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TMX 63407

RESPONSE OF THE ION-ELECTRON DETECTOR FLOWN ON EXPLORER 12 AUGUST TO DECEMBER 1961

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NOVEMBER 1968

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Response of the Ion-Electron Detector

Flown on Explorer 12

August to December 1961

By

Leo R. Davis

and

Andrei Konradi

Goddard Space Flight Center

Greenbelt, Md.

November 1968

INTRODUCTION

We are presenting here a temporal history of the output of the Ion-Electron Detector flown on Explorer 12 by L. R. Davis and J. M. Williamson.

The satellite was launched on August 16, 1961 and ceased transmitting on December 6, 1961. It had a 33° inclination orbit with an apogee at 13 R_e which permitted it to cross the boundary of the magnetosphere twice on each orbit. Its orbital period was 26½ hours. At launch the line of apsides was pointed in the direction of the sun.

DETECTOR

The detector is a scintillation counter consisting of a photomultiplier tube on the face of which is deposited a 5-mg/cm^2-thick layer of crystalline ZnS covered by a 1000 Å thick layer of Al. A wheel driven by a stepping motor introduces varying thicknesses of Ni absorber between the collimator and the phosphor, thus permitting acquisition of energy information on the incident particles. The wheel also carries three Au discs, which in some wheel positions scatter the incident flux entering through an alternate collimator into the phosphor.

A collimator allows particles to enter from a viewing cone with a half-angle of about 11°.

There are three modes of operation:

1. Pulse output from the anode measures the number of incident protons above certain energies.

2. Normally the eighth dynode current measures the total incident flux from both protons and electrons.

3. Electrons can, however, be selected preferentially by scattering the incident beam of both protons and electrons from the Au discs. In this mode of operation the eighth dynode current measures the total incident flux only due to electrons in the energy range between 20 and 100 kev.

In all three modes of operation the energy cutoff can be raised by introducing varying thicknesses of Ni absorbers mounted on the wheel.

The lowest detectable proton flux is about 10^3 p/cm^2 sec ster. The minimum detectable electron flux, however, depends on the energy of incident electrons and varies from 3.6×10^5/cm^2 sec ster at 20 kev to 1.4×10^5/cm^2 sec ster at 100 kev.

The proton cutoff energies of the detector are defined to be those energies at which the efficiency of the detector with a particular absorber in front of the aperture is 50%.

Owing to the directionality of the detector and the spin of the satellite, it is possible to measure the pitch-angle distribution of particles if the direction of the magnetic field is either known experimentally or can be calculated.

A complete set of information can be obtained every 83 seconds.

Table I summarizes the salient characteristics of the detector. For a more detailed description of the detector the reader is referred to other publications listed in the Bibliography.

DETECTOR RESPONSE

The response of the Ion-Electron Detector has been presented as three sets of curves. These curves are made up of data points at intervals of 83 seconds connected by straight lines except when data is missing for more than several minutes. Each point corresponds to a value obtained after a filtering algorithm is applied to 16 readings recorded during two and a half rolls of the satellite with one particular absorber wheel position in place. In practice this usually represents the maximum of the 16 valid readings. Since in the trapping region the pitch angle distribution is usually peaked at 90° local pitch angle, the detector almost always can see the 90° pitch angle. The curves therefore correspond to the intensity of locally mirroring particles.

The two sets of curves marked "Direct Geometry Current" and "Proton Intensity" were obtained simultaneously with the same absorbers by recording the 8th dynode current and pulse output of the detector. The highest curve - corresponding to no Ni absorber in the path of the incident radiation - has been multiplied by a proper factor to take the different geometric factors into account.

The curves are ordered according to absorber thickness with the response with no absorber at the top and the background response with .05 aluminum plug in front of the detector at the bottom.

For the "Direct Geometry Current" and the "Scatter Geometry Current" the lowest possible response corresponds to the background current of the photomultiplier tube. In the case of the "Proton Intensity" curve, the lowest response is zero counts during the storage period and is

TABLE I

N_i absorber micro inches (nominal)	Geometry	Pulse output for protons with energies > E	8th dynode current output measuring	Geometric factor (cm^2 ster)
0	Direct	105 KeV	Prot. & Electr.	5.8×10^{-4}
5	"	140	"	5.4×10^{-3}
12	"	200	"	5.4×10^{-3}
30	"	255	"	5.4×10^{-3}
75	"	460	"	5.4×10^{-3}
200	"	970	"	5.4×10^{-3}
500	"	1700	"	5.4×10^{-3}
.05" Al	Direct and Scatter	~ 22 MeV	"	Omnidirectional penetrating background
5	Scatter	--	Electrons	5.4×10^{-3}
12	"	--	"	5.4×10^{-3}
30	"	--	"	5.4×10^{-3}

represented by a point a decade below the count rate of 10^3 protons/cm^2 sec ster. It should be pointed out that one source of background is due to penetrating cosmic rays at a level of 10^3 protons/cm^2 sec ster. The other source is due to penetrating protons in the inner belt and enhanced electron fluxes in the outer belt.

The "Scatter Geometry Current" consisting of three curves is due to electrons only. The lowest (fourth) curve in that group is the same as in the "Direct Geometry Current" and corresponds to the penetrating background.

To guard against incidental noise a filtering scheme was imposed on the data but as can be seen occasional noise spikes still do occur.

PARAMETERS

In addition to the linear time scale there are two non-linear scales representing the radial distance and McIlwain's L parameter on the bottom of the plot. Other curves represent parameters derived from the geomagnetic (G) and the solar-magnetospheric (S) coordinate systems. The latter is defined such that the X-axis originates at the center of the earth and is pointed toward the sun. The Z-axis lies in the plane defined by the X-axis and the geomagnetic dipole axis. The Y-axis is perpendicular to the X and Z axes and positive in such a direction as to form a right-handed coordinate system.

The parameters represented are:

(1) Geomagnetic latitude and solar-magnetospheric latitude with P and N indicating positive and negative values.

(2) Geomagnetic and solar-magnetospheric local time. Zero is defined to be at the noon meridian.

(3) Distance of the satellite above the geomagnetic or solar-magnetospheric equatorial plane. N denotes a position below and P above the plane.

RESTRICTIONS

When viewing this data it is important to keep in mind a number of restrictions and limitations to which this data is subject:

1) Detector response to earth light. Without absorber in front of it, the detector is sensitive to earth light. In particular this can be seen to be true for the channel with the lowest threshold. Typically this condition occurs on in-bound passes when periodic spikes or waves can be seen to be superimposed on the 8th dynode direct geometry current represented by the top-most curve.

2) High intensity electron fluxes can produce pile-up in the detector that looks like a proton count rate.

3) The detector reaches saturation at about 10^4 counts/sec. This can be seen as a flattening of the detector response at low L values.

4) High intensity spikes can be seen beyond the magnetopause and in the magnetosheath. Even though a filtering scheme was employed to guard against noise it is clear that not all noise was removed. Thus while some spikes are undoubtedly real, others are produced by telemetry noise, in particular since the satellite was at

its farthest point in orbit at the time of the transmission.

ERRATA

Below are noted some errors which occurred during the processing and/or plotting of the data. There may be others which remained unrecognized.

1. 1961 9 3 0105-0120

Extraneous data

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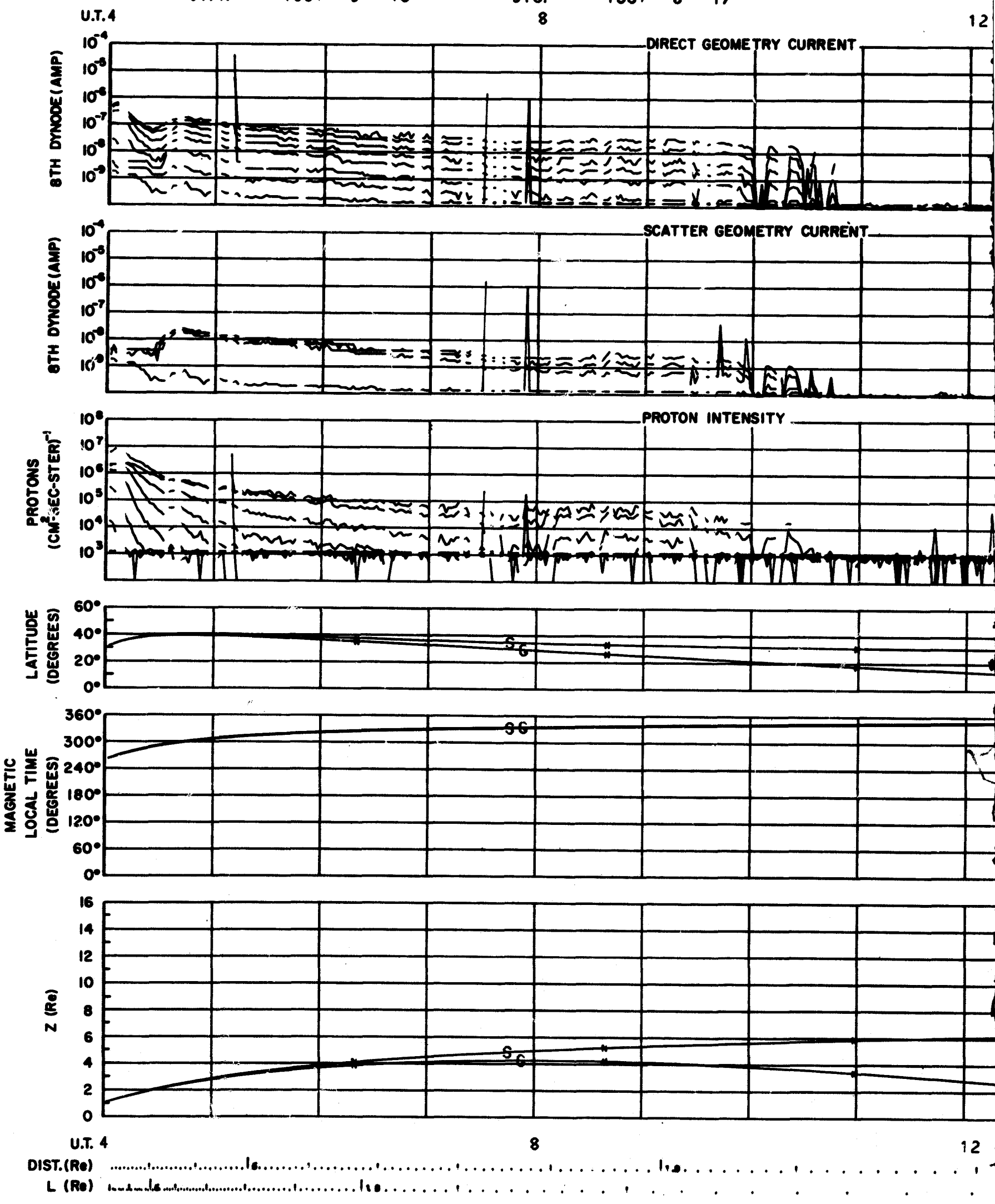

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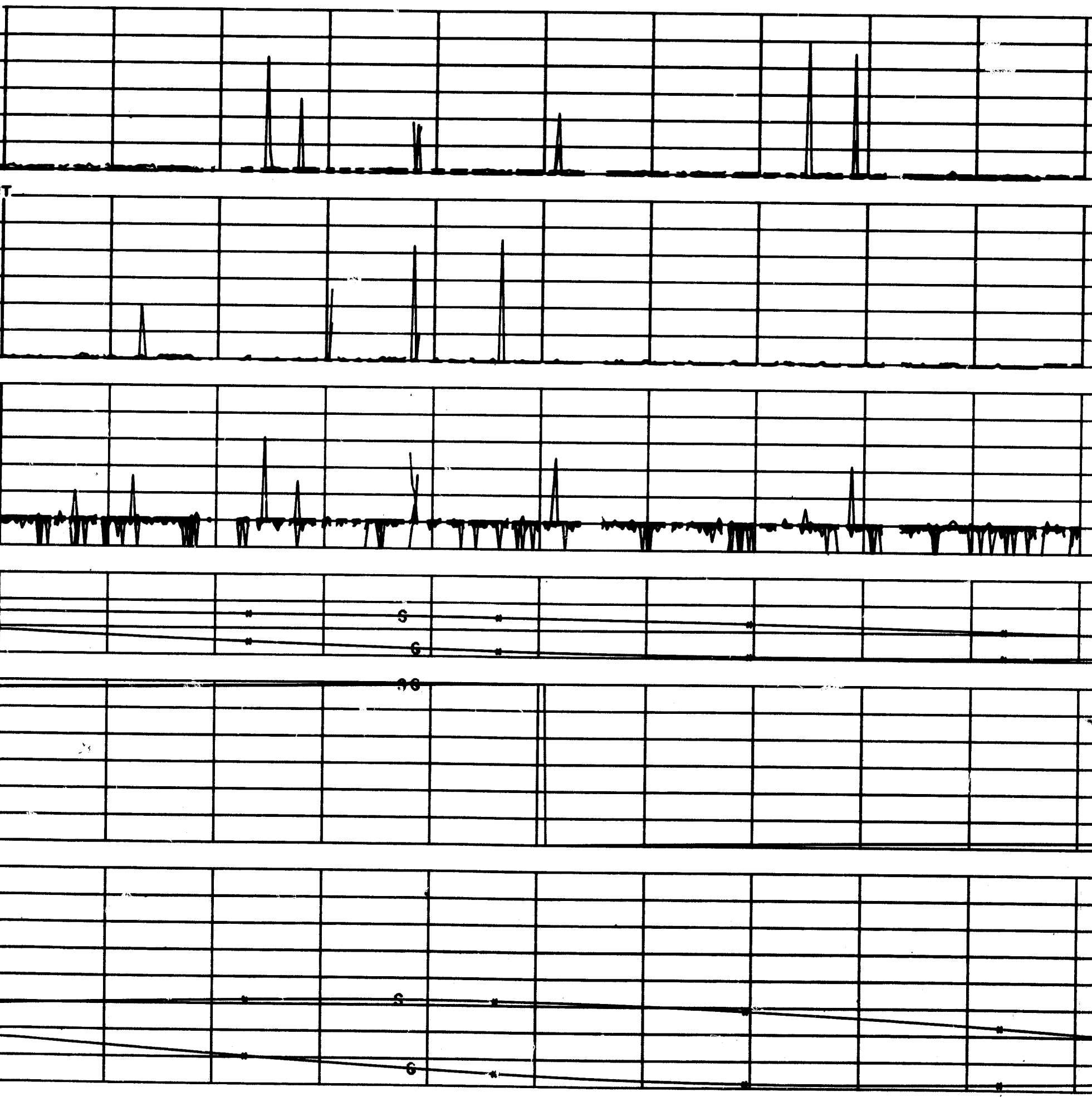

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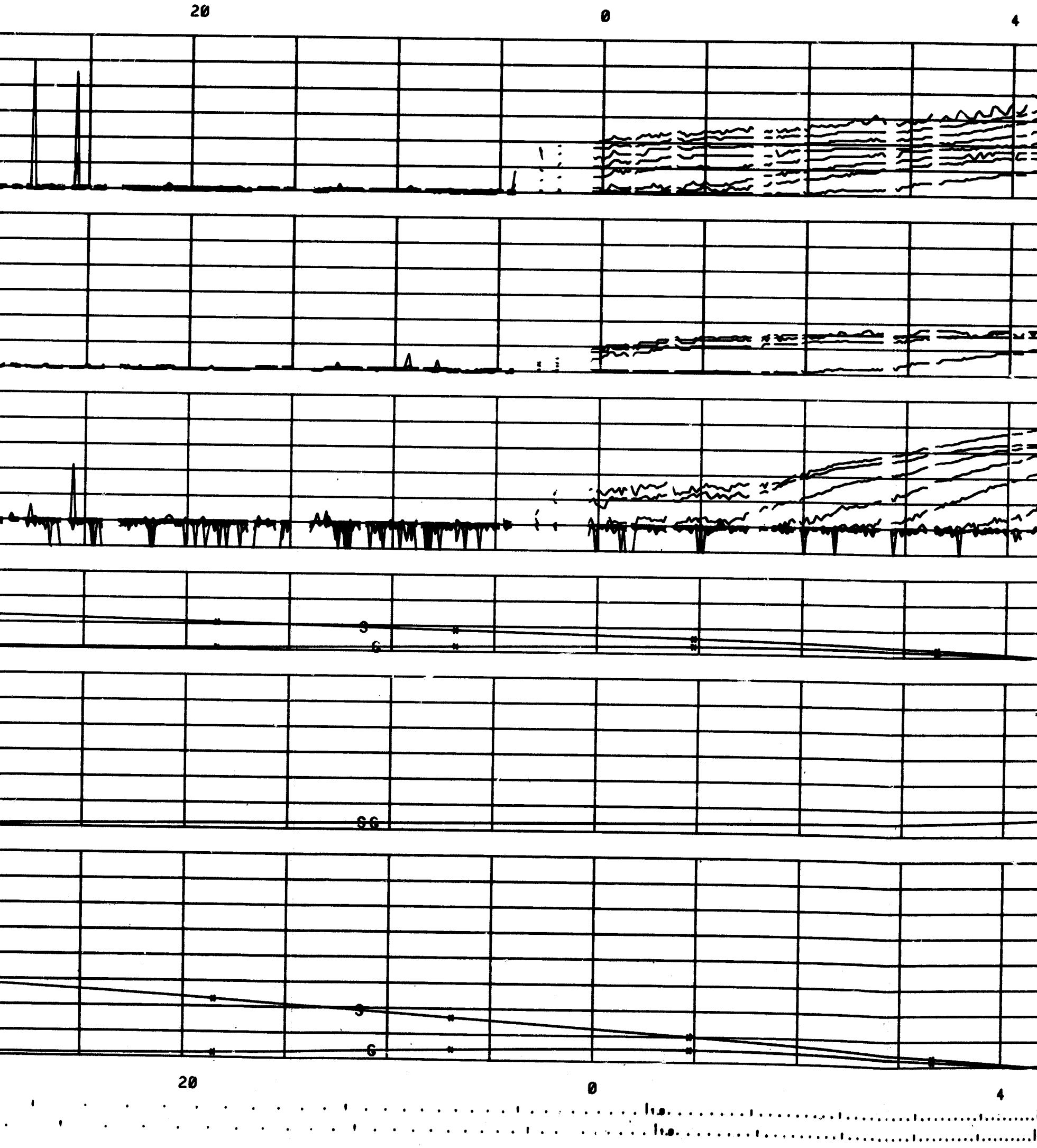

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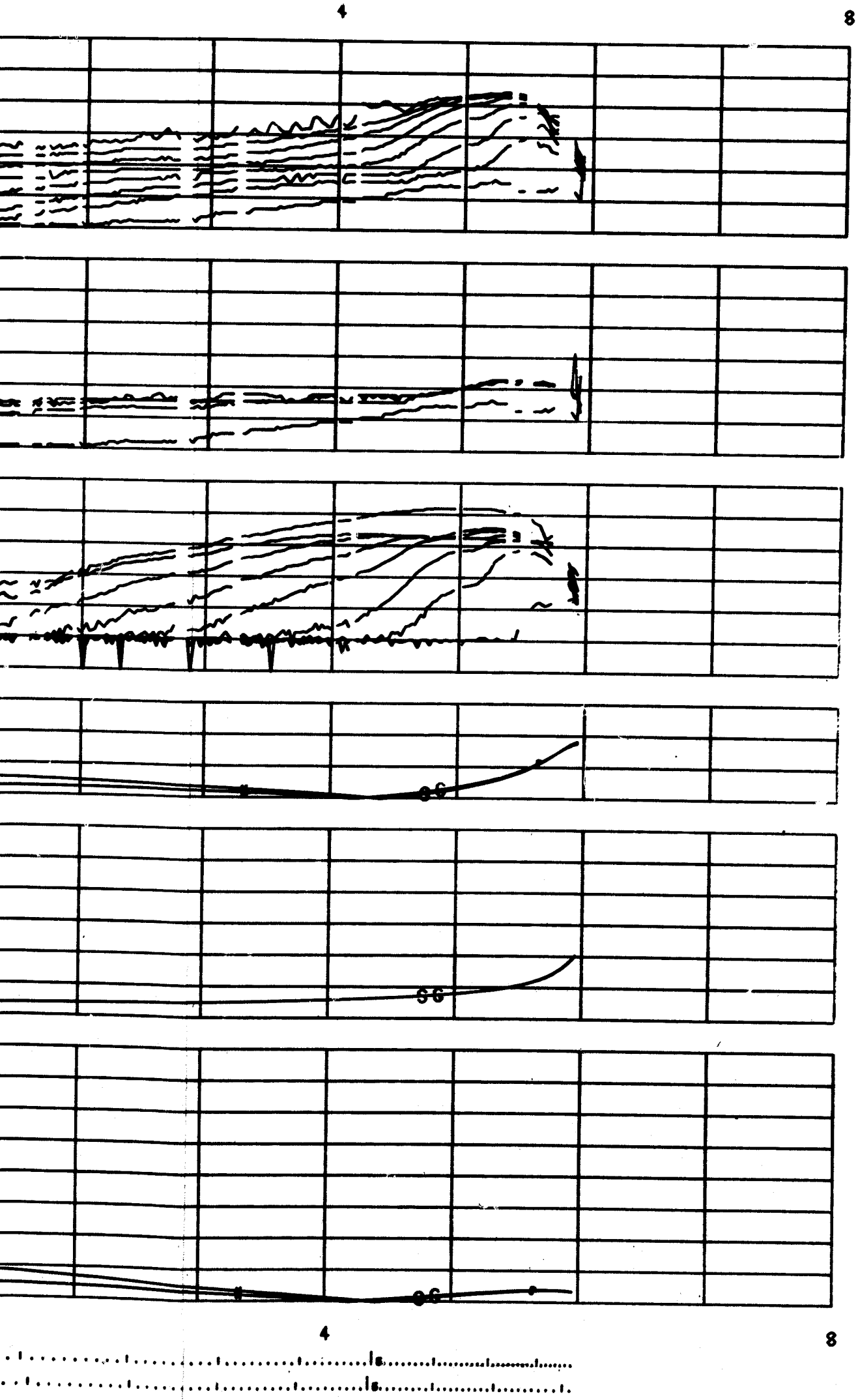

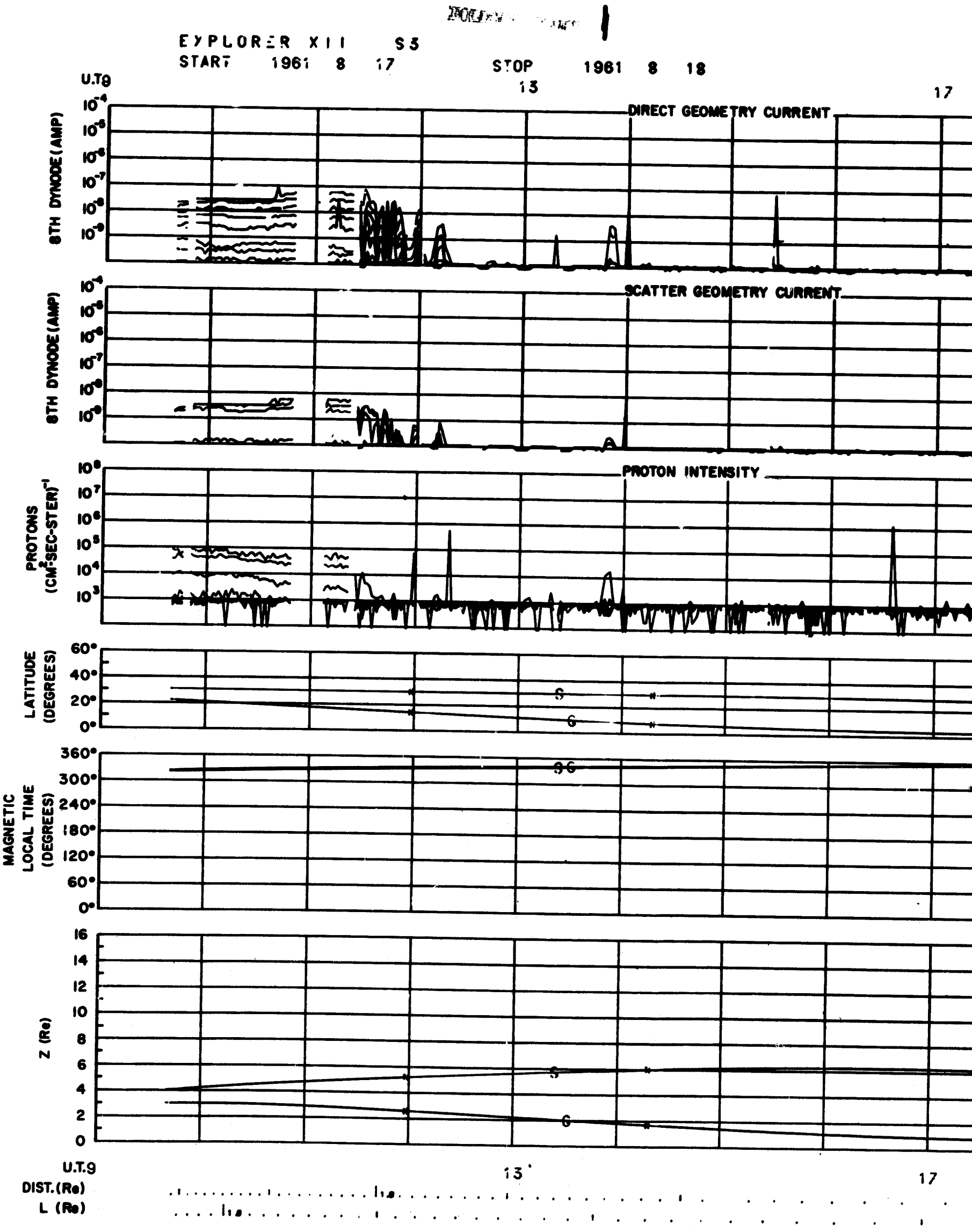
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STOP 1961 8 18
U.T.9
13
17
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8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T.9
DIST. (Re)
L (Re)

2

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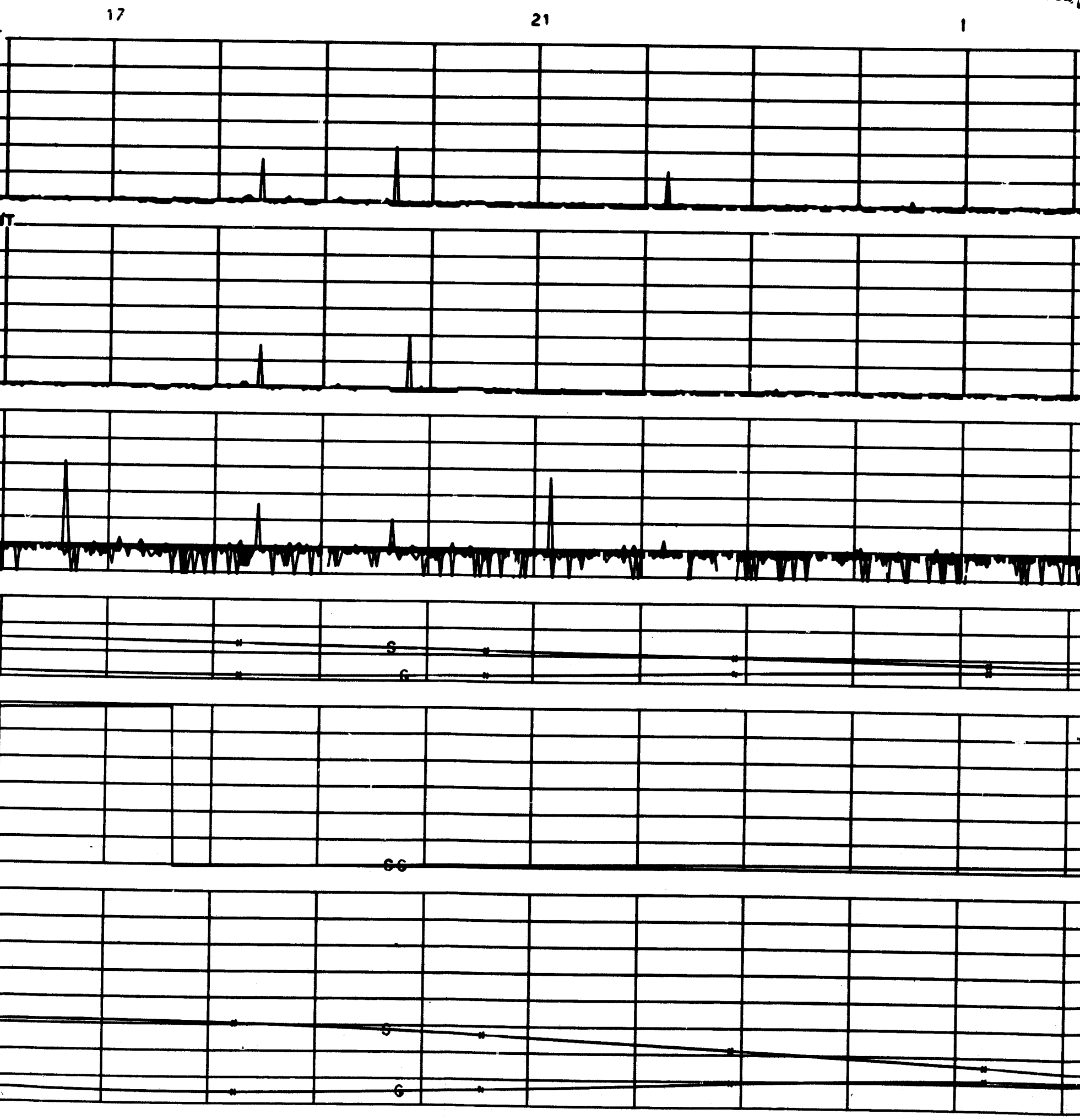

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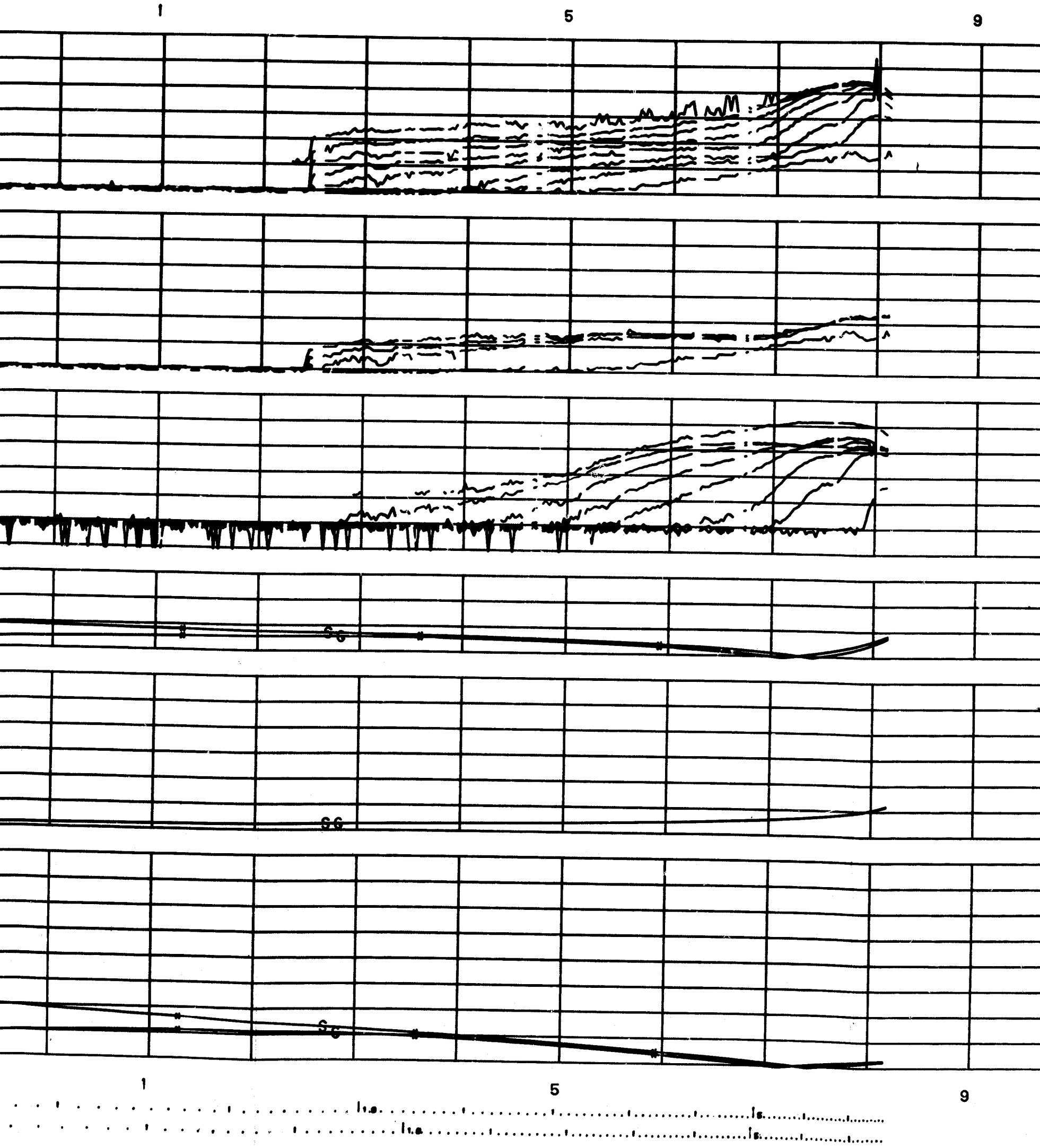

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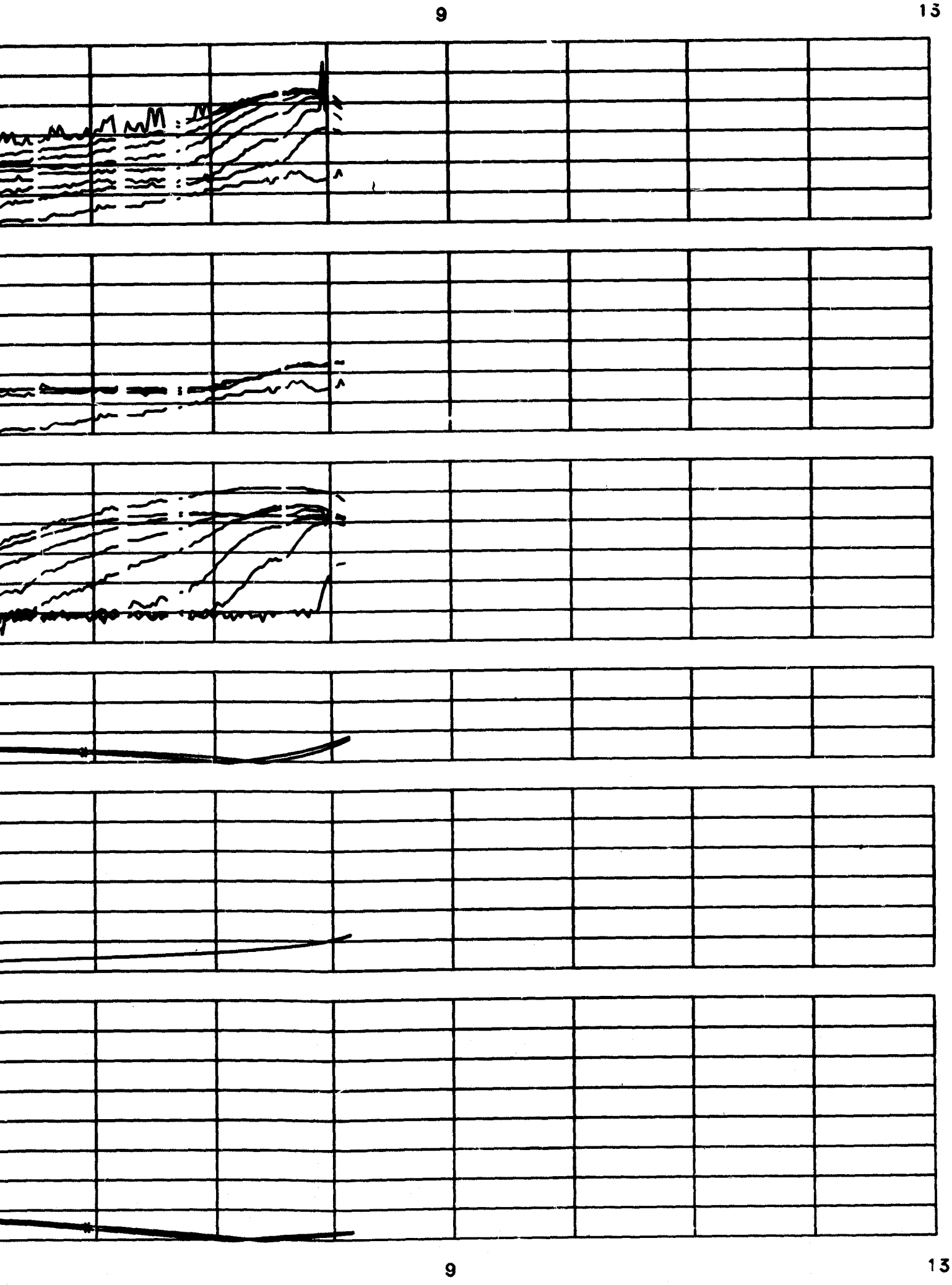

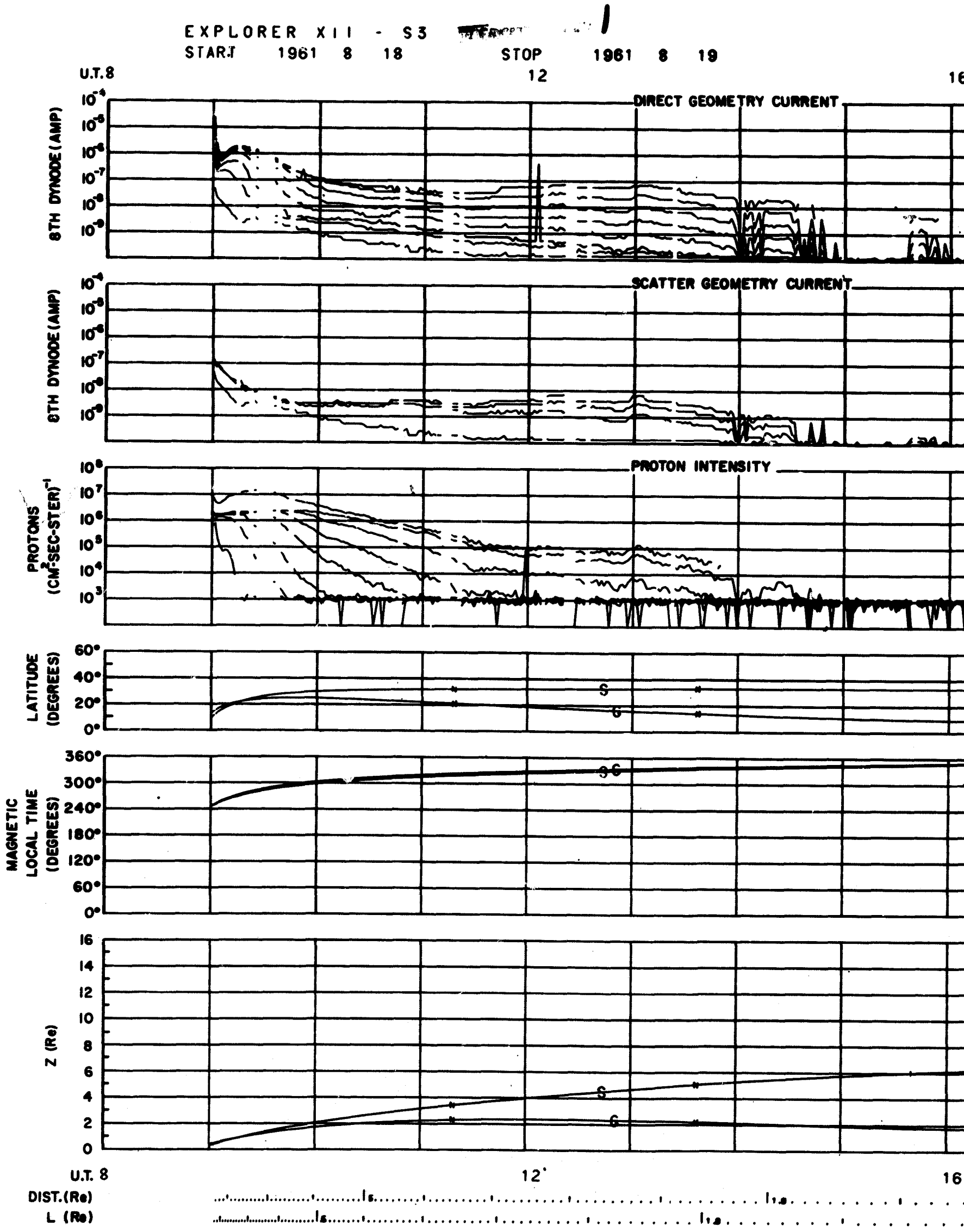
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STOP 1961 8 19
U.T.8
12
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8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
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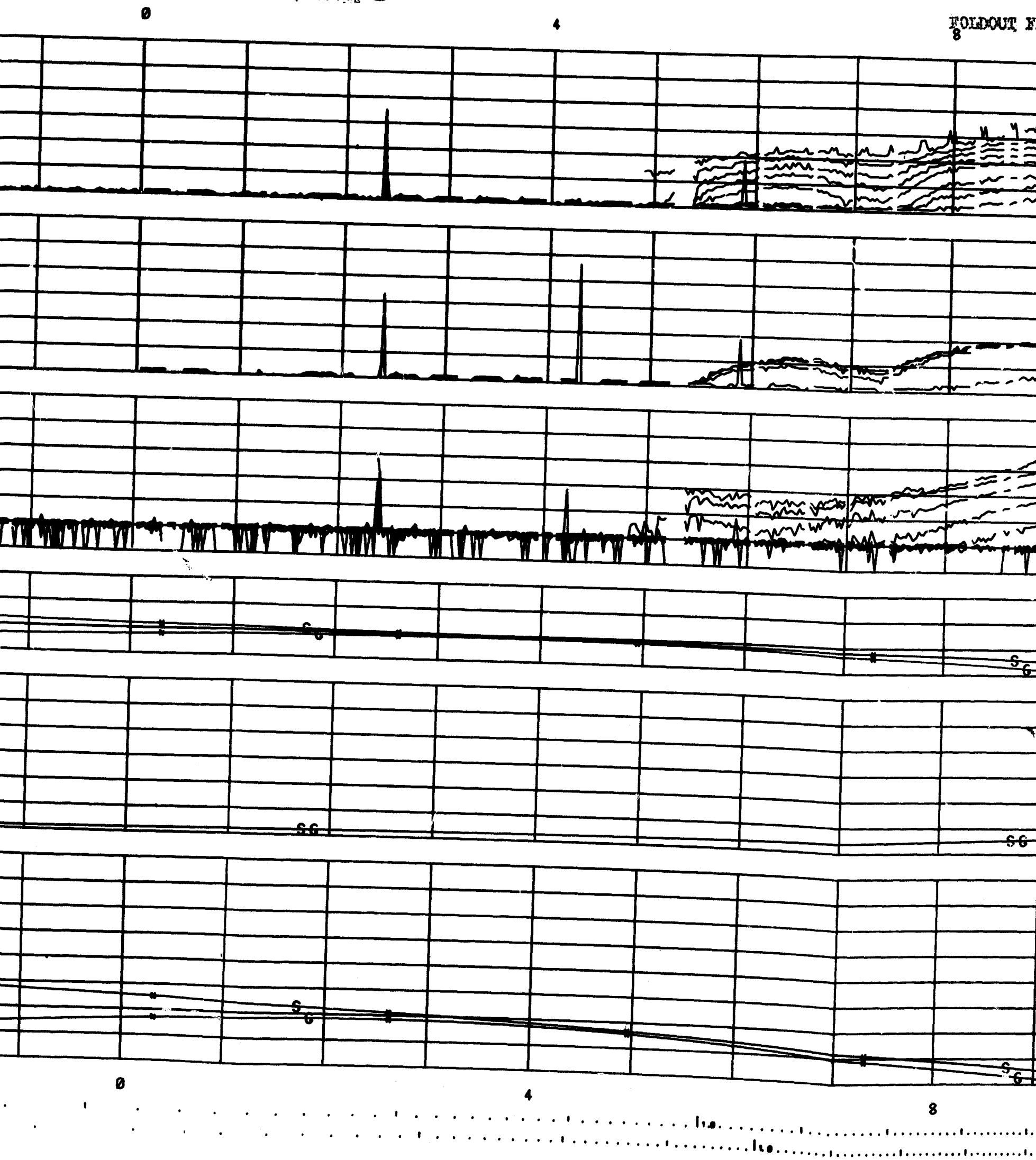

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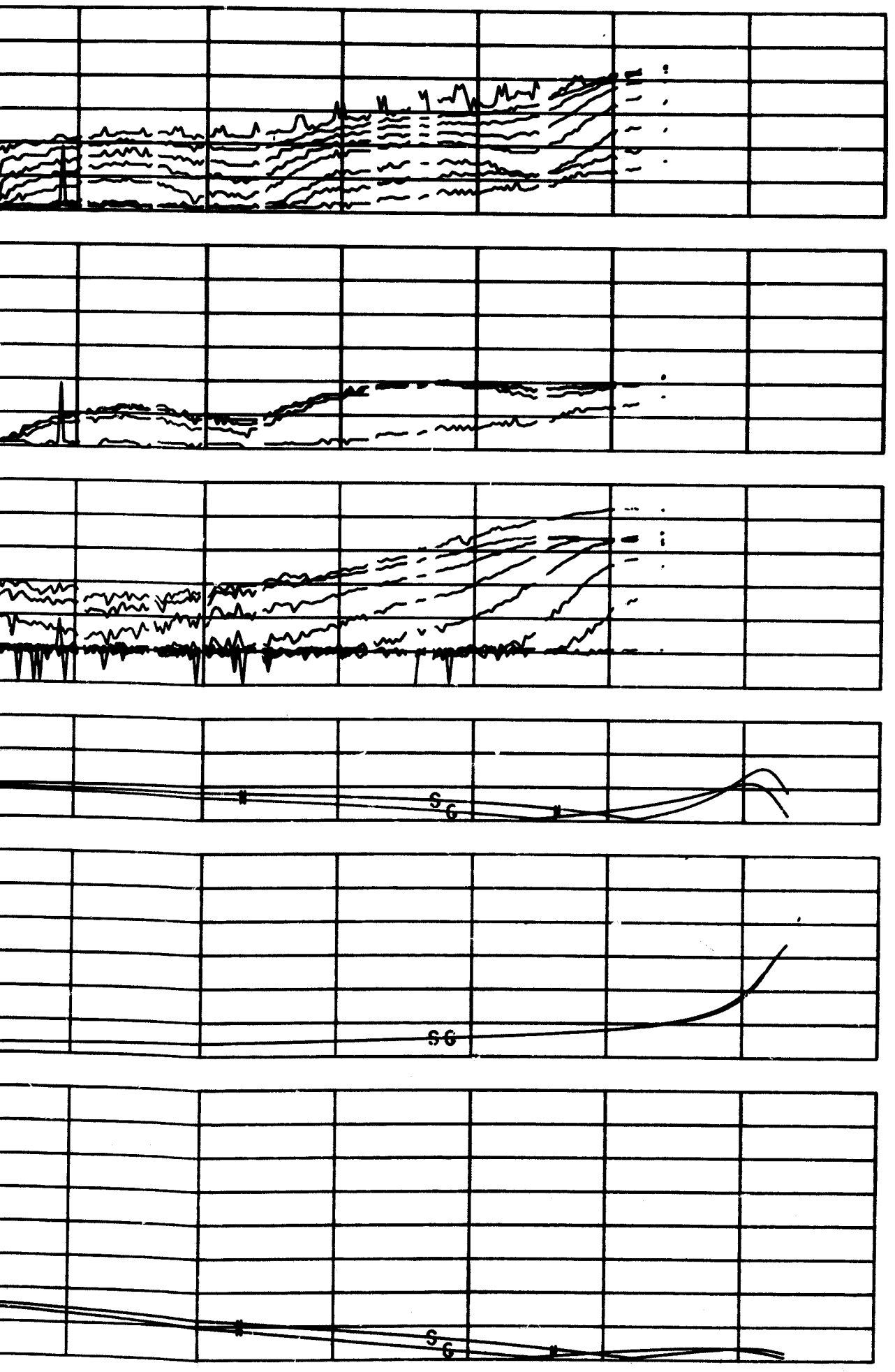

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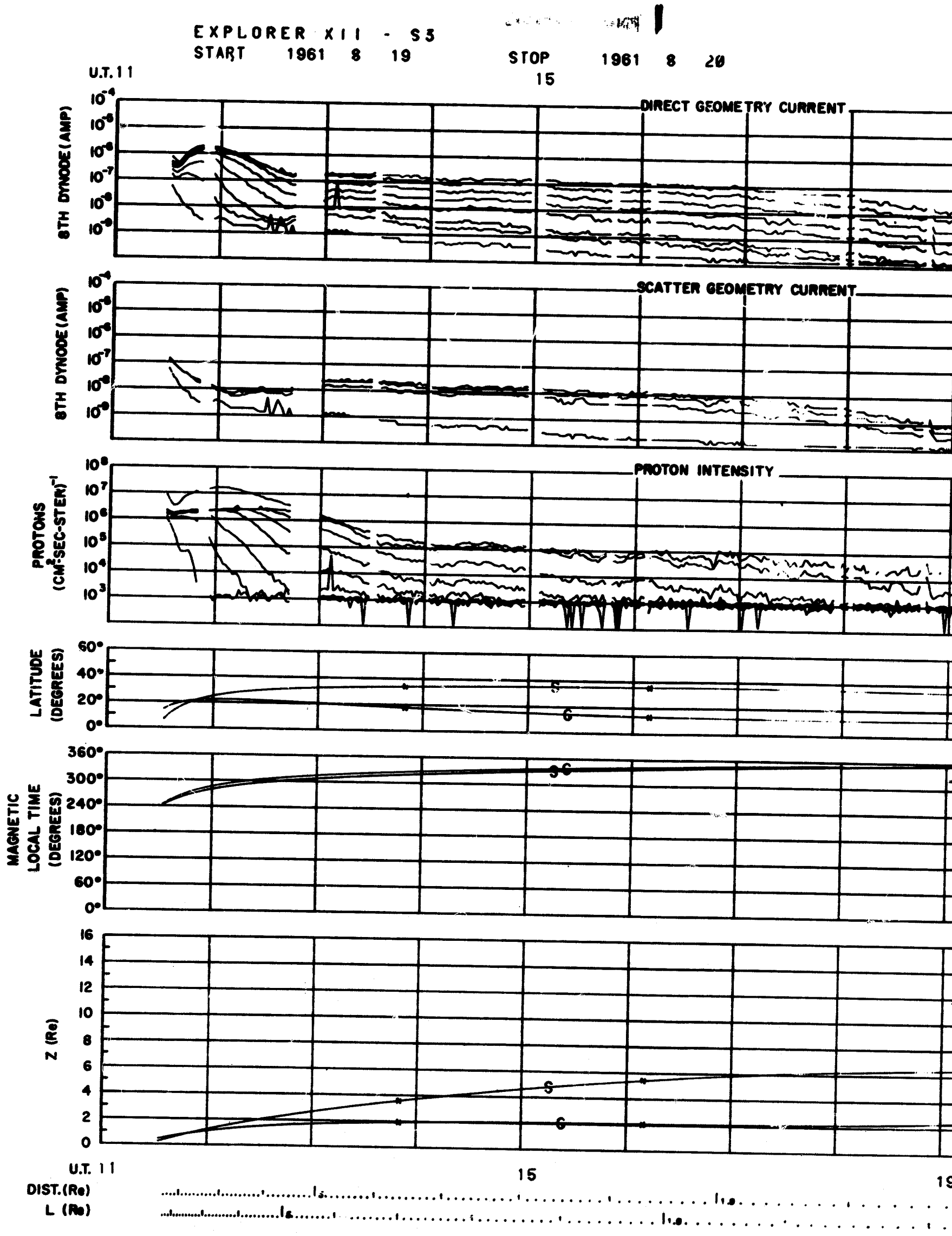
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STOP 1961 8 20
U.T. 11
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DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 11
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DIST. (Re)
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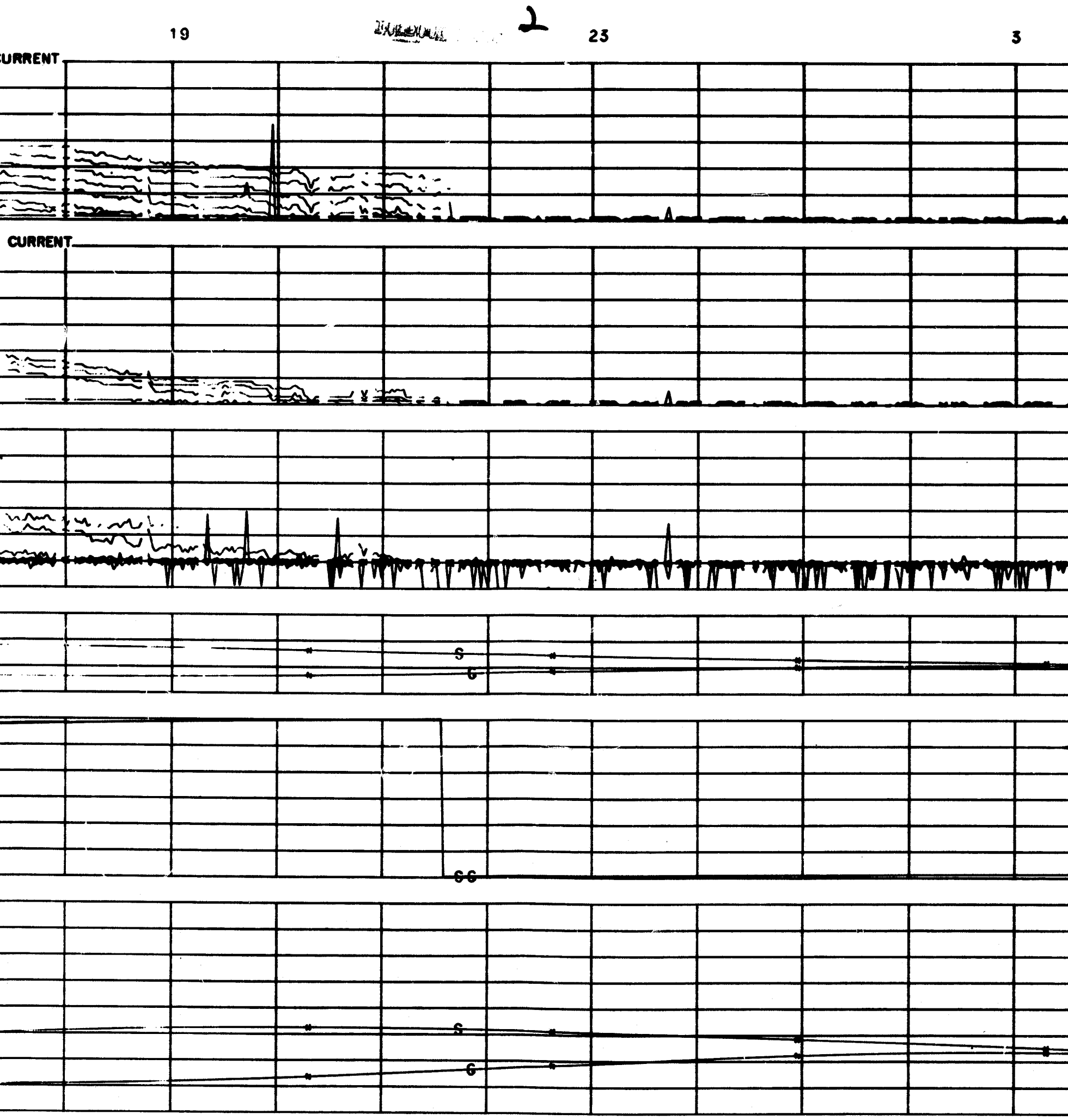
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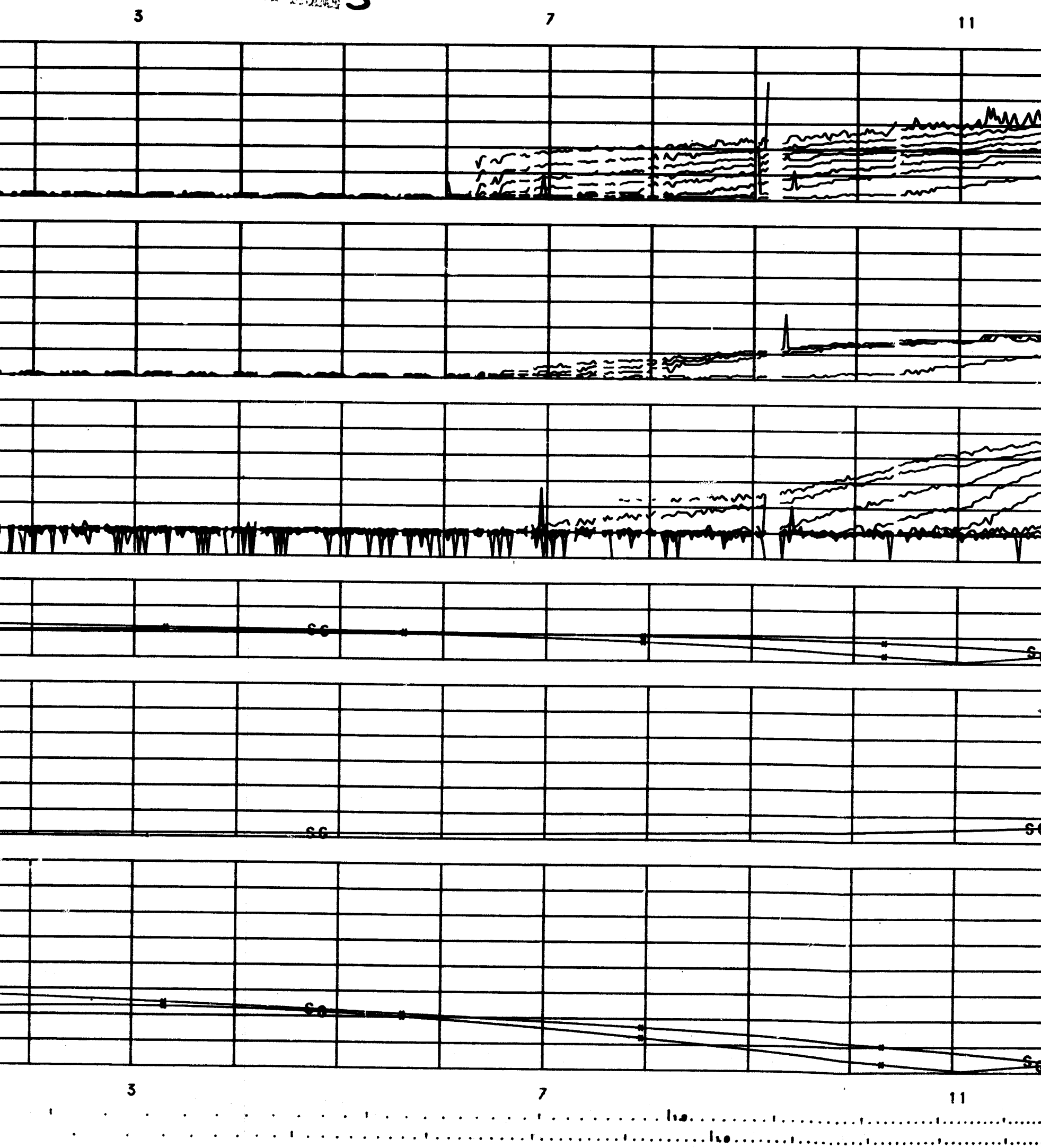

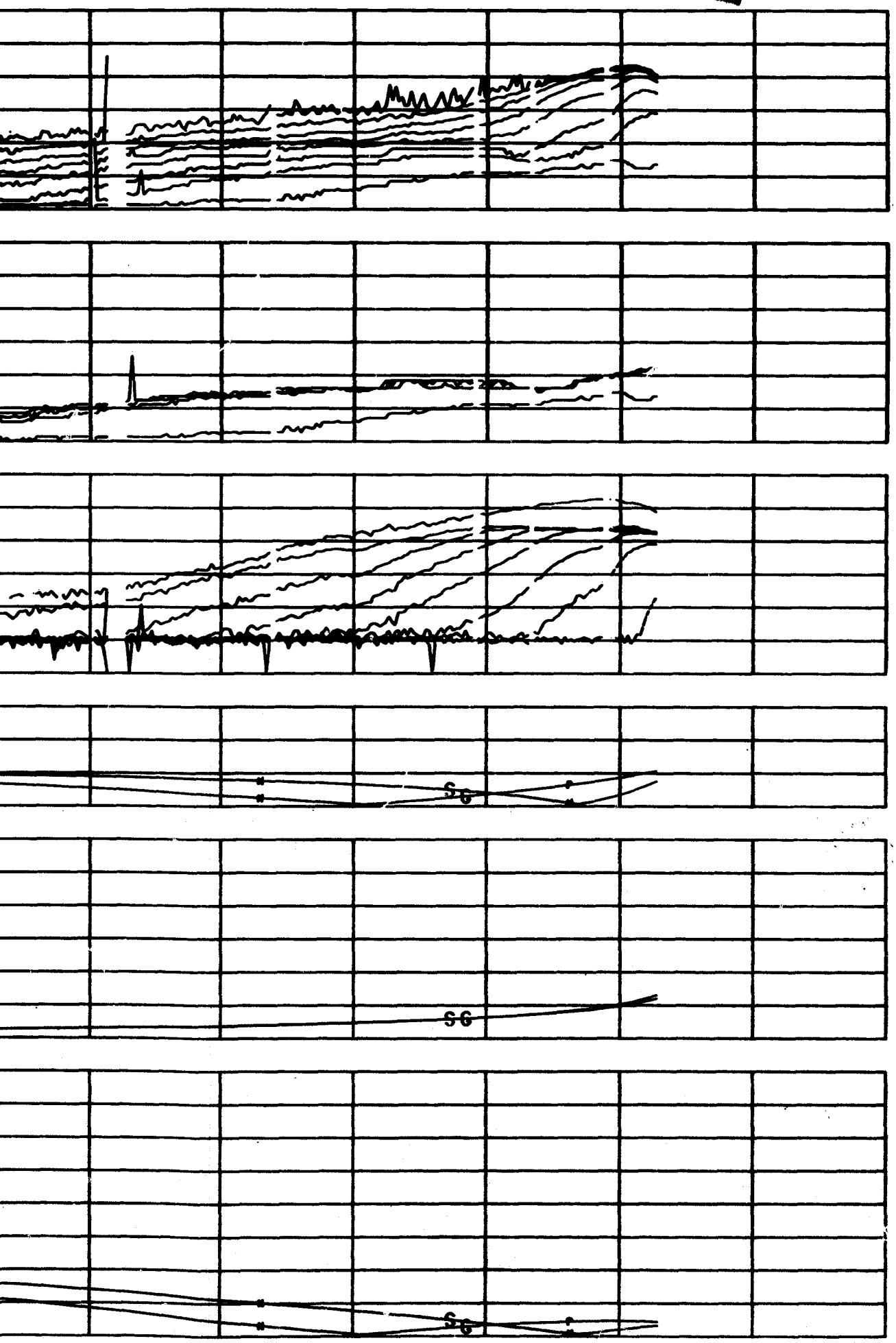
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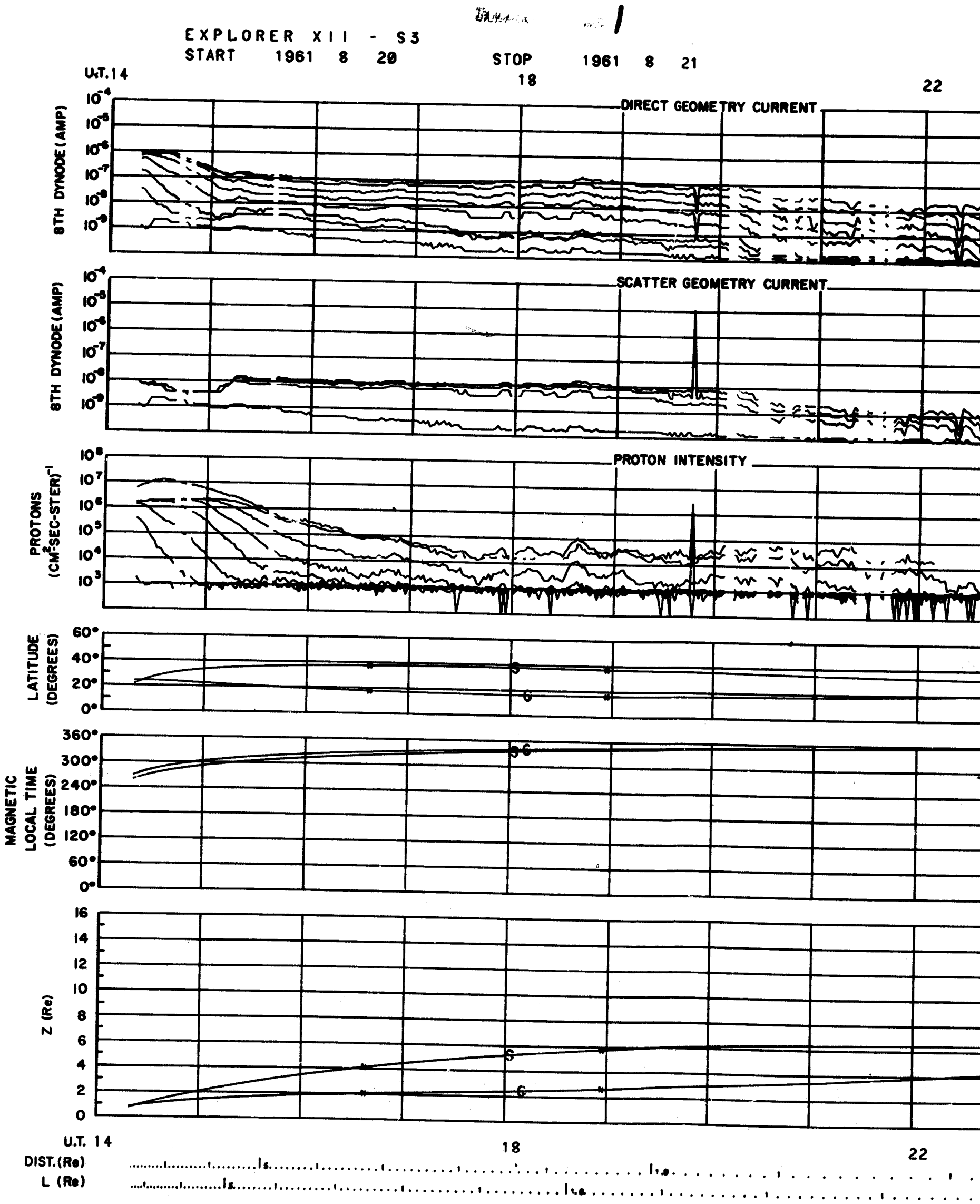
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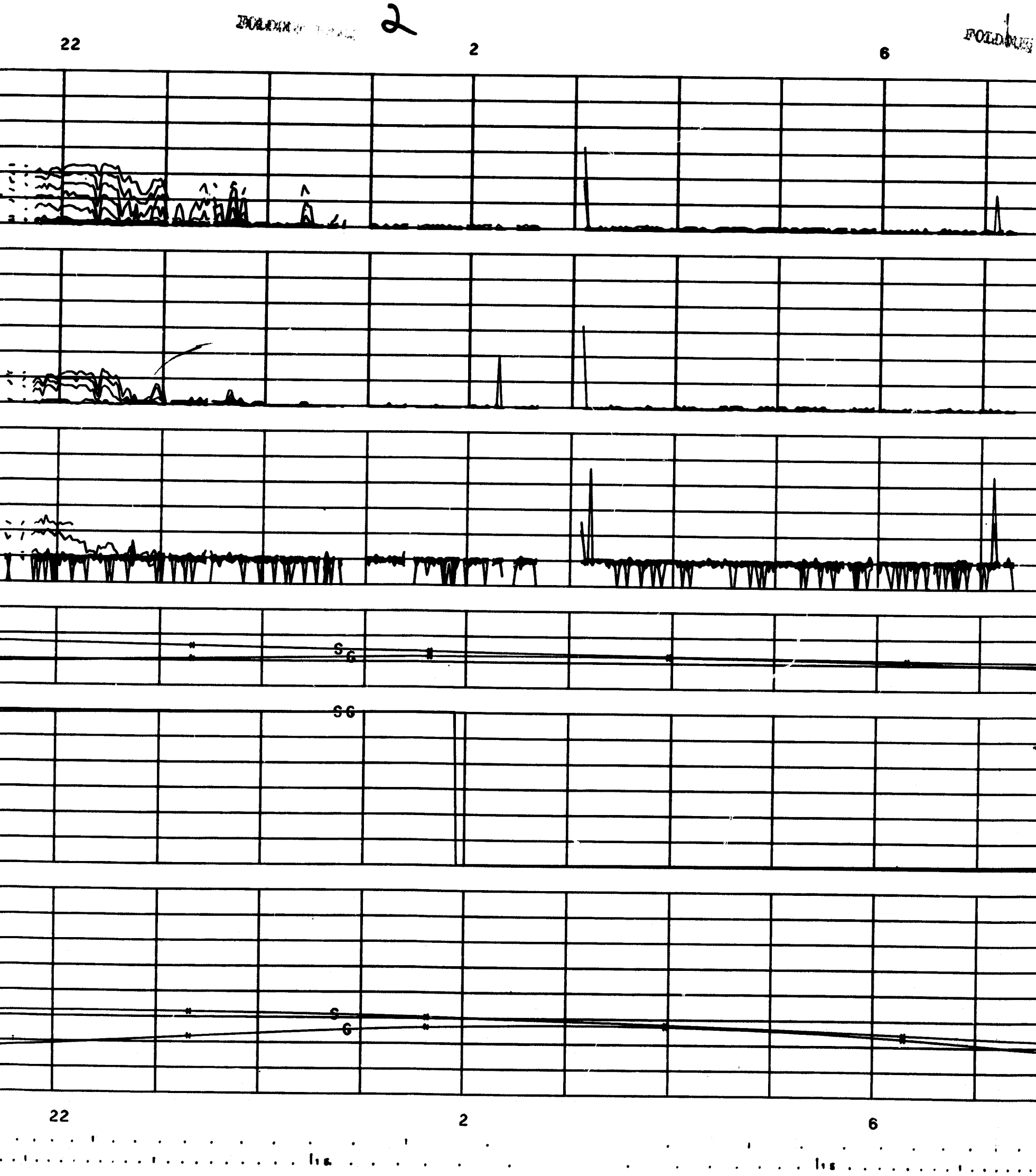
U.T. 14
18
22
DIRECT GEOMETRY CURRENT
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
8TH DYNODE (AMP)
PROTONS (CM²-SEC-STERADIAN)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
DIST. (Re)
L (Re)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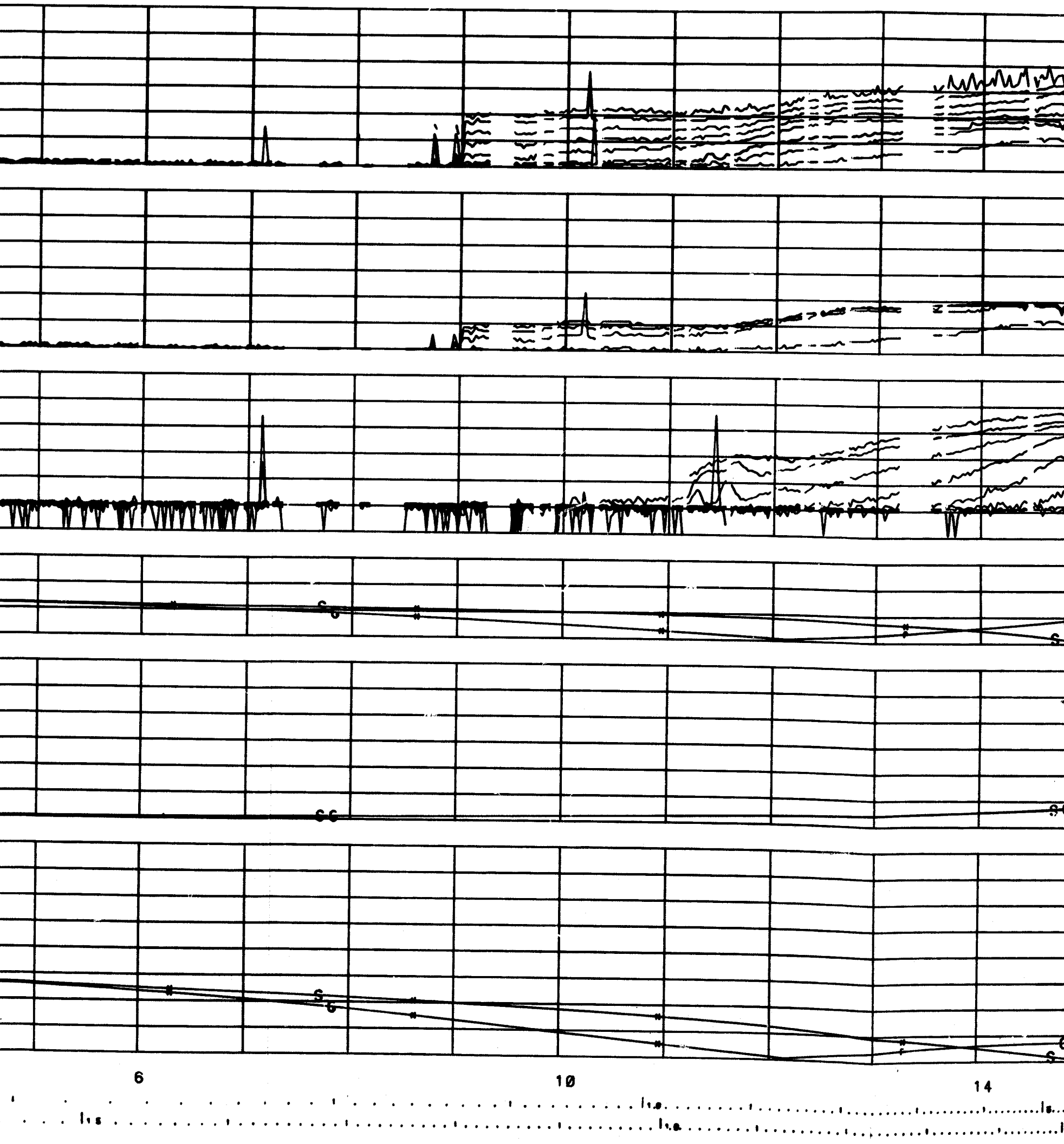

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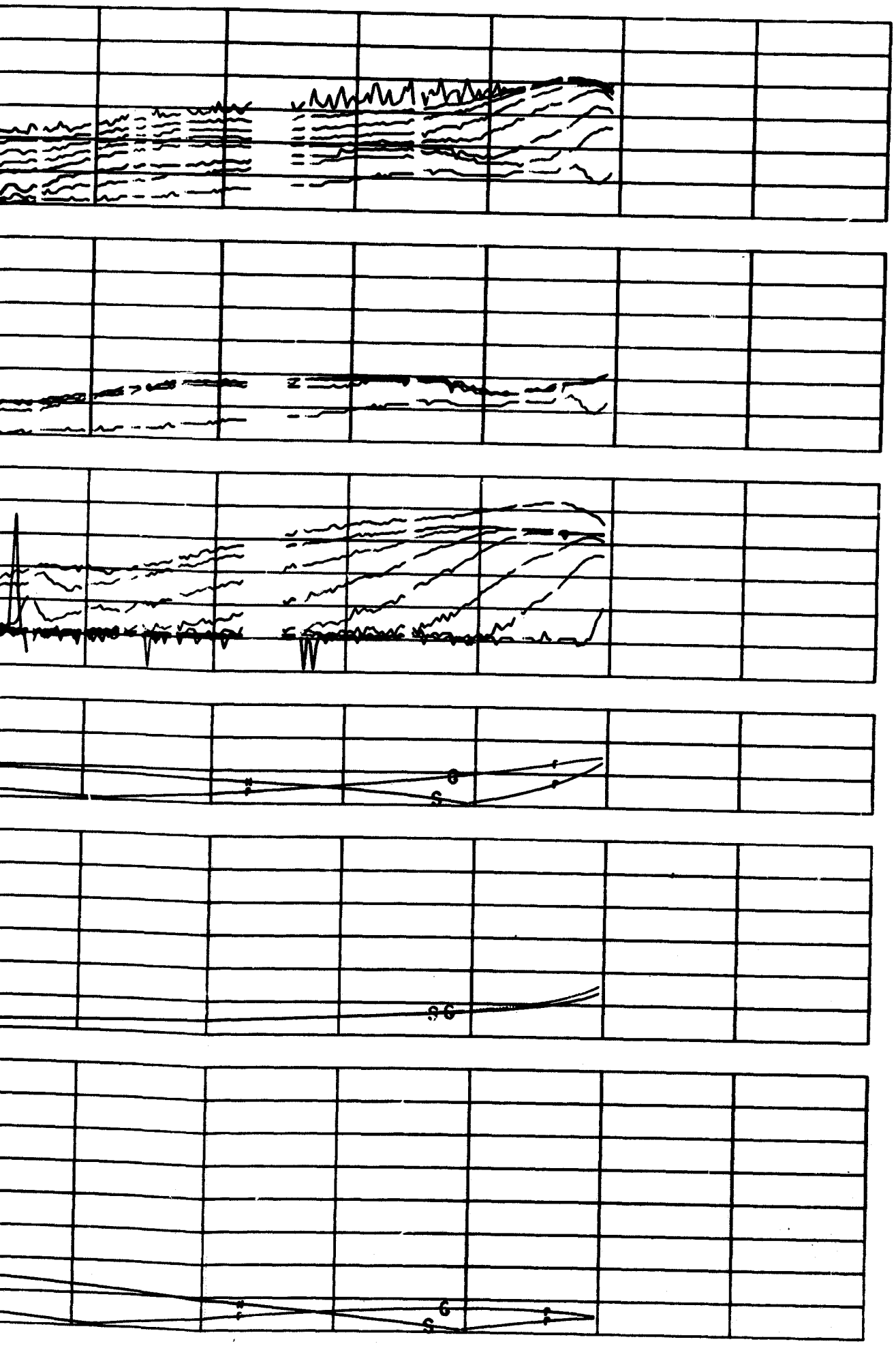

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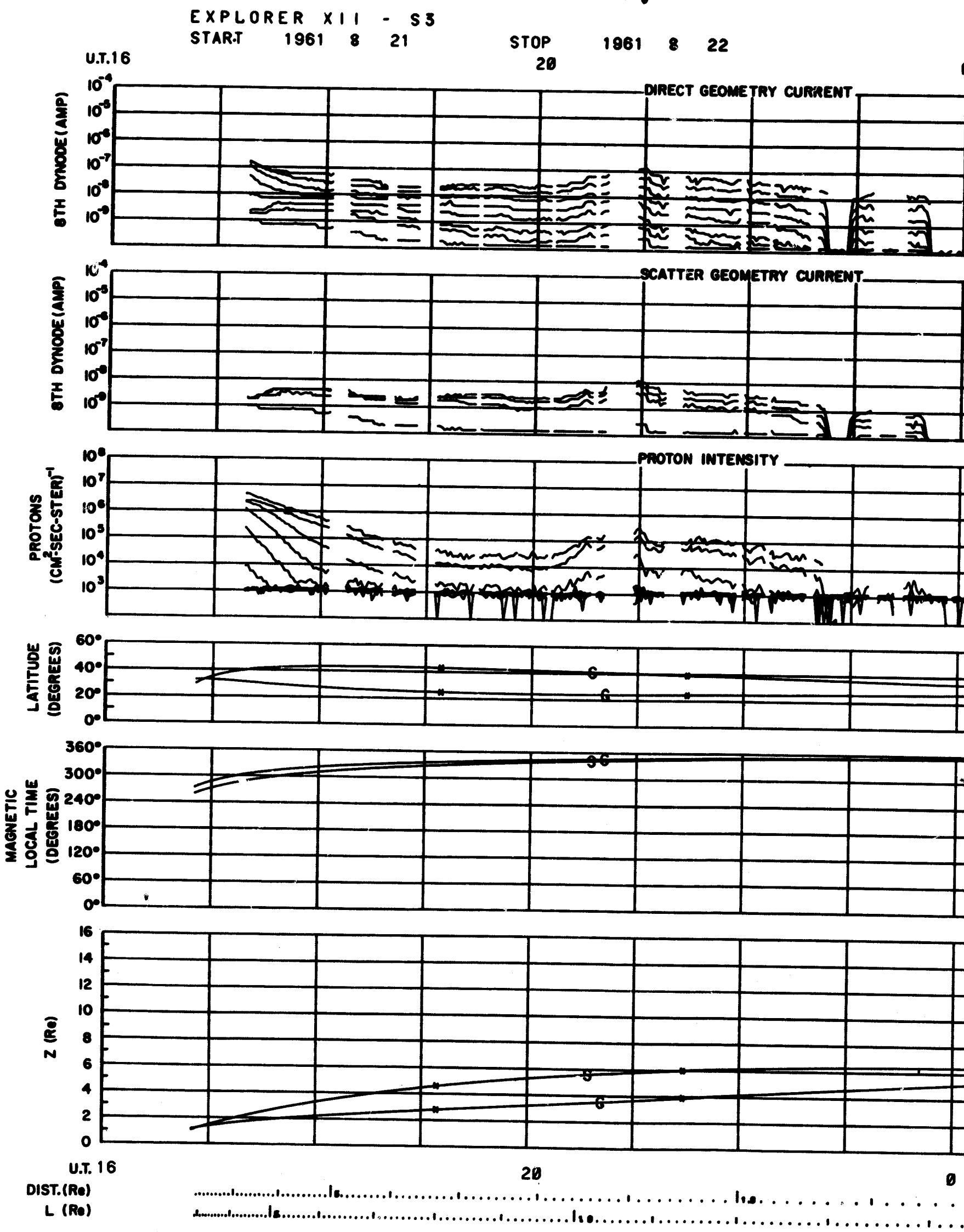
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8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 16
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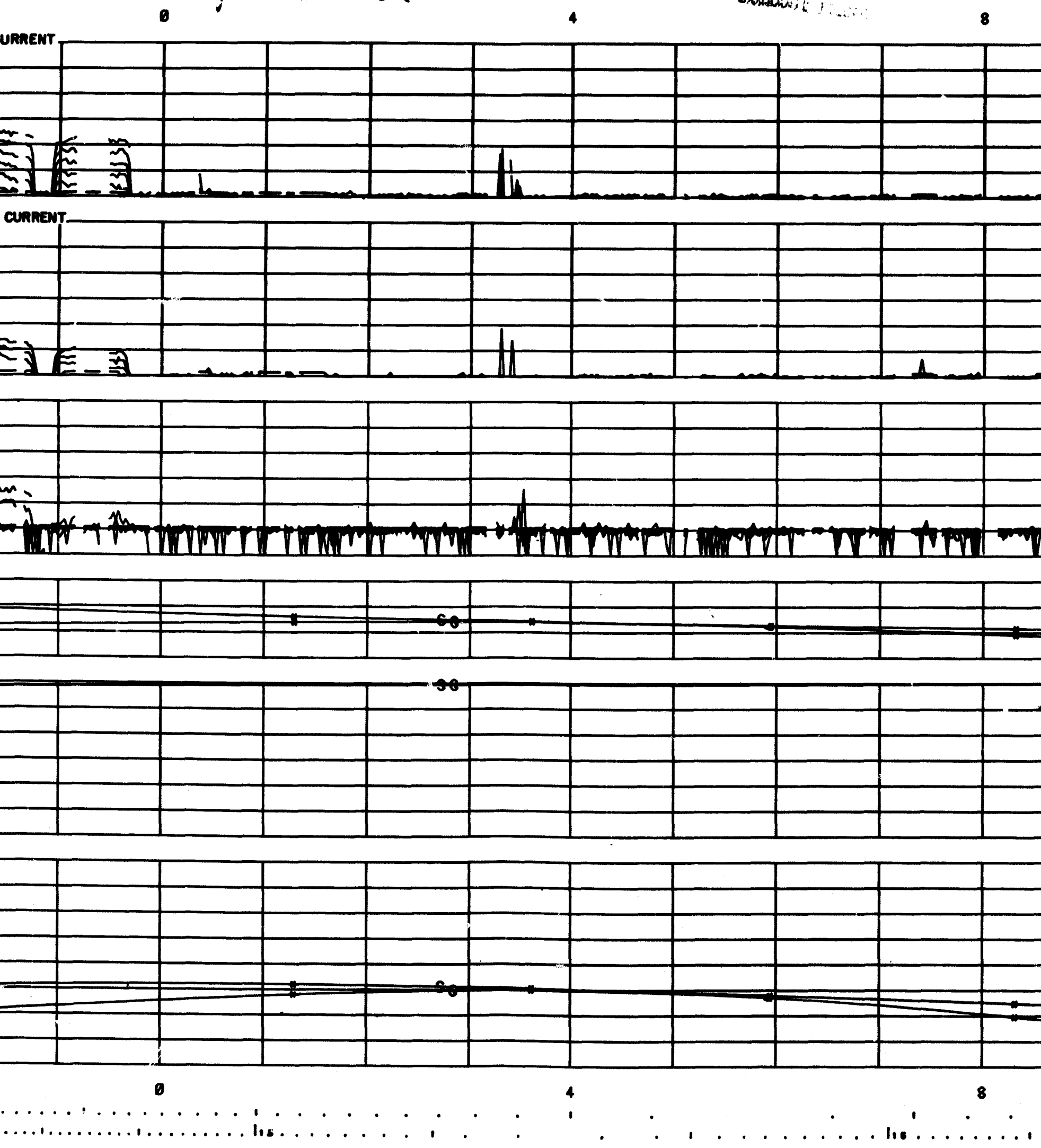
0
DIST. (Re)
L (Re)

2



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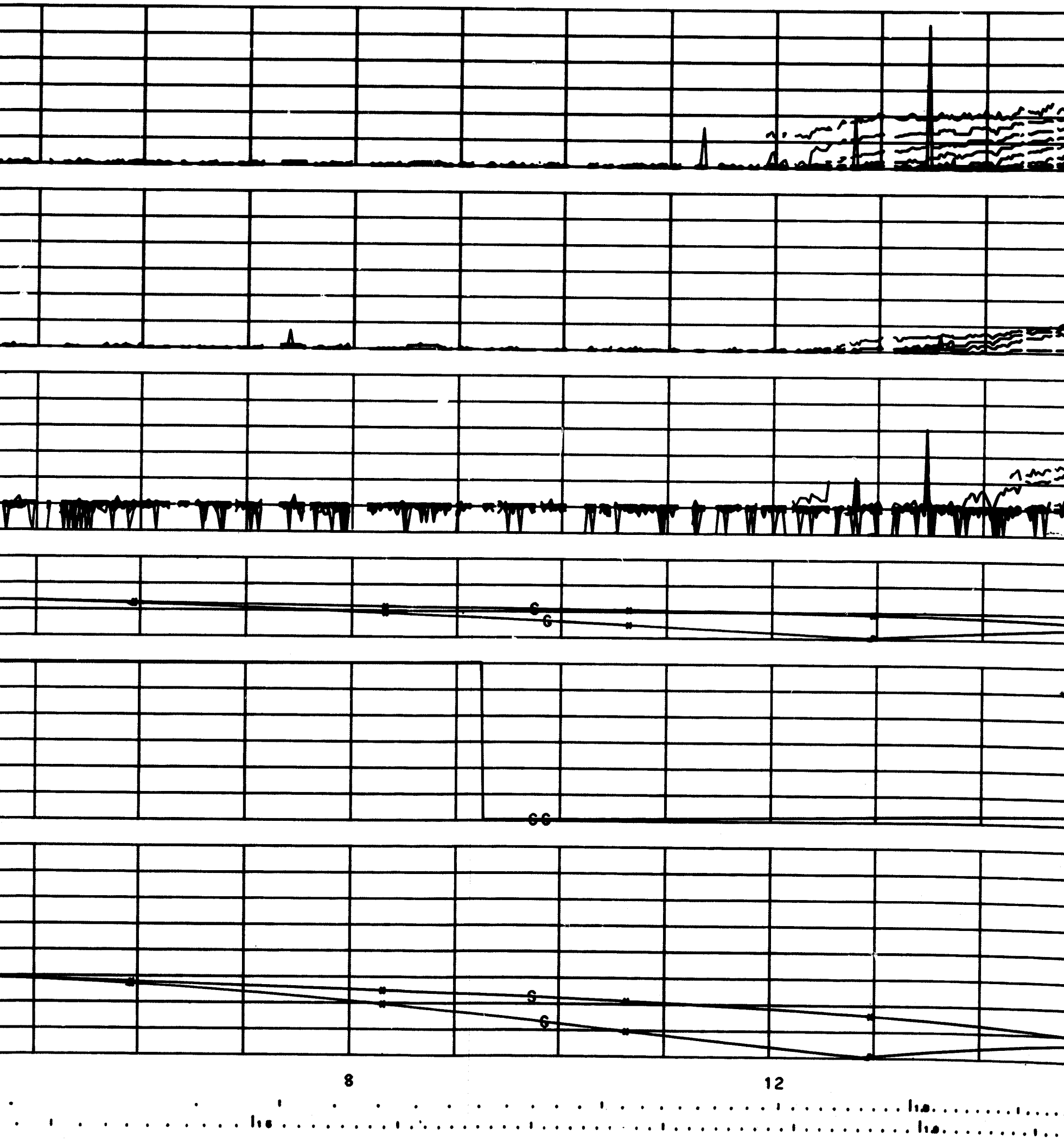

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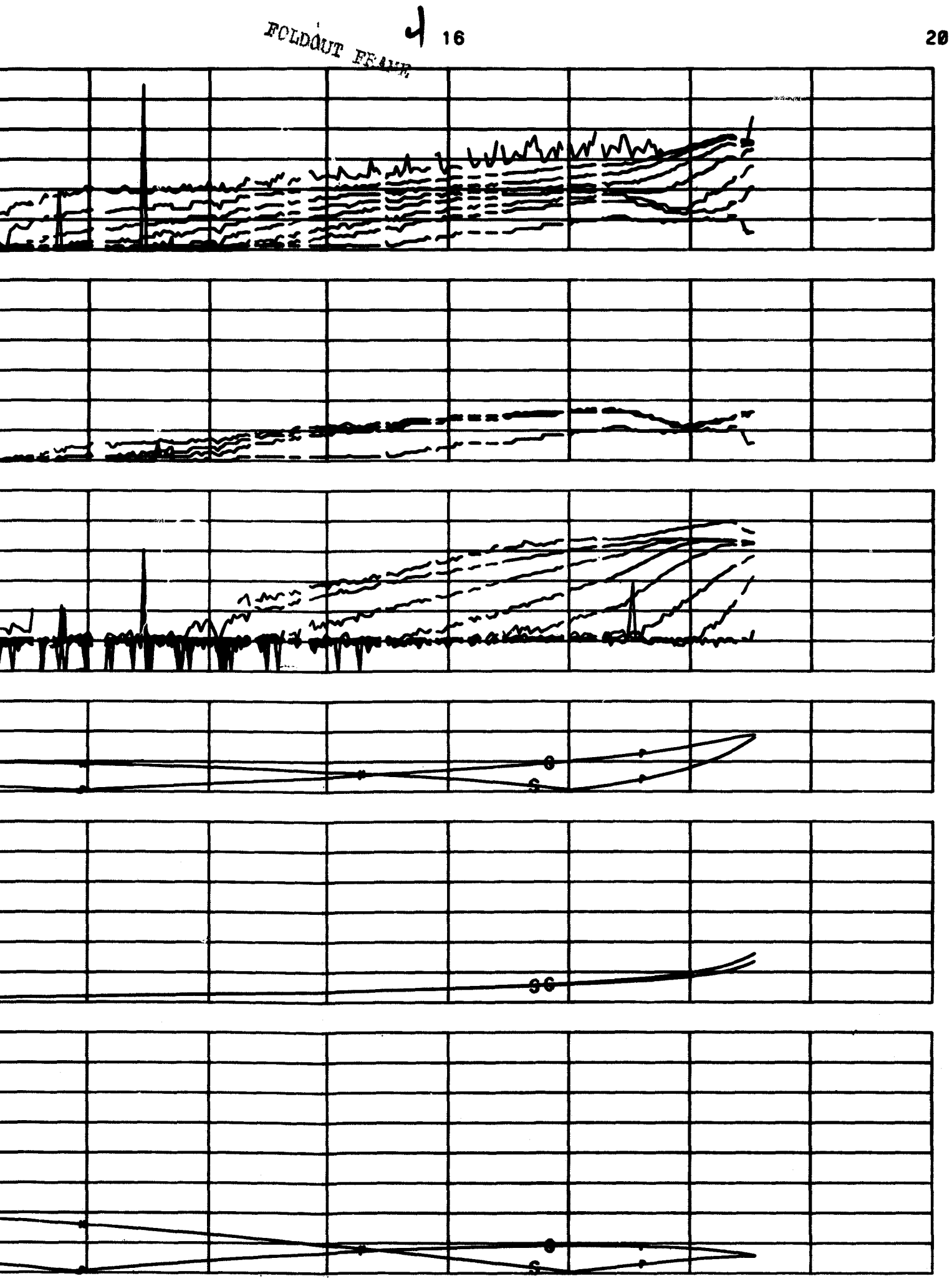

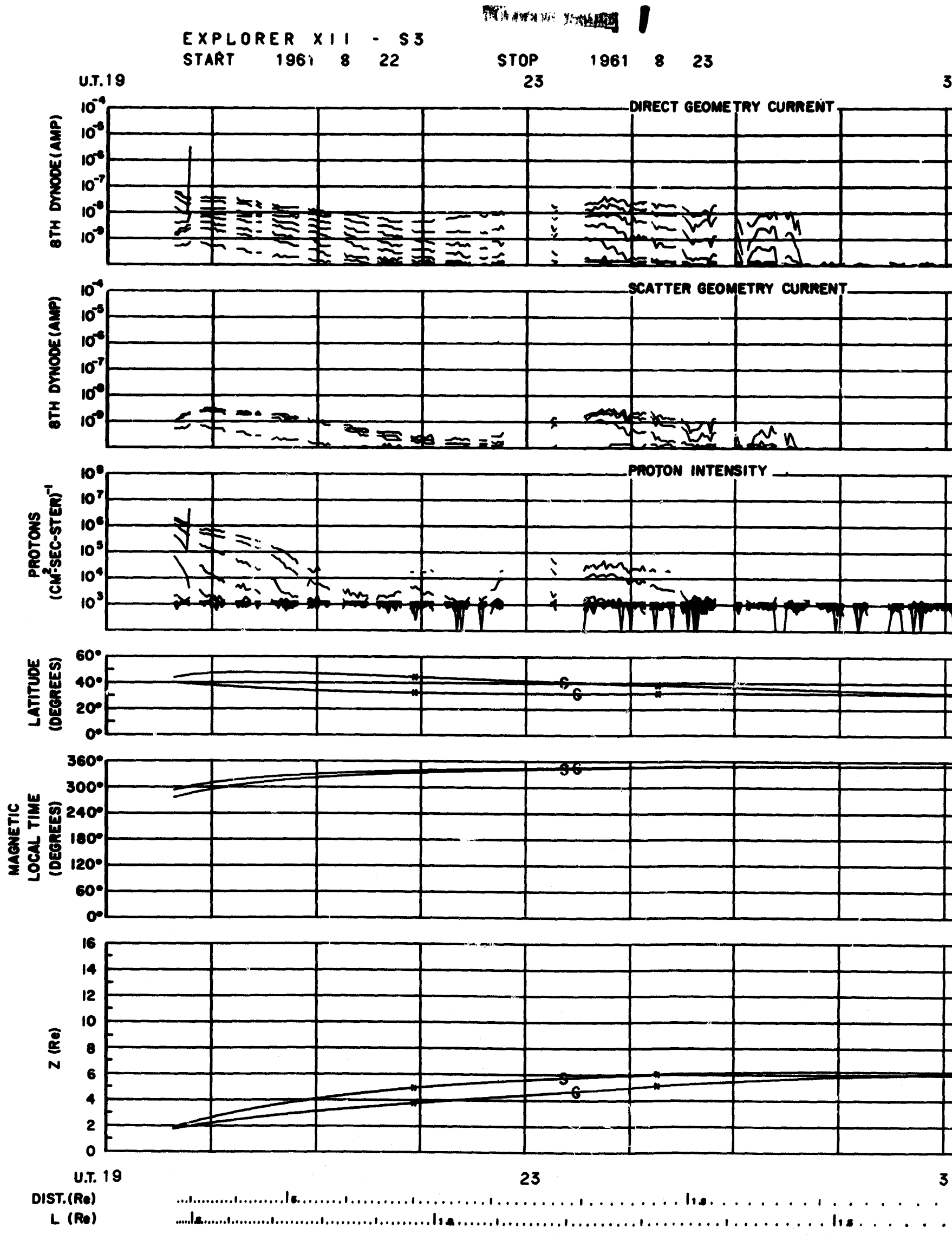
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U.T. 19
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DIRECT GEOMETRY CURRENT
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
8TH DYNODE (AMP)
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
DIST. (Re)
L (Re)

FOLDOUT FRAME 2

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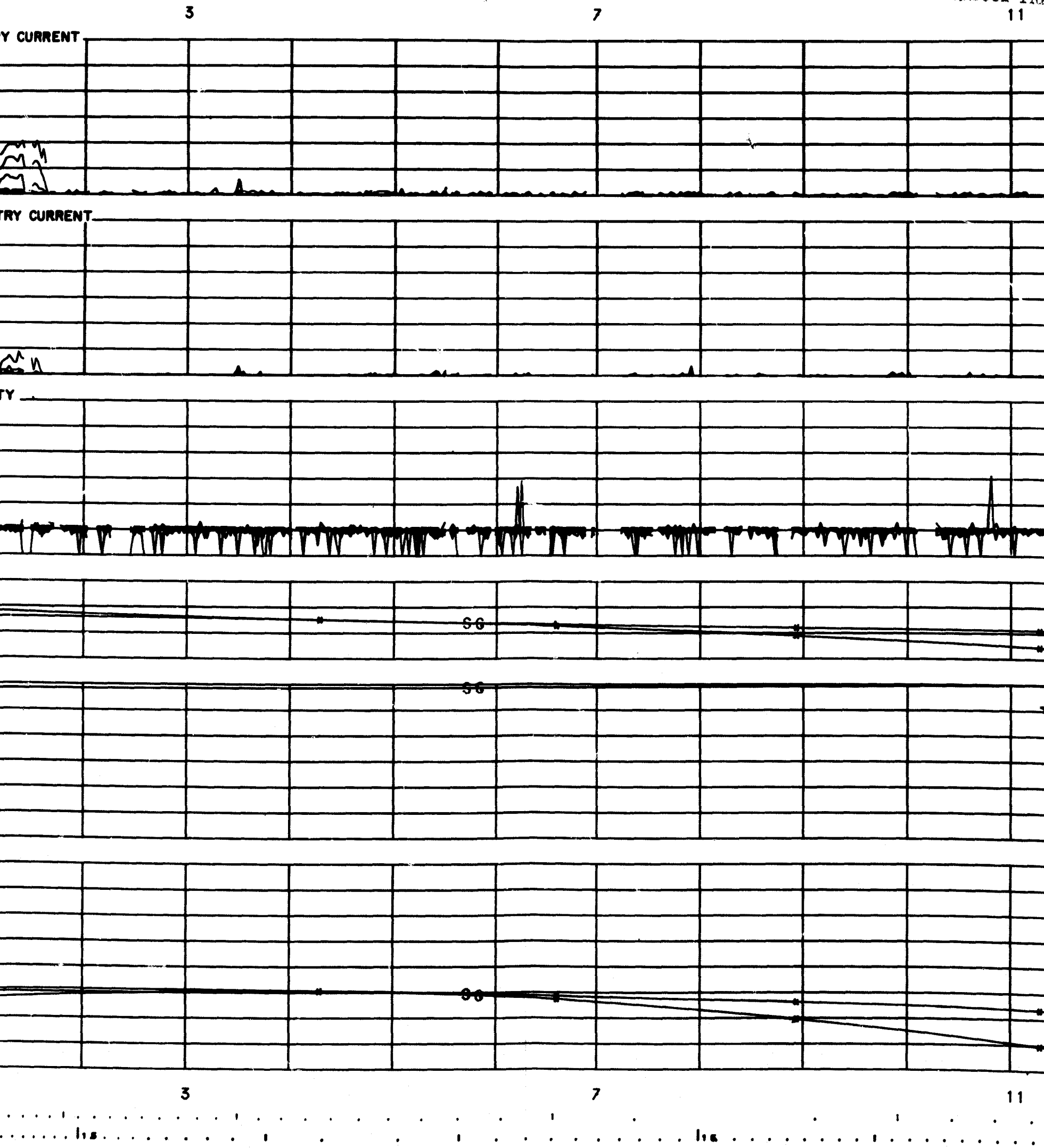

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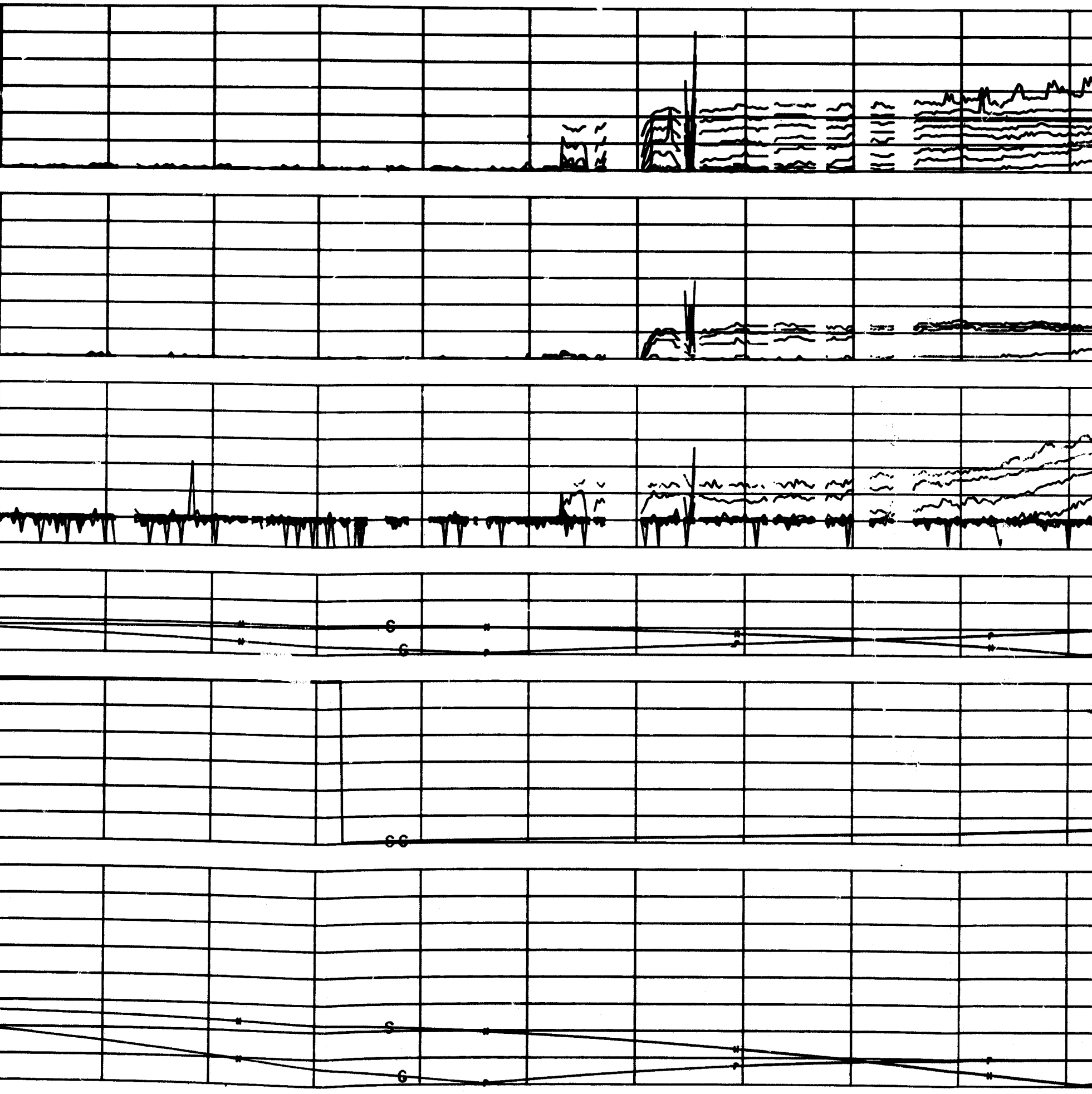

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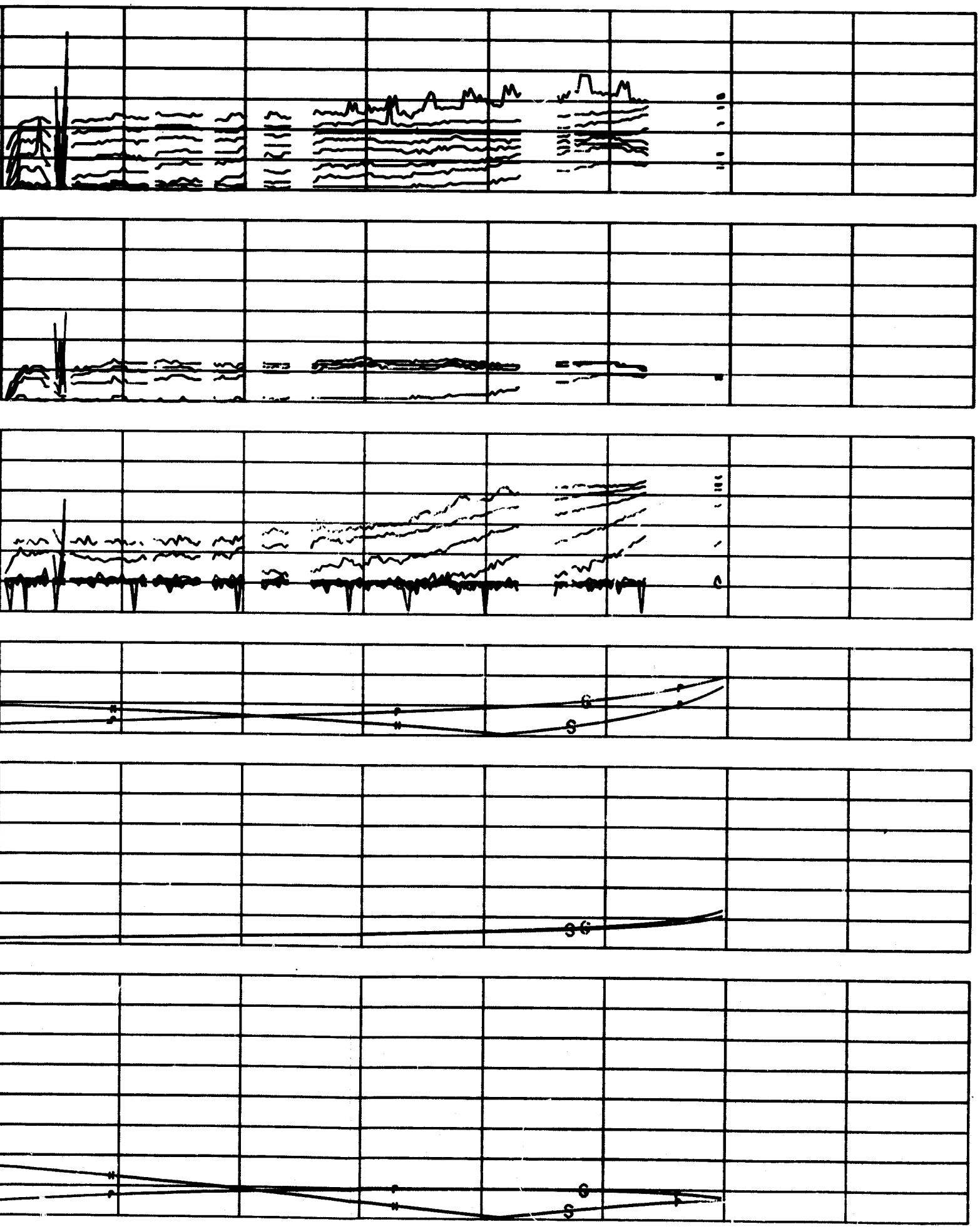

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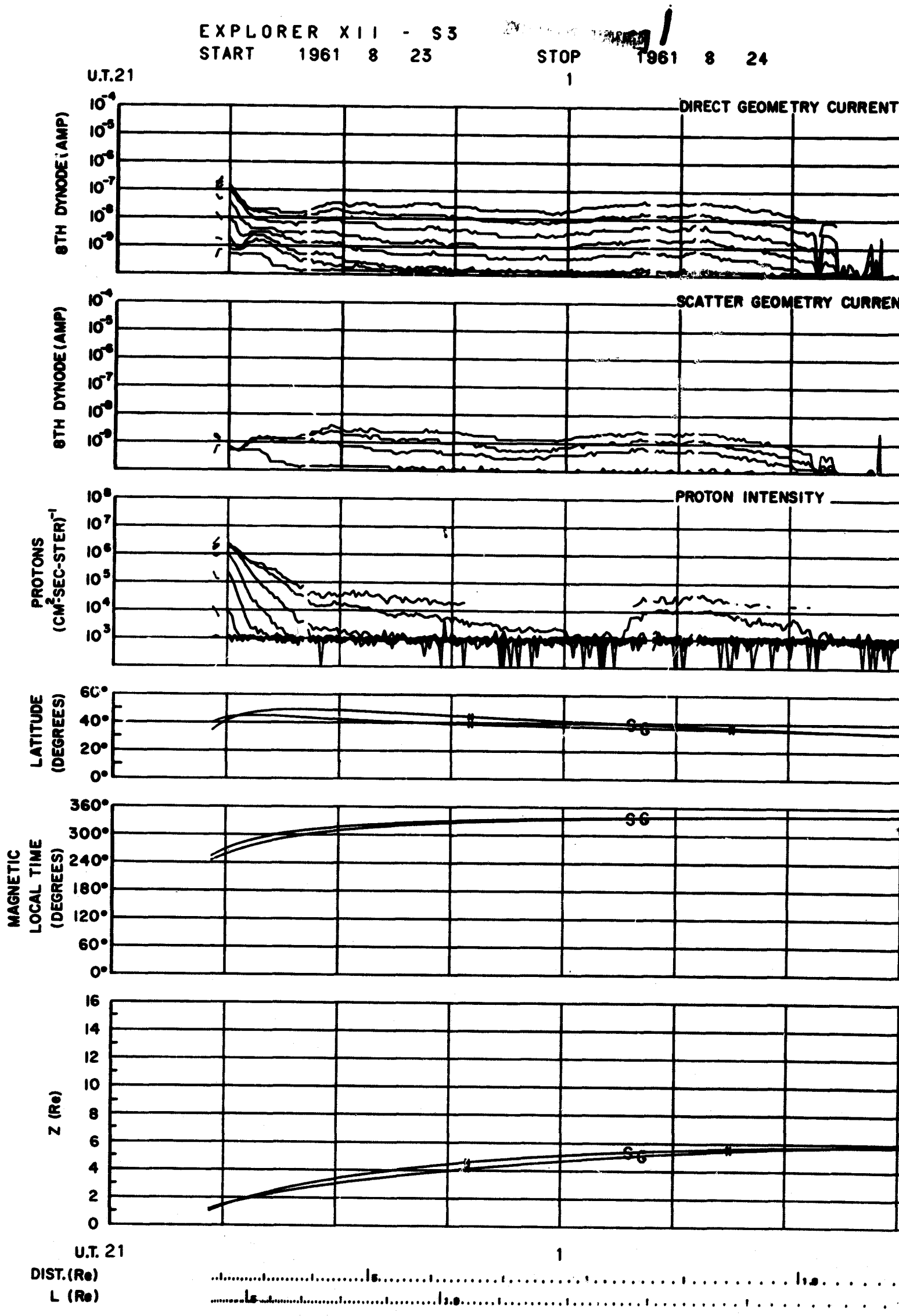
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STOP 1961 8 24
U.T.21
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SCATTER GEOMETRY CURREN
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 21
1
DIST. (Re)
L (Re)

8 24

2

5 9

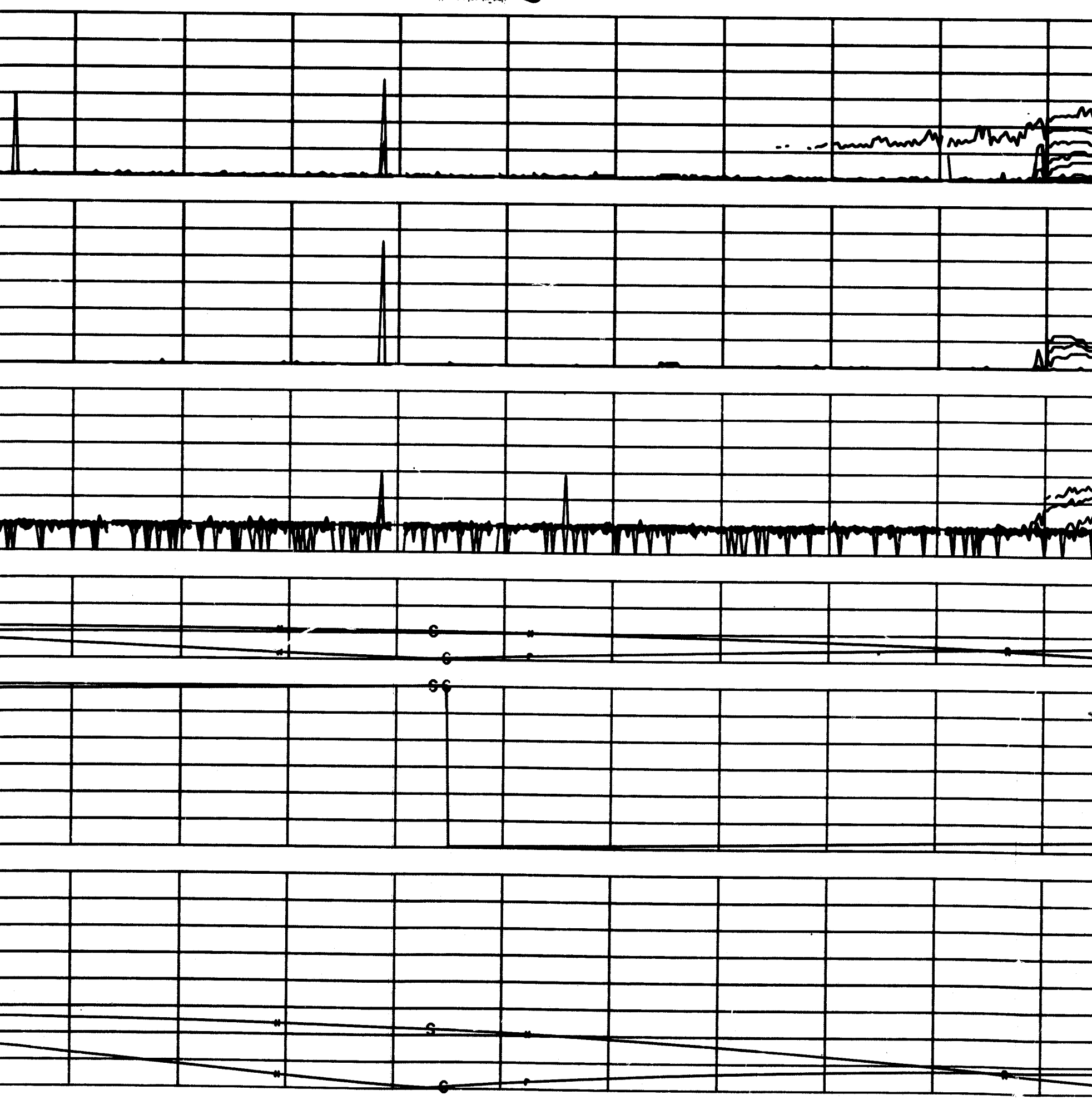
DIRECT GEOMETRY CURRENT

SCATTER GEOMETRY CURRENT

PROTON INTENSITY

5 9

13 FOLDOUT FRAME 3 17



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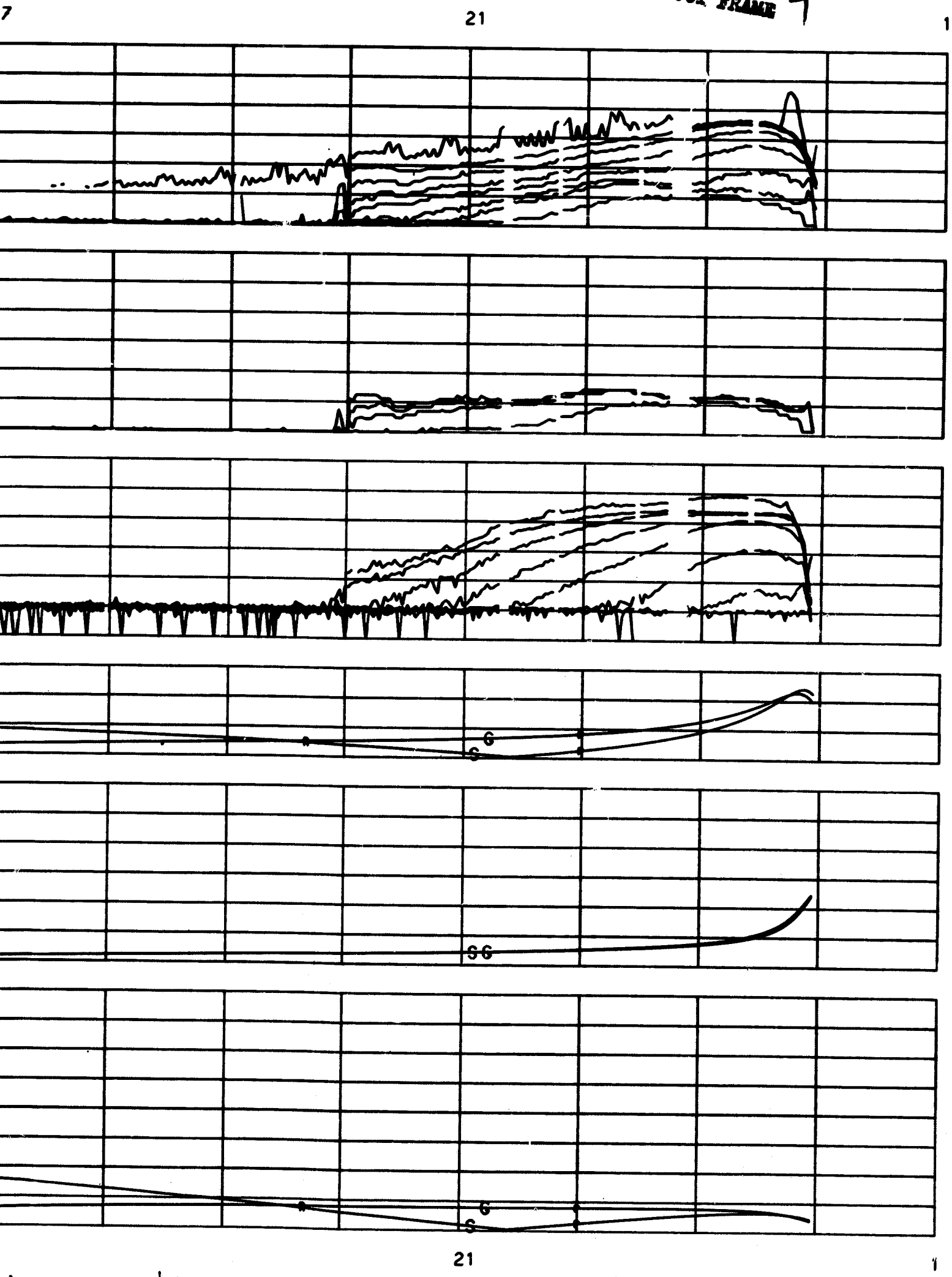

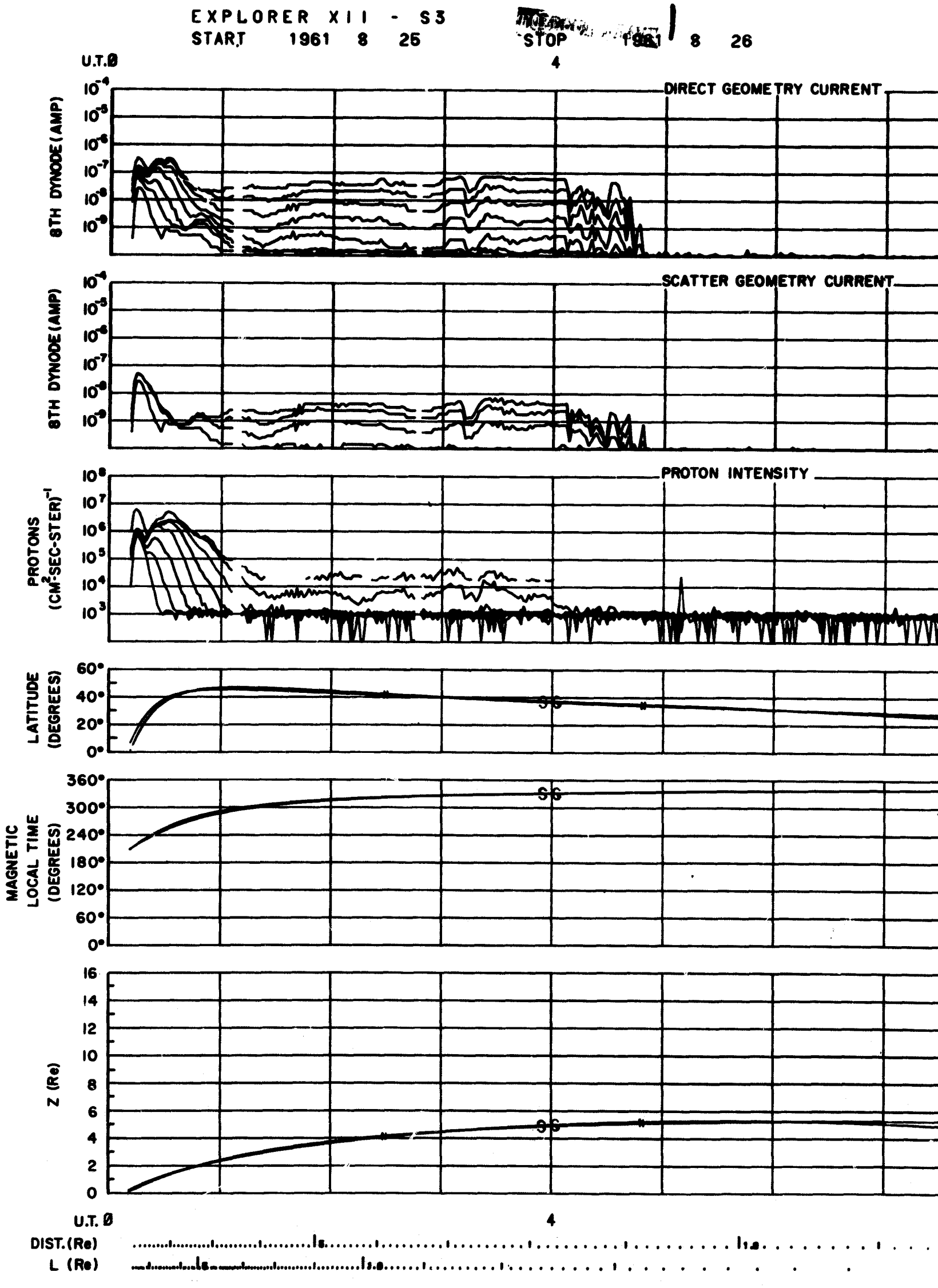
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U.T.Ø
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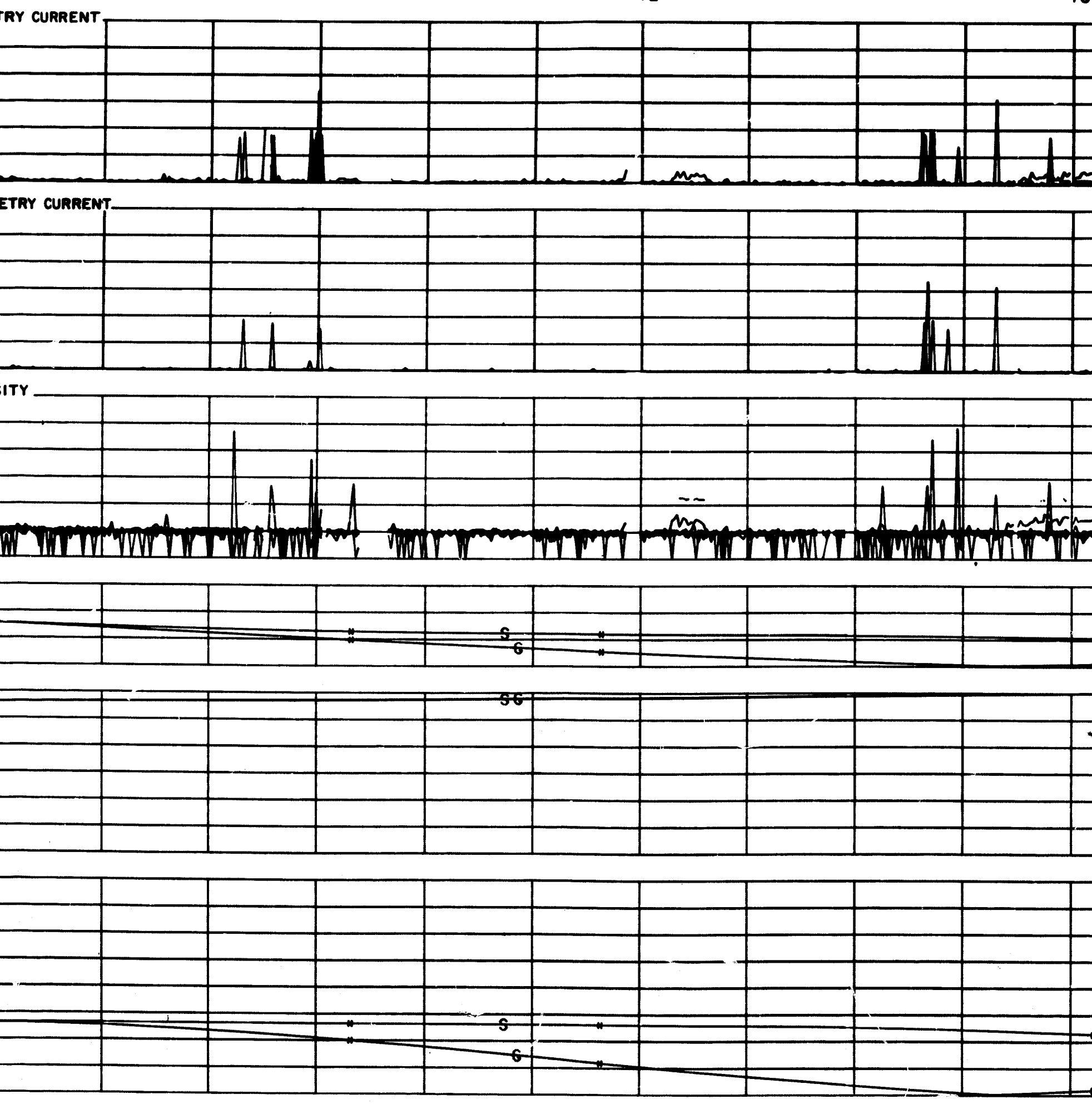
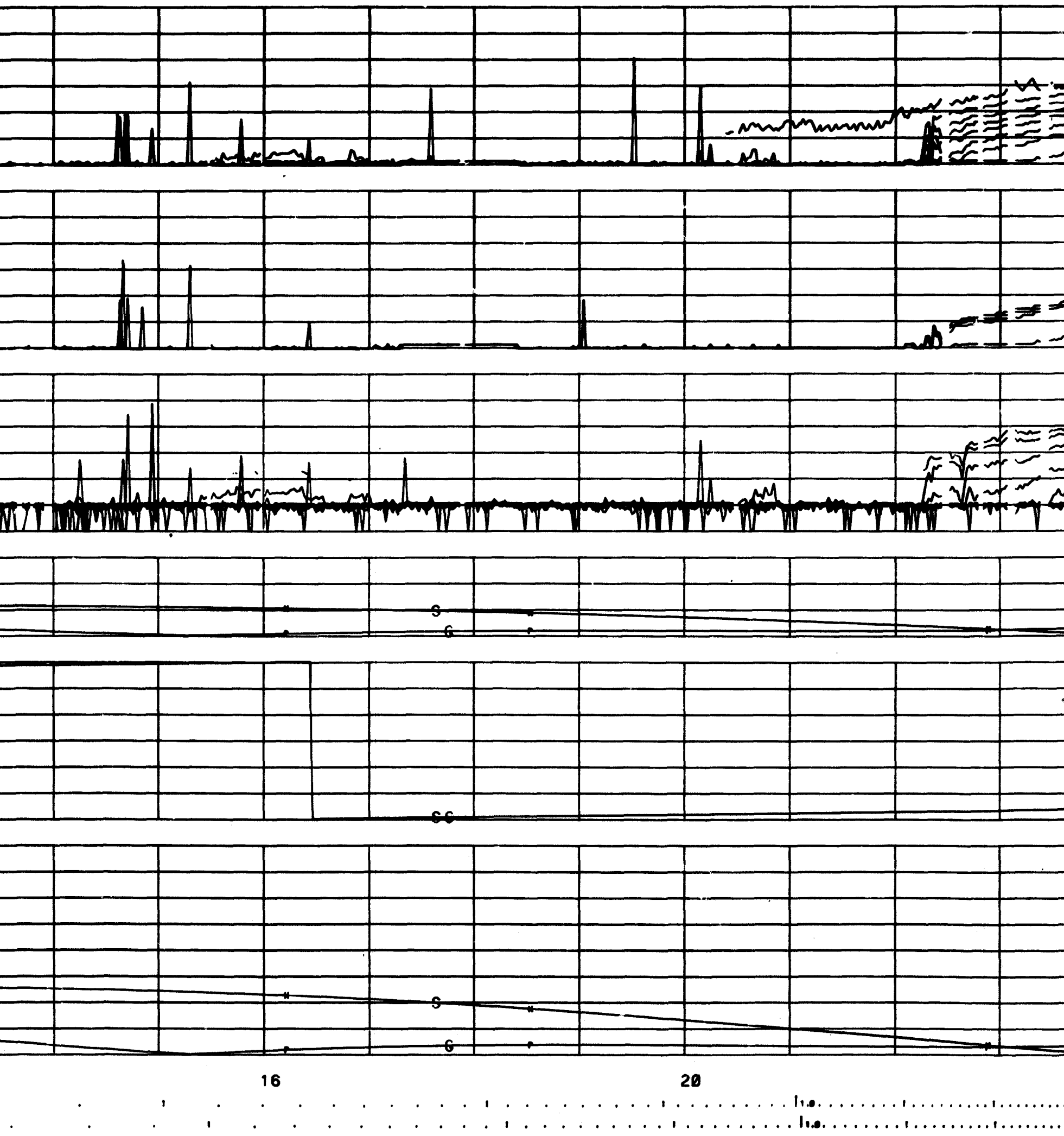
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. Ø
4
DIST. (Re)
L (Re)

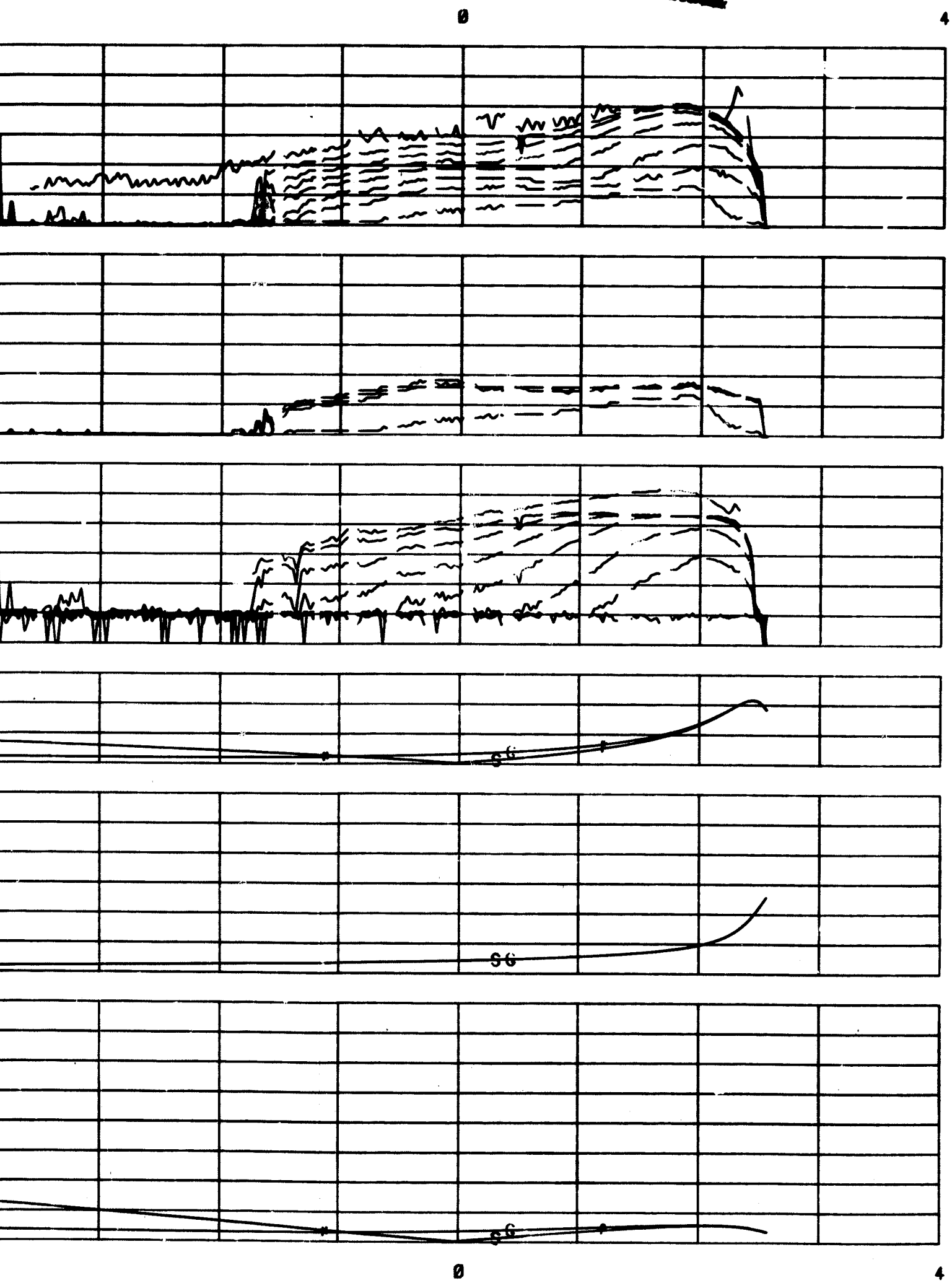
2

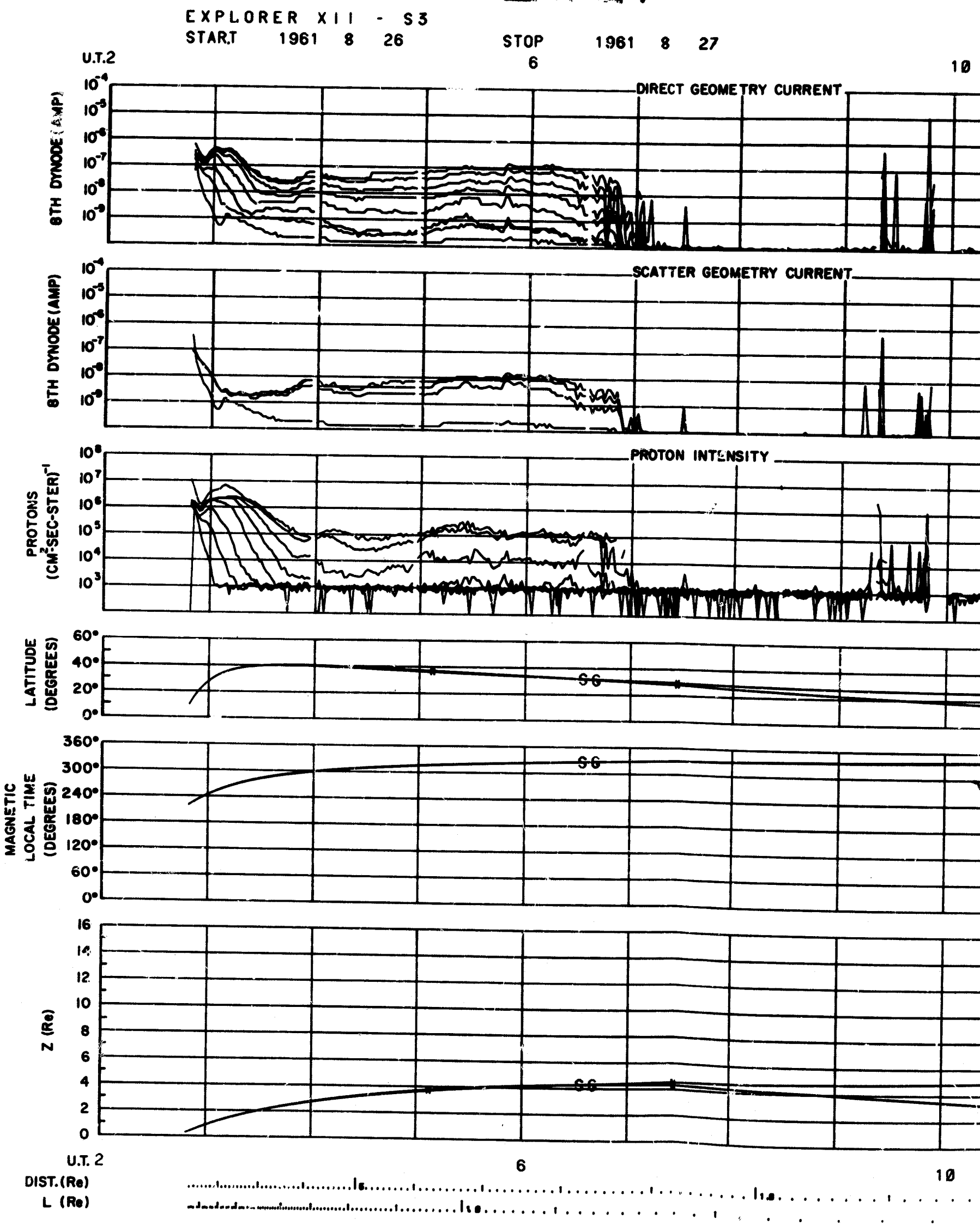


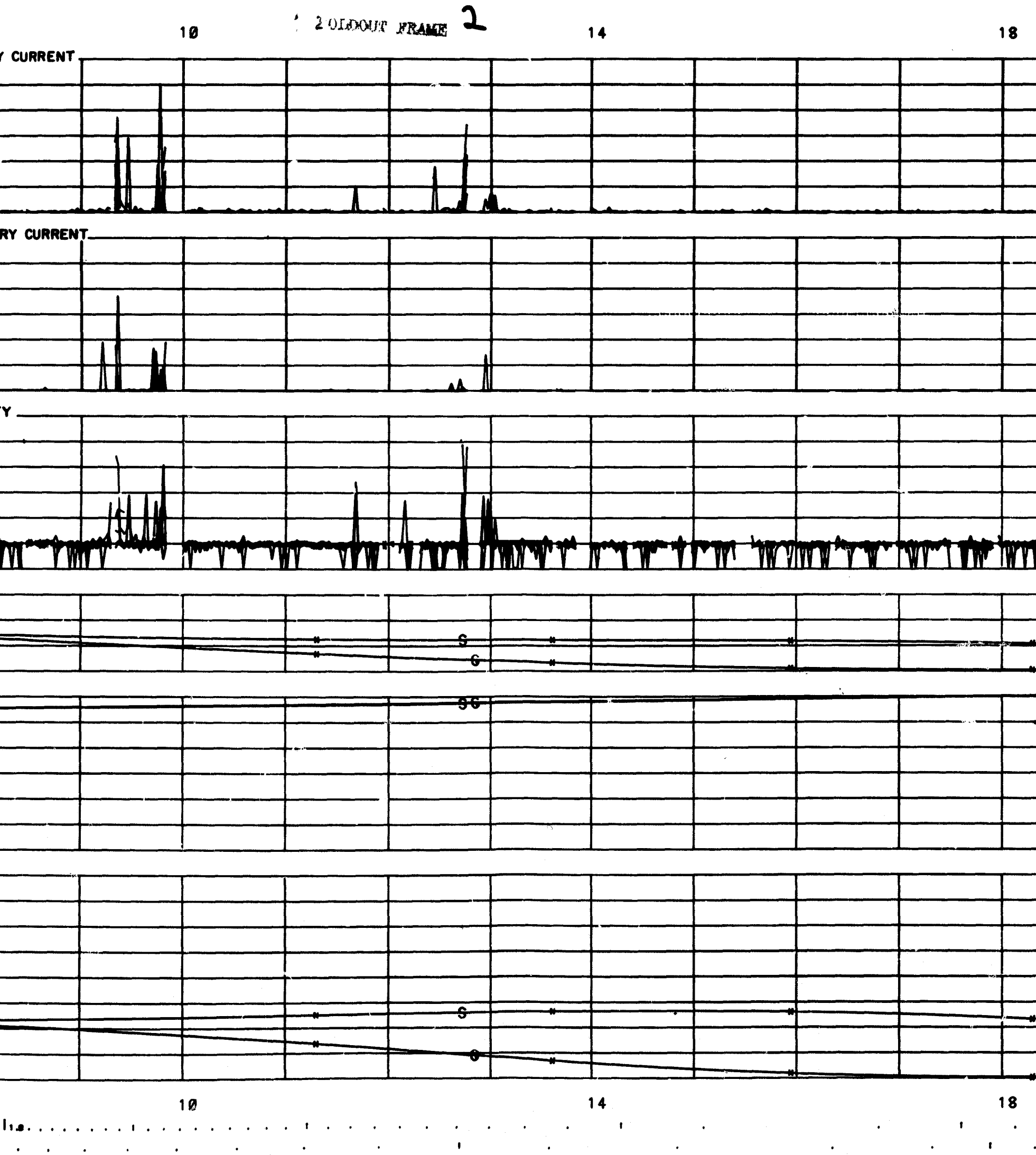
FOLDOUT FRAME 3



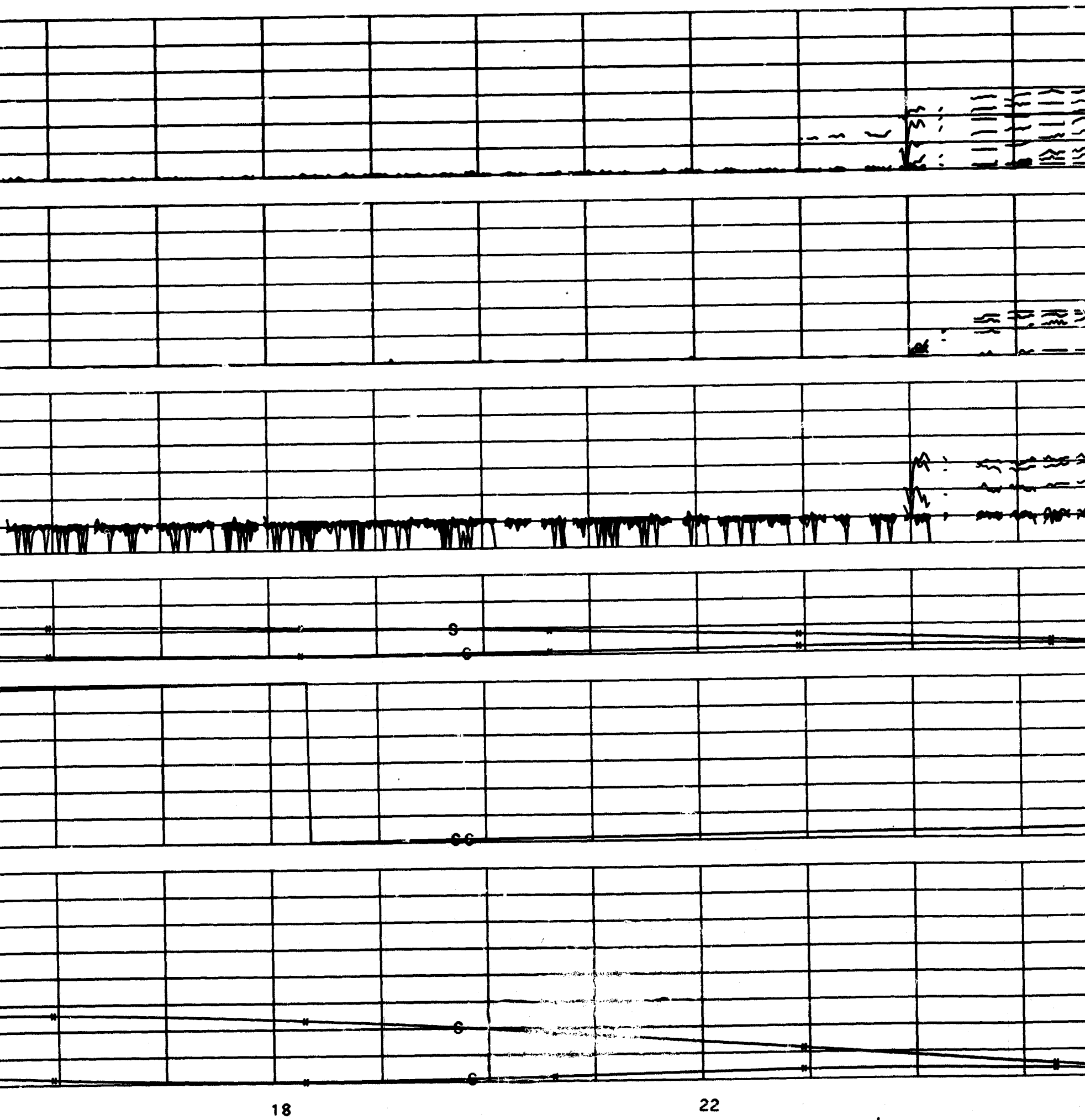
FOLDOUT FRAME 4



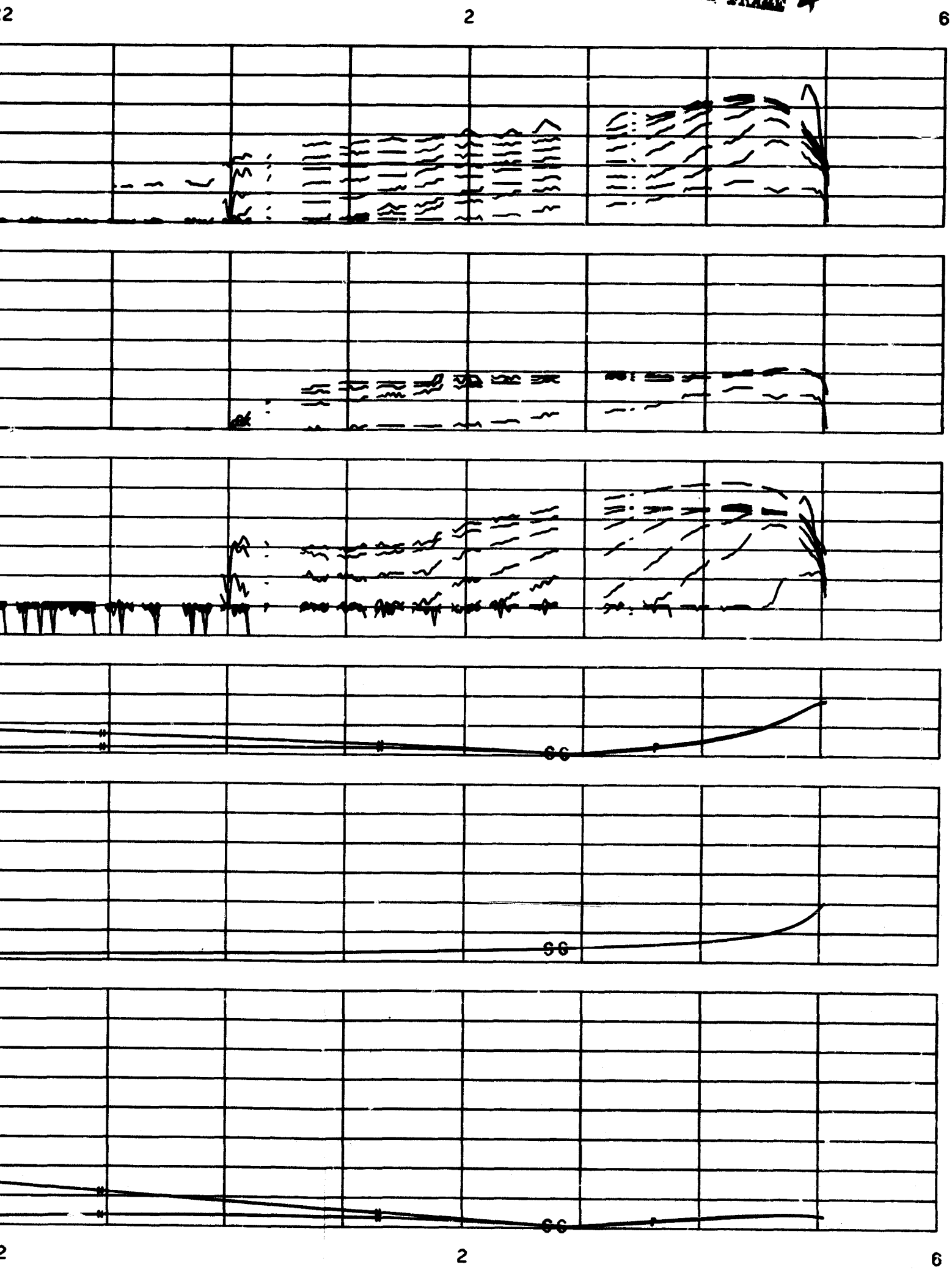

EXPLORER XII - S3
START 1961 8 26
STOP 1961 8 27
U.T.2
6
10
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
SG
MAGNETIC LOCAL TIME (DEGREES)
SG
Z (Re)
SG
U.T. 2
6
10
DIST. (Re)
L (Re)

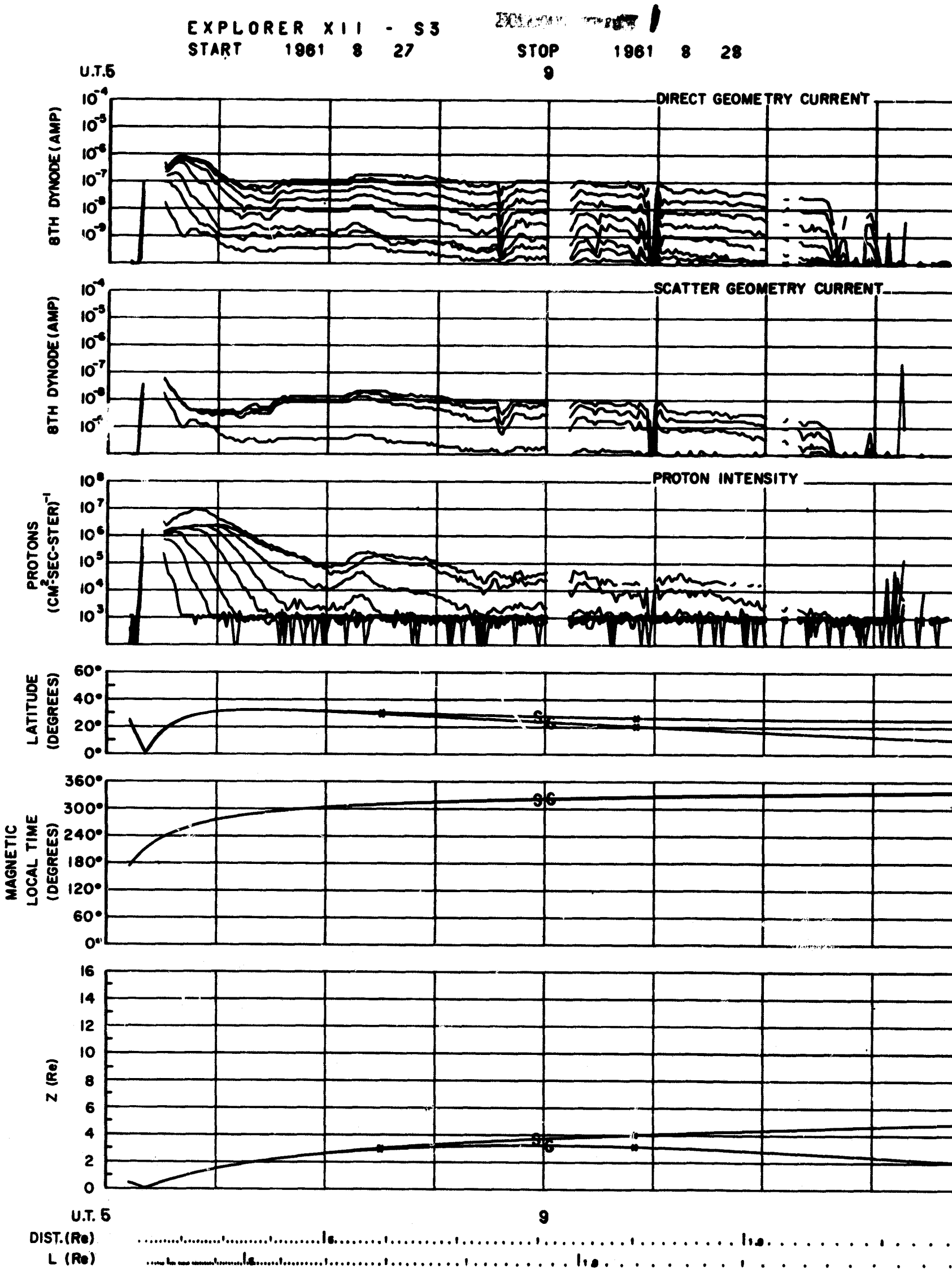

FOLDOUT FRAME 2
10
14
18
Y CURRENT
RY CURRENT
TY
S
G
SG
S
G
10
14
18

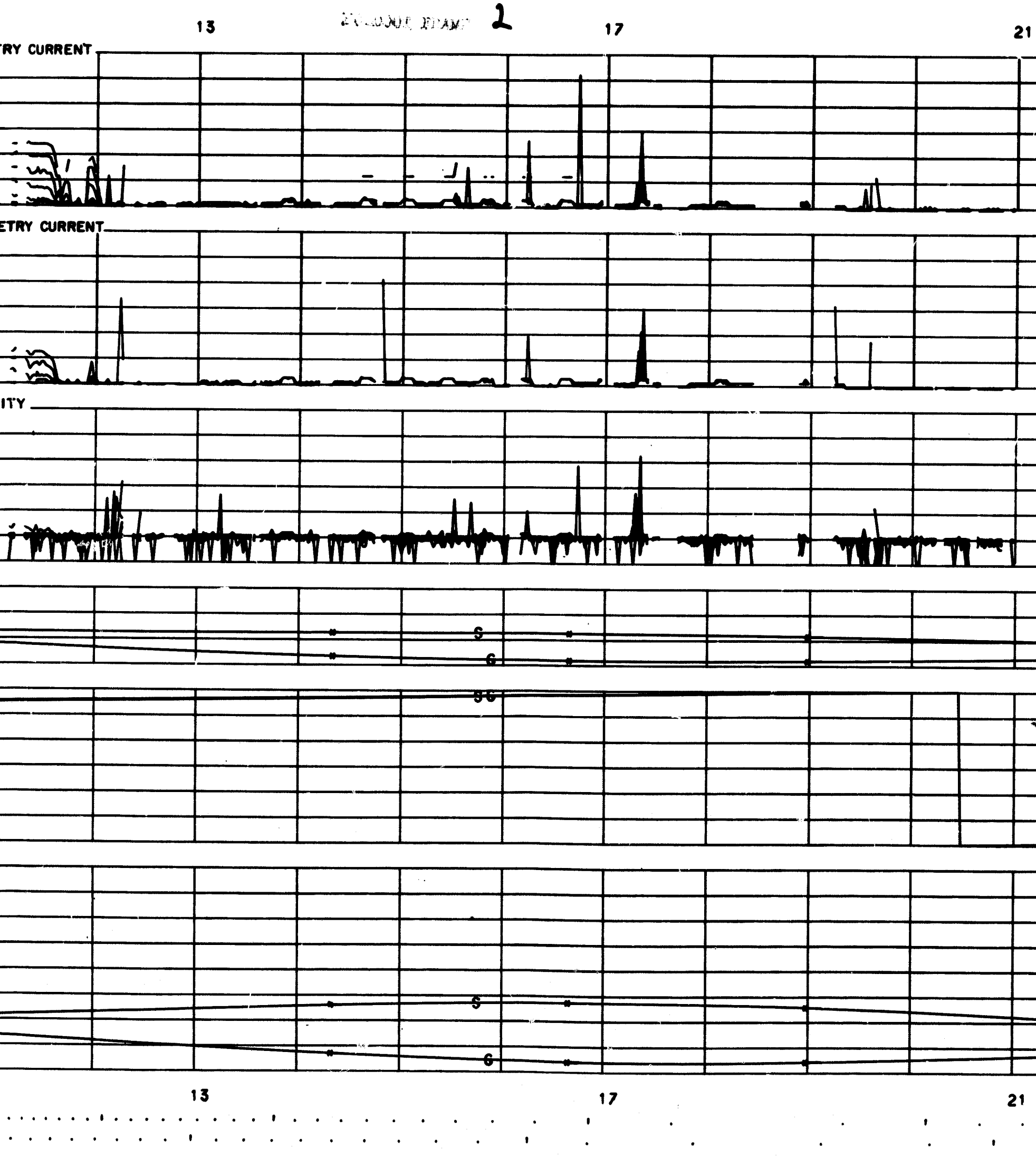
FOLDOUT FRAME 3



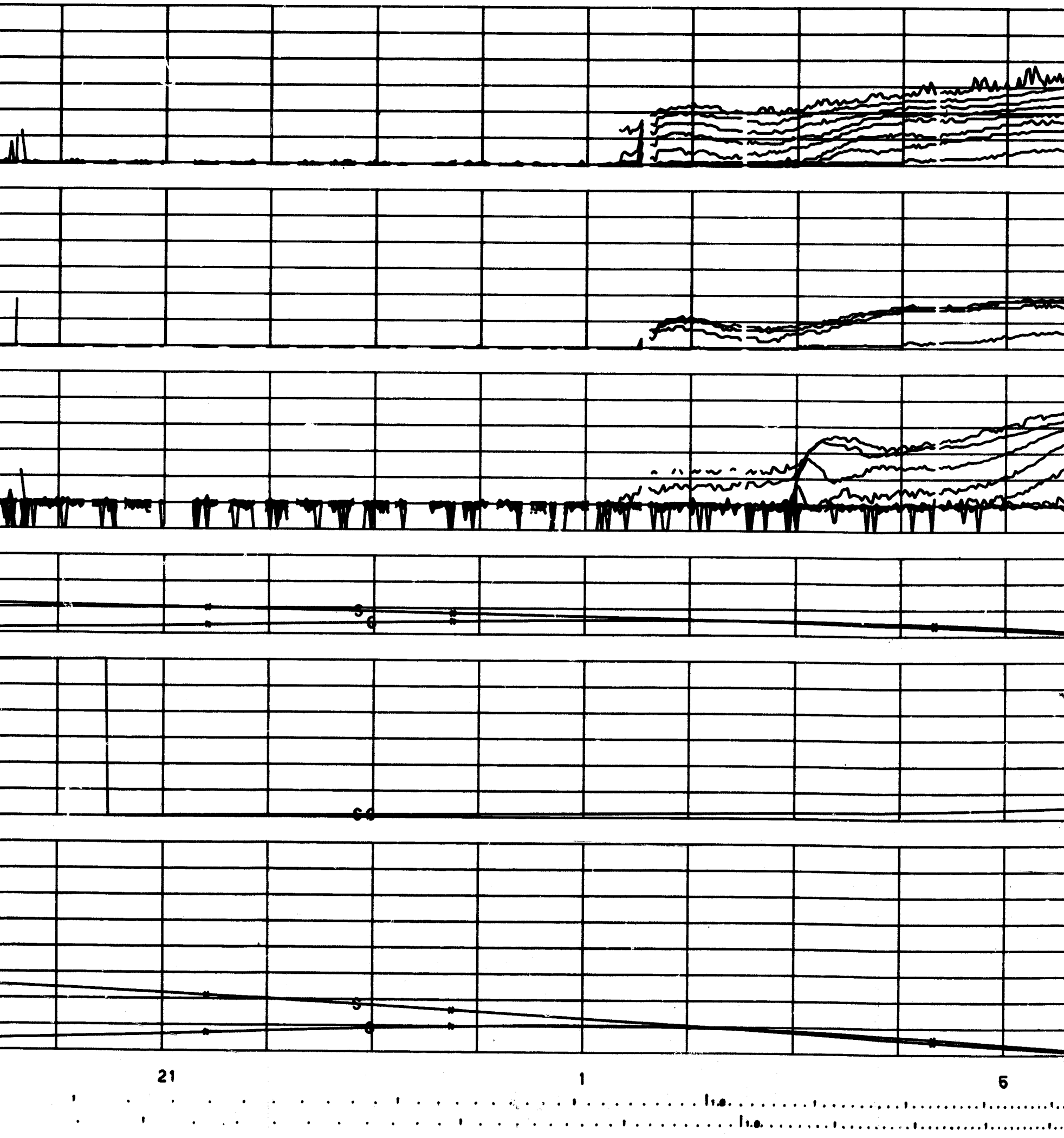
FOLDOUT FRAME 4




EXPLORER XII - S3
START 1961 8 27
STOP 1961 8 28
U.T.5
9
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 5
9
DIST. (Re)
L (Re)


13
2
17
21
RY CURRENT
ETRY CURRENT
ITY
S
G
SG
S
G
13
17
21

FOLDOUT FRAME 3



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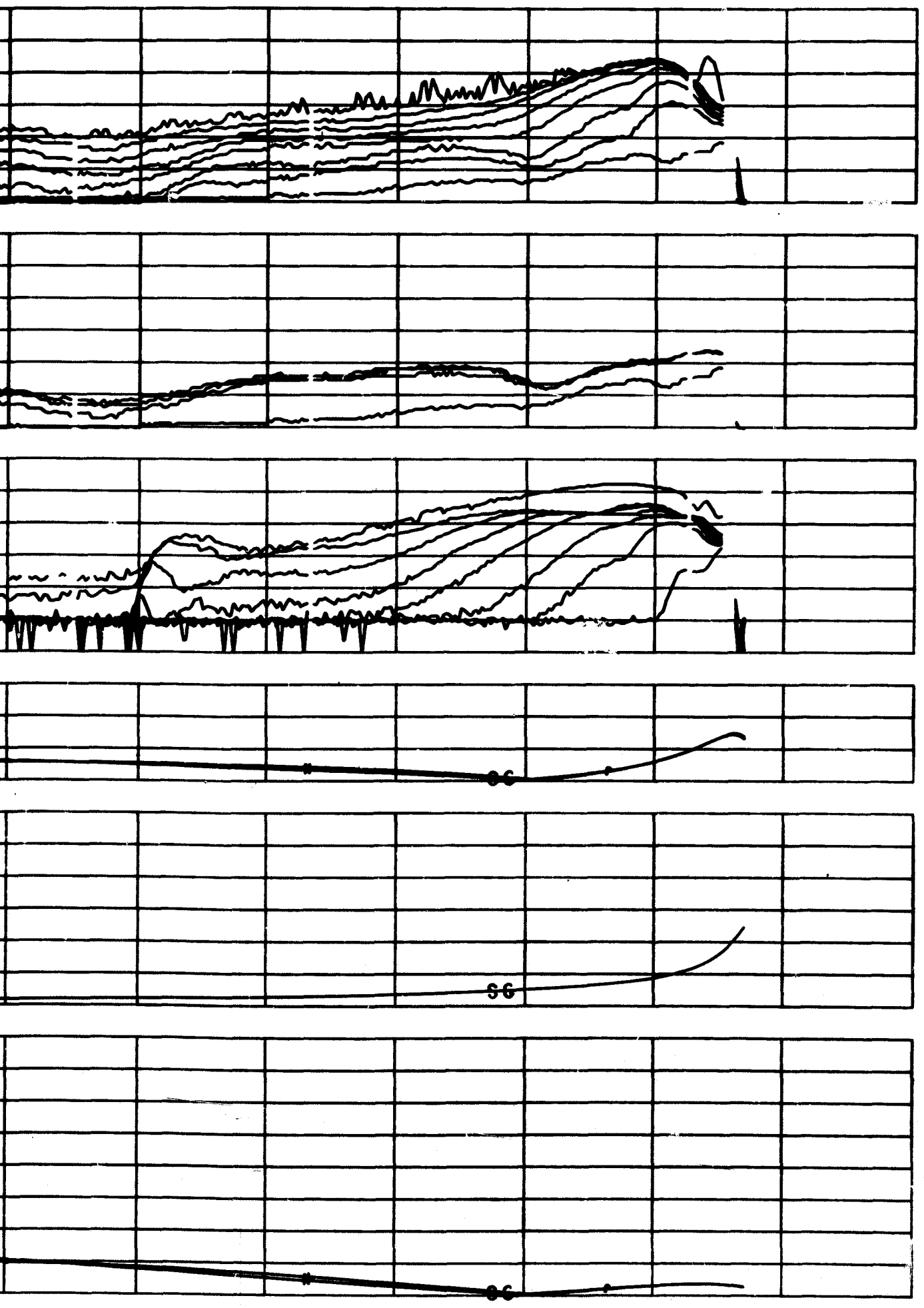
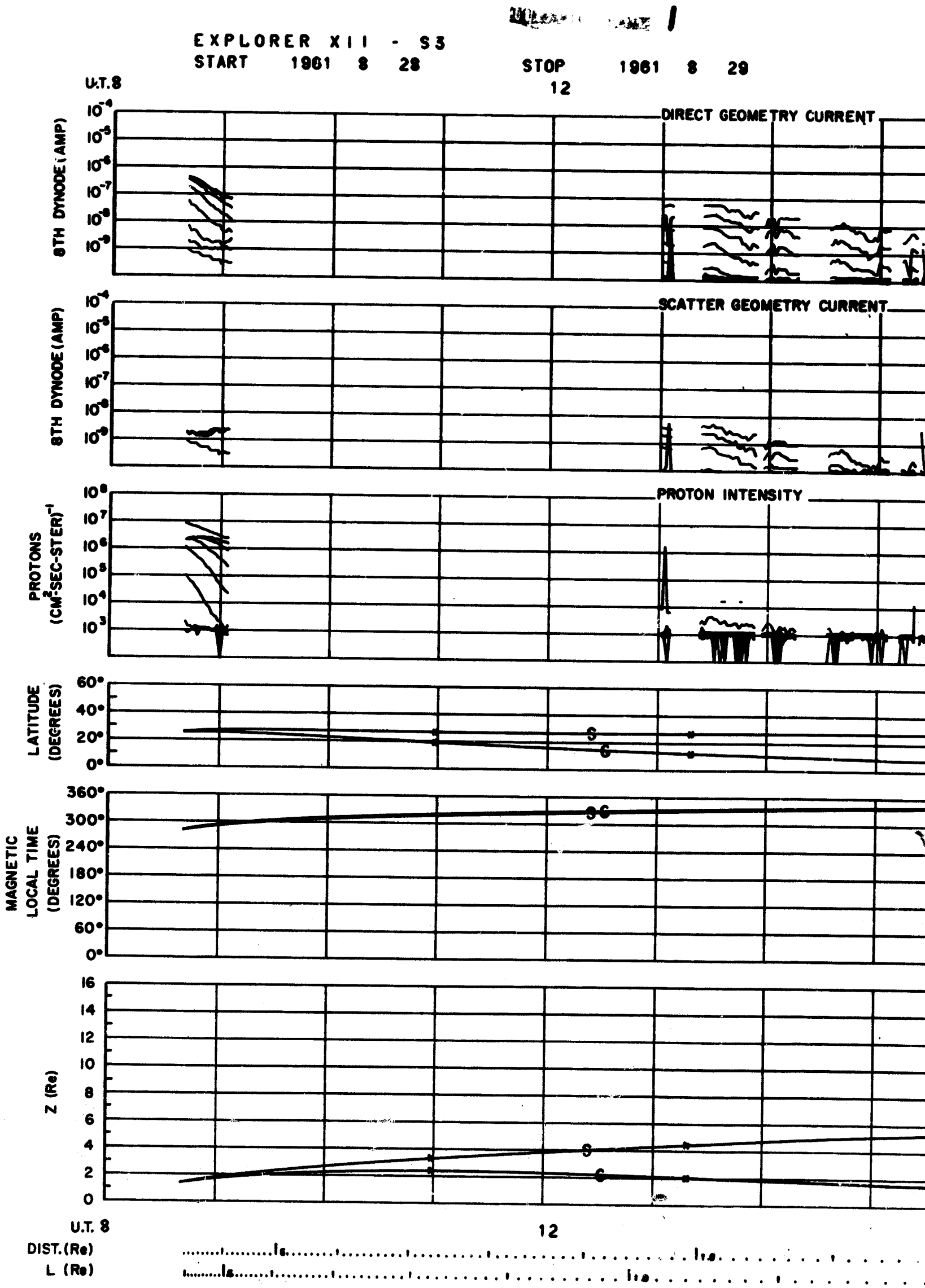



EXPLORER XII - S3
START 1961 8 28
STOP 1961 8 29
U.T.8
12
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM-2-SEC-STER)-1
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 8
12
DIST. (Re)
L (Re)

29 16 23

INSERT FRAME 2

FO

T GEOMETRY CURRENT

ER GEOMETRY CURRENT

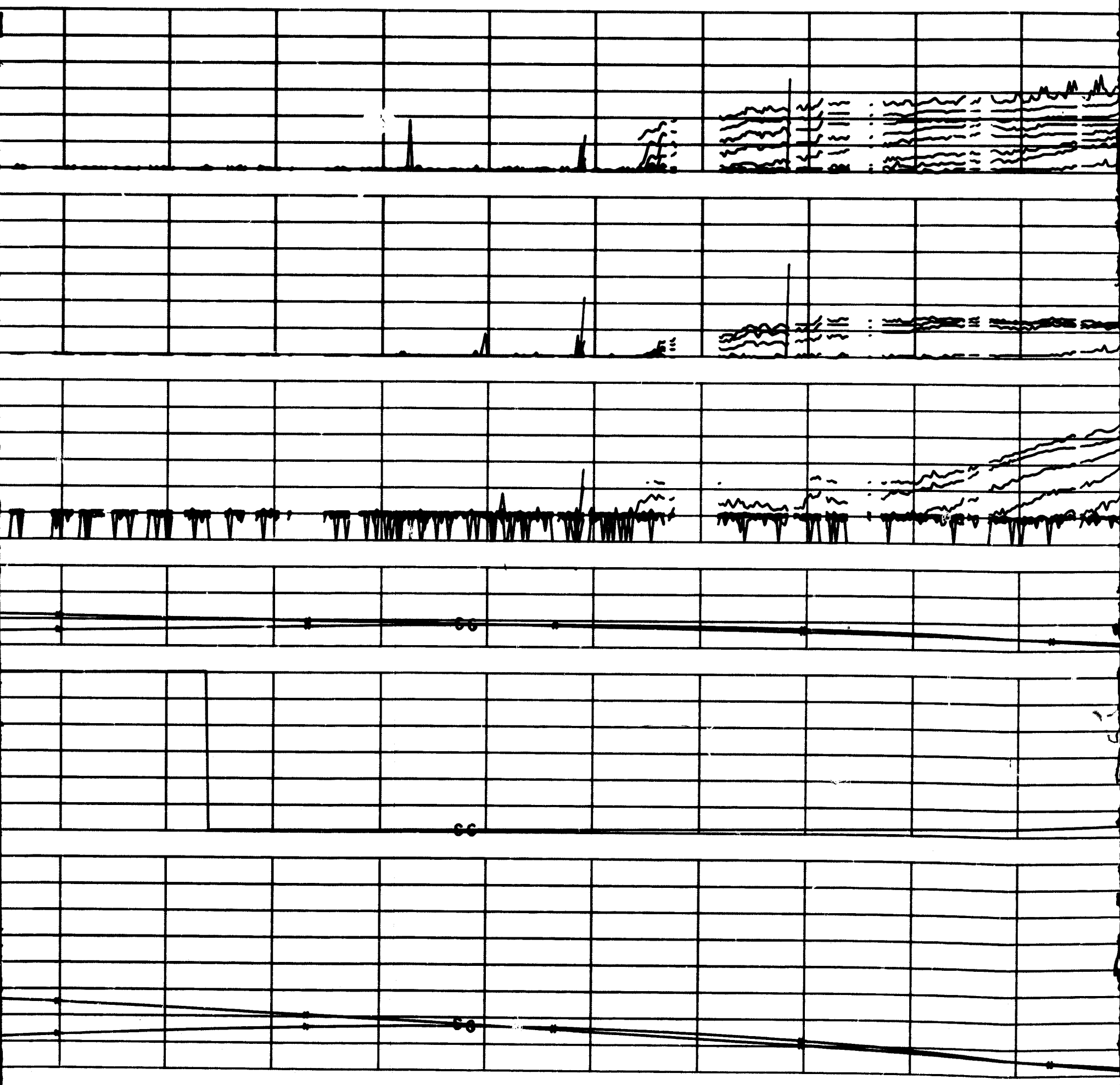
N INTENSITY

S

G

FOLDOUT FRAME 3

FOLDOUT FRAME



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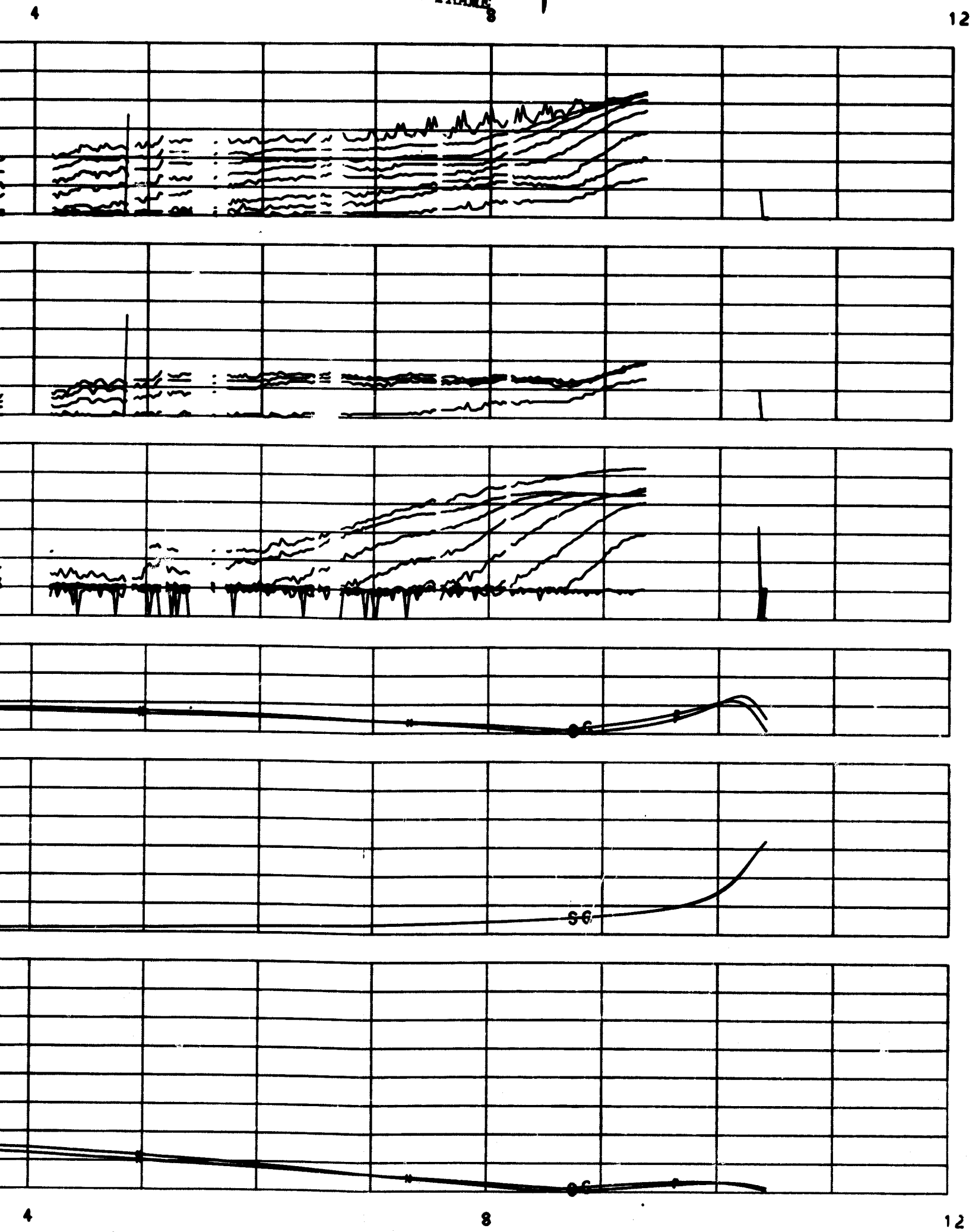
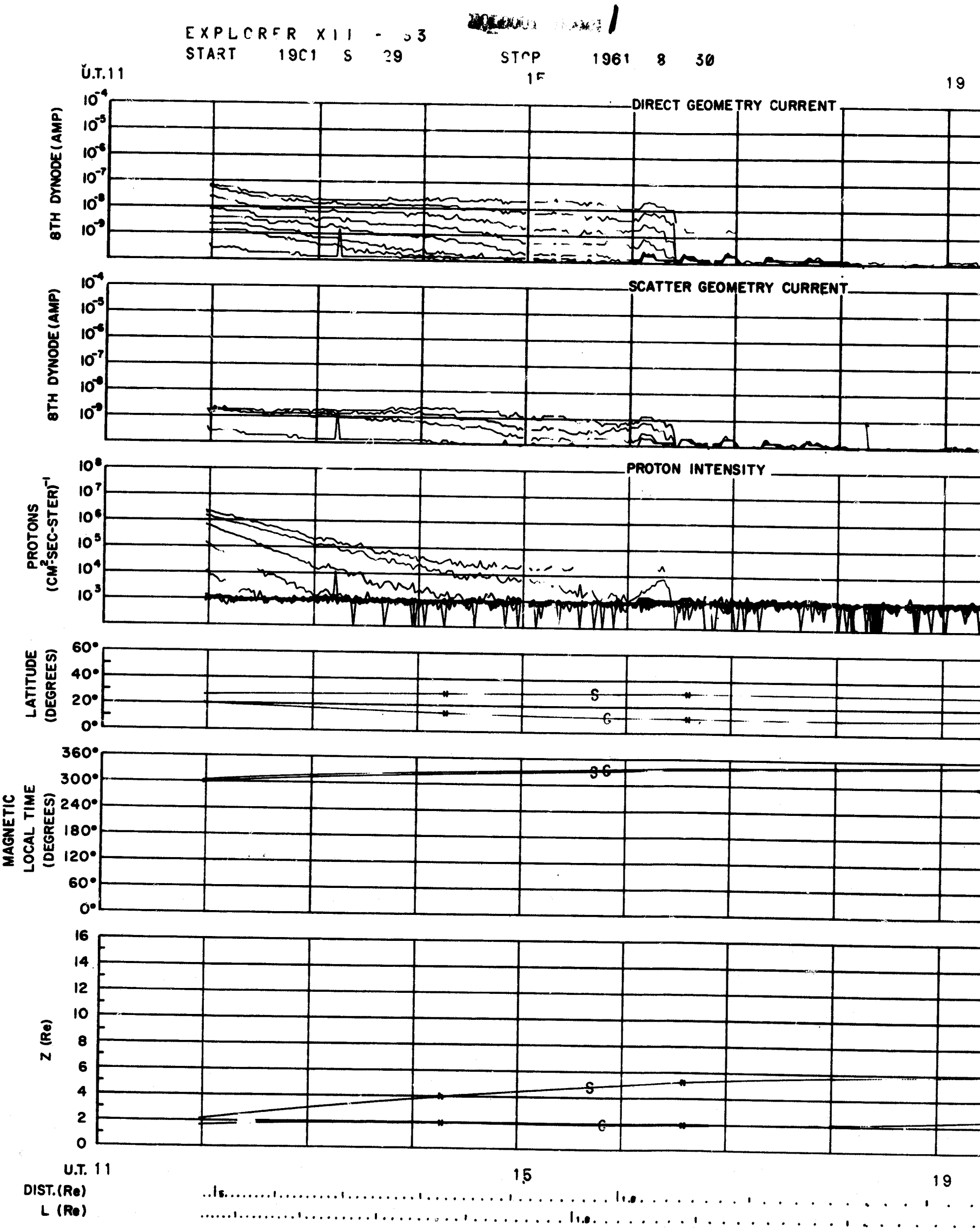
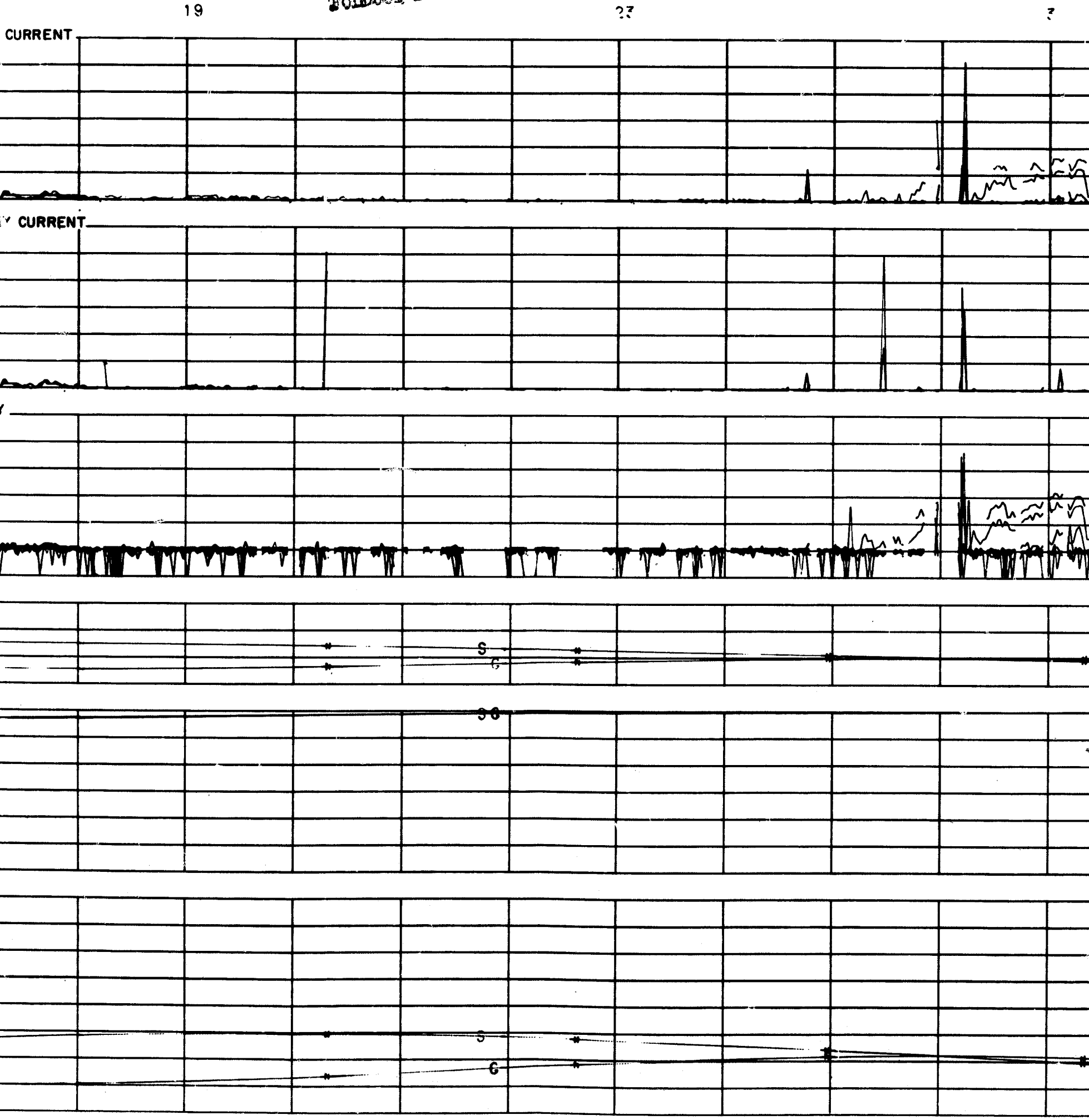



EXPLORER XII - 53
START 1961 8 29
STOP 1961 8 30
U.T. 11
15
19
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
S
G
MAGNETIC LOCAL TIME (DEGREES)
S G
Z (Re)
S
G
U.T. 11
15
19
DIST. (Re)
L (Re)

