HSP-ØØ8

Testing of the HSP RSDP Algorithms

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This document reviews the procedure used to test the High Speed Photometer calibration algorithms in the IRAF and PODPS formats. Many appendices are provided as references to this procedure.

Addendum to
Testing of the HSP RSDP Algorithms

30 Nov 89

Below are some modifications and additions to the information in the document Testing of the HSP RSDP Algorithms, dated 3 Nov 89.

Two wildcard characters, "?" and "*", are used throughout the document, usually in reference to partial or whole file names. As in UNIX, "?" is used to match any single character, and "*" is used to match any string of characters. For example, ".c?h" would refer to any of the following: ".c0h",".c1h",".c2h", or ".c3h"; "*.*h" could refer to files named "pafft.d0h" or "hsp.c2h" or "and.with".

In order to agree with the procedure now used in PODPS v24.0, IRAF v2.8EXPORT, and the calibration parameter tables listed in Appendix C, the third paragraph of page 2 in the document should read as follows:

Calibration Parameters

For the nine HSP calibration parameters (see Table 1), SDAS tables have been created (see Appendix C) which contain base values and coefficients. For parameters whose values depend on polynomial coefficients, the following values are used for testing purposes:

```
(A00,A01,A02,A03) =  (1.00    ,1.0e-04,1.0e-07,1.0e-10)
(A10,A11,A12,A13) =  (5.0e-02,1.0e-05,1.0e-08,1.0e-11)
(A20,A21,A22,A23) =  (1.0e-03,1.0e-06,1.0e-09,1.0e-12)
(A30,A31,A32,A33) =  (1.0e-04,1.0e-07,1.0e-10,1.0e-13)

Base Temperature  =  0.       (Celsius)
Base Time         =  47020.   (in Modified Julian Date)
```

The values of the coefficients are expected to change once the spacecraft has been launched and real data can be used to determine these factors. The Base Temperature is a zero point offset and is expected to remain constant. The Base Time is chosen for the convenience of the polynomial fitting and it may or may not change in the future.

On page 88, the second page of Appendix E, the units of the epoch "t" should now read "Modified Julian Date", not

"Julian Days". Any other references to Julian Date should be read as Modified Julian Date when PODPS v24.0 or IRAF v2.8EXPORT is being discussed.

Additionally, Appendix B has been entirely rewritten. Not only has the procedure for determining the Julian Date changed, but more complete instructions on what to look for when checking test files has been included. Unfortunately, this has increased the number of pages in this appendix: so it has been renumbered to allow for future additions. The page number is now B.m.n, where B stands for Appendix B, m stands for the section number (just one section, so far), and n stands for the page in a particular section. In future revisions of the entire document, all appendices will be numbered similarly. The new Appendix B is attached.

Appendix B

The steps required to test the CALHSP code can be divided into three areas: preparation, calibration, and confirmation. Preparation may initially involve PODPS, in order to obtain the basic test datasets. Calibration can be done in both PODPS and IRAF. Confirmation can be done by hand, or in IRAF, but either way will require the use of IRAF. It is assumed that the reader is familiar with the use of IRAF, although not necessarily for the purpose of calibrating HSP data.

This appendix contains details of the testing steps, separated into those three areas. They are kept sequential so they may be referred to more easily, rather than to suggest that they must be completed in this order.

Preparation

1) Obtain GEIS format datasets with the following characteristics: point and extended source data, analog and digital data type, single color and star-sky photometry (SCP and SSP) mode. It may be a good idea to obtain these files by requesting PODPS support personnel to provide you with sets of (non-area scan) GST data which has just been run through PODPS (to insure that the most recent reformatting software has been used). The following files compose a dataset:

Type of File	Extension	?
data	d?d, d?h	0 = digital star
mask	q?d, q?h	1 = digital sky
standard header	shd, shh	2 = analog star
unique log	uld, ulh	3 = analog sky
trailer	trl	

2) For full testing of switches, you should create 10 files with the

DEADTIME, TRUE_CNT, and TRUE_PHC

switches set in the following combinations for the following configurations of extended and point source, analog and digital data:

source/type	switch setting
pa	pd fft
ed	pd ftf
	pd tff
ed	tft
ea ed	ttf
ea	pd ttt

where
p = point source data
e = extended source data
a = analog
d = digital
t = PERFORM and } for switches in
f = OMIT } order listed above

For example, pafft stands for a point source analog file with

```
DEADTIME= 'OMIT        ' / deadtime correction
TRUE_CNT= 'OMIT        ' / compute the true count rates
TRUE_PHC= 'PERFORM     ' / compute the true photocurrents
```

These cofigurations are designed to test not only that the calibration is being done correctly, but also that the program is paying attention only to the appropriate switches: i. e. for digital data, only the deadtime and true_cnt switches are applicable; and for analog data, only the true_phc switch is applicable. The program is expected to ignore the analog switch if the data is digital, and visa-versa.

3) For IRAF v2.8EXPORT and later, you must be sure that the location and name of the calibration tables has been included in each of the data headers (".d?h" files). If it has not, you must add to those files lines similar to the following, or else the program will not know where to find the tables. Make sure the lines are the proper fixed character length for FITS files!

```
CCP0  = 'xpolyeval$ccp0' / aperture area table
CCP1  = 'xpolyeval$ccp1' / high voltage factor table
CCP2  = 'xpolyeval$ccp2' / gain factor table
CCP3  = 'xpolyeval$ccp3' / pre-amplifier noise table
CCP4  = 'xpolyeval$ccp4' / relative sensitivity table
CCP5  = 'xpolyeval$ccp5' / dark signal table
CCP7  = 'xpolyeval$ccp7' / CVC offset table
CCP8  = 'xpolyeval$ccp8' / dead time table
CCP9  = 'xpolyeval$ccp9' / dark aperture translation table
```

This addition should not be a problem if the data has been reformatted by PODPS v24.0 since its reformatting software (i.e., the program which partitions the spacecraft data into the GEIS file datasets) will insert these lines in automatically. This is pointed out in case you are using data that was not formatted with PODPS v24.0. It is assumed that your version of IRAF knows the definition of "xpolyeval", and that the tables are located there.

Calibration

Calibration will be done in IRAF, PODPS, by hand, or all three, depending on what is being tested. The steps involved in hand-calibration of data are described under the section on Confirmation, below. If testing is being done on PODPS, then PODPS support personnel will run the data through the pipeline and pass on the results for you to confirm. If testing is being done on (or confirmation is

being done by) IRAF, then the following simple step should be followed.

4) Run "stsdas.hsp.calhsp" on the ".d?h" files. If a configuration is invalid, for example, pdfft, then (as of IRAF v2.8EXPORT) no output should be produced. This holds for PODPS v24.0, too.

Confirmation

In order to confirm that calibration has been sucessful, you must check the status of the calibration header for such things as the updating of the calibration switches, APERAREA keyword, PTSRCFLG keyword in the sky file, and correctness of the calibration parameter values. Then you must compare raw and calibrated data values, via either hand-calculation of the values or IRAF. The steps involved in hand-calculation are discussed in step 6, below.

5) Except for steps "d" and "e", the checks discussed here confirm the performance of the reformatting stage of PODPS, NOT the RSDP stage. However, it is a good idea to check these results anyway.

a) Using Table 3 in Appendix A, check the TIMEBIAS value in the raw data file.

b) Using the equation in Appendix E, check the SAMPTIME value in the raw data file.

c) Using the following as a guide, check the status of the point source flag keyword (PTSRCFLG). PTSRCFLG in the raw data headers should be "E" in the sky file(s) (".d1h" and/or ".d3h") when the MODE is "SSP", except for the following cases in which PTSRCFLG should be the same (either "P" or "E") as the star files (".d0h" and/or ".d2h"):

(1) simultaneous two-color observation with PMT, i. e.

DETECTSK = 5, and DETECTOB = 3, APERTOBJ='VF750_F320' OR
DETECTSK = 3, and DETECTOB = 5, APERTSKY='VF750_F320'

(2) simultaneous two-color observation with prism, i. e.

APERTOBJ = 'VF240V_A', and APERTSKY = 'VF551V_A', OR
APERTSKY = 'VF240V_A', and APERTOBJ = 'VF551V_A', OR

APERTOBJ = 'VF135U1_A', and APERTSKY = 'VF248U1_A', OR
APERTSKY = 'VF135U1_A', and APERTOBJ = 'VF248U1_A', OR

APERTOBJ = 'VF145U2_A', and APERTSKY = 'VF262U2_A', OR
APERTSKY = 'VF145U2_A', and APERTOBJ = 'VF262U2_A'.

d) Switches set to PERFORM in the raw GEIS files should be set to COMPLETE in the calibrated files.

e) Calibrated files containing extended source data should contain a value for the APERAREA keyword. The correct value can be found in the aperture area calibration parameter table (CCP0, see Appendix C).

6) If the flags and switches appear to be correct and you need to hand-calibrate results as a control, follow this step; else skip to the next.

In order to hand calculate the calibration parameters, the epoch of the observation needs to be known. The epoch, in Modified Julian Date, is calculated using the following steps. A running example is included on the right:

a) In IRAF, use "images.imheader" with both longheader and userfield set to "yes", record the values for the keywords "FPKTTIME" and "LPKTTIME". If they are different, you should take the average of the two.

FPKTTIME = LPKTTIME = 1 May 1988 01:34:58.00

b) Using the 'JULIAN DATES OF GREGORIAN CALENDAR DATES' tables in the Astronomical Almanac (page K4 of the 1983-1990 almanacs), do the following:

I)	Find the Julian Date for Jan 0d 0h of the century for the year in FPKTTIME,	1900 -> 2415019.5
II)	Add the value in Table B for the year in FPKTTIME,	+ 32141
III)	Add the value in Table C for the month in FPKTTIME,	+ 121
IV)	Add the number of days in the month (the day in FPKTTIME),	+ 1
V)	Add the fraction of a day (.dddd) indicated by the time in FPKTTIME, .dddd = {[([ss.ss/60] + mm) / 60] + hh} / 24	+ 0.0659491
VI)	Subtract the Julian Date corresponding to zero in the Modified Julian Date system.	- 2400000.5
VII)	The final value is referred to as "t" in Appendix E, in the calibration parameter polynomial equations.	t = 47282.0659491

Using the Modified Julian Date, base values and coefficients from the appropriate calibration parameter table, the appropriate temperature values from the ".shh" file, and the polynomial (or deadtime) equation in Appendix E, calculate the calibration parameter values.

7) Compare the control calibration parameter values (hand-calibrated or otherwise) to those listed in the calibrated header being checked.

8) Compare the control calibrated data values to those in the calibrated test dataset. In order to check the calibration of the actual data, choose a few points (see below) out of the raw data files and/or choose the SAME points out of the calibrated data file. If necessary, hand-calibrate the raw data points using the CALHSP Algorithms in Appendix E.

These points can be listed using IRAF's "stsdas.tools.listarea" or "images.listpix". The output from both can be redirected into a file. "listarea" gives a 2-d listing of an image subsection with the pixel values labelled by the image coordinates, whereas "listpix" lists, in columnar format, the pixel values labelled by the image subsection coordinates. "listarea" is good for seeing structure in an image and for coordinating pixel values with their location in an image, but it is slightly slower than listpix and adds form-feeds between lines of data. However, havng the image locations for pixel values is a great advantage over a list of almost arbitrarily numbered pixel values.

Note: IRAF only accepts header ("*.*h") files in its command line syntax. An error will result if the data ("*.*d") files are entered as a command parameter.

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Testing of the HSP RSDP Algorithms
3 Nov 89

Introduction

This document describes the many factors involved in the testing of the High Speed Photometer (HSP) SE-06 algorithms (CALHSP) in the IRAF/SDAS and PODPS environments. Its purpose is to serve as a guide whenever testing of the IRAF or PODPS CALHSP algorithms needs to be done. A brief summary of the datasets used and the results obtained during the August 1989 testing is presented. There are many appendices containing various information. Appendix A contains all the Figures and Tables refered to in the body of this document that are not found in another appendix. Appendix B suggests some relatively easy steps to follow when testing HSP calibration algorithms. Appendix C contains a printout of the most current calibration parameter tables. The values in some of these tables will change sometime after launch. Appendix D contains a full printout of various headers of the datasets involved, and a partial listing of the data in the raw and calibrated data files. Appendix E contains the algorithms used during calibration. This appendix will be discussed in more detail below.

Data Types and Calibration Switches

For the HSP, two types of data are possible: DIGITAL and ANALOG. Data is reduced differently for these two data types, therefore the algorithms for both need to be tested. Between the two, there are three calibration switches: DEADTIME, TRUE_CNT, and TRUE_PHC. The first two of these switches apply to DIGITAL data; the other applies to ANALOG data. The setting of the three calibration switches, will determine which algortihms are used to calibrate the data.

The calibration switches can be either turned on (set to PERFORM) or turned off (set to OMIT). Since there is only one analog switch, analog data is either calibrated or not calibrated. However, digital data can be calibrated in several ways: full calibration (both switches on), deadtime calibration (just the DEADTIME switch on), true count calibration (just the TRUE_CNT switch on), or no calibration (both switches off).

The reformatting software in PODPS will generally turn on only switches applicable to the data type; inapplicable switches are set to OMIT. However, a switch which does not affect the type of data present should be ignored by the calibration software regardless of whether or not it is set to OMIT. Therefore, for purposes of testing, invalid combinations of PERFORM and OMIT are used to ascertain that the proper switches are being used. Suggested testing combinations can be found in Appendix B, item 2.

Calibration Algorithms

Appendix E contains the algortihms used in calibrating HSP data. These equations are organized by the different possible settings of the calibration switches. Each possible setting is then differentiated by the value of the point source flag (PTSRCFLG), indicating the presence of point (P) or extended (E) source data. The equations for the extended source data are generally the same as those for similarly configured point source data with the difference being that extended source data is divided by the area of the aperture (APERAREA). The APERAREA keyword value in the calibration header should be udated only when PTSRCFLG is set to "E". Next to each heading for point or extended source data in Appendix E is the corresponding configuration code which was introduced in Appendix B, item 2. Replace underscores with either "t" or "f", whichever is appropriate.

Also presented in Appendix E is the equation by which the sample time should be calculated. Although this task is performed by the PODPS reformatting software and NOT by the RSDP software, it is a good idea to make sure the calculation is being done correctly. If the sample time does not seem to be correct, it is also possible that one of the two values used in its calculation was not correctly updated by the reformatting software.

Also presented is the third-order, bi-dimensional polynomial function of time and temperature upon which the calculation of most of the HSP calibration parameters (see Table 1) is based. Lastly, the equation for DEADTIME, which has been simplified, is also given.

Calibration Parameters

For the nine HSP calibration parameters (see Table 1), SDAS tables have been created (see Appendix C) which contain base values and coefficients. For parameters whose values depend on polynomial coefficients, the following values are used:

```
(A00,A01,A02,A03) =  (1.00   ,1.0e-04,1.0e-07,1.0e-10)
(A10,A11,A12,A13) =  (5.0e-02,1.0e-05,1.0e-08,1.0e-11)
(A20,A21,A22,A23) =  (1.0e-03,1.0e-06,1.0e-09,1.0e-12)
(A30,A31,A32,A33) =  (1.0e-04,1.0e-07,1.0e-10,1.0e-13)

Base Temperature  =  0.
Base Time         =  32000.
```

The values of the coefficients are expected to change once the spacecraft has been launched and real data can be used to determine these factors. The Base Temperature is a zero point offset and is expected to remain constant. The Base Time is chosen for the convenience of the polynomial fitting and it may or may not change in the future.

August 1989 Testing: Background for the Datasets

In August 1989, an HSP data file set (see Appendix B, item 1) for each data type was chosen from the disk$reference:[cdbsdata.hsp_idt.test] directory on SCIVAX to be tested in the IRAF v2.8/PODPS v23.1 environments. Figures 1 and 2 show parts of the star data headers of these two file sets. The file sets were copied several times each to allow the same analog or digital data to be arranged in different configurations with regards to the calibration switches (see AppendixB, item 2). The RSDP and SDAS algorithms were tested by "hand" validating (see Appendix F) the results that would be obtained from the calibration of each configuration of the two files.

The data used for the August 1989 testing probably came from GST 4 data that was run through an informal PODPS test in December, thus giving the files a date of 5 December 88. As can be seen by looking at Figures 1and 2, the value of the APERTURE keyword is missing out of these data headers. This missing information is easily replaced since it is the same as the APERTOBJ value or the APERTSKY value, depending on whether the file is of star or sky data.

Additionally, some of the unique data log (".ulh") files in this data list VHIVOLT values for certain detectors which are inconsistent with the values in Table 2, a listing of High Voltage Power Supply Settings. This problem is illustrated in Figure 2 where the value for the high voltage setting for the "sky" detector (VHIVOLTS) should, but does not agree with the value for detector 4 (VHIVOLT4). The values should agree because the sky detector (DETECTSK) for this data is detector 4 and therefore the value in VHIVOLTS should be the same as the value for VHIVOLT4. The correct VHIVOLT values can be obtained from Andrea Tuffli's

14 Oct 86 HSP Standard Parameters Memo to the STScI Commanding Group, from which Table 2 was obtained.

Two other problems are illustrated in both Figures 1 and 2. The value for the sample time (SAMPTIME) and the time bias (TIMEBIAS) are sometimes incorrect. The correct value for SAMPTIME can be obtained by working the equation in Appendix E. The correct value for the TIMEBIAS can be found by reading Table 3.

The problem of the missing or incorrect information was probably caused by bugs in the PODPS reformatting software. It is only relevant to this testing procedure in that for the CALHSP software to run, all the necessary information had to be present so we had to add information to these particular files. These changes needed to be done only once to the digital and once to the analog file and then these files were copied and configured differently. The TIMEBIAS and SAMPTIME problems have no effect on the testing of the RSDP algorithms, but they may have an effect on the validity of the calibration if they are not fixed by launch.

August 1989 Testing: Results

Since the versions of the software in the IRAF and PODPS environments were slightly different, slightly different results were obtained for the two tests. However, none of the problems encountered warranted the filing of an Operations Problems Reports (OPR). Furthermore, all of the problems have been fixed in the latest upgrade of IRAF (v2.8EXPORT) and will be installed in the upcoming (1 December 1989) build of PODPS (v24.0).

The types of problems encountered were the following:

1) the APERAREA keyword was not updated appropriately, i.e. in the extended source calibrated data files. This problem occurred in both PODPS and in IRAF.

2) in IRAF, when TRUE_CNT (in digital data) or TRUE_PHC (in analog data) was set to OMIT in extended source data, an error message,

"ERROR: aperarea < 0"

was given and any sky data present was not calibrated.

3) in PODPS, when TRUE_CNT (in digital data) or TRUE_PHC (in analog data) was set to OMIT in extended source data, the calibrated data was equal to the raw data divided by the aperture area. The calibrated data should have been the same as the raw data in these cases.

All three of these problems have been fixed in IRAF v2.8EXPORT. In fact, when DEADTIME and TRUE_CNT (in digital data) or TRUE_PHC (in analog data) are set to OMIT in any data files, then no calibration output is created since nothing is being done to the data in these configurations. Again, these fixes are scheduled to be installed into the upcoming PODPS build.

Since the programmer was already aware of these problems and had them fixed and ready to install in the soon-to-come build of PODPS, no OPR's were issued. No Software Problem Reports (SPR) were issued either, for basically the same reason.

Conclusions and Recommendations

Due to the confusion which can be caused by software evolution, as described above, it may be best to run a "starter" set of digital and analog GST data through the most recent version of the POPDS pipeline first, and use the datasets created by the reformatting stage of PODPS as the basis for the test datasets. These data sets can then be cloned, as descibed above and in Appendix B, and used as the test datasets. Appendix B describes the testing steps in detail. Appendix D contains sample copies of some HSP data headers which were modified in order to test IRAF v2.8EXPORT. Appendix C contains copies of the SDAS HSP Calibration Parameter Tables, which would be needed for "hand calibration" of data. Appendix E contains the algorithms used in calibration of HSP data and Appendix F contains copies of FORTRAN programs and examples of their input files, which can be used to "hand calibrate" HSP data.

Any problems found which are related to the non-RSDP stages of PODPS should be documented with an OPR. Any problems that are related to the RSDP stage of PODPS should be documented in an SPR.

Appendix A

This appendix contains the Figures and Tables referred to in the body of the text.

