DATA SET CATALOG #8

Explorer 15 Electron Energy Distribution

62-059A-01A 1 Tape

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 This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system.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

EPE-C

L-ORDERED PROTON - ELECTRON COUNT TAPE

62-059A-01A

This data set has been restored. There was originally 1 Binary 9-Track, 1600 BPI tape. There is one restored tape. The DR tape is a 3480 cartridge and the DS tape is 9-track, 6250 BPI. The tape was created on an IBM BESYS computer. The DR and DS number along with the corresponding D number and the time span is as follows:

DR#	DS#	D#	FILES	TIME SPAN
DR03039	DS03039	D00074	62	10/27/62 - 01/01/63

62-059A-01A

EXPLORER - 15

January 1968

This is the Data Set Catalog for the Explorer 15 Electron Energy Distribution Experiment (62-059A-01A).

The data set consists of one binary 800 Bpi tape recorded under the Bell Labs System. The tape was unpacked with the NSSDC routine "GETBE".

THIS CATALOG CONSISTS OF:

1. BCD listing of data in first 3 files.
2. Matrix of the X and L values, with the B/BO value given in relation to the X value.
3. Matrix of B and L values.
4. The 'L' value, maximum and minimum values for 'B', each of the electron detectors and the 'X' value for every file.
5. Total number of records in each file.
6. Octal dump of first four files.
7. Listings of program to produce 1.
8. Listing of program to produce 2, 3, 4 and 5.

DATA USERS' NOTE

NSSDC 68-18

EXPLORER 15 (1962 BETA LAMBDA 2)

ELECTRON ENERGY DISTRIBUTION EXPERIMENT

SEPTEMBER 1968

NATIONAL SPACE SCIENCE DATA CENTER

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

DATA USERS' NOTE
NSSDC 68-18

EXPLORER 15 (1962 BETA LAMBDA 2) ELECTRON ENERGY DISTRIBUTION EXPERIMENT

EXPERIMENTER

W. L. Brown

SEPTEMBER 1968

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 15 (1962 Beta Lambda 2) electron energy distribution 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, the name and address of the experimenter are 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
Code 601
Greenbelt, Maryland 20771

Area Code – 301 982-6695

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LIST OF FIGURES

EXPLORER 15 (1962 BETA LAMBDA 2)

ELECTRON ENERGY DISTRIBUTION EXPERIMENT

BACKGROUND

Scientists at Bell Telephone Laboratories designed the electron energy distribution experiment on Explorer 15. The primary purpose of the experiment was to study the injection of new electrons into the trapping region by high-altitude nuclear explosions and the subsequent disappearance of these particles by atmospheric scattering or other loss mechanisms. A related experiment to determine angular distribution was negated by the high spin rate.[1]

This experiment was one of six (see figure 1) carried aboard the Explorer 15 (1962 Beta Lambda 2) spacecraft, which was launched on October 27, 1962, from Cape Kennedy, Florida. Explorer 15 achieved a low-inclination orbit with an apogee of 17 300 km, a perigee of 310 km, a period of 312 min, and an inclination of 18°.[2,3]

No.	Experiment	Experimenter(s)	Affiliation
01	Electron Energy Distribution	W. Brown	BTL*
02	Omnidirectional Detector	C. McIlwain	University of California
03	Angular Distribution	W. Brown	BTL*
04	Directional Detector	C. McIlwain	University of California
05	Ion-Electron Detector	L. Davis J. Williamson	GSFC** GSFC**
06	Magnetic Field	L. Cahill	University of New Hampshire

*Bell Telephone Laboratories.

**Goddard Space Flight Center.

Figure 1—Explorer 15 Experiments

EXPERIMENTER

W. L. Brown – Bell Telephone Laboratories*

EXPERIMENT

Instrumentation and Measurements

Explorer 15 carried a group of six diffused-silicon p-n junction semiconductor devices, which were similar to those carried aboard the Telstar satellites. These detectors were designed to measure the rough energy spectrum of electrons in the artificial radiation belt. The p-n junction regions of the detectors contained a high electric field developed by an applied bias potential. Holes and electrons are generated in silicon in proportion to the energy lost by a high-energy charged particle. These holes and electrons generated in the p-n junction region produce an output pulse proportional in magnitude to the amount of energy the particle lost in the active field-containing region of the device.[1]

The detectors on Explorer 15, mounted in different shielding arrangements, were provided with various thicknesses of absorber for measurements of electrons of different energies. (See figure 2.) For all detectors, a pulse height discrimination level of approximately 0.4 Mev was established. One detector had an additional discrimination level set at 2.7 Mev. The effective geometrical factors apply for a detector bias of 100 volts; at this voltage the detectors had an active thickness of about 0.4 mm. A bias of 5 volts was also supplied during part of the experiment.

At this lower value, the active thickness was reduced to approximately 0.12 mm. This change reduced the electron detection efficiency by a factor of approximately 100 because of the low probability that an electron would leave at least 0.4 Mev in such a thin active region. The detection efficiency for low-energy protons was essentially unaffected. By comparing the counting rates at a 100-volt and a 5-volt bias, the proton and electron components of the counting rate could be separated.[1]

Detectors B and C were located on protruding omnidirectional mounts. The other four detectors were placed in the center block of the detector box. All the detectors looked perpendicular to the spin axis of the satellite. The two omnidirectional detector mounts protruded through the satellite cover and viewed an almost unobstructed 2π solid angle.[1]

Calibration

Detector A, Channel E1:

The detection characteristics of this detector were measured with a Sr^{90} beta source and with monoenergetic electrons up to 2 Mev. Measurements were made with essentially point source geometry. The detector was displaced behind the truncated end of the entrance cone of the shielding block to reduce the probability of electron scatter into the detector. The angular response of this detector is shown in figure 3.[1]

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*Address: Bell Telephone Laboratories, Inc., Murray Hill, New Jersey 91109.

Detector	Channel	Pulse Height Discriminator (Mev*)	Absorber (g/cm²)	Threshold Energies		Full Angular Aperture	Mathematical Geometrical Factor (cm² ster)	Effective Geometrical Factor for Electrons (cm² ster)
				Electrons (Mev)	Protons (Mev)			
A	E1	0.408	.020	0.5	2.1	20°	2.9×10^{-3}	6.5×10^{-4}
	E4	2.7	.020	2.8	4.0	20°	2.9×10^{-3}	
B	E2	0.411	.42	1.9	15	2π (20°)	†2.9×10^{-3}	5.5×10^{-4}
C	E3	0.408	.84	2.9	22	2π (30°)	†6.5×10^{-3}	$\sim 9 \times 10^{-4}$
D	E5	0.402	6.3	background		4π	2×10^{-1}	
E	E6	0.410	.020	0.5	2.1	10°	4.7×10^{-4}	1.6×10^{-4}
F	E7	0.413	.41	1.9	15	14°	9.4×10^{-4}	$\sim 1.5 \times 10^{-4}$

*Energy equivalent of charge pulse required by the discriminator.
†Assuming uniform scattering over 2π solid angle for electrons penetrating a hemispherical dome.

Figure 2—Characteristics of Detectors

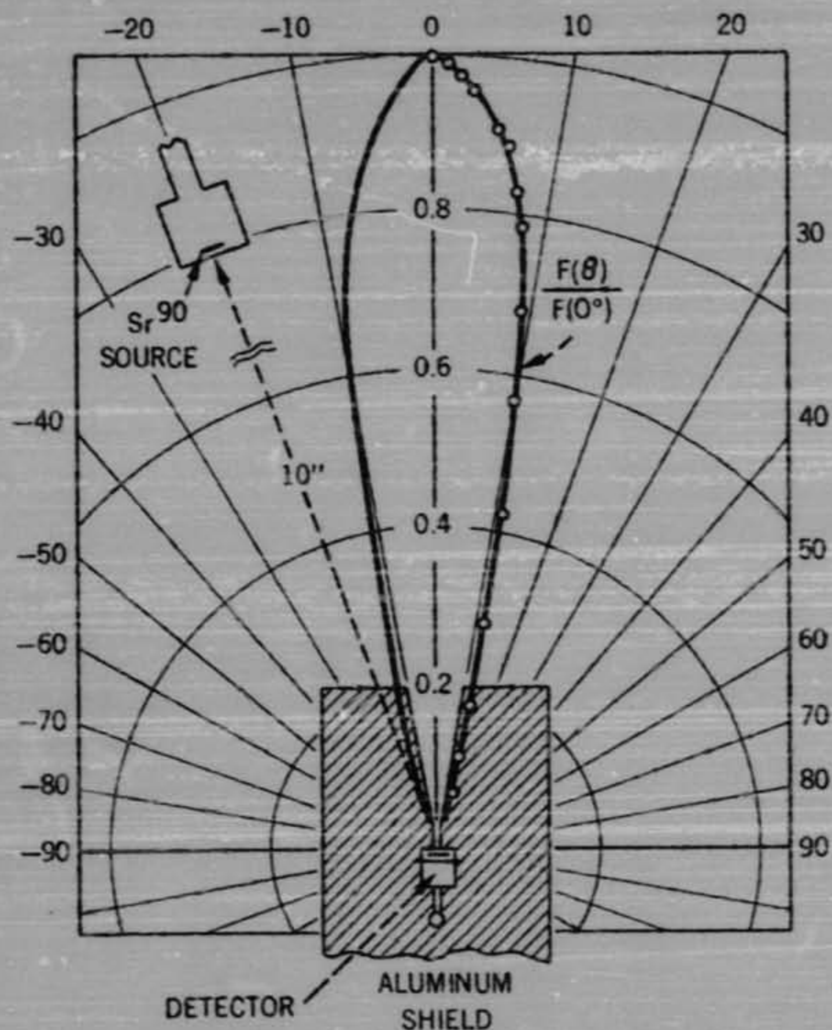

Figure 3—Angular Response of Detector A

Figure 4 shows the geometrical factor of the detector for monoenergetic electrons. An electron Van de Graaff at Bell Telephone Laboratories was used in the calibration for energies up to 1 Mev. For higher energies, a Van de Graaff at the Massachusetts Institute of Technology was used. The detector's effective geometrical factor was found to rise steeply at about 0.5 Mev as electrons succeeded in penetrating the 20 mg/cm² entrance window and in satisfying the 0.4-Mev pulse height requirement of the discriminator. The mathematical geometrical factor was approximately 2.9×10^{-3} cm² ster. Thus the peak efficiency of the detector, which occurred at an energy of about 0.7 Mev, was between 35 and 40%.

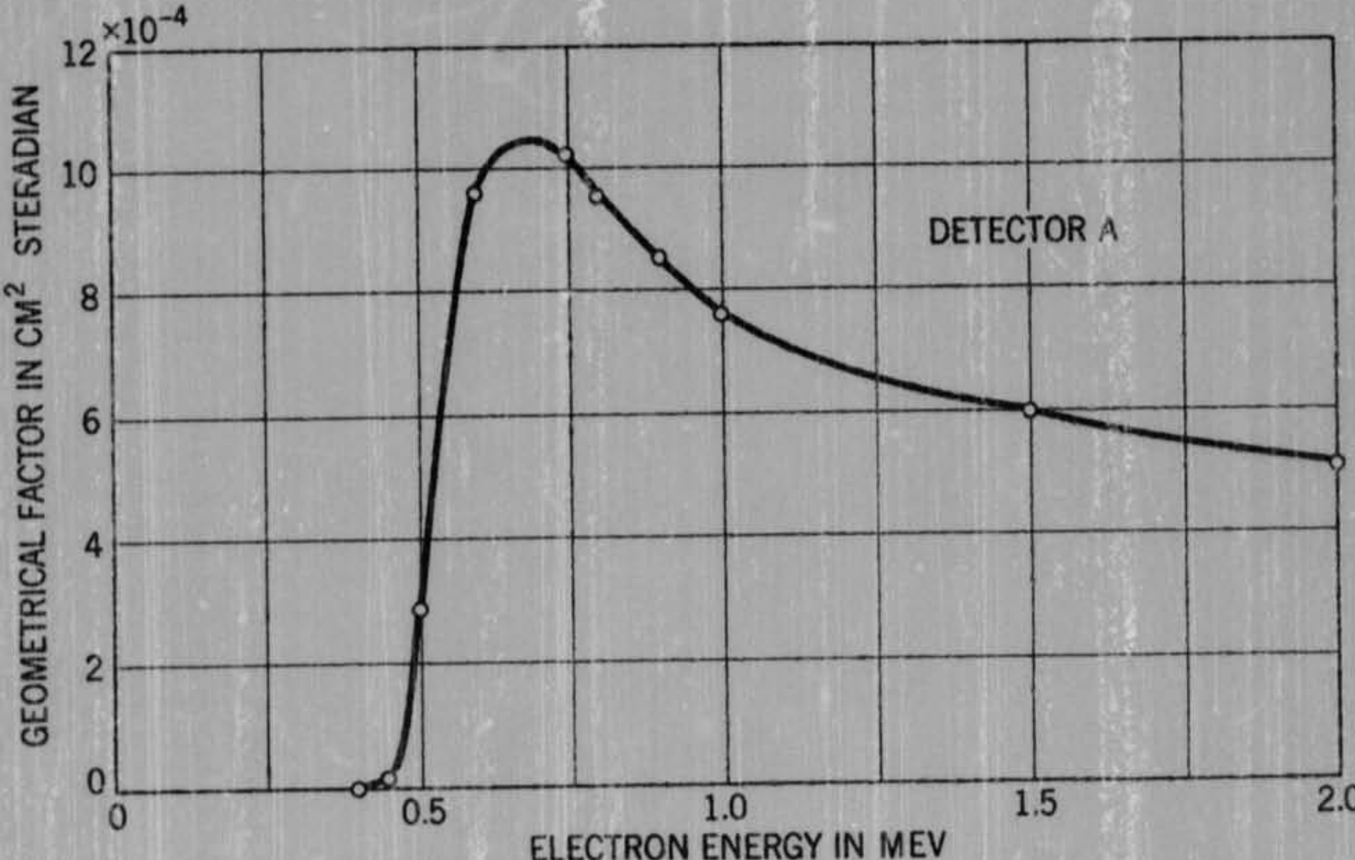

Figure 4—Geometrical Factor for Detector A

The active thickness of the silicon p-n junction detector is 0.37 mm, and a minimum ionizing electron will, on the average, lose only about 0.15 Mev in passing through it. The discriminator level was set considerably higher than this to avoid possible problems of detector noise. Thus the detector efficiency went through a maximum for electrons that stop with high probability in the active thickness and slowly decreased toward higher energy electrons when the mean energy loss dropped below the discrimination level. The average geometrical factor clearly depended on the spectrum of electrons, but for an exponential spectrum with an e-folding energy of 1 Mev, the geometrical factor for electrons above 0.5 Mev was 6.5×10^{-4} cm^2 ster.[1]

Detector B, Channel E2:

This detector was dependent on the properties of a brass scattering dome for its wide angle characteristics. The angular response is shown in figure 5. The curve $1/2\,(1 + \cos\theta)$ shown on the figure is the response that would be obtained if the electrons were isotropically distributed in angle when they penetrated a truly hemispherical dome. The dome was elongated to compensate for the incompleteness of the scattering, but in response the detector was nonetheless down a factor of approximately 2 at 90°. This discrepancy was undetectable when an omnidirectional flux was measured by averaging the counting rate of the detector as the satellite rotated around its spin axis.[1]