FOLDOUT FRAME 2



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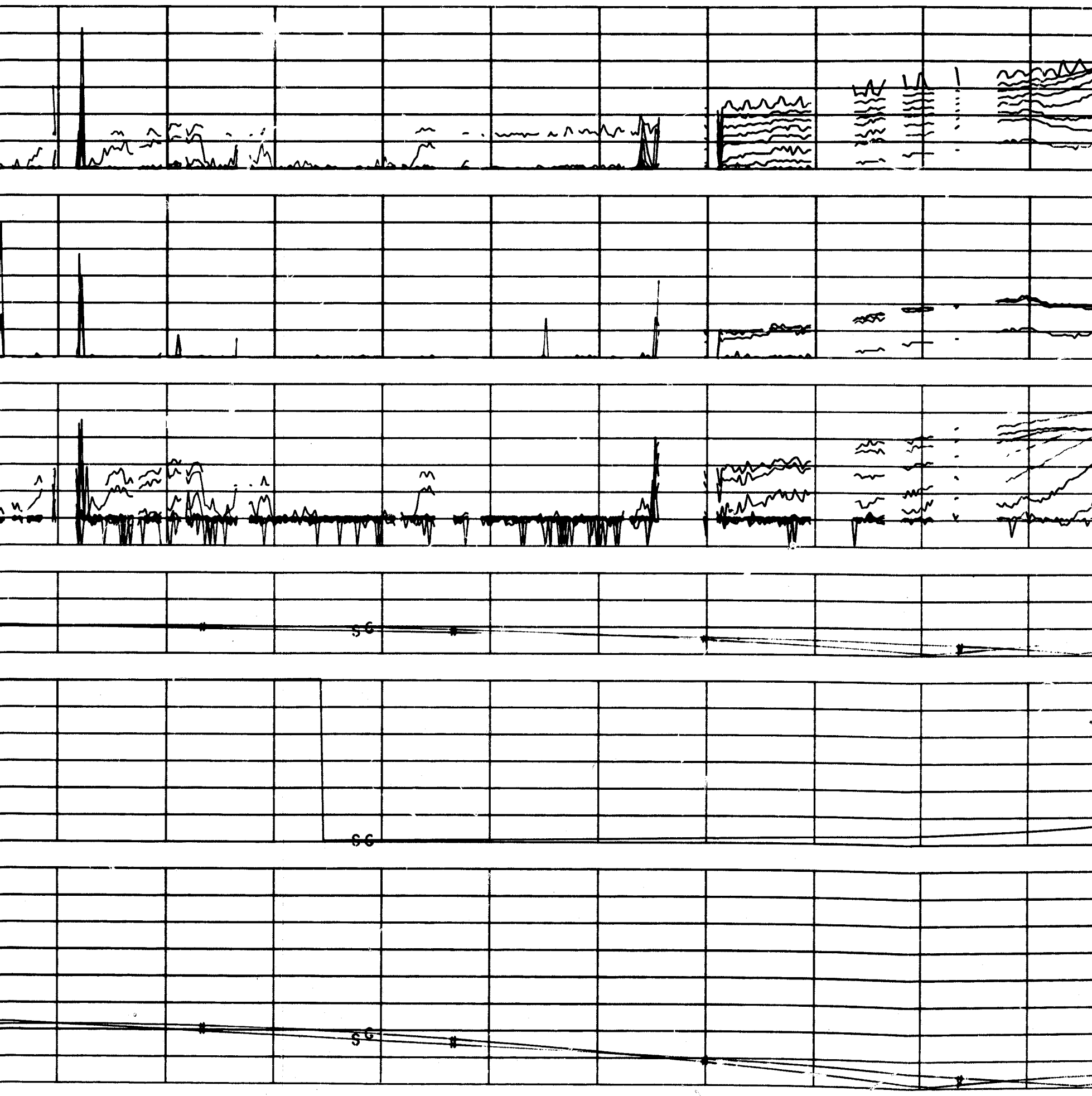
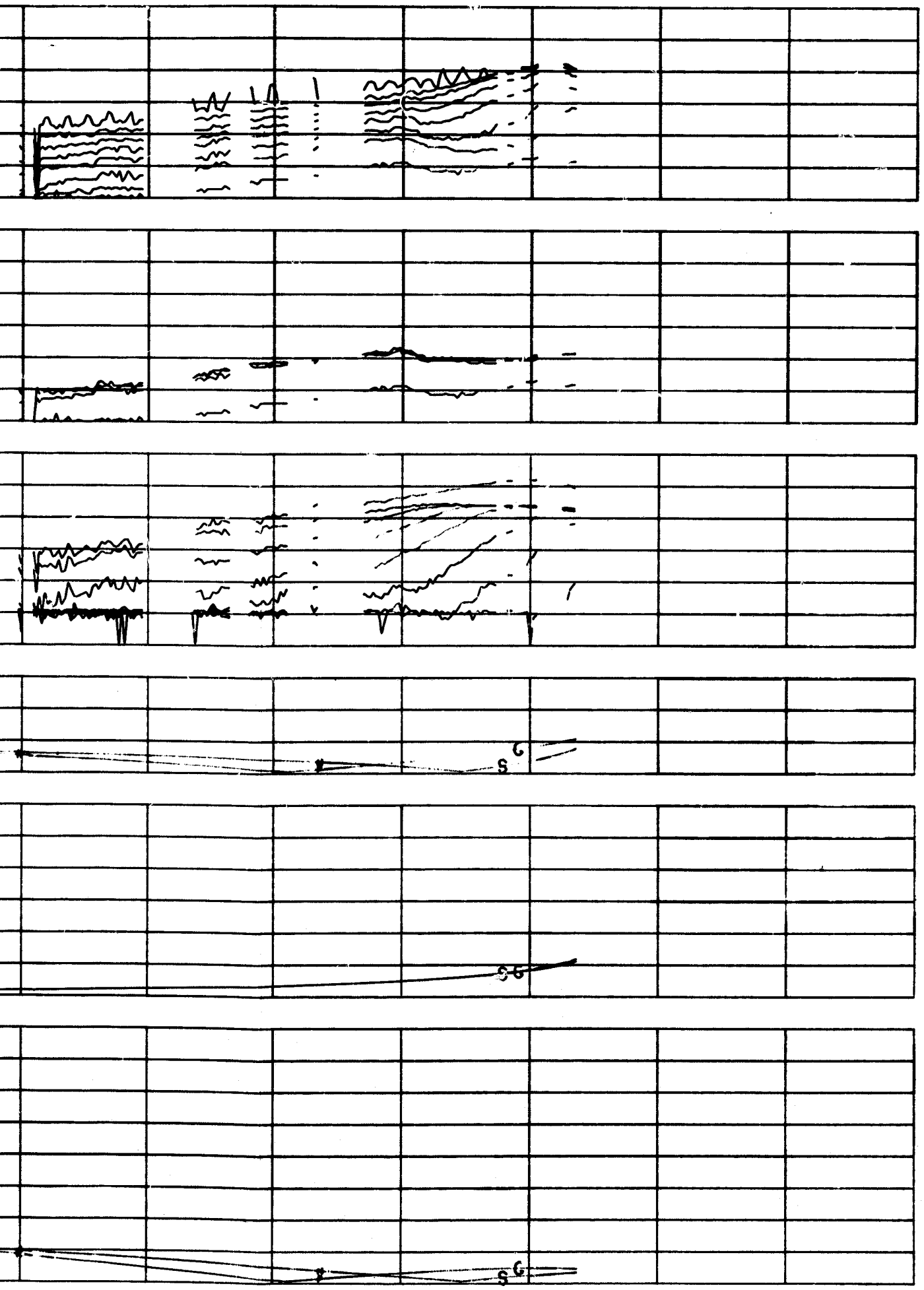
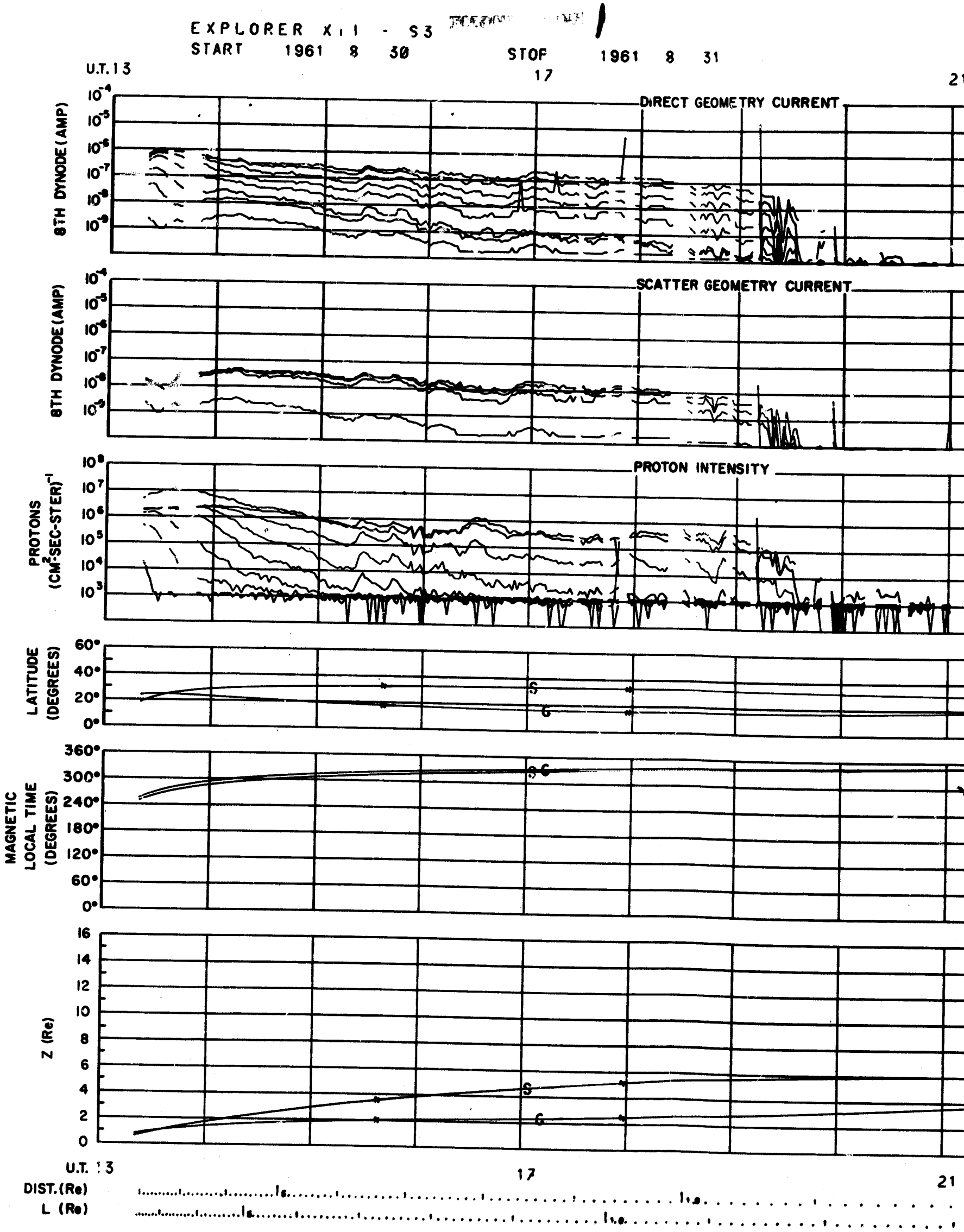


FOLDOUT FRAME 4

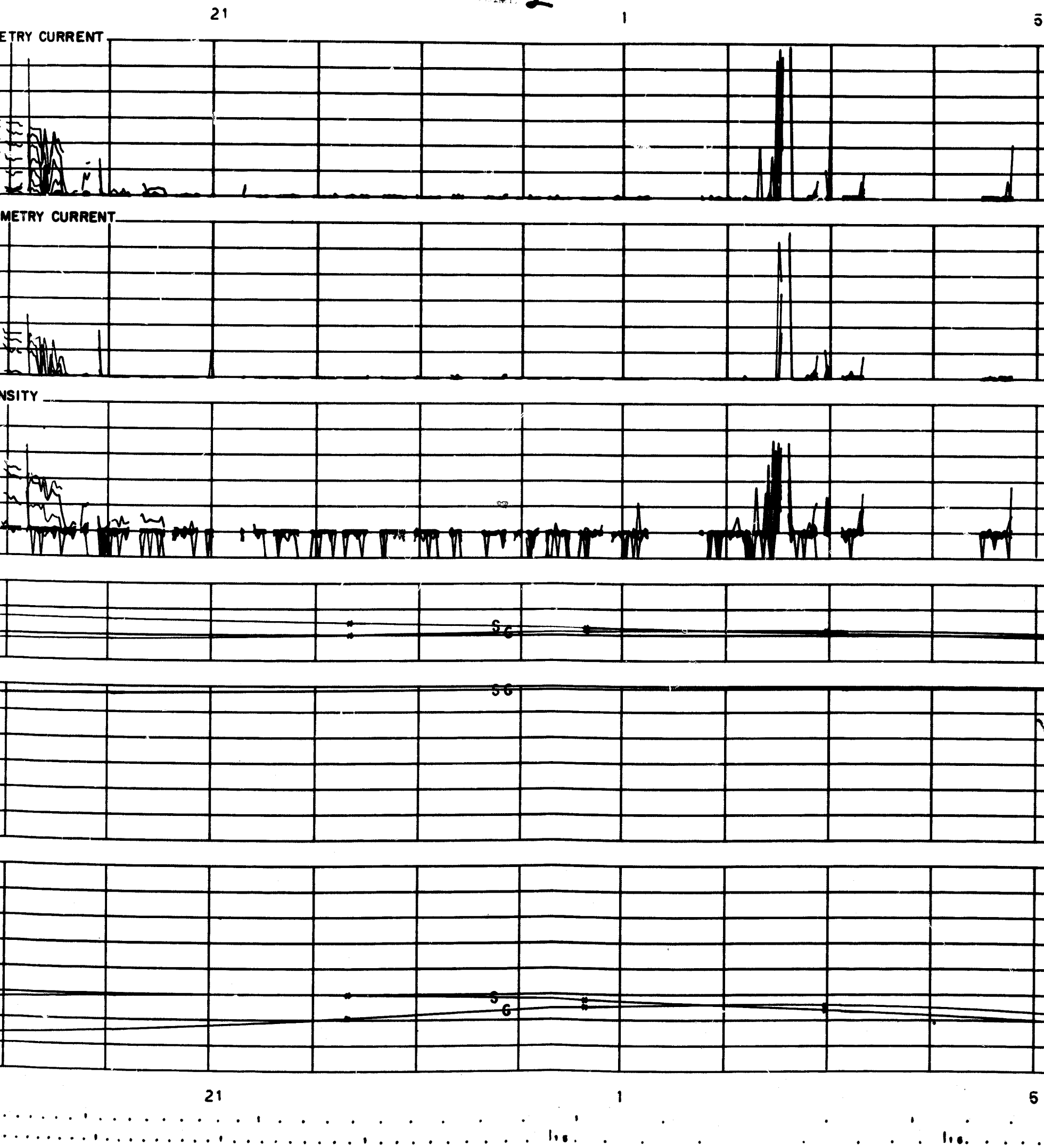
11 15



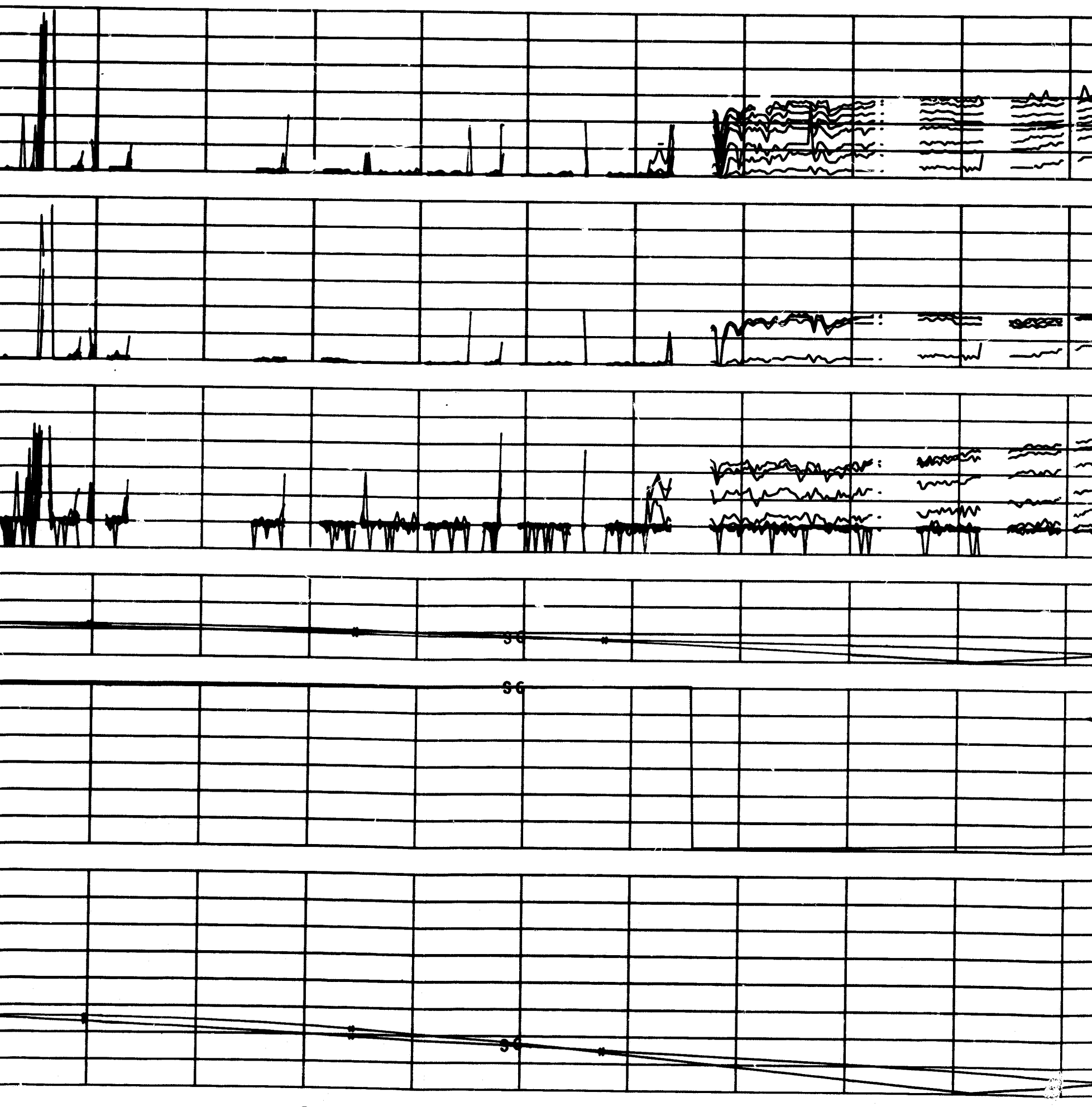
11 15


EXPLORER XII - S3
START 1961 8 30
STOP 1961 8 31
U.T. 13
17
21
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
DIST. (Re)
L (Re)

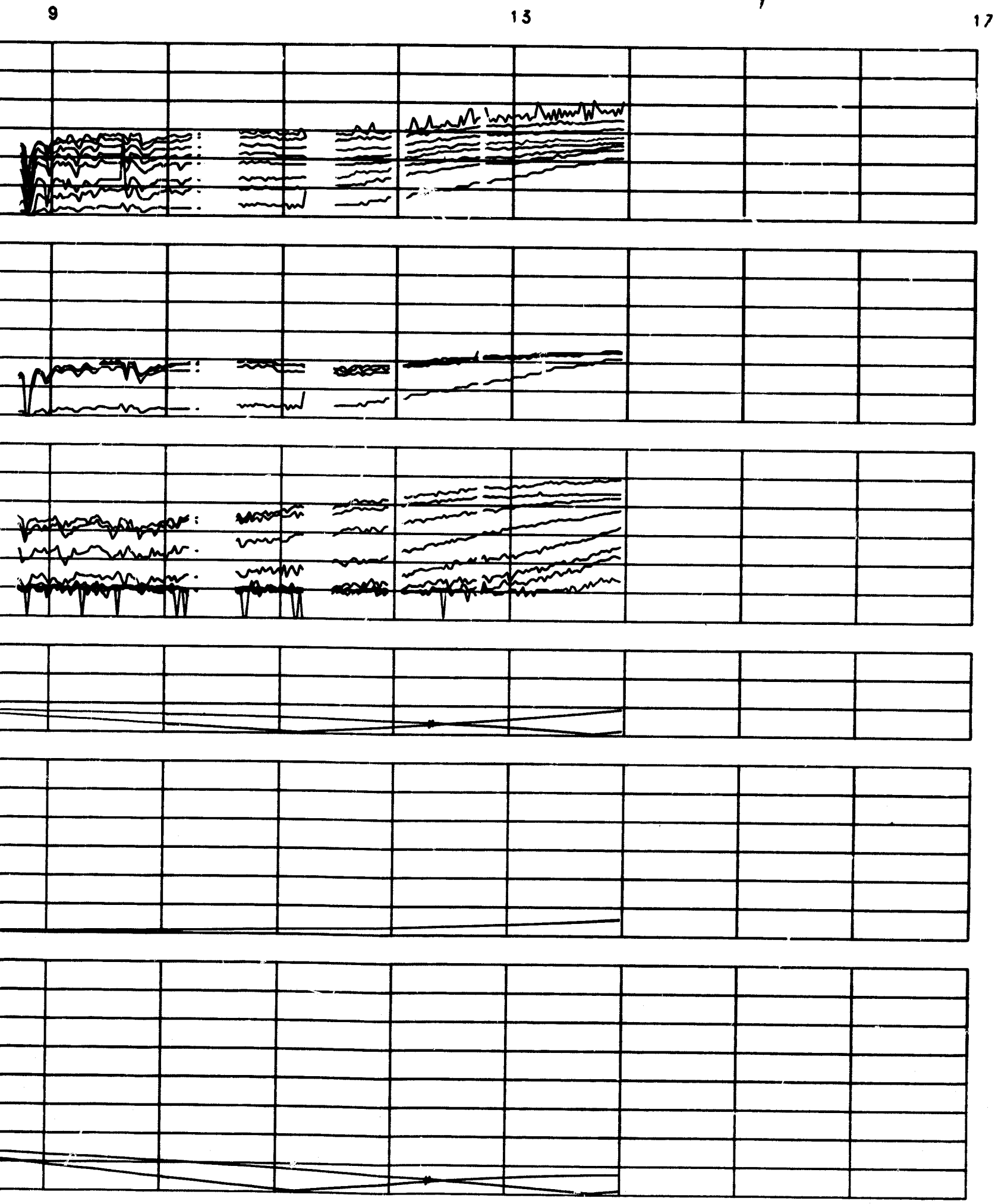
FOLDOUT FRAME 2



FOLDOUT FRAME 3

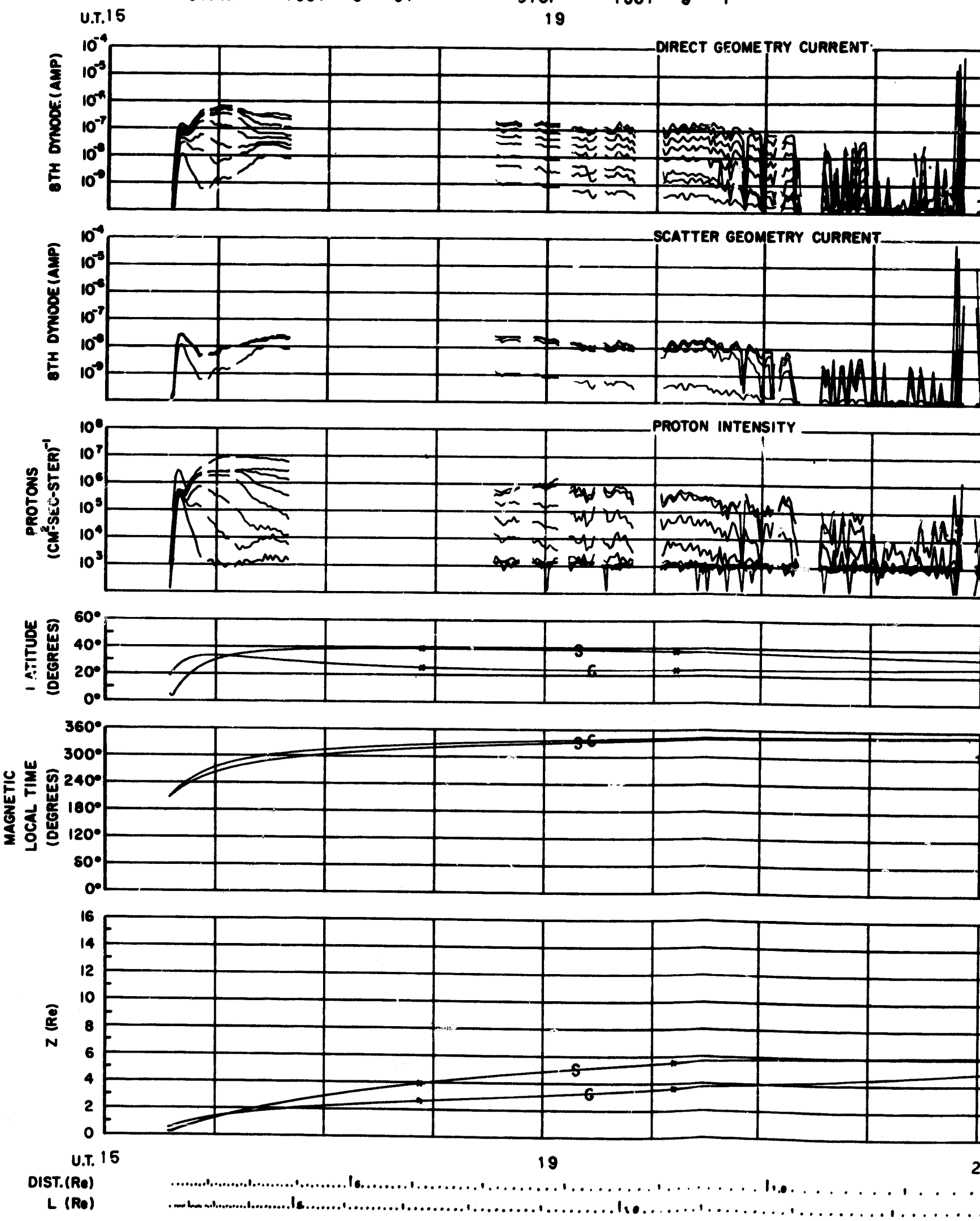


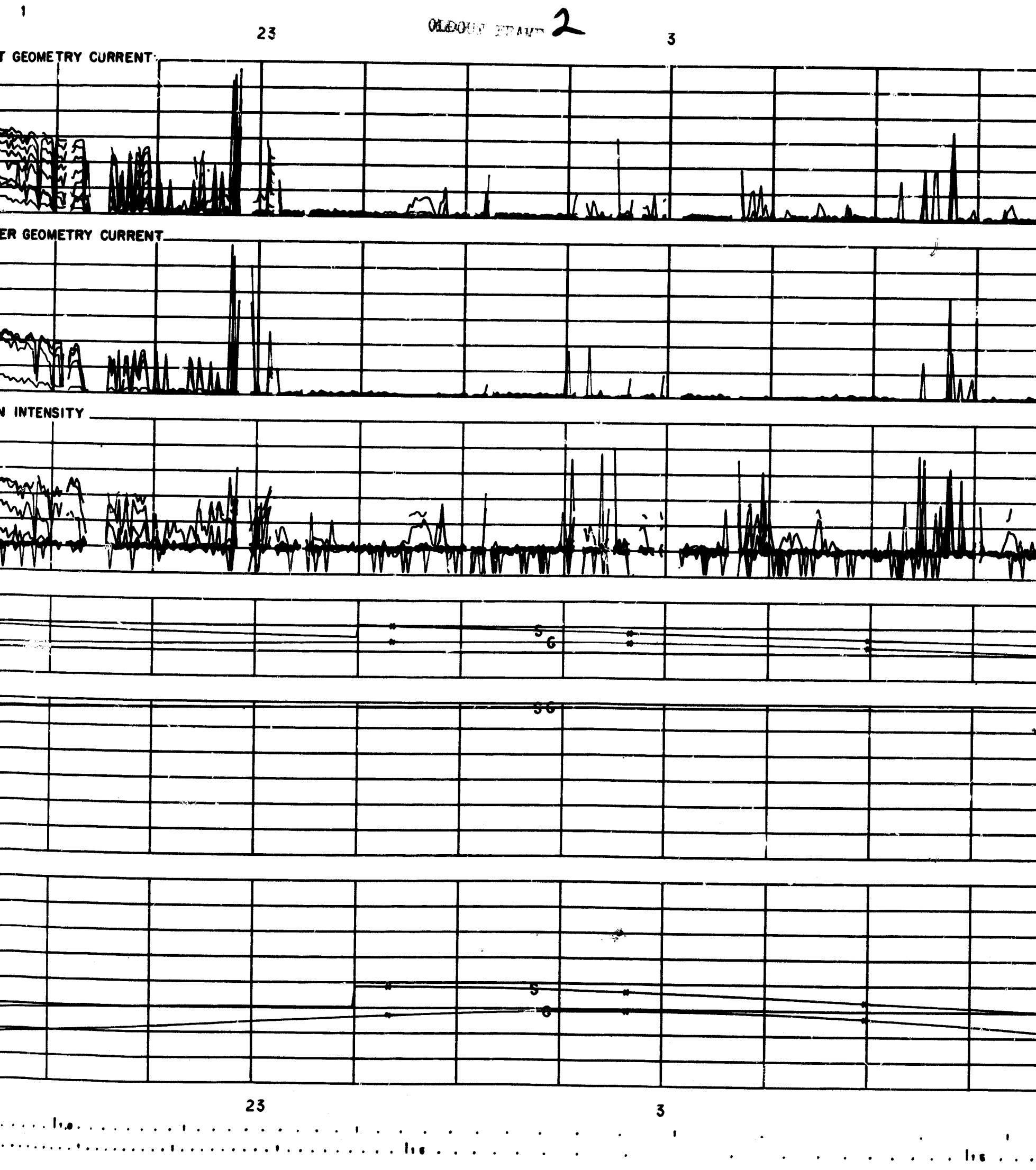
FOLDOUT FRAME 4



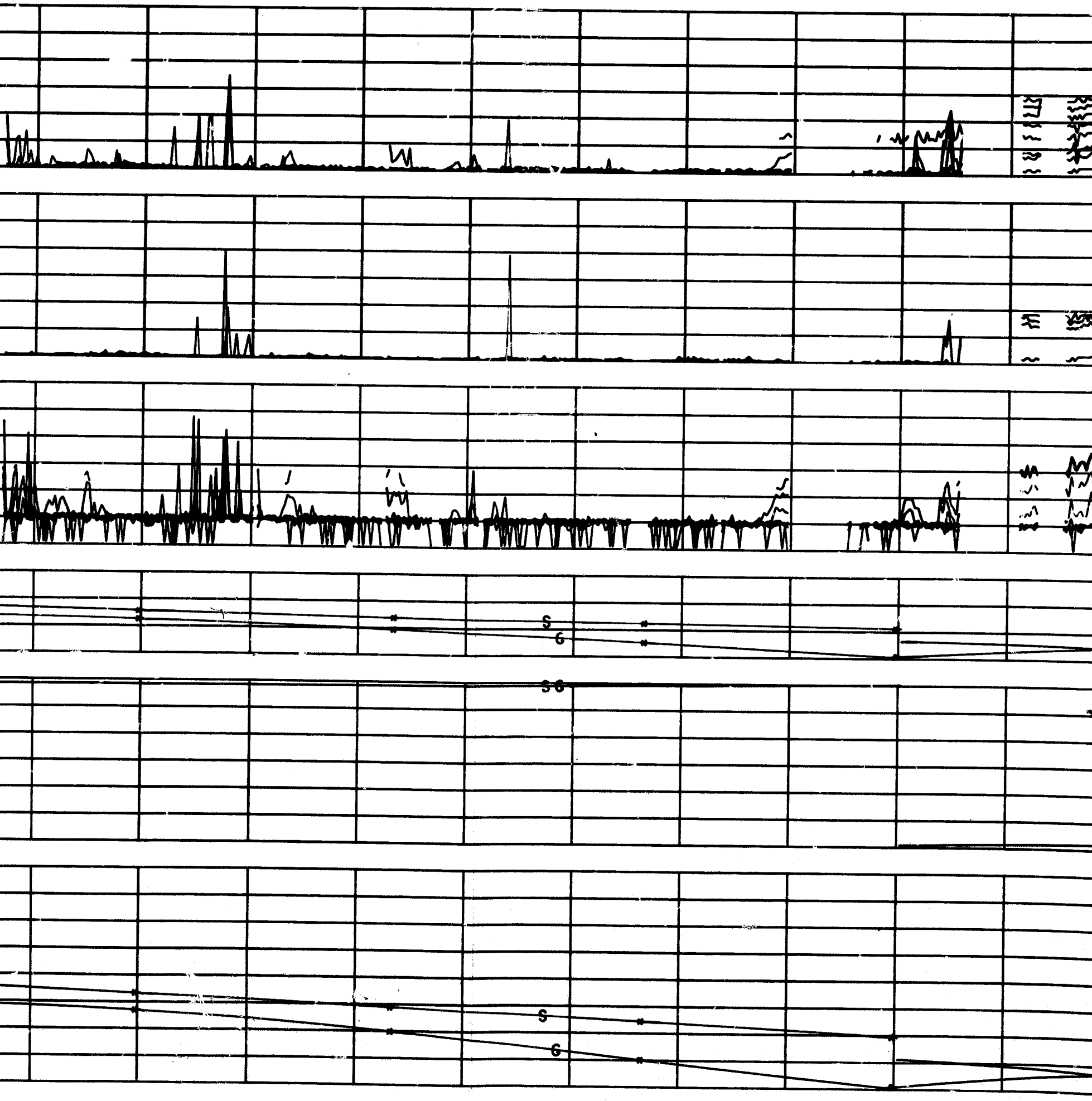
EXPLORER XII - S3

START 1961 8 31 STOP 1961 9 1

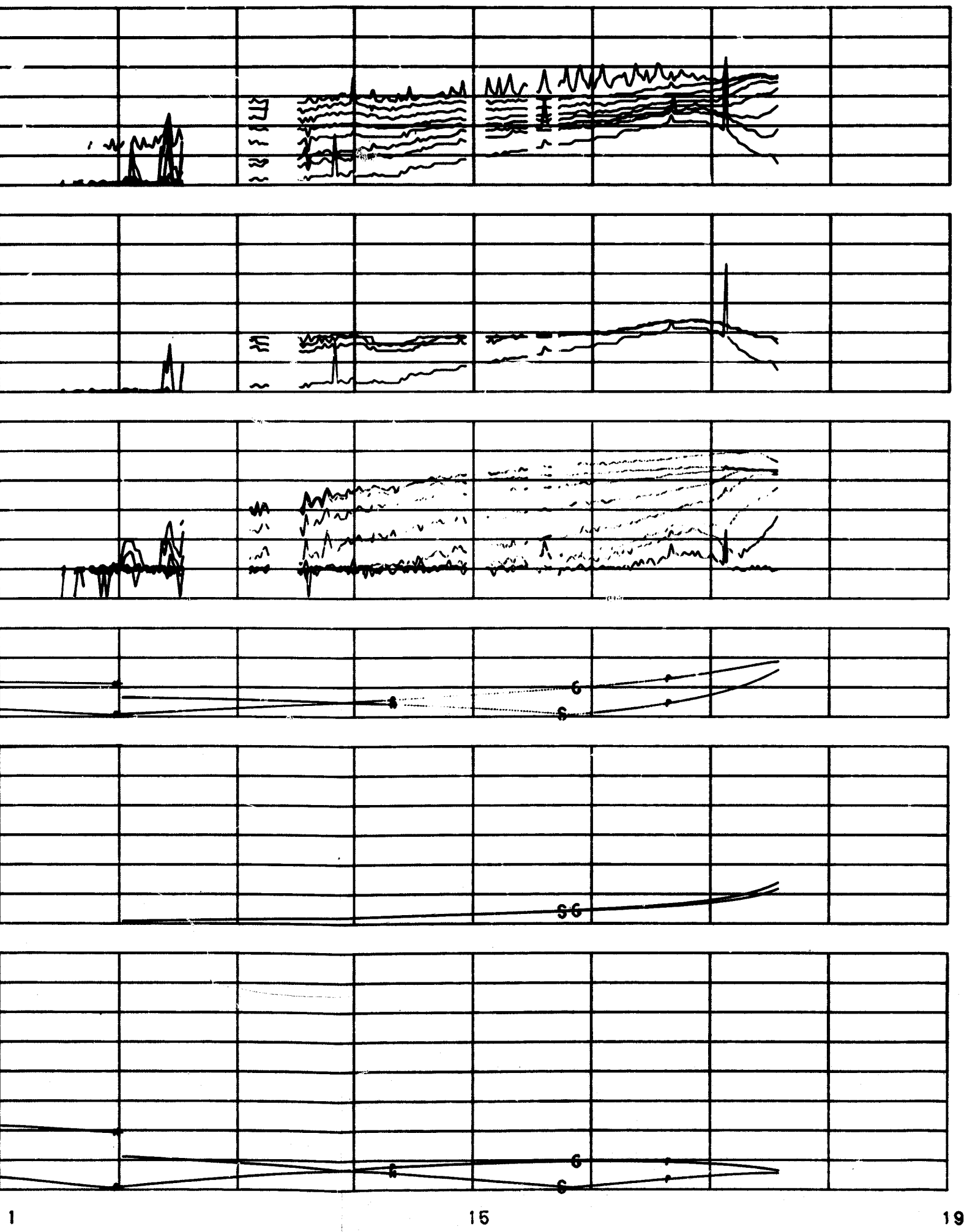


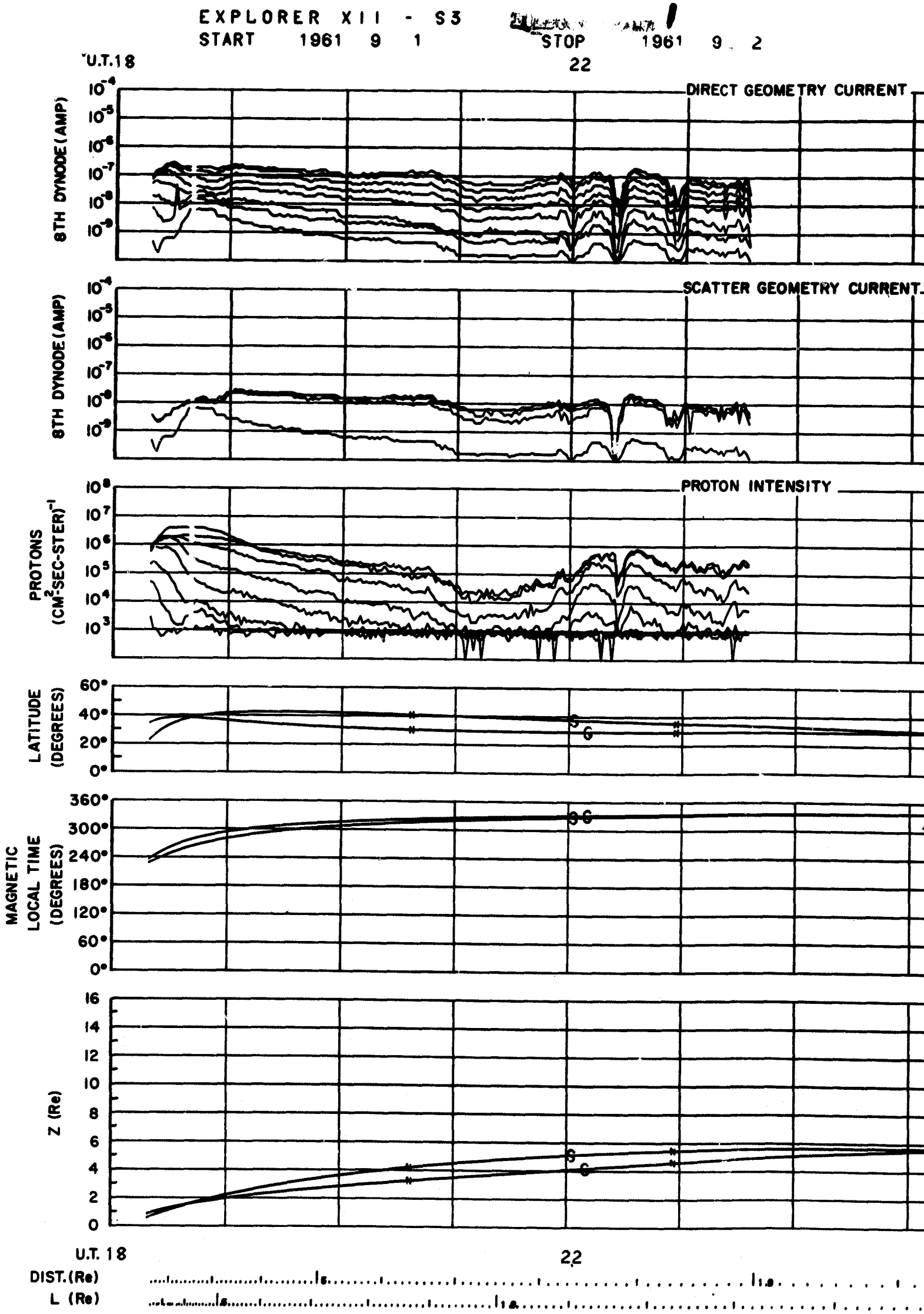

1
23
OLDOUT FRAME 2
3
T GEOMETRY CURRENT
ER GEOMETRY CURRENT
N INTENSITY
S
G
S G
S
G
23
3

FOLD OUT FRAME 3

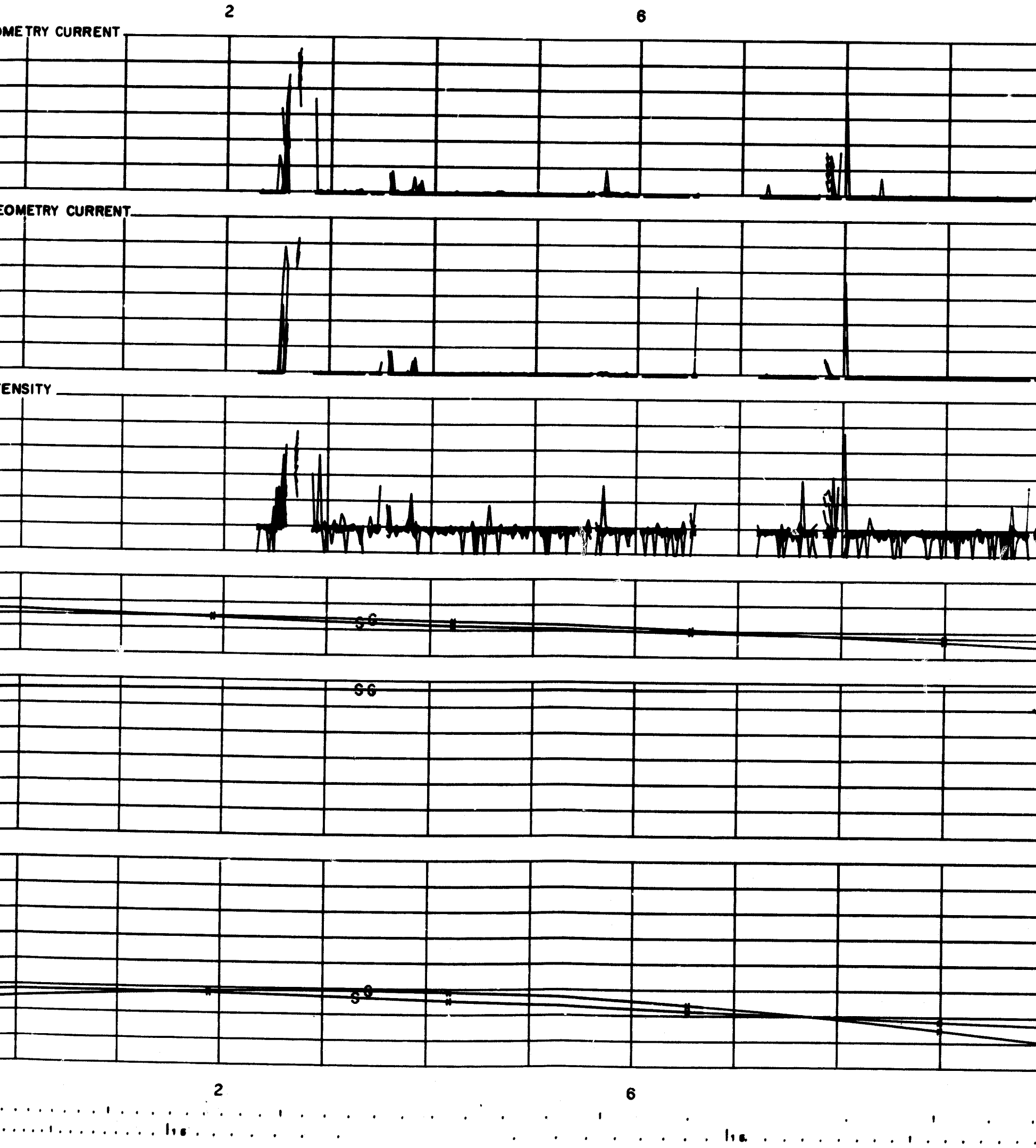


FOLDOUT FRAME 4

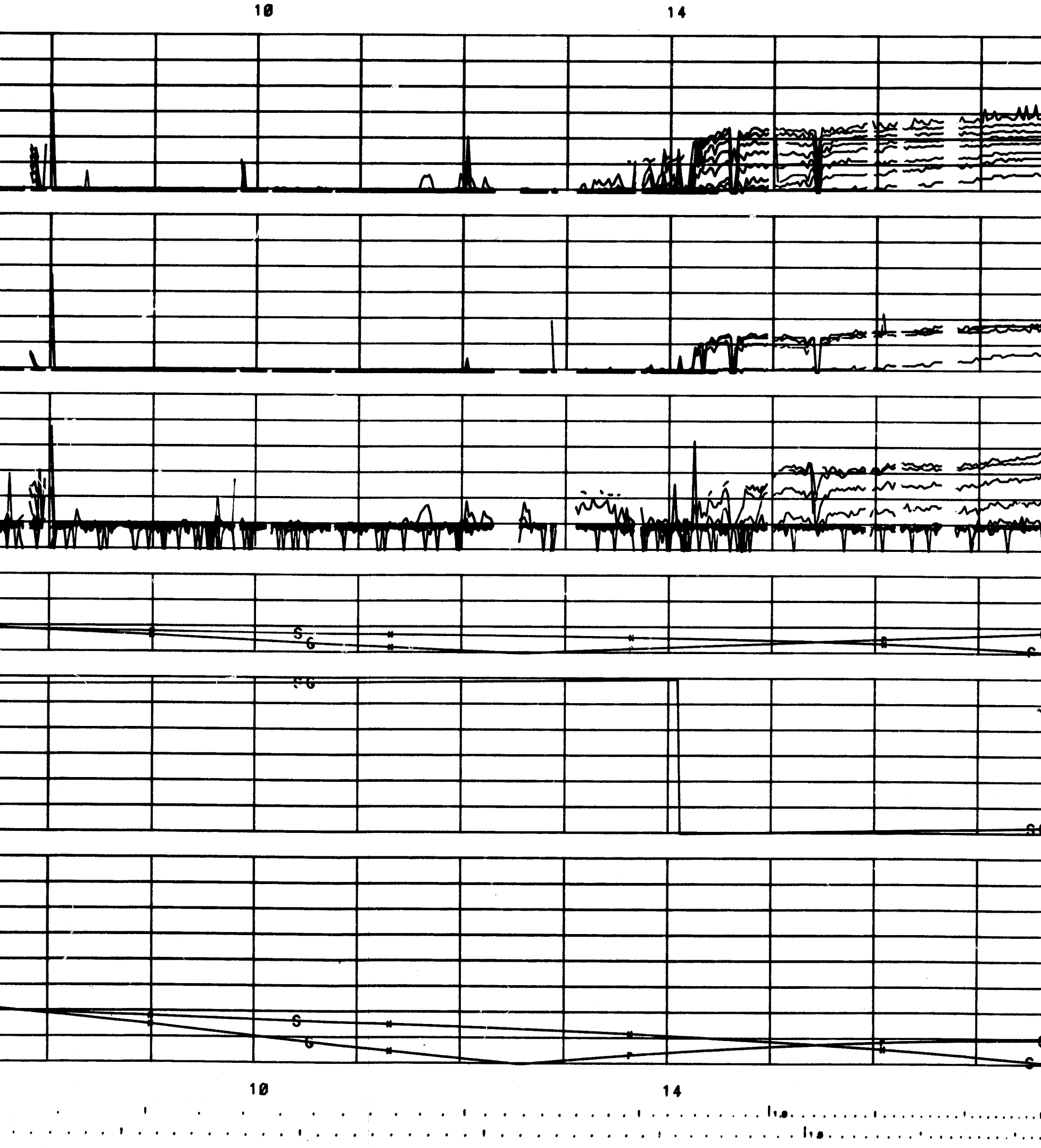



EXPLORER XII - S3
START 1961 9 1
STOP 1961 9 2
U.T. 18
22
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
DIST. (Re)
L (Re)

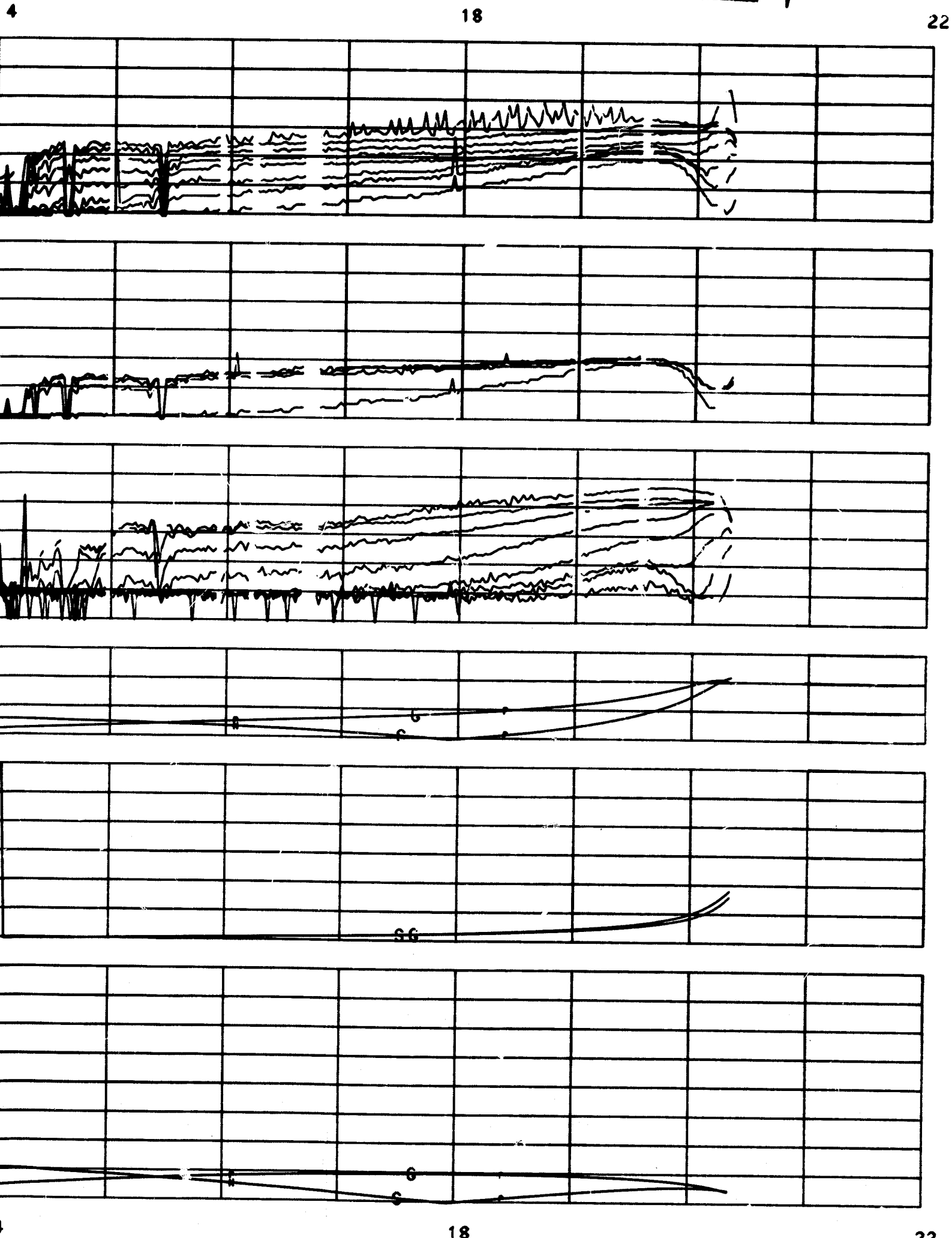
PHOTOGRAPH FRAME 2

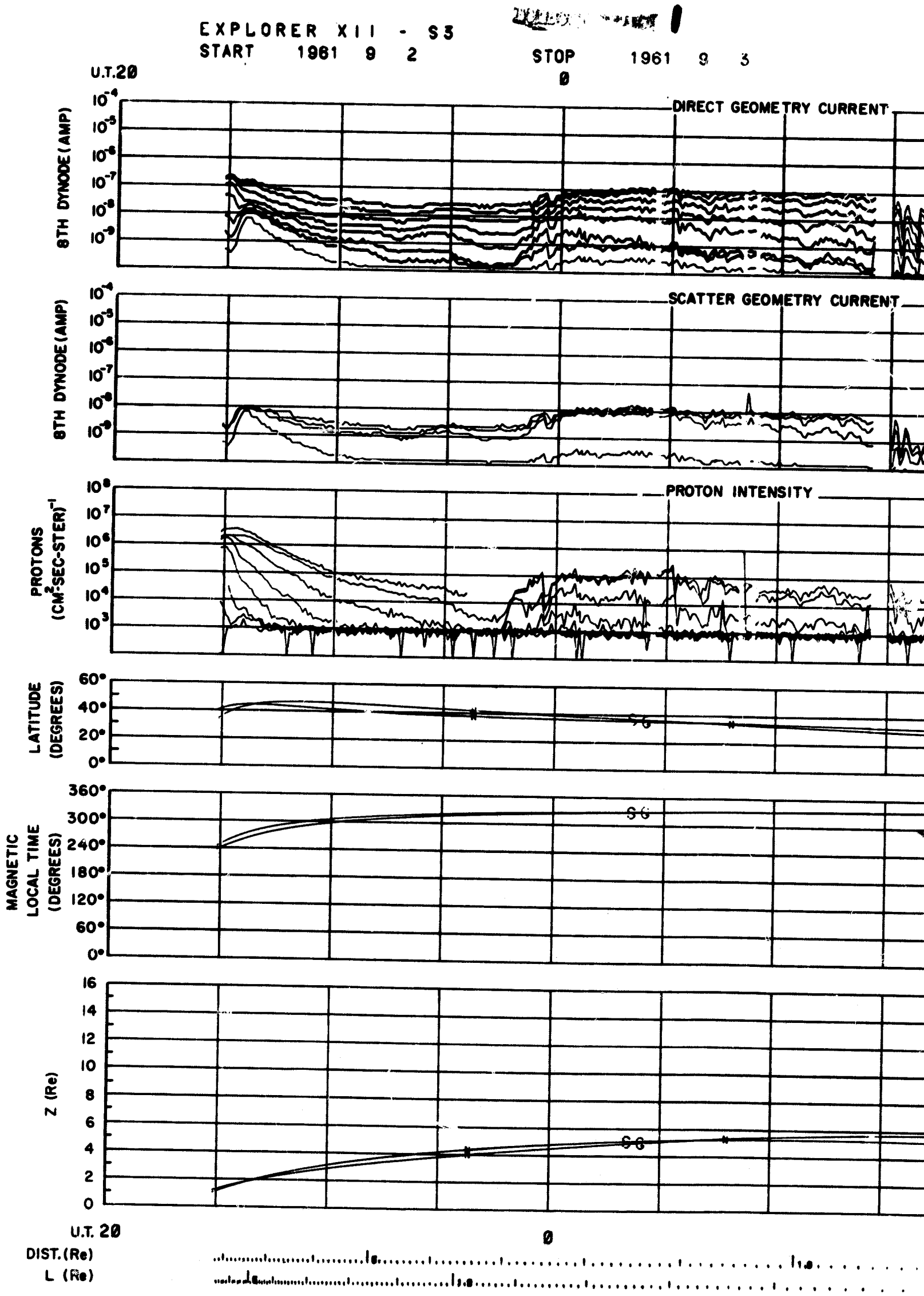


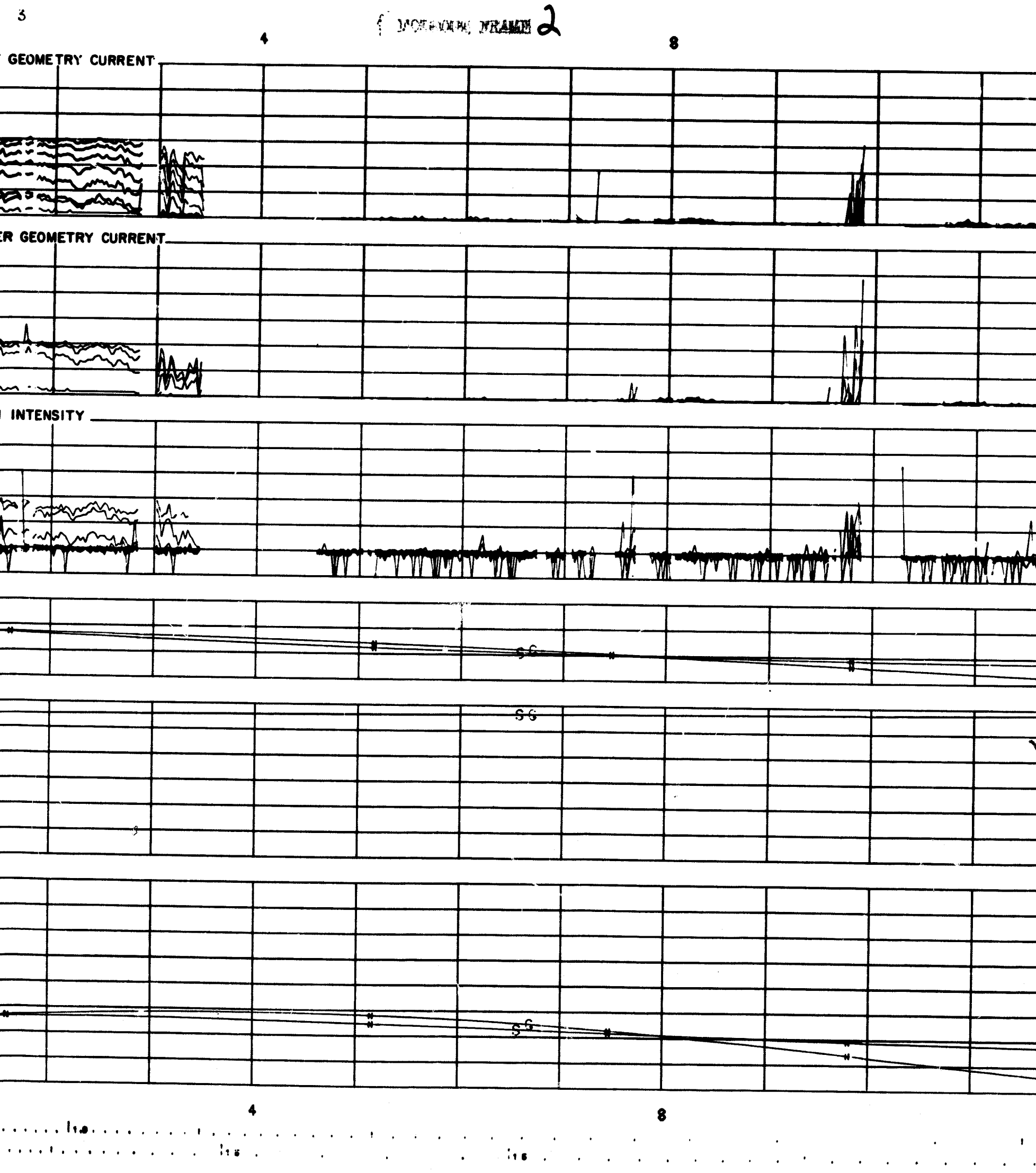
FOLDOUT FRAME 3



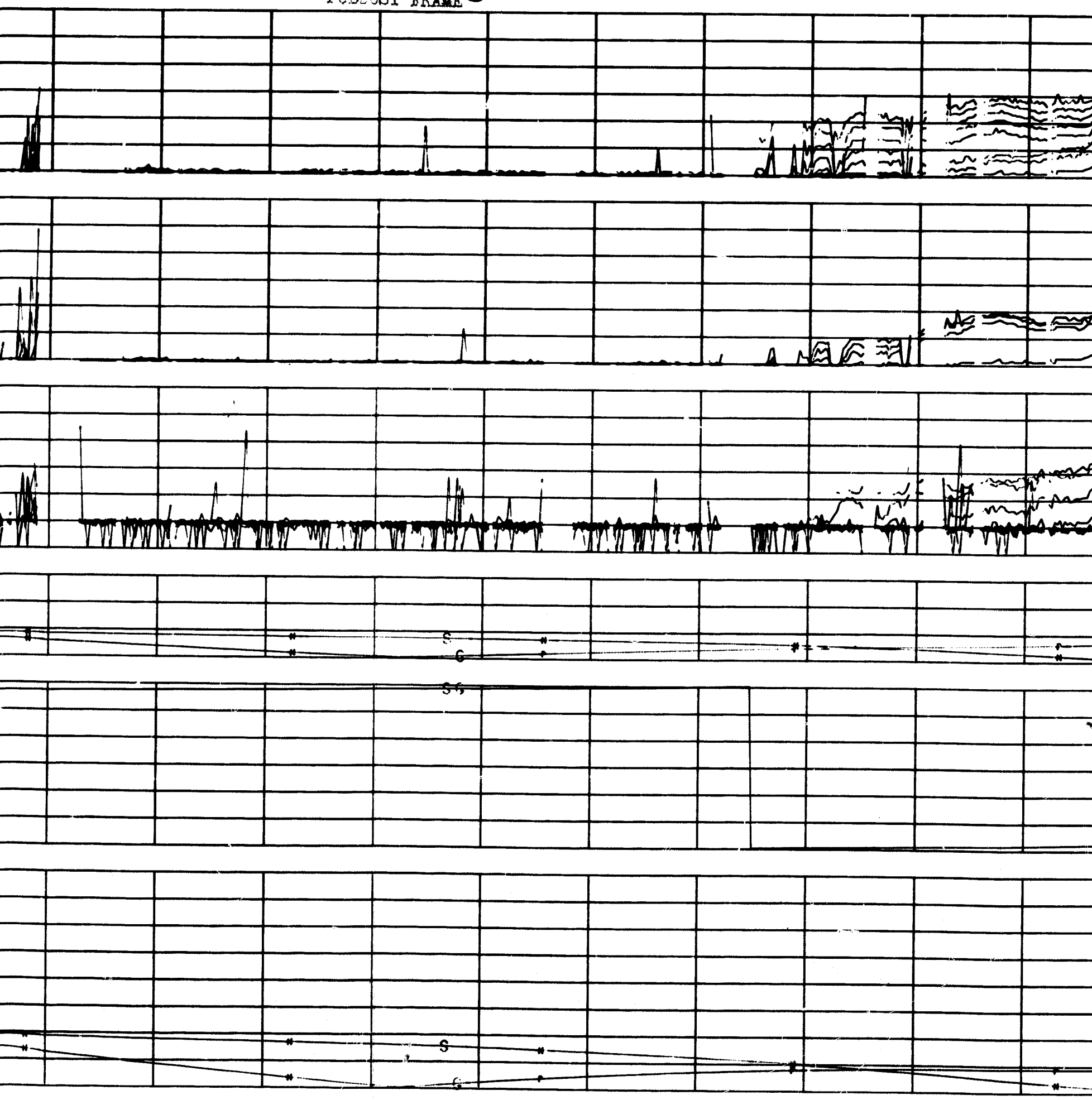
FOLDOUT FRAME 4




EXPLORER XII - S3
START 1961 9 2
STOP 1961 9 3
U.T.20
0
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 20
0
DIST. (Re)
L (Re)

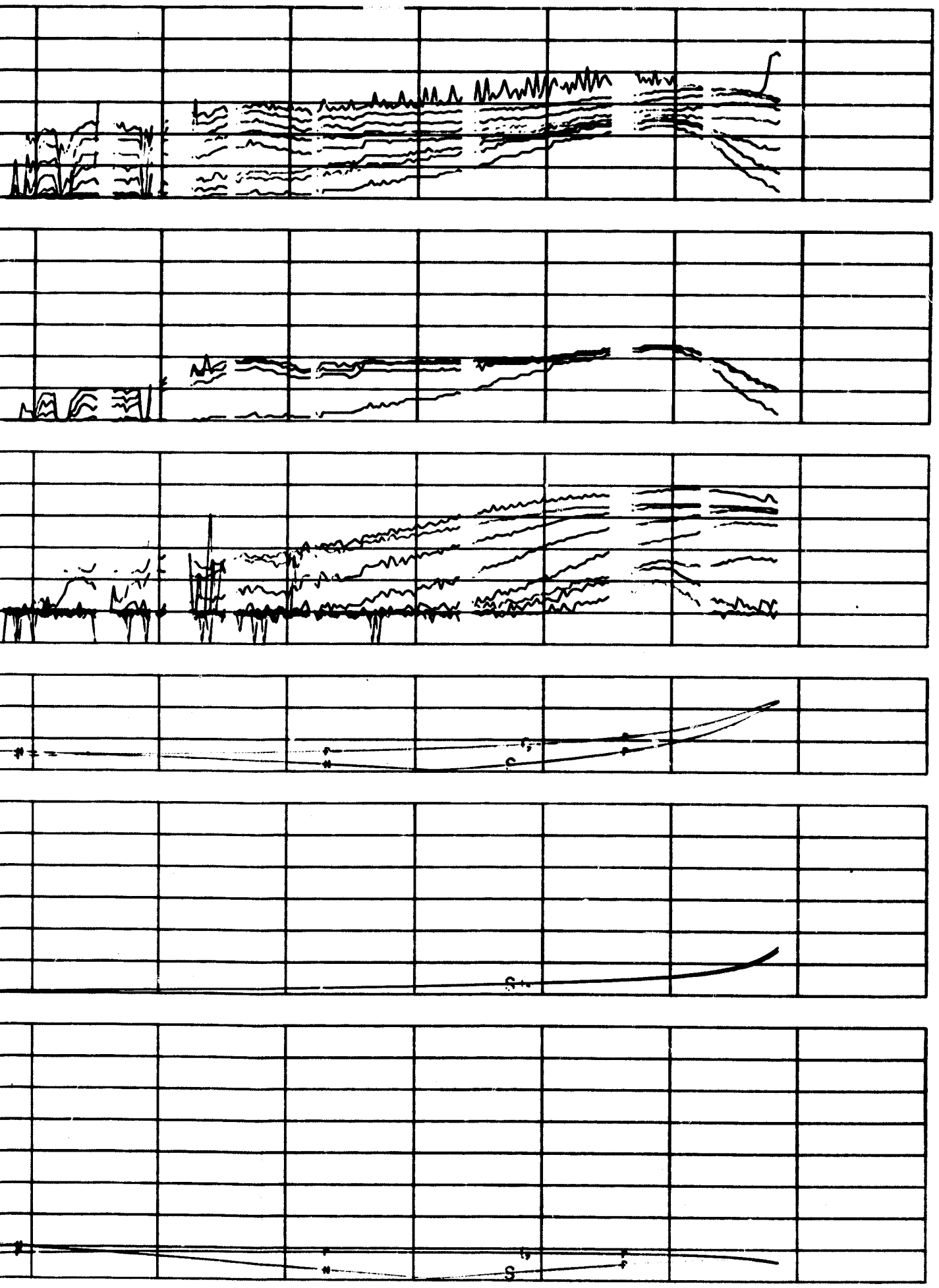

3
4
8
GEOMETRY CURRENT
ER GEOMETRY CURRENT
INTENSITY
SG
SG
SG
4
8

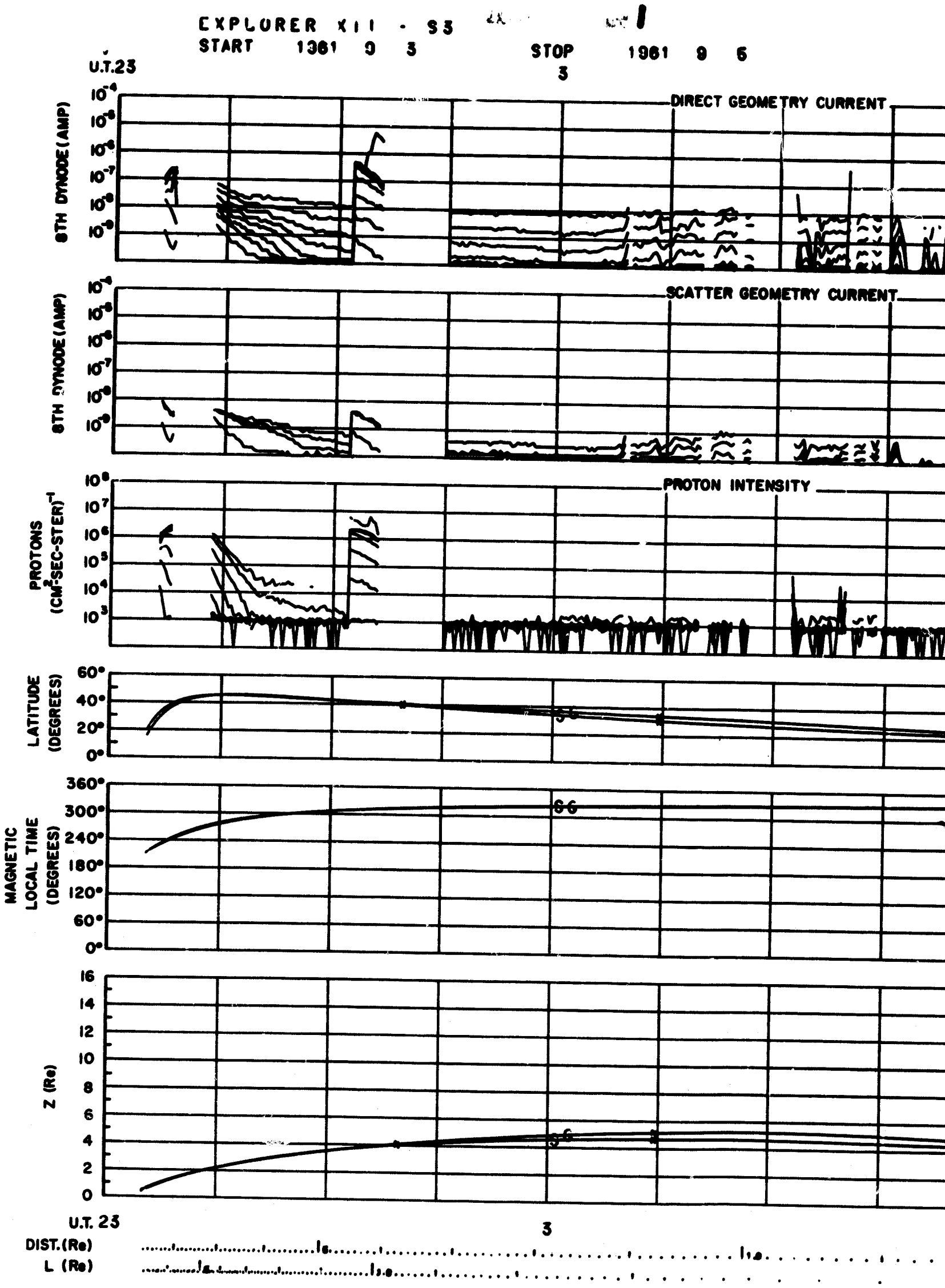
12 FOLDOUT FRAME 3 16

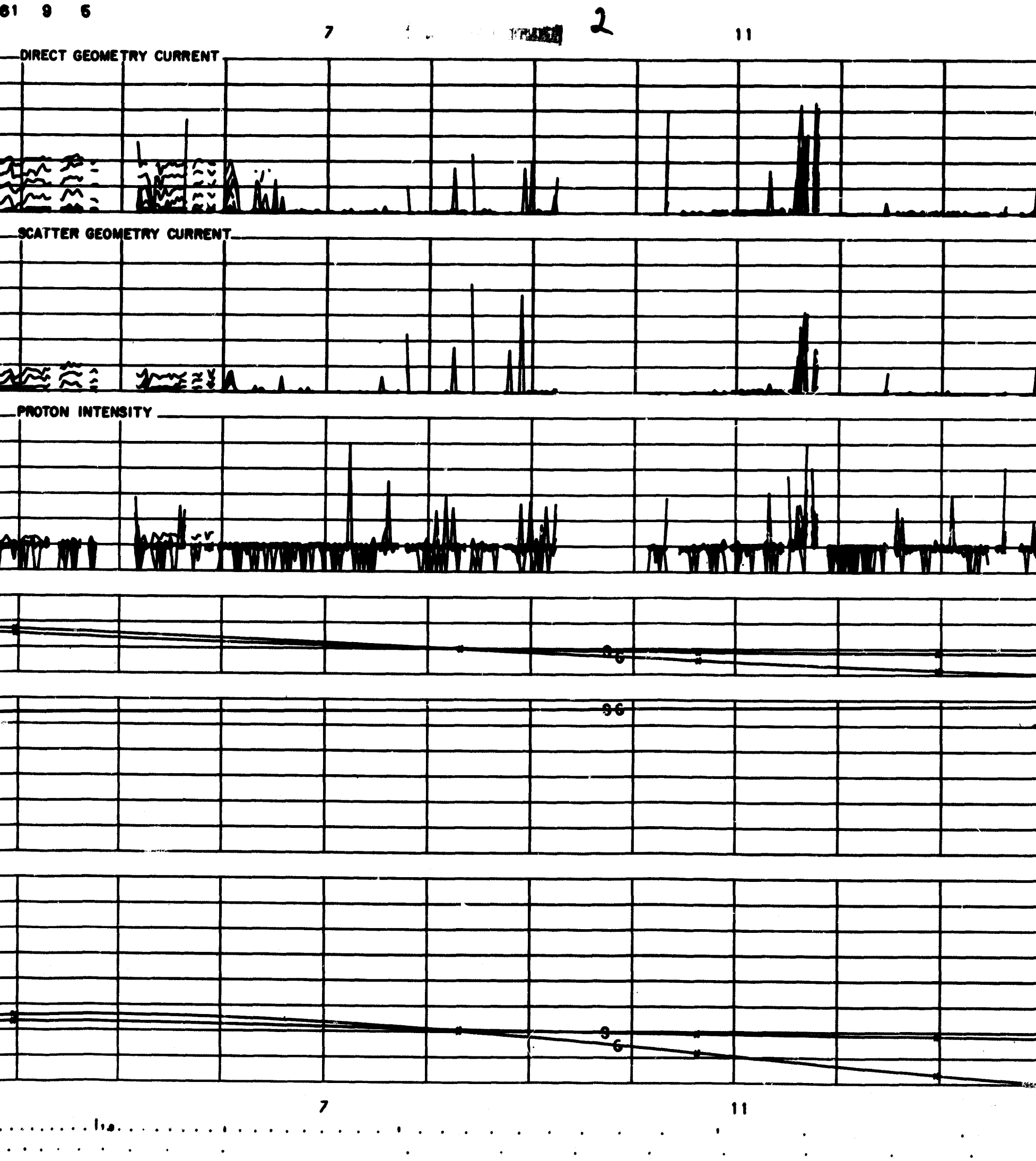


12 16

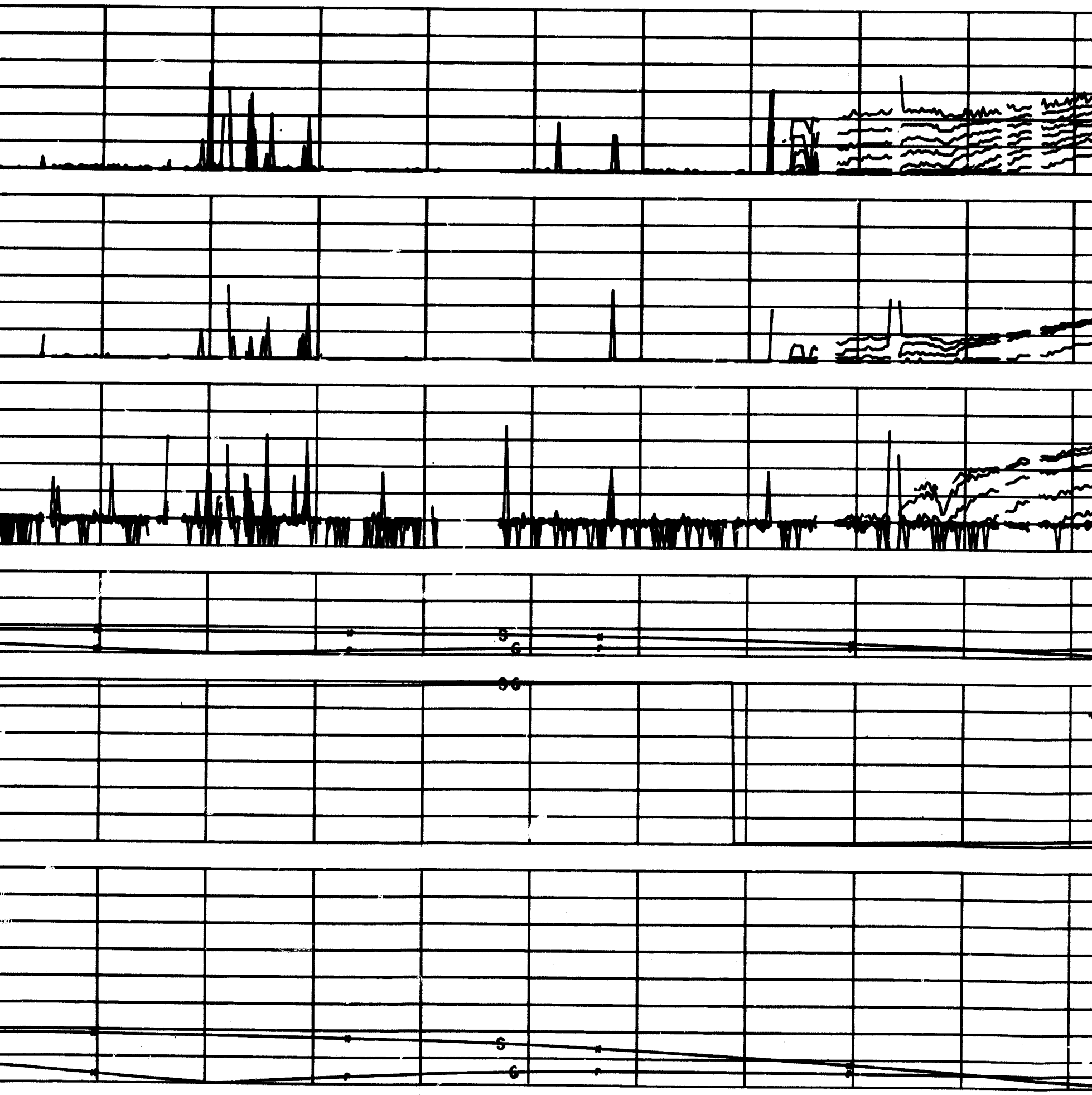
FOLDOUT FRAME 4



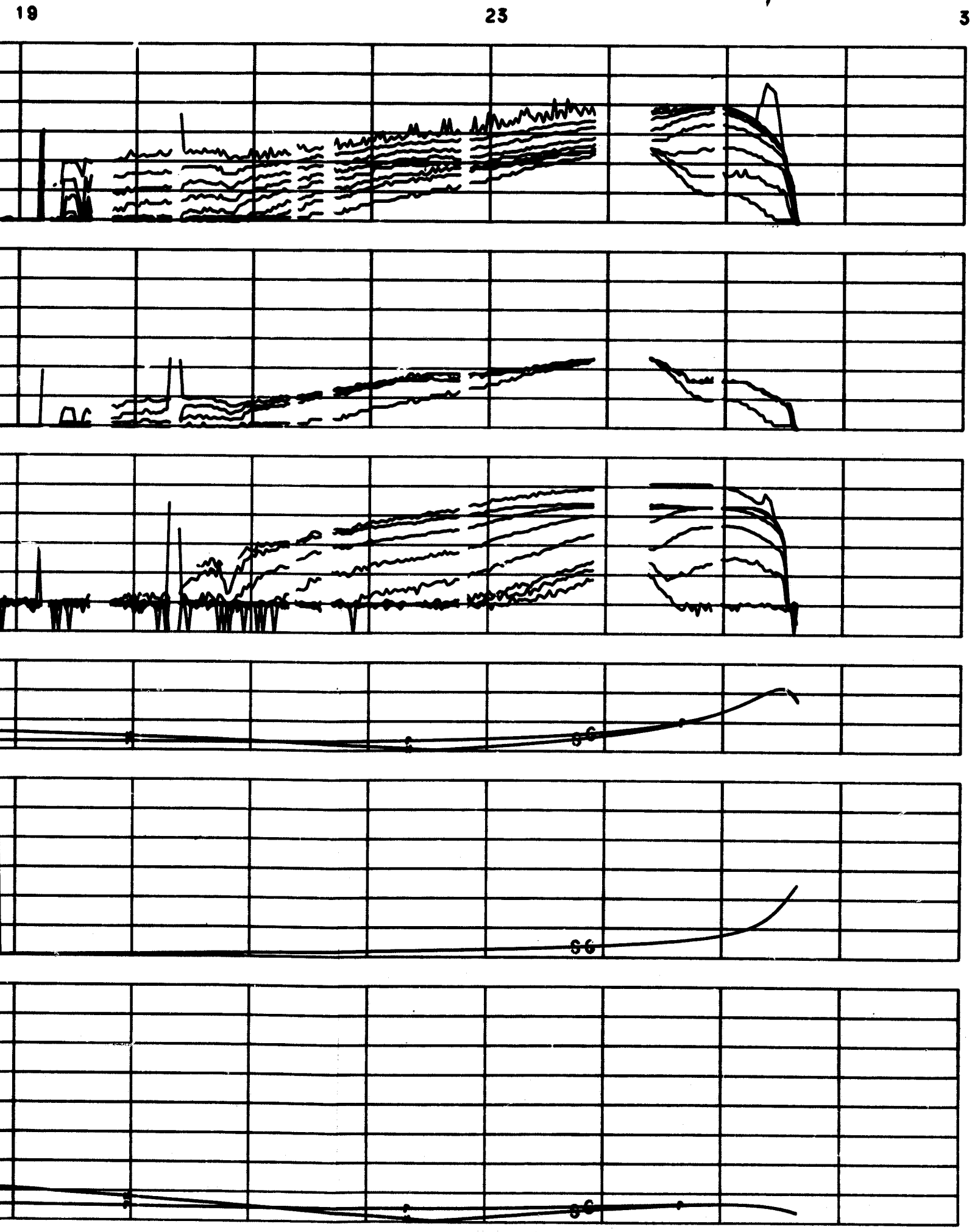

EXPLORER XII - S3
START 1961 9 3
STOP 1961 9 6
U.T.23
3
DIRECT GEOMETRY CURRENT
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
8TH DYNODE (AMP)
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 23
3
DIST. (Re)
L (Re)

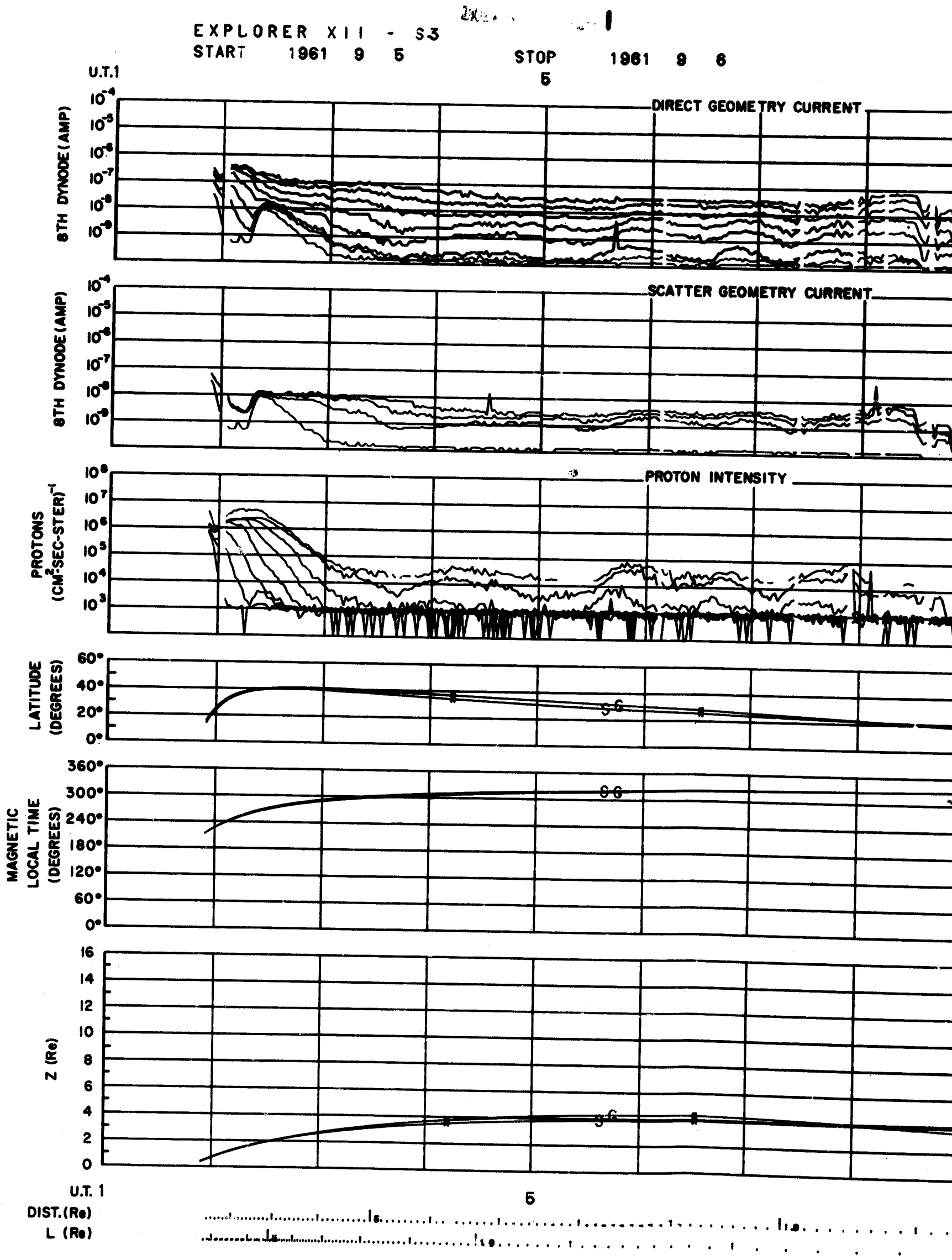

61 9 5
7
2
11
DIRECT GEOMETRY CURRENT
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
96
96
96
7
11

15 FOLDOUT FRAME 3 19

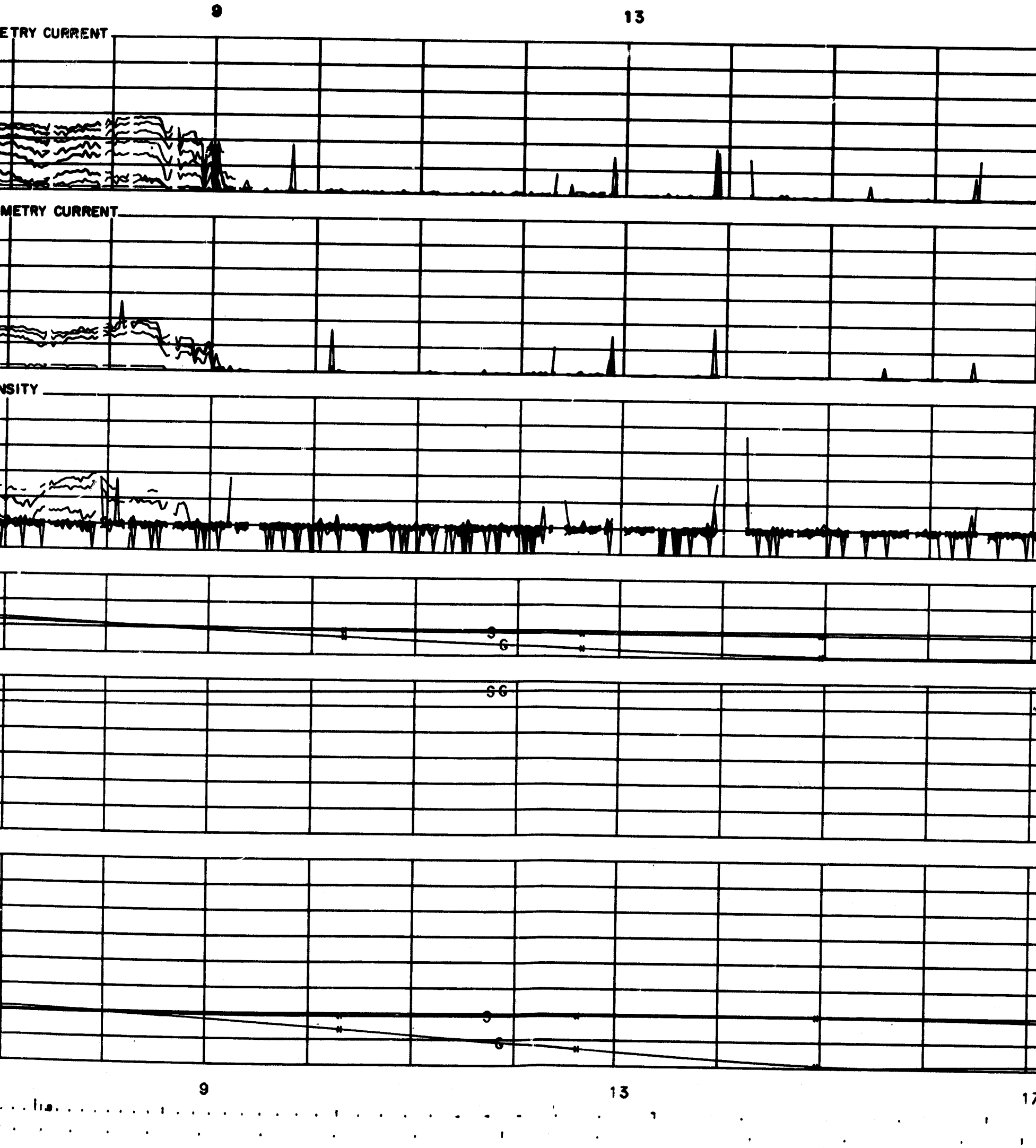


FOLDOUT FRAME 4

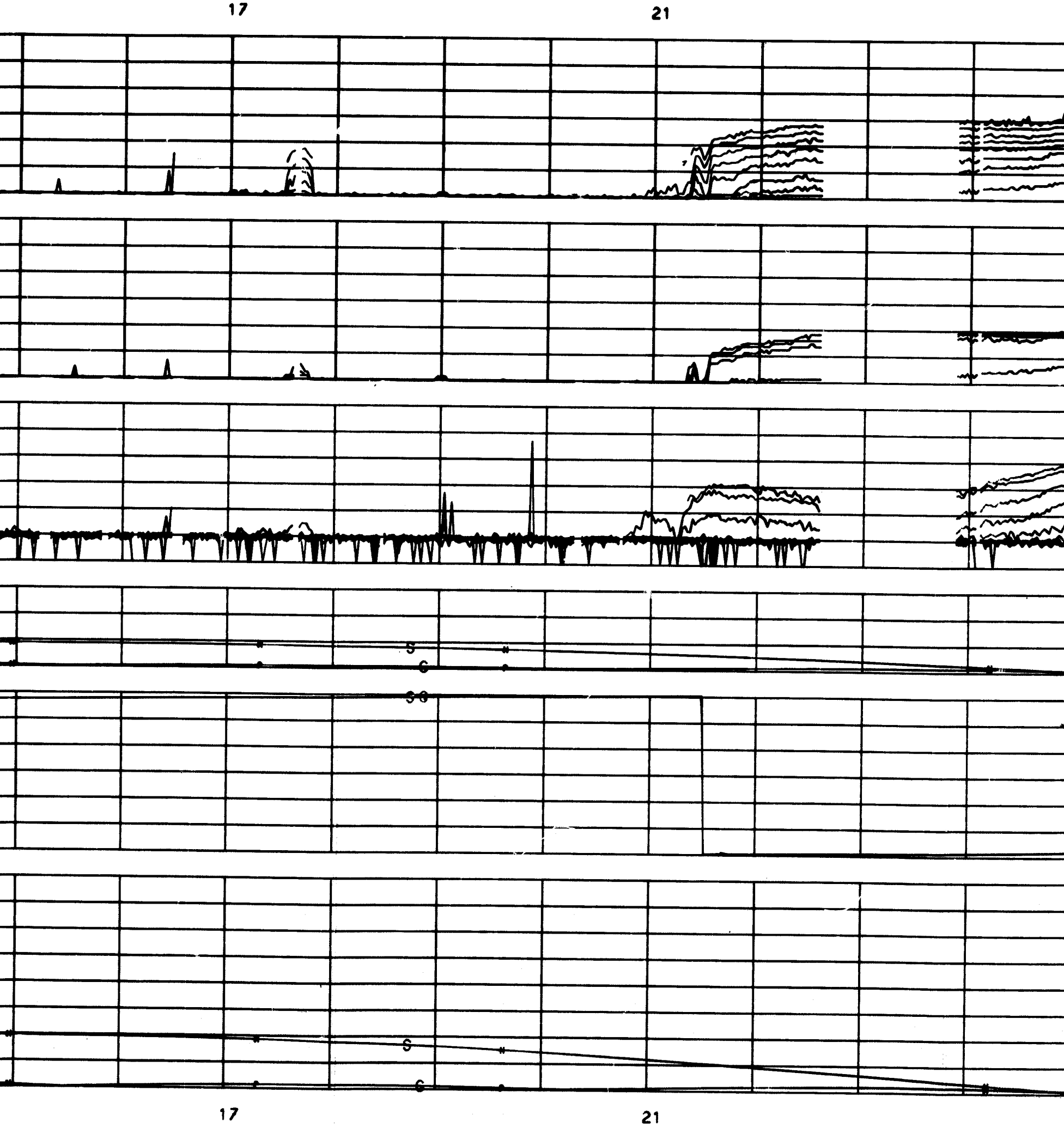



EXPLORER XII - S3
START 1961 9 5
STOP 1961 9 6
U.T.1
5
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 1
5
DIST. (Re)
L (Re)

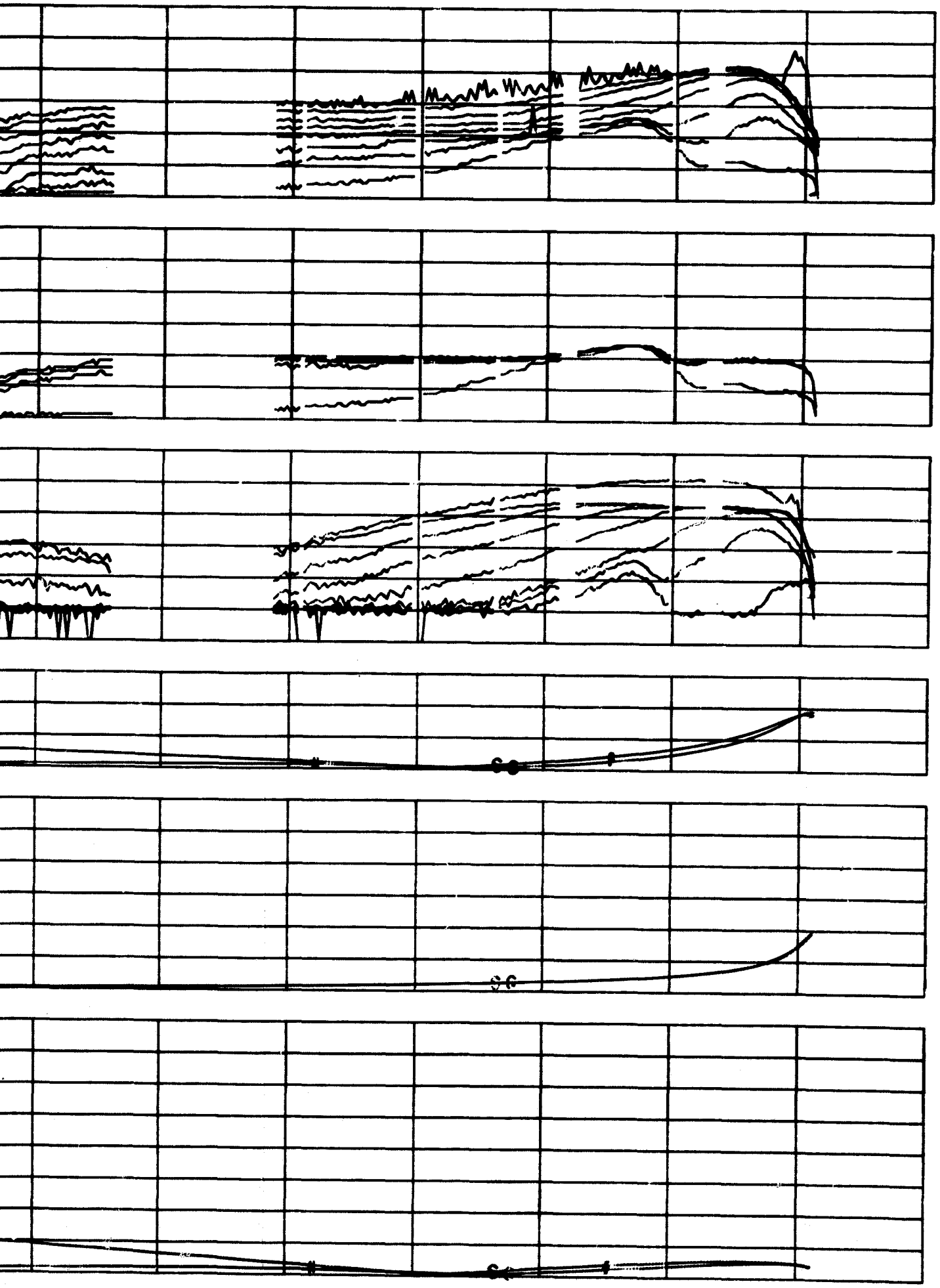
2



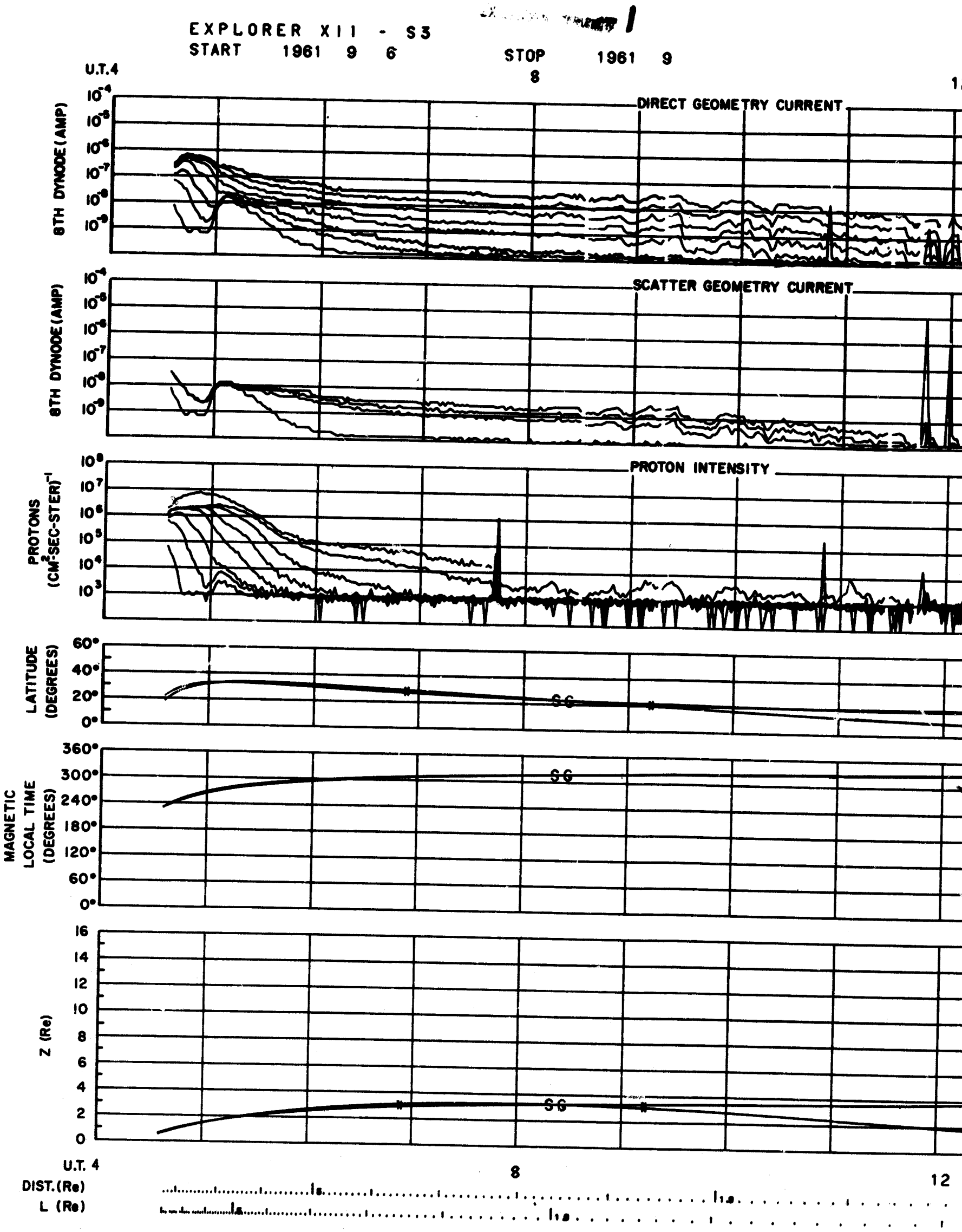
FOLDOUT FRAME 3



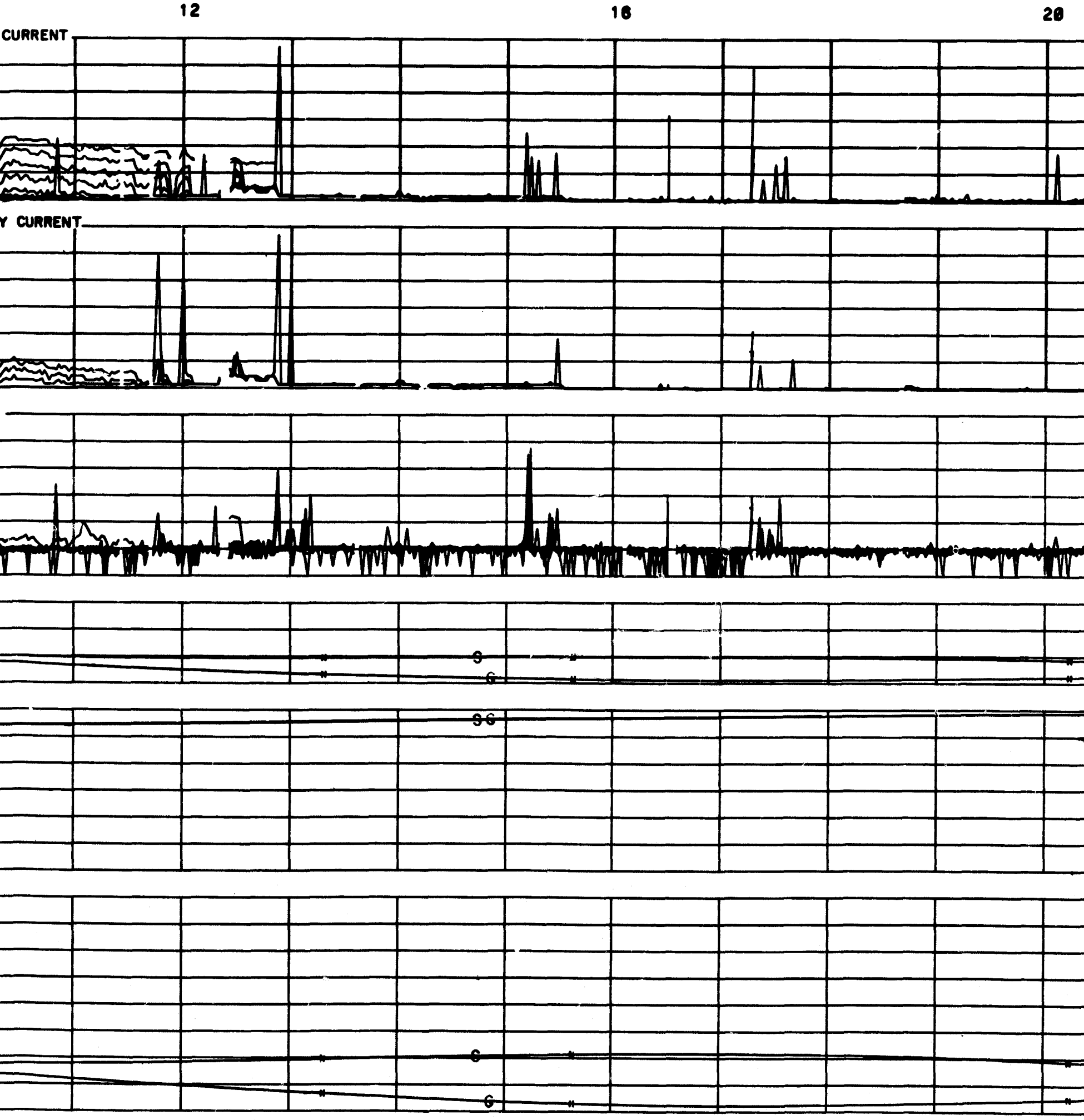
1 FOLDOUT FRAME 4 5

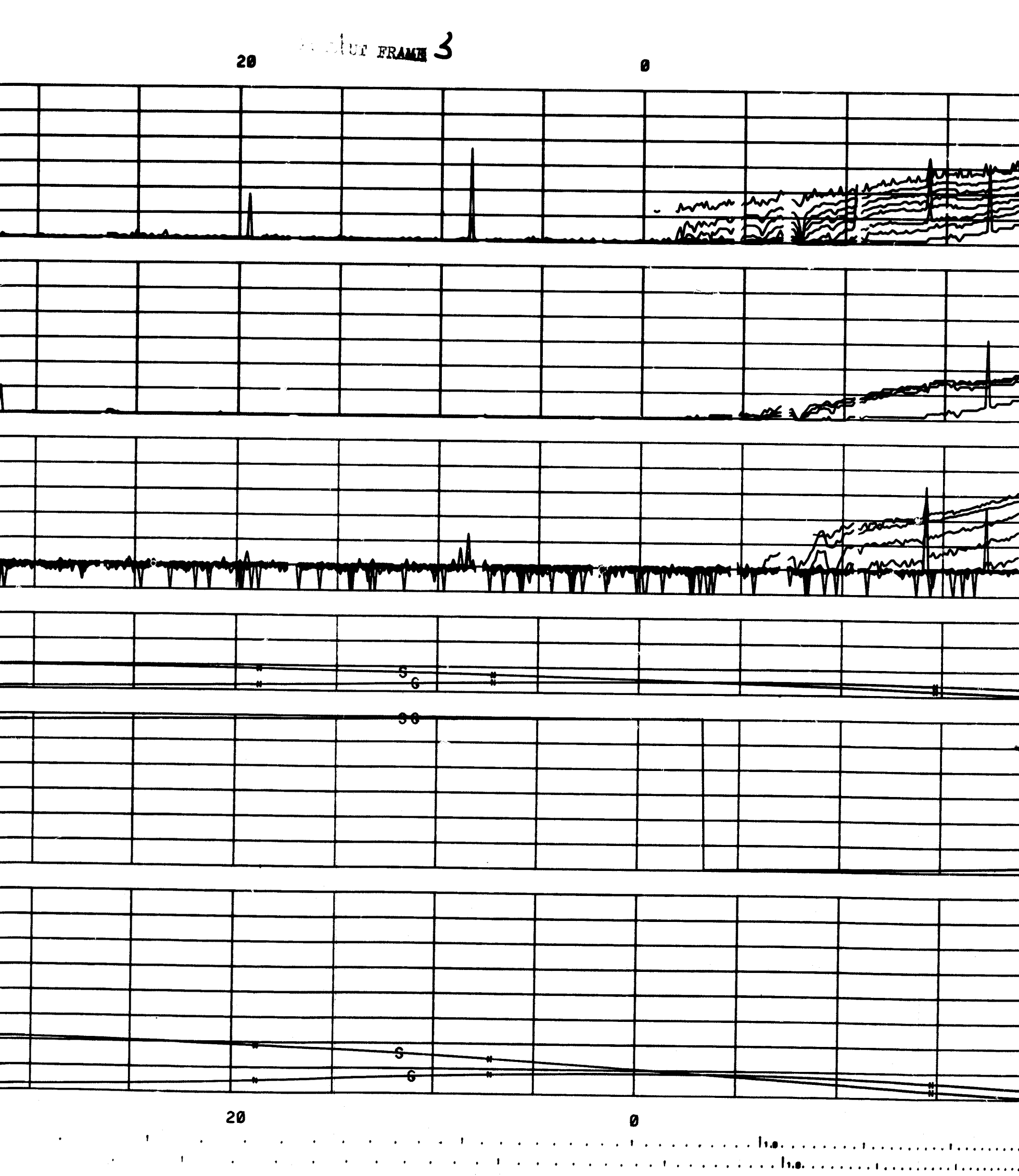


1 5

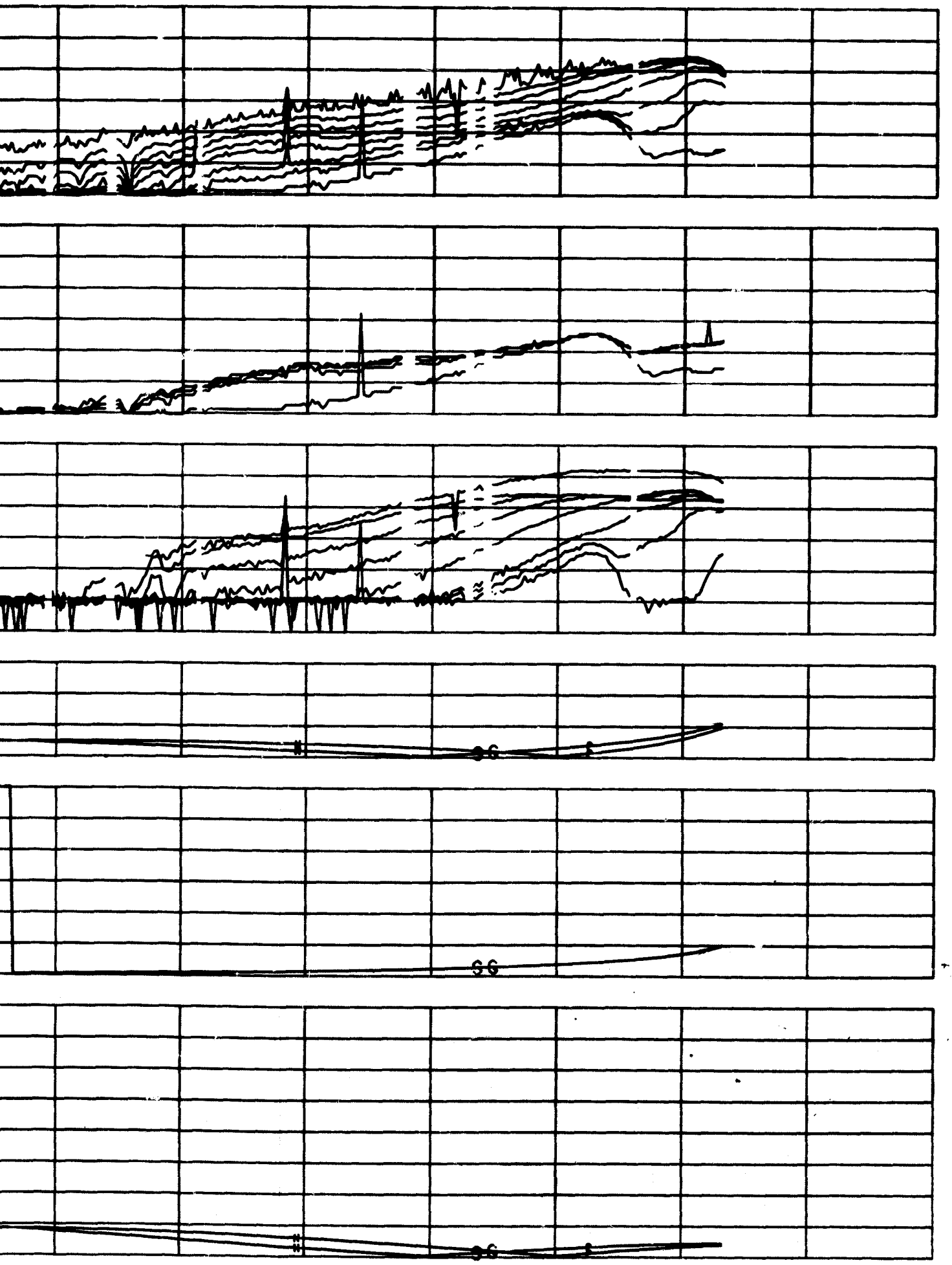

EXPLORER XII - S3
START 1961 9 6
STOP 1961 9
8
U.T.4
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
SG
MAGNETIC LOCAL TIME (DEGREES)
SG
Z (Re)
SG
U.T. 4
8
12
DIST. (Re)
L (Re)

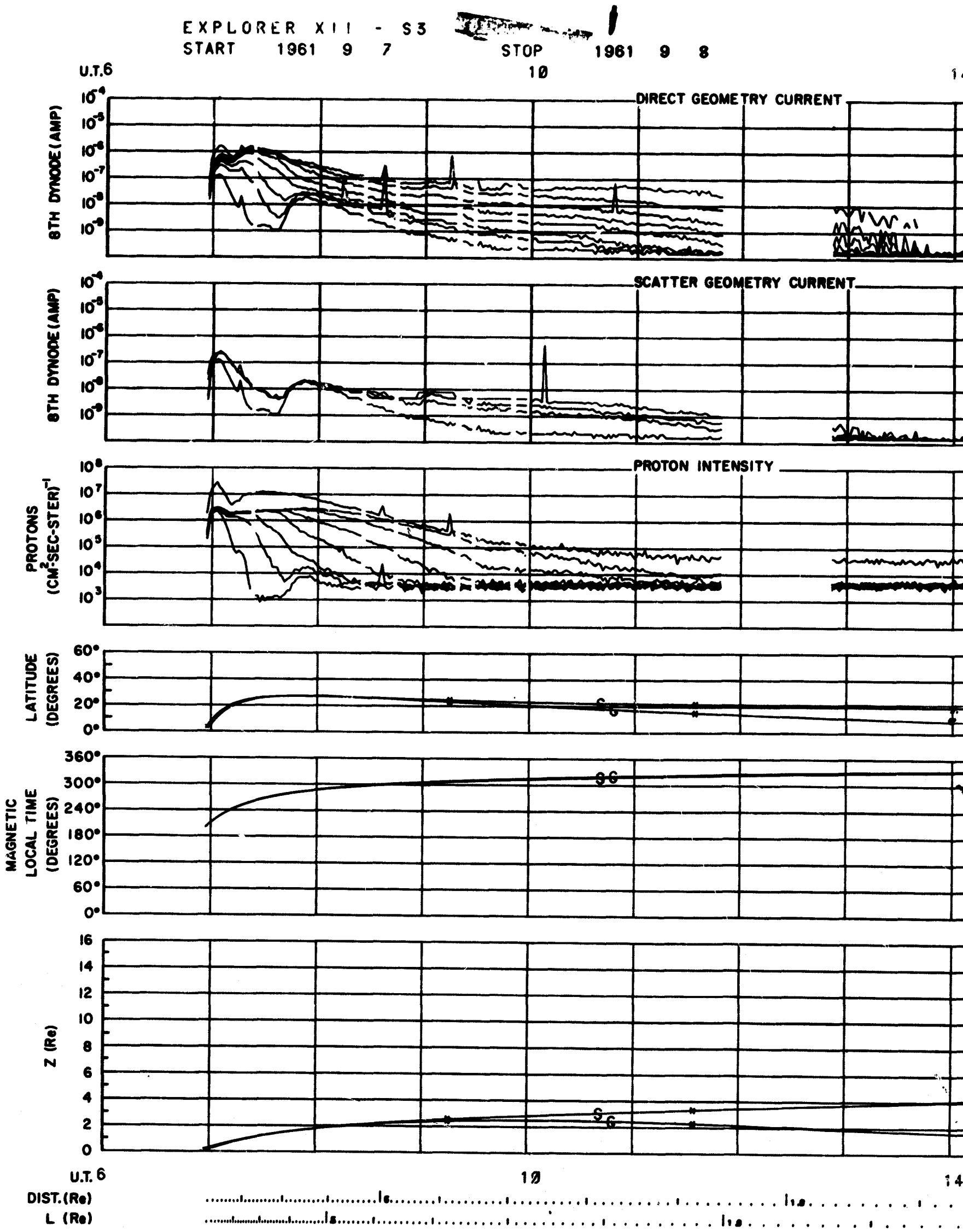
2



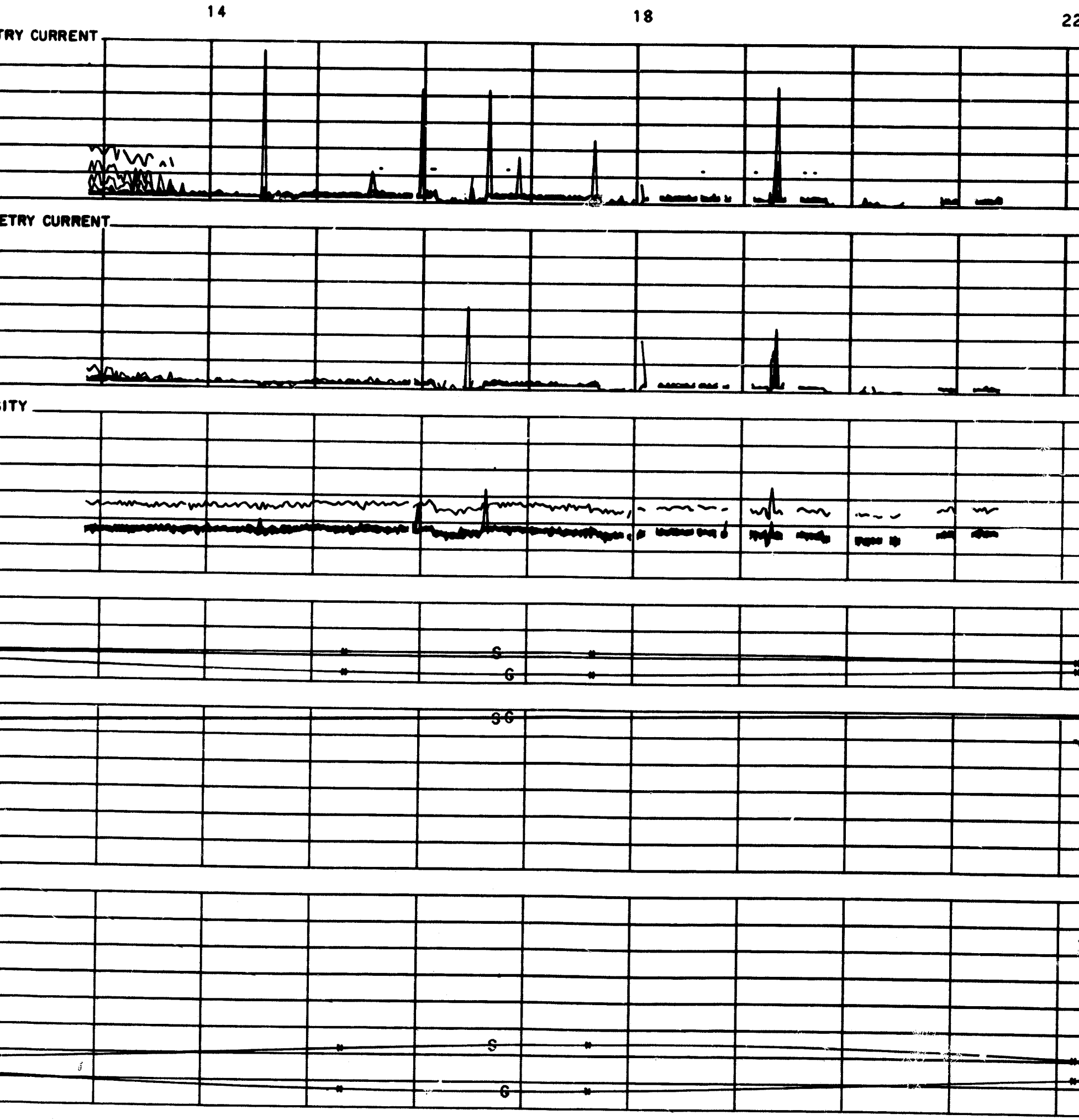

FRAME 3
20
0
S
G
S
G
20
0

FOLDOUT FRAME 4

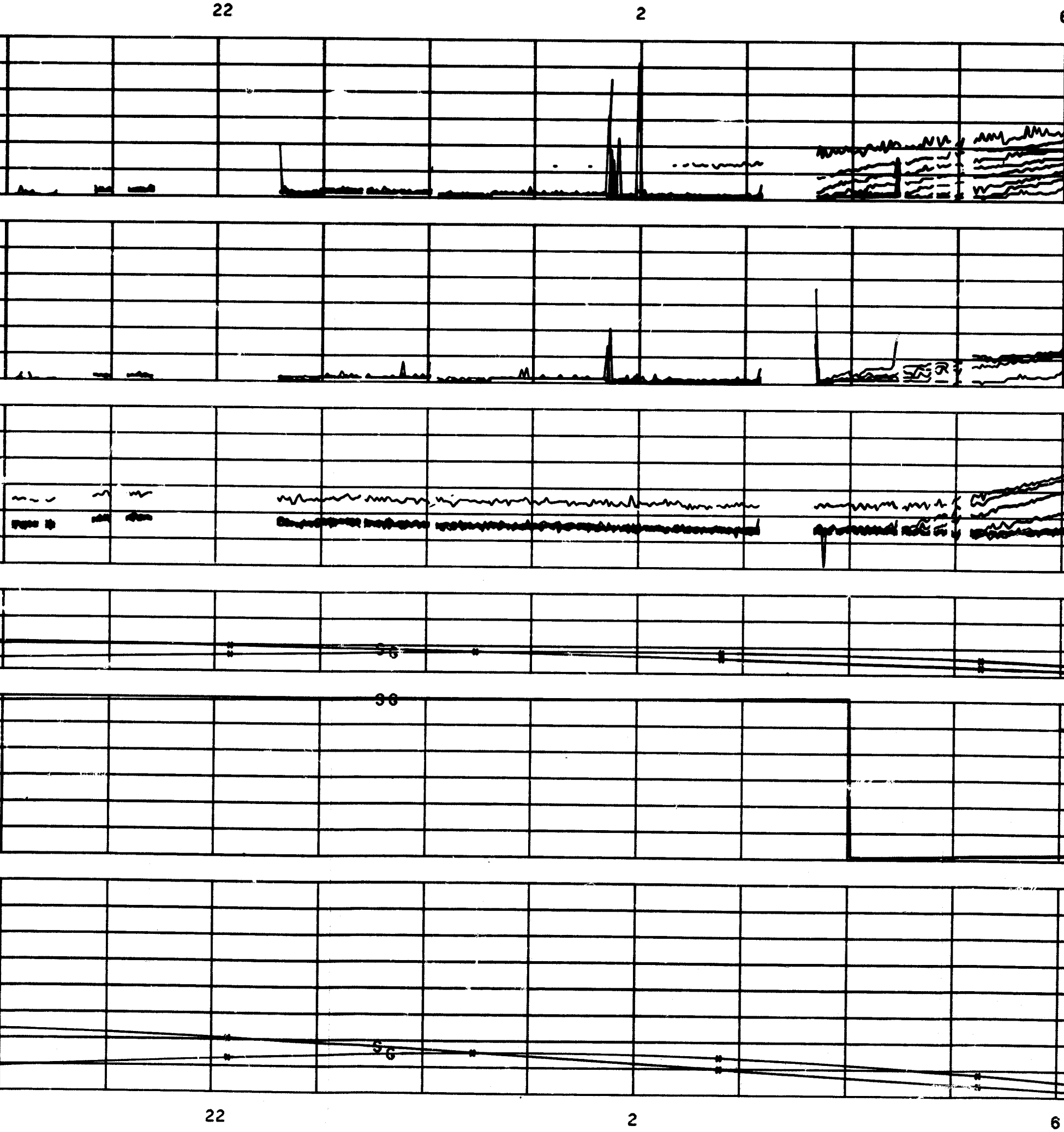



EXPLORER XII - S3
START 1961 9 7
STOP 1961 9 8
U.T.6
10
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 6
10
DIST. (Re)
L (Re)

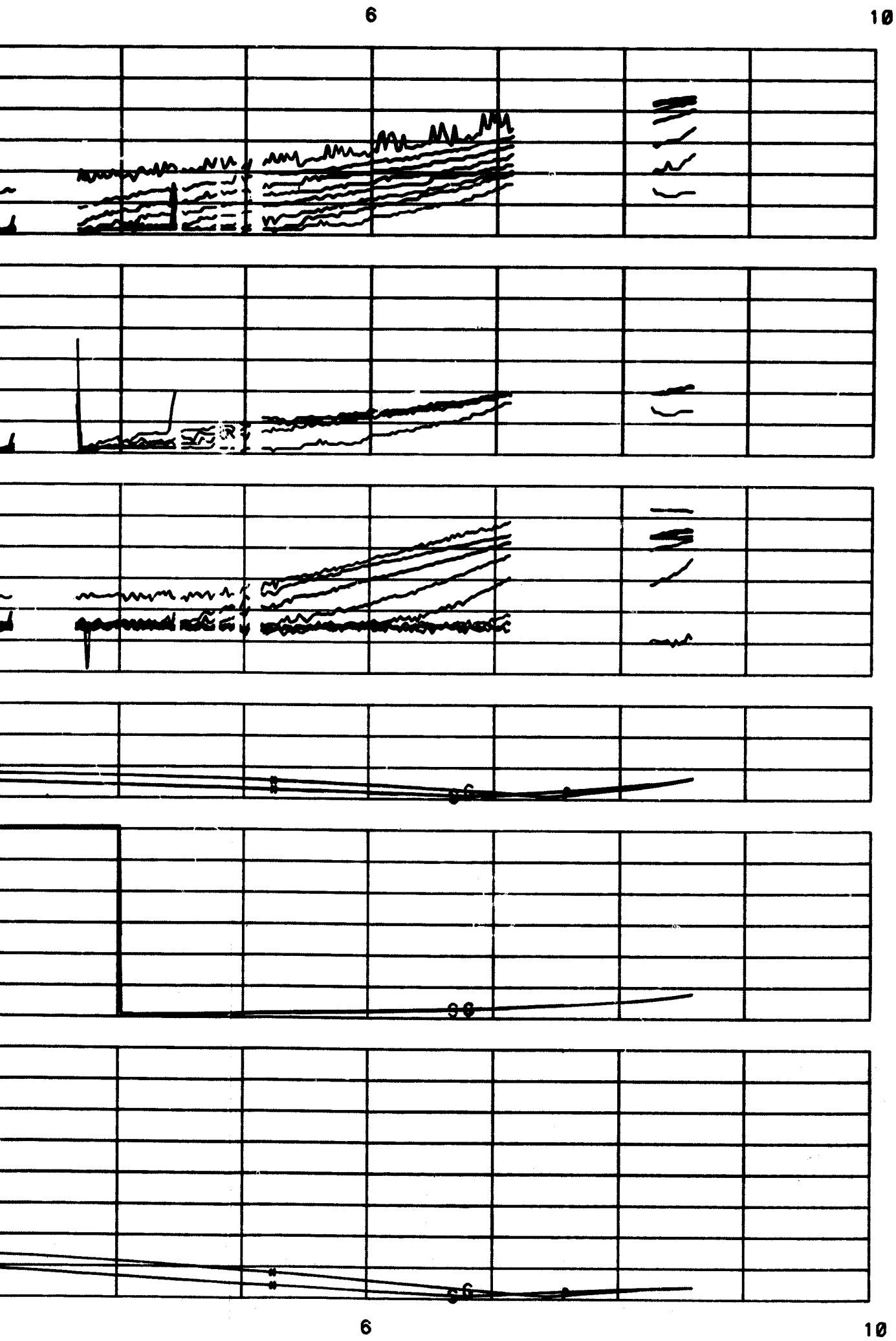
2

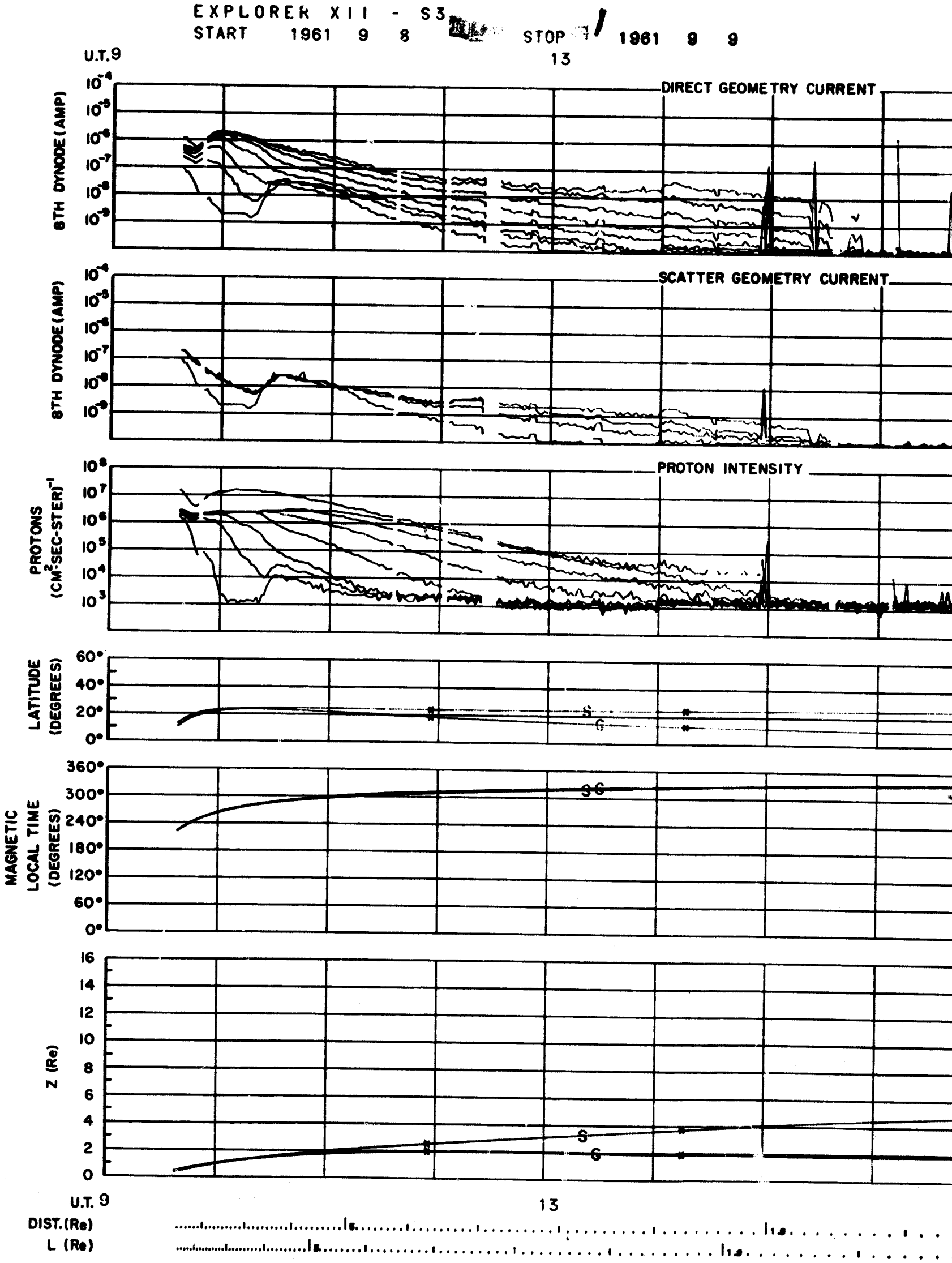


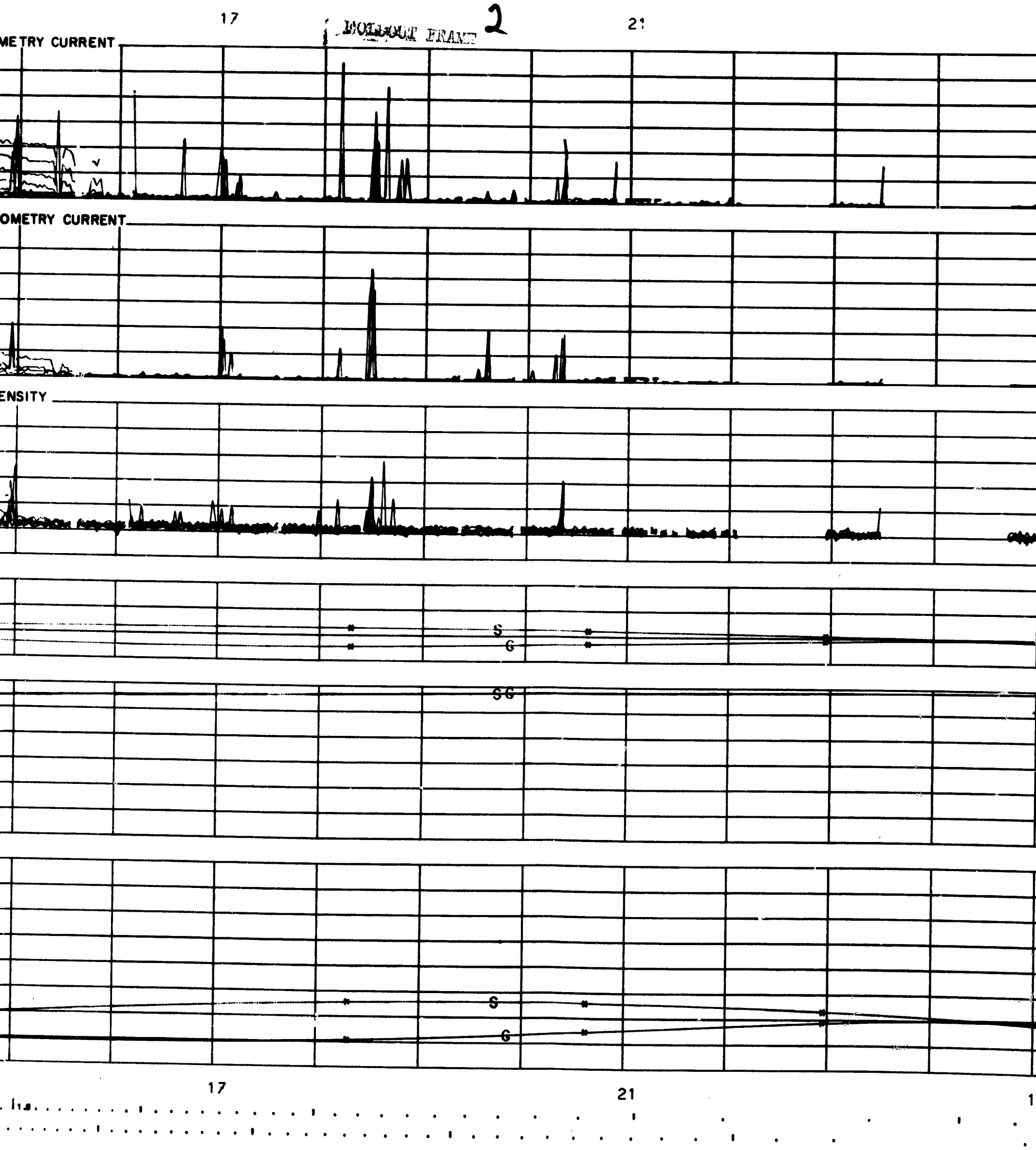
FRAME 3

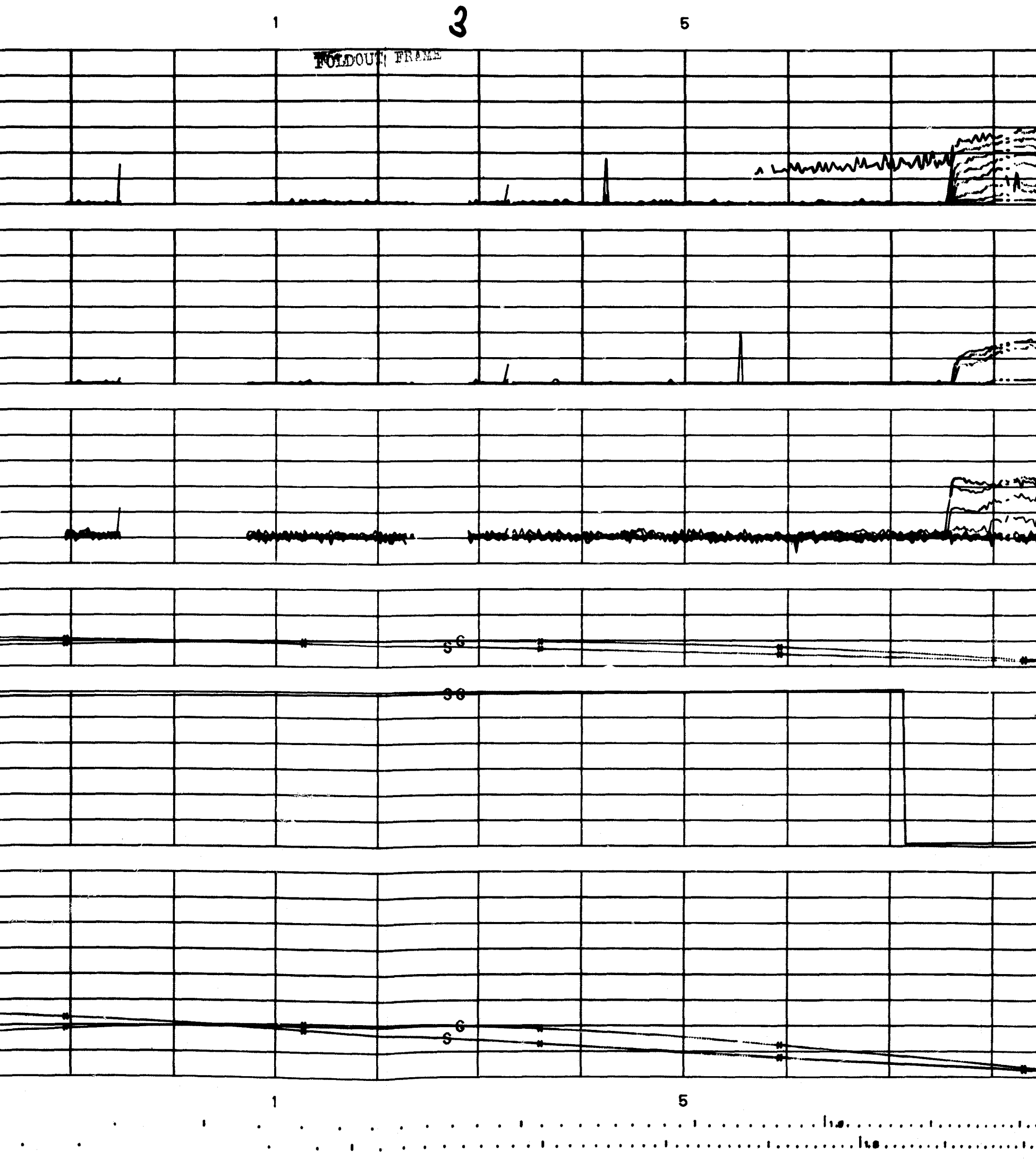


FOLDOUT FRAME 4

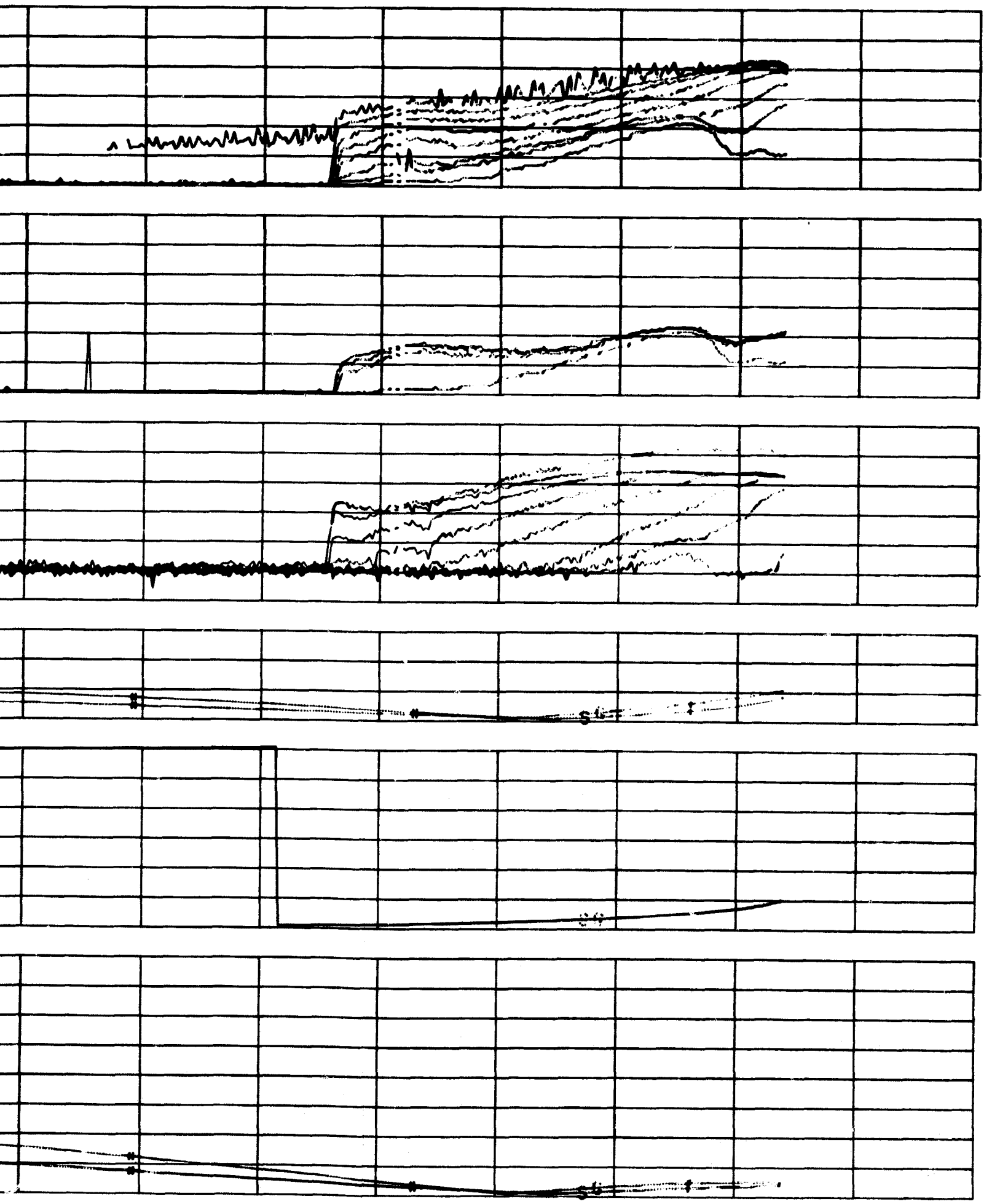


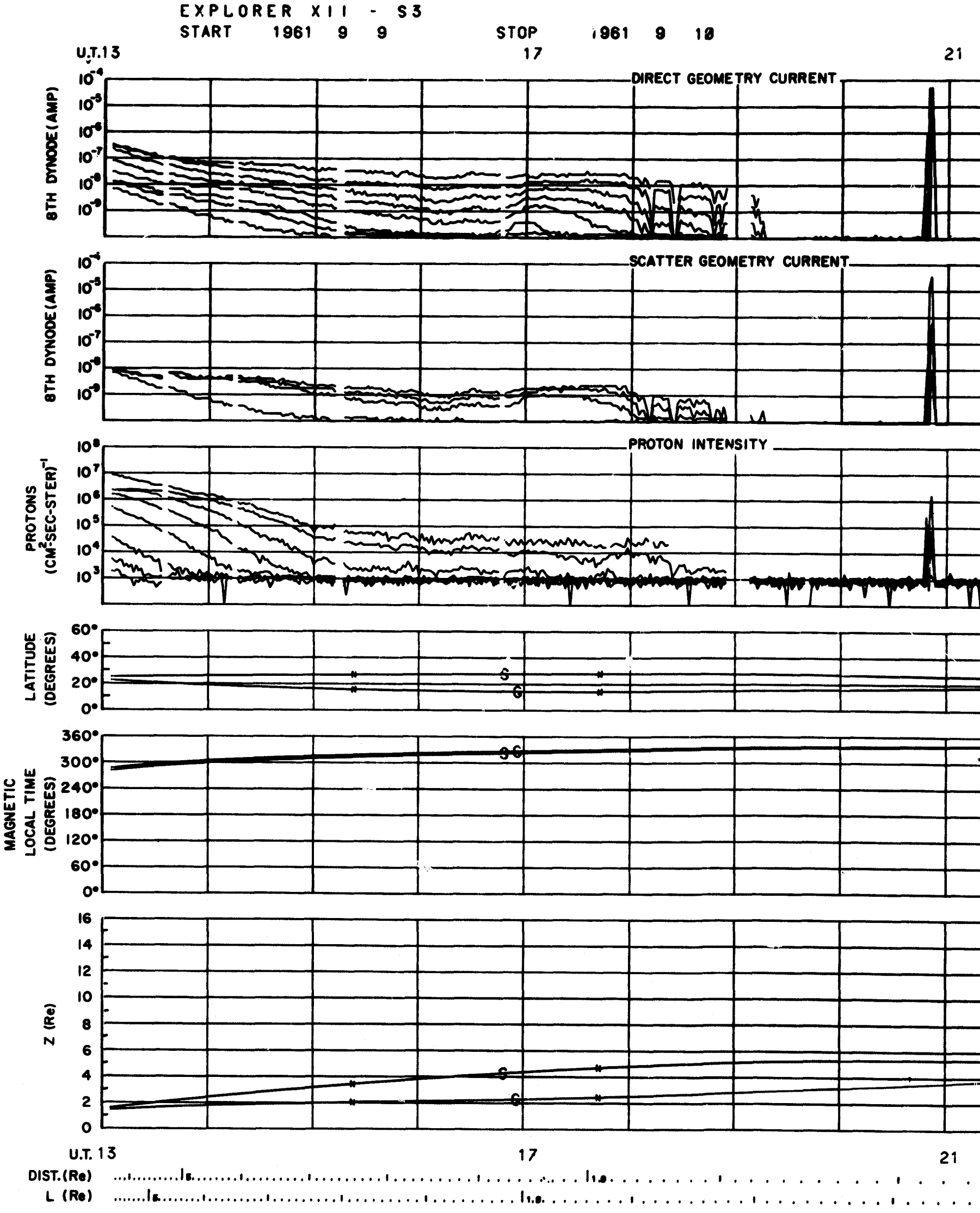

EXPLORER XII - S3
START 1961 9 8
STOP 1961 9 9
U.T.9
13
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 9
13
DIST. (Re)
L (Re)


17
BOILOUT FRAME 2
21
METRY CURRENT
OMETRY CURRENT
ENSITY
S
G
SG
S
G
17
21


1
3
5
FOLDOUT FRAME
S G
3 G
G
S
1
5

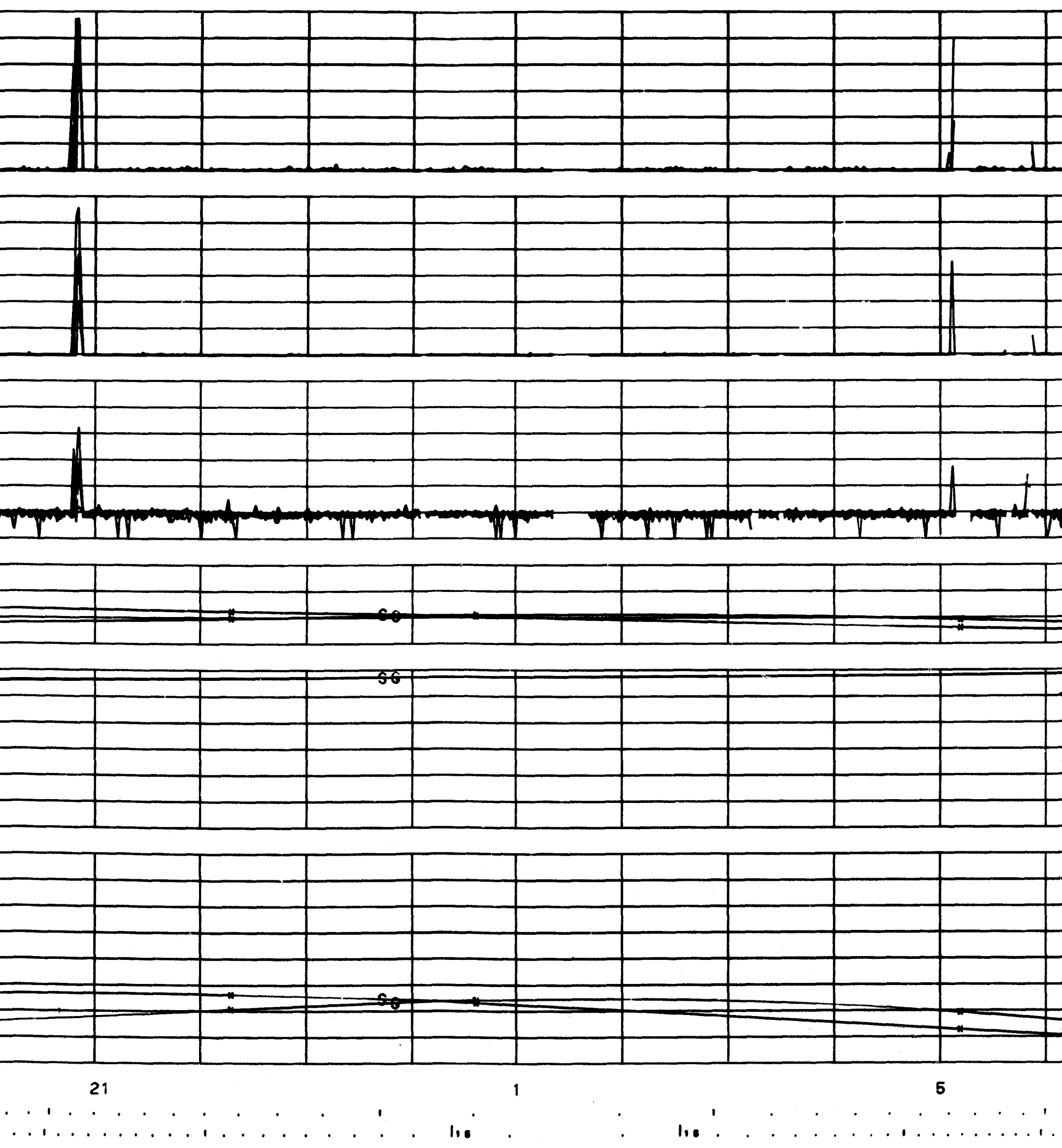
FOLDOUT FRAME 4



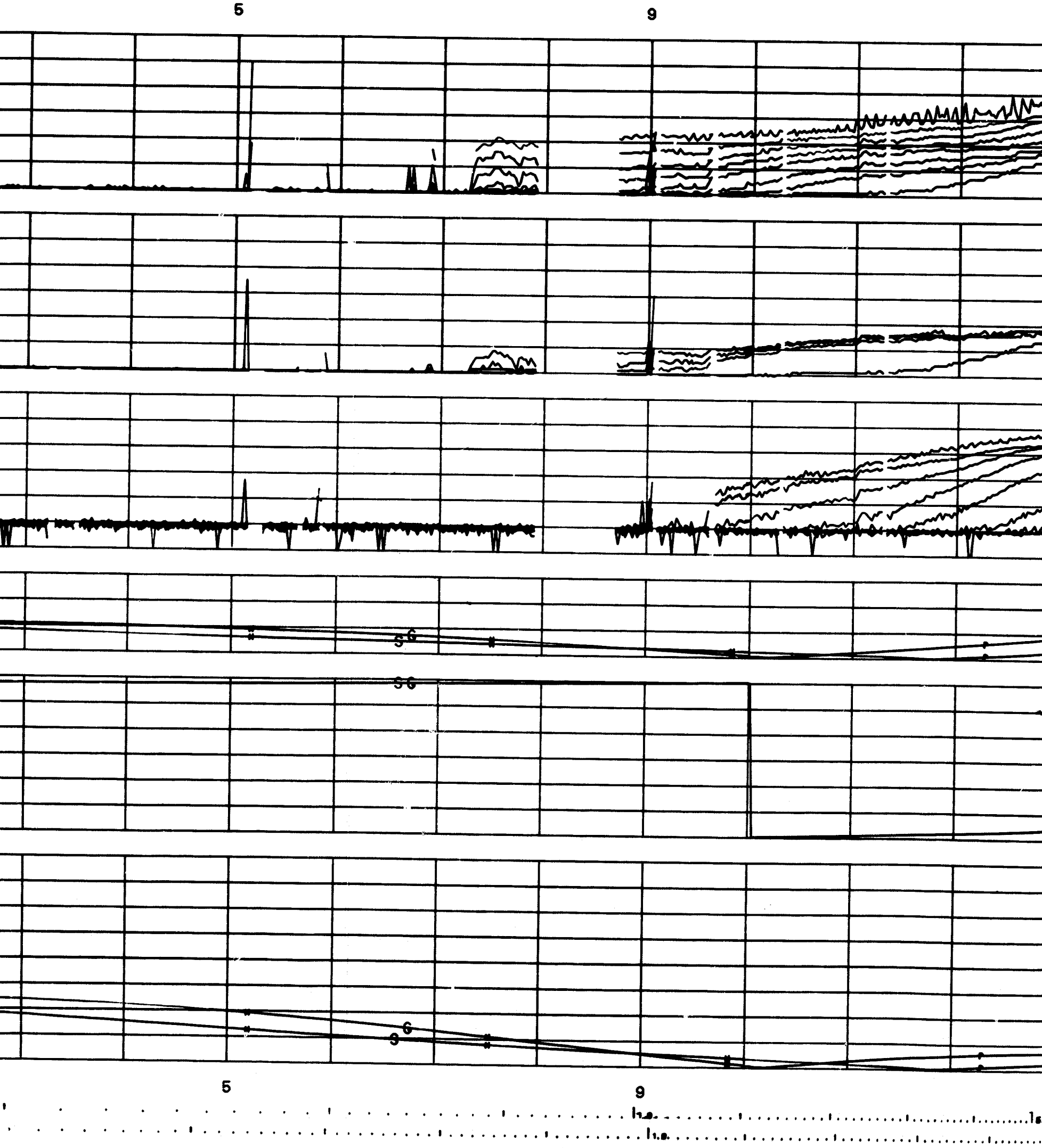

EXPLORER XII - S3
START 1961 9 9
STOP 1961 9 10
U.T. 13
17
21
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 13
17
21
DIST. (Re)
L (Re)

FOLDOUT FRAME 2

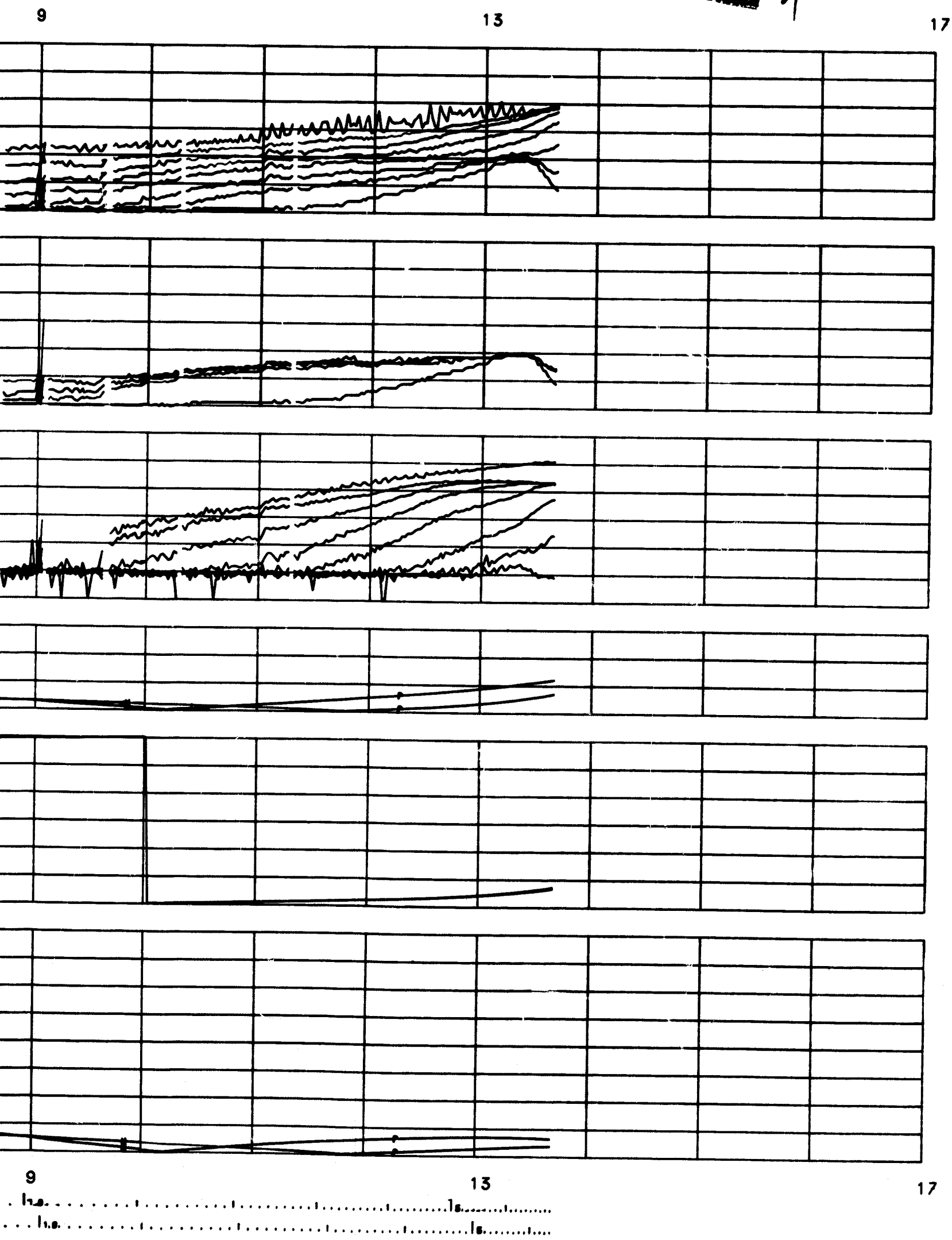
FOLDOUT

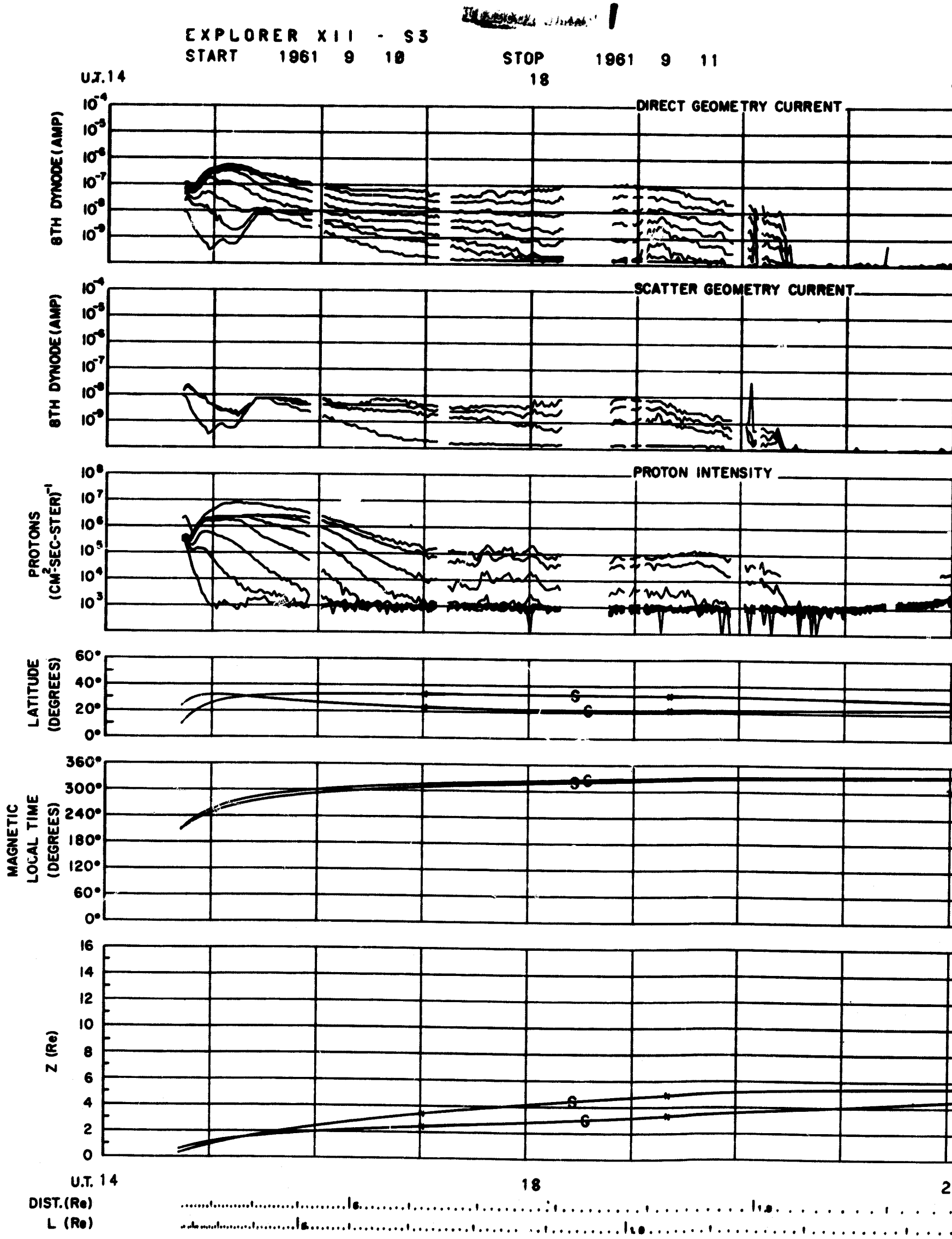


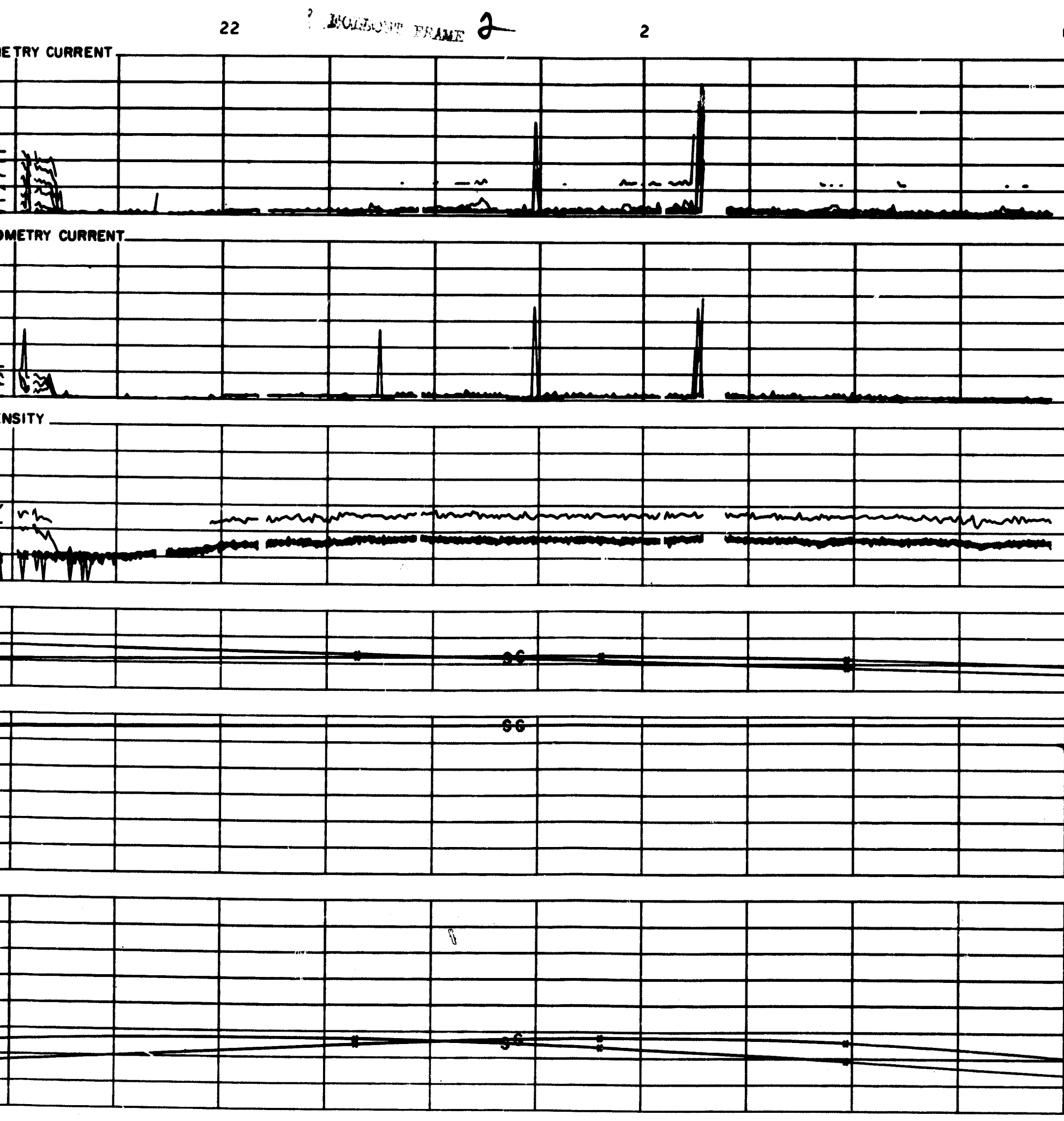
FOLDOUT FRAME 3



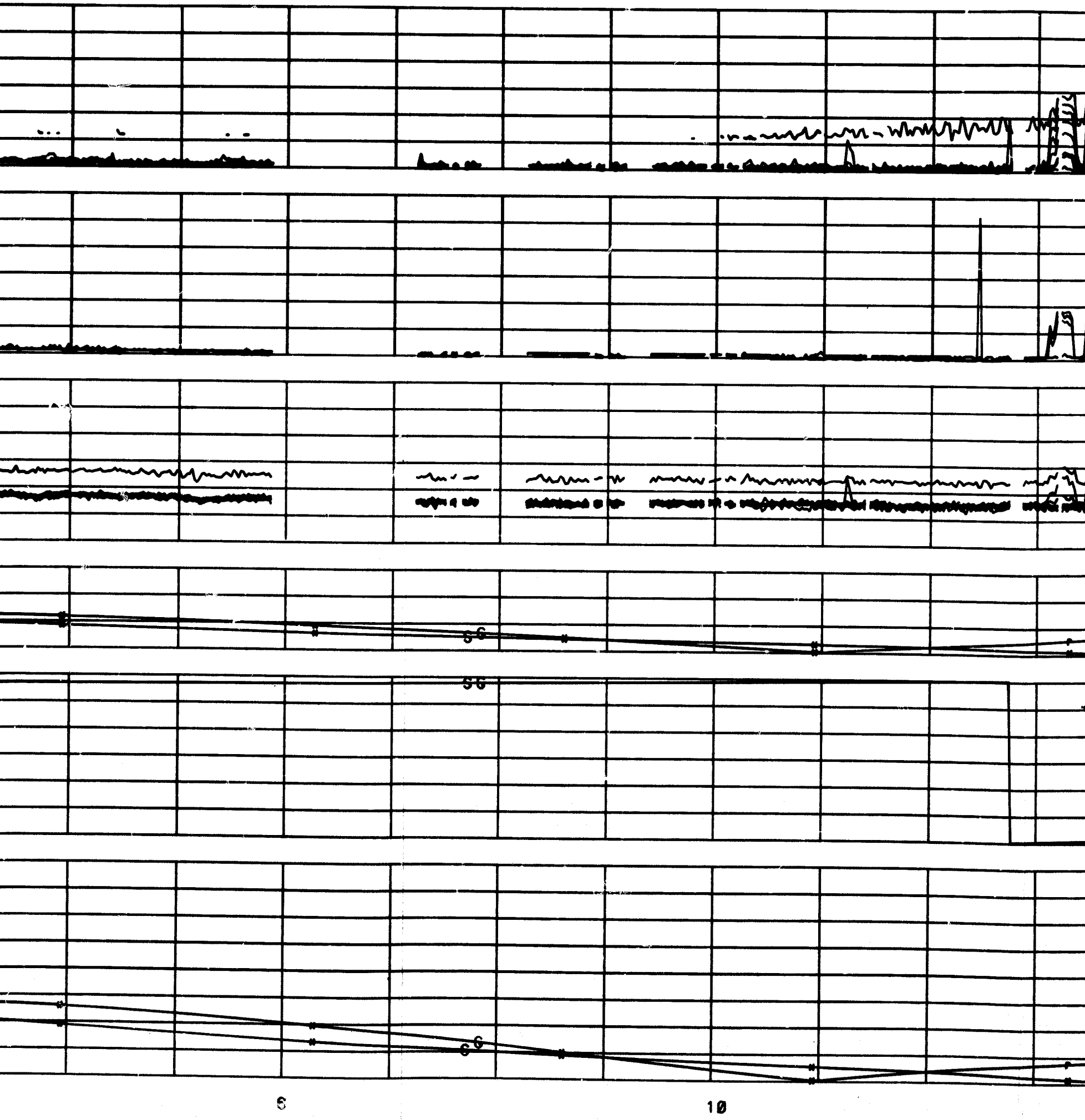
FOLDOUT FRAME 4



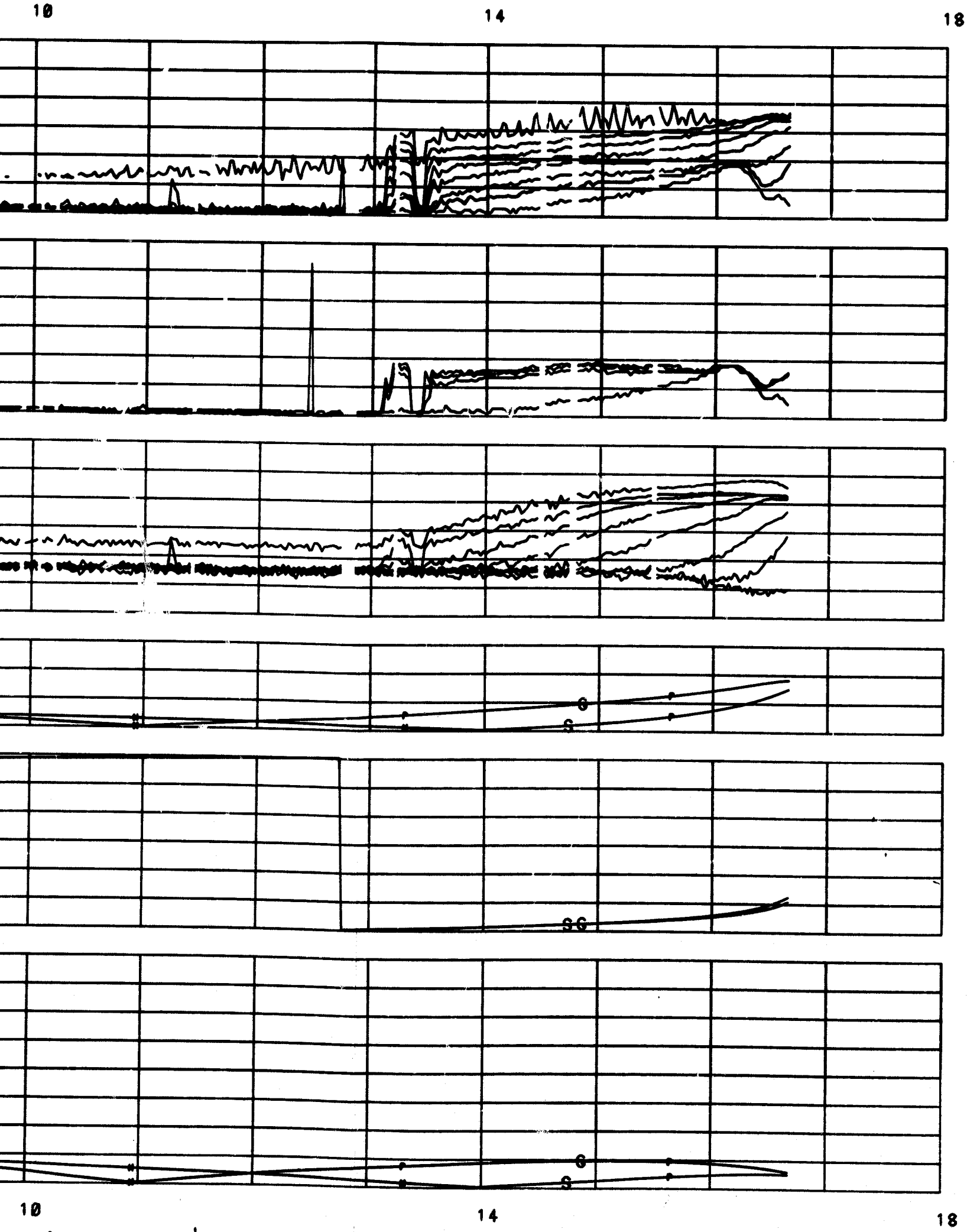

EXPLORER XII - S3
START 1961 9 10
STOP 1961 9 11
UT.14
18
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 14
18
DIST. (Re)
L (Re)

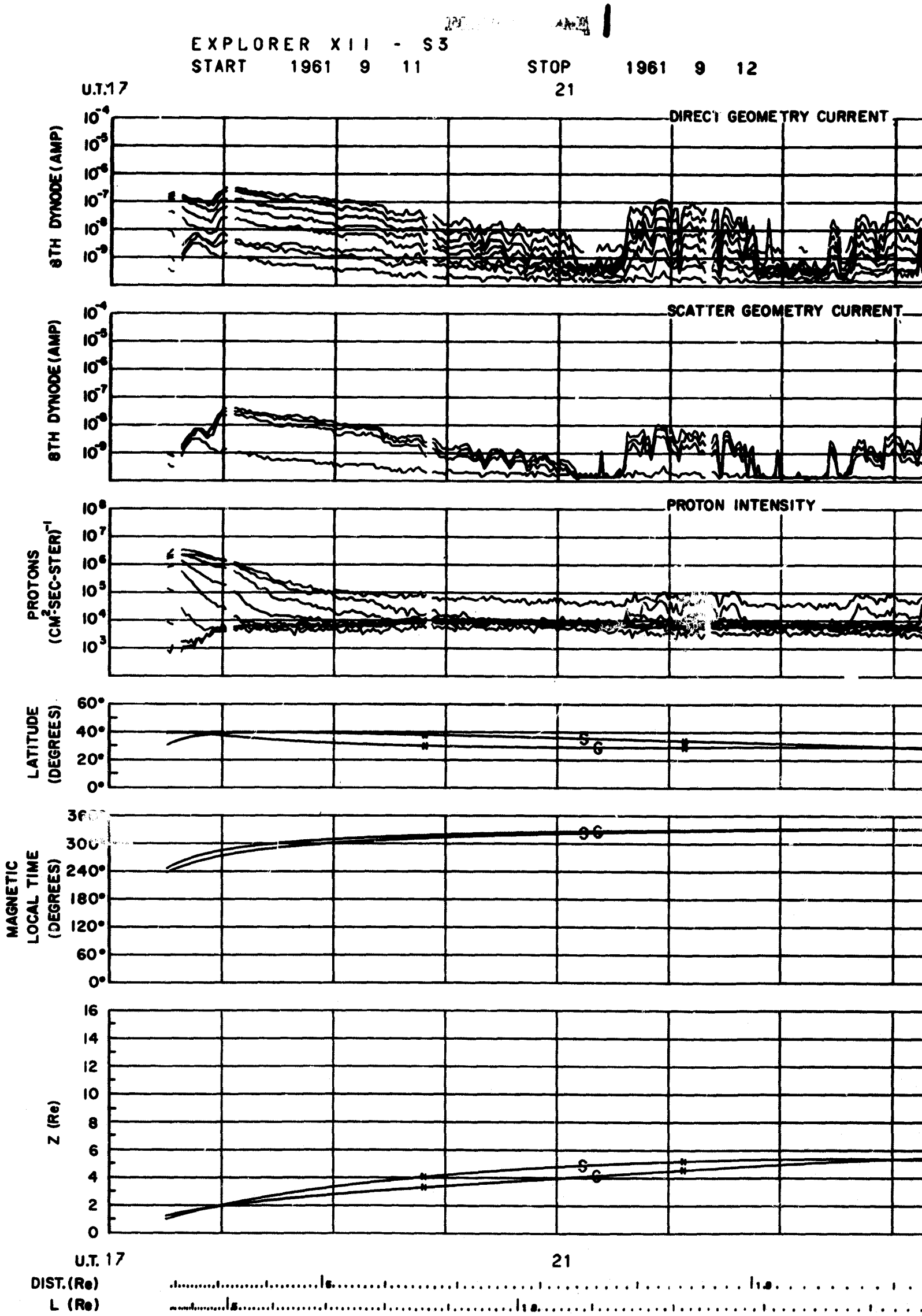

22
FRAME 2
2
ETRY CURRENT
OMETRY CURRENT
NSITY
SG
SG
SG
22
2

6 FOLDOUT FRAME 3 10



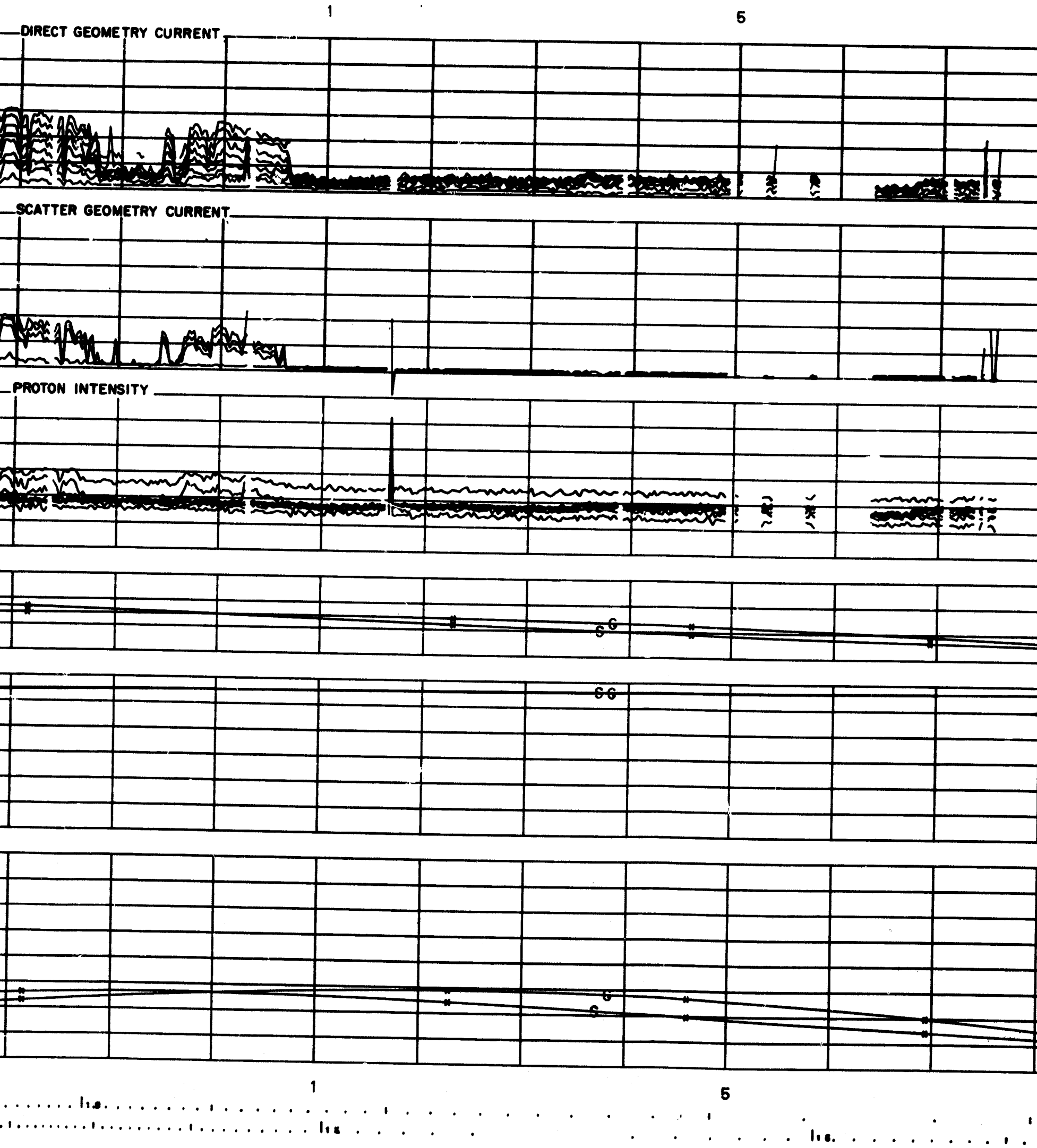
FOLDOUT FRAME 4



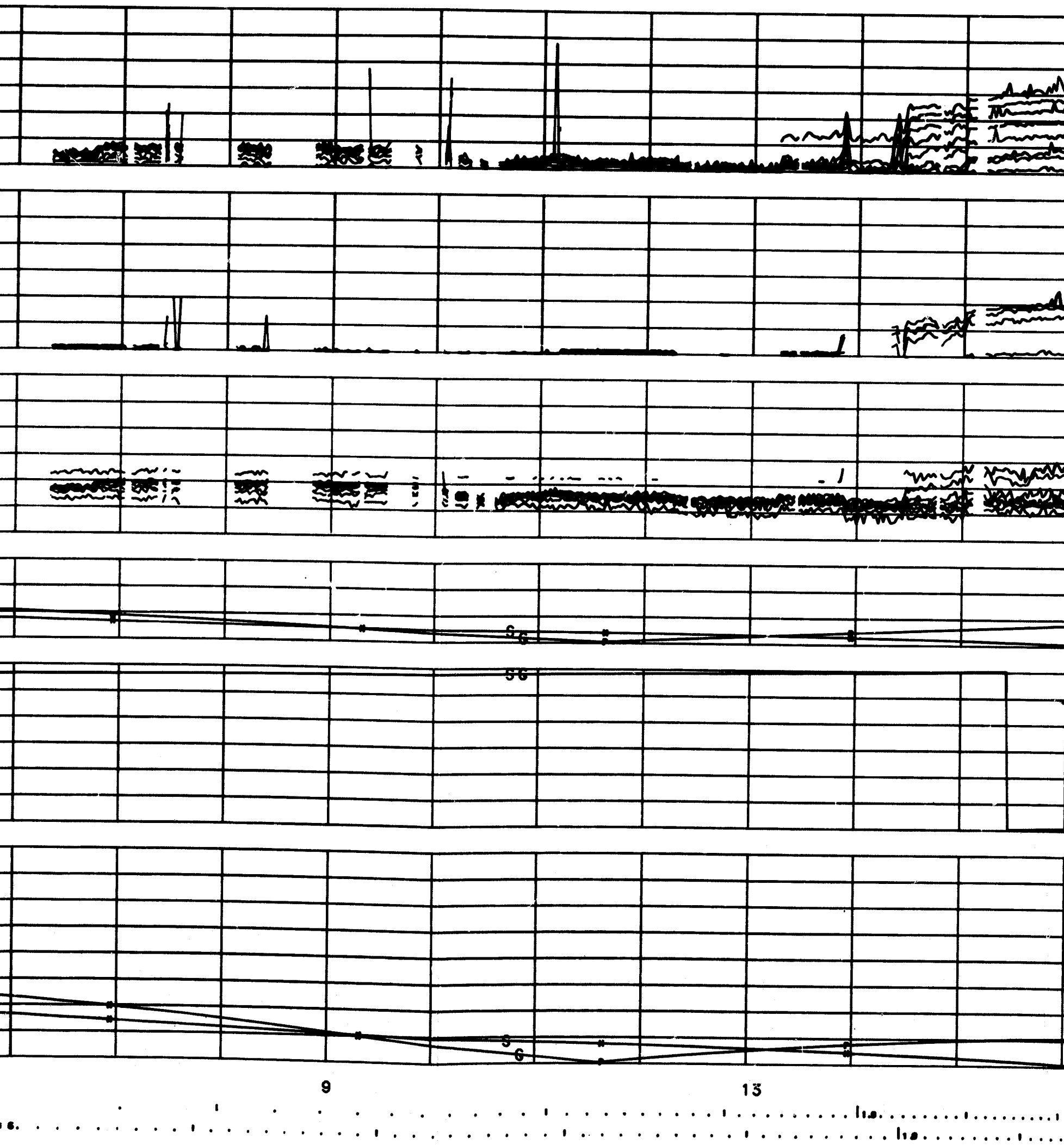

EXPLORER XII - S3
START 1961 9 11
STOP 1961 9 12
U.T. 17
21
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
DIST. (Re)
L (Re)

