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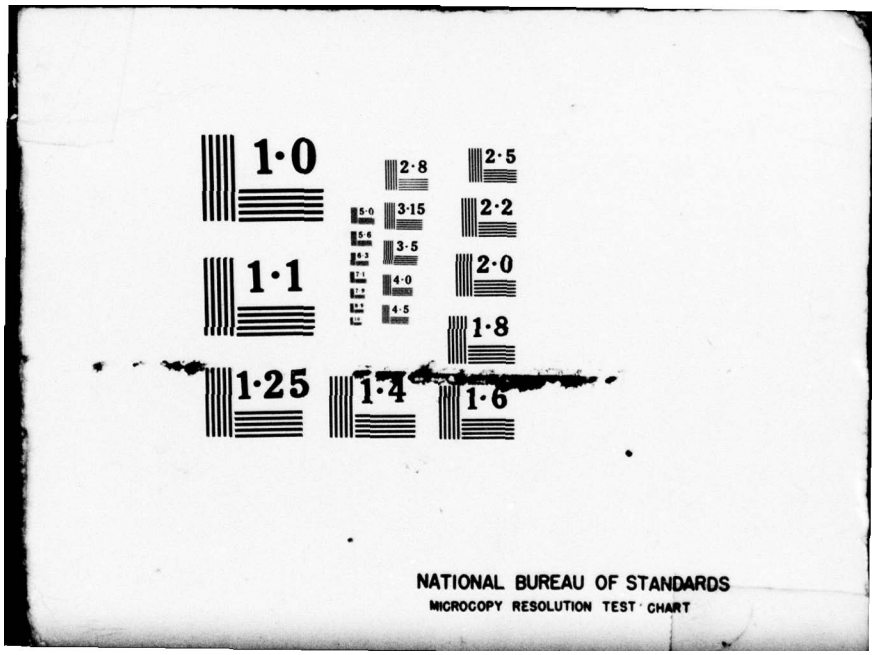
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ANALYSIS OF DATA FROM RESEARCH SATELLITES

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SATELLITE S3-2	MATHEMATICAL MODEL	LEPS
SATELLITE S3-3	PROTON MODEL	P-ALPHA
NEAR-POLAR ORBIT	ENERGY SPECTRUM	
MULTIPLE LINE REGRESSION	PROTON FLUX	

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

DATA RECORDED ON INSTRUMENTS ABOARD SATELLITES S72-1, S3-2, AND S3-3 HAVE BEEN PROCESSED AND ANALYZED UNDER THIS CONTRACT. A MATHEMATICAL MODEL OF THE TRAPPED RADIATION PROTON ENVIRONMENT BASED ON S72-1 DATA IS PRESENTED ALSO IN THIS REPORT.

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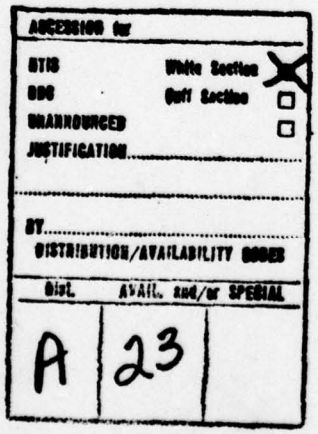

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INTRODUCTION

This document contains a description of the work done by Emmanuel College under contract no. F19628-73-C-0190 in support of AFGL experiments which were flown on satellites S72-1, S3-2, and S3-3. Specific documentation of the trapped radiation environment for selected time intervals between October 1972 and January 1976 is included in graphical and tabular form. A mathematical model of the trapped radiation proton environment based on the S72-1 data is also presented.

Satellite S72-1.

The experiment flown on S72-1 consisted of a "Heavy Particle Identification Instrument" constructed by Panametrics Inc. For a description of this instrument see References (1) and (2). We have previously reported directional and omnidirectional proton flux summaries for this experiment (reference 3). The S72-1 orbit was nearly polar and approximately circular at an altitude of 760 km. This gave good to excellent coverage of the region of "L-Hmin" space including $1.14 < L < 4.0$ earth radii and $100 < Hmin < 760$ km.

The data from S72-1 covered the time period of October 1972 through December 1973. No obvious temporal variations were observed over this period. A subset consisting of all observations for the time interval October 1972 - February 1973 was selected as being a representative sample for analysis. This data base was sorted into an L - Hmin grid and an empirical fit was made to it using multiple linear regression techniques. The resulting mathematical model showed agreement with the original grid with an RMS error of less than

ten percent. A listing of the model in the form of a FORTRAN coded function subprogram is given in Appendix - A.

A FORTRAN program was written to duplicate as closely as possible the orbital integration map which Levine and Vette use to illustrate their "AP6" proton model for a similar range of energies (reference 4). AP6 is a composite of eleven experimental data sets from various satellite experiments from 1961 - 1964 and is widely referenced as the proton radiation standard. The results from our model are tabulated in Tables 1 and 2 and the comparable results from Levine and Vette are given in Table 3 and 4.

Comparison of the tables shows qualitative agreement but with differences of up to an order of magnitude at the lower energies. Vette suggests that factors of two uncertainties exist in the calibration of some of the experiments in his composite, and that temporal variations of a factor of two could exist. However, the Vette model is effectively a fit to a much larger portion of L-Hmin space and is heavily weighted with data taken at Hmins above 1000 km. Our data suggests that AP6 does not represent the proton environment below 1000 km. very well. We have submitted a copy of our S72-1 data to Dr. Vette to be included in future updates of AP6.

Further documentation of our proton model is given in Figures 1, 2, and 3. Figures 1 and 2 are a three-dimensional map of the modeled fluxes vs L and Hmin viewed from the low-L side and the high-L side respectively. Figure 3 is a set of plots showing the energy spectrum as a function of L and Hmin.

TABLE 1

ORBITAL INTEGRATION MAP FOR COMPARISON TO VETTE AP6. ALT = 556. KM

ORBIT ALTITUDE.. 556. KM TOTAL TIME.. 24 HOURS

ENERGY MEV		ORBITAL FLUX 0 DEG		ORBITAL FLUX 30 DEG		ORBITAL FLUX 60 DEG		ORBITAL FLUX 90 DEG	
E1	E2	JE1	JE1-JE2	JE1	JE1-JE2	JE1	JE1-JE2	JE1	JE1-JE2
4.0	5.0	.515E+05	.353E+03	.904E+07	.115E+06	.858E+07	.143E+07	.643E+07	.979E+06
5.0	6.0	.511E+05	.353E+03	.793E+07	.963E+05	.715E+07	.741E+06	.545E+07	.512E+06
6.0	7.0	.508E+05	.353E+03	.783E+07	.852E+05	.641E+07	.444E+06	.494E+07	.310E+06
7.0	8.0	.504E+05	.353E+03	.775E+07	.778E+05	.596E+07	.294E+06	.463E+07	.208E+06
8.0	9.0	.501E+05	.353E+03	.767E+07	.725E+05	.567E+07	.210E+05	.442E+07	.150E+06
9.0	10.0	.497E+05	.353E+03	.760E+07	.688E+05	.546E+07	.159E+06	.427E+07	.114E+06
10.0	11.0	.494E+05	.353E+03	.753E+07	.658E+05	.530E+07	.126E+06	.416E+07	.914E+05
11.0	12.0	.490E+05	.353E+03	.746E+07	.635E+05	.518E+07	.103E+06	.406E+07	.757E+05
12.0	13.0	.487E+05	.353E+03	.740E+07	.617E+05	.507E+07	.872E+05	.399E+07	.645E+05
13.0	14.0	.483E+05	.353E+03	.734E+07	.601E+05	.498E+07	.756E+05	.392E+07	.564E+05
14.0	15.0	.480E+05	.353E+03	.728E+07	.589E+05	.491E+07	.658E+05	.387E+07	.502E+05
15.0	16.0	.476E+05	.353E+03	.722E+07	.578E+05	.484E+07	.601E+05	.382E+07	.454E+05
16.0	17.0	.473E+05	.353E+03	.716E+07	.574E+05	.478E+07	.565E+05	.377E+07	.430E+05
17.0	18.0	.469E+05	.353E+03	.710E+07	.570E+05	.473E+07	.536E+05	.373E+07	.409E+05
18.0	19.0	.466E+05	.353E+03	.705E+07	.565E+05	.467E+07	.511E+05	.369E+07	.392E+05
19.0	20.0	.462E+05	.353E+03	.699E+07	.563E+05	.462E+07	.490E+05	.365E+07	.377E+05
20.0	21.0	.459E+05	.353E+03	.693E+07	.560E+05	.457E+07	.472E+05	.361E+07	.364E+05
21.0	22.0	.455E+05	.353E+03	.688E+07	.557E+05	.452E+07	.456E+05	.358E+07	.353E+05
22.0	23.0	.451E+05	.353E+03	.682E+07	.555E+05	.448E+07	.443E+05	.354E+07	.343E+05
23.0	24.0	.448E+05	.353E+03	.677E+07	.552E+05	.444E+07	.430E+05	.351E+07	.335E+05
24.0	25.0	.444E+05	.353E+03	.671E+07	.550E+05	.439E+07	.420E+05	.347E+07	.327E+05
25.0	26.0	.441E+05	.353E+03	.666E+07	.548E+05	.435E+07	.410E+05	.344E+07	.320E+05
26.0	27.0	.437E+05	.353E+03	.660E+07	.546E+05	.431E+07	.401E+05	.341E+07	.314E+05
27.0	28.0	.434E+05	.353E+03	.655E+07	.544E+05	.427E+07	.393E+05	.338E+07	.308E+05
28.0	29.0	.430E+05	.353E+03	.649E+07	.543E+05	.423E+07	.386E+05	.335E+07	.303E+05
29.0	30.0	.427E+05	.353E+03	.644E+07	.541E+05	.419E+07	.380E+05	.331E+07	.298E+05
30.0	0.0	.423E+05	.423E+05	.638E+07	.638E+07	.415E+07	.415E+07	.329E+07	.329E+07

TABLE 2

ORBITAL INTEGRATION MAP FOR COMPARISON TO VETTE AP6. ALT = 833. KM

ORBIT ALTITUDE.. 833. KM TOTAL TIME.. 24 HOURS

ENERGY MEV		ORBITAL FLUX 0 DEG		ORBITAL FLUX 30 DEG		ORBITAL FLUX 60 DEG		ORBITAL FLUX 90 DEG	
E1	E2	JE1	JE1-JE2	JE1	JE1-JE2	JE1	JE1-JE2	JE1	JE1-JE2
4.0	5.0	.986E+07	.675E+05	.776E+08	.247E+07	.591E+08	.100E+08	.457E+08	.700E+07
5.0	6.0	.979E+07	.675E+05	.752E+08	.169E+07	.491E+08	.488E+07	.387E+08	.345E+07
6.0	7.0	.972E+07	.675E+05	.735E+08	.128E+07	.442E+08	.290E+07	.352E+08	.200E+07
7.0	8.0	.966E+07	.675E+05	.722E+08	.105E+07	.414E+08	.180E+07	.332E+08	.131E+07
8.0	9.0	.959E+07	.675E+05	.711E+08	.896E+06	.396E+08	.127E+07	.319E+08	.930E+06
9.0	10.0	.952E+07	.675E+05	.703E+08	.795E+06	.384E+08	.950E+06	.310E+08	.706E+06
10.0	11.0	.945E+07	.675E+05	.695E+08	.725E+06	.374E+08	.752E+06	.303E+08	.565E+06
11.0	12.0	.939E+07	.675E+05	.687E+08	.674E+06	.367E+08	.620E+06	.297E+08	.471E+06
12.0	13.0	.932E+07	.675E+05	.681E+08	.635E+06	.360E+08	.529E+06	.292E+08	.406E+06
13.0	14.0	.925E+07	.675E+05	.674E+08	.605E+06	.355E+08	.454E+06	.288E+08	.359E+06
14.0	15.0	.918E+07	.675E+05	.668E+08	.582E+06	.350E+08	.416E+06	.285E+08	.325E+06
15.0	16.0	.912E+07	.675E+05	.662E+08	.563E+06	.346E+08	.380E+06	.281E+08	.298E+06
16.0	17.0	.905E+07	.675E+05	.657E+08	.554E+06	.342E+08	.362E+06	.278E+08	.285E+06
17.0	18.0	.898E+07	.675E+05	.651E+08	.547E+06	.339E+08	.347E+06	.276E+08	.275E+06
18.0	19.0	.891E+07	.675E+05	.646E+08	.540E+06	.335E+08	.334E+06	.273E+08	.266E+06
19.0	20.0	.885E+07	.675E+05	.640E+08	.535E+06	.332E+08	.324E+06	.270E+08	.258E+06
20.0	21.0	.878E+07	.675E+05	.635E+08	.529E+06	.329E+08	.314E+06	.268E+08	.251E+06
21.0	22.0	.871E+07	.675E+05	.630E+08	.525E+06	.326E+08	.306E+06	.265E+08	.245E+06
22.0	23.0	.864E+07	.675E+05	.624E+08	.520E+06	.323E+08	.299E+06	.263E+08	.240E+06
23.0	24.0	.858E+07	.675E+05	.619E+08	.517E+06	.320E+08	.293E+06	.260E+08	.235E+06
24.0	25.0	.851E+07	.675E+05	.614E+08	.513E+06	.317E+08	.287E+06	.258E+08	.231E+06
25.0	26.0	.844E+07	.675E+05	.609E+08	.510E+06	.314E+08	.282E+06	.256E+08	.228E+06
26.0	27.0	.837E+07	.675E+05	.604E+08	.507E+06	.311E+08	.278E+06	.253E+08	.224E+06
27.0	28.0	.831E+07	.675E+05	.599E+08	.504E+06	.308E+08	.274E+06	.251E+08	.222E+06
28.0	29.0	.824E+07	.675E+05	.594E+08	.502E+06	.305E+08	.270E+06	.249E+08	.219E+06
29.0	30.0	.817E+07	.675E+05	.589E+08	.499E+06	.303E+08	.267E+06	.247E+08	.216E+06
30.0	0.0	.810E+07	.810E+07	.584E+08	.584E+08	.300E+08	.300E+08	.244E+08	.244E+08

TABLE 3

ORBITAL INTEGRATION MAP AP6

ORBIT ALTITUDE.. 300. N MI 556 KM		TOTAL TIME.. 24. HOURS						TIME INTERVAL.. 1. MINUTES	
ENERGY MEV		ORBITAL FLUX 0 DEG		ORBITAL FLUX 30 DEG		ORBITAL FLUX 60 DEG		ORBITAL FLUX 90 DEG	
E1	E2	*E1	E1-E2	*E1	E1-E2	*E1	E1-E2	*E1	E1-E2
4.00	5.00	0.457E 05	0.228E 04	0.191E 08	0.250E 07	0.228E 08	0.629E 07	0.170E 08	0.449E 07
5.00	6.00	0.434E 05	0.178E 04	0.166E 08	0.176E 07	0.165E 08	0.346E 07	0.126E 08	0.252E 07
6.00	7.00	0.416E 05	0.144E 04	0.145E 08	0.132E 07	0.131E 08	0.216E 07	0.100E 08	0.159E 07
7.00	8.00	0.402E 05	0.121E 04	0.135E 08	0.104E 07	0.109E 08	0.147E 07	0.845E 07	0.110E 07
8.00	9.00	0.390E 05	0.104E 04	0.125E 08	0.842E 06	0.944E 07	0.107E 07	0.735E 07	0.799E 06
9.00	10.00	0.379E 05	0.904E 03	0.117E 08	0.699E 06	0.837E 07	0.807E 06	0.656E 07	0.610E 06
10.00	11.00	0.370E 05	0.799E 03	0.110E 08	0.592E 06	0.755E 07	0.633E 06	0.595E 07	0.482E 06
11.00	12.00	0.362E 05	0.714E 03	0.104E 08	0.509E 06	0.693E 07	0.511E 06	0.546E 07	0.391E 06
12.00	13.00	0.355E 05	0.645E 03	0.985E 07	0.443E 06	0.642E 07	0.422E 06	0.507E 07	0.324E 06
13.00	14.00	0.349E 05	0.586E 03	0.941E 07	0.391E 06	0.600E 07	0.355E 06	0.475E 07	0.274E 06
14.00	15.00	0.343E 05	0.537E 03	0.902E 07	0.347E 06	0.564E 07	0.303E 06	0.447E 07	0.235E 06
15.00	16.00	0.337E 05	0.495E 03	0.867E 07	0.312E 06	0.534E 07	0.263E 06	0.424E 07	0.204E 06
16.00	17.00	0.332E 05	0.458E 03	0.836E 07	0.281E 06	0.508E 07	0.230E 06	0.404E 07	0.179E 06
17.00	18.00	0.328E 05	0.426E 03	0.808E 07	0.256E 06	0.485E 07	0.203E 06	0.386E 07	0.158E 06
18.00	19.00	0.324E 05	0.398E 03	0.782E 07	0.234E 06	0.464E 07	0.181E 06	0.370E 07	0.142E 06
19.00	20.00	0.320E 05	0.373E 03	0.759E 07	0.215E 06	0.446E 07	0.163E 06	0.356E 07	0.127E 06
20.00	21.00	0.316E 05	0.350E 03	0.738E 07	0.198E 06	0.430E 07	0.147E 06	0.343E 07	0.115E 06
21.00	22.00	0.312E 05	0.330E 03	0.718E 07	0.183E 06	0.415E 07	0.134E 06	0.332E 07	0.105E 06
22.00	23.00	0.309E 05	0.312E 03	0.699E 07	0.170E 06	0.402E 07	0.122E 06	0.321E 07	0.961E 05
23.00	24.00	0.306E 05	0.296E 03	0.682E 07	0.159E 06	0.390E 07	0.112E 06	0.311E 07	0.884E 05
24.00	25.00	0.303E 05	0.281E 03	0.667E 07	0.148E 06	0.378E 07	0.104E 06	0.303E 07	0.816E 05
25.00	26.00	0.300E 05	0.268E 03	0.652E 07	0.139E 06	0.368E 07	0.958E 05	0.294E 07	0.756E 05
26.00	27.00	0.298E 05	0.255E 03	0.638E 07	0.131E 06	0.358E 07	0.890E 05	0.287E 07	0.703E 05
27.00	28.00	0.295E 05	0.244E 03	0.625E 07	0.123E 06	0.349E 07	0.830E 05	0.280E 07	0.656E 05
28.00	29.00	0.293E 05	0.234E 03	0.612E 07	0.117E 06	0.341E 07	0.776E 05	0.273E 07	0.614E 05
29.00	30.00	0.290E 05	0.224E 03	0.601E 07	0.110E 06	0.333E 07	0.727E 05	0.267E 07	0.576E 05
30.00		0.288E 05	0.288E 05	0.590E 07	0.590E 07	0.326E 07	0.326E 07	0.261E 07	0.261E 07

TABLE 4

ORBITAL INTEGRATION MAP AP6

ORBIT ALTITUDE.. 450. N MI 834 KMS		TOTAL TIME.. 24. HOURS				TIME INTERVAL.. 1. MINUTES	
ENERGY MEV		ORBITAL FLUX 0 DEG		ORBITAL FLUX 30 DEG		ORBITAL FLUX 60 DEG		ORBITAL FLUX 90 DEG	
E1	E2	*E1	E1-E2	*E1	E1-E2	*E1	E1-E2	*E1	E1-E2
4.00	5.00	0.249E 08	0.235E 07	0.116E 09	0.204E 08	0.508E 08	0.236E 08	0.696E 08	0.172E 08
5.00	6.00	0.226E 08	0.178E 07	0.950E 08	0.137E 08	0.671E 08	0.136E 08	0.525E 08	0.101E 08
6.00	7.00	0.208E 08	0.139E 07	0.824E 08	0.982E 07	0.536E 08	0.874E 07	0.424E 08	0.658E 07
7.00	8.00	0.194E 08	0.113E 07	0.726E 08	0.744E 07	0.448E 08	0.608E 07	0.358E 08	0.464E 07
8.00	9.00	0.183E 08	0.941E 06	0.651E 08	0.585E 07	0.387E 08	0.488E 07	0.312E 08	0.345E 07
9.00	10.00	0.173E 08	0.800E 06	0.593E 08	0.473E 07	0.343E 08	0.344E 07	0.277E 08	0.267E 07
10.00	11.00	0.165E 08	0.691E 06	0.545E 08	0.391E 07	0.308E 08	0.272E 07	0.251E 08	0.213E 07
11.00	12.00	0.158E 08	0.606E 06	0.506E 08	0.330E 07	0.281E 08	0.222E 07	0.229E 08	0.174E 07
12.00	13.00	0.152E 08	0.536E 06	0.473E 08	0.282E 07	0.259E 08	0.184E 07	0.212E 08	0.146E 07
13.00	14.00	0.147E 08	0.479E 06	0.445E 08	0.245E 07	0.240E 08	0.155E 07	0.197E 08	0.124E 07
14.00	15.00	0.142E 08	0.432E 06	0.421E 08	0.214E 07	0.225E 08	0.133E 07	0.185E 08	0.106E 07
15.00	16.00	0.138E 08	0.392E 06	0.399E 08	0.190E 07	0.212E 08	0.115E 07	0.174E 08	0.925E 06
16.00	17.00	0.134E 08	0.358E 06	0.380E 08	0.169E 07	0.200E 08	0.101E 07	0.165E 08	0.814E 06
17.00	18.00	0.130E 08	0.329E 06	0.363E 08	0.152E 07	0.190E 08	0.895E 06	0.157E 08	0.722E 06
18.00	19.00	0.127E 08	0.303E 06	0.348E 08	0.137E 07	0.181E 08	0.795E 06	0.150E 08	0.645E 06
19.00	20.00	0.124E 08	0.281E 06	0.334E 08	0.125E 07	0.173E 08	0.717E 06	0.143E 08	0.581E 06
20.00	21.00	0.121E 08	0.261E 06	0.322E 08	0.114E 07	0.166E 08	0.648E 06	0.137E 08	0.526E 06
21.00	22.00	0.119E 08	0.244E 06	0.311E 08	0.104E 07	0.159E 08	0.589E 06	0.132E 08	0.479E 06
22.00	23.00	0.116E 08	0.228E 06	0.300E 08	0.951E 06	0.153E 08	0.538E 06	0.127E 08	0.438E 06
23.00	24.00	0.114E 08	0.214E 06	0.291E 08	0.888E 06	0.148E 08	0.493E 06	0.123E 08	0.402E 06
24.00	25.00	0.112E 08	0.201E 06	0.282E 08	0.834E 06	0.143E 08	0.454E 06	0.119E 08	0.371E 06
25.00	26.00	0.110E 08	0.190E 06	0.273E 08	0.787E 06	0.139E 08	0.420E 06	0.115E 08	0.343E 06
26.00	27.00	0.108E 08	0.180E 06	0.266E 08	0.745E 06	0.134E 08	0.390E 06	0.112E 08	0.319E 06
27.00	28.00	0.106E 08	0.170E 06	0.259E 08	0.670E 06	0.131E 08	0.363E 06	0.109E 08	0.297E 06
28.00	29.00	0.104E 08	0.162E 06	0.252E 08	0.628E 06	0.127E 08	0.338E 06	0.106E 08	0.278E 06
29.00	30.00	0.103E 08	0.154E 06	0.246E 08	0.591E 06	0.123E 08	0.317E 06	0.103E 08	0.260E 06
30.00		0.101E 08	0.161E 06	0.240E 08	0.240E 08	0.120E 08	0.120E 08	0.100E 08	0.100E 08

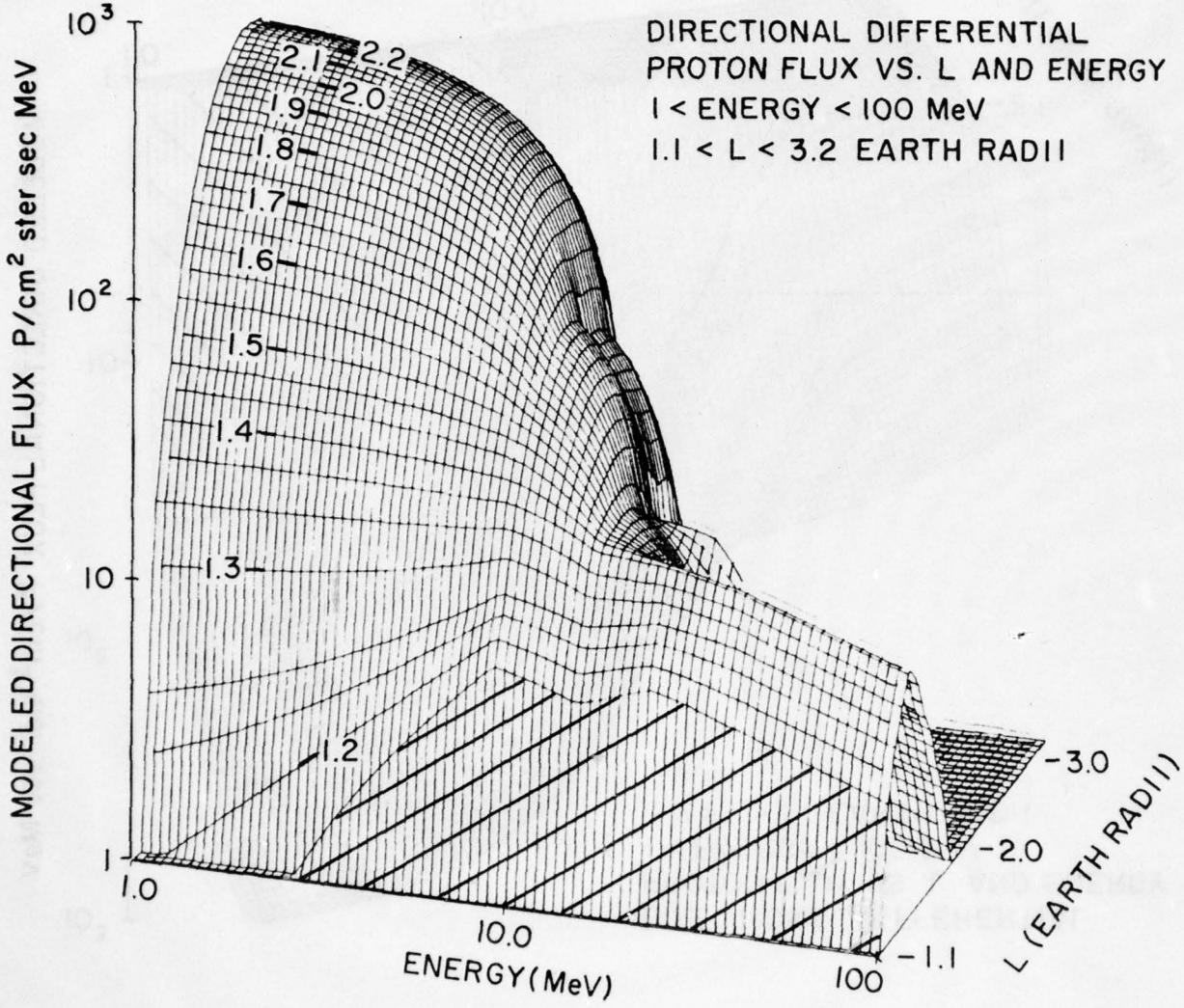
DIRECTIONAL DIFFERENTIAL
PROTON FLUX VS. L AND ENERGY
1 < ENERGY < 100 MeV
1.1 < L < 3.2 EARTH RADII
MODELED DIRECTIONAL FLUX P/cm² ster sec MeV
10³
10²
10
1
2.1
2.2
1.9
2.0
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.0
10.0
100
ENERGY(MeV)
3.0
2.0
1.1
L (EARTH RADII)

FIG. 1

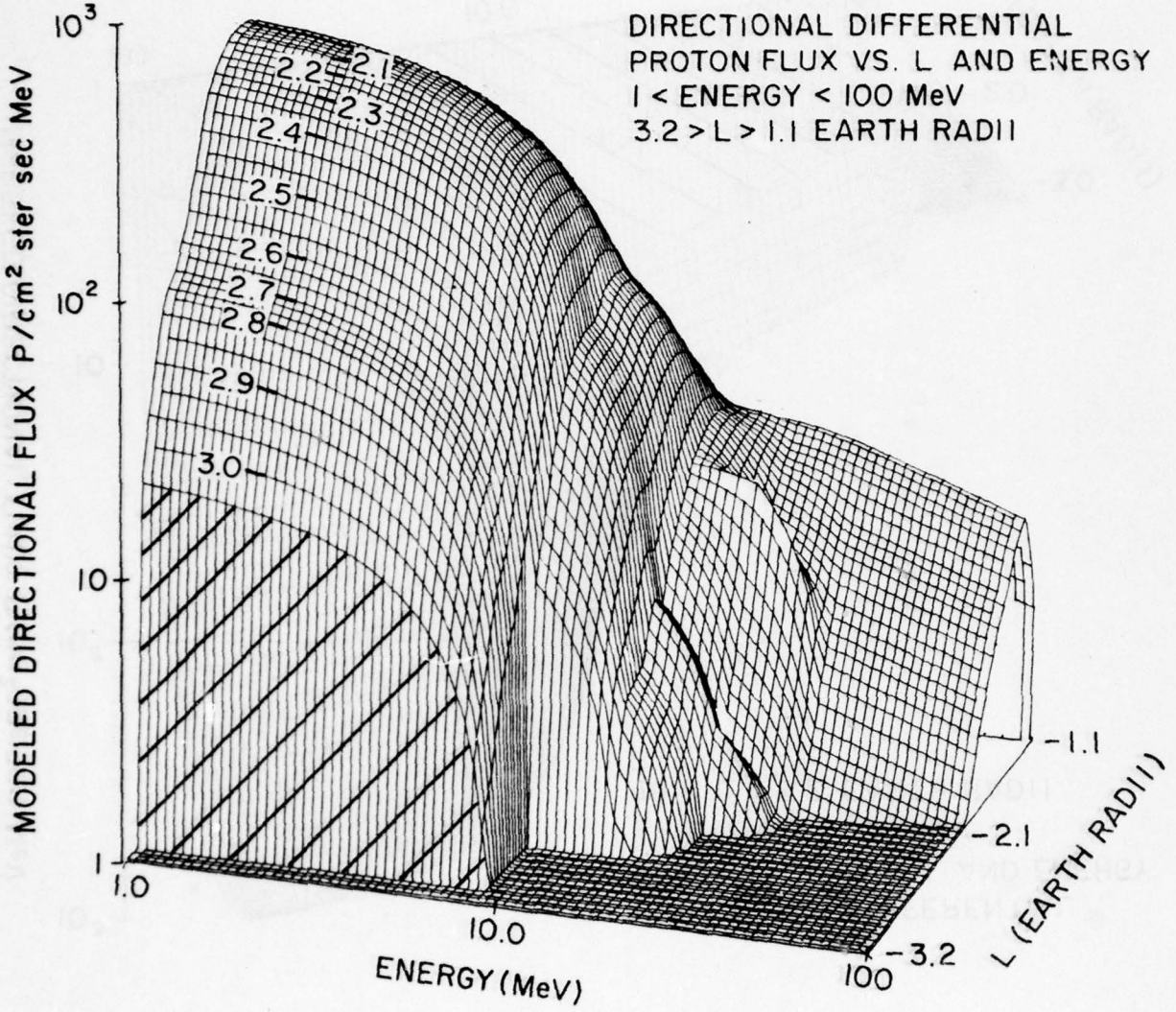
DIRECTIONAL DIFFERENTIAL
PROTON FLUX VS. L AND ENERGY
1 < ENERGY < 100 MeV
3.2 > L > 1.1 EARTH RADII
MODELED DIRECTIONAL FLUX P/cm² ster sec MeV
10³
10²
10
1
2.2
2.1
2.3
2.4
2.5
2.6
2.7
2.8
2.9
3.0
1.0
10.0
100
ENERGY (MeV)
3.2
2.1
1.1
L (EARTH RADII)

FIG. 2

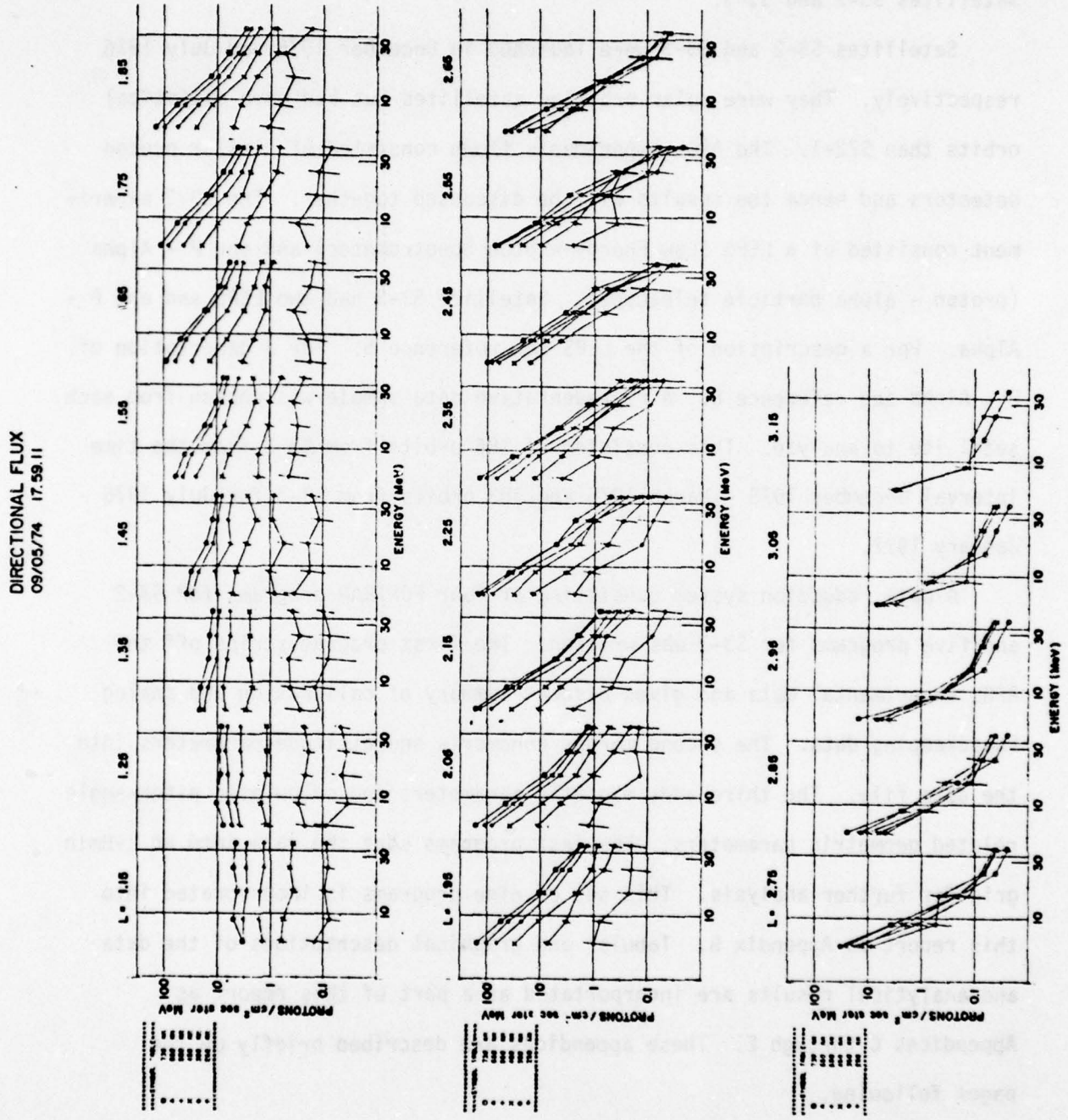
DIRECTIONAL FLUX
09/05/74 17.59.11
L= 1.15
1.25
1.35
1.45
1.55
1.65
1.75
1.85
L= 1.95
2.05
2.15
2.25
2.35
2.45
2.55
2.65
L= 2.75
2.85
2.95
3.05
3.15
ENERGY (MeV)
PROTONS/cm² sec ster MeV

FIG. 3

Satellites S3-2 and S3-3.

Satellites S3-2 and S3-3 were launched in December 1975 and July 1976 respectively. They were polar-orbiting satellites but had more elliptical orbits than S72-1. The AFGL experiments flown consisted of similar proton detectors and hence the results will be discussed together. The S3-2 experiment consisted of a LEPS (Low Energy Proton Spectrometer) and one P - Alpha (proton - alpha particle telescope). Satellite S3-3 had two LEPS and one P - Alpha. For a description of the LEPS see reference 5. For a description of P - Alpha see reference 6. A representative data sample was chosen from each satellite to analyze. This consisted of 186 orbits from S3-2 from the time interval December 1975 - March 1976 and 383 orbits from S3-3 for July 1976 - January 1977.

A data reduction system consisting of four FORTRAN programs for S3-2 and five programs for S3-3 was written. The first program strips off the AFGL experimental data and gives a short summary of calibration and analog housekeeping data. The second merges ephemeris and attitude parameters into the data file. The third adds magnetic parameters and calculates pitch-angle related geometric parameters. The last programs sort the data into an L-Hmin grid for further analysis. This set of nine programs is incorporated into this report as Appendix B. Tabular and graphical descriptions of the data and analytical results are incorportated as a part of this report as Appendices C through E. These appendices are described briefly on the pages following.

Appendix C.

This appendix gives two extended tables presenting the results of the P-Alpha experiment for each of the two satellites. The format was chosen to be compatible with our previously published tables summarizing satellite S72-1 (reference 3). Each page in the table summarizes all the sampled data from a small interval in L. Down the page, this L interval is divided into several Hmin intervals. For each L-Hmin combination, average values for the set of observations are given for Hmin, B, and the corresponding equatorial pitch angle EQPA. The ratio of the average B value to the equatorial B value corresponding to that L-Hmin is given as B/BEQ.

There are 14 columns across the page. The first column represents the central value of pitch angle corresponding to that line of data. The line labeled "7" is the sum of two 15-degree pitch angle intervals 0 - 15 and 165 - 180 degrees. It can be interpreted as a background, and the calculated directional and omnidirectional fluxes should be of good quality as long as the background is small relative to them. The line labeled "90" is the calculated directional proton flux and is based on the pitch angle interval 75 - 105 degrees. The line labeled "0" is the calculated omnidirectional proton flux and is based on a sum over all pitch angles. Columns 2 through 11 are the 5 proton fluxes with their respective RMS error corresponding to the 5 energy intervals given in the header line above them. Column 12 is the observation time in seconds. Columns 13 and 14 are the integral proton flux observed by the instrument and its RMS error.

Appendix D.

This appendix contains a representative sample selected from the energy distributions observed by the S3-2 and S3-3 LEPS and P-Alpha instruments. The sample was taken at L = 3.5 to 4.0 where background from high energy protons and electrons is at a minimum. The average B, L, Hmin and B/BEQ values corresponding to the data sample represented by each plot is given at the top. One curve is drawn for each Hmin group and plotted with a unique symbol. Table 5 below gives the symbol correspondence with the Hmin parameter. It also gives the mirror point B value corresponding to each L-Hmin group so that comparisons with data sets from other experimentors based on a B - L coordinate system can be made. The agreement between the three instruments over the energy interval 500 Kev to 6 Mev alos serves as an in flight verification of the instrument calibration.

Appendix E.

This appendix contains a set of plots of the observed time history of the two LEPS and the P-Alpha instrument from S3-3 for selected L intervals. Day one in the plots was January 1, 1976. A Kp curve is included with each plot to show the corresponding solar related activity for the same time interval. Attempts to correlate the fluctuations in the low Hmin fluxes with the Kp index and other similar geophysical parameters have not yet been successful. The constancy of the higher Hmin fluxes is partially due to a saturation condition at high count rates in the solid state detectors. See Table 5 for the symbol correspondence with the Hmin coordinate.

TABLE 5

SYMBOL TABLE

Values of B in Gauss at Edges of Intervals

Hmm \ L =	2.0	2.2	2.4	2.6	2.8	3.0	3.5	4.0	5.0
0	.276	.283	.291	.301	.311	.323	.352	.381	.442
100	.268	.275	.282	.292	.302	.313	.340	.368	.425
200	.260	.266	.274	.283	.293	.303	.329	.355	.408
300	.251	.258	.266	.274	.284	.293	.318	.342	.391
400	.243	.250	.257	.266	.274	.283	.306	.329	.375
500	.235	.242	.249	.257	.265	.274	.295	.316	.358
600	.227	.233	.240	.248	.256	.264	.284	.303	.341
700	.218	.225	.232	.239	.247	.254	.272	.290	.324
800	.210	.217	.224	.230	.237	.244	.261	.277	.307
900	.202	.209	.215	.222	.228	.234	.250	.264	.290
1000	.194	.200	.207	.213	.219	.225	.238	.251	.274
1500	.170	.177	.184	.190	.196	.202	.214	.224	.237
2000	.142	.148	.154	.160	.165	.169	.180	.189	.199
3000	.099	.104	.109	.113	.117	.121	.129	.136	.143
4000	.071	.075	.079	.083	.086	.089	.096	.102	.108
6000	.038	.041	.044	.046	.048	.050	.055	.059	.062

REFERENCES

REFERENCES

1. Morel, P.R., and B. Sellers, "Design and Fabrication of a Heavy Particle Identification Instrument for Satellites", R & D Equipment Information Report, Panametrics Inc., Contract F19628-69-C-0234, December 1972.

2. Filz, R.C., et al, "Observations of S-45 MeV Protons at $L \leq 3$ and $L \geq 7$", Space Research XIV, 321, Berlin 1974.

3. Holeman, E., and R. Filz, "Proton Flux Data Obtained on Air Force Satellite 72-1", Scientific Report No. 1, Emmanuel College, AFCRL-TR-74-0325, June 1974.

4. Lavine, James P., and James I. Vette, "Models of the Trapped Radiation Environment, Vol. 5: Inner Belt Protons", NASA SP-3024, 1969.

5. Pantazis, John, A. Huber, and M.P. Hagan, "Design of a Low Energy Proton Spectrometer", Final Report, Emmanuel College, AFCRL-TR-75-0637, Dec. 1975.

6. Morel, Paul R., et al. "A Satellite Telescope for Protons and Alphas", Final Report, Panametrics, Inc., AFCRL-TR-74-0531, Nov. 1974.

APPENDIX A

```
      FUNCTION FLXBC(HH,EL,EE)                                          10
C*************************************************************        11
C*****                                                                  12
C  1975  SUBPROGRAM.  E. HOLEMAN.  LAST ALTERED 21 APR 75.              13
C  CREATED 14 MAR 75.                                                   14
C*****                                                                  15
C*****                                                                  16
C  DESK CALCULATOR PROTON FLUX MODEL - 01-D                             17
C*****                                                                  18
C*****                                                                  19
C  FUNCTIONAL FORM.                                                     20
C    LOG(J)=A1+A2*LOG(H)+A3*LOG(E/15.)                                  21
C*****                                                                  22
C*****                                                                  23
C  DEFINITION OF COEFFICIENTS A1,A2,AND A3.                             24
C                                                                       25
C    FOR L LESS THAN 1.4                                                26
C     A1 = -25.77+16.44*L-4.282*L*L                                     27
C     A2 = 5.359-.4055*L*L                                              28
C     A3 = .995*L-.8651*L*L                                             29
C                                                                       30
C    FOR (L.GE.1.4.AND.E.GT.15.)                                        31
C     A1 = -15.06+2.120*L+.4368*L*L                                     32
C     A2 = 5.359-.4055*L*L                                              33
C     A3 = 3.462-2.674*L                                                34
C                                                                       35
C    FOR (L.GE.1.4.AND.E.LE.15.)                                        36
C     A1 = -15.93+3.139*L+.1566*L*L                                     37
C     A2 = 5.359-.4055*L*L                                              38
C     A3 = 8.208-8.172*L+1.325*L*_                                      39
C*****                                                                  40
C*****                                                                  41
C  FOR (E.GT.170)                                                       42
C    J = J(E=170)*(170/E)**4.2                                          43
C*****                                                                  44
C*************************************************************        45
      DIMENSION A(3),B(3),C(3),D(3),E(3),F(3),G(3),H(3),P(3)            46
C*****                                                                  47
C  MODEL 01-D COEFFICIENTS.                                             48
C*****                                                                  49
      DATA A,B,C,D,E,F,G,H,P /-25.77,-15.06,-15.93,16.44,2.120,         50
     +3.139,
     +-4.282,.4368,.1566,3*5.359,3*-.4055,0.,3.462,8.208,               51
     +.995,-2.674,-8.172,-.8651,0.,1.325,3*0./                          52
      FB1(X,K)=A(K)+B(K)*X+C(K)*X*X                                     53
      FB2(X,K)=D(K)+E(K)*X*X                                            54
      FB3(X,K)=F(K)+G(K)*X+H(K)*X*X                                     55
      FJJ(Y,Z)=10.**(A1+A2*ALOG10(Y)+A3*ALOG10(Z/15.))                  56
C*****                                                                  57
C  SELECT KK                                                            58
C*****                                                                  59
```


WEIGHTED DATA WITH 2nd DEGREE POLYNOMIALS IN L FOR COEFFICIENTS.

```
      KK=1                                                              60
      IF(EL.GT.1.4) KK=2                                                61
      IF(EL.GT.1.4.AND.EE.LT.15.) KK=3                                  62
      A1=FB1(EL,KK)                                                     63
      A2=FB2(EL,KK)                                                     64
      A3=FB3(EL,KK)                                                     65
      IF(A3.GT.0.) A3=0.                                                66
      XE=EE                                                             67
      IF(EE.GT.170.) XE=170.                                            68
C*****                                                                  69
C  CALCULATE FUNCTION VALUE.                                            70
C*****                                                                  71
      FLXBC=FJJ(4H,XE)                                                  72
      IF(EE.GT.170.) FLXBC=FLXBC/(EE/170.)**4.2                         73
      RETURN                                                            74
      END                                                               75
```

```
CECEICE  //// END OF LIST ////
CECEICE  /// END OF LIST ////
```

APPENDIX B

78 11 16 023

APPENDIX - B

S3-2 and S3-3 Data Reduction System

Table of Contents

	PAGE NO. (REF. UPPER RIGHT CORNER)
1. Program S2RDBB	1
Subroutine S2UPA	
Subroutine S2RPK	
Subroutine TDATB	
Subroutine JULED	
Subroutine S2PAL	
Subroutine S2OUTA	
2. Program S2OMAD	20
Subroutine OM	
Subroutine ORBT	
Subroutine DFS2	
Subroutine NWTN	
Subroutine DATJ	
Subroutine TJDA	
Subroutine FIT	
Subroutine LAMDEL	
Subroutine ORMAG	
Subroutine LAGDEG	
Subroutine LAGRAG	
Subroutine S2UPB	
Subroutine S2PK2	
Subroutine GEOGA	
3. Program S2BLAF	54
Subroutine EULER	
Subroutine TRANS	
Subroutine INVAR	
Subroutine LCALL	
Subroutine INTR3	
Subroutine POSTL	
Subroutine LINES	
Subroutine START	
Subroutine INTEG	
Subroutine CARMEL	
Subroutine NEWMAG	
Subroutine INTER	
Subroutine COEFG	
Subroutine S2UP2	

4. Program S2SABI 82
Subroutine AUTCD

5. Program S3RABA 91
Subroutine S3UPA
Function ISHIFT

6. Program S3OMAB 100
Subroutine OM3
Subroutine AUTDC

7. Program S3BLAC 120

8. Program S3SACD 125
Subroutine HMALT
Subroutine PACE3

9. Program S3SADE 136
Subroutine UNPE3
Subroutine UNPEF
Subroutine PACEF

```
      PROGRAM S23088(AFILE,BFILE,YFILE,ZFILE,OUTPUT=64,TAPE1          10
     +=AFILE,TAPE2=BFILE,TAPE6=OUTPUT,TAPE8=YFILE,TAPE9=ZFILE)        11
C*****************************************************************  12
C*****                                                              13
C  1975   PROGRAM.  E. HOLEMAN.  LAST ALTERED 2 MAR 76              14
C  1975   S3-2 DATA REDUCTION SYSTEM.  CREATED 13 NOV 75            15
C  VERSION NO. FT3.                                                16
C*****                                                             17
C*****                                                             18
C  COUNTERS USED                                                   19
C     ICT1   COUNTS RECORDS READ                                   20
C     ICT2   COUNTS RECORDS WRITTEN                                21
C     ICT3   COUNTS SECONDS OF DATA PROCESSED                      22
C     NSSC   SUB-SUB-COM COUNTER                                   23
C*****                                                             24
C  FLAGS USED                                                      25
C     IFGA.GE.2 ==> LEPS CALIBRATION MODE IN EFFECT                26
C*****                                                             27
C*****                                                             28
C  REFORMAT MERN DATA TAPE AND CREATE 1ST PUM SUMMARY FILE         29
C*****                                                             30
C  47200 CM STORAGE REQUIRED FOR LOADING.                          31
C*****                                                             32
C*****                                                             33
C*****************************************************************  34
      DIMENSION FHED(30),IHED(30),IDAT(37,17),JDAT(65),            35
     +IANN(100),JANN(4,16),KDAT(27,16),KANN(27),LDAT(4,8),         36
     +ISAN(100),ISDA(441,JSDA(4,8),LTIM(8),LABL(3),                37
     +XOUT(12),JSAN(4,8)                                           38
      EQUIVALENCE(FHED,IHED)                                       39
      EQUIVALENCE(IANN(37),JANN(1,1))                              40
      EQUIVALENCE(ISDA(13),JSDA(1,1))                              41
      EQUIVALENCE(ISAN(37),JSAN(1,1))                              42
      DATA IANN,KANN /100*4008,27*0/                               43
      DATA ISAN,ISDA /144*0/                                       44
      MASK8=SHIFT(18,45)                                           45
      MASK4=7777777777777773                                       46
      MASKC=7777778                                                47
      NPRT=4                                                       48
      JPRT=0                                                       49
      REWIND1                                                      50
      REWIND2                                                      51
      REWIND8                                                      52
      REWIND9                                                      53
C*****                                                             54
C  INITIALIZE FILES AND ZERO CONSTANTS                             55
C*****                                                             56
   10 CONTINUE                                                     57
      DO 140 II=1,16                                               58
      KDAT(1,II)=MASKC                                             59
  140 CONTINUE                                                     60
```

```
      IEOF=0                                                            61
      JWC=27                                                            62
      ISKP=0                                                            63
      ICT1=0                                                            64
      ICT2=0                                                            65
      ICT3=0                                                            66
      NSSC=0                                                            67
      IERT=2                                                            68
      IUNT=9                                                            69
      IEGR=0                                                            70
      KANN(27)=10HHKP RECORD                                            71
      ADAT=DATE(IDTT)                                                   72
      ATIM=TIME(ITIM)                                                   73
 2001 FORMAT(1H1,5X,*S73-2 PROCESSING BEGUN IN S2P0BE*,                 74
     +2(2X,A10)/5X,*ORBIT ID = *,3A10                                   75
     +/5X,*DATA ACQUISITION INTERVAL =*,2F10.5,2X,A8                    76
     +/5X,*ALTITUDE RANGE =*,3F10.1                                     77
     +/5X,*LATITUDE RANGE =*,3F10.3                                     78
     +/5X,*ACTIVITY INDEX =*,3F10.3)                                    79
C*****                                                                  80
C  READ FILE HEADER                                                     81
C*****                                                                  82
      READ(1) KWC,KGC,(FHED(K),K=1,KWC)                                 83
      IF(EOF(1)) 100,10                                                 84
 10   CONTINUE                                                          85
      ENCODE(30,4001,LABL) (IHED(I),I=1,3),IHED(6)                      86
 4001 FORMAT(R4,R3,2X,A10,1X,A8)                                        87
      HR1=FHED(8)/3600.                                                 88
      HR2=FHED(13)/3600.                                                89
      WRITE(6,2001) ITIM,IDTT,LABL,HR1,HR2,IHED(6),FHED(9),             90
     +FHED(14),FHED(10),FHED(11),FHED(15),FHED(12),                     91
     +(FHED(I),I=23,25)                                                 92
      WRITE(8,2001) ITIM,IDTT,LABL,HR1,HR2,IHED(6),FHED(9),             93
     +FHED(14),FHED(10),FHED(11),FHED(15),FHED(12),                     94
     +(FHED(I),I=23,25)                                                 95
      WRITE(9,2001) ITIM,IDTT,LABL,HR1,HR2,IHED(6),FHED(9),             96
     +FHED(14),FHED(10),FHED(11),FHED(15),FHED(12),                     97
     +(FHED(I),I=23,25)                                                 98
      GMT1=FLOAT(IHED(18))/1000.                                        99
      TRAT=FLOAT(IHED(19))/FLOAT(IHED(20))/1000.                       100
      LTIM(1)=1975                                                     101
      LTIM(2)=IHED(16)                                                 102
      IF(LTIM(2)..T.330) LTIM(1)=1976                                  103
      GMTZ=GMT1-FLOAT(IHED(17))*TRAT                                   104
C*****                                                                 105
C  READ ONE DATA RECORD                                                106
C*****                                                                 107
 20   CONTINUE                                                         108
      II=0                                                             109
      READ(1) IWC,IGC,((TDAT(I,J),I=1,IWC),J=1,IGC)                    110
      IEOF=EOF(1)                                                      111
```

```
      IF(IFOF.NE.0) GO TO 210                                          112
      ICT1=ICT1+1                                                      113
C*****                                                                 114
C  LIST SELECTED IPRT RECORDS                                          115
C*****                                                                 116
      IF(ICT1.LE.ISKP.OR.ICT1.GT.(ISKP+IPRT)) GO TO 40                 117
      JPRT=1                                                           118
 40   CONTINUE                                                         119
C*****                                                                 120
C  PROCESS DATA IN ONE SECOND INTERVALS                                121
C*****                                                                 122
 50   CONTINUE                                                         123
      II=II+1                                                          124
      NSSC=MOD(NSSC,16)+1                                              125
C*****                                                                 126
C  UNPACK DATA                                                         127
C*****                                                                 128
      CALL S2UPA(IDAT(1,II),JDAT,IANN,JANN,NSSC)                       129
      IF(NSSC.NE.1.AND.ICT3.EQ.0) GO TO 51                             130
      IF(ICT3.NE.0) GO TO 60                                           131
      HR=((GMTZ+FLOAT(IDAT(1,1))*TRAT)/3600.                           132
      CALL TDATB(LTIM,TMA,MON,HR,JD,013)                               133
      IHED(26)=JD                                                      134
      FHED(27)=HR                                                      135
      IHED(30)=SL3FILE                                                 136
      WRITE(2) KWC,KGC,(FHED(I),I=1,KWC)                               137
 60   CONTINUE                                                         138
      CALL S2PAL(JDAT(14),LDAT,LCHN)                                   139
      IF(IFGB.GT.5) IFGB=0                                             140
      IFGA=SHIFT(JDAT(2),-15)                                          141
      IF(IFGB.NE.0) IFGB=IFGB+1                                        142
      IF(IFGB.EQ.0.AND.IFGA.EQ.1) IFGB=1                               143
      ICT3=ICT3+1                                                      144
 2008 FORMAT(//5X,I11,12I5,I2,I7,2I5/5X,8I12/5X,8I12/5X,10I9/         145
     +5X,25I4)                                                         146
C*****                                                                 147
C  REPACK DATA AND CREATE BFILE                                        148
C*****                                                                 149
      CALL S2RPK(JDAT,IANN,KDAT(1,NSSC),KANN,NSSC)                     150
      JDAT(2)=JDAT(2).AND.777778                                       151
C*****                                                                 152
C  ADD DATA TO SUMMARY FILE.                                           153
C*****                                                                 154
      DO 70 JJ=1,12                                                    155
      IF(IFGB.NE.5) ISDA(JJ)=ISDA(JJ)+JDAT(JJ+1)+MASKA                 156
      IF(JJ.GT.4) GO TO 70                                             157
      JSDA(JJ,LCHN)=JSDA(JJ,LCHN)+LDAT(JJ,LCHN)+MASKA                  158
 70   CONTINUE                                                         159
      IF(IFGB.EQ.1) CALL S2OUTA(ISDA,JSDA,ISAN,                        160
     +JSAN,IUNT,ICT3,0)                                                161
      IF(IFGB.EQ.5) CALL S2OUTA(ISDA,JSDA,ISAN,JSAN,IUNT,ICT3,1)
```

```
      IF(NSSC.NE.16) GO TO 50                                          163
      ISA=0                                                            164
      ISB=0                                                            165
      ISC=0                                                            166
      DO 110 JJ=1,6                                                    167
      ISA=ISA+IANN(JJ)                                                 168
  110 CONTINUE                                                         169
      DO 120 JJ=7,16                                                   170
      ISB=ISB+IANN(JJ)                                                 171
  120 CONTINUE                                                         172
      DO 130 JJ=17,36                                                  173
      ISC=ISC+IANN(JJ)                                                 174
  130 CONTINUE                                                         175
      IF((ISA.LT.300.AND.ISB.LT.1150).AND.ISC.LT.2000) GO TO 50        176
  210 CONTINUE                                                         177
      IF(NSSC.EQ.0) GO TO 200                                          178
C*****                                                                 179
C  DO 16 SECOND INTERVAL ROUTINES                                      180
C*****                                                                 181
      JPRT=0                                                           182
      ICT2=ICT2+1                                                      183
      JGC=NSSC+1                                                       184
      WRITE(2) JWC,JGC,((KOAT(I,J),I=1,27),J=1,NSSC),                  185
     +(KANN(I),I=1,27)                                                 186
      DO 150 JJ=1,16                                                   187
      KOAT(1,JJ)=MASKC                                                 188
  150 CONTINUE                                                         189
      IF(ISA.LT.300.AND.ISB.LT.1150) GO TO 50                          190
      DO 80 JJ=1,100                                                   191
      IF(IANN(JJ).GE.4000) GO TO 80                                    192
      ISAN(JJ)=ISAN(JJ)+IANN(JJ)+MASKA                                 193
   80 CONTINUE                                                         194
      IF(MOD(ICT2,NPRT).NE.0.AND.IEOF.EQ.0) GO TO 50                   195
      IF(IEOA.NE.1) CALL S2OUTA(ISOA,JSOA,ISAN,JSAN,IUNT,              196
     +ICT3,0)                                                          197
   50 CONTINUE                                                         198
      IF(IEOF.NE.0) GO TO 200                                          199
      IF(IT.LT.ISC) GO TO 30                                           200
      GO TO 20                                                         201
  100 CONTINUE                                                         202
      WRITE(8,2006)                                                    203
 2006 FORMAT(5X,*EOI ENCOUNTERED ON AFILE*)                            204
      STOP                                                             205
  200 CONTINUE                                                         206
      IUNT=8                                                           207
      CALL S2OUTA(ISOA,JSOA,ISAN,JSAN,IUNT,ICT3,2)                     208
      WRITE(6,2007) ICT1                                               209
      WRITE(5,2007) ICT1                                               210
      WRITE(3,2007) ICT1                                               211
 2007 FORMAT(5X,*EOF ENCOUNTERED ON AFILE BY S2R088*                   212
     +* AFTER RECORD NUMBER*,I6)                                       213
```

```
      ENDFILE2                                                          214
      IF(IEOF.NE.0) GO TO 90                                            215
      CALL DISCON(8)                                                    216
      END                                                               217
```

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```
      SUBROUTINE S2UPA(IDAT,JDAT,IANN,JANN,NSSC)                        218
C*************************************************************        219
C*****                                                                 220
C  1975   SUBPROGRAM.  E. HOLEMAN.  LAST ALTERED 1 DEC 75              221
C  1975   S3-2 DATA REDUCTION SYSTEM.  CREATED 14 NOV 75               222
C*****                                                                 223
C*****                                                                 224
C  UNPACK AFILE FORMATTED DATA FROM MCINERNIE.                         225
C*****                                                                 226
C*************************************************************        227
      DIMENSION IDAT(37),JDAT(65),IANN(36),IANT(40),JANN(4,16)          228
      JDAT(1)=IDAT(1)                                                   229
C*****                                                                 230
C  DECODE 24-2-11                                                      231
C*****                                                                 232
      IF(NSSC.GT.16) NSSC=1                                             233
      JDAT(2)=MXGETX(IDAT(2),1,4)                                       234
      JDAT(3)=MXGETX(IDAT(2),5,4)                                       235
      JDAT(4)=SHIFT(MXGETX(IDAT(2),9,2),12).OR.MXGETX(IDAT(3),1,2)
      JDAT(5)=MXGETX(IDAT(3),3,4)                                       237
      JDAT(6)=MXGETX(IDAT(3),7,4)                                       238
      JDAT(7)=MXGETX(IDAT(4),1,4)                                       239
      JDAT(8)=MXGETX(IDAT(4),5,4)                                       240
      JDAT(9)=SHIFT(MXGETX(IDAT(4),9,2),12).OR.MXGETX(IDAT(5),1,2)
      JDAT(10)=MXGETX(IDAT(5),3,4)                                      242
      JDAT(11)=MXGETX(IDAT(5),7,4)                                      243
      JDAT(12)=MXGETX(IDAT(6),1,4)                                      244
      JDAT(13)=MXGETX(IDAT(6),5,4)                                      245
C*****                                                                 246
C  DECODE 2-ALPHA DATA                                                 247
C*****                                                                 248
      JDAT(14)=SHIFT(MXGETX(IDAT(7),7,4),36).OR.MXGETX(IDAT(8),1,6)
C*****                                                                 250
C  DECODE 24-5-21                                                      251
C*****                                                                 252
      JDAT(15)=SHIFT(MXGETX(IDAT(8),7,4),24).OR.MXGETX(IDAT(9),1,4)
      JDAT(16)=SHIFT(MXGETX(IDAT(9),5,6),12).OR.MXGETX(IDAT(10),1,2)
      JDAT(17)=MXGETX(IDAT(10),3,8)                                     255
      JDAT(18)=MXGETX(IDAT(11),1,8)                                     256
      JDAT(19)=SHIFT(MXGETX(IDAT(11),9,2),36).OR.MXGETX(IDAT(12),1,6)
      JDAT(20)=SHIFT(MXGETX(IDAT(12),7,4),24).OR.MXGETX(IDAT(13),1,4)
      JDAT(21)=SHIFT(MXGETX(IDAT(13),5,6),12).OR.MXGETX(IDAT(14),1,2)
      JDAT(22)=MXGETX(IDAT(14),3,8)                                     260
      JDAT(23)=MXGETX(IDAT(15),1,8)                                     261
      JDAT(24)=SHIFT(MXGETX(IDAT(15),9,2),36).OR.MXGETX(IDAT(16),1,6)
      JDAT(25)=SHIFT(MXGETX(IDAT(16),7,4),24).OR.MXGETX(IDAT(17),1,4)
      JDAT(26)=SHIFT(MXGETX(IDAT(17),5,6),12).OR.MXGETX(IDAT(18),1,2)
      JDAT(27)=MXGETX(IDAT(18),3,8)                                     265
      JDAT(28)=MXGETX(IDAT(19),1,8)                                     266
      JDAT(29)=SHIFT(MXGETX(IDAT(19),9,2),36).OR.MXGETX(IDAT(20),1,6)
      JDAT(30)=SHIFT(MXGETX(IDAT(20),7,4),24).OR.MXGETX(IDAT(21),1,4)
```

```
C*****                                                                  269
C  DECODE 24-5-22                                                      270
C*****                                                                  271
      JDAT(31)=MXGETX(IDAT(21),5,4)                                     272
      JDAT(32)=SHIFT(MXGETX(IDAT(21),9,2),12).OR.MXGETX(IDAT(22),1,2)
      JDAT(33)=MXGETX(IDAT(22),3,4)                                     274
      JDAT(34)=MXGETX(IDAT(22),7,4)                                     275
      JDAT(35)=MXGETX(IDAT(23),1,4)                                     276
      JDAT(36)=MXGETX(IDAT(23),5,4)                                     277
      JDAT(37)=SHIFT(MXGETX(IDAT(23),9,2),12).OR.MXGETX(IDAT(24),1,2)
      JDAT(38)=MXGETX(IDAT(24),3,4)                                     279
      JDAT(39)=MXGETX(IDAT(24),7,4)                                     280
      JDAT(40)=MXGETX(IDAT(25),1,4)                                     281
C*****                                                                  282
C  DECODE MAGNETOMETERS                                                 283
C*****                                                                  284
      IC=5                                                              285
      IW=25                                                             286
      DO 30 II=41,65                                                    287
      JDAT(II)=MXGETX(IDAT(IW),IC,2)                                    288
      IC=IC+2                                                           289
      IF(IC.LE.9) GO TO 30                                              290
      IW=IW+1                                                           291
      IC=1                                                              292
 30   CONTINUE                                                          293
C*****                                                                  294
C  DECODE 24-2 ANALOG                                                   295
C*****                                                                  296
      IW=37                                                             297
      IC=5                                                              298
      DO 10 II=1,36                                                     299
      IANT(II)=MXGETX(IDAT(IW),IC,2)                                    300
      IC=IC+2                                                           301
      IF(IC.LE.9) GO TO 10                                              302
      IW=IW+1                                                           303
      IC=1                                                              304
 10   CONTINUE                                                          305
      IANT(37)=MXGETX(IDAT(6),9,2)                                      306
      IANT(38)=MXGETX(IDAT(7),1,2)                                      307
      IANT(39)=MXGETX(IDAT(7),3,2)                                      308
      IANT(40)=MXGETX(IDAT(7),5,2)                                      309
C*****                                                                  310
C  TRANSFER IANT VALUES AND DETERMINE SSC COUNT VALUE                   311
C*****                                                                  312
      ISSC=0                                                            313
      JSSC=0                                                            314
      DO 20 II=1,36                                                     315
      IF(IANT(II).LT.40000B) IANN(II)=IANT(II)                          316
      IF(II.LE.6.AND.IANT(II).LT.40000B) ISSC=II+8                      317
      IF((II.GT.6.AND.II.LE.16).AND.IANT(II).LT.40000B) ISSC=II-4
      IF(II.LE.20) GO TO 20                                             319
```