In figure 6 the curve shows the effective geometrical factor for monoenergetic electrons up to 2.8 Mev. The brass dome, 0.42 gm/cm^2 in thickness, broadened the rise of the detector response because of the statistical variability of electron energy loss in penetrating the dome. It was not feasible to extend the measurements above 3 Mev, and the dashed line is a reasonable extrapolation to higher energies. Since electron energy loss was variable in this relatively thick absorber, it was likely that the curve would come down at high energies only very slowly if at all. The measured curve has been approximated by an ideal step in detector effective geometrical factor from zero below a threshold to a constant value above. Using a fission electron spectrum the effective threshold was found to be 1.85 Mev. For a soft exponential spectrum with an e-folding energy of 0.5 Mev the threshold was found to be 1.8 Mev. These values may be compared with the estimated 1.9-Mev energy for half penetration of the shield with 0.5-Mev average penetration energy. For simplicity, this detector was said to measure electrons above 1.9 Mev.[1]

Detector C, Channel E3:

This detector had a brass scattering dome 0.84 gm/cm^2 in thickness. The thickness was too great to allow measurements with a Sr^{90} source and even too thick using the high-energy Van de Graaff to see more than the start of its energy dependence. As a result, the geometrical factor and the equivalent threshold energy for this detector were estimated by making analogies with detector B.[1]

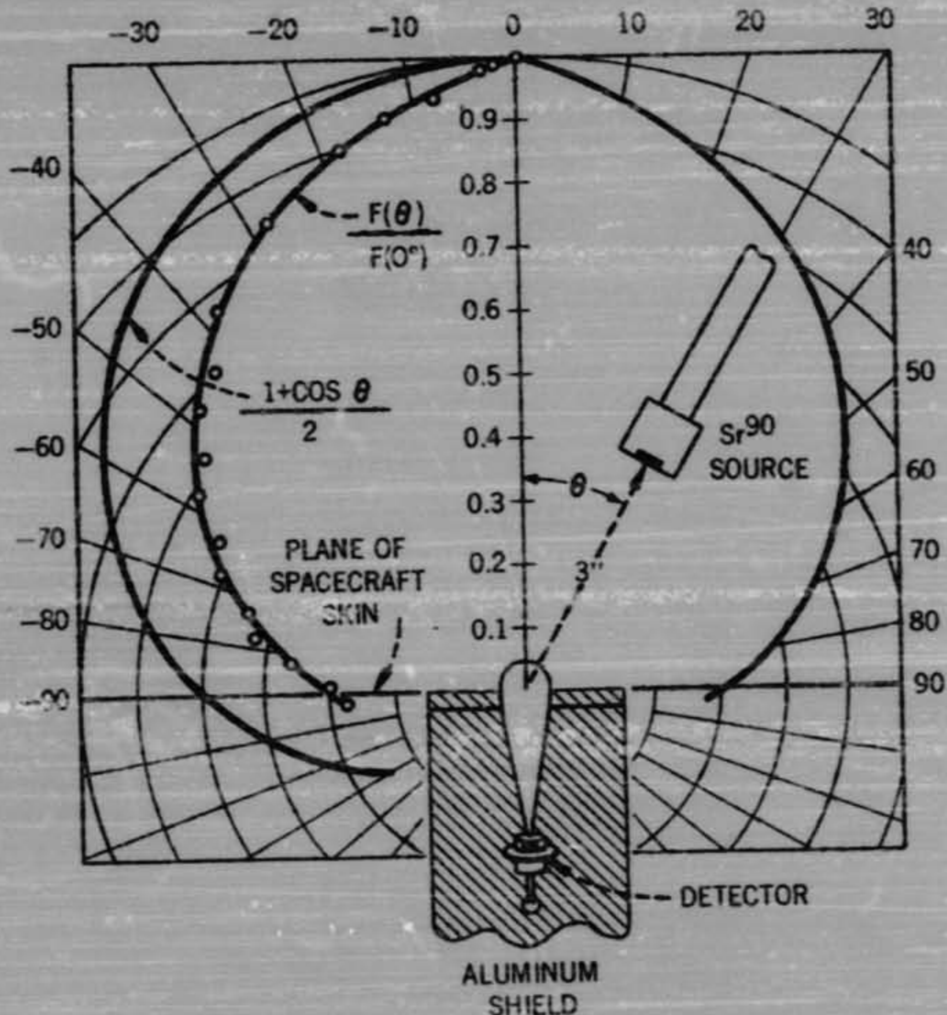

Figure 5—Angular Response of Detector B

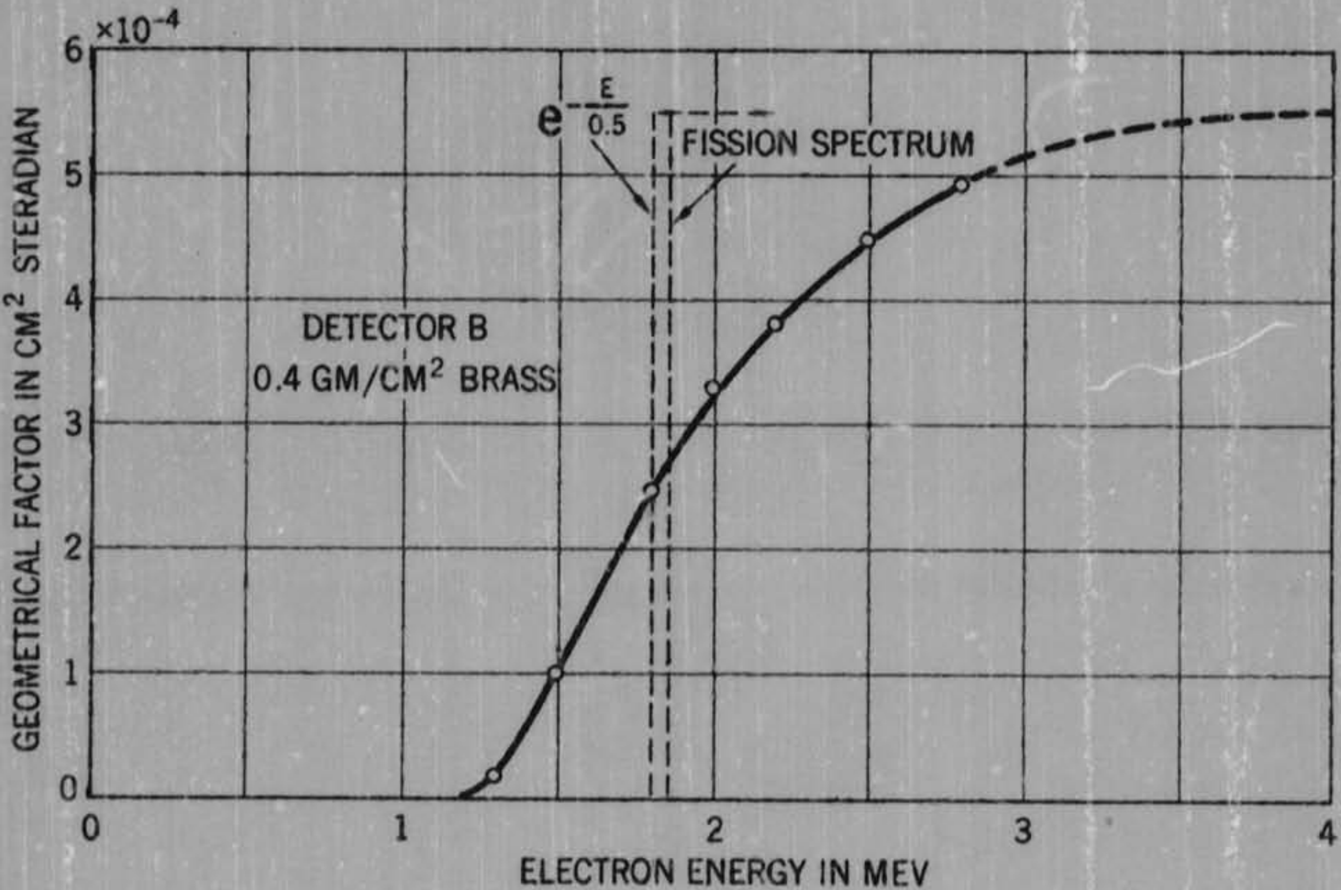

Figure 6–Geometrical Factor for Detector B

Proton Detection in Detector A:

Figure 7 shows the computed response of detector A to protons under the two conditions of detector bias and with the two discrimination levels corresponding to channels E1 and E4. The energy deposited in the detector, ΔE, rose from zero as protons penetrated the 20 mg/cm² window of the detector. The energy deposited met the requirements of the low-discrimination threshold at an incident proton energy of ~2.1 Mev and the high threshold at ~4 Mev. The curve is double valued because the lower energy loss of protons had ranges greater than the active thickness of the device (0.37 mm at 100 volts bias; 0.105 mm at 5 volts bias, as measured with 18-Mev protons from the Princeton cyclotron). This double valued character of the curve defined bands of energies within which protons can satisfy the pulse height discrimination requirements. Protons could be detected with essentially 100% efficiency within the energy bands. The effective geometrical factor of the detector for protons was essentially the mathematical factor determined by the entrance cone and aperture.[1]

Directional Detectors E and F, Channels F6 and E7:

The lower energy directional detector, detector E, was very similar to detector A in characteristics but with a smaller entrance cone. The cone was provided to improve the angular definition of the measurements.

Detector F was arranged to have a similar threshold to omnidirectional detector B. In order to preserve the directional properties of detector F, the absorber was at the bottom of the entrance cone in the cap of the detector cartridge. The counting statistics observed in this detector were poor due to a smaller than adequate aperture angle.[1]

Background Detector D, Channel E5:

The active device of this detector was essentially identical to those of the other five detectors. Buried in the block of four detectors with a solid front plug, detector D measured bremsstrahlung from electrons which were stopped in the housing and the additional small contribution from protons with energies >70 Mev.[1]

Telemetry

The worldwide Minitrack network of ground stations and a Pacific Missile Range station in Hawaii received and recorded telemetered data from Explorer 15. Using the 136.100-MHz beacon transmitted from the satellite, the following Minitrack stations were responsible for the acquisition of interferometer tracking data:

Antofagasta, Chile
Blossom Point, Maryland
Fort Myers, Florida
Johannesburg, South Africa
Lima, Peru

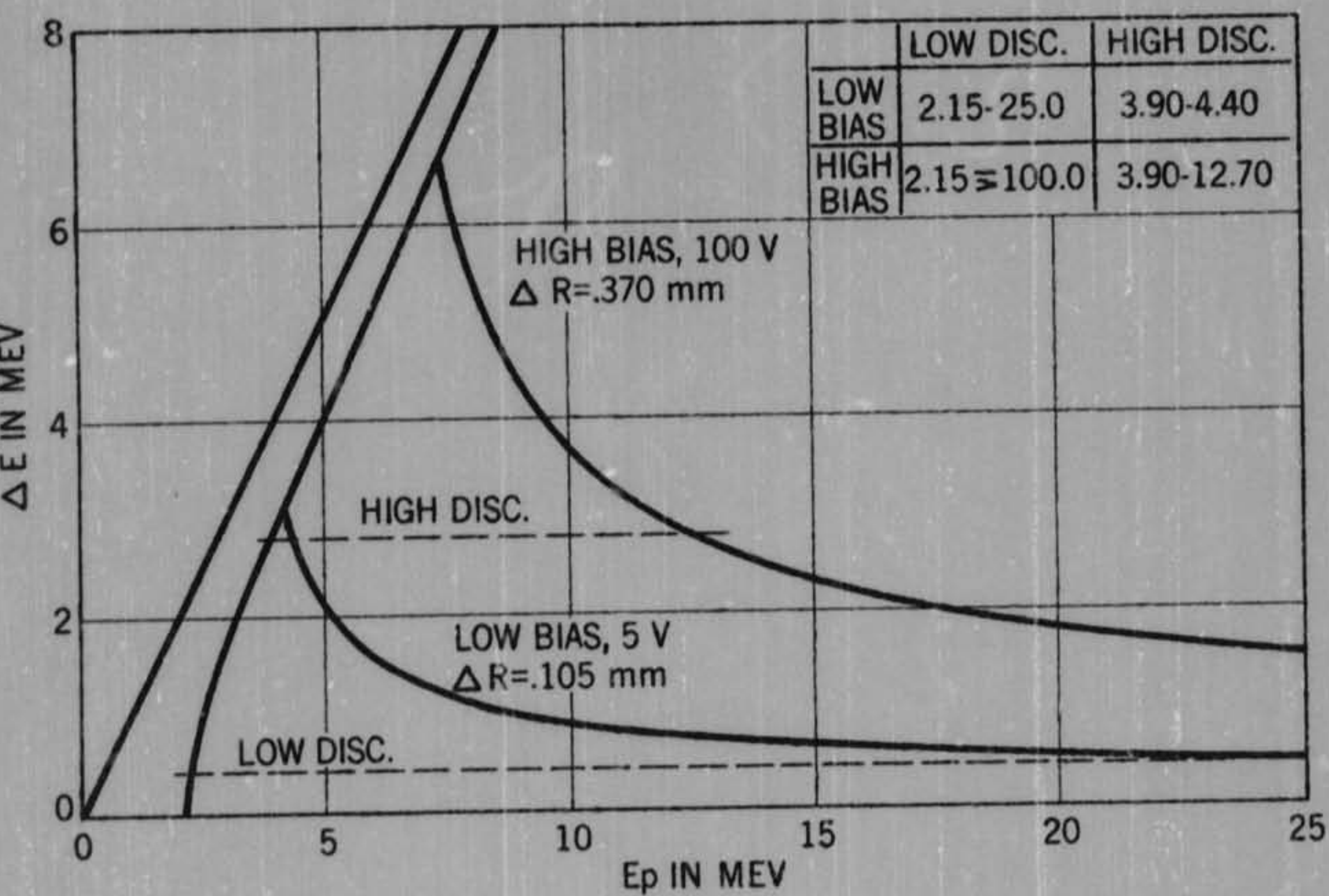

Figure 7—Computed Response of Detector A to Protons

Mojave, California
Quito, Ecuador
Santiago, Chile
Woomera, Australia

The telemetry system of the satellite operated continuously so that all data transmission was in real time. A PFM (pulse-frequency modulation) system was used; the modulation was composed of bursts of energy separated in time by periods of no oscillation. Except for a synchronization reference, equal time intervals were devoted to the duration of a burst and to a period of no oscillation. The synchronization reference was composed of a 50% shorter period followed by a 150% longer burst. This reference defined the origin of each frame: 16 sequential bursts, each of which represented a channel.

The complete telemetry encoding format encompassed 16 frames (16 channels per frame). The bursts were 10 msec in duration; the burst frequency ranged from 5 to 15 kHz.

Because only a low sampling rate was required for the housekeeping performance variables of the spacecraft, one channel was subcommutated by 16—hence the 16 frames used to complete an encoding format. For some experiments, a second level of encoding was accomplished within the signal-conditioning electronics before application to the telemetry encoder. This processing was not considered a telemetry-encoding operation, but rather a programming of the appropriate experiment to a fixed routine.

Operational Experience

Explorer 15 went into orbit spinning too fast. A deliberate "spin-up" was imparted to keep it accurately on course while climbing to orbital altitude. However, a system of small weights designed to attenuate the spin failed to function; as a result, Explorer 15 had a spin rate at least 10 times greater than intended.