Figure 1

This figure contains select information from the original 'v0200705t' dataset used as the basis for the August 1989 IRAF and PODPS testing.

```
:::::::::::::
v0200705t.d0h  (data header)
:::::::::::::

                                  / HSP DATA DESCRIPTOR KEYWORDS
INSTRUME= 'HSP                 ' / instrument in use
ROOTNAME= 'V0200705T           ' / rootname of the observation set
FILETYPE= 'DST                 ' / shp, udl, dst, dsk, ast, ask, asd, asa
CTYPE1  = 'TIME                ' / unitless, line, pixel, channel, sample, time
NSEGPGRP=                      0 / not computed - used only by OSS
BUNIT   = 'COUNTS              ' / units of calibrated data

                                  / CALIBRATION FLAGS AND INDICATORS
MODE    = 'SSP                 ' / instrument mode SCP, SSP, ARS
DETECTOB=                      4 / detector in use (0-5) - object data
DETECTSK=                      4 / detector in use (0-5) - sky data
PTSRCFLG= 'P                   ' / point source flag (P=point, E=extended)
APERTOBJ= 'VCLRU2_D            ' / aperture in use - object data
APERTSKY= 'VCLRU2_B            ' / aperture in use - sky data

                                  / CALIBRATION SWITCHES: perform,omit,complete
DET_CHR = 'PERFORM             ' / retrieve detector characteristics
DEADTIME= 'PERFORM             ' / deadtime correction
TRUE_CNT= 'PERFORM             ' / compute the true count rates
TRUE_PHC= 'OMIT                ' / compute the true photocurrents

                                  / CALIBRATION KEYWORDS
DATA_TYP= 'DIGITAL             ' / data type: digital, analog
DATA_SRC= 'STAR                ' / data source: star, sky, area scan
DATA_FMT= 'WORD                ' / data format: byte, word, lwrd, alog, all
WORDS   =                     29 / number of HSP samples in a line
LINES   =                      1 / number of lines in a group
INT_TIME=                1023999 / time of integration (in 1/1.024 microseconds)
TIMEBIAS=                      1 / instrument time bias (in 1/1.024 microseconds)
SAMPTIME=         0.9765625E-06 / time of integration (in seconds)
DELAY   =                      0 / delay between integrations (in 1/1.024 usec.)
DETECTOR=                      4 / detector used
APERTURE= '                    ' / name of the aperture used
APERAREA=  0.0000000000000E+00 / aperarea
BDEXPFLG=                      1 / bus director expander flag
PT_EFFIC=         0.0000000E+00 / scaled point source cathode efficiency
EX_EFFIC=         0.0000000E+00 / scaled extended source cathode efficiency
DARKRATE=         0.0000000E+00 / scaled cathode dark rate
PRE_AMP =         0.0000000E+00 / scaled tube pre-amp contribution
HIGHVOLT=         0.0000000E+00 / scaled high voltage
TUBEGAIN=         0.0000000E+00 / scaled tube gain
DEADTM  =  0.0000000000000E+00 / deadtime
```

Figure 1 (cont'd)

```
TAU1     =  0.0000000000000E+00 / natural response time of the electronics
EPSILON  =  0.0000000000000E+00 / scaling factor for adjusted registered/true cou
THRESHLD=  0.0000000000000E+00 / threshold for paired pulse correction
Q0       =  0.0000000000000E+00 / constant used in computation of tau2
Q1       =  0.0000000000000E+00 / constant used in computation of tau2
F        =  0.0000000000000E+00 / constant used as the threshold in computing tau
CVCOFSET=         0.0000000E+00 / scaled CVC offset
VGAIND   =                    7 / telemetry value for gain setting

                                / STATISTICAL KEYWORDS
DATE     = '05/12/88          ' / date this file was written (dd/mm/yy)
PODPSFF  =                    0 / 0=(no  podps fill); 1=(podps fill present)
PODPSFP  = '0000               ' / podps fill pattern (hex)
STDCFFF  =                    0 / 0=(no st dcf fill); 1=(st dcf fill present)
STDCFFP  = '0000               ' / st dcf fill pattern (hex)
DQMSKFV  =         0.1000000E+03 / dq mask value to indicate fill (R*4)

                                / DISPLAY KEYWORDS
PLOTID   = 'HSP                ' / plot title

END


::::::::::::::
v0200705t.shh  (standard header)
::::::::::::::

DEA_TEMP=         0.3100332E+02 / DEA temperature of the object detector
DET_TEMP=         0.2554449E+02 / detector temperature of the object detector


::::::::::::::
v0200705t.ulh (unique data log header)
::::::::::::::

VHIVOLT1=                   255 / high voltage setting for detector 1
VHIVOLT2=                   255 / high voltage setting for detector 2
VHIVOLT3=                   156 / high voltage setting for detector 3
VHIVOLT4=                    11 / high voltage setting for detector 4
VHIVOLT5=                   168 / high voltage setting for detector 5
VHIVOLTS=                    11 / high voltage setting for detector "sky"
```

Figure 2

This figure contains select information from the original 'v020090ao' dataset used as the basis for the August 1989 IRAF and PODPS testing.

```
:::::::::::::
v020090ao.d2h   (data header)
:::::::::::::

                                  / HSP DATA DESCRIPTOR KEYWORDS
INSTRUME= 'HSP                  ' / instrument in use
ROOTNAME= 'V020090AO            ' / rootname of the observation set
FILETYPE= 'AST                  ' / shp, udl, dst, dsk, ast, ask, asd, asa
CTYPE1  = 'TIME                 ' / unitless, line, pixel, channel, sample, time
NSEGPGRP=                       0 / not computed - used only by OSS
BUNIT   = 'COUNTS               ' / units of calibrated data

                                  / CALIBRATION FLAGS AND INDICATORS
MODE    = 'SSP                  ' / instrument mode SCP, SSP, ARS
DETECTOB=                       3 / detector in use (0-5) - object data
DETECTSK=                       4 / detector in use (0-5) - sky data
PTSRCFLG= 'P                    ' / point source flag (P=point, E=extended)
APERTOBJ= 'VF262V_B             ' / aperture in use - object data
APERTSKY= 'VF262U2_B            ' / aperture in use - sky data

                                  / CALIBRATION SWITCHES: perform,omit,complete
DET_CHR = 'PERFORM              ' / retrieve detector characteristics
DEADTIME= 'OMIT                 ' / deadtime correction
TRUE_CNT= 'OMIT                 ' / compute the true count rates
TRUE_PHC= 'PERFORM              ' / compute the true photocurrents

                                  / CALIBRATION KEYWORDS
DATA_TYP= 'ANALOG               ' / data type: digital, analog
DATA_SRC= 'STAR                 ' / data source: star, sky, area scan
DATA_FMT= 'ALOG                 ' / data format: byte, word, lwrd, alog, all
WORDS   =                     180 / number of HSP samples in a line
LINES   =                       1 / number of lines in a group
INT_TIME=                 1023872 / time of integration (in 1/1.024 microseconds)
TIMEBIAS=                     100 / instrument time bias (in 1/1.024 microseconds)
SAMPTIME=          0.9863282E-04 / time of integration (in seconds)
DELAY   =                       0 / delay between integrations (in 1/1.024 usec.)
DETECTOR=                       3 / detector used
APERTURE= 'VF262V_B             ' / name of the aperture used
APERAREA=  0.0000000000000E+00 / aperarea
BDEXPFLG=                       1 / bus director expander flag
PT_EFFIC=          0.0000000E+00 / scaled point source cathode efficiency
EX_EFFIC=          0.0000000E+00 / scaled extended source cathode efficiency
DARKRATE=          0.0000000E+00 / scaled cathode dark rate
PRE_AMP =          0.0000000E+00 / scaled tube pre-amp contribution
HIGHVOLT=          0.0000000E+00 / scaled high voltage
TUBEGAIN=          0.0000000E+00 / scaled tube gain
DEADTM  =  0.0000000000000E+00 / deadtime
```

Figure 2 (cont'd)

```
TAU1     =  0.0000000000000E+00 / natural response time of the electronics
EPSILON  =  0.0000000000000E+00 / scaling factor for adjusted registered/true cou
THRESHLD=   0.0000000000000E+00 / threshold for paired pulse correction
Q0       =  0.0000000000000E+00 / constant used in computation of tau2
Q1       =  0.0000000000000E+00 / constant used in computation of tau2
F        =  0.0000000000000E+00 / constant used as the threshold in computing tau
CVCOFSET=         0.0000000E+00 / scaled CVC offset
VGAIND   =                    7 / telemetry value for gain setting

                                / STATISTICAL KEYWORDS
DATE     = '05/12/88          ' / date this file was written (dd/mm/yy)
PODPSFF  =                    0 / 0=(no  podps fill); 1=(podps fill present)
PODPSFP  = '0000               ' / podps fill pattern (hex)
STDCFFF  =                    0 / 0=(no st dcf fill); 1=(st dcf fill present)
STDCFFP  = '0000               ' / st dcf fill pattern (hex)
DQMSKFV  =         0.1000000E+03 / dq mask value to indicate fill (R*4)

                                / DISPLAY KEYWORDS
PLOTID   = 'HSP                ' / plot title

END


::::::::::::::
v020090ao.shh   (standard header)
::::::::::::::

DEA_TEMP=         0.3005495E+02 / DEA temperature of the object detector
DET_TEMP=         0.2425640E+02 / detector temperature of the object detector


::::::::::::::
v020090ao.ulh   (unique data log header)
::::::::::::::

VHIVOLT1=                   110 / high voltage setting for detector 1
VHIVOLT2=                   203 / high voltage setting for detector 2
VHIVOLT3=                   156 / high voltage setting for detector 3
VHIVOLT4=                    11 / high voltage setting for detector 4
VHIVOLT5=                   168 / high voltage setting for detector 5
VHIVOLTS=                   156 / high voltage setting for detector "sky"
```

Table 1

HSP Calibration Parameter Table Information

Tables dependent on detector temperature (DET_TEMP)

CONTENTS	KEYWORD	TABLE	DATE
high voltage factor	HIGHVOLT	CCP1	19 Jun 89
detector dark signal	DARKRATE	CCP5	19 Jun 89
paired-pulse correction	DEADTM	CCP8	19 Jun 89
relative sensitivity (detector efficiency)	PT_EFFIC or EX_EFFIC	CCP4	7 Jul 89

Tables dependent on detector electronics temperature (DEA_TEMP)

CONTENTS	KEYWORD	TABLE	DATE
analog gain factor	TUBEGAIN	CCP2	4 Nov 88
pre-amplifier noise	PRE_AMP	CCP3	4 Nov 88
current-to-voltage converter offset	CVCOFSET	CCP7	4 Nov 88

Tables not dependant on temperature

CONTENTS	KEYWORD	TABLE	DATE
aperture area	APERAREA	CCP0	7 Jul 89
dark aperture translation	(none)	CCP9	7 Jul 89

KEYWORD refers to the keyword name found in the raw and calibrated data headers. TABLE refers to the root name of the SDAS table file: the ".tab" extension is assumed. DATE refers to the creation date of the files (on SCIVAX) used to test in IRAF v2.8EXPORT. The dates in the header lines on the tables in Appendix C are the dates the tables were created on the Suns. Finally, the temperatures on which the values are dependent can be found in the ".shh" file.

Table 2

High Voltage Power Supply Settings

from Andrea Tuffli's 14 Oct 86 HSP Standard Parameters
Memo to the STScI Commanding Group

det	gain	HVPS input
1	5e+5	80
1	1e+6	110
1	2e+6	143
2	5e+5	166
2	1e+6	203
2	2e+6	244
3	5e+5	124
3	1e+6	156
3	2e+6	192
4	5e+5	5
4	1e+6	11
4	2e+6	49
5	5e+5	152
5	1e+6	168
5	2e+6	187

Table 3

HSP Timebiases

To determine the correct time bias for an observation, you must know the instrument MODE, number of detectors (where relevant), and format of the data (DATA_FMT). These items are contained in the raw and calibrated data headers. The table below lists the correct TIMEBIAS value for the different combinations of these items.

MODE	# DETECTORS	DATA_FMT	TIMEBIAS
SSP	1	BYTE	1
SSP	1	WORD	1
SSP	1	LWRD	1
SSP	1	ALOG	0
SSP	1	ALL	105
SSP	2	BYTE	29
SSP	2	WORD	53
SSP	2	LWRD	73
SSP	2	ALOG	156
SSP	2	ALL	217
SCP		BYTE	13
SCP		WORD	25
SCP		LWRD	35
SCP		ALOG	128
SCP		ALL	159
ARS		BYTE	13
ARS		WORD	25
ARS		LWRD	35
ARS		ALOG	128
ARS		ALL	159
SBDP		BYTE	0
SBDP		WORD	0
SBDP		LWRD	0
SBDP		ALOG	0
SBDP		ALL	0

SSP = star-sky photometry
SCP = single color photometry
ARS = area scan
SBDP = special bus director program

Appendix B

The steps required to test the CALHSP code can be divided into three areas: preparation, calibration, and confirmation. Preparation may initially involve PODPS, in order to obtain the basic test datasets. Calibration can be done in both PODPS and IRAF. Confirmation can be done by hand, or in IRAF, but either way will require the use of IRAF. It is assumed that the reader is familiar with the use of IRAF, although not necessarily for the purpose of calibrating HSP data.

This appendix contains details of the testing steps, separated into those three areas. They are kept sequential so they may be referred to more easily, rather than to suggest that they must be completed in this order.

Preparation

1) Obtain point and extended source, analog and digital GST data files: It may be a good idea to obtain these files by requesting PODPS support personnel to provide you with one set of the most recent (non-area scan) analog and digital data in order to insure that the most recent reformatting software has been used.

Type of File	Extension	?
data	d?d, d?h	0 = digital star
mask	q?d, q?h	1 = digital sky
standard header	shd, shh	2 = analog star
unique log	uld, ulh	3 = analog sky
trailer	trl	

2) For full testing of switches, you should create 10 files with the

DEADTIME, TRUE_CNT, and TRUE_PHC

switches set in the following combinations for the following configurations of extended and point source, analog and digital data:

source/type	switch setting
pa	pd fft
ed	pd ftf
	pd tff
ed	tft
ea ed	ttf
ea	pd ttt

where
p = point source data
e = extended source data
a = analog
d = digital
t = PERFORM and } for switches in
f = OMIT } order listed above

For example, pafft stands for a point source analog file with

```
DEADTIME= 'OMIT      ' / deadtime correction
TRUE_CNT= 'OMIT      ' / compute the true count rates
TRUE_PHC= 'PERFORM   ' / compute the true photocurrents
```

These cofigurations are designed to test not only that the calibration is being done correctly, but also that the program is paying attention only to the appropriate switches: i. e. for digital data, only the deadtime and true_cnt switches are applicable; and for analog data, only the true_phc switch is applicable. The program is expected to ignore the analog switch if the data is digital, and visa-versa

3) For IRAF v2.8EXPORT and later, you must be sure that the location and name of the calibration tables has been included in each of the data headers (".d?h" files). If it has not, you must add to those files lines similar to the following, or else the program will not know where to find the tables. Make sure the lines are the proper fixed character length for FITS files!

```
CCP0  = 'xpolyeval$ccp0' / aperture area table
CCP1  = 'xpolyeval$ccp1' / high voltage factor table
CCP2  = 'xpolyeval$ccp2' / gain factor table
CCP3  = 'xpolyeval$ccp3' / pre-amplifier noise table
CCP4  = 'xpolyeval$ccp4' / relative sensitivity table
CCP5  = 'xpolyeval$ccp5' / dark signal table
CCP7  = 'xpolyeval$ccp7' / CVC offset table
CCP8  = 'xpolyeval$ccp8' / dead time table
CCP9  = 'xpolyeval$ccp9' / dark aperture translation table
```

This addition should not be a problem if the data has been reformatted by PODPS v24.0 since the program in it that partitions the spacecraft data into the datasets is going to put these lines in automatically. This is pointed out in case you are using data that was not formatted with PODPS v24.0. It is assumed that your version of IRAF knows the definition of "xpolyeval", and that the tables are located there.

Calibration

Calibration will be done in IRAF, PODPS, by hand, or all three, depending on what is being tested. If calibration is being done in PODPS, then PODPS support personnel will run the data through the pipeline. If it is being done by hand, then Appendix E lists the equations to be used. (HINT: Appendix F contains listings of programs and samples of the required input files as one suggestion on how to automate calibration by hand.) If calibration is being done in IRAF, then the following simple step should be followed.

4) Run "stsdas.hsp.calhsp" on the ".d?h" files. If a configuration is invalid, for example, pdfft, then (as of IRAF v2.8EXPORT) no output should be produced. This holds for PODPS v24.0, too.

Confirmation

In order to confirm that calibration has been sucessful, one must compare raw and calibrated data values, and the status of the calibration header for such things as the updating of the calibration switches and APERAREA keyword and the correctness of the calibration parameter values.

5) In order to hand calculate the calibration parameters, the epoch of the observation needs to be known. The epoch, in Julian Days, is calculated by following the steps below. A running example is included on the right:

a) In IRAF, use images.imheader with both longheader and userfield set to "yes", record the values for the keywords "FPKTTIME" and "LPKTTIME". If they are different, you may want to take the average of the two.

FPKTTIME = LPKTTIME = 1 May 1988 01:34:58.00

b) Using the tables on page K4 (or thereabouts) of the Astronomical Almanac, do the following:

I)	Find the value in Table B for the year in FPKTTIME,	1988 -> 32141
II)	Add the value in Table C for the month in FPKTTIME,	+ 121
III)	Add the number of full days in the month until the day in FPKTTIME,	+ 0
IV)	Add the fraction of a day (.dddd) indicated by the time in FPKTTIME, .dddd = {[([ss.ss/60] + mm) / 60] + hh} / 24	+ 0.0659491
V)	The final value is referred to as "t" in Appendix E, in the calibration parameter polynomial equation.	t = 32262.0659491

6) Compare the "hand-calibrated" calibration parameter values to thosed listed in the ".c?h" file.

7) In order check the calibration of the data, choose a few points out of the raw and calibrated data files to compare. These points can be listed using IRAF's "stsdas.tools.listarea" or "images.listpix". The output from both can be redirected into a file. "listarea" gives a 2-d listing of an image subsection with the pixel values labelled by the image coordinates, whereas "listpix" lists, in columnar format, the pixel values labelled by the image

subsection coordinates. "listarea" is good for seeing structure in an image and for coordinating pixel values with their location in an image, but it is slightly slower than listpix and adds form-feeds between lines of data. However, havng the image locations for pixel values is a great advantage over a list of almost arbitrarily numbered pixel values.

Note: IRAF only accepts header (*.*h) files in its command line syntax. An error will result if the data (*.*d) files are entered as a command parameter.

Appendix C

This appendix contains copies of the HSP Calibration Parameter tables.

Table ccp0.tab Mon 10:20:45 06-Nov-89

(row)	APER_NAME	APER_SIZE
1	VCLRU1_A	0.7854
2	VCLRU1_B	0.1257
3	VCLRU1_D	0.1257
4	VCLRU1_F	0.1257
5	VCLRU1_T	78.54
6	VCLRU1_S	78.54
7	VF122U1_A	0.7854
8	VF122U1_B	0.7854
9	VF122U1_D	0.7854
10	VF135U1_A	0.7854
11	VF135U1_B	0.7854
12	VF135U1_C	0.7854
13	VF135U1_D	0.7854
14	VF135U1_E	0.7854
15	VF135U1_F	0.7854
16	VF145U1_A	0.7854
17	VF145U1_B	0.7854
18	VF145U1_C	0.7854
19	VF145U1_D	0.7854
20	VF152U1_A	0.7854
21	VF152U1_B	0.7854
22	VF152U1_C	0.7854
23	VF152U1_D	0.7854
24	VF184U1_A	0.7854
25	VF184U1_B	0.7854
26	VF184U1_C	0.7854
27	VF184U1_D	0.7854
28	VF218U1_A	0.7854
29	VF218U1_B	0.7854
30	VF218U1_C	0.7854
31	VF218U1_D	0.7854
32	VF220U1_A	0.7854
33	VF220U1_B	0.7854
34	VF220U1_C	0.7854
35	VF220U1_D	0.7854
36	VF240U1_A	0.7854
37	VF240U1_B	0.7854
38	VF240U1_C	0.7854
39	VF240U1_D	0.7854
40	VF248U1_A	0.7854
41	VF248U1_B	0.7854
42	VF248U1_C	0.7854
43	VF248U1_D	0.7854
44	VF248U1_E	0.7854
45	VF248U1_F	0.7854
46	VF278U1_A	0.7854
47	VF278U1_B	0.7854
48	VF278U1_C	0.7854
49	VF278U1_D	0.7854
50	VCLRV_A	0.7854

(row)	APER_NAME	APER_SIZE
51	VCLRV_B	0.1257
52	VCLRV_C	0.7854
53	VCLRV_D	0.1257
54	VCLRV_E	0.7854
55	VCLRV_F	0.1257
56	VCLRV_H	0.1257
57	VCLRV_J	0.1257
58	VCLRV_T	78.54
59	VCLRV_S	78.54
60	VF184V_A	0.7854
61	VF184V_B	0.7854
62	VF184V_C	0.7854
63	VF184V_D	0.7854
64	VF240V_A	0.7854
65	VF240V_B	0.7854
66	VF240V_C	0.7854
67	VF240V_D	0.7854
68	VF240V_E	0.7854
69	VF240V_F	0.7854
70	VF262V_A	0.7854
71	VF262V_B	0.7854
72	VF262V_C	0.7854
73	VF262V_D	0.7854
74	VF355V_A	0.7854
75	VF355V_B	0.7854
76	VF355V_C	0.7854
77	VF355V_D	0.7854
78	VF400V_A	0.7854
79	VF400V_B	0.7854
80	VF400V_D	0.7854
81	VF419V_A	0.7854
82	VF419V_B	0.7854
83	VF419V_C	0.7854
84	VF419V_D	0.7854
85	VF450V_A	0.7854
86	VF450V_B	0.7854
87	VF450V_C	0.7854
88	VF450V_D	0.7854
89	VF551V_A	0.7854
90	VF551V_B	0.7854
91	VF551V_C	0.7854
92	VF551V_D	0.7854
93	VF551V_E	0.7854
94	VF551V_F	0.7854
95	VF620V_A	0.7854
96	VF620V_B	0.7854
97	VF620V_C	0.7854
98	VF620V_D	0.7854
99	VCLRU2_A	0.7854
100	VCLRU2_B	0.1257

(row)	APER_NAME	APER_SIZE
101	VCLRU2_D	0.1257
102	VCLRU2_F	0.1257
103	VCLRU2_T	78.54
104	VCLRU2_S	78.54
105	VF122U2_A	0.7854
106	VF122U2_B	0.7854
107	VF122U2_D	0.7854
108	VF145U2_A	0.7854
109	VF145U2_B	0.7854
110	VF145U2_C	0.7854
111	VF145U2_D	0.7854
112	VF145U2_E	0.7854
113	VF145U2_F	0.7854
114	VF152U2_A	0.7854
115	VF152U2_B	0.7854
116	VF152U2_C	0.7854
117	VF152U2_D	0.7854
118	VF160U2_A	0.7854
119	VF160U2_B	0.7854
120	VF160U2_C	0.7854
121	VF160U2_D	0.7854
122	VF179U2_A	0.7854
123	VF179U2_B	0.7854
124	VF179U2_C	0.7854
125	VF179U2_D	0.7854
126	VF184U2_A	0.7854
127	VF184U2_B	0.7854
128	VF184U2_C	0.7854
129	VF184U2_D	0.7854
130	VF218U2_A	0.7854
131	VF218U2_B	0.7854
132	VF218U2_C	0.7854
133	VF218U2_D	0.7854
134	VF248U2_A	0.7854
135	VF248U2_B	0.7854
136	VF248U2_C	0.7854
137	VF248U2_D	0.7854
138	VF262U2_A	0.7854
139	VF262U2_B	0.7854
140	VF278U2_A	0.7854
141	VF278U2_B	0.7854
142	VF278U2_C	0.7854
143	VF278U2_D	0.7854
144	VF284U2_A	0.7854
145	VF284U2_B	0.7854
146	VF284U2_C	0.7854
147	VF284U2_D	0.7854
148	VCLRP_A	0.3318
149	VCLRP_C	0.3318
150	VCLRP_S	28.274

(row)	APER_NAME	APER_SIZE
151	VCLRP_T	28.274
152	VF216P0	0.3318
153	VF216P90	0.3318
154	VF216P45	0.3318
155	VF216P135	0.3318
156	VF237P0	0.3318
157	VF237P90	0.3318
158	VF237P45	0.3318
159	VF237P135	0.3318
160	VF277P0	0.3318
161	VF277P90	0.3318
162	VF277P45	0.3318
163	VF277P135	0.3318
164	VF327P0	0.3318
165	VF327P90	0.3318
166	VF327P45	0.3318
167	VF327P135	0.3318
168	VF750_F320	0.7854

