#567

IPAS

Point Source Catalog
83-004A-01E

High Source Density Bins Catalog
83-004A-01G

Zodiacal Observation History File
83-004A-01H

Working Survey Data Base (WSDB)
83-004A-01I

Ancillary WSDB File
83-004A-01F

HCON-3 Skyplate Images
83-004A-01K

All Sky Maps Data
83-004A-01L

HCON-1 Skyplate Images
83-004A-01Q

Galactic Plane Skyflux Maps
83-004A-01T

Small Scale Structure Catalog
83-004A-01U

Pointed Observations Directory
83-004A-01V

Pointed Observations on Tape
83-004A-01W

HCON-2 Skyplate Images
83-004A-01Z

Asteroid and Comet Survey
83-004A-01c

Serendipitous Survey Catalog
83-004A-01e

Survey of Cataloged Galaxies and Quasars
83-004A-01h

Faint Source Catalog, Version 2.0
83-004A-01i

HCON Best of Three Images
HCON 1, 2, 3
83-004A-01j

2 Min Zodiacal History File
83-004A-01k

Catalog of Low Resolution Spectra
-02A

567	83-004A-01c	ASIR-00036
567	83-004A-01e	ASIR-00020
567	83-004A-01E	ASIR-00059
567	83-004A-01F	ASIR-00032
567	83-004A-01G	ASIR-00025
567	83-004A-01H	ASIR-00005
567	83-004A-01h	ASIR-00066
567	83-004A-01i	ASIR-00029
567	83-004A-01I	ASIR-00060
567	83-004A-01j	ASIR-00067
567	83-004A-01K	ASIR-00024
567	83-004A-01k	ASIR-00068
567	83-004A-01L	ASIR-00023
567	83-004A-01Q	ASIR-00043
567	83-004A-01T	ASIR-00027
567	83-004A-01U	ASIR-00022
567	83-004A-01V	ASIR-00001
567	83-004A-01W	ASIR-00045
567	83-004A-01x	ASIR-00049
567	83-004A-01Z	ASIR-00008
567	83-004A-02A	ASIR-00064

IRAS
POINT SOURCE REJECT CATALOG
83-004A-01

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1. INTRODUCTION:

The documentation for this data set was originally on paper, kept in NSSDC's Data Set Catalogs (DSCs). The paper documentation in the Data Set Catalogs have been made into digital images, and then collected into a single PDF file for each Data Set Catalog. The inventory information in these DSCs is current as of July 1, 2004. This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system. The information existing in the DSCs is now not needed for locating the data files, but we did not remove that inventory information.

The offline tape datasets have now been migrated from the original magnetic tape to Archival Information Packages (AIP’s).

A prior restoration may have been done on data sets, if a requestor of this data set has questions; they should send an inquiry to the request office to see if additional information exists.

2. ERRATA/CHANGE LOG:

NOTE: Changes are made in a text box, and will show up that way when displayed on screen with a PDF reader.

When printing, special settings may be required to make the text box appear on the printed output.

Version	Date	Person	Page	Description of Change
01				
02				

3 LINKS TO RELEVANT INFORMATION IN THE ONLINE NSSDC INFORMATION SYSTEM:

http://nssdc.gsfc.nasa.gov/nmc/

[NOTE: This link will take you to the main page of the NSSDC Master Catalog. There you will be able to perform searches to find additional information]

4. CATALOG MATERIALS:

a. Associated Documents — To find associated documents you will need to know the document ID number and then click here.
http://nssdcftp.gsfc.nasa.gov/miscellaneous/documents/

b. Core Catalog Materials

REQ.AGENT	RAND #	ACQ. AGENT
GLS	V0273	WHW

IRAS

POINT SOURCE CATALOG ON TAPE

83-004A-01E ASIR-00020

This data set consists of 2 magnetic tapes. These tapes are 1600 BPI, 9 track, and are ASCII formatted. These tapes contain 3 header files and 3 data files each. The header file describes the range of data in each succeeding file. These tapes were created on an IBM 3032 computer. The D and C numbers are as follows:

D#	C#
D-64548	C-24294
D-64549	C-24295

```
$ASS IN-T80
$NOP
$NOP
$NOP
$NOP ***** LIST OF 1ST & LAST REC. OF FILES 1 & 6 ********
$EXE TPLIST BS

 INPUT PARAMETERS ARE:  AS FL=1=1

 TAPE NO.   1              FILE NO.   1
 RECORD   1                LENGTH   80
IRAS POINT SOURCE CATALOG      1984 NOV 23  1.00   FILE 1  RA RANGE:  0 -  4 HRS

 TAPE NO.   1              FILE NO.   1
 RECORD   1                LENGTH   80
IRAS POINT SOURCE CATALOG      1984 NOV 23  1.00   FILE 1  RA RANGE:  0 -  4 HRS

***** JOB DONE.
$WEO LPS
```

D64548
PSC301
83-004A-01E

```
$AVF IN 5
$EXE TPLIST BS

INPUT PARAMETERS ARE:  AS FL=1=1

 TAPE NO.   1                FILE NO.   1
 RECORD    1                 LENGTH   20480
 000+1556  8 0  0+155652 56 11102 33.686E-013.367E-015.970E-011.808E+001133 0     0  0  9  8     0
  0   45   74  BF+1000100000000013 20 41                         6N2514                   14   0 999 999
85 9U04169                 8  0 143  72  7210M+03-21-011              52180 999  66  7212ZG  800+15
      8  0 143 999   008000-2618  8 0  1-261857 87 29105 22.530E-012.480E-014.022E-012.233E+001113
 0      0   0   0 11     0      0     0   50F  0-1000000010000096 28 00                    08000-3042  8 0
  3-304215 59 19106 23.247E-012.479E-014.086E-017.537E+001131 0     0  0 12   0     0     0   44    0
G -1000000000000875 38 00                          08000-4049  8 0  6-404912 80 10110 23.177E-012.478E-0
14.608E-011.152E+013111 0    11   0   0   0    49     0      0      0E    -1000110200000865 49 00
         08000-4041  8 0  7-404140 17  9116 31.499E+004.124E-014.022E-011.430E+013311 0      6  9   0
 0  206   74     0    0AB I110001111100086E 49 00                      08000+3602  8 0  7+36 254 36
9102 31.620E+007.406E-014.008E-011.000E+003311 0     6 10   0   0  209    63     0     0AB  150000010000
0005 18 00                        08000+1908  8 0  9+19 8 6 51  6102 36.412E-013.585E-013.994E-019.995
E-013111 0    11   0   0   0   69     0      0     0C    -1800000000000004 21 12                       1VX
 CNC                  21222   3 110 116 0                       0   0    0    0   008000-2248  8 0 39-224815
29 10107 32.469E-012.877E-011.312E+002.891E+001133 0      0  0  8 15    47     0  124    62HDAB-10000001
10000876 25 14                     14494- G 12        Sc     27289 999   95  35 0
 0   0    0    0   008000-2345  8 0 45-234533 49  6106 38.517E-013.068E-014.022E-014.847E+003311 0    10
 17  0   0  100    42     0    0AC G 3000000000000895 24 00                             08000-2805  8 0 50-28
528 34 13105 23.122E-012.481E-016.679E-015.099E+001133 0     0  0 11 18     0    35    57   67KGFB-1002
000100000057 36 00                      08000-2905  8 0 51-29 513 59 10108 23.145E-012.480E-014.019E
-019.743E+003111 0    11   0   0   0   49     0      0     0D    -1001100000000895 43 00
 08000-2447  8 0 52-244745 30  8106 34.904E-012.481E-014.023E-011.262E+003111 0     7   0   0   0    48
   0      0     0CF  -1000000000000067 24 12                         13175028           A0     12118  91 999
  0 0                         0   0    0    0   008000-0231  8 0 55- 23131 29  7106 46.967E-012.624E-014.
016E-011.000E+003211 0     7 15   0   0   67    47     0     0AI  2700000000000005 15 12
     13135412            M3     19105  90 999    0 0                          0   0    0    0   008001-2604  8
 61-26 442 28 10 13 21.162E+014.068E+006.924E-011.634E+003331 0      6  9 10  0 1373   663    76      0A
AB  0001100000000036 28 12                          1603868                     63242140C 999    0 0
            0   0    0    0   008001-4452  8 0 64-445234 19  8114 31.015E+015.440E+008.739E-015.701E+0
03331 0     3  5  7   0 1251   898    73     0AABE1800000000000895 34 00                        08001-2113
  8 0 75-211355 18  9105 39.434E-012.945E-014.023E-019.992E-013311 0     7 11   0   0  124    42     0
  0AD   0000000000000026 22 00                         08001-4141  8 0 80-414122 29  9118 32.297E+007.9
92E-014.419E-012.358E+003311 0    13 11   0   0  179   112     0     0AAD 9100000000000096 49 00
            08001+1305  8 0 81+13 6 9 29 10102 24.478E-014.595E-014.000E-011.176E+003111 0      9   0
  0   0   51     0     0    0BF  -1000000000000002 19 12                          13 97509             K0    29
 97  76 999    0 0                               0   0    0    0   008001-1850  8 0 87-1850 4 81 13107 23.928E-0
12.484E-014.023E-019.997E-013111 0    26   0   0   0    44     0      0     0C  G-1000000000000014 19 00
               08001+2331  8 0 87+233159 40  7102 32.512E-016.676E-013.724E+007.050E+001333 0
 0 14 10 11    0   52   341  1910BAA-1000000000000002 22 51                             6N2512
  4287 999 999 100 9U0+191                   37272 141  60  8410M+04-19-021              119271 999   54  90
1226  800+23            37272 141 999   C27MKN 384                   4288 999 999    084
    0   0    0    0   008001+2300  8 0 90+23 045 48 10102 32.513E-013.052E-016.970E-011.013E+001132 0
    0   0  9 27     0     0    72    31  8D-1000000000000003 23 00                          08001-8437  8 0 9
6-843742 14  8 47 54.339E-012.477E-014.030E-011.226E+003112 0     5   0  0 16    51      0     0   36BDLE
-1000000000000035 17 00                       08001-2918  8 0 97-291822 67 10109 24.420E-012.480E-014
.021E-016.977E+003111 0    10   0   0   0   67     0      0     0C   E-1001100000000896 43 12
     13175032           K5    36111  88 999    0 0                           0   0    0    0   008001-3500  8
 0102-35 046 41  8113 34.776E-012.479E-014.016E-011.333E+013111 0    11   0   0   0    52     0      0     0
BLDF-1002100210010895 61 12                           13198723           K2     18292  81  95    0 0
           0   0    0    0   008001+3716  8 0107+371637 45  8102 31.877E+004.821E-014.009E-011.000E+
003311 0     6 10   0   0  220    48     0     0AB  1000000000000014 17 22                           200  133
              56178    1  76    013 60531           K5     18283  70 999    008001-5116  8 0110-511654 33
 14122 32.487E-012.478E-016.683E-016.004E+001132 0      0  0 23 15     0     0    57    53   FF-1000201600
000896 75 00                      08001-5735  8 0114-573525 61 24116 22.485E-012.476E-014.531E-013.4
83E-001113 0      0  0  0 13     0      0    33    46  GB-1000000100000065 33 00                          08001
+5341  8 0116+534129100 25103 22.581E-012.498E-014.262E-011.283E+001113 0      0   0   0 11     0      0
 42   55  EB-1000000000000013 12 31                               9U04193                 31   7 140   36   7810M
+09-13-115             54117 999  30  7212ZG  800+53              31   7 140 999    0 0
```

REQ.AGENT	RAND NO.	ACQ.AGENT
GLS	V0273	WHW

IRAS

ANCILLARY WSDB FILE TAPE

83-004A-01F ASIR-00032

This data set consists of one magnetic data tape. This tape is 6250 BPI, 9 track, and was created on an IBM 3032 computer. The tape contains 40 files (20 header files and 20 data files), each header file is written in ASCII and is succeeded by a data file written in binary. The tape contains more detailed information on the entries in the Point Source Catalog made as a result of the processing of those sources. The D and C numbers are as follows:

D#	C#
D-64556	C-24296

```
$NOP
$NOP
$NOP ***** LIST OF FILE 1 (1 RECORD) ON GAIL 1 *******
$EXE TPLIST BS

INPUT PARAMETERS ARE:  ID AL

 TAPE NO.   1               FILE NO.   1
 RECORD   1                 LENGTH   90
FINAL CATALOG ANCILARY LUNE01 1984 NOV 23  2.00  *******FINAL PRODUCTS*******

***** JOB DONE.
$WEO LPC
```

D 64556

$$

REQ. AGENT	RAND NO.	ACQ.AGENT
GLS	V0273	WHW

IRAS

HIGH SOURCE DENSITY BINS CATALOG

83-004A-01G ASIR-00025

This data set consists of one magnetic tape. The tape is 1600 BPI, 9 track, ASCII formatted and contains 2 files of data. The tape was created on an IBM 3032 computer. The tape contains observations of regions of high IR source density which were specially processed to eliminate unreliable sources. The D and C numbers are as follows:

D#	C#
D-64551	C-24297

```
$NOP
$NOP ********** JN-1-OUT ***********
$EXE TPLIST ES

INPUT PARAMETERS ARE:  AS FL=1=1 1 1

TAPE NO.   1              FILE NO.   1
 RECORD   1               LENGTH   1600J
 29  16645806877 83.39101.16 77.05129.111.3333E+072.7544E+079.2612E+068.2998E+06 29  16645807677 82
.86101.16 76.77107.191.3214E+072.7452E+079.1178E+068.0178E+06 29  16645808477 82.34101.16 76.49105.
341.3174E+072.7455E+079.0787E+067.8935E+06 29  16645809277 81.82101.16 76.19103.581.3183E+072.7522E
+079.0891E+068.0346E+06 29  16645810077 81.29101.16 75.88101.891.3217E+072.7543E+079.2141E+068.4820
E+06 29  16645810877 80.77101.16 75.55100.281.3319E+072.7557E+079.2860E+068.8736E+06 29  1664581167
7 80.25101.16 75.22 98.741.3401E+072.7638E+079.3575E+069.1981E+06 29  16645812477 79.73101.16 74.87
 97.271.3348E+072.7665E+079.4477E+069.3402E+06 29  16645813277 79.20101.16 74.52 95.871.3386E+072.7
671E+079.4793E+069.6032E+06 29  16645814077 78.68101.16 74.15 94.531.3405E+072.7776E+079.5703E+061.
0113E+07 29  16645814877 78.16101.16 73.78 93.261.3449E+072.7834E+079.5910E+061.0333E+07 29  166458
15677 77.63101.16 73.40 92.041.3421E+072.7859E+079.5575E+061.0229E+07 29  16645816477 77.11101.16 7
3.01 90.881.3385E+072.7873E+079.4559E+069.6248E+06 29  16645817277 76.59101.16 72.61 89.771.3526E+0
72.7958E+079.7153E+061.0743E+07 29  16645818077 76.06101.16 72.21 88.711.3544E+072.8035E+079.6705E+
061.0639E+07 29  16645818877 75.54101.16 71.80 87.701.3581E+072.8066E+079.7185E+061.0103E+07 29  16
645819678 75.02101.16 71.39 86.741.3569E+072.8065E+079.6201E+069.7933E+06 29  16645820478 74.49101.
16 70.57 85.821.3668E+072.8133E+079.6936E+061.0186E+07 29  16645821278 73.97101.16 70.55 84.941.373
8E+072.8211E+079.6996E+061.0139E+07 29  16645822078 73.45101.16 70.12 84.101.3714E+072.8357E+079.79
11E+061.1054E+07 29  16645822878 72.93101.16 69.69 83.291.3696E+072.8355E+079.6566E+061.0052E+07 29
  16645823678 72.40101.16 69.25 82.521.3742E+072.8400E+079.7846E+061.0725E+07 29  16645824478 71.88
101.16 68.81 81.781.3806E+072.8470E+079.9254E+061.1046E+07 29  16645825278 71.36101.16 68.37 81.071
.3901E+072.8486E+079.9238E+061.1444E+07 29  16645826078 70.83101.16 67.92 80.401.3947E+072.8507E+07
9.9050E+061.2216E+07 29  16645826878 70.31101.16 67.47 79.741.3931E+072.8608E+079.7945E+061.1660E+0
7 29  16645827678 69.79101.16 67.02 79.121.3936E+072.8655E+079.8346E+061.2825E+07 29  16645828478 6
9.26101.16 66.56 78.521.4034E+072.8777E+079.7956E+061.1843E+07 29  16645829278 68.74101.16 66.11 77
 51.3939E+072.8812E+079.7651E+061.0651E+07 29  16645830078 68.22101.16 65.65 77.391.3929E+072.8836
 079.6669E+069.7668E+06 29  16645830878 67.69101.16 65.18 76.861.4010E+072.8891E+079.7774E+069.806
6E+06 29  16645831678 67.17101.16 64.72 76.351.4118E+072.8993E+079.9671E+061.1037E+07 29  166458324
78 66.65101.16 64.25 75.861.4135E+072.9065E+079.9942E+061.1454E+07 29  16645833278 66.13101.16 63.7
8 75.381.4136E+072.9154E+071.0052E+071.1497E+07 29  16645834078 65.60101.16 63.31 74.921.4209E+072.
9230E+071.0173E+071.2051E+07 29  16645834878 65.08101.16 62.84 74.481.4316E+072.9330E+071.0247E+071
.2216E+07 29  16645835678 64.56101.16 62.36 74.061.4306E+072.9423E+071.0389E+071.3800E+07 29  16645
836478 64.03101.16 61.89 73.651.4377E+072.9535E+071.0489E+071.3592E+07 29  16645837278 63.51101.16
61.41 73.261.4564E+072.9699E+071.0829E+071.5065E+07 29  16645838078 62.99101.16 60.93 72.871.4594E+
072.9749E+071.0742E+071.4565E+07 29  16645838879 62.46101.16 60.45 72.511.4633E+072.9830E+071.0583E
+071.3544E+07 29  16645839679 61.94101.16 59.97 72.151.4719E+073.0005E+071.0818E+071.4303E+07 29  1
6645840479 61.42101.16 59.49 71.811.4802E+073.0101E+071.1004E+071.5172E+07 29  16645841279 60.90101
.16 59.00 71.471.5486E+073.0421E+071.1157E+071.6247E+07 29  16645842079 60.37101.16 58.52 71.151.50
62E+073.0472E+071.1201E+071.6729E+07 29  16645842879 59.85101.16 58.03 70.841.5103E+073.0550E+071.1
451E+071.8858E+07 29  16645843679 59.33101.16 57.54 70.541.5133E+073.0664E+071.1450E+071.8832E+07 2
9  16645844479 58.80101.16 57.05 70.251.5283E+073.0899E+071.1729E+072.0951E+07 29  16645845279 58.2
8101.16 56.56 69.961.5484E+073.1049E+071.1806E+072.0873E+07 29  16645846079 57.76101.16 56.07 69.69
1.5423E+073.1159E+071.1767E+072.0573E+07 29  16645846879 57.23101.16 55.58 69.431.5660E+073.1385E+0
71.2226E+072.2679E+07 29  16645847679 56.71101.16 55.09 69.171.5588E+073.1480E+071.2389E+072.5420E+
07 29  16645848479 56.19101.16 54.60 68.921.5873E+073.1638E+071.2824E+072.4842E+07 29  16645849279
55.67101.16 54.11 68.681.5857E+073.1723E+071.2584E+072.2510E+07 29  16645850079 55.14101.16 53.61 6
8.441.6042E+073.1871E+071.2811E+072.4658E+07 29  16645850879 54.62101.16 53.12 68.211.5988E+073.194
3E+071.2655E+072.3358E+07 29  16645851679 54.10101.16 52.62 67.991.5994E+073.2028E+071.2516E+072.25
55E+07 29  16645852479 53.57101.16 52.13 67.781.6134E+073.2177E+071.2638E+072.2315E+07 29  16645853
279 53.05101.16 51.63 67.571.6394E+073.2421E+071.3000E+072.3963E+07 29  16645854079 52.53101.16 51.
13 67.361.6392E+073.2654E+071.3397E+072.6223E+07 29  16645854879 52.00101.16 50.63 67.171.6663E+073
 983E+071.4344E+072.9786E+07 29  16645872980 40.17101.16 39.26 63.882.0559E+073.8920E+072.8864E+07
8.0887E+07 29  16645873780 39.65101.16 38.75 63.772.0808E+073.9308E+072.8792E+077.8739E+07 29  1664
5874580 39.13101.16 38.25 63.672.1788E+074.0223E+072.9644E+079.2260E+07 29  16645875380 38.60101.16
 37.74 63.572.2216E+074.1000E+073.0017E+079.7944E+07 29  16645876180 38.08101.16 37.23 63.472.2446E
+074.1131E+072.9737E+079.3878E+07 29  16645876981 37.56101.16 36.73 63.372.1857E+074.0784E+072.5955
E+077.8175E+07 29  16645877781 37.03101.16 36.22 63.282.1642E+074.0652E+072.4383E+077.0629E+07 29
 16645878581 36.51101.16 35.71 63.192.1319E+074.0674E+072.3993E+076.5366E+07 29  16645879381 35.9910
```

IRAS ZODIACAL HISTORY FILE.

D-64552

F: 572 CT. 16 mins.