This high spin rate did not greatly interfere with accomplishment of the satellite's mission, which was to investigate the radiation belts created by U. S. and Russian high-altitude nuclear testing; it did, however, cause problems in the interpretation of experimental results.

For this experiment, one of the difficulties caused by the increased spin rate was that it nearly precluded observation by the directional detectors of the extremely high off-equatorial maximum of the electrons injected by the Russian nuclear test of October 28, 1962. The information concerning that off-equatorial maximum was discernible in only a very few omnidirectional measurements made at different B values on successive passes of the satellite through the region L = 1.8 to 2.0 in the first few days after the nuclear explosion. It has been estimated that, although it made the data from the detectors easier to interpret, the despin failure reduced the anticipated value of the results from this experiment by about 20%.

Two malfunctions were specifically associated with the chain of information from this experiment. Starting on November 9, 1962, there was a malfunction in the cosmic-ray logic box in which the accumulation of particle events was carried out and from which the results were fed to the telemetry system. This difficulty made it essentially impossible to interpret the results on the ground because the readout of the register into the telemetry encoder was incorrect. After about 2 weeks, the malfunction disappeared as mysteriously as it had appeared. Late in November, the detector measuring electrons >2.9 Mev became noisy, and no further useful information was obtained from it.[4]

Explorer 15 continued to operate until February 9, 1963, when it ceased transmitting.

DATA

Reduction Techniques

All data were processed immediately upon receipt to enable rapid reduction and analysis. The system used for processing the data from Explorer 15 consisted of two PFM analog-to-digital processing lines, a medium-sized computer, a high-speed printer, and a large-scale computer.

Utilized to process the raw telemetry tapes received from the data-acquisition network, the two PFM analog-to-digital processing lines served to establish frame synchronization, to encode the raw telemetry signals in digital form, to merge the encoder data with time, and to prepare a digital magnetic tape in a BCD format suitable for further processing.

The digital magnetic tapes produced by the data-processing lines were used as inputs to the medium-sized computer, which was programmed to perform certain quality control checks and to reformat the data for entry into the large-scale computer for final processing and analysis. Quality control consisted of verifying ground time, checking frame and subcommutation synchronization, converting noisy data points to predetermined characters, and flagging bad data points and time breaks. Reformatting entailed adding quality control characters and transposing the data from a low- to a high-density mode to ensure efficient tape utilization. The output of this operation was a master digital tape containing from 12 to 15 hr of experimental data.

Since the above steps provided a tape that was sufficient only for a quick-look analysis, further processing was required before the experimenters could receive their data in a form suitable for further detailed analysis. Original digital data from the BTL experiments have been machine sorted into individual detector channels and merged with the ephemeris information concerning the position of the satellite in the McIlwain magnetic coordinates B and L. Since Explorer 15 had a low orbital inclination, its most important motion from the standpoint of the trapped particle distribution is across lines of constant L.[1]

Timespan of Data

The data available at NSSDC cover the period of October 27, 1962, to January 1, 1963.

Format of Available Data

The data for the Explorer 15 electron energy distribution experiment are available on one magnetic tape. The tape is file-structured and is written at a density of 800 bpi. The tape was written with a FORTRAN program on an IBM 7094 under control of the BE-SYS (Bell System) monitor. Physical records or blocks normally contain up to 167 words and consist of either part of a logical record or one or more logical records. BE-SYS uses a word length of 36 bits, which can also be described as 12 octal digits, or as six characters, where a character is represented by two octal digits. Character information is encoded in odd-parity on the tape in the external code of an IBM 7094.[5]

Control words of six characters each are used to separate the logical records within a physical record. The first character in the control word is always the octal 77. The second character is a control character or flag, while the third is the file identification character and is generally blank. The last three characters indicate the number of words in the logical record that follows.

Records written with a FORTRAN "WRITE TAPE" statement will have only P or Q flags. If the logical record fit within the block, it was assigned a Q flag. However, if it overflowed the block, the record was broken into two or more logical records. All of these have P flags except the last one, which has a Q flag. Records generated by FORTRAN "WRITE OUTPUT TAPE" statements also appear on the tape and usually contain identification information. The control characters that signify this type of record are H, L, or M. These three flags all indicate that the logical record must be decoded character-by-character according to some format to recover the BCD or Hollerith information. An H flag signifies a BCD card image with a maximum length of 14 words (= 84 characters). Records which are not card image have an L or an M as a flag. If the record was greater than 22 words, it was broken into two or more logical records, the last of which has an L flag, with all the others having M flags.[1]

Each physical record is terminated with a control word containing an E flag as the control character. The word count field in this control word is used to indicate the number of logical records which have been completed within the physical record.[5]

Character Codes for the IBM 7094

Description or Function	Internal Code	External Code (Tape Code)
Zero	00	12
One	01	01
Two	02	02
Three	03	03
Four	04	04
Five	05	05
Six	06	06
Seven	07	07
Eight	10	10
Nine	11	11
	12	20
Equals	13	13
Quotes	14	14
	15	15
	16	16
Tape Mark	17	17
Plus	20	60
A	21	61
B	22	62
C	23	63
D	24	64
E	25	65
F	26	66
G	27	67
H	30	70
I	31	71
Plus Zero	32	72
Period	33	73
Right Paren	34	74
	35	75
	36	76
Group Mark	37	77
Minus	40	40
J	41	41
K	42	42
L	43	43
M	44	44
N	45	45
Ø	46	46
P	47	47
Q	50	50

Character Codes for the IBM 7094 (Continued)

Description or Function	Internal Code	External Code (Tape Code)
R	51	51
Minus Zero	52	52
Dollar Sign	53	53
Asterisk	54	54
	55	55
	56	56
Mode Change	57	57
Blank	60	00
Slash	61	21
S	62	22
T	63	23
U	64	24
V	65	25
W	66	26
X	67	27
Y	70	30
Z	71	31
Record Mark	72	32
Comma	73	33
Left Paren	74	34
Word Separator	75	35
	76	36
Tape Seg. Mark	77	37

An example of a control word in octal is 774300120102. Using the tabulated character codes, the control character is seen to be 43 = L, and the word count is 120102 = 012; this indicates that the logical record contains 12 words. Since the flag is an L flag, the 12 words have to be decoded character-by-character. The number of words these 12 words represent is determined by the format.

The data had a number of features which needed to be preserved; yet, the number of data points was too large to work with in a reasonable way. With a point every 9.3 sec, a pass from maximum to minimum L, requiring about 2.7 hr, contains over a thousand data points for a single detector channel such as E1. The high density of points can be used in either of two ways. In regions where the flux of particles is not changing rapidly with L, the large number of points can be used to improve the statistical definition of that flux by taking an average. In regions where the flux dependence on L is very sharp, the fineness in the grain of the data can be used to define the position and shape of such a structure. There are, of course, places where the data for a particular channel are nonexistent, either because it was not received from the satellite in suitable form for processing or because the programmed bias changes in the experiments produce holes in the high-bias data and clusters of points at low bias. An elaborate system of machine smoothing and interpolation has been used to provide values of the counting rate at specific values of L. These 62 L values are as follows:[5]

L VALUES

1.10	1.26	1.45	1.76	1.92	2.2	2.8	3.8
1.12	1.28	1.50	1.78	1.94	2.25	2.9	4.0
1.14	1.30	1.55	1.80	1.96	2.3	3.0	4.2
1.16	1.32	1.60	1.82	1.98	2.35	3.1	4.4
1.18	1.34	1.65	1.84	2.00	2.4	3.2	4.6
1.20	1.36	1.70	1.86	2.05	2.5	3.3	4.8
1.22	1.38	1.72	1.88	2.1	2.6	3.4	
1.24	1.40	1.74	1.90	2.15	2.7	3.6	

The spacing between these chosen L lines is small in the region of the very rapid rise at the bottom of the inner belt and between L = 1.7 and 2.0 where new particles were introduced with detailed structure by the Soviet explosions in October and early November 1962. It has been found necessary to use different processes of smoothing and interpolation in different parts of the coordinate space to get satisfactory results. Smoothing of the E1 response has been accomplished with a mathematical filter at the appropriate frequency. The actual mathematical form of the L and B dependence of the flux of any particular class of particles is not known, particularly in the complicated time immediately following injection of new particles, and a visual criterion of satisfactory interpolation has been required.[5]

The data were plotted as individual points for both high and low detector biases. The values were interpolated by machine, and the degree of satisfaction was determined by how nearly the interpolated results fit on the existing curve. The L-tables were edited for machine values according to this criterion.[5]

The interpolated data are stored on the "L-files" tape. The file-structured tape has 62 files corresponding to the 62 L values. Each file contains the interpolated data for one L value. The records within the files are time-ordered and contain 14 binary words each. Words 1 to 13 are floating point, and word 14 should be interpreted in octal, as follows:[5]

Word	
1	L, the magnetic shell parameter
2	B, the magnetic induction in gauss
3	Time in fractions of days of 1962 (1-1-62 at noon = 0.5)
4	E4 high bias
5	E4 low bias
6	E1 high bias
7	E1 low bias
8	E2 high bias
9	E2 low bias

Word

10	E3 high bias
11	E3 low bias
12	$X = (1.0 - B_0/B)^{1/2}$
13	γ = angle between spin axis vector and B vector in degrees
14	Flag - XABCDX XXXXXX in octal digits

The detector readings in words 4-11 indicate the counts in five frames (= 1.46 sec). Fractions occur due to the interpolation. The data for detector E3-high bias are not valid past day 357.3.

In interpreting the flag (word 14) the X digits are irrelevant. The A digit refers to detector E4, the B digit to detector E1, the C digit to detector E2, and the D digit to detector E3. If the digit corresponding to a particular detector is 0, it indicates that both the high- and low-bias readings are good. If it is 1, the high-bias reading is bad; if it is 2, the low-bias reading is bad; and if it is 3, both high- and low-bias for that detector are bad.[5]

As an aid to the use of the Explorer 15 data tape, the Data Center staff has prepared a program which reads the data from Explorer 15 and determines the minimum and maximum values for the detectors used in the electron energy distribution experiment. The program is incorporated in a data set catalog, which is available for study at the Data Center. The data set catalog includes the following:

1. An octal dump of the binary tapes
2. The minimum and maximum values for the detectors ordered by the L value
3. A matrix of X vs L with 22 values of X and 62 values of L and the B/B_0 given in relation to X
4. A matrix of B vs L with 20 values of B and 62 values of L
5. The total number of records in each file

REFERENCES

1. "Study on the Enhanced Radiation Belts," Final Report on Bell Telephone Laboratories Experiments on Explorer XV, Project Serb, NAS 5-3058, June 30, 1964.

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DOCUMENTATION OF THE BTL SATELLITE DATA TAPES

I. TAPE FORMAT

The BTL satellite data tapes were written with Fortran programs on an IBM 7094 under control of the BE-SYS monitor. These Fortran output routines generate tapes where the logical records produced by individual WRITE TAPE or WRITE ØUTPUT TAPE statements do not correspond to the actual physical records. The following description of this tape blocking process is provided to enable a user to decode the tapes.

BE-SYS uses word lengths of 36 bits, which can also be described as 12 octal digits, or as 6 characters, where a character is denoted by 2 octal digits. Character or BCD information is written on tape so as to be directly meaningful to the 1460. Since information is encoded there differently than in the 7094, a translation is necessary between tape and the 7094. Table I-1 contains a list of the character codes for the 7094 and their translation for the 1460 or for tapes.

Most of the data on the Bell Labs satellite output tapes is binary information written with the Fortran "WRITE TAPE" statement. The list of data written by one such statement is called a logical record, and can consist of up to 999 words. For uniformity, BE-SYS writes all tape output in physical records (or blocks) which normally contain up to 167 words. Each block is a single 800 bit per inch binary tape record and can contain either part of a logical record, or one or more logical records.

Logical records are separated in the blocks (physical records) by control words(of 6 characters). The first character in the control word is always octal 77. The second character is a control character or flag. The third character, the file identification character, is generally blank and can be ignored. The last three characters indicate the length (word count in 1460 BCD code) of the logical record that follows. Records written with a Fortran "WRITE TAPE" statement will have only P and Q flags as control characters. If the logical record fits within the block, it is assigned a Q flag. However, if it overflows the block, it is broken into two or more logical records, the last of which has a Q flag, all others having P flags. Thus on reading, a sequence of logical records flagged P, followed by one flagged Q, should be considered as a single logical record.

Each block is terminated with a control word containing an E flag as the control character. The word count field in this control word is used to indicate the number of logical records within the block. This count includes only records which have been completed.

There is also some information on the tapes, generally identification files or records, which has been generated by Fortran "WRITE ØUTPUT TAPE" statements. This information has been encoded by means of a specified format into BCD or Hollerith information. BE-SYS blocks this data in the same manner as binary data (i.e. in physical records of up to 167 words which contain logical records separated by control words). This information is distinguished from binary information by the use of different control characters or flags.

The flags which are valid for a Fortran "READ INPUT TAPE" statement are H, L, and M. All indicate that the logical record contains BCD or Hollerith information to be decoded character by character according to some Format. An H flag indicates a BCD card image with a maximum length of 14 words (84 characters). Records written with a Fortran "WRITE ØUTPUT TAPE" statement will have L and M flags as control characters. If the logical record is greater than 22 words, it is broken up into two or more records, the last of which has an L flag; all others having M flags. If the logical record contains 22 words or less, it is assigned an L flag. Thus, on reading, a sequence of logical records flagged M, followed by one flagged L should be treated as a single record.

Multireel Tapes: On some occasions, data runs over from one reel to a second. The BE-SYS monitor uses a double end-of-file mark to signify the end of a reel. Thus on reading a double end of file, the user should proceed to the second tape and continue reading. This should not be interpreted as an end of file.

Examples of Tape Blocking

Example 1: This is an octal dump of the first file of the Relay I electron L-tables tape. This file is an identification file which was generated by a Fortran "WRITE ØUTPUT TAPE" statement. It contains only one physical record (or block). The numbers in the first column of the dump refer to word number within the block.

The first word of the block (octal 774300120102) is a control word, as indicated by the octal 77. The second character in the word is denoted by the octal 43 which represents the character L (see Table I-1). This L indicates that the following logical record contains BCD information, and that the record is completed within the block. The last 6 octal digits (120102) represent the characters 012 and indicate that the logical record contains 12 words. Translating the next 12 words character by character yields: bRELAYbI bbELECTRØNbDATAbTAPEbFØRb12/01/62b(DAYb335)b-b03/31/64b (DAYb091), where b represents a blank.

The final word in the block is another control word. Its second character is an E (octal 65) which indicates that this is the end of the block. The word count (octal 121201) specifies that one logical record was completed within the block.

EXAMPLE 1

RECORD NO. 0001

```
0001  774500120102  005165436130  007100000543  656323514645  006461236100  236147650066
0007  465100010221  120121060200  346461300003  030574004000  120321030121  060460346461
0[illegible]  300012110174  776500121201
[illegible] OF FILE
```

Example 2: This is an octal dump of the first file of the Explorer XV L-files tape. This is a data file which was generated by Fortran "WRITE TAPE" statements. It is contained in three physical records (or blocks).

The Q flag (octal 50) in the first control word (775000120104) indicates that the logical record contains binary information and is complete within the block; the word count (octal 120104) specifies that there are 14 words in the logical record. The next 14 words should be interpreted as explained in the Explorer XV write-up in section II: the first 13 as floating point data, and the fourteenth as an octal flag.

