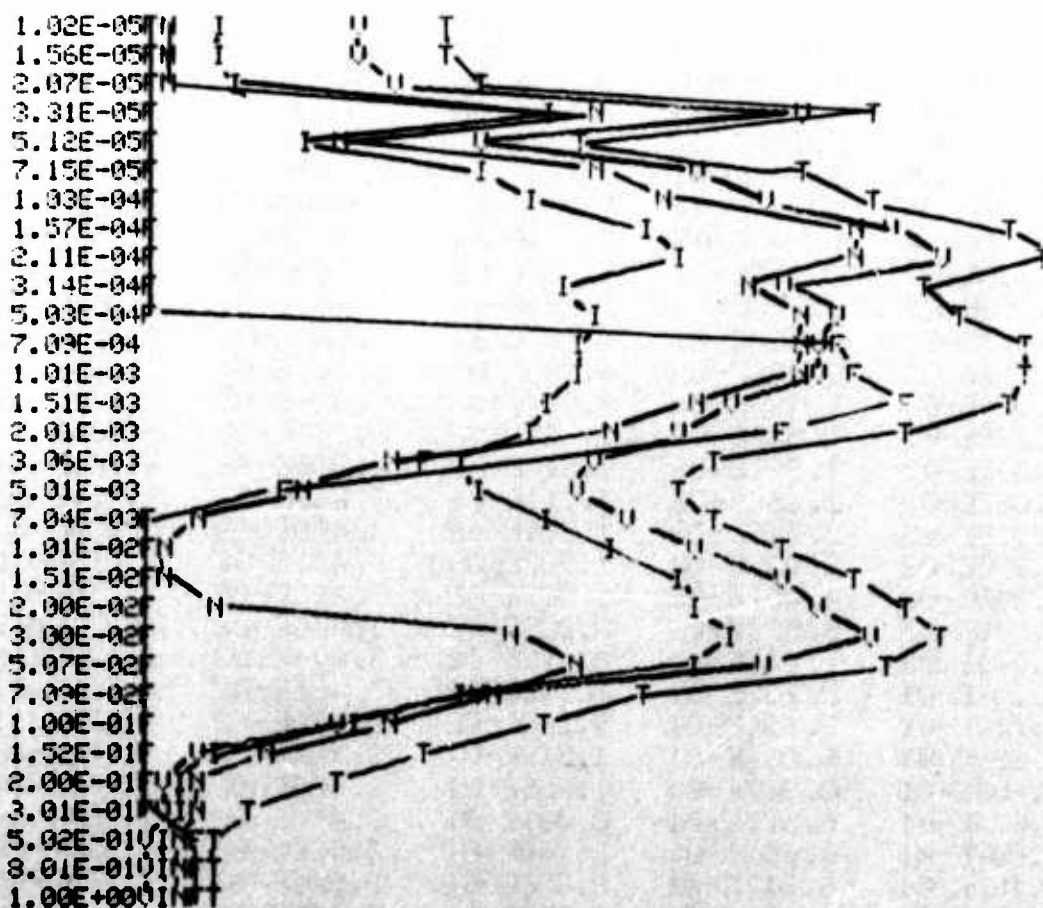
TIME	IRP	UISP	NRUV	FRUV	TOTP
1.021E-05	1.370E+12	3.070E+12	7.020E+11	6.840E+06	5.140E+12
1.557E-05	1.380E+12	3.110E+12	7.130E+11	6.840E+06	5.200E+12
2.069E-05	1.540E+12	3.690E+12	8.560E+11	6.840E+06	6.090E+12
3.308E-05	9.800E+12	4.100E+13	1.280E+13	6.840E+06	6.360E+13
5.115E-05	2.430E+12	6.500E+12	2.780E+12	6.850E+06	1.170E+13
7.152E-05	6.650E+12	2.430E+13	1.320E+13	6.860E+06	4.410E+13
1.032E-04	9.000E+12	3.500E+13	1.880E+13	6.870E+06	6.280E+13
1.569E-04	1.690E+13	7.070E+13	5.560E+13	6.920E+06	1.430E+14
2.114E-04	2.200E+13	9.590E+13	5.800E+13	7.030E+06	1.760E+14
3.135E-04	1.040E+13	4.020E+13	3.130E+13	7.210E+06	8.190E+13
5.033E-04	1.300E+13	5.020E+13	4.290E+13	2.950E+07	1.060E+14
7.091E-04	1.180E+13	4.350E+13	4.190E+13	5.430E+13	1.510E+14
1.011E-03	1.200E+13	4.280E+13	4.060E+13	5.530E+13	1.510E+14
1.508E-03	9.860E+12	2.940E+13	2.340E+13	7.890E+13	1.420E+14
2.007E-03	8.380E+12	2.130E+13	1.450E+13	3.670E+13	8.090E+13
3.065E-03	6.030E+12	1.240E+13	3.780E+12	4.840E+12	2.700E+13
5.014E-03	6.510E+12	1.120E+13	2.320E+12	2.090E+12	2.210E+13
7.044E-03	9.050E+12	1.570E+13	1.310E+12	3.130E+11	2.640E+13
1.015E-02	1.370E+13	2.320E+13	5.490E+11	4.950E+10	3.750E+13
1.514E-02	2.030E+13	3.800E+13	4.280E+11	1.930E+09	5.870E+13
2.003E-02	2.440E+13	4.910E+13	1.450E+12	1.550E+08	7.490E+13
3.001E-02	2.980E+13	6.110E+13	8.110E+12	6.450E+06	9.910E+13
5.071E-02	2.250E+13	3.370E+13	1.170E+13	1.760E+07	6.790E+13
7.091E-02	5.750E+12	5.880E+12	6.260E+12	1.470E+08	1.790E+13
1.001E-01	3.040E+12	2.860E+12	3.890E+12	2.910E+09	9.800E+12
1.523E-01	1.490E+12	1.250E+12	1.840E+12	1.940E+10	4.590E+12
2.002E-01	9.640E+11	7.530E+11	1.100E+12	6.200E+10	2.880E+12
3.013E-01	5.940E+11	4.220E+11	5.980E+11	1.870E+11	1.800E+12
5.020E-01	3.070E+11	2.250E+11	3.450E+11	3.640E+11	1.240E+12
8.012E-01	1.760E+11	1.360E+11	2.210E+11	3.740E+11	9.080E+11
1.002E+00	1.390E+11	1.130E+11	1.890E+11	3.470E+11	7.890E+11

TIME	INTI	INTU	INTN	INTF	INTT
1.021E-05	3.006E-06	6.758E-06	1.546E-06	5.000E-09	1.131E-05
1.557E-05	4.761E-06	1.071E-05	2.459E-06	-4.000E-09	1.793E-05
2.069E-05	6.552E-06	1.489E-05	3.428E-06	-9.000E-09	2.486E-05
3.303E-05	2.563E-05	9.026E-05	2.621E-05	.000E+00	1.421E-04
5.115E-05	5.393E-05	2.117E-04	5.897E-05	-7.000E-08	3.245E-04
7.152E-05	7.881E-05	2.978E-04	1.119E-04	9.997E-09	4.885E-04
1.032E-04	1.397E-04	5.291E-04	2.372E-04	.000E+00	9.060E-04
1.569E-04	3.127E-04	1.243E-03	7.033E-04	1.000E-07	2.259E-03
2.114E-04	5.780E-04	2.383E-03	1.482E-03	.000E+00	4.443E-03
3.135E-04	8.953E-04	3.775E-03	2.199E-03	3.000E-07	6.869E-03
5.033E-04	1.473E-03	6.050E-03	4.067E-03	4.000E-06	1.159E-02
7.091E-04	2.097E-03	8.420E-03	6.163E-03	6.200E-04	1.730E-02
1.011E-03	2.956E-03	1.149E-02	8.934E-03	5.336E-03	2.872E-02
1.506E-03	4.273E-03	1.588E-02	1.288E-02	2.201E-02	5.504E-02
2.007E-03	5.372E-03	1.892E-02	1.512E-02	2.867E-02	6.808E-02
3.065E-03	7.065E-03	2.266E-02	1.711E-02	3.266E-02	7.951E-02
5.014E-03	9.955E-03	2.781E-02	1.848E-02	3.409E-02	9.034E-02
7.044E-03	1.375E-02	3.438E-02	1.927E-02	3.452E-02	1.019E-01
1.015E-02	2.243E-02	4.857E-02	1.989E-02	3.463E-02	1.255E-01
1.514E-02	4.310E-02	8.532E-02	2.008E-02	3.463E-02	1.834E-01
2.003E-02	6.941E-02	1.367E-01	2.119E-02	3.474E-02	2.620E-01
3.001E-02	1.347E-01	2.708E-01	3.190E-02	3.466E-02	4.721E-01
5.071E-02	2.787E-01	5.430E-01	9.140E-02	3.470E-02	9.478E-01
7.091E-02	3.328E-01	6.063E-01	1.319E-01	3.480E-02	1.106E+00
1.001E-01	3.608E-01	6.337E-01	1.655E-01	3.480E-02	1.195E+00
1.523E-01	3.874E-01	6.575E-01	2.001E-01	3.470E-02	1.280E+00
2.002E-01	4.007E-01	6.683E-01	2.160E-01	3.500E-02	1.320E+00
3.013E-01	4.167E-01	6.817E-01	2.356E-01	3.800E-02	1.374E+00
5.020E-01	4.385E-01	6.958E-01	2.557E-01	5.190E-02	1.442E+00
8.012E-01	4.548E-01	7.031E-01	2.751E-01	7.930E-02	1.517E+00
1.002E+00	4.622E-01	7.139E-01	2.849E-01	9.660E-02	1.558E+00

PLTPON

ET 12

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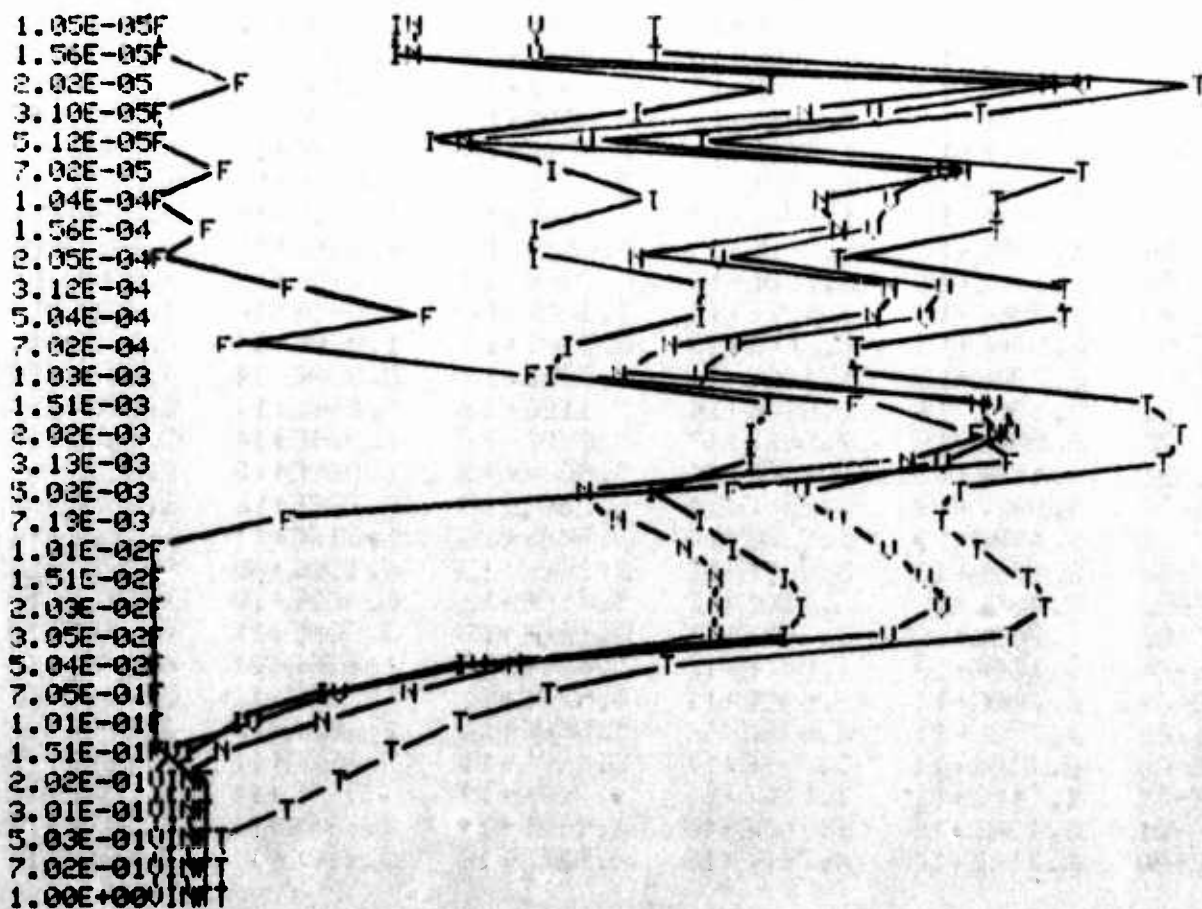
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1.047E-05	3.770E+12	8.700E+12	4.030E+12	3.140E+10	1.650E+13
1.560E-05	3.790E+12	8.780E+12	4.070E+12	6.480E+10	1.670E+13
2.021E-05	3.400E+13	2.040E+14	1.650E+14	1.560E+12	4.050E+14
3.097E-05	1.500E+13	6.070E+13	4.400E+13	3.850E+11	1.200E+14
5.115E-05	4.760E+12	1.120E+13	5.790E+12	4.300E+11	2.220E+13
7.018E-05	9.370E+12	9.810E+13	1.080E+14	1.470E+12	2.170E+14
1.036E-04	1.780E+13	6.720E+13	4.890E+13	5.730E+11	1.340E+14
1.556E-04	8.600E+12	6.130E+13	5.050E+13	1.310E+12	1.220E+14
2.045E-04	8.950E+12	2.550E+13	1.640E+13	1.950E+11	5.100E+13
3.120E-04	2.400E+13	9.210E+13	7.110E+13	2.100E+12	1.890E+14
5.041E-04	2.380E+13	8.800E+13	6.520E+13	4.680E+12	1.820E+14
7.020E-04	1.090E+13	2.910E+13	1.830E+13	1.400E+12	5.970E+13
1.031E-03	9.940E+12	2.360E+13	1.360E+13	8.920E+12	5.600E+13
1.512E-03	3.420E+13	1.250E+14	1.100E+14	5.740E+13	3.260E+14
2.024E-03	3.050E+13	1.310E+14	1.220E+14	1.130E+14	3.970E+14
3.126E-03	3.090E+13	9.580E+13	7.540E+13	1.410E+14	3.430E+14
5.022E-03	1.680E+13	4.390E+13	1.150E+13	2.740E+13	9.950E+13
7.128E-03	2.320E+13	5.270E+13	1.430E+13	2.130E+12	9.230E+13
1.013E-02	2.920E+13	6.910E+13	2.170E+13	7.320E+11	1.210E+14
1.514E-02	3.690E+13	8.770E+13	2.710E+13	3.200E+10	1.520E+14
2.030E-02	4.230E+13	9.590E+13	2.700E+13	2.770E+09	1.650E+14
3.052E-02	3.950E+13	7.310E+13	2.670E+13	2.000E+08	1.390E+14
5.035E-02	5.880E+12	6.240E+12	7.750E+12	3.740E+09	1.990E+13
7.055E-02	2.670E+12	2.780E+12	4.080E+12	7.060E+12	9.610E+12
1.010E-01	1.610E+12	1.640E+12	2.480E+12	2.880E+11	6.020E+12
1.515E-01	9.530E+11	9.120E+11	1.360E+12	6.360E+11	3.860E+12
2.020E-01	6.440E+11	5.760E+11	8.310E+11	8.930E+11	2.940E+12
3.005E-01	3.910E+11	3.230E+11	4.680E+11	9.740E+11	2.160E+12
5.031E-01	2.060E+11	1.680E+11	2.580E+11	7.330E+11	1.360E+12
7.020E-01	1.320E+11	1.120E+11	1.860E+11	5.930E+11	1.020E+12
1.003E+00	8.450E+10	7.390E+10	1.280E+11	4.440E+11	7.300E+11