Table ccp1.tab Mon 10:21:59 06-Nov-89

(row)	DET_NUM	TYPE	VOLTAGE	BASE_VALUE	BASE_TEMP	BASE_TIME	A00	A01
1	1	ANALOG	0.	0.11	0.	47020.	1.	1.000000E-4
2	1	DIGITAL	0.	0.111	0.	47020.	1.	1.000000E-4
3	1	ANALOG	80.	0.51	0.	47020.	1.	1.000000E-4
4	1	DIGITAL	80.	0.511	0.	47020.	1.	1.000000E-4
5	1	ANALOG	110.	1.01	0.	47020.	1.	1.000000E-4
6	1	DIGITAL	110.	1.011	0.	47020.	1.	1.000000E-4
7	1	ANALOG	143.	2.01	0.	47020.	1.	1.000000E-4
8	1	DIGITAL	143.	2.011	0.	47020.	1.	1.000000E-4
9	2	ANALOG	0.	0.12	0.	47020.	1.	1.000000E-4
10	2	DIGITAL	0.	0.121	0.	47020.	1.	1.000000E-4
11	2	ANALOG	166.	0.52	0.	47020.	1.	1.000000E-4
12	2	DIGITAL	166.	0.521	0.	47020.	1.	1.000000E-4
13	2	ANALOG	203.	1.02	0.	47020.	1.	1.000000E-4
14	2	DIGITAL	203.	1.021	0.	47020.	1.	1.000000E-4
15	2	ANALOG	244.	2.02	0.	47020.	1.	1.000000E-4
16	2	DIGITAL	244.	2.021	0.	47020.	1.	1.000000E-4
17	3	ANALOG	0.	0.13	0.	47020.	1.	1.000000E-4
18	3	DIGITAL	0.	0.131	0.	47020.	1.	1.000000E-4
19	3	ANALOG	124.	0.53	0.	47020.	1.	1.000000E-4
20	3	DIGITAL	124.	0.531	0.	47020.	1.	1.000000E-4
21	3	ANALOG	156.	1.03	0.	47020.	1.	1.000000E-4
22	3	DIGITAL	156.	1.031	0.	47020.	1.	1.000000E-4
23	3	ANALOG	192.	2.03	0.	47020.	1.	1.000000E-4
24	3	DIGITAL	192.	2.031	0.	47020.	1.	1.000000E-4
25	4	ANALOG	0.	0.14	0.	47020.	1.	1.000000E-4
26	4	DIGITAL	0.	0.141	0.	47020.	1.	1.000000E-4
27	4	ANALOG	5.	0.54	0.	47020.	1.	1.000000E-4
28	4	DIGITAL	5.	0.541	0.	47020.	1.	1.000000E-4
29	4	ANALOG	11.	1.04	0.	47020.	1.	1.000000E-4
30	4	DIGITAL	11.	1.041	0.	47020.	1.	1.000000E-4
31	4	ANALOG	49.	2.04	0.	47020.	1.	1.000000E-4
32	4	DIGITAL	49.	2.041	0.	47020.	1.	1.000000E-4
33	5	ANALOG	0.	0.15	0.	47020.	1.	1.000000E-4
34	5	DIGITAL	0.	0.151	0.	47020.	1.	1.000000E-4
35	5	ANALOG	152.	0.55	0.	47020.	1.	1.000000E-4
36	5	DIGITAL	152.	0.551	0.	47020.	1.	1.000000E-4
37	5	ANALOG	168.	1.05	0.	47020.	1.	1.000000E-4
38	5	DIGITAL	168.	1.051	0.	47020.	1.	1.000000E-4
39	5	ANALOG	187.	2.05	0.	47020.	1.	1.000000E-4
40	5	DIGITAL	187.	2.051	0.	47020.	1.	1.000000E-4

(row)	A02	A03	A10	A11	A12	A13	A20
1	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
2	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
3	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
4	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
5	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
6	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
7	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
8	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
9	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
10	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
11	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
12	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
13	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
14	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
15	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
16	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
17	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
18	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
19	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
20	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
21	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
22	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
23	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
24	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
25	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
26	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
27	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
28	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
29	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
30	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
31	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
32	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
33	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
34	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
35	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
36	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
37	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
38	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
39	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
40	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001

(row)	A21	A22	A23	A30	A31	A32	A33
1	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
2	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
3	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
4	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
5	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
6	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
7	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
8	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
9	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
10	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
11	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
12	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
13	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
14	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
15	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
16	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
17	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
18	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
19	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
20	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
21	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
22	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
23	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
24	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
25	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
26	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
27	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
28	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
29	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
30	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
31	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
32	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
33	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
34	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
35	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
36	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
37	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
38	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
39	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
40	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13

Table ccp2.tab Mon 10:22:14 06-Nov-89

(row)	DET_NUM	VGAIND	BASE_VALUE	BASE_TEMP	BASE_TIME	A00	A01
1	1	0.	0.61	0.	47020.	1.	1.000000E-4
2	1	2.	0.061	0.	47020.	1.	1.000000E-4
3	1	3.	0.0061	0.	47020.	1.	1.000000E-4
4	1	6.	6.100000E-4	0.	47020.	1.	1.000000E-4
5	1	7.	6.100000E-5	0.	47020.	1.	1.000000E-4
6	2	0.	0.62	0.	47020.	1.	1.000000E-4
7	2	2.	0.062	0.	47020.	1.	1.000000E-4
8	2	3.	0.0062	0.	47020.	1.	1.000000E-4
9	2	6.	6.200000E-4	0.	47020.	1.	1.000000E-4
10	2	7.	6.200000E-5	0.	47020.	1.	1.000000E-4
11	3	0.	0.63	0.	47020.	1.	1.000000E-4
12	3	2.	0.063	0.	47020.	1.	1.000000E-4
13	3	3.	0.0063	0.	47020.	1.	1.000000E-4
14	3	6.	6.300000E-4	0.	47020.	1.	1.000000E-4
15	3	7.	6.300000E-5	0.	47020.	1.	1.000000E-4
16	4	0.	0.64	0.	47020.	1.	1.000000E-4
17	4	2.	0.064	0.	47020.	1.	1.000000E-4
18	4	3.	0.0064	0.	47020.	1.	1.000000E-4
19	4	6.	6.400000E-4	0.	47020.	1.	1.000000E-4
20	4	7.	6.400000E-5	0.	47020.	1.	1.000000E-4
21	5	0.	0.65	0.	47020.	1.	1.000000E-4
22	5	2.	0.065	0.	47020.	1.	1.000000E-4
23	5	3.	0.0065	0.	47020.	1.	1.000000E-4
24	5	6.	6.500000E-4	0.	47020.	1.	1.000000E-4
25	5	7.	6.500000E-5	0.	47020.	1.	1.000000E-4

(row)	A02	A03	A10	A11	A12	A13	A20
1	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
2	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
3	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
4	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
5	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
6	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
7	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
8	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
9	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
10	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
11	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
12	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
13	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
14	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
15	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
16	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
17	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
18	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
19	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
20	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
21	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
22	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
23	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
24	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
25	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001

(row)	A21	A22	A23	A30	A31	A32	A33
1	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
2	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
3	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
4	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
5	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
6	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
7	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
8	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
9	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
10	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
11	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
12	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
13	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
14	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
15	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
16	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
17	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
18	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
19	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
20	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
21	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
22	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
23	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
24	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
25	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13

Table ccp3.tab Mon 10:22:25 06-Nov-89

(row)	DET_NUM	TYPE	BASE_VALUE	BASE_TEMP	BASE_TIME	A00	A01	A02
1	1	ANALOG	0.1	0.	47020.	1.	1.000000E-4	1.000000E-7
2	1	DIGITAL	0.1	0.	47020.	1.	1.000000E-4	1.000000E-7
3	2	ANALOG	0.2	0.	47020.	1.	1.000000E-4	1.000000E-7
4	2	DIGITAL	0.2	0.	47020.	1.	1.000000E-4	1.000000E-7
5	3	ANALOG	0.3	0.	47020.	1.	1.000000E-4	1.000000E-7
6	3	DIGITAL	0.3	0.	47020.	1.	1.000000E-4	1.000000E-7
7	4	ANALOG	0.4	0.	47020.	1.	1.000000E-4	1.000000E-7
8	4	DIGITAL	0.4	0.	47020.	1.	1.000000E-4	1.000000E-7
9	5	ANALOG	0.5	0.	47020.	1.	1.000000E-4	1.000000E-7
10	5	DIGITAL	0.5	0.	47020.	1.	1.000000E-4	1.000000E-7

(row)	A03	A10	A11	A12	A13	A20	A21
1	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
2	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
3	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
4	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
5	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
6	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
8	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
9	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
10	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6

(row)	A22	A23	A30	A31	A32	A33
1	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
2	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
3	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
4	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
5	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
7	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
8	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
9	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
10	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13

Table ccp4.tab Mon 10:22:40 06-Nov-89

(row)	APER_NAME	DET_NUM	BASE_VALUE_P	BASE_VALUE_E	BASE_TEMP	BASE_TIME	A00	A01
1	VCLRU1_A	2	1.	0.9	0.	47020.	1.	1.000000E-4
2	VCLRU1_B	2	1.	0.9	0.	47020.	1.	1.000000E-4
3	VCLRU1_D	2	1.	0.9	0.	47020.	1.	1.000000E-4
4	VCLRU1_F	2	1.	0.9	0.	47020.	1.	1.000000E-4
5	VCLRU1_T	2	1.	0.9	0.	47020.	1.	1.000000E-4
6	VCLRU1_S	2	1.	0.9	0.	47020.	1.	1.000000E-4
7	VF122U1_A	2	1.	0.9	0.	47020.	1.	1.000000E-4
8	VF122U1_B	2	1.	0.9	0.	47020.	1.	1.000000E-4
9	VF122U1_D	2	1.	0.9	0.	47020.	1.	1.000000E-4
10	VF135U1_A	2	1.	0.9	0.	47020.	1.	1.000000E-4
11	VF135U1_B	2	1.	0.9	0.	47020.	1.	1.000000E-4
12	VF135U1_C	2	1.	0.9	0.	47020.	1.	1.000000E-4
13	VF135U1_D	2	1.	0.9	0.	47020.	1.	1.000000E-4
14	VF135U1_E	2	1.	0.9	0.	47020.	1.	1.000000E-4
15	VF135U1_F	2	1.	0.9	0.	47020.	1.	1.000000E-4
16	VF145U1_A	2	1.	0.9	0.	47020.	1.	1.000000E-4
17	VF145U1_B	2	1.	0.9	0.	47020.	1.	1.000000E-4
18	VF145U1_C	2	1.	0.9	0.	47020.	1.	1.000000E-4
19	VF145U1_D	2	1.	0.9	0.	47020.	1.	1.000000E-4
20	VF152U1_A	2	1.	0.9	0.	47020.	1.	1.000000E-4
21	VF152U1_B	2	1.	0.9	0.	47020.	1.	1.000000E-4
22	VF152U1_C	2	1.	0.9	0.	47020.	1.	1.000000E-4
23	VF152U1_D	2	1.	0.9	0.	47020.	1.	1.000000E-4
24	VF184U1_A	2	1.	0.9	0.	47020.	1.	1.000000E-4
25	VF184U1_B	2	1.	0.9	0.	47020.	1.	1.000000E-4
26	VF184U1_C	2	1.	0.9	0.	47020.	1.	1.000000E-4
27	VF184U1_D	2	1.	0.9	0.	47020.	1.	1.000000E-4
28	VF218U1_A	2	1.	0.9	0.	47020.	1.	1.000000E-4
29	VF218U1_B	2	1.	0.9	0.	47020.	1.	1.000000E-4
30	VF218U1_C	2	1.	0.9	0.	47020.	1.	1.000000E-4
31	VF218U1_D	2	1.	0.9	0.	47020.	1.	1.000000E-4
32	VF220U1_A	2	1.	0.9	0.	47020.	1.	1.000000E-4
33	VF220U1_B	2	1.	0.9	0.	47020.	1.	1.000000E-4
34	VF220U1_C	2	1.	0.9	0.	47020.	1.	1.000000E-4
35	VF220U1_D	2	1.	0.9	0.	47020.	1.	1.000000E-4
36	VF240U1_A	2	1.	0.9	0.	47020.	1.	1.000000E-4
37	VF240U1_B	2	1.	0.9	0.	47020.	1.	1.000000E-4
38	VF240U1_C	2	1.	0.9	0.	47020.	1.	1.000000E-4
39	VF240U1_D	2	1.	0.9	0.	47020.	1.	1.000000E-4
40	VF248U1_A	2	1.	0.9	0.	47020.	1.	1.000000E-4
41	VF248U1_B	2	1.	0.9	0.	47020.	1.	1.000000E-4
42	VF248U1_C	2	1.	0.9	0.	47020.	1.	1.000000E-4
43	VF248U1_D	2	1.	0.9	0.	47020.	1.	1.000000E-4
44	VF248U1_E	2	1.	0.9	0.	47020.	1.	1.000000E-4
45	VF248U1_F	2	1.	0.9	0.	47020.	1.	1.000000E-4
46	VF278U1_A	2	1.	0.9	0.	47020.	1.	1.000000E-4
47	VF278U1_B	2	1.	0.9	0.	47020.	1.	1.000000E-4
48	VF278U1_C	2	1.	0.9	0.	47020.	1.	1.000000E-4
49	VF278U1_D	2	1.	0.9	0.	47020.	1.	1.000000E-4

(row)	APER_NAME	DET_NUM	BASE_VALUE_P	BASE_VALUE_E	BASE_TEMP	BASE_TIME	A00	A01
50	VCLRV_A	3	1.	0.9	0.	47020.	1.	1.000000E-4
51	VCLRV_B	3	1.	0.9	0.	47020.	1.	1.000000E-4
52	VCLRV_C	3	1.	0.9	0.	47020.	1.	1.000000E-4
53	VCLRV_D	3	1.	0.9	0.	47020.	1.	1.000000E-4
54	VCLRV_E	3	1.	0.9	0.	47020.	1.	1.000000E-4
55	VCLRV_F	3	1.	0.9	0.	47020.	1.	1.000000E-4
56	VCLRV_J	3	1.	0.9	0.	47020.	1.	1.000000E-4
57	VCLRV_H	3	1.	0.9	0.	47020.	1.	1.000000E-4
58	VCLRV_T	3	1.	0.9	0.	47020.	1.	1.000000E-4
59	VCLRV_S	3	1.	0.9	0.	47020.	1.	1.000000E-4
60	VF184V_A	3	1.	0.9	0.	47020.	1.	1.000000E-4
61	VF184V_B	3	1.	0.9	0.	47020.	1.	1.000000E-4
62	VF184V_C	3	1.	0.9	0.	47020.	1.	1.000000E-4
63	VF184V_D	3	1.	0.9	0.	47020.	1.	1.000000E-4
64	VF240V_A	3	1.	0.9	0.	47020.	1.	1.000000E-4
65	VF240V_B	3	1.	0.9	0.	47020.	1.	1.000000E-4
66	VF240V_C	3	1.	0.9	0.	47020.	1.	1.000000E-4
67	VF240V_D	3	1.	0.9	0.	47020.	1.	1.000000E-4
68	VF240V_E	3	1.	0.9	0.	47020.	1.	1.000000E-4
69	VF240V_F	3	1.	0.9	0.	47020.	1.	1.000000E-4
70	VF262V_A	3	1.	0.9	0.	47020.	1.	1.000000E-4
71	VF262V_B	3	1.	0.9	0.	47020.	1.	1.000000E-4
72	VF262V_C	3	1.	0.9	0.	47020.	1.	1.000000E-4
73	VF262V_D	3	1.	0.9	0.	47020.	1.	1.000000E-4
74	VF355V_A	3	1.	0.9	0.	47020.	1.	1.000000E-4
75	VF355V_B	3	1.	0.9	0.	47020.	1.	1.000000E-4
76	VF355V_C	3	1.	0.9	0.	47020.	1.	1.000000E-4
77	VF355V_D	3	1.	0.9	0.	47020.	1.	1.000000E-4
78	VF400V_A	3	1.	0.9	0.	47020.	1.	1.000000E-4
79	VF400V_B	3	1.	0.9	0.	47020.	1.	1.000000E-4
80	VF400V_D	3	1.	0.9	0.	47020.	1.	1.000000E-4
81	VF419V_A	3	1.	0.9	0.	47020.	1.	1.000000E-4
82	VF419V_B	3	1.	0.9	0.	47020.	1.	1.000000E-4
83	VF419V_C	3	1.	0.9	0.	47020.	1.	1.000000E-4
84	VF419V_D	3	1.	0.9	0.	47020.	1.	1.000000E-4
85	VF450V_A	3	1.	0.9	0.	47020.	1.	1.000000E-4
86	VF450V_B	3	1.	0.9	0.	47020.	1.	1.000000E-4
87	VF450V_C	3	1.	0.9	0.	47020.	1.	1.000000E-4
88	VF450V_D	3	1.	0.9	0.	47020.	1.	1.000000E-4
89	VF551V_A	3	1.	0.9	0.	47020.	1.	1.000000E-4
90	VF551V_B	3	1.	0.9	0.	47020.	1.	1.000000E-4
91	VF551V_C	3	1.	0.9	0.	47020.	1.	1.000000E-4
92	VF551V_D	3	1.	0.9	0.	47020.	1.	1.000000E-4
93	VF551V_E	3	1.	0.9	0.	47020.	1.	1.000000E-4
94	VF551V_F	3	1.	0.9	0.	47020.	1.	1.000000E-4
95	VF620V_A	3	1.	0.9	0.	47020.	1.	1.000000E-4
96	VF620V_B	3	1.	0.9	0.	47020.	1.	1.000000E-4
97	VF620V_C	3	1.	0.9	0.	47020.	1.	1.000000E-4
98	VF620V_D	3	1.	0.9	0.	47020.	1.	1.000000E-4

(row)	APER_NAME	DET_NUM	BASE_VALUE_P	BASE_VALUE_E	BASE_TEMP	BASE_TIME	A00	A01
99	VCLRU2_A	4	1.	0.9	0.	47020.	1.	1.000000E-4
100	VCLRU2_B	4	1.	0.9	0.	47020.	1.	1.000000E-4
101	VCLRU2_D	4	1.	0.9	0.	47020.	1.	1.000000E-4
102	VCLRU2_F	4	1.	0.9	0.	47020.	1.	1.000000E-4
103	VCLRU2_T	4	1.	0.9	0.	47020.	1.	1.000000E-4
104	VCLRU2_S	4	1.	0.9	0.	47020.	1.	1.000000E-4
105	VF122U2_A	4	1.	0.9	0.	47020.	1.	1.000000E-4
106	VF122U2_B	4	1.	0.9	0.	47020.	1.	1.000000E-4
107	VF122U2_D	4	1.	0.9	0.	47020.	1.	1.000000E-4
108	VF145U2_A	4	1.	0.9	0.	47020.	1.	1.000000E-4
109	VF145U2_B	4	1.	0.9	0.	47020.	1.	1.000000E-4
110	VF145U2_C	4	1.	0.9	0.	47020.	1.	1.000000E-4
111	VF145U2_D	4	1.	0.9	0.	47020.	1.	1.000000E-4
112	VF145U2_E	4	1.	0.9	0.	47020.	1.	1.000000E-4
113	VF145U2_F	4	1.	0.9	0.	47020.	1.	1.000000E-4
114	VF152U2_A	4	1.	0.9	0.	47020.	1.	1.000000E-4
115	VF152U2_B	4	1.	0.9	0.	47020.	1.	1.000000E-4
116	VF152U2_C	4	1.	0.9	0.	47020.	1.	1.000000E-4
117	VF152U2_D	4	1.	0.9	0.	47020.	1.	1.000000E-4
118	VF160U2_A	4	1.	0.9	0.	47020.	1.	1.000000E-4
119	VF160U2_B	4	1.	0.9	0.	47020.	1.	1.000000E-4
120	VF160U2_C	4	1.	0.9	0.	47020.	1.	1.000000E-4
121	VF160U2_D	4	1.	0.9	0.	47020.	1.	1.000000E-4
122	VF179U2_A	4	1.	0.9	0.	47020.	1.	1.000000E-4
123	VF179U2_B	4	1.	0.9	0.	47020.	1.	1.000000E-4
124	VF179U2_C	4	1.	0.9	0.	47020.	1.	1.000000E-4
125	VF179U2_D	4	1.	0.9	0.	47020.	1.	1.000000E-4
126	VF184U2_A	4	1.	0.9	0.	47020.	1.	1.000000E-4
127	VF184U2_B	4	1.	0.9	0.	47020.	1.	1.000000E-4
128	VF184U2_C	4	1.	0.9	0.	47020.	1.	1.000000E-4
129	VF184U2_D	4	1.	0.9	0.	47020.	1.	1.000000E-4
130	VF218U2_A	4	1.	0.9	0.	47020.	1.	1.000000E-4
131	VF218U2_B	4	1.	0.9	0.	47020.	1.	1.000000E-4
132	VF218U2_C	4	1.	0.9	0.	47020.	1.	1.000000E-4
133	VF218U2_D	4	1.	0.9	0.	47020.	1.	1.000000E-4
134	VF248U2_A	4	1.	0.9	0.	47020.	1.	1.000000E-4
135	VF248U2_B	4	1.	0.9	0.	47020.	1.	1.000000E-4
136	VF248U2_C	4	1.	0.9	0.	47020.	1.	1.000000E-4
137	VF248U2_D	4	1.	0.9	0.	47020.	1.	1.000000E-4
138	VF262U2_A	4	1.	0.9	0.	47020.	1.	1.000000E-4
139	VF262U2_B	4	1.	0.9	0.	47020.	1.	1.000000E-4
140	VF278U2_A	4	1.	0.9	0.	47020.	1.	1.000000E-4
141	VF278U2_B	4	1.	0.9	0.	47020.	1.	1.000000E-4
142	VF278U2_C	4	1.	0.9	0.	47020.	1.	1.000000E-4
143	VF278U2_D	4	1.	0.9	0.	47020.	1.	1.000000E-4
144	VF284U2_A	4	1.	0.9	0.	47020.	1.	1.000000E-4
145	VF284U2_B	4	1.	0.9	0.	47020.	1.	1.000000E-4
146	VF284U2_C	4	1.	0.9	0.	47020.	1.	1.000000E-4
147	VF284U2_D	4	1.	0.9	0.	47020.	1.	1.000000E-4

(row)	APER_NAME	DET_NUM	BASE_VALUE_P	BASE_VALUE_E	BASE_TEMP	BASE_TIME	A00	A01
148	VPCLR_A	1	1.	1.	0.	47020.	1.	1.000000E-4
149	VPCLR_T	1	1.	1.	0.	47020.	1.	1.000000E-4
150	VPCLR_S	1	1.	1.	0.	47020.	1.	1.000000E-4
151	VPCLR_C	1	1.	1.	0.	47020.	1.	1.000000E-4
152	VF216P0	1	1.	1.	0.	47020.	1.	1.000000E-4
153	VF216P90	1	1.	1.	0.	47020.	1.	1.000000E-4
154	VF216P45	1	1.	1.	0.	47020.	1.	1.000000E-4
155	VF216P135	1	1.	1.	0.	47020.	1.	1.000000E-4
156	VF237P0	1	1.	1.	0.	47020.	1.	1.000000E-4
157	VF237P90	1	1.	1.	0.	47020.	1.	1.000000E-4
158	VF237P45	1	1.	1.	0.	47020.	1.	1.000000E-4
159	VF237P135	1	1.	1.	0.	47020.	1.	1.000000E-4
160	VF277P0	1	1.	1.	0.	47020.	1.	1.000000E-4
161	VF277P90	1	1.	1.	0.	47020.	1.	1.000000E-4
162	VF277P45	1	1.	1.	0.	47020.	1.	1.000000E-4
163	VF277P135	1	1.	1.	0.	47020.	1.	1.000000E-4
164	VF327P0	1	1.	1.	0.	47020.	1.	1.000000E-4
165	VF327P90	1	1.	1.	0.	47020.	1.	1.000000E-4
166	VF327P45	1	1.	1.	0.	47020.	1.	1.000000E-4
167	VF327P135	1	1.	1.	0.	47020.	1.	1.000000E-4
168	VF750_F320	3	1.	1.	0.	47020.	1.	1.000000E-4
169	VF750_F320	5	1.	1.	0.	47020.	1.	1.000000E-4