61 9 12

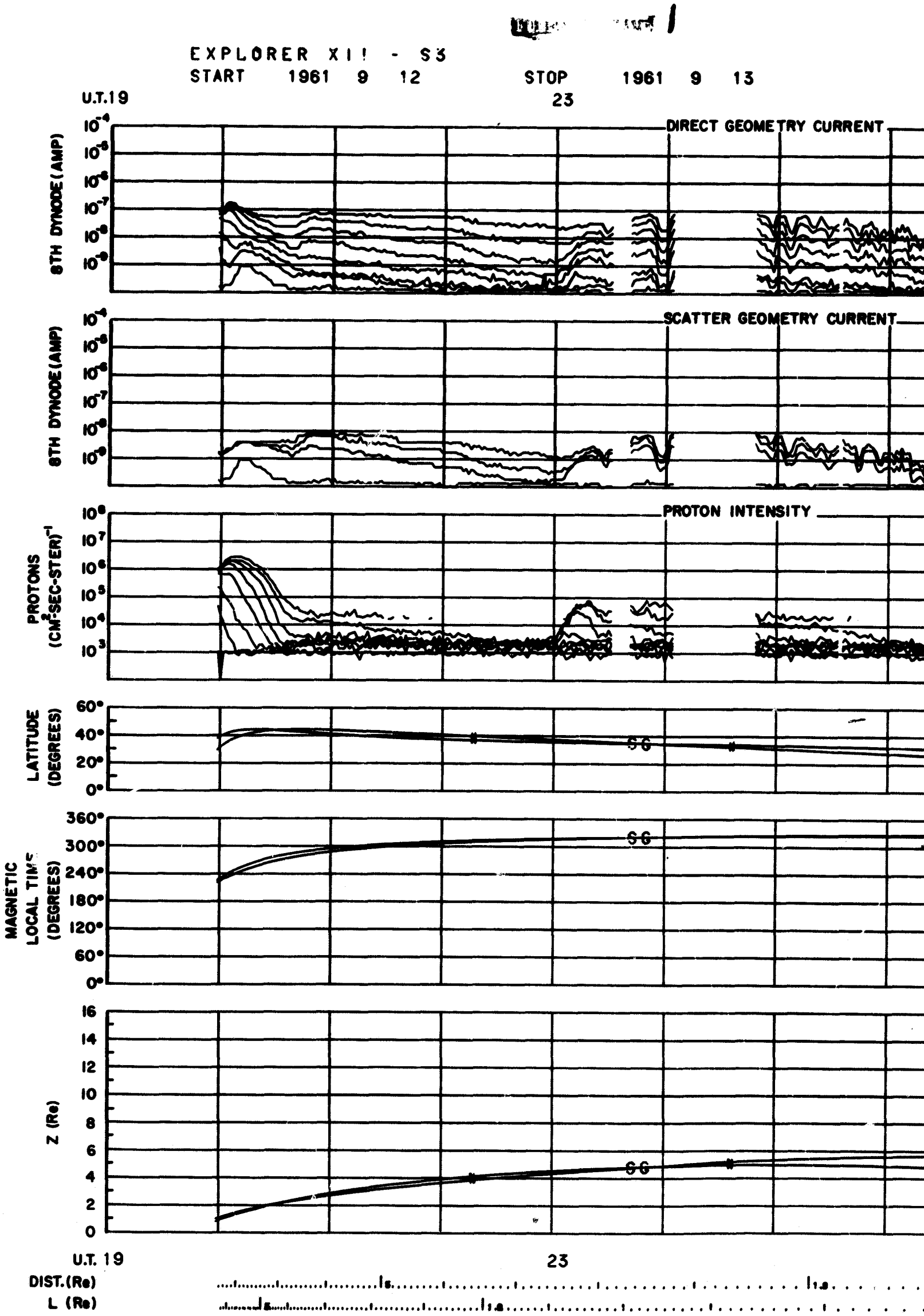
2

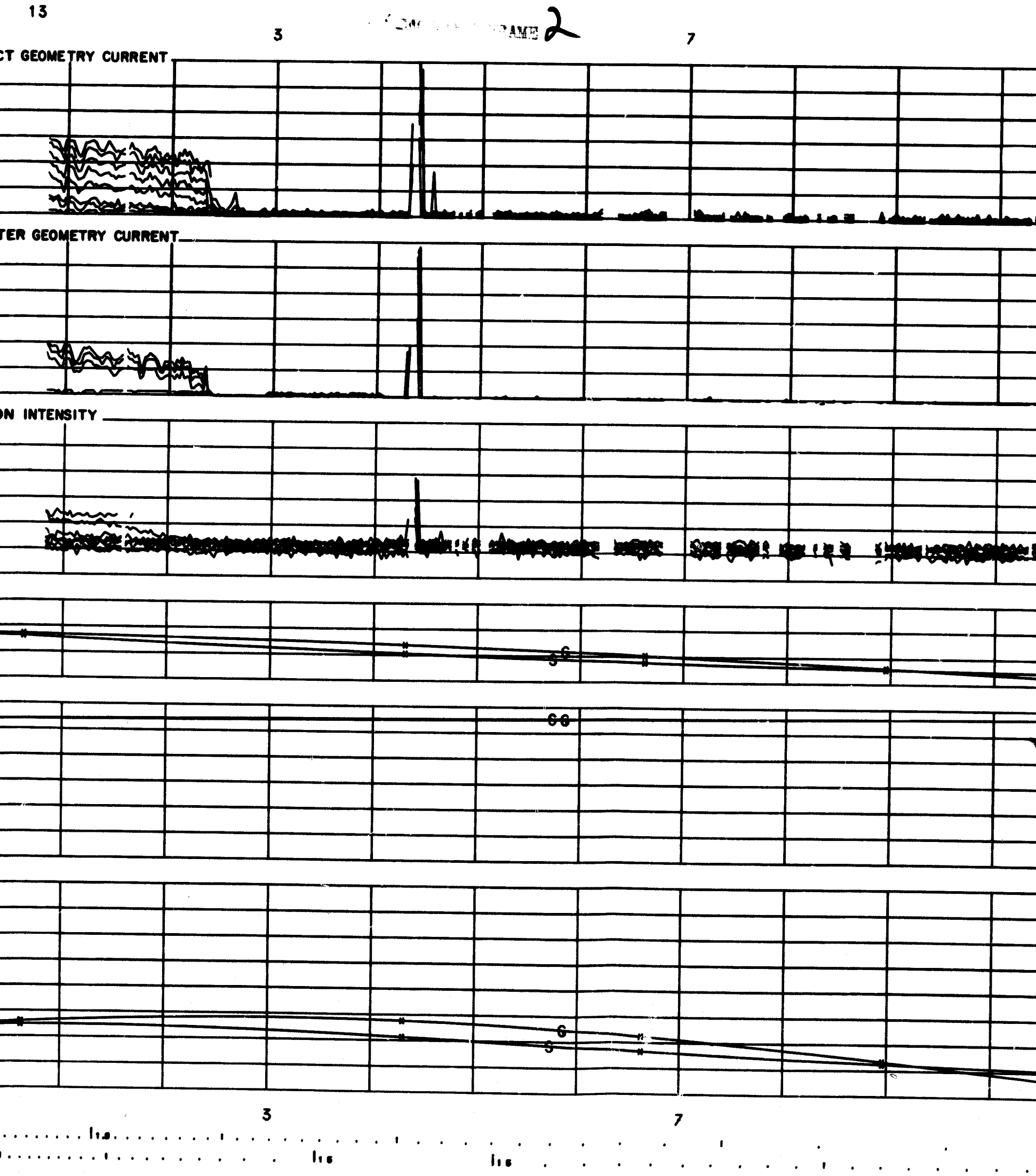

1
5
DIRECT GEOMETRY CURRENT
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
G
S
G
G
G
S
1
5

FOLDOUT FRAME 3

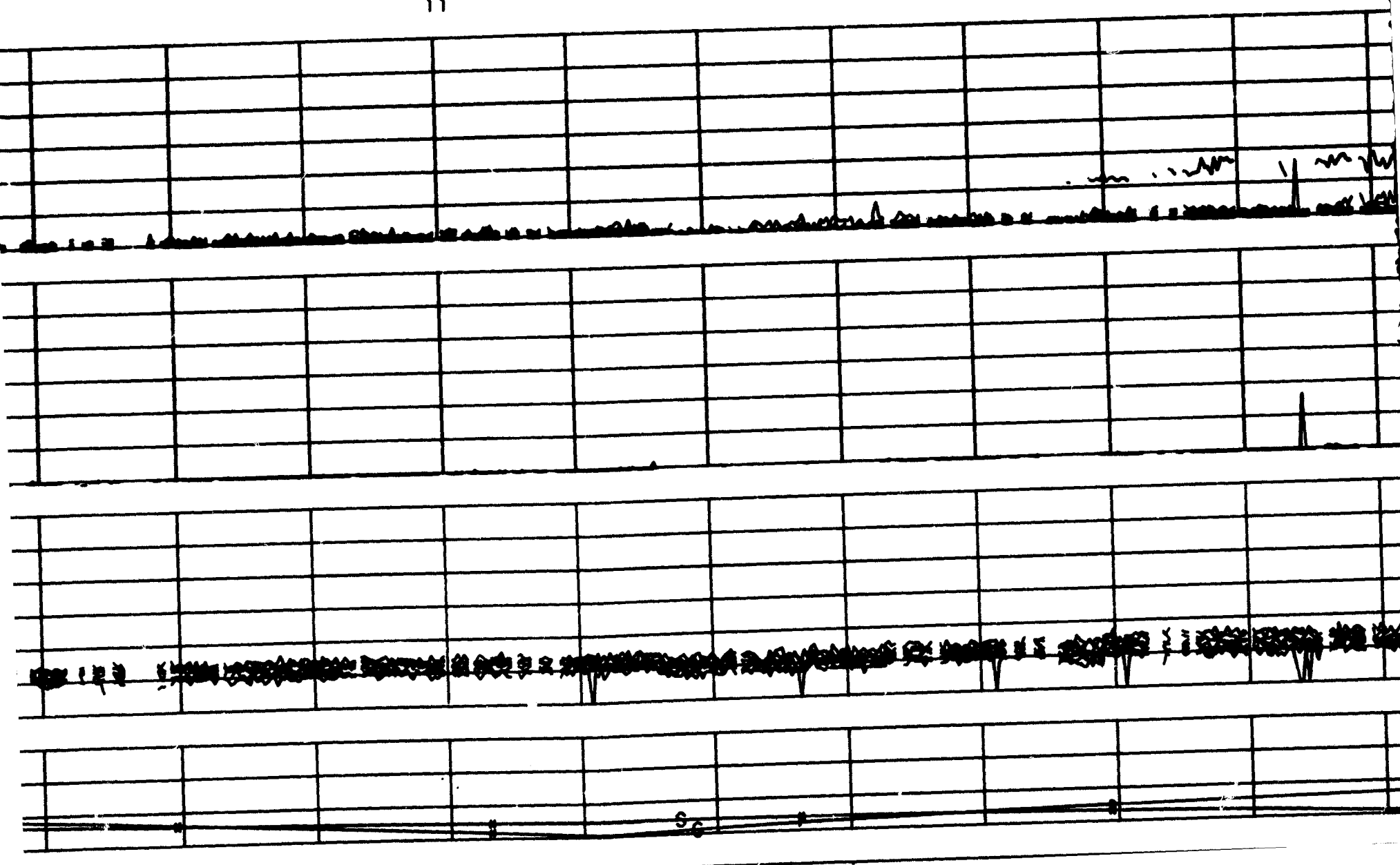


FOLDOUT FRAME 4

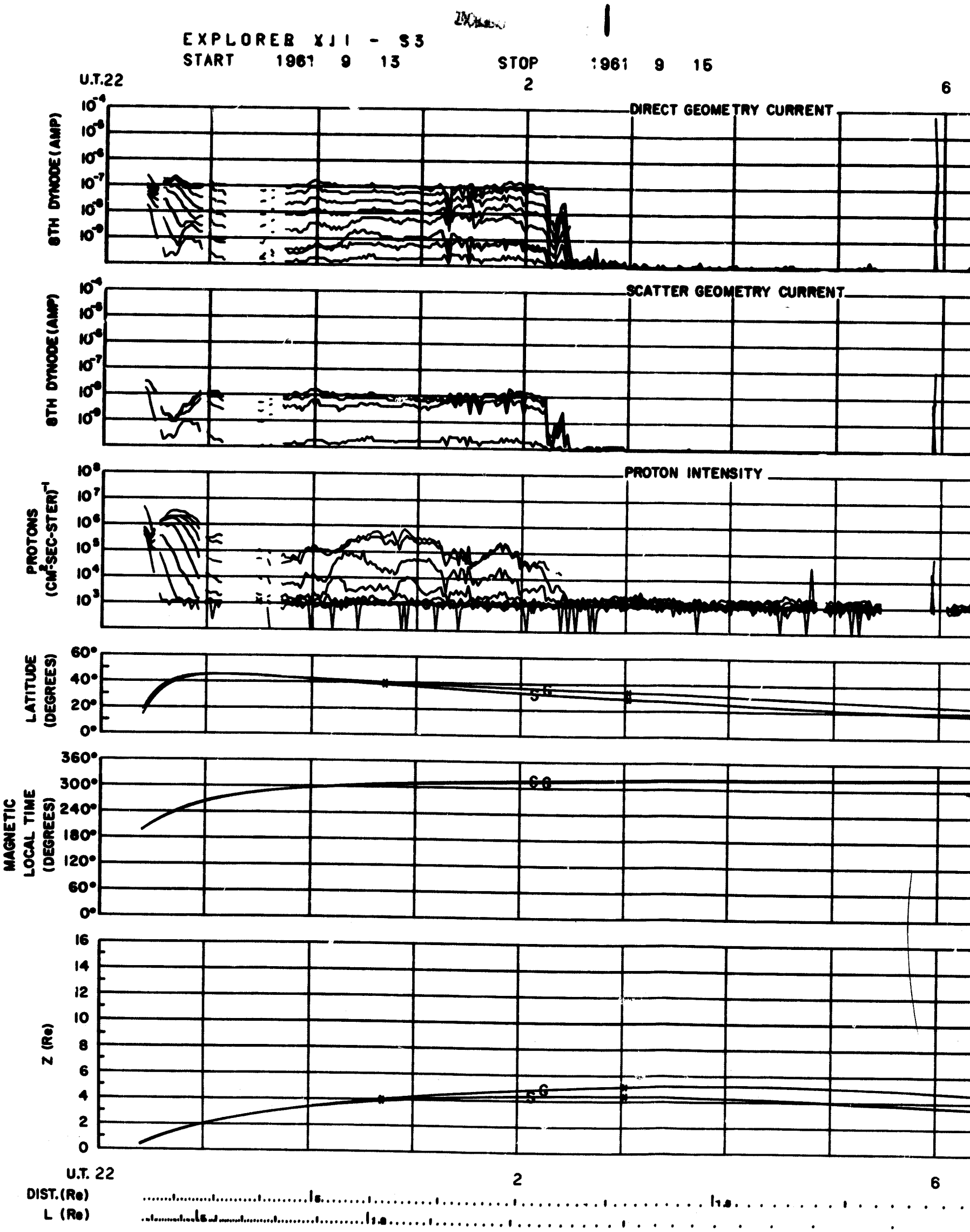

EXPLORER XII - S3
START 1961 9 12
STOP 1961 9 13
U.T.19
23
DIRECT GEOMETRY CURRENT
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
8TH DYNODE (AMP)
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
S6
U.T. 19
23
DIST.(Re)
L (Re)

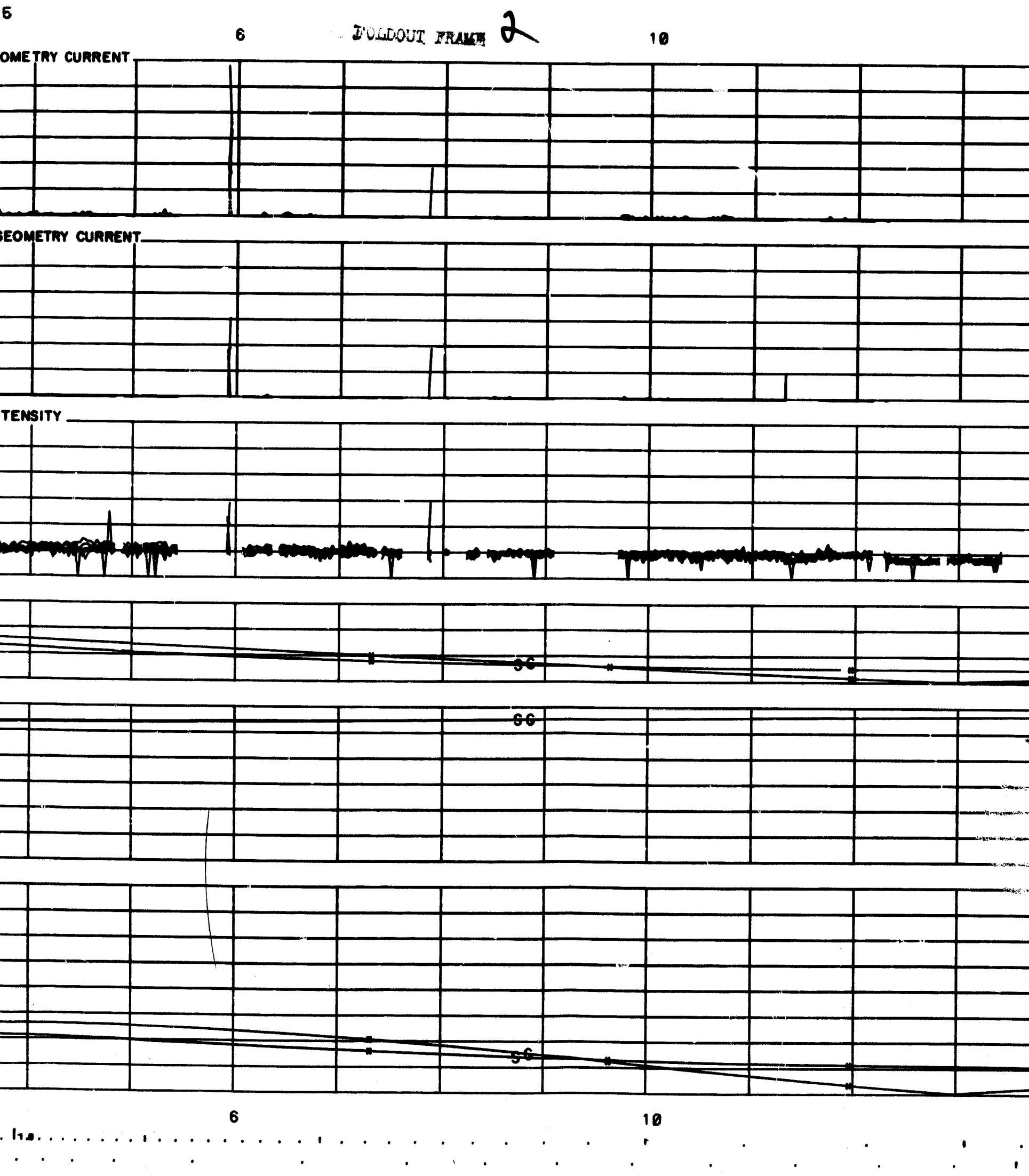

13
3
FRAME 2
7
CT GEOMETRY CURRENT
TER GEOMETRY CURRENT
ON INTENSITY
G
S
G G
G
S
3
7

FOLDOUT FRAME 3

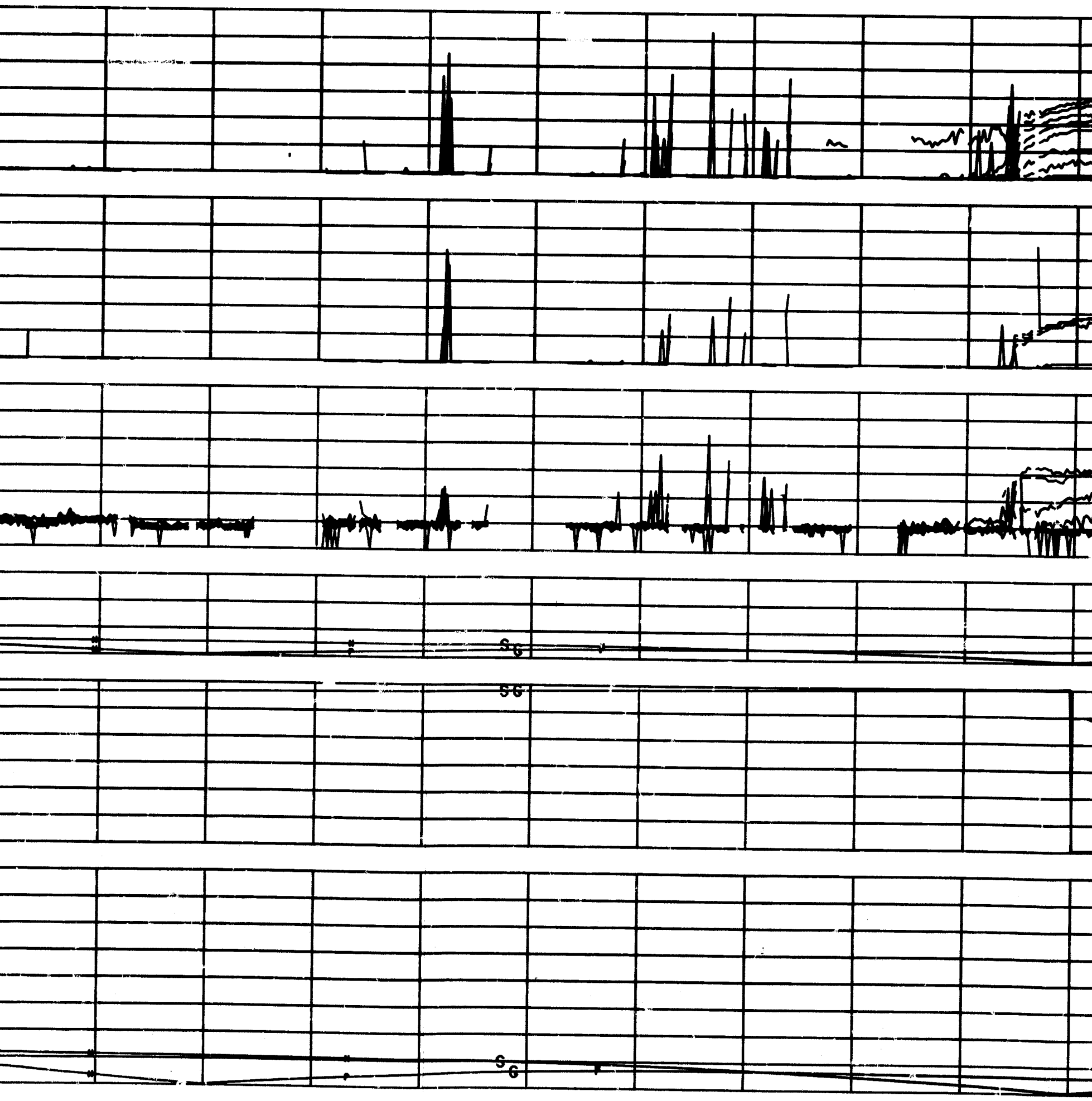


15
19
FOLDOUT FRAME 4
23
S
S
S
S
S
S
15
19
23

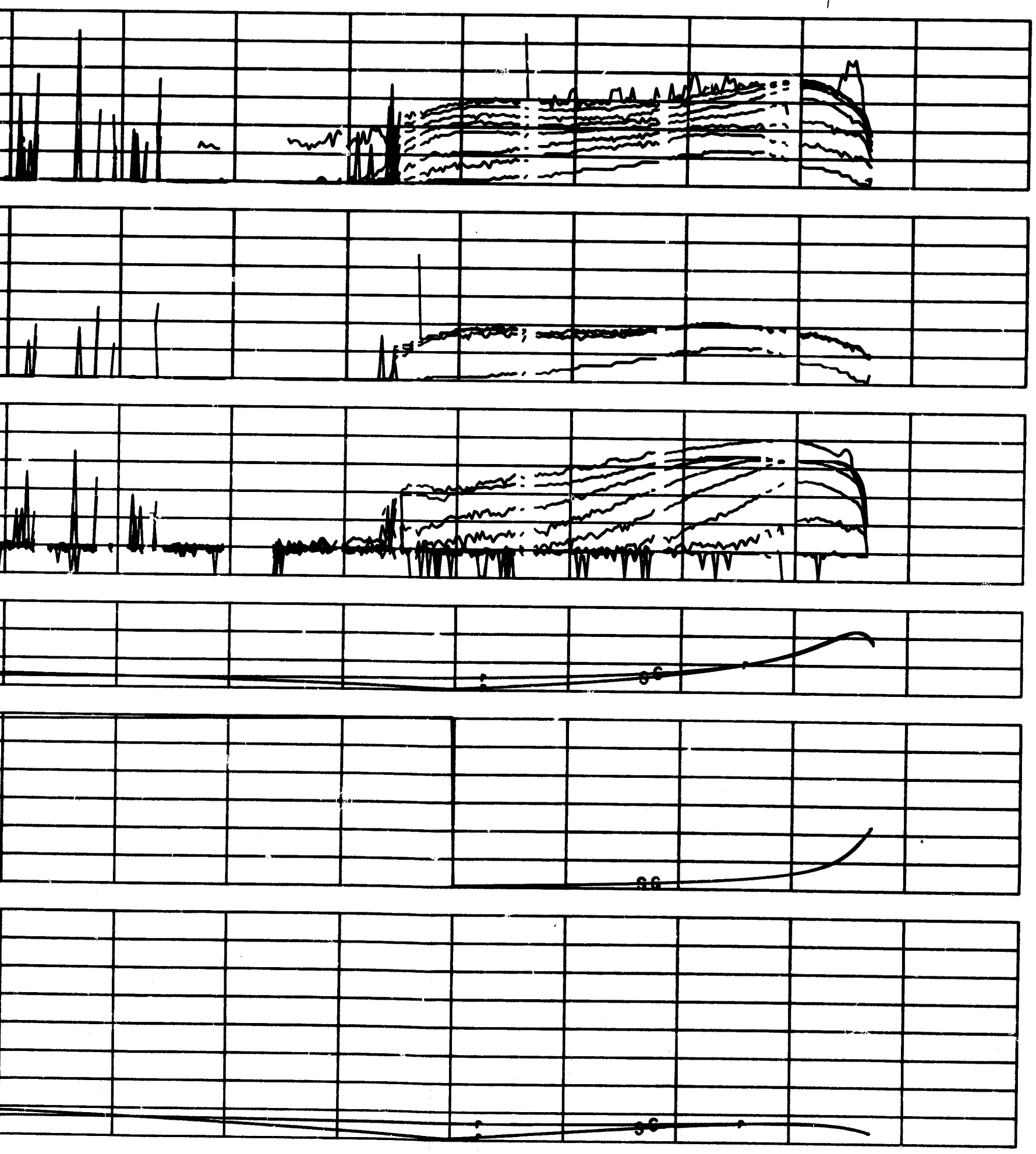

EXPLORER XII - S3
START 1961 9 13
STOP 1961 9 15
U.T.22
2
6
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 22
2
6
DIST. (Re)
L (Re)

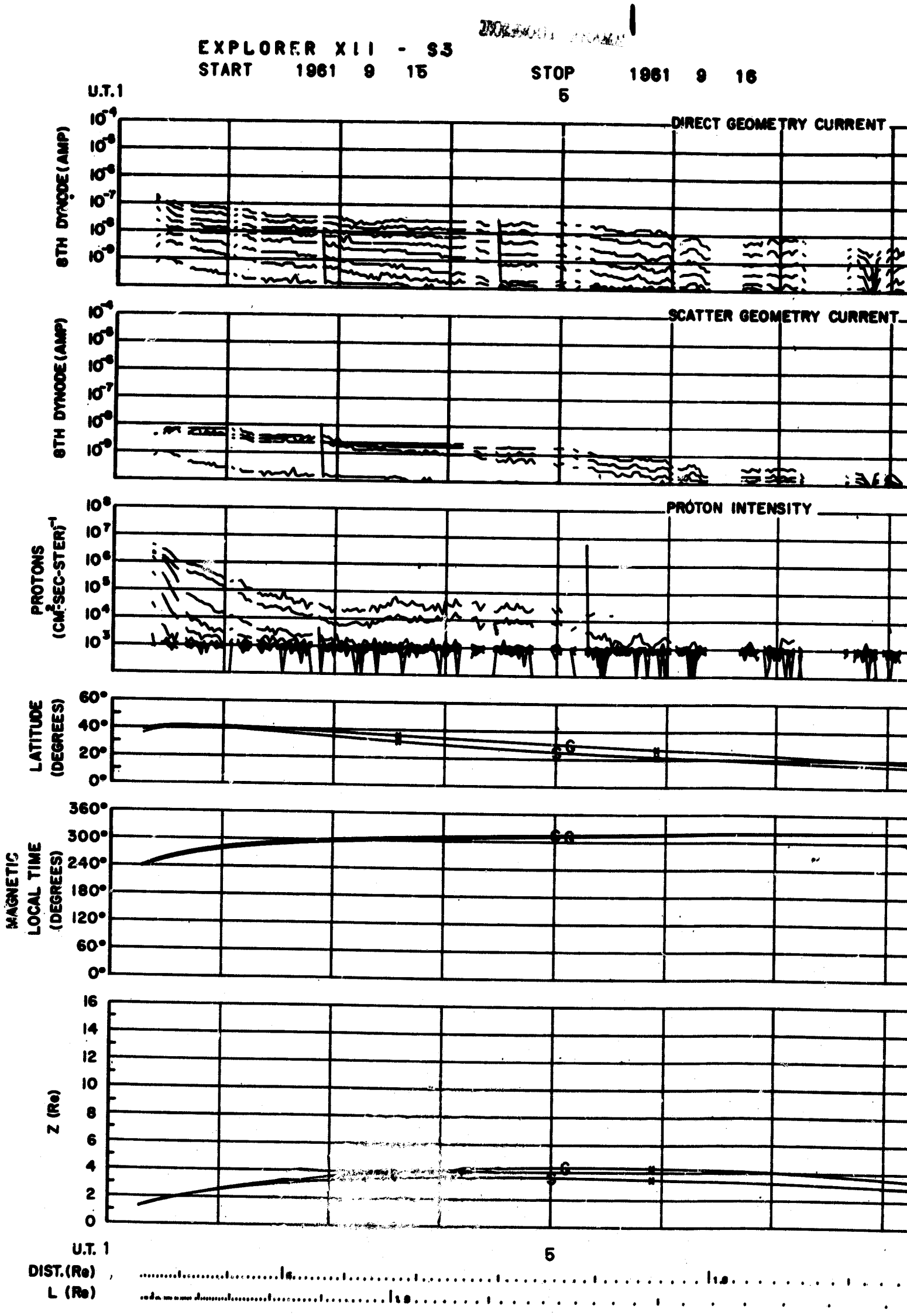

5
6
FOLDOUT FRAME 2
10
OMETRY CURRENT
EOMETRY CURRENT
TENSITY
SC
SC
SC
6
10

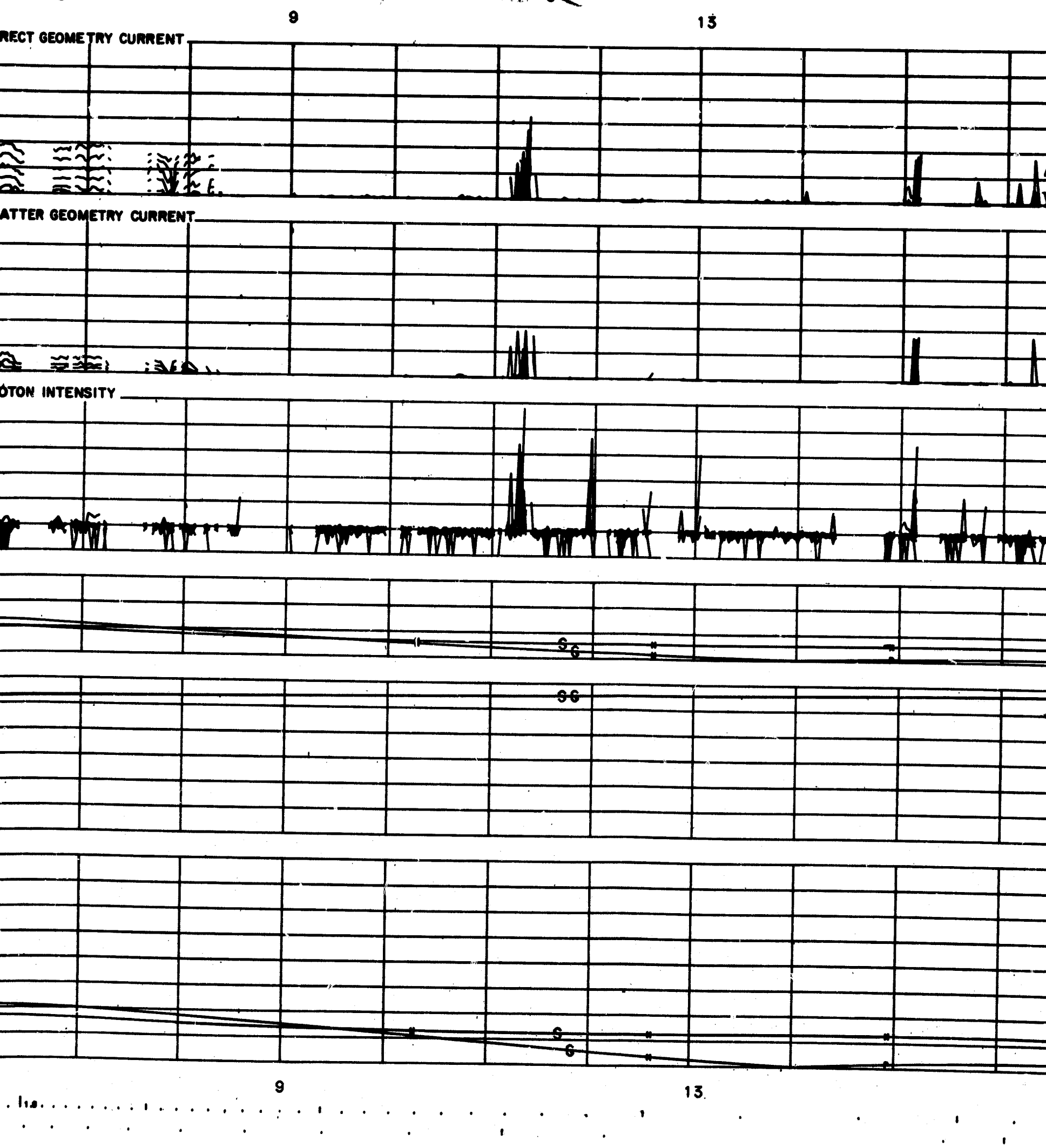
FOLDOUT FRAME 3



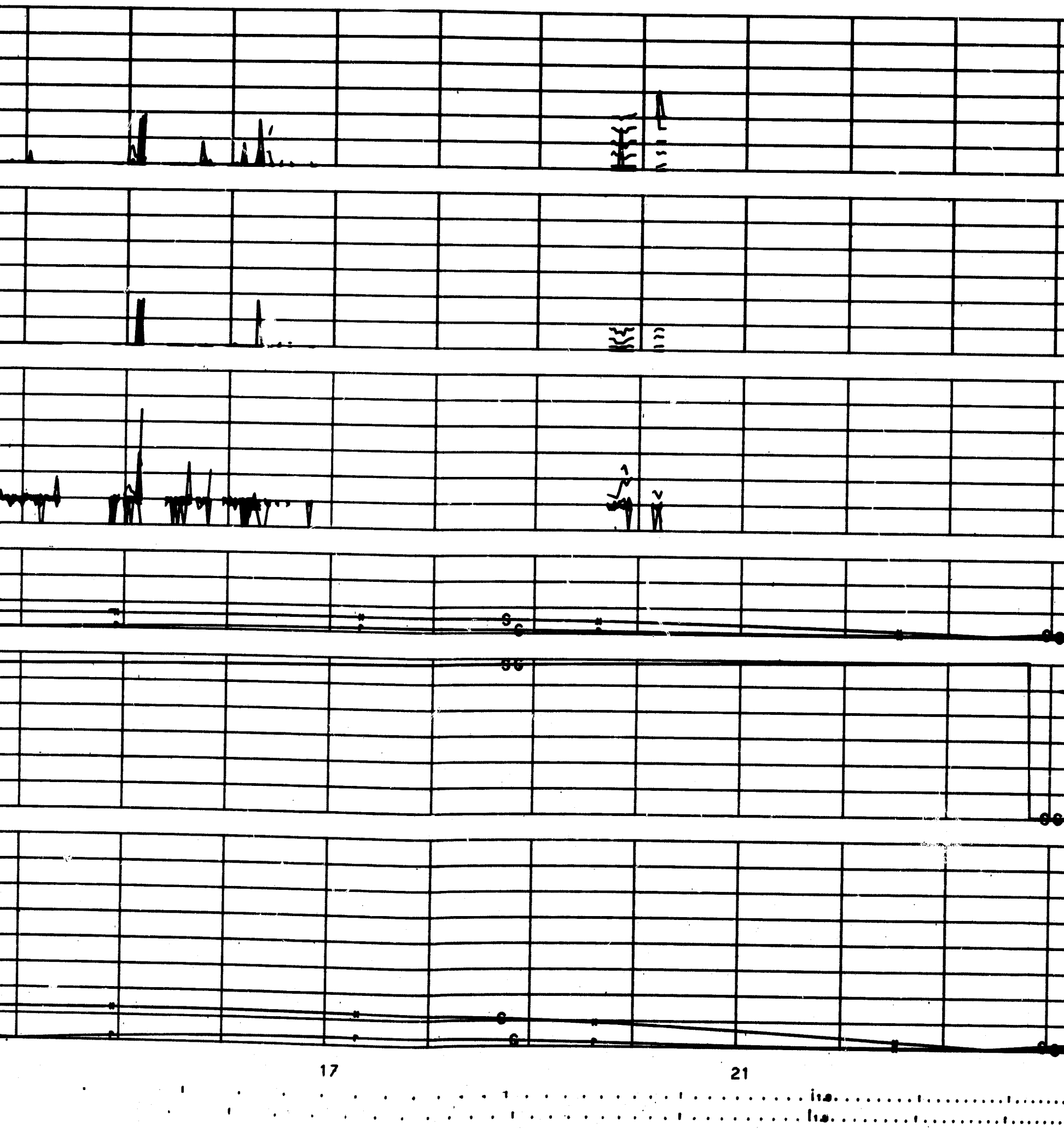
FOLDOUT FRAME 4



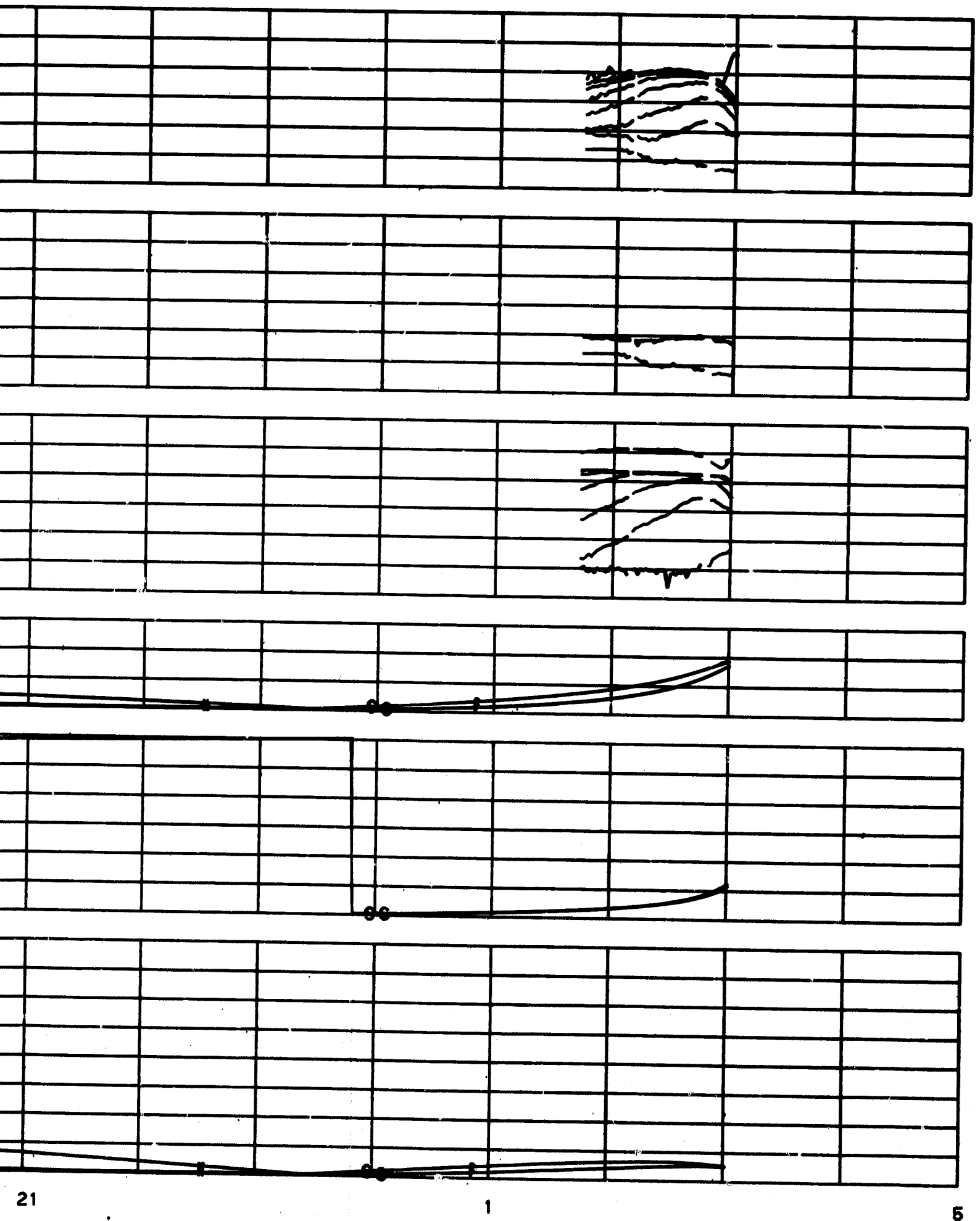

EXPLORER XII - S3
START 1961 9 15
STOP 1961 9 16
U.T.1
5
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM-2-SEC-STER)-1
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 1
5
DIST.(Re)
L (Re)

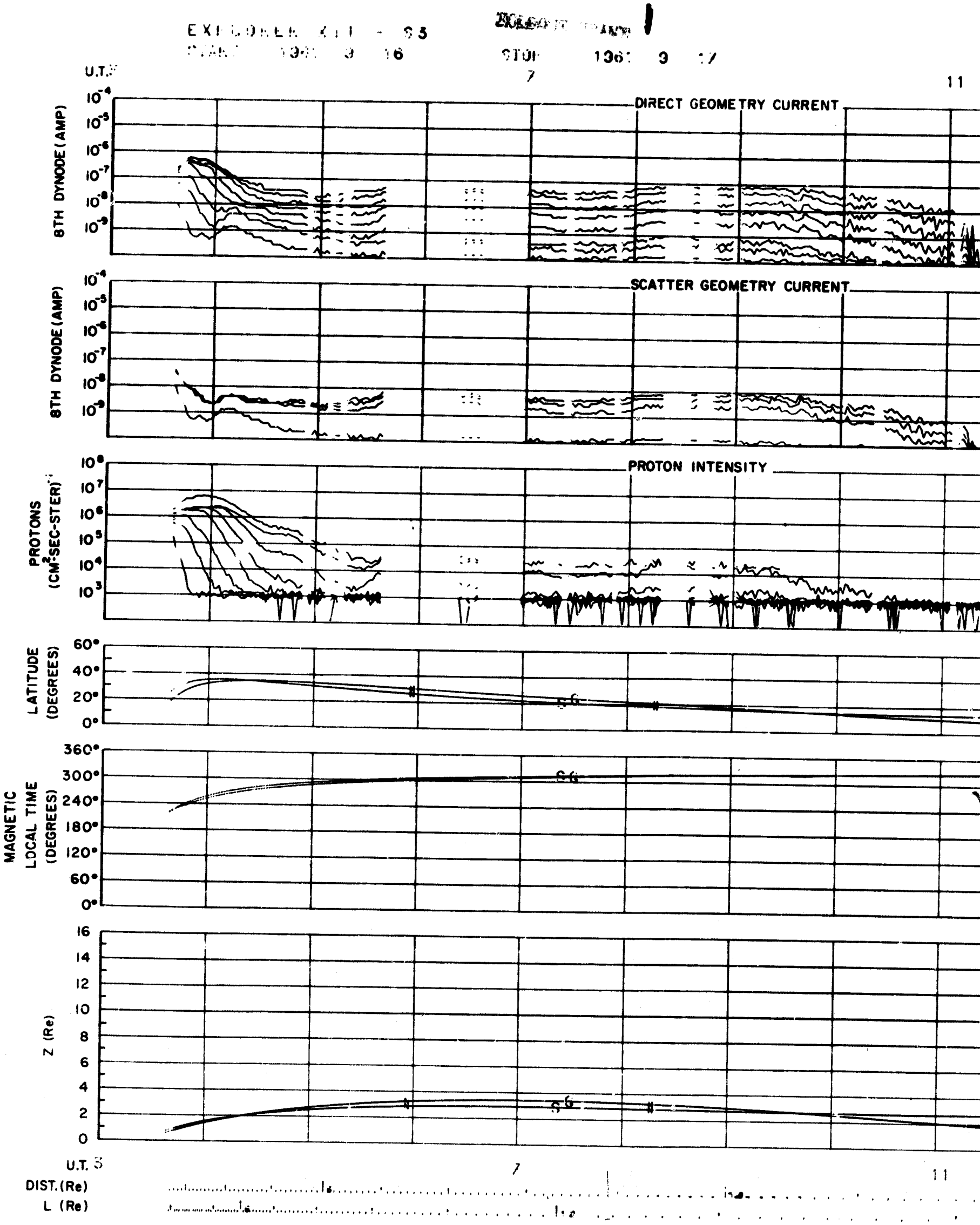

9 16
FOLDOUT FRAME 2
9
13
RECT GEOMETRY CURRENT
ATTER GEOMETRY CURRENT
OTON INTENSITY
SG
SG
SG
9
13

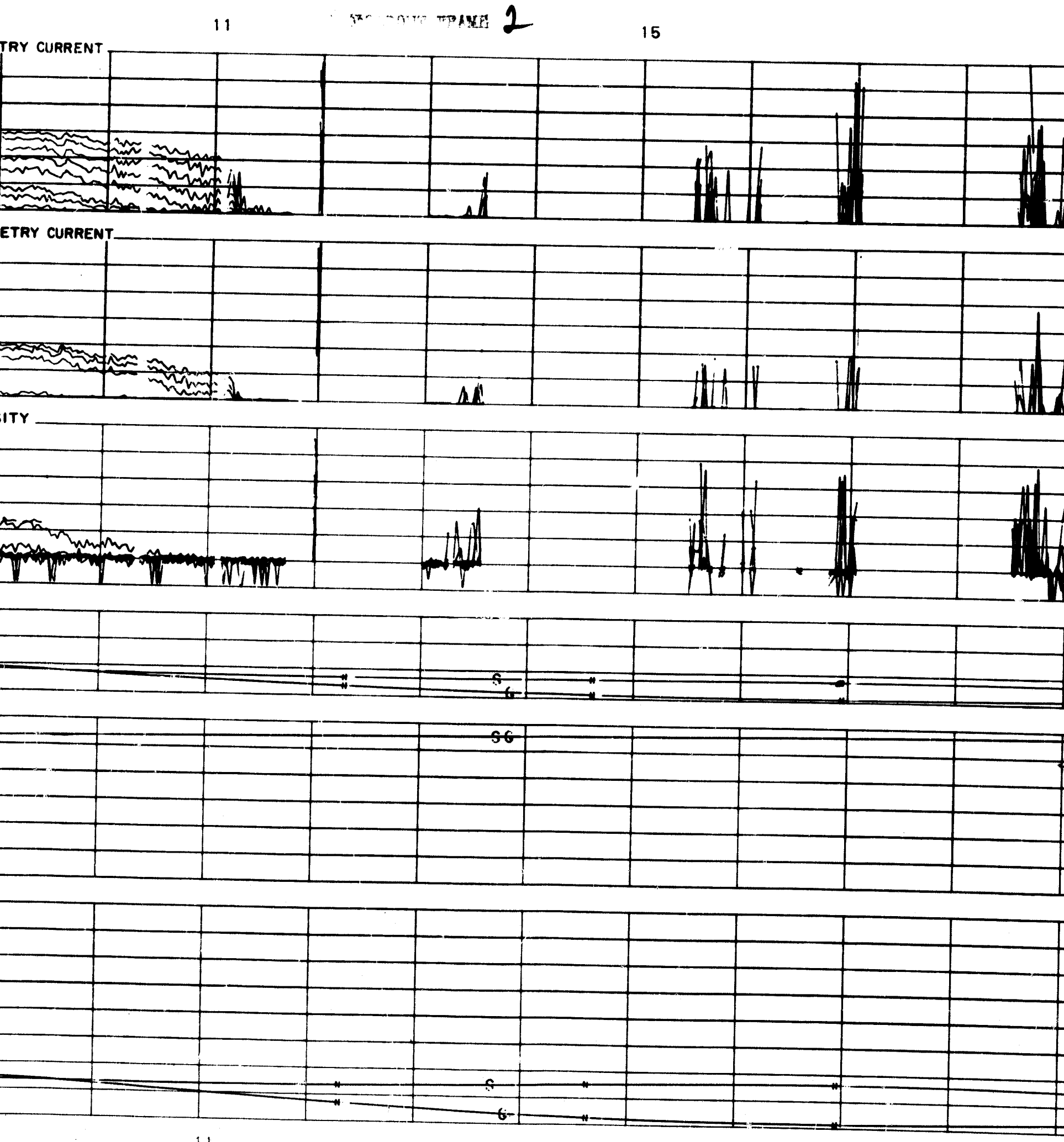
FOLDOUT FRAME 3



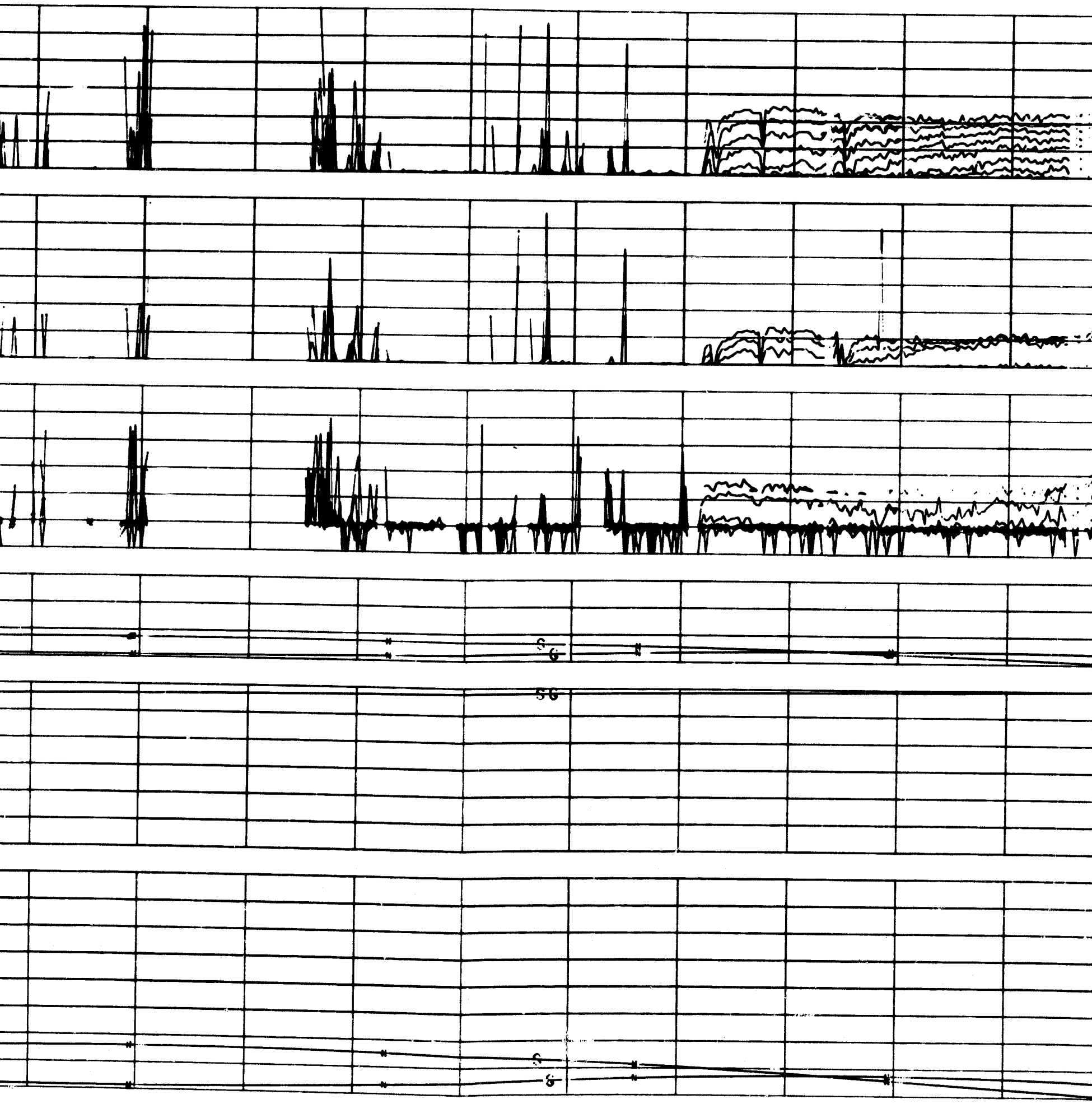
FOLDOUT FRAME 4



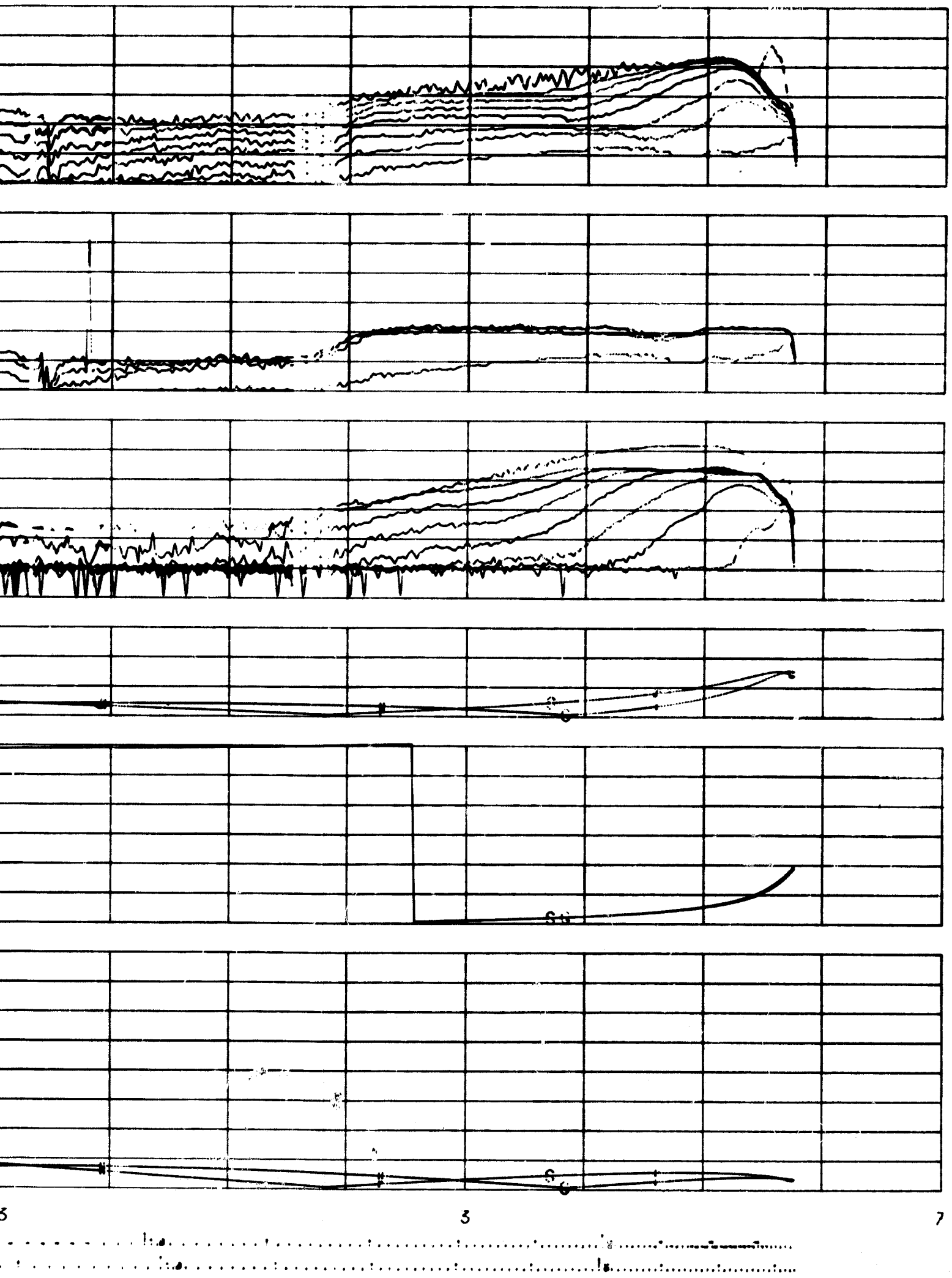

EXPLORER XII - 33
U.T.
7
11
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T.
DIST. (Re)
L (Re)

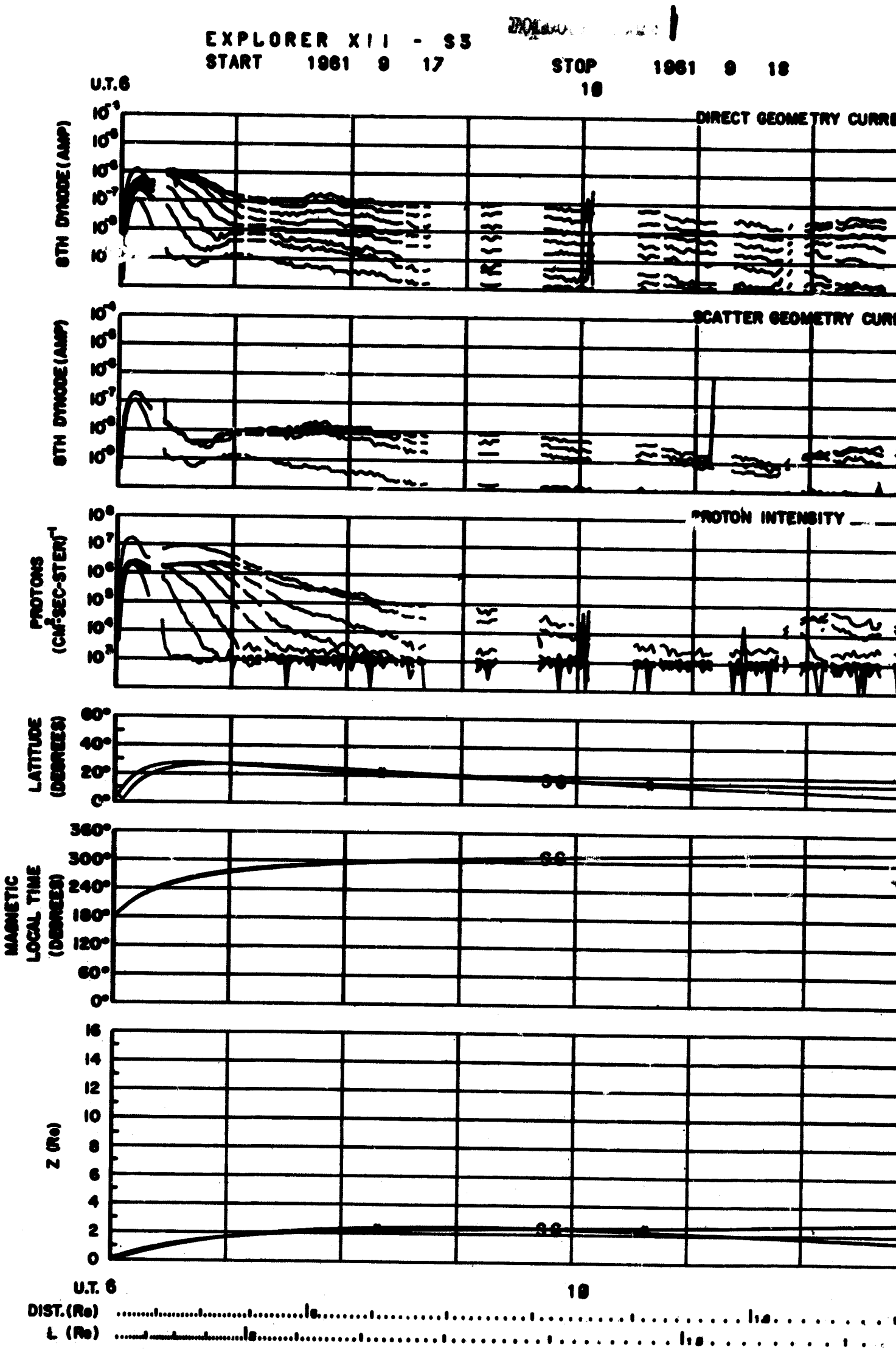

11
FRAME 2
15
TRY CURRENT
ETRY CURRENT
ITY
11
15

FOLDOUT FRAME 3



FOLDOUT FRAME 1




EXPLORER XII - S3
START 1961 9 17
STOP 1961 9 18
U.T.6
18
DIRECT GEOMETRY CURRE
8TH DYNODE (AMP)
SCATTER GEOMETRY CURR
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 6
18
DIST. (Re)
L (Re)

1

1961 9 18

2

14 18

DIRECT GEOMETRY CURRENT

SCATTER GEOMETRY CURRENT

PROTON INTENSITY

3

6

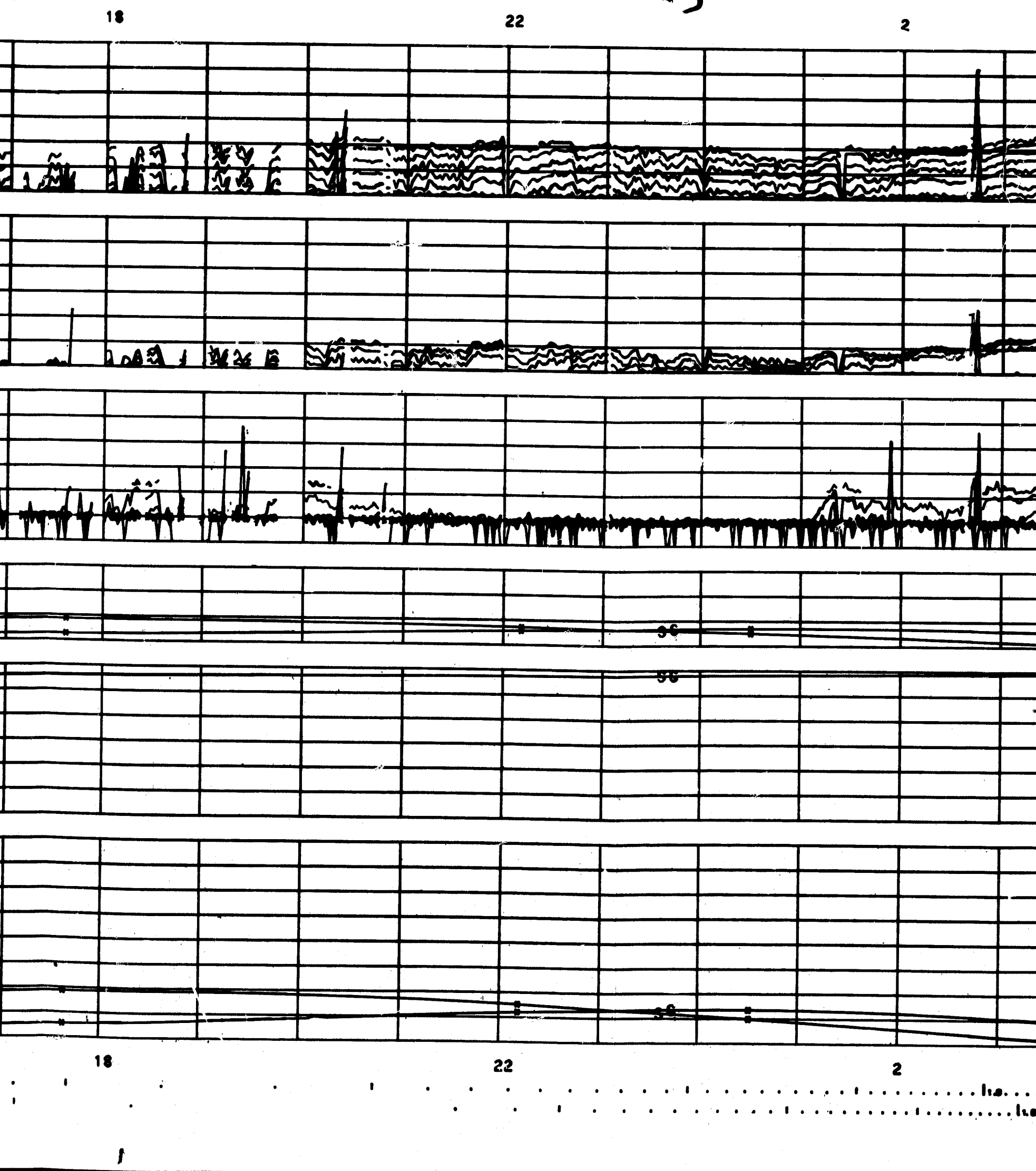
36

3

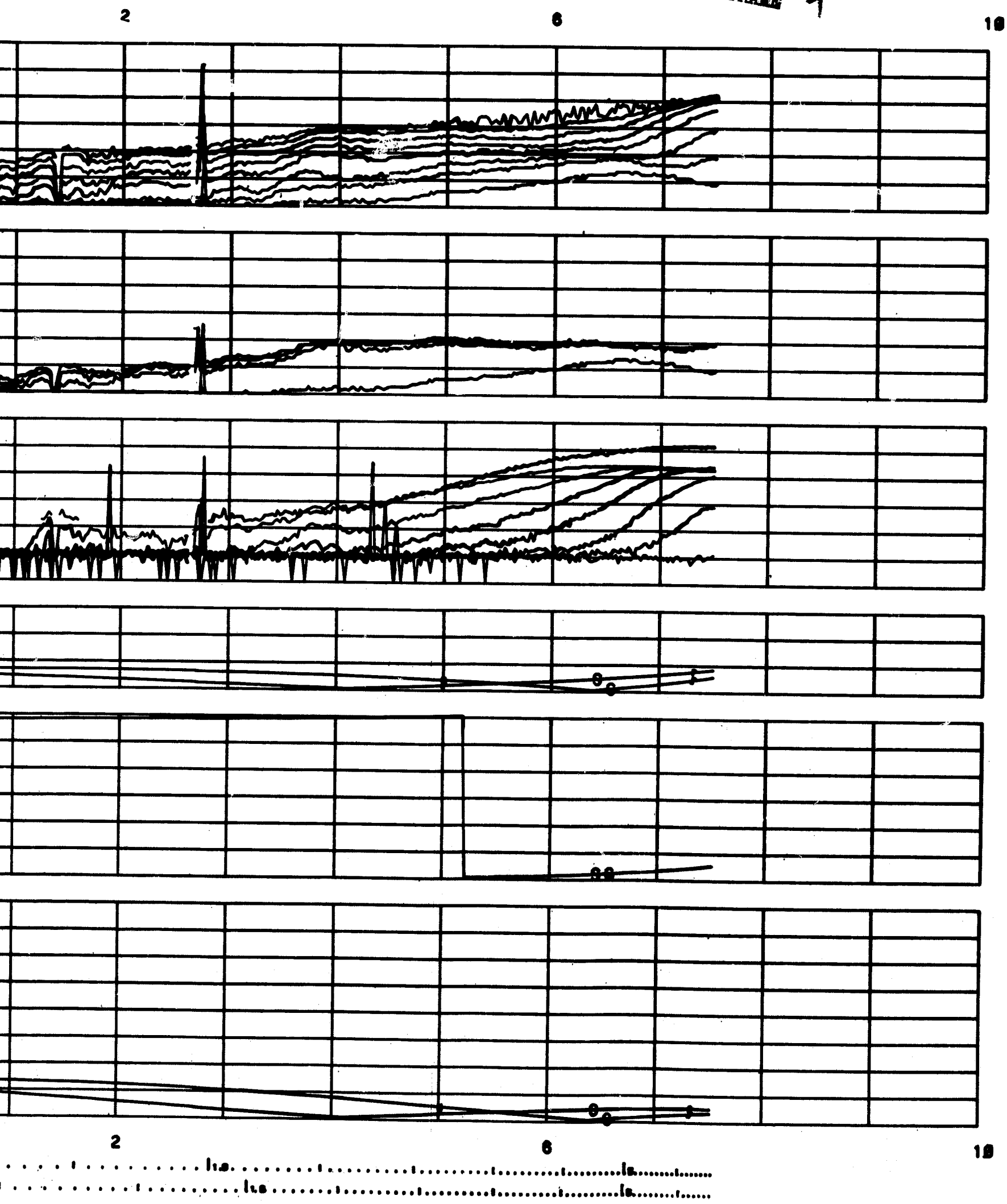
6

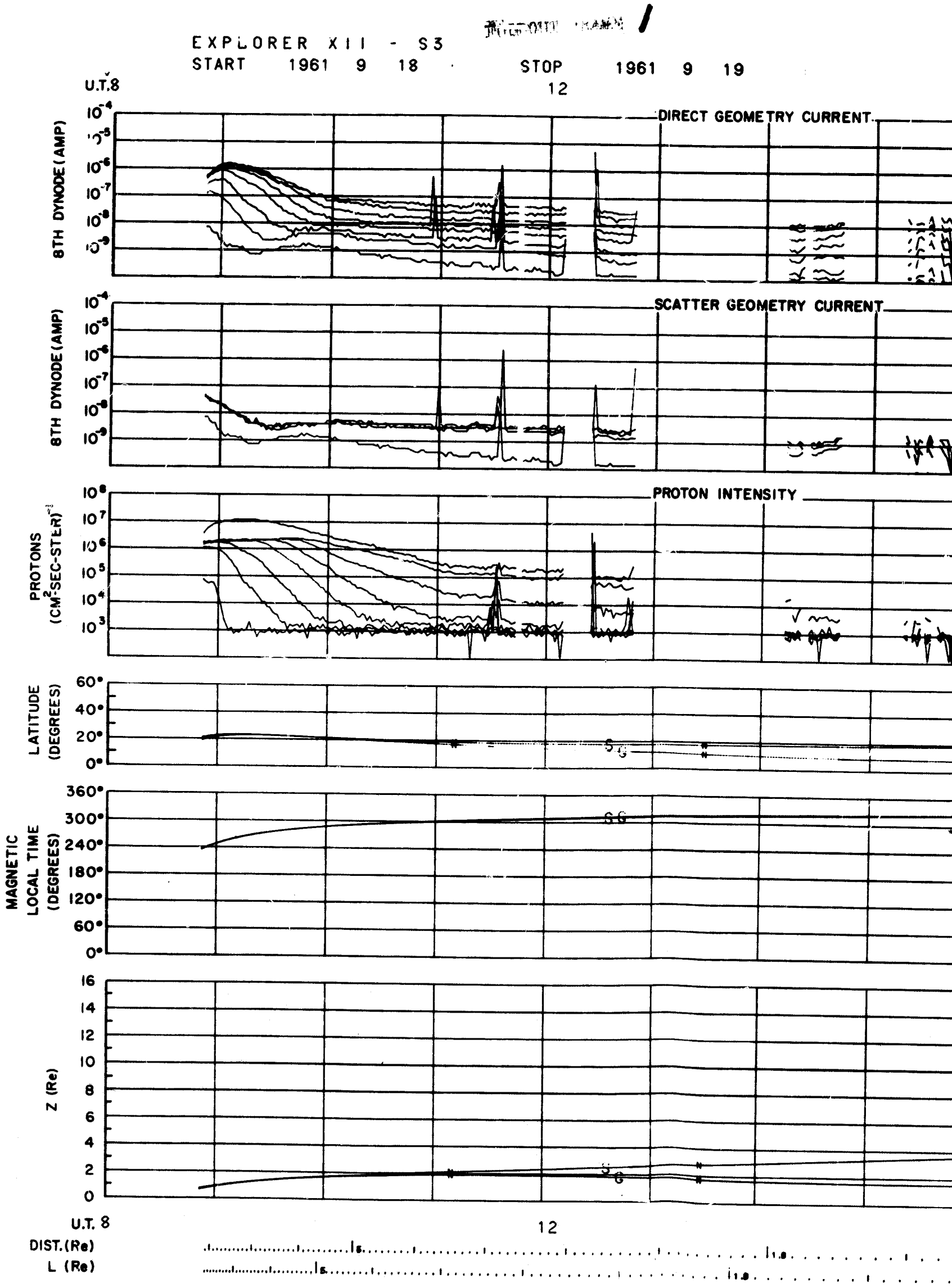
14 18

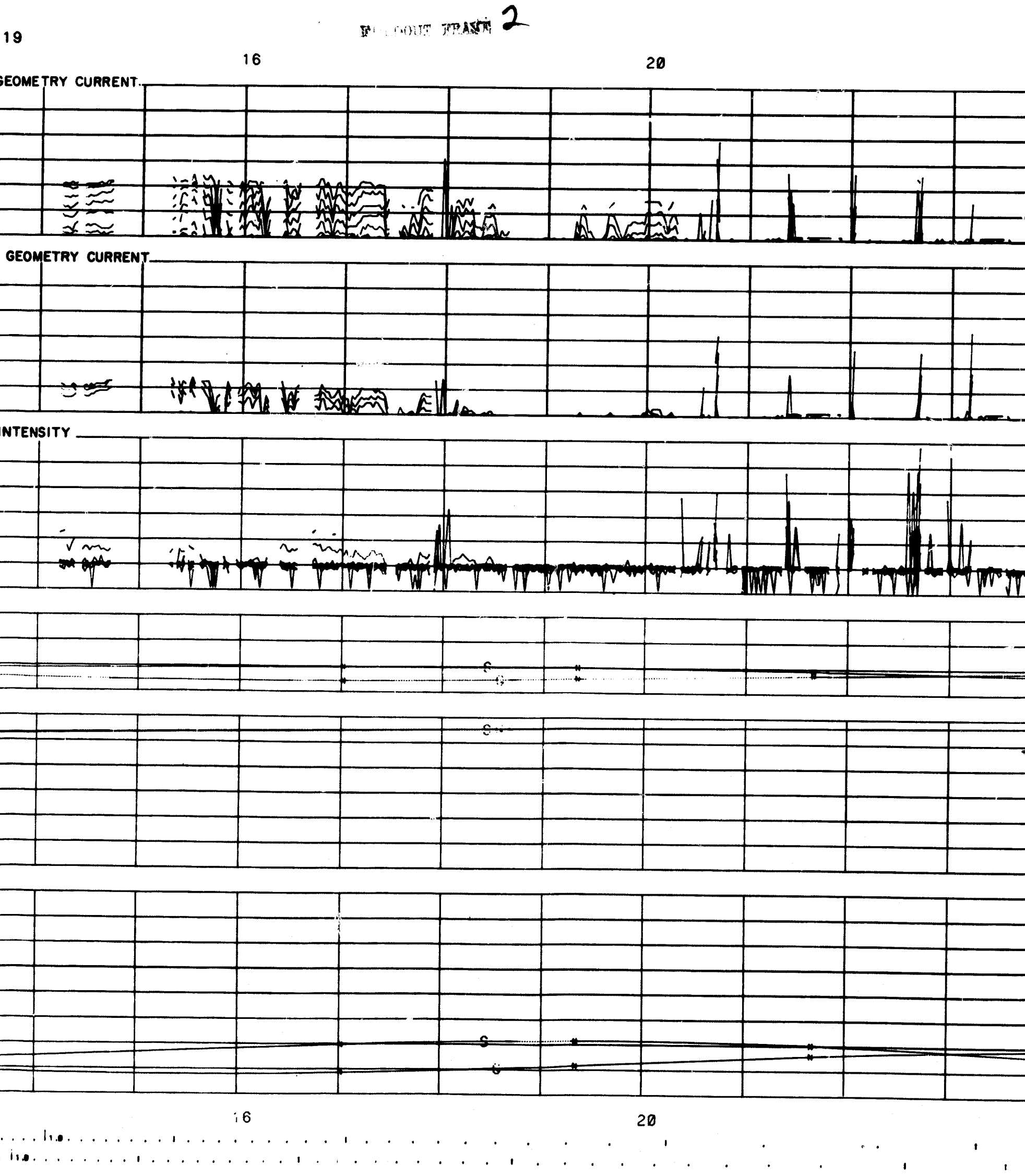
FOLDOUT FRAME 3



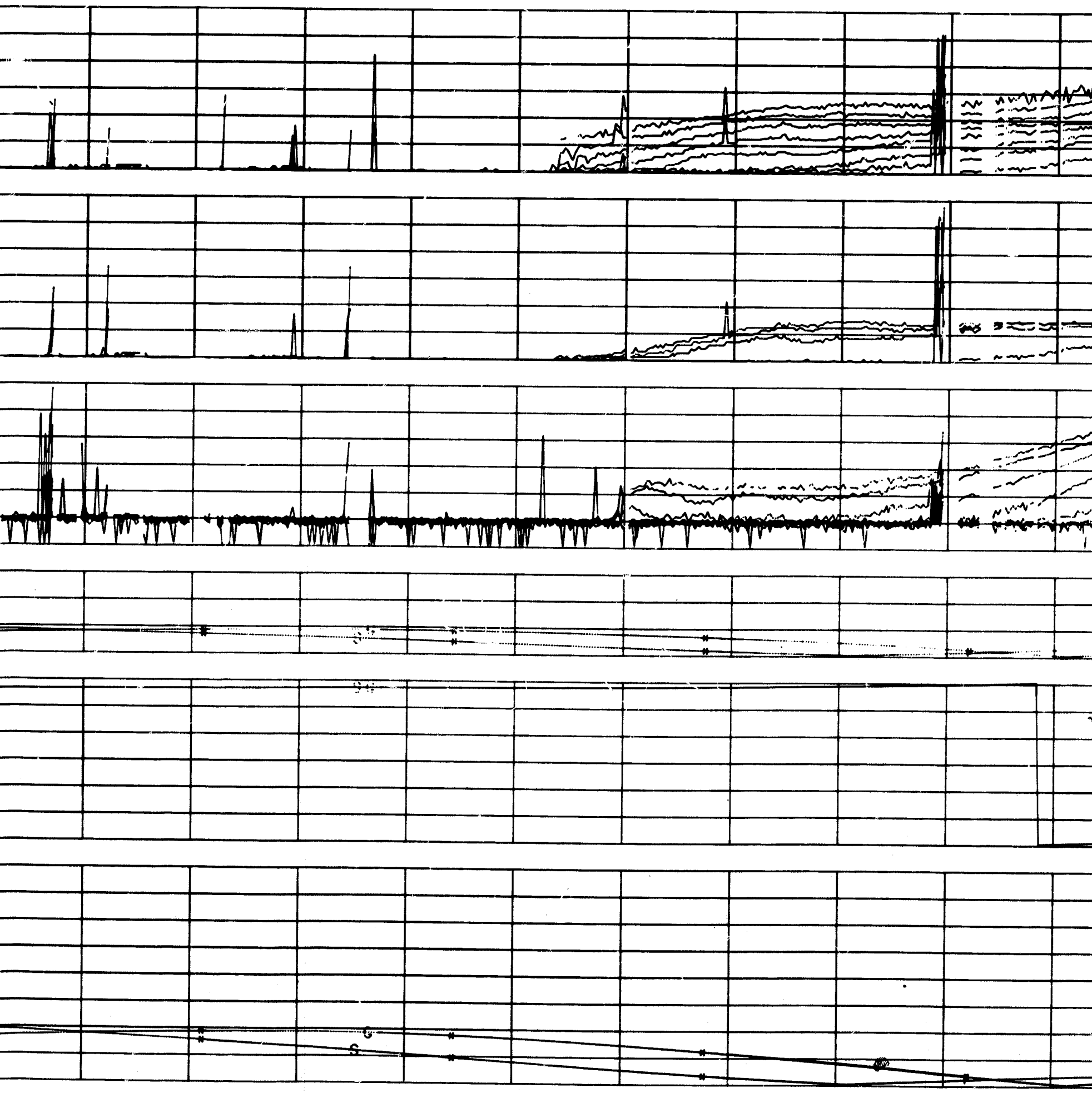
FOLDOUT FRAME 4



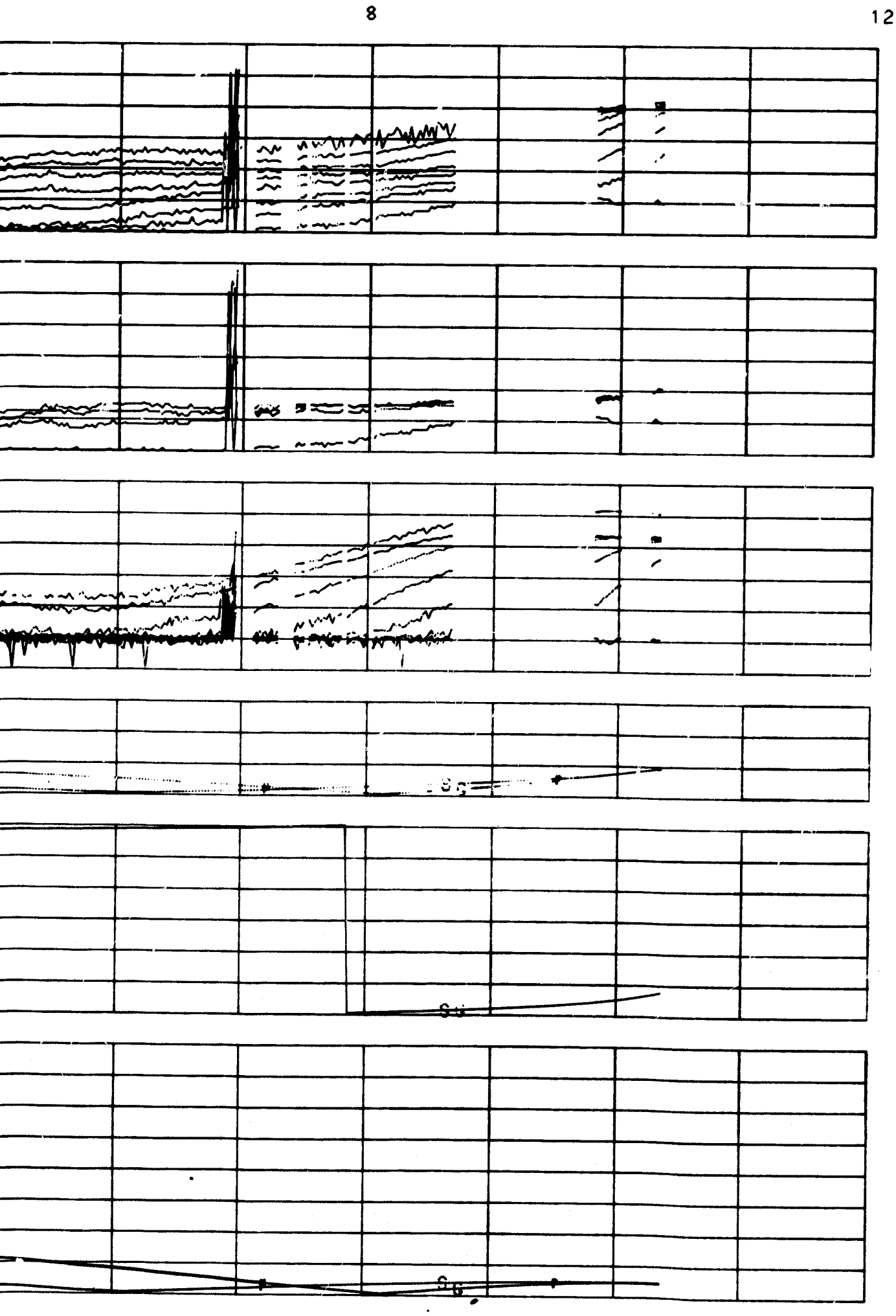

EXPLORER XII - S3
START 1961 9 18
STOP 1961 9 19
U.T.8
12
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM-2-SEC-STER)-1
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 8
12
DIST. (Re)
L (Re)

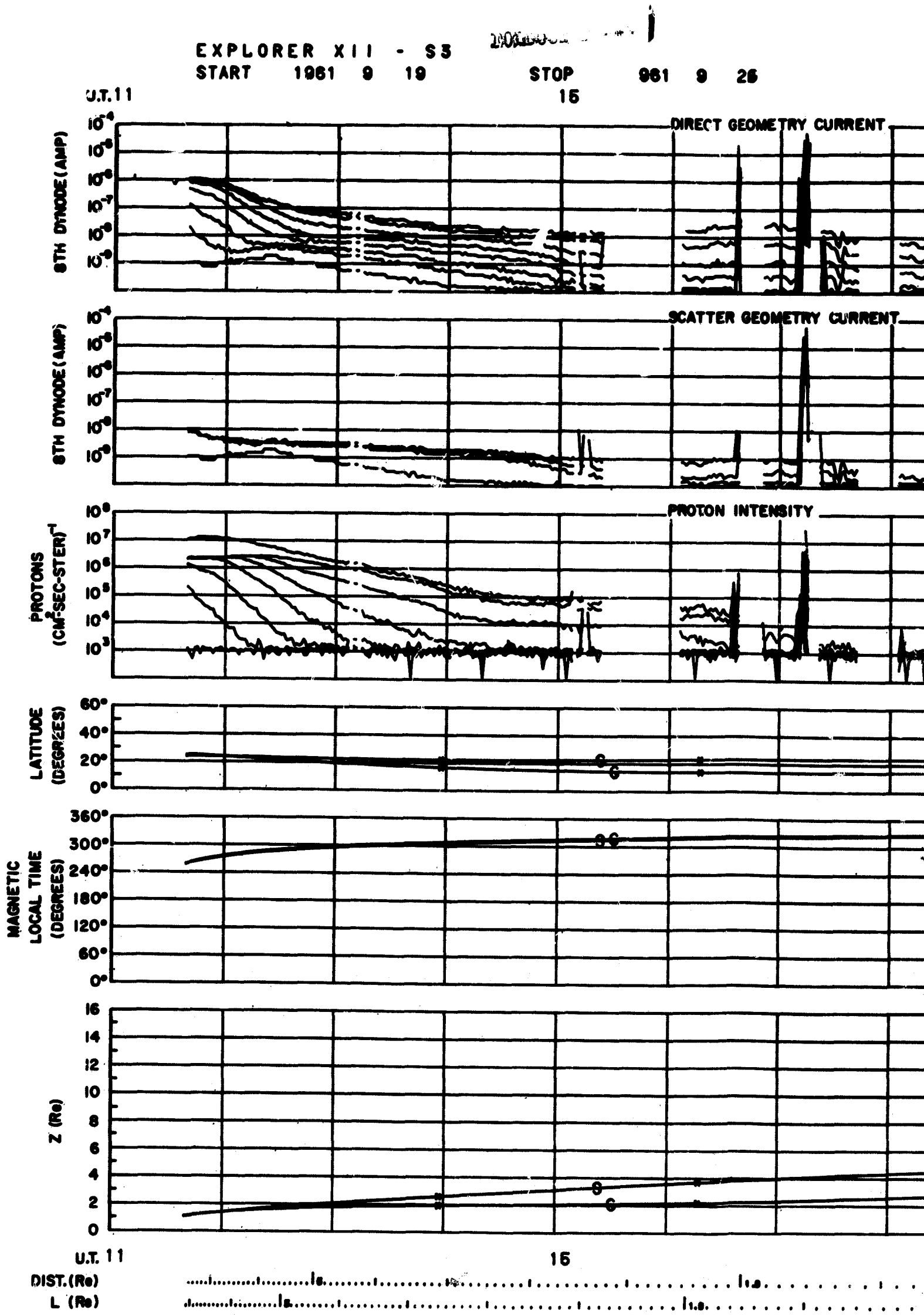

19
16
20
GEOMETRY CURRENT
GEOMETRY CURRENT
INTENSITY
16
20

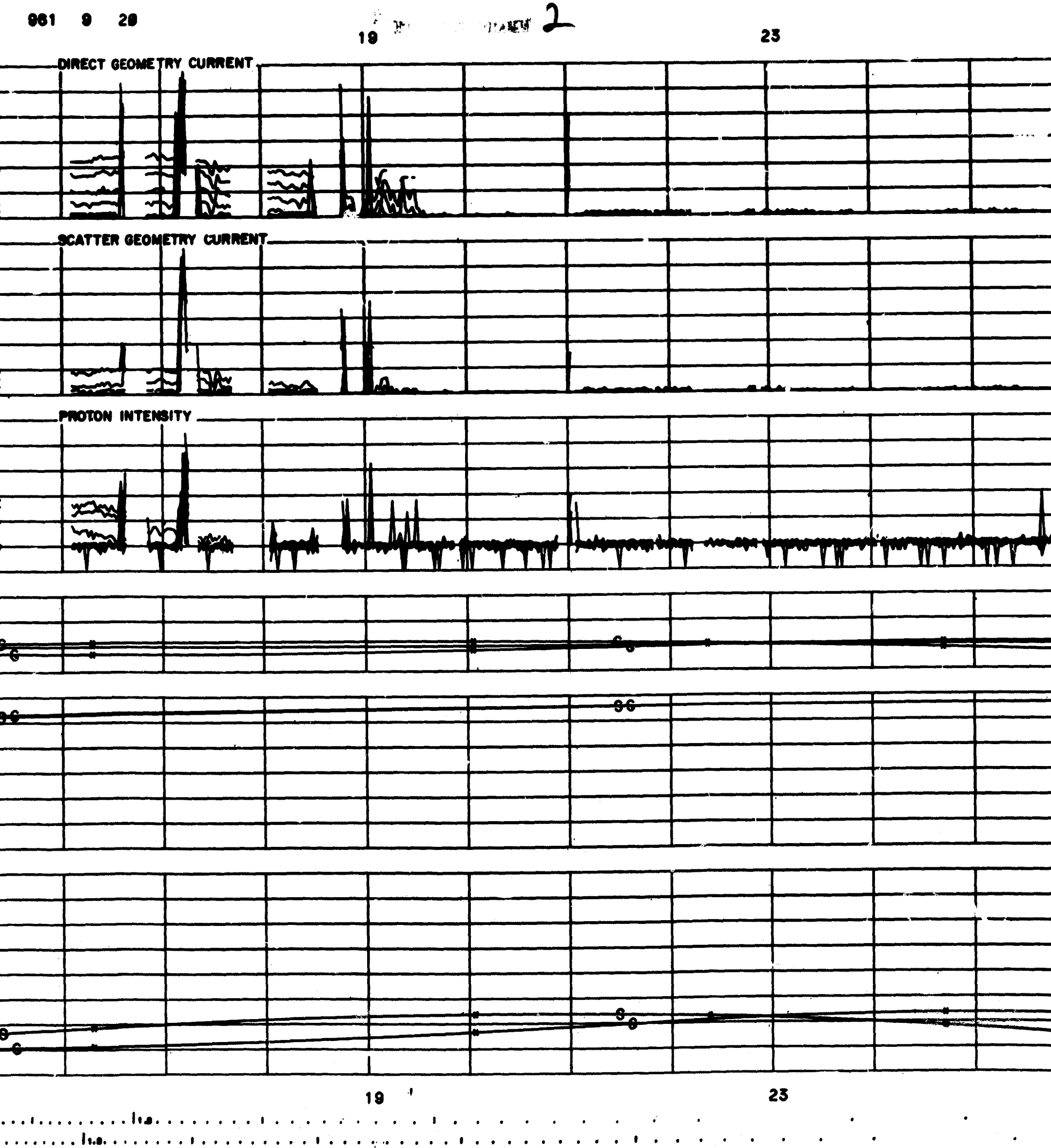
FOLDOUT FRAME 3

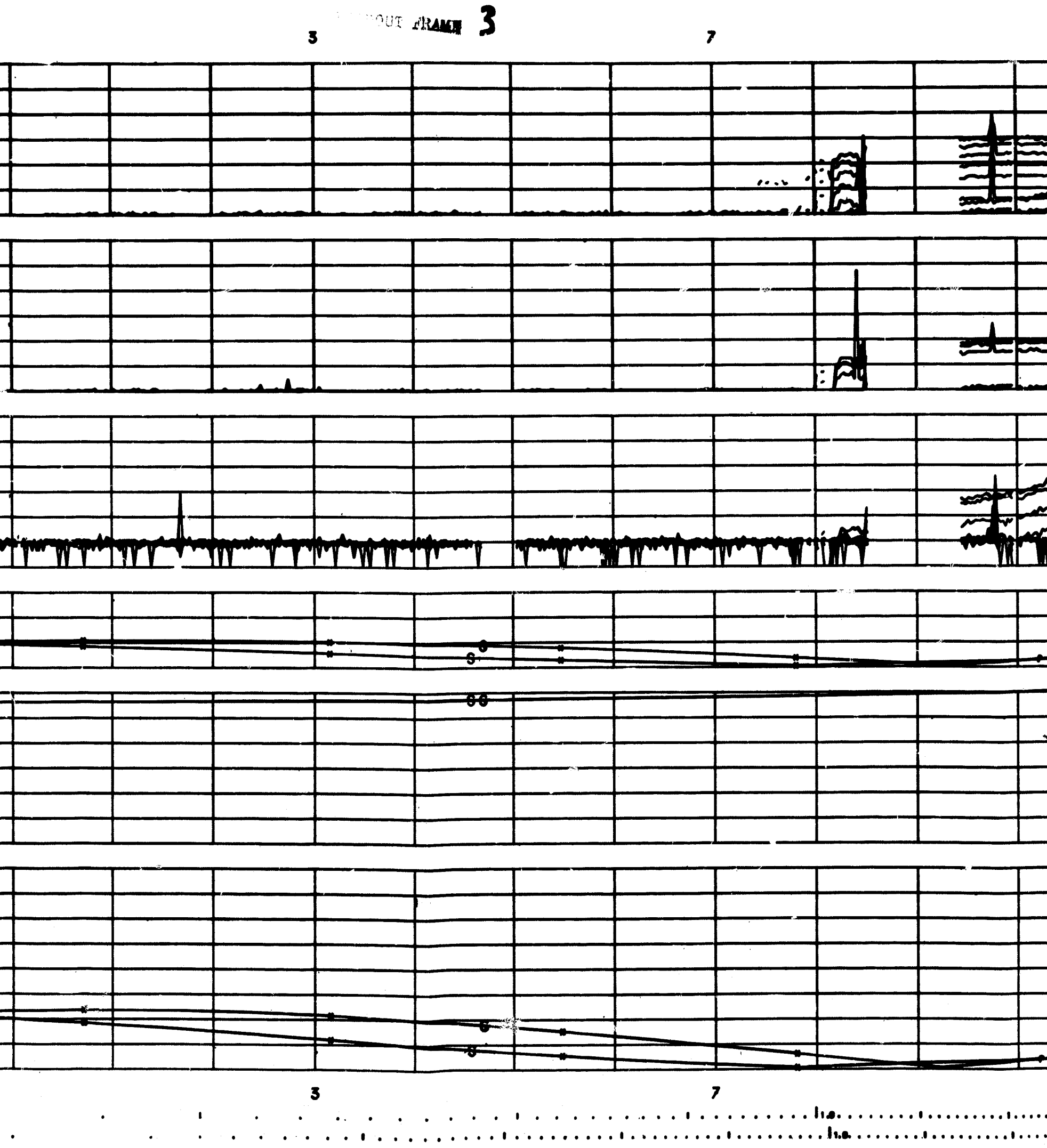


FOLDOUT FRAME 4

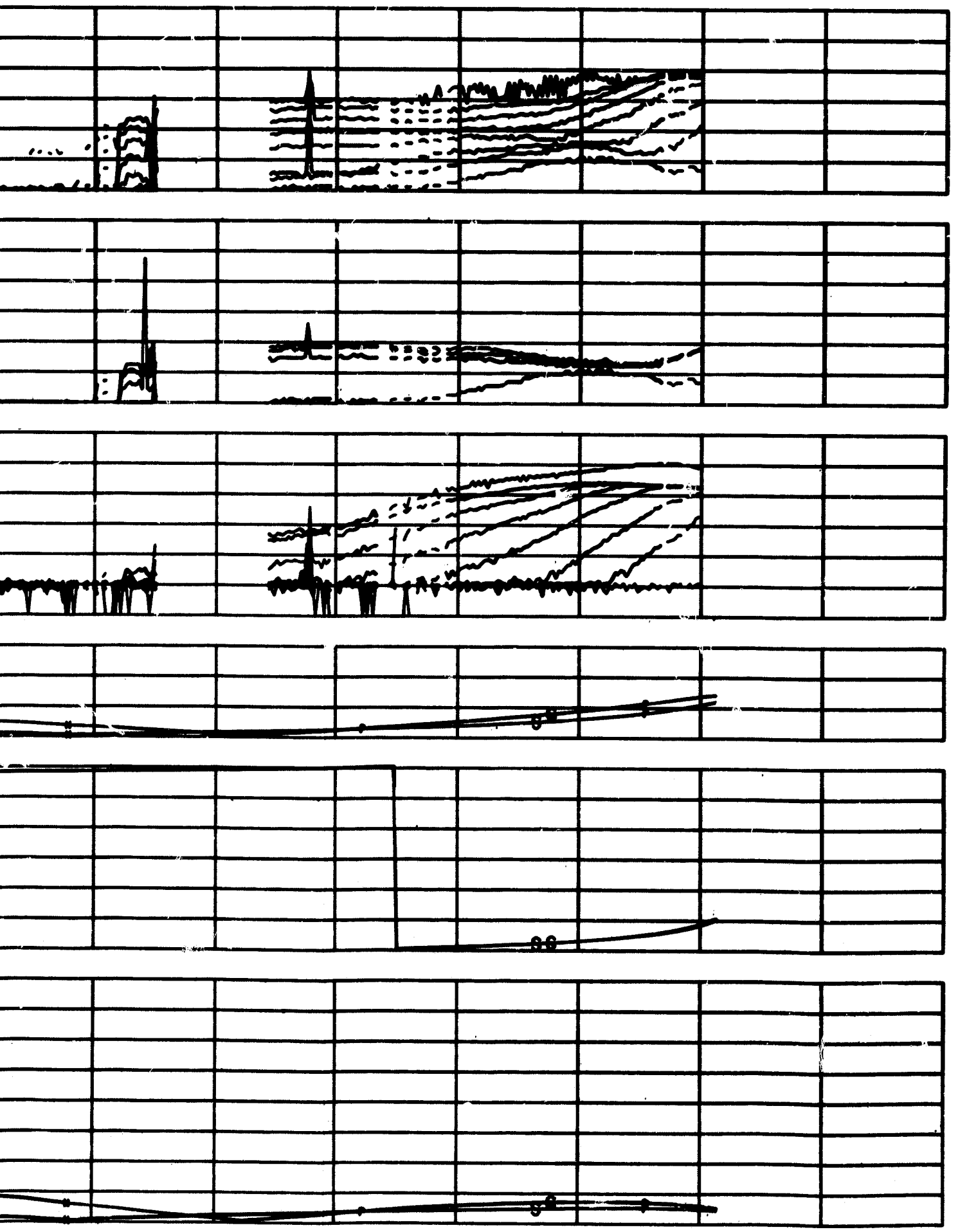


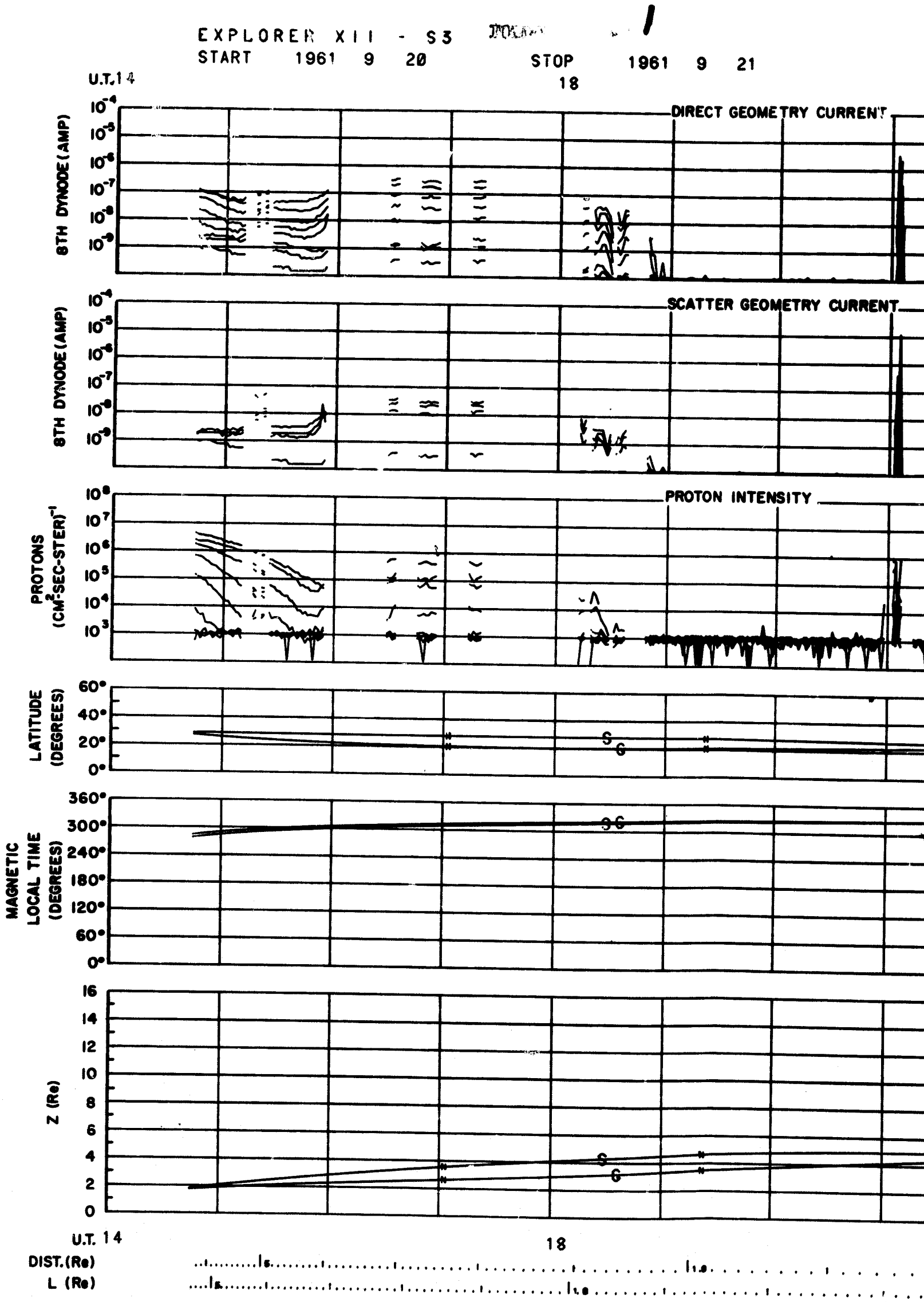

EXPLORER XII - S3
START 1961 9 19
STOP 961 9 26
U.T. 11
15
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 11
15
DIST. (Re)
L (Re)

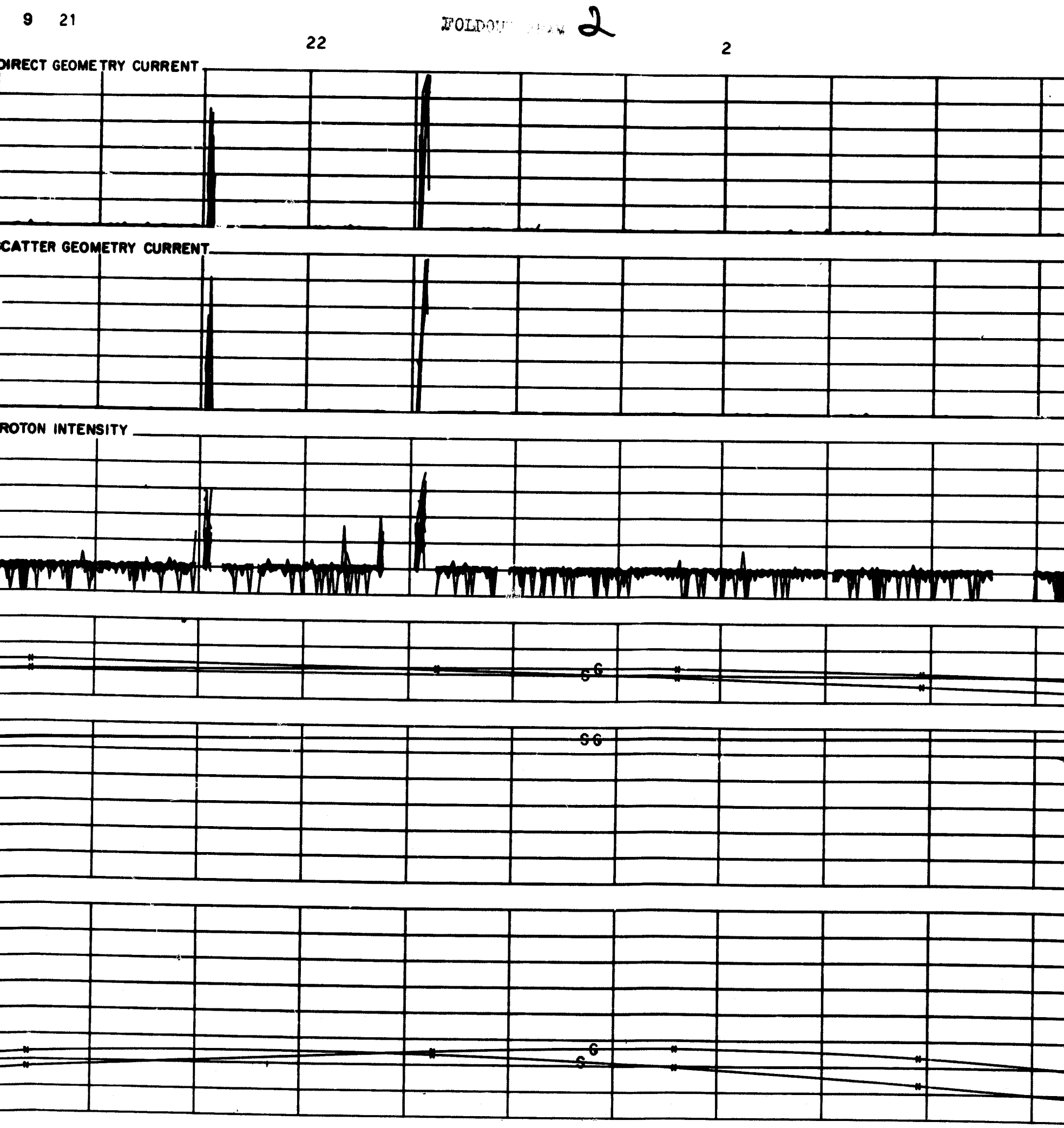

961 9 28
19
23
DIRECT GEOMETRY CURRENT
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
SG
19
23


3
7
3
7

FOLDOUT FRAME 4




EXPLORER XII - S3
START 1961 9 20
STOP 1961 9 21
U.T. 14
18
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
DIST. (Re)
L (Re)


9 21
FOLDOUT FRAME 2
22
2
DIRECT GEOMETRY CURRENT
CATTER GEOMETRY CURRENT
ROTON INTENSITY
G
S
G
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G
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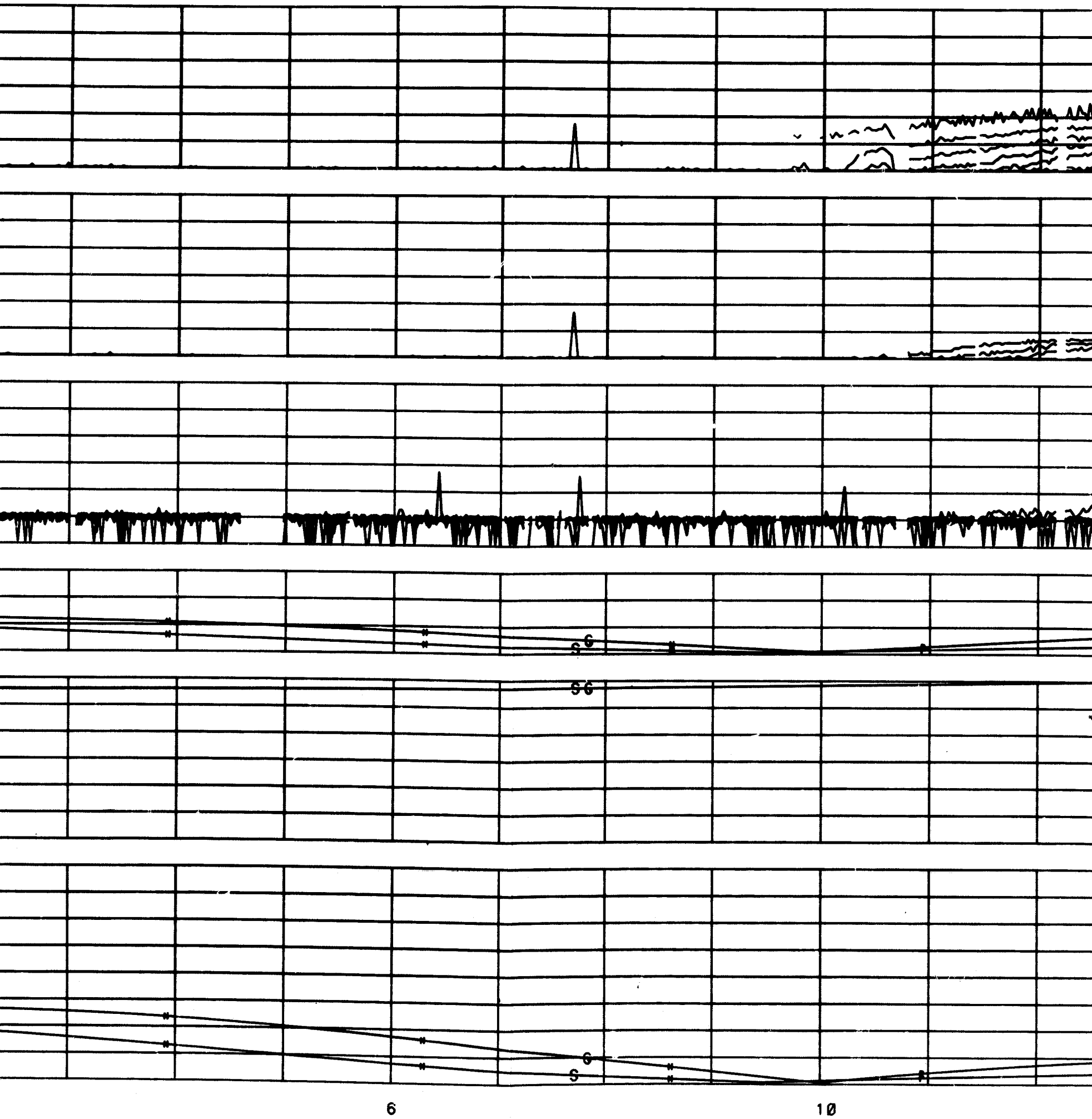
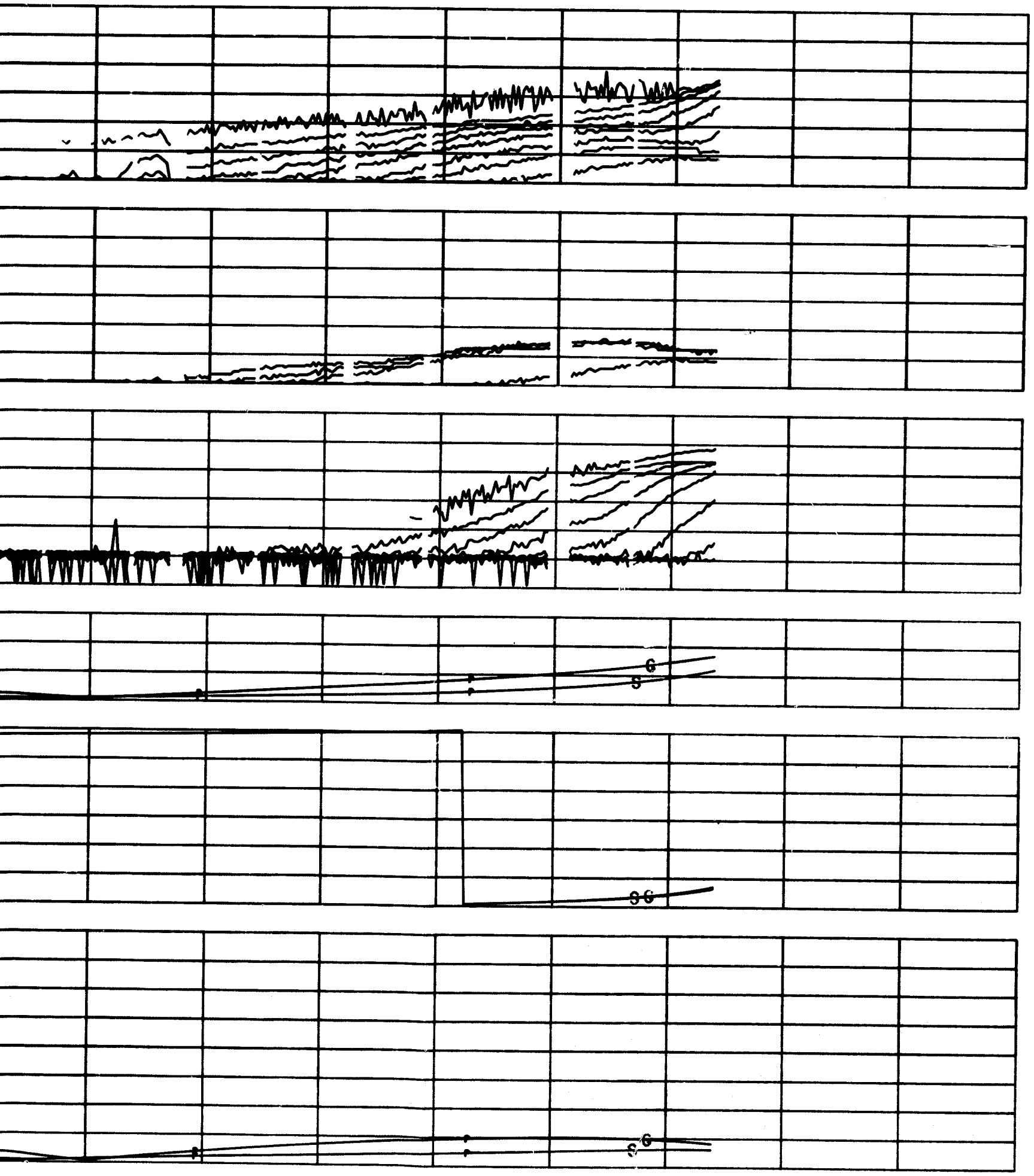
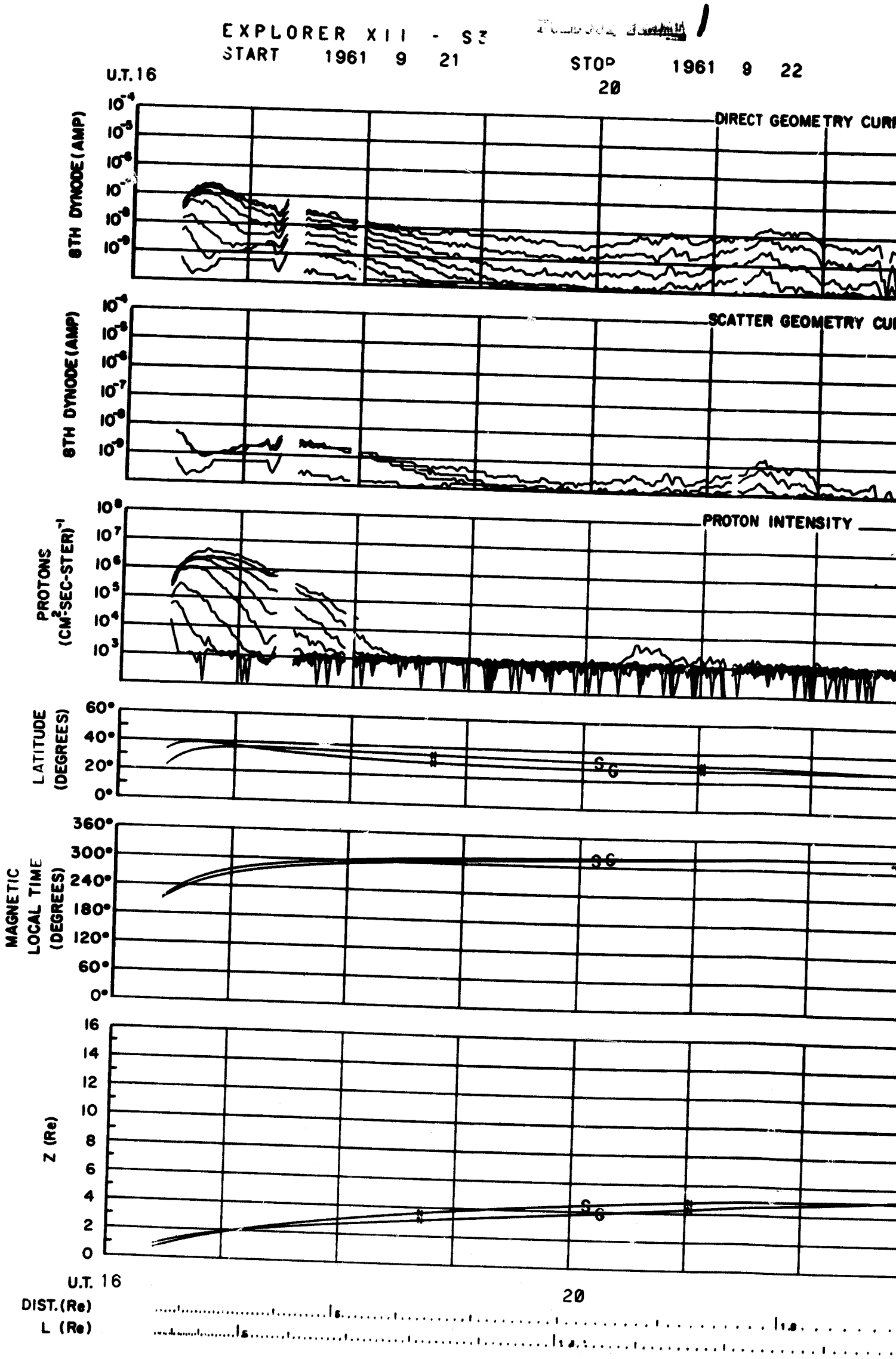
22
2
1 s
1 s
1 s

FOLDOUT FRAME 3



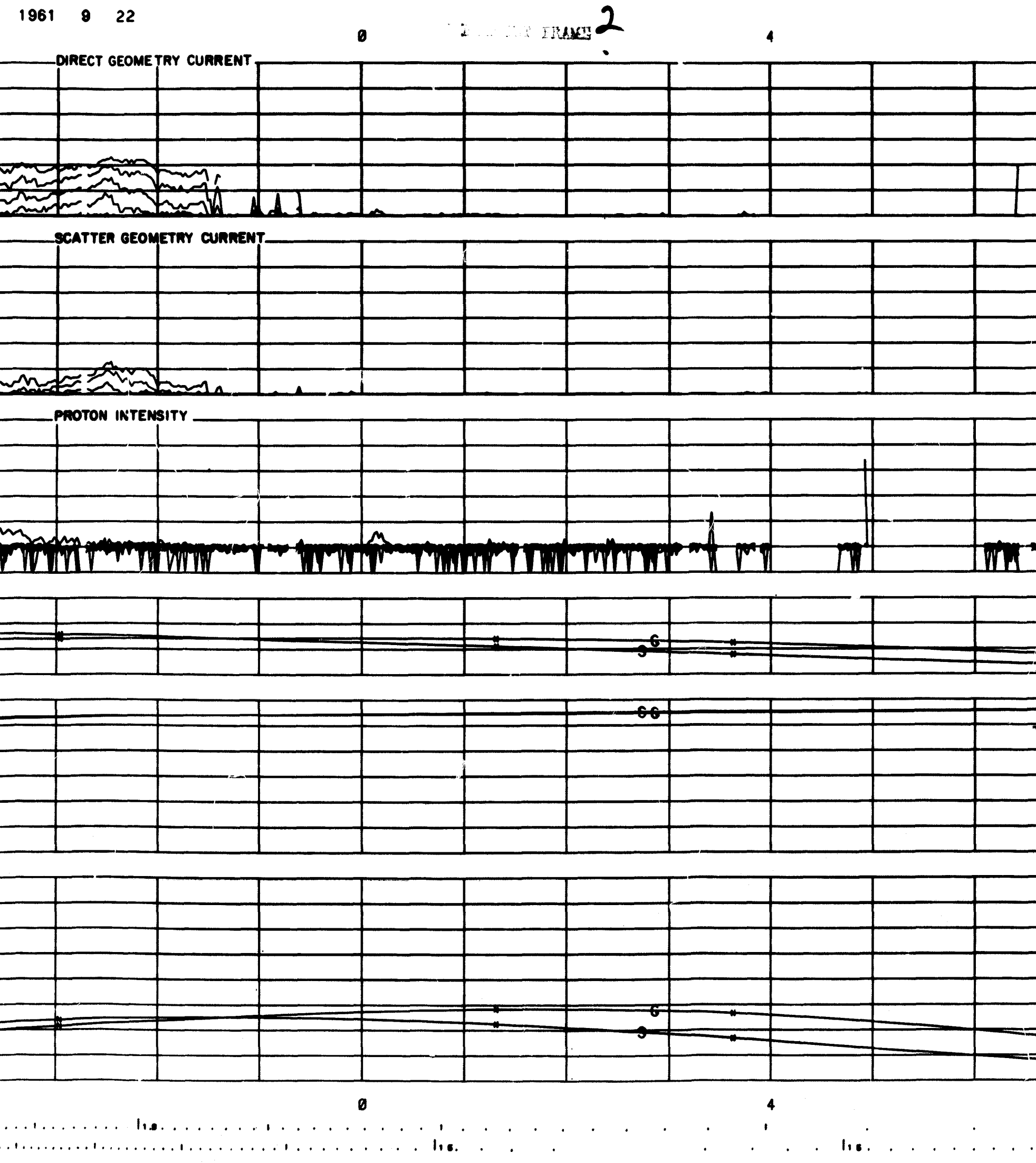
FOLDOUT FRAME 4

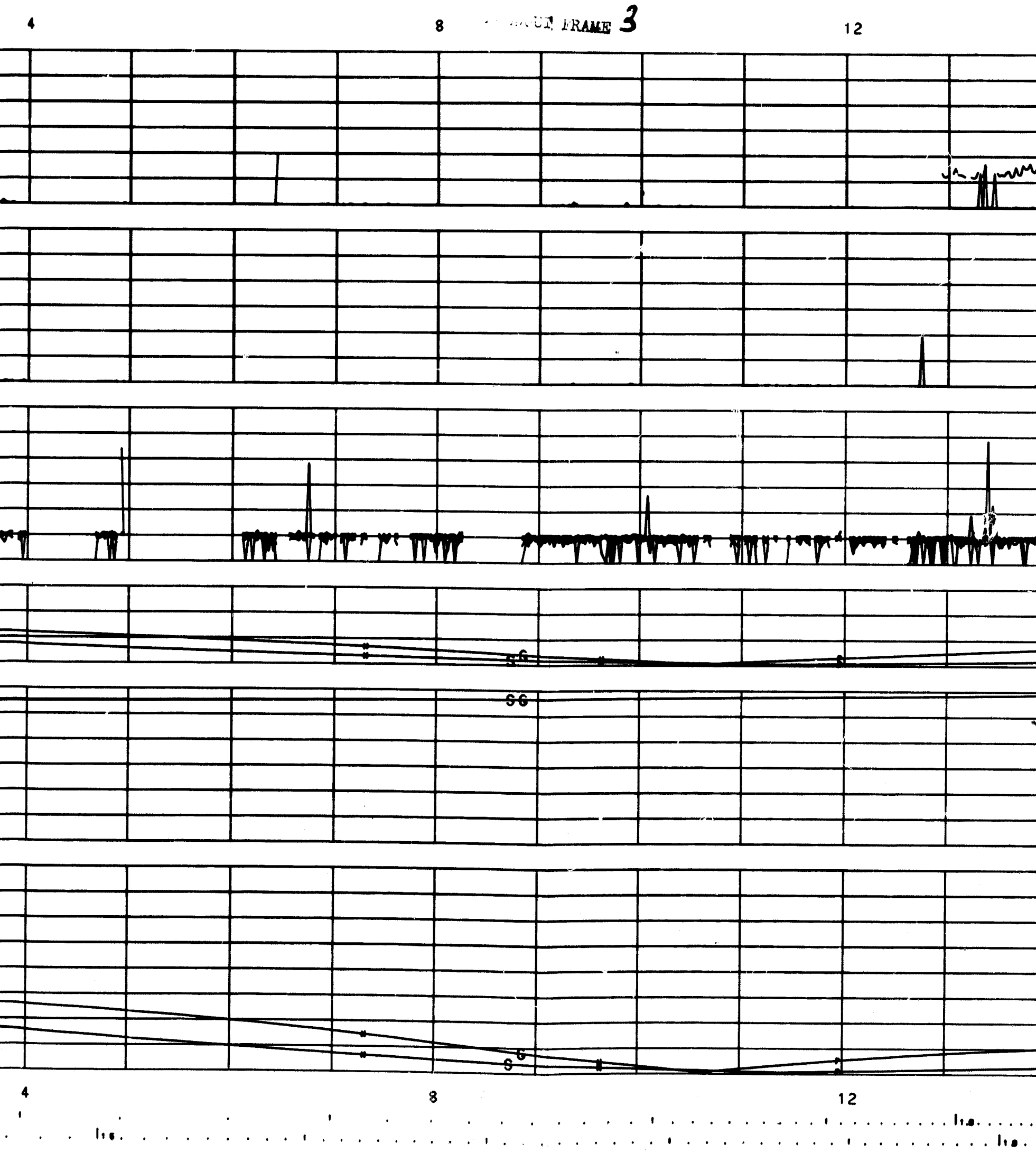



EXPLORER XII - S3
START 1961 9 21
STOP 1961 9 22
U.T. 16
20
DIRECT GEOMETRY CURR
8TH DYNODE (AMP)
SCATTER GEOMETRY CUR
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 16
20
DIST. (Re)
L (Re)

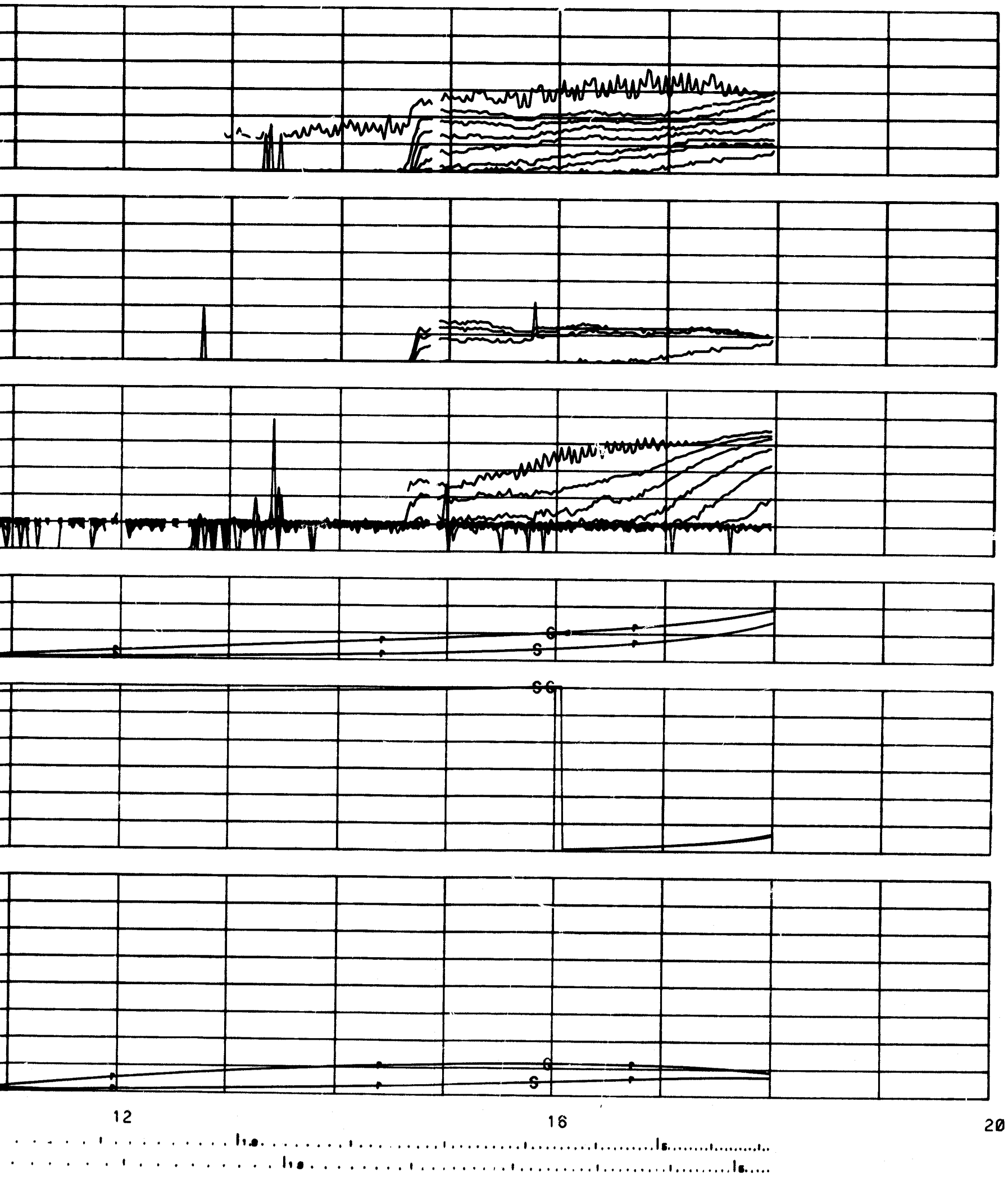
1

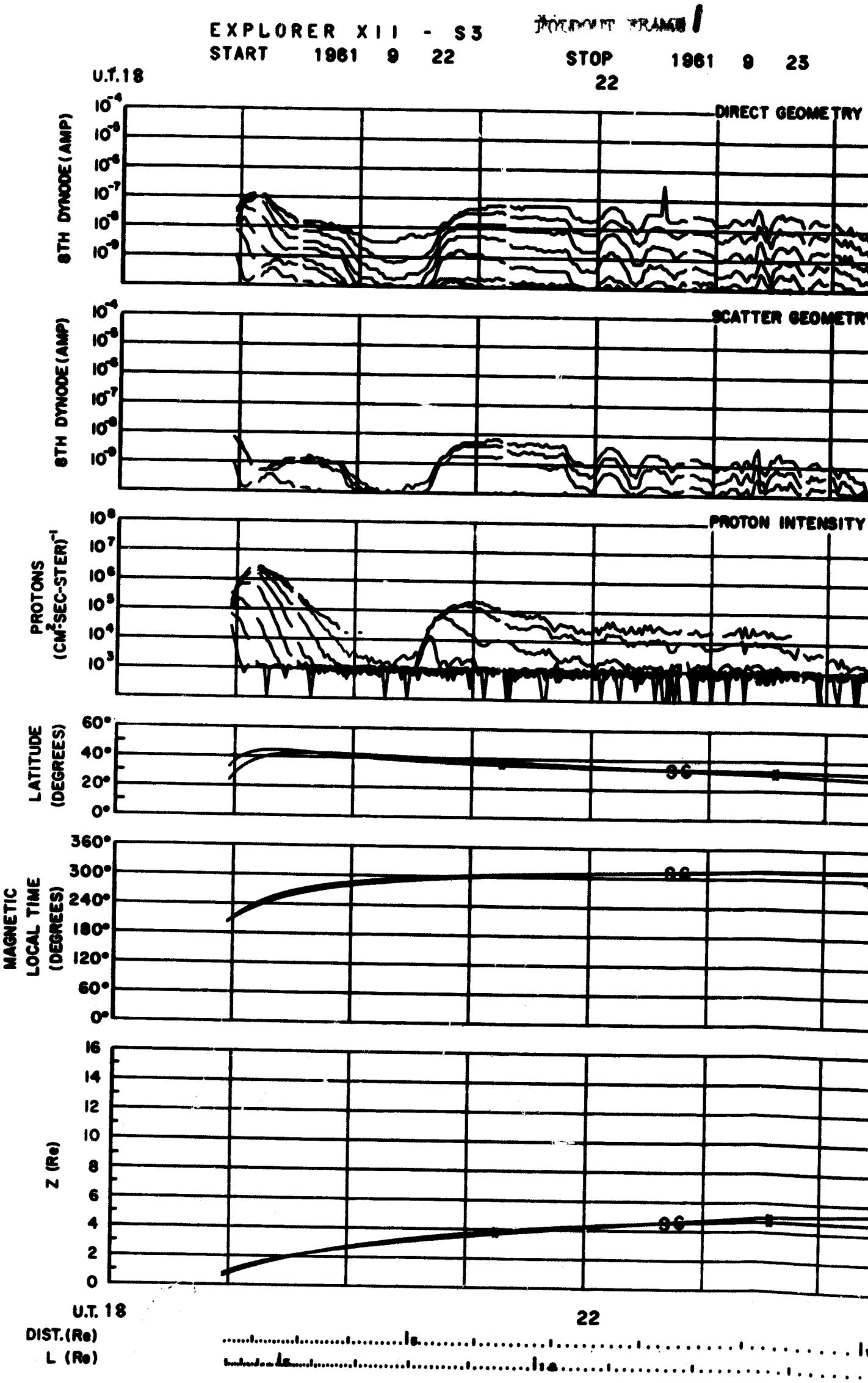
1961 9 22


0
FRAME 2
4
DIRECT GEOMETRY CURRENT
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
6
5
66
6
5
0
4


4
8
FRAME 3
12
S6
S6
S6
4
8
12

FOLDOUT FRAME 4

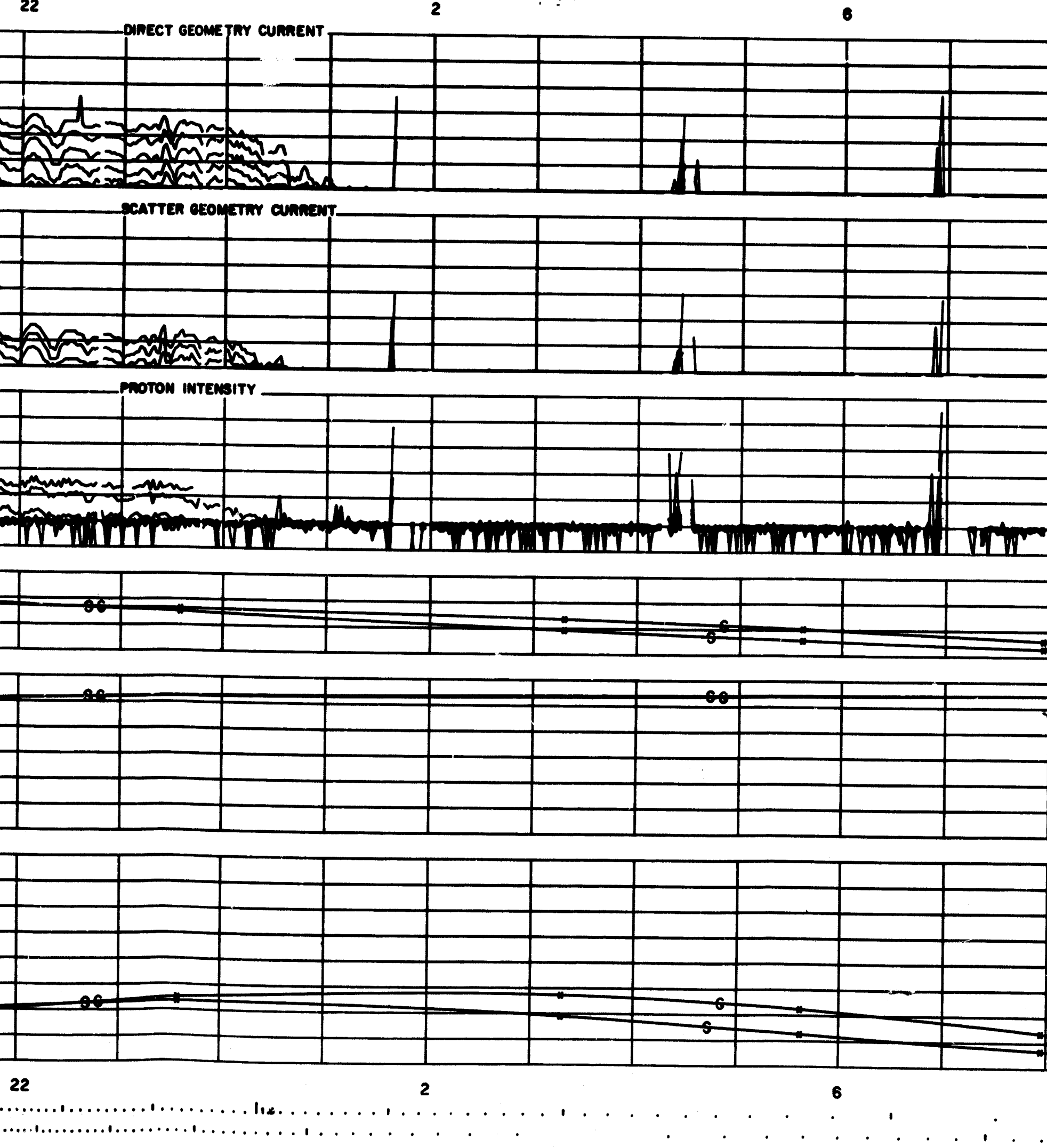



EXPLORER XII - S3
START 1961 9 22
STOP 1961 9 23
22
U.T. 18
DIRECT GEOMETRY
SCATTER GEOMETRY
PROTON INTENSITY
8TH DYNODE (AMP)
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 18
22
DIST. (Re)
L (Re)

FOLDOUT FRAME 1

STOP 1961 9 23

FOLDOUT FRAME 2



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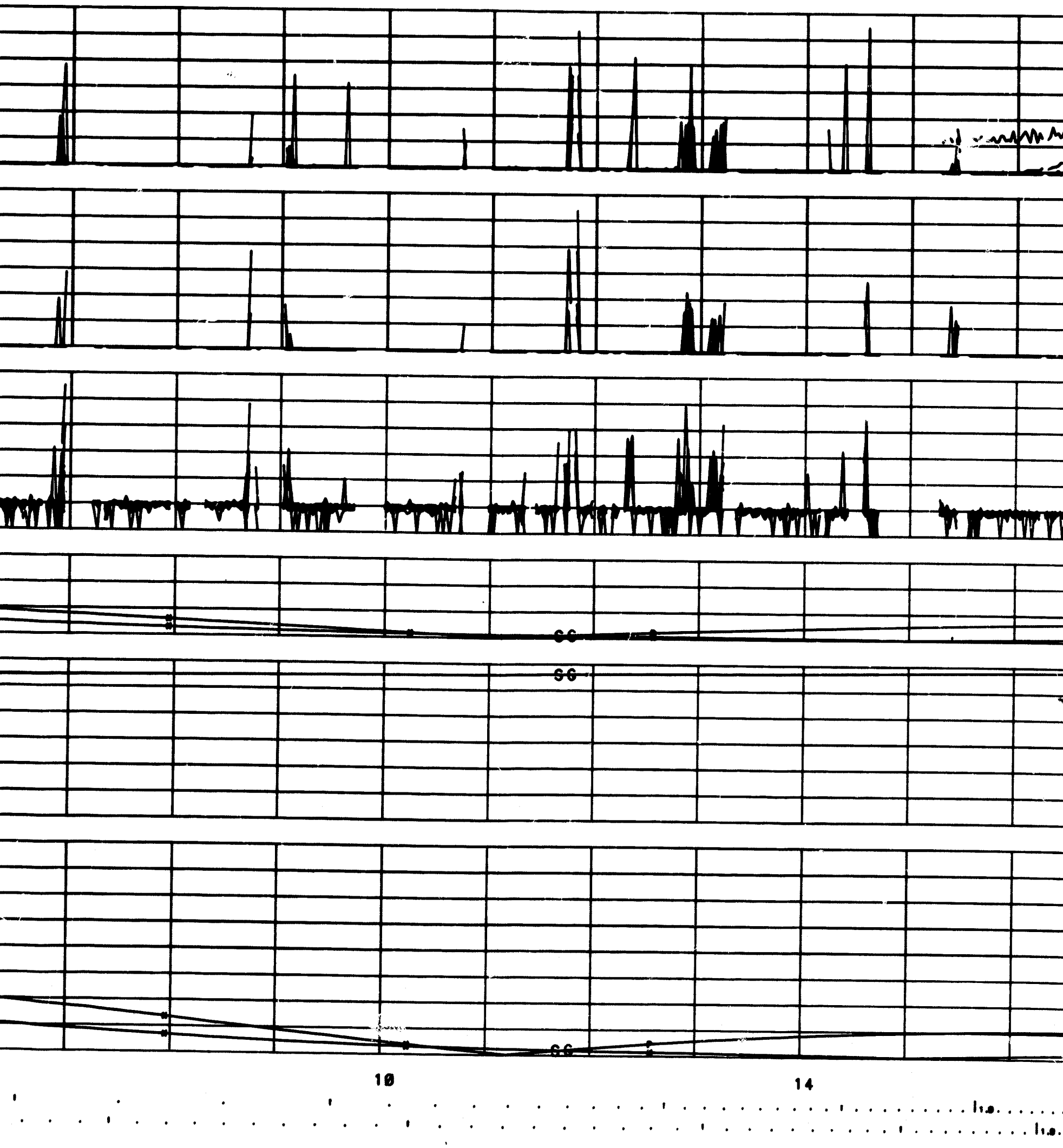
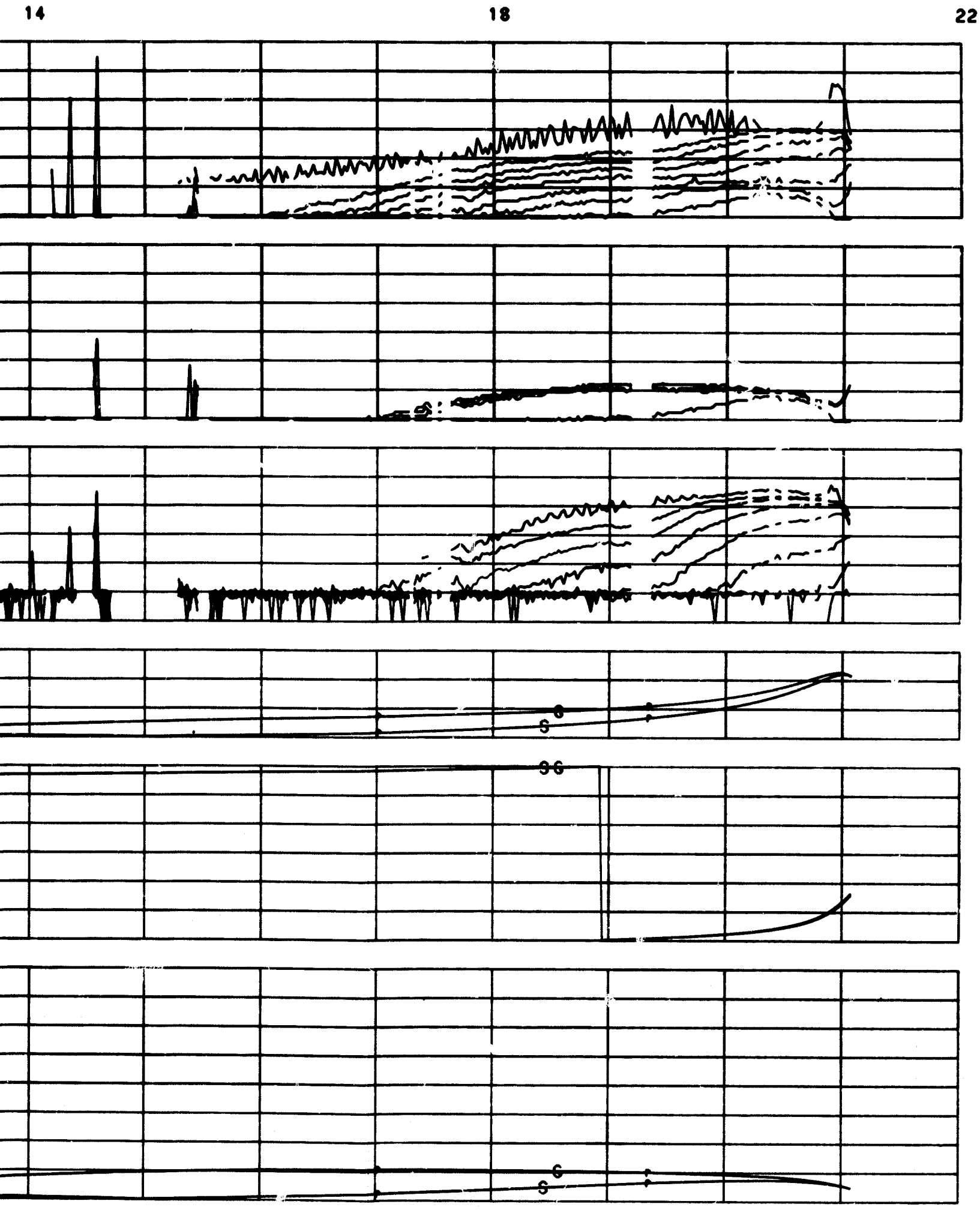
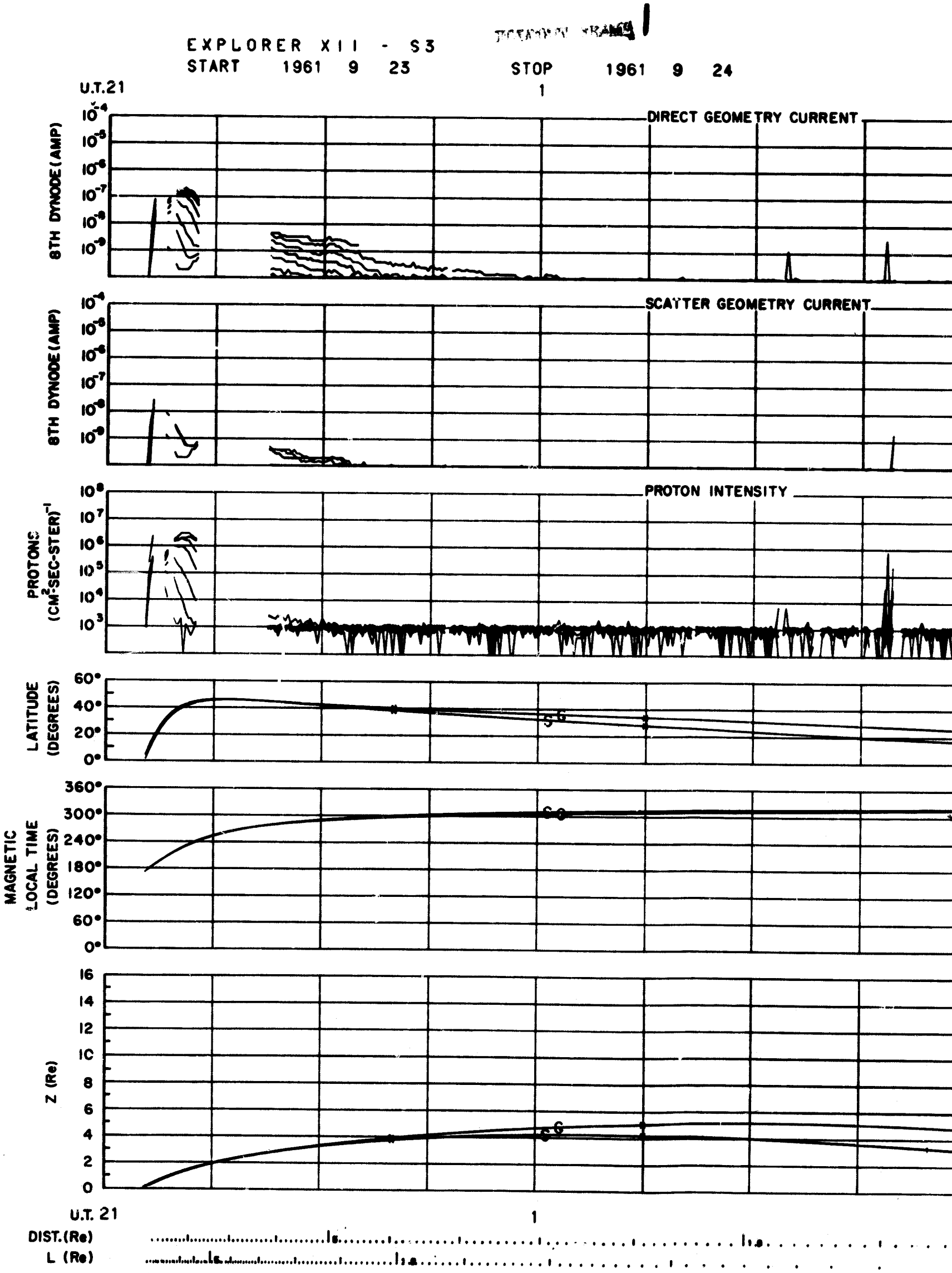
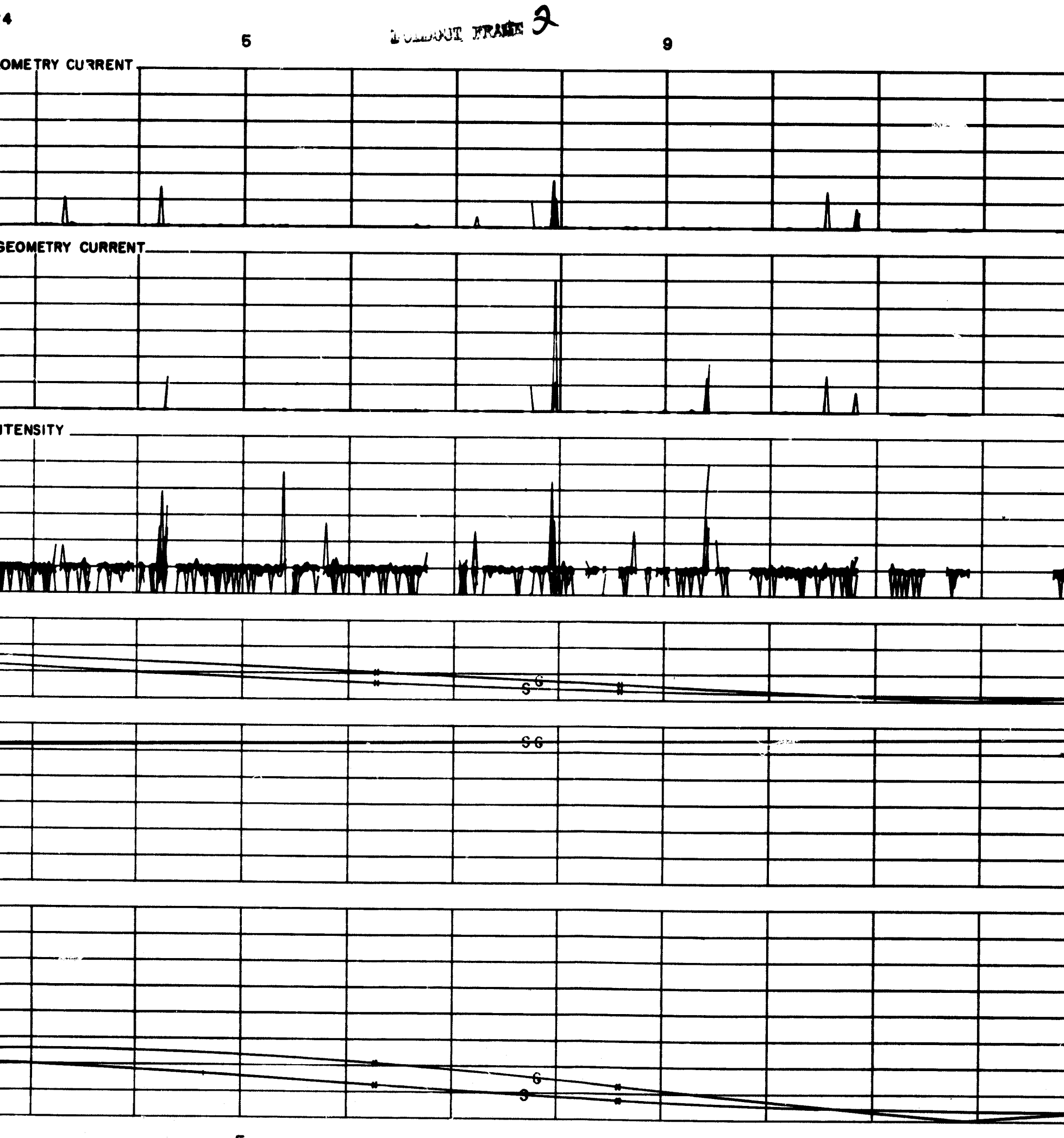


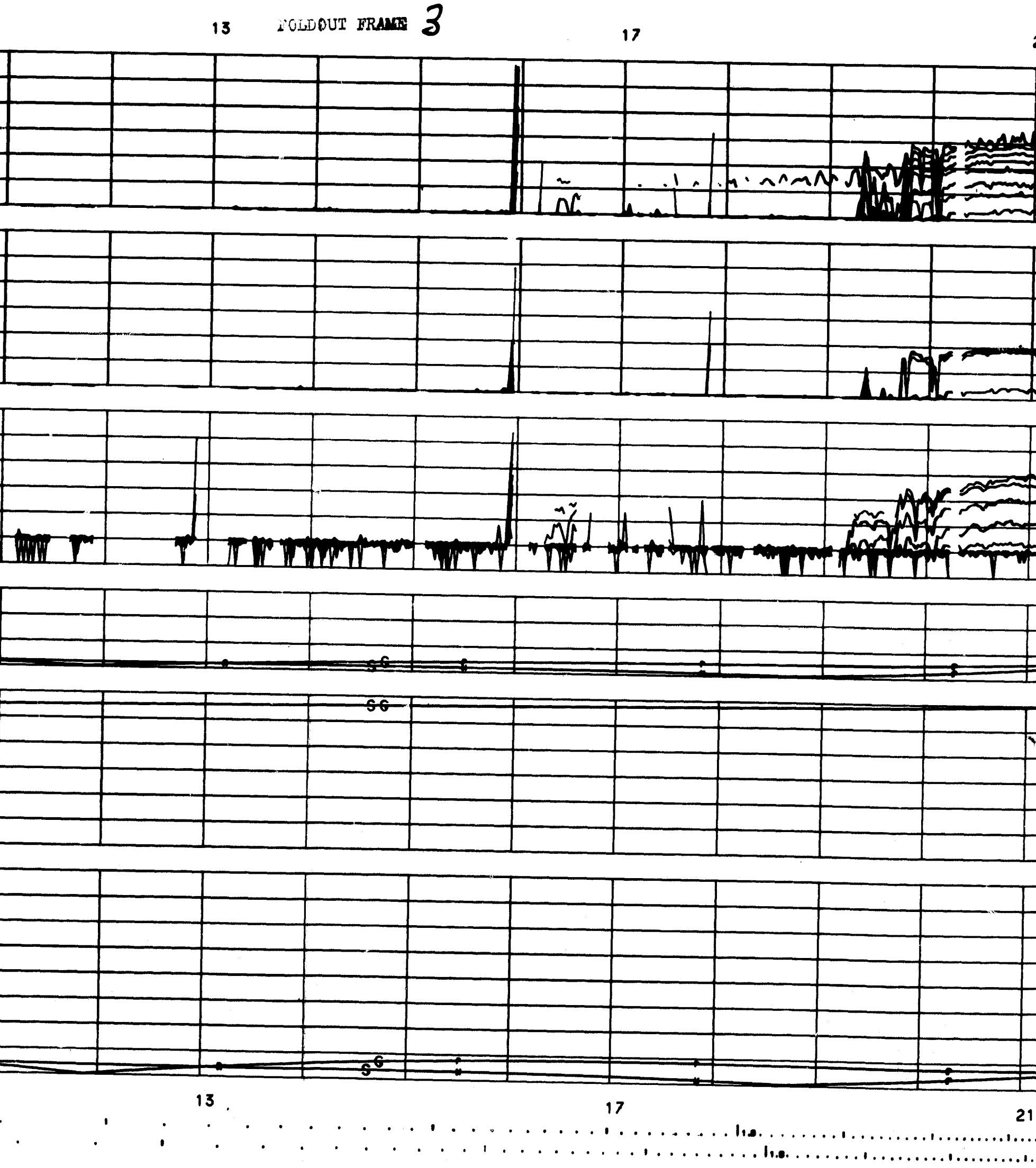
FOLDOUT FRAME 4




EXPLORER XII - S3
START 1961 9 23
STOP 1961 9 24
U.T.21
1
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 21
1
DIST.(Re)
L (Re)


4
5
9
OMETRY CURRENT
GEOMETRY CURRENT
ITENSITY
G
S
G
S
G
S
5
9

FOLDOUT FRAME 3



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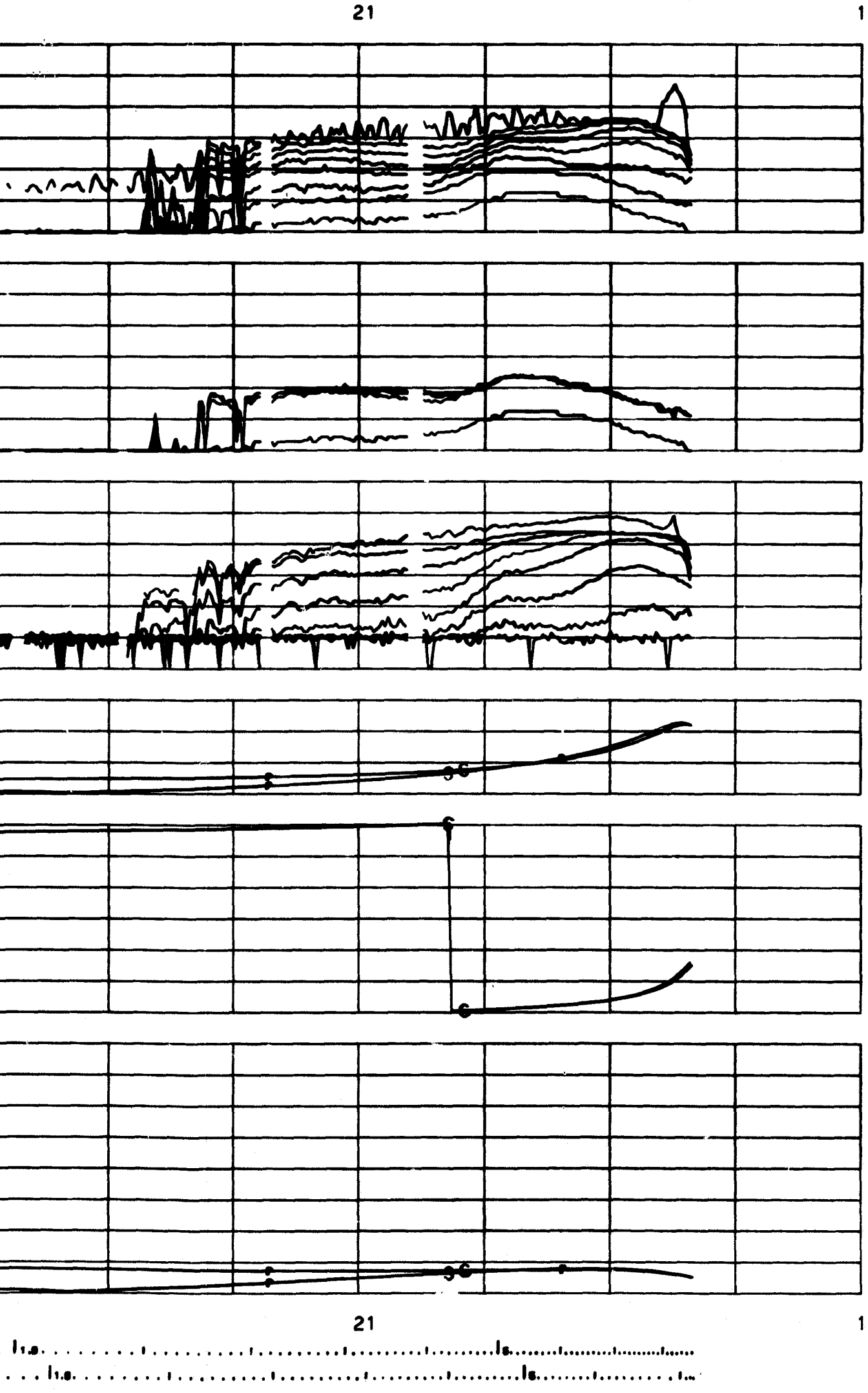
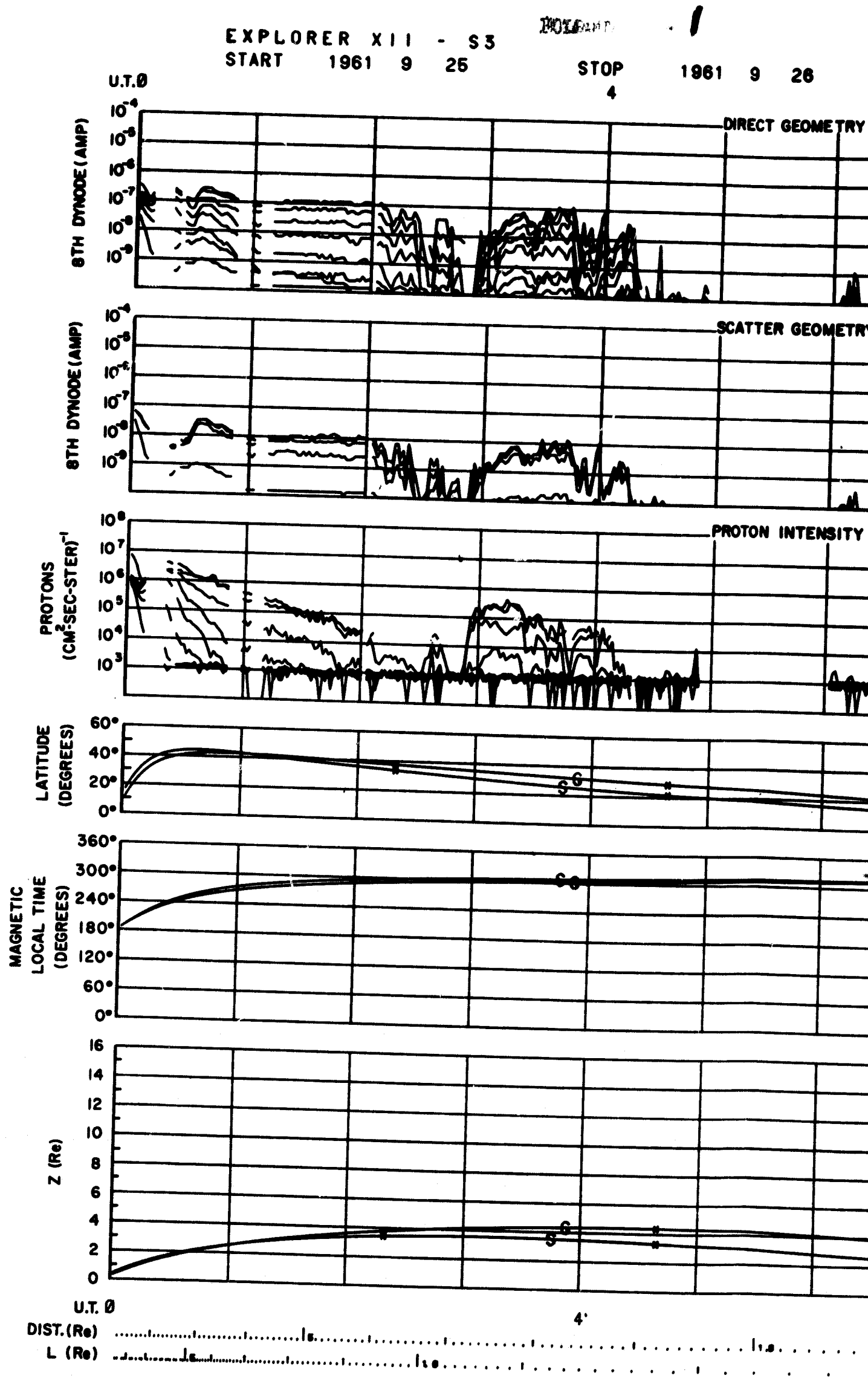
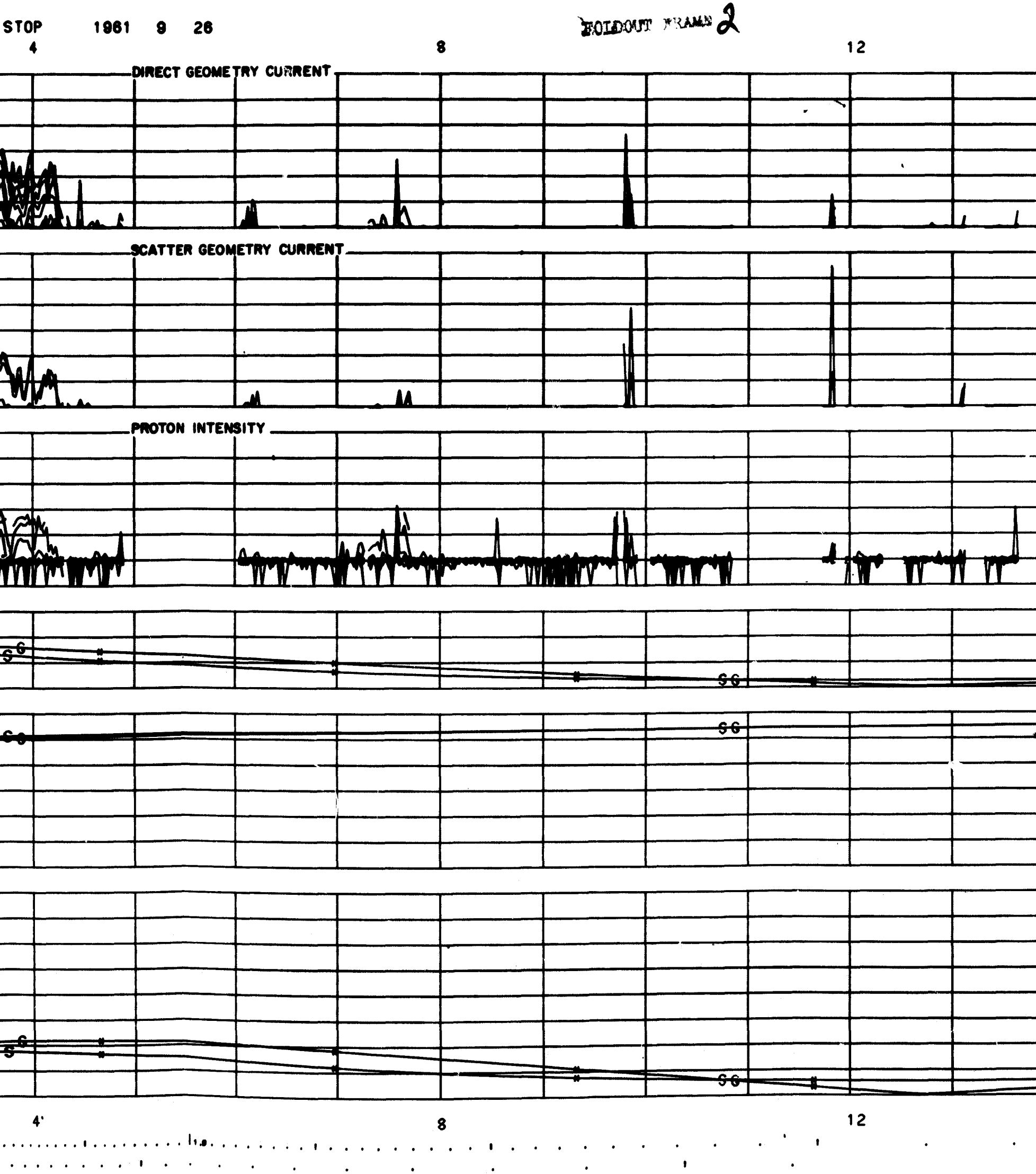



EXPLORER XII - S3
START 1961 9 25
STOP 1961 9 26
U.T.Ø
4
DIRECT GEOMETRY
SCATTER GEOMETRY
PROTON INTENSITY
8TH DYNODE (AMP)
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. Ø
DIST. (Re)
L (Re)

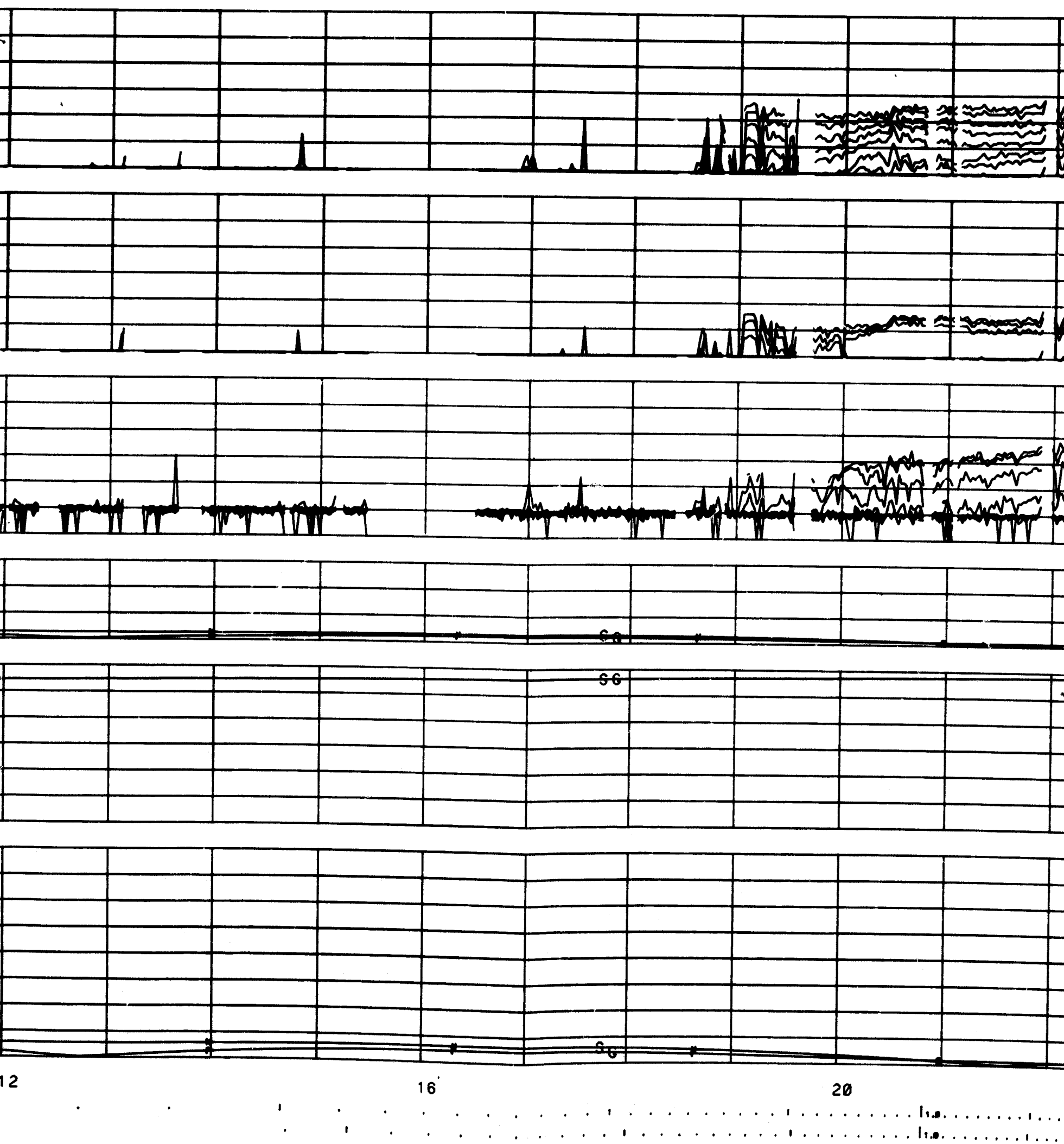
1

STOP 1961 9 26

FOLDOUT FRAME 2



FOLDOUT FRAME 3



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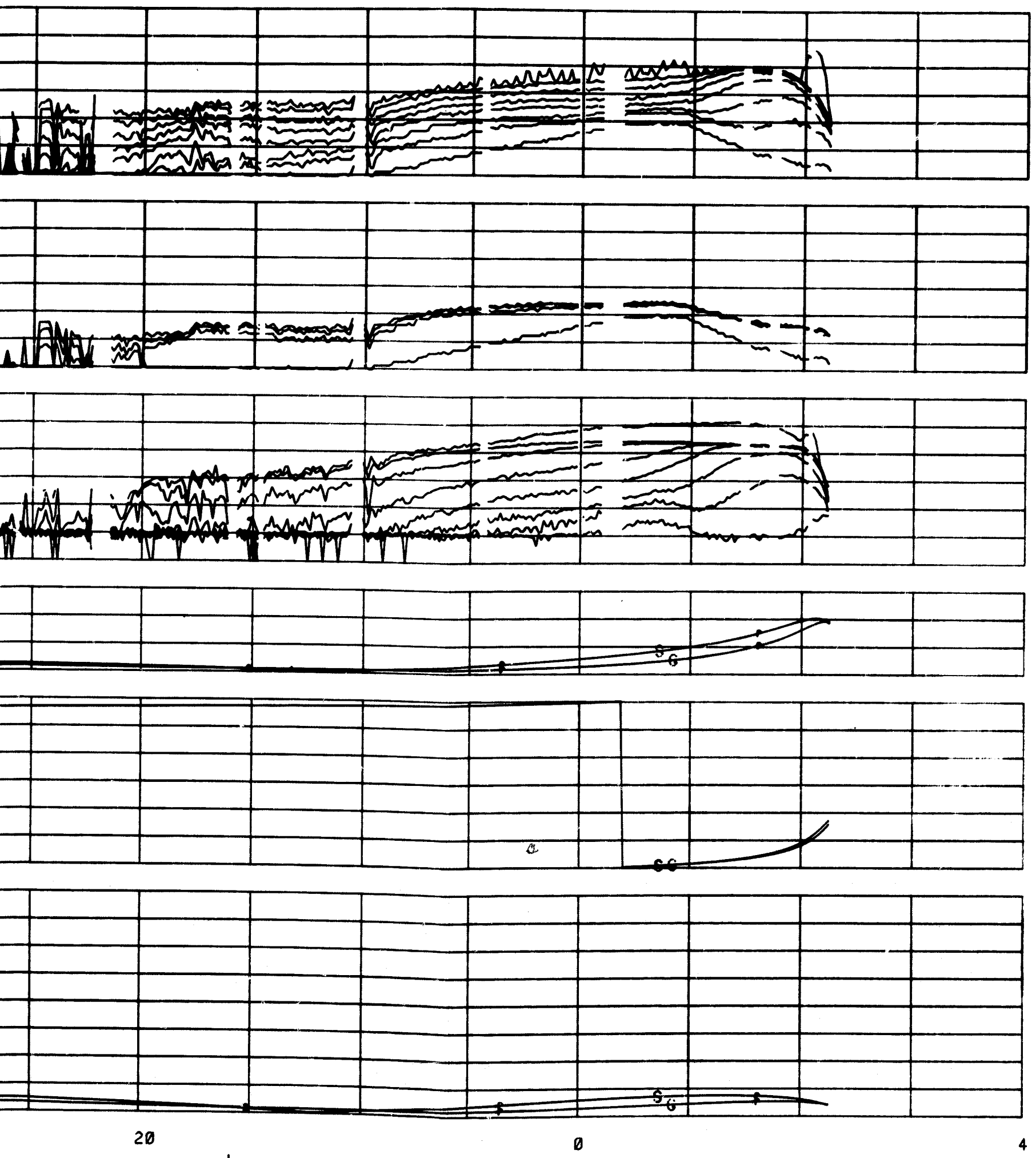
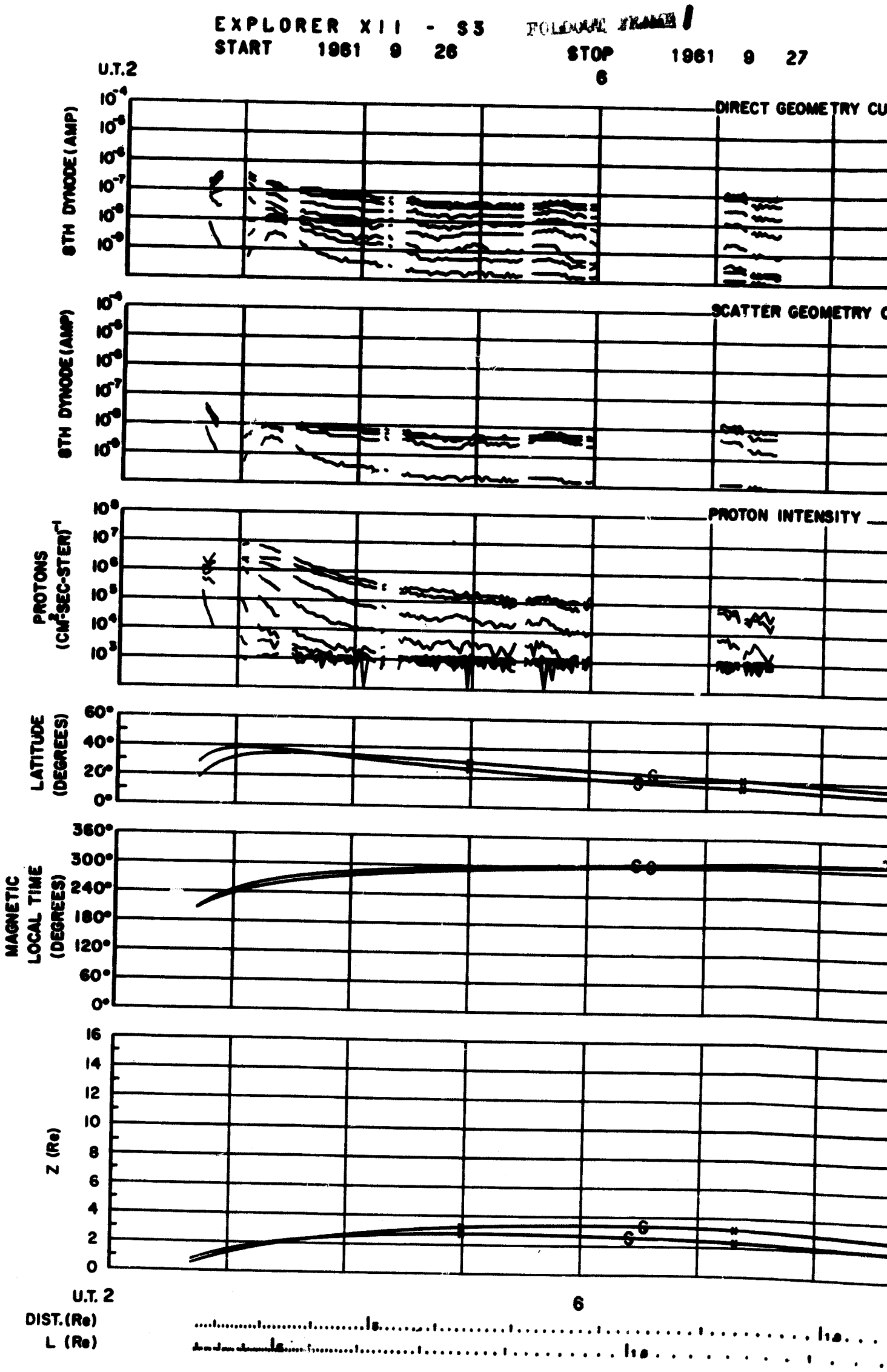
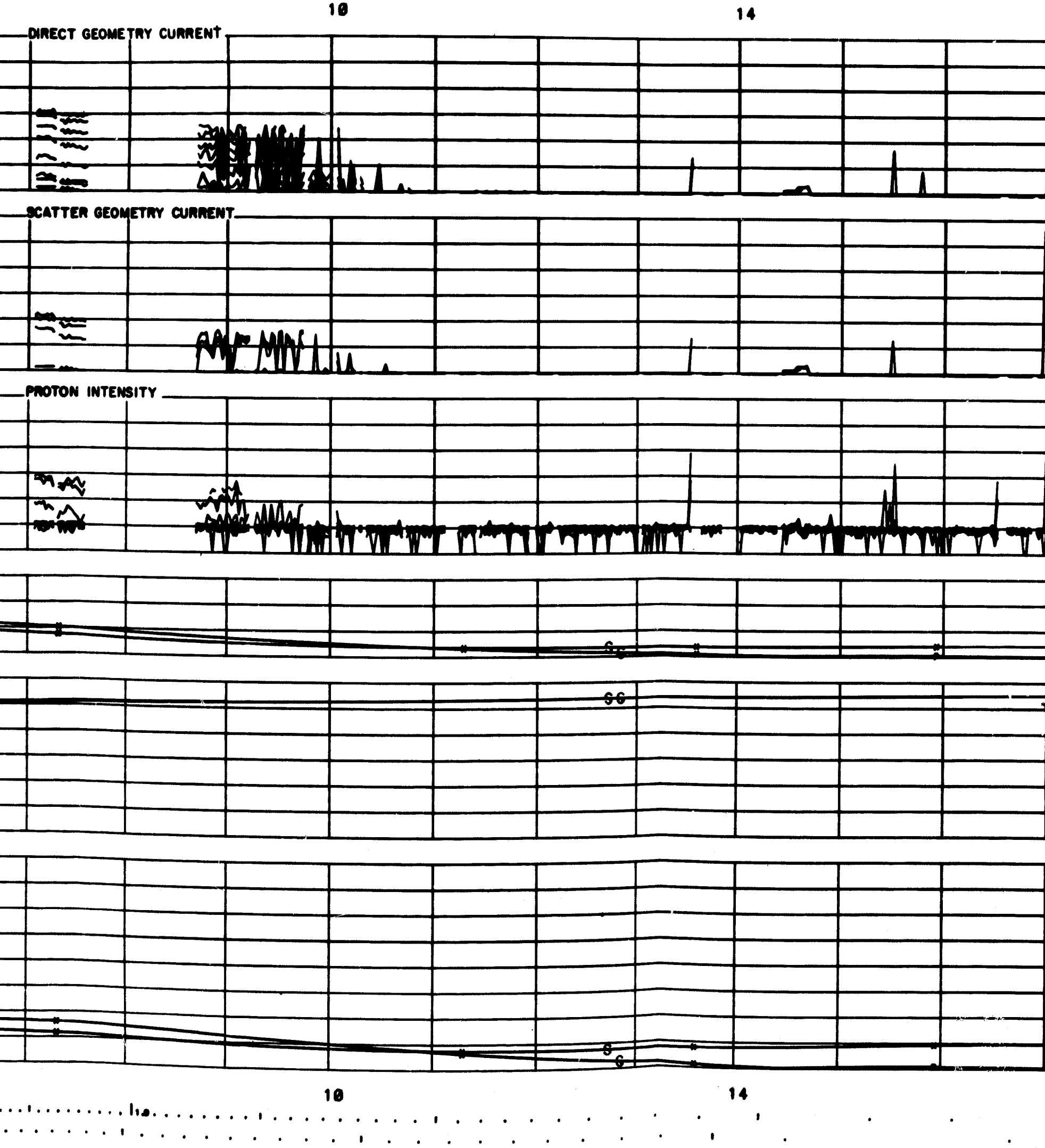
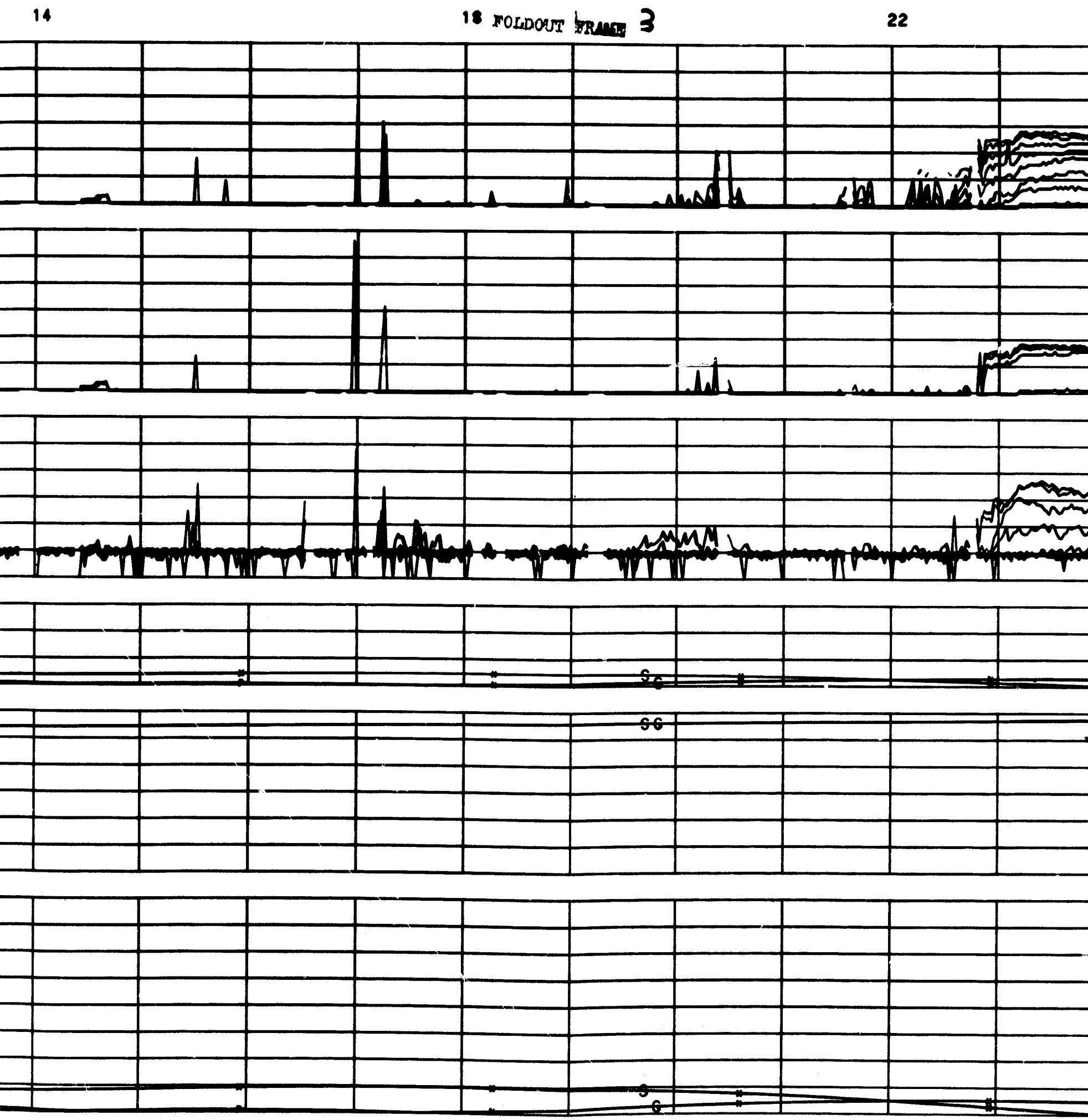



EXPLORER XII - S3
START 1961 9 26
STOP 1961 9 27
U.T.2
6
8TH DYNODE (AMP)
DIRECT GEOMETRY CU
SCATTER GEOMETRY C
PROTONS (CM²-SEC-STER)⁻¹
PROTON INTENSITY
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 2
6
DIST. (Re)
L (Re)