(NEW TAPE)

```
600  4911380398316З.44 82.97 16.43155.813.1334E+076.0902E+072.0462E+079.8274E+06600  49113804783162
.92 82.97 16.94155.823.0835E+075.9961E+071.9854E+079.4301E+06

 TAPE NO.   1              FILE NO.   572
 RECORD    10              LENGTH    880
600 369116701746288.74 88.07-71.15322.811.2184E+072.2575E+072.2454E+071.8122E+07600 369116702546288
.23 88.07-71.66322.641.2148E+072.2462E+072.2491E+071.7810E+07600 369116703346287.72 88.07-72.17322.
471.2134E+072.2406E+072.2482E+071.7628E+07600 369116704146287.20 88.07-72.68322.291.2073E+072.2325E
+072.2581E+071.7785E+07600 369116704946286.69 88.07-73.19322.101.1994E+072.2282E+072.2709E+071.8035
E+07600 369116705746286.18 88.07-73.70321.891.1984E+072.2227E+072.2749E+071.8192E+07600 36911670654
6285.66 88.07-74.21321.671.1942E+072.2171E+072.2804E+071.8180E+07600 369116707346285.15 88.07-74.72
321.441.1956E+072.2111E+072.2879E+071.8308E+07600 369116708146284.64 88.07-75.23321.191.1954E+072.2
080E+072.3067E+071.8585E+07600 369116708946284.12 88.07-75.74320.931.1906E+072.2025E+072.3184E+071.
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 ***** JOB DONE.
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D-64552
ZODIACAL HISTORY FILE
F: 753
(COLD TAPE REPLACED)

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$  P   LIS TO ED ED EDT OF RPOUT1
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 RECORD   1                LENGTH   16000
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.86101.15 76.771 7.181.3214E+072.7452E+ 79.1178E+068.0178E+06 29  16645808477 82.34101.15 76.48105.
341.3174E+072.7455E+ 79.0787E+067.8935E+06 29  16645809277 81.81101.15 76.18103.581.3183E+072.7522E
+079.0891E+068.0346E+06 29  16645810077 81.29101.15 75.87101.891.3217E+072.7543E+079.2141E+068.4820
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671E+079.4793E+069.6032E+06 29  16645814077 78.67101.15 74.15 94.531.3405E+072.7776E+079.5703E+061.
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3.00 90.871.3385E+072.7873E+079.4559E+069.6248E+06 29  16645817277 76.58101.15 72.61 89.771.3526E+0
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9  16645844479 58.80101.15 57.05 70.241.5283E+073.0899E+071.1729E+072.0951E+07 29  16645845279 58.2
8101.15 56.56 69.961.5484E+073.1049E+071.1806E+072.0873E+07 29  16645846079 57.75101.15 56.07 69.69
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.2983E+071.4344E+072.9786E+07 29  16645872980 40.17101.15 39.25 63.872.0559E+073.8920E+072.8864E+07
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REQ. AGENT	RAND NO.	ACQ. AGENT
GLS	V0273	WHW

IRAS

ZODIACAL OBSERVATION HISTORY FILE
VERSION 3.0

83-004A-01H ASIR-00005

This data set consists of 1 magnetic tape. This tape is 6250 BPI, 9-track, ASCII formatted and was created on an IBM 3032 computer. The Zohf is a low resolution version of the IRAS sky survey. The data base is time ordered and retains the subdivision of the original survey into semi-daily Satellite Operation Programs (SOPS) and individual continous survey scan observations (OBS). The data base organization is described on the following pages. The D and C number, number of files contained on the tape are as follows:

REC SIZE = 80 bytes, with a physical blocksize = 200 logical records or 16000 bytes

D Number	C Number	Files	SOP
D-64552	C-24298	573	29-600

572 files

IPAC

INTEROFFICE MEMORANDUM

701–305–88
December 30, 1988

TO: Distribution

FROM: C. Oken

SUBJECT: Release of the Version 3 Zodiacal History File

The Version 3 Zodiacal History File (ZOHF) and a table of corrections that reduce the scan-to-scan calibration inconsistencies in the ZOHF have been released to the NSSDC on a 6250-bpi ASCII tape. Two documents, also included in this delivery, are attached to this memo. The new ZOHF is described in the circular titled "Version 3 of the Zodiacal History File," and the correction table is described in the memo by F. Boulanger titled "Gain and Offset Corrections for ZOHF Version 3." These valuable corrections are the result of the research efforts of F. Boulanger and are not an IRAS product. We include them here because they are a useful adjunct to the official data.

Attachments
Distribution:
F. Gillett
H. Habing
M. Hauser
J. Houck
F. Low
G. Neugebauer
T. Soifer
B. Stewart
G. Villere
W. Warren

cc:
IPAC
S. Dermott
C. Heiles
P. Nicholson
P. Richards
M. Rowan-Robinson
M. Sykes
M. Werner

H

IRAS CIRCULAR December 28, 1988

VERSION 3 OF THE ZODIACAL HISTORY FILE

C.A. OKEN, T.N. GAUTIER and S.L. WHEELOCK
Infrared Processing and Analysis Center
California Institute of Technology
Pasadena, California 91125

This circular accompanies the release of Version 3 of the IRAS Zodiacal History File (ZOHF). The description of this ZOHF product – especially the changes made since the last release of the ZOHF (Version 2, May 1986) – follows, along with a brief description and a release date for an additional ZOHF product.

This new version incorporates a number of changes. The major improvements are in the calibration. The baseline calibration has been improved and, for the first time, corrections for detector hysteresis effects are incorporated. The entire IRAS survey was reprocessed with the improved calibration. Other changes to the ZOHF include a format change, additional calibration improvements, position improvements, a sampling change, and several processing changes. We also discuss the results of some of the verification tests we have done. This release circular is not intended to be an exhaustive description of the Version 3 ZOHF or its analysis. That document will appear in the Explanatory Supplement to the IRAS Super Skyflux products to be released in 1991. Rather, we want to provide the essential information to enable a researcher to use the new ZOHF product.

The Version 3 ZOHF represents what we consider the final fundamental DC calibration of the IRAS data. There are, however, still calibration differences at the few percent level between observations. These are not yet understood. In particular, there remains a systematic difference between ascending and descending scans which is probably a calibration problem and not a true feature of the sky. This systematic problem is discussed in the section on anomalies below.

It is possible to make empirical corrections to these data to remove much of the residual calibration noise. François Boulanger has derived a set of gain and offset coefficients for this purpose at 12, 25 and 60 μm for about 80% of the survey scans in the Version 3 ZOHF. These coefficients are being released separately by him. As a convenience, we are including them as a separate file on the magnetic tape containing the new ZOHF. The enclosed memo titled "Gain and Offset Corrections" describes these coefficients in detail.

The identical newly-calibrated and improved IRAS data will also be used to create a point-source-removed ZOHF. Point sources will be removed by a median or a mid-average technique. This product is scheduled for release in mid-1989.

Product Description

The Version 3 ZOHF is created in basically the same way as were the previous versions. IRAS data from (almost) all detectors at each wavelength are boxcar averaged over eight seconds of time. This results in an approximately square beam 0.5° wide. The exact pixel sizes are given in Table 1. These sizes have not changed from those in Version 2. These beam sizes are not the full width of the IRAS focal plane because the smallest detectors in each band are excluded from the average.

Table 1. Pixel Sizes for ZOHF

Wavelength (μm)	Pixel Size (arc minutes) In-Scan	Cross-Scan
12	30.8	28.4
25	30.8	30.3
60	30.8	28.5
100	30.8	30.5

Format

The Version 3 ZOHF is delivered to the NSSDC in the form of a 6250-bpi ASCII magnetic tape. The record format of the Version 3 tape has been changed to give UTCS in centiseconds instead of seconds; otherwise the format is the same as in Version 2. The new format is given in Table 2.

Processing

Several improvements in data processing were made for Version 3 and an error in Version 2 was corrected. The set of observations contained in Version 3 is slightly different from that of Version 2. A small set of survey scans erroneously excluded from the last release are included for the first time in Version 3. Observations that could not be properly calibrated using the new stimulator extraction method are excluded from Version 3. In total, Version 3 contains .07% fewer observations than Version 2.

Before data compression, radiation spikes and other electronic glitches are removed by a deglitch processor. The processor passes a filter over the detector data streams and recognizes any glitches whose power rises too abruptly above the local noise level. The glitches are then replaced using linear interpolation between the data points on either side of the offending glitch.

The data used in the Version 2 ZOHF had been processed with a destriper which adjusted the gain and offset of each individual detector in a band to match those of the average of all detectors in that band. The destriper was not used for Version 3. This

Table 2. Format of Version 3 ZOHF
(Replaces old version in IRAS Explanatory Supplement[1])

BYTE	NAME	DESCRIPTION	UNITS	TYPE
1	NSOP	SOP Number	-	I3
4	NOBS	OBS Number	-	I3
7	NUTCS[1]	Time UTCS	centisec	I10
17	INCL[1]	Inclination	degrees	F6.2
23	ELONG[1]	Solar Elongation	degrees	F6.2
29	BETA	Ecliptic Latitude	degrees	F6.2
35	LAMBDA	Ecliptic Longitude	degrees	F6.2
41	$I^1_{\nu_1}$	12 μm Brightness Density	Jy/sr	E10.4
51	I_{ν_2}	25 μm Brightness Density	Jy/sr	E10.4
61	I_{ν_3}	60 μm Brightness Density	Jy/sr	E10.4
71	I_{ν_4}	100 μm Brightness Density	Jy/sr	E10.4

[1] Refer to page X-42 of the IRAS Explanatory Supplement (Beichman *et al.* 1988) for definitions.

change should have little effect since the destriper left the average value of the ZOHF unchanged and, in any case, did not affect the striping caused by calibration variations between scans.

An error was found in Version 2 and corrected in Version 3 that advanced the position in-scan by 115″ for half of the mission data. Improvements in the satellite pointing reconstruction made to support the IRAS Faint Source Survey are incorporated in the new ZOHF. The impact of these improvements is generally not large relative to the resolution of the ZOHF.

The sampling interval in the Version 3 ZOHF is 8 seconds of time. Adjacent in-scan pixels are not overlapping, as was the case for Version 1.0. This reduces the file size by a factor of 2 as compared to Version 2.

Calibration

Several important changes were made in the IRAS calibration software. A response function for each detector was implemented that models the hysteresis effects introduced by particulate radiation and high infrared fluxes. The hysteresis model corrects all detectors for radiation-induced responsivity enhancement due to the South Atlantic Anomaly (SAA) and the 60 and 100 μm detectors for photon-induced responsivity enhancement. The uncertainty in the tracking of the detectors' response following a SAA crossing is now 2-3%. The improvement in the 60 and 100 μm detector response function after crossing the galactic plane is seen by differencing scans that cross the plane in opposite directions. At 100 μm in Version 2, there was a 20% discrepancy between these scans within 15° of the plane. The discrepancy in Version 3 is now only 5-6% between 6 and 15° of the plane. Larger uncertainties may still occur within 6° of the plane. At 60 μm, the remaining discrepancy within 15° of the plane is the same as for 100 μm.

We have enhanced the calibration accuracy using more accurate field of view measurements for the detectors and a more robust method of extracting internal calibration flashes in confused areas of the sky. The field of view improvement resulted in calibration shifts of -14% at 12 and 25 μm, -3% at 60 μm and -7% at 100 μm. Note that this is not the only calibration shift introduced in the reprocessing. Calibration stability is improved by a few percent in scans where the robust calibration extraction was needed.

As in previous releases of the ZOHF, the absolute baseline is maintained by daily reference to a standard patch of sky near the north ecliptic pole (NEP) called the Total Flux Photometric Reference (TFPR). During each day's observation of the TFPR, the total signal from each detector is measured along with its responsivity and compared to the brightness model for the TFPR. The difference between the product of the responsivity with the TFPR model and the measured signal is ascribed to electronic offset. The electronic offset used for correction of the survey observations is obtained by linear interpolation between offsets obtained during these measurements of the TFPR. This process is described in more detail in Section VI.B.3 of the IRAS Explanatory Supplement (Beichman *et al.* 1988).

The brightness model for the TFPR consists of a sinusoidal variation imposed on a constant offset (see page VI-10 of Beichman *et al.*). The variable part is caused by the annual motion of the Earth within the cloud of interplanetary dust surrounding the Sun. The symmetry plane of the cloud is tipped with respect to the ecliptic plane so part of the variation is due to the change in the path length of dust toward the ecliptic pole. The other part of the variation is due to changes in the temperature and density of the local dust as the Earth changes its distance from the Sun due to its orbital eccentricity. The constant term of the model is due to the constant part of the path length through the interplanetary dust and the galactic emission toward the ecliptic pole.

Two significant changes were made in the TFPR model. Unlike the previous TFPR model, the current model includes the effect of the Earth's orbital eccentricity in the amplitude and phase of the sinusoidal part of the model. The special absolute baseline calibration observations, the total flux calibrations (TFCAL observations), which determine the constant term of the TFPR model (also described in Section VI.B.3 of the IRAS Explanatory Supplement), have been re-analyzed with noticeably improved results. The internal consistency of the TFCAL observations is now 2% of the TFPR brightness or better at 12, 60 and 100 μm and 5% at 25 μm. The zero point uncertainties in the TFPR model based upon internal inconsistencies are now 0.36, 1.2, 0.17 and 0.4 MJy/sr ($1\,\sigma$), at 12, 25, 60 and 100 μm, respectively. The uncertainties in the basic responsivity calibration of the IRAS data traced back to standard stars and the asteroid model remains 2%, 5%, 5%, and 10% at 12, 25, 60 and 100 μm, as discussed in Section VI.C.2.c on page VI-24 of the IRAS Explanatory Supplement. The actual zero point uncertainties of the survey observations will be larger than those of the TFPR model due to baseline drifts on time scales shorter than one day and other systematic effects which are discussed in the anomalies section below.

Analysis Results

Comparison of Version 2 and Version 3

Several general analyses were done at IPAC to verify the new ZOHF data and characterize it with respect to Version 2.

Gain and Offset

To compare intensities, each Version 3 observation was linearly fit to its counterpart in Version 2 (where it existed). The average gain and offsets of these fits as well as the maxima and minima for the mission are given in Table 3. The mission mean gain and offset is approximately the value expected from the calibration changes which were implemented for Version 3. The mission extremes of gain and offset are caused by attempting to fit a linear transformation to the detector non-linearities encountered when especially bright sources are covered during a scan.

Table 3. Gain and offset of each Version 3 observation compared to each Version 2 Observation

Coefficient	Wavelength Band (μm)	Mission Mean	Error of Mean (1 σ)	Mission Maximum	Mission Minimum
GAIN	12	.896	.013	1.083	.685
	25	.919	.022	1.420	.713
	60	1.075	.042	1.344	.706
	100	1.031	.082	1.999	.505
OFFSET	12	-.208	.534	3.271	-5.044
(MJy/sr)	25	-3.062	1.260	8.760	-21.163
	60	-.310	.814	4.651	-5.504
	100	1.4	1.8	22.7	-11.8

Position

The cumulative effect of the position correction and the improved interpolation scheme can be shown by differencing the position given in the ZOHF to a position predicted in the Observation Parameter File for each ZOHF record in Versions 2 and 3. The Observation Parameter File is an internal IPAC file which summarizes the pointing information for each scan to an accuracy of about 20″. Histograms of these differences are given in Table 4. Note that Version 3 agrees much better with the Observation Parameter File than does Version 2. It should also be noted that both Versions of the ZOHF were compared with the Version 2 Observation Parameter File (a Version 3 Observation Parameter File, which would reflect the improved pointing, does not exist). It is likely that the Version 3 positions are actually slightly better than the histogram shows.

Table 4. Histograms of comparison of ZOHF positions with the Observation Parameter File

Difference (″)	Version 2 (%)	Version 3 (%)
0-10	39.0	37.7
10-20	15.7	23.6
20-30	9.1	17.4
30-40	5.9	12.0
40-50	4.2	7.0
50-60	3.3	2.1
60-70	2.7	.1
70-80	2.5	**
80-90	2.2	0.
90-100	1.9	0.
100-200	11.9	0.
200-300	1.5	0.
300-400	**	0.
400-500	**	0.
500-600	0.	0.
600-700	**	0.
700-800	**	0.
800-900	0.	0.
900-1000	**	0.
1000-2000	**	0.
>2000	**	0.

** represents a percentage $< .05$

Calibration Consistency Verification

M. G. Hauser and J. Vrtilek at Goddard Space Flight Center and L. J. Rickard and S. Stemwedl of the Naval Research Laboratory have performed extensive analyses of the ZOHF checking noise level and calibration consistency. Their results are summarized here.

If the IRAS calibration system were working perfectly, the brightness of the north ecliptic pole measured during survey observations should agree with the TFPR model used during the daily baseline calibration observations. The discrepancy between the pole and the TFPR gives some measure of the stability and uncertainty of the survey's baseline. The difference between the survey observations of the TFPR and the model is shown in Figure 1. The rms scatter is seen to be approximately 3% at 12 and 25 μm, 4% at 60, and 8% at 100 μm.

We should be able to re-derive from the ZOHF the same TFPR model that we used in the calibration. Any differences between the rederived model the model used in calibration provide another measure of the calibration consistency. Hauser *et al.* fit sinusoidal and constant terms to the ZOHF measurements taken within 1° of the NEP, excluding the area immediately around NGC 6543. Their constant terms derived from descending scans agreed with the TFPR model's constant terms to within 1%. The amplitude of the sinusoidal term differed from the model's by 3%, 7%, 9% and 68% at 12, 25, 60 and 100 μm for the descending scans. The relatively poor agreement in the amplitude of variation at 100 μm is not alarming since the amplitude is only 2% of the constant term. Ascending scans produced fits with similarly good agreement in the constant term, except for 100 μm where the constant term was 4% too small. The variable terms from the ascending scans differed from the TFPR model by 4%, 14%, 18% and 33% in the four bands. These differences between ascending and descending survey scans are discussed in the next section.

Anomalies

Several users of the Version 2 ZOHF have found that the descending scans (scans which progress with decreasing ecliptic latitude) are systematically brighter at the ecliptic plane than are the ascending scans (scans which progress with increasing ecliptic latitude.) Note that, in the IRAS orbit, descending scans always look behind the Earth in its orbit while ascending scans always look ahead. This effect was investigated and discrepancies on the order of 2% (2% at 12 and 60 μm, 1.5% at 25 μm, and 4% at 100 μm) are seen at the north ecliptic pole between the ascending and descending scans. At the pole the two sets of scans are looking at the same part of the sky and the difference should be zero. The error seen at the pole is within the uncertainties of the DC gain calibration.

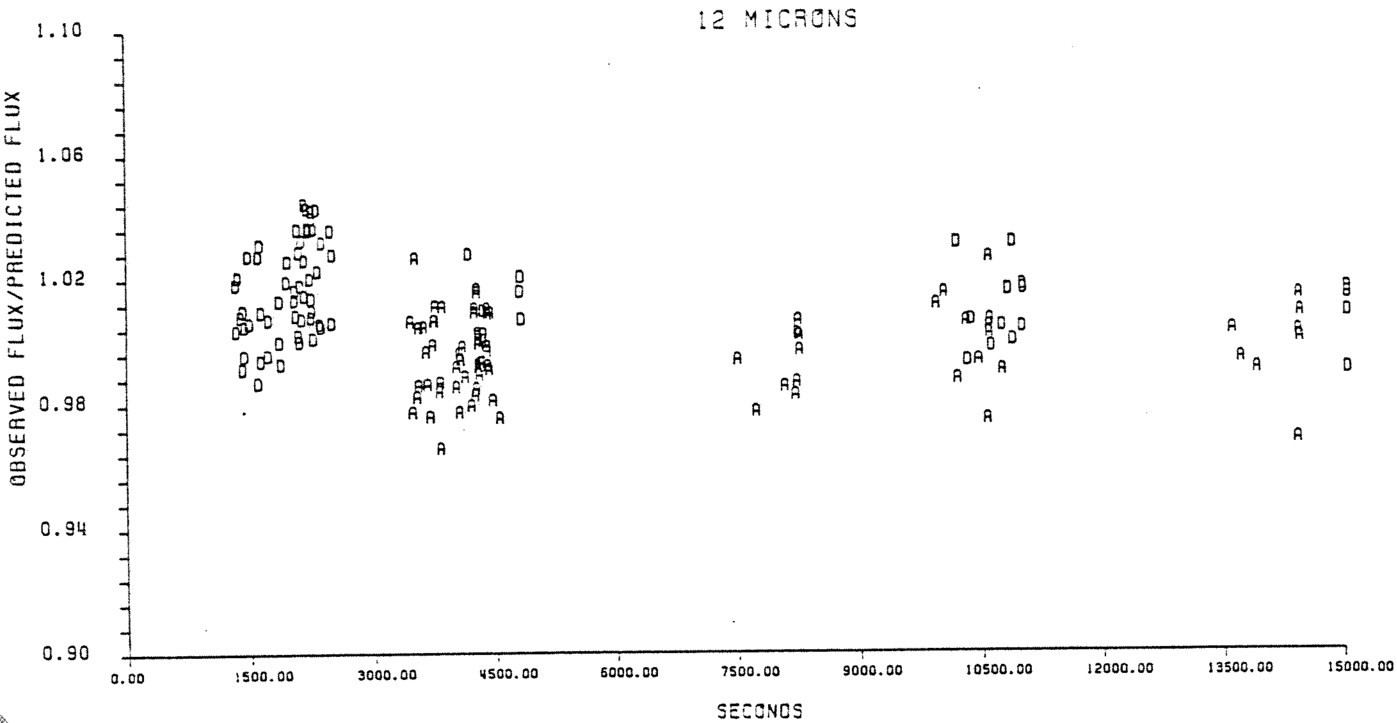
This difference could be caused by a residual hysteresis effect in the DC response of the detector after crossing the SAA. The model implemented in calibration for handling hysteresis after the SAA was derived only for the AC response. The DC response was assumed to vary linearly with the AC response and was obtained by applying a scale factor to the AC response. This assumption is evidently not correct at the few percent level.

Due to the nature of the survey scan strategy, descending scans dominate the first group of survey scans following a SAA crossing. These scans have elevated fluxes relative to the next group of scans which occur at larger time intervals from SAA crossings and are predominantly ascending. In Figure 1, the abscissa is the ratio of the measured flux at the NEP and the flux calculated from the TFPR model. This is plotted against the time from the most recent SAA crossing for the 12, 25, 60, and 100 μm bands. If the calibration were perfect, all measurements would be 1.0. The observations fall into groups along the time axis. Figure 2 shows the mean flux ratio and population standard deviation for each grouping of scans at 12, 25, 60, and 100 μm.

In short we believe that a large part, perhaps all, of the ascending-descending asymmetry can be attributed to uncorrected calibration drifts. We cannot, however, at this time eliminate the possibility that some of the asymmetry is a real feature of the sky.

Reference:

Beichman, C.A., Neugebauer, G., Habing, H.J., Clegg, P.E., and Chester, T.J., eds., 1989, *Infrared Astronomical Satellite Catalogs and Atlases, Vol. 1 Explanatory Supplement.* NASA Publication RP-1190.



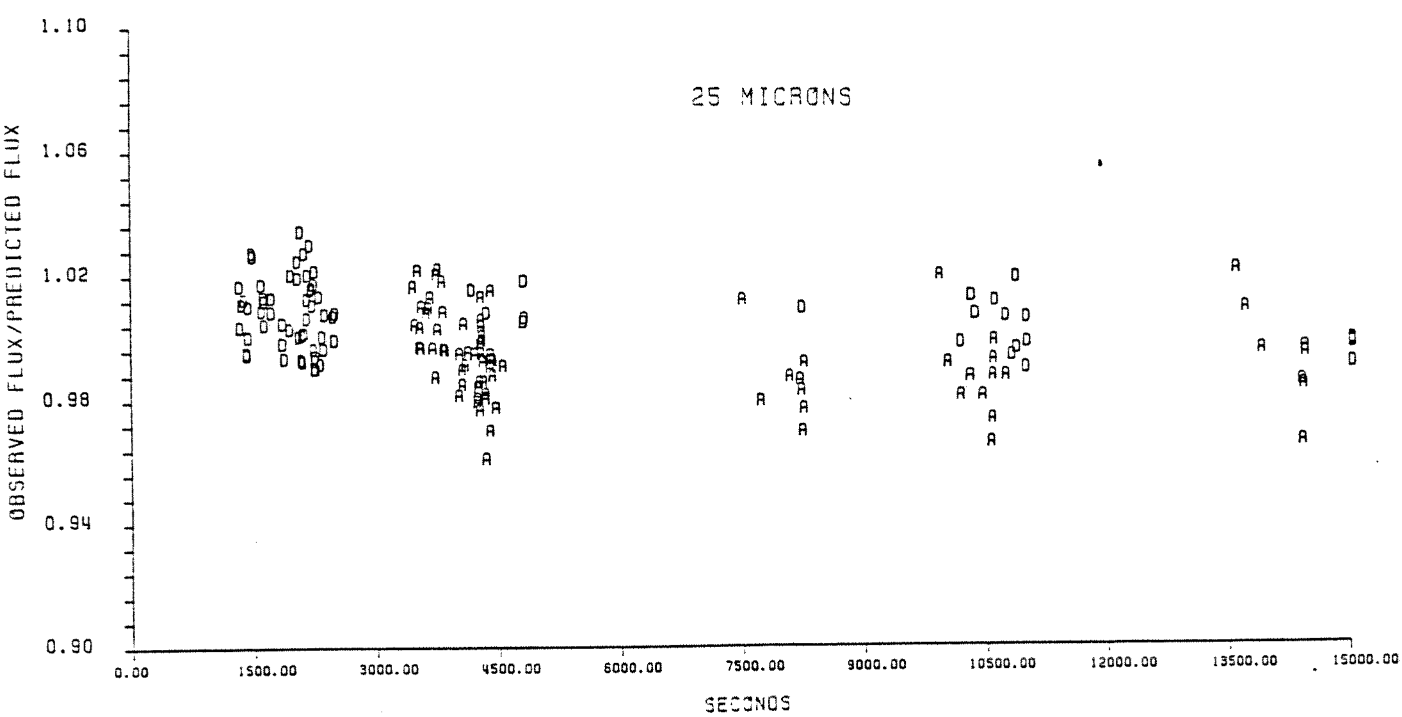


Figure 1. Flux ratio at NEP vs. time (seconds) from SAA crossing at 12, 25, 60, and 100 μm. (See text, Anomalies.)

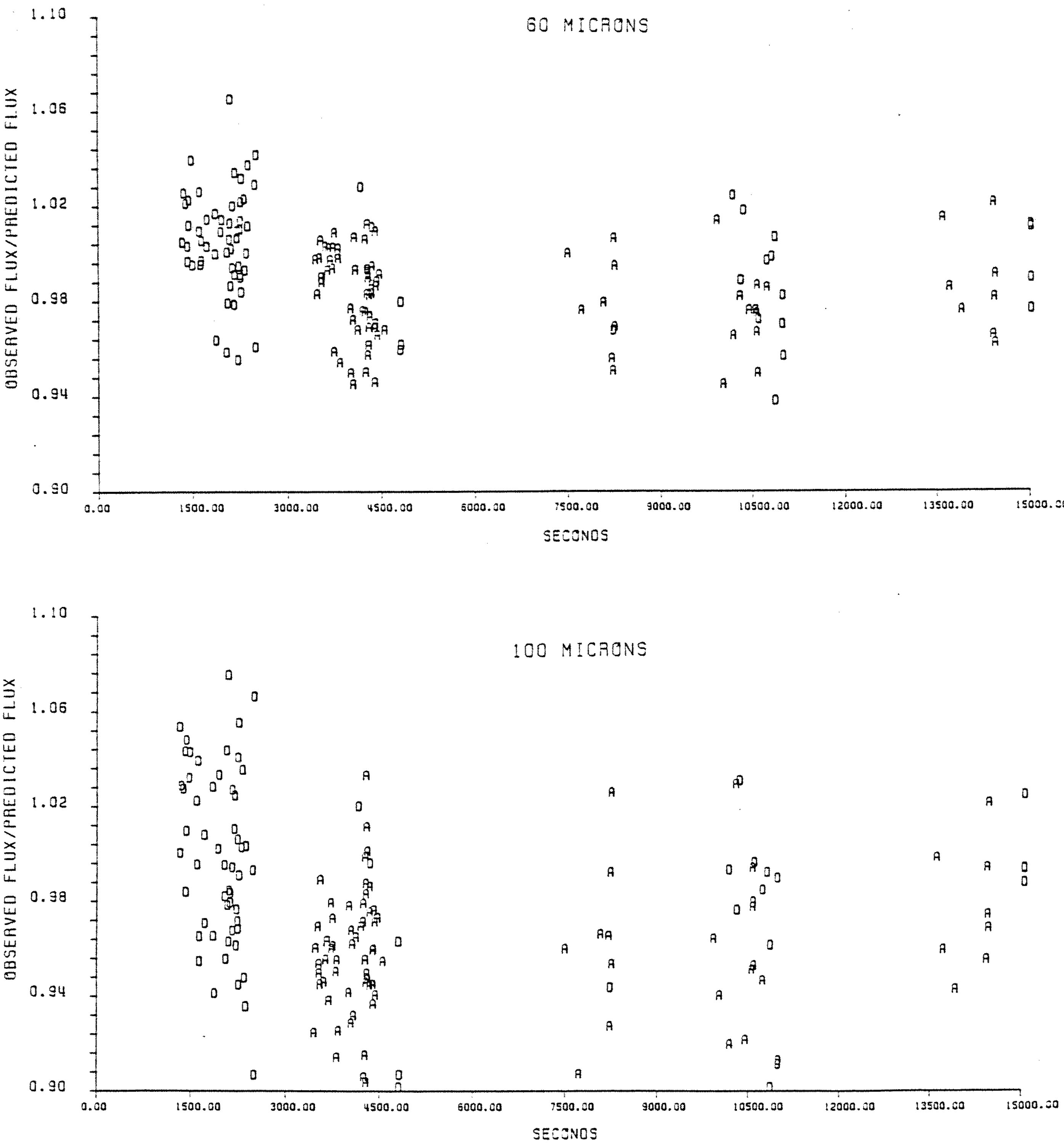


Figure 1, continued

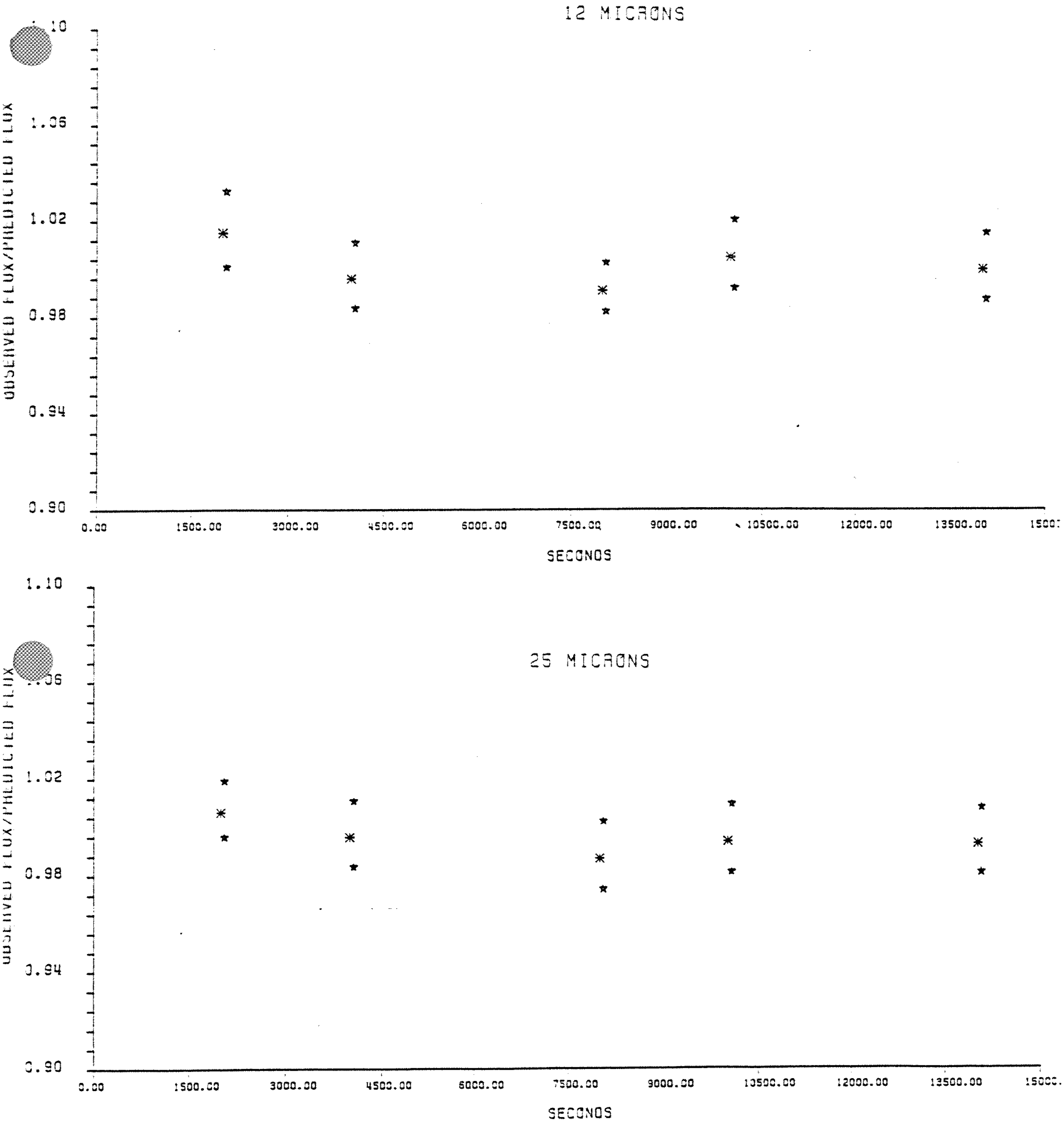
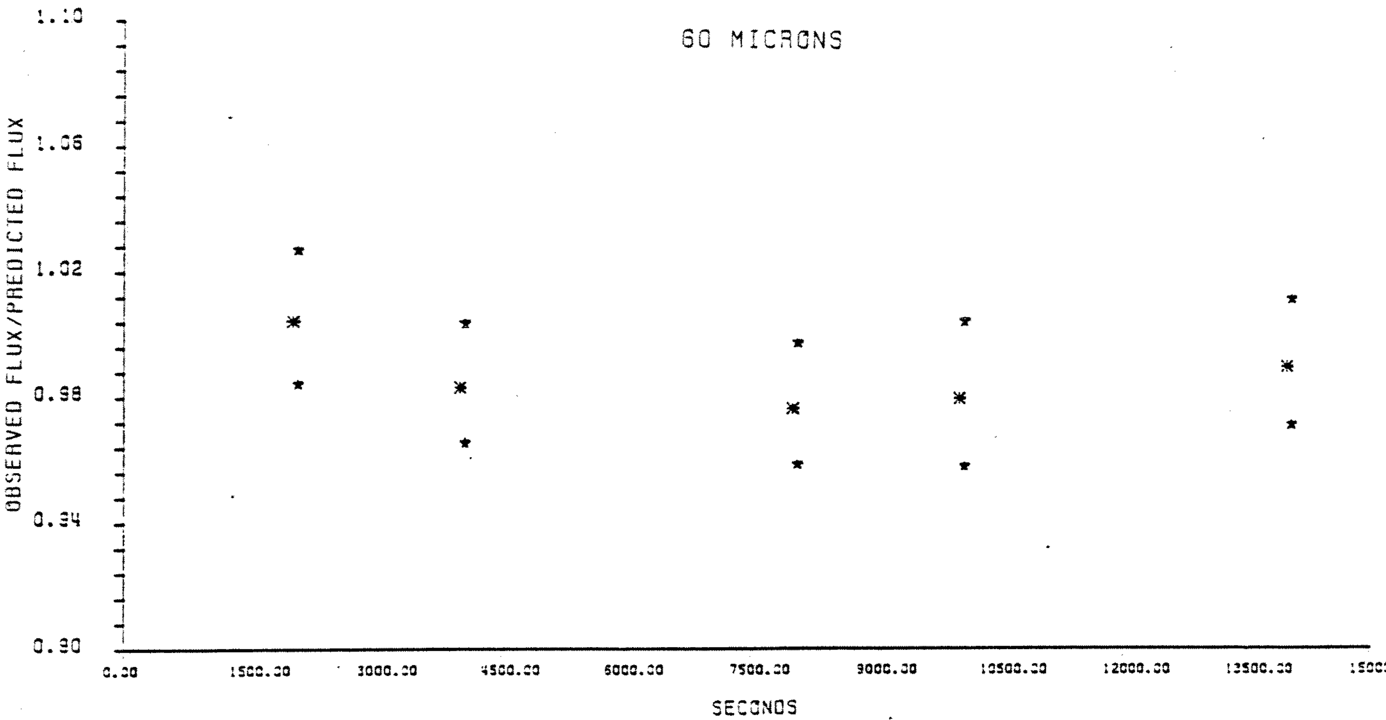


Figure 2. Mean flux ratios at NEP and population standard deviations vs. time (seconds) from SAA crossing at 12, 25, 60, and 100 μm. (See text, Anomalies).



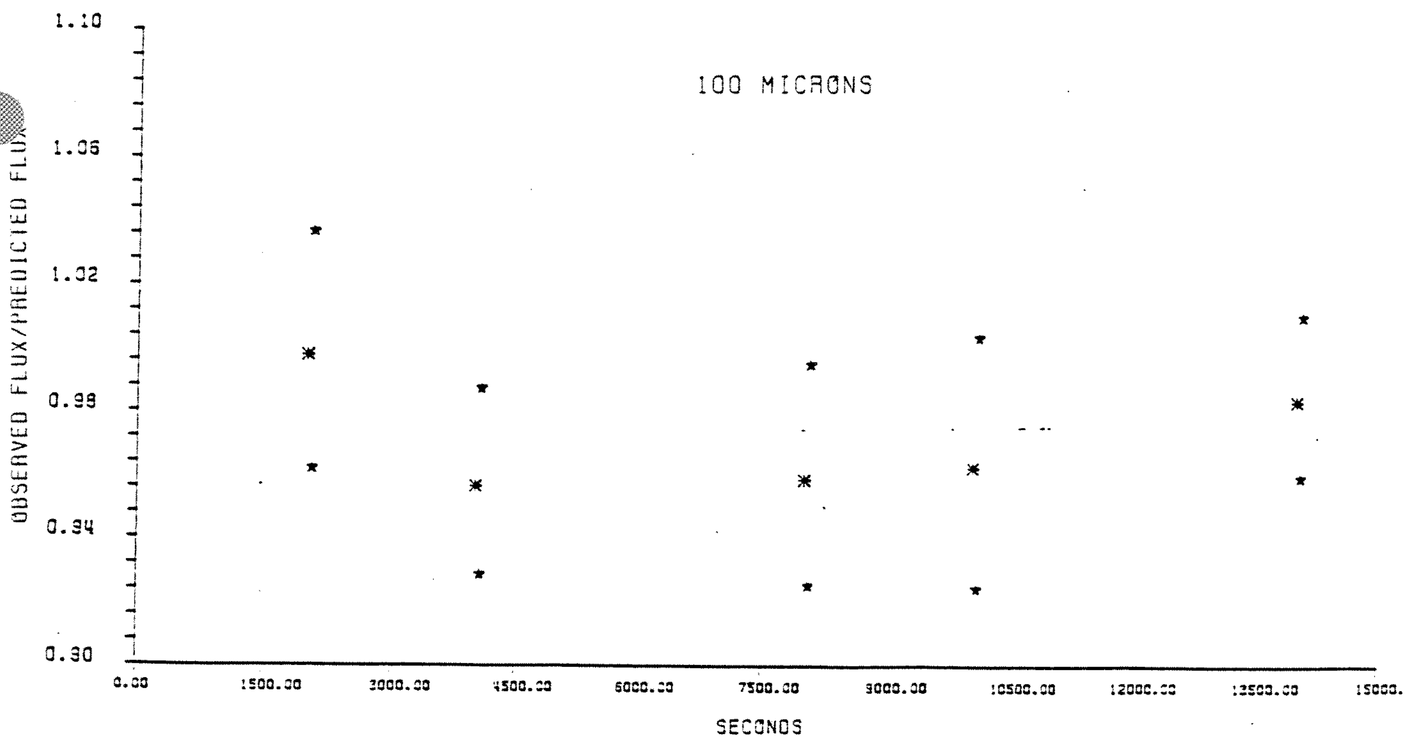


Figure 2, continued

GAIN AND OFFSET CORRECTIONS FOR ZOHF VERSION 3

F. Boulanger

A file of corrections of gains and DC offsets is given to accompany the Zodiacal History File (ZOHF). These corrections are intended to smooth out residual systematic imperfections in the ZOHF. This note describes how these corrections, given per observation, are derived. It also presents some statistics on the corrections.

The Version 3 ZOHF was used to compute average profiles of the zodiacal emission versus inclination (azimuth angle about the Earth-Sun axis) for the whole data set. The averaging bins have a size of 50 days and 5° elongation (angle between the line of sight and the sun) with a half interval overlap in both directions. The averaging process is described in the first appendix of Boulanger and Pérault (1988 Ap. J. 330, 964). There is only one change with respect to what is decribed in that paper. The differential corrections needed to regrid the average profiles on a square grid of SOP (Survey Observing Plan: half a day of observations) and elongation are now derived from the physical model of Good (Paper in preparation). Uncertainties on the parameters of this model have only a minor influence on the average profiles because the model is only used to do interpolation corrections of a few percent.

We compute the zodiacal light profile for each scan by linear interpolation of the nearest average profiles. Gain and DC offset corrections are derived from a linear fit between the scans and the corresponding zodiacal light profiles. The zodiacal light profile is fitted as a lower envelope to the scan by iterating the fit three times and by discarding all points with residuals larger than 5σ from one iteration to the next. In deriving these corrections, we assume that the zodiacal light dependence on elongation and time is linear between two consecutive average profiles. The gain and offset corrections are basically forcing each individual scan to match the average zodiacal light measured by all the scans with same SOP and elongation. This procedure is valid only if the fit is made over data points for which the Galactic emission is negligible compared to the magnitude of the gain and offset corrections. These corrections are typically a few percent. To satisfy this last condition the coefficients of the fits are derived only from parts of scans covering the regions at high Galactic latitude ($|b| \geq 25°$) where there is a good correlation between the IR and H I emission (Boulanger and Pérault 1988). In these regions the Galactic emission at 12 and 25 μm is negligible compared to the zodiacal light. Since we restricted ourselves to regions where IR and H I emission correlate, H I data is used to subtract the galactic contribution at 60 μm (see Boulanger and Pérault 1988). No correction factors are derived at 100 μm because variations in the slope of the IR-H I correlation from place to place in the sky prevent subtraction of the Galactic emission with sufficient accuracy.

Correction factors are measured only for scans for which at least 60 data points (30°) satisfy the selection criteria for low Galactic emission described in the previous paragraph.

Therefore, no gain and offset corrections are obtained for short scans and scans which have too few points in regions of low galactic emission. The file gives correction factors for about 80% of the scans longer than 25°. Statistics on the gain and offset corrections are presented in Tables 1 and 2. Table 1 gives the average value and the root mean square dispersion of the gain and offset corrections. At all wavelengths the average gain and offset corrections are close to 1 and 0, respectively. This shows that the corrections do not change the overall calibration of the data. The root mean square dispersion of the gain corrections is about 3% for the three wavelengths. Table 2 gives a histogram of the gain corrections. The gain and offset corrections are plotted against SOP and elongation in Figure 1. This figure shows that there is no systematic effect in the corrections with respect to elongation and SOP.

The file of corrections is a formatted ASCII file. The format and content of the file is described in Table 3. The file contains one entry for each scan in the ZOHF. When no gain and offset corrections were derived the correction factors and the correlation coefficient of the fit were set to zero.

Use the following formula to apply the corrections:

Corrected Flux = [ZOHF Flux (MJy/sr) - Offset] / Gain

TABLE 1. Statistics of Correction Factors

λ μm	Number of Scans			Offsets MJy/sr		Gains		Residuals MJy/sr
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
12	3616	2133	0	-0.105	0.482	1.004	0.030	0.114
25	3617	2132	0	-0.125	0.835	1.001	0.032	0.172
60	3384	2295	70	0.036	0.403	0.994	0.036	0.162

(1): number of scans with a good fit (correlation coefficeint larger than 0.96)
(2): number of scans without a fit; most of these are short scans.
(3): number of scans with a poor fit (correlation coefficient smaller than 0.96)
(4): average offset correction
(5): rms of offset corrections
(6): average gain correction
(7): rms of gain corrections
(8): average amplitude of residuals (rms dispersion) after subtraction of the fit.

TABLE 2. Histogram of Gains

Range	12 μm	25 μm	60 μm
<0.955	69	196	330
0.955-0.965	79	158	166
0.965-0.975	141	173	220
0.975-0.985	324	308	360
0.985-0.995	670	564	474
0.995-1.005	854	665	606
1.005-1.015	628	546	538
1.015-1.025	356	448	358
1.025-1.035	184	248	134
1.035-1.045	81	118	59
>1.045	230	193	139
Total	3616	3617	3384

Table 3. File Format

Name	Description	Units	Type
NSOP	SOP number	–	I4
NOBS	OBS number	–	I3
ELONG	Solar elongation	degrees	F6.1
NPTS	Number of data points in the scan	–	I4
FG1	Gain factor 12μm	–	F7.3
FO1	Offset factor 12μm	MJy/sr	F6.2
FC1	Correlation Coefficient	–	F6.3
FS1	Standard dispersion of fit residuals 12 μm	MJy/sr	F6.2
FG2	Gain factor 25μm	–	F7.3
FO2	Offset factor 25μm	MJy/sr	F6.2
FC2	Correlation coefficient of fit	–	F6.3
FS2	Standard dispersion of fit residuals 25 μm	MJy/sr	F6.2
FG3	Gain factor 60μm	–	F7.3
FO3	Offset factor 60μm	MJy/sr	F6.2
FC3	Correlation Coefficient of fit	–	F6.3
FS3	Standard dispersion of fit residuals 60 μm	MJy/sr	F6.2
N1	Number of data points used for fit	–	I4
	– first iteration	–	
N2	– second iteration	–	I4
N3	– third iteration	–	I4
NPRO	Number of data points in average profile fitted to the scan	–	I4

Note: Corrected Data = (ZOHF Flux (MJy/sr) - Offset)/Gain

12 µm

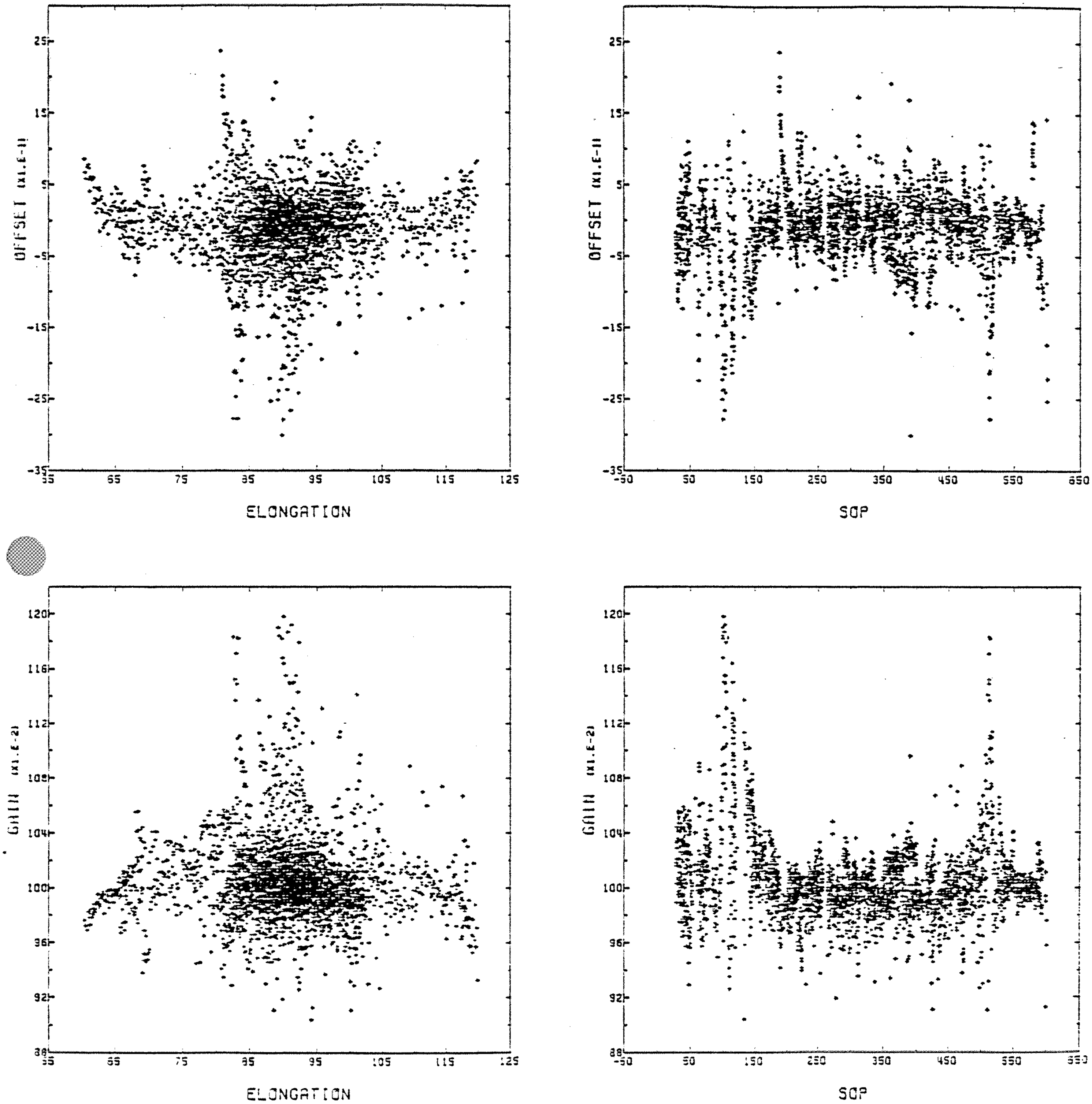


Figure 1a: Gain and Offset corrections versus elongation and SOP

25 µm

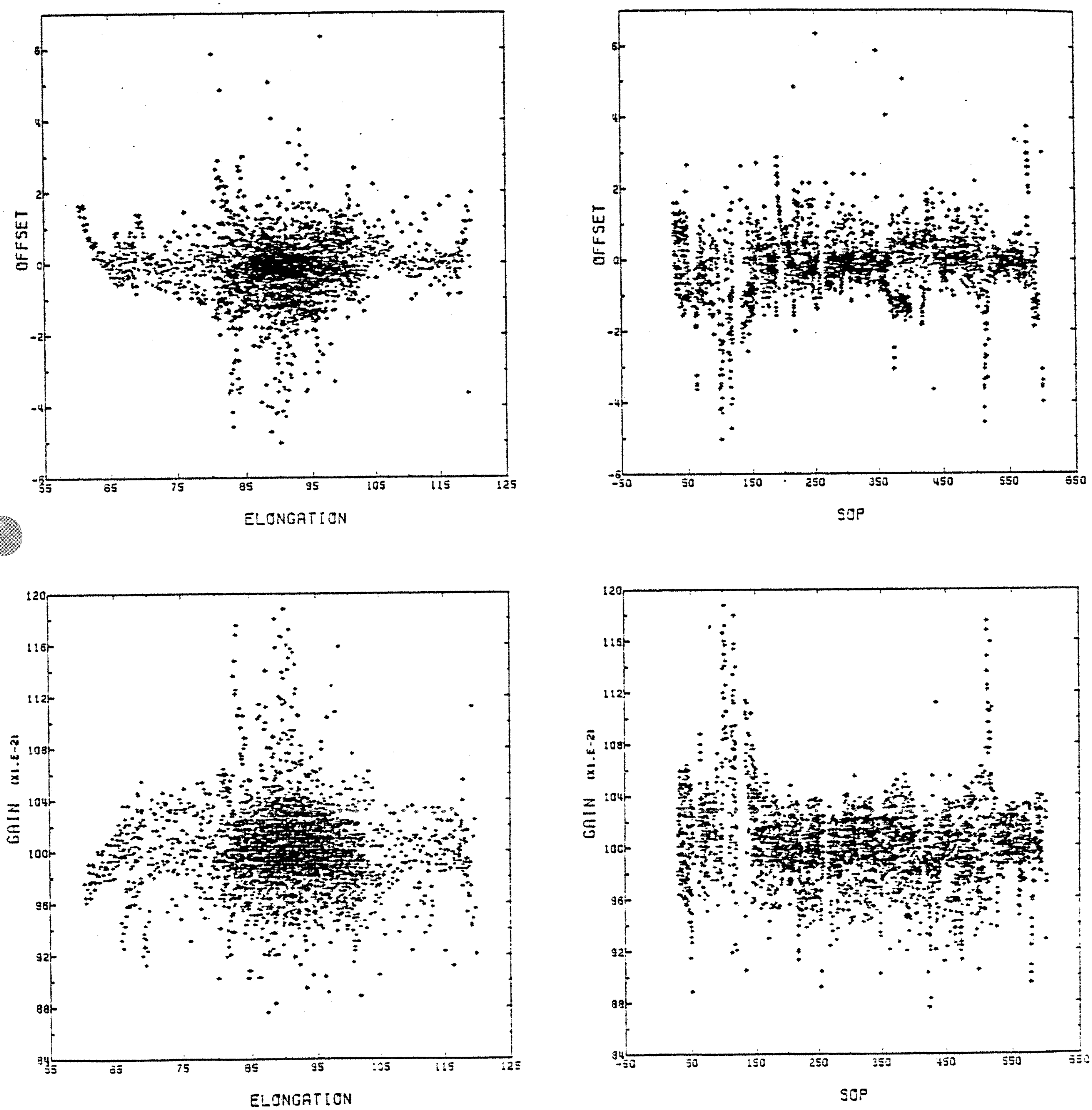


Figure 1b: Gain and Offset corrections at 25 um versus elongation and SOP

60 µm

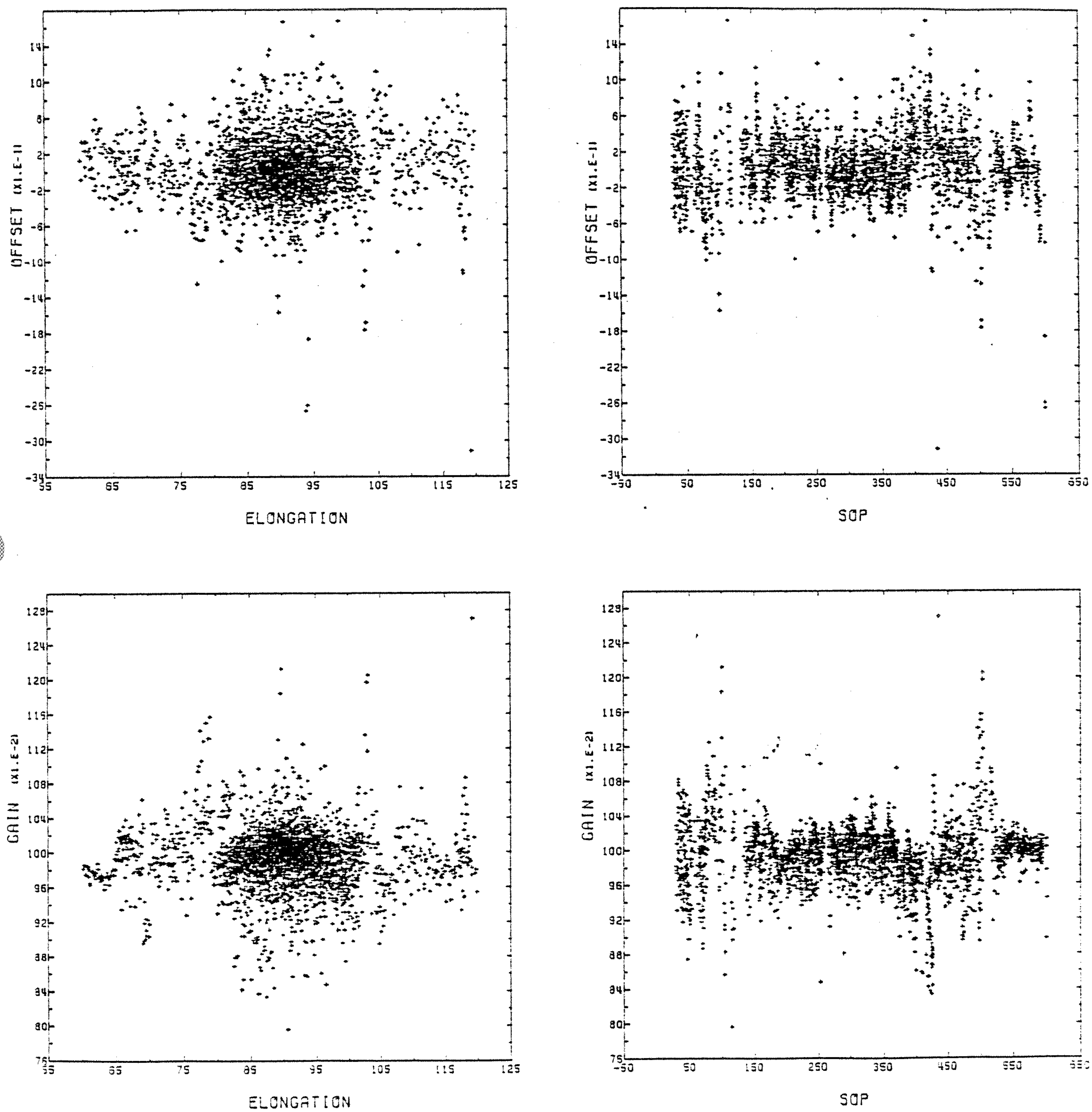


Figure 1c: Gain and Offset corrections at 60 um versus elongation and SOP

IRAS ZODIACAL HISTORY FILE.

D-64552

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.3951E+072.8486E+079.9238E+061.1444E+07 29  16645826078 70.83101.15 67.92 80.391.3947E+072.8507E+07
9.9150E+ 61.2216E+07 29  16645826878 70.31101.15 67.47 79.741.3931E+072.8608E+079.7945E+061.1660E+0
7 29  16645827678 69.78101.15 67.02 79.121.3936E+072.8655E+079.8346E+061.2825E+07 29  16645828478 6
9.26101.15 66.56 78.521.4034E+072.8777E+079.7956E+061.1843E+07 29  16645829278 68.74101.15 66.10 77
.941.3939E+072.8812E+ 79.7651E+061.0651E+07 29  16645830078 68.21101.15 65.64 77.391.3929E+072.8836
E+079.6669E+069.7668E+06 29  16645830878 67.69101.15 65.18 76.861.4010E+072.8891E+079.7774E+069.806
E+06 29  16645831678 67.17101.15 64.71 76.341.4118E+072.8993E+079.9671E+061.1037E+07 29  166458324
78 66.64101.15 64.25 75.851.4135E+072.9065E+079.9942E+061.1454E+07 29  16645833278 66.12101.15 63.7
8 75.381.4136E+072.9154E+071.0052E+071.1497E+07 29  16645834078 65.60101.15 63.31 74.921.4205E+072.
9230E+071.0173E+ 71.2051E+07 29  16645834878 65.07101.15 62.83 74.481.4316E+072.9330E+071.0247E+071
.2216E+07 29  16645835678 64.55101.15 62.36 74.061.4306E+072.9423E+071.0389E+071.3800E+07 29  16645
836478 64.03101.15 61.88 73.651.4377E+072.9535E+071.0489E+071.3592E+07 29  16645837278 63.51101.15
61.40 73.251.4564E+072.9699E+071.0829E+ 71.5065E+07 29  16645838078 62.98101.15 60.93 72.871.4594E+
072.9749E+071.0742E+071.4565E+07 29  16645838879 62.46101.15 60.44 72.501.4633E+072.9830E+071.0583E
+071.3544E+07 29  16645839679 61.94101.15 59.96 72.151.4719E+073.0005E+071.0818E+071.4303E+07 29  1
6645840479 61.41101.15 59.48 71.801.4802E+073.0101E+071.1004E+071.5172E+07 29  16645841279 60.89101
.15 59.00 71.471.5486E+073.0421E+071.1157E+071.6247E+07 29  16645842079 60.37101.15 58.51 71.151.50
62E+073.0472E+071.1201E+071.6729E+07 29  16645842879 59.84101.15 58.02 70.841.5103E+073.0550E+071.1
451E+071.8858E+07 29  16645843679 59.32101.15 57.54 70.531.5133E+073.0664E+071.1450E+071.8832E+07 2
9  16645844479 58.80101.15 57.05 70.241.5283E+073.0899E+071.1729E+072.0951E+07 29  16645845279 58.2
8101.15 56.56 69.961.5484E+073.1049E+071.1806E+072.0873E+07 29  16645846079 57.75101.15 56.07 69.69
1.5423E+073.1159E+071.1767E+072.0573E+07 29  16645846879 57.23101.15 55.58 69.421.5660E+073.1385E+0
71.2226E+072.2679E+07 29  16645847679 56.71101.15 55.09 69.161.5688E+073.1480E+071.2389E+072.5420E+
07 29  16645848479 56.18101.15 54.59 68.911.5873E+073.1638E+071.2824E+072.4842E+07 29  16645849279
55.66101.15 54.1  68.671.5857E+073.1723E+071.2584E+072.2510E+07 29  16645850079 55.14101.15 53.61 6
8.441.6042E+073.1871E+071.2811E+072.4658E+07 29  16645850879 54.61101.15 53.11 68.211.5988E+073.194
3E+ 71.2655E+072.3358E+07 29  16645851679 54.09101.15 52.62 67.991.5994E+073.2028E+071.2516E+072.25
55E+07 29  16645852479 53.57101.15 52.12 67.771.6134E+073.2177E+071.2638E+072.2315E+07 29  16645853
279 53.05101.15 51.62 67.561.6394E+073.2421E+071.3000E+072.3963E+07 29  16645854079 52.52101.15 51.
13 67.361.6392E+ 73.2654E+071.3397E+072.6223E+07 29  16645854879 52.00101.15 50.63 67.161.6663E+073
.2983E+071.4344E+072.9786E+07 29  16645872980 40.17101.15 39.25 63.872.0559E+073.8920E+072.8864E+07
8.0887E+07 29  16645873780 39.64101.15 38.75 63.772.0808E+073.9308E+072.8792E+077.8739E+07 29  1664
```

REQ.AGENT	RAND NO.	ACQ.AGENT
GLS	V0273	WHW

IRAS

WORKING SURVEY DATA BASE (WSDB)

83-004A-01I ASIR-00029

This data set consists of one magnetic tape. The tape is 6250 BPI, 9 track, and contains binary data. Each binary data file is proceeded by a ASCII header file, 20 header files and 20 binary data files. The tape was created on an IBM 3032 computer. The WSDB is the larger version of the Point Source Catalog which retains more of the data used in contructing that catalog and more of the data reduction history of each observation. The D and C numbers are as follows:

D#	C#
D-64555	C-24301

D64555
WSDB
Version 3

```
$NOP                    LIST OF GLS 1
$EXE TPLIST BS

INPUT PARAMETERS ARE:  AS SR=1=1 1 1 1

 TAPE NO.   1              FILE NO.   1
 RECORD   1                LENGTH   80
FINAL CATALOG WSDB LUNE01     1986 FEB 18   3.00   *******FINAL PRODUCTS*******

***** JOB DONE.
$WEO LPS

$$
$ASS IN HT1 OUT HT0
```

DUMP OF TAPE GLS

D64555

INPUT TAPE GLS ON HT0
DATA INPUT H9 NF=40 SR=40=LAST=1

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
1	1	1	80	0	0	0	0	0	0

FILE 40 RECORD 49 LENGTH 13000BYTES

(0)	32C80000	00C40000	00000014	000091E0	24CE8AEB	FA643704	18750023	00050073	00000000	00000002
(40)	000000EE	00000079	0000009A	000000A8	00000000	00000000	0000001B	00000016	00000000	00320054
(80)	00005A63	1177000E	000D0002	00AD0000	00000000	00080000	0000010C	006B003C	2E08663D	00002000
(120)	000000DF	00000044	00000049	000000FC	00000000	00000000	00000000	0000002A	00000000	00000061
(160)	00000063	11170000	00000000	0001000B	000A000B	08CA0000	00000000	00EF0001	2E7D6992	00000003
(200)	00C40000	00000014	000091E0	24DE9FBC	FA5E1021	0002003C	00050064	00000000	00000002	00000156
(240)	0000005B	00000061	0000006B	00000000	00000000	00000000	00000019	00000000	00000021	0000005B
(280)	11170007	000E0007	00CA0000	00000000	00070000	00000000	00000039	2E0A477E	00000000	000000EC
(320)	00000074	00000055	0000007C	00000000	00000000	00000000	00000014	00000000	00000038	0000005D
(360)	1117000A	00010001	052C0000	00000000	000E0000	00000000	00000038	2E7F4CED	00000003	00C40000
(400)	00000014	000091E2	25228B28	FA5F277A	18740021	00050054	00000000	00000002	0000013C	0000005F
(440)	00000079	000000A6	00000000	00000000	00000014	00000019	00000000	00360054	00006063	11370000
(480)	0000000A	002C0007	000E0007	00CA0000	00000000	0000003B	2E159479	00000000	000000DA	00000076
(520)	00000074	0000008C	00000000	00000021	00000018	00000015	00000025	0033005F	005D5E62	1257000E
(560)	000D0000	00090000	0000006C	006E0000	00000000	0000002C	2E8B941B	00000000	00C40000	00000014
(600)	000091E2	2528037E	FA6298BE	18750015	00050042	00000000	00000002	00000108	0000005C	00000122
(640)	00000180	00000000	00000000	0000003D	00000047	00000000	00550099	00006364	1157000E	00090000
(680)	152D0000	0000006C	0D6E0000	00000000	0000003C	2E168597	00000003	000000F7	0000004F	00000135
(720)	00000189	00000000	00000000	00000028	00000037	00000000	008A00D6	00006364	11770000	0000002D
(760)	048C000B	000000EB	08CA0000	000F1110	00EF003B	2E8B940F	00000303	00C40000	00000014	000092A8
(800)	23AA2CFE	FA4C6E02	18090012	00050024	00000000	00000002	000003C6	00000077	00000043	0000004A
(840)	00000064	00000022	00000000	00000000	00700025	00000000	645A0000	721104AD	00000000	000008EB
(880)	00000000	000A010C	00070008	00000033	2DD56EDB	03000000	000003F2	00000057	0000003E	0000002B
(920)	0000006F	00000000	00000000	00000000	00620000	00000000	63000000	7111000E	000D0000	00000D0C
(960)	00000008	00030110	00000000	00000034	2E4C4F74	03000000	00C40000	00000014	000092A9	23F45217
(1000)	FA481921	1833000C	0005006B	0001610B	00000002	00000737	00000095	00000053	0000003C	000000D4
(1040)	0000002B	00000000	00000000	0098002D	00000000	645A0000	721100CE	00090006	0000006C	00000000
(1080)	00030000	00000000	00000034	2DE2A767	10000000	00000686	000000A9	0000004A	00000048	000000B7
(1120)	0000001E	00000000	00000000	00B6003C	00000000	64620000	7711002A	0029000A	000900EF	000E0000
(1160)	00000000	00000000	00000130	2E589555	00000000	00C40000	00000014	000092A9	23F9EF4F	FA3B515E
(1200)	181F0028	000500B3	00000000	00000002	00000185	00000064	00000087	00000067	00000000	00000000
(1240)	00000017	00000000	00000000	00390000	00005C00	11710007	000D004B	00020000	0000000D	00000000
(1280)	00000000	00000021	2DE3A5A1	00002000	000003D0	0000005F	0000008C	00000034	00000000	00000000
(1320)	00000016	00000000	00000000	00540000	00005F00	11710003	000600EF	00060000	0000000A	00000000
(1360)	00000000	00000025	2E5A7810	00002000	00C40000	00000014	000092A9	23FBE220	FA5079DF	182C001C
(1400)	0005009B	00000000	00000002	00000101	000000A4	00000083	00000074	00000000	0000002E	00000014
(1440)	00000011	00000036	00440033	005E6060	12770000	000C00AD	00040002	00000002	004D0000	00000000
(1480)	00000023	2DE2A7B1	00000000	00000129	0000019F	0000008C	0000005D	00000000	00000078	0000001E
(1520)	00000017	00000056	00310024	0059635A	12370000	00000005	00880008	0007000C	0CEB0000	00000000
(1560)	00000037	2E58957A	00000003	00C40000	00000014	000092AB	2449DC77	FA4398F1	1833000E	00050028
(1600)	00000000	00000002	000000E7	000000C0	000002AA	00000198	00000000	0000002D	0000007B	00000043
(1640)	0000003D	00BE00AC	00626464	15770000	008C04AD	008C000B	000008EB	004A0000	00000000	0000003B
(1680)	2DEFDF98	00000300	000000D5	000000A3	00000207	00000185	00000000	00000017	00000045	00000035
(1720)	0000003B	01330103	00646464	17770000	000D0046	00AD0000	0003006C	006B0010	00EF0110	1D6F003C
(1760)	2E66BD19	00000003	00C40000	00000014	000092AB	2450D540	FA47738A	183C0009	0005004B	0003610D
(1800)	00000002	0000062C	000000A1	0000003D	0000002C	0000008E	00000017	00000000	00000000	00B5003F
(1840)	00000000	64620000	7411002A	00090000	00000110	00070008	0000006C	000E0000	00030130	2DF0DE34
(1880)	00000000	00000668	000000AC	00000046	00000037	0000008E	0000001D	00000000	00000000	00C0004B
(1920)	00000000	64630000	7711002D	00040001	000000EB	00000000	000000EF	00CE0000	00060233	2E66BD48
(1960)	00080000	00C40000	00000014	000092AB	24511DE5	FA42D262	18390009	00050024	0003610E	00000002
(2000)	00000D8F	0000015B	0000003D	00000079	0000010F	0000002F	00000000	0000001C	01B0006E	0000001E
(2040)	6463005D	7712002A	00290000	00012190	00070008	0000006C	0CCE0000	00000130	2DF0DE19	03030000
(2080)	00000C9D	0000012F	00000048	0000003D	000000E7	00000028	00000000	0000000E	0146006C	00000028

REQ. AGENT	RAND NO.	ACQ. AGENT
GLS	V0273	WHW

IRAS

HCON-3

SKY PLATE IMAGES

83-004A-01K ASIR-00024

This data set consists of 24 magnetic tapes. These tapes are 6250 BPI, 9 track, and contain 64 files of data each, except the last tape, which contains only 32 files of data. These tapes were created on an IBM 3032 computer. Each tape holds 8 plates, except the last tape, which holds 4 plates. The first several records of each file contain the header, then the image appears. The header records are ASCII formatted and the image records are binary formatted. These image tapes are all in FITS (Flexible Image Transport System) format. The D and C numbers and the sky plates contained on each tape are as follows:

D#	C#	SKY PLATES
D-64557	C-24305	1-8
D-64558	C-24306	9-16
D-64559	C-24307	17-24
D-64560	C-24308	25-32
D-64561	C-24309	33-40
D-64562	C-24310	41-46,48,49
D-64563	C-24311	50-57
D-64564	C-24312	58,59,61-66
D-64565	C-24313	67-69,73-77
D-64566	C-24314	78-82,85-87
D-64567	C-24315	88-93,98,99
D-64568	C-24316	100-106,109
D-64569	C-24317	110-117
D-64570	C-24318	121-128
D-64571	C-24319	129,133-139
D-64572	C-24320	140-142,145-149
D-64573	C-24321	150-153,156-159
D-64574	C-24322	160-167
D-64575	C-24323	169-176
D-64576	C-24324	177-184
D-74922	C-26329	185-192
D-74923	C-26330	193-200
D-74924	C-26331	201-208
D-74925	C-26332	209-212

D-64557
C-24305
SKY PLATES FOR HCON-3
83-004A-01K

```
$NOP
$NOP **************** DAOUT1 ****************
$EXE TPLIST BS

INPUT PARAMETERS ARE:  AS SR=1=1 1 1 1

 TAPE NO.   1                FILE NO.   1
 RECORD   1                  LENGTH   2880
SIMPLE  =                     T            / STANDARD FITS FORMAT                        BITPIX  =
          32         / 4-BYTE TWOS-COMPL INTEGERS              NAXIS    =                        3
   / NUMBER OF AXES                          NAXIS1  =                  495           / # SAMPLES PER L
INE (FASTEST VARY NDEX)NAXIS2  =                 503           / # LINES OF DATA IN IMAGE FILE
    NAXIS3  =                   1            / # WAVELENGTHS                                BSCALE  =
  5.452386E-02             / TRUE=TAPE*BSCALE+BZERO                   BZERO    =                    0.0
     /                                       BUNIT    = 'JY/SR    '                      / INTENSITY
                          BLANK   =           -2000000000            / TAPE VALUE FOR EMPTY PIXEL
       CRVAL1  =                   0.0           / RA AT ORIGIN (DEGREES)                CRPIX1  =
               247.         / SAMPLE AXIS ORIGIN (PIXEL)          CTYPE1  = 'RA---TAN'
          / DECREASES IN VALUE AS SAMPLE INDEX    COMMENT                                       INCREAS
ES  (GNOMONIC PROJECTION)      CDELT1  =          -3.333333E-02               / COORD VALUE INCREMENT DEG/
PIXEL      COMMENT                                  AT ORIGIN ON SAMPLE AXIS                   CRVAL2
 =                 90.00          / DEC AT ORIGIN (DEGREES)                CRPIX2  =
252.         / LINE AXIS ORIGIN (PIXEL)             CTYPE2  = 'DEC--TAN'                             / DEC
REASES IN VALUE AS LINE INDEX       COMMENT                                 INCREASES  (GNOMONIC P
ROJECTION)      CDELT2  =          -3.333333E-02            / COORD VALUE INCREMENT DEG/PIXEL        COM
MENT                                     AT ORIGIN ON LINE AXIS                 CRVAL3  =
 1.2E-05            / WAVELENGTH IN METERS                   CRPIX3  =                        1.
                                         CTYPE3  = 'LAMBDA  '
                     CDELT3  =                           0.
 DATAMAX =            5.452386E+07            / JY/SR  (TRUE VALUE)                       DATAMIN =
1.183215E+07           / JY/SR  (TRUE VALUE)                EPOCH   =                      1950.
  / EME50                                DATE-MAP= '01/11/84'                             / MAP RELEASE DA
TE (DD/MM/YY)              DATE    = '14/03/86'                    / DATE THIS TAPE WRITTEN (DD/MM/YY)
     ORIGIN  = 'JPL-IRAS'                      / INSTITUTION                            TELESCOP= 'IRA
S    '                                                          INSTRUME= 'SKYPLATE'
       / IRAS SKY PLATE                         OBJECT  = 'PL001 H3'                          / PLATE NUMB
ER / HCON                        PROJTYPE= 'GNOMONIC'                         / PROJECTION TYPE


***** JOB DONE.
$EXE TPLIST BS

INPUT PARAMETERS ARE:  AS SR=1=1 1 1 57

 TAPE NO.   1                FILE NO.   57
 RECORD   1                  LENGTH   2880
SIMPLE  =                     T            / STANDARD FITS FORMAT                        BITPIX  =
          32         / 4-BYTE TWOS-COMPL INTEGERS              NAXIS    =                        3
   / NUMBER OF AXES                          NAXIS1  =                  498           / # SAMPLES PER L
INE (FASTEST VARY NDEX)NAXIS2  =                 503           / # LINES OF DATA IN IMAGE FILE
    NAXIS3  =                   1            / # WAVELENGTHS                                BSCALE  =
  8.509797E-02             / TRUE=TAPE*BSCALE+BZERO                   BZERO    =                    0.0
     /                                       BUNIT    = 'JY/SR    '                      / INTENSITY
                          BLANK   =           -2000000000            / TAPE VALUE FOR EMPTY PIXEL
       CRVAL1  =                 216.00          / RA AT ORIGIN (DEGREES)                CRPIX1  =
               247.         / SAMPLE AXIS ORIGIN (PIXEL)          CTYPE1  = 'RA---TAN'
          / DECREASES IN VALUE AS SAMPLE INDEX    COMMENT                                       INCREAS
ES  (GNOMONIC PROJECTION)      CDELT1  =          -3.333333E-02               / COORD VALUE INCREMENT DEG/
PIXEL      COMMENT                                  AT ORIGIN ON SAMPLE AXIS                   CRVAL2
 =                 75.00          / DEC AT ORIGIN (DEGREES)                CRPIX2  =
252.         / LINE AXIS ORIGIN (PIXEL)             CTYPE2  = 'DEC--TAN'                             / DEC
REASES IN VALUE AS LINE INDEX       COMMENT                                 INCREASES  (GNOMONIC P
ROJECTION)      CDELT2  =          -3.333333E-02            / COORD VALUE INCREMENT DEG/PIXEL        COM
MENT                                     AT ORIGIN ON LINE AXIS                 CRVAL3  =
```

```
                        CDELT3  =                        0.
  DATAMAX =             8.509798E+07         / JY/SR  (TRUE VALUE)                    DATAMIN =
 1.247151E+07          / JY/SR  (TRUE VALUE)                    EPOCH    =                1950.
    / EME50                                 DATE-MAP= '01/11/84'                   / MAP RELEASE DA
 TE (DD/MM/YY)          DATE     = '14/03/86'               / DATE THIS TAPE WRITTEN (DD/MM/YY)
      ORIGIN  = 'JPL-IRAS'                       / INSTITUTION                       TELESCOP= 'IRA
 S     '                                                         INSTRUME= 'SKYPLATE'
        / IRAS SKY PLATE                            OBJECT   = 'PL008 H3'                / PLATE NUMB
 ER / HCON                PROJTYPE= 'GNOMONIC'                       / PROJECTION TYPE


 ***** JOB DONE.
 $WEO LPS
```

```
 $$
 $ASS IN HT1 OUT HT0
```

f3-004A-01L

Reverse:

$$l^{II} = l_0^{II} - SAMPLE/scale$$

$$b^{II} = -arcsin[LINE/(scale \times 180/\pi)] \qquad \text{(X.D.5)}$$

where b^{II} and l^{II} are Galactic latitude and longitude and subscript zero denotes the field center.

