DATA SET CATALOG #4

Explorer 7 - Radiation & Solar Proton

59-009A-04A 14 Tapes

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 This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system.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

EXPLORER 7

RADIATION AND SOLAR PROTON DATA

59-009A-04A

THIS DATA SET HAS BEEN RESTORED. ORIGINALLY IT CONTAINED 14 7-TRACK, 556 AND 800 BPI TAPES WRITTEN IN BCD. THERE IS ONE RESTORED TAPE WRITTEN IN EBCDIC. THE TAPES ARE NOT IN TIME SEQUENTIAL ORDER. THE DR TAPE IS A 3480 CARTRIDGE AND THE DS TAPE IS 9-TRACK, 6250 BPI. THE ORIGINAL TAPES WERE CREATED ON A 7094 COMPUTER. THE DR AND DS NUMBERS ALONG WITH THE CORRESPONDING D NUMBERS AND THE TIME SPANS ARE AS FOLLOWS:

DR#	DS#	D#	FILES	TIME SPAN
DR002860	DS002860	D000045	1	10/13/59 - 11/26/59
		D000046	2	11/26/59 - 12/16/59
		D000047	3	12/16/59 - 01/22/60
		D000048	4	01/22/60 - 02/23/60
		D000049	5	02/23/60 - 03/20/60
		D000050	6	03/20/60 - 04/10/60
		D000051	7	04/10/60 - 04/25/60
		D000052	8	04/26/60 - 05/12/60
		D000054	9	06/03/60 - 06/29/60
		D000055	10	06/29/60 - 07/30/60
		D000056	11	07/30/60 - 09/18/60
		D000057	12	09/18/60 - 12/13/60
		D000058	13	12/13/60 - 02/28/61
		D000053	14	05/12/60 - 06/30/60

EXPLORER 7 (59-009A-04A0

RADIATION AND SOLAR PROTON EXPERIMENT

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MASTER FILE #	ORIGINAL	COPY IF AVAILABLE
1	D-00045	C-00008
2	D-00046	C-00009
3	D-00047	C-00010
4	D-00048	C-00011
5	D-00049	C-00012
6	D-00050	C-00013
7	D-00051	C-08897
8	D-00052	C-08898
9	D-00053	C-08899
10	D-00054	C-08900
11	D-00055	C-08901
12	D-00056	C-08902
13	D-00057	C-08903
14	D-00058	C-08904

6/21/13 - These 14 'D' tapes have been sent to the National Archives for storage. Only the 'C' tapes remain here.

DATA USERS' NOTE

NSSDC 67-01

EXPLORER 7 (1959 IOTA 1)

RADIATION AND SOLAR PROTON EXPERIMENT

JANUARY 1967

NATIONAL SPACE SCIENCE DATA CENTER

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION • GODDARD SPACE FLIGHT CENTER, GREENBELT, MD.

DATA USERS' NOTE
NSSDC 67-01

EXPLORER 7 (1959 IOTA 1) RADIATION AND SOLAR PROTON EXPERIMENT

EXPERIMENTERS
J. A. Van Allen
G. H. Ludwig
H. Whelpley
L. A. Frank

JANUARY 1967

FOREWORD

This Data Users' Note is specifically designed to help potential data users decide if they can make use of the data obtained in the Explorer 7 (1959 Iota 1) radiation and solar proton experiment. Once a data user decides that he requires the data, it will serve as the unifying element—the key—in the actual use of the data available at the National Space Science Data Center (NSSDC). To achieve these goals, the Note briefly describes the experiment, including the instrumentation and measurements, the telemetry, and the operational experience. All available details are then provided on the actual reduction techniques and format of recorded data. For those desiring more details, a list of experimenters is provided to facilitate direct contact. As a further aid, detailed references (and bibliography) are also included. When available, NASA accession numbers* are given. The primary purpose of these references is to identify the sources containing complete information concerning the subject under discussion. Most of these references are physically available at NSSDC—those that are not are readily obtainable.

Inquiries concerning the availability of data should be directed to:

National Space Science Data Center
Goddard Space Flight Center
Greenbelt, Maryland 20771
Area Code 301 982-6695

* For example, N64-2243 is an accession number for an article reported in the Scientific and Technical Aerospace Reports (STAR), and A63-5921 refers to an entry in the International Aerospace Abstracts (IAA).

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LIST OF FIGURES

EXPLORER 7 (1959 IOTA 1)
RADIATION AND SOLAR PROTON EXPERIMENT

BACKGROUND

This radiation and solar proton experiment was designed by researchers at the University of Iowa for comprehensive spatial and temporal monitoring of total cosmic-ray intensity, geomagnetically trapped corpuscular radiation, and solar protons.

This experiment was one of six (see Figure 1) carried aboard Explorer 7 (1959 Iota 1), which was launched on October 13, 1959. The active lifetime of Explorer 7 extended to August 24, 1961, during which time the orbital elements changed only slightly. Initial apogee, perigee, and inclination angle were about 1100 km, 530 km, and 50.3 deg, respectively. The satellite was spin-stabilized about its longitudinal axis. At the time of antenna deployment, the spin rate decreased to 360 rpm from the injection rate of 420 rpm. By the 390th day of orbit, the rate had decreased to about 312 rpm.[1,2]

EXPERIMENTERS

J. A. Van Allen - University of Iowa*
G. H. Ludwig** - University of Iowa
H. Whelpley - University of Iowa
L. A. Frank - University of Iowa

EXPERIMENT

Instrumentation and Measurements

Two Geiger-Mueller counters were used, one an Anton type 302 and the other an Anton type 112. The instrumentation was calibrated with an X-ray source before the flight to obtain the relationship between r (the apparent counting rate) and R (the true counting rate).[1,2] The instruments counted protons with energies of 20 and 30 Mev and electrons above 1 and 3 Mev; and the bremsstrahlung from electrons of energies above about 30 and 70 kev. In an

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**Present address: NASA Goddard Space Flight Center, Greenbelt, Maryland.

FIGURE 1
EXPLORER 7 EXPERIMENTS

No.	Experiment	Investigator	Affiliation
01	Thermal Radiation	V. Suomi	Univ. of Wisconsin
02	Solar Radiation	T. Chubb H. Friedman R. Kreplin	Naval Research Laboratory
03	Heavy Cosmic Radiation	G. Groetzinger M. Pomerantz R. Schwed	Martin Company Barton Research Foundation Martin Company
04	Radiation and Solar Proton	L. Frank G. Ludwig J. Van Allen H. Whelpley	University of Iowa
05	Micrometeorite	H. LaGow	Goddard Space Flight Center
06	Ground-Based Ionospheric	W. Dyke R. Jones C. Little R. Parthasarathy W. Ross G. Swenson O. Villiard, Jr.	Lenfield Research Lenfield Research NBS* Univ. of Alaska Penn. State Univ. Univ. of Illinois Stanford University

*National Bureau of Standards

omnidirectional intensity of penetrating charged particles of $1/cm^2/sec$, the counting rates are 0.54/sec with a scaling factor of 2048 and 7.1/sec with a scaling factor of 128. Over the part of the dynamic range in which the counters overlap, an absorption coefficient can be determined since they are covered by different but known thicknesses of absorbers,[1] i.e., the 302 counter is shielded by at least 0.7 gm/cm^2 of stainless steel and the 112 counter by 1.6 gm/cm^2 of lead.[2]

A change of state of the 112-counter scaler causes a change in subcarrier frequency of 40 to 60 cps; a change in state of the 302-counter scaler causes a frequency shift of approximately 90 cps. Therefore, the two scaler outputs are readily distinguished, even when the absolute frequencies are not measured.[1]

The data are accurately represented by semiempirical expressions, where the values of τ are correct at 23°C and at the nominal primary power supply voltage (6.5 v).[1,2]

The value of r (apparent counting rate) is obtained from the telemetry records; it is

$$r = ns/t(n)$$

where s is the scaling factor and t(n) is the time for n full cycles of the scaler output form. R as a function of r is a double-valued function. It is expected that the counting rate of the 302 counter will always remain on the ascending part of the curve. The ambiguity in the 112-counter data can nearly always be resolved by the use of auxiliary data: spatial dependence of counting rate, the simultaneous rate of the 302, and the statistical fluctuation of the 112 rate.[1]

Telemetry

The 20-Mc/s telemetry system, which transmitted all Explorer 7 scientific experimental data except the micrometeorite information, consisted of a time division multiplexer, four subcarrier oscillators, and an amplitude-modulated transmitter.[2]

The time division multiplexer was a 10-channel commutation device containing a time oscillator, a pulse amplifier, and a 10-stage counter in the conventional ring-counter configuration. The commutator segments were divided in the following manner: two used for calibration at 0- and 5.5-volt levels, three used for the Naval Research Laboratory experiments, one used for battery voltage, one used for solar-cell data, and three used for heavy primary cosmic-ray data.[2,3]

Operational Experience

The receiving station for corpuscular radiation data produced an average of 4.5 usable recordings each day during the 2-month period from October 14 to December 14, 1959; the duration of readable data averaged 7.2 min per pass. As of April 1, 1960, the passes provided 5 to 20 min of substantially continuous data.