TIME	INTI	INTV	INTN	INTF	INTT
1.047E-05	8.527E-06	1.968E-05	9.123E-06	4.900E-08	3.738E-05
1.560E-05	1.316E-05	3.038E-05	1.409E-05	1.100E-07	5.774E-05
2.021E-05	2.162E-05	6.621E-05	3.967E-05	3.800E-07	1.279E-04
3.097E-05	5.432E-05	1.914E-04	1.265E-04	1.120E-06	3.733E-04
5.115E-05	1.039E-04	4.521E-04	3.321E-04	4.000E-06	8.921E-04
7.018E-05	1.367E-04	6.122E-04	4.751E-04	6.000E-06	1.230E-03
1.036E-04	2.640E-04	1.079E-03	8.150E-04	8.900E-06	2.167E-03
1.556E-04	4.604E-04	1.973E-03	1.503E-03	2.240E-05	3.958E-03
2.045E-04	5.455E-04	2.197E-03	1.682E-03	2.850E-05	4.452E-03
3.120E-04	1.033E-03	3.971E-03	3.053E-03	6.400E-05	8.121E-03
5.041E-04	1.723E-03	6.686E-03	5.211E-03	1.990E-04	1.382E-02
7.020E-04	2.369E-03	9.135E-03	7.056E-03	4.600E-04	1.902E-02
1.031E-03	3.450E-03	1.343E-02	1.043E-02	1.310E-03	2.862E-02
1.512E-03	6.166E-03	2.361E-02	1.878E-02	4.616E-03	5.318E-02
2.024E-03	1.030E-02	3.975E-02	3.265E-02	1.304E-02	9.574E-02
3.126E-03	1.863E-02	7.176E-02	6.221E-02	5.799E-02	2.106E-01
5.022E-03	2.978E-02	1.028E-01	8.072E-02	1.083E-01	3.216E-01
7.128E-03	4.065E-02	1.292E-01	8.815E-02	1.110E-01	3.690E-01
1.013E-02	5.989E-02	1.745E-01	1.008E-01	1.120E-01	4.472E-01
1.514E-02	1.001E-01	2.695E-01	1.321E-01	1.123E-01	6.140E-01
2.030E-02	1.496E-01	3.843E-01	1.660E-01	1.123E-01	8.122E-01
3.052E-02	2.526E-01	6.009E-01	2.355E-01	1.123E-01	1.201E+00
5.035E-02	3.407E-01	7.181E-01	3.042E-01	1.074E-01	1.470E+00
7.055E-02	3.581E-01	7.366E-01	3.303E-01	1.123E-01	1.537E+00
1.010E-01	3.733E-01	7.523E-01	3.534E-01	1.136E-01	1.593E+00
1.515E-01	3.880E-01	7.668E-01	3.752E-01	1.193E-01	1.649E+00
2.020E-01	3.974E-01	7.755E-01	3.881E-01	1.285E-01	1.690E+00
3.005E-01	4.088E-01	7.853E-01	4.019E-01	1.519E-01	1.748E+00
5.031E-01	4.227E-01	7.965E-01	4.188E-01	1.922E-01	1.830E+00
7.020E-01	4.305E-01	8.029E-01	4.286E-01	2.239E-01	1.886E+00
1.003E+00	4.380E-01	8.094E-01	4.396E-01	2.607E-01	1.948E+00

PLTPOM

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TIME	IRP	UISP	NRUU	FRUU	TOTF
1.062E-05	6.600E+12	2.050E+13	2.350E+13	4.500E+12	5.510E+13
1.603E-05	6.770E+12	2.290E+13	2.210E+13	4.800E+12	5.650E+13
2.030E-05	7.060E+12	2.040E+13	1.280E+13	4.380E+12	4.470E+13
3.105E-05	7.540E+12	4.560E+13	5.070E+13	1.240E+13	1.160E+14
5.065E-05	8.740E+12	6.810E+13	7.060E+13	1.750E+13	1.650E+14
7.037E-05	1.210E+13	6.340E+13	8.300E+13	1.710E+13	1.760E+14
1.043E-04	1.160E+13	4.700E+13	5.930E+13	1.920E+13	1.370E+14
1.605E-04	1.200E+13	7.140E+13	6.880E+13	2.650E+13	1.790E+14
2.037E-04	1.800E+13	1.390E+14	1.470E+14	5.590E+13	3.590E+14
3.000E-04	1.560E+13	5.100E+13	3.570E+13	2.670E+13	1.290E+14
5.042E-04	2.440E+13	1.440E+14	1.390E+14	1.010E+14	4.090E+14
7.258E-04	1.940E+13	6.400E+13	4.550E+13	4.500E+13	1.740E+14
1.039E-03	2.130E+13	6.780E+13	4.700E+13	6.270E+13	1.990E+14
1.508E-03	2.590E+13	1.200E+14	1.100E+14	1.640E+14	4.200E+14
2.003E-03	2.570E+13	8.800E+13	6.290E+13	1.020E+14	2.790E+14
3.028E-03	2.730E+13	1.130E+14	9.590E+13	2.330E+14	4.690E+14
5.029E-03	3.590E+13	1.030E+14	7.110E+13	1.290E+14	3.390E+14
7.074E-03	3.580E+13	9.330E+13	5.850E+13	1.950E+14	3.830E+14
1.018E-02	4.150E+13	1.050E+14	5.560E+13	3.900E+13	2.410E+14
1.523E-02	5.080E+13	1.250E+14	6.210E+13	2.720E+12	2.400E+14
2.028E-02	5.490E+13	1.230E+14	5.540E+13	1.310E+11	2.340E+14
3.062E-02	2.970E+13	3.400E+13	2.000E+13	6.190E+09	8.370E+13
5.065E-02	3.480E+12	3.630E+12	5.410E+12	6.460E+10	1.260E+13
7.110E-02	1.780E+12	1.790E+12	2.920E+12	3.530E+11	6.840E+12
1.018E-01	1.100E+12	1.040E+12	1.690E+12	8.690E+11	4.700E+12
1.536E-01	6.700E+11	5.640E+11	8.820E+11	1.350E+12	3.460E+12
2.010E-01	4.750E+11	3.650E+11	5.560E+11	1.200E+12	2.590E+12
3.002E-01	2.710E+11	1.990E+11	3.130E+11	9.050E+11	1.690E+12
5.009E-01	1.510E+11	1.070E+11	1.760E+11	6.170E+11	1.050E+12
8.050E-01	8.190E+10	6.130E+10	1.090E+11	4.290E+11	6.810E+11
1.006E+00	6.210E+10	4.760E+10	8.820E+10	3.620E+11	5.600E+11

TIME	INTI	INTU	INTN	INTF	INTT
1.062E-05	1.037E-05	3.308E-05	2.995E-05	5.360E-06	7.876E-05
1.603E-05	1.904E-05	6.157E-05	5.729E-05	1.122E-05	1.491E-04
2.030E-05	2.609E-05	8.119E-05	7.982E-05	1.646E-05	2.036E-04
3.105E-05	4.504E-05	2.001E-04	2.078E-04	4.494E-05	4.978E-04
5.065E-05	8.849E-05	4.625E-04	4.870E-04	1.072E-04	1.145E-03
7.037E-05	1.381E-04	7.273E-04	8.016E-04	1.809E-04	1.848E-03
1.043E-04	2.270E-04	1.242E-03	1.365E-03	3.360E-04	3.170E-03
1.605E-04	3.984E-04	2.215E-03	2.392E-03	6.734E-04	5.678E-03
2.037E-04	5.473E-04	2.946E-03	3.157E-03	1.005E-03	7.655E-03
3.000E-04	8.791E-04	4.337E-03	4.662E-03	1.771E-03	1.165E-02
5.042E-04	1.710E-03	7.956E-03	8.234E-03	4.136E-03	2.204E-02
7.258E-04	2.697E-03	1.170E-02	1.180E-02	7.287E-03	3.349E-02
1.039E-03	4.240E-03	1.758E-02	1.719E-02	1.314E-02	5.215E-02
1.508E-03	6.863E-03	2.746E-02	2.596E-02	2.500E-02	8.528E-02
2.003E-03	9.854E-03	3.777E-02	3.472E-02	3.973E-02	1.221E-01
3.028E-03	1.667E-02	6.109E-02	5.324E-02	7.636E-02	2.074E-01
5.029E-03	3.220E-02	1.100E-01	8.940E-02	1.603E-01	3.919E-01
7.074E-03	5.033E-02	1.583E-01	1.205E-01	2.296E-01	5.567E-01
1.018E-02	7.840E-02	2.300E-01	1.604E-01	2.896E-01	7.584E-01
1.523E-02	1.345E-01	3.704E-01	2.305E-01	3.007E-01	1.036E+00
2.028E-02	1.992E-01	5.236E-01	3.022E-01	3.014E-01	1.326E+00
3.062E-02	3.105E-01	7.155E-01	3.930E-01	3.014E-01	1.720E+00
5.065E-02	3.572E-01	7.634E-01	4.384E-01	3.022E-01	1.861E+00
7.110E-02	3.689E-01	7.753E-01	4.578E-01	3.027E-01	1.905E+00
1.018E-01	3.788E-01	7.849E-01	4.733E-01	3.075E-01	1.944E+00
1.536E-01	3.892E-01	7.943E-01	4.885E-01	3.222E-01	1.994E+00
2.010E-01	3.955E-01	7.993E-01	4.962E-01	3.368E-01	2.028E+00
3.002E-01	4.037E-01	8.054E-01	5.059E-01	3.604E-01	2.075E+00
5.009E-01	4.133E-01	8.123E-01	5.164E-01	3.968E-01	2.139E+00
8.050E-01	4.211E-01	8.180E-01	5.269E-01	4.325E-01	2.199E+00
1.006E+00	4.245E-01	8.206E-01	5.309E-01	4.521E-01	2.228E+00