D.2.c Aitoff Projection - Low-Resolution All-Sky Maps

The Aitoff equal area projection was used to provide a photometrically correct map of the entire celestial sphere. Galactic coordinates were chosen as a convenient and natural coordinate system. The transformation equations are:

Forward:

define

$scale = 2$ pixels/degree

$$\rho = arccos[\cos(b^{II}) \times \cos(\{l^{II} - l_0^{II}\}/2)]$$

$$\theta = arcsin[\cos(b^{II}) \times \sin(\{l^{II} - l_0^{II}\}/2)/\sin(\rho)] \qquad \text{(X.D.6)}$$

then

$$SAMPLE = -4 \times scale \times 180/\pi \times \sin(\rho/2) \times \sin(\theta)$$

$$LINE = \pm 2 \times scale \times 180/\pi \times \sin(\rho/2) \times \cos(\theta) \qquad \text{(X.D.7)}$$

where the '+' applies to $b^{II} < 0$ and the '-' to $b^{II} >= 0$.

Reverse:

define

$$Y = -LINE/(2 \times scale \times 180/\pi)$$

$$X = -SAMPLE/(2 \times scale \times 180/\pi)$$

$$A = (4 - X^2 - 4 \times Y^2)^{1/2}$$

then

$$b^{II} = 180/\pi \times arcsin(A \times Y)$$

$$l^{II} = l_0^{II} + 2 \times 180/\pi \times arcsin[A \times X/(2 \times \cos\{b^{II}\})] \qquad \text{(X.D.8)}$$

where l^{II} and b^{II} are Galactic longitude and latitude and subscript zero denotes the field center.

D.3 16.5° Images

The 16.5° images the high-resolution presentation of the IRAS sky survey in image form. Two hundred twelve (212) 16.5° × 16.5° fields cover the whole sky with field centers spaced by approximately 15°. The three sky coverages of the full mission are presented as three separate sets of 212 maps, with some maps not included in the third coverage (Table X.D.1). A list of plate numbers vs. plate centers comprises Appendix X.2 and a map of plate locations is given in Fig. X.D.1. An individual map consists of 499×499 array of 2′×2′ pixels into which the IRAS survey data were mapped using a gnomonic projection (described in Section X.D.2.a). The 16.5° images are available as photographic prints and as digital magnetic tape. The formats of these two forms are described below. Detailed descriptions of the procedures used to produce the maps are given in Section V.G.

Table X.D.1 Plates Missing From the Third Sky Coverage

47	95	130
60	96	131
70	97	132
71	107	143
72	108	144
83	118	154
84	119	155
94	120	168

D.3.a Prints of 16.5° Images

Photographic black and white negative transparencies were produced from the digital map data with a film recorder. All four bands of each field were reproduced side by side in a rectangular format approximately 5 inches sq. intended for enlargement to 16 inches by 20 inches. Two hundred fifty-six (256) brightness levels were available with the film recorder and the brightness range in each band of each field was individually compressed, clipped and scaled to fit within these 256 levels.

The compression, clipping and scaling were accomplished by first extracting the fifth root of the surface brightness to compress the dynamic range of the data. A histogram of the fifth root map was made and the pixel values were shifted and scaled into the 0-255 range so as to saturate the lower and upper one percent of the histogram. The approximate surface brightness value of any pixel can be recovered by first comparing the density of the pixel of interest to the grey scales which show every 17th pixel value from zero to 255. The shift and scale are removed using the 0 DN = X Jy sr^{-1} and 255 DN = Y Jy sr^{-1} information in the label (see the sample label below).

The complete formula is:

$$\text{surface brightness (Jy sr}^{-1}) = [\frac{D}{255}(Y^{1/5} - X^{1/5}) + X^{1/5}]^5 \qquad \text{(X.D.9)}$$

where D is the pixel value determined by comparison with the grey scale and Y and X are obtained from the label.

Final calibration factors were not applied to the third sky coverage data before production of the photo products. Therefore, the intensities obtained using the procedure above on the third coverage may not agree with intensities found on the magnetic tape versions of the maps. The magnetic tape version uses the final IRAS catalog calibration and should be used in case of discrepancy. Intensities obtained

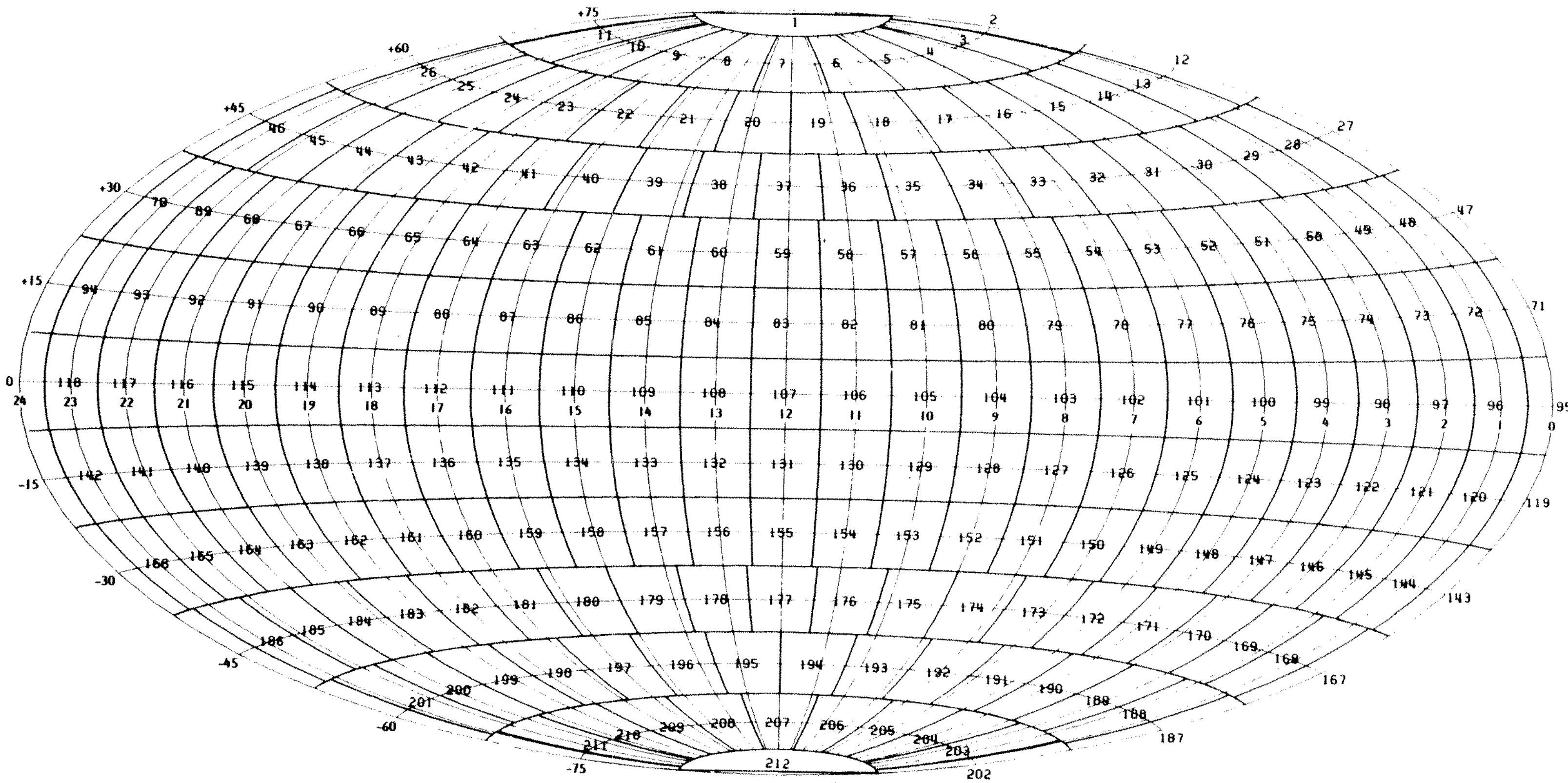

Figure X.D.1 Map of 16.5° image boundaries in equatorial coordinates.

from the third coverage photo products can be approximately corrected to the final calibration by multiplying the intensity derived from a photograph by the following factors:

12 μm	0.84
25 μm	0.80
60 μm	0.80
100 μm	0.69

The first, second and mini-survey coverage photos were corrected to the final calibration.

The coordinate system of each map is arranged so that when viewed with the printing in the label right side up north is up and east is to the left at the field center, which is adopted as pixel (0,0). In this orientation the horizontal rows of pixels are by convention called lines and the pixels within each line are called samples. Line numbers increase from top to bottom and sample numbers increase from left to right. The line numbers of the top and bottom lines are given in the label as TOP and BOTTOM, respectively. Similarly the left and right extreme sample numbers are given as LEFT and RIGHT. With this information and the tic marks along the sides of the image area the line and sample coordinates of any pixel can be determined for application of the inverse map projection formulae given above in Section X.D.2. The tic marks also allow alignment of the co-ordinate overlay grids as described in Section X.D.7.

Color composite negative transparencies in 4×5 inch format of each sky plate field have been produced by recording the 100 μm map in red (positive), the 60 μm map in green and the 12 μm map in blue. These color versions of the data are not intended for quantitative analysis. The shift and scale information in the label is difficult to read and no attempt has been made to produce a consistent color balance among the plates. In one plate a particular hue will indicate one ratio to 100 μm to 60 μm to 12 μm brightness and in another plate the ratio for that hue will be somewhat different.

Sample Label from 16.5° Image Photograph

IRAS SKYFLUX HCON: 3 FIELD: 153 DEC:-30 RA: 10:00 25 MICRON
R.A. & DEC GNOMONIC PIXEL: 2.00 ARCMIN JD:2445654.25-2445660.25
TOP:-249 BOTTOM: 249 LEFT:-249 RIGHT: 249 1 TIC = 5 PIXELS
0DN= 4.28E+ 2 JY/SR 255DN= 5.38E+ 2 MJY/SR 5TH ROOT DATE:84/08/10

First line:

SKYFLUX: refers to the 212 maps which cover the whole sky with 2′ pixels. Can also be ALL SKY for the 1/2° pixel all-sky maps.

HCON: serial number of the sky coverage

FIELD: IRAS field number. See maps in Fig. X.D.1. Can also be Galactic Plane field.

DEC,RA: coordinates of field center. DEC in degrees, RA in hours and minutes. Can also be LON and LAT for Galactic coordinate (l^{II},b^{II}) projections.

MICRON: wavelength band of the map.

Second line:

RA & DEC GNOMONIC: Projection type.
Can also be EQUIVALENT CYLINDRICAL or LON & LAT AITOFF

PIXEL: Pixel size.

JD: Julian dates of the earliest and latest data in the map, accurate to 1/2 day.

Third line:

TOP,BOTTOM,LEFT,RIGHT: Line and sample numbers at the edges of the map.

1 TIC: Spacing between the tic marks around the edge in pixels

Fourth line:

0DN, 255DN: Surface brightness values of the minimum and maximum pixels in the map.

5TH ROOT: Indicates that the fifth root of the actual surface brightness is shown. Can also be LINEAR in which case the true, uncompressed, surface brightness is shown.

DATE: Year/Month/Day on which the map was assembled.

D.3.b Tapes of 16.5° Images

The magnetic tape form of the 16.5° images contains the calibrated surface brightness data in 499×499 arrays of $2' \times 2'$ pixels recorded in the FITS format. The article by Wells *et al.* (1981) in conjunction with the label records of each tape file gives a detailed description of the format of each map image. A brief description of the format follows and a listing of a sample FITS label can be found in Appendix X.3.

One sky coverage consists of 27 tapes of 6250 bpi (bits per inch) density. The third coverage has only 24 tapes with a total of 188 plates. Each plate consists of four surface brightness maps and four statistical weight maps, one of each for each wavelength band. The plates are ordered on the tapes by plate number and within a plate the image files are ordered: 12 μm brightness, 12 μm weight, 25 μm brightness, 25 μm weight, 60 μm brightness, 60 μm weight, 100 μm brightness and 100 μm weight. The first two records of each file contain the label, then the image appears as a stream of pixel values divided into 2880 byte records without regard for line length. The stream begins with the smallest line and smallest sample number and the sample number increases fastest. The last record is padded to 2880 bytes with zeros. Four-byte integers are used for brightness image data numbers and 2-byte integers for weight images, high order byte first. All this and other information necessary to successfully regenerate a map is contained in the FITS label records described in Appendix X.3.

D.4 Galactic Plane Maps

For convenience in dealing with the Galactic plane the survey data within 10° of the Galactic plane were remapped from the into a set of images in Galactic coordinates to cover the full circle of the Galaxy. This remapping from the 16.5° images resulted in a slight degradation in resolution even though the pixel size was the same in both sets of maps. Twenty-four 16.7° × 20° fields cover the Galactic plane with field centers at integral multiples of 15° Galactic longitude. The three sky coverages of the survey were separated into three sets of maps. The image format is 499 lines of 599 samples each, projected from Galactic coordinates with an equal area cylindrical projection (see Section X.D.2.b). Galactic plane maps are available in both photographic and FITS tape formats. Two 6250 bpi tapes of 12 maps each hold the 24 Galactic plane maps. The differences in the FITS label between the 16.5° images and the

Galactic plane maps are noted in the description and listing of the FITS label in Appendix X.3. No statistical weight images are included for the Galactic plane maps. Statistical weight information may be obtained from the 16.5° maps. Coordinate overlays described in Section X.D.7 are available for the Galactic plane maps.

D.5 Low-Resolution All-Sky Maps

The 1/2° × 1/2° beam data contained in the Zodiacal History file described below was split into the three separate sky coverages and assembled into three all-sky maps with an Aitoff equal area projection in Galactic coordinates. Two fields of each sky coverage were produced; one centered on the Galactic center and one centered on the Galactic anti-center. The pixel arrays consist of 325 lines of 649 samples each. Galactic north is in the direction of decreasing line number (up) and Galactic east in the direction of decreasing sample number (left). The all-sky maps are available in both photographic and FITS tape forms. The formats of the photographic and tape forms of all-sky maps are very similar to those of the 16.5° images (see Section X.D.3) with the differences described in the labels of the photographs and tape files. Coordinate overlays described in Section X.D.7 are available for the all-sky maps.

D.6 Zodiacal Observation History File

For convenience in the analysis and treatment of background emission from interplanetary dust (zodiacal emission) and other extremely large scale emission features, the survey data were averaged to 1/2° × 1/2° beam size and along with pointing information was preserved as a time ordered data set containing all three sky coverages of the survey. This file is available on magnetic tape written with the format described in Appendix X.4.

D.7 Coordinate Overlays

A set of coordinate overlays for the photographs is available as photographic negative transparencies in the 5 inch sq. format. The scale is identical to the corresponding map product so the overlays will be the correct size if enlarged by the same factor as the map. One overlay is provided for each declination zone from -30° to +30° where the overlays for zones of opposite sign are obtained by rotating the grids through 180°. Five overlays are provided for each declination zone between 45° and 75° to accommodate the fact that integer hour meridians cross the plates in these zones in five different configurations. Again the overlay for the zone of opposite sign is obtained by rotating the grid 180°. All integer hour meridians are labeled 00M. The hour of right ascension should be determined from the position of the plate center given in the label on the photograph. The plate numbers to which a particular overlay pertains are printed in the lower right corner of the overlay. The overlays are aligned by matching the two triangular fiducials along each edge of the overlay with the two large map border tics which straddle the center of each side of the map. The two overlays for the polar regions are similarly aligned with the fiducials and tics. The correct orientation makes the lettering on the overlay read the same way as the lettering in the plate label.

One overlay is used for all Galactic plane maps. It is aligned with the same method as the sky plates. One orientation of the overlay is used for even numbered fields and has 0° as the center longitude; the other orientation, used for all fields, has 5° as the center longitude. The tens digit of the true longitude should be obtained from label of the picture.

REQ. AGENT	RAND NO.	ACQ. AGENT
GLS	V0273	WHW

IRAS

ALL SKY MAPS DATA

83-004A-01L ASIR-00023

This data set consists of one magnetic tape. The tape is 6250 BPI, 9 track, and contains 24 files of data. The tape was created on an IBM 3032 computer. The first several records of each file contains the header, than the image appears. The header records are ASCII formatted and the image records are binary formatted. The tape is written in FITS (Flexiable Image Transport System) format. The data on this tape was derived from the Zodiacal Observation History File and is displayed in two Aitoff (galactic center and anti-center) Projections of the entire sky for each HCON and each of the four IRAS wavelength bands. Thus there are 24 frames of data. The D and C numbers are as follows:

D#	C#
D-64680	C-24366

D64680

83-004A-01L

```
$NOP
$NOP ***************LIST OF GOUT1***************
$EXE TPLIST BS

INPUT PARAMETERS ARE:  AS SR=1=1 1 1 1

 TAPE NO.   1              FILE NO.   1
 RECORD   1                LENGTH    2880
SIMPLE  =                     T              / STANDARD FITS FORMAT                 BITPIX  =
         32          / 4-BYTE TWOS-COMPL INTEGERS            NAXIS    =                    3
  / NUMBER OF AXES                             NAXIS1  =                  649          / # SAMPLES PER L
INE (FASTEST VARY NDEX)NAXIS2  =                 325          / # LINES OF DATA IN IMAGE FILE
    NAXIS3  =                    1           / # WAVELENGTHS                        BSCALE  =
   1.854999E+05             / TRUE=TAPE*BSCALE+BZERO                 BZERO    =                    0.0
      /                                       BUNIT    = 'JY/SR    '                        / INTENSITY
                                BLANK    =             -2000000000          / TAPE VALUE FOR EMPTY PIXEL
        CRVAL1   =                    0.0         / GALACTIC LONGITUDE AT ORIGIN (DEGREES)CRPIX1   =
              325.          / SAMPLE AXIS ORIGIN (PIXEL)           CTYPE1   = 'LON--ATF'
         / DECREASES IN VALUE AS SAMPLE INDEX     COMMENT                                      INCREAS
ES  (AITOFF PROJECTION)        CDELT1   =                    -0.5           / COORD VALUE INCREMENT DEG/
PIXEL        COMMENT                                   AT ORIGIN ON SAMPLE AXIS                CRVAL2
 =                       0.0          / GALACTIC LATITUDE AT ORIGIN (DEGREES) CRPIX2   =
163.           / LINE AXIS ORIGIN (PIXEL)              CTYPE2   = 'LAT--ATF'                        / DEC
REASES IN VALUE AS LINE INDEX      COMMENT                                   INCREASES  (AITOFF PRO
JECTION)        CDELT2   =                    -0.5          / COORD VALUE INCREMENT DEG/PIXEL        COM
MENT                                         AT ORIGIN ON LINE AXIS                CRVAL3   =
  1.2E-05          / WAVELENGTH IN METERS                 CRPIX3   =                          1.
                                          CTYPE3   = 'LAMBDA  '
                        CDELT3   =                    0.
 DATAMAX =            2.639665E+08            / JY/SR  (TRUE VALUE)                          DATAMIN =
1.261400E+07            / JY/SR  (TRUE VALUE)                 EPOCH    =                   1950.
    / EME50                                 DATE-MAP= '01/11/84'                           / MAP RELEASE DA
TE (DD/MM/YY)            DATE     = '12/05/86'                    / DATE THIS TAPE WRITTEN (DD/MM/YY)
     ORIGIN   = 'JPL-IRAS'                            / INSTITUTION                      TELESCOP= 'IRA
S     '                                                                  INSTRUME= 'ALL SKY '
      / IRAS LOW RES ALL-SKY                          OBJECT   = 'CENTER 1'                          / ALL-SKY GA
LACTIC CENTER / HCON          PROJTYPE= 'AITOFF  '                        / PROJECTION TYPE

***** JOB DONE.
$WEO LPS

$$
```

REQ. AGENT	RAND NO.	ACQ. AGENT
GLS	V0273	WHW

IRAS

HCON-1

SKY PLATES IMAGES

83-004A-01Q ASIR-00043

This data set consists of 27 magnetic tapes. These tapes are 6250 BPI, 9 track, and contain 64 files of data each, except the last tape contains only 32 files of data. Each tape holds 8 plates except the last tape which holds 4 plates. The first several records of each file contain the header, then the image appears. The header records are ASCII formatted and the image records are binary formatted. These image tapes are all in FITS (Flexiable Image Transport System) format. These tapes were created on an IBM 3032 computer. The D and C numbers and the sky plates contained on each tape are as follows:

D#	C#	SKY PLATES
D-66615	C-24931	1-8
D-66616	C-24932	9-16
D-66617	C-24933	17-24
D-66618	C-24934	25-32
D-66619	C-24935	33-40
D-66620	C-24936	41-48
D-66621	C-24937	49-56
D-66622	C-24938	57-64
D-66623	C-24939	65-72
D-66624	C-24940	73-80
D-66625	C-24941	81-88
D-66626	C-24942	89-96
D-66627	C-24943	97-104
D-66628	C-24944	105-112
D-66629	C-24945	113-120
D-66630	C-24946	121-128
D-66631	C-24947	129-136
D-66632	C-24948	137-144
D-66633	C-24949	145-152
D-66634	C-24950	153-160
D-66635	C-24951	161-168
D-66636	C-24952	169-176
D-66637	C-24953	177-184
D-66638	C-24954	185-192
D-66639	C-24955	193-200
D-66640	C-24956	201-208
D-66641	C-24957	209-212

D-66629

83-004A-01Q

```
$NOP
$NOP ******** GLS **********
$EXE TPLIST BS

INPUT PARAMETERS ARE:  AS SR=1=1 1 1

 TAPE NO.   1              FILE NO.   1
 RECORD   1                LENGTH   2880
SIMPLE  =                         T           / STANDARD FITS FORMAT                      BITPIX  =
            32           / 4-BYTE TWOS-COMPL INTEGERS            NAXIS     =                     3
  / NUMBER OF AXES                          NAXIS1  =                   499          / # SAMPLES PER L
INE (FASTEST VARY NDEX)NAXIS2  =                  486          / # LINES OF DATA IN IMAGE FILE
    NAXIS3  =                       1           / # WAVELENGTHS                          BSCALE  =
   3.883548E-01           / TRUE=TAPE*BSCALE+BZERO           BZERO    =                        0.0
          /                                      BUNIT    = 'JY/SR    '                    / INTENSITY
                             BLANK    =             -2000000000         / TAPE VALUE FOR EMPTY PIXEL
         CRVAL1  =                    270.00          / RA AT ORIGIN (DEGREES)           CRPIX1  =
                 250.          / SAMPLE AXIS ORIGIN (PIXEL)           CTYPE1  = 'RA---TAN'
            / DECREASES IN VALUE AS SAMPLE INDEX    COMMENT                                      INCREAS
ES  (GNOMONIC PROJECTION)       CDELT1  =           -3.333333E-02          / COORD VALUE INCREMENT DEG/
PIXEL        COMMENT                              AT ORIGIN ON SAMPLE AXIS                   CRVAL2
 =                   0.0           / DEC AT ORIGIN (DEGREES)            CRPIX2  =
243.            / LINE AXIS ORIGIN (PIXEL)              CTYPE2  = 'DEC--TAN'                     / DEC
REASES IN VALUE AS LINE INDEX       COMMENT                                      INCREASES  (GNOMONIC P
ROJECTION)      CDELT2  =           -3.333333E-02           / COORD VALUE INCREMENT DEG/PIXEL        COM
MENT                                    AT ORIGIN ON LINE AXIS               CRVAL3  =
 1.2E-05             / WAVELENGTH IN METERS                 CRPIX3  =                         1.
                                        CTYPE3  = 'LAMBDA  '
                      CDELT3  =                       0.
 DATAMAX =           3.883548E+08              / JY/SR  (TRUE VALUE)                  DATAMIN  =
2.260350E+07             / JY/SR  (TRUE VALUE)              EPOCH    =                    1950.
     / EME50                                 DATE-MAP= '01/11/84'                           / MAP RELEASE DA
TE (DD/MM/YY)           DATE    = '06/05/85'               / DATE THIS TAPE WRITTEN (DD/MM/YY)
    ORIGIN   = 'JPL-IRAS'                           / INSTITUTION                         TELESCOP= 'IRA
S     '                                                      INSTRUME= 'SKYPLATE'
          / IRAS SKY PLATE                       OBJECT   = 'PL113 H1'                         / PLATE NUMB
ER / HCON                    PROJTYPE= 'GNOMONIC'                 / PROJECTION TYPE


***** JOB DONE.
$EXE TPLIST BS

INPUT PARAMETERS ARE:  AS SR=1=1 1 1 64

 TAPE NO.   1              FILE NO.   64
 RECORD   1                LENGTH   2880
SIMPLE  =                         T           / STANDARD FITS FORMAT                      BITPIX  =
            16           / 2-BYTE TWOS-COMPL INTEGERS            NAXIS     =                     3
  / NUMBER OF AXES                          NAXIS1  =                   503          / # SAMPLES PER L
INE (FASTEST VARY NDEX)NAXIS2  =                  493          / # LINES OF DATA IN IMAGE FILE
    NAXIS3  =                       1           / # WAVELENGTHS                          BSCALE  =
   3.474826E-02           / TRUE=TAPE*BSCALE+BZERO           BZERO    =                        0.0
          /                                      BUNIT    = '         '                    / STATISTICAL
 WEIGHT                      BLANK    =                        0         / TAPE VALUE FOR EMPTY PIXEL
         CRVAL1  =                     15.00          / RA AT ORIGIN (DEGREES)           CRPIX1  =
                 252.          / SAMPLE AXIS ORIGIN (PIXEL)           CTYPE1  = 'RA---TAN'
            / DECREASES IN VALUE AS SAMPLE INDEX    COMMENT                                      INCREAS
ES  (GNOMONIC PROJECTION)       CDELT1  =           -3.333333E-02          / COORD VALUE INCREMENT DEG/
PIXEL        COMMENT                              AT ORIGIN ON SAMPLE AXIS                   CRVAL2
 =                 -15.00          / DEC AT ORIGIN (DEGREES)            CRPIX2  =
246.            / LINE AXIS ORIGIN (PIXEL)              CTYPE2  = 'DEC--TAN'                     / DEC
REASES IN VALUE AS LINE INDEX       COMMENT                                      INCREASES  (GNOMONIC P
ROJECTION)      CDELT2  =           -3.333333E-02           / COORD VALUE INCREMENT DEG/PIXEL        COM
MENT                                    AT ORIGIN ON LINE AXIS               CRVAL3  =
```

```
CDELT3  =                  0.
DATAMAX =          1.111944E+03          / DIMENSIONLESS                          DATAMIN =
3.474826E-02            / DIMENSIONLESS                        EPOCH    =                1950.
    / EME50                                DATE-MAP= '01/11/84'                             / MAP RELEASE DA
TE (DD/MM/YY)               DATE     = '06/05/85'                      / DATE THIS TAPE WRITTEN (DD/MM/YY)
     ORIGIN  = 'JPL-IRAS'                              / INSTITUTION                          TELESCOP= 'IRA
S     '                                                              INSTRUME= 'SKYPLATE'
         / IRAS SKY PLATE                          OBJECT   = 'PL120 H1'                               / PLATE NUMB
ER / HCON                       PROJTYPE= 'GNOMONIC'                           / PROJECTION TYPE

***** JOB DONE.
$WEO LPS

$$
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REQ. AGENT	RAND#	ACQ. AGENT
GLS	V0273	WHW

IRAS

GALACTIC PLANE SKYFLUX MAPS

83-004A-01T ASIR-00027

This data set consists of 6 magnetic tapes. The tapes are 6250 BPI, 9 track, and contain 48 files of data each. These tapes were created on an IBM 3032 computer. Each tape contains 12 maps. The first several records of each file contain the header, then the image appears. The header records are ASCII formatted and the image records are binary formatted. These image tapes are in FITS (Flexiable Image Transport System) format. The D and C numbers are as follows:

D#	C#	CONTENTS
D-70763	C-25267	1ST HCON GALACTIC FIELDS 00-11
D-70764	C-25268	1ST HCON GALACTIC FIELDS 12-23
D-74017	C-26066	2ND HCON GALACTIC FIELDS 00-11
D-74018	C-26067	2ND HCON GALACTIC FIELDS 12-23
D-74019	C-26068	3RD HCON GALACTIC FIELDS 00-11
D-74020	C-26069	3RD HCON GALACTIC FIELDS 12-23

D 74017

83-004A-01T

```
$NOP
$NOP
$NOP ********GOUT1*********
$EXEC TPLIST BS

INPUT PARAMETERS ARE:  AS SR=1=2 1 1 1

 TAPE NO.   1            FILE NO.   1
 RECORD   1              LENGTH   2880
SIMPLE  =                T              / STANDARD FITS FORMAT                BITPIX  =
           32       / 4-BYTE TWOS-COMPL INTEGERS          NAXIS   =                    3
   / NUMBER OF AXES                        NAXIS1  =                499         / # SAMPLES PER L
INE (FASTEST VARY NDEX)NAXIS2  =                    599          / # LINES OF DATA IN IMAGE FILE
     NAXIS3  =                   1          / # WAVELENGTHS                         BSCALE  =
    1.905734E+00          / TRUE=TAPE*BSCALE+BZERO          BZERO    =                     0.0
       /                                    BUNIT    = 'JY/SR    '                / INTENSITY
                             BLANK   =            -2000000000          / TAPE VALUE FOR EMPTY PIXEL
          CRVAL1  =                   0.0          / GALACTIC LONGITUDE AT ORIGIN (DEGREES)CRPIX1  =
                 250.          / SAMPLE AXIS ORIGIN (PIXEL)          CTYPE1  = 'LON      '
           / DECREASES IN VALUE AS SAMPLE INDEX    COMMENT                                   INCREAS
ES  (LAMBERT EQUIVALENT        COMMENT                            CYLINDRICAL PROJECTION)
              CDELT1  =          -3.333333E-02          / COORD VALUE INCREMENT DEG/PIXEL       COMMENT
                                    AT ORIGIN ON SAMPLE AXIS                  CRVAL2  =
  0.0            / GALACTIC LATITUDE AT ORIGIN (DEGREES) CRPIX2  =                     300.          / LIN
E AXIS ORIGIN (PIXEL)              CTYPE2   = 'LAT--SIN'                   / DECREASES IN VALUE AS
LINE INDEX      COMMENT                                     INCREASES  (LAMBERT EQUIVALENT        COM
MENT                                   CYLINDRICAL PROJECTION)                  CDELT2  =          -3.33
3333E-02             / COORD VALUE INCREMENT DEG/PIXEL       COMMENT
 AT ORIGIN ON LINE AXIS            CRVAL3   =                       1.2E-05           / WAVELENGTH IN METE
RS                    CRPIX3   =                     1.
 CTYPE3  = 'LAMBDA  '                                                           CDELT3  =
             0.                                                   DATAMAX =            1.905735E+09
     / JY/SR  (TRUE VALUE)                        DATAMIN =           2.473680E+07           / JY/SR  (TRUE V
ALUE)                    EPOCH   =                  1950.          / EME50
      DATE-MAP= '01/11/84'                         / MAP RELEASE DATE (DD/MM/YY)          DATE     = '16/
07/86'                         / DATE THIS TAPE WRITTEN (DD/MM/YY)     ORIGIN  = 'JPL-IRAS'
        / INSTITUTION                                     TELESCOP= 'IRAS    '
                                 INSTRUME= 'GALPLANE'                               / IRAS GALACTIC PLANE


 TAPE NO.   1            FILE NO.   1
 RECORD   2              LENGTH   2880
OBJECT   = 'GPL00 H2'                        / GALACTIC PLANE PLATE NUMBER / HCON    PROJTYPE= 'LAMBECYL
 '                      / PROJECTION TYPE                          COMMENT
                                              COMMENT    PROJECTION FORMULAE:
                         COMMENT        FORWARD FORMULA; XLON0 IS THE LONGITUDE OF PLATE CENTER
    COMMENT    R2D = 45. / ATAN(1.)                                                  COMMENT     PIX
 = 30.                                                               COMMENT     XLINE = -SIN(XLAT) * PI
X * R2D                                           COMMENT    SAMPLE = -(XLON - XLON0) * PIX
                             COMMENT
       COMMENT        INVERSE FORMULA; ARCSINE IS REQUIRED                                 COMMENT
XLON = XLON0 - SAMPLE / PIX                                          COMMENT    XLAT = -ASIN(XLINE
/ (PIX * R2D))                                        COMMENT   REFERENCES:
                                 COMMENT    IRAS SDAS SOFTWARE INTERFACE SPECIFICATION(SIS)  #623-94/
NO. SF05    COMMENT    ASTRON. ASTROPHYS. SUPPL. SER. 44,(1981) 363-370 (RE:FITS)          COMMENT
   RECONCILIATION OF FITS PARMS W/ SIS SF05 PARMS:                           COMMENT    NAXIS1 = (ES -
SS + 1); NAXIS2 = (EL - SL + 1);                         COMMENT    CRPIX1 = (1 - SS);      CRPIX2 = (
1 - SL)                                END
```

D74017

GOUT-1

```
**** JOB DONE.
$EXEC TPLIST BS

INPUT PARAMETERS ARE:  AS SR=1=2 1 1 48

 TAPE NO.   1              FILE NO.   48
 RECORD   1                LENGTH   2880
SIMPLE  =                    T          / STANDARD FITS FORMAT                   BITPIX  =
              32          / 4-BYTE TWOS-COMPL INTEGERS             NAXIS    =                    3
   / NUMBER OF AXES                          NAXIS1  =                  499          / # SAMPLES PER L
INE (FASTEST VARY NDEX)NAXIS2  =                  599          / # LINES OF DATA IN IMAGE FILE
    NAXIS3  =                    1          / # WAVELENGTHS                          BSCALE  =
  2.444410E+00            / TRUE=TAPE*BSCALE+BZERO                  BZERO   =                  0.0
      /                                          BUNIT   = 'JY/SR   '                       / INTENSITY
                                BLANK   =          -2000000000          / TAPE VALUE FOR EMPTY PIXEL
        CRVAL1  =               165.00          / GALACTIC LONGITUDE AT ORIGIN (DEGREES)CRPIX1  =
               250.        / SAMPLE AXIS ORIGIN (PIXEL)               CTYPE1  = 'LON     '
           / DECREASES IN VALUE AS SAMPLE INDEX    COMMENT                                     INCREAS
ES  (LAMBERT EQUIVALENT          COMMENT                                 CYLINDRICAL PROJECTION)
            CDELT1  =          -3.333333E-02          / COORD VALUE INCREMENT DEG/PIXEL        COMMENT
                                        AT ORIGIN ON SAMPLE AXIS                  CRVAL2  =
 0.0             / GALACTIC LATITUDE AT ORIGIN (DEGREES) CRPIX2  =                   300.          / LIN
E AXIS ORIGIN (PIXEL)              CTYPE2  = 'LAT--SIN'                        / DECREASES IN VALUE AS
LINE INDEX      COMMENT                                         INCREASES  (LAMBERT EQUIVALENT        COM
MENT                                         CYLINDRICAL PROJECTION)                 CDELT2  =          -3.33
3333E-02              / COORD VALUE INCREMENT DEG/PIXEL        COMMENT
 AT ORIGIN ON LINE AXIS                  CRVAL3  =                   1.0E-04              / WAVELENGTH IN METE
RS                    CRPIX3  =                   1.
 CTYPE3  = 'LAMBDA  '                                                                   CDELT3  =
          0.                                                          DATAMAX =           2.444411E+09
   / JY/SR  (TRUE VALUE)                          DATAMIN =           1.559056E+07              / JY/SR  (TRUE V
ALUE)                    EPOCH   =                  1950.          / EME50
    DATE-MAP= '01/11/84'                               / MAP RELEASE DATE (DD/MM/YY)              DATE    = '16/
07/86'                    / DATE THIS TAPE WRITTEN (DD/MM/YY)      ORIGIN  = 'JPL-IRAS'
        / INSTITUTION                                 TELESCOP= 'IRAS    '
                                 INSTRUME= 'GALPLANE'                                / IRAS GALACTIC PLANE