```
      IF(IANT(II).LT.4000B) JSSC=II-20
   20 CONTINUE
      IF(JSSC.NE.0) NSSC=JSSC
      IF(ISSC.NE.0) NSSC=ISSC
      JANN(1,NSSC)=IANT(37)
      JANN(2,NSSC)=IANT(38)
      JANN(3,NSSC)=IANT(39)
      JANN(4,NSSC)=IANT(40)
      RETURN
      END
```

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```
      SUBROUTINE S2RPK(JDAT,IANN,KDAT,KANN,NSSC)                        330
C*************************************************************        331
C*****                                                                 332
C  1975   SUBPROGRAM.  E. HOLEMAN.  LAST ALTERED 21 NOV 75.            333
C  1975   S3-2 DATA REDUCTION SYSTEM.  CREATED 18 NOV 75               334
C*****                                                                 335
C*****                                                                 336
C  REPACK DATA MATRIX AND HOUSEKEEPING INTO FILE FORMAT.              337
C*****                                                                 338
C*************************************************************        339
      DIMENSION JDAT(65),IANN(36),KDAT(27),KANN(17),                    340
     +IBIT(65),NHK(7)                                                   341
      DATA IBIT /60,4*(24,18,18),60,16*48,10*24,25*9/                   342
      IWD=1                                                             343
      IBT1=60                                                           344
      DO 60 IT=1,27                                                     345
      KDAT(II)=0B                                                       346
   60 CONTINUE                                                          347
      DO 10 IT=1,65                                                     348
      NBT=IBIT(II)                                                      349
   40 CONTINUE                                                          350
      IBT2=IBT1-NBT+1                                                   351
      IF(IBT2.LE.0) GO TO 20                                            352
      KDAT(IWD)=ISBYTX(IBT2,NBT,KDAT(IWD),JDAT(IT))                     353
      GO TO 30                                                          354
   20 CONTINUE                                                          355
      NBT=NBT-IBT1                                                      356
      KDAT(IWD)=ISBYTX(1,IBT1,KDAT(IWD),SHIFT(JDAT(IT),-NBT))           357
      IBT1=60                                                           358
      IWD=IWD+1                                                         359
      GO TO 40                                                          360
   30 CONTINUE                                                          361
      IBT1=IBT2-1                                                       362
      IF(IBT1.GT.0) GO TO 10                                            363
      IWD=IWD+1                                                         364
      IBT1=60                                                           365
   10 CONTINUE                                                          366
      NHK(1)=20+NSSC                                                    367
      NHK(2)=NSSC+4                                                     368
      NHK(3)=NSSC-8                                                     369
      IF(NHK(3).GT.5) NHK(3)=0                                          370
      IF(NHK(2).LT.7) NHK(2)=0                                          371
      NHK(4)=37+4*(NSSC-1)                                              372
      NHK(5)=NHK(4)+1                                                   373
      NHK(6)=NHK(5)+1                                                   374
      NHK(7)=NHK(6)+1                                                   375
      DO 50 II=1,7                                                      376
      IF(NHK(II).LE.0) GO TO 50                                         377
      JJ=MOD(NHK(II),6)                                                 378
      IF(JJ.EQ.0) JJ=6                                                  379
      IIA=(NHK(II)-1)/6+1                                               380
```

```
      JJA=55-8*JJ                                                    381
      IF(IANN(NHK(II)).EQ.40008) IANN(NHK(IT))=4008                  382
      KANN(IIA)=ISBYTK(JJA,9,KANN(IIA),IANN(NHK(IT)))                383
50    CONTINUE                                                       384
      RETURN                                                         385
      END                                                            386
```

```
      SUBROUTINE TDATB(L,TM,MON,HR,JD,MODE)
C*****************************************************************
C*****
C  1975   SUBPROGRAM.  E. HOLEMAN.  LAST ALTERATION 16 MAR 77
C  CREATED 12 DEC 75
C*****
C*****
C  THE SUBPROGRAM FILLS IN THE MISSING PARAMETERS TO GIVE
C  THE COMPLETE TIME DESCRIPTION LISTED IN THE TABLE
C  BELOW WITH THE INPUT SPECIFIED BY MODE.
C*****
C*****
C  DEFINITION OF PARAMETERS.
C      L(1)    YEAR
C      L(2)    DAY
C      L(3)    HOUR
C      L(4)    MINUTE
C      L(5)    SECOND
C      L(6)    MICROSECOND
C      L(7)    ELAPSED TIME IN SECONDS SINCE 0.000 IEPC2 TO TIME
C              DEFINED BY L(19 - L(6)
C      TM      SAME AS L(7) IN DECIMAL FRACTION FORM WITH L(6)
C              ADDED
C      HR      TIME OF DAY IN HOUR + FRACTION
C      JD      MODIFIED JULIAN DAY RELATIVE TO EPOCH IEPC1
C      MON     ALPHANUMERIC DATE IN FORM DD MON YR
C*****
C*****
C  MODE IS A TWO CHANACTER OCTAL FLAG DESCRIBING THE INPUT
C  CONDITIONS, EACH CHARACTER OF WHICH ACTS AS A 4
C  POSITION SWITCH.  THE FIRST CHARACTER (LEFTMOST) SPECIFIES
C  THE SOURSE OF THE YEAR AND DAY AS FOLLOWS.
C*****
C      = 0 ==> L(1),L(2) ARE INPUT
C      = 1 ==> L(1),L(2) TO BE CALCULATED FROM JD MOD IEPC1
C      = 2 ==> L(1),L(2) TO BE CALCULATED FROM L(7)
C      = 4 ==> L(1),L(2) TO BE CALCULATED FROM TM
C*****
C  THE SECOND CHARACTER (RIGHTMOST) SPECIFIES THE SOURSE
C  OF L(3) THROUGH L(6)
C*****
C      = 0 ==> L(3-6) ARE INPUT
C      = 1 ==> L(3-6) TO BE CALCULATED FROM HR
C      = 2 ==> L(3-6) TO BE CALCULATED FROM L(7)
C      = 4 ==> L(3-6) TO BE CALCULATED FROM TM
C*****
C*****
C  ALL SIXTEEN COMBINATIONS OF THE TWO SWITCHES ARE ALLOWED.
C*****
C*****************************************************************
      DIMENSION L(10)
```

```
      DATA IEPC1,IEPC2,<YR,LYR                                          438
     +/1950,1972,1,1/                                                   439
      IF(MODE.GT.448) GO TO 100                                         440
      IF(MODE.LE.78) GO TO 10                                           441
C*****                                                                  442
C  CALCULATE YEAR AND DAY                                               443
C*****                                                                  444
      IF((MODE.AND.103).NE.108) GO TO 20                                445
      CALL JULED(JD,L(1),L(2),IEPC1,MON,D                               446
      GO TO 10                                                          447
 20   CONTINUE                                                          448
      TTM=TM                                                            449
      IL7=L(7)                                                          450
      IF(MODE.GE.403) IL7=TM                                            451
      L(7)=IL7                                                          452
      NDAY=L(7)/86400                                                   453
      NYEAR=NDAY/365                                                    454
      L(1)=NYEAR+IEPC2                                                  455
      L(2)=NDAY-NYEAR*365-(NYEAR+<YR)/4+1                               456
      IF(L(2).GE.1) GO TO 10                                            457
      L(1)=L(1)-1                                                       458
      L(2)=366                                                          459
 10   CONTINUE                                                          460
      IF(L(1).LT.100) L(1)=L(1)+1900                                    461
C*****                                                                  462
C  CALCULATE HR                                                         463
C*****                                                                  464
      IMD=MODE.AND.78                                                   465
      IF(IMD.E).1) GO TO 30                                             466
      IF(IMD.GT.1) GO TO 40                                             467
      HR=FLOAT(L(3)*3600+L(4)*60+_(5))/3600.+FLOAT(L(6))                468
     +/1.E06/3600.                                                      469
      GO TO 50                                                          470
 40   CONTINUE                                                          471
      IL7=L(7)                                                          472
      TTM=TM                                                            473
      IF(IMD.E).2) TTM=TL7                                              474
      HR=TTM/3600.                                                      475
      IHR=HR                                                            476
      HR=FLOAT(MOD(IHR,24))+(HR-FLOAT(IHR))                             477
 50   CONTINUE                                                          478
C*****                                                                  479
C  CALCULATE L(3) -> L(6)                                               480
C*****                                                                  481
      L(3)=HR                                                           482
      DHR=(HR-FLOAT(L(3)))*60.                                          483
      L(4)=DHR                                                          484
      DHR=(DHR-FLOAT(L(4)))*60.                                         485
      L(5)=DHR                                                          486
      L(6)=(DHR-F_OAT(L(5)))*1.E06                                      487
      IF(L(6).GE.999998) L(5)=L(5)+1                                    488
```

```
      IF(L(6).GE.999998) L(6)=0                                          489
 50   CONTINUE                                                           490
C*****                                                                  491
C  CALCULATE L(7) AND TM                                                492
      IF(IMD.LT.2) GO TO 60                                              493
      IF(IMD.EQ.4) L(7)=TM                                               494
      IF(IMD.EQ.2) TM=FLOAT(L(7))+FLOAT(L(5))/1.E06                      495
      GO TO 70                                                           496
 60   CONTINUE                                                           497
      L(7)=L(5)+60*(L(4)+60*(L(3)+24*(365*(L(1)-IEPC2)+                  498
     +(L(1)-IEPC2+LYR)/4+L(2)-1)))                                       499
      TM=FLOAT(L(7))+FLOAT(L(6))/1.E06                                   500
 70   CONTINUE                                                           501
      CALL JULED(JD,L(1),L(2),IEPC1,MON,1)                               502
      RETURN                                                             503
 100  CONTINUE                                                           504
C*****                                                                  505
C  RESET EPOCHS                                                         506
C*****                                                                  507
      IEPC1=L(1)                                                         508
      IEPC2=L(2)                                                         509
      KYR=MOD(IEPC1-1,4)                                                 510
      LYR=MOD(IEPC2-1,4)                                                 511
      RETURN                                                             512
      END                                                                513
```

```
      SUBROUTINE JULED(JD,LYR,LDA,IEPC,MON,MODE)                        514
      DIMENSION MONA(12),MONB(12)                                       515
      DATA MONA /3HJAN,3HFEB,3HMAR,3HAPR,3HMAY,3HJUN,3HJUL,             516
     +3HAUG,3HSEP,3HOCT,3HNOV,3HDEC/                                    517
      DATA MONB /31,28,31,30,31,30,31,31,30,31,30,31/                   518
      MEPC=MOD(IEPC-1,4)                                                519
      IF(MODE.NE.0) GO TO 10                                            520
C*****                                                                  521
C  DERIVE LYR AND LDA FROM JD,IEPC                                      522
C*****                                                                  523
      NDLYR=JD/365                                                      524
   50 CONTINUE                                                          525
      LYR=IEPC+NDLYR                                                    526
      LDA=JD-365*NDLYR-(NDLYR+MEPC)/4+1                                 527
      IF(LDA.GT.0) GO TO 20                                             528
      NDLYR=NDLYR-1                                                     529
      GO TO 50                                                          530
   10 CONTINUE                                                          531
C*****                                                                  532
C  DERIVE JD FROM LYR,LDA                                               533
C*****                                                                  534
      IF(LYR.LT.100) LYR=1900+LYR                                       535
      NDLYR=LYR-IEPC                                                    536
      JD=365*NDLYR+(NDLYR+MEPC)/4+LDA-1                                 537
   20 CONTINUE                                                          538
C*****                                                                  539
C  DERIVE MON FROM LYR,LDA                                              540
C*****                                                                  541
      MYR=MOD(LYR,100)                                                  542
      IF(MOD(LYR,4).EQ.0) MONB(2)=29                                    543
      IDA=LDA                                                           544
      DO 30 II=1,12                                                     545
      IMON=II                                                           546
      IF(IDA.LE.MONB(II)) GO TO 40                                      547
      IDA=IDA-MONB(II)                                                  548
   30 CONTINUE                                                          549
      II=12                                                             550
   40 CONTINUE                                                          551
      ENCODE(10,4001,MON) IDA,MONA(II),MYR                              552
 4001 FORMAT(1X,I2,1X,A3,I3)                                            553
      MONB(2)=28                                                        554
      RETURN                                                            555
      END                                                               556
```

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```
      SUBROUTINE S2PAL(IWD,LDAT,ICH)
C*****************************************************************
C*****
C  1975   SUBPROGRAM.  E. HOLEMAN.  LAST ALTERED 19 DEC 75
C  1975   S3-2 DATA REDUCTION SYSTEM.  CREATED 18 NOV 75
C*****
C*****
C  UNPACK P-ALPHA DATA WORD INTO THREE COMPONENTS AND OVERFLOW
C  BITS.
C*****
C*****************************************************************
      DIMENSION LDAT(4,8)
C*****
C  INVERT IWD
C*****
      JWD=0B
      DO 10 II=1,56
      JWD=SHIFT(JWD,1).OR.LBYTX(II,1,IWD)
 10   CONTINUE
      ICH=LBYTX(54,3,JWD)
      ICH=ICH+1
      LDAT(1,ICH)=LBYTX(37,16,JWD)
      LDAT(2,ICH)=LBYTX(18,18,JWD)
      LDAT(3,ICH)=LBYTX(1,16,JWD)
      LDAT(4,ICH)=LBYTX(53,1,JWD)
      LDAT(4,ICH)=SHIFT(LDAT(4,ICH),1).OR.LBYTX(36,1,JWD)
      LDAT(4,ICH)=SHIFT(LDAT(4,ICH),1).OR.LBYTX(17,1,JWD)
      RETURN
      END
```

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```
      SUBROUTINE S2OUTA(ISDA,JSDA,ISAN,JSAN,IUNT,ICT3,IFGA)
C*****
C*****
C  1975   SUBPROGRAM.  E. HOLEMAN.  LAST ALTERED 29 JAN 76
C  1975   S3-2 DATA REDUCTION SYSTEM.  CREATED 25 NOV 75.
C*****
C*****
C  IFGA = 0 ==> NORMAL PROCESSING
C  IFGA = 1 ==> LEPS CALIBRATION DATA
C  IFGA = 2 ==> TOTALS FOR FILE
C*****
C*****
C  CREATE 10 LINE SUMMARY OF ANALOG AND DIGITAL DATA.
C*****
C*****
      DIMENSION ISDA(44),ISAN(100),JSDA(4,8),JSAN(4,8),
     +MOUT(23,10),MESG(10),JOUT(36),KSDA(44),LSDA(4,8),
     +KSAN(68),LSAN(4,8),NOUT(10),ICAL(44),JCAL(4,8)
      EQUIVALENCE(KSDA(13),LSDA(1,1))
      EQUIVALENCE(KSAN(37),LSAN(1,1))
      EQUIVALENCE(ICAL(13),JCAL(1,1))
      DATA ICAL /44*0/
      DATA NOUT,ICALL,KSAN,KSDA /88*17,10,1,113*0/
      FXXX(IZZ)=FLOAT(IZZ.AND.MASK8)/FLOAT(SHIFT(IZZ,-45))
      ICALL=ICALL+1
      IF(ICALL.NE.1) GO TO 200
      MASK8=777777777777778
      ENCODE(60,4001,MESG)
4001  FORMAT(*S3-2 DATA REDUCTION SYSTEM.    24 SECOND TOTALS*,
     +T60,1H )
      MESG(7)=10H LEPS CALIB
      MESG(8)=10HRATION
      MESG(9)=10HTOTALS FOR
      MESG(10)=10H FILE
      GLEP=5.4742
200   CONTINUE
      DO 210 II=1,10
      DO 210 JJ=1,23
      MOUT(JJ,II)=1.E11
210   CONTINUE
      IF(IFGA.EQ.2) GO TO 190
      DO 60 II=1,12
      JOUT(II)=ISDA(II).AND.MASK8
      IF(II.GT.8) GO TO 60
      JOUT(II+12)=JSDA(1,II).AND.MASK8
60    CONTINUE
      WRITE(8,2004) ICT3,(JOUT(I),I=1,20)
2004  FORMAT(1X,I5,I9,3I7,4I8,4I9,3I5,2I6,T2,2I1)
      IF(IFGA.EQ.0) WRITE(IUNT,2001) (MESG(I),I=1,6)
      IF(IFGA.EQ.1) WRITE(IUNT,2001) (MESG(I),I=1,3),MESG(7),
     +MESG(8)
```

```
2001 FORMAT(//5X,6A10)                                                  537
     WRITE(IUNT,2002)                                                   538
2002 FORMAT(4X,34 * ,*   24-4 ANALOG*,5X,3H *  ,7X,*24-4 DIGI*,        539
    +*TAL*,6X,3H * ,*24-2*,3H * 5X,*24-2 DIGITAL (SUMS + AVER*         540
    +*AGES + NO. OF OBSERVATIONS)*)                                     541
     WRITE(IUNT,2003)                                                   542
2003 FORMAT(4X,34 * ,*    AVERAGES*,7X,34 * ,7X,* AVERAGES*,           543
    +9X,34 * ,*AVAL*,34 * )                                             544
     DO 80 II=37,68                                                     545
     ISAN(II)=ISAN(II)+ISAN(II+32)                                      546
80   CONTINUE                                                           547
     DO 10 II=1,10                                                      548
     IF(ISAN(II+5).GT.0) MOUT(1,II)=FXXX(ISAN(II+6))                    549
10   CONTINUE                                                           550
     DO 20 II=1,8                                                       551
     DO 20 JJ=1,4                                                       552
     IF(JSAN(JJ,II).GT.0) MOUT(JJ+1,II)=FXXX(JSAN(JJ,II))               553
20   CONTINUE                                                           554
     DO 30 II=1,5                                                       555
     IF(ISAN(II).GT.0) MOUT(11,II)=FXXX(ISAN(II))                       556
30   CONTINUE                                                           557
     DO 40 II=1,8                                                       558
     IF(JSDA(1,II).GT.0) MOUT(6,II)=SHIFT(JSDA(1,II),-45)               559
     DO 40 JJ=1,4                                                       560
     IF(JSDA(JJ,II).GT.0) MOUT(JJ+6,II)=FXXX(JSDA(JJ,II))               561
40   CONTINUE                                                           562
     DO 50 II=1,12                                                      563
     MOUT(II+11,1)=ISDA(II).AND.MASKB                                   564
     MOUT(II+11,5)=ISDA(II+6).AND.MASKB                                 565
     IF(ISDA(II).GT.0) MOUT(II+11,3)=SHIFT(ISDA(II),-45)                566
     IF(ISDA(II+6).GT.0) MOUT(II+11,7)=SHIFT(ISDA(II+6),-45)            567
     IF(ISDA(II).GT.0) MOUT(II+11,2)=FXXX(ISDA(II))                     568
     IF(ISDA(II+6).GT.0) MOUT(II+11,6)=FXXX(ISDA(II+6))                 569
50   CONTINUE                                                           570
     DO 230 II=1,10                                                     571
     II1=NOUT(II)                                                       572
     WRITE(IUNT,2011) II,(MOUT(I,II),I=1,II1)                           573
230  CONTINUE                                                           574
60   CONTINUE                                                           575
     IFGB=JSDA(2,5).AND.MASKB                                           576
     IF(SHIFT(JSDA(2,5),-45).LT.4) IFGB=10                              577
     DO 70 II=1,100                                                     578
     IF(II.LE.68) KSAN(II)=KSAN(II)+ISAN(II)                            579
     ISAN(II)=0                                                         580
     IF(II.GT.44) GO TO 70                                              581
     IF(IFGA.EQ.1.AND.II.GT.12) KSDA(II)=KSDA(II)+ISDA(II)              582
     IF(IFGA.NE.1) KSDA(II)=KSDA(II)+ISDA(II)                           583
     IF(IFGB.LE.5.AND.II.GT.12) ICAL(II)=ICAL(II)+ISDA(II)              584
     IF(IFGA.EQ.1.AND.II.LE.12) ICAL(II)=ICAL(II)+ISDA(II)              585
     ISDA(II)=0                                                         586
70   CONTINUE                                                           587
```

```
      RETURN                                                            588
  190 CONTINUE                                                          589
C*****                                                                  590
C  PRINT OUT TOTALS FOR FILE PAGE                                       591
C*****                                                                  592
      DO 220 II=1,12                                                    593
      JOUT(II)=KSDA(II).AND.MASK8                                       594
      IF(II.GT.8) GO TO 220                                             595
      JOUT(II+12)=LSDA(1,II).AND.MASK8                                  596
      JOUT(II+20)=LSDA(2,II).AND.MASK8                                  597
      JOUT(II+28)=LSDA(3,II).AND.MASK8                                  598
  220 CONTINUE                                                          599
      WRITE(8,2005) IDT3,JOUT                                           700
 2005 FORMAT(1X,I5,12I10/(6X,8I10))                                     701
      WRITE(IUNT,2001) (MESG(I),I=1,3),MESG(8),MESG(10)                 702
      WRITE(IUNT,2002)                                                  703
      WRITE(IUNT,2003)                                                  704
      DO 100 II=1,10                                                    705
      IF(KSAN(II+5).GT.0) MOUT(1,II)=FXXX(KSAN(II+5))                   706
  100 CONTINUE                                                          707
      DO 120 II=1,8                                                     708
      DO 120 JJ=1,4                                                     709
      IF(LSAN(JJ,II).GT.0) MOUT(JJ+1,II)=FXXX(LSAN(JJ,II))              710
  120 CONTINUE                                                          711
      DO 130 II=1,6                                                     712
      IF(KSAN(II).GT.0) MOUT(11,II)=FXXX(KSAN(II))                      713
  130 CONTINUE                                                          714
      DO 140 II=1,8                                                     715
      IF(LSDA(1,II).GT.0) MOUT(6,II)=SHIFT(LSDA(1,II),-45)              716
      DO 140 JJ=1,4                                                     717
      IF(LSDA(JJ,II).GT.0) MOUT(JJ+6,II)=FXXX(LSDA(JJ,II))              718
  140 CONTINUE                                                          719
      DO 150 II=1,6                                                     720
      MOUT(II+11,1)=KSDA(II).AND.MASK8                                  721
      MOUT(II+11,5)=KSDA(II+6).AND.MASK8                                722
      IF(KSDA(II).GT.0) MOUT(II+11,3)=SHIFT(KSDA(II),-45)               723
      IF(KSDA(II+6).GT.0) MOUT(II+11,7)=SHIFT(KSDA(II+6),-45)           724
      IF(KSDA(II).GT.0) MOUT(II+11,2)=FXXX(KSDA(II))                    725
      IF(KSDA(II+6).GT.0) MOUT(II+11,6)=FXXX(KSDA(II+6))                726
  150 CONTINUE                                                          727
      DO 160 II=1,10                                                    728
      II1=MOUT(II)                                                      729
      WRITE(IUNT,2011) II,(MOUT(I,II),I=1,II1)                          730
 2011 FORMAT(2X,I2,2H *,5(1X,I3),2H * ,I3,1X,I4,                        731
     +1X,I7,1X,I6,1X,I1,3H * ,I4,2H * ,I10,5(1X,I9))                    732
  160 CONTINUE                                                          733
      DO 170 II=1,68                                                    734
      KSAN(II)=0                                                        735
      IF(II.GT.44) GO TO 170                                            736
      KSDA(II)=0                                                        737
  170 CONTINUE                                                          738
```

```
C*****                                                                  739
C  PRINT OUT CALIBRATION DATA SUMMARY                                  740
C*****                                                                  741
      GLEPA=0.                                                          742
      IF(SHIFT(ICAL(1),-45).EQ.0) GO TO 270                             743
      GLEPA=(FXXX(ICAL(3))-FXXX(ICAL(2)))/(FXXX(ICAL(3))-FXXX           744
     +(ICAL(4)))/GLEP                                                   745
  270 CONTINUE                                                          746
      WRITE(IUNT,2006) GLEPA                                            747
 2006 FORMAT(//5X,*LEPS CALIBRATION DATA.   12 CHANNELS WITH*           748
     +* SUMS AVERAGES + NUMBER OF OBSERVATIONS*                         749
     +/5X,*LEPS GAIN INDEX = *,F10.5)                                   750
      DO 240 II=1,12                                                    751
      JOUT(II)=ICAL(II).AND.MASKB                                       752
      JOUT(II+12)=0                                                     753
      IF(ICAL(II).GT.0) JOUT(II+12)=FXXX(ICAL(II))                      754
      JOUT(II+24)=SHIFT(ICAL(II),-45)                                   755
  240 CONTINUE                                                          756
      WRITE(IUNT,2007) JOUT                                             757
 2007 FORMAT(5X,12I8)                                                   758
      WRITE(IUNT,2008)                                                  759
 2008 FORMAT(//5X,*P - ALPHA CALIBRATION DATA.   8 CHANNELS*            760
     +* FOR COINCIDENCE MODE, FRONT AND BACK DETECTOR*)                 761
      DO 250 II=1,8                                                     762
      JOUT(II)=0                                                        763
      JOUT(II+8)=0                                                      764
      JOUT(II+16)=0                                                     765
      IF(JCAL(1,II).GT.0) JOUT(II)=FXXX(JCAL(1,II))                     766
      IF(JCAL(2,II).GT.0) JOUT(II+8)=FXXX(JCAL(2,II))                   767
      IF(JCAL(3,II).GT.0) JOUT(II+16)=FXXX(JCAL(3,II))                  768
  250 CONTINUE                                                          769
      WRITE(IUNT,2009) (JOUT(I),I=1,24)                                 770
 2009 FORMAT(5X,8I8)                                                    771
      DO 260 II=1,44                                                    772
      ICAL(II)=0                                                        773
  260 CONTINUE                                                          774
      RETURN                                                            775
      END                                                               776
```

```
      PROGRAM S2OMAD(BFILE,CFILE,EMFLE,YFILE,OUTPUT,                    10
     +TAPE1=BFILE,TAPE2=CFILE,TAPE4=EMFLE,TAPE8=YFILE,                  11
     +TAPE6=OUTPUT)                                                     12
C*****************************************************************    13
C*****                                                                 14
C  1975   PROGRAM.  E. ADLEMAN.  LAST ALTERATION 20 FEB 76             15
C  1975   FROM S2OMAD  18 DEC 75.                                      16
C*****                                                                 17
C*****                                                                 18
C  ICT1  COUNTS MASTER FRAMES READ                                     19
C  ICT3  COUNTS SECONDS OF DATA PROCESSED.                             20
C*****                                                                 21
C*****                                                                 22
C  PROGRAM REQUIRES 56300 CM STORAGE FOR LOADING.                      23
C*****                                                                 24
C*****************************************************************    25
      DIMENSION FHED(30),IHED(30),KDAT(27,18),IANN(100),                26
     +JDAT(65),LDAT(4,8),ATT(2,16),IDA(39),LABL(3)                      27
      EQUIVALENCE(FHED,IHED)                                            28
      COMMON/USEX/NMAX,IPRINT,IWHAT,ICOUNT,NPRINT,IECI(16),             29
     +LV(16),ALPHA(16),BETA(16),SUBERM(16),WRONUM(16),                  30
     +ZIOTA,ICALL                                                       31
      COMMON/D_OUT/ R_LV(16),DELTLV(16),R_ECI(16),DLTECI(16),           32
     +ALFLVX(16),ALFLVY(16),ALFLVZ(16),ALPHEX(16),ALPHEY(16),           33
     +ALPHEZ(16)                                                        34
      COMMON/OUTALL/PI,TWOPI,RD,DR,SI,CI,C,MU                           35
      COMMON /TIMERS/ JT(8),IT(8)                                       36
      COMMON/ICGEOG/OMEGA,THETA,XIOTA,RNM,XLT,XLG,ALT,XLTM,             37
     +XLGM                                                              38
C                                                                       39
C*****                                                                 40
C  INITIALIZE FILES AND CM CONSTANTS                                   41
C*****                                                                 42
C                                                                       43
      IDAT=DATE(ADAT)                                                   44
      ITIM=TIME(ATIM)                                                   45
      TC=SECOND(ZZZ)                                                    46
 2011 FORMAT(1H1,4X,*S3-2 PROCESSING BEGUN FOR S2OMA*,5X,A10,           47
     +5X,A10)                                                           48
      MNEMO=5LCFILE                                                     49
      REWIND1                                                           50
      REWIND2                                                           51
      REWIND4                                                           52
      REWIND8                                                           53
      IPRINT=0                                                          54
      IWHAT=2                                                           55
      ICOUNT=295                                                        56
      NPRINT=300                                                        57
      ICT3=0                                                            58
C*****                                                                 59
C  INITIALIZE USER CONSTANTS                                           60
```

```
C*****                                                          61
C                                                               62
      NMAX=16                                                   63
      DO 10 II=1,16                                             64
      LV(II)=1                                                  65
      IECI(II)=0                                                66
      SUBFRM(II)=II                                             67
      WRDNUM(II)=55                                             68
      ALPHA(II)=0.                                              69
      BETA(II)=0.                                               70
 10   CONTINUE                                                  71
C                                                               72
C*****                                                          73
C  CHECK EM DECK TIME CONSTANTS.                                74
C  READ TAPE FILE HEADER RECORD.                                75
C*****                                                          76
C                                                               77
      IFGA=0                                                    78
 70   CONTINUE                                                  79
      JSA=1                                                     80
      JSB=1                                                     81
      JSC=1                                                     82
      ICT1=0                                                    83
      ILN=0                                                     84
      IPG=0                                                     85
      ICALL=1                                                   86
      READ(1) JWD,JGC,(IHED(I),I=1,JWD)                         87
      IF(EOF(1)) 100,80                                         88
 80   CONTINUE                                                  89
      JSD=0                                                     90
      ICT3=0                                                    91
      WRITE(8,2011) ADAT,ATIM                                   92
      ENCODE(30,4001,LABL) (IHED(I),I=1,3),IHED(6)              93
 4001 FORMAT(R4,R5,2X,A10,1X,A8)                                94
 2006 FORMAT(1H1)                                               95
      TMA=0.                                                    96
      IFGA=0                                                    97
      CALL OM(KABORT,KT3ORT)                                    98
      ICALL=ICALL+1                                             99
      IF(KABORT.EQ.1) GO TO 110                                 100
      CALL TDAT3(IT,TMB,MON,HR,JD,08)                           101
      TMA=TMB                                                   102
      WRITE(6,2014) (IT(I),I=1,6)                               103
      WRITE(6,2014) (IT(I),I=1,6)                               104
 2014 FORMAT(5X,*  EM TIMES*,5I5,I8,I10,I4)                     105
C*****                                                          106
C  CHECK TAPE TIME CONSTANTS                                    107
C*****                                                          108
      GMT1=FLOAT(IHED(19))/1000.                                109
      TRAT=FLOAT(IHED(18))/FLOAT(IHED(20))/1000.                110
      GMTZ=GMT1-FLOAT(IHED(17))*TRAT                            111
```

```
      IF(IHED(30).NE.SLBFILE) STOP                                      112
      IHED(30)=SLBFILE                                                  113
      CALL TDATB(IT,TMA,MON,FHED(27),IHED(26),118)                      114
      WRITE(8,2015) (IT(I),I=1,6)                                       115
      WRITE(6,2015) (IT(I),I=1,6)                                       116
 2015 FORMAT(5X,*TAPE TIMES*,5I5,F8,I10,I4)                             117
 1001 FORMAT(1H1,7A10,F15.3,F10.1,5X,A10)                               118
   20 CONTINUE                                                          119
C*****                                                                  120
C  READ MASTER FRAME                                                    121
C*****                                                                  122
      READ(1) IWC,IGC,((KDAT(I,J),I=1,IWC),J=1,IGC)                    123
      IF(EOF(1)) 100,30                                                 124
   30 CONTINUE                                                          125
      ICT1=ICT1+1                                                       126
      HR=(GMTZ+FLOAT(KDAT(1,1))*TRAT)/3600.                             127
      KDAT(27,18)=10HBLK RECORD                                         128
      CALL TDATB(IT,TM,MON,HR,IHED(26),113)                             129
      KABORT=KTBORT=0                                                   130
      CALL OM(KABORT,KTBORT)                                            131
      IF(KABORT.EQ.1) GO TO 110                                         132
      IF(KTBORT.EQ.1) GO TO 51                                          133
      ICALL=ICALL+1                                                     134
      IGC=IGC+1                                                         135
      KDAT(27,IGC)=10HATT RECORD                                        136
   21 CONTINUE                                                          137
      CALL GEOGA(TM)                                                    138
      IF(ICALL.NE.3) GO TO 60                                           139
      FHED(9)=ALT                                                       140
      FHED(11)=XLF                                                      141
      FHED(21)=XIDTA                                                    142
      FHED(22)=OMEGA                                                    143
      FHED(23)=THETA                                                    144
      FHED(24)=XLG                                                      145
      WRITE(2) JWC,JGC,(FHED(I),I=1,JWC)                                146
   60 CONTINUE                                                          147
C                                                                       148
C*****                                                                  149
C  SETUP AND PRINT OUT EPHEMERIS INFORMATION                            150
C*****                                                                  151
C                                                                       152
      IF(MOD(ICT1,4).NE.1) GO TO 41                                     153
      IF(JSA.EQ.0.AND.JSB.EQ.0) GO TO 41                                154
      ILN=ILN+1                                                         155
      IF(MOD(ILN,50).NE.1) GO TO 40                                     156
      IPG=IPG+1                                                         157
      WRITE(8,2001) HR,MON,ADAT,IPG                                     158
      WRITE(8,2004) LABL,OMEGA,XIDTA                                    159
 2004 FORMAT(5X,*ORBIT ID = *,3A10,10X,*SATELLITE RT.*                  160
     +* ASCENSION = *,F10.3,*  INCLINATION = *,F10.3)                   161
 2001 FORMAT(1H2//5X,*S3-2 EPHEMERUS FOR*,F10.4,                        162
```

```
     +1X,A10,7X,*COMPUTER RUN OF *,A10,7X,*PAGE NO. *,I4)                  163
      WRITE(8,2002)                                                        164
 2002 FORMAT(/T25,*GEOCENTRIC*,T60,*GEOMAGNETIC*/                          165
     +10X,*TIME*,T20,*LAT*,T30,*LONG*,T38,*ALT*,T48,                       166
     +*THETA*,T59,*LATM*,T68,*LONM*,T77,*R(KM)*)                           167
  40 CONTINUE                                                              168
      RKM=RNM*1.85325                                                      169
      WRITE(8,2003) IT(3),IT(4),IT(5),XLT,XLG,ALT,THETA,                   170
     +XLTM,XLGM,RKM                                                        171
 2003 FORMAT(7X,I2,2I3,F5.3,F10.3,F9.3,5F10.3)                             172
  41 CONTINUE                                                              173
      II1=IGC-2                                                            174
      DO 90 II=1,II1                                                       175
      ICT3=ICT3+1                                                          176
      CALL S2UPB(KDAT(1,II),JDAT,KDAT(1,17))                               177
 2012 FORMAT(2X,I7,3I6,3I5,2X,I5,I8,3I5,2F10.3)                            178
      ATT(1,II)=RLLV(II)*RD                                                179
      ATT(2,II)=DELTLV(II)*RD                                              180
  90 CONTINUE                                                              181
      II3=IGC-1                                                            182
      CALL S2HKB(KDAT(1,1),JDAT,KDAT(1,II3),IANN)                          183
      ISA=                                                                 184
      ISB=                                                                 185
      ISC=                                                                 186
      DO 150 II=1,6                                                        187
      ISA=ISA+IANN(II)                                                     188
 150  CONTINUE                                                             189
      DO 160 II=7,16                                                       190
      ISB=ISB+IANN(II)                                                     191
 160  CONTINUE                                                             192
      DO 170 II=17,36                                                      193
      ISC=ISC+IANN(II)                                                     194
 170  CONTINUE                                                             195
      JSA=                                                                 196
      JSB=                                                                 197
      JSC=                                                                 198
      IF(ISA.GT.800) JSA=1                                                 199
      IF(ISB.GT.1150) JSB=1                                                200
      IF(ISC.GT.2000) JSC=1                                                201
      JSD=JSA+JSB+JSC                                                      202
      IF(JSD.EQ.0) GO TO 51                                                203
      II2=                                                                 204
      DO 50 II=1,II1                                                       205
      DO 50 JJ=1,2                                                         206
      II2=II2+1                                                            207
      IDA(II2)=100.*ATT(JJ,II)+.5                                          208
  50  CONTINUE                                                             209
C*****                                                                     210
C  WRITE MASTER FRAME OUTPUT                                               211
C*****                                                                     212
      IDA(1)=A_T+.5                                                        213
```

```
      IDA(2)=100.*XLT+.5                                                214
      IDA(3)=100.*XLG+.5                                                215
      IDA(4)=100.*THETA+.5                                              216
      IDA(5)=100.*OMEGA+.5                                              217
      IDA(6)=100.*XLTM+.5                                               218
      IDA(39)=100.*XLGM+.5                                              219
      CALL S2P<3(<DAT(1,IGC),IDA,39)                                    220
 91   CONTINUE                                                          221
      KTBORT=0                                                          222
      IF(JSO.NE.0) WRITE(2) IWC,IGC,((<DAT(I,J),I=1,IWC),J=1,IGC)
      GO TO 20                                                          224
 110  CONTINUE                                                          225
      WRITE(6,2011) ICALL                                               226
 100  CONTINUE                                                          227
C*****                                                                 228
C  END OF FILE PROCESSING                                              229
C*****                                                                 230
      IEGA=IEGA+1                                                       231
      IF(IEGA.EQ.1) ENDFILE2                                            232
      IF(IEGA.GT.3) GO TO 70                                            233
 120  CONTINUE                                                          234
      WRITE(8,2008)                                                     235
      WRITE(6,2008)                                                     236
 2008 FORMAT(2X,*END OF FILE ON S2OMA*)                                 237
      TTT=SECOND(ZZZ)-TO                                                238
      WRITE(8,2009) TTT                                                 239
      WRITE(6,2009)                                                     240
 2009 FORMAT(2X,*TOTAL PROCESSING TIME FOR S2OMA IS*,F10.3)             241
 2010 FORMAT(2X,*JOB IS BEING ABORTED BY <ABORT AFTER CALL NO.*,I5)
      END                                                               243
```

```
      SUBROUTINE OM (KABORT,KTBORT)                                          244
C                                                                            245
C*****************************************************************         246
C*****                                                                       247
C  1975   SUBPROGRAM.  E. HOLEMAN.  LAST ITERATION 21 FEB 76                 248
C  1975   S3-2 DATA REDUCTION SYSTEM.  FROM 3C VERSION 74274                 249
C  1975   15 DEC 75                                                          250
C                                                                            251
C        MAIN SUBROUTINE OF OUTPUT MODULE     VERSION 74091                  252
C        BC MODIFICATION      VERSION 74274                                  253
C        EC MODIFICATION      VERSION 75345                                  254
C                                                                            255
C*****************************************************************         256
C                                                                            257
      REAL   IOTA,MU                                                         258
      DIMENSION  _V(16),IECI(16),JT(16),                                     259
     *           CNU(16,3),CPHI(16,3),CPSI(16,3),                            260
     *           TR1(3),TR2(3),TRNU(3),TT/A(3),TOME(3),                      261
     *           SUBFRM(16),WRDNUM(16),ALPHA(16),BETA(16),                   262
     *           ALPH1(16),XP(16),YP(16),ZP(16),ADUM(8)                      263
      DIMENSION RANGE(3)                                                     264
      DIMENSION SEC(30),X0(30),Y0(30),Z0(30),DX0(30),DY0(30),DZ0(30)
      DIMENSION TLIMIT(30),DENOM(30),FACT)P(30),P0(30),RV0(30),RN0(30),
     CA0(30),SI0(30),CI0(30),HXY0(30),THETA0(30)                             267
      DIMENSION OMEGA0(30),DOMEG0(30)                                        268
      REAL IOTA0(30)                                                         269
      COMMON/TIMERS/JTIMEE,JTIMEU                                            270
      COMMON/ JSEK /NMAX,IPRINT,IWHAT,ICOUNT,NPRINT,IECI,                    271
     +LV,ALPHA,BETA,SJBFRM,WRDNUM,XICTA,ICALL                                272
      COMMON /IOGEOG/ OMEG,THET,XIOT,RR,ALT,AXLG,AALT,XLTM,XLGM
      DIMENSION JTIMEJ(8), JTIMEE(8), JTIMEP(8)                              274
      COMMON/OJTALL/PI,TWOPI,RD,DR,SI,CI,J,MU                                275
      COMMON/SPIN/OMEGAS                                                     276
      COMMON/OMNWTN/XZ,YZ,ZZ,XDZ,YDZ,ZDZ,DEN,FAC,RV,RN,A,IOTA,HXY,
     C    OMEGAP,OMEGDT,RP                                                  278
      COMMON/OUTOJT/ X,Y,Z,XD,YD,ZD,R,THETA                                  279
      COMMON/OUTNWT/EPSLNN,ITERBN                                            280
      COMMON/OUTO_/SP,CP,SS,CS,ST,CT,RNU,OMEGA,PHI0,PSI0,PHIM,PSIM,J
      COMMON/DLOUT/RLLV(16),DELTLV(16),RLECI(16),DLTECI(16),                 282
     *       ALELVX(16),ALELVY(16),ALELVZ(16),                               283
     *       ALPHEX(16),ALPHEY(16),ALPHEZ(16)                                284
      DATA TOFF/50./                                                         285
      DALE1 = 0.0                                                            286
      JZ = 1                                                                 287
      KTBORT=0                                                               288
      ICTEM=0                                                                289
      IF(ICALL.NE.1) GO TO 51                                                290
C*****                                                                       291
C  ZERO ERROR CONTROL CONSTANTS.                                             292
C*****                                                                       293
      KABT=500                                                               294
```

```
      LABT=600                                                          295
      KCOUNT=0                                                          296
      EPSLNN = .000000001                                               297
      ITERMN = 25                                                       298
      PRINT 1041                                                        299
 1041 FORMAT(1H1,OUTPUT MODULE - OM)                                    300
      PI=3.14159265358979                                               301
      TWOPI = 2.*PI                                                     302
      RD = 180./PI                                                      303
      DR = PI/180.                                                      304
C     MU=1407645000000000.                                              305
      C=6076.1155                                                       306
C                                                                       307
      MU=1.407645E16                                                    308
C        READ ALL DATA REQUIRED FOR THE OUTPUT MODULE.                  309
C        NOTATION...                                                    310
C           INPUT DATA SUPPLIED BY EXPERIMENTER--                       311
C              NMAX = NUMBER OF EXPERIMENTER WORDS FOR WHICH ATTITUDE
C                     OR EPHEMERIS IS REQUIRED.                        313
C              LV(I) = 1 IF LOCAL-VERTICAL ATTITUDE FOR WORD I IS
C                        REQUIRED.                                      315
C                    = 0 OTHERWISE.                                     316
C              IECI(I) = 1 IF ECI ATTITUDE FOR WORD I IS REQUIRED,
C                      = 0 OTHERWISE.                                   318
C              IPRINT = PRINTOUT FREQUENCY CONTROL                      319
C                         -1 = NEVER                                    320
C                          0 = EVERY NPRINTH CALL                       321
C                          1 = EVERY CALL                               322
C              IWHAT  = CONTROL FOR DIRECTION COSINES AND/OR            323
C                   RT. ASCENSION AND DECLINATION OUTPUT                324
C                         IWHAT = 1  - DIR COS ONLY                     325
C                         IWHAT = 2 - LAMDA AND DELTA ONLY              326
C                         IWHAT = 3 - BOTH                              327
C              SUBFRM(I) = IDENTIFIER OF SUBFRAME IN MAIN FRAME FOR
C                        WORD I.                                        329
C              WRDNUM(I) = IDENTIFIER OF WORD NUMBER I IN SUBFRAME.
C              ALPHA(I) = FIRST EULER ANGLE DEFINING ATTITUDE OF
C                       EXPERIMENTER'S EARTH SENSOR W.R.T. SATELLITE
C                       BODY AXES.                                     333
C                 BETA(I)  = SECOND EULER ANGLE.                       334
C           INPUT DATA FROM ESTIMATION MODULE--                        335
C              NCNU  = NUMBER OF COEFFICIENTS FOR CURVE FIT OF NU.
C              NCPHI = NUMBER OF COEFFICIENTS FOR CURVE FIT OF PHIM.
C              NCPSI = NUMBER OF COEFFICIENTS FOR CURVE FIT OF PSIM.
C              CNU   = COEFFICIENTS OF CURVE FIT FOR NU.               339
C              CPHI  = COEFFICIENTS OF CURVE FIT FOR PHIM.             340
C              CPSI  = COEFFICIENTS OF CURVE FIT FOR PSIM.             341
C              RNUAVG = AVERAGE OF ALL VALUES OF NU.                   342
C              TAVG  = AVERAGE OF ALL TIMES THAT HORIZON SENSOR
C                      LINE OF SIGHT IS ALONG VERTICAL.                344
C              OMEGAS = AVERAGE SPIN RATE                              345
```

```
C              TZ      = TIME AT WHICH INITIAL EMPHERIS DATA APPLIES
C                                                                      347
      PRINT 1000                                                       348
 1000 FORMAT(///1H ,29HDATA SUPPLIED BY EXPERIMENTER ///)              349
C                                                                      350
C        READ THE EXPERIMENTER*S DATA.                                 351
C                                                                      352
      PRINT 1220, (JTIME(I),I=1,5)                                     353
 1220 FORMAT(1X,4HYEAR,I5,4X,3HDAY,I4,4X,4HHOUR,I3,4X,6HMINUTE,I3,4X,  354
     C   7HSECONDS,I13)                                               355
C 1001READ(5     ,1200) NMAX, IPRINT, IWHAT                          356
 1200 FORMAT(3I2)                                                     357
      IF(IPRINT.GT.0) NPRINT=IPRINT                                    358
      IATTD = 0                                                        359
      DO 15 I = 1,NMAX                                                 360
C 1001READ(5     ,1010) LV(I), IECI(I), SUBFRM(I), WRDNUM(I),        361
C 1001*              ALPHA(I), BETA(I)                                 362
 1010 FORMAT (2I2,6X4F10.0)                                           363
      IATTD = IATTD + IABS(LV(I)) + IABS(IECI(I))                      364
      PRINT 1500, LV(I), IECI(I), SUBFRM(I), WRDNUM(I),                365
     *ALPHA(I)   ,   BETA(I)                                          366
 1500 FORMAT(1X,3HLV    , I1, 2X,4HECI     , I1, 1SX,                 367
     *      3X,7HSUBFRM    , F4.0, 3X,7HWRDNUM    , F5.0, 3X,6HALPHA  368
     *      F7.3, 3X,5HBETA    , F7.3)                               369
C                                                                      370
C        CORRECT FOR THE LOCATION OF THE WORD IN THE DATA FRAME.       371
C                                                                      372
C 1115 DT(I) = ((SUBFRM(I)-1.)*62.5 + (WRDNUM(I)-1.)*.46628125)/1000.
      DT(I)=SUBFRM(I)-0.5                                              374
 15   CONTINUE                                                         375
C                                                                      376
C     ***************************************                          377
C        READ THE ESTIMATION MODULE DATA.                              378
C     THIS INPUT BLOCK PUNCHED FROM THE E.M. PROGRAM                   379
C        READ IN THE EPHEMERIDES FROM EM                               380
C                                                                      381
      PRINT 110                                                        382
  110 FORMAT(///1X,34HDATA SUPPLIED BY ESTIMATION MODULE//)            383
C                                                                      384
      KARDSQ = 1                                                       385
 50   CONTINUE                                                         386
      READ(4,1001) ADJM                                                387
 1001 FORMAT(8A10)                                                    388
 1105 FORMAT(6X,I4,6X,I3,9X,I2,11X,I2,10X,I2,21X,I2)                  389
      IF(EOF(4)) 660,60                                                390
 60   CONTINUE                                                         391
      DECODE(80,4001,ADJM) KARDN                                       392
 4001 FORMAT(73X,I2)                                                  393
      ICTEM=ICTEM+1                                                    394
      IF(ICTEM.GT.50) GO TO 660                                        395
      IF(KARDN.NE.1) GO TO 50                                          396
```

```
      DECODE(80,1100,ADUM) (JTIMEE(I),I=1,4),NVECT,KARDN                397
      ICTEM=0                                                           398
      JTIMEE(5)=0                                                       399
      JTIMEE(6)=0                                                       400
      PRINT 1220, (JTIMEE(I),I=1,3)                                     401
      CALL TDATE(JTIMEE,TIMM,MON,HR,JD,DB)                              402
      JTIMEU(1)=JTIMEE(1)                                               403
      JTIMEU(2)=JTIMEE(2)                                               404
      JTIMEU(3)=JTIMEE(3)                                               405
      JTIMEU(4)=JTIMEE(4)                                               406
      JTIMEU(5)=JTIMEE(5)                                               407
      JTIMEU(6)=JTIMEE(6)                                               408
      JTIMEU(7)=JTIMEE(7)                                               409
      JTIMEU(8)=JTIMEE(8)=0                                             410
      DO 21 JJ = 1,NVECT                                                411
      KARDSQ = KARDSQ + 1                                               412
      READ(4,1110) SEC(JJ),XC(JJ),YC(JJ),ZC(JJ),KARDN                   413
      IF(KARDSQ .NE. KARDN) GO TO 660                                   414
      KARDSQ = KARDSQ + 1                                               415
      READ(4,1120) DXC(JJ),DYC(JJ),DZC(JJ),KARDN                        416
      IF(KARDSQ .NE. KARDN) GO TO 660                                   417
      PRINT 610, SEC(JJ),XC(JJ),YC(JJ),ZC(JJ)                           418
      PRINT 615, DXC(JJ),DYC(JJ),DZC(JJ)                                419
  610 FORMAT(4H SEC,F13.6,4H    X,F17.6,4H    Y,F17.6,4H    Z,F17.6)
  615 FORMAT(          17X,4H  XD,F17.9,4H  YD,F17.9,4H  ZD,F17.9)
 1110 FORMAT(4X,F13.6,4X,F16.6,4X,F16.6,4X,F16.6,1X,I2)                 422
 1120 FORMAT(         21X,F16.9,4X,F16.9,4X,F16.9,1X,I2)                423
   21 CONTINUE                                                          424
      KARDSQ = KARDSQ + 1                                               425
      READ(4,1125) TFIRST,TLAST,KARDN                                   426
      IF(KARDSQ .NE. KARDN) GO TO 660                                   427
 1125 FORMAT(23X,F13.6,3X,F13.6,25X,I2)                                 428
C                                                                       429
C                                                                       430
C     DETERMINE ORBITAL PARAMETERS FOR EACH STATE VECTOR                431
C                                                                       432
      PRINT 1041                                                        433
      DO 620 JJ=1,NVECT                                                 434
      CALL ORBIT(XC(JJ),YC(JJ),ZC(JJ),DXC(JJ),DYC(JJ),DZC(JJ),DENOM(JJ),
     1FACTOR(JJ),RC(JJ),RVC(JJ),RVO(JJ),AI(JJ),SIO(JJ),CIO(JJ),         436
     2CIOTA(JJ),HXY(JJ),THETAC(JJ),OMEGA(JJ),DOMEG(JJ),JJ,SEC(JJ))
  620 CONTINUE                                                          438
C                                                                       439
C     COMPUTE EPHEMERIS ZONE BOUNDARIES                                 440
      NMINUS = NVECT - 1                                                441
      IF(NVECT .EQ. 1) GO TO 605                                        442
      DO 600 IJ = 1,NMINUS                                              443
      TLIMIT(IJ) = 0.5*(SEC(IJ) + SEC(IJ+1))                            444
      PRINT 645, IJ,TLIMIT(IJ)                                          445
  600 CONTINUE                                                          446
  605 TLIMIT(NVECT) = TLAST                                             447
```

```
      KNDX = 0                                                          448
  645 FORMAT(10X,7HTLIMIT(,I2,3H) =,E21.9                               449
C                                                                       450
C                                                                       451
C                                                                       452
      KARDSQ = KARDSQ + 1                                               453
      READ(4,800) IC,NOC,IORD,TIM1,TIM2,KARDN                           454
      IF (KARDSQ .NE. KARDN) GO TO 660                                  455
      DO 61 I=1,NOC                                                     456
      IF (I .EQ. 1) GO TO 777                                           457
      KARDSQ = KARDSQ + 1                                               458
      READ (4,800) III,JJJ,KKK,TIM1,TIM2,KARDN                          459
      IF (KARDSQ .NE. KARDN) GO TO 660                                  460
  777 TR1(I) = TIM1                                                     461
      TR2(I) = TIM2                                                     462
      RANGE(I) = TIM2 - TIM1                                            463
      KARDSQ = KARDSQ + 1                                               464
      READ (4,801) TRNU(I),TTVA(I),TOME(I),KARDN                        465
      IF (KARDSQ .NE. KARDN) GO TO 660                                  466
      JH = 0                                                            467
   62 JL = JH + 1                                                       468
      JH = JH + 3                                                       469
      IF (JL.GT.IORD) GO TO 63                                          470
      KARDSQ = KARDSQ + 1                                               471
      READ (4,802) (CNU(J,I),J=JL,JH),KARDN                             472
      IF (KARDSQ .NE. KARDN) GO TO 660                                  473
      GO TO 62                                                          474
   63 JH = 0                                                            475
   64 JL = JH + 1                                                       476
      JH = JH + 3                                                       477
      IF (JL.GT.IORD) GO TO 65                                          478
      KARDSQ = KARDSQ + 1                                               479
      READ (4,802) (CPHI(J,I), J=JL,JH),KARDN                           480
      IF (KARDSQ .NE. KARDN) GO TO 660                                  481
      GO TO 64                                                          482
   65 JH = 0                                                            483
   66 JL = JH + 1                                                       484
      JH = JH + 3                                                       485
      IF (JL.GT.IORD) GO TO 67                                          486
      KARDSQ = KARDSQ + 1                                               487
      READ (4,802) (CPST(J,I), J=JL,JH),KARDN                           488
      IF (KARDSQ .NE. KARDN) GO TO 660                                  489
      GO TO 66                                                          490
   67 CONTINUE                                                          491
   61 CONTINUE                                                          492
      KARDSQ = KARDSQ + 1                                               493
      READ(4,805) ETA1D,ETA2D,KARDN                                     494
      IF(KARDN .NE. KARDSQ) GO TO 660                                   495
  800 FORMAT(5X,I1,4X,I1,9X,I2,5X,F14.6,5(,F14.6,18X,I2)                496
  801 FORMAT(3X,F17.10,5X,F17.10,5X,F17.10,14X,I2)                      497
  802 FORMAT(8X,E17.10,8X,E17.10,8X,E17.10,3X,I2)                       498
```

```
   35 FORMAT(7X,F12.5,8X,F12.5,38X,I3)
C
      CALL DES2(CNU,CPHI,CPSI,NOC,IORD)
C
C     ****************************************** ***
      GO TO 39
  660 CONTINUE
      WRITE (6,680) KARDSO,KARDN
  680 FORMAT(21H    UENCE ERROR, CARD,I3,17H CONTAINED NUMBER,I3//)
   38 KABORT=1
      RETURN
   39 CONTINUE
C        FIND THE SINES AND COSINES OF THE INVARIANT ANGLE ETA.
      ETA = ETA1D * DR
      ETA2 = ETA2D * DR
      SE2 =  SIN(ETA2)
      CE2 =  COS(ETA2)
      SE =  SIN(ETA)
      CE =  COS(ETA)
C
C        PERFORM THE PRELIMINARY TRANSFORMATIONS CORRESPONDING TO
C        THE INVARIANT ANGLES ALPHA, BETA, AND ETA
C
      DO 40 I = 1,NMAX
      ALPH1(I) = ALPHA(I) + DALFA
      CA =  COS(ALPH1(I)*DR)
      SA =  SIN(ALPH1(I)*DR)
      CB =  COS(BETA(I)*DR)
      SB =  SIN(BETA(I)*DR)
      XP(I) = CA*CB*CE2 - SE2*(SE*SA*CB + CE*SB)
      YP(I) = (SE*SA*CB + CE*SB)*CE2 + CB*CA*SE2
      ZP(I) = -CE*SA*CB + SE*SB
   40 CONTINUE
C     NBP IS NUMBER OF PRINT BLOCKS PER PAGE
C
C     IF PRINTOUT IS NOT DESIRED, SKIP THIS SECTION
      KDENOM = 0
      IF(IPRINT .LT. 0) GO TO 650
      KCOORD = 0
      DO 661 KK = 1,NMAX
      KCOORD = KCOORD + IECI(KK) + LV(KK)
  661 CONTINUE
      IF(KCOORD .EQ. 0) GO TO 655
      KWHAT = 1
      IF(IWHAT .EQ. 3) KWHAT = 2
      KDENOM = KCOORD*KWHAT + NMAX + 3
  655 CONTINUE
C     FOR POSITION
      KDENOM = KDENOM + 8
      NBP = 54/KDENOM
      IF(NBP .EQ. 0) NBP = 1
```

```
 650  CONTINUE
      NB=NBP
      RETURN
   51 CONTINUE
C*****************************************************************
C*****
C  NORMAL ENTRY POINT TO SUBPROGRAM.
C*****
C*****************************************************************
      S       =      FLOAT(JTIMEU(7)  - JTIMEE(7))
     C              + FLOAT(JTIMEU(6)  - JTIMEE(6))/1000000.
      IF((TLFRST-S)*(S-TTLAST)) 53,52,52
   53 CONTINUE
      IF(KCOUNT.LT.30) PRINT 1510, ICALL
 1510 FORMAT(42H TIME OF CALL OUTSIDE RANGE OF ESTIMATE  ,I10)
      KCOUNT=KCOUNT+1
      KTBORT=1
      IF(KCOUNT.GE.KABT) GO TO 555
      RETURN
   52 CONTINUE
C
      IF(NVECT .EQ. 1) GO TO 635
      DO 625 IJ = 1,NMINUS
      IF(S - TLIMIT(IJ)) 630,630,625
 625  CONTINUE
 635  IJ = NVECT
 630  CONTINUE
      IF(KNDX .EQ. IJ) GO TO 640
      THETA = THETA0(IJ)
      XZ = X0(IJ)
      YZ = Y0(IJ)
      ZZ = Z0(IJ)
      XDZ = DX0(IJ)
      YDZ = DY0(IJ)
      ZDZ = DZ0(IJ)
      DEN = DENOM(IJ)
      FAC = FACTOR(IJ)
      RV = RV0(IJ)
      RN = RN0(IJ)
      A = A0(IJ)
      SI = SI0(IJ)
      CI = CI0(IJ)
      HXY = HXY0(IJ)
      IOTA = IOTA0(IJ)
      OMEGAZ = OMEGA0(IJ)
      OMEGOT = DOMEG0(IJ)
      RZ = R0(IJ)
      KNDX = IJ
 640  CONTINUE
C
C
```

```
C        START OF MAIN LOOP                                              501
C                                                                        502
         TDEL=S-SEC(IJ)                                                  503
         OMEG=OMEGAZ+OMEGDT*TDEL                                         504
         OMEG=OMEG*RD                                                    505
         CALL NWTN(TDEL,<ABORT),RETURNS(38)                              506
         THET=THETA*RD                                                   507
         XIOT=ATAN2(SI,CI)*RD                                            508
         RR=R                                                            509
       2 J = 1                                                           510
C                                                                        511
C        CORRECT THE TIME FOR LOCATION IN MAIN FRAME.                    512
C                                                                        513
       3 TS = DT(J) + S                                                  514
C                                                                        515
C        FIND THE TIME FROM THE INITIAL TIME OF EPHEMERIS ACQUISITION.   516
C                                                                        517
       4 TDELT = TS - SEC(IJ)                                            518
C                                                                        519
C        UPDATE OMEGA.                                                   520
C                                                                        521
         OMEGA = OMEGAZ + OMEGDT*TDELT                                   522
         OMEGAD = OMEGA*RD                                               523
C                                                                        524
C        COMPUTE PRESENT VALUES OF EPHEMERIS.                            525
C                                                                        526
         CALL NWTN(TDELT,KABORT),RETURNS(38)                             527
C                                                                        528
C        UPDATE THETA                                                    529
C                                                                        530
         THETAD = THETA*RD                                               531
C                                                                        532
         IF(J .GT. NMAX) GO TO 5                                         533
C                                                                        534
C        IF NO ATTITUDE IS REQUIRED, GO TO 100                           535
C                                                                        536
         IF(LV(J) + IECI(J)) 100, 100, 5                                 537
C                                                                        538
       5 CONTINUE                                                        539
C                                                                        540
C        ATTITUDE IS REQUIRED.  FIND THE VALUE OF TIME FOR THE CURVE FIT 541
C                                                                        542
C                                                                        543
         J7 = 1                                                          544
         IF (NOC.EQ.1) GO TO 68                                          545
         IF (TS.GT.TR1(2).AND.TS.LE.TR2(2)) J7 = 2                       546
         IF (NOC.EQ.2) GO TO 68                                          547
         IF (TS.GT.TR1(3).AND.TS.LE.TR2(3)) J7 = 3                       548
      68 CONTINUE                                                        549
         RNUAVG = TRNU(J7)                                               550
         TVAVG  = TTVA(J7)                                               551
```

```
      OMEGAS = TOME(JZ)                                                 552
C        FIND PHIM, PSIM, AND THE DECIMAL PART OF NU                    553
C                                                                       554
C                                                                       555
      TSS = TS - TVAVG                                                  556
      CALL FIT(PHIMO,RANGE(JZ),CPHI(1,JZ),IORD,TSS)                     557
      CALL FIT(PSIMO,RANGE(JZ),CPSI(1,JZ),IORD,TSS)                     558
      CALL FIT(DECNU,RANGE(JZ),CNJ(1,JZ),IORD,TSS)                      559
      PHIM = PHIMO*DR                                                   560
      PSIM = PSIMO*DR                                                   561
C                                                                       562
C                                                                       563
C        FIND NU IN REVOLUTIONS.                                        564
C                                                                       565
      RNU = OMEGAS * (TS- TVAVG) / TWOPI + RNUAVG + 0.5                 566
      INU = RNJ                                                         567
      FINU = INU                                                        568
      RNUREV = RNJ - FINU - DECNU                                       569
 7685 CONTINUE                                                          570
      IF ( RNUREV .GE. 1.0 ) RNUREV = RNUREV - 1.0                      571
      IF ( RNUREV .LT. 0.0 ) RNUREV = RNUREV + 1.0                      572
      IF ( RNUREV .GE.  1.0 ) GO TO 7685                                573
      IF ( RNUREV .LT.  0.0 ) GO TO 7685                                574
C                                                                       575
C        FIND NU IN RADIANS.                                            576
C                                                                       577
      RNU = RNUREV*TWOPI                                                578
C                                                                       579
C        FIND NU IN DEGREES                                             580
      RNUDEG = RNUREV*360.                                              581
C                                                                       582
C        FIND PHIM AND PSIM IN DEGREES FOR OUTPUT                       583
C                                                                       584
C                                                                       585
C        COMPUTE TRIG FUNCTIONS OF ANGLES FOR LAMDEL                    586
      CTHETA =  COS(THETA)                                              587
      CT = CTHETA                                                       588
      STHETA = SIN(THETA)                                               589
      ST = STHETA                                                       590
      CPHIM  = COS(PHIM)                                                591
      SPSIM  = SIN(PSIM)                                                592
      SPHIM  = SIN(PHIM)                                                593
      CPSIM  = COS(PSIM)                                                594
C                                                                       595
C        FIND PHI AND PSI IN LOCAL-VERTICAL COORDINATES (PHIO AND PSIO).
C                                                                       597
      SS = SPSIM*CT - SPHIM*ST*CPSIM                                    598
      PSIO =  ASIN(SS)                                                  599
      CS =  COS(PSIO)                                                   700
      TOP = ST*SPSIM + CPSIM*CT*SPHIM                                   701
      BOT = CPHIM*CPSIM                                                 702
```

```
      PHI0 =  ATAN(TOP/BOT)                                              703
      IF(BOT) 10,11,11                                                   704
   10 PHI0 = PHI0 + PI                                                   705
      GO TO 13                                                           706
   11 IF(TOP) 12,13,13                                                   707
   12 PHI0 = PHI0 + TWOPI                                                708
   13 CONTINUE                                                           709
      SP =  SIN (PHI0)                                                   710
      CP =  COS(PHI0)                                                    711
      PHI0 = PHI0*RD                                                     712
      PSI0 = PSI0*RD                                                     713
      IF(J .GT. NMAX) GO TO 200                                          714
C                                                                        715
C        FIND THE RIGHT ASCENSION AND DECLINATION OF THE EXPERIMENTER*S
C        SENSOR IN ECI AND/OR LOCAL-VERTICAL COORDINATES.                717
C                                                                        718
      CALL LAMDEL(XP(J),YP(J),ZP(J),LV(J),IECI(J))                       719
C                                                                        720
  100 J = J + 1                                                          721
C                                                                        722
C        IF THIS IS THE EXPERIMENTER*S LAST WORD IN MAIN FRAME, PRINT
C        OUT THE RESULTS  - IF REQUIRED                                  724
      IF(J .LE. NMAX) GO TO 3                                            725
      TS = S                                                             726
      GO TO 4                                                            727
C                                                                        728
  200 CONTINUE                                                           729
C                                                                        730
C        SEE IF THE RESULTS ARE TO BE PRINTED                            731
      IF(IPRINT)500,300,300                                              732
  300 IF(ICOUNT - NPRINT) 325, 350, 350                                  733
  325 ICOUNT = ICOUNT + 1                                                734
      GO TO 500                                                          735
  350 ICOUNT = 1                                                         736
C                                                                        737
C        OUTPUT IS REQUIRED AT THIS STEP                                 738
      NB=NB+1                                                            739
      IF(NB.LE.NBP) GO TO 1                                              740
      PRINT 1041                                                         741
      NB = 1                                                             742
    1 PRINT 1042                                                         743
      PRINT 1042                                                         744
 1042 FORMAT(1X)                                                         745
      JTIMEP(7) = JTIMEJ(7)                                              746
      JTIMEP(8) = JTIMEJ(6)                                              747
      CALL TDATE(JTIMEJ,TIMM,MON,IR,JD,443)                              748
      SECGMT = FLOAT(JTIMEP(5)) + FLOAT(JTIMEP(6))/1000000.             749
      PRINT 1220, (JTIMEP(J),J=1,4),SECGMT                               750
      PRINT 1040, THETA,OMEGAD,S,X,Y,Z,XD,YD,ZD,R                        751
 1040 FORMAT(1X,10HTHETA     ,E15.6,5X,      10HOMEGA     ,E15.6,5X,
     *           10HTIME      ,E15.6,/  1X,     10HX         ,E15.6,5X,
```

```
     *           10HY          ,E15.6,5X,      10HZ          ,E15.6,/
     *         1X,10HXD        ,E15.6,5X,      10HYD         ,E15.6,5X,
     *           10HZD         ,E15.6,/ 1X,    10HR          ,E15.6/)
      IF(IATTD .LE. 0) GO TO 415                                          757
      PRINT 1050, PHIMD,PHIDD,RNUDEG,PSIMD,PSIDD                          758
 1050 FORMAT( 1X,10HPHIM       ,E15.6,5X,      10HPHID       ,E15.6,5X,
     *           10HNU         ,E15.6,/ 1X,    10HPSIM       ,E15.6,5X,
     *           10HPSID       ,E15.6)                                   761
  415 CONTINUE                                                            762
      DO 30 JJ=1,NMAX                                                     763
      IF(LV(JJ)+IECI(JJ)) 30, 30, 20                                      764
C     ***NOTATION**                                                       765
C                                                                         766
C           ALELVX,ALELVY,AND ALELVZ ARE THE DIRECTION COSINES IN
C                 THE LOCAL VERTICAL COORDINATE SYSTEM                    768
C                                                                         769
C           ALPHEX, ALPHEY, AND ALPHEZ ARE THE DIRECTION COSINES IN
C                 THE EARTH-CENTERED-COORDINATES SYSTEM                   771
C                                                                         772
   20 CONTINUE                                                            773
      IWORD = WORDNUM(JJ)                                                 774
      ISUB = SUBFRM(JJ)                                                   775
      PRINT 1140, IWORD, ISUB                                             776
 1140 FORMAT(/10X25HATTITUDE FOR WORD NUMBER , I3,13H OF SUBFRAME , I3)
      IF(LV(JJ)) 44, 44, 22                                               778
   22 CONTINUE                                                            779
      IF(IWHAT - 2) 41, 42, 43                                            780
   41 CONTINUE                                                            781
C                                                                         782
C        ONLY DIRECTION COSINES ARE DESIRED - IN LV COORDS.               783
      PRINT 1170, ALELVX(JJ),ALELVY(JJ),ALELVZ(JJ)                        784
 1170 FORMAT(2X10HALPHA X LV E16.8,3X10HALPHA Y LV E16.8,                 785
     X 3X10HALPHA Z LV E16.8)                                             786
      GO TO 44                                                            787
   43 CONTINUE                                                            788
C                                                                         789
C        BOTH DIRECTION COSINES AND RT. ASC. AND DECLIN. ARE DESIRED-LV
      PRINT 1170, ALELVX(JJ),ALELVY(JJ),ALELVZ(JJ)                        791
   42 CONTINUE                                                            792
      RLLVD = RLLV(JJ)*57.3                                               793
      DLTLVD= DELTLV(JJ)*57.3                                             794
      PRINT 1150, RLLVD,DLTLVD                                            795
 1150 FORMAT(10X,10HLAMDA LV  ,F15.6,5X, 10HDELTA LV  ,E15.6)             796
   44 CONTINUE                                                            797
   27 IF(IECI(JJ).LE.0) GO TO 30                                          798
      IF(IWHAT - 2) 46, 47, 48                                            799
   46 CONTINUE                                                            800
C        ONLY DIRECTION COSINES ARE DESIRED - IN ECI COORDS.              801
      PRINT 1180, ALPHEX(JJ),ALPHEY(JJ),ALPHEZ(JJ)                       802
 1180 FORMAT(2X10HALPHAX ECI E16.8,3X10HALPHAY ECI E16.8,                 803
     X 3X10HALPHAZ ECI E16.8)                                             804
```

```
      GO TO 49                                                          805
   46 CONTINUE                                                          806
C        BOTH DIRECTION COSINES AND RT. ASC. AND DECLIN. ARE DESIRED-ECI
      PRINT 1180, ALPHEX(JJ),ALPHEY(JJ),ALPHEZ(JJ)                      808
   47 CONTINUE                                                          809
      RLECID = RLECI(JJ)*RD                                             810
      DLTECID = DLTECI(JJ)*RD                                           811
      PRINT 1150, RLECID,DLTECID                                        812
 1150 FORMAT(10X,10HLAMDA ECI ,E15.6,5X,11HDELTA ECI ,E15.6)            813
   48 CONTINUE                                                          814
   30 CONTINUE                                                          815
      GO TO 500                                                         816
  555 CONTINUE                                                          817
      KABORT=1                                                          818
      IF(KOUNT.LT.LABT) PRINT 2001,KOUNT,KABT                           819
      IF(MOD(KOUNT,100).EQ.0) PRINT 2001,KOUNT,KABT                     820
 2001 FORMAT(2X,"KOUNT=",I5,"  KABT=",I5)                               821
  500 CONTINUE                                                          822
      J = NMAX                                                          823
      RETURN                                                            824
      END                                                               825
```

```
      SUBROUTINE ORBT(X,Y,Z,XD,YD,ZD,DENOM,FACTOR,R,RV,RN,A,SIO,CIO,
     1IOTA,HXY,THETA,OMEGA,OMEGDT,ISEG,SEC)                            827
C                                                                      828
      REAL   IOTA,N,MU,IOTAD                                           829
      COMMON/OUTALL/PI,TWOPI,RD,DR,SI,CI,C,MU                          830
      COMMON/OMIO/LINPUT,LOUTPUT                                       831
      X=X/C                                                            832
      Y=Y/C                                                            833
      Z=Z/C                                                            834
      XD=XD/C                                                          835
      YD=YD/C                                                          836
      ZD=ZD/C                                                          837
C                                                                      838
C     COMPUTE CONSTANTS FOR COMPUTATION OF THETA, OMEGA, IOTA
C                                                                      840
      R= SQRT(X**2+Y**2+Z**2)                                          841
      V= SQRT(XD**2+YD**2+ZD**2)                                       842
      RV=X*XD+Y*YD+Z*ZD                                                843
      H= SQRT((R*V)**2-RV**2)                                          844
      HX=YD*Z-ZD*Y                                                     845
      HY=ZD*X-XD*Z                                                     846
      HZ=XD*Y-YD*X                                                     847
      HXY= SQRT(HX**2+HY**2)                                           848
C                                                                      849
C                                                                      850
C     COMPUTE THETA,OMEGA,IOTA                                         851
C                                                                      852
      SOM=HX/HXY                                                       853
      COM=-HY/HXY                                                      854
      OMEGA= ASIN(SOM)                                                 855
      SIO=HXY/H                                                        856
      CIO=HZ/H                                                         857
      IOTA= ASIN(SIO)                                                  858
      STH=(Z*H)/(R*HXY)                                                859
      CTH=(Y*HX-X*HY)/(R*HXY)                                          860
      THETA= ASIN(STH)                                                 861
C                                                                      862
C                                                                      863
C     QUADRANT LOGIC FOR THETA,OMEGA,IOTA                              864
C                                                                      865
      IF(SOM.GE.0.0.AND.COM.GE.0.0)  OMEGA=OMEGA                       866
      IF(                COM.LE.0.0)  OMEGA=PI-OMEGA                   867
      IF(SOM.LE.0.0.AND.COM.GE.0.0)  OMEGA=2.*PI+OMEGA                 868
      IF(SIO.GE.0.0.AND.CIO.GE.0.0)  IOTA=IOTA                         869
      IF(                CIO.LE.0.0)  IOTA=PI-IOTA                     870
      IF(SIO.LE.0.0.AND.CIO.GE.0.0)  IOTA=2.*PI+IOTA                   871
      IF(STH.GE.0.0.AND.CTH.GE.0.0)  THETA=THETA                       872
      IF(                CTH.LE.0.0)  THETA=PI-THETA                   873
      IF(STH.LT.0.0.AND.CTH.GE.0.0)  THETA=TWOPI+THETA                 874
      A=R/(2.-R*V**2/(MU/C**3))                                        875
      N= SQRT(MU/C**3)/A**1.5                                          876
```

```
      RN=N                                                              877
      FACTOR = 1.-R/A                                                   878
      ECCENT =  SQRT(FACTOR*FACTOR + RV*R/MU**3/(A*MU))                 879
      DOMEGA=-TWOPI*.001524*(20902900./C/A)**2* COS(IOTA)               880
     C  /(1.0 - ECCENT**2)**2                                           881
      TORBIT=TWOPI/N                                                    882
      OMEGDT=DOMEGA/TORBIT                                              883
      OMGDTD = OMEGDT*RD                                                884
      IOTAD = IOTA*RD                                                   885
      RNDEG = RN*RD                                                     886
      DENOM=1./(A*A*RN)                                                 887
      OMEGAD = OMEGA*RD                                                 888
      THETAD = THETA*RD                                                 889
      WRITE(LOUTPUT,900) ISEG,SEC,THETAD,OMEGAD,IOTAD,OMGDTD,R,V,RV,    890
     C  RNDEG,TORBIT,ECCENT                                             891
  900 FORMAT(3X,8HSEGMENT ,I2,16X,8HTIME    ,E15.9,3X,8HTHETAD  ,E15.9,
     1       3X,8HOMEGA   ,E15.9,/,3X,8HIOTA    ,E15.9,3X,8HOMEGDT  ,
     2       E15.9,3X,8HRADIUS  ,E15.9,3X,8HVEL_OC   ,E15.9,/,3X,
     3       8HR DOT V ,E15.9,3X,8HMN MOTN ,E15.9,3X,8HPERIOD  ,E15.9,
     4 3X,8HECCEN   ,E15.9/)                                            896
      RETURN                                                            897
      END                                                               898
```

```
      SUBROUTINE DES2(C1,C2,C3,NOC,IORD)                                899
C     ******************************************************************
C     PRINTS NU,PHI,PSI ARRAYS IN COLUMN FORM                           901
C     ******************************************************************
      DIMENSION C1(16,3),C2(16,3),C3(16,3)                              903
C                                                                       904
      PRINT 1000                                                        905
 1000 FORMAT(16X2HNU,27X3HPHI,26X3HPSI/)                                906
      DO 1 I=1,NOC                                                      907
      WRITE (6,900) I,NOC                                               908
  900 FORMAT(6HOCURVE,I2,3H OF,I2)                                      909
      DO 2 K=1,IORD                                                     910
      WRITE (6,1001) C1(K,I),C2(K,I),C3(K,I)                            911
    2 CONTINUE                                                          912
    1 CONTINUE                                                          913
      RETURN                                                            914
 1001 FORMAT(5XE19.8,10XE19.8,10XE19.8)                                 915
      END                                                               916
```

```
      SUBROUTINE NWTN(TNR,KABORT),RETURNS(N)                              917
C                                                                         918
      REAL IOTA,MU                                                        919
C                                                                         920
      COMMON/OUTALL/PI,TWOPI,RD,DR,SI,CI,S,MU                             921
      COMMON/OMNWTN/X0,Y0,Z0,X0Z,Y0Z,Z0Z,DENOM,FACTOR,RV,RN,A,IOTA,HXY,   922
     C  OMEGAZ,OMEGDT,R0                                                  923
      COMMON/OUTOUT/ X,Y,Z,DX,DY,DZ,R,THETA                               924
      COMMON/OUTNWT/EPSLNN,ITERMN                                         925
      COMMON/OMIO/LINPUT,LOUTPUT                                          926
C                                                                         927
      I = 1                                                               928
    1 ST = SIN(THETA)                                                     929
      CT = COS(THETA)                                                     930
      F = THETA - FACTOR*ST + RV*(1. - CT)*DENOM - RN*TNR                 931
      FP = 1. - FACTOR*CT + RV*ST*DENOM                                   932
      IF( ABS(F) - EPSLNN) 5, 5, 2                                        933
    2 IF(I - ITERMN) 3,4,4                                                934
    3 THETA = THETA - F/FP                                                935
      I = I + 1                                                           936
      GO TO 1                                                             937
    5 CONTINUE                                                            938
      F=1.0+A*(CT-1.0)/R0                                                 939
      G=(ST+RN*TNR-THETA)/RN                                              940
      X = F*X0+G*X0Z                                                      941
      Y = F*Y0+G*Y0Z                                                      942
      Z = F*Z0+G*Z0Z                                                      943
      R = SQRT(X*X + Y*Y + Z*Z)                                           944
      FD = -A*A*RV*ST/(R*R0)                                              945
      GD = 1.+A*(CT - 1.)/R                                               946
      DX = FD*X0 + GD*X0Z                                                 947
      DY = FD*Y0 + GD*Y0Z                                                 948
      DZ = FD*Z0 + GD*Z0Z                                                 949
      HX = Y*DZ - DY*Z                                                    950
      HY = Z*DX - DZ*X                                                    951
      STH = Z/(R*ST )                                                     952
      CTH = (Y*HX - X*HY)/(R*HXY)                                         953
      THETA= ASIN(STH)                                                    954
C                                                                         955
C     IF(STH.GE.0.0.AND.CTH.GE.0.0) THETA=THETA                           956
      IF(                   CTH.LE.0.0) THETA=PI-THETA                    957
      IF(STH.LT.0.0.AND.CTH.GE.0.0) THETA=TWOPI+THETA                     958
C                                                                         959
      KABORT = 0                                                          960
      RETURN                                                              961
    4 WRITE(LOUTPUT,100) F                                                962
  100 FORMAT(43H NEWTON-RAPHSON DOES NOT CONVERGE.  VALUE OF F IS,E15.8)  963
      KABORT = 1                                                          964
      RETURN N                                                            965
      END                                                                 966
```

```
      SUBROUTINE DATJ(L)                                                967
C                                                                       968
C     COMPUTES      SECONDS AND MICRO-SECONDS SINCE 1969                969
C                                                                       970
      DIMENSION L(8)                                                    971
C                                                                       972
C     INPUT                                                             973
C                                                                       974
C     L(1) YEAR                                                         975
C     L(2) DAY                                                          976
C     L(3) HOUR                                                         977
C     L(4) MINUTE                                                       978
C     L(5) SECONDS                                                      979
C     L(6) MICRO-SECONDS                                                980
C                                                                       981
C     OUTPUT                                                            982
C                                                                       983
C     L(7) SECONDS                                                      984
C     L(8) MICRO-SECONDS                                                985
C                                                                       986
      NYEAR = MOD(L(1),100)                                             987
C                                                                       988
      L(8) = L(6)                                                       989
      L(7) = L(5) + 60*(L(4) + 60*(L(3) + 24*(L(2) + (NYEAR - 69)/4 - 1
     C + 365*(NYEAR - 70) )))                                           991
      RETURN                                                            992
      END                                                               993
```

```
      SUBROUTINE TJDA(L)                                                 994
C                                                                        995
C     COMPUTES FROM SECONDS AND MICRO-SECONDS SINCE 1969                 996
C                                                                        997
      DIMENSION L(8)                                                     998
C                                                                        999
C     OUTPUT                                                            1000
C                                                                       1001
C     L(1) YEAR                                                         1002
C     L(2) DAY                                                          1003
C     L(3) HOUR                                                         1004
C     L(4) MINUTE                                                       1005
C     L(5) SECONDS                                                      1006
C     L(6) MICRO-SECONDS                                                1007
C                                                                       1008
C     INPUT                                                             1009
C                                                                       1010
C     L(7) SECONDS                                                      1011
C     L(8) MICRO-SECONDS                                                1012
C                                                                       1013
      NDAY = L(7)/86400                                                 1014
      NYEAR = NDAY/365                                                  1015
      L(1) = NYEAR + 1970                                               1016
      L(2) = NDAY - NYEAR*365 - (NYEAR + 1)/4 + 1                       1017
      IF(L(2) .GE. 1) GO TO 5                                           1018
      L(1) = L(1) - 1                                                   1019
      L(2) = 366                                                        1020
    5 CONTINUE                                                          1021
      JT = L(7) - NDAY*86400                                            1022
      L(3) = JT/3600                                                    1023
      JT = JT - L(3)*3600                                               1024
      L(4) = JT/60                                                      1025
      JT = JT - L(4)*60                                                 1026
      L(5) = JT                                                         1027
      L(6) = L(8)                                                       1028
      RETURN                                                            1029
      END                                                               1030
```