PLTPOM

ET 12

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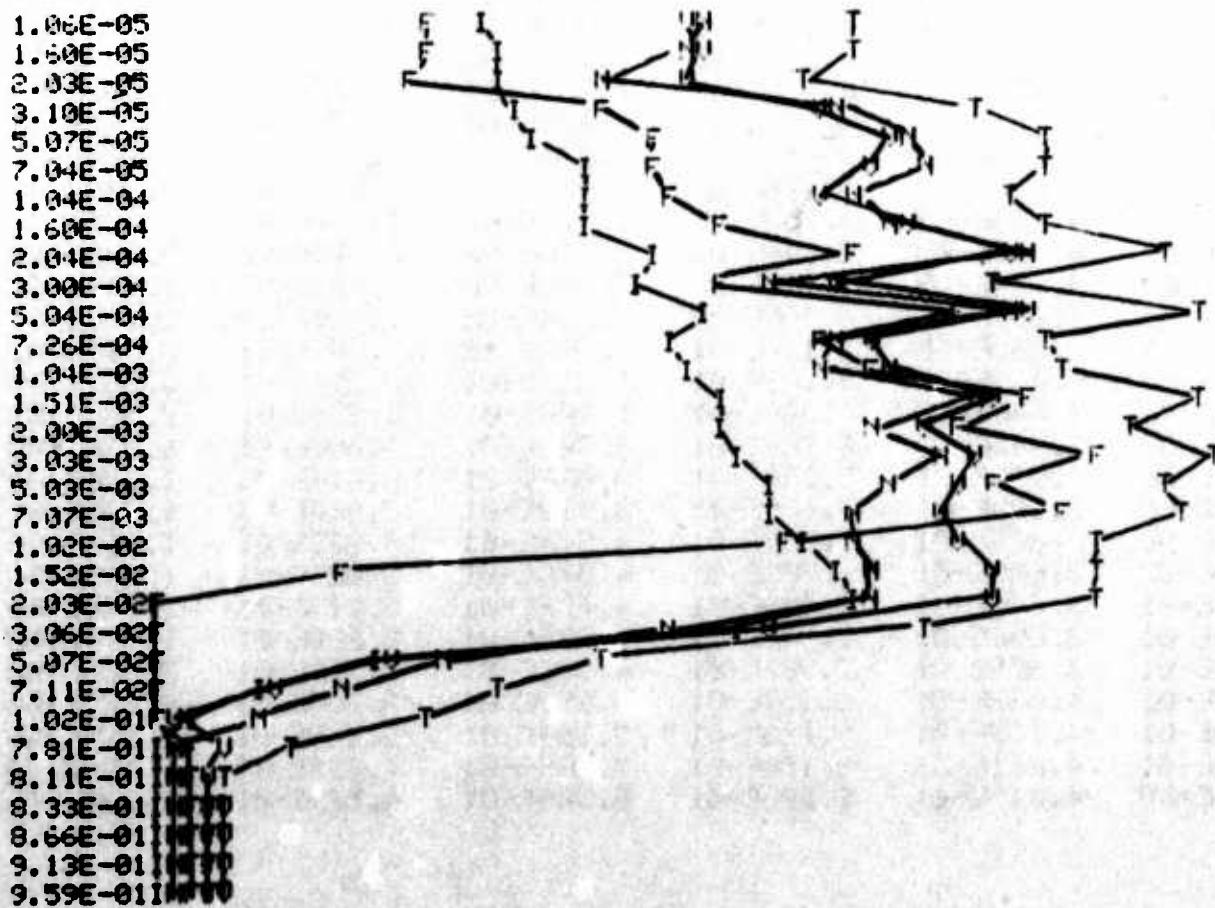
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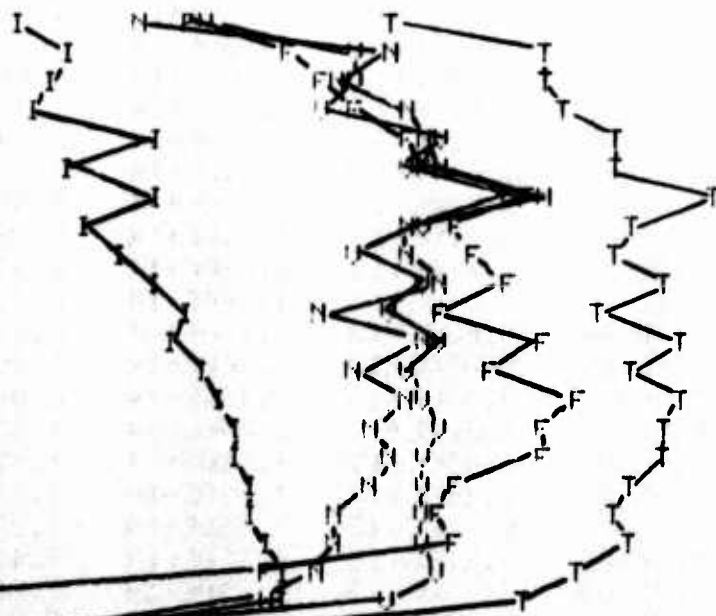
TIME	IRP	UISF	NRUU	FRUU	TOTF
1.021E-05	1.150E+13	3.340E+13	2.250E+13	3.240E+13	9.980E+13
1.634E-05	1.530E+13	3.580E+13	1.020E+14	5.030E+13	2.620E+14
2.061E-05	1.480E+13	8.510E+13	7.810E+13	7.020E+13	2.480E+14
3.037E-05	1.320E+13	7.230E+13	1.190E+14	8.540E+13	2.900E+14
5.078E-05	2.590E+13	1.370E+14	1.300E+14	1.100E+14	4.020E+14
7.027E-05	1.530E+13	1.200E+14	1.350E+14	1.260E+14	3.960E+14
1.004E-04	2.640E+13	2.050E+14	2.320E+14	2.120E+14	6.760E+14
1.554E-04	1.750E+13	1.240E+14	1.210E+14	1.500E+14	4.110E+14
2.008E-04	2.200E+13	8.980E+13	1.120E+14	1.680E+14	3.920E+14
3.076E-04	2.520E+13	1.250E+14	1.400E+14	2.050E+14	4.950E+14
5.235E-04	3.090E+13	1.000E+14	7.350E+13	1.460E+14	3.510E+14
7.006E-04	2.730E+13	1.370E+14	1.340E+14	2.680E+14	5.670E+14
1.099E-03	3.570E+13	1.200E+14	8.820E+13	1.820E+14	4.260E+14
1.535E-03	3.790E+13	1.170E+14	1.160E+14	3.160E+14	5.870E+14
2.040E-03	4.400E+13	1.350E+14	9.810E+13	2.570E+14	5.300E+14
3.108E-03	4.450E+13	1.270E+14	1.030E+14	2.630E+14	5.360E+14
5.003E-03	4.690E+13	1.320E+14	9.110E+13	1.580E+14	4.280E+14
7.189E-03	4.760E+13	1.260E+14	8.070E+13	1.430E+14	3.970E+14
1.026E-02	5.100E+13	1.300E+14	7.830E+13	1.580E+14	4.170E+14
1.500E-02	5.700E+13	1.360E+14	7.200E+13	5.060E+13	3.160E+14
2.031E-02	5.830E+13	1.080E+14	5.420E+13	5.120E+12	2.250E+14
3.011E-02	1.770E+13	1.630E+13	1.390E+13	2.330E+11	4.820E+13
5.057E-02	2.440E+12	2.500E+12	3.910E+12	2.940E+11	9.150E+12
7.166E-02	1.270E+12	1.260E+12	2.100E+12	7.370E+11	5.370E+12
1.008E-01	8.220E+11	7.580E+11	1.250E+12	1.530E+12	4.370E+12
1.507E-01	5.130E+11	4.200E+11	6.660E+11	1.280E+12	2.880E+12
2.024E-01	3.610E+11	2.640E+11	4.050E+11	1.030E+12	2.060E+12
3.017E-01	2.150E+11	1.480E+11	2.330E+11	7.280E+11	1.320E+12
5.023E-01	1.150E+11	8.130E+10	1.370E+11	4.890E+11	8.230E+11
7.094E-01	7.230E+10	5.190E+10	9.220E+10	3.480E+11	5.640E+11
1.001E+00	4.670E+10	3.600E+10	6.720E+10	2.670E+11	4.190E+11

TIME	INTI	INTU	INTN	INTF	INTT
1.021E-05	2.343E-05	7.547E-05	9.930E-05	8.460E-05	2.828E-04
1.634E-05	4.809E-05	2.422E-04	2.912E-04	1.874E-04	7.689E-04
2.061E-05	6.341E-05	3.240E-04	3.854E-04	2.533E-04	1.026E-03
3.037E-05	9.368E-05	5.724E-04	6.569E-04	4.711E-04	1.794E-03
5.078E-05	2.188E-04	1.184E-03	1.381E-03	9.958E-04	3.780E-03
7.027E-05	3.053E-04	1.809E-03	2.023E-03	1.559E-03	5.696E-03
1.004E-04	4.921E-04	2.719E-03	3.085E-03	2.608E-03	8.904E-03
1.554E-04	8.092E-04	4.503E-03	5.078E-03	4.689E-03	1.508E-02
2.008E-04	1.029E-03	5.679E-03	6.392E-03	6.458E-03	1.956E-02
3.076E-04	1.726E-03	9.080E-03	1.017E-02	1.183E-02	3.281E-02
5.235E-04	3.146E-03	1.422E-02	1.523E-02	2.115E-02	5.375E-02
7.006E-04	4.370E-03	2.065E-02	2.163E-02	3.295E-02	7.964E-02
1.099E-03	7.595E-03	3.126E-02	3.135E-02	5.501E-02	1.252E-01
1.525E-03	1.121E-02	4.603E-02	4.536E-02	8.724E-02	1.898E-01
2.040E-03	1.610E-02	6.101E-02	5.779E-02	1.208E-01	2.557E-01
3.108E-03	2.688E-02	9.693E-02	8.849E-02	1.951E-01	4.074E-01
5.003E-03	4.703E-02	1.589E-01	1.323E-01	3.066E-01	6.448E-01
7.189E-03	7.186E-02	2.253E-01	1.766E-01	3.702E-01	8.520E-01
1.026E-02	1.079E-01	3.190E-01	2.344E-01	4.917E-01	1.153E+00
1.520E-02	1.720E-01	4.759E-01	3.234E-01	6.166E-01	1.588E+00
2.031E-02	2.444E-01	6.307E-01	4.029E-01	6.461E-01	1.924E+00
3.011E-02	3.294E-01	7.367E-01	4.659E-01	6.481E-01	2.180E+00
5.057E-02	3.577E-01	7.639E-01	4.984E-01	6.506E-01	2.271E+00
7.166E-02	3.662E-01	7.725E-01	5.123E-01	6.527E-01	2.304E+00
1.008E-01	3.731E-01	7.791E-01	5.238E-01	6.612E-01	2.337E+00
1.507E-01	3.806E-01	7.856E-01	5.338E-01	6.782E-01	2.378E+00
2.024E-01	3.858E-01	7.896E-01	5.406E-01	6.924E-01	2.408E+00
3.017E-01	3.923E-01	7.942E-01	5.475E-01	7.125E-01	2.447E+00
5.023E-01	3.998E-01	7.994E-01	5.558E-01	7.412E-01	2.496E+00
7.094E-01	4.043E-01	8.025E-01	5.612E-01	7.606E-01	2.529E+00
1.001E+00	4.084E-01	8.055E-01	5.671E-01	7.819E-01	2.563E+00

ET 12

1 2 4 8 1 2 4 8 1 2 4 8

1.02E-05
1.63E-05
2.06E-05
3.04E-05
5.03E-05
7.03E-05
1.00E-04
1.55E-04
2.01E-04
3.08E-04
5.23E-04
7.01E-04
1.10E-03
1.52E-03
2.04E-03
3.11E-03
5.00E-03
7.19E-03
1.03E-02
1.52E-02
2.03E-02
3.01E-02
5.06E-02
7.17E-02
1.01E-01
1.51E-01
2.02E-01
3.02E-01
5.02E-01
7.09E-01
1.00E+00



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TIME	IRP	UISP	NRUU	FRUU	TOTF
1.016E-05	1.590E+13	1.000E+14	1.540E+14	2.720E+14	1.540E+14
1.555E-05	1.600E+13	1.020E+14	1.430E+14	2.560E+14	5.170E+14
2.016E-05	1.850E+12	1.300E+14	1.810E+14	3.380E+14	6.670E+14
3.007E-05	2.040E+13	1.460E+14	2.000E+14	3.960E+14	7.630E+14
5.067E-05	2.500E+13	1.850E+14	2.460E+14	4.900E+14	9.450E+14
7.071E-05	2.510E+13	1.720E+14	2.240E+14	4.680E+14	8.890E+14
1.033E-04	2.670E+13	1.610E+14	2.180E+14	4.890E+14	8.940E+14
1.520E-04	3.100E+13	1.930E+14	2.490E+14	5.990E+14	1.070E+15
2.004E-04	3.270E+13	1.830E+14	2.360E+14	5.880E+14	1.040E+15
3.042E-04	3.710E+13	2.030E+14	2.410E+14	6.500E+14	1.130E+15
5.187E-04	4.240E+13	1.840E+14	2.170E+14	6.070E+14	1.050E+15
7.217E-04	4.630E+13	2.130E+14	2.260E+14	6.580E+14	1.140E+15
1.019E-03	5.050E+13	1.960E+14	1.980E+14	5.870E+14	1.030E+15
1.525E-03	5.490E+13	2.120E+14	2.000E+14	6.180E+14	1.080E+15
2.058E-03	5.820E+13	2.040E+14	1.830E+14	5.720E+14	1.020E+15
3.018E-03	6.090E+13	1.800E+14	1.350E+14	3.260E+14	7.030E+14
5.145E-03	6.110E+13	1.680E+14	1.130E+14	2.190E+14	5.610E+14
7.015E-03	6.180E+13	1.590E+14	1.030E+14	2.020E+14	5.250E+14
1.023E-02	6.270E+13	1.510E+14	9.130E+13	1.510E+14	4.570E+14
1.502E-02	6.100E+13	1.290E+14	7.080E+13	8.980E+13	3.510E+14
2.074E-02	4.030E+13	4.530E+13	2.870E+13	2.860E+13	1.430E+14
3.017E-02	8.330E+12	7.810E+12	9.570E+12	7.840E+12	3.350E+13
5.037E-02	1.700E+12	1.760E+12	2.070E+12	2.460E+12	8.790E+12
7.057E-02	9.830E+11	9.940E+11	1.660E+12	2.200E+12	5.840E+12
1.009E-01	6.400E+11	5.980E+11	9.830E+11	1.860E+12	4.080E+12
1.526E-01	4.230E+11	3.570E+11	5.710E+11	1.380E+12	2.730E+12
2.019E-01	3.060E+11	2.320E+11	3.610E+11	1.020E+12	1.920E+12