The first word following these 14 data words (word 16 of the block) is another control word. It indicates another 14-word binary logical record which follows.

The last logical record in the block begins with the control word at word 151 of the physical record. It is also 14 words long and is completed within the block. The final control word (word 166) contains an E flag (octal 65), and a word count (octal 120101) which indicates that 11 logical records have been completed within this block.

Example 3: This is an octal dump of the first two physical records of a data file on the Relay I electron L-tables tape.

The Q flag (octal 50) in the first control word (775000121206) indicates that the logical record contains

EXAMPLE 2

RECORD NO. 0001

0001	775000120104	201431463146	176741?36710	211455330337	203607653304	000000000000
[illegible]	203431075547	000000000000	202527431503	000000000000	202621276113	000000000000
[illegible]	174746022545	207426172532	022223004440	775000120104	201431463146	177424044026
0019	211465230656	000000000000	000000000000	000000000000	000000000000	000000000000
0025	000000000000	000000000000	000000000000	177565245023	206734465706	032223004440
0031	775000120104	201431463146	177420513447	211502157137	000000000000	000000000000
0037	000000000000	200500677735	000000000001	000000000000	000000000000	000000000000
0043	17754?60332	207407430153	031333000000	775000120104	201431463146	176765056452
0049	211506123644	200561426500	175702630507	176641564217	177607553334	201675410203
0055	177516214501	177463777430	177516562023	176650572712	207417137766	000003000440
0061	775000120104	201431463146	177403324377	211510104100	200740560420	175631463160
[illegible]	177412365657	176422361173	201755073227	176407166640	203463002417	176423407377
	177431630653	207434652464	000003000000	775000120104	201431463146	176774611235
	211511161163	000000000000	000000000000	000000000000	000000000000	000000000000
[illegible]	175404422576	000000000000	175402565767	176752707515	206770526034	033113000000
0091	775000120104	201431463146	176760101422	211521066705	000000000000	175764407712
0097	000000000000	200426234723	000000000000	177455445532	000000000000	177575507534
0103	176566400575	207411104161	010003000000	775000120104	201431463146	176777717041
0109	211523046654	000000000000	000000000000	000000000000	000000000000	000000000000
0115	175634626322	000000000000	175654266237	177401370133	207431505661	032003004440
0121	775000120104	201431463146	176742337633	211524130303	000000000000	000000000000
0127	000000000000	000000000000	000000000000	000000000000	177400000000	000000000000
0133	175475404654	206622201240	032223000000	775000120104	201431463146	176736605471
0139	211526110531	000000000000	175537604433	000000000000	200434631656	200573222671
0145	177642661503	201432543667	177710220322	000000000000	206655110442	010003000000
[illegible]	775000120104	201431463146	176740710102	211530071000	000000000000	000000000000
	203713230643	000000000000	203556423771	000000000000	202563775760	000000000000
	174662361554	206715354522	032223004440	776500120101		

RECORD NO. 0002

	775000120104	201431463146	176741204677	211531145413	203440702723	000000000000
	202414274076	000000000000	202434210766	000000000000	203414637436	176733653715
[illegible]	174751731461	206760545130	022203000000	775000120104	201431463146	176746557250
0019	211532051014	000000000000	000000000000	000000000000	000000000000	000000000000
0025	000000000000	000000000000	000000000000	175761354651	205761126035	032223000000
0031	775000120104	201431463146	176760054441	211534030642	000000000000	000000000000
0037	000000000000	000000000000	000000000000	000000000000	000000000000	000000000000
0043	176566033634	207413137320	032223000000	775000120104	201431463146	176746452662
0049	211543032356	000000000000	000000000000	177402453753	000000000000	000000000000
0055	000000000000	200610421046	000000000000	174576053707	206731701523	032223004440
0061	775000120104	201431463146	176740131102	211550053614	202513247131	000000000000
0067	200425451621	000000000000	200707511736	000000000000	222561047000	000000000000
0073	174452067650	206604470321	022223000000	775000120104	201431463146	176737547751
0079	211552033423	203626425247	175624340765	201473471621	176434621060	201566205005
0085	176400137575	223404342550	175644154410	173457550261	206646551021	000003004440
0091	775000120104	201431463146	1[illegible]754703425	211555074552	203443467063	000000000000
0097	202447426457	000000000000	2[illegible]625774137	000000000000	222501027417	000000000000
[illegible]	176520762646	206504174237	022223000000	775000120104	201431463146	176743730013
[illegible]	211557054462	000000000000	000000000000	000000000000	176436460051	000000000000
0115	175712751671	000000000000	000000000000	175605661104	206541726370	031133000000
0121	775000120104	201431463146	176743730013	211557054462	000000000000	000000000000
0127	000000000000	176436460051	000000000000	175712751671	000000000000	000000000000
0133	175605661104	206541537564	031133000000	775000120104	201431463146	176741600420
0139	211561034216	000000000000	000000000000	202577317356	000000000000	201724462302
0145	000000000000	222632043000	000000000000	175425464071	206575660510	032223000000
0151	775000120104	201431463146	176747061241	211566055271	000000000000	000000000000
0157	202405560742	000000000000	202462475403	000000000000	217777120000	000000000000
0163	175776161466	206527111346	032223000000	776500120101		

RECORD NO. 0003

[illegible]01	775000120104	201431463146	176750741021	211600116702	202702257374	000000000000
[illegible]	200535503412	000000000000	200755407242	000000000000	221615155505	000000000000
[illegible]	176433770550	206600416277	022223000000	775000120104	201431463146	176741652362
[illegible]	211604056362	000000000000	000000000000	201757650453	000000000000	202433544725
0025	000000000000	221602620266	000000000000	175432526573	206646373401	032223004440
0031	776500121202					

END OF FILE

binary information and is complete within the block; the word count (octal 121206) specifies six words. These next six words should be interpreted as explained in the Relay I write-up in section V: the first two as floating point, and the last four as decrement integers.

In interpreting the remainder of the block one proceeds as in Example 2. At the end of the block an example of the use of the P flag occurs. The control word at word 163 of the block contains a P flag (octal 47) which indicates that only the first part of this logical record is contained in the block. The word count indicates that two words are in this block.

The final word of the block (a control word with an E flag) specifies that four logical records were completed in the block; this count does not include the record with the P flag.

The remaining portion of the incomplete record is found at the beginning of the next block. The first logical record there has a Q flag and contains 14 words. In unblocking, these 14 words should be appended to the two words from the preceding block to form a single 16 word logical record.

EXAMPLE 3

RECORD NO. 0001

0001	775000121206	201531463145	201546111563	000076000000	000533000000	000104000000
0007	000133000000	775000120402	000076000000	000534000000	000003000000	176664247073
0013	176653226712	176423126527	201546111565	201535341217	201546111565	211533076573
0019	211533076105	211533053776	000610002500	000667002577	000323002551	600527642426
0025	600534357656	600676246621	176452504751	176424600662	176452504751	177426631070
0031	176731260524	175447102330	200000020000	200077140016	010000010100	210434000000
0037	621674363517	214464554251	213645400000	621674363517	217545026057	212600000000
0043	621674363517	216617731174	211716666667	621674363517	215772473376	175501636721
0049	604554076566	201762543275	775000121104	000077000000	000033000000	000007000000
0055	175767244152	176421051077	176455220007	176401672150	176431673407	176411032551
0061	176643247737	201535341217	201534324774	201544672274	201534121727	201535152376
0067	201533513615	201541014223	211607075562	211607077666	211607076623	211607075274
0073	211607077400	211607075006	211607077112	001431002550	001376002477	001115002550
0079	001465002550	001305002572	001461002550	001210002550	600722226506	600700012270
0085	600652125462	600714611656	600670765135	600706517400	600661506203	176424600662
0091	176422110326	176447346362	176421371540	176426550466	176420133400	176435647567
0097	167405275000	174415165040	175665225010	171713152200	174664512220	173427017700
0103	175477627240	007000000003	007000000003	005000000003	007000000103	007100000003
0109	007000000003	007000000003	215404266667	215405507514	213757511112	215414733334
0115	214677000000	215420224744	214535735334	217667442223	217673257035	217422133334
0121	217703335556	217635762223	217710454160	217540273334	217462431111	217465022456
0127	216513415556	217473422222	217422751111	217502476654	216672644445	216560411111
0133	216574312742	215601255556	216605762223	216511373334	215604467665	216410051111
0139	202400422773	201770725370	202637243604	202472004717	177546126655	202514076331
0145	203520216457	775000120106	000077000000	000151000000	000001000000	176566561744
0151	201535747331	211725062046	000424002473	600571522535	176426033462	176550365430
0157	004000000001	212532362023	215573474405	214640224744	214421303373	177627173167
0163	774700121202	000077000000	000153000000	776500121204		

RECORD NO. 0002

0001	775000120104	000001000000	176642503326	201536152576	211727071107	000571002470
0007	600541013562	176426550466	176714770320	000000000005	210700451710	214431056427
0013	213401530337	212505056427	175640313200	775000120106	000077000000	000154000000
0019	000001000000	176614374240	201541625402	211730062561	000371002474	600555065565
0025	176437605264	176667647500	006000000004	211616161616	214737252525	213677434343
0031	213437070707	176573324311	775000120106	000077000000	000160000000	000001000000
0037	177413154750	201544467227	211734072663	000302002425	600452562000	176446637534
0043	177573202206	000000000000	000000000000	200707070707	000000000000	000000000000
0049	000000000000	775000120106	000077000000	000163000000	000001000000	176435556654
0055	201534121727	211737074011	000436002475	600543514251	176421371540	176662651164
0061	000000000000	210765252525	214530252525	213512707070	212616525252	175773332626
0067	775000120105	000077000000	000167000000	000031000000	177404165236	201534530041
0073	211743060144	000370002420	600560471610	176422626707	177501347026	000000000001
0079	000000000000	000000000000	000000000000	000000000000	000000000000	775000120106
0085	000077000000	000172000000	000001000000	176654651247	201533513615	211746052524
0091	000466002477	600533527245	176420133400	176716642544	000000000004	210422522152
0097	213501417576	212615075641	211650171227	175443741245	775000120106	000077000000
0103	000174000000	000001000000	176603401041	201541217270	211750070404	000500002420
0109	600542150607	176436361657	176637437750	000000000006	211602525252	215450707070
0115	214452070707	213555070707	177415500534	775000120106	000077000000	000202000000
0121	000001000000	176631630052	201537371666	211756067740	000532002433	600546130454
0127	176431746604	176702075124	000000000000	210732525252	214560434343	213564707070
0133	212605616161	176502124277	775000120106	000077000000	000203000000	000001000000
0139	176603134713	201534121727	211757060222	000564002430	600561174335	176421371540
0145	176574350644	000000000000	211634440767	215516302600	214531147521	213565017552
0151	177502201772	774700120103	000077000000	000211000000	000001000000	176633641652
0157	201535544264	211765054154	000606002427	600544635502	176425316256	176671741770
0163	000000000003	210750707070	214530707070	776500121211		

TABLE I-1

Description or Function	7094 Octal Code	Blocked Tape Code (1460 BCD Code)
Zero	00	12
One	01	01
Two	02	02
Three	03	03
Four	04	04
Five	05	05
Six	06	06
Seven	07	07
Eight	10	10
Nine	11	11
	12	20
Equals	13	13
Quotes	14	14
	15	15
	16	16
Tape Mark	17	17
Plus	20	60
A	21	61
B	22	62
C	23	63
D	24	64
E	25	65
F	26	66
G	27	67
H	30	70
I	31	71
Plus Zero	32	72
Period	33	73
Right Paren	34	74
	35	75
	36	76

TABLE I-1 (con't.)

Description or Function	7094 Octal Code	Blocked Tape Code (1460 BCD Code)
Group Mark	37	77
Minus	40	40
J	41	41
K	42	42
L	43	43
M	44	44
N	45	45
Ø	46	46
P	47	47
Q	50	50
R	51	51
Minus Zero	52	52
Dollar Sign	53	53
Asterisk	54	54
	55	55
	56	56
Mode Change	57	57
Blank	60	00
Slash	61	21
S	62	22
T	63	23
U	64	24
V	65	25
W	66	26
X	67	27
Y	70	30
Z	71	31
Record Mark	72	32
Comma	73	33
Left Paren	74	34
Word Separator	75	35
	76	36
Tape Seg. Mark	77	37

II. EXPLORER XV L-FILES TAPE

The BTL data from the Explorer XV satellite have a number of features which need to be preserved and yet the number of data points is too large to work with in its entirety in a reasonable way. With a point every 9.3 seconds, a pass from maximum to minimum L, requiring about 2.7 hours, contains over a thousand data points for a single detector channel such as E1. The high density of points can be used in either of two ways. In regions where the flux of particles is not changing rapidly with L, the large number of data points can be used to improve the statistical definition of that flux by averaging. In regions where the flux dependence on L is very sharp the fineness in the grain of the data can be used to define the position and shape of such structure.. There are, of course, places where the data for a particular channel is nonexistent, either because it was not received from the satellite in suitable form for processing or because the programmed bias changes in the experiments produce holes in the high bias data and clusters of points at low bias. An elaborate system of machine smoothing and interpolation has been used to provide values of the counting rate or flux at specific values of L. These 62 L values are listed in Table II-1 below.

TABLE II-1

1.10	1.26	1.45	1.76	1.92	2.2	2.8	3.8
1.12	1.28	1.50	1.78	1.94	2.25	2.9	4.0
1.14	1.30	1.55	1.80	1.96	2.3	3.0	4.2
1.16	1.32	1.60	1.82	1.98	2.35	3.1	4.4
1.18	1.34	1.65	1.84	2.00	2.4	3.2	4.6
1.20	1.36	1.70	1.86	2.05	2.5	3.3	4.8
1.22	1.38	1.72	1.88	2.1	2.6	3.4	
1.24	1.40	1.74	1.90	2.15	2.7	3.6	

The spacings between these chosen L lines is small in the region of the very rapid rise at the bottom of the inner belt and between L = 1.7 and 2.0 where new particles were introduced with detailed structure by the Soviet explosions in October and early November. It has been found necessary to use different processes of smoothing and interpolation in different parts of the coordinate space in order to get satisfactory results. Smoothing of the E1 response has been accomplished with a mathematical filter at the appropriate frequency.* The actual mathematical form of the L and B dependence of the flux of any particular class of particles is not known, particularly in the complicated time immediately following injection of new particles, and a visual criterion of satisfactory interpolation has been required.

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*R. W. Hamming, Numerical Methods for Scientists and Engineers, Chapter 24, McGraw Hill Book Co., Inc., New York (1962).

Figure II-1 shows a plot for the first half orbit of the satellite for channel E1 of Detector A. The data are plotted as individual points, the upper set corresponding to the detector at high bias, the lower set to the detector at low bias. The machine interpolated values are indicated on the figure by small plus signs for high bias and small minus signs for low bias. The plus signs are almost indistinguishable from the data except where there are low bias breaks. A judgement of the correct curve in the low bias case is, of course, made more difficult because of the broad spacings between the neighboring sets of points, and it is not obvious that the machine choice around L = 1.6 is ideal. One way of expressing the degree of satisfaction with the interpolated results is to ask how nearly they fit on the curve one would have drawn by hand through the existing points. This "eyeball" criterion is a remarkably severe one for the computer to satisfy. At places where this criterion shows the machine values are incorrect or where the machine has interpolated across regions where structure may exist, the L-tables are edited accordingly.