(row)	A02	A03	A10	A11	A12	A13	A20	A21
1	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
2	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
3	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
4	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
5	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
6	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
7	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
8	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
9	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
10	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
11	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
12	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
13	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
14	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
15	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
16	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
17	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
18	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
19	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
20	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
21	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
22	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
23	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
24	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
25	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
26	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
27	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
28	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
29	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
30	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
31	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
32	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
33	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
34	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
35	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
36	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
37	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
38	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
39	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
40	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
41	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
42	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
43	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
44	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
45	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
46	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
47	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
48	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
49	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6

(row)	A02	A03	A10	A11	A12	A13	A20	A21
50	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
51	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
52	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
53	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
54	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
55	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
56	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
57	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
58	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
59	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
60	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
61	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
62	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
63	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
64	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
65	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
66	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
67	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
68	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
69	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
70	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
71	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
72	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
73	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
74	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
75	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
76	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
77	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
78	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
79	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
80	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
81	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
82	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
83	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
84	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
85	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
86	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
87	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
88	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
89	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
90	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
91	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
92	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
93	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
94	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
95	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
96	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
97	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
98	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6

(row)	A02	A03	A10	A11	A12	A13	A20	A21
99	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
100	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
101	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
102	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
103	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
104	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
105	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
106	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
107	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
108	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
109	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
110	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
111	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
112	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
113	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
114	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
115	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
116	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
117	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
118	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
119	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
120	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
121	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
122	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
123	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
124	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
125	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
126	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
127	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
128	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
129	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
130	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
131	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
132	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
133	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
134	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
135	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
136	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
137	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
138	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
139	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
140	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
141	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
142	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
143	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
144	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
145	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
146	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
147	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6

(row)	A02	A03	A10	A11	A12	A13	A20	A21
148	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
149	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
150	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
151	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
152	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
153	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
154	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
155	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
156	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
157	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
158	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
159	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
160	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
161	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
162	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
163	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
164	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
165	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
166	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
167	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
168	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6
169	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001	1.000000E-6

(row)	A22	A23	A30	A31	A32	A33
1	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
2	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
3	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
4	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
5	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
7	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
8	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
9	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
10	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
11	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
12	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
13	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
14	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
15	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
16	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
17	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
18	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
19	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
20	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
21	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
22	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
23	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
24	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
25	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
26	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
27	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
28	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
29	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
30	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
31	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
32	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
33	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
34	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
35	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
36	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
37	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
38	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
39	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
40	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
41	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
42	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
43	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
44	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
45	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
46	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
47	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
48	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
49	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13

(row)	A22	A23	A30	A31	A32	A33
50	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
51	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
52	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
53	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
54	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
55	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
56	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
57	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
58	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
59	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
60	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
61	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
62	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
63	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
64	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
65	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
66	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
67	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
68	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
69	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
70	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
71	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
72	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
73	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
74	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
75	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
76	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
77	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
78	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
79	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
80	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
81	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
82	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
83	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
84	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
85	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
86	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
87	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
88	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
89	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
90	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
91	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
92	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
93	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
94	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
95	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
96	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
97	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
98	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13

(row)	A22	A23	A30	A31	A32	A33
99	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
100	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
101	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
102	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
103	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
104	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
105	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
106	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
107	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
108	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
109	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
110	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
111	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
112	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
113	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
114	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
115	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
116	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
117	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
118	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
119	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
120	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
121	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
122	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
123	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
124	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
125	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
126	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
127	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
128	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
129	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
130	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
131	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
132	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
133	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
134	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
135	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
136	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
137	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
138	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
139	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
140	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
141	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
142	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
143	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
144	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
145	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
146	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
147	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13

(row)	A22	A23	A30	A31	A32	A33
148	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
149	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
150	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
151	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
152	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
153	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
154	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
155	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
156	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
157	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
158	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
159	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
160	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
161	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
162	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
163	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
164	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
165	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
166	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
167	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
168	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
169	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13

Table ccp5.tab Mon 10:22:53 06-Nov-89

(row)	APER_NAME	TYPE	VOLTAGE	BASE_VALUE	BASE_TEMP	BASE_TIME	A00	A01
1	VDARKP_A	ANALOG	0.	0.015	0.	47020.	1.	1.000000E-4
2	VDARKP_A	DIGITAL	0.	0.01	0.	47020.	1.	1.000000E-4
3	VDARKP_A	ANALOG	80.	0.15	0.	47020.	1.	1.000000E-4
4	VDARKP_A	DIGITAL	80.	0.1	0.	47020.	1.	1.000000E-4
5	VDARKP_A	ANALOG	110.	0.15	0.	47020.	1.	1.000000E-4
6	VDARKP_A	DIGITAL	110.	0.1	0.	47020.	1.	1.000000E-4
7	VDARKP_A	ANALOG	143.	0.15	0.	47020.	1.	1.000000E-4
8	VDARKP_A	DIGITAL	143.	0.1	0.	47020.	1.	1.000000E-4
9	VDARKP_B	ANALOG	0.	0.015	0.	47020.	1.	1.000000E-4
10	VDARKP_B	DIGITAL	0.	0.01	0.	47020.	1.	1.000000E-4
11	VDARKP_B	ANALOG	80.	0.15	0.	47020.	1.	1.000000E-4
12	VDARKP_B	DIGITAL	80.	0.1	0.	47020.	1.	1.000000E-4
13	VDARKP_B	ANALOG	110.	0.15	0.	47020.	1.	1.000000E-4
14	VDARKP_B	DIGITAL	110.	0.1	0.	47020.	1.	1.000000E-4
15	VDARKP_B	ANALOG	143.	0.15	0.	47020.	1.	1.000000E-4
16	VDARKP_B	DIGITAL	143.	0.1	0.	47020.	1.	1.000000E-4
17	VDARKP_C	ANALOG	0.	0.015	0.	47020.	1.	1.000000E-4
18	VDARKP_C	DIGITAL	0.	0.01	0.	47020.	1.	1.000000E-4
19	VDARKP_C	ANALOG	80.	0.15	0.	47020.	1.	1.000000E-4
20	VDARKP_C	DIGITAL	80.	0.1	0.	47020.	1.	1.000000E-4
21	VDARKP_C	ANALOG	110.	0.15	0.	47020.	1.	1.000000E-4
22	VDARKP_C	DIGITAL	110.	0.1	0.	47020.	1.	1.000000E-4
23	VDARKP_C	ANALOG	143.	0.15	0.	47020.	1.	1.000000E-4
24	VDARKP_C	DIGITAL	143.	0.1	0.	47020.	1.	1.000000E-4
25	VDARKU1_A	ANALOG	0.	0.025	0.	47020.	1.	1.000000E-4
26	VDARKU1_A	DIGITAL	0.	0.02	0.	47020.	1.	1.000000E-4
27	VDARKU1_A	ANALOG	166.	0.25	0.	47020.	1.	1.000000E-4
28	VDARKU1_A	DIGITAL	166.	0.2	0.	47020.	1.	1.000000E-4
29	VDARKU1_A	ANALOG	203.	0.25	0.	47020.	1.	1.000000E-4
30	VDARKU1_A	DIGITAL	203.	0.2	0.	47020.	1.	1.000000E-4
31	VDARKU1_A	ANALOG	244.	0.25	0.	47020.	1.	1.000000E-4
32	VDARKU1_A	DIGITAL	244.	0.2	0.	47020.	1.	1.000000E-4
33	VDARKU1_B	ANALOG	0.	0.025	0.	47020.	1.	1.000000E-4
34	VDARKU1_B	DIGITAL	0.	0.02	0.	47020.	1.	1.000000E-4
35	VDARKU1_B	ANALOG	166.	0.25	0.	47020.	1.	1.000000E-4
36	VDARKU1_B	DIGITAL	166.	0.2	0.	47020.	1.	1.000000E-4
37	VDARKU1_B	ANALOG	203.	0.25	0.	47020.	1.	1.000000E-4
38	VDARKU1_B	DIGITAL	203.	0.2	0.	47020.	1.	1.000000E-4
39	VDARKU1_B	ANALOG	244.	0.25	0.	47020.	1.	1.000000E-4
40	VDARKU1_B	DIGITAL	244.	0.2	0.	47020.	1.	1.000000E-4

(row)	APER_NAME	TYPE	VOLTAGE	BASE_VALUE	BASE_TEMP	BASE_TIME	A00	A01
41	VDARKU1_C	ANALOG	0.	0.025	0.	47020.	1.	1.000000E-4
42	VDARKU1_C	DIGITAL	0.	0.02	0.	47020.	1.	1.000000E-4
43	VDARKU1_C	ANALOG	166.	0.25	0.	47020.	1.	1.000000E-4
44	VDARKU1_C	DIGITAL	166.	0.2	0.	47020.	1.	1.000000E-4
45	VDARKU1_C	ANALOG	203.	0.25	0.	47020.	1.	1.000000E-4
46	VDARKU1_C	DIGITAL	203.	0.2	0.	47020.	1.	1.000000E-4
47	VDARKU1_C	ANALOG	244.	0.25	0.	47020.	1.	1.000000E-4
48	VDARKU1_C	DIGITAL	244.	0.2	0.	47020.	1.	1.000000E-4
49	VDARKV_A	ANALOG	0.	0.035	0.	47020.	1.	1.000000E-4
50	VDARKV_A	DIGITAL	0.	0.03	0.	47020.	1.	1.000000E-4
51	VDARKV_A	ANALOG	124.	0.35	0.	47020.	1.	1.000000E-4
52	VDARKV_A	DIGITAL	124.	0.3	0.	47020.	1.	1.000000E-4
53	VDARKV_A	ANALOG	156.	0.35	0.	47020.	1.	1.000000E-4
54	VDARKV_A	DIGITAL	156.	0.3	0.	47020.	1.	1.000000E-4
55	VDARKV_A	ANALOG	192.	0.35	0.	47020.	1.	1.000000E-4
56	VDARKV_A	DIGITAL	192.	0.3	0.	47020.	1.	1.000000E-4
57	VDARKV_B	ANALOG	0.	0.035	0.	47020.	1.	1.000000E-4
58	VDARKV_B	DIGITAL	0.	0.03	0.	47020.	1.	1.000000E-4
59	VDARKV_B	ANALOG	124.	0.35	0.	47020.	1.	1.000000E-4
60	VDARKV_B	DIGITAL	124.	0.3	0.	47020.	1.	1.000000E-4
61	VDARKV_B	ANALOG	156.	0.35	0.	47020.	1.	1.000000E-4
62	VDARKV_B	DIGITAL	156.	0.3	0.	47020.	1.	1.000000E-4
63	VDARKV_B	ANALOG	192.	0.35	0.	47020.	1.	1.000000E-4
64	VDARKV_B	DIGITAL	192.	0.3	0.	47020.	1.	1.000000E-4
65	VDARKV_C	ANALOG	0.	0.035	0.	47020.	1.	1.000000E-4
66	VDARKV_C	DIGITAL	0.	0.03	0.	47020.	1.	1.000000E-4
67	VDARKV_C	ANALOG	124.	0.35	0.	47020.	1.	1.000000E-4
68	VDARKV_C	DIGITAL	124.	0.3	0.	47020.	1.	1.000000E-4
69	VDARKV_C	ANALOG	156.	0.35	0.	47020.	1.	1.000000E-4
70	VDARKV_C	DIGITAL	156.	0.3	0.	47020.	1.	1.000000E-4
71	VDARKV_C	ANALOG	192.	0.35	0.	47020.	1.	1.000000E-4
72	VDARKV_C	DIGITAL	192.	0.3	0.	47020.	1.	1.000000E-4
73	VDARKU2_A	ANALOG	0.	0.045	0.	47020.	1.	1.000000E-4
74	VDARKU2_A	DIGITAL	0.	0.04	0.	47020.	1.	1.000000E-4
75	VDARKU2_A	ANALOG	5.	0.45	0.	47020.	1.	1.000000E-4
76	VDARKU2_A	DIGITAL	5.	0.4	0.	47020.	1.	1.000000E-4
77	VDARKU2_A	ANALOG	11.	0.45	0.	47020.	1.	1.000000E-4
78	VDARKU2_A	DIGITAL	11.	0.4	0.	47020.	1.	1.000000E-4
79	VDARKU2_A	ANALOG	49.	0.45	0.	47020.	1.	1.000000E-4
80	VDARKU2_A	DIGITAL	49.	0.4	0.	47020.	1.	1.000000E-4

(row)	APER_NAME	TYPE	VOLTAGE	BASE_VALUE	BASE_TEMP	BASE_TIME	A00	A01
81	VDARKU2_B	ANALOG	0.	0.045	0.	47020.	1.	1.000000E-4
82	VDARKU2_B	DIGITAL	0.	0.04	0.	47020.	1.	1.000000E-4
83	VDARKU2_B	ANALOG	5.	0.45	0.	47020.	1.	1.000000E-4
84	VDARKU2_B	DIGITAL	5.	0.4	0.	47020.	1.	1.000000E-4
85	VDARKU2_B	ANALOG	11.	0.45	0.	47020.	1.	1.000000E-4
86	VDARKU2_B	DIGITAL	11.	0.4	0.	47020.	1.	1.000000E-4
87	VDARKU2_B	ANALOG	49.	0.45	0.	47020.	1.	1.000000E-4
88	VDARKU2_B	DIGITAL	49.	0.4	0.	47020.	1.	1.000000E-4
89	VDARKU2_C	ANALOG	0.	0.045	0.	47020.	1.	1.000000E-4
90	VDARKU2_C	DIGITAL	0.	0.04	0.	47020.	1.	1.000000E-4
91	VDARKU2_C	ANALOG	5.	0.45	0.	47020.	1.	1.000000E-4
92	VDARKU2_C	DIGITAL	5.	0.4	0.	47020.	1.	1.000000E-4
93	VDARKU2_C	ANALOG	11.	0.45	0.	47020.	1.	1.000000E-4
94	VDARKU2_C	DIGITAL	11.	0.4	0.	47020.	1.	1.000000E-4
95	VDARKU2_C	ANALOG	49.	0.45	0.	47020.	1.	1.000000E-4
96	VDARKU2_C	DIGITAL	49.	0.4	0.	47020.	1.	1.000000E-4
97	VDARKPMT	ANALOG	0.	0.055	0.	47020.	1.	1.000000E-4
98	VDARKPMT	DIGITAL	0.	0.05	0.	47020.	1.	1.000000E-4
99	VDARKPMT	ANALOG	152.	0.55	0.	47020.	1.	1.000000E-4
100	VDARKPMT	DIGITAL	152.	0.5	0.	47020.	1.	1.000000E-4
101	VDARKPMT	ANALOG	168.	0.55	0.	47020.	1.	1.000000E-4
102	VDARKPMT	DIGITAL	168.	0.5	0.	47020.	1.	1.000000E-4
103	VDARKPMT	ANALOG	187.	0.55	0.	47020.	1.	1.000000E-4
104	VDARKPMT	DIGITAL	187.	0.5	0.	47020.	1.	1.000000E-4

(row)	A02	A03	A10	A11	A12	A13	A20
1	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
2	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
3	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
4	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
5	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
6	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
7	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
8	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
9	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
10	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
11	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
12	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
13	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
14	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
15	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
16	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
17	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
18	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
19	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
20	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
21	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
22	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
23	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
24	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
25	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
26	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
27	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
28	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
29	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
30	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
31	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
32	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
33	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
34	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
35	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
36	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
37	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
38	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
39	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
40	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001

(row)	A02	A03	A10	A11	A12	A13	A20
41	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
42	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
43	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
44	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
45	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
46	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
47	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
48	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
49	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
50	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
51	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
52	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
53	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
54	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
55	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
56	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
57	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
58	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
59	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
60	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
61	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
62	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
63	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
64	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
65	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
66	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
67	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
68	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
69	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
70	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
71	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
72	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
73	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
74	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
75	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
76	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
77	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
78	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
79	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
80	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001

(row)	A02	A03	A10	A11	A12	A13	A20
81	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
82	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
83	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
84	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
85	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
86	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
87	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
88	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
89	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
90	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
91	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
92	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
93	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
94	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
95	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
96	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
97	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
98	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
99	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
100	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
101	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
102	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
103	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
104	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001

(row)	A21	A22	A23	A30	A31	A32	A33
1	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
2	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
3	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
4	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
5	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
6	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
7	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
8	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
9	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
10	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
11	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
12	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
13	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
14	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
15	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
16	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
17	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
18	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
19	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
20	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
21	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
22	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
23	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
24	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
25	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
26	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
27	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
28	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
29	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
30	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
31	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
32	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
33	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
34	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
35	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
36	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
37	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
38	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
39	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
40	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13

(row)	A21	A22	A23	A30	A31	A32	A33
41	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
42	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
43	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
44	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
45	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
46	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
47	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
48	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
49	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
50	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
51	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
52	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
53	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
54	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
55	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
56	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
57	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
58	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
59	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
60	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
61	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
62	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
63	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
64	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
65	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
66	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
67	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
68	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
69	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
70	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
71	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
72	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
73	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
74	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
75	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
76	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
77	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
78	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
79	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
80	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13

(row)	A21	A22	A23	A30	A31	A32	A33
81	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
82	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
83	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
84	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
85	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
86	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
87	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
88	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
89	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
90	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
91	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
92	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
93	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
94	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
95	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
96	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
97	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
98	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
99	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
100	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
101	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
102	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
103	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
104	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13

Table ccp7.tab Mon 10:23:08 06-Nov-89

(row)	DET_NUM	VGAIND	BASE_VALUE	BASE_TEMP	BASE_TIME	A00	A01
1	1	0.	210.	0.	47020.	1.	1.000000E-4
2	1	2.	212.	0.	47020.	1.	1.000000E-4
3	1	3.	213.	0.	47020.	1.	1.000000E-4
4	1	6.	216.	0.	47020.	1.	1.000000E-4
5	1	7.	217.	0.	47020.	1.	1.000000E-4
6	2	0.	220.	0.	47020.	1.	1.000000E-4
7	2	2.	222.	0.	47020.	1.	1.000000E-4
8	2	3.	223.	0.	47020.	1.	1.000000E-4
9	2	6.	226.	0.	47020.	1.	1.000000E-4
10	2	7.	227.	0.	47020.	1.	1.000000E-4
11	3	0.	230.	0.	47020.	1.	1.000000E-4
12	3	2.	232.	0.	47020.	1.	1.000000E-4
13	3	3.	233.	0.	47020.	1.	1.000000E-4
14	3	6.	236.	0.	47020.	1.	1.000000E-4
15	3	7.	237.	0.	47020.	1.	1.000000E-4
16	4	0.	240.	0.	47020.	1.	1.000000E-4
17	4	2.	242.	0.	47020.	1.	1.000000E-4
18	4	3.	243.	0.	47020.	1.	1.000000E-4
19	4	6.	246.	0.	47020.	1.	1.000000E-4
20	4	7.	247.	0.	47020.	1.	1.000000E-4
21	5	0.	250.	0.	47020.	1.	1.000000E-4
22	5	2.	252.	0.	47020.	1.	1.000000E-4
23	5	3.	253.	0.	47020.	1.	1.000000E-4
24	5	6.	256.	0.	47020.	1.	1.000000E-4
25	5	7.	257.	0.	47020.	1.	1.000000E-4

(row)	A02	A03	A10	A11	A12	A13	A20
1	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
2	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
3	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
4	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
5	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
6	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
7	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
8	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
9	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
10	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
11	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
12	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
13	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
14	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
15	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
16	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
17	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
18	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
19	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
20	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
21	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
22	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
23	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
24	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001
25	1.000000E-7	1.000000E-10	0.05	1.000000E-5	1.000000E-8	1.000000E-11	0.001

(row)	A21	A22	A23	A30	A31	A32	A33
1	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
2	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
3	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
4	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
5	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
6	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
7	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
8	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
9	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
10	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
11	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
12	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
13	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
14	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
15	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
16	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
17	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
18	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
19	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
20	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
21	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
22	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
23	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
24	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13
25	1.000000E-6	1.000000E-9	1.000000E-12	1.000000E-4	1.000000E-7	1.000000E-10	1.000000E-13

Table ccp8.tab Mon 10:23:21 06-Nov-89

(row)	DET_NUM	VOLTAGE	THRESH	BASE_VALUE	A1	BASE_TEMP
1	1	0.	6.	1.100000E-8	1.000000E-10	0.
2	1	143.	6.	4.100000E-8	1.000000E-10	0.
3	1	110.	6.	3.100000E-8	1.000000E-10	0.
4	1	80.	6.	2.100000E-8	1.000000E-10	0.
5	2	0.	6.	1.200000E-8	1.000000E-10	0.
6	2	244.	6.	4.200000E-8	1.000000E-10	0.
7	2	203.	6.	3.200000E-8	1.000000E-10	0.
8	2	166.	6.	2.200000E-8	1.000000E-10	0.
9	3	0.	6.	1.300000E-8	1.000000E-10	0.
10	3	192.	6.	4.300000E-8	1.000000E-10	0.
11	3	156.	6.	3.300000E-8	1.000000E-10	0.
12	3	124.	6.	2.300000E-8	1.000000E-10	0.
13	4	0.	4.	1.400000E-8	1.000000E-10	0.
14	4	49.	4.	4.400000E-8	1.000000E-10	0.
15	4	11.	4.	3.400000E-8	1.000000E-10	0.
16	4	5.	4.	2.400000E-8	1.000000E-10	0.
17	5	0.	20.	1.500000E-8	1.000000E-10	0.
18	5	187.	20.	4.500000E-8	1.000000E-10	0.
19	5	168.	20.	3.500000E-8	1.000000E-10	0.
20	5	152.	20.	2.500000E-8	1.000000E-10	0.