The general run of data indicated that the experiment was operating in a satisfactory manner, expect for a brief period in September-October 1960.[4]

DATA

Reduction Techniques

The data reduction system used at the University of Iowa includes a bandpass filter centered at 1300 cps and having a width of ±7-1/2% that is used to separate this subcarrier channel from the other channels. Following this, a narrow-band (BW = 60 cps) FM discriminator was used to demodulate the subcarrier signal. The resulting output was recorded as a function of time by a moving-pen oscillograph. Alternatively, a simple "comb" filter, consisting of four LC-tuned narrow-bandpass filters (15 cps BW) connected with their inputs in parallel. has been found capable of producing a high-quality oscillograph record. Each of the four filters was tuned to a different one of the four discrete frequencies. The outputs of the individual filters were rectified, passed through RC integrators, and combined in such a way that the two information channels were available separately for recording on a multichannel oscillograph.[1]

In reducing the data for the earth's inner radiation zone, the invariant coordinates B and L were used

$$R = R(L, B, t)$$

and the observational data were reduced to a two-dimensional array in terms of positional coordinates. Within this array, B (or B/B_{eq}) was regarded as the variable and L as the parameter in systematizing the data.

The plan was as follows:

1. Selection of particular magnetic shells characterized by the parameter L (L = 1.10 to L = 1.50 by steps of 0.05; L = 1.6 to L = 2.6 by steps of 0.1)

2. Determination (by interpolation as necessary) of the counting rate of the 302 Geiger tube as the satellite passed through points for which L has one of the selected values

3. Computation of B at the points thus defined

After reduction of the original signals sent by the transmitter of the satellite to the receiving station, the data were supplied on IBM cards, each of which contained the counting rate at a given time. A total of 150 000 cards was available covering the period from October 13, 1959, through December 31, 1960.

To have the data in the form

$$R = R(L, B, t)$$

a number of operations had to be performed:

1. Compute the orbital position of the satellite as a function of time

2. Compute the B and L coordinates as a function of time: $B = B(t)$ and $L = L(t)$

3. Combine the counting rate $R(t)$ with $B(t)$ and $L(t)$

An orbit program was written in the FORTRAN language to compute the geographic altitude, longitude, and latitude as a function of time, using the smoothed orbital elements calculated at the Smithsonian Astrophysical Observatory.

Since some difficulties were found in applying the orbital elements to January, February, and the first half of August 1960, these periods were not considered.

The magnetic-field program was adapted to the orbit program so that altitude, latitude, longitude, and B were computed for the same time. The scaler magnitude B of the earth's magnetic field was calculated making use of a harmonic expansion up to the sixth order (48 coefficients).

The L program contained the definition of L in terms of the integral adiabatic invariant I. It produces a sequence of values of L corresponding to a sequence of geographic positions.

These programs were combined in a master program. The main operational steps were:

1. Read into the computer (IBM 7070) all the IBM cards belonging to the same pass over a given receiving station

2. Compute the orbital position (geographic altitude, longitude, latitude) at each minute of time during the pass

3. Compute B and then L for each set of altitude, latitude, and longitude (B and L are thus given as functions of time, computed at 1-min intervals during the pass)

4. Using linear interpolation, find at what time t_L the satellite crossed the magnetic shells designated by the selected values of L

5. Using linear interpolation, compute the counting rate R at the times t_L

Other quantities were computed in the same manner. The output was printed and punched on IBM cards, each containing universal time, longitude, latitude, altitude, L, B, I, B/B_{eq}, log R, R, and pass number. Cards were then sorted and, for each L, put in time order.

The original 150 000 sets of data were thus reduced to about 13 000 (about 700 sets for each value of L). These 700 sets of data were distributed through the period of October 13, 1959, to December 31, 1960, but not in a uniform way.

The rms scattering of the observational data is usually considerably less than a factor of 2. The reasons for this scattering may be found in short-term time variations and lack of precision in the computation of B and L due to all causes (orbital errors, lack of precise knowledge of the geomagnetic field, and computational approximations).[4]

Timespan of Data

Data suitable for electronic processing containing detector counting rates fully merged with orbital information and ordered chronologically were obtained for the period of October 13, 1959, to February 28, 1961.

Format of Available Data

The data are packed at 556 bpi, in BCD mode, using single blocks with a Logical Record Length of 114 characters (see Figure 2). All positions not described in the 114-position record are BCD blanks.[5]

FIGURE 2

EXPLORER 7 DATA FORMAT[5]

For Master File of Orbit and Data Merged	
Record Positions	Description of Contents
2	Satellite Code (7)
4,5	Year
7,8	Month
10,11	Day
13,14	Hour
16,17	Minute
19,20	Second
22,23	Hundredth Minute
25,26	Receiving Station (See Figure 3)
29-32	1/2 Time Lag in 25th of Second
33-35	Half Cycles
36-40	Time Interval of Sample in 25th of Second
41-46	Center of Time Interval in Hr, Min, 10th of Min
47-52	2 (Log (Counts/Sec)) to Nearest Hundredth (Decimal point assumed between positions 50 and 51)
56-58	Detector Number
60-69	Counts/Sec to the Nearest 10th (Decimal point assumed between positions 68 and 69)
72-79	Latitude
81-89	Longitude
91-96	Altitude (Kilometers)
98-104	B
106-112	L

FIGURE 3

EXPLORER 7 STATIONS AND LOCATIONS

Stations	Longitude	Latitude	Approximate Receiving Range	
			Longitude	Latitude
1. Antigua	-62	+17	Max. -100	+42
			Min. -20	-10
2. Antofagasta	-70	-24	-100	0
			-40	-50
3. Blossom Point	-77	+38	-120	+50
			-10	+10
4. Fort Myers	-82	+27	-110	+50
			-50	0
5. Hawaii	-150	+21	-180	+50
			-120	-5
6. Heidelberg	+9	+49	-20	+50
			+35	+20
7. Huntsville	-87	+35	-120	+50
			-50	+5
8. Johannesburg	+28	-26	0	0
			+60	-50
9. Lima	-77	-12	-110	+45
			-40	-20
10. London	-1	+52	-30	+50
			+30	+25
11. Ottawa	-76	+46	-110	+50
			-45	+15
12. Quito	-79	-1	-110	+25
			-50	-27
13. San Diego	-117	+33	-140	+50
			-95	0
14. Santiago	-71	-33	-100	-5
			-35	-50
15. S. Rhodesia	+31	-18	+60	+10
			0	-45
16. SUI	-92	+42	-120	+50
			-50	+15
17. Woomera	+137	-31	+170	0
			+100	-50

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3. Cherrick, I. L., "Telemetry Code and Calibrations for Satellite 1959 IOTA (Explorer VII)," NASA D-484, May 1960.

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5. Frank, L. A., "Explorer VII (1959 IOTA) Data Format for Master File of Orbit and Data Merged," Letter dated May 25, 1966, Department of Physics and Astronomy, University of Iowa.