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```
      SUBROUTINE FIT(OUT,TR,CO,IO,T)                                    1031
      INTEGER HALF                                                      1032
      DIMENSION CO(16)                                                  1033
      COMMON/OUTALL/PI,TWOPI,RD,DR,SI,CI,S,MU                           1034
      HALF = IO/2                                                       1035
      OUT = CO(1) + CO(2)*T + CO(3)*T**2 + CO(4)*T**3                   1036
      DO 1 I = 3,HALF                                                   1037
      X = (I - 2)*TWOPI*T/TR                                            1038
      K = 2*I - 1                                                       1039
      OUT = OUT + CO(K)* COS(X) + CO(K+1)* SIN(X)                       1040
    1 CONTINUE                                                          1041
      RETURN                                                            1042
      END                                                               1043
```

```
      SUBROUTINE LAMDEL(XP,YP,ZP,LV,IECI)                                1044
C                                                                        1045
C*************************************************************         1046
C                                                                        1047
C        GIVEN PHIO, PSIO, NU, ETA, ALPHA, BETA, THETA, IOTA, AND
C              OMEGA, THIS SUBROUTINE COMPUTES THE RIGHT ASCENSION
C              AND DECLINATION OF THE EXPERIMENTERS SENSOR IN      1050
C              ECI AND/OR LOCAL VERTICAL COORDINATES               1051
C              ALSO ALLOWS FOR OUTPUT OF DIRECTION COSINES IN      1052
C              LOCAL VERTICAL AND/OR ECI COORDINATES               1053
C                                                                  1054
C*************************************************************         1055
C                                                                        1056
C                                                                        1057
      REAL   IOTA,MU,NUE                                                 1058
      COMMON/OUTALL/PI,TWOPI,RO,OR,SI,CI,S,MU                            1059
      COMMON/OUTO_/SP,CP,SS,CS,ST,CT,RNU,OMEGA,PHIO,PSIO,PHIM,PSIM,J
      COMMON/OLOUT/RLLV(16),DELTLV(16),RLECI(16),DLTECI(16),
     *       ALFLVX(16),ALFLVY(16),ALFLVZ(16),
     *       ALPHEX(16),ALPHEY(16),ALPHEZ(16)
C                                                                  1064
C                                                                  1065
C                                                                  1066
C        COMPUTE THE PROJECTION OF A UNIT VECTOR ALIGNED WITH THE
C        SENSOR ONTO THE X, Y, AND Z AXES IN THE LOCAL VERTICAL    1068
C        COORDINATE SYSTEM.                                        1069
      COMMON /OUTOUT/ X,Y,Z,DX,DY,DZ,R,THETA                             1070
      CO =  COS(OMEGA)                                                   1071
      SO =  SIN(OMEGA)                                                   1072
      XEO =  CT*(CI*(CO*Y-X*SO)+ST*Z)-ST*(CO*X+SO*Y)                     1073
      YEO =       SI*(CO*Y-X*SO)-CI*Z                                    1074
      ZEO = -ST*(CI*(CO*Y-X*SO)+ST*Z)-CT*(CO*X+SO*Y)                     1075
      XEP = -(XEO*CS+SS*(YEO*CP+ZEO*SP))                                 1076
      ZEP = YEO*SP - ZEO*CP                                              1077
      NUE =  ATAN(XEP/ZEP)                                               1078
      IF(ZEP) 1,2,2                                                      1079
    1 NUE = NUE + PI                                                     1080
      GO TO 4                                                            1081
    2 IF(XEP) 3,4,4                                                      1082
    3 NUE = NUE+ TWOPI                                                   1083
    4 CONTINUE                                                           1084
      CN =  COS(RNU-NUE)                                                 1085
      SN =  SIN(RNU-NUE)                                                 1086
      XO = XP*CS*CN - YP*SS - ZP*CS*SN                                   1087
      YO =  XP*(CP*SS*CN-SP*SN) + YP*CP*CS - ZP*(CP*SS*SN+SP*CN)
      ZO = XP*(SP*SS*CN + CP*SN) + YP*SP*CS + ZP*(CP*CN - SP*SS*SN)
C                                                                  1090
      IF(LV) 50,50,5                                                     1091
C                                                                  1092
    5 CONTINUE                                                           1093
C                                                                  1094
```

```
C        LOCAL VERTICAL ATTITUDE IS REQUIRED.                          1095
C        FIND THE RIGHT ASCENSION *LAMDA*, AND DECLINATION *DELTA*.
      DELTLV(J) =  ASIN(-Z0)                                            1097
      RLLV(J) =  ATAN(Y0/X0)                                            1098
C        QUADRANT LOGIC                                                1099
      IF(X0) 10, 25, 25                                                 1100
   10 RLLV(J) = RLLV(J) + PI                                            1101
      GO TO 40                                                          1102
   25 IF(Y0) 30, 40, 40                                                 1103
   30 RLLV(J) = RLLV(J) + TWOPI                                         1104
   40 CONTINUE                                                          1105
C                                                                       1106
C        FIND THE DIRECTION COSINES IN LOCAL-VERTICAL COORDINATES
C                                                                       1108
      ALPLV/X(J) = X0                                                   1109
      ALPLVY(J) = Y0                                                    1110
      ALPLV/Z(J) = Z0                                                   1111
C                                                                       1112
C        CHECK TO SEE IF ECI ATTITUDE IS REQUIRED.                      1113
C                                                                       1114
      IF(IECI) 100, 100, 50                                             1115
   50 CONTINUE                                                          1116
C        ECI ATTITUDE IS REQUIRED.                                      1117
C        COMPUTE THE PROJECTION OF A UNIT VECTOR ALIGNED WITH THE
C        SENSOR ONTO THE X, Y, Z, AXES IN THE ECI ( EARTH-CENTERED
C        SENSOR ONTO THE X, Y,AND Z AXES IN THE EARTH-CENTERED-INERTIAL
C        (ECI)  COORDINATE SYSTEM.                                      1121
C                                                                       1122
      XE = -X0*(SO*CI*CT + CO*ST) - Y0*SO*SI + Z0*(SO*CI*ST - CO*CT)
      YE = X0*(CO*CI*CT - SO*ST) + Y0*CO*SI - Z0*(CO*CI*ST + SO*CT)
      ZE = X0*SI*CT - Y0*CI - Z0*SI*ST                                  1125
C                                                                       1126
C        FIND THE DIRECTION COSINES IN ECI COORDINATES                  1127
      ALPHEX(J) = XE                                                    1128
      ALPHEY(J) = YE                                                    1129
      ALPHEZ(J) = ZE                                                    1130
C                                                                       1131
C        FIND THE RIGHT ASCENSION (LAMDA) AND DECLINATION (DELTA)
      DLTECI(J) =  ASIN(-ZE)                                            1133
      RLECI(J) =  ATAN(YE/XE)                                           1134
C        QUADRANT LOGIC                                                1135
      IF(XE) 60, 70, 70                                                 1136
   60 RLECI(J) = RLECI(J) + PI                                          1137
      GO TO 10)                                                         1138
   70 IF(YE) 80, 100, 100                                               1139
   80 RLECI(J) = RLECI(J) + TWOPI                                       1140
  100 CONTINUE                                                          1141
      RETURN                                                            1142
      END                                                               1143
```

```
      SUBROUTINE ORMAG(NUNIT, STTIME, ENDTYM, DELTAT, NWDS, NUMWRD,
     1    ARRAY, IERR)                                                  1145
C                                                                       1146
      DIMENSION EPH(50,3), ARRAY(1), NUMWRD(1), DATA(50), X(3), Y(3),
     1    NWDEG(6)                                                      1148
      DATA ISTREPH/0/, IFIRST/0/                                        1149
      DATA(NWDEG(I), I = 1,6)/20, 29, 34, 37, 38,40/                    1150
      DATA IFLAG/1/                                                     1151
C                                                                       1152
      IND = 0                                                           1153
      IERR = 0                                                          1154
      IF(IFIRST .EQ. 1) GO TO 140                                       1155
C                                                                       1156
C        READ HEADER RECORD                                             1157
   90 READ(NUNIT) IWD, JGP, (DATA(I), I = 1, IWD)                       1158
      IF(EOF(NUNIT)) 400, 100                                           1159
  100 IF(IFIRST .EQ. 1) GO TO 140                                       1160
      TINC = DATA(12)                                                   1161
      START = DATA(10)                                                  1162
      STOP = DATA(11)                                                   1163
C                                                                       1164
C        CHECK IF TIME WITHIN RANGE OF HEADER RECORD TIME               1165
  120 IF(STTIME .LT. START) GO TO 380                                   1166
      IF(STTIME .GT. STOP) GO TO 380                                    1167
      IF(IFIRST .EQ. 1) GO TO 140                                       1168
      IFIRST = 1                                                        1169
      GO TO 90                                                          1170
C                                                                       1171
  140 IF(ISTREPH .EQ. 1) GO TO 200                                      1172
      IF(STTIME .LT. DATA(8)) GO TO 160                                 1173
      ISET = 1                                                          1174
      DO 150 K = 1, IWD                                                 1175
  150 EPH(K,1) = DATA(K)                                                1176
      GO TO 90                                                          1177
  160 IF(ISET .EQ. 1) GO TO 165                                         1178
  162 BACKSPACE NUNIT                                                   1179
      BACKSPACE NUNIT                                                   1180
      GO TO 90                                                          1181
  165 DO 170 K = 1, IWD                                                 1182
  170 EPH(K,2) = DATA(K)                                                1183
      READ(NUNIT) IWD, JGP, (EPH(I,3), I = 1, IWD)                      1184
      ISET = 0                                                          1185
C                                                                       1186
C        HAVE STARTING POSITION                                         1187
      ISTREPH = 1                                                       1188
      GO TO 275                                                         1189
C                                                                       1190
  200 IF(STTIME .LT. EPH(8,2)) GO TO 220                                1191
      IF(IFLAG.EQ.1.AND.STTIME.GT.EPH(8,3)) GO TO 410                   1192
      IF(IFLAG.EQ.1.AND.STTIME.LE.EPH(8,3)) GO TO 275                   1193
      READ(NUNIT) IWD,JGP,(DATA(I),I=1,IWD)                             1194
```

```
      IF(EOF(NJNIT)) 240,250                                          1195
  250 DO 210 K=1,2                                                    1196
      DO 210 I = 1, IWD                                               1197
  210 EPH(I,K) = EPH(I,K+1)                                           1198
      DO 260 I=1,IWD                                                  1199
  260 EPH(I,3)=DATA(I)                                                1200
      GO TO 200                                                       1201
  240 IFLAG=1                                                         1202
      GO TO 275                                                       1203
  220 IF(STTIME .GE. EPH(8,1)) GO TO 275                              1204
      BACKSPACE NJNIT                                                 1205
      BACKSPACE NJNIT                                                 1206
      IFLAG=0                                                         1207
      ISTEPH = 0                                                      1208
      GO TO 162                                                       1209
C                                                                     1210
C        INTERPOLATE ON NWDS OF DATA                                  1211
  275 DO 350 K = 1, NWDS                                              1212
      NM = NUMWRD(K)                                                  1213
      DO 300 I = 1, 3                                                 1214
      Y(I) = EPH(NM,I)                                                1215
  300 X(I) = EPH(8,I)                                                 1216
      DO 310 M = 1, 6                                                 1217
      IF(NM .NE. NWDEG(M)) GO TO 310                                  1218
      CALL LAGDEG(X, Y, STTIME, YY)                                   1219
      GO TO 325                                                       1220
  310 CONTINUE                                                        1221
      CALL LAGRAG(X, Y, STTIME, YY)                                   1222
  325 IND   IND + 1                                                   1223
      ARRAY(IND) = YY                                                 1224
  350 CONTINUE                                                        1225
C                                                                     1226
      STTIME = STTIME + DELTAT                                        1227
      IF(STTIME .GE. ENDTIM)RETURN                                    1228
      GO TO 120                                                       1229
  390 IERR = 1                                                        1230
      RETURN                                                          1231
  400 IERR = 2                                                        1232
      RETURN                                                          1233
  410 IERR=3                                                          1234
      RETURN                                                          1235
      END                                                             1236
```

```
      SUBROUTINE LAGDEG(X, Y, XX, YY)                                    1237
      DIMENSION X(3), Y(3)                                               1238
C                                                                        1239
      I=1                                                                1240
      J=2                                                                1241
      K=3                                                                1242
      IF(ABS(Y(K)-Y(I)) - 300.)1, 2, 2                                   1243
    2 IF(Y(K) - Y(I) .GT. 0.0) GO TO 3                                   1244
C        GOING FROM 0 TO 360                                             1245
      Y(K) = Y(K) + 360.                                                 1246
      GO TO 8                                                            1247
C        GOING FROM 360 TO 0                                             1248
    3 Y(I) = Y(I) + 360.                                                 1249
    8 IF(ABS(Y(J)-Y(I)) - 300.)1, 4, 4                                   1250
    4 Y(J) = Y(J) + 360.                                                 1251
    1 XN0 = XX - X(I)                                                    1252
      XN1 = XX - X(J)                                                    1253
      XN2 = XX - X(K)                                                    1254
      X01 = X(I) - X(J)                                                  1255
      X02 = X(I) - X(K)                                                  1256
      X12 = X(J) - X(K)                                                  1257
      YY = XN1/X01*XN2/X12*Y(I) - XN0/X01*XN2/X12*Y(J) + XN0/X02*XN1/X12
     1   * Y(K)                                                          1259
      IF(YY - 360.)5, 6, 6                                               1260
    6 YY = YY - 360.                                                     1261
    5 RETURN                                                             1262
      END                                                                1263
```

```
      SUBROUTINE LAGRAG(X, Y, XX, YY)                                    1264
C        IF DIMENSION OF X IS N, THEN N-2 IS LIMIT ON NUMBER OF POINTS
C     THAT CAN BE INTERPOLATED BETWEEN USING THIS ROUTINE                1266
C        XX LIES BETWEEN  I  AND  I+1                                    1267
      DIMENSION X(3), Y(3)                                               1268
C                                                                        1269
      I=1                                                                1270
      J=2                                                                1271
      K=3                                                                1272
      XN0 = XX-X(I)                                                      1273
      XN1 = XX-X(J)                                                      1274
      XN2 = XX-X(K)                                                      1275
      X01 = X(I)-X(J)                                                    1276
      X02 = X(I)-X(K)                                                    1277
      X12 = X(J)-X(K)                                                    1278
      YY = XN1/X01*XN2/X02*Y(I) - XN0/X01*XN2/X12*Y(J) + XN0/X02*XN1/X12
     1   * Y(K)                                                          1280
      RETURN                                                             1281
      END                                                                1282
```

```
      SUBROUTINE S2UPB(KDAT,JDAT,KANN,IANN)                              1283
C*****************************************************************      1284
C*****                                                                  1285
C  1975   SUBPROGRAM.  E. HOLEMAN.  LAST ALTERATION 19 NOV 75           1286
C  1975   S3-2 DATA REDUCTION SYSTEM.  CREATED 18 NOV 75                1287
C*****                                                                  1288
C*****                                                                  1289
C  UNPACK FORMAT 3 DATA FOR 1 SECOND INTERVAL AND                      1290
C  UNPACK HOUSEKEEPING RECORD (16 SEC INTERVAL) AT ENTRY               1291
C  S2HKP.                                                              1292
C*****                                                                  1293
C*****************************************************************      1294
      DIMENSION KDAT(27),JDAT(65),IBIT(65),KANN(17),IANN(100)           1295
      DATA IBIT /60,4*(24,18,18),60,16*48,10*24,25*9/                   1296
      IWD=1                                                             1297
      IBT1=60                                                           1298
      DO 10 II=1,65                                                     1299
      NBT=IBIT(II)                                                      1300
      IBT2=IBT1-NBT+1                                                   1301
      IF(IBT2.LE.0) GO TO 20                                            1302
      JDAT(II)=LBYTX(IBT2,NBT,KDAT(IWD))                                1303
      GO TO 30                                                          1304
20    CONTINUE                                                          1305
      JDAT(II)=LBYTX(1,IBT1,KDAT(IWD))                                  1306
      NBT=NBT-IBT1                                                      1307
      IBT2=60-NBT+1                                                     1308
      IWD=IWD+1                                                         1309
      JDAT(II)=SHIFT(JDAT(II),NBT).OR.LBYTX(IBT2,NBT,KDAT(IWD))         1310
30    CONTINUE                                                          1311
      IBT1=IBT2-1                                                       1312
      IF(IBT1.GT.0) GO TO 10                                            1313
      IBT1=60                                                           1314
      IWD=IWD+1                                                         1315
10    CONTINUE                                                          1316
      RETURN                                                            1317
      ENTRY S2HKB                                                       1318
      IJ=0                                                              1319
      DO 40 II=1,17                                                     1320
      DO 40 JJ=1,5                                                      1321
      IJ=IJ+1                                                           1322
      IF(IJ.GT.100) GO TO 40                                            1323
      IBT=55-9*JJ                                                       1324
      IANN(IJ)=LBYTX(IBT,9,KANN(II))                                    1325
40    CONTINUE                                                          1326
      RETURN                                                            1327
      END                                                               1328
```

```
      SUBROUTINE S2PK2(KDAT,IDAT,NID)                                   1329
      DIMENSION KDAT(100),IDAT(NID)                                     1330
      MID=2                                                             1331
      GO TO 10                                                          1332
      ENTRY S2PK3                                                       1333
      MID=3                                                             1334
      GO TO 10                                                          1335
      ENTRY S2PK4                                                       1336
      MID=4                                                             1337
      GO TO 10                                                          1338
      ENTRY S2PK5                                                       1339
      MID=5                                                             1340
   10 CONTINUE                                                          1341
      IID=60/MID                                                        1342
      II1=0                                                             1343
      DO 20 II=1,NID,MID                                                1344
      II1=II1+1                                                         1345
      JJ1=61                                                            1346
      JJ3=II+MID-1                                                      1347
      DO 20 JJ=II,JJ3                                                   1348
      JJ1=JJ1-IID                                                       1349
      IF(IDAT(JJ).LT.0) IDAT(JJ)=IDAT(JJ)+36000                         1350
      KDAT(II1)=ISBYTE(JJ1,IID,KDAT(II1),IDAT(JJ))                      1351
   20 CONTINUE                                                          1352
      RETURN                                                            1353
      END                                                               1354
```

```
      SUBROUTINE GEOGA(TT)                                              1355
C*****************************************************************    1356
C*****                                                                 1357
C  1972  SUBPROGRAM.  E. HOLEMAN.  LAST ALTERED 2 SEP 76.              1358
C  FROM SUBROUTINE GEOG 16 JAN 76.                                      1359
C*****                                                                 1360
C  CALCULATES GEOCENTRIC AND GEOMAGNETIC LATITUDE AND                  1361
C  LONGITUDE AS A FUNCTION OF TIME FOR A SATELLITE ORBIT               1362
C  DESCRIBED BY THE COORDINATES OMEGA,THETA,PIOTA, R.                  1363
C****                                                                  1364
C*****                                                                 1365
C  ALL PARAMETERS BUT TIME ARE PASSED THROUGH COMMON                   1366
C  BLOCK IOGEOG.                                                       1367
C*****                                                                 1368
C*****************************************************************    1369
      COMMON /IOGEOG/ OMEGA,THETA,PIOTA,R,XLT,XLG,ALT,XLTM,XLGM         1370
      DATA ICALL /0/                                                    1371
      ICALL=ICALL+1                                                     1372
      IF(ICALL.GT.1) GO TO 10                                           1373
      PI=3.141592654                                                    1374
      DR=PI/180.                                                        1375
      RD=1./DR                                                          1376
      TWOPI=2.*PI                                                       1377
      PI32=270.*DR                                                      1378
      PI2=90.*DR                                                        1379
      COLAT=11.435*DR                                                   1380
      WLON=69.761*DR                                                    1381
      STO=SIN(COLAT)                                                    1382
      CTO=COS(COLAT)                                                    1383
 10   CONTINUE                                                          1384
      RIOTR=RIOTA*DR                                                    1385
      THETR=THETA*DR                                                    1386
      OMEGR=OMEGA*DR                                                    1387
      OMEGTH=TT*(-.004178074622O2)                                      1388
      OMEGTH=OMEGTH*DR                                                  1389
      XLATR=ASIN(SIN(THETR)*SIN(RIOTR))                                 1390
      ARG=SIN(THETR)*COS(RIOTR)/COS(XLATR)                              1391
      IF(ARG.GE.1.) ARG=1.-1.E-10                                       1392
      IF(ARG.LE.-1) ARG=-1.+1.E-10                                      1393
      OMEGOB=ASIN(ARG)                                                  1394
      IF(PI2.LT.THETR.AND.THETR.LT.PI32) OMEGOB=PI-OMEGOB               1395
      IF(-PI32.LT.THETR.AND.THETR.LT.-PI2) OMEGOB=PI-OMEGOB             1396
      XLGOMZ=-39.75557*DR                                               1397
      XLGR=OMEGR+OMEGOB+OMEGTH+XLGOMZ                                   1398
      XLT=XLATR*RD                                                      1399
      XLG=XLGR*RD                                                       1400
      IXLG=XLG                                                          1401
      MXLG=(IXLG/360)*360                                               1402
      XLG=XLG-FLOAT(MXLG)                                               1403
      IF(XLG.LT.0.) XLG=XLG+360.                                        1404
      ALT=R*1.85325-6371.2                                              1405
```

```
      XLGR=XLG*DR                                                    1406
      CTG=SIN(XLATR)                                                 1407
      STG=COS(XLATR)                                                 1408
      CTD=CTO*CTG+STO*STG*COS(XLGR+WLON)                             1409
      STD=SQRT(1.-CTD*CTD)                                           1410
      XLTM=ATAN(CTD/STD)*RD                                          1411
      CLD=(CTO*(CTD)-CTG)/(STO*STD)                                  1412
      SLGLO=SIN(XLGR+WLON)                                           1413
      SLD=STG*SLGLO/STD                                              1414
      XLGM=180.-ATAN2(SLD,-CLD)*RD                                   1415
      RETURN                                                         1416
      END                                                            1417
```

```
      PROGRAM S2B_AF(CFILE,DFILE,LFILE=0,AFILE=64,                      10
     +OUTPUT=64,TAPE1=CFILE,TAPE3=DFILE,TAPE2=LFILE,                    11
     +TAPE8=AFILE,TAPE6=OUTPUT)                                         12
C*****                                                                  13
C*****                                                                  14
C  1975   PROGRAM.  E. HOLEMAN.  LAST ALTERATION 6 JUL 75              15
C  FROM OMBLAF  30 DEC 75.                                             16
C*****                                                                  17
C*****                                                                  18
C  PROGRAM TO ADD B AND L INFORMATION FOR DATA FILE FROM               19
C  S2OMA                                                               20
C*****                                                                  21
C*****                                                                  22
C  363008 CM STORAGE REQUIRED FOR LOADING.                             23
C*****                                                                  24
C*****                                                                  25
      DIMENSION EL(21),BE(21),SL(21),KDAT(27,18),IDA(39),               26
     +FHED(30),THED(30),RT(10),IRT(10),LTEM(8),JDAT(65),                27
     +LDAT(4,8),ASPK(5),ATT(2,16),BATT(2,16),LABL(7),                   28
     +XM(3,3),YM(3,3),                                                  29
     +TANN(100)                                                         30
      EQUIVALENCE(FHED,THED)                                            31
      RD=57.2957795128                                                  32
      DR=1./RD                                                          33
      BDEL=11.2*DR                                                      34
      CDEL=COS(BDEL)                                                    35
      SDEL=SIN(BDEL)                                                    36
      PDEL=291.*DR                                                      37
      REWIND1                                                           38
      REWIND3                                                           39
      REWIND8                                                           40
      IDTT=DATE(ADAT)                                                   41
      T0=SECOND(TTT)                                                    42
      CALL COEFG(1976.,EL,BE,SL)                                        43
      CALL SLITE(0)                                                     44
 50   CONTINUE                                                          45
      ICT3=0                                                            46
      ICT4=0                                                            47
      T1=SECOND(TTT)                                                    48
      READ(1) IWC,IGC,(FHED(I),I=1,IWC)                                 49
      IF(EOF(1)) 110,60                                                 50
 60   CONTINUE                                                          51
      MNEMO=FHED(IWC)                                                   52
      FHED(IWC)=5LOFILE                                                 53
      ENCODE(30,4001,LABL) (THED(I),I=1,30),THED(6)                     54
 4001 FORMAT(R4,R5,2X,A10,1X,A8)                                        55
      GMT1=FLOAT(IHED(18))/1000.                                        56
      TRAT=FLOAT(IHED(19))/FLOAT(IHED(20))/1000.                        57
      GMTZ=GMT1-FLOAT(IHED(17))*TRAT                                    58
      FHED(21)=96.288                                                   59
      XIOTA=FHED(21)                                                    60
```

```
      WRITE(3) IWC,IGC,(FHED(I),I=1,IWC)                                  61
      JD=IHED(26)                                                         62
      CALL TDAT3(LTIM,TM,MON,FHED(27),JD,118)                             63
   10 CONTINUE                                                            64
C*****                                                                    65
C  READ MASTER FRAME INPUT                                                66
C*****                                                                    67
      READ(1) IWC,IGC,(((KDAT(I,J),I=1,IWC),J=1,IGC)                      68
      IEOF=EOF(1)                                                         69
      IF(IEOF.NE.0) GO TO 100                                             70
      ISA=0                                                               71
      ISB=0                                                               72
      ISC=0                                                               73
      JGC=IGC-1                                                           74
      CALL S2HKB((KDAT(1,1),JDAT,KDAT(1,JGC),IANN)                        75
      DO 130 II=1,6                                                       76
      ISA=ISA+IANN(II)                                                    77
  130 CONTINUE                                                            78
      DO 240 II=7,16                                                      79
      ISB=ISB+IANN(II)                                                    80
  240 CONTINUE                                                            81
      DO 250 II=17,36                                                     82
      ISC=ISC+IANN(II)                                                    83
  250 CONTINUE                                                            84
      IF((ISA.LT.800.AND.ISB.LT.1150).AND.ISC.LT.2000) GO TO 10           85
   90 CONTINUE                                                            86
      IF(KDAT(IWC,IGC).NE.10HATT RECORD) GO TO 10                         87
      ICT3=ICT3+1                                                         88
      CALL S2UP3((KDAT(1,IGC),IDA,13)                                     89
      ALT=IDA(1)                                                          90
      XLT=FLOAT(IDA(2))/100.                                              91
      XLG=FLOAT(IDA(3))/100.                                              92
      THET=FLOAT(IDA(4))/100.                                             93
      IF(XLT.GT.90.) XLT=XLT-360.                                         94
      OMEG=FLOAT(IDA(5))/100.                                             95
      XLTM=FLOAT(IDA(6))/100.                                             96
      XLGM=FLOAT(IDA(39))/100.                                            97
      IF(XLTM.GT.90.) XLTM=XLTM-360.                                      98
      RKM=ALT+6371.2                                                      99
      RNM=RKM/1.85325                                                    100
      CALL INVAR(XLT,XLG,ALT,.0001,BA,FL,RR,RT,BP)                       101
      CALL INTER(EL,SL,21,0,1,FL,SLX)                                    102
      CALL INTER(EL,BE,21,0,1,FL,BEX)                                    103
      HMN=(BA-BEX)/SLX                                                   104
      IF(HMN.LE.0.) HMN=0.                                               105
      IF(HMN.GT.ALT) HMN=ALT                                             106
      IDA(1)=BA*10000.+.5                                                107
      IF(FL.LT.0..OR.FL.GT.10.) FL=10.                                   108
      IDA(2)=FL*1000.+.5                                                 109
      IDA(3)=HMN+.5                                                      110
C*****                                                                   111
```

```
C  ADD GEOMETRY                                                          112
C*****                                                                   113
      II2=6                                                              114
      II1=IGC-2                                                          115
      DO 80 II=1,II1                                                     116
      DO 80 JJ=1,2                                                       117
      II2=II2+1                                                          118
      ATT(JJ,II)=FLOAT(IDA(II2))/100.                                    119
 80   CONTINUE                                                           120
 120  CONTINUE                                                           121
      SGAM=COS(XIOTA*DR)/COS(XLT*DR)                                     122
      TGAM=ABS(SGAM)                                                     123
      IF(TGAM.LE.1.) GO TO 140                                           124
      WRITE(6,2006) ICT3,XIOTA,XLT                                       125
 2006 FORMAT(1X,*AT PROBLEM AT*,I5,2F10.1)                               126
      GO TO 10                                                           127
 140  CONTINUE                                                           128
      GAM=ASIN(SGAM)*RD                                                  129
      IF(THET.GT.90..AND.THET.LT.270.) GAM=180.-GAM                      130
      DR=ATAN2(BP,BT)*RD                                                 131
      XIB=ASIN(BR/BA)*RD                                                 132
      RT(1)=-(90.+GAM+DR)                                                133
      IRT(1)=3                                                           134
      RT(2)=90.+XIB                                                      135
      IRT(2)=1                                                           136
      CALL EULER(THA,PHA,YM,RT,IRT,2,C,THB,PHB,XM)                       137
      CALL EULER(90.,0.,XM,RT,IRT,C,1,ANGT,ANGP,YM)                      138
      IF(ANGT.LT.0.) ANGT=ANGT+360.                                      139
      IF(ANGP.LT.0.) ANGP=ANGP+360.                                      140
      IDA(4)=100.*ANGT+.5                                                141
      IDA(5)=100.*ANGP+.5                                                142
      IDA(6)=0.                                                          143
      DO 40 II=1,II1                                                     144
      PHA=ATT(1,II)                                                      145
      THA=90.+ATT(2,II)                                                  146
      CALL EULER(THA,PHA,XM,RT,IRT,0,1,BATT(1,II),BATT(2,II),YM)
 40   CONTINUE                                                           148
      II2=6                                                              149
      DO 160 II=1,II1                                                    150
      DO 160 JJ=1,2                                                      151
      II2=II2+1                                                          152
      IF(BATT(JJ,II).LT.0.) BATT(JJ,II)=BATT(JJ,II)+360.                 153
      IDA(II2)=100.*BATT(JJ,II)+.5                                       154
 160  CONTINUE                                                           155
      CALL S2PK3(KDAT(14,IGC),IDA,36)                                    156
      KDAT(IWC,IGC)=10HMAG RECORD                                        157
C*****                                                                   158
C  WRITE MASTER FRAME OUTPUT                                             159
C*****                                                                   160
      WRITE(3) IWC,IGC,((KDAT(I,J),I=1,IWC),J=1,IGC)                     161
      ICT4=ICT4+1                                                        162
```

```
      IF(ISA.LT.800.AND.ISB.LT.1150) GO TO 10
      IF(MOD(ICT3,4).NE.1) GO TO 10
      HR=(GMTZ+FLOAT(KDAT(1,1))*TRAT)/3600.
      CALL TDATB(LTIM,TM,MON,HR,JD,01B)
 2001 FORMAT(1H1,4X,*S3-2 64 SECOND LISTING FROM MAGNETIC*
     +* FIELD PROGRAM.*/5X,*EPHEMERUS FOR *,F10.4,1X,A10,7X,
     +*  COMPUTER RUN OF *,A10
     +/5X,*RT ASCENSION = *,F10.3,*  INCLINATION = *,F10.3)
      IF(ICT3.EQ.1) WRITE(8,2001) HR,MON,ADAT,OMEG,XIOTA
      IF(ICT3.EQ.1) WRITE(8,2013) LABL
 2013 FORMAT(5X,*ORBIT ID = *,3A10/T25,*GEOCENTRIC*,
     +T60,*GEOMAGNETIC*/10X,*TIME*,T20,*LAT*,T30,*LONG*,T38,
     +*ALT*,T43,*THETA*,T59,*LATM*,T68,*LONM*,T77,*R(KM)*,
     +T89,*B*,T99,*L*,T107,*HMIN*)
      WRITE(8,2014) LTIM(3),LTIM(4),LTIM(5),XLT,XLG,ALT,THET,
     +XLTM,XLGM,RKM,BA,FL,HMN
 2014 FORMAT(7X,I2,2I3,F9.3,F10.3,F9.1,3F10.3,F10.1,F10.5,
     +F10.4,F10.1)
      GO TO 10
 100  CONTINUE
      WRITE(8,2002) ICT3,ICT4
 2002 FORMAT(1X,I5,*  MASTER FRAMES READ FROM CFILE*/
     +1X,I5,*  MASTER FRAMES WRITTEN ON DFILE*)
      T2=SECOND(TTT)-T1
      WRITE(8,2003) T2
 2003 FORMAT(2X,*PROCESSING TIME FOR ORBIT IS*,F10.3)
      ENDFILE3
      GO TO 50
 110  CONTINUE
      T2=SECOND(TTT)-T0
      WRITE(8,2005) T2
 2005 FORMAT(2X,*TOTAL PROCESSING TIME FOR S2BLA IS*,F10.3)
      END
```

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```
      SUBROUTINE EULER(TA,PA,X,ALP,IA,NA,IND,TB,PB,Y)                   196
      DIMENSION A(3),B(3),X(3,3),Y(3,3),ALP(10),IA(10)                  197
      PI=3.141592653                                                    198
      RD=180./PI                                                        199
      DR=1./RD                                                          200
      IF(IND.NE.0) GO TO 10                                             201
      DO 20 II=1,3                                                      202
      DO 30 JJ=1,3                                                      203
      X(II,JJ)=0.                                                       204
   30 CONTINUE                                                          205
      X(II,II)=1.                                                       206
   20 CONTINUE                                                          207
   10 CONTINUE                                                          208
      IF(IND.EQ.0) GO TO 11                                             209
      TAR=TA*DR                                                         210
      PAR=PA*DR                                                         211
   11 CONTINUE                                                          212
      DO 40 II=1,3                                                      213
      DO 40 JJ=1,3                                                      214
      Y(II,JJ)=X(II,JJ)                                                 215
   40 CONTINUE                                                          216
      IF(NA.LT.1) GO TO 50                                              217
      DO 60 II=1,NA                                                     218
      CALL TRANS(ALP(II),IA(II),Y)                                      219
   60 CONTINUE                                                          220
   50 CONTINUE                                                          221
      IF(IND.EQ.0) GO TO 110                                            222
      A(1)=SIN(TAR)*COS(PAR)                                            223
      A(2)=SIN(TAR)*SIN(PAR)                                            224
      A(3)=COS(TAR)                                                     225
      IF(IND.EQ.2) GO TO 70                                             226
      DO 80 II=1,3                                                      227
      B(II)=0                                                           228
      DO 80 JJ=1,3                                                      229
      B(II)=B(II)+A(JJ)*Y(JJ,II)                                        230
   80 CONTINUE                                                          231
      GO TO 90                                                          232
   70 CONTINUE                                                          233
      DO 100 II=1,3                                                     234
      B(II)=0.                                                          235
      DO 100 JJ=1,3                                                     236
      B(II)=B(II)+Y(II,JJ)*A(JJ)                                        237
  100 CONTINUE                                                          238
   90 CONTINUE                                                          239
      TB=ACOS(B(3))*RD                                                  240
      PB=ATAN2(B(2),B(1))*RD                                            241
  110 CONTINUE                                                          242
      RETURN                                                            243
      END                                                               244
```

```
      SUBROUTINE TRANS(PHI,L,X)                                          245
      DIMENSION X(3,3),ROT(3,3),Y(3,3)                                   246
      PI=3.141592653                                                     247
      RD=180./PI                                                         248
      DR=1./RD                                                           249
      DO 10 II=1,3                                                       250
      DO 10 JJ=1,3                                                       251
      ROT(II,JJ)=0.                                                      252
   10 CONTINUE                                                           253
      PHIR=-PHI*DR                                                       254
      GO TO (20,30,40) L                                                 255
   20 CONTINUE                                                           256
      ROT(1,1)=1.                                                        257
      ROT(2,2)=COS(PHIR)                                                 258
      ROT(2,3)=SIN(PHIR)                                                 259
      ROT(3,2)=-ROT(2,3)                                                 260
      ROT(3,3)=ROT(2,2)                                                  261
      GO TO 50                                                           262
   30 ROT(1,1)=COS(PHIR)                                                 263
      ROT(1,3)=-SIN(PHIR)                                                264
      ROT(2,2)=1.0                                                       265
      ROT(3,1)=-ROT(1,3)                                                 266
      ROT(3,3)=ROT(1,1)                                                  267
      GO TO 50                                                           268
   40 CONTINUE                                                           269
      ROT(1,1)=COS(PHIR)                                                 270
      ROT(1,2)=SIN(PHIR)                                                 271
      ROT(2,1)=-ROT(1,2)                                                 272
      ROT(2,2)=ROT(1,1)                                                  273
      ROT(3,3)=1.                                                        274
   50 CONTINUE                                                           275
      DO 60 II=1,3                                                       276
      DO 60 JJ=1,3                                                       277
      Y(II,JJ)=0.                                                        278
      DO 60 KK=1,3                                                       279
      Y(II,JJ)=Y(II,JJ)+X(II,KK)*ROT(KK,JJ)                              280
   60 CONTINUE                                                           281
      DO 70 II=1,3                                                       282
      DO 70 JJ=1,3                                                       283
      X(II,JJ)=Y(II,JJ)                                                  284
   70 CONTINUE                                                           285
      RETURN                                                             286
      END                                                                287
```

```
      SUBROUTINE INVAR(FLAT,FLONG,ALT,ERR,BB,FL,RR,BT,BPI                288
C     REVISED DEC 1965                                                   289
C      NOTE,ERROR IN L IS TYPICALLY LESS THAN 10.*ERR*L (PERCENT)
C        FLAT=LATITUDE IN DEGREES  , FLONG=LONGITUDE IN DEGREES          291
C       ALT=ALTITUDE=DISTANCE FROM SURFACE OF EARTH IN KILOMETERS
      DIMENSION V(3,3),B(200),ARC(200),VN(3),VP(3),BEG(200),BEND(200),
     1BLOG(200),ECO(200),R1(3),R2(3),R3(3)                              294
      CALL SLITET(1,IFG1)                                               295
      RAD=57.2957795131                                                 296
      IF(IFG1.EQ.1) GO TO 50                                            297
      V(1,2)=ALT/6371.2                                                 298
      V(2,2)=(90.-FLAT)/RAD                                             299
      V(3,2)=FLONG/RAD                                                  300
      ARC(1)=0.                                                         301
      ARC(2)=(1.0+V(1,2))*SQRT (ERR)*0.3                                302
      DCLT=1.5708-0.2007*COS (V(3,2)+1.233)                             303
      IF(V(2,2)-DCLT)10,10,11                                           304
   11 ARC(2)=-ARC(2)                                                    305
   10 CALL START (R1,R2,R3,B,ARC,     V)                             306
      DO 12 I=1,3                                                       307
      VP(I)=V(I,2)                                                      308
   12 VN(I)=V(I,3)                                                      309
      CALL LINES (R1,R2,R3,B,ARC,ERR,J,VP,VN)                           310
      IF(J-200)16,17,17                                                 311
   17 FL=-1.0                                                           312
      GO TO 18                                                          313
   16 JUP=J                                                             314
      DO 40 J=1,JUP                                                     315
      ARC(J)=ABS (ARC(J))                                               316
   40 BLOG(J)=ALOG(B(J))                                                317
      JEP=JUP-1                                                         318
      DO 21 J=2,JEP                                                     319
      ASUM=ARC(J)+ARC(J+1)                                              320
      DX=BLOG(J-1)-BLOG(J)                                              321
      DN=ASUM*ARC(J)*ARC(J+1)                                           322
      BCO   =((BLOG(J-1)-BLOG(J+1))*ARC(J)**2-DX*ASUM**2)/DN            323
      CCO   =(DX*ARC(J+1)-(BLOG(J)-BLOG(J+1))*ARC(J))/DN                324
      SA=.75*ARC(J)                                                     325
      SC=SA+.25*ASUM                                                    326
      DCO=BLOG(J-1)-CCO   *SA*SC                                        327
      ECO(J)=BCO   +CCO   *(SA+SC)                                      328
      BEG(J)=EXP (DCO+ECO(J)*.5*ARC(J))                                 329
   21 BEND(J)=EXP (DCO+ECO(J)*.5*(ASUM+ARC(J)))                         330
      BEG(JUP)=BEND(JEP)                                                331
      BEND(JUP)=B(JUP)                                                  332
      ECO(JUP)=(2.0/ARC(JUP))*ALOG(BEND(JUP)/BEG(JUP))                  333
      CALL INTEG (ARC,BEG,BEND,B,JEP,ECO,F_INT)                         334
      CALL CARMEL (B(2),FLINT,FL)                                       335
   18 BB=B(2)                                                           336
   50 CONTINUE                                                          337
      RL=ALT/6371.2+1.                                                  338
```

```
      THET=(90.-F_AT)/RAD                                              339
      ST=ABS(SIN(THET))                                                340
      PHI=FLONG/RAD                                                    341
      CALL NEWMAG(RL,ST,PHI,BR,BT,BP,BC,THET)                          342
      IF(IFG1.EQ.1) CALL LCALL(FLAT,FLONG,ALT,FL)                      343
      IF(FL.GT.8000.) FL=-1.                                           344
      BB=SQRT(BR*BR+BT*BT+BP*BP)                                       345
      RETURN                                                           346
      END                                                              347
```

```
      SUBROUTINE LCALL(XLT,XLG,XA_T,XL)                                 348
      DIMENSION UJXL(145),UDXL(145),DUXL(145),DDXL(145),INDX(144),      349
     +XLAB(2)                                                           350
      COMMON/INTERP/X1,Y1,Z1,X2,Y2,Z2,D1,D2,D3,D4,U1,U2,U3,U4           351
      DATA ICALL/0/                                                     352
      IF(ABS(X_T).GT.87.5) XL=6666.                                     353
      IF(ABS(X_T).GT.87.5) RETURN                                       354
      ICALL=ICALL+1                                                     355
      IF(ICALL.NE.1) GO TO 10                                           356
      CALL OPENMS(2,INDX,144,0)                                         357
      CALL READMS(2,XLAB,2,143)                                         358
      Z1=X_AB(2)                                                        359
      Z2=X_AB(1)                                                        360
      GO TO 20                                                          361
   10 CONTINUE                                                          362
      TEST=(XLT-DNLT)*(XLT-UPLT)                                        363
      IF(TEST.GT.0.) GO TO 20                                           364
   30 CONTINUE                                                          365
C*****                                                                  366
C  DETERMINE LONGITUDE INDEX                                            367
C*****                                                                  368
      KLGL=XLG/2.5+1.                                                   369
      KLGU=KLGL+1.                                                      370
      DNLG=2.5*FLOAT(KLGL-1)                                            371
      UPLG=DNLG+2.5                                                     372
      TEST=(XLG-DNLG)*(XLG-UPLG)                                        373
      IF(TEST.GT.0) GO TO 100                                           374
      IF(KLGU.GT.145) KLGU=145                                          375
      X1=DNLG                                                           376
      X2=UPLG                                                           377
      U1=UDXL(KLGL)                                                     378
      U2=UDXL(KLGU)                                                     379
      U3=UJXL(KLGU)                                                     380
      U4=UUXL(KLGL)                                                     381
      D1=DDXL(KLGL)                                                     382
      D2=DDXL(KLGU)                                                     383
      D3=DUXL(KLGU)                                                     384
      D4=DUXL(KLGL)                                                     385
      CALL INTR3(XLG,XLT,XALT,XL)                                       386
      RETURN                                                            387
   20 CONTINUE                                                          388
C*****                                                                  389
C  NEW LATITUDES NEEDED                                                 390
C*****                                                                  391
      IND=(XLT+87.5)/1.25+1.                                            392
      IF(MOD(IND,2).EQ.0) IND=IND-1                                     393
      DNLT=FLOAT(IND-1)*1.25-87.5                                       394
      Y1=DNLT                                                           395
      CALL READMS(2,UDX,145,IND)                                        396
      IND=IND+1                                                         397
      CALL READMS(2,DDXL,145,IND)                                       398
```

```
      IND=IND+1                                                        399
      UPLT=FLOAT(IND-1)*1.25-87.5                                      400
      Y2=UPLT                                                          401
      CALL READMS(2,UJX_,145,IND)                                      402
      IND=IND+1                                                        403
      CALL READMS(2,UJX_,145,IND)                                      404
      TEST=(XLT-ONLT)*(XLT-UPLT)                                       405
      IF(TEST.LE.0) GO TO 30                                           406
C*****                                                                 407
C  PROBLEMS IN LATITUDE LOGIC                                          408
C*****                                                                 409
      WRITE(6,2001) ONLT,XLT,UPLT,IND                                  410
 2001 FORMAT(1X,*CHECK LATITUDES*,3F10.1,I5)                           411
      GO TO 110                                                        412
  100 CONTINUE                                                         413
C*****                                                                 414
C  PROBLEMS IN LONGITUDE LOGIC                                         415
C*****                                                                 416
      WRITE(6,2002) ONLG,XLG,UPLG,KLGL,KLGU                            417
 2002 FORMAT(1X,*CHECK LONGITUDES*,3F10.1,2I5)                         418
  110 CONTINUE                                                         419
      CALL EXIT                                                        420
      END                                                              421
```

```
      SUBROUTINE INTR3(P1,P2,P3,FP)                                      422
      COMMON/INTERP/X1,Y1,Z1,X2,Y2,Z2,D1,D2,D3,D4,U1,U2,U3,U4            423
      IF(U1.LT.0..OR.U2.LT.0..OR.U3.LT.0..OR.U4.LT.0.) GO TO 10          424
      IF(D1.LT.0..OR.D2.LT.0..OR.D3.LT.0..OR.D4.LT.0.) GO TO 10          425
      RA=0.                                                              426
      IF(Z1.EQ.Z2) GO TO 20                                              427
      RA=(P3-Z1)/(Z2-Z1)                                                 428
   20 CONTINUE                                                           429
      A1=D1+(U1-D1)*RA                                                   430
      A2=D2+(U2-D2)*RA                                                   431
      A3=D3+(U3-D3)*RA                                                   432
      A4=D4+(U4-D4)*RA                                                   433
      RB=0.                                                              434
      IF(Y2.EQ.Y1) GO TO 30                                              435
      RB=(P2-Y1)/(Y2-Y1)                                                 436
   30 CONTINUE                                                           437
      B1=A1+(A4-A1)*RB                                                   438
      B2=A2+(A3-A2)*RB                                                   439
      RC=0.                                                              440
      IF(X2.EQ.X1) GO TO 40                                              441
      RC=(P1-X1)/(X2-X1)                                                 442
   40 CONTINUE                                                           443
      FP=B1+(B2-B1)*RC                                                   444
      GO TO 50                                                           445
   10 CONTINUE                                                           446
      FP=8888.                                                           447
   50 CONTINUE                                                           448
      RETURN                                                             449
      END                                                                450
```

APP-B- 3 - 64

```
      SUBROUTINE POSTL(JHEM,XLT,UALT,DALT)                              451
      NAMELIST/NAML/THEM,HHH,DLAT,XMLAT                                 452
      NAMELIST/LNAM/XLAT,ALT,DLNG                                       453
      REWIND2                                                           454
      REWIND3                                                           455
      READ(2,NAML)                                                      456
      UALT=HHH                                                          457
      READ(3,NAML)                                                      458
      DALT=HHH                                                          459
      IF(JHEM.EQ.1) GO TO 10                                            460
      READ(2,NAML)                                                      461
      UALT=HHH                                                          462
      READ(3,NAML)                                                      463
      DALT=HHH                                                          464
10    CONTINUE                                                          465
      IF(ABS(XLT).GT.(XMLAT-.1)) RETURN                                 466
      TLAT=2.001*DLAT                                                   467
20    CONTINUE                                                          468
      READ(2,LNAM)                                                      469
      READ(3,LNAM)                                                      470
      IF(ABS(XLT-XLAT).LT.TLAT) GO TO 30                                471
      GO TO 20                                                          472
30    CONTINUE                                                          473
      PRINT 2001,XLT,XLAT,JHEM,UALT,DALT                                474
2001  FORMAT(2X,*NEW QUADRANT CALLED.  LAT=*,F8.2,*  DATA SET=*,
     +F8.2/2X,*HEMISPHERE=*,I4,2F10.1)                                  476
      RETURN                                                            477
      END                                                               478
```

```
      SUBROUTINE LINES (R1,R2,R3,B,ARC,ERR,J,VP,VN)                    479
C     VERSION OF MAY 1965                                              480
      DIMENSION B(200),ARC(200),R1(3),R2(3),R3(3),VN(3),VP(3),RA(3)
      CRE=0.25                                                         482
      IF(ERR-0.15625)74,75,75                                          483
   74 CRE=    (ERR**0.333333333)                                       484
   75 A3=ARC(3)                                                        485
      AAB=ABS(A3)                                                      486
      SNA=A3/AAB                                                       487
      A1=ARC(1)                                                        488
      A2=ARC(2)                                                        489
      A06=A3*A3/6.0                                                    490
      J=3                                                              491
      ILP=1                                                            492
      IS=1                                                             493
      GO TO 87                                                         494
   66 IS=1                                                             495
      J=J+1                                                            496
      A06=A3*A3/6.0                                                    497
      ARCJ=A1+A2+A3                                                    498
      AD=(ASUM+A1)/AA                                                  499
      BD=ASUM/BB                                                       500
      CD=A1/CC                                                         501
   36 DO 5 I=1,3                                                       502
      DD=R1(I)/AA-R2(I)/BB+R3(I)/CC                                    503
      GO TO(6,8),IS                                                    504
    6 RT=R1(I)-(AD*R1(I)-BD*R2(I)+CD*R3(I)-DD*ARCJ)*ARCJ               505
      RA(I)=R1(I)                                                      506
      R1(I)=R2(I)                                                      507
      R2(I)=R3(I)                                                      508
      R3(I)=RT                                                         509
      VP(I)=VN(I)                                                      510
    8 RRAR=(R2(I)+R3(I))/2.-DD*A06                                     511
    5 VN(I)=VP(I)+A3*RRAR                                              512
   87 IF(VN(2))76,77,77                                                513
   76 VN(2)=-VN(2)                                                     514
   77 IF(VN(2)-3.141592653)78,78,79                                    515
   79 VN(2)=6.283185307-VN(2)                                          516
      GO TO 77                                                         517
   78 IF(VN(3))80,81,81                                                518
   80 VN(3)=VN(3)+6.283185307                                          519
      GO TO 78                                                         520
   81  IF(VN(3)-6.283185307)82,82,83                                   521
   83 VN(3)=VN(3)-6.283185307                                          522
      GO TO 81                                                         523
   82 GO TO (9,10),IS                                                  524
    9 SIT=ABS(SIN(VN(2)))                                              525
      PRE1=VN(1)                                                       526
      PRE2=PRE1*VN(2)                                                  527
      PRE3=PRE1*SIT*VN(3)                                              528
C**** SSQ=SIT*SIT                                                      529
```

```
C**** OER=(6355.312+SSD*(21.3677+.108*SSD))/6371.2                    530
C**** AER=VN(1)-OER                                                   531
C**** CALL MAGNET(AER,SIT,VN(3),BR,BT,BP,B(J),VN(2))                  532
      CALL NEWMAG(VN ,SIT,VN(3),BR,BT,BP,B(J),VN(2))                  533
      R3(1)=BR/B(J)                                                   534
      DN=B(J)*VN(1)                                                   535
      R3(2)=BT/DN                                                     536
      R3(3)=BP/(DN*SIT)                                               537
      ASUM=A3+A2                                                      538
      AA=ASUM*A2                                                      539
      BB=A3*A2                                                        540
      CC=ASUM*A3                                                      541
      IS=2                                                            542
      GO TO 36                                                        543
   10 CONTINUE                                                        544
      SIT=ABS (SIN (VN(2)))                                           545
      B(J)=B(J)*((PRE1/VN(1))**3)                                     546
   59 QRT=.5*ABS (R3(1))/(.1+ABS (R3(2)*VN(1)))                       547
      X=(ABS (VN(1)-PRE1)+QRT*ABS (VN(1)*VN(2)-PRE2)+ABS (VN(1)*SIT*VN(3
     1)-PRE3))/(AA*ERR*SQRT (1.+QRT*QRT))                             549
      GO TO (90,93,90),ILP                                            550
   93 IF(X-3.3)90,89,89                                               551
   89 A3=A3*0.2*(8.0+X)/(0.8+X)                                       552
      J=J-1                                                           553
      ILP=3                                                           554
      ASUM=A2+A1                                                      555
      AA=ASUM*A1                                                      556
      BB=A2*A1                                                        557
      CC=ASUM*A2                                                      558
      DO 91 I=1,3                                                     559
      VN(I)=VP(I)                                                     560
      R3(I)=R2(I)                                                     561
      R2(I)=R1(I)                                                     562
   91 R1(I)=RA(I)                                                     563
      GO TO 73                                                        564
   36 IF(J-200)67,60,60                                               565
   67 A1=A3                                                           566
      IF(B(J)-B(2))49,49,60                                           567
   49 ILP=1                                                           568
      A2=A3                                                           569
      A3=A3*.2*(8.+X)/(.8+X)                                          570
      AM=(2.-R3(2)*VN(1))*VN(1)*CPE                                   571
      IF(ABS (A3)-AM)84,84,72                                         572
   72 A3=SNA*AM                                                       573
   84 IF(SNA*R3(1)+.5)85,85,73                                        574
   85 AM=-.5*SNA*VN(1)/R3(1)                                          575
      IF(ABS (A3)-AM)73,73,86                                         576
   86 A3=SNA*AM                                                       577
   73 ARG(I+1)=A3                                                     578
      AA3=ABS (A3)                                                    579
      GO TO 66                                                        580
```

```
60 RETURN                                                    581
   END                                                       582
```