Table ccp9.tab Mon 10:23:33 06-Nov-89

(row)	APER_NAME	DARK_APER	DET_NUM
1	VCLRU1_A	VDARKU1_A	2
2	VCLRU1_B	VDARKU1_A	2
3	VCLRU1_D	VDARKU1_A	2
4	VCLRU1_F	VDARKU1_A	2
5	VCLRU1_T	VDARKU1_A	2
6	VCLRU1_S	VDARKU1_A	2
7	VF122U1_A	VDARKU1_A	2
8	VF122U1_B	VDARKU1_A	2
9	VF122U1_D	VDARKU1_A	2
10	VF135U1_A	VDARKU1_A	2
11	VF135U1_B	VDARKU1_A	2
12	VF135U1_C	VDARKU1_A	2
13	VF135U1_D	VDARKU1_A	2
14	VF135U1_E	VDARKU1_A	2
15	VF135U1_F	VDARKU1_A	2
16	VF145U1_A	VDARKU1_A	2
17	VF145U1_B	VDARKU1_A	2
18	VF145U1_C	VDARKU1_A	2
19	VF145U1_D	VDARKU1_A	2
20	VF152U1_A	VDARKU1_B	2
21	VF152U1_B	VDARKU1_B	2
22	VF152U1_C	VDARKU1_B	2
23	VF152U1_D	VDARKU1_B	2
24	VF184U1_A	VDARKU1_B	2
25	VF184U1_B	VDARKU1_B	2
26	VF184U1_C	VDARKU1_B	2
27	VF184U1_D	VDARKU1_B	2
28	VF218U1_A	VDARKU1_B	2
29	VF218U1_B	VDARKU1_B	2
30	VF218U1_C	VDARKU1_B	2
31	VF218U1_D	VDARKU1_B	2
32	VF220U1_A	VDARKU1_B	2
33	VF220U1_B	VDARKU1_B	2
34	VF220U1_C	VDARKU1_B	2
35	VF220U1_D	VDARKU1_B	2
36	VF240U1_A	VDARKU1_C	2
37	VF240U1_B	VDARKU1_C	2
38	VF240U1_C	VDARKU1_C	2
39	VF240U1_D	VDARKU1_C	2
40	VF248U1_A	VDARKU1_C	2
41	VF248U1_B	VDARKU1_C	2
42	VF248U1_C	VDARKU1_C	2
43	VF248U1_D	VDARKU1_C	2
44	VF248U1_E	VDARKU1_C	2
45	VF248U1_F	VDARKU1_C	2
46	VF278U1_A	VDARKU1_C	2
47	VF278U1_B	VDARKU1_C	2
48	VF278U1_C	VDARKU1_C	2
49	VF278U1_D	VDARKU1_C	2
50	VCLRV_A	VDARKV_A	3
51	VCLRV_B	VDARKV_A	3
52	VCLRV_C	VDARKV_A	3
53	VCLRV_D	VDARKV_A	3
54	VCLRV_E	VDARKV_A	3
55	VCLRV_F	VDARKV_A	3
56	VCLRV_J	VDARKV_A	3
57	VCLRV_H	VDARKV_A	3
58	VCLRV_T	VDARKV_A	3
59	VCLRV_S	VDARKV_A	3
60	VF184V_A	VDARKV_A	3
61	VF184V_B	VDARKV_A	3
62	VF184V_C	VDARKV_A	3
63	VF184V_D	VDARKV_A	3
64	VF240V_A	VDARKV_A	3
65	VF240V_B	VDARKV_A	3
66	VF240V_C	VDARKV_A	3
67	VF240V_D	VDARKV_A	3
68	VF240V_E	VDARKV_A	3
69	VF240V_F	VDARKV_A	3
70	VF262V_A	VDARKV_A	3
71	VF262V_B	VDARKV_A	3
72	VF262V_C	VDARKV_A	3
73	VF262V_D	VDARKV_A	3
74	VF355V_A	VDARKV_B	3
75	VF355V_B	VDARKV_B	3
76	VF355V_C	VDARKV_B	3
77	VF355V_D	VDARKV_B	3
78	VF400V_A	VDARKV_B	3
79	VF400V_B	VDARKV_B	3
80	VF400V_D	VDARKV_B	3
81	VF419V_A	VDARKV_B	3
82	VF419V_B	VDARKV_B	3
83	VF419V_C	VDARKV_B	3
84	VF419V_D	VDARKV_B	3
85	VF450V_A	VDARKV_B	3
86	VF450V_B	VDARKV_B	3
87	VF450V_C	VDARKV_B	3
88	VF450V_D	VDARKV_B	3
89	VF551V_A	VDARKV_C	3
90	VF551V_B	VDARKV_C	3
91	VF551V_C	VDARKV_C	3
92	VF551V_D	VDARKV_C	3
93	VF551V_E	VDARKV_C	3
94	VF551V_F	VDARKV_C	3
95	VF620V_A	VDARKV_C	3
96	VF620V_B	VDARKV_C	3
97	VF620V_C	VDARKV_C	3
98	VF620V_D	VDARKV_C	3
99	VCLRU2_A	VDARKU2_A	4
100	VCLRU2_B	VDARKU2_A	4

(row)	APER_NAME	DARK_APER	DET_NUM
101	VCLRU2_D	VDARKU2_A	4
102	VCLRU2_F	VDARKU2_A	4
103	VCLRU2_T	VDARKU2_A	4
104	VCLRU2_S	VDARKU2_A	4
105	VF122U2_A	VDARKU2_A	4
106	VF122U2_B	VDARKU2_A	4
107	VF122U2_D	VDARKU2_A	4
108	VF145U2_A	VDARKU2_A	4
109	VF145U2_B	VDARKU2_A	4
110	VF145U2_C	VDARKU2_A	4
111	VF145U2_D	VDARKU2_A	4
112	VF145U2_E	VDARKU2_A	4
113	VF145U2_F	VDARKU2_A	4
114	VF152U2_A	VDARKU2_A	4
115	VF152U2_B	VDARKU2_A	4
116	VF152U2_C	VDARKU2_A	4
117	VF152U2_D	VDARKU2_A	4
118	VF160U2_A	VDARKU2_B	4
119	VF160U2_B	VDARKU2_B	4
120	VF160U2_C	VDARKU2_B	4
121	VF160U2_D	VDARKU2_B	4
122	VF179U2_A	VDARKU2_B	4
123	VF179U2_B	VDARKU2_B	4
124	VF179U2_C	VDARKU2_B	4
125	VF179U2_D	VDARKU2_B	4
126	VF184U2_A	VDARKU2_B	4
127	VF184U2_B	VDARKU2_B	4
128	VF184U2_C	VDARKU2_B	4
129	VF184U2_D	VDARKU2_B	4
130	VF218U2_A	VDARKU2_B	4
131	VF218U2_B	VDARKU2_B	4
132	VF218U2_C	VDARKU2_B	4
133	VF218U2_D	VDARKU2_B	4
134	VF248U2_A	VDARKU2_C	4
135	VF248U2_B	VDARKU2_C	4
136	VF248U2_C	VDARKU2_C	4
137	VF248U2_D	VDARKU2_C	4
138	VF262U2_A	VDARKU2_C	4
139	VF262U2_B	VDARKU2_C	4
140	VF278U2_A	VDARKU2_C	4
141	VF278U2_B	VDARKU2_C	4
142	VF278U2_C	VDARKU2_C	4
143	VF278U2_D	VDARKU2_C	4
144	VF284U2_A	VDARKU2_C	4
145	VF284U2_B	VDARKU2_C	4
146	VF284U2_C	VDARKU2_C	4
147	VF284U2_D	VDARKU2_C	4
148	VPCLR_A	VDARKP_A	1
149	VPCLR_T	VDARKP_A	1
150	VPCLR_S	VDARKP_A	1
151	VPCLR_C	VDARKP_A	1
152	VF216P0	VDARKP_A	1
153	VF216P90	VDARKP_A	1
154	VF216P45	VDARKP_A	1
155	VF216P135	VDARKP_A	1
156	VF237P0	VDARKP_A	1
157	VF237P90	VDARKP_A	1
158	VF237P45	VDARKP_A	1
159	VF237P135	VDARKP_A	1
160	VF277P0	VDARKP_B	1
161	VF277P90	VDARKP_B	1
162	VF277P45	VDARKP_B	1
163	VF277P135	VDARKP_B	1
164	VF327P0	VDARKP_C	1
165	VF327P90	VDARKP_C	1
166	VF327P45	VDARKP_C	1
167	VF327P135	VDARKP_C	1
168	VF750_F320	VDARKV_A	3
169	VF750_F320	VDARKPMT	5
170	VDARKP_A	VDARKP_A	1
171	VDARKP_B	VDARKP_B	1
172	VDARKP_C	VDARKP_C	1
173	VDARKU1_A	VDARKU1_A	2
174	VDARKU1_B	VDARKU1_B	2
175	VDARKU1_C	VDARKU1_C	2
176	VDARKV_A	VDARKV_A	3
177	VDARKV_B	VDARKV_B	3
178	VDARKV_C	VDARKV_C	3
179	VDARKU2_A	VDARKU2_A	4
180	VDARKU2_B	VDARKU2_B	4
181	VDARKU2_C	VDARKU2_C	4
182	VDARKPMT	VDARKPMT	5

Appendix D

This appendix contains copies of the HSP data headers for some analog data used to test IRAF v2.8EXPORT in October 1989. Immediately following the appropriate header are partial listings of the raw and calibrated data.

```
SIMPLE  =                    F / data conforms to the fits standard
BITPIX  =                   32 / bits per data value
DATATYPE= 'REAL*4            ' / datatype of the group array
NAXIS   =                    1 / number of dimensions in the group array
NAXIS1  =                  180 / first dimension of the group array
GROUPS  =                    T / data has groups
GCOUNT  =                    1 / number of groups
PCOUNT  =                   14 / number of parameters
PSIZE   =                  960 / bits in the parameter block

                                / GROUP PARAMETERS: OSS
PTYPE1  = 'CRVAL1            ' / time at reference pixel-first packet time
PDTYPE1 = 'REAL*8            ' / data type of parameter 1
PSIZE1  =                   64 / number of bits in parameter 1
PTYPE2  = 'CRVAL2            ' / right ascension of aperture
PDTYPE2 = 'REAL*8            ' / data type of parameter 2
PSIZE2  =                   64 / number of bits in parameter 2
PTYPE3  = 'CRVAL3            ' / declination of aperture
PDTYPE3 = 'REAL*8            ' / data type of parameter 3
PSIZE3  =                   64 / number of bits in parameter 3
PTYPE4  = 'CRPIX1            ' / pixel number of reference pixel
PDTYPE4 = 'REAL*4            ' / data type of parameter 4
PSIZE4  =                   32 / number of bits in parameter 4
PTYPE5  = 'CD1_1             ' / time increment between pixels
PDTYPE5 = 'REAL*4            ' / data type of parameter 5
PSIZE5  =                   32 / number of bits in parameter 5
PTYPE6  = 'DATAMIN           ' / minimum data value in the group
PDTYPE6 = 'REAL*4            ' / datatype of parameter 6
PSIZE6  =                   32 / number of bits in parameter 6
PTYPE7  = 'DATAMAX           ' / maximum data value in the group
PDTYPE7 = 'REAL*4            ' / datatype of parameter 7
PSIZE7  =                   32 / number of bits in parameter 7
PTYPE8  = 'FILLCNT           ' / number of segments containing fill
PDTYPE8 = 'INTEGER*4         ' / datatype of parameter 8
PSIZE8  =                   32 / number of bits in parameter 8
PTYPE9  = 'ERRCNT            ' / number of segments containing errors
PDTYPE9 = 'INTEGER*4         ' / datatype of parameter 9
PSIZE9  =                   32 / number of bits in parameter 9
PTYPE10 = 'FPKTTIME          ' / the time of the first packet
PDTYPE10= 'CHARACTER*24      ' / 64 bit binary time is converted to ascii
PSIZE10 =                  192 / number of bits in parameter 10
PTYPE11 = 'LPKTTIME          ' / the time of the last packet
PDTYPE11= 'CHARACTER*24      ' / 64 bit binary time is converted to ascii
PSIZE11 =                  192 / number of bits in parameter 11
PTYPE12 = 'CTYPE1            ' / the first coordinate type
PDTYPE12= 'CHARACTER*8       ' / data type of parameter 12
PSIZE12 =                   64 / number of bits in parameter 12
PTYPE13 = 'CTYPE2            ' / the second coordinate type
PDTYPE13= 'CHARACTER*8       ' / data type of parameter 13
PSIZE13 =                   64 / number of bits in parameter 13
PTYPE14 = 'CTYPE3            ' / the third coordinate type
PDTYPE14= 'CHARACTER*8       ' / data type of parameter 14
PSIZE14 =                   64 / number of bits in parameter 14

                                / HSP DATA DESCRIPTOR KEYWORDS
INSTRUME= 'HSP               ' / instrument in use
```

```
ROOTNAME= 'pafft              ' / rootname of the observation set
FILETYPE= 'AST                ' / shp, udl, dst, dsk, ast, ask, asd, asa
CTYPE1  = 'TIME               ' / unitless, line, pixel, channel, sample, time
NSEGPGRP=                     0 / not computed - used only by OSS
BUNIT   = 'COUNTS             ' / units of calibrated data

                                / CALIBRATION FLAGS AND INDICATORS
MODE    = 'SCP                ' / instrument mode SCP, SSP, ARS
DETECTOB=                     3 / detector in use (0-5) - object data
DETECTSK=                     4 / detector in use (0-5) - sky data
PTSRCFLG= 'P                  ' / point source flag (P=point, E=extended)
APERTOBJ= 'VF262V_B           ' / aperture in use - object data
APERTSKY= 'VF262U2_B          ' / aperture in use - sky data

                                / CALIBRATION SWITCHES: perform,omit,complete
DET_CHR = 'PERFORM            ' / retrieve detector characteristics
DEADTIME= 'OMIT               ' / deadtime correction
TRUE_CNT= 'OMIT               ' / compute the true count rates
TRUE_PHC= 'PERFORM            ' / compute the true photocurrents

                                / CALIBRATION KEYWORDS
DATA_TYP= 'ANALOG             ' / data type: digital, analog
DATA_SRC= 'STAR               ' / data source: star, sky, area scan
DATA_FMT= 'ALOG               ' / data format: byte, word, lwrd, alog, all
WORDS   =                   180 / number of HSP samples in a line
LINES   =                     1 / number of lines in a group
INT_TIME=               1023872 / time of integration (in 1/1.024 microseconds)
TIMEBIAS=                   100 / instrument time bias (in 1/1.024 microseconds)
SAMPTIME=        0.9863282E-04 / time of integration (in seconds)
DELAY   =                     0 / delay between integrations (in 1/1.024 usec.)
DETECTOR=                     3 / detector used
APERTURE= 'VF262V_B           ' / name of the aperture used
APERAREA=  0.0000000000000E+00 / aperarea
BDEXPFLG=                     1 / bus director expander flag
PT_EFFIC=        0.0000000E+00 / scaled point source cathode efficiency
EX_EFFIC=        0.0000000E+00 / scaled extended source cathode efficiency
DARKRATE=        0.0000000E+00 / scaled cathode dark rate
PRE_AMP =        0.0000000E+00 / scaled tube pre-amp contribution
HIGHVOLT=        0.0000000E+00 / scaled high voltage
TUBEGAIN=        0.0000000E+00 / scaled tube gain
DEADTM  =  0.0000000000000E+00 / deadtime
TAU1    =  0.0000000000000E+00 / natural response time of the electronics
EPSILON =  0.0000000000000E+00 / scaling factor for adjusted registered/true cou
THRESHLD=  0.0000000000000E+00 / threshold for paired pulse correction
Q0      =  0.0000000000000E+00 / constant used in computation of tau2
Q1      =  0.0000000000000E+00 / constant used in computation of tau2
F       =  0.0000000000000E+00 / constant used as the threshold in computing tau
CVCOFSET=        0.0000000E+00 / scaled CVC offset
VGAIND  =                     7 / telemetry value for gain setting

                                / STATISTICAL KEYWORDS
DATE    = '05/12/88           ' / date this file was written (dd/mm/yy)
PODPSFF =                     0 / 0=(no  podps fill); 1=(podps fill present)
PODPSFP = '0000               ' / podps fill pattern (hex)
STDCFFF =                     0 / 0=(no st dcf fill); 1=(st dcf fill present)
STDCFFP = '0000               ' / st dcf fill pattern (hex)
```

```
DQMSKFV =          0.1000000E+03 / dq mask value to indicate fill (R*4)

                                 / DISPLAY KEYWORDS
PLOTID  = 'HSP                 ' / plot title
CCP0    = 'xpolyeval$ccp0      ' / aperture area table name
CCP1    = 'xpolyeval$ccp1      ' / high voltage factor table name
CCP2    = 'xpolyeval$ccp2      ' / gain factor table name
CCP3    = 'xpolyeval$ccp3      ' / pre-amplifier noise table name
CCP4    = 'xpolyeval$ccp4      ' / relative sensitivity table name
CCP5    = 'xpolyeval$ccp5      ' / dark signal table name
CCP7    = 'xpolyeval$ccp7      ' / CVC offset table name
CCP8    = 'xpolyeval$ccp8      ' / dead time table name
CCP9    = 'xpolyeval$ccp9      ' / dark aperture translation table name

END
```

pafft.d2h[1:50]

SAMPLE LINE	1	2	3	4
0	171.	171.	171.	171.
SAMPLE LINE	5	6	7	8
0	8363.	171.	171.	171.
SAMPLE LINE	9	10	11	12
0	2219.	171.	171.	171.
SAMPLE LINE	13	14	15	16
0	171.	171.	171.	171.
SAMPLE LINE	17	18	19	20
0	171.	171.	171.	171.
SAMPLE LINE	21	22	23	24
0	171.	171.	171.	235.
SAMPLE LINE	25	26	27	28
0	171.	171.	171.	172.
SAMPLE LINE	29	30	31	32
0	171.	171.	171.	32939.
SAMPLE LINE	33	34	35	36
0	171.	171.	171.	171.
SAMPLE LINE	37	38	39	40
0	171.	171.	171.	427.
SAMPLE LINE	41	42	43	44
0	171.	171.	171.	171.
SAMPLE LINE	45	46	47	48
0	12459.	171.	171.	171.
SAMPLE LINE	49	50		
0	171.	171.		

```
SIMPLE  =                    F /
BITPIX  =                   32 /
DATATYPE= 'REAL*4  '           /
NAXIS   =                    1 /
NAXIS1  =                  180 /
GROUPS  =                    T /
GCOUNT  =                    1 /
PCOUNT  =                   14 /
PSIZE   =                  960 /
PTYPE1  = 'CRVAL1  '           /
PDTYPE1 = 'REAL*8  '           /
PSIZE1  =                   64 /
PTYPE2  = 'CRVAL2  '           /
PDTYPE2 = 'REAL*8  '           /
PSIZE2  =                   64 /
PTYPE3  = 'CRVAL3  '           /
PDTYPE3 = 'REAL*8  '           /
PSIZE3  =                   64 /
PTYPE4  = 'CRPIX1  '           /
PDTYPE4 = 'REAL*4  '           /
PSIZE4  =                   32 /
PTYPE5  = 'CD1_1   '           /
PDTYPE5 = 'REAL*4  '           /
PSIZE5  =                   32 /
PTYPE6  = 'DATAMIN '           /
PDTYPE6 = 'REAL*4  '           /
PSIZE6  =                   32 /
PTYPE7  = 'DATAMAX '           /
PDTYPE7 = 'REAL*4  '           /
PSIZE7  =                   32 /
PTYPE8  = 'FILLCNT '           /
PDTYPE8 = 'INTEGER*4'          /
PSIZE8  =                   32 /
PTYPE9  = 'ERRCNT  '           /
PDTYPE9 = 'INTEGER*4'          /
PSIZE9  =                   32 /
PTYPE10 = 'FPKTTIME'           /
PDTYPE10= 'CHARACTER*24'       /
PSIZE10 =                  192 /
PTYPE11 = 'LPKTTIME'           /
PDTYPE11= 'CHARACTER*24'       /
PSIZE11 =                  192 /
PTYPE12 = 'CTYPE1  '           /
PDTYPE12= 'CHARACTER*8'        /
PSIZE12 =                   64 /
PTYPE13 = 'CTYPE2  '           /
PDTYPE13= 'CHARACTER*8'        /
PSIZE13 =                   64 /
PTYPE14 = 'CTYPE3  '           /
PDTYPE14= 'CHARACTER*8'        /
PSIZE14 =                   64 /

                               / GROUP PARAMETERS: OSS

                               / HSP DATA DESCRIPTOR KEYWORDS
INSTRUME= 'HSP               ' / instrument in use
```

```
ROOTNAME= 'pafft              ' / rootname of the observation set
FILETYPE= 'AST                ' / shp, udl, dst, dsk, ast, ask, asd, asa
CTYPE1  = 'TIME               ' / unitless, line, pixel, channel, sample, time
NSEGPGRP=                     0 / not computed - used only by OSS
BUNIT   = 'CT/S    '            / units of calibrated data

                                / CALIBRATION FLAGS AND INDICATORS
MODE    = 'SCP                ' / instrument mode SCP, SSP, ARS
DETECTOB=                     3 / detector in use (0-5) - object data
DETECTSK=                     4 / detector in use (0-5) - sky data
PTSRCFLG= 'P                  ' / point source flag (P=point, E=extended)
APERTOBJ= 'VF262V_B           ' / aperture in use - object data
APERTSKY= 'VF262U2_B          ' / aperture in use - sky data

                                / CALIBRATION SWITCHES: perform,omit,complete
DET_CHR = 'PERFORM            ' / retrieve detector characteristics
DEADTIME= 'OMIT               ' / deadtime correction
TRUE_CNT= 'OMIT               ' / compute the true count rates
TRUE_PHC= 'COMPLETE'            / compute the true photocurrents

                                / CALIBRATION KEYWORDS
DATA_TYP= 'ANALOG             ' / data type: digital, analog
DATA_SRC= 'STAR               ' / data source: star, sky, area scan
DATA_FMT= 'ALOG               ' / data format: byte, word, lwrd, alog, all
WORDS   =                   180 / number of HSP samples in a line
LINES   =                     1 / number of lines in a group
INT_TIME=               1023872 / time of integration (in 1/1.024 microseconds)
TIMEBIAS=                   100 / instrument time bias (in 1/1.024 microseconds)
SAMPTIME=        0.9863282E-04 / time of integration (in seconds)
DELAY   =                     0 / delay between integrations (in 1/1.024 usec.)
DETECTOR=                     3 / detector used
APERTURE= 'VF262V_B           ' / name of the aperture used
APERAREA=  0.0000000000000E+00 / aperarea
BDEXPFLG=                     1 / bus director expander flag
PT_EFFIC=             5.838772 / scaled point source cathode efficiency
EX_EFFIC=        0.0000000E+00 / scaled extended source cathode efficiency
DARKRATE=              2.04357 / scaled cathode dark rate
PRE_AMP =             2.659608 / scaled tube pre-amp contribution
HIGHVOLT=             6.013935 / scaled high voltage
TUBEGAIN=          5.585176E-4 / scaled tube gain
DEADTM  =  0.0000000000000E+00 / deadtime
TAU1    =  0.0000000000000E+00 / natural response time of the electronics
EPSILON =  0.0000000000000E+00 / scaling factor for adjusted registered/true cou
THRESHLD=  0.0000000000000E+00 / threshold for paired pulse correction
Q0      =  0.0000000000000E+00 / constant used in computation of tau2
Q1      =  0.0000000000000E+00 / constant used in computation of tau2
F       =  0.0000000000000E+00 / constant used as the threshold in computing tau
CVCOFSET=              2101.09 / scaled CVC offset
VGAIND  =                     7 / telemetry value for gain setting

                                / STATISTICAL KEYWORDS
DATE    = '05/12/88           ' / date this file was written (dd/mm/yy)
PODPSFF =                     0 / 0=(no  podps fill); 1=(podps fill present)
PODPSFP = '0000               ' / podps fill pattern (hex)
STDCFFF =                     0 / 0=(no st dcf fill); 1=(st dcf fill present)
STDCFFP = '0000               ' / st dcf fill pattern (hex)
```

```
DQMSKFV =          0.1000000E+03 / dq mask value to indicate fill (R*4)

                                 / DISPLAY KEYWORDS
PLOTID  = 'HSP                 ' / plot title
CCP0    = 'xpolyeval$ccp0      ' / aperture area table name
CCP1    = 'xpolyeval$ccp1      ' / high voltage factor table name
CCP2    = 'xpolyeval$ccp2      ' / gain factor table name
CCP3    = 'xpolyeval$ccp3      ' / pre-amplifier noise table name
CCP4    = 'xpolyeval$ccp4      ' / relative sensitivity table name
CCP5    = 'xpolyeval$ccp5      ' / dark signal table name
CCP7    = 'xpolyeval$ccp7      ' / CVC offset table name
CCP8    = 'xpolyeval$ccp8      ' / dead time table name
CCP9    = 'xpolyeval$ccp9      ' / dark aperture translation table name

END
```

pafft.c2h[1:50]

