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4. CATALOG MATERIALS.

1. Introduction:

The documentation for this data set was originally on paper kept in NSSDC's Data Set Catalogs (DSCs). The offline tape datasets have now been migrated from the original magnetic tape to magnetic disk (starting in mid-2004). Accordingly, statements in the format descriptions that address such tape relevant factors as blocking and but density are no longer applicable. The paper documentation in the Data Set Catalogs have been scanned and made into digital images of the pages, the collected into a single PDF file for each Data Set Catalog.

The inventory information in these DSCs is current as of July 1, 2004. But this inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system, and the user should go to that interface (JIN) if further information existing in the DSCs is now not needed for locating data files, but we did not go to the trouble of removing that inventory information.

2. CHANGE LOG

Version	Date	Person	Page	Description of Change
01				

3. LINKS TO RELEVANT INFORMATION IN THE ONLINE NSSDC INFORMATION SYSTEM:
[NOTE: ANY OF THE INFORMATION FIELDS MIGHT BE BLANK.]
[THE "MATERIALS FOR DISTRIBUTION" FIELD IS HERE CALLED JUST "MATERIALS"]

"Remarks" for spacecraft SCNAME1":
http://nssdc.gsfc.nasa.gov/database/MasterCatalog?sc=1977-102A--remark--

"Materials" for spacecraft SCNAME1":
http://nssdc.gsfc.nasa.gov/database/MasterCatalog?sc=1977-102A--mat--

"Remarks" for SCNAME1 experiment EXNAME1:
http://nssdc.gsfc.nasa.gov/database/MasterCatalog?sc=1977-102A&ex=09--remark--

"Materials" for SCNAME experiment EXNAME1:
http://nssdc.gsfc.nasa.gov/database/MasterCatalog?sc=1977-102&ex=09--mat--

"Remarks" for EXNAME1 data set DSNAME1:
http://nssdc.gsfc.nasa.gov/database/MasterCatalog?ds=SPHE-00677--remark--

"Materials" for EXNAME1 data set DSNAME1:
http://nssdc.gsfc.nasa.gov/database/MasterCatalog?ds=SPHE-00677--mat--

"Remarks" for EXNAME1 data set DSNAME2:
http://nssdc.gsfc.nasa,gov/database/MasterCatalog?ds=SPHE-00677--remark--

"Materials" for EXNAME1 data set DSNAME2:
http://nssdc.gsfc.nasa.gov/database/MasterCatalog?ds=SPHE-00677--mat--

"Remarks" for EXNAME1 data set DSNAME3:

"Materials" for EXNAME1 data set DSNAME3:

"Remarks" for SCNAME1 experiment EXNAME2:

"Materials" for SCNAME1 experiment EXNAME2:

"Remarks" for EXNAME2 data set DSNAME1:
"Materials" for EXNAME2 data set DSNAME1:

"Remarks" for EXNAME2 data set DSNAME2:
"Materials" for EXNAME2 data set DSNAME2:

“Remarks” for spacecraft SCNAME2”:
http://nssdc.gsfc.nasa.gov/database/MaterCatalog?sc=1978-079A--??--

“Materials” for spacecraft SCNAME2:
http://nssdc.gsfc.nasa.gov/database/MaterCatalog?sc=1978-079A--??--

“Remarks” for SCNAME2 experiment EXNAME1:
http://nssdc.gsfc.nasa.gov/database/MaterCatalog?sc=1978-079A&ex=03--??--

“Materials” for SCNAME2 experiment EXNAME1”
http://nssdc.gsfc.nasa.gov/database/MasterCatalog?sc=1978-079A&ex=03--??--

“Remarks” for EXNAME1 data set DSNAME1:
http://nssdc.gsfc.nasa.gov/database/MasterCatalog?ds=SPHE--00011--remark--

“Materials” for EXNAME1 data set DSNAME1:
http://nssdc.gsfc.nasa.gov/database/MasterCatalog?ds=SPHE--00011--remark--

“Remarks” for EXNAME1 data set DSNAME2:
http://nssdc.gsfc.nasa.gov/database/MasterCatalog?ds=SPHE-00014--remark--

“Materials” for EXNAME1 data set DSNAME2:
http://nssdc.gsfc.nasa.gov/database/MasterCatalog?ds=SPHE-00014--remark--

“Remarks” for EXNAME1 data set DSNAME3:

“Materials” for EXNAME1 data set DSNAME3:

“Remarks” for SCNAME2 experiment EXNAME2:

“Materials” for SCNAME2 experiment EXNAME2:

“Remarks” for EXNAME2 data set DSNAME1:

“Materials” for EXNAME2 data set DSNAME1:

“Remarks” for EXNAME2 data set DSNAME2:

“Materials” for EXNAME2 data set DSNAME2:

“Remarks” for data set DSNAME3:

“Materials” for EXNAME data set DSNAME3:

“Remarks” for SCNAME2 experiment EXNAME3:

“Materials” for SCNAME2 experiment EXNAME3:

“Remarks” for EXNAME3 data set DSNAME1:

“Materials” for EXNAME3 data set DSNAME1:

“Remarks” for EXNAME3 data set DSNAME2:

“Materials” for EXNAME3 data set DSNAME2:

=-=-= -
=-=-= -

ALTERNATE OPTION:

For SCNAME2:

“Remarks” for EXNAME1 data set DSNAME2:

http://nssdc.gsfc.nasa.gov/database/MasterCatalog?ds=SPHE-00014--remark--

“Materials” for EXNAME1 data set DSNAME2:

http://nssdc.gsfc.nasa.gov/database/MasterCatalog?ds=SPHE-00014--mat--

can be shown as

“Remarks” for EXNAME1 data set DSNAME2:

http://nssdc.gsfc.nasa.gov/database/MasterCatalog?ds=78-079A-03C--remark--

“Materials” for EXNAME1 data set DSNAME2:

http://nssdc.gsfc.nasa.gov/database/MasterCatalog?ds=78-079A-03C--mat--

=-=-= -
=-=-= -

4. CATALOG MATERIALS:

DATA SET CATALOG #21

Explorer 33 ION Chamber Geiger COUNTER

66-058A -04A 7 tapes

IMP-D

ORIGINAL GM & ION CHAMBER COUNTS, TAPE

66-058A-04A

THIS DATA SET HAS BEEN RESTORED. ORIGINALLY THERE WERE 7 7-TRACK, 800 BPI TAPES WRITTEN IN BCD. THERE ARE TWO RESTORED TAPES. THE DR TAPES ARE 3480 CARTRIDGES AND THE DS TAPES ARE 9-TRACK, 6250 BPI, WRITTEN IN EBCDIC. THE TAPES WERE CREATED ON A 7094 COMPUTER. THE DR AND DS NUMBERS ALONG THE CORRESPONDING D NUMBERS AND THE TIME SPANS ARE AS FOLLOWS:

DR#	DS#	D#	FILES	TIME SPAN
DR03455	DS03455	D02099	1	07/01/66 - 08/19/66
		D02100	2	08/20/66 - 10/07/66
		D02101	3	10/08/66 - 11/25/66
		D02102	4	11/26/66 - 01/13/67
DR03456	DS03456	D02103	1	01/14/67 - 03/03/67
		D02104	2	03/04/67 - 04/21/67
		D02105	3	04/22/67 - 06/09/67

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Section One.....Problems Encountered while Processing

Section Two.....Documentation from University of California

Section Three.....Original Tape Numbers, and Duplicate Tape Numbers

Section Four.....Partial Listing Master 1 (Original Tape)

Section Five.....Partial Listing of Output Tape (Master 1)

EXPLORER 33 ION CHAMBER - - GEIGER COUNTER
(66-058A-01A)

After unsuccessfully attempting to copy this data set using the NSSDC Dupe and Compare utility program (NA988), it was determined that there are data files written past the physical end-of-tape mark (reflective spot) on the tapes received from Berkeley. Since the 7094 will read data past the end-of-tape mark but will not write data pas the end-of-tape mark an alternate method of copying this data set was neccessary. The process decided upon involved the use of "Mulcpy" (A5.01.002). This program copies 'N' number of files from 'K' number of tapes onto one tape according to the data setup card. The program used for this data set has been modified to delete all end-of-file marks but the last one. Each original tape contains several hundred files so by deleting these end-of-file marks much less tape was required on each output reel. All of the tapes were successfully copied by this program and placed in the Data Repository. The original has a double end-of-file after the last data file. Every record on the C-tape (copy) can easily be indentified with a data file on the D-tape (original) be the 12-character indentification prefix. (Page 19 Explorer 33 documentation.)