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```
      SUBROUTINE START (R1,R2,R3,B,ARC,     V)
C     VERSION OF DEC 1965
      DIMENSION B(200),ARC(200),V(3,3),R1(3),R2(3),R3(3)
      SIT=ABS (SIN (V(2,2)))
      AER=V(1,2)
      SSQ=SIT*SIT
C**   OER=(6356.912+SSQ*(21.3677+.108*SSQ))/6371.2
      OER=1.
      V(1,2)=AER+OER
   10 IF(V(3,2))11,12,12
   11 V(3,2)=V(3,2)+6.283185307
      GO TO 10
C**12 CALL MAGNET(AER,SIT,V(3,2),BR,BT,BP,B(2),V(2,2))
   12 CALL NEWMAG(V(1,2),SIT,V(3,2),BR,BT,BP,B(2),V(2,2))
      R2(1)=BR/B(2)
      DN=B(2)*V(1,2)
      R2(2)=BT/DN
      R2(3)=BP/(DN*SIT)
      IS=0
    1  DO 2 I=1,3
    2 V(I,1)=V(I,2)-ARC(2)*R2(I)
      SIT=ABS (SIN (V(2,1)))
C** 3  SSQ=SIT*SIT
C**   OER=(6356.912+SSQ*(21.3677+.108*SSQ))/6371.2
C**   AER=V(1,1)-OER
C**   CALL MAGNET(AER,SIT,V(3,1),BR,BT,BP,B(1),V(2,1))
    3 CONTINUE
      CALL  NEWMAG(V(1,1),SIT,V(3,1),BR,BT,BP,B(1),V(2,1))
      IF(B(1)-B(2))4,5,5
    4  ARC(2)=-ARC(2)
      GO TO 1
    5 R1(1)=BR/B(1)
      ARC(3)=ARC(2)
      DN=B(1)*V(1,1)
      R1(2)=BT/DN
      R1(3)=BP/(DN*SIT)
      DO 6 I=1,3
    6 V(I,1)=V(I,2)-ARC(2)*(R1(I)+R2(I))/2.
      SIT=ABS (SIN (V(2,1)))
      IS=IS+1
      GO TO (3,7),IS
    7  DO 8 I=1,3
    8 V(I,3)=V(I,2)+ARC(3)*((1.5)*R2(I)-.5*R1(I))
      RETURN
      END
```

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```
      SUBROUTINE INTEG (ARC,BEG,BEND,B,JEP,ECO,FI)                      528
C     UNCHANGED MAY 1965                                                529
      DIMENSION ARC(200),BEG(200),BEND(200),B(200),ECO(200)             530
    4 KK=JEP                                                            531
    6 IF(KK-4) 14,11,20                                                 532
   11 KK=KK-1                                                           533
   14 A=B(KK-1)/B(2)                                                    534
      X2=B(KK)/B(2)                                                     535
      X3=B(KK+1)/B(2)                                                   536
      ASUM=ARC(KK)+ARC(KK+1)                                            537
      DN=ARC(KK)*ARC(KK+1)*ASUM                                         538
      BB=(-A*ARC(KK+1)*(ARC(KK)+ASUM)+X2*ASUM**2-X3*ARC(KK)**2)/DN
      C=(A*ARC(KK+1)-X2*ASUM+X3*ARC(KK))/DN                             540
      FI=1.570796326*(1.-A+BB*BB/(4.*C))/SQRT (ABS (C))                 541
      RETURN                                                            542
   20 T=SQRT (1.-BEND(2)/B(2))                                          543
      ZET= (1.+T)/(1.-T)                                                544
      IF (ZET .EQ.0.)  GO TO 200                                        545
      FI=(2.*T-ALOG((1.+T)/(1.-T)))/ECO(2)                              546
  201 IF(B(2)-BEND(KK))21,21,25                                         547
  200 FI=1000.**1000                                                    548
      GO TO 201                                                         549
  300 FI=1000.**1000                                                    550
      GO TO 301                                                         551
   25 KK=KK+1                                                           552
   21 T=SQRT (ABS (1.0-BEG(KK)/B(2)))                                   553
      ZET= (1.+T)/(1.-T)                                                554
      IF (ZET .EQ.0.)  GO TO 300                                        555
      FI=FI-(2.*T-ALOG((1.+T)/(1.-T)))/ECO(KK)                          556
  301 KK=KK-1                                                           557
   22 DO 5 I=3,KK                                                       558
      ARG1=1.-BEND(I)/B(2)                                              559
      IF(ARG1)26,26,27                                                  560
   26 TE=1.E-5                                                          561
      GO TO 28                                                          562
   27 TE=SQRT (ARG1)                                                    563
   28 ARG1=1.-BEG(I)/B(2)                                               564
      IF(ARG1)29,29,31                                                  565
   31 TB=SQRT (ARG1)                                                    566
      GO TO 32                                                          567
   29 TB=1.E-5                                                          568
   32 IF(ABS (ECO(I))-2.E-5) 23,23,24                                   569
   23 FI=FI+((TE+TB)*(ARC(I)+ARC(I+1)))/4.                              570
      GO TO 5                                                           571
   24 CONTINUE                                                          572
      ZET3= (1.+TE)*(1.-TB)/((1.-TE)*(1.+TB))                           573
      IF (ZET3.EQ. 0.)  FI= 10.**37                                     574
      IF (ZET3 .NE. 0.) FI=FI+(2.*(TE-TB)-ALOG(ZET3))/ECO(I)            575
    5 CONTINUE                                                          576
   30 RETURN                                                            577
      END                                                               578
```

AD-A061 560 EMMANUEL COLL BOSTON MASS F/G 4/1
ANALYSIS OF DATA FROM RESEARCH SATELLITES.(U)
JUL 78 E G HOLEMAN, A F DAVIS, M P HAGAN F19628-73-C-0190
UNCLASSIFIED AFGL-TR-78-0181 NL

2 OF 3
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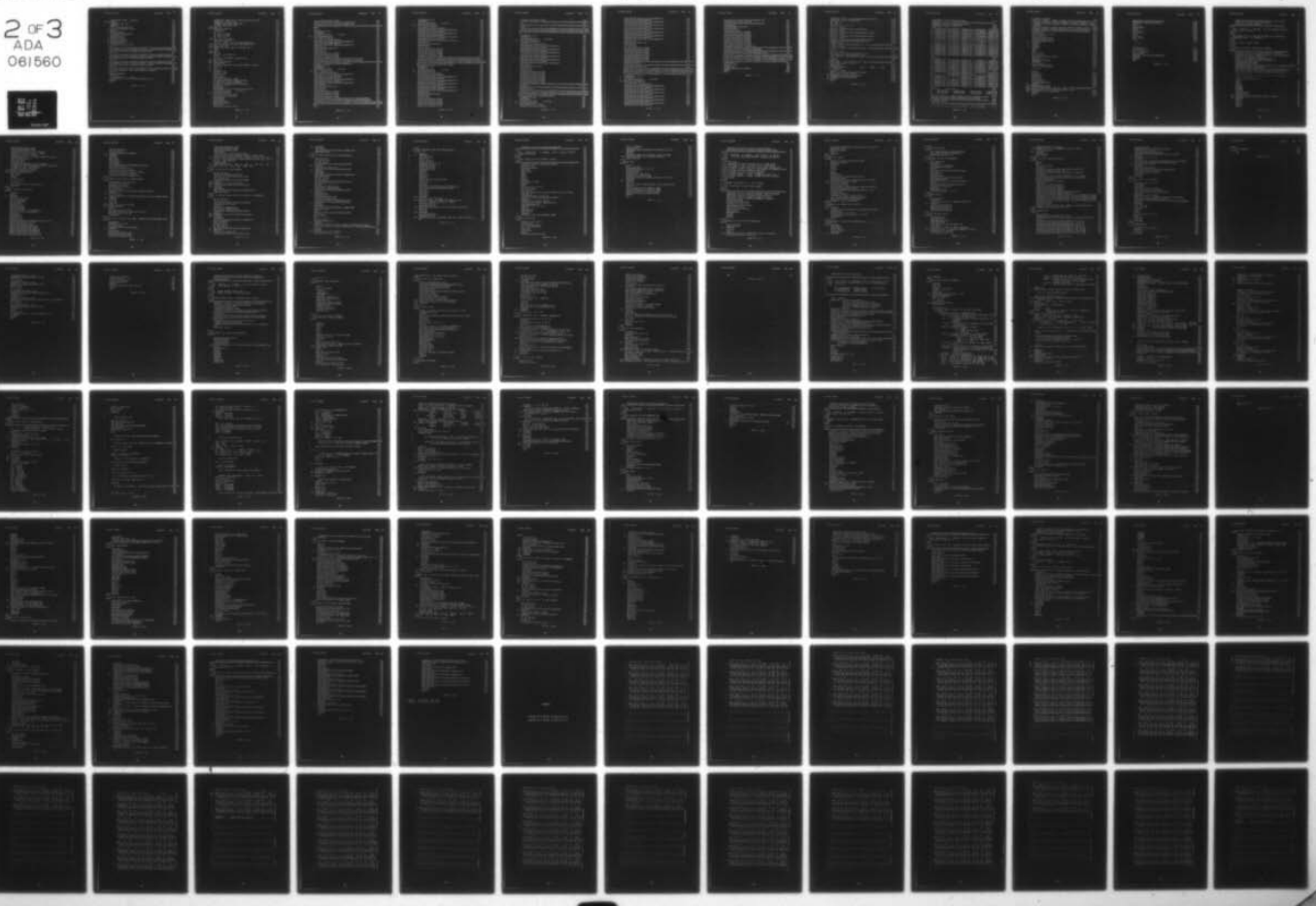
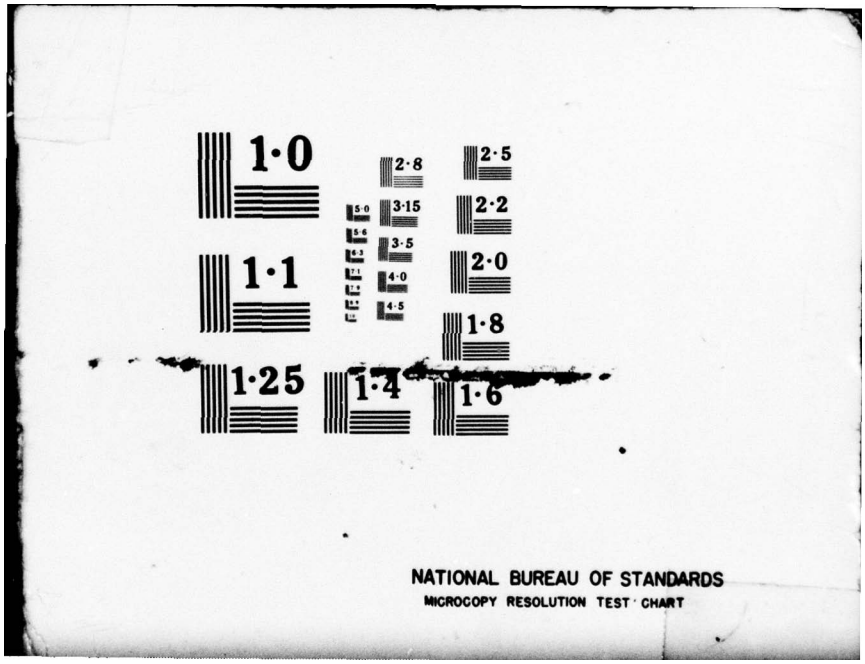
061560

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1·8
1·6
NATIONAL BUREAU OF STANDARDS
MICROCOPY RESOLUTION TEST CHART

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      SUBROUTINE CARMEL (G,XI,VL)                                       679
!IBFTC CARME                                                            680
C     UNCHANGED MAY 1965                                                681
C     COMPUTE _                                                         682
      IF(XI-1.0E-36) 14,14,15                                           683
   14 VL=(0.311653/3)**(1./3.)                                          684
      RETURN                                                            685
   15 XX=3.0*ALOG(XI)                                                   686
      XX=XX+ALOG(3/0.311653)                                            687
      IF(XX+22.) 1,1,8                                                  688
    8 IF(XX+3.) 2,2,9                                                   689
    9 IF(XX-3.) 3,3,10                                                  690
   10 IF(XX-11.7)4,4,11                                                 691
   11 IF(XX-23.) 5,5,6                                                  692
    1 GG=.333339*XX+.30082102                                           693
      GO TO 7                                                           694
    2 GG=((((((((-8.1537735E-14*XX+8.3232531E-13)*XX+1.0166362E-9)*XX+  695
     18.1048663E-8)*XX+3.2916354E-6)*XX+8.2711096E-5)*XX+1.3714667E-3)* 696
     2XX+.01501724 5)*XX+.43432642)*XX+.62337691                        697
      GO TO 7                                                           698
    3 GG=((((((((2.6047023E-10*XX+2.3028767E-9)*XX-2.1997983E-8)*XX-    699
     15.3977642E-7)*XX-3.3408822E-6)*XX+3.8379917E-5)*XX+1.1784234E-3)* 700
     2XX+1.4492441E-2)*XX+.43352788)*XX+.5228644                        701
      GO TO 7                                                           702
    4 GG=(((((((((5.3271655E-10*XX-3.9583036E-8)*XX+9.9766148E-07)*XX-  703
     11.2531932E-5)*XX+7.9451313E-5)*XX-3.2077032E-4)*XX+2.1680398E-3)* 704
     2XX+1.2817956E-2)*XX+.43510529)*XX+.5222355                        705
      GO TO 7                                                           706
    5 GG=(((((2.9212095E-8*XX-3.8049276E-5)*XX+2.170224E-4)*XX-6.7310339 707
     1E-3)*XX+.12039224)*XX-.18461796)*XX+2.0007187                     708
      GO TO 7                                                           709
    6 GG=XX-3.0460681                                                   710
    7  CONTINUE                                                         711
      IF(GG.GE.88.0) GG = 88.0                                          712
      VL=(((1.0+EXP  (GG))*0.311653)/8)**(1./3.)                        713
      RETURN                                                            714
      END                                                               715
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      SUBROUTINE NEWMAG(R,ST ,PHI,BR,BT,BP,B,THET)                      716
      DIMENSION G(9,9),BM(9)                                            717
      COMMON/BLOCK1/G,BM,J,NMAX,SUM                                     718
      IF(SUM) 1000,1005,1000                                            719
 1000 P22 = 0.                                                          720
C**** RELATIVE ERROR IN B                                               721
      BERR=0.0001                                                       722
      AR = 0.                                                           723
      DO 1001 L=1,NMAX                                                  724
      DO 1001 M=1,NMAX                                                  725
      AR = AR + 1.                                                      726
 1001 P22 = P22 + AR*G(M,L)                                             727
      SUM=(SUM-P22)/SJM                                                 728
      IF( ABS  (SJM) - 1.E-4) 1004,1004,1002                            729
C**** NOTE FOLLOWING PRINT AND STOP STATEMENTS                          730
 1002 PRINT 1003,SUM                                                    731
 1003 FORMAT(21H DATA WRONG IN NEWMAG E15.8)                            732
      STOP                                                              733
 1004 SUM=0.                                                            734
 1005 P22=ST                                                            735
      P21=SQRT (1.-P22**2)                                              736
      AR=R                                                              737
      IF(THET-1.570796327) 154,154,156                                  738
  156 P21=-P21                                                          739
  154 IF(J) 152,152,151                                                 740
  151 SSQ=P22**2                                                        741
      AR=AR+(14.288-SSQ*(21.3677+.108*SSQ))/6371.2                      742
  152 AR=1./AR                                                          743
C     N= 2                                                              744
  159 DP22=P21                                                          745
      SP2=SIN (PHI)                                                     746
      CP2=COS (PHI)                                                     747
      DP21=-P22                                                         748
      AOR=AR*AR*AR                                                      749
      C2=G(2,2)*CP2+G(1,2)*SP2                                          750
      BR=-(AOR+AOR)*(G(2,1)*P21+C2*P22)                                 751
      BT=AOR*(G(2,1)*DP21+C2*DP22)                                      752
      BP=AOR*(G(1,2)*CP2-G(2,2)*SP2)*P22                                753
      IF(NMAX-3) 1,3,3                                                  754
C     AOR=AOR*AR                                                        755
      ERR=BERR*SQRT ((BP/P22)**2+BR**2+BT**2)                           756
      IF(BM(3)*AOR-ERR)       1,1,103                                   757
  103 SP3=(SP2+SP2)*CP2                                                 758
      CP3=(CP2+SP2)*(CP2-SP2)                                           759
      P31=P21**2-0.333333333                                            760
      P32=P21**2                                                        761
      P33=P22**2                                                        762
      DP31=-P32-P32                                                     763
      DP32=P21*P21-P33                                                  764
      DP33=-DP31                                                        765
      C2=G(3,2)*CP2+G(1,3)*SP2                                          766
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      C3=G(3,3)*CP3+G(2,3)*SP3                                          767
      BR=BR-3.0*AOR*(G(3,1)*DP31+C2*DP32+C3*DP33)                       768
      BT=BT+AOR*(G(3,1)*DP31+C2*DP32+C3*DP33)                           769
      BP=BP-AOR*((G(3,2)*SP2-G(1,3)*CP2)*P32+2.0*(G(3,3)*SP3-G(2,3)*CP3)
     1*P33)                                                             771
C     N= 4                                                              772
      IF(NMAX-4) 1,4,4                                                  773
 4    AOR=AOR*AR                                                        774
      IF(BM(4)*AOR-ERR)       1,1,104                                   775
 104  SP4=SP2*CP3+CP2*SP3                                               776
      CP4=CP2*CP3-SP2*SP3                                               777
      P41=P21*P31-0.26666666*P21                                        778
      DP41=P21*DP31+DP21*P31-0.26666666*DP21                            779
      P42=P21*P32-0.20000000*P22                                        780
      DP42=P21*DP32+DP21*P32-0.20000000*DP22                            781
      P43=P21*P33                                                       782
      DP43=P21*DP33+DP21*P33                                            783
      P44=P22*P33                                                       784
      DP44=3.0*P43                                                      785
      C2=G(4,2)*CP2+G(1,4)*SP2                                          786
      C3=G(4,3)*CP3+G(2,4)*SP3                                          787
      C4=G(4,4)*CP4+G(3,4)*SP4                                          788
      BR=BR-4.0*AOR*(G(4,1)*P41+C2*P42+C3*P43+C4*P44)                   789
      BT=BT+AOR*(G(4,1)*DP41+C2*DP42+C3*DP43+C4*DP44)                   790
      BP=BP-AOR*((G(4,2)*SP2-G(1,4)*CP2)*P42+2.0*(G(4,3)*SP3-G(2,4)*CP3)
     1*P43+3.0*(G(4,4)*SP4-G(3,4)*CP4)*P44)                             792
      IF(NMAX-5) 1,5,5                                                  793
 5    AOR=AOR*AR                                                        794
      IF(BM(5)*AOR-ERR)       1,1,105                                   795
 105  SP5 = (SP3+SP2)*CP3                                               796
      CP5=(CP3+SP2)*(CP3-SP2)                                           797
      DP51=P21*DP41+DP21*P41-0.25714285*DP31                            798
      P51=P21*P41-0.25714285*P31                                        799
      P52=P21*P42-0.22857142*P32                                        800
      DP52=P21*DP42+DP21*P42-0.22857142*DP32                            801
      P53=P21*P43-0.14285714*P33                                        802
      DP53=P21*DP43+DP21*P43-0.14285714*DP33                            803
      P54=P21*P44                                                       804
      DP54=P21*DP44+DP21*P44                                            805
      P55=P22*P44                                                       806
      DP55=4.0*P54                                                      807
      C2=G(5,2)*CP2+G(1,5)*SP2                                          808
      C3=G(5,3)*CP3+G(2,5)*SP3                                          809
      C4=G(5,4)*CP4+G(3,5)*SP4                                          810
      C5=G(5,5)*CP5+G(4,5)*SP5                                          811
      BR=BR-5.0*AOR*(G(5,1)*P51+C2*P52+C3*P53+C4*P54+C5*P55)            812
      BT=BT+AOR*(G(5,1)*DP51+C2*DP52+C3*DP53+C4*DP54+C5*DP55)           813
      BP=BP-AOR*((G(5,2)*SP2-G(1,5)*CP2)*P52+2.0*(G(5,3)*SP3-G(2,5)*CP3)
     1*P53+3.0*(G(5,4)*SP4-G(3,5)*CP4)*P54+4.0*(G(5,5)*SP5-G(4,5)*CP5)*P
     255)                                                               816
C     N= 6                                                              817
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      IF(NMAX-6) 1,6,5                                                  818
6     AOR=AOR*AR                                                        819
      IF(BM(6)*AOR-ERR)       1,1,106                                   820
106   SP6=SP2*CP5+CP2*SP5                                               821
      CP6=CP2*CP5-SP2*SP5                                               822
      P61=P21*P51-0.25396825*P41                                        823
      DP61=P21*DP51+DP21*P51-0.25396825*DP41                            824
      P62=P21*P52-0.23809523*P42                                        825
      DP62=P21*DP52+DP21*P52-0.23809523*DP42                            826
      P63=P21*P53-0.19047619*P43                                        827
      DP63=P21*DP53+DP21*P53-0.19047619*DP43                            828
      P64=P21*P54-0.11111111*P44                                        829
      DP64=P21*DP54+DP21*P54-0.11111111*DP44                            830
      P65=P21*P55                                                       831
      DP65=P21*DP55+DP21*P55                                            832
      P66=P22*P55                                                       833
      DP66=5.0*P65                                                      834
      C2=G(6,2)*CP2+G(1,6)*SP2                                          835
      C3=G(6,3)*CP3+G(2,6)*SP3                                          836
      C4=G(6,4)*CP4+G(3,6)*SP4                                          837
      C5=G(6,5)*CP5+G(4,6)*SP5                                          838
      C6=G(6,6)*CP6+G(5,6)*SP6                                          839
      BR=BR-6.0*AOR*(G(6,1)*P61+C2*P62+C3*P63+C4*P64+C5*P65+C6*P66)
      BT=BT+AOR*(G(6,1)*DP61+C2*DP62+C3*DP63+C4*DP64+C5*DP65+C6*DP66)
      BP=BP-AOR*((G(6,2)*SP2-G(1,6)*CP2)*P62+2.0*(G(6,3)*SP3-G(2,6)*CP3)
     1*P63+3.0*(G(6,4)*SP4-G(3,6)*CP4)*P64+4.0*(G(6,5)*SP5-G(4,6)*CP5)*P
     265+5.0*(G(6,6)*SP6-G(5,6)*CP6)*P66)                               844
      IF(NMAX-7) 1,7,7                                                  845
7     AOR=AOR*AR                                                        846
      IF(BM(7)*AOR-ERR)       1,1,107                                   847
107   SP7=(SP4+SP4)*CP4                                                 848
      CP7=(CP4+SP4)*(CP4-SP4)                                           849
      P71=P21*P61-0.25252525*P51                                        850
      DP71=P21*DP51+DP21*P61-0.25252525*DP51                            851
      P72=P21*P62-0.24242424*P52                                        852
      DP72=P21*DP52+DP21*P62-0.24242424*DP52                            853
      P73=P21*P63-0.21212121*P53                                        854
      DP73=P21*DP53+DP21*P63-0.21212121*DP53                            855
      P74=P21*P64-0.16161616*P54                                        856
      DP74=P21*DP54+DP21*P64-0.16161616*DP54                            857
      P75=P21*P65-0.09090909*P55                                        858
      DP75=P21*DP65+DP21*P65-0.09090909*DP55                            859
      P76=P21*P66                                                       860
      DP76=P21*DP56+DP21*P66                                            861
      P77=P22*P66                                                       862
      DP77=6.0*P75                                                      863
      C2=G(7,2)*CP2+G(1,7)*SP2                                          864
      C3=G(7,3)*CP3+G(2,7)*SP3                                          865
      C4=G(7,4)*CP4+G(3,7)*SP4                                          866
      C5=G(7,5)*CP5+G(4,7)*SP5                                          867
      C6=G(7,6)*CP6+G(5,7)*SP6                                          868
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      C7=G(7,7)*CP7+G(6,7)*SP7                                          869
      BR=BR-7.0*AOR*(G(7,1)*P71+C2*P72+C3*P73+C4*P74+C5*P75+C6*P76+C7*P7
     17)                                                                871
      BT=BT+AOR*(G(7,1)*DP71+C2*DP72+C3*DP73+C4*DP74+C5*DP75+C6*DP76+C7*
     1DP77)                                                             873
      BP=BP-AOR*((G(7,2)*SP2-G(1,7)*CP2)*P72+2.0*(G(7,3)*SP3-G(2,7)*CP3)
     1*P73+3.0*(G(7,4)*SP4-G(3,7)*CP4)*P74+4.0*(G(7,5)*SP5-G(4,7)*CP5)*P
     275+5.0*(G(7,6)*SP6-G(5,7)*CP6)*P76+6.0*(G(7,7)*SP7-G(6,7)*CP7)*P77
     3)                                                                 877
      IF(NMAX-8) 1,8,8                                                  878
8     AOR=AOR*AR                                                        879
      IF(BM(8)*AOR-ERR)       1,1,108                                   880
108   SP8=SP2*CP7+CP2*SP7                                               881
      CP8=CP2*CP7-SP2*SP7                                               882
      P81=P21*P71-0.25174825*P61                                        883
      DP81=P21*DP71+DP21*P71-0.25174825*DP61                            884
      P82=P21*P72-0.24475524*P62                                        885
      DP82=P21*DP72+DP21*P72-0.24475524*DP62                            886
      P83=P21*P73-0.22377622*P63                                        887
      DP83=P21*DP73+DP21*P73-0.22377622*DP63                            888
      P84=P21*P74-0.18881118*P64                                        889
      DP84=P21*DP74+DP21*P74-0.18881118*DP64                            890
      P85=P21*P75-0.13986013*P65                                        891
      DP85=P21*DP75+DP21*P75-0.13986013*DP65                            892
      P86=P21*P76-0.07692307*P66                                        893
      DP86=P21*DP76+DP21*P76-0.07692307*DP66                            894
      P87=P21*P77                                                       895
      DP87=P21*DP77+DP21*P77                                            896
      P88=P22*P77                                                       897
      DP88=7.0*P87                                                      898
      C2=G(8,2)*CP2+G(1,8)*SP2                                          899
      C3=G(8,3)*CP3+G(2,8)*SP3                                          900
      C4=G(8,4)*CP4+G(3,8)*SP4                                          901
      C5=G(8,5)*CP5+G(4,8)*SP5                                          902
      C6=G(8,6)*CP6+G(5,8)*SP6                                          903
      C7=G(8,7)*CP7+G(6,8)*SP7                                          904
      C8=G(8,8)*CP8+G(7,8)*SP8                                          905
      BR=BR-8.0*AOR*(G(8,1)*P81+C2*P82+C3*P83+C4*P84+C5*P85+C6*P86+C7*P8
     17+C8*P88)                                                         907
      BT=BT+AOR*(G(8,1)*DP81+C2*DP82+C3*DP83+C4*DP84+C5*DP85+C6*DP86+C7*
     1DP87+C8*DP88)                                                     909
      BP=BP-AOR*((G(8,2)*SP2-G(1,8)*CP2)*P82+2.0*(G(8,3)*SP3-G(2,8)*CP3)
     1*P83+3.0*(G(8,4)*SP4-G(3,8)*CP4)*P84+4.0*(G(8,5)*SP5-G(4,8)*CP5)*P
     285+5.0*(G(8,6)*SP6-G(5,8)*CP6)*P86+6.0*(G(8,7)*SP7-G(6,8)*CP7)*P87
     3+7.0*(G(8,8)*SP8-G(7,8)*CP8)*P88)                                 913
      IF(NMAX-9) 1,9,9                                                  914
9     AOR=AOR*AR                                                        915
      IF(BM(9)*AOR-ERR)       1,1,109                                   916
109   SP9=(SP5+SP5)*CP5                                                 917
      CP9=(CP5+SP5)*(CP5-SP5)                                           918
      P91=P21*P81-0.25129205*P71                                        919
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      DP91=P21*DP81+DP21*P81-0.25128205*D**71                                  920
      P92=P21*P82-0.24615384*P72                                               921
      DP92=P21*DP82+DP21*P82-0.24615384*D**72                                  922
      P93=P21*P83-0.23076923*P73                                               923
      DP93=P21*DP83+DP21*P83-0.23076923*D**73                                  924
      P94=P21*P84-0.20512820*P74                                               925
      DP94=P21*DP84+DP21*P84-0.20512820*D**74                                  926
      P95=P21*P85-0.16923076*P75                                               927
      DP95=P21*DP85+D*21*P85-0.16923076*D**75                                  928
      P96=P21*P86-0.12307692*P76                                               929
      DP96=P21*DP86+DP21*P86-0.12307692*D**76                                  930
      P97=P21*P87-0.06666666*P77                                               931
      DP97=P21*DP87+DP21*P87-0.06666666*D**77                                  932
      P98=P21*P88                                                              933
      DP98=P21*DP88+D*21*P88                                                   934
      P99=P22*P88                                                              935
      DP 9=8.0*P98                                                             936
      C2=G(9,2)*C*2+G(1,9)*SP2                                                 937
      C3=G(9,3)*CP3+G(2,9)*SP3                                                 938
      C4=G(9,4)*C*4+G(3,9)*SP4                                                 939
      C5=G(9,5)*C*5+G(4,9)*SP5                                                 940
      C6=G(9,6)*C*6+G(5,9)*SP6                                                 941
      C7=G(9,7)*CP7+G(6,9)*SP7                                                 942
      C8=G(9,8)*C*8+G(7,9)*SP8                                                 943
      C9=G(9,9)*C*9+G(8,9)*SP9                                                 944
      BR=BR-3.0*AOR*(G(9,1)*P91+C2*P92+C3*P93+C4*P94+C5*P95+C6*P96+C7*P9       945
     17+C8*P98+C9*P99)                                                         946
      BT=BT+AOR*(G(9,1)*DP91+C2*D*92+C3*D*93+C4*DP94+C5*D*95+C6*DP96+C7*       947
     1DP97+C8*D*98+C9*D*99)                                                    948
      BP=B*-AOR*((G(9,2)*SP2-G(1,9)*CP2)*P92+2.0*(G(9,3)*SP3-G(2,9)*CP3)       949
     1*P93+3.0*(G(9,4)*SP4-G(3,9)*CP4)*P94+4.0*(G(9,5)*SP5-G(4,9)*CP5)*P       950
     295+5.0*(G(9,5)*SP6-G(5,9)*C*6)*P96+6.0*(G(9,7)*SP7-G(6,9)*CP7)*P97       951
     3+7.0*(G(9,9)*SP8-G(7,9)*CP8)*P98+8.0*(G(9,9)*SP9-G(8,9)*CP9)*P99)        952
      IF(NMAX-10) 1,10,10                                                      953
10    AOR=AOR*AR                                                               954
      IF(BM(10)*AOR-ERR)       1,1,1010                                        955
1010  SP10=SP2*CP9+CP2*SP9                                                     956
      CP10=CP2*CP9-SP2*SP9                                                     957
      P101=P21*P91-0.25098039*P81                                              958
      DP101=P21*D*91+DP21*P91-0.25098039*D*81                                  959
      P102=P21*P92-0.24705882*P82                                              960
      DP102=P21*D*92+DP21*P92-0.24705882*D*82                                  961
      P103=P21*P93-0.23529411*P83                                              962
      DP103=P21*D*93+DP21*P93-0.23529411*D*83                                  963
      P104=P21*P94-0.21568627*P84                                              964
      DP104=P21*D*94+DP21*P94-0.21568627*D*84                                  965
      P105=P21*P95-0.18823529*P85                                              966
      DP105=P21*D*95+DP21*P95-0.18823529*D*85                                  967
      P106=P21*P96-0.15294117*P86                                              968
      DP106=P21*D*96+DP21*P96-0.15294117*D*86                                  969
      P107=P21*P97-0.10980392*P87                                              970
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      DP107=P21*DP97+DP21*P97-0.10980392*DP87                          971
      P108=P21*P98-0.05882352*P88                                      972
      DP108=P21*DP98+DP21*P98-0.05882352*DP88                          973
      P109=P21*P99                                                     974
      DP109=P21*DP99+DP21*P99                                          975
      P1010=P22*P99                                                    976
      DP1010=9.0*P109                                                  977
      C2=G(10,2)*DP2+G(1,10)*SP2                                       978
      C3=G(10,3)*DP3+G(2,10)*SP3                                       979
      C4=G(10,4)*DP4+G(3,10)*SP4                                       980
      C5=G(10,5)*DP5+G(4,10)*SP5                                       981
      C6=G(10,6)*DP6+G(5,10)*SP6                                       982
      C7=G(10,7)*DP7+G(6,10)*SP7                                       983
      C8=G(10,8)*DP8+G(7,10)*SP8                                       984
      C9=G(10,9)*DP9+G(8,10)*SP9                                       985
      C10=G(10,10)*DP10+G(9,10)*SP10                                   986
      BR=BR-10.0*AOR*(G(10,1)*P101+C2*P102+C3*P103+C4*P104+C5*P105+C6*P1
     1106+C7*P107+C8*P108+C9*P109+C10*P101))                           988
      BT=BT+AOR*(G(10,1)*DP101+C2*DP102+C3*DP103+C4*DP104+C5*DP105+C6*DP
     1106+C7*DP107+C8*DP108+C9*DP109+C10*DP1010)                       990
      BP=BP-AOR*((G(10,2)*SP2-G(1,10)*DP2)*P102+2.0*(G(10,3)*SP3-G(2,10)
     1*DP3)*P103+3.0*(G(10,4)*SP4-G(3,10)*DP4)*P104+4.0*(G(10,5)*SP5-G(4
     2,10)*DP5)*P105+5.0*(G(10,6)*SP6-G(5,10)*DP6)*P106+6.0*(G(10,7)*SP7
     3-G(6,10)*DP7)*P107+7.0*(G(10,8)*SP8-G(7,10)*DP8)*P108+8.0*(G(10,9)
     4*SP9-G(8,10)*DP9)*P109+9.0*(G(10,10)*SP10-G(9,10)*DP10)*P1010)
1     BP=BP/P22*1.E-5                                                  996
      BT=BT*1.E-5                                                      997
      BR=BR*1.E-5                                                      998
      B=SQRT (BR*BR+BT*BT+BP*BP)                                       999
      RETURN                                                          1000
      END                                                             1001
```

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```
      SUBROUTINE INTER (X,F,NV,ITIME,IPRINT,XX,FXX)                    1002
      DIMENSION X(NV),F(NV),D(4,21)                                    1003
      NX = NV - 1                                                      1004
      NY = NV - 2                                                      1005
      IF(ITIME.NE.0) GO TO 5                                           1006
      DO 1 J = 1,NX                                                    1007
    1 D(1,J) = (F(J+1)-F(J))/(X(J+1)-X(J))                             1008
      DO 2 J = 2,NX                                                    1009
    2 D(2,J) = (D(1,J)-D(1,J-1))/(X(J+1)-X(J-1))                       1010
      DO 3 J = 2,NY                                                    1011
    3 D(3,J) = (D(2,J+1)-D(2,J))/(X(J+2)-X(J-1))                       1012
      DO 4 J = 3,NY                                                    1013
    4 D(4,J) = (D(3,J)-D(3,J-1))/(X(J+2)-X(J-2))                       1014
    5 IF(XX.GE.X(2).AND.XX.LT.X(NX)) GO TO 6                           1015
      IF(XX.LT.X(2))                                                   1016
     1  FXX = F(1) + (XX-X(1))*D(1,1) + (XX-X(1))*(XX-X(2))*D(2,2)
      IF(XX.GT.X(NX))                                                  1018
     1  FXX = F(NX) + (XX-X(NX))*D(1,NX) + (XX-X(NX))*(XX-X(NY))*D(2,NX)
      GO TO 9                                                          1020
    6 DO 7 K = 2,NY                                                    1021
      IF(XX.LT.X(K).OR.XX.GE.X(K+1)) GO TO 7                           1022
      IF((XX-X(K)).LE.(X(K+1)-XX)) GO TO 8                             1023
      FXX = F(K+1) + (XX-X(K+1))*D(1,K) + (XX-X(K+1))*(XX-X(K))*D(2,K+1)
      GO TO 9                                                          1025
    7 CONTINUE                                                         1026
    8 FXX = F(K) + (XX-X(K))*D(1,K) + (XX-X(K))*(XX-X(K+1))*D(2,K)
    9 IF(IPRINT.NE.0) GO TO 20                                         1028
      WRITE(6,12)                                                      1029
   12 FORMAT(1H1,59H X                F(X)       DIF1       DIF2       DIF3
     1   DIF4////)                                                     1031
      DO 14 K = 1,NV                                                   1032
      WRITE(6,10) X(K),F(K),D(2,K),D(4,K)                              1033
   14 WRITE(6,11) D(1,K),D(3,K)                                        1034
   10 FORMAT(F6.2,5X,3(F10.5,10X)//)                                   1035
   11 FORMAT(21X,2(F10.5,10X)//)                                       1036
   20 RETURN                                                           1037
      END                                                              1038
```

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```
      SUBROUTINE COEFG(XSRF,EL,BEE,SLL)                                 1039
      DIMENSION EL(21),BE(21),SL(21),DB(21),DS(21),BEE(21),SLL(21)
      DIMENSION G(9,9),GT(9,9),BM(9),GY(9,9)                            1041
      COMMON/BLOG1/GY,BM,J,NMAX,SJM                                     1042
      DATA  G/      0.                                                  1043
     C, .604035E+05,-.694380E+05,-.226000E+04,-.102077E+05, .311579E+05
     C,-.351543E+04,-.283472E+05, .937586E+04,-.102775E+05, .192185E+05
     C,-.416396E+04,-.587450E+05,-.227907E+04, .183464E+05,-.122775E+05
     C,-.189940E+05, .521832E+05,-.366865E+05,-.285316E+05,-.407948E+04
     C, .157331E+03,-.249926E+05, .419039E+05, .322422E+05,-.398356E+05
     C, .662893E+05, .255038E+05, .219502E+04,-.118227E+05,-.656957E+04
     C, .408895E+03, .567099E+04, .394771E+05,-.203659E+05, .497035E+03
     C,-.131210E+04, .137984E+05, .119025E+05,-.590732E+04,-.324078E+04
     C, .357183E+03,-.431546E+04, .758951E+04, .106945E+05, .457852E+05
     C, .247117E+05,-.218156E+05, .372490E+04,-.467581E+03, .182791E+04
     C,-.181957E+04, .555702E+02,-.301796E+04,-.331655E+05,-.133312E+05
     C, .384764E+05,-.116204E+05, .480488E+03, .119662E+04,-.188741E+03
     C,-.983253E+03, .408139E+04,-.746472E+05, .178544E+05, .162593E+05
     C, .474198E+04, .471100E+04, .997789E+03, .392562E+03,-.761824E+03
     C,-.150787E+04, .129705E+05,-.213114E+05,-.246238E+05,-.100527E+05
     C,-.880195E+04,-.554710E+04,-.147026E+04,-.359419E+03,-.619500E+03
     C/                                                                 1060
      DATA GT/      0.                                                  1061
     C,-.153000E+02, .365000E+02,-.500000E+00, .306182E+01,-.149627E+02
     C, .144373E+01, .134064E+02,-.502727E+01, .230000E+01,-.870000E+01
     C,-.520000E+00, .330682E+02,-.110727E+01,-.111836E+02, .567091E+01
     C, .126409E+02,-.258125E+02, .204382E+02, .144626E+02, .138545E+01
     C,-.135545E+01, .117391E+02,-.222873E+02,-.164387E+02, .202725E+02
     C,-.336494E+02,-.129600E+02,-.135555E+01, .608745E+01, .300418E+01
     C, .209182E+00,-.292373E+01,-.189291E+02, .102393E+02,0.           1068
     C, .553455E+00,-.625691E+01,-.606578E+01, .310600E+01, .155291E+01
     C,0.          , .219274E+01,-.370473E+01,0.           ,-.233831E+02
     C,-.130643E+02, .113949E+02,-.177482E+01, .210464E+00,-.912027E+00
     C, .930725E+00,0.           , .148303E+01, .170128E+02, .597818E+01
     C,-.199255E+02, .600255E+01,-.232682E+01,-.604521E+00, .134335E+00
     C, .494364E+00,-.205957E+01, .390173E+02,-.868827E+01,-.819136E+01
     C,-.246973E+01,-.246973E+01,-.484364E+00,-.194177E+00, .388355E+00
     C, .752055E+00,-.670309E+01, .112165E+02, .124258E+02, .534718E+01
     C, .444917E+01, .274609E+01, .752051E+00, .188014E+00, .313354E+00
     C/                                                                 1078
      DATA BM/     .991934E+05                                          1079
     C,     .991934E+05,     .374862E+05,     .244272E+05,     .129915E+05
     C,     .621152E+04,     .302467E+04,     .127136E+04,     .377433E+03
     C/                                                                 1082
      DATA BE/.955799,1.27945,1.33083,1.44433,1.66801,1.96777,          1083
     +2.05220,2.22592,2.39004,2.53963,2.67014,2.77546,                  1084
     +2.84604,2.88595,2.89716,2.88815,2.86748,2.83612,2.80352,          1085
     +2.76829,2.72037/                                                  1086
      DATA DB/.315765,.529916,.554383,.603814,.719287,.816979,.907366,
     +.[illegible],1.[illegible],1.[illegible],1.211[illegible],1.[illegible],
     +1.[illegible],1.[illegible],1.[illegible],1.[illegible],1.261176,
```

```
     +1.237467,1.213395/                                                    1090
      DATA SL/.164654,1.064938,.752276,.744650,.821132,.900768,             1091
     +.978823,1.057715,1.135386,1.206095,1.267318,1.312199,1.328488,
     +1.325078,1.301284,1.266225,1.228001,1.185870,1.149161,1.106291,
     +1.065532/                                                             1094
      DATA DS/.0493822,.503208,.347607,.333029,.374478,.414188,.453381,
     +.493194,.532534,.568446,.599601,.622439,.630635,.628619,              1096
     +.615995,.597417,.577039,.554531,.535332,.511624,.489605/              1097
      DATA IFG1/1/                                                          1098
      IF(IFG1.EQ.2) GO TO 41                                                1099
      DO 40 II=1,21                                                         1100
      DB(II)=DB(II)*(-.001)                                                 1101
      SL(II)=SL(II)*(-.001)                                                 1102
      DS(II)=DS(II)*.000001                                                 1103
 40   CONTINUE                                                              1104
      IFG1=2                                                                1105
 41   CONTINUE                                                              1106
      YR=XGRF                                                               1107
      AR=0                                                                  1108
      SUM=0                                                                 1109
      DO 10 K=1,9                                                           1110
      DO 10 I=1,9                                                           1111
      GY(I,K)=G(I,K)+YR*GT(I,K)                                             1112
      AR=AR+1                                                               1113
      SUM=SUM+AR*GY(I,K)                                                    1114
10    CONTINUE                                                              1115
      DO 20 I=1,21                                                          1116
      SLL(I)=SL(I)+YR*DS(I)                                                 1117
      EE(I)=SE(I)+YR*DB(I)                                                  1118
      CONTINUE                                                              111
      J=0                                                                   112
      NMAX=9                                                                1121
      EL(1)=1.15                                                            1122
      EL(2)=1.2                                                             1123
      EL(3)=1.25                                                            1124
      EL(4)=1.3                                                             1125
      DO 30 II=5,21                                                         1126
      EL(II)=EL(II-1)+.1                                                    1127
 30   CONTINUE                                                              1128
C$1C$1WRITE(6,2003) XGRF                                                   1129
2003  FORMAT(1H1,4X,*IGRF *,F7.1,*  USED IN THIS CALCULATION*///)
C$1C$1WRITE(6,2001) (EL(J),EE(J),SLL(J),J=1,21)                            1131
2001  FORMAT(5X,F5.1,F10.5,E15.5)                                           1132
      RETURN                                                                1133
      END                                                                   1134
```

```
      SUBROUTINE S2UP2(KDAT,IDAT,NKD)                                   1135
      DIMENSION KDAT(NKD),IDAT(300)                                     1136
      MKD=2                                                             1137
      GO TO 10                                                          1138
      ENTRY S2UP3                                                       1139
      MKD=3                                                             1140
      GO TO 10                                                          1141
      ENTRY S2UP4                                                       1142
      MKD=4                                                             1143
      GO TO 10                                                          1144
      ENTRY S2UP5                                                       1145
      MKD=5                                                             1146
      CONTINUE                                                          1147
      IKD=IDIM/MKD                                                      1148
      DO 20 II=1,NKD                                                    1149
      JJ1=31                                                            1150
      JJ2=MKD*(II-1)+1                                                  1151
      JJ3=JJ2+MKD-1                                                     1152
      DO 20 JJ=JJ2,JJ3                                                  1153
      JJ1=JJ1-IKD                                                       1154
      IDAT(JJ)=LSHIFT(JJ1,IKD,KDAT(II))                                 1155
20    CONTINUE                                                          1156
      RETURN                                                            1157
      END                                                               1158
```

```
      PROGRAM S2SABI(DFILE,EFILE,YFILE,ZFILE,OUTPUT=64,                 10
     +TAPE1=DFILE,TAPE2=EFILE,TAPE8=YFILE,                              11
     +TAPE9=ZFILE,TAPE6=OUTPUT)                                         12
C*****                                                                  13
C*****                                                                  14
C  1976   PROGRAM.  E. HOLEMAN.  LAST ALTERATION 23 JUL 76              15
C  FROM S2BLAF 7 JAN 76.                                               16
C*****                                                                  17
C*****                                                                  18
C  PRELIMINARY SORT OF DATA BY LATITUDE AND LONGITUDE.                  19
C  SEPARATION ONLY.  NO SORTING YET.                                    20
C*****                                                                  21
C*****                                                                  22
C  ICT3  COUNTS RECORDS READ.                                           23
C*****                                                                  24
C*****                                                                  25
C  467008 CM STORAGE REQUIRED FOR LOADING.                              26
C*****                                                                  27
C*****                                                                  28
      DIMENSION KDAT(27,18),IDA(78),ERG(33),FERG(33),                   29
     +FHED(30),IHED(30),LTIM(8),JDAT(65),IOUT(14,13),XPA(13),           30
     +LDAT(4,8),BATT(2,15),JDA(15),                                     31
     +IPAD1(12,12),IPAD2(8,12,3),IANN(100),                             32
     +IMAT(13,12),JMAT(8,12),KMAT(200),LABL(3)                          33
      EQUIVALENCE(FHED,IHED)                                            34
      EQUIVALENCE(IMAT,JMAT)                                            35
      COMMON /IOGEOG/ OMEGA,THETA,RIOTA,RNM,XLT,XLG,ALT,XLTM,XLGM
      DATA IPAD1,IPAD2,IOUT /614*0/                                     37
      DATA ERG /116.,100.,60.,58.,50.,29.,25.,15.5,15.,14.3,            38
     +13.,9.14,8.52,8.,6.69,6.41,6.1,6.02,5.61,5.5,5.31,                39
     +2.927,2.63,2.038,2.01,1.445,.948,6.3,4.03,3.64,                   40
     +1.56,1.35,1.24/                                                   41
      FLUX(IFLX)=FLOAT(IFLX.AND.MASK3)/FLOAT(SHIFT(IFLX,-45))           42
      MASK4=SHIFT(1,45)                                                 43
      MASK3=777777777777777B                                            44
      IFGB=0                                                            45
      SNB=0.                                                            46
      SLF=0.                                                            47
      REWIND1                                                           48
      REWIND2                                                           49
      REWIND8                                                           50
      REWIND9                                                           51
      T0=SECOND(TTT)                                                    52
      WRITE(8,2004)                                                     53
 2004 FORMAT(1H1,4X,*PROCESSING BEGUN IN S2SAB*)                        54
   50 CONTINUE                                                          55
      IFGC=-1                                                           56
      IOLT=0                                                            57
      ICT1=0                                                            58
      ICT3=0                                                            59
      ICT4=0                                                            60
```

```
      T1=SECOND(TTT)                                                    61
      READ(1) IWC,IGC,(FHED(I),I=1,IWC)                                 62
      IF(EOF(1)) 110,50                                                 63
   50 CONTINUE                                                          64
      MNEMO=FHED(IWC)                                                   65
      FHED(IWC)=5LEFILE                                                 66
      RIOTA=FHED(21)                                                    67
      ENCODE(30,4001,LABL) (IHED(I),I=1,3),IHED(6)                      68
 4001 FORMAT(R4,R5,2X,A10,1X,A8)                                        69
      THTL=0.                                                           70
      ALTL=0.                                                           71
      DTHT=.047                                                         72
      WRITE(2) IWC,IGC,(FHED(I),I=1,IWC)                                73
      GMT1=FLOAT(IHED(18))/1000.                                        74
      TRAT=FLOAT(IHED(19))/FLOAT(IHED(20))/1000.                        75
      GMT2=GMT1-FLOAT(IHED(17))*TRAT                                    76
      CALL TDATE(LTIM,TMA,MON,FHED(27),IHED(26),118)                    77
      WRITE(6,2010)                                                     78
      WRITE(9,2010)                                                     79
 2010 FORMAT(1H1)                                                       80
      WRITE(6,2008) FHED(27),MON,LABL                                   81
      WRITE(8,2008) FHED(27),MON,LABL                                   82
      WRITE(9,2008) FHED(27),MON,LABL                                   83
 2008 FORMAT(5X,*ORBIT TO*,F8.2,A10,2X,3A10)                            84
      TLTL=-999                                                         85
      ILOL=-999                                                         86
      TALL=-999                                                          7
   60 CONTINUE                                                          88
C*****                                                                  89
C  READ MASTER FRAME INPUT                                              90
C*****                                                                  91
      READ(1) IWC,IGC,((KDAT(I,J),I=1,IWC),J=1,IGC)                    92
      IEOF=EOF(1)                                                       93
      IF(IEOF.NE.0) GO TO 20                                            94
      IF(KDAT(IWC,IGC).NE.10HMAG RECORD) GO TO 10                       95
      ISA=0                                                             96
      ISB=0                                                             97
      JGC=IGC-1                                                         98
      CALL S2HK3(KDAT(1,1),JDAT,KDAT(1,JGC),IANN)                       99
      DO 130 II=1,6                                                    100
      ISA=ISA+IANN(II)                                                 101
  130 CONTINUE                                                         102
      DO 240 II=7,16                                                   103
      ISB=ISB+IANN(II)                                                 104
  240 CONTINUE                                                         105
      IF(ISA.LT.800.AND.ISB.LT.1150) GO TO 10                          106
      ICT3=ICT3+1                                                      107
      CALL S2DP3(KDAT(1,IGC),IDA,26)                                   108
      ALT=IDA(1)                                                       109
      RKM=ALT+6371.2                                                   110
      RNM=RKM/1.85325                                                  111
```

```
      OMEGA=FLOAT(IDA(5))/100.                                          112
      THETA=FLOAT(IDA(4))/100.                                          113
      IF(ABS(THETA-THTL).LT..5) THTL=0.                                 114
      IF(ABS(THETA-THTL).GT.5.) THTL=0.                                 115
      IF(ALTL.LT.100.) ALTL=ALT                                         116
      IF(ABS(THTL).GT.1.E-6) DTHT=(THETA-THTL)/16.                      117
      TALT=(ALT-ALTL)/16.                                               118
      TALT1=1.1*TALT                                                    119
      TALT2=TALT/1.1                                                    120
      IF(ABS(TALT2-TALT1).LT.1.) DALT=TALT                              121
      IF((TALT1-DALT)*(DALT-TALT2).GT.0.) DALT=TALT                     122
      IF(DTHT.GT..063) DTHT=DTHT/2.                                     123
      IF(DTHT.GT..063) DTHT=.063                                        124
C     PRINT 3005,ALT,ALTL,DALT                                          125
 3005 FORMAT(1X,2F8.0,F8.4)                                             126
      THTL=THETA                                                        127
      ALTL=ALT                                                          128
      II2=45                                                            129
      DO 260 II=1,16                                                    130
      DO 260 JJ=1,2                                                     131
      II2=II2+1                                                         132
      BATT(JJ,II)=FLOAT(IDA(II2))/100.                                  133
  260 CONTINUE                                                          134
C*****                                                                  135
C  WRITE MASTER FRAME OUTPUT                                            136
C*****                                                                  137
      II2=IGC-2                                                         138
      II1=1                                                             139
   30 CONTINUE                                                          140
      JDA(14)=KOAT(1,II1)                                               141
      DO 70 II=II1,II2                                                  142
      THETA=THETA+DTHT                                                  143
      ALT=ALT+DALT                                                      144
      RKM=ALT+6371.2                                                    145
      RNM=RKM/1.85325                                                   146
      CALL GEOGA(TMA)                                                   147
      IF(XLTM.GT.180.) XLTM=XLTM-360.                                   148
      IF(XLT.GT.180.) XLT=XLT-360.                                      149
      TMA=TMA+1.                                                        150
      ILTC=XLTM/5.                                                      151
      ILGC=XLGM/5.                                                      152
      IALC=ALT/100.                                                     153
      IF(ILTC.NE.ILTL.OR.ILGC.NE.ILGL) GO TO 20                         154
      IF(IALL.NE.IALC) GO TO 20                                         155
      JDA(1)=JDA(1)+IFIX(ALT)                                           156
      JDA(2)=JDA(2)+IFIX(100.*XLT)                                      157
      JDA(3)=JDA(3)+IFIX(100.*XLG)                                      158
      JDA(4)=JDA(4)+IFIX(100.*THETA)                                    159
      JDA(5)=JDA(5)+IFIX(100.*OMEGA)                                    160
      JDA(6)=JDA(6)+IFIX(100.*XLTM)                                     161
      JDA(13)=JDA(13)+IFIX(100.*XLGM)                                   162
```

```
      JDA(15)=JDA(15)+1                                                 163
      DO 330 JJ=7,12                                                    164
      JDA(JJ)=JDA(JJ)+IDA(JJ+33)                                        165
  330 CONTINUE                                                          166
      ALT2=ALT                                                          167
      XLT2=XLTM                                                         168
      XLG2=XLGM                                                         169
      IDLT=IDLT+1                                                       170
      ICT1=ICT1+1                                                       171
      CALL S2UP3(KDAT(1,II),JDAT,KDAT(1,17))                           172
      IF(IFGB.GT.5) IFGB=0                                              173
      IFGA=SHIFT(JDAT(2),-15)                                           174
      IF(IFGB.NE.0) IFGB=IFGB+1                                         175
      IF(IFGB.EQ.0.AND.IFGA.EQ.1) IFGB=1                                176
      JDAT(2)=JDAT(2).AND.77777B                                        177
      CALL S2PAL(JDAT(14),LDAT,LCHN)                                    178
C*****                                                                  179
C  ADD DATA TO PITCH ANGLE DISTRIBUTION                                 180
C*****                                                                  181
      IPA=ABS(BATT(1,II))/15.+1.                                        182
      IF(IPA.GT.12) IPA=12                                              183
      IF(IPA.LT.1) IPA=1                                                184
      IF(IFGB.GT.1) GO TO 70                                            185
      DO 150 JJ=1,12                                                    186
      IPAD1(JJ,IPA)=IPAD1(JJ,IPA)+JDAT(JJ+1)*MASKA                      187
  150 CONTINUE                                                          188
      DO 230 JJ=1,3                                                     189
      IPAD2(LCHN,IPA,JJ)=IPAD2(LCHN,IPA,JJ)+LDAT(JJ,LCHN)*MASKA         190
  230 CONTINUE                                                          191
   70 CONTINUE                                                          192
      GO TO 10                                                          193
   90 CONTINUE                                                          194
C     PRINT 3002,IFGC,IEOF,IDLT                                        195
 3002 FORMAT(1X,9I5)                                                    196
      II1=II                                                            197
      IF(IFGC.LT.0) GO TO 30                                            198
      IF(IEOF.NE.0.AND.IDLT.LE.2) GO TO 100                             199
      IF(IDLT.LE.2) GO TO 30                                            200
      ICT4=ICT4+1                                                       201
C*****                                                                  202
C  PRINT OUT 64 SECOND PITCH ANGLE DISTRIBUTIONS AND ZERO SUMS.         203
C*****                                                                  204
      SNB=JDA(15)                                                       205
      IF(SNB.LT.1.) SNB=1.                                              206
      DO 340 II=1,13                                                    207
      JDA(II)=FLOAT(JDA(II))/SNB+.5                                     208
  340 CONTINUE                                                          209
      ALTA=JDA(1)                                                       210
      XLTA=FLOAT(JDA(2))/100.                                           211
      XLGA=FLOAT(JDA(3))/100.                                           212
      XLTMA=FLOAT(JDA(6))/100.                                          213
```

```
      XLGMA=FLOAT(JDA(13))/100.                                          214
      BAA=FLOAT(JDA(7))/10000.                                           215
      FLA=FLOAT(JDA(8))/1000.                                            216
      HMNA=JDA(9)                                                        217
      CALL AUTOD(JDA,KMAT,15,JWDD,KWDD)                                  218
      WRITE(9,2006) XLTMA,XLGMA,ALTA,IDLT,BAA,FLA,HMNA                   219
 2006 FORMAT(//10X,*MLAT =*,F8.2,*  MLONG =*,F8.2,*  ALT =*,             220
     +F8.1,*  TIME INTERVAL IS *,I4//10X,*BAV =*,F8.3,*  DAV =*,        221
     +F8.2,*  HMAV =*,F8.1)                                             222
      WRITE(9,2001)                                                      223
 2001 FORMAT(/3X,*P-ANG   PA1  N1   PA2  N2   PA3  N3   PA4  *          224
     +*N4   PA5  N5   PAF8  NF8   PA86  N86*)                           225
C*****                                                                  226
C  SET UP LEPS PITCH ANGLE MATRIX                                       227
C*****                                                                  228
      DO 170 II=1,12                                                     229
      XPA(II)=FLOAT(15*(II-1))+7.5                                       230
      IMAT(13,II)=SHIFT(IPAD1(1,II),-45)                                 231
      DO 180 JJ=1,12                                                     232
      IMAT(JJ,II)=IPAD1(JJ,II).AND.MASK8                                 233
  180 CONTINUE                                                           234
 2009 FORMAT(2X,F6.1,I4,I7,3I6,8I7)                                      235
 2017 FORMAT(2X,F6.1,I4,F9.1,3F8.1,8F9.1)                                236
  170 CONTINUE                                                           237
      KWD=KWDD+1                                                         238
      CALL AUTOD(IMAT,KMAT(KWD),156,JWDD,KWDD)                           239
      KWDD=KWD+KWDD-1                                                    240
C*****                                                                  241
C  SET UP P-ALPHA COINC MODE AND FRONT DET PA MATRICES                  242
C*****                                                                  243
      DO 190 II=1,12                                                     244
      DO 200 JJ=1,8                                                      245
      JMAT(JJ,II)=IPAD2(JJ,II,1).AND.MASK8                               246
      IF(JJ.GT.5) GO TO 200                                              247
      IJ=2*JJ-1                                                          248
      IOUT(IJ,II)=JMAT(JJ,II)                                            249
      IF(II.EQ.1) IOUT(IJ,13)=0                                          250
      IOUT(IJ,13)=IOUT(IJ,13)+IOUT(IJ,II)                                251
  200 CONTINUE                                                           252
 2011 FORMAT(2X,F6.1,2(,3I7,2I8,2I5,I7,10(I                             253
  190 CONTINUE                                                           254
      KWD=KWDD+1                                                         255
      CALL AUTOD(JMAT,KMAT(KWD),96,JWDD,KWDD)                            256
      KWDD=KWD+KWDD-1                                                    257
      IOUT(11,13)=0                                                      258
      DO 320 II=1,12                                                     259
      DO 350 JJ=1,8                                                      260
      JMAT(JJ,II)=IPAD2(JJ,II,2).AND.MASK8                               261
  350 CONTINUE                                                           262
      IOUT(11,II)=JMAT(8,II)                                             263
      IOUT(11,13)=IOUT(11,13)+IOUT(11,II)                                264
```

```
 320  CONTINUE                                                          255
      KWD=KWDD+1                                                        256
      CALL AUTOD(JMAT,KMAT(KWD),96,JWDD,KWDD)                           257
      KWDD=KWD+KWDD-1                                                   258
C*****                                                                  259
C  SET UP BACK DET AND NO OF OBS MATRICES                               260
C*****                                                                  261
      IOUT(13,13)=0                                                     262
      DO 210 II=1,12                                                    263
      DO 220 JJ=1,8                                                     264
      JMAT(JJ,II)=IPAD2(JJ,II,3).AND.MASK3                              265
 220  CONTINUE                                                          266
      IOUT(13,II)=JMAT(6,II)                                            267
      IOUT(13,13)=IOUT(13,13)+IOUT(13,II)                               268
 210  CONTINUE                                                          269
      KWD=KWDD+1                                                        270
      CALL AUTOD(JMAT,KMAT(KWD),96,JWDD,KWDD)                           271
      KWDD=KWD+KWDD-1                                                   272
      DO 310 II=1,12                                                    273
      DO 360 JJ=1,8                                                     274
      JMAT(JJ,II)=SHIFT(IPAD2(JJ,II,1),-45)                             275
      IF(JJ.GT.6) GO TO 360                                             276
      IJ=2*JJ                                                           277
      IOUT(IJ,II)=JMAT(JJ,II)                                           278
      IF(II.EQ.1) IOUT(IJ,13)=0                                         279
      IOUT(IJ,13)=IOUT(IJ,13)+IOUT(IJ,II)                               280
 360  CONTINUE                                                          281
      IOUT(12,13)=0                                                     282
      IOUT(14,13)=0                                                     283
      IOUT(12,II)=JMAT(8,II)                                            284
      IOUT(14,II)=JMAT(6,II)                                            285
      IOUT(12,13)=IOUT(12,13)+IOUT(12,II)                               286
      IOUT(14,13)=IOUT(14,13)+IOUT(14,II)                               287
 310  CONTINUE                                                          288
      KWD=KWDD+1                                                        289
      CALL AUTOD(JMAT,KMAT(KWD),96,JWDD,KWDD)                           290
      KWDD=KWD+KWDD-1                                                   291
      IGC=1                                                             292
      WRITE(2) KWDD,IGC,(KMAT(I),I=1,KWDD)                              293
      XPA(13)=90.                                                       294
      DO 80 II=1,13                                                     295
      ISL=0                                                             296
      DO 120 JJ=1,14                                                    297
      ISL=ISL+IOUT(JJ,II)                                               298
 120  CONTINUE                                                          299
      IF(ISL.GT.0) WRITE(9,2007) XPA(II),(IOUT(I,II),I=1,14)            300
      IF(II.EQ.13.AND.ISL.GT.0) WRITE(6,2007) XPA(II),(IOUT(I,II),
     +I=1,14)                                                           301
 80   CONTINUE                                                          302
2007  FORMAT((1X,F6.1,7(I6,I3)))                                        303
      IF(IEOF.NE.0) GO TO 100                                           304
```

```
C*****                                                                  316
C  ZERO CONSTANTS FOR NEXT LAT,LONG BOX                                317
C*****                                                                  318
      IDLT=0                                                            319
 30   CONTINUE                                                          320
      DO 40 II=1,12                                                     321
      JDA(II)=0                                                         322
      DO 40 JJ=1,12                                                     323
      IPAD1(JJ,II)=0                                                    324
      IF(JJ.GT.9) GO TO 40                                              325
      IPAD2(JJ,II,1)=0                                                  326
      IPAD2(JJ,II,2)=0                                                  327
      IPAD2(JJ,II,3)=0                                                  328
 40   CONTINUE                                                          329
      IFGO=0                                                            330
      JDA(13)=0                                                         331
      JDA(14)=0                                                         332
      JDA(15)=0                                                         333
      IF(XLT.GT.90.) XLT=XLT-360.                                       334
      XLT1=XLT                                                          335
      XLG1=XLG                                                          336
      ALT1=ALT                                                          337
      HR=(GMT7+FLOAT(IDAT(1,II1))*TRAT)/3600.                           338
      CALL TDAT8(LTIM,TMA,MON,HR,JD,019)                                339
      ILTL=ILTO                                                         340
      ILGL=ILGO                                                         341
      IALL=IALO                                                         342
      GO TO 90                                                          343
100   CONTINUE                                                          344
      WRITE(8,2002) ICT3,ICT4                                           345
2002  FORMAT(1X,I5,*  RECORDS READ FROM DFILE*/                         346
     +1X,I5,*  RECORDS WRITTEN ON EFILE*)                               347
      T2=SECOND(TTT)-T1                                                 348
      WRITE(8,2003) T2                                                  349
2003  FORMAT(2X,*PROCESSING TIME FOR ORBIT IS*,F10.3)                   350
      ENDFILE2                                                          351
      GO TO 50                                                          352
110   CONTINUE                                                          353
      T2=SECOND(TTT)-T0                                                 354
      WRITE(8,2005) T2                                                  355
2005  FORMAT(2X,*TOTAL PROCESSING TIME FOR S2SAB IS*,F10.3)             356
      END                                                               357
```