SAMPLE	1	2	3	4
LINE				
0	-98414.95	-98414.95	-98414.95	-98414.95
SAMPLE	5	6	7	8
LINE				
0	319293.2	-98414.95	-98414.95	-98414.95
SAMPLE	9	10	11	12
LINE				
0	6012.077	-98414.95	-98414.95	-98414.95
SAMPLE	13	14	15	16
LINE				
0	-98414.95	-98414.95	-98414.95	-98414.95
SAMPLE	17	18	19	20
LINE				
0	-98414.95	-98414.95	-98414.95	-98414.95
SAMPLE	21	22	23	24
LINE				
0	-98414.95	-98414.95	-98414.95	-95151.6
SAMPLE	25	26	27	28
LINE				
0	-98414.95	-98414.95	-98414.95	-98363.96
SAMPLE	29	30	31	32
LINE				
0	-98414.95	-98414.95	-98414.95	1572418.
SAMPLE	33	34	35	36
LINE				
0	-98414.95	-98414.95	-98414.95	-98414.95
SAMPLE	37	38	39	40
LINE				
0	-98414.95	-98414.95	-98414.95	-85361.57
SAMPLE	41	42	43	44
LINE				
0	-98414.95	-98414.95	-98414.95	-98414.95
SAMPLE	45	46	47	48
LINE				
0	528147.2	-98414.95	-98414.95	-98414.95
SAMPLE	49	50		
LINE				
0	-98414.95	-98414.95		

```
SIMPLE  =                    F /
BITPIX  =                   32 /
DATATYPE= 'REAL*4  '           /
NAXIS   =                    1 /
NAXIS1  =                  180 /
GROUPS  =                    T /
GCOUNT  =                    1 /
PCOUNT  =                   14 /
PSIZE   =                  960 /
PTYPE1  = 'CRVAL1  '           /
PDTYPE1 = 'REAL*8  '           /
PSIZE1  =                   64 /
PTYPE2  = 'CRVAL2  '           /
PDTYPE2 = 'REAL*8  '           /
PSIZE2  =                   64 /
PTYPE3  = 'CRVAL3  '           /
PDTYPE3 = 'REAL*8  '           /
PSIZE3  =                   64 /
PTYPE4  = 'CRPIX1  '           /
PDTYPE4 = 'REAL*4  '           /
PSIZE4  =                   32 /
PTYPE5  = 'CD1_1   '           /
PDTYPE5 = 'REAL*4  '           /
PSIZE5  =                   32 /
PTYPE6  = 'DATAMIN '           /
PDTYPE6 = 'REAL*4  '           /
PSIZE6  =                   32 /
PTYPE7  = 'DATAMAX '           /
PDTYPE7 = 'REAL*4  '           /
PSIZE7  =                   32 /
PTYPE8  = 'FILLCNT '           /
PDTYPE8 = 'INTEGER*4'          /
PSIZE8  =                   32 /
PTYPE9  = 'ERRCNT  '           /
PDTYPE9 = 'INTEGER*4'          /
PSIZE9  =                   32 /
PTYPE10 = 'FPKTTIME'           /
PDTYPE10= 'CHARACTER*24'       /
PSIZE10 =                  192 /
PTYPE11 = 'LPKTTIME'           /
PDTYPE11= 'CHARACTER*24'       /
PSIZE11 =                  192 /
PTYPE12 = 'CTYPE1  '           /
PDTYPE12= 'CHARACTER*8'        /
PSIZE12 =                   64 /
PTYPE13 = 'CTYPE2  '           /
PDTYPE13= 'CHARACTER*8'        /
PSIZE13 =                   64 /
PTYPE14 = 'CTYPE3  '           /
PDTYPE14= 'CHARACTER*8'        /
PSIZE14 =                   64 /

                               / GROUP PARAMETERS: OSS

                               / HSP DATA DESCRIPTOR KEYWORDS
INSTRUME= 'HSP               ' / instrument in use
```

```
ROOTNAME= 'V020090AO          ' / rootname of the observation set
FILETYPE= 'AQT                ' / shp, udl, dst, dsk, ast, ask, asd, asa
CTYPE1  = 'TIME               ' / unitless, line, pixel, channel, sample, time
NSEGPGRP=                     0 / not computed - used only by OSS
BUNIT   = 'COUNTS             ' / units of calibrated data

                                / CALIBRATION FLAGS AND INDICATORS
MODE    = 'SSP                ' / instrument mode SCP, SSP, ARS
DETECTOB=                     3 / detector in use (0-5) - object data
DETECTSK=                     4 / detector in use (0-5) - sky data
PTSRCFLG= 'P                  ' / point source flag (P=point, E=extended)
APERTOBJ= 'VF262V_B           ' / aperture in use - object data
APERTSKY= 'VF262U2_B          ' / aperture in use - sky data

                                / CALIBRATION SWITCHES: perform,omit,complete
DET_CHR = 'PERFORM            ' / retrieve detector characteristics
DEADTIME= 'OMIT               ' / deadtime correction
TRUE_CNT= 'OMIT               ' / compute the true count rates
TRUE_PHC= 'PERFORM            ' / compute the true photocurrents

                                / CALIBRATION KEYWORDS
DATA_TYP= 'ANALOG             ' / data type: digital, analog
DATA_SRC= 'STAR               ' / data source: star, sky, area scan
DATA_FMT= 'ALOG               ' / data format: byte, word, lwrd, alog, all
WORDS   =                   180 / number of HSP samples in a line
LINES   =                     1 / number of lines in a group
INT_TIME=               1023872 / time of integration (in 1/1.024 microseconds)
TIMEBIAS=                   100 / instrument time bias (in 1/1.024 microseconds)
SAMPTIME=        0.9863282E-04 / time of integration (in seconds)
DELAY   =                     0 / delay between integrations (in 1/1.024 usec.)
DETECTOR=                     3 / detector used
APERTURE= '                   ' / name of the aperture used
APERAREA=  0.0000000000000E+00 / aperarea
BDEXPFLG=                     1 / bus director expander flag
PT_EFFIC=        0.0000000E+00 / scaled point source cathode efficiency
EX_EFFIC=        0.0000000E+00 / scaled extended source cathode efficiency
DARKRATE=        0.0000000E+00 / scaled cathode dark rate
PRE_AMP =        0.0000000E+00 / scaled tube pre-amp contribution
HIGHVOLT=        0.0000000E+00 / scaled high voltage
TUBEGAIN=        0.0000000E+00 / scaled tube gain
DEADTM  =  0.0000000000000E+00 / deadtime
TAU1    =  0.0000000000000E+00 / natural response time of the electronics
EPSILON =  0.0000000000000E+00 / scaling factor for adjusted registered/true cou
THRESHLD=  0.0000000000000E+00 / threshold for paired pulse correction
Q0      =  0.0000000000000E+00 / constant used in computation of tau2
Q1      =  0.0000000000000E+00 / constant used in computation of tau2
F       =  0.0000000000000E+00 / constant used as the threshold in computing tau
CVCOFSET=        0.0000000E+00 / scaled CVC offset
VGAIND  =                     7 / telemetry value for gain setting

                                / STATISTICAL KEYWORDS
DATE    = '05/12/88           ' / date this file was written (dd/mm/yy)
PODPSFF =                     0 / 0=(no  podps fill); 1=(podps fill present)
PODPSFP = '0000               ' / podps fill pattern (hex)
STDCFFF =                     0 / 0=(no st dcf fill); 1=(st dcf fill present)
STDCFFP = '0000               ' / st dcf fill pattern (hex)
```

```
DQMSKFV =          0.1000000E+03 / dq mask value to indicate fill (R*4)

                                 / DISPLAY KEYWORDS
PLOTID  = 'HSP                 ' / plot title

END
```

```
SIMPLE  =                    F / data conforms to the fits standard
BITPIX  =                   32 / bits per data value
DATATYPE= 'REAL*4            ' / datatype of the group array
NAXIS   =                    1 / number of dimensions in the group array
NAXIS1  =                  180 / first dimension of the group array
GROUPS  =                    T / data has groups
GCOUNT  =                    1 / number of groups
PCOUNT  =                   14 / number of parameters
PSIZE   =                  960 / bits in the parameter block

                                / GROUP PARAMETERS: OSS
PTYPE1  = 'CRVAL1            ' / time at reference pixel-first packet time
PDTYPE1 = 'REAL*8            ' / data type of parameter 1
PSIZE1  =                   64 / number of bits in parameter 1
PTYPE2  = 'CRVAL2            ' / right ascension of aperture
PDTYPE2 = 'REAL*8            ' / data type of parameter 2
PSIZE2  =                   64 / number of bits in parameter 2
PTYPE3  = 'CRVAL3            ' / declination of aperture
PDTYPE3 = 'REAL*8            ' / data type of parameter 3
PSIZE3  =                   64 / number of bits in parameter 3
PTYPE4  = 'CRPIX1            ' / pixel number of reference pixel
PDTYPE4 = 'REAL*4            ' / data type of parameter 4
PSIZE4  =                   32 / number of bits in parameter 4
PTYPE5  = 'CD1_1             ' / time increment between pixels
PDTYPE5 = 'REAL*4            ' / data type of parameter 5
PSIZE5  =                   32 / number of bits in parameter 5
PTYPE6  = 'DATAMIN           ' / minimum data value in the group
PDTYPE6 = 'REAL*4            ' / datatype of parameter 6
PSIZE6  =                   32 / number of bits in parameter 6
PTYPE7  = 'DATAMAX           ' / maximum data value in the group
PDTYPE7 = 'REAL*4            ' / datatype of parameter 7
PSIZE7  =                   32 / number of bits in parameter 7
PTYPE8  = 'FILLCNT           ' / number of segments containing fill
PDTYPE8 = 'INTEGER*4         ' / datatype of parameter 8
PSIZE8  =                   32 / number of bits in parameter 8
PTYPE9  = 'ERRCNT            ' / number of segments containing errors
PDTYPE9 = 'INTEGER*4         ' / datatype of parameter 9
PSIZE9  =                   32 / number of bits in parameter 9
PTYPE10 = 'FPKTTIME          ' / the time of the first packet
PDTYPE10= 'CHARACTER*24      ' / 64 bit binary time is converted to ascii
PSIZE10 =                  192 / number of bits in parameter 10
PTYPE11 = 'LPKTTIME          ' / the time of the last packet
PDTYPE11= 'CHARACTER*24      ' / 64 bit binary time is converted to ascii
PSIZE11 =                  192 / number of bits in parameter 11
PTYPE12 = 'CTYPE1            ' / the first coordinate type
PDTYPE12= 'CHARACTER*8       ' / data type of parameter 12
PSIZE12 =                   64 / number of bits in parameter 12
PTYPE13 = 'CTYPE2            ' / the second coordinate type
PDTYPE13= 'CHARACTER*8       ' / data type of parameter 13
PSIZE13 =                   64 / number of bits in parameter 13
PTYPE14 = 'CTYPE3            ' / the third coordinate type
PDTYPE14= 'CHARACTER*8       ' / data type of parameter 14
PSIZE14 =                   64 / number of bits in parameter 14

                                / HSP DATA DESCRIPTOR KEYWORDS
INSTRUME= 'HSP               ' / instrument in use
```

```
ROOTNAME= 'V020090AO          ' / rootname of the observation set
FILETYPE= 'ASK                ' / shp, udl, dst, dsk, ast, ask, asd, asa
CTYPE1  = 'TIME               ' / unitless, line, pixel, channel, sample, time
NSEGPGRP=                     0 / not computed - used only by OSS
BUNIT   = 'COUNTS             ' / units of calibrated data

                                / CALIBRATION FLAGS AND INDICATORS
MODE    = 'SSP                ' / instrument mode SCP, SSP, ARS
DETECTOB=                     3 / detector in use (0-5) - object data
DETECTSK=                     4 / detector in use (0-5) - sky data
PTSRCFLG= 'P                  ' / point source flag (P=point, E=extended)
APERTOBJ= 'VF262V_B           ' / aperture in use - object data
APERTSKY= 'VF262U2_B          ' / aperture in use - sky data

                                / CALIBRATION SWITCHES: perform,omit,complete
DET_CHR = 'PERFORM            ' / retrieve detector characteristics
DEADTIME= 'OMIT               ' / deadtime correction
TRUE_CNT= 'OMIT               ' / compute the true count rates
TRUE_PHC= 'PERFORM            ' / compute the true photocurrents

                                / CALIBRATION KEYWORDS
DATA_TYP= 'ANALOG             ' / data type: digital, analog
DATA_SRC= 'SKY                ' / data source: star, sky, area scan
DATA_FMT= 'ALOG               ' / data format: byte, word, lwrd, alog, all
WORDS   =                   180 / number of HSP samples in a line
LINES   =                     1 / number of lines in a group
INT_TIME=                250000 / time of integration (in 1/1.024 microseconds)
TIMEBIAS=                  6000 / instrument time bias (in 1/1.024 microseconds)
SAMPTIME=                0.2500 / time of integration (in seconds)
DELAY   =                     0 / delay between integrations (in 1/1.024 usec.)
DETECTOR=                     4 / detector used
APERTURE= 'VF262U2_B          ' / name of the aperture used
APERAREA=  0.0000000000000E+00 / aperarea
BDEXPFLG=                     1 / bus director expander flag
PT_EFFIC=        0.0000000E+00 / scaled point source cathode efficiency
EX_EFFIC=        0.0000000E+00 / scaled extended source cathode efficiency
DARKRATE=        0.0000000E+00 / scaled cathode dark rate
PRE_AMP =        0.0000000E+00 / scaled tube pre-amp contribution
HIGHVOLT=        0.0000000E+00 / scaled high voltage
TUBEGAIN=        0.0000000E+00 / scaled tube gain
DEADTM  =  0.0000000000000E+00 / deadtime
TAU1    =  0.0000000000000E+00 / natural response time of the electronics
EPSILON =  0.0000000000000E+00 / scaling factor for adjusted registered/true cou
THRESHLD=  0.0000000000000E+00 / threshold for paired pulse correction
Q0      =  0.0000000000000E+00 / constant used in computation of tau2
Q1      =  0.0000000000000E+00 / constant used in computation of tau2
F       =  0.0000000000000E+00 / constant used as the threshold in computing tau
CVCOFSET=        0.0000000E+00 / scaled CVC offset
VGAIND  =                     7 / telemetry value for gain setting

                                / STATISTICAL KEYWORDS
DATE    = '05/12/88           ' / date this file was written (dd/mm/yy)
PODPSFF =                     0 / 0=(no  podps fill); 1=(podps fill present)
PODPSFP = '0000               ' / podps fill pattern (hex)
STDCFFF =                     0 / 0=(no st dcf fill); 1=(st dcf fill present)
STDCFFP = '0000               ' / st dcf fill pattern (hex)
```

```
DQMSKFV =          0.1000000E+03 / dq mask value to indicate fill (R*4)

                                 / DISPLAY KEYWORDS
PLOTID  = 'HSP                 ' / plot title
CCP0    = 'xpolyeval$ccp0      ' / aperture area table name
CCP1    = 'xpolyeval$ccp1      ' / high voltage factor table name
CCP2    = 'xpolyeval$ccp2      ' / gain factor table name
CCP3    = 'xpolyeval$ccp3      ' / pre-amplifier noise table name
CCP4    = 'xpolyeval$ccp4      ' / relative sensitivity table name
CCP5    = 'xpolyeval$ccp5      ' / dark signal table name
CCP7    = 'xpolyeval$ccp7      ' / CVC offset table name
CCP8    = 'xpolyeval$ccp8      ' / dead time table name
CCP9    = 'xpolyeval$ccp9      ' / dark aperture translation table name

END
```

pafft.d3h[1:50]

SAMPLE	1	2	3	4
LINE				
0	163.	163.	163.	163.

SAMPLE	5	6	7	8
LINE				
0	163.	163.	163.	163.

SAMPLE	9	10	11	12
LINE				
0	163.	163.	163.	163.

SAMPLE	13	14	15	16
LINE				
0	12451.	163.	163.	8355.

SAMPLE	17	18	19	20
LINE				
0	163.	163.	163.	163.

SAMPLE	21	22	23	24
LINE				
0	163.	163.	163.	163.

SAMPLE	25	26	27	28
LINE				
0	163.	163.	163.	163.

SAMPLE	29	30	31	32
LINE				
0	163.	163.	163.	163.

SAMPLE	33	34	35	36
LINE				
0	163.	163.	163.	163.

SAMPLE	37	38	39	40
LINE				
0	163.	163.	2211.	163.

SAMPLE	41	42	43	44
LINE				
0	163.	163.	163.	163.

SAMPLE	45	46	47	48
LINE				
0	163.	35.	163.	163.

SAMPLE	49	50
LINE		
0	163.	163.

```
SIMPLE  =                    F /
BITPIX  =                   32 /
DATATYPE= 'REAL*4  '           /
NAXIS   =                    1 /
NAXIS1  =                  180 /
GROUPS  =                    T /
GCOUNT  =                    1 /
PCOUNT  =                   14 /
PSIZE   =                  960 /
PTYPE1  = 'CRVAL1  '           /
PDTYPE1 = 'REAL*8  '           /
PSIZE1  =                   64 /
PTYPE2  = 'CRVAL2  '           /
PDTYPE2 = 'REAL*8  '           /
PSIZE2  =                   64 /
PTYPE3  = 'CRVAL3  '           /
PDTYPE3 = 'REAL*8  '           /
PSIZE3  =                   64 /
PTYPE4  = 'CRPIX1  '           /
PDTYPE4 = 'REAL*4  '           /
PSIZE4  =                   32 /
PTYPE5  = 'CD1_1   '           /
PDTYPE5 = 'REAL*4  '           /
PSIZE5  =                   32 /
PTYPE6  = 'DATAMIN '           /
PDTYPE6 = 'REAL*4  '           /
PSIZE6  =                   32 /
PTYPE7  = 'DATAMAX '           /
PDTYPE7 = 'REAL*4  '           /
PSIZE7  =                   32 /
PTYPE8  = 'FILLCNT '           /
PDTYPE8 = 'INTEGER*4'          /
PSIZE8  =                   32 /
PTYPE9  = 'ERRCNT  '           /
PDTYPE9 = 'INTEGER*4'          /
PSIZE9  =                   32 /
PTYPE10 = 'FPKTTIME'           /
PDTYPE10= 'CHARACTER*24'       /
PSIZE10 =                  192 /
PTYPE11 = 'LPKTTIME'           /
PDTYPE11= 'CHARACTER*24'       /
PSIZE11 =                  192 /
PTYPE12 = 'CTYPE1  '           /
PDTYPE12= 'CHARACTER*8'        /
PSIZE12 =                   64 /
PTYPE13 = 'CTYPE2  '           /
PDTYPE13= 'CHARACTER*8'        /
PSIZE13 =                   64 /
PTYPE14 = 'CTYPE3  '           /
PDTYPE14= 'CHARACTER*8'        /
PSIZE14 =                   64 /

                               / GROUP PARAMETERS: OSS

                               / HSP DATA DESCRIPTOR KEYWORDS
INSTRUME= 'HSP               ' / instrument in use
```

```
ROOTNAME= 'V020090AO          ' / rootname of the observation set
FILETYPE= 'ASK                ' / shp, udl, dst, dsk, ast, ask, asd, asa
CTYPE1  = 'TIME               ' / unitless, line, pixel, channel, sample, time
NSEGPGRP=                     0 / not computed - used only by OSS
BUNIT   = 'CT/S    '            / units of calibrated data

                                / CALIBRATION FLAGS AND INDICATORS
MODE    = 'SSP                ' / instrument mode SCP, SSP, ARS
DETECTOB=                     3 / detector in use (0-5) - object data
DETECTSK=                     4 / detector in use (0-5) - sky data
PTSRCFLG= 'P                  ' / point source flag (P=point, E=extended)
APERTOBJ= 'VF262V_B           ' / aperture in use - object data
APERTSKY= 'VF262U2_B          ' / aperture in use - sky data

                                / CALIBRATION SWITCHES: perform,omit,complete
DET_CHR = 'PERFORM            ' / retrieve detector characteristics
DEADTIME= 'OMIT               ' / deadtime correction
TRUE_CNT= 'OMIT               ' / compute the true count rates
TRUE_PHC= 'COMPLETE'            / compute the true photocurrents

                                / CALIBRATION KEYWORDS
DATA_TYP= 'ANALOG             ' / data type: digital, analog
DATA_SRC= 'SKY                ' / data source: star, sky, area scan
DATA_FMT= 'ALOG               ' / data format: byte, word, lwrd, alog, all
WORDS   =                   180 / number of HSP samples in a line
LINES   =                     1 / number of lines in a group
INT_TIME=                250000 / time of integration (in 1/1.024 microseconds)
TIMEBIAS=                  6000 / instrument time bias (in 1/1.024 microseconds)
SAMPTIME=                0.2500 / time of integration (in seconds)
DELAY   =                     0 / delay between integrations (in 1/1.024 usec.)
DETECTOR=                     4 / detector used
APERTURE= 'VF262U2_B          ' / name of the aperture used
APERAREA=  0.0000000000000E+00 / aperarea
BDEXPFLG=                     1 / bus director expander flag
PT_EFFIC=              5.838772 / scaled point source cathode efficiency
EX_EFFIC=         0.0000000E+00 / scaled extended source cathode efficiency
DARKRATE=              2.627447 / scaled cathode dark rate
PRE_AMP =              3.546143 / scaled tube pre-amp contribution
HIGHVOLT=              6.072322 / scaled high voltage
TUBEGAIN=           5.673830E-4 / scaled tube gain
DEADTM  =  0.0000000000000E+00 / deadtime
TAU1    =  0.0000000000000E+00 / natural response time of the electronics
EPSILON =  0.0000000000000E+00 / scaling factor for adjusted registered/true cou
THRESHLD=  0.0000000000000E+00 / threshold for paired pulse correction
Q0      =  0.0000000000000E+00 / constant used in computation of tau2
Q1      =  0.0000000000000E+00 / constant used in computation of tau2
F       =  0.0000000000000E+00 / constant used as the threshold in computing tau
CVCOFSET=              2189.743 / scaled CVC offset
VGAIND  =                     7 / telemetry value for gain setting

                                / STATISTICAL KEYWORDS
DATE    = '05/12/88           ' / date this file was written (dd/mm/yy)
PODPSFF =                     0 / 0=(no  podps fill); 1=(podps fill present)
PODPSFP = '0000               ' / podps fill pattern (hex)
STDCFFF =                     0 / 0=(no st dcf fill); 1=(st dcf fill present)
STDCFFP = '0000               ' / st dcf fill pattern (hex)
```

```
DQMSKFV =          0.1000000E+03 / dq mask value to indicate fill (R*4)

                                 / DISPLAY KEYWORDS
PLOTID  = 'HSP                 ' / plot title
CCP0    = 'xpolyeval$ccp0      ' / aperture area table name
CCP1    = 'xpolyeval$ccp1      ' / high voltage factor table name
CCP2    = 'xpolyeval$ccp2      ' / gain factor table name
CCP3    = 'xpolyeval$ccp3      ' / pre-amplifier noise table name
CCP4    = 'xpolyeval$ccp4      ' / relative sensitivity table name
CCP5    = 'xpolyeval$ccp5      ' / dark signal table name
CCP7    = 'xpolyeval$ccp7      ' / CVC offset table name
CCP8    = 'xpolyeval$ccp8      ' / dead time table name
CCP9    = 'xpolyeval$ccp9      ' / dark aperture translation table name

END
```

pafft.c3h[1:50]