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7	60	4	10	11	57	3	6	5	40	12	253	11571	380	112	797	49
.315		2.455														
7	60	4	10	11	57	6	11	5	180	3	387	11571	461	302	2020	49
.315		2.456														
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.315		2.459														
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.315		2.463														
7	60	4	10	11	57	22	38	5	40	12	248	11574	383	112	821	49
.315		2.463														
7	60	4	10	11	57	33	55	5	40	12	240	11575	386	112	850	49
.315		2.468														
7	60	4	10	11	57	35	59	5	170	3	355	11576	469	302	2206	49
.315		2.469														
7	60	4	10	11	57	42	70	5	40	12	234	11577	388	112	873	49
.316		2.474														
7	60	4	10	11	57	49	83	5	190	3	343	11578	470	302	2244	49
.316		2.477														
7	60	4	10	11	57	52	87	5	40	11	238	11579	379	112	782	49
.316		2.479														
7	60	4	10	11	58	1	2	5	40	11	234	11580	380	112	796	4
.316		2.483														
7	60	4	10	11	58	4	7	5	180	3	332	11581	473	302	2305	4
.316		2.485														
7	60	4	10	11	58	10	18	5	40	12	245	11582	384	112	831	4
.316		2.488														
7	60	4	10	11	58	16	28	5	160	3	305	11583	480	302	2525	4
.316		2.491														
7	60	4	10	11	58	21	35	5	40	12	239	11583	385	112	846	4
.316		2.494														
7	60	4	10	11	58	29	49	5	150	3	320	11585	478	302	2468	4
.316		2.498														
7	60	4	10	11	58	30	50	5	30	12	241	11585	385	112	846	4
.316		2.499														
7	60	4	10	11	58	39	66	5	30	12	245	11587	385	112	838	4
.317		2.504														
7	60	4	10	11	58	41	69	5	180	3	310	11587	478	302	2468	4
.317		2.505														
7	60	4	10	11	58	49	82	5	40	11	233	11588	381	112	807	4
.317		2.509														
7	60	4	10	11	58	53	89	5	160	3	305	11589	480	302	2525	4
.317		2.512														
[illegible]									50	12	240	11590	382	112	810	4

797	49.90	194.55	1049	0	REC	1. LENGTH	114	D-0051
2020	49.87	194.78	1049	0	REC	2. LENGTH	114	4/10/60 -
792	49.80	195.34	1050	0	REC	3. LENGTH	114	4/26/60
2115	49.72	195.98	1051	0	REC	4. LENGTH	114	
821	49.71	196.06	1051	0	REC	5. LENGTH	114	8 tapes were Listed in the original catalog.
850	49.60	196.93	1052	0	REC	6. LENGTH	114	
2206	49.59	197.09	1052	0	REC	7. LENGTH	114	
873	49.52	197.65	1053	0	REC	8. LENGTH	114	
2244	49.45	198.20	1054	0	REC	9. LENGTH	114	
782	49.42	198.44	1054	0	REC	10. LENGTH	114	
796	49.33	199.16	1055	0	REC	11. LENGTH	114	
2305	49.30	199.39	1056	0	REC	12. LENGTH	114	
831	49.24	199.87	1056	0	REC	13. LENGTH	114	
2525	49.19	200.35	1057	0	REC	14. LENGTH	114	
846	49.14	200.74	1057	0	REC	15. LENGTH	114	
2468	49.06	201.38	1058	0	REC	16. LENGTH	114	
846	49.05	201.46	1059	0	REC	17. LENGTH	114	
838	48.96	202.18	1060	0	REC	18. LENGTH	114	
2468	48.94	202.33	1060	0	REC	19. LENGTH	114	
807	48.87	202.97	1061	0	REC	20. LENGTH	114	
2525	48.83	203.29	1061	0	REC	21. LENGTH	114	
810	48.78	203.69	1062	0	REC	22. LENGTH	114	

```
.317   2.514

 7 60  4 10 11 59  6 10  5   150  3  286 11591   487   302        2731
.317   2.519

 7 60  4 10 11 59  8 14  5    40 12  252 11591   381   112         807
.317   2.520

 7 60  4 10 11 59 17 29  5   160  3  303 11593   482   302        2575
.318   2.526

 7 60  4 10 11 59 18 30  5    40 11  235 11593   380   112         792
.318   2.527

 7 60  4 10 11 59 28 47  5    40 11  231 11595   381   112         807
.318   2.533

 7 60  4 10 11 59 30 50  5   170  3  294 11595   483   302        2602
.318   2.534

 7 60  4 10 11 59 37 63  5    40 11  246 11596   376   112         755
.318   2.539

 7 60  4 10 11 59 40 68  5   150  3  289 11597   486   302        2683
.318   2.541

 7 60  4 10 11 59 46 78  5    40 12  247 11598   383   112         824
.319   2.545

 7 60  4 10 11 59 52 88  5   150  3  292 11599   486   302        2693
.319   2.549

       1  11 59 57 95  5    40 11  238 11599   379
```

2	2731	48.70	204.32	1063	0	REC	23. LENGTH	114
2	807	48.68	204.48	1063	0	REC	24. LENGTH	114
2	2575	48.59	205.19	1064	0	REC	25. LENGTH	114
2	792	48.58	205.27	1064	0	REC	26. LENGTH	114
2	807	48.49	206.07	1065	0	REC	27. LENGTH	114
2	2602	48.47	206.23	1065	0	REC	28. LENGTH	114
2	755	48.40	206.78	1066	0	REC	29. LENGTH	114
2	2683	48.37	207.02	1066	0	REC	30. LENGTH	114
2	824	48.31	207.50	1067	0	REC	31. LENGTH	114
2	2693	48.25	207.98	1068	0	REC	32. LENGTH	114
		.	2 .37	1068	0	E	33. T	

7 60	4 26	9 26 51 86	5	290	4	605	9269	205	112	106
.239	1.334									
7 60	4 26	9 26 57 96	13	260	2	293	9270	208	112	110
.238	1.330									
7 60	4 26	9 27 9 15	13	260	2	307	9272	204	112	104
.237	1.323									
7 60	4 26	9 27 15 25	5	280	4	547	9272	215	112	118
.236	1.319									
7 60	4 26	9 27 20 34	13	250	2	242	9273	224	112	131
.236	1.316									
7 60	4 26	9 27 31 52	13	230	3	349	9275	229	112	139
.235	1.310									
7 60	4 26	9 27 35 59	5	290	4	474	9276	227	112	137
.234	1.307									
7 60	4 26	9 27 43 72	13	230	2	244	9277	224	112	131
.233	1.303									
7 60	4 26	9 27 53 89	5	300	4	422	9279	235	112	150
.232	1.297									
7 60	4 26	9 29 19 32	5	310	6	249	9293	309	112	353
.224	1.254									

269	205	112	106	19.66	217.08	1055	0	REC	1, LENGTH	114
270	208	112	110	19.42	217.32	1056	0	REC	2, LENGTH	114
272	204	112	104	18.92	217.74	1057	0	REC	3, LENGTH	114
272	215	112	118	18.67	217.94	1058	0	REC	4, LENGTH	114
273	224	112	131	18.46	218.10	1058	0	REC	5, LENGTH	114
275	229	112	139	18.00	218.47	1059	0	REC	6, LENGTH	114
276	227	112	137	17.83	218.60	1059	0	REC	7, LENGTH	114
277	224	112	131	17.50	218.87	1060	0	REC	8, LENGTH	114
279	235	112	150	17.08	219.20	1061	0	REC	9, LENGTH	114
283	309	112	350	13.47	222.05	1067	0	REC	10, LENGTH	114

7	60	12	13	2	19	34	88	8	20	13	249	2196	391	112	867	-16.03	
.240	1.385																
7	60	12	13	2	19	44	74	8	30	9	256	2197	355	112	596	-15.58	
.240	1.373																
7	60	12	13	2	19	54	91	8	50	6	243	2199	323	112	410	-15.13	
.241	1.361																
7	60	12	13	2	20	4	8	8	60	5	275	2201	297	112	304	-14.69	
.241	1.349																
7	60	12	13	2	20	16	27	8	90	4	304	2203	267	112	217	-14.15	
.241	1.336																
7	60	12	13	2	20	33	56	8	110	4	596	2206	210	112	112	-13.39	
.241	1.318																
7	60	12	13	2	21	4	7	8	210	4	986	2211	163	112	66	-12.00	
.242	1.286																
7	60	12	13	2	21	49	82	8	240	4	1254	2218	142	112	51	-9.98	
.243	1.243																
7	60	12	13	2	22	44	74	8	250	4	1494	2227	127	112	43	-9.86	
.244	1.236																
7	60	12	13	3	34	47	79	14	10	43	234	3348	515	112	3744	-46.49	27
.245	1.716																
7	60	12	13	3	34	52	88	14	210	2	371	3349	428	302	1387	-46.58	27
.245	1.718																
7	60	12	13	3	35	24	40	14	10	44	232	3354	518	112	3898	-47.17	27
.243	1.729																
7	60	12	13	3	35	58	97	14	180	3	381	3360	462	302	2041	-47.80	27
.241	1.742																
7	60	12	13	3	36	1	2	14	10	46	232	3360	523	112	4129	-47.85	27
.241	1.743																
7	60	12	13	3	36	11	19	14	10	47	236	3362	524	112	4152	-48.04	27
.241	1.747																
7	60	12	13	3	36	13	22	14	190	3	375	3362	462	302	2052	-48.07	27
.241	1.748																
7	60	12	13	3	36	20	34	14	10	46	232	3363	522	112	4083	-48.20	27
.240	1.751																
7	60	12	13	3	36	28	47	14	180	3	360	3365	467	302	2174	-48.35	27
.240	1.755																
7	60	12	13	3	36	38	64	14	0	46	228	3366	525	112	4223	-48.53	27
.240	1.759																
7	60	12	13	3	36	42	70	14	200	3	320	3367	475	302	2376	-48.61	27
.239	1.761																
7	60	12	13	3	36	55	92	14	170	3	336	3369	473	302	2305	-48.85	27
.239	1.768																
7	60	12	13	3	37	7	13	14	170	3	299	3371	483	302	2593	-48.98	28