TIME	INTI	INTU	INTN	INTF	INTT
1.016E-05	3.184E-05	1.717E-04	2.658E-04	5.031E-04	9.724E-04
1.555E-05	5.244E-05	3.057E-04	4.572E-04	8.418E-04	1.657E-03
2.016E-05	7.057E-05	4.151E-04	6.183E-04	1.138E-03	2.242E-03
3.007E-05	1.154E-04	7.279E-04	1.060E-03	2.005E-03	3.908E-03
5.067E-05	2.218E-04	1.470E-03	2.085E-03	4.057E-03	7.834E-03
7.071E-05	3.388E-04	2.272E-03	3.150E-03	6.249E-03	1.201E-02
1.033E-04	5.425E-04	3.565E-03	4.876E-03	9.964E-03	1.895E-02
1.520E-04	8.787E-04	5.529E-03	7.462E-03	1.605E-02	2.992E-02
2.004E-04	1.242E-03	7.519E-03	1.003E-02	2.250E-02	4.129E-02
3.042E-04	2.114E-03	1.218E-02	1.580E-02	3.758E-02	6.767E-02
5.187E-04	4.189E-03	2.224E-02	2.764E-02	7.035E-02	1.244E-01
7.217E-04	6.368E-03	3.197E-02	3.829E-02	1.005E-01	1.771E-01
1.019E-03	9.824E-03	4.642E-02	5.316E-02	1.446E-01	2.540E-01
1.525E-03	1.621E-02	7.111E-02	7.728E-02	2.180E-01	3.826E-01
2.058E-03	2.340E-02	9.619E-02	1.006E-01	2.878E-01	5.080E-01
3.018E-03	3.709E-02	1.391E-01	1.364E-01	3.825E-01	6.951E-01
5.145E-03	6.814E-02	2.263E-01	1.971E-01	5.081E-01	9.996E-01
7.015E-03	9.565E-02	2.991E-01	2.448E-01	5.991E-01	1.239E+00
1.023E-02	1.436E-01	4.192E-01	3.197E-01	7.383E-01	1.621E+00
1.502E-02	2.148E-01	5.783E-01	4.109E-01	8.631E-01	2.067E+00
2.074E-02	2.852E-01	6.866E-01	4.712E-01	9.318E-01	2.375E+00
3.017E-02	3.264E-01	7.259E-01	5.057E-01	9.623E-01	2.520E+00
5.037E-02	3.422E-01	7.419E-01	5.299E-01	9.801E-01	2.594E+00
7.057E-02	3.481E-01	7.479E-01	5.390E-01	9.920E-01	2.627E+00
1.009E-01	3.537E-01	7.533E-01	5.490E-01	1.006E+00	2.662E+00
1.526E-01	3.601E-01	7.590E-01	5.579E-01	1.026E+00	2.703E+00
2.019E-01	3.642E-01	7.623E-01	5.625E-01	1.058E+00	2.747E+00

PLTFON

Et 13
1

2

4

8

1

2

4

8

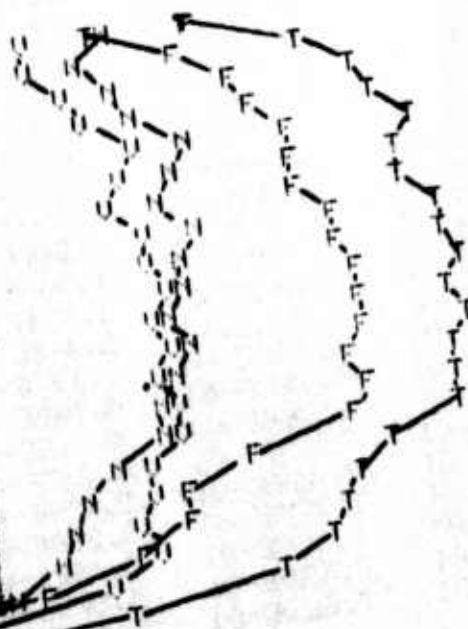
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2

4

8

- 1.02E-05
- 1.53E-05
- 2.02E-05
- 3.01E-05
- 5.07E-05
- 7.07E-05
- 1.03E-04
- 1.52E-04
- 2.00E-04
- 3.04E-04
- 5.19E-04
- 7.22E-04
- 1.02E-03
- 1.52E-03
- 2.06E-03
- 3.02E-03
- 5.15E-03
- 7.01E-03
- 1.02E-02
- 1.50E-02
- 2.07E-02
- 3.02E-02
- 5.04E-02
- 7.06E-02
- 1.01E-01
- 1.53E-01
- 2.02E-01



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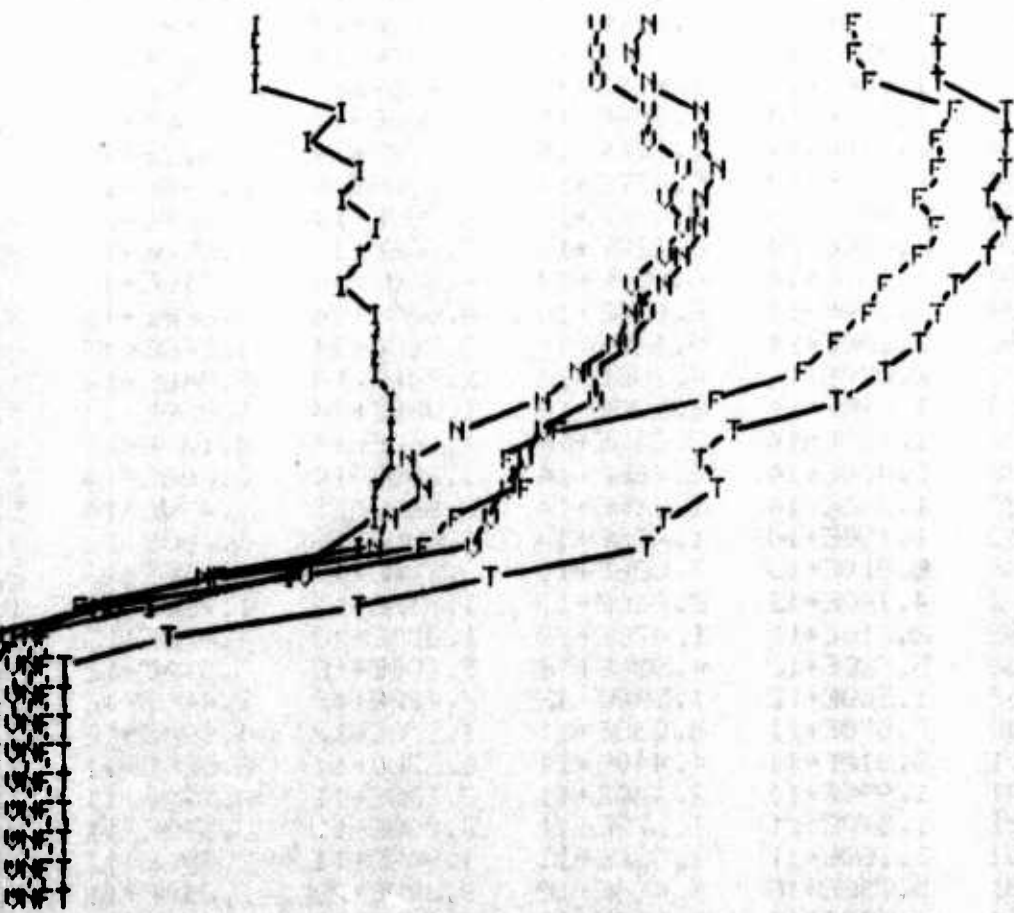
TIME	IRP	UISP	NRUU	FRUU	TOTF
1.101E-05	4.400E+13	3.000E+14	4.050E+14	1.480E+15	2.200E+15
1.520E-05	4.420E+13	3.180E+14	3.970E+14	1.480E+15	2.240E+15
2.195E-05	4.290E+13	3.140E+14	4.080E+14	1.600E+15	2.360E+15
3.047E-05	6.980E+13	4.420E+14	5.730E+14	2.490E+15	3.580E+15
5.204E-05	5.950E+13	4.460E+14	5.820E+14	2.300E+15	3.390E+15
7.002E-05	7.910E+13	5.010E+14	6.130E+14	2.320E+15	3.520E+15
1.003E-04	7.160E+13	4.660E+14	5.620E+14	2.200E+15	3.300E+15
1.504E-04	8.600E+13	5.130E+14	5.850E+14	2.220E+15	3.400E+15
2.058E-04	7.820E+13	4.730E+14	5.370E+14	2.110E+15	3.200E+15
3.110E-04	7.250E+13	3.950E+14	4.480E+14	1.790E+15	2.700E+15
5.009E-04	8.340E+13	4.070E+14	3.990E+14	1.520E+15	2.410E+15
7.063E-04	8.410E+13	3.630E+14	3.490E+14	1.280E+15	2.080E+15
1.013E-03	8.820E+13	3.280E+14	2.990E+14	1.030E+15	1.750E+15
1.550E-03	9.480E+13	3.040E+14	2.320E+14	6.460E+14	1.280E+15
2.067E-03	9.460E+13	2.330E+14	1.380E+14	2.640E+14	7.300E+14
3.083E-03	9.120E+13	1.990E+14	1.100E+14	1.850E+14	5.850E+14
5.564E-03	8.690E+13	1.980E+14	1.160E+14	2.030E+14	6.040E+14
7.441E-03	8.220E+13	1.690E+14	9.520E+13	1.460E+14	4.920E+14
1.006E-02	7.610E+13	1.520E+14	8.500E+13	1.200E+14	4.320E+14
1.521E-02	5.370E+13	5.670E+13	3.130E+13	3.150E+13	1.730E+14
2.045E-02	2.350E+13	2.010E+13	1.670E+13	1.590E+13	7.620E+13
3.115E-02	5.470E+12	5.160E+12	7.100E+12	7.410E+12	2.510E+13
5.081E-02	1.320E+12	1.440E+12	2.240E+12	3.330E+12	8.330E+12
7.047E-02	7.850E+11	8.800E+11	1.370E+12	1.970E+12	5.000E+12
1.032E-01	4.570E+11	5.280E+11	8.140E+11	1.310E+12	3.110E+12
1.524E-01	3.200E+11	3.590E+11	5.310E+11	8.710E+11	2.080E+12
2.032E-01	2.420E+11	2.680E+11	3.910E+11	6.360E+11	1.540E+12
3.014E-01	1.520E+11	1.670E+11	2.440E+11	3.930E+11	9.550E+11
5.005E-01	7.890E+10	8.780E+10	1.350E+11	2.190E+11	5.200E+11
8.101E-01	4.510E+10	4.970E+10	7.960E+10	1.320E+11	3.070E+11
1.009E+00	3.370E+10	3.650E+10	6.010E+10	1.050E+11	2.350E+11

TIME	INTI	INTU	INTN	INTF	INTT
1.101E-05	8.794E-05	6.150E-04	8.921E-04	3.459E-03	5.054E-03
1.520E-05	1.321E-04	9.359E-04	1.290E-03	4.938E-03	7.296E-03
2.195E-05	2.004E-04	1.444E-03	1.941E-03	7.439E-03	1.102E-02
3.047E-05	3.050E-04	2.166E-03	2.918E-03	1.147E-02	1.686E-02
5.234E-05	6.423E-04	4.534E-03	6.004E-03	2.407E-02	3.525E-02
7.002E-05	9.744E-04	6.661E-03	8.635E-03	3.405E-02	5.032E-02
1.003E-04	1.525E-03	1.015E-02	1.291E-02	5.004E-02	7.463E-02
1.504E-04	2.507E-03	1.619E-02	1.993E-02	7.714E-02	1.158E-01
2.058E-04	3.574E-03	2.258E-02	2.722E-02	1.053E-01	1.587E-01
3.110E-04	5.459E-03	3.344E-02	3.952E-02	1.540E-01	2.324E-01
5.009E-04	9.239E-03	5.260E-02	5.906E-02	2.286E-01	3.495E-01
7.063E-04	1.334E-02	7.110E-02	7.716E-02	2.969E-01	4.585E-01
1.013E-03	1.975E-02	9.579E-02	1.003E-01	3.768E-01	5.926E-01
1.550E-03	3.153E-02	1.360E-01	1.337E-01	4.827E-01	7.839E-01
2.067E-03	4.326E-02	1.681E-01	1.548E-01	5.304E-01	8.966E-01
3.083E-03	6.581E-02	2.181E-01	1.824E-01	5.773E-01	1.044E+00
5.564E-03	1.186E-01	3.434E-01	2.573E-01	7.136E-01	1.433E+00
7.441E-03	1.562E-01	4.238E-01	3.035E-01	7.895E-01	1.673E+00
1.006E-02	2.054E-01	5.240E-01	3.606E-01	8.764E-01	1.966E+00
1.521E-02	2.857E-01	6.464E-01	4.249E-01	9.511E-01	2.308E+00
2.045E-02	3.296E-01	6.857E-01	4.517E-01	9.763E-01	2.443E+00
3.115E-02	3.558E-01	7.091E-01	4.781E-01	1.002E+00	2.545E+00
5.081E-02	3.671E-01	7.208E-01	4.951E-01	1.025E+00	2.608E+00
7.047E-02	3.717E-01	7.258E-01	5.035E-01	1.037E+00	2.638E+00
1.032E-01	3.762E-01	7.310E-01	5.108E-01	1.049E+00	2.667E+00
1.524E-01	3.806E-01	7.359E-01	5.185E-01	1.061E+00	2.697E+00
2.032E-01	3.839E-01	7.397E-01	5.244E-01	1.070E+00	2.718E+00
3.014E-01	3.883E-01	7.446E-01	5.311E-01	1.082E+00	2.746E+00
5.005E-01	3.935E-01	7.502E-01	5.393E-01	1.096E+00	2.779E+00
8.101E-01	3.979E-01	7.551E-01	5.470E-01	1.108E+00	2.808E+00
1.009E+00	3.997E-01	7.571E-01	5.502E-01	1.114E+00	2.821E+00

ET 13

1 2 4 8 1 2 4 8 1 2 4 8

1.10E-05
1.52E-05
2.20E-05
3.05E-05
5.23E-05
7.00E-05
1.00E-04
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2.06E-04
3.11E-04
5.01E-04
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3.08E-03
5.56E-03
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5.08E-02
7.05E-02
1.03E-01
1.52E-01
2.03E-01
3.01E-01
5.01E-01
9.10E-01
1.01E+00