SAMPLE LINE	1	2	3	4
0	-100750.4	-100750.4	-100750.4	-100750.4
SAMPLE LINE	5	6	7	8
0	-100750.4	-100750.4	-100750.4	-100750.4
SAMPLE LINE	9	10	11	12
0	-100750.4	-100750.4	-100750.4	-100750.4
SAMPLE LINE	13	14	15	16
0	510091.1	-100750.4	-100750.4	306477.3
SAMPLE LINE	17	18	19	20
0	-100750.4	-100750.4	-100750.4	-100750.4
SAMPLE LINE	21	22	23	24
0	-100750.4	-100750.4	-100750.4	-100750.4
SAMPLE LINE	25	26	27	28
0	-100750.4	-100750.4	-100750.4	-100750.4
SAMPLE LINE	29	30	31	32
0	-100750.4	-100750.4	-100750.4	-100750.4
SAMPLE LINE	33	34	35	36
0	-100750.4	-100750.4	-100750.4	-100750.4
SAMPLE LINE	37	38	39	40
0	-100750.4	-100750.4	1056.5	-100750.4
SAMPLE LINE	41	42	43	44
0	-100750.4	-100750.4	-100750.4	-100750.4
SAMPLE LINE	45	46	47	48
0	-100750.4	-107113.4	-100750.4	-100750.4
SAMPLE LINE	49	50		
0	-100750.4	-100750.4		

```
SIMPLE  =                    F /
BITPIX  =                   32 /
DATATYPE= 'REAL*4  '           /
NAXIS   =                    1 /
NAXIS1  =                  180 /
GROUPS  =                    T /
GCOUNT  =                    1 /
PCOUNT  =                   14 /
PSIZE   =                  960 /
PTYPE1  = 'CRVAL1  '           /
PDTYPE1 = 'REAL*8  '           /
PSIZE1  =                   64 /
PTYPE2  = 'CRVAL2  '           /
PDTYPE2 = 'REAL*8  '           /
PSIZE2  =                   64 /
PTYPE3  = 'CRVAL3  '           /
PDTYPE3 = 'REAL*8  '           /
PSIZE3  =                   64 /
PTYPE4  = 'CRPIX1  '           /
PDTYPE4 = 'REAL*4  '           /
PSIZE4  =                   32 /
PTYPE5  = 'CD1_1   '           /
PDTYPE5 = 'REAL*4  '           /
PSIZE5  =                   32 /
PTYPE6  = 'DATAMIN '           /
PDTYPE6 = 'REAL*4  '           /
PSIZE6  =                   32 /
PTYPE7  = 'DATAMAX '           /
PDTYPE7 = 'REAL*4  '           /
PSIZE7  =                   32 /
PTYPE8  = 'FILLCNT '           /
PDTYPE8 = 'INTEGER*4'          /
PSIZE8  =                   32 /
PTYPE9  = 'ERRCNT  '           /
PDTYPE9 = 'INTEGER*4'          /
PSIZE9  =                   32 /
PTYPE10 = 'FPKTTIME'           /
PDTYPE10= 'CHARACTER*24'       /
PSIZE10 =                  192 /
PTYPE11 = 'LPKTTIME'           /
PDTYPE11= 'CHARACTER*24'       /
PSIZE11 =                  192 /
PTYPE12 = 'CTYPE1  '           /
PDTYPE12= 'CHARACTER*8'        /
PSIZE12 =                   64 /
PTYPE13 = 'CTYPE2  '           /
PDTYPE13= 'CHARACTER*8'        /
PSIZE13 =                   64 /
PTYPE14 = 'CTYPE3  '           /
PDTYPE14= 'CHARACTER*8'        /
PSIZE14 =                   64 /

                               / GROUP PARAMETERS: OSS

                               / HSP DATA DESCRIPTOR KEYWORDS
INSTRUME= 'HSP               ' / instrument in use
```

```
ROOTNAME= 'V020090AO          ' / rootname of the observation set
FILETYPE= 'AQK                ' / shp, udl, dst, dsk, ast, ask, asd, asa
CTYPE1  = 'TIME               ' / unitless, line, pixel, channel, sample, time
NSEGPGRP=                     0 / not computed - used only by OSS
BUNIT   = 'COUNTS             ' / units of calibrated data

                                / CALIBRATION FLAGS AND INDICATORS
MODE    = 'SSP                ' / instrument mode SCP, SSP, ARS
DETECTOB=                     3 / detector in use (0-5) - object data
DETECTSK=                     4 / detector in use (0-5) - sky data
PTSRCFLG= 'P                  ' / point source flag (P=point, E=extended)
APERTOBJ= 'VF262V_B           ' / aperture in use - object data
APERTSKY= 'VF262U2_B          ' / aperture in use - sky data

                                / CALIBRATION SWITCHES: perform,omit,complete
DET_CHR = 'PERFORM            ' / retrieve detector characteristics
DEADTIME= 'OMIT               ' / deadtime correction
TRUE_CNT= 'OMIT               ' / compute the true count rates
TRUE_PHC= 'PERFORM            ' / compute the true photocurrents

                                / CALIBRATION KEYWORDS
DATA_TYP= 'ANALOG             ' / data type: digital, analog
DATA_SRC= 'SKY                ' / data source: star, sky, area scan
DATA_FMT= 'ALOG               ' / data format: byte, word, lwrd, alog, all
WORDS   =                   180 / number of HSP samples in a line
LINES   =                     1 / number of lines in a group
INT_TIME=                250000 / time of integration (in 1/1.024 microseconds)
TIMEBIAS=                  6000 / instrument time bias (in 1/1.024 microseconds)
SAMPTIME=                0.2500 / time of integration (in seconds)
DELAY   =                     0 / delay between integrations (in 1/1.024 usec.)
DETECTOR=                     4 / detector used
APERTURE= '                   ' / name of the aperture used
APERAREA=  0.0000000000000E+00 / aperarea
BDEXPFLG=                     1 / bus director expander flag
PT_EFFIC=        0.0000000E+00 / scaled point source cathode efficiency
EX_EFFIC=        0.0000000E+00 / scaled extended source cathode efficiency
DARKRATE=        0.0000000E+00 / scaled cathode dark rate
PRE_AMP =        0.0000000E+00 / scaled tube pre-amp contribution
HIGHVOLT=        0.0000000E+00 / scaled high voltage
TUBEGAIN=        0.0000000E+00 / scaled tube gain
DEADTM  =  0.0000000000000E+00 / deadtime
TAU1    =  0.0000000000000E+00 / natural response time of the electronics
EPSILON =  0.0000000000000E+00 / scaling factor for adjusted registered/true cou
THRESHLD=  0.0000000000000E+00 / threshold for paired pulse correction
Q0      =  0.0000000000000E+00 / constant used in computation of tau2
Q1      =  0.0000000000000E+00 / constant used in computation of tau2
F       =  0.0000000000000E+00 / constant used as the threshold in computing tau
CVCOFSET=        0.0000000E+00 / scaled CVC offset
VGAIND  =                     7 / telemetry value for gain setting

                                / STATISTICAL KEYWORDS
DATE    = '05/12/88           ' / date this file was written (dd/mm/yy)
PODPSFF =                     0 / 0=(no  podps fill); 1=(podps fill present)
PODPSFP = '0000               ' / podps fill pattern (hex)
STDCFFF =                     0 / 0=(no st dcf fill); 1=(st dcf fill present)
STDCFFP = '0000               ' / st dcf fill pattern (hex)
```

```
DQMSKFV =          0.1000000E+03 / dq mask value to indicate fill (R*4)

                                 / DISPLAY KEYWORDS
PLOTID  = 'HSP                 ' / plot title

END
```

```
SIMPLE  =                    F / data conforms to the fits standard
BITPIX  =                   16 / bits per data value
DATATYPE= 'UNSIGNED*2        ' / datatype of the group array
NAXIS   =                    1 / number of dimensions in the group array
NAXIS1  =                  965 / first dimension of the group array
GROUPS  =                    T / data has groups
GCOUNT  =                    0 / number of groups
PCOUNT  =                    3 / number of parameters
PSIZE   =                  256 / bits in the parameter block

                                / GROUP PARAMETERS: OSS
PTYPE1  = 'FILLCNT           ' / number of segments containing fill
PDTYPE1 = 'INTEGER*4         ' / datatype of parameter 1
PSIZE1  =                   32 / number of bits in parameter 1
PTYPE2  = 'ERRCNT            ' / number of segments containing errors
PDTYPE2 = 'INTEGER*4         ' / datatype of parameter 2
PSIZE2  =                   32 / number of bits in parameter 2
PTYPE3  = 'PKTTIME           ' / time from the packet ancillary data
PDTYPE3 = 'CHARACTER*24      ' / 64 bit binary time is converted to ascii
PSIZE3  =                  192 / number of bits in parameter 3

                                / HSP DATA DESCRIPTOR KEYWORDS
INSTRUME= 'HSP               ' / instrument in use
ROOTNAME= 'V020090AO         ' / rootname of the observation set
FILETYPE= 'SHP               ' / shp, udl, dst, dsk, ast, ask, asd, asa
CTYPE1  = 'UNITLESS          ' / unitless, line, pixel, channel, sample, time
NSEGPGRP=                    0 / not computed - used only by OSS
DEFAULTS=                    F / default values used in reformatting these data

                                / STATISTICAL KEYWORDS
DATE    = '05/12/88          ' / date this file was written (dd/mm/yy)
DCFOBSN =                   33 / DCF observation number in SHP
PKTFMT  =                  170 / packet format code
TIMECODE=              1603303 / packet time code

                                / TIME CONVERSION KEYWORDS
CLKDRFTR=  0.1300000000000E-18 / spacecraft clock drift rate
CLKRATE =  0.1250000000000E+00 / spacecraft clock rate
SPCLINCN=                    0 / spacecraft clock at UTCO
UTCO1   =            716177408 / bytes 5-8 of UTCO
UTCO2   =              9543883 / bytes 1-4 of UTCO

                                / CDBS KEYWORDS
VCVAMP1 =       -0.2528000E+00 / current-voltage amplifier 1
VCVAMP2 =       -0.2528000E+00 / current-voltage amplifier 2
VCVAMP3 =        0.4970118E+00 / current-voltage amplifier 3
VCVAMP4 =        0.4970118E+00 / current-voltage amplifier 4
VCVAMP5 =        0.3970369E+00 / current-voltage amplifier 5
VDT1M15 =       -0.6666667E-01 / detector supply 1 M15
VDT1P05 =        0.6282353E-01 / detector supply 1 P05
VDT1P15 =        0.6666667E-01 / detector supply 1 P15
VDT2M15 =       -0.6666667E-01 / detector supply 2 M15
VDT2P05 =        0.6282353E-01 / detector supply 2 P05
VDT2P15 =        0.6666667E-01 / detector supply 2 P15
VDT3M15 =       -0.1540000E+02 / detector supply 3 M15
VDT3P05 =        0.5130589E+01 / detector supply 3 P05
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VDT3P15 =        0.1540000E+02 / detector supply 3 P15
VDT4M15 =       -0.1513333E+02 / detector supply 4 M15
VDT4P05 =        0.5109647E+01 / detector supply 4 P05
VDT4P15 =        0.1540000E+02 / detector supply 4 P15
VDT5M15 =        0.2260000E-10 / detector supply 5 M15
VDT5P05 =        0.2460000E-10 / detector supply 5 P05
VDT5P15 =        0.2280000E-10 / detector supply 5 P15
VFOCUS1 =        0.6346521E+02 / focus 1
VFOCUS2 =        0.6301100E+02 / focus 2
VFOCUS3 =        0.7345787E+02 / focus 3
VFOCUS4 =        0.7345787E+02 / focus 4
VFTAVERR=        0.0000000E+00 / TAV error status
VHDEFL1 =        0.9626000E+04 / horizontal deflection 1
VHDEFL2 =        0.9626000E+04 / horizontal deflection 2
VHDEFL3 =        0.2669176E+04 / horizontal deflection 3
VHDEFL4 =        0.4910820E+04 / horizontal deflection 4
VHVPSM1 =        0.1399600E+04 / HVPS 1 output monitor
VHVPSM2 =        0.1399600E+04 / HVPS 2 output monitor
VHVPSM3 =        0.2230616E+04 / HVPS 3 output monitor
VHVPSM4 =        0.1539659E+04 / HVPS 4 monitor output
VHVPSM5 =        0.2202604E+04 / HVPS 5 output monitor
VTHRES1 =       -0.3144000E+02 / threshold 1
VTHRES2 =       -0.3144000E+02 / threshold 2
VTHRES3 =        0.1840047E+02 / threshold 3
VTHRES4 =        0.1180814E+03 / threshold 4
VTHRES5 =        0.3672838E+03 / threshold 5
VTPAFB1 =        0.1938359E+02 / temperature aft bulkhead 1
VTPAFB2 =        0.1938359E+02 / temperature aft bulkhead 2
VTPDEA1 =        0.2425640E+02 / temperature DEA 1
VTPDEA2 =        0.2425640E+02 / temperature DEA 2
VTPDEA3 =        0.3005495E+02 / temperature DEA 3
VTPDEA4 =        0.3005495E+02 / temperature DEA 4
VTPDEA5 =        0.2641904E+02 / temperature DEA 5
VTPDET1 =        0.2299618E+02 / temperature detector 1
VTPDET2 =        0.2383324E+02 / temperature detector 2
VTPDET3 =        0.2425640E+02 / temperature detector 3
VTPDET4 =        0.2425640E+02 / temperature detector 4
VTPDET5 =        0.2341321E+02 / temperature detector 5
VTPFILT =        0.2341321E+02 / temperature filter
VTPFWB1 =        0.2217155E+02 / temperature forward bulkhead 1
VTPFWB2 =        0.1097320E+02 / temperature forward bulkhead 2
VTPMTPA =        0.2299618E+02 / temperature mount point A
VTPMTPB =        0.1977246E+02 / temperature mount point B
VTPMTPC =        0.2299618E+02 / temperature mount point C
VTPNP2C =        0.2095786E+02 / temperature inboard P2 skin center
VTPNP3C =        0.2095786E+02 / temperature inboard P3 skin center
VTPODP2 =        0.2217155E+02 / temperature P2 ODS radiator forward
VTPODP3 =        0.2135931E+02 / temperature P3 ODS radiator forward
VTPODSA =        0.2402134E+02 / temperature ODS aft
VTPPCDS =        0.3052689E+02 / temperature PCDS
VTPPSP2 =        0.2341321E+02 / temperature PCDS/SCN bay P2 skin
VTPPSP3 =        0.2299618E+02 / temperature PCDS/SCN bay P3 skin
VTPRIUA =        0.2332108E+02 / temperature RIU A
VTPRIUB =        0.2302372E+02 / temperature RIU B
VTPSYCN =        0.3148447E+02 / temperature system controller
VVDEFL1 =        0.9541000E+04 / vertical deflection 1
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VVDEFL2 =          0.9541000E+04 / vertical deflection 2
VVDEFL3 =         -0.4473930E+04 / vertical deflection 3
VVDEFL4 =          0.3873761E+04 / vertical deflection 4
HVPSM   =          0.2230616E+04 / high voltage power supply output of the object
DEA_TEMP=          0.3005495E+02 / DEA temperature of the object detector
DET_TEMP=          0.2425640E+02 / detector temperature of the object detector
FOCUSD  =          0.7345787E+02 / focus (command value) of the object detector

                                 / PODPS SUPPORT SCHEDULE: PROGRAMMATIC DATA
PROGRMID= '020                 ' / program id (base 36)
PR_INV_L= 'DOXSEY              ' / last name of principal investigator
PR_INV_F= '                    ' / first name of principal investigator
PR_INV_M= '                    ' / middle initial of principal investigator
AFFILIAT= 'GO                  ' / observer organization or affiliation
ACCPDATE= '1988028             ' / proposal acceptance date (yyyyddd)
OBSET_ID= '09                  ' / observation set id
CALIBRAT= 'Y                   ' / calibrate data flag
OBSERVTN= '0A                  ' / observation number (base 36)
EXPACKET=                      1 / expected number of source packets
PRODTYPE= '                    ' / output product medium type
OPFORMAT= '                    ' / output product format specification
CALIBTYP= '                    ' / calibration type : E, I or Blank

                                 / PODPS SUPPORT SCHEDULE: FLAGS AND INDICATORS
MODE    = 'SSP                 ' / instrument mode SCP, SSP, ARS
DETECTOB=                      3 / detector in use (0-5) - object data
DETECTSK=                      4 / detector in use (0-5) - sky data
PTSRCFLG= 'P                   ' / point source flag (P=point, E=extended)
RTAMATCH= 'NO RTA FI AVAILABL' / above f&i match RTA (TRUE,FALSE,NO RTA F&I AVL)

                                 / PODPS SUPPORT SCHEDULE: DATA GROUP II DATA
INSTRUID= 'HSP                 ' / instrument in use
WRD11_14=                     33 / word 11/14 (0-255)
PSTRTIME= '1988.122:07:36:08 ' / predicted obs. start time (yydddhhmmss)
PSTPTIME= '1988.122:09:07:11 ' / predicted obs. stop time (yydddhhmmss)
APEROBJ = 'VF262V_B            ' / si object aperture id
APERSKY = 'VF262U2_B           ' / si sky aperture id
TRGTNAME= '867_12              ' / target name
APERTYPE= 'SICS                ' / distance of target from earth (km)
RTASCNV1=  0.1502091953913E+03 / right ascension of v1 axis of st
DECLNV1 =  0.5590662882952E+02 / declination of v1 axis of st
PSANGLV3=         -0.1379651E+00 / position angle of v3 axis of st
APEROFFX=         -0.2441406E-05 / x component of offset of object in aperture
APEROFFY=          0.3896484E-05 / y component of offset of object in aperture
ANGLESEP=          0.0000000E+00 / ang. separation of target from ref. object
DGESTAR = '0381701100F1        ' / FGS ID(F1,F2,F3) concat. w/ dom. gd. star id
SGESTAR = '0381701101F3        ' / FGS ID(F1,F2,F3) concat. w/ subdom. gd. star id
RTASNTRG=  0.1503767215491E+03 / right ascension of target
DECLNTRG=  0.5581900640559E+02 / declination of target
PANGAPER=          0.0000000E+00 / position angle of aperture used with target
REFOBJPA=          0.0000000E+00 / pos. angle of target from ref. object (degrees)
SAAAVOID= '02                  ' / SAA model for SAA Avoidance (range 02-99)
TARAQMOD= '3                   ' / target acquisition mode (values 00, 01, 02, 03)
POSTNSTX= -0.6683781148807E+04 / position of space telescope x axis
POSTNSTY= -0.1146031048184E+04 / position of space telescope y axis
POSTNSTZ= -0.1539293403032E+04 / position of space telescope z axis
```

```
VELOCSTX=  0.4379092154854E+00 / velocity of space telescope along the x axis
VELOCSTY= -0.6847529622021E+01 / velocity of space telescope along the y axis
VELOCSTZ=  0.3209626385991E+01 / velocity of space telescope along the z axis
RTASCSUN=  0.3888386978995E+02 / right ascension of the sun
DECLNSUN=  0.1522591784957E+02 / declination of the sun
RTASMOON=  0.2099042306558E+03 / right ascension of the moon
DECLMOON= -0.1578362668401E+02 / declination of the moon
VELABBRA=        0.0000000E+00 / aberration in position of the target
ANNPARRA=        0.0000000E+00 / par. shift in position, non-solar sys target
V2APERCE=        0.3380600E+03 / V2 offset of target from aper. center (arc-sec)
V3APERCE=       -0.3158500E+03 / V3 offset of target from aper. center (arc-sec)
EQRADTRG=        0.0000000E+00 / equatorial radius of target
FLATNTRG=        0.0000000E+00 / flattening of target
NPDECTRG=        0.0000000E+00 / north pole declination of target
NPASNTRG=        0.0000000E+00 / north pole right ascension of target
ROTRTTRG=        0.0000000E+00 / rotation rate of target
LONGPMER=        0.0000000E+00 / longitude of prime meridian
EPLONGPM=        0.0000000E+00 / epoch of longitude of prime meridian
SURFLATD=        0.0000000E+00 / surface feature latitude
SURFLONG=        0.0000000E+00 / surface feature longitude
SURFALTD=        0.0000000E+00 / surface feature altitude
MTFLAG  = '                    ' / moving target flag; T if it is a moving target
S0INVMAG=  0.0000000000000E+00 / S0 inverse magnitude
S0XDIR  =  0.0000000000000E+00 / S0 X direction
S0YDIR  =  0.0000000000000E+00 / S0 Y direction
S0ZDIR  =  0.0000000000000E+00 / S0 Z direction
START48 =  0.0000000000000E+00 / command start time; seconds from 1980
END48   =  0.0000000000000E+00 / command end time; seconds from 1980
ACOEF1X =  0.0000000000000E+00 / coefficient A(1,X) of the #48 command
ACOEF1Y =  0.0000000000000E+00 / coefficient A(1,Y) of the #48 command
ACOEF1Z =  0.0000000000000E+00 / coefficient A(1,Z) of the #48 command
ACOEF2X =  0.0000000000000E+00 / coefficient A(2,X) of the #48 command
ACOEF2Y =  0.0000000000000E+00 / coefficient A(2,Y) of the #48 command
ACOEF2Z =  0.0000000000000E+00 / coefficient A(2,Z) of the #48 command
ACOEF3X =  0.0000000000000E+00 / coefficient A(3,X) of the #48 command
ACOEF3Y =  0.0000000000000E+00 / coefficient A(3,Y) of the #48 command
ACOEF3Z =  0.0000000000000E+00 / coefficient A(3,Z) of the #48 command
ACOEF4X =  0.0000000000000E+00 / coefficient A(4,X) of the #48 command
ACOEF4Y =  0.0000000000000E+00 / coefficient A(4,Y) of the #48 command
ACOEF4Z =  0.0000000000000E+00 / coefficient A(4,Z) of the #48 command
ACOEF5X =  0.0000000000000E+00 / coefficient A(5,X) of the #48 command
ACOEF5Y =  0.0000000000000E+00 / coefficient A(5,Y) of the #48 command
ACOEF5Z =  0.0000000000000E+00 / coefficient A(5,Z) of the #48 command
REFOBJRA=  0.1503767215491E+03 / right ascension of reference object
REFOBDEC=  0.5581900640559E+02 / declination of reference object

                               / ONBOARD EPHEMERIS MODEL PARAMETERS
EPCHTIME=  0.0000000000000E+00 / epoch time of parameters (secs since 1/1/85)
SDMEANAN=  0.0000000000000E+00 / 2nd derivative coef for mean anomly (revs/sec)
CIRVELOC=  0.0000000000000E+00 / circular orbit linear velocity (meters/second)
COSINCLI=  0.0000000000000E+00 / cosine of inclination
ECCENTRY=  0.0000000000000E+00 / eccentricity
ECCENTX2=  0.0000000000000E+00 / eccentricity times 2
ECBDX4D3=  0.0000000000000E+00 / eccentricity cubed times 4/3
ESQDX5D2=  0.0000000000000E+00 / eccentricity squared times 5/2
ECBDX3  =  0.0000000000000E+00 / eccentricity cubed times 3
```

```
FDMEANAN=  0.0000000000000E+00 / 1st derivative coef for mean anomly (revs/sec)
RCASCNRD=  0.0000000000000E+00 / rt chge right ascension ascend node (rads/sec)
RCASCNRV=  0.0000000000000E+00 / rt chge right ascension ascend node (revs/sec)
ARGPERIG=  0.0000000000000E+00 / argument of perigee (revolutions/second)
MEANANOM=  0.0000000000000E+00 / mean anomaly (revolutions)
RCARGPER=  0.0000000000000E+00 / rate change of argument of perigee (revs/sec)
RASCASCN=  0.0000000000000E+00 / right ascension of ascending node (revolutions)
SINEINCL=  0.0000000000000E+00 / sine of inclination
SEMILREC=  0.0000000000000E+00 / semi-latus rectum
TIMEFFEC=  0.0000000000000E+00 / time parameters took effect (secs since 1/1/85)
OBSSTRTT=  0.0000000000000E+00 / predicted obs. start time (secs since 1/1/85)

END
```

```
SIMPLE  =                    F / data conforms to the fits standard
BITPIX  =                   16 / bits per data value
DATATYPE= 'UNSIGNED*2        ' / datatype of the group array
NAXIS   =                    1 / number of dimensions in the group array
NAXIS1  =                  965 / first dimension of the group array
GROUPS  =                    T / data has groups
GCOUNT  =                    1 / number of groups
PCOUNT  =                    3 / number of parameters
PSIZE   =                  256 / bits in the parameter block

                               / GROUP PARAMETERS: OSS
PTYPE1  = 'FILLCNT           ' / number of segments containing fill
PDTYPE1 = 'INTEGER*4         ' / datatype of parameter 1
PSIZE1  =                   32 / number of bits in parameter 1
PTYPE2  = 'ERRCNT            ' / number of segments containing errors
PDTYPE2 = 'INTEGER*4         ' / datatype of parameter 2
PSIZE2  =                   32 / number of bits in parameter 2
PTYPE3  = 'PKTTIME           ' / time from the packet ancillary data
PDTYPE3 = 'CHARACTER*24      ' / 64 bit binary time is converted to ascii
PSIZE3  =                  192 / number of bits in parameter 3

                               / HSP DATA DESCRIPTOR KEYWORDS
INSTRUME= 'HSP               ' / instrument in use
ROOTNAME= 'V020090AO         ' / rootname of the observation set
FILETYPE= 'UDL               ' / shp, udl, dst, dsk, ast, ask, asd, asa
CTYPE1  = 'UNITLESS          ' / unitless, line, pixel, channel, sample, time
NSEGPGRP=                    0 / not computed - used only by OSS

                               / SCIENCE FILE SETS: T=present,F=absent
DST_FILE=                    F / digital star science is present
DSK_FILE=                    F / digital sky science is present
AST_FILE=                    T / analog star science is present
ASK_FILE=                    T / analog sky science is present
ASD_FILE=                    F / area scan digital is present
ASA_FILE=                    F / area scan analog is present

                               / STATISTICAL KEYWORDS
DATE    = '05/12/88          ' / date this file was written (dd/mm/yy)
PKTFMT  =                   16 / packet format code
TIMECODE=              1603295 / packet time code

                               / CDBS KEYWORDS
VDATAFMT= 'Alog              ' / Format of current observation
VFAPVECX=                    0 / x cmp apt vct f/ tav
VFAPVECY=                    0 / y cmp apt vct f/ tav
VFCENVEX=                 4096 / x cmp trg ct vct tav
VFCENVEY=                    0 / y cmp trg ct vct tav
VFCTVECX=                63011 / x cmp crs trg vt tav
VFCTVECY=                65031 / y cmp crs trg vt tav
VFFTVECX=                63011 / x cmp fn trg vct tav
VFFTVECY=                65031 / y cmp fn trg vct tav
VFOBJCNT=                    2 / count of trg obj
VFPFACTX=                  505 / tav vct cnv fctr - x
VFPFACTY=                  473 / tav vct vnv fctr - y
VFSLWVEX=                63011 / x cmp slew vct tav
VFSLWVEY=                65031 / y cmp slew vct tav
```

```
VGAIND1 =                    7 / gain setting of detector 1
VGAIND2 =                    7 / gain setting of detector 2
VGAIND3 =                    7 / gain setting of detector 3
VGAIND4 =                    7 / gain setting of detector 4
VGAIND5 =                    7 / gain setting of detector 5
VGAINDS =                    7 / gain setting of detector "sky"
VHIVOLT1=                  110 / high voltage setting for detector 1
VHIVOLT2=                  203 / high voltage setting for detector 2
VHIVOLT3=                  156 / high voltage setting for detector 3
VHIVOLT4=                   11 / high voltage setting for detector 4
VHIVOLT5=                  168 / high voltage setting for detector 5
VHIVOLTS=                  156 / high voltage setting for detector "sky"
VHORSTPT=                   32 / no. of horiz steps/spatial point in area scans
VHPOINTS=                   20 / no. of horiz points (columns) in area scans
VNOINTPT=                    1 / no. of integrations/pt in area scans
VPADTHR1=                  255 / PAD threshold setting for detector 1
VPADTHR2=                  255 / PAD threshold setting for detector 2
VPADTHR3=                    6 / PAD threshold setting for detector 3
VPADTHR4=                    4 / PAD threshold setting for detector 4
VPADTHR5=                   20 / PAD threshold setting for detector 5
VPADTHRS=                    6 / PAD threshold setting for detector "sky"
VHORIZ1H=                  255 / Horizontal deflection for detector 1 (high byte
VHORIZ1L=                  255 / Horizontal deflection for detector 1 (low byte)
VHORIZ2H=                  255 / Horizontal deflection for detector 2 (high byte
VHORIZ2L=                  255 / Horizontal deflection for detector 2 (low byte)
VHORIZ3H=                   10 / Horizontal deflection for detector 3 (high byte
VHORIZ3L=                   89 / Horizontal deflection for detector 3 (low byte)
VHORIZ4H=                   12 / Horizontal deflection for detector 4 (high byte
VHORIZ4L=                   37 / Horizontal deflection for detector 4 (low byte)
VREQDET = 'IDT3              ' / requested detector for the object observation
VVERT1H =                   15 / Vertical deflection for detector 1 (high byte)
VVERT1L =                  255 / Vertical deflection for detector 1 (low byte)
VVERT2H =                   15 / Vertical deflection for detector 1 (high byte)
VVERT2L =                  255 / Vertical deflection for detector 1 (low byte)
VVERT3H =                    4 / Vertical deflection for detector 1 (high byte)
VVERT3L =                   35 / Vertical deflection for detector 1 (low byte)
VVERT4H =                    2 / Vertical deflection for detector 1 (high byte)
VVERT4L =                  217 / Vertical deflection for detector 1 (low byte)
VSKYDET =                    4 / currently selected sky detector
VVERSTPT=                   32 / no. of vert. steps/spatial pt. in area scans
VVPOINTS=                   20 / no. of vertical points (rows) in area scans
VOLTAGE =                  156 / high voltage setting (command value) of the obj
THRESH  =                    6 / PAD threshold setting for the object detector
VHORIZ  =                 2649 / horizontal deflection (command value) of the ob
VVERT   =                 2649 / vertical deflection (command value) of the obje
END
```