The interpolated data is stored on the "L-files" tape. This tape is file-structured; each file contains the interpolated data for one L value. There are 62 files corresponding to the 62 L values listed in Table II-1. Within each file the records are time-ordered. All records contain

14 binary words. Words 1 to 13 are floating point, word 14 should be interpreted in octal, as follows:

Word

1 L, the magnetic shell parameter

2 B, the magnetic induction in Gauss

3 time in fractions of days of 1962 (1-1-62 at noon = 0.5)

4 E4 high bias

5 E4 low bias

6 E1 high bias

7 E1 low bias

8 E2 high bias

9 E2 low bias

10 E3 high bias

11 E3 low bias

12 $X = (1. - B_0/B)^{1/2}$

13 γ = angle between spin axis vector and B vector in degrees

14 Flag - XABCDX XXXXXX in octal digits

The detector readings in words 4 - 11 indicate the counts in 5 frames (= 1.46 sec.). Fractions occur due to the interpolation. The data for detector E3-high bias is no good past day 357.3.

In interpreting the flag (word 14), the X digits are irrelevant. The A digit refers to detector E4, the B digit to detector E1, the C digit to detector E2 and the D digit to E3. If the digit corresponding to a particular detector is

0, it indicates that both the high and low bias readings are good. If it is a 1, the high bias reading is bad; if a 2, the low bias reading is bad, and if a 3, both high and low bias for that detector are bad.

More details on the Bell Labs experiments on this satellite are contained in the "Final Report on BTL Experiments on Explorer XV" - Contract NAS 5-3058 (June 30, 1964).

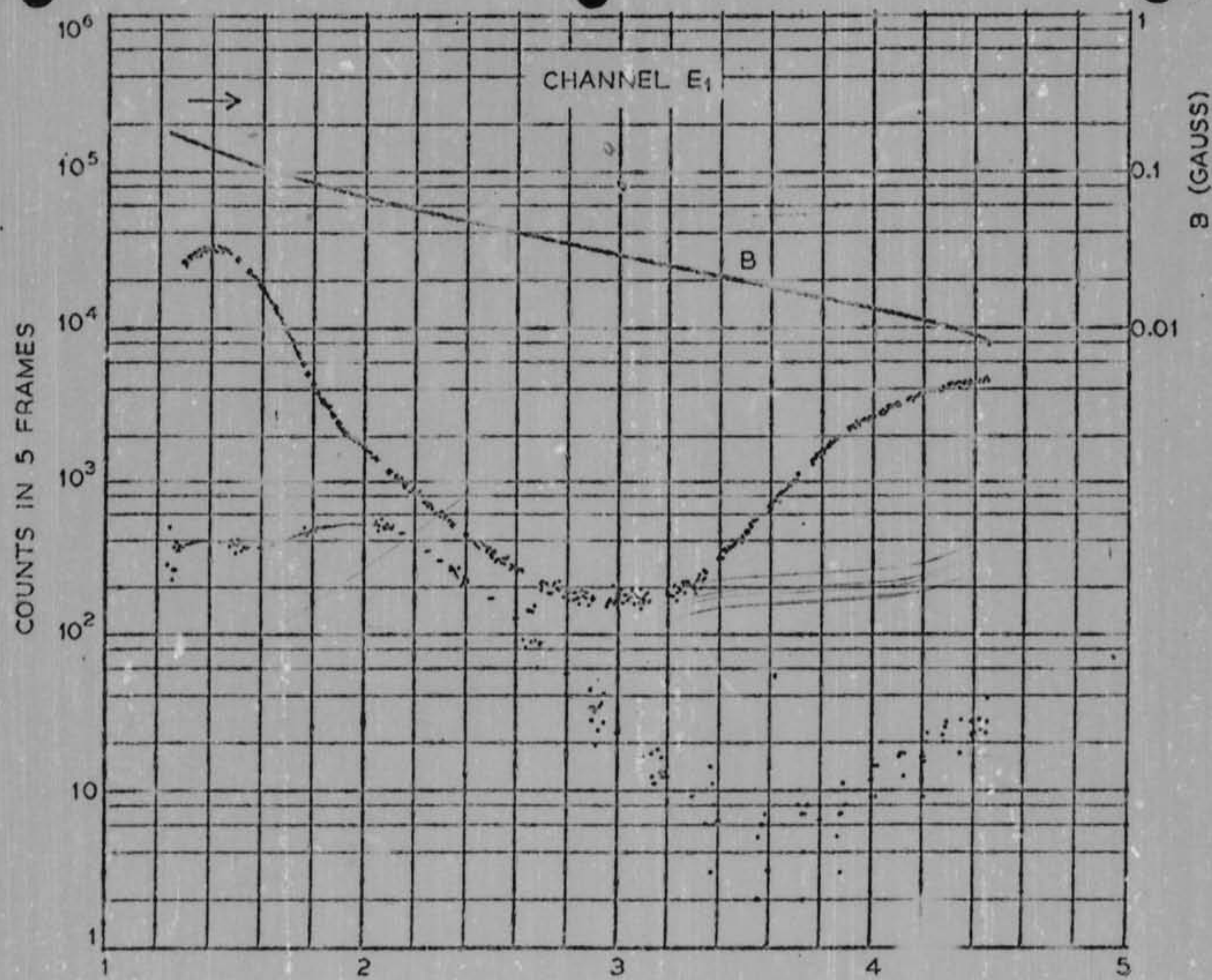
CHANNEL E_1
B
COUNTS IN 5 FRAMES
B (GAUSS)
10^6
10^5
10^4
10^3
10^2
10
1
0.1
0.01
1
2
3
4
5
L

Fig. II-1

62-059A-01A EXPLORER-15 (1962 BETA LAMBDA 2) 01 ELECTRON ENERGY DISTRIBUTION, NS

THIS PROGRAM READS DATA TAKEN FROM EXPLORER 15 AND DETER
AND MAXIMUM VALUES FOR THE EIGHT DETECTORS USED IN THE ELECT
EXPERIMENT. THESE VALUES ARE GIVEN ORDERED BY THE 'L' VALUE.
ALSO PRODUCES TWO MATRICES. ONE OF THE 'X' VERSUS 'L' - WITH
AND 62 VALUES OF 'L' - AND THE 'E/EO' GIVEN IN RELATION TO
OF THE 'B' VERSUS 'L' - WITH 20 VALUES OF 'B' AND 62 VALUES
FINALLY, THE TOTAL OF RECORDS IN EACH FILE IS GIVEN.

PAGE 1

TRON ENERGY DISTRIBUTION, NSSDC MAGNETIC TAPE NUMBER D-00074.

N FROM EXPLORER 15 AND DETERMINES THE MINIMUM
T DETECTORS USED IN THE ELECTRON DISTRIBUTION
EN ORDERED BY THE 'L' VALUE. THE PROGRAM
OF THE 'X' VERSUS 'L' - WITH 22 VALUES OF 'X'
'E/EO' GIVEN IN RELATION TO 'X'. THE OTHER.
VALUES OF 'B' AND 62 VALUES OF 'L'.
EACH FILE IS GIVEN.

L	B	TIME	E4 HIGH	E4 LOW	E1 HIGH	E1 LOW	E2 HIGH	E2 LOW
1.10	0.23	301.4	6.12	0.	4.39	0.	2.68	0.
1.10	0.27	309.3	0.	0.	0.	0.	0.	0.
1.10	0.27	322.2	0.	0.	0.	0.63	0.00	0.
1.10	0.24	326.2	0.72	0.11	0.20	0.38	1.74	0.[illegible]
1.10	0.25	328.1	0.94	0.10	0.26	0.13	1.93	0.[illegible]
1.10	0.25	329.2	0.	0.	0.	0.	0.	0.[illegible]
1.10	0.24	337.1	0.	0.12	0.	0.54	0.	0.[illegible]
1.10	0.25	339.1	0.	0.	0.	0.	0.	0.[illegible]
1.10	0.24	340.2	0.	0.	0.	0.	0.	0.
1.10	0.23	342.1	0.	0.09	0.	0.56	0.74	0.[illegible]
1.10	0.23	344.1	0.	0.	7.18	0.	5.73	0.
1.10	0.23	345.2	4.51	0.	2.10	0.	2.22	0.
1.10	0.24	346.1	0.	0.	0.	0.	0.	0.
1.10	0.24	348.0	0.	0.	0.	0.	0.	0.
1.10	0.23	355.1	0.	0.	0.25	0.	0.	0.
1.10	0.23	360.1	2.59	0.	0.54	0.	0.89	0.
1.10	0.23	362.1	6.35	0.10	1.23	0.14	1.46	0.
1.10	0.24	365.1	4.56	0.	2.31	0.	6.34	0.
1.10	0.24	367.1	0.	0.	0.	0.14	0.	0.
1.10	0.24	367.1	0.	0.	0.	0.14	0.	0.
1.10	0.24	369.1	0.	0.	3.00	0.	1.83	0.
1.10	0.24	374.1	0.	0.	2.04	0.	2.40	0.
1.10	0.24	384.2	3.52	0.	0.68	0.	0.96	0.
1.10	0.24	388.1	0.	0.	1.94	0.	2.22	0.

*** END OF FILE 1 ***

OW	E2 HIGH	E2 LOW	E3 HIGH	E3 LOW	X	GAMMA	FLAG
.	2.68	0.	3.14	0.	.0593	69.56	2222
.	0.	0.	0.	0.	.3626	59.58	3222
.63	0.00	0.	0.	0.	.3473	65.89	3133
.38	1.74	0.33	0.30	0.33	.2074	67.80	0
.13	1.93	0.13	4.80	0.13	.2752	71.21	0
.	0.	0.06	0.	0.06	.2397	63.08	3311
.54	0.	0.29	0.	0.37	.1829	66.28	1000
.	0.	0.10	0.	0.10	.2514	70.41	3200
.	0.	0.	0.25	0.	.0775	50.28	3222
.56	0.74	0.41	1.10	0.45	.	53.64	1000
.	5.73	0.	2.91	0.	.0530	57.68	3222
0.	2.22	0.	4.20	0.23	.0598	52.10	2220
0.	0.	0.	0.	0.	.1215	6[illegible].15	3222
0.	0.	0.	0.	0.	.1826	66.80	3222
0.	0.	0.	0.77	0.	.0466	59.23	3222
0.	0.89	0.	188967.00	0.	.0364	48.58	2222
0.14	1.46	0.13	266693.41	0.10	.0185	52.84	0
0.	6.34	0.	164375.53	0.	.1645	40.53	2222
0.14	0.	0.11	0.	0.	.0952	44.24	3113
0.14	0.	0.11	0.	0.	.0952	44.21	3113
0.	1.83	0.	209955.00	0.	.0678	47.73	3222
0.	2.40	0.	32714.00	0.	.1246	42.89	3222
0.	0.96	0.	101686.82	0.	.1387	48.07	2222
0.	2.22	0.	99016.18	0.	.0690	52.81	3222

L	B	TIME	E4 HIGH	E4 LOW	E1 HIGH	E1 LOW	E2 HIGH
1.12	0.22	301.4	5.95	0.10	6.19	0.10	5.26
1.12	0.25	309.3	0.	0.	0.	0.	0.
1.12	0.27	321.1	0.	0.	0.	0.	47828.56
1.12	0.26	322.2	0.	0.	0.	3.51	0.00
1.12	0.23	326.2	1.10	0.13	0.92	1.98	3.45
1.12	0.24	328.1	1.41	0.10	0.90	0.34	3.78
1.12	0.24	329.2	0.	0.	0.	0.	0.
1.12	0.22	331.2	0.34	0.09	3.62	0.13	0.36
1.12	0.24	333.2	0.	0.	0.19	0.	1.94
1.12	0.23	337.1	0.	0.14	0.	1.60	0.
1.12	0.23	339.1	0.	0.09	0.	0.24	0.51
1.12	0.22	340.2	0.	0.	13.44	0.	11.33
1.12	0.24	341.0	0.	0.	7.64	0.	0.
1.12	0.22	342.1	0.	0.08	0.30	1.87	1.92
1.12	0.22	344.1	0.	0.14	12.92	0.47	9.11
1.12	0.22	345.2	5.15	0.	10.58	0.	7.91
1.12	0.22	346.1	0.	0.	0.28	0.	0.
1.12	0.23	348.0	0.	0.10	0.	0.28	0.21
1.12	0.22	355.1	0.	0.12	0.05	0.49	0.
1.12	0.22	360.1	3.32	0.	4.43	0.	4.25
1.12	0.22	362.1	6.77	0.09	3.00	0.88	2.96
1.12	0.22	364.0	2.80	0.10	3.83	0.16	3.33
1.12	0.22	364.0	0.	0.	1.71	0.	1.31
1.12	0.22	365.1	5.38	0.	12.85	0.	19.62
1.12	0.22	367.1	0.	0.	0.	1.10	0.
1.12	0.22	367.1	0.	0.	0.	1.10	0.
1.12	0.22	369.1	0.	0.	4.45	0.	2.99
1.12	0.23	370.2	5.46	0.	0.26	0.	0.15
1.12	0.22	372.1	6.29	0.	6.39	0.	2.54
1.12	0.22	373.0	0.36	0.10	3.41	0.10	6.09
1.12	0.22	374.1	0.	0.	3.83	0.	3.37
1.12	0.23	375.2	1.32	0.13	2.09	0.17	1.99
1.12	0.23	377.2	0.	0.12	0.	0.11	0.
1.12	0.23	382.2	6.66	0.	5.20	0.	2.59
1.12	0.22	384.2	4.06	0.	1.68	0.	2.03
1.12	0.22	388.1	0.	0.	3.79	0.	3.86

*** END CF FILE 2 ***

E1 LOW	E2 HIGH	E2 LOW	E3 HIGH	E3 LOW	X	GAMMA	FLAG
0.10	5.26	0.18	6.31	0.10	.0767	68.38	0
0.	0.	0.	0.	0.	.3595	55.84	3222
0.	47828.56	0.	0.	0.	.4297	79.09	3222
3.51	0.00	0.	0.	0.	.3651	63.75	3133
1.98	3.45	1.26	1.19	1.27	.2019	67.52	0
0.34	3.78	0.27	7.67	0.31	.2616	71.22	0
0.	0.	0.10	0.	0.09	.2631	61.03	3311
0.13	0.36	0.13	1.47	0.13	.0137	54.82	0
0.	1.94	0.	1.42	0.	.3020	64.00	3222
1.60	0.	0.58	0.	0.83	.1766	65.96	1000
0.24	0.51	0.19	1.69	0.20	.2176	70.13	1100
0.	11.33	0.	8.10	0.	.0815	49.71	3222
0.	0.	0.	0.12	0.	.2555	74.38	3232
1.87	1.92	1.09	2.46	1.26	.	53.44	1000
0.47	9.11	0.	4.96	0.	.0261	57.39	1022
0.	7.91	0.	12.55	0.38	.0687	61.83	2220
0.	0.	0.	0.	0.	.1041	61.44	3222
0.28	0.21	0.19	0.62	0.22	.1188	65.33	1000
0.49	0.	0.32	0.10	0.36	.0541	58.25	1000
0.	4.25	0.	188766.52	0.	.0537	49.19	2222
0.88	2.96	0.43	264164.69	0.19	.0261	52.73	0
0.16	3.33	0.16	196321.79	0.15	.0516	59.74	0
0.	1.31	0.	191095.20	0.	.	56.50	3222
0.	19.62	0.	164187.00	0.	.0920	43.43	2222
1.10	0.	0.46	262713.94	0.50	.0659	46.16	3100
1.10	0.	0.46	262713.94	0.50	.0659	46.15	3100
0.	2.99	0.	213628.62	0.	.0356	49.09	3222
0.	0.15	0.	210548.70	0.	.1668	41.11	2222
0.	2.54	0.	66284.34	0.	.0989	44.51	2222
0.10	6.09	0.10	155999.30	0.10	.0629	56.31	0
0.	3.37	0.	35612.60	0.	.	46.89	3222
0.17	1.99	0.15	20988.40	0.	.2152	41.66	2
0.11	0.	0.11	34330.02	0.43	.1191	46.54	1100
0.	2.59	0.	82695.19	0.	.1188	51.35	2222
0.	2.03	0.	99945.40	0.	.0232	55.60	2222
0.	3.86	0.	94697.78	0.	.0788	58.28	3222