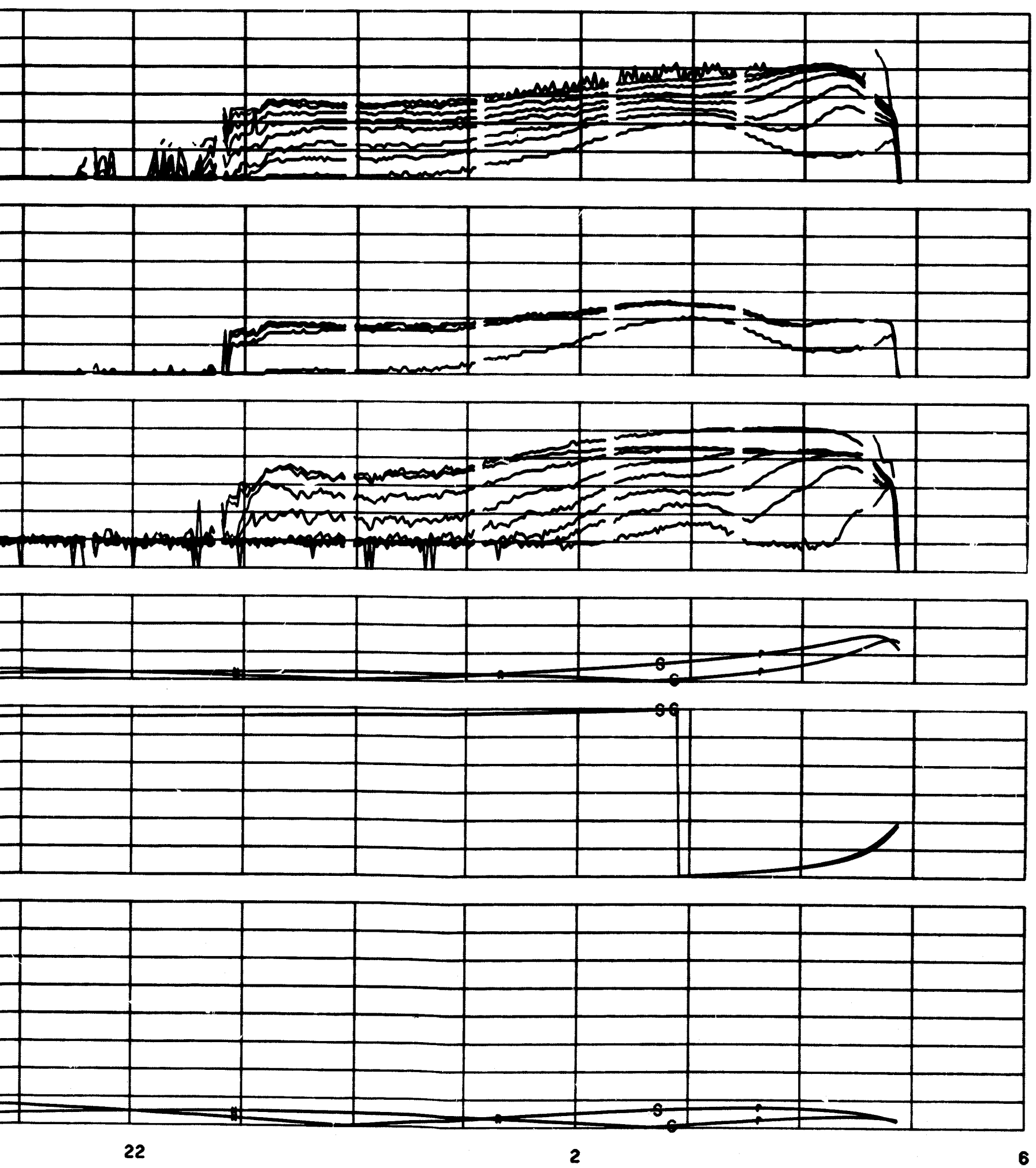
961 9 27

FOLDOUT FRAME 2




14
18 FOLDOUT FRAME 3
22
SG
SG
SG
14
18
22

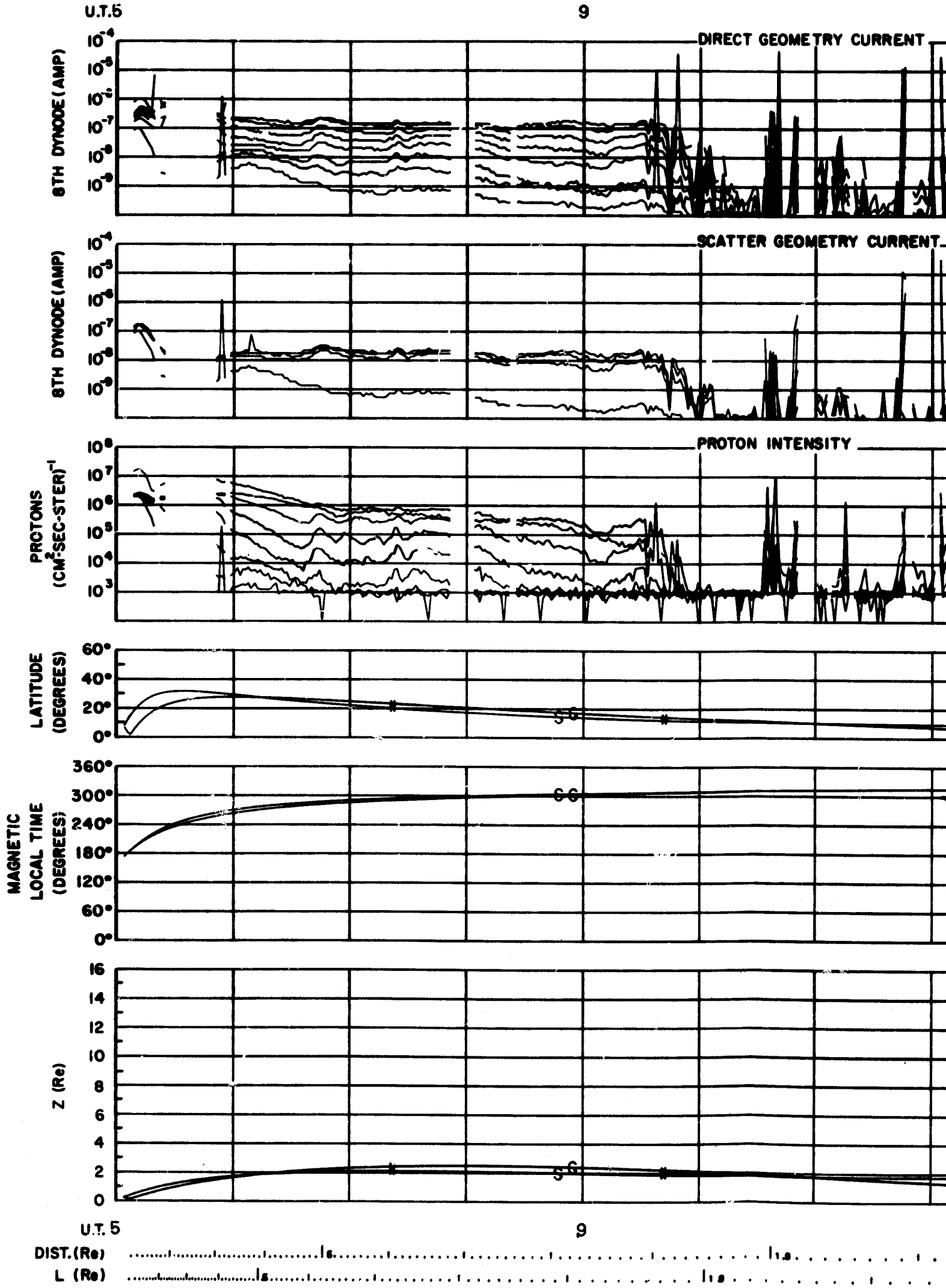
FOLDOUT FRAME 4



FOLDOUT FRAME 1

EXPLORER XII - S3

START 1961 9 27 STOP 1961 9 28



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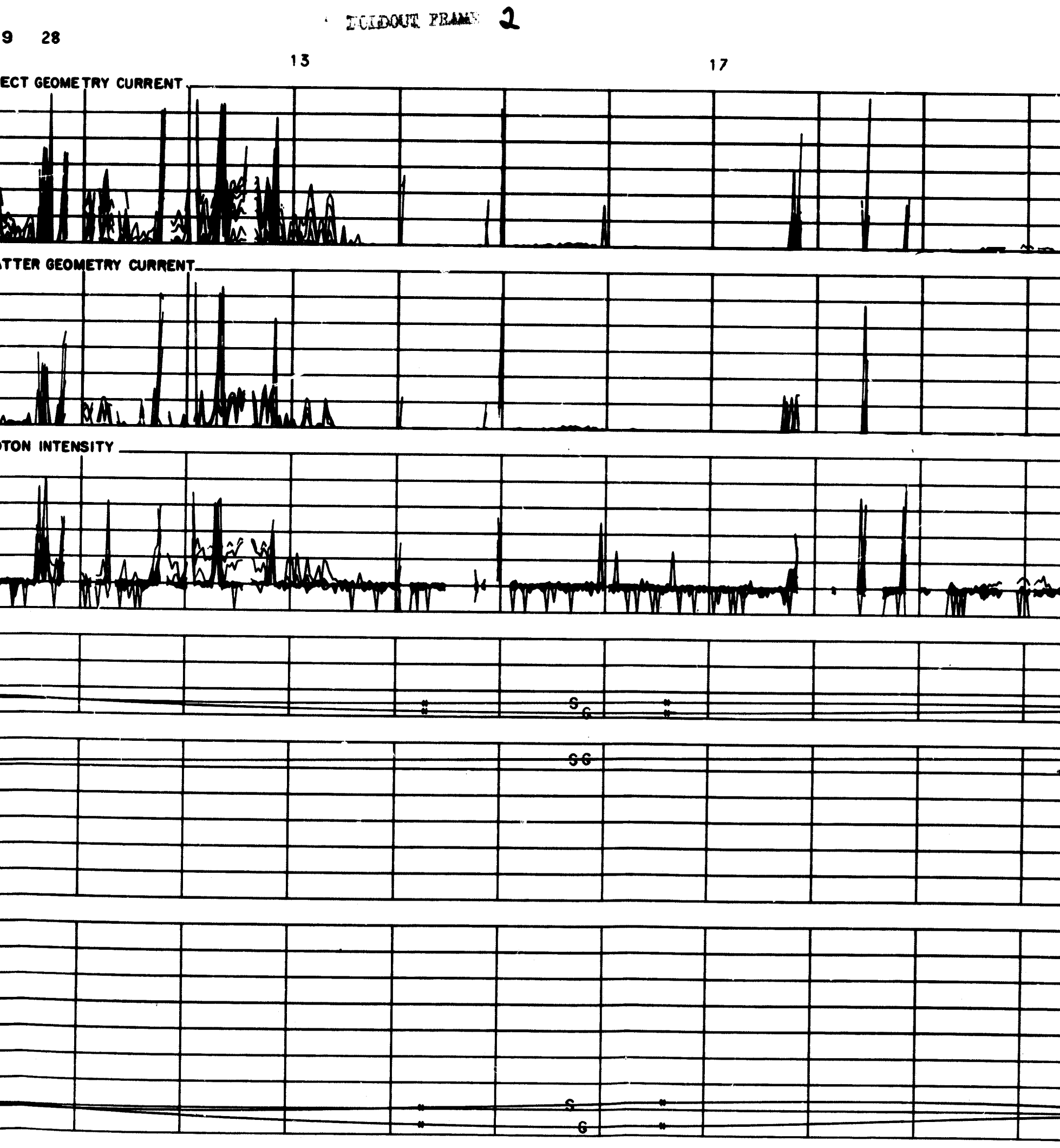

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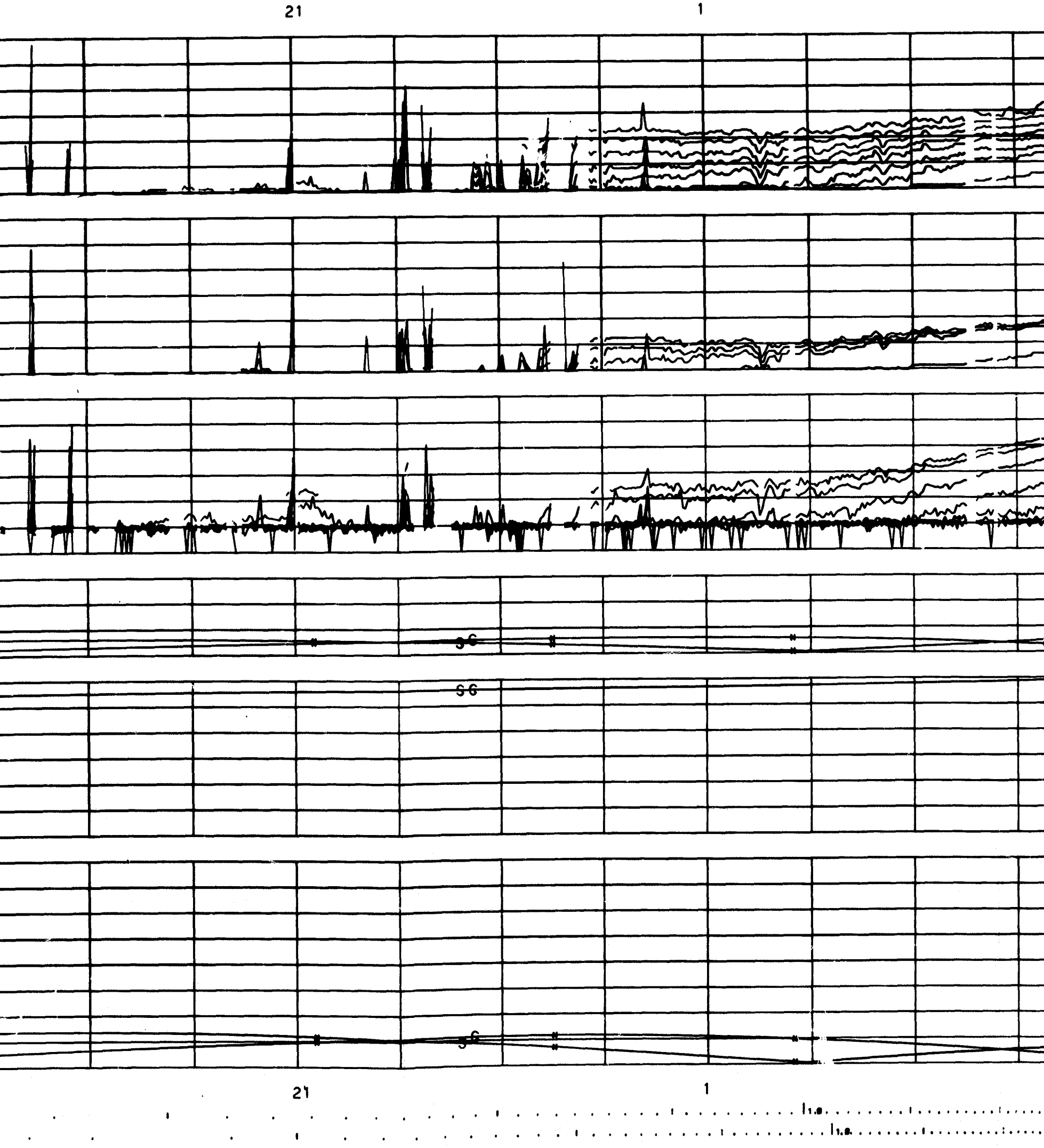
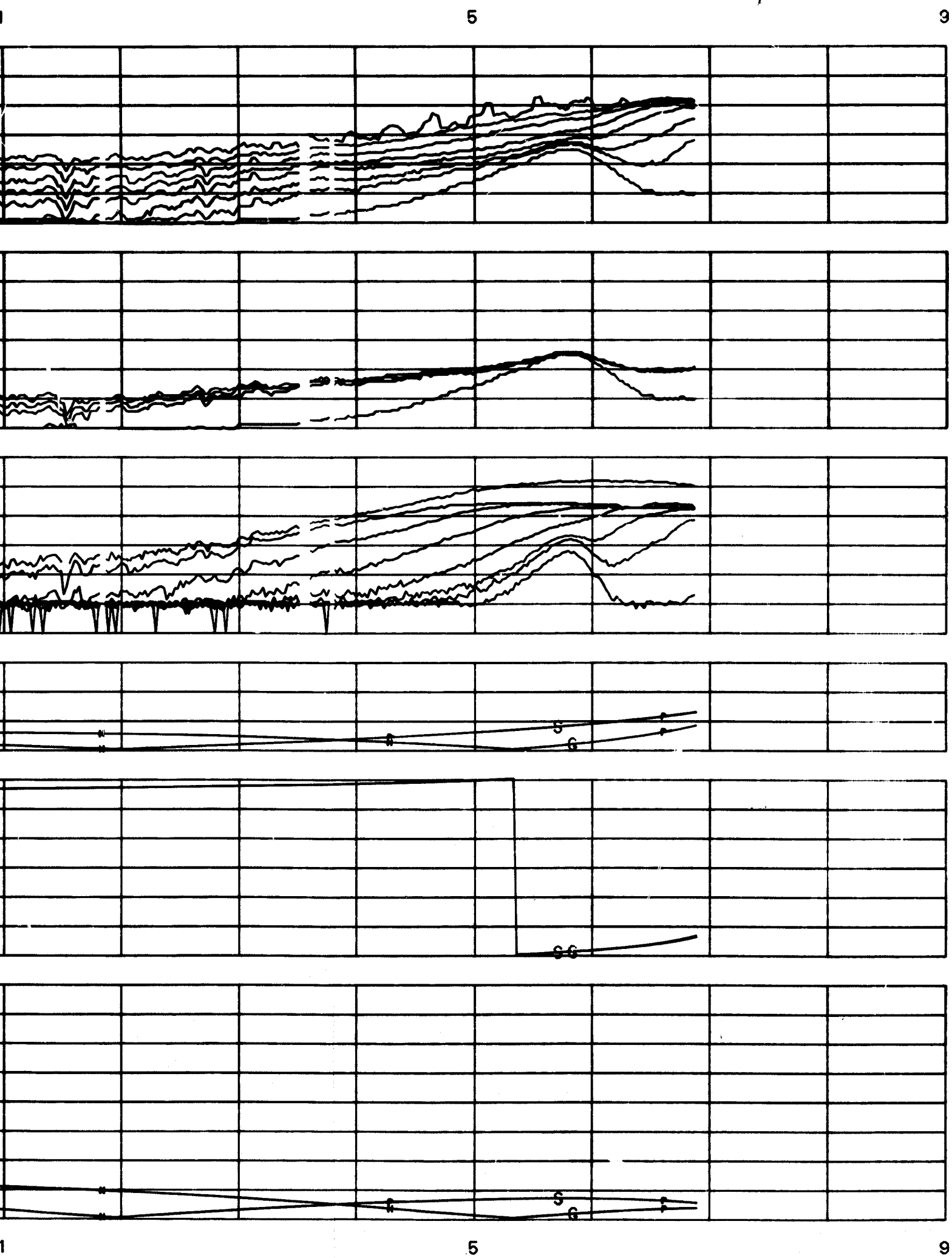
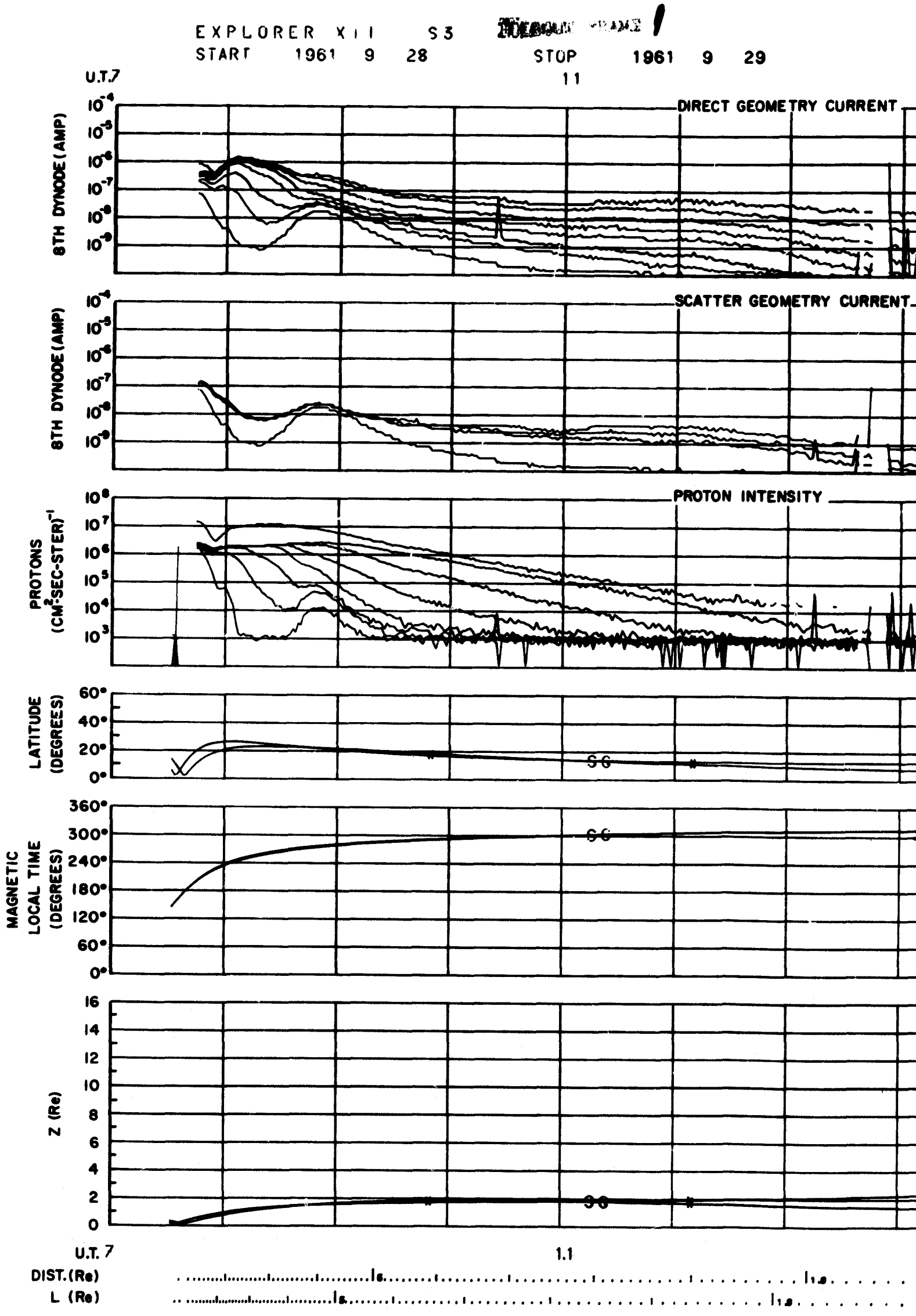
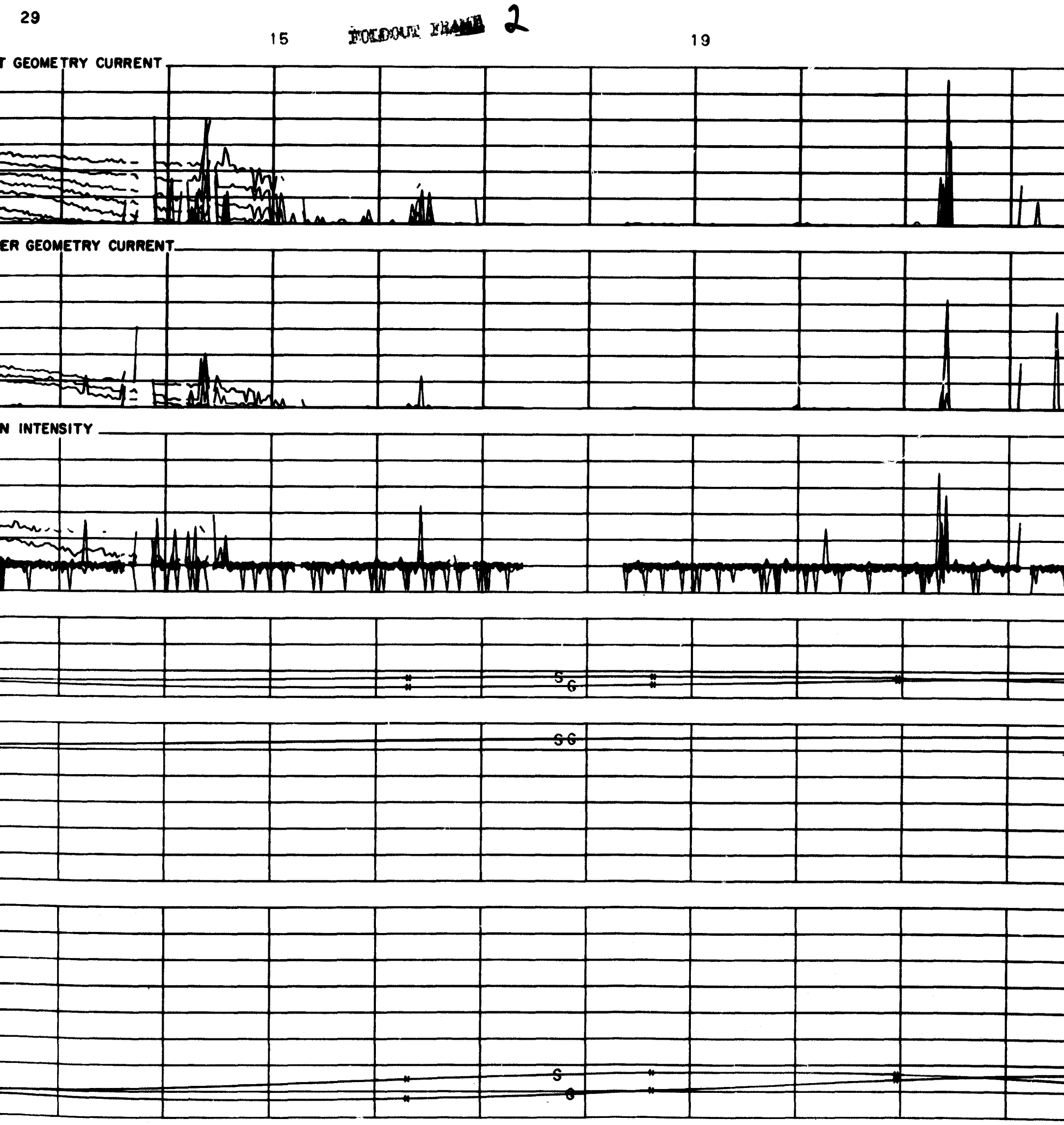


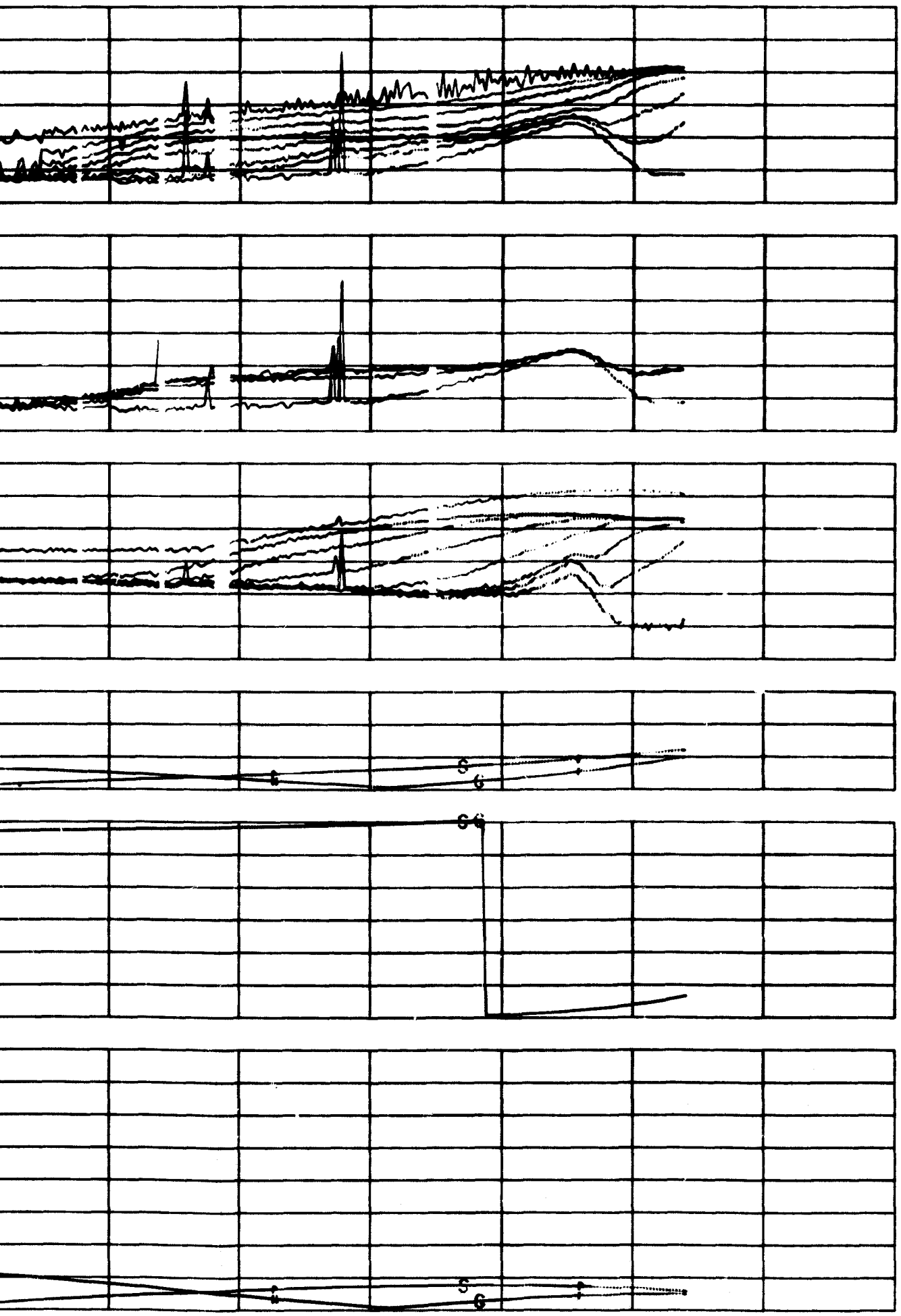
FOLDOUT FRAME 4

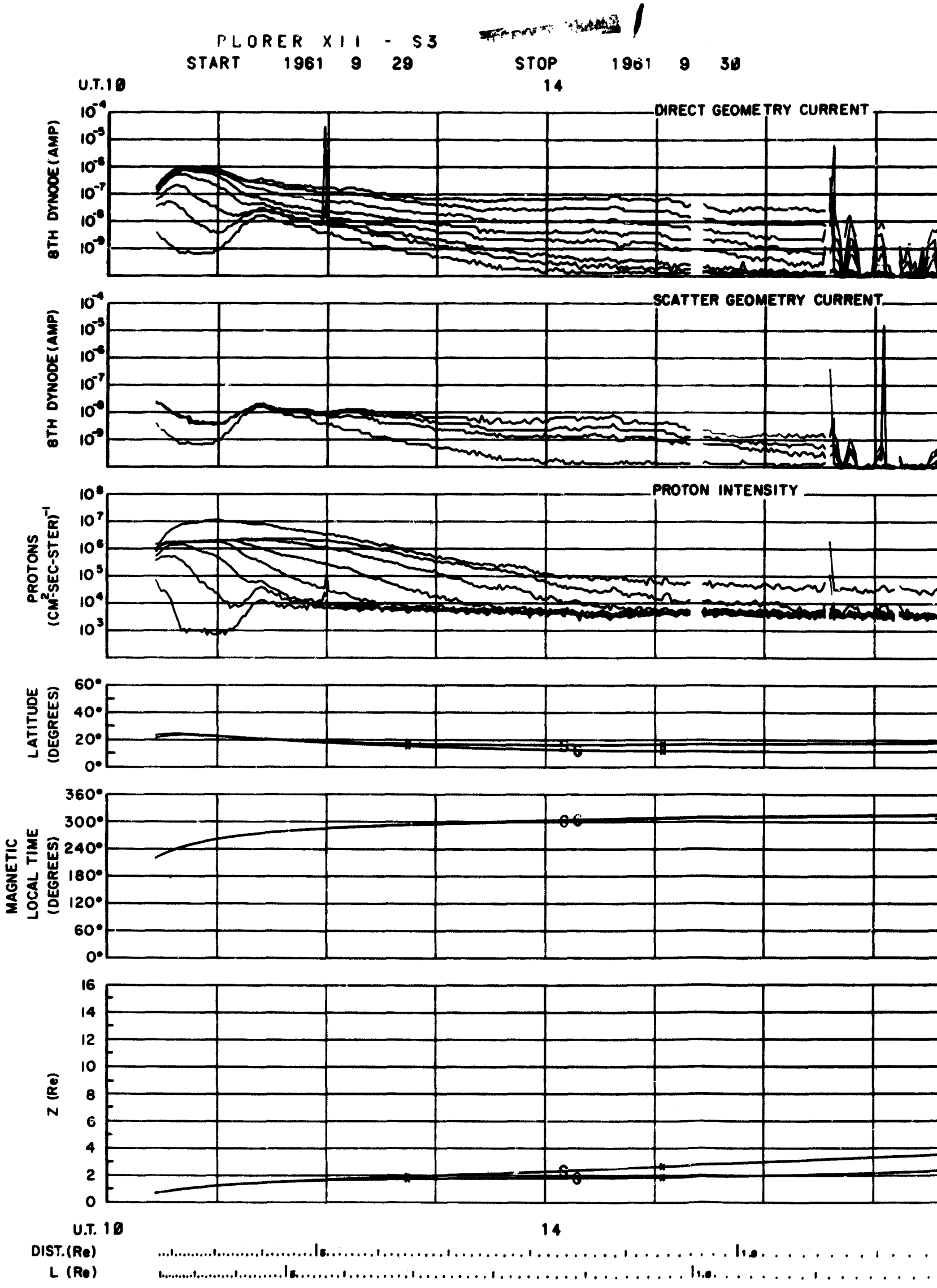



EXPLORER XII S3
START 1961 9 28
STOP 1961 9 29
U.T.7
11
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 7
1.1
DIST. (Re)
L (Re)


29
15
FOLDOUT FRAME 2
19
T GEOMETRY CURRENT
ER GEOMETRY CURRENT
N INTENSITY
S
G
S G
S
G
15
19

FOLDOUT FRAME 3


S
6
S
6
S
6


PLORER XII - S3
START 1961 9 29
STOP 1961 9 30
U.T.10
14
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM-2SEC-STER)-1
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 10
14
DIST.(Re)
L (Re)

2

30

18

22

CT GEOMETRY CURRENT

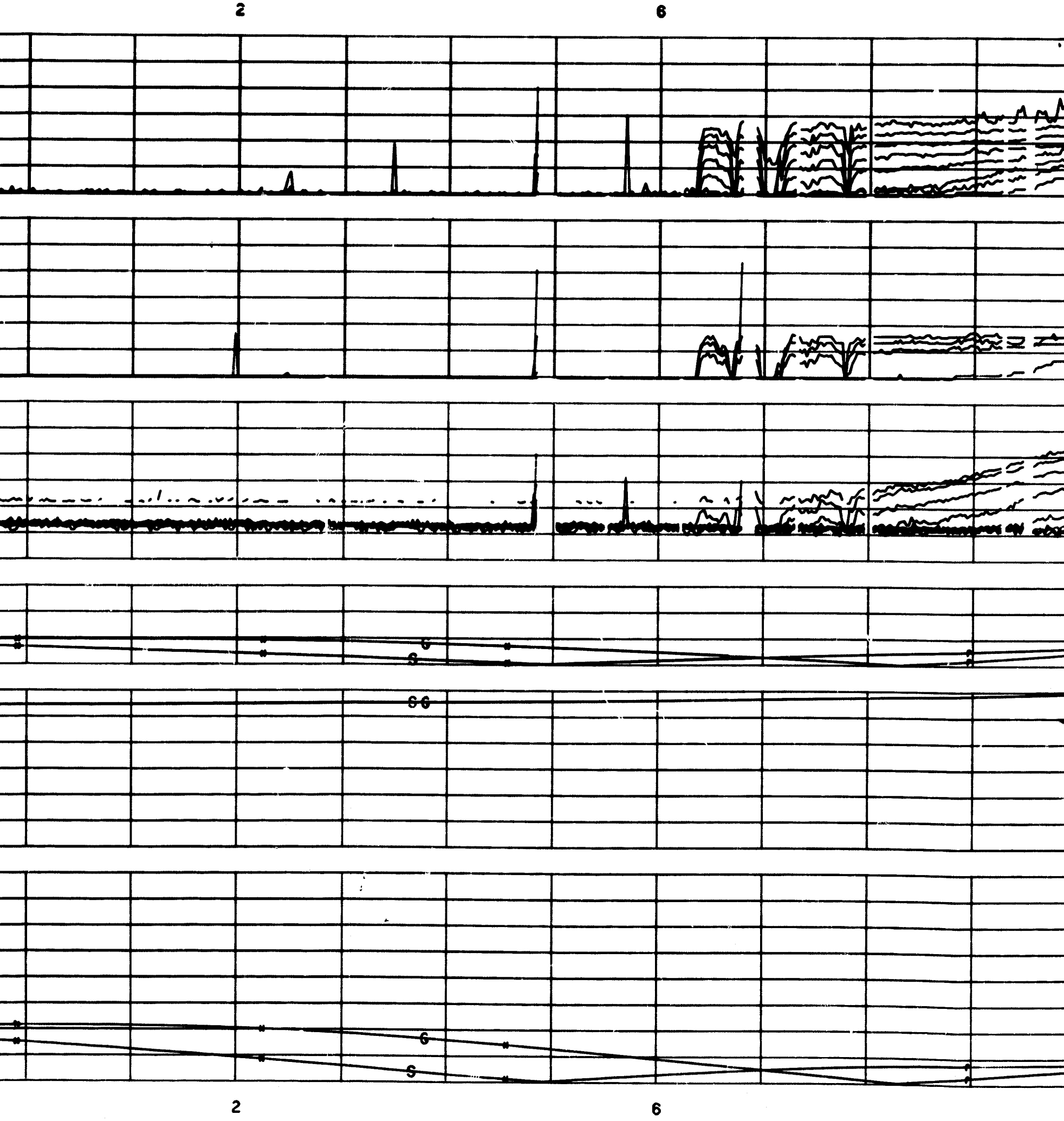
TER GEOMETRY CURRENT

ON INTENSITY

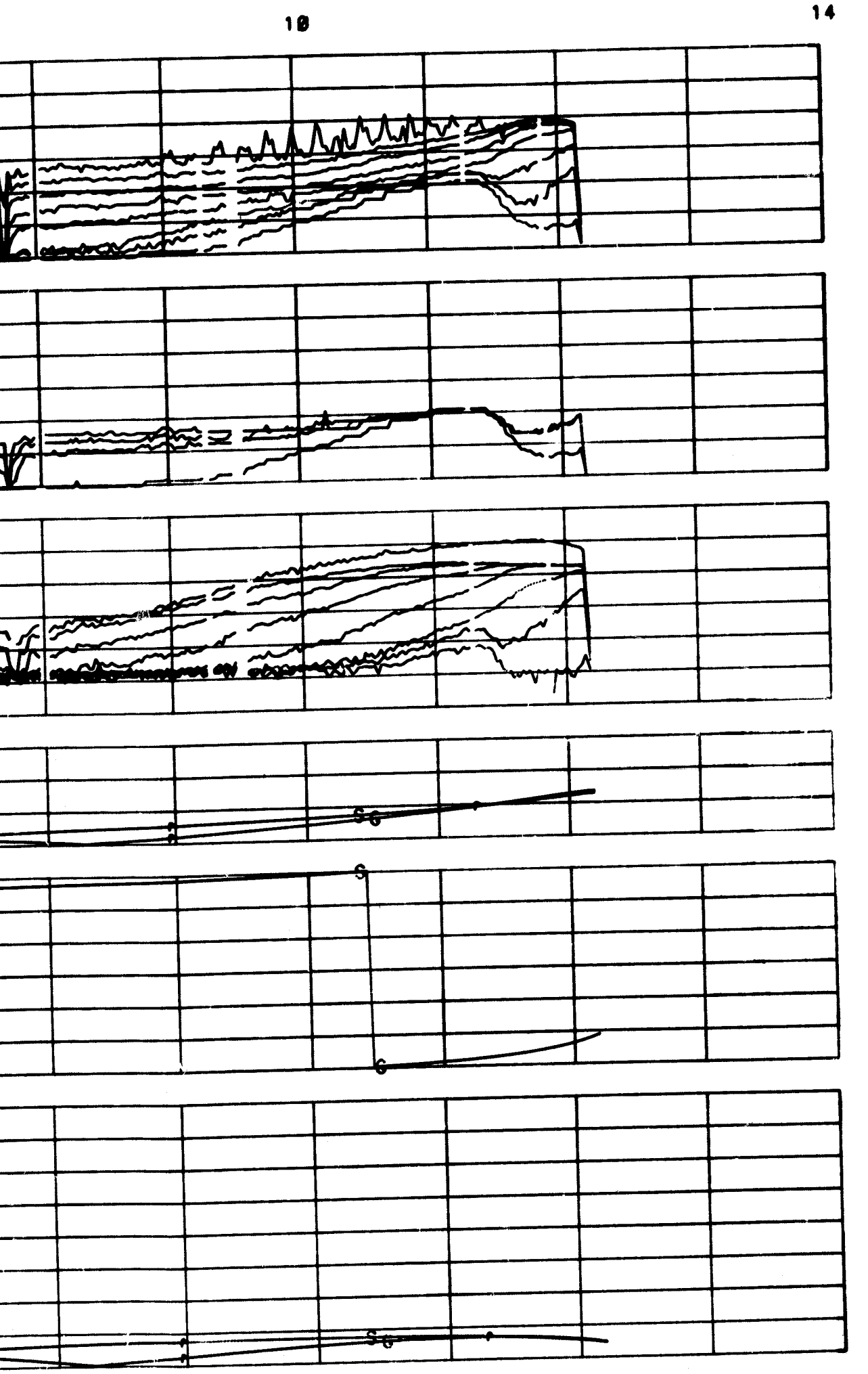
18

22

FILMED FRAME 3

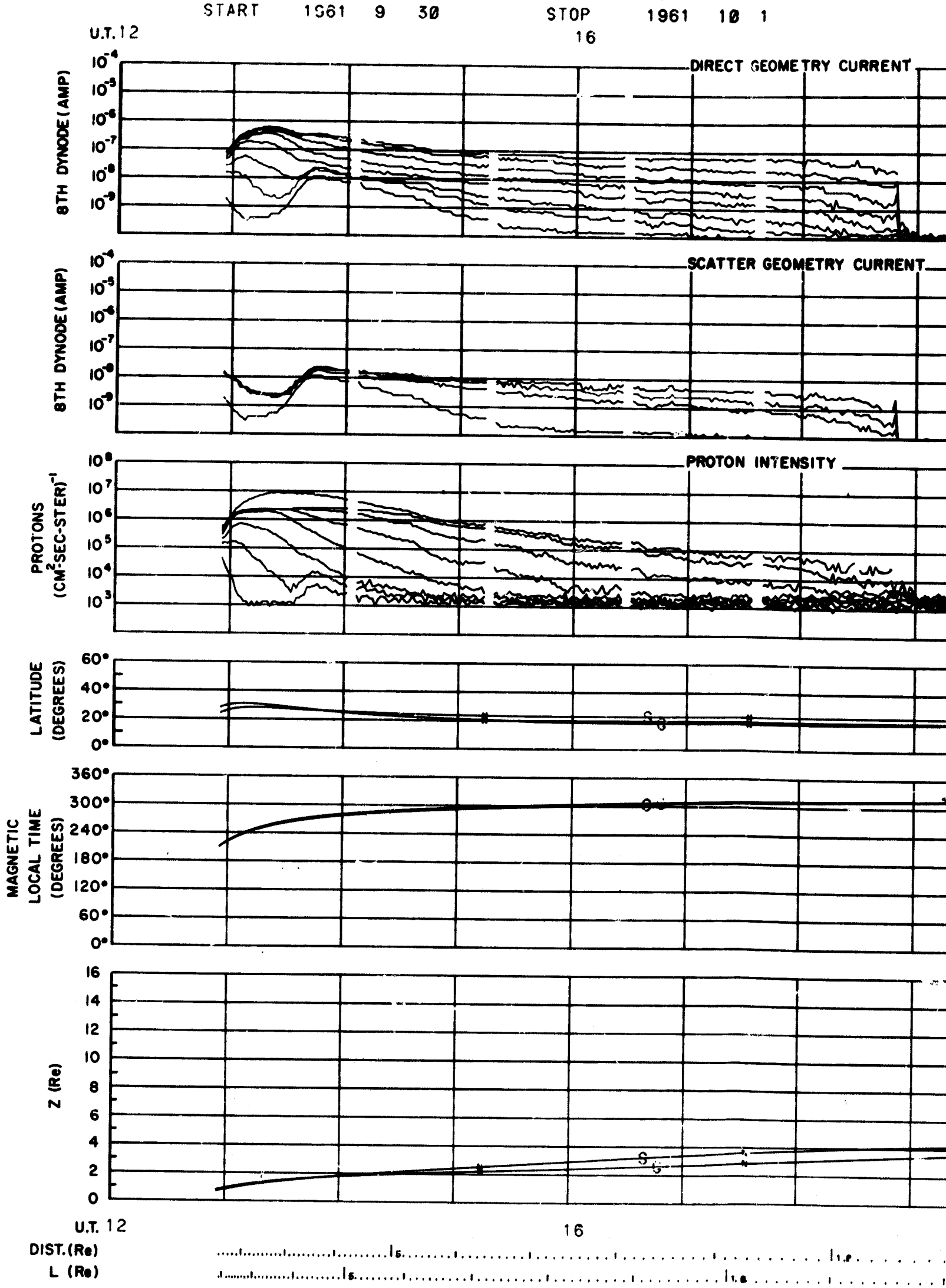


FOLDOUT FRAME 4

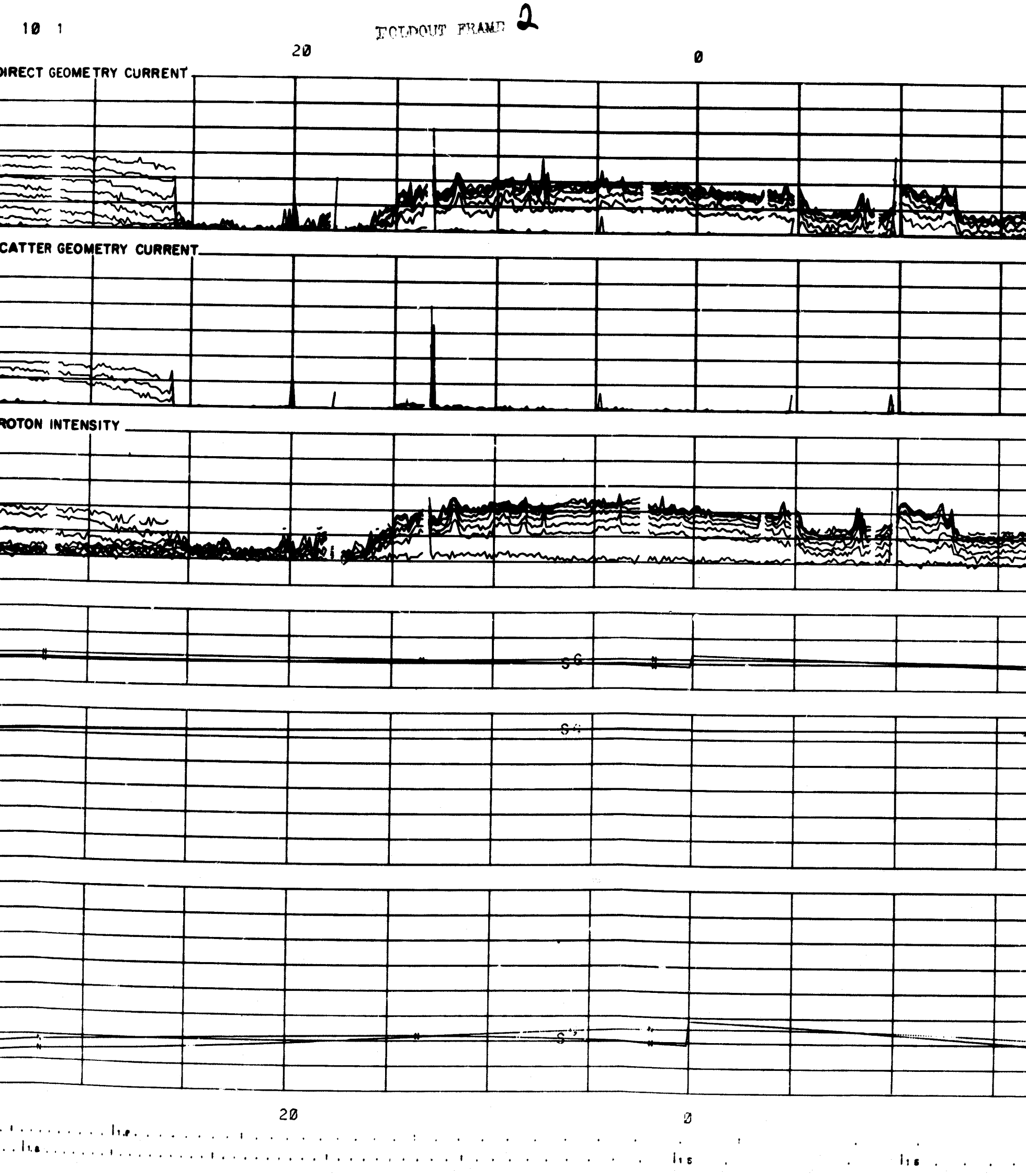


EXPLORER XII - S3 FOLDOUT FRAME 1

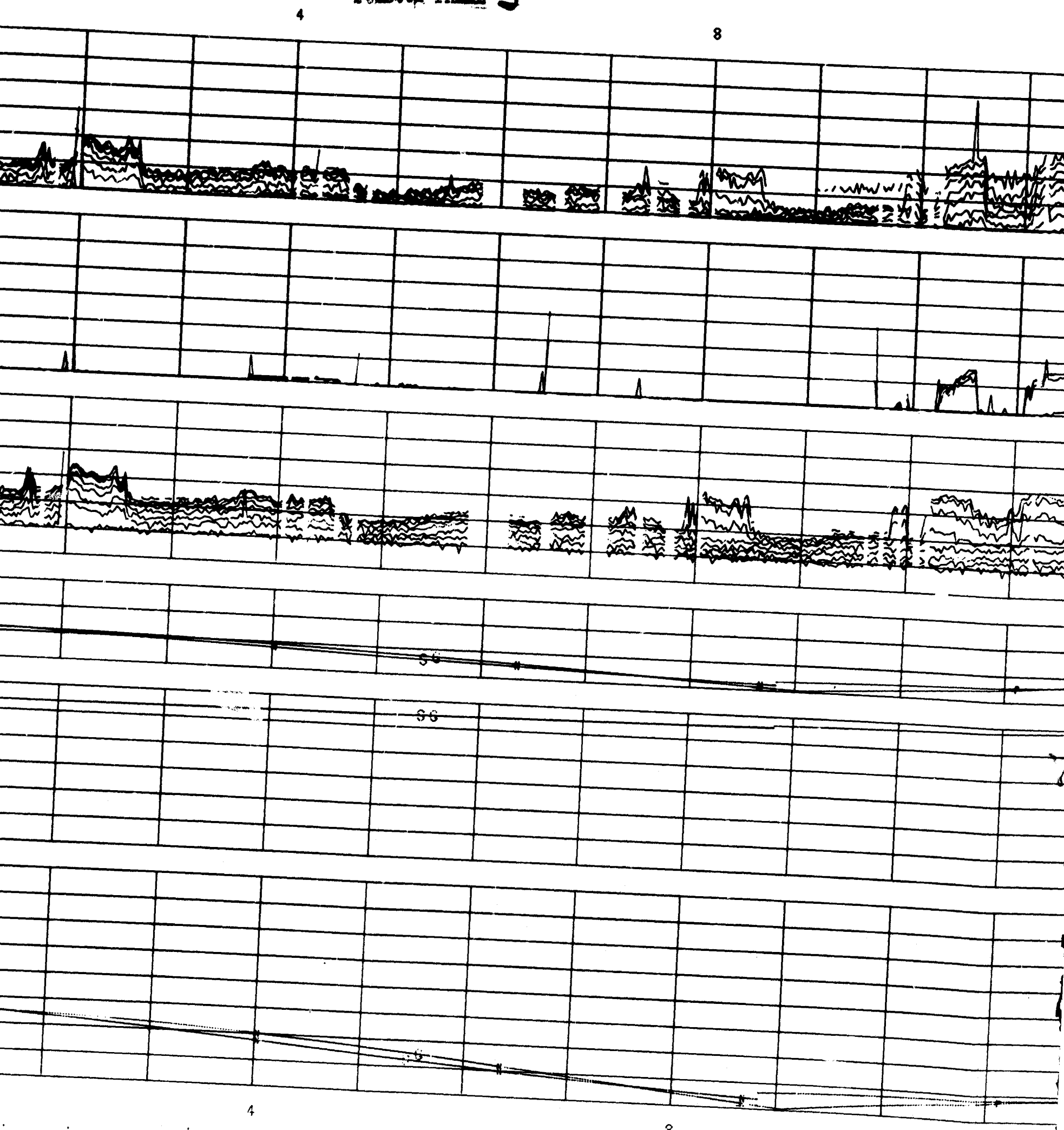
START 1961 9 30 STOP 1961 10 1



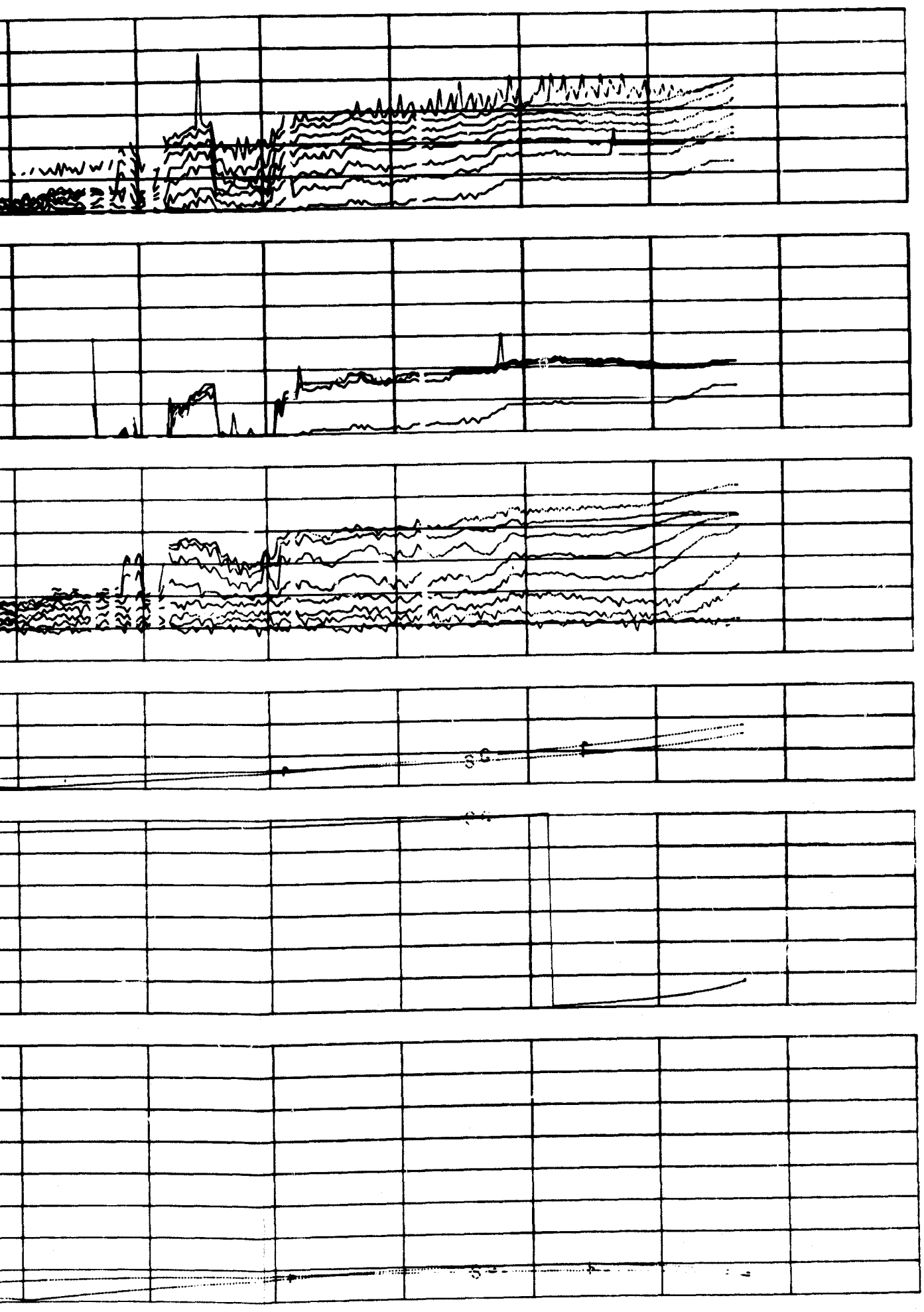
FOLDOUT FRAME 2

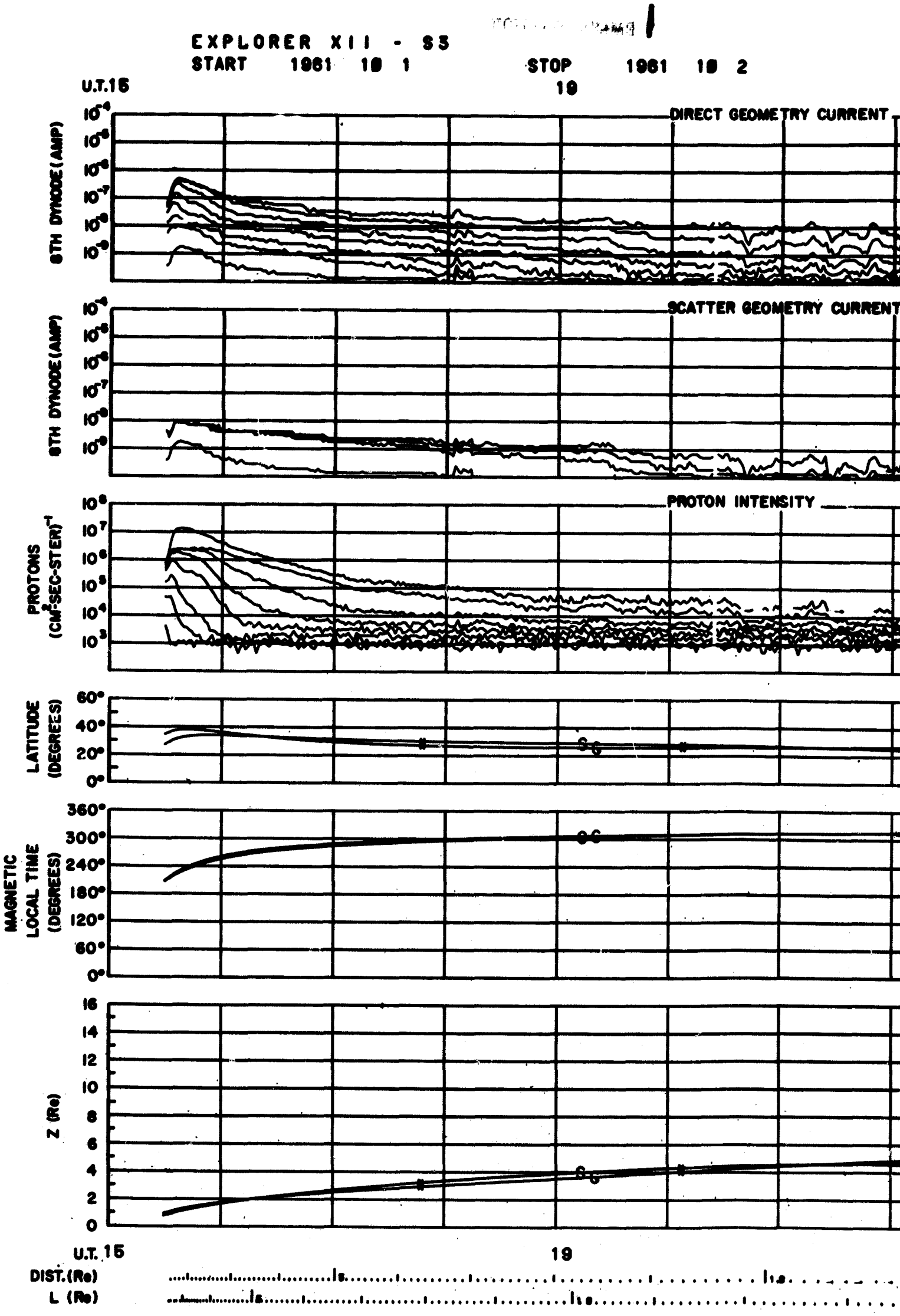


FOLDOUT FRAME 3



FOLDOUT FRAME 4




EXPLORER XII - S3
START 1961 10 1
STOP 1961 10 2
U.T.15
19
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 15
19
DIST. (Re)
L (Re)

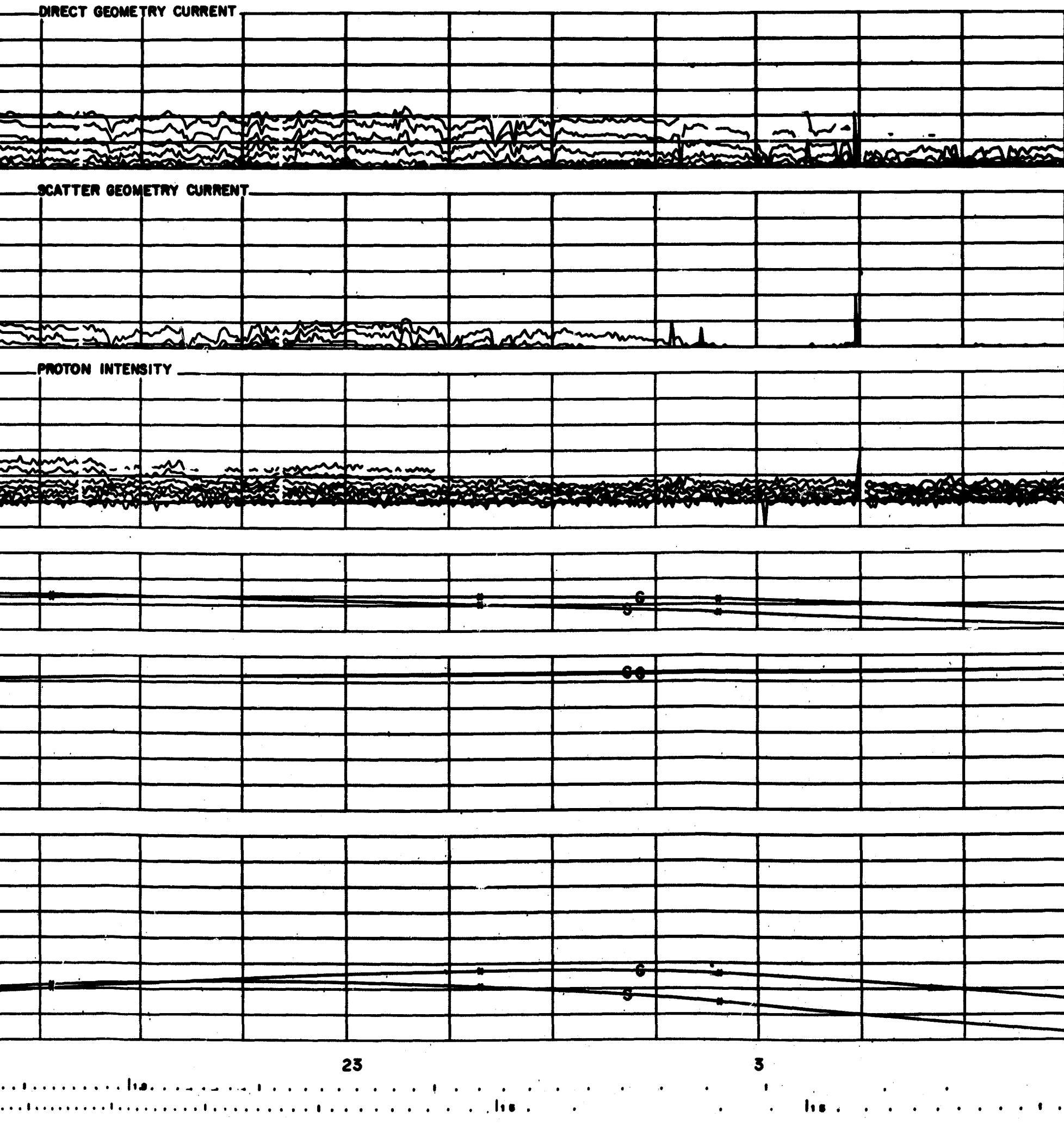
1

1961 10 2

2

23

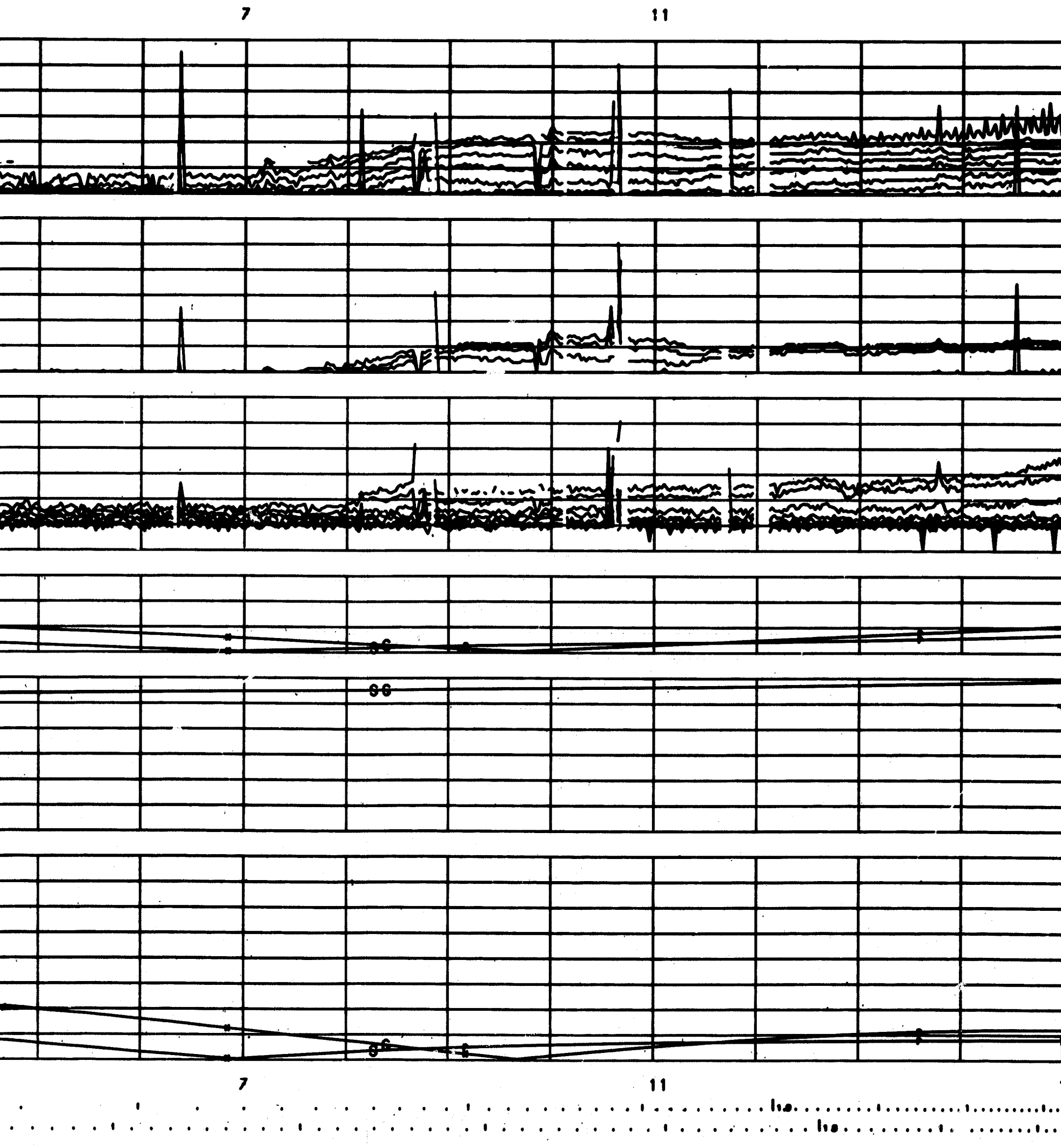
3



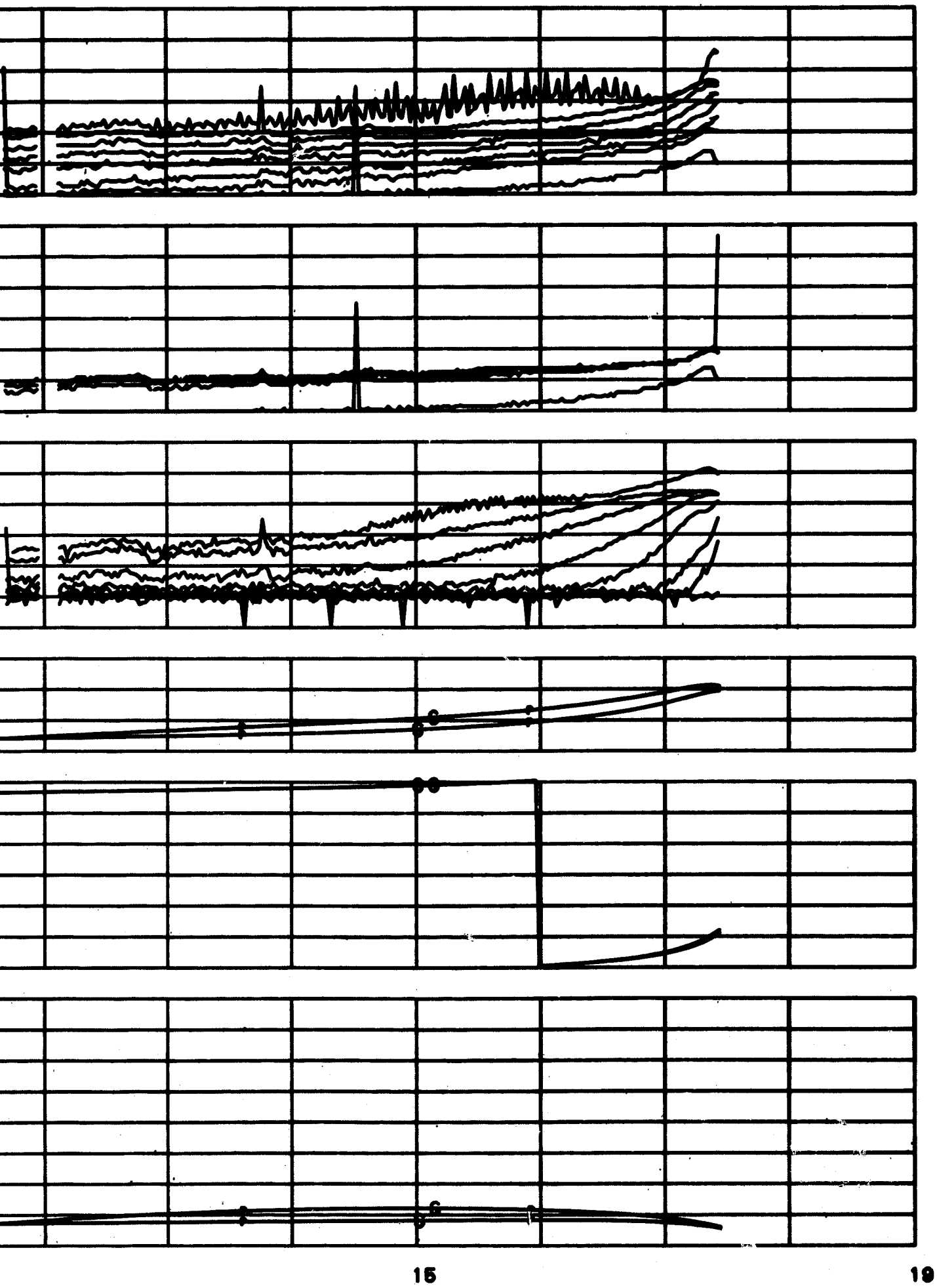
23

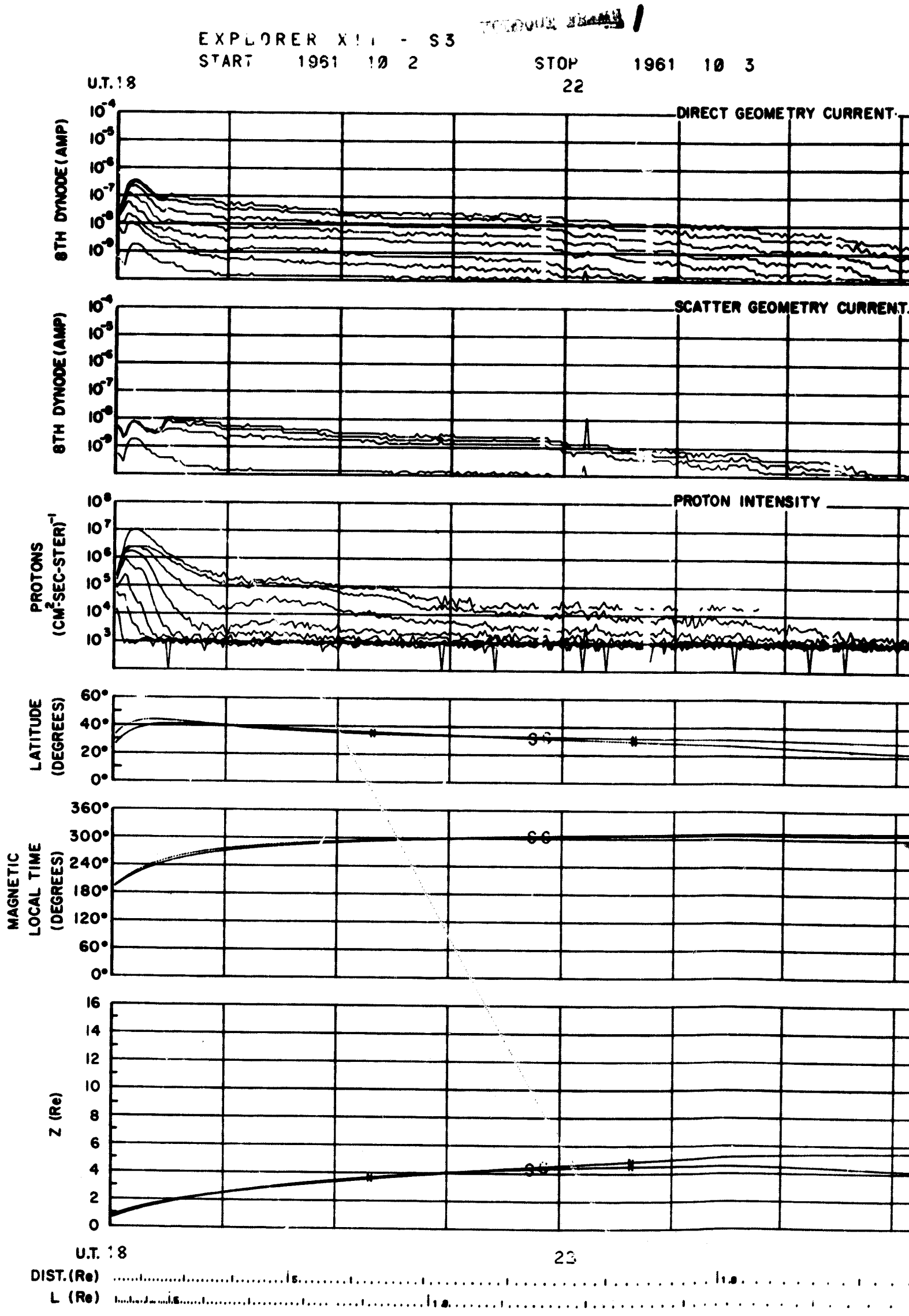
3

T FRAME 3



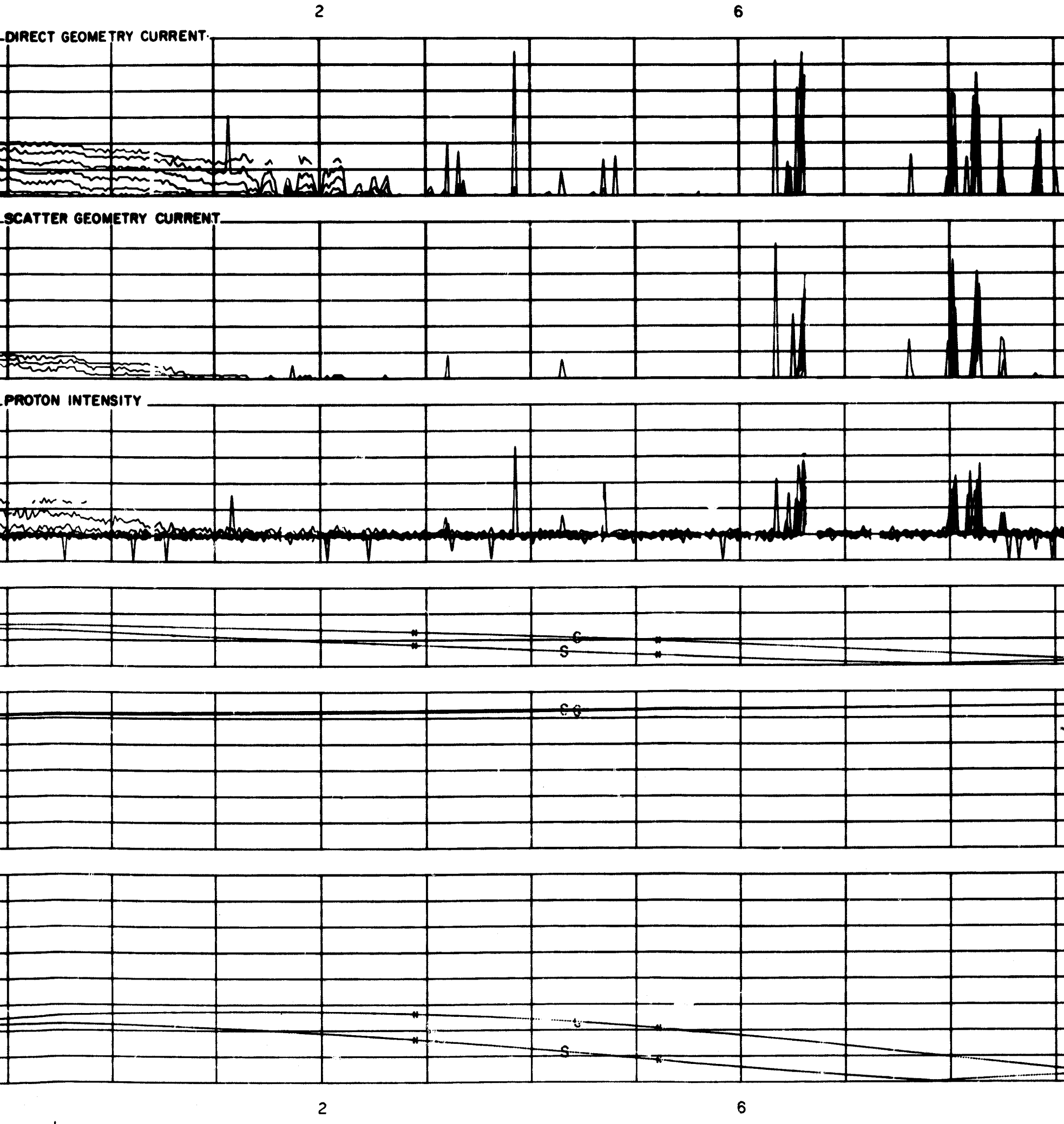
FOLDOUT FRAME 4



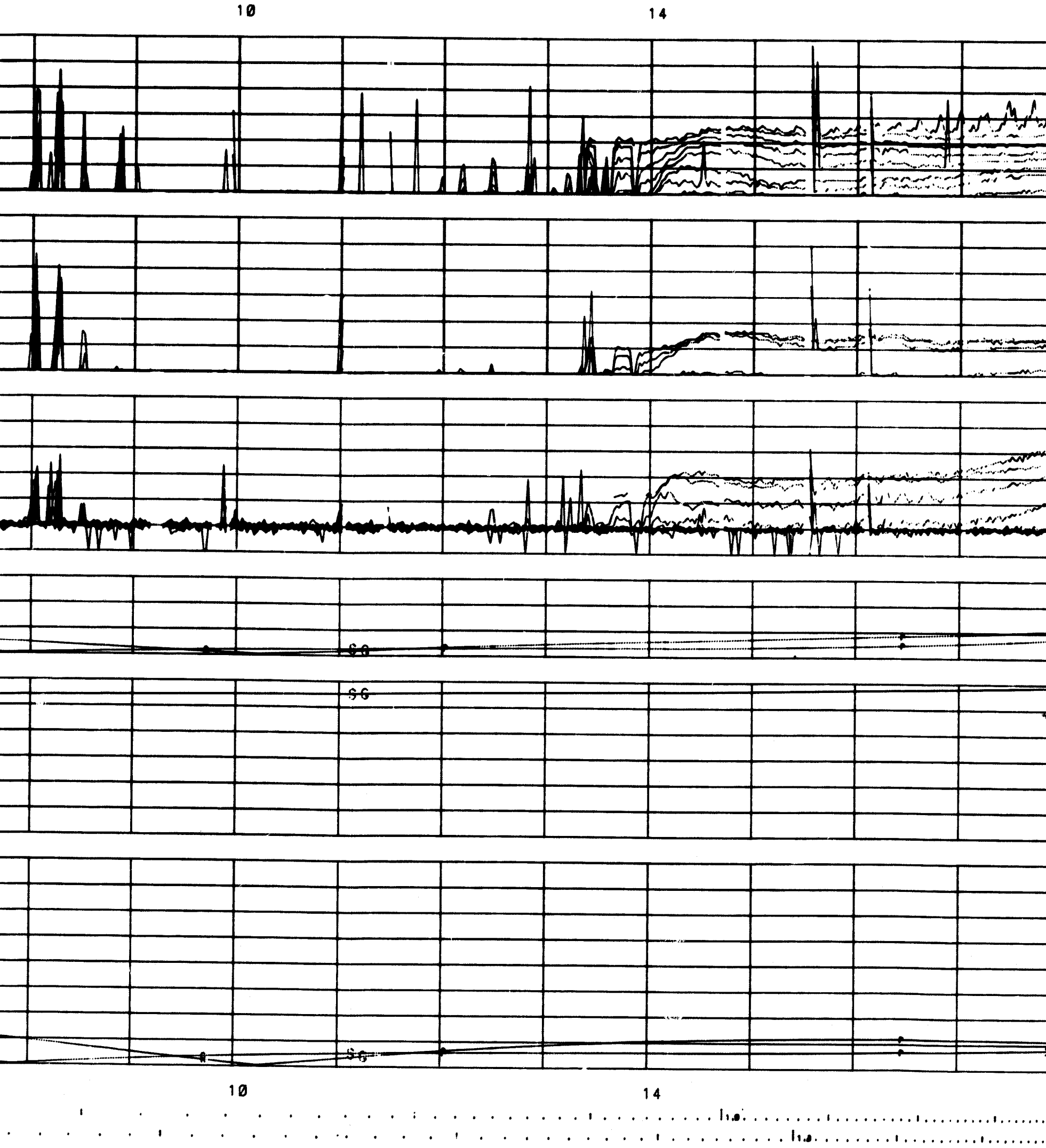

EXPLORER XII - S3
START 1961 10 2
STOP 1961 10 3
U.T. 18
22
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
DIST. (Re)
L (Re)

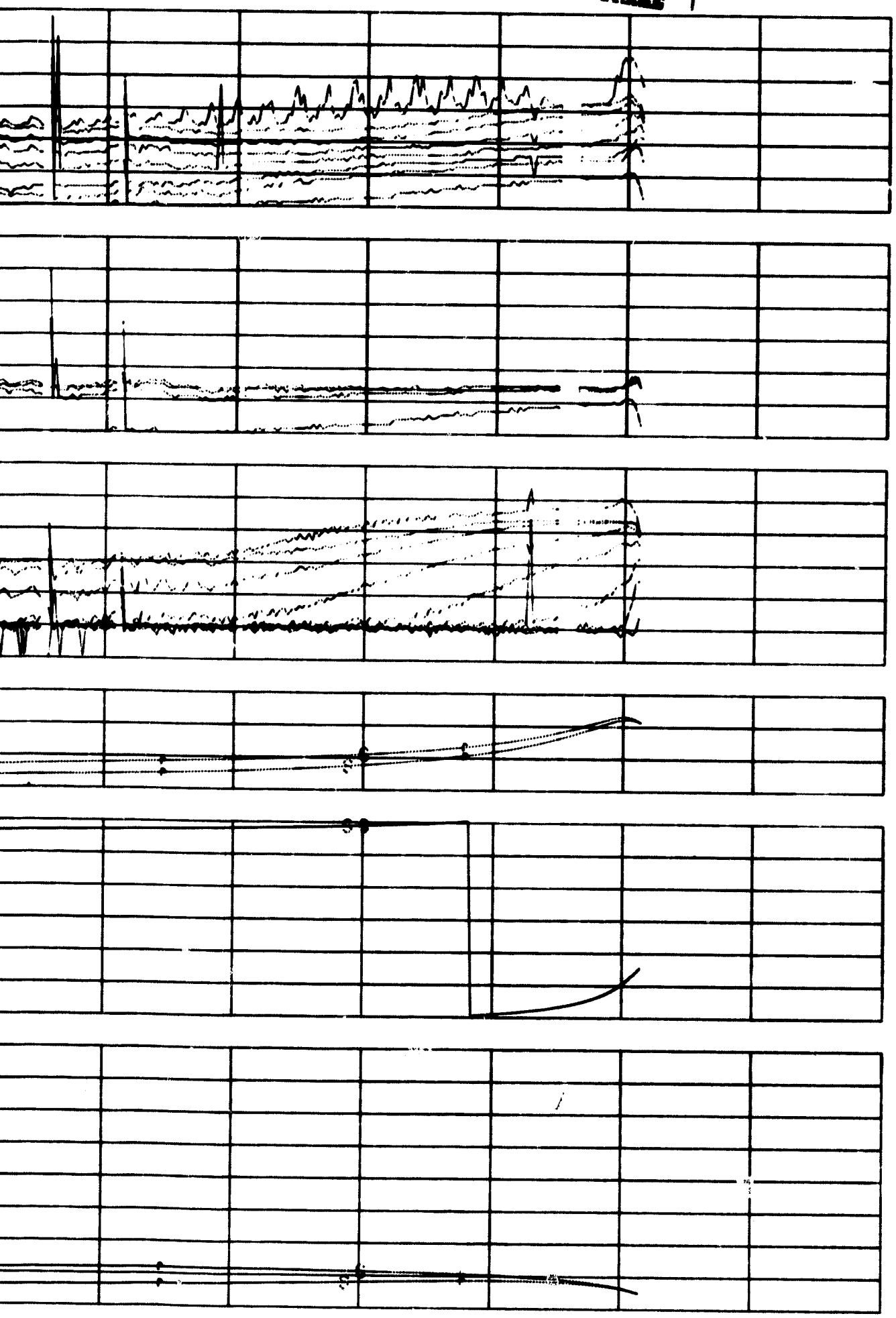
1 10 3

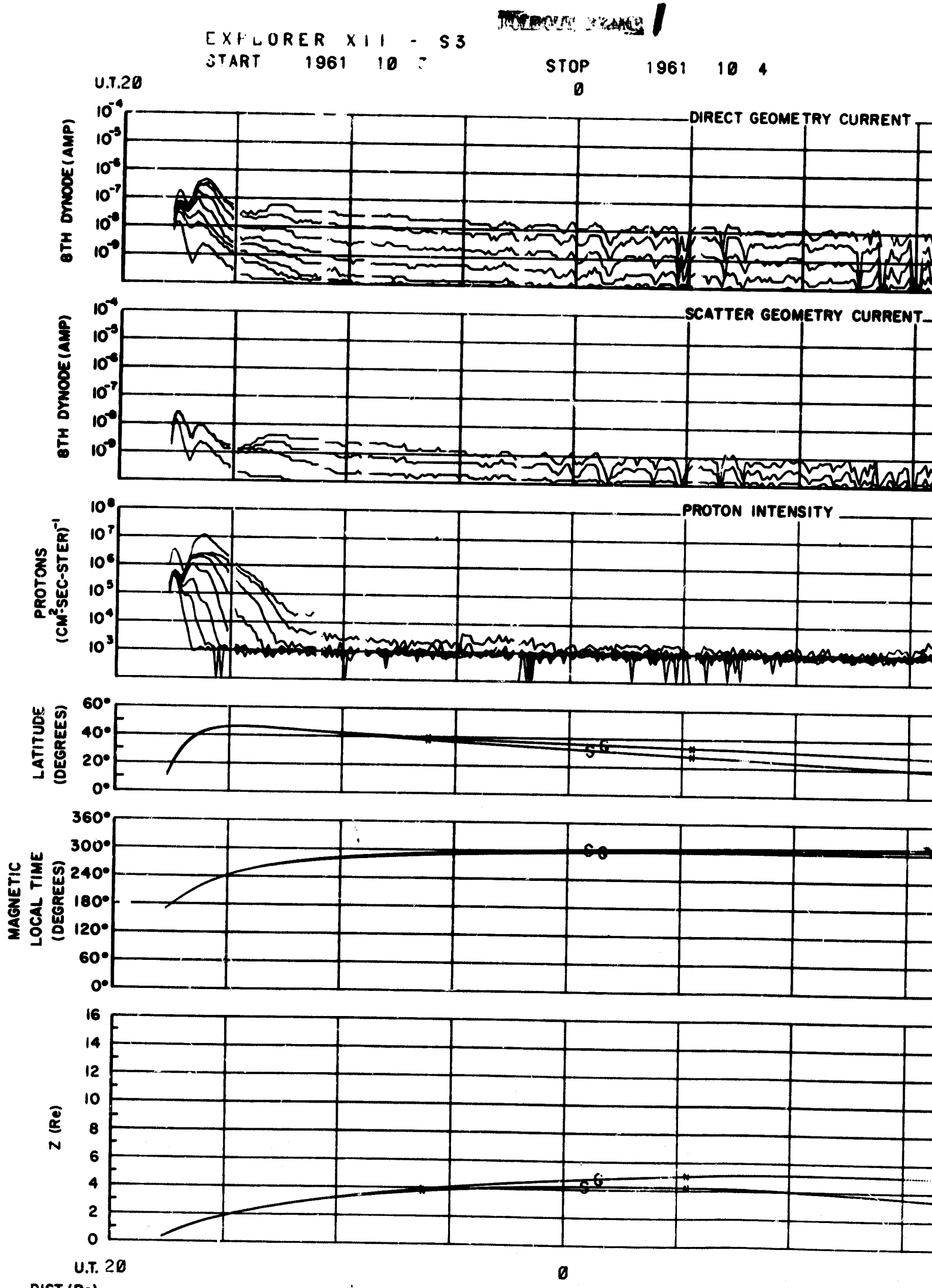
FRAME 2

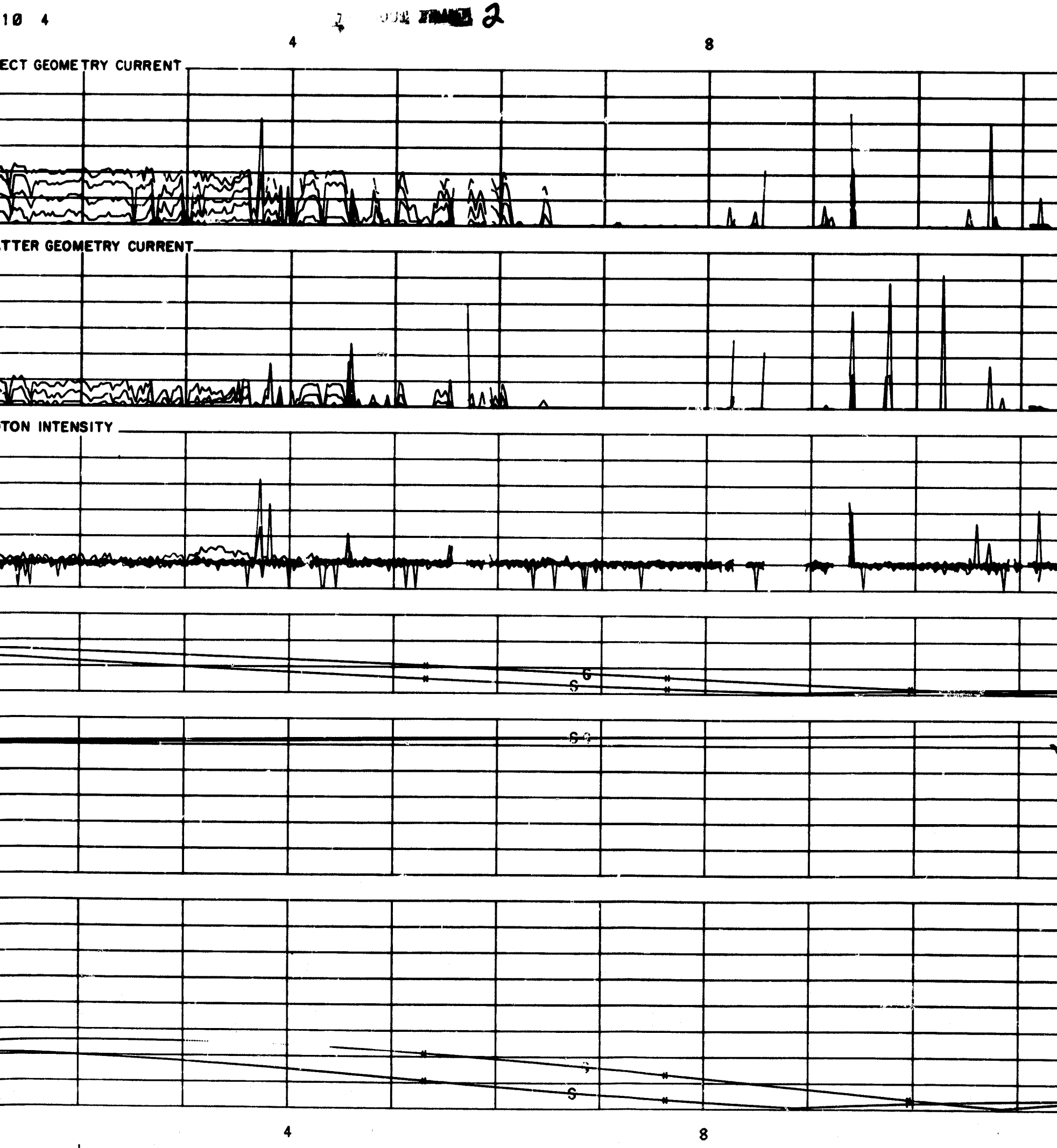

2
6
DIRECT GEOMETRY CURRENT
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
G
S
G G
G
S
2
6

FOLDOUT FRAME 3

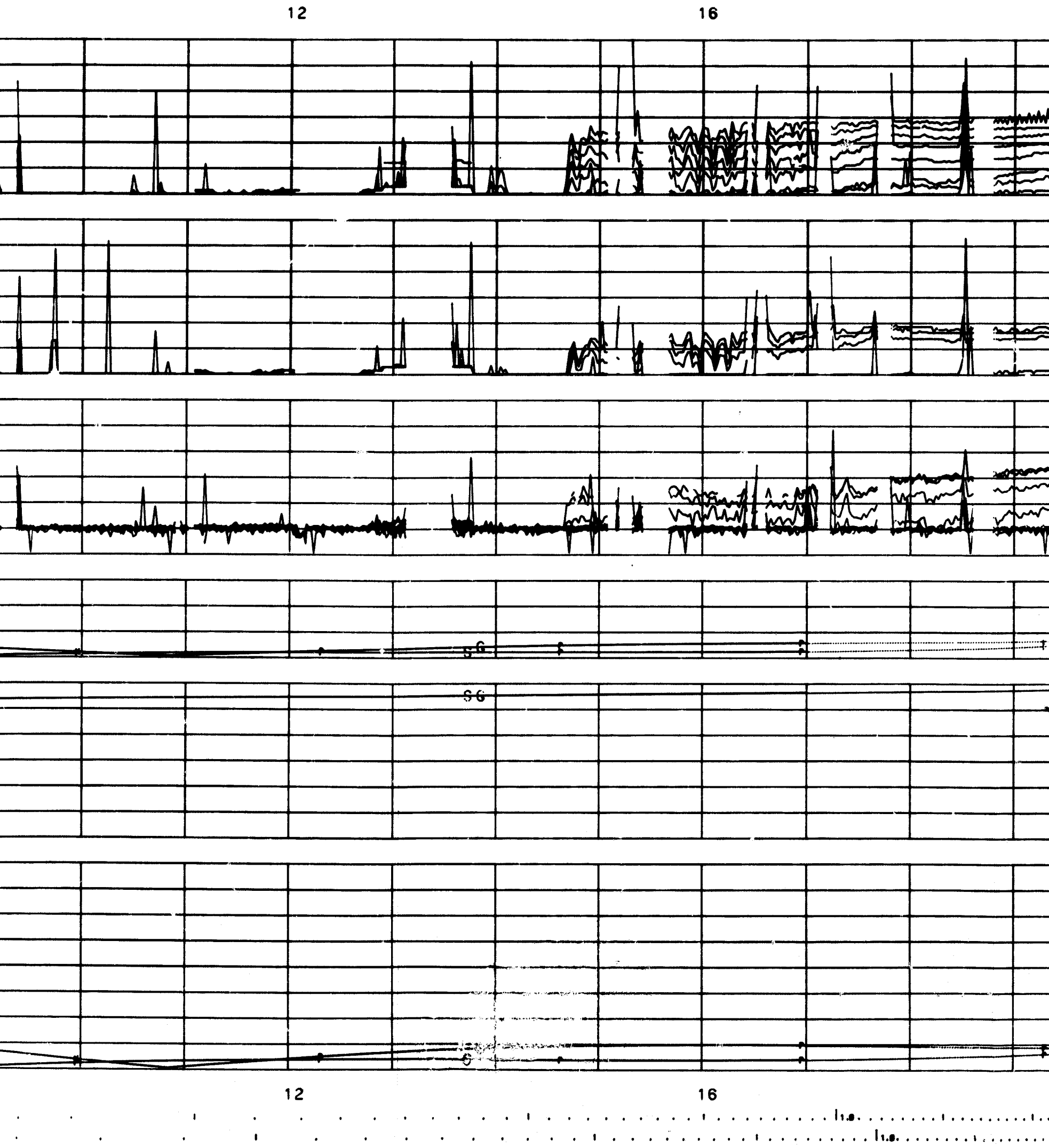




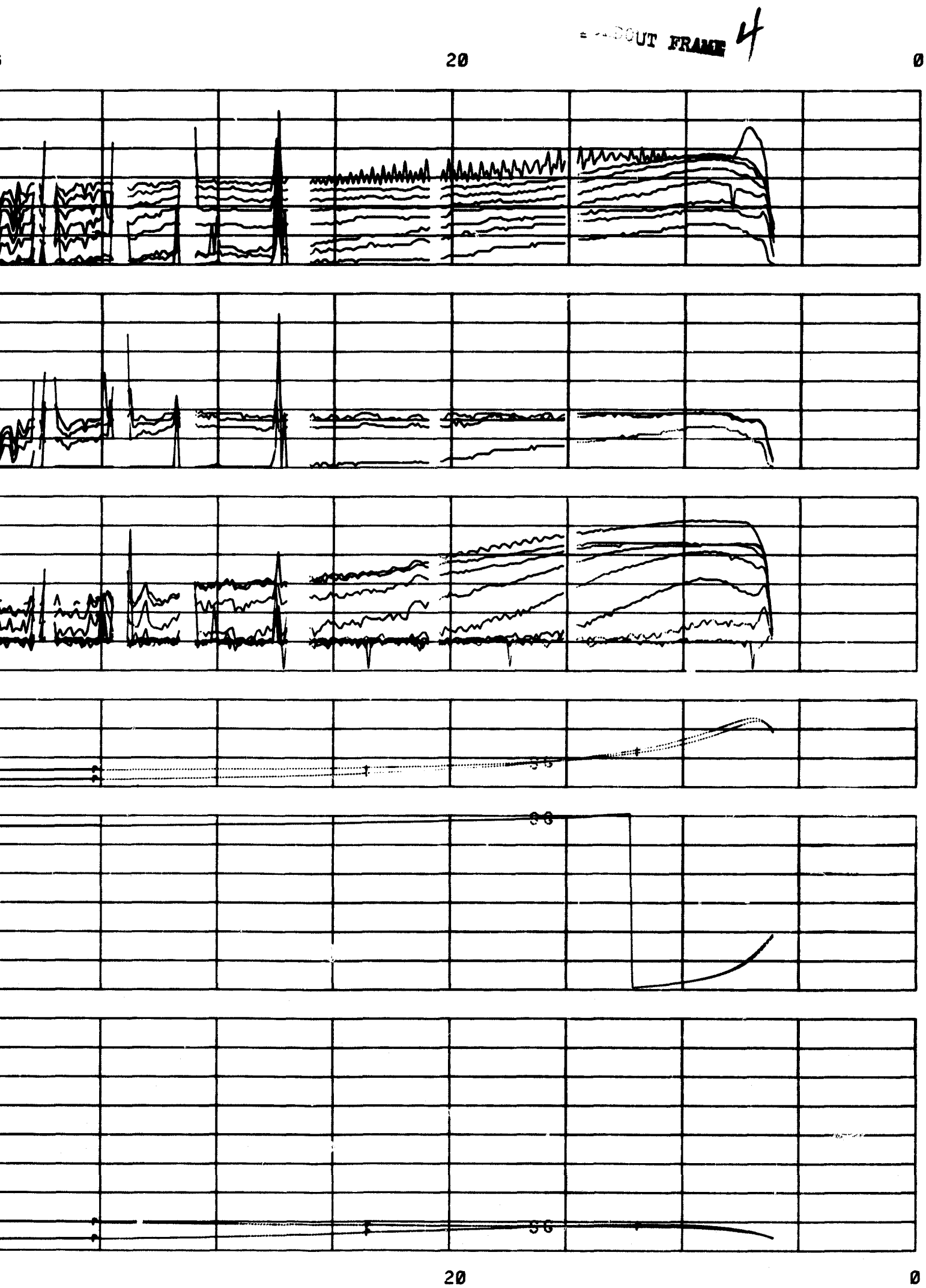

EXPLORER XII - S3
START 1961 10
STOP 1961 10 4
U.T.20
0
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 20
DIST. (Re)
L (Re)

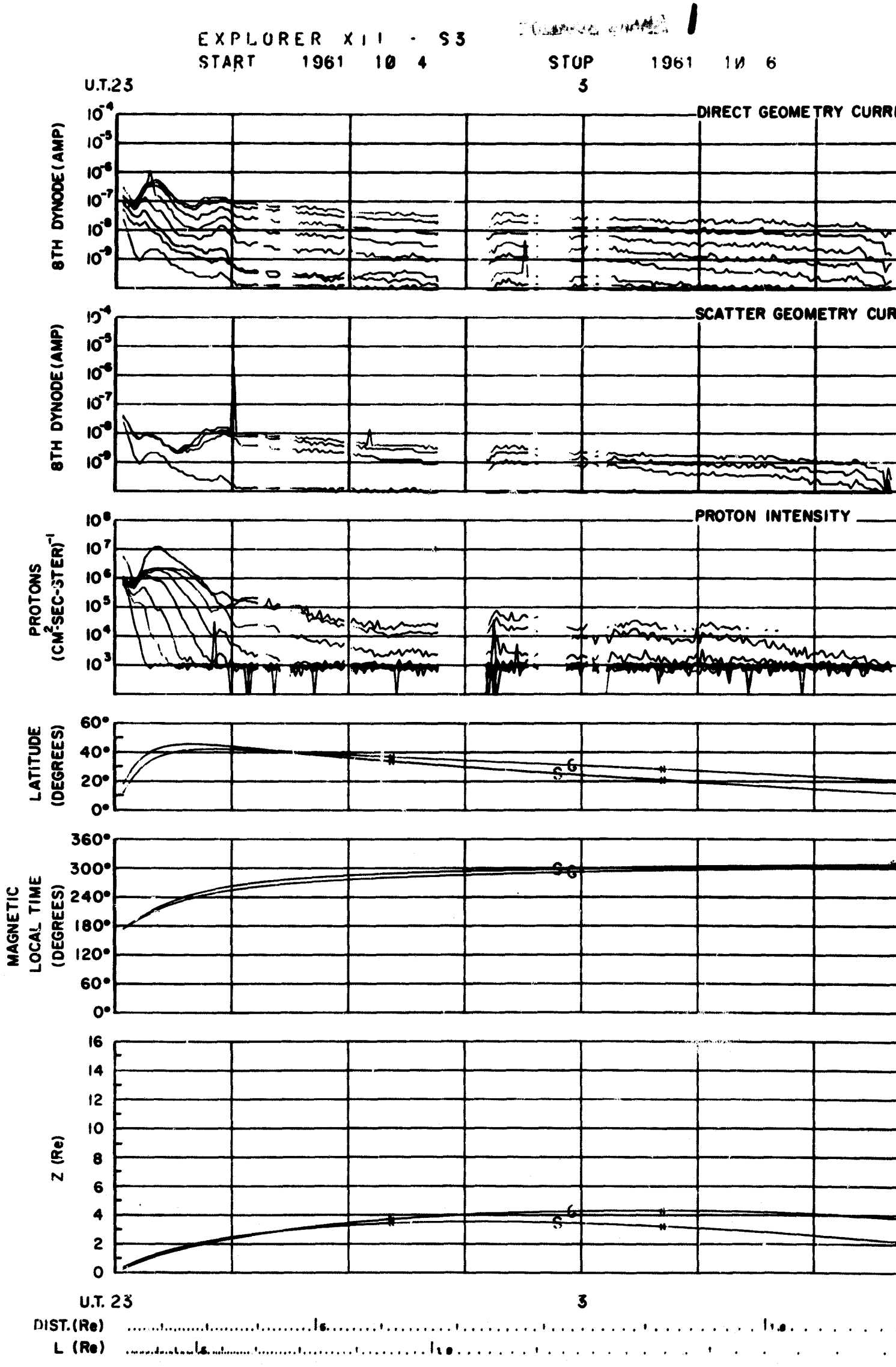

10 4
2
4
8
ECT GEOMETRY CURRENT
TTER GEOMETRY CURRENT
TON INTENSITY
4
8

FOLDOUT FRAME 3

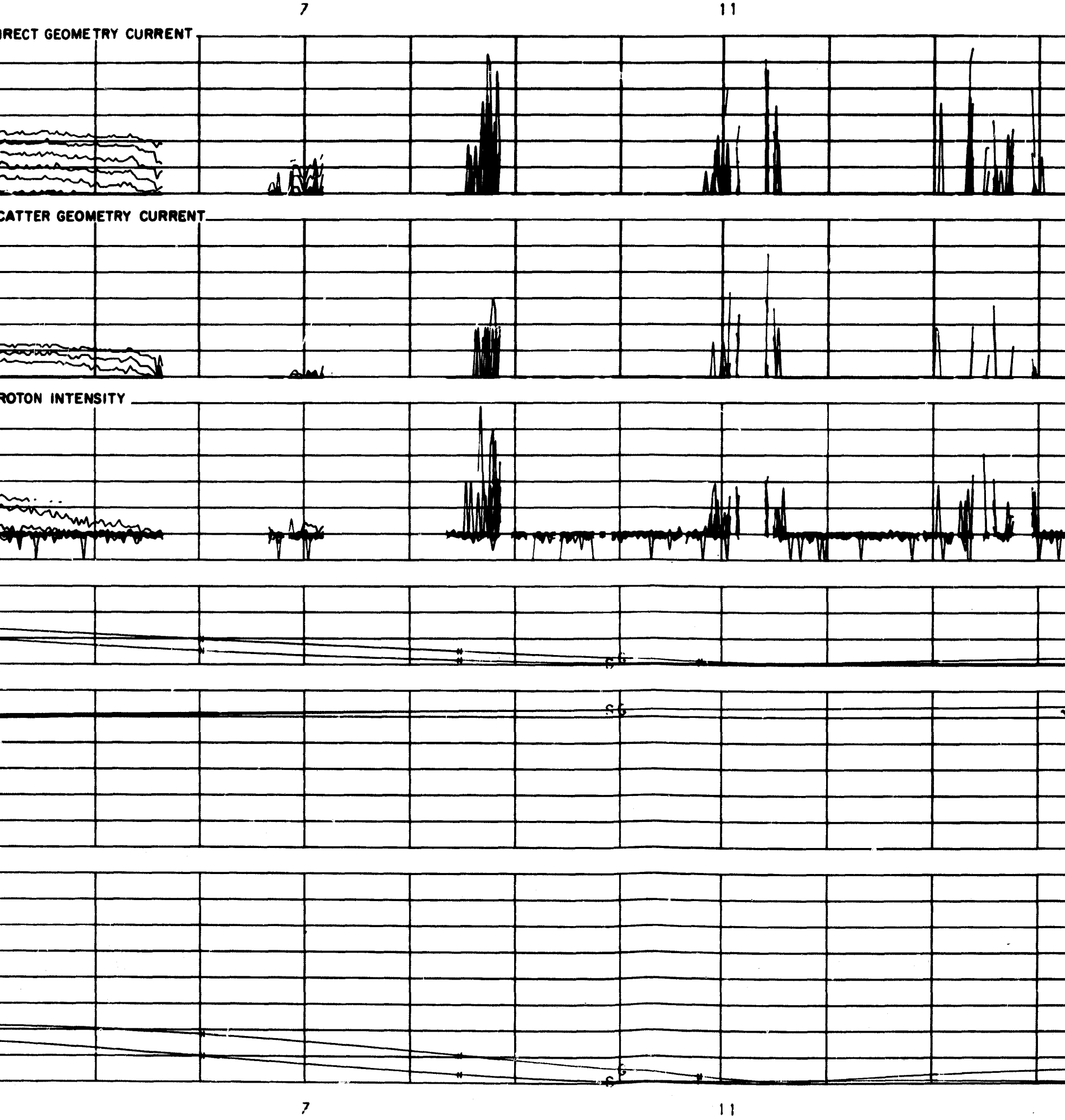


FOLDOUT FRAME 4

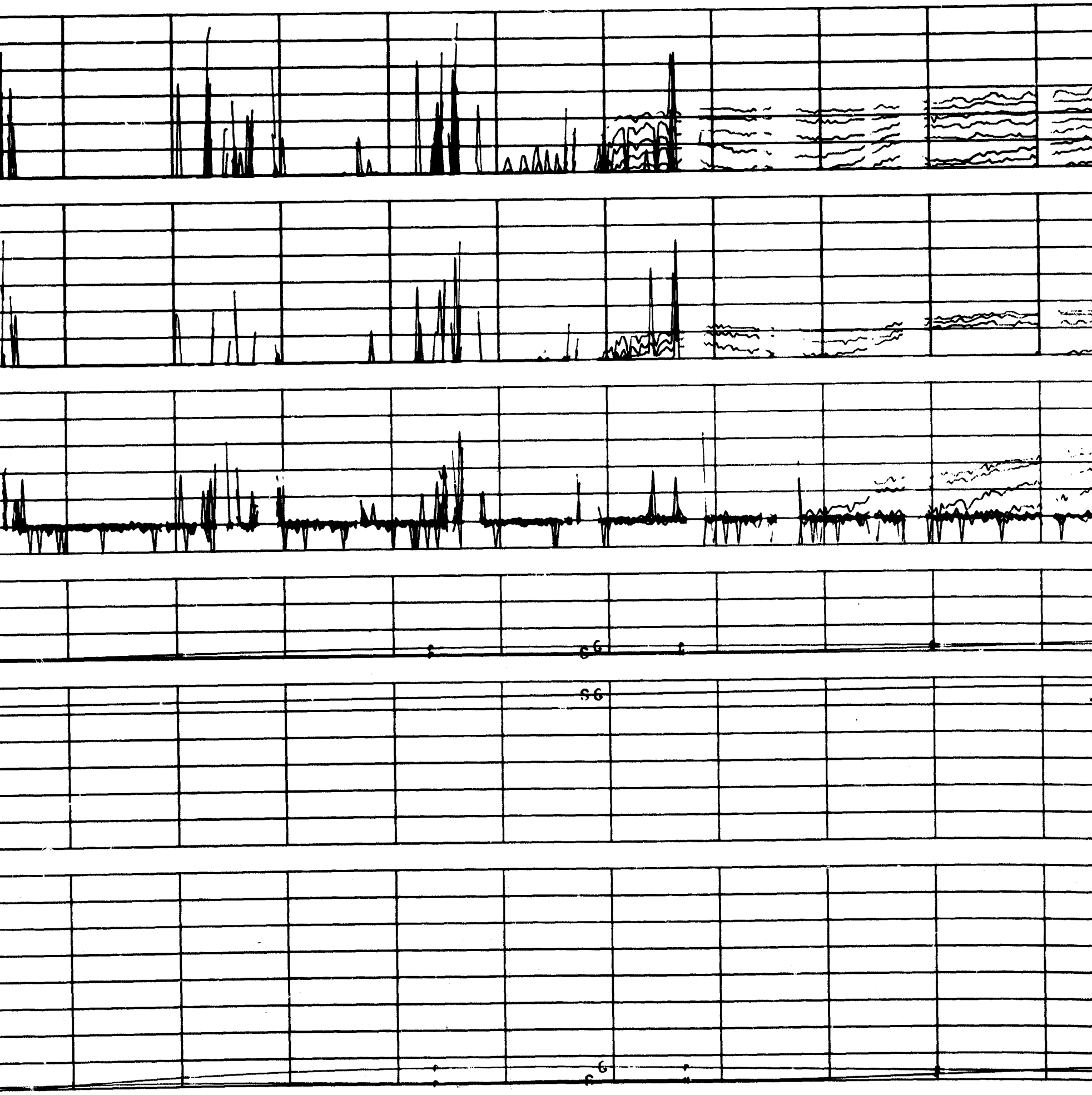



EXPLORER XII - S3
START 1961 10 4
STOP 1961 10 6
U.T.23
3
DIRECT GEOMETRY CURR
8TH DYNODE (AMP)
SCATTER GEOMETRY CUR
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM-2SEC-3TER)-1
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 23
3
DIST. (Re)
L (Re)

PHOTOGRAPH NUMBER 2



FOLDOUT FRAME 3



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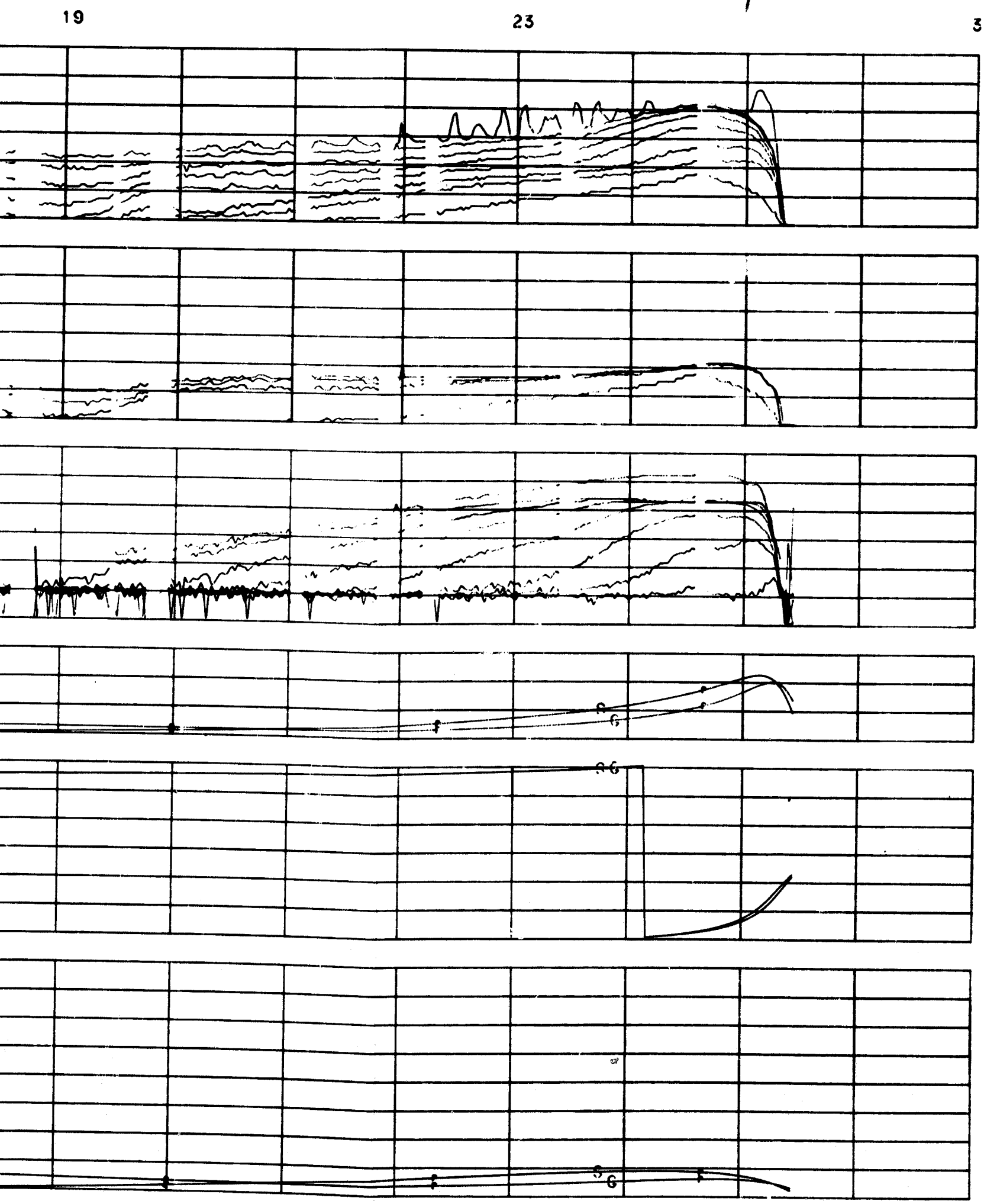
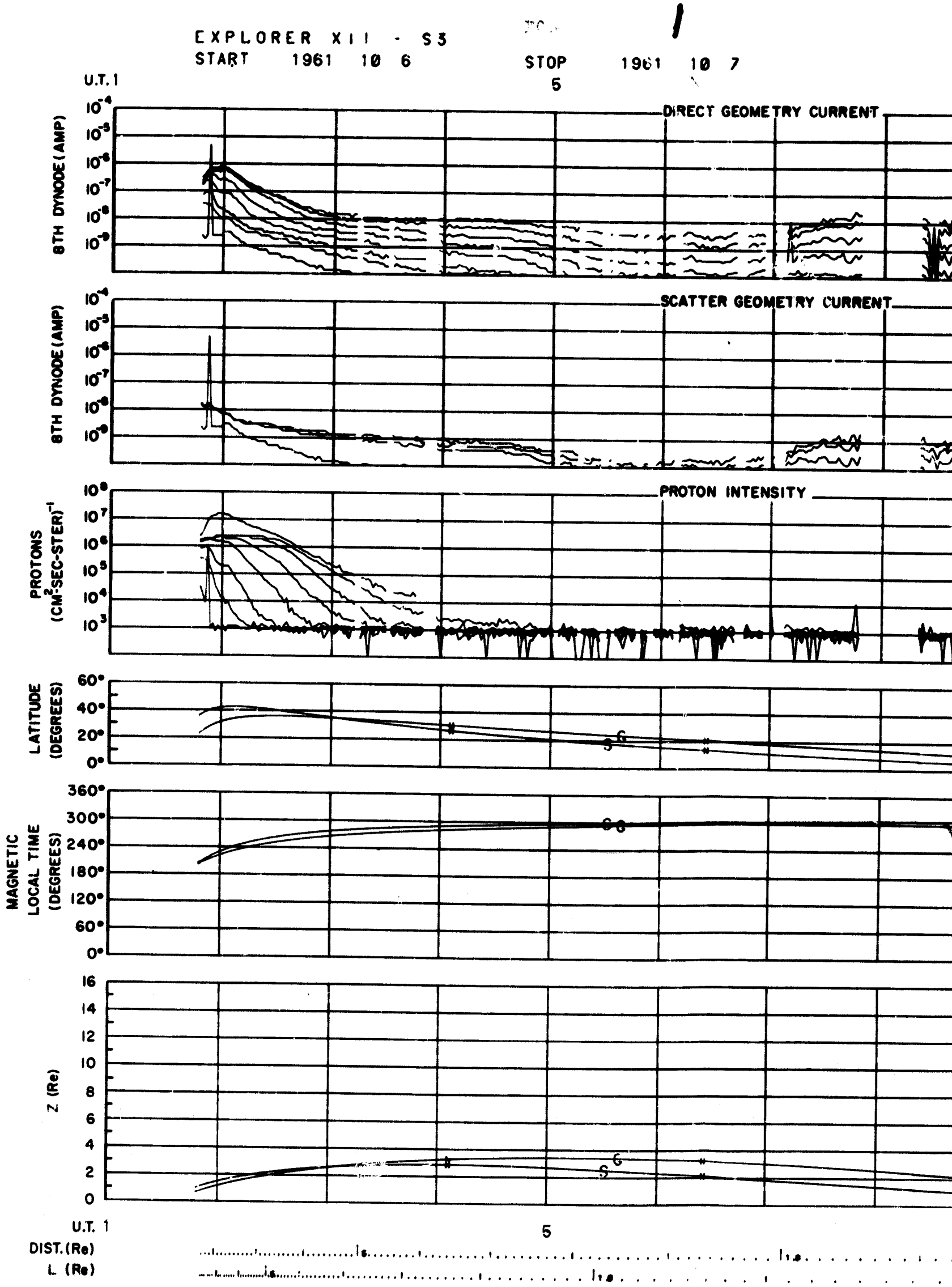
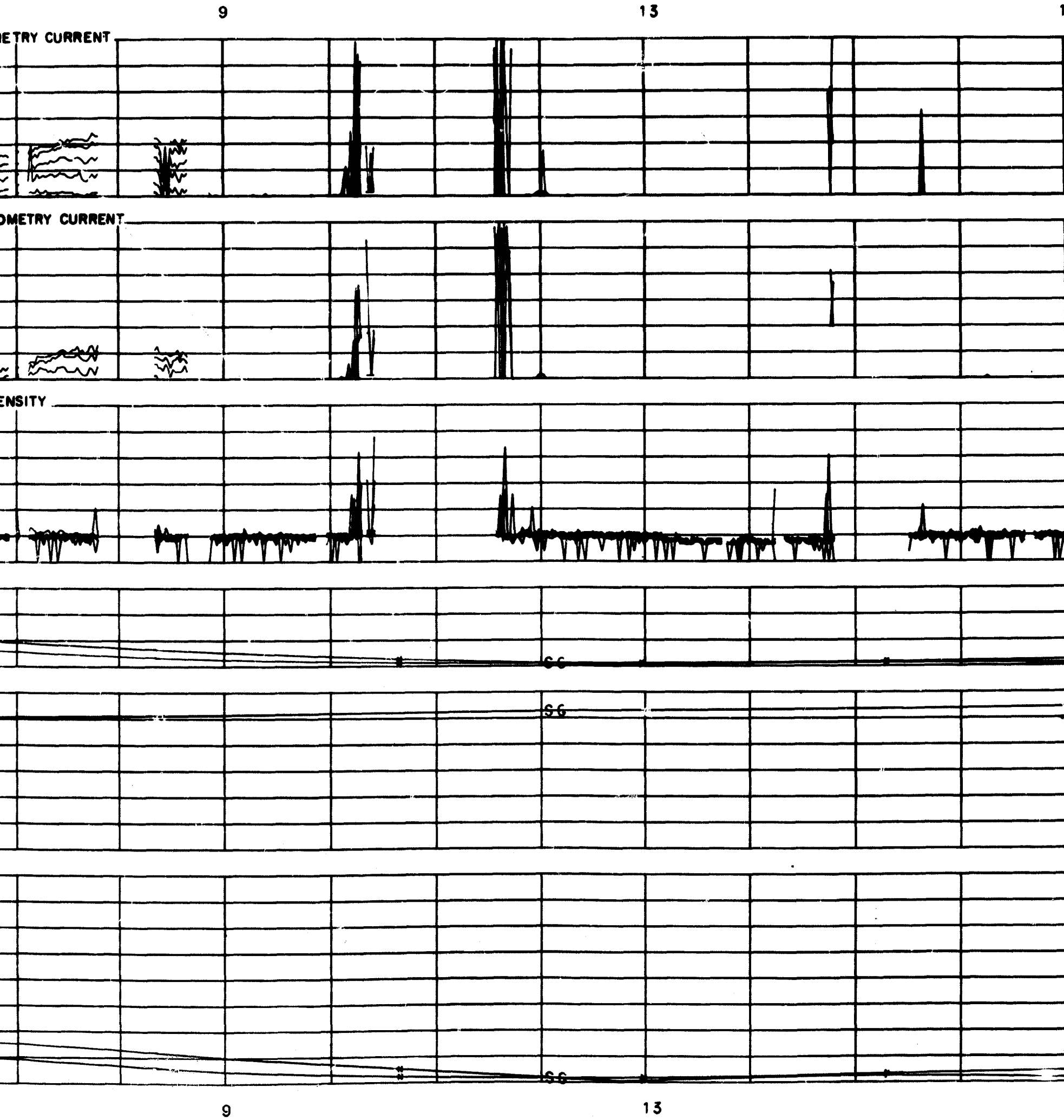
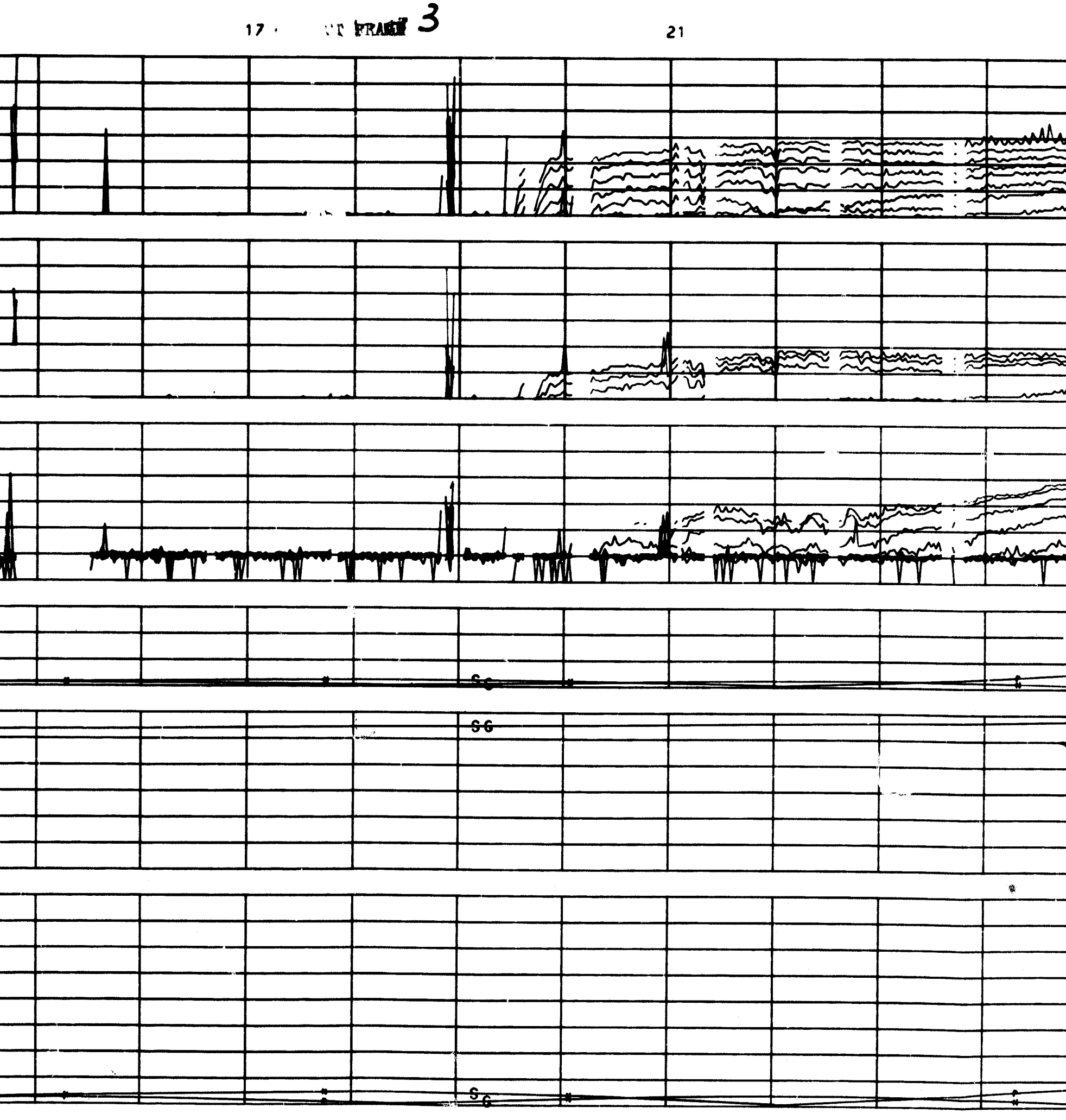
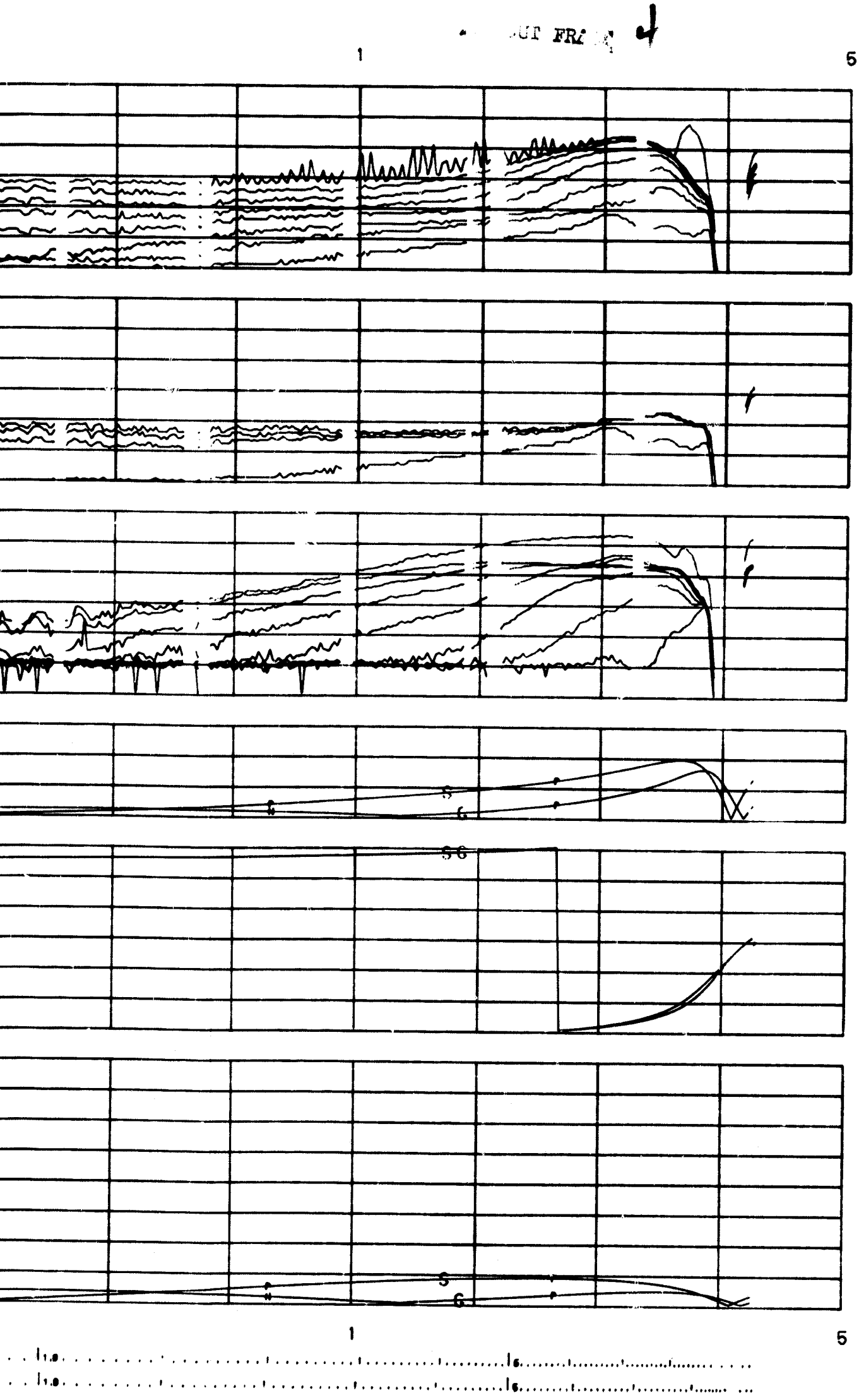


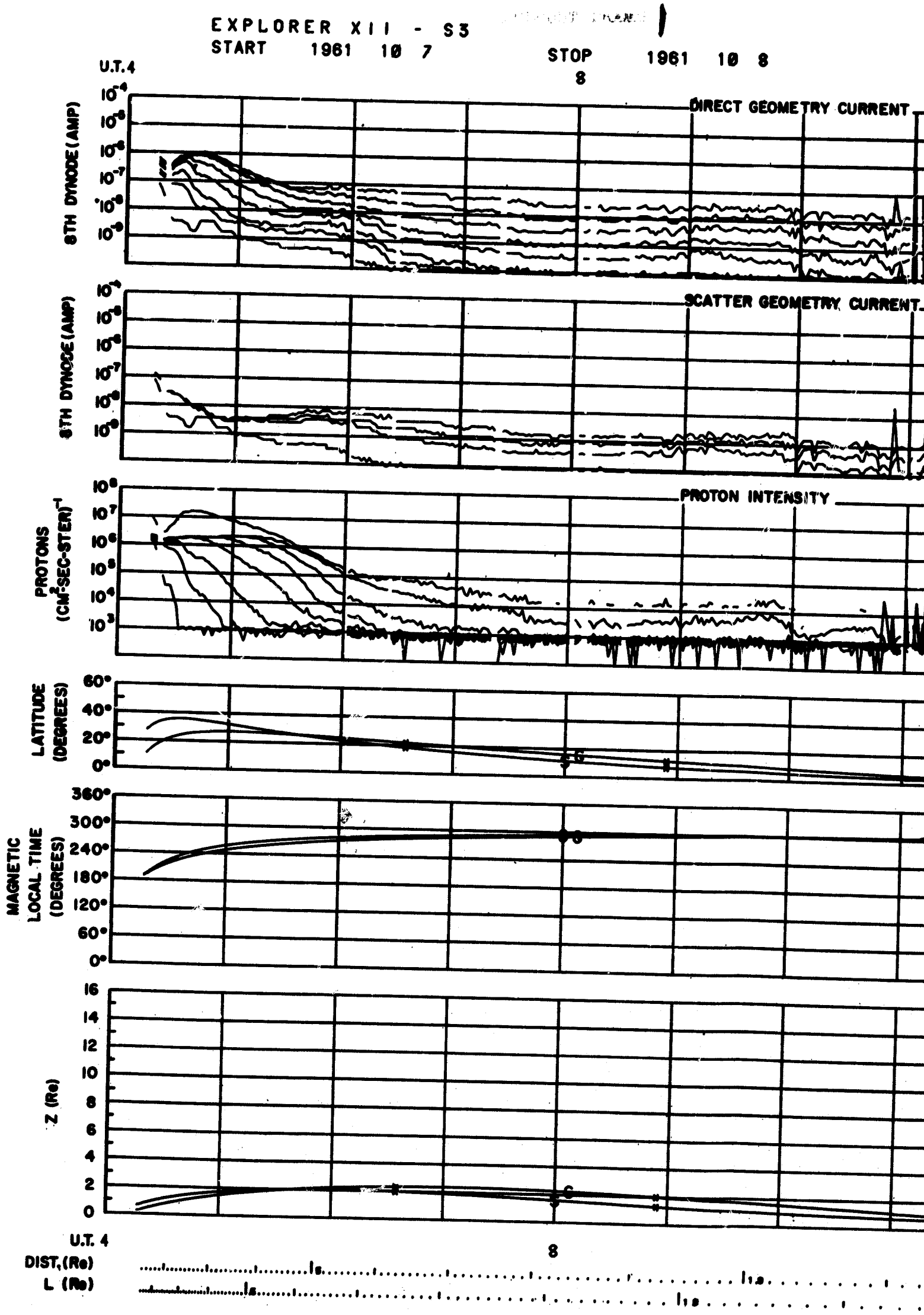

EXPLORER XII - S3
START 1961 10 6
STOP 1961 10 7
U.T. 1
5
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 1
5
DIST. (Re)
L (Re)

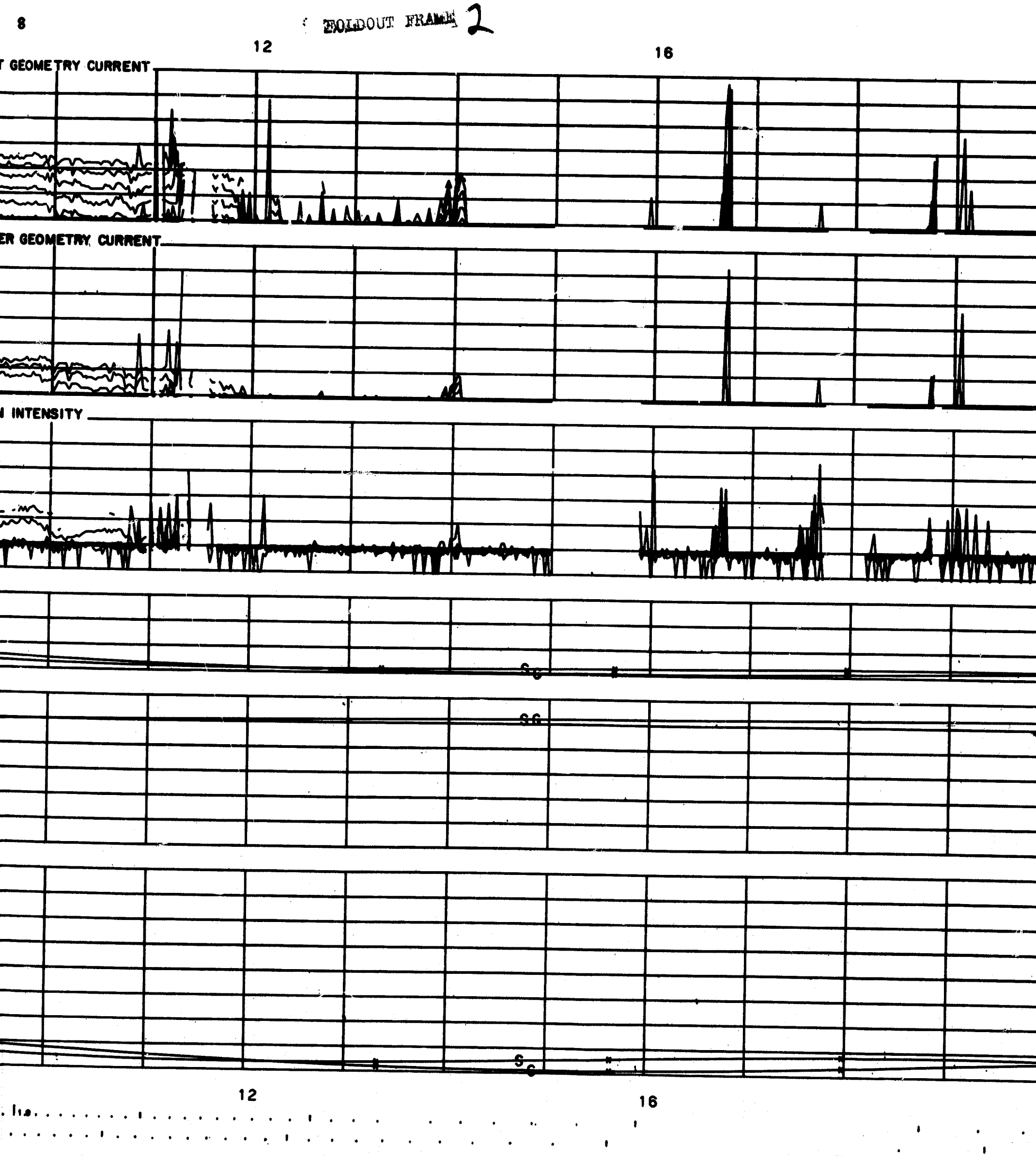
2



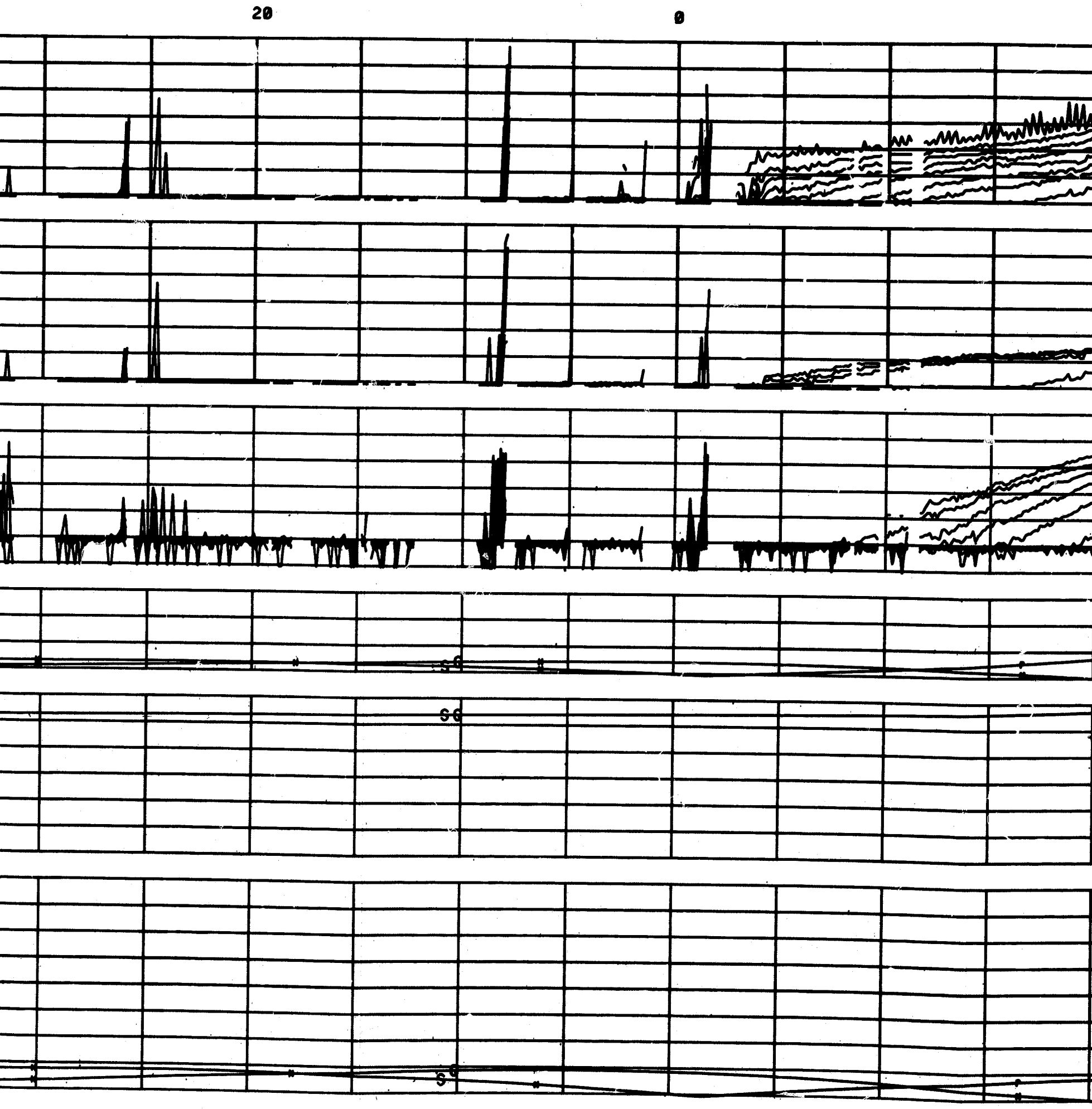

17
FRAME 3
21
SG
SG
SG
17
21


1
5
S
G
S
G
1
5

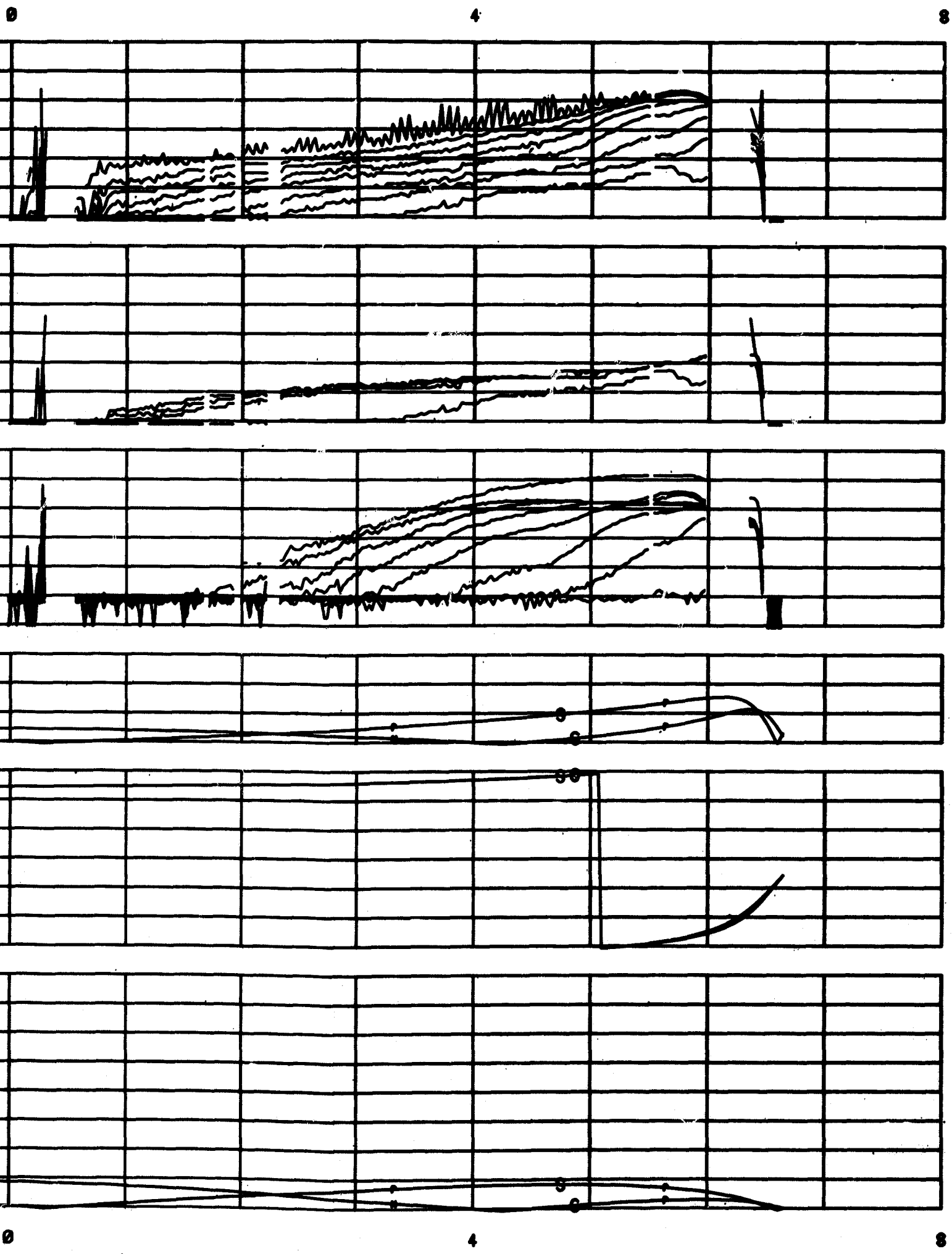

EXPLORER XII - S3
START 1961 10 7
STOP 1961 10 8
U.T.4
8
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 4
8
DIST. (Re)
L (Re)

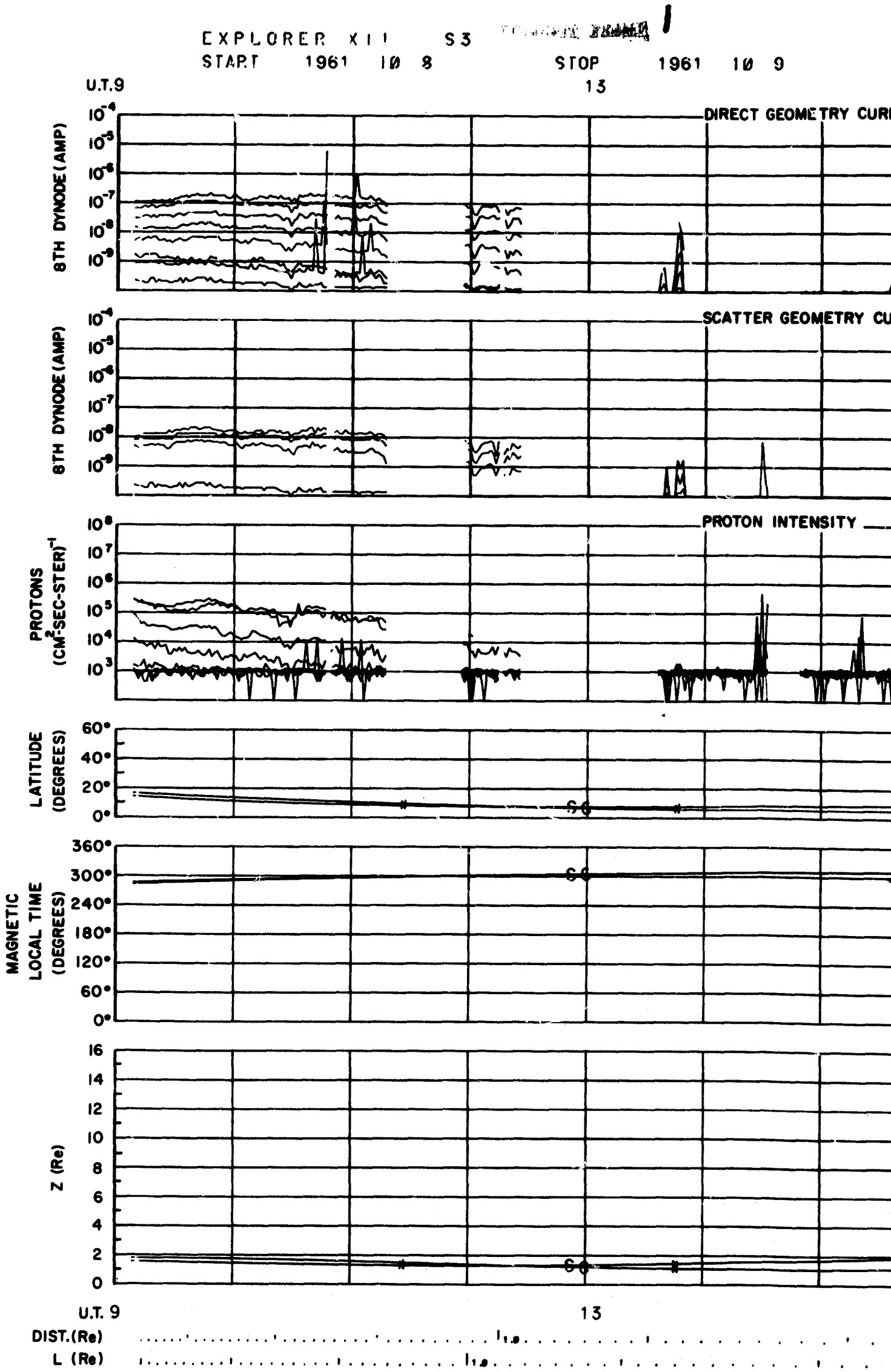

8
FOLDOUT FRAME 2
12
16
T GEOMETRY CURRENT
ER GEOMETRY CURRENT
N INTENSITY
SC
SC
SC
12
16

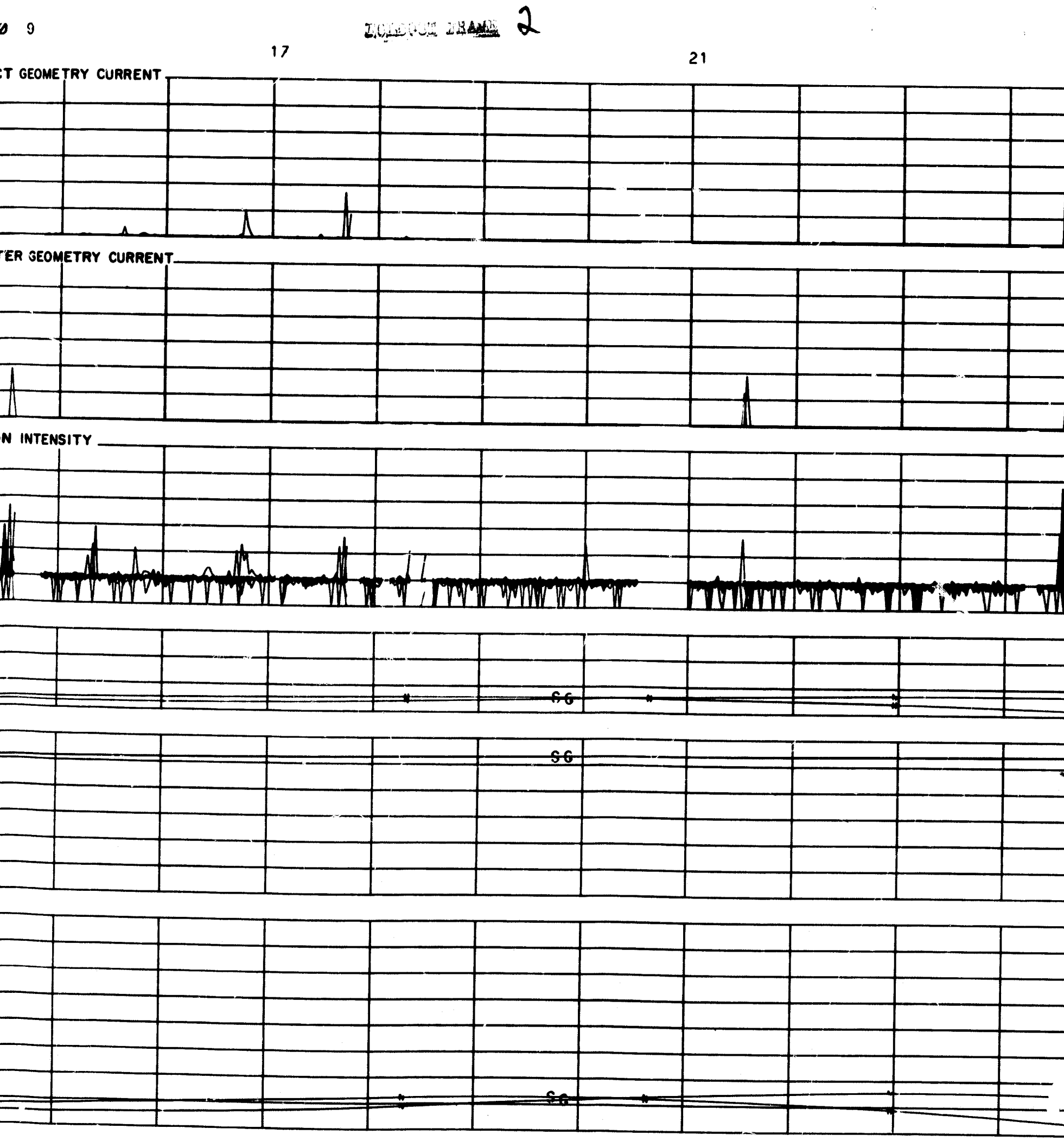
FOLDOUT FRAME 3



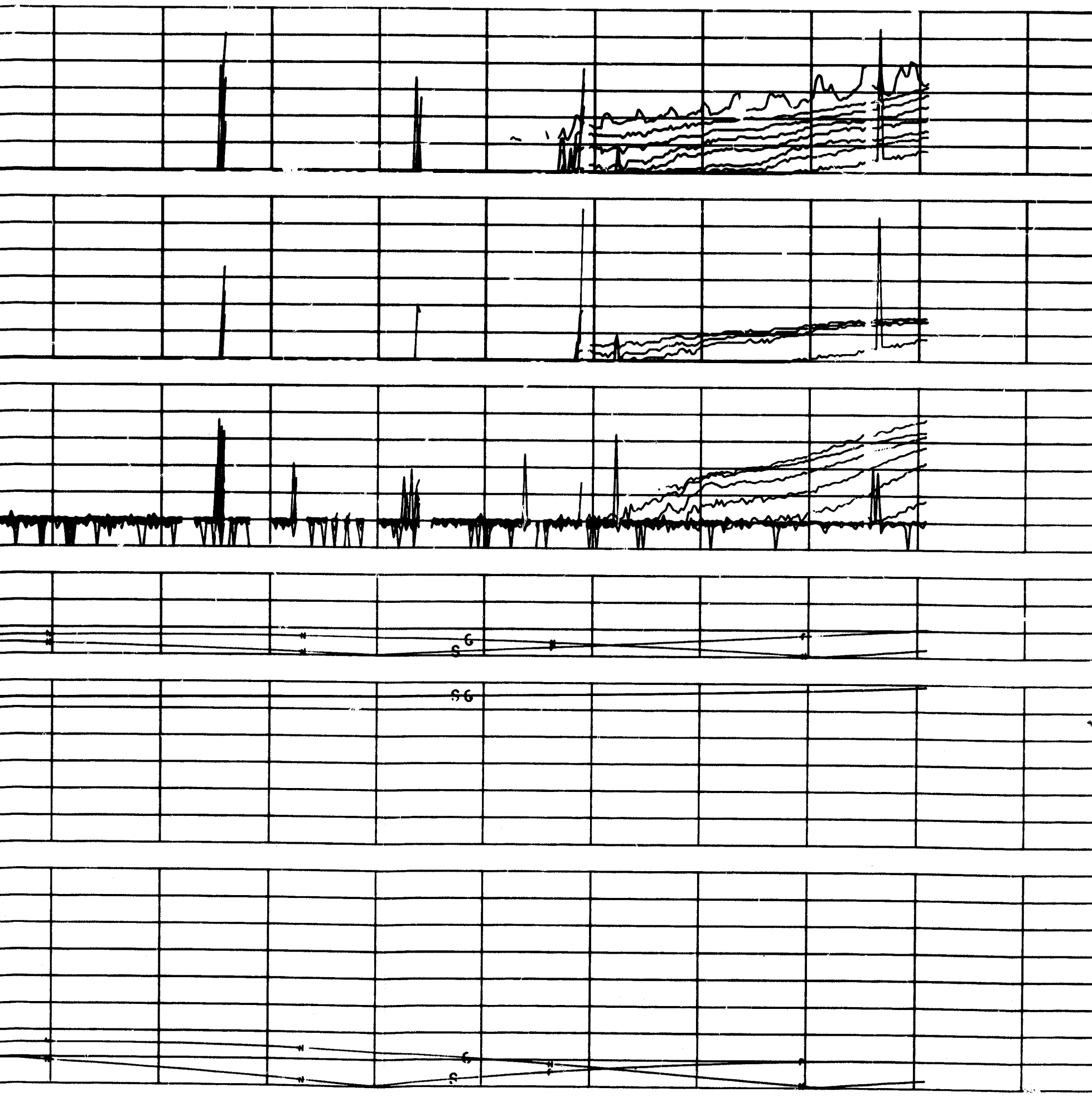
FOLDOUT FRAME 4



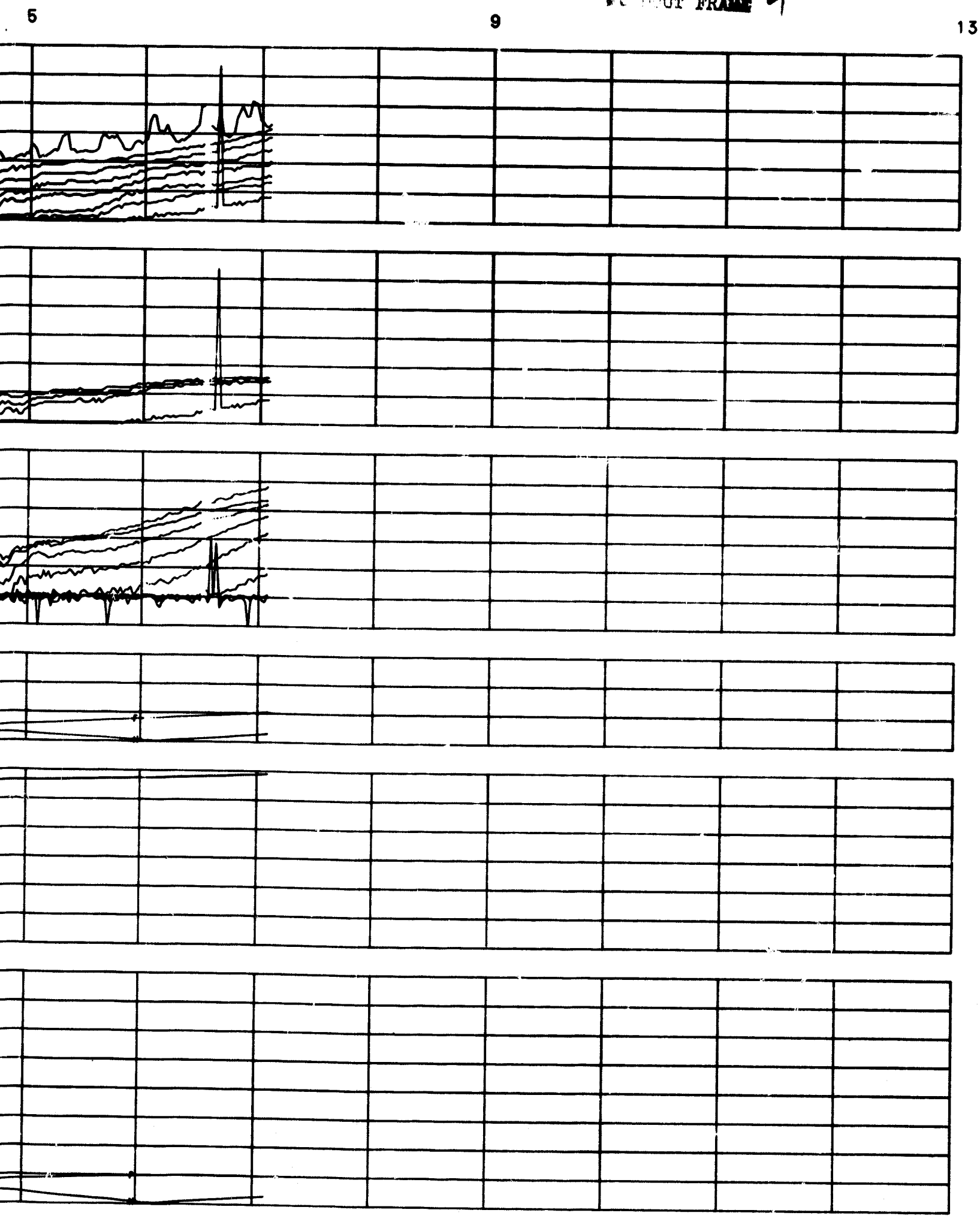

EXPLORER XII S3
START 1961 10 8
STOP 1961 10 9
U.T.9
13
DIRECT GEOMETRY CURI
SCATTER GEOMETRY CU
PROTON INTENSITY
8TH DYNODE (AMP)
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 9
13
DIST.(Re)
L (Re)

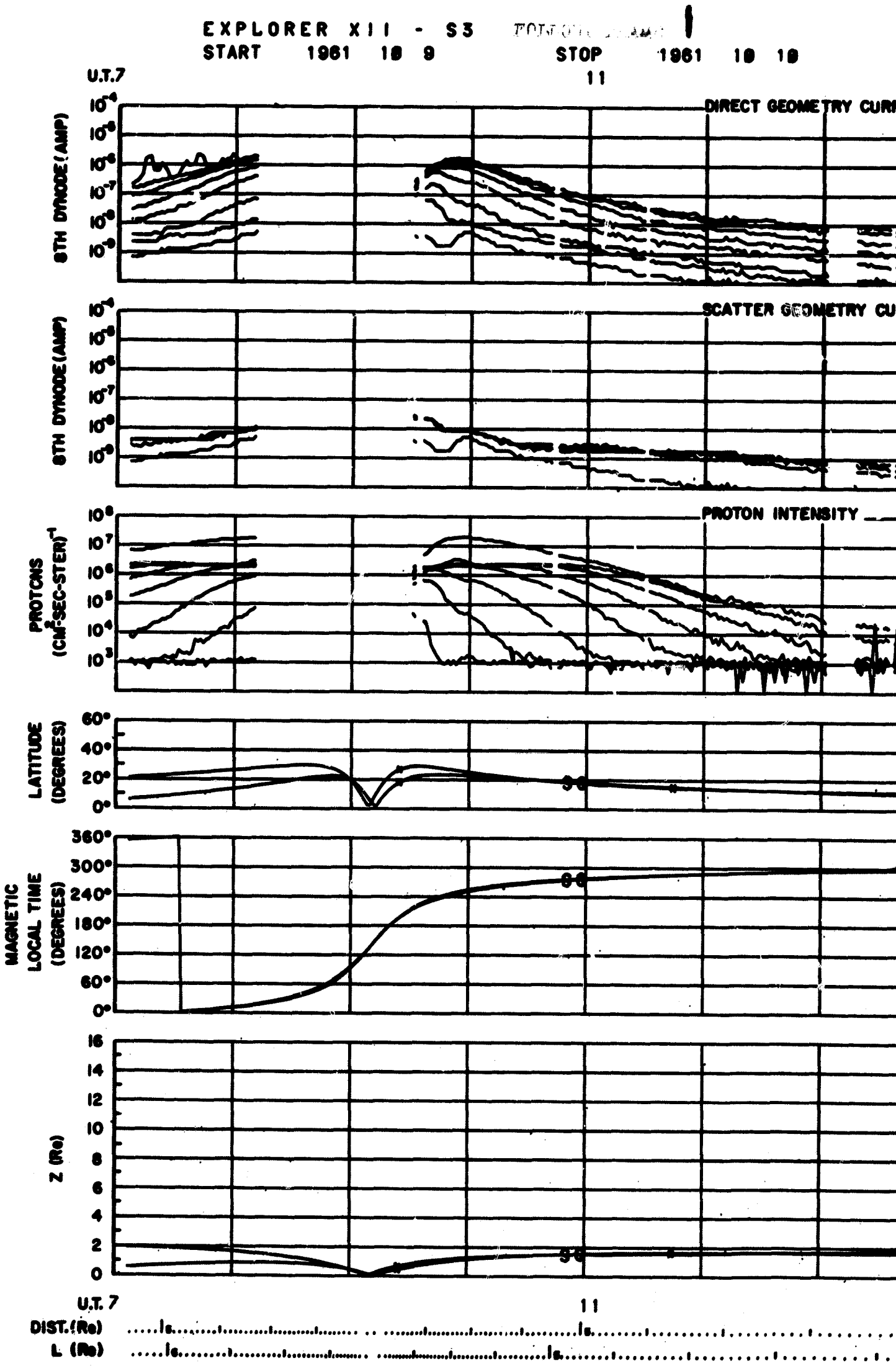

0 9
17
21
CT GEOMETRY CURRENT
TER GEOMETRY CURRENT
N INTENSITY
S6
S6
S6
17
21

OUT FRAME 3



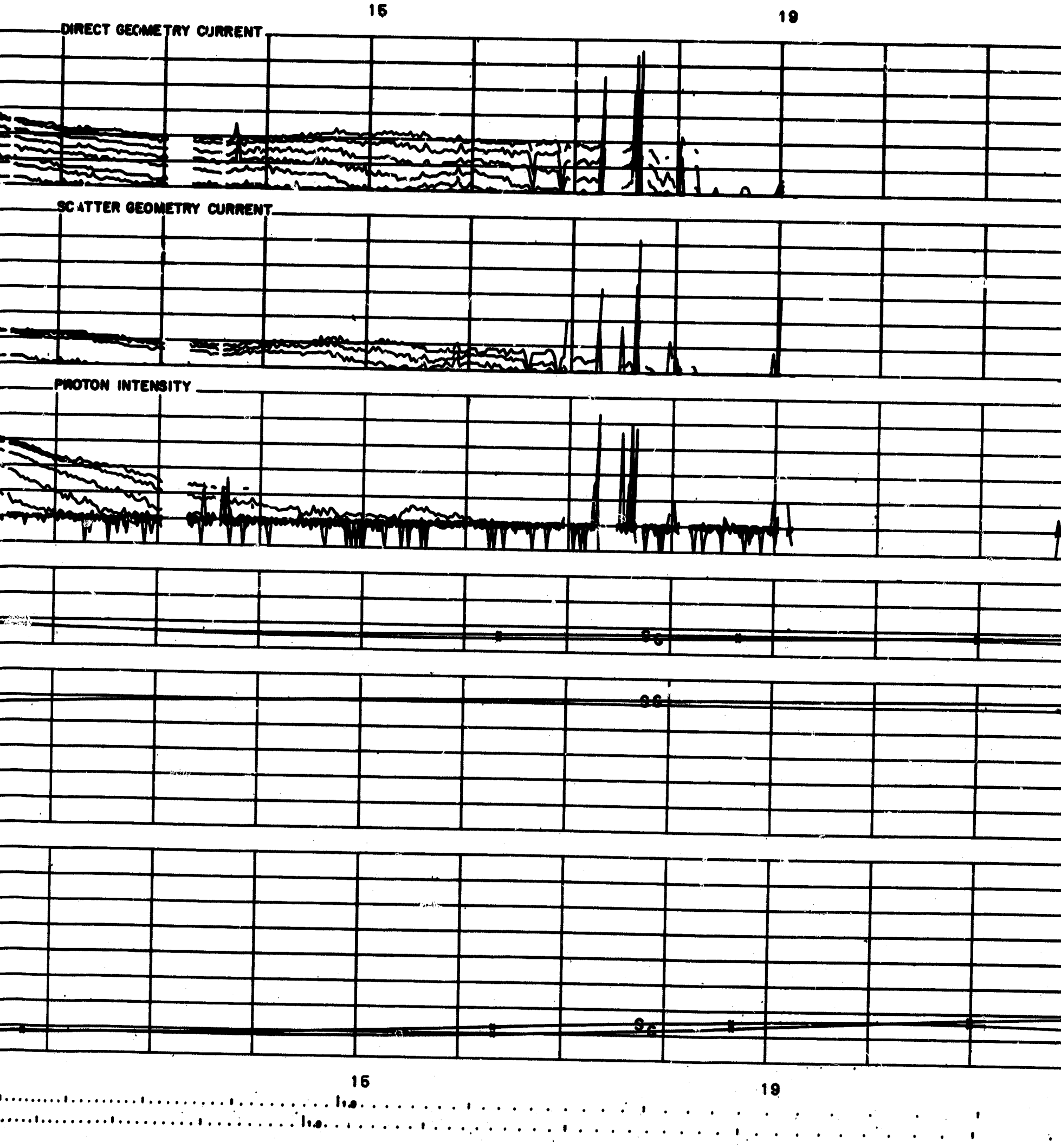
FOLDOUT FRAME 4



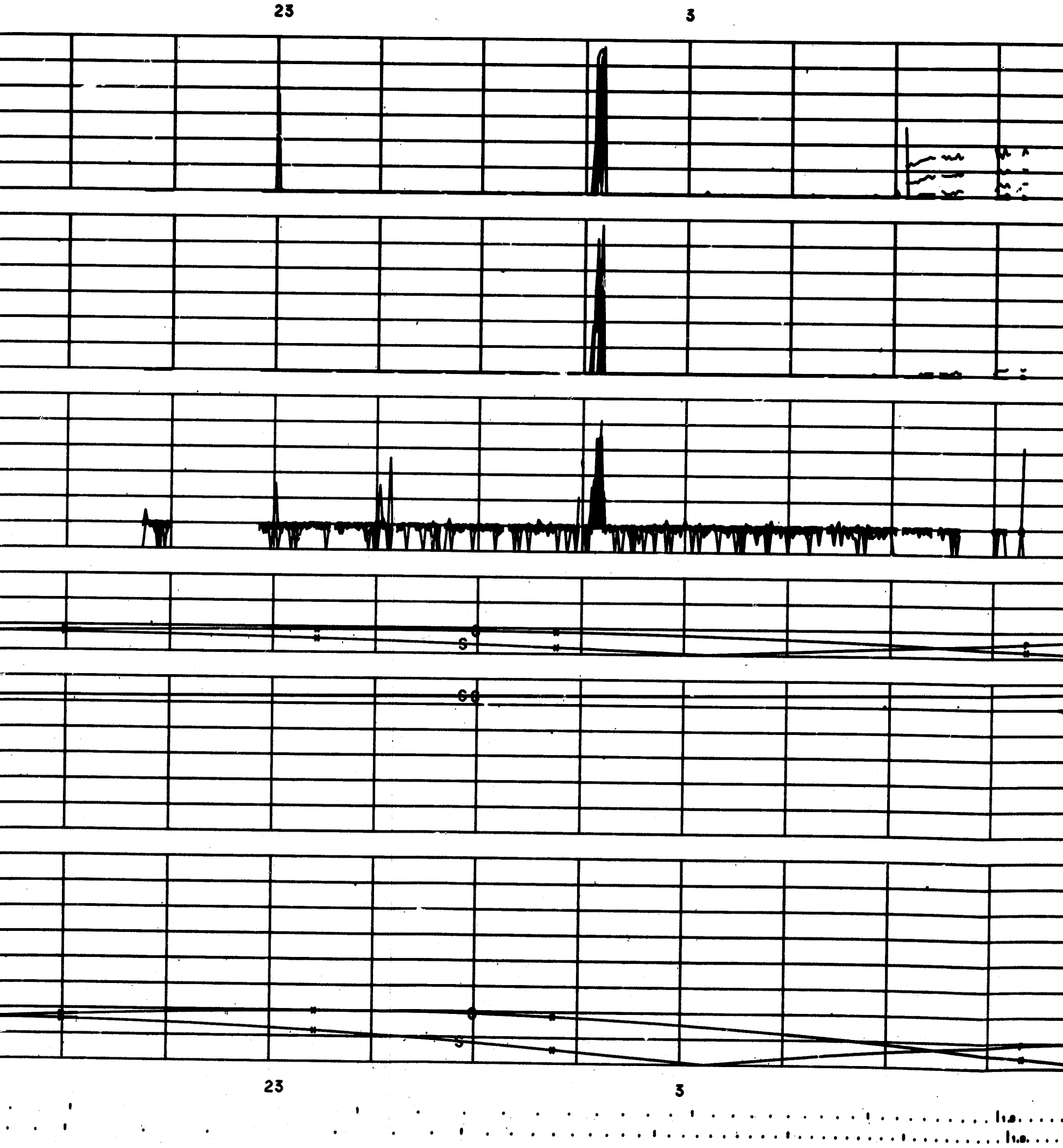

EXPLORER XII - S3
START 1961 10 9
STOP 1961 10 10
U.T.7
11
DIRECT GEOMETRY CURV
SCATTER GEOMETRY CU
PROTON INTENSITY
8TH DYNODE (AMP)
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
DIST. (Re)
L (Re)

1

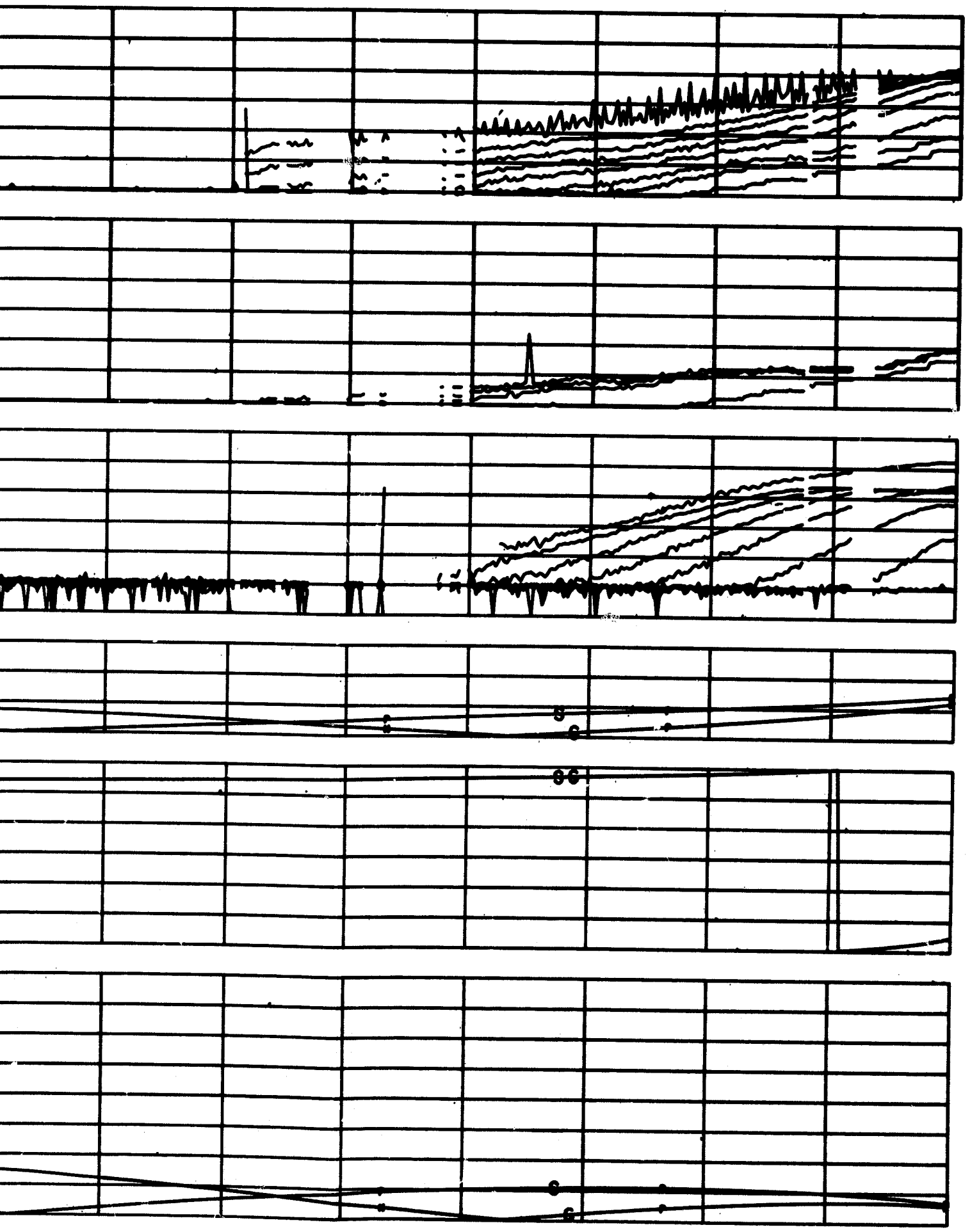
1961 10 10 FRAME 2



FOLDOUT FRAME 3

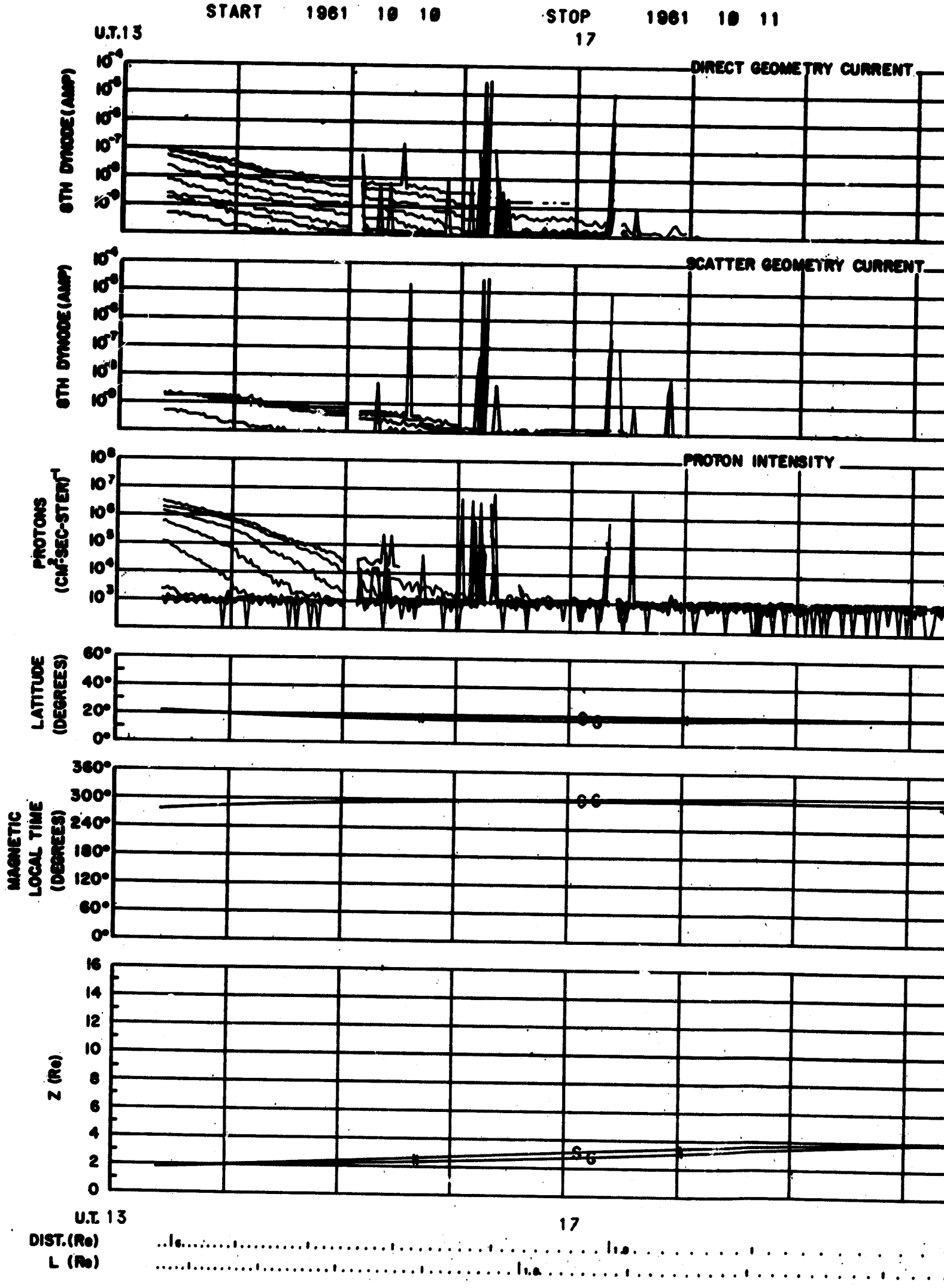


FOLDOUT FRAME 4



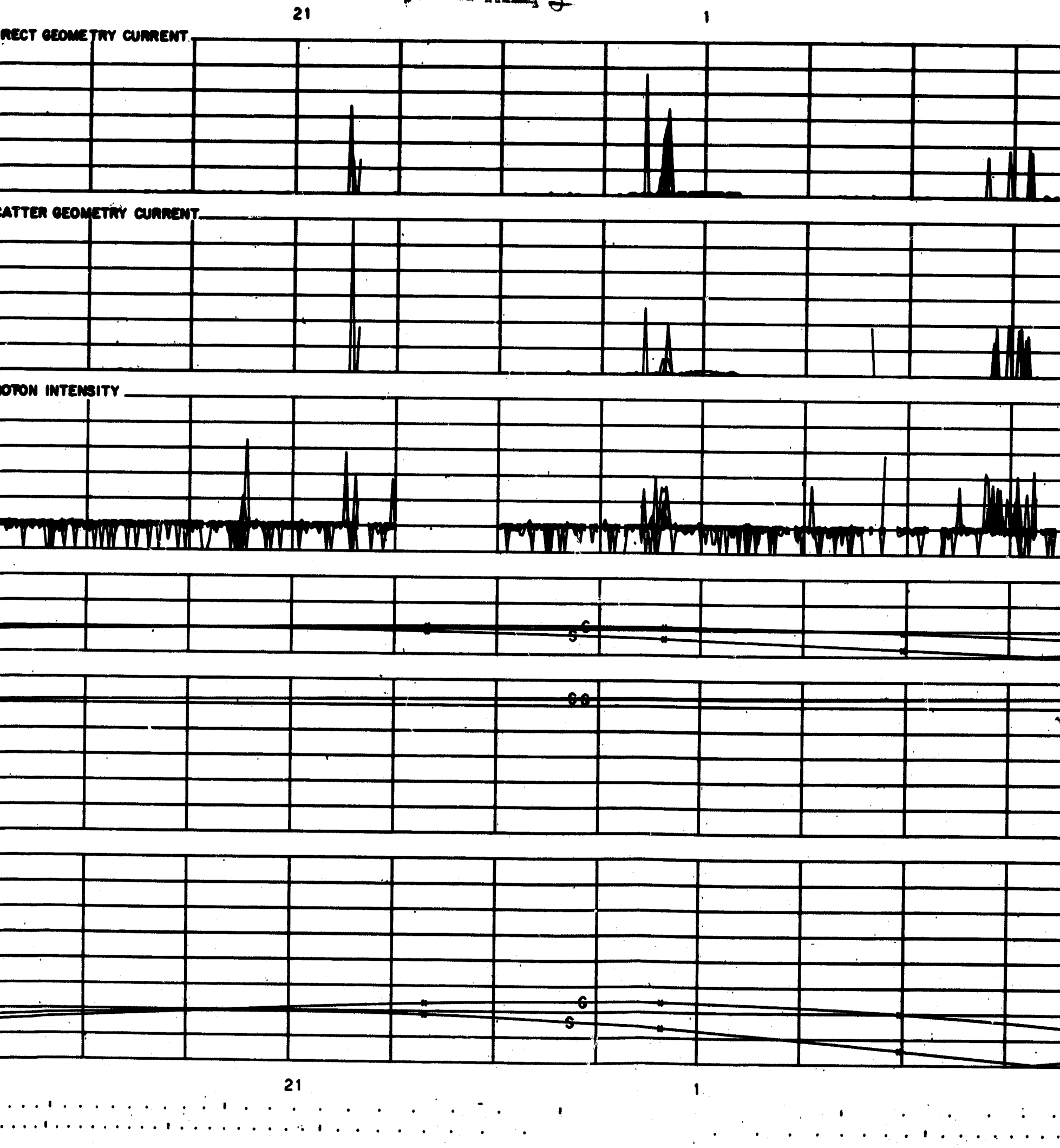
EXPLORER XII - S3 FOLDOUT FRAME 1

START 1961 10 10 STOP 1961 10 11

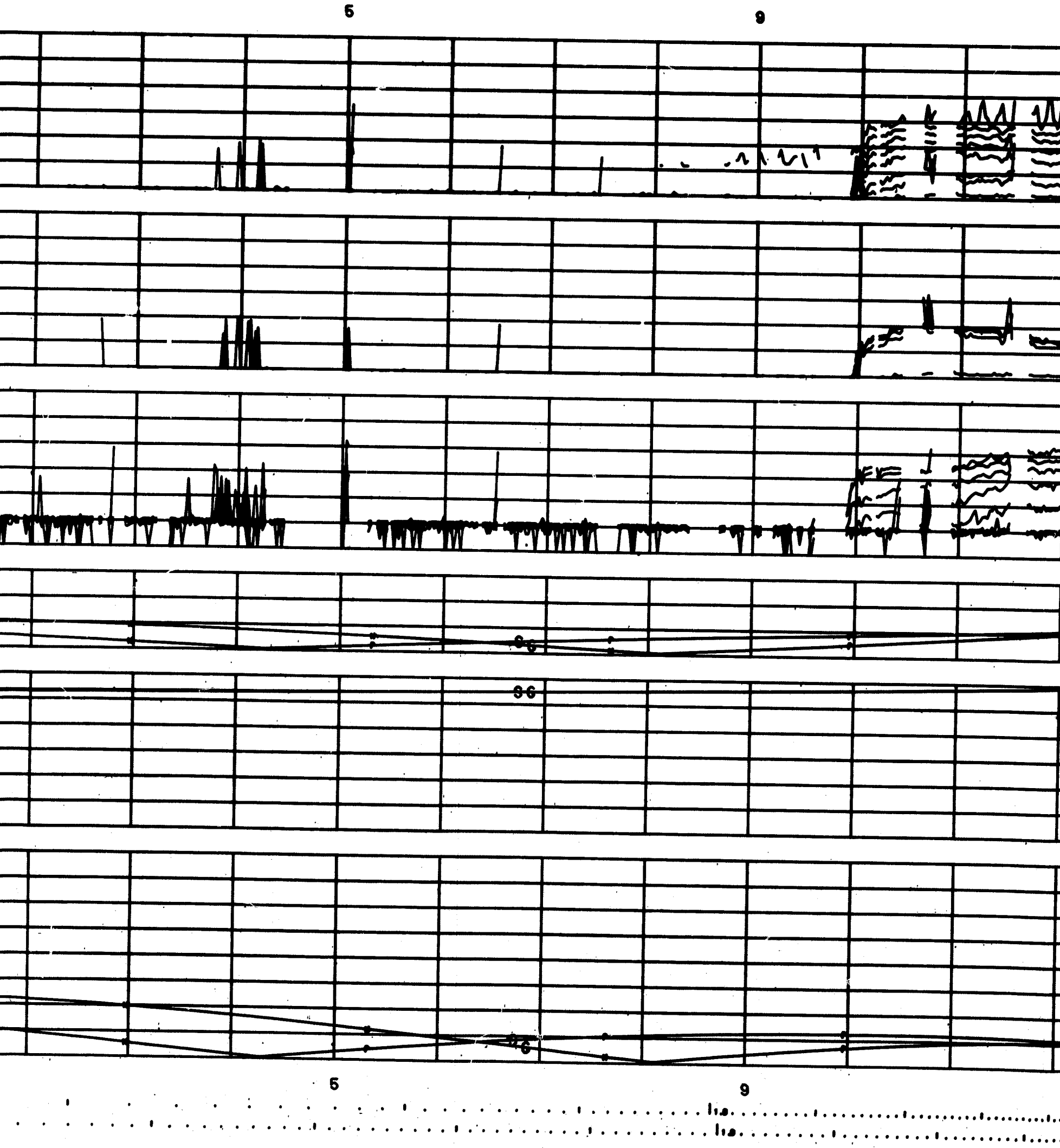


10 11

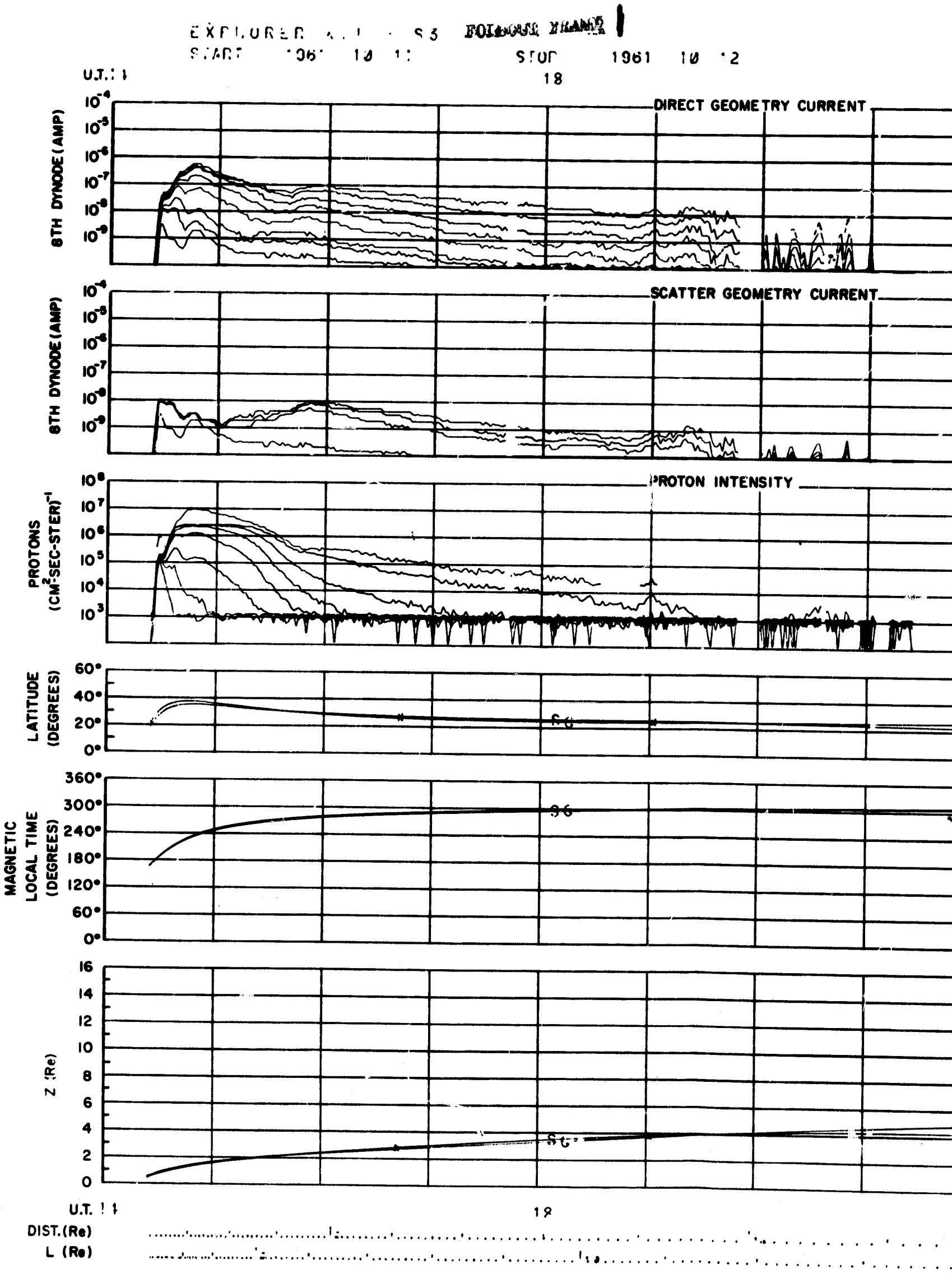
FOLDOUT FRAME 2



FOLDOUT FRAME 3

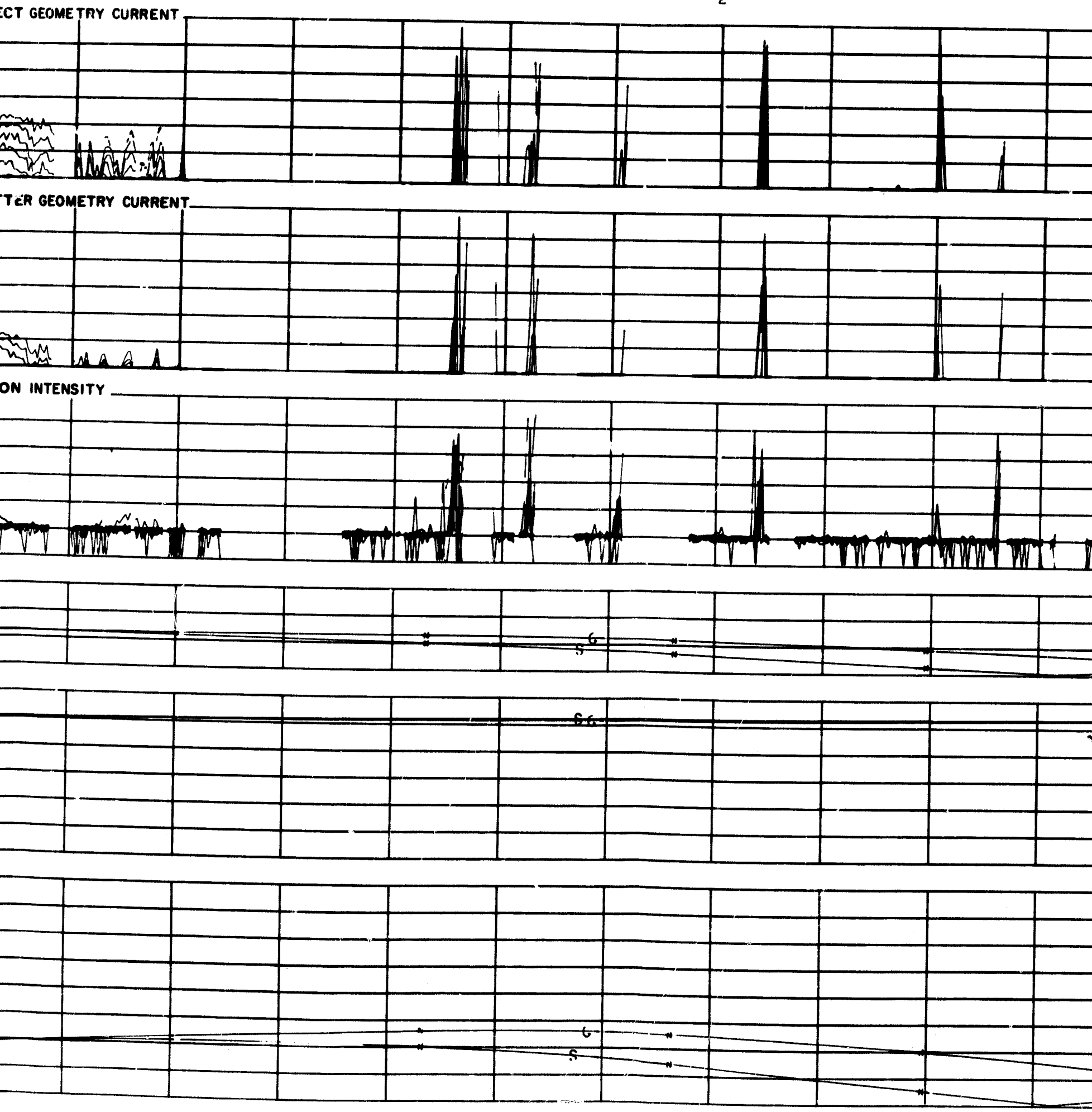


FOLDOUT FRAME 4


EXPLORER
S3
FOLDOUT FRAME
START 1961 10 1
STOP 1961 10 2
U.T. 11
18
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM-2-SEC-STER)-1
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 11
18
DIST. (Re)
L (Re)