 TAPE NO.   1              FILE NO.   48
 RECORD   2                LENGTH   2880
OBJECT  = 'GPL11 H2'                              / GALACTIC PLANE PLATE NUMBER / HCON     PROJTYPE= 'LAMBECYL
'                     / PROJECTION TYPE                                  COMMENT
                                               COMMENT   PROJECTION FORMULAE:
                            COMMENT        FORWARD FORMULA; XLONO IS THE LONGITUDE OF PLATE CENTER
     COMMENT    R2D = 45. / ATAN(1.)                                                            COMMENT     PIX
= 30.                                                                 COMMENT     XLINE = -SIN(XLAT) * PI
X * R2D                                             COMMENT     SAMPLE = -(XLON - XLONO) * PIX
                                COMMENT
        COMMENT         INVERSE FORMULA; ARCSINE IS REQUIRED                                     COMMENT
XLON = XLONO - SAMPLE / PIX                                              COMMENT     XLAT = -ASIN(XLINE
/ (PIX * R2D))                                          COMMENT   REFERENCES:
                                    COMMENT    IRAS SDAS SOFTWARE INTERFACE SPECIFICATION(SIS)  #623-94/
NO. SF05    COMMENT    ASTRON. ASTROPHYS. SUPPL. SER. 44,(1981) 363-370 (RE:FITS)              COMMENT
   RECONCILIATION OF FITS PARMS W/ SIS SF05 PARMS:                        COMMENT    NAXIS1 = (ES -
SS + 1); NAXIS2 = (EL - SL + 1);                            COMMENT    CRPIX1 = (1 - SS);     CRPIX2 = (
1 - SL)                                 END
```

REQ. AGENT
GLS

ACQ. AGENT
WHW

IRAS

SMALL SCALE STRUCTURE CATALOG (SSS)

83-004A-01U ASIR-00022

This data set consists of 1 magnetic tape. This tape is 6250 bpi, 9 track, ASCII and contains one file of data. This tape was created on an IBM 3032 computer. The D and C numbers are as follows:

D	C
D-70970	C-25229

83-004A-01U

Jet Propulsion Laboratory
California Institute of Technology
4800 Oak Grove Drive
Pasadena, California 91109
(818) 354-4321

JPL

January 29, 1986

Dr. Wayne Warren
NSSDC - Astronomical Data Center
Goddard Space Flight Center
Code 633.8
Greenbelt, Maryland 20771

Dear Dr. Warren:

Please find enclosed 50 sets of the Introduction to the IRAS Small Scale Structure Catalog with microfiche copies of the Catalog itself attached. Also attached is one loose-leaf copy of the Introduction for photo-copying if you should run out of the bound copies.

It has been brought to be our attention that the tape copy of the SSS Catalog contained some ASCII null characters where blank characters had been intended. It should be possible to replace all these characters by blank characters without affecting the information contents of the Catalog in any way.

Sincerely,

Dr. George Helou
IRAS Science Team

GH:ck

cc: C. A. Beichman
G. Neugebauer
B. T. Soifer
G. F. Squibb

7 FEB 1986

Received
50 copies SSS Catalog documentation (B36702-00A)
2 Ag. microfiche sets of catalog
Unbound master copy of document
IPAC Personnel Roster.
WHW

PS: also 2 original sets of microfiche, phone numbers list

U

NATIONAL SPACE SCIENCE DATA CENTER

Central Data Services Facility

Operated for NASA by M/A-COM Sigma Data Services

Astronomical Data Center
Goddard Space Flight Center
Code 633.8
Greenbelt, Maryland 20771
Telephone (301) 344-8310

7 February 1986

Dr. George Helou
Mail Code IPAC
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, California 91109

Dear Dr. Helou:

We have today received your letter of January 29, copies (50) of the Introduction to the *IRAS Small Scale Structure Catalog* (with diazo microfiche inserted), two silver original copies of the catalog microfiche, and a master (unbound) copy of the Introduction. Everything arrived in good condition and we thank you.

I will attach the microfiche envelopes to the PREFACE pages(iii) of the document copies using a small spot of glue stick or some other nondamaging adhesive, as I do with microfiche in our ADC documents. I would suggest this for the future, as microfiche tend to become separated from documents if they are not attached in some way (as many had inside the box during shipment from JPL). The Ag originals were examined carefully and I found them to be excellent, so we can now produce good diazo copies here. Supplying a master unbound copy of the complete Introduction was a very good idea. I can now have the entire document filmed and loaded to microfiche for people who would rather have everything in microfiche form, and I won't have to destroy one of the bound copies to do it.

I also thank you for the IPAC Personnel Roster which Rosanne evidently slipped into the box.

I am a bit surprised to learn about the hexidecimal null ('00') character occurrences in the tape version, and we appreciate your bringing this to my attention. We had the same problem with the *IRAS Catalog of Point Sources* and fixed it here; hence, I would not have expected it to happen again (one more strike and someone is out) since JPL personnel were alerted to the PSC data processing difficulties it could have caused. I am only kidding, of course, because it is not a serious problem and I will simply move the data to disk storage and run them through a conversion program that I wrote for the PSC. No other data will be modified in any way. RWP*

* this means that your original tape is no good; I found 1503 in 156 records. Will have to prepare a new tape for you. W

Please have Gail set up a new tape at the 3081, then come down to see me some afternoon this week and I'll show her how to prepare the [illegible] conversion program, which will be of interest to her.

Thanks again for supplying the documents and original microfiche so quickly. Now all I have to do is find the time to prepare several dozen tapes for requesters who have been waiting for the catalog.

Yours sincerely,

Wayne H. Warren Jr.
Astronomical Data Center

Copies to: C. A. Beichman / IPAC
R. Hernandez / IPAC
J. H. King / NSSDC
G. Neugebauer / IPAC
J. L. Riordan / NSSDC
P. A. Ross / NSSDC
D. M. Sawyer / NSSDC
B. T. Soifer / IPAC
G. F. Squibb / IPAC

83-004A-01U?

**** TSO FOREGROUND HARDCOPY ****
DSNAME=W3WHW.TEMP3

VOLUME NO.
TAPE VOL.

271.3345	+78.3914	+173.88	106	029	DPS02B	AG1104	861	F	16/ 3/83	IRG101	1	16	1.86E-02	1.91E-02	3.48E-02	1.25E-01
84.0303	-28.7222	-19.07	105	029	DPS02B	AG1181	1756	F	10/ 4/83	IRG102	1	16	1.83E-02	2.15E-02	3.29E-02	1.20E-01
288.2891	-55.0770	+176.44	105	029	DPS02B	AG1332	2397	F	24/ 4/83	IRG103	1	16	1.99E-02	2.24E-02	4.04E-02	1.46E-01
325.6072	+27.9002	-162.69	107	029	DPS02B	AG1507	3390	F	19/ 5/83	IRG104	1	16	1.73E-02	2.04E-02	2.51E-02	8.62E-02
348.4290	-59.3610	-159.28	107	029	DPS02B	AG1793	3889	F	31/ 5/83	IRG105	1	16	2.47E-02	2.51E-02	5.21E-02	2.25E-01
158.3123	-32.0009	-28.16	107	029	DPS02B	AG1147	4607	F	16/ 6/83	IRG106	1	16	1.67E-02	2.12E-02	2.38E-02	7.66E-02
15.2526	+12.9646	-158.43	107	029	DPS02B	AG1229	5441	I	1/ 7/83	IRG107	1	16	9.36E+04	1.74E+05	5.65E+04	9.73E+04
17.4032	+17.6017	-156.99	107	029	DPS02B	AG2084	6396	F	18/ 7/83	IRG108	1	16	1.86E-02	2.96E-02	2.67E-02	8.18E-02
255.9672	+60.9188	-38.58	108	029	DPS02B	AG2240	7229	F	2/ 8/83	IRG109	1	16	1.71E-02	1.65E-02	3.25E-02	1.08E-01
242.8945	+34.3555	-15.96	100	029	DPS62D	AG2326	8233	I	16/ 8/83	IRG110	1	16	6.02E+04	6.82E+04	5.08E+04	9.13E+04
72.3316	+51.9966	-177.28	100	029	DPS62D	AG2792	9451	I	31/ 8/83	IRG111	1	16	1.86E+05	2.73E+05	6.71E+04	2.60E+05
102.2859	+27.4745	+174.58	105	029	DPS62D	AG3082	11693	F	28/ 9/83	IRG112	1	16	1.93E-02	3.63E-02	2.58E-02	7.49E-02
299.9927	-33.0165	+11.01	100	029	DPS62D	AG3040	13521	F	22/10/83	IRG113	1	16	1.80E-02	3.13E-02	2.37E-02	6.96E-02
237.2352	-56.1628	+168.31	107	029	DPS52B	BS0066	193	F	21/ 2/83	IRG114	1	16	4.05E-02	3.70E-02	9.88E-02	9.27E-01
15.5781	+40.9866	-142.63	067	029	DPS61D	BS0409	8104	F	15/ 8/83	IRG115	1	16	1.31E-02	1.70E-02	2.25E-02	7.67E-02
269.0925	+43.2998	-6.70	067	029	DPS61D	BS0541	10823	I	15/ 9/83	IRG116	1	16	5.63E+04	6.44E+04	4.66E+04	7.54E+04
[illegible]5.1042	+61.9230	+133.88	067	029	DPS61D	BS0594	13694	F	26/10/83	IRG117	1	16	1.27E-02	1.50E-02	1.91E-02	6.07E-02
[illegible]69.8711	+66.7023	-103.89	077	029	DPS61C	CA0010	4090	F	7/ 6/83	IRG118	1	16	1.38E-02	1.60E-02	2.51E-02	8.11E-02
22.6919	+30.4878	+31.91	105	029	DPS02B	CG0114	67	F	17/ 2/83	IRG119	1	16	2.62E-02	4.06E-02	3.74E-02	1.24E-01
72.6169	-83.9768	-22.78	108	029	DPS02B	CG0828	1163	F	27/ 3/83	IRG120	1	16	1.65E-02	1.65E-02	2.60E-02	9.67E-02
80.8333	-70.4237	-49.84	361	029	DPS05B	CG1098	2727	I	2/ 5/83	IRG121	1	16	1.37E+05	1.45E+05	3.23E+05	8.74E+05
85.7587	-67.5428	-61.88	361	029	DPS05B	CG1388	3420	F	19/ 5/83	IRG122	1	16	2.67E-02	2.87E-02	7.60E-02	3.33E-01
227.0938	+67.4922	-60.23	107	029	DPS02B	CG1572	4313	F	12/ 6/83	IRG123	1	16	1.67E-02	1.86E-02	2.82E-02	9.05E-02
178.7003	+55.8200	-9.30	103	029	DPS02B	CG1610	5090	I	26/ 6/83	IRG124	1	16	7.80E+04	1.06E+05	6.03E+04	1.09E+05
226.2031	+56.0585	-29.76	108	029	DPS02B	CG1545	6103	F	15/ 7/83	IRG125	1	16	1.72E-02	1.82E-02	2.89E-02	9.47E-02
199.0268	-20.6543	-28.63	103	029	DPS02B	CG1985	8222	I	16/ 8/83	IRG126	1	16	1.08E+05	2.26E+05	6.45E+04	1.31E+05
255.2847	+31.5116	+17.88	100	029	DPS62D	CG2096	12299	I	5/10/83	IRG127	1	16	6.46E+04	7.63E+04	5.70E+04	9.59E+04
63.5806	-55.8428	+14.13	107	029	DPS52B	DF0029	31	F	12/ 2/83	IRG128	1	16	1.88E-02	1.86E-02	3.22E-02	1.18E-01
95.4177	-64.8178	-48.56	108	029	DPS52B	DF0012	3119	F	15/ 5/83	IRG129	1	16	1.66E-02	1.57E-02	2.63E-02	8.70E-02
66.8351	-55.0987	-123.77	107	029	DPS52B	DF0008	5706	F	5/ 7/83	IRG130	1	16	1.96E-02	2.09E-02	4.31E-02	1.46E-01
171.0562	+71.3192	+118.59	100	029	DPS62D	DF0179	13096	I	15/10/83	IRG131	1	16	7.13E+04	7.18E+04	6.27E+04	1.00E+05
102.7908	-52.0976	-15.88	077	029	DPS60B	FL0001	2021	F	17/ 4/83	IRG132	1	16	2.53E-02	2.67E-02	6.39E-02	2.15E-01
1.2836	-55.4518	-144.70	077	029	DPS60B	FL0015	3675	I	26/ 5/83	IRG133	1	16	1.06E+05	1.17E+05	1.20E+05	2.78E+05
130.2972	-69.5671	-77.47	077	029	DPS60B	FL0058	6326	F	18/ 7/83	IRG134	1	16	2.13E-02	2.12E-02	3.33E-02	1.21E-01
309.9136	+71.0756	-86.14	076	029	DPS60B	FL0046	7457	I	4/ 8/83	IRG135	1	16	8.65E+04	1.01E+05	8.16E+04	2.07E+05
90.3136	-81.5385	-141.90	100	029	DPS63D	FL0122	8073	F	14/ 8/83	IRG136	1	16	2.30E-02	2.41E-02	3.51E-02	1.42E-01
261.7061	+50.2786	-22.88	100	029	DPS63D	FL0113	8842	F	23/ 8/83	IRG137	1	16	2.42E-02	2.32E-02	4.08E-02	1.36E-01
65.2401	-1.4987	-171.42	105	029	DPS63D	FL0119	9495	I	31/ 8/83	IRG138	1	16	1.08E+05	1.67E+05	9.27E+04	1.75E+05
271.6807	+69.8291	-15.88	100	029	DPS63D	FL0114	10158	F	9/ 9/83	IRG139	1	16	2.22E-02	2.47E-02	3.78E-02	1.23E-01
101.6099	+74.4720	+161.95	099	029	DPS63D	FL0125	10767	I	15/ 9/83	IRG140	1	16	9.59E+04	1.09E+05	8.78E+04	1.63E+05
50.8678	-71.8882	+143.29	099	029	DPS63D	FL0135	11339	F	22/ 9/83	IRG141	1	16	2.30E-02	2.44E-02	3.71E-02	1.03E-01
120.5064	-39.8904	+159.99	099	029	DPS63E	FL0222	14489	F	8/11/83	IRG142	1	16	2.55E-02	2.72E-02	4.91E-02	3.61E-01
50.8454	-71.9011	+127.82	099	029	DPS63D	FL0135	12503	I	8/10/83	IRG143	1	16	9.83E+04	1.16E+05	7.52E+04	1.31E+05
102.9560	-52.2403	+164.34	103	029	DPS63E	FL0211	13428	F	20/10/83	IRG144	1	16	3.71E-02	3.71E-02	9.87E-02	3.57E-01
113.6013	-55.7581	+159.48	101	029	DPS63E	FL0220	14235	I	4/11/83	IRG145	1	16	1.01E+05	1.17E+05	9.30E+04	2.17E+05
5.3542	+63.8256	+58.40	107	029	DPS02B	GS0283	182	F	21/ 2/83	IRG146	1	16	2.55E-02	2.64E-02	5.83E-02	3.78E-01
305.5305	+51.7226	-154.94	107	029	DPS02B	GS0557	3185	F	16/ 5/83	IRG147	1	16	1.86E-02	1.97E-02	3.67E-02	1.84E-01
248.5478	-10.4594	-7.88	056	029	DPS60D	GS0732	9824	F	5/ 9/83	IRG148	1	16	2.56E-02	4.79E-02	9.44E-02	3.73E-01
350.5562	+73.9833	+63.93	108	029	DPS52B	MC0563	18	I	10/ 2/83	IRG149	9	16	8.14E+04	9.26E+04	6.17E+04	1.65E+05
[illegible]50.5562	+73.9833	+63.93	108	029	DPS52B	MC0563	17	F	10/ 2/83	IRG149	1	16	1.81E-02	2.05E-02	2.63E-02	1.31E-01
[illegible]2.6089	-78.3883	+104.82	107	029	DPS02B	MC0863	632	I	8/ 3/83	IRG150	1	16	9.59E+04	9.58E+04	7.99E+04	1.89E+05
114.2453	-49.6260	-21.33	108	029	DPS02B	MC1182	2771	I	3/ 5/83	IRG151	1	16	8.41E+04	9.04E+04	7.74E+04	2.34E+05
126.0562	-50.7746	-47.44	107	029	DPS02B	MC1114	4272	F	11/ 6/83	IRG152	1	16	2.23E-02	2.32E-02	5.38E-02	3.04E-01
346.4575	+61.6704	-147.17	362	029	DPS55B	MC0313	5638	F	4/ 7/83	IRG153	1	16	3.02E-02	3.44E-02	1.68E-01	1.87E+00
186.7063	-63.6070	-28.61	039	009	DSD01A	MC1690	6496	I	20/ 7/83	IRG154	1	16	4.04E+05	2.10E+05	6.50E+05	1.66E+06
44.3494	+60.3834	-162.09	039	009	DSD01A	MC2132	8510	I	19/ 8/83	IRG155	1	16	4.88E+05	6.91E+05	2.37E+06	1.13E+07

D70970

83-004A-01U

```
$EXE TPLIST,BS

INPUT PARAMETERS ARE:  AS FL=1=1 1 1 1

 TAPE NO.   1              FILE NO.   1
 RECORD   1                LENGTH   19040
X0000+575 2     26.0+57342600320.00E+000.00E+009.59E+003.54E+01XX000012005520     88                0
0  0   0 0    0
  A8   3.9   28 52 42   B0   -3.9  -28 47 21   X0000+359 1     47.6+35572100020.00E+000.00E+000.00E+006.4
2E+00XXX000000004 2     00                      0  0  0  0    0
                                                                            BC    0.0    0 57 21   X0001+547 1    1
00.4+54472003000.00E+001.20E+000.00E+000.00E+00X0XX11000300 7     80  00009+5446    0 15   0   0 2    2
                                                                               B9    0.0    0 24 15
                                    2D0  44033              46144   1  90    013 21042         K7     48238   95
  82    0X0001+556 1    105.4+55363400020.00E+000.00E+000.00E+001.48E+01XXX00001002311     80
     0  0   0   0 0    0
                                       B0    0.0    0 44 16   X0001+603 1    106.7+60221400300.00E+000.00E+007.6
0E+000.00E+00XX0X0111113110      80  00010+6022    0   0 30    0 0    0
                                                              B9    0.0    0 36 22                          X0001+1
28 1    117.9+12484700020.00E+000.00E+000.00E+007.16E+00XXX000010002 2      00  00013+1249    0   0   0 53
  0   0
                      BC    0.0    0 38 13   X0001+660 D    137.6+66034843346.51E+001.48E+023.45E+021.33E+0200
003476459411      CE*00015+6603   32 63 73 51 0     0                                                        B9
 -1.1   -9 33 38   B0    0.0   11 58 91   B0    3.1    8 62124   B9   -2.0  -10 35 31   X0001+637 2    149.0+63
43260230O.00E+001.50E+007.28E+000.00E+00X00X22222450 4      04*00017+6342    0 10 26    0 0     0
                                                                   F1   -0.7  -26 24   9   B9    0.7   26 32 31
                           X0001+601 1    158.9+60105900300.00E+000.00E+005.10E+000.00E+00XX0X11111131 9
 80  00021+6010    0   0 34    0 0     0
                             B9    0.0    0 32 15                        X0002+536 1    214.3+53391800400.00E+0
00.00E+004.75E+000.00E+00XX0X2011319610      80  00021+5340    0   0 46    0 0     0
                                                                            A8    0.0    0 55 40
      X0002+617 C    231.2+61422123025.78E+006.18E+000.00E+008.65E+0100X00133855610     80  00025+6141
  0 38   0 71 0    0                                                       B0    0.4  -34 44 23   A8    4.4   39
44 41                                  B0   -4.8   -5 58 29   X0002+555 2    235.9+55303400230.00E+000.00E+003.48E+
001.89E+01XX00111004617      00  00026+5531    0   0   0 72 0    0
                                                            B0   -3.2  -47 42 14   A8    3.2   47 56 35   X0002+696
 2   237.1+69375600330.00E+000.00E+009.63E+002.68E+01XX001111034321      80  00027+6934    0   0 59   0 0
  0                                                                                                     A8   -4.6
  11 54 37   B9    4.6  -11 38 23   X0002+572 2    246.3+57142800320.00E+000.00E+004.05E+001.58E+01XX000
001003215     00  00027+5713    0   0   0 57 0    0
                                          A8   -2.6   19 39 20   B0    2.6  -19 41 17   X0002+657 D    256.2+65463
734343.23E+004.67E+003.35E+015.94E+0100000001424565 9     C4  00029+6546    0 27 32 56 0    0
                                              F1    2.0  -10 30 25   A8    4.7   12 35 38   B0   -2.6  -37 40 39   B9
 -4.1   35 45 33   X0003+612 1    308.0+61130200300.00E+000.00E+005.35E+000.00E+00XX0X1132004010      80
 00031+6112    0   0 28    0 0     0
                          B9    0.0    0 30 29                          X0003+605 2    323.6+60352303300.00E+004.
15E+001.89E+010.00E+00X00X01110330 4      80  00033+6035    0 15 21    0 0     0
                                                  A8   -0.4   -3 20 22   A8    0.4    3 28 27
  X0003+234 1    344.5+23283700020.00E+000.00E+000.00E+007.10E+00XXX00001000317      80                0
  0   0   0 0    0
                               BC    0.0    0 44 16   X0004+653 2    427.6+65215302400.00E+001.84E+013.30E+010
.00E+00X00X33110641 5      C0  00044+6521    0 11 20    0 2    4
                                  F4   -0.2  -11 30 16   A8    0.2   11 27 32                          1600036
      EA     1 275 161 999    023DG 002                110241 999 999   60X0004+541 2    428.8+54080700230.
00E+000.00E+002.72E+001.46E+01XX00100011024 9     80                          0   0   0   0   0    0
                                                                                 B0    0.2  -24 34 12   A8   -0.2
24 35 23   X0004+704 D    438.3+70273422223.53E+002.34E+007.58E+001.93E+0100001001344317     00  00043+
7028   21   0   0   0 0    0                                                       B0  -12.6   20 40 19   F1    5.0
 -45 39 10   B0    1.1  -36 54 22   B0    6.5   61 38 12   X0004+599 2    443.0+59571903020.00E+002.98E+000
.00E+003.07E+01X0X02032236312      C8                      0   0   0   0  0    0
                                           B9    0.1   -3 36 20                                F1   -0.1    3 38 17   X0004
+646 C    445.6+64410244301.04E+011.43E+011.50E+020.00E+00001X22124564 8      C3  00047+6441   23 16 22
 0 1    3                                                          A8    1.1   -5 37 54   A8    1.3    7 32 49   FG
 -2.4   -2 33 37                            11PK 118+ 2.1             92 91 999 999 125
```

REQ. AGENT	RAND NO.	ACQ.AGENT
GLS	V0273	WHW

IRAS

POINTED OBSERVATIONS DIRECTORY

83-004A-01V ASIR-00001

This data set consists of one magnetic tape. The tape is 9 track, 6250 BPI, ASCII and is written in FITS (Flexiable Image Transport System) format. This tape was created on an IBM 3032 computer. This directory is the key to locating an IRAS pointed observation. The directory is ordered according to increasing Right Ascension of the grid center. The D and C numbers are as follows:

D#	C#
D-71495	C-25301

D 71495

Pointed Observations Directory

```
$NOP
$NOP
$NOP ******* GAILOUT1 *******
$EXE IPLIST BS

INPUT PARAMETERS ARE:  AS FL=1=1 1 1

 TAPE NO.   1              FILE NO.   1
 RECORD   1                LENGTH   2880
   0.1053  -0.0320 -156.65 073 029 DPS60C SY0087  4016 F  2/ 6/83 IRG162  225 16 3.25E-02 6.26E-02
3.65E-02 1.10E-01        0.1053  -0.0320 -156.65 073 029 DPS60C SY0087  4017 I  2/ 6/83 IRG162  233
16 1.33E+05 2.54E+05 7.94E+04 1.35E+05          0.2620 +21.6706 -154.54 108 029 DPS02B AG2014  5597 F
 3/ 7/83 IRG107  329 16 1.77E-02 2.35E-02 2.45E-02 7.45E-02        0.2620 +21.6706 -154.54 108 029 D
PS02B AG2014  5598 I  3/ 7/83 IRG107  337 16 8.29E+04 1.17E+05 6.23E+04 1.67E+05         0.2684 +21.6
717 -154.57 107 029 DPS02B AG2014  5590 F  3/ 7/83 IRG107  297 16 1.78E-02 2.41E-02 2.43E-02 7.95E-
02        0.2684 +21.6717 -154.57 107 029 DPS02B AG2014  5591 I  3/ 7/83 IRG107  305 16 7.94E+04 1.1
9E+05 5.95E+04 1.73E+05        0.4920 +67.2377  +63.10 107 029 DPS52B MC0272   153 F 20/ 2/83 IRG149
  417 16 2.72E-02 3.36E-02 2.28E-01 2.05E+00         0.4920 +67.2377  +63.10 107 029 DPS52B MC0272
154 I 20/ 2/83 IRG149  425 16 1.51E+05 2.32E+05 7.74E+05 2.70E+06         0.4937 +67.2368  +63.78 107
 029 DPS52B MC0272   212 F 21/ 2/83 IRG149  721 16 2.68E-02 3.99E-02 2.36E-01 2.03E+00         0.4937
 +67.2368  +63.78 107 029 DPS52B MC0272   213 I 21/ 2/83 IRG149  729 16 1.47E+05 2.59E+05 7.83E+05
2.97E+06        0.8119 -37.6633 -161.09 107 029 DPS02B BS0268  4983 F 22/ 6/83 IRG114  609 16 1.90E-
02 2.45E-02 3.42E-02 1.18E-01        0.8119 -37.6633 -161.09 107 029 DPS02B BS0268  4984 I 22/ 6/83
IRG114  617 16 8.00E+04 1.11E+05 7.45E+04 1.50E+05        0.8131 -37.6636 -160.54 107 029 DPS02B BS0
268  4942 F 21/ 6/83 IRG114  593 16 2.04E-02 2.50E-02 3.81E-02 1.42E-01        0.8131 -37.6636 -160.
54 107 029 DPS02B BS0268  4943 I 21/ 6/83 IRG114  601 16 8.43E+04 1.07E+05 8.03E+04 1.95E+05
0.8977 -55.4045  +43.79 111 029 DPS63E FL0228 15030 F 15/11/83 IRG145 1369 16 2.39E-02 3.35E-02 4.2
9E-02 1.16E-01        0.8977 -55.4045  +43.79 111 029 DPS63E FL0228 15031 I 15/11/83 IRG145 1377 16
1.02E+05 1.62E+05 9.97E+04 1.25E+05        0.9156 -55.4198  +44.67 109 029 DPS63E FL0228 14964 F 14/
11/83 IRG145 1097 16 2.37E-02 2.90E-02 4.62E-02 1.37E-01        0.9156 -55.4198  +44.67 109 029 DPS6
3E FL0228 14965 I 14/11/83 IRG145 1105 16 1.05E+05 1.35E+05 9.69E+04 1.55E+05        0.9163 -55.4119
  +41.07 109 029 DPS63E FL0228 15186 F 19/11/83 IRG158 1273 16 2.55E-02 3.19E-02 5.20E-02 1.76E-01
       0.9163 -55.4119  +41.07 109 029 DPS63E FL0228 15187 I 19/11/83 IRG158 1281 16 1.01E+05 1.45E+
05 1.01E+05 1.98E+05        0.9327 -55.4203  +39.40 107 029 DPS63E FL0228 15349 F 21/11/83 IRG158 17
53 16 2.41E-02 2.81E-02 4.58E-02 1.45E-01        0.9327 -55.4203  +39.40 107 029 DPS63E FL0228 15350
 I 21/11/83 IRG158 1761 16 9.91E+04 1.45E+05 9.03E+04 1.53E+05        0.9619 +15.8496 -158.41 107 02
9 DPS02B AG2016  4829 F 19/ 6/83 IRG106  409 16 1.94E-02 3.96E-02 2.58E-02 7.65E-02        0.9619 +1
5.8496 -158.41 107 029 DPS02B AG2016  4830 I 19/ 6/83 IRG106  417 16 9.03E+04 1.89E+05 7.44E+04 9.2
6E+04

 TAPE NO.   1              FILE NO.   1
 RECORD   578              LENGTH   600
 359.4148 +62.2053  -99.98 067 029 DPS61D BS0576 10562 I 12/ 9/83 IRG115 2081 16 6.68E+04 6.79E+04
7.17E+04 3.09E+05      359.7146 +66.9506  +64.08 107 029 DPS52B MC0276   172 F 21/ 2/83 IRG149  545
16 3.10E-02 4.74E-02 4.52E-01 2.90E+00      359.7146 +66.9506  +64.08 107 029 DPS52B MC0276   173 I
21/ 2/83 IRG149  553 16 1.85E+05 4.22E+05 1.41E+06 4.27E+06      359.7515 +66.9420  +67.24 105 029 D
PS52B MC0276   365 F 24/ 2/83 IRG149 1281 16 3.24E-02 4.45E-02 4.13E-01 3.73E+00      359.7515 +66.9
420  +67.24 105 029 DPS52B MC0276   366 I 24/ 2/83 IRG149 1289 16 1.94E+05 3.79E+05 1.43E+06 5.11E+
06

***** JOB DONE.
$WEO LPS

$$
```

REQ. AGENT	RAND NO.	ACQ. AGENT
GLS	V0273	WHW

IRAS

POINTED OBSERVATIONS ON TAPE

83-004A-01W ASIR-00045

This data set consists of 66 magnetic tapes. The tapes are 9 track, 6250 BPI, unlabeled and are written in FITS (Flexiable Image Transport System) format. These tapes were created on an IBM 3032 computer. Each observation is represented by eight files on the tape: 12 um data, 12 um noise, 25 um data, 25 um noise, 60 um data, 60 um noise, 100 um data, and 100 um noise. The first two records of each file contain the FITS header, then the grid begins in the third record as a stream of pixel values divided into 2880 byte records without regard to line length. The final records are padded to 2880 bytes with zeros. Two-byte intergers are used for most of the FLUX and INTEN data grids and all of the noise grids. The D and C numbers, number of files and the volume numbers are as follows:

D#	C#	VOLUME NO.	NO. FILES
D-71496	C-25765	IRG101	1728
D-71497	C-25766	IRG102	1792
D-71498	C-25767	IRG103	1728
D-71499	C-25768	IRG104	1760
D-71500	C-25769	IRG105	1744
D-71501	C-25770	IRG106	1728
D-71502	C-25771	IRG107	1752
D-71503	C-25772	IRG108	1792
D-71504	C-25773	IRG109	1784
D-71505	C-25774	IRG110	1808
D-71506	C-25775	IRG111	1896
D-71507	C-25776	IRG112	1864
D-71508	C-25777	IRG113	1960
D-71509	C-25778	IRG114	2176
D-71510	C-25779	IRG115	2376
D-71511	C-25780	IRG116	2488
D-71512	C-25781	IRG117	2408
D-71513	C-25782	IRG118	1928
D-71514	C-25783	IRG119	1648
D-71515	C-25784	IRG120	1448

D#	C#	VOLUME NO.	NO. FILES
D-71516	C-25785	IRG121	938
D-71517	C-25786	IRG122	1296
D-71518	C-25787	IRG123	1456
D-71519	C-25788	IRG124	1504
D-71520	C-25789	IRG125	2064
D-71521	C-25890	IRG126	1440
D-71522	C-25891	IRG127	1416
D-71523	C-25892	IRG128	1712
D-71524	C-25893	IRG129	1712
D-71525	C-25894	IRG130	1736
D-71526	C-25895	IRG131	1792
D-71527	C-25896	IRG132	2216
D-71528	C-25897	IRG133	2216
D-71529	C-25898	IRG134	2216
D-71530	C-25899	IRG135	1896
D-71531	C-25900	IRG136	1936
D-71532	C-25901	IRG137	1816
D-71533	C-25902	IRG138	1816
D-71534	C-25903	IRG139	1816
D-71535	C-25904	IRG140	1816
D-71536	C-25905	IRG141	1816
D-71537	C-25906	IRG142	1888
D-71538	C-25907	IRG143	1832
D-71539	C-25908	IRG144	1801
D-71540	C-25909	IRG145	1817
D-71541	C-25910	IRG146	1656
D-71542	C-25911	IRG147	1920
D-71543	C-25947	IRG148	1872
D-71544	C-25948	IRG149	1592
D-71545	C-25949	IRG150	1592
D-71546	C-25950	IRG151	1536
D-71547	C-25951	IRG152	1376
D-71548	C-25952	IRG153	1072
D-71549	C-25953	IRG154	1936
D-71550	C-25954	IRG155	2152
D-71551	C-25955	IRG156	2464
D-71552	C-25956	IRG157	576
D-71553	C-25957	IRG158	1784
D-71554	C-25958	IRG159	360
D-71555	C-25959	IRG160	2048
D-71556	C-25960	IRG161	976
D-71557	C-25961	IRG162	1264
D-71558	C-25962	IRG163	984
D-71559	C-25963	IRG164	496
D-71560	C-25964	IRG165	696
D-71561	C-25965	IRG166	824

APPENDIX A. FORMAT OF THE IRAS POINTED OBSERVATIONS

This section describes the formats of the Additional Observation (AO) Directory and AO Grids in their machine readable forms. The AOs were produced on a set of 66 volumes of 9-track, 6250 bpi, unlabeled tapes. The order of the AOs on the tapes reflects various mission and post-mission constraints. In general, the data are ordered on the tapes according to time of observation. The directory, which is ordered according to increasing Right Ascension of the grid center, is the key to finding the desired AO. The tape volumes are numbered in the form IRGnmm, where n is a data center code and mm is the volume number between 01 and 66.

I. The AO Directory

The AO Directory is the key to locating an IRAS pointed Observation on the tapes. The directory is ordered according to increasing Right Ascension of the grid center. It is available in printed form as Appendix C of this document and as a machine-readable file on the tape volume (IRG100). The machine-readable AO Directory is the first file on Tape IRG101. Physical record size is 2880 bytes. Each logical record is 120 bytes long and describes one AO grid. Bytes are numbered 0 to 119, and each contains on 7-bit, right justified ASCII character. The format for each of the logical records is given in Table A.1

Each observation consists of eight files on the tape: 12 um data, 12 um noise, 25 um data, 25 um noise, 60 um data, 60 um noise, 100 um data, and 100 um noise. For brevity, the file number for only the 12 um data grid is listed in the directory. The file numbers for the other bands and the noise grids can computed by adding the appropriate offset to the 12 um number.

Table A.1 FORMAT OF THE AO DIRECTORY

START BYTE	NAME	DESCRIPTION	UNITS	FORMAT
0	RA	Right Ascension (1950) of grid	degrees	F9.4
9	DEC	Declination (1950) of grid	degrees	F9.4
18	ROTA	Rotation angle (FITS CROTA2) from +Y Axis to +DEC	degrees	F8.2
26	Y	Y-axis (in-scan) grid dimension	arcmin	I4
30	Z	Z-axis (cross-scan) grid dimension	arcmin	I4
34	---	SPACE	-----	1X
35	MACRO	Macro of this observation.	-----	A6
41	---	SPACE	-----	1X
42	OBSID	Observation identifier	-----	A6

2. The AO Grids

The magnetic tape form of the Additional Observations contains the coadded grid data arrays of pixels recorded in the FITS format. The article by Wells, Greisen, and Harten [Astron. and Astrophys. Suppl., 44, 363-370 (1981)] in conjunction with the header record for each grid give a detailed description of the format of each grid.

Each observation is represented by eight files on the tape: 12 um data, 12 um noise, 25 um data, 25 um noise, 60 um data, 60 um noise, 100 um data, and 100 um noise. The first two records of each file contain the FITS header, then the grid begins in the third record as a stream of pixel values divided into 2880 byte records without regard to line length. The final records is padded to 2880 bytes with zeros. Two-byte integers are used for most of the FLUX and INTN data grids and all of the noise grids. In a few cases, four-byte integers are used to avoid saturation.

Standard FITS keywords are used where possible. Explanations and nonstandard keywords are given in Table A.2.

Table A.2 FITS KEYWORDS

KEYWORD	EXPLANATION
BZERO	BZERO is meant to define the photometric baseline. This parameter is set to zero for all the IRAS grids. For INTN grids, a baseline equal to the 25th percentile of the intensity values in the grid has been subtracted to produce the values on the tape. This baseline value is given under the non-standard keyword BIAS.
BUNIT	The FLUX data and noise grids are in Jy. The INTN grids have units of Jy/Sr.
CDELT1	This parameter is negative since increasing samples along axis 1 are in the -RA direction.
CROTA2	This angle defines the rotation from the +Y axis (in-scan) toward the +DEC axis, where counter-clockwise angles are positive.
BIAS	This nonstandard keyword gives the estimated baseline for INTN grids. It corresponds to the 25th percentile of the intensity values in the grid. The true brightness in a pixel is given by: TRUE = TAPE * BSCALE + BIAS For FLUX grids, the BIAS level is given for reference only. The true flux level in the pixel is given by: TRUE = TAPE * BSCALE

Table A-3. SAMPLE FLUX GRID HEADER

```
SIMPLE   =                    T  /STANDARD FITS FORMAT
BITPIX   =                   16  /2 BYTE TWOS-COMPL INTEGERS
NAXIS    =                    3  /NUMBER OF AXES
NAXIS1   =                   50  /NZ = Z (CROSS SCAN) GRID DIMENSION
NAXIS2   =                  216  /NY = Y (IN SCAN) GRID DIMENSION
NAXIS3   =                    1  /NUMBER OF WAVELENGTHS
BSCALE   =         1.611655E-02  /TRUE=TAPE*BSCALE+BZERO
BZERO    =         0.0
BUNIT    = 'JY      '            /FLUX
BLANK    =               -32768  /TAPE VALUE FOR EMPTY CELL
CRVAL1   =         8.282030E+02  /RA AT ORIGIN (DEGREES)
CRPIX1   =                  26.  /Z-AXIS ORIGIN (CELL) = (NZ/2)+1
CTYPE1   = 'RA---SIN'            /DECREASES IN VALUE AS SAMPLE INDEX
COMMENT                           INCREASES (ORTHOGRAPHIC PROJECTION)
CDELT1   =         9.999998E-02  /Z-GRID CELL WIDTH (DEGREES)
CROTA1   =                  0.0  /TWIST ANGLE UNDEFINED FOR Z-AXIS
CRVAL2   =         2.206647E+01  /DEC AT ORIGIN (DEGREES)
CRPIX2   =                 109.  /Y-AXIS ORIGIN (CELL) = (NY/2)+1
CTYPE2   = 'DEC--SIN'            /INCREASES IN VALUE AS LINE INDEX
COMMENT                           INCREASES (ORTHOGRAPHIC PROJECTION)
CDELT2   =         8.333333E-03  /Y-GRID CELL WIDTH (DEGREES)
CROTA2   =         2.750000E+01  /ROTATES +NAXIS2 INTO +DEC AXIS (ANGLE
COMMENT                           MEASURED POSITIVE CCW FROM +NAXIS2 TO
COMMENT                           +DEC)    (DEGREES)
CRVAL3   =             6.00E-05  /WAVELENGTH IN METERS
CRPIX3   =                   1.
CTYPE3   = 'LAMBDA'
CDELT3   =                   0.
CROTA3   =                   0.
DATAMAX  =         4.612556E+00  /JY       (TRUE VALUE)
DATAMIN  =        -2.651172E-01  /JY       (TRUE VALUE)
BIAS     =         2.728472E+07  /BIAS LEVEL (GRID REF) IN JY/SR
EPOCH    =                1950.  /EME50
DATE-OBS = '15/ 3/83'            /DATE OF OBSERVATION (DD/MM/YY)
DATE     = '15/10/85'            /DATE THIS TAPE WRITTEN (DD/MM/YY)
ORIGIN   = 'JPL-IRAS'            /INSTITUTION
TELESCOP = 'IRAS    '
INSTRUME = 'DEEPSKY '
COMMENT                           DSSID = DS01
COMMENT                           SOP =    98; OBS =     13
DSKYGRID =                 838.  /DEEPSKY GRID NO.
DATE-CR  =  '41442254'           /DSCO O/P FILE CREATION DATE(YDDDHHMM)
COMMENT                          EST. MEDIAN NOISE =3.1673E-02 JY
COMMENT                          GRID TWIST =-1.7725000E+02 (DEG) MEAS-
COMMENT                          URED FROM SOUTH TO +Y, CW IS POSITIVE.
COMMENT                          GAIN NORM. USED = 1.590000E-01
COMMENT                          MFILT = 6
COMMENT                          KFILT = 6
OBJECT   = 'BS   64'             /OBSERVER ID + IGO'S AO NO.
COMMENT                           IGO'S REP. SEQ. NO. = 2
OBSERVER = 'DPS52B '             /DS01,2 SIS: C1 FIELD
COMMENT                          OBJ. NAME NO. (C2) FIELD =1
COMMENT                          DS01,2 SIS: D(1-4) = 5 31 42  0
COMMENT                          DS01,2 SIS: E(1-3) =111 59 29
COMMENT                          DS01,2 SIS: PROG = DPS1AB
COMMENT    REFERENCES:
COMMENT    IRAS SDAS SOFTWARE INTERFACE SPEC. #623-94/NO. DS01
COMMENT    IRAS SDAS SOFTWARE INTERFACE SPEC. #623-94/NO. DS02
COMMENT    THE USER'S GUIDE TO IRAS POINTED OBSERVATION PRODUCTS
COMMENT    IRAS/SDAS SUBSYSTEM DESIGN SPEC./ #623-75
COMMENT    ASTRON. ASTROPHYS SUPPL SER. 44, 363-370 (1981)
```

Table A-5. SAMPLE NOISE GRID HEADER

```
SIMPLE   =                    T   /STANDARD FITS FORMAT
BITPIX   =                   16   /2 BYTE TWOS-COMPL INTEGERS
NAXIS    =                    3   /NUMBER OF AXES
NAXIS1   =                   50   /NZ = Z (CROSS SCAN) GRID DIMENSION
NAXIS2   =                  216   /NY = Y (IN SCAN) GRID DIMENSION
NAXIS3   =                    1   /NUMBER OF WAVELENGTHS
BSCALE   =         1.611655E-02   /TRUE=TAPE*BSCALE+BZERO
BZERO    =         0.0
BUNIT    = 'JY      '             /NOIS (STATISTICAL WEIGHT)
BLANK    =               -32768   /TAPE VALUE FOR EMPTY CELL
CRVAL1   =         8.282030E+02   /RA AT ORIGIN (DEGREES)
CRPIX1   =                  26.   /Z-AXIS ORIGIN (CELL) = (NZ/2)+1
CTYPE1   = 'RA---SIN'             /DECREASES IN VALUE AS SAMPLE INDEX
COMMENT                            INCREASES (ORTHOGRAPHIC PROJECTION)
CDELT1   =         9.999998E-02   /Z-GRID CELL WIDTH (DEGREES)
CROTA1   =                  0.0   /TWIST ANGLE UNDEFINED FOR Z-AXIS
CRVAL2   =         2.206647E+01   /DEC AT ORIGIN (DEGREES)
CRPIX2   =                 109.   /Y-AXIS ORIGIN (CELL) = (NY/2)+1
CTYPE2   = 'DEC--SIN'             /INCREASES IN VALUE AS LINE INDEX
COMMENT                            INCREASES (ORTHOGRAPHIC PROJECTION)
CDELT2   =         8.333333E-03   /Y-GRID CELL WIDTH (DEGREES)
CROTA2   =         2.750000E+01   /ROTATES +NAXIS2 INTO +DEC AXIS (ANGLE
COMMENT                            MEASURED POSITIVE CCW FROM +NAXIS2 TO
COMMENT                            +DEC)    (DEGREES)
CRVAL3   =             6.00E-05   /WAVELENGTH IN METERS
CRPIX3   =                   1.
CTYPE3   = 'LAMBDA'
CDELT3   =                   0.
CROTA3   =                   0.
DATAMAX  =         4.448168E+00   /JY       (TRUE VALUE)
DATAMIN  =         1.611655E-02   /JY       (TRUE VALUE)
EPOCH    =                1950.   /EME50
DATE-OBS = '15/ 3/83'             /DATE OF OBSERVATION (DD/MM/YY)
DATE     = '15/10/85'             /DATE THIS TAPE WRITTEN (DD/MM/YY)
ORIGIN   = 'JPL-IRAS'             /INSTITUTION
TELESCOP = 'IRAS    '
INSTRUME = 'DEEPSKY '
COMMENT                            DSSID = DS01
COMMENT                            SOP =    98; OBS =    13
DSKYGRID =                 838.   /DEEPSKY GRID NO.
DATE-CR  = '41442254'             /DSCO O/P FILE CREATION DATE(YDDDHHMM)
COMMENT                           EST. MEDIAN NOISE =3.1673E-02 JY
COMMENT                           GRID TWIST =-1.7725000E+02 (DEG) MEAS-
COMMENT                           URED FROM SOUTH TO +Y, CW IS POSITIVE.
COMMENT                           GAIN NORM. USED = 1.590000E-01
COMMENT                           MFILT = 6
COMMENT                           KFILT = 6
OBJECT   = 'BS   64'              /OBSERVER ID + IGO'S AO NO.
COMMENT                            IGO'S REP. SEQ. NO. = 2
OBSERVER = 'DPS52B '              /DS01,2 SIS: C1 FIELD
COMMENT                           OBJ. NAME NO. (C2) FIELD =1
COMMENT                           DS01,2 SIS: D(1-4) = 5 31 42  0
COMMENT                           DS01,2 SIS: E(1-3) =111 59 29
COMMENT                           DS01,2 SIS: PROG = DPS1AB
COMMENT  REFERENCES:
COMMENT  IRAS SDAS SOFTWARE INTERFACE SPEC. #623-94/NO. DS01
COMMENT  IRAS SDAS SOFTWARE INTERFACE SPEC. #623-94/NO. DS02
COMMENT  THE USER'S GUIDE TO IRAS POINTED OBSERVATION PRODUCTS
COMMENT  IRAS/SDAS SUBSYSTEM DESIGN SPEC./ #623-75
COMMENT  ASTRON. ASTROPHYS SUPPL SER. 44, 363-370 (1981)
```

W

APPENDIX B. FORTRAN Subroutines to Convert Between RA-DEC and Pixel Coordinates

These three FORTRAN subroutines can be used to convert between equatorial coordinates and the pixel coordinates of the IRAS pointed observations. The grids have been produced using an orthographic projection. Epoch 1950 has been assumed throughout the processing. Subroutine CTE2G computes the transformation matrix used by the other subroutines and needs to be run only once per grid. The subroutines GTOSKY and SKYTOG compute the grid to sky and sky to grid conversions, respectively.

```
C *****COMPUTE EME50 TO GRID TRANSFORMATION MATRIX********
C
      SUBROUTINE CTE2G(ALPG,DELG,CROTA2,TE2G)
C
C     TE2G   =  TRANSFORMATION MATRIX FROM EME TO GRID
C     ALPG   =  RIGHT ASCENSION OF GRID CENTER (DEG, EME50)
C     DELG   =  DECLINATION OF GRID CENTER (DEG, EME50)
C     CROTA2 = GRID ROTATION ANGLE.  IN FITS HEADER.
C
      REAL*8 TE2G(3,3)
      DATA RTD/57.29577951/
C
      TWSG = CROTA2 - 180.0
      SALP = SIN(ALPG/RTD)
      CALP = COS(ALPG/RTD)
      SDEL = SIN(DELG/RTD)
      CDEL = COS(DELG/RTD)
      STWS = SIN(TWSG/RTD)
      CTWS = COS(TWSG/RTD)
C
      TE2G(1,1) = +SDEL
      TE2G(1,2) = -SALP*CDEL
      TE2G(1,3) = +CALP*CDEL
      TE2G(2,1) = -CDEL*CTWS
      TE2G(2,2) = -CALP*STWS -SALP*SDEL*CTWS
      TE2G(2,3) = -SALP*STWS +CALP*SDEL*CTWS
      TE2G(3,1) = +CDEL*STWS
      TE2G(3,2) = -CALP*CTWS +SALP*SDEL*STWS
      TE2G(3,3) = -SALP*CTWS -CALP*SDEL*STWS
C
      RETURN
      END
```

```
C   *********CONVERT RA & DEC (ALP,DEL) TO PIXEL (PY,PZ)********
C
      SUBROUTINE SKYTOG(PY,PZ,NY,NZ,DRY,DRZ,TE2G,ALP,DEL)
C
C     PY   =  Y (IN-SCAN) PIXEL VALUE
C     PZ   =  Z (CROSS-SCAN) PIXEL VALUE
C     NY   =  NUMBER OF CELLS IN Y DIRECTION
C     NZ   =  NUMBER OF CELLS IN Z DIRECTION
C     DRY  =  CELL SIZE IN Y DIRECTION (ARCMINUTES)
C     DRZ  =  CELL SIZE IN Z DIRECTION (ARCMINUTES)
C     TE2G =  TRANSFORMATION MATRIX FROM EME TO GRID
C             COMPUTED IN SUBROUTINE CTE2G
C     ALP  =  RIGHT ASCENSION OF PIXEL PY,PZ (DEG, EME50)
C     DEL  =  DECLINATION OF PIXEL PY,PZ  (DEG, EME50)
C
      INTEGER*4     NY,NZ,NYC,NZC
      REAL*4        ALPG,DELG,TWSG,ALP,DEL,PY,PZ
      REAL*8        TE2G(3,3), VE(3), VT(3)
      DATA          RTD /57.29577951/
C
C     COMPUTE EME VECTOR
C
      NYC = NY/2 + 1
      NZC = NZ/2 + 1
      SDEL = SIN ( DEL/RTD )
      CDEL = COS ( DEL/RTD )
      SALP = SIN ( ALP/RTD )
      CALP = COS ( ALP/RTD )
      VE(1) = +SDEL
      VE(2) = -SALP * CDEL
      VE(3) = +CALP * CDEL
C
C     COMPUTE GRID VECTOR AND PY,PZ
C
      VE(1) = TE2G(1,1)*VT(1)+TE2G(1,2)*VT(2)+TE2G(1,3)*VT(3)
      VE(2) = TE2G(2,1)*VT(1)+TE2G(2,2)*VT(2)+TE2G(2,3)*VT(3)
      VE(3) = TE2G(3,1)*VT(1)+TE2G(3,2)*VT(2)+TE2G(3,3)*VT(3)
      PY    = 60. * RTD * VT(2) / DRY + NYC
      PZ    = 60. * RTD * VT(3) / DRZ + NZC
C
      RETURN
      END
```

Acknowledgements

We wish to recognize the efforts of the IRAS Data Management Team during both the production of the original grids and the reformatting into FITS format images. J. Bennett and S. Wheelock gave invaluable assistance in the analysis of the pointed observations. We thank the staff of the IRAS library for organizing the mountain of quick-look data into a useful form. The Westerbork-Leiden software package was the basis for most of the analysis and display tools used with the pointed observations.

W

APPENDIX C. PRINTED VERSION OF THE POINTED OBSERVATION DIRECTORY

This section is a printed summary of the Additional Observation (AO) Directory. It is a condensed version of the machine readable directory file described in Appendix A. Note especially that for this summary, for the DPS observations - which have both Flux and Intensity mode grids - only the Flux grid is actually listed. The corresponding Intensity grid is grid number n+1 and its location is file number m+8 on the same tape volume as the flux mode grid. When the Intensity mode grid is not next in sequence on the same tape it is given an explicit entry.

For example, the first entry in the directory is for grid 4016 - a Flux mode grid which begins on file number 225 of Volume IRG 162. The corresponding Intensity data is grid 4017 which begins on file 233 of the same volume.

Parameters included in the printed directory are:

RA	Right Ascension (Earth Mean Equatorial 1950.0) of grid center
DEC	Declination (Earth Mean Equatorial 1950.0) of grid center
ROTA	Rotation angle of grid from In-scan direction to + DEC (degrees),
Y	In-scan dimension (arcmin),
Z	Cross-scan dimension (arcmin),
MACRO TYPE	Macro used for this observation,
OBS ID	Identifier for this observation (assigned during mission operations),
GRID #	Grid number for this observation (assigned during data processing),
M	Processing mode for this grid; "F" means both Flux and Intensity grids are available. Usually only the Flux grid is listed to save space. The corresponding Intensity grid is the next set of files (Total of 16 files) "I" means only the Intensity grid is available (Total of 8 files)
Tape Volume	Volume name of grid data
File #	First file location of grid data on that tape

NSSDC NATIONAL SPACE SCIENCE DATA CENTER

W

Central Data Services Facility
Operated for NASA by Science Applications Research

Astronomical Data Center
Goddard Space Flight Center
Code 633
Greenbelt, Maryland 20771
Telephone (301)286-8310
FTS 888-8310

17 June 1986

Mr. Richard D. Benson
Mail Stop 100- 22 (IPAC)
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, California 91109

Dear Rich;

I have now looked carefully at the AO Guide addenda pages and inserted them into my personal copy of the publication. I have a few suggestions with regard to these pages for the final publication.

1. The redone title page presents problems because it does not replace the original, e.g., it does not contain the preprint number, five authors' middle initials are omitted (including Miley's; I know that Gerry does not have one), and the footnotes are missing.

2. Appendix C page: (a) I believe that OBSERVATIONS should be plural, but it's not that important; (b) there should be a hyphen between "machine" and "readable" (second and third lines); (c) the page number has been incorrectly typed as the letter "O" instead of the number "0".

3. I would remove the "e" from Acknowledgments, but again, it's not that important.

I have distributed sets of the addenda pages to all AO data recipients with a copy of the enclosed memorandum to each person so that the pages will be inserted properly.

Yours sincerely,
Original Signed by
Wayne H. Warren Jr.

Wayne H. Warren Jr.

Enclosures: Set of Addenda Pages
WHW Memorandum

W

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FTS 888-8310

TO: Recipients of *A User's Guide to IRAS Pointed Observation Products*

FROM: *IRAS* Data Acquisition Scientist / NSSDC WDC-A-R&S

SUBJECT: Addenda Pages for Publication IPAC PRE-008N

The attached pages should be inserted into the accompanying copy of the AO Guide:

1. New Title Page

   This page should be inserted following the previous title page, but the old title page should not be removed because it contains information not given on the 1986 May 15 page.

2. Acknowledgments Page

   Insert this following page 29.

3. APPENDIX C Explanation Page

   Insert this following page B-3 (before Appendix page C-1).

Wayne H. Warren Jr.
1986 June 17

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W

Central Data Services Facility

Operated for NASA by Science Applications Research

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Goddard Space Flight Center
Code 633
Greenbelt, Maryland 20771
Telephone (301)286-8310
FTS 888-8310

8 June 1986

Mr. Richard D. Benson
Mail Code 100-22 (IPAC)
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, California 91109

Dear Rich;

Thank you for your letter of May 30, 1986 and for the attached pages to be distributed with *A User's Guide to IRAS Pointed Observations Products*. We will prepare copies of the pages and send a set with each copy of the AO Guide. We will also query our information system, list all previous recipients of AO data, and send a set to each person.

Things are going quite well with *IRAS* data distribution and the request activity is reasonably high. The procedures that we are using (such as this one) to keep the community informed and updated with the latest information are making all of us look good in their eyes -- we appreciate your help in making this possible.

Yours sincerely,

Wayne

Wayne H. Warren Jr.
IRAS Data Acquisition Scientist

Jet Propulsion Laboratory
California Institute of Technology
4800 Oak Grove Drive
Pasadena, California 91109
(818) 354-4321

JPL

W

May 30, 1986

Dr. Wayne Warren
National Space Science Data Center
Goddard Space Flight Center
Code 633.8
Greenbelt, Maryland 20771

Dear Wayne,

Thank you for calling to our attention that A User's Guide to IRAS Pointed Observation Products fails to note the location of the Intensity mode DPS grids in the printed directory.

Page C-0 attached should be added to all copies of the guide to correct this omission. Also attached is a new title page to properly include Dr. George Miley as an author, and an acknowledgement page.

Please include these errata with your future distributions of the guide. We will send them to our original distribution list.

Very truly yours,

Rick Benson

R.D. Benson
IPAC Analysis & Operations
Engineer

Attachment
RDB:nct
cc: IRAS SCITEAM

RECORD COUNT OF TAPE GAILIN

INPUT TAPE GAILIN ON TA0

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
1	1	1	80	0	0	0	0	0	0
2	226	226	19040	0	0	0	0	0	0

DOUBLE END OF FILE READ AFTER FILE 2 # OF PERMANENT READ ERRORS 0

START TIME 01/07/86 20:44:52 STOP TIME 01/07/86 20:45:26

$$
$NOP
$NOP

REQ. AGENT	RAND NO.	ACQ. AGENT
GLS	V0273	WHW

IRAS

HCON-2

SKY PLATES IMAGES

83-004A-01Z ASIR-00008

This data set consists of 27 magnetic tapes. These tapes are 6250 BPI, 9 track, and contain 64 files of data each, except the last tape contains only 32 files of data. Each tape holds 8 plates except the last tape which holds 4 plates. The first several records of each file contain the header, then the image appears. The header records are ASCII formatted and the image records are binary formatted. These image tapes are all in FITS (Flexiable Image Transport System) format. These tapes were created on an IBM 3032 computer. The D and C numbers and the sky plates contained on each tape are as follows:

D#	C#	SKY PLATES
D-73893	C-25967	1-8
D-73894	C-25968	9-16
D-73895	C-25969	17-24
D-73896	C-25970	25-32
D-73897	C-25971	33-40
D-73898	C-25972	41-48
D-73899	C-25973	49-56
D-73900	C-25974	57-64
D-73901	C-25975	65-72
D-73902	C-25976	73-80
D-73903	C-25977	81-88
D-73904	C-25978	89-96
D-73905	C-25979	97-104
D-73906	C-25980	105-112
D-73907	C-25981	113-120
D-73908	C-25982	121-128
D-73909	C-25983	129-136
D-73910	C-25984	137-144
D-73911	C-25985	145-152
D-73912	C-25986	153-160
D-73913	C-25987	161-168
D-73914	C-25988	169-176
D-73915	C-25989	177-184
D-73916	C-25990	185-192
D-73917	C-25991	193-200
D-73918	C-25992	201-208
D-73919	C-25993	209-212