```
      SUBROUTINE AUTCD(IMAT,JMAT,IWD,JWD,KWD)
C*****************************************************************
C*****
C  1976   SUBPROGRAM.  E. HOLEMAN.  LAST ALTERED 17 OCT 77.
C  CREATED 4 MAR 76.
C*****
C*****
C  FIRST VERSION OF AUTO-PACKING ROUTINE
C*****
C*****************************************************************
      DIMENSION IMAT(1),JMAT(1),KMAT(512)
      DATA ICT4 /0/
      XLGK=2.079441541
      MAXK=-99
      ICT4=ICT4+1
      JWD=1
      KWD=1
      MAXI=1
      KWD1=0
      KSUM=20
      IF(IWD.LT.0) IWD=0
      NWPW=20
      LWD=1
      IF(IWD.EQ.0) GO TO 50
      DO 10 II=1,IWD
      KMAT(II)=20
      IF((SHIFT(IMAT(II),-48).AND.77777B).NE.0) GO TO 40
      KMAT(II)=0
      IF(IMAT(II).EQ.0) GO TO 10
      KMAT(II)=ALOG(FLOAT(IMAT(II)))/XLGK+1.
 40   CONTINUE
      IF(KMAT(II).GT.MAXK) MAXI=II
      IF(KMAT(II).GT.MAXK) MAXK=KMAT(II)
      KSUM=KSUM+KMAT(II)
      IF(KSUM.LE.20) GO TO 10
      KSUM=0
      KSUM=KMAT(II)
      KWD1=KWD1+1
 10   CONTINUE
      IF(MAXK.GT.20) WRITE(6,2001) MAXK
C*****
C  ENCODE WORD LOGIC
C*****
      IF(MAXK.GT.7) NWPW=10
      NCPW=60/NWPW
      JWD1=(IWD-1)/NWPW+2
      DO 20 II=1,IWD,NWPW
      LWD=LWD+1
      JMAT(LWD)=0
      ICH=61
      MWD=MIN0(II+NWPW-1,IWD)
```

```
      DO 20 JJ=II,MWD                                                    409
      ICH=ICH-NCPW                                                       410
      JMAT(LWD)=ISBYTX(ICH,NCPW,JMAT(LWD),JMAT(JJ))                      411
   20 CONTINUE                                                           412
      JWD=LWD                                                            413
      IF(JWD.NE.JWD1) WRITE(6,2001) ICT4,JWD,JWD1                        414
 2001 FORMAT(1X,*PROBLEM IN CODING AT*,4I5)                              415
      KWD1=KWD1+LWD                                                      416
C*****                                                                   417
C  ENCODE DATA                                                           418
C*****                                                                   419
      ICH=0                                                              420
      DO 30 II=1,IWD                                                     421
      IF(KMAT(II).EQ.0) GO TO 30                                         422
      NCPW=3*KMAT(II)                                                    423
      ICH=ICH-NCPW                                                       424
      IF(ICH.LE.0) LWD=LWD+1                                             425
      IF(ICH.LE.0) ICH=61-NCPW                                           426
      JMAT(LWD)=ISBYTX(ICH,NCPW,JMAT(LWD),JMAT(II))                      427
   30 CONTINUE                                                           428
   40 CONTINUE                                                           429
      KWD=LWD                                                            430
      IF(KWD.NE.KWD1) WRITE(6,2001) ICT4,JWD,KWD,KWD1                    431
      JMAT(1)=0                                                          432
      JMAT(1)=ISBYTX(46,15,JMAT(1),IWD)                                  433
      JMAT(1)=ISBYTX(31,15,JMAT(1),NWPW)                                 434
      JMAT(1)=ISBYTX(16,15,JMAT(1),JWD)                                  435
      JMAT(1)=ISBYTX(1,15,JMAT(1),KWD)                                   436
      RETURN                                                             437
      END                                                                438
```

```
      PROGRAM S3PABA(AFILE,BFILE,YFILE,OUTPUT=64,                       10
     +TAPE1=AFILE,TAPE2=BFILE,TAPE8=YFILE,TAPE6=OUTPUT)                 11
C*****************************************************************    12
C******                                                               13
C  1976   PROGRAM.  T. SPENCER.  LAST ALTERED  14 SEP 77               14
C  1976   S3-3 DATA REDUCTION SYSTEM.  CREATED 14 JUN 76               15
C******                                                               16
C******                                                               17
C  COUNTERS USED                                                      18
C ICK---POSITION OF CURRENT RECORD IN 16 SECOND GROUP                 19
C ICK1--POSITION OF CURRENT RECORD IN 8 SECOND GROUP                  20
C ISCR---SECONDS OF DATA READ SINCE LAST INPUT RECORD READ            21
C ISCW---COUNTS SECONDS OF DATA TO BE WRITTEN IN CURRENT RECORD       22
C ISCT---SECONDS OF DATA PROCESSED FOR FILE.                          23
C ICT2---COUNTS NUMBER OF FILES PROCESSED.                            24
C ICT3---COUNTS NUMBER OF AFILE RECORDS READ FOR FILE.                25
C ICT4---COUNTS NUMBER OF BFILE RECORDS WRITTEN FOR FILE.             26
C  FLAGS USED                                                         27
C******                                                               28
C******                                                               29
C  REFORMATS MERN DATA TAPE.  NO LISTINGS.                            30
C******                                                               31
C  47200 CM STORAGE REQUIRED FOR LOADING.                             32
C******                                                               33
C******                                                               34
C*****************************************************************    35
      DIMENSION FHED(30),IHED(30),ICAL(4),JCAL(4),KCAL(6)             36
      DIMENSION LABL(3),KDAT(76),LTIM(8),LDAT(4,8)                    37
      DIMENSION IDAT(25,20),JDAT(20,16),MDAT(12,4)                    38
      DIMENSION IANA(22),JANA(4,8),KANA(54),LANA(30)                  39
      COMMON IANA,JANA                                                40
      EQUIVALENCE(IANA,KANA)                                          41
      EQUIVALENCE(FHED,IHED)                                          42
      EQUIVALENCE(MDAT,KDAT(2))                                       43
      MASKA=SHIFT(1B,45)                                              44
      MASKB=7777777777777778                                          45
      MASKC=777778                                                    46
      MASKD=MASKC+1                                                   47
      REWIND1                                                         48
      REWIND2                                                         49
      REWIND8                                                         50
C******                                                               51
C  INITIALIZE FILES AND ZERO CONSTANTS                                52
C******                                                               53
      DO 120 II=1,54                                                  54
      KANA(II)=4008                                                   55
  120 CONTINUE                                                        56
      IWHICH=0                                                        57
      ITANA=1                                                         58
 2001 FORMAT(141,5X,*S3-3 PROCESSING BEGUN IN S3PABA*,                59
     +2(2X,A10)/5X,*ORBIT ID=*,3A10                                   60
```

```
     +/5X,'DATA ACQUISITION INTERVAL=',2F10.5,2X,A8)                    61
      ADAT=DATE(IDTT)                                                   62
      ATIM=TIME(ITIM)                                                   63
      ICT2=0                                                            64
 20   CONTINUE                                                          65
C******                                                                 66
C  READ FILE HEADER                                                     67
C******                                                                 68
      READ(1) KWC,KGC,(FHED(K),K=1,KWC)                                 69
      IF(EOF(1)) 100,10                                                 70
 10   CONTINUE                                                          71
      ISCT=0                                                            72
      ICT3=0                                                            73
      ICT4=0                                                            74
      LGC=0                                                             75
      ISCW=0                                                            76
      ICT2=ICT2+1                                                       77
      KCAL(1)=KCAL(2)=KCAL(3)=KCAL(4)=0                                 78
      IHED(30)=5LBFILE                                                  79
      ENCODE(30,4001,LABL) (IHED(I),I=1,3),IHED(6)                      80
 4001 FORMAT(R4,R5,2X,A10,1X,A8)                                        81
      HR1=FHED(8)/3600.                                                 82
      HR2=FHED(13)/3600.                                                83
      WRITE(8,2001) ITIM,IDTT,LABL,HR1,HR2,IHED(6)                      84
      GMT1=FLOAT(IHED(18))/1000.                                        85
      TRAT=FLOAT(IHED(19))/FLOAT(IHED(20))/1.00.                        86
      LTIM(1)=1976                                                      87
      LTIM(2)=IHED(16)                                                  88
      IF(LTIM(2)..T.180) LTIM(1)=1977                                   89
      CALL TDATB(LTIM,IMA,MON,HR1,JD,01B)                               90
      GMTZ=GMT1-FLOAT(IHED(17))*TRAT                                    91
 2002 FORMAT(*  TIME DISCREPANCY*)                                      92
C******                                                                 93
C  BEGINNING OF NORMAL READ LOOP....                                    94
C******                                                                 95
 200  CONTINUE                                                          96
      READ(1) IWC,IGC,((IDAT(I,J),I=1,IWC),J=1,IGC)                     97
      IEOF=EOF(1)                                                       98
      IF(IEOF.NE.0) GO TO 310                                           99
      IF(IWC.GT.25.OR.IGC.GT.20) GO TO 200                             100
      ICT3=ICT3+1                                                      101
      ISCR=0                                                           102
C******                                                                103
C  BEGINNING OF ONE SECOND PROCESSING.....                             104
C******                                                                105
 210  CONTINUE                                                         106
      ISCT=ISCT+1                                                      107
      ISCR=ISCR+1                                                      108
      DO 40 II=1,76                                                    109
      KDAT(II)=0                                                       110
 40   CONTINUE                                                         111
```

```
C******                                                          112
C  UNPACK ONE SECOND.                                           113
C******                                                          114
      CALL S3UPA(IDAT(1,ISCR),KDAT,ICK2)                        115
      CALL S2PAL(KDAT(75),LDAT,ICK1)                            116
      IF(ISCT.NE.1) GO TO 50                                    117
C******                                                          118
C  BEGINNING OF FILE PROCESSING.                                 119
C******                                                          120
      LWC=ISCW=JWC=0                                            121
      INOW=ICK1                                                 122
      IF(ICK2.GT.0) INOW=ICK2                                   123
      IBEG=KDAT(1)/16-INOW                                      124
      ILAS=0                                                    125
      HR=(GMTZ+FLOAT(KDAT(1))*TRAT)/3600.                       126
      IHED(26)=JD                                               127
      IHED(27)=HR                                               128
      IHED(29)=IBEG                                             129
      WRITE(2) KWC,1,(IHED(I),I=1,KWC)                          130
      ICK3=MOD(IBEG,8)+1                                        131
      IF(ICK3.NE.ICK1) IBEG=IBEG+ICK1-ICK3                      132
      ICOM=0                                                    133
      ICAL(1)=ICAL(2)=ICAL(3)=ICAL(4)=1                         134
      ICKC=ICK=KDAT(1)/256                                      135
 40   CONTINUE                                                  136
      ICKC=KDAT(1)/256                                          137
      IF(ICKC.NE.ICKL) GO TO 50                                 138
C******                                                          139
C  TRANSFER ANALOG                                               140
C******                                                          141
      DO 110 II=1,22                                            142
      IIA=II+43                                                 143
      IF(KDAT(IIA).LT.4000) IANA(II)=KDAT(IIA)                  144
 110  CONTINUE                                                  145
      JANA(1,ICK1)=KDAT(72)                                     146
      JANA(2,ICK1)=KDAT(73)                                     147
      JANA(3,ICK1)=KDAT(74)                                     148
      JANA(4,ICK1)=KDAT(75)                                     149
C*****                                                          150
C  CHECK FOR TIME GAPS.                                          151
C******                                                          152
      JNOW=KDAT(1)/16                                           153
      INOW=JNOW-IBEG                                            154
      ICK=MOD(JNOW,16)+1                                        155
      IGAP=INOW-ILAS                                            156
      IF(IGAP.GT.1) ICAL(2)=ICAL(4)=1                           157
      ILAS=INOW                                                 158
C*1   IF(IGAP.NE.1) WRITE(6,2003) IGAP,INOW                     159
 2003 FORMAT(1X,I3,"  SECOND GAP DETECTED AT",I8)               160
      IF(ICK2.LE.0) ICK2=ICK                                    161
      IF(LGC.NE.0) GO TO 320                                    162
```

```
      LANA(1)=KDAT(1)-15*(ICK-1)                                        163
 2004 FORMAT(1X,*GAP AT BEGINNING OF MASTER FRAME*,                     164
     +* AT*,I5,I3,2I10)                                                 165
  220 CONTINUE                                                          166
      LGC=LGC+IGAP                                                      167
      ISCW=ISCW+1                                                       168
C******                                                               169
C  CHECK ON LEPS CALIBRATION LOGIC.                                   170
C******                                                               171
      ICALB=0                                                           172
      IIA=0                                                             173
      DO 30 II=2,38,12                                                  174
      IIA=IIA+1                                                         175
      IF(IIA.EQ.1.OR.IIA.EQ.3) KCAL(IIA)=ICAL(IIA+1)                    176
      ICAL(IIA)=SHIFT(KDAT(II),-15)                                     177
      IF(IIA.EQ.2.OR.IIA.EQ.4) KCAL(IIA)=ICAL(IIA-1)                    178
      JCAL(IIA)=0                                                       179
      IF((KDAT(II+2)-4500)*(6500-KDAT(II+2)).GT.0.AND.                  180
     +((KDAT(II+2)-KDAT(II+1))*(KDAT(II+2)-KDAT(II+3)))                 181
     +.GT.0) JCAL(IIA)=1                                                182
      KDAT(II)=KDAT(II).AND.MASKD                                       183
   30 CONTINUE                                                          184
      KCAL(1)=KCAL(1).AND.JCAL(1)                                       185
      KCAL(2)=KCAL(2).AND.JCAL(2)                                       186
      KCAL(3)=KCAL(3).AND.JCAL(3)                                       187
      KCAL(4)=KCAL(4).AND.JCAL(4)                                       188
      ICALB=KCAL(1)*8+KCAL(2)*4+KCAL(3)*2+KCAL(4)                       189
      JDAT(1,ISCW)=KDAT(1)+SHIFT(ICALB,45)                              190
      IF(KCAL(3).EQ.1.AND.KCAL(4).NE.1) MDAT(1,4)=MDAT(1,4)+MASKD
      IF(KCAL(3).EQ.1.AND.KCAL(3).NE.1) MDAT(1,3)=MDAT(1,3)+MASKD
      IF(KCAL(1).EQ.1.AND.KCAL(2).NE.1) MDAT(1,2)=MDAT(1,2)+MASKD
      IF(KCAL(5).EQ.1.AND.KCAL(1).NE.1) MDAT(1,1)=MDAT(1,1)+MASKD
      KCAL(5)=KCAL(2)                                                   195
      KCAL(6)=KCAL(4)                                                   196
      IF(ICALB.NE.0) WRITE(8,2005) JNOW,ICAL,JCAL,KCAL,ICALB            197
 2005 FORMAT(1X,I3,2(1X,4I1),1X,6I1,I5)                                 198
C******                                                               199
C  SET NOISE TRAP                                                     200
C******                                                               201
      DO 80 KK=1,4                                                      202
      IF(MDAT(1,KK).GE.MASKD) GO TO 130                                 203
      IF(ICALB.NE.0) WRITE(8,2006) JNOW,KK,(MDAT(I,KK),I=1,12)          204
      IFGB=0                                                            205
      TEST=FLOAT(MDAT(2,KK))/FLOAT(MDAT(3,KK).OR.1B)                    206
      IF(TEST.GT.16..AND.MDAT(2,KK).GE.256) GO TO 130                   207
      TEST=FLOAT(MDAT(3,KK))/FLOAT(MDAT(2,KK).OR.1B)                    208
      IF(TEST.GT.16..AND.MDAT(3,KK).GE.256) GO TO 130                   209
      TEST=FLOAT(MDAT(11,KK))/FLOAT(MDAT(12,KK).OR.1B)                  210
      IF(TEST.GE.16..AND.MDAT(11,KK).GE.256) GO TO 130                  211
      TEST=FLOAT(MDAT(12,KK))/FLOAT(MDAT(11,KK).OR.1B)                  212
      IF(TEST.GT.16..AND.MDAT(12,KK).GE.256) GO TO 130                  213
```

```
      DO 140 JJ=4,10                                                    214
      SUMM=(MDAT(JJ-1,KK)+MDAT(JJ+1,KK))/2                             215
      IF(SUMM.LE.0.) SUMM=1.                                            216
      TEST=FLOAT(MDAT(JJ,KK))/SUMM                                      217
      IF(TEST.GE.3.5.AND.MDAT(JJ,KK).GE.32) IFGB=1                      218
  140 CONTINUE                                                          219
      IF(IFGB.NE.1) GO TO 80                                            220
  130 CONTINUE                                                          221
      IF(MDAT(1,KK).LT.MASKD) MDAT(1,KK)=MDAT(1,KK)+MASKD               222
      WRITE(8,2006) JNOW,KK,(MDAT(I,KK),I=1,12)                         223
 2006 FORMAT(1X,I9,I2,12I8)                                             224
   80 CONTINUE                                                          225
      JDAT(2,ISCW)=KDAT(76)                                             226
      CALL AUTOD(MDAT,JDAT(3,ISCW),48,JCD,ICD)                          227
      IF(ICD.GT.ICDM) ICDM=ICD                                          228
      IF(ISCW.GE.IGC) GO TO 200                                         229
      GO TO 210                                                         230
   50 CONTINUE                                                          231
C*****                                                                  232
C  RECORD READY TO BE WRITTEN                                           233
C*****                                                                  234
      IF(ISCW.LE.0) GO TO 90                                            235
      ICT4=ICT4+1                                                       236
      JWC=ICDM+2                                                        237
      IF(ICD.EQ.ICDM) JWC=JWC+1                                         238
      JDAT(JWC,ISCW)=104DAT RECORD                                      239
      CALL AUTOD(KANA,LANA(2),54,JCD,ICD)                               240
      LWC=ICD+2                                                         241
      LANA(LWC)=10HHHK2 RECORD                                          242
      WRITE(2) JWC,ISCW,((JDAT(J,I),J=1,JWC),I=1,ISCW)                  243
      WRITE(2) LWC,1,(LANA(I),I=1,LWC)                                  244
      IF(JDAT(1,1).NE.LANA(1)) PRINT 2004,ICT3,ICT4,LANA(1),            245
     +JDAT(1,1)                                                         246
   90 CONTINUE                                                          247
      DO 70 II=1,54                                                     248
      KANA(II)=4008                                                     249
   70 CONTINUE                                                          250
      ICDM=0                                                            251
      ISCW=0                                                            252
      IF(IEOF.NE.0) GO TO 310                                           253
      LGC=0                                                             254
      ICKL=ICK2                                                         255
      GO TO 60                                                          256
  310 CONTINUE                                                          257
C******                                                                 258
C  EOF ENCOUNTERED.                                                     259
C******                                                                 260
      IF(ISCW.NE.0) GO TO 50                                            261
      ENDFILE2                                                          262
      GO TO 20                                                          263
  100 CONTINUE                                                          264
```

```
C******                                                          265
C  EOI ENCOUNTERED.                                             266
C******                                                          267
      END                                                        268
```

```
      SUBROUTINE S3UPA(IDAT,NODAT,IANA)                                 269
C IDAT FILE TO BE UNPACKED LESS WORD AND GROUP COUNT                    270
C NODAT FILE UNPACKED                                                   271
C IANA POSITION IN 16 SEC GROUP                                         272
C                                                                       273
      DIMENSION IDAT (33),NODAT(75),ISCR(22)                            274
      COMMON /K/K(60)                                                   275
      DATA ISCR/11,10,9,8,7,6,5,4,3,2,4,3,2,1,16,1,8,7,6,5,3,2/         276
      IBIT=16                                                           277
      NODAT(1)=IDAT(1)                                                  278
      IWD=13                                                            279
      J=1                                                               280
      DO 5 I=1,60                                                       281
      K(I)=J                                                            282
5     J=J+I+1                                                           283
      J=47                                                              284
      DO 10 I=2,46                                                      285
1001  FORMAT(1X,4I4,2Z16)                                               286
      J=J-1                                                             287
      II=ISHIFT(IDAT(IWD),-16)                                          288
      NODAT(J)=IDAT(IWD)-SHIFT(II,16)                                   289
      IDAT(IWD)=II                                                      290
      IF (I .EQ. 46) GOTO 10                                            291
      IF (IBIT .GT. 44) GOTO 20                                         292
      IBIT=IBIT+16                                                      293
10    CONTINUE                                                          294
      GOTO 30                                                           295
20    I=I+1                                                             296
      J=J-1                                                             297
      IBIT=IBIT-44                                                      298
      IWD=IWD-1                                                         299
      II=ISHIFT(IDAT(IWD),-IBIT)                                        300
      NODAT(J)=(IDAT(IWD)-SHIFT(II,IBIT))*2**(16-IBIT)+IDAT(IWD+1)
      IDAT(IWD)=II                                                      302
      IBIT=IBIT+16                                                      303
      GOTO 10                                                           304
30    II=ISHIFT(IDAT(14) ,-12)                                          305
      NODAT(72)=IDAT(14)-SHIFT(II,12)                                   306
      IDAT(14)=II                                                       307
      DO 40 I=1,3                                                       308
      II=ISHIFT(IDAT(14),-16)                                           309
      NODAT(58-I)=IDAT(14)-SHIFT(II,16)                                 310
40    IDAT(14)=II                                                       311
      II=ISHIFT(IDAT(17) ,-12)                                          312
      NODAT(58)=IDAT(17)-SHIFT(II,12)                                   313
      IDAT(17)=II                                                       314
      DO 50 I=1,5                                                       315
      II=ISHIFT(IDAT(18) ,-12)                                          316
      NODAT(56-I)=IDAT(18)-SHIFT(II,12)                                 317
50    IDAT(18)=II                                                       318
      DO 60 I=1,4                                                       319
```

```
      II=ISHIFT(IDAT(17) ,-12)                                          320
      NODAT(62-I)=IDAT(17)-SHIFT(II,12)                                 321
60    IDAT(17)=II                                                       322
      DO 70 I=1,2                                                       323
      II=ISHIFT(IDAT(16) ,-12)                                          324
      NODAT(58-I)=IDAT(16)-SHIFT(II,12)                                 325
70    IDAT(16)=II                                                       326
      DO 80 I=1,2                                                       327
      DO 80 J=1,5                                                       328
      II=ISHIFT(IDAT(18+I) ,-12)                                        329
      NODAT(62+5*I-J)=IDAT(18+I)-SHIFT(II,12)                           330
      IDAT(18+I)=II                                                     331
80    CONTINUE                                                          332
      II=ISHIFT(IDAT(15) ,-24)                                          333
      NODAT(76)=SHIFT((IDAT(15)-SHIFT(II,24)),36)+IDAT(15)              334
      IDAT(15)=II                                                       335
      DO 90 I=1,3                                                       336
      II=ISHIFT(IDAT(15) ,-12)                                          337
      NODAT(76-I)=IDAT(15)-SHIFT(II,12)                                 338
90    IDAT(15)=II                                                       339
      IANA=0                                                            340
      DO 100 I=1,22                                                     341
      IF (NODAT(72-I) .LT. 400000) IANA=ISUB(I)                         342
100   CONTINUE                                                          343
      RETURN                                                            344
      END                                                               345
```

APP-B- 5 - 38

```
      FUNCTION ISHIFT(I,J)                                          346
      COMMON /K/K(60)                                               347
      IF (J .LT. 1) GOTO 10                                         348
      ISHIFT=SHIFT(I,J)                                             349
      RETURN                                                        350
10    ISHIFT=SHIFT(I,J) .AND. K(60+J)                               351
      RETURN                                                        352
      END                                                           353
```

```
      PROGRAM S3DMAB(BFILE,CFILE,EMFLE,YFILE,OUTPUT,                    10
     +TAPE1=BFILE,TAPE2=CFILE,TAPE4=EMFLE,TAPE8=YFILE,                  11
     +TAPE6=OUTPUT)                                                     12
C*****                                                                  13
C*****                                                                  14
C  1975   PROGRAM.  E. HOLEMAN.  LAST ALTERATION 29 NOV 76             15
C  1975   FROM S2DMAD  26 JUL 76.                                       16
C*****                                                                  17
C*****                                                                  18
C  IDT1  COUNTS MASTER FRAMES READ                                      19
C  IDT3  COUNTS SECONDS OF DATA PROCESSED.                              20
C*****                                                                  21
C*****                                                                  22
C  PROGRAM REQUIRES 56300 CM STORAGE FOR LOADING.                       23
C*****                                                                  24
C*********************************************************************  25
      DIMENSION FHED(30),IHED(30),IDAT(20,16),IANA(61),                 26
     +JATT(10,16),IDA(7),LABL(3),IATT(30,3)                             27
      EQUIVALENCE(FHED,IHED)                                            28
      EQUIVALENCE(IANA(56),IDA)                                         29
      COMMON/USEX/NMAX,IPRINT,IWHAT,ICOUNT,NPRINT,IECI(5),              30
     +LV(5),ALPHA(5),RET*(5),SUBERM(5),WRONUM(5),                       31
     +ZIOTA,ICALL                                                       32
      COMMON/D_OUT/ RLLV(5),DELTLV(5),RLECI(5),DLTECI(5),               33
     +ALFLVX(5),ALFLVY(5),ALFLVZ(5),ALPHEC(5),ALPHEY(5),                34
     +ALPHEZ(5)                                                         35
      COMMON/OJTALL/PI,TWOPI,PD,DR,ST,CI,C,MJ                           36
      COMMON /TIMERS/ JT(8),IT(8)                                       37
      COMMON/IOGEOG/OMEGA,THETA,XIOTA,RNM,XLT,XLG,ALT,XLTM,             38
     +XLGM                                                              39
      DATA IDAT /320*0/                                                 40
C                                                                       41
C*****                                                                  42
C  INITIALIZE FILES AND OM3 CONSTANTS                                   43
C*****                                                                  44
C                                                                       45
      MASK0=7777777777777778                                            46
      IDTT=DATE(ADTT)                                                   47
      ITIM=TIME(ATIM)                                                   48
      TG=SECOND(ZZZ)                                                    49
 2011 FORMAT(1H1,4X,*S3-7 PROCESSING BEGUN FOR S3DMA*,5X,A10,           50
     +5X,A10)                                                           51
      MNEMO=5LDFILE                                                     52
      REWIND1                                                           53
      REWIND2                                                           54
      REWIND4                                                           55
      REWIND8                                                           56
      IPRINT=0                                                          57
      IWHAT=2                                                           58
      ICOUNT=295                                                        59
      NPRINT=300                                                        60
```

```
      ICT3=0                                                          61
C*****                                                                62
C  INITIALIZE USER CONSTANTS                                         63
C*****                                                                64
C                                                                     65
      NMAX=5                                                          66
      DO 10 II=1,NMAX                                                 67
      LV(II)=1                                                        68
      IECI(II)=0                                                      69
      WRONJM(II)=1.                                                   70
 10   CONTINUE                                                        71
      SUBERM(1)=SJBERM(3)=-3.                                         72
      SUBERM(2)=SJBERM(4)=5.                                          73
      SUBERM(5)=-7.                                                   74
      ALPHA(1)=ALPHA(2)=179.67                                        75
      ALPHA(3)=ALPHA(4)=359.89                                        76
      ALPHA(5)=359.2                                                  77
      BETA(1)=BETA(2)=.05                                             78
      BETA(3)=BETA(4)=.0                                              79
      BETA(5)=0.11                                                    80
C                                                                     81
C*****                                                                82
C  CHECK EM DECK TIME CONSTANTS.                                      83
C  READ TAPE FILE HEADER RECORD.                                      84
C*****                                                                85
C                                                                     86
      IEGA=0                                                          87
 70   CONTINUE                                                        88
      ICT1=0                                                          89
      ICT2=0                                                          90
      ILN=0                                                           91
      IPG=0                                                           92
      ICALL=1                                                         93
      READ(1) JWC,JGC,(THED(I),I=1,JWC)                               94
      IF(EOF(1)) 100,90                                               95
 90   CONTINUE                                                        96
      ICT3=0                                                          97
      WRITE(6,2011) ADTT,ATIM                                         98
      ENCODE(30,4001,LABL) (THED(I),I=1,3),THED(6)                    99
4001  FORMAT(R4,R5,2X,A10,1X,A8)                                     100
2006  FORMAT(1H1)                                                    101
      TMA=0.                                                         102
      IEGA=0                                                         103
      CALL OM3(KABORT,KTABRT)                                        104
      ICALL=ICALL+1                                                  105
      IT(7)=0                                                        106
      IF(KABORT.EQ.1) GO TO 110                                      107
      CALL TDATE(IT,TMB,MON,HR,JD,DB)                                108
      TMA=TMB                                                        109
      WRITE(6,2014) (IT(I),I=1,6)                                    110
      WRITE(6,2014) (IT(I),I=1,6)                                    111
```

```
 2014 FORMAT(5X,*  EM TIMES*,5I5,T8,I10,I4)                              112
C*****                                                                   113
C  CHECK TAPE TIME CONSTANTS                                            114
C*****                                                                   115
      GMT1=FLOAT(IHED(18))/1000.                                         116
      TRAT=FLOAT(IHED(19))/FLOAT(IHED(20))/1000.                         117
      GMTZ=GMT1-FLOAT(IHED(17))*TRAT                                     118
      IF(IHED(30).NE.SUBFILE) STOP                                       119
      IHED(30)=SUBFILE                                                   120
      CALL TDATB(IT,TMA,MON,FHED(27),IHED(26),113)                       121
      HR1=FHED(6)/3600.                                                  122
      HR2=FHED(13)/3600.                                                 123
      WRITE(8,2015) (IT(I),I=1,6)                                        124
      WRITE(6,2015) (IT(I),I=1,6)                                        125
 2015 FORMAT(5X,*TAPE TIMES*,5I5,T8,I10,I4)                              126
 1001 FORMAT(1H1,7A10,F15.3,F10.1,5X,A10)                                127
   20 CONTINUE                                                           128
C*****                                                                   129
C  READ MASTER FRAME                                                     130
C*****                                                                   131
      READ(1) IWC,IGC,((IDAT(I,J),I=1,IWC),J=1,IGC)                     132
      IF(EOF(1)) 100,30                                                  133
   30 CONTINUE                                                           134
      READ(1) IWCA,IGCA,((IATT(I,J),I=1,IWCA),J=1,IGCA)                  135
      IWCB=IWCA                                                          136
      IGCB=IGCA                                                          137
      ICT1=ICT1+1                                                        138
      IF(ICT1.NE.1) GO TO 50                                             139
      ICT1=0                                                             140
      IF(IATT(1,1).LT.1.E6) IATT(1,1)=IDAT(1,1)                          141
      HR=(GMTZ+FLOAT(IATT(1,1))*TRAT)/3600.                              142
      CALL TDATB(IT,TMC,MON,HR,IHED(26),113)                             143
      KABORT=KTBORT=0                                                    144
      CALL OM3(KABORT,KTBORT)                                            145
      IF(KABORT.EQ.1) GO TO 110                                          146
      IF(KTBORT.EQ.1) GO TO 20                                           147
      ICALL=ICALL+1                                                      148
      CALL GEOGA(TMC)                                                    149
      FHED(9)=ALT                                                        150
      FHED(11)=XLT                                                       151
      FHED(21)=XIOTA                                                     152
      FHED(22)=OMEGA                                                     153
      FHED(23)=THETA                                                     154
      FHED(24)=XLG                                                       155
      WRITE(2) JWC,JGC,(FHED(I),I=1,JWC)                                 156
      ICT1=1                                                             157
   50 CONTINUE                                                           158
      II1=0                                                              159
C*****                                                                   160
C  DETERMINE ATTITUDES                                                   161
C*****                                                                   162
```

```
      DO 130 II=1,IGO                                                   163
      DO 140 JJ=1,10                                                    164
      JATT(JJ,II)=0.                                                    165
  140 CONTINUE                                                          166
      HR=(GMTZ+FLOAT(IDAT(1,II).AND.MASK3)*TRAT)/3600.                  167
      IF(HR.LT.HR1.OR.HR.GT.HR2) GO TO 130                              168
      CALL TDATB(IT,TM,MON,HR,IHED(26),110)                             169
      KABORT=KTBORT=0                                                   170
      CALL OMB(KABORT,KTBORT)                                           171
      IF(KABORT.EQ.1) GO TO 110                                         172
      IF(KTBORT.EQ.1) GO TO 130                                         173
      II1=II1+1                                                         174
      ICALL=ICALL+1                                                     175
      IF(II1.EQ.1) CALL GEOGA(TM)                                       176
      DO 9  JJ=1,5                                                      177
      JJ2=2*JJ                                                          178
      JJ1=JJ2-1                                                         179
      JATT(JJ1,II)=RLLV(JJ)*RD*100.+.5                                  180
      JATT(JJ2,II)=DELV(JJ)*RD*100.+.5                                  181
    9 CONTINUE                                                          182
  130 CONTINUE                                                          183
      IF(II1.LE.0) GO TO 150                                            184
C*****                                                                  185
C  SETUP AND PRINT OUT EPHEMERIS INFORMATION                            186
C*****                                                                  187
      IF(MOD(ICT1,4).NE.1) GO TO 150                                    188
      ILN=ILN+1                                                         189
      IF(MOD(ILN,50).NE.1) GO TO 40                                     190
      IPG=IPG+1                                                         191
      WRITE(8,2001) HR,MON,ADTT,IPG                                     192
      WRITE(8,2004) LABL,OMEGA,XIOTA                                    193
 2004 FORMAT(5X,*ORBIT ID = *,3A10,10X,*SATELLITE PT.*                  194
     +* ASCENSION = *,F10.3,*  INCLINATION = *,F10.3)                   195
 2001 FORMAT(1H2//5X,*S3-3 EPHEMERUS FOR*,F10.4,                        196
     +1X,A10,7X,*COMPUTER RUN OF *,A10,7X,*PAGE NO. *,I4)               197
      WRITE(8,2002)                                                     198
 2002 FORMAT(/T25,*GEOCENTRIC*,T60,*GEOMAGNETIC*/                       199
     +10X,*TIME*,T20,*LAT*,T30,*LONG*,T39,*ALT*,T48,                    200
     +*THETA*,T59,*LATM*,T68,*LONM*,T77,*R(KM)*)                        201
   40 CONTINUE                                                          202
      RKM=RNM*1.85325                                                   203
      WRITE(8,2003) IT(3),IT(4),IT(5),XLT,XLG,ALT,THETA,                204
     +XLTM,XLGM,RKM                                                     205
 2003 FORMAT(7X,I2,2I3,F9.3,F10.3,F9.3,5F10.3)                          206
  150 CONTINUE                                                          207
      II2=10*IGO                                                        208
C*****                                                                  209
C  WRITE MASTER FRAME OUTPUT                                            210
C*****                                                                  211
      IDA(1)=ALT+.5                                                     212
      IDA(2)=100.*XLT+.5                                                213
```

```
      IDA(3)=100.*XLG+.5                                                    214
      IDA(4)=100.*THETA+.5                                                  215
      IDA(5)=100.*OMEGA+.5                                                  216
      IDA(6)=100.*XLTM+.5                                                   217
      IDA(7)=100.*XLGM+.5                                                   218
      DO 50 II=1,7                                                          219
      IF(IDA(II).LT.0) IDA(II)=IDA(II)+36000                                220
   50 CONTINUE                                                              221
      CALL AUTOC(IANA,IATT(2,1),LOC,KOC,JOC)                                222
      CALL AUTOC(IANA,IATT(2,1),61,KOC,JOC)                                 223
      IWCA=MAXO((IWCA-2),JOC)+2                                             224
      CALL S2P<3(IATT(1,2),JATT,II2)                                        225
      ICO=(II2-1)/3+1                                                       226
      IF(ICO.LT.30) ICO=ICO+1                                               227
      IWCB=MINO(ICO,30)                                                     228
      IWCB=MAXO(IWCB,IWCA)                                                  229
      IGCB=(ICO-1)/30+2                                                     230
      IF(MOD(ICO,IWCB).EQ.0) IGCB=IGCB+1                                    231
      IATT(IWCB,1)=10HHKP RECORD                                            232
      IATT(IWCB,IGCB)=13HATT RECORD                                         233
  100 CONTINUE                                                              234
      KTBORT=0                                                              235
      ICT2=ICT2+1                                                           236
      WRITE(2) IWC,IGC,((IDAT(I,J),I=1,IWC),J=1,IGC)                        237
      WRITE(2) IWCB,IGCB,((IATT(I,J),I=1,IWCB),J=1,IGCB)                    238
      GO TO 20                                                              239
  110 CONTINUE                                                              240
      WRITE(8,2010) ICALL                                                   241
      IFGA=4                                                                242
  100 CONTINUE                                                              243
C*****                                                                      244
C  END OF FILE PROCESSING                                                   245
C*****                                                                      246
      IFGA=IFGA+1                                                           247
      IF(IFGA.NE.1) GO TO 120                                               248
      ENDFILE2                                                              249
      CALL CONNEC(6)                                                        250
      WRITE(8,2008) ICT1,ICT2                                               251
      WRITE(6,2008) ICT1,ICT2                                               252
  120 CONTINUE                                                              253
      IF(IFGA..LT.3) GO TO 70                                               254
      WRITE(8,2008)                                                         255
      WRITE(6,2008)                                                         256
 2008 FORMAT(2X,*END OF FILE ON S3OMA*,                                     257
     +/,1X,I5*  FILES READ FROM BFILE*/,1X,I5*  FILES WRITTEN TO OFILE*)
      TTT=SECOND(ZZZ)-TO                                                    259
      WRITE(6,2009) TTT                                                     260
      WRITE(6,2009) TTT                                                     261
      CALL DISCON(6)                                                        262
 2009 FORMAT(2X,*TOTAL PROCESSING TIME FOR S3OMA IS*,F10.3)                 263
 2010 FORMAT(2X,*JOB IS BEING ABORTED BY CABORT AFTER CALL NO.*,I5)
```

```
      END                                                          265
```

APP=B= 6 -105

```
      SUBROUTINE OM3(KABORT,KTBORT)
C
C*****************************************************************
C*****
C  1975   SUBPROGRAM.  E. HOLEMAN.  LAST ALTERATION 28 JUL 76
C  1975   S3-2 DATA REDUCTION SYSTEM.  FROM EC VERSION 74274
C  1975   15 DEC 75
C
C        MAIN SUBROUTINE OF OUTPUT MODULE    VERSION 74091
C        EC MODIFICATION     VERSION 74274
C        EC MODIFICATION     VERSION 75345
C
C*****************************************************************
C
      REAL   IOTA,MU
      DIMENSION  LV(5),IECI(5),DT(5),
     *           CNU(16,3),CPHI(16,3),CPSI(16,3),
     *           TR1(3),TR2(3),TRNU(3),TT/A(3),TOME(3),
     *           SUBFRM(5),WRDNUM(5),ALPHA(5),BETA(5),
     *           ALPH1(5),XP(5),YP(5),ZP(5),ADJM(8)
      DIMENSION RANGE(3)
      DIMENSION SEC(30),X0(30),Y0(30),Z0(30),DX0(30),DY0(30),DZ0(30)
      DIMENSION TLIMIT(30),DENOM(30),FACTOR(30),R0(30),R/0(30),RNC(30),
     CA0(30),SI0(30),CI0(30),HXY0(30),THETA0(30)
      DIMENSION OMEGA0(30),DOMEG0(30)
      REAL IOTA0(30)
      COMMON/TIMERS/JTIMEE,JTIMEU
      COMMON/ JSEX /NMAX,IPRINT,IWHAT,ICOUNT,NPRINT,IECI,
     +LV,ALPHA,BETA,SUBFRM,WRDNUM,XIOTA,ICALL
      COMMON /IOGEOG/ OMEG,THET,XIOT,RR,AXLT,AXLG,AALT,XLTM,XLGM
      DIMENSION JTIMEU(8), JTIMEE(8), JTIMEP(8)
      COMMON/OJTALL/PI,TWOPI,PD,DR,SI,CT,C,MU
      COMMON/SPIN/OMEGAS
      COMMON/OMNWTN/XZ,YZ,ZZ,XDZ,YDZ,ZDZ,DEN,FAC,RV,RN,A,IOTA,HXY,
     C   OMEGAZ,OMEGDT,RZ
      COMMON/OUTOUT/ X,Y,Z,XD,YD,ZD,R,THETA
      COMMON/OUTNWT/ERSLNN,ITERBN
      COMMON/OJTDL/SP,CP,SS,CS,ST,CT,RNU,OMEGA,PHIC,PSIC,PHIM,PSIM,J
      COMMON/DLOUT/RLLV(5),DELTLV(5),RLECI(5),DLTECI(5),
     *       ALFLVX(5),ALFLVY(5),ALFLVZ(5),
     *       ALPHEX(5),ALPHEY(5),ALPHEZ(5)
      DATA TOFF/50./
      DALFA = 0.0
      JZ = 1
      KTBORT=0
      ICTEM=0
      IF(ICALL.NE.1) GO TO 51
      DO 110 II=1,8
      JTIMEE(II)=0
      JTIMEU(II)=0
      JTIMEP(II)=0
```

```
 110  CONTINUE
C*****
C  ZERO ERROR CONTROL CONSTANTS.
C*****
      KABT=500
      LABT=600
      KCOUNT=0
      EPSLNN = .000000001
      ITERBN = 25
      PRINT 1041
 1041 FORMAT(20H1OUTPUT MODULE - OM3)
      PI=3.14159265358979
      TWOPI = 2.*PI
      RD = 180./PI
      DR = PI/180.
C*1C*1MU=1407645000000000.
      C=6076.1155
C
      MU=1.407645E16
C        READ ALL DATA REQUIRED FOR THE OUTPUT MODULE.
C        NOTATION...
C           INPUT DATA SUPPLIED BY EXPERIMENTER--
C              NMAX = NUMBER OF EXPERIMENTER WORDS FOR WHICH ATTITUDE
C                     OR EPHEMERIS IS REQUIRED.
C              LV(I) = 1 IF LOCAL-VERTICAL ATTITUDE FOR WORD I IS
C                       REQUIRED,
C                    = 0 OTHERWISE.
C              IECI(I) = 1 IF ECI ATTITUDE FOR WORD I IS REQUIRED,
C                      = 0 OTHERWISE.
C              IPRINT = PRINTOUT FREQUENCY CONTROL
C                          -1 = NEVER
C                           0 = EVERY NPRINTH CALL
C                           1 = EVERY CALL
C              IWHAT  = CONTROL FOR DIRECTION COSINES AND/OR
C                   RT. ASCENSION AND DECLINATION OUTPUT
C                            IWHAT = 1  - DIR COS ONLY
C                            IWHAT = 2 - LAMDA AND DELTA ONLY
C                            IWHAT = 3 - BOTH
C              SUBFRM(I) = IDENTIFIER OF SUBFRAME IN MAIN FRAME FOR
C                     WORD I.
C              WRDNUM(I) = IDENTIFIER OF WORD NUMBER I IN SUBFRAME.
C              ALPHA(I) = FIRST EULER ANGLE DEFINING ATTITUDE OF
C                         EXPERIMENTER*S EARTH SENSOR W.R.T. SATELLITE
C                         BODY AXES.
C              BETA(I)  = SECOND EULER ANGLE.
C           INPUT DATA FROM ESTIMATION MODULE--
C              NCNU  = NUMBER OF COEFFICIENTS FOR CURVE FIT OF NU.
C              NCPHI = NUMBER OF COEFFICIENTS FOR CURVE FIT OF PHIM.
C              NCPSI = NUMBER OF COEFFICIENTS FOR CURVE FIT OF PSIM.
C              CNU   = COEFFICIENTS OF CURVE FIT FOR NU.
C              CPHI  = COEFFICIENTS OF CURVE FIT FOR PHIM.
```

```
C              CPSI  = COEFFICIENTS OF CURVE FIT FOR PSIM.                  368
C              RNJAVG = AVERAGE OF ALL VALUES OF NU.                         369
C              TVAVG  = AVERAGE OF ALL TIMES THAT HORIZON SENSOR
C                       LINE OF SIGHT IS ALONG VERTICAL.                     371
C              OMEGAS = AVERAGE SPIN RATE                                    372
C              TZ     = TIME AT WHICH INITIAL EMPEHERIS DATA APPLIES
C                                                                            374
      PRINT 1000                                                             375
 1000 FORMAT(//1H ,29HDATA SUPPLIED BY EXPERIMENTER //)                      376
C                                                                            377
C        READ THE EXPERIMENTER*S DATA.                                       378
C                                                                            379
      PRINT 1220, (JTIMEJ(I),I=1,5)                                          380
 1220 FORMAT(1X,4HYEAR,I5,4X,3HDAY,I4,4X,4HHOUR,I3,4X,6HMINUTE,I3,4X,
     C   7HSECONDS,I13)                                                      382
3810 1READ(5     ,1200) NMAX, IPRINT, IWHAT                                  383
 1200 FORMAT(3I2)                                                            384
      IF(IPRINT.GT.0) NPRINT=IPRINT                                          385
      IATTO = 0                                                              386
      DO 15 I = 1,NMAX                                                       387
3810 1READ(5     ,1010) LV(I), IECI(I), SUBFRM(I), WRDNUM(I),                388
3 10 *               ALPHA(I), BETA(I)                                       389
 1010 FORMAT (2I2,6X4F10.0)                                                  390
      IATTD = IATTO + IABS(LV(I)) + IABS(IECI(I))                            391
      PRINT 1500, LV(I), IECI(I), SUBFRM(I), WRDNUM(I),                      392
     *ALPHA(I)   ,   BETA(I)                                                 393
 1500 FORMAT(1X,3HLV    , I1, 2X,4HECI     , I1, 15X,                       394
     *      3X,7HSUBFRM    , F4.0, 3X,7HWRDNUM    , F5.0, 3X,6HALPHA
     *      F7.3, 3X,5HBETA    , F7.3)                                      396
C                                                                            397
C        CORRECT FOR THE LOCATION OF THE WORD IN THE DATA FRAME.
C                                                                            399
      DT(I) = ((SUBFRM(I)-1.)*62.5 + (WRDNUM(I)-1.)*.4882812E)/1000.
 15   CONTINUE                                                               401
C                                                                            402
C     ***************************************                                403
C        READ THE ESTIMATION MODULE DATA.                                    404
C     THIS INPUT BLOCK PUNCHED FROM THE E.M. PROGRAM                         405
C        READ IN THE EPHEMERIDES FROM EM                                     406
C                                                                            407
      PRINT 119                                                              408
  119 FORMAT(///1X,34HDATA SUPPLIED BY ESTIMATION MODULE//)                  409
C                                                                            410
      KARDSQ = 1                                                             411
  50  CONTINUE                                                               412
      READ(4,1001) ADJM                                                      413
 1001 FORMAT(8A10)                                                           414
 1100 FORMAT(6X,I4,8X,I3,9X,I2,11X,I2,10X,I2,21X,I2)                        415
      IF(EOF(4)) 660,60                                                      416
  60  CONTINUE                                                               417
      DECODE(80,4001,ADJM) KARDN                                             418
```

```
 4001 FORMAT(78X,I2)                                                    419
      ICTEM=ICTEM+1                                                     420
      IF(ICTEM.GT.50) GO TO 660                                         421
      IF(KARDN.NE.1) GO TO 50                                           422
      DECODE(80,1100,ABUF) (JTIMEE(I),I=1,4),NVECT,KARDN                423
      ICTEM=0                                                           424
      JTIMEE(5)=0                                                       425
      JTIMEE(6)=0                                                       426
      PRINT 1220, (JTIMEE(I),I=1,6)                                     427
      CALL TDATE(JTIMEE,IMM,MON,HR,JD,CBI                               428
      JTIMEU(1)=JTIMEE(1)                                               429
      JTIMEU(2)=JTIMEE(2)                                               430
      JTIMEU(3)=JTIMEE(3)                                               431
      JTIMEU(4)=JTIMEE(4)                                               432
      JTIMEU(5)=JTIMEE(5)                                               433
      JTIMEU(6)=JTIMEE(6)                                               434
      JTIMEU(7)=JTIMEE(7)                                               435
      JTIMEU(8)=JTIMEE(8)=0                                             436
      DO 21 JJ = 1,NVECT                                                437
      KARDSQ = KARDSQ + 1                                               438
      READ(4,1110) SEC(JJ),XC(JJ),YC(JJ),ZC(JJ),KARDN                   439
      IF(KARDSQ .NE. KARDN) GO TO 660                                   440
      KARDSQ = KARDSQ + 1                                               441
      READ(4,1120) DXC(JJ),DYC(JJ),DZC(JJ),KARDN                        442
      IF(KARDSQ .NE. KARDN) GO TO 660                                   443
      PRINT 615, SEC(JJ),XC(JJ),YC(JJ),ZC(JJ)                          444
      PRINT 615, DXC(JJ),DYC(JJ),DZC(JJ)                               445
  610 FORMAT(44 SEC,F17.6,4H    X,F17.6,4H    Y,F17.6,4H    Z,F17.6)
  615 FORMAT(          17X,4H  XD,F17.9,4H  YD,F17.9,4H  ZD,F17.9)
 1110 FORMAT(4X,F13.6,4X,F16.6,4X,F16.6,4X,F16.6,1X,I2)                 448
 1120 FORMAT(         21X,F16.9,4X,F16.9,4X,F16.9,1X,I2)                449
   21 CONTINUE                                                          450
      KARDSQ = KARDSQ + 1                                               451
      READ(4,1125) TLEPST,TTLAST,KARDN                                  452
      IF(KARDSQ .NE. KARDN) GO TO 660                                   453
 1125 FORMAT(23X,F13.6,3X,F13.6,25X,I2)                                 454
C                                                                       455
C                                                                       456
C     DETERMINE ORBITAL PARAMETERS FOR EACH STATE VECTOR                457
C                                                                       458
      PRINT 1041                                                        459
      DO 620 JJ=1,NVECT                                                 460
      CALL ORBT(XC(JJ),YC(JJ),ZC(JJ),DXC(JJ),DYC(JJ),DZC(JJ),DENOM(JJ),
     1FACTOR(JJ),RC(JJ),RVC(JJ),RNC(JJ),AI(JJ),SIC(JJ),CTC(JJ),         462
     2TOTAL(JJ),HXYC(JJ),THETAC(JJ),OMEGA1(JJ),OOMEGC(JJ),JJ,SEC(JJ))
  620 CONTINUE                                                          464
C                                                                       465
C     COMPUTE EPHEMERIS ZONE BOUNDARIES                                 466
      NMINUS = NVECT - 1                                                467
      IF(NVECT .EQ. 1) GO TO 605                                        468
      DO 630 IJ = 1,NMINUS                                              469
```

```
      TLIMIT(IJ) = 0.5*(SEC(IJ) + SEC(IJ+1))                            470
      PRINT 645, IJ,TLIMIT(IJ)                                          471
  600 CONTINUE                                                          472
  605 TLIMIT(NVECT) = TTLAST                                            473
      KNDX = 0                                                          474
  645 FORMAT(10X,7HTLIMIT(,I2,3H) =,E21.9)                              475
C                                                                       476
C                                                                       477
C                                                                       478
      KARDSQ = KARDSQ + 1                                               479
      READ(4,800) IC,NOC,IORD,TIM1,TIM2,KARDN                           480
      IF (KARDSQ .NE. KARDN) GO TO 660                                  481
      DO 61 I=1,NOC                                                     482
      IF (I .EQ. 1) GO TO 777                                           483
      KARDSQ = KARDSQ + 1                                               484
      READ (4,800) III,JJJ,KKK,TIM1,TIM2,KARDN                          485
      IF (KARDSQ .NE. KARDN) GO TO 660                                  486
  777 TR1(I) = TIM1                                                     487
      TR2(I) = TIM2                                                     488
      RANGE(I) = TIM2 - TIM1                                            489
      KARDSQ = KARDSQ + 1                                               490
      READ (4,801) TRNU(I),TTVA(I),TOMS(I),KARDN                        491
      IF (KARDSQ .NE. KARDN) GO TO 660                                  492
      JH = 0                                                            493
   62 JL = JH + 1                                                       494
      JH = JH + 3                                                       495
      IF (JL.GT.IORD) GO TO 63                                          496
      KARDSQ = KARDSQ + 1                                               497
      READ (4,802) (CNJ(J,I),J=JL,JH),KARDN                             498
      IF (KARDSQ .NE. KARDN) GO TO 660                                  499
      GO TO 62                                                          500
   63 JH = 0                                                            501
   64 JL = JH + 1                                                       502
      JH = JH + 3                                                       503
      IF (JL.GT.IORD) GO TO 65                                          504
      KARDSQ = KARDSQ + 1                                               505
      READ (4,802) (CPHI(J,I), J=JL,JH),KARDN                           506
      IF (KARDSQ .NE. KARDN) GO TO 660                                  507
      GO TO 64                                                          508
   65 JH = 0                                                            509
   66 JL = JH + 1                                                       510
      JH = JH + 3                                                       511
      IF (JL.GT.IORD) GO TO 67                                          512
      KARDSQ = KARDSQ + 1                                               513
      READ (4,802) (CPSI(J,I), J=JL,JH),KARDN                           514
      IF (KARDSQ .NE. KARDN) GO TO 660                                  515
      GO TO 66                                                          516
   67 CONTINUE                                                          517
   61 CONTINUE                                                          518
      KARDSQ = KARDSQ + 1                                               519
      READ(4,805) ETA1D,ETA2D,KARDN                                     520
```

```
      IF(KARDN .NE. KARDSQ) GO TO 660                                   521
  800 FORMAT(5X,I1,4X,I1,9X,I2,5X,F14.6,5X,F14.6,18X,I2)                522
  801 FORMAT(3(F17.10,5X),F17.10,5X,F17.10,14X,I2)                      523
  802 FORMAT(8X,E17.10,8X,E17.10,8X,E17.10,3X,I2)                       524
  805 FORMAT(7X,F12.5,8X,F12.5,38X,I3)                                  525
C                                                                       526
      CALL DFS2(CNU,CPHI,CPSI,NOC,IORD)                                 527
C                                                                       528
C     ***************************************                           529
      GO TO 39                                                          530
   66 CONTINUE                                                          531
      WRITE (6,680) KARDSQ,KARDN                                        532
  680 FORMAT(21H SEQUENCE ERROR, CARD,I3,17H CONTAINED NUMBER,I3//)
  28  KABORT=1                                                          534
      RETURN                                                            535
   39 CONTINUE                                                          536
C        FIND THE SINES AND COSINES OF THE INVARIANT ANGLE ETA.         537
      ETA = ETA1D * DR                                                  538
      ETA2 = ETA2D * DR                                                 539
      SE2 =  SIN(ETA2)                                                  540
      CE2 =  COS(ETA2)                                                  541
      SE =  SIN(ETA)                                                    542
      CE =  COS(ETA)                                                    543
C                                                                       544
C        PERFORM THE PRELIMINARY TRANSFORMATIONS CORRESPONDING TO
C        THE INVARIANT ANGLES ALPHA, BETA, AND ETA                      546
C                                                                       547
      DO 4? I = 1,NMAX                                                  548
      ALPH1(I) = ALPHA(I) + DALFA                                       549
      CA =  COS(ALPH1(I)*DR)                                            550
      SA =  SIN(ALPH1(I)*DR)                                            551
      CB =  COS(BETA(I)*DR)                                             552
      SB =  SIN(BETA(I)*DR)                                             553
      XP(I) = CA*CB*CE2 - SE2*(SE*SA*CB + CE*SB)                        554
      YP(I) = (SE*SA*CB + CE*SB)*CE2 + CB*CA*SE2                        555
      ZP(I) = -CE*SA*CB + SE*SB                                         556
   4? CONTINUE                                                          557
C     NBP IS NUMBER OF PRINT BLOCKS PER PAGE                            558
C                                                                       559
C     IF PRINTOUT IS NOT DESIRED, SKIP THIS SECTION                     560
      KDENOM = 0                                                        561
      IF(IPRINT .LT. 0) GO TO 650                                       562
      KCOORD = 0                                                        563
      DO 651 KK = 1,NMAX                                                564
      KCOORD = KCOORD + IFSI(KK) + LV(KK)                               565
  651 CONTINUE                                                          566
      IF(KCOORD .EQ. 0) GO TO 655                                       567
      KWHAT = 1                                                         568
      IF(IWHAT .EQ. 3) KWHAT = 2                                        569
      KDENOM = KCOORD*KWHAT + NMAX + 3                                  570
  655 CONTINUE                                                          571
```

```
C      FOR POSITION                                                    572
       KDENOM = KDENOM + 8                                             573
       NBP = 54/KDENOM                                                 574
       IF(NBP .EQ. 0) NBP = 1                                          575
  650  CONTINUE                                                        576
       NB=NBP                                                          577
       RETURN                                                          578
    51 CONTINUE                                                        579
C*****************************************************************    580
C*****                                                               581
C  NORMAL ENTRY POINT TO SUBPROGRAM.                                   582
C*****                                                               583
C*****************************************************************    584
       S      =      FLOAT(JTIMEU(7) - JTIMEF(7))                     585
      C            + FLOAT(JTIMEU(6) - JTIMEF(6))/1000000.           586
       IF((TLFRST-S)*(S-TTLAST)) 53,52,52                              587
    53 CONTINUE                                                        588
       PRINT 1004, TLFRST,S,TTLAST                                     589
 1004  FORMAT(1X,3E20.14)                                              590
       IF(KCOUNT.LT.30) PRINT 1510, ICALL                              591
 1510  FORMAT(42H TIME OF CALL OUTSIDE RANGE OF ESTIMATE ,I10)         592
       KCOUNT=KCOUNT+1                                                 593
       KTABORT=1                                                       594
       IF(KCOUNT.GE.KABT) GO TO 555                                    595
       RETURN                                                          596
    52 CONTINUE                                                        597
C                                                                      598
       IF(NVECT .EQ. 1) GO TO 635                                      599
       DO 625 IJ = 1,NMTNJS                                            600
       IF(S - TLIMIT(IJ)) 630,630,625                                  601
  625  CONTINUE                                                        602
  635  IJ = NVECT                                                      603
  630  CONTINUE                                                        604
       IF(KNOX .EQ. IJ) GO TO 640                                      605
       THETA = THETA0(IJ)                                              606
       XZ = X0(IJ)                                                     607
       YZ = Y0(IJ)                                                     608
       ZZ = Z0(IJ)                                                     609
       XDZ = DX0(IJ)                                                   610
       YDZ = DY0(IJ)                                                   611
       ZDZ = DZ0(IJ)                                                   612
       DEN = DENOM(IJ)                                                 613
       FAC = FACTOR(IJ)                                                614
       RJ = RJ0(IJ)                                                   615
       RN = RN0(IJ)                                                    616
       A = A0(IJ)                                                      617
       SI = SI0(IJ)                                                    618
       CI = CI0(IJ)                                                    619
       HXY = HXY0(IJ)                                                  620
       IOTA=IOTA0(IJ)                                                  621
       OMEGAZ = OMEGA0(IJ)                                             622
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```
      OMEGDT = DOMEGC(IJ)                                              623
      RZ = RS(IJ)                                                      624
      KNOX = IJ                                                        625
  540 CONTINUE                                                         626
C                                                                      627
C                                                                      628
C        START OF MAIN LOOP                                            629
C                                                                      630
      TDEL=S-SEC(IJ)                                                   631
      OMEC=OMEGAZ+OMEGDT*TDEL                                          632
      OMEG=OMEG*RD                                                     633
      CALL NWTN(TDEL,KABORT),RETURNS(38)                               634
      THET=THETA*RD                                                    635
      XIDT=ATAN2(SI,CI)*RD                                             636
      RR=R                                                             637
    2 J = 1                                                            638
C                                                                      639
C        CORRECT THE TIME FOR LOCATION IN MAIN FRAME.                  640
C                                                                      641
    7 TS = DT(J) + S                                                   642
C                                                                      643
C        FIND THE TIME FROM THE INITIAL TIME OF EPHEMERIS ACQUISITION. 645
C                                                                      646
    4 TDELT = TS - SEC(IJ)                                             647
C                                                                      648
C        UPDATE OMEGA.                                                 649
C                                                                      650
      OMEGA = OMEGAZ + OMEGDT*TDELT                                    651
      OMEGRD = OMEGA*RD                                                652
C                                                                      653
C        COMPUTE PRESENT VALUES OF EPHEMERIS.                          654
C                                                                      655
      CALL NWTN(TDELT,KABORT),RETURNS(38)                              656
C                                                                      657
C        UPDATE THETA                                                  658
C                                                                      659
      THETAD = THETA*RD                                                660
C                                                                      661
      IF(J .GT. NMAX) GO TO 5                                          662
C                                                                      663
C        IF NO ATTITUDE IS REQUIRED, GO TO 100                         664
C                                                                      665
      IF(L/(J) + IECI(J)) 100, 100, 5                                  666
C                                                                      667
    5 CONTINUE                                                         668
C                                                                      669
C        ATTITUDE IS REQUIRED.  FIND THE VALUE OF TIME FOR THE CURVE FIT.
C                                                                      670
C                                                                      671
      JZ = 1                                                           672
      IF (NOC.EQ.1) GO TO 68                                           673
```

```
      IF (TS.GT.TR1(2).AND.TS.LE.TR2(2)) JZ = 2                          674
      IF (NOC.EQ.2) GO TO 68                                             675
      IF (TS.GT.TR1(3).AND.TS.LE.TR2(3)) JZ = 3                          676
   68 CONTINUE                                                           677
      RNUAVG = TRNU(JZ)                                                  678
      TVAVG  = TTVA(JZ)                                                  679
      OMEGAS = TOME(JZ)                                                  680
C        FIND PHIM, PSIM, AND THE DECIMAL PART OF NU                     681
C                                                                        682
C                                                                        683
      TSS = TS - TVAVG                                                   684
      CALL FIT(PHIMD,RANGE(JZ),CPHI(1,JZ),TORD,TSS)                      685
      CALL FIT(PSIMD,RANGE(JZ),CPSI(1,JZ),TORD,TSS)                      686
      CALL FIT(DECNU,RANGE(JZ),CNU(1,JZ),TORD,TSS)                       687
      PHIM = PHIMD*DR                                                    688
      PSIM = PSIMD*DR                                                    689
C                                                                        690
C                                                                        691
C        FIND NU IN REVOLUTIONS.                                         692
C                                                                        693
      RNU = OMEGAS * (TS- TVAVG) / TWOPI + RNUAVG + 0.5                  694
      INU = RNU                                                          695
      FINU = INU                                                         696
      RNUREV = RNU - FINU - DECNU                                        697
 7685 CONTINUE                                                           698
      IF ( RNUREV .GE. 1.0 ) RNUREV = RNUREV - 1.0                       699
      IF ( RNUREV .LT. 0.0 ) RNUREV = RNUREV + 1.0                       700
      IF ( RNUREV .GE.  1.0 ) GO TO 7685                                 701
      IF ( RNUREV .LT.  0.0 ) GO TO 7685                                 702
C                                                                        703
C        FIND NU IN RADIANS.                                             704
C                                                                        705
      RNU = RNUREV*TWOPI                                                 706
C                                                                        707
C        FIND NU IN DEGREES                                              708
      RNUDEG = RNUREV*360.                                               709
C                                                                        710
C        FIND PHIM AND PSIM IN DEGREES FOR OUTPUT                        711
C                                                                        712
C                                                                        713
C        COMPUTE TRIG FUNCTIONS OF ANGLES FOR LAMDEL                     714
      CTHETA =  COS(THETA)                                               715
      CT = CTHETA                                                        716
      STHETA = SIN(THETA)                                                717
      ST = STHETA                                                        718
      CPHIM  = COS(PHIM)                                                 719
      SPSIM  = SIN(PSIM)                                                 720
      SPHIM  = SIN(PHIM)                                                 721
      CPSIM  = COS(PSIM)                                                 722
C                                                                        723
C        FIND PHI AND PSI IN LOCAL-VERTICAL COORDINATES (PHIC AND PSIC).
```