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TIME	IRP	UISP	NRUV	FRUV	TOTP
1.010E-05	1.240E+14	6.920E+14	6.280E+14	2.020E+15	3.470E+15
1.523E-05	1.400E+14	6.970E+14	6.230E+14	1.990E+15	3.450E+15
2.005E-05	1.410E+14	7.030E+14	6.240E+14	1.960E+15	3.420E+15
3.004E-05	1.450E+14	7.900E+14	7.140E+14	2.280E+15	3.920E+15
5.130E-05	1.990E+14	1.040E+15	9.460E+14	3.330E+15	5.510E+15
7.033E-05	2.350E+14	1.050E+15	8.860E+14	2.830E+15	5.000E+15
1.008E-04	2.410E+14	1.060E+15	8.770E+14	2.810E+15	4.990E+15
1.527E-04	2.450E+14	9.670E+14	7.480E+14	2.430E+15	4.400E+15
2.004E-04	2.490E+14	9.410E+14	6.900E+14	2.220E+15	4.100E+15
3.094E-04	2.680E+14	8.280E+14	5.600E+14	1.870E+15	3.520E+15
5.156E-04	2.360E+14	6.850E+14	4.920E+14	1.810E+15	3.230E+15
5.181E-04	2.340E+14	6.630E+14	4.680E+14	1.680E+15	3.050E+15
7.109E-04	2.200E+14	5.640E+14	3.760E+14	1.260E+15	2.420E+15
1.050E-03	2.050E+14	4.390E+14	2.740E+14	8.540E+14	1.770E+15
1.545E-03	1.890E+14	3.590E+14	1.980E+14	5.080E+14	1.250E+15
2.062E-03	1.720E+14	3.260E+14	1.740E+14	4.130E+14	1.090E+15
3.016E-03	1.490E+14	2.460E+14	1.200E+14	2.260E+14	7.410E+14
5.190E-03	1.290E+14	1.880E+14	8.860E+13	1.470E+14	5.520E+14
7.039E-03	1.130E+14	1.430E+14	6.500E+13	9.760E+13	4.190E+14
1.056E-02	8.010E+13	7.020E+13	3.180E+13	4.130E+13	2.230E+14
1.587E-02	4.140E+13	2.760E+13	1.550E+13	1.720E+13	1.020E+14
2.139E-02	2.210E+13	1.470E+13	1.050E+13	1.070E+13	5.790E+13
3.205E-02	5.920E+12	4.930E+12	5.700E+12	5.510E+12	2.210E+13
5.174E-02	1.560E+12	1.590E+12	2.420E+12	2.440E+12	8.020E+12
7.110E-02	7.870E+11	8.830E+11	1.370E+12	1.690E+12	4.730E+12
1.002E-01	3.810E+11	4.440E+11	6.670E+11	8.500E+11	2.340E+12
1.534E-01	1.990E+11	2.440E+11	3.720E+11	4.870E+11	1.300E+12
2.018E-01	1.570E+11	1.870E+11	2.790E+11	3.590E+11	9.820E+11
3.011E-01	1.160E+11	1.320E+11	1.940E+11	2.390E+11	6.800E+11
5.003E-01	5.730E+10	6.460E+10	9.890E+10	1.240E+11	3.450E+11
7.071E-01	3.600E+10	3.960E+10	6.260E+10	8.260E+10	2.210E+11
1.005E+00	2.230E+10	2.370E+10	3.910E+10	5.660E+10	1.420E+11

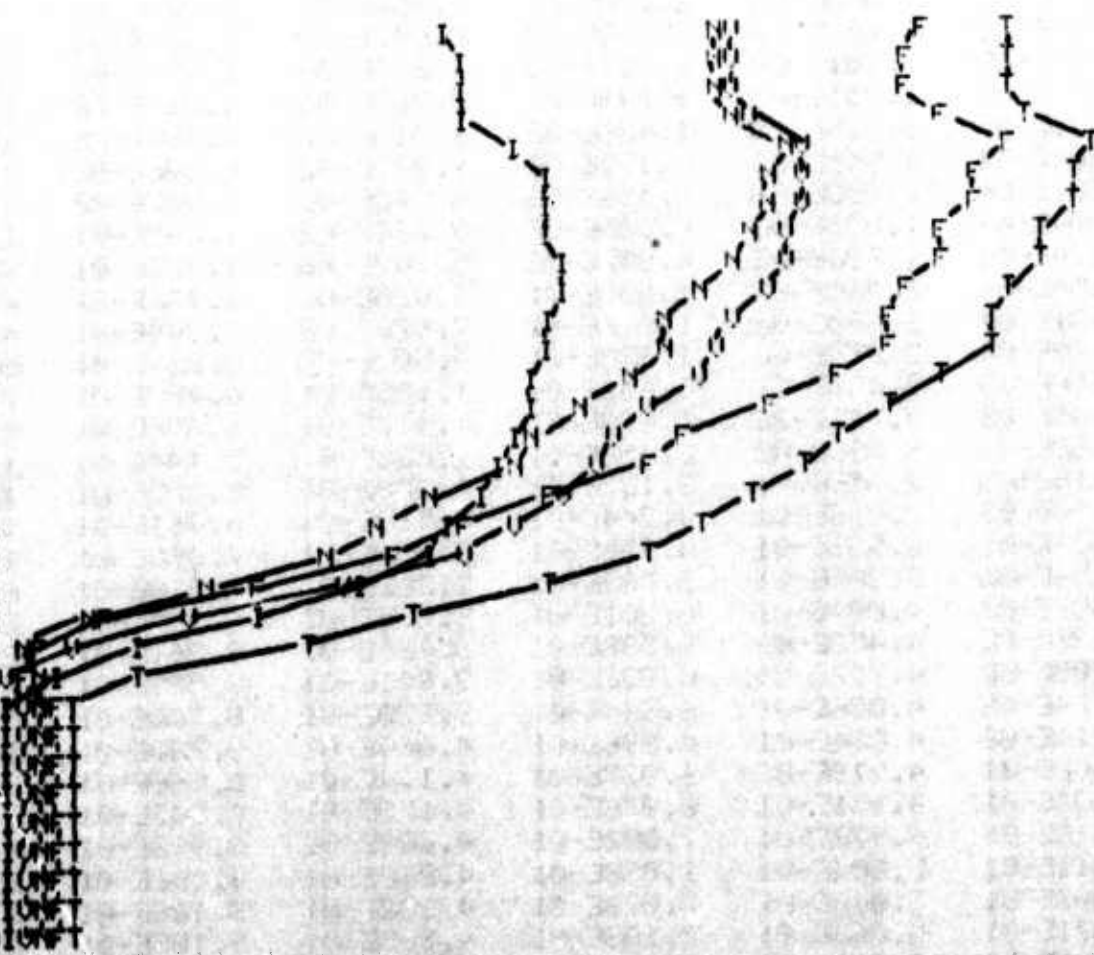
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1.523E-05	4.080E-04	2.200E-03	1.958E-03	6.228E-03	1.079E-02
2.005E-05	5.692E-04	2.998E-03	2.667E-03	8.463E-03	1.470E-02
3.004E-05	9.101E-04	4.782E-03	4.263E-03	1.354E-02	2.349E-02
5.130E-05	1.851E-03	9.749E-03	8.960E-03	3.010E-02	5.066E-02
7.033E-05	2.913E-03	1.456E-02	1.313E-02	4.388E-02	7.448E-02
1.008E-04	4.540E-03	2.198E-02	1.933E-02	6.336E-02	1.092E-01
1.527E-04	7.658E-03	3.456E-02	2.943E-02	9.927E-02	1.709E-01
2.004E-04	1.039E-02	4.523E-02	3.736E-02	1.245E-01	2.175E-01
3.094E-04	1.736E-02	6.807E-02	5.347E-02	1.777E-01	3.166E-01
5.156E-04	2.960E-02	1.055E-01	8.020E-02	2.732E-01	4.885E-01
5.181E-04	2.800E-02	1.026E-01	7.870E-02	2.649E-01	4.742E-01
7.109E-04	3.777E-02	1.272E-01	9.503E-02	3.232E-01	5.832E-01
1.050E-03	5.488E-02	1.662E-01	1.195E-01	4.009E-01	7.415E-01
1.545E-03	7.743E-02	2.070E-01	1.427E-01	4.656E-01	8.927E-01
2.062E-03	9.899E-02	2.458E-01	1.630E-01	5.144E-01	1.022E+00
3.016E-03	1.352E-01	3.137E-01	1.988E-01	5.925E-01	1.240E+00
5.190E-03	2.066E-01	4.244E-01	2.519E-01	6.861E-01	1.569E+00
7.039E-03	2.593E-01	4.955E-01	2.852E-01	7.368E-01	1.777E+00
1.056E-02	3.385E-01	5.783E-01	3.222E-01	7.888E-01	2.028E+00
1.587E-02	4.094E-01	6.301E-01	3.475E-01	8.195E-01	2.206E+00
2.139E-02	4.453E-01	6.538E-01	3.629E-01	8.361E-01	2.298E+00
3.205E-02	4.717E-01	6.732E-01	3.821E-01	8.539E-01	2.381E+00
5.174E-02	4.836E-01	6.844E-01	3.970E-01	8.700E-01	2.435E+00
7.110E-02	4.884E-01	6.896E-01	4.060E-01	8.780E-01	2.462E+00
1.002E-01	4.919E-01	6.937E-01	4.114E-01	8.866E-01	2.484E+00
1.534E-01	4.951E-01	6.976E-01	4.173E-01	8.947E-01	2.505E+00
2.018E-01	4.972E-01	7.000E-01	4.208E-01	8.992E-01	2.517E+00
3.011E-01	5.004E-01	7.038E-01	4.268E-01	9.062E-01	2.537E+00
5.003E-01	5.040E-01	7.078E-01	4.332E-01	9.128E-01	2.558E+00
7.071E-01	5.062E-01	7.103E-01	4.365E-01	9.185E-01	2.572E+00
1.005E+00	5.081E-01	7.124E-01	4.405E-01	9.225E-01	2.583E+00

PLTPON

ET 13

1 2 4 3 1 2 4 3 1 2 4 3

1.01E-05
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 2.01E-05
 3.00E-05
 5.13E-05
 7.03E-05
 1.01E-04
 1.53E-04
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 7.11E-04
 1.05E-03
 1.55E-03
 2.06E-03
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 5.17E-02
 7.11E-02
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 5.00E-01
 7.07E-01
 1.00E+00



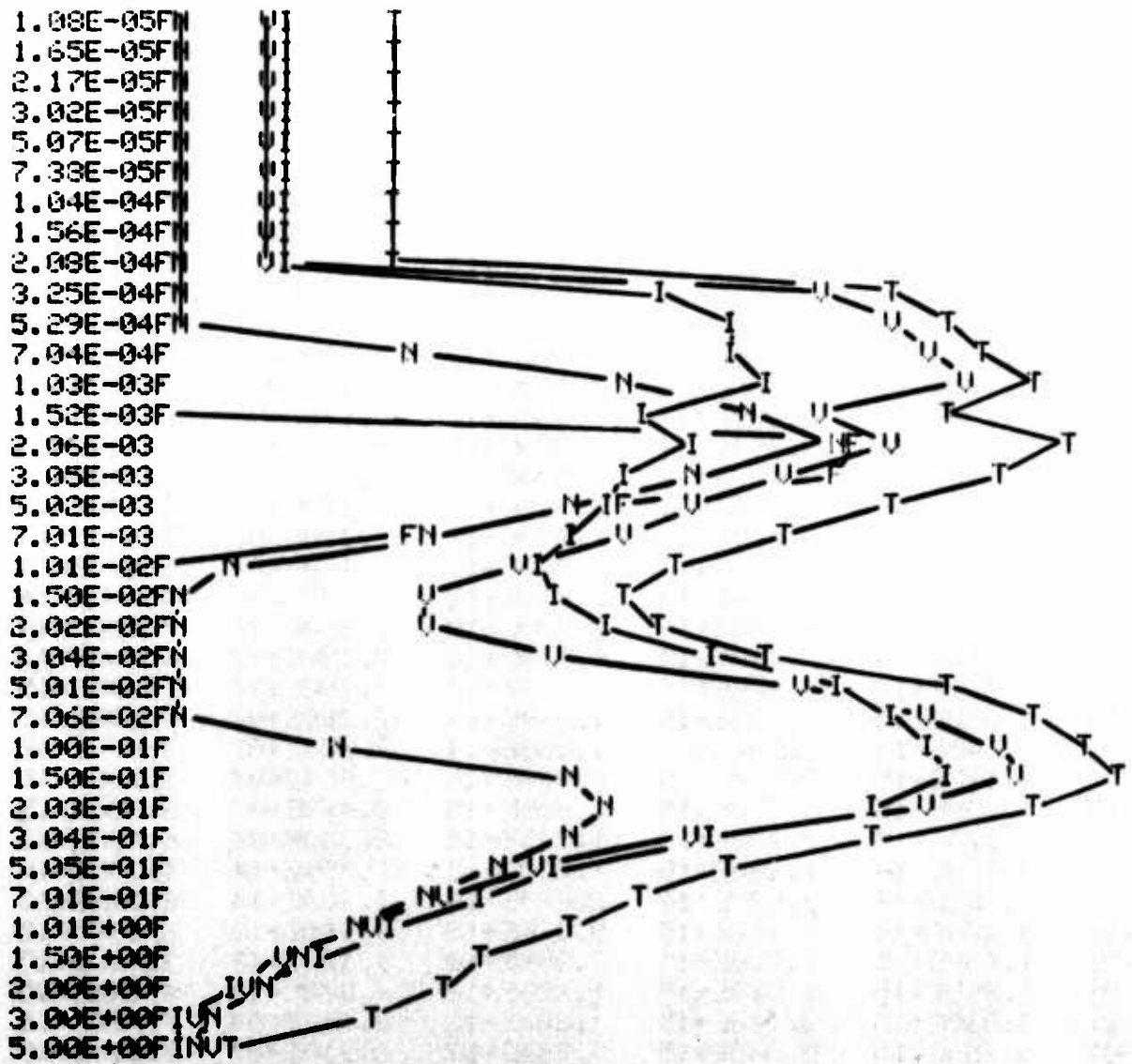
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TIME	IRP	UISP	NRUJ	FRUJ	TOTP
1.084E-05	1.790E+12	1.680E+12	1.380E+10	1.280E+06	3.480E+12
1.654E-05	1.790E+12	1.680E+12	1.380E+10	1.280E+06	3.480E+12
2.166E-05	1.790E+12	1.680E+12	1.380E+10	1.280E+06	3.480E+12
3.020E-05	1.790E+12	1.680E+12	1.380E+10	1.280E+06	3.480E+12
5.071E-05	1.790E+12	1.680E+12	1.380E+10	1.280E+06	3.490E+12
7.377E-05	1.790E+12	1.680E+12	1.380E+10	1.290E+06	3.490E+12
1.040E-04	1.790E+12	1.680E+12	1.380E+10	1.280E+06	3.490E+12
1.559E-04	1.790E+12	1.680E+12	1.380E+10	1.280E+06	3.490E+12
2.078E-04	1.790E+12	1.680E+12	1.380E+10	1.280E+06	3.490E+12
3.246E-04	1.600E+13	3.910E+13	1.380E+10	1.280E+06	5.520E+13
5.290E-04	2.400E+13	5.700E+13	1.800E+10	1.300E+06	8.110E+13
7.041E-04	2.400E+13	6.670E+13	3.940E+12	1.320E+06	9.460E+13
1.033E-03	2.720E+13	8.370E+13	1.220E+13	1.330E+06	1.230E+14
1.522E-03	1.350E+13	3.700E+13	2.640E+13	2.680E+06	7.690E+13
2.064E-03	1.870E+13	5.510E+13	4.450E+13	4.470E+13	1.630E+14
3.049E-03	1.310E+13	3.040E+13	1.900E+13	4.190E+13	1.050E+14
5.020E-03	1.130E+13	1.980E+13	9.320E+12	1.320E+13	5.570E+13
7.015E-03	9.470E+12	1.260E+13	4.240E+12	3.930E+12	3.020E+13
1.010E-02	8.110E+12	7.000E+12	1.430E+12	3.360E+11	1.740E+13
1.501E-02	8.840E+12	4.090E+12	2.010E+11	6.100E+10	1.320E+13
2.020E-02	1.140E+13	4.150E+12	2.690E+10	2.560E+09	1.550E+13
3.037E-02	2.110E+13	8.300E+12	4.640E+09	2.580E+08	2.940E+13
5.013E-02	4.360E+13	3.580E+13	1.930E+10	3.230E+05	7.940E+13
7.056E-02	5.780E+13	6.780E+13	2.950E+11	5.390E+05	1.260E+14
1.003E-01	7.030E+13	1.030E+14	2.670E+12	1.530E+06	1.760E+14
1.502E-01	7.460E+13	1.210E+14	9.520E+12	8.380E+06	2.050E+14
2.028E-01	5.310E+13	6.670E+13	1.110E+13	3.130E+07	1.310E+14
3.036E-01	2.060E+13	2.000E+13	9.340E+12	1.200E+08	4.990E+13
5.053E-01	8.690E+12	7.810E+12	6.330E+12	7.240E+08	2.280E+13
7.013E-01	5.510E+12	4.830E+12	4.380E+12	2.470E+09	1.470E+13
1.000E+00	3.350E+12	2.920E+12	2.790E+12	3.700E+09	9.070E+12
1.502E+00	2.020E+12	1.950E+12	2.010E+12	4.270E+09	5.990E+12
2.005E+00	1.410E+12	1.540E+12	1.650E+12	3.570E+09	4.610E+12
3.002E+00	8.770E+11	1.060E+12	1.080E+12	2.240E+09	3.020E+12
5.005E+00	4.030E+11	5.320E+11	4.890E+11	9.600E+08	1.430E+12