```
INPUT PARAMETERS ARE:  AS AL 1

 TAPE NO.   1              FILE NO.   1
 RECORD   1                LENGTH   80
IRAS SMALL SCALE STRUCTURE CATALOG   VER 1.00    1985DEC   ONE FILE  53720 RECS

***** JOB DONE.
$WEO LPS
```

$$

D73893

83-004A-01E

```
$NOP
$NOP *****************LIST OF GOUT1****************
$EXE TPLIST BS

INPUT PARAMETERS ARE:  AS SR=1=2 1 1

 TAPE NO.   1              FILE NO.   1
 RECORD   1                LENGTH   2880
SIMPLE  =                        T           / STANDARD FITS FORMAT                  BITPIX  =
          32           / 4-BYTE TWOS-COMPL INTEGERS              NAXIS    =                  3
    / NUMBER OF AXES                          NAXIS1  =                497           / # SAMPLES PER L
INE (FASTEST VARY NDEX)NAXIS2  =                 503          / # LINES OF DATA IN IMAGE FILE
    NAXIS3  =                  1           / # WAVELENGTHS                          BSCALE  =
   3.893974E-02            / TRUE=TAPE*BSCALE+BZERO                   BZERO    =               0.0
          /                                BUNIT    = 'JY/SR   '                     / INTENSITY
                        BLANK    =           -2000000000            / TAPE VALUE FOR EMPTY PIXEL
       CRVAL1  =                  0.0          / RA AT ORIGIN (DEGREES)                 CRPIX1  =
             248.          / SAMPLE AXIS ORIGIN (PIXEL)           CTYPE1  = 'RA---TAN'
         / DECREASES IN VALUE AS SAMPLE INDEX     COMMENT                                     INCREAS
ES  (GNOMONIC PROJECTION)       CDELT1  =           -3.333333E-02            / COORD VALUE INCREMENT DEG/
PIXEL          COMMENT                                  AT ORIGIN ON SAMPLE AXIS                CRVAL2
  =                  90.00          / DEC AT ORIGIN (DEGREES)              CRPIX2  =
252.           / LINE AXIS ORIGIN (PIXEL)             CTYPE2  = 'DEC--TAN'                        / DEC
REASES IN VALUE AS LINE INDEX       COMMENT                                   INCREASES  (GNOMONIC P
ROJECTION)       CDELT2  =           -3.333333E-02            / COORD VALUE INCREMENT DEG/PIXEL         COM
MENT                                AT ORIGIN ON LINE AXIS                   CRVAL3  =
 1.2E-05            / WAVELENGTH IN METERS                    CRPIX3  =                   1.
                                   CTYPE3  = 'LAMBDA  '
                    CDELT3  =                     0.
 DATAMAX =              3.893973E+07          / JY/SR  (TRUE VALUE)                  DATAMIN =
1.383146E+07              / JY/SR  (TRUE VALUE)              EPOCH    =              1950.
     / EME50                         DATE-MAP= '01/11/84'                            / MAP RELEASE DA
TE (DD/MM/YY)            DATE     = '05/05/86'                      / DATE THIS TAPE WRITTEN (DD/MM/YY)
      ORIGIN   = 'JPL-IRAS'                         / INSTITUTION                      TELESCOP= 'IRA
S     '                                                       INSTRUME= 'SKYPLATE'
         / IRAS SKY PLATE                         OBJECT   = 'PL001 H2'                          / PLATE NUMB
ER / HCON                       PROJTYPE= 'GNOMONIC'                       / PROJECTION TYPE


 TAPE NO.   1              FILE NO.   1
 RECORD   2                LENGTH   2880
COMMENT                                    MINSOP =   29; MAXSOP = 145               COMMENT
                       LOGTAG = VSFLOG( 8.2)                            COMMENT
   GEOMTAG = GEOM( 7.9)                      COMMENT
                       COMMENT   PROJECTION FORMULAE:
    COMMENT          FORWARD FORMULA; RA0 AND DEC0 ARE THE PLATE CENTER                 COMMENT      R2D
 = 45. / ATAN(1.)                                                 COMMENT     PIX = 30.
                                         COMMENT      A = COS(DEC) * COS(RA0 - RA)
                          COMMENT      F = PIX * R2D / (SIN(DEC0) * SIN(DEC) + A * COS(DEC0))
          COMMENT     SAMPLE = -F * COS(DEC) * SIN(RA-RA0)                                    COMMENT
XLINE = -F * (COS(DEC0) * SIN(DEC) - A * SIN(DEC0))                        COMMENT
                                            COMMENT          INVERSE FORMULA; REQUIRES ARCSINE
                             COMMENT      X = SAMPLE / (PIX * R2D)
             COMMENT      Y = LINE / (PIX * R2D)                                                COMMENT
    DELTA = ATAN(SQRT(X*X + Y*Y))                                          COMMENT     BETA = ATAN2(-X
,Y)                                              COMMENT      DEC = ASIN(SIN(DEC0)*COS(DELTA)-CO
S(DEC0)*SIN(DELTA)*COS(BETA))        COMMENT     XX = SIN(DEC0)*SIN(DELTA)*COS(BETA)+COS(DEC0)*COS(DEL
TA)              COMMENT      YY = SIN(DELTA)*SIN(BETA)                                                COM
MENT     RA = RA0 + ATAN2(YY,XX)                                             COMMENT    REFERENCES:
                                                  COMMENT      IRAS SDAS SOFTWARE INTERFACE S
PECIFICATION(SIS)  #623-94/NO. SF05     COMMENT     ASTRON. ASTROPHYS. SUPPL. SER. 44,(1981) 363-370
(RE:FITS)             COMMENT     RECONCILIATION OF FITS PARMS W/ SIS SF05 PARMS:
COMMENT      NAXIS1 = (ES - SS + 1); NAXIS2 = (EL - SL + 1);                            COMMENT     CRPIX1
 = (1 - SS);       CRPIX2 = (1 - SL)                                  END
```

```
INPUT PARAMETERS ARE: AS SK-1-2 1 1 64

TAPE NO.   1              FILE NO.   64
RECORD   1                LENGTH   2880
SIMPLE  =                    T         / STANDARD FITS FORMAT              BITPIX  =
        16         / 2-BYTE TWOS-COMPL INTEGERS           NAXIS   =                  3
   / NUMBER OF AXES                      NAXIS1  =                 498         / # SAMPLES PER L
INE (FASTEST VARY NDEX)NAXIS2  =                 503         / # LINES OF DATA IN IMAGE FILE
   NAXIS3  =                    1         / # WAVELENGTHS                  BSCALE  =
  7.560796E-02          / TRUE=TAPE*BSCALE+BZERO               BZERO   =                 0.0
        /                                 BUNIT   = '        '                      / STATISTICAL
 WEIGHT                 BLANK   =                    0          / TAPE VALUE FOR EMPTY PIXEL
        CRVAL1  =               216.00          / RA AT ORIGIN (DEGREES)           CRPIX1  =
              252.         / SAMPLE AXIS ORIGIN (PIXEL)           CTYPE1  = 'RA---TAN'
         / DECREASES IN VALUE AS SAMPLE INDEX    COMMENT                                INCREAS
ES  (GNOMONIC PROJECTION)      CDELT1  =          -3.333333E-02          / COORD VALUE INCREMENT DEG/
PIXEL       COMMENT                             AT ORIGIN ON SAMPLE AXIS              CRVAL2
 =              75.00          / DEC AT ORIGIN (DEGREES)           CRPIX2  =
252.        / LINE AXIS ORIGIN (PIXEL)              CTYPE2  = 'DEC--TAN'                    / DEC
REASES IN VALUE AS LINE INDEX      COMMENT                                  INCREASES  (GNOMONIC P
ROJECTION)      CDELT2  =          -3.333333E-02          / COORD VALUE INCREMENT DEG/PIXEL      COM
MENT                           AT ORIGIN ON LINE AXIS              CRVAL3  =
 1.0E-04          / WAVELENGTH IN METERS                 CRPIX3  =                  1.
                              CTYPE3  = 'LAMBDA  '
                 CDELT3  =                   0.
 DATAMAX =          2.419455E+03          / DIMENSIONLESS                          DATAMIN =
7.560796E-02          / DIMENSIONLESS                     EPOCH   =                1950.
  / EME50                          DATE-MAP= '01/11/84'                         / MAP RELEASE DA
TE (DD/MM/YY)           DATE    = '05/05/86'                 / DATE THIS TAPE WRITTEN (DD/MM/YY)
    ORIGIN  = 'JPL-IRAS'                 / INSTITUTION                            TELESCOP= 'IRA
S    '                                           INSTRUME= 'SKYPLATE'
       / IRAS SKY PLATE                  OBJECT  = 'PL008 H2'                            / PLATE NUMB
ER / HCON                 PROJTYPE= 'GNOMONIC'                          / PROJECTION TYPE

TAPE NO.   1              FILE NO.   64
RECORD   2                LENGTH   2880
COMMENT                                   MINSOP =  29; MAXSOP = 255           COMMENT
                   LOGTAG = VSFLOG( 8.2)                         COMMENT
   GEOMTAG = GEOM( 7.9)               COMMENT
                   COMMENT   PROJECTION FORMULAE:
   COMMENT        FORWARD FORMULA; RA0 AND DEC0 ARE THE PLATE CENTER              COMMENT    R2D
 = 45. / ATAN(1.)                                               COMMENT    PIX = 30.
                                   COMMENT    A = COS(DEC) * COS(RA0 - RA)
                      COMMENT    F = PIX * R2D / (SIN(DEC0) * SIN(DEC) + A * COS(DEC0))
         COMMENT    SAMPLE = -F * COS(DEC) * SIN(RA-RA0)                           COMMENT
XLINE = -F * (COS(DEC0) * SIN(DEC) - A * SIN(DEC0))                COMMENT
                                      COMMENT       INVERSE FORMULA; REQUIRES ARCSINE
                         COMMENT    X = SAMPLE / (PIX * R2D)
           COMMENT    Y = LINE / (PIX * R2D)                                       COMMENT
   DELTA = ATAN(SQRT(X*X + Y*Y))                                COMMENT    BETA = ATAN2(-X
,Y)                                       COMMENT    DEC = ASIN(SIN(DEC0)*COS(DELTA)-CO
S(DEC0)*SIN(DELTA)*COS(BETA))      COMMENT    XX = SIN(DEC0)*SIN(DELTA)*COS(BETA)+COS(DEC0)*COS(DEL
TA)           COMMENT    YY = SIN(DELTA)*SIN(BETA)                                     COM
MENT     RA = RA0 + ATAN2(YY,XX)                                   COMMENT   REFERENCES:
                                           COMMENT    IRAS SDAS SOFTWARE INTERFACE S
PECIFICATION(SIS)  #623-94/NO. SF05    COMMENT    ASTRON. ASTROPHYS. SUPPL. SER. 44,(1981) 363-370
(RE:FITS)          COMMENT    RECONCILIATION OF FITS PARMS W/ SIS SF05 PARMS:
 COMMENT     NAXIS1 = (ES - SS + 1); NAXIS2 = (EL - SL + 1);                 COMMENT    CRPIX1
= (1 - SS);      CRPIX2 = (1 - SL)                         END
```

```
$NOP
$NOP ***** GOUT 27 ********
$EXEC TPLIST BS
```

D73919

```
INPUT PARAMETERS ARE:' AS FL=1=1 1 1 1

TAPE NO.   1              FILE NO.   1
RECORD   1                LENGTH   2880
SIMPLE  =                          T          / STANDARD FITS FORMAT                    BITPIX  =
        32             / 4-BYTE TWOS-COMPL INTEGERS              NAXIS   =                      3
  / NUMBER OF AXES                           NAXIS1  =                 503           / # SAMPLES PER L
INE (FASTEST VARY NDEX)NAXIS2  =                    494          / # LINES OF DATA IN IMAGE FILE
    NAXIS3  =                       1           / # WAVELENGTHS                            BSCALE  =
  1.920857E-01            / TRUE=TAPE*BSCALE+BZERO                 BZERO   =                    0.0
       /                                          BUNIT   = 'JY/SR    '                  / INTENSITY
                             BLANK   =              -2000000000          / TAPE VALUE FOR EMPTY PIXEL
         CRVAL1  =                 252.00           / RA AT ORIGIN (DEGREES)                 CRPIX1  =
               252.          / SAMPLE AXIS ORIGIN (PIXEL)            CTYPE1  = 'RA---TAN'
           / DECREASES IN VALUE AS SAMPLE INDEX     COMMENT                                     INCREAS
ES  (GNOMONIC PROJECTION)       CDELT1  =           -3.333333E-02              / COORD VALUE INCREMENT DEG/
PIXEL        COMMENT                                 AT ORIGIN ON SAMPLE AXIS                   CRVAL2
 =                 -75.00              / DEC AT ORIGIN (DEGREES)                CRPIX2  =
246.            / LINE AXIS ORIGIN (PIXEL)             CTYPE2  = 'DEC--TAN'                          / DEC
REASES IN VALUE AS LINE INDEX      COMMENT                                 INCREASES  (GNOMONIC P
ROJECTION)       CDELT2  =           -3.333333E-02            / COORD VALUE INCREMENT DEG/PIXEL        COM
MENT                                    AT ORIGIN ON LINE AXIS                   CRVAL3  =
 1.2E-05              / WAVELENGTH IN METERS                  CRPIX3  =                           1.
                                        CTYPE3  = 'LAMBDA  '
                      CDELT3  =                            0.
 DATAMAX =            1.920857E+08            / JY/SR  (TRUE VALUE)                     DATAMIN =
1.231473E+07            / JY/SR  (TRUE VALUE)                  EPOCH   =                       1950.
     / EME50                                DATE-MAP= '01/11/84'                         / MAP RELEASE DA
TE (DD/MM/YY)            DATE    = '06/05/86'                    / DATE THIS TAPE WRITTEN (DD/MM/YY)
     ORIGIN  = 'JPL-IRAS'                           / INSTITUTION                       TELESCOP= 'IRA
S     '                                                          INSTRUME= 'SKYPLATE'
        / IRAS SKY PLATE                           OBJECT  = 'PL209 H2'                      / PLATE NUMB
ER / HCON                    PROJTYPE= 'GNOMONIC'                         / PROJECTION TYPE

 TAPE NO.   1             FILE NO.   1
 RECORD   348             LENGTH   2880
```

REQ. AGENT
GLS

ACQ. AGENT
WHW

IRAS

ASTEROID AND COMET SURVEY

83-004A-01c ASIR-00036

This data set consists of 1 magnetic tape. This tape is 6250 bpi, 9 track, ASCII formatted and contains 8 files and was created on an IBM 3081 computer. This tape contains seven data products, including asteroid sightings, in addition to an asteroid catalog, asteroid statistics, a comet catalog, asteroid names and pointers, asteroids ground based data and asteroid rejected sightings. Some 96% of the sky was scanned, providing data for 25 comets, 1811 known asteroids, and a number of unknown asteroids. The D and C numbers are as follows:

D#	C#
D-83259	C-28068

83-004A-01c

APPENDIX B. DATA FORMATS

The formats for selected data records, files and products are tabulated in this appendix.

B.1 Scientific Data Analysis System (SDAS) Formats

The following information was generated by the SDAS Asteroid Tagging Algorithm (ATA).

B.1.1 CN28 and CN29

The CN28 data file contained a record for each potential asteroid sighting. Each record consisted of parameters as shown in Table B-1.

Table B-1 CN28 Parameters

1950.0 mean ecliptic longitude, latitude, and twist angle
1950.0 mean equatorial right ascension, declination, and twist angle
Position error parameters on the scan and cross-scan axes
Phase angle
Fluxes, flux error parameters, and signal-to-noise ratios in the four survey channels
Detection-template correlation coefficients for the four survey channels, and detector baselines in the twelve- and twenty-five micron channels
Detection time and detector identification array
Status words describing flux quality and confusion level
Known-source identifier (zero if no association)
Sequence number for grouped asteroid sightings (drop-dead sightings tagged with "1", other associated sightings with incremented-sequence numbers)
Figures of merit for motion probability and color temperature appropriate to solar system objects

the ADAS approach was different, and since the CN29 records were a subset of the CN28 (with some loss of position information for (hours-confirmed averaged sightings), the presence of some sightings in CN29 was simply noted with an association bit in the status word of the IP01 records.

The CN28 data were filtered and reformatted. Specifically, the a priori (i.e., predicted) known-object records were stripped out, and a small fraction of the records affected by an SDAS processing problem were removed (this problem involved an erroneous value for the cross-scan uniform component of position uncertainty, and rendered position values unusable). In addition, the way in which the ATA was forced to operate produced a significant amount of redundancy, since candidate sightings could be output more than once as part of a sighting group, and then they could come up again as drop-deads and be output yet again. This redundancy was removed, but the linking information was preserved in a small parallel file.

At this point, the non-seconds-confirmed sightings were filtered out; this means that to be retained, a sighting had to be detected in the twenty-five-micron channel (band 2) with at least a status of non-seconds-confirmed due (possibly) to a failed detector. This reduced the size of IP01 from about 4.5 million sightings to about 2.5 million. In addition, the status word ASTATW was initialized, and the SOP and OBS numbers were looked up and inserted into the record. The bin number for the data base position-access key was also computed.

Finally a band-merge correction was performed which involved combining the pieces of certain sightings which had not been put together during the SDAS processing. Since the SDAS products were intended to be inertially fixed sources, and since there was a requirement on the completeness of the catalog to be produced, whenever any significant doubt existed about whether a combination of detections was caused by two close sources, the detections were left unmerged in order to avoid producing one spurious source with an unconfirmable position. The unmerged detections are sometimes referred to as "fractured" sightings in the literature, but in fact they were never put together in the first place. Since the potential failure at hours confirmation was not a concern in the ADAS processing, and since all the

B.2.1.2 Spacecraft Heliocentric Ephemeris File (SHEF)

The Spacecraft Heliocentric Ephemeris File (SHEF) is a slightly reformatted version of a standard SDAS file. It is used to obtain the heliocentric 1950.0 mean ecliptic spacecraft vector so that conversion of asteroid position vectors from sun-center to spacecraft-center can be performed. A SHEF record covers one SOP period, so it is necessary to know the SOP number, which is also the direct-access record number for the corresponding SHEF record. The contents of each record are as shown in Table B-3.

Table B-3. SHEF Parameters

NSOP	: SOP number
NRECS	: number of spacecraft vectors in this record
V(4,300)	: double-precision vector table; V(I,J), I = 2, 3, 4, is the Jth instantaneous sun-spacecraft vector in kilometers, and V(1,J) is the corresponding time tag in deciseconds past 1981.0

B.2.1.3 ADAS Area Coverage File (AACV)

The ADAS Area Coverage File (AACV) contains information about the passage of the IRAS telescope boresight through each bin in the all-sky bin system. This bin system is the same one used by SDAS to keep track of area coverage. The bins are formed by partitioning the sky into ecliptic latitude bands and then segmenting these bands into bins of approximately 46 arcminute width. The latitude range of the bands varies from about six degrees at the ecliptic to about half a degree near the poles, and is set to optimize parameters involved with the sun-locked scanning mode which are not important to the discussion herein. Any position in 1950.0 mean ecliptic coordinates can be mapped to one of the bins in this system, and the bin number can be used as a direct-access record number in the AACV. The contents of each AACV record are as follows.

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B.2.1.5 IRAS Working Survey Data Base

The file known as the Working Survey Data Base (WSDB) produced by SDAS contains positions, flux densities, uncertainties, and other observational and processing histories of point-like sources detected by IRAS (see ES Sec. X.B.3.); the WSDB was used to remove contamination of fixed point sources from the asteroid data base. The status word assigned to every sighting in the ADAS data base (see ASTATW in Section 6.1.1.8 below) revealed whether that particular detection was associated with a point source on the months-confirmed level, and whether there was a time match, as well. This association would ultimately cast doubt upon the worthiness of the particular sighting in question and make it a candidate for rejection during asteroid catalog production.

B.2.1.6 SES Files

The Small Extended Source (SES) file is another by-product of SDAS processing which contains sources between one and ten arcminutes in angular extent. Again, association of individual asteroid sightings with entries in the SES file are noted in the sightings' status word. There were several intermediate products in SDAS involving small extended sources. The one actually referenced by this association is known technically as the CUSPOOL data set. It is the output of the Cluster Analysis Processor (CAP), and consists of spatially merged small extended sources which were found not to be fragments of larger-scale structure during the cluster analysis.

B.2.1.7 Observation Parameters File (PR04)

The SDAS Observation Parameters File (PR04) is used as it was produced by SDAS. It contains the parameters in Table B-7 for each survey observation.

00001000	13	4096	used in band 1 albedo average
00002000	14	8192	used in band 2 albedo average
00004000	15	16384	used in band 3 albedo average
00008000	16	32768	used in band 4 albedo average
00010000	17	65536	CUSPOOL band 1 position match
00020000	18	131072	CUSPOOL band 2 position match
00040000	19	262144	CUSPOOL band 3 position match
00080000	20	524288	CUSPOOL band 4 position match
00100000	21	1048576	CUSPOOL band 1 time match
00200000	22	2097152	CUSPOOL band 2 time match
00400000	23	4194304	CUSPOOL band 3 time match
00800000	24	8388608	CUSPOOL band 4 time match
01000000	25	16777216	band 1 high density region
02000000	26	33554432	band 2 high density region
04000000	27	67108864	band 3 high density region
08000000	28	134217728	band 4 high density region
10000000	29	268435456	WSDB time match
20000000	30	536870912	matched 2 different known asts
40000000	31	1073741824	not the only 1 to match known
80000000	32	2147483648	spare bit

B.2.1.8.2 ARSTAT

This status word contains information concerning the sighting's acceptance or rejection. A "1" bit indicates the condition is true; a "0" bit indicates the condition is false.

Table B-9. ARSTAT

hex bit position	bit no.	decimal value	condition and notes
00000001	1	1	sighting was accepted
00000002	2	2	associated with Known Asteroid/Comet
00000004	3	4	passed AS signal/noise test
00000008	4	8	passed AS color test
00000010	5	16	AS decision based on ASTATW
00000020	6	32	spare bit
00000040	7	64	at least one flux status OK
00000080	8	128	at least one correlation coefft OK
00000100	9	256	at least one S/N ratio OK
00000200	10	512	N/M ratio OK
00000400	11	1024	position match score OK
00000800	12	2048	at least one derived albedo is OK
00001000	13	4096	ASTATW OK
00002000	14	8192	absolute colors OK
00004000	15	16384	CSTAT bits OK in all bands
00008000	16	32768	passed hand inspection

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Header Record Format:

(3I10,1P4E14.6,1P12D20.12,1P9E14.6,2I10,6A1)

Header Record Parameter Definitions:

Table B-11. FPN2 Header Record Parameters

Name	Units	Format	Description
F2ID	-	I10	ADAS ID
F2TYPE	-	I10	ADAS TYPE
F2NSIT	-	I10	No. of usable sightings
F2ALB	-	1PE14.6	Derived geometric albedo (p_V)
F2SIGA	-	1PE14.6	Uncertainty (one-sigma) in derived albedo (σ_{pv})
F2DIAM	km	1PE14.6	Derived diameter (D)
F2SIGD	km	1PE14.6	Uncertainty (one-sigma) in derived diameter (σ_D)
F2EP1	JD	1PD20.6	Time of perihelion passage[1] (T)
F2AP1	deg	1PD20.6	Argument of perihelion[1] (ω)
F2LA1	deg	1PD20.6	Longitude of the ascending node[1] (Ω)
F2I1	deg	1PD20.6	Inclination[1] (i)
F2E1	-	1PD20.6	Eccentricity[1] (e)
F2PD1	AU	1PD20.6	Perihelion distance[1] (q)

Table B-11. FPN2 Header Record Parameters (continued)

Name	Units	Format	Description
F2EP2	JD	1PD20.6	Time of perihelion passage[2] (T)
F2AP2	deg	1PD20.6	Argument of perihelion[2] (ω)
F2LA2	deg	1PD20.6	Longitude of the ascending node[2] (Ω)
F2I2	deg	1PD20.6	Inclination[2] (i)
F2E2	-	1PD20.6	Eccentricity[2] (e)
F2PD2	AU	1PD20.6	Perihelion distance[2] (q)
F2B10	mag	1PE14.6	Blue absolute magnitude (H_B)
F2PC	-	1PE14.6	Slope parameter (G)
F2Q	-	1PE14.6	Phase integral (Q)
F2BMV	mag	1PE14.6	B-V color
F2LTCV	-	1PE14.6	Probability that flux variation significantly affected the flux measurements (P_{FV})
F2FVAR	mag	1P4E14.6	Magnitude of flux variation in each band (Δmag)
F2ASTW	-	I10	Composite status word
ER1	-	I10	Ephemeris quality code
B10Q	-	2A1	Absolute magnitude quality code
BMVQ	-	2A1	Color quality code
SPARQ	-	2A1	Spare

Notes: 1) Orbital element set no. 1
2) Orbital element set no. 2

B.2.2.1.2 **FPN4 - Asteroid Summary Catalog and Data Base (FDP No. 4)**

This product is identical to the header records in FPN2 except that in the printed version, the two sets of orbital elements have been omitted.

B.2.2.1.3 **FPN6 - Asteroid Statistics Catalog and Data Base (FDP No. 6)**

This product contains information pertaining to the number of times each object was sighted, the number of times it was predicted, and possible reasons for any failures to be sighted each time it was predicted.

Record List:

ID, TYPE, NPRED, NSIGHT, N2FANT,
NDEDET, NNOISY, NNOALI

Record Format: (8I10)

Record Parameter Definitions

Table B-13. FPN6 Record Parameters

Name	Units	Format	Description
ID	-	I10	ADAS ID
TYPE	-	I10	ADAS TYPE
NPRED	-	I10	No. of predicted sightings
NSIGHT	-	I10	No. of realized sightings
N2FANT	-	I10	No. of times predicted too faint to detect
NDEDET	-	I10	No. of times not detected and image crossed over dead band 2 detector
NNOISY	-	I10	No. of times not detected and image crossed over noisy band 2 detector
NNOALI	-	I10	No. of times not detected and no likely reason identified for the nondetection

B.2.2.1.4 **FPN7 - Comet Catalog and Data Base (FDP No. 7)**

This product contains information concerning known comets. The structure is similar to FPN2, implying a header record for each object and a list of sighting records.

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Sighting Record List:
TNAM, DNAM, MM, YS, ASTRA, ASTDEC, ASTSGY, ASTSGZ, ASTLZ, TWIST, ASTFLX, ASTSGF, ASTSNR, ASTCOR, ASTFST, ASTATW, ARSTAT, ASTCST, PRDRAS, PRDREA, PRDALP, ADDIAM, ADSIGD, ADCRSC, CUSFLX, CUSMNR

Sighting Record Format: (3I10,1P19E14.6,5I10,1P17E14.6)

Sighting Record Parameter Definitions

Table B-15. FPN7 Sighting Record Parameters

Name	Units	Format	Description
TNAM	ds	I10	SDAS sighting name (time part)
DNAM	-	I10	SDAS sighting name (detector ID part)
MM	YYMM	I10	Observation time, year and month
YS	day	1PE14.6	Observation day (UT day and fraction of day)
ASTRA	rad	1PE14.6	Right ascension (geocentric)
ASTDEC	rad	1PE14.6	Declination (geocentric)
ASTSGY	rad	1PE14.6	In-scan position uncertainty (one-sigma)
ASTSGZ	rad	1PE14.6	Cross-scan gaussian position uncertainty (one-sigma
ASTLZ	rad	1PE14.6	Cross-scan uniform position uncertainty (one-sigma)

Table B-15. FPN7 Sighting Record Parameters

Name	Units	Format	Description
TWIST	rad	1PE14.6	Position twist angle (from north counter-clockwise to cross-scan axis)
ASTFLX	Jy	1P4E14.6	Flux in each survey band
ASTSGF	Jy	1P4E14.6	Flux uncertainty (one-sigma) in each survey band
ASTSNR	-	1P4E14.6	Signal-to-noise ratio in each survey band
ASTCOR	-	I10	Correlation coefficients in each survey band (packed)
ASTFST	-	I10	Flux status words for each survey band (packed)
ASTATW	-	I10	Associated data status word
ARSTAT	-	I10	Acceptance/rejection status word
ASTCST	-	I10	Confusion status word
PRDRAS	AU	1PE14.6	Comet-sun distance
PRDREA	AU	1PE14.6	Comet-earth distance
PRDALP	rad	1PE14.6	Phase angle
ADDIAM	km	1P4E14.6	Derived diameter in each survey band
ADSIGD	km	1P4E14.6	One-sigma uncertainty in ADDIAM
ADCRSC	km**2	1P4E14.6	Cross-sectional area in each band
CUSFLX	Jy	1PE14.6	Band-2 flux of associated small extended source
CUSMNR	rad	1PE14.6	Band-2 size of associated small extended source

C

B.2.2.1.6 FPNC - Asteroid Name, Provisional Designation, and Pointers to FPND (FDP No. 12)

Record List:

ID,TYPE,POINT,ASTNAM,PROVIS

Record Format:

(3I10,16A1,9A1)

Record Parameter Definition:

Table B-18. FPNC Record Parameters

Name	Units	Format	Description
ID	-	I10	ADAS ID
TYPE	-	I10	ADAS TYPE
POINT	-	I10	pointers to files in FPND ("1" indicates association, "0" indicates none) bit no. / decimal value / file 1 / 1 / 24 color 2 / 2 / 8 color 3 / 4 / Lightcurve 4 / 8 / Polarimetry 5 / 16 / UBV
ASTNAM	-	16A1	Asteroid name
PROVIS	-	9A1	Provisional Designation

B.2.2.1.7 FPND - Asteroid Ground-Based Data (FDP No. 13)

Record List:

FILE,ID,TYPE,DATA

Record Format:

(I1,I5,1X,I1,204A1)

Record Parameter Definition:

Table B-20. FPNF Record Parameters

Name	Units	Format	Description
TNAM	ds	I10	SDAS sighting name (time part)
DNAM	-	I10	SDAS sighting name (detector ID part)
ID	-	I10	ADAS ID
TYPE	-	I10	ADAS TYPE
MM	YYMM	I10	Observation time, year and month
YS	day	1PE14.6	Observation day (UT day and fraction of day)
ASTRA	rad	1PE14.6	Right ascension (geocentric)
ASTDEC	rad	1PE14.6	Declination (geocentric)
ASTSGY	rad	1PE14.6	In-scan position uncertainty (one-sigma)
ASTSGZ	rad	1PE14.6	Cross-scan gaussian position uncertainty (one-sigma)
ASTLZ	rad	1PE14.6	Cross-scan uniform position uncertainty (one-sigma)
TWIST	rad	1PE14.6	Position twist angle (from north counter-clockwise to cross-scan axis)
ASTFLX	Jy	1P4E14.6	Flux in each survey band
ASTSGF	Jy	1P4E14.6	Flux uncertainty (one-sigma) in each survey band
ASTSNR	-	1P4E14.6	Signal-to-noise ratio in each survey band
ASTCOR	-	I10	Correlation coefficients in each survey band (packed)
ASTFST	-	I10	Flux status words for each survey band (packed)
ASTATW	-	I10	Associated data status word
ARSTAT	-	I10	Acceptance/rejection status word
ADSTAT	-	I10	Albedo determination status word
ASTCST	-	I10	Confusion status word
IDPSC	-	12A1	IRAS Point Source Catalog name

B.2.2.2 New Object Products

B.2.2.3 Ancillary Products

B.3 Structure for Supplemental Data Files

The formats for the ground-based asteroid data files are given in this section.

B.3.1 UBV Color Indices

Although the B-V color was required in reducing IRAS asteroid flux measurements to albedos and diameters (and therefore appears in data files other than this) the U-B color indices were not used but are clearly a desirable parameter as well.

Table B-21 UBV Record Format

Field	Width	Contents
1	9	Asteroid number or provisional designation.
2	4	U-B
3	1	U-B weight
4	4	B-V
5	1	B-V weight
6	6	Date record was last changed
7	2	References: 1 Bowell et al. (1979) [TRIAD] 2 Zellner et al. (1985) [ECAS] 3 Weighted mean of values from references 1 and 2.
8	9	Provisional designation for a numbered asteroid

B.3.2 Eight-Color Asteroid System Color Indices

Below is the data format for the Eight-Color Asteroid Survey data file.

File name : ECAS.DAT
File size : 49,477 bytes
Number of data records : 589
Date of last update : 11/19/85
Each record contains 82 characters divided into 18 fields.

Table B-22 Eight-Color Record Format

Field	Width	Contents
1	9	Asteroid number or provisional designation
2	5	s-v color index
3	5	u-v color index
4	5	b-v color index
5	5	v-w color index
6	5	v-x color index
7	5	v-p color index
8	5	v-z color index
9	3	Uncertainty in s-v color index
10	3	Uncertainty in u-v color index
11	3	Uncertainty in b-v color index
12	3	Uncertainty in v-w color index
13	3	Uncertainty in v-x color index
14	3	Uncertainty in v-p color index
15	3	Uncertainty in v-z color index
16	6	Date record was last changed
17	2	Reference: 1 Zellner et al. (1985)
18	9	Provisional designation for asteroids which were numbered since publication of reference 1.

Field	Width	Contents
31	3	Uncertainty in 0.765 μm reflectance
32	4	Reflectance at 0.800 μm
33	3	Uncertainty in 0.800 μm reflectance
34	4	Reflectance at 0.830 μm
35	3	Uncertainty in 0.830 μm reflectance
36	4	Reflectance at 0.870 μm if ref = 1; 0.865 μm if ref = 2
37	3	Uncertainty in 0.870 μm or 0.865 μm reflectance
38	4	Reflectance at 0.900 μm
39	3	Uncertainty in 0.900 μm reflectance
40	4	Reflectance at 0.930 μm
41	3	Uncertainty in 0.930 μm reflectance
42	4	Reflectance at 0.950 μm
43	3	Uncertainty in 0.950 μm reflectance
44	4	Reflectance at 0.970 μm
45	3	Uncertainty in 0.970 μm reflectance
46	4	Reflectance at 1.000 μm
47	3	Uncertainty in 1.000 μm reflectance
48	4	Reflectance at 1.030 μm
49	3	Uncertainty in 1.030 μm reflectance
50	4	Reflectance at 1.060 μm
51	3	Uncertainty in 1.060 μm reflectance
52	4	Reflectance at 1.100 μm
53	3	Uncertainty in 1.100 μm reflectance
54	6	Date record added or updated
55	2	References: 1 Chapman and Gaffey (1979) 2 McFadden et al. (1984) and personal communication (1986).

NOTES:
1. The data for 433 Eros from Ref. 1 were replaced with those from Ref. 2 because the former included a calibration correction which had already been applied to the data.
2. There are two records for 1685 Toro, one from each reference.

B.3.4 Polarimetry File

Below is the data format for the polarimetry data file. The present file is a slightly reformatted version of the 1979 computer card "TRIAD" file created by Ben Zellner. For further details regarding this file see Morrison and Zellner (1979).

File name : POLARIM.DAT
File size : 8,548 bytes
Number of data records : 111
Date of last update : 06/30/79
Each record contains 75 characters divided into 18 fields.

REFERENCES

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```
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$NOP
$NOP
$NOP   ******************* GLSOUT1 ********************
$EXE TFLIST ES

INPUT PARAMETERS ARE:  AS FL=1=1 1 1 1
```

83-004A-01c

```
 TAPE NO.   1              FILE NO.   1
 RECORD   1                LENGTH   32764
       597          1              Bandusia          1906 UB          598          1          16Octavia
  1906 UC          599          1          23Luisa          1906 UJ          600          1          Mus
a          1906 UM          601          1          16Nerthus          1906 UN          602          1
       26Marianna          1906 TE          603          1          Timandra          1906 TJ          604
        1          Tekmessa          1906 TK          605          1          Juvisia          1906 UU
       606          1          18Brangane          1906 VB          607          1          Jenny
  1906 VC          608          1          Adolfine          1906 VD          609          1          Ful
via          1906 VF          610          1          Valeska          1906 VK          611          1
       16Valeria          1906 VL          612          1          Veronika          1906 VN          613
        1          19Ginevra          1906 VP          614          1          Pia          1906 VQ
       615          1          16Roswitha          1906 VR          616          1          18Elly
  1906 VT          617          1          19Patroclus          1906 VY          618          1          18Elf
riede          1906 VZ          619          1          16Triberga          1906 WC          620          1
       16Drakonia          1906 WE          621          1          20Werdanda          1906 WJ          622
        1          22Esther          1906 WP          623          1          16Chimaera          1907 XJ
       624          1          31Hektor          1907 XM          625          1          Xenia
  1907 XN          626          1          18Notburga          1907 XO          627          1          16Cha
ris          1907 XS          628          1          21Christine          1907 XT          629          1
       Bernardina          1907 XU          630          1          Euphemia          1907 XW          631
        1          22Philippina          1907 YJ          632          1          4Pyrrha          1907 YX
       633          1          16Zelima          1907 ZM          634          1          Ute
  1907 ZN          635          1          18Vundtia          1907 ZS          636          1          Eri
           1907 XP          637          1          Chrysothemis          1907 YE          638          1
       Moira          1907 ZQ          639          1          19Latona          1907 ZT          640
        1          18Brambilla          1907 ZW          641          1          4Agnes          1907 ZX
       642          1          16Clara          1907 ZY          643          1          18Scheherezade
  1907 ZZ          644          1          16Cosima          1907 AA          645          1          16Agr
ippina          1907 AG          646          1          Kastalia          1907 AC          647          1
       16Adelgunde          1907 AD          648          1          19Pippa          1907 AE          649
        1          Josefa          1907 AF          650          1          18Amalasuntha          1907 AM
       651          1          18Antikleia          1907 AN          652          1          Jubilatrix
  1907 AU          653          1          18Berenike          1907 BK          654          1          31Zel
inda          1908 BM          655          1          Briseis          1907 BF          656          1
       Beagle          1908 BU          657          1          Gunlod          1908 BV          658
        1          16Asteria          1908 BW          659          1          18Vestor          1908 CS
       660          1          23Crescentia          1908 CC          661          1          18Cloelia
  1908 CL          662          1          Newtonia          1908 CW          663          1          18Ger
linde          1908 DG          664          1          18Judith          1908 DH          665          1
       Sabine          1908 DK          666          1          Desdemona          1908 DM          667
        1          Denise          1908 DN          668          1          Dora          1908 DO
       669          1          16Kypria          1908 DQ          670          1          Ottegebe
  1908 DR          671          1          Carnegia          1908 DV          672          1          Ast
arte          1908 DY          673          1          16Edda          1908 EA          674          1
       29Rachele          1908 EP          675          1          22Ludmilla          1908 DU          676
        1          1Melitta          1909 FN          677          1          4Aaltje          1909 FP
       678          1          Fredegundis          1909 FS          679          1          20Pax
  1909 FY          680          1          16Genoveva          1909 GW          681          1          Gor
go          1909 GZ          682          1          Hagar          1909 HA          683          1
       4Lanzia          1909 HC          684          1          Hildburg          1909 HD          685
        1          Hermia          1909 HE          686          1          18Gersuind          1909 HF
       687          1          18Tinette          1909 HG          688          1          Melanie
  1909 HH          689          1          16Zita          1909 HJ          690          1          16Wra
tislavia          1909 HZ          691          1          16Lehigh          1909 JG          692          1
       18Hippodamia          1901 HD          693          1          16Zerbinetta          1909 HN          694
        1          16Ekard          1909 JA          695          1          19Bella          1909 JB
```

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     114          2          01981 WP1          1981 WP1          115          2          01981 WV1
   1981 WV1          116          2          01981 YR1          1981 YR1          117          2          0198
1 YS          1981 YS          118          2          01982 BD3          1982 BD3          119          2
     01982 BG1          1982 BG1          120          2          01982 FQ2          1982 FQ2          121
     2          01982 HL          1982 HL          122          2          01982 HR          1982 HR
     123          2          01982 RU          1982 RU          124          2          01982 SL
 1982 SL          125          2          01982 TX          1982 TX          126          2          0198
2 UH          1982 UH          127          2          01982 WA          1982 WA          128          2
     181982 XB          1982 XB          129          2          01982 YC1          1982 YC1          130
     2          01983 AM          1983 AM          131          2          01983 AV          1983 AV
     132          2          01983 BA          1983 BA          133          2          01983 CW1
   1983 CW1          134          2          01983 CX2          1983 CX2          135          2          0198
3 DJ          1983 DJ