Space Sciences Laboratory
University of California
Berkeley, California 94720

I. Technical Description of the University of California Explorer-[illegible] Energetic Particle Experiment

II. Description of the Data Format on Magnetic Tapes Supplied to the NASA Space Science Data Center

K.A. Anderson, Principal Investigator
R. P. Lin, Research Physicist
G.H. Pitt, Chief Programmer

Technical Report on NAS 5-9077
Series 10, Issue 8

March 20,, 1969

I. TECHNICAL DESCRIPTION OF EXPERIMENT

The University of California experiment aboard Explorer-33 consists of two Geiger-Mueller tubes, one of which looks out directly at particle fluxes while the other is in a configuration where it sees the particle flux backscattered off an 8 mil gold foil. Protons lose energy in the gold foil without backscattering while electrons backscatter with high efficiency and little energy loss. With this arrangement, proton and electron fluxes can be separated.

The open counter, GM2, and the scatter detector, GM1, are both pointing at 90° to the spin axis. GM1 is a Lionel 205 HT Geiger-Mueller tube with a standard window while GM2 is a thin-window version of the same tube with an energy threshold of about one-half as high as for GM1. Thus, for electrons it is possible to derive some energy spectrum information about the fluxes. A 4-inch ion chamber completes the detector complement which is shown in Figure 1. Table 1 summarizes the characteristics of the detectors.

Geiger-Mueller Detectors

The Lionel 205 HT tube has a cylindrical cathode of $\frac{1}{4}$" inside diameter, and it is sensitive to radiation over the entire $\frac{1}{4}$" diameter window. This tube has a 1.2-1.4 mg/cm^2 window, and a typical electron detection efficiency versus electron energy curve is shown in Figure 2. The threshold, arbitrarily defined as the 1/e efficiency point, is about 40 keV for these tubes. GM2 is a special thin-window (0.7 mg/cm^2 mica) modified Lionel 205 HT. The window diameter has been necked down to 0.17" in order to support the mica window against pressure. Its response to

Table 1. Explorer-33 Detector Characteristics

Designation	Type of Detector	Window mg/cm^2	Directional Sensitivity		Omnidirectional Sensitivity		Geometry Factor	
			Electrons	Protons	Electrons	Protons	Directional cm^2 - ster	Omnidirectional cm^2
GM1	Lionel 205 HT GM tube in scatter configuration	1.4 mica	> 45 KeV	None	>2.5 MeV	35 MeV	2.4×10^{-2}	~0.75
GM2	Lionel 205 HT thin-window GM tube	0.7 mica	> 22 KeV	>0.3 MeV	> 2.5 MeV	35 MeV	0.29	~0.75
Ion Chamber	4" diameter spherical Neher-type integrating ion chamber	210 aluminum skin	--	--	> 0.7 MeV	12 MeV maximum sensitivity ~17 MeV	--	~80

electrons is also shown in Figure 2. As can be seen, its threshold is about 22 keV for electrons.

The proton response of these tubes is calculated from range energy curves given by Trower[1] after the tube window thicknesses are calibrated with an alpha-particle source.

The 8 mil gold scatter foil used in GM1 provides effective discrimination against protons. All particles seen by the counter must backscatter off the foil. Protons lose energy before they are scattered through large angles, as can be illustrated by calculating the rms scattering of a 10 MeV proton in a length equal to its range. From Fermi:[2]

$$\overline{\theta^2} \approx \frac{8\pi N D z^2 Z^2 e^4}{V^2 p^2} \ln \frac{a_o V p}{2 Z^{4/3} z e^2}$$

where N = number of atoms per cm^3, D = length of travel (placed equal to the range), z = charge of particle = 1 for proton, Z = charge of scatter = 79 for gold, e = electron charge, V = velocity of particle, p = momentum of particle, and a_o = Bohr radius. We obtain

$$\sqrt{\overline{\theta^2}} \approx 0.2 \text{ radians} \approx 10^o$$

Tests on the efficacy of the scatter foil were conducted using a cyclotron beam of 4 MeV protons.[3] An upper limit of 0.1% was obtained for the proton detection efficiency. Furthermore the observation of solar proton events has confirmed that the count rate of the scatter counter due to backscattered protons is negligible.

Electrons backscatter off the gold foil with high efficiency. A well referenced treatment of electron scattering is contained in Siegbahn,[4] and only the pertinent results will be mentioned here. The 8 mil gold foil is thick enough to insure saturation backscattering of electrons of a few MeV or lower energies. Fifty per cent of a normally incident beam of electrons and 70% of a diffuse beam will be backscattered from the gold foil. The angular distribution of the backscattered electrons will be approximately $\cos^2\theta$ in angular dependence. Neither the backscatter efficiency nor the angular distribution of the backscattered electrons is dependent on the energy of the incident electron. However, energy loss occurs in the scattering foil. Measurements indicate that for a heavy element such as gold or lead the probable energy loss is about 5-10%, with about two-thirds of the particles losing less than 20% of their energy. The effect of this energy loss is two-fold:

1. the energy threshold of the scatter counters are about 5 keV higher than the bare GM tube, and
2. the counting efficiency versus electron energy curve is not quite as sharply falling.

Thus the scatter counter's (GM1) threshold is about 45 keV for electrons. From the above considerations the scattering efficiency would be expected to stay fairly constant over a wide range of electron energy above the threshold for the scatter counter. Figure 3 shows the measured efficiency versus energy for the IMP-3 scatter counter configuration.[5]

On Explorer-33, GM2 is pointed at right angles to the spin axis and the spin axis is pointed only 4° off the ecliptic plane.

The initial orientation of the spin axis just barely allows GM2 to see the sun; however, as the spin axis-sun angle changes due to the orbital motion of the earth, GM2 sees more and more of the sun. Because of its very thin window GM2 is quite sensitive to solar X-rays in the 1-14 Å region, and its background count rate is due primarily to such X-rays.

The X-ray response of these counters can be calculated if the composition of the mica window and the fill gas is known. If an X-ray beam of intensity $I_o(\lambda)$ is incident on a material of thickness, ℓ, then the intensity of the penetrating beam is .

$$I(\lambda) = I_o(\lambda) \exp\left[-\rho \ell \sigma(\lambda)\right]$$

where ρ = density of the material, and $\sigma(\lambda)$ = cross-section.

$$\sigma(\lambda) = \frac{1}{\rho} \sum_i \rho_i \sigma_i(\lambda)$$

where ρ_i = density of element i in the material and $\sigma_i(\lambda)$ = cross-section for element i.

For an X-ray to be counted by the Geiger-Mueller tube, it must penetrate the window and stop in the gas. Therefore, the counting efficiency is given by

$$\frac{I(\lambda)}{I_o(\lambda)} = \exp\left[-\rho \ell \sigma(\lambda)\right]_{mica} \left\{1 - \exp\left[-\rho \ell \sigma(\lambda)\right]_{gas}\right\}$$

Using the cross-sections kindly supplied by L. Acton (private communication), the calculation has been carried for GM2 of Explorer 33. The resulting efficiency curve is shown in Figure 4.

The GM tubes are shielded with 1.5 g/cm^2 of brass. This shielding is in addition to the spacecraft packaging and outer skin so that the total shielding is about 2.0 g/cm^2. Range-energy curves were used to determine the threshold energies for penetrating particles.[1]

The Geiger-Mueller tubes have dead times following a pulse. These dead times change at very high count rates since the voltage across the tube never recovers completely after a pulse before a new pulse starts. The variation of the count rate with flux is shown in Figure 5 for GM1 of the Explorer 33. The assumption of a constant dead time fits the curve well over most of the tube's useful range, and individually fitted dead times can be used to correct the count rates of the detectors. These are 1×10^{-4} seconds for both GM1 and GM2.

The accumulation and readout format of Explorer 33 is shown in Figure 6. Essentially the counts are accumulated over about 40 seconds, which is many spin periods. Thus, since the counters point 90° off the spin axis they will sweep out and average over a wide cone of angles.

On August 1, GM2 of Explorer 33 began to behave erratically. At this time it was counting a continuous 3000 counts per second from solar X-rays. By August 4, the count rate of GM2 had risen to 10,000 counts per second, which was higher

than the saturation rate achieved in laboratory tests. On August 9, GM2 stopped counting and a few days later GM1 also stopped. Studies in the laboratory on similar tubes indicated that GM2 had apparently gone into a neon lamp type discharge, and drawn enough current to lower the power supply voltage below the starting potential of GM1. This malfunction may have been due to two causes:

1. loss of some gas from the counter, due to a pinhole leak in the very thin window of the counter, or a leak elsewhere in the counter walls; or
2. absorption of the quenching gas on the walls of the counter from the catalytic action of the large X-ray flux.

Eventually the current drawn by GM2 became sufficiently large to lower the supply voltage and stop GM1 also. The ion chamber continued to operate since its voltage threshold is 350V.