897	-16.03	34.50	784	0	REC	1. LENGTH	114
596	-15.58	34.88	781	0	REC	2. LENGTH	114
410	-15.13	35.25	778	0	REC	3. LENGTH	114
304	-14.69	35.63	775	0	REC	4. LENGTH	114
217	-14.15	36.08	772	0	REC	5. LENGTH	114
112	-13.39	36.71	767	0	REC	6. LENGTH	114
66	-12.00	37.87	758	0	REC	7. LENGTH	114
51	-9.98	39.56	746	0	REC	8. LENGTH	114
43	-9.86	42.28	746	0	REC	9. LENGTH	114
744	-46.49	270.44	1091	0	REC	10. LENGTH	114
387	-46.58	270.80	1091	0	REC	11. LENGTH	114
898	-47.17	273.12	1090	0	REC	12. LENGTH	114
041	-47.80	275.58	1089	0	REC	13. LENGTH	114
129	-47.85	275.79	1088	0	REC	14. LENGTH	114
152	-48.04	276.52	1088	0	REC	15. LENGTH	114
052	-48.07	276.66	1088	0	REC	16. LENGTH	114
083	-48.20	277.17	1088	0	REC	17. LENGTH	114
174	-48.35	277.75	1088	0	REC	18. LENGTH	114
223	-48.53	278.47	1087	0	REC	19. LENGTH	114
376	-48.61	278.76	1087	0	REC	20. LENGTH	114
305	-48.85	279.70	1087	0	REC	21. LENGTH	114
393	-48.98	280.63	1086	0	REC	22. LENGTH	114

D-0058

12/13/00 - 2/23/01

.238 1.770

7 60 12 13 3 37 21 35 14 170 4 379 3374 487 302 2714 -4
.237 1.770

7 60 12 13 3 37 25 42 14 10 49 235 3374 528 112 4361 -4
.236 1.770

7 60 12 13 3 37 34 57 14 0 47 228 3376 529 112 4395 -4
.236 1.770

7 60 12 13 3 37 34 57 14 160 3 276 3376 490 302 2832 -4
.236 1.770

7 60 12 13 3 37 46 78 14 170 4 347 3378 494 302 2949 -4
.235 1.771

7	302	2714	-49.07	281.76	1084	0	REC	23. LENGTH	114
8	112	4361	-49.10	282.08	1084	0	REC	24. LENGTH	114
9	112	4395	-49.16	282.81	1083	0	REC	25. LENGTH	114
0	302	2832	-49.16	282.81	1083	0	REC	26. LENGTH	114
1	302	2949	-49.24	283.78	1082	0	REC	27. LENGTH	114

7	61	2	28	19	18	59	59	3	280	4	514	19190	220	112	126	34.
.324		2.208														
7	61	2	28	19	19	19	32	3	280	4	478	19193	225	112	134	33.
.322		2.168														
7	61	2	23	19	19	27	45	3	390	1	2136	19195	216	302	120	33.
.321		2.152														
7	61	2	28	19	19	39	65	3	260	4	480	19197	227	112	136	32.
.320		2.129														
7	61	2	28	19	19	58	98	3	290	4	535	19200	217	112	121	31.
.318		2.093														
7	61	2	28	19	20	19	33	3	300	4	499	19203	221	112	127	31.
.316		2.056														
7	61	2	28	19	20	39	66	3	250	4	505	19207	222	112	129	30.
.314		2.021														
7	61	2	28	19	21	0	0	3	270	4	497	19210	223	112	131	29.
.311		1.986														
7	61	2	28	19	21	21	35	3	280	4	551	19213	213	112	116	29.
.309		1.952														
7	61	2	28	19	21	45	76	3	260	4	655	19218	199	112	99	28.
.306		1.915														

2	126	34.08	257.07	1071	0	REC	1. LENGTH	114
2	134	33.37	258.00	1072	0	REC	2. LENGTH	114
2	120	33.08	258.37	1072	0	REC	3. LENGTH	114
2	136	32.65	258.92	1073	0	REC	4. LENGTH	114
2	121	31.97	259.80	1074	0	REC	5. LENGTH	114
2	127	31.22	260.77	1075	0	REC	6. LENGTH	114
2	129	30.51	261.70	1076	0	REC	7. LENGTH	114
2	131	29.76	262.67	1077	0	REC	8. LENGTH	114
2	116	29.00	263.64	1078	0	REC	9. LENGTH	114
2	99	28.15	264.76	1080	0	REC	10. LENGTH	114

```
@I   FOR    E7UI00,E7UI00
COMPILATION BY UNIVAC 1108 FORTRAN-IV DATED     JUNE 22,1965 F4008
THIS COMPILATION WAS DONE ON 21 SEP 66 AT 11:45:53


   MAIN PROGRAM          ENTRY POINT 000000

   STORAGE USED (BLOCK, NAME, LENGTH)

        0001    *CODE    001263
        0000    *DATA    000544
        0002    *BLANK   000000


   EXTERNAL REFERENCES (BLOCK, NAME)

        0003    SETEOF
        0004    NRDU$
        0005    NIO1$
        0006    NIO2$
        0007    NWDU$
        0010    NSTOP$


   STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

    0000    000443 102F      0000    000136 104F      0000    000456 106F      00
    0000    000211 109F      0000    000226 110F      0000    000246 111F      00
    0000    000331 114F      0000    000355 115F      0000    000400 116F      00
    0000    000467 120F      0000    000500 125F      0001    000022 1266      00
    0000    000123 19F       0001    000750 21L       0001    001171 27L       00
    0001    000216 305L      0001    000253 310L      0001    000437 312L      00
    0001    000514 325L      0001    000550 330L      0001    000571 335L      00
    0001    000663 345L      0000    000510 377F      0001    000716 39L       00
    0000    000442 563F      0001    001100 9L        0001    000143 95L       00
    0000 R  000104 FLONG     0000 R  000111 GAP       0000 I  000067 I         00
    0000 I  000107 IBAD1     0000 I  000076 IDAY      0000 I  000070 IDAYPT    00
    0000 I  000075 IMON      0000 I  000066 IREC      0000 I  000073 ISAT      00
    0000 I  000072 IU        0000 I  000074 IYR       0000 I  000071 I$        00
    0000 I  000113 NDAY      0000 I  000116 NHR       0000 I  000117 NMIN      00
    0000 I  000112 NREC      0000 I  000120 NSEC      0000 I  000014 NSTAT     00
    0000 R  000051 TITLE


00100     1.   C     TAPE VERIFICATION PROGRAM
00100     2.   C     THIS PROGRAM VERIFIES AND TAKES INVENTORY OF 14 DATA TAPES
00100     3.   C     RECEIVED 7 JUNE 1966 FROM SUI.
00101     4.         DIMENSION          MONTH(12), NSTAT(17), CALDAY(12),TITLE(1
00103     5.         DATA PREV /9999999999./
00105     6.         DATA IREC/1/
00107     7.         DATA(MONTH(I),I=1,12)/3HJAN, 3HFEB, 3HMAR, 3HAPR, 3HMAY, 3H
00107     8.        *3HJUL, 3HAUG, 3HSEP, 3HOCT, 3HNOV, 3HDEC/
00111     9.         DATA(CALDAY(I), I = 1,12)/0., 31., 59., 90., 120., 151., 18
00111    10.        *                          212., 243., 273., 304., 334.,/
```

NE 22,1965 F4008

RELATIVE LOCATION, NAME)