```
C                                                                       725
      SS = SPSIM*CT - SPHIM*ST*CPSIM                                    726
      PSIO =  ASIN(SS)                                                  727
      CS =  COS(PSIO)                                                   728
      TOP = ST*SPSIM + CPSIM*CT*SPHIM                                   729
      BOT = CPHIM*CPSIM                                                 730
      PHIO =  ATAN(TOP/BOT)                                             731
      IF(BOT) 10,11,11                                                  732
   10 PHIO = PHIO + PI                                                  733
      GO TO 13                                                          734
   11 IF(TOP) 12,13,13                                                  735
   12 PHIO = PHIO + TWOPI                                               736
   13 CONTINUE                                                          737
      SP =  SIN (PHIO)                                                  738
      CP =  COS(PHIO)                                                   739
      PHIOD = PHIO*RD                                                   740
      PSIOD = PSIO*RD                                                   741
      IF(J .GT. NMAX) GO TO 200                                         742
C                                                                       743
C        FIND THE RIGHT ASCENSION AND DECLINATION OF THE EXPERIMENTER*S
C        SENSOR IN ECI AND/OR LOCAL-VERTICAL COORDINATES.               745
C                                                                       746
      CALL LAMDEL(XP(J),YP(J),ZP(J),LV(J),IECI(J))                      747
C                                                                       748
  101 J = I + 1                                                         749
C                                                                       750
C        IF THIS IS THE EXPERIMENTER*S LAST WORD IN MAIN FRAME, PRINT
C        OUT THE RESULTS  - IF REQUIRED                                 752
      IF(J .LE. NMAX) GO TO 3                                           753
      IS = S                                                            754
      GO TO 4                                                           755
C                                                                       756
  200 CONTINUE                                                          757
C                                                                       758
C        SEE IF THE RESULTS ARE TO BE PRINTED                           759
      IF(IPRINT)500,300,300                                             760
  301 IF(ICOUNT - NPRINT)  325, 350, 350                                761
  325 ICOUNT = ICOUNT + 1                                               762
      GO TO 500                                                         763
  350 ICOUNT = 1                                                        764
C                                                                       765
C        OUTPUT IS REQUIRED AT THIS STEP                                766
      NB=NP+1                                                           767
      IF(NP.LE.NB) GO TO 1                                              768
      PRINT 1041                                                        769
      NB = 1                                                            770
    1 PRINT 1042                                                        771
      PRINT 1042                                                        772
 1042 FORMAT(1X)                                                        773
      JTIMEP(7) = JTIMEJ(7)                                             774
      JTIMEP(8) = JTIMEJ(8)                                             775
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      CALL TDATE(JTIMED,TIMM,MON,IR,JD,443)                              776
      SECGMT = FLOAT(JTIMED(5)) + FLOAT(JTIMED(6))/1000000.             777
      PRINT 1220, (JTIMED(J),J=1,4),SECGMT                              778
      PRINT 1040, THETAD,OMEGAD,S,X,Y,Z,XD,YD,ZD,R                      779
 1040 FORMAT(1X,10HTHETA     ,E15.6,5X,      10HOMEGA     ,E15.6,5X,
     *          10HTIME     ,E15.6,/  1X,    10HX         ,E15.6,5X,
     *          10HY        ,E15.6,5X,       10HZ         ,E15.6,/
     *        1X,10HXD      ,E15.6,5X,       10HYD        ,E15.6,5X,
     *          10HZD       ,E15.6,/ 1X,     10HR         ,E15.6/)
      IF(IATTD .LE. 0) GO TO 415                                        785
      PRINT 1050, PHIMD,PHICD,RNUDEG,PSIMD,PSICD                        786
 1050 FORMAT( 1X,10HPHIM     ,E15.6,5X,       10HPHIC      ,E15.6,5X,
     *          10HNU       ,E15.6,/  1X,    10HPSIM      ,E15.6,5X,
     *          10HPSIC     ,E15.6)                                     7 9
  415 CONTINUE                                                          790
      DO 30 JJ=1,NMAX                                                   791
      IF(LV(JJ)+IECI(JJ)) 30, 30, 20                                    792
C     ***NOTATION**                                                     793
C                                                                       794
C           ALFLVX,ALFLVY,AND ALFLVZ ARE THE DIRECTION COSINES IN
C                 THE LOCAL VERTICAL COORDINATE SYSTEM                  796
C                                                                       797
C           ALPHEX, ALPHEY, AND ALPHEZ ARE THE DIRECTION COSINES IN
C                 THE EARTH-CENTERED-COORDINATES SYSTEM                 799
C                                                                       800
   20 CONTINUE                                                          801
      IWORD = WRDNUM(JJ)                                                802
      ISUB = SUBFRM(JJ)                                                 803
      PRINT 1140, IWORD, ISUB                                           804
 1140 FORMAT(/10X25HATTITUDE FOR WORD NUMBER , I3,13H OF SUBFRAME , I3)
      IF(LV(JJ)) 44, 44, 22                                             806
   22 CONTINUE                                                          807
      IF(IWHAT - 2) 41, 42, 43                                          808
   41 CONTINUE                                                          809
C                                                                       810
C        ONLY DIRECTION COSINES ARE DESIRED - IN LV COORDS.             811
      PRINT 1170, ALFLVX(JJ),ALFLVY(JJ),ALFLVZ(JJ)                     812
 1170 FORMAT(2X10HALPHA X LV E16.8,3X10HALPHA Y LV E16.8,
     X 3X10HALPHA Z LV E16.8)                                           814
      GO TO 44                                                          815
   43 CONTINUE                                                          816
C                                                                       817
C        BOTH DIRECTION COSINES AND RT. ASC. AND DECLIN. ARE DESIRED-LV
      PRINT 1170, ALFLVX(JJ),ALFLVY(JJ),ALFLVZ(JJ)                      819
   42 CONTINUE                                                          820
      RLLVD = RLLV(JJ)*RD                                               821
      DLTLVD= DELTLV(JJ)*RD                                             822
      PRINT 1150, RLLVD,DLTLVD                                          823
 1150 FORMAT(10X,10HLAMDA LV  ,E15.6,5X, 10HDELTA LV  ,E15.6)           824
   44 CONTINUE                                                          825
   27 IF(IECI(JJ).LE.0) GO TO 30                                        826
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      IF(IWHAT - 2) 45, 47, 48                                          827
   45 CONTINUE                                                          828
C        ONLY DIRECTION COSINES ARE DESIRED - IN ECI COORDS.            829
      PRINT 1190, ALPHEX(JJ),ALPHEY(JJ),ALPHEZ(JJ)                     830
 1190 FORMAT(2X10HALPHAX ECI E16.8,3X10HALPHAY ECI E16.8,               831
     X 3X10HALPHAZ ECI E16.8)                                           832
      GO TO 49                                                          833
   48 CONTINUE                                                          834
C        BOTH DIRECTION COSINES AND RT. ASC. AND DECLIN. ARE DESIRED-ECI
      PRINT 1130, ALPHEX(JJ),ALPHEY(JJ),ALPHEZ(JJ)                      836
   47 CONTINUE                                                          837
      RLECID = RLECI(JJ)*RD                                             838
      DTECID = DLTECI(JJ)*RD                                            839
      PRINT 1160, RLECID,DTECID                                         840
 1160 FORMAT(10X,10HLAMDA ECI ,F15.6,5X,10HDELTA ECI ,F15.6)            841
   49 CONTINUE                                                          842
   30 CONTINUE                                                          843
      GO TO 500                                                         844
  555 CONTINUE                                                          845
      KABORT=1                                                          846
      IF(KCOUNT.LT.LABT) PRINT 2001,KCOUNT,KABT                         847
      IF(MOD(KCOUNT,100).EQ.0) PRINT 2001,KCOUNT,KABT                   848
 2001 FORMAT(2X,*KOUNT*,I5,*  KABT*,I5)                                 849
  500 CONTINUE                                                          850
      J = NMAX                                                          851
      RETURN                                                            852
      END                                                               853
```

```
      SUBROUTINE AUTOC(IMAT,JMAT,IWD,JWD,KWD)
C*****************************************************************
C*****
C  1976   SUBPROGRAM.  E. HOLEMAN.  LAST ALTERED 12 JUL 77.
C  CREATED 9 MAR 76.
C*****
C*****
C  FIRST VERSION OF AUTO-UNPACKING ROU
C*****
C*****************************************************************
      DIMENSION IMAT(1),JMAT(1),KMAT(512)
      DATA ICT1,ICT2,KCT2 /3*0/
      ICT1=ICT1+1
      IWD=LBYTX(46,15,JMAT(1))
      NWPW=LBYTX(31,15,JMAT(1))
      JWD=LBYTX(16,15,JMAT(1))
      KWD=LBYTX(1,15,JMAT(1))
      IF(IWD.LT.1.OR.IWD.GT.512) GO TO 40
      IF(NWPW.NE.10.AND.NWPW.NE.20) GO TO 40
      IF(KWD.GT.512.OR.JWD.GT.512) GO TO 40
      IF(JWD.EQ.0.OR.KWD.EQ.0) GO TO 40
C*****
C  DECODE WORD LOGIC
C*****
      DO 10 II=1,IWD
      IMAT(II)=0
 10   CONTINUE
      LWD=1
      NCPW=60/NWPW
      DO 20 II=1,IWD,NWPW
      LWD=LWD+1
      ICH=61
      MWD=II+NWPW-1
      DO 20 JJ=II,MWD
      ICH=ICH-NCPW
      KMAT(JJ)=LBYTX(ICH,NCPW,JMAT(LWD))
 20   CONTINUE
      IF(LWD.NE.JWD) GO TO 40
C*****
C  DECODE DATA
C*****
      ICH=0
      DO 30 II=1,IWD
      IF(KMAT(II).EQ.0) GO TO 30
      NCPW=3*KMAT(II)
      ICH=ICH-NCPW
      IF(ICH.LE.0) LWD=LWD+1
      IF(LWD.GT.KWD) GO TO 40
      IF(ICH.LE.0) ICH=61-NCPW
      IMAT(II)=LBYTX(ICH,NCPW,JMAT(LWD))
 30   CONTINUE
```

```
      IF(LWD.LT.KWD) GO TO 40                                          905
      ICT1=0                                                           906
      RETURN                                                           907
   40 CONTINUE                                                         908
      ICT2=ICT2+1                                                      909
      IF(ICT2.LE.10) WRITE(6,2001) IWD,NWD,JWD,KWD,LWD                 910
      JCT2=ICT1-ICT2                                                   911
      IF(JCT2.NE.KCT2) ICT2=0                                          912
      KCT2=JCT2                                                        913
 2001 FORMAT(5X,*PROBLEM IN DECODING AT*,5I5)                          914
      IWD=-1                                                           915
      RETURN                                                           916
      END                                                              917
```

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```
      PROGRAM S3BLAC(CFILE,DFILE,LFILE=0,YFILE=64,                      10
     +OUTPUT=64,TAPE1=CFILE,TAPE3=DFILE,TAPE2=LFILE,                    11
     +TAPE8=YFILE,TAPE6=OUTPUT)                                         12
C*****                                                                  13
C*****                                                                  14
C  1975   PROGRAM.  E. ADLEMAN.  LAST ALTERATION  2 SEP 77             15
C  FROM S2BLAF  30 JUL 76.                                             16
C*****                                                                  17
C*****                                                                  18
C  PROGRAM TO ADD B AND L INFORMATION FOR DATA FILE FROM               19
C  STOMA                                                               20
C*****                                                                  21
C*****                                                                  22
C  520008 CM STORAGE REQUIRED FOR LOADING.                             23
C****                                                                   24
C*********************************************************************25
      DIMENSION E_(21),BE(21),SL(21),IDAT(20,16),IDA(14),               26
     +FHED(30),IHED(30),RT(10),IRT(10),LTIM(8),JDA(68),                 27
     +ASPK(5),ATT(10,16),BATT(10,16),LABL(7),                           28
     +XM(3,3),YM(3,3),IATT(30,5),JATT(10,16)                            29
      EQUIVALENCE(FHED,IHED)                                            30
      EQUIVALENCE(IDA,JDA(55))                                          31
      RD=57.2957795128                                                  32
      DR=1./RD                                                          33
      BDEL=11.2*DR                                                      34
      CDEL=COS(BDEL)                                                    35
      SDEL=SIN(BDEL)                                                    36
      PDEL=291.*DR                                                      37
      REWIND1                                                           38
      REWIND3                                                           39
      REWIND8                                                           40
      CALL DISCON(6)                                                    41
      IDTT=DATE(ADAT)                                                   42
      T0=SECOND(TT)                                                     43
      CALL COEFG(1976.,EL,BE,SL)                                        44
      CALL SLITE(0)                                                     45
 50   CONTINUE                                                          46
      ICT3=0                                                            47
      ICT4=0                                                            48
      T1=SECOND(TT)                                                     49
      READ(1) IWC,IGC,(FHED(I),I=1,IWC)                                 50
      IF(EOF(1)) 110,60                                                 51
 60   CONTINUE                                                          52
      MNEMO=FHED(IWC)                                                   53
      FHED(IWC)=5_DFILE                                                 54
      ENCODE(30,4001,LABL) (IHED(I),I=1,3),IHED(6)                      55
4001  FORMAT(R4,R5,2X,A10,1X,A8)                                        56
      GMT1=FLOAT(IHED(18))/1000.                                        57
      TRAT=FLOAT(IHED(19))/FLOAT(IHED(20))/1000.                        58
      GMTZ=GMT1-FLOAT(IHED(17))*TRAT                                    59
      FHED(21)=37.54                                                    60
```

```
      XIOTA=FHED(21)                                                    61
      WRITE(3) IWC,IGC,(FHED(I),I=1,IWC)                                62
      JD=IHED(26)                                                       63
      CALL TDAT3(LTIM,TM,MON,FHED(27),JD,1131)                          64
 10   CONTINUE                                                          65
C*****                                                                  66
C  READ MASTER FRAME INPUT                                              67
C*****                                                                  68
      READ(1) IWC,IGC,((TDAT(I,J),I=1,IWC),J=1,IGC)                    69
      IEOF=EOF(1)                                                       70
      IF(IEOF.NE.0) GO TO 100                                           71
      READ(1) IWCA,IGCA,((IATT(I,J),I=1,IWCA),J=1,IGCA)                 72
      IF(IATT(IWCA,IGCA).NE.10HATT RECORD) GO TO 10                     73
      ICT3=ICT3+1                                                       74
C*****                                                                  75
C  UNPACK ATTITUDE MATRIX                                               76
C*****                                                                  77
      IIA=10*IGC                                                        78
      CALL AUTOC(JDA,IATT(2,1),LCD,KCD,JCD)                             79
      NWC=(IIA-1)/3+1                                                   80
      CALL S2UP3(IATT(1,2),JATT,NWC)                                    81
      ALT=IDA(1)                                                        82
      XLT=FLOAT(IDA(2))/100.                                            83
      XLG=FLOAT(IDA(3))/100.                                            84
      THET=FLOAT(IDA(4))/100.                                           85
      IF(XLT.GT.90.) XLT=XLT-360.                                       86
      OMEG=FLOAT(IDA(5))/100.                                           87
      XLTM=FLOAT(IDA(6))/100.                                           88
      XLGM=FLOAT(IDA(7))/100.                                           89
      IF(XLTM.GT.90.) XLTM=XLTM-360.                                    90
      RKM=ALT+6371.2                                                    91
      RNM=RKM/1.85325                                                   92
      CALL INVAR(XLT,XLG,ALT,.0001,BA,FL,BE,ET,BP)                      93
      CALL INTER(EL,SL,21,0,1,FL,SLX)                                   94
      CALL INTER(EL,BE,21,0,1,FL,BEX)                                   95
      HMN=(BA-BEX)/SLX                                                  96
      IF(HMN.LE.0.) HMN=0.                                              97
      IF(HMN.GT.ALT) HMN=ALT                                            98
      IDA(8)=BA*10000.+.5                                               99
      IF(FL.LT.0..OR.FL.GT.20.) FL=20.                                 100
      IDA(9)=FL*1000.+.5                                               101
      IDA(10)=HMN+.5                                                   102
C*****                                                                 103
C  ADD GEOMETRY                                                        104
C*****                                                                 105
      DO 80 II=1,IGC                                                   106
      DO 80 JJ=1,10                                                    107
      ATT(JJ,II)=FLOAT(JATT(JJ,II))/100.                               108
      IF(ATT(JJ,II).GT.360.) ATT(JJ,II)=ATT(JJ,II)-360.                109
 80   CONTINUE                                                         110
      IFGS=0                                                           111
```

```
 120  CONTINUE                                                          112
      SGAM=COS(XIOTA*DR)/COS(XLT*DR)                                    113
      TGAM=ABS(SGAM)                                                    114
      IF(TGAM.LE.1.) GO TO 140                                          115
      XLT=.99*XLT                                                       116
      IFGB=IFGB+1                                                       117
      IF(IFGB.LE.10) GO TO 120                                          118
      WRITE(6,2006) ICT,XIOTA,XLT                                       119
 2006 FORMAT(1X,*LAT PROBLEM AT*,I5,2F10.1)                             120
      GO TO 10                                                          121
 140  CONTINUE                                                          122
      GAM=ASIN(SGAM)*RD                                                 123
      IF(THET.GT.90..AND.THET.LT.270.) GAM=180.-GAM                     124
      DB=ATAN2(BP,BT)*RD                                                125
      XIB=ASIN(BR/BA)*RD                                                126
      RT(1)=-(90.+GAM+DB)                                               127
      IRT(1)=3                                                          128
      RT(2)=90.+XIB                                                     129
      IRT(2)=1                                                          130
      CALL EULER(THA,PHA,YM,RT,IRT,2,0,THB,PHB,XM)                      131
      CALL EULER(90.,0.,XM,RT,IRT,0,1,ANGT,ANGP,YM)                     132
      IF(ANGT.LT.0.) ANGT=ANGT+360.                                     133
      IF(ANGP.LT.0.) ANGP=ANGP+360.                                     134
      IDA(11)=100.*ANGT+.5                                              135
      IDA(12)=100.*ANGP+.5                                              136
      IDA(13)=IDA(14)=0                                                 137
      DO 40 II=1,IGC                                                    138
      DO 40 JJ=1,5                                                      139
      JJ2=2*JJ                                                          140
      JJ1=JJ2-1                                                         141
      PHA=ATT(JJ1,II)                                                   142
      THA=90.+ATT(JJ2,II)                                               143
      CALL EULER(THA,PHA,XM,RT,IRT,0,1,BATT(JJ1,II),BATT(JJ2,II),YM)
 40   CONTINUE                                                          145
      DO 150 II=1,IGC                                                   146
      DO 150 JJ=1,10                                                    147
      IF(BATT(JJ,II).LT.0.) BATT(JJ,II)=BATT(JJ,II)+360.                148
      JATT(JJ,II)=100.*BATT(JJ,II)+.5                                   149
 150  CONTINUE                                                          150
C*****                                                                 151
C  PACK FOR OUTPUT                                                     152
C*****                                                                 153
      CALL AUTOD(IDA,IATT(2,1),68,KCD,JCD)                              154
      IWCA=MAXO((IWCA-2),JCD)+2                                         155
      IGCB=IGCA+1                                                       156
      CALL S2P(3(IATT(1,IGCB),JATT,IIA)                                 157
      ICD=(IIA-1)/3+1                                                   158
      IF(ICD.LT.30) ICD=ICD+1                                           159
      IWCB=MIN0(ICD,30)                                                 160
      IWCB=MAX0(IWCB,IWCA)                                              161
      IGCB=(ICD-1)/30+IGCB                                              162
```

```
      IF(MOD(IGD,IWCB).EQ.0) IGCB=IGCB+1                                  163
      IATT(IWCB,IGCB)=10HMAG RECORD                                       164
      IATT(IWCB,IGCA)=10HATT RECORD                                       165
      IATT(IWCB,1)=10HHKP RECORD                                          166
C*****                                                                    167
C  WRITE MASTER FRAME OUTPUT                                              168
C*****                                                                    169
      WRITE(3) IWC,IGC,((IDAT(I,J),I=1,IWC),J=1,IGC)                      170
      WRITE(3) IWCB,IGCB,((IATT(I,J),I=1,IWCB),J=1,IGCB)                  171
      ICT4=ICT4+1                                                         172
      IF(MOD(ICT3,4).NE.1) GO TO 10                                       173
      HR=(GMTZ+FLOAT(IDAT(1,IGC))*TRAT)/3600.                             174
      CALL TDATB(LTIM,TM,MON,HR,JD,0IB)                                   175
      XLAM=0.                                                             176
      IF(FL.GT.1.) XLAM=ACOS(SQRT(1./FL))*R2D                             177
      XLCT=HR+XLG*.066666667                                              178
      IF(XLCT.GT.24.) XLCT=XLCT-24.                                       179
2001  FORMAT(1H1,4X,*S3-B 64 SECOND LISTING FROM MAGNETIC*                180
     +* FIELD PROGRAM.*/5X,*EPHEMERUS FOR *,F10.4,1X,A10,7X,              181
     +*  COMPUTER RUN OF *,A10                                           182
     +/5X,*RT ASCENSION = *,F10.3,*  INCLINATION = *,F10.3)               183
      IF(ICT3.EQ.1) WRITE(8,2001) HR,MON,ADAT,OMEG,XIOTA                  184
      IF(ICT3.EQ.1) WRITE(8,2013) LABL                                    185
2013  FORMAT(5X,*ORBIT ID = *,3A10/T25,*GEOCENTRIC*,                      186
     +T60,*GEOMAGNETIC*/10X,*TIME*,T20,*LAT*,T30,*LONG*,T38,             187
     +*ALT*,T48,*THETA*,T59,*LATM*,T68,*LONM*,T78,*R(KM)*,               188
     +T91,*B*,T100,*L*,T108,*HMIN*,T118,*LAMBDA*,T129,*LTIME*)            189
      WRITE(8,2014) LTIM(3),LTIM(4),LTIM(5),XLT,XLG,ALT,THET,             190
     +XLTM,XLGM,R(M,BA,FL,HMN,XLAM,XLCT                                  191
2014  FORMAT(7X,I2,2I3,F9.3,F10.3,F9.1,3F10.*,F10.1,F10.5,               192
     +F10.4,F10.1,2F10.3)                                                193
      GO TO 10                                                            194
100   CONTINUE                                                            195
      CALL CONNEC(6)                                                      196
      WRITE(8,2002) ICT3,ICT4                                             197
      WRITE(6,2002) ICT3,ICT4                                             198
2002  FORMAT(1X,I5,*  MASTER FRAMES READ FROM DFILE*/                     199
     +1X,I5,*  MASTER FRAMES WRITTEN ON DFILE*)                           200
      T2=SECOND(TT)-T1                                                    201
      WRITE(8,2003) T2                                                    202
      WRITE(6,2003) T2                                                    203
2003  FORMAT(2X,*PROCESSING TIME FOR ORBIT IS*,F10.3)                     204
      ENDFILE3                                                            205
      CALL DISCON(6)                                                      206
      GO TO 50                                                            207
110   CONTINUE                                                            208
      CALL CONNEC(6)                                                      209
      T2=SECOND(TT)-T0                                                    210
      WRITE(8,2005) T2                                                    211
      WRITE(6,2005) T2                                                    212
2005  FORMAT(2X,*TOTAL PROCESSING TIME FOR S3BLA IS*,F10.3)               213
```

```
      CALL DISCON(6)                                                    214
      END                                                               215
```

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```
      PROGRAM S3SAC0(DFILE,EFILE,FFILE,ZFILE,OUTPUT=64,                  10
     +TAPE1=DFILE,TAPE2=EFILE,TAPE3=FFILE,                               11
     +TAPE5=ZFILE,TAPE6=OUTPUT)                                          12
C*****************************************************                  13
C*****                                                                  14
C  1976   PROGRAM.  E. HOLEMAN.  LAST ALTERATION 9 SEP 77               15
C  FROM S2SAB1  22 DEC 76.                                              16
C*****                                                                  17
C*****                                                                  18
C  PRELIMINARY SORT OF DATA BY "L" AND HMIN.                            19
C  SEPARATION ONLY.  NO SORTING                                         20
C  12 LINE PAD LISTING OF P-ALPHA INSTRUMENT ONLY...                    21
C  NUMBER SPECTRUM ONLY.  NO FLUXES CALCULATED.                         22
C*****                                                                  23
C*****                                                                  24
C  ICT3  COUNTS RECORDS READ.                                           25
C*****                                                                  26
C*****                                                                  27
C  54000B CM STORAGE REQUIRED FOR LOADING.                              28
C*****                                                                  29
C  ALTERATION HISTORY.                                                  30
C     24 AUG 77.  CHANGED HMIN CALCULATION FOR HMIN >1000. KM.          31
C*****                                                                  32
C*****                                                                  33
C*****************************************************                  34
      DIMENSION IDAT(20,16),JDA(88),ERG(33),FERG(33),BORL(28),          35
     +FHED(30),IHED(30),LTIM(8),JDAT(12,4),IOUT(14,13),XPA(13),         36
     +KDAT(4,8),BATT(10,16),IDA(14),JATT(10,17),KDA(15),                37
     +IPAD1(12,12,2),IPAD2(8,12,4),TATT(3),5),BORH(17),                 38
     +IMAT(13,12,2),JMAT(8,12),KMAT(300),LABL(3),ICAL(4)                39
      EQUIVALENCE(FHED,IHED)                                            40
      EQUIVALENCE(IDA,JDA(55))                                          41
      COMMON /IOGEOG/ OMEGA,THETA,PIOTA,RNM,XLT,XLG,ALT,XLTM,XLGM
      DATA IPAD1,IPAD2,IOUT /854*0/                                     42
      DATA ERG /116.,100.,60.,58.,50.,29.,25.,15.5,15.,14.3,            44
     +13.,9.14,8.32,8.,6.69,6.41,6.1,6.02,5.61,5.5,5.31,                45
     +2.927,2.69,2.038,2.01,1.445,.948,6.58,4.03, 3.64,                 46
     +1.56,1.35,1.24/                                                   47
      DATA BORL /1.,1.14,1.15,1.16,1.17,1.18,1.19,1.2,1.3,1.4,          48
     +1.5,1.6,1.7,1.8,1.9,2.,2.2,2.4,2.6,2.8, 3.,3.5,4.,               49
     +5.,6.,8.,10.,25./                                                 50
      DATA BORH /0.,100.,200.,300.,400.,500.,600.,700.,800.,900.,
     +1000.,1500.,2000.,3000.,4000.,6000.,10000./                       52
      FLUX(IFLX)=FLOAT(IFLX.AND.MASKB)/FLOAT(SHIFT(IFLX,-45))           53
      MASK1=SHIFT(13,45)                                                54
      MASK3=7777777777777778                                            55
      MASK5=777773                                                      56
      SNR=1.                                                            57
      SLF=1.                                                            58
      KWOM=-999                                                         59
      REWIND1                                                           60
```

```
      REWIND2                                                          61
      REWIND8                                                          62
      REWIND9                                                          63
      TO=SECOND(TTT)                                                   64
      WRITE(8,2004)                                                    65
 2004 FORMAT(141,4X,*PROCESSING BEGUN IN S3SAC*)                       66
 50   CONTINUE                                                         67
      IFGC=-1                                                          68
      IDTM=0                                                           69
      ICT1=0                                                           70
      ICT3=0                                                           71
      ICT4=0                                                           72
      T1=SECOND(TTT)                                                   73
      READ(1) JWC,JGC,(FHED(I),I=1,JWC)                                74
      IF(EOF(1)) 110,60                                                75
 60   CONTINUE                                                         76
      MNEMO=FHED(JWC)                                                  77
      FHED(JWC)=SLEFILE                                                78
      RIOTA=FHED(21)                                                   79
      ENCODE(30,4001,LABL) (IHED(I),I=1,3),IHED(6)                     80
 4001 FORMAT(R4,R5,2X,A10,1X,A8)                                       81
      THTL=0.                                                          82
      ALTL=0.                                                          83
      HMNL=0.                                                          84
      FLL=0.                                                           85
      BEL=0.                                                           86
      DTHT=.047                                                        87
      DALT=0.                                                          88
      DHMN=0.                                                          89
      DFL=0.                                                           90
      DBE=0.                                                           91
      WRITE(2) JWC,JGC,(FHED(I),I=1,JWC)                               92
      GMT1=FLOAT(IHED(18))/1000.                                       93
      TRAT=FLOAT(IHED(19))/FLOAT(IHED(20))/1000.                       94
      GMTZ=GMT1-FLOAT(IHED(17))*TRAT                                   95
      CALL TDATB(LTIM,TMA,MON,FHED(27),IHED(26),116)                   96
      WRITE(6,2004)                                                    97
      WRITE(9,2010)                                                    98
 2010 FORMAT(141)                                                      99
      WRITE(6,2008) FHED(27),MON,LABL                                 100
      WRITE(8,2008) FHED(27),MON,LABL                                 101
      WRITE(9,2008) FHED(27),MON,LABL                                 102
 2008 FORMAT(5X,*ORBIT ID*,F8.2,A10,2X,3A10)                          103
      IFLL=-999                                                       104
      IBEL=-999                                                       105
      IHML=-999                                                       106
 10   CONTINUE                                                        107
C*****                                                               108
C  READ MASTER FRAME INPUT                                           109
C*****                                                               110
      READ(1) IWC,IGC,((TDAT(I,J),I=1,IWC),J=1,IGC)                  111
```

```
      IEOF=EOF(1)                                                        112
      IF(IEOF.NE.0) GO TO 20                                             113
      READ(1) IWCA,IGCA,((IATT(I,J),I=1,IWCA),J=1,IGCA)                  114
      IF(IATT(IWCA,IGCA).NE.10HMAG RECORD) GO TO 10                      115
C*****                                                                   116
C  UNPACK HOUSEKEEPING                                                   117
C*****                                                                   118
      IIA=10*IGC                                                         119
      IIB=(IIA-1)/3+1                                                    120
      CALL AUTDC(IDA,IATT(2,1),KCD,JCD,ICD)                              121
      ICT3=ICT3+1                                                        122
      HR=(GMTZ+FLOAT(IATT(1,1))*TRAT)/360).                              123
      CALL TDAT3(LTIM,TMA,MON,HR,JD,01B)                                 124
      ALT=IDA(1)                                                         125
      FL=FLOAT(IDA(9))/1000.                                             126
      BE=FLOAT(IDA(8))/10000.                                            127
      HMN=IDA(10)                                                        128
      RKM=ALT+6371.2                                                     129
      RNM=RKM/1.85325                                                    130
      OMEGA=FLOAT(IDA(5))/100.                                           131
      THETA=FLOAT(IDA(4))/100.                                           132
      IF(ICT3.NE.1) GO TO 250                                            133
      THTL=THETA                                                         134
      ALTL=ALT                                                           135
      HMNL=HMN                                                           136
      TMAL=TMA                                                           137
      FLL=FL                                                             138
      BEL=BE                                                             139
      DTHTL=.015                                                         140
      DALTL=0.                                                           141
      DHMNL=0.                                                           142
      DFLL=0.                                                            143
      DBEL=0.                                                            144
  250 CONTINUE                                                           145
C*****                                                                   146
C  SET TIME AND DELTA'S LOGIC                                            147
C*****                                                                   148
      JNOW=(IATT(1,1).AND.MASK8)/16                                      149
      INOW=JNOW-IHED(29)                                                 150
      IGAP=INOW-ILAS                                                     151
      ILAS=INOW                                                          152
      XGAP=IGAP                                                          153
      IF(XGAP.LT.1.) XGAP=1.                                             154
      DTHT=(THETA-THTL)/XGAP                                             155
      DALT=(ALT-ALTL)/XGAP                                               156
      DHMN=(HMN-HMNL)/XGAP                                               157
      DFL=(FL-FLL)/XGAP                                                  158
      DBE=(BE-BEL)/XGAP                                                  159
      IF(DTHT.GT..08.OR.DTHT.LT..015) DTHT=DTHTL                         160
      IF(ABS(DFL).GT..025) DFL=DFLL                                      161
      IF(ABS(DBE).GT..025) DBE=DBEL                                      162
```

```
      IF(ABS(DALT).GT.2.5) DALT=DALTL                                   163
      IF(ABS(DHMN).GT.2.5) DHMN=DHMNL                                   164
      DTHT_=DTHT                                                        165
      DFLL=DFL                                                          166
      DBEL-DBE                                                          167
      DALTL=DA_T                                                        168
      DHMNL=DHMN                                                        169
      THTL=THETA                                                        170
      ALTL=ALT                                                          171
      HMNL=HMN                                                          172
      FLL=FL                                                            173
      BEL=BE                                                            174
      TMAL=TMA                                                          175
      IGCB=3                                                            176
      IF(IGCA.EQ.5) IGCB=4                                              177
      CALL S2UP3(IATT(1,IGCB),JATT,II8)                                 178
      DO 260 II=1,IGC                                                   179
      DO 260 JJ=1,10                                                    180
      BATT(JJ,II)=FLOAT(JATT(JJ,II))/100.                               181
  260 CONTINUE                                                          182
C*****                                                                  183
C  BEGIN ONE SECOND PROCESSING LOOP.                                    184
C*****                                                                  185
      II1=1                                                             186
   90 CONTINUE                                                          187
      DO 70 II=II1,IGC                                                  188
      DTM=(IDAT(1,II).AND.MASK8)/16-JNOW                                189
      IF(DTM.GT.15.) DTM=15.                                            190
      IF(DTM.LT.0.) DTM=0.                                              191
      THETA=THTL+DTHT*DTM                                               192
      ALT=ALTL+DALT*DTM                                                 193
      HMN=HMNL+DHMN*DTM                                                 194
      FL=FLL+DFL*DTM                                                    195
      BE=BEL+DBE*DTM                                                    196
      TMA=TMAL+DTM                                                      197
      RKM=ALT+6371.2                                                    198
      RNM=RKM/1.85325                                                   199
      CALL GEOGA(TMA)                                                   200
      IF(XLTM.GT.180.) XLTM=XLTM-360.                                   201
      IF(XLT.GT.180.) XLT=XLT-360.                                      202
      TMA=TMA+1.                                                        203
      HRA=(GMTZ+FLOAT(IDAT(1,II))*TRAT)/3600.                           204
      IF(XLG.LT.0.) XLG=XLG+360.                                        205
      XLCT=HRA+XLG*.066666667                                           206
      DO 140 JJ=1,27                                                    207
      IFLC=JJ                                                           208
      IF(BORL(JJ).LT.FL.AND.FL.LE.BORL(JJ+1) ) GO TO 160                209
  140 CONTINUE                                                          210
  160 CONTINUE                                                          211
      DO 370 JJ=1,10                                                    212
      IHMC=JJ                                                           213
```

```
      IF(BORH(JJ).LE.HMN.AND.HMN.LE.BORH(JJ+1)) GO TO 380                    214
  370 CONTINUE                                                               215
C*****                                                                       216
C  USE ALTERNATE HMAIN PROCEDURE.                                            217
C*****                                                                       218
      HMN=ALT                                                                219
      IHMC=16                                                                220
      IF(HMN.LE.5000.) CALL HMALT(BE,FL,HMN,IHMC)                            221
      IF(HMN.GT.A_T) HMN=ALT                                                 222
  380 CONTINUE                                                               223
      IF(HMN.GT.A_T) HMN=ALT                                                 224
      IF(IABS(IHMC-IHML).GT.3.AND.ICT4.NE.0) GO TO 70                        225
      IF((IFLC.NE.IFL_.OR.IHMC.NE.IHML).AND.IDTM.GT.4) GO TO 20              226
C 1CF1PRINT 3004,II,IFLC,IHMC,THETA,ALT,FL,HMN                               227
 3004 FORMAT(1X,I5,2I3,5F12.5)                                               228
      KDA(1)=KDA(1)+IFIX(ALT)                                                229
      KDA(2)=KDA(2)+IFIX(100.*XLT)                                           230
      KDA(3)=KDA(3)+IFIX(100.*XLG)                                           231
      KDA(4)=KDA(4)+IFIX(100.*THETA)                                         232
      KDA(5)=KDA(5)+IFIX(100.*OMEGA)                                         233
      KDA(6)=KDA(6)+IFIX(100.*XLTM)                                          234
      KDA(7)=KDA(7)+IDA(7)                                                   235
      KDA(8)=KDA(8)+IDA(8)                                                   236
      KDA(9)=KDA(9)+IFIX(1000.*FL)                                           237
      KDA(10)=KDA(10)+IFIX(HMN)                                              238
      KDA(13)=KDA(13)+IFIX(100.*X_GM)                                        239
      KDA(14)=KDA(14)+IFIX(100.*X_CT)                                        240
      KDA(15)=KDA(15)+1                                                      241
      DO 330 JJ=11,12                                                        242
      KDA(JJ)=KDA(JJ)+IDA(JJ)                                                243
  330 CONTINUE                                                               244
      ALT2=ALT                                                               245
      XLT2=XLTM                                                              246
      XLG2=XLGM                                                              247
      IDTM=IDT1+1                                                            248
      ICT1=ICT1+1                                                            249
      CALL AUTDC(JDAT,IDAT(3,II),KCD,JCD,ICD)                                250
      CALL S2PAL(IDAT(2,II),KDAT,_CHN)                                       251
C*****                                                                       252
C  ADD DATA TO PITCH ANGLE DISTRIBUTION                                      253
C*****                                                                       254
      IFGA=SHIFT(IDAT(1,II),-45)                                             255
      ICAL(1)=ICAL(2)=ICAL(3)=ICAL(4)=0                                      256
      IF(IFGA.GT.7) ICAL(1)=1                                                257
      IF((IFGA.AND.78).GT.3) ICAL(2)=1                                       258
      IF((IFGA.AND.38).GT.1) ICAL(3)=1                                       259
      IF((IFGA.AND.18).EQ.1) ICAL(4)=1                                       260
      DO 240 KK=1,4                                                          261
      IF(ICAL(KK).EQ.1) GO TO 240                                            262
      IF(JDAT(1,KK).GE.MASKC) GO TO 240                                      263
      KK2=2*KK                                                               264
```

```
      KK1=KK2-1                                                          265
      IPA=ABS(BATT(KK1,TT))/15.+1.                                       266
      IF(IPA.GT.12) IPA=12                                               267
      IF(IPA.LT.1) IPA=1                                                 268
      KK3=(KK-1)/2+1                                                     269
      DO 150 JJ=1,12                                                     270
      IPAD1(JJ,IPA,KK3)=IPAD1(JJ,IPA,KK3)+JDAT(JJ,KK)+MASKA              271
  150 CONTINUE                                                           272
  240 CONTINUE                                                           273
      IPA=ABS(BATT(9,II))/15.+1.                                         274
      IF(IPA.GT.12) IPA=12                                               275
      IF(IPA.LT.1) IPA=1                                                 276
      DO 230 JJ=1,3                                                      277
      IPAD2(LCHN,IPA,JJ)=IPAD2(LCHN,IPA,JJ)+KDAT(JJ,LCHN)+MASKA         278
  230 CONTINUE                                                           279
   70 CONTINUE                                                           280
      GO TO 10                                                           281
   20 CONTINUE                                                           282
      II1=II                                                             283
      IF(IEGC._T.0) GO TO 30                                             284
      IF(IEOF.NE.0.AND.IDTM.LE.2) GO TO 100                              285
      IF(IDTM.LE.2) GO TO 30                                             286
C1CS1 PRINT 3004,ICT3,IELC,IHMC,DTHT,DALT,DEL,DHMN                       287
      ICT4=ICT4+1                                                        288
C*****                                                                   289
C  PRINT OUT 64 SECOND PITCH ANGLE DISTRIBUTIONS AND ZERO SUMS.          290
C*****                                                                   291
      SNB=KDA(15)                                                        292
      IF(SNB.LT.1.) SNB=1.                                               293
      DO 340 II=1,14                                                     294
      KDA(II)=FLOAT(KDA(II))/SNB+.5                                      295
  340 CONTINUE                                                           296
      IF(KDA(14).GT.2400) KDA(14)=KDA(14)-2400                           297
      ALTA=KDA(1)                                                        298
      XLTA=FLOAT(KDA(2))/100.                                            299
      XLGA=FLOAT(KDA(3))/100.                                            300
      XLTMA=FLOAT(KDA(6))/100.                                           301
      XLGMA=FLOAT(KDA(13))/100.                                          302
      BAA=FLOAT(KDA(8))/10000.                                           303
      FLA=FLOAT(KDA(9))/1000.                                            304
      HMNA=KDA(10)                                                       305
      PRINT 3004,ICT3,IELC,IHMC,BAA,ALTA,FLA,HMNA                        306
      WRITE(9,2006) XLTMA,XLGMA,ALTA,IDTM,BAA,FLA,HMNA                   307
 2006 FORMAT(//10X,*MLAT =*,F8.2,*  MLONG =*,F8.2,*  ALT =*,            308
     +F8.1,*  DT = *,I4/10X,*BAV =*,F8.3,*  LAV =*,                     309
     +F8.2,*  HMAV =*,F8.1)                                             310
      WRITE(3,2001)                                                      311
 2001 FORMAT(/3X,*P-ANG  PA1 N1  PA2 N2  PA3 N3  PA4 *                   312
     +*N4  PA5 N5  PAE8 NE8  PAB6 NB6*)                                 313
C*****                                                                   314
C  SET UP LEPS PITCH ANGLE MATRIX                                        315
```

```
C*****                                                                  316
      DO 130 KK=1,2                                                     317
      DO 170 II=1,12                                                    318
      XPA(II)=FLOAT(15*(II-1))+7.5                                      319
      IMAT(13,II,KK)=SHIFT(IPAD1(1,II,KK),-45)                          320
      DO 180 JJ=1,12                                                    321
      IMAT(JJ,II,KK)=IPAD1(JJ,II,KK).AND.MASK8                          322
  180 CONTINUE                                                          323
 2009 FORMAT(2X,F6.1,I4,I7,3I6,8I7)                                     324
 2017 FORMAT(2X,F6.1,I4,F9.1,3F8.1,8F9.1)                               325
  170 CONTINUE                                                          326
  130 CONTINUE                                                          327
C*****                                                                  328
C  SET UP P-ALPHA COINC MODE AND FRONT DET PA MATRICES                  329
C*****                                                                  330
      DO 190 II=1,12                                                    331
      DO 200 JJ=1,8                                                     332
      IPAD2(JJ,II,4)=SHIFT(IPAD2(JJ,II,1),-45)                          333
      IPAD2(JJ,II,1)=IPAD2(JJ,II,1).AND.MASK8                           334
      IF(JJ.GT.5) GO TO 200                                             335
      IJ=2*JJ-1                                                         336
      IOUT(IJ,II)=IPAD2(JJ,II,1)                                        337
      IF(II.EQ.1) IOUT(IJ,13)=0                                         338
      IOUT(IJ,13)=IOUT(IJ,13)+IOUT(IJ,II)                               339
  200 CONTINUE                                                          340
 2001 FORMAT(1X,5I12)                                                   341
 2011 FORMAT(2X,F6.1,2(,2I7,2I8,2I5,I7,10X))                            342
  190 CONTINUE                                                          343
      IOUT(11,13)=0                                                     344
      DO 320 II=1,12                                                    345
      DO 350 JJ=1,8                                                     346
      IPAD2(JJ,II,2)=IPAD2(JJ,II,2).AND.MASK8                           347
  350 CONTINUE                                                          348
      IOUT(11,II)=IPAD2(9,II,2)                                         349
      IOUT(11,13)=IOUT(11,13)+IOUT(11,II)                               350
  320 CONTINUE                                                          351
C*****                                                                  352
C  SET UP BACK DET AND NO OF OBS MATRICES                               353
C*****                                                                  354
      IOUT(13,13)=0                                                     355
      DO 210 II=1,12                                                    356
      DO 220 JJ=1,8                                                     357
      IPAD2(JJ,II,3)=IPAD2(JJ,II,3).AND.MASK8                           358
  220 CONTINUE                                                          359
      IOUT(13,II)=IPAD2(9,II,3)                                         360
      IOUT(13,13)=IOUT(13,13)+IOUT(13,II)                               361
  210 CONTINUE                                                          362
      DO 310 II=1,12                                                    363
      DO 360 JJ=1,5                                                     364
      IJ=2*JJ                                                           365
      IOUT(IJ,II)=IPAD2(JJ,II,4)                                        366
```

```
      IF(II.EQ.1) IOUT(IJ,13)=0                                          367
      IOUT(IJ,13)=IOUT(IJ,13)+IOUT(IJ,II)                                368
  360 CONTINUE                                                           369
      IOUT(12,13)=0                                                      370
      IOUT(14,13)=0                                                      371
      IOUT(12,II)=IPAD2(5,II,4)                                          372
      IOUT(14,II)=IPAD2(6,II,4)                                          373
      IOUT(12,13)=IOUT(12,13)+IOUT(12,II)                                374
      IOUT(14,13)=IOUT(14,13)+IOUT(14,II)                                375
  310 CONTINUE                                                           376
      CALL PACK3(KMAT,KOA,IMAT,IPAD2,KWDD)                              377
      KWDM=MAX0(KWDM,KWDD)                                               378
      WRITE(2) KWDD,1,(KMAT(I),I=1,KWDD)                                 379
      XPA(13)=90.                                                        380
      DO 80 II=1,13                                                      381
      ISL=0                                                              382
      DO 120 JJ=1,14                                                     383
      ISL=ISL+IOUT(JJ,II)                                                384
  120 CONTINUE                                                           385
      IF(ISL.GT.0) WRITE(9,2007) XPA(II),(IOUT(I,II),I=1,14)             386
   80 CONTINUE                                                           387
      WRITE(8,2012) ELA,AMNA,IDTM,(IOUT(I,13),I=1,14)                    388
 2012 FORMAT((1X,F7.3,F7.1,I5,7(I6,I3)))                                 389
 2007 FORMAT((1X,F6.1,7(I6,I3)))                                         390
      IF(IEOF.NE.0) GO TO 100                                            391
C*****                                                                   392
C  ZERO CONSTANTS FOR NEXT LAT,LONG BOX                                  393
C*****                                                                   394
      IDTM=0                                                             395
   40 CONTINUE                                                           396
      DO 40 II=1,12                                                      397
      KOA(II)=0                                                          398
      DO 40 JJ=1,12                                                      399
      IPAD1(JJ,II,1)=0                                                   400
      IPAD1(JJ,II,2)=0                                                   401
      IF(JJ.GT.8) GO TO 40                                               402
      IPAD2(JJ,II,1)=0                                                   403
      IPAD2(JJ,II,2)=0                                                   404
      IPAD2(JJ,II,3)=0                                                   405
      IPAD2(JJ,II,4)=0                                                   406
   40 CONTINUE                                                           407
      IEOC=0                                                             408
      KOA(13)=1                                                          409
      KOA(14)=1                                                          410
      KOA(15)=1                                                          411
      IF(XLT.GT.90.) XLT=XLT-360.                                        412
      XLT1=XLTM                                                          413
      XLG1=XLGM                                                          414
      ALT1=ALT                                                           415
      IFLL=IFLG                                                          416
      IHML=IHMG                                                          417
```

```
      GO TO 90                                                          418
  100 CONTINUE                                                          419
      WRITE(8,2002) ICT3,ICT4,KWD*                                      420
 2002 FORMAT(1X,I5,*  RECORDS READ FROM FILE*/                          421
     +1X,I5,*  RECORDS WRITTEN ON FILE*/                                422
     +* MAXIMUM OUTPUT RECORD SIZE WAS*,I5)                             423
      T2=SECOND(TTT)-T1                                                 424
      WRITE(8,2003) T2                                                  425
 2003 FORMAT(2X,*PROCESSING TIME FOR ORBIT IS*,F10.3)                   426
      ENDFILE2                                                          427
      GO TO 50                                                          428
  110 CONTINUE                                                          429
      T2=SECOND(TTT)-T0                                                 430
      WRITE(8,2005) T2                                                  431
 2005 FORMAT(2X,*TOTAL PROCESSING TIME FOR S3SAC IS*,F10.3)             432
      END                                                               433
```

APP-B- 8 -133

```
      SUBROUTINE HMALT(BE,FL,HMN,IHMC)                                  434
      DIMENSION BORH(6),CA(6,2),CB(6,2),BORB(6)                         435
      DATA BORH /1000.,1500.,2000.,3000.,4000.,6000./                   436
      DATA CA /.13935,.17938,.15613,.12291,.10298,.06976,               437
     +.16321,.13106,.09852,.06811,.05911+,.034698/                      438
      DATA CB /.1+,.115,.095,.062,.04,.017,                             439
     +.1557,.1451,.1234,.095,.0664,.0381/                               440
      JJ=1                                                              441
      IF(FL.GT.4.) JJ=2                                                 442
      XL=ALOG10(FL)                                                     443
      DO 10 II=1,5                                                      444
      BORB(II)=CB(II,JJ)+CA(II,JJ)*XL                                   445
10    CONTINUE                                                          446
      DO 20 II=1,5                                                      447
      KK=II                                                             448
      IF(BORB(II).GT.BE.AND.BE.GE.BORB(II+1)) GO TO 30                  449
20    CONTINUE                                                          450
      HMN=0.                                                            451
      IHMC=1                                                            452
      RETURN                                                            453
30    CONTINUE                                                          454
      IHMC=10+KK                                                        455
      HMN=(BE-BORB(KK))/(BORB(KK+1)-BORB(KK))*(BORH(KK+1)               456
     +-BORH(KK))+BORH(KK)                                               457
      RETURN                                                            458
      END                                                               459
```

APP-P- 8 -134

```
      SUBROUTINE PACE3(IMAT,IDA,IPD1,IPD2,IFLG)
C*****************************************************************
C*****
C  1977   SUBPROGRAM.  E. HOLFMAN.  LAST ALTERED 18 JAN 77.
C  FROM PACEF 18 JAN 77.
C*****
C*****
C  PACKS S72-3 PITCH ANGLE DISTRIBUTION DATA INTO EFILE FORMAT.
C*****
C*****************************************************************
      DIMENSION IMAT(1),IDA(1),IPD1(13,12,2),IPD2(8,12,4)
      DATA ICT4 /0/
      ICT4=ICT4+1
      CALL AUTCD(IDA,IMAT,15,JWDD,KWDD)
      KWD=KWDD+1
      CALL AUTCD(IPD1,IMAT(KWD),156,JWDD,KWDD)
      KWD=KWD+KWDD
      CALL AUTCD(IPD1(1,1,2),IMAT(KWD),156,JWDD,KWDD)
      KWD=KWD+KWDD
      CALL AUTCD(IPD2,IMAT(KWD),96,JWDD,KWDD)
      KWD=KWD+KWDD
      CALL AUTCD(IPD2(1,1,2),IMAT(KWD),96,JWDD,KWDD)
      KWD=KWD+KWDD
      CALL AUTCD(IPD2(1,1,3),IMAT(KWD),96,JWDD,KWDD)
      KWD=KWD+KWDD
      CALL AUTCD(IPD2(1,1,4),IMAT(KWD),96,JWDD,KWDD)
      KWD=KWD+KWDD-1
      IFLG=KWD
      RETURN
      END
```

APP-B- 9 -135

```
      PROGRAM S3SADE(EFILE,FFILE,YFILE=64,ZFILE,OUTPUT=64,
     +TAPE4,TAPE2=EFILE,TAPE8=YFILE,TAPE1=FFILE,
     +TAPE3=ZFILE,TAPE6=OUTPUT)
C*****
C*****
C  1977   PROGRAM.  E. HOLEMAN.  LAST ALTERATION 15 NOV 77
C  FROM S2SBAD 18 JAN 77.
C*****
C*****
C  PRELIMINARY SORT OF DATA BY  L  AND HMOV.
C  12 LINE PAD LISTING FOR P-ALPHA ONLY.  NUMBER DISTRIBUTIONS.
C*****
C*****
C  ICT1 COUNTS TOTAL NUMBER OF DATA RECORDS READ.
C  ICT2 COUNTS NUMBER OF OUTPUT DATA RECORDS
C  ICT4 COUNTS NUMBER OF DATA READ FOR ORBIT IFIL.
C*****
C*****
C  ALTERATION SUMMARY
C    18 NOV 77   ADDED S3-2 COMPATIBILITY.
C*****
C*****
C  560008 CM STORAGE REQUIRED FOR LOADING.
C*****
C*****
      DIMENSION
     +FHED(30),THED(30),LTIM(8),IOUT(14,13),XPA(13),BORL(25),BORH(17),
     +IDA(15),JNDX(434),JNDX(433),JMAT(384),
     +IPD1(13,12,2),IPD2(8,12,4),IMAT(384),
     +KMAT(384),LABL(3),
     +JDA(15),JPD1(13,12,2),JPD2(8,12,4)
      EQUIVALENCE(FHED,IHED)
      COMMON JNDX
      DATA IPD1,IPD2,IOUT /878*0/
      DATA JDA,JPD1,JPD2 /711*0/
      DATA IMAT,JMAT /768*0/
      DATA BORL /1.,1.14,1.15,1.16,1.17,1.18,1.19,1.2,1.3,1.4,
     +1.5,1.6,1.7,1.8,1.9,2.,2.2,2.4,2.6,2.8,3.,3.5,4.,
     +5.,6.,8.,10.,25./
      DATA BORH /0.,100.,200.,300.,400.,500.,600.,700.,800.,
     +900.,1000.,1500.,2000.,3000.,4000.,5000.,10000./
      DO 330 II=1,433
      JNDX(II)=0
  330 CONTINUE
      KNDX=384
      IFGA=0
      IFGB=0
      IFIL=0
      SNB=0.
      SLF=0.
      KWDM=250
```

```
      REWIND1                                                          61
      REWIND2                                                          62
      REWIND8                                                          63
      REWIND9                                                          64
      ICT1=0                                                           65
      ICT2=0                                                           66
      CALL OPENMS(4,INDX,434,0)                                        67
      ITL=433                                                          68
      T0=SECOND(TTT)                                                   69
      WRITE(8,2004)                                                    70
C 101 WRITE(6,2011)                                                    71
 2004 FORMAT(1H1,4X,*PROCESSING BEGUN IN S3SADE*)                      72
      JEOF=0                                                           73
 50   CONTINUE                                                         74
      JEOF=JEOF+1                                                      75
      IF(JEOF.GE.4) GO TO 150                                          76
      IEGC=-1                                                          77
      IDLT=0                                                           78
      ICT3=0                                                           79
      ICT4=0                                                           80
      T1=SECOND(TTT)                                                   81
      READ(2) IWC,IGC,(FHED(I),I=1,IWC)                                82
      IF(EOF(2)) 50,60                                                 83
 60   CONTINUE                                                         84
      JEOF=0                                                           85
      IFIL=IFIL+1                                                      86
      MMEMO=FHED(IWC)                                                  87
      FHED(IWC)=3.FFILE                                                88
      IF(IFIL.EQ.1) WRITE(1) IWC,IGC,(FHED(I),I=1,IWC)                 89
      RIOTS=FHED(21)                                                   90
      ENCODE(30,4001,LABL) (IHED(I),I=1,3),IHED(6)                     91
 4001 FORMAT(R4,R5,2X,A10,1X,A8)                                       92
      ISAT=3                                                           93
      IF((IHED(1).AND.77777777B).EQ.4HS3-2) ISAT=2                     94
      THTL=0.                                                          95
      ALTL=0.                                                          96
      DTHT=.047                                                        97
      GMT1=FLOAT(IHED(18))/1000.                                       98
      TRAT=FLOAT(IHED(19))/FLOAT(IHED(20))/1000.                       99
      GMTZ=GMT1-FLOAT(IHED(17))*TRAT                                  100
      CALL TOATB(LTIM,TMA,MON,FHED(27),IHED(26),118)                  101
C 102 WRITE(6,2008) FHED(27),MON,LABL                                 102
      WRITE(8,2008) FHED(27),MON,LABL                                 103
 2011 FORMAT(1H1)                                                     104
      WRITE(8,2008) FHED(27),MON,LABL                                 105
 2008 FORMAT(5X,*)RBIT ID*,F8.2,A10,2X,3A10)                          106
 10   CONTINUE                                                        107
 90   CONTINUE                                                        108
      IF(IEGA.NE.0) PRINT 3001,IEGA,IWC,IHM,IEL,IIN,ILAT,ILON,NUM3
      IEGA=0                                                          110
C*****                                                                111
```

```
C  READ EFILE RECORD AND ADD DATA TO RANDOM FILE                    112
C*****                                                             113
      READ(2) IWC,IGC,(KMAT(I),I=1,IWC)                            114
      IEOF=EOF(2)                                                  115
      IF(IEOF.NE.0) GO TO 100                                      116
      ICT4=ICT4+1                                                  117
      ICT1=ICT1+1                                                  118
      IF(ISAT.EQ.2) CALL UNPEF(KMAT,IDA,IPD1,IPD2,IWC)             119
      IF(ISAT.EQ.3) CALL UNPE3(KMAT,IDA,IPD1,IPD2,IWC)             120
      IF(IWC.LE.0) IFGA=1                                          121
      IF(IWC.LE.0) GO TO 90                                        122
 7001 FORMAT(1X,12I5)                                              123
C*****                                                             124
C  DETERMINE L AND HMIN INDICES.                                   125
C*****                                                             126
      HMN=IDA(10)                                                  127
      FL=FLOAT(IDA(9))/1000.                                       128
      ILAT=IDA(6)+9000                                             129
      IF(ILAT.GT.18000) ILAT=ILAT-36000                            130
      ILAT=(ILAT-1)/500+1                                          131
      ILON=(IDA(13)-1)/500+1                                       132
      IALT=(IDA(1)-1)/100-3                                        133
      DO 30 II=1,27                                                134
      IEL=II                                                       135
      IF(BORL(II).LT.FL.AND.FL.LE.BORL(II+1)) GO TO 40             136
 30   CONTINUE                                                     137
 40   CONTINUE                                                     138
      DO 130 II=1,16                                               139
      IHM=II                                                       140
      IF(BORH(II).LE.HMN.AND.HMN.LE.BORH(II+1)) GO TO 250          141
 130  CONTINUE                                                     142
      IHM=17                                                       143
 250  CONTINUE                                                     144
      IHM=17-IHM                                                   145
      IIN=(IEL-1)*16+IHM                                           146
C*****PRINT 3001,ILAT,IALT,ILON,IIN,IIL,IHM,IEL                    147
      IF(IHM.GT.16) IFGA=2                                         148
      IF(IEL.GT.27) IFGA=3                                         149
      IF(IIN.GT.432) IFGA=4                                        150
      IF(ILAT.GT.36.OR.ILON.GT.72) IFGA=5                          151
      IF(ILAT.LE.0.OR.ILON.LE.0) IFGA=6                            152
      IF(IEL.LE.0.OR.IHM.LE.0) IFGA=7                              153
      IF(IFGA.NE.0) GO TO 90                                       154
      IF(IIN.EQ.IIL) GO TO 140                                     155
      CALL WRITMS(4,IMAT,JNDX(IIL),IIL,-1)                         156
      IRD=IIN                                                      157
      IF(JNDX(IIN).EQ.0) IRD=433                                   158
      CALL READMS(4,IMAT,JNDX(IRD),IRD)                            159
      IIL=IIN                                                      160
 140  CONTINUE                                                     161
      IF(JNDX(IIL).GE.1) GO TO 210                                 162
```

```
 230  CONTINUE                                                          163
      DO 150 II=1,IWC                                                   164
C*****                                                                  165
C  NEW DATA FOR THESE COORDS.                                          166
C*****                                                                  167
      IMAT(II)=KMAT(II)                                                 168
 150  CONTINUE                                                          169
      KNDX=192                                                          170
      IF(IWC.GT.192) KNDX=384                                           171
      JNDX(IIL)=KNDX                                                    172
      GO TO 90                                                          173
 210  CONTINUE                                                          174
C*****                                                                  175
C  ADD NEW DATA TO OLD                                                  176
C*****                                                                  177
      JWC=-1                                                            178
      IF(ISAT.EQ.2) CALL UNPEF(IMAT,JDA,JPD1,JPD2,JWC)                  179
      IF(ISAT.EQ.3) CALL UNPE3(IMAT,JDA,JPD1,JPD2,JWC)                  180
      IF(JWC.LE.0) GO TO 230                                            181
      NUM1=IDA(15)                                                      182
      NUM2=JDA(15)                                                      183
      NUM3=NUM1+NUM2                                                    184
C*****PRINT 3001,IIN,NUM1,NUM2,NUM3                                     185
      IF(NUM3.LE.0) IFGA=6                                              186
      IF(IFGA.NE.0) GO TO 90                                            187
      DO 2  II=1,12                                                     188
      DO 2  JJ=1,13                                                     189
      IPD1(JJ,II,1)=IPD1(JJ,II,1)+JPD1(JJ,II,1)                         190
      IPD1(JJ,II,2)=IPD1(JJ,II,2)+JPD1(JJ,II,2)                         191
      IF(JJ.GT.8) GO TO 20                                              192
      DO 7  KK=1,4                                                      193
      IPD2(JJ,II,KK)=IPD2(JJ,II,KK)+JPD2(JJ,II,KK)                      194
 7    CONTINUE                                                          195
 20   CONTINUE                                                          196
      IF(IDA(2).GT.36000) IDA(2)=IDA(2)-36000                           197
      IF(IDA(6).GT.36000) IDA(6)=IDA(6)-36000                           198
      IF(JDA(2).GT.36000) JDA(2)=JDA(2)-36000                           199
      IF(JDA(6).GT.36000) JDA(6)=JDA(6)-36000                           200
      DO 220 II=1,14                                                    201
      IDA(II)=(IDA(II)*NUM1+JDA(II)*NUM2)/NUM3                          202
 220  CONTINUE                                                          203
      IF(IDA(2).LT.0) IDA(2)=IDA(2)+36000                               204
      IF(IDA(6).LT.0) IDA(6)=IDA(6)+36000                               205
      IDA(15)=NUM3                                                      206
      IWC=0                                                             207
      IF(ISAT.EQ.2) CALL PACEF(IMAT,IDA,IPD1,IPD2,IWC)                  208
      IF(ISAT.EQ.3) CALL PACE3(IMAT,IDA,IPD1,IPD2,IWC)                  209
      IF(IWC.GT.KMDM) WRITE(6,3001) 1860,IWC                            210
      KNDX=192                                                          211
      IF(IWC.GT.192) KNDX=384                                           212
      JNDX(IIL)=KNDX                                                    213
```

```
      GO TO 90                                                          214
  160 CONTINUE                                                          215
      WRITE(6,3002)                                                     216
 3002 FORMAT(1X,*INPUT COMPLETE*)                                       217
C*****                                                                  218
C  INPUT COMPLETE.  BEGIN OUTPUT.                                       219
C*****                                                                  220
      CALL WRITMS(4,IMAT,JNDX(IIL),IIL,-1)                              221
      IFGP=0                                                            222
      DO 170 III=1,432                                                  223
      IF(MOD(III,16).EQ.1) IFGP=1                                       224
      IF(JNDX(III).LT.1) GO TO 170                                      225
      IF(IFGP.EQ.1) WRITE(9,2010)                                       226
      IFGP=0                                                            227
      CALL READMS(4,IMAT,JNDX(III),III)                                 228
      JWD=-2                                                            229
      IF(ISAT.EQ.2) CALL UNPEF(IMAT,IDA,IPD1,IPD2,JWD)                  230
      IF(ISAT.EQ.3) CALL UNPE3(IMAT,IDA,IPD1,IPD2,JWD)                  231
      IF(JWD.LE.0) GO TO 170                                            232
      WRITE(1) JWD,1,(IMAT(I),I=1,JWD)                                  233
      ICT2=ICT2+1                                                       234
      ALTA=IDA(1)                                                       235
      XLTA=FLOAT(IDA(2))/100.                                           236
      IF(XLTA.GT.90.) XLTA=XLTA-360.                                    237
      XLGA=FLOAT(IDA(3))/100.                                           238
      XLTM=FLOAT(IDA(5))/100.                                           239
      IF(XLTM.GT.90.) XLTM=XLTM-360.                                    240
      XLGM=FLOAT(IDA(13))/100.                                          241
      BAA=FLOAT(IDA(8))/10000.                                          242
      FLA=FLOAT(IDA(9))/1000.                                           243
      HMNA=IDA(10)                                                      244
      IDLT=IDA(15)                                                      245
      WRITE(9,2006) XLTM,XLGM,ALTA,IDLT,BAA,FLA,HMNA                    246
 2006 FORMAT(//10X,*MLAT =*,F8.2,*  MLONG =*,F8.2,*  ALT =*,            247
     +F8.1,*  TIME INTERVAL IS *,I4/10X,*BAV =*,F8.3,*  FAV =*,         248
     +F8.2,*  HMAV =*,F8.1)                                            249
      WRITE(9,2001)                                                     250
 2001 FORMAT(/3X,*P-ANG  PA1  N1  PA2  N2  PA3  N3  PA4  *              251
     +*N4  PA5  N5  PA6  N6  PA7  N7  PA8  N8*)                         252
C*****                                                                  253
C  SET UP P-ALPHA COINC MODE AND FRONT DET PA MATRICES                  254
C*****                                                                  255
      DO 240 II=1,13                                                    256
      DO 240 JJ=1,14                                                    257
      IOUT(JJ,II)=0                                                     258
  240 CONTINUE                                                          259
      XPA(13)=90.                                                       260
      DO 190 II=1,12                                                    261
      XPA(II)=FLOAT(15*(II-1))+7.5                                      262
      DO 200 JJ=1,5                                                     263
      JJ1=2*JJ-1                                                        264
```

```
      JJ2=JJ1+1                                                          265
      IOUT(JJ1,II)=IPD2(JJ,II,1)                                         266
      IOUT(JJ2,II)=IPD2(JJ,II,4)                                         267
      IF(IT.EQ.1) IOUT(JJ1,13)=IOUT(JJ2,13)=0                            268
      IOUT(JJ1,13)=IOUT(JJ1,13)+IOUT(JJ1,II)                             269
      IOUT(JJ2,13)=IOUT(JJ2,13)+IOUT(JJ2,II)                             270
  200 CONTINUE                                                           271
      IOUT(11,II)=IPD2(8,II,2)                                           272
      IOUT(12,II)=IPD2(8,II,4)                                           273
      IOUT(13,II)=IPD2(6,II,3)                                           274
      IOUT(14,II)=IPD2(6,II,4)                                           275
      IOUT(11,13)=IOUT(11,13)+IOUT(11,II)                                276
      IOUT(12,13)=IOUT(12,13)+IOUT(12,II)                                277
      IOUT(13,13)=IOUT(13,13)+IOUT(13,II)                                278
      IOUT(14,13)=IOUT(14,13)+IOUT(14,II)                                279
  190 CONTINUE                                                           280
      DO 80 II=1,13                                                      281
      ISL=0                                                              282
      DO 120 JJ=1,14,2                                                   283
      IF(IOUT(JJ+1,II).LE.0) GO TO 120                                   284
      ISL=ISL+IOUT(JJ+1,II)                                              285
      IOUT(JJ,II)=IOUT(JJ,II)*10/IOUT(JJ+1,II)                           286
  120 CONTINUE                                                           287
      IF(ISL.GT.0) WRITE(9,2007) XPA(II),(IOUT(I,II),I=1,14)             288
   80 CONTINUE                                                           289
      IF(ISL.GT.0) WRITE(6,2011) RAA,FLA,TMNA,IDLT,(IOUT(I,13),          290
     +I=1,14)                                                            291
 2011 FORMAT(1X,F8.4,F8.3,,F8.1,I4,(1X,7(I6,I3)))                        292
 2007 FORMAT((1X,F6.1,5(I6,I3),2(I7,I4)))                                293
  180 CONTINUE                                                           294
  170 CONTINUE                                                           295
      GO TO 110                                                          296
  100 CONTINUE                                                           297
      WRITE(8,2002) ICT4                                                 298
 2101 WRITE(6,2002) ICT4                                                 299
 2002 FORMAT(1X,I5,*  RECORDS READ FROM FFILE*)                          300
      T2=SECOND(TTT)-T1                                                  301
      WRITE(6,2003) T2                                                   302
 2003 FORMAT(2X,*READ TIME FOR ORBIT IS*,F10.3/)                         303
      GO TO 50                                                           304
  110 CONTINUE                                                           305
      ENDFILE1                                                           306
      WRITE(6,2004) ICT1,ICT2                                            307
      WRITE(8,2004) ICT1,ICT2                                            308
 2004 FORMAT(2X,*END OF RUN STATISTICS*/                                 309
     +2X,I5,*  RECORDS READ FROM FFILE*/                                 310
     +2X,I5,*  RECORDS WRITTEN TO FFILE*)                                311
      T2=SECOND(TTT)-T0                                                  312
      WRITE(8,2005) T2                                                   313
 2005 FORMAT(2X,*TOTAL PROCESSING TIME FOR S3SAD IS*,F10.3)              314
      END                                                                315
```

