[redacted]

#402

SKYLAB

CREW/VEHICLE DISTURBANCES

73-027A-42A

[redacted]

Table of Contents

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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 This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system.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

SKYLAB

SUMMARY OF EXP. T-013

73-027A-42A ENNO-00003

THIS DATA SET HAS BEEN RESTORED. ORIGINALLY IT CONTAINED TWO 9-TRACK, 1600 BPI TAPES WRITTEN IN EBCDIC. THE ORIGINAL TAPES WERE STANDARD LABELED, THE LABELS WERE STRIPPED WHEN THE TAPES WERE RESTORED. THERE IS ONE RESTORED TAPE WRITTEN IN ASCII, THIS RESTORED TAPE IS NOT STANDARD LABELLED. THE DR TAPE IS A 3480 CARTRIDGE AND THE DS TAPE IS 9-TRACK, 6250 BPI. THE ORIGINAL TAPE WAS CREATED ON A CDC 6600 COMPUTER AND WAS RESTORED ON AN IBM 9021 COMPUTER. THE DR AND DS NUMBER ALONG WITH THE CORRESPONDING D NUMBER AND TIME SPAN IS AS FOLLOWS:

DR#	DS#	D#	FILES	TIME SPAN
DR005569	DS005569	D023662	1-2	08/16/73 - 08/16/73
		D030427	3-8	08/16/73 - 08/16/73

REQ. AGENT	RAND NO.	ACQ. AGENT
CAW	RC5950	CDW

SKYLAB

CREW/VEHICLE DISTURBANCES

73-027A-42A

This data set consists of 2 D & C tapes. The first tape contains 6 files and the second tape has 18 files. The second tape is a continuation of the first tape. Both tapes are 1600, EBCDIC, 9 track and were created on the*CDC computer. The tapes are standard label. The tapes cover the period from HR 13:19:29 thru HR 16:27:53 on day 228 of year 1973. The tapes D & C numbers are listed below along with a partial format. Send copy of microfiche B26733-000A.

D#	C#	FILES	TIME SPAN
D-23662	C-19389	6	08/16/73
D-30427	C-19390	18	08/16/73

* The tapes were created on the CDC computer, however were written in 360 format.

B26732-000A

TITLE: EXPERIMENT T-013 DATA TAPE DESCRIPTION

A digital magnetic tape of much of the reduced T-013 data has been prepared and is described in this appendix. Inquiries concerning availability of these data should be addressed to:

National Space Sciences Data Center
National Aeronautics and Space Administration
Goddard Space Flight Center
Code 601
Greenbelt, MD 20771

Reference: NSSDC ID 73-027A-42A

The data tape was prepared by use of Control Data Corporation's (CDC) Model 6000 series digital computers and is described herein.

Data generated from processing the raw data from experiment T-013 are recorded in seven files on the magnetic tape designated W0045. This tape is a labeled, nine-track, 1600 bits per inch, phase encoded, CDC SCOPE 3.4 internal format tape. The tape has an ANSI-standard 80 character label. The "label" internal to the label is T-013, and the creation date is given as "75232" which means day 232 (20 August) of 1975. The seven files group as three logical units: a descriptive header file and a long data stream of FMU and vehicle forces and moments and astronaut body Euler angles; three files of smoothed astronaut center-of-mass and attitude data as functions of time; and a descriptive header file and a short stream of raw ATM rate gyro data.

The first two files are a header and a long data stream. The first file contains one 70-word record which was written with an unformatted write statement, and so may be read with an unformatted read statement, and may be interpreted with an A10 format,

```
      DIMENSION HEADER (70)
                .
                .
                .
      READ (9) HEADER
                .
                .
                .
      PRINT 400, HEADER
  400 FORMAT (5X, 7A10)
```

The second file, the data stream file, contains 3074 records of 512 words each, written by an unformatted write statement.

```
      DIMENSION A (512)
      .
      .
      .
      WRITE (9) A
```

Each record contains 14 contiguous blocks of 35 words per time point (490 words of data in each 512 word record). The blocks of 35 words contain the values of the following forces, moments, and body Euler angles.

Word	Parameter
1	Time, in seconds from beginning of year (TGMT)
2-4	F_X, F_Y, and F_Z for FMU 1, in newtons
5-7	M_X, M_Y, and M_Z for FMU 1, in newton-meters
8-13	F_X, F_Y, F_Z, M_X, M_Y, and M_Z for FMU 2, in newtons and newton-meters
14-19	F_X, F_Y, F_Z, M_X, M_Y, and M_Z for vehicle, in newtons and newton-meters
20-35	γ_{21}, γ_{22}, γ_{31}, γ_{32}, γ_{41}, γ_{42}, γ_{51}, γ_{52}, γ_{61}, γ_{62}, γ_{71}, γ_{72}, γ_{81}, γ_{82}, γ_{91}, and γ_{92}, in degrees

If these records are read by an unformatted read statement, they can be interpreted as in an E-format.

```
      DIMENSION A (512)
      .
      .
      .
      READ (9) A
      PRINT 200, (A(I), I = 1, 490)
  200 FORMAT (7 (5E25.15/)/)
```

Table XIII correlates certain activities of the T-013 experiment with time points in the data stream and record numbers in the second file of tape W0045. The data stream in the second file has had short data gaps filled by linear interpolation; the time span runs from 13:19:29 to 16:27:54 on day 228 (from TGMT 19747169 to 19758474).