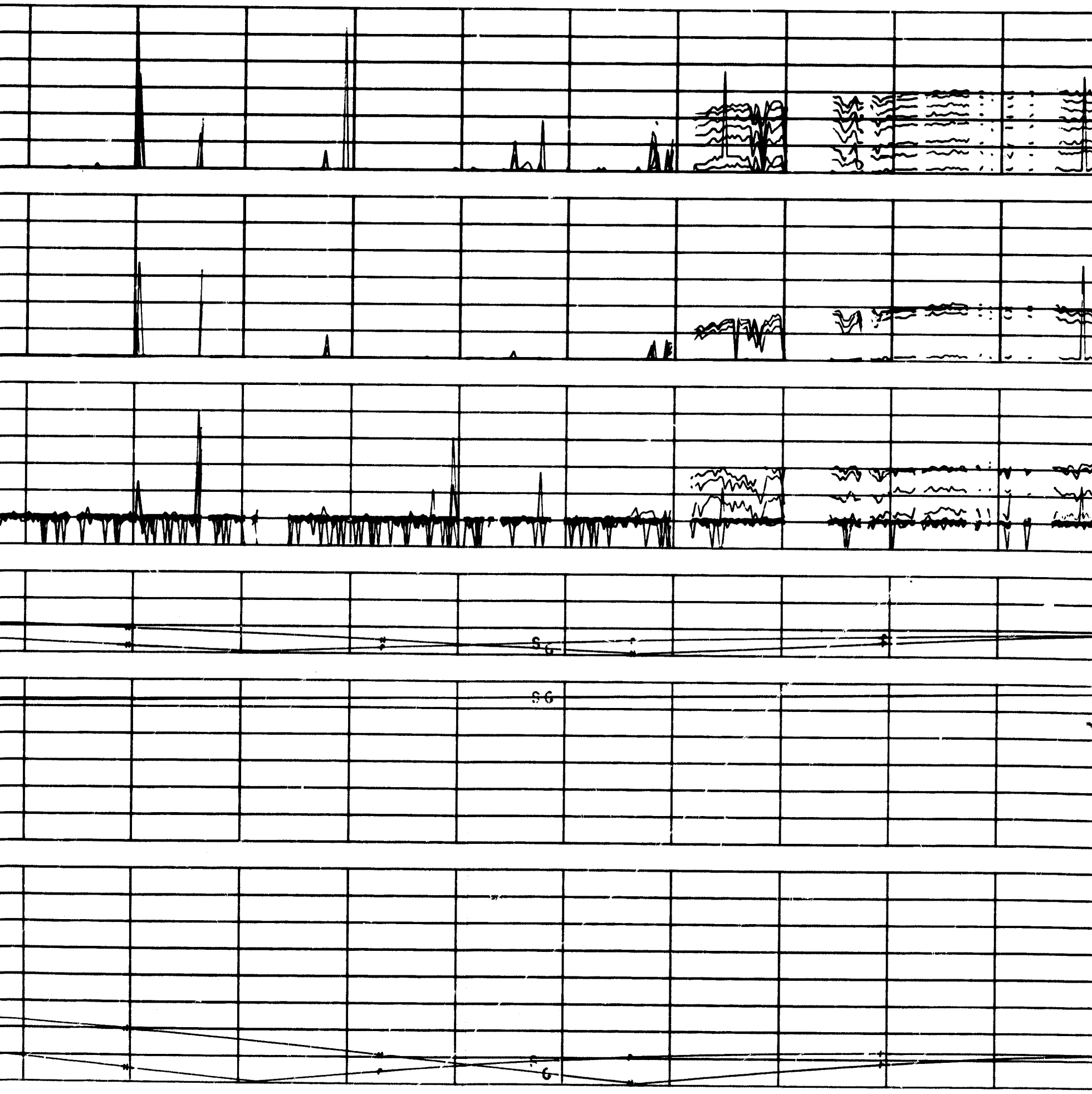
10 ·2

22 FOLDOUT FRAME 2 2



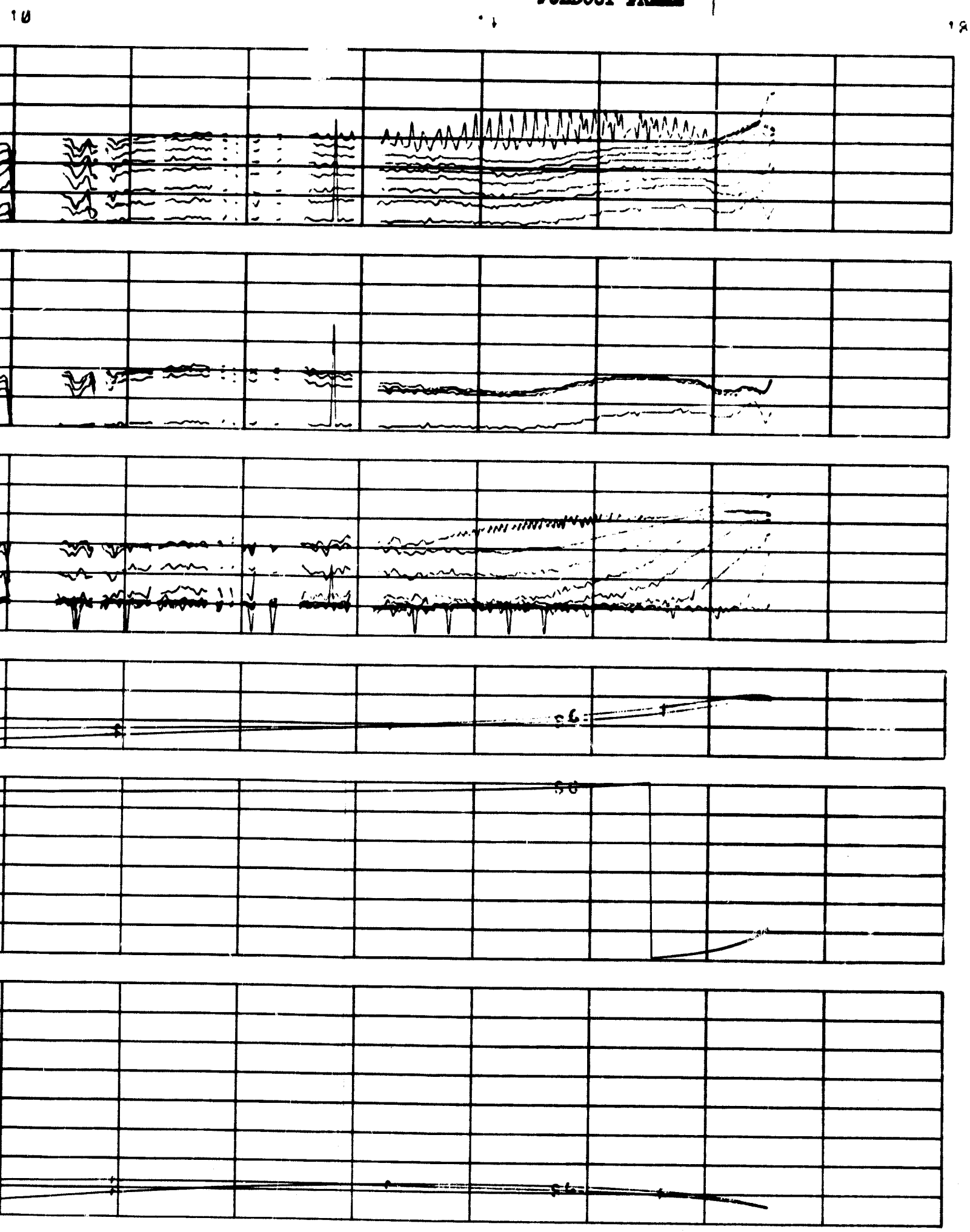
22 2

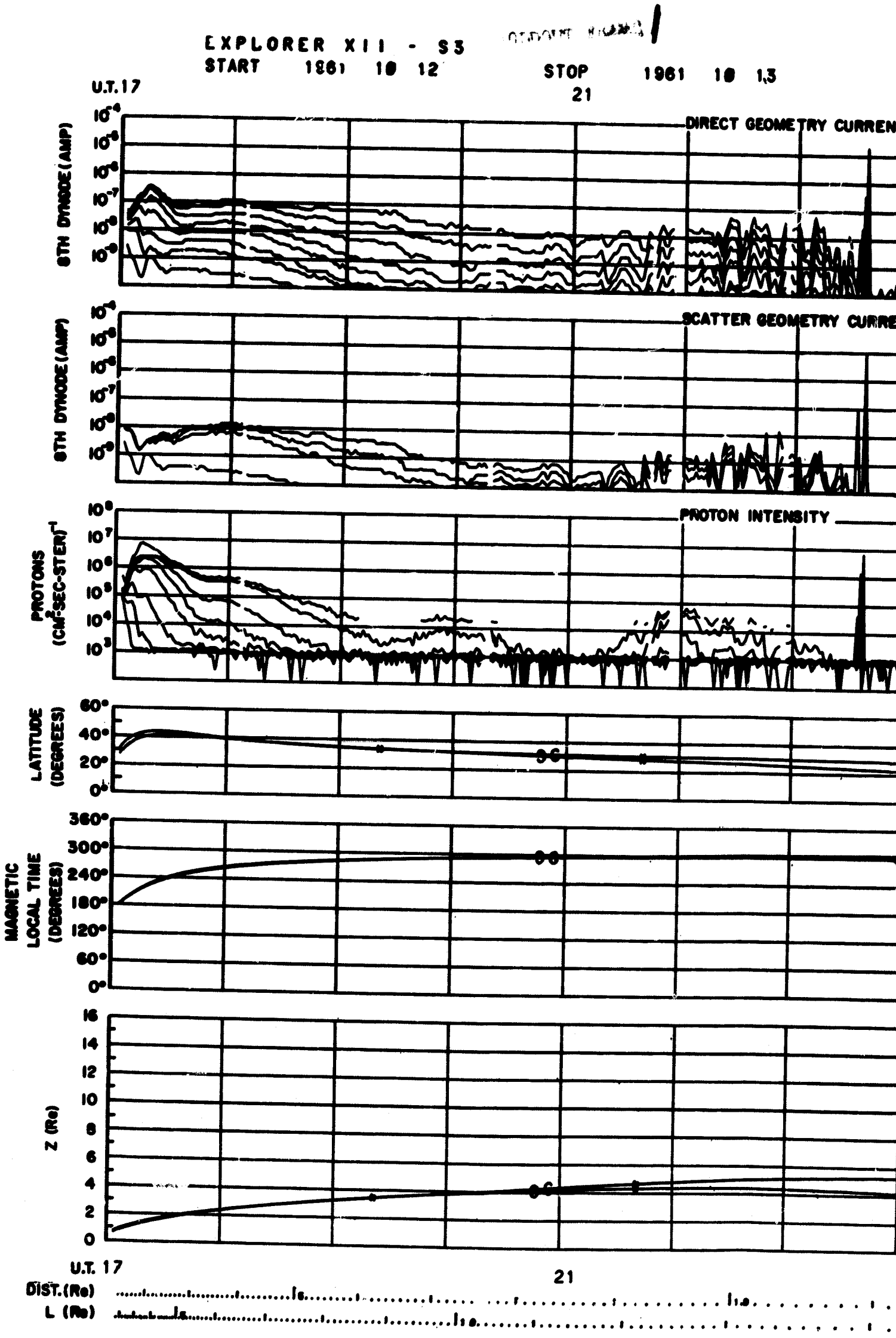
6 FOLDOUT FRAME 3 10



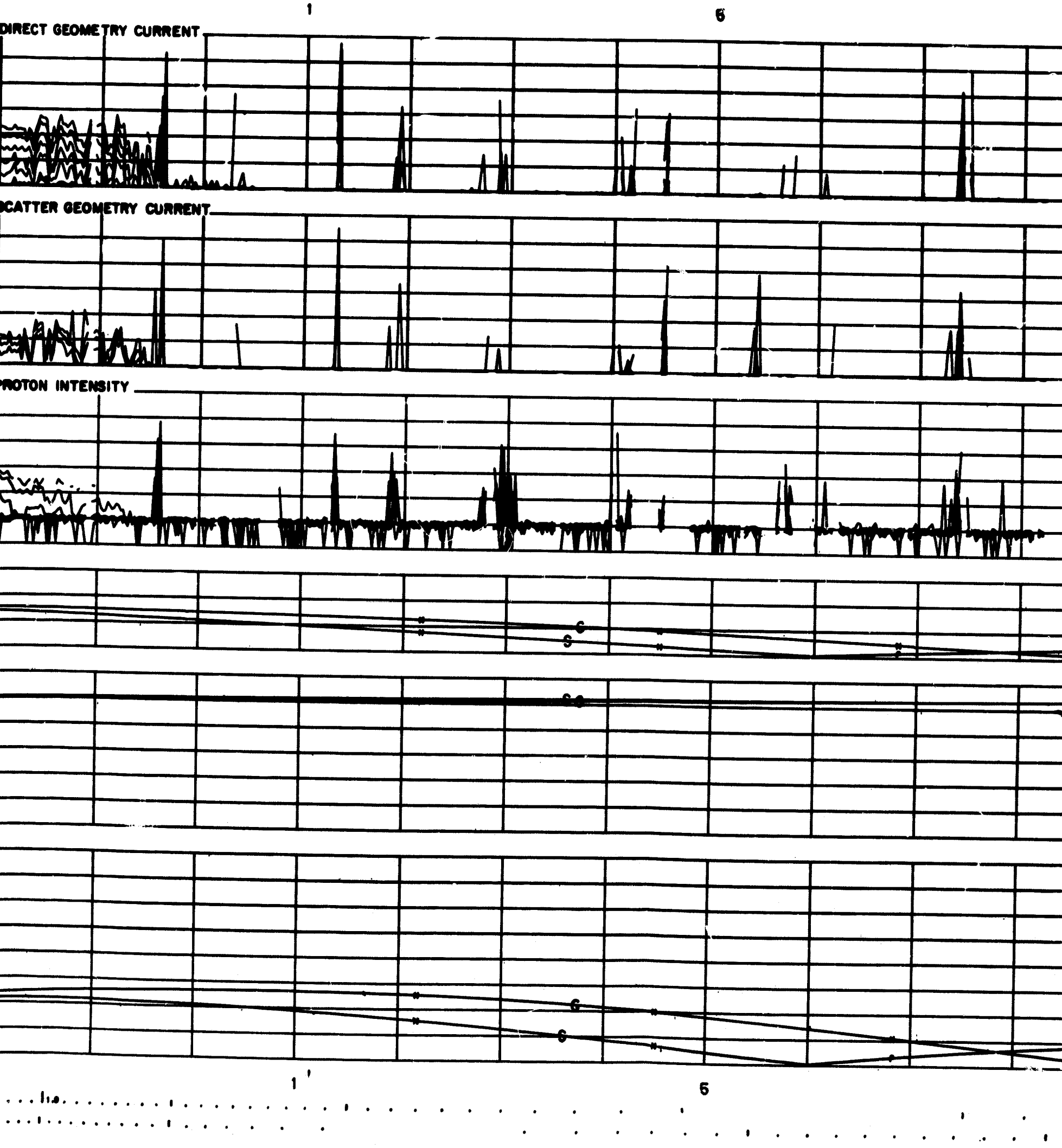
6 10

FOLDOUT FRAME 4

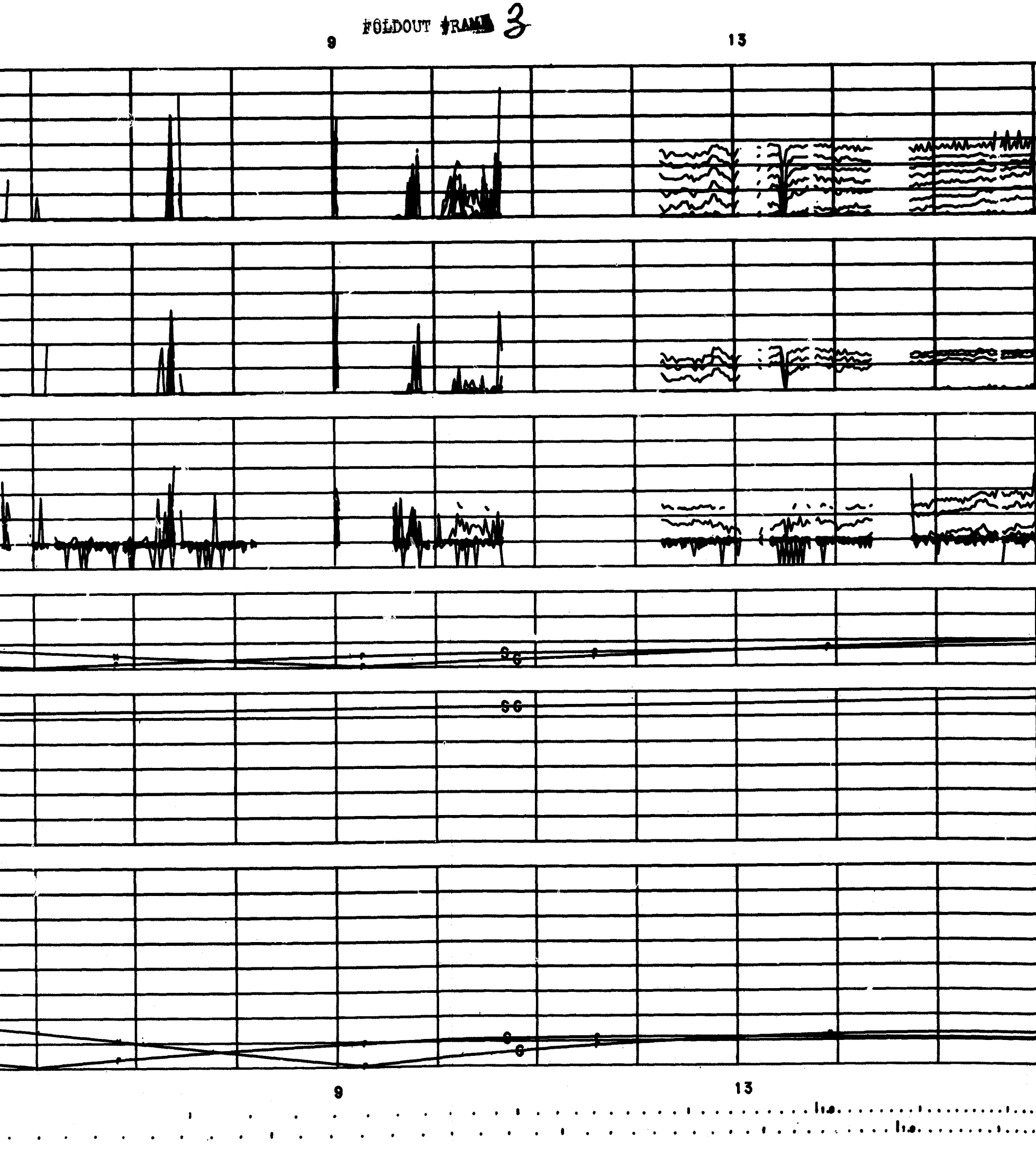



EXPLORER XII - S3
START 1961 10 12
STOP 1961 10 13
U.T. 17
21
DIRECT GEOMETRY CURREN
SCATTER GEOMETRY CURRE
PROTON INTENSITY
8TH DYNODE (AMP)
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
DIST. (Re)
L (Re)

10 1,3 FOLDOUT FRAME 2



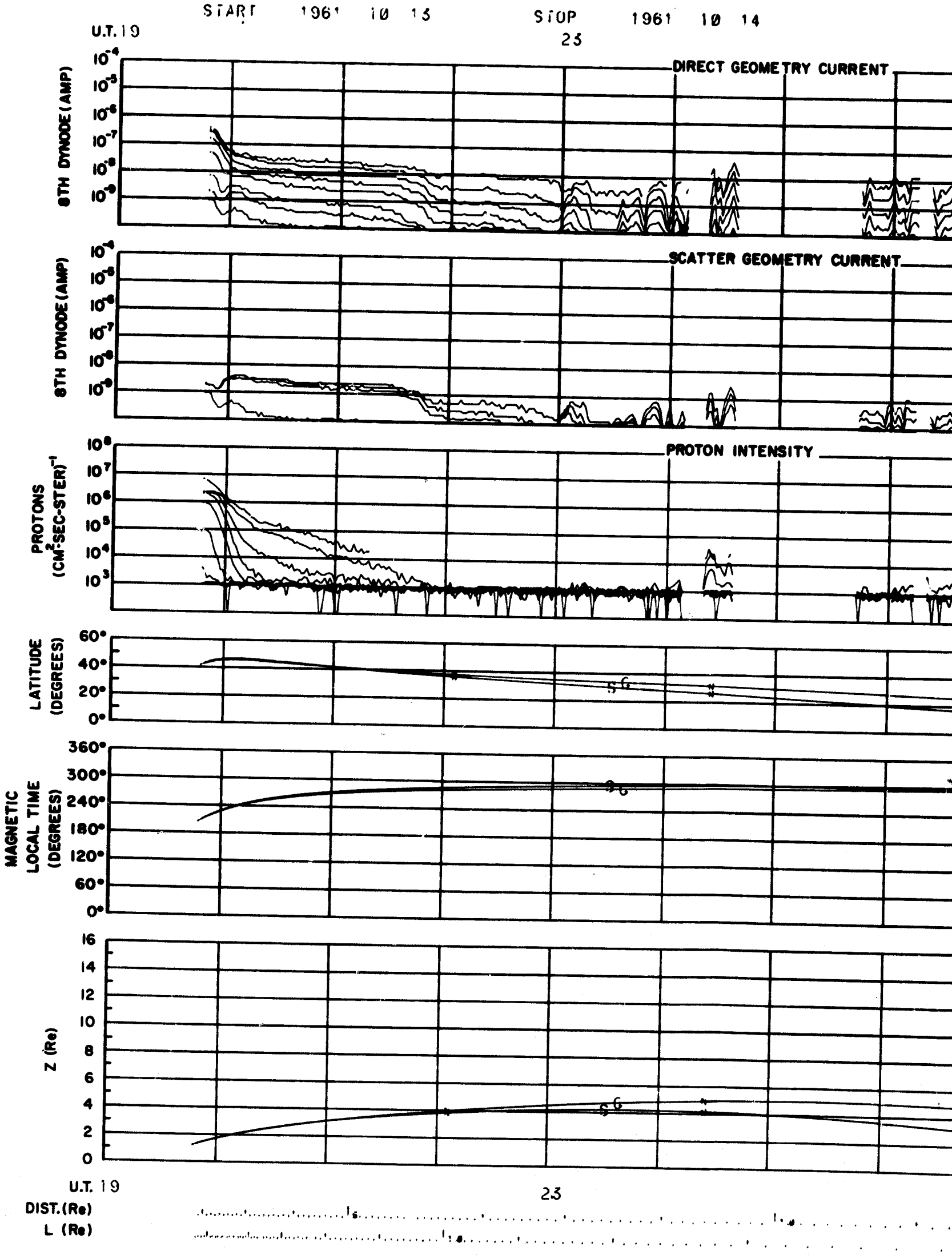
FOLDOUT FRAME 3



FOLDOUT FRAME 4

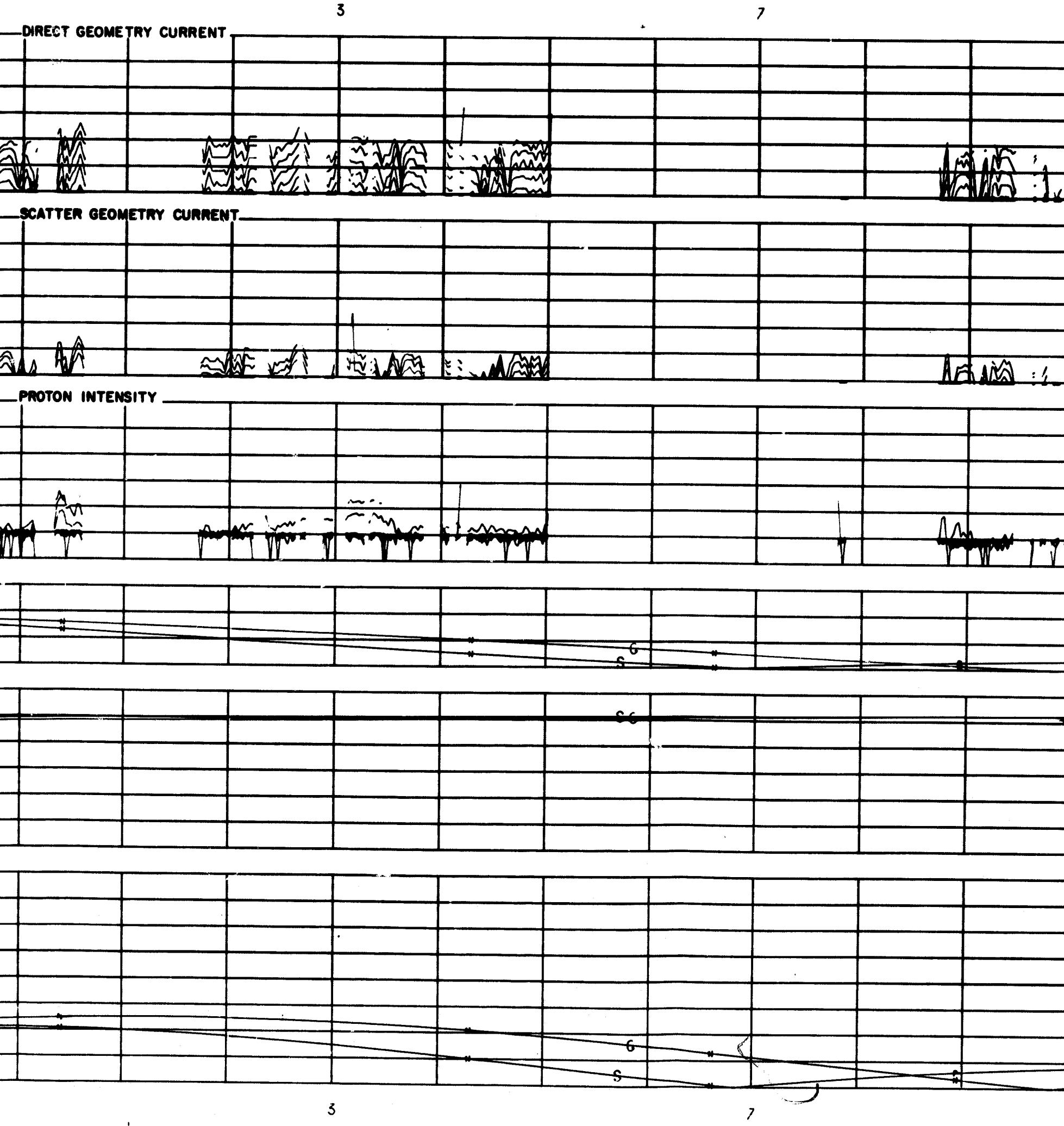
FOLDOUT FRAME 1

EXPLORER XII - S3
START 1961 10 13 STOP 1961 10 14

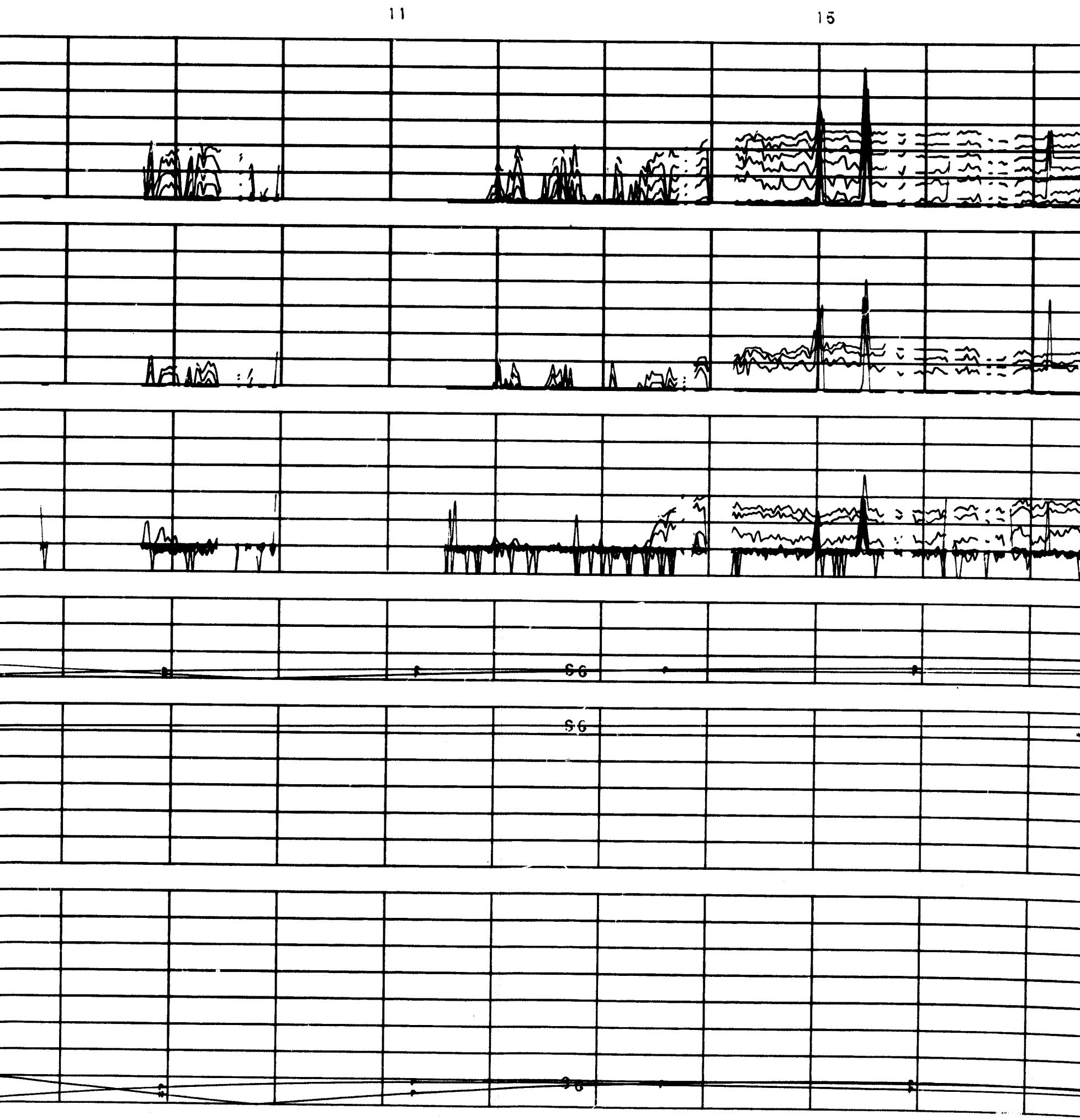


61 10 14

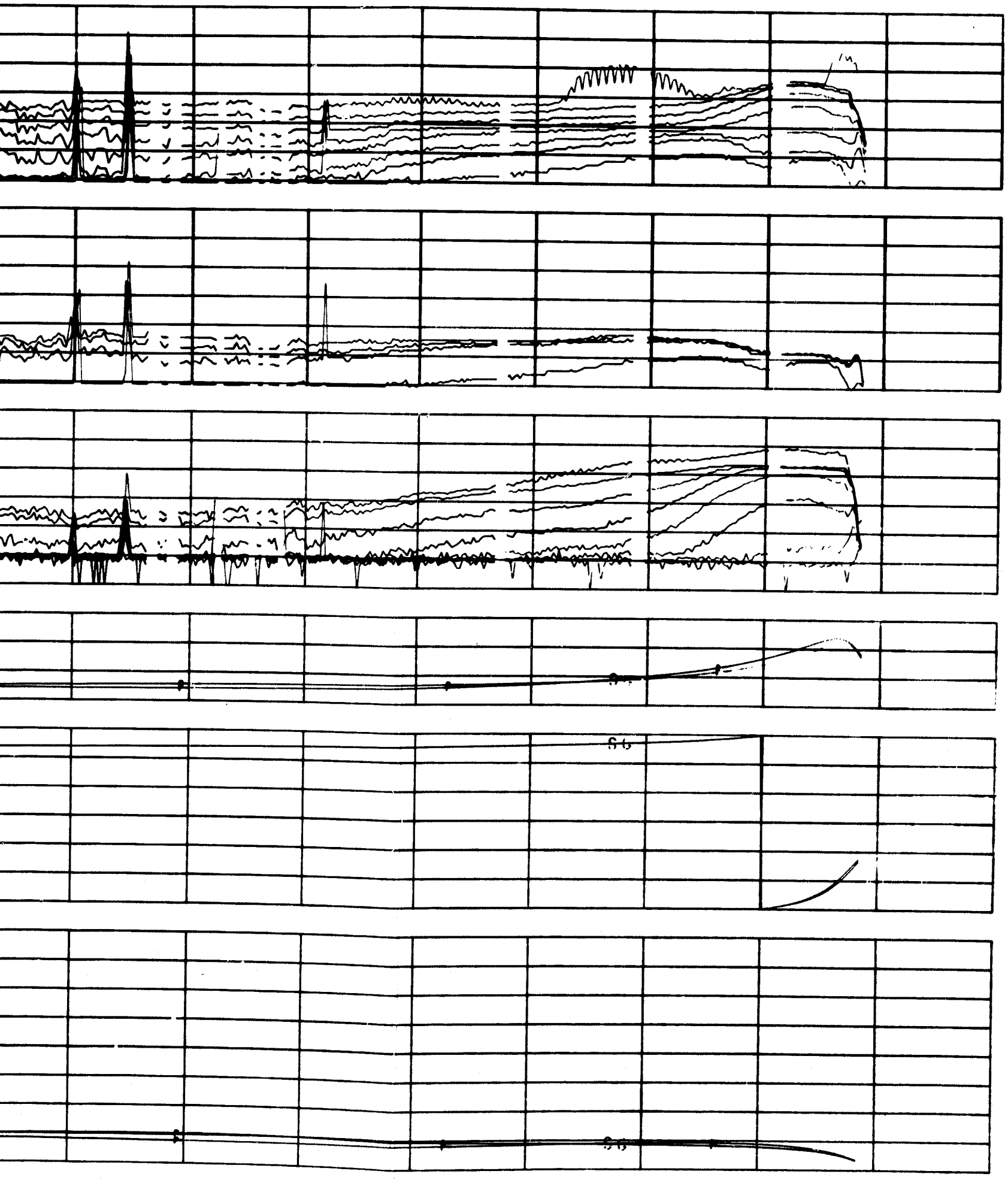
FOLDOUT FRAME 2



FOLDOUT FRAME 3

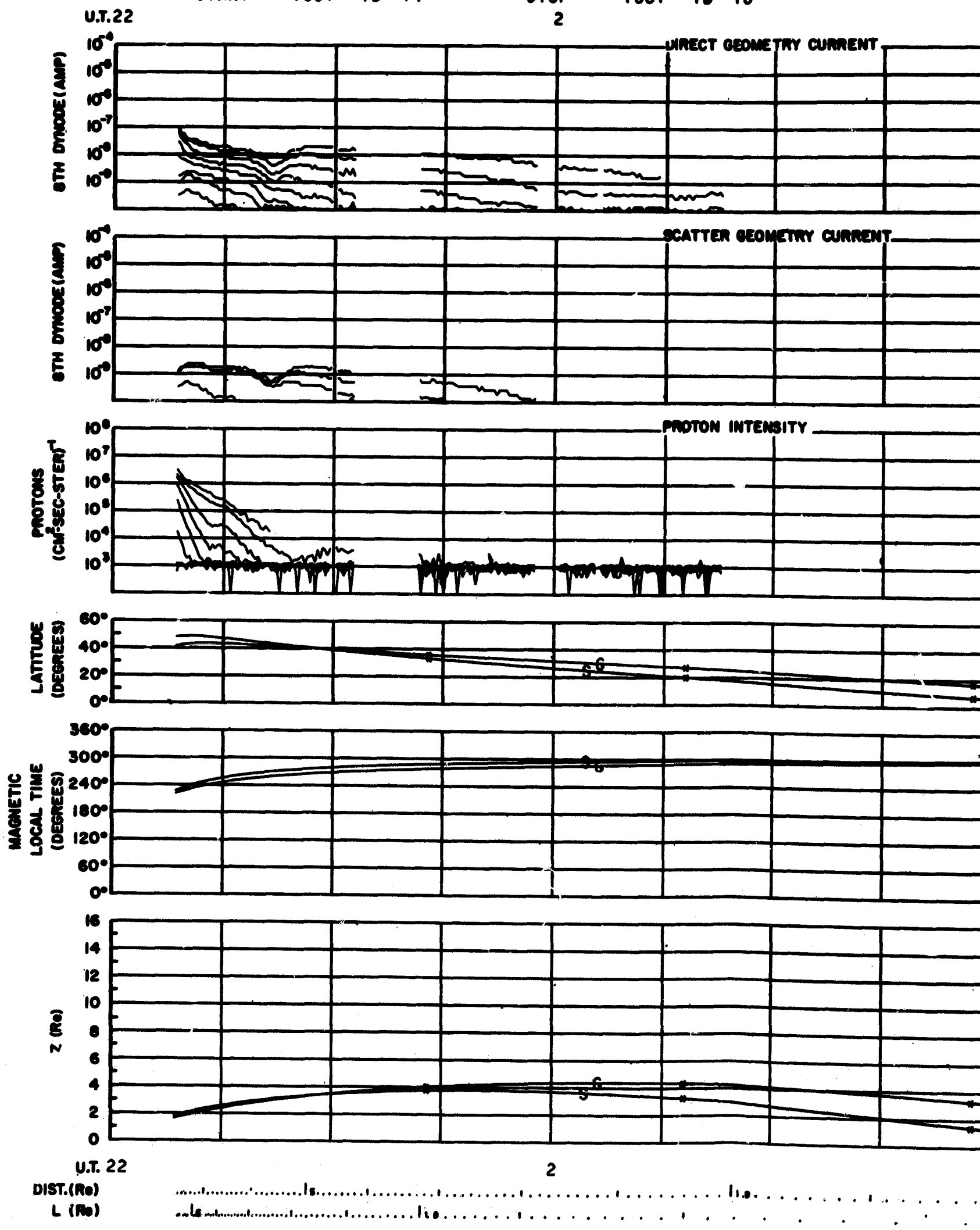


FOLDOUT FRAME 4

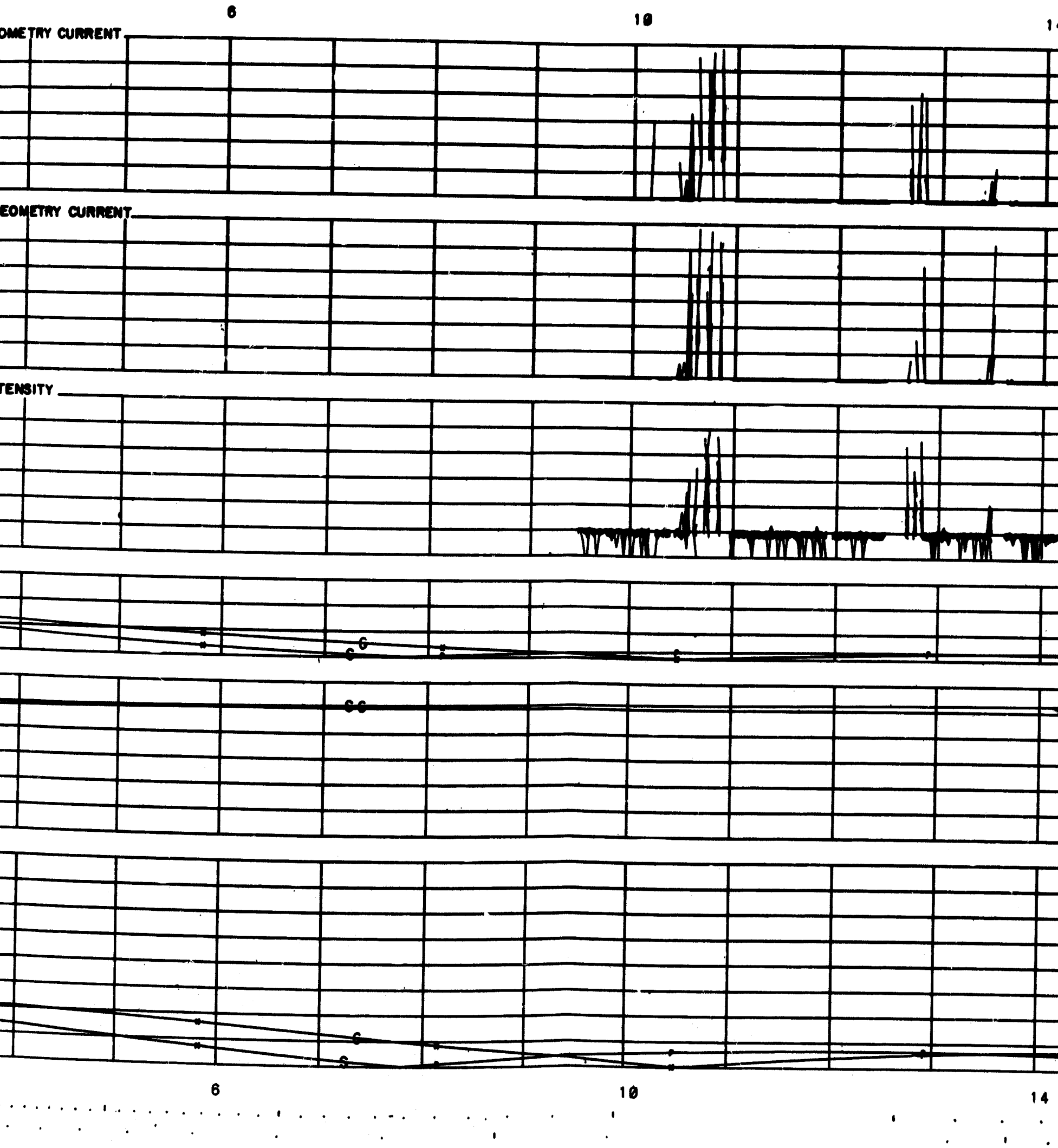


EXPLORER XII - S3 TOTAL FRAME 1

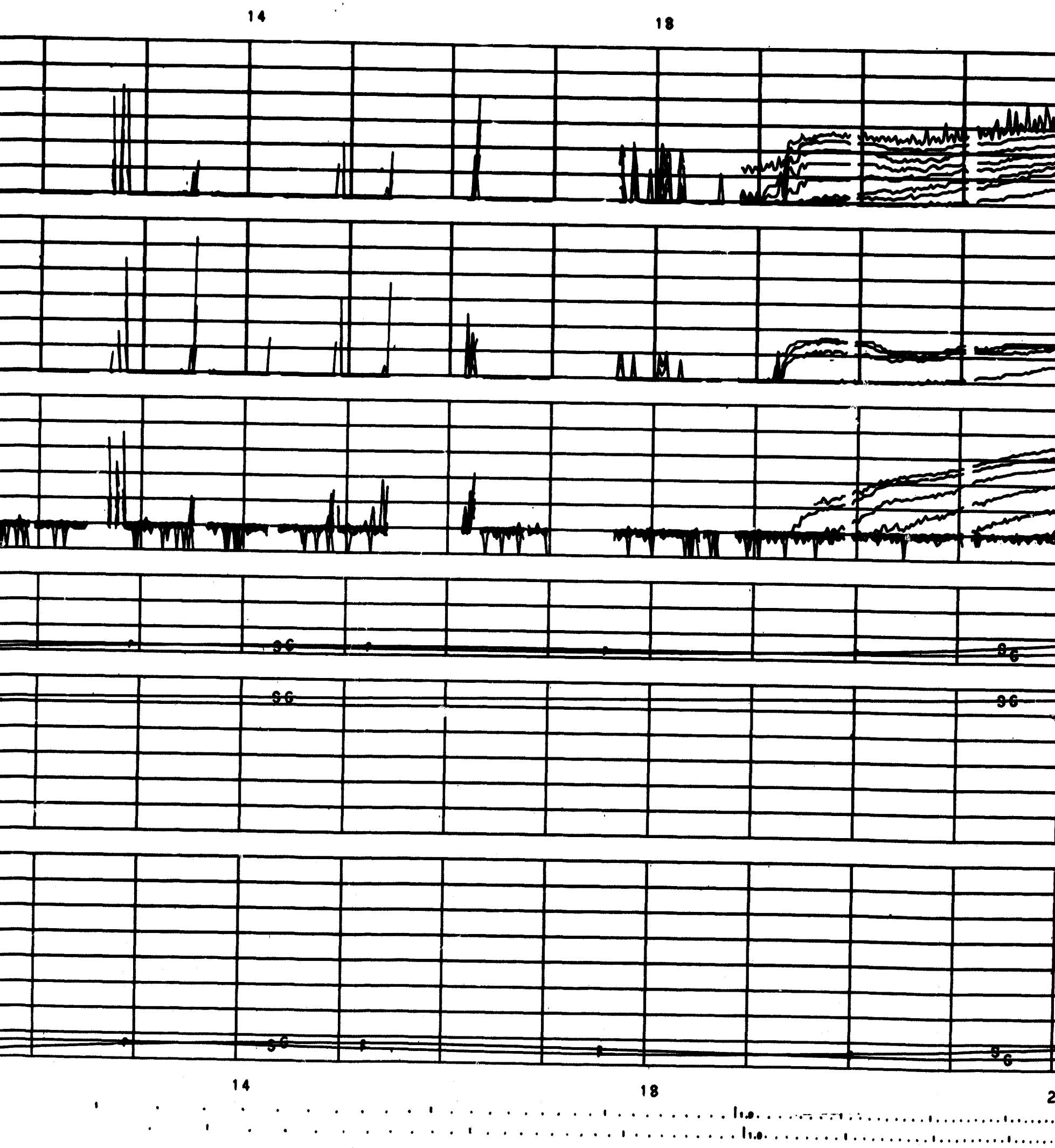
START 1961 10 14 STOP 1961 10 16



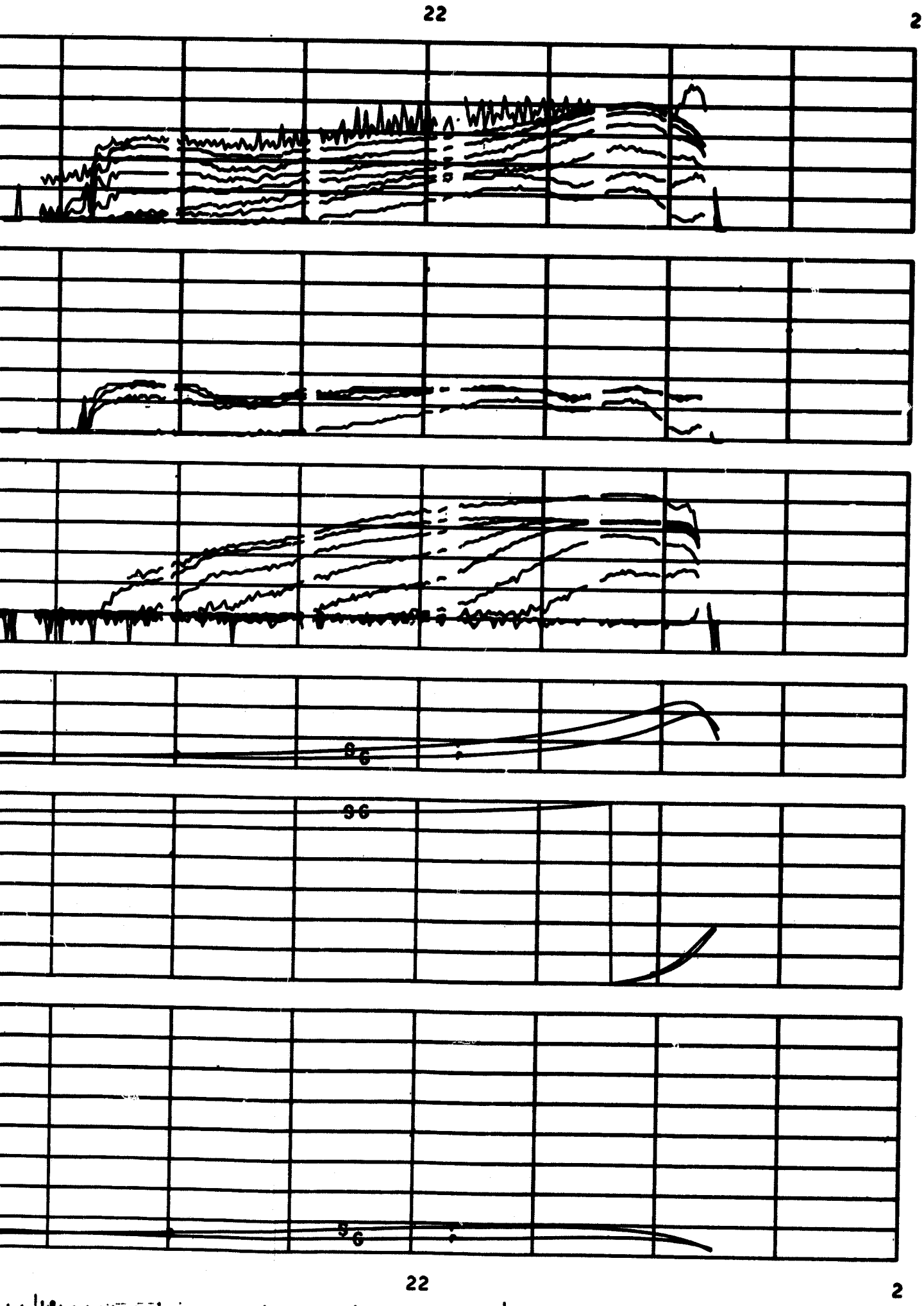
FOLDOUT FRAME 2

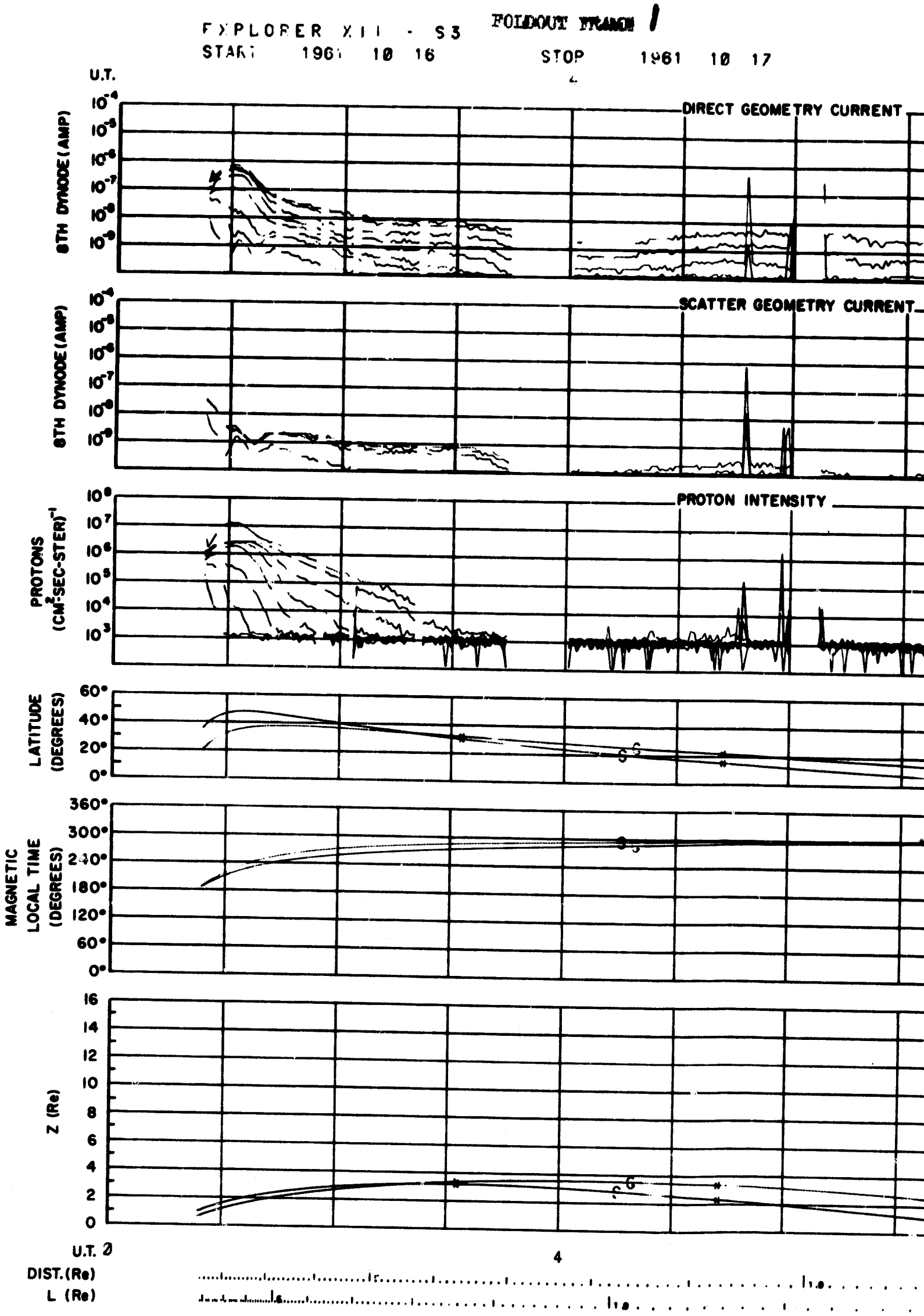


FOLDOUT FRAME 3



FOLDOUT FRAME 4




EXPLORER XII - S3
FOLDOUT FRAME 1
START 1961 10 16
STOP 1961 10 17
U.T.
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM-2SEC-STER)-1
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 2
4
DIST. (Re)
L (Re)

10 17

FOLDOUT FRAME 2

8

12

ECT GEOMETRY CURRENT

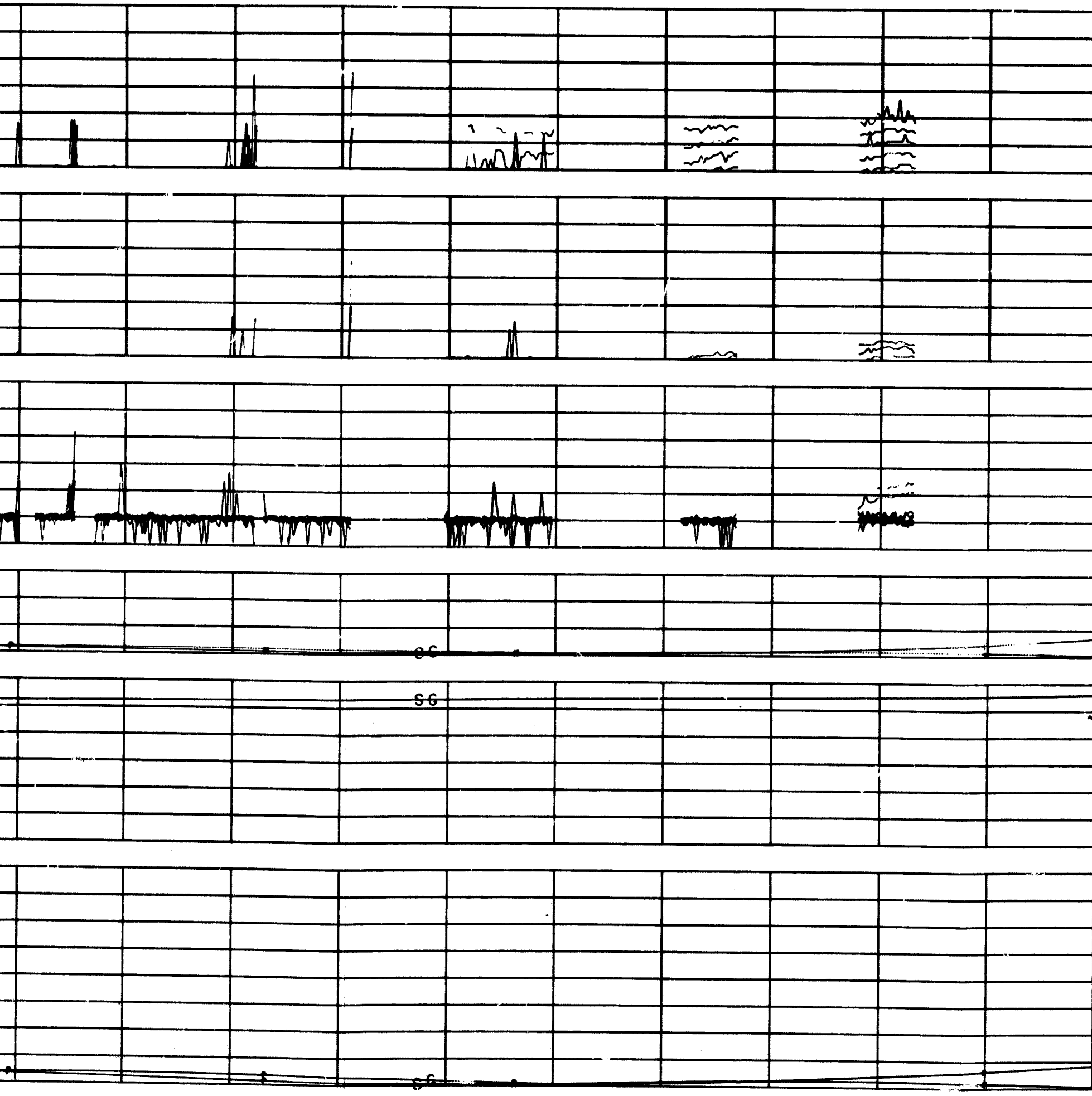
TTER GEOMETRY CURRENT

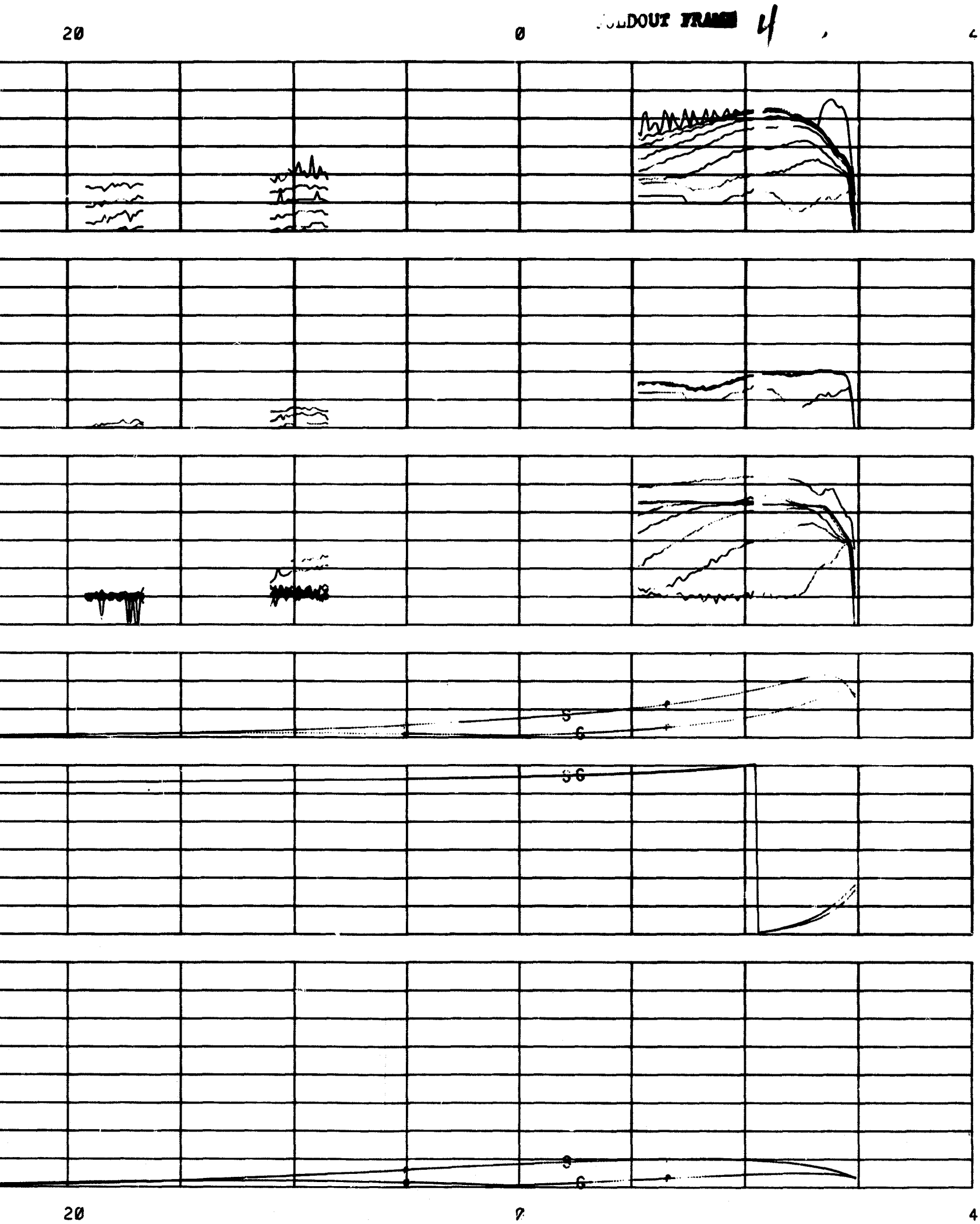
TON INTENSITY

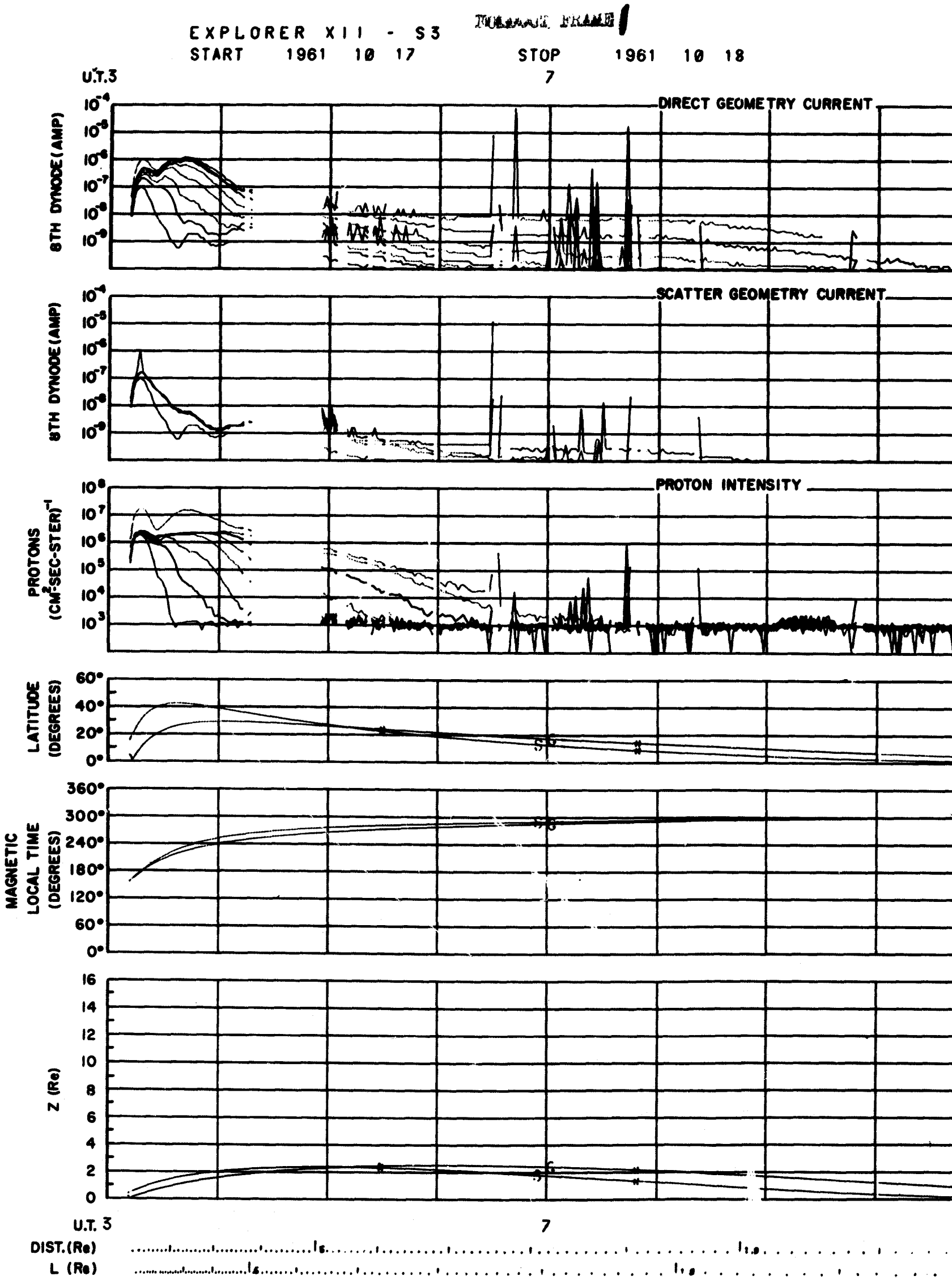
8

12

FOLDOUT FRAME 3

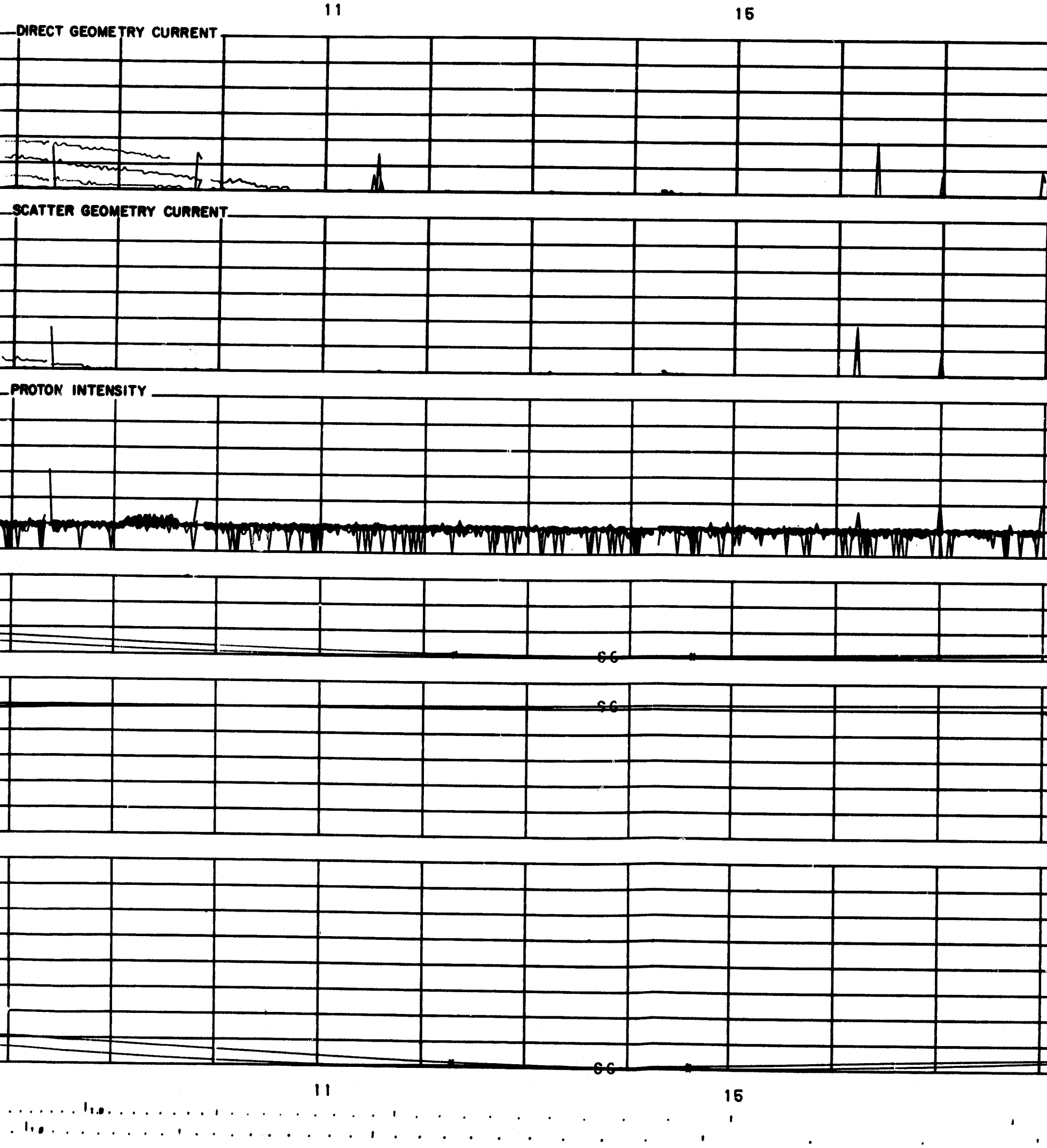



20
0
FOLDOUT FRAME 4
4
S
G
S G
S
G
20
0
4

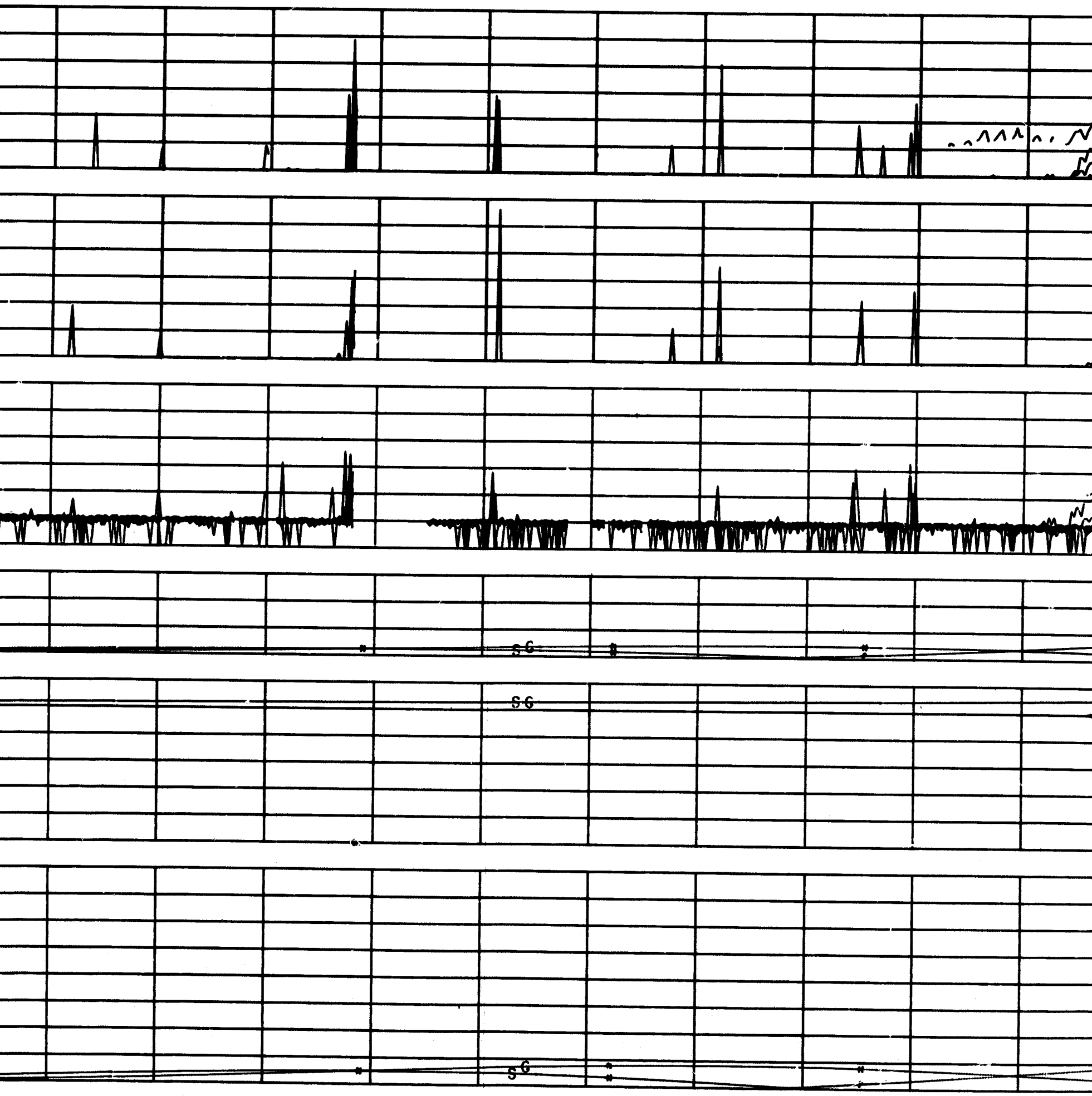

EXPLORER XII - S3
START 1961 10 17
STOP 1961 10 18
U.T.3
7
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 3
7
DIST. (Re)
L (Re)

61 10 18

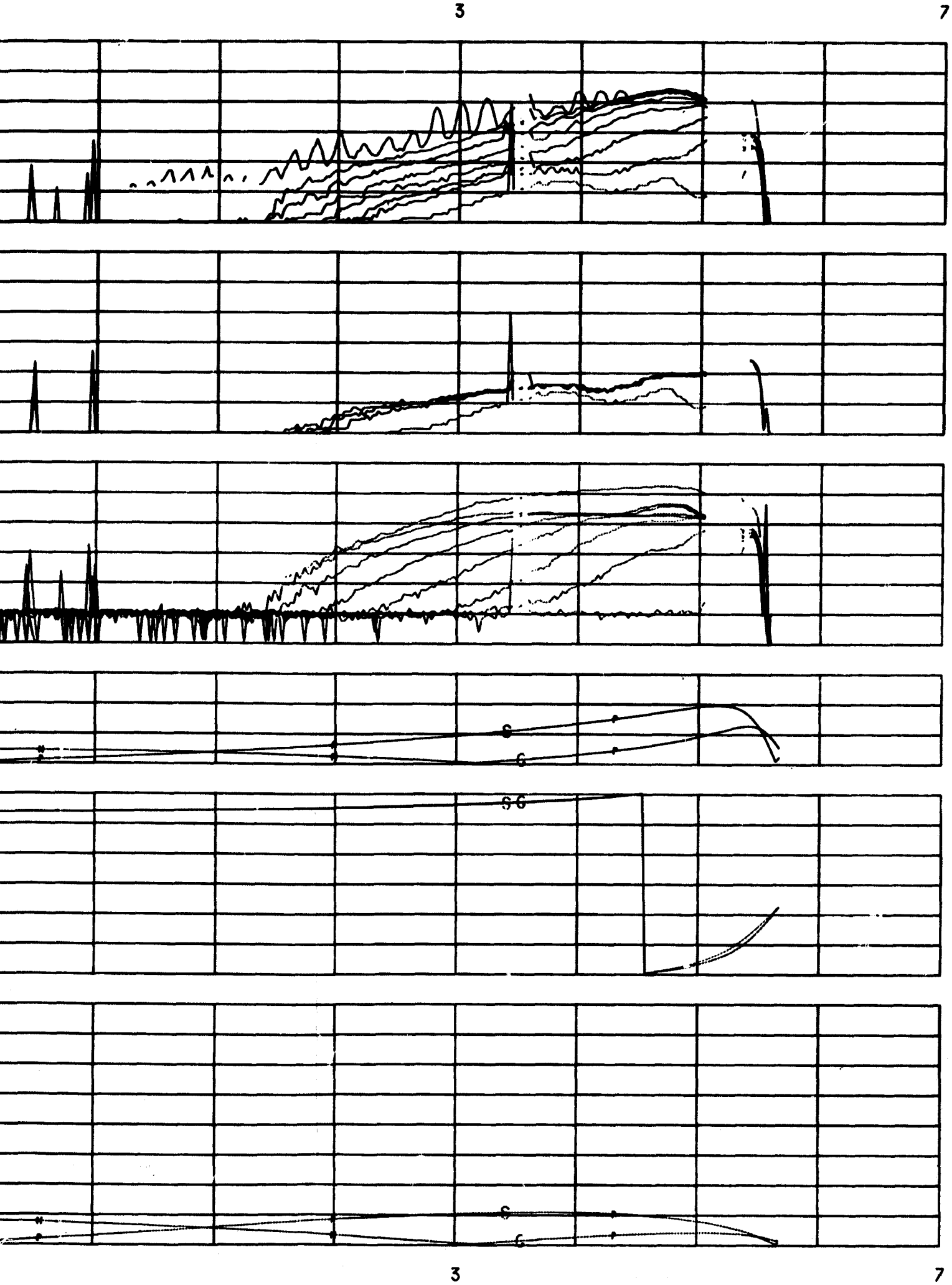
FOLDOUT FRAME 2

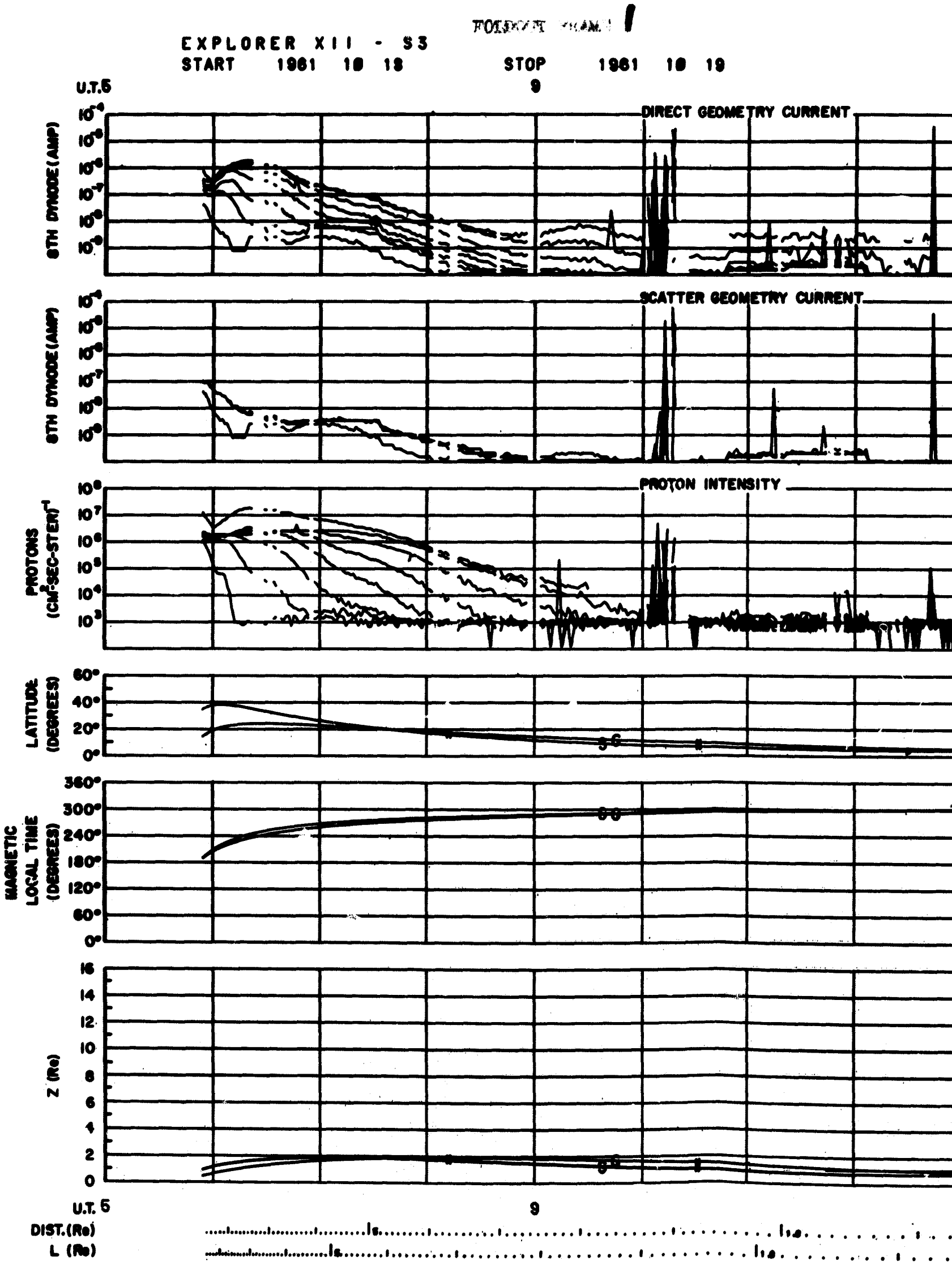


FOLDOUT FRAME 3

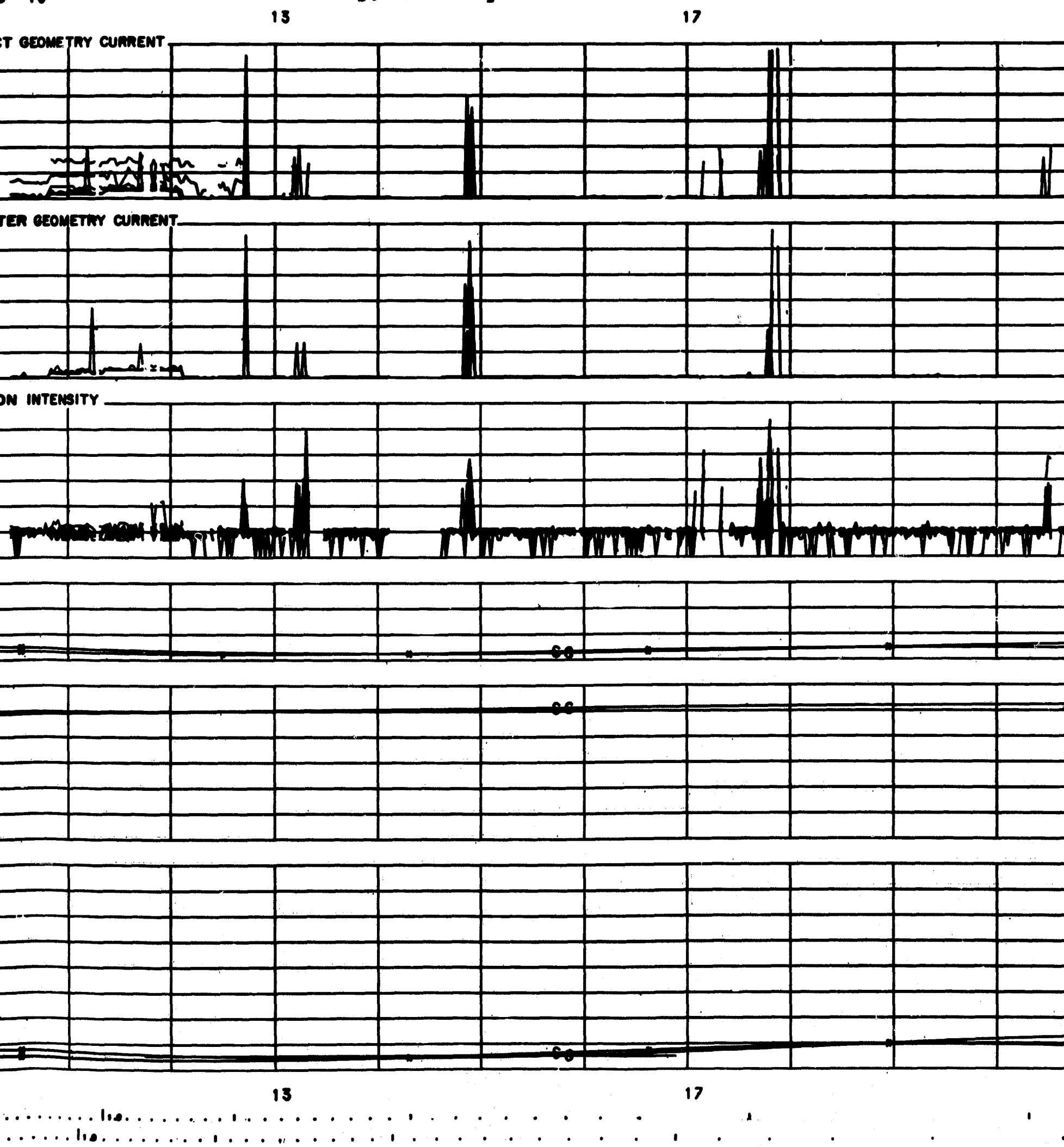


FOLDOUT FRAME 4




EXPLORER XII - S3
START 1961 10 18
STOP 1961 10 19
U.T.5
9
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 5
9
DIST. (Re)
L (Re)

FOLDOUT FRAME 2



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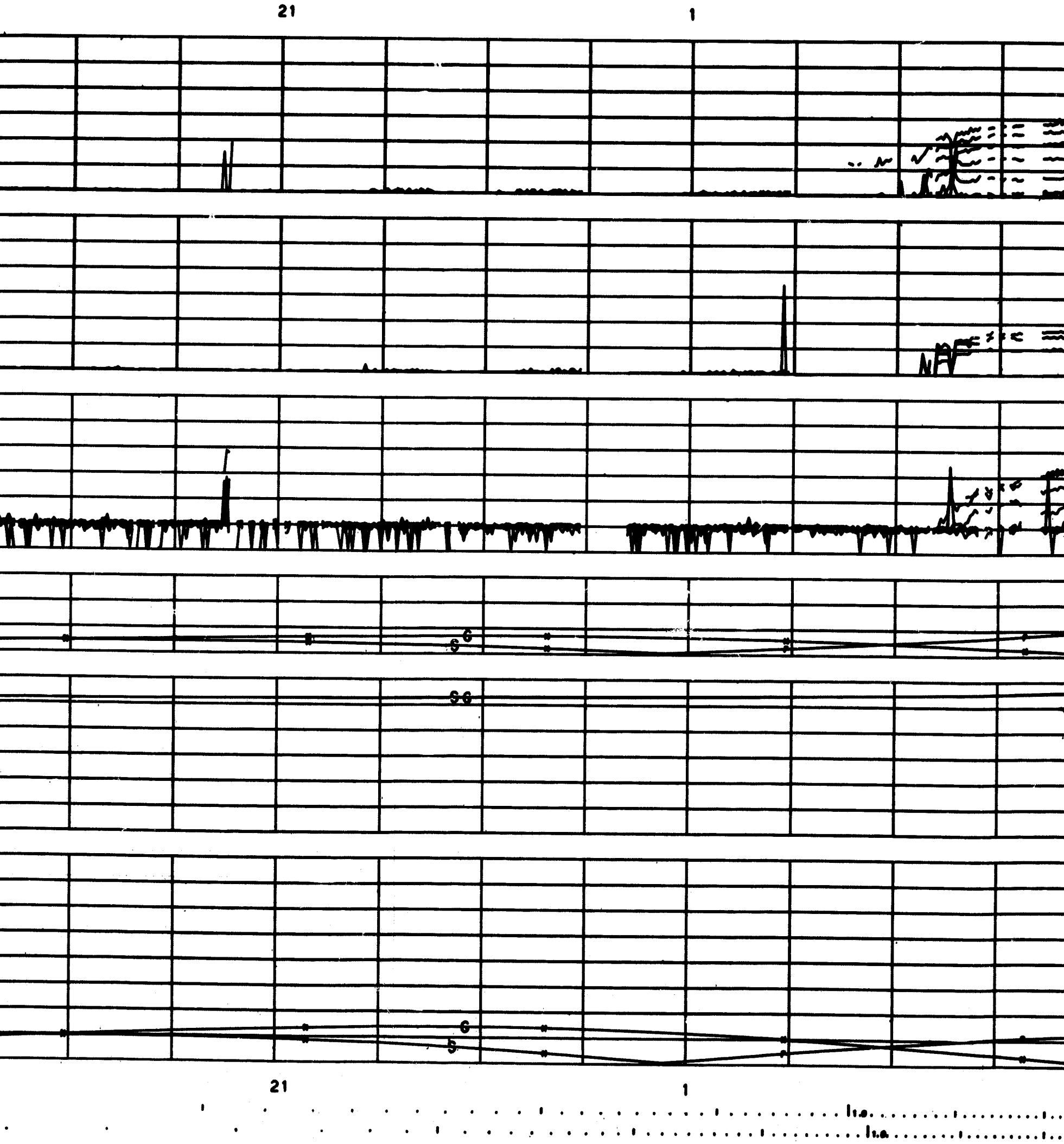

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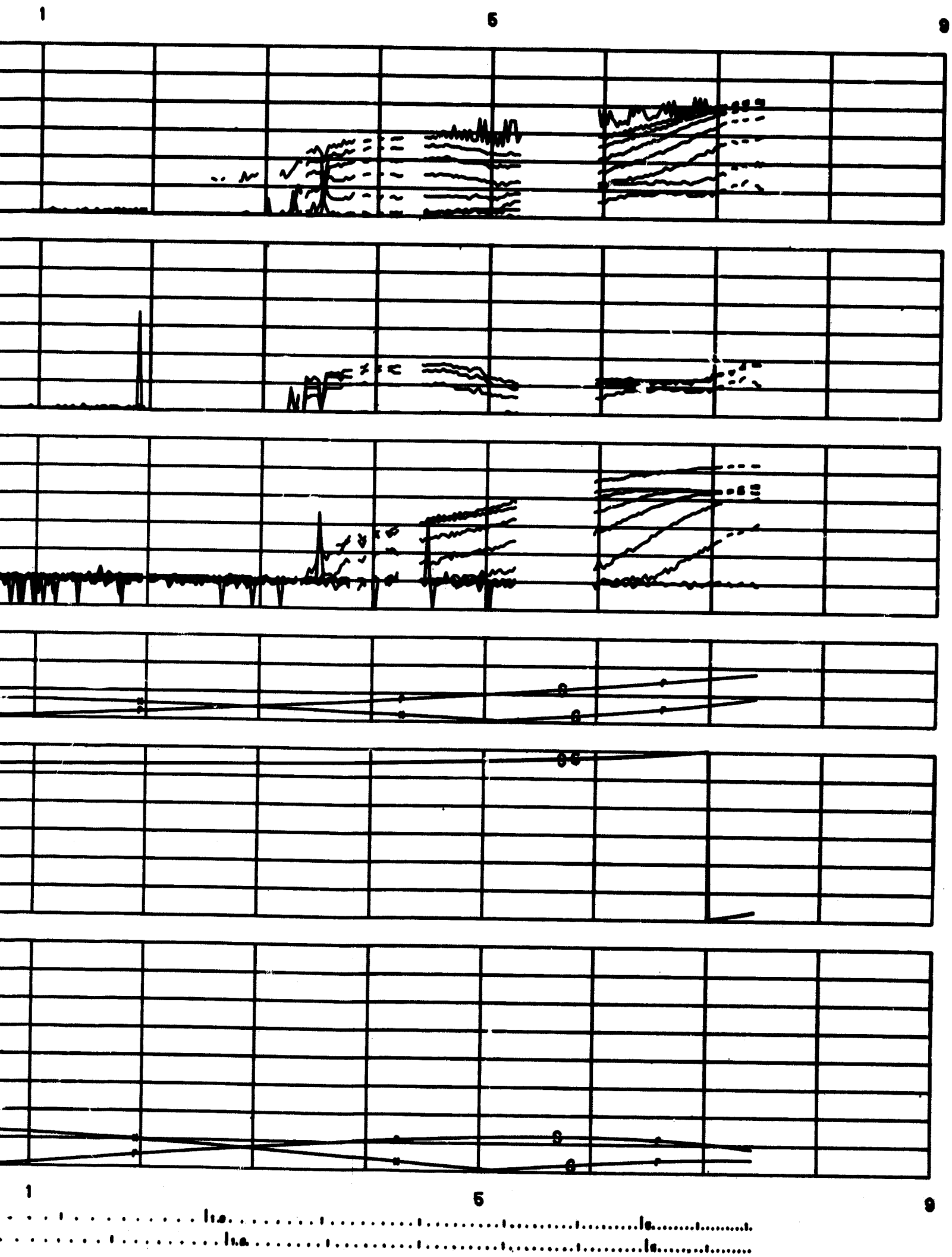
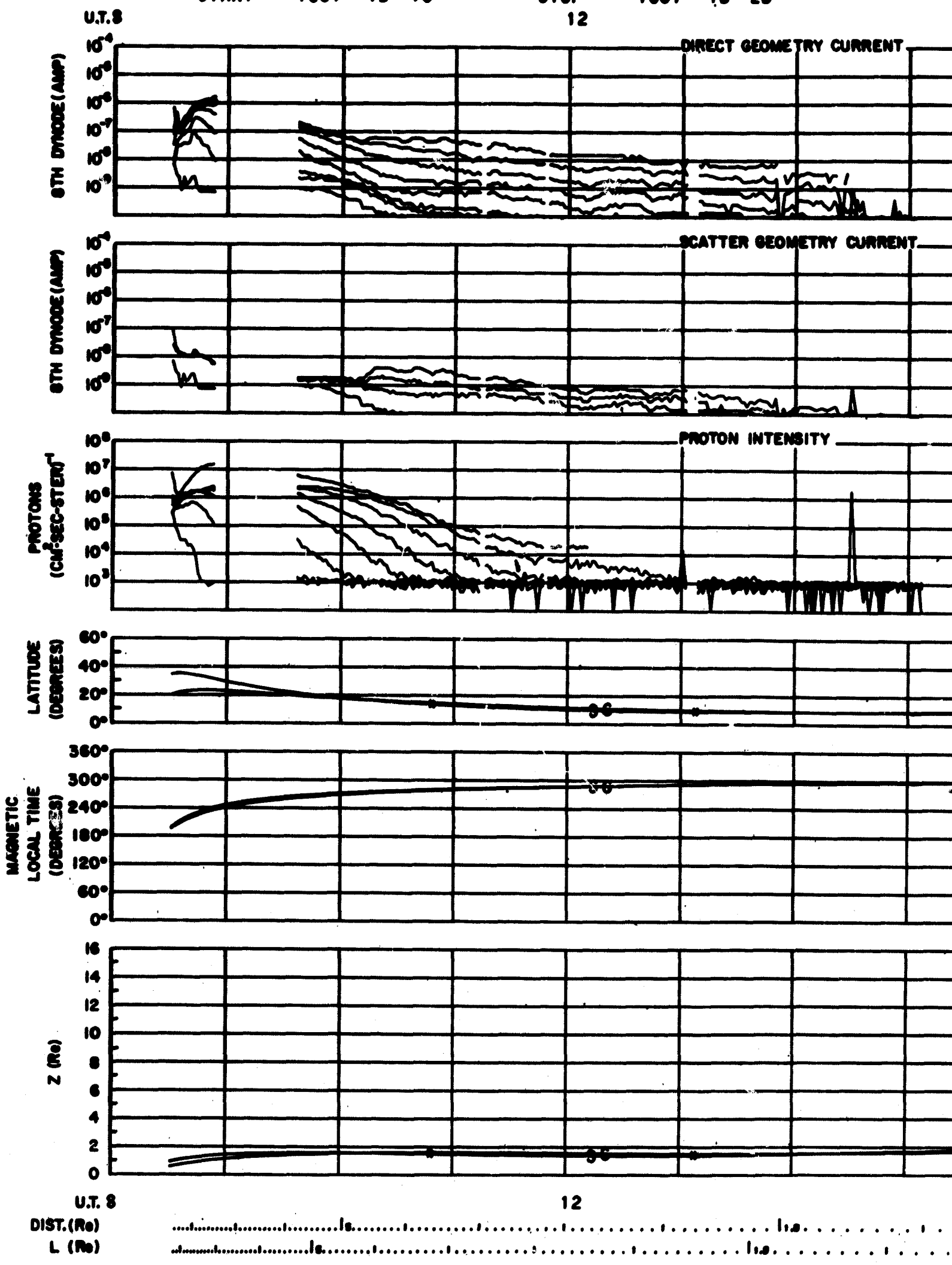
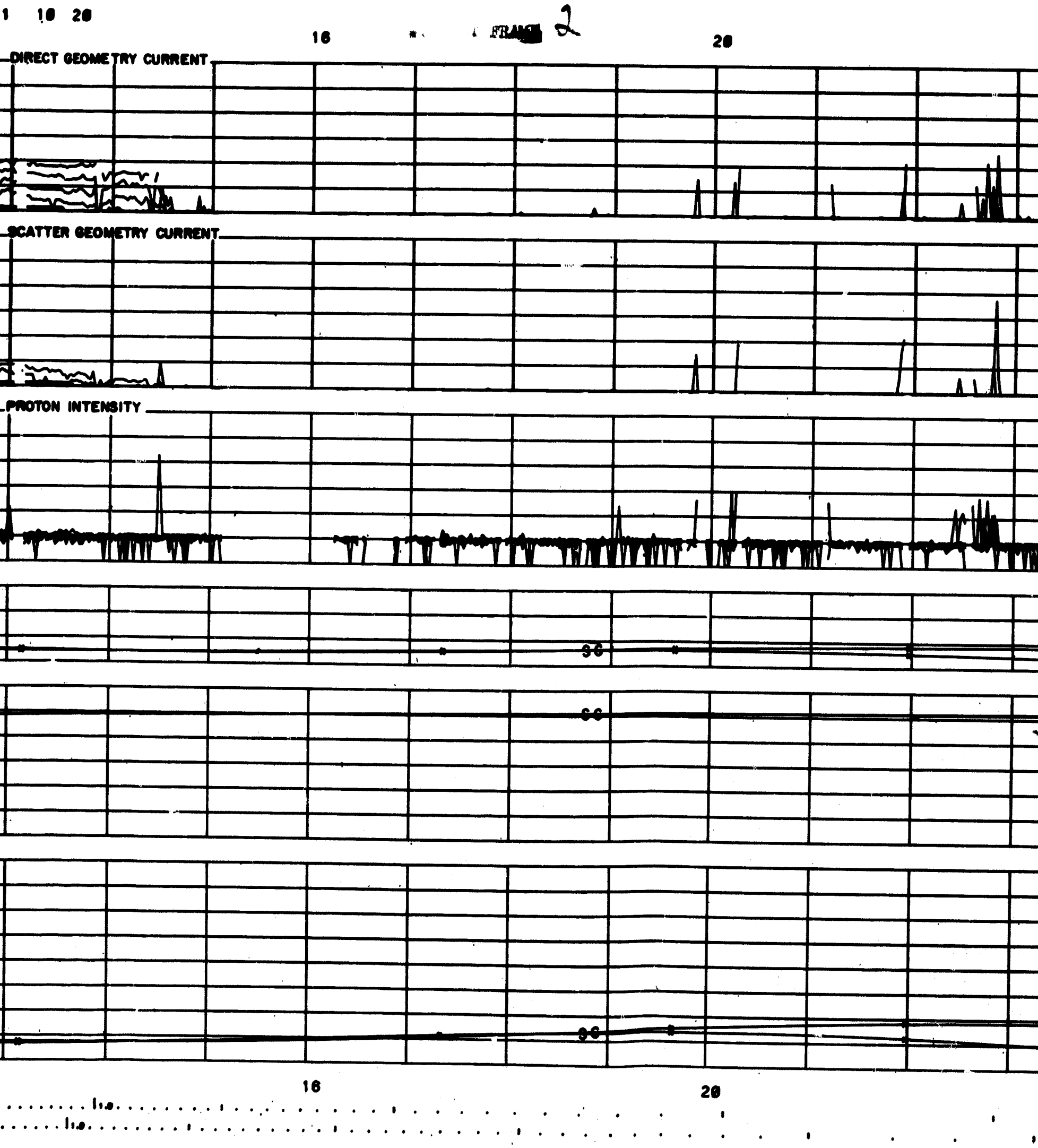


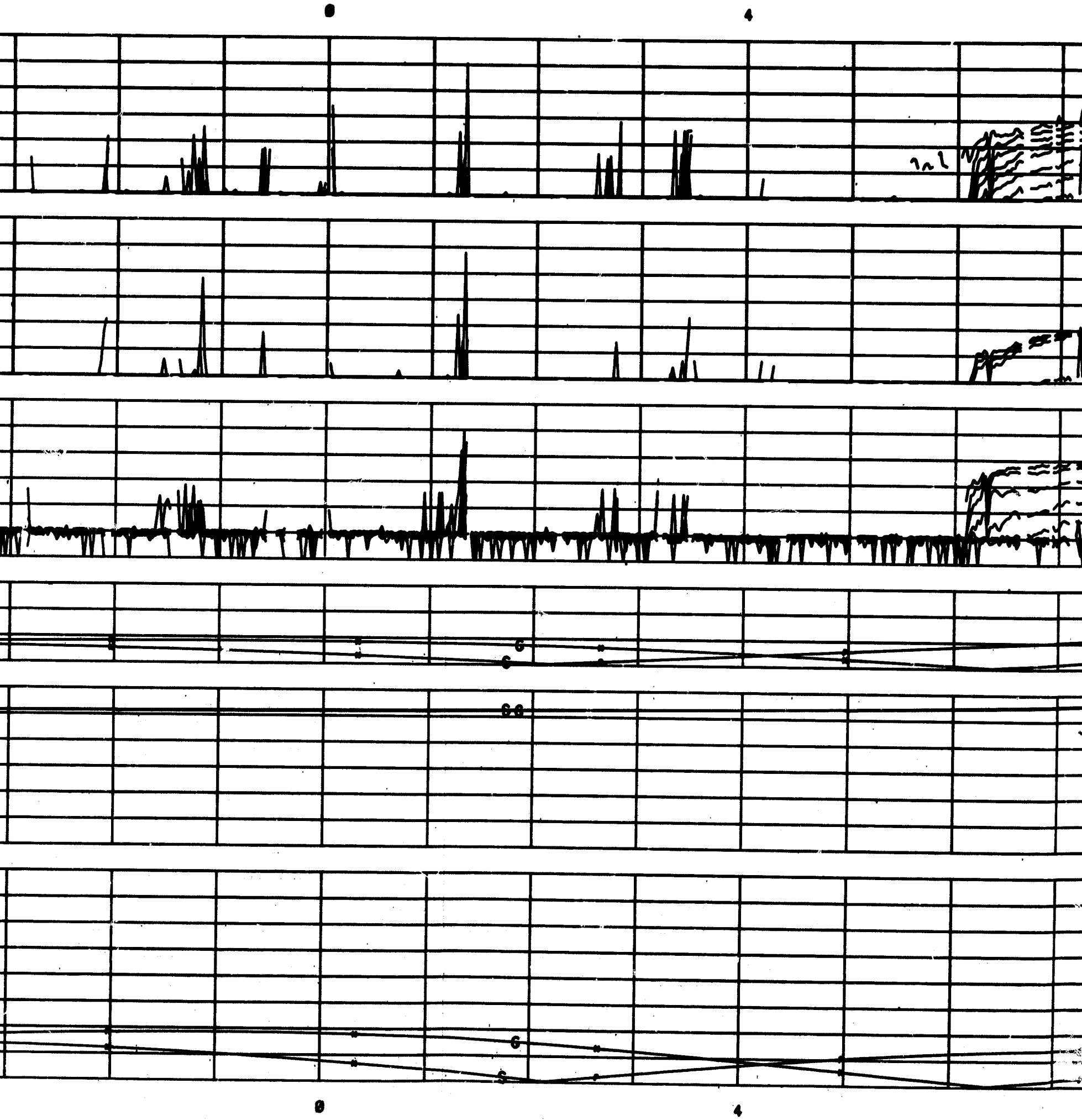
EXPLORER XII - S3 FOLDOUT FRAME 1

START 1961 10 19 STOP 1961 10 20

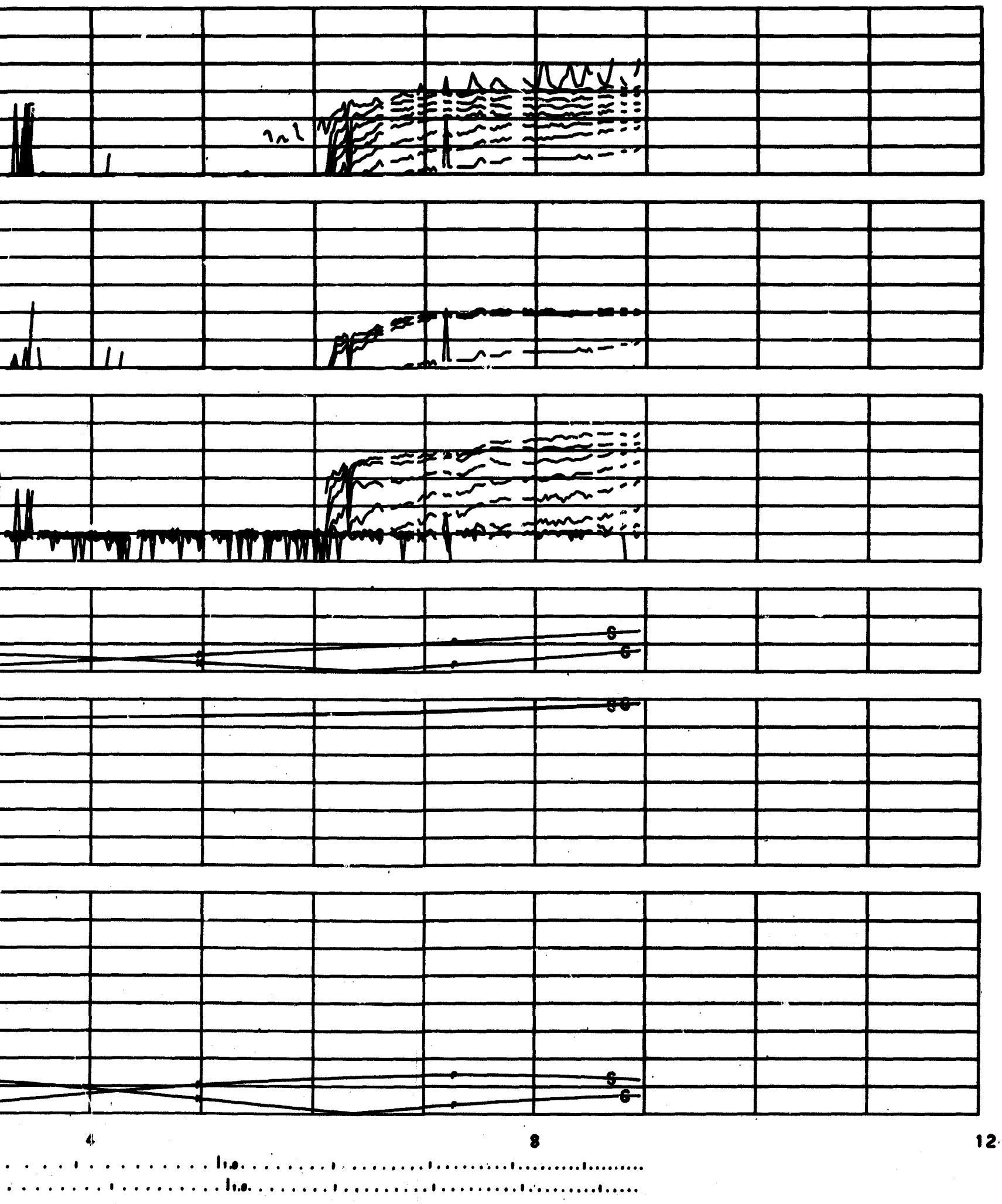


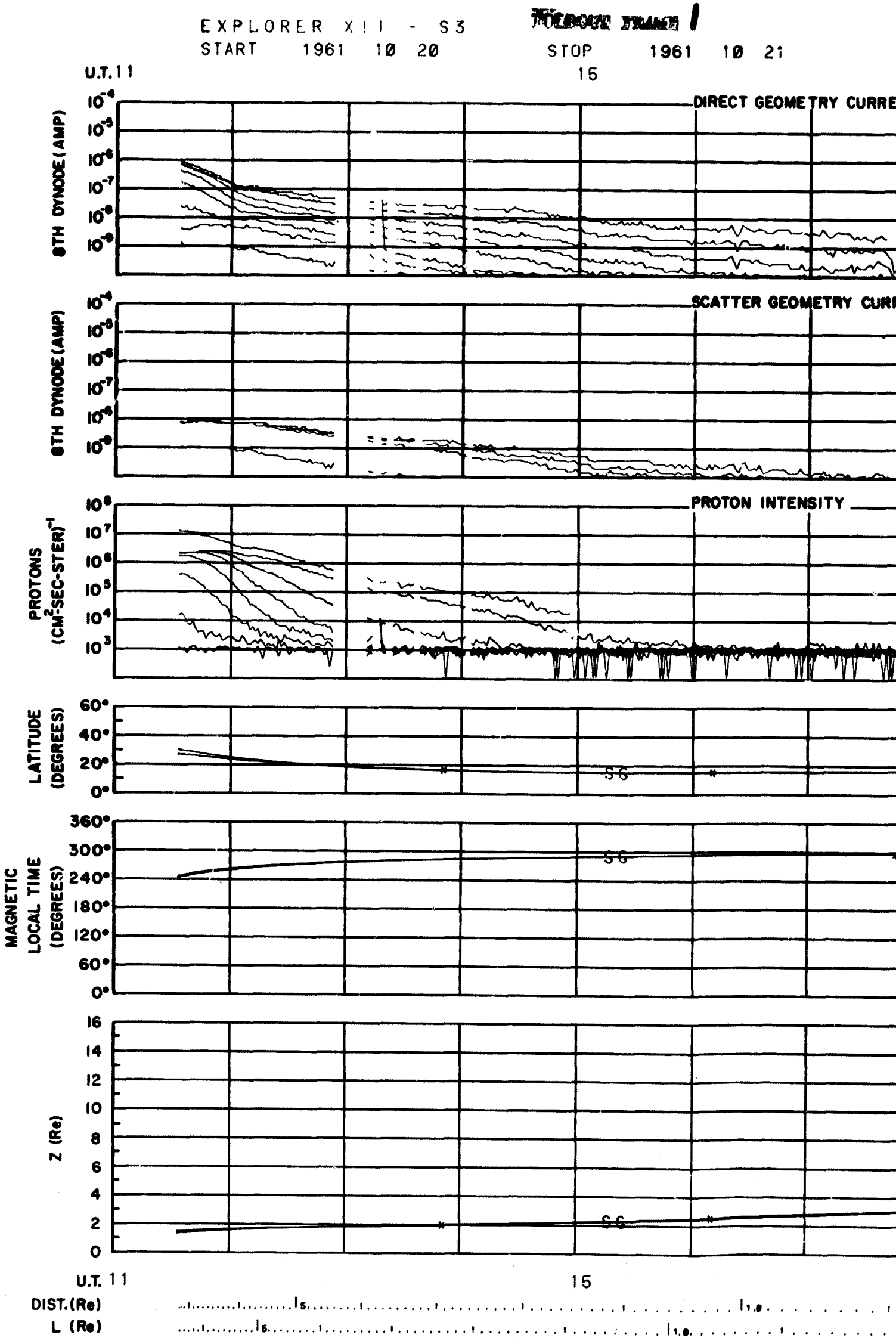

1 10 20
16
FRAME 2
20
DIRECT GEOMETRY CURRENT
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
16
20

FOLDOUT FRAME 3



FOLDOUT FRAME 4

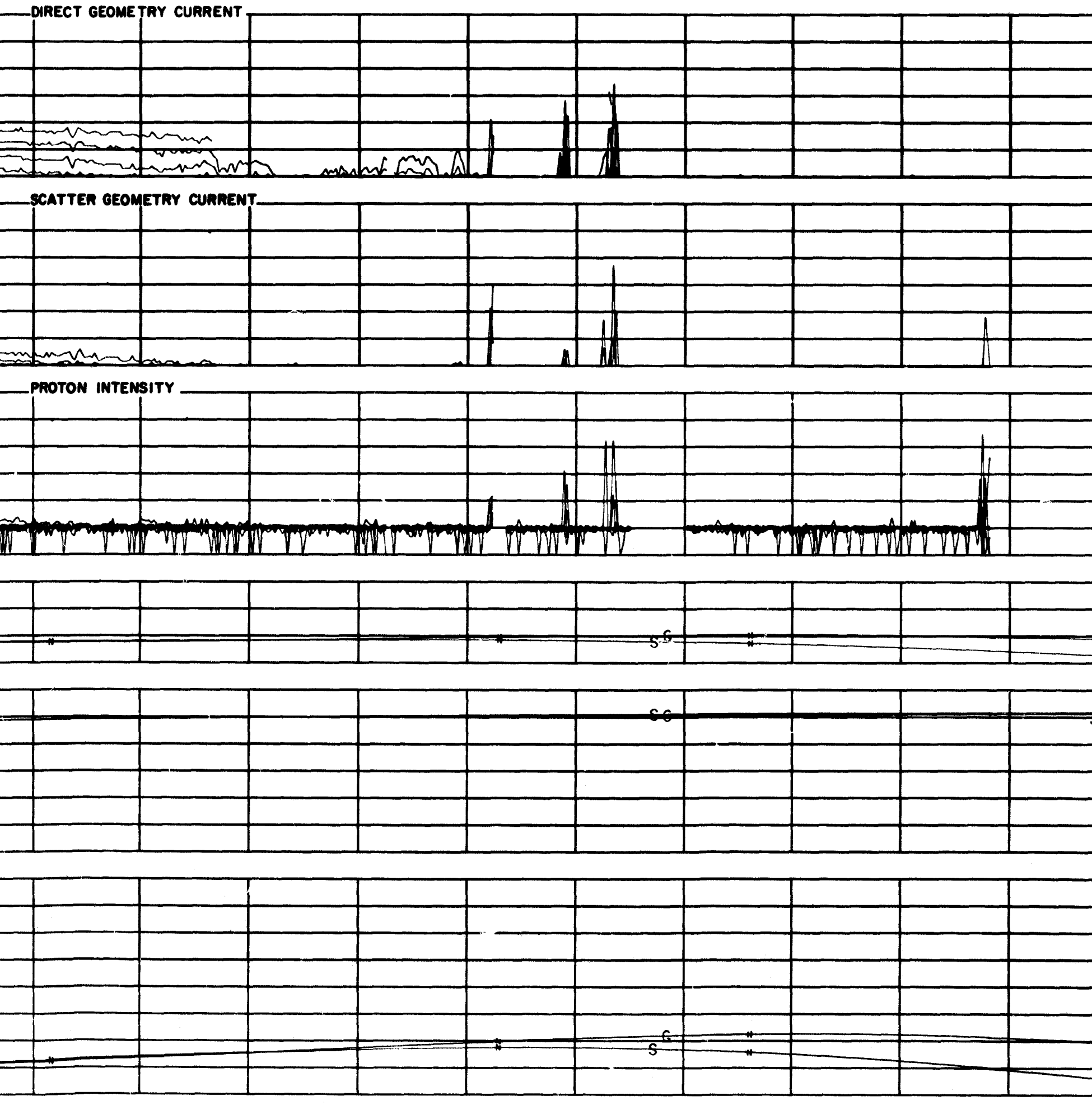



EXPLORER XII - S3
START 1961 10 20
STOP 1961 10 21
U.T. 11
15
DIRECT GEOMETRY CURRE
SCATTER GEOMETRY CURI
PROTON INTENSITY
8TH DYNODE (AMP)
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
SG
DIST. (Re)
L (Re)

1

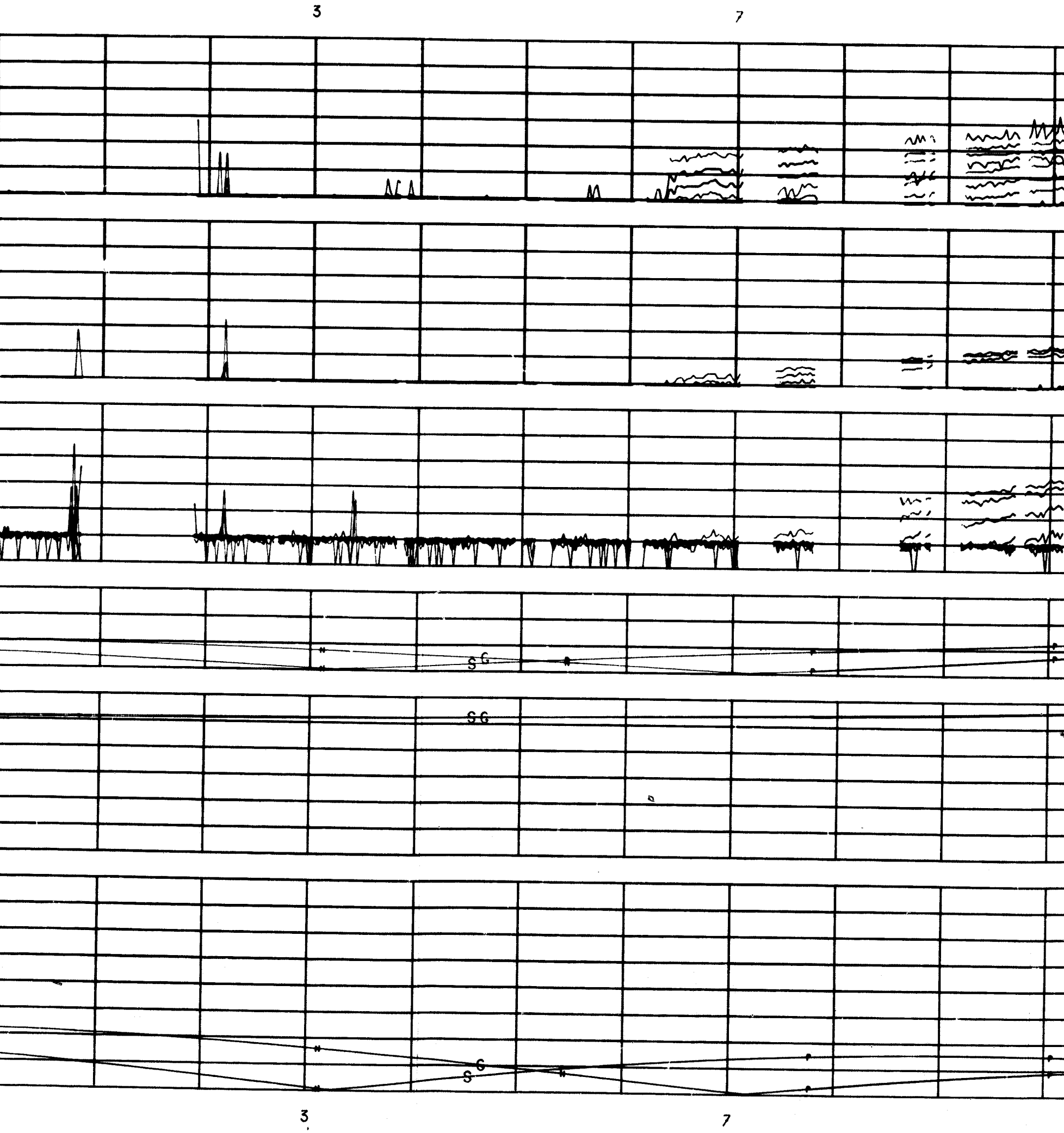
961 10 21

19 DOUT FRAME 2 23



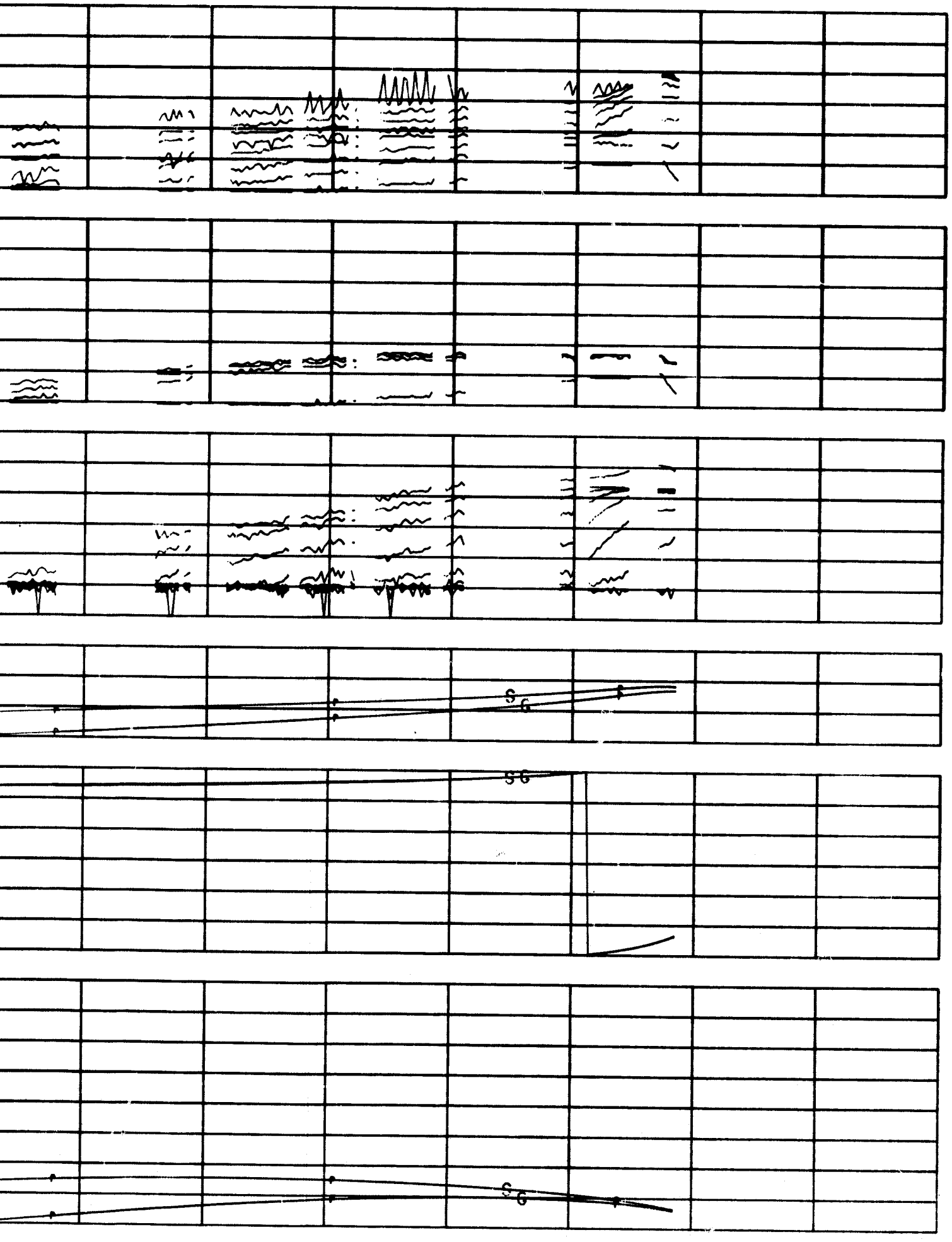
19 23

FOLDOUT FRAME 3

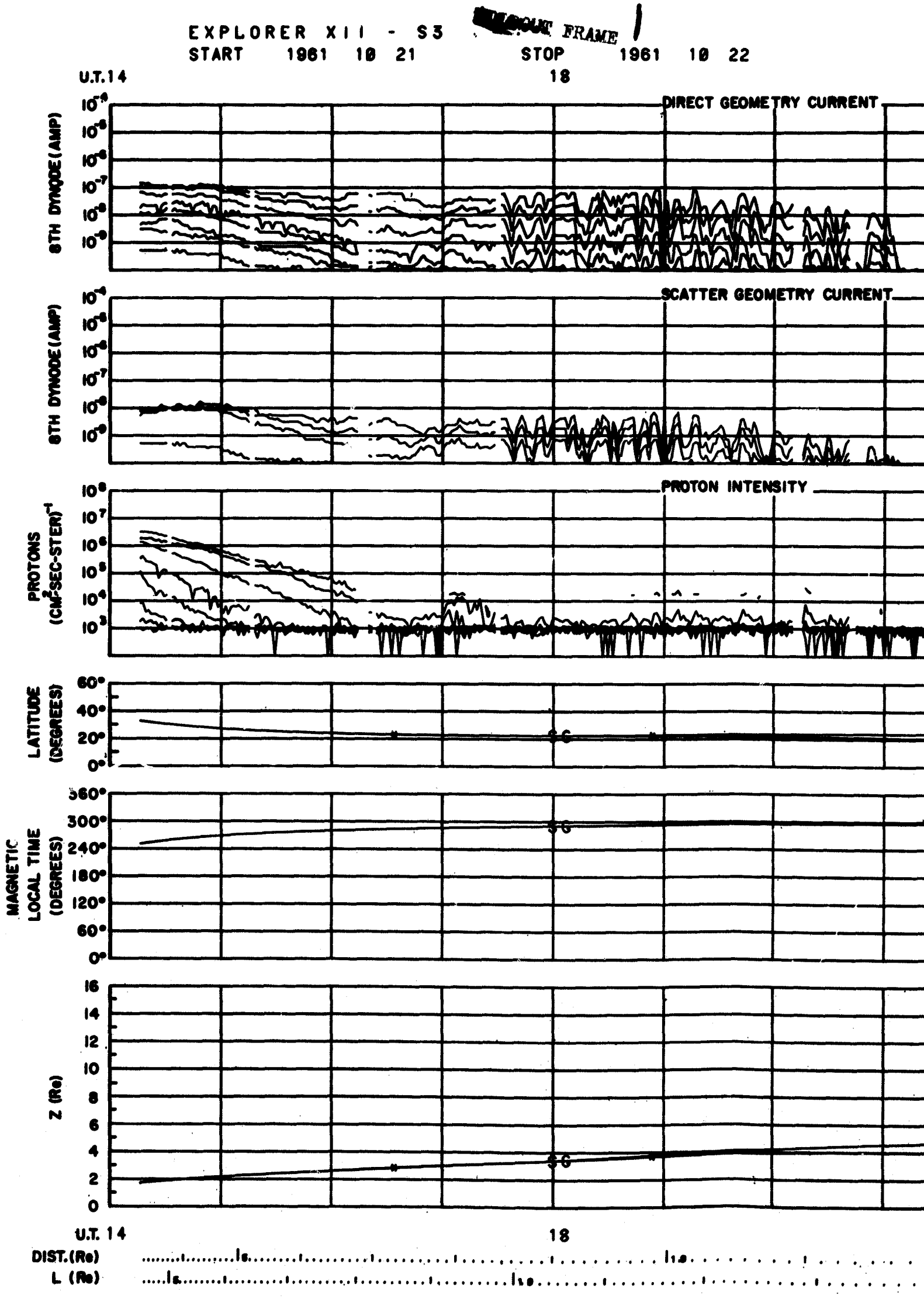


FOLDOUT FRAME 4

11 15

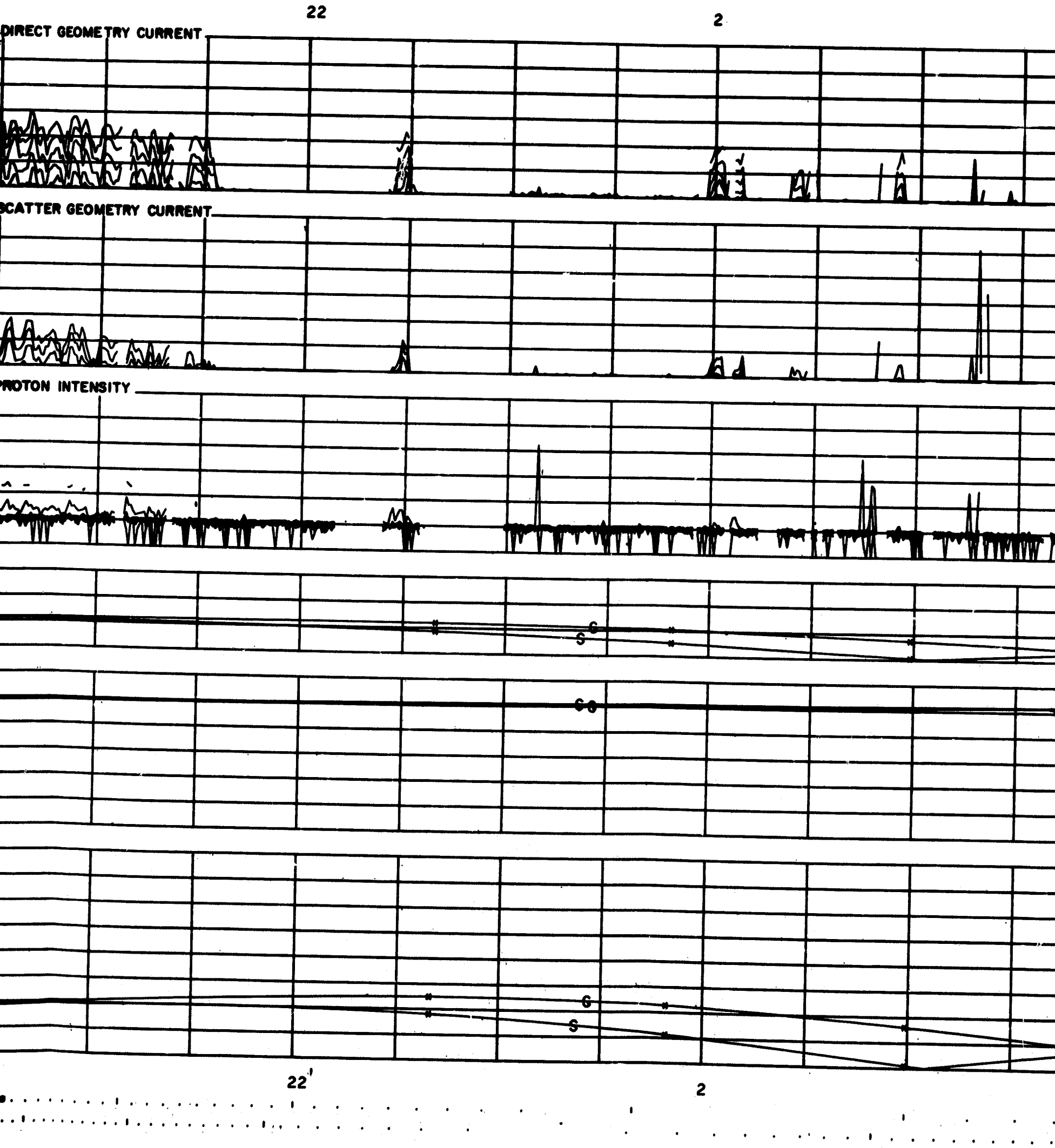


11 15

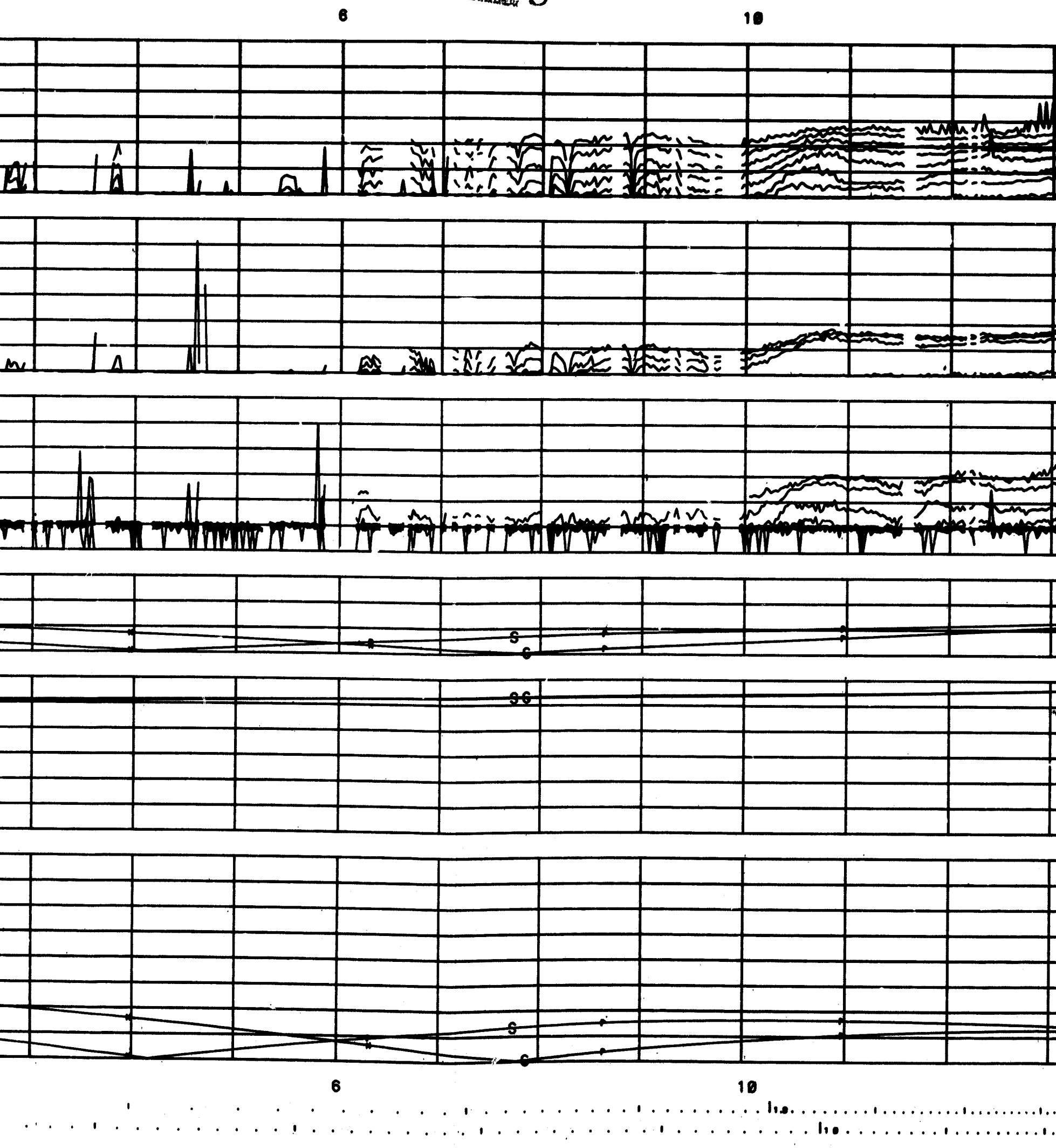

EXPLORER XII - S3
START 1961 10 21
STOP 1961 10 22
U.T. 14
18
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 14
18
DIST. (Re)
L (Re)

10 22

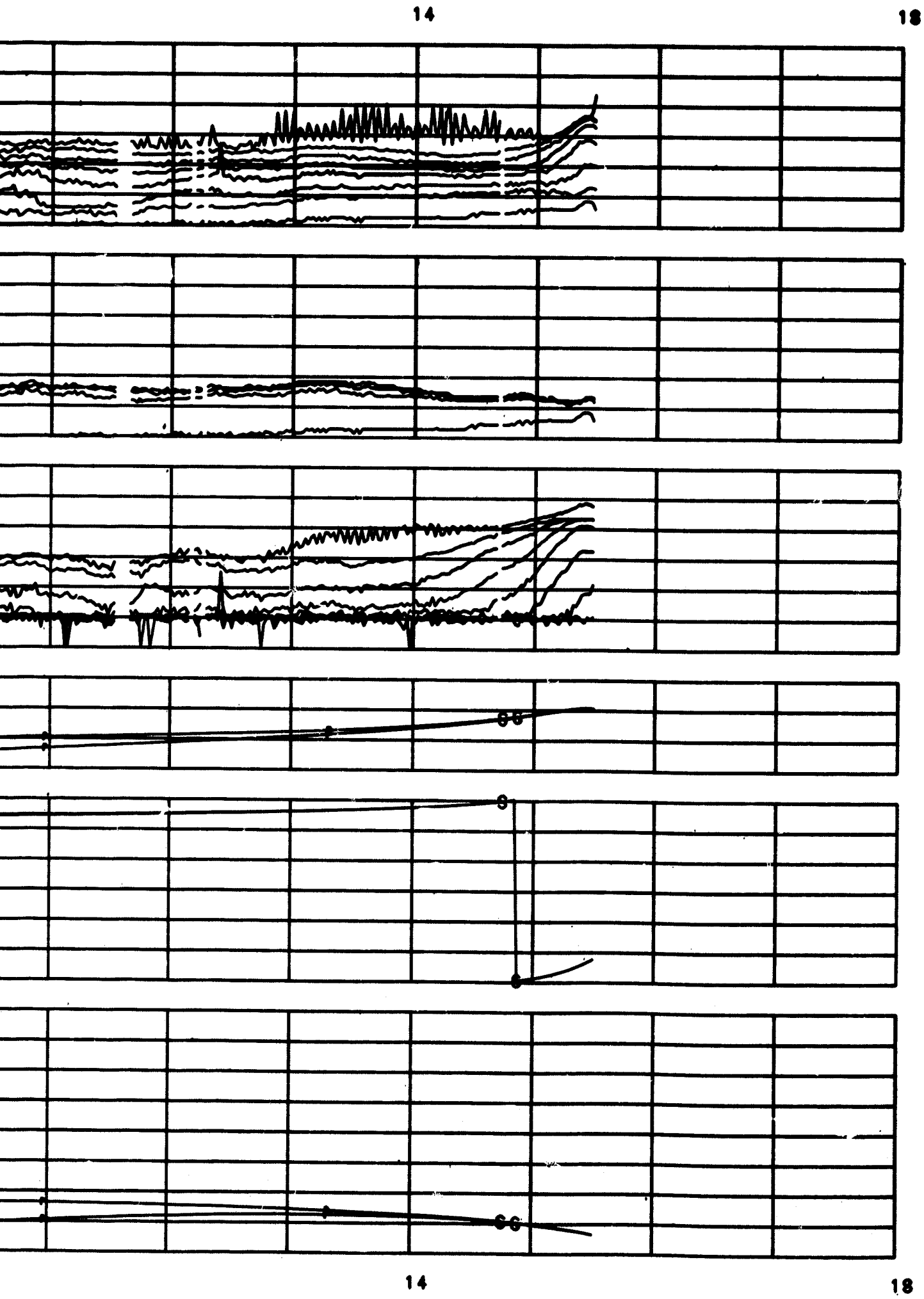
FOLDOUT FRAME 2

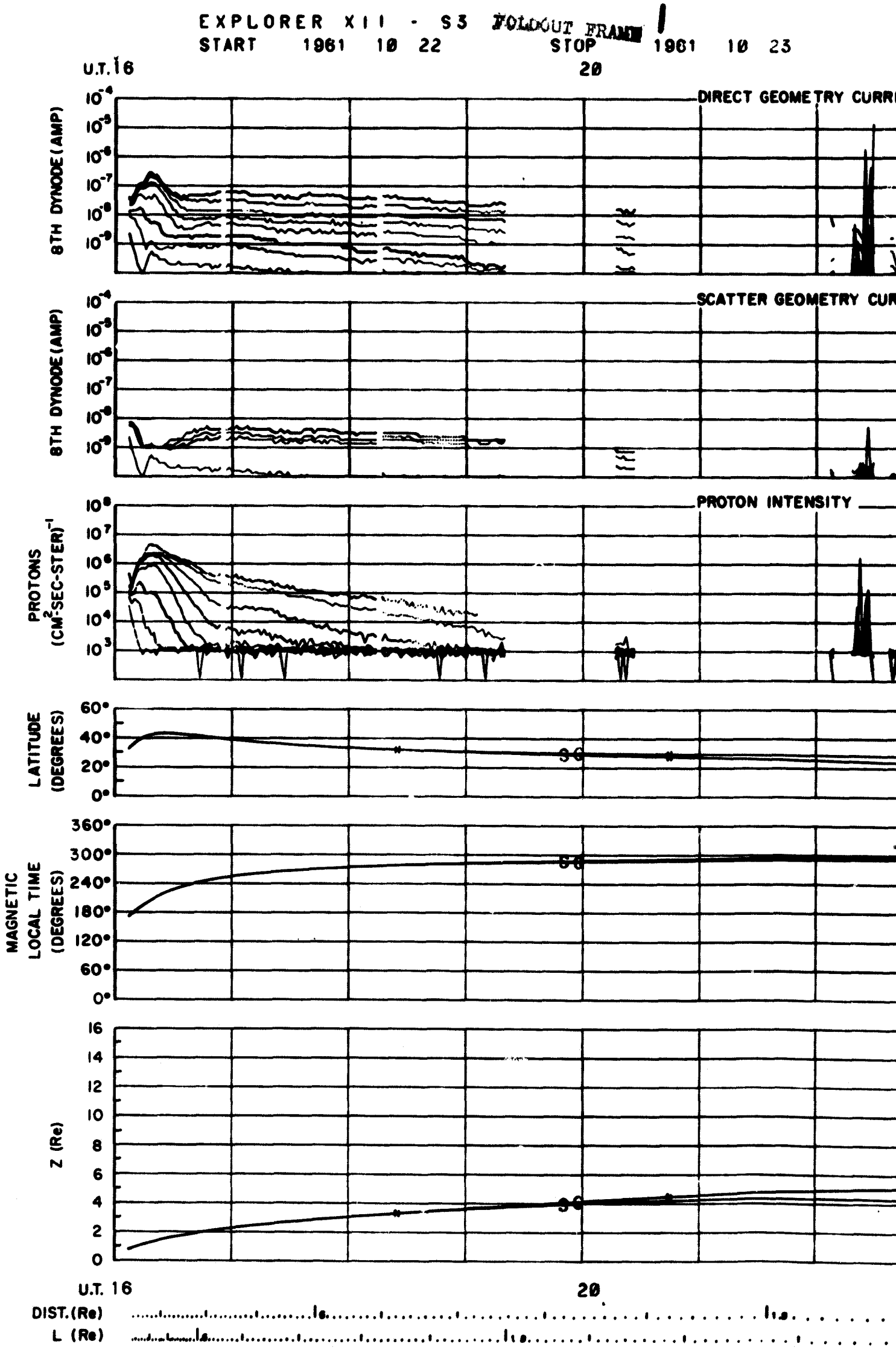


FRAME 3



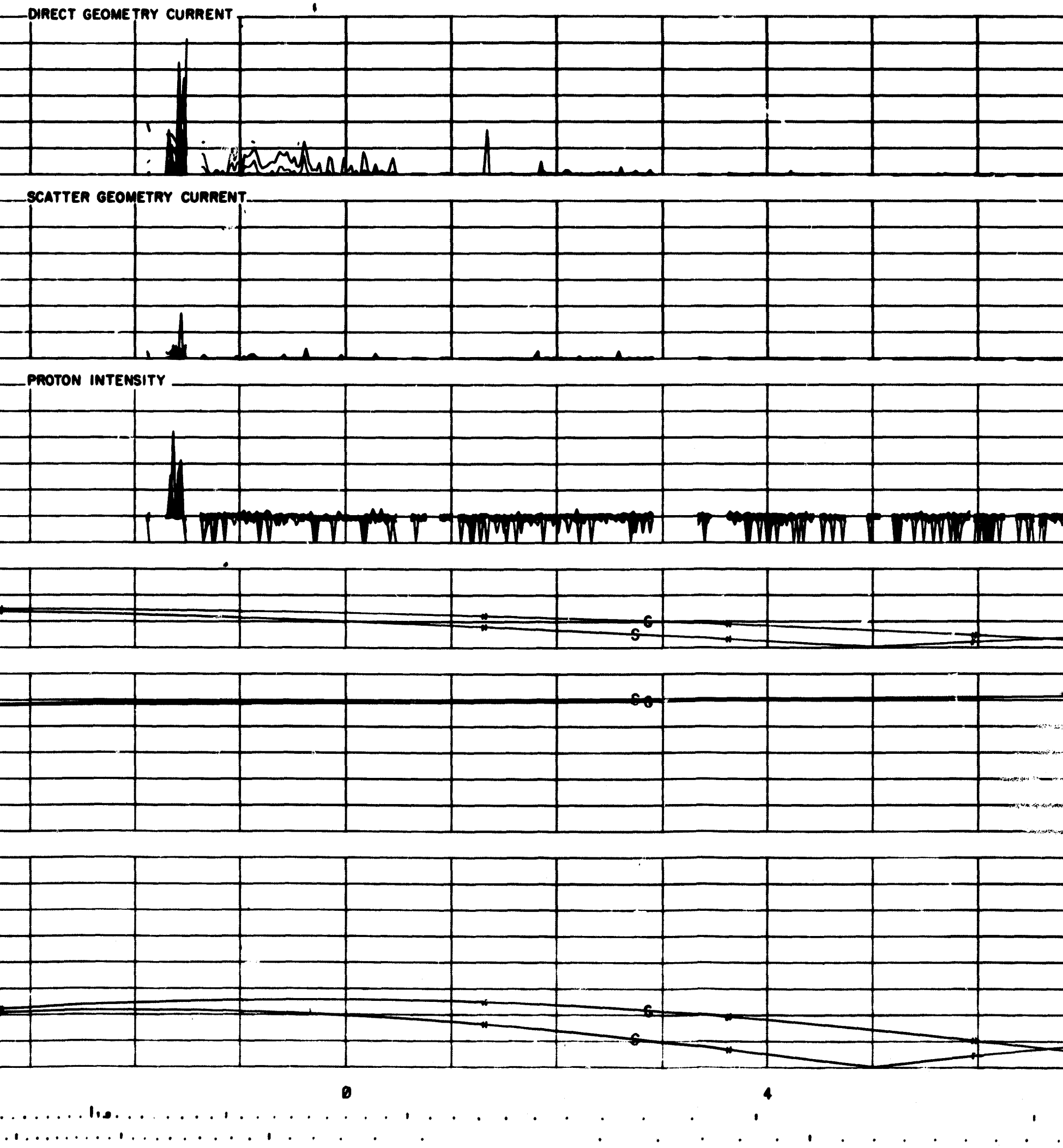
FOLDOUT FRAME 1



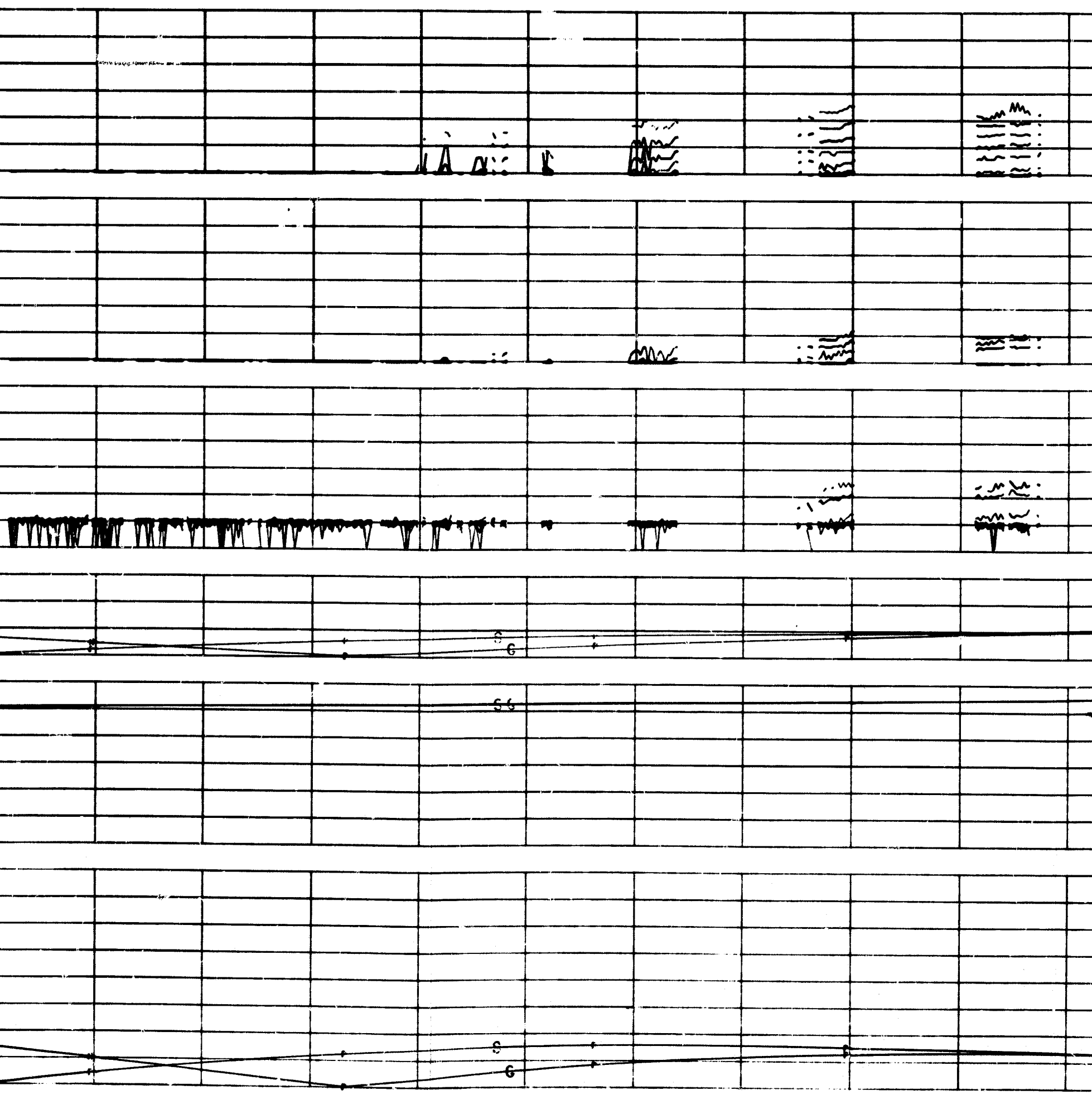

EXPLORER XII - S3
START 1961 10 22
STOP 1961 10 23
U.T. 16
20
DIRECT GEOMETRY CURR
8TH DYNODE (AMP)
SCATTER GEOMETRY CUR
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 16
20
DIST. (Re)
L (Re)

961 10 23

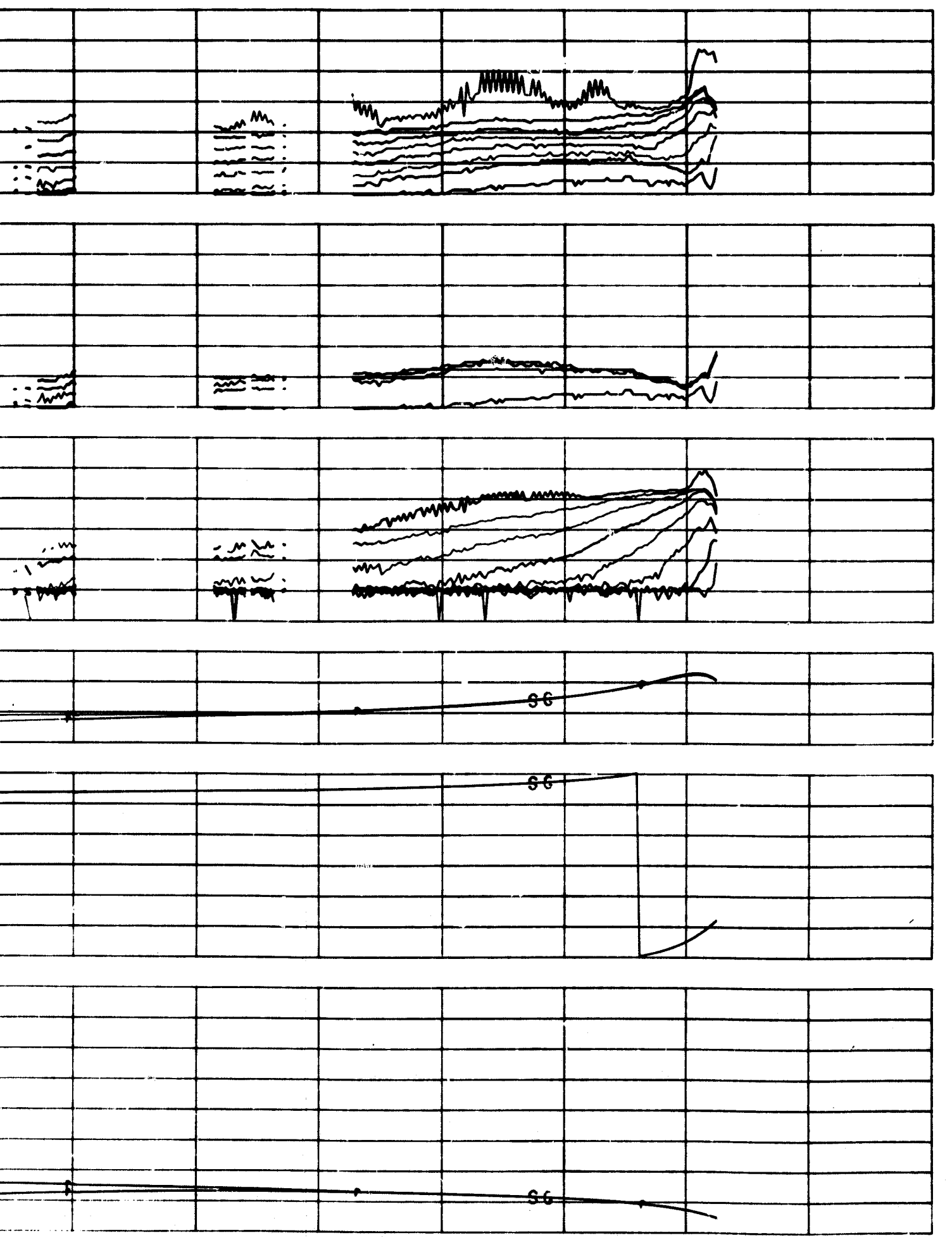
FOLDOUT FRAME 2

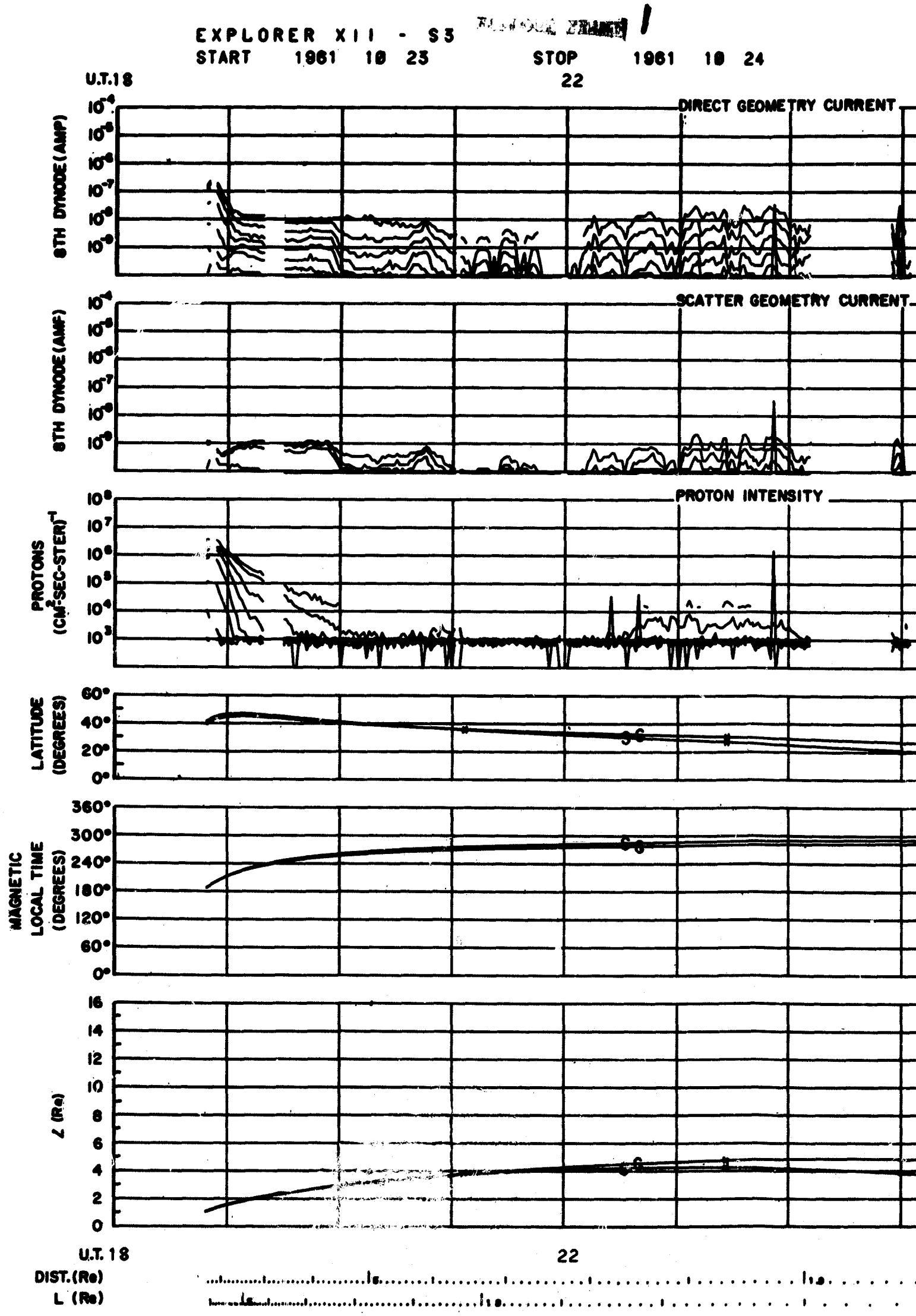


FOLDOUT FRAME 3



FOLDOUT FRAME 4




EXPLORER XII - S3
START 1961 10 23
STOP 1961 10 24
U.T.18
22
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
L (Re)
U.T. 18
22
DIST. (Re)
L (Re)

1 10 24

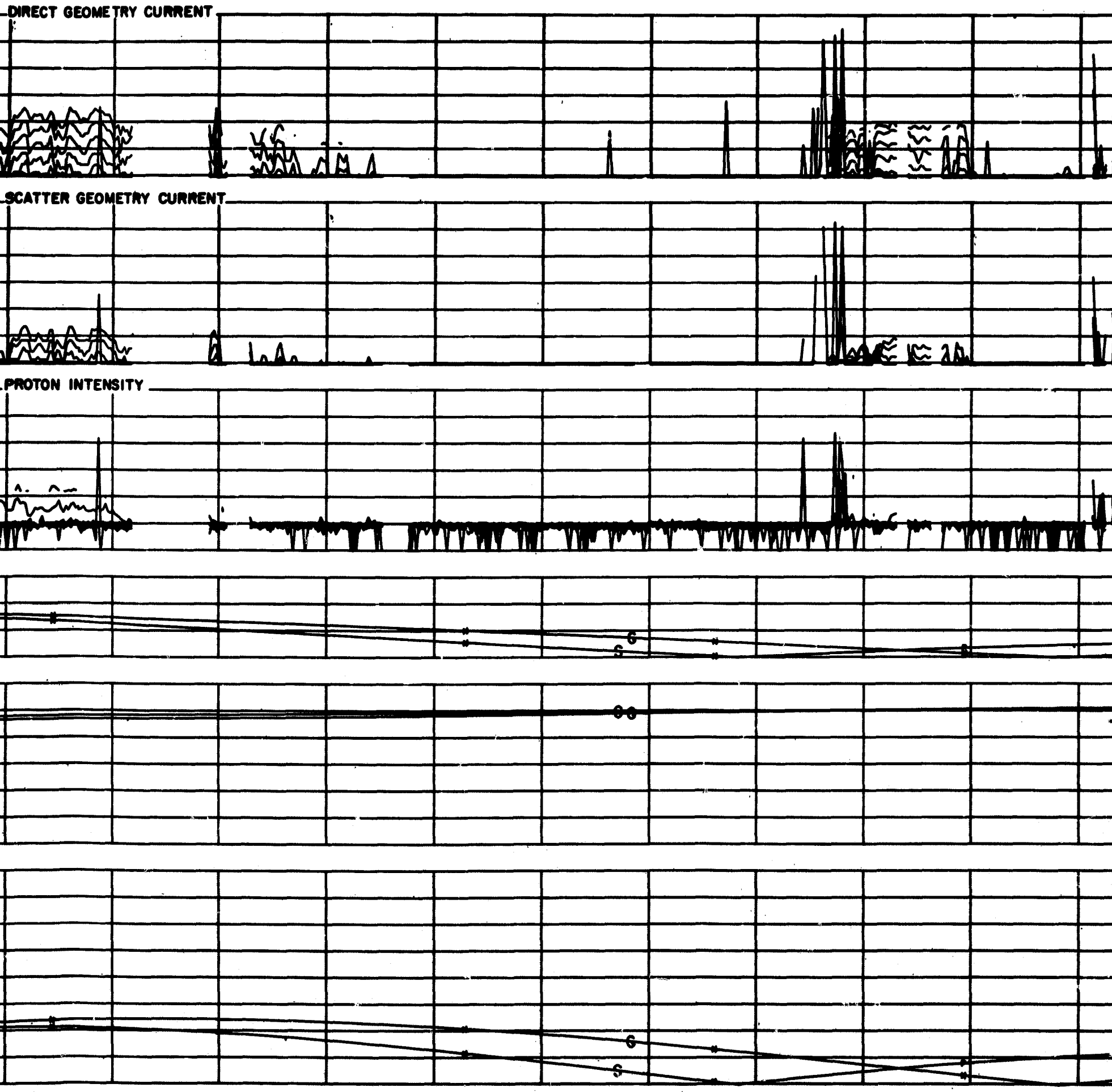
NOT DOUT FRAME 2

6

DIRECT GEOMETRY CURRENT

SCATTER GEOMETRY CURRENT

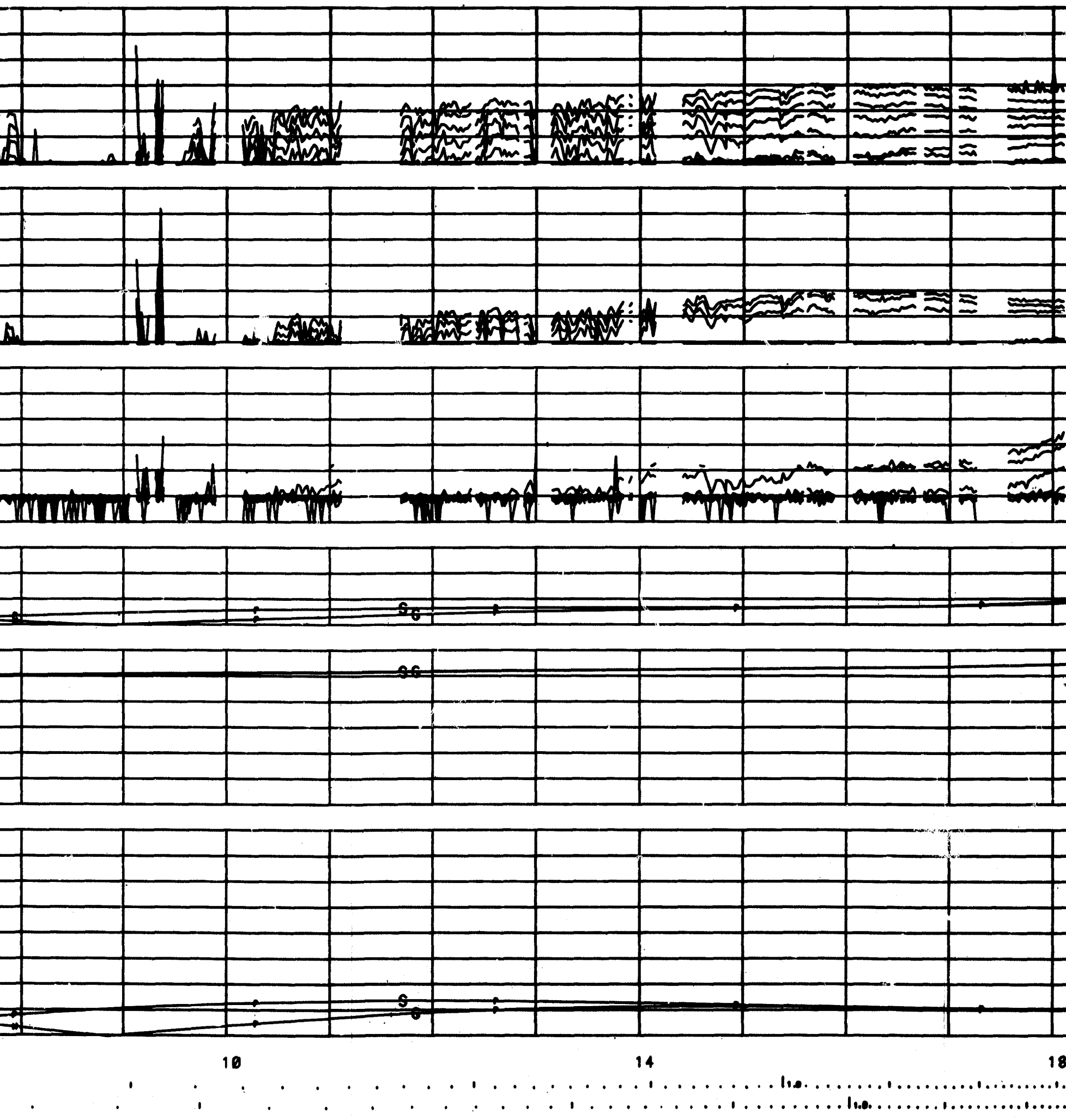
PROTON INTENSITY



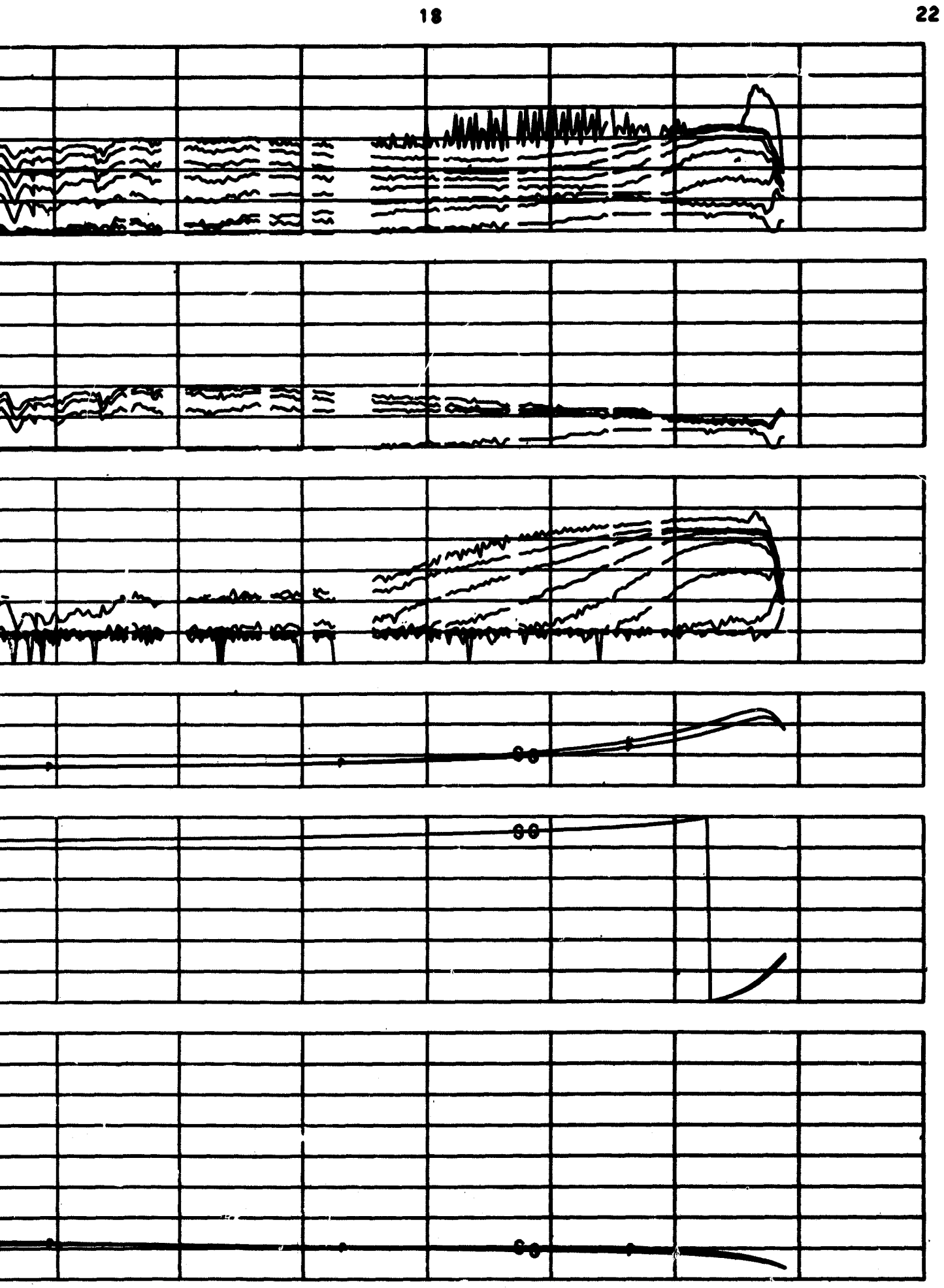
2

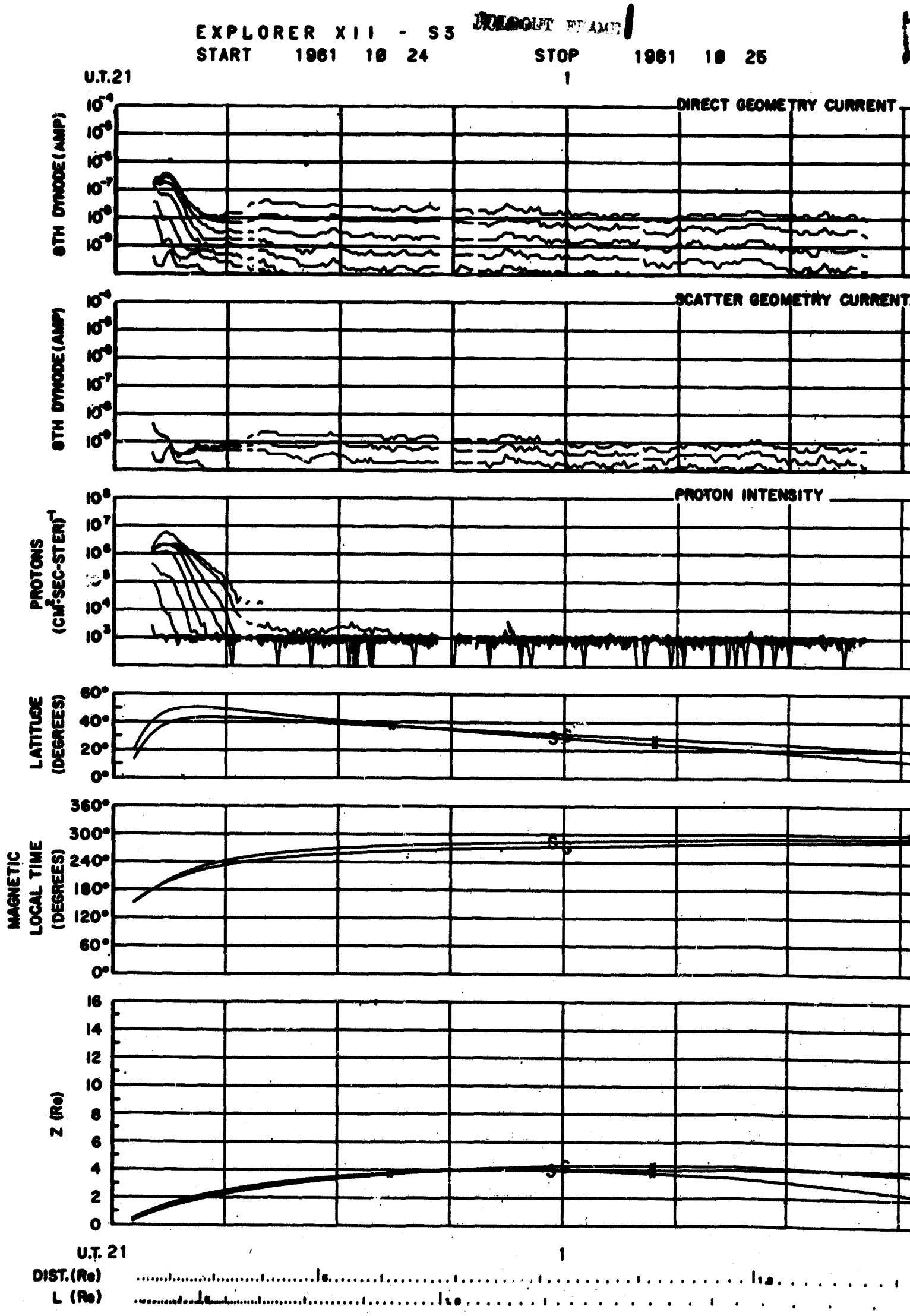
6

FOLDOUT FRAME 3



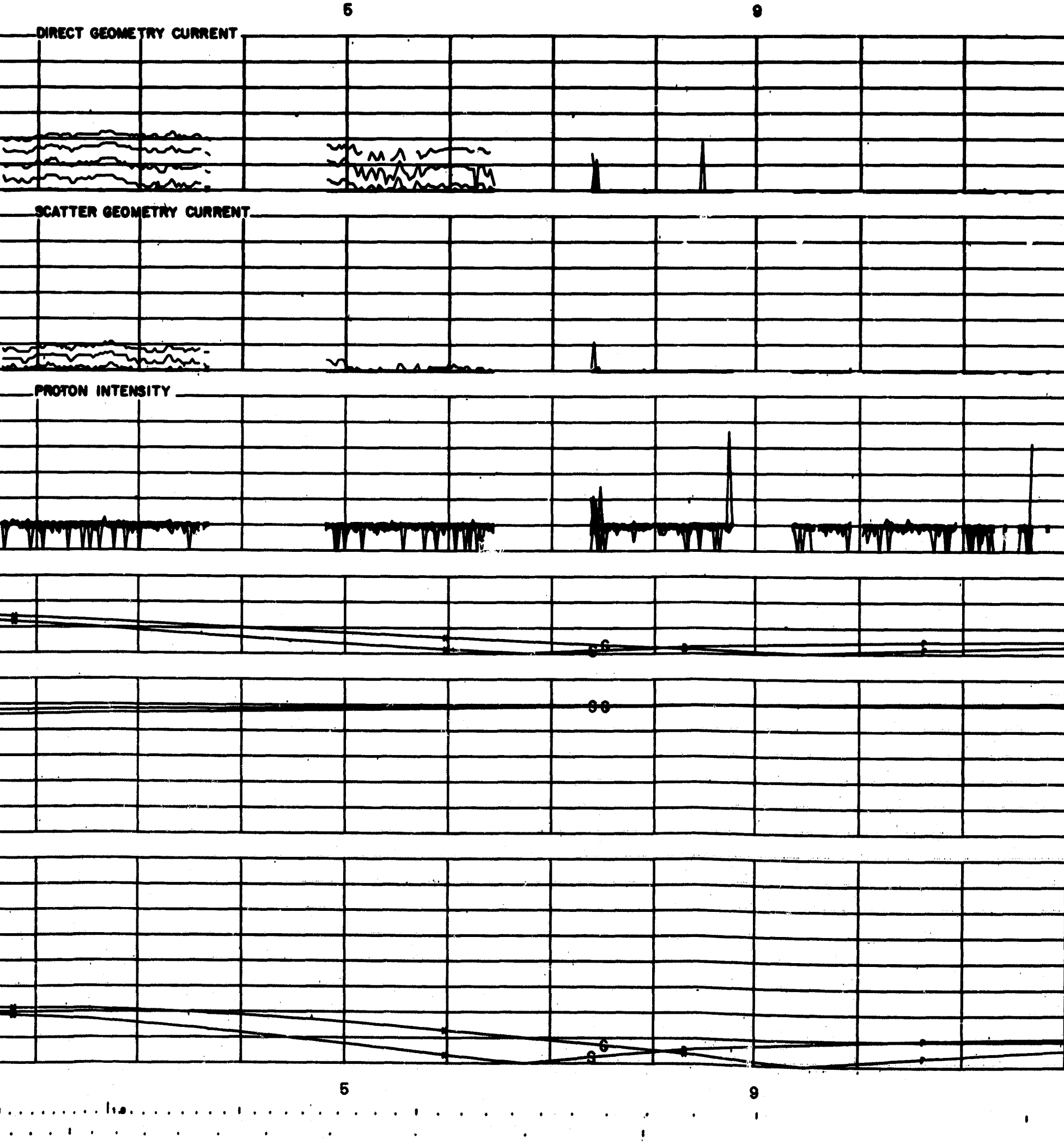
FOLDOUT FRAME 4



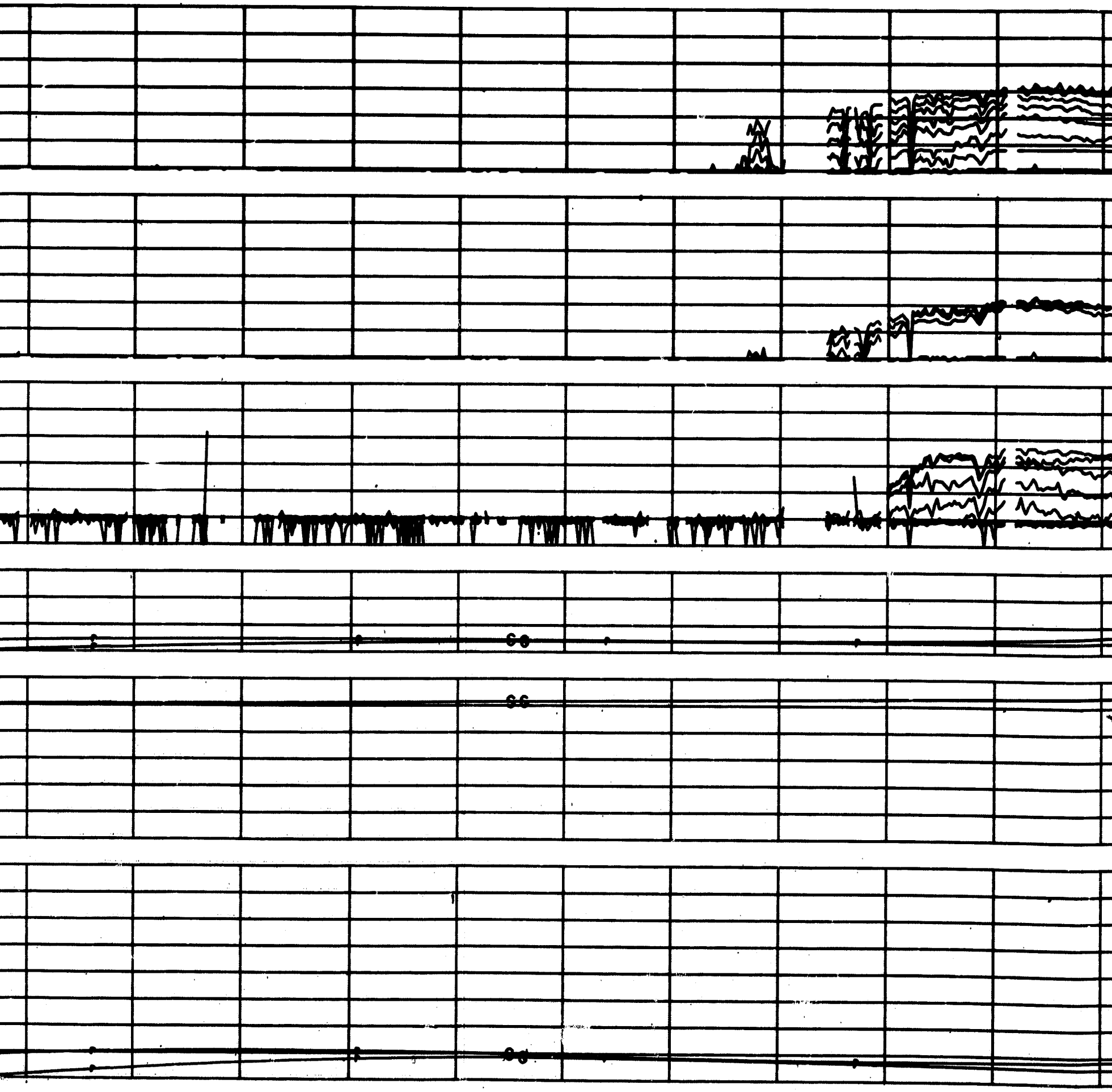

EXPLORER XII - S3
START 1961 10 24
STOP 1961 10 25
U.T.21
1
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 21
1
DIST. (Re)
L (Re)