TIME	INTI	INTU	INTN	INTF	INTT
1.084E-05	4.220E-06	3.951E-06	3.300E-08	-1.600E-10	8.204E-06
1.654E-05	6.661E-06	6.234E-06	5.500E-08	-3.330E-09	1.295E-05
2.166E-05	8.868E-06	8.289E-06	6.300E-08	5.630E-09	1.723E-05
3.020E-05	1.252E-05	1.171E-05	1.000E-07	-3.120E-09	2.433E-05
5.071E-05	2.131E-05	1.933E-05	7.700E-07	-6.053E-07	4.080E-05
7.377E-05	3.119E-05	2.918E-05	2.500E-07	-9.000E-09	6.061E-05
1.040E-04	4.417E-05	4.133E-05	3.400E-07	1.100E-09	8.584E-05
1.559E-04	6.642E-05	6.215E-05	5.300E-07	-1.720E-08	1.291E-04
2.078E-04	8.868E-05	8.297E-05	-4.435E-05	4.503E-05	1.723E-04
3.246E-04	2.395E-04	3.940E-04	1.100E-06	-2.900E-08	6.346E-04
5.290E-04	1.107E-03	2.485E-03	2.000E-06	-1.830E-07	3.594E-03
7.041E-04	2.082E-03	5.159E-03	1.190E-04	-4.000E-07	7.360E-03
1.033E-03	4.144E-03	1.144E-02	1.066E-03	6.360E-04	1.729E-02
1.522E-03	6.588E-03	1.923E-02	5.612E-03	4.500E-04	3.188E-02
2.064E-03	9.061E-03	2.673E-02	1.166E-02	7.271E-03	5.472E-02
3.049E-03	1.245E-02	3.539E-02	1.770E-02	2.154E-02	8.708E-02
5.020E-03	1.753E-02	4.497E-02	2.260E-02	2.968E-02	1.148E-01
7.015E-03	2.242E-02	5.232E-02	2.556E-02	3.298E-02	1.333E-01
1.010E-02	2.907E-02	5.962E-02	2.751E-02	3.452E-02	1.507E-01
1.501E-02	3.903E-02	6.583E-02	2.814E-02	3.478E-02	1.678E-01
2.020E-02	5.148E-02	7.070E-02	2.822E-02	3.480E-02	1.852E-01
3.037E-02	8.994E-02	8.471E-02	2.825E-02	3.479E-02	2.377E-01
5.013E-02	2.442E-01	1.860E-01	2.830E-02	3.478E-02	4.933E-01
7.056E-02	4.938E-01	4.386E-01	2.880E-02	3.482E-02	9.960E-01
1.003E-01	9.560E-01	1.066E+00	3.800E-02	3.552E-02	2.096E+00
1.502E-01	1.842E+00	2.475E+00	1.100E-01	3.510E-02	4.462E+00
2.028E-01	2.675E+00	3.729E+00	2.490E-01	3.470E-02	6.688E+00
3.036E-01	3.402E+00	4.494E+00	4.930E-01	3.430E-02	8.423E+00
5.053E-01	4.015E+00	5.065E+00	8.640E-01	3.500E-02	9.979E+00
7.013E-01	4.335E+00	5.349E+00	1.106E+00	3.900E-02	1.083E+01
1.008E+00	4.647E+00	5.621E+00	1.362E+00	3.700E-02	1.167E+01
1.502E+00	4.950E+00	5.896E+00	1.634E+00	3.700E-02	1.252E+01
2.005E+00	5.151E+00	6.102E+00	1.857E+00	3.300E-02	1.314E+01
3.002E+00	5.414E+00	6.407E+00	2.179E+00	3.300E-02	1.403E+01
5.005E+00	5.697E+00	6.769E+00	2.524E+00	4.000E-02	1.503E+01

E↑ 12

1 2 4 8 1 2 4 8 1 2



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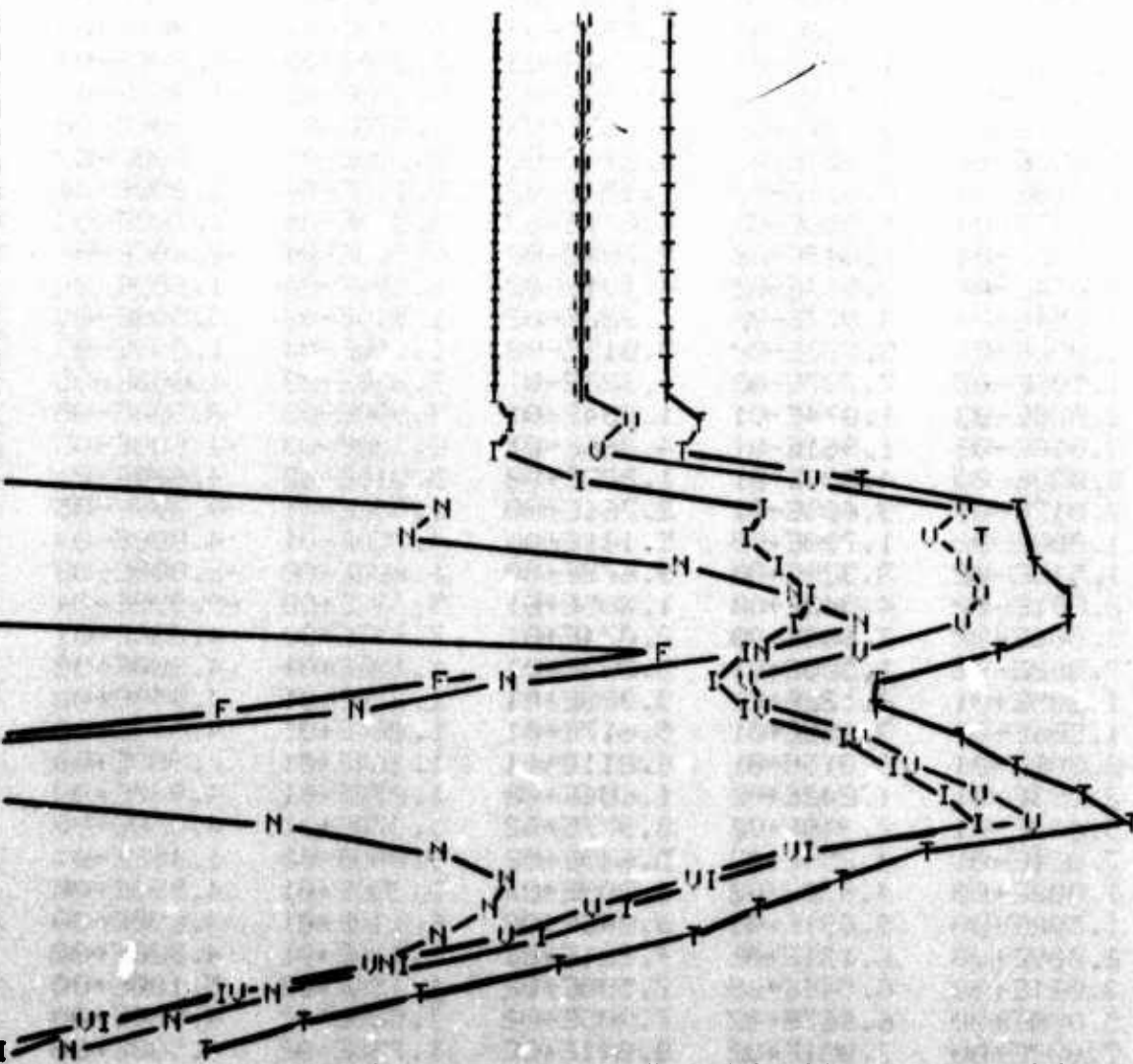
TIME	IRP	UISP	NRUJ	FRUJ	TOTP
1.042E-05	2.130E+14	3.500E+14	7.980E+12	7.170E+07	5.710E+14
1.053E-05	2.130E+14	3.500E+14	7.980E+12	7.170E+07	5.710E+14
1.538E-05	2.130E+14	3.500E+14	7.980E+12	7.170E+07	5.710E+14
2.129E-05	2.130E+14	3.500E+14	7.980E+12	7.170E+07	5.710E+14
3.049E-05	2.130E+14	3.500E+14	7.980E+12	7.170E+07	5.710E+14
5.126E-05	2.130E+14	3.500E+14	7.980E+12	7.170E+07	5.710E+14
7.391E-05	2.130E+14	3.500E+14	7.980E+12	7.170E+07	5.710E+14
1.030E-04	2.130E+14	3.500E+14	7.980E+12	7.170E+07	5.710E+14
1.710E-04	2.130E+14	3.490E+14	7.980E+12	7.170E+07	5.700E+14
2.037E-04	2.130E+14	3.490E+14	7.980E+12	7.170E+07	5.700E+14
3.272E-04	2.130E+14	3.490E+14	7.990E+12	7.170E+07	5.700E+14
5.074E-04	2.130E+14	3.460E+14	7.990E+12	7.170E+07	5.670E+14
7.654E-04	2.130E+14	3.450E+14	8.000E+12	7.170E+07	5.660E+14
1.092E-03	2.130E+14	3.450E+14	8.010E+12	7.170E+07	5.660E+14
1.506E-03	2.280E+14	4.820E+14	8.090E+12	7.180E+07	7.180E+14
2.070E-03	2.190E+14	3.790E+14	8.310E+12	7.180E+07	6.060E+14
3.016E-03	3.570E+14	1.470E+15	9.970E+12	7.190E+07	1.840E+15
5.039E-03	1.080E+15	3.330E+15	1.560E+14	7.220E+07	4.570E+15
7.017E-03	9.540E+14	2.830E+15	1.280E+14	7.300E+07	3.910E+15
1.000E-02	1.110E+15	3.350E+15	6.470E+14	7.960E+07	5.100E+15
1.515E-02	1.320E+15	3.740E+15	1.220E+15	8.470E+07	6.280E+15
2.001E-02	1.270E+15	3.390E+15	1.940E+15	8.380E+07	6.600E+15
3.002E-02	9.250E+14	1.880E+15	1.020E+15	5.590E+14	4.390E+15
7.002E-02	7.750E+14	9.620E+14	2.220E+14	1.620E+14	2.120E+15
1.005E+01	9.470E+14	1.080E+15	9.370E+13	4.180E+13	2.160E+15
1.506E+01	1.650E+15	1.770E+15	7.390E+12	1.140E+12	3.430E+15
2.008E+01	2.260E+15	2.580E+15	1.420E+12	6.880E+10	4.840E+15
3.003E+01	3.060E+15	3.960E+15	1.200E+12	2.010E+09	7.020E+15
5.009E+01	3.750E+15	5.380E+15	5.960E+13	2.910E+07	9.190E+15
7.021E+01	1.420E+15	1.320E+15	1.500E+14	7.130E+07	2.900E+15
1.002E+00	7.850E+14	7.180E+14	2.350E+14	3.350E+08	1.740E+15
1.502E+00	4.580E+14	3.980E+14	2.150E+14	1.460E+09	1.070E+15
2.009E+00	2.790E+14	2.330E+14	1.640E+14	3.080E+09	6.760E+14
3.021E+00	1.120E+14	1.050E+14	1.070E+14	7.110E+09	3.230E+14
5.000E+00	4.060E+13	4.180E+13	5.830E+13	3.230E+10	1.410E+14
7.002E+00	1.950E+13	1.920E+13	3.150E+13	8.340E+10	7.030E+13
1.001E+01	1.140E+13	9.730E+12	1.770E+13	1.330E+11	3.900E+13