TABLE XIII.- DOY 228 ACTIVITIES

Start time	Time, sec	Activity	Initial record in file 2
15:19:25	19754365	Calibrate FMU 1	277
15:19:47	19754387	Calibrate FMU 2	293
15:20:30	19754430	Task 3, trial run	324
15:21:35	19754495	End trial run	370
15:26:00	19754760	Time correlation on FMU 2	559
15:26:50	19754810	Flapping arms	595
15:27:20	19754840	Flapping arms	617
15:28:01	19754881	Forceful squat thrust	646
15:29:19	19754959	Normal thrust	657
15:29:50	19754990	Forceful soaring	678
15:30:35	19755035	Normal soaring	711
15:33:45	19755225	Forceful soaring, two men	846
15:38:05	19755485	Forceful soaring, two men	1032
15:40:00	19755600	Film coverage starts	1114
15:45:12	19755912	Calibrate FMU 1	1337
15:46:04	19755964	Calibrate FMU 2	1374
15:46:55	19756015	Unscheduled swaying motion	1410
15:51:48	19756308	Time reference on FMU 2	1620
15:53:35	19756415	Start deep breathing	1696
15:54:07	19756447	5 coughs	1719
15:54:25	19756465	5 sneezes	1732
15:55:24	19756524	Astronaut at attention, LIMS reference	1774
15:55:25	19756525	Wave right arm	1775
15:56:15	19756575	Wave left arm	1810
15:56:40	19756600	Wave right arm	1828
15:57:56	19756676	Bowing motion	1883
15:58:35	19756715	Swing right leg	1910
15:59:13	19756753	Bend right knee	1938
16:06:40	19757200	One man soaring	2210
16:09:35	19757375	Console operations, start	2335
16:12:20	19757540	Console operations, end	2452
16:13:25	19757605	Flapping arms	2498
16:13:47	19757627	Second LIMS reference, arms straight, knees bent 10^{o}	2513
16:14:02	19757642	Forceful pushoffs	2524
16:14:22	19757662	Normal pushoffs	2538
16:14:53	19757693	Worst case soaring, one man	2560
16:17:12	19757832	Two men soaring	2660
16:18:10	19757890	Astronaut uncoils LIMS cable	2701
16:20:30	19758030	Time reference on FMU 2	2758
16:22:32	19758152	Coughs, sneezes	2845
16:23:30	19758210	Arm movements	2886
16:25:15	19758315	Leg lifts	2961
16:26:10	19758370	One man soaring	3001
16:26:44	19758404	Double somersault	3025
16:27:53	19758473	End of telemetry	3074

The middle files, files number 3, 4, and 5, each contain an initial Hollerith identification record followed by several data records (215 in file 3, 311 in file 4, 310 in file 5) of seven 60-bit words containing values of the following parameters (at 6 samples/sec):

Word	Parameter
1	Time of day 228 in seconds
2-4	X, Y, and Z coordinates of astronaut center of mass, cm
5-7	ϕ, θ, and ψ astronaut attitude angles, deg

The files contain the smoothed data for soaring activities 5, 6, and 7 as detailed in tables XIV, XV, and XVI. All records were written by an unformatted write statement; they may be read with an unformatted read with an unformatted read statement.

```
      DIMENSION C (7)
      .
      .
      .
      READ (9) C
```

The header record may be printed with an A10 format

```
      PRINT 100, C
  100 FORMAT (1X, 8A10)
```

and the data records printed with an E-format

```
      PRINT 300, C
  300 FORMAT (1X, 5E25.15)
```

TABLE XIV.- SOARING ACTIVITY 5 FOR DAY 228

[16:06:43.57 to 16:07:19.77]

Start time	Activity	Duration, sec
6:43.57	Soar to FMU 2	0.5
6:44.07	Hold FMU 2	7.5
6:51.57	Soar	.8
6:52.38	FMU 1	10.39
7:02.77	Soar	2.0
7:04.77	FMU 2	4.5
7:09.27	Soar	1.7
7:10.97	Hold FMU 1	8.8
Summary: 36.2 seconds activity; 4 soarings		

TABLE XV.- SOARING ACTIVITY 6 FOR DAY 228

[16:14:55.57 to 16:15:52.87]

Start time	Activity	Duration, sec
14:55.57	Soar to FMU 2	0.4
14:55.97	Hold FMU 2	5.2
15:01.17	Soar	.7
15:01.87	Hold FMU 1	5.2
15:07.07	Soar	.6
15:07.67	FMU 2	4.5
15:12.17	Soar	.7
15:12.87	FMU 1	6.8
15:19.67	Soar	1.3
15:20.97	FMU 2	5.41
15:26.38	Soar	1.09
15:27.47	FMU 1	5.7
15:33.17	Soar	1.0
15:34.17	FMU 2	6.1
15:40.27	Soar	1.1
15:41.37	Hold FMU 1	11.5
Summary: 57.3 seconds activity; 8 soarings		

TABLE XVI.- SOARING ACTIVITY 7 FOR DAY 228

[16:17:14.37 to 16:18:01.17]

Start time	Activity	Duration, sec
17:14.37	Soar to FMU 2	0.7
17:15.07	Hold FMU 2	7.4
17:22.47	Soar	.7
17:23.17	FMU 1	5.5
17:28.67	Soar	.6
17:29.27	FMU 2	6.7
17:35.97	Soar	.7
17:36.37	FMU 1	15.0
17:51.67	Soar	.4
17:52.07	FMU 2	8.2
18:00.27	Soar	.9
Summary: 46.8 seconds activity; 6 soarings		

The last two files (files 6 and 7) contain 512-word records, file 6 is another header and contains one record with 35 words of alphameric information and 477 words of blanks. It may be read with an unformatted read statement and interpreted by an A10 format; only the first 35 words need to be printed.

```
      DIMENSION D (512)
              .
              .
              .
      READ (9) D
              .
              .
              .
      PRINT 500, (D(I), I = 1, 35)
  500 FORMAT (5X, 7A10)
```

The 21 records in file 7 may also be read with an unformatted read statement, but should be interpreted with an E-format.

```
      DIMENSION D(512)
      .
      .
      .
      READ (9) D
      .
      .
      .
      PRINT 600, (D(I), I = 1, 510)
  600 FORMAT (5X, 5E 20.10)
```

Each record in file 7 contains 102 contiguous groups of 5 data words; in each group, the words contain the following variable values:

Word	Parameter
1	Time from beginning of year (1973), sec
2	Time from a reference time point, sec (this word is non-T-013 related)
3	OWS rate gyro output from X2 gyro, deg/sec
4	OWS rate gyro output from Y1 gyro, deg/sec
5	OWS rate gyro output from Z3 gyro, deg/sec

These groups of data occur at 12 samples/sec.