L	E	TIME	E4 HIGH	E4 LOW	E1 HIGH	E1 LOW	E2 HIGH	E2
1.14	0.21	301.4	7.89	0.11	9.88	0.15	11.20	
1.14	0.22	304.5	0.	0.	0.07	0.	0.	
1.14	0.22	315.2	0.	0.	0.	0.	0.	
1.14	0.25	321.1	0.	0.	0.	0.	2.86	
1.14	0.25	322.2	0.	0.	0.	17.57	0.00	
1.14	0.21	322.2	0.	0.11	4.84	0.36	3.46	
1.14	0.22	326.2	1.69	0.15	5.08	8.35	8.67	
1.14	0.22	323.1	2.10	0.10	3.66	1.36	8.99	
1.14	0.23	329.2	5.86	0.12	0.46	0.15	1.20	
1.14	0.21	329.2	5.96	0.	5.60	0.	5.62	
1.14	0.21	331.2	0.55	0.09	36.50	0.32	3.55	
1.14	0.23	332.1	0.47	0.	0.96	0.	0.38	
1.14	0.23	333.2	0.	0.10	0.67	0.10	3.81	
1.14	0.21	334.0	0.	0.	0.	0.	4.00	
1.14	0.21	336.0	0.	0.	1.80	0.	3.30	
1.14	0.22	337.1	0.	0.15	1.88	4.09	0.75	
1.14	0.22	339.1	0.	0.08	0.	0.54	12.43	
1.14	0.21	340.2	0.	0.11	6.37	0.32	4.67	
1.14	0.21	341.0	0.	0.10	39.00	0.11	4.00	
1.14	0.22	342.1	2.05	0.	1.19	0.	0.41	
1.14	0.21	342.1	0.	0.08	3.06	5.43	5.03	
1.14	0.21	343.0	0.	0.	7.29	0.	1.18	
1.14	0.21	344.1	0.	0.20	26.79	2.45	16.23	
1.14	0.21	345.2	5.86	0.	53.38	0.	28.47	
1.14	0.21	347.2	0.	0.19	4.49	1.18	0.78	
1.14	0.21	347.2	0.	0.	0.	0.	3.46	
1.14	0.21	348.1	0.	0.09	3.40	2.12	1.37	
1.14	0.23	350.0	0.	0.11	0.02	0.32	0.	
1.14	0.21	350.0	0.	0.	4.31	0.	0.	
1.14	0.22	354.0	0.	0.	0.70	0.	1.00	
1.14	0.21	355.1	0.	0.16	2.18	3.02	5.58	
1.14	0.21	355.9	0.	0.08	1.60	0.	3.46	
1.14	0.22	355.9	0.	0.	1.00	0.	0.	
1.14	0.21	357.0	5.46	0.	8.33	0.	0.88	
1.14	0.22	359.0	5.25	0.	2.91	0.	3.91	
1.14	0.21	359.0	0.	0.	3.80	0.	3.34	
1.14	0.21	360.1	4.23	0.10	35.81	0.	20.18	
1.14	0.22	361.0	0.	0.	1.84	0.	3.00	
1.14	0.21	362.1	7.24	0.08	8.96	4.43	6.94	
1.14	0.21	364.0	3.63	0.10	10.24	0.51	5.42	
1.14	0.21	364.0	0.	0.10	4.78	0.	4.37	
1.14	0.21	365.1	6.30	0.	70.29	0.	60.32	
1.14	0.21	367.1	0.	0.	5.11	6.43	4.14	
1.14	0.21	367.1	0.	0.	5.11	6.43	4.14	
1.14	0.21	369.1	0.	0.	8.76	0.	5.60	
1.14	0.21	370.2	6.24	0.	5.42	0.	1.72	
1.14	0.21	372.1	7.02	0.	39.63	0.	12.16	
1.14	0.21	373.0	0.70	0.10	8.20	0.26	10.12	
1.14	0.21	374.1	0.	0.	7.74	0.	7.00	
1.14	0.22	375.2	1.75	0.25	5.73	1.31	4.95	
1.14	0.21	377.2	4.87	0.20	6.82	0.24	2.29	
1.14	0.21	382.0	6.93	0.	6.84	0.	0.87	
1.14	0.21	382.2	7.58	0.	37.21	0.	13.64	
1.14	0.21	384.2	4.69	0.	5.91	0.	5.53	
1.14	0.21	388.1	0.	0.	9.56	0.	7.62	

*** END OF FILE 3 ***

E1 LOW	E2 HIGH	E2 LOW	E3 HIGH	E3 LOW	X	GAMMA	FLAG
0.15	11.20	0.65	13.55	0.16	.0261	66.89	0
0.	0.	0.	0.67	0.	.2337	56.70	3222
0.	0.	0.	3.00	0.	.2283	71.06	3332
0.	2.86	0.	0.	0.13	.4072	80.19	3220
17.57	0.00	0.	0.	0.	.3790	61.36	3133
0.36	3.46	22.51	2.90	0.27	.0763	61.01	1000
8.35	8.67	4.09	4.91	4.10	.1978	67.18	0
1.36	8.99	0.83	13.89	1.03	.2477	70.83	0
0.15	1.20	0.14	2.03	0.13	.2723	59.13	0
0.	5.62	0.	3.71	0.	.0632	51.81	2222
0.32	3.55	0.26	7.13	0.28	.0247	54.32	0
0.	0.38	0.	0.15	0.	.2924	77.37	2222
0.10	3.81	0.10	2.79	0.10	.3233	62.38	1000
0.	4.00	0.	4.90	0.	.0871	73.65	3322
0.	3.30	0.	3.04	0.	.0750	70.29	3222
4.09	0.75	1.08	4.23	1.67	.1513	65.07	1000
0.54	12.43	0.33	20.68	0.36	.1778	68.37	1100
0.32	4.67	0.29	3.33	0.21	.0315	49.59	1000
0.11	4.00	0.11	1.38	0.11	.0672	68.99	1000
0.	0.41	0.	4.17	0.	.2252	62.95	2222
5.43	5.03	2.54	5.60	3.09	.0249	53.34	1000
0.	1.18	0.	3.26	0.	.0783	66.34	3222
2.45	16.23	0.	8.99	0.	.0210	56.73	1022
0.	28.47	0.	38.30	0.64	.0768	61.38	2220
1.18	0.78	0.55	6.22	0.57	.0749	61.81	1000
0.	3.46	0.	4.58	0.	.1408	43.38	3322
2.12	1.37	0.71	3.92	0.89	.0258	61.56	1000
0.32	0.	0.16	0.	0.27	.3011	67.46	1000
0.	0.	0.	0.	0.	.0458	61.69	3233
0.	1.00	0.	3.00	0.	.2202	64.58	3222
3.02	5.58	1.18	4.13	1.51	.0351	55.82	1000
0.	3.46	0.	1.41	0.	.1391	81.51	1222
0.	0.	0.	1.00	0.	.2474	68.87	3222
0.	0.88	0.	6.90	0.	.0650	57.02	2222
0.	3.91	0.	209528.48	0.	.2090	67.04	2222
0.	3.34	0.	225691.61	0.	.1377	58.35	3222
0.	20.18	0.	182415.66	0.12	.0210	49.15	220
0.	3.00	0.	205966.88	0.	.1898	62.02	3222
4.43	6.94	1.26	260881.12	0.51	.0723	51.47	0
0.51	5.42	0.51	207674.22	0.43	.0595	61.21	0
0.	4.37	0.10	210273.34	0.	.0719	52.79	1202
0.	60.32	0.	163519.83	0.	.0619	45.43	2222
6.43	4.14	1.50	259455.14	2.07	.0469	47.38	3000
6.43	4.14	1.50	259455.14	2.07	.0469	47.35	3000
0.	5.60	0.	219753.31	0.	.0405	48.92	3222
0.	1.72	0.	202152.94	0.	.1211	45.23	2222
0.	12.16	0.	78571.22	0.	.0571	47.78	2222
0.26	10.12	0.18	182691.59	0.21	.0585	57.48	0
0.	7.00	0.	36536.03	0.	.0675	48.77	3222
1.31	4.95	0.71	31588.13	0.	.1505	47.71	2
0.24	2.29	0.19	40298.18	1.42	.0484	51.63	0
0.	0.87	0.	84551.99	0.	.0426	56.48	2222
0.	13.64	0.	77962.12	0.	.0409	57.36	2222
0.	5.53	0.	100709.88	0.	.0998	59.62	2222
0.	7.62	0.	100198.52	0.	.1375	61.03	3222

62-059A-01A EXPLORER-15 (1962 BETA LAMBDA 2) 01 ELECTRON ENERGY DISTRI

THE TABLE OF MAXIMUM AND MINIMUM VALUES FOR THIS TAPE OF EXPLORER

L VALUE		MAXIMUM	MINIMUM		MAXIMUM	MINIMUM		MAXIMUM	MINIMUM
1.10	E VALUE	0.27E-00	0.23E-00	DETECTOR E1 HIGH	0.72E 01	0.20E-00	DETECTOR E1 LOW	0.63E 00	0.13E-00
	X VALUE	0.30E-00	0.15E-01	DETECTOR E3 HIGH	0.48E 01	0.25E-00	DETECTOR E3 LOW	0.45E-00	0.63E-01
1.12	E VALUE	0.27E-00	0.22E-00	DETECTOR E1 HIGH	0.13E 02	0.51E-01	DETECTOR E1 LOW	0.35E 01	0.10E-00
	X VALUE	0.43E-00	0.14E-01	DETECTOR E3 HIGH	0.13E 02	0.10E-00	DETECTOR E3 LOW	0.13E 01	0.55E-01
1.14	B VALUE	0.25E-00	0.21E-00	DETECTOR E1 HIGH	0.70E 02	0.17E-01	DETECTOR E1 LOW	0.16E 02	0.10E-00
	X VALUE	0.41E-00	0.21E-01	DETECTOR E3 HIGH	0.36E 02	0.15E-00	DETECTOR E3 LOW	0.41E 01	0.10E-0
1.16	E VALUE	0.26E-00	0.20E-00	DETECTOR E1 HIGH	0.36E 03	0.19E-00	DETECTOR E1 LOW	0.79E 02	0.11E-0
	X VALUE	0.49E-00	0.24E-02	DETECTOR E3 HIGH	0.12E 03	0.12E-00	DETECTOR E3 LOW	0.11E 02	0.11E-0
1.18	E VALUE	0.33E-00	0.19E-00	DETECTOR E1 HIGH	0.28E 04	0.12E 01	DETECTOR E1 LOW	0.31E 03	0.99E-0
	X VALUE	0.65E 00	0.74E-02	DETECTOR E3 HIGH	0.99E 03	0.16E 01	DETECTOR E3 LOW	0.54E 03	0.97E-0

1 01 ELECTRON ENERGY DISTRIBUTION. ASSOC MAGNETIC TAPE NUMBER D-00074.

S FOR THIS TAPE OF EXPLORER 15 ARE AS FOLLOWS. ORDERED BY 'L' VALUES

HIGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
NIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
20E-00	0.63E 00 0.13E-00	0.63E 01 0.74E 00	0.41E-00 0.64E-01
HIGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
NIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
25E-00	0.45E-00 0.63E-01	0.64E 01 0.72E 00	0.12E-00 0.86E-01
HIGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
NIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
51E-01	0.25E 01 0.10E-00	0.48E 05 0.15E-00	0.13E 01 0.99E-01
HIGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
NIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
10E-00	0.13E 01 0.55E-01	0.70E 01 0.34E-00	0.14E-00 0.81E-01
HIGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
NIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.17E-01	0.18E 02 0.10E-00	0.60E 02 0.38E-00	0.23E 02 0.10E 00
HIGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
INIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.15E-00	0.41E 01 0.10E-00	0.79E 01 0.47E-00	0.25E-00 0.78E-01
1 HIGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
INIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.19E-00	0.79E 02 0.11E-00	0.18E 03 0.25E-01	0.33E 02 0.23E-01
3 HIGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
INIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.12E-00	0.11E 02 0.11E-00	0.89E 01 0.85E 00	0.44E-00 0.71E-01
1 HIGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
INIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.12E 01	0.31E 03 0.99E-01	0.99E 03 0.70E 00	0.47E 02 0.64E-02
3 HIGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
INIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.16E 01	0.54E 03 0.97E-01	0.53E 02 0.12E 01	0.70E 00 0.65E-01

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62-059A-01A EXPLORER-15 (1962 BETA LAMBDA 2) 01 ELECTRON ENERGY DISTR

THE TABLE OF MAXIMUM AND MINIMUM VALUES FOR THIS TAPE OF EXPLORER

L VALUE	B VALUE MAXIMUM	B VALUE MINIMUM	DETECTOR E1 HIGH MAXIMUM	DETECTOR E1 HIGH MINIMUM	DETECTOR E1 LOW MAXIMUM	DETECTOR E1 LOW MINIMUM
1.20	0.32E-00	0.18E-00	0.12E 05	0.56E 00	0.11E 04	0.83E-0
	X VALUE MAXIMUM	**X VALUE MINIMUM**	**DETECTOR E3 HIGH MAXIMUM**	**DETECTOR E3 HIGH MINIMUM**	**DETECTOR E3 LOW MAXIMUM**	**DETECTOR E3 LOW MINIMUM**
	0.66E 00	0.16E-01	0.46E 04	0.17E 01	0.40E 03	0.94E-0
1.22	0.38E-00	0.17E-00	0.24E 05	0.86E 00	0.36E 04	0.60E-0
	0.74E 00	0.29E-01	0.71E 04	0.85E 00	0.31E 03	0.92E-0
1.24	0.37E-00	0.16E-00	0.33E 05	0.25E-00	0.10E 05	0.39E-0
	0.75E 00	0.35E-02	0.79E 04	0.14E 01	0.24E 03	0.93E-0
1.26	0.39E-00	0.16E-00	0.43E 05	0.28E-01	0.26E 05	0.26E-
	0.78E 00	0.91E-02	0.76E 04	0.10E 01	0.20E 03	0.57E-
1.28	0.36E-00	0.15E-00	0.51E 05	0.64E-01	0.36E 05	0.17E-
	0.78E 00	0.35E-02	0.72E 04	0.26E-00	0.19E 03	0.10E-