TIME	INTI	INTV	INTN	INTF	INTT
1.042E-05	4.802E-04	7.890E-04	1.780E-05	5.100E-07	1.238E-03
1.053E-05	4.473E-04	7.350E-04	1.670E-05	2.800E-07	1.199E-03
1.538E-05	6.942E-04	1.140E-03	2.680E-05	-5.700E-07	1.860E-03
2.129E-05	9.952E-04	1.634E-03	3.379E-04	-3.003E-04	2.667E-03
3.049E-05	1.360E-03	2.234E-03	5.200E-05	-8.200E-07	3.645E-03
5.126E-05	2.418E-03	3.970E-03	9.100E-05	-1.999E-07	6.479E-03
7.391E-05	3.571E-03	5.863E-03	1.350E-04	-1.000E-06	9.568E-03
1.030E-04	5.054E-03	8.296E-03	1.900E-04	-5.000E-07	1.354E-02
1.710E-04	8.514E-03	1.397E-02	3.160E-04	3.200E-06	2.280E-02
2.037E-04	1.018E-02	1.671E-02	3.800E-04	1.700E-06	2.727E-02
3.272E-04	1.647E-02	2.700E-02	6.200E-04	-2.600E-06	4.409E-02
5.074E-04	2.564E-02	4.191E-02	9.600E-04	1.600E-06	6.851E-02
7.654E-04	3.877E-02	6.322E-02	1.510E-03	-5.500E-05	1.034E-01
1.092E-03	5.538E-02	9.013E-02	1.900E-04	1.889E-03	1.476E-01
1.506E-03	7.737E-02	1.323E-01	2.830E-03	4.600E-05	2.125E-01
2.070E-03	1.074E-01	1.934E-01	3.900E-03	8.300E-05	3.048E-01
3.016E-03	1.961E-01	4.366E-01	6.700E-03	-4.600E-05	6.394E-01
5.039E-03	4.839E-01	1.273E+00	3.010E-02	4.600E-04	1.787E+00
7.017E-03	9.688E-01	2.761E+00	1.082E-01	-9.999E-05	3.838E+00
1.000E-02	1.790E+00	5.181E+00	4.350E-01	4.000E-04	7.406E+00
1.515E-02	3.328E+00	9.678E+00	1.604E+00	-2.000E-03	1.461E+01
2.001E-02	4.842E+00	1.385E+01	3.378E+00	-9.999E-04	2.207E+01
3.002E-02	7.663E+00	2.074E+01	7.297E+00	4.230E-01	3.612E+01
7.002E-02	1.505E+01	3.203E+01	1.122E+01	4.300E+00	6.260E+01
1.005E+01	2.122E+01	3.928E+01	1.226E+01	4.850E+00	7.761E+01
1.506E+01	3.659E+01	5.617E+01	1.264E+01	4.940E+00	1.103E+02
2.008E+01	6.015E+01	8.211E+01	1.264E+01	4.980E+00	1.599E+02
3.003E+01	1.242E+02	1.606E+02	1.270E+01	4.940E+00	3.024E+02
5.009E+01	2.948E+02	3.977E+02	1.370E+01	4.850E+00	7.111E+02
7.021E+01	4.259E+02	5.649E+02	9.000E+00	1.488E+01	1.015E+03
1.002E+00	4.976E+02	6.209E+02	3.350E+01	4.890E+00	1.157E+03
1.502E+00	5.691E+02	6.848E+02	6.110E+01	4.690E+00	1.320E+03
2.009E+00	6.131E+02	7.221E+02	8.380E+01	4.820E+00	1.424E+03
3.021E+00	6.546E+02	7.590E+02	1.154E+02	5.100E+00	1.534E+03
5.000E+00	6.867E+02	7.905E+02	1.528E+02	4.900E+00	1.635E+03
7.002E+00	7.001E+02	8.041E+02	1.738E+02	4.500E+00	1.682E+03
1.001E+01	7.105E+02	8.137E+02	1.898E+02	5.000E+00	1.719E+03

ET 13

1 2 4 8 1 2 4 8 1 2 4 8

1.04E-05FN
1.05E-05FN
1.54E-05FN
2.13E-05FN
3.05E-05FN
5.13E-05FN
7.39E-05FN
1.03E-04FN
1.71E-04FN
2.04E-04FN
3.27E-04FN
5.07E-04FN
7.65E-04FN
1.03E-03FN
1.51E-03FN
2.07E-03FN
3.02E-03FN
5.04E-03F
7.02E-03F
1.00E-02F
1.51E-02F
2.00E-02F
3.00E-02
7.00E-02
1.00E+01
1.51E-01FN
2.01E-01FN
3.00E-01FN
5.01E-01F
7.02E-01F
1.00E+00F
1.50E+00F
2.01E+00F
3.02E+00F
5.00E+00F
7.00E+00F
1.00E+01FUI



APPENDIX B

RESULTS OF DATA EXTRACTION AND MODIFICATION

The fractional power in each of the six frequency bands varies widely with time, as is seen in Figure 6 of this report. In order to help simplify the analytical expressions in subroutine RADOUT, the fractional power in each of the frequency bands was averaged within each of the six time bands.

On each of the following pages, the six time bands are separated by the time of the time band trailing edge (e.g., 1.000 E-4 , 3.955 E-4 , 6.010 E-3 , 5.127 E-2 , 5.685 E-1 , 1.101 E+0 seconds, page 74). At each of these times, the average value of fractional power to total power in each of the six wavelength (or equivalent photon energy) bands is given. When the average values are compared to specific fractions in each time band for each of the energy bands, generally there is reasonable correspondence.

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AVERAGE FRACTIONAL POWER IN DIFFERENT SPECTRAL BANDS

TIME	IRPOW	REDPOW	GRNPOW	BLUPOW	NUUPOW	FLUPOW
1.042E-05	.269	.139	.243	.349	.001	.000
1.612E-05	.265	.138	.242	.352	.000	.000
2.125E-05	.227	.135	.258	.382	.000	.000
3.278E-05	.279	.166	.320	.234	.000	.000
5.393E-05	.061	.035	.067	.145	.271	.421
7.122E-05	.097	.058	.112	.253	.480	.000
1.000E-04	.200	.112	.207	.286	.125	.070
1.029E-04	.020	.012	.024	.055	.100	.782
1.548E-04	.022	.013	.026	.058	.112	.770
2.067E-04	.024	.014	.028	.062	.117	.755
3.170E-04	.028	.016	.031	.067	.123	.732
3.955E-04	.023	.014	.027	.061	.115	.760
5.019E-04	.037	.021	.038	.079	.137	.685
7.355E-04	.087	.042	.071	.128	.179	.496
1.064E-03	.101	.047	.079	.137	.183	.455
1.524E-03	.187	.075	.113	.171	.183	.269
2.049E-03	.214	.082	.120	.174	.178	.233
3.002E-03	.333	.106	.140	.171	.138	.114
5.021E-03	.586	.131	.140	.088	.039	.015
6.010E-03	.221	.072	.100	.136	.148	.324
7.164E-03	.746	.115	.101	.027	.006	.001
1.005E-02	.784	.110	.091	.016	.001	.000
1.514E-02	.698	.144	.128	.029	.000	.000
2.022E-02	.614	.163	.166	.055	.000	.000
3.023E-02	.487	.168	.215	.130	.003	.000
5.035E-02	.379	.153	.223	.224	.022	.000
5.127E-02	.618	.142	.154	.080	.005	.000
7.024E-02	.353	.143	.213	.245	.047	.000
1.011E-01	.365	.131	.179	.246	.081	.000
1.505E-01	.417	.106	.085	.210	.185	.000
2.010E-01	.385	.090	.075	.201	.249	.000
3.003E-01	.355	.079	.072	.205	.291	.000
5.015E-01	.334	.073	.074	.218	.302	.000
5.685E-01	.368	.104	.116	.221	.192	.000
5.823E-01	.331	.073	.075	.222	.301	.000
7.010E-01	.324	.072	.076	.228	.298	.000
8.020E-01	.319	.072	.077	.234	.298	.000
1.101E+00	.308	.072	.078	.243	.298	.000
1.101E+00	.320	.072	.076	.232	.299	.000

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AVERAGE FRACTIONAL POWER IN DIFFERENT SPECTRAL BANDS

TIME	IRFOW	REDPOW	GRNPOW	BLUPOW	NUUPOW	FUUPON
1.000E-05	.319	.141	.248	.264	.023	.000
1.649E-05	.256	.137	.277	.322	.010	.000
2.161E-05	.236	.134	.284	.340	.007	.000
3.186E-05	.178	.142	.364	.316	.001	.000
5.134E-05	.159	.097	.189	.328	.226	.000
7.095E-05	.174	.107	.213	.353	.152	.000
1.000E-04	.221	.126	.263	.320	.070	.000
1.055E-04	.139	.083	.161	.333	.283	.000
1.505E-04	.126	.075	.146	.314	.340	.000
2.024E-04	.030	.018	.034	.075	.141	.706
3.062E-04	.026	.015	.029	.064	.116	.747
5.109E-04	.080	.048	.092	.197	.220	.363
5.138E-04	.036	.020	.038	.078	.134	.689
7.182E-04	.050	.027	.048	.095	.151	.629
1.039E-03	.085	.041	.070	.126	.175	.501
1.521E-03	.141	.061	.095	.154	.184	.366
2.046E-03	.204	.079	.117	.171	.177	.250
3.032E-03	.293	.101	.144	.178	.144	.140
5.002E-03	.505	.136	.171	.103	.058	.028
5.550E-03	.188	.067	.097	.129	.146	.372
7.022E-03	.602	.151	.187	.044	.012	.004
1.013E-02	.599	.155	.215	.030	.001	.000
1.500E-02	.523	.170	.228	.075	.000	.000
2.015E-02	.470	.165	.219	.142	.001	.000
3.039E-02	.395	.157	.221	.215	.011	.000
3.482E-02	.518	.160	.214	.101	.005	.001
5.034E-02	.336	.141	.213	.256	.055	.000
7.004E-02	.327	.131	.193	.262	.087	.000
1.014E-01	.394	.104	.091	.224	.185	.000
1.502E-01	.366	.084	.066	.188	.297	.000
2.007E-01	.339	.073	.062	.183	.341	.000
3.017E-01	.330	.068	.062	.187	.352	.000
3.861E-01	.349	.100	.114	.217	.220	.000
5.012E-01	.321	.065	.064	.194	.353	.002
8.017E-01	.307	.064	.067	.204	.357	.005
1.001E+00	.295	.062	.067	.210	.365	.004
1.001E+00	.308	.064	.066	.203	.358	.004

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AVERAGE FRACTIONAL POWER IN DIFFERENT SPECTRAL BANDS

TIME	IRPOW	REDPOW	GRNPOW	BLUPOW	NUUPOW	FLUPOW
1.021E-05	.267	.118	.193	.286	.137	.000
1.557E-05	.265	.118	.194	.287	.137	.000
2.069E-05	.253	.117	.195	.294	.141	.000
3.308E-05	.154	.095	.193	.357	.201	.000
5.115E-05	.208	.101	.171	.284	.238	.000
7.152E-05	.151	.085	.160	.306	.299	.000
1.000E-04	.216	.106	.185	.302	.192	.000
1.038E-04	.143	.084	.161	.314	.299	.000
1.569E-04	.118	.070	.136	.288	.309	.000
2.114E-04	.125	.076	.152	.316	.330	.000
3.135E-04	.127	.072	.136	.282	.382	.000
5.033E-04	.123	.070	.131	.273	.405	.000
6.898E-04	.127	.075	.143	.295	.361	.000
7.091E-04	.078	.043	.079	.166	.277	.360
1.011E-03	.079	.043	.077	.163	.269	.366
1.508E-03	.069	.035	.060	.112	.165	.556
2.007E-03	.104	.048	.079	.136	.179	.454
3.065E-03	.223	.096	.157	.206	.140	.179
5.014E-03	.295	.114	.201	.192	.105	.095
5.055E-03	.141	.063	.109	.162	.189	.335
7.044E-03	.343	.145	.254	.197	.050	.012
1.015E-02	.365	.162	.267	.189	.015	.001
1.514E-02	.346	.154	.247	.245	.007	.000
2.003E-02	.326	.144	.228	.283	.019	.000
2.212E-02	.345	.151	.249	.229	.023	.003
3.001E-02	.301	.130	.202	.285	.082	.000
5.071E-02	.331	.109	.146	.242	.172	.000
7.091E-02	.321	.074	.062	.192	.350	.000
1.001E-01	.310	.050	.052	.174	.397	.000
1.523E-01	.325	.061	.048	.164	.401	.004
2.002E-01	.335	.058	.047	.156	.382	.022
2.453E-01	.320	.080	.093	.202	.297	.004
3.013E-01	.330	.053	.044	.138	.332	.104
5.020E-01	.248	.039	.034	.109	.278	.294
8.012E-01	.194	.030	.028	.092	.243	.412
1.002E+00	.176	.027	.027	.089	.240	.440
1.002E+00	.237	.037	.033	.107	.273	.312