Additional Notes on Tape WOO 45
(for CDC user equipment)

Blocking Type C

Record Type S

Control Cards

Record Manager:

FILE, TAPE, BT=C, RT=S, FØ=SQ.

Load set:

LDSET, FILES = TAPE.

73-027A-42A

402

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

Mail stop 117
for R. C.
Langley, Va
23665

REPLY TO
ATTN OF REA

APR 6 1976

TO: Goddard Space Flight Center
Attn: Mr. Leo Davis

FROM: REA/Principal Investigator, Skylab Experiment T-013

SUBJECT: Transmittal of Skylab T-013 Data Tape, Ref. NSSDC ID 73-027A-42A

Per conversations with your office approximately 9 months ago, the subject data tape is hereby transmitted to the National Space Sciences Data Center. Also enclosed is a description of the tape; this description appears as Appendix E of NASA TN D-8128, entitled "A Summary of the Skylab Crew/Vehicle Disturbances Experiment T-013". A copy of this TN is enclosed also. This report describes the Skylab experiment and the manner in which the data were obtained. The list of references on page 68 of TND-8128 provide a good background on the measurement and use of astronaut crew motion disturbance data.

As a matter of interest to potential tape users with Control Data Corporation equipment, some additional control information is attached to the enclosed tape description, at the suggestion of Langley personnel who helped in the tape preparation. If further assistance should be needed, Mr. R. W. Will of NASA-Langley is quite familiar with the data tape and could aid in answering questions.

I would be happy to provide you with any further information you may desire or need.

Bruce A. Conway

Bruce A. Conway

804 827-3745

Enclosures

R.W. Will 804 - 827-3919

B26732-000A

TITLE: EXPERIMENT T-013 DATA TAPE DESCRIPTION

A digital magnetic tape of much of the reduced T-013 data has been prepared and is described in this appendix. Inquiries concerning availability of these data should be addressed to:

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Code 601
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Reference: NSSDC ID 73-027A-42A

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Data generated from processing the raw data from experiment T-013 are recorded in seven files on the magnetic tape designated W0045. This tape is a labeled, nine-track, 1600 bits per inch, phase encoded, CDC SCOPE 3.4 internal format tape. The tape has an ANSI-standard 80 character label. The "label" internal to the label is T-013, and the creation date is given as "75232" which means day 232 (20 August) of 1975. The seven files group as three logical units: a descriptive header file and a long data stream of FMU and vehicle forces and moments and astronaut body Euler angles; three files of smoothed astronaut center-of-mass and attitude data as functions of time; and a descriptive header file and a short stream of raw ATM rate gyro data.

The first two files are a header and a long data stream. The first file contains one 70-word record which was written with an unformatted write statement, and so may be read with an unformatted read statement, and may be interpreted with an A10 format,

```
      DIMENSION HEADER (70)
                .
                .
                .
      READ (9) HEADER
                .
                .
                .
      PRINT 400, HEADER
  400 FORMAT (5X, 7A10)
```

The second file, the data stream file, contains 3074 records of 512 words each, written by an unformatted write statement.

```
DIMENSION A (512)
      .
      .
      .
WRITE (9) A
```

Each record contains 14 contiguous blocks of 35 words per time point (490 words of data in each 512 word record). The blocks of 35 words contain the values of the following forces, moments, and body Euler angles.

Word	Parameter
1	Time, in seconds from beginning of year (TGMT)
2-4	F_X, F_Y, and F_Z for FMU 1, in newtons
5-7	M_X, M_Y, and M_Z for FMU 1, in newton-meters
8-13	F_X, F_Y, F_Z, M_X, M_Y, and M_Z for FMU 2, in newtons and newton-meters
14-19	F_X, F_Y, F_Z, M_X, M_Y, and M_Z for vehicle, in newtons and newton-meters
20-35	γ_{21}, γ_{22}, γ_{31}, γ_{32}, γ_{41}, γ_{42}, γ_{51}, γ_{52}, γ_{61}, γ_{62}, γ_{71}, γ_{72}, γ_{81}, γ_{82}, γ_{91}, and γ_{92}, in degrees

If these records are read by an unformatted read statement, they can be interpreted as in an E-format.

```
      DIMENSION A (512)
            .
            .
            .
      READ (9) A
      PRINT 200, (A(I), I = 1, 490)
  200 FORMAT (7 (5E25.15/)/)
```

Table XIII correlates certain activities of the T-013 experiment with time points in the data stream and record numbers in the second file of tape W0045. The data stream in the second file has had short data gaps filled by linear interpolation; the time span runs from 13:19:29 to 16:27:54 on day 228 (from TGMT 19747169 to 19758474).