0000		000456 106F	0000		000144 107F	0000		000166 108F
0000		000246 111F	0000		000270 112F	0000		000310 113F
0000		000400 116F	0000		000423 117F	0001		000011 117G
0001		000022 126G	0001		001135 15L	0000		000122 18F
0001		001171 27L	0001		000104 29L	0001		000163 300L
0001		000437 312L	0001		000307 315L	0001		000460 320L
0001		000571 335L	0001		000626 340L	0001		000612 343L
0001		000716 39L	0000		000125 401F	0001		001211 446G
0001		000143 95L	0000	R	000035 CALDAY	0000	R	000103 FLAT
0000	I	000067 I	0000	I	000105 IALT	0000	I	000106 IBAD
0000	I	000070 IDAYPT	0000	I	000077 IHR	0000	I	000100 IMIN
0000	I	000073 ISAT	0000	I	000101 ISEC	0000	I	000102 ISTAT
0000	I	000071 I$	0000	I	000121 K	0000	I	000000 MONTH
0000	I	000117 NMIN	0000	I	000114 NMON	0000	I	000110 NOBAD
0000	I	000014 NSTAT	0000	I	000115 NYR	0000	R	000065 PREV

ES INVENTORY OF 14 DATA TAPES

, NSTAT(17), CALDAY(12),TITLE(12)