01 ELECTRON ENERGY DISTRIBUTION, NSSDC MAGNETIC TAPE NUMBER D-00074.

FOR THIS TAPE OF EXPLORER 15 ARE AS FOLLOWS, ORDERED BY 'L' VALUES

IGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
MUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
E 00	0.11E 04 0.83E-01	0.65E 04 0.12E-00	0.64E 02 0.38E-01
IGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
MUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
E 01	0.40E 03 0.94E-0[illegible]	0.2[illegible]E 03 0.18E 01	0.98E 00 0.61E-01

IGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
MUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
E 00	0.36E 04 0.60E-01	0.11E 05 0.15E-05	0.83E 02 0.95E-01
IGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
MUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
E 00	0.31E 03 0.92E-01	0.28E 03 0.67E 00	0.12E 01 0.59E-01

IGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
MUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
E-00	0.10E 05 0.29E-01	0.13E 05 0.33E-00	0.13E 03 0.96E-01
IGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
MUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
E 01	0.24E 03 0.93E-01	0.89E 02 0.96E 00	0.18E 01 0.57E-01

IGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
MUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
E-01	0.26E 05 0.26E-01	0.13E 05 0.29E-00	0.16E 03 0.10E-00
IGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
MUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
E 01	0.20E 03 0.97E-01	0.58E 02 0.23E-00	0.31E 01 0.57E-01

IGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
MUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
4E-01	0.38E 05 0.17E-01	0.13E 05 0.17E-00	0.19E 03 0.99E-01
IGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
MUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
6E-00	0.19E 03 0.10E-00	0.12E 03 0.58E-02	0.35E 01 0.57E-01

62-059A-01A EXPLORER-15 (1962 BETA LAMBDA 2) 01 ELECTRON ENERGY DISTRIBUTIO

THE TABLE OF MAXIMUM AND MINIMUM VALUES FOR THIS TAPE OF EXPLORER 15 AR

L VALUE				
L	B VALUE	DETECTOR E1 HIGH	DETECTOR E1 LOW	DE
VALUE	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MA
1.30	0.40E-00 0.14E-00	0.57E 05 0.12E-00	0.42E 05 0.13E-01	0.
	X VALUE	DETECTOR E3 HIGH	DETECTOR E3 LOW	DE
	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MA
	0.80E 00 0.66E-02	0.68E 04 0.20E 01	0.23E 03 0.87E-01	0.
L	B VALUE	DETECTOR E1 HIGH	DETECTOR E1 LOW	DE
VALUE	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MA
1.32	0.39E-00 0.14E-00	0.62E 05 0.69E-01	0.46E 05 0.12E-01	0.
	X VALUE	DETECTOR E3 HIGH	DETECTOR E3 LOW	DE
	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MA
	0.81E 00 0.16E-01	0.96E 05 0.16E-00	0.27E 03 0.66E-01	0.
L	B VALUE	DETECTOR E1 HIGH	DETECTOR E1 LOW	DE
VALUE	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MA
1.34	0.37E-00 0.13E-00	0.66E 05 0.11E-01	0.46E 05 0.14E-01	0.
	X VALUE	DETECTOR E3 HIGH	DETECTOR E3 LOW	DE
	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MA
	0.81E 00 0.15E-01	0.52E 05 0.43E-00	0.27E 03 0.51E-01	0.
L	B VALUE	DETECTOR E1 HIGH	DETECTOR E1 LOW	D
VALUE	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	M
1.36	0.36E-00 0.12E-00	0.14E 06 0.17E-00	0.49E 05 0.14E-01	0
	X VALUE	DETECTOR E3 HIGH	DETECTOR E3 LOW	D
	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	M
	0.81E 00 0.17E-01	0.28E 05 0.16E-00	0.23E 03 0.27E-01	0
L	B VALUE	DETECTOR E1 HIGH	DETECTOR E1 LOW	D
VALUE	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	M
1.38	0.35E-00 0.12E-00	0.81E 05 0.31E-00	0.49E 05 0.82E-02	0
	X VALUE	DETECTOR E3 HIGH	DETECTOR E3 LOW	D
	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	M
	0.81E 00 0.29E-02	0.26E 05 0.33E-00	0.23E 03 0.28E-01	0

ELECTRON ENERGY DISTRIBUTION. NSSDC MAGNETIC TAPE NUMBER C-00074.

THIS TAPE OF EXPLORER 15 ARE AS FOLLOWS. ORDERED BY 'L' VALUES

DETECTOR E1 LOW		DETECTOR E2 HIGH		DETECTOR E2 LOW	
MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM
0.42E 05	0.13E-01	0.12E 05	0.10E-00	0.21E 03	0.73E-01

DETECTOR E3 LOW		DETECTOR E4 HIGH		DETECTOR E4 LOW	
MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM
0.23E 03	0.87E-01	0.44E 02	0.10E-00	0.26E 01	0.43E-01

DETECTOR E1 LOW		DETECTOR E2 HIGH		DETECTOR E2 LOW	
MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM
0.46E 05	0.12E-01	0.12E 05	0.22E-00	0.22E 03	0.80E-01

DETECTOR E3 LOW		DETECTOR E4 HIGH		DETECTOR E4 LOW	
MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM
0.27E 03	0.66E-01	0.40E 05	0.12E-00	0.47E 01	0.27E-01

DETECTOR E1 LOW		DETECTOR E2 HIGH		DETECTOR E2 LOW	
MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM
0.48E 05	0.14E-01	0.11E 05	0.14E-00	0.22E 03	0.38E-01

DETECTOR E3 LOW		DETECTOR E4 HIGH		DETECTOR E4 LOW	
MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM
0.27E 03	0.51E-01	0.45E 02	0.20E-00	0.84E 01	0.17E-01

DETECTOR E1 LOW		DETECTOR E2 HIGH		DETECTOR E2 LOW	
MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM
0.49E 05	0.14E-01	0.10E 05	0.16E-00	0.32E 03	0.14E-01

DETECTOR E3 LOW		DETECTOR E4 HIGH		DETECTOR E4 LOW	
MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM
0.23E 03	0.37E-01	0.61E 02	0.27E-00	0.29E 02	0.12E-01

DETECTOR E1 LOW		DETECTOR E2 HIGH		DETECTOR E2 LOW	
MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM
0.49E 05	0.82E-02	0.92E 04	0.27E-00	0.22E 03	0.13E-08

DETECTOR E3 LOW		DETECTOR E4 HIGH		DETECTOR E4 LOW	
MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM
0.23E 03	0.28E-01	0.75E 02	0.17E-00	0.52E 01	0.11E-01

62-059A-01A EXPLORER-15 (1962 BETA LAMBDA 2) C1 ELECTRON ENERGY DISTR

THE TABLE OF MAXIMUM AND MINIMUM VALUES FOR THIS TAPE OF EXPLORER

L VALUE		E VALUE MAXIMUM	E VALUE MINIMUM	DETECTOR E1 HIGH MAXIMUM	DETECTOR E1 HIGH MINIMUM	DETECTOR E1 LOW MAXIMUM	DETECTOR E1 LOW MINIMUM
1.40		0.33E-00	0.11E-00	0.77E 05	0.13E 01	0.49E 05	0.58E-0
		X VALUE MAXIMUM	X VALUE MINIMUM	DETECTOR E3 HIGH MAXIMUM	DETECTOR E3 HIGH MINIMUM	DETECTOR E3 LOW MAXIMUM	DETECTOR E3 LOW MINIMUM
		0.61E 00	0.56E-02	0.84E 04	0.28E-00	0.24E 03	0.23E-0
1.45	E VALUE	0.29E-00	0.10E-00	0.63E 05	0.12E-28	0.51E 05	0.11E-0
	X VALUE	0.81E 00	0.10E-01	0.38E 04	0.25E-00	0.23E 03	0.34E-0
1.50	E VALUE	0.29E-00	0.92E-01	0.55E 05	0.14E 01	0.50E 05	0.11E-
	X VALUE	0.82E 00	0.18E-01	0.29E 04	0.22E-00	0.44E 03	0.11E-
1.55	E VALUE	0.26E-00	0.84E-01	0.45E 05	0.52E 02	0.42E 05	0.12E-
	X VALUE	0.82E 00	0.21E-01	0.22E 04	0.21E 01	0.42E 04	0.11E-
1.60	B VALUE	0.27E-00	0.76E-01	0.36E 05	0.12E 02	0.28E 05	0.36E-
	X VALUE	0.85E 00	0.21E-02	0.15E 04	0.60E-01	0.47E 05	0.18E

2) 01 ELECTRON ENERGY DISTRIBUTION. NSSDC MAGNETIC TAPE NUMBER D-00074.

S FOR THIS TAPE OF EXPLORER 18 ARE AS FOLLOWS, ORDERED BY 'L' VALUES

1 HIGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
INIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.13E 01	0.49E 05 0.58E-02	0.85E 04 0.26E-00	0.53E 04 0.15E-19
3 HIGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
INIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.28E-00	0.24E 03 0.23E-01	0.92E 02 0.30E-01	0.88E 01 0.14E-01
1 HIGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
INIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.12E-28	0.51E 05 0.11E-03	0.72E 04 0.38E-00	0.38E 04 0.25E-01
3 HIGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
INIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.25E-00	0.23E 03 0.34E-01	0.10E 08 0.65E 00	0.65E 01 0.31E-07
1 HIGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
INIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.14E 01	0.50E 05 0.11E-00	0.56E 04 0.41E-00	0.30E 04 0.11E-00
3 HIGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
INIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.22E-00	0.44E 03 0.11E-00	0.25E 03 0.16E 01	0.14E 02 0.24E-01
E1 HIGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
0.52E 02	0.42E 05 0.12E-00	0.42E 04 0.25E 01	0.25E 04 0.11E-00
E3 HIGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
0.21E 01	0.42E 04 0.11E-00	0.38E 03 0.26E-01	0.39E 02 0.42E-01
E1 HIGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
0.12E 02	0.28E 05 0.36E-00	0.29E 04 0.40E 01	0.22E 04 0.17E-00
E3 HIGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
0.60E-01	0.47E 05 0.18E-00	0.52E 03 0.29E-00	0.87E 02 0.63E-01

62-059A-01A EXPLORER-15 ,1962 BETA LAMBDA 2) 01 ELECTRON ENERGY DIS

THE TABLE OF MAXIMUM AND MINIMUM VALUES FOR THIS TAPE OF EXPLOR

L VALUE						
L	B VALUE		DETECTOR E1 HIGH		DETECTOR E1 LO	
VALUE	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMU
1.65	0.24E-00	0.69E-01	0.64E 05	0.66E 02	0.15E 05	0.18E
	X VALUE		DETECTOR E3 HIGH		DETECTOR E3 LO	
	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMU
	0.84E 00	0.13E-01	0.99E 03	0.30E 01	0.19E 06	0.43E-
L	B VALUE		DETECTOR E1 HIGH		DETECTOR E1 LO	
VALUE	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMU
1.70	0.23E-00	0.63E-01	0.14E 06	0.58E 02	0.90E 04	0.15E
	X VALUE		DETECTOR E3 HIGH		DETECTOR E3 LO	
	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMU
	0.85E 00	0.16E-01	0.24E 05	0.69E 00	0.28E 06	0.56E
L	B VALUE		DETECTOR E1 HIGH		DETECTOR E1 LO	
VALUE	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMU
1.72	0.22E-00	0.61E-01	0.30E 05	0.17E 03	0.66E 04	0.55E
	X VALUE		DETECTOR E3 HIGH		DETECTOR E3 LO	
	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMU
	0.85E 00	0.68E-02	0.26E 06	0.13E 02	0.17E 06	0.12E
L	B VALUE		DETECTOR E1 HIGH		DETECTOR E1 LO	
VALUE	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMU
1.74	0.21E-00	0.59E-01	0.17E 05	0.24E 03	0.83E 04	0.15E
	X VALUE		DETECTOR E3 HIGH		DETECTOR E3 LO	
	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMU
	0.85E 00	0.67E-02	0.17E 04	0.88E 01	0.67E 05	0.12E
L	B VALUE		DETECTOR E1 HIGH		DETECTOR E1 LO	
VALUE	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMU
1.76	0.21E-00	0.57E-01	0.17E 05	0.38E 03	0.80E 04	0.18E
	X VALUE		DETECTOR E3 HIGH		DETECTOR E3 LO	
	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMU
	0.85E 00	0.67E-02	0.21E 04	0.86E 01	0.19E 05	0.11E

2) C1 ELECTRON ENERGY DISTRIBUTION, NSSDC MAGNETIC TAPE NUMBER C-00074.

S FOR THIS TAPE OF EXPLORER 15 ARE AS FOLLOWS, ORDERED BY 'L' VALUES

HIGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
NIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
66E 02	0.15E 05 0.18E 01	0.21E 04 0.11E 02	0.21E 04 0.46E-01
HIGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
NIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.30E 01	0.19E 06 0.43E-00	0.67E 03 0.13E 01	0.14E 03 0.37E-01
HIGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
INIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.58E 02	0.90E 04 0.15E 01	0.19E 04 0.33E 01	0.17E 04 0.16E-01
HIGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
INIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.69E 00	0.26E 06 0.96E 00	0.81E 03 0.24E 01	0.27E 06 0.46E-01
HIGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
INIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.17E 03	0.66E 04 0.55E 01	0.59E 04 0.21E 02	0.17E 04 0.57E-01
HIGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
INIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.13E 02	0.17E 06 0.12E 01	0.11E 04 0.22E 01	0.71E 05 0.34E-01
HIGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
INIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.24E 03	0.83E 04 0.15E 02	0.26E 04 0.14E 02	0.18E 04 0.82E 00
HIGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
INIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.66E 01	0.67E 05 0.12E 01	0.19E 04 0.31E 01	0.21E 05 0.41E-01
HIGH	DETECTOR E1 LOW	DETECTOR E2 HIGH	DETECTOR E2 LOW
INIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.38E 03	0.80E 04 0.18E 02	0.30E 04 0.21E 02	0.20E 04 0.11E 01
HIGH	DETECTOR E3 LOW	DETECTOR E4 HIGH	DETECTOR E4 LOW
INIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM	MAXIMUM MINIMUM
.86E 01	0.19E 05 0.11E 01	0.28E 04 0.51E 01	0.70E 04 0.37E-01

62-059A-01A EXPLORER-15 (1962 BETA LAMBDA 2) C1 ELECTRON ENERGY DISTRIBUTIO

```
THERE HAS BEEN A TOTAL OF     24 RECORDS READ FROM FILE  1
THERE HAS BEEN A TOTAL OF     36 RECORDS READ FROM FILE  2
THERE HAS BEEN A TOTAL OF     55 RECORDS READ FROM FILE  3
THERE HAS BEEN A TOTAL OF     65 RECORDS READ FROM FILE  4
THERE HAS BEEN A TOTAL OF     80 RECORDS READ FROM FILE  5
THERE HAS BEEN A TOTAL OF     96 RECORDS READ FROM FILE  6
THERE HAS BEEN A TOTAL OF    109 RECORDS READ FROM FILE  7
THERE HAS BEEN A TOTAL OF    127 RECORDS READ FROM FILE  8
THERE HAS BEEN A TOTAL OF    141 RECORDS READ FROM FILE  9
THERE HAS BEEN A TOTAL OF    164 RECORDS READ FROM FILE 10
THERE HAS BEEN A TOTAL OF    179 RECORDS READ FROM FILE 11
THERE HAS BEEN A TOTAL OF    204 RECORDS READ FROM FILE 12
THERE HAS BEEN A TOTAL OF    231 RECORDS READ FROM FILE 13
THERE HAS BEEN A TOTAL OF    263 RECORDS READ FROM FILE 14
THERE HAS BEEN A TOTAL OF    286 RECORDS READ FROM FILE 15
THERE HAS BEEN A TOTAL OF    301 RECORDS READ FROM FILE 16
THERE HAS BEEN A TOTAL OF    345 RECORDS READ FROM FILE 17
THERE HAS BEEN A TOTAL OF    381 RECORDS READ FROM FILE 18
THERE HAS BEEN A TOTAL OF    411 RECORDS READ FROM FILE 19
THERE HAS BEEN A TOTAL OF    434 RECORDS READ FROM FILE 20
THERE HAS BEEN A TOTAL OF    463 RECORDS READ FROM FILE 21
THERE HAS BEEN A TOTAL OF    493 RECORDS READ FROM FILE 22
THERE HAS BEEN A TOTAL OF    495 RECORDS READ FROM FILE 23
THERE HAS BEEN A TOTAL OF    503 RECORDS READ FROM FILE 24
THERE HAS BEEN A TOTAL OF    511 RECORDS READ FROM FILE 25
```

ELECTRON ENERGY DISTRIBUTION. NSSDC MAGNETIC TAPE NUMBER D-00074.