TABLE XIII.- DOY 228 ACTIVITIES

Start time	Time, sec	Activity	Initial record in file 2
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15:21:35	19754495	End trial run	370
15:26:00	19754760	Time correlation on FMU 2	559
15:26:50	19754810	Flapping arms	595
15:27:20	19754840	Flapping arms	617
15:28:01	19754881	Forceful squat thrust	646
15:29:19	19754959	Normal thrust	657
15:29:50	19754990	Forceful soaring	678
15:30:35	19755035	Normal soaring	711
15:33:45	19755225	Forceful soaring, two men	846
15:38:05	19755485	Forceful soaring, two men	1032
15:40:00	19755600	Film coverage starts	1114
15:45:12	19755912	Calibrate FMU 1	1337
15:46:04	19755964	Calibrate FMU 2	1374
15:46:55	19756015	Unscheduled swaying motion	1410
15:51:48	19756308	Time reference on FMU 2	1620
15:53:35	19756415	Start deep breathing	1696
15:54:07	19756447	5 coughs	1719
15:54:25	19756465	5 sneezes	1732
15:55:24	19756524	Astronaut at attention, LIMS reference	1774
15:55:25	19756525	Wave right arm	1775
15:56:15	19756575	Wave left arm	1810
15:56:40	19756600	Wave right arm	1828
15:57:56	19756676	Bowing motion	1883
15:58:35	19756715	Swing right leg	1910
15:59:13	19756753	Bend right knee	1938
16:06:40	19757200	One man soaring	2210
16:09:35	19757375	Console operations, start	2335
16:12:20	19757540	Console operations, end	2452
16:13:25	19757605	Flapping arms	2498
16:13:47	19757627	Second LIMS reference, arms straight, knees bent 10°	2513
16:14:02	19757642	Forceful pushoffs	2524
16:14:22	19757662	Normal pushoffs	2538
16:14:53	19757693	Worst case soaring, one man	2560
16:17:12	19757832	Two men soaring	2660
16:18:10	19757890	Astronaut uncoils LIMS cable	2701
16:20:30	19758030	Time reference on FMU 2	2758
16:22:32	19758152	Coughs, sneezes	2845
16:23:30	19758210	Arm movements	2886
16:25:15	19758315	Leg lifts	2961
16:26:10	19758370	One man soaring	3001
16:26:44	19758404	Double somersault	3025
16:27:53	19758473	End of telemetry	3074

The middle files, files number 3, 4, and 5, each contain an initial Hollerith identification record followed by several data records (215 in file 3, 311 in file 4, 310 in file 5) of seven 60-bit words containing values of the following parameters (at 6 samples/sec):

Word	Parameter
1	Time of day 228 in seconds
2-4	X, Y, and Z coordinates of astronaut center of mass, cm
5-7	ϕ, θ, and ψ astronaut attitude angles, deg

The files contain the smoothed data for soaring activities 5, 6, and 7 as detailed in tables XIV, XV, and XVI. All records were written by an unformatted write statement; they may be read with an unformatted read with an unformatted read statement.

```
      DIMENSION C (7)
      .
      .
      .
      READ (9) C
```

The header record may be printed with an A10 format

```
      PRINT 100, C
  100 FORMAT (1X, 8A10)
```

and the data records printed with an E-format

```
      PRINT 300, C
  300 FORMAT (1X, 5E25.15)
```

TABLE XIV.- SOARING ACTIVITY 5 FOR DAY 228

[16:06:43.57 to 16:07:19.77]

Start time	Activity	Duration, sec
6:43.57	Soar to FMU 2	0.5
6:44.07	Hold FMU 2	7.5
6:51.57	Soar	.8
6:52.38	FMU 1	10.39
7:02.77	Soar	2.0
7:04.77	FMU 2	4.5
7:09.27	Soar	1.7
7:10.97	Hold FMU 1	8.8
Summary: 36.2 seconds activity; 4 soarings		

TABLE XV.- SOARING ACTIVITY 6 FOR DAY 228

[16:14:55.57 to 16:15:52.87]

Start time	Activity	Duration, sec
14:55.57	Soar to FMU 2	0.4
14:55.97	Hold FMU 2	5.2
15:01.17	Soar	.7
15:01.87	Hold FMU 1	5.2
15:07.07	Soar	.6
15:07.67	FMU 2	4.5
15:12.17	Soar	.7
15:12.87	FMU 1	6.8
15:19.67	Soar	1.3
15:20.97	FMU 2	5.41
15:26.38	Soar	1.09
15:27.47	FMU 1	5.7
15:33.17	Soar	1.0
15:34.17	FMU 2	6.1
15:40.27	Soar	1.1
15:41.37	Hold FMU 1	11.5
Summary: 57.3 seconds activity; 8 soarings		

TABLE XVI.- SOARING ACTIVITY 7 FOR DAY 228

[16:17:14.37 to 16:18:01.17]

Start time	Activity	Duration, sec
17:14.37	Soar to FMU 2	0.7
17:15.07	Hold FMU 2	7.4
17:22.47	Soar	.7
17:23.17	FMU 1	5.5
17:28.67	Soar	.6
17:29.27	FMU 2	6.7
17:35.97	Soar	.7
17:36.37	FMU 1	15.0
17:51.67	Soar	.4
17:52.07	FMU 2	8.2
18:00.27	Soar	.9
Summary: 46.8 seconds activity; 6 soarings		

The last two files (files 6 and 7) contain 512-word records, file 6 is another header and contains one record with 35 words of alphameric information and 477 words of blanks. It may be read with an unformatted read statement and interpreted by an A10 format; only the first 35 words need to be printed.

```
      DIMENSION D (512)
              .
              .
              .
      READ (9) D
              .
              .
              .
      PRINT 500, (D(I), I = 1, 35)
  500 FORMAT (5X, 7A10)
```

The 21 records in file 7 may also be read with an unformatted read statement, but should be interpreted with an E-format.

```
      DIMENSION D(512)
      .
      .
      .
      READ (9) D
      .
      .
      .
      PRINT 600, (D(I), I = 1, 510)
  600 FORMAT (5X, 5E 20.10)
```

Each record in file 7 contains 102 contiguous groups of 5 data words; in each group, the words contain the following variable values:

Word	Parameter
1	Time from beginning of year (1973), sec
2	Time from a reference time point, sec (this word is non-T-013 related)
3	OWS rate gyro output from X2 gyro, deg/sec
4	OWS rate gyro output from Y1 gyro, deg/sec
5	OWS rate gyro output from Z3 gyro, deg/sec

These groups of data occur at 12 samples/sec.