3HFEB, 3HMAR, 3HAPR, 3HMAY, 3HJUN,
HNOV, 3HDEC/
31., 59., 90., 120., 151., 181.,
243., 273., 304., 334./

```
00113    11.          CALL SETEOF($27)
00114    12.          IDAYPT = 0
00114    13.    C
00114    14.    C     READ TITLE FROM DATA CARD
00114    15.    C
00115    16.          READ (31,18) TITLE
00123    17.    18    FORMAT(12A6)
00124    18.          WRITE(32,19) TITLE
00132    19.    19    FORMAT(1H1,12A6,/)
00133    20.          IU = 3
00133    21.    C
00133    22.    C     READ FIRST RECORD FROM TAPE
00133    23.    C
00134    24.          READ(IU,104) ISAT,IYR,IMON,IDAY,IHR,IMIN,ISEC,ISTAT,FLAT,
00134    25.         *FLONG,IALT
00151    26.          WRITE (32,401) IDAY,  MONTH(IMON), IYR, IHR, IMIN, ISEC
00161    27.    401   FORMAT(1H0,  10HSTART TIME,3X, I2, 1X, A3, 2(1X,I2),2(1H:,I2
00162    28.          GO TO 95
00162    29.    C
00162    30.    C     READ NEXT RECORD FROM TAPE
00162    31.    C
00163    32.    29    READ(IU,104) ISAT,IYR,IMON,IDAY,IHR,IMIN,ISEC,ISTAT,FLAT
00163    33.         *,FLONG,IALT
00200    34.    104   FORMAT(1H I1,6I3, 3X,I3, 48X, F5.2, F10.2, I7)
00201    35.          IREC = IREC + 1
00202    36.          IBAD = 0
00203    37.          IBAD1 = 0
00203    38.    C
00203    39.    C     VERIFY PARAMETERS
00203    40.    C
00203    41.    C     SATELLITE CODE MUST BE 7
00203    42.    C
00204    43.    95    IF (ISAT .EQ. 7) GO TO 300
00206    44.          WRITE(32,107) IREC, ISAT, ISTAT
00213    45.    107   FORMAT(1H013H***ERROR***  ,10HRECORD NO.,I5,3X,16HSATELLITE
00213    46.         *, I3, 2X, 14HSHOULD EQUAL 7, 3X, 11HSTATION NO., I3)
00214    47.          IBAD = 1
00214    48.    C
00214    49.    C     TEST FOR YEAR BETWEEN 59 AND 61
00214    50.    C
00215    51.    300   IF(IYR .GE.  59.AND. IYR .LE.  61) GO TO 305
00217    52.          WRITE(32,108) IREC,IYR,ISTAT
00224    53.    108   FORMAT(1H013H***ERROR***  ,10HRECORD NO.,I5,3X, 7HYEAR = I3,
00224    54.         *36H SHOULD NOT BE BEFORE 59 OR AFTER 61,3X,11HSTATION NO., I
00224    55.    C
00224    56.    C       MONTH MUST BE FROM 1 TO 12
00224    57.    C
00225    58.    305   IF(IMON .GE.  1 .AND. IMON.LE.  12) GO TO 310
00227    59.          WRITE(32,109) IREC, IMON, ISTAT
00234    60.    109   FORMAT(1H013H***ERROR***  ,10HRECORD NO.,I5,3X,  8HMONTH = ,
00234    61.         *11HSTATION NO.,I3)
00235    62.          IBAD1 = 1
00235    63.    C
00235    64.    C     HOUR MUST GO FROM 0 TO 23
00235    65.    C
00236    66.    310   IF (IHR .GE.  0 .AND. IHR .LE.  23) GO TO 315
00240    67.          WRITE(32,110) IREC,IHR,ISTAT
00245    68.    110   FORMAT(1H013H***ERROR***  ,10HRECORD NO.,I5,
```

```
SETEOF(327)
T = 0

TITLE FROM DATA CARD

(31,18) TITLE
T(12A6)
(32,19) TITLE
T(1H1,12A6,/)
9

FIRST RECORD FROM TAPE

U,104) ISAT,IYR,IMON,IDAY,IHR,IMIN,ISEC,ISTAT,FLAT,
IALT
(32,401) IDAY,  MONTH(IMON), IYR, IHR, IMIN, ISEC
T(1H0,  10HSTART TIME,3X, I2, 1X, A3, 2(1X,I2),2(1H:,I2))
95

EXT RECORD FROM TAPE

U,104) ISAT,IYR,IMON,IDAY,IHR,IMIN,ISEC,ISTAT,FLAT
,IALT
(1H I1,6I3, 3X,I3, 48X, F5.2, F10.2, I7)
 IREC + 1
 0
= 0

 PARAMETERS

ITE CODE MUST BE 7

AT .EQ. 7) GO TO 300
32,107) IREC, ISAT, ISTAT
(1H013H***ERROR***  ,10HRECORD NO.,I5,3X,16HSATELLITE CODE =
2X, 14HSHOULD EQUAL 7, 3X, 11HSTATION NO., I3)
 1

OR YEAR BETWEEN 59 AND 61

 .GE.  59.AND. IYR .LE.  61) GO TO 305
52,108) IREC,IYR,ISTAT
(1H013H***ERROR***  ,10HRECORD NO.,I5,3X, 7HYEAR = I3,
OULD NOT BE BEFORE 59 OR AFTER 61,3X,11HSTATION NO., I3)

H MUST BE FROM 1 TO 12

N .GE.  1 .AND. IMON.LE.  12) GO TO 310
52,109) IREC, IMON, ISTAT
(1H013H***ERROR***  ,10HRECORD NO.,I5,3X,  8HMONTH = ,I3,3X,
TION NO.,I3)
: 1

UST GO FROM 0 TO 23

 .GE.  0 .AND. IHR .LE.  23) GO TO 315
52,110) IREC,IHR,ISTAT
1H013H***ERROR***  ,10HRECORD NO.,I5,
```

```
00245    69.          *3X, 6HHOUR =, I3,18H OUT OF RANGE 0-23,3X,11HSTATION NO.
00246    70.           IBAD1 = 1
00246    71.    C
00246    72.    C      CHECK TO SEE IF DAY IS PROPER FOR MONTH AND LEAP YEAR
00246    73.    C
00247    74.    315    IF(IDAY.LT. 1.OR.IDAY.GT.31.OR.(IMON.EQ.2.AND.IYR.NE. 60
00247    75.          *.AND. IDAY .GT.  28) .OR. (IMON .EQ. 2 .AND. IYR .EQ.  6
00247    76.          * .GT.  29) .OR.((IMON .EQ. 4 .OR. IMON .EQ. 6 .OR. IMON
00247    77.          *.OR. IMON .EQ. 11).AND. IDAY .GT. 30))
00247    78.          *GO TO 312
00251    79.           GO TO 320
00252    80.    312    WRITE(32,111) IREC,IDAY,MONTH(IMON) ,IYR, ISTAT
00261    81.    111    FORMAT(1H013H***ERROR***  ,10HRECORD NO.,I5,
00261    82.          *3X, 5HDAY =, I3, 2X,18H OUT OF RANGE FOR ,A3,I3,3X,11HST
00261    83.          *I3  )
00262    84.           IBAD1 = 1
00262    85.    C
00262    86.    C      RANGE OF MINUTES 0 TO 59
00262    87.    C
00263    88.    320    IF(IMIN.GE.0.AND.IMIN.LE. 59)GO TO 325
00265    89.           WRITE (32,112) IREC,IMIN,ISTAT
00272    90.    112    FORMAT(1H013H***ERROR***  ,10HRECORD NO.,I5,
00272    91.          *3X,   5HMIN =,I3,19H OUT OF RANGE 0-59.,3X,11HSTATION N
00273    92.           IBAD1 = 1
00273    93.    C
00273    94.    C      RANGE OF SECONDS 0 TO 59
00273    95.    C
00274    96.    325    IF(ISEC.GE. 0 .AND.ISEC .LE. 59) GO TO 330
00276    97.           WRITE (32,113) IREC, ISEC, ISTAT
00303    98.    113    FORMAT(1H013H***ERROR***  ,10HRECORD NO.,I5,3X, 5HSEC =
00303    99.          *2X,18HOUT OF RANGE 0-59., 3X, 11HSTATION NO., I3   )
00304   100.           IBAD1 = 1
00304   101.    C
00304   102.    C      CHECK LATITUDE FOR -51 TO +51 DEGREES
00304   103.    C
00305   104.    330    IF( ABS(FLAT) - 51.0) 335, 335, 327
00310   105.    327    WRITE(32,114) IREC,FLAT,ISTAT
00315   106.    114    FORMAT(1H013H***ERROR***  ,10HRECORD NO.,I5,2X,11H LATI
00315   107.          *  F10.2, 3X, 30HRANGE -51 DEGREES +51 DEGREES., 3X, 11H
00315   108.          *, I3)
00316   109.           IBAD = 1
00316   110.    C
00316   111.    C      CHECK LONGITUDE FOR 0 TO 360 DEGREES
00316   112.    C
00317   113.    335    IF(FLONG .LT. 0. .OR. FLONG .GT. 360.) GO TO 343
00321   114.           GO TO 340
00322   115.    343    WRITE(32,115) IREC,FLONG,ISTAT
00327   116.    115    FORMAT(1H013H***ERROR***  ,10HRECORD NO.,I5,3X,12HLONGI
00327   117.          *F10.2, 3X,
00327   118.          *  23HRANGE 0 DEGREES TO 360.,3X, 11HSTATION NO.    ,I3)
00330   119.           IBAD = 1
00330   120.    C
00330   121.    C      CHECK ALTITUDE FOR 550 TO 1100
00330   122.    C
00331   123.    340    IF(IALT .GE. 550 .AND.IALT .LE. 1100) GO TO 345
00333   124.           WRITE (32,116) IREC,IALT,ISTAT
00340   125.    116    FORMAT(1H013H***ERROR***  ,10HRECORD NO.,I5,3X,11HALTI
00340   126.          *I7, 2X, 26HRANGE 550 DEGREES TO 1100., 3X, 11HSTATION
```

```
NGE 0-23,3X,11HSTATION NO.,I3)

 FOR MONTH AND LEAP YEAR

(.(IMON.EQ.2.AND.IYR.NE. 60
N .EQ. 2 .AND. IYR .EQ.  60.AND.IDAY
.OR. IMON .EQ. 6 .OR. IMON .EQ. 9
.GT. 30))

(IMON) ,IYR, ISTAT
HRECORD NO.,I5,
 RANGE FOR ,A3,I3,3X,11HSTATION NO.,




60 TO 325
T
HRECORD NO.,I5,
ANGE 0-59.,3X,11HSTATION NO.I3)


59) GO TO 330
TAT
HRECORD NO.,I5,3X, 5HSEC = ,I5,
 11HSTATION NO.,  I3    )

 DEGREES

5, 327

HRECORD NO.,I5,2X,11H LATITUDE =,
REES +51 DEGREES., 3X, 11HSTATION NO.


DEGREES

GT. 360.) GO TO 343

T
HRECORD NO.,I5,3X,12HLONGITUDE = ,

3X, 11HSTATION NO.    ,I3)


0

E. 1100) GO TO 345
T
HRECORD NO.,I5,3X,11HALTITUDE = ,
TO 1100., 3X, 11HSTATION NO. , I3)
```

```
00341   127.          IBAD = 1
00341   128.    C
00341   129.    C     RECEIVING STATION NUMBER FROM 1 TO 17
00341   130.    C
00342   131.    345   IF (ISTAT .GE. 1 .AND. ISTAT .LE. 17) GO TO 39
00344   132.          IBAD = 1
00345   133.          WRITE(32,117)IREC,ISTAT
00351   134.    117   FORMAT(1H013H***ERROR***  ,10HRECORD NO.,I5,3X,19HRECEIVING
00351   135.         *N =,I3,2X, 11HRANGE 1-17.  )
00352   136.    39    IF (IBAD .EQ. 1 .OR. IBAD1 .EQ. 1) NOBAD = NOBAD + 1
00354   137.          IF(IBAD1.EQ. 0) GO TO 21
00356   138.          WRITE (32,563)
00360   139.    563   FORMAT(1H )
00361   140.          GO TO 29
00361   141.    C
00361   142.    C     COMPUTE DATE IN NUMBER OF DAYS SINCE 1/1/59
00361   143.    C
00362   144.    21    GAP = (IYR-59)*365 + CALDAY(IMON) + IDAY + FLOAT(60*IHR+IMI
00362   145.         *1440.
00363   146.          IF (IYR .EQ. 61 .OR. IYR .EQ. 60 .AND. IMON .GT. 2) GAP = G
00363   147.    C
00363   148.    C     TEST FOR A DATA GAP IN EXCESS OF 12 HOURS
00363   149.    C
00365   150.          IF(GAP- PREV .LT. .5) GO TO 9
00367   151.          WRITE(32,102)NREC,NDAY,MONTH(NMON),NYR,NHR,NMIN,NSEC,IREC,I
00367   152.         *              MONTH(IMON),IYR,IHR,IMIN,ISEC
00407   153.    102   FORMAT(1H0,8HDATA GAP,2(3X, 7HREC NO.,I5,5X,I2,1X,A3,2(1X,I
00407   154.         *2(1H:, I2)))
00407   155.    C     TEST FOR START OF NEW DAY
00410   156.    9     IF (INT(GAP)-INT(PREV) .LT. 1) GO TO 15
00412   157.          WRITE(32,106)NDAY,MONTH(NMON),NYR,IDAYPT
00420   158.    106   FORMAT(1H0,I2,1X,A3,   I3,1X,I5,1X,24HACCEPTABLE DATA POINT
00421   159.          IDAYPT = 0
00422   160.    15    PREV = GAP
00423   161.    24    NMON = IMON
00424   162.          NYR = IYR
00425   163.          NDAY = IDAY
00426   164.          NHR = IHR
00427   165.          NMIN = IMIN
00430   166.          NSEC = ISEC
00431   167.          NREC = IREC
00432   168.          IF (IBAD .EQ. 1) GO TO 29
00434   169.          IDAYPT = IDAYPT + 1
00434   170.    C
00434   171.    C     COUNT THE NUMBER OF DATA POINTS FOR EACH STATION
00434   172.    C
00435   173.          NSTAT(ISTAT) = NSTAT(ISTAT) + 1
00436   174.          GO TO 29
00437   175.    27    WRITE(32,106)NDAY,MONTH(NMON),NYR,IDAYPT
00445   176.          DO 120K =1,17
00450   177.          IF (NSTAT(K) .NE. 0) WRITE(32,120) K, NSTAT(K)
00455   178.    120   FORMAT(1H0,17HRECEIVING STATION,I3,2X,I6,1X,12HDATA POINTS.
00457   179.          WRITE(32,125)IDAY,MONTH(IMON),IYR,IHR,IMIN,ISEC
00467   180.    125   FORMAT(1H0,8HEND TIME,3X,I2,1X,A3,2(1X,I2),2(1H:I2))
00470   181.          WRITE (32,377) IREC, NOBAD
00474   182.    377   FORMAT(1H032HTOTAL NUMBER OF POINTS ON TAPE =,I7,1H ,/, 1H
00474   183.         *22HNUMBER OF BAD POINTS =,I5)
00475   184.          STOP
```

```
TO 17

. 17) GO TO 39

CORD NO.,I5,3X,19HRECEIVING STATIO

1) NOBAD = NOBAD + 1



INCE 1/1/59

) + IDAY + FLOAT(60*IHR+IMIN)/

 .AND. IMON .GT. 2) GAP = GAP + 1.

 12 HOURS

N),NYR,NHR,NMIN,NSEC,IREC,IDAY,
,IMIN,ISEC
C NO.,I5,5X,I2,1X,A3,2(1X,I2),

0 TO 15
R,IDAYPT
1X,24HACCEPTABLE DATA POINT(S)  )









FOR EACH STATION


R,IDAYPT

0) K, NSTAT(K)
I3,2X,I6,1X,12HDATA POINTS.)
R,IHR,IMIN,ISEC
5,2(1X,I2),2(1H:I2))

NTS ON TAPE =,I7,1H ,/, 1H ,
```

```
00476   185.          END
        END OF LISTING.      0 *DIAGNOSTIC* MESSAGE(S).
```

```
MASTER FILE  1 - UNIVERSITY OF IOWA EXPLORER 7 DATA

START TIME   13 OCT 59 22:41:34
13 OCT 59    25 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO.   38     14 OCT 59  0:30:22   REC NO.   39     14 OCT 59 12:37:
14 OCT 59    24 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO.   76     15 OCT 59  0: 6:45   REC NO.   77     15 OCT 59 12:20:
DATA GAP   REC NO.  144     15 OCT 59 23:43:52   REC NO.  145     16 OCT 59 14:45:
15 OCT 59    95 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO.  199     16 OCT 59 23:22:44   REC NO.  200     17 OCT 59 14: 7:
16 OCT 59    55 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO.  246     17 OCT 59 21:16:51   REC NO.  247     18 OCT 59 10:16:
17 OCT 59    47 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO.  532     18 OCT 59 20:54:51   REC NO.  533     19 OCT 59 13:23:
18 OCT 59   286 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO.  617     19 OCT 59 20:32:34   REC NO.  618     20 OCT 59 12:59:
19 OCT 59    85 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO.  742     20 OCT 59 20: 9:47   REC NO.  743     21 OCT 59 12:37:
20 OCT 59   125 ACCEPTABLE DATA POINT(S)
***ERROR***  RECORD NO.  804   ALTITUDE =    1101  RANGE 550 DEGREES TO 1100.   ST
***ERROR***  RECORD NO.  805   ALTITUDE =    1101  RANGE 550 DEGREES TO 1100.   ST
***ERROR***  RECORD NO.  806   ALTITUDE =    1102  RANGE 550 DEGREES TO 1100.   ST
***ERROR***  RECORD NO.  807   ALTITUDE =    1102  RANGE 550 DEGREES TO 1100.   ST
***ERROR***  RECORD NO.  808   ALTITUDE =    1103  RANGE 550 DEGREES TO 1100.   ST
***ERROR***  RECORD NO.  809   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.   ST
***ERROR***  RECORD NO.  810   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.   ST
***ERROR***  RECORD NO.  811   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.   ST
***ERROR***  RECORD NO.  812   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.   ST
***ERROR***  RECORD NO.  813   ALTITUDE =    1105  RANGE 550 DEGREES TO 1100.   ST
***ERROR***  RECORD NO.  814   ALTITUDE =    1105  RANGE 550 DEGREES TO 1100.   ST
```