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AVERAGE FRACTIONAL POWER IN DIFFERENT SPECTRAL BANDS

TIME	IRPOW	REDPOW	GRNPOW	BLUPOW	NUVPOW	FUUPOW
1.047E-05	.228	.101	.164	.262	.244	.002
1.560E-05	.227	.101	.163	.261	.244	.004
2.021E-05	.084	.066	.138	.301	.407	.004
3.097E-05	.125	.075	.144	.286	.367	.003
5.115E-05	.214	.096	.155	.254	.261	.019
7.018E-05	.043	.044	.111	.297	.498	.007
1.000E-04	.154	.081	.146	.277	.337	.006
1.036E-04	.133	.076	.143	.284	.365	.004
1.556E-04	.070	.069	.143	.289	.414	.011
2.045E-04	.175	.086	.148	.265	.322	.004
3.120E-04	.127	.073	.137	.278	.376	.011
5.041E-04	.131	.074	.137	.273	.358	.026
7.020E-04	.183	.087	.146	.255	.307	.023
8.383E-04	.137	.077	.142	.274	.357	.013
1.031E-03	.178	.080	.129	.213	.243	.159
1.512E-03	.105	.058	.107	.218	.337	.176
2.024E-03	.077	.046	.091	.194	.307	.285
3.126E-03	.090	.046	.081	.152	.220	.411
4.757E-03	.112	.058	.102	.194	.277	.258
5.022E-03	.169	.086	.150	.205	.116	.275
7.128E-03	.251	.114	.187	.269	.155	.023
1.013E-02	.241	.111	.188	.272	.179	.006
1.514E-02	.243	.112	.188	.278	.178	.000
1.648E-02	.226	.106	.178	.256	.157	.076
2.030E-02	.256	.116	.185	.279	.164	.000
3.052E-02	.284	.110	.163	.253	.192	.000
5.035E-02	.295	.064	.061	.189	.389	.000
7.055E-02	.278	.056	.051	.183	.425	.735
1.010E-01	.267	.050	.045	.178	.412	.048
1.515E-01	.247	.041	.037	.158	.352	.165
1.827E-01	.271	.073	.090	.207	.322	.158
2.020E-01	.219	.033	.030	.133	.283	.304
3.005E-01	.181	.024	.022	.103	.217	.451
5.031E-01	.151	.018	.018	.087	.190	.539
7.020E-01	.129	.015	.016	.078	.182	.581
1.003E+00	.116	.013	.015	.073	.175	.608
1.003E+00	.159	.021	.020	.095	.209	.497

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AVERAGE FRACTIONAL POWER IN DIFFERENT SPECTRAL BANDS

TIME	IRFOW	REIFOW	GRNPOW	BLUPOW	NUUPOW	FUUPOW
1.062E-05	.120	.058	.095	.218	.426	.082
1.603E-05	.120	.058	.097	.250	.391	.085
2.030E-05	.158	.081	.138	.239	.286	.098
3.105E-05	.065	.031	.109	.253	.437	.107
5.065E-05	.053	.047	.112	.253	.428	.106
7.037E-05	.069	.052	.102	.206	.472	.097
1.000E-04	.097	.055	.109	.237	.407	.096
1.043E-04	.085	.041	.069	.233	.433	.140
1.605E-04	.067	.497	.109	.240	.384	.148
2.037E-04	.050	.047	.103	.236	.409	.156
3.000E-04	.121	.067	.117	.211	.277	.207
5.042E-04	.060	.048	.097	.207	.340	.247
7.258E-04	.111	.062	.109	.197	.261	.259
9.160E-04	.082	.127	.101	.221	.351	.193
1.039E-03	.107	.058	.101	.181	.236	.315
1.508E-03	.062	.041	.081	.165	.262	.390
2.003E-03	.092	.053	.093	.169	.225	.366
3.020E-03	.058	.036	.069	.136	.204	.497
4.628E-03	.080	.047	.086	.163	.232	.392
5.029E-03	.106	.048	.091	.164	.210	.381
7.074E-03	.093	.044	.075	.125	.153	.509
1.018E-02	.172	.082	.135	.217	.231	.162
1.441E-02	.124	.058	.100	.169	.198	.350
1.523E-02	.212	.100	.162	.258	.259	.011
2.028E-02	.235	.104	.164	.259	.237	.001
3.062E-02	.355	.093	.117	.196	.239	.000
5.065E-02	.276	.056	.052	.179	.429	.005
7.110E-02	.260	.049	.043	.168	.427	.052
1.018E-01	.234	.041	.035	.144	.360	.185
1.536E-01	.194	.029	.025	.108	.255	.390
1.598E-01	.252	.067	.006	.188	.315	.092
2.010E-01	.183	.025	.022	.094	.215	.463
3.002E-01	.160	.020	.018	.080	.185	.536
5.009E-01	.144	.016	.016	.070	.168	.588
8.050E-01	.120	.013	.013	.063	.160	.630
1.006E+00	.111	.012	.013	.061	.158	.646
1.006E+00	.144	.017	.016	.074	.177	.573

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AVERAGE FRACTIONAL POWER IN DIFFERENT SPECTRAL BANDS

TIME	IRPOW	REDPOW	GRNPOW	BLUPOW	HUUPOW	FUUPOW
1.021E-05	.115	.059	.100	.176	.225	.325
1.634E-05	.058	.041	.077	.210	.389	.223
2.061E-05	.060	.048	.096	.199	.315	.283
3.037E-05	.046	.021	.034	.194	.410	.294
5.078E-05	.064	.049	.095	.198	.323	.274
7.027E-05	.039	.034	.080	.189	.341	.318
1.000E-04	.064	.042	.080	.194	.334	.286
1.004E-04	.039	.033	.080	.191	.343	.314
1.554E-04	.043	.040	.083	.177	.294	.365
2.008E-04	.056	.026	.043	.160	.286	.429
3.076E-04	.051	.036	.071	.145	.283	.414
5.235E-04	.088	.048	.084	.153	.209	.416
7.006E-04	.048	.032	.066	.144	.236	.473
9.760E-04	.054	.036	.071	.162	.275	.462
1.099E-03	.084	.048	.083	.151	.207	.427
1.525E-03	.065	.030	.049	.120	.196	.538
2.040E-03	.083	.043	.075	.136	.185	.485
3.108E-03	.083	.042	.071	.122	.191	.489
4.537E-03	.079	.041	.069	.132	.195	.465
5.003E-03	.110	.054	.091	.164	.213	.369
7.189E-03	.120	.058	.096	.164	.203	.360
1.026E-02	.122	.057	.095	.159	.188	.379
1.309E-02	.117	.056	.094	.162	.201	.369
1.520E-02	.180	.083	.132	.216	.228	.160
2.031E-02	.259	.102	.149	.227	.241	.023
3.011E-02	.367	.077	.087	.175	.288	.005
5.057E-02	.267	.052	.048	.173	.427	.032
7.166E-02	.236	.043	.038	.154	.391	.137
1.008E-01	.188	.031	.027	.115	.286	.350
1.452E-01	.250	.065	.080	.177	.310	.118
1.507E-01	.178	.026	.022	.098	.231	.444
2.024E-01	.175	.022	.019	.086	.197	.500
3.017E-01	.163	.019	.017	.077	.177	.552
5.023E-01	.140	.015	.015	.069	.166	.594
7.094E-01	.128	.013	.014	.065	.163	.617
1.001E+00	.116	.012	.013	.062	.160	.637
1.001E+00	.150	.018	.017	.076	.182	.557

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AVERAGE FRACTIONAL POWER IN DIFFERENT SPECTRAL BANDS

TIME	IRFOW	REDFOW	GRNFOW	BLUFOW	NUUFOW	FUUFOW
1.016E-05	.103	.076	.164	.463	1.000	1.766
1.555E-05	.031	.020	.047	.130	.277	.495
2.016E-05	.003	.022	.049	.123	.271	.507
3.007E-05	.027	.020	.046	.124	.262	.519
5.067E-05	.026	.023	.050	.012	.260	.519
7.071E-05	.028	.021	.048	.125	.252	.526
1.000E-04	.036	.031	.068	.163	.387	.722
1.033E-04	.030	.020	.046	.114	.244	.547
1.520E-04	.029	.020	.047	.113	.233	.560
2.004E-04	.031	.020	.044	.111	.227	.565
3.042E-04	.033	.021	.046	.112	.213	.575
5.187E-04	.040	.023	.045	.108	.207	.578
7.217E-04	.041	.024	.051	.112	.198	.577
1.019E-03	.049	.027	.050	.113	.192	.570
1.038E-03	.036	.022	.047	.112	.216	.568
1.525E-03	.051	.023	.055	.113	.185	.572
2.058E-03	.057	.030	.054	.116	.179	.561
3.018E-03	.087	.044	.075	.138	.192	.464
4.452E-03	.065	.034	.062	.122	.186	.532
5.145E-03	.109	.053	.089	.157	.201	.390
7.015E-03	.118	.056	.091	.156	.196	.385
1.023E-02	.137	.063	.102	.167	.200	.330
1.193E-02	.121	.057	.094	.160	.199	.369
1.502E-02	.174	.073	.114	.180	.202	.256
2.074E-02	.282	.074	.092	.151	.201	.200
3.017E-02	.249	.049	.051	.133	.206	.234
5.037E-02	.193	.036	.033	.131	.327	.280
7.057E-02	.168	.029	.026	.115	.284	.377
1.009E-01	.157	.024	.022	.100	.241	.456
1.323E-01	.204	.048	.056	.135	.257	.300
1.526E-01	.155	.021	.019	.090	.209	.505
2.019E-01	.159	.019	.017	.084	.188	.531
2.019E-01	.157	.020	.018	.087	.199	.518

CASE 5 / 42

AVERAGE FRACTIONAL POWER IN DIFFERENT SPECTRAL BANDS

TIME	IRPOW	REDPOW	GRNPOW	BLUPOW	NUVPOW	FUUPOW
1.101E-05	.020	.016	.034	.009	.102	.664
1.520E-05	.020	.016	.036	.090	.177	.661
2.195E-05	.018	.015	.032	.086	.173	.678
3.047E-05	.019	.014	.031	.078	.160	.696
5.234E-05	.018	.014	.032	.085	.172	.678
7.002E-05	.022	.017	.037	.080	.174	.659
1.000E-04	.020	.016	.034	.072	.173	.673
1.003E-04	.022	.017	.036	.088	.170	.667
1.504E-04	.025	.019	.040	.091	.172	.653
2.058E-04	.024	.018	.039	.090	.168	.659
3.110E-04	.027	.019	.039	.089	.166	.663
5.009E-04	.035	.023	.046	.100	.166	.631
7.063E-04	.040	.025	.049	.100	.168	.615
1.013E-03	.050	.028	.052	.107	.171	.589
1.144E-03	.032	.021	.043	.095	.169	.640
1.550E-03	.074	.040	.070	.128	.181	.505
2.067E-03	.130	.062	.099	.159	.189	.362
3.083E-03	.156	.069	.106	.165	.188	.316
4.318E-03	.120	.057	.092	.151	.186	.394
5.564E-03	.144	.063	.100	.165	.192	.336
7.441E-03	.167	.069	.107	.167	.193	.297
1.006E-02	.176	.071	.108	.172	.197	.278
1.029E-02	.162	.068	.105	.168	.194	.304
1.521E-02	.310	.080	.096	.151	.181	.182
2.045E-02	.308	.062	.068	.135	.219	.209
3.115E-02	.218	.042	.042	.122	.283	.295
5.081E-02	.150	.028	.028	.116	.269	.400
7.047E-02	.157	.026	.027	.123	.274	.394
1.032E-01	.147	.022	.023	.124	.262	.421
1.141E-01	.217	.043	.047	.129	.240	.317
1.524E-01	.154	.020	.023	.129	.255	.419
2.032E-01	.157	.019	.022	.132	.254	.413
3.014E-01	.159	.018	.022	.135	.255	.412
5.005E-01	.152	.016	.021	.132	.260	.421
8.101E-01	.147	.015	.020	.127	.259	.430
1.009E+00	.143	.014	.020	.122	.256	.447
1.009E+00	.152	.017	.021	.130	.257	.424

CASE 5 / 50

AVERAGE FRACTIONAL POWER IN DIFFERENT SPECTRAL BANDS

TIME	IRPOW	REDPOW	GRNPOW	BLUPOW	NUVPOW	FUUPOW
1.010E-05	.036	.271	.055	.117	.181	.582
1.523E-05	.041	.029	.057	.117	.181	.577
2.005E-05	.041	.029	.058	.119	.182	.573
3.004E-05	.037	.028	.055	.118	.182	.582
5.130E-05	.036	.026	.052	.109	.172	.604
7.033E-05	.047	.031	.060	.113	.177	.566
1.000E-04	.040	.069	.056	.116	.179	.581
1.008E-04	.048	.032	.060	.120	.176	.563
1.527E-04	.056	.036	.065	.121	.170	.552
2.004E-04	.061	.038	.068	.123	.168	.541
3.094E-04	.076	.042	.072	.121	.159	.531
5.156E-04	.073	.040	.064	.108	.152	.560
5.181E-04	.077	.041	.066	.110	.153	.551
7.109E-04	.091	.046	.071	.115	.155	.521
1.050E-03	.116	.052	.076	.120	.155	.482
1.326E-03	.075	.041	.068	.117	.161	.538
1.545E-03	.151	.062	.089	.137	.158	.406
2.062E-03	.158	.064	.093	.142	.160	.379
3.016E-03	.201	.074	.105	.152	.162	.305
4.125E-03	.170	.067	.096	.144	.160	.363
5.190E-03	.234	.079	.107	.154	.161	.266
7.039E-03	.270	.082	.107	.152	.155	.233
8.237E-03	.252	.081	.107	.153	.158	.250
1.056E-02	.359	.083	.094	.138	.143	.185
1.587E-02	.406	.073	.073	.125	.152	.169
2.139E-02	.382	.065	.063	.125	.181	.185
3.205E-02	.268	.047	.047	.129	.258	.249
5.174E-02	.195	.034	.034	.130	.302	.304
7.110E-02	.166	.028	.029	.130	.290	.357
9.134E-02	.296	.055	.057	.129	.221	.242
1.002E-01	.163	.024	.027	.139	.285	.363
1.534E-01	.153	.019	.023	.145	.286	.375
2.018E-01	.160	.018	.023	.149	.284	.366
3.011E-01	.171	.017	.023	.153	.285	.351
5.003E-01	.166	.016	.022	.149	.287	.359
7.071E-01	.163	.015	.022	.143	.283	.374
1.005E+00	.157	.014	.020	.133	.275	.399
1.005E+00	.162	.017	.023	.144	.284	.370

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