Additional Notes on Tape WOO 45
(for CDC user equipment)

Blocking Type C

Record Type S

Control Cards

Record Manager:

FILE, TAPE, BT=C, RT=S, FØ=SQ.

Load set:

LDSET, FILES = TAPE.

D-23662

```
$JOB  11:54:10
$ASS IN TB1
$NOP *** LIST OF GAIL1  *******
$AVF IN 1
$EXE TPLIST BS

INPUT PARAMETERS ARE:  ED SR=1=1

 TAPE NO.   1              FILE NO.   1
 RECORD   1                LENGTH   710
T013 EXPERIMENT DATA TAPE W0045.  CREATED 19 AUG 1975 FROM TAPE W0031 (CREATED 23 JULY 1975).  DERI
VED FROM MSFC TAPE H4982 COVERING DOY 228 FROM 13.19.29 TO 16.27.53.  SHORT DATA GAPS FILLED IN BY
LINEAR INTERPOLATION.  DC BIAS REMOVED.  SUBSEQUENT FILE CONTAINS 512-WORD RECORDS EACH WITH 14 CON
TIGUOUS SETS OF THE FOLLOWING VARIABLES (UNITS).      TGMT(SEC)  FX1(N)    FY1(N)    FZ1(N)   MX1(N
*M)  MY1(N*M)  MZ1(N*M)   FX2(N)    FY2(N)    FZ2(N)   MX2(N*M)  MY2(N*M)  MZ2(N*M)   FVX(N)    FVY
(N)    FVZ(N)   MVX(N*M)   MVY(N*M)  MVZ(N*M) GAM21(DEG)GAM22(DEGGAM31(DEG)GAM32(DEG)GAM41(DEG)GAM4
2(DEG)GAM51(DEG)GAM52(DEG)GAM61(DEG)GAM62(DEG)GAM71(DEG)GAM72(DEG)GAM81(DEG)GAM82(DEG)GAM91(DEG)GAM
92(DEG)::::::::::

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

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$$
$AVR CI 8
```