***** JOB DONE.
$EXE TPLIST BS

 INPUT PARAMETERS ARE:  AS FL=1=1 1 1 8

  TAPE NO.   1               FILE NO.   8
  RECORD   1                 LENGTH   32720
         1          1          2          0          2          2          0          0          2
1          3          0          1          3          0          0          3          1          1
0          0          1          0          0          4          1          1          0          1
   1          0          0          5          1          0          0          0          0          0
     0          6          1          1          0          0          1          0          0          7
      1          4          0          4          4          0          0          8          1          1
0          1          1          0          0          9          1          0          1          0
0          0          0          1          1          1          0          1          1          0
     0          11          1          0          0          0          0          0          0          12
          1          0          0          0          0          0          0          13          1          2
0          1          1          0          0          14          1          0          0
0          0          0          15          1          1          0          1          1
     0          16          1          0          0          0          0          0          0
17          1          1          0          1          0          0          0          18          1
0          0          0          1          0          0          19          1          0          0
0          0          0          0          20          1          0          0          0          0
     0          0          21          1          0          0          0          0          0          0
      22          1          1          0          0          1          0          0          23          1
0          0          0          0          0          0          24          1          0          0
0          0          0          0          25          1          2          0          0          1
         1          0          26          1          3          0          0          3          0
1          27          1          0          0          0          0          0          0          28
1          1          0          0          1          0          0          29          1          0
0          0          0          0          0          30          1          2          0          0
  2          0          0          31          1          0          0          0          0          0
          32          1          2          0          0          1          1          0          33
      1          0          0          0          0          0          0          34          1          0
0          0          0          0          0          35          1          0          0          0
0          0          0          36          1          1          0          0          1          0
     0          37          1          0          0          0          0          0          0          38
         1          0          0          0          0          0          0          39          1
1          0          0          1          0          0          40          1          0          0
0          0          1          1          41          1          1          0          0          1
0          0          42          1          0          0          0          0          0          0
  43          1          0          0          0          0          0          0          44          1
0          0          0          0          0          0          45          1          6          0
0          6          0          0          46          1          0          0          0          0
0          0          47          1          1          0          0          1          0          0
     48          1          2          0          0          2          0          0          49          1
         1          0          0          0          0          1          50          1          2          0
0          0          1          0          1          51          1          0          0          0
0          0          0          52          1          0          0          0          0          0
0          53          1          1          0          0          1          0          0          54
  1          1          0          0          1          0          0          55          1          1
```

REQ. AGENT
GLS

ACQ. AGENT
WHW

IRAS

SERENDIPITOUS SURVEY CATALOG

83-004A-01e ASIR-00020

This data set consists of 1 magnetic tape. This tape is 6250 bpi, 9 track, ASCII formatted and contains 2 files. The first file contains the source listings and the second contains the redundant fields. This tape was created on an IBM 3081 computer. The data are foruitous observations of 43,866 pointlike sources that happened to lie in the 1813 individual fields included in the Pointed Observations Program. The D and C numbers are as follows:

D#	C#
D-74763	C-28067

f3-004A-01e

V. THE FORMATS OF THE IRAS SERENDIPITOUS SURVEY CATALOG

A. Introduction

This chapter describes the formats of the IRAS Serendipitous Survey Catalog in its printed and machine-readable forms. A brief description is given of each entry in the catalog; tables describe each column of the catalog in more detail and give, for the machine readable versions, the logical type of each variable and its length in bytes. The catalog consists of three basic parts; a) field headers, b) source listings, and c) redundant fields (a printed list of the redundant fields is also available in Appendix A). The field header includes information on the global properties of each pair of reference/confirming grids. The source listing documents the properties of the individual confirmed sources found in each field. The redundant field listing identifies those grid pairs with more than 5% overlapping coverage on the sky.

Because the Serendipitous Survey fields are non-uniformly distributed on the sky, the catalog has been arranged by fields, with the fields ordered by the right ascension of the field center. The field header is located at the beginning of the source listing for that field. Within a field the sources are also arranged in order of right ascension. The redundant field listing is separate and follows the rest of the catalog. As much as possible, the conventions established for the IRAS/PSC have been adopted for the Serendipitous Survey.

B. The Machine Readable Version

The tape version of the SSC is written with 80-character (ASCII) logical records and blocked with 256 logical records per physical record so that one can regard the tape as a sequence of card images. The entries are arranged so that the source data fit into two records. Association information requires an additional 40 characters per association and appears in subsequent records, two associations per record.

Like other IRAS catalogs, the tape contains a header file containing the date and version number of the data on the Tape (Table V.A)

Table V.A. Format of Header Files

f3-004A-01e

double sided

Start Byte	Name	Description	Length
00	Name	Name of IRAS data product	30A1
30	Date	Date of Production	12A1
42	Vers	Version Number	5A1
47	Comment	32 bytes of comment	32A1

Table V.B describes each entry in the tape field header. Each catalog field header entry requires 160 bytes. Those columns that are also included in the printed version of the Serendipitous Survey are marked.

Table V.C describes each entry in the catalog tape source listing. Each catalog source entry requires 160 + NID * 40 bytes where NID is the number of catalog associations, including the IRAS/PSC, for each source. In the tables, the Column "format" refers to the length and type of the (FORTRAN) character field used to read or write each entry.

Table V.B. Format of Field Headers[1] (SSC Tape Version)

Start Byte	Name	Description	Units	Format
00	FNAME[2]	Field Name		13A1
13	RGRID[2]	Reference Grid No.		I5
18	RDATE[2]	Obs. Date, Ref. Grid	Days JD 2445000 +	I3
21	CGRID[2]	Confirming Grid No.		I5
26	CDATE[2]	Obs. Date, Conf. Grid	Days JD 2445000 +	I3
29	MACRO[2]	Macro Type		1A1
30	GLON[2]	Galactic Longitude	Degree	I3
33	GLAT[2]	Galactic Latitude	Degree	I3
36	PDRAS	Sign of R.A. Difference Between Grid centers	+/-	1A1
37	PDRA	Amplitude of R.A. Difference Between Grid Centers	Arcsec	I3
40	PDDECS	Sign of Dec. Difference Between Grid Centers	+/-	1A1
41	PDDEC	Amplitude of Dec. Difference Between Grid Centers	Arcsec	I3
44	RANGLE	Reference Grid Scan Direction (E of N)	Degree	I4
48	CANGLE	Confirming Grid Scan Direction (E of N)	Degree	I4
52	EFFAREA[2]	100x Effective Area of Grid Overlap	Degree[2]	I3
55	RUNDF[2]	No. of Fields with Overlap > 5%	NN	I2
57	SPARES	23 spare bytes		23A1
	-----	-------New Record-------	-----	
80	RNOISE	Median Noise of Ref. Grid (1 value per band)	mJy	4I5
100	CNOISE	Median Noise of Conf. Grid (1 value per band)	mJy	4I5
120	NSOURC	Number of Confirmed Sources (1 value per band)	NNN	4I3
132	NCONF[2]	Number of Confused Confirmations (1 value per band)	NNN	4I3
144	CIRRUS[2]	Number of 100 μm only Confirmed Sources	NN	I3
147	NMERGE	Number of Merged Sources	NNN	I3
150	SPARES	10 spare bytes		10A1

NOTES:

[1] Fields are listed in order of increasing Right Ascension of the Reference Grid center. Field header records are located at the beginning of the source listing for each field.

[2] This quantity is listed in the printed version of the catalog.

The following is a brief description of the individual entries in the Field Headers of the tape version of the SSC.

Field Name: FNAME
The IRAS/SSC field name is the position of the center of the reference grid, given in the form hhmmssSddmmss.

Grid Number: RGRID, CGRID
The identifying number (see Section III.A) for the reference (R) and confirming (C) grids for the field. The reference grid has the lower 60 μm median noise.

Observation Date: RDATE, CDATE
The observation dates for the reference (R) and confirming (C) grids in Julian Days -2445000.

Macro Type: MACRO
The macro identifying code is given in Table II.1.

Galactic Coordinates: GLON, GLAT
Galactic coordinates rounded to nearest degree

Position Differences: PDRAS, PDRA, PDDECS, PDDEC
The sign and magnitude of the position difference between reference and confirming grid centers, in the sense of (confirming - reference), in right ascension and declination.

Grid Orientation: RANGLE, CANGLE
The orientation of the in-scan direction of the reference and confirming grids on the sky, measured in degrees East of North.

Effective area: EFFAREA
The effective area of the sky covered by both the reference and confirming grids.

Redundant Fields: RUNDF
The number of additional grid pairs in the Serendipitous Survey, i.e. with different OBSID's, which overlap this field by more than 5%.

Grid Noise: RNOISE, CNOISE
The median noise of the reference and confirming grids.

Confirmed Sources: NSOURC
The number of confirmed sources in this field, in the 12, 25, 60 and 100 μm bands, respectively.

Confused Sources: NCONF
The number of confused confirmations in this field, in the 12, 25, 60 and 100 μm bands, respectively.

100 μm Only Sources: CIRRUS
The number of 100 μm confirmed sources in the field that are not band merged. The density of such sources is taken to be a measure of the infrared "cirrus" in the field.

Band-Merged Sources: NMERGE
The number of band-merged sources in the field, i.e., the number of source records following the field header.

Table V.C. Format of Source Listings[1] (SSC Tape Version)

Start Byte	Name	Description	Units	Format
00	NAME[2]	Source Name		11A1
11	HOUR	Right Ascension 1950	Hours	I2
13	MINUTE	Right Ascension 1950	Minutes	I2
15	SECOND	Right Ascension 1950	Deci-seconds	I3
18	DSIGN	Declination Sign	+/-	1A1
19	DECDEG	Declination 1950	Degree	I2
21	DECMIN	Declination 1950	Arcmin	I2
23	DECSEC	Declination 1950	Arcsec	I2
25	SPARE	1 spare byte		1A1
26	ANGLE	Position Angle of Source Error Box		I3
29	SPARE	1 spare byte		1A1
30	FLUX[2]	Averaged Non-color Corrected Flux Densities (1 value per band)	Jansky (10^{-26} W/m^2/Hz)	4E9.3
66	FQUAL[2]	Flux Density Quality (1 value per band)		4I1
70	RGRID	Reference Grid Number		I5
76	SPARE	9 spare bytes		9A1
-----		-------New Record-------	-----	
80	RELUNC[2]	Percent Relative Flux Density Uncertainties (1 value per band)		4I3
92	TLSNR	10x Local Signal-to-Noise Ratio (1 value per band)		4I4
108	CC[2]	Point Source Correlation Coefficient (1 value per band)		4A1
112	TRFLUX	10x F_c/F_r		4I2
120	POSDRS12	Right Ascension Delta Sign	+/-	1A1
121	POSDR12	Right Ascension Delta	Arcsec	I3
124	POSDDS12	Declination Delta Sign	+/-	1A1
125	POSDD12	Declination Delta	Arcsec	I3
128 -135		Repeat for 25 μm Band	+/- Arcsec	1A1 I3
136 -143		Repeat for 60 μm Band	+/- Arcsec	1A1 I3
144 -151		Repeat for 100 μm Band	+/- Arcsec	1A1 I3
152	PNEARC[2]	Number of Sources in Confusion Window (1 value per band)		4I1 I2
156	NID[2]	Number of Positional Associations		I2
158	IDTYPE[2]	Type of Object		I1

159	SPARE	1 spare bytes		1A1
	-----	-------New Record-------	-----	
160	CATNO	Catalog Number[4]		I2
162	SOURCE	Source ID		15A1
177	IDTYPE	Source Type/Spectral Class[5]		5A1
182	RADIUS	Radius Vector from SSC Position to Association	Arcsec	I3
185	POS	Position Angle from SSC Position to Association (E of N)	Degree	I3
188	FIELD1	Object Field #1	Catalog Dependent[6]	I4
192	FIELD2	Object Field #2	Catalog Dependent[7]	I4
196	FIELD3	Object Field #3	Catalog Dependent[8]	I4
200 -240	. . .	Continuation of Associations in Blocks of 40 Bytes etc.		

NOTES:

[1] Sources are listed in order of increasing Right Ascension within each field.

[2] This quantity is listed in the printed version of the SSC.

[3] For associations with the IRAS/PSC, this value is 41.

[4] For associations with the IRAS/PSC, this value is 3.

[5] For associations with the IRAS/PSC, this field is left blank.

[6] For associations with the IRAS/PSC, this value is a flag indicating the bands in which the source was detected with medium or high quality; it is encoded as indicated in the PSC Supplement Table X.B.2.

[7] For associations with the IRAS/PSC, this value is the PSC 2.0 Flux Density in the shortest (first) wavelength band in which it was detected. Flux Densities higher than 10 Jy are encoded 9999.

[8] For associations with the IRAS/PSC, this value is the PSC 2.0 Flux Density in the second wavelength band in which it was detected. Flux Densities higher than 10 Jy are encoded 9999.

The following is a brief description of the individual entries in the Source Listings of the tape version of the SSC.

Source Name: NAME, APPNAME

The IRAS/SSC source name is constructed as for IRAS/PSC sources and is derived from its position by combining the hours, minutes and tenths of minutes of right ascension and the sign, degrees and minutes of the declination. In obtaining the minutes of right ascension and declination for the name, the positions were truncated. If sources within a field have duplicate positional names, they are distinguished by an appended letter (APPNAME), starting with the letter A.

Position: (HOUR,MINUTE,SECOND,DSIGN,DECDEG,DECMIN,DECSEC)

Positions are, as in the IRAS/PSC, given for the equinox 1950.0 and epoch 1983.5. Hours (HOUR) and minutes (MINUTE) of right ascension are given as integers while seconds (SECOND) are rounded to integer deciseconds. The declination is given as a character sign (DSIGN) followed by integer values of degrees (DECDEG), minutes (DECMIN) and seconds (DECSEC).

Position Angle: ANGLE

The position angle of the major axis of the SSC source error box expressed in degrees East of North.

Flux Density: FLUX(4)

Each of the four wavelengths has a NON-COLOR-CORRECTED flux density in units of Janskys, (1 Jy = 10^{-26} W $m^{-2} Hz^{-1}$). The quoted value is the noise weighted average as defined in Section III.C.2.

Flux Quality: FQUAL(4)

Each flux density measurement is designated high quality, moderate quality or upper limit (FQUAL = 3, 2, or 1, respectively) based on the prescription discussed in Section III.C.

Flux Density Uncertainty: RELUNC(4), TLSNR(4)

Each flux density measurement other than an upper limit has an associated uncertainty expressed in two ways; RELUNC is the uncertainty expressed as a 1 sigma value in units of 100x<n>/<F> (see Section III.C.2). TLSNR is ten times the local signal to noise ratio (see Section II.C) as determined from the reference or confirming grid, whichever is least.

Point Source Correlation Coefficient: CC(4)

As discussed in Section III.B, SSC sources can have point source correlation coefficients between 70-100%. These are encoded as alphabetic characters with A=100, B=99.....Z=75-70, one value per band. The quoted correlation coefficients come from the reference or confirming grids, whichever is higher, for high quality sources.

Flux Density Ratio: TRFLUX(4)

As discussed in Section III.B, SSC sources can have flux density ratios $0.5 < F_{(c)}/F_{(r)} < 2.0$. TRFLUX is the flux density ratio for high quality sources expressed as $10 \times F_c/F_r$.

Position differences: POSDRS12, POSDR12, POSDDS12, POSDD12.......
The quoted positions of SSC sources are determined from a weighted average of the positions of the confirmed sources in each band with a high quality flux density(see Section III.C.1). POSDRS12, POSDR12, POSDDS12 and POSDD12 give the sign and amplitude (in arcsec), of the difference in right ascension and declination respectively, between the final band-merged position and the 12 μm confirmed source position. The following 12 entries repeat the above format for 25, 60 and 100 μm confirmed source components.

Confusion: PNEARC(4)
In regions of high source density, the Pointed Observation source extraction process, as well as the Serendipitous Survey Confirmation and Band Merging processing, can result in degraded positions and incorrectly band merged sources. PNEARC is 1-(number of confirmed sources in the confusion and band merge window)(See Section III.D) Any value greater than zero is indicative of potential confusion in the processing and the resulting source information should be examined carefully, e.g. by inspection of the grids in question.

Positional Associations: NID, IDTYPE, CATNO, SOURCE, TYPE, RADIUS, POS, FIELD 1-3
The positional associations formats and definitions are done as per the IRAS/PSC (Chapter X, Supplement), with the exceptions noted in Section III.F.

Table V.D Format of Overlapping Fields File (SSC Tape Version)

Start Byte	Name	Description	Units	Format
00	GRID0	Prime Ref. Grid		I5
05	SPARE	1 spare byte		1A1
06	GRID1	Overlapping Field #1, Ref. Grid		I5
11	SPARE	1 spare byte		1A1
12	AOVLP1	Overlapping Sky Coverage	$Arcmin^2$	I4
16-26		Repeat of 5-15 for Overlapping Field # 2		
27-37		Repeat of 5-15 for Overlapping Field # 3		
.				
.				
60-70		Repeat of 5-15 for Overlapping Field # 5		
71-79	SPARE	9 spare bytes		9A1
	-----	-------New Record-------	-----	
80-85	SPARE	6 spare bytes		6A1
86-96		Repeat of 5-15 for Overlapping Field # 6		
.				
.				.

The quantities in the Overlapping Fields List are as follows:

Prime Reference Grid: GRID0
The grid against which other reference grids are checked for overlapping sky coverage.

First Overlapping Grid: GRID1
The number of the first reference grid with more than 5% overlap with GRID0.

Overlap Area: AOVLP1
Area of overlapping sky coverage between GRID0 and GRID1 in square arcminutes.

The format is repeated for each additional grid overlapping with GRID0. If more than 5 grids overlap with GRID0, they are listed in succeeding records, as necessary; the first six bytes of each of these additional records begins with a string of 6 spaces.

C. The Printed Version of the IRAS/SSC

The printed version of the IRAS/SSC is organized in the same fashion as the machine readable version, with the catalog sources listed in order of increasing right ascension within a given field and with the fields listed in order of increasing right ascension of the field center. Both the field header and the source listings of the printed version contain subsets of the information found in the machine readable version.

Table V.E. Format of Field Headers (SSC Printed Version)

Column	Title	Format	Machine-Readable Quantity
1-13	FIELD NAME	HHMMSS±DDMMSS	FNAME
14	Space		
15-20	LLL±BB	NNN±NN	GLON,GLAT
21-29	MN(12)	NNNNN.NNN	RNOISE(12)[1]
30-39	MN(25)	NNNNN.NNN	RNOISE(25)[1]
40-49	MN(60)	NNNNN.NNN	RNOISE(60)[1]
50-59	MN(100)	NNNNN.NNN	RNOISE(100)[1]
60	Space		
61-64	POS	±NNN	RANGLE
65	Space		
66-68	N12	NNN	NSOURC(12)
69-71	N25	NNN	NSOURC(25)
72-74	N60	NNN	NSOURC(60)
75-77	N100	NNN	NSOURC(100)
78	Space		
79-80	C	NN	CIRRUS
81	Space		
82-92	GRIDS	NNNNN NNNNN	RGRID CGRID
93	Space		
94-100	OBS-DATES	NNN NNN	RDATE CDATE

```
$NOP
$NOP  ****************** GAILOUT1 ******************
$EXE TPLIST BS
```

83-004A-01e

```
INPUT PARAMETERS ARE:  AS FL=1=1 2 1 1

 E NO.   1              FILE NO.   1
 RECORD   1             LENGTH   16000
000104+214018 5595519 5597519A198-39+ 21+  3 155 155 65 0                                  18   24   25   8
   18   23   25   75  2  1  3  2          0  0  4                23589+2218 2358575+221850  65 7.836E-0
21.074E- 11.333E-013.711E-011131 559                 13               31       0       7                -
  0-  0              0  00 00006+2141 0000382+214112  65 2.418E-011.083E+004.559E+004.792E+003333 5590
     5  1     1 117 180 148 148BBBB 7 91010-   0-   0+  36+  17+  35+  15+   3+   40000 84   6A0001+21
     43245 999 999   72 SU0006               57327 144   42   6010M+04-01-013              85144 999
42  6012ZG  000+21             57327 144 999    027MKN 334              42243 999 999    029*MARK  334
    S1    41244 146   22    0304ZW 001              57327 999 999    04100005+2140             48247  14
10544255 0013+2112  001196+211217  65 1.199E-011.074E-011.140E-013.711E-013111 5590        10
   62              E    7      -  0-                                0     00 00033+2101 0003216+210132   65
7.836E-021.074E- 12.886E-016.392E-011133 5590                  6  8            76   53   GC      916
     -   0-   0- 31- 19   00 00 000158+671415   153386   212387C118+05-   2+   3 -63 -64  65 1
            27   34   222 1967   27   40  229 1949 31 32 17  8 20  2  6  2  8 62               23535+6
731 2353302+673140  27 1.200E-011.498E- 11.281E+009.524E+001131  153                13               64
   I     9                   -  0-  0                2  00 23536+6735 2353412+673545  27 1.242E-011.498E
-011.070E+009.524E+003111  153          15              31                G    13         -  0-  0
      4       23552+6718 2355129+671834  27 1.200E-011.679E+001.070E+009.524E+001311  153
  1          278              L     18                   -  0-  0                 0   13 32X2355+672
103269   2 999   0                                    23560+6717 2356035+671758  27 1.638E-011.
498E-011.070E+009.524E+003111  153        11                59                   Y    8        -  0-  0
             13 23LDN 1268                    580145 999 9991560
 23562+6716 2356165+671627  27 1.362E-011.498E-011.070E+009.524E+003111  153          13             70
        Z    9         -  0-  0                                0    13 23LDN 1268             462147 999 9991
560                                      23564+6728 2356277+672810  27 1.200E-011.498E-011.436E+0
 524E+ 001131  153                    11                98        G       9                -  0-  0          0
   23575+6737 2357345+673718   27 1.200E-011.852E-011.070E+009.524E+001311  153           13
    44               E     9                  -  0-  0                     0   00  23580+6729  2358038+672916   27 1.2
00E-011.498E-014.737E+009.524E+001131  153                      3                222         M     9
    -   1-                    0  00 23580+6712 2358054+671207  27 2.126E+001.498E-011.070E+009.524E+003111
 153                 210              W     9       -  0-  0                            0   13 23LDN 1268
         401252 999 9991560                                          23582+6731 2358124+673124   27
 1.200E-011.498E-011.070E+001.922E+ 11113  153                  7                  86     C        8
              -  0-  0   0 13 4123583+6731               37113  13 3104440
           23587+6722 2358454+672207  27 1.200E-011.498E-011.070E+005.710E+011113  153
     2                168    U        12                       -  0-     0  00 23590+6713 2359022+671330
 27 3.482E+005.119E+001.644E+029.524E+ 03331  153          0   0   0     340 260 437     PVF 1010 9  - 19
- 2 - 42- 58- 33- 92            000  00 23593+6727 2359227+672707  27 5.358E-019.332E-011.070E+009.524E
+003311  153            3  2            210 213          VG    910     -  0-   0- 24- 45              00    00 23
595+6709 2359353+673901   27 2.584E+   9.721E+001.070E+009.524E+003311   153           0  0          359 192
       LT  1010      -   0-   0+ 16+ 14               00    33 23LDN 1272                   560165 999 9999999
230CL 0286                  231141 999 999 6014123595+6708                 12244    335269886
                 23596+6723 2359396+672301  27 1.200E-011.388E-011.070E+009.524E+001311  153
     18                5          X      8                  -  0-  0                          0    00 23598+6725 235951
6+672535   27 2.0 9E-011.498E-011.070E+009.524E+003111  153           9              97              P    8
    -  0-  0                              00 00001+6706 0000060+670630   27 1.200E-012.055E+001.070E+
009.524E+001311  153                   1                266           Z    10               -  0-  0                0
  33 23LDN 1272                391185 999 9999999230CL 0286                  46230 999 999 6004100000+6706
        18183    7 5354320                                                 00001+6715 0000118+671529  27 6.
641E-011.498E-011.070E+009.524E+003111  153          2                 359              H   10       -  0-  0
                     13 41 00002+6715                    40 46    7 707 970
          00002+6719  0000138+671937  27 3.317E-011.498E-011.070E+009.524E+003111  153            5
    90               W    9       -  0-  0                            0       00 00003+6716 0000199+671621   2
7 1.200E-018.960E-011.070E+009.524E+001311  153                2                192          0    12
 -   0-                         13 41  00002+6715               30217   7 707 971
          00 05+6720 0000324+672038  27 1.200E-011.498E-011.070E+004.758E+011113  153
     3                277     R        10                    -  0-  0    0 00  00010+6711 0001025+67113
```

```
A              463268 999 999 96 23LDN 1272                575315 999 999999923MRSL 118+04/1          298 93
 999 999999923CED 214B                 321 93 999 99915 023DG 001                 333 92 999 999390000012+6
642 001135+664217  25 1.428E-019.646E-011.931E+001.726E+011311  365                 3            162
    S      9               -  C-                0   00 00014+6647 0001291+664757  25 3.154E-016.477E
-011.931E+001.726E+013311  365           6  4         110 162         GG    8 8     -  C-   0+   9+ 31
            00    43 22S171                        326 429999 778      023MRSL 118+04/1         353 31 999 999999923C
E  214B                      366 34 999 99915 023DG 001                 373 36 999 999390000016+6639 0001407+663
912  25 4.81 E-013.074E-011.931E+001.726E+013211  365          4 14          98  87          KZ  1311     -
  0-   0+  41+  54                     13 4100016+6638                  19227   7 732 5 92
                          00020+6653 0002052+665313  25 2.210E+001.984E-011.931E+001.726E+013111  365
                   226                 D     9         -  0-   0                            0     74 22S171
         731769999 778     23MRSL 118+04/1              33247 999 999999923CED 214B                 15209 999 9991
5 023DG 001                     14160 999 999390013 10956              K0       4347  58 999     0159104
  K1III   6296   57 1 07   934100020+6653                     6237     32200 720
         0021+6658   02 77+665827   25 1.428E-013.628E-011.931E+001.726E+011311   365                 8
       59             R        5                 -   1-                          43 22S171                    3871819999
778     023MRSL 118+04/1              330188 999 999999923CED 214B              328184 999 99915 023DG 001
              327182 999 99939000021+6657  002117+665759  25 2.424E-011.984E-011.931E+001.726E+013111
 365          9                7              G   1          -   0-                              43 22S171
                  3611859999 778     23MRSL 118+04/1              307193 999 999999923CED 214B                  302189
999 99915 023DG  01                   301186 999 999390000024+6650 0002297+665001  25 1.428E-012.178E+00
2.773E+011.249E+ 21333  365                 1  1  1       268 399 175 HZP   910 8          -  0-   0-   6- 16- 3
4- 35  00  43 22S171                        1843109999 778     023MRSL 118+04/1           251316 999 999999923CED
214B                  235320 999 99915 023DG  01                        227322 999 999390000027+6700 0002459+670027
   25 6.849E-011.544E+002.245E+011.726E+013331  365              3  2  1        150 227 265       NMI   9 910   -   0
-    0+   4-   7-   4-  19                  53 22S171                    5592059999 778      023MRSL 118+04/1            5
22211 999 999999923CED 214B                    51 209 999 99915 023DG 001                          5 5208 999 999390041
00027+6700                  32 22     7 8181484                                                 00030+6637 0003029+66
3725  25 7.327E- 11.984E-011.931E+001.726E+013111  365              2              233                  L   13
-                                      13 4100030+6638               4   25    111035 956
                          00031+6638 0003 80+663837  25 1.428E-011.984E-011.291E+011.726E+011131  365
           2              373            Y        11                        -  0-   0            0  13 4100030+6638
        382 0    111 35 956                                                     00033+6645 0003192+664526  25 6.287E
 11.984E-011.931E+ 01.726E+013111  365          3                 146                L     8         -   0-   0
                          23 22S171                            5853129999 778      4100032+6645                   26205    3 7
93 8420034+6655 0003292+665516  25 6.885E-011.984E-011.931E+001.726E+013111  365             3
166             H       7           -   0-    0                           43 22S171                           5282489999
 778       23MRSL 118+04/1                542256 999 999999923CED 214B                   52 255 999 99915 023DG 001
              5 8255 999 99939000043+6644  0004219+664459  25 5.424E-016.109E-011.931E+001.726E+013311
  365           4   5           151 188          TS   10 9      -  0-   0+   2-   8                       00     00 00045+665
2  004312+665238  25 1.428E-011.984E-014.519E+011.726E+011131  365                          0              373
   Z         1                       -   1-                      13    3RAFGL 5003                   753 9 999      1     0
                                       00 48+6653 0004484+665316  25 1.428E-011.984E-011.931E+002.925E+02
1113  365                  0                  270      L          7                                -  0-   0     0 13    5CEP
HIV-8                    52141 999   15   22                                                      00049+6654 0004561+66543
9  25 2. 50E+0 3.529E+011.931E+001.726E+013311  365               1  0              353 370            LH    8 8      -
0-   0+    6+  11                      00     13 4100049+6654                   10 46     726843006
                       00050+6632 0005051+663223  25 1.621E-012.292E-011.931E+001.726E+013311  365
13 14              38   56             NS      8 9      -    1-    0-  14-  41                   00      23 32X0005+665
    18317      6 999     4100050+6631                          36230      6 310209100052+6649 A0005164+664944  25 9.983E-01
1.984E-011.931E+ 01.726E+013111  365               2                  302                 Y      9         -    0-    0
                          00 00052+6649B000517 +664903  25 1.745E-011.117E+001.931E+001.726E+011311  365
            2               193              P      12                     -   0-   0                      00 00061+6642 00060
68+664255  25 2.507E-011.984E-011.931E+001.726E+013111  365              8                    68                  C      7
      -    1-   0                                      00 00070+6645 0007023+664508  25 1.428E-011.984E-012.151E
+001.84 E+ 11133  365                        14 12              4   68   LI       8 6                            -    0-    0-  27-  72
  0 00 0076+6643   07383+664328  25 4.697E-011.984E-011.931E+001.726E+013111  365               4
    9                    B        6             -   0-                                       00
```


```
TAPE NO.   1                  FILE NO.   2
RECORD   1                    LENGTH   16
    17   2591   792    29    2447                                                                58      72   846   3
 76   783     925 1599       98   665      914 1286     112 1874                     927   296     409   912     663   670
                                                     65   9428  1011
```

REQ. AGENT
GLS

ACQ. AGENT
WHW

IRAS

SURVEY OF CATALOGED GALAXIES AND QUASARS

83-004A-01h ASIR-00066

This data set consists of 1 magnetic tape. This tape is 6250 bpi, 9 track, written in FITS format and contains 2 data files. The first file contains a FITS header for the data, an extension header giving a complete description of the format of the data and the data; and the second file contains a FITS header for the galaxy association data and the association data. This tape was created on an IBM 3081 computer. The sources appearing in the catalog are a subset of those listed in the Point Source Catalog, it is ordered by right accension and all positions in the catalog refer to epoch 1950.0. The D and C numbers are as follows:

D#	C#
D-83260	C-28069

83-004A-01h

IV. DESCRIPTION OF THE CATALOG ENTRIES

The sources appearing in the Extragalactic Catalog are a subset of those listed in the Point Source Catalog. The Extragalactic Catalog is ordered by right ascension. All positions in the Extragalactic Catalog refer to epoch 1950.0.

The entry for each source has a double page format. The left-hand page contains the *IRAS* data, and the right-hand page the information on the associated cataloged galaxies and quasars. The galaxy or quasar names can appear in five separate columns, each containing entries from one or more galaxy catalogs. Table III.A.1 details the assignments of the various galaxy catalogs to the five columns. Details of the association procedures and the optical positions used for the galaxies are given in Sec. III.

If a particular *IRAS* source associates with two or more objects in the same catalog, or in catalogs sharing the same column, additional lines are used for that source in the Extragalactic Catalog. The entries appear in blocks of ten *IRAS* sources.

The *IRAS* information appearing in the Extragalactic Catalog is identical to that in the Point Source Catalog, Version 2, except that the printed versions differ in the selection of parameters. An additional parameter has been included in the Extragalactic Catalog; namely, a far-infrared flux especially suited to galaxies. An error in this parameter in Version 1 of the Extragalactic Catalog has been corrected. Further detailed information on all of the entries besides this one can be found in the Explanatory Supplement to the *IRAS* Catalogs and Atlases (S.X). References to this information are given below, where appropriate.

A. Point Source Data

The following specifics apply to the printed version of the *IRAS* Survey of Cataloged Galaxies and Quasars. Details of the tape version, and the tape format, can be found in Sec. IV.B, below.

A.1 *IRAS* Point Source Data (Left Hand Page of the Catalog)

These data are identical to those in the Point Source Catalog except for the far-infrared flux parameter, FIR.

Name: IRAS NAME

The *IRAS* source name is derived from its position by combining the hours (HH), minutes (MM), and tenths of minutes of right ascension, and the sign, degrees (DD), and minutes (MM) of the declination. The right ascension and declination have been truncated. A letter 'A', 'B', 'C', etc. is appended to names of sources so close together that they would otherwise have had identical names.

Position: RA (HH,MM,SS.S), DEC (DD,MM,SS)

IRAS positions are given for the equinox 1950.0.

Galactic Latitude: GAL LAT

Galactic latitude b^{II} rounded to the nearest degree.

Positional Uncertainties: SEMI-MA, SEMI-MI, POS ANG

The uncertainty is expressed as a 95% confidence uncertainty ellipse. The semi-major (SEMI-MA) and semi-minor (SEMI-MI) axes ($''$) of the confidence ellipse are given. The orientation of the ellipse on the sky, (POS ANG), is expressed in terms of the angle between the major axis of the ellipse and the local equatorial meridian, expressed in degrees east of north. Further information is available in S.V.D.9 and S.VII.C. The uncertainty is overestimated for large uncertainties (S.VII.C.1.b).

Number of Sightings: NH

The number of hours-confirmed sightings of a source is given. (See Section II.A of the present document, and S.V.D)

Flux Densities and Their Qualities

Flux densities in Janskys ($10^{-26}\ Wm^{-2}Hz^{-1}$) are given in the four bands, each followed by a flag indicating the quality of the measurement. The flux densities **assume** an underlying energy distribution $f_\nu \propto \nu^{-1}$, i.e. **they have not been color-corrected**. Color-corrections to other spectral shapes must be made by consulting Table II.A.1 (S.VI.C.3). The quoted flux densities are averages of all the hours-confirmed sightings as obtained by the prescription in S.V.H.5. If no flux quality flag is given, the flux density is a high quality one. A colon (:) denotes a moderate quality flux density, and an 'L' denotes an upper limit. An 'S' indicates a saturated flux density. An upper limit is usually a 3-σ value but may be much more than this if the flux was deleted by the high-source-density processor (S.V.H.6). The assignment of flux qualities is described in S.V.H.5.

Combined 60 and 100 μm Flux and Quality: LOG(FIR)

This quantity is a convenient representation of the far-infrared flux of a galaxy, as measured by *IRAS*, at least for thermal infrared sources; it is effectively the total flux between 42.5 and 122.5 μm. It is in units of Wm^{-2}. A full description of this parameter is given in Appendix B; numerically the quantity tabulated is given by:

$$Log(FIR) = Log(1.26 \times (F(60) + F(100))),$$

where F(60) and F(100) are the fluxes measured for the source, in Wm^{-2}, in the 60 and 100 μm bands respectively. These fluxes can be recovered from the nominal flux densities listed in the *IRAS* catalogs using the formulae:

$$F(60) = 2.58\ \ 10^{-14} \times f_\nu(60)$$

$$F(100) = 1.00\ \ 10^{-14} \times f_\nu(100)$$

where $f_\nu(60)$ and f_ν (100) are the flux densities at the two wavelengths, measured in Janskys.

The flux quality assigned to FIR is carried over from the flux qualities of the 60 and 100 μm flux densities. FIR is of course subject to the same uncertainties in the calibration as the individual flux densities.

Flux Uncertainties: FLUX UNCS(4)

Each high- or moderate-quality flux density measurement has an associated uncertainty expressed as a 1-σ value in units of $\delta f_\nu / f_\nu$. Uncertainties are discussed in S.V.H.5. These flux qualities have been encoded according to the following convention (where the uncertainty was first rounded to two significant figures):

Symbol	Uncertainty Range
A	$0.00 \le \delta f_\nu / f_\nu < 0.04$
B	$0.04 \le \delta f_\nu / f_\nu < 0.08$
C	$0.08 \le \delta f_\nu / f_\nu < 0.12$
D	$0.12 \le \delta f_\nu / f_\nu < 0.16$
E	$0.16 \le \delta f_\nu / f_\nu < 0.20$
F	$\delta f_\nu / f_\nu \ge 0.20$

Correlation Coefficient: CORR COEF(4)

The correlation coefficient, one per band, ranges from 87 to 100%. It is derived from a least squares fit of the data for a source to the point source template. The coefficient is described fully in S.V.C.4. In the Extragalactic Catalog the coefficient is encoded as alphabetic characters with A=100%, B=99% etc., to M = 87%, one for each band. The value quoted is the highest correlation coefficient seen for that source on any sighting.

Cirrus Indicators: CI (C1, C2)

Over a large range of galactic latitudes the infrared sky at 100 μm is characterized by emission from interstellar dust on a wide range of angular scales. As described in Sec. II.F, this so-called "infrared cirrus" can seriously hamper efforts to extract point source detections from the data. To aid the user in interpreting the quoted 100 μm measurements, three cirrus-related quantities have been established (S.V.H.4 and S.VII.H). Two of these are given in the Extragalactic Catalog.

C1 gives the number of 100 μm-only hours-confirmed sources located within a $\pm\frac{1}{2}^\circ$ box in ecliptic coordinates centered on the source. The sources included in this count are the weeks-confirmed sources prior to high-source-density processing, if applicable (see Sec. II.E), plus those sources hours-confirmed but not weeks-confirmed. Values of greater than 3 may indicate contamination by cirrus with structure on the point-source size scale.

C2 gives a cirrus indication on a larger scale than C1 and compares a "cirrus flux" with the source flux at 100 μm (see S.V.H.4 for derivation of C2). Values of C2 larger than 4 or 5 indicate the presence of considerable structure in the 100 μm emission on a $\frac{1}{2}^\circ$ scale. A value of 0 indicates that no 100 μm extended emission data were available for the source in question.

Confusion Status Flags: CONF (CF, PH, PW, HD)

A great deal of care went into trying to untangle instances of confusion between neighboring sources (S.V.D.2, D.3) (see Sec. II.E). In parts of the sky where the source density is low, confusion processing was often able to separate sources that are quite close together. The CF (CONFUSE in the Supplement) flag is set if two or more sightings of the source in a given band had confusion status bits set, indicating confusion in the seconds-confirmation or band-merging processes. This flag is hex encoded by band (see key in Table IV.A.1).

Table IV.A.1
Key to Hex Encoded Flags[1]

Value of Flag	12	25	60	100
0	0	0	0	0
1	1	0	0	0
2	0	1	0	0
3	1	1	0	0
4	0	0	1	0
5	1	0	1	0
6	0	1	1	0
7	1	1	1	0
8	0	0	0	1
9	1	0	0	1
A	0	1	0	1
B	1	1	0	1
C	0	0	1	1
D	1	0	1	1
E	0	1	1	1
F	1	1	1	1

[1] The table indicates whether the bit is set (1) or not (0) for each band.

Other indicators of possible confusion are given by PH and PW (PNEARH and PNEARW in the Supplement) which are, respectively, the number of hours- and weeks-confirmed point sources located within a 4.5′ cross-scan and 6′ in-scan window centered on the source. Values larger than 9 are given as 9 (S.VII.H.1.a, S.X.B).

Regions of high source density received special processing to improve the reliability of the quoted sources (see Sec. II.E and S.V.H.6). The regions are band dependent. If a particular band of a given source went through high source density processing, then the appropriate bit in HD is set (HSDFLAG in Supplement). HD is hex encoded by band (see Table IV.A.1).

Small Extended Source Flags: SES1(4), SES2(1)

SES1 is the number of seconds-confirmed small-scale structure detections in a given band found within a window centered on the source. The size of the window is 6′ in-scan × 4.5′ cross-scan. As described in S.VII.H.1, values of SES1 greater than 1 should caution the reader that significant extended structure may exist in the region and that the source in question may be a point-source-like piece of a complex field.

SES2 is the number of weeks-confirmed small-scale structure sources in a given band located within a 6′ in-scan × 4.5′ cross-scan window centered on the source. Values greater than zero mean that the point source flux measurement should be treated with caution as the source in question may, in fact, be extended, and the flux density quoted in the *IRAS* Small Scale Structure Catalog may provide a better representation of the source. SES2 is hex encoded by band (see Table IV.A.1).

Small Scale Structure Associations: N, NAME, DIS

The Small Scale Structure associations were established by searching the *IRAS* Small Scale Structure Catalog (1988) near the positions of *IRAS* point sources rather than near galaxies. The associations were made in much the same way as was used for associations in other astronomical catalogs with entries in the Point Source Catalog (details in S. V.H.9). N is the number of small-scale structure sources that associate with the point source. In the Extragalactic Catalog N is never larger than one. NAME is the name of the associated source as in the *IRAS* Small Scale Structure Catalog, and DIS is the separation in arcseconds between point source and small-scale structure source.

For many galaxies, the SES2 flag is set but no extended-source associations are given. This situation arises primarily because the SES2 flag is based on weeks-confirmed small-scale structure sources (which numbered about 40,000), whereas associations were established with the Small Scale Structure Catalog which contains only 16,740 entries. The presence of a SES2 flag is sufficient cause for suspecting that the galaxy may have been resolved by *IRAS*, though the extended detection did not make it through the stringent final catalog selection process. (See the Explanatory Supplement to the Small Scale Structure Catalog 1988 for more detail.) Another reason that may have led to the situation described above is that SES2 flags were based on a slightly larger search window than associations with the Small Scale Structure Catalog.

Other Associations: N, I, DIS

If an *IRAS* point source associates with an object from any of the various non-galaxy catalogs listed in Table S.V.H.1, that fact is indicated here. N is the number of associations made for the source among these non-galaxy catalogs and I is a code which indicates which catalog the nearest of these associations is from (see Table IV.A.2). DIS is the separation of this object from the point source (″). There is a priority scheme in selecting the nearest association: if an association exists from one of the first nine catalogs in Table IV.A.2 it takes priority over the remainder. Similarly associations from catalogs A-E take precedence over F-J, and catalogs F-I are preferred over J. Although this field is included primarily to warn of possible confusion of the galaxy with a star or nebula, the catalog of extragalactic radio sources, J, is included on the lowest priority, since it provides a useful piece of additional information.

Table IV.A.2

Key to Identifications from Non-Galaxy Catalogs[1]

Code	Catalog
1	Smithsonian Astrophysical Observatory Star Catalog, 1966
2	Bright Star Catalogue - 4th Edition, Hoffleit and Jascheck 1982
3	Dearborn Observatory Catalogue of faint Red Stars, Lee *et al.* 1943, 1944, 1947
4	General Catalogue of Variable Stars, Kukarkin *et al.* 1970, 1971
5	Early Type Stars with Emission Lines, Wackerling 1970
6	New Catalog of Suspected Variable Stars, Kukarkin *et al.* 1981
7	General Catalogue of Cool Carbon Stars
8	Catalog of Nearby Stars, Gliese 1969
9	General Catalog of S Stars, Stephenson 1973, 1976
A	Strasbourg Planetary Nebulae
B	Parkes HII Region Survey, Haynes *et al.* 1979
C	Bonn HII Region Survey, Altenhoff *et al.* 1979
D	Catalog of CO Radial Velocities Toward Galactic HII Regions, Blitz *et al.* 1982
E	Catalogue of Dark Nebulae, Lynds 1962
	Comparison Catalog of HII Regions, Marsalkova 1974
	Catalog of Star Clusters and Associations, Alter *et al.* 1970
	Catalog of Bright Diffuse Nebulae, Cederblad 1946
	Untersuchungen Über Reflexionsnebel am Palomar Sky Survey, Dorschner and Gurtler 1964
	A Study of Reflection Nebulae, van den Bergh 1966b
	Catalog of Southern Stars Embedded in Nebulosity, van den Bergh and Herbst 1975
F	Revised Air Force Geophysical Laboratory Four-Color Survey, Price and Murdock 1983
G	Two Micron Sky Survey, Neugebauer and Leighton 1969
H	Equatorial Infrared Catalogue, Sweeney *et al.* 1978
I	Two Micron Sky Survey with Improved Positions, Kleinmann and Joyce 1984
J	Catalog of Extragalactic Radio Sources Having Flux Densities Greater than 1 Jy at 5 Ghz, Kuhr *et al.* 1981

[1] One extragalactic catalog, J, is included.

A.2 Extragalactic Associations (Right Hand Page)

Name: IRAS NAME

Repeat of the *IRAS* name.

Primary Galaxy Catalog Names: UGC, UGCA, ESO, CGCG

This column lists the name of the galaxy from four of the five main galaxy catalogs; the UGC (U), the UGC Appendix (UA), the CGCG (Z), and the ESO (E), with which the *IRAS* source is associated. A UGC galaxy with the suffix 'A' is from the addendum to the UGC. MCG associations appear elsewhere. As described in Sec. III.A above, these four catalogs were fully combined prior to making the associations (see III.C and D), so there is at most one entry for each *IRAS* source in this column unless the *IRAS* source is associated with more than one galaxy. Details of the catalogs and nomenclature used in various regions of the sky are given in Sec. III.C and in Table III.C.1. Positions for the galaxies have been taken from the same catalog as the name, except in the case of the Dressel and Condon (1976) positions for UGC galaxies, and except for a few errors discovered in the UGC coordinates (see Sec. III.F).

If more than one Primary Catalog Galaxy associates with a particular *IRAS* source, the one matching the *IRAS* source more closely in position is listed first. The next galaxy appears on the following line.

Number of Appearances of the Galaxy: N

An entry in this column indicates that the galaxy named in the preceding column appears more than once in the Extragalactic Catalog. The value of N is the number of times that the galaxy name appears, i.e., the number of *IRAS* sources with which the galaxy was associated. Galaxies appearing more than twice in the Extragalactic Catalog are listed in Table III.A.2.

Major Axis Diameter: MAJ AXIS DIAM

The major axis diameter of the galaxy listed in the Primary Galaxy Catalog column (″). For catalogs that list both blue and red sizes, the blue one has been adopted. The size quoted here is that used to decide whether the galaxy should be treated as a large or small galaxy for the association procedure (see Sec. III.B). For a large galaxy ($> 90''$ in semi-major axis), the association search radius used was one-half of the major axis given here. If no size was available in the catalog the number zero appears in this column.

Separation: DIST

Distance of the galaxy from the *IRAS* Source (″).

Position Angle: POS ANG

Position angle of the separation vector from the *IRAS* source to the optical galaxy, in degrees east of north.

Position and Magnitude Flags: P, M

P is a flag indicating any special circumstances concerning the optical position used for the galaxy. M is a flag that refers to the magnitude quoted. Explanations of both flags are given in Sec. IX. These flags only indicate discrepancies that came to light during the merger process; they are not intended to indicate all discrepancies that may be present in the galaxy catalogs.

Magnitude: MAG

The magnitude is carried over from the galaxy catalog in question. Most often it is a photographic blue magnitude derived ultimately from the CGCG.

Classification Field: CLASSN FIELD (TRUNC)

In this column the first seven characters of the classification field of the catalog in question have been reproduced. There is no guarantee that these types are in any way homogeneous, and they are often truncated.

MCG Galaxies: MCG

This column contains MCG identifications for the Primary Catalog Galaxy, and also MCG galaxies that have not been identified with the Primary Catalog galaxy for which an independent association has been made with the *IRAS* source (see Sec. III.D). MCG identifications for Primary Catalog galaxies may be identified by the absence of any diameter or separation information for the MCG galaxy.

If a single UGC, UGCA or ESO galaxy is identified with two or more MCG galaxies, this is usually indicated with a '+' symbol. The second and subsequent MCG galaxies will not appear by name in the Extragalactic Catalog. If there is both an identification with a Primary Catalog galaxy and an independent association with another MCG galaxy for a particular source, the identification will appear first, and the independent association will be on the following line. Additional MCG independent associations will appear on subsequent lines, in order of proximity to the *IRAS* source.

Number of Appearances of the MCG name: N

This column lists the number of times that a given MCG name appears in the Extragalactic Catalog. Unlike the situation for the Primary Galaxy Catalog entries, N does not necessarily indicate the number of *IRAS* sources that the MCG galaxy is associated with, because there exist cases in which two or more components of a galaxy or galaxy pair have the same MCG name.

Major Axis Diameter: MAJ AXIS DIAM

Outer major axis diameter of the MCG galaxy, if the MCG name is not just an identification for a Primary Catalog galaxy (″). If no size was available for the galaxy, the number zero is entered in this column. For large galaxies (> 180″ in semi-major axis) the association search radius used was one-half of the major axis given here.

Separation: DIS

Separation of the MCG galaxy from the *IRAS* source (″), if that MGC galaxy has been associated independently with the *IRAS* source.

Position Angle: POS ANG

Position angle of the radius vector from the *IRAS* source to the MCG galaxy, in degrees east from north, if that MCG galaxy has been associated independently with the *IRAS* source.

NGC/IC Name: NGC, IC

NGC or IC identification for the Primary Catalog galaxy, if available, or for the MCG galaxy. If size and separation information exists for the MCG galaxy, then the NGC/IC identification belongs to it; otherwise, the NGC/IC identification belongs to the Primary Catalog galaxy. No identifications are available for CGCG galaxies. Only six characters of the identification field have been copied into the Extragalactic Catalog. The symbols '+', '/' or '=' indicate additional NGC/IC names, which will not appear by name in the Extragalactic Catalog. A '?' or ':' denotes an uncertain identification. These symbols have the same meaning as they do in the optical catalog in question. Note that NGC or IC galaxies that are *IRAS* sources but that do not appear in the optical catalogs (Table II.A.1), if any exist, will not appear here.

Secondary Catalogs: ARP, MKN, DDO

This column contains the names of galaxies from the Markarian lists (MKN), the Atlas of Peculiar Galaxies (ARP) and the Catalogue of Dwarf Galaxies (DDO). No attempt has been made to identify objects appearing in this column with each other or with Primary Catalog and MCG galaxies.

Number of Appearances of the Name: N

N indicates the number of appearances of the ARP, MKN or DDO name in the Extragalactic Catalog.

Separation: DIS

Separation of the ARP, MKN or DDO galaxy from the *IRAS* source (″).

Position Angle: POS ANG

The position angle of the radius vector from the *IRAS* source to the galaxy, in degrees east from north.

Secondary Catalogs: VCV, VV, ZW. LISTS

This column contains the names of galaxies and quasars from the compilation of Veron-Cetty and Veron (nomenclature from the original listings combined by Veron-Cetty and Veron), the Atlas of Interacting Galaxies (V) and the eight lists of F. Zwicky (1ZW through 8ZW). As for the previous secondary column, no attempt has been made to internally identify objects in this column amongst themselves, or with objects in any of the other galaxy-name columns.

Number of Appearances of the Name: N

N indicates the number of times that the galaxy name appears in the Extragalactic Catalog.

Separation: DIS

Separation of the galaxy from the *IRAS* source (″).

Position Angle: POS ANG

Position angle of the radius vector of the *IRAS* source from the galaxy, in degrees east of north.

VCV Type or VV Flag: TY OR FL

This column is used to identify VCV entries because many entries from this catalog are duplicated in one of the other secondary catalogs – most notably the Markarian lists. The type of the galaxy from VCV has been used as this identification flag. For VCV galaxies with no type, the letters "AN", for "Active Nucleus", have been inserted to mark the entry.

This column also contains a number of flags for VV galaxies; the meaning of these flags is explained in Sec. IX.

B. Tape Formats

In addition to the printed version of the Extragalactic Catalog, there is a tape version presented in the FITS table format (Wells, Greisen, and Harten 1981; Greisen and Harten 1981; Grosbøl *et al.* 1988 and Harten *et al.* 1988). Galaxy association records are written in a separate FITS table keyed to the *IRAS* data records. The two tables are written as two files on one tape.

The format of the tape is (a) in the first file: a FITS header for the *IRAS* data, an extension header giving a complete description of the format of the *IRAS* data, and the *IRAS* data; and (b) in the second file: FITS header for the galaxy association data, the extension header for the association data, and the association data. The FITS header for each file contains the date and version number of the data on tape. Extension headers describe each column in the data table. The information in the extension headers is given in a more easily-readable format in Tables IV.B.1 and IV.B.2. which contain a brief description of each variable on the tape, the logical type of each variable, and its length in bytes. For a more complete description of variables, see pages IV-1 through IV-9. Tables IV.B.3 and IV.B.4 give samples of the FITS headers and extension headers for the two files on the tape.

There are two differences between the printed and tape versions of the Extragalactic Catalog. One is that the FITS tape file containing the *IRAS* data includes an additional parameter: NRECS. NRECS is the number of galaxy association records which will be found keyed to that *IRAS* data record in the galaxy associations tape file. As in the printed catalog, multiple galaxy association records keyed to a single *IRAS* data record appear in the tape file in order of increasing distance on the sky from the *IRAS* source. The second difference is that the association data FITS tape file contains an additional parameter, RECNO. RECNO is the sequential number of the *IRAS* data record to which a particular association record refers.

Table IV.B.1. Format of IRAS Data for Extragalactic Catalog Tape

Start Byte	Name	Description	Units	Format
01	NAME	*IRAS* source name	——	A11
12	RAHR	Right Ascension 1950	Hours	I2
15	RAMIN	Right Ascension 1950	Minutes	I2
18	RASEC	Right Ascension 1950	Seconds	F4.1
23	DECSGN	Declination Sign	+,-	A1
24	DECDEG	Declination 1950	Arc degrees	I2
27	DECMIN	Declination 1950	Arc minutes	I2
30	DECSEC	Declination 1950	Arc seconds	I2
33	GLAT	galactic latitude 1950	Arc degrees	I3
37	UNCMAJ	Uncertainty ellipse semi-major axis	Arc seconds	I3
40	UNCMIN	Uncertainty ellipse semi-minor axis	Arc seconds	I3
44	POSANG	Uncertainty ellipse position angle	Degrees (East of North)	I3
47	NHCON	Number of times observed	——	I2
49	FNU_12	12 μm flux density averaged, non color corrected	Janskys (10^{-26} $Wm^{-2}Hz^{-1}$)	F6.2
55	FQUAL_12	12 μm flux quality where (blank)=high quality :=moderate quality L=upper limit	——	A1
56	FNU_25	25 μm flux density averaged, non color corrected	Janskys (10^{-26} $Wm^{-2}Hz^{-1}$)	F6.2
62	FQUAL_25	25 μm flux quality where (blank)=high quality :=moderate quality L=upper limit	——	A1
63	FNU_60	60 μm flux density averaged, non color corrected	Janskys (10^{-26} $Wm^{-2}Hz^{-1}$)	F7.2
70	FQUAL_60	60 μm flux quality where (blank)=high quality :=moderate quality L=upper limit	——	A1
71	FNU_100	100 μm flux density averaged, non color corrected	Janskys (10^{-26} $Wm^{-2}Hz^{-1}$)	F7.2

Table IV.B.1. Format of IRAS Data for Extragalactic Catalog Tape (Continued)

Start Byte	Name	Description	Units	Format
78	FQUAL_100	100 μm flux quality where (blank)=high quality :=moderate quality L=upper limit	——	A1
79	FIR	Log (FIR) far infrared flux combined 60 & 100 μm flux, see Appendix B	Wm^{-2}	F6.2
85	FQFIR	FIR flux quality where (blank)=high quality :=moderate quality L=upper limit	——	A1
86	RELUNC[1]	Percent relative flux density uncertainties, one value per band, A - 0% < UNCS < 4% B - 4 < UNCS < 8 C - 8 < UNCS < 12 D - 12 < UNCS < 16 E - 16 < UNCS < 20 F - UNCS > 20	——	4A1
91	CC[1]	Point source correlation coefficient, one value per band A = 100% B = 99 C = 98 . . M = 87	——	4A1
96	CIRR1	Cirrus indicator, number of 100 μm only sources in window	——	I1
97	CIRR2	Cirrus indicator, ratio of cirrus flux to source flux	——	I1
99	CONFUSE	Confusion flag, hex encoded see Table IV.A.1.	——	I1
100	PNEARH	Number hours-confirmed point sources in window PNEARH>9 = 9	——	I1

Table IV.B.1. Format of IRAS Data for Extragalactic Catalog Tape (Continued)

Start Byte	Name	Description	Units	Format
101	PNEARW	Number of weeks-confirmed point sources in window PNEARW>9 = 9	——	I1
102	HSDFLG	High source density flag, hex encoded, see table IV.A.1.	——	I1
104	SES1[1]	Number of seconds-confirmed small extended sources in window, one value per band	——	4I1
108	SES2	Number of weeks-confirmed small extended sources in window, hex encoded, see table IV.A.1.	——	I1
109	NSSS	Number of associations from Small Scale Structure Catalog	——	I2
112	SSSNAM	Name of closest SSS association	——	A10
122	DISSSS	Separation from the SSS source	Arc minutes	I3
125	NONGAL	Number of associations from non-galaxy catalogs listed in table S.V.H.1.	——	I2
128	IDNGAL	Code indicating non-galaxy catalog with closest association, see table IV.A.2.	——	A1
130	DSNGAL	Separation of the non-galaxy source	Arc minutes	I3
133	NRECS	Number of lines in association file which are keyed on this *IRAS* name	——	I2
135	BLANKS	Blank space for possible added data	——	A26

[1] In the FITS header, these quantities are suffixed by the wavelength. Example: CC(4) is given as CC_12, CC_25, CC_60, and CC_100.

Table IV.B.2. Format of Association Data for Extragalactic Catalog Tape

Start Byte	Name	Description	Units	Format
01	NAME	Repeat of *IRAS* source name	——	A11
12	PGCNAM	Galaxy name from Primary Galaxy Catalog (UGC, UGCA, ESO, OR CGCG)	——	A12
25	NPGC	Number of appearances	——	I1
27	DIAMP	Major axis diameter	Arc seconds	I4
33	DISPGC	Distance from *IRAS* source	Arc seconds	I3
37	PAPGC	Position angle of separation vector	Degrees East of North	I3
41	POSFLG	Position flag, see Sec.IX	——	A1
42	MAGFLG	Magnitude flag, see Sec.IX	——	A1
44	MAGPGC	Magnitude from Primary Galaxy Catalog	Magnitude	F4.1
49	CLASSN	Classification field	——	A7
57	MCGNAM	Galaxy name from MCG	——	A11
69	NMCG	Number of appearances	——	I1
71	DIAMM	Major axis diameter	Arc seconds	I4
76	DISMCG	Distance from *IRAS* source	Arc seconds	I3
80	PAMCG	Position angle of separation vector	Degrees East of North	I3
84	NGCIC	NGC or IC identification of Primary Catalog or MCG galaxy	——	A7
91	AMDNAM	ARP, MKN, DDO associations	——	A7
99	NAMD	Number of appearances	——	I1
101	DISAMD	Distance from *IRAS* source	Arc seconds	I3
105	PAAMD	Position angle of separation vector	Degrees East of North	I3
109	VVZNAM	VCV, VV, Zwicky list associations	——	A11
121	NVVZ	Number of appearances	——	I1
123	DISVVZ	Distance from *IRAS* source	Arc seconds	I3
127	PAVVZ	Position angle of separation vector	Degrees East of North	I3
131	VCVFLG	VCV identifier or VV flag, see Sec. IX	——	A2
133	RECNO	Main Data Table record number for *IRAS* source	——	I5
138	BLANKS	Blank space for possible added data	——	A23

Table IV.B.3. Portion of FITS Header for IRAS Data