961 10 25

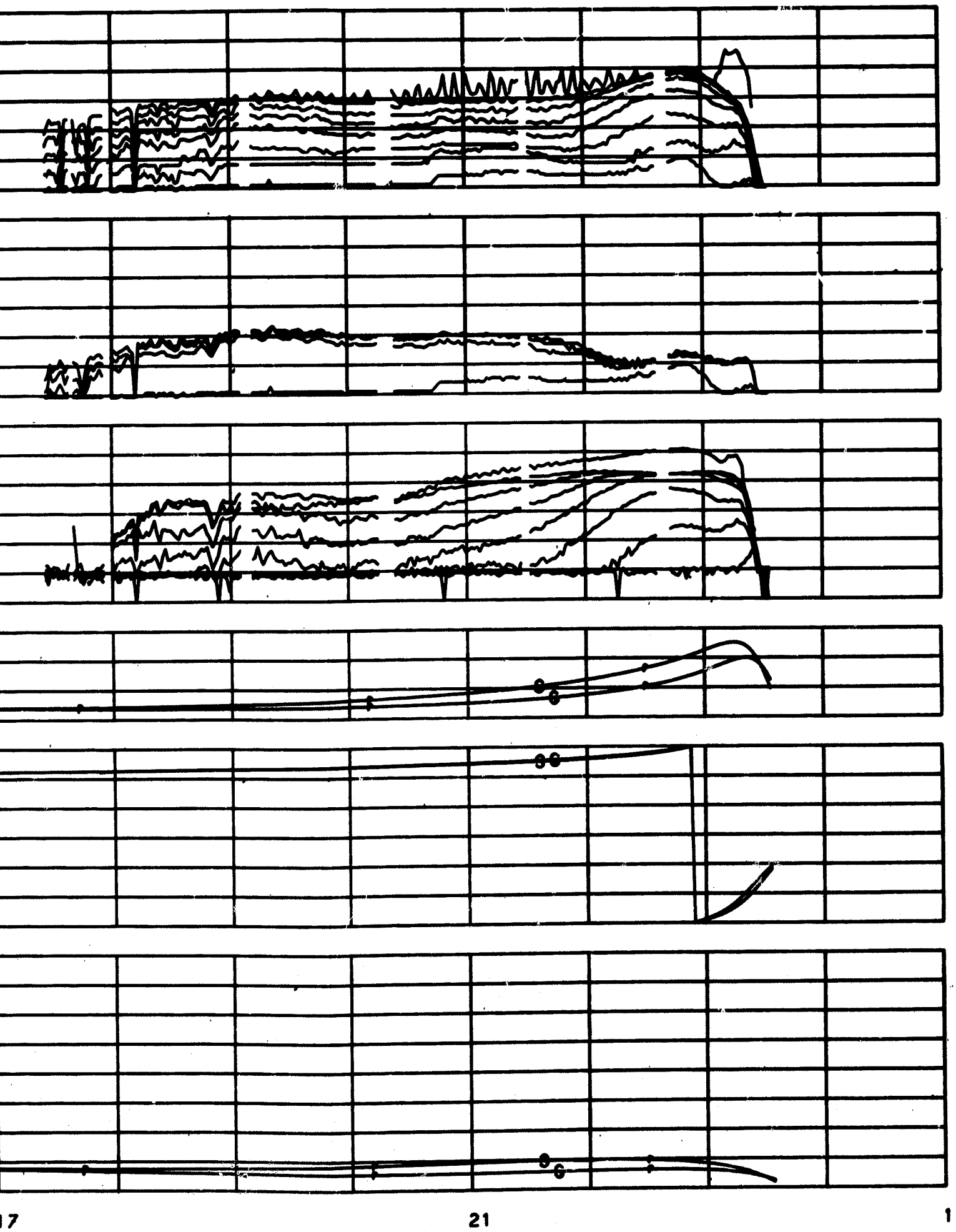
FRAME 2

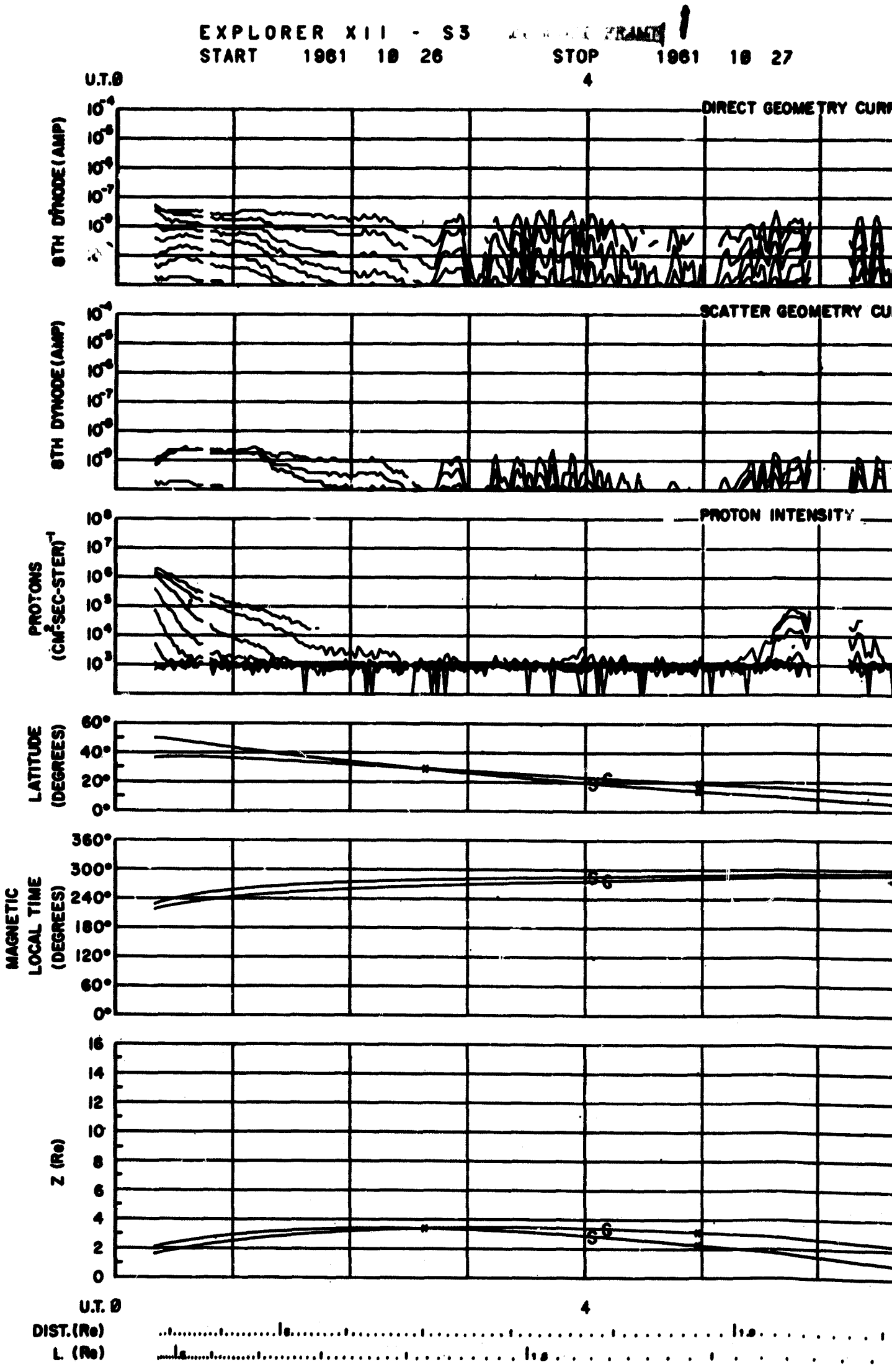


13 FOLDOUT FRAME 3 17



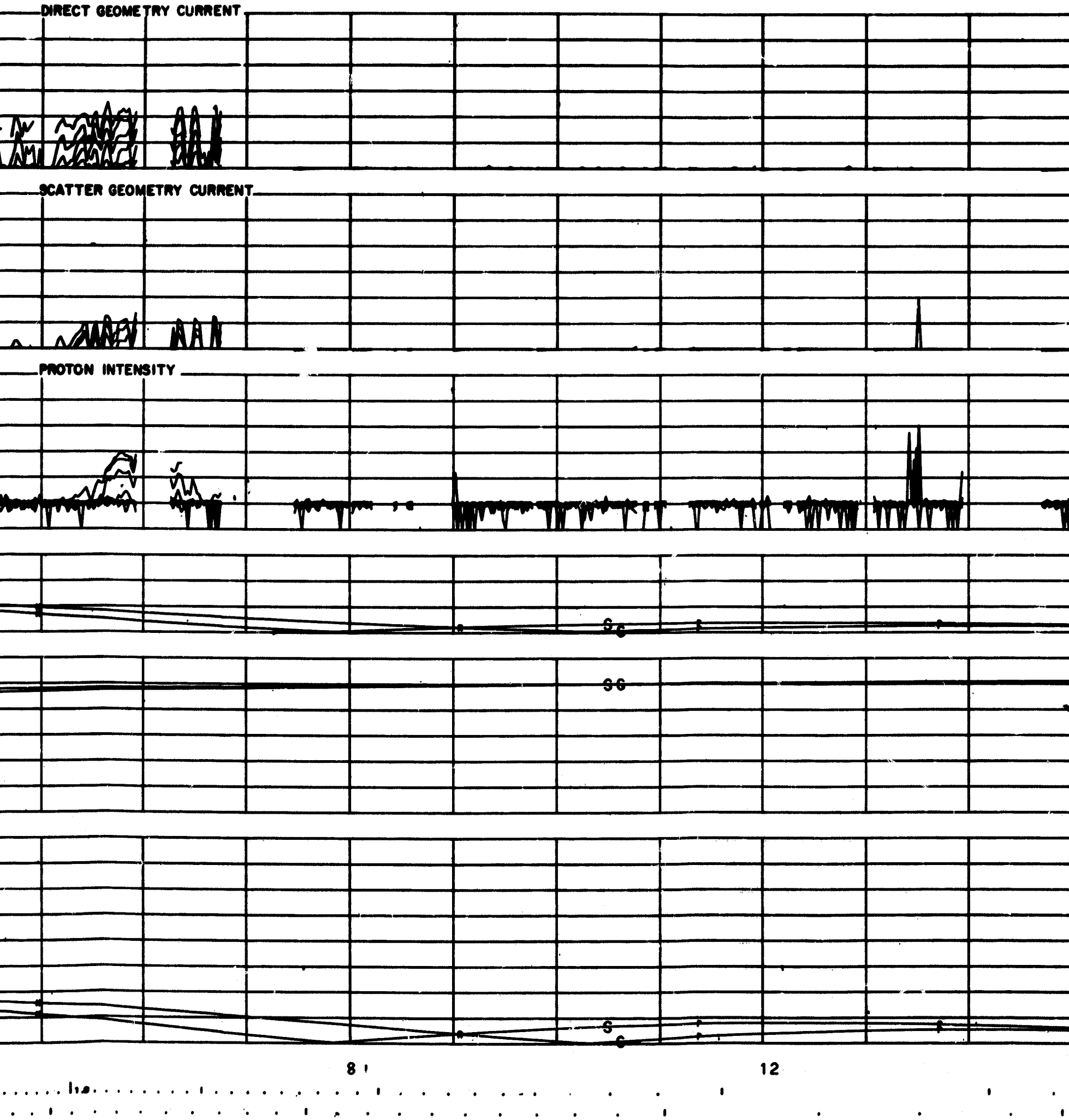
FOLDOUT FRAME 4

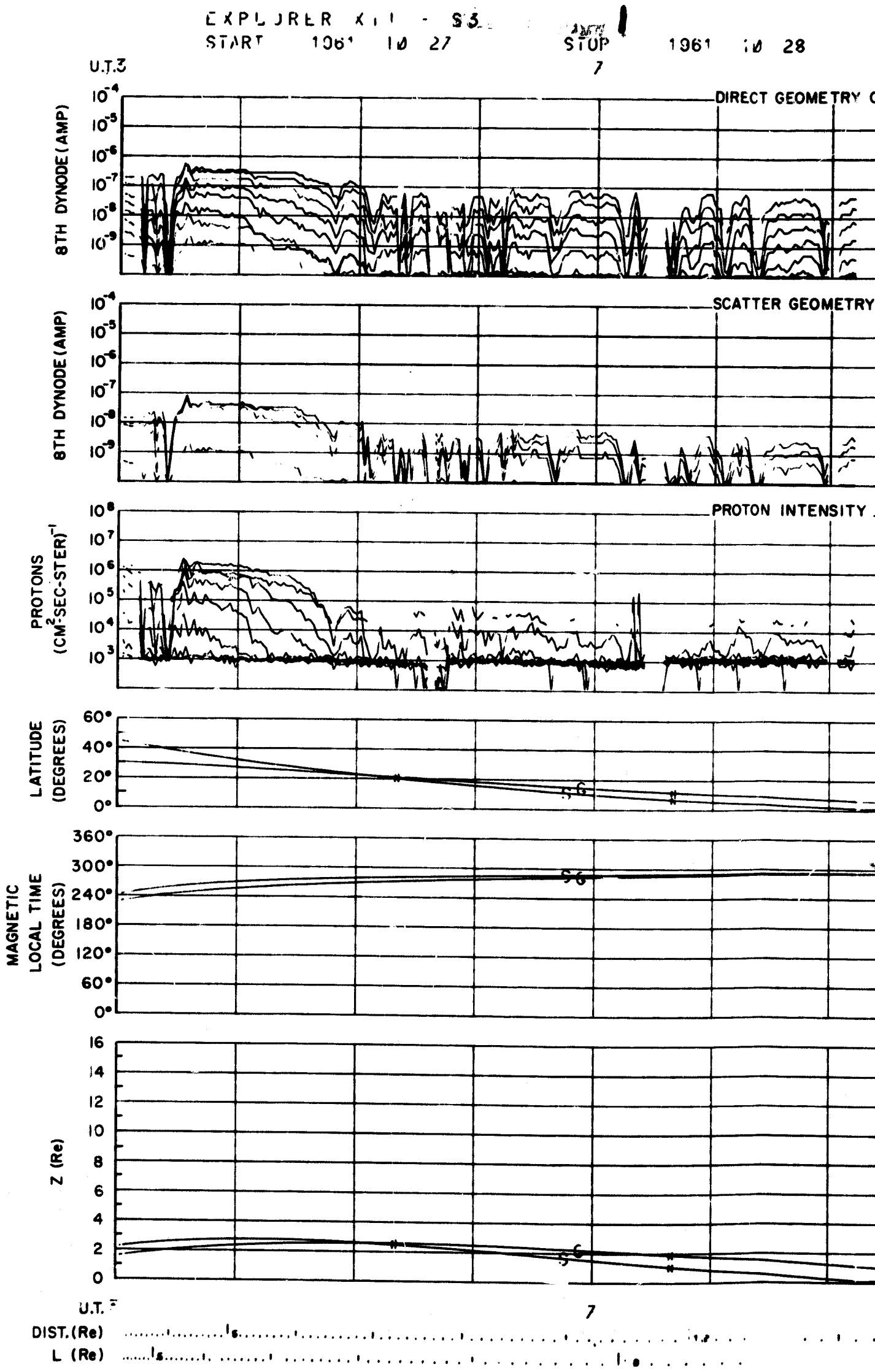



EXPLORER XII - S3
START 1961 10 26
STOP 1961 10 27
U.T.Ø
4
DIRECT GEOMETRY CURR
8TH DYNODE (AMP)
SCATTER GEOMETRY CU
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. Ø
4
DIST. (Re)
L. (Re)

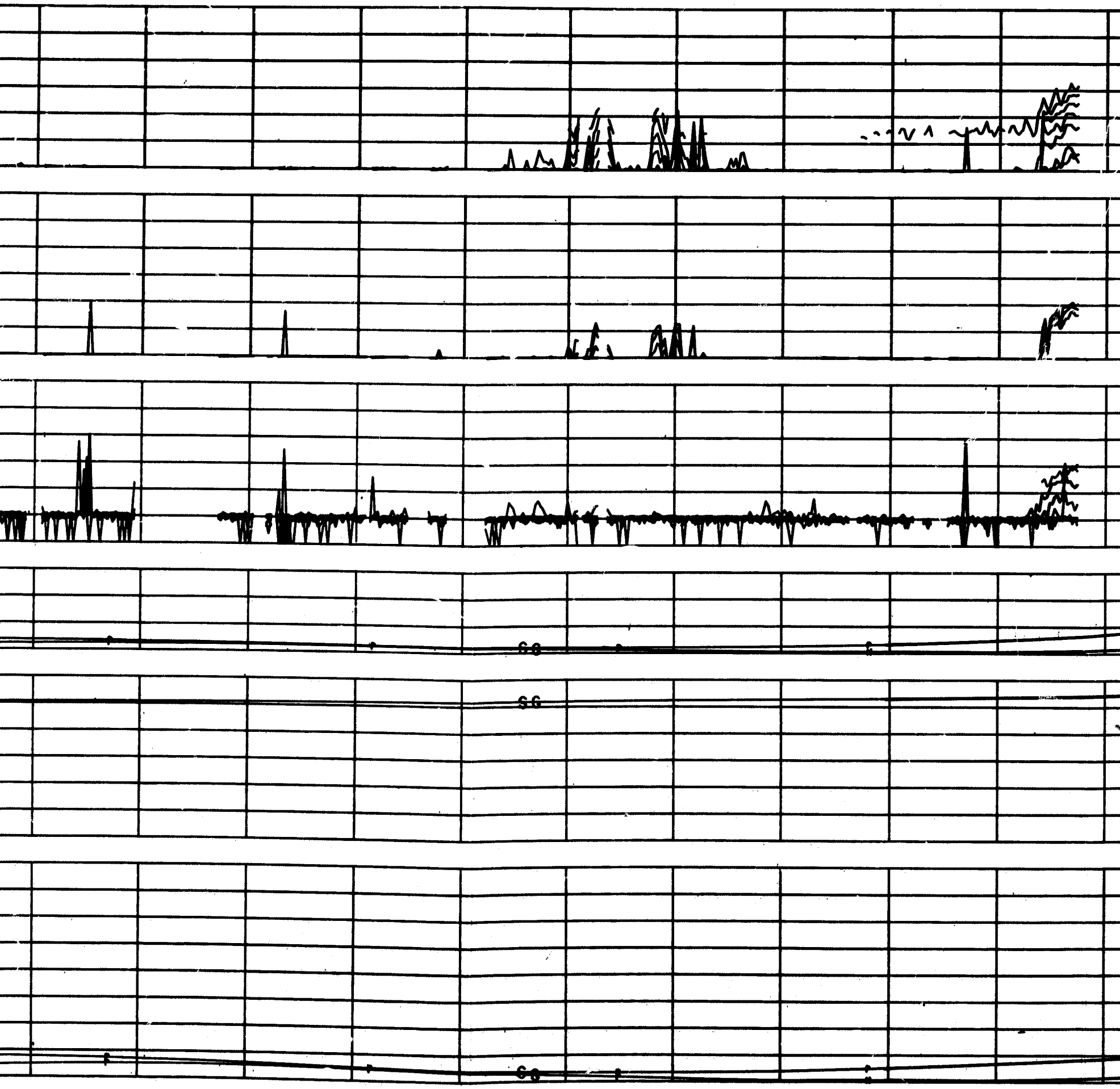
1961 19 27

8 FOLDOUT FRAME 2 12

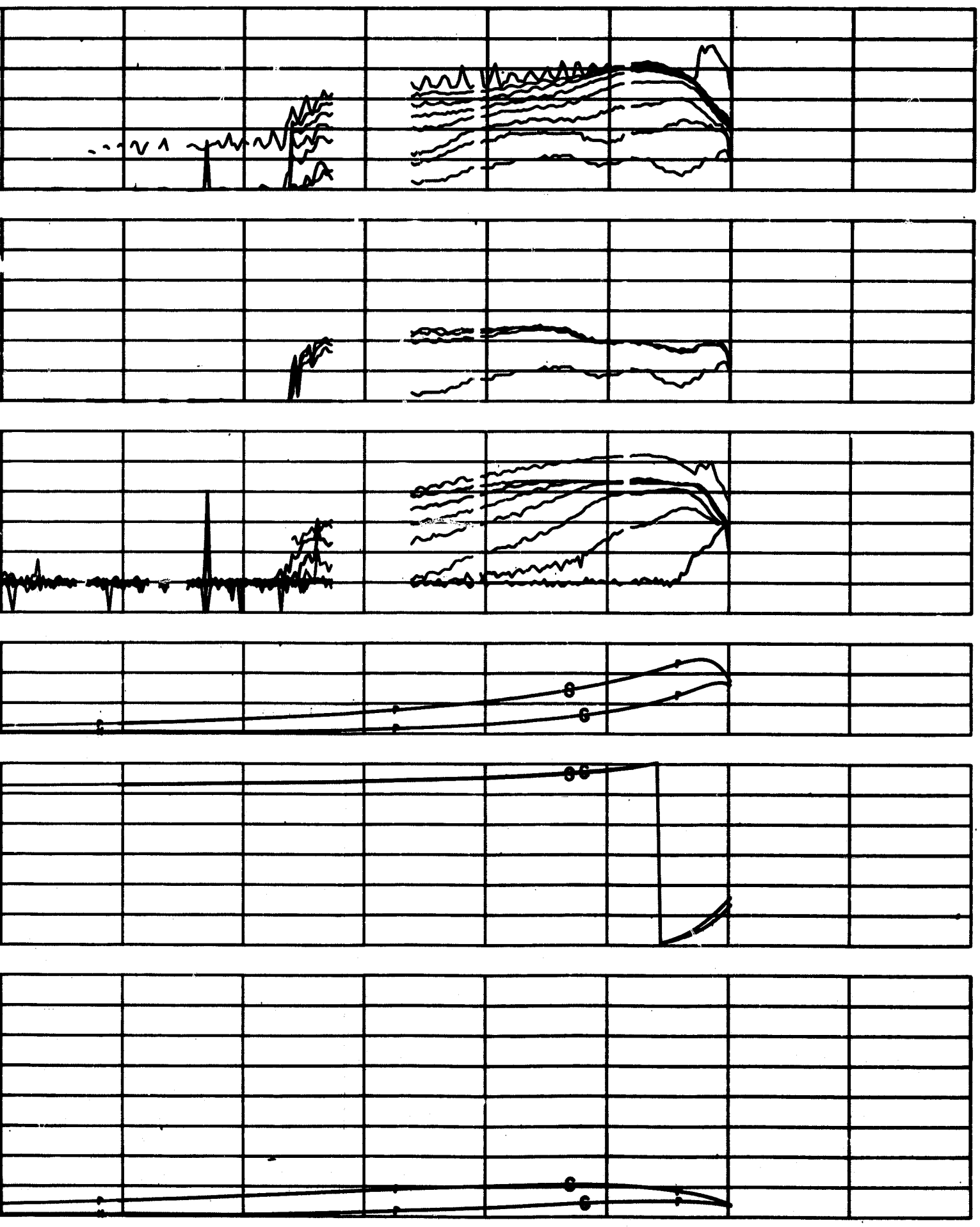


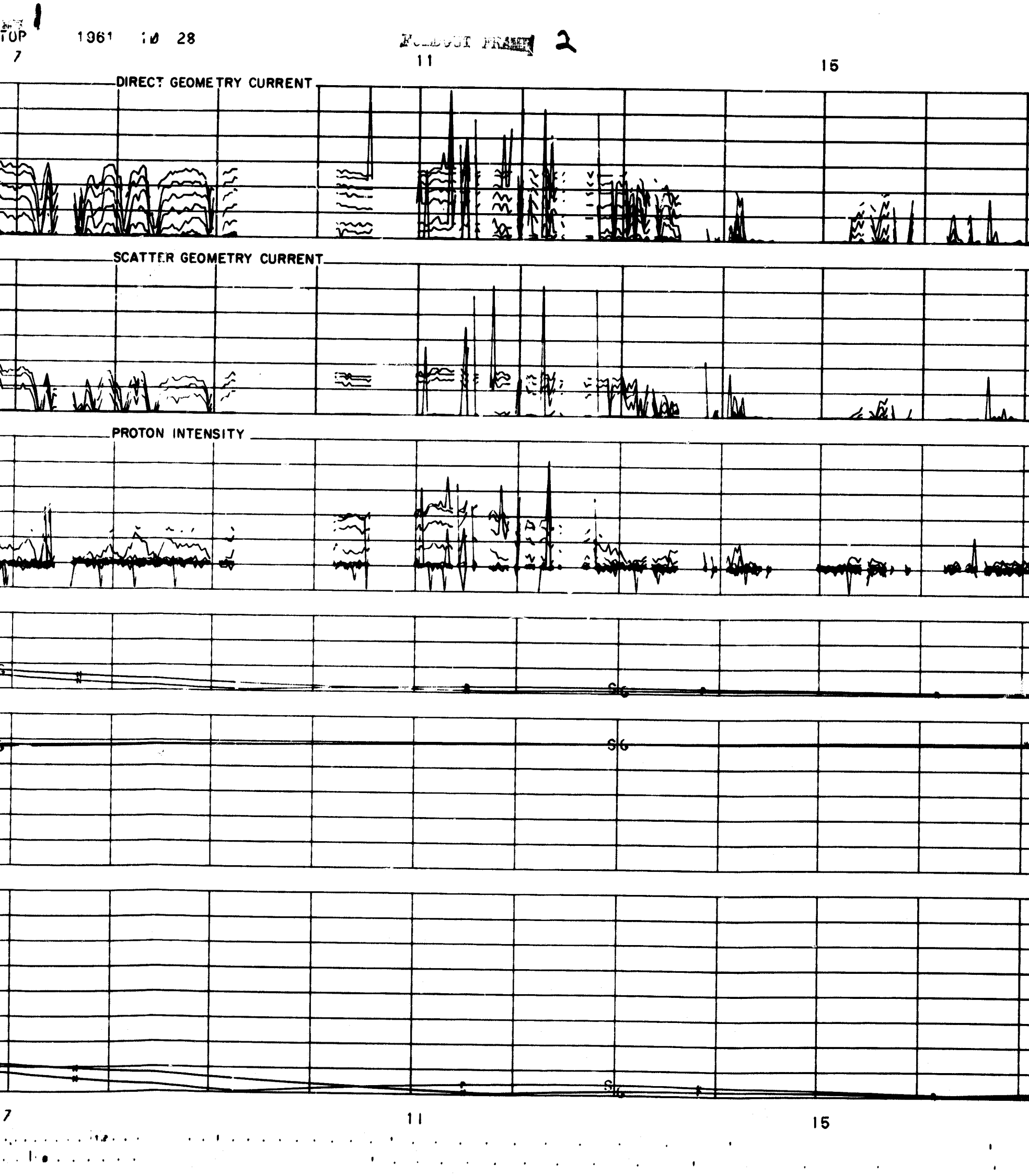

EXPLORER XII - S3
START 1961 10 27
STOP 1961 10 28
U.T.
DIRECT GEOMETRY
8TH DYNODE (AMP)
SCATTER GEOMETRY
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
DIST. (Re)
L (Re)

16 FOLDOUT FRAME 3 20

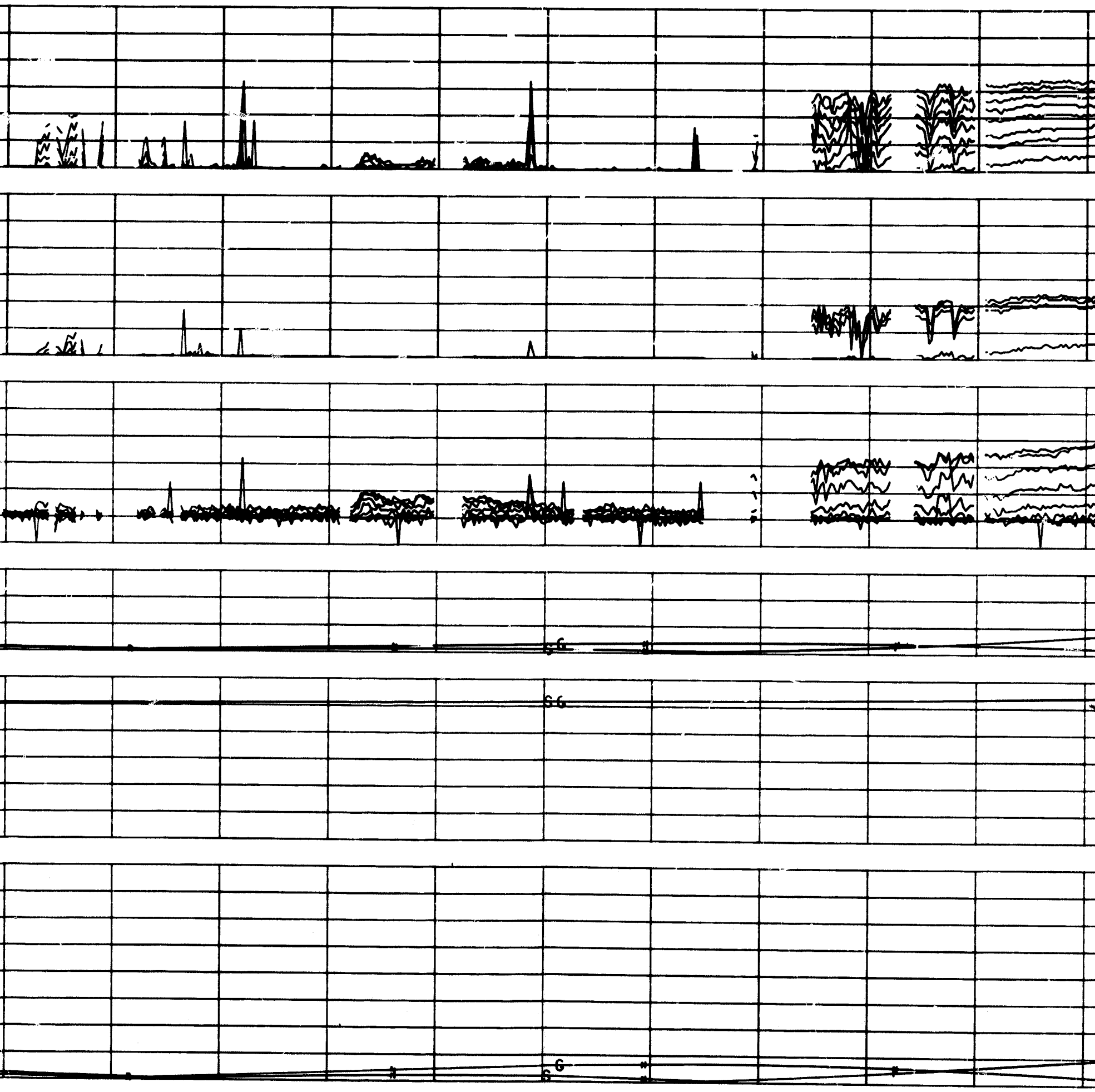


FOLDOUT FRAME 4

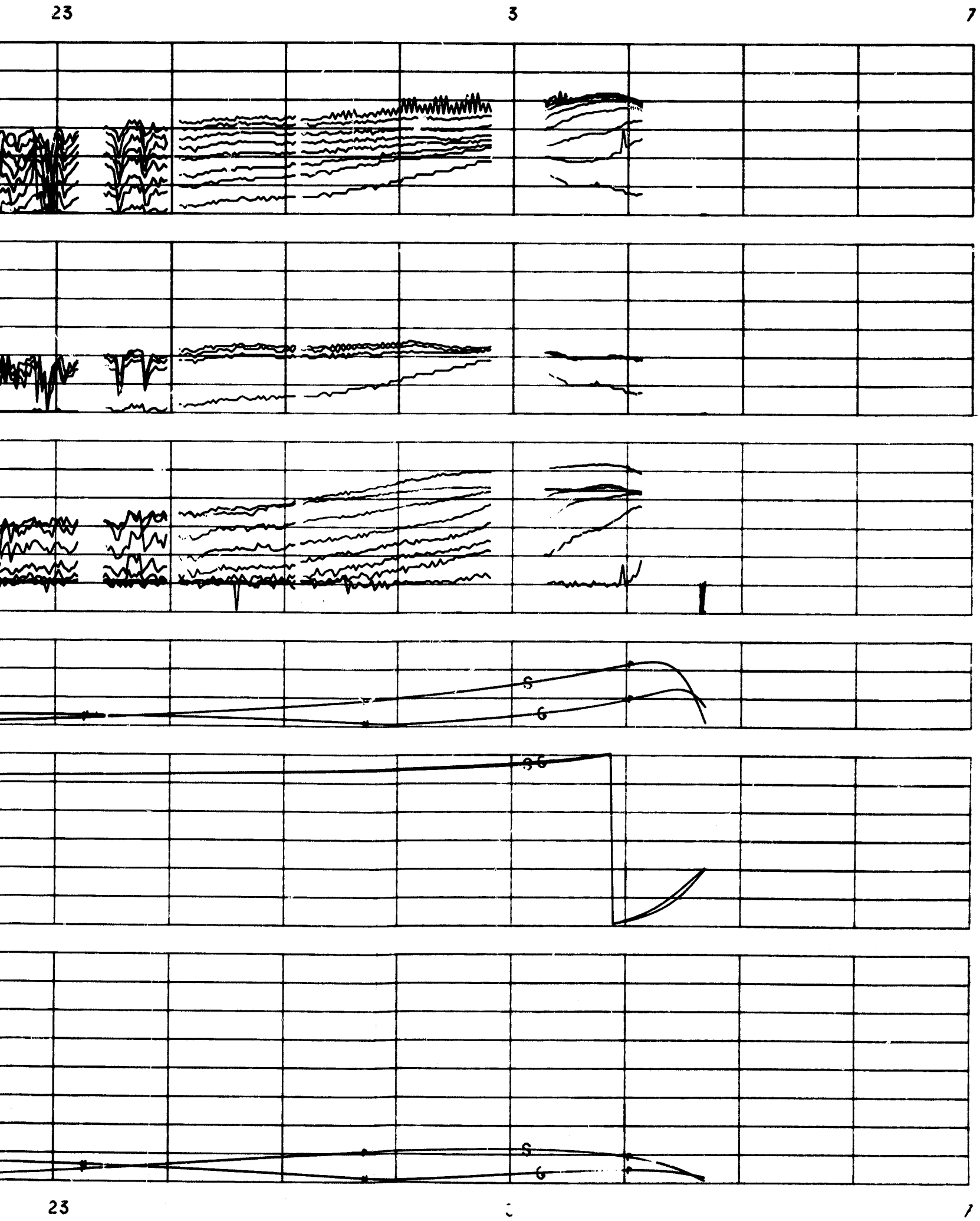


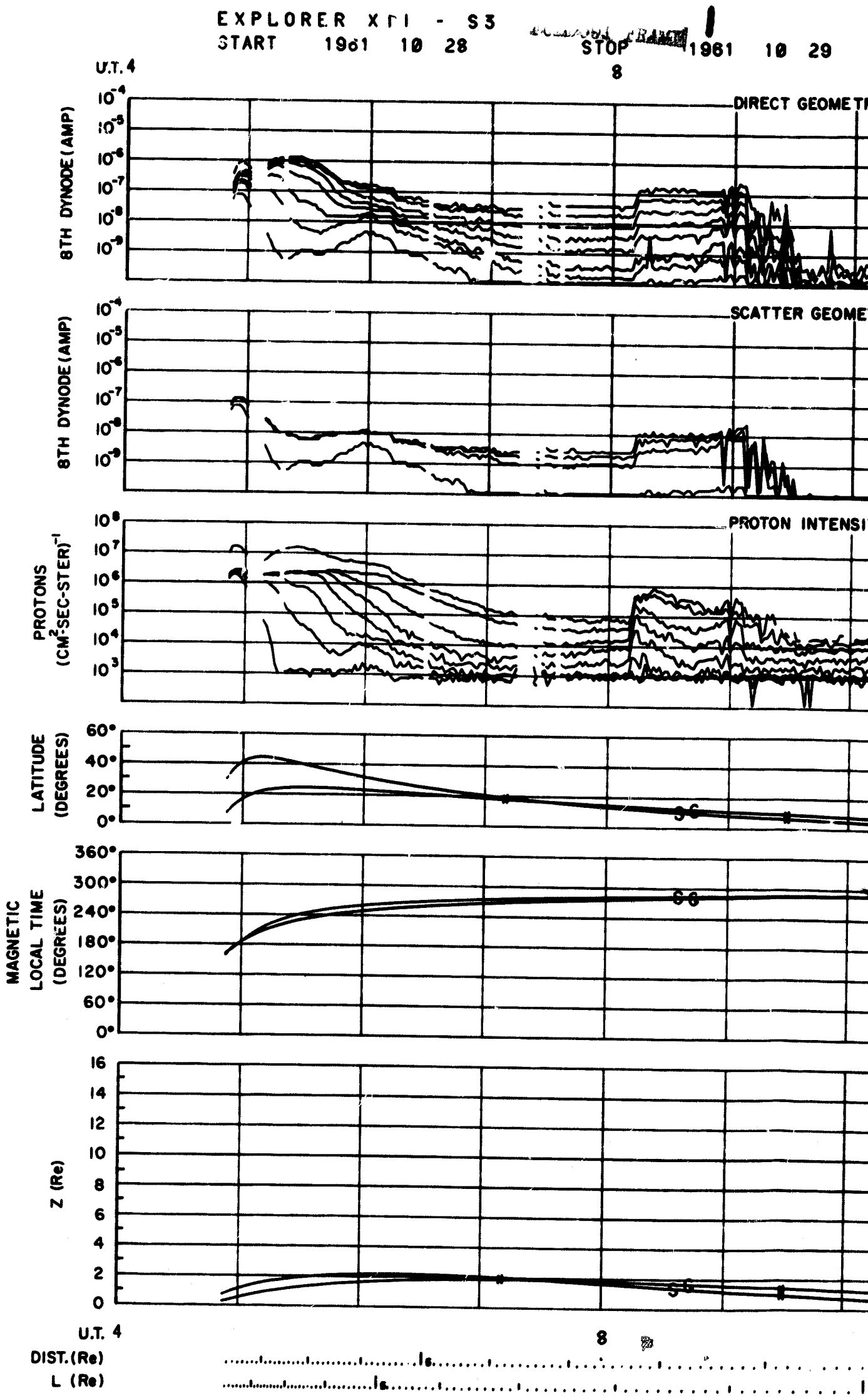

1
TOP
1961 10 28
FOLDOUT FRAME 2
7
11
15
DIRECT GEOMETRY CURRENT
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
S6
S6
S6
7
11
15

FOLDOUT FRAME 3



FOLDOUT FRAME 4




EXPLORER XII - S3
START 1961 10 28
STOP 1961 10 29
U.T. 4
8
DIRECT GEOMETRY
8TH DYNODE (AMP)
SCATTER GEOMETRY
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
DIST. (Re)
L (Re)

1 10 29

FOLDOUT FRAME 2

12 16

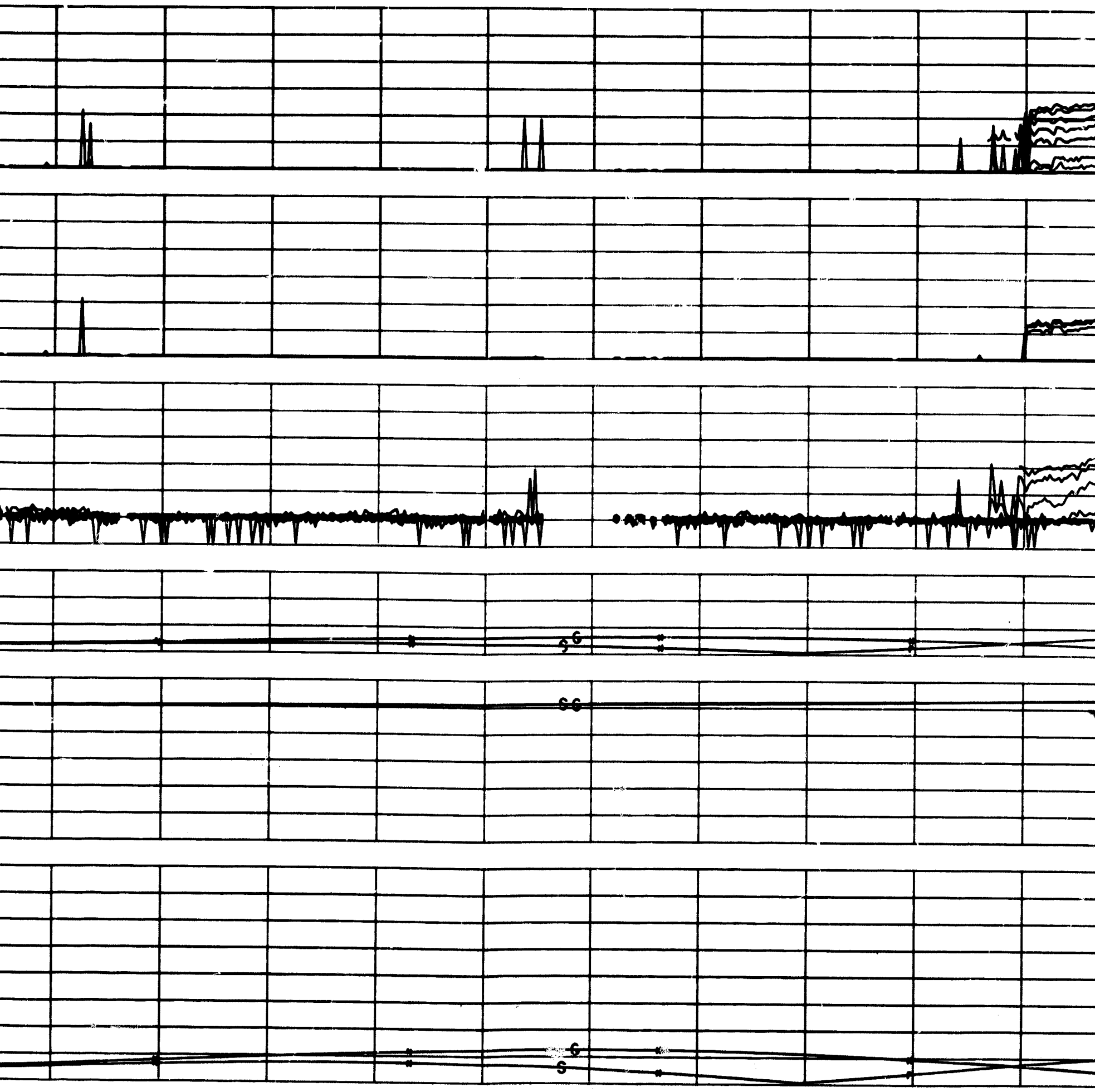
DIRECT GEOMETRY CURRENT

SCATTER GEOMETRY CURRENT

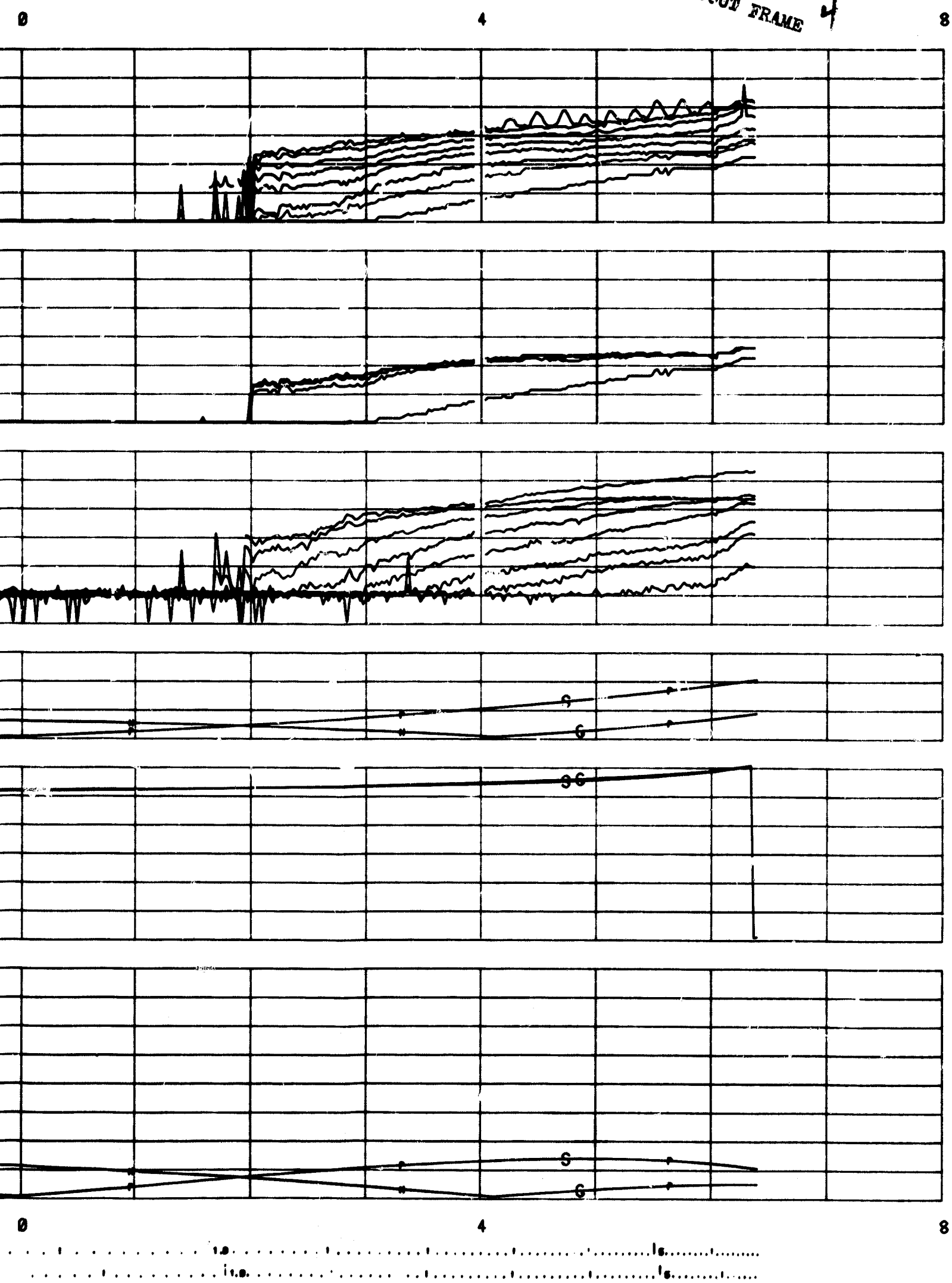
PROTON INTENSITY

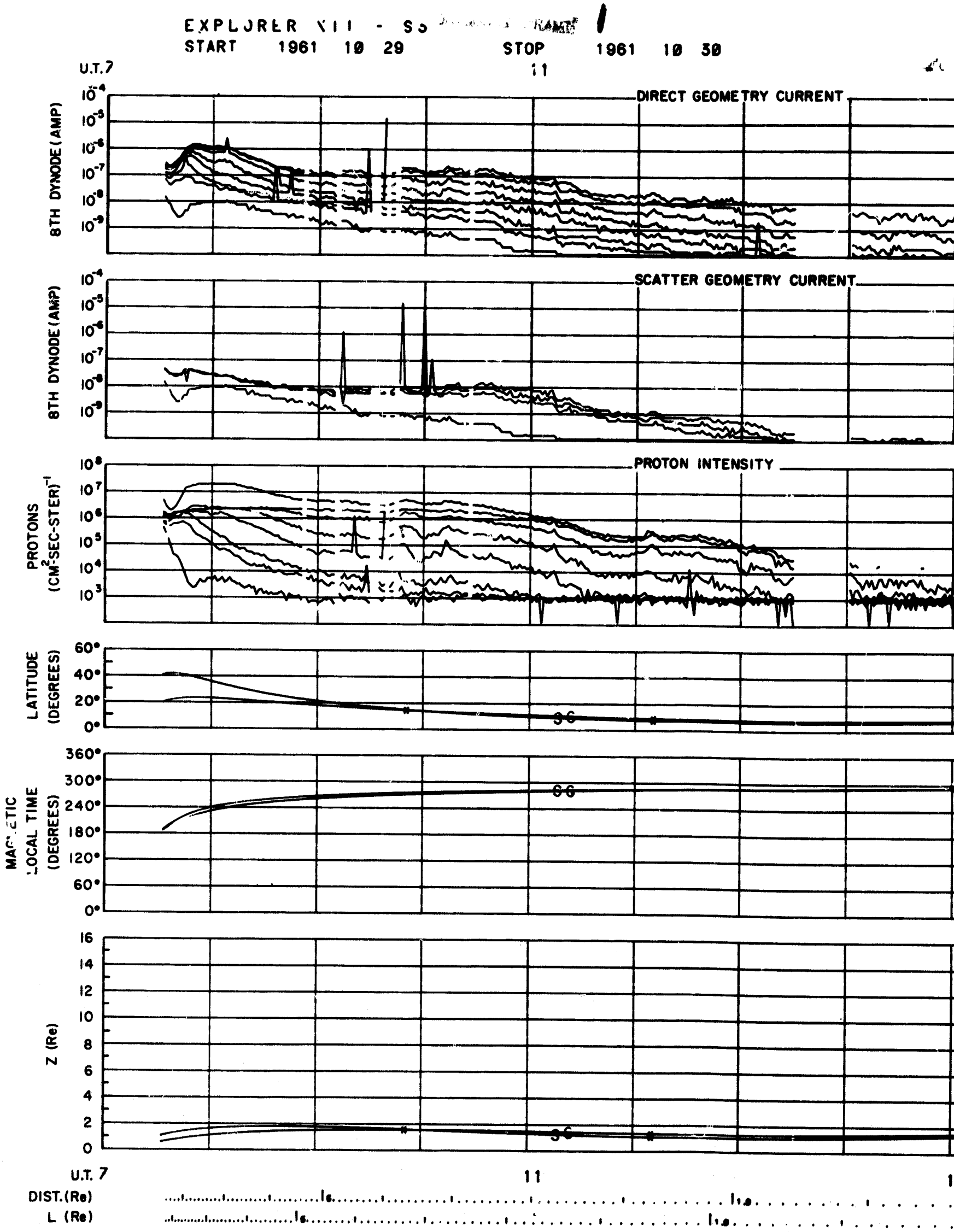
12 16

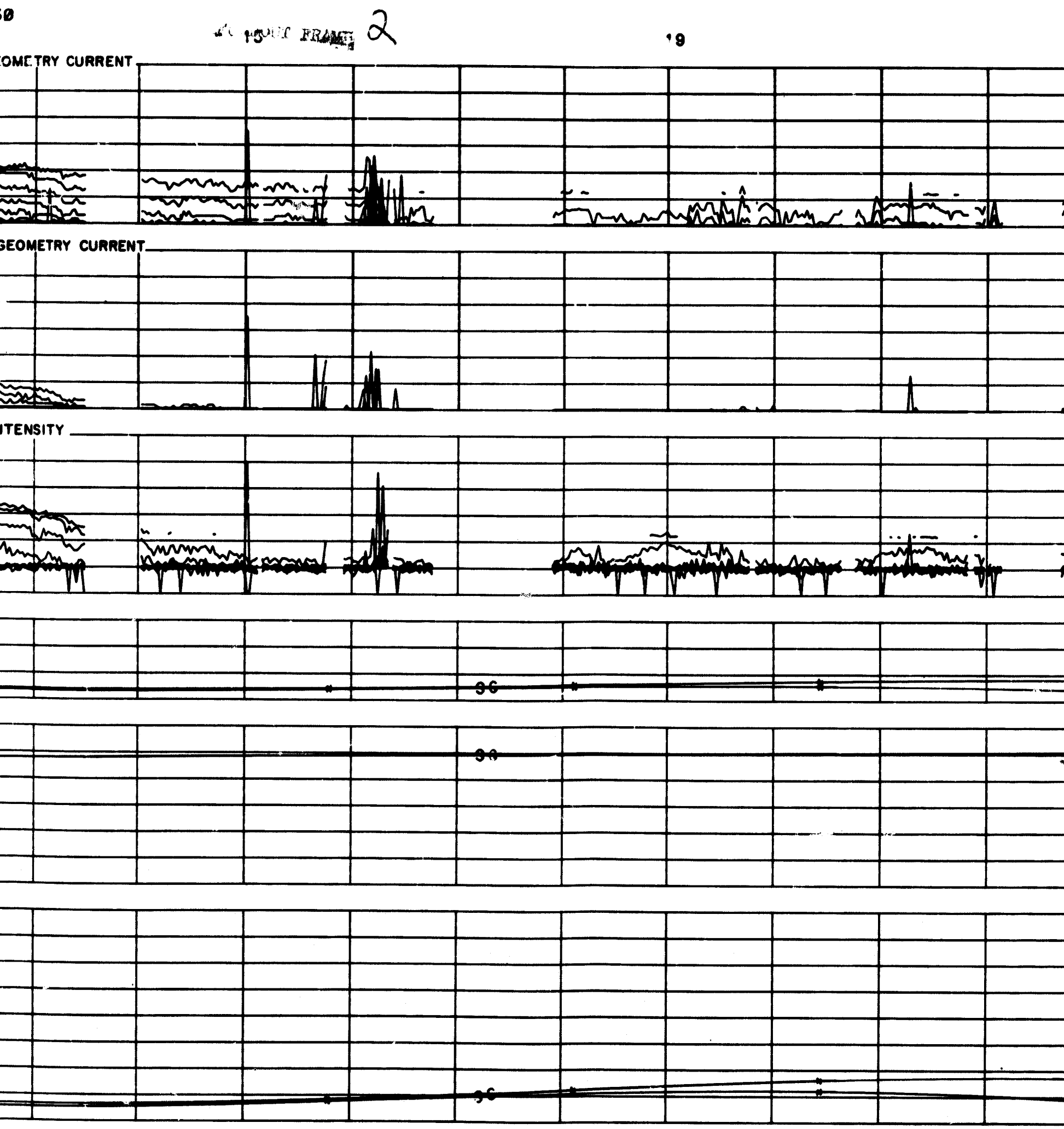
FOLDOUT FRAME 3



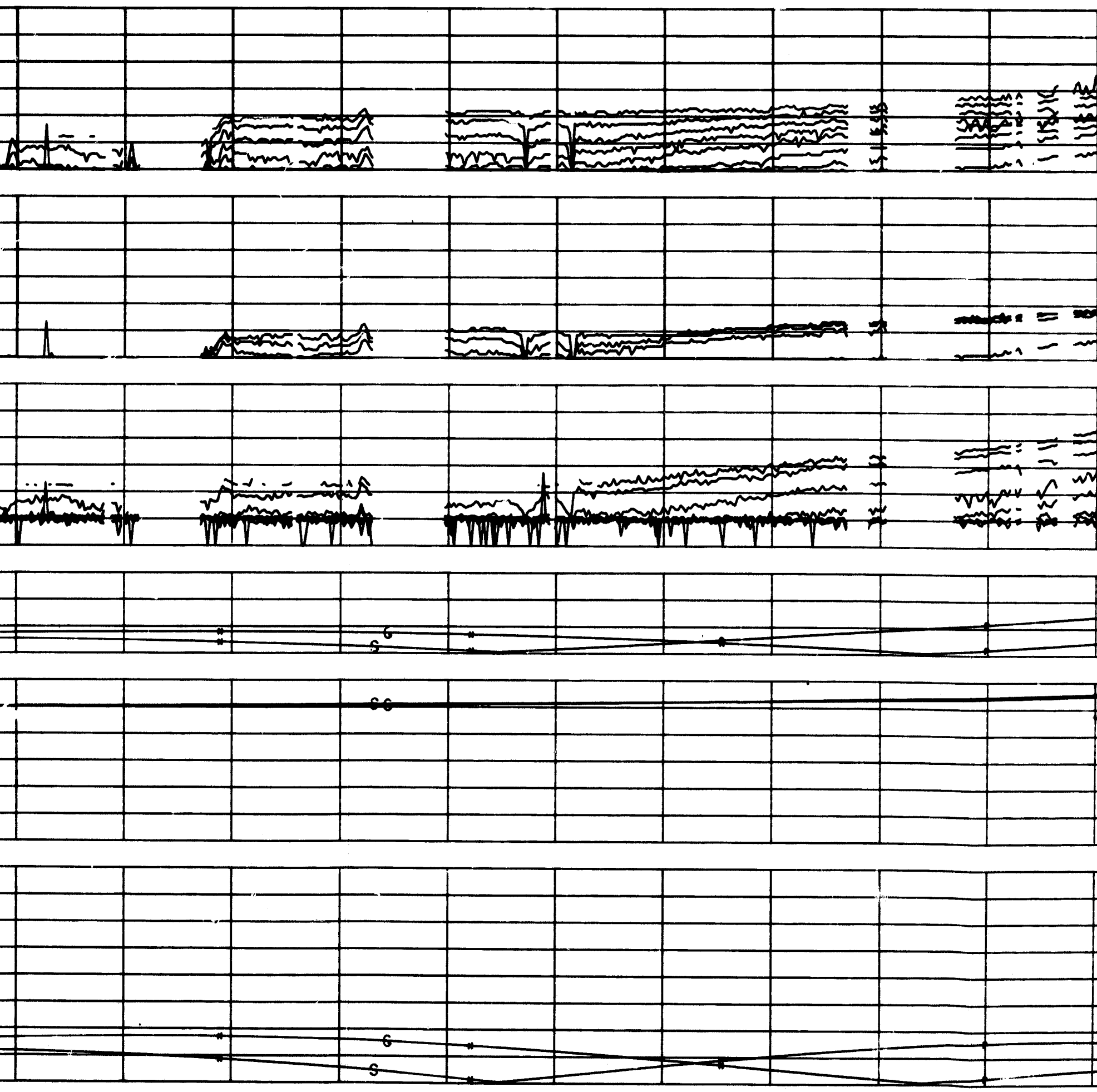
FOLDOUT FRAME 4



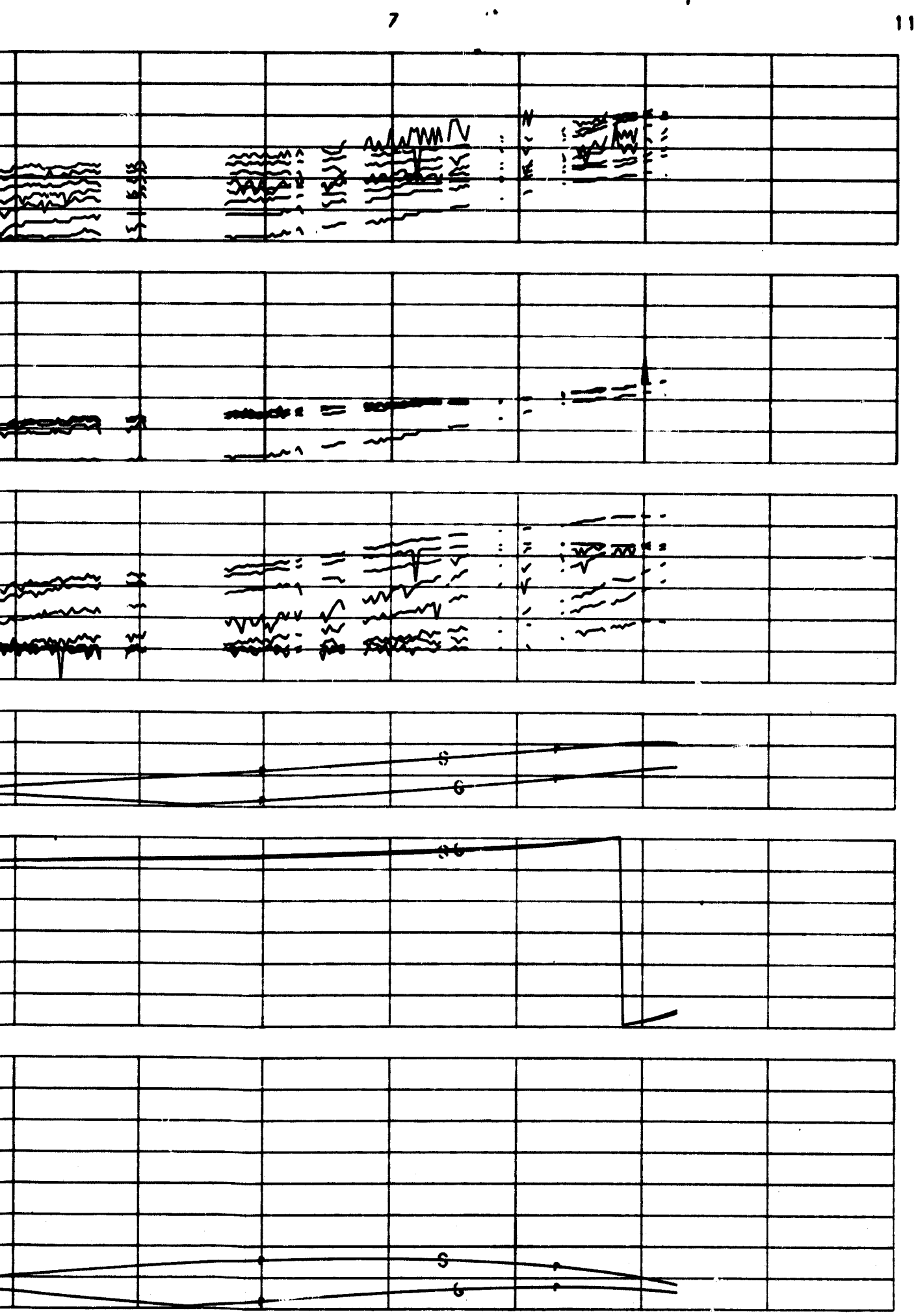

EXPLORER VII - S5
START 1961 10 29
STOP 1961 10 30
U.T.7
11
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 7
11
DIST. (Re)
L (Re)


50
15
FRAME 2
19
OMETRY CURRENT
GEOMETRY CURRENT
ITENSITY
36
36
36
15
19

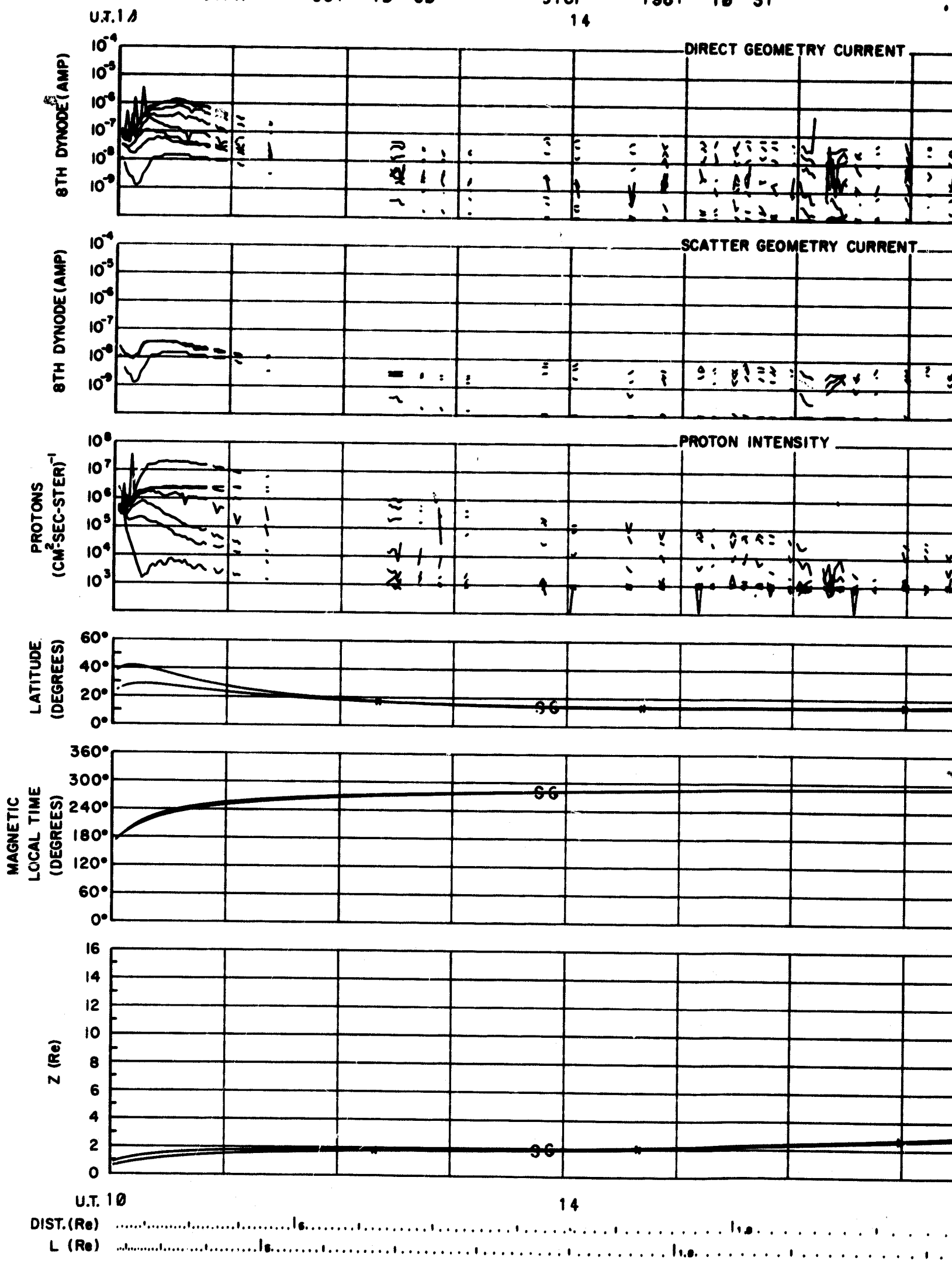
FOLDOUT FRAME 3

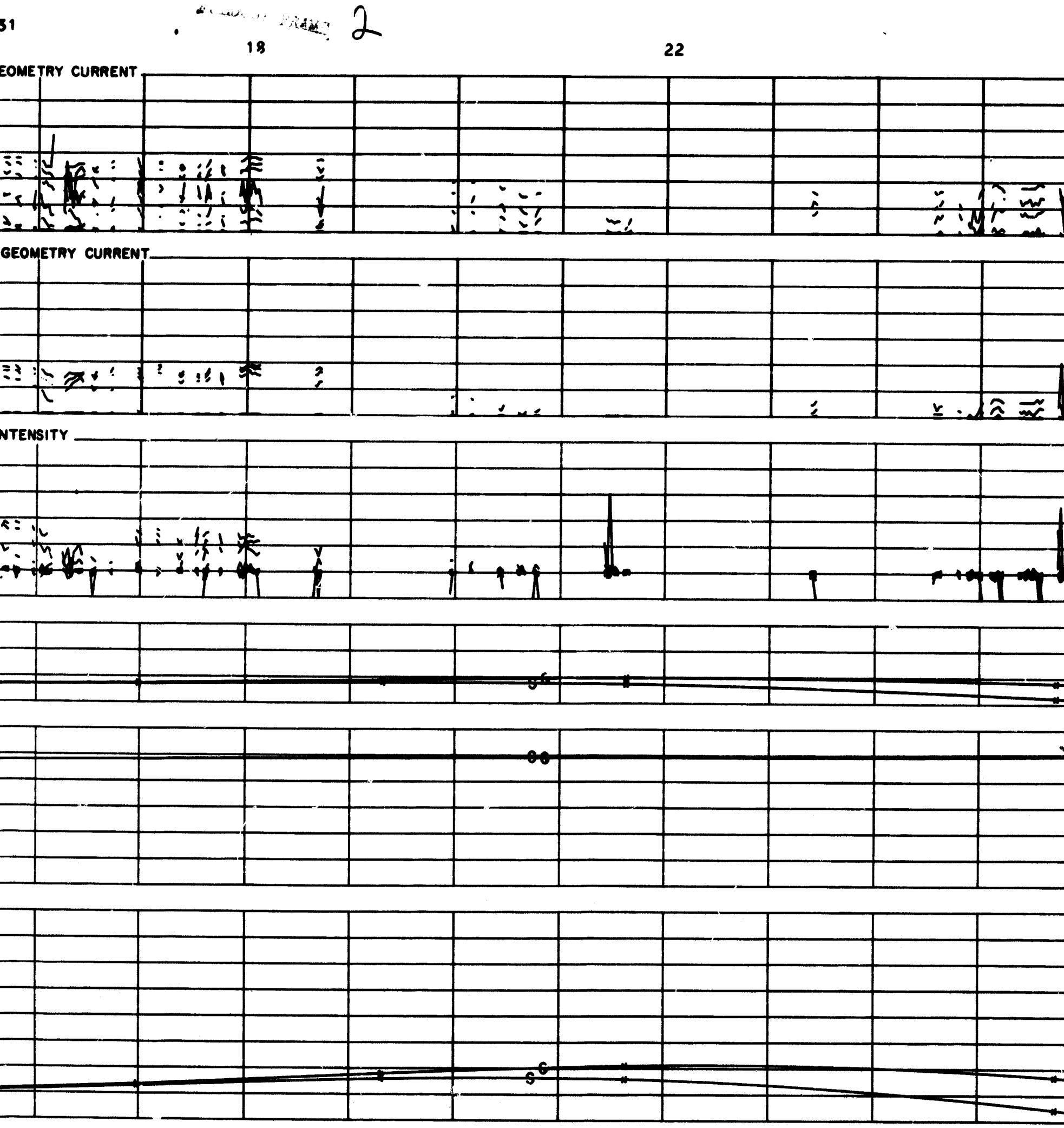


FOLDOUT FRAME 4

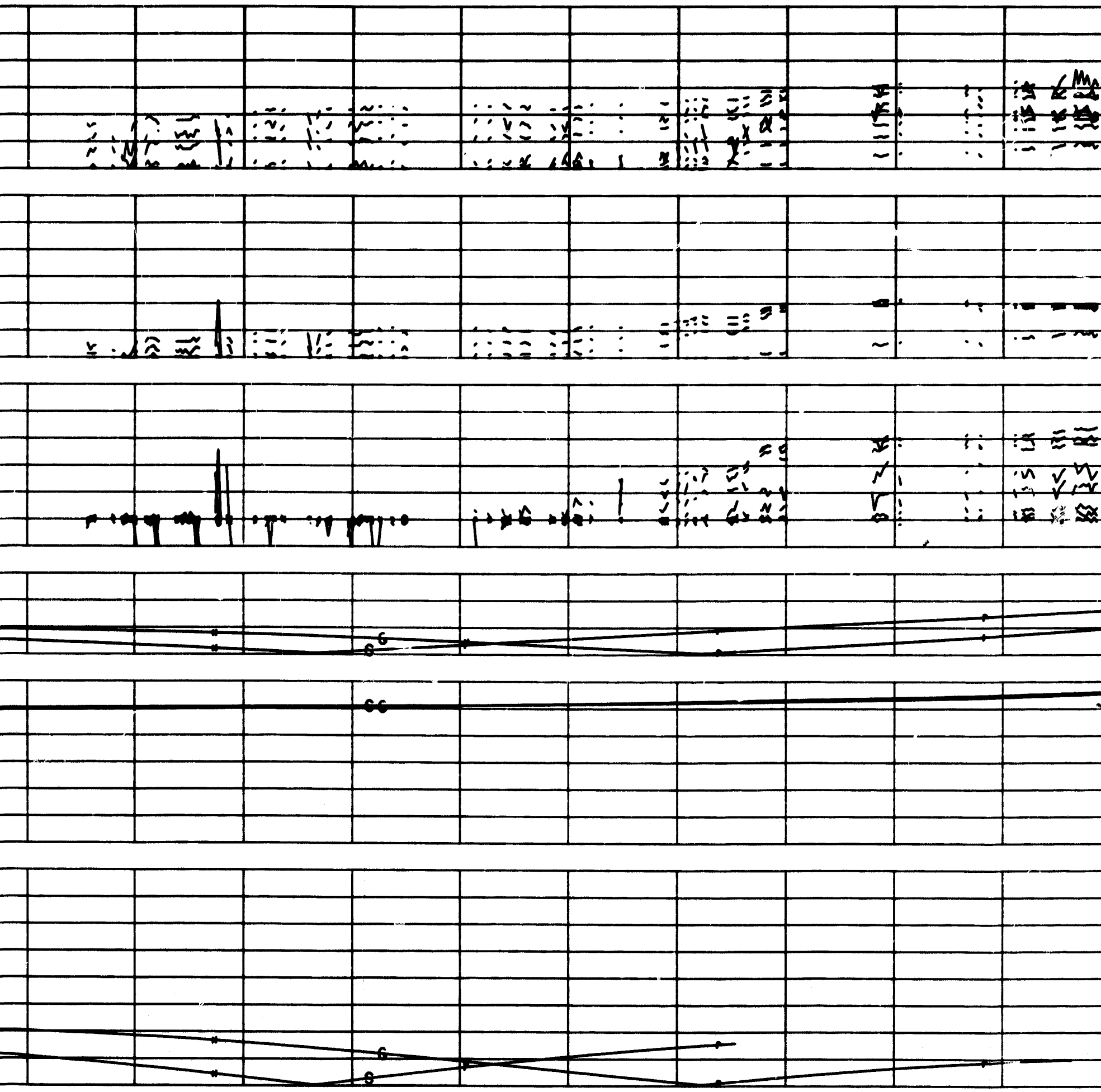


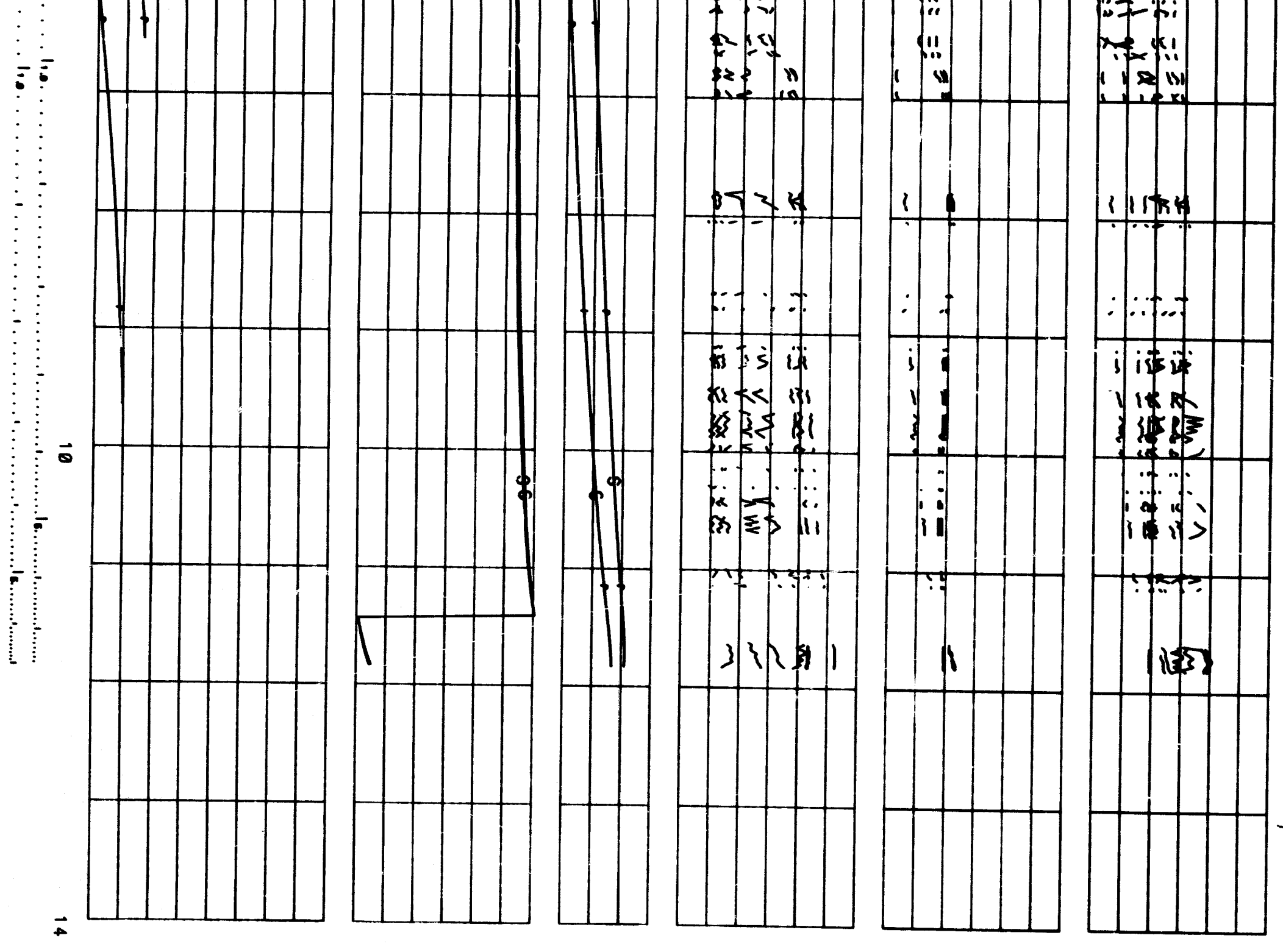
EXPLORER XII - S5
START 1961 10 30 STOP 1961 10 31



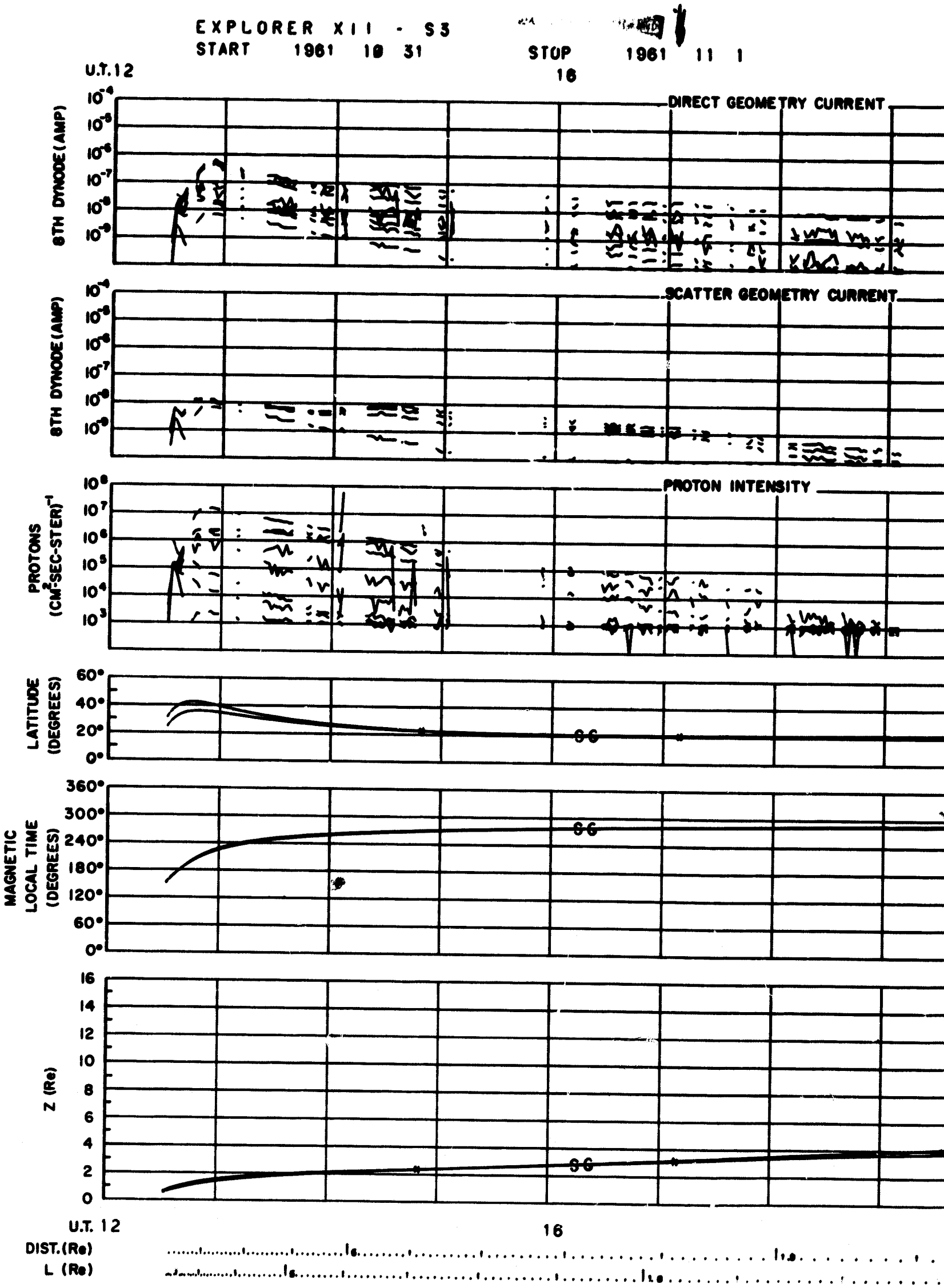

51
2
18
22
EOMETRY CURRENT
GEOMETRY CURRENT
NTENSITY
G
S
G
S
18
22

FOLDOUT FRAME 3

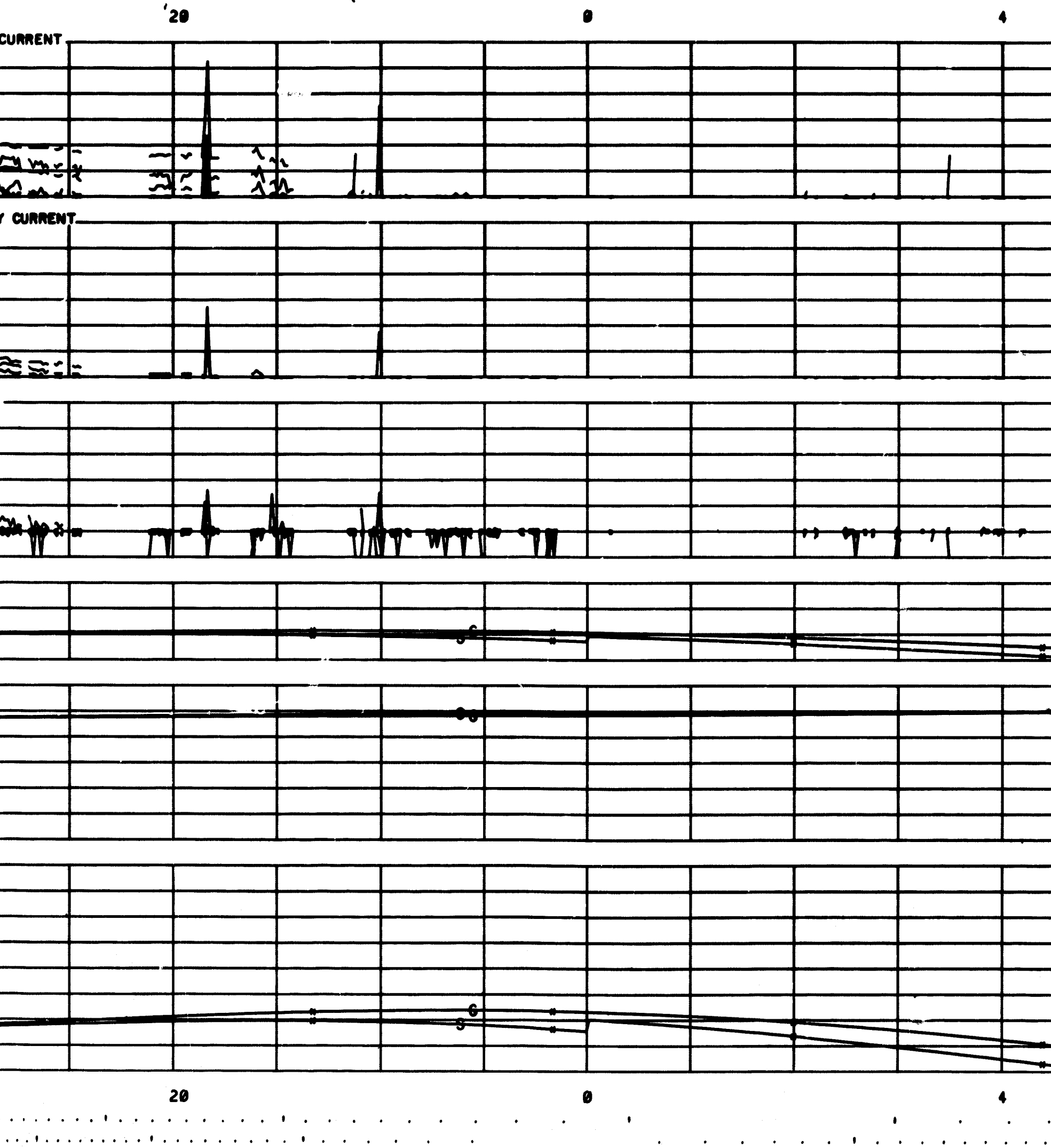




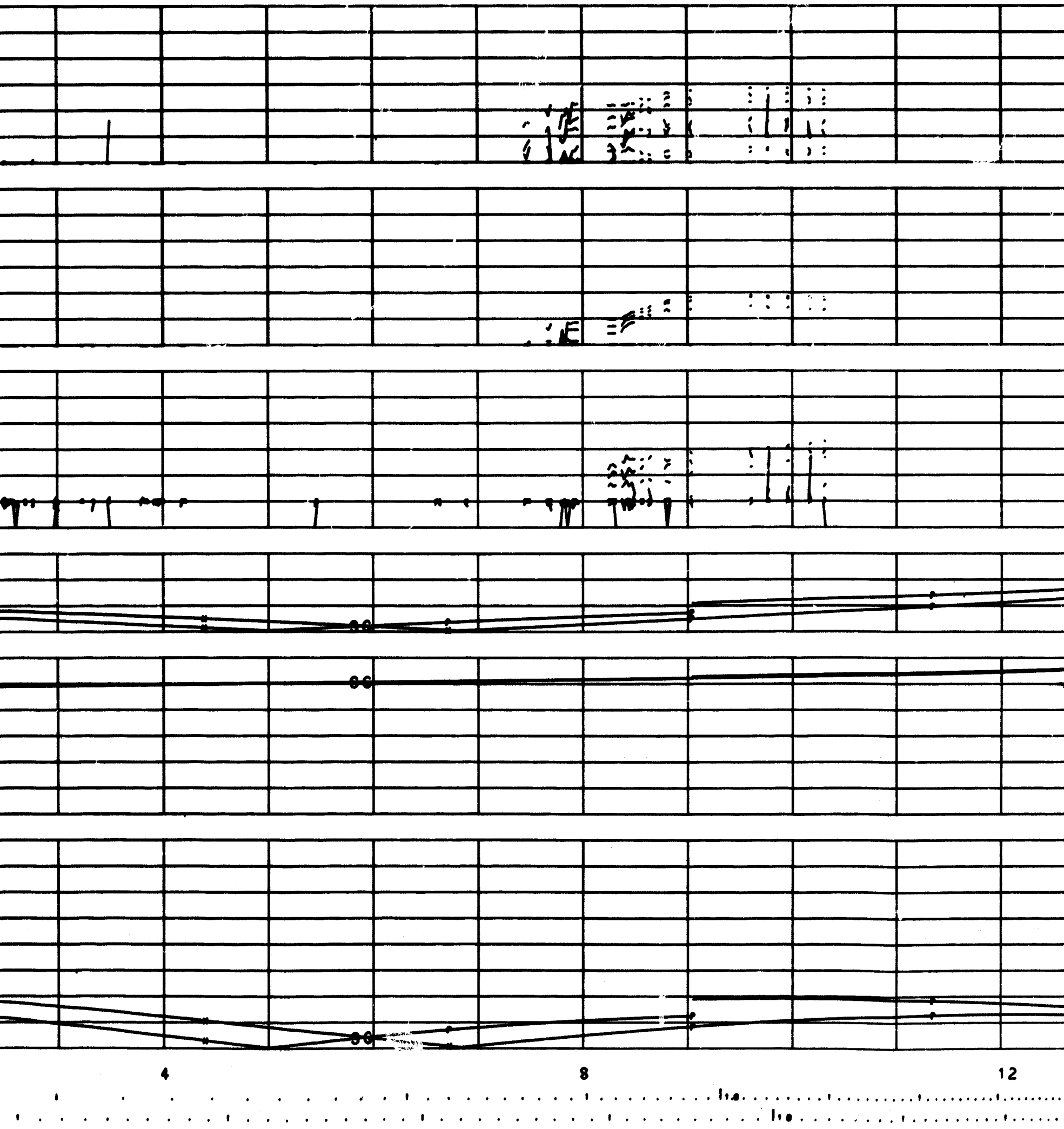
FOLDOUT FRAME


EXPLORER XII - S3
START 1961 10 31
STOP 1961 11 1
U.T. 12
16
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 12
16
DIST. (Re)
L (Re)

2

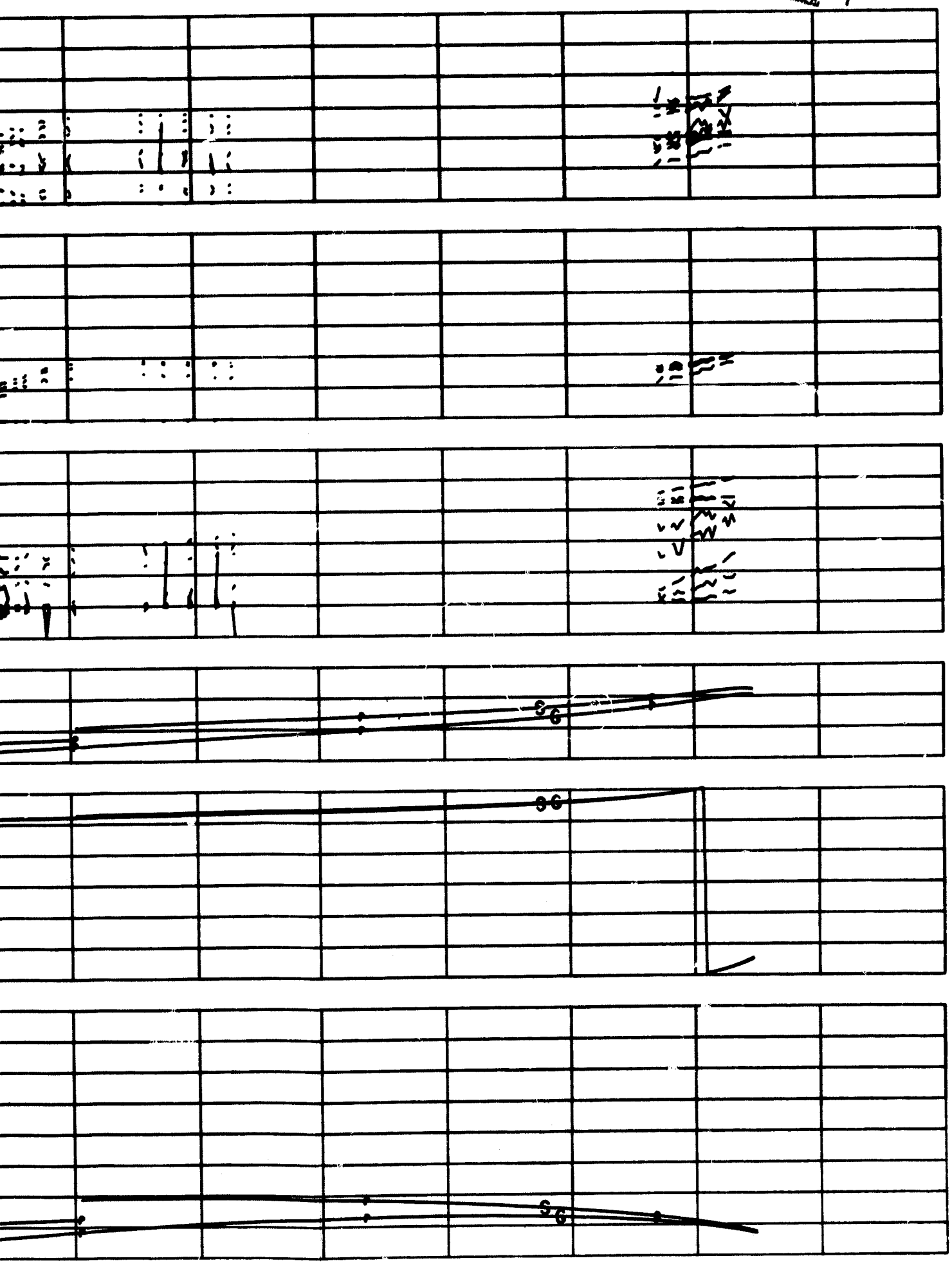


FOLDOUT FRAME 8

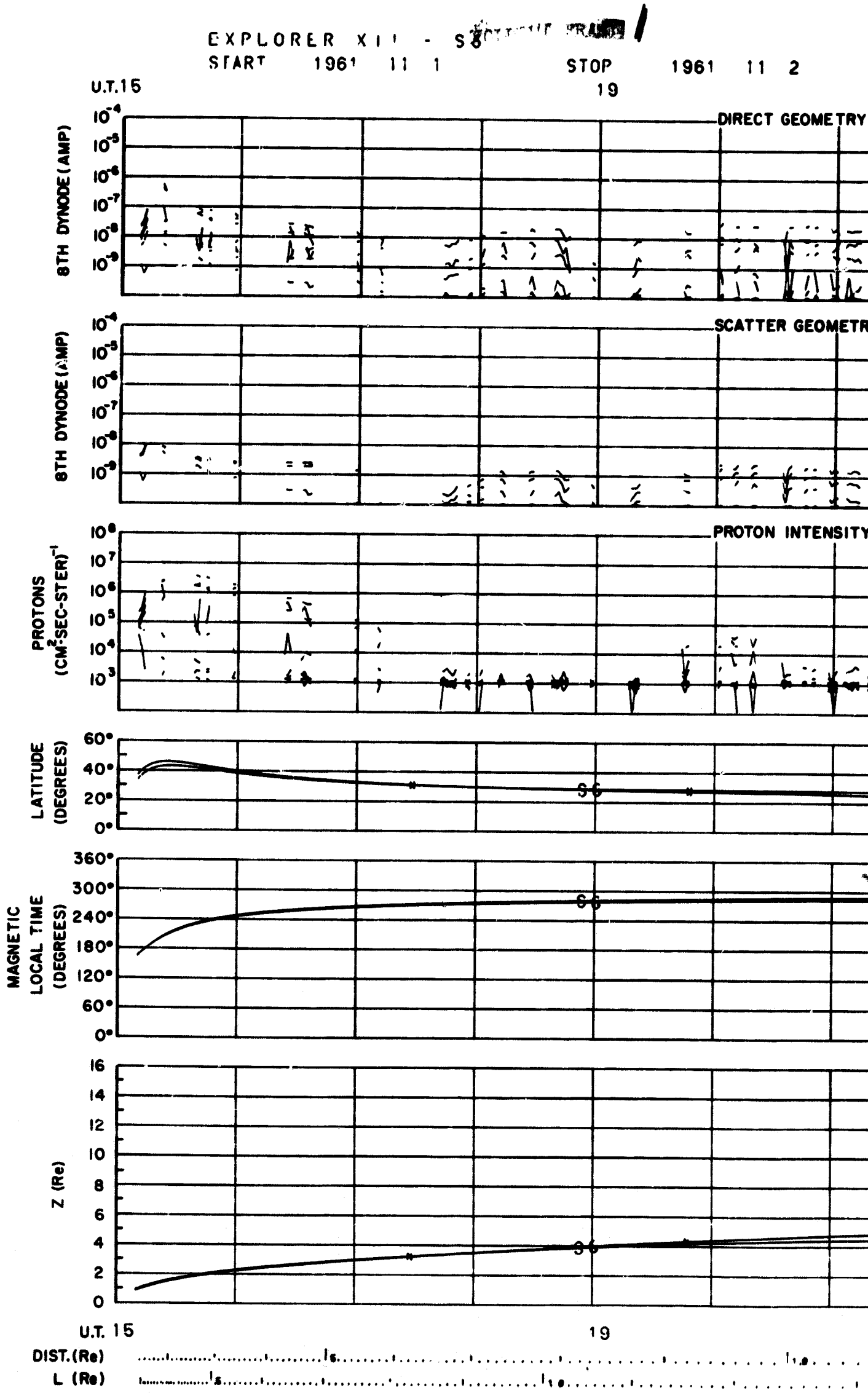


FOLDOUT FRAME 4

12 16



12 16


EXPLORER XII - S8
START 1961 11 1
STOP 1961 11 2
U.T.15
19
DIRECT GEOMETRY
SCATTER GEOMETRY
PROTON INTENSITY
8TH DYNODE (AMP)
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
DIST. (Re)
L (Re)

1 11 2

23 2 3

DIRECT GEOMETRY CURRENT

SCATTER GEOMETRY CURRENT

PROTON INTENSITY

G

S

G

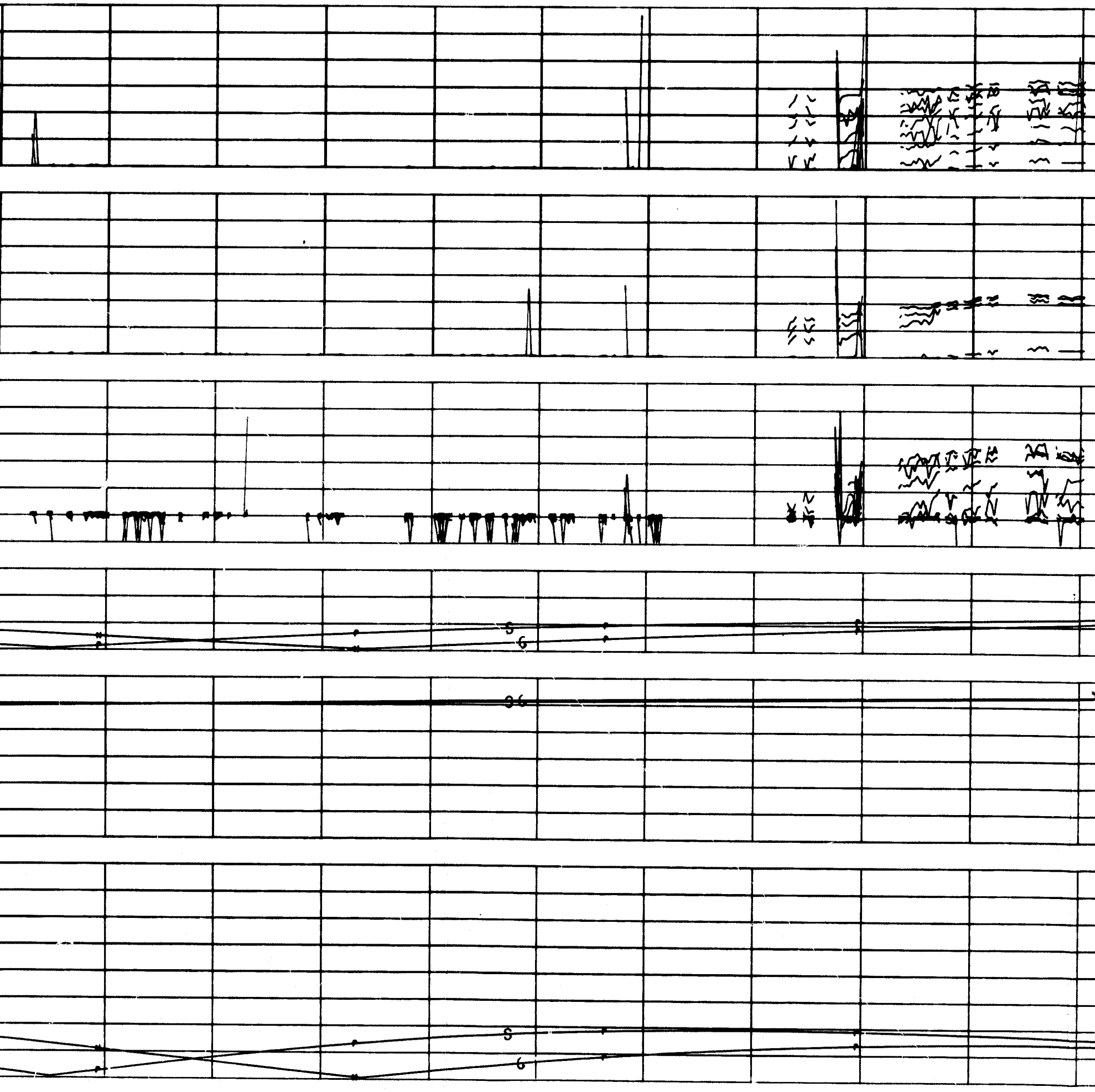
S

G

S

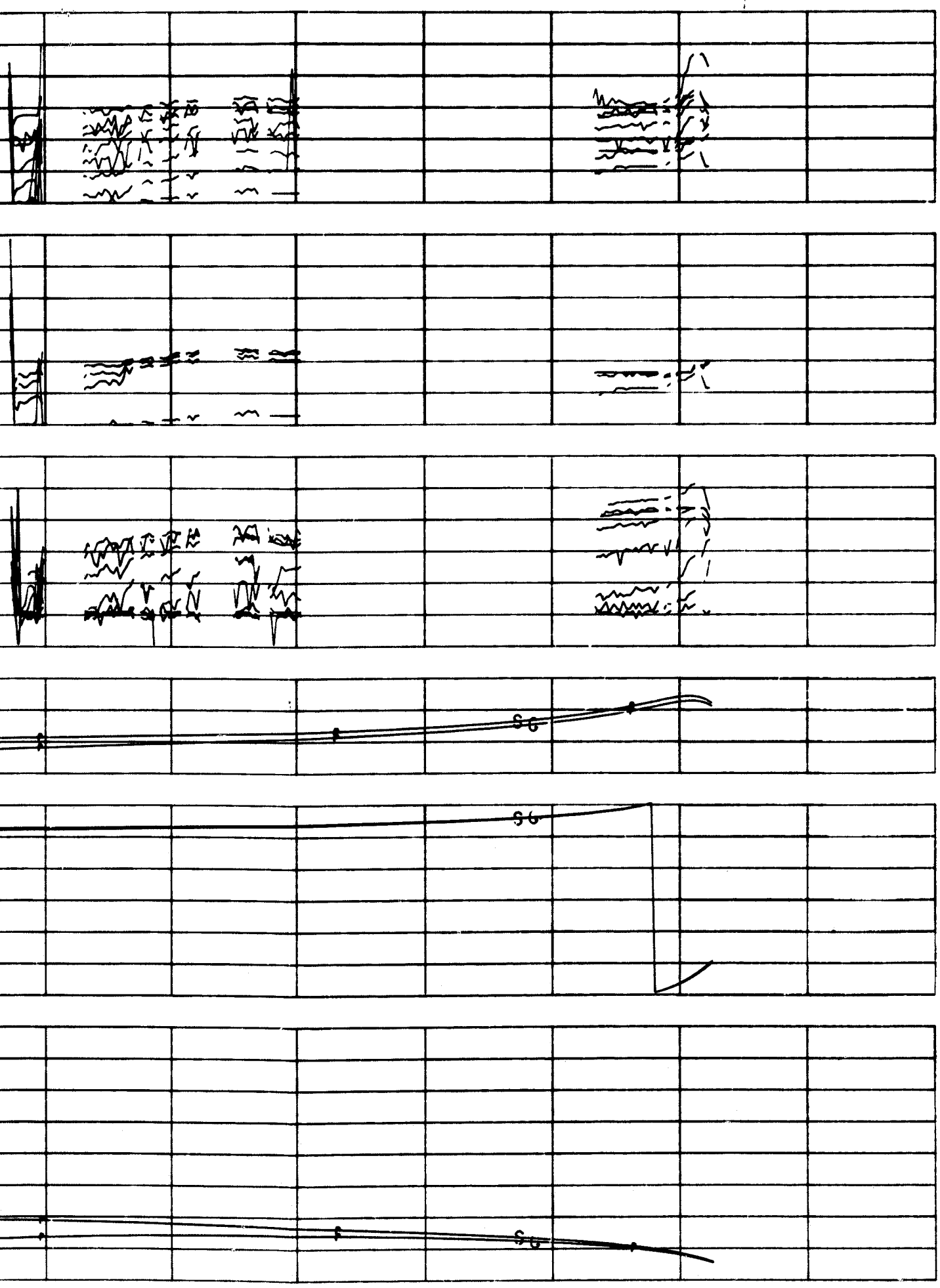
23 3

FOLDOUT FRAME 3

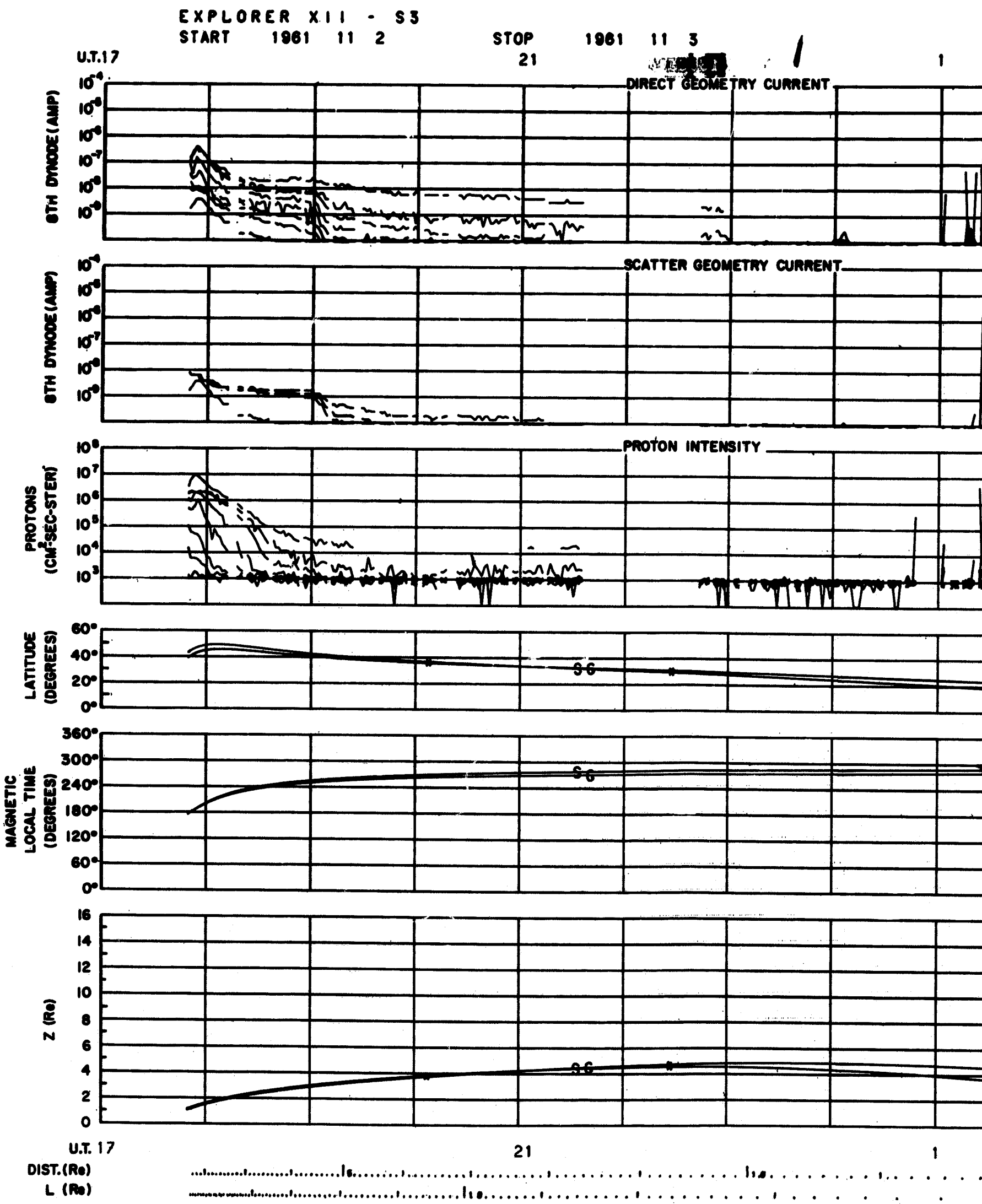


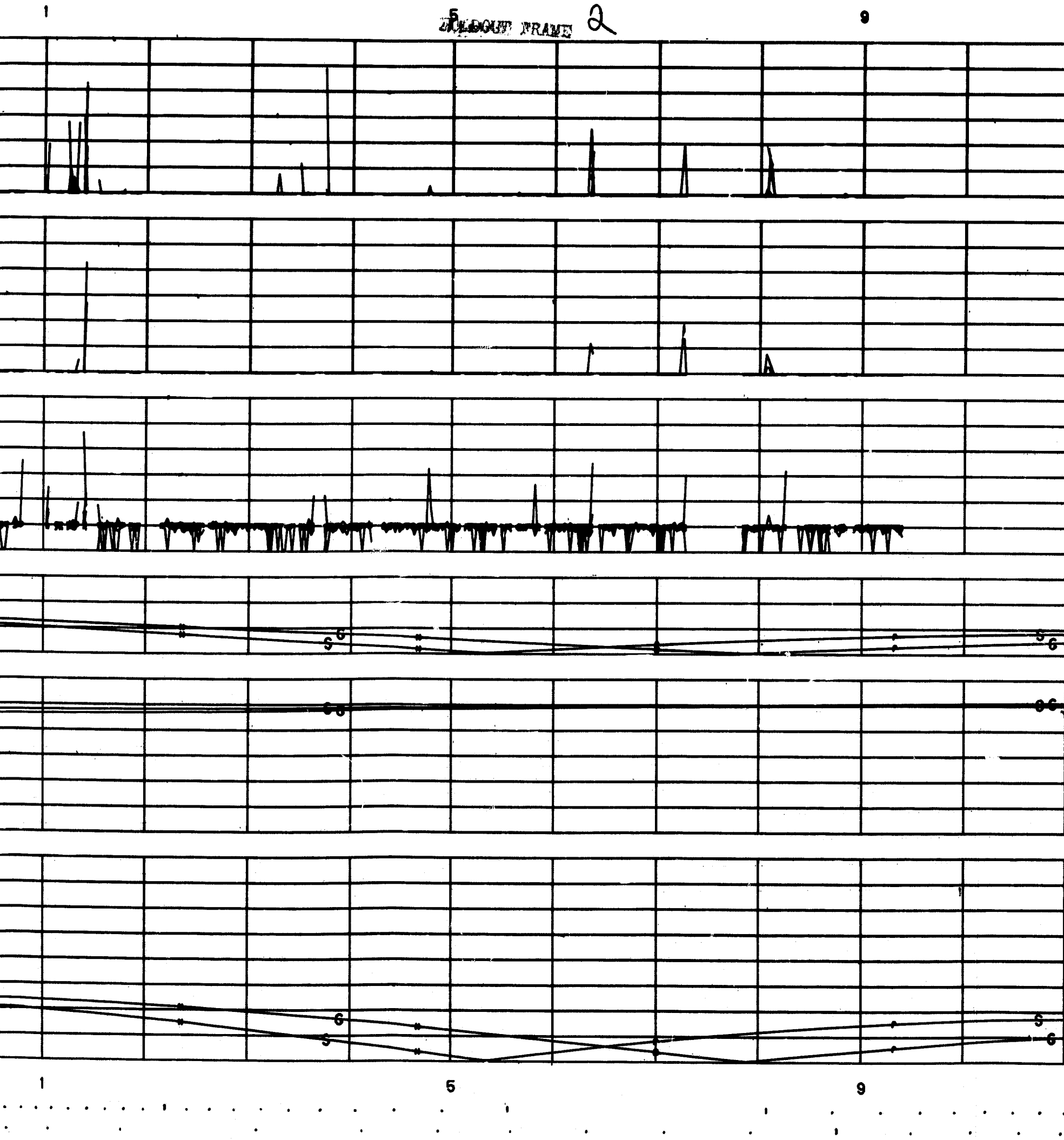
FOLDOUT FRAME 4

15 13

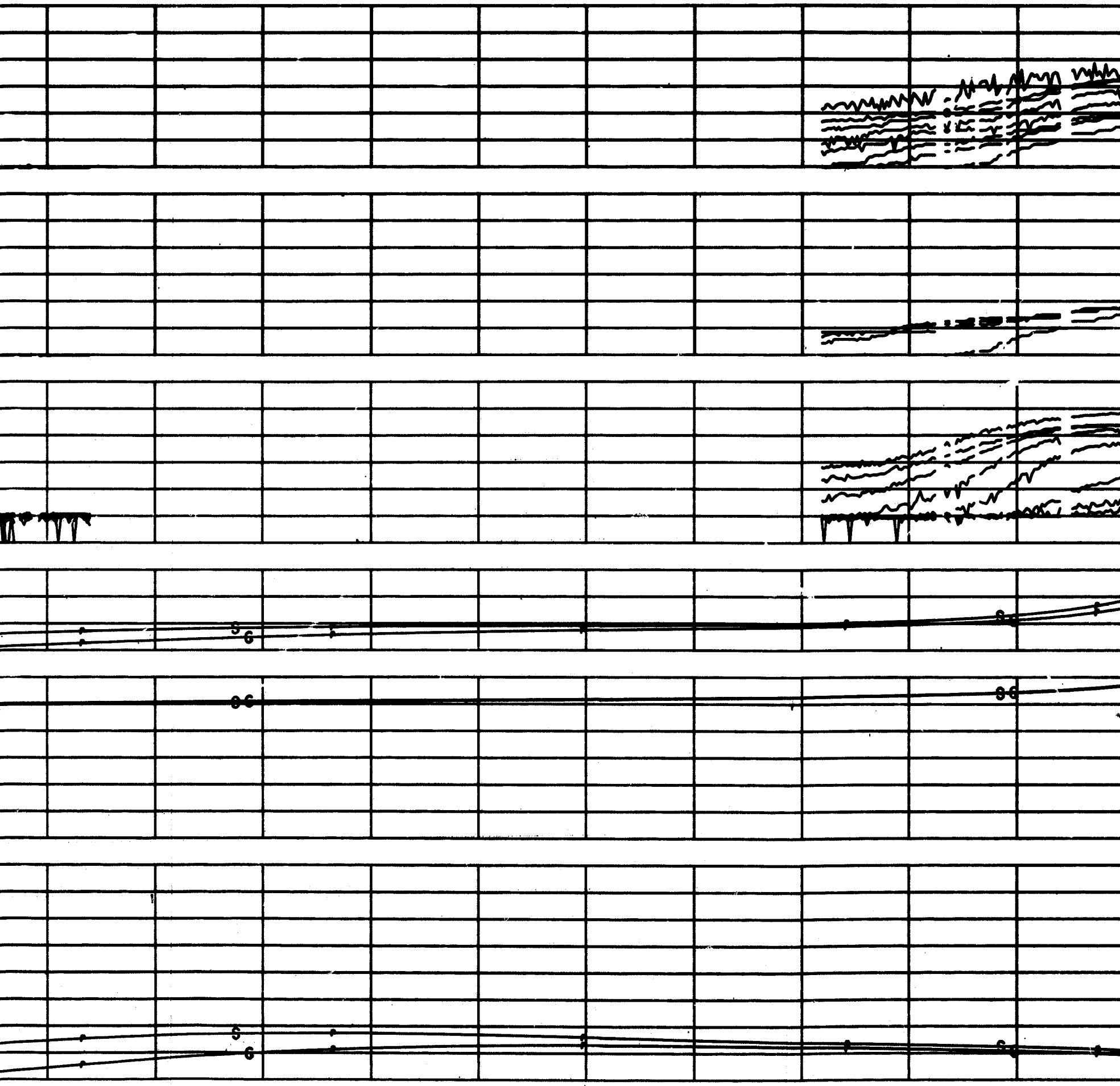


15 19


EXPLORER XII - S3
START 1961 11 2
STOP 1961 11 3
U.T.17
21
1
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)
LATITUDE (DEGREES)
SG
MAGNETIC LOCAL TIME (DEGREES)
SG
Z (Re)
SG
U.T. 17
21
1
DIST. (Re)
L (Re)

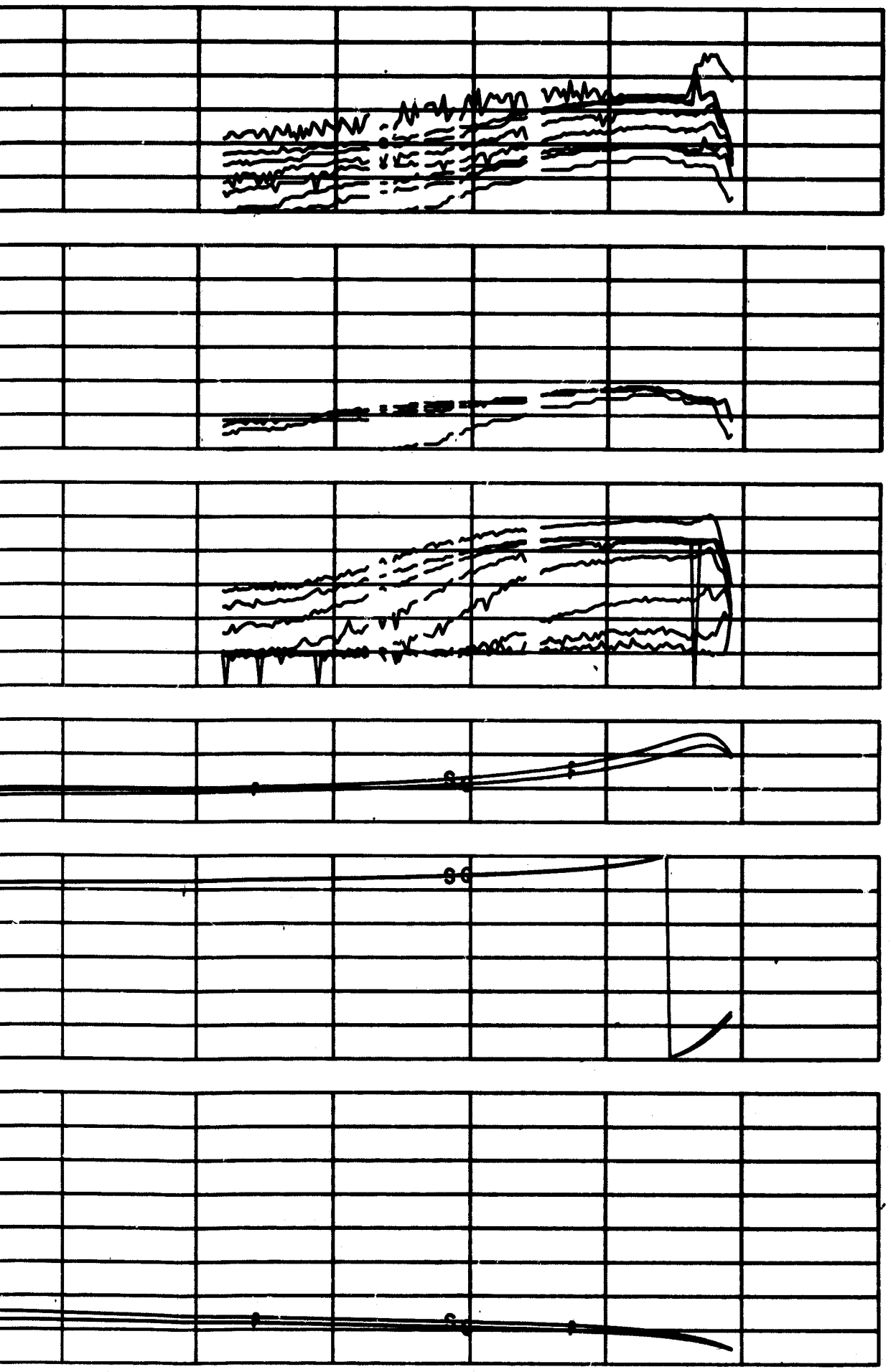

1
5
9
DROPOUT FRAME 2
6
S
6
S
1
5
9

FOLDOUT FRAME 3

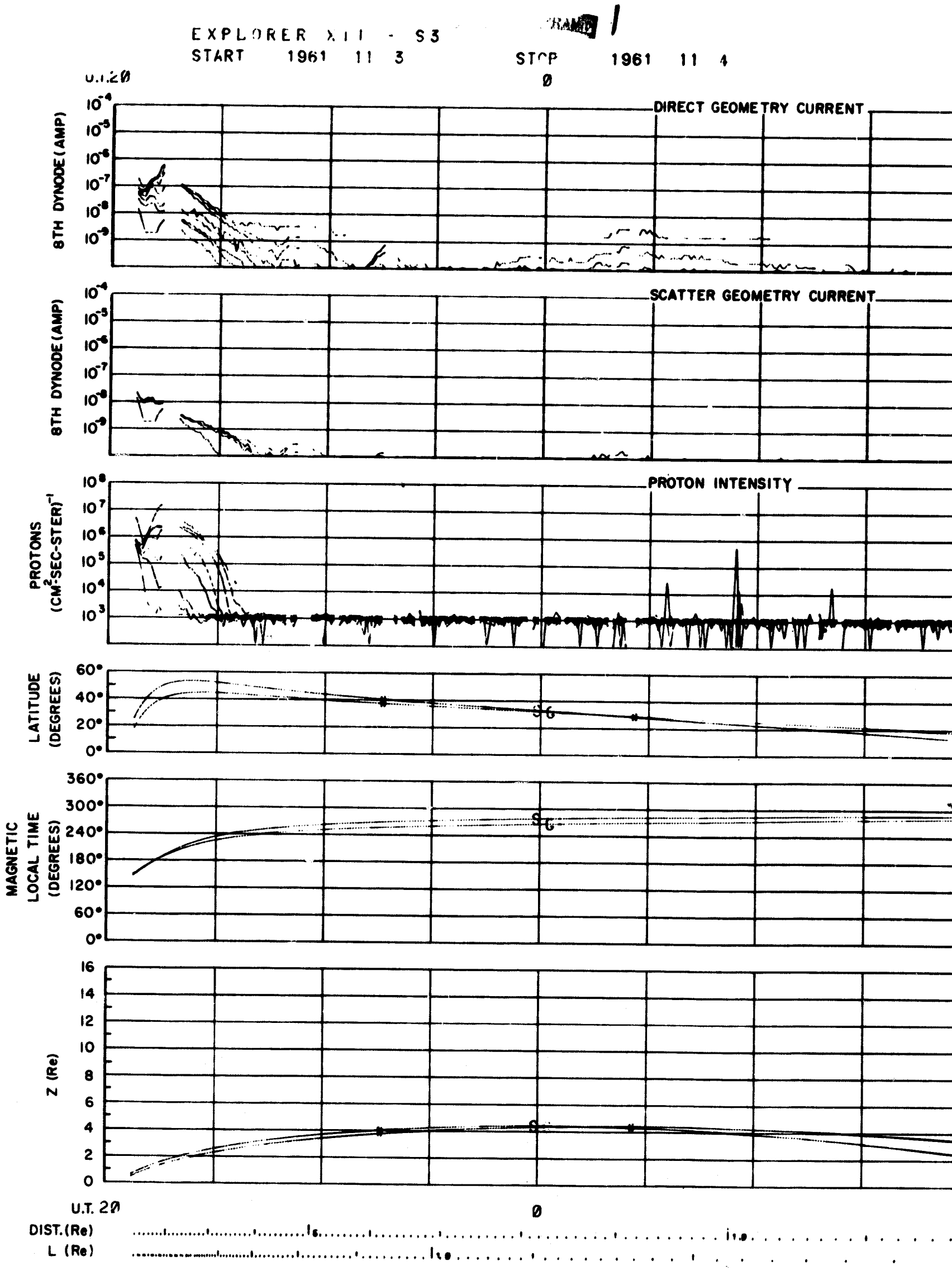


FOLDOUT FRAME 4

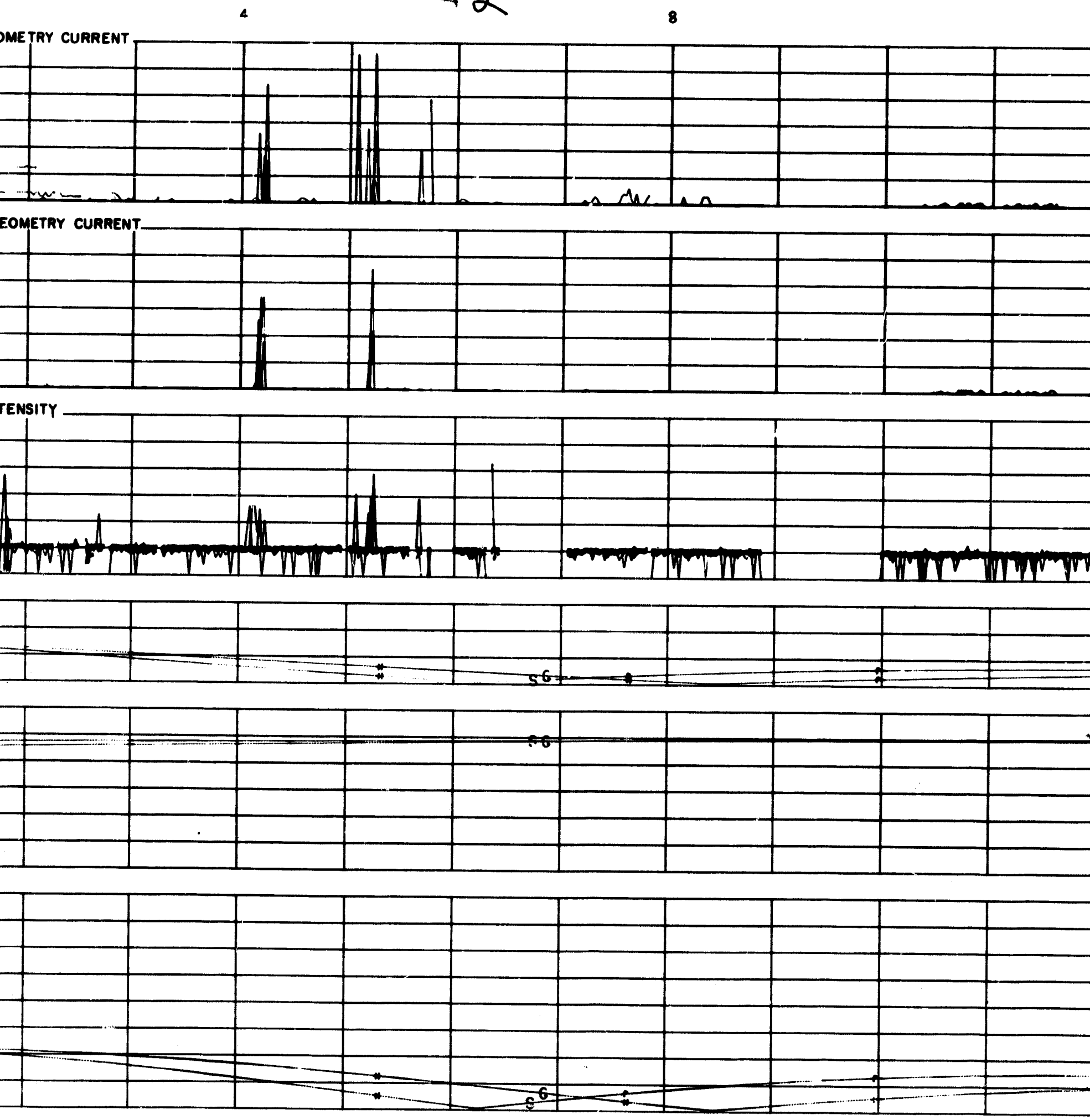
17 21

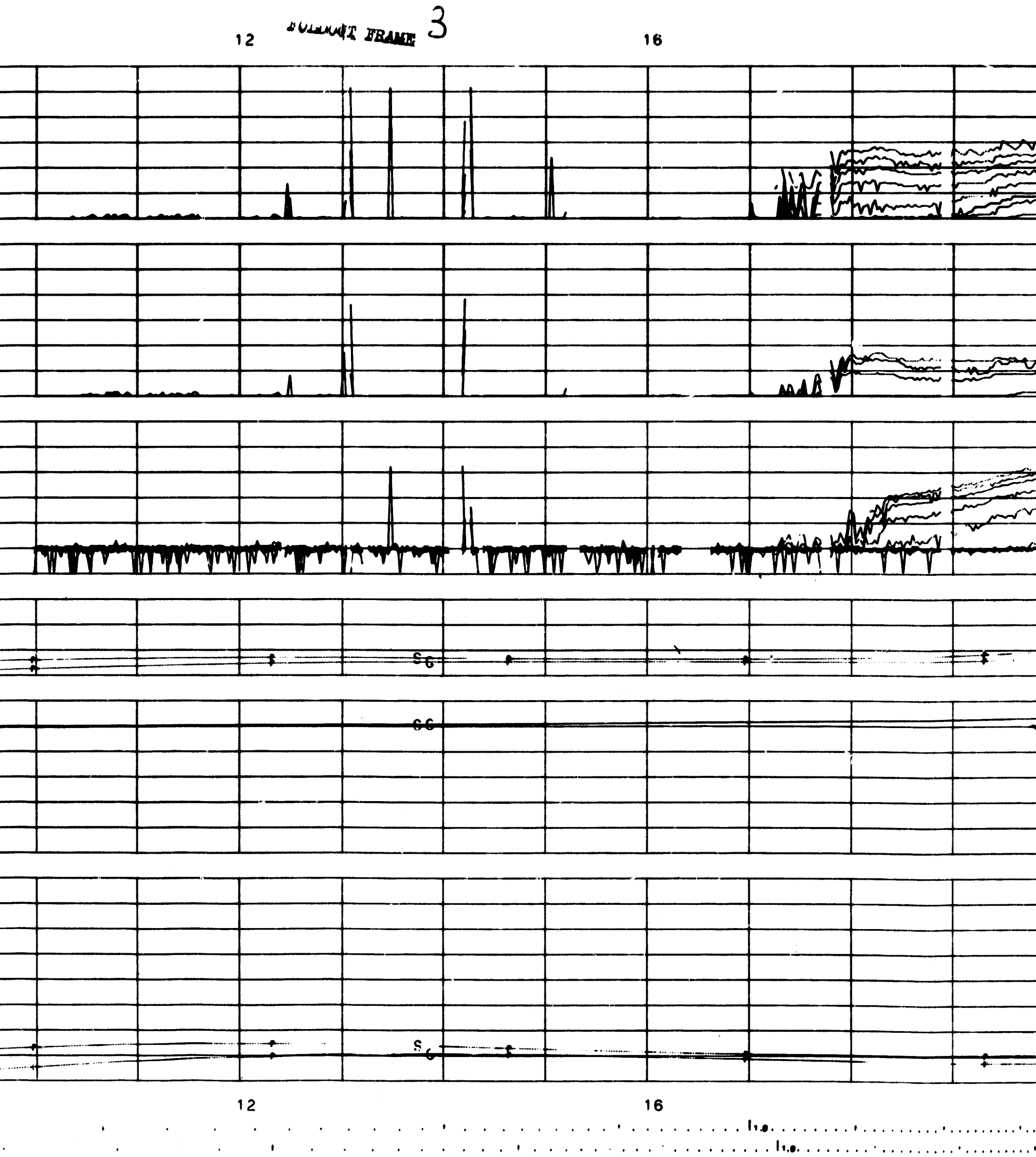


17 21

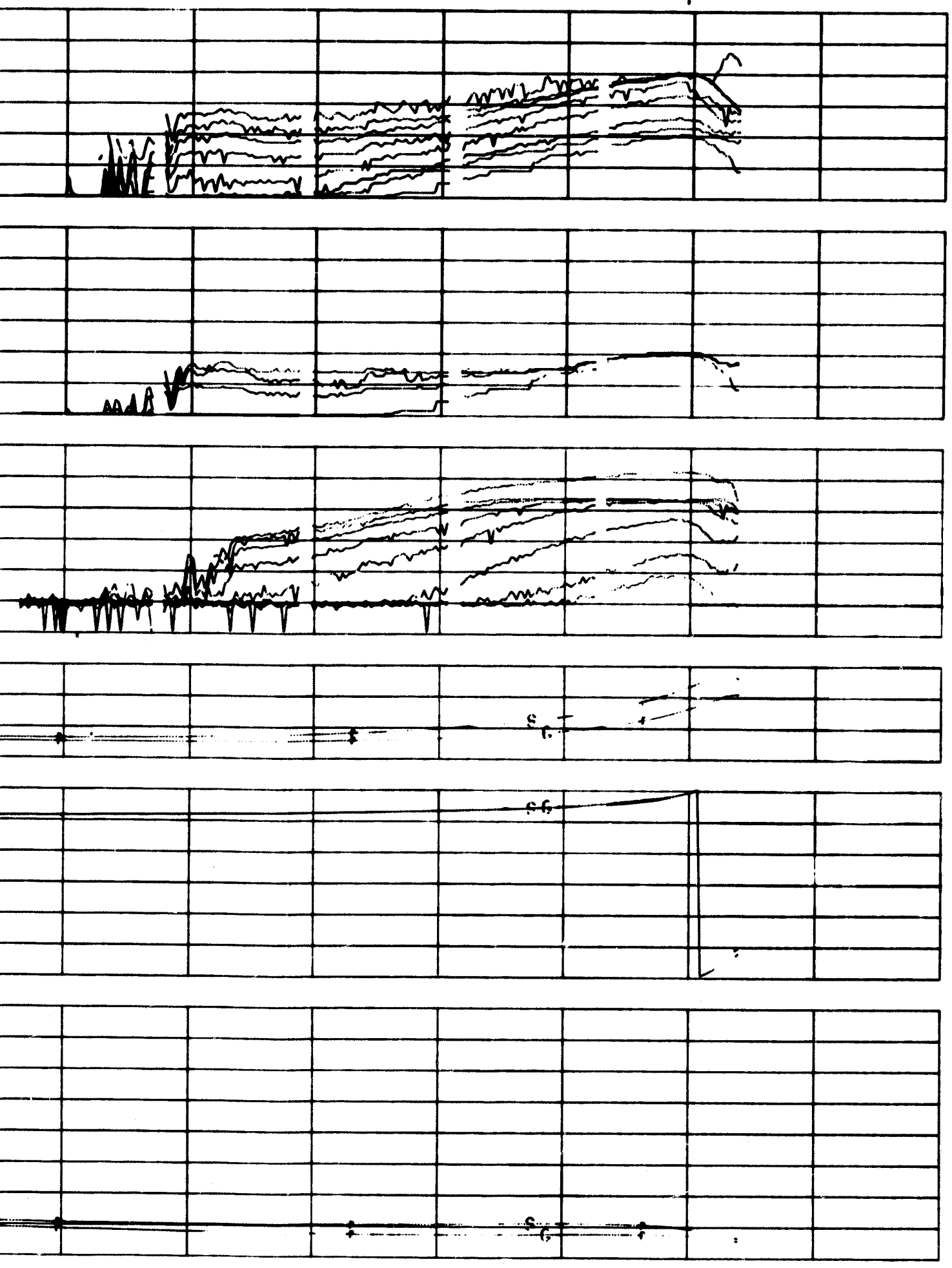

EXPLORER XII - S3
START 1961 11 3
STOP 1961 11 4
U.T. 20
0
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 20
0
DIST. (Re)
L (Re)

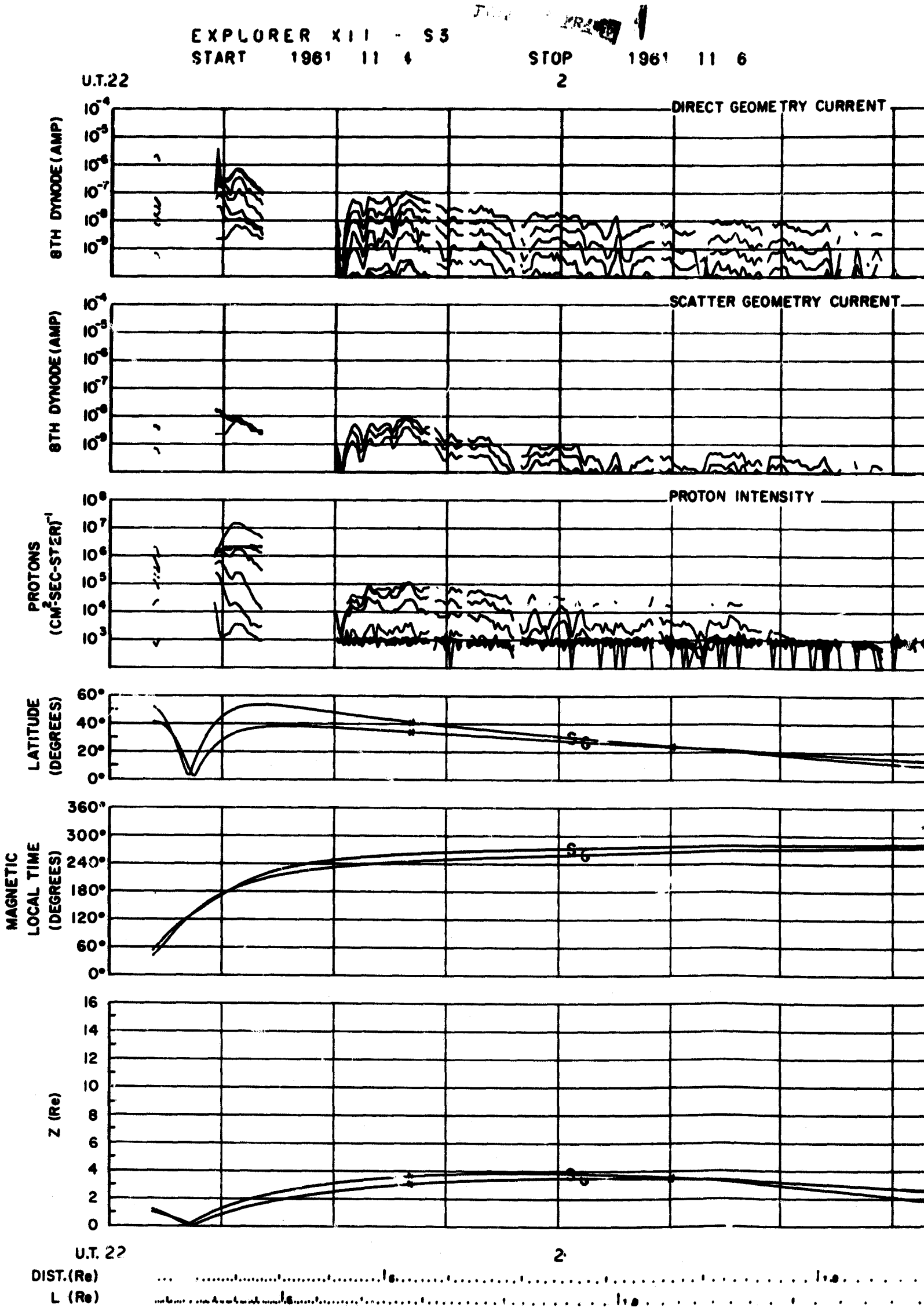
TRAIN 2

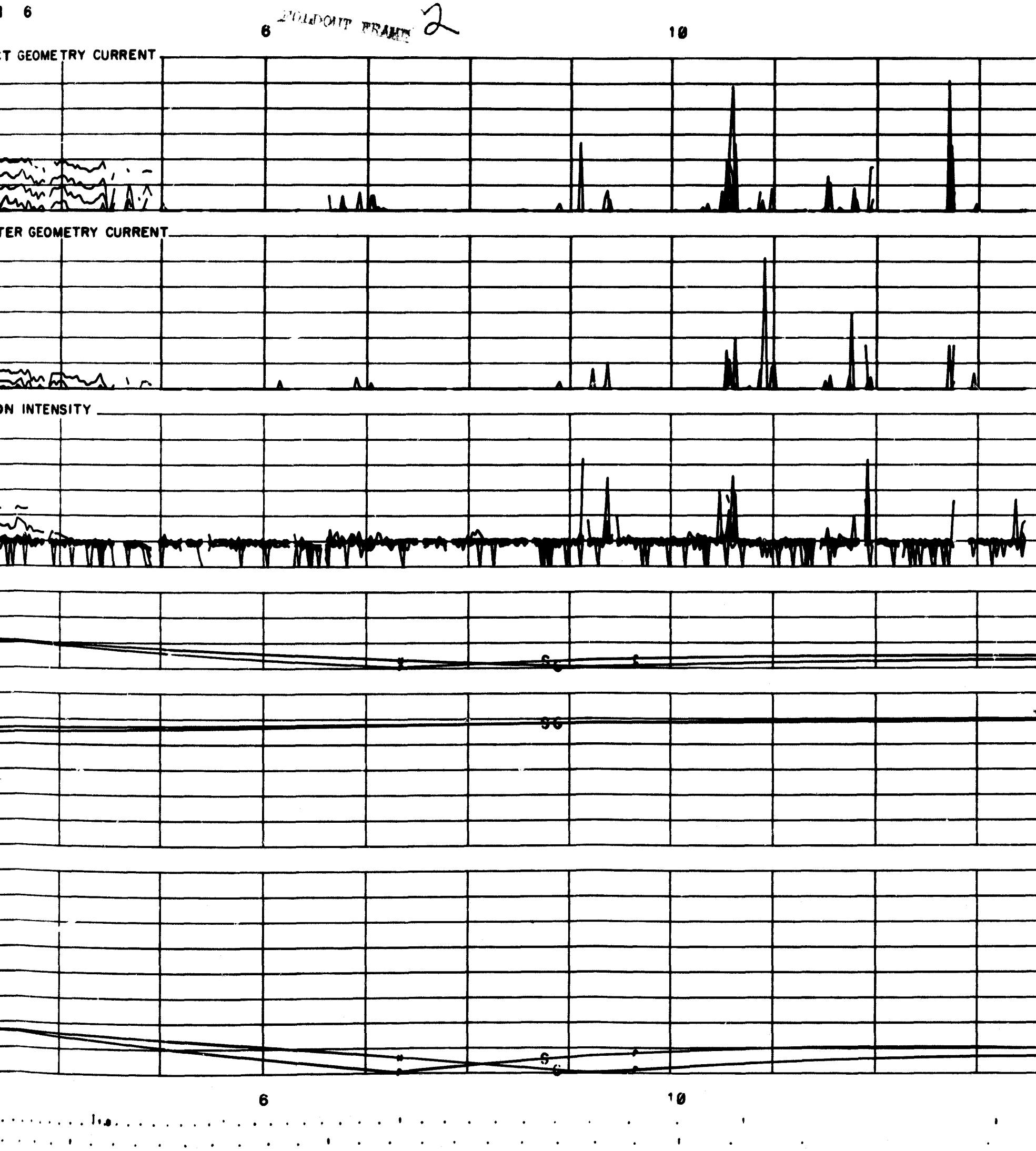



12
SUBMIT FRAME 3
16
12
16

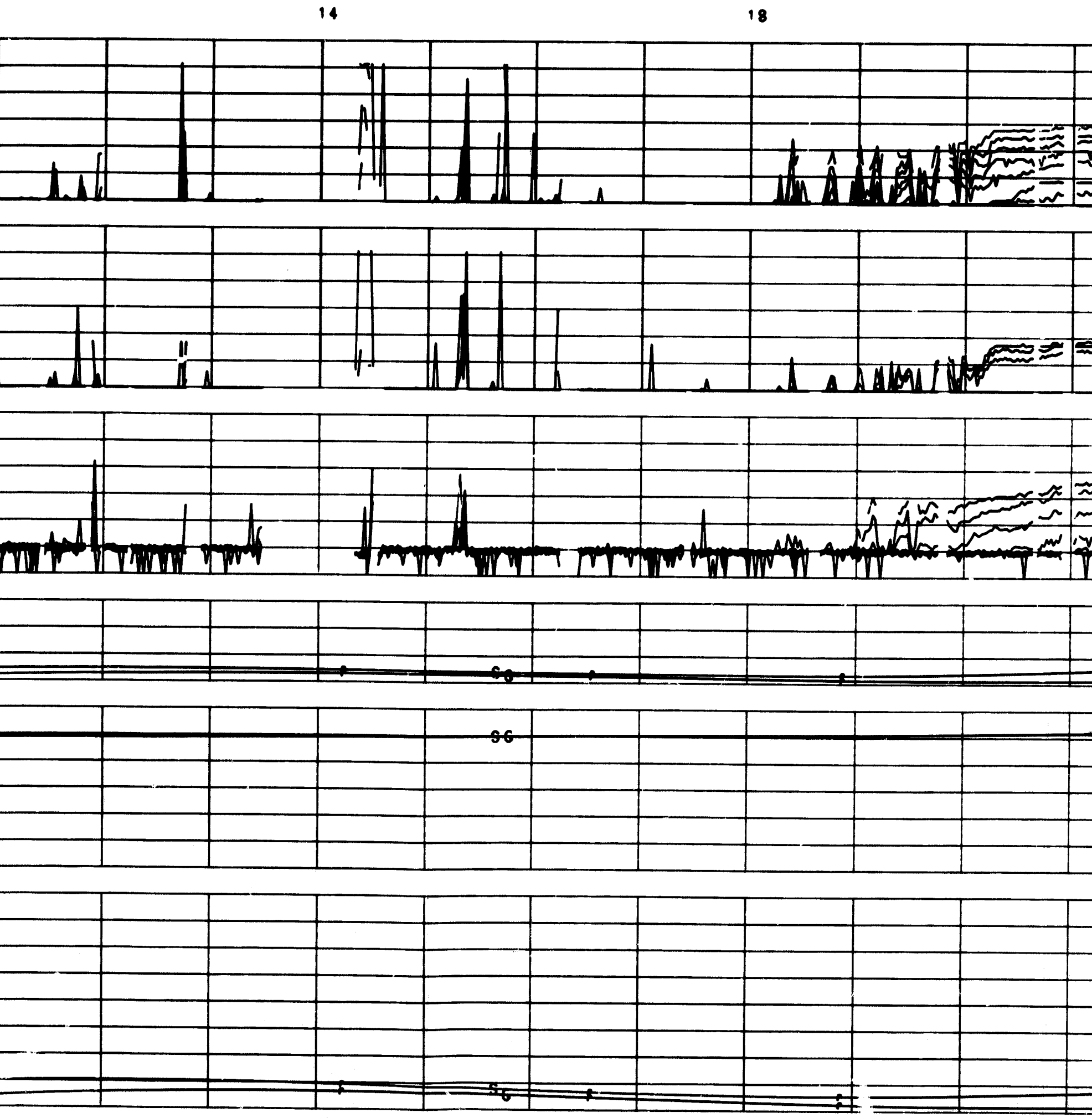
FOLDOUT FRAME 4




EXPLORER XII - S3
START 1961 11 4
STOP 1961 11 6
U.T.22
2
DIRECT GEOMETRY CURRENT
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
8TH DYNODE (AMP)
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
DIST. (Re)
L (Re)

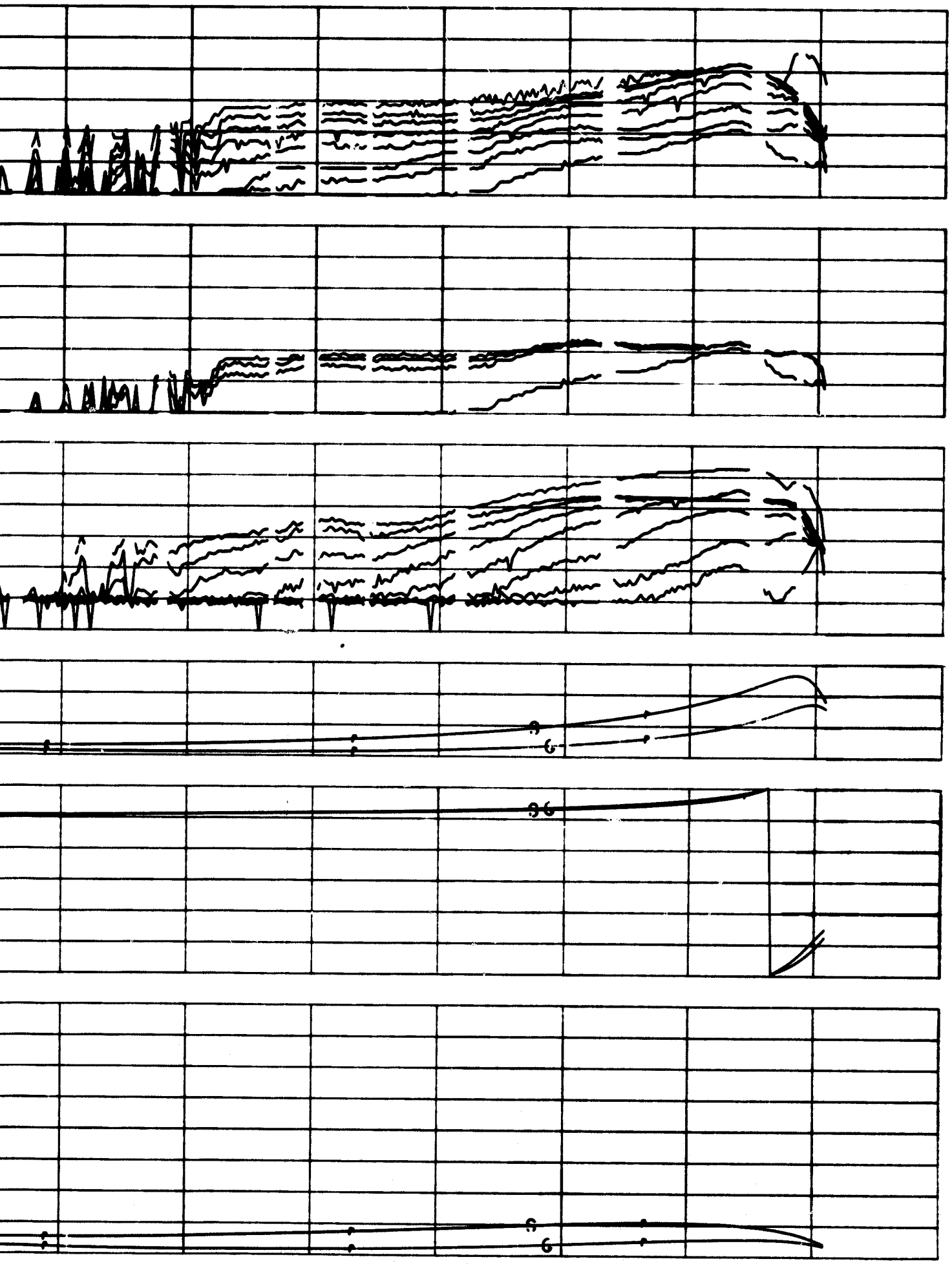

6
FOLDOUT FRAME 2
6
10
T GEOMETRY CURRENT
TER GEOMETRY CURRENT
N INTENSITY
6
10

FOLDOUT FRAME 3

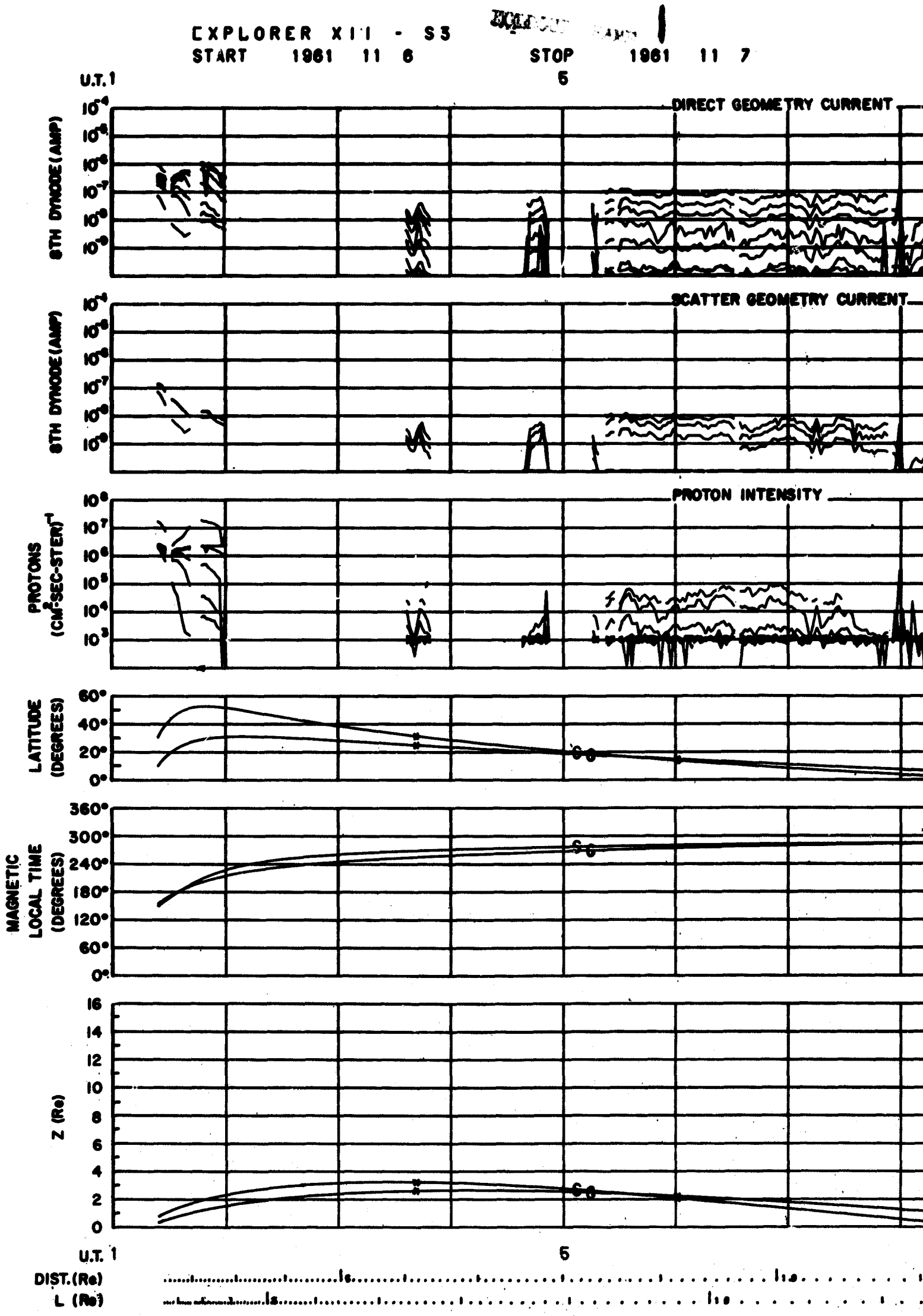


FOLDOUT FRAME 4

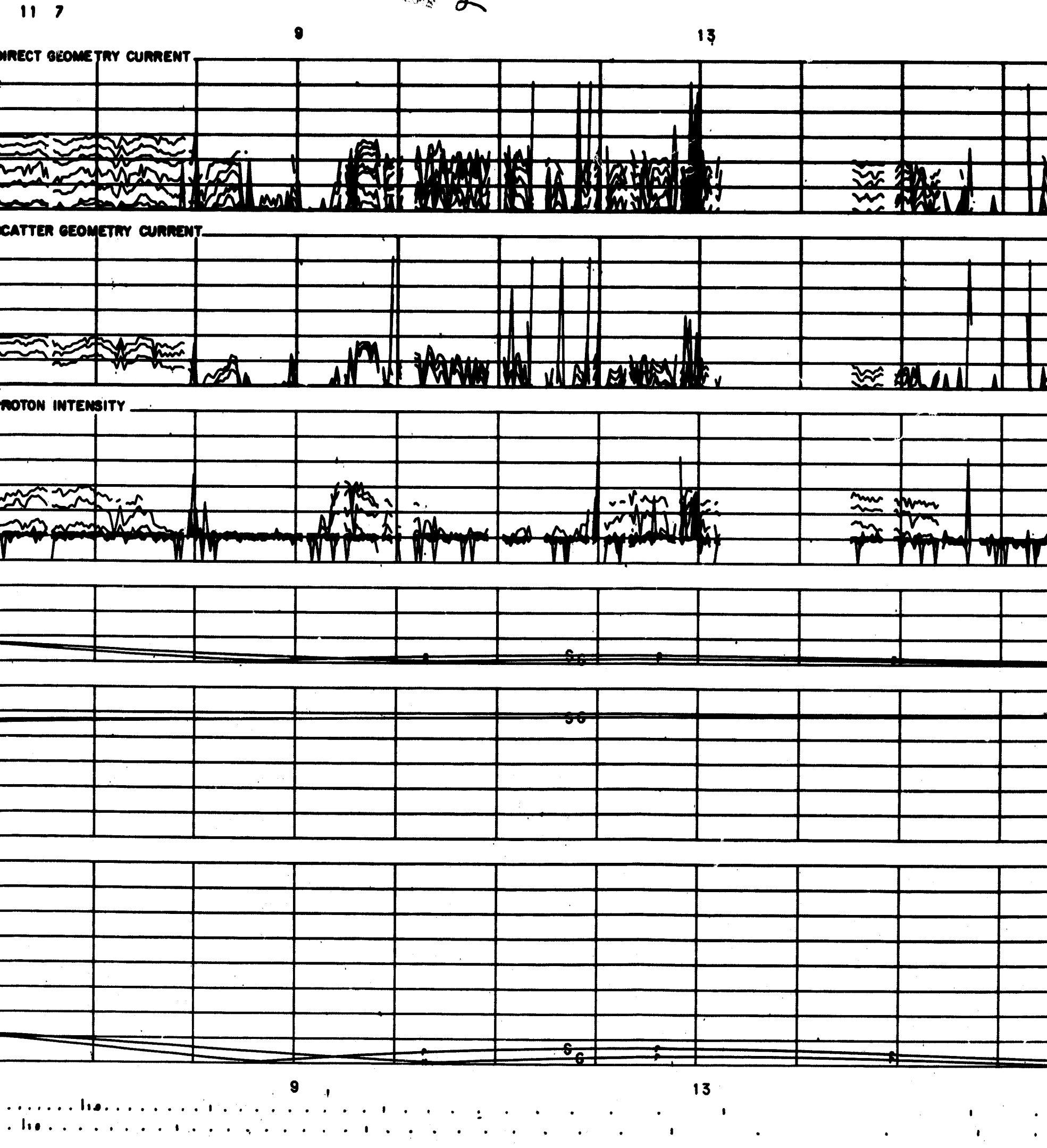
22 2



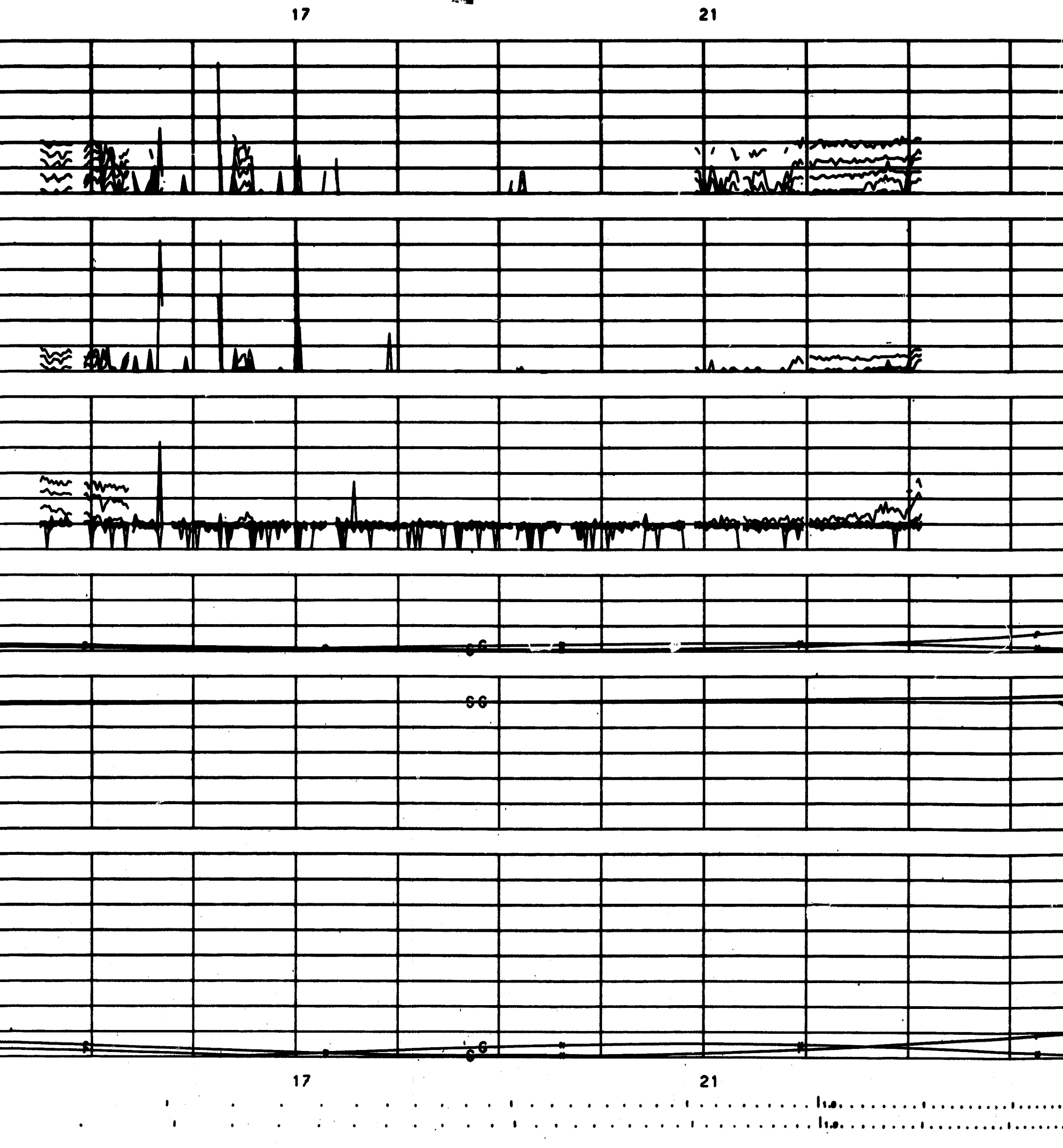
22 2


EXPLORER XII - S3
START 1961 11 6
STOP 1961 11 7
U.T. 1
5
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 1
5
DIST. (Re)
L (Re)

FOLDOUT FRAME 2



FOLDOUT FRAME 3



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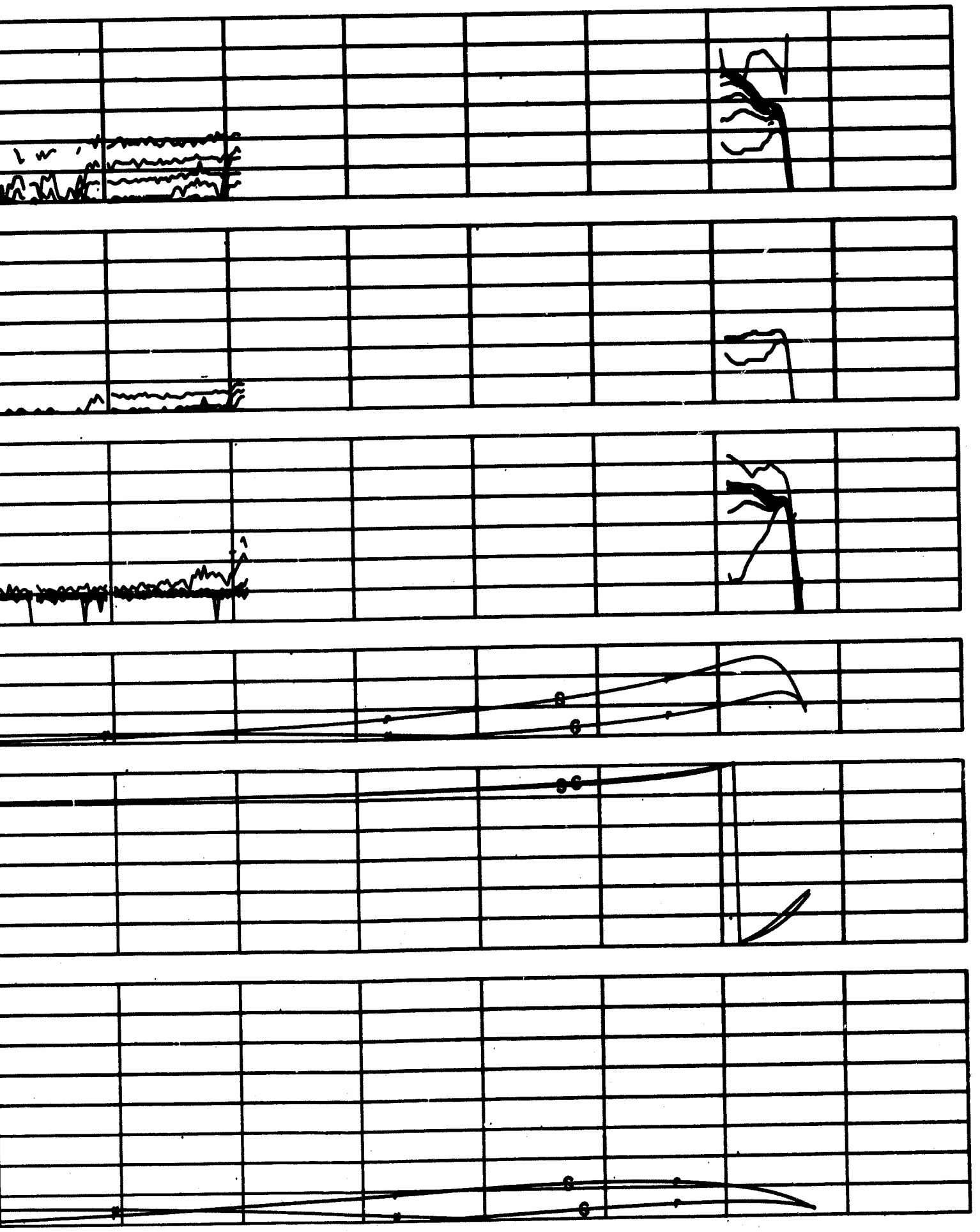
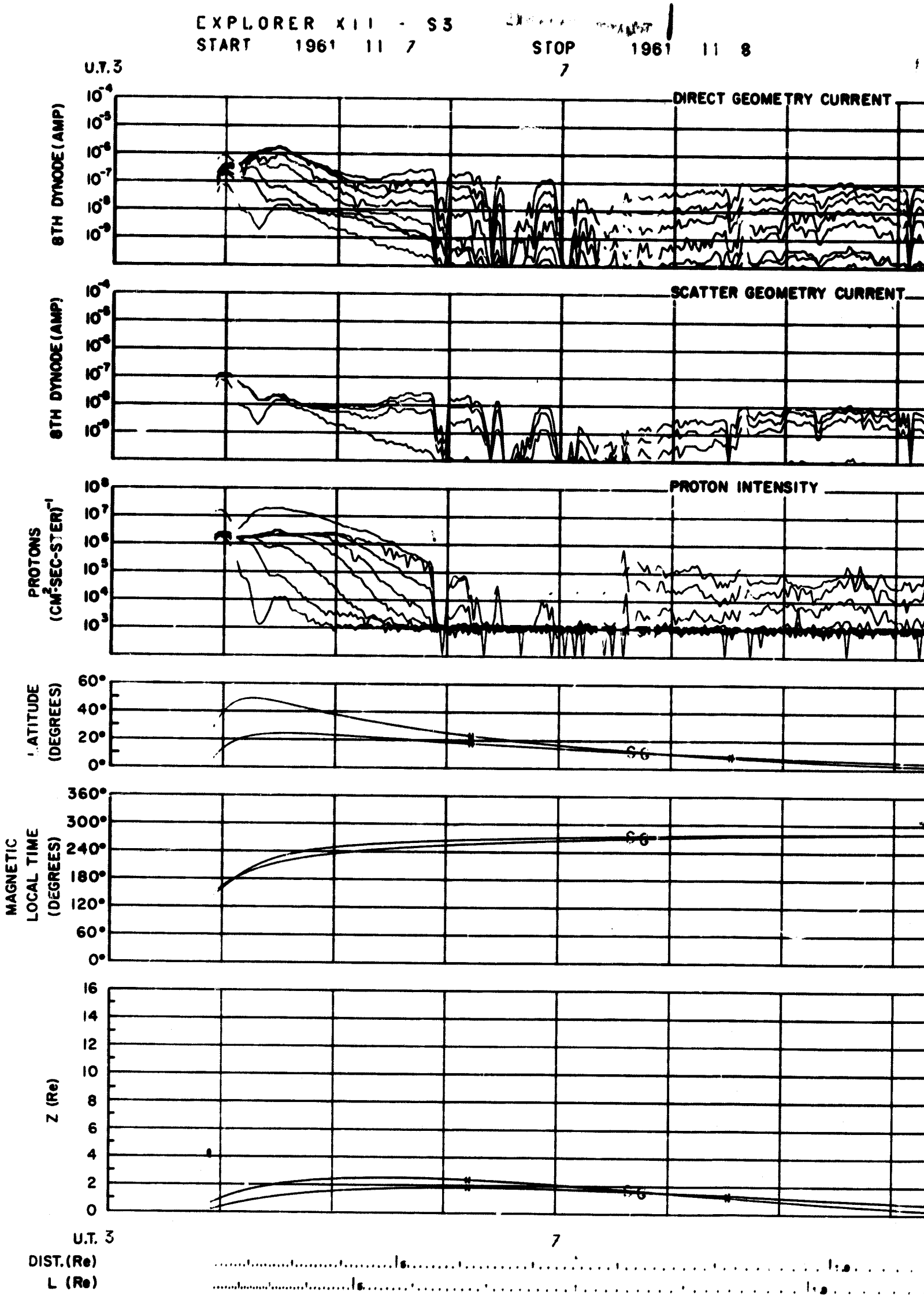
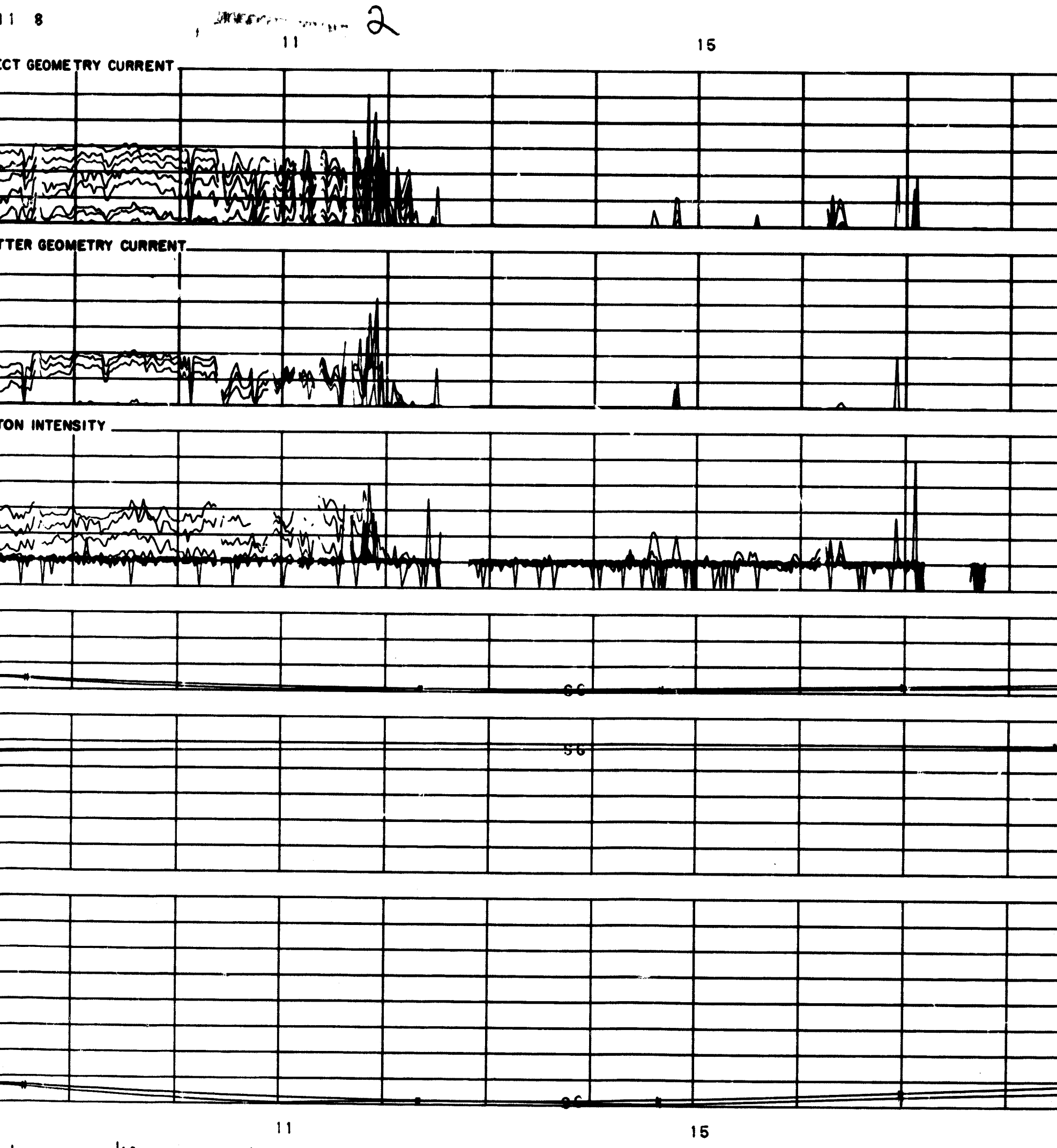
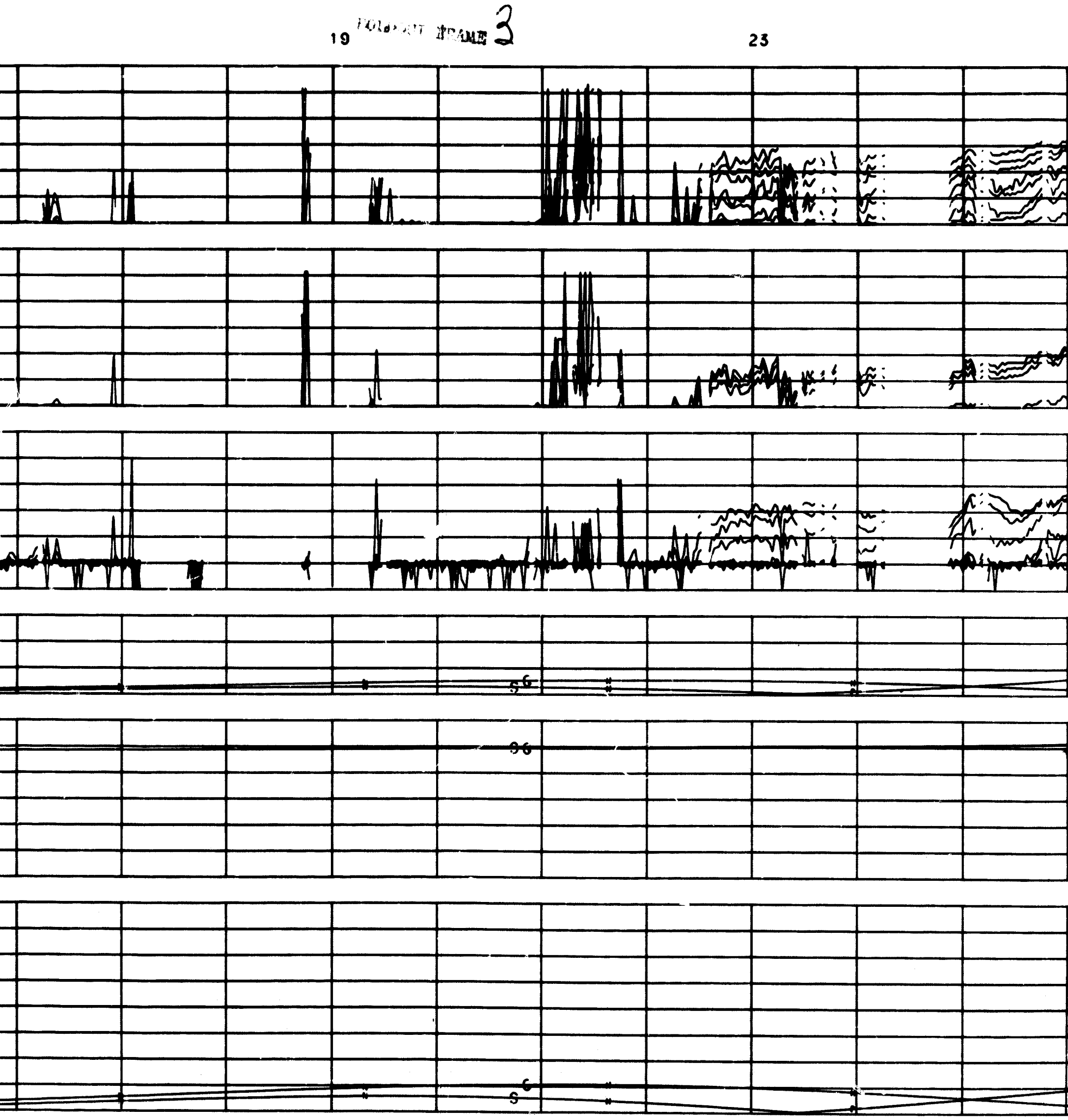
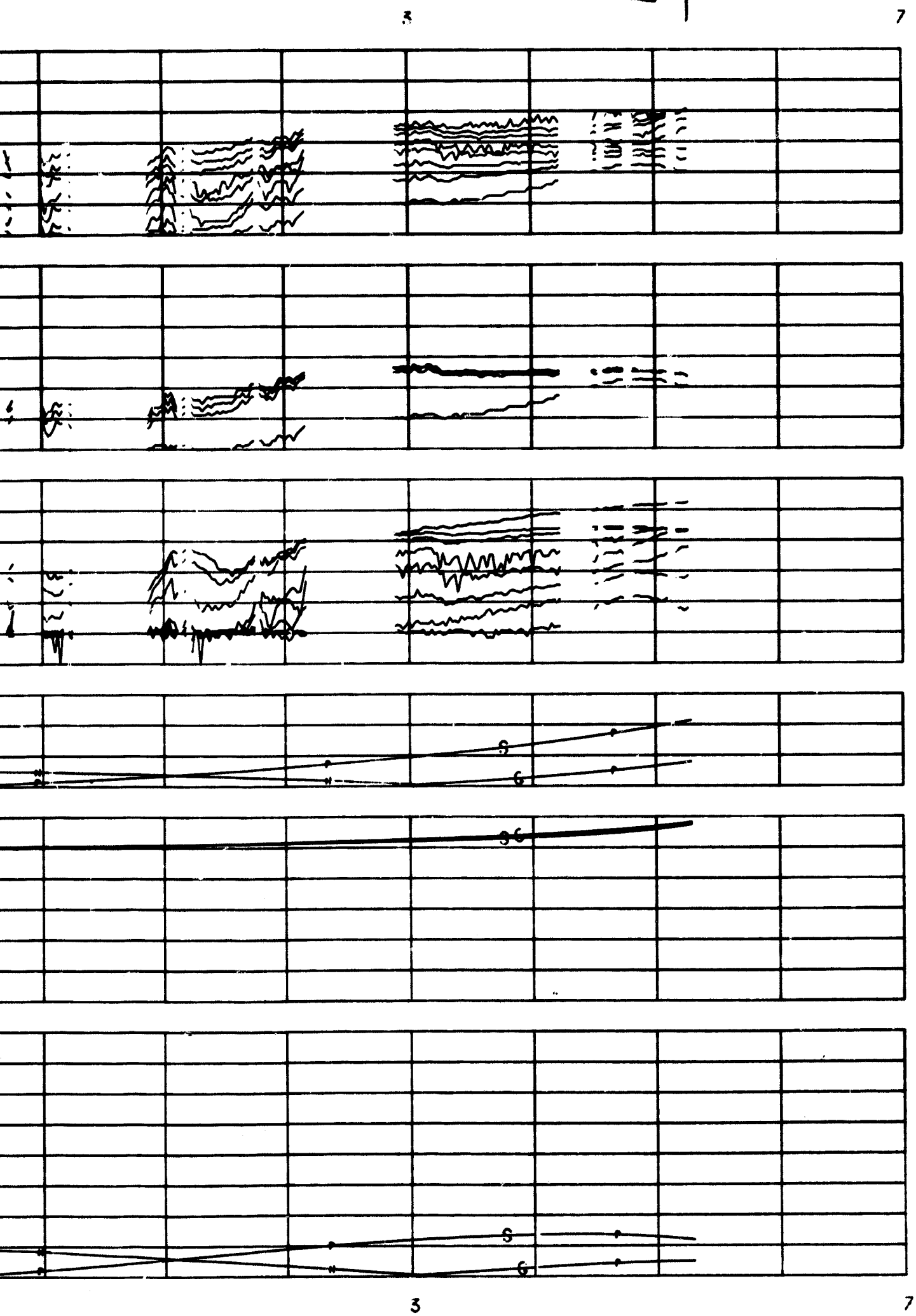


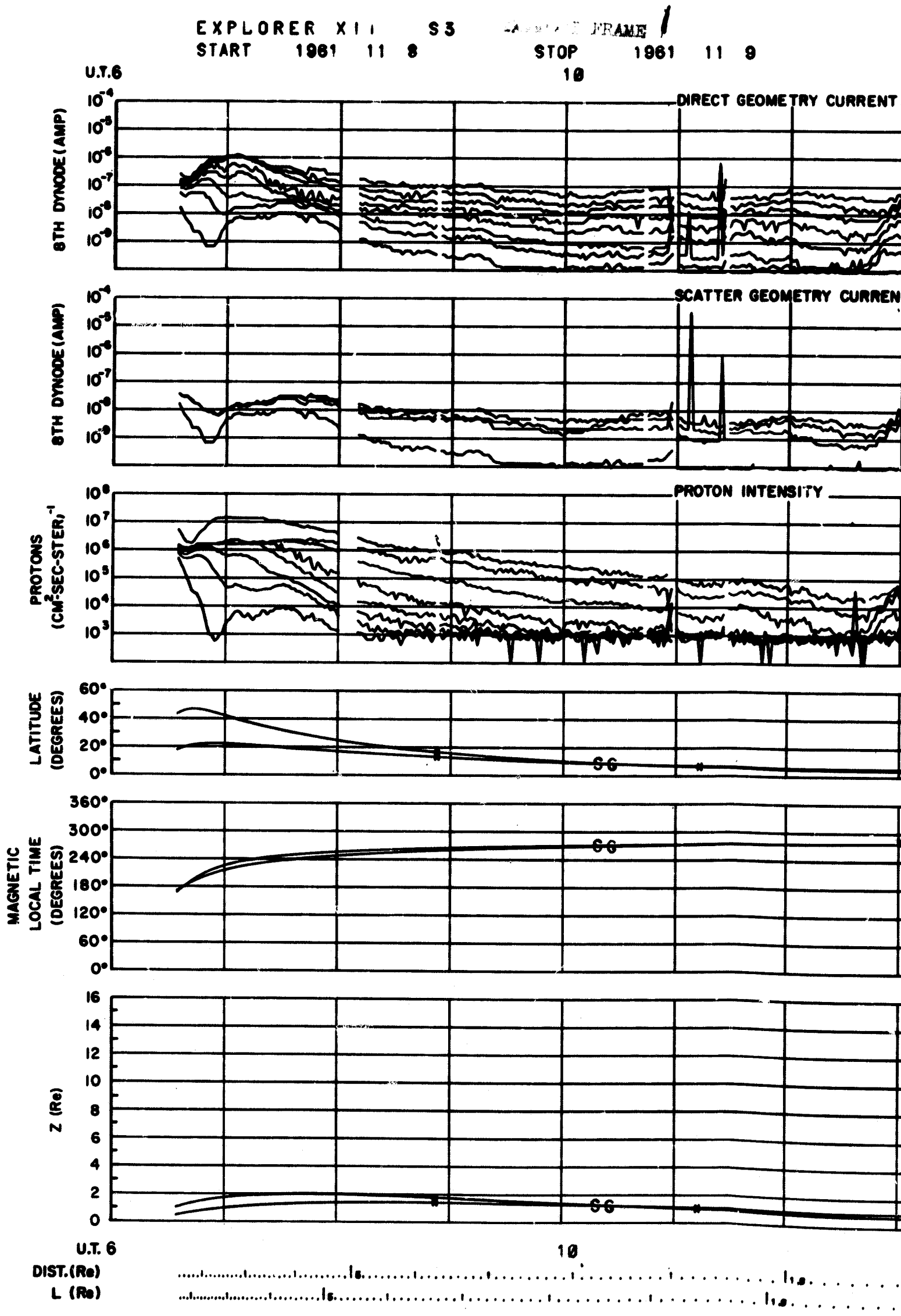

EXPLORER XII - S3
START 1961 11 7
STOP 1961 11 8
U.T. 3
7
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 3
7
DIST. (Re)
L (Re)