73-027A-42A

TAPE 1 OF 2 SKYLAB D-23662

6 FILES CREW/VEHICLE DISTURBANCES

08/16/73

HR 13:19:29 THRU 16:27:53

```
$JOB  14:10:04
$ASS IN MS4
$NOP ********* HEX DUMP OF X-371 *************
$EYEC DPHEX BS
 INPUT TAPE ON MS4
 DATA INPUT     6 1 1
   FILE  1        RECORD    1      LENGTH   80    BYTES
   (      0)   E5D6D3F1  D5C6F0F2  F4F3E740  40404040  40404040  40404040  40404040  40404040  40404040  40404040
   (     40)   40404040  F9F6F1F3  F0F0D540  40404040  40404040  40404040  40404040  40404040  40404040  404040F1
   FILE  1        RECORD    2      LENGTH   80    BYTES
   (      0)   C8C4D9F1  E3C9E3D3  C5404040  40404040  40404040  40C1C2C3  C44040F0  F0F0F1F0  F0F0F1F0  F0F0F1F0
   (     40)   F040F7F7  F1F5F840  F7F7F1F5  F840F0F0  F0F0F0F0  D2D9D6D5  D6E2F24B  F160F3F3  40404040  40404040
 FILE     1        # OF DATA RECORDS    2        # SUCCESSFUL READS   3
         # PERMANENT READ ERRORS    0        # ZERO BYTE ERRORS  0         # SHORT RECORDS    0         # UNDEFINED ERRORS  0
             # OF RECORDS RETRIED    0        TOTAL # OF RETRIES  0
   FILE  2        RECORD    1      LENGTH  710    BYTES
   (      0)   E3F0F1F3  40C5E7D7  C5D9C9D4  C5D5E340  C4C1E3C1  40E3C1D7  C540E6F0  F0F4F54B  4040C3D9  C5C1E3C5
   (     40)   C440F1F9  40C1E4C7  40F1F9F7  F540C6D9  D6D440E3  C1D7C540  E6F0F0F3  F1404DC5  D9C5C1E3  C5C440F2
   (     80)   F340D1E4  D3E840F1  F9F7F540  4B4040C4  C5D9C9E5  C5C440C6  D9D6D440  D4E2C4C3  40E3C1D7  C540C6F4
   (    120)   F9F8F240  C3D6E5C5  D9C9D5C7  40C4D6E8  40F2F2F8  40C6D9D6  D440F1F3  4BF1F94B  F2F940E3  D640F1F6
   (    160)   4BF2F74B  F5F34B40  40E2C8D6  D9E340C4  C1E3C140  C7C1D7E2  40C6C9D3  D3C5C440  C9D540C2  E840D3C9
   (    200)   D5C5C1D9  40C9D5E3  C5D9D7D6  D3C1E3C9  D6D54B40  40C4C340  C2C9C1E2  40D9C5D4  D6E5C5C4  4B4040E2
   (    240)   E4C2E2C5  D8E4C5D5  E340C6C9  D3C540C3  D6D5E3C1  C9D5E240  F5F1F260  E6D6D9C4  40D9C5C3  D6D9C4E2
   (    280)   40C5C1C3  C840E6C9  E3C840F1  F440C3D6  D5E3C9C7  E4D6E4E2  40E2C5E3  E240D6C6  40E3C8C5  40C6D6D3
   (    320)   D3D6E6C9  D5C740E5  C1D9C9C1  C2D3C5E2  404DE4D5  C9E3E25D  4B404040  404040E3  C7D4E34D  E2C5C35D
   (    360)   4040C6E7  F14DD55D  40404040  C6E8F14D  D55D4040  4040C6E9  F14DD55D  404040D4  E7F14DD5  5CD45D40
   (    400)   40D4E8F1  4DD55CD4  5D4040D4  E9F14DD5  5CD45D40  4040C6E7  F24DD55D  40404040  C6E8F24D  D55D4040
   (    440)   4040C6E9  F24DD55D  404040D4  E7F24DD5  5CD45D40  40D4E8F2  4DD55CD4  5D4040D4  E9F24DD5  5CD45D40
   (    480)   4040C6E5  E74DD55D  40404040  C6E5E84D  D55D4040  4040C6E5  E94DD55D  404040D4  E5E74DD5  5CD45D40
   (    520)   4040D4E5  E84DD55C  D45D4040  D4E5E94D  D55CD45D  40C7C1D4  F2F14DC4  C5C75DC7  C1D4F2F2  4DC4C5C7
   (    560)   C7C1D4F3  F14DC4C5  C75DC7C1  D4F3F24D  C4C5C75D  C7C1D4F4  F14DC4C5  C75DC7C1  D4F4F24D  C4C5C75D
   (    600)   C7C1D4F5  F14DC4C5  C75DC7C1  D4F5F24D  C4C5C75D  C7C1D4F6  F14DC4C5  C75DC7C1  D4F6F24D  C4C5C75D
   (    640)   C7C1D4F7  F14DC4C5  C75DC7C1  D4F7F24D  C4C5C75D  C7C1D4F8  F14DC4C5  C75DC7C1  D4F8F24D  C4C5C75D
   (    680)   C7C1D4F9  F14DC4C5  C75DC7C1  D4F9F24D  C4C5C75D  7A7A7A7A  7A7A7A7A  7A7A
 FILE     2        # OF DATA RECORDS    1        # SUCCESSFUL READS   1
         # PERMANENT READ ERRORS    0        # ZERO BYTE ERRORS  0         # SHORT RECORDS    0         # UNDEFINED ERRORS  0
             # OF RECORDS RETRIED    0        TOTAL # OF RETRIES  0
   FILE  3        RECORD    1      LENGTH   80    BYTES
   (      0)   C5D6C6F1  E3C9E3D3  C5404040  40404040  40404040  40C1C2C3  C44040F0  F0F0F1F0  F0F0F1F0  F0F0F1F0
   (     40)   F040F7F7  F1F5F840  F7F7F1F5  F840F0F0  F0F0F0F1  D2D9D6D5  D6E2F24B  F160F3F3  40404040  40404040
 FILE     3        # OF DATA RECORDS    1        # SUCCESSFUL READS   1
         # PERMANENT READ ERRORS    0        # ZERO BYTE ERRORS  0         # SHORT RECORDS    0         # UNDEFINED ERRORS  0
             # OF RECORDS RETRIED    0        TOTAL # OF RETRIES  0
   FILE  4        RECORD    1      LENGTH   80    BYTES