```
SIMPLE    =                    T  /  Standard FITS format
BITPIX    =                    8  /  Character data
NAXIS     =                    0  /  No image data array present
EXTEND    =                    T  /  There may be standard extensions
BLOCKED   =                    T  /  Tape may be blocked to multiples of 2880
END

XTENSION  =  'TABLE'              /  Table extension
BITPIX    =                    8  /  Character data
NAXIS     =                    2  /  Simple 2-D matrix
NAXIS1    =                  160  /  Number of characters per record
NAXIS2    =                11444  /  Number of records in the file
PCOUNT    =                    0  /  No "random" parameters
GCOUNT    =                    1  /  Only one group
TFIELDS   =                   50  /  Number of data fields per record
EXTNAME   =  'XCAT_DATA'          /  IRAS Extragalactic Catalog - main data file
AUTHOR    =  'IPAC'               /  Infrared Processing and Analysis Center
REFERENC  =  'Version 2.1'        /  Catalog reference
DATE      =  '05/06/89'           /  Date file was generated (dd/mm/yy)


COMMENT This FITS header is NOT a complete scientific document for the subject
COMMENT catalog. It serves only as a minimal description of the general
COMMENT format and structure of the data file.

COMMENT A copy of "Cataloged Galaxies and Quasars Observed in the IRAS
COMMENT Survey, Version 2" should be used to answer questions about the
COMMENT data in the Extragalactic Catalog (XCAT).

COMMENT Names which refer to each of the four IRAS bands of 12, 25, 60 and
COMMENT 100 microns are suffixed with the numerals 12, 25, 60 and 100.
COMMENT For example RELUNC_12 is the relative flux density uncertainty
COMMENT at 12 microns.
```

Table IV.B.3. Portion of FITS Header for IRAS Data (Continued)

TTYPE1	=	'NAME'		/	Source name
TBCOL1	=		1	/	Start column
TFORM1	=	'A11'		/	Fortran format
TTYPE2	=	'RAHR'		/	Hours RA, equinox 1950.0, epoch 1983.5
TBCOL2	=		12	/	Start column
TFORM2	=	'I2'		/	Fortran format
TUNIT2	=	'HR'		/	Units are hours of time
TTYPE3	=	'RAMIN'		/	Minutes RA, equinox 1950.0, epoch 1983.5
TBCOL3	=		15	/	Start column
TFORM3	=	'I2'		/	Fortran format
TUNIT3	=	'MIN'		/	Units are minutes of time
TTYPE4	=	'RASEC'		/	Seconds RA, equinox 1950.0, epoch 1983.5
TBCOL4	=		18	/	Start column
TFORM4	=	'F4.1'		/	Fortran format
TUNIT4	=	'SEC'		/	Units are seconds of time
etc.					

Table IV.B.4. Portion of FITS Header for Galaxy Associations Data

```
SIMPLE    =                      T   /  Standard FITS format
BITPIX    =                      8   /  Character data
NAXIS     =                      0   /  No image data array present
EXTEND    =                      T   /  There may be standard extensions
BLOCKED   =                      T   /  Tape may be blocked to multiples of 2880
END

XTENSION  =  'TABLE'                 /  Table extension
BITPIX    =                      8   /  Character data
NAXIS     =                      2   /  Simple 2-D matrix
NAXIS1    =                    160   /  Number of characters per record
NAXIS2    =                  12776   /  Number of records in the file
PCOUNT    =                      0   /  No "random" parameters
GCOUNT    =                      1   /  Only one group
TFIELDS   =                     27   /  Number of data fields per record
EXTNAME   =  'XCAT_ASOC'             /  IRAS Extragalactic Catalog, associations table
AUTHOR    =  'IPAC'                  /  Infrared Processing and Analysis Center
REFERENC  =  'Version 2.1'           /  Catalog reference
DATE      =  '05/06/89'              /  Date file was generated (dd/mm/yy)


COMMENT This FITS header is NOT a complete scientific document for the subject
COMMENT catalog. It serves only as a minimal description of the general format
COMMENT and structure of the data file. A copy of "Cataloged Galaxies and
COMMENT Quasars Observed in the IRAS Survey, 2" should be used to answer
COMMENT questions about the data in the IRAS Extragalactic Catalog (XCAT).

COMMENT Source Catalog Reference: Cataloged Galaxies and Quasars Observed in
COMMENT the IRAS Survey, 2, IPAC, 1989 February.

COMMENT This table contains only the galaxy association fields for each source
COMMENT in XCAT. The IRAS observational data for each source are in table
COMMENT XCAT_DATA. Each record is tagged with the IRAS source name with which
COMMENT it is associated, as well as the sequential record number within
COMMENT table XCAT_DATA where the IRAS observational data can be found.
COMMENT Field names are identical with the field names given in "Cataloged
COMMENT Galaxies and Quasars Observed in the IRAS Survey, 2".
```

Table IV.B.4. Portion of FITS Header for Galaxy Associations Data (Continued)

TTYPE1	=	'NAME'	/	*IRAS* source name
TBCOL1	=	1	/	Start column
TFORM1	=	'A11'	/	Fortran format
TTYPE2	=	'PGCNAM'	/	Galaxy name from Primary Galaxy Catalog
TBCOL2	=	12	/	Start column
TFORM2	=	'A12'	/	Fortran format
COMMENT Primary Galaxy Catalogs are UGC, UGCA, ESO, and CGCG.				
TTYPE3	=	'NPGC'	/	Number of appearances
TBCOL3	=	25	/	Start column
TFORM3	=	'I1'	/	Fortran format
TTYPE4	=	'DIAMP'	/	Major axis diameter
TBCOL4	=	27	/	Start column
TFORM4	=	'I4'	/	Fortran format
TUNIT4	=	'ARCSEC'	/	Units are seconds of arc
TTYPE5	=	'DISPGC'	/	Distance from *IRAS* source
TBCOL5	=	33	/	Start column
TFORM5	=	'I3'	/	Fortran format
TUNIT5	=	'ARCSEC'	/	Units are seconds of arc
etc.				

83-004A-01h

```
$AASS IN HT1
NO PROCEDURE
$ASS IN HT1
$NOP
$NOP
$NOP
$NOP
$NOP  ********************** GLSOUT2 ************************
$EXE TPLIST BS

INPUT PARAMETERS ARE:  AS SR=1=1 2 1 1

 TAPE NO.   1              FILE NO.   1
 RECORD   1                LENGTH   2880
SIMPLE  =                            T / Standard FITS format                           BITPIX  =
         8 / Character data                                         NAXIS    =                    0 / No im
age data array present                    EXTEND  =                           T / There may be standard ex
tensions              BLOCKED =                            T / Tape may be blocked to multiples of 2880
    END


          XTENSION= 'TABLE   '              / Table extension                                  BITPIX  =
                    8 / Character data                                   NAXIS   =
2 / Simple 2-D matrix                               NAXIS1  =                  160 / Number of chara
cters per record              NAXIS2  =                 11444 / Number of records in the file
            PCOUNT   =                             0 / No "random" parameters                        GCOUNT
   =                        1 / Only one group                                TFIELDS =
    5  / Number of data fields per record                EXTNAME = 'XCAT_DATA'              / IRAS Extrag
alactic Catalog - main data file    AUTHOR   = 'IPAC    '              / Infrared Processing and Analys
is Center          REFERENC= 'Version 2.1'          / Catalog reference                              DA
TE     = '05/06/89'            / Date file was generated (dd/mm/yy)
                                                               COMMENT This FITS header is NOT a comple
te scientific document for the subject  COMMENT catalog.  It serves only as a minimal description o
f the general         COMMENT format and structure of the data file.
                                                                                COMMENT A copy of
 "Cataloged Galaxies and Quasars Observed in the IRAS          COMMENT Survey, Version 2" should be
 used to answer questions about the         COMMENT data in the Extragalactic Catalog (XCAT).

      COMMENT Names which refer to each of the four IRAS bands of 12, 25, 60 and       COMMENT 100 m
icrons are suffixed with the numerals 12, 25, 60 and 100.          COMMENT For example FELUNC 12 is
```

```
                           TFORM47 = 'A1      '              / Fortran format
       COMMENT Codes for non-galaxy id's are in Table IV.A.2.. printed edition.
                                                                TTYPE48 = 'DSNGAL  '
  / Separation of the non-galaxy source             TBCOL48 =                   130 / Start column
                                     TFORM48 = 'I3      '              / Fortran format
           TUNIT48 = 'ARCMIN  '            / Units are minutes of arc
                                                                   TTYPE49 = 'NRECS   '
     / Number of lines in XCAT_ASOC with IRAS name     TBCOL49 =                      133 / Start column
                                        TFORM49 = 'I2      '              / Fortran format
                                                                                        TTY
 PE50 = 'BLANKS  '            / Blank space for possible added data              TBCOL50 =
     135 / Start column                                   TFORM50 = 'A26     '              / Fortran
 format
                 END
                                                                         00010-0359  0  0
 1.0 - 3 59 20 -64  47  8  67 2    .25L    .33L    1.21      2.49 -13.15    CC  HAA 23 0000 0100
              1                              00001+0827  0  0  6.1 + 8 27 32 -52  54 15  66 2   .25L
   .28L    .70    1.19 -13.42   DC   CD 15 0100 0010                          1
      00003+0313  0  0 18.9 + 3 13 33 -57  88 17  66 2   .25L   .32L    .52L   1.12 -13.51L   C HBDC
  15 0000 0000                   1                               00003-3431  0  0 21.3 -34 31  1 -
 77  54  9  66 2  1.06L   .25L     .80    2.57 -13.23   CC B BB 03 0000 0000
  1                          00005-0211  0  0 31.7 - 2 11 38 -62  46 11  67 2   .25L   .56L    .88
   2.60 -13.21   CD  IAB 12 0000 0000                   1                                00005+2140
  0  0 35.1 +21 40 53 -40  32  8  64 2   .25L  1.05     4.25     4.51 -12.71  CDD HAAA 03 0000 0000
                     1                        00007+0320  0  0 42.7 + 3 20 34 -57  49 11  66 2
    .25L   .29L    .58    1.68 -13.40   CC   CB 12 0000 0000                           1
              00007+0820  0  0 47.4 + 8 20  5 -52  31 16  66 2   .69L   .62L    .54:   1.23 -13.48:
  CC FFBC 15 0000 0010                 1                                 00008+0526  0  0 51.2 + 5
  26  7 -55  75 19  66 2   .25L   .91L    .59L   1.83 -13.38L   C  DHC 14 0000 0000
        1                          00009-1101  0  0 57.3 -11  1 41 -70  66 17  66 2   .32L   .29L
    .54L   1.38 -13.46L   D   CB 33 0000 0000                        1                              00
 010+2255  0  1  1.2 +22 55 19 -38  46 15  64 2   .25L   .25L     .74     3.64:-13.16:  CE   BB 55 000
  0011                       1                                 00012+0712  0  1 14.9 + 7 12  3 -54  33
  3  66 2   .25L   .26L    .65:    2.43 -13.29:  DC   GDA 35 0000 0020                          1
                  00014+2028  0  1 24.5 +20 28 26 -41  36  6  64 2   .47     .58     5.14    15.63
 -12.44 CDDD CBAA 13 0000 1100                   1                             00015-1215  0  1
 35.8 -12 15 40 -71  56 13  66 2   .25L   .34L    .48:   1.49 -13.46:  DC   BC 14 0000 0000
              1                              00018+3111  0  1 50.0 +31 11 37 -30  40  9  59 2   .25L
   .25L    .97    2.65 -13.19   CC  HAB  3 0000 0000                          1
      00018+4712  0  1 50.3 +47 12 26 -15  49 19  51 2   .40L   .25L    .42    1.32L-13.52   C  L C
  66 0100 0011                 1                             00021+2633  0  2 10.8 +26 33 12
 -35  63 16  64 2   .26L   .25L    .51    1.35 -13.47   CC   DB 15 0100 0000
  1                         00022- 150  0  2 13.6 - 1 50 58 -62  56 11  67 2   .46L   .32L    .94
   1.41:-13.31:  CD   BB 13 0100 0000                          2

  TAPE NO.   1               FILE NO.   2
  RECORD   1                 LENGTH   2880
 SIMPLE  =                        T / Standard FITS format                        BITPIX  =
         8 / Character data                                  NAXIS   =                       0 / No im
 age data array present                   EXTEND  =                       T / There may be standard ex
 tensions                BLOCKED =                       T / Tape may be blocked to multiples of 2880
     END
```

```
        XTENSION= 'TABLE   '           / Table extension                                   BITPIX  =
                  8 / Character data                                   NAXIS   =
2 / Simple 2-D matrix                         NAXIS1  =                 160 / Number of chara
cters per record              NAXIS2  =                 12776 / Number of records in the file
           PCOUNT   =                    0 / No "random" parameters                          GCOUNT
  =                    1 / Only one group                          TFIELDS =
  27 / Number of data fields per record          EXTNAME = 'XCAT_ASOC'            / IRAS Extrag
alactic Catalog, associations table AUTHOR  = 'IPAC    '           / Infrared Processing and Analys
is Center         REFERENC= 'Version 2.1'         / Catalog reference                          DA
TE    = '05/06/89'            / Date file was generated (dd/mm/yy)
                                                          COMMENT This FITS header is NOT a comple
te scientific document for the subject  COMMENT catalog.  It serves only as a minimal description o
f the general format COMMENT and structure of the data file.  A copy of "Cataloged Galaxies  and
  COMMENT Quasars Observed in the IRAS Survey, 2" should be used to answer       COMMENT questions
 about the data in the IRAS Extragalactic Catalog (XCAT).
                                             COMMENT Source Catalog Reference: Cataloged Galaxies an
d Quasars Observed in    COMMENT the IRAS Survey, Version 2, IPAC, 1989 February
                                                                                     COMMENT This
table contains only the galaxy association fields for each source  COMMENT in XCAT. The IRAS observ
ational data for each source are in table       COMMENT XCAT_DATA. Each record is tagged with the I
RAS source name with which   COMMENT it is associated, as well as the sequential record number with
in         COMMENT table XCAT_DATA where the IRAS observational data can be found.          COMMENT F
ield names are identical with the field names given in "Cataloged      COMMENT Galaxies and Quasars
 Observed in the IRAS Survey, Version 2".
                                  TTYPE1  = 'NAME    '           / IRAS source name
               TBCOL1  =                    1 / Start column                                     TFORM
1  = 'A11     '           / Fortran format
                                                         TTYPE2  = 'PGCNAM  '           / Galaxy nam
e from Primary Galaxy Catalog        TBCOL2  =                   12 / Start column
                   TFORM2  = 'A12     '           / Fortran format                                  C
OMMENT Primary Galaxy Catalogs are UGC, UGCA, ESO, and CGCG.
                                                            TTYPE3  = 'NPGC    '           / Number
 of appearances                          TBCOL3  =                   25 / Start column
                       TFORM3  = 'I1      '           / Fortran format
                                                                                 TTYPE4  = 'DIAMP
   '           / Major axis diameter                               TBCOL4  =                   27 / St
art column                            TFORM4  = 'I4      '           / Fortran format
                           TUNIT4  = 'ARCSEC  '           / Units are seconds of arc
                                                                                      TTYPE5  = 'D
ISPGC   '           / Distance from IRAS source                          TBCOL5  =                   33
/ Start column                              TFORM5  = 'I3      '           / Fortran format
                               TUNIT5  = 'ARCSEC  '           / Units are seconds of arc
                                                                                          TTYPE6
= 'PAPGC   '           / Position angle of separation vector          TBCOL6  =
 37 / Start column                              TFORM6  = 'I3      '           / Fortran forma
t                                  TUNIT6  = 'DEG     '           / Units are degrees
                COMMENT Position angle is measured in degrees East of North
                                                                           TTYPE7  = 'POSFLG  '
          / Position flag, see Sec. IX, op. cit.          TBCOL7  =                   41 / Start col
umn                                    TFORM7  = 'A1      '           / Fortran format
 TTYPE8  = 'MAGFLG  '           / Magnitude flag, see Sec. IX, op. cit.          TBCOL8  =
          42 / Start column                                 TFORM8  = 'A1      '           / Fortr
an format
                        TTYPE9  = 'MAGPGC  '           / Magnitude from Primary Galaxy Catalog
```

REQ. AGENT
GLS

ACQ. AGENT
WHW

IRAS

FAINT SOURCE CATALOG, VERSION 2.0

83-004A-01i ASIR-00029

This data set consists of 1 magnetic tape. This tape is 6250 bpi, 9 track, is written in FITS table format and contains 2 data files, one for non-association data (FSC_DATA) and one for association data (FSC_ASSOC). There are 2 headers, each with 80-byte records, within each file. The first header in each file identifies the tape as being in FITS format. The second header contains the FITS keyword file giving the format information for the rest of the file. This tape was created on an IBM 3032. The D and C numbers are as follows:

D#	C#
D-82667	C-28029

83-004A-01 i

INFRARED PROCESSING AND ANALYSIS CENTER

California Institute of Technology 100-22
Pasadena, California 91125

September 28, 1990

Dr. Michael Van Steenberg
NSSDC
NASA Goddard Space Flight Center
Code 633.8
Greenbelt, MD 20771

Dear Michael:

This letter accompanies the release of Version 2.0 of the Faint Source Catalog for the unconfused sky with $|b|>10^{o}$. The catalog is on a single 6250-bpi tape and is in FITS table format. The Fits table format conforms to the structure used for version 1.2 and consists of the following:

- The catalog consists of two files, one for non-association data (FSC_DATA) and one for association data (FSC_ASSOC).
- There are 2 headers, each with 80-byte records, within each file.
- The first header in each file identifies the tape as being in FITS format.
- The second header contains the FITS keyword file giving the format information for the rest of the file.
- The data part (non-header portion) of FSC_DATA has 240-byte records.
- The data part of FSC_ASSOC has 64-byte records.
- The tape is blocked in multiples of 2880 bytes. (28800)

New additions to fields have been made relative to version 1.2. We have added a field NOISRAT (one for each band), and now the SPARE field is reduced to 13 bytes (A13).

The FITS header identifies this as version 2.0 created on 12 September 1990.

OCT 1990

818 584-2302 Fax 584-3345

The first three records of each file contain the FITS header. The grid commences in the fourth record as a continuous stream of pixel values in 2880 byte records. The unused portion of the final record is padded with zeros. Depending on the dynamic range of each spectral band, either of two- or four-byte integers are used for the flux density and noise grids (as indicated by the FITS keyword BITPIX), and in all cases one-byte integers are used for the data count grids. It should be recalled that the flux-density grid has a value at any pixel for which the number of data counts is non-zero, whereas the noise grid does not report values at any pixel which has fewer than four data counts. In Tables V.B.1 through V.B.3 the sample grid headers for the flux density, noise and count grids are displayed. In Table V.B.4 the explanations for some of the FITS keywords are given.

B.2 Flux Calibration of FSS Plates

The FSS plates being released are an exact copy (within the digitization scale defined in Section V.B.1) of the plates from which the FSDB is generated. However, in going from the FSDB to the FSC, a flux-density calibration correction was applied to the sources which takes into account the non-linear behavior of load resistors due to different background brightnesses (see Section II.G.5). The user of these plates is therefore warned that if the flux density of a given FSC source is measured directly from the plates, the FSC flux density can be different from the plate value by a few percent. *Thus the careful user will strive to compute the appropriate non-linear correction factors and apply them to the values read from the plate.* In order to facilitate this task a file containing the actual backgrounds used for the non-linear corrections will be released later.

C. The Faint Source Catalog

The information about faint infrared point sources is presented in increasing detail, progressing from the microfiche version to the short tape version of the catalog to the long tape version containing more detailed information about the parameters of each source. The microfiche version (Section V.C.2) is intended for users at the telescope or at institutions without computerized information retrieval systems. The short catalog tape (Section V.C.1) is intended for astronomers desiring to make statistical studies and to search the catalog for large numbers of sources. The long catalog tape (Section V.C.3) is meant to give the sophisticated researcher all the available data on any given source such as pointers to duplicate sources from plates which overlap the source, a list of all correction factors applied to each source, and the results of template fits to each source.

C.1 The Short Machine-Readable Version of the Faint Source Catalog

The short FSC tape is presented as FITS table data. In order to do this, the associations block has been split out as a separate file. It takes one 6250-bpi tape to hold all of these files for $|b| > 50°$.

The FITS table format consists of the following:

- The catalog is split into two files, one for the non-association data (FSC_DATA) and one for the association data (FSC_ASSOC).
- There are two headers, each with 80-byte records, within each file.
- The first header in each file identifies that the tape is written in FITS format.
- The second header constitutes the FITS keyword file giving the format information for the rest of the file.
- The data part (i.e., non-header part) of FSC_DATA has 240-byte records.
- The data part of FSC_ASSOC has 64-byte records.
- The tape is blocked to multiples of 2880 bytes.

Specifically, the formats of the files are as follows:

FILE 1:

Block 1 – short header file
Blocks 2–10 – FSC_DATA header
Blocks 11–END – FSC_DATA

FILE 2:

Block 1 – short header file
Blocks 2–4 – FSC_ASSOC header
Blocks 5–END – FSC_ASSOC

The short header file is given in Table V.C.1.

TABLE V.C.1 Header File for FSC Data Files

```
SIMPLE  =                    T / Standard FITS format
BITPIX  =                    8 / Character data
NAXIS   =                    0 / No image data array present
EXTEND  =                    T / There may be standard extensions
BLOCKED =                    T / Tape may be blocked to multiples of 2880
END
```

TABLE V.C.2. Portion of FITS Header for FSC Data File

```
XTENSION= 'TABLE    '                  /  Table extension
BITPIX  =                            8 / Character data
NAXIS   =                            2 / Simple 2--D matrix
NAXIS1  =                          240 / Number of characters per record
NAXIS2  =                        27827 / Number of records in the file
PCOUNT  =                            0 / No "random" parameters
GCOUNT  =                            1 / Only one group
TFIELDS =                           54 / Number of data fields per record
EXTNAME = 'FSC_DATA  '                 / IRAS Faint Source Catalog - main data file
AUTHOR  = 'IPAC      '                 / Infrared Processing and Analysis Center
REFERENC= 'Version 1.1 '               / Catalog reference
DATE    = '26/04/89  '                 / Date file was generated (dd/mm/yy)

HISTORY This FITS header is NOT a complete scientific document for the subject
HISTORY catalog.   It serves only as a minimal description of the general
HISTORY format and structure of the data file.

HISTORY A copy of "Explanatory Supplement to the Faint Source Survey"
HISTORY should be used to answer questions about the data in the FSC.

COMMENT Names which refer to each of the four IRAS bands of 12, 25, 60 and
COMMENT 100 microns are suffixed with the numerals 12, 25, 60 and 100.
COMMENT For example FNU_12 is the flux density at 12 microns.

TTYPE1  = 'NAME      '                 / Source name
TBCOL1  =                            1 / Start column
TFORM1  = 'A12       '                 / Fortran format

TTYPE2  = 'RAHR      '                 / Hours RA, equinox 1950.0, epoch 198 3.5
TBCOL2  =                           12 / Start column
TFORM2  = 'I2        '                 / Fortran format
TUNIT2  = 'HR        '                 / Units are hours of time
 .  .  .

TTYPE11 = 'POSANG    '                 / Uncertainty ellipse position angle
TBCOL11 =                           29 / Start column
TFORM11 = 'I3        '                 / Fortran format
TUNIT11 = 'DEG       '                 / Units are degrees
COMMENT POSANG (field 11) is measured in degrees east of north between the
COMMENT major axis of the ellipse and the local equatorial meridian.

etc.
```

TABLE V.C.3. Portion of FITS Header for FSC Association Data

```
XTENSION= 'TABLE   '                     / Table extension
BITPIX  =                              8 / Character data
NAXIS   =                              2 / Simple 2-D matrix
NAXIS1  =                             64 / Number of characters per record
NAXIS2  =                          44753 / Number of records in the file
PCOUNT  =                              0 / No "random" parameters
GCOUNT  =                              1 / Only one group
TFIELDS =                             12 / Number of data fields per record
EXTNAME = 'FSC_ASSOC'                   / IRAS Faint Source Catalog - associations table
AUTHOR  = 'IPAC    '                     / Infrared Processing and Analysis Center
REFERENC= 'Version 1.1'                  / Catalog reference
DATE    = '26/04/89'                     / Date file was generated (dd/mm/yy)
COMMENT This FITS header is not a complete scientific document for the subject
COMMENT catalog.  It serves only as a minimal description of the general format
COMMENT and structure of the data file.    A copy of the "Faint Source Survey
COMMENT Explanatory Supplement", IPAC preprint, should be used to answer
COMMENT questions about the data in the IRAS Faint Source Catalog.
COMMENT Source catalog reference:  IRAS Faint Source Catalog, Version 1.1,
COMMENT IPAC, 1989 April.
COMMENT This table contains only the point source association fields for each
COMMENT source in the IRAS FSC. The observational data for each source are
COMMENT in table FSC data.  Each association is tagged with the IRAS source name
COMMENT with which it is associated, as well as the sequential record number
COMMENT within table FSC data where the observational data can be found.
COMMENT Field names are identical with the field names given in
COMMENT the IRAS Faint Source Survey Explanatory Supplement.
TTYPE1  = 'NAME    '                     / Source name
TBCOL1  =                              1 / Start column
TFORM1  = 'A11     '                     / Fortran format
TTYPE2  = 'RECNO   '                     / Main data table record number for source
TBCOL2  =                             12 / Start column
TFORM2  = 'I2      '                     / Fortran format
TTYPE3  = 'CATNO   '                     / Catalog number
TBCOL3  =                             19 / Start column
TFORM3  = 'I2      '                     / Fortran format
```

etc.

TABLE V.C.4 Format of FSC Data File for Short FSC Tape (continued)

NOTES:

1 Quantities listed in microfiche version of catalog
2 In the FITS header, these quantities are suffixed by the wavelength. Example: FNU(4) is given as FNU_12, FNU_25, FNU_60, and FNU_100.

TABLE V.C.5. Format of Association Data for FSC Tape

Start Byte	Name	Description	Units	Format
00	NAME[1]	Source Name	—	12A1
12	RECNO[1]	Record No. in main data table	—	I6
18	CATNO[1]	Catalog No.	—	I2
20	SOURCE[1]	Source ID	—	15A1
35	TYPE[1]	Source Type/Spectral Class	—	5A1
40	RADIUS[1]	Radius vector from *IRAS* source to association	Arc Second	I3
43	POS	Position angle from *IRAS* source to association	Degree (East of North)	I3
46	DSTMAJOR	Distance from *IRAS* source to association along the *IRAS* position error major axis	Arc Second	I3
49	DSTMINOR	Distance from *IRAS* source to association along the *IRAS* position error minor axis	Arc Second	I3
52	FIELD1[2]	Object field #1 (magnitude/other)	Catalog dependent	I4
56	FIELD2[2]	Object field #2 (magnitude/other)	Catalog dependent	I4
60	FIELD3	Object field #3 (magnitude/other)	Catalog dependent	I4

1 Quantities listed in printed version of catalog
2 FIELD1 is listed in microfiche version of catalog, except for catalogs 2 and 19, where FIELD2 is listed.

Table V.C.2 gives a sample of the header for the non-association data and Table V.C.3 gives a sample of the header for the association data. Tables V.C.4 (FSC data) and V.C.5 (association data) describe each entry in the short catalog tape. All of this information is contained in the actual FITS headers, but is presented here in an easier-to-read format. Those columns that are also included in the microfiche version are marked. Each catalog entry required 240 bytes of ASCII data for the non-association data and NID $\times$ 64 bytes of ASCII data for the association data. In these tables the column "Format" refers to the length and type of the (FORTRAN) character field used to read or write each entry.

The tape is written with 240-character (ASCII) logical records for the non-association data and with 64-character records for the association data. The number of logical records per physical record is 36 for the headers, 12 for the non-association data, and 45 for the association data. These numbers apply to unblocked files only and should be multiplied by the blocking factors for blocked files.

In general, for quantities that have a value in each wavelength band, subscripts or array indices range from 1 to 4 and refer, respectively, to 12, 25, 60 and 100 μm. A number of the flags discussed below have values in each of the four wavelength bands. For compactness these are encoded into a single base-16 (Hex) digit (values 0-F) in the following manner. The four bits of the hex digit correspond to the four wavelength bands with bit 0 (Least Significant Bit) for 12 μm, bit 1 for 25 μm, bit 2 for 60 μm and bit 3 for 100 μm. The presence of a flag in a band is denoted by setting its bit to 1. Thus a flag set at 12 and 25 μm would have a value of 0011=3(Hex) while a flag set at 25, 60 and 100 μm would have a value of 1110=E (Hex). A flag encoded in this manner will be referred to as "hex-encoded by band".

The remainder of this section discusses individual entries in the catalog.

Source Name: NAME

The *IRAS* source name is derived from its position by combining the hours, minutes and tenths of minutes of right ascension and the sign, degrees and minutes of the declination. In obtaining the minutes of right ascension and declination for the name, the positions were truncated. This quantity is preceded by the letter 'F' to designate a FSC source, and the letter 'Z' to designate a Reject File source. The letters 'A', 'B', 'C', etc., are appended to names of sources so close together that they would otherwise have had identical names. Due to the large number of duplicate sources caused by plate overlap, we have changed the convention used in the PSC and eliminated the 'A' for the first such source with a duplicate name. Names were uniquely assigned to both catalog and reject file sources, including duplicate sources, with catalog sources named first. An example of

TABLE V.C.6 Source Designations for all *IRAS* Catalogs

Catalog	Source Name
Point Source Catalog	*IRAS* 12345-6789
Point Source Reject File	*IRAS* R12345-6789
Small Scale Structure Catalog	*IRAS* X1234-678
Serendipitous Survey Catalog	*IRAS* S12345-678
Faint Source Catalog	*IRAS* F12345-6789
Faint Source Reject File	*IRAS* Z12345-6789

a reference to a FSC source is *IRAS* F12345-6789. Table V.C.6 collects all the various designations for sources in all *IRAS* catalogs.

Position: HOURS, MINUTE, SECOND, DSIGN, DECDEG, DECMIN, DECSEC

Positions are given for the equinox 1950.0 and epoch 1983.5. Hours (HOURS) and minutes (MINUTE) of right ascension are given as integers while seconds (SECOND) are rounded to integer deciseconds. The declination is given as a character sign (DSIGN) followed by integer values of degrees (DECDEG), minutes (DECMIN) and seconds (DECSEC).

Position uncertainty: MAJOR, MINOR, POSANG

As discussed in Section II.F.3, the uncertainty in the position for a source depends primarily on its brightness in the various wavelength bands and the number of sightings. The final uncertainty is expressed as an ellipse whose semimajor (MAJOR) and semi-minor (MINOR) axes are the 1-σ errors given in seconds of arc. The orientation (POSANG) of the ellipse on the sky is expressed in terms of the angle between the major axis of the ellipse and the local equatorial meridian. It is expressed in degrees east of north.

Number of sightings: NDET

The number of individual detector sightings is given.

Flux Density: FNU(4)

Each of the four wavelengths has a *non-color-corrected* flux density in units of Janskys ($1\ Jy = 10^{-26}\ Wm^{-2}Hz^{-1}$). The quality of each flux density is designated by FQUAL (see below).

The flux densities have been calculated assuming an intrinsic source energy distribution such that the flux density f_ν is proportional to ν^{-1}. Corrections to other spectral shapes can be made by consulting Section VI.C in the *Main Supplement* or by the table inside the back cover of this Supplement.

Note that the flux density quoted for some sources could be zero if there were not enough data available to derive a good upper limit (see Sections II.F.4 and III.H).

Flux Density Quality: FQUAL(4)

As described in Section II.F.4, a flux-density measurement can be either high quality (FQUAL=3), moderate quality (FQUAL=2) or an upper limit (FQUAL=1).

Flux Density Uncertainties: RELUNC(4)

Each flux-density measurement other than an upper limit has an associated uncertainty expressed as a 1-σ value in units of $100 \times \frac{\delta f_\nu}{f_\nu}$. Uncertainties are discussed in Sections II.F.4 and III.F.

Signal-to-Noise Ratios: MEDSNR(4), LOCSNR(4), NOISCOR (4)

The SNR is calculated in two different ways. The median SNR (MEDSNR) is calculated through the use of a median noise calculated over an area of roughly $15' \times 15'$ (and corrected by NOISCOR, the NCF), which is accurate to $\sim 8\%$ (see Section III.A.4). This median SNR is referred to simply as SNR elsewhere in this document. The local SNR (LOCSNR) is calculated using the noise for the pixel containing the peak flux density of the source (see Section II.C.4).

Area of source: AREA(4)

The area of each source is calculated as the number of contiguous pixels with flux density above three times the noise after possible rethresholding.

Confusion: CONFUSE, CATNBR, EXTNBR(4)

As described in Section II.F.5, the bandmerger attempted to identify sources that were confused with neighboring sources in one or more bands. The CONFUSE flag is set in a given band if any instance of confusion was present in that band.

Other indicators of possible confusion are given by CATNBR and EXTNBR. CATNBR gives the number of nearby catalog sources within a radius of $6'$. EXTNBR gives for each band the number of extractions within a radius of $6'$.

Cirrus Indicator: CIRRUS

Over nearly the entire sky, portions of the FSS plates are affected by the infrared cirrus. Cirrus can seriously hamper efforts to extract point sources from the data and can also produce structure on a point source scale that can masquerade as true point sources. The CIRRUS flag gives the number of 100 μm-only sources in the extraction database within a radius of $30'$. It is a fairly good discriminant that warns the user that cirrus which contains structure on a point source scale is present in a given region. Values above 2 usually indicate contamination.

Minimum reliability: MINREL

The minimum reliability for a source is the maximum of the reliability calculated individually for each band. See Section III.D for more information.

Positional Associations: NID, IDTYPE, CATNO, SOURCE, TYPE, RADIUS, DSTMINOR, DSTMAJOR, POS, FIELD1-3

Much of the utility of the FSC comes from the association of infrared objects with sources known to exist from other astronomical catalogs. As described in Section II.G, a large number of catalogs have been searched for positional matches. The total number of matches found is given by NID. Each match results in a 64-character decription which is placed in a separate association file in order to conform to the FITS catalog format.

IDTYPE ranges from 1 to 15 and states whether an association was found in an extragalactic catalog (bit 0), a stellar catalog (bit 1), catalogs with other types of objects (bit 2) or in a catalog with mixed types (bit 3). Note that this differs from the convention used in previous *IRAS* data products where only the total of the association types was given. For example, if associations were found to both an extragalactic catalog and a stellar catalog the IDTYPE was 'multiple'. We are now preserving the information as to which type of catalogs were matched.

SOURCE is the name of the object in that catalog and TYPE its character or spectral type, if available. A vector is drawn from the *IRAS* position to the associated object. RADIUS is the length of that vector in arcseconds. POS is the angle between the vector and the local equatorial meridian expressed in degrees east of north. DSTMAJOR is the distance from the *IRAS* source to the associated object along the major axis of the positional uncertainty ellipse of the *IRAS* source and DSTMINOR is the similar distance along the minor axis.

Three fields (FIELD1-3) have values depending on the catalog in question (Table II.G.6). Typically, FIELD1,2 are magnitudes (in decimag) and FIELD3 a size.

D. The Explanatory Supplement

This Explanatory Supplement is available as a set of ASCII files in $\TeX$ format on floppy disks, with each chapter or section, depending on length, in a separate file.

Authors:

T. Chester and M. Moshir

83-004A-01i

D-82667

C-28029

```
$NOP
$NOP
$NOP
$NOP ==================================== LIST OF GOUT1
$EXE TPLIST BS

INPUT PARAMETERS ARE:  AS SR=1=1 2 1 1

 TAPE NO.   1             FILE NO.   1
 RECORD   1               LENGTH   28800
SIMPLE  =                        T / Standard FITS format                        BITPIX  =
           8 / Character data                              NAXIS   =                       0 / No im
age data array present                   EXTEND  =                    T / There may be standard ex
tensions                BLOCKED =                    T / Tape may be blocked to multiples of 2880
    END




          XTENSION= 'TABLE   '           / Table extension                                   BITPIX  =
                     8 / Character data                             NAXIS   =
2 / Simple 2-D matrix                          NAXIS1  =                   240 / Number of chara
cters per record              NAXIS2  =                 173044 / Number of records in the file
           PCOUNT  =                      0 / No "random" parameters                         GCOUNT
  =                      1 / Only one group                            TFIELDS =
  58 / Number of data fields per record               EXTNAME = 'FSC_DATA'           / IRAS Faint
Source Catalog - main data file     AUTHOR  = 'IPAC     '            / Infrared Processing and Analys
is Center          REFERENC= 'Version 2.0'          / Catalog reference                          DA
TE     = '12/09/9 '              / Date file was generated (dd/mm/yy)
                                                       COMMENT This FITS header is NOT a comple
te scientific document for the subject  COMMENT catalog.  It serves only as a minimal description o
f the general          COMMENT format and structure of the data file.
                                                                              COMMENT A copy of
 "Explanatory Supplement to the Faint Source Survey",         COMMENT Version 2, should be used to
 answer questions about the data           COMMENT in the FSC.

       COMMENT Names which refer to each of the four IRAS bands of 12, 25, 60 and       COMMENT 100 m
icrons are suffixed with the numerals 12, 25, 60 and 100.          COMMENT For example FNU_12 is th
e flux density at 12 microns.
                                    TTYPE1  = 'NAME    '            / Source name
          TBCOL1  =                      1 / Start column                                 TFORM1  =
 'A12     '         / Fortran format
                                                       TTYPE2  = 'RAHR    '            / Hours RA, equi
nox 1950.0, epoch 1983.5         TBCOL2  =                     13 / Start column
          TFORM2  = 'I2      '             / Fortran format                                    TUNIT
```

```
TTYPE3  = 'RAMIN   '                       / Minutes RA
, equinox 1950.0, epoch 1983.5      TBCOL3  =                   15 / Start column
                   TFORM3  = 'I2      '                / Fortran format                  T
UNIT3   = 'MIN     '               / Units are minutes of time
                                                              TTYPE4  = 'RASEC   '             / Second
s RA, equinox 1950.0, epoch 1983.5      TBCOL4  =                   17 / Start column
                      TFORM4  = 'I3      '               / Fortran format
  TUNIT4  = 'SEC     '                / Units are deci-seconds of time
                                                                 TTYPE5  = 'DECSGN '             / Si
gn of DEC, equinox 1950.0, epoch 1983.5      TBCOL5  =                   20 / Start column
                         TFORM5  = 'A1      '               / Fortran format
                                                                                    TTYPE6  = 'D
ECDEG  '              / Degrees DEC, equinox 1950.0, epoch 1983.5      TBCOL6  =                   21
/ Start column                               TFORM6  = 'I2      '               / Fortran format
                            TUNIT6  = 'DEG     '                / Units are degrees
                                                                                       TTYPE7
= 'DECMIN  '              / Minutes DEC, equinox 1950.0, epoch 1983.5      TBCOL7  =
 23 / Start column                               TFORM7  = 'I2      '               / Fortran forma
t                                TUNIT7  = 'ARCMIN  '                / Units are minutes of arc
                                                                                          TTYP
E8  = 'DECSEC  '              / Seconds DEC, equinox 1950.0, epoch 1983.5      TBCOL8  =
    25 / Start column                               TFORM8  = 'I2      '               / Fortran f
ormat                               TUNIT8  = 'ARCSEC  '                / Units are seconds of arc

TTYPE9  = 'UNCMAJOR'              / Uncertainty ellipse major axis                TBCOL9  =
        27 / Start column                               TFORM9  = 'I3      '               / Fortr
an format                              TUNIT9  = 'ARCSEC  '                / Units are seconds of arc

    TTYPE10 = 'UNCMINOR'              / Uncertainty ellipse minor axis                TBCOL10 =
            30 / Start column                               TFORM10 = 'I3      '               / F
ortran format                              TUNIT10 = 'ARCSEC  '                / Units are seconds of
 arc
        TTYPE11 = 'POSANG  '              / Uncertainty ellipse position angle                TBCOL11 =
                33 / Start column                               TFORM11 = 'I3      
 / Fortran format                              TUNIT11 = 'DEG     '                / Units are degree
s                              COMMENT POSANG (field 11) is measured in degrees East of North betwe
en the      COMMENT major axis of the ellipse and the local equatorial meridian.
                                                                              TTYPE12 = 'NOBS_12 '
     / Number of times observed at 12 mu              TBCOL12 =                   36 / Start column
                                   TFORM12 = 'I3      '               / Fortran format
                TNULL12 = '        '               / Null value                                   COM
MENT NOBS is NULL when the corresponding band is an upper limit              COMMENT (FQUAL = 1).