MASTER FILE 1

EC NO. 39 14 OCT 59 12:37:16

EC NO. 77 15 OCT 59 12:20: 3
EC NO. 145 16 OCT 59 14:45:18

EC NO. 200 17 OCT 59 14: 7: 3

EC NO. 247 18 OCT 59 10:16:28

EC NO. 533 19 OCT 59 13:23:15

EC NO. 618 20 OCT 59 12:59:43

EC NO. 743 21 OCT 59 12:37: 8

RANGE 550 DEGREES TO 1100. STATION NO. 17
RANGE 550 DEGREES TO 1100. STATION NO. 17
RANGE 550 DEGREES TO 1100. STATION NO. 17
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RANGE 550 DEGREES TO 1100. STATION NO. 17

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***ERROR***  RECORD NO.  815   ALTITUDE =    1105  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO.  816   ALTITUDE =    1105  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO.  817   ALTITUDE =    1105  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO.  818   ALTITUDE =    1105  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO.  819   ALTITUDE =    1105  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO.  820   ALTITUDE =    1105  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO.  821   ALTITUDE =    1105  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO.  822   ALTITUDE =    1105  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO.  823   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO.  824   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO.  825   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO.  826   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO.  827   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
DATA GAP   REC NO.  871     21 OCT 59 19:48:31   REC NO.  872     22 OCT 59 10:3
21 OCT 59   105 ACCEPTABLE DATA POINT(S)
***ERROR***  RECORD NO.  943   ALTITUDE =    1102  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO.  944   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
DATA GAP   REC NO. 1151     22 OCT 59 19:24:47   REC NO. 1152     23 OCT 59 10:
22 OCT 59   278 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO. 1360     23 OCT 59 20: 6:57   REC NO. 1361     24 OCT 59  8:1
23 OCT 59   209 ACCEPTABLE DATA POINT(S)
***ERROR***  RECORD NO. 1533   ALTITUDE =    1103  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1534   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1535   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1536   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1537   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1538   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1539   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1540   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
```

NGE 550 DEGREES TO 1100. STATION NO. 17

NGE 550 DEGREES TO 1100. STATION NO. 17

NGE 550 DEGREES TO 1100. STATION NO. 17

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NGE 550 DEGREES TO 1100. STATION NO. 17

NGE 550 DEGREES TO 1100. STATION NO. 17

NGE 550 DEGREES TO 1100. STATION NO. 17

NO. 872 22 OCT 59 10:30: 1

NGE 550 DEGREES TO 1100. STATION NO. 17

NGE 550 DEGREES TO 1100. STATION NO. 17

NO. 1152 23 OCT 59 10: 6:39

NO. 1361 24 OCT 59 8:14:25

ANGE 550 DEGREES TO 1100. STATION NO. 17

ANGE 550 DEGREES TO 1100. STATION NO. 17

ANGE 550 DEGREES TO 1100. STATION NO. 17

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ANGE 550 DEGREES TO 1100. STATION NO. 17

ANGE 550 DEGREES TO 1100. STATION NO. 17

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***ERROR***  RECORD NO. 1541   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1542   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1543   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1544   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1545   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1546   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1547   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1548   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1549   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1550   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1551   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1552   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1553   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1554   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1555   ALTITUDE =    1104  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1556   ALTITUDE =    1103  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1557   ALTITUDE =    1103  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1558   ALTITUDE =    1102  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1559   ALTITUDE =    1101  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1560   ALTITUDE =    1101  RANGE 550 DEGREES TO 1100.
***ERROR***  RECORD NO. 1561   ALTITUDE =    1101  RANGE 550 DEGREES TO 1100.
DATA GAP   REC NO. 1670     24 OCT 59 18:40: 4   REC NO. 1671     25 OCT 59  7:5
24 OCT 59   281 ACCEPTABLE DATA POINT(S)
25 OCT 59   364 ACCEPTABLE DATA POINT(S)
26 OCT 59   528 ACCEPTABLE DATA POINT(S)
27 OCT 59   344 ACCEPTABLE DATA POINT(S)
***ERROR***  RECORD NO. 3254   LONGITUDE =     360.95   RANGE 0 DEGREES TO 360.
28 OCT 59   347 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO. 3433     29 OCT 59 16:43:27   REC NO. 3434     30 OCT 59  7:2
```

MASTER FILE 1

ANGE 550 DEGREES TO 1100. STATION NO. 17
ANGE 550 DEGREES TO 1100. STATION NO. 17
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NGE 550 DEGREES TO 1100. STATION NO. 17
NGE 550 DEGREES TO 1100. STATION NO. 17
NGE 550 DEGREES TO 1100. STATION NO. 17