   (      0)   C8C4D9F1  C6D6D9C3  C5404040  40404040  40404040  40C1C2C3  C44040F0  F0F0F1F0  F0F0F2F0  F0F0F1F0
   (     40)   F040F7F7  F1F5F840  F7F7F1F5  F840F0F0  F0F0F0F0  D2D9D6D5  D6E2F24B  F160F3F3  40404040  40404040
 FILE     4        # OF DATA RECORDS    1        # SUCCESSFUL READS   1
         # PERMANENT READ ERRORS    0        # ZERO BYTE ERRORS  0         # SHORT RECORDS    0         # UNDEFINED ERRORS  0
             # OF RECORDS RETRIED    0        TOTAL # OF RETRIES  0
   FILE  5        RECORD    1      LENGTH 5120 BYTES
   (      0)   40404040  404BF1F9  F7F4F7F1  F6F9F2F5  F0F0F0F0  F0C54EF0  F8404040  40604BF9  F4F8F9F3  F3F5F3F8
   (     40)   F5F6F3F0  F2F2C54E  F0F04040  4040604B  F8F2F6F0  F2F9F1F1  F5F4F2F5  F3F3F5C5  4EF0F240  40404040
   (     80)   4BF3F7F0  F2F1F0F8  F7F9F3F4  F1F3F6F1  C54EF0F1  40404040  604BF4F2  F6F0F0F6  F8F6F0F9  F5F6F7F7
   (    120)   F7C54EF0  F0404040  40404BF3  F6F7F9F1  F9F8F8F0  F8F5F4F1  F6F4C560  F0F14040  4040404B  F4F2F4F6
   (    160)   F2F8F6F2  F1F2F6F4  F5F0F3C5  4EF0F040  40404040  4BF1F1F0  F1F2F2F5  F8F4F2F6  F0F7F1F9  C54EF0F2
   (    200)   40404040  604BF7F5  F8F8F1F5  F6F6F9F7  F9F7F8F7  F3C54EF0  F2404040  40604BF1  F9F7F6F5  F8F3F8F6
   (    240)   F8F9F0F8  F2F0C54E  F0F24040  4040604B  F4F3F7F8  F5F9F0F3  F3F0F2F2  F9F3F7C5  4EF0F140  40404040
   (    280)   4BF4F2F7  F3F1F3F9  F6F4F5F9  F6F7F7F5  C54EF0F1  40404040  604BF2F3  F0F2F9F3  F1F5F0F0  F4F4F5F6
   (    320)   F2C54EF0  F1404040  40604BF2  F3F4F6F7  F9F4F7F4  F8F2F4F9  F5F7C54E  F0F24040  4040404B  F6F7F2F1
   (    360)   F3F4F4F5  F6F2F7F4  F6F2F5C5  4EF0F140  40404060  4BF1F0F0  F6F3F3F2  F4F8F8F7  F5F0F8F8  C54EF0F2
   (    400)   40404040  604BF5F2  F2F0F2F6  F6F0F7F3  F1F6F4F6  F5C54EF0  F1404040  40604BF1  F5F4F7F0  F7F9F0F3
   (    440)   F8F0F6F9  F5F2C54E  F0F14040  4040604B  F2F1F0F7  F4F0F7F4  F4F7F5F0  F6F6F5C5  4EF0F240  40404060
   (    480)   4BF2F8F6  F9F8F9F5  F1F8F8F0  F7F8F9F0  C54EF0F2  40404040  604BF1F1  F7F3F3F7  F8F0F4F7  F6F5F5F2
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(  3360)  4BF2F9F0  F4F9F7F9  F4F6F5F6  F3F7F9F5  C54EF0F2  404040d0  404BF1F0  F4F2F9F4  F9F6F6F9  F1F1F5F7
(  3400)  F5C54EF0  F2404040  40404BF8  F9F7F2F0  F5F0F4F7  F9F6F6F1  F3F3C54E  F0F14040  40404040  F4F7F4F6
(  3440)  F3F5F9F9  F0F8F3F4  F0F6F5C5  4EF0F140  404C4040  4BF9F5F6  F0F3F8F0  F3F0F7F0  F6F3F2F1  C54EF0F0
(  3480)  40404040  404BF1F8  F9F9F0F5  F0F3F6F2  F1F3F4F7  F5C54EF0  F1404040  40604BF2  F9F8F0F6  F8F4F2F0
(  3520)  F4F9F5F9  F9F5C560  F0F24040  40406040  F1F1F9F3  F4F5F2F0  F8F7F7F0  F0F0F2C5  4EFCF040  40404060
(  3560)  4BF3F6F8  F4F0F9F6  F9F5F2F8  F2F8F1F7  C54EF0F1  40404040  404BF6F9  F3F7F6F9  F6F2F3F6  F7F4F7F9
(  3600)  F5C54EF0  F1404040  40604BF6  F3F9F4F1  F0F3F6F7  F4F7F4F5  F6F8C54E  F0F14040  40404040  F1F9F7F5
(  3640)  F8F2F8F9  F5F0F0F0  F0F0F0C5  4EF0F840  40404040  4BF6F0F6  F9F5F7F8  F5F9F6F2  F1F1F0F4  C560F0F1
(  3680)  40404040  604BF1F9  F3F7F6F6  F8F2F4F3  F3F6F5F0  F7C54EF0  F1404040  40404BF2  F6F8F2F5  F1F1F9F7
(  3720)  F7F4F5F1  F0F9C54E  F0F14040  40404040  F1F2F7F0  F9F8F7F0  F5F2F5F3  F1F5F4C5  4EF0F140  40404060
(  3760)  4BF8F1F9  F1F1F5F4  F1F1F3F2  F7F0F2F9  C54EF0F0  40404040  604BF2F1  F8F9F1F8  F5F1F3F3  F9F5F4F2
(  3800)  F4C54EF0  F1404040  40604BF1  F1F3F4F0  F1F8F5F9  F5F6F4F1  F2F8C560  F0F54040  40406040  F4F0F8F4
(  3840)  F3F3F1F2  F7F9F3F2  F4F7F9C5  60F0F340  40404040  4BF6F2F1  F6F1F9F7  F1F1F3F8  F1F9F7F6  C560F0F5
(  3880)  40404040  604BF1F1  F0F3F3F5  F2F7F4F1  F7F4F2F9  F9C560F0  F5404040  40604BF1  F2F8F8F6  F2F2F5F8
(  3920)  F4F9F4F2  F5F2C560  F0F54040  40404040  F1F1F9F2  F1F2F9F2  F0F2F4F2  F0F4F4C5  60F0F74C  4C404060
(  3960)  4BF2F6F8  F2F5F0F5  F7F6F1F2  F5F3F9F2  C54EF0F1  40404040  404BF1F9  F3F7F2F5  F9F8F1F0  F2F3F7F1
(  4000)  F5C54EF0  F1404040  40604BF6  F0F6F9F4  F6F5F1F9  F4F3F4F8  F5F7C560  F0F14040  40404040  F7F3F6F4
(  4040)  F4F8F6F3  F7F3F0F7  F1F1F4C5  4EF0F140  40404040  4BF7F4F5  F0F6F3F0  F0F9F8F9  F7F8F7F1  C54EF0F1