Ion Chamber

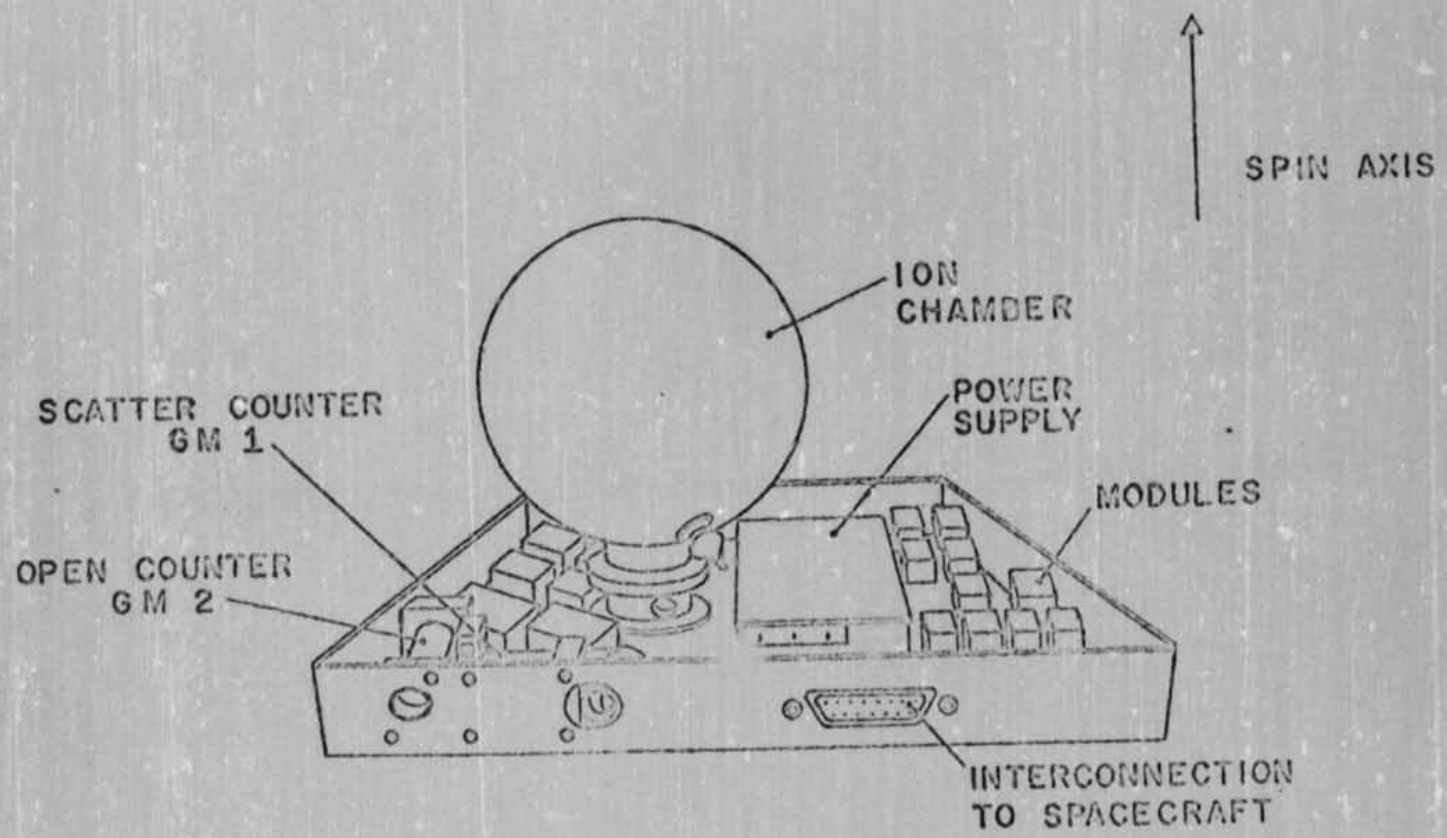
A schematic of the ion chamber carried aboard Explorer 33 is shown in Figure 7. This is an integrating Neher-type ionization chamber. The operation of the chamber is straightforward. The tungsten whisker flicks over and charges the anode to 700 volts. Then the anode collects electrons from ionization in the chamber, making the anode voltage drop. When the drop in anode voltage creates a powerful enough electrostatic force on the whisker, the whisker flicks over and recharges the anode. The pulse created by the recharging is recorded and represents a specific amount of ionization in the chamber. The calibration curve of the Explorer 33 chamber is shown in Figure 8.

The response of the chamber to protons and electrons of different energies can be calculated. For very high energy (minimum ionizing) particles which penetrate the spacecraft the calculation is fairly simple. However, for low energy particles both the thickness of material surrounding the chamber, and the varying ionization loss of the particle with energy must be taken into account. The amount of energy lost in the chamber can be calculated from range-energy curves, and the material to be traversed before entering the chamber may be estimated from considerations of the ion chamber location on the spacecraft. Figure 9 gives the results of such calculations.

For the Explorer-33 ion chamber the time span between pulses is measured to milliseconds and read out every 40 seconds. Thus the time resolution of the Explorer-33 ion chamber is a function of the radiation level. At galactic cosmic ray background levels the time resolution is about ten minutes.

REFERENCES

1. Trower, W.P., High Energy Particle Data, Volume II. Range-Energy and dE/dX Plots of Charged Particles in Matter, University of California, Lawrence Radiation Laboratory, Berkeley, Publication UCRL-2426, 1966
2. Fermi, E., Notes compiled by J. Orear, A.H. Rosenfeld, and R.A. Schluter, Nuclear Physics, University of Chicago Press, Chicago, Illinois, p. 36, 1950
3. Anderson, K.A., H.K. Harris and R.J. Paoli, J. Geophys. Res., 70, 1039, 1965
4. Siegbahn, K., Alpha-, Beta- and Gamma-Ray Spectroscopy, V1, N. Holland Publishing Co., Amsterdam, Netherlands, 1965



UNIVERSITY OF CALIFORNIA EXPERIMENT PACKAGE FOR EXPLORER 33

FIGURE 1. The Explorer-33 package shown here is located on the top of the spacecraft. Both the open and scatter counters look out at 90° to the spin axis.

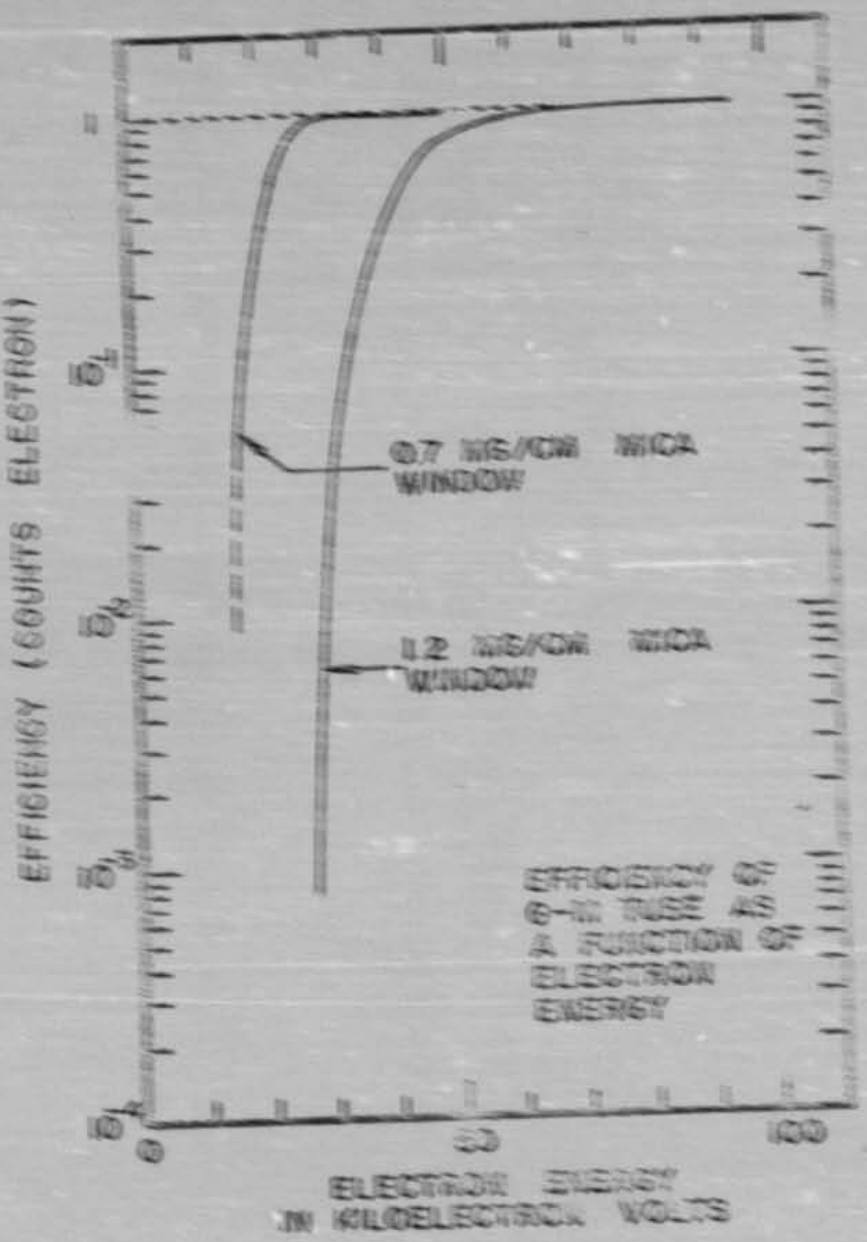
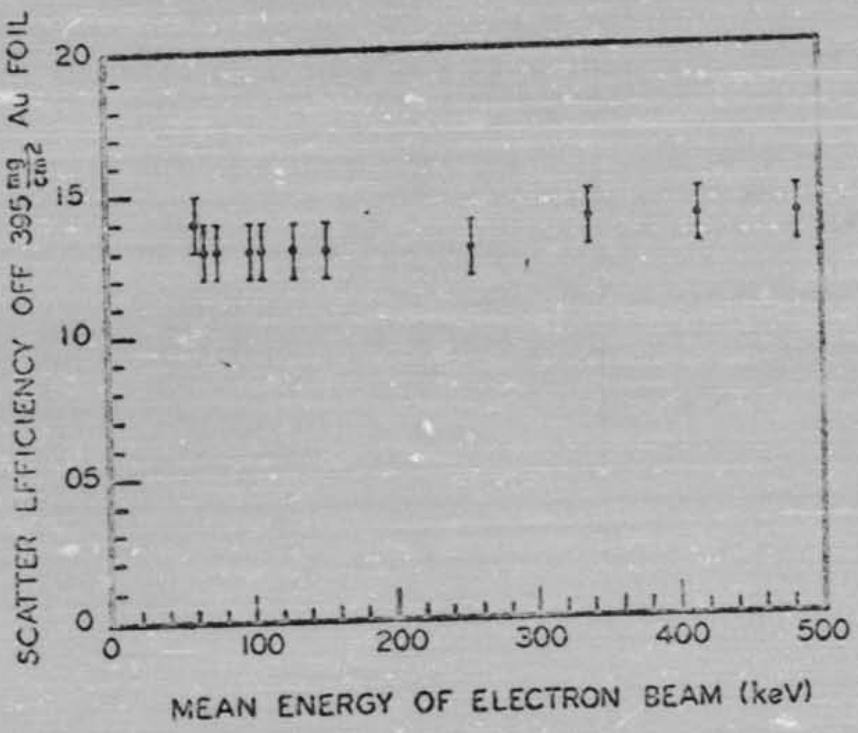