Appendix E

This appendix contains the equations used in the calibration of HSP data.

CALHSP ALGORITHMS

DIGITAL, deadtime = perform, true_cnt = perform

$$c_{in} = c_m \ / \ samptime$$

$$c_{out} = c_{in} \ / \ (1 - c_{in} * deadtime)$$

Point Source (pdtt_)

$$c_p = (c_{out} - pre\_amp - darkrate) \ / \ (highvolt * pt\_effic)$$

Extended Source (edtt_)

$$c_e = \frac{[(c_{out} - pre\_amp - darkrate) \ / \ (highvolt * ex\_effic)]}{aperarea}$$

DIGITAL, deadtime = perform, true_cnt = omit

$$c_{in} = c_m \ / \ samptime$$

Point Source (pdtf_)

$$c_p = c_{in} \ / \ (1 - c_{in} * deadtime)$$

Extended Source (edtf_)

$$c_e = \frac{c_{in} \ / \ (1 - c_{in} * deadtime)}{aperarea}$$

DIGITAL, deadtime = omit, true_cnt = perform

$$c_{in} = c_m \ / \ samptime$$

Point Source (pdft_)

$$c_p = (c_{in} - pre\_amp - darkrate) \ / \ (highvolt * pt\_effic)$$

Extended Source (edft_)

$$c_e = \frac{[(c_{in} - pre\_amp - darkrate) \ / \ (highvolt * ex\_effic)]}{aperarea}$$

ANALOG, true_phc = perform

Point Source (pd__t)

$$c_p = \frac{[(c_m - cvcofset) \,/\, tubegain] - pre\_amp - darkrate}{(highvolt * pt\_effic)}$$

Extended Source (ed__t)

$$c_e = \frac{\dfrac{[(c_m - cvcofset) \,/\, tubegain] - pre\_amp - darkrate}{(highvolt * ex\_effic)}}{aperarea}$$

KEY

c_m = measured (observed) raw count or current
c_{in} = count rate
c_p = calibrated point source count or current
c_e = calibrated extended source count or current

SAMPLE TIME

The following is the equation used to calculate the sample time. All of the values for the keywords involved can be found in the data headers (".d0h" and ".c0h" files).

$$samptime = \frac{int\_time + timebias}{1.024 * 10^6}$$

CALIBRATION PARAMETER POLYNOMIAL

The following HSP Calibration Parameters

pre_amp	*darkrate*
highvolt	*pt_effic*
cvcofset	*ex_effic*
tubegain	

are calculated using the following polynomial:

$$\begin{aligned} X = X0 * & [1.0 + a01*(t-t0) + a02*(t-t0)^2 + a03*(t-t0)^3] \\ & + [a10 + a11*(t-t0) + a12*(t-t0)^2 + a13*(t-t0)^3]*(T-T0) \\ & + [a20 + a21*(t-t0) + a22*(t-t0)^2 + a23*(t-t0)^3]*(T-T0)^2 \\ & + [a30 + a31*(t-t0) + a32*(t-t0)^2 + a33*(t-t0)^3]*(T-T0)^3 \end{aligned}$$

where X is the calibration parameter value, $X0$ is the parameter's base value, t is the epoch (time in Julian Days) of the observation, $t0$ is the base time, T is the temperature, and $T0$ is the base temperature. All the co-efficients and base values are found in the Calibration Parameter tables (see Appendix C). The epoch is found by the process descibed in Appendix B, step 5.

DEADTIME EQUATION

For deadtime, the following equation holds for IRAF v2.8EXPORT and PODPS v.24.0:

$$X = X0 + [a1 * (T-T0)]$$

NOTE: There are two relevant temperatures: one for the detector (DET_TEMP) and one for the detector electronics (DEA_TEMP). Their values can be found in the standard header (.shh) packet. Table 1 lists the calibration parameters by temperature dependence.

Appendix F

This appendix contains two programs which can be used to "hand calibrate" High Speed Photometer data. Examples of the input files required are included immediately after each program. Reading Appendix B will help to make sense out of the contents of the input files, which are also described on the last page of this appendix.

```
::::::::::::::
anackcal.f
::::::::::::::
c program anackcal to check calibration of analog data
c need input file like psky.ana below
      implicit none (a-z)
      character infile*80,title*80,ptsrcflg*1
      integer i,j,k,n,ncm
      real*8 tblb,tblc,d,hh,mm,ss,t0,tt,
     &     cm(10),tempdea,tempdet,x0(6),
     &     x(6),cp,ce,aperarea,val

c request input file name and open input file
      write(*,10)
 10    format('Name of input file? ',$)
      read (*,*) infile

      open (10,file=infile,status='old')

c read in variables
      read (10,'(a80)')title
      write (*,'(/,a80,/)')title
      read (10,30) tblb,tblc,d,hh,mm,ss,t0
 30    format(6(15x,f20.0,/),15x,f20.0)
      read (10,'(15x,i2)') ncm
      read (10,'(15x,f20.0)') (cm(j),j=1,ncm)
      read (10,40) tempdea,tempdet,(x0(i),i=1,6),ptsrcflg,aperarea
 40    format(8(15x,f20.0,/),10x,a1,4x,f20.0)

c calculate julian date
      call juldate(tblb,tblc,d,t0,hh,mm,ss,tt)
      write (*,50) tt
 50   format('juldate  is ',f11.7,/)

c loop through calculations for each cm point
      do 850 k = 1,ncm

c write out input value
      write (*,63)k,cm(k)
 63   format('cm(',i2,')   is ',f18.8)

c calculate cvcoffst
      call calculate(x0(1),tt,tempdea,'cvcoffst  ',val)
      x(1) = val

c calculate gainfact
      call calculate(x0(2),tt,tempdea,'gainfact  ',val)
      x(2) = val

c calculate preamp
      call calculate(x0(3),tt,tempdea,'preamp  ',val)
      x(3) = val

c calculate dark
      call calculate(x0(4),tt,tempdet,'dark    ',val)
      x(4) = val

c calculate hvfactor
      call calculate(x0(5),tt,tempdet,'hvfactor',val)
      x(5) = val
```

```
c calculate sensitiv
      call calculate(x0(6),tt,tempdet,'sensitiv',val)
      x(6) = val

c calculate cp (counts for point source)
      cp = (((cm(k) - x(1)) / x(2)) - x(3) - x(4)) / (x(5) * x(6))
      if ((ptsrcflg .eq. 'p') .OR. (ptsrcflg .eq. 'P')) then
           write (*,*)
           write (*,*) 'Cp is ',cp
           write (*,*)
      end if

c calculate ce (counts for extended source)
      if ((ptsrcflg .eq. 'e') .OR. (ptsrcflg .eq. 'E')) then
           ce = cp / aperarea
           write (*,*) 'Cp is ',cp
           write (*,*)
           write (*,*) 'Ce is ',ce
           write (*,*)
      end if

 850  continue
 999  continue
      stop
      end

c*********************************************************************
      subroutine calculate(x0,tt,temp,name,val)
      implicit none (a-z)
      real*8 val,x0,tt,temp
      character*8 name

      val=x0*((1.000 + 1.d-4*tt + 1.d-7*tt**2 + 1.d-10*tt**3)
     &      + (0.050 + 1.d-5*tt + 1.d-8*tt**2 + 1.d-11*tt**3) * temp
     &      + (0.001 + 1.d-6*tt + 1.d-9*tt**2 + 1.d-12*tt**3) * temp**2
     &      + (1.e-4 + 1.d-7*tt + 1.d-10*tt**2+ 1.d-13*tt**3) * temp**3)

      write (*,200) name, val
 200  format(a8,' is ',f18.8)

      return
      end

c*********************************************************************
      subroutine juldate(tblb,tblc,d,t0,hh,mm,ss,tt)
      implicit none (a-z)
      real*8 dd,hh,mm,ss,t,tt,t0,
     &     tblb, tblc,d
c
c see Astromical Almanac for table B & C values.
c     d = Actual day of month - 1   (bcuz day is not whole until 12p)
c

      dd = (( (ss/60. + mm)/60.) + hh)/24.

      t = tblb + tblc + d + dd

      tt = t - t0

      return
      end
*_____________________________________________________________________*
```

```
::::::::::::::
psky.ana
::::::::::::::
point source sky data for v90ao
tblb          = 32141.
tblc          = 274.
d             = 10.
hh            = 5.
mm            = 16.
ss            = 41.8
t0            = 32000.
ncm           = 3
cm            = 2211.
                163.
                35.
tempdea       = 0.3005495e+2
tempdet       = 0.2425640e+2
x0(cvcofset)  = 247.
x0(gainfact)  = 6.400000e-05
x0(preamp)    = 0.4
x0(dark)      = 0.45
x0(hvfactor)  = 1.04
x0(sensitiv)  = 1.0
aperarea  p   = 0.7854
```

```
::::::::::::::
digckcal.f
::::::::::::::
c digckcal - check calibration of digital data
c needs input file like estar.5 below
      implicit none (a-z)
      character infile*80,title*80,ptsrcflg*1
      integer i
      real*8 tblb,tblc,day,hh,mm,ss,t0,tt,
     &      cm,samptime,deadtime,basetemp,tempdea,tempdet,
     &      x0(4),deadl,cin,cout,x(4),cp,ce,aperarea,val

c request input file name and open input file
      write(*,10)
 10    format('Name of input file? ',$)
      read (*,*) infile

      open (10,file=infile,status='old')

c read in variables
      read (10,'(a80)')title
      write (*,'(/,a80,/)')title
      read (10,30)tblb,tblc,day,hh,mm,ss,t0,cm,samptime,
     &      basetemp,tempdea,tempdet,deadl,(x0(i),i=0,4),ptsrcflg,
     &      aperarea
 30    format(18(15x,f20.0,/),10x,a1,4x,f20.0)

c calculate julian date
      call juldate(tblb,tblc,day,t0,hh,mm,ss,tt)
      write (*,50) tt
 50   format('juldate  is ',f11.7)

c print out sample time
      write (*,60) samptime
 60   format('samptime is ',e14.8)
c calculate deadtime
      call deadtm(x0(0),deadl,basetemp,tempdet,deadtime)

      write (*,80) deadtime
 80    format('deadtime is ',e14.8)

c calculate cin and cout
      cin = cm / samptime

      cout = cin / ( 1. - (cin * deadtime) )

      write (*,100) cm, cin, cout
 100   format('cm  ',5x,'is',f10.1,4x,
     &        'and cin is ',f10.1,' and cout is ',f20.3)

c calculate preamp
      call calculate(x0(1),tt,basetemp,tempdea,'preamp  ',val)
      x(1) = val

c calculate dark
      call calculate(x0(2),tt,basetemp,tempdet,'dark    ',val)
      x(2) = val

c calculate hvfactor
      call calculate(x0(3),tt,basetemp,tempdet,'hvfactor',val)
      x(3) = val
```

```
c calculate sensitiv
      call calculate(x0(4),tt,basetemp,tempdet,'sensitiv',val)
      x(4) = val

c calculate cp (counts for point source)
      cp = ( cout - x(1) - x(2) ) / ( x(3) * x(4) )
      if ((ptsrcflg .eq. 'p') .OR. (ptsrcflg .eq. 'P')) then
           write (*,*)
           write (*,*) 'Cp is ',cp
           write (*,*)
      end if

c calculate ce (counts for extended source)
      if ((ptsrcflg .eq. 'e') .OR. (ptsrcflg .eq. 'E')) then
           ce = cp / aperarea
           write (*,*) 'Cp is ',cp
           write (*,*)
           write (*,*) 'Ce is ',ce
           write (*,*)
      end if

 999  continue
      stop
      end

c***********************************************************************
      subroutine juldate(tblb,tblc,day,t0,hh,mm,ss,tt)
      implicit none (a-z)
      real*8 dd,hh,mm,ss,t,tt,t0,
     &     tblb, tblc,day
c
c see Astromical Almanac for table B & C values.
c     day = Actual day of month - 1   (bcuz day is not whole until 12p)
c

      dd = (( (ss/60. + mm)/60.) + hh)/24.

      t = tblb + tblc + day + dd

      tt = t - t0

      return
      end
c***********************************************************************
      subroutine deadtm(x0,dead1,basetemp,dtemp,deadtime)
      implicit none (a-z)
      real*8 x0,dead1,basetemp,dtemp,deadtime,temp

      temp = dtemp - basetemp

      deadtime = x0 + (dead1 * temp)

      return
      end
```

```
c*********************************************************************
      subroutine calculate(x0,tt,basetemp,dtemp,name,val)
      implicit none (a-z)
      real*8 x0,tt,basetemp,dtemp,val,temp
      character*8 name

      temp = dtemp - basetemp

      val=x0*((1.000 + 1.e-4*tt + 1.e-7*tt**2 + 1.e-10*tt**3)
     &      + (0.050 + 1.e-5*tt + 1.e-8*tt**2 + 1.e-11*tt**3) * temp
     &      + (0.001 + 1.e-6*tt + 1.e-9*tt**2 + 1.e-12*tt**3) * temp**2
     &      + (1.e-4 + 1.e-7*tt + 1.e-10*tt**2+ 1.e-13*tt**3) * temp**3)

      write (*,200) name, val
 200  format(a8,' is ',f10.8)

      return
      end
*_____________________________________________________________________*
```

```
::::::::::::::
estar.5
::::::::::::::
extended digital star data (edttf.c0h)
tblb          = 32141.
tblc          = 121.
day           = 0.
hh            = 10.
mm            = 30.
ss            = 06.62
t0            = 32000.
cm            = 1.
samptime      = 0.5e-06
basetemp      = 0.
tempdea       = 0.3100332e+02
tempdet       = 0.2554449e+02
deadal        = 1.0e-10
x0(deadtm)    = 3.4e-08
x0(preamp)    = 0.4
x0(dark)      = 0.4
x0(hvfactor)  = 1.041
x0(sensitiv)  = 0.9
aperarea  e   = 0.1257
```