(  4080)  40404040  604BF1F8  F3F3F6F6  F9F9F0F7  F8F0F1F2  F8C54EF0  F2404040  40404BF3  F6F8F6F7  F5F1F8F8
(  4120)  F4F1F7F2  F9F1C54E  F0F14040  40404040  F2F9F0F4  F9F0F0F7  F3F4F4F2  F6F2F1C5  4EF0F240  40404060
(  4160)  4BF3F1F8  F1F4F1F0  F1F9F2F7  F1F0F5F3  C54EF0F1  40404040  404BF2F1  F6F7F9F2  F1F9F4F1  F2F1F5F5
(  4200)  F0C54EF0  F2404040  40404BF3  F6F8F7F1  F6F5F4F2  F6F5F7F1  F1F0C54E  F0F14040  40404040  F2F9F0F4
(  4240)  F9F7F9F4  F6F5F6F3  F7F9F5C5  4EF0F240  40404040  4BF1F1F2  F0F2F6F0  F9F6F4F5  F8F9F2F8  C54EF0F2
(  4280)  40404040  404BF1F1  F7F2F8F6  F1F7F8F7  F1F0F7F8  F9C54EF0  F2404040  40404BF4  F7F4F6F3  F5F9F9F0
(  4320)  F8F3F4F0  F6F5C54E  F0F14040  40404040  F9F5F6F0  F3F8F0F3  F0F7F0F6  F3F2F1C5  4EFCF040  40404040
(  4360)  4BF1F8F9  F9F0F5F0  F3F6F2F1  F3F4F7F5  C54EF0F1  40404040  604BF2F9  F8F0F6F8  F4F2F0F4  F9F5F9F9
(  4400)  F5C560F0  F2404040  40604BF1  F1F9F3F4  F5F2F0F8  F7F7F0F0  F0F8C54E  F0F04040  40406040  F3F6F8F4
(  4440)  F0F9F6F9  F5F2F8F2  F8F1F7C5  4EF0F140  40404040  4BF6F8F3  F7F6F9F6  F2F3F6F7  F4F7F9F5  C54EF0F1
(  4480)  40404040  604BF6F3  F9F4F1F0  F3F6F7F4  F7F4F5F6  F8C54EF0  F1404040  40404BF1  F9F7F5F8  F2F8F9F3
(  4520)  F9F9F9F9  F9F9C54E  F0F84040  4040d04B  F4F1F4F4  F9F3F6F6  F7F9F8F4  F2F4F9C5  4EF0F140  40404060
(  4560)  4BF8F2F1  F5F0F9F3  F9F5F1F9  F2F7F7F1  C54EF0F1  40404040  404BF2F7  F2F2F8F2  F5F0F7F2  F1F6F5F3
(  4600)  F1C54EF0  F0404040  40404BF1  F5F1F2F6  F1F8F1F0  F7F6F5F6  F3F7C54E  F0F14040  4040d04B  F1F7F5F2
(  4640)  F9F4F4F7  F3F0F4F5  F2F8F0C5  4EF0F140  40404060  4BF2F6F3  F5F0F6F7  F9F4F0F3  F0F2F8F2  C54EF0F1
(  4680)  40404040  404BF9F5  F6F3F2F4  F1F3F2F7  F9F9F6F5  F7C560F0  F7404040  40404BF3  F4F4F3F8  F3F0F0F5
(  4720)  F8F8F5F5  F8F7C560  F0F44040  4040604B  F5F2F4F1  F4F6F5F2  F7F2F6F4  F1F5F5C5  60F0F640  40404040
(  4760)  4BF9F3F0  F3F0F4F4  F2F6F5F5  F4F2F9F7  C560F0F7  40404040  404BF1F0  F8F6F5F6  F7F2F3F4  F8F8F3F0
(  4800)  F7C560F0  F6404040  40604BF1  F0F0F4F0  F0F5F9F7  F0F3F9F3  F3F9C560  F0F84040  4040604B  F2F7F2F2
(  4840)  F8F3F0F3  F1F3F6F3  F0F1F7C5  4EF0F040  40404040  4BF8F2F1  F5F1F2F8  F3F9F0F2  F2F8F3F0  C54EF0F1
(  4880)  40404040  404BF4F1  F4F4F9F3  F6F5F8F4  F2F1F0F1  F1C54EF0  F1404040  40404BF1  F7F8F5F3  F2F4F2F5
(  4920)  F4F1F3F2  F4F6C54E  F0F24040  4040404B  F3F0F2F0  F9F1F1F0  F2F9F3F6  F2F5F4C5  4EF0F240  40404060
(  4960)  4BF5F6F9  F1F2F1F1  F3F3F3F5  F2F1F8F9  C54EF0F2  40404040  404BF3F6  F8F6F7F5  F1F8F8F4  F1F7F2F9
(  5000)  F1C54EF0  F1404040  40404BF2  F9F0F4F9  F0F0F7F3  F4F4F2F6  F2F1C54E  F0F24040  4040604B  F2F8F6F2
(  5040)  F3F1F5F2  F2F3F2F8  F5F3F6C5  4EF0F140  40404040  48F2F9F9  F6F0F7F5  F0F1F7F8  F5F8F5F6  C54EF0F2
(  5080)  40404040  404BF3F6  F8F7F1F6  F5F4F2F6  F5F7F1F1  F0C54EF0  F1404040  40404BF2  F9F0F4F9  F7F9F4F6
FILE     5        # OF DATA RECORDS    8828      # SUCCESSFUL READS   8821
          # PERMANENT READ ERRORS    1        # ZERO BYTE ERRORS   7        # SHORT RECORDS    0        # UNDEFINED ERRORS   0
            # OF RECORDS RETRIED    179       TOTAL # OF RETRIES   249
    FILE   5        RECORD    1       LENGTH    80     BYTES
    (      0)   C5D6E5F1  C6D6D9C3  C5404040  40404040  40404040  40C1C2C3  C44040F0  F0F0F1F0  F0F0F2F0  F0F0F1F0
    (     40)   F040F7F7  F1F5F840  F7F7F1F5  F840F0F0  F8F8F2F8  D2D9D6D5  D6E2F24B  F160F3F3  40404040  40404040
    FILE   5        RECORD    2       LENGTH    80     BYTES
    (      0)   C5D6E5F2  D5C6F0F2  F4F44040  40404040  40404040  40404040  40404040  40404040  40404040  40404040
    (     40)   40404040  40404040  40404040  40404040  40404040  40404040  40404040  40404040  40404040  40404040
FILE     6        # OF DATA RECORDS    2         # SUCCESSFUL READS   3
          # PERMANENT READ ERRORS    0        # ZERO BYTE ERRORS   0        # SHORT RECORDS    0        # UNDEFINED ERRORS   0
            # OF RECORDS RETRIED    0        TOTAL # OF RETRIES   0

$$
```