FROM FILE 1

FROM FILE 2

FROM FILE 3

FROM FILE 4

FROM FILE 5

FROM FILE 6

FROM FILE 7

FROM FILE 8

FROM FILE 9

FROM FILE 10

FROM FILE 11

FROM FILE 12

FROM FILE 13

FROM FILE 14

FROM FILE 15

FROM FILE 16

FROM FILE 17

FROM FILE 18

FROM FILE 19

FROM FILE 20

FROM FILE 21

FROM FILE 22

FROM FILE 23

FROM FILE 24

FROM FILE 25

62-059A-01A EXPLORER-15 (1962 BETA LAMBDA 2) 01 ELECTRON ENERGY DISTRIBUTION.

```
THERE HAS BEEN A TOTAL OF     518 RECORDS READ FROM FILE  26
THERE HAS BEEN A TOTAL OF     521 RECORDS READ FROM FILE  27
THERE HAS BEEN A TOTAL OF     525 RECORDS READ FROM FILE  28
THERE HAS BEEN A TOTAL OF     533 RECORDS READ FROM FILE  29
THERE HAS BEEN A TOTAL OF     539 RECORDS READ FROM FILE  30
THERE HAS BEEN A TOTAL OF     541 RECORDS READ FROM FILE  31
THERE HAS BEEN A TOTAL OF     546 RECORDS READ FROM FILE  32
THERE HAS BEEN A TOTAL OF     558 RECORDS READ FROM FILE  33
THERE HAS BEEN A TOTAL OF     562 RECORDS READ FROM FILE  34
THERE HAS BEEN A TOTAL OF     566 RECORDS READ FROM FILE  35
THERE HAS BEEN A TOTAL OF     566 RECORDS READ FROM FILE  36
THERE HAS BEEN A TOTAL OF     565 RECORDS READ FROM FILE  37
THERE HAS BEEN A TOTAL OF     570 RECORDS READ FROM FILE  38
THERE HAS BEEN A TOTAL OF     580 RECORDS READ FROM FILE  39
THERE HAS BEEN A TOTAL OF     582 RECORDS READ FROM FILE  40
THERE HAS BEEN A TOTAL OF     583 RECORDS READ FROM FILE  41
THERE HAS BEEN A TOTAL OF     587 RECORDS READ FROM FILE  42
THERE HAS BEEN A TOTAL OF     597 RECORDS READ FROM FILE  43
THERE HAS BEEN A TOTAL OF     603 RECORDS READ FROM FILE  44
THERE HAS BEEN A TOTAL OF     606 RECORDS READ FROM FILE  45
THERE HAS BEEN A TOTAL OF     616 RECORDS READ FROM FILE  46
THERE HAS BEEN A TOTAL OF     621 RECORDS READ FROM FILE  47
THERE HAS BEEN A TOTAL OF     631 RECORDS READ FROM FILE  48
THERE HAS BEEN A TOTAL OF     638 RECORDS READ FROM FILE  49
THERE HAS BEEN A TOTAL OF     633 RECORDS READ FROM FILE  50
THERE HAS BEEN A TOTAL OF     633 RECORDS READ FROM FILE  51
```

TRON ENERGY DISTRIBUTION. NSSDC MAGNETIC TAPE NUMBER C-00074.

FILE 26

FILE 27

FILE 28

FILE 29

FILE 30

FILE 31

FILE 32

FILE 33

FILE 34

FILE 35

FILE 36

FILE 37

FILE 38

FILE 39

FILE 40

FILE 41

FILE 42

FILE 43

FILE 44

FILE 45

FILE 46

FILE 47

FILE 48

FILE 49

FILE 50

FILE 51

62-059A-01A EXPLORER-15 (1962 BETA LAMBDA 2) C1 ELECTRON ENERGY DISTRIB

THERE HAS BEEN A TOTAL OF 638 RECORDS READ FROM FILE 52

THERE HAS BEEN A TOTAL OF 637 RECORDS READ FROM FILE 53

THERE HAS BEEN A TOTAL OF 642 RECORDS READ FROM FILE 54

THERE HAS BEEN A TOTAL OF 643 RECORDS READ FROM FILE 55

THERE HAS BEEN A TOTAL OF 641 RECORDS READ FROM FILE 56

THERE HAS BEEN A TOTAL OF 450 RECORDS READ FROM FILE 57

THERE HAS BEEN A TOTAL OF 263 RECORDS READ FROM FILE 58

THERE HAS BEEN A TOTAL OF 163 RECORDS READ FROM FILE 59

THERE HAS BEEN A TOTAL OF 111 RECORDS READ FROM FILE 60

THERE HAS BEEN A TOTAL OF 72 RECORDS READ FROM FILE 61

THERE HAS BEEN A TOTAL OF 40 RECORDS READ FROM FILE 62

2) C1 ELECTRON ENERGY DISTRIBUTION, NSSDC MAGNETIC TAPE NUMBER D-00074.

READ FROM FILE 52

READ FROM FILE 53

READ FROM FILE 54

READ FROM FILE 55

READ FROM FILE 56

READ FROM FILE 57

READ FROM FILE 58

READ FROM FILE 59

READ FROM FILE 60

READ FROM FILE 61

READ FROM FILE 62

```
      DIMENSION BUFR (1400) , EBUFF (14)
      CALL SETHD
      LINE = 0
      I = 1
      IFILE = 1
      IBITS = 21
      LR = 1
      IREC = 0
  200 CALL GETBE (BUFR (I),N,M,ICODE)
      IF(ICODE .EQ. -1) GO TO 300
C     IF(ICODE .EQ. 1) GO TO 60
C     IF(ICODE .EQ. 2) GO TO 70
C     IF(ICODE .EQ. 3) GO TO 80
      IREC = IREC + 1
      I = I + 14
      GO TO 200
  300 CALL HEADER
      LINE = 0
      I = 0
    6 DO 7 K = 1,14
      I = I + 1
    7 EBUFF(K) = BUFR(I)
      EBUFF(14) = SHIFT(BUFR(I),IBITS,LR)
      WRITE (3,101) (EBUFF(K), K =1,14)
      IREC = IREC - 1
      IF(IREC.EQ.0) GO TO 8
      LINE = LINE + 1
      IF (LINE .GT. 55) GO TO 300
      GO TO 6
    8 WRITE (3,102) IFILE
      IFILE = IFILE + 1
      IF (IFILE .EQ. 4) STOP
      I = 1
      GO TO 200
  101 FORMAT (1H ,3X,2(F4.2,2X),F5.1,2X,8(F9.2,2X),F5.4,2X,F5.2,3X,O5)
  102 FORMAT (1H0,16H*** END OF FILE ,I2,4H ***)
      END
```

02/14/66 PAGE 1

T - INTERNAL FORMULA NUMBER(S)

THIS LISTING WAS USED TO PRODUCE LISTINGS OF THE FIRST 3 FILES WHICH ARE SHOWN IN THE FRONT OF THIS CATALOG

```
                                   .1
                                   .2
                                   .3
                                   .4
                                   .5
                                   .6
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                                   .8

                                   .9     .10    .11
                                   .12
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                                   .18
                                   .19
                                   .20    .21
                                   .22
                                   .23    .24    .25    .26    .27
                                   .28
                                   .29    .30    .31
                                   .32
                                   .33    .34    .35
                                   .36
                                   .37    .38    .39
                                   .40
                                   .41    .42    .43
                                   .44
                                   .45
.2X.F5.2.3X.05)
                                   .46
```

```
C       ****************************************************************
C       ****
C       *****6 JUNE 68
C       ****
C       *****THIS PROGRAM IS TITLED EXPL-15.
C       ****
C       *****THIS PROGRAM REQUIRES THE FOLLOWING SUBPROGRAMS
C       *****TO RUN - MAXIS, MTBXL, MATBL, CETEE, FLAG.    *
C       ****
C       ****************************************************************
        DIMENSION BUF(100),ISTC(100)
        COMMON /INC/LINE,II,N
C       ****************************************************************
C       ****INITIALIZE ROUTINE.
        IREC1=0
        IREC2=0
        I4=0
        I5=1
        I7=0
        LINE=0
C       ****INDICATES THE 'L' VALUE IN MATRICES
        N=1
        CALL MTBL (1,VALUEX,VALUEL) ✓
        CALL MTBXL(1,VALUEX,VALUEL) ✓
C       ****************************************************************
C       ****START MAIN PROGRAM.
        WRITE (3,5)
      5 FORMAT(1H1)
      2 KEY=1
C       ****READ IN A RECORD
      4 CALL CETEE (BUF,NWCS,0,ICODE)
C       ****CHECK FOR END OF FILE
        IF (ICODE.EQ.-1) GO TO 50
C       ****CHECK FOR END OF TAPE
        IF (ICODE.EQ.-2) GO TO 50
C       ****INCREASE RECORD COUNTERS.
        IREC1=IREC1+1
        IREC2=IREC2+1
C       ****CHECK FOR PARITY ERROR
        IF (ICODE.EQ.1) GO TO 100
C       ****CHECK FOR ILLEGAL FLAG WORD.
        IF (ICODE.EQ.2) GO TO 110
C       ****CHECK FOR ERROR IN 'E' FLAG.
        IF (ICODE.EQ.3) GO TO 120
C       ****CALL ROUTINE FOR MAX. - MIN. VALUES.
        CALL MAXIS (KEY,BUF(1),BUF(2),BUF(3),BUF(4),BUF(5),BUF(6), ✓
       1  BUF(7),BUF(8),BUF(9),BUF(10),BUF(11),BUF(12),BUF(14))
C       ****SET 'KEY' TO UPDATE MATRICES.
        KEY=0
C       ****CALL 'B', 'X' AND 'L' MATRIX
        CALL MTBXL (KEY,BUF(12),BUF(1))
C       ****CALL 'B' AND 'L' MATRIX.
        CALL MATBL (KEY,BUF(2),BUF(1))
        GO TO 4
C       ****************************************************************
```

T - INTERNAL FORMULA NUMBER(S)

****

S

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.10 .11

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.14 .15 .16

.17 .18 .19
.20

.21

.22 .23 .24

.25 .26 .27

.28 .29 .30

E),BUF(6), ✓
,BUF(14))
.31

.32

.33
.34

****

/

```
C     ****END OF FILE ROUTINE.
   50 IREC1=IREC1+1
      WRITE (3,51) IREC1
   51 FORMAT (1H ,9X, 46HAN END OF FILE HAS BEEN ENCOUNTERED ON RECORD ,
     1 I5//)
C     ****SET KEY TO UP DATE MAXIS MATRIX.
      KEY=2
C     ****INCREASE INDEX COUNTER.
      I4=I4+1
      I5=I5+1
C     ****STORE VALUE OF RECORD COUNTER.
      ISTO(I4)=IREC1-1
      IF (ICODE.EQ.-2) GO TO 52
C     ****INDICATES THE 'L' VALUE IN MATRICES
      N=N+1
C     ****REINITIALIZE RECORD COUNTER.
      IREC1=0
      GO TO 4
C     ******************************************************************
C     ****EXIT ROUTINE.
C     ****SET 'KEY' TO WRITE MATRICES.
   52 KEY=-1
      CALL SETHC
C     ****WRITE OUT MATRICES
      CALL MTEXL(KEY,BUF(12),BUF(1))
      CALL MATBL(KEY,BUF(2),BUF(1))
      CALL MAXIS(KEY,BUF(1),BUF(2),BUF(3),BUF(4),BUF(5),BUF(6),
     1  BUF(7),BUF(8),BUF(9),BUF(10),BUF(11),BUF(12),BUF(14))
      I5=0
      CALL HEADER
      DO 57 I2=1,I4
      I5=I5+1
      IF (I5.LT.26) GO TO 58
      CALL HEADER
      I5=0
C     ****WRITE OUT TOTAL NUMBER OF RECORDS.
   58 WRITE (3,56) ISTO(I2), I2
   56 FORMAT(1H ,5X, 26HTHERE HAS BEEN A TOTAL OF ,I6,1X,23HRECORDS REA
     1D FROM FILE ,I3//)
   57 CONTINUE
      WRITE (3,55)
   55 FORMAT(1H1,9X, 16HEND EXPL-15 JOB.//)
      REWIND 5
      STOP
C     ******************************************************************
C     ****PARITY ERROR ROUTINE
  100 WRITE (3,102) IREC1
  102 FORMAT (1H ,9X, 42HA PARITY ERROR HAS BEEN DETECTED ON RECORD,
     1 1X,I6//)
C     ****DECREASE RECORD COUNTER.
      IREC1=IREC1-1
      GO TO 4
C     ******************************************************************
C     ****ILLEGAL FLAG ROUTINE.
  110 WRITE (3,112) IREC2, (BUF(IJ),IJ=1,14)
```

- INTERNAL FORMULA NUMBER(S)

.35
.36
.37 .38 .39

ED ON RECORD .

.40
.41

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****

.49
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ILF (6).
)F(14))

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.59 . .60 .61
.62

.63
.64 .65 .66

X.23HRECCRDS FEA

.67 .68
.69 .70

.71

****

.72
.73 .74 .75

ED ON RECORD.

.76

****

.77
.78 .79 .80 .81 .82 .83

```
112 FCRMAT (1H .5X, 45HAN ILLEGAL FLAG WORD HAS BEEN DETECTED ON RECOR
   1D,1X,I6,1X, 15HAS SHOWN BELOW,//10X, 20A6//)
    GO TO 4
C     ****************************************************************
C     *****'E' FLAG ROUTINE.
120 WRITE (3,122) IREC2, (BUF(IJ),IJ=1,14)
122 FORMAT (1H .9X, 52HAN ERROR HAS BEEN DETECTED IN THE 'E' FLAG ON R
   1ECORD,1X,I6,1X, 15HAS SHOWN BELOW,//10X, 20A6//)
    GO TO 4
    END
```

- INTERNAL FORMULA NUMBER(S)

TED ON RECOR

****

.84
.85 .86 .87 .88 .89 .90

'E' FLAG ON R

.91
.92