FIGURE 2. The measured efficiency of the Geiger-Mueller tubes with 1.2 mg/cm^2 and 0.7 mg/cm^2 mica windows is shown here as a function of energy.



IMP I, II, III GM I SCATTER COUNTER CONFIGURATION

FIGURE 3. This figure illustrates the uniformity of the scattering efficiency of the gold foil over a wide range of electron energies.

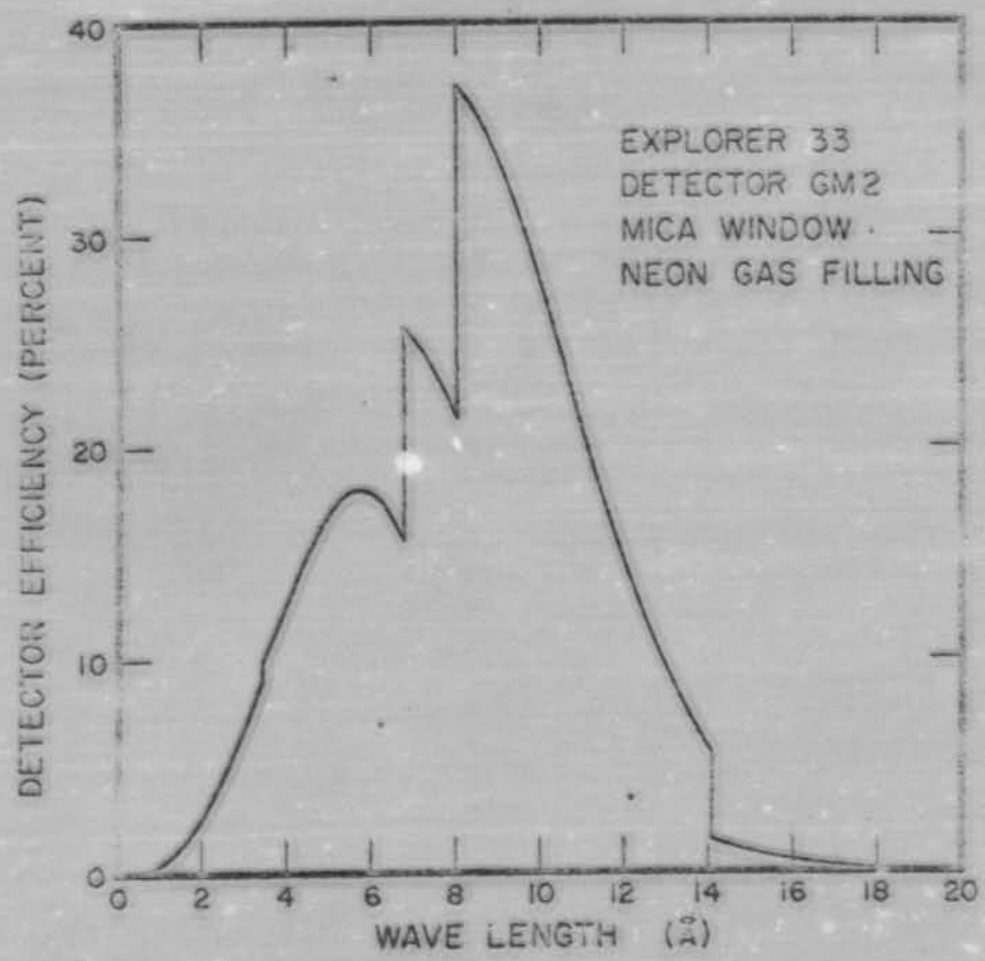


FIGURE 4. The efficiency of the 0.7 mg/cm² mica window open counter aboard Explorer-33 for counting X-rays has been calculated and is shown here as a function of X-ray wavelength.

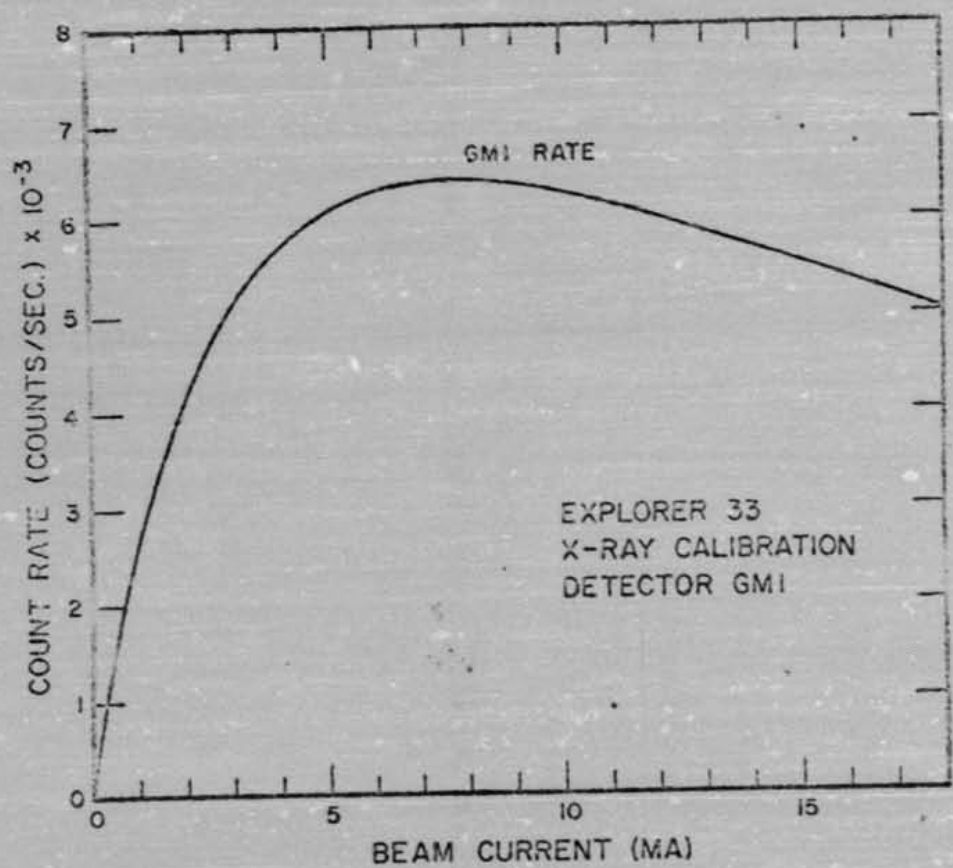


FIGURE 5. In this calibration of the Geiger-Mueller tube the incident flux of X-rays is proportional to the beam current. The count rate of the GM tube as a function of flux is well described up to ~5000 counts per second by a simple dead time correction.