11 8
2
11
15
CT GEOMETRY CURRENT
TTER GEOMETRY CURRENT
TON INTENSITY
11
15


19
FOLDOUT FRAME 3
23
96
96
6
S
19
23

FOLDOUT FRAME 4




EXPLORER XII S3
START 1961 11 8
STOP 1961 11 9
U.T.6
10
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURREN
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
SG
DIST. (Re)
L (Re)

11 9

FOLDOUT FRAME 2

14 18

ECT GEOMETRY CURRENT

TTER GEOMETRY CURRENT

TON INTENSITY

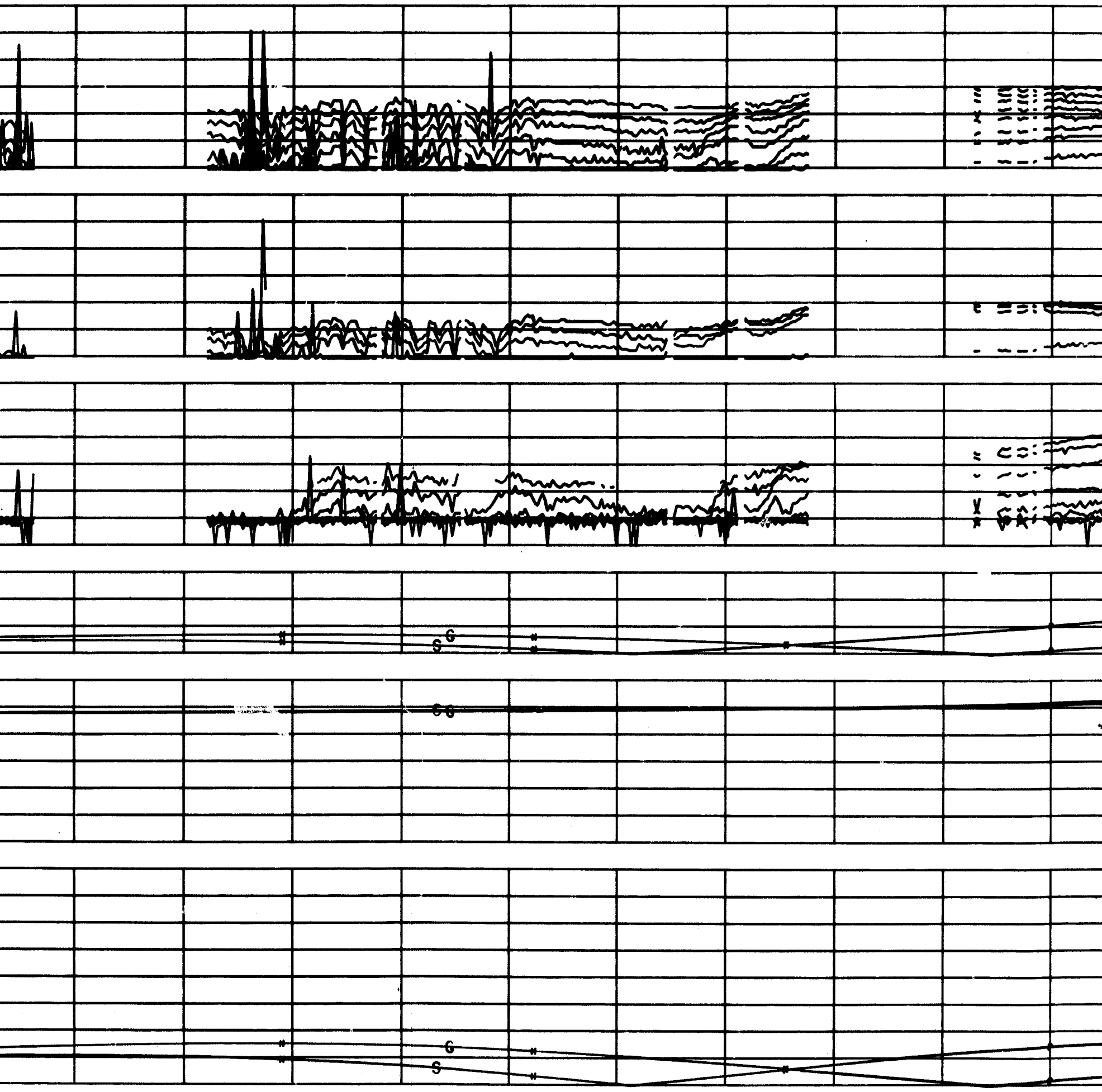
56

56

58

14 18

22 FOLDOUT FRAME 3 2



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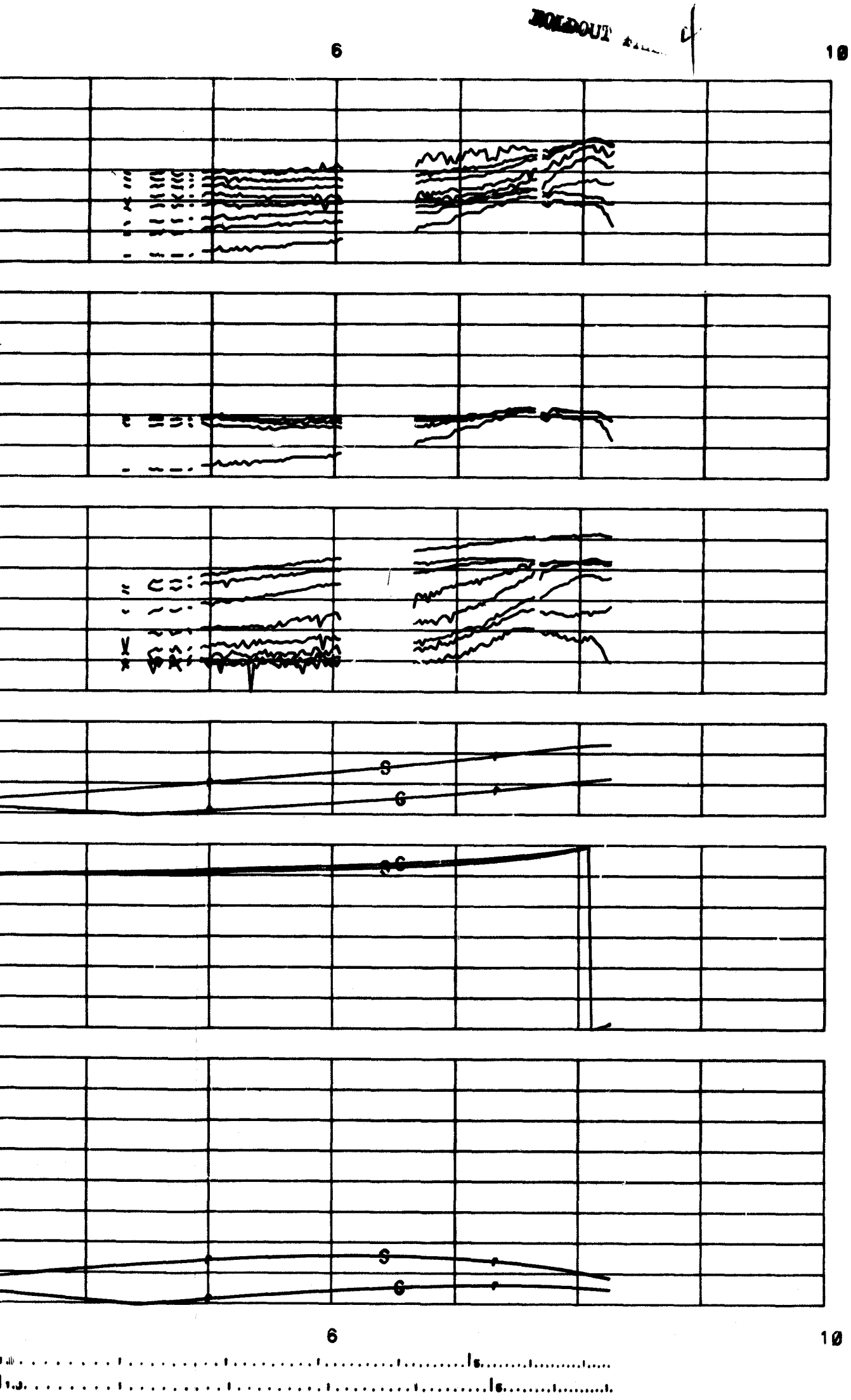
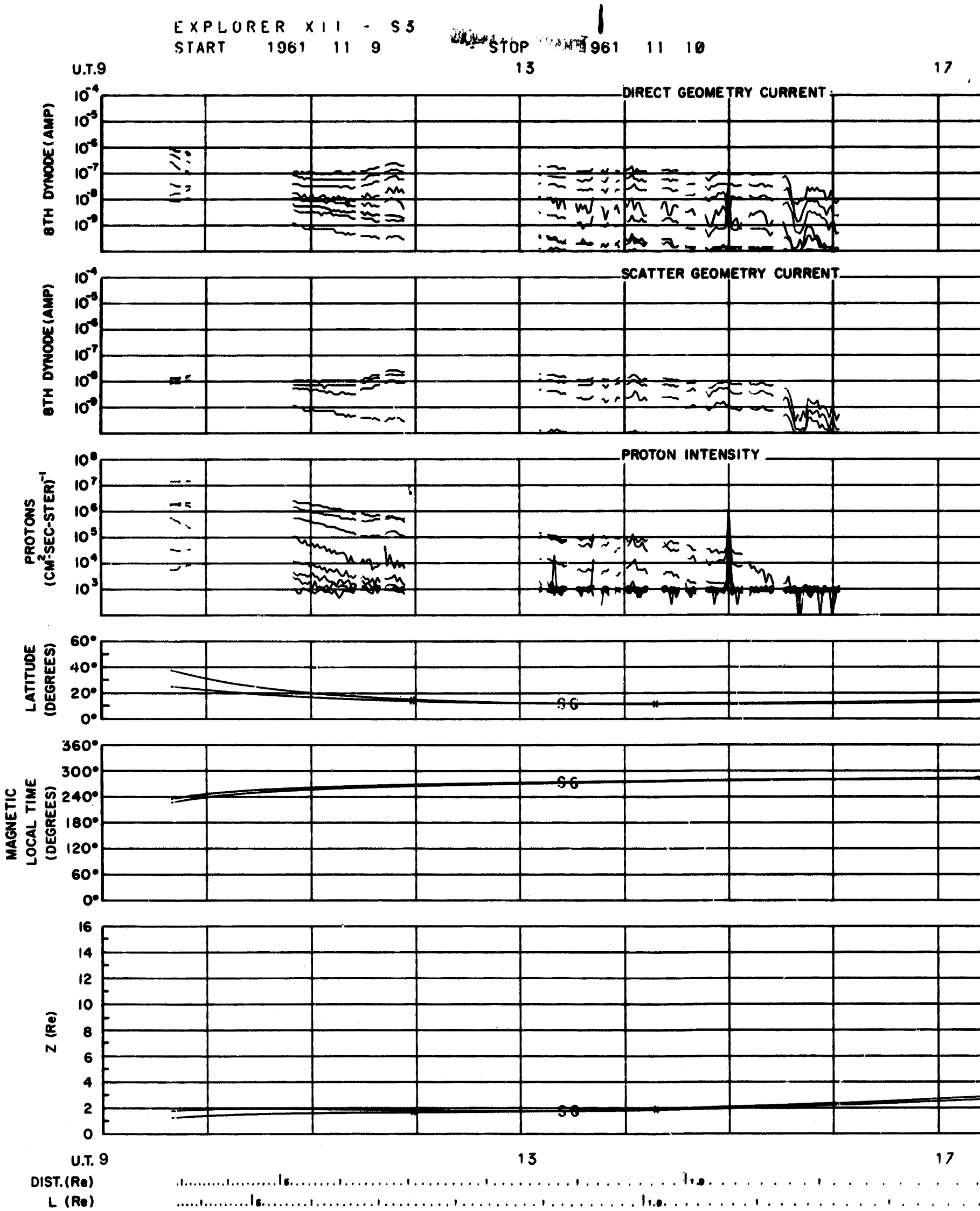
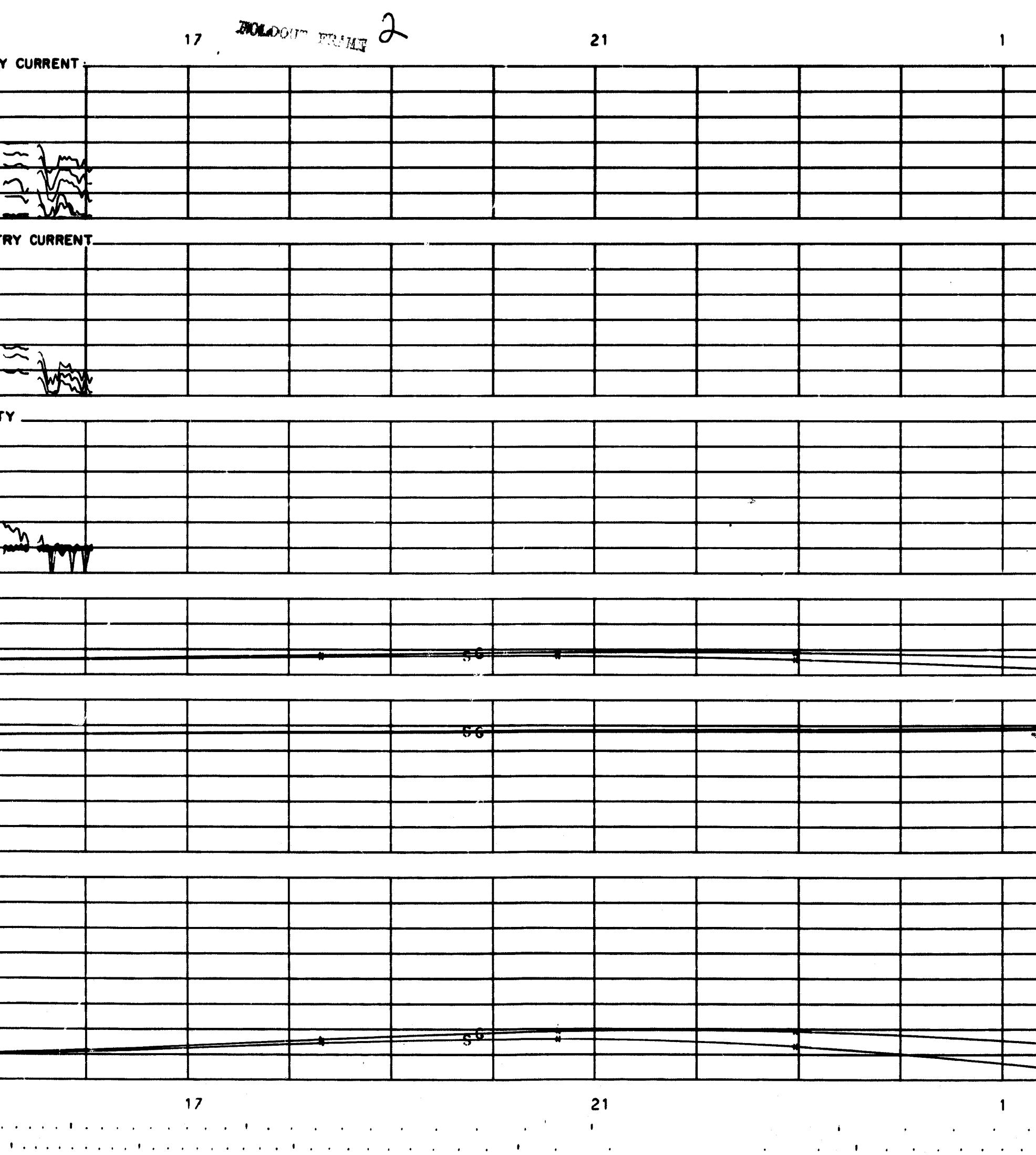
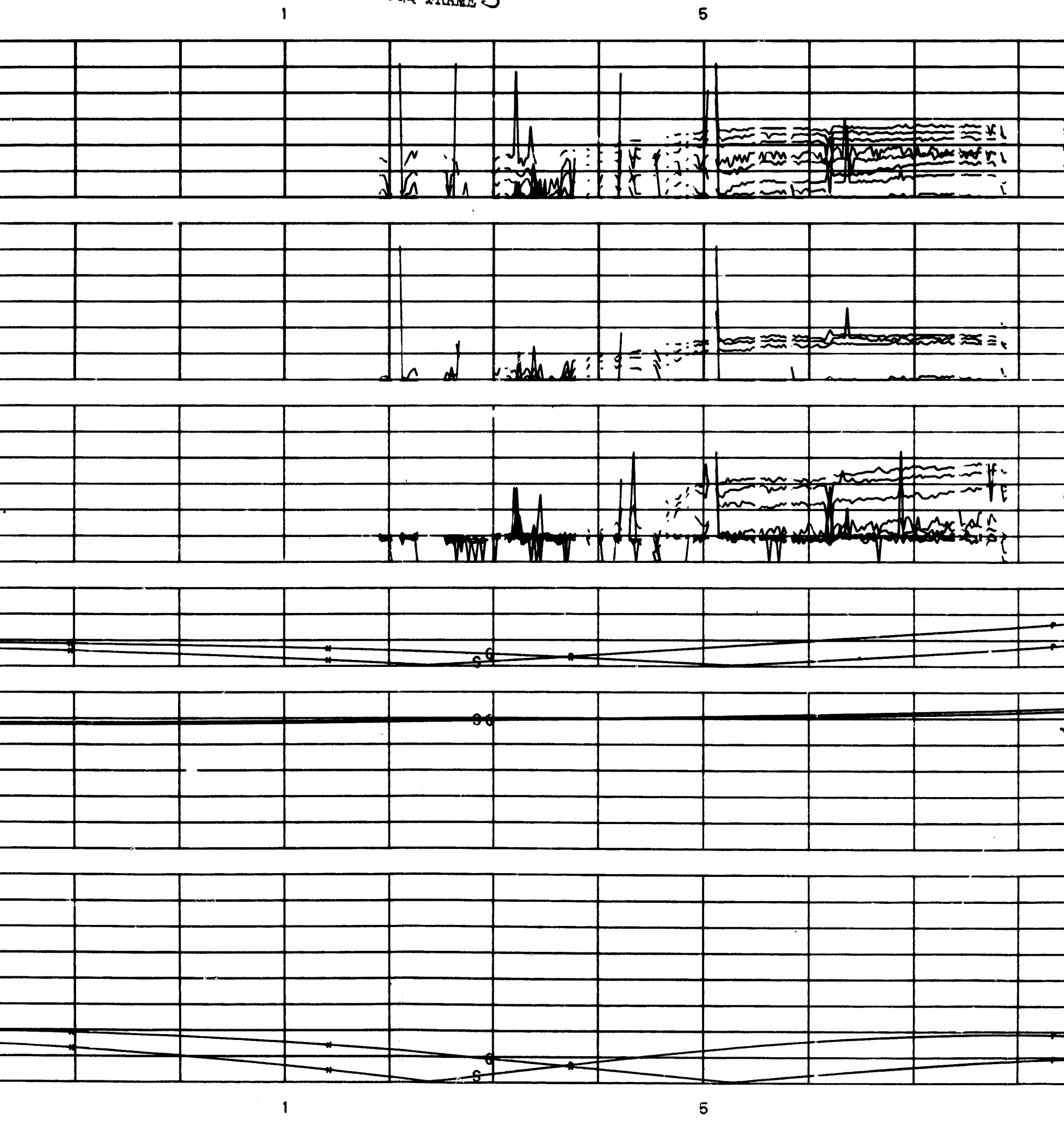

BOILDOUT
6
10
S
G
S
G
S
G
6
10

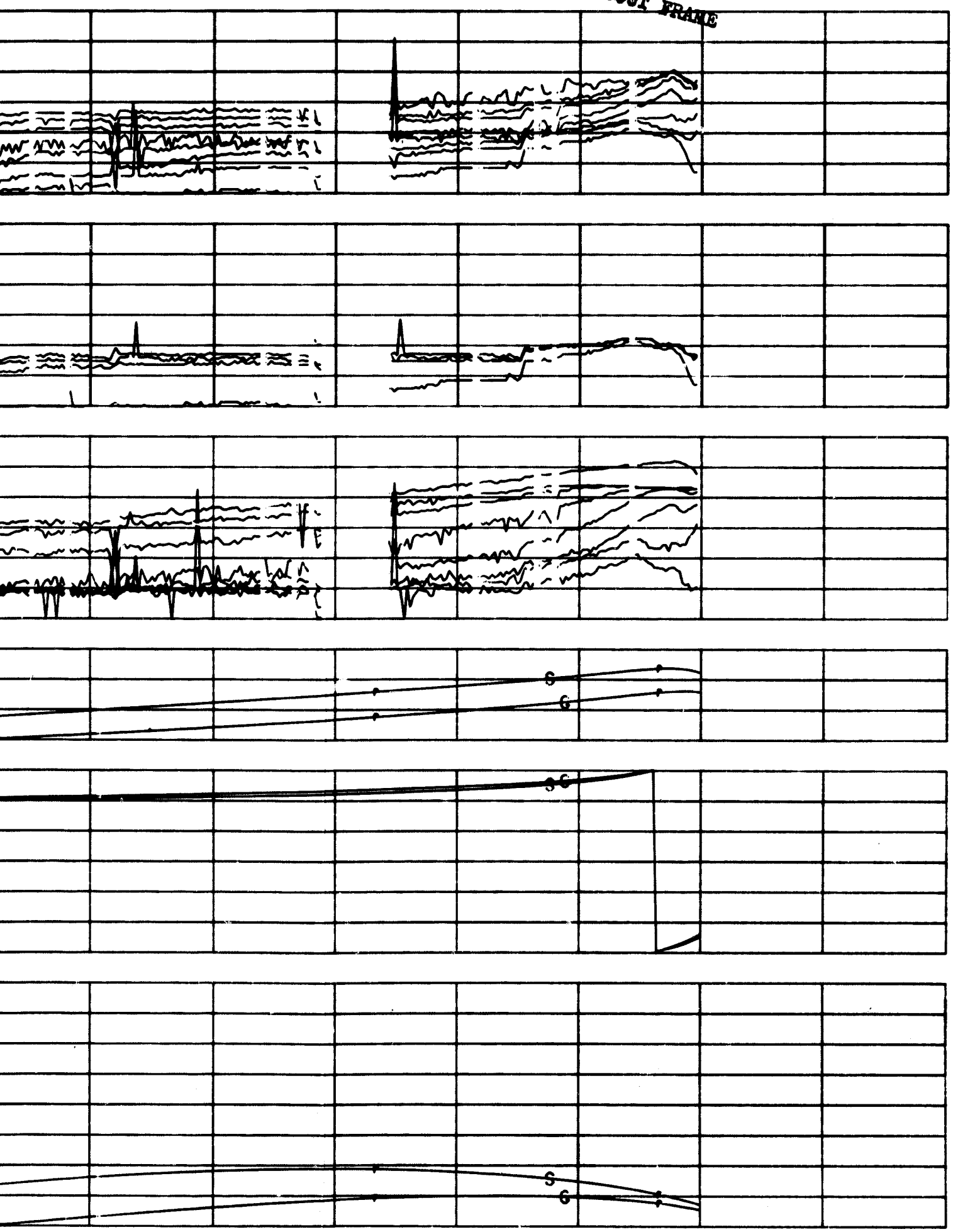

EXPLORER XII - S3
START 1961 11 9
STOP 1961 11 10
U.T.9
13
17
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
S6
MAGNETIC LOCAL TIME (DEGREES)
S6
Z (Re)
S6
U.T. 9
13
17
DIST. (Re)
L (Re)


17
BOLDOUT FRAME 2
21
1
Y CURRENT
TRY CURRENT
TY
56
56
56
17
21
1

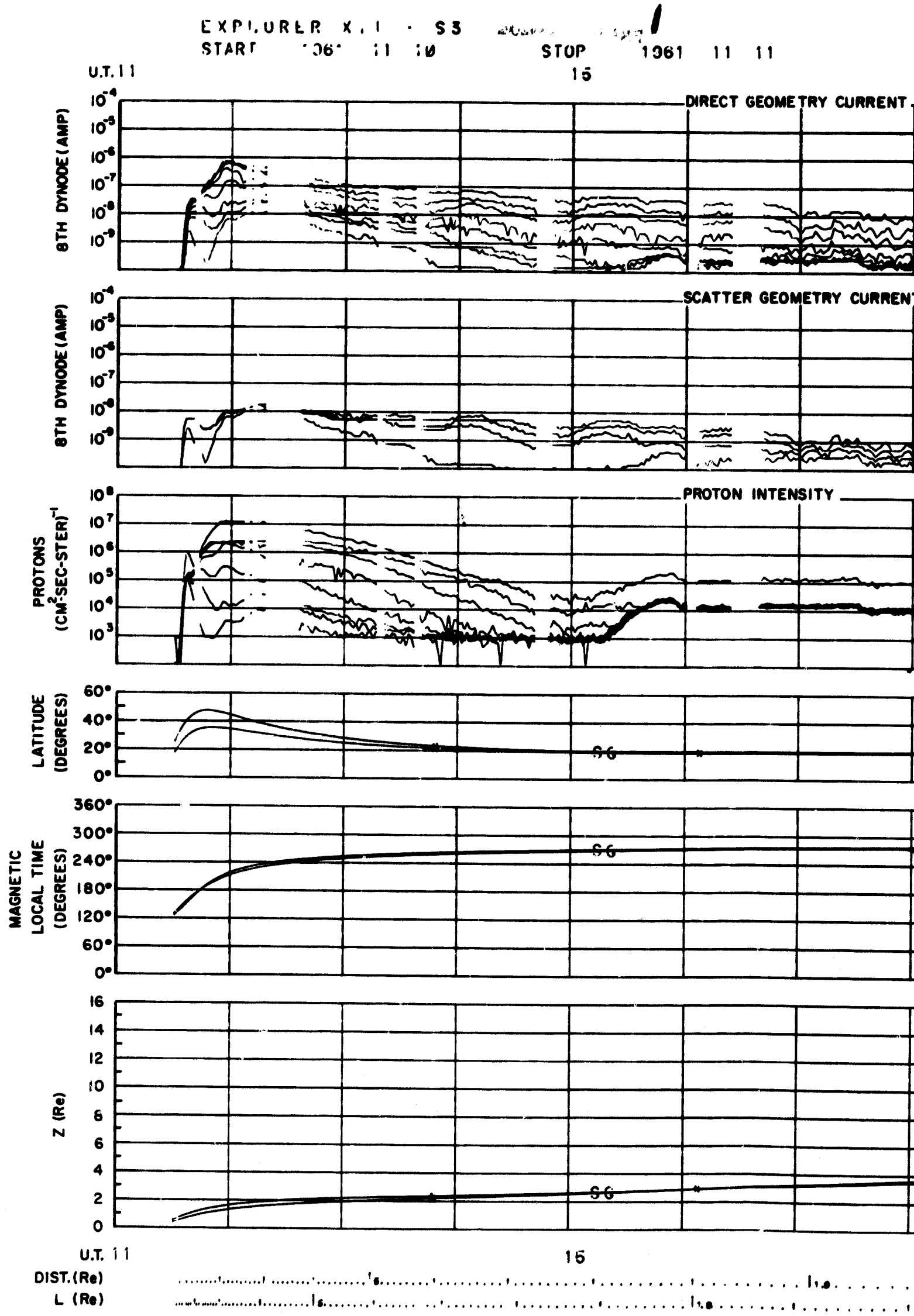
FOLDOUT FRAME 3



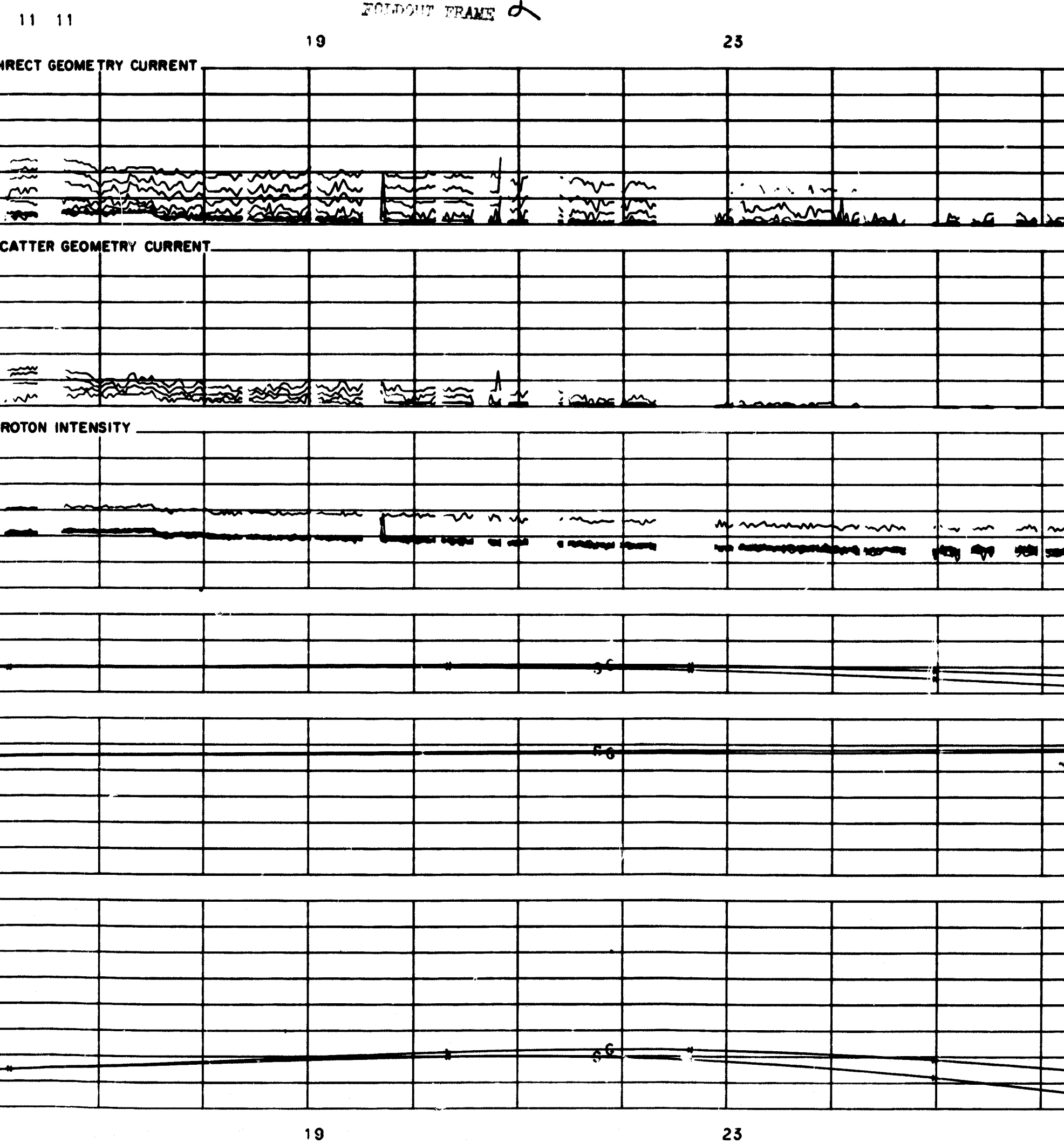
9 FOLDOUT FRAME 4 13



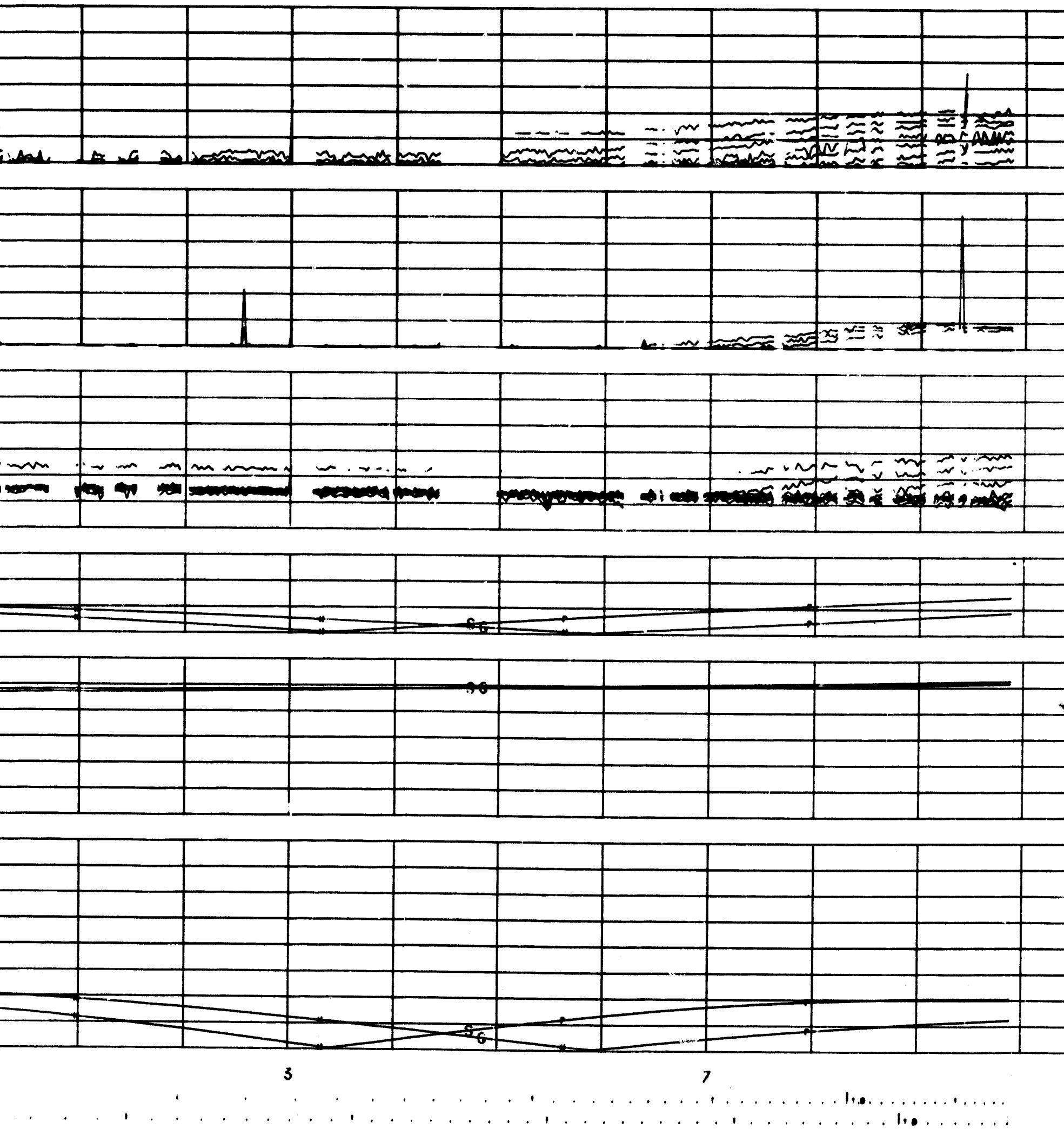
9 13


EXPLORER XII - S3
START 1961 11 10
STOP 1961 11 11
U.T. 11
15
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM-2-SEC-STER)-1
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 11
15
DIST. (Re)
L (Re)

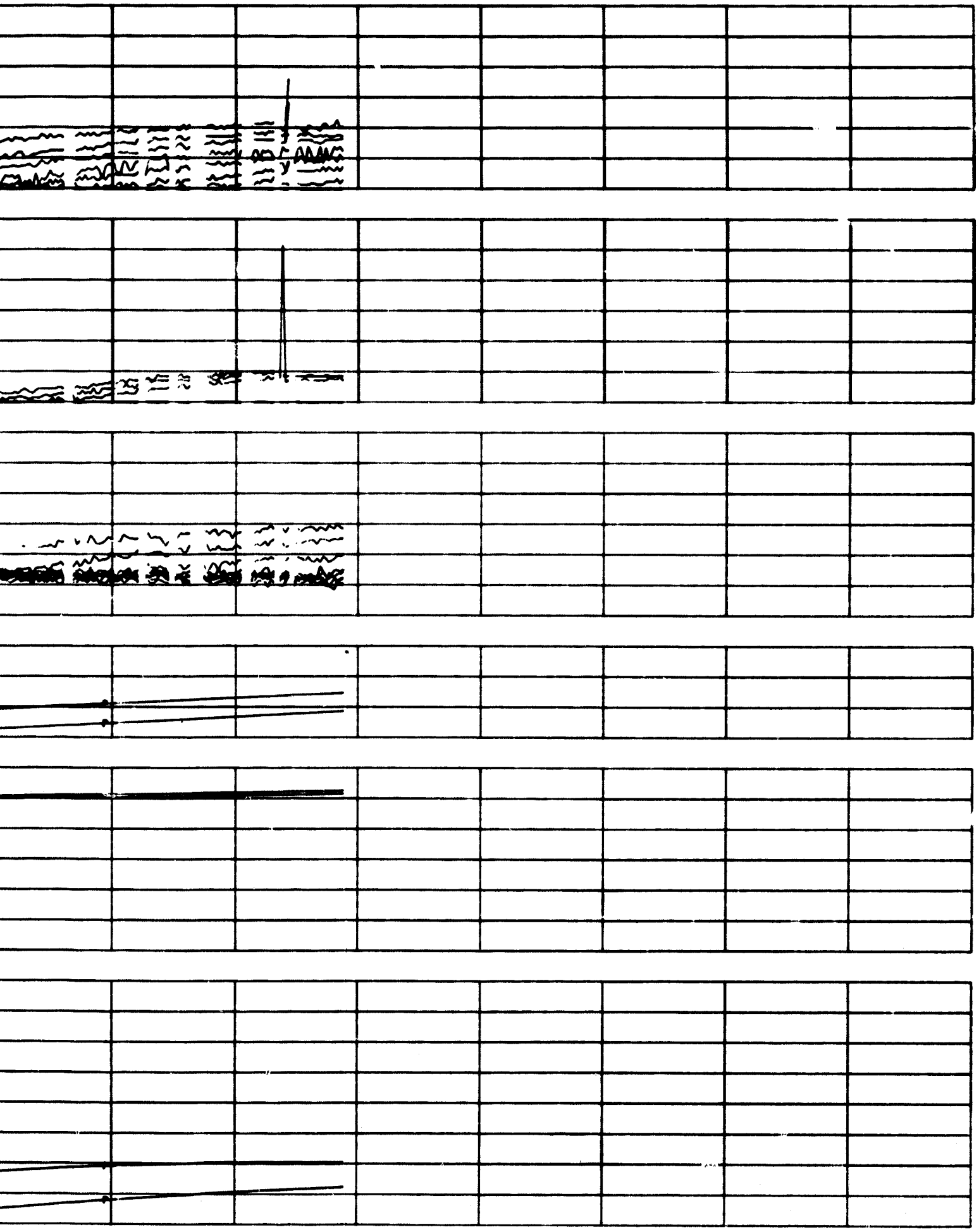
FOLDOUT FRAME 2

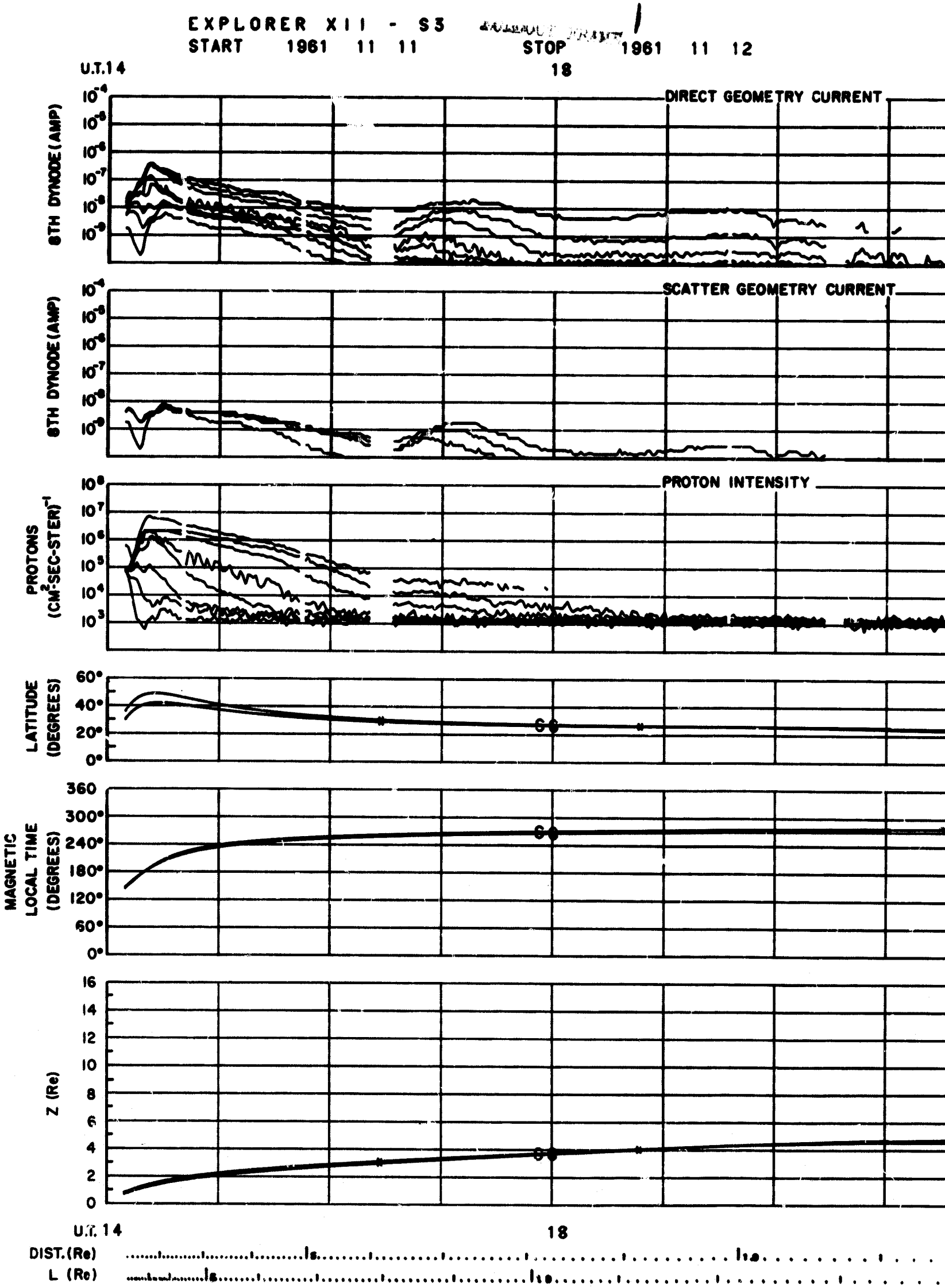


FOLDOUT FRAME 3



FOLDOUT FRAME 4

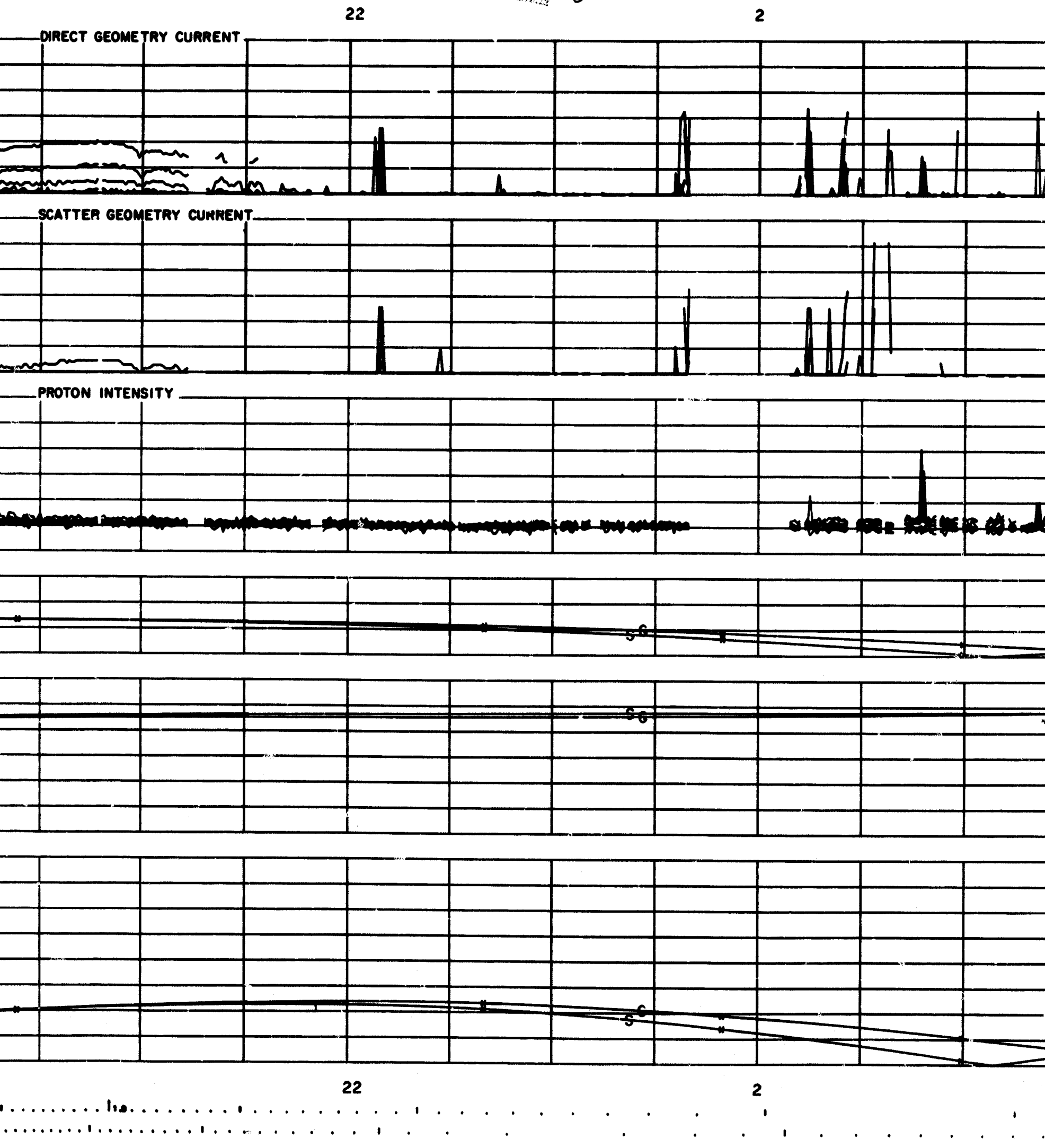



EXPLORER XII - S3
START 1961 11 11
STOP 1961 11 12
U.T. 14
18
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 14
18
DIST. (Re)
L (Re)

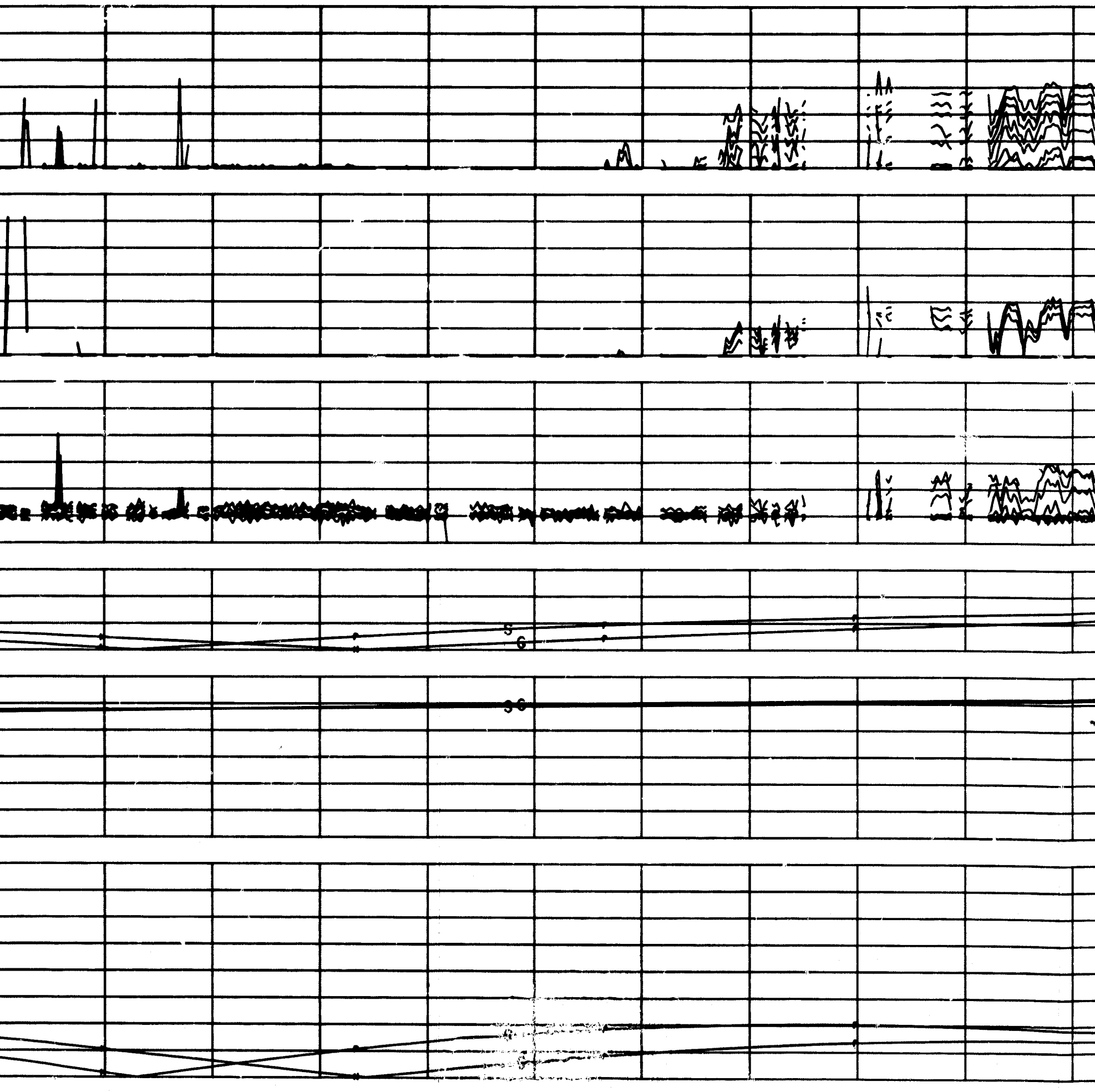
1

1961 11 12

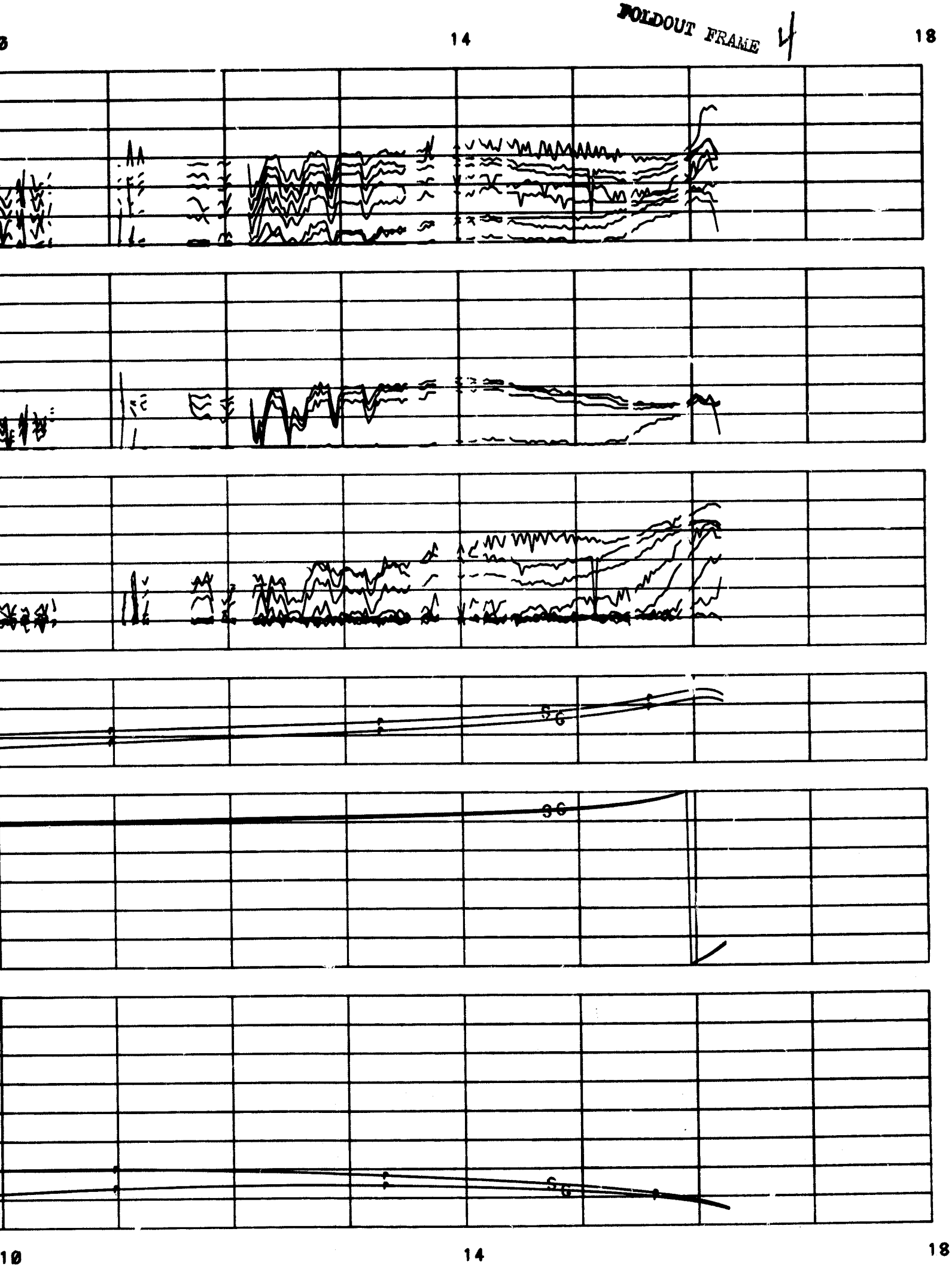
FOLDOUT FRAME 2

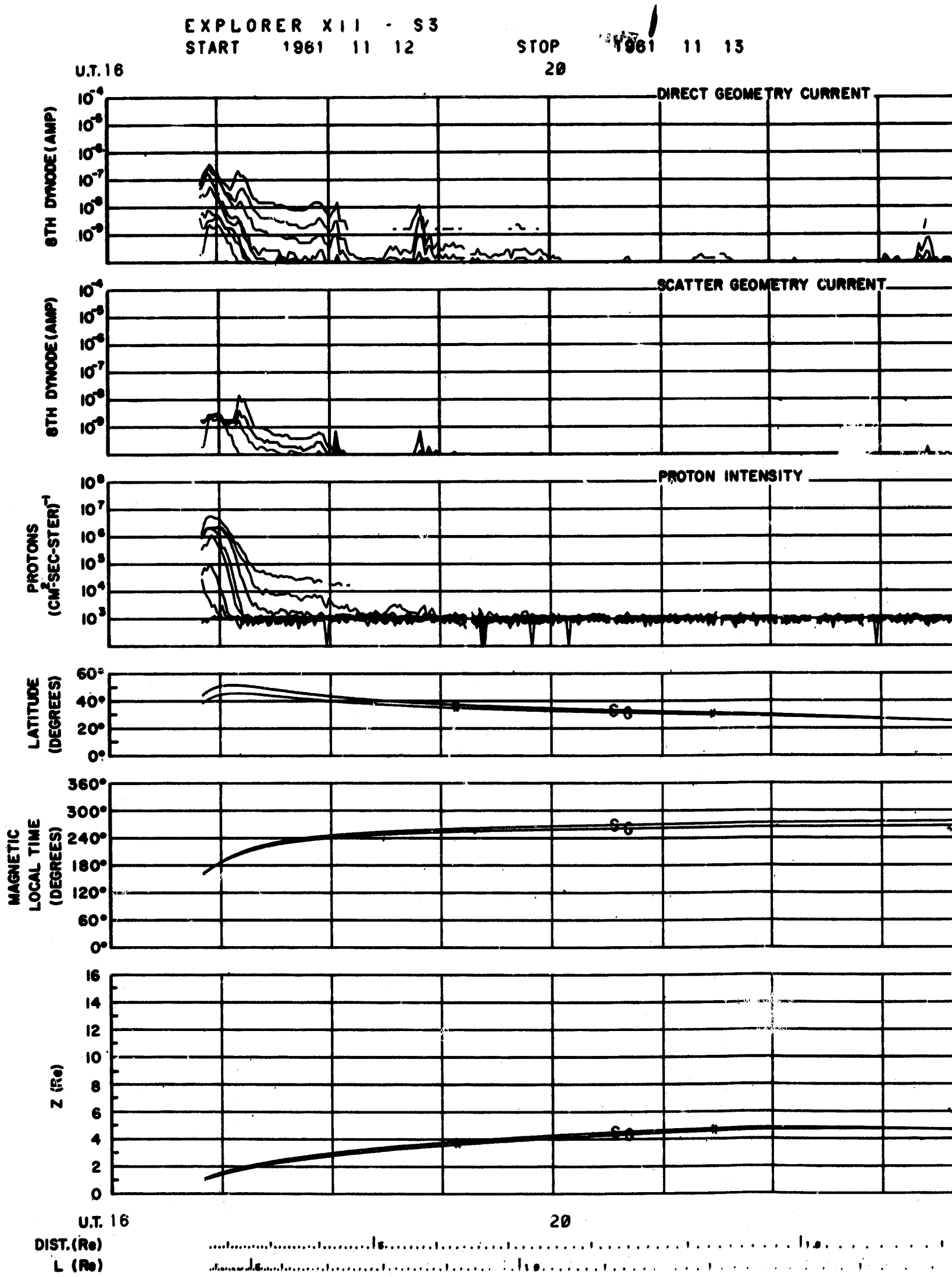


FOLDOUT FRAME 3

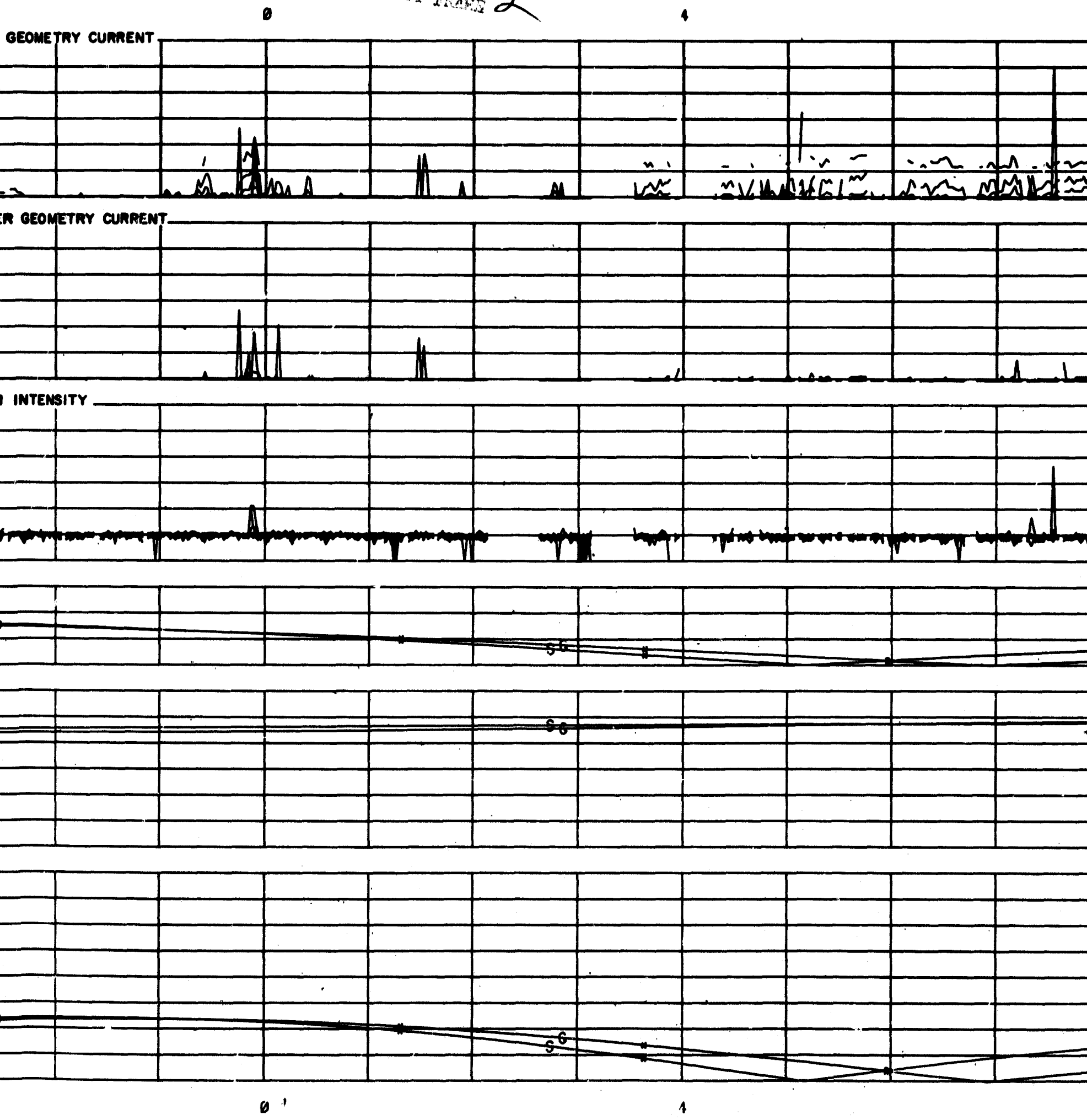


FOLDOUT FRAME 4

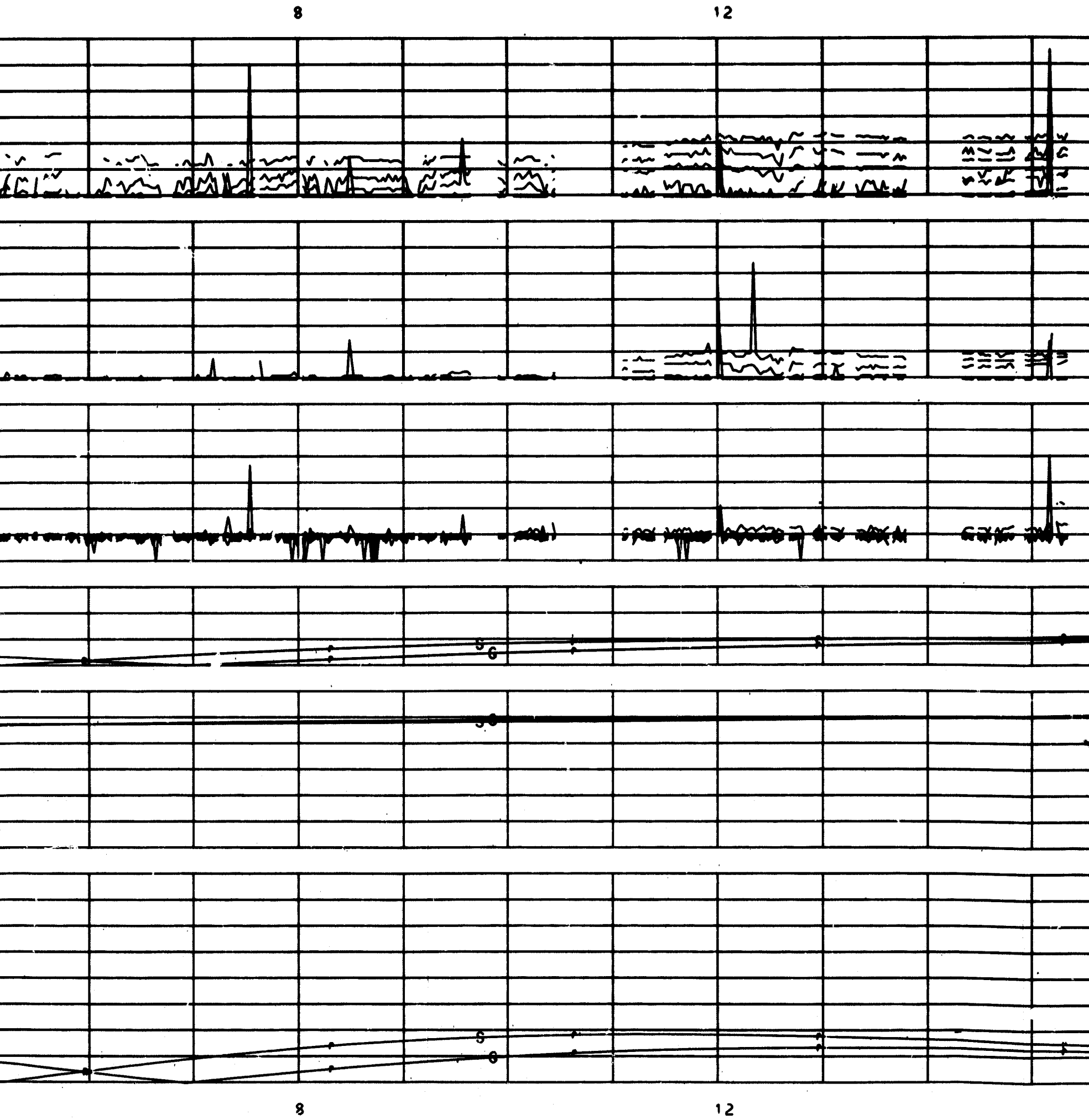



EXPLORER XII - S3
START 1961 11 12
STOP 1961 11 13
U.T. 16
20
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 16
20
DIST. (Re)
L (Re)

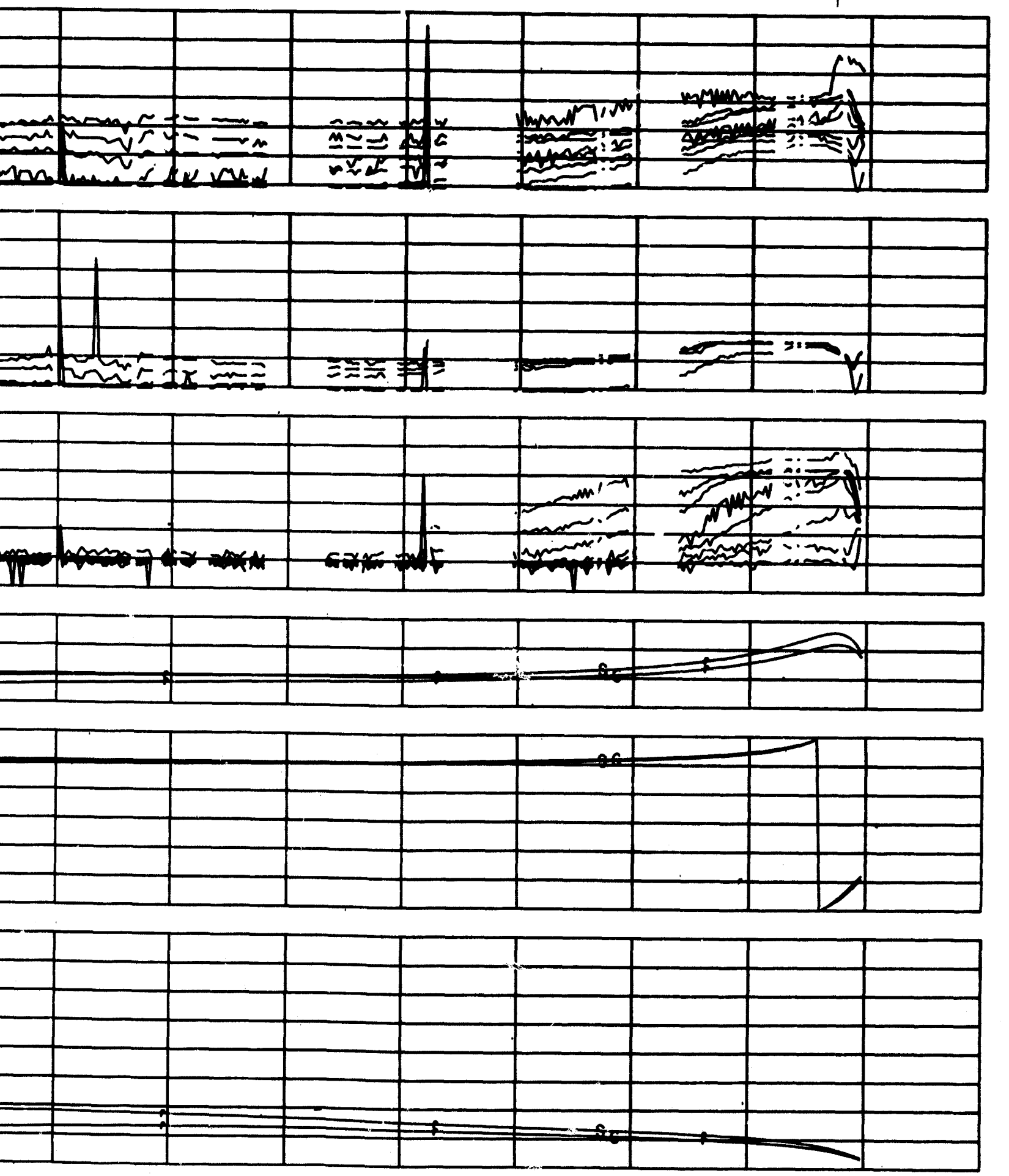
FOLDOUT FRAME 2

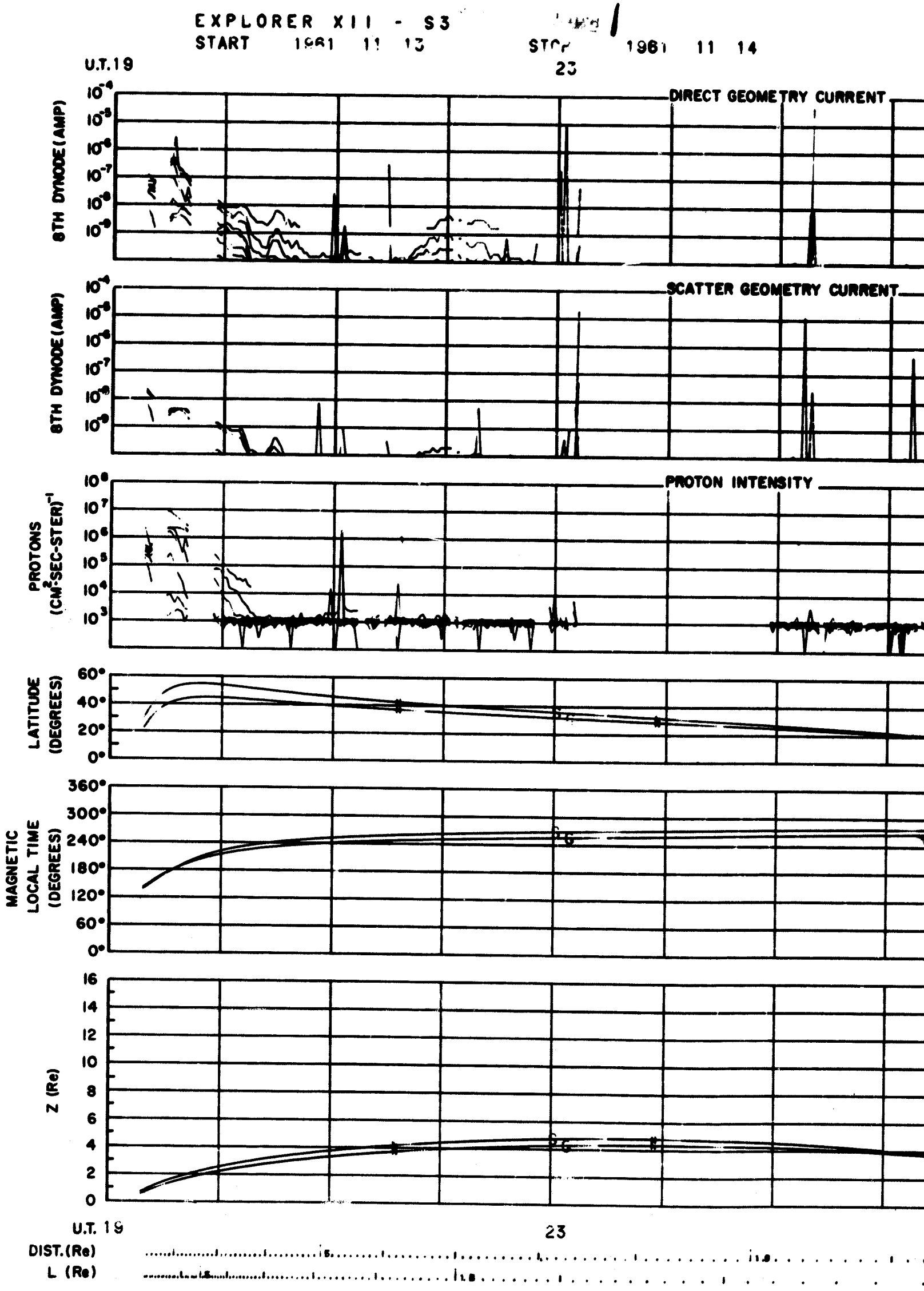


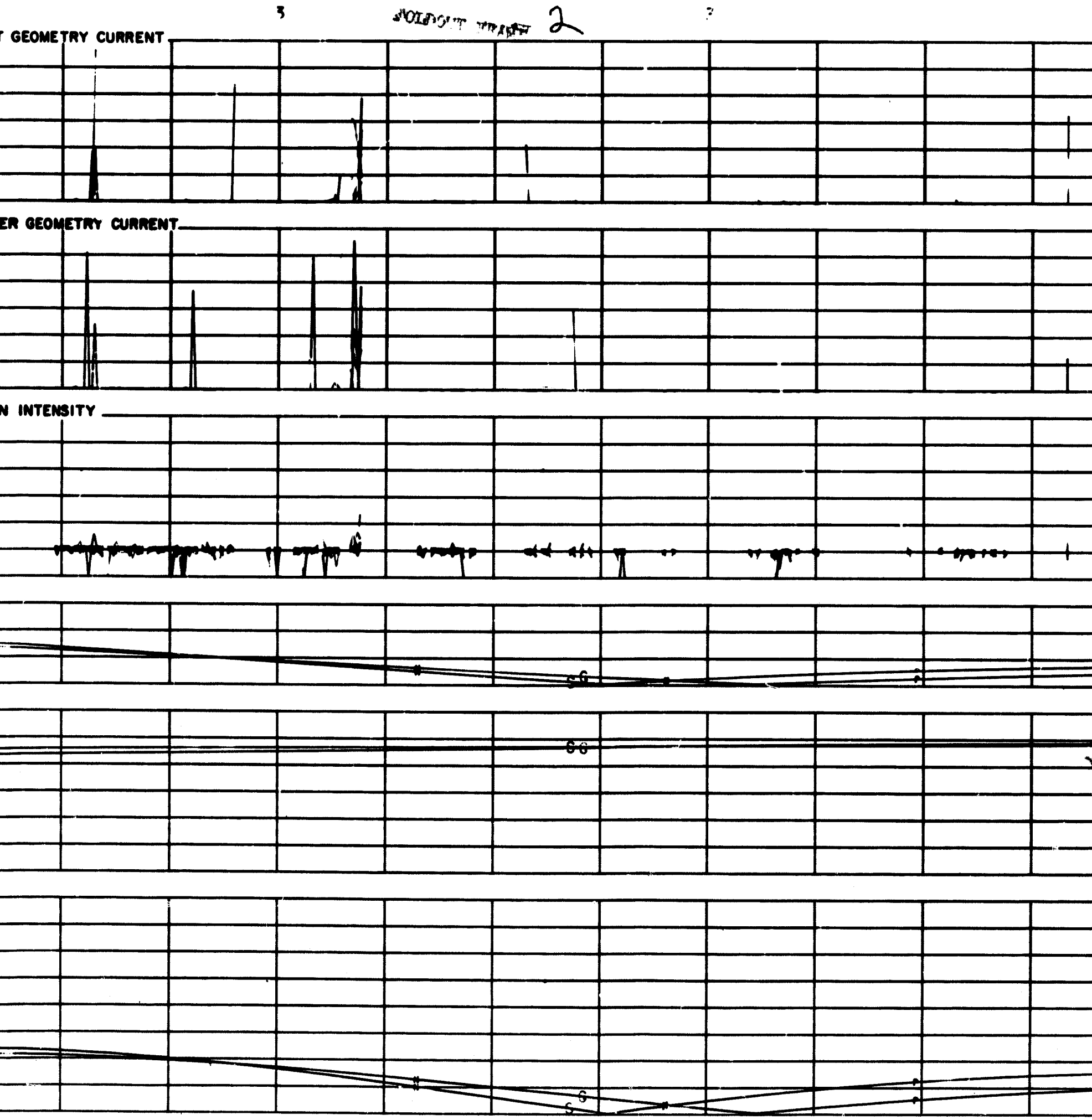
FOLDOUT FRAME 3



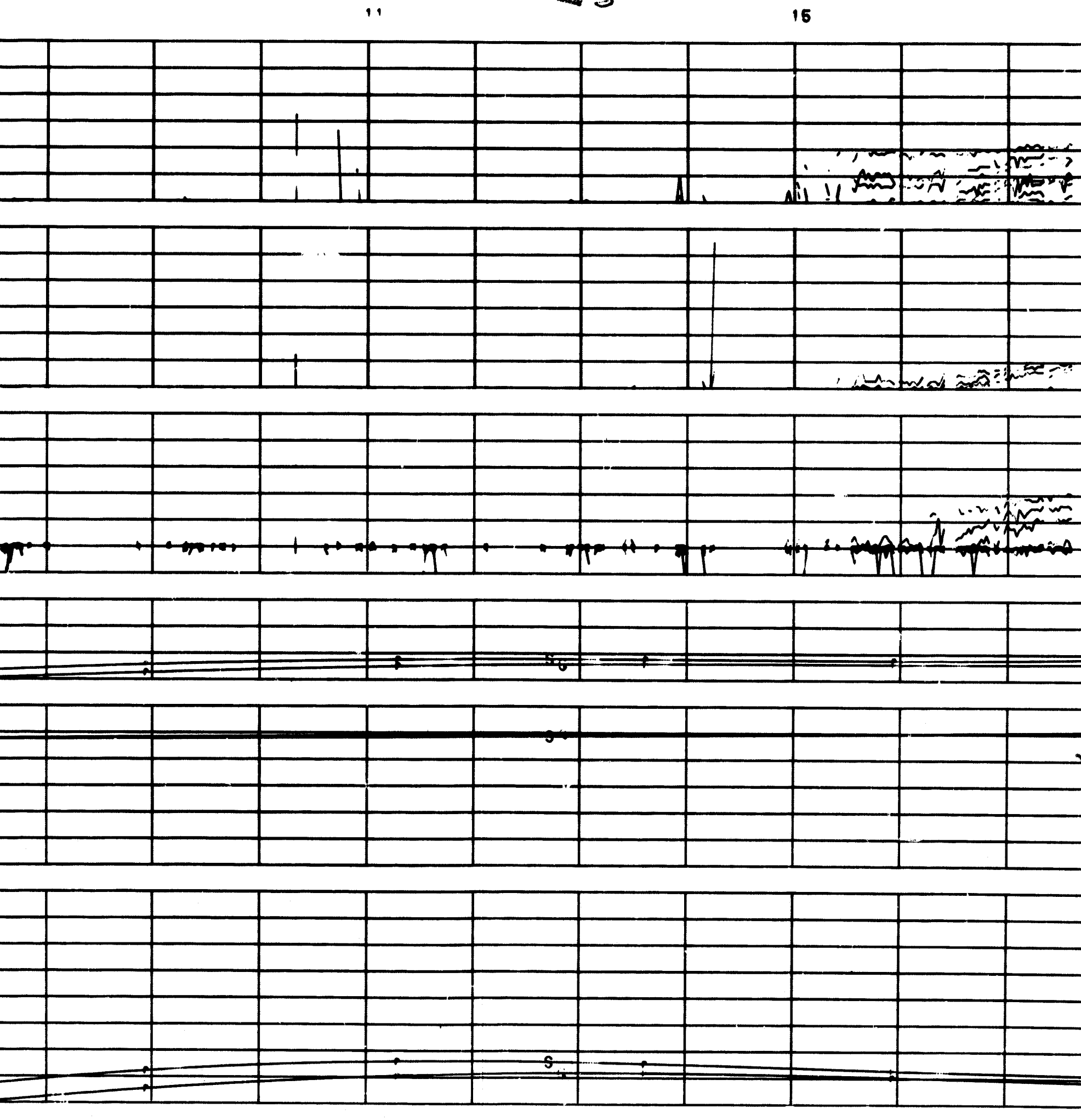
FOLDOUT FRAME 4



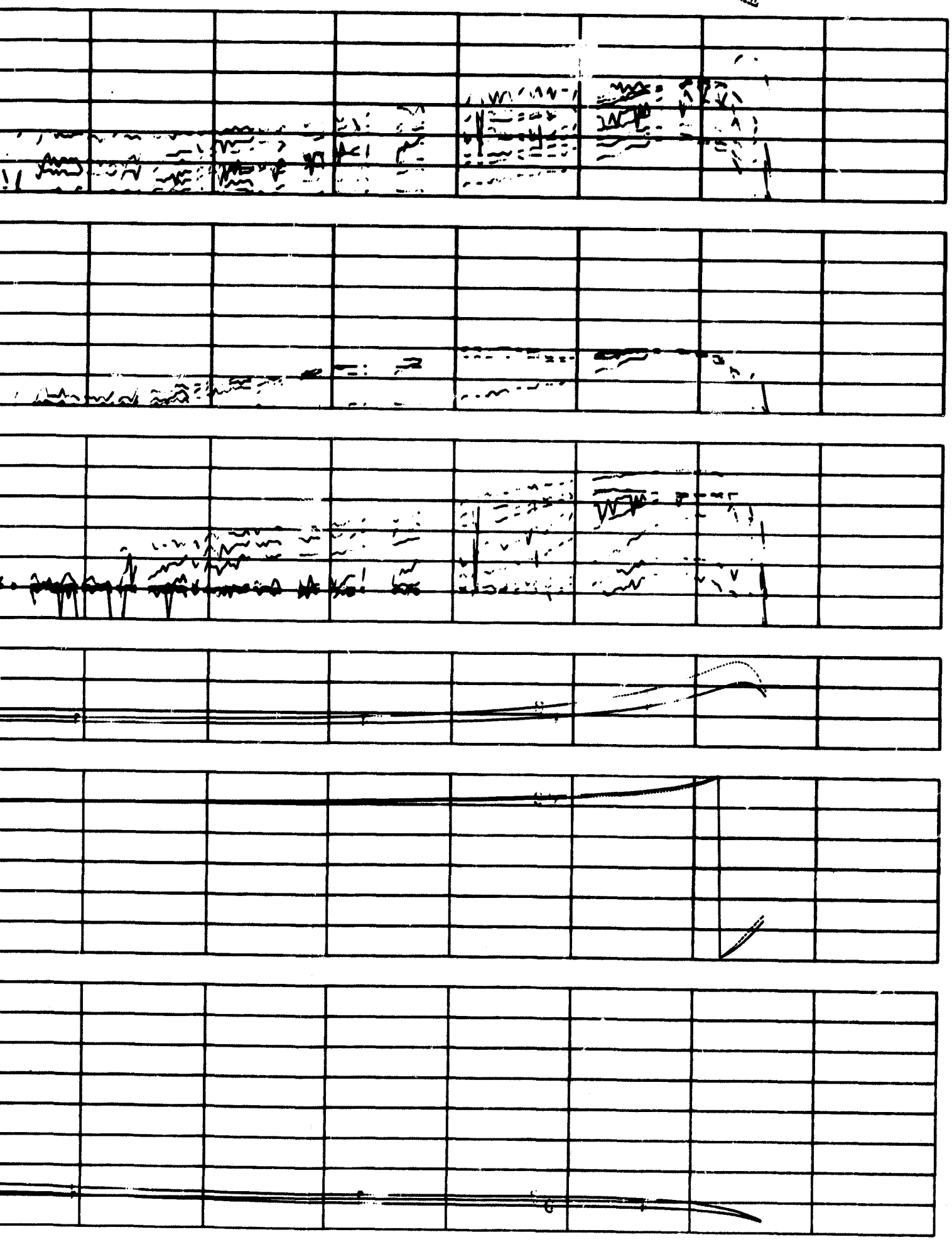

EXPLORER XII - S3
START 1961 11 13
STOP 1961 11 14
U.T. 19
23
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 19
23
DIST. (Re)
L (Re)

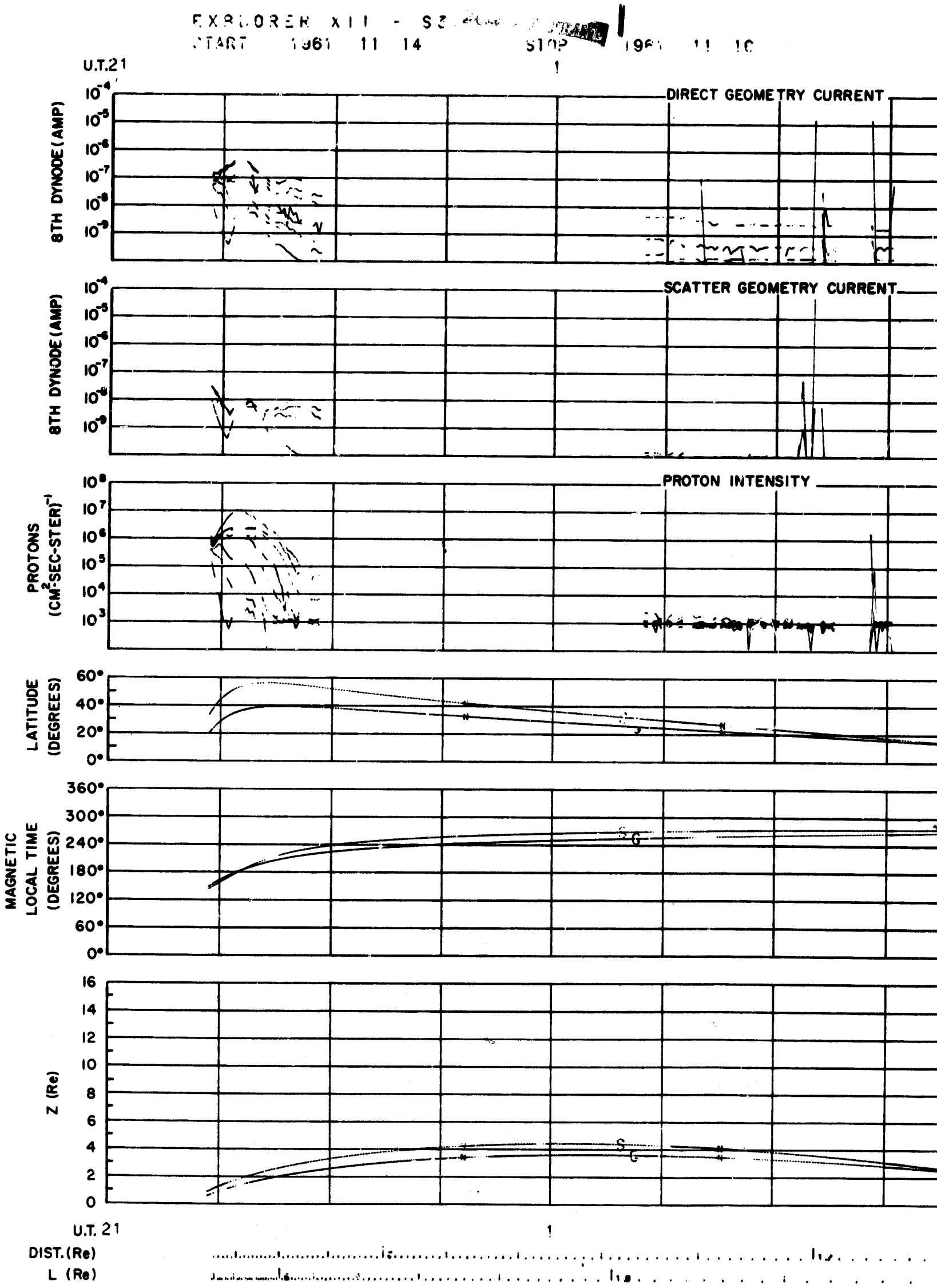

GEOMETRY CURRENT
ER GEOMETRY CURRENT
N INTENSITY

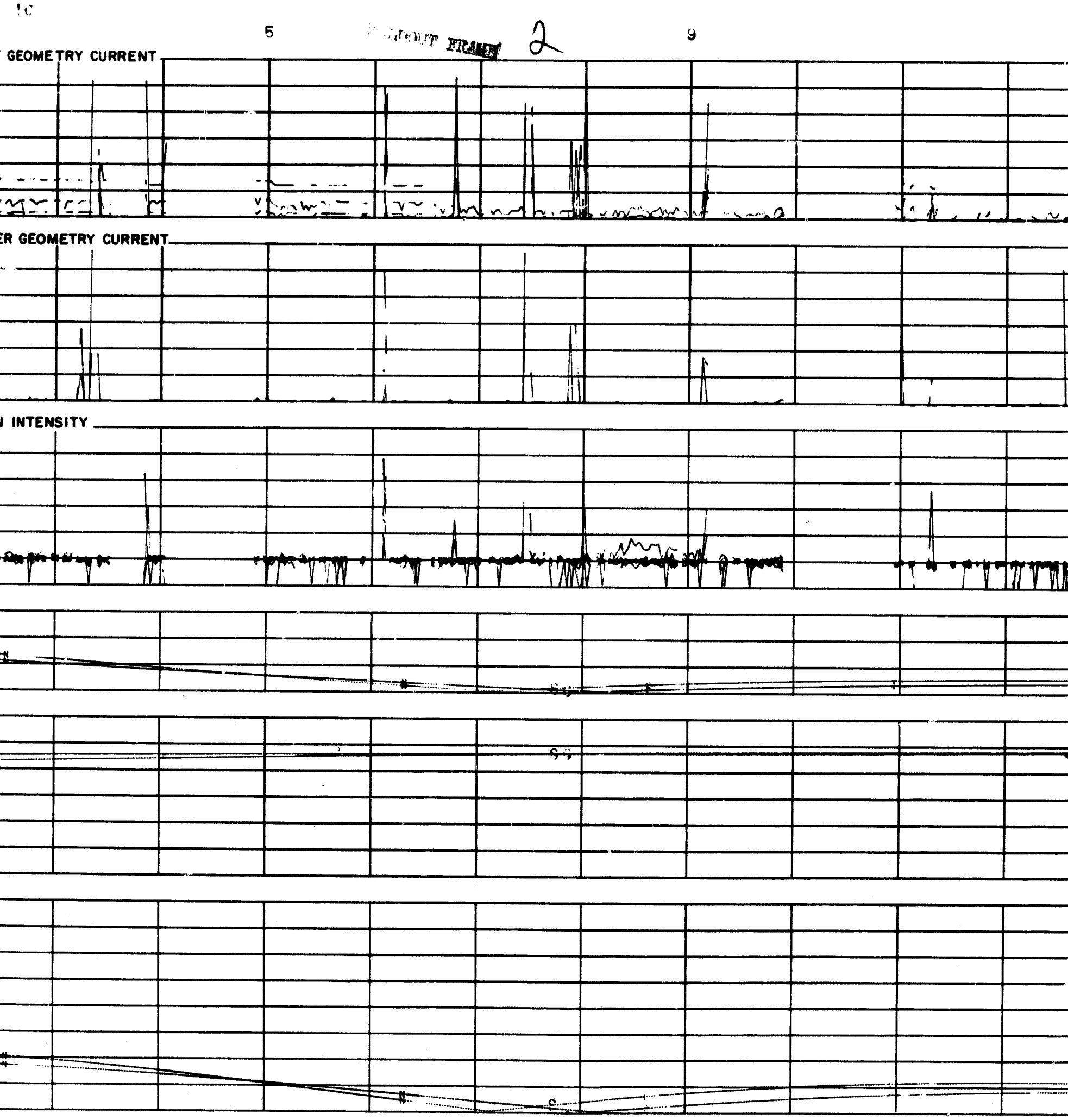
FOLDOUT FRAME 3



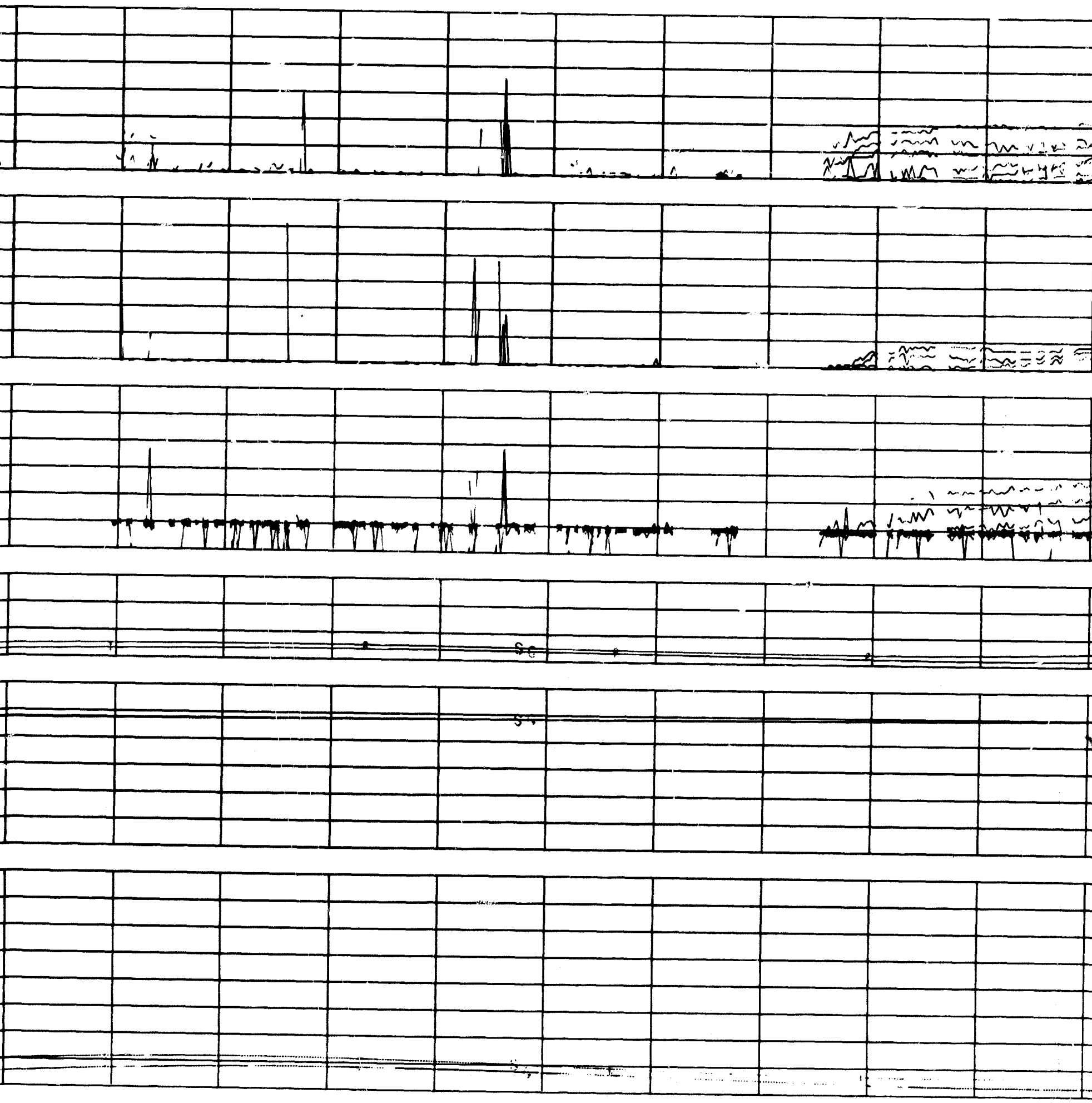
FOLDOUT FRAME



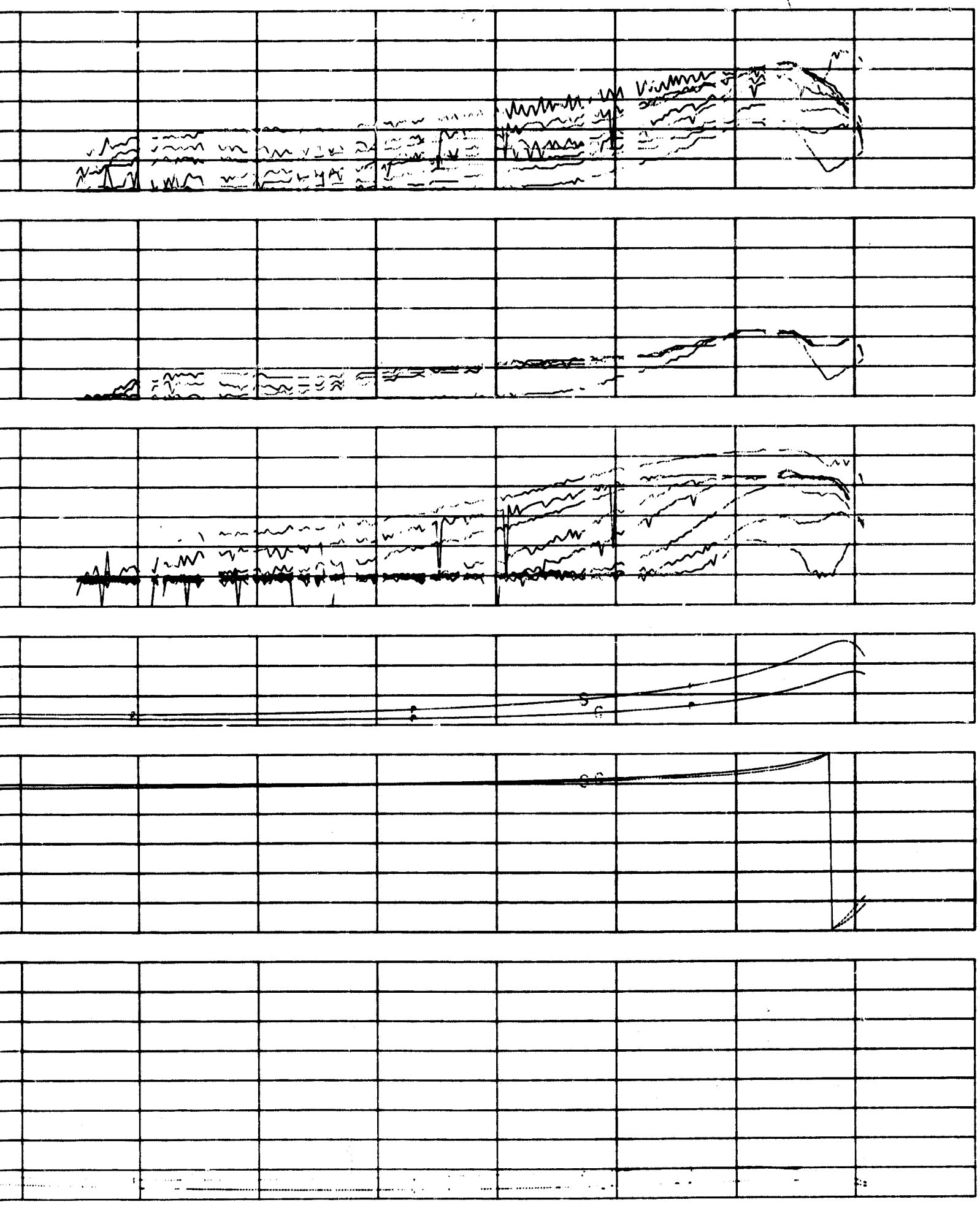

EXPLORER XII - S3
START 1961 11 14
STOP 1961 11 16
U.T.21
1
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 21
1
DIST. (Re)
L (Re)

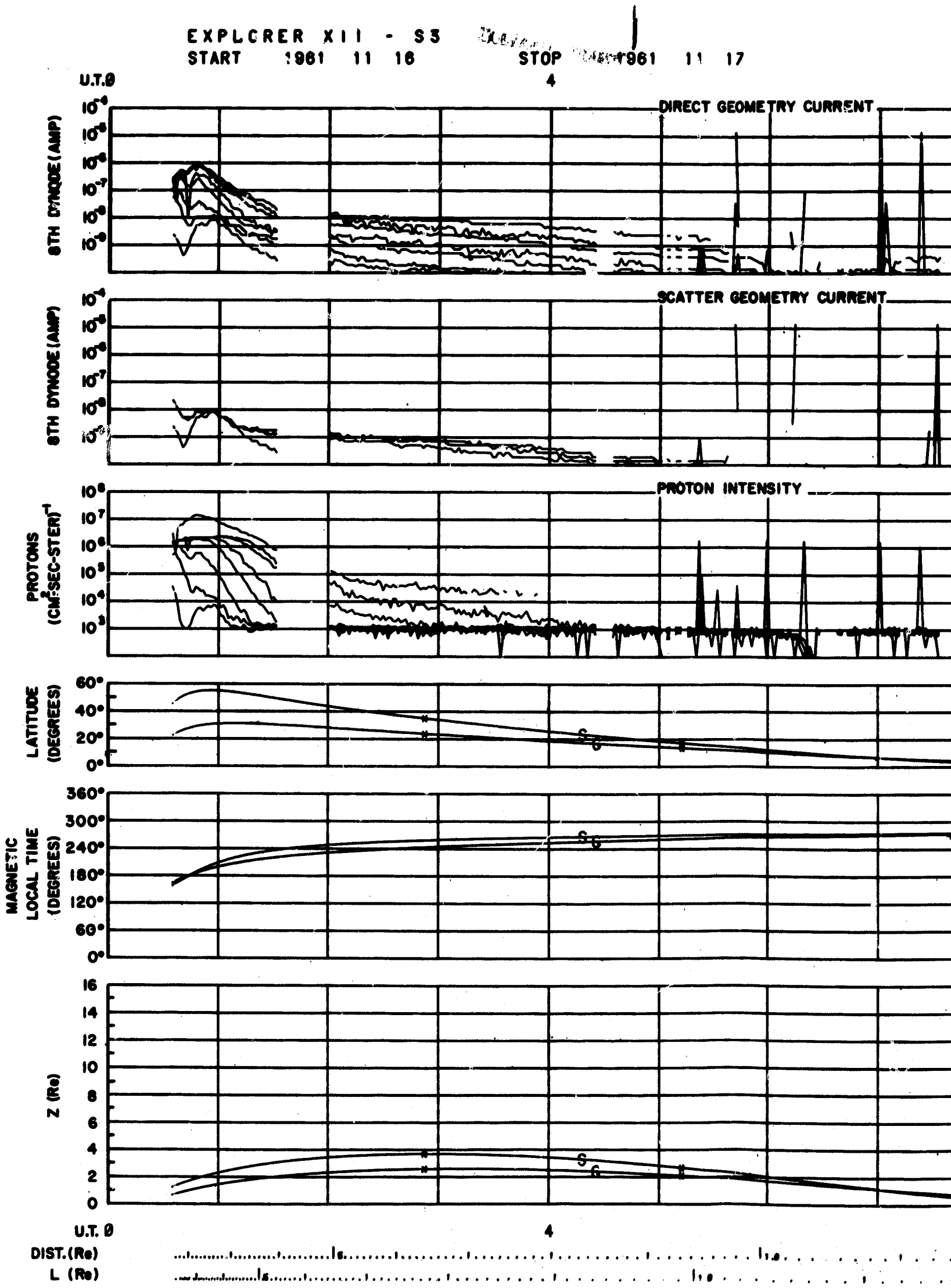

5
FRAME 2
9
GEOMETRY CURRENT
ER GEOMETRY CURRENT
INTENSITY

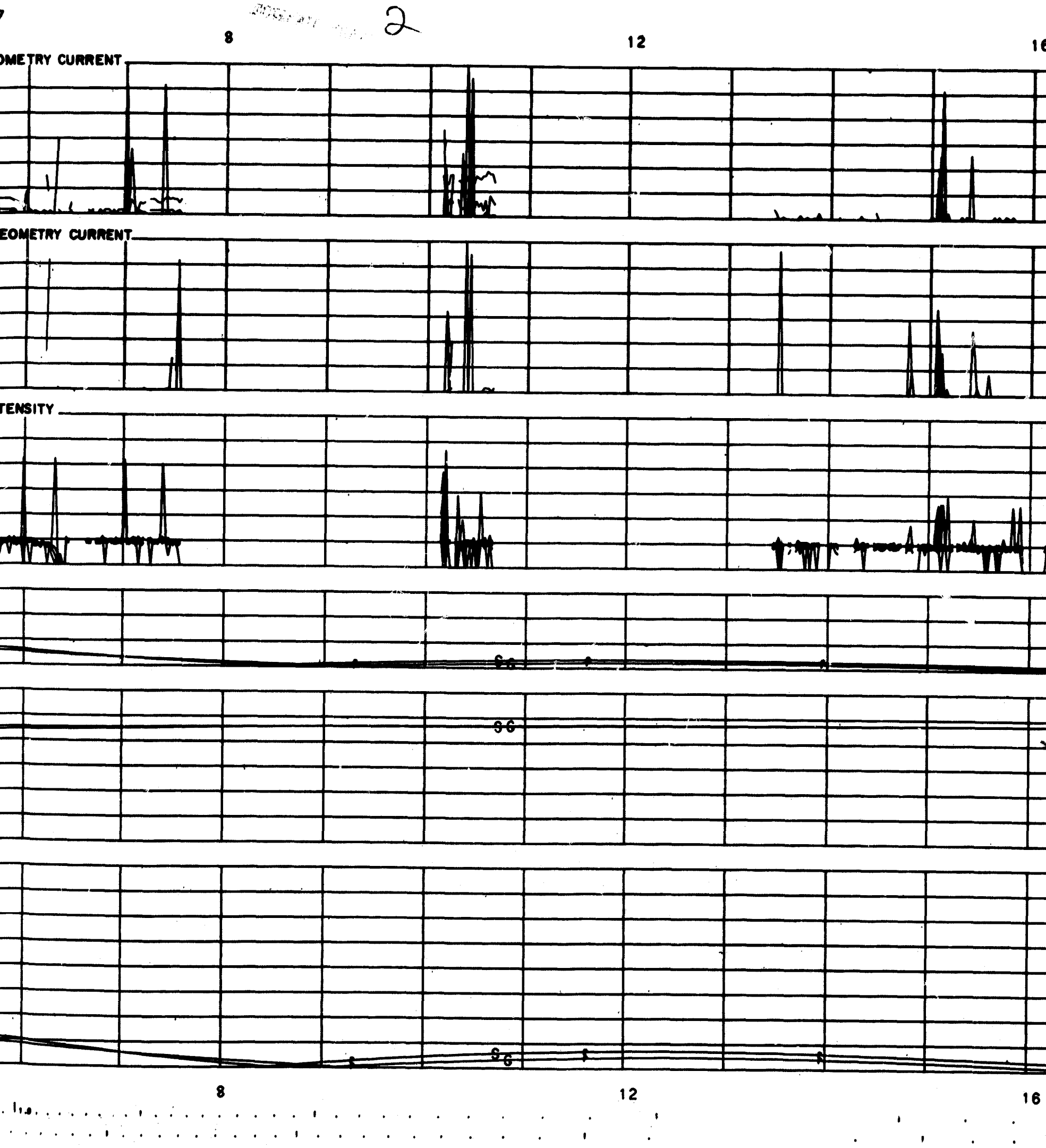
FOLDOUT FRAME 3



FOLDOUT FRAME 4

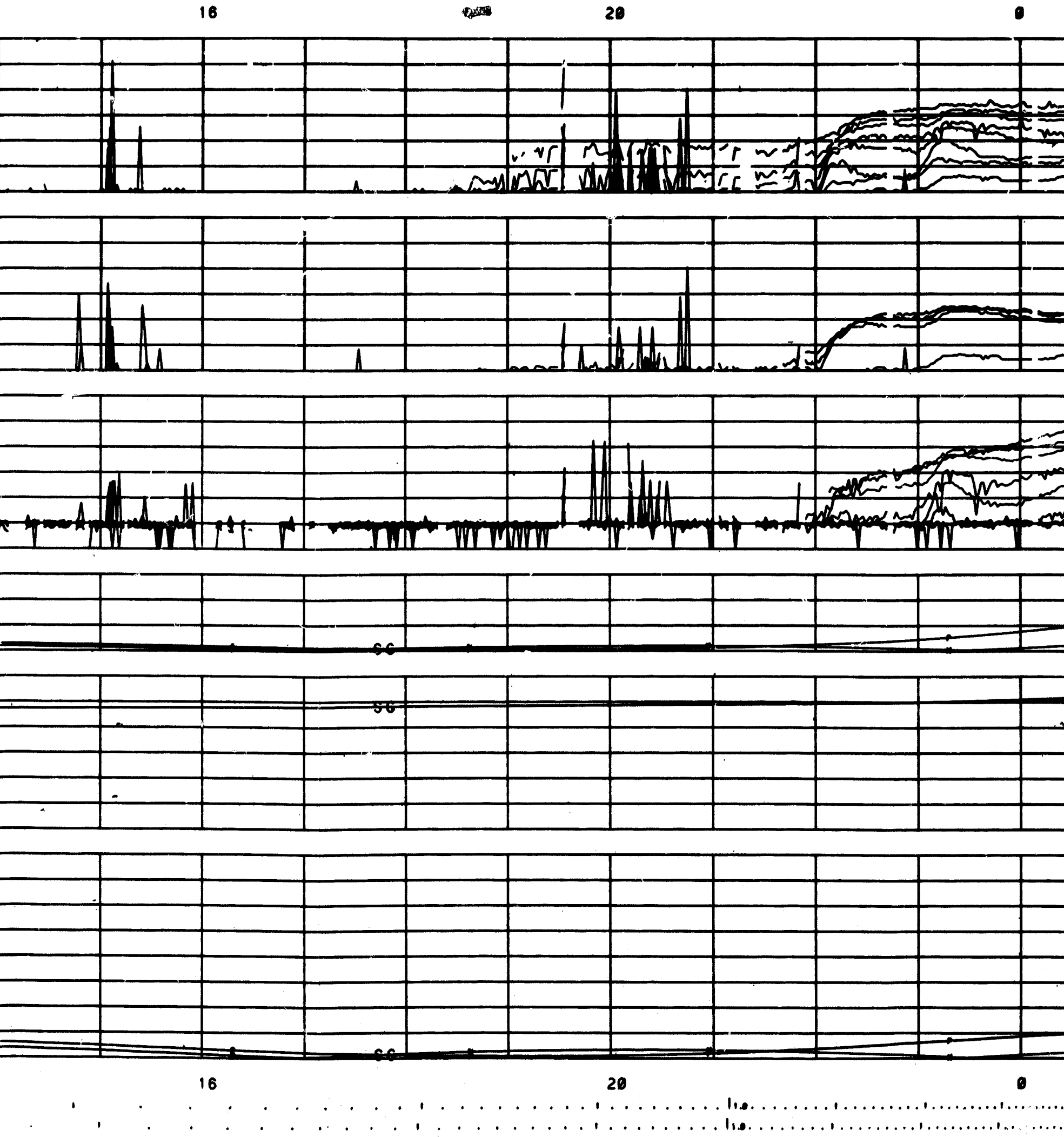



EXPLORER XII - S3
START 1961 11 16
STOP 1961 11 17
U.T.Ø
4
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. Ø
4
DIST. (Re)
L (Re)

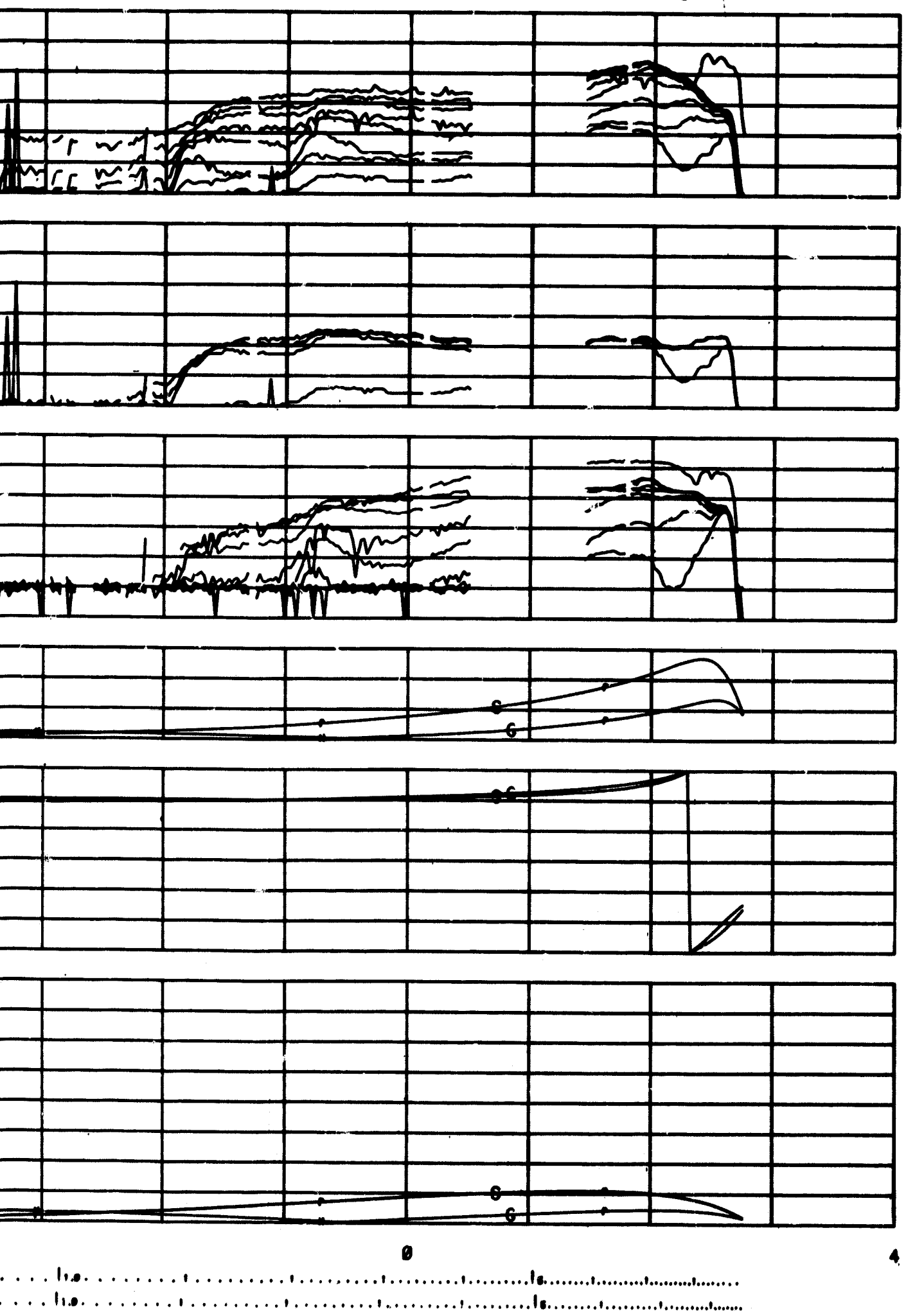

8
12
16
OMETRY CURRENT
EOMETRY CURRENT
TENSITY
SG
SG
SG
8
12
16

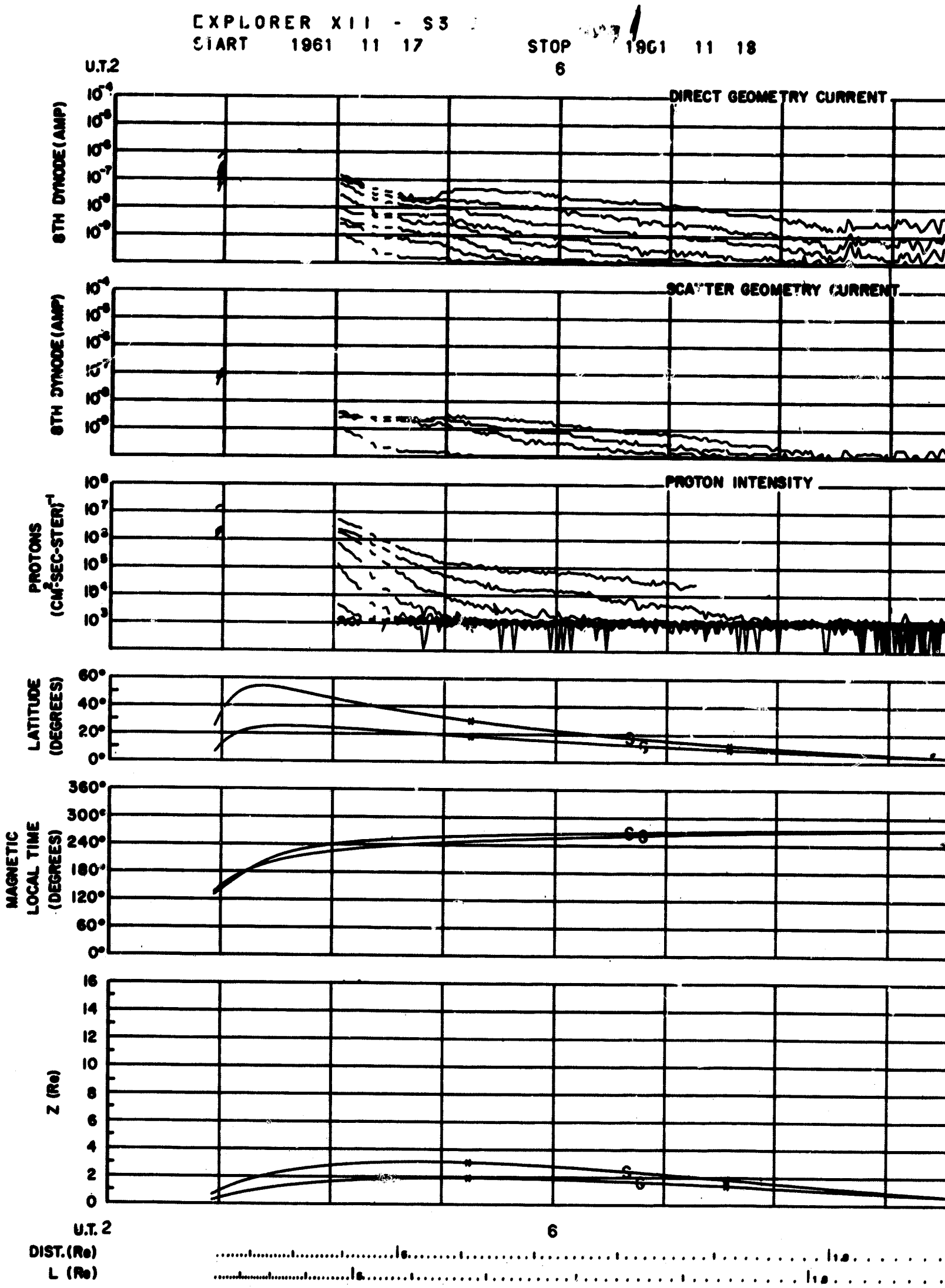
[redacted]

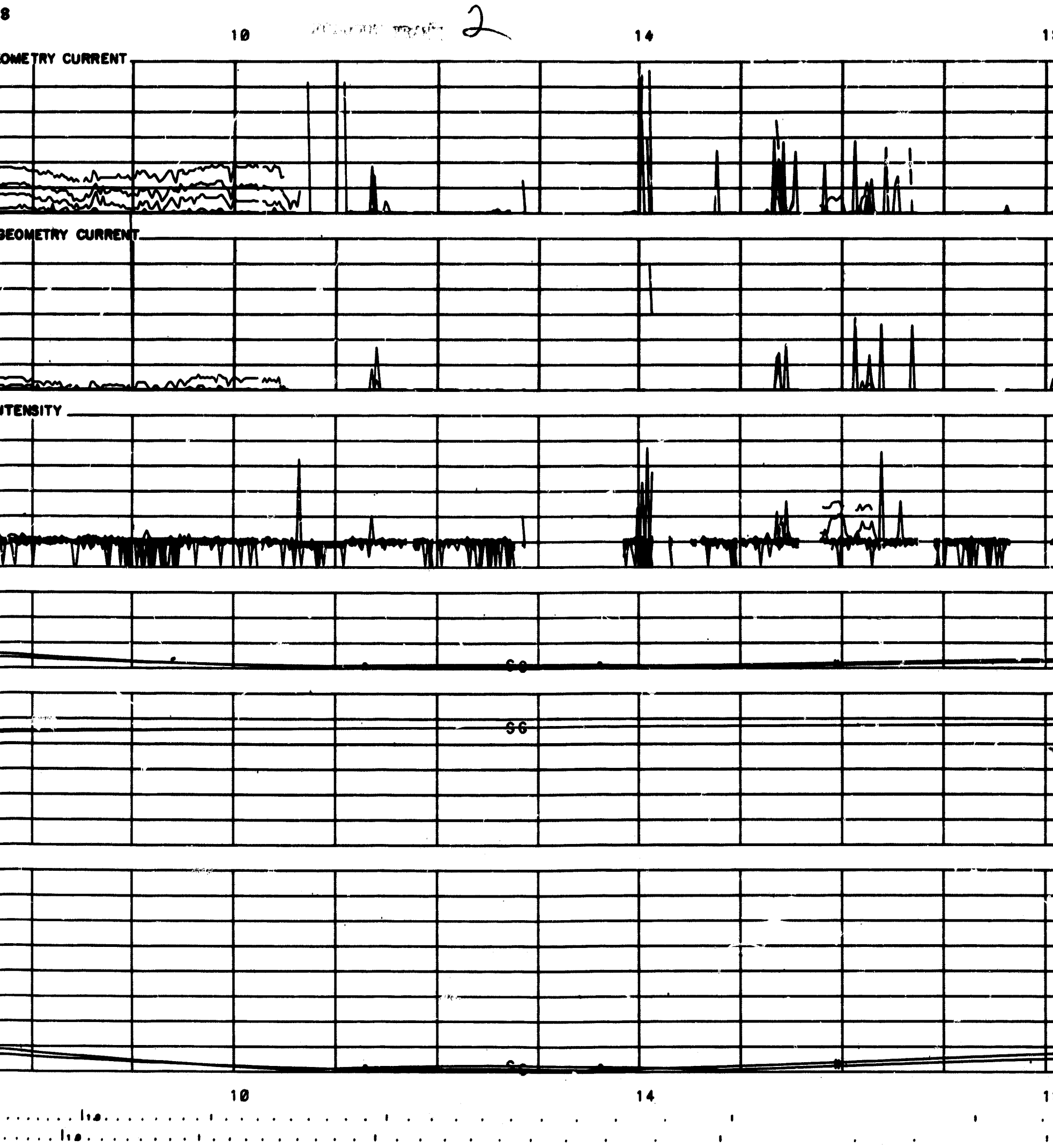
[redacted]PUT FRAME 3



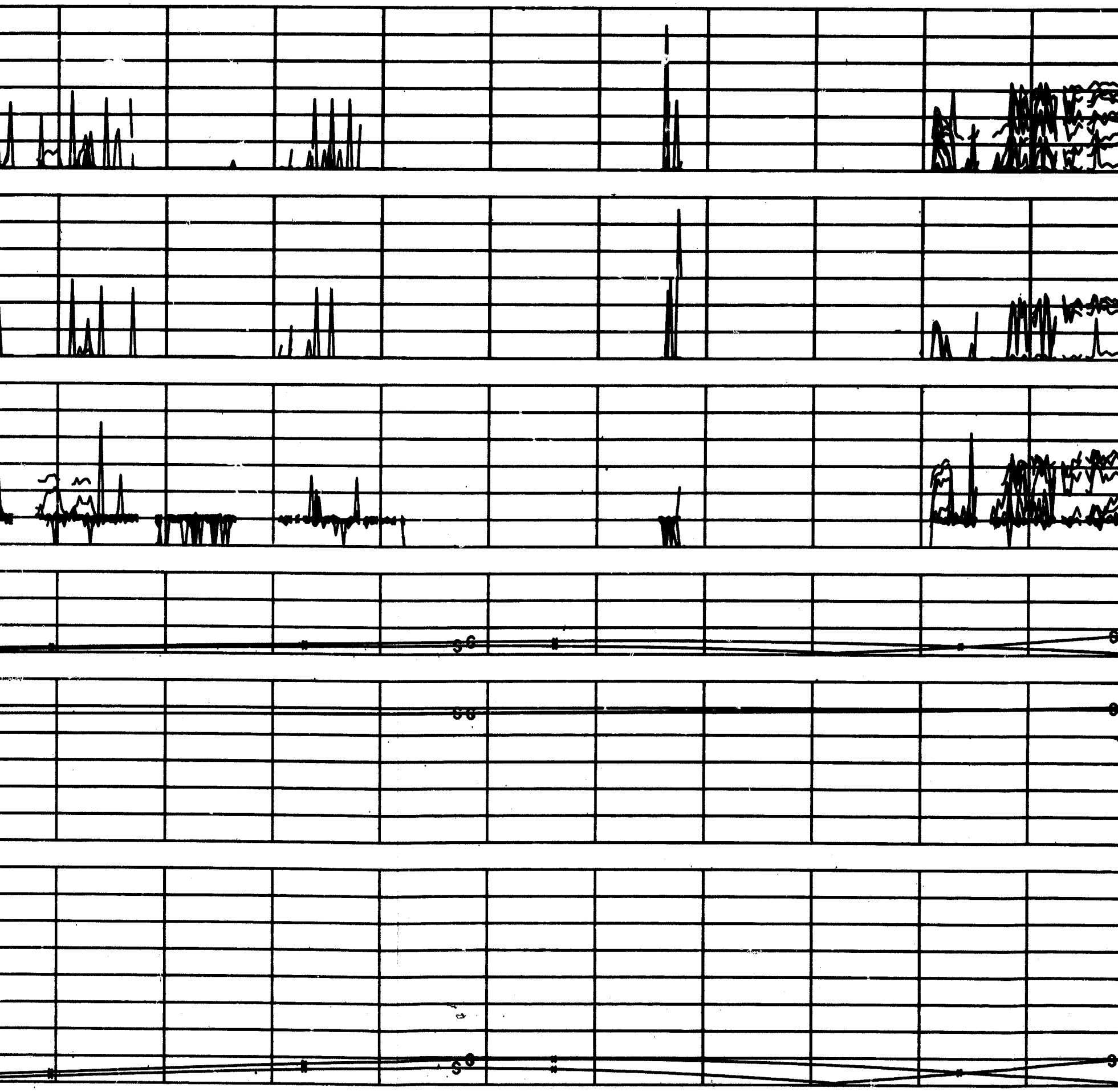
FOLDOUT FRAME 4




EXPLORER XII - S3
START 1961 11 17
STOP 1961 11 18
U.T.2
6
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 2
6
DIST. (Re)
L (Re)


8
10
2
14
OMETRY CURRENT
EOMETRY CURRENT
ITENSITY
10
14

FOLDOUT FRAME 3



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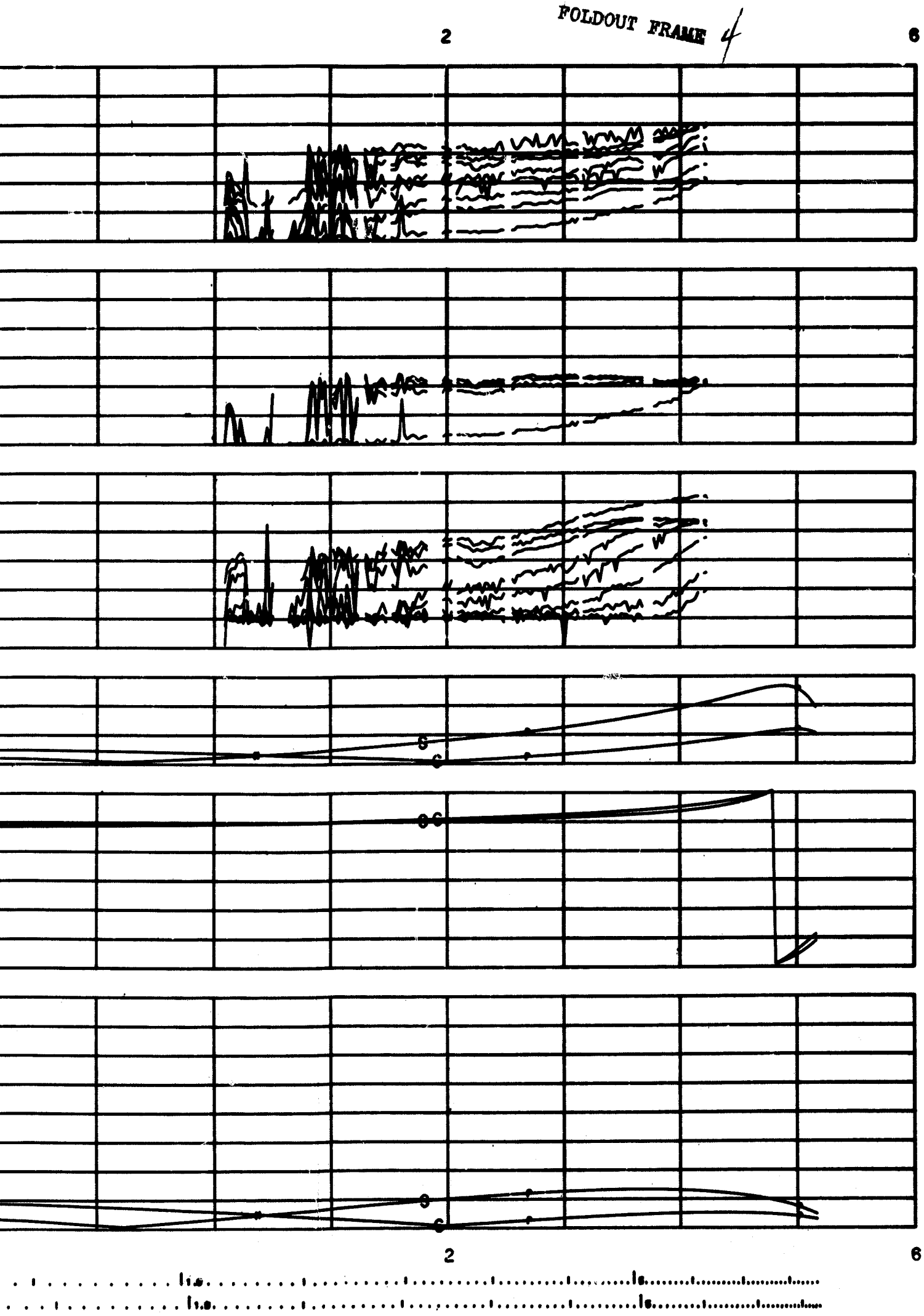
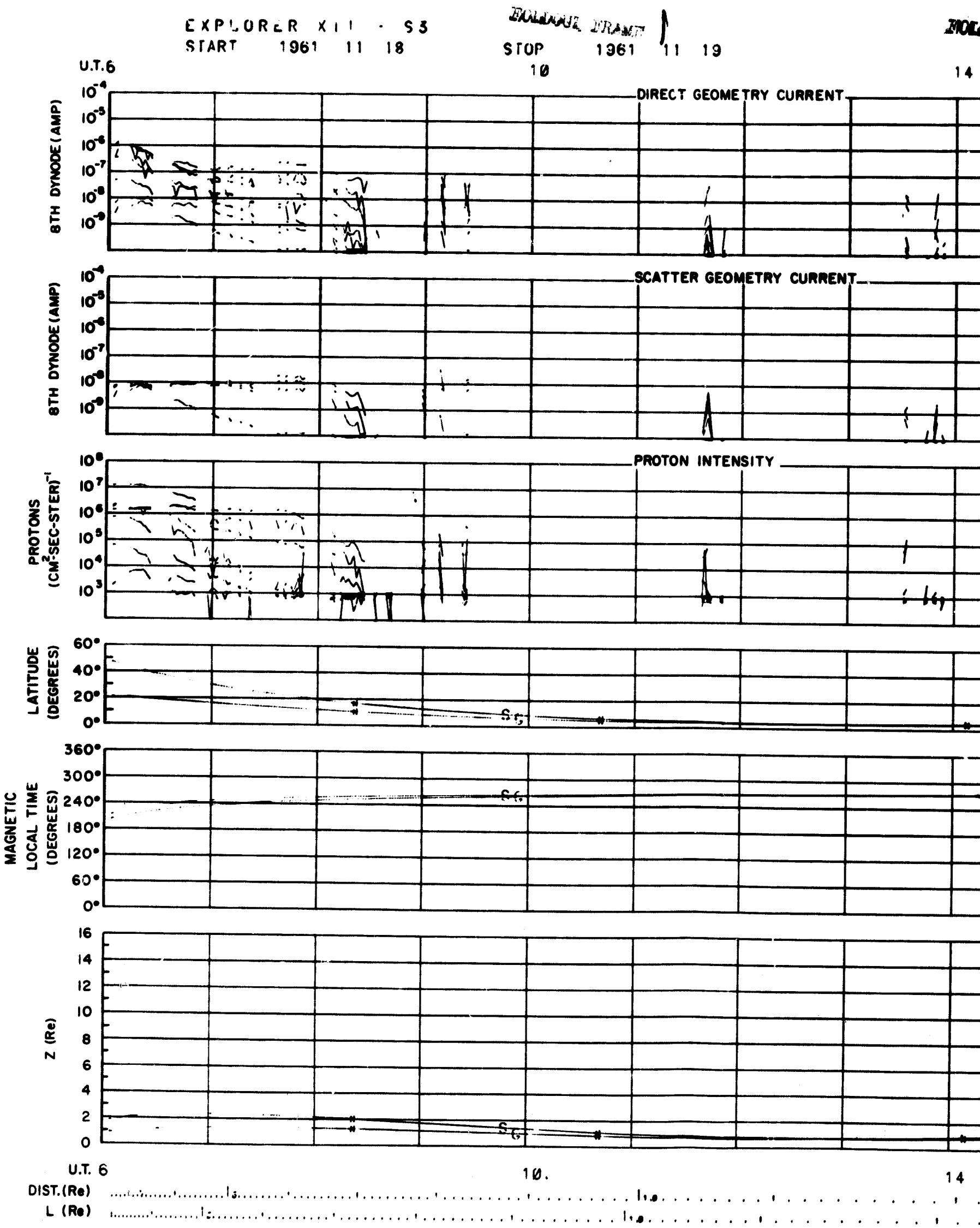



EXPLORER XII - S3
START 1961 11 18
STOP 1961 11 19
U.T.6
10
14
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 6
10.
14
DIST.(Re)
L (Re)

FOLDOUT FRAME 2

11 19

14 18

RECT GEOMETRY CURRENT

ATTER GEOMETRY CURRENT

OTON INTENSITY

SG

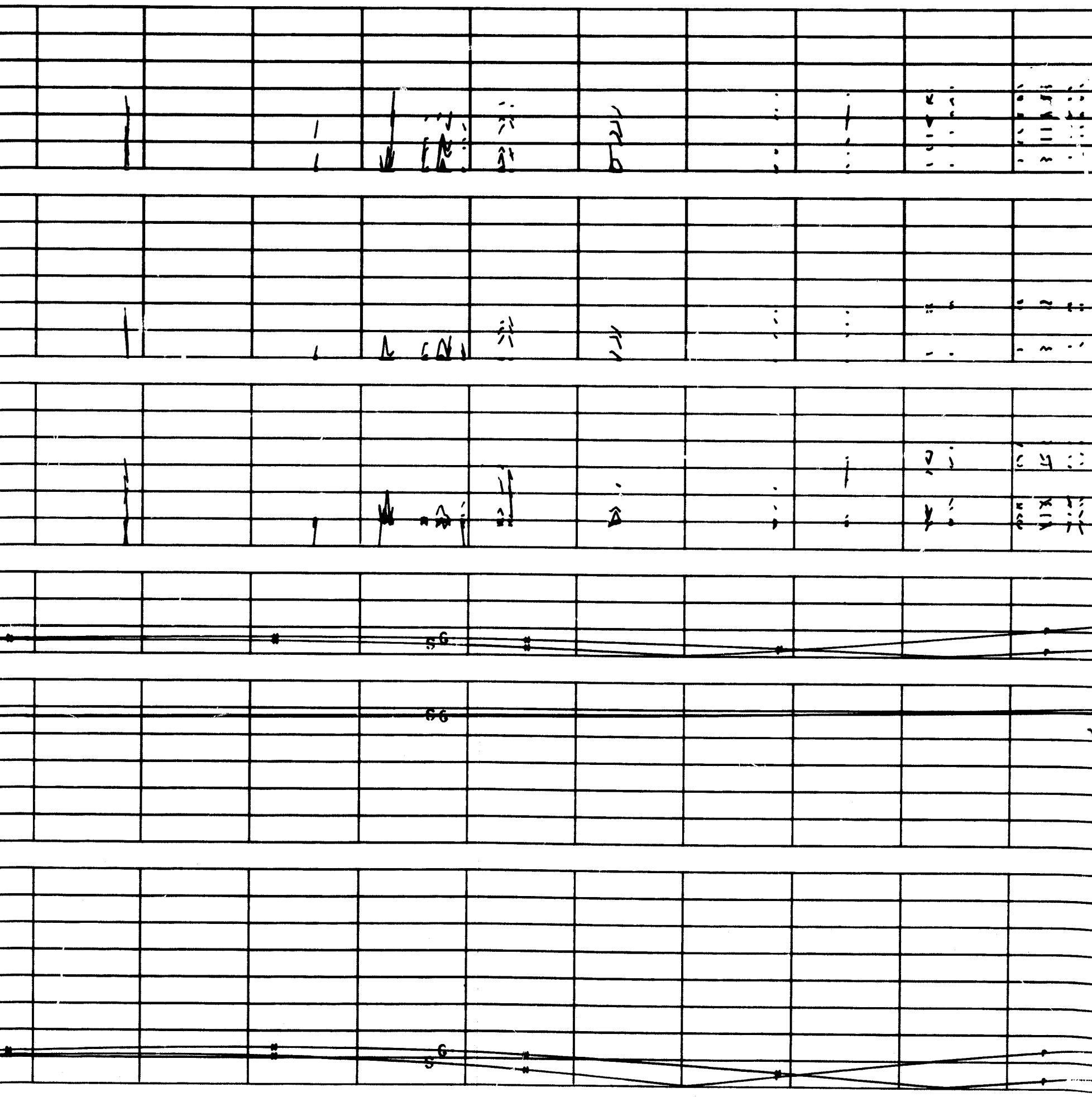
SG

SG

14 18

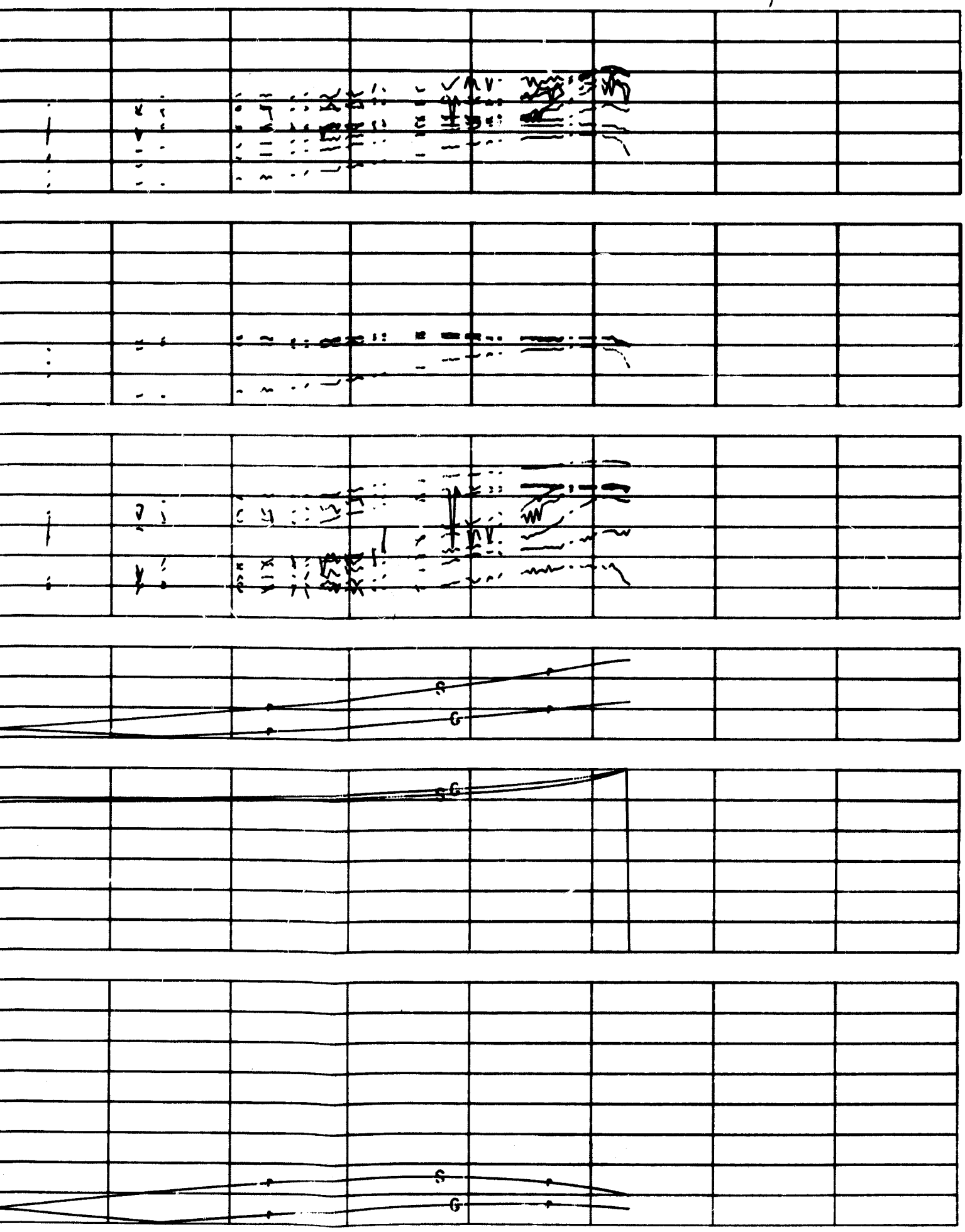
FOLDOUT FRAME 3

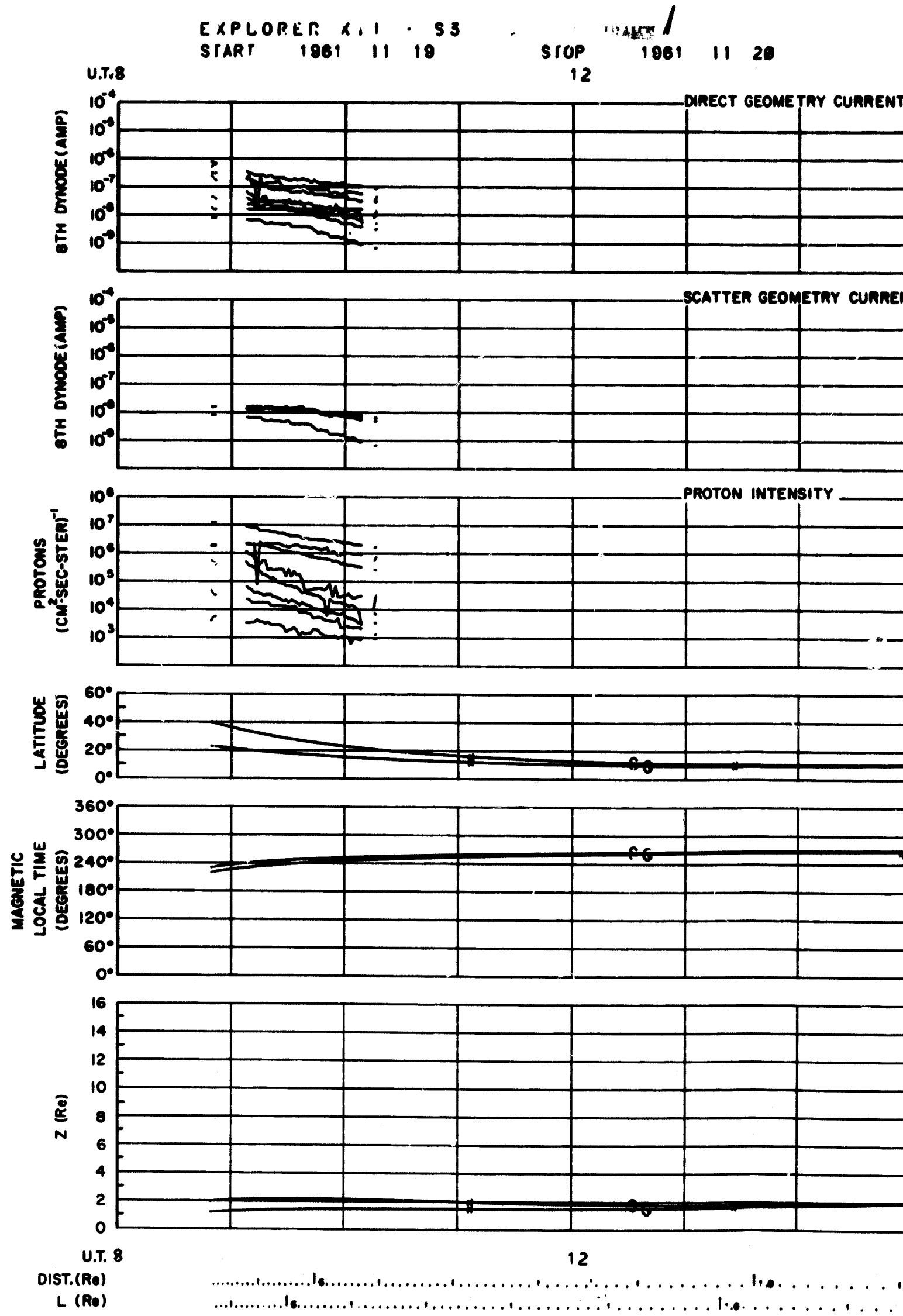
22 2

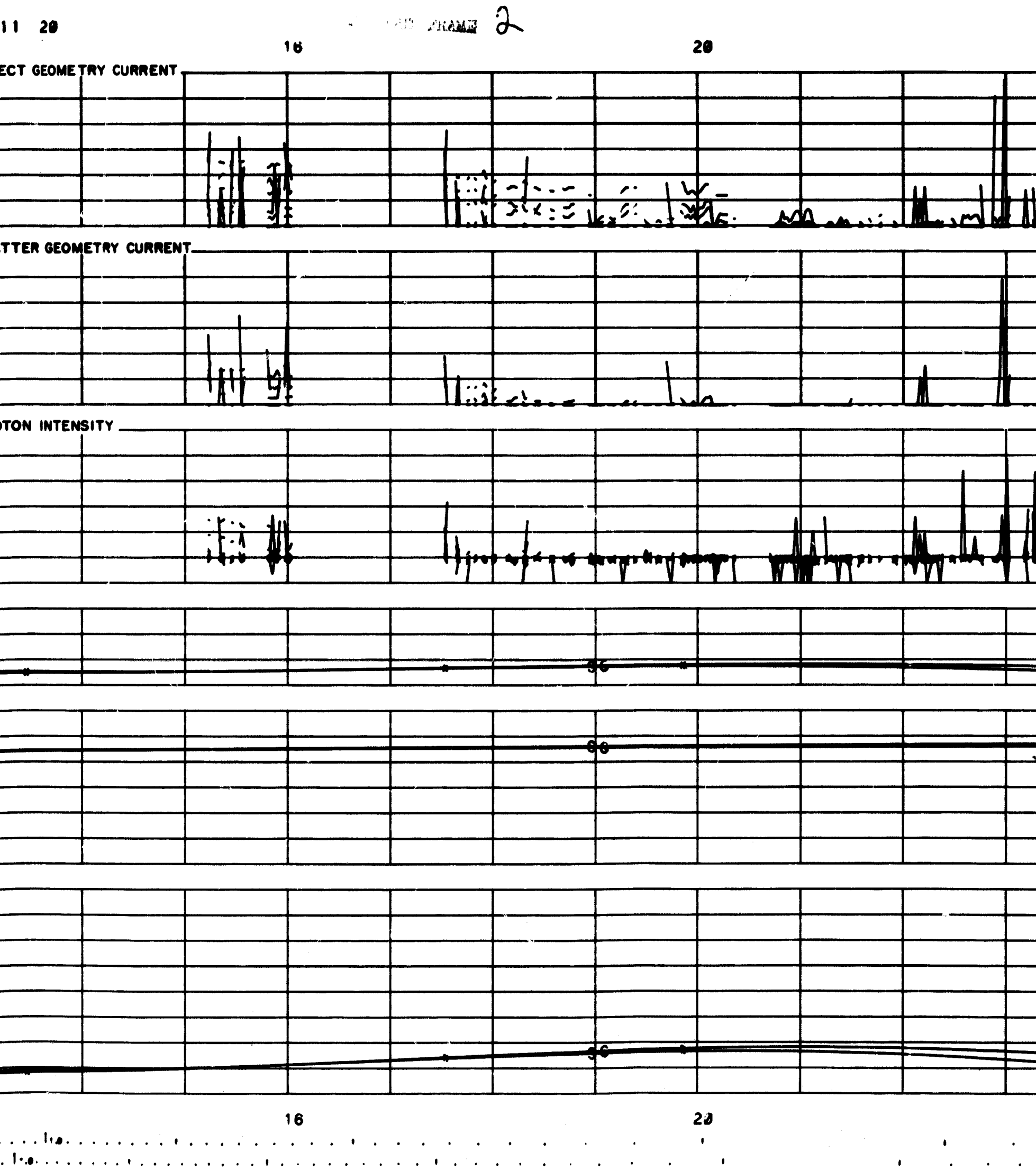


22 2

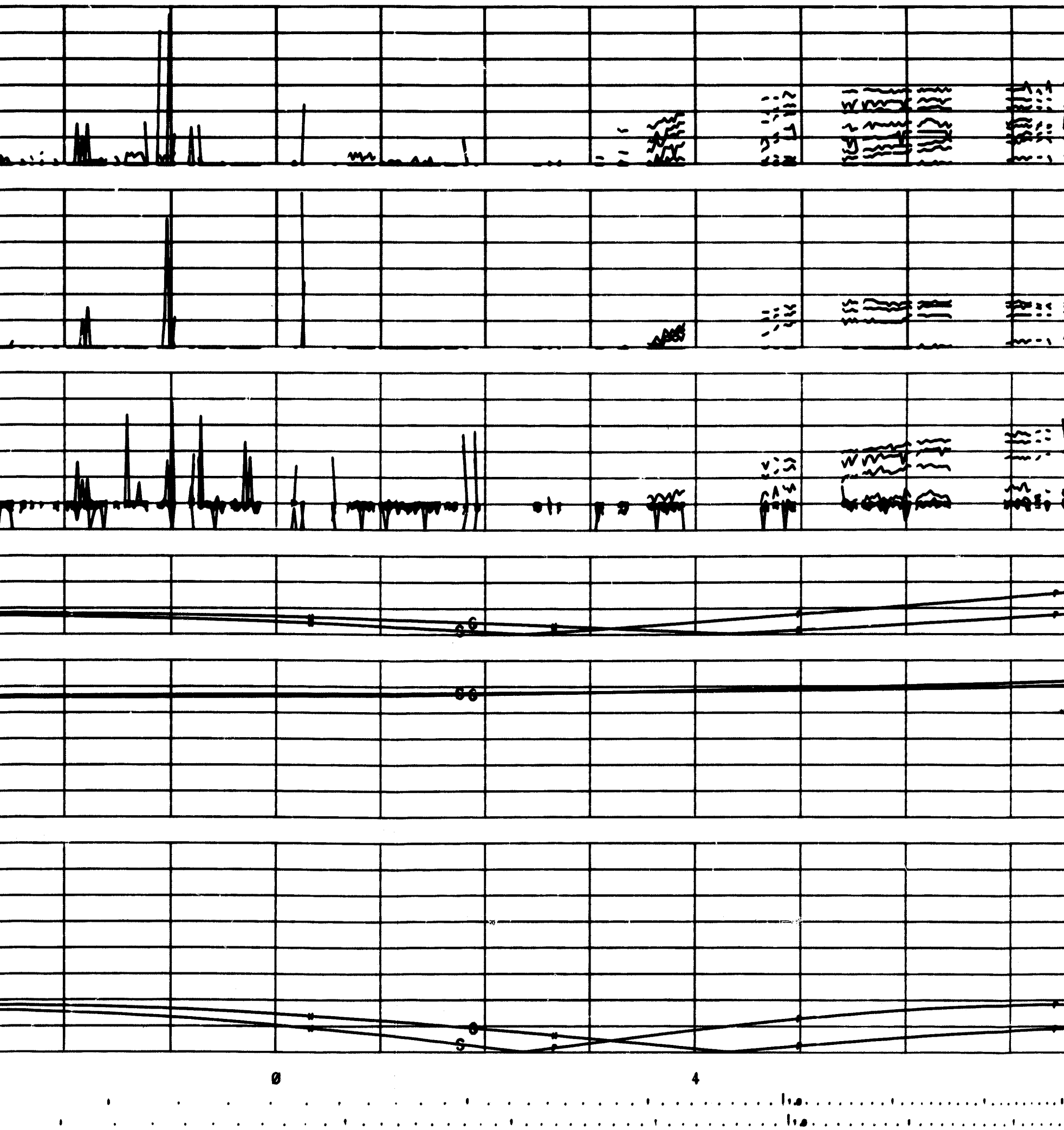
FOLDOUT FRAME 4



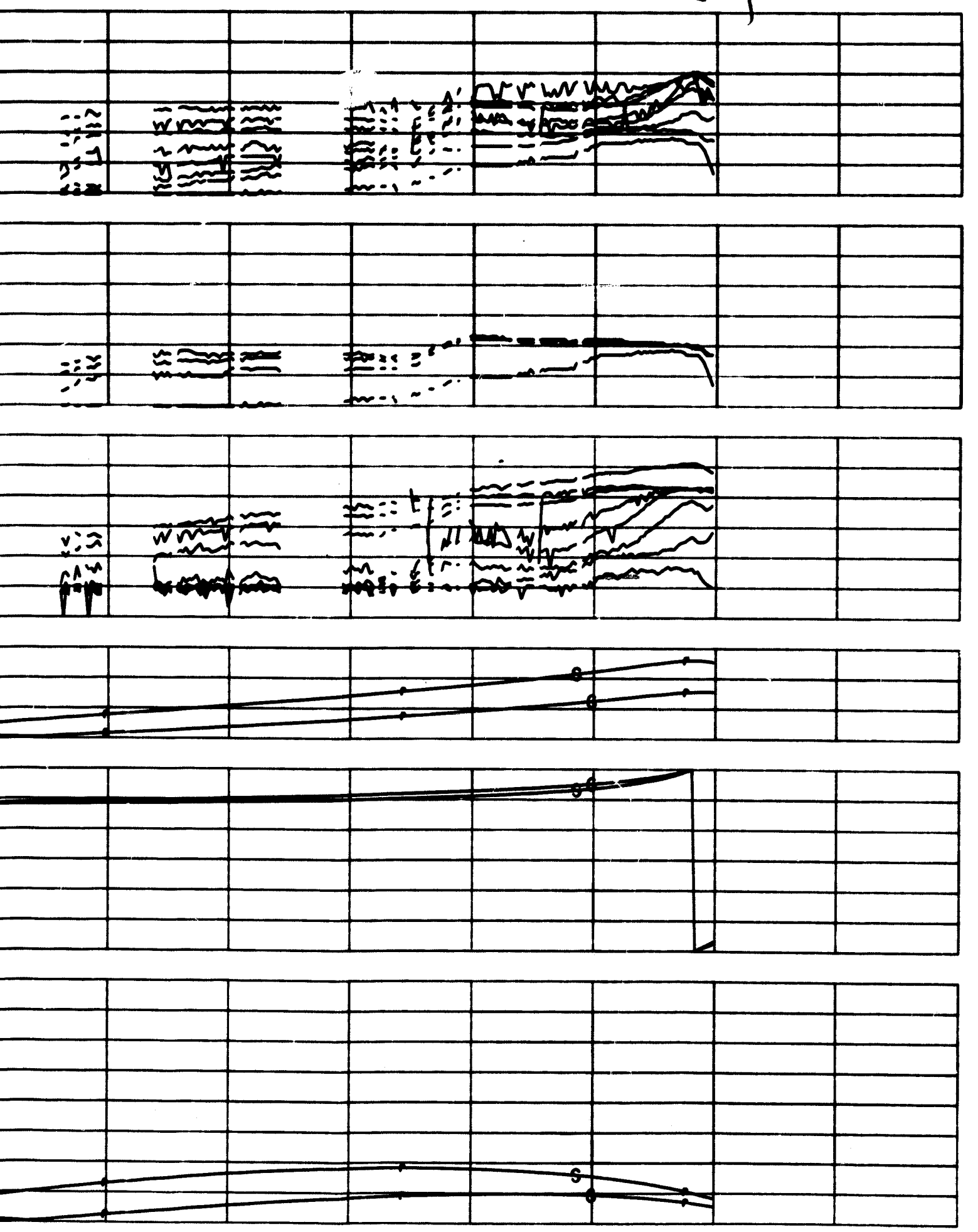

EXPLORER XII · S3
START 1961 11 19
STOP 1961 11 20
U.T. 8
12
DIRECT GEOMETRY CURRENT
SCATTER GEOMETRY CURRE
PROTON INTENSITY
8TH DYNODE (AMP)
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
DIST. (Re)
L (Re)

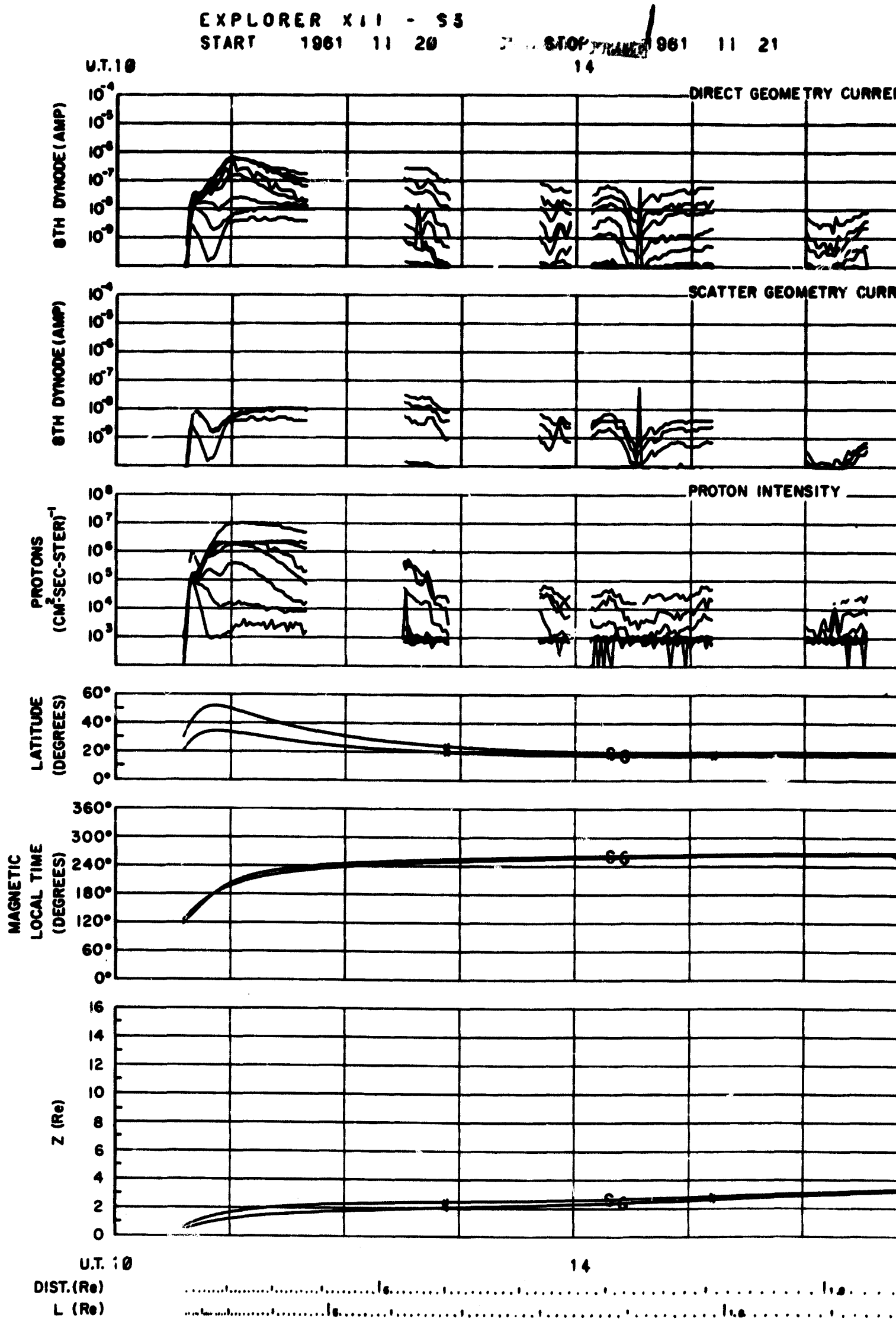

11 20
FRAME 2
16
20
ECT GEOMETRY CURRENT
TTER GEOMETRY CURRENT
OTON INTENSITY
16
20

FOLDOUT FRAME 3

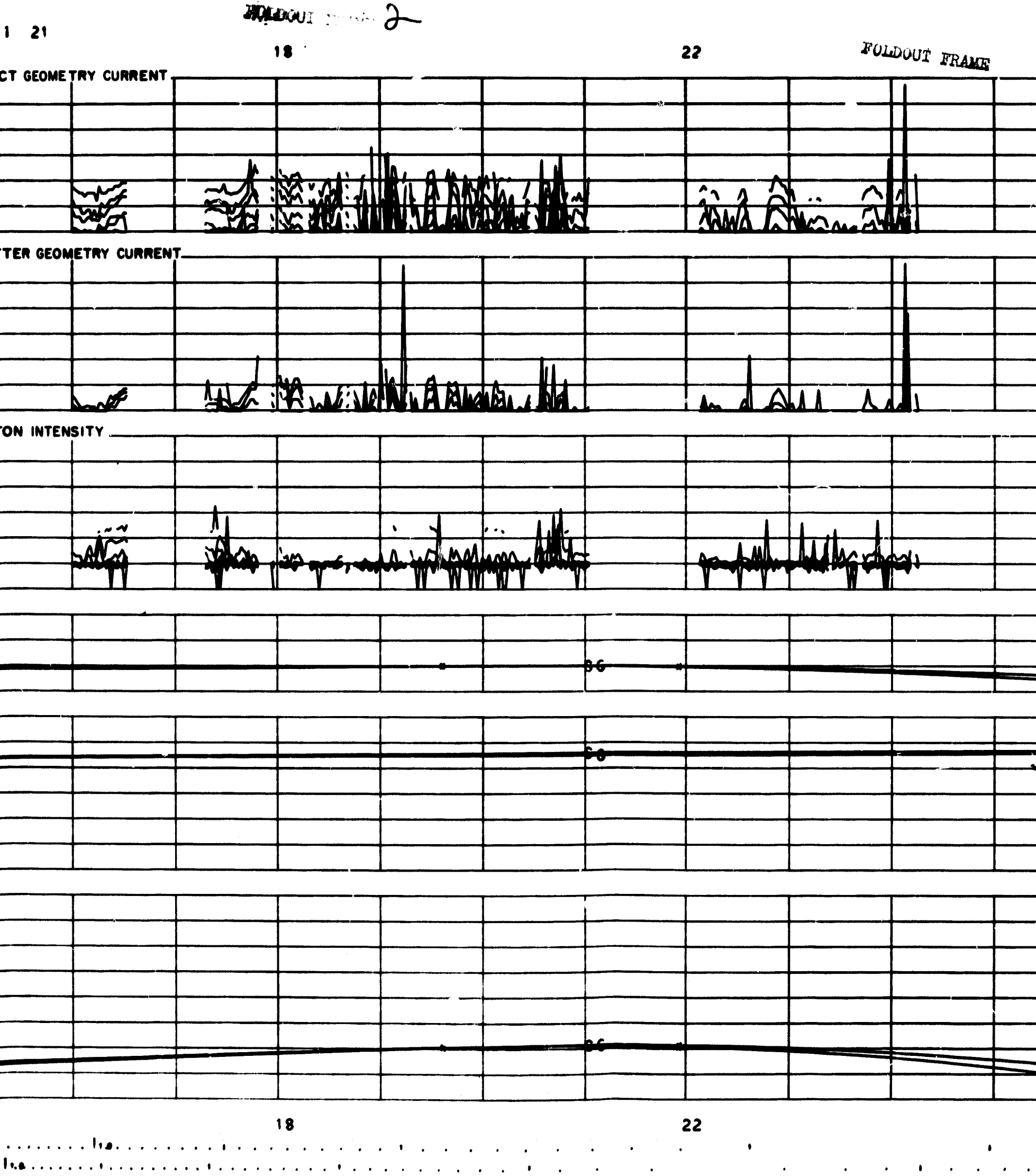


FOLDOUT FRAME 4

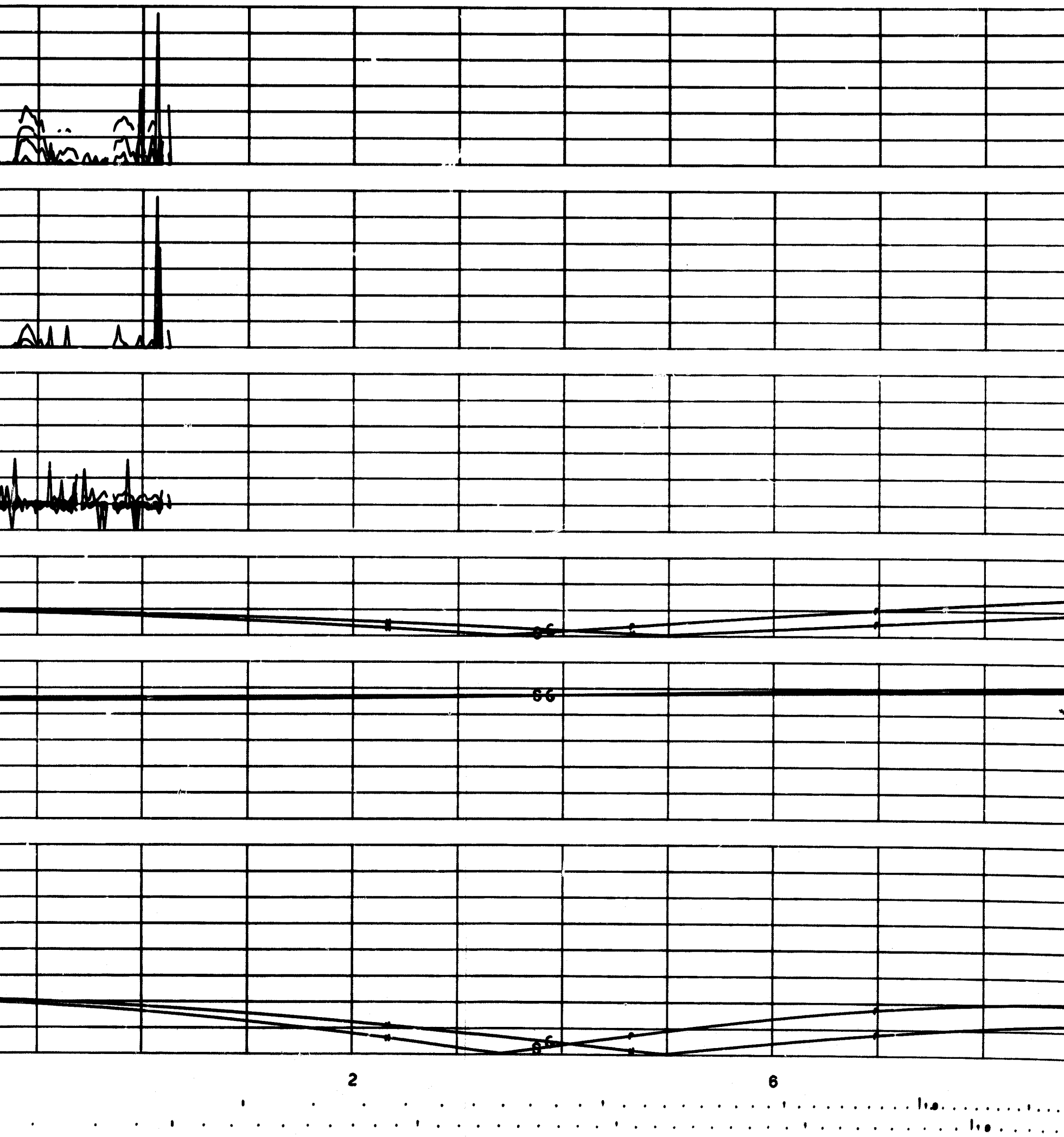



EXPLORER XII - S3
START 1961 11 20
STOP 1961 11 21
U.T. 10
14
DIRECT GEOMETRY CURRE
8TH DYNODE (AMP)
SCATTER GEOMETRY CURR
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 10
14
DIST. (Re)
L (Re)

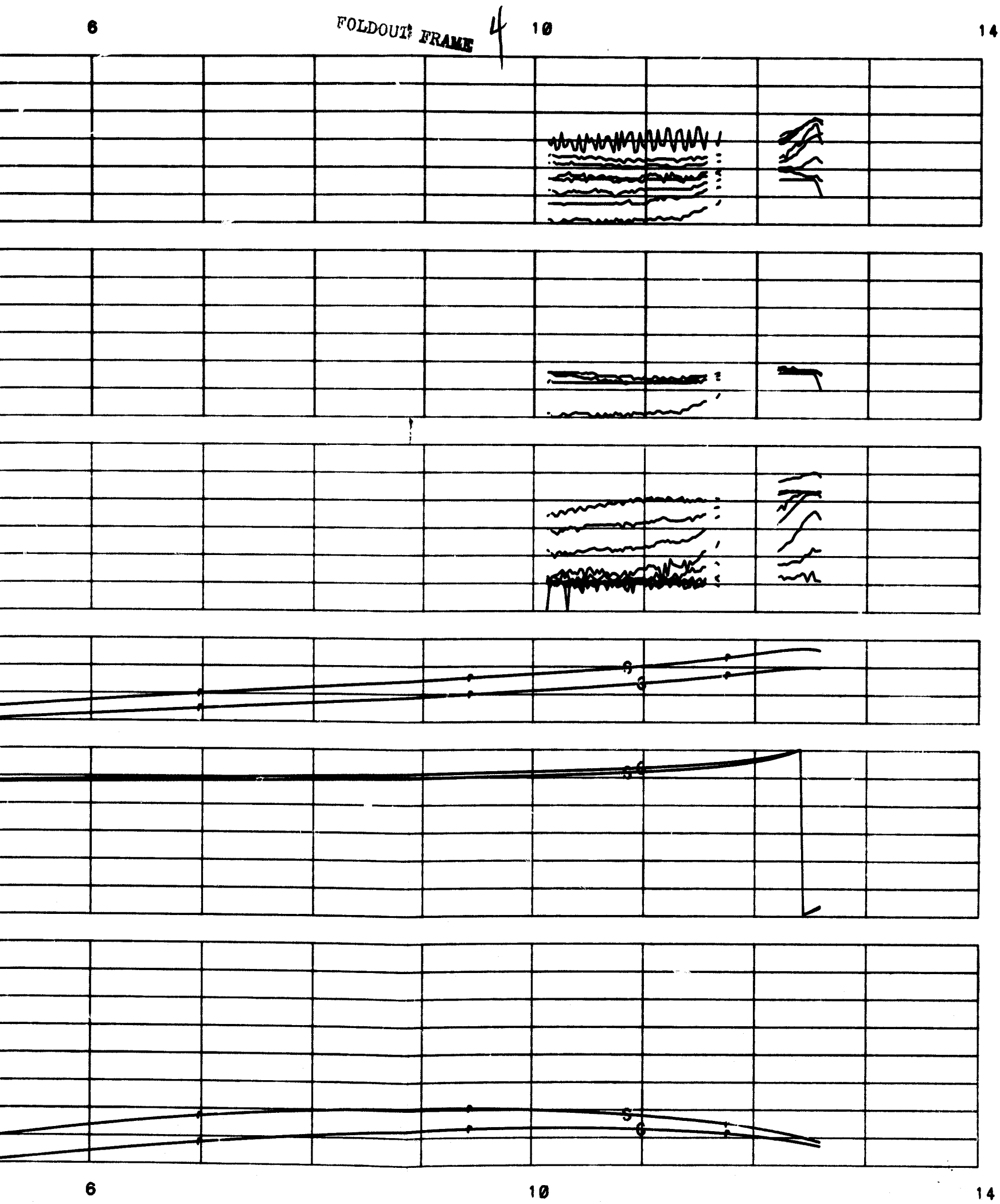
FOLDOUT FRAME 2

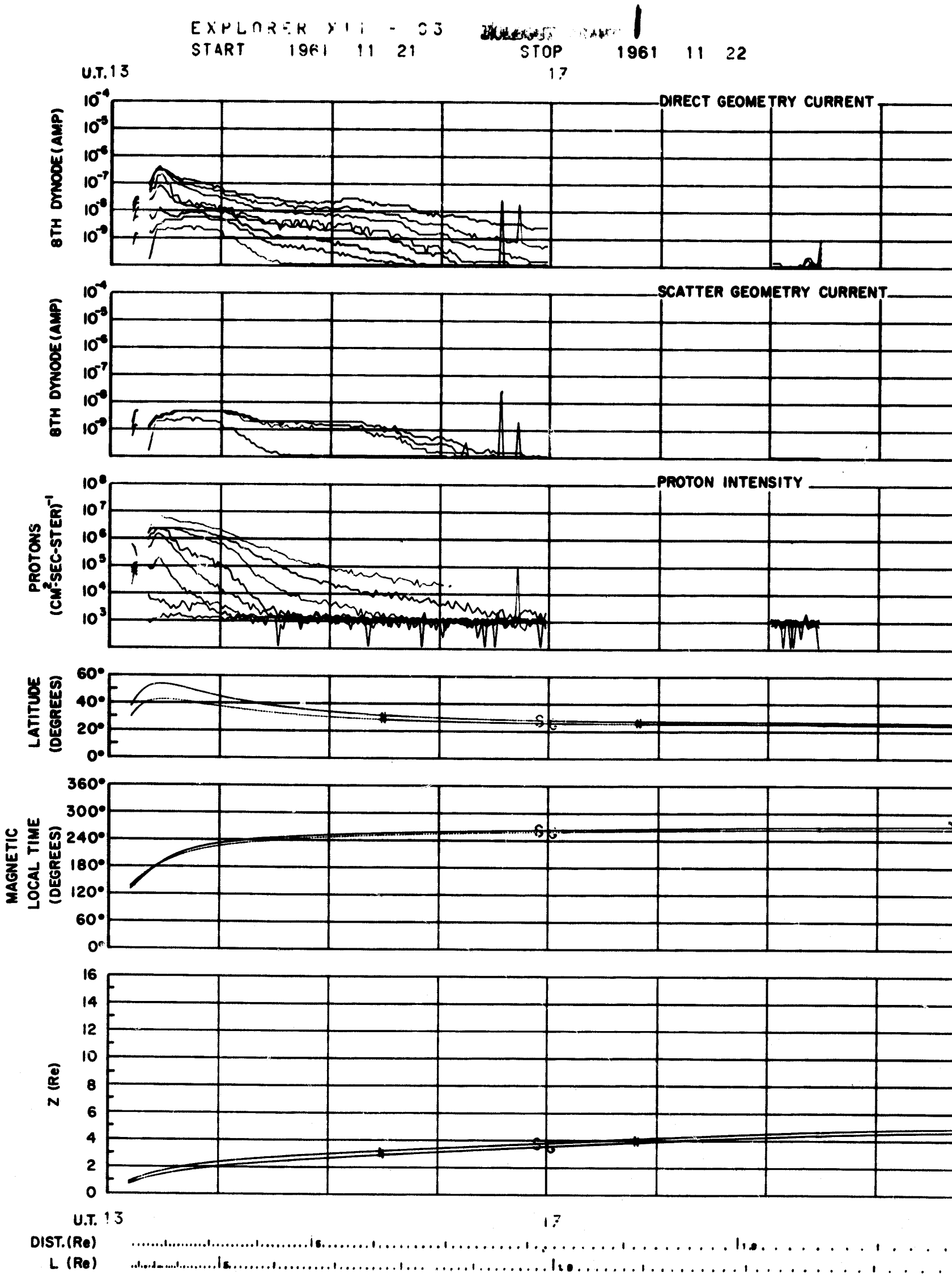


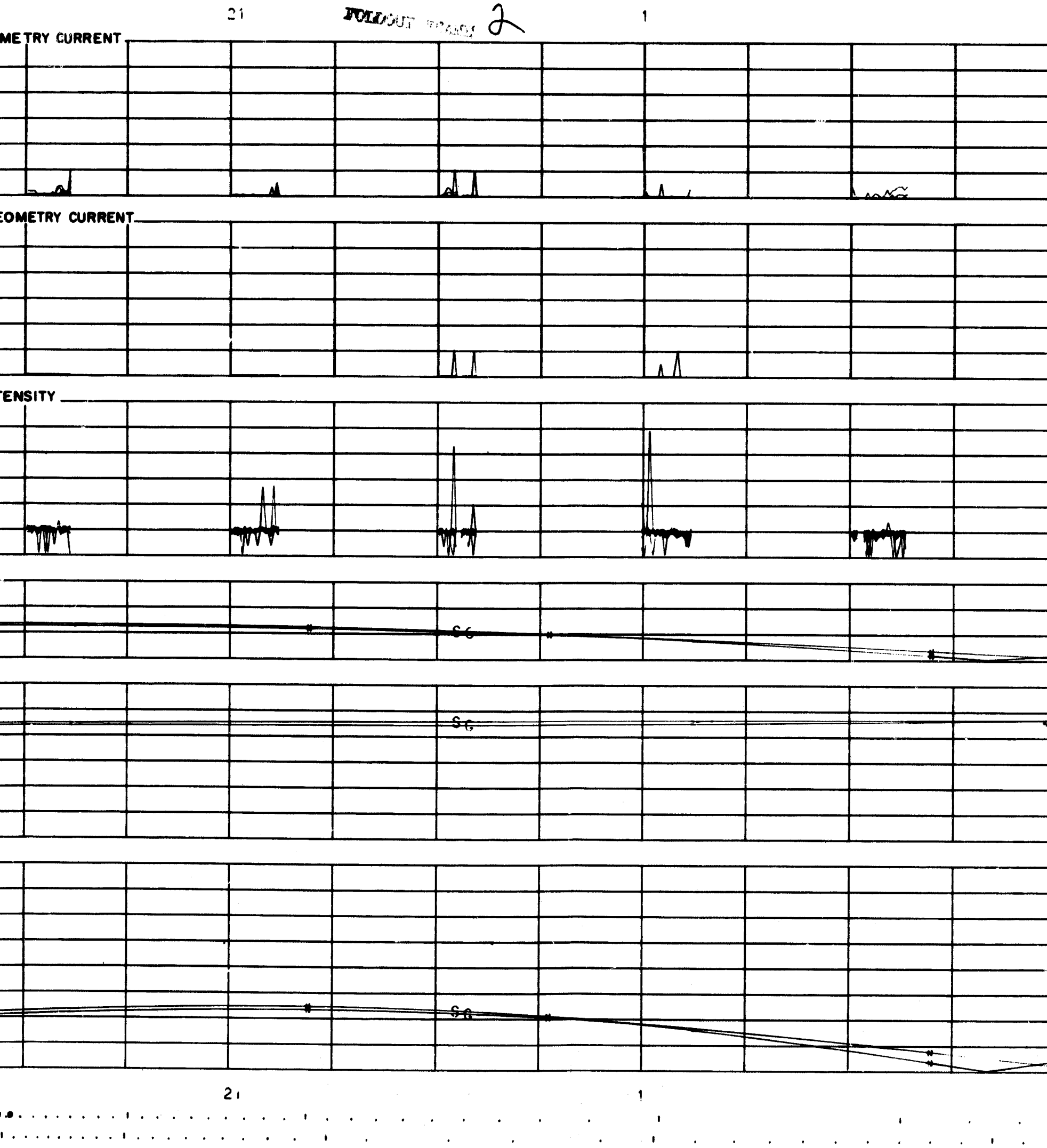
FOLDOUT FRAME 3 2 6 FOLDOU



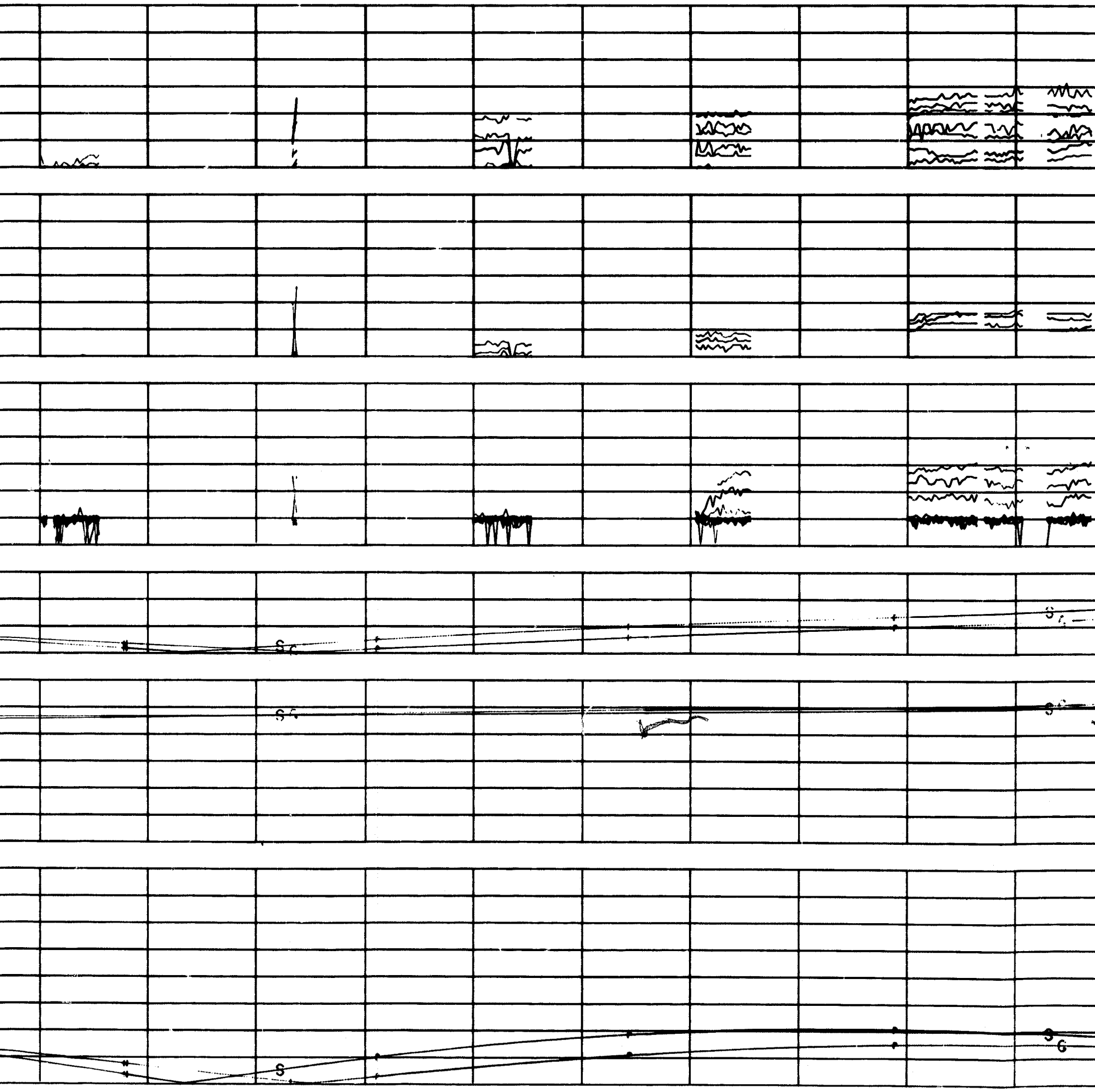
FOLDOUT FRAME 4



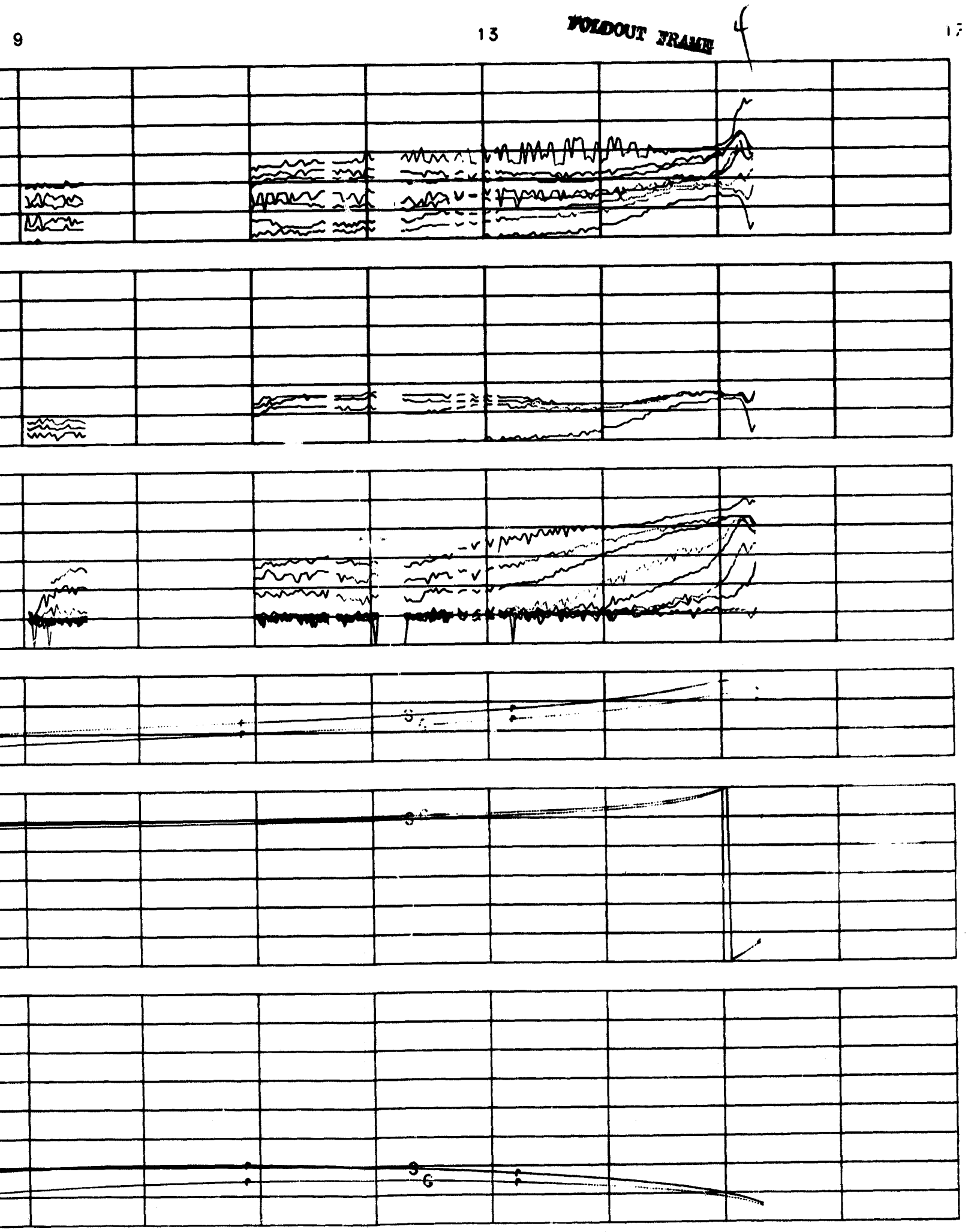

EXPLORER XII - 33
START 1961 11 21
STOP 1961 11 22
U.T. 13
17
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 13
17
DIST. (Re)
L (Re)