                                         TTYPE13 = 'NOBS_25 '             / Number of times observed at
 25 mu              TBCOL13 =                   39 / Start column
 TFORM13 = 'I3      '               / Fortran format                                   TNULL13 = '
 '            / Null value
                                          TTYPE14 = 'NOBS_60 '             / Number of times observe
d at 60 mu              TBCOL14 =                   42 / Start column
     TFORM14 = 'I3      '               / Fortran format                                   TNULL14 = '
     '            / Null value
                                             TTYPE15 = 'NOBS_100'             / Number of times obs
erved at 100 mu              TBCOL15 =                   45 / Start column
         TFORM15 = 'I3      '               / Fortran format                                   TNULL15 =
'        '            / Null value
                                                TTYPE16 = 'FNU_12  '             / Non-color corre
cted flux density at 12 mu              TBCOL16 =                   48 / Start column
             TFORM16 = 'E9.3    '               / Fortran format                                   TUNIT1
6 = 'JANSKY  '              / Units are Janskys                              TNULL16 = '        '
    / Null value                              COMMENT FNU is only NULL in the rare instanc
e when there is insufficient        COMMENT information available to make a good estimate of the up
per limit.                                                                                          TT
YPE17 = 'FNU_25  '              / Non-color corrected flux density at 25 mu              TBCOL17 =
         57 / Start column                               TFORM17 = 'E9.3    '               / Fortran
 format                              TUNIT17 = 'JANSKY  '                / Units are Janskys
```

REQ. AGENT

JAR

ACQ. AGENT

WHW

IRAS
HCON-1, 2, 3
SKY PLATE IMAGES

83-004A-01j ASIR-00067

This data set consists of 20 magnetic tapes. These tapes are 6250 BPI, 9 track. The number of files and sky plates on each tape are listed below. Each image consists of 8 data files, ie. 8 images on one tape would result in 88 data files on the tape. The first several records of each file contain the header, and then the image appears. The header records are ASCII formatted, and the image records are binary formatted. These image tapes are all in FITS (Flexible Image Transport System) Format. These tapes were created on an IBM 3032 computer. The D and C numbers, files, and the skyplates contained on each tape are as follows:

D#	C#	FILES	SKYPLATES
D-80381	C-27699	88	1-11
D-80382	C-27700	88	12-22
D-80383	C-27701	88	23-33
D-80384	C-27702	80	34-42,45
D-80385	C-27703	96	44-55
D-80386	C-27704	88	56-66
D-80387	C-27705	88	67-77
D-80388	C-27706	80	78-87
D-80389	C-27707	88	88-98
D-80390	C-27708	88	99-109
D-80391	C-27709	88	110-120
D-80392	C-27710	88	121-131
D-80393	C-27711	88	132-142
D-80394	C-27712	96	143-154
D-80395	C-27713	88	155-165
D-80396	C-27714	88	166-176
D-80397	C-27715	88	177-187
D-80398	C-27716	96	188-199
D-80399	C-27717	72	200-208
D-80400	C-27718	32	209-212

83-004A-01j

CALIFORNIA INSTITUTE OF TECHNOLOGY

INFRARED PROCESSING AND ANALYSIS CENTER 100-22

May 18, 1988

TO: Distribution
FROM: Gaylin Laughlin

Enclosed is your copy of the best color negatives from the three HCON Skyflux plates. This set of negatives was made by determining which HCON had the best coverage for each plate. Nothing new has been done to the 1984-1986 data that went into these images. The internal dates on the image labels are the original processing dates. Therefore, they vary from September, 1984 through January, 1988. This is the final deliverable from the Skyflux project. If you have any problems with these images or need more information on them, please feel free to contact Nick Gautier or me.

DISTRIBUTION:

T. Chester
H. Habing
G. Squibb
B. Stewart
W. Warren

03 JUN 1988

Acknowledged to Laughlin and Gautier via BITnet, 6/3/88. WHW

JPL 6304 HCON-3 60 MICRON FIELD 1 — IMAGE #

JPL 6305 HCON-3 60 MICRON FIELD 2

JPL 6306 HCON-3 60 MICRON FIELD 3

JPL 6307 HCON-3 60 MICRON FIELD 4

JPL 6308 HCON-3 60 MICRON FIELD 5

JPL 6309 HCON-3 60 MICRON FIELD 6

JPL 6310 HCON-3 60 MICRON FIELD 7

JPL 6311 HCON-3 60 MICRON FIELD 8

JPL 6312 HCON-3 60 MICRON FIELD 9

JPL 6313 HCON-3 60 MICRON FIELD 10

JPL 6314 HCON-3 60 MICRON FIELD 11

JPL 6315 HCON-3 60 MICRON FIELD 12

JPL 6316 HCON-3 60 MICRON FIELD 13

JPL 6317 HCON-3 60 MICRON FIELD 14

JPL 6318 HCON-3 60 MICRON FIELD 15

JPL 6319 HCON-3 60 MICRON FIELD 16

JPL 6320 HCON-3 60 MICRON FIELD 17

JPL 6321 HCON-3 60 MICRON FIELD 18

JPL 6322 HCON-3 60 MICRON FIELD 19

JPL 6323 HCON-1 60 MICRON FIELD 20

JPL 6324 HCON-1 60 MICRON FIELD 21

JPL 6325 HCON-1 60 MICRON FIELD 22

JPL 6326 HCON-2 60 MICRON FIELD 23

JPL 6327 HCON-2 60 MICRON FIELD 24

JPL 6328 HCON-3 60 MICRON FIELD 25

JPL 6329 HCON-1 60 MICRON FIELD 26

JPL 6330 HCON-2 60 MICRON FIELD 27

JPL 6331 HCON-1 60 MICRON FIELD 28

JPL 6332 HCON-3 60 MICRON FIELD 29

JPL 6333 HCON-3 60 MICRON FIELD 30

JPL 6334 HCON-3 60 MICRON FIELD 31

JPL 6335 HCON-3 60 MICRON FIELD 32

JPL 6336 HCON-3 60 MICRON FIELD 33

JPL 6337 HCON-1 60 MICRON FIELD 34

JPL 6338 HCON-2 60 MICRON FIELD 35

JPL 6339 HCON-3 60 MICRON FIELD 36

JPL 6340 HCON-1 60 MICRON FIELD 37

JPL 6341 HCON-1 60 MICRON FIELD 38

JPL 6342 HCON-1 60 MICRON FIELD 39

JPL 6343 HCON-2 60 MICRON FIELD 40

JPL 6344 HCON-3 60 MICRON FIELD 41

JPL 6345 HCON-3 60 MICRON FIELD 42

JPL 6346 HCON-3 60 MICRON FIELD 45

JPL 6347 HCON-1 60 MICRON FIELD 44

JPL 6348 HCON-1 60 MICRON FIELD 45

JPL 6349 HCON-1 60 MICRON FIELD 46

JPL 6350 HCON-2 60 MICRON FIELD 47

JPL 6351 HCON-1 60 MICRON FIELD 48

JPL 6352 HCON-2 60 MICRON FIELD 49

JPL 6353 HCON-3 60 MICRON FIELD 50

JPL 6354 HCON-3 60 MICRON FIELD 51

JPL 6355 HCON-2 60 MICRON FIELD 52

JPL 6356 HCON-3 60 MICRON FIELD 53

JPL 6357 HCON-3 60 MICRON FIELD 54

JPL 6358 HCON-3 60 MICRON FIELD 55

JPL 6359 HCON-2 60 MICRON FIELD 56

JPL 6360 HCON-3 60 MICRON FIELD 57

JPL 6361 HCON-1 60 MICRON FIELD 58

JPL 6362 HCON-2 60 MICRON FIELD 59

JPL 6363 HCON-1 60 MICRON FIELD 60

PL 6364 HCON-2 60 MICRON FIELD 61

PL 6365 HCON-1 60 MICRON FIELD 62

PL 6366 HCON-1 60 MICRON FIELD 63

PL 6367 HCON-3 60 MICRON FIELD 64

PL 6368 HCON-3 60 MICRON FIELD 65

PL 6369 HCON-3 60 MICRON FIELD 66

PL 6370 HCON-3 60 MICRON FIELD 67

PL 6371 HCON-1 60 MICRON FIELD 68

PL 6372 HCON-1 60 MICRON FIELD 69

PL 6373 HCON-1 60 MICRON FIELD 70

PL 6374 HCON-1 60 MICRON FIELD 71

PL 6375 HCON-2 60 MICRON FIELD 72

PL 6376 HCON-1 60 MICRON FIELD 73

PL 6377 HCON-3 60 MICRON FIELD 74

PL 6378 HCON-3 60 MICRON FIELD 75

PL 6379 HCON-2 60 MICRON FIELD 76

PL 6380 HCON-3 60 MICRON FIELD 77

PL 6381 HCON-3 60 MICRON FIELD 78

PL 6382 HCON-2 60 MICRON FIELD 79

PL 6383 HCON-2 60 MICRON FIELD 80

PL 6384 HCON-3 60 MICRON FIELD 81

PL 6385 HCON-2 60 MICRON FIELD 82

PL 6386 HCON-2 60 MICRON FIELD 83

PL 6387 HCON-2 60 MICRON FIELD 84

PL 6388 HCON-1 60 MICRON FIELD 85

PL 6389 HCON-3 60 MICRON FIELD 86

PL 6390 HCON-3 60 MICRON FIELD 87

PL 6391 HCON-3 60 MICRON FIELD 88

PL 6392 HCON-3 60 MICRON FIELD 89

PL 6393 HCON-3 60 MICRON FIELD 90

PL 6394 HCON-3 60 MICRON FIELD 91

PL 6395 HCON-1 60 MICRON FIELD 92

PL 6396 HCON-1 60 MICRON FIELD 93

PL 6397 HCON-1 60 MICRON FIELD 94

PL 6398 HCON-1 60 MICRON FIELD 95

PL 6399 HCON-2 60 MICRON FIELD 96

PL 6400 HCON-1 60 MICRON FIELD 97

PL 6401 HCON-2 60 MICRON FIELD 98

PL 6402 HCON-3 60 MICRON FIELD 99

PL 6403 HCON-2 60 MICRON FIELD 100

PL 6404 HCON-3 60 MICRON FIELD 101

PL 6405 HCON-3 60 MICRON FIELD 102

PL 6406 HCON-1 60 MICRON FIELD 103

PL 6407 HCON-3 60 MICRON FIELD 104

PL 6408 HCON-1 60 MICRON FIELD 105

PL 6409 HCON-2 60 MICRON FIELD 106

PL 6410 HCON-1 60 MICRON FIELD 107

PL 6411 HCON-2 60 MICRON FIELD 108

PL 6412 HCON-1 60 MICRON FIELD 109

PL 6413 HCON-3 60 MICRON FIELD 110

PL 6414 HCON-1 60 MICRON FIELD 111

PL 6415 HCON-3 60 MICRON FIELD 112

PL 6416 HCON-3 60 MICRON FIELD 113

PL 6417 HCON-1 60 MICRON FIELD 114

PL 6418 HCON-1 60 MICRON FIELD 115

PL 6419 HCON-2 60 MICRON FIELD 116

PL 6420 HCON-1 60 MICRON FIELD 117

PL 6421 HCON-2 60 MICRON FIELD 118

PL 6422 HCON-1 60 MICRON FIELD 119

PL 6423 HCON-2 60 MICRON FIELD 120

PL 6424	HCON-1	60 MICRON	FIELD 121
PL 6425	HCON-1	60 MICRON	FIELD 122
PL 6426	HCON-3	60 MICRON	FIELD 123
PL 6427	HCON-3	60 MICRON	FIELD 124
PL 6428	HCON-3	60 MICRON	FIELD 125
PL 6429	HCON-3	60 MICRON	FIELD 126
PL 6430	HCON-3	60 MICRON	FIELD 127
PL 6431	HCON-3	60 MICRON	FIELD 128
PL 6432	HCON-1	60 MICRON	FIELD 129
PL 6433	HCON-1	60 MICRON	FIELD 130
PL 6434	HCON-1	60 MICRON	FIELD 131
PL 6435	HCON-2	60 MICRON	FIELD 132
PL 6436	HCON-1	60 MICRON	FIELD 133
PL 6437	HCON-2	60 MICRON	FIELD 134
PL 6438	HCON-1	60 MICRON	FIELD 135
PL 6439	HCON-3	60 MICRON	FIELD 136
PL 6440	HCON-3	60 MICRON	FIELD 137
PL 6441	HCON-1	60 MICRON	FIELD 138
PL 6442	HCON-3	60 MICRON	FIELD 139
PL 6443	HCON-2	60 MICRON	FIELD 140
PL 6444	HCON-1	60 MICRON	FIELD 141
PL 6445	HCON-1	60 MICRON	FIELD 142
PL 6446	HCON-1	60 MICRON	FIELD 143
PL 6447	HCON-1	60 MICRON	FIELD 144
PL 6448	HCON-2	60 MICRON	FIELD 145
PL 6449	HCON-3	60 MICRON	FIELD 146
PL 6450	HCON-3	60 MICRON	FIELD 147
PL 6451	HCON-3	60 MICRON	FIELD 148
PL 6452	HCON-3	60 MICRON	FIELD 149
PL 6453	HCON-3	60 MICRON	FIELD 150

PL 6454	HCON-1	60 MICRON	FIELD 151
PL 6455	HCON-3	60 MICRON	FIELD 152
PL 6456	HCON-1	60 MICRON	FIELD 153
PL 6457	HCON-1	60 MICRON	FIELD 154
PL 6458	HCON-2	60 MICRON	FIELD 155
PL 6459	HCON-1	60 MICRON	FIELD 156
PL 6460	HCON-2	60 MICRON	FIELD 157
PL 6461	HCON-1	60 MICRON	FIELD 158
PL 6462	HCON-3	60 MICRON	FIELD 159
PL 6463	HCON-3	60 MICRON	FIELD 160
PL 6464	HCON-3	60 MICRON	FIELD 161
PL 6465	HCON-1	60 MICRON	FIELD 162
PL 6466	HCON-3	60 MICRON	FIELD 163
PL 6467	HCON-3	60 MICRON	FIELD 164
PL 6468	HCON-2	60 MICRON	FIELD 165
PL 6469	HCON-1	60 MICRON	FIELD 166
PL 6470	HCON-1	60 MICRON	FIELD 167
PL 6471	HCON-1	60 MICRON	FIELD 168
PL 6472	HCON-2	60 MICRON	FIELD 169
PL 6473	HCON-3	60 MICRON	FIELD 170
PL 6474	HCON-3	60 MICRON	FIELD 171
PL 6475	HCON-3	60 MICRON	FIELD 172
PL 6476	HCON-3	60 MICRON	FIELD 173
PL 6477	HCON-3	60 MICRON	FIELD 174
PL 6478	HCON-1	60 MICRON	FIELD 175
PL 6479	HCON-1	60 MICRON	FIELD 176
PL 6480	HCON-1	60 MICRON	FIELD 177
PL 6481	HCON-3	60 MICRON	FIELD 178
PL 6482	HCON-3	60 MICRON	FIELD 179
PL 6483	HCON-3	60 MICRON	FIELD 180

PL 6484 HCON-3 60 MICRON FIELD 181

PL 6485 HCON-3 60 MICRON FIELD 182

PL 6486 HCON-2 60 MICRON FIELD 183

PL 6487 HCON-3 60 MICRON FIELD 184

PL 6488 HCON-3 60 MICRON FIELD 185

PL 6489 HCON-1 60 MICRON FIELD 186

PL 6490 HCON-1 60 MICRON FIELD 187

PL 6491 HCON-2 60 MICRON FIELD 188

PL 6492 HCON-2 60 MICRON FIELD 189

PL 6493 HCON-2 60 MICRON FIELD 190

PL 6494 HCON-3 60 MICRON FIELD 191

PL 6495 HCON-3 60 MICRON FIELD 192

PL 6496 HCON-3 60 MICRON FIELD 193

PL 6497 HCON-3 60 MICRON FIELD 194

PL 6498 HCON-3 60 MICRON FIELD 195

PL 6499 HCON-3 60 MICRON FIELD 196

PL 6500 HCON-3 60 MICRON FIELD 197

PL 6501 HCON-3 60 MICRON FIELD 198

PL 6502 HCON-3 60 MICRON FIELD 199

PL 6503 HCON-1 60 MICRON FIELD 200

PL 6504 HCON-2 60 MICRON FIELD 201

PL 6505 HCON-1 60 MICRON FIELD 202

PL 6506 HCON-3 60 MICRON FIELD 203

PL 6507 HCON-3 60 MICRON FIELD 204

PL 6508 HCON-3 60 MICRON FIELD 205

PL 6509 HCON-3 60 MICRON FIELD 206

PL 6510 HCON-3 60 MICRON FIELD 207

PL 6511 HCON-3 60 MICRON FIELD 208

PL 6512 HCON-3 60 MICRON FIELD 209

PL 6513 HCON-3 60 MICRON FIELD 210

PL 6514 HCON-3 60 MICRON FIELD 211

PL 6515 HCON-3 60 MICRON FIELD 212

(1) 1 – 11 (1)

IRAS HCON – BEST OF (3)

ID – 83 – 004A – 01j (small letter – j)

D – 80381

```
$NOP
$NOP ****************************** LIST OF JOUT1 ******************************
$EXE TPLIST BS

INPUT PARAMETERS ARE:  AS SR=1=1 1 1 1

TAPE NO.  1              FILE NO.  1
 RECORD   1              LENGTH   2880
SIMPLE  =                    T          / STANDARD FITS FORMAT                  BITPIX  =
       32           / 4-BYTE TWOS-COMPL INTEGERS             NAXIS   =                 3
  / NUMBER OF AXES                              NAXIS1  =                495         / # SAMPLES PER L
INE (FASTEST VARY NDEX)NAXIS2  =                    503              / # LINES OF DATA IN IMAGE FILE
    NAXIS3  =                    1           / # WAVELENGTHS                          BSCALE  =
   5.452386E-02           / TRUE=TAPE*BSCALE+BZERO                     BZERO   =                0.0
    /                                           BUNIT   = 'JY/SR    '                          / INTENSITY
                   BLANK   =            -2000000000          / TAPE VALUE FOR EMPTY PIXEL
       CRVAL1  =                   0.0            / RA AT ORIGIN (DEGREES)                CRPIX1  =
               247.           / SAMPLE AXIS ORIGIN (PIXEL)             CTYPE1  = 'RA---TAN'
        / DECREASES IN VALUE AS SAMPLE INDEX    COMMENT                                      INCREAS
ES  (GNOMONIC PROJECTION)       CDELT1  =           -3.333333E-02           / COORD VALUE INCREMENT DEG/
PIXEL       COMMENT                                    AT ORIGIN ON SAMPLE AXIS                   CRVAL2
 =                90.00          / DEC AT ORIGIN (DEGREES)             CRPIX2  =
252.         / LINE AXIS ORIGIN (PIXEL)                CTYPE2  = 'DEC--TAN'                          / DEC
REASES IN VALUE AS LINE INDEX      COMMENT                                    INCREASES  (GNOMONIC P
ROJECTION)      CDELT2  =          -3.333333E-02           / COORD VALUE INCREMENT DEG/PIXEL         COM
MENT                                    AT ORIGIN ON LINE AXIS                   CRVAL3  =
 1.2E-05          / WAVELENGTH IN METERS                  CRPIX3  =                         1.
                                        CTYPE3  = 'LAMBDA  '
                CDELT3  =                        0.
 DATAMAX  =            5.452386E+07           / JY/SR  (TRUE VALUE)                   DATAMIN  =
1.183215E+07              / JY/SR  (TRUE VALUE)                    EPOCH   =                  1950.
    / EME50                                 DATE-MAP= '01/11/84'                             / MAP RELEASE DA
TE (DD/MM/YY)               DATE    = '14/03/86'                             / DATE THIS TAPE WRITTEN (DD/MM/YY)
     ORIGIN  = 'JPL-IRAS'                            / INSTITUTION                            TELESCOP= 'IRA
S     '                                                           INSTRUME= 'SKYPLATE'
       / IRAS SKY PLATE                             OBJECT  = 'PL001 H3'                          / PLATE NUMB
ER / HCON                   PROJTYPE= 'GNOMONIC'                          / PROJECTION TYPE


***** JOB DONE.
$EXE TPLIST BS

INPUT PARAMETERS ARE:  AS SR=1=1 1 1 88

TAPE NO.  1              FILE NO.  88
 RECORD   1              LENGTH   2880
SIMPLE  =                    T          / STANDARD FITS FORMAT                  BITPIX  =
       16           / 2-BYTE TWOS-COMPL INTEGERS             NAXIS   =                 3
  / NUMBER OF AXES                              NAXIS1  =                503         / # SAMPLES PER L
INE (FASTEST VARY NDEX)NAXIS2  =                    500              / # LINES OF DATA IN IMAGE FILE
    NAXIS3  =                    1           / # WAVELENGTHS                          BSCALE  =
   8.118397E-02           / TRUE=TAPE*BSCALE+BZERO                     BZERO   =                0.0
    /                                           BUNIT   = '        '                          / STATISTICAL
 WEIGHT            BLANK   =                      0          / TAPE VALUE FOR EMPTY PIXEL
       CRVAL1  =                324.00            / RA AT ORIGIN (DEGREES)                CRPIX1  =
               252.           / SAMPLE AXIS ORIGIN (PIXEL)             CTYPE1  = 'RA---TAN'
        / DECREASES IN VALUE AS SAMPLE INDEX    COMMENT                                      INCREAS
ES  (GNOMONIC PROJECTION)       CDELT1  =           -3.333333E-02           / COORD VALUE INCREMENT DEG/
PIXEL       COMMENT                                    AT ORIGIN ON SAMPLE AXIS                   CRVAL2
 =                75.00          / DEC AT ORIGIN (DEGREES)             CRPIX2  =
250.         / LINE AXIS ORIGIN (PIXEL)                CTYPE2  = 'DEC--TAN'                          / DEC
REASES IN VALUE AS LINE INDEX      COMMENT                                    INCREASES  (GNOMONIC P
ROJECTION)      CDELT2  =          -3.333333E-02           / COORD VALUE INCREMENT DEG/PIXEL         COM
MENT                                    AT ORIGIN ON LINE AXIS                   CRVAL3  =
```

```
CDELT3  =                    ).
DATAMAX =         2.597889E+03          / DIMENSIONLESS                                         DATAMIN =
8.118397E-02           / DIMENSIONLESS                                EPOCH    =                         1950.
   / EME50                                              DATE-MAP= '01/11/84'                    / MAP RELEASE DA
TE (DD/MM/YY)            DATE     = '14/03/86'                              / DATE THIS TAPE WRITTEN (DD/MM/YY)
     ORIGIN  = 'JPL-IRAS'                          / INSTITUTION                                     TELESCOP= 'IRA
     '                                                                      INSTRUME= 'SKYPLATE'
     / IRAS SKY PLATE                               OBJECT   = 'PL011 H3'                       / PLATE NUMB
ER / HCON                        PROJTYPE= 'GNOMONIC'                       / PROJECTION TYPE

***** JOB DONE.
$WEO LPS

$$
```

REQ. AGENT	RAND No.	ACQ. AGENT
JPB		MEV

IRAS

2 ARC MIN ZODIACAL HISTORY FILE

83-004A-01k ASIR-00068

This data set consists of 7 magnetic tapes. These tapes are 6250 bpi, ASCII, AND 9 track. The D and C numbers, number of files and the SOP's contained on each tape are as follows:
The rec = 120 bytes, blocksize = 200 logical records or 16000 bytes

D#	C#	FILES	SOP
D-80511	C-27800	81	29 - 109
D-80512	C-27801	81	110 - 190
*D-80513	C-27802	85	191 - 275
D-80514	C-27803	81	276 - 356
D-80515	C-27804	82	357 - 438
D-80516	C-27805	77	439 - 515
D-80517	C-27806	85	516 - 600

* Three records were delete ~~for~~ from file 3 (records 5,12,and 19) due to parity errors. Replacement tape has been ordered.

83-004A-01K

INFRARED PROCESSING AND ANALYSIS CENTER

California Institute of Technology 100-22
Pasadena, California 91125

May 18, 1990

Dr. Wayne Warren
NSSDC
Goddard Space Flight Center
Mail Code 633.8
Greenbelt, MD 20771

Dear Wayne:

Enclosed are 7 unlabeled 6250-bpi tapes containing the 2' in-scan x 30' cross-scan resolution Zodiacal History File (2' ZOHF). This is a new ZOHF product generated at IPAC in conjunction with the Guest Investigator program for the purpose of studying the zodiacal bands. The interested investigators (Mark Sykes, Stanley Dermott, and Phillip Nicholson) have checked out the product to their satisfaction, but only a minimal checkout has been done here at IPAC.

The SOPs are divided among the tapes as follows:

TAPE	SOP RANGE
1	29 - 109
2	110 - 190
3	191 - 275
4	276 - 356
5	357 - 438
6	439 - 515
7	516 - 600

JUN 01 1990
rec'd 7x2400' BASF GOLD tapes in straps, no strips, no bumpers, no rings.

818 584-2902 Fax 584-9945

The record format is as follows:

2' IN-SCAN ZODIACAL HISTORY FILE

BYTE	NAME	DESCRIPTION	UNITS	TYPE
1	NSOP	SOP Number	--	I3
4	NOBS	OBS Number	--	I3
7	NUTCS	Time UTCS	centisec	I10
17	INCL	Inclination	degrees	F6.2
23	ELONG	Elongation	degrees	F6.2
29	BETA	Ecliptic Latitude	degrees	F6.2
35	LAMBDA	Ecliptic Longitude	degrees	F6.2
41	INU_12(1)	12 μm Intensity (1st sample)	Jy/sr	E10.4
51	INU_12(2)	12 μm Intensity (2nd sample)	Jy/sr	E10.4
61	INU_25(1)	25 μm Intensity (1st sample)	Jy/sr	E10.4
71	INU_25(2)	25 μm Intensity (2nd sample)	Jy/sr	E10.4
81	INU_60(1)	60 μm Intensity (1st sample)	Jy/sr	E10.4
91	INU_60(2)	60 μm Intensity (2nd sample)	Jy/sr	E10.4
101	INU_100(1)	100 μm Intensity (1st sample)	Jy/sr	E10.4
111	INU_100(2)	100 μm Intensity (2nd sample)	Jy/sr	E10.4

The normal time interval between records is one second (rather than eight seconds), and 2 sets of intensities are contained in each record. This is the one format difference from the standard ZOHF: eight (rather than four) intensities are given per record. The time and positions (INCL, ELONG, LAMBDA, BETA) describe the first set of data samples (INU_12(1), INU_25(1), INU_60(1), INU_100(1)) in the record. The second set of data samples is located halfway between the position given in the current record and the position given in the next record, except for the case of data gaps. When a data gap exists, the position of the second set of intensities must be extrapolated using the position of the previous record. As in the latest versions of the standard ZOHF (3.0 and 3.1), the NUTCS is given in centiseconds (rather than seconds). A description of the time given in this (and all other) ZOHF products will appear in Explanatory Supplement to the Improved IRAS Low and Medium Resolution Sky Intensity Products.

The 2' ZOHF has the highest in-scan resolution obtainable by simple boxcar filtering of the Compressed Detector Data (CMDD), which is used to produce all the ZOHF products. The cross-scan dimension, 30', has not been changed.

Sincerely,

Carol Oken Tom

Carol Oken Tom Chester

Enclosures

cc (w/tapes):	IPAC Library	(w/o tapes):	IPAC
	D. Giaretta		S. Dermott
	D. Goorvitch		C. Heiles
	F. Gillett		G. Neugebauer
	H. Habing		P. Nicholson
	M. Hauser		M. Sykes
	J. Houck		R. Walker
	F. Low		M. Werner
	M. Rowan-Robinson		E. Young
	T. Soifer		

FILE 1 RECORD 1 24000 BYTES

83-004A-01k D-80511

29 16645806527 83.63101.16 77.17110.041.3437E+071.3433E+072.7646E+072.7643E+079.0103E+069.0607E+068.0114E+068.0173E+06 29 1664580
6627 83.57101.16 77.14109.791.3437E+071.3425E+072.7530E+072.7504E+079.0591E+069.0370E+068.1152E+068.0220E+06 29 16645806727 83.5010
1.16 77.10109.541.3322E+071.3327E+072.7582E+072.7551E+079.0103E+069.0430E+067.9659E+067.8979E+06 29 16645806827 83.44101.16 77.0710
9.301.3403E+071.3409E+072.7493E+072.7470E+079.0531E+069.0143E+067.8682E+067.9159E+06 29 16645806927 83.37101.16 77.04109.051.3264E+
071.3311E+072.7562E+072.7446E+079.0605E+069.1074E+067.8654E+067.9066E+06 29 16645807027 83.31101.16 77.00108.811.3263E+071.3258E+07
2.7471E+072.7478E+079.1055E+069.0609E+067.9626E+068.0498E+06 29 16645807127 83.24101.16 76.97108.561.3190E+071.3369E+072.7445E+072.
7731E+079.2692E+061.0559E+078.3122E+061.0306E+07 29 16645807227 83.17101.16 76.94108.321.3295E+071.3185E+072.7636E+072.7507E+071.04
17E+079.3119E+061.0157E+078.4215E+06 29 16645807327 83.11101.16 76.90108.081.3238E+071.3203E+072.7538E+072.7507E+079.2151E+069.1326
E+068.0356E+068.0576E+06 29 16645807427 83.04101.16 76.87107.841.3227E+071.3235E+072.7413E+072.7444E+079.0700E+069.0705E+068.0676E+
068.0246E+06 29 16645807527 82.98101.16 76.84107.601.3194E+071.3257E+072.7521E+072.7442E+079.0931E+069.0665E+067.9706E+067.8497E+06
29 16645807627 82.91101.16 76.80107.371.3249E+071.3229E+072.7423E+072.7479E+079.1707E+069.0586E+067.8420E+067.8010E+06 29 1664580
7727 82.85101.16 76.77107.131.3172E+071.3144E+072.7467E+072.7488E+079.0651E+069.1092E+067.8080E+067.8903E+06 29 16645807827 82.7810
1.16 76.73106.891.3162E+071.3219E+072.7478E+072.7452E+079.1422E+069.1103E+067.9822E+068.0975E+06 29 16645807927 82.72101.16 76.7010
6.661.3190E+071.3191E+072.7396E+072.7390E+079.1324E+069.1728E+068.2466E+068.2659E+06 29 16645808027 82.65101.16 76.66106.431.3196E+
071.3325E+072.7382E+072.7411E+079.1420E+069.1132E+068.2086E+068.1357E+06 29 16645808127 82.59101.16 76.62106.201.3307E+071.3184E+07
2.7457E+072.7498E+079.0767E+069.1197E+068.1667E+068.0774E+06 29 16645808227 82.52101.16 76.59105.971.3156E+071.3193E+072.7449E+072.
7395E+079.1231E+069.1378E+067.8966E+068.0024E+06 29 16645808327 82.46101.16 76.55105.741.3165E+071.3408E+072.7400E+072.7561E+079.17
05E+069.0657E+067.8407E+067.8528E+06 29 16645808427 82.39101.16 76.52105.511.3143E+071.3099E+072.7532E+072.7445E+079.0229E+069.0812
E+067.8183E+067.7410E+06 29 16645808527 82.32101.16 76.48105.291.3093E+071.3074E+072.7497E+072.7488E+079.0355E+069.1242E+067.8413E+
067.8862E+06 29 16645808627 82.26101.16 76.44105.061.3129E+071.3197E+072.7460E+072.7423E+079.1335E+069.0647E+067.7910E+067.8924E+06
29 16645808727 82.19101.16 76.41104.841.3209E+071.3150E+072.7431E+072.7454E+078.9884E+069.0435E+067.8172E+067.8395E+06 29 1664580
8827 82.13101.16 76.37104.621.3107E+071.3174E+072.7427E+072.7367E+079.0295E+069.0422E+067.8994E+067.9326E+06 29 16645808927 82.0610
1.16 76.33104.401.3176E+071.3094E+072.7464E+072.7483E+079.0760E+069.0301E+067.8276E+067.9119E+06 29 16645809027 82.00101.16 76.2910
4.181.3145E+071.3127E+072.7499E+072.7535E+079.0912E+069.0957E+067.9024E+068.0215E+06 29 16645809127 81.93101.16 76.26103.961.3088E+
071.3163E+072.7546E+072.7558E+079.0530E+069.1136E+068.1736E+068.1307E+06 29 16645809227 81.87101.16 76.22103.741.3181E+071.3239E+07
2.7494E+072.7527E+079.0908E+069.1210E+068.1193E+068.0940E+06 29 16645809327 81.80101.16 76.18103.531.3223E+071.3187E+072.7535E+072.
7525E+079.1011E+069.0740E+068.0541E+068.1315E+06 29 16645809427 81.74101.16 76.14103.311.3183E+071.3219E+072.7493E+072.7575E+079.07
86E+069.1486E+068.0068E+068.0186E+06 29 16645809527 81.67101.16 76.10103.101.3220E+071.3312E+072.7519E+072.7529E+079.0919E+069.0609
E+068.0398E+067.9680E+06 29 16645809627 81.61101.16 76.06102.891.3171E+071.3204E+072.7536E+072.7532E+079.0704E+069.1296E+068.0672E+
068.0862E+06 29 16645809727 81.54101.16 76.02102.671.3254E+071.3201E+072.7525E+072.7639E+079.1287E+069.1275E+068.1972E+068.1986E+06
29 16645809827 81.47101.16 75.99102.461.3186E+071.3208E+072.7537E+072.7445E+079.1083E+069.2007E+068.1032E+068.1097E+06 29 1664580
9927 81.41101.16 75.95102.261.3182E+071.3248E+072.7425E+072.7514E+079.1738E+069.2441E+068.1417E+068.3788E+06 29 16645810027 81.3410
1.16 75.91102.051.3265E+071.3249E+072.7542E+072.7544E+079.2063E+069.2457E+068.4539E+068.5090E+06 29 16645810127 81.28101.16 75.8710
1.841.3141E+071.3223E+072.7551E+072.7582E+079.2188E+069.2998E+068.6999E+068.7681E+06 29 16645810227 81.21101.16 75.83101.641.3234E+
071.3183E+072.7598E+072.7596E+079.2729E+069.2718E+068.8630E+068.7446E+06 29 16645810327 81.15101.16 75.79101.431.3169E+071.3279E+07
2.7533E+072.7548E+079.2821E+069.2104E+068.7498E+068.6703E+06 29 16645810427 81.08101.16 75.75101.231.3225E+071.3211E+072.7552E+072.
7561E+079.2167E+069.2179E+068.5608E+068.5440E+06 29 16645810527 81.02101.16 75.71101.031.3449E+071.3347E+072.7558E+072.7486E+079.20
68E+069.2166E+068.4737E+068.6275E+06 29 16645810627 80.95101.16 75.67100.831.3220E+071.3253E+072.7548E+072.7526E+079.1931E+069.2166
E+068.5709E+068.5518E+06 29 16645810727 80.89101.16 75.62100.631.3225E+071.3287E+072.7542E+072.7542E+079.2307E+069.2213E+068.5893E+
068.6252E+06 29 16645810827 80.82101.16 75.58100.431.3336E+071.3320E+072.7571E+072.7551E+079.2458E+069.2981E+068.7767E+068.9423E+06
29 16645810927 80.76101.16 75.54100.231.3332E+071.3416E+072.7556E+072.7578E+079.2684E+069.3491E+069.0040E+069.0084E+06 29 1664581
1027 80.69101.16 75.50100.041.3357E+071.3361E+072.7566E+072.7599E+079.3776E+069.4062E+069.2615E+069.3374E+06 29 16645811127 80.6210
1.16 75.46 99.841.3307E+071.3320E+072.7548E+072.7579E+079.4102E+069.3290E+069.2146E+069.0474E+06 29 16645811227 80.56101.16 75.42 9
9.651.3263E+071.3303E+072.7569E+072.7598E+079.3273E+069.2789E+068.9042E+068.9620E+06 29 16645811327 80.49101.16 75.38 99.451.3381E+
071.3485E+072.7617E+072.7591E+079.2923E+069.2777E+068.8911E+068.9389E+06 29 16645811427 80.43101.16 75.33 99.261.3351E+071.3351E+07
2.7521E+072.7574E+079.3132E+069.3060E+068.9781E+069.0943E+06 29 16645811527 80.36101.16 75.29 99.071.3362E+071.3486E+072.7589E+072.
7590E+079.2846E+069.3225E+069.1536E+069.0322E+06 29 16645811627 80.30101.16 75.25 98.881.3336E+071.3504E+072.7636E+072.7653E+079.34
00E+069.3694E+069.0493E+069.0099E+06 29 16645811727 80.23101.16 75.21 98.691.3326E+071.3326E+072.7657E+072.7682E+079.3720E+069.2703
E+069.0826E+069.1182E+06 29 16645811827 80.17101.16 75.16 98.511.3358E+071.3394E+072.7660E+072.7639E+079.3374E+069.3996E+069.2313E+
069.4612E+06 29 16645811927 80.10101.16 75.12 98.321.3423E+071.3544E+072.7651E+072.7736E+079.5017E+069.4325E+069.5694E+069.5062E+06
29 16645812027 80.04101.16 75.08 98.141.3394E+071.3398E+072.7702E+072.7704E+079.4362E+069.4653E+069.6021E+069.4319E+06 29 1664581
2127 79.97101.16 75.03 97.951.3318E+071.3289E+072.7753E+072.7760E+079.4652E+069.4994E+069.3044E+069.2578E+06 29 16645812227 79.9110
1.16 74.99 97.771.3319E+071.3317E+072.7649E+072.7668E+079.4096E+069.3699E+069.2673E+069.1670E+06 29 16645812327 79.84101.16 74.95 9
7.591.3325E+071.3311E+072.7587E+072.7637E+079.4541E+069.4354E+069.1671E+069.2986E+06 29 16645812427 79.77101.16 74.90 97.411.3407E+
071.3430E+072.7614E+072.7701E+079.4574E+069.4612E+069.2654E+069.2931E+06 29 16645812527 79.71101.16 74.86 97.231.3472E+071.3343E+07
2.7697E+072.7664E+079.4598E+069.4414E+069.3728E+069.4209E+06 29 16645812627 79.64101.16 74.82 97.051.3326E+071.3353E+072.7620E+072.
7668E+079.4531E+069.4072E+069.2671E+069.3214E+06 29 16645812727 79.58101.16 74.77 96.871.3277E+071.3379E+072.7629E+072.7636E+079.45
42E+069.5040E+069.4464E+069.5072E+06 29 16645812827 79.51101.16 74.73 96.691.3338E+071.3358E+072.7618E+072.7737E+079.4667E+069.3849

REQ.AGENT	RAND NO.	ACQ.AGENT
GLS	V0273	WHW

IRAS

CATALOG OF LOW RESOLUTION SPECTRA

83-004A-02A ASIR-00064

This data set consists of one magnetic data tape. The tape is 1600 BPI, 9 track, ASCII formatted and was created on an IBM 3032 computer. The tape contains 1 header file and 2 data files. The first data file lists the wavelengths corresponding to each sample of the spectral. The second file contains the actual spectra along with associated header information. The D and C numbers are as follows:

D#	C#
D-64550	C-24302

```
$AVP PA E
$EXE TPLIST SS

INPUT PARAMETERS ARE:  AS FL=1=1

 TAPE NO.   1              FILE NO.   1
 RECORD   1               LENGTH   22480
 2.21+4826  0 0100+4826 70.489E+020.242E+020.409E+010.126E+01 4 4 4211175 22    14701485 870 867 11
4  98 0.412E+02 0.134E+02 0.307E-02 0.177E-02 1.020.25848E-1515551579147115351650163614801629153817
3018231278126412411387134013711270140313061384136713361264155515966683845759699999609660938986198
0698226783075197300706672969847492693067426788676666996358607160746090567535695785544354104990482 5
4949473849654608+426429541614416412240314091398836753803358337211881179215821678147614191802154814 1
11453158015261345146314931487127713761618160213441414153214721534101810149459457771026 829 888 8
43 849 935 983 850 858 931 714 913 535 563 877 934 827 542 910337757575420516247974215377235343283 3
22330722702238725242571231821692140213021882115219018441892215017661751172217941651159214571511144 7
141013821405156215441327144157812141167146412881036134212201087128491976997210277316677869 5
6 876 834 727 826 715 960 013 946 795 796 906 787 947 990 956 937 930 1IW     CAS              5 22
 3 115 14619 741                   6 30 130 999   000007+5524  0 0467+5524 80.976E+020.469E+020.743E
+010.220E+01 5 4 3221111 4      742 757 609 629  63  56 0.986E+02 0.331E+02 0.258E-02 0.108E-01 1.1
10.43163E-15 8561008 965 920 9141080 910 795 705 560 671 566 629 692 617 601 573 656 528 592 631 69
2 698 648 492 50810443009555942599579999948991598695841886158295810581388298631682438039767374797 3
1971726893697776914671767234996339612959325615548953795380508249214759487647494582452245474384373 4
117406837543055162410788 730 725 720 816 647 644 793 789 796 900 771 834 727 708 774 757 711 700
 666 789 703 705 764 668 48 641 663 566 699 721 739 826 738 350 580 537 439 624 658 675 377 369 36
5 481 551 818400267116610631565653694696444564324394036633353329828272640274325462370226423512139 21
3421731990200118941824182191618041814178917151594150616341453136814971333146214531090133512251221 1
16810371224109 5 926 863 6 738 553 552 677 674 579 635 578 536 702 617 564 572 552 723 683 718 658
 573 629 645 643 638 1Y     CAS              6112   4  88 152 200  44028                53 51   1 115
0 3RAFGL    5             2804   1 -13   0 4TMSS +60001              28304  12  66   024 60001
      2  3   0   2   0                                                00012+6626  0 1163+6626 10.127E+020.3
26E+010.313E+010.237E+02  5 4182345 54    2565272411571076 137 187 0.162E+02 0.182E+01 0.716E-01 0
.238E+00 1.000.14967E-1527 247024092646236026012479243827092582297925252834285622552528259223722 51
 2368240224132430195020902420994729792599998818791572807145735370005957553156165797493150135257 52
 4490244864511427742594588 92424941773889377137904074377739063358357836373364369237683604344530743
508369553823494323434003011805246825972607256728192547285427292634277128962483265925422743268928 01
29712615289127242682291125 1387 9671246104411151163112887113611144117711531244107410571212143111 8
01175100712556911232109224311924552277206420142572200918391866160616751539181815581242164717451 3
9913501528127214251737129043132313221489144312241425131411791270141811591192126311731287139610 101
31816251232 89710731235108101 862 96010005108572660210481220120313361089113093286810349871041
145010251099106910891306111787 200  44038                  20194   1  66   0 3RAFGL    7              129
9  10 999    0 4TMSS +70002             12 21  14  42   013 10948             M0     1355  65 999    0159099
           M4III  2306  6247   0                                                  00017+3949   0 1455+394951
0.178E+020.689E+010.105E+0 960E+00 2 2 21613 0 54     1558147915861729 238 268 0.159E+02 0.425E+01
 0.210E-01 0.126E+00 0.950 860E-1511622076253113901835108411961751166211811632112916951374149119 4
316811489113717242121135211247107682312854042609299099999582839979987843686176297008673762415 0
1859063884596754285481586349471455075134473248974415484338504640419836493284401146653946391436823
4353527403438563602358336601526982403214716211490172518101141146098112111902155714291714146815 28
169211691125171514801753164261603158913232242246118051610227116971284197914591184173711541347150
3153712391306118913891772111173237845515312488649554283423237873585366934823254280528453406318127
1926062842249428082354263823215218572483251621511879218725862220211520632209221322632790234224761
829224921121835219323792505052316228421871151190118321465163119331449184419491431139718291660189 7
2024173320441369130618842112211691180220041SV     AND                 4 33    4  76 142 200   22669
           68263    2 999    0 3 GL    8              2 18  15 999    0 4TMSS +40001                43335  26
64   024 40001                3 10   9   3   0                                                 00019-1047   0
 1567-1047180.127E+020.3380.556E+000.274E+01 2 2 2012335 42    29602986 8201087 253 172 0.825E+
01 0.293E-01 0.124E-01 0.5 00 0.800.12373E-1536373585409037133467376327182267247129162414275431 6
62858246724142408237627762975322043180255626792673269447238461999994118680789777787708684161546 0
9758496043592857475305524414812438044525030440445004094386940684000484836643528446142544300381 23
 4764438183527362639253995934653551336134053121360130343229331325943171294529312936268329212615
27942758289732022959282725167328531803332337234818638901104907722958953678595764837 71
0 755 978 734 902 733 739 87091164 761 967 99317112619194119142075196417591759158414611423159612
7513861395115711651154134911426126813801246131712361363128613441319116013391283123914581155159 1
29413021148104611711190 7493 887 998 836 8001368 823 8611252 9411057 89512971222 91110801005 930
13421069100679711971301121009531084101414091124 773 4TMSS -10001                  39261  15  37   0131
47066         K2     2314  999    0159103            K3Ibv  2314  49 163 1921600013           K3
```

D64550
LRS 301
83-004A-02A

```
$ASS IN TBO
$NOP
$NOP
$NOP
$NOP ******* LIST OF 1ST & LAST REC. ON FILES 1 & 3 ON GAILOUT1 ********
$EXE TPLIST BS

INPUT PARAMETERS ARE:  AS FL=1=1

 TAPE NO.   1              FILE NO.   1
 RECORD   1                LENGTH   80
IRAS-LRS SPECTRA CATALOG      15 NOV 1984 01.00

 TAPE NO.   1              FILE NO.   1
 RECORD   1                LENGTH   80
IRAS-LRS SPECTRA CATALOG      15 NOV 1984 01.00

***** JOB DONE.
$WEO LRS
```

IRAS

Point Source Reject Catalog

83-004A-01x ASIR-00049

This data sets consists of 1 8mm tape, and 1 4mm tape. The DD and DC numbers along are as follows:

DD #	DC #	File
DD109310	DC033187	1