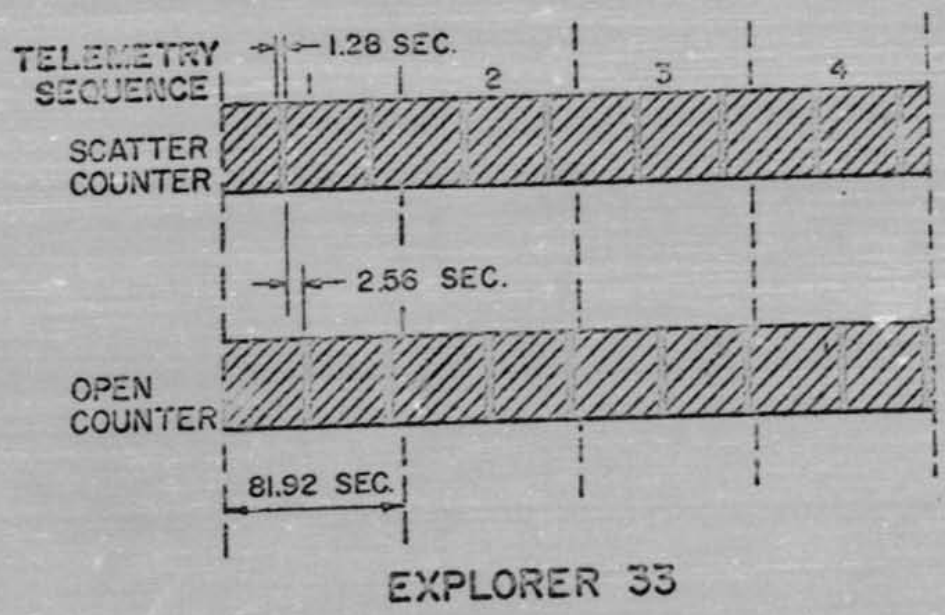
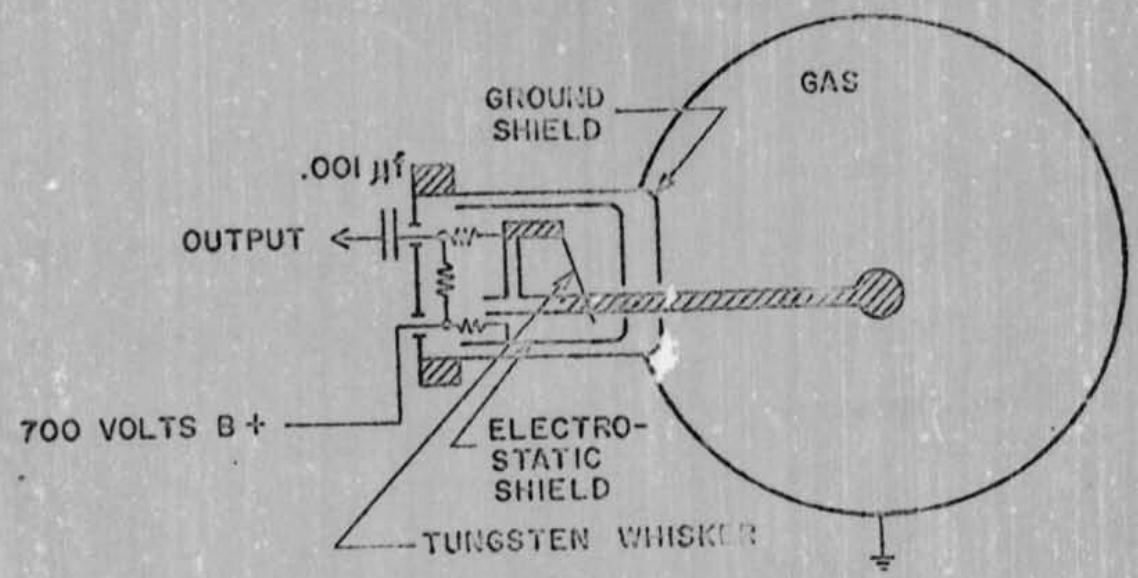


FIGURE 6. The Explorer-33 accumulation and telemetry sequence is shown here. The slanted line regions indicate when accumulation of counts is taking place. The solid bar indicates time of readout. The scatter counter readout is 2.56 seconds before the open counter.



EXPLORER 33

SCHEMATIC, 4" ION CHAMBER

FIGURE 7. This is a schematic of the Neher-type integrating ion chamber carried aboard Explorer-33.

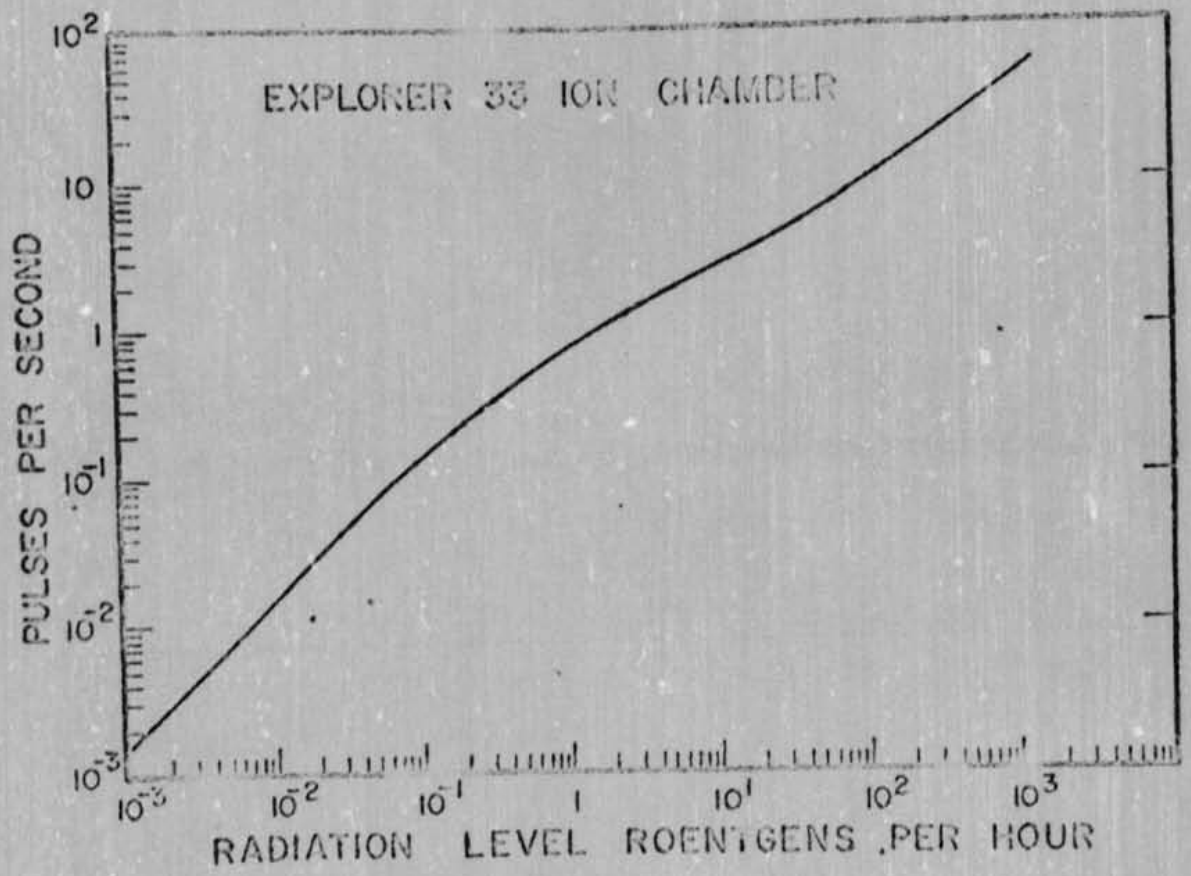


FIGURE 8. This shows the calibration of the Explorer-33 ion chamber for radiation dosage.