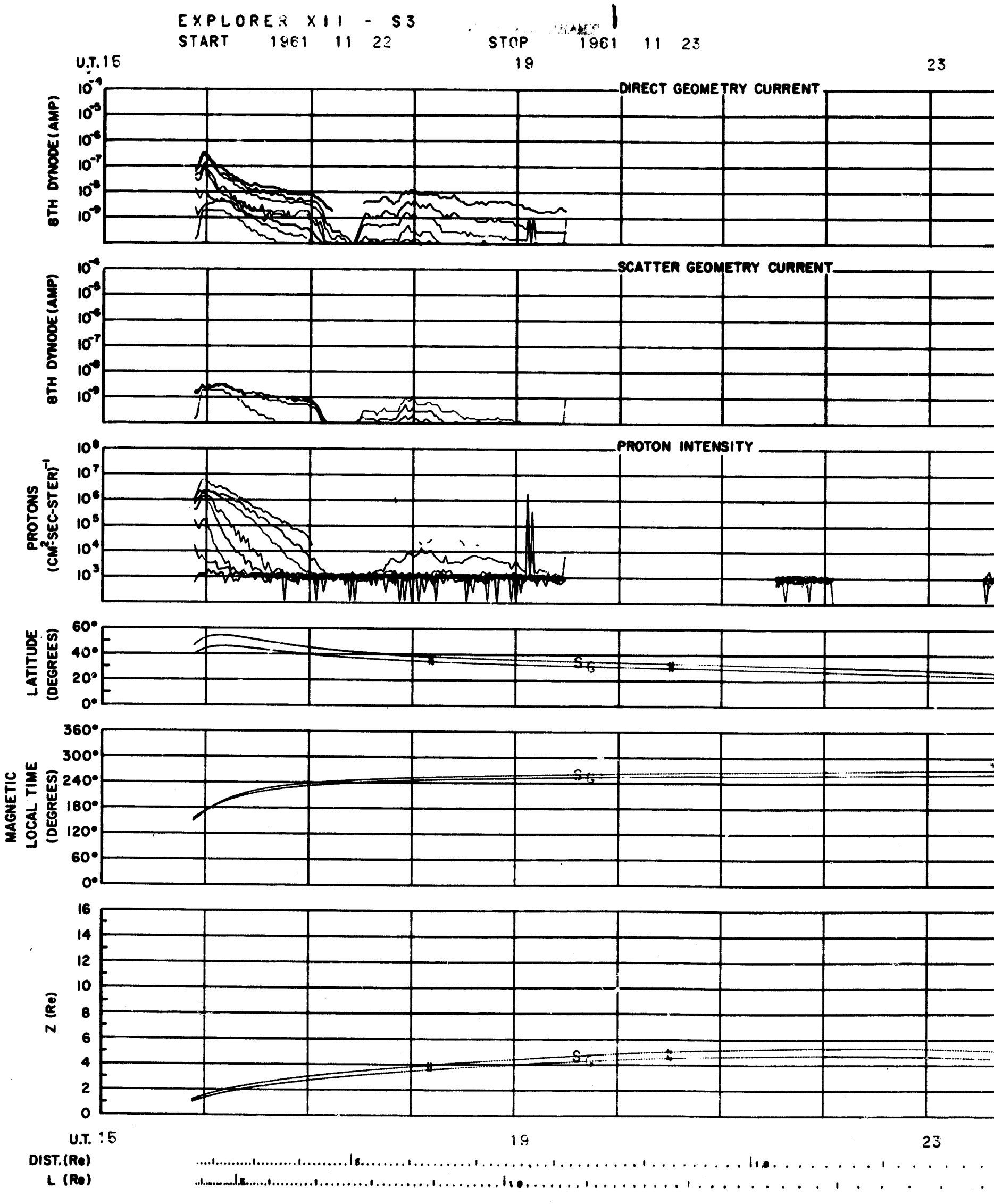

21
FOLDOUT PAGE 2
1
METRY CURRENT
EOMETRY CURRENT
ENSITY
SG
SG
SG
21
1

FOLDOUT FRAME 3

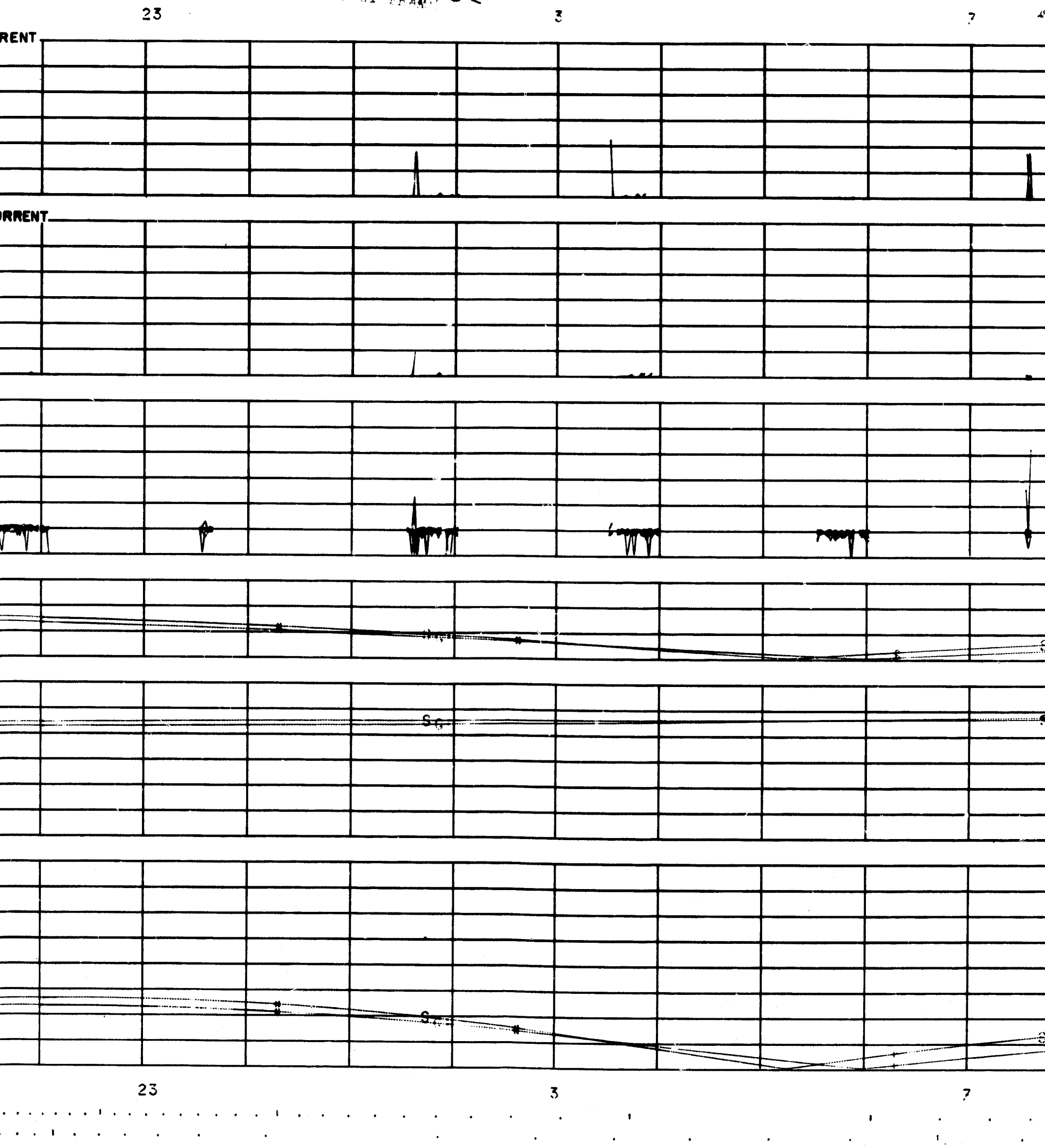


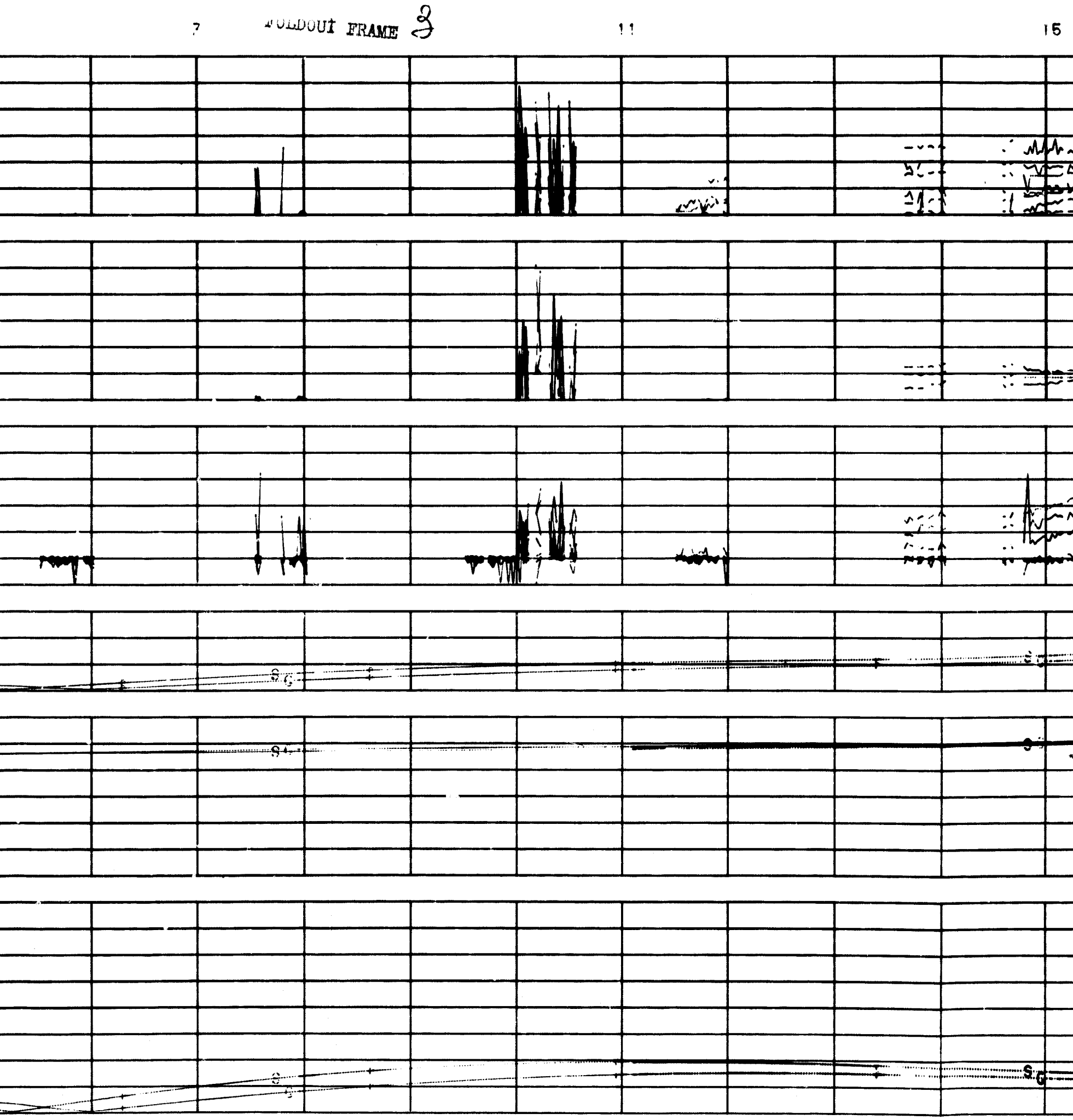
FOLDOUT FRAME 4

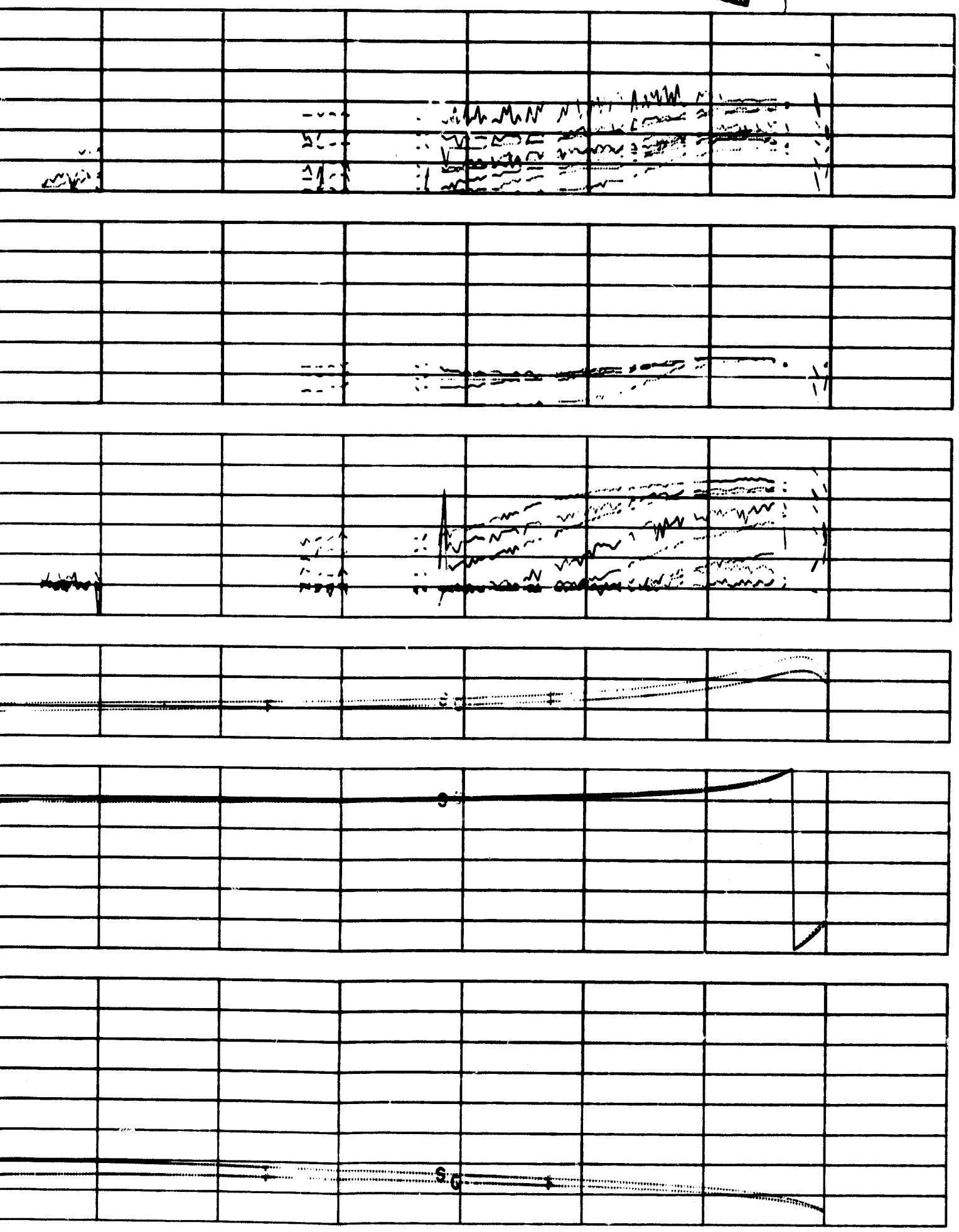


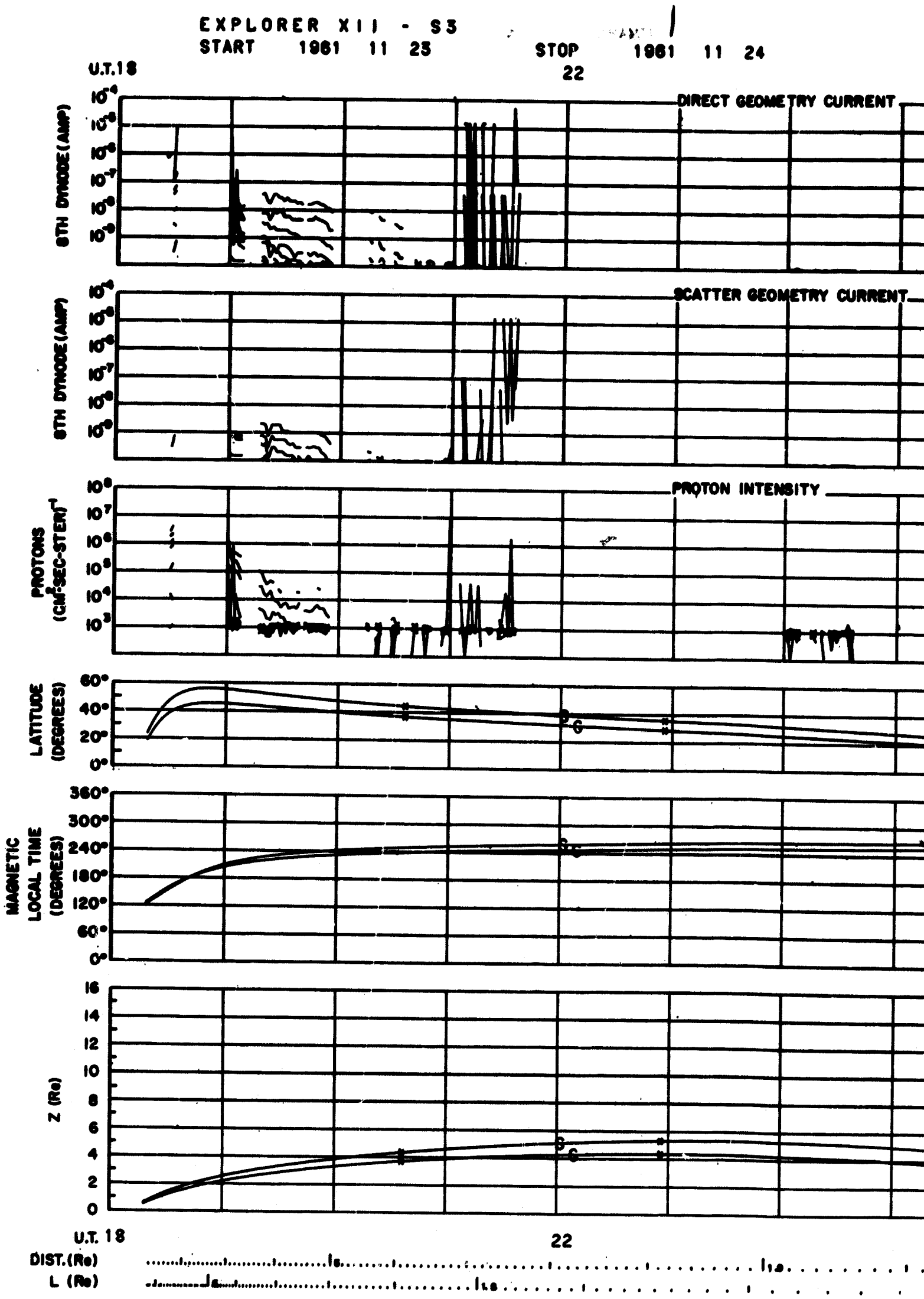

EXPLORER XII - S3
START 1961 11 22
STOP 1961 11 23
U.T. 15
19
23
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 15
19
23
DIST. (Re)
L (Re)

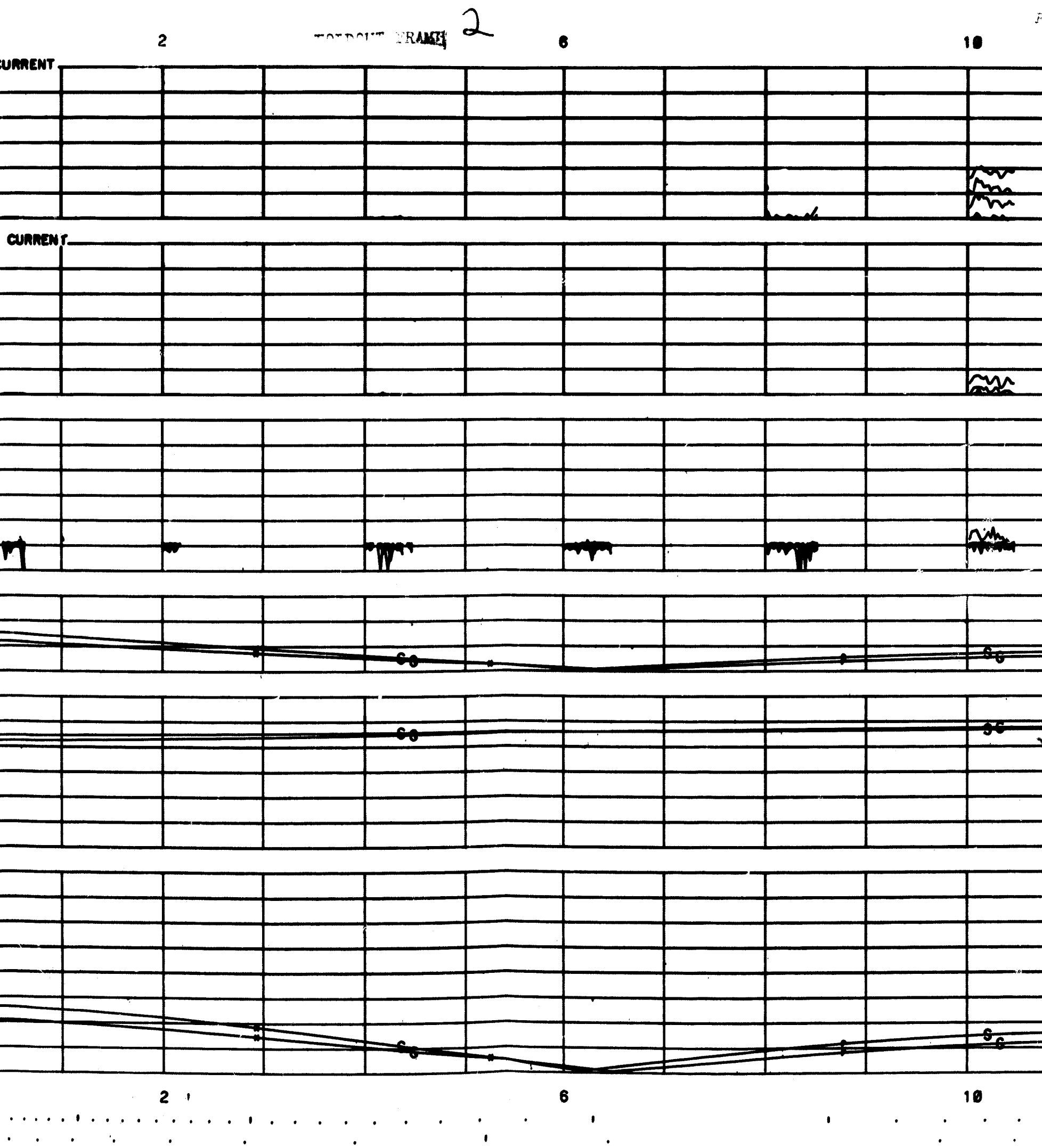
FRAME 2



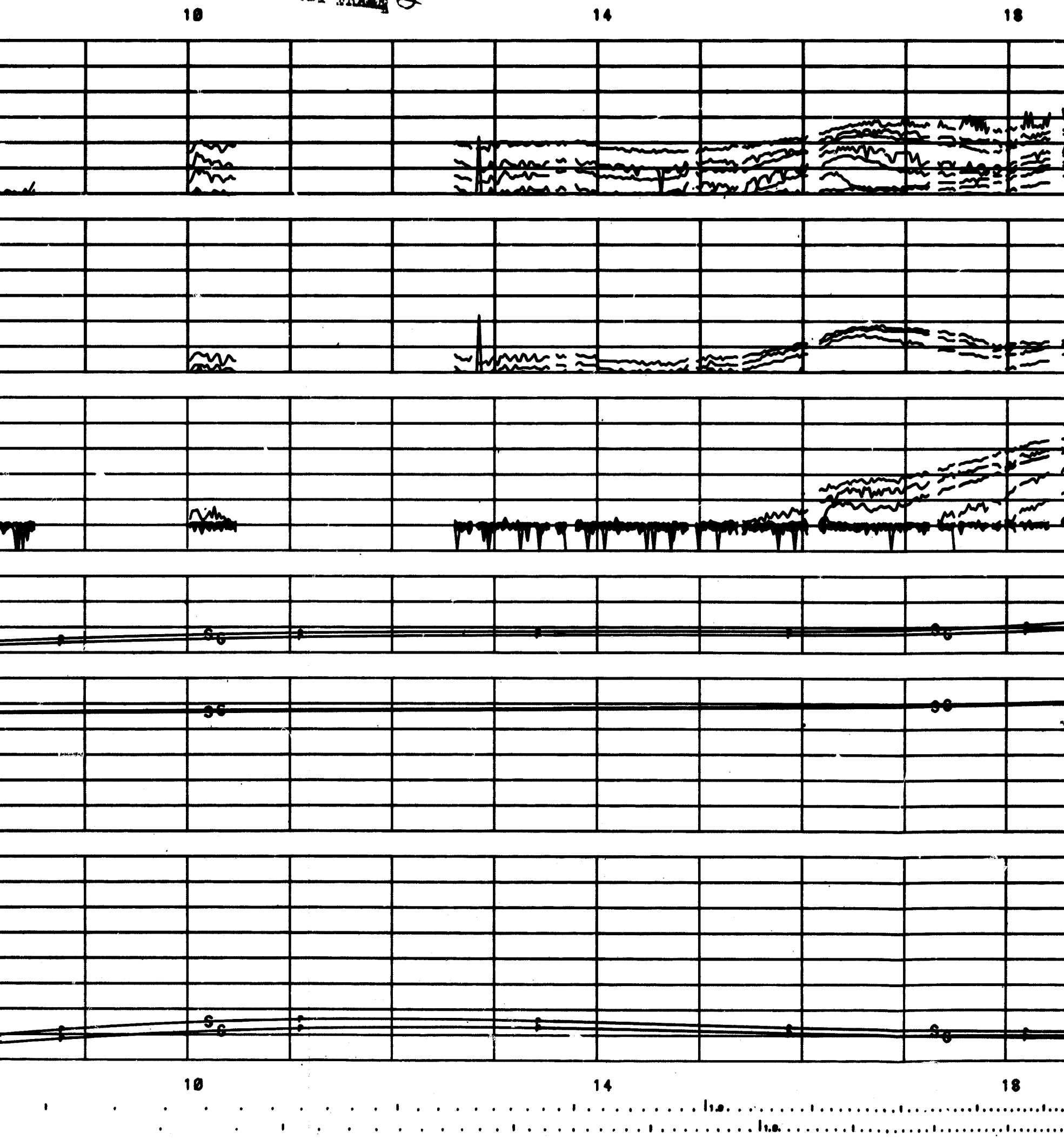

7
FOLDOUT FRAME 3
11
15
7
11
15


S.G.


EXPLORER XII - S3
START 1961 11 25
STOP 1961 11 24
U.T.18
22
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM-2SEC-STER)-1
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 18
22
DIST.(Re)
L (Re)

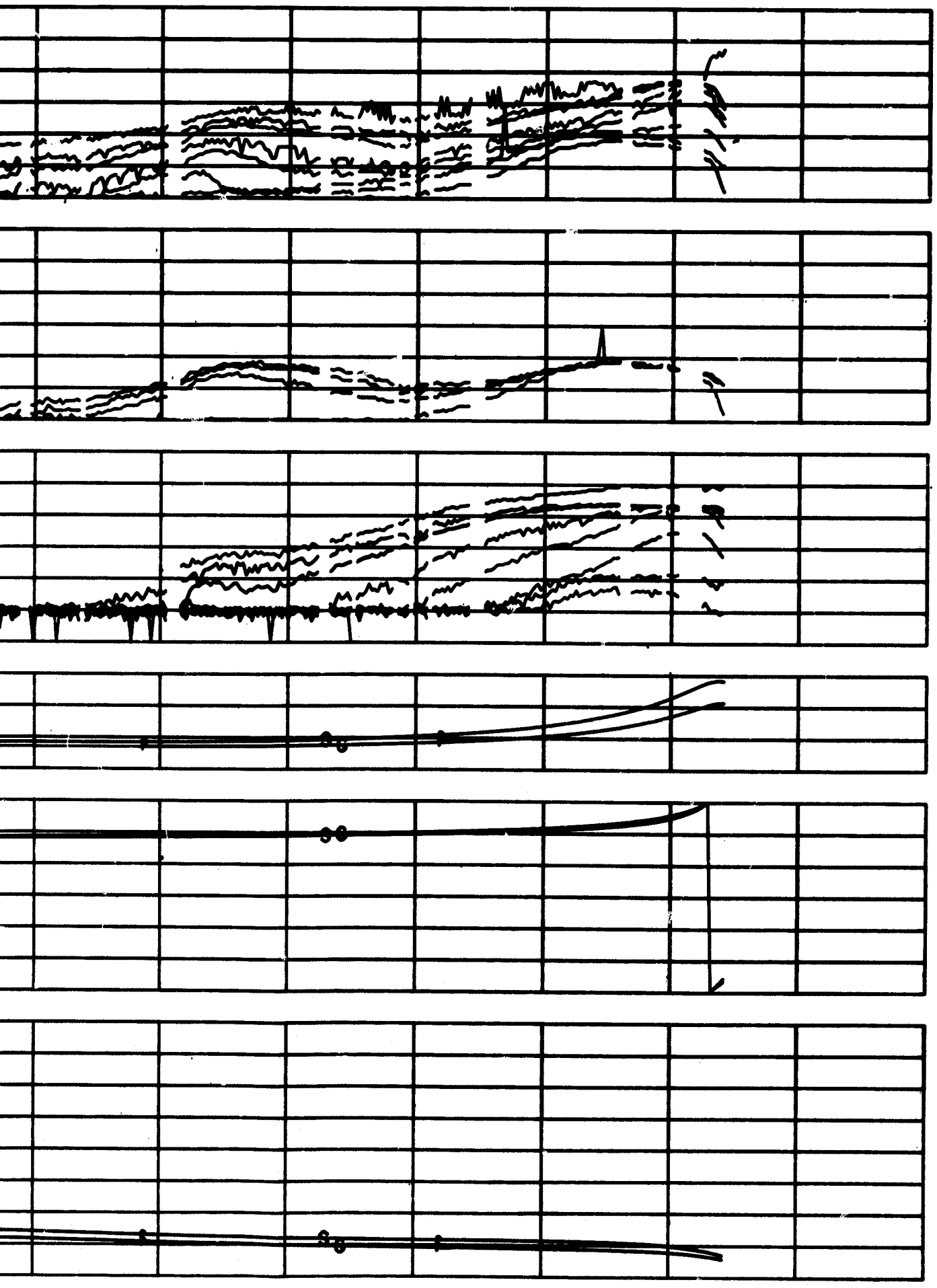

2
6
10
CURRENT
CURRENT
2
6
10

FOLDOUT FRAME 3

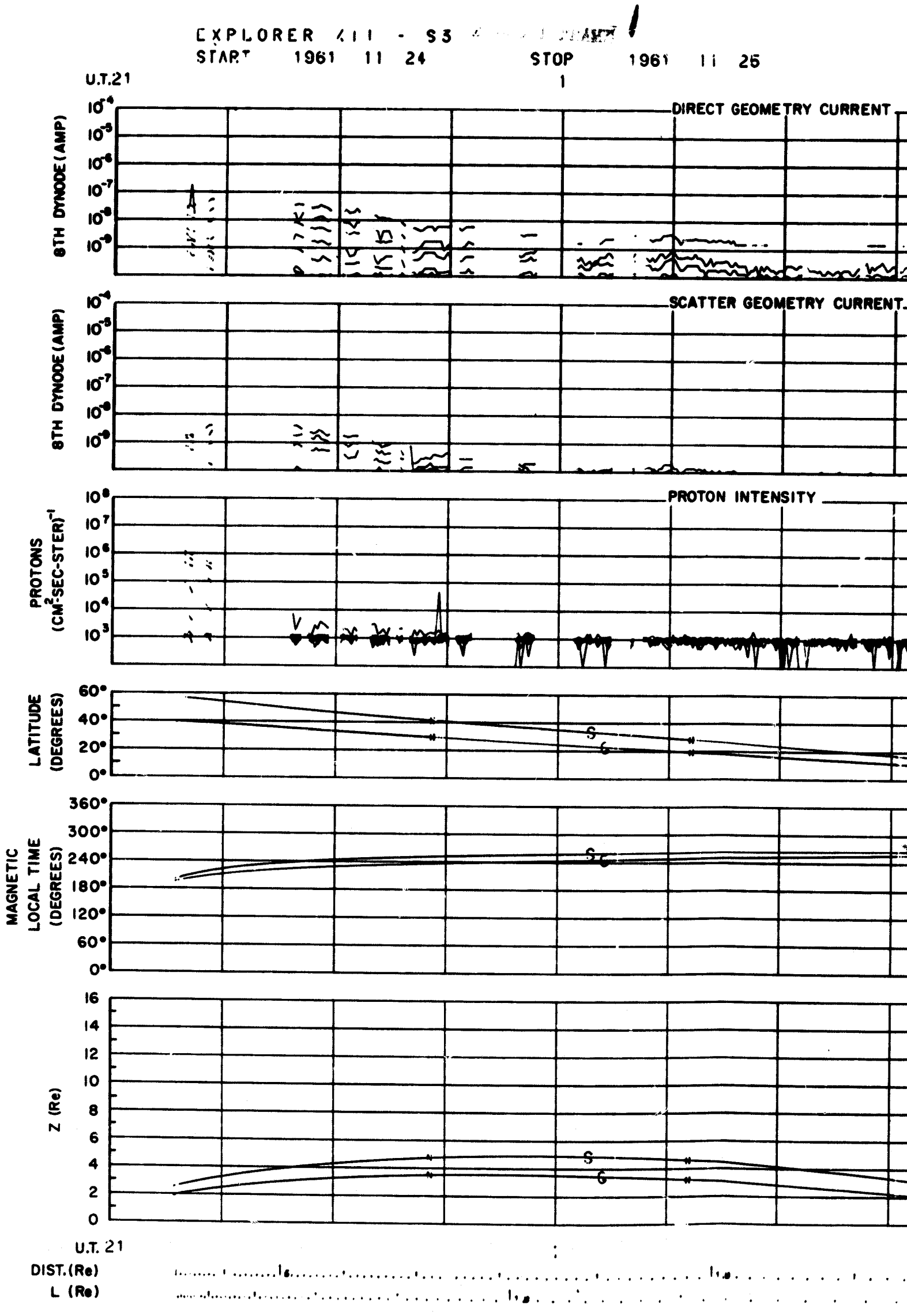


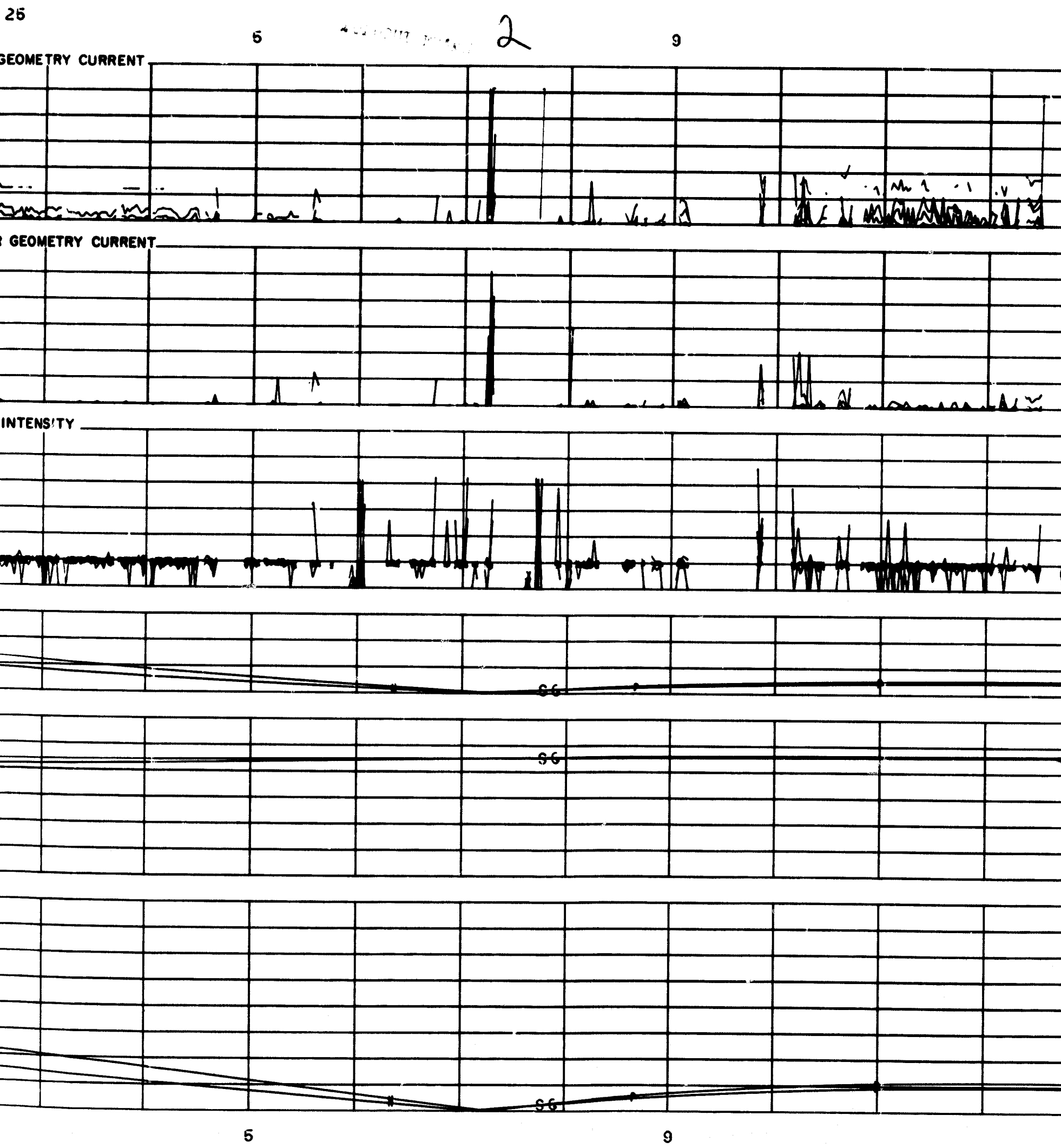
FOLDOUT FRAME 4

18 22

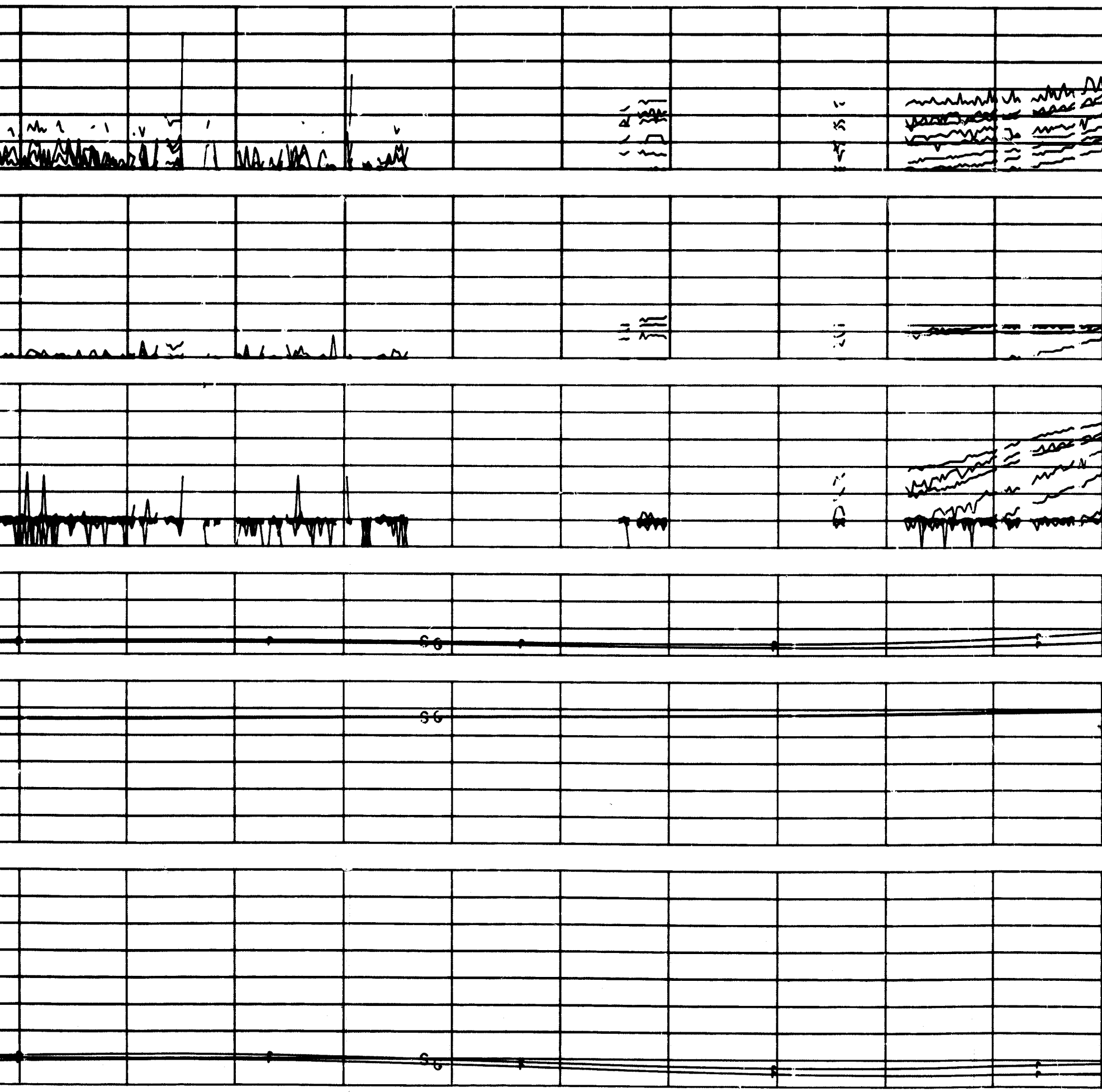


18 22

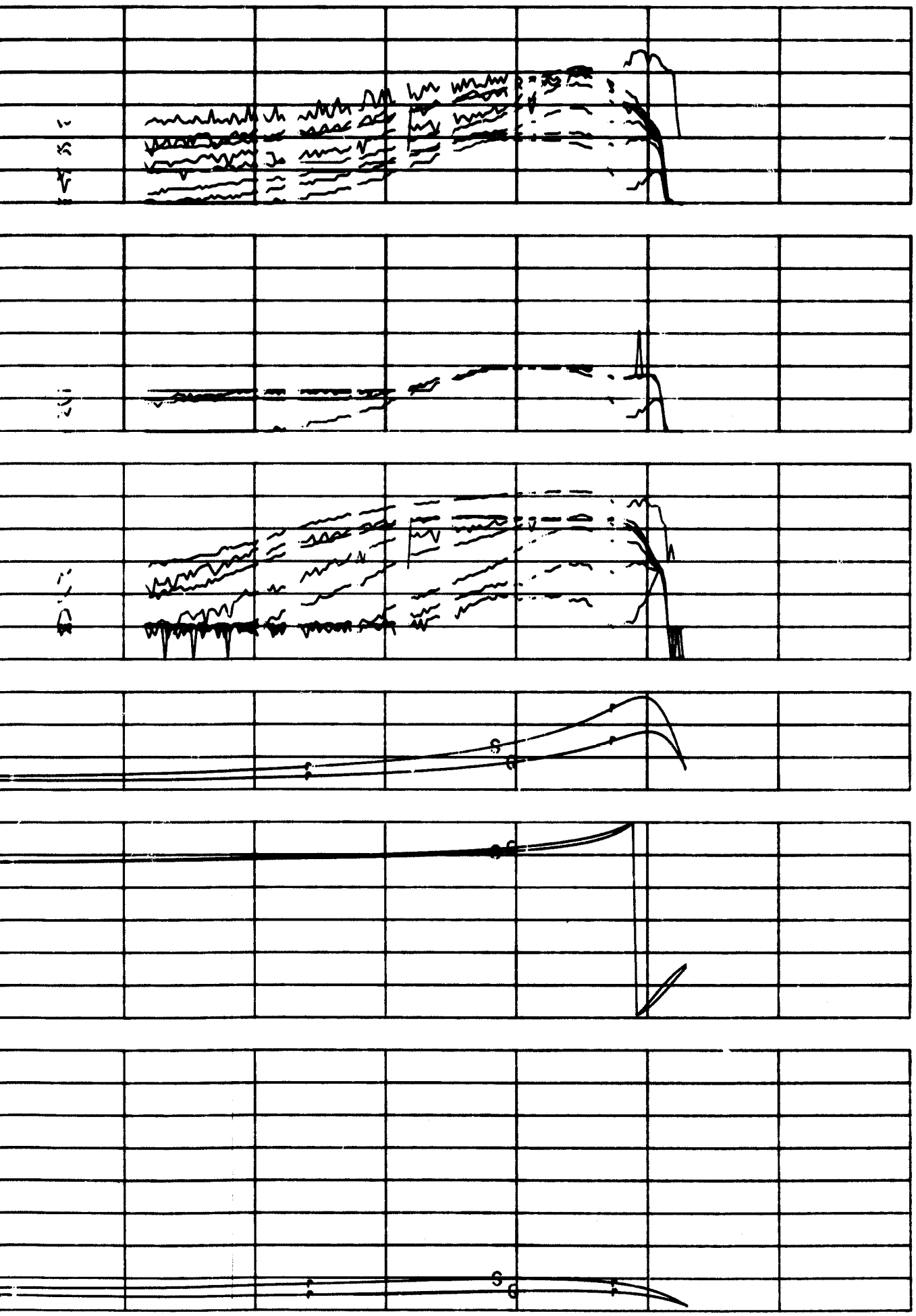

EXPLORER 41 - S3
START 1961 11 24
STOP 1961 11 25
U.T.21
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 21
DIST. (Re)
L (Re)

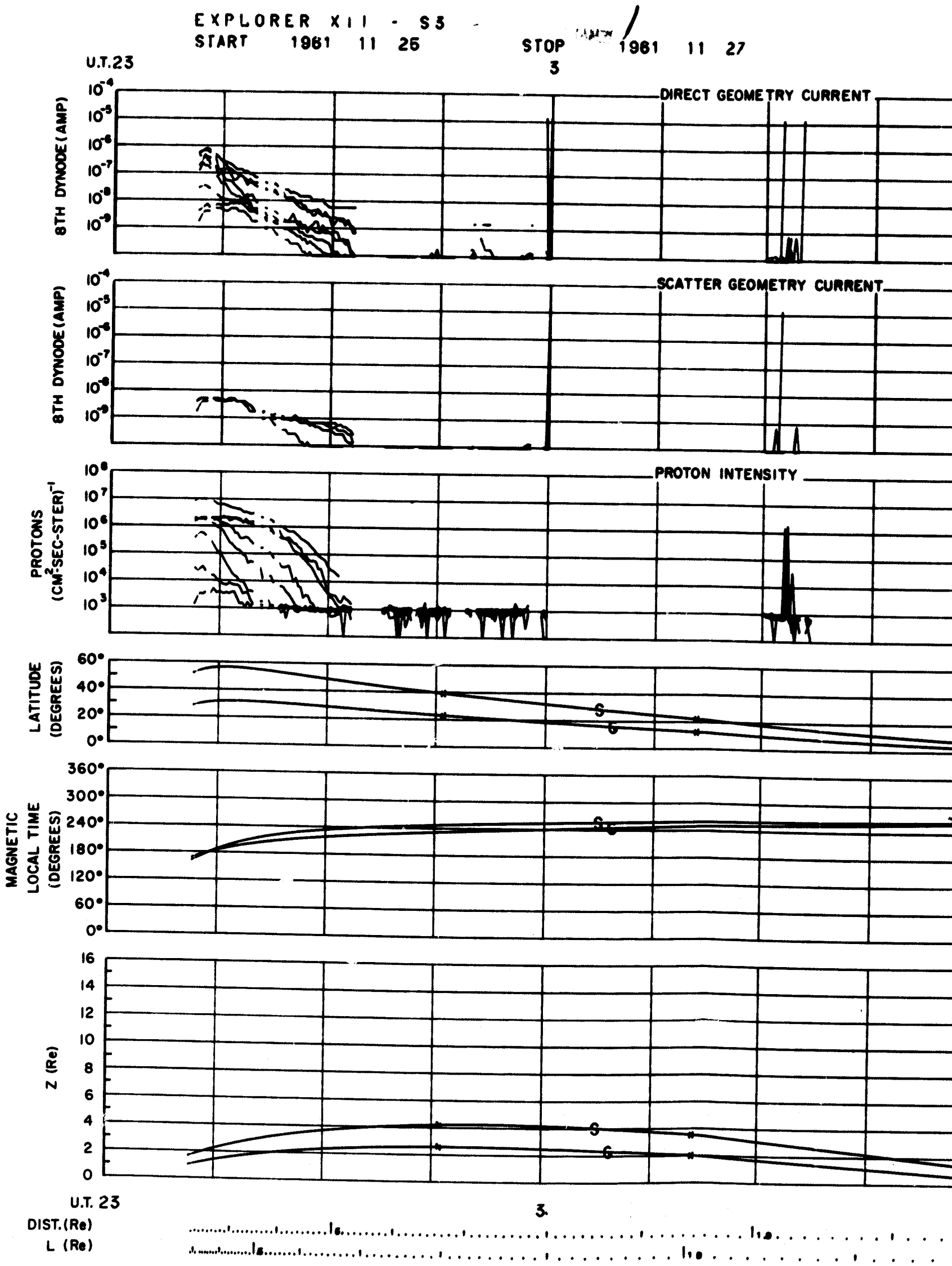

25
5
2
9
GEOMETRY CURRENT
GEOMETRY CURRENT
INTENSITY
SG
SG
SG
5
9

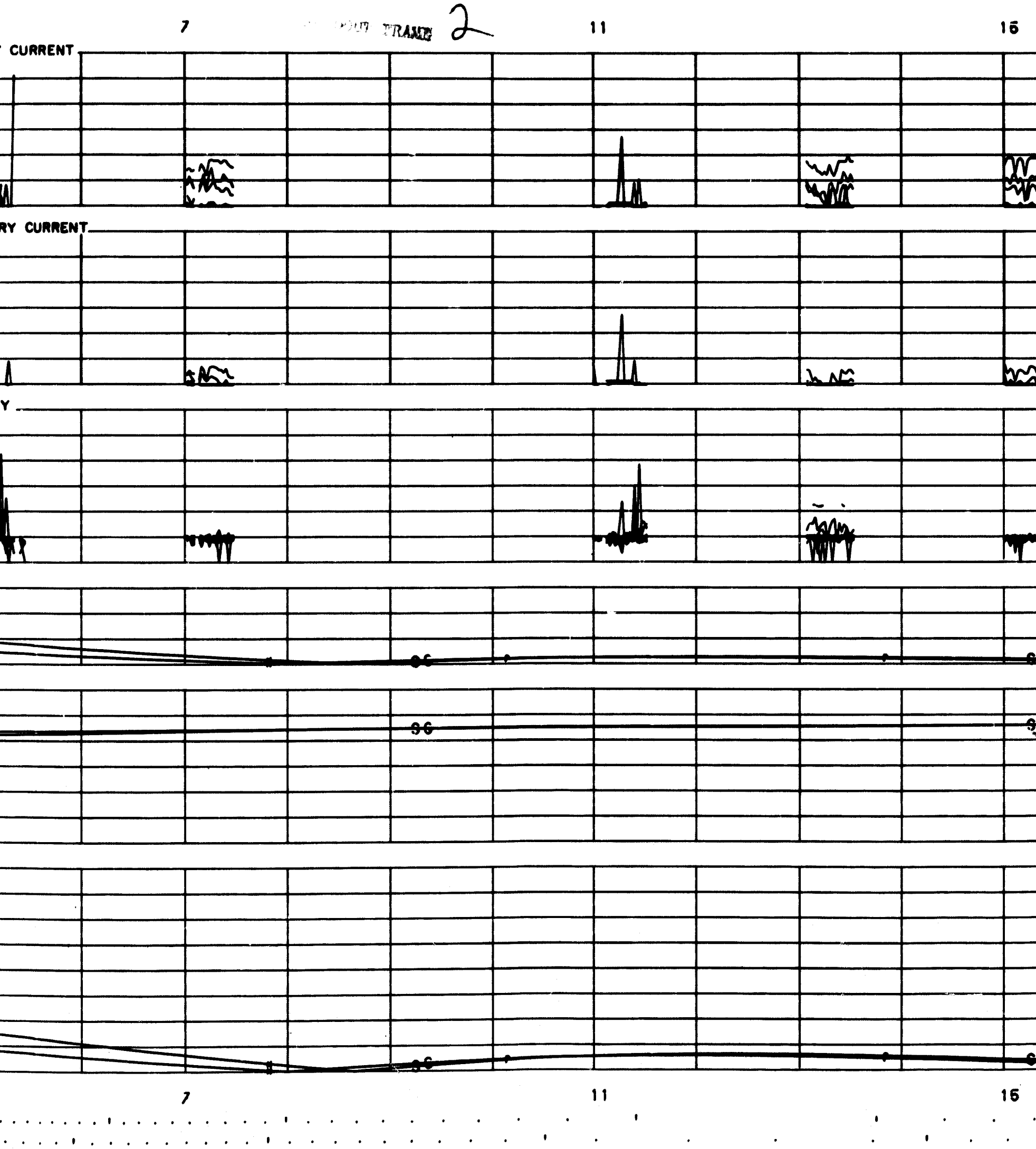
FOLDOUT FRAME 3



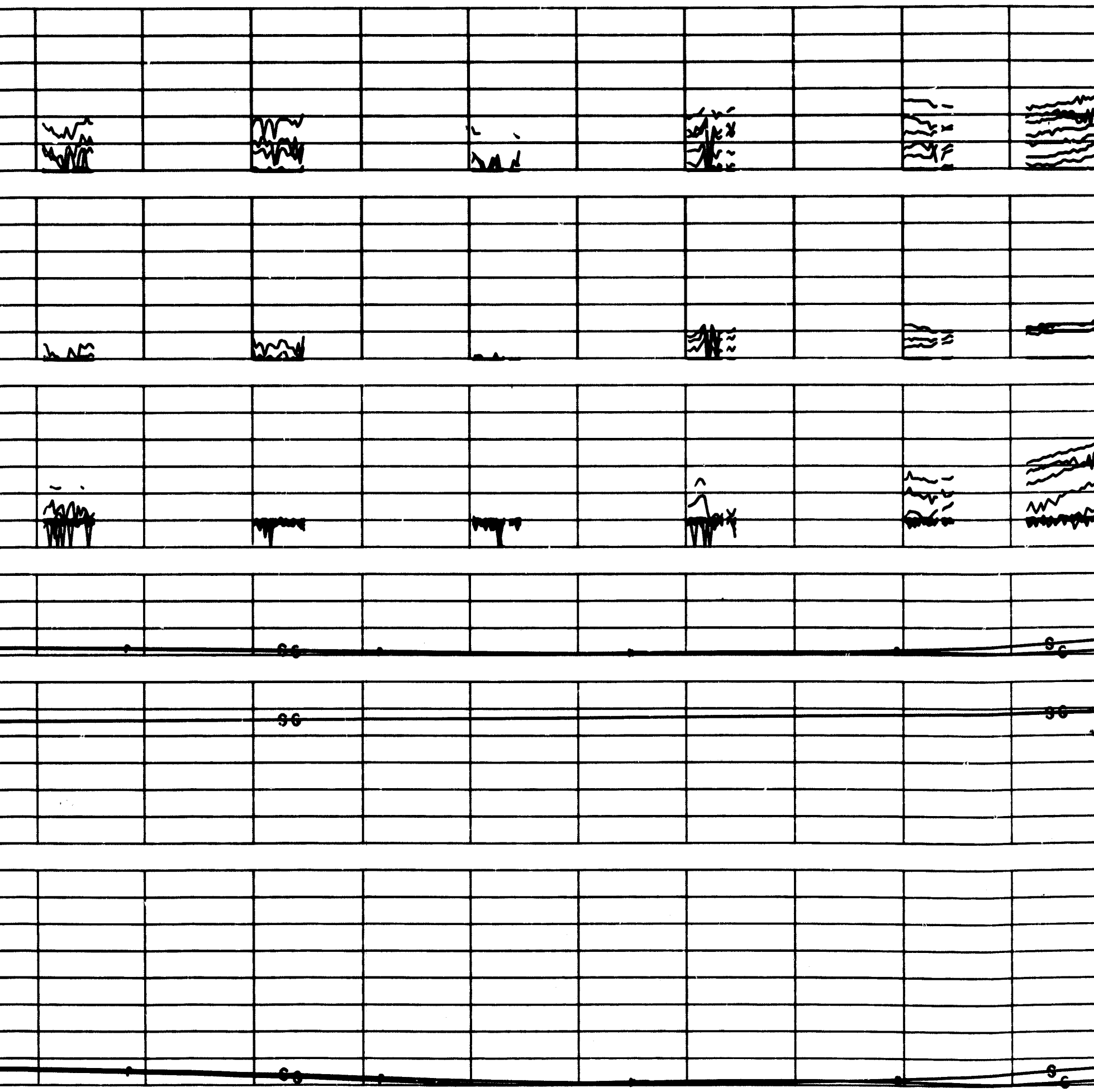
FOLDOUT FRAME 4



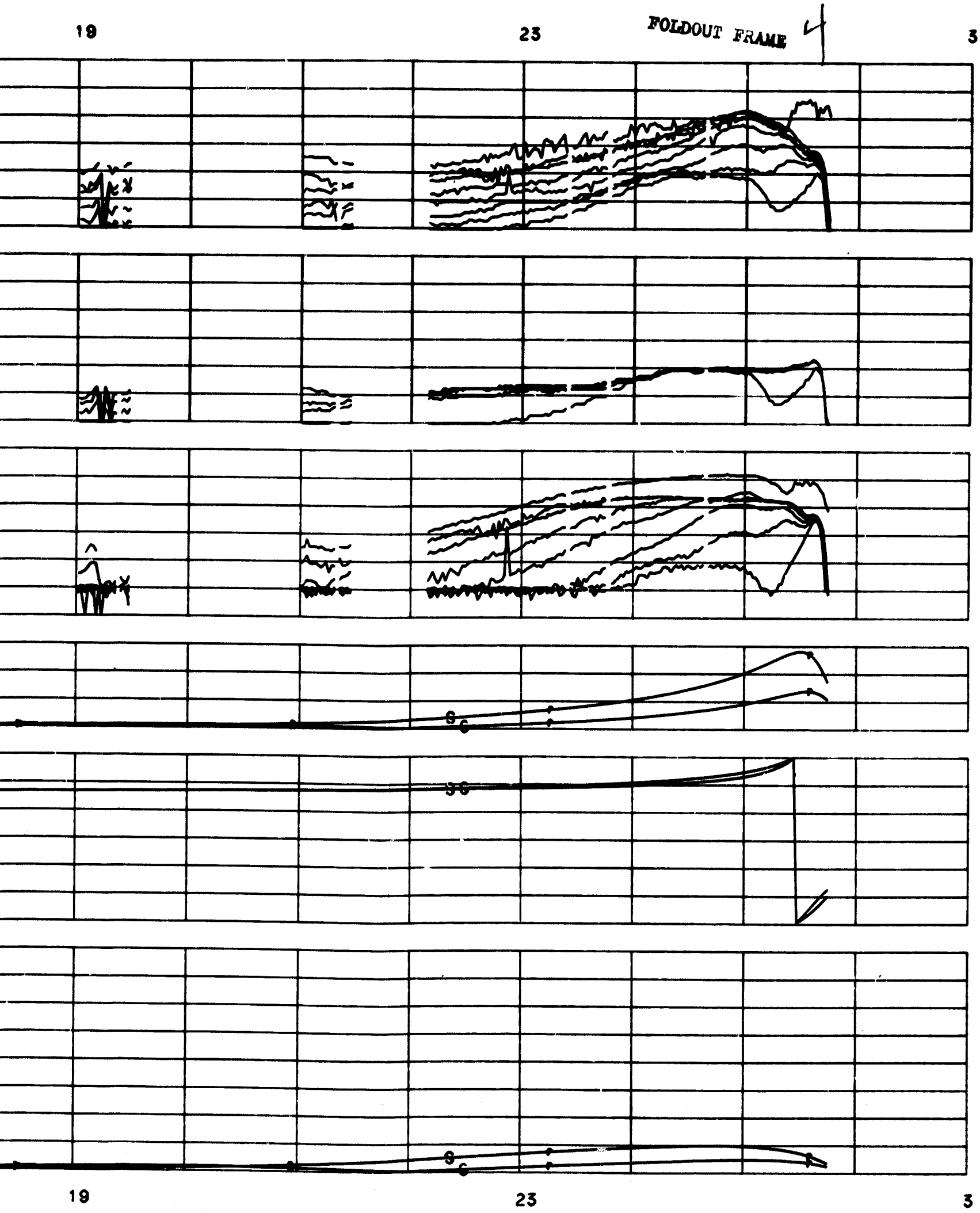

EXPLORER XII - S3
START 1961 11 25
STOP 1961 11 27
U.T.23
3
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 23
3.
DIST. (Re)
L (Re)

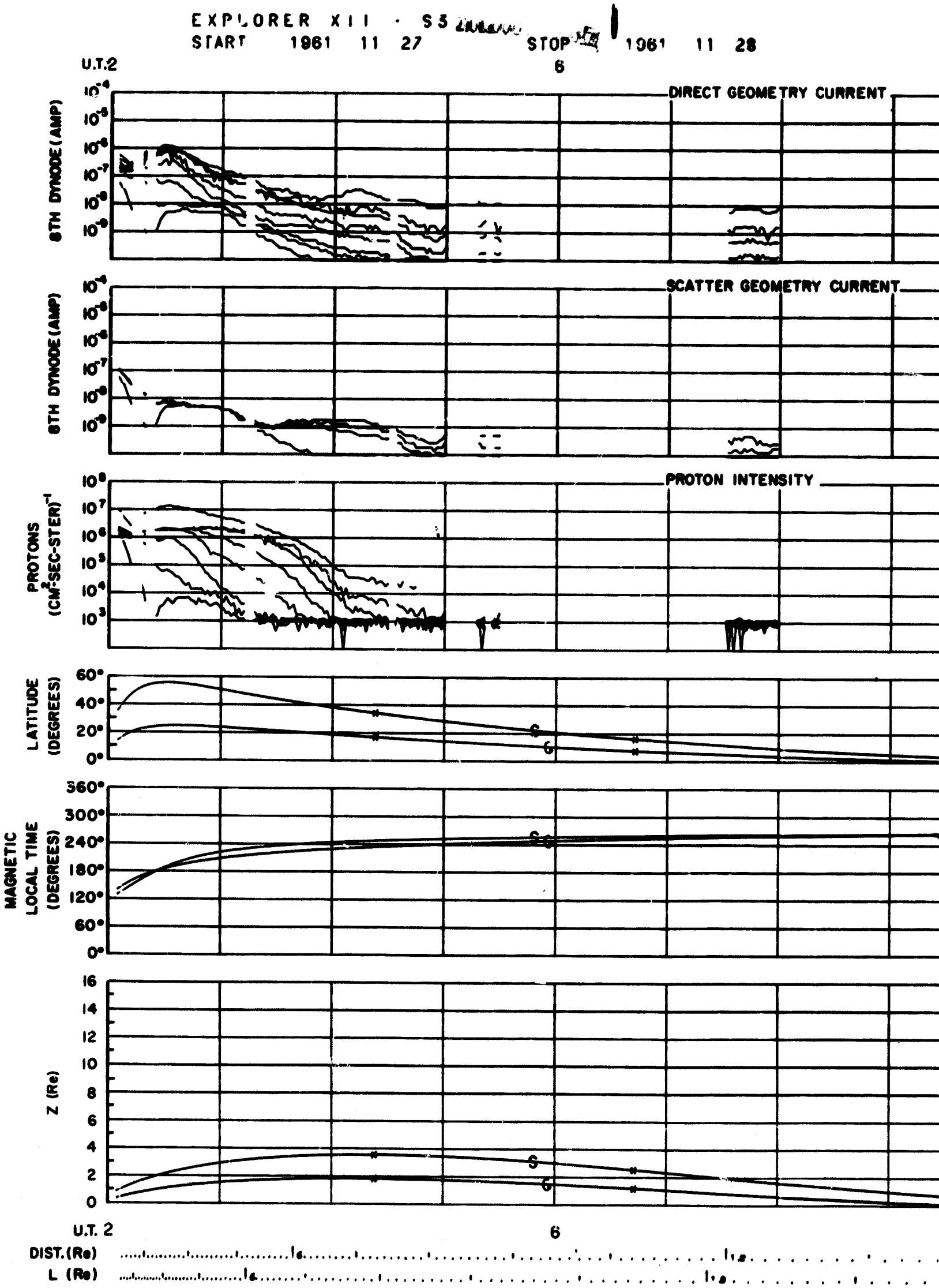

7
FRAME 2
11
15
CURRENT
RY CURRENT
Y
7
11
15

15 DOUT FRAME 3 19

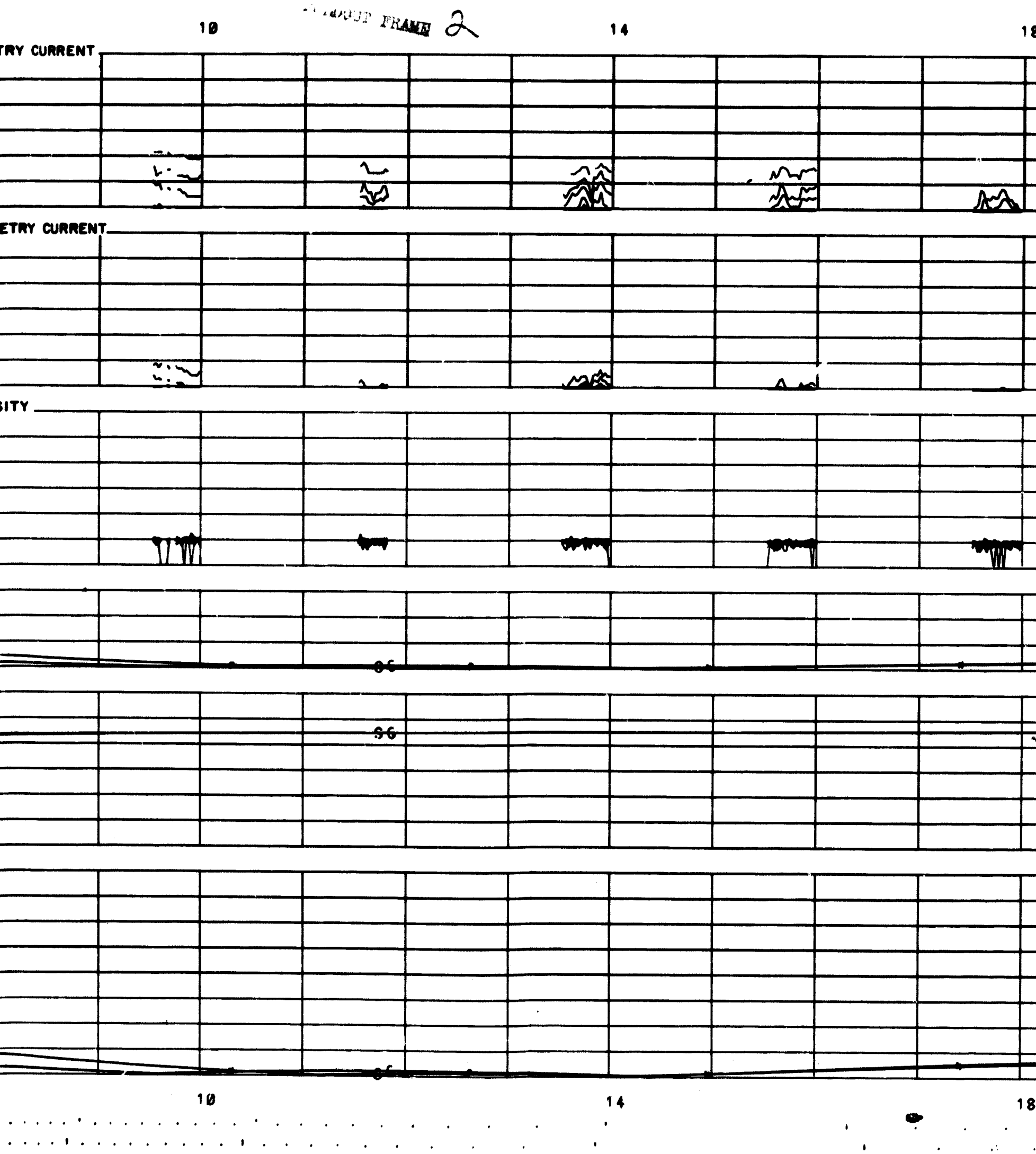


15 19

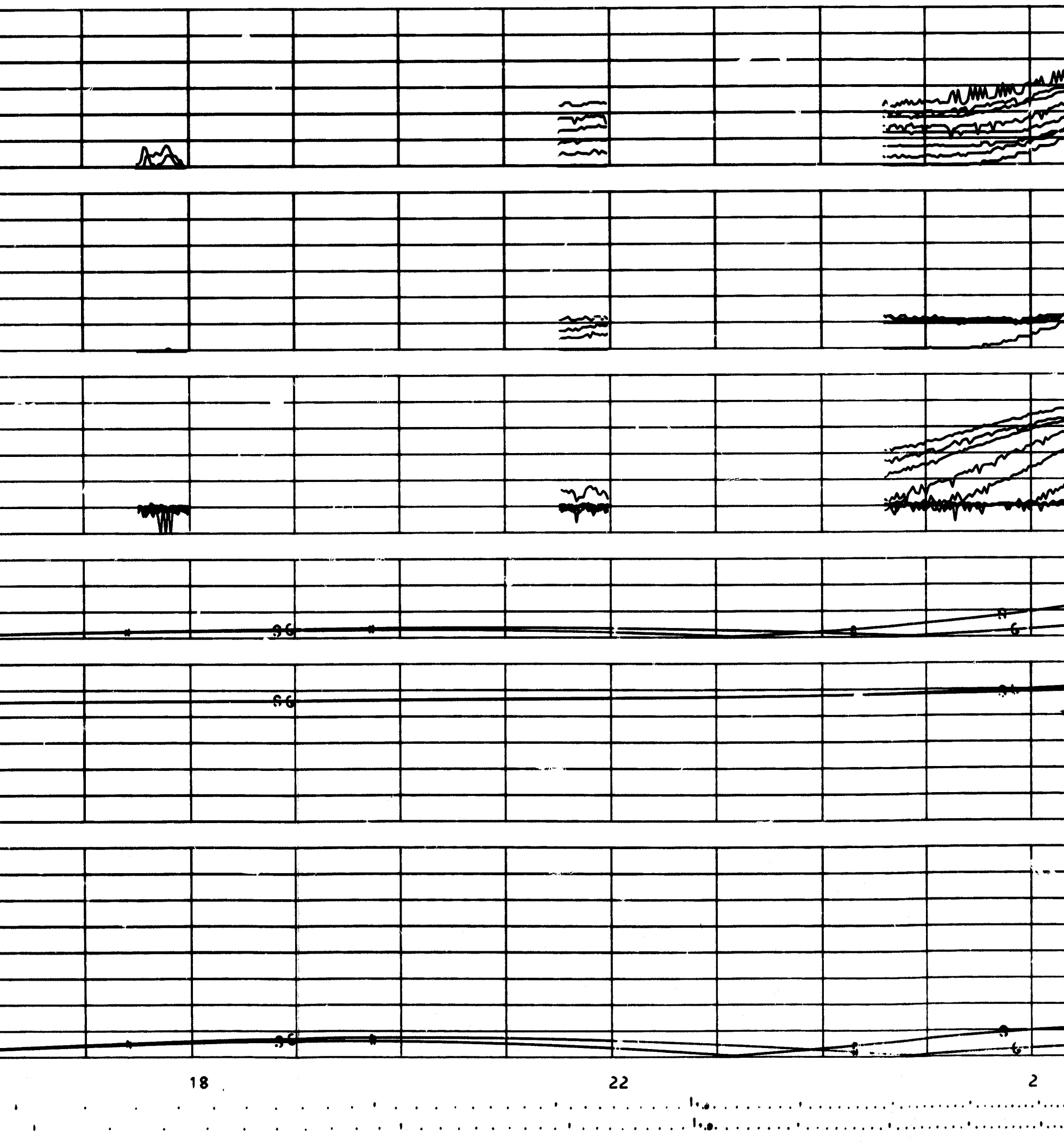

19
23
FOLDOUT FRAME 4
3
S
C
SC
S
C
19
23
3


EXPLORER XII · S3
START 1961 11 27
STOP 1961 11 28
U.T.2
6
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 2
6
DIST. (Re)
L (Re)

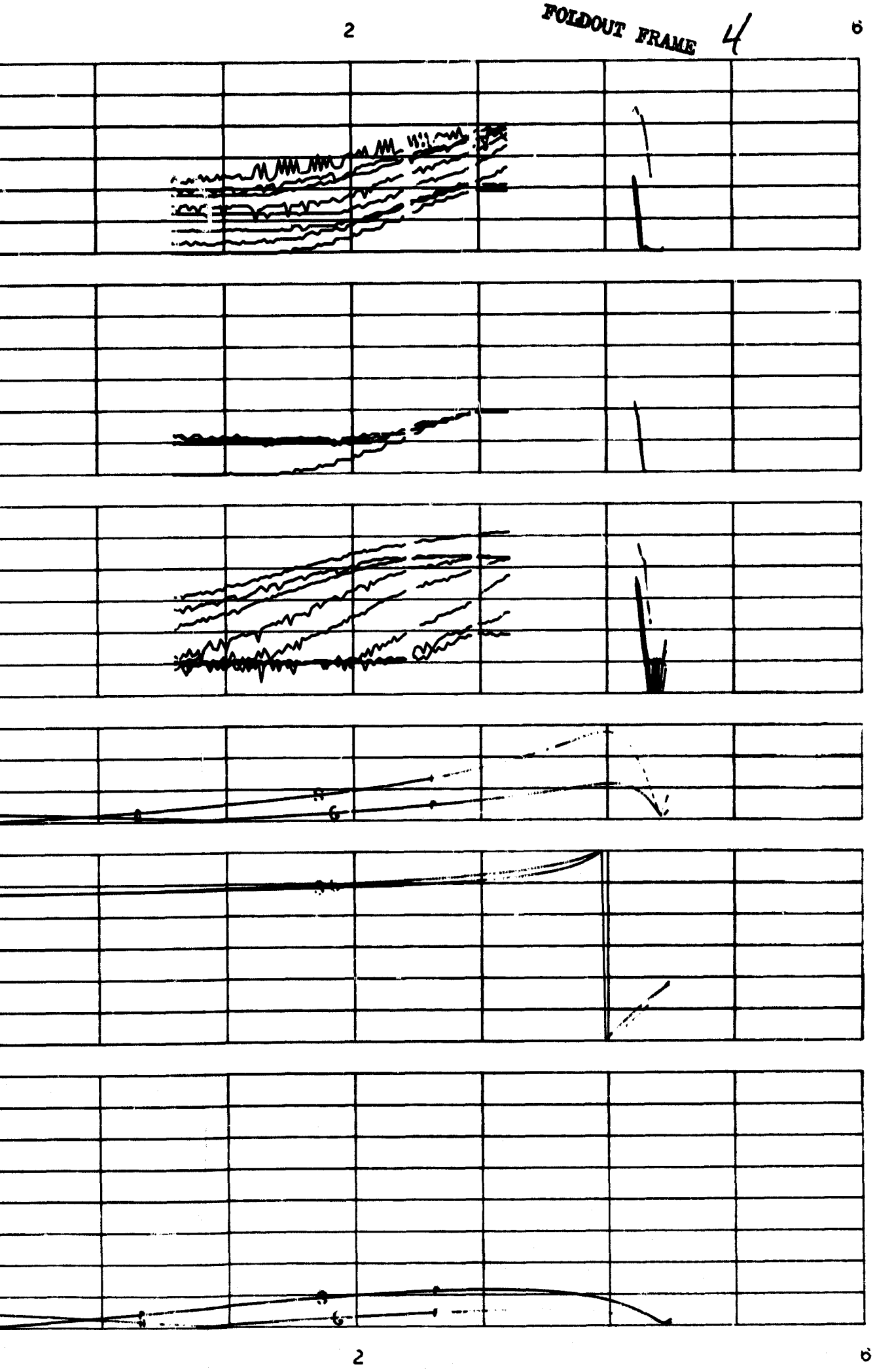
FOLDOUT FRAME 2

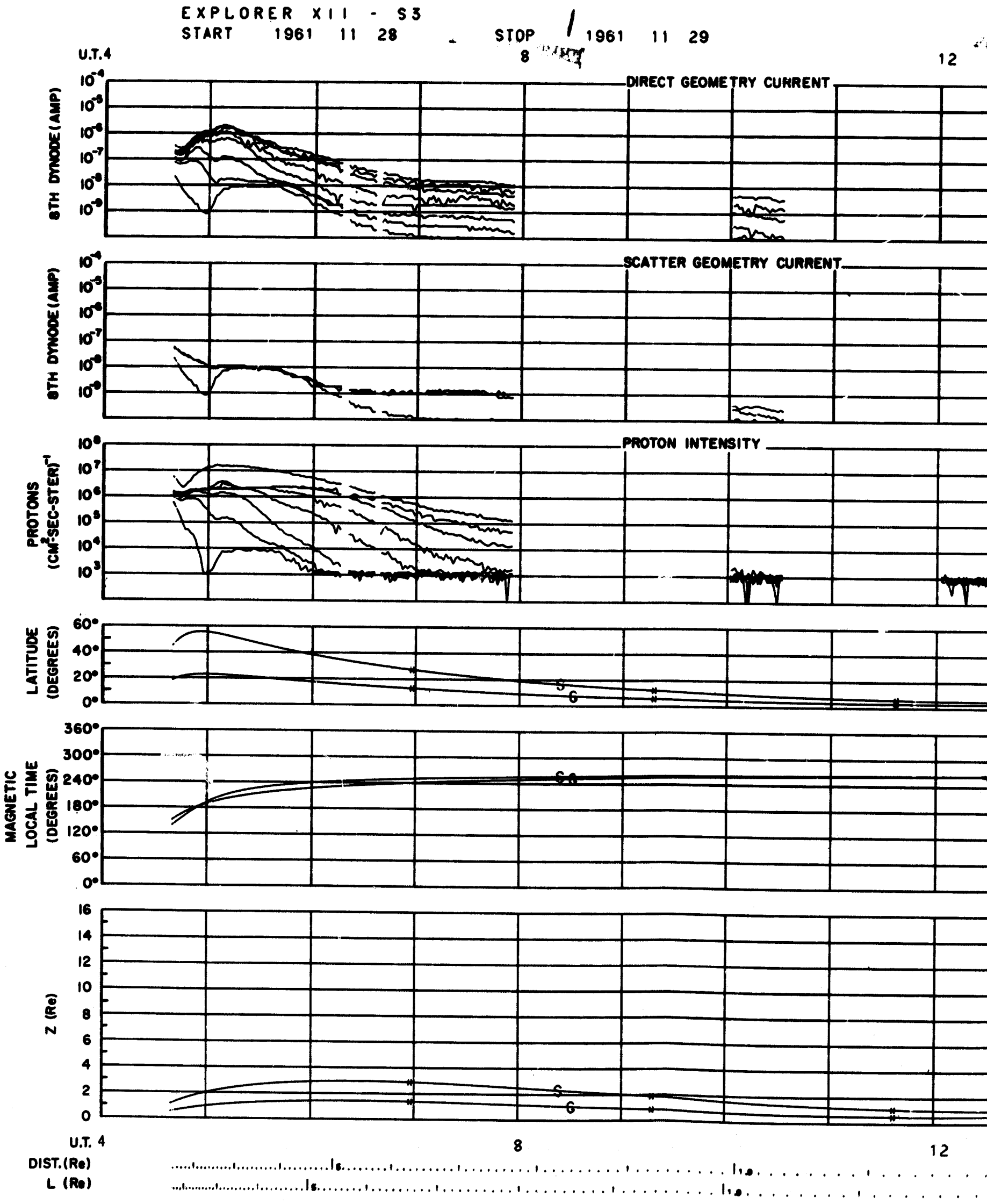


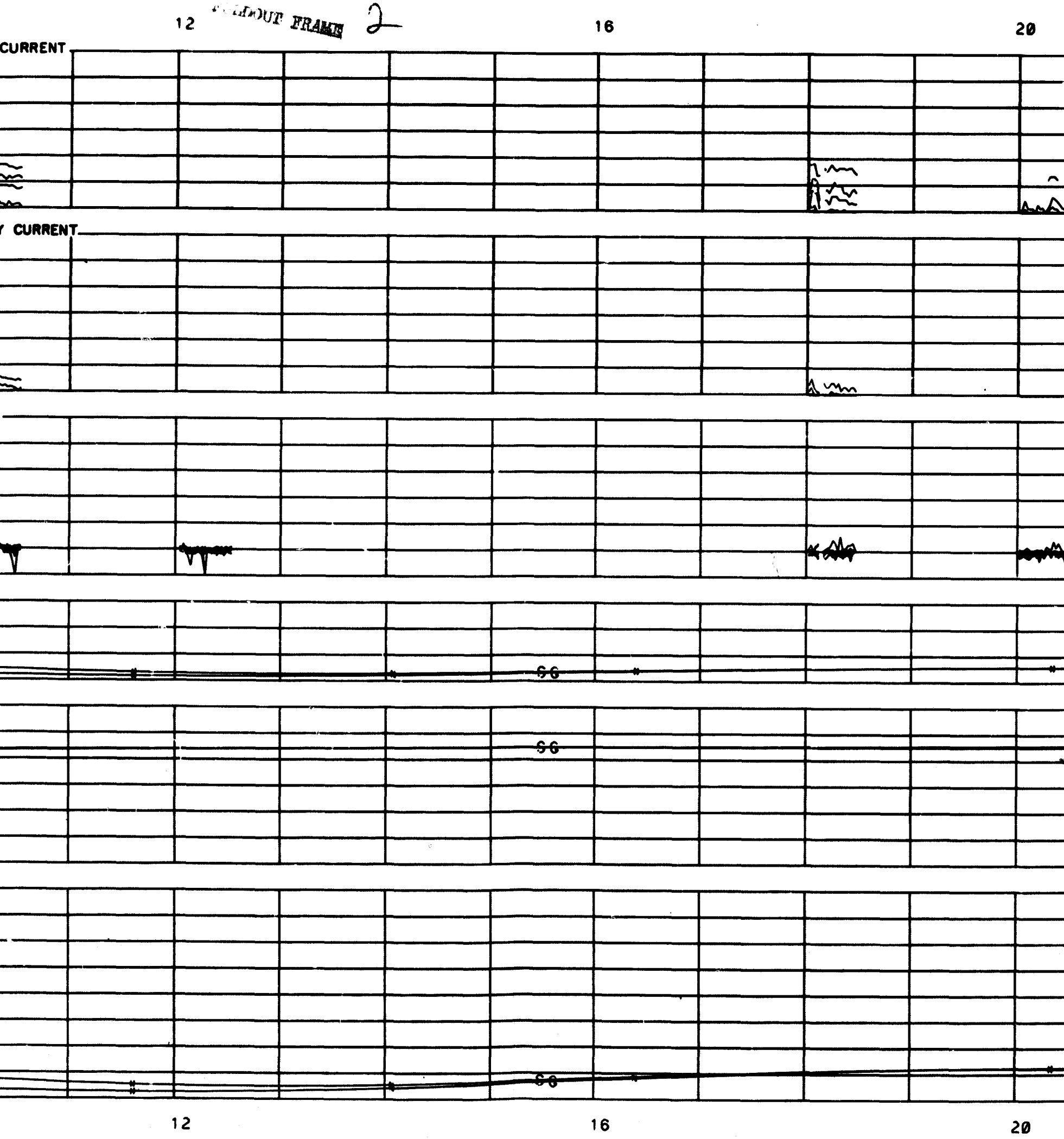
FOLDOUT FRAME 3



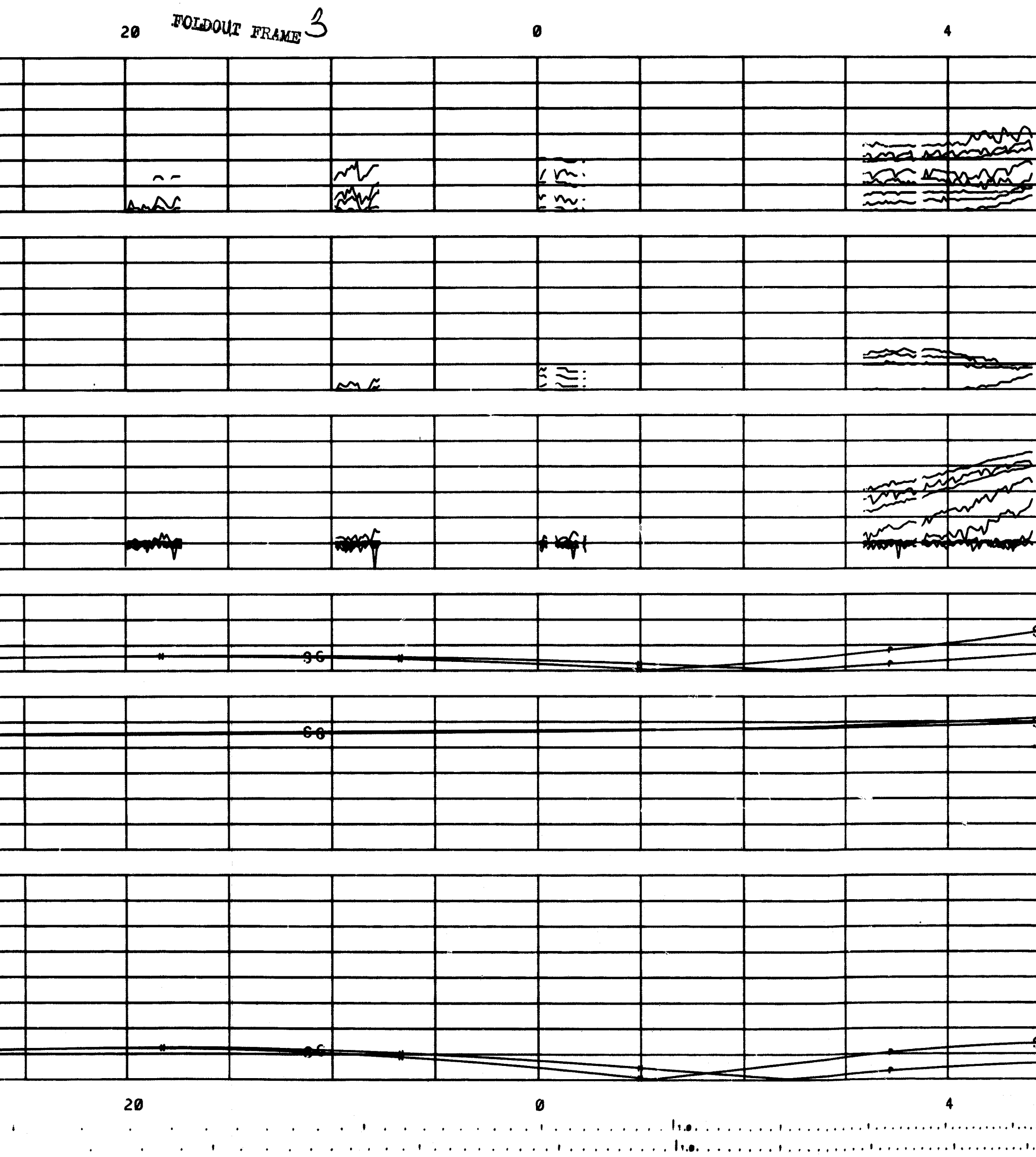
FOLDOUT FRAME 4



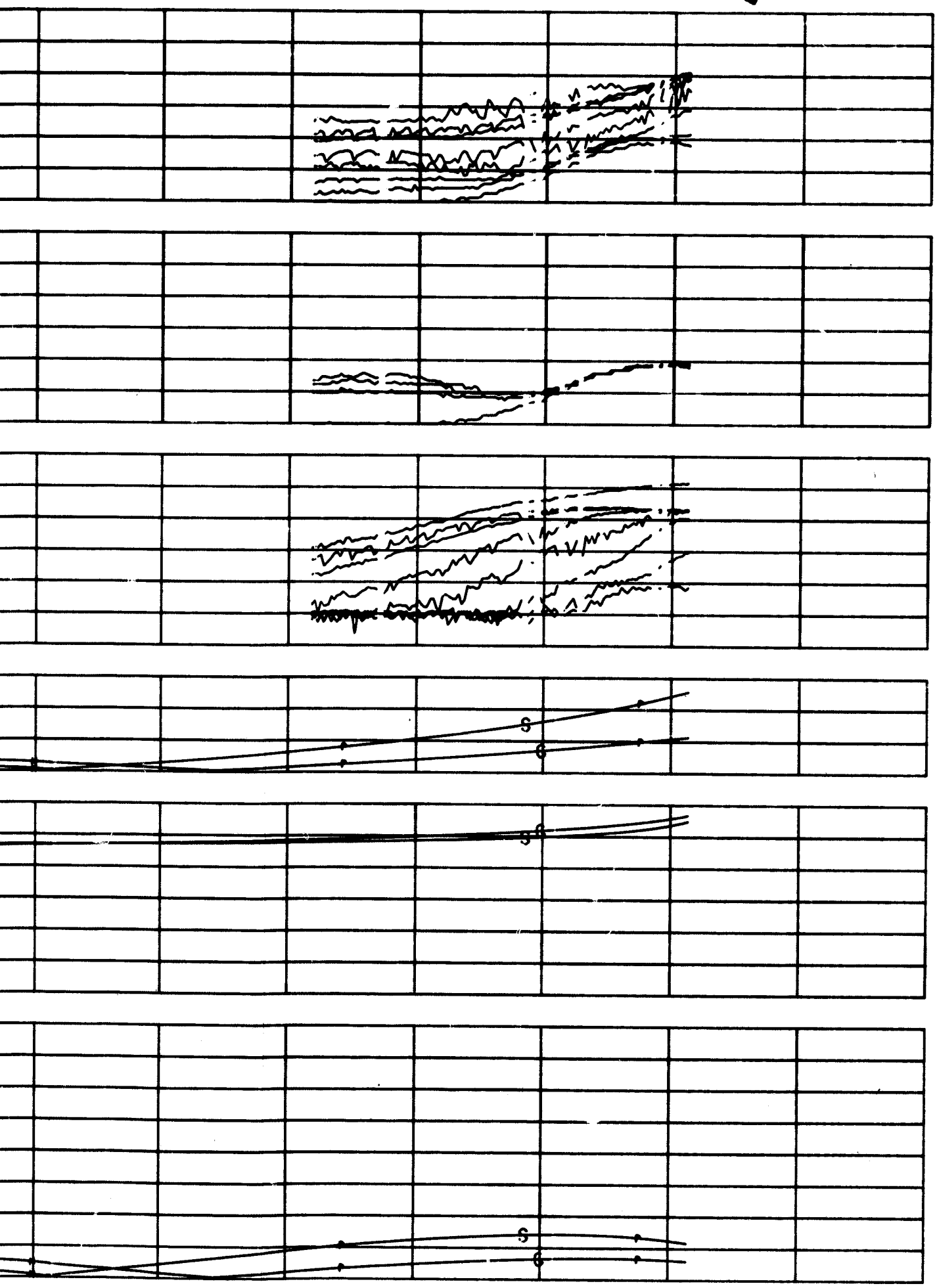

EXPLORER XII - S3
START 1961 11 28 STOP 1961 11 29
U.T.4
8
12
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 4
8
12
DIST. (Re)
L (Re)

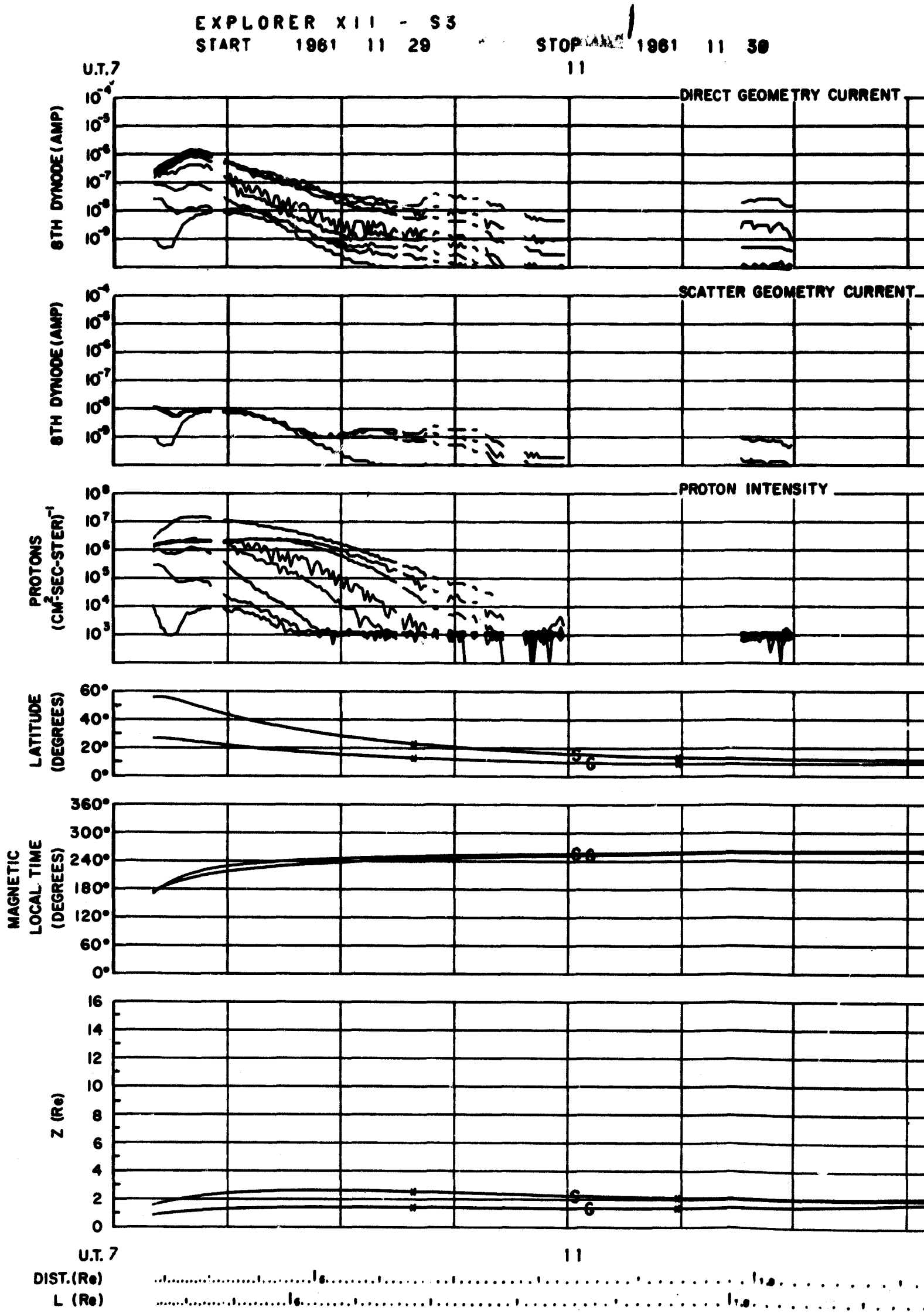

12
16
20
CURRENT
CURRENT
SG
SG
SG
12
16
20

FOLDOUT FRAME 3



FOLDOUT FRAME 4




EXPLORER XII - S3
START 1961 11 29
STOP 1961 11 30
U.T. 7
11
DIRECT GEOMETRY CURRENT
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
8TH DYNODE (AMP)
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
DIST. (Re)
L (Re)

11 30

FOLDOUT FRAME 2

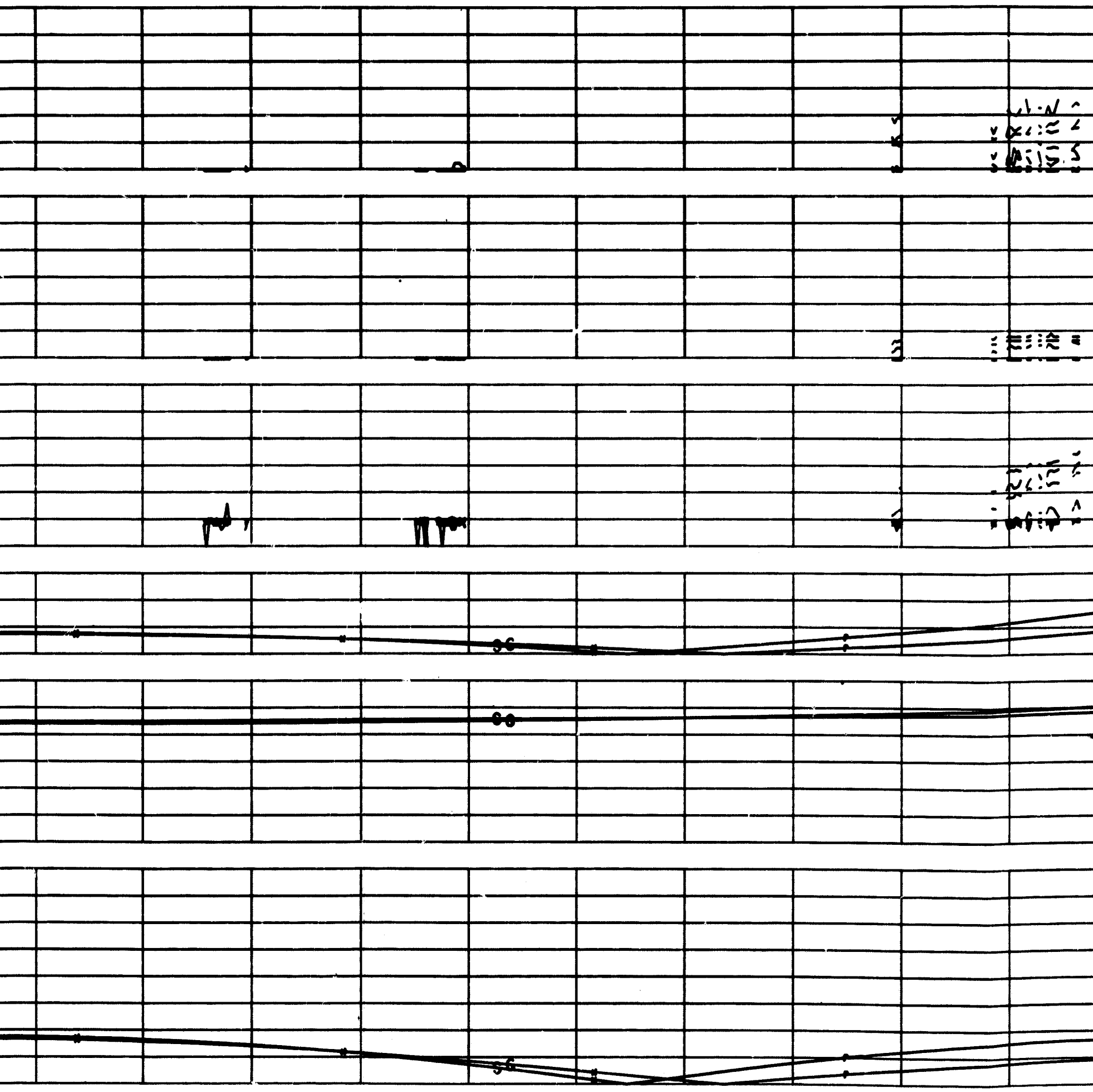
15 19

RECT GEOMETRY CURRENT

ATTER GEOMETRY CURRENT

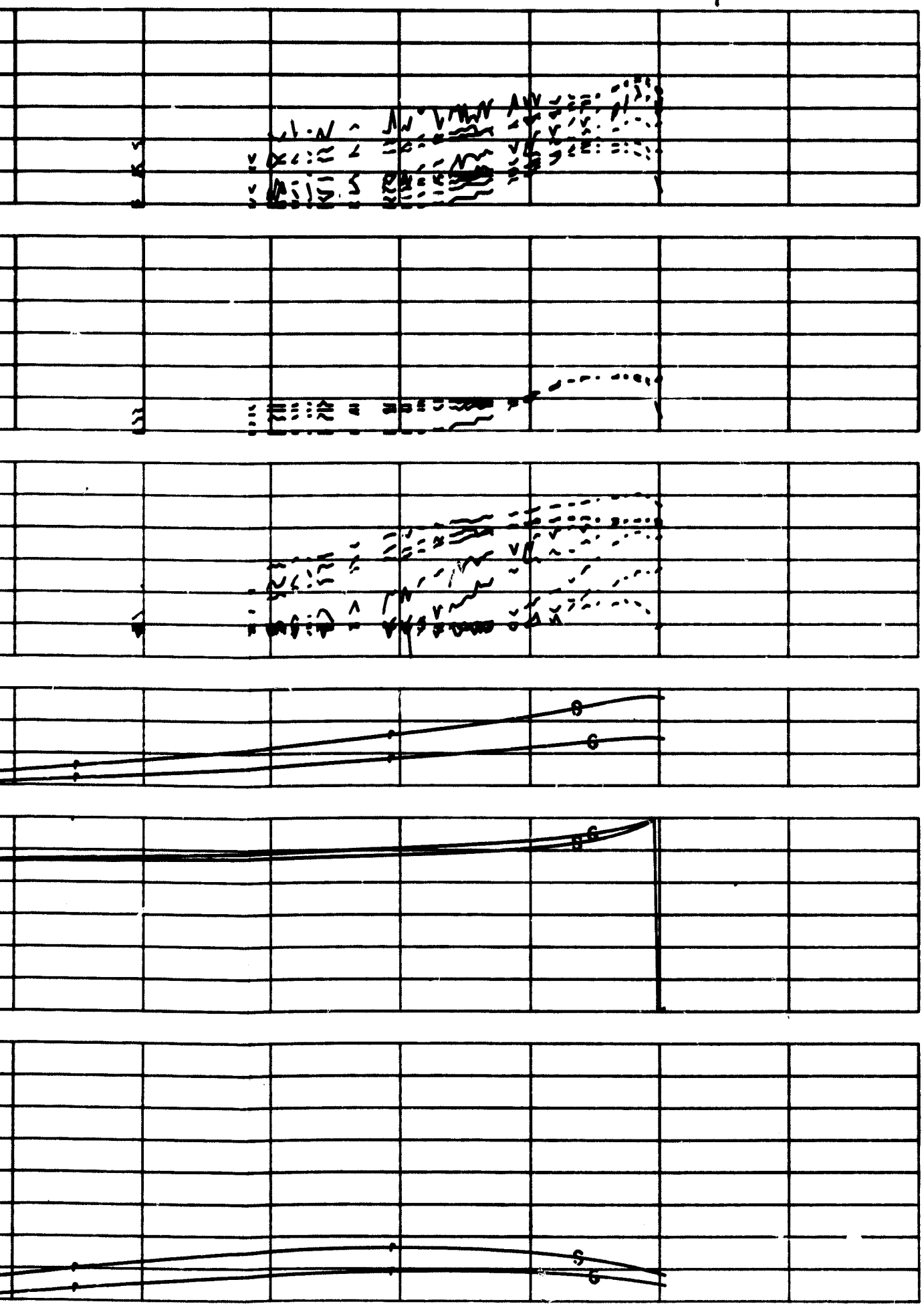
OTON INTENSITY

15 19

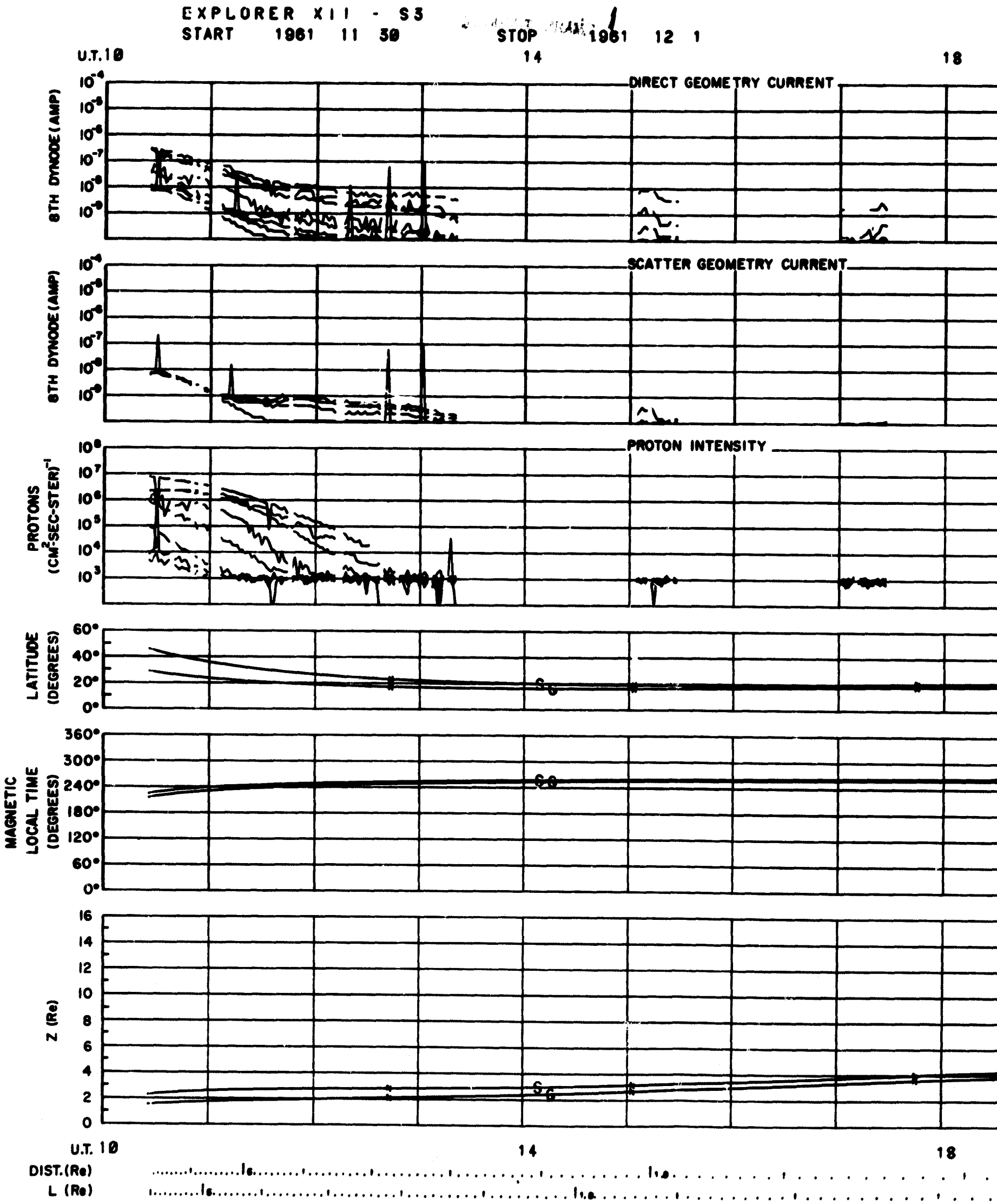


FOLDOUT FRAME 4

7 11



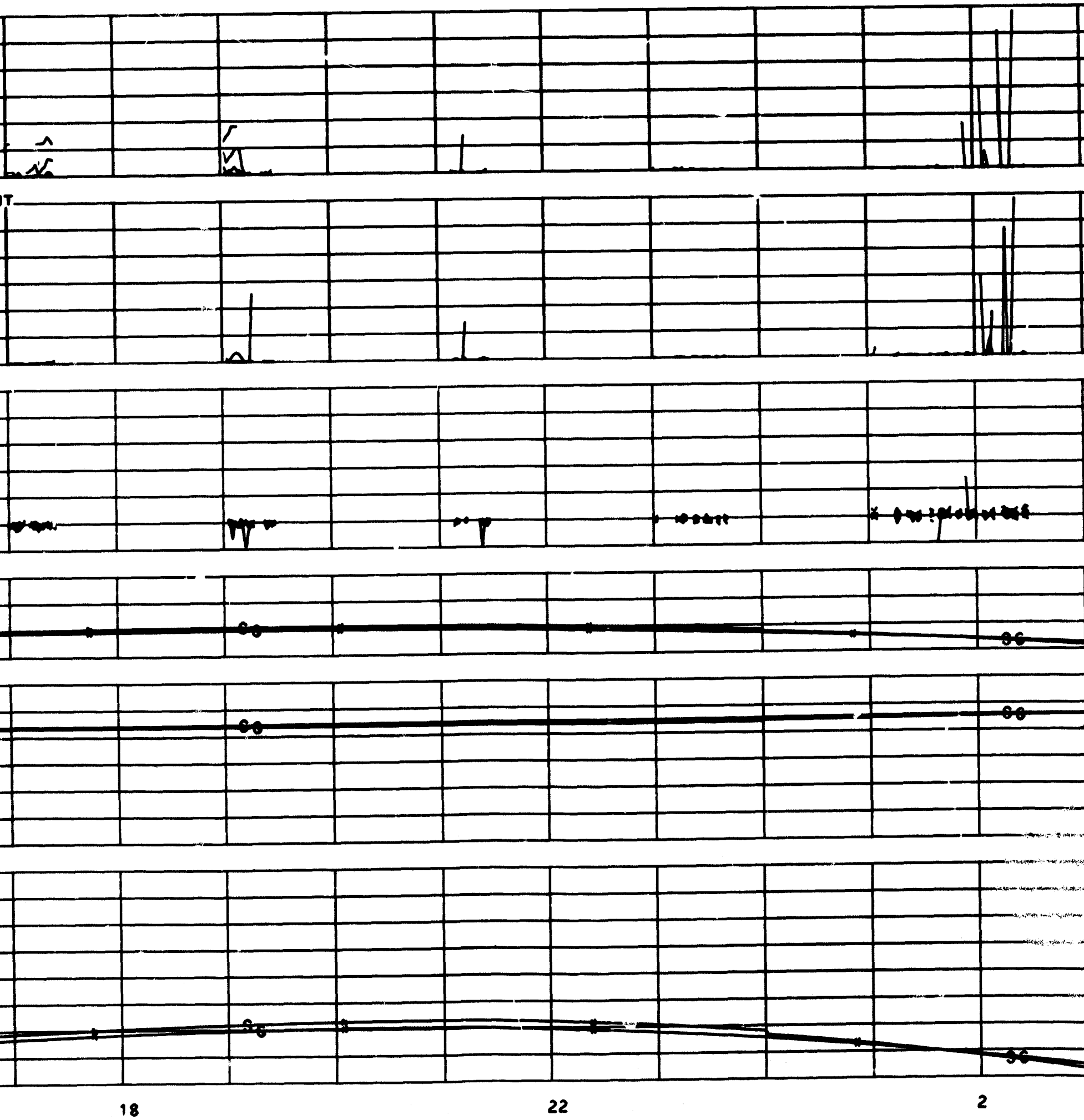
7 11


EXPLORER XII - S3
START 1961 11 30
STOP 1961 12 1
U.T. 10
14
18
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 10
14
18
DIST. (Re)
L (Re)

[redacted]

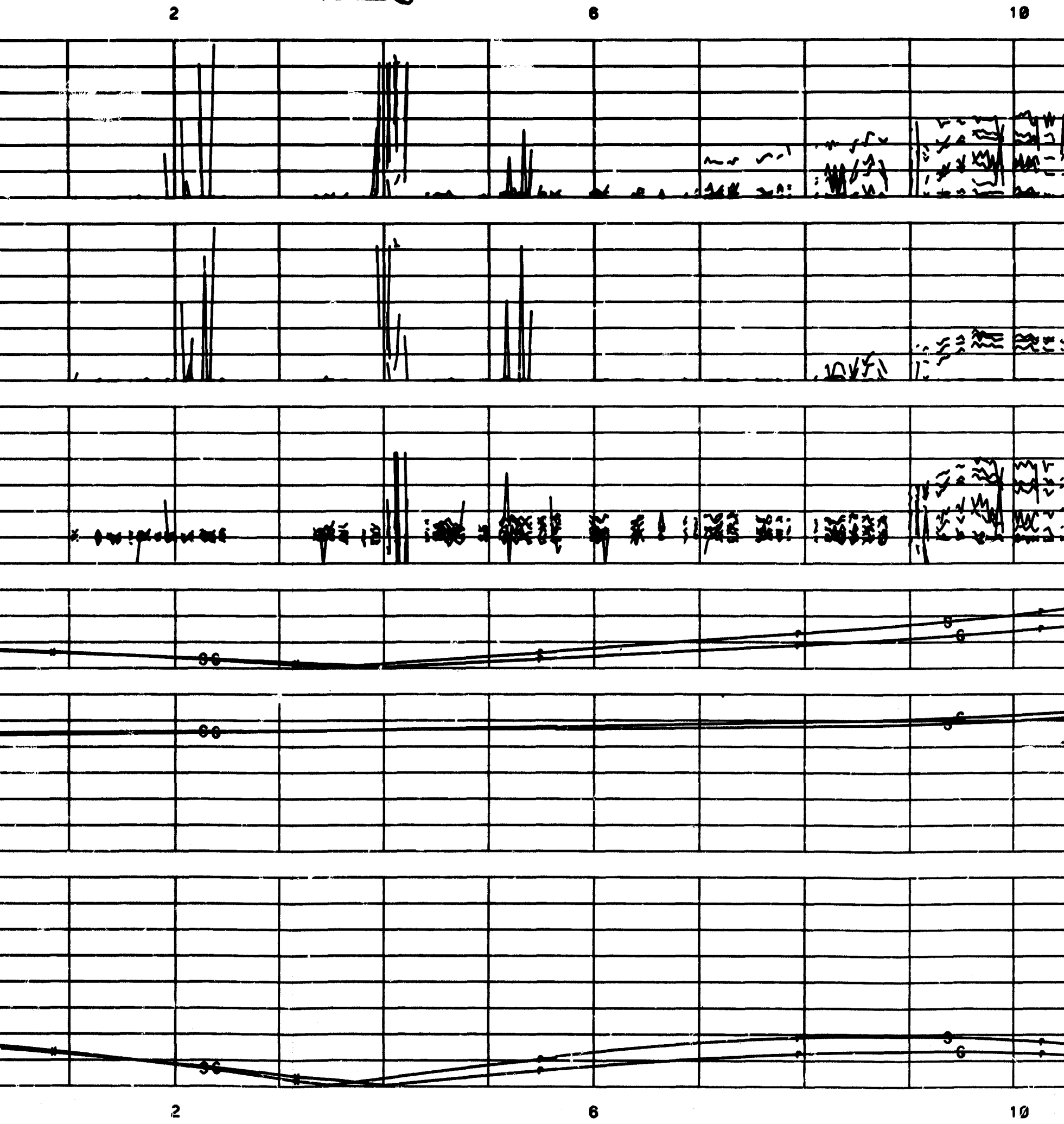
FOL

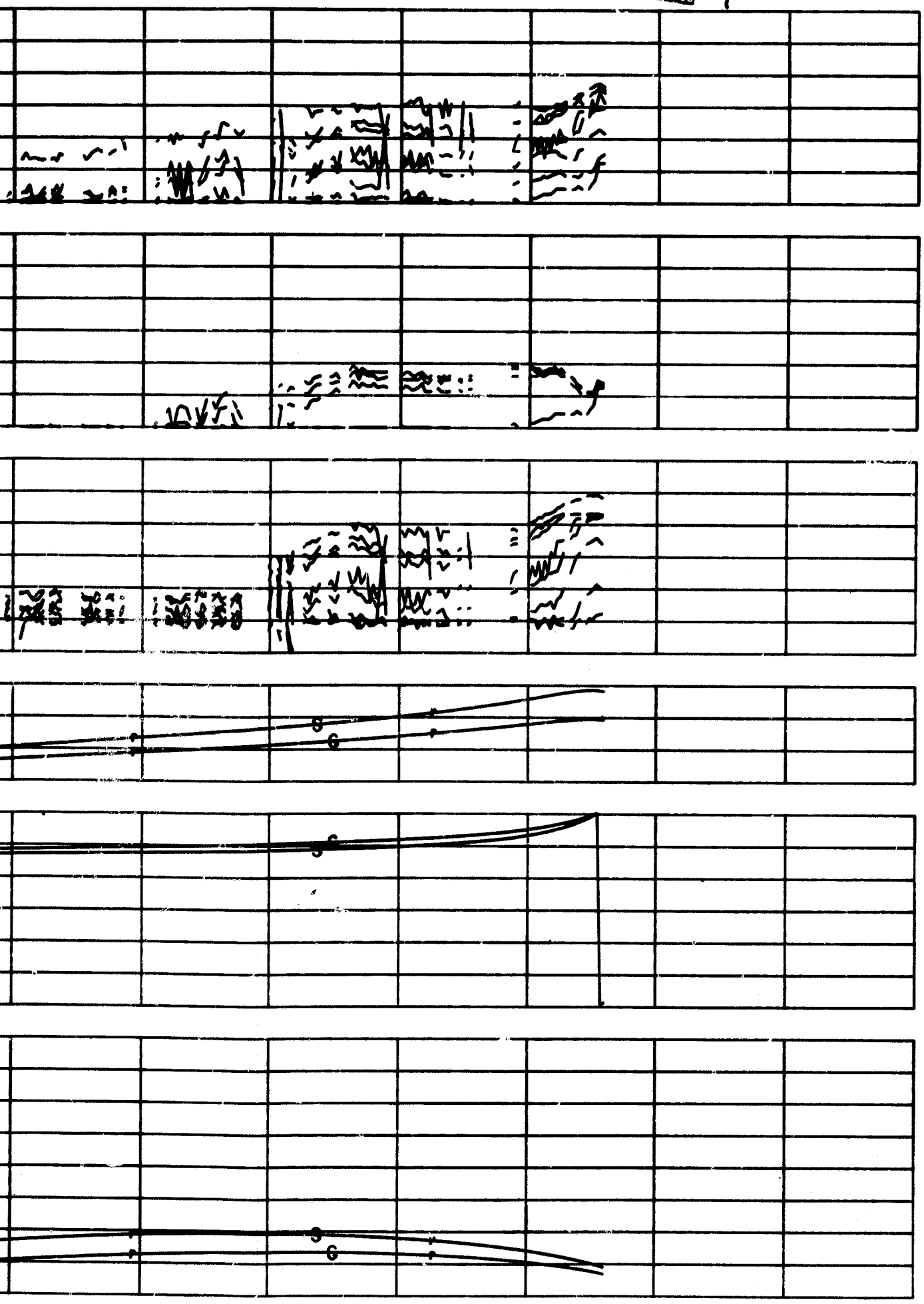
18 ...OUT FRAME 2. 22 2

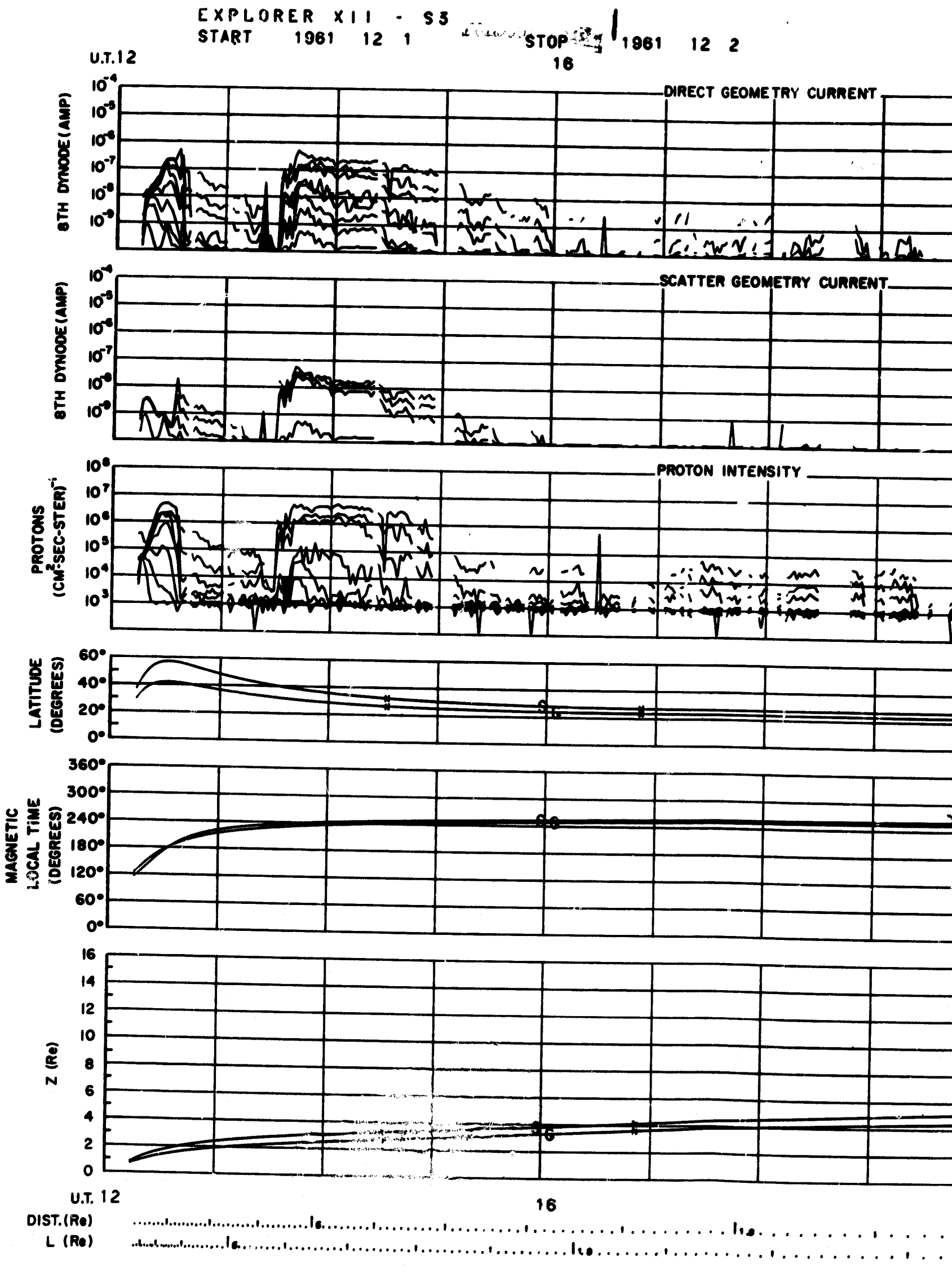


18 22 2

FOLDOUT FRAME 3




S
G
S
G
S
G


EXPLORER XII - S3
START 1961 12 1
STOP 1961 12 2
U.T. 12
16
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 12
16
DIST. (Re)
L (Re)

2

20 2 0

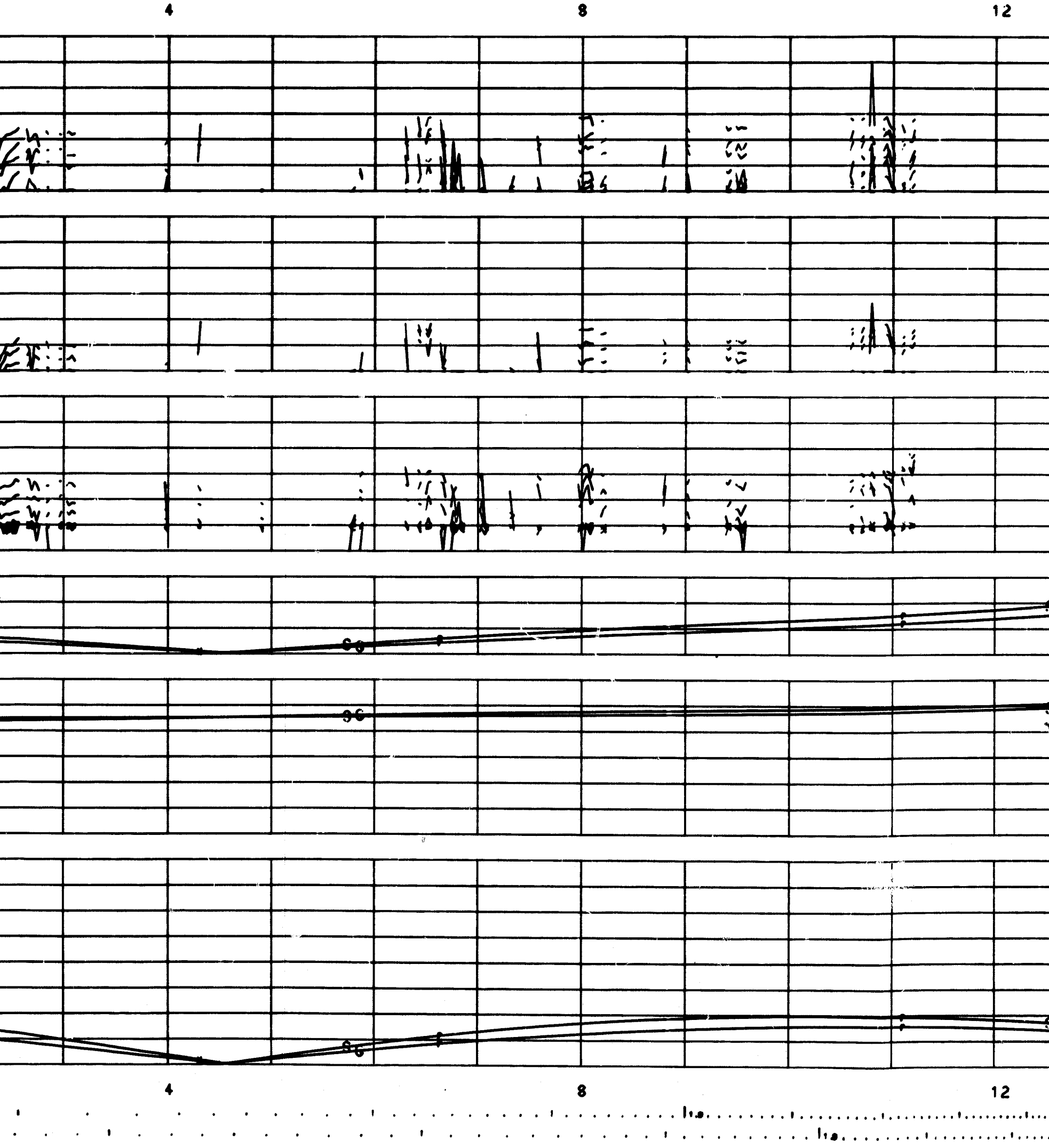
EOMETRY CURRENT

GEOMETRY CURRENT

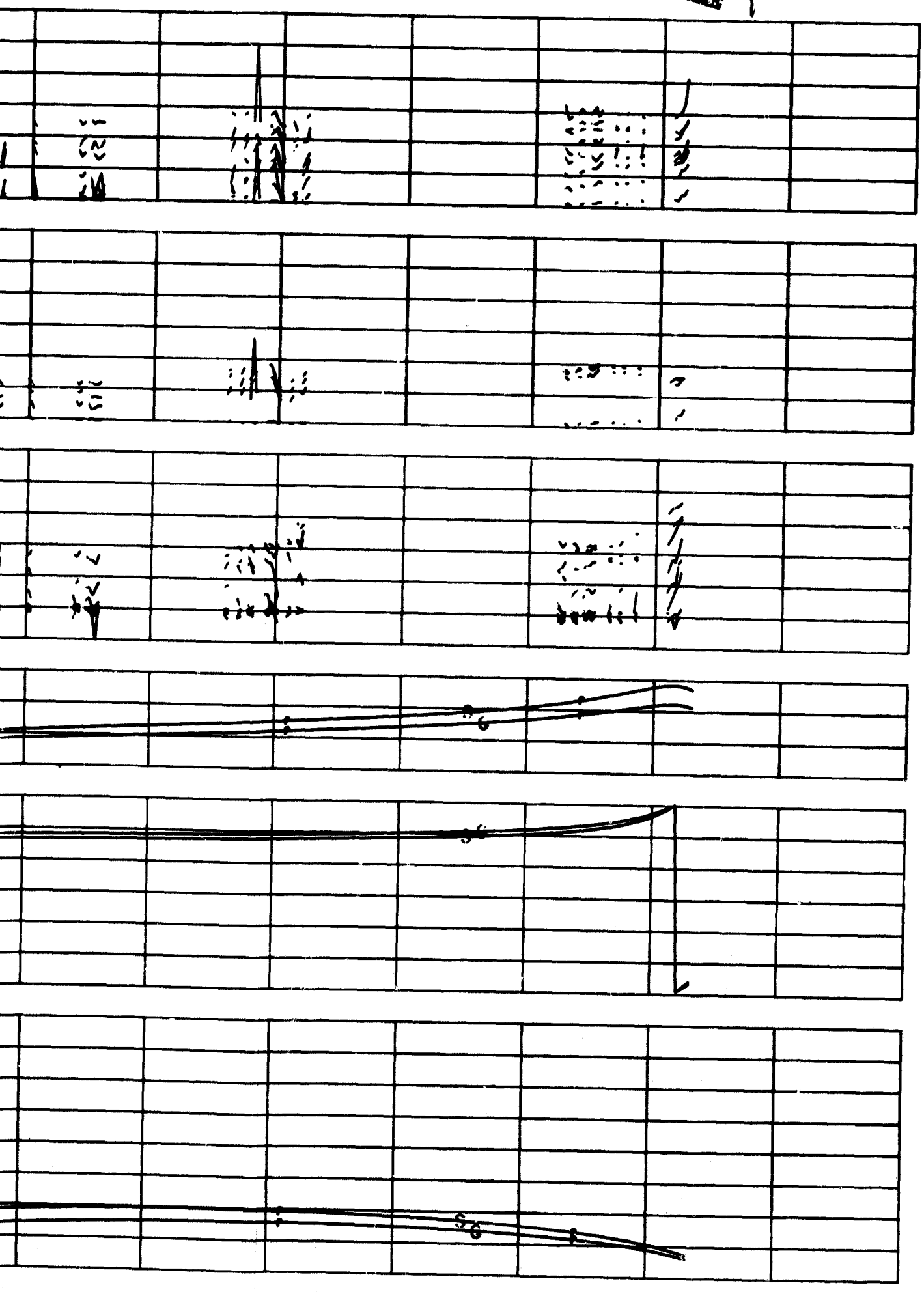
NTENSITY

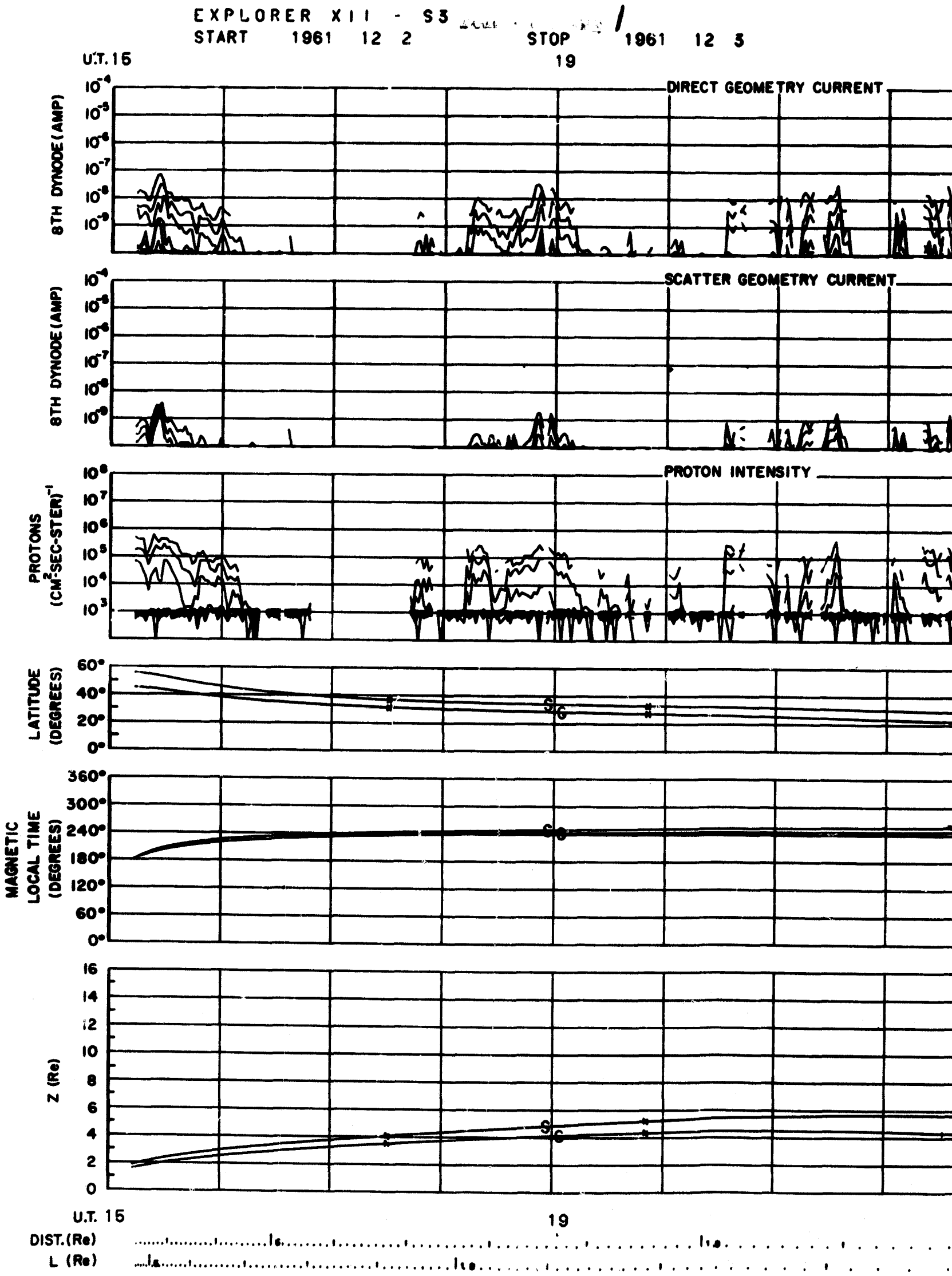
20 0

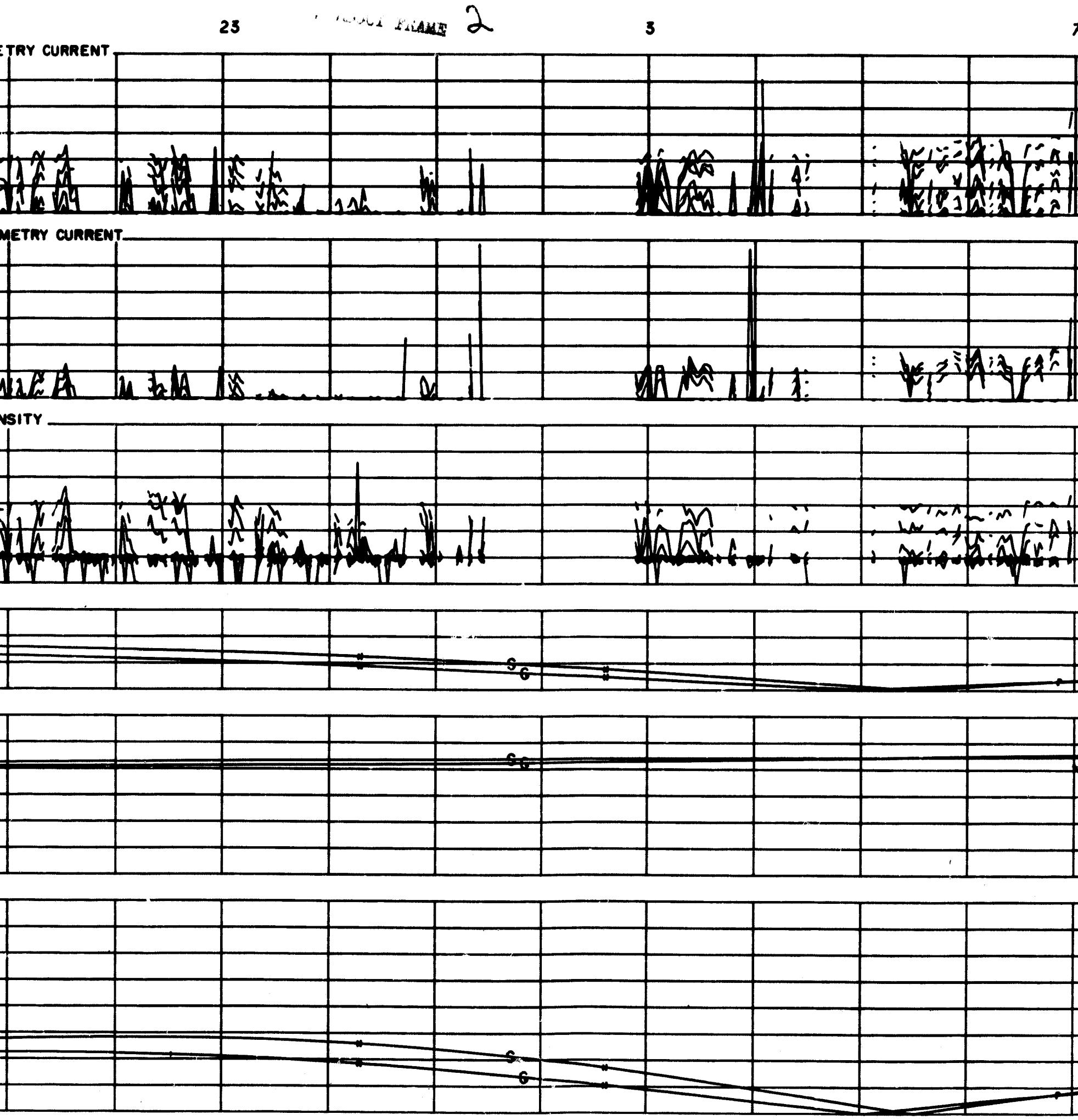
FOLDOUT FRAME 3



FOLDOUT FRAME 4

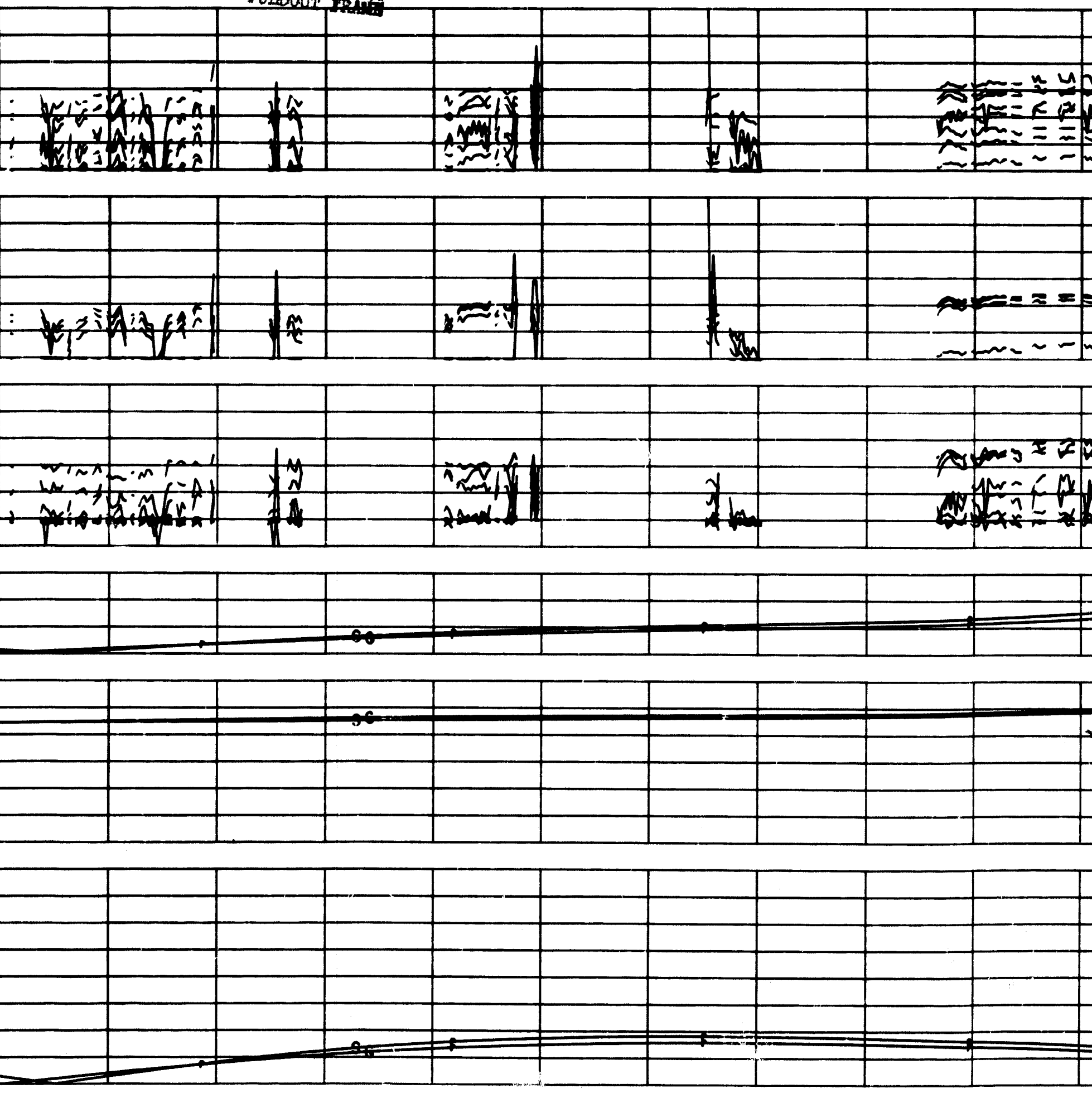


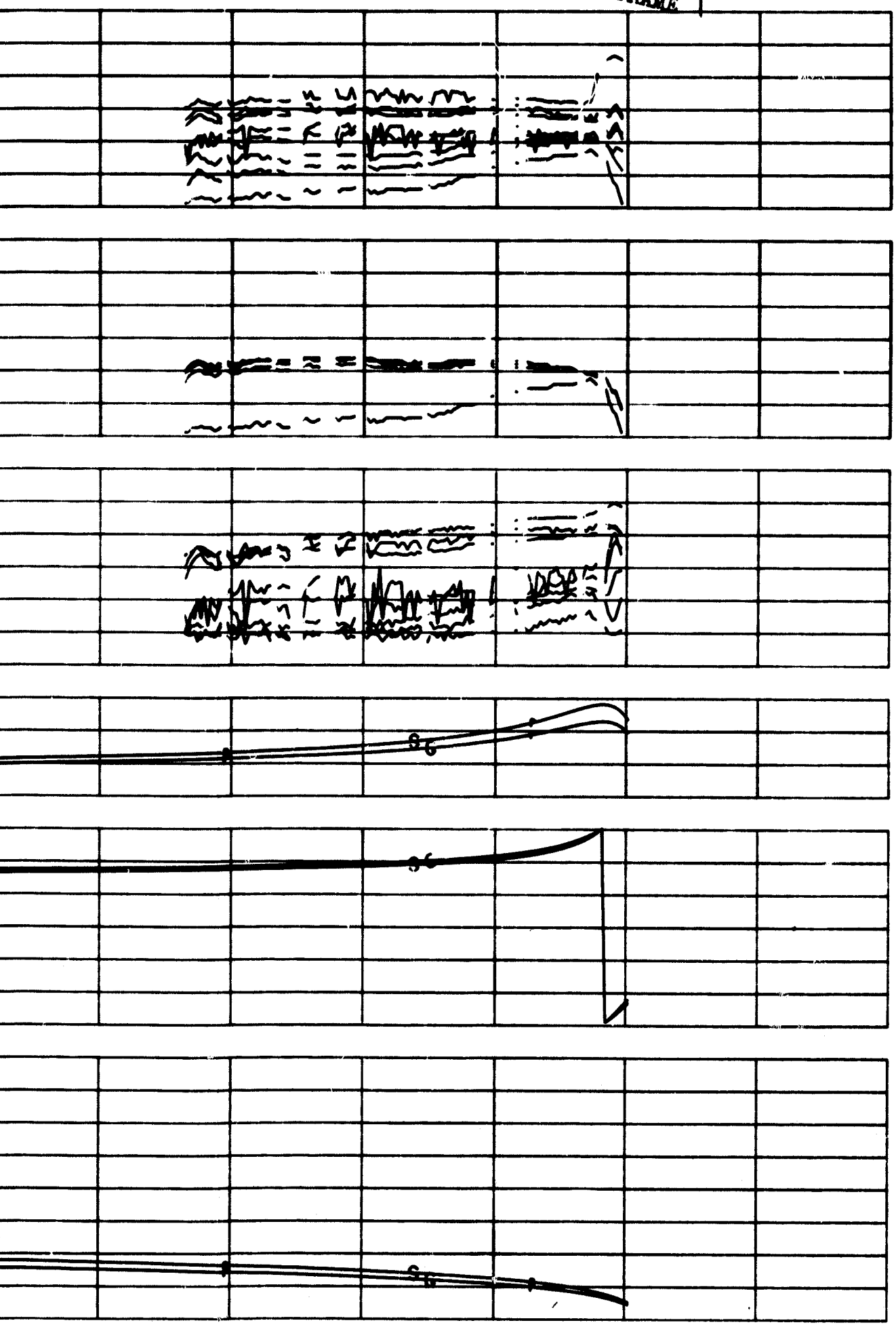

EXPLORER XII - S3
START 1961 12 2
STOP 1961 12 3
U.T. 15
19
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 15
19
DIST. (Re)
L (Re)

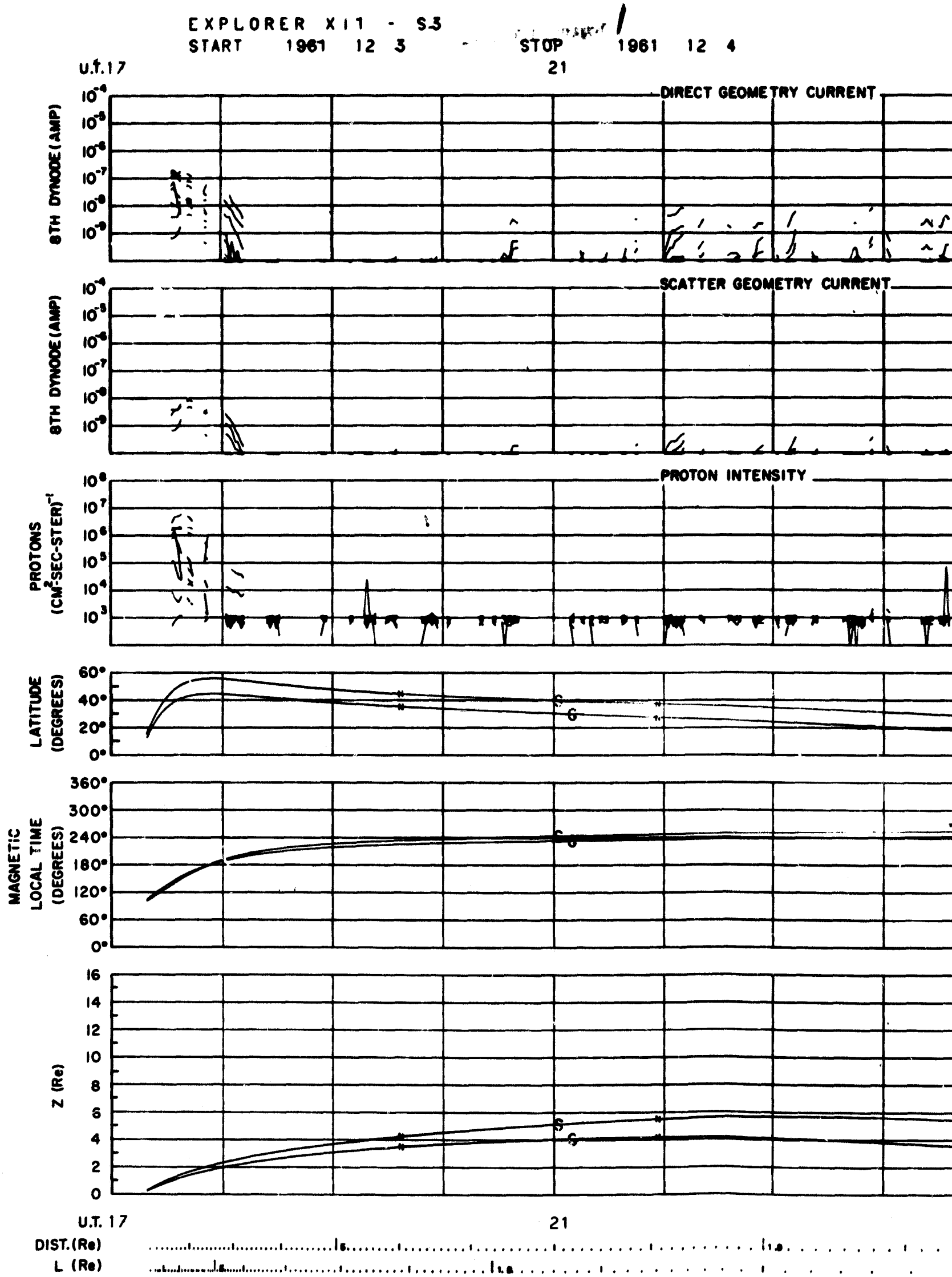

23
FRAME 2
3
ETRY CURRENT
METRY CURRENT
NSITY
S
G
S
G
S
G
23
3

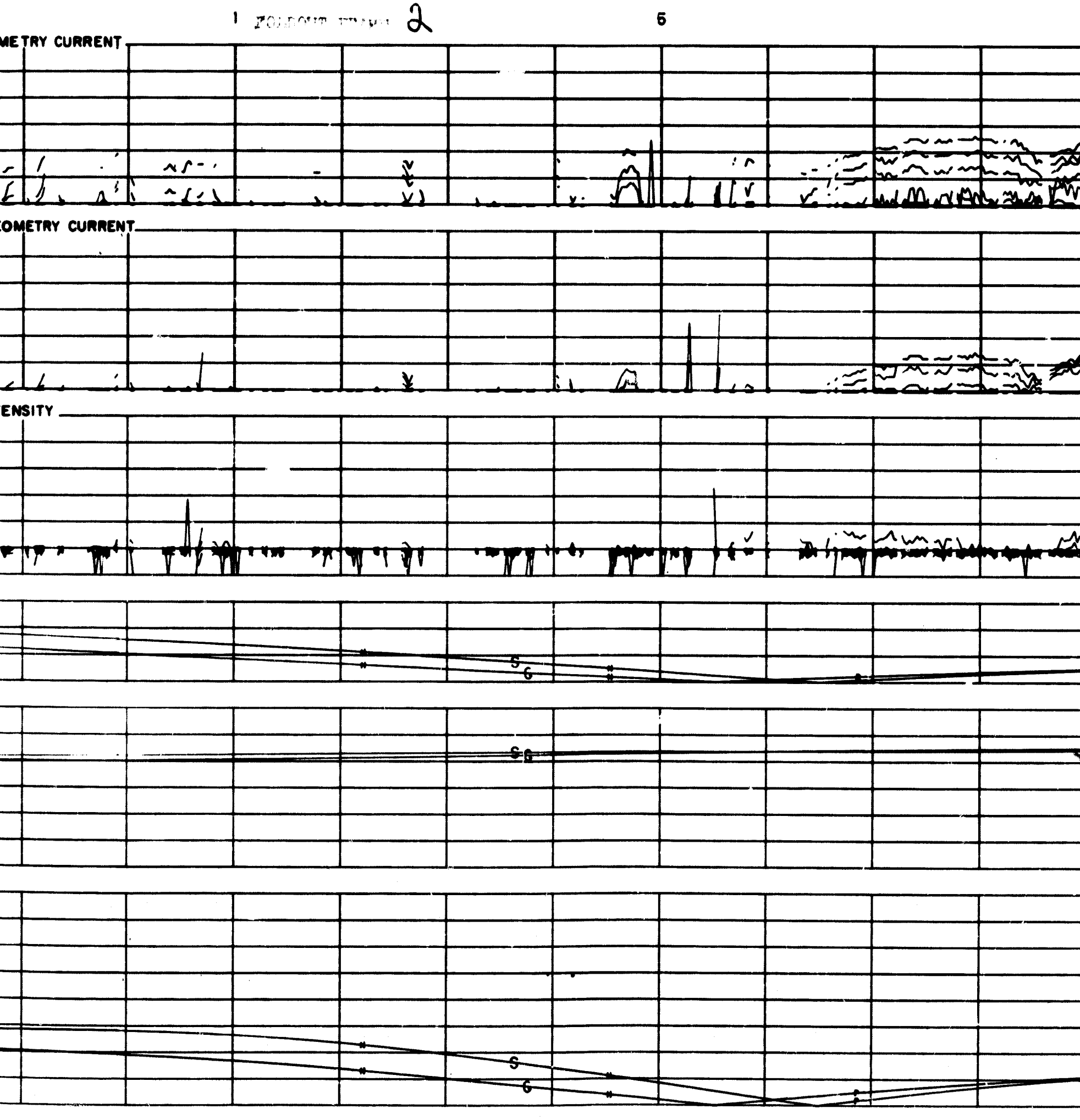
3

FOLDOUT FRAME

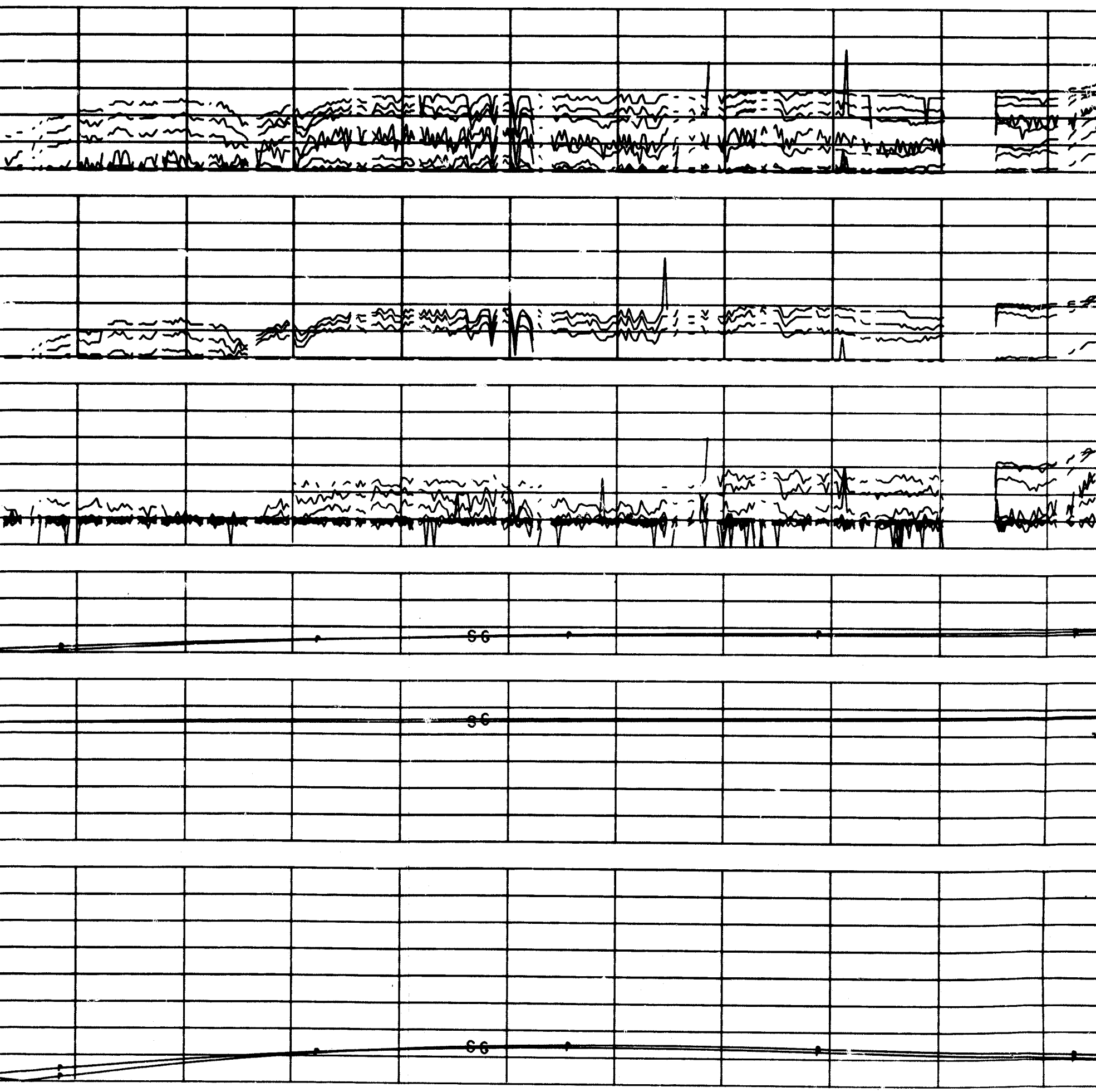



S_6
S_6
S_6


EXPLORER XII - S3
START 1961 12 3
STOP 1961 12 4
U.T. 17
21
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
U.T. 17
21
DIST. (Re)
L (Re)

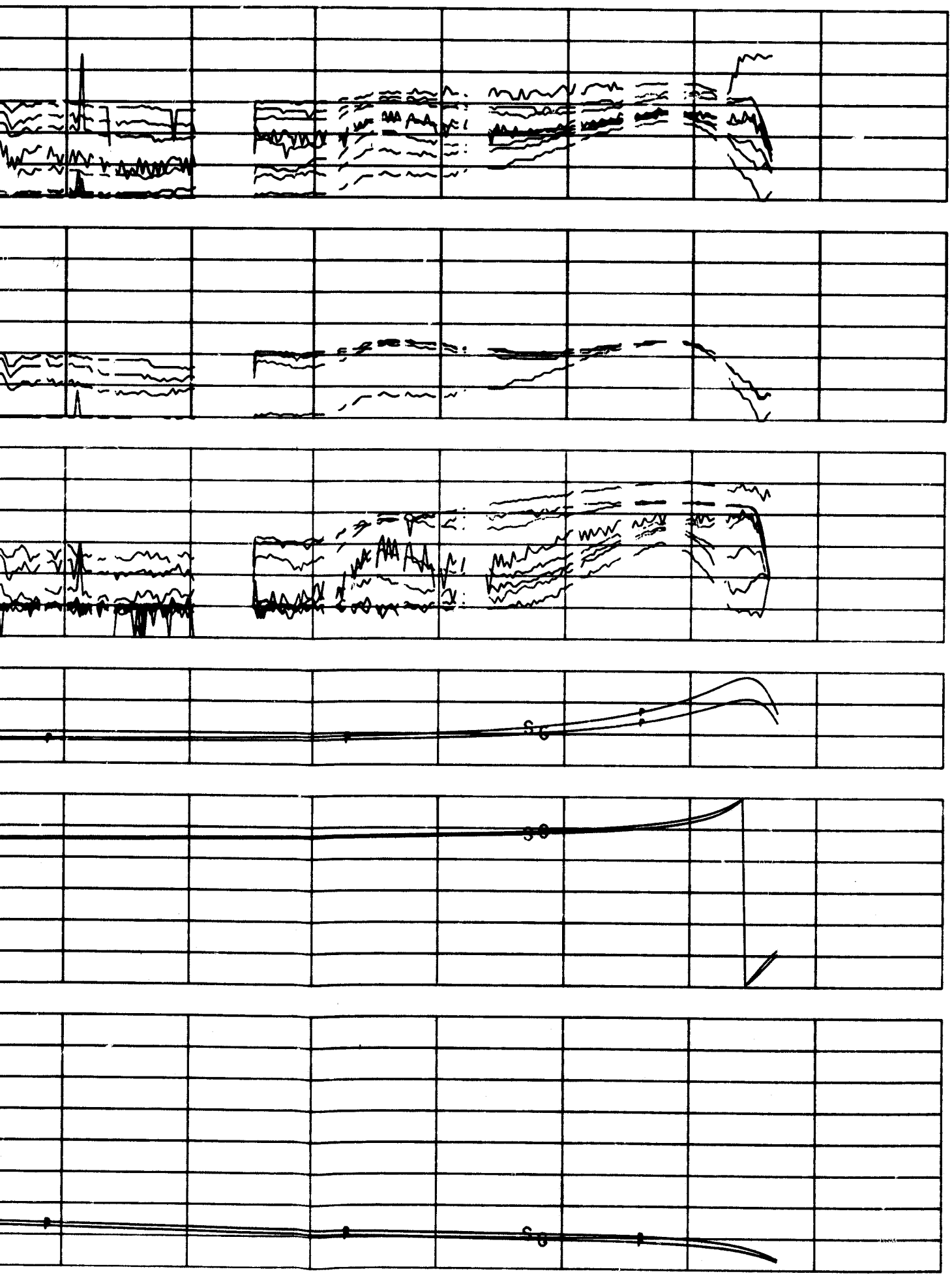

METRY CURRENT
OMETRY CURRENT
ENSITY
5
6
5
6
5
6
1
5

FOLDOUT FRAME 3

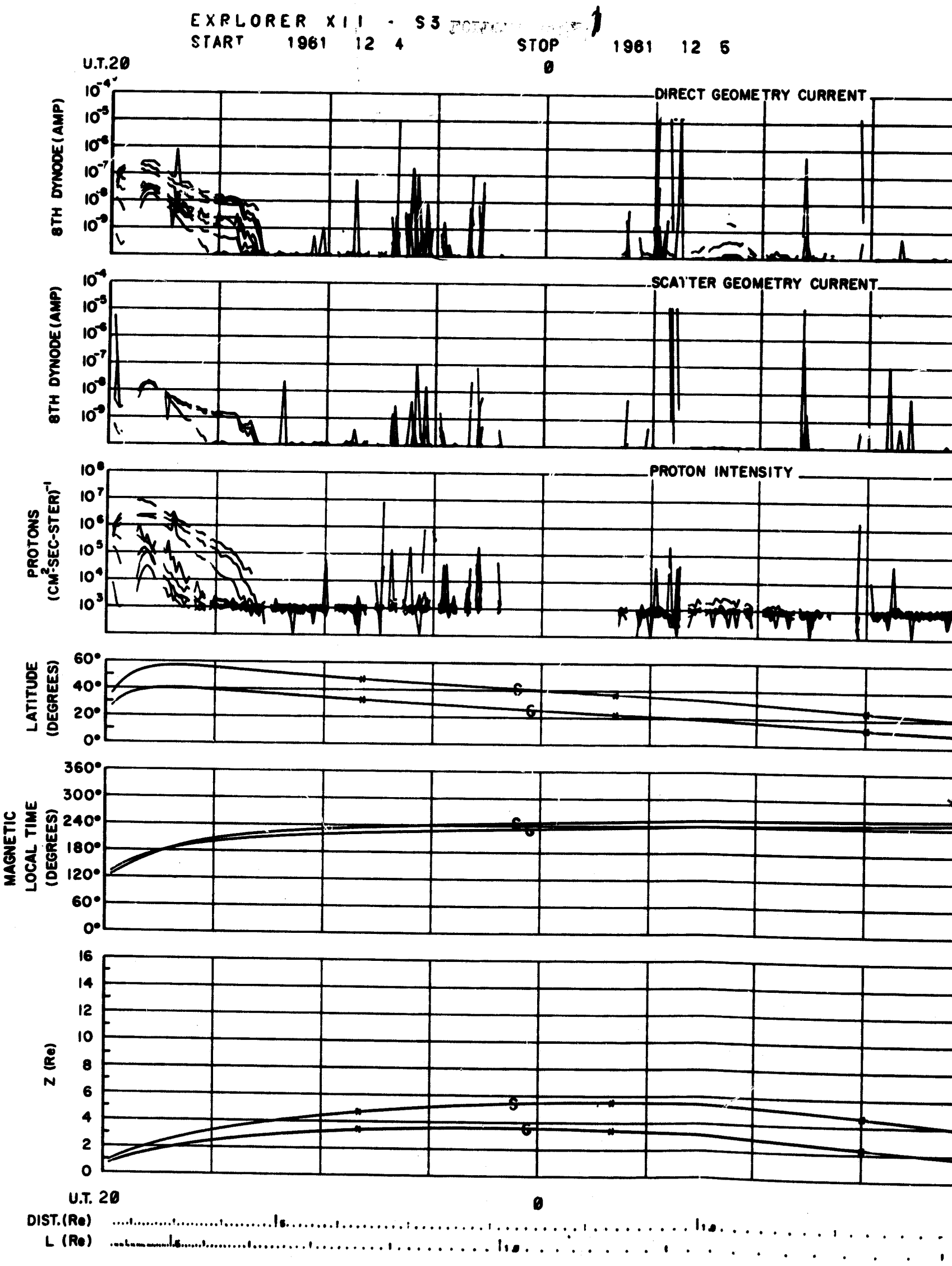


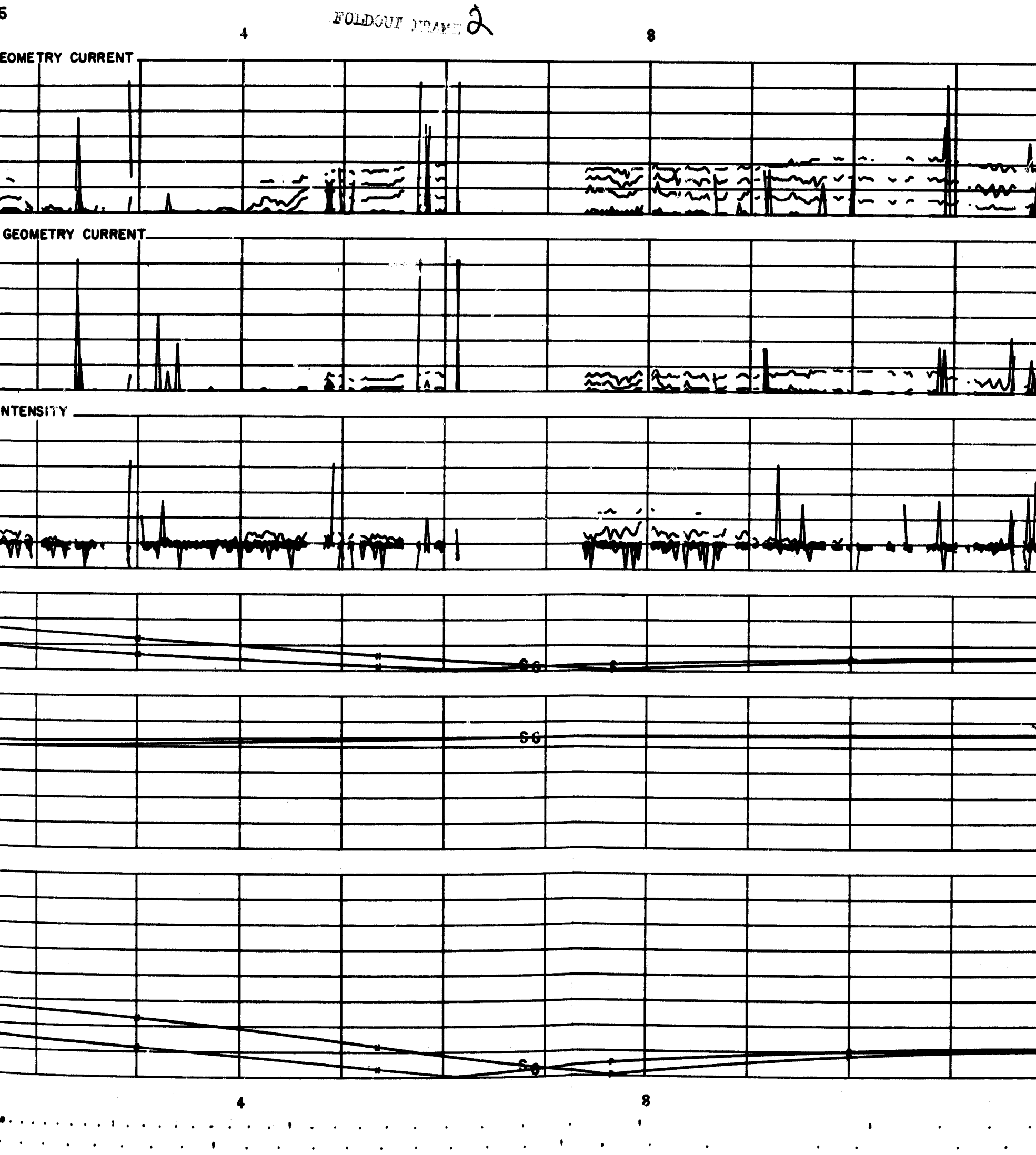
FOLDOUT FRAME 4

17 21

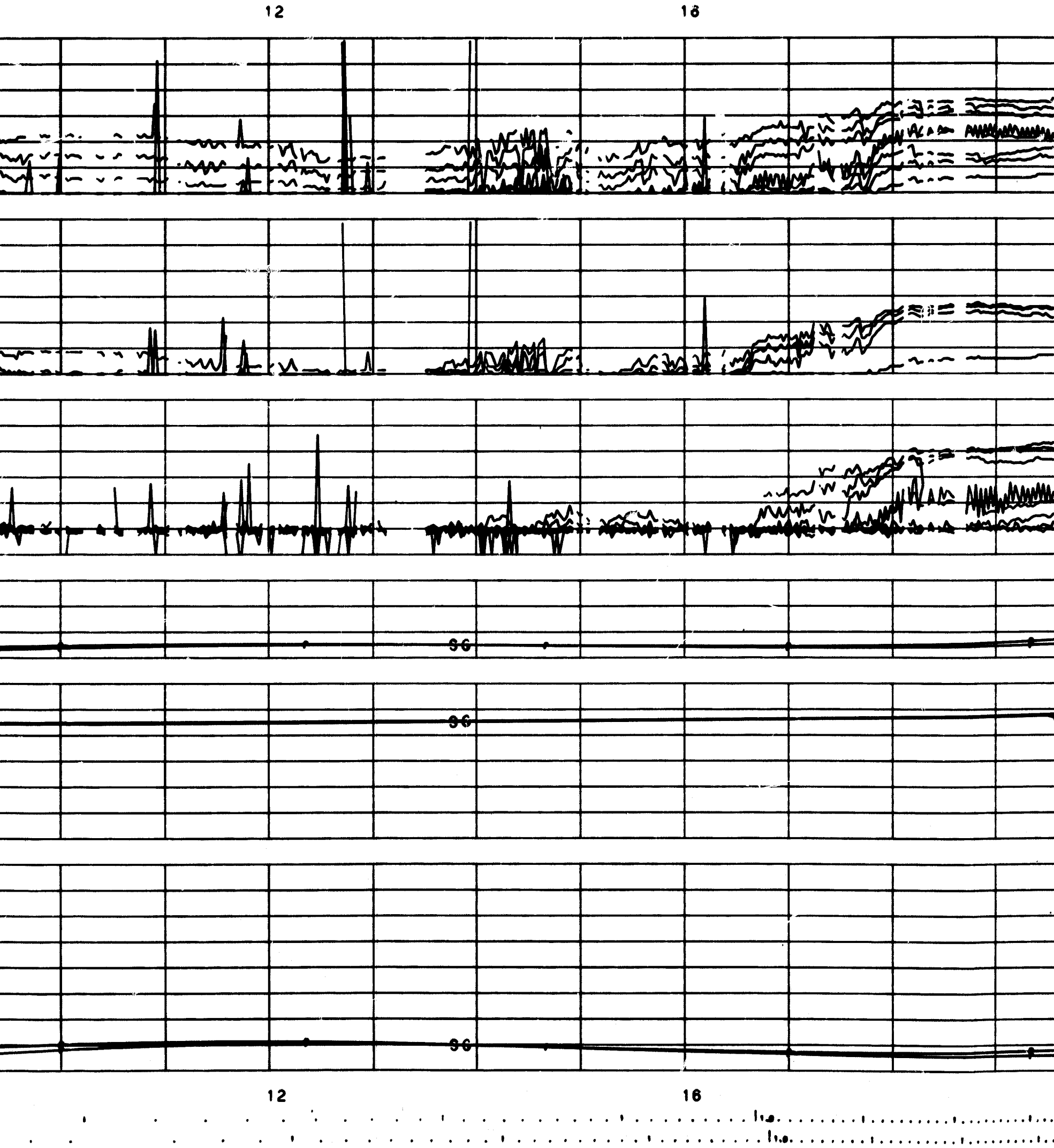


17 21

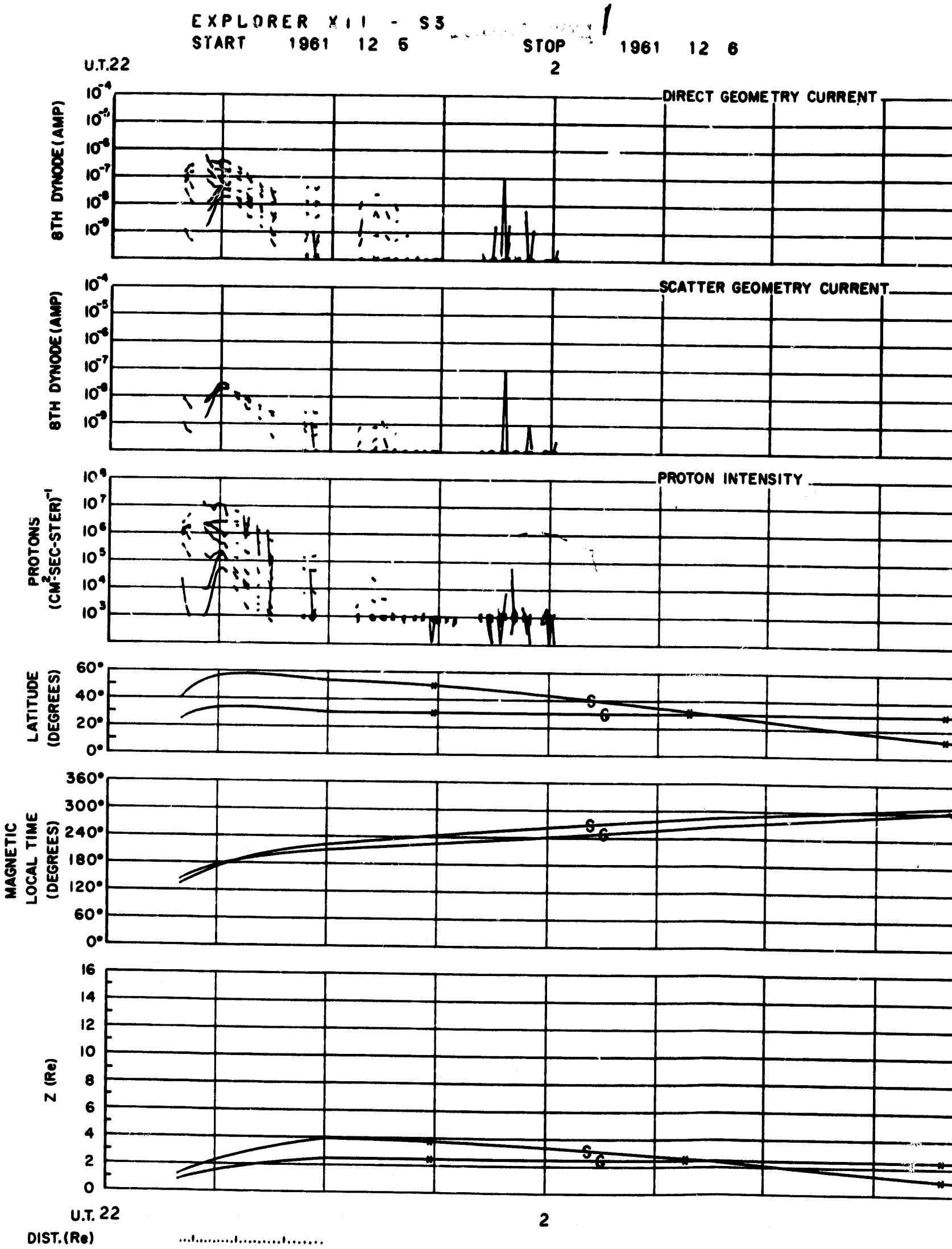

EXPLORER XII - S3
START 1961 12 4
STOP 1961 12 5
U.T.20
0
DIRECT GEOMETRY CURRENT
SCATTER GEOMETRY CURRENT
PROTON INTENSITY
8TH DYNODE (AMP)
PROTONS (CM²-SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
DIST. (Re)
L (Re)

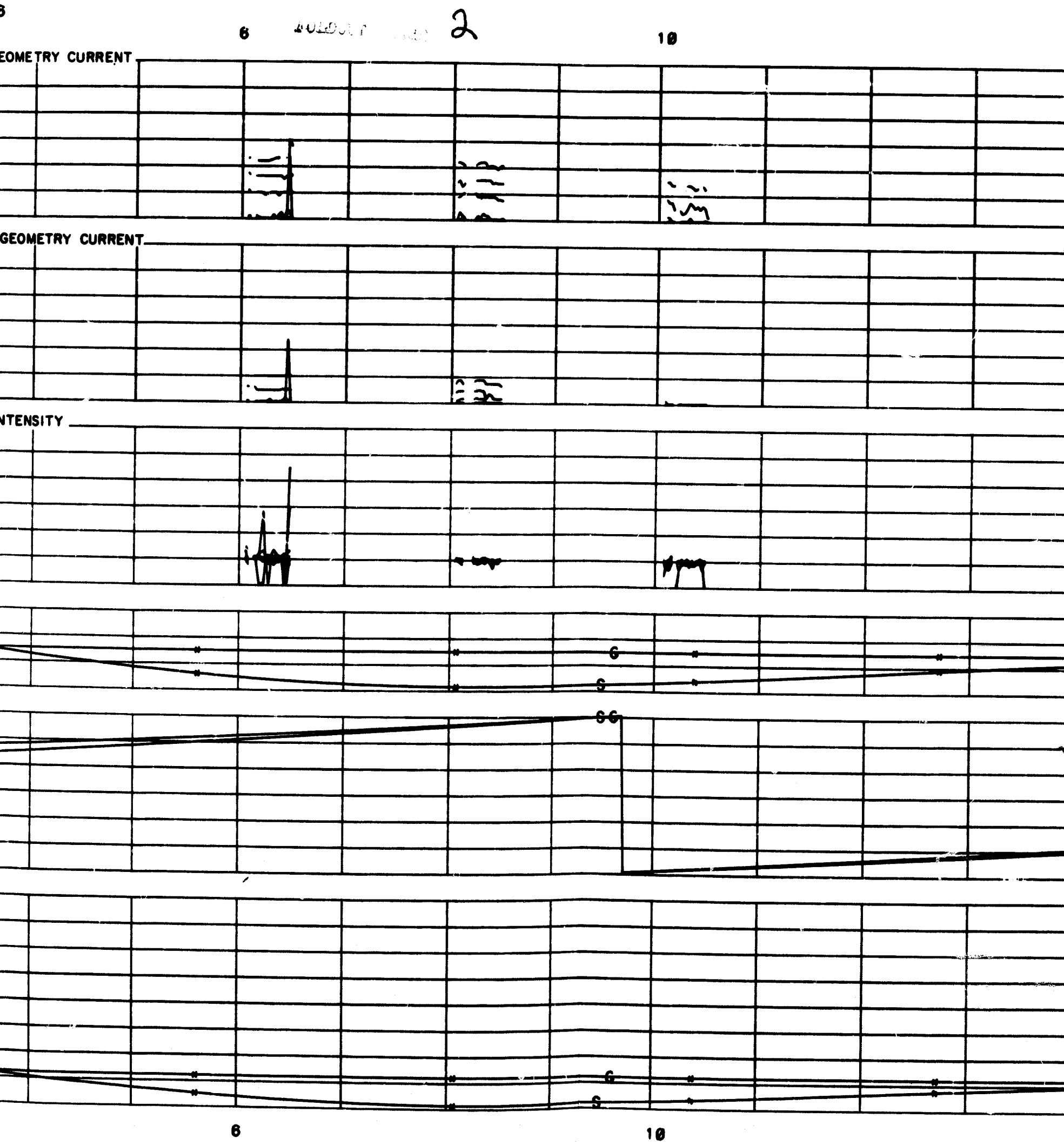

5
FOLDOUT FRAME 2
4
8
EOMETRY CURRENT
GEOMETRY CURRENT
NTENSITY
SG
SG
SG
4
8

FOLDOUT FRAME 3

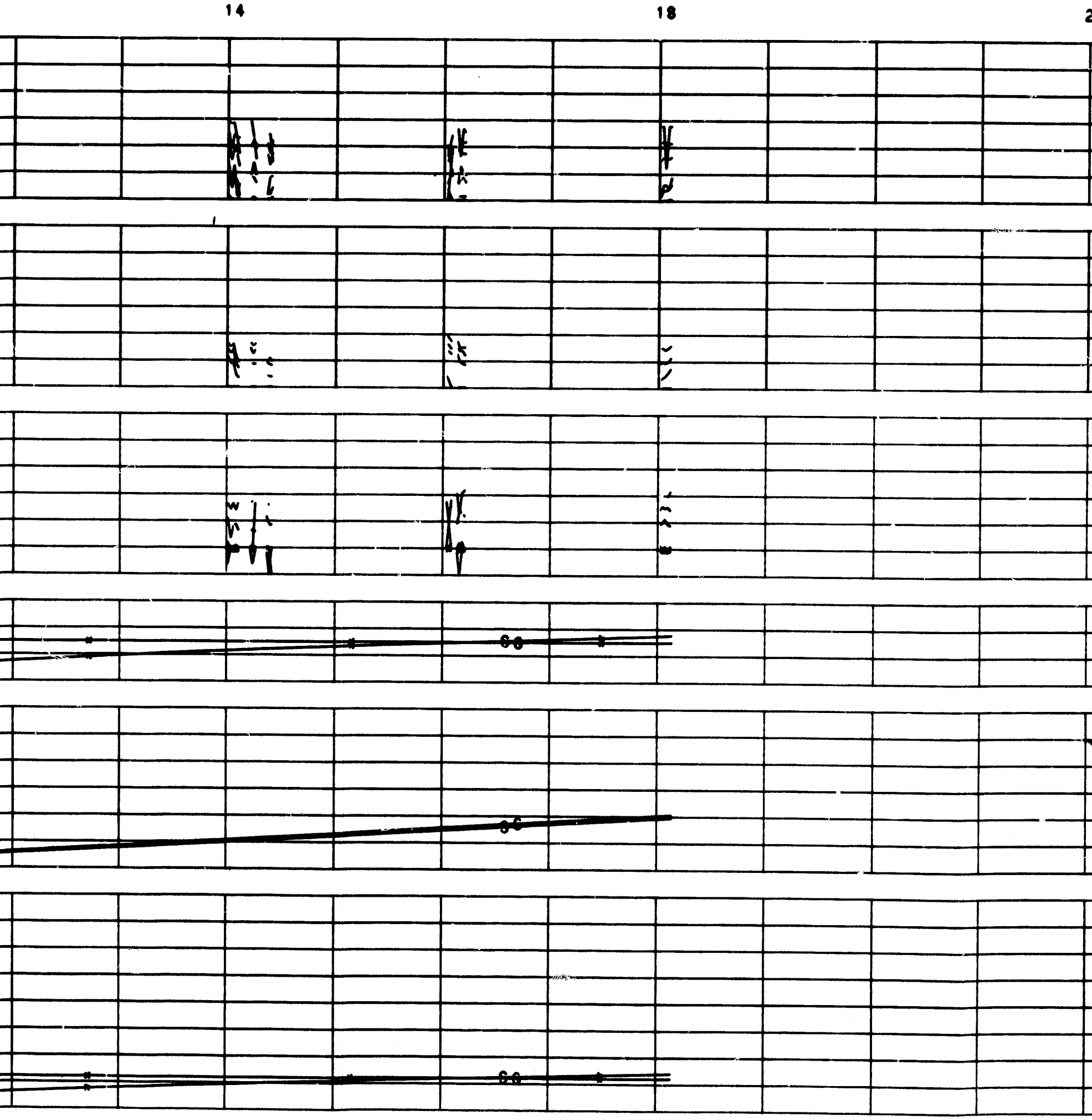


FOLDOUT FRAME 4


EXPLORER XII - S3
START 1961 12 6
STOP 1961 12 6
U.T.22
2
DIRECT GEOMETRY CURRENT
8TH DYNODE (AMP)
SCATTER GEOMETRY CURRENT
8TH DYNODE (AMP)
PROTON INTENSITY
PROTONS (CM²SEC-STER)⁻¹
LATITUDE (DEGREES)
MAGNETIC LOCAL TIME (DEGREES)
Z (Re)
S
G
U.T. 22
2
DIST. (Re)


6
2
10
EOMETRY CURRENT
GEOMETRY CURRENT
NTENSITY
G
S
SG
G
S
6
10

FOLDOUT FRAME 3



FOLDOUT FRAME 4

22 2

22 2