```
      SUBROUTINE UNPE3(IMAT,IDA,IPD1,IPD2,IFLG)                          316
C*************************************************************          317
C*****                                                                  318
C  1977   SUBPROGRAM.  E. HOLEMAN.  LAST ALTERED 18 JAN 77.             319
C  FROM UNPEF 18 JAN 77.                                               320
C*****                                                                  321
C*****                                                                  322
C  UNPACKS S3-2 EFILE DATA FILE INTO PITCH ANGLE DIST. MATRICES.
C*****                                                                  324
C*************************************************************          325
      DIMENSION IMAT(1),IDA(1),IPD1(13,12,2),IPD2(6,12,4)              326
      DATA ICT4 /0/                                                    327
      IWC=IFLG                                                         328
      IFLG=-1                                                          329
      ICT4=ICT4+1                                                      330
      CALL AUTOC(IDA,IMAT,IWD,JWD),KWDD)                               331
      KWD=KWDD+1                                                       332
      IF(IWD.NE.13) GO TO 10                                           333
      CALL AUTOC(IPD1,IMAT(KWD),IWD,JWDD,KWD))                         334
      KWD=KWDD+KW)                                                     335
      IF(IWD.NE.156) GO TO 10                                          336
      CALL AUTOC(IPD1(1,1,2),IMAT(KWD),IWD,JWDD,KWDD)                  337
      KWD=KWDD+KW)                                                     338
      IF(IWD.NE.156) GO TO 10                                          339
      CALL AUTOC(IPD2,IMAT(KWD),IWD,JWDD,KWD))                         340
      KWD=KWDD+KW)                                                     341
      IF(IWD.NE.96) GO TO 10                                           342
      CALL AUTOC(IPD2(1,1,2),IMAT(KWD),IWD,JWDD,KWDD)                  343
      KWD=KWDD+KW)                                                     344
      IF(IWD.NE.96) GO TO 10                                           345
      CALL AUTOC(IPD2(1,1,3),IMAT(KWD),IWD,JWDD,KWDD)                  346
      KWD=KWDD+KW)                                                     347
      IF(IWD.NE.96) GO TO 10                                           348
      CALL AUTOC(IPD2(1,1,4),IMAT(KWD),IWD,JWDD,KWDD)                  349
      KWD=KWD+(WD)-1                                                   350
      IF(IWD.E).96) GO TO 20                                           351
10    CONTINUE                                                         352
      WRITE(6,2019) ICT4                                               353
2019  FORMAT(1X,*CANT READ RECORD*,I5)                                 354
      RETURN                                                           355
20    CONTINUE                                                         356
      IF(KWD.NE.IWC.AND.IWC.GT.0) GO TO 10                             357
      IFLG=KWD                                                         358
      RETURN                                                           359
      END                                                              360
```

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```
      SUBROUTINE UNPEF(IMAT,IDA,IP01,IP02,IFLG)                          361
      DIMENSION IMAT(1),IDA(1),IP01(1),IP02(3,12,4)                      362
      DATA ICT4 /0/                                                      363
      IWC=IFLG                                                           364
      IFLG=-1                                                            365
      ICT4=ICT4+1                                                        366
      CALL AUTOC(IDA,IMAT,IWD,JWDD,KWDD)                                 367
      KWD=KWDD+1                                                         368
      IF(IWD.NE.15) GO TO 10                                             369
      CALL AUTOC(IP01,IMAT(KWD),IWD,JWDD,KWDD)                           370
      KWD=KWDD+KWD                                                       371
      IF(IWD.NE.156) GO TO 10                                            372
      CALL AUTOC(IP02,IMAT(KWD),IWD,JWDD,KWDD)                           373
      KWD=KWDD+KWD                                                       374
      IF(IWD.NE.95) GO TO 10                                             375
      CALL AUTOC(IP02(1,1,2),IMAT(KWD),IWD,JWDD,KWDD)                    376
      KWD=KWDD+KWD                                                       377
      IF(IWD.NE.95) GO TO 10                                             378
      CALL AUTOC(IP02(1,1,3),IMAT(KWD),IWD,JWDD,KWDD)                    379
      KWD=KWDD+KWD                                                       380
      IF(IWD.NE.95) GO TO 10                                             381
      CALL AUTOC(IP02(1,1,4),IMAT(KWD),IWD,JWDD,KWDD)                    382
      KWD=KWD+KWDD-1                                                     383
      IF(IWD.EQ.95) GO TO 20                                             384
10    CONTINUE                                                           385
      WRITE(6,2013) ICT4                                                 386
2013  FORMAT(1X,'CANT READ RECORD',I5)                                   387
      RETURN                                                             388
20    CONTINUE                                                           389
      IF(KWD.NE.IWC.AND.IWC.GT.0) GO TO 10                               390
      IFLG=KWD                                                           391
      RETURN                                                             392
      END                                                                393
```

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```
      SUBROUTINE PACEF(IMAT,IDA,IPD1,IPD2,IFLG)                          394
      DIMENSION IMAT(1),IDA(1),IPD1(1),IPD2(8,12,4)                      395
      DATA ICT4 /0/                                                      396
      ICT4=ICT4+1                                                        397
      CALL AUTOD(IDA,IMAT,15,JWDD,KWDD)                                  398
      KWD=KWDD+1                                                         399
      CALL AUTOD(IPD1,IMAT(KWD),156,JWDD,KWDD)                           400
      KWD=KWD+(KWD)                                                      401
      CALL AUTOD(IPD2,IMAT(KWD),96,JWDD,KWDD)                            402
      KWD=KWD+(KWD)                                                      403
      CALL AUTOD(IPD2(1,1,2),IMAT(KWD),96,JWDD,KWDD)                     404
      KWD=KWD+(KWD)                                                      405
      CALL AUTOD(IPD2(1,1,3),IMAT(KWD),96,JWDD,KWDD)                     406
      KWD=KWD+(KWD)                                                      407
      CALL AUTOD(IPD2(1,1,4),IMAT(KWD),96,JWDD,KWDD)                     408
      KWD=KWD+(KWD)-1                                                    409
      IFLG=KWD                                                           410
      RETURN                                                             411
      END                                                                412
```

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```
FILZZOE  //// END OF LIST ////
FILZZOE  //// END OF LIST ////
```

APPENDIX C

HEADING S73-2 REFERS TO SATELLITE S3-2

HEADING S73-3 REFERS TO SATELLITE s3-3

SATELLITE S73-2, ENERGY SPECTRUM LISTING

L = 1.16 HMIN = 512. B = .1971 B/BEQ = .9993 EQPA = 90.00

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	.0163	.016	0.00	0.00	8.0	[illegible]
90	.8824	.360	.2206	.127	.4280	.115	.3877	.072	.3897	.084	10.2	[illegible]
0	4.920	1.56	2.272	.751	3.848	.606	3.247	.406	4.054	.326	58.6	3.601 .223

L = 1.16 HMIN = 440. B = .2032 B/BEQ = 1.0136 EQPA = 83.34

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.4	0.00 0.00
90	.0869	.087	.1671	.075	.1065	.038	.2591	.043	.2661	.031	20.8	.2375 .021
0	.6967	.402	1.639	.438	1.364	.227	2.060	.227	2.113	.139	124.9	1.889 .106

L = 1.16 HMIN = 358. B = .2076 B/BEQ = 1.0417 EQPA = 78.48

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.0	0.00 0.00
90	0.00	0.00	.0566	.057	.0913	.053	0.00	0.00	.1170	.027	11.6	.0671 .018
0	.4269	.427	.2186	.217	.6225	.235	.7799	.184	.8202	.136	67.0	.7336 .092

L = 1.16 HMIN = 243. B = .2155 B/BEQ = 1.0870 EQPA = 73.57

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.0	0.00 0.00
90	0.00	0.00	0.00	0.00	.3255	.026	.0294	.021	.0147	.010	10.4	.0138 .010
0	0.00	0.00	0.00	0.00	.2160	.153	.0984	.070	.0984	.049	57.4	.1070 .038

L = 1.16 HMIN = 154. B = .2215 B/BEQ = 1.1118 EQPA = 71.54

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.2	0.00 0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.0105	.011	8.3	[illegible]
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.0274	.027	31.4	.0149 .015

L = 1.16 HMIN = 26. B = .2314 B/BEQ = 1.1812 EQPA = 68.13

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.6	0.00 0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.4	0.00 0.00
0	.3497	.350	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	83.8	[illegible]

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 1.17 HMIN = 556. B = .1930 B/BEQ = .9963 EQPA = 90.00

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	.0817	.082	0.00	0.00	0.00	0.00	0.00	0.00	.0420	.012	18.4	.1275	78-4
90	.9191	.206	.8347	.129	.6695	.087	1.295	.086	1.587	.063	30.2	1.257	.040
0	6.232	1.01	7.504	.787	5.909	.453	11.19	.435	12.90	.327	174.8	11.06	.220

L = 1.17 HMIN = 433. B = .2022 B/BEQ = 1.0465 EQPA = 77.34

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.0210	.015	6.8	.0114	81-4
90	0.00	0.00	.0919	.092	.1702	.076	.2500	.061	.3023	.050	8.6	.2714	.035
0	2.739	1.22	1.396	.624	1.512	.419	2.365	.357	3.037	.286	53.0	2.628	.194

L = 1.17 HMIN = 351. B = .2075 B/BEQ = 1.0739 EQPA = 74.79

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.0	0.00	0.00
90	.1471	.147	.1634	.116	.0681	.048	.0551	.032	.1250	.030	9.2	.1057	.021
0	1.037	.733	.7917	.457	.3183	.184	.8972	.216	1.171	.173	56.0	.9736	.116

L = 1.17 HMIN = 241. B = .2153 B/BEQ = 1.1114 EQPA = 71.54

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.5	0.00	0.00
90	.0980	.098	0.00	0.00	0.00	0.00	.0147	.015	0.00	0.00	11.4	633-5	45-4
0	.3976	.398	0.00	0.00	0.00	0.00	.1244	.072	.0829	.041	70.6	.0870	.031

L = 1.17 HMIN = 157. B = .2214 B/BEQ = 1.1341 EQPA = 69.39

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.6	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.6	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.2	0.00	0.00

L = 1.17 HMIN = 55. B = .2290 B/BEQ = 1.1761 EQPA = 67.24

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.0123	.012	5.0	778-5	78-4
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.8	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-.18	0.00	38.8	0.00	0.00

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L =	1.18	HMIN =	622.	B =	.1882	B/BEQ =	.9992	EQPA =	90.00				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	.0219	.022	.0551	.023	.0796	.015	14.4	.0378	.010
90	.9013	.207	1.109	.172	1.352	.120	1.754	.096	3.347	.099	28.8	2.293	.056
0	9.620	1.27	10.33	.939	10.36	.605	16.74	.537	28.12	.491	170.6	21.80	.310

L =	1.19	HMIN =	572.	B =	.1918	B/BEQ =	1.0131	EQPA =	83.47				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	.0460	.046	.0204	.020	.0245	.017	.0235	.019	14.2	.0329	.0[illegible]
90	.9104	.252	1.213	.211	.9663	.107	1.451	.095	2.379	.094	21.6	1.680	.038
0	7.080	1.29	7.614	.952	7.730	.653	14.00	.572	21.54	.504	123.2	16.80	.324

L =	1.18	HMIN =	454.	B =	.2002	B/BEQ =	1.0748	EQPA =	76.83				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	.0194	.019	0.00	0.00	8.4	.0193	.0[illegible]
90	.2451	.142	.3096	.109	.2523	.067	.4248	.059	.6843	.056	17.0	.1009	.030
0	3.155	.998	3.387	.779	3.791	.431	3.290	.326	3.947	.264	80.4	3.542	.173

L =	1.18	HMIN =	345.	B =	.2079	B/BEQ =	1.1009	EQPA =	72.37				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.0184	.018	6.0	6.8-5	6[illegible]
90	0.00	0.00	.1471	.147	.0340	.034	.1471	.056	.1011	.030	7.2	.1031	.024
0	.6597	.660	.3299	.330	.1344	.134	.7573	.219	.6842	.149	45.0	.3314	.104

L =	1.18	HMIN =	264.	B =	.2137	B/BEQ =	1.1345	EQPA =	69.86				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.4	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.0590	.025	7.4	.0210	.011
0	0.00	0.00	.3486	.346	0.00	0.00	.2700	.135	.2725	.083	42.4	.0992	.06[illegible]

L =	1.18	HMIN =	186.	B =	.2192	B/BEQ =	1.1608	EQPA =	66.15				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.6	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.0	0.00	0.00
0	0.00	0.00	0.00	0.00	.1591	.159	0.00	0.00	.0392	.039	37.8	.0406	.029

L =	1.18	HMIN =	44.	B =	.2297	B/BEQ =	1.2133	EQPA =	57.21				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.2	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.4	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.8	0.00	0.00

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 1.20 HMIN = 712. B = .1921 B/BEQ = 1.0715 EQPA = 87.75

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.4	0.00	0.00
90	2.206	.901	1.838	.478	2.753	.536	0.765	.499	9.184	.376	4.6	7.602	.259
0	29.03	5.93	19.96	3.47	24.00	2.93	76.44	3.04	94.75	2.35	24.2	77.34	1.97

L = 1.19 HMIN = 655. B = .1858 B/BEQ = 1.0141 EQPA = 86.35

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	.1548	.109	.0374	.033	.0557	.028	.0599	.021	.1397	.023	20.6	.1001	.014
90	1.527	.294	1.584	.212	1.886	.149	3.309	.148	4.859	.132	24.8	3.646	.176
0	11.73	1.59	13.19	1.12	13.76	.727	28.12	.730	42.91	.640	132.4	82.82	.407

L = 1.19 HMIN = 536. B = .1940 B/BEQ = 1.0484 EQPA = 77.60

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	.0679	.045	0.00	0.00	.0232	.013	.0321	.010	22.0	.0265	.007
90	.4902	.163	.6127	.123	.8374	.092	1.487	.079	1.863	.064	31.0	1.640	.049
0	5.934	.976	5.658	.681	8.132	.527	12.36	.449	17.96	.384	178.0	14.20	.249

L = 1.19 HMIN = 440. B = .2011 B/BEQ = 1.0822 EQPA = 73.11

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	.0163	.016	.0490	.020	8.2	.1332	.013
90	.6127	.274	.3342	.149	.3342	.096	.9743	.134	.7353	.074	10.4	.6568	.045
0	3.125	1.18	2.765	.798	3.456	.576	9.280	.665	7.630	.399	63.2	6.805	.295

L = 1.19 HMIN = 343. B = .2079 B/BEQ = 1.1220 EQPA = 70.03

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.0	0.00	0.00
90	.1471	.147	.0817	.082	.0340	.034	.0490	.035	.1961	.049	8.0	.1021	.022
0	1.853	1.07	.6176	.437	.2688	.190	.9466	.244	1.193	.196	46.0	.9850	.128

L = 1.19 HMIN = 225. B = .2163 B/BEQ = 1.1746 EQPA = 57.31

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.8	0.00	0.00
90	.1634	.163	0.00	0.00	0.00	0.00	.0163	.016	668-5	87-4	8.8	.0133	77-4
0	.5582	.558	.2791	.279	0.00	0.00	.0569	.057	.1813	.066	61.6	.1339	.045

L = 1.19 HMIN = 139. B = .2285 B/BEQ = 1.2354 EQPA = 65.62

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.2	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.2	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.0	0.00	0.00

L = 1.19 HMIN = 36. B = .2305 B/BEQ = 1.2513 EQPA = 63.39

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.8	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	.0134	.013	0.00	0.00	12.8	3.4-5	31-4
0	0.00	0.00	0.00	0.00	0.00	0.00	.0403	.040	0.00	0.00	72.8	.0135	.011

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 1.20	HMIN = 712.	B = .1821	B/BEQ = 1.0015	EQPA = 87.75			
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.	
7	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	1.4	0.00 0.00
90	2.206 .901	1.878 .475	3.757 .936	6.765 .499	9.088 .376	4.6	7.662 .295
0	29.03 5.93	19.96 3.47	74.02 2.93	76.44 3.04	94.75 2.35	24.2	77.94 1.37

L = 1.19	HMIN = 634.	B = .1966	B/BEQ = .9907	EQPA = 0.00			
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.	
7	.0949 .067	.0189 .019	.0426 .019	.0572 .015	.1003 .019	35.0	.3748 .014
90	1.187 .175	1.348 .135	1.604 .095	2.452 .084	4.788 .078	52.8	2.928 .046
0	10.16 .955	11.59 .722	11.67 .467	22.10 .445	34.36 .397	323.	2.536 .051

L = 1.17	HMIN = 539.	B = .1925	B/BEQ = .9886	EQPA = 0.00			
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.	
7	.0216 .022	.0380 .020	479-5 48-4	.0152 62-4	.0351 64-4	63.2	.3526 39-4
90	.7843 .113	.7878 .077	.7808 .051	1.297 .049	1.700 .037	93.0	1.389 .024
0	6.289 .581	6.283 .413	7.044 .282	11.35 .243	15.66 .207	534.6	12.46 .135

L = 1.16	HMIN = 426.	B = .2013	B/BEQ = 1.0048	EQPA = 88.00			
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.	
7	0.00 0.00	0.00 0.00	0.00 0.00	526-5 44-4	.0132 44-4	47.2	337-4 27-4
90	.1741 .058	.2177 .043	.1960 .026	.7249 .024	.3481 .018	82.2	.3072 .012
0	1.678 .316	1.901 .240	1.784 .149	3.036 .178	2.679 .093	481.0	2.635 .066

L = 1.15	HMIN = 333.	B = .2071	B/BEQ = .9942	EQPA = 90.00			
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.	
7	.0263 .026	0.00 0.00	0.00 0.00	0.00 0.00	128-5 12-4	58.6	133-5 94-5
90	.0460 .027	.0613 .023	.0810 .017	.0556100-4	.0687 74-4	88.6	.639 84-4
0	.1106 .079	.3377 .096	.4238 .070	.5883 .057	.5745 .140	526.2	.3356 .124

L = 1.14	HMIN = 236.	B = .2143	B/BEQ = 1.0207	EQPA = 91.82			
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.	
7	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	66.8	0.00 0.00
90	.0600 .030	0.00 0.00	645-5 46-4	959-5 39-4	.0103 29-4	93.8	.0104 21-4
0	.3150 .129	.3531 .039	.3556 .025	.1108 .024	.0845 .016	849.4	.3978 .112

L = 1.13	HMIN = 128.	B = .2221	B/BEQ = 1.0166	EQPA = 87.66			
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.	
7	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	47.0	0.00 0.00
90	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	163-5 12-4	89.0	474-6 62-6
0	0.00 0.00	0.00 0.00	.0116 .012	0.00 0.00	.0111 55-4	526.8	729-5 33-4

L = 1.11	HMIN = 16.	B = .2296	B/BEQ = 1.0013	EQPA = 87.87			
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.	
7	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	155-5 11-4	36.2	819-6 57-6
90	0.00 0.00	0.00 0.00	0.00 0.00	967-6 97-5	0.00 0.00	152.8	295-6 25-5
0	.0649 .046	0.00 0.00	0.00 0.00	980-5 57-4	-.33 0.00	830.9	-81-5 19-4

SATELLITE S73-2. ENERGY SPECTRUM LISTING L = 1.2-1.3

L = 1.29 HMIN = 1148. B = .1485 B/BEQ = 1.0107 EQPA = 84.09

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	4.412	1.47	.7353	.520	2.145	.573	15.83	.881	25.04	.959	2.4	16.56	.520
90	186.1	5.51	44.61	1.91	82.46	1.65	49.60	1.02	31.32	.537	8.0	43.19	.458
0	1374.	70.5	476.9	12.8	803.1	10.9	557.3	6.21	60.10	1.44	+2.0	3+1.2	2.50

L = 1.27 HMIN = 1035. B = .1568 B/BEQ = 1.0302 EQPA = 80.14

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	1.961	.400	.4257	.128	7.294	.251	9.980	.313	12.53	.233	17.0	9.43[illegible]	.1-7
90	69.75	1.85	25.70	.830	47.24	.652	44.53	.452	27.99	.239	31.6	37.91	.215
0	572.8	9.43	252.6	4.43	-76.9	3.95	427.4	2.60	193.1	1.25	135.8	3.6.+	1.13

L = 1.24 HMIN = 934. B = .1627 B/BEQ = .9973 EQPA = 90.00

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	1.471	.329	.3803	.130	1.200	.124	5.053	.172	7.809	.163	21.4	5.736	.122
90	29.45	.776	15.41	.394	32.42	.364	36.30	.269	23.63	.153	73.6	23.02	.122
0	232.[illegible]	4.10	139.2	2.25	319.5	2.19	367.9	1.63	206.2	.860	+02.5	291.5	.706

L = 1.23 HMIN = 829. B = .1698 B/BEQ = .9986 EQPA = 90.01

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	.6179	.118	.1050	.035	.3567	.040	2.211	.072	3.2+0	.058	65.8	2.477	.038
90	9.137	.332	7.495	.211	17.67	.217	24.85	.173	19.53	.111	120.0	13.56	.080
0	76.87	1.76	66.02	1.15	165.[illegible]	1.18	242.9	.990	191.[illegible]	.618	721.0	131.+	.+50

L = 1.21 HMIN = 728. B = .1770 B/BEQ = 1.0131 EQPA = 86.81

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	.2451	.074	.0865	.031	.1680	.029	.7591	.041	1.209	.036	66.4	.4900	.023
90	4.508	.219	4.199	.151	9.460	.145	15.39	.133	14.11	.091	130.0	12.57	.061
0	39.79	1.24	35.21	.829	78.25	.799	144.7	.752	142.9	.527	744.2	126.+	.361

L = 1.23 HMIN = 634. B = .1851 B/BEQ = 1.0913 EQPA = 73.19

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	.3240	.090	.0117	.012	.0613	.018	.2413	.024	.6958	.031	60.2	.+163	.016
90	2.493	.210	2.489	.153	4.925	.137	10.69	.135	10.02	.095	81.8	9.092	.066
0	19.87	1.09	21.19	.796	43.42	.737	97.29	.769	100.6	.554	492.2	85.13	.368

L = 1.22 HMIN = 535. B = .1921 B/BEQ = 1.1215 EQPA = 70.79

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	.0789	.045	.0147	.015	.0370	.014	.0936	.016	.1411	.015	53.6	.1016	86-+
90	1.454	.153	1.494	.108	1.730	.072	4.483	.082	5.539	.064	96.5	+.510	.043
0	11.76	.779	11.84	.549	15.63	.409	37.74	.440	50.93	.361	564.4	+1.06	.233

L = 1.24 HMIN = 436. B = .2000 B/BEQ = 1.2083 EQPA = 65.47

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	.0163	.016	638-5	64-4	.0717	.016	.0306	69-4	45.6	.1358	55-4
90	.4922	.098	.7353	.084	.3447	.061	2.072	.063	2.650	.052	74.2	2.096	.033
0	5.590	.614	5.846	.446	7.552	.329	17.09	.343	25.17	.295	424.0	19.27	.186

L = 1.24 HMIN = 349. B = .2074 B/BEQ = 1.2591 EQPA = 63.02

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	.0123	.012	639-5	64-4	.0337	.010	24.0	.0211	59-4
90	.1730	.071	.2171	.056	.2592	.039	.3853	.034	.6166	.032	+9.2	.+412	.019
0	1.840	.434	1.873	.306	2.284	.220	3.840	.198	4.099	.145	284.8	3.616	.099

L = 1.23 HMIN = 243. B = .2151 B/BEQ = 1.2681 EQPA = 62.62

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	.0113	.011	0.00	0.00	0.00	0.00	31.0	125-5	13-+
90	.0342	.034	.0490	.028	.0184	.011	.0416	.011	.0836	95-4	+8.6	.0536	66-+
0	.2103	.149	.3722	.141	-.02[illegible]	0.00	.5297	.078	.4697	.050	274.0	.-149	.034

SATELLITE S73-2. ENERGY SPECTRUM LISTING L = 1.2-1.3

L = 1.23 HMIN = 139. B = .2230 B/BEQ = 1.3342 EQPA = 59.97

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	163-5	18-4		
90	0.00	0.00	0.00	0.00								
0	.0827	.083	0.00	0.00								

L = 1.23 HMIN = 19. B = .2327 B/BEQ = 1.3997 EQPA = 57.72

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0	0.00	0.00	0.00	0.00	0.00	0.00	.0159	.011				

SATELLITE S73-2. ENERGY SPECTRUM LISTING L = 1.3-1.4

L =	1.34	HMIN =	1236.	B =	.1432	B/BEQ =	1.0980	EQPA =	72.62				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	[illegible]-100.	
	7	5.392	.727	4.622	.493	23.59	.694	37.10	.674	28.81	.404	13.8	23.55	.274
	90	467.3	7.24	81.91	2.00	81.14	1.33	52.60	.718	35.87	.419	14.4	53.85	.402
	0	3621.	34.9	788.2	11.9	864.9	6.84	240.9	2.84	93.15	.942	36.6	313.8	1.67
L =	1.33	HMIN =	1152.	B =	.1494	B/BEQ =	1.1251	EQPA =	77.52				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
	7	2.941	.930	3.595	.574	17.11	.865	33.30	.838	21.13	.557	6.4	21.1-	.388
	90	247.7	5.29	64.84	2.09	85.54	1.29	50.57	.704	32.59	.414	13.0	51.14	.381
	0	2110.	27.5	509.3	9.67	676.4	6.64	228.9	2.90	156.1	1.70	79.-	300.1	1.71
L =	1.35	HMIN =	1023.	B =	.1605	B/BEQ =	1.2329	EQPA =	83.31				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
	7	3.529	1.02	0.00	0.00	6.127	.685	17.30	.921	13.09	.586	3.-	11.20	.336
	90	101.3	4.07	40.53	1.93	55.11	1.45	42.96	.798	27.62	.451	9.0	34.67	.414
	0	1091.	25.4	385.4	10.7	548.4	8.31	350.9	4.61	219.4	2.55	48.6	327.2	2.27
L =	1.34	HMIN =	933.	B =	.1665	B/BEQ =	1.2709	EQPA =	62.50				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
	7	1.384	.346	.3483	.116	2.974	.231	7.173	.242	11.09	.207	18.0	8.501	.136
	90	87.83	1.80	30.11	.784	45.97	.653	39.33	.375	24.81	.222	37.2	33.16	.166
	0	814.5	10.2	283.7	4.30	462.9	3.55	422.4	2.34	164.4	1.04	223.2	233.4	1.00
L =	1.33	HMIN =	841.	B =	.1738	B/BEQ =	1.3148	EQPA =	60.71				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
	7	.8403	.297	.2163	.097	1.818	.193	4.611	.220	8.22-	.216	14.6	5.316	.119
	90	42.94	1.45	20.72	.679	35.11	.562	34.76	.400	21.92	.229	32.0	27.36	.182
	0	349.0	7.30	175.6	3.67	328.7	3.23	352.2	2.33	159.6	1.12	138.8	236.8	.961
L =	1.33	HMIN =	736.	B =	.1823	B/BEQ =	1.3853	EQPA =	58.17				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
	7	1.050	.332	1.879	.311	.3342	.096	1.698	.181	3.487	.146	12.4	2.382	.136
	90	15.80	.866	9.986	.487	23.09	.496	27.43	.367	18.41	.200	31.2	21.35	.163
	0	110.3	4.23	60.16	2.21	220.5	2.75	295.7	2.19	175.4	1.26	178.2	235.6	.941
L =	1.35	HMIN =	646.	B =	.1905	B/BEQ =	1.4538	EQPA =	55.16				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
	7	.1634	.116	0.00	0.00	.1451	.048	.4412	.062	1.487	.078	17.2	.9636	.047
	90	7.099	.600	5.806	.384	11.10	.331	17.78	.306	13.65	.193	28.8	13.36	.134
	0	61.64	3.24	48.15	2.03	109.1	1.98	178.7	1.76	133.1	1.06	169.8	136.1	.785
L =	1.33	HMIN =	532.	B =	.1976	B/BEQ =	1.4913	EQPA =	55.25				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
	7	.1987	.089	.0596	.034	.0341	.017	.1144	.022	.4824	.033	35.8	.2636	.018
	90	2.727	.289	2.431	.191	3.956	.164	8.511	.160	8.915	.110	49.0	8.110	.080
	0	17.09	1.29	17.68	.936	32.18	.816	79.48	.883	84.51	.644	235.2	71.35	.431
L =	1.34	HMIN =	435.	B =	.2059	B/BEQ =	1.5682	EQPA =	52.99				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
	7	0.00	0.00	0.00	0.00	901-5	90-4	.0389	.013	.0735	.012	33.2	.0527	79-4
	90	1.054	.161	1.097	.117	1.289	.093	3.162	.091	4.004	.076	56.8	2.934	.045
	0	10.72	.967	9.430	.640	11.38	.455	26.48	.478	39.90	.417	333.6	30.35	.264
L =	1.33	HMIN =	351.	B =	.2126	B/BEQ =	1.6046	EQPA =	52.13				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
	7	.0774	.077	0.00	0.00	0.00	0.00	.0155	.011	.0123	64-4	19.0	.0143	54-4
	90	.3945	.119	.4902	.093	.4631	.057	.7790	.056	1.140	.048	39.8	.3337	.029
	0	2.758	.602	4.882	.568	4.059	.330	6.014	.260	8.050	.239	222.8	7.169	.157

SATELLITE S73-2. ENERGY SPECTRUM LISTING L = 1.3-1.4

L = 1.33 HMIN = 240. B = .2215 B/BEQ = 1.6483 EQPA = 31.1-

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T		
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.6	0.00	0.00
90	.0566	.057	.0507	.036	.0211	.015	.2101	.033	.1162	.017	28.6	.1279	.013
0	.8743	.331	.4425	.198	.2217	.080	2.137	.193	1.781	.111	164.2	1.388	.090

L = 1.34 HMIN = 124. B = .2317 B/BEQ = 1.7965 EQPA = 48.25

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T		
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.8	0.00	0.00
90	0.00	0.00	0.00	0.00	806-5	81-4	0.00	0.00	189-3	19-4	37.8	216-5	15--
0	0.00	0.00	0.00	0.00	.0565	.040	.0135	.014	.0270	.014	213.0	.0252	95--

L = 1.34 HMIN = 43. B = .2386 B/BEQ = 1.8460 EQPA = 47.39

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T		
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.8	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.6	0.00	0.00
0	.1220	.122	0.00	0.00	0.00	0.00	.0126	.013	831-5	83--	233.4	337-5	57--

SATELLITE S73-2. ENERGY SPECTRUM LISTING L = 1.4-1.5

L = 1.45 HMIN = 1217. B = .1504 B/BEQ = 1.4746 EQPA = 55.++

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	3.5-100.	
7	3.595	.766	3.105	.504	.634	.421	21.05	.622	17.70	.380	8.6	1.+30	.267
90	245.9	6.34	77.55	2.09	88.44	1.+5	45.58	.781	25.43	.+12	10.8	+-.47	.+30
0	2491.	34.7	702.2	12.9	785.7	8.93	308.8	3.86	91.06	1.47	60.6	372.+	2.75

L = 1.40 HMIN = 1160. B = .1527 B/BEQ = 1.3474 EQPA = 59.+8

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	3.5-100.	
7	2.941	2.08	0.00	0.00	2.451	.867	37.21	2.34	25.92	.976	1.2	31.3*	1.01
90	245.6	11.0	67.40	4.05	72.81	2.73	49.19	1.97	29.85	1.+8	2.4	4+.56	.821
0	2668.	80.3	694.3	29.0	783.7	19.9	51.58	3.39	+4.2+	3.00	12.+	214.5	3.6+

L = 1.45 HMIN = 1039. B = .1647 B/BEQ = 1.6114 EQPA = 51.38

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	3.5-100.	
7	2.101	.664	.1875	.184	2.502	.357	7.668	.401	7.920	.288	6.2	7.338	.215
90	97.55	3.46	41.25	1.74	48.34	1.28	38.60	.718	20.92	.413	10.2	31.37	.346
0	891.7	20.1	376.7	9.39	446.+	6.+9	357.9	4.03	17[illegible].+	1.99	63.6	240.3	1.87

L = 1.44 HMIN = 947. B = .1718 B/BEQ = 1.6497 EQPA = 51.13

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	3.5-100.	
7	.4902	.490	.1838	.184	.3064	.217	8.294	.496	6.+41	.318	3.8	[illegible].412	.227
90	77.02	2.56	26.72	1.18	37.42	.939	31.85	.628	19.20	.307	14.0	2+.25	.270
0	713.1	16.5	274.6	7.24	+14.7	5.74	276.1	3.25	159.+	1.73	76.2	2+3.9	1.87

L = 1.45 HMIN = 838. B = .1810 B/BEQ = 1.7526 EQPA = +9.05

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	3.5-100.	
7	1.176	.598	.3676	.212	.3064	.137	1.303	.168	3.618	.231	5.6	2.223	.12+
90	39.71	2.42	19.74	1.18	27.76	.803	27.88	.585	16.62	.333	11.2	23.+1	.279
0	259.6	10.4	165.7	5.99	272.1	4.96	316.4	3.67	168.0	1.91	67.+	220.6	1.59

L = 1.44 HMIN = 755. B = .1870 B/BEQ = 1.7771 EQPA = +8.63

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	3.5-100.	
7	.1838	.184	.0817	.082	.2828	.082	1.858	.158	2.+6[illegible]	.118	10.8	2.122	.337
90	18.24	1.04	12.89	.672	19.79	.513	25.13	.410	15.03	.235	22.2	17.54	.175
0	175.6	6.39	113.0	3.65	195.0	3.02	231.0	2.34	150.2	1.34	123.0	173.6	1.0+

L = 1.45 HMIN = 647. B = .1965 B/BEQ = 1.9[illegible]67 EQPA = +6.+[illegible]

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	3.5-100.	
7	0.00	0.00	.0460	.046	.0279	.028	.3105	.071	.9232	.087	11.6	.+484	.038
90	11.20	.796	8.015	.443	8.292	.286	13.97	.257	11.96	.187	28.6	11.33	.12+
0	94.84	4.14	62.[illegible]5	2.77	81.1[illegible]	1.73	140.4	1.58	11.[illegible]	1.00	161.6	111.6	.729

L = 1.44 HMIN = 533. B = .2050 B/BEQ = 1.9563 EQPA = +5.6+

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	3.5-100.	
7	.2674	.109	0.00	0.00	.0439	.020	.0854	.02[illegible]	.2101	.023	32.8	.1293	.112
90	3.676	.411	3.738	.276	3.441	.164	6.663	.153	6.899	.100	39.6	0.944	.083
0	36.51	2.15	26.42	1.29	33.20	.861	64.76	.892	67.9[illegible]	.648	234.+	53.+0	.++1

L = 1.44 HMIN = 437. B = .2126 B/BEQ = 2.0203 EQPA = +4.71

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	3.5-100.	
7	0.00	0.00	0.00	0.00	.0292	.021	0.00	0.00	.0468	.013	22.4	.0278	89+-
90	1.471	.252	1.769	.187	1.419	.107	2.669	.099	3.732	.083	37.8	3.144	.257
0	14.51	1.38	15.18	1.00	11.1[illegible]	.557	24.31	.566	33 95	.474	219.+	25.95	.317

L = 1.43 HMIN = 346. B = .2201 B/BEQ = 2.0785 EQPA = +3.92

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	3.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	566-5	57-+	36[illegible]-5	37-4	22.0	3[illegible]+-5	25-4
90	.4622	.139	.5744	.115	.6313	.077	.7273	.05+	1.02+	.044	35.2	.9173	.132
0	4.166	.749	5.203	.597	4.752	.370	6.068	.290	8.348	.252	212.2	7.538	.169

SATELLITE S73-2. ENERGY SPECTRUM LISTING L = 1.4-1.5

L = 1.45 HMIN = 248. B = .2293 B/BEQ = 2.2342 EQPA = +1.39

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	.5-100.
7	0.00 1.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	14.0	.00 1.00
90	.0545 .054	.0679 .045	.1021 .034	.2353 .037	.2426 .028	25.6	.731 .119
0	.5655 .326	1.050 .317	1.200 .219	2.318 .213	2.167 .145	151.2	1.966 .100

L = 1.43 HMIN = 136. B = .2373 B/BEQ = 2.2362 EQPA = +1.37

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	.5-100.
7	0.00 1.00	0.00 0.00	1.00 1.00	0.00 0.00	0.00 0.00	7.4	1.00 0.00
90	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	.0184 92-4	16.8	926-5 46-4
0	0.00 0.00	0.00 0.00	0.00 1.00	.0592 .042	.1173 .041	38.8	.1777 .025

L = 1.44 HMIN = 26. B = .2480 B/BEQ = 2.3763 EQPA = +0.44

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	.5-100.
7	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	28.2	1.00 1.00
90	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	198-5 20-4	36.6	138-5 11-4
0	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	701-5 70-4	209.0	367-5 37-4

********** FILZ4CE //// END OF LIST ////
********** FILZ4CE //// END OF LIST ////

SATELLITE S73-5. ENERGY SPECTRUM LISTING

L = 1.56	HMIN = 1248.	B = .1535	B/BEQ = 1.8617	EQPA = 46.80								
PA/EGY= 5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7 .8836 .327	.3675 .154	2.058 .231	6.765 .321	8.167 .215	10.8	7.648 .166						
90 1178.1 3.94	55.48 1.32	18.61 1.11	33.71 .634	16.31 .345	12.4	31.21 .398						
0 1466. 24.0	606.9 11.1	448. 6.16	275.0 3.20	78.00 1.25	72.6	2-1.8 1.66						
L = 1.55	HMIN = 1139.	B = .1621	B/BEQ = 1.9454	EQPA = 45.80								
PA/EGY= 5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7 1.270 .378	.3675 .150	1.654 .225	4.142 .225	4.442 .195	11.4	3.868 .110						
90 1100.1 4.71	52.53 1.72	22.58 1.19	37.88 .662	15.92 .325	11.8	24.78 .331						
0 844.4 17.7	439.2 9.16	297.4 5.70	293.3 3.39	137.5 1.62	75.2	2-2.2 1.57						
L = 1.56	HMIN = 1160.	B = .1698	B/BEQ = 2.0336	EQPA = 44.53								
PA/EGY= 5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7 .3673 .368	.3675 .260	.6893 .230	2.745 .367	7.798 .211	3.4	2.886 .185						
90 80.61 5.44	45.83 2.47	25.93 1.27	25.55 .855	14.37 .339	8.5	25.12 .392						
0 585.6 20.0	324.5 11.1	212.4 6.87	285.4 4.61	72.03 1.62	39.2	185.1 1.90						
L = 1.54	HMIN = 981.	B = .1767	B/BEQ = 2.0636	EQPA = 44.17								
PA/EGY= 5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7 .3288 .231	0.00 0.00	.4598 .183	1.324 .180	2.886 .163	7.8	1.894 .097						
90 67.78 3.45	29.72 1.47	22.57 .729	22.34 .465	13.12 .252	14.3	13.71 .213						
0 457.0 12.7	260.9 6.84	231.3 4.18	247.2 2.99	104.1 1.41	80.6	177.9 1.30						
L = 1.54	HMIN = 862.	B = .1845	B/BEQ = 2.1716	EQPA = 42.73								
PA/EGY= 5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7 .1838 .194	.2451 .173	.1021 .102	.9069 .140	1.278 .125	5.8	.9725 .061						
90 37.82 2.17	21.94 1.16	19.91 .812	19.78 .603	12.05 .272	11.6	14.38 .224						
0 368.3 13.6	196.0 6.52	164.2 3.91	189.0 2.88	112.2 1.52	87.2	151.9 1.32						
L = 1.55	HMIN = 726.	B = .1953	B/BEQ = 2.3177	EQPA = 41.17								
PA/EGY= 5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7 .1471 .147	.0668 .047	.0234 .024	.3235 .058	.8143 .058	12.4	.8647 .042						
90 20.27 1.14	13.72 .814	9.148 .357	13.04 .328	9.72 .195	21.6	10.07 .132						
0 180.1 6.42	107.0 3.58	78.62 1.93	108.9 1.58	84.86 .981	127.2	94.16 .734						
L = 1.55	HMIN = 645.	B = .2025	B/BEQ = 2.4208	EQPA = 39.99								
PA/EGY= 5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 .0840	.042 .1939	.041	6.2 .1139	.023					
90 3.488 1.12	10.70 .957	8.934 .451	8.340 .296	7.000 .232	12.2	3.173 .191						
0 97.03 6.21	61.69 3.53	56.14 2.14	84.53 1.82	78.28 1.24	73.4	77.24 .899						
L = 1.54	HMIN = 531.	B = .2112	B/BEQ = 2.4762	EQPA = 39.45								
PA/EGY= 5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7 0.00 0.00	0.00 0.00	.0181 .016	919-5 92-4	.1171 .026	16.4	.0807 .014						
90 7.698 .614	4.852 .340	3.967 .188	4.410 .153	4.168 .118	27.5	4.148 .078						
0 58.87 3.10	37.70 1.77	32.44 .878	37.13 .780	40.39 .569	177.2	37.99 .406						
L = 1.54	HMIN = 441.	B = .2180	B/BEQ = 2.5261	EQPA = 38.99								
PA/EGY= 5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7 0.00 0.00	0.00 0.00	0.00 0.00	865-5 61-4	.0199 83-4	35.6	.0131 39-4						
90 3.121 .735	2.341 .391	1.404 .110	2.038 .088	2.207 .064	42.3	2.396 .048						
0 23.39 1.69	19.51 1.08	11.84 .545	17.63 .459	23.40 .373	242.2	20.39 .254						
L = 1.55	HMIN = 340.	B = .2274	B/BEQ = 2.7237	EQPA = 37.32								
PA/EGY= 5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	23.4	0.00 0.00						
90 1.091 .225	.9351 .154	.6047 .073	.7014 .051	.7437 .044	33.8	.7726 .033						
0 9.071 1.13	6.661 .683	5.295 .391	5.736 .284	7.422 .231	236.5	6.639 .167						

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 1.54 HMIN = 239. B = .2349 B/BEQ = 2.7433 EQPA = 37.14

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.8	0.00	0.00
90	.1089	.077	.2451	.087	.0666	.030	.2031	.036	.1891	.026	23.2	.1643	.017
0	1.659	.586	1.840	.434	.6526	.169	1.638	.184	1.492	.123	140.8	1.456	.039

L = 1.55 HMIN = 139. B = .2440 B/BEQ = 2.9113 EQPA = 37.88

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	613-5	43-4	23.6	330-5	23-4
90	.0474	.047	.0265	.025	.0248	.014	.0542	.014	.0253	72-4	34.6	.0360	64-4
0	.1474	.147	.0744	.074	.0907	.002	.4790	.083	.1814	.036	198.6	.2436	.031

L = 1.54 HMIN = 32. B = .2535 B/BEQ = 2.9779 EQPA = 35.41

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.0	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	420-5	42-4	223-5	22-4	31.6	246-5	17-4
0	0.00	0.00	0.00	0.00	0.00	0.00	.0471	.027	.0537	.014	185.0	.0249	.01

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 1.64 HMIN = 1019. B = .1599 B/BEQ = 2.2839 EQPA = 41.60

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	.8403	.420	.7373	.729	.3001	.124	2.868
90	178.3	5.15	82.73	7.49	14.13	1.45	22.94
0	966.3	27.2	479.7	13.5	202.5	5.73	265.1

L = 1.67 HMIN = 1172. B = .1668 B/BEQ = 2.4724 EQPA = 37.49

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	.1225	.123	0.00	0.00	3.147
90	109.9	5.91	57.45	7.45	17.74	1.09	16.30
0	1080.	27.7	546.1	14.1	248.2	6.25	127.2

L = 1.67 HMIN = 1038. B = .1763 B/BEQ = 2.6226 EQPA = 36.13

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	.7353	.735	.3676	.368	0.00	0.00	.4834
90	84.64	3.72	47.54	8.31	15.10	.919	14.29
0	769.2	24.2	338.7	11.7	166.7	5.29	125.1

L = 1.65 HMIN = 949. B = .1826 B/BEQ = 2.6292 EQPA = 36.08

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	.0438	.044	.1471
90	51.34	3.53	44.71	1.87	13.45	.877	10.71
0	482.9	16.4	230.3	8.02	101.5	3.74	127.5

L = 1.64 HMIN = 842. B = .1910 B/BEQ = 2.6854 EQPA = 37.52

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	.2022
90	45.10	2.71	29.58	1.38	14.79	.608	11.35
0	301.4	11.6	158.1	5.94	111.1	3.19	125.0

L = 1.64 HMIN = 787. B = .1995 B/BEQ = 2.8218 EQPA = 36.53

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-57.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	.0768	.077	.0988
90	33.89	1.91	17.58	.723	4.53	.307	7.085
0	319.9	9.73	160.9	5.20	75.28	2.18	65.38

L = 1.64 HMIN = 642. B = .2072 B/BEQ = 2.9826 EQPA = 36.9-

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	.0383	.038	0.00
90	20.79	1.19	10.42	.565	5.049	.274	5.190
0	170.2	6.47	98.02	3.47	42.02	1.49	46.06

L = 1.66 HMIN = 532. B = .2178 B/BEQ = 3.1335 EQPA = 34.03

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	1.739	.482	0.00	0.00	0.00	0.00	0.00
90	8.524	.963	6.791	.542	2.882	.226	2.559
0	53.72	4.10	57.17	2.90	23.64	1.24	23.16

L = 1.64 HMIN = 439. B = .2240 B/BEQ = 3.1727 EQPA = 34.18

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	566-5
90	4.804	.477	2.961	.239	1.564	.113	1.611
0	44.99	2.49	27.40	1.36	13.52	.621	12.69

L = 1.65 HMIN = 344. B = .2327 B/BEQ = 3.3384 EQPA = 33.18

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	1.739	.300	1.591	.241	.5674	.046	.7255
0	17.73	1.99	11.47	1.32	8.048	.605	5.748

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L =	1.65	HMIN =	335.	B =	.2418	B/BEQ =	3.-5[illegible]	EQPA =	32.+7				
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	.5-100.						
7	0.00	0.00	0.00	0.00	.0215	.022	0.00	0.00	617-8	81-4	13.9	55-5	+1-4
90	.0090	.034	.2111	.105	.1745	.0[illegible]8	.1981	.0-2	.216[illegible]	.[illegible]32	15.[illegible]	.2307	.123
0	1.211	.605	1.081	.4[illegible]9	.6852	.195	1.019	.17[illegible]	1.[illegible]+0	.1-0	93.9	1.0[illegible]1	.09-

L =	1.64	HMIN =	131.	B =	.2500	B/BEQ =	[illegible].[illegible]6[illegible]-	EQPA =	32.00				
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	.5-100.						
7	0.00	0.01	0.[illegible]	1.[illegible]	[illegible].[illegible]	[illegible].[illegible]	[illegible].[illegible]	[illegible].[illegible]	12.2	[illegible].[illegible]	[illegible].[illegible]		
90	.1471	.104	0.[illegible]0	0.00	1.2[illegible]	0.00	865-5	87-4	.[illegible]5[illegible]	90-4	19.[illegible]	.0214	3[illegible]-4
0	.7780	.425	.8[illegible]10	.[illegible]25	0.0[illegible]	0.00	.1693	.[illegible]64	.2 22	.0-9	119.0	.2[illegible]4	.[illegible]38

L =	1.65	HMIN =	81.	B =	.2566	B/BEQ =	3.[illegible]67[illegible]	EQPA =	31.+5				
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-5[illegible].	50.-100.	T	.5-100.						
7	0.00	0.00	0.[illegible]0	0.00	0.0[illegible]	0.00	0.00	0.[illegible]0	390-5	38-4	26.+	141-5	19-4
90	0.00	[illegible].00	0.[illegible]0	0.[illegible]0	[illegible].[illegible](	[illegible].00	639-5	64-4	2[illegible]-5	28-4	26.+	215-5	21-4
0	.3540	.250	0.00	0.00	.0374	.038	.1056	.0-[illegible]	.0177	.013	162.6	.[illegible]37	.[illegible]10

SATELLITE S77-2, ENERGY SPECTRUM LISTING

L = 1.76 HMIN = 1319. B = .1970 B/BEQ = 2.7259 EQPA = 37.26

PA/EGY= 5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.E-100.
7 0.00 0.00	0.00 0.00	.1021 .182	3.529 .41E	.4-12 .127	2.8	1.141 .168
90 150.7 17.2	126.6 5.15	71.95 1.70	11.42 .747	4.603 .335	2.8	17.31 .437
0 1580. 67.2	774.0 27.4	370.4 10.4	81.96 4.12	60.76 2.51	14.0	138.3 3.04

L = 1.75 HMIN = 1244. B = .1830 B/BEQ = 2.7563 EQPA = 36.73

PA/EGY= 5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.E-100.
7 0.00 0.00	0.00 0.00	.0618 .261	.6092 .113	.7806 .103	5.2	.0918 .206
90 152.9 6.12	93.73 3.91	27.05 .898	13.15 .622	4.657 .239	6.4	17.4- .028
0 1295. 39.3	661.3 15.3	236.1 5.76	117.8 2.79	39.23 1.15	42.6	1.0.9 1.68

L = 1.75 HMIN = 1170. B = .1690 B/BEQ = 2.6142 EQPA = 35.36

PA/EGY= 5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.E-100.
7 .4908 .491	0.00 0.00	0.00 0.00	.3209 .068	.5.1 .082	7.0	.8990 .246
90 144.1 4.72	88.77 2.77	52.71 .873	11.35 .67E	5.618 .134	8.0	15.23 .272
0 1182. 25.2	478.3 11.1	175.3 4.47	103.5 2.34	41.3 1.04	54.8	128.3 1.34

L = 1.77 HMIN = 1033. B = .1812 B/BEQ = 3.2757 EQPA = 33.85

PA/EGY= 5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.E-100.
7 0.00 0.00	.4412 .255	0.00 0.00	.4-12 .11-	.1436 .058	4.6	.0364 .1-6
90 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0 703.8 22.3	383.6 11.5	134.8 4.41	77.31 2.22	32.37 1.03	42.4	92.46 1.29

L = 1.75 HMIN = 921. B = .1894 B/BEQ = 3.2716 EQPA = 33.50

PA/EGY= 5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.E-100.
7 5.731 .991	.0715 .074	1.495 .276	.4947 .081	3.861 .133	10.2	2.842 .104
90 71.16 2.41	33.79 1.21	15.06 .536	7.089 .279	2.721 .140	14.6	3.053 .158
0 643.8 14.3	297.6 7.17	82.57 2.47	69.18 1.86	***** 0.00	32.6	62.17 .759

L = 1.75 HMIN = 831. B = .1972 B/BEQ = 3.4163 EQPA = 32.81

PA/EGY= 5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.E-100.
7 0.00 0.00	0.00 0.00	.0765 .077	.0490 .035	.3125 .076	4.8	.1821 .038
90 52.55 2.23	20.82 1.04	8.511 .499	5.375 .335	2.060 .132	8.8	8.441 .159
0 568.1 17.6	223.2 7.82	61.37 2.58	47.17 1.52	20.24 .718	54.4	56.21 .891

L = 1.74 HMIN = 729. B = .2053 B/BEQ = 3.4798 EQPA = 32.42

PA/EGY= 5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.E-100.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	.0147 .015	4.9	311-5 81-4
90 30.15 2.23	15.74 1.16	6.094 .495	4.074 .291	2.31 .142	9.0	9.144 .144
0 318.9 12.9	158.6 6.47	47.04 2.27	40.75 1.52	23.91 .925	53.6	45.65 .810

L = 1.79 HMIN = 635. B = .2147 B/BEQ = 3.6763 EQPA = 30.61

PA/EGY= 5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.E-100.
7 0.00 0.00	.1471 .147	0.00 0.00	0.00 0.00	.0441 .025	5.4	.0288 .014
90 17.55 1.80	12.17 .987	7.782 .548	2.794 .214	1.781 .121	8.4	3.358 .127
0 182.9 9.90	99.48 5.16	74.33 1.96	24.88 1.14	15.50 .634	54.6	29.33 .642

L = 1.75 HMIN = 539. B = .2208 B/BEQ = 3.7684 EQPA = 31.01

PA/EGY= 5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.E-100.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	91[illegible]-5 92-4	9.6	405-5 41-4
90 17.72 1.34	9.874 .858	7.264 .195	2.031 .137	1.298 .075	16.0	2.422 .077
0 174.9 6.42	74.25 3.77	82.85 1.21	17.32 .731	12.74 .441	94.8	21.72 .419

L = 1.73 HMIN = 437. B = .2283 B/BEQ = 3.8000 EQPA = 30.86

PA/EGY= 5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.E-100.
7 .0613 .061	0.00 0.00	0.00 0.00	0.00 0.00	917-5 58-4	20.0	334-5 34-4
90 5.997 .599	7.156 .277	1.778 .173	1.150 .072	.7647 .043	30.0	1.285 .041
0 48.16 2.82	28.78 1.53	12.74 .651	9.880 .464	7.920 .254	175.0	10.35 .213

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 1.73 HMIN = 342. B = .2365 B/BEQ = 3.9398 EQPA = 30.25

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	817-5	58-4	19.4	401-5	28-4
90	2.768	.346	1.116	.168	.6897	.037	.5027	.051	.3931	.032	29.8	.3545	.027
0	20.55	1.83	14.68	1.10	5.555	.442	4.782	.283	3.687	.175	174.6	3.230	.152

L = 1.74 HMIN = 249. B = .2449 B/BEQ = 4.1435 EQPA = 29.42

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	365-5	37-4	15.8	246-5	25-4
90	.1471	.104	.2941	.104	.2298	.059	.2399	.043	.2042	.029	19.4	.2126	.021
0	2.354	.785	3.211	.642	2.137	.334	1.850	.218	1.537	.130	117.4	1.707	.106

L = 1.74 HMIN = 144. B = .2533 B/BEQ = 4.2490 EQPA = 29.02

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	.5-100.	
7	0.00	0.00	0.00	0.00	.0170	.017	365-5	37-4	366-5	37-4	18.4	634-5	37-
90	.2753	.118	.0274	.025	.0323	.019	.0882	.021	.0504	.014	26.8	.0824	.011
0	1.781	.563	.4398	.197	-.15	0.00	.6630	.109	.4452	.063	163.8	.4732	.047

L = 1.74 HMIN = 25. B = .2647 B/BEQ = 4.4480 EQPA = 28.30

PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.8	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	.0232	.013	66-5	47-4	19.4	.0100	45-4
0	0.00	0.00	0.00	0.00	.0517	.031	.1464	.061	.0610	.027	119.4	.0772	.022

SATELLITE S77-2, ENERGY SPECTRUM LISTING

L = 1.86 HMIN = 1704. B = .1627 B/BEQ = 3.3367 EQPA = 33.13

PA/EGY= 5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	.E-100.
7 0.00 0.00 0.00 0.00 0.00 0.00 .1361 .098 0.00 0.00					1.2	.1237 .00.
90 225.7 10.7 46.43 7.65 17.77 1.05 4.412 .805 1.287 .216					2.3	1.773 .235
0 1906. 66.8 533.7 24.4 171.7 7.43 60.07 3.65 18.96 1.46					13.0	123.4 2.7

L = 1.88 HMIN = 1247. B = .1864 B/BEQ = 3.6126 EQPA = 31.7-

PA/EGY= 5.E-8.	8.-17.	17.-25.	25.-50.	50.-100.	T	.E-100.
7 0.00 0.00 0.00 0.00 0.00 0.00 .3309 .113 .2-01 .055					5.-	.2089 .039
90 20.65 7.81 67.72 0.89 19.00 1.71 5.824 .414 1.-34 .115					5.6	12.91 .30.
0 1716. 34.0 477.2 14.5 142.1 5.18 55.73 2.26 13.67 .800					32.0	101.2 1.56

L = 1.86 HMIN = 1139. B = .1763 B/BEQ = 3.6797 EQPA = 31.76

PA/EGY= 5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	.E-100.
7 0.00 0.00 0.00 0.00 0.00 0.00 .0735 .074 .1103 .064					2.2	.0707 .036
90 128.6 7.69 74.73 4.25 13.87 1.15 5.404 .448 1.035 .221					3.2	1.17 .351
0 990.2 40.1 497.5 20.0 148.4 7.37 63.71 3.12 14.14 1.07					18.2	89.65 2.01

L = 1.85 HMIN = 1048. B = .1876 B/BEQ = 3.7283 EQPA = 31.19

PA/EGY= 5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	.E-100.
7 0.00 0.00 .3636 .368 0.00 0.00 .1471 .088 .1763 .037					2.6	.0748 .033
90 84.00 4.95 42.87 2.29 13.89 1.19 3.725 .331 1.441 .148					4.2	7.822 .284
0 965.8 31.5 316.3 13.8 93.74 4.95 46.70 2.47 17.29 1.04					23.6	73.51 1.88

L = 1.85 HMIN = 950. B = .1914 B/BEQ = 3.8035 EQPA = 30.49

PA/EGY= 5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	.E-100.
7 0.00 0.00 0.00 0.00 0.00 0.00 .0882 .051 .0981 .035					6.8	.0829 .019
90 1MF.8 3.19 40.65 1.98 9.05 .438 3.901 .184 1.845 .084					14.2	7.456 .143
0 684.4 14.7 304.6 6.97 63.48 2.74 38.77 1.12 12.33 .443					81.2	61.67 .721

L = 1.85 HMIN = 869. B = .1983 B/BEQ = 4.0208 EQPA = 29.91

PA/EGY= 5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	.E-100.
7 0.00 0.00 0.00 0.00 0.00 0.00 .0368 .037 .0147 .015					3.8	.0205 .01-
90 77.55 4.78 75.02 2.18 .9E6 .699 3.500 .321 1.63- .127					4.8	3.401 .219
0 607.8 25.- 242.6 11.2 58.10 3.64 26.02 1.6- 10.84 .724					28.2	48.15 1.18

L = 1.85 HMIN = 737. B = .2092 B/BEQ = 4.2956 EQPA = 29.00

PA/EGY= 5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	.E-100.
7 0.00 0.00 0.00 0.00 0.00 0.00 .0919 .041 .0245 .014					6.6	.0472 .017
90 46.56 4.18 21.07 1.02 3.357 .295 1.936 .145 .9773 .085					13.2	4.135 .111
0 457.7 13.5 134.8 6.02 42.49 1.85 18.97 .457 8.791 .410					74.2	39.71 .818

L = 1.84 HMIN = 655. B = .2154 B/BEQ = 4.2759 EQPA = 28.32

PA/EGY= 5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	.E-100.
7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 .0245 .025					2.5	.0139 .01-
90 33.83 4.07 14.11 1.30 7.773 .479 2.588 .277 .8716 .096					4.6	2.915 .157
0 301.2 10.1 140.4 9.51 87.49 3.91 23.78 1.03 6.466 .539					25.2	31.11 .958

L = 1.84 HMIN = 554. B = .2239 B/BEQ = 4.4446 EQPA = 28.32

PA/EGY= 5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	.E-100.
7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00					1.8	0.00 0.00
90 27.53 2.94 8.578 .945 7.002 .629 1.092 .151 .5760 .084					5.4	1.955 .115
0 188.3 13.1 88.06 6.48 29.14 2.41 11.10 .973 6.916 .543					32.8	19.83 .681

L = 1.87 HMIN = 441. B = .2338 B/BEQ = 4.8650 EQPA = 28.38

PA/EGY= 5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	.E-100.
7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00					11.8	.0.00 0.00
90 11.86 1.74 4.803 .441 1.247 .145 .6039 .089 .4567 .042					17.4	1.187 .052
0 37.60 5.27 40.03 3.40 9.961 .788 6.610 .438 3.845 .222					101.2	9.463 .268

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L =	1.84	HMIN =	354.	B =	.2404	B/BEQ =	.8182	EQPA =	27.10		
PA/EGY=	5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	.E-100.				
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	.4044	.461	3.241	.307	1.122	.135	.4357	.049	.2819	.020	28.5	.2947	.032
0	56.61	3.07	24.94	1.52	7.725	.949	4.543	.297	2.743	.191	156.0	2.287	.179

L =	1.85	HMIN =	255.	B =	.2492	B/BEQ =	5.8775	EQPA =	26.35		
PA/EGY=	5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	.E-100.				
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	.4412	.255	.4045	.143	.3567	.079	.7101	.088	.0982	.025	9.4	.1394	.023
0	5.005	1.33	2.376	.792	.9698	.370	1.298	.253	.9891	.178	56.0	1.234	.130

L =	1.84	HMIN =	148.	B =	.2573	B/BEQ =	5.1554	EQPA =	25.12		
PA/EGY=	5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	.E-100.				
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0.00	0.00	0.00	0.00	.0255	.018	.0210	.011	.0252	3E-4	28.2	.0232	5E-4
0	0.00	0.00	.3870	.194	.1202	.069	.3922	.175	.2281	.064	151.2	.2692	.037

L =	1.83	HMIN =	35.	B =	.2679	B/BEQ =	5.2744	EQPA =	27.31		
PA/EGY=	5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	.E-100.				
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	.1245	.011	.0119	5E-4	16.0	.1135	5E-4
0	0.00	0.00	0.00	0.00	0.00	0.00	.1777	.073	.1197	.0-2	38.5	.1690	.029

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 1.94 HMIN = 1314. B = .1643 B/BEQ = 3.8782 EQPA = 30.98

PA/EGY=	5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0.00	0.00	0.00	18.03	2.335	2.794	.4541
0	0.00	0.00	2148.	177.	556.	46.5	55.19

L = 1.94 HMIN = 1250. B = .1774 B/BEQ = 3.9856 EQPA = 30.06

PA/EGY=	5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	.2941	.294	.8804	.360	.2042	.144	.1103
90	191.4	6.74	59.1	2.50	15.48	.918	3.365
0	1991.	40.6	647.7	16.4	151.8	5.18	42.89

L = 1.95 HMIN = 1156. B = .1785 B/BEQ = 4.2272 EQPA = 29.10

PA/EGY=	5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	179.7	10.1	0.00	0.00	0.00	0.00	0.00
90	198.5	12.1	77.1	7.21	17.45	1.17	2.941
0	*****	0.00	573.3	26.7	191.4	7.46	28.54

L = 1.97 HMIN = 1047. B = .1894 B/BEQ = 4.6803 EQPA = 27.63

PA/EGY=	5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	.0249	.0225
90	155.9	4.20	39.03	1.71	7.421	.430	2.630
0	1268.	24.8	443.4	13.4	86.90	2.78	21.60

L = 1.95 HMIN = 946. B = .1958 B/BEQ = 4.8413 EQPA = 27.58

PA/EGY=	5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	.1471	.147	0.00	0.00	0.00	0.00	0.00
90	149.9	7.67	35.11	1.47	.944	.339	2.137
0	967.4	18.7	332.0	7.71	66.91	2.25	22.34

L = 1.96 HMIN = 862. B = .2030 B/BEQ = 4.8746 EQPA = 26.33

PA/EGY=	5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	.7353	.735	0.00	0.00	0.00	0.00	.0735
90	78.72	4.47	25.27	1.97	5.457	.578	2.279
0	845.0	30.1	289.7	12.7	93.35	3.39	16.79

L = 1.96 HMIN = 771. B = .2141 B/BEQ = 5.1687 EQPA = 26.04

PA/EGY=	5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	55.15	4.50	14.71	2.25	3.470	.421	1.765
0	418.3	18.9	182.6	8.58	39.57	2.61	14.51

L = 1.96 HMIN = 687. B = .2283 B/BEQ = 5.3953 EQPA = 25.67

PA/EGY=	5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	20.98	2.78	24.75	2.44	.5237	.519	1.422
0	317.8	22.0	124.5	9.75	82.38	2.60	8.985

L = 1.95 HMIN = 537. B = .2294 B/BEQ = 5.4747 EQPA = 25.30

PA/EGY=	5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	22.61	1.61	9.972	.697	3.321	.225	.9069
0	196.2	7.55	69.27	3.15	17.44	1.03	6.529

L = 1.95 HMIN = 454. B = .2352 B/BEQ = 5.5780 EQPA = 25.05

PA/EGY=	5.E-8.	8.-17.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	11.93	.951	8.071	.719	1.707	.138	.7904
0	149.6	5.94	55.43	2.54	10.85	.722	5.419

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 1.93 HMIN = 350. B = .2440 B/BEQ = 5.6197 EQPA = 24.87

PA/EGY= 5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T
7 1.178 .349	0.00 0.00	0.00 0.00	0.00 0.00	46.3	1.578
90 5.303 .684	2.900 .743	.9987 .117	.4779 .059	.2 11 .009	19.3 .2975
0 31.72 3.92	23.47 1.73	.2468 .038	5.784 .813	1.730 .140	109.9 4.788

L = 1.95 HMIN = 224. B = .2554 B/BEQ = 5.1 48 EQPA = 23.87

PA/EGY= 5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	15.9 0.00
90 .7783 .222	.3038 .104	.1874 .034	.1225 .027	.0764 .019	32.6 .1238
0 5.808 1.16	4.800 .741	.8873 .204	1.043 .154	.7-84 .092	126.8 1.148

L = 1.94 HMIN = 151. B = .2610 B/BEQ = 5.1429 EQPA = 23.80

PA/EGY= 5.E-8.	8.-13.	13.-25.	25.-50.	0.-100.	T
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	15.0 0.00
90 .2451 .142	.0387 .039	0.0 .017	.1525 .035	.0832 .011	16.5 .1721
0 2.613 .827	.5270 .242	.1674 .034	.8892 .152	.4756 .079	116.8 .8031

L = 1.95 HMIN = 37. B = .2717 B/BEQ = 5.-943 EQPA = 23.2-

PA/EGY= 5.E-8.	8.-13.	13.-25.	25.-50.	50.-100.	T
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	15.- 0.00
90 0.00 0.00	0.00 0.00	0.00 0.00	.0346 .017	.0031 .012	16.2 .0342
0 0.00 0.00	0.00 0.00	0.00 0.00	.3754 .097	.3-38 .066	113.- .2844

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********** FIL7SCF //// END OF LIST ////