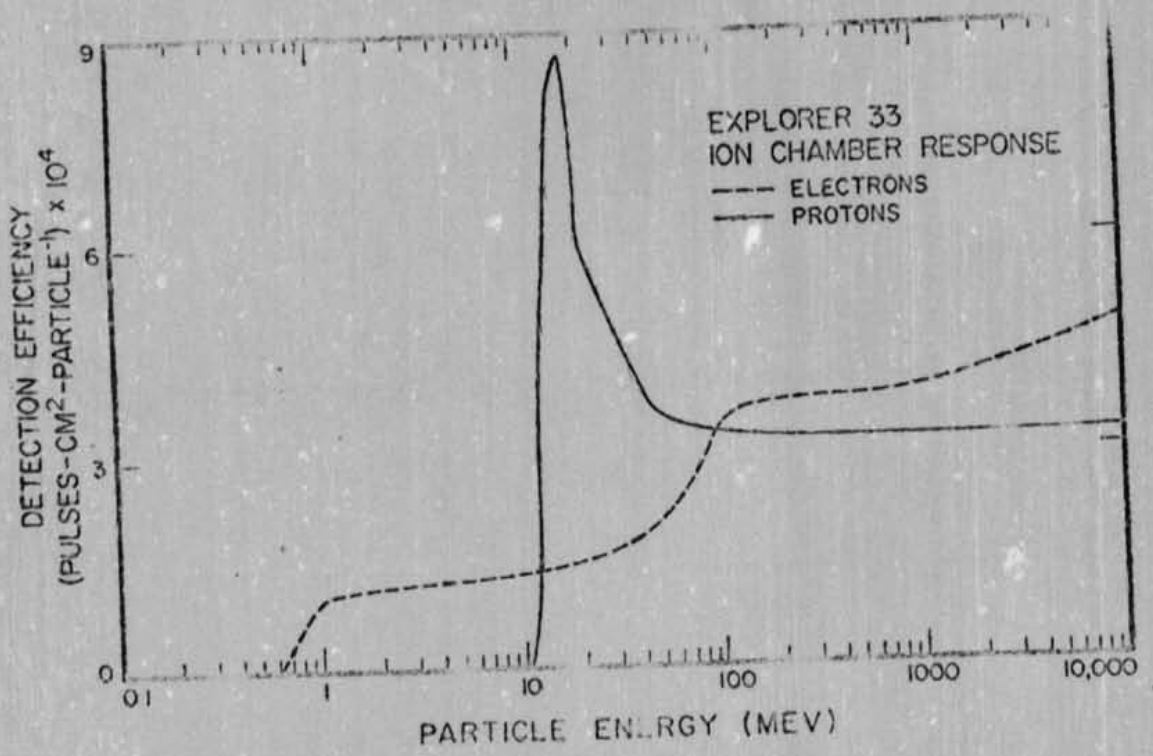


FIGURE 9. The ion chamber efficiency for electrons and protons as a function of energy was calculated from range-energy curves and shown here.

II. EXPLORER-33 UNIVERSITY OF CALIFORNIA EXPERIMENT DATA TAPES

All the useful data from the Explorer-33 University of California experiment is contained on seven 2400 foot magnetic tape reels. The data covers the period from day 181, 1966 to day 160, 1967. These tapes were generated by merging 49 reels received from Goddard Space Flight Center (GSFC) onto the seven longer reels in chronological order. Each long tape contains data from seven shorter reels. The tapes were generated on an IBM 360/40 system and contain BCD characters on a 7-track tape in even parity at 800 characters/inch density.

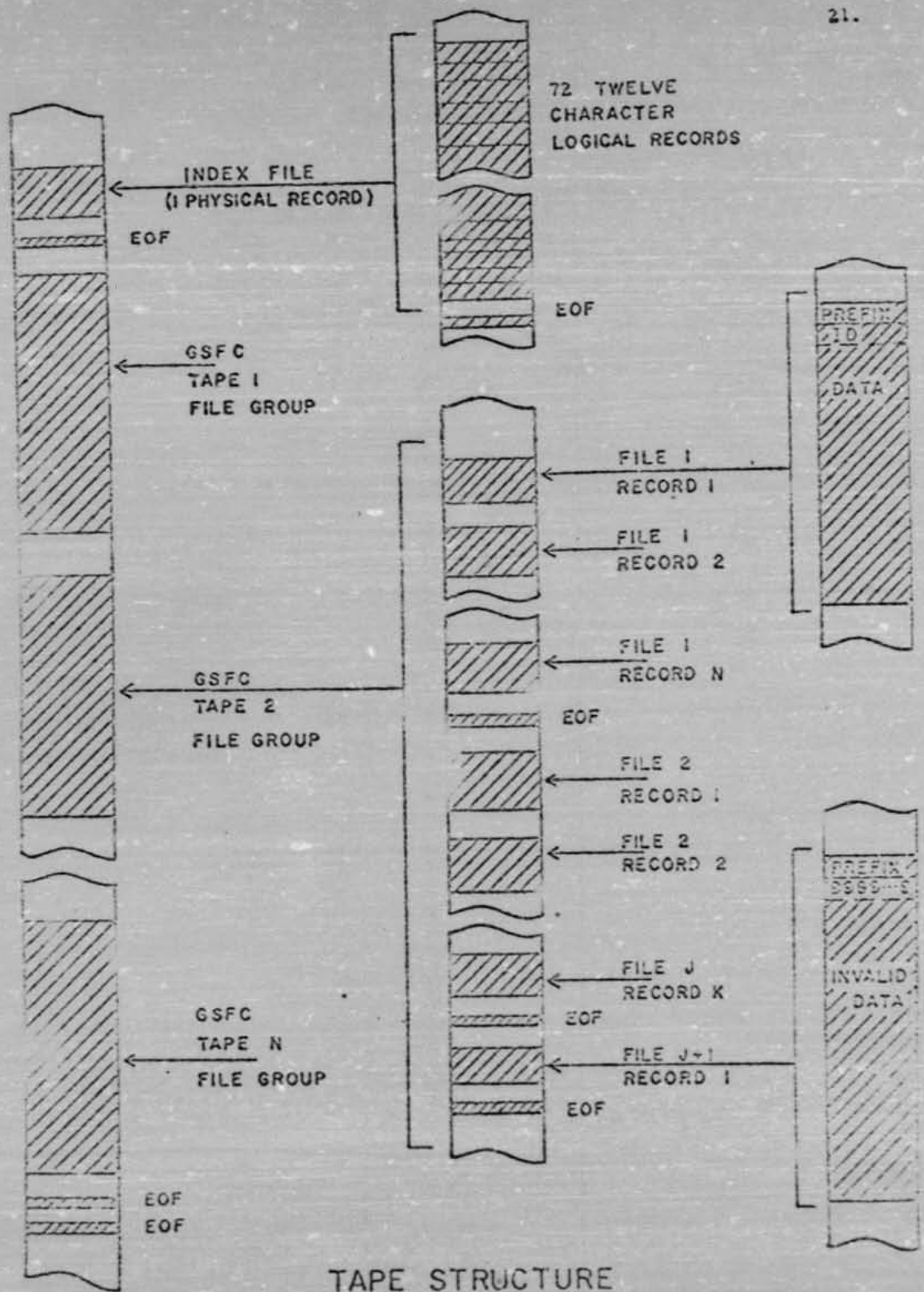
The first file of each stacked tape is a one record file which serves as an index to that tape. The physical record is 865 characters in length and consists of 72 twelve-character index entries. There is one index entry for each of the GSFC short reels stacked onto the larger tape. The entries are in the following format:

Characters	
1-6	GSFC reel number
7-9	Total number of files on the GSFC reel
10-12	blank

Each stacked tape contains seven entries. The remaining entries are blank. Following the index file is the stacked experiment data copied from the GSFC reels. The data is in the same file by file format as it appeared on the original tapes except that a 12-character field has been prefixed to each record to identify it to University of California programs using these tapes. The individual records are 865 characters (including prefix field) and are formatted as follows:

Characters	
1-6	The GSFC reel number on which this record originally appeared.
7-9	The file number within that GSFC reel.
10-12	The record number within the above file.
13-865	The experimental data in its original format (see tape format sheet).

The last file on each of the GSFC tapes is a one record file with the twelve character identification field (i.e., Satellite No., Julian Day, Year) set to nines. This field has also been copied onto the stacked tape. Thus the first record of the following file on the stacked tape will have a different GSFC reel number and a file number of 1 in the prefix field. Two end of file marks will follow the last data file on the stacked tape.