NO. 1671 25 OCT 59 7:52:12

RANGE 0 DEGREES TO 360. STATION NO. 6

NO. 3434 30 OCT 59 7:29:19

```
29 OCT 59   179 ACCEPTABLE DATA POINT(S)
30 OCT 59   194 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO. 4127     31 OCT 59 17:48: 6   REC NO. 4128      1 NOV 59  5:5
31 OCT 59   500 ACCEPTABLE DATA POINT(S)
 1 NOV 59   356 ACCEPTABLE DATA POINT(S)
 2 NOV 59   457 ACCEPTABLE DATA POINT(S)
 3 NOV 59   606 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO. 6059      4 NOV 59 16:16:30   REC NO. 6060      5 NOV 59  5:2
 4 NOV 59   513 ACCEPTABLE DATA POINT(S)
 5 NOV 59   185 ACCEPTABLE DATA POINT(S)
 6 NOV 59   466 ACCEPTABLE DATA POINT(S)
 7 NOV 59   231 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO. 7264      8 NOV 59 13:44:31   REC NO. 7265      9 NOV 59  2:
 8 NOV 59   323 ACCEPTABLE DATA POINT(S)
 9 NOV 59   494 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO. 8005     10 NOV 59 11:29:30   REC NO. 8006     11 NOV 59  1:2
10 NOV 59   247 ACCEPTABLE DATA POINT(S)
11 NOV 59  1030 ACCEPTABLE DATA POINT(S)
12 NOV 59  1034 ACCEPTABLE DATA POINT(S)
13 NOV 59  1314 ACCEPTABLE DATA POINT(S)
14 NOV 59   995 ACCEPTABLE DATA POINT(S)
15 NOV 59   971 ACCEPTABLE DATA POINT(S)
16 NOV 59  1350 ACCEPTABLE DATA POINT(S)
***ERROR***  RECORD NO.14736   LONGITUDE =     360.88   RANGE 0 DEGREES TO 360.
17 NOV 59  1432 ACCEPTABLE DATA POINT(S)
18 NOV 59  1606 ACCEPTABLE DATA POINT(S)
19 NOV 59  1325 ACCEPTABLE DATA POINT(S)
20 NOV 59  1558 ACCEPTABLE DATA POINT(S)
21 NOV 59  1778 ACCEPTABLE DATA POINT(S)
```

MASTER FILE

C NO. 4128 1 NOV 59 5:53:33

C NO. 6060 5 NOV 59 5:20:17

C NO. 7265 9 NOV 59 2: 9:42

C NO. 8006 11 NOV 59 1:24:31

38 RANGE 0 DEGREES TO 360. STATION NO. 6

22 NOV 59 1418 ACCEPTABLE DATA POINT(S)

23 NOV 59 1359 ACCEPTABLE DATA POINT(S)

24 NOV 59 1208 ACCEPTABLE DATA POINT(S)

25 NOV 59 1421 ACCEPTABLE DATA POINT(S)

26 NOV 59   644 ACCEPTABLE DATA POINT(S)

RECEIVING STATION 3   13383 DATA POINTS.

RECEIVING STATION 6   6444 DATA POINTS.

RECEIVING STATION 16   5867 DATA POINTS.

RECEIVING STATION 17   2698 DATA POINTS.

END TIME   26 NOV 59 5:31:13

TOTAL NUMBER OF POINTS ON TAPE - 28449
NUMBER OF BAD POINTS -   57

MASTER FILE 14 - UNIVERSITY OF IOWA EXPLORER 7 DATA

START TIME 13 DEC 60 2:19:34

13 DEC 60 899 ACCEPTABLE DATA POINT(S)

14 DEC 60 735 ACCEPTABLE DATA POINT(S)

15 DEC 60 691 ACCEPTABLE DATA POINT(S)

16 DEC 60 725 ACCEPTABLE DATA POINT(S)

17 DEC 60 887 ACCEPTABLE DATA POINT(S)

DATA GAP REC NO. 4616 18 DEC 60 23:52: 9 REC NO. 4617 19 DEC 60 14:2

18 DEC 60 679 ACCEPTABLE DATA POINT(S)

19 DEC 60 459 ACCEPTABLE DATA POINT(S)

DATA GAP REC NO. 5086 20 DEC 60 1: 7:54 REC NO. 5087 20 DEC 60 13:5

20 DEC 60 385 ACCEPTABLE DATA POINT(S)

21 DEC 60 563 ACCEPTABLE DATA POINT(S)

22 DEC 60 702 ACCEPTABLE DATA POINT(S)

DATA GAP REC NO. 6829 23 DEC 60 5: 1:48 REC NO. 6830 23 DEC 60 19:3

23 DEC 60 442 ACCEPTABLE DATA POINT(S)

DATA GAP REC NO. 7261 24 DEC 60 4:37:55 REC NO. 7262 24 DEC 60 19:3

24 DEC 60 189 ACCEPTABLE DATA POINT(S)

25 DEC 60 456 ACCEPTABLE DATA POINT(S)

DATA GAP REC NO. 7971 26 DEC 60 3:46:58 REC NO. 7972 26 DEC 60 20:

26 DEC 60 323 ACCEPTABLE DATA POINT(S)

27 DEC 60 656 ACCEPTABLE DATA POINT(S)

DATA GAP REC NO. 9381 28 DEC 60 21:37: 4 REC NO. 9382 29 DEC 60 10:

28 DEC 60 590 ACCEPTABLE DATA POINT(S)

DATA GAP REC NO. 9698 29 DEC 60 21:10:48 REC NO. 9699 30 DEC 60 11:

29 DEC 60 317 ACCEPTABLE DATA POINT(S)

DATA GAP REC NO. 9966 30 DEC 60 20:48:59 REC NO. 9967 31 DEC 60 9:

30 DEC 60 268 ACCEPTABLE DATA POINT(S)

DATA GAP REC NO.10310 31 DEC 60 20:22:32 REC NO.10311 8 JAN 61 10:

MASTER FILE 14

TA

REC NO. 4617 19 DEC 60 14:23: 5

REC NO. 5087 20 DEC 60 13:59:49

REC NO. 6830 23 DEC 60 19:35: 8

REC NO. 7262 24 DEC 60 19:13: 7

REC NO. 7972 26 DEC 60 20: 8: 9

REC NO. 9382 29 DEC 60 10:22:49

REC NO. 9699 30 DEC 60 11:42: 1

REC NO. 9967 31 DEC 60 9:35:34

REC NO.10311 8 JAN 61 10:11:29

```
31 DEC 60   344 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO.10381      8 JAN 61 10:26:27   REC NO.10382     20 JAN 61  0:4
 8 JAN 61    71 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO.10821     20 JAN 61  6:20:19   REC NO.10822     20 JAN 61 20:1
20 JAN 61   585 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO.11607     21 JAN 61  6:51: 5   REC NO.11608     21 JAN 61 19:4
DATA GAP   REC NO.11707     21 JAN 61 23:59:31   REC NO.11708      1 FEB 61  0:2
21 JAN 61   741 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO.11750      1 FEB 61  0:43: 1   REC NO.11751     22 FEB 61 11:
 1 FEB 61    43 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO.11780     22 FEB 61 11:11:21   REC NO.11781     24 FEB 61 15:3
22 FEB 61    30 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO.11814     24 FEB 61 15:43:36   REC NO.11815     25 FEB 61  7:2
24 FEB 61    38 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO.11966     25 FEB 61 18:56:15   REC NO.11967     26 FEB 61  6:5
25 FEB 61   152 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO.12119     26 FEB 61 18:30:58   REC NO.12120     27 FEB 61  6:3
26 FEB 61   153 ACCEPTABLE DATA POINT(S)
DATA GAP   REC NO.12428     27 FEB 61 18: 7:48   REC NO.12429     28 FEB 61  6:1
27 FEB 61   309 ACCEPTABLE DATA POINT(S)
28 FEB 61   296 ACCEPTABLE DATA POINT(S)
RECEIVING STATION  3    1319 DATA POINTS.
RECEIVING STATION  5     131 DATA POINTS.
RECEIVING STATION  8    5975 DATA POINTS.
RECEIVING STATION 12     160 DATA POINTS.
RECEIVING STATION 14    3682 DATA POINTS.
RECEIVING STATION 16     518 DATA POINTS.
RECEIVING STATION 17     939 DATA POINTS.
END TIME   28 FEB 61 19:21:45
```

EC NO.10382 20 JAN 61 0:45: 0

EC NO.10822 20 JAN 61 20:13: 3

EC NO.11608 21 JAN 61 19:46: 2

EC NO.11708 1 FEB 61 0:29:22

EC NO.11751 22 FEB 61 11: 4: 5

EC NO.11781 24 FEB 61 15:38:54

EC NO.11815 25 FEB 61 7:23: 0

EC NO.11967 26 FEB 61 6:58:54

EC NO.12120 27 FEB 61 6:34:28

EC NO.12429 28 FEB 61 6:12:25

TOTAL NUMBER OF POINTS ON TAPE - 12724
NUMBER OF BAD POINTS - 0

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