TAPE STRUCTURE

UCAL FINAL EXPLORER-33 EXPERIMENTER TAPE FORMAT

Item	Function	Number of BCD Characters
0	Prefix	12
1	Identification (ID)	
	(a) Satellite	2
	(b) Julian Day of Year	3
	(c) Year	2
	(d) Data Acquisition Station	2
	(e) Analog Tape Number	3
2	A/D Line Indicator	1
3	Time for the Middle of Channel Ø, Frame Ø	
	(a) Day Count of Year (Jan 1 = 0)	3
	(b) Fractional Day of Year (millisecond precision)	8
	(c) Blank	1
4	Time Flag	2
5	Sequence Counter ("Satellite Clock") (1 Decimal Number)	6
6	Frame Rate	4
7	Sequence Identification	
	Items 8 through 23 repeated two (2) times per sequence, i.e., for frames 5 and 13.	
8	Frame Number	2
9	Pre Data Flag	1
10	Raw Data (4 Comb Filter Numbers)	2
11	Guardband Flag	1
12	Converted Data GM1(1 Decimal Number of max 65,535)	5
13	Raw Data (4 Comb Filter Numbers)	12
14	Guardband Flag	1
15	Converted Data IC Clock (1 Decimal No. of max 65,535)	5
16	Raw Data (4 Comb Filter Numbers)	12
17	Guardband Flag	1
18	Converted Data GM2(1 Decimal No. of max. 65,535)	5
19	Raw Data (1 Comb Filter Number)	3
20	Raw Data (3 Comb Filter Numbers)	9
21	Guardband Flag	1
22	Converted Data IC Count(1 Decimal No. of max. 4095)	4
23	Post Data Flag	1
24	Data Quality Flag	1
25	Performance Parameter (1 Decimal No. of max. 255)	3
26	Performance Parameter (1 Decimal No. of max. 255)	3
27	Performance Parameter (1 Decimal No. of max. 255)*	3
28	Optical Aspect	
	(a) Pseudo Sun Pulse Flag	2
	(b) Sun Angle (1 Octal No. of max. 777)	3
	(c) Spin Period (1 Decimal No. of max. 4095)	4
	(d) Sun Time (1 Decimal No. of max. 4095)	4
	(e) Moon Time 1 (1 Decimal No. of max. 4095)	4
	(f) Moon Time 2 (1 Decimal No. of max. 4095)	4
	(g) Moon Time 3 (1 Decimal No. of max. 4095)	4
	TOTAL NUMBER OF CHARACTERS PER SEQUENCE	223

Four of the above described sequences will be blocked together with the exception that the last three sequences of the block will not contain the Identification (Item #1) or A/D Line Indicator (Item #2).

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*In a sequence 1 Item #25 will be PP1, Item #26 will be PP2, Item #27 will be PP7.

In a sequence 2 Item #25 will be PP14, Item #26 will be PP15, Item #27 will be PP16.

In a sequence 3 Item #25 will be PP17, Item #26 will be PP18, Item #27 will be PP19.

In a sequence 4 Item #25 will be PP20, Item #26 will be PP22, Item #27 will be PP24.

EXPLORER 33 ION CHAMBER - - GEIGER COUNTER

INTERIM DATA SET CATALOG (66-058A-04A)

ORIGINAL TAPE NO.	NO. OF FILES	OUTPUT TAPE NO.
D-02099 (Master 1)	445	C-01907
D-02100 (Master 2)	429	C-01908
D-02101 (Master 3)	435	C-01909
D-02102 (Master 4)	384	C-01910
D-02103 (Master 5)	422	C-01911
D-02104 (Master 6)	427	C-01912
D-02105 (Master 7)	429	C-01913

Number of data files on original is one less than the total number of files. Output tape has one file only.

BB625707C AA165505G BB520507A BB838905I B3998106E 33998205I AA

00000

39982051 AA1731051 REC 1. LENGTH 870

00000

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BB626700A00A5818255530011118168477948 02043732591810520840430500720133530400
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00520560610952617920844000106100216181685726320204373359182052064036028036
40056050028000000023023084080002719132048024080028057849050048034084000151
60760054890086114051995261794165600010683021718168667318 02043734591830520
08400009505608005402300000002804005807200844913206806404802805973207205308
00028064080068010469006908506809626179407000001177402171816876200 5 02043735
60720650840840000680640400400320000000320640720580107891320360640480280597
06803200000003204004407200940900730820859962617931535000117700216000 00

BB626700A00B5818255530011118168856691 02043736591810520560400520280595750800
50000000360500300720079191320600360520280595900800540840840000320800500640
00530560610952617950581000117700217181689513 77 02043737591820520720750520
72076024040000000040023024080005119132064080052028059413052052034084000137
80800041290086114220995251793142900011777021618169046064 02043738591830520
08400017603605204404400000004407505008000355913203608005202805942008404008
00044036072080003179005808506809626179604370001177702181816914075 1 02043737
30280320840840002230320480840440000000440350800800028591320600280560280593
02804800000004808008408000258900760820869952617941345000117800216000 00

BB626700A00C5818255530011118169235438 02043740591810520560720520280594470720
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00520550610952617950413000117850218181693301 24 02043741591820520400280550
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40840017590087114121995261795128200011777021818169424810 02043742591830520
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00052048052084001389005806506709626179503500001178602171816951949 7 02043740
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02805600000005606406008400102900800820889952500101237000117850218000 00

BB626700A00D5818266530011118169614183 02043744591810520800280560280593510 32
20000000520640540840003691320760840520280593940280800720840007990360520440
00530560610952617950325000117870217181697088 69 02043745591820520560280520 2
84084084048000000048055072084000569132076064048028059730056084054084001233
60840004490087114220995251796121100011785021718169803556 02043746591830520
08400153206802808004400000000440760750840003591320560480440280600550520750 7
00044004080084000279005808506809626179503070001178402171816989824 2 02043740
40400600760840006200760240720400000000400720800840002091320240440400280603
03204000000004002408408400016900830820899952517971202000117890218000 00

BB626700A00E5818266530011118169992928 02043748591810520280800360280604450 54
60000000360400840840001291320280680360280604940240480560800060480600240480
00520560610952500100305000117840217181700876 15 02043749591820520720580350 2
72052028036000000036052084084000099132==========999999==========999999
====9999992999999999995259999120899999999999918170182301 02043750591830520
08000683103206005403200000003204808408400010913208007604402805993706803505
00032032084084000149007508506899626179699990001178602171817027698 7 02043750
10320800440840025900760400480320000000320680800840002191320840760490600269
06004000000003103208408400014940860829999999901723380000199999999000 00

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20600560610956617970348000117850218181704553 60 02043753591820520400360240
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00032044056034001239005908606899626179703910001173702181817065573 3 02043 7
50640240800840005020360400320320000000320640520840013491320240280720320 54
03203200000003202805203400143900880820929962617971316000117839999000 00

BB626700A00G5818266530011118170750419 02043756591810520280480240360531500 6
20000000320680480840014991320440400350360524100640440800840004220640500 32
00530560610952617970448000117860218181703451 05 02043757591820520640680440
24075032032000000032048048084001549132044024055036051194080044080084000 41
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072013353040076052080006188036036080006   REC     1. LENGTH   870
1108402305203600000003604406408400091 9
2064036028036052933048040080084000442 0
034084000151075024064028000000028072 07
734591830520360400520280595800280640 84
973207205308403400005803602808402800 00
2005 020437355918405205204404802805981
6404802805974005407208408400005406406 0
21600000

028059575030054034084000082064064028 03   REC     2. LENGTH   870
8208005006403600000003604405207500551 9
2072075052028059427044056084084000123 0
034084000137050044075040000000040040 04
738591830520600750520280594300240440 84
942008404008403400017703205607604400 00
0751 020437395918405207207205202805944
2805602805935504402408408400025108004 8
21600000

028059447072024084034000244024032036 04   REC     3. LENGTH   870
7106005605604800000004807203208400212 9
2040023055028059371064068080004000326 0
0800840003740520580440520000000520280 4
742591830520560560550280592550800600 80
591830530440800840004210760800720520 00
9497 020437435918405208005605602805924
6405602805923105407207608400055502405 5
21800000

502805935103205007508400062204408406405   REC     4. LENGTH   870
7990360520440520000000520640680840007 09
5205602305202305952308008406808400102 60
4054084001233035052040048000000048040 07
3746591830520350840440280539150400240 64
6005505207507508400055305608403204400 00
98242 020437475918405208405804002806022
0440400280603350840800440840025770480 32
21800000

602806044505407507503000464607208006803   REC     5. LENGTH   870
0480600240480360000000360480840840001 09
5207205303502806048305408003608000719 00
=======999999==========900000========
3750591330520840720400280602080270440 44
5993706803506 3===99999908008005203200 00
76987 020437515918405207205005202805949
0760490600269120710560760769999990240 61
999900000

802805839304006006008400164406807203603   REC     6. LENGTH   870
2250240280360320000000320320720840006 29
5204003602403205729102404407208400094 40
=======99999904806003203200000003203206
3754591830520760600350320554180750600 76
5602305607607608400055208404803203200 00
55733 020437555918405202402405503205529
0280720320542550320360800840004620560 32
999900000

240360531500600440800840004230320360320 3   REC     7. LENGTH   870
4220640500320320000000320550430840001529
5206406804403605178105004408008400042 30
4080084000418024032036032000000032044 04
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000840240240240000394092999109996261793035100019999999918130976546 020438
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840350840840000000308107208400049913207 2===0630849999990840240240240655 2
402404081940642559999962601450103000100010177181812506 05 0204386759184052
023065521040404030849000000084084024024040819132072068084034000057024024 0
000840240240240000009499917510999626180212220001000102201313135529 2 020438
902402402402400000000350520340840000000840240240240000091320580580840340000
084084000000054024024024000009005205606109626180205390001000102190000 0

33525700C02F581326515000111818144997 8 0204386959182052072053034034000067002
400000008402402402400000913203206808408400007702402402402400000000800480 8
009011412199625180216570001000102191818154466 4 0204387059183052052068084 0
400440840840000000340240240240400000913 2==========999999==========99999
====999999299999999999099999999999999999999999999918181639351 0204387159184 05
***999999*************900000*************99999*13*************999999*******
00*************99999*499999999999999999999999999999999999999918181828723 020438
9*************999999*************900000*************99999*13*************999
******900000*************99999*499999999999999999999999999999999999900000

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=900000122120024024140319132044032===0849999990840240240240655210240540 52
410299999999999000009999001600014081181821127 82 0204387659181 05**********
**********900000*************99999*13*************999999*************99999
****99999*407999999999999999999999999999999999999918182586214 0204388159132052
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00==========999999299999999999999999999999999999999999999918182680900 020438
8===0240240249999999===0480480849000000084===0240249999991320 48===0840849 99
0840840000000730240240240000094094999089990000000000100010001000000000

88525700C02458182651600111818277558 7 0204388359184052028072084084000062 11
890000008402402402400000913202*0690680849999990840840230230 6528106*06*0**
412309411299010000000010016000100001818353307 9 0204389159184052072064084 0
320550840840000000340240240240000009132024068084084000079024024024000000
40240000009014809811599000000000100010001000100001818362776 5 0204389259181 05
072015371028055084084000000034034084084000019132==========999999======
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0840840000000840240240240000090009011499999000000000000100100000000

88626700C021581825515000111313381713 8 0204389459183052048072072084000032500
4000000084===024024999999132077076 06*0689999990870840250253509230 6*05400
410925499909999000000010001000140811818391182 4 0204389559134052072032035
320240560840000000841070240241408191 3**********999999**********99999
****99999*425509599999999999999999999999999999999918184574529 0204390259183 05
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000840240240240000009811810211409000000000000100010000100000181346692 15 020439
508002407208000051060600440840840000000840840840840000019132==========99
======900000==========99999961681061239999999999999999999999999900000

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*900000*************99999*13*************999999*************999999*******
49991119990999999999999999999999999
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00000

00
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024024024024000000052075080054000000084024 02
 02043863591840520480680840840000730240240 24
4034000650240240240240000000===0760800849000
8130976546 02043864591810520840680840840000 6
3205006808508400007002402402402400000003502 4
10001021900000

072084084000052024024024024000000064036084 08   REC    71, LENGTH   870
240000000400400340340000000340240240240000 09
918305203206808408400007708407603606002768 10
084024024024065521052052084084000000084084 02
 02043857591840520840740720849999990840230 23
4034000057024024024024000000068048084084000 0
3131355292 02043868591810520400720840840000 5
3205805608408400006802402402402400000000370 52
10001021900000

0530340840000670240240240240000000720480840 8   REC    72, LENGTH   870
240000000800480840840000000340240240240000 09
918305205206808408400007202402402402400000 00
============999999============900000========
 020438715918405*************999999*********
****999999*************999999*************9000
18181828723 020438735918205*************99999
3*************999999*************999999******
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0052052084002177024024024024000000032024068==   REC    73, LENGTH   870
024065521024054052036100000084===024024999999
5918105*************999999*************999999*
*************999999*************900000********
 020438815913205206806308408400006804406402 4
=====999999============999999============9000
18182680900 020438825913305212007208403410004
132048===084084999999024024105090200256077048
010001000000000

0720340840000621180240240241555210 15===00800   REC    74, LENGTH   870
23065281 06*06*0**0**900000085087084025235859
5918405207206408408400008302402402402400000 00
0240240240240000000530430840840000000840240 2
5 020438925918105203606808408400007604408403 6
=====999999============999999============9000
18183722451 020438935918205205207208411610005
132036004084084100252024024024024000000048048
010001000000000

8072072084000325024064024024065376024056056 08   REC    75, LENGTH   870
02535092906*054077055900000008708708402623585 9
5913405207203203508400021108402402402406552 10
9*************999999*************900000********
9 020439025918305207505308408400006602402402 4
8408400006802402402402400000003505203408400 00
18134669215 020439035918405206405408408400008
132============999999============999999======
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*********99999*************999999***********   REC    76, LENGTH   870
***999999*************900000*************99999*

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00000 00000 00000

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24036080076000000007502402402400000091320640640840840000350240240240240000000
40240000090092085103995261800271000117910219181752953 65 02043804591810520480
02400000007204402402400000000800240240240000091 32==========999999==========
00==========99999920530569990999999999999999999999999999181753900 51 020438055
9**********99999**********900000**********99999*13**********999999
**********900000**********99999*499999999999999999999999999999999999900000

38525700D00058132552100111818175768796 02043809591820520360550340840001240240
50000000760240240240000091 32==========999999==========999999==========
29999999999962699991140999999999999918175863483 02043810591830 5**********9
**********900000**********99999*13**********999999**********999999
****99999*4999999999999999999999999999999999999918176242228 02043814591830520 60
02400000002808406807600000007602402402400000091320400640840840400091024024024
00075024024024000000900740920740962618001007000100050218181763369 14 02043815 5
20240750840603154320750720720760000000760840840840000019 132==========999999
==========900000==========99999920920869999999999999999999999999999999900000

33626700D00058182662100111817643160 1 02043815591810 5**********999999
*900000**********99999*13**********999999**********999999
49999999999999999999999999999999999918179356878 02043847591840520440600840840
44064070080000000030024024024000000913208005208408400012902402402402400000000
40240000090092038810399525180106250001000102191817945155 5 02043848591810 5202
02400000003607202808400000008402402402400000091 32==========999999==========
00==========99999920520569990999999999999999999999999999181795562 51 02043849
9**********999999**********900000**********99999*13**********999999
**********900000**********99999*4999999999999999999999999999999999999900000

88626700000E5818266210011131304 38428 02043858591830520440680840840000740240
40000000840240240240000091320240720840840000630240240240240000000540500308
00770950760962618020183000100010219181805031 15 02043859591840520480720340840
64064080084000000084024024024000000913 2==========999999==========999999
====999999920920899999999999999999999999999999999181805978 01 02043860591810 5
999999*******900000**********99999*13**********999999
00**********99999*4053999999099999999999999999999999999913131443978 02043869
70240240240240000000720480840840000000840240240240000091320320680840840000 7
0840840000000840240240240000000000000000411212995261802165700010001021900000

88626700D00F5813255210011181815446 64 02043870591830520520680340840000720240
40000000840240240240000091 32==========999999==========999999==========

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5405203408400013302402402402400000002402804006   REC    77. LENGTH   870
2402400000008003208406000000006002402402400000 9
9591840520360560840840001240240240240240000000
0350240240240240000000800640760720000007202402
519 0204380059181052040064084084000091024024024
4084034000920640440320360526460600680560750000
1818175011306 0204380159182052080060084084000 09
09132075060084084000098024024024024000000064080
00011799021800000

0500500340840000970240240240240000000600480640 7   REC    78. LENGTH   870
2402400000006406406407600000007602402402400000 9
0359134052048064084084000089024024024024000000
0350240240240240000000440240800760000007602402
365 0204380459181052048064084084000089024024024
=======999999===========999999===========9000
9918175390051 020438055918205''''''''''''''99999
9'13''''''''''''''999999''''''''''''999999''''''
99999999999900000

0360550340840001240240240240240000000800560320 7   REC    79. LENGTH   870
=====999999===========900000===========999999
1059183 05''''''''''''''999999''''''''''''999999'
999''''''''''''''999999''''''''''''900000''''''''
2228 0204381459183052050052084084000134024024024
4084034000091024024024024000000050320720760000
1818176336914 0204381559184052036064084084000 09
19132===========999999===========999999======
999999999999900000

''''''''''''''999999''''''''''''999999''''''''''''   REC    80. LENGTH   870
''''''999999''''''''''''900000''''''''''''99999'
8475913405204406008408400010502402402402400000 0
0129024024024024000000060080064080000000080024 02
1555 0204384859181052028060084084000110024024024
=======999999===========999999===========9000
99918179556251 0204384959182 05''''''''''''''99999
99'13''''''''''''''999999''''''''''''999999''''''
999999999999900000

2044068084084000074024024024024000000007205608008   REC    81. LENGTH   870
0240240000000540500830840000000840240240240000 09
8595918405204807203408400005702402402402400000 00
9999===========999999===========900000========
7801 0204386059181 05''''''''''''''999999''''''''
''''''''999999''''''''''''999999''''''''''''9000
99913131449978 0204386959182052072068084084000 05
0091320320680840840000770240240240240000000080048
700010001021900000

2052068084084000072024024024024000000004004408408   REC    82. LENGTH   870
=======999999===========900000===========999999
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