AD-A061 560 EMMANUEL COLL BOSTON MASS F/G 4/1
ANALYSIS OF DATA FROM RESEARCH SATELLITES.(U)
JUL 78 E G HOLEMAN, A F DAVIS, M P HAGAN F19628-73-C-0190
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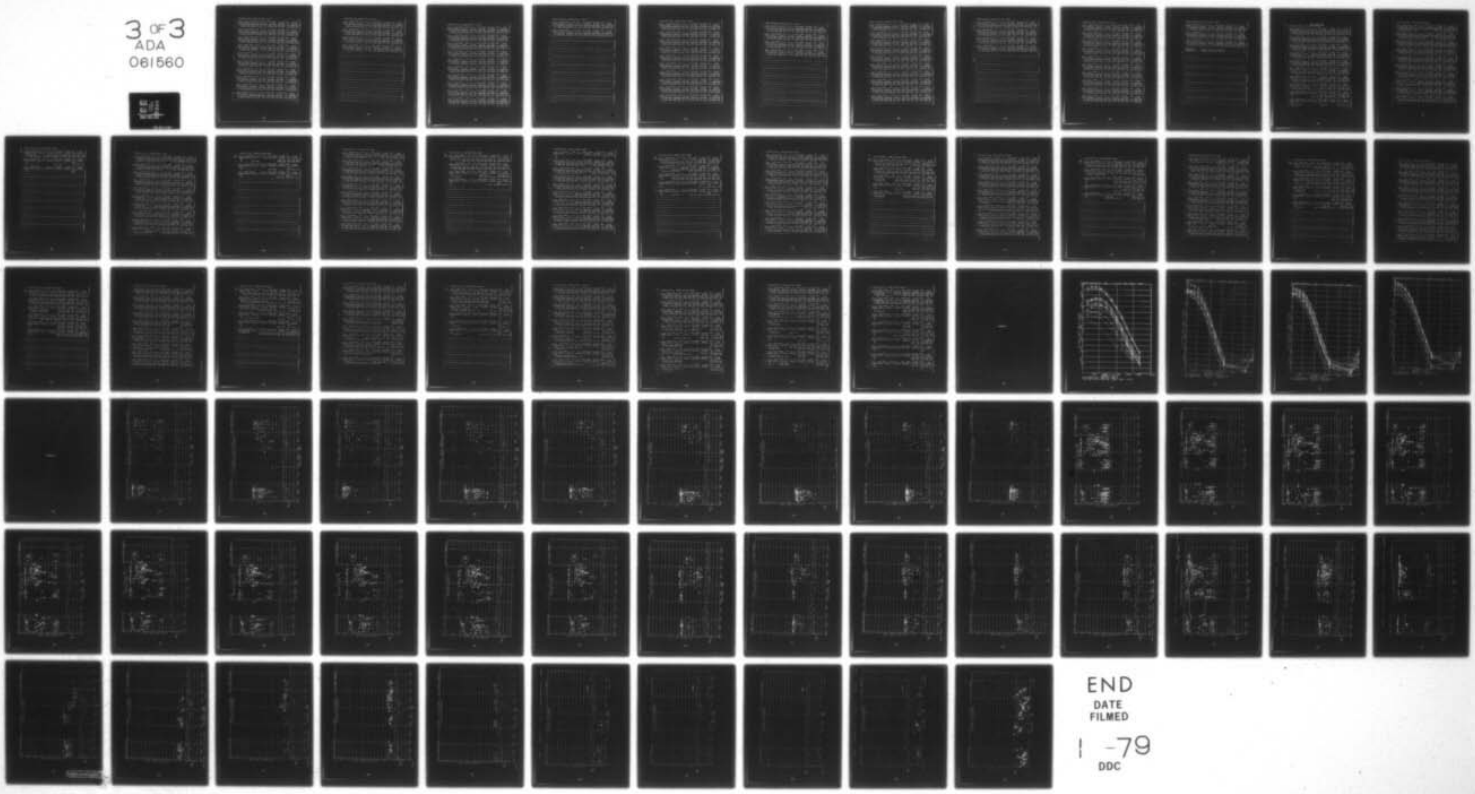

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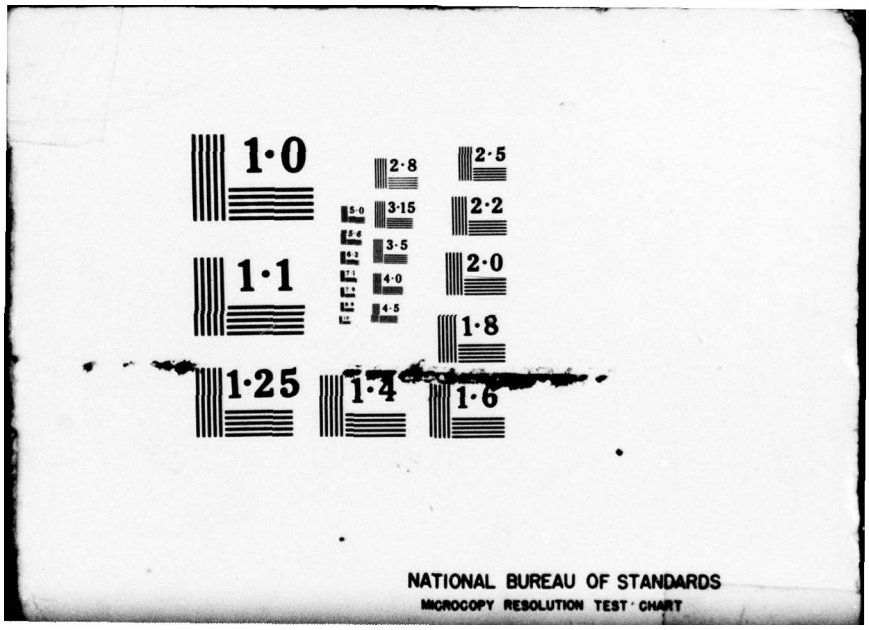
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NATIONAL BUREAU OF STANDARDS
MICROCOPY RESOLUTION TEST · CHART

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 2.58 HMIN = 1359. B = .1833 B/BEQ = 9.3583 EOPA = 18.46

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	3.10	6.60	0.00	0.00	0.00	1.4	3.00
90	72.06	10.3	13.24	3.12	.5882	1.4	3.362
0	757.6	49.8	146.8	15.4	5.443	8.4	34.37

L = 2.54 HMIN = 1241. B = .1912 B/BEQ = 10.0650 EOPA = 18.37

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	.4312	.490	0.00	0.00	0.00	1.8	.1215
90	81.25	5.47	11.47	1.30	.4902	4.6	2.816
0	521.4	23.7	95.70	6.59	4.838	30.8	25.41

L = 2.52 HMIN = 1157. B = .1963 B/BEQ = 10.1531 EOPA = 18.29

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.10	0.00	0.00	0.00	0.00	1.8	0.00
90	57.28	4.97	11.76	1.32	.4095	3.8	2.735
0	701.3	26.5	101.0	7.93	4.373	23.0	27.45

L = 2.52 HMIN = 1011. B = .2093 B/BEQ = 10.6807 EOPA = 17.65

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.10	0.00	0.00	0.00	.1471	.2	.1945
90	0.00	0.00	0.00	0.00	0.00	0.0	0.00
0	23.13	29.0	0.00	0.00	2.903	1.4	3.849

L = 2.55 HMIN = 917. B = .2183 B/BEQ = 11.5657 EOPA = 17.16

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	3.10	0.00	0.00	0.00	.0735	4.6	373-5
90	49.32	4.90	7.445	.827	.2231	5.4	1.628
0	464.8	18.1	53.22	4.63	3.484	37.4	15.31

L = 2.52 HMIN = 844. B = .2242 B/BEQ = 11.5829 EOPA = 17.01

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.10	0.00	0.00	0.00	0.00	1.4	0.00
90	41.57	4.52	7.843	1.39	.9191	3.4	5.332
0	377.4	25.4	54.92	6.60	7.727	17.8	47.03

L = 2.53 HMIN = 732. B = .2339 B/BEQ = 12.1687 EOPA = 16.66

PA/ESY=	5.5-6.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.10	0.00	0.00	0.00	0.00	.8	0.00
90	31.96	3.95	10.05	1.57	.3331	3.4	1.335
0	306.4	22.2	55.00	6.48	5.447	19.4	11.39

L = 2.55 HMIN = 627. B = .2435 B/BEQ = 13.3974 EOPA = 15.15

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.10	0.00	0.00	0.00	0.00	.8	0.00
90	5.882	2.94	6.618	2.21	.3364	1.8	.3458
0	180.6	27.8	49.76	16.2	3.254	7.6	7.578

L = 2.55 HMIN = 513. B = .2527 B/BEQ = 13.3882 EOPA = 15.85

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.10	0.00	0.00	0.00	0.00	1.2	0.00
90	5.618	2.21	2.574	.973	0.00	1.2	.5511
0	154.5	23.0	19.96	6.12	1.317	8.0	6.432

L = 2.57 HMIN = 448. B = .2535 B/BEQ = 14.0323 EOPA = 15.45

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.10	0.00	0.00	0.00	0.00	5.8	0.00
90	14.22	1.87	2.757	.503	.2525	8.4	.5929
0	95.38	7.52	18.98	2.76	2.532	58.0	4.788

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 2.56 HMIN = 342. B = .2645 B/BEQ = 14.4502 EQPA = 15.25

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
Z	0.10	0.00	0.00	0.00	0.00	7.6	.3167 96-4
90	3.125	.758	1.103	.283	.193	8.2	.3843 .047
0	46.13	4.89	5.443	1.19	1.181	55.4	3.174 .219

L = 2.56 HMIN = 265. B = .2753 B/BEQ = 14.9979 EQPA = 15.02

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
Z	0.10	0.00	0.00	0.00	0.00	7.4	.3193 74-4
90	.3676	.260	.4085	.193	0.00	8.8	.1134 .023
0	11.91	2.35	4.004	1.00	.4132	59.2	1.186 .124

L = 2.56 HMIN = 143. B = .2854 B/BEQ = 15.5181 EQPA = 14.88

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
Z	0.10	0.00	0.00	0.00	0.00	3.2	.1973 43-4
90	0.10	0.00	0.00	0.00	.0756	3.4	5.504 .251
0	0.10	0.00	0.00	0.00	.2241	22.4	51.12 1.32

L = 2.55 HMIN = 11. B = .3019 B/BEQ = 16.1465 EQPA = 14.41

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
Z	0.10	0.00	0.00	0.00	0.00	0.0	432-5 43-4
90	0.10	0.00	0.00	0.00	0.00	12.4	341-5 54-4
0	0.10	0.00	0.00	0.00	.1961	72.8	.3431 .051

SATELLITE S73-2, ENERGY SPECTRUM TESTING

L = 2.63 HMIN = 1220. B = .1941 B/BEQ = 11.3640 EQPA = 17.25

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	37.75	4.30	8.392	1.11	.3364	.153	.5982	.208	.0735	.052	3.2	1.799	.143
G	571.9	28.8	76.28	7.33	5.141	1.25	2.467	.598	.5040	.102	19.8	20.44	.990

L = 2.63 HMIN = 1132. B = .2023 B/BEQ = 11.7995 EQPA = 16.92

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.0	0.00	0.00
30	75.37	5.26	2.941	1.04	.4295	.200	.4044	.122	.0234	.021	3.6	2.486	.164
G	565.4	28.6	41.37	5.48	4.332	1.04	3.179	.663	.2765	.138	20.8	19.72	.931

L = 2.62 HMIN = 1063. B = .2079 B/BEQ = 11.9548 EQPA = 16.81

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.4	4.34-5	0.00
30	88.53	5.10	8.676	1.13	.6533	.184	.3529	.102	.0123	.012	5.4	2.781	.142
G	469.0	18.9	72.19	5.25	3.324	.801	2.903	.477	.1392	.039	37.4	17.76	.653

L = 2.66 HMIN = 455. B = .2272 B/BEQ = 13.7166 EQPA = 15.65

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.4	.1973	.037
30	9.314	1.51	2.390	.663	.1921	.102	1.127	.235	27.39	1.00	3.6	8.862	.309
G	117.3	11.7	13.40	2.73	1.933	.342	12.97	1.27	176.4	3.41	24.2	92.12	1.71

L = 2.63 HMIN = 799. B = .2315 B/BEQ = 13.5595 EQPA = 15.76

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.8	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.4	0.00	0.00
G	6.10	0.00	0.00	0.00	0.00	0.00	2.177	1.26	.3629	.363	3.4	.9035	.452

L = 2.68 HMIN = 633. B = .2474 B/BEQ = 15.2765 EQPA = 14.82

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.6	0.00	0.00
30	14.71	2.33	1.838	.822	.2231	.133	0.00	0.00	0.00	0.00	3.0	.5225	.091
G	133.5	13.9	23.22	4.11	1.441	.644	.7257	.325	.0691	.069	20.4	5.002	.437

L = 2.66 HMIN = 527. B = .2665 B/BEQ = 15.5205 EQPA = 14.73

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.0368	.021	3.6	.1389	.023
30	13.13	1.65	.5982	.208	.1021	.072	.3392	.092	4.522	.288	6.8	1.928	.105
G	89.12	7.58	6.048	1.26	.8151	.324	3.497	.480	34.63	1.09	44.4	21.31	.603

L = 2.64 HMIN = 465. B = .2610 B/BEQ = 15.4561 EQPA = 14.74

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	.0368	.037	0.00	0.00	4.4	4.34-5	0.00
30	8.690	1.08	1.430	.242	.1021	.045	.3527	.060	1.875	.099	14.6	1.330	.060
G	77.41	5.17	10.46	1.33	1.427	.311	2.769	.304	15.13	.502	86.6	11.50	.319

L = 2.66 HMIN = 348. B = .2725 B/BEQ = 16.5073 EQPA = 14.25

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	.0368	.032	.0539	.016	13.4	.3552	.043
30	4.020	.628	.5882	.170	.0701	.041	.4493	.061	3.578	.120	16.6	2.294	.173
G	30.51	3.11	6.858	1.05	.5115	.204	3.512	.341	15.51	.763	90.6	21.61	.423

L = 2.65 HMIN = 244. B = .2812 B/BEQ = 16.4808 EQPA = 14.03

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	.0210	.021	0.00	0.00	6.6	5.49-5	0.00
30	.4212	.297	0.00	0.00	0.00	0.00	0.00	0.00	.1123	.012	6.4	.3182	.011
G	3.436	2.45	0.00	0.00	0.00	0.00	-.07	0.00	.0363	.036	48.6	.2459	.353

SATELLITE S73-2. ENERGY SPECTRUM TESTING

L = 2.66 HMIN = 153. B = .2839 B/BEQ = 17.5614 EQPA = 13.81

PA/ESY=	3.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	3.5-100.	
Z	1.10	C.CO	0.00	0.00	C.11	0.01	0.00	C.00	0.00	0.00	5.6	0.00	C.00
90	0.00	C.CO	.0919	.092	C.11	0.01	0.00	C.00	.1891	.045	7.8	.1948	.022
C	.7030	.768	.3722	.372	C.11	0.01	.1451	.103	.3859	.177	40.0	.5568	.103

L = 2.64 HMIN = 26. B = .3027 B/BEQ = 17.8844 EQPA = 13.68

PA/ESY=	3.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	3.5-100.	
Z	C.1C	C.1C	0.00	0.00	C.11	0.01	0.00	C.00	317-3	82-4	9.2	423-5	42-4
90	.1684	.116	0.00	0.00	.0433	.031	.1910	.045	3.025	.131	14.4	1.499	.06.
0	1.718	.764	0.00	0.00	.1513	.107	2.735	.317	23.60	.639	82.6	13.49	.35.

SATELLITE S72-2, ENERGY SPECTRUM TESTING

L = 2.76 HMIN = 1314. B = .1972 B/BEQ = 11.9993 EQPA = 15.85

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.16	0.00	0.00	0.00	0.00	1.6	3.00
90	54.41	6.33	4.412	1.30	.5127	1.6	2.115
0	455.7	36.4	52.78	8.35	4.943	10.8	15.85

L = 2.74 HMIN = 1241. B = .1952 B/BEQ = 12.9585 EQPA = 15.12

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
15	0.16	0.00	0.00	0.00	0.00	1.2	.1324
90	23.53	4.16	.7353	.735	0.00	.6	2.146
0	454.5	82.1	7.257	7.26	0.00	2.6	10.04

L = 2.75 HMIN = 1159. B = .2027 B/BEQ = 13.5407 EQPA = 15.77

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	1.8	3.00
90	26.47	6.24	2.206	.911	.1532	2.4	.6494
0	93.31	12.7	19.05	4.16	.7353	16.2	5.214

L = 2.78 HMIN = 1079. B = .2107 B/BEQ = 14.5735 EQPA = 15.19

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	.6	3.00
90	24.51	3.47	2.941	1.04	0.00	2.0	1.128
0	329.7	26.1	18.98	4.60	.5141	13.0	11.05

L = 2.72 HMIN = 945. B = .2210 B/BEQ = 14.2683 EQPA = 15.35

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.10	0.00	0.00	0.30	0.00	2.6	.8599
90	25.74	3.18	1.103	.637	.1021	3.2	2.371
0	178.8	14.4	11.03	2.53	1.251	24.6	9.396

L = 2.76 HMIN = 859. B = .2335 B/BEQ = 15.5663 EQPA = 14.59

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
15	0.10	0.00	0.00	0.00	0.00	1.4	3.00
90	38.24	7.50	1.103	.637	0.00	1.2	.9402
0	220.6	35.8	11.61	5.81	2.315	5.4	6.542

L = 2.73 HMIN = 792. B = .2357 B/BEQ = 15.4713 EQPA = 14.73

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
15	0.10	0.00	.1838	.184	0.00	3.6	1.751
90	11.76	4.16	1.103	.637	.1532	1.8	22.35
0	84.57	14.3	4.438	2.42	.5492	11.6	135.4

L = 2.72 HMIN = 622. B = .2504 B/BEQ = 16.3183 EQPA = 14.24

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	.4	3.00
90	10.92	1.51	1.029	.339	0.00	4.8	.7539
0	32.27	9.78	11.83	2.52	.4592	27.2	6.663

L = 2.77 HMIN = 555. B = .2582 B/BEQ = 17.3518 EQPA = 13.81

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.10	0.00	0.00	0.00	0.00	2.4	3.00
90	5.030	.857	.5515	.225	.0341	9.8	1.139
0	52.14	5.29	6.988	1.37	.1141	57.6	6.433

L = 2.75 HMIN = 448. B = .2573 B/BEQ = 17.4952 EQPA = 13.57

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.10	0.00	0.00	0.00	0.00	6.0	3.00
90	3.620	.640	.4902	.200	.0471	11.6	1.274
0	34.13	3.86	3.732	.881	.2351	71.0	6.855

SATELLITE S73-2. ENERGY SPECTRUM TESTING

L = 2.74 HMIN = 352. J = .2755 B/BEQ = 18.2303 EQPA = 13.55

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
Z	0.10	0.00	0.00	0.00	0.00	0.00	.0588	.042	.0125	.014	7.6	.0278	.012
90	2.273	.551	.2252	.113	0.00	0.00	.2941	.063	1.954	.143	10.2	.9734	.058
0	18.84	3.10	1.528	.624	.1351	.105	1.918	.315	15.47	.638	56.8	9.572	.360

L = 2.74 HMIN = 264. J = .2833 B/BEQ = 18.8615 EQPA = 13.31

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
Z	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.0460	.021	10.4	.0147	.04.
90	1.251	.364	.1050	.074	0.00	0.00	.1203	.040	.3563	.045	13.2	.2535	.027
0	5.639	1.58	.9425	.421	.1516	.114	2.024	.278	3.388	.437	76.4	5.041	.246

L = 2.75 HMIN = 162. J = .2937 B/BEQ = 19.5841 EQPA = 13.03

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
Z	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.0123	.012	5.8	571-5	57-.
90	.2111	.210	.2757	.159	0.00	0.00	0.00	0.00	.0123	.012	7.6	.0256	.011
0	5.048	1.78	1.262	.631	0.00	0.00	0.00	0.00	-.15	0.00	45.4	.2030	.053

L = 2.74 HMIN = 34. J = .3057 B/BEQ = 20.2432 EQPA = 12.84

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
Z	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.8	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	.1003	.026	.0545	.011	23.4	.0632	.011
0	.2044	.204	0.00	0.00	.0421	.042	1.230	.157	.8648	.093	143.8	.8064	.066

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 2.80 HMIN = 1337. R = .1875 B/BEQ = 13.3010 EQPA = 15.91

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	.4	0.00
30	17.55	5.09	5.882	2.08	0.00	.4	1.945
0	416.1	63.5	78.70	13.7	0.00	3.0	13.06

L = 2.83 HMIN = 1238. R = .1970 B/BEQ = 14.3757 EQPA = 15.29

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	.1358	4.2	.3185
30	23.04	1.94	1.287	.344	.1021	.059	.1361
0	184.9	16.8	20.82	2.56	.9284	.344	1.388

L = 2.82 HMIN = 1161. R = .2043 B/BEQ = 14.7636 EQPA = 15.12

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	1.8	0.00
30	25.74	4.35	2.574	.973	0.00	.1471	.104
0	226.0	21.6	10.05	3.35	0.00	.7257	.419

L = 2.88 HMIN = 1042. R = .2172 B/BEQ = 16.7238 EQPA = 14.15

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
15	.7353	.735	0.00	0.00	0.00	.6490	.049
30	7.353	1.90	.7353	.520	0.00	.2206	.127
0	119.0	18.6	6.708	3.56	0.00	.2903	.290

L = 2.87 HMIN = 930. R = .2274 B/BEQ = 17.3635 EQPA = 13.89

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	1.4	0.00
30	15.39	2.77	1.838	.822	0.00	.0380	.069
0	95.15	12.4	10.25	2.96	.3184	.314	.7639

L = 2.85 HMIN = 836. R = .2355 B/BEQ = 17.5158 EQPA = 13.82

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	3.6	0.00
30	9.804	1.27	.7353	.278	.0581	.043	2.416
0	82.47	7.38	6.076	1.43	.6372	.307	15.44

L = 2.88 HMIN = 747. R = .2443 B/BEQ = 18.7585 EQPA = 13.35

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	2.2	0.00
30	12.13	2.11	1.176	.416	0.00	1.029	.275
0	31.32	10.5	8.204	2.28	.2743	.275	8.577

L = 2.87 HMIN = 634. R = .2550 B/BEQ = 19.4302 EQPA = 13.11

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	.2341	.208	.3245
30	2.941	1.04	.2451	.245	.1021	.102	.5515
0	27.50	6.48	3.629	1.62	.2341	.284	3.786

L = 2.84 HMIN = 555. R = .2614 B/BEQ = 19.2785 EQPA = 13.15

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	.0420	.030	.1716
30	3.135	.758	.4412	.180	.0755	.054	1.408
0	31.27	4.17	2.739	.856	.3481	.201	15.41

L = 2.85 HMIN = 442. R = .2719 B/BEQ = 20.1865 EQPA = 12.85

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	11.0	0.00
30	2.521	.515	.1838	.092	0.00	.0579	.028
0	24.54	2.91	2.448	.654	.1421	.101	.7603

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 2.85 HMIN = 339. B = .2819 B/BEQ = 20.9890 EQPA = 12.61

PA/ESY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.10	0.00	0.00	0.00	0.01	0.01	.2574	.056	1.435	.111	10.8	.7349	.051
90	4.517	.689	.0613	.061	.0515	.043	2.647	.180	23.09	.376	12.0	13.07	.205
0	41.29	4.11	.8063	.403	.8314	.241	20.36	.894	200.8	2.00	72.2	114.1	1.10

L = 2.83 HMIN = 269. B = .2879 B/BEQ = 21.0760 EQPA = 12.58

PA/ESY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.10	0.00	0.00	0.00	0.01	0.01	.3234	.029	.3368	.021	5.8	.3268	.013
90	2.353	.832	0.00	0.00	0.01	0.01	.3529	.102	5.949	.292	5.2	4.392	.181
0	10.38	2.94	0.00	0.00	0.01	0.01	3.567	.529	17.24	1.31	38.0	27.57	.745

L = 2.88 HMIN = 152. B = .3012 B/BEQ = 23.1191 EQPA = 12.00

PA/ESY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	3.0	0.00	0.00
90	0.10	0.00	0.00	0.00	0.01	0.01	0.00	0.00	.0147	.015	4.8	811-5	81-4
0	1.037	1.04	0.00	0.00	0.01	0.01	0.00	0.00	.2150	.108	28.0	.1371	.061

L = 2.85 HMIN = 26. B = .3142 B/BEQ = 23.2708 EQPA = 11.95

PA/ESY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.10	0.00	0.00	0.00	0.01	0.01	0.00	0.00	.0387	.012	19.4	.0201	63-4
90	0.10	0.00	0.00	0.00	0.01	0.01	.0210	.012	.1930	.024	23.6	.1038	.013
0	0.10	0.00	0.00	0.00	0.01	0.01	.3706	.087	2.487	.159	141.2	1.430	.083

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 2.96 HMIN = 1221. B = .2020 B/BEQ = 15.9223 EQPA = 14.07

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	.6	0.00	0.00
30	11.76	2.40	1.176	.415	0.00	3.6	.3890	.065
6	112.2	12.2	5.938	1.98	0.00	22.4	3.908	.365

L = 2.92 HMIN = 1169. B = .2051 B/BEQ = 16.5405 EQPA = 14.23

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	1.0	0.00	0.00
30	8.088	2.44	.7353	.368	0.00	2.2	.3183	.075
6	106.4	16.6	5.582	2.50	.4552	12.8	3.900	.494

L = 2.99 HMIN = 1047. B = .2156 B/BEQ = 14.5047 EQPA = 13.44

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	1.2	0.00	0.00
30	5.392	1.63	.4902	.347	0.00	.0982	.051	.0147	.015	4.4	.1503	.035
6	55.54	8.20	3.024	1.35	.2418	.242	.7573	.309	.0631	.063	23.8	1.904	.248

L = 2.97 HMIN = 947. B = .2285 B/BEQ = 19.3259 EQPA = 13.15

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	5.8	0.00	0.00
30	7.159	1.15	.9454	.315	0.00	.2574	.056	2.851	.153	9.0	1.807	.088
6	56.59	6.16	6.141	1.31	.2325	.164	2.947	.399	17.19	.699	51.6	11.85	.420

L = 2.95 HMIN = 893. B = .2336 B/BEQ = 19.3716 EQPA = 13.13

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.	
7	0.00	0.00	0.00	0.00	.2451	.110	.1471	.104	1.6	.1702	.064
30	5.147	1.38	.7353	.520	0.00	.4412	.180	7.059	.509	2.8	2.973	.203
6	50.50	9.60	1.814	1.28	0.00	1.378	.566	32.17	1.61	16.8	29.11	.959

L = 2.95 HMIN = 751. B = .2469 B/BEQ = 20.3883 EQPA = 12.82

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.0735	.074	1.0	.3389	.033
30	5.812	1.32	.9804	.490	0.00	0.00	4.301	.398	33.50	.906	3.6	16.30	.420
6	53.22	8.62	4.233	1.60	0.00	0.00	29.54	1.86	248.4	3.90	24.2	145.1	2.15

L = 2.96 HMIN = 642. B = .2578 B/BEQ = 21.5092 EQPA = 12.45

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	.1471	.104	0.00	0.00	1.8	.0432	.031
30	2.941	.849	.2451	.245	0.00	0.00	.2941	.085	3.425	.352	5.2	4.474	.193
6	20.16	4.03	.8294	.546	0.00	0.00	1.757	.366	58.57	1.52	36.6	32.30	.924

L = 2.94 HMIN = 538. B = .2673 B/BEQ = 21.9414 EQPA = 12.33

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.0294	.021	4.8	.0162	.011
30	1.471	.735	0.00	0.00	0.00	0.00	.1471	.056	7.353	.278	5.2	5.327	.203
6	5.816	2.19	.8538	.604	0.00	0.00	2.303	.477	32.65	1.40	36.0	31.17	.915

L = 2.96 HMIN = 430. B = .2795 B/BEQ = 23.2363 EQPA = 11.97

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.8	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	.4412	.147	1.887	.215	2.8	1.195	.129
6	5.123	2.96	.8538	.654	.3351	.335	2.444	.611	10.31	.888	18.0	6.656	.533

L = 2.94 HMIN = 350. B = .2854 B/BEQ = 23.3554 EQPA = 11.94

PA/ESY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.0294	.021	4.8	.3162	.011
30	.7353	.520	0.00	0.00	0.00	0.00	.2206	.074	.5637	.033	4.6	.4821	.064
6	2.721	1.57	.4536	.454	.1491	.199	2.419	.484	5.929	.570	31.4	4.353	.325

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 2.96 HMIN = 237. B = .2975 B/BEQ = 24.8972 EQPA = 11.55

PA/ENGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.4	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.8	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.1935	.137	15.2	.1010	.071

L = 2.97 HMIN = 141. B = .3071 B/BEQ = 25.9885 EQPA = 11.31

PA/ENGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.4	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.0358	.026	3.6	.0216	.015
0	1.232	1.26	0.00	0.00	0.00	0.00	.1210	.121	.5048	.178	23.2	.3310	.105

L = 2.94 HMIN = 30. B = .3192 B/BEQ = 26.0414 EQPA = 11.30

PA/ENGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.0414	.014	13.6	.1257	85.
30	.2451	.142	0.00	0.00	0.00	0.00	.3333	.057	5.029	.157	17.4	3.383	.087
0	2.053	.776	0.00	0.00	0.00	0.00	2.761	.280	33.84	.695	100.0	13.78	.381

********** FILZSCE //// END OF LIST ////

********** FILZSCE //// END OF LIST ////

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L = 1.28 HMIN = 1151. B = .1523 B/BEQ = 1.0149 EQPA = 83.03													
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T	2.614	.462	3.206	.245	12.28	.423	13.17	.304	12.04	.178	23.0	12.55	.146
90	272.5	3.34	46.97	1.01	51.60	.637	29.95	.340	18.57	.195	36.6	34.27	.191
0	2634	19.3	470.3	5.71	458.7	3.59	239.9	1.78	83.29	.748	213.4	261.3	.970

L = 1.25 HMIN = 947. B = .1637 B/BEQ = 1.0304 EQPA = 80.11													
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T	1.786	.433	.6684	.211	1.343	.178	3.021	.201	4.620	.168	12.2	3.293	.104
90	61.51	1.98	17.57	.947	29.56	.642	23.94	.430	14.72	.252	19.8	19.67	.197
0	531.0	11.3	157.3	4.42	337.4	4.12	271.3	2.59	145.9	1.36	117.8	212.9	1.18

L = 1.25 HMIN = 848. B = .1712 B/BEQ = 1.0571 EQPA = 76.56													
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T	1.070	.378	.2451	.123	.4814	.145	1.471	.164	3.393	.167	9.4	2.148	.094
90	27.45	1.64	13.07	.731	13.72	.615	18.32	.350	12.77	.222	18.0	16.58	.189
0	233.9	8.16	115.8	4.02	235.9	3.74	217.6	2.46	118.9	1.27	103.8	164.1	1.10

L = 1.24 HMIN = 750. B = .1786 B/BEQ = 1.0895 EQPA = 73.34													
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T	.4202	.297			.1950	.074	1.748	.169	1.071	.106	8.2	1.034	.070
90	8.299	.934	6.618	.698	15.40	.655	14.44	.461	10.70	.267	11.2	11.49	.200
0	74.31	5.36	48.05	3.07	114.9	3.04	123.6	2.25	129.4	1.65	72.8	116.4	1.11

L = 1.24 HMIN = 651. B = .1861 B/BEQ = 1.1380 EQPA = 69.62													
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T	.5842	.416	.2191	.149	.2188	.098	.1961	.069	1.074	.126	6.0	.5436	.062
90	6.863	1.06	3.840	.560	7.743	.464	8.891	.317	7.713	.238	10.4	8.237	.176
0	35.32	4.13	27.31	2.59	78.62	2.84	100.9	2.23	74.44	1.35	59.2	73.18	1.01

L = 1.24 HMIN = 550. B = .1935 B/BEQ = 1.1861 EQPA = 66.65													
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T									.2206	.057	4.8	.1216	.041
90	1.471	.556	1.563	.379	3.064	.343	4.461	.331	4.812	.198	7.6	4.479	.151
0	16.33	3.14	14.21	2.07	27.02	1.86	50.55	1.79	51.07	1.24	47.4	44.96	.953

L = 1.24 HMIN = 446. B = .2010 B/BEQ = 1.2262 EQPA = 64.57													
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T							.0498	.049	.0598	.029	1.4	.0572	.026
90	.9804	.490	.8170	.258	.7276	.167	1.235	.191	2.397	.198	6.6	1.403	.091
0	9.123	2.75	6.451	1.61	7.948	1.17	14.17	1.10	18.57	.889	34.8	14.85	.572

L = 1.24 HMIN = 353. B = .2081 B/BEQ = 1.2603 EQPA = 62.97													
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T											2.6		
90	.2941	.294	.1839	.184			.4902	.110	.7904	.121	4.4	.5747	.071
0	1.161	1.16	2.419	1.21	1.210	.541	5.225	.779	7.896	.677	24.8	5.914	.428

L = 1.24 HMIN = 248. B = .2159 B/BEQ = 1.3012 EQPA = 61.24													
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T											1.6		
90							.0735	.052	.0735	.052	2.6	.0599	.030
0					.2889	.288	.6911	.309	1.056	.264	21.2	.7969	.170

L = 1.24 HMIN = 149. B = .2238 B/BEQ = 1.3713 EQPA = 58.62													
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T											2.0		
90											4.2		
0	2.765	1.95					.1319	.132			21.2	.1097	.063

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L =	1.39	HMIN =	2038.	B =	.1157	B/BEQ =	.9992	EQPA =	90.00				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	209.1	5.55	77.06	3.37	98.04	1.83	56.26	1.29	23.16	.757	6.4	46.71	.533
90	1755	16.9	170.4	3.23	99.72	1.38	39.38	.602	32.89	.431	13.2	84.96	.500
0	14014	72.7	713.1	11.5					101.1	1.38	76.8	463.6	2.15
L =	1.36	HMIN =	1732.	B =	.1281	B/BEQ =	1.0316	EQPA =	79.92				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	73.11	1.11	26.02	.474	55.36	.427	47.37	.272	23.94	.135	31.0	36.63	.125
90	1327	3.62	114.6	.726	82.44	.402	36.71	.186	29.96	.123	152.4	76.18	.139
0	12721	20.7	990.6	4.03	393.7	1.63			37.38	.246	893.6	443.9	.518
L =	1.34	HMIN =	1304.	B =	.1481	B/BEQ =	1.1407	EQPA =	69.44				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	11.48	.522	5.310	.233	21.49	.311	25.49	.231	17.18	.138	67.6	19.18	.105
90	673.4	3.09	69.64	.692	59.64	.419	30.34	.209	23.23	.125	105.4	49.38	.135
0	5730	16.2	693.2	3.39	510.1	2.21	105.8	.698	55.38	.358	631.8	310.3	.614
L =	1.34	HMIN =	954.	B =	.1660	B/BEQ =	1.2901	EQPA =	61.59				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	2.941	.766	.8088	.244	7.606	.292	14.55	.422	8.687	.302	9.8	8.742	.186
90	238.0	4.29	36.13	1.33	41.19	1.07	25.33	.643	16.57	.319	13.2	23.13	.268
0	2944	28.5	326.2	7.69	400.5	5.57	106.8	1.93	105.2	1.33	81.4	211.7	1.41
L =	1.35	HMIN =	849.	B =	.1745	B/BEQ =	1.3713	EQPA =	58.64				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	.9804	.400	.2828	.126	3.574	.427	3.941	.340	3.805	.197	8.2	2.994	.119
90	102.1	4.63	29.41	1.40	38.19	1.14	20.98	.507	13.26	.274	10.4	22.83	.292
0	939.0	20.8	259.1	7.79	377.7	6.12	262.1	3.56	135.4	1.84	50.8	224.5	1.68
L =	1.34	HMIN =	743.	B =	.1820	B/BEQ =	1.4081	EQPA =	57.43				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	.2941	.234	.1838	.184	.3838	.171	1.062	.132	3.395	.144	6.3	3.581	.143
90	52.26	2.43	16.24	1.04	23.28	.771	17.21	.562	11.27	.455	9.6	12.83	.228
0	596.4	17.7	174.4	6.78	475.5	7.10	193.1	3.16	83.35	1.47	55.8	181.9	1.58
L =	1.34	HMIN =	648.	B =	.1902	B/BEQ =	1.4781	EQPA =	55.34				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	.3258	.241	.1050	.105	.2042	.083	.4596	.092	2.968	.265	7.2	.8159	.066
90	27.21	3.16	12.35	1.35	19.57	1.07	15.00	.525	8.824	.268	6.2	14.79	.305
0	97.18	7.83	53.00	4.41	150.1	4.59	180.4	3.30	83.46	1.62	46.6	118.7	1.40
L =	1.34	HMIN =	549.	B =	.1974	B/BEQ =	1.5034	EQPA =	54.64				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7					.0513	.061	.0882	.051	.8088	.086	4.4	.8135	.085
90	3.824	.750	3.476	.482	5.617	.437	8.500	.500	7.402	.426	7.6	4.769	.148
0	48.64	6.18	42.33	4.13	63.16	3.26	62.17	2.24	39.79	1.22	36.9	43.73	1.02
L =	1.34	HMIN =	448.	B =	.2060	B/BEQ =	1.5866	EQPA =	52.55				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	.3575	.260				.2574	.097	.1029	.039		5.8	.0915	.023
90	1.471	1.47	1.471	.600	2.880	.420	3.950	.288	3.654	.164	5.2	5.529	.203
0	1.935	1.12	7.587	1.58	24.04	1.98	50.51	1.91	51.94	1.39	41.8	41.85	.877
L =	1.35	HMIN =	346.	B =	.2143	B/BEQ =	1.6766	EQPA =	50.56				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7											5.8		
90	.4011	.232	.4412	.180	.1021	.072	.9559	.153	1.158	.146	7.4	.5941	.056
0	4.725	1.79	4.249	1.23	3.849	.727	4.354	.536	8.721	.518	43.4	6.565	.341

SATELLITE S73-B. ENERGY SPECTRUM LISTING

L =	1.36	HMIN =	252.	B =	.2223	B/BEQ =	1.7902	EQPA =	48.37				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T		5.5-100.
											5.4		
90	.4902	.490			.0766	.077	.0919	.041	.2778	.048	5.0	.3190	.050
0	.9364	.936	.8294	.586	.5184	.299	1.451	.342	2.322	.310	34.4	1.796	.200

L =	1.37	HMIN =	157.	B =	.2302	B/BEQ =	1.8826	EQPA =	46.79				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T		5.5-100.
											2.0		
90											5.0		
0							.1382	.138			8.2	.0937	.094

L =	1.35	HMIN =	5.	B =	.2744	B/BEQ =	2.1516	EQPA =	42.98				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T		5.5-100.
											9.0		
90											15.4		
0											93.6		

SATELLITE S73-7. ENERGY SPECTRUM LISTING

L =	1.45	HMIN =	2339.	B =	.1065	B/BEQ =	1.0355	EQPA =	79.32				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	235.6	1.58	60.33	.511	90.97	.407	52.27	.224	22.76	.103	157.2	46.75	.108
90	1089	3.30	204.5	.756	107.4	.353	35.60	.143	37.17	.095	264.6	174.8	.124
0	17871	18.4	1421	3.66	137.6	.725			80.03	.274	1541.6	607.7	.550
L =	1.44	HMIN =	1774.	B =	.1301	B/BEQ =	1.2363	EQPA =	64.07				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	57.50	1.08	23.01	.514	52.32	.526	37.44	.314	18.69	.154	61.6	27.61	.132
90	1170	4.25	114.5	.946	73.55	.470	30.19	.207	25.02	.137	98.6	66.85	.162
0	10233	22.4	915.4	4.71	268.6	1.64			57.74	.376	507.4	390.7	.700
L =	1.44	HMIN =	1285.	B =	.1543	B/BEQ =	1.4782	EQPA =	55.34				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	4.988	.478	2.005	.259	12.92	.359	17.55	.316	10.54	.167	28.0	12.17	.130
90	389.6	3.20	59.40	.925	53.43	.546	25.98	.259	15.93	.138	56.0	35.35	.158
0	3639	18.3	604.9	5.31	486.3	3.08	133.8	1.12	70.35	.575	310.8	263.3	.807
L =	1.44	HMIN =	945.	B =	.1719	B/BEQ =	1.6473	EQPA =	51.18				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	.9358	.354	.2674	.134	2.451	.433	5.897	.294	5.632	.204	9.2	5.117	.147
90	111.6	3.20	34.60	1.16	76.17	.764	20.92	.383	12.42	.232	18.4	21.59	.214
0	903.6	15.4	283.4	6.06	776.5	4.51	208.9	2.78	96.65	1.13	110.0	192.3	1.15
L =	1.45	HMIN =	853.	B =	.1799	B/BEQ =	1.7565	EQPA =	43.98				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	.5535	.327	.3151	.182	1.566	.231	1.975	.204	3.897	.239	7.4	2.166	.107
90	56.93	2.45	23.58	1.11	27.44	.775	19.72	.472	10.47	.253	13.4	15.54	.219
0	578.0	14.5	201.6	6.05	272.4	4.48	215.3	2.74	83.27	1.22	81.0	152.9	1.24
L =	1.46	HMIN =	753.	B =	.1886	B/BEQ =	1.8645	EQPA =	47.09				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	.4902	.490			.2451	.123	.6723	.119	2.572	.181	4.8	2.967	.120
90	27.76	2.26	11.27	.960	23.32	.891	14.47	.377	8.170	.188	11.6	14.55	.221
0	178.6	8.93	104.7	4.34	185.2	4.15	186.6	2.72	78.33	1.25	68.2	129.8	1.21
L =	1.45	HMIN =	649.	B =	.1970	B/BEQ =	1.9715	EQPA =	46.02				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	.4902	.490			.0643	.061	.1103	.064	1.070	.097	5.6	.8059	.075
90	10.95	1.34	10.43	.835	10.85	.689	12.61	.681	7.000	.321	7.2	5.970	.194
0	113.8	8.05	64.60	4.29	59.79	2.91	99.66	2.46	59.03	1.44	49.6	76.41	1.09
L =	1.44	HMIN =	547.	B =	.2044	B/BEQ =	1.9505	EQPA =	45.73				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	.2575	.258			.0766	.077			.2574	.069	5.4	.1225	.030
90	6.250	1.52	5.719	.684	6.242	.489	8.366	.370	5.858	.268	7.2	6.700	.190
0	64.43	6.75	41.42	3.83	63.28	3.06	82.77	2.48	60.72	1.56	39.6	63.12	1.11
L =	1.46	HMIN =	455.	B =	.2130	B/BEQ =	2.1100	EQPA =	47.51				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	.4902	.490							.0184	.018	7.4	.0229	.016
90	2.206	.735	2.574	.973	3.860	.486	5.074	.432	3.456	.356	7.8	3.134	.181
0	9.676	3.23	20.47	3.31	26.17	2.38	34.43	1.86	26.77	1.33	28.2	34.64	.371
L =	1.47	HMIN =	356.	B =	.2218	B/BEQ =	2.2377	EQPA =	42.00				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7											2.2		
90		1.961	.490	.2298	.133	.4902	.155	3.676	.520	3.2	.9605	.108	
0	15.21	4.54	11.98	2.80			9.123	1.12	11.00	.917	16.6	11.96	.715

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L =	1.44	HMIN =	249.	B =	.2791	B/BEQ =	2.2000	EQPA =	42.39		
PA/EGY=	5.5-8.	8.-13.		13.-25.		25.-50.		50.-100.	T	5.5-100.	
7									2.4		
90								.1618	.049	2.2	.1945 .059
0		.8539	.954					2.305	.444	14.0	1.536 .290

L =	1.43	HMIN =	143.	B =	.2364	B/BEQ =	2.2138	EQPA =	42.23		
PA/EGY=	5.5-8.	8.-13.		13.-25.		25.-50.		50.-100.	T	5.5-100.	
7									3.0		
90									3.4		
0					.1210	.121			24.0	.0320	.032

L =	1.45	HMIN =	7.	B =	.2781	B/BEQ =	2.7097	EQPA =	37.41		
PA/EGY=	5.5-8.	8.-13.		13.-25.		25.-50.		50.-100.	T	5.5-100.	
7									17.0		
90									24.6		
0								994-5	39-4	144.0	533-5 53-4

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L =	1.57	HMIN =	3152.	B =	.0821	B/BEQ =	1.0220	EQPA =	81.57					
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.		
7	328.0	3.77	50.06	1.12	75.69	.865	38.10	.400	16.15	.193	33.4	33.93	.215	
90	2666	9.55	447.6	2.54	181.2	1.14	30.99	.311	27.92	.195	47.6	134.7	.332	
0	20566	45.9	3594	13.4	895.7	4.34			117.5	.776	283.6	905.7	1.57	
L =	1.53	HMIN =	2638.	B =	.0981	B/BEQ =	1.1301	EQPA =	70.17					
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.		
7	218.9	1.41	45.67	.469	67.44	.374	39.81	.196	16.98	.087	159.2	36.63	.095	
90	1955	3.42	275.5	.909	122.7	.392	20.08	.134	31.18	.039	241.2	106.9	.131	
0	17047	18.8	2202	4.76	495.5	1.46			102.4	.325	1410.6	682.2	.509	
L =	1.54	HMIN =	1767.	B =	.1358	B/BEQ =	1.5922	EQPA =	52.42					
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.		
7	8.869	.633	5.214	.741	15.21	1.388	18.71	.297	10.92	.169	51.2	12.72	.126	
90	593.0	4.61	106.5	1.25	62.49	.683	21.57	.275	15.53	.163	43.4	42.53	.195	
0	5262	24.9	973.0	7.59	520.3	3.58	56.16	.812	37.23	.469	246.0	231.2	.953	
L =	1.54	HMIN =	1268.	B =	.1615	B/BEQ =	1.8861	EQPA =	46.73					
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.		
7	1.707	.327	.4136	.138	3.983	.296	7.005	.216	4.771	.140	17.5	5.356	.109	
90	152.3	2.65	50.45	1.09	39.05	.602	19.96	.298	11.23	.166	31.8	22.69	.167	
0	1461	15.1	459.9	5.96	355.9	3.39	150.0	1.53	78.25	.777	187.2	189.2	.961	
L =	1.55	HMIN =	946.	B =	.1776	B/BEQ =	2.1272	EQPA =	43.29					
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.		
7	.4902	.490			.3501	.124	.5867	.120	2.492	.143	6.0	2.192	.119	
90	42.78	2.39	34.72	1.68	25.15	.801	16.18	.514	8.971	.217	11.0	15.66	.235	
0	460.2	14.7	278.6	7.66	248.4	4.06	189.2	2.86	75.23	1.20	63.0	149.3	1.35	
L =	1.54	HMIN =	847.	B =	.1859	B/BEQ =	2.1323	EQPA =	42.48					
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.		
7	.3258	.231	.0735	.074	.3064	.116	.1961	.069	1.071	.106	7.3	.5985	.055	
90	42.89	2.29	18.58	1.11	18.94	.726	12.24	.474	7.711	.266	10.0	10.94	.206	
0	351.8	12.3	163.0	5.96	128.1	3.51	143.6	2.51	80.38	1.32	66.4	114.9	1.15	
L =	1.54	HMIN =	744.	B =	.1934	B/BEQ =	2.2587	EQPA =	41.71					
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.		
7	.7353	.735	.1471	.147	.2298	.094	.2647	.088	.5441	.089	5.0	.4202	.057	
90	24.06	1.79	11.43	.804	13.42	.611	9.779	.424	6.797	.259	10.0	7.800	.174	
0	198.0	10.1	113.5	5.47	133.9	3.80	85.63	2.19	60.06	1.28	54.4	81.58	1.07	
L =	1.55	HMIN =	647.	B =	.2018	B/BEQ =	2.3345	EQPA =	40.36					
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.		
7					.0511	.051			.2206	.048	6.2	.1380	.029	
90	5.042	1.03	14.29	1.22	8.617	.574	7.614	.353	4.989	.168	8.8	7.662	.184	
0	65.80	5.64	50.22	3.40	59.81	2.38	81.73	1.93	63.16	1.20	63.0	67.94	.910	
L =	1.55	HMIN =	558.	B =	.2101	B/BEQ =	2.5068	EQPA =	39.17					
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.		
7							.0490	.049	.0735	.052	3.0	.0399	.022	
90	12.62	1.24	6.505	.607	3.830	.289	5.068	.239	4.108	.194	12.0	4.176	.116	
0	136.4	8.64	100.9	5.25	50.23	2.70	46.45	1.63	30.62	.934	51.6	44.75	.916	
L =	1.55	HMIN =	452.	B =	.2185	B/BEQ =	2.5818	EQPA =	38.43					
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.		
7	.2941	.294					.0368	.037	.0368	.037	3.8	.1307	.018	
90	1.654	.551	2.083	.505	1.654	.318	2.265	.258	2.463	.150	6.4	2.419	.121	
0	7.425	2.24	13.85	2.14	10.51	1.23	18.09	1.16	26.80	.999	41.4	20.20	.612	

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L =	1.56	HMIN =	356.	B =	.2274	B/BEQ =	2.7502	EQPA =	37.09				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
											1.4		
90	1.961	.693	1.183	.368	1.313	.240	.6618	.110	1.229	.114	6.8	1.144	.091
0			13.11	2.48	11.00	1.49	10.49	.991	8.240	.621	24.6	11.58	.601
L =	1.55	HMIN =	249.	B =	.2357	B/BEQ =	2.7005	EQPA =	36.77				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
											4.0		
90	.5882	.416	.1838	.184	.3064	.177	.1103	.064	.5882	.208	3.4	.1945	.047
0	2.322	1.64	2.419	1.21	.9304	.465	1.451	.407	2.065	.340	25.4	1.814	.234
L =	1.55	HMIN =	148.	B =	.2437	B/BEQ =	2.8796	EQPA =	36.11				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
											1.8		
90						.0368	.037				7.4	.0114	.011
0	1.528	1.53				.1613	.161	.0506	.031		18.2	.1266	.077
L =	1.55	HMIN =	5.	B =	.2945	B/BEQ =	3.5070	EQPA =	39.28				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
											17.8		
90											23.6		
0								.0101	.010		145.2	529-5	53-4

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L =	1.70	HMIN =	4001.	B =	.8634	B/BEQ =	.9951	EQPA =	90.00				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T							20.29	1.75	10.89	.882	.4	27.43	1.63
90											0.0		
R											.4		

L =	1.65	HMIN =	3478.	B =	.0758	B/BEQ =	1.0674	EQPA =	73.53				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T	265.1	2.27	47.97	.646	52.49	.425	25.78	.212	11.56	.106	81.4	28.96	.118
90	2581	5.21	546.2	1.74	212.0	.712	26.20	.175	21.18	.107	132.4	145.3	.207
R	21719	28.8	4365	3.86	1330	3.15			89.83	.401	809.4	1019	.983

L =	1.64	HMIN =	2600.	B =	.1032	B/BEQ =	1.4563	EQPA =	55.96				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T	50.54	.958	17.51	.796	44.13	.399	20.43	.203	8.701	.091	70.8	17.77	.393
90	1210	3.87	273.3	1.22	106.2	.502	18.23	.144	18.65	.106	127.2	73.80	.150
R	10975	20.6	2265	6.64	438.9	1.88			82.26	.399	749.2	510.8	.724

L =	1.65	HMIN =	1755.	B =	.1412	B/BEQ =	2.0257	EQPA =	44.64				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T	2.778	.475	1.341	.241	5.379	.503	6.830	.236	4.582	.145	17.4	4.950	.105
90	357.0	4.58	104.5	1.63	46.85	.729	13.72	.247	9.186	.153	28.6	28.60	.197
R	7910	22.6	952.6	9.10	435.8	4.01	93.28	1.28	41.14	.609	164.4	230.1	1.04

L =	1.64	HMIN =	1233.	B =	.1674	B/BEQ =	2.3537	EQPA =	40.53				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T	.3676	.250	.2674	.174	9191	.217	1.569	.195	.9069	.105	7.4	.8517	.067
90	116.3	3.78	52.79	1.97	24.70	.830	11.79	.340	6.838	.190	12.4	15.87	.223
R	798.9	17.3	231.0	7.90	231.1	4.23	127.4	2.16	74.82	1.18	77.8	141.4	1.18

L =	1.65	HMIN =	955.	B =	.1819	B/BEQ =	2.6334	EQPA =	38.04				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T					.1021	.102	.8524	.180	.4412	.104	2.4	.6970	.106
90	60.61	4.13	34.49	1.68	15.98	.836	8.234	.451	6.434	.486	6.0	10.27	.258
R	827.8	29.8	274.9	13.7	160.3	5.68	63.76	2.53	33.43	1.25	29.2	36.39	1.59

L =	1.64	HMIN =	843.	B =	.1907	B/BEQ =	2.6714	EQPA =	37.72				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T					.4814	.145	.3676	.116	.4307	.110	5.0	.3190	.050
90	43.01	3.98	24.12	1.98	13.06	.707	9.150	.387	4.226	.228	6.4	9.282	.238
R	223.1	13.1	175.3	8.08	127.7	4.29	89.70	2.52	51.84	1.34	40.4	83.36	1.26

L =	1.65	HMIN =	745.	B =	.1997	B/BEQ =	2.8497	EQPA =	36.33				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T							.0882	.051	.5310	.066	7.4	.5575	.043
90	38.50	2.27	19.56	.979	7.910	.469	5.853	.293	3.467	.140	12.0	6.426	.144
R	304.8	11.4	150.1	6.03	80.44	2.78	57.42	1.61	29.16	.795	65.2	57.36	.822

L =	1.66	HMIN =	650.	B =	.2082	B/BEQ =	3.0362	EQPA =	35.02				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T							.1471	.080	.2206	.052	4.0	.2334	.048
90	14.29	1.73	14.56	1.46	5.515	.460	3.550	.273	1.887	.152	6.6	3.737	.148
R	174.9	10.3	95.79	6.30	50.71	2.80	35.50	1.63	17.08	.797	37.8	33.85	.829

L =	1.64	HMIN =	546.	B =	.2149	B/BEQ =	3.0327	EQPA =	35.05				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T							.0598	.042	.1471	.042	5.4	.1888	.027
90	17.16	2.05	10.71	1.06	3.370	.359	2.770	.261	1.838	.150	6.6	3.083	.135
R	94.72	8.51	66.20	4.84	24.47	1.56	21.81	1.24	14.99	.717	41.0	27.97	.655

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L =	1.65	HMIN =	448.	B =	.2236	B/BEQ =	3.2079	EQPA =	33.34				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7								.0294	.021	4.4	.0177	.013	
90	9.706	1.69	4.517	.685	1.634	.299	1.474	.133	1.149	.103	7.6	1.792	.096
0	38.70	4.34	29.69	3.13	14.29	1.40	17.54	1.04	13.50	.653	45.8	16.26	.522

L =	1.65	HMIN =	347.	B =	.2331	B/BEQ =	3.3624	EQPA =	33.05				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7				.2042	.144			.0368	.027	2.2	.0531	.031	
90			1.654	.551	.5515	.184	.3676	.164	.6250	.107	3.8	.5836	.077
0	18.35	4.13	9.978	2.13			3.064	.497	4.636	.432	33.8	4.476	.319

L =	1.64	HMIN =	251.	B =	.2402	B/BEQ =	3.4084	EQPA =	32.90				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7											1.9		
90			.9191	.411	.1821	.102	.2574	.097	.2101	.047	4.0	.3210	.056
0			4.147	1.47	.4652	.329	1.693	.453	1.786	.316	26.4	1.629	.218

L =	1.65	HMIN =	149.	B =	.2493	B/BEQ =	3.5700	EQPA =	31.96				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7											1.4		
90											5.4		
0								.1897	.109	14.8	.1557	.090	

L =	1.65	HMIN =	4.	B =	.3041	B/BEQ =	4.3627	EQPA =	28.50				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7											19.2		
90											25.4		
0			.0955	.095			.0370	.027	949-5	95-4	152.6	.0201	.010

SATELLITE S73-3, ENERGY SPECTRUM LISTING

L =	1.75	HMIN =	4271.	B =	.0607	B/BEQ =	1.0413	EQPA =	78.51				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T	286.4	4.84	59.55	1.64	33.02	.771	12.57	.297	5.801	.146	19.4	20.98	.205
90	3144	13.1	644.9	3.73	263.5	1.61	31.79	.424	10.71	.165	29.4	164.1	.466
0	27409	66.1	5380	20.8	2117	8.43	149.0	1.49	57.49	695	180.8	1750	2.39
L =	1.74	HMIN =	3598.	B =	.0752	B/BEQ =	1.2746	EQPA =	62.34				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T	134.3	2.03	33.88	.720	28.54	.486	13.54	.218	5.378	.083	46.6	15.17	.113
90	2191	6.83	478.7	2.31	194.6	.903	19.91	.199	13.05	.121	69.8	120.5	.259
0	19509	37.3	4243	12.2	1500	4.80	40.63	.533	68.20	.490	412.2	987.6	1.35
L =	1.74	HMIN =	2617.	B =	.1069	B/BEQ =	1.8159	EQPA =	47.32				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T	16.54	.335	6.776	.713	11.78	.263	9.190	.170	3.217	.076	47.2	6.352	.072
90	881.7	4.19	237.3	1.61	88.47	.641	11.15	.151	3.689	.092	70.8	54.29	.173
0	7363	29.4	1979	8.20	704.0	3.17	15.14	.322	54.46	.431	425.6	422.1	.873
L =	1.74	HMIN =	1769.	B =	.1438	B/BEQ =	2.4248	EQPA =	39.96				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T	1.746	.433	.3151	.129	1.277	.173	3.227	.162	1.593	.088	14.8	2.934	.074
90	295.9	4.35	103.9	1.62	38.74	.718	8.618	.252	4.758	.121	23.8	23.47	.196
0	2624	22.8	871.9	9.22	333.4	3.73	60.40	1.10	31.71	.557	146.6	190.4	.939
L =	1.75	HMIN =	1337.	B =	.1671	B/BEQ =	2.8364	EQPA =	36.06				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T				.6893	.230	1.079	.225	.7230	.034	3.8	.7112	.097	
90	193.5	4.87	51.58	1.69	20.41	.694	6.437	.270	2.921	.140	13.0	14.34	.207
0	1698	29.2	595.7	17.0	217.6	4.61	58.20	1.69	15.30	.614	59.8	172.6	1.30
L =	1.75	HMIN =	942.	B =	.1872	B/BEQ =	3.2115	EQPA =	33.92				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T		.3676	.258			.1961	.098	.0368	.026	2.8	.7973	.037	
90	76.96	4.34	40.93	3.17	11.64	1.09	3.235	.489	1.675	.196	3.6	8.008	.294
0	480.5	21.9	162.7	9.02	55.85	3.84	17.67	2.01	21.95	1.08	27.6	57.81	1.19
L =	1.73	HMIN =	541.	B =	.1941	B/BEQ =	3.2279	EQPA =	33.82				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T								.1838	.092	1.6	.1216	.054	
90	97.06	11.9	26.10	3.10	11.64	1.89	5.294	.441	2.696	.257	2.2	7.586	.366
0	412.2	28.2	275.8	18.3	133.0	8.19			21.77	1.56	10.4	66.46	2.27
L =	1.75	HMIN =	748.	B =	.2037	B/BEQ =	3.4765	EQPA =	32.43				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T					.0368	.037	.0245	.025		3.4	.0279	.016	
90	45.59	3.66	23.77	2.41	5.923	.778	4.265	.560	1.728	.178	3.4	5.286	.246
0	427.5	23.8	151.5	9.78	51.40	3.76	24.54	1.80	12.77	.963	21.8	39.21	1.18
L =	1.74	HMIN =	551.	B =	.2116	B/BEQ =	3.5804	EQPA =	31.90				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T					.0735	.042	.0184	.013		6.0	.0324	.014	
90	23.53	1.96	12.62	1.24	5.247	.448	2.328	.239	1.461	.116	7.4	3.354	.133
0	275.8	13.8	146.1	6.72	59.69	3.31	21.24	1.19	10.12	.606	43.6	31.14	.741
L =	1.75	HMIN =	542.	B =	.2215	B/BEQ =	3.7603	EQPA =	30.95				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
T								.0147	.015	5.4	729-5	72-4	
90	27.34	2.03	5.147	.870	3.217	.405	1.563	.169	.8640	.099	7.4	2.455	.114
0	164.5	9.68	59.60	4.29	25.00	1.80	15.46	.988	8.648	.511	47.8	19.41	.558

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L =	1.76	HMIN =	454.	B =	.2296	B/BEQ =	3.9864	EQPA =	30.08				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T		5.5-100.
											1.0		
90	4.412	1.80	6.801	1.12	1.269	.236	.8098	.172	.8733	.143	4.0	1.245	.110
0	67.22	10.1	45.72	5.76	11.19	1.84			5.878	.653	15.8	10.94	.729

L =	1.74	HMIN =	344.	B =	.2362	B/BEQ =	3.9622	EQPA =	30.15				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T		5.5-100.
											5.2		
90	2.614	.654	.3676	.184	.3064	.306	.3922	.179	.2876	.055	5.6	3890	.052
0	26.39	4.82	3.718	1.17	1.077	.423	3.079	.520	3.238	.347	35.0	3.642	.283

L =	1.75	HMIN =	250.	B =	.2452	B/BEQ =	4.2427	EQPA =	29.04				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T		5.5-100.
											2.8		
90	.4903	.347			.1762	.068	.1307	.046	.1838	.047	8.0	.1410	.026
0	1.659	1.17			.3807	.490	1.340	.716	1.116	.204	36.6	1.175	.157

L =	1.75	HMIN =	143.	B =	.2548	B/BEQ =	4.3937	EQPA =	28.43				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T		5.5-100.
											1.2		
90									.0490	.035	2.0	.0399	.028
0					.6365	.450			.1703	.121	17.8	.1726	.086

L =	1.75	HMIN =	1.	B =	.3103	B/BEQ =	5.3050	EQPA =	25.73				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T		5.5-100.
											17.0		
90	1.743	.308					408-5	41-4	617-5	43-4	28.8	.0473	80-4
0	6.084	1.03					.01c0	.01?	.0370	.018	144.0	.1873	.030

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L = 1.85 HMIN = 4499. B = .0594 B/BEQ = 1.2044 EQPA = 65.67

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	208.2	3.14	30.37	.927	22.76	.499	6.220	.184	2.476	.091	28.0	13.74	.176
90	2541	11.0	506.2	3.36	227.9	1.48	24.66	.317	7.303	.126	33.4	127.7	.396
0	21004	54.9	4489	17.6	1808	7.45	172.8	1.57	44.05	.548	204.4	1075	2.01

L = 1.84 HMIN = 3594. B = .0782 B/BEQ = 1.5728 EQPA = 52.89

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	81.33	1.82	17.84	.588	13.42	.309	6.193	.154	1.761	.061	38.0	7.394	.087
90	1750	7.25	368.2	2.33	161.3	1.07	15.33	.204	5.754	.087	50.4	89.55	.263
0	14320	36.6	3023	11.9	1293	5.05	69.49	.805	36.35	.410	310.2	737.7	1.35

L = 1.84 HMIN = 2581. B = .1117 B/BEQ = 2.2392 EQPA = 41.93

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	11.42	.788	3.575	.322	3.603	.210	3.725	.135	1.099	.053	27.6	2.592	.060
90	756.4	4.81	213.1	1.98	75.72	.726	6.067	.160	3.332	.084	40.4	48.32	.216
0	7366	29.7	1892	10.6	599.8	3.87	21.45	.508	18.95	.339	241.6	397.7	1.11

L = 1.85 HMIN = 1786. B = .1473 B/BEQ = 2.9722 EQPA = 35.45

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	2.353	.589	.2206	.127	.7706	.131	.8937	.121	.4278	.053	10.6	.5203	.148
90	317.4	5.24	103.6	2.42	31.00	.747	4.272	.182	1.860	.090	16.6	19.22	.212
0	2719	28.7	940.9	12.3	276.8	4.24	41.72	1.14	12.75	.444	93.6	175.0	1.20

L = 1.85 HMIN = 1301. B = .1739 B/BEQ = 3.5145 EQPA = 32.24

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7	.1838	.184				.2941	.069	.0840	.030	8.2	.1291	.025
90	173.7	5.05	59.87	1.92	16.77	.683	3.444	.205	1.397	.089	11.6	11.03	.192
0	1213	29.3	407.2	9.96	124.9	3.17	34.75	1.18	13.24	.517	72.6	85.34	.950

L = 1.85 HMIN = 952. B = .1914 B/BEQ = 3.8746 EQPA = 30.53

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7						.1471	.147	.1471	.104	.6	.1945	.112
90	118.4	9.33	35.29	2.34	8.578	.936	2.868	.459	.9559	.187	2.4	7.359	.345
0	1219	59.5					25.25	2.71	4.382	.803	6.2	67.38	2.99

L = 1.85 HMIN = 868. B = .1972 B/BEQ = 3.9725 EQPA = 30.11

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7											1.2		
90	64.71	6.90	42.40	3.22	8.570	1.15	1.912	.375	.5147	.138	2.2	6.313	.334
0			247.1	13.3	44.25	3.49	21.77	1.78	6.981	.695	16.6	34.56	1.26

L = 1.85 HMIN = 742. B = .2074 B/BEQ = 4.2327 EQPA = 29.08

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7											1.4		
90	44.12	4.65	11.03	2.85	3.676	1.06	1.691	.353	1.029	.195	1.8	3.631	.280
0	406.4	34.3	133.5	13.9	32.44	4.22			7.338	1.07	8.2	32.31	1.74

L = 1.83 HMIN = 639. B = .2162 B/BEQ = 4.2637 EQPA = 28.97

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7											3.2		
90	50.49	4.97	13.05	1.55	1.379	.460	1.949	.268	.6618	.156	3.0	3.294	.207
0	388.7	25.0	144.3	11.1			15.54	1.63	5.161	.645	14.0	30.90	1.30

L = 1.85 HMIN = 547. B = .2243 B/BEQ = 4.5185 EQPA = 28.06

PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.
7									.0768	.037	3.9	.0102	.010
90	35.29	5.09	13.73	1.83	2.574	.397	1.324	.197	.4097	.066	4.4	2.034	.134
0	128.9	12.2	93.86	6.71	27.68	2.54	10.64	1.07	3.294	.429	26.2	15.95	.684

SATELLITE S73-3, ENERGY SPECTRUM LISTING

L =	1.84	HMIN =	455.	B =	.2323	B/BEQ =	4.6644	EQPA =	27.58				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
							.0245	.025			5.4	720-5	72-4
90	9.664	1.42	3.971	.764	.7149	.270	.7647	.150	.3125	.076	4.8	.3969	.090
0	85.30	8.23	32.47	3.52	8.276	1.15	4.396	.604	2.570	.324	36.6	7.575	.399

L =	1.86	HMIN =	350.	B =	.2429	B/BEQ =	4.9895	EQPA =	26.60				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
											1.4		
90	5.882	2.08	1.654	.551	.6127	.217	.0490	.049	.2206	.064	3.4	.4348	.071
0	26.33	5.90	19.13	3.55							8.8	4.276	.611

L =	1.88	HMIN =	229.	B =	.2506	B/BEQ =	4.8253	EQPA =	26.78				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
											2.2		
90							11.01	.481	.0613	.027	5.0	4.116	.179
0							69.77	3.02	.8985	.249	22.8	18.12	.781

L =	1.85	HMIN =	154.	B =	.2571	B/BEQ =	5.2385	EQPA =	25.91				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
											4.4		
90									.0245	.017	5.0	.0156	.011
0							.6158	.233	.2268	.101	32.6	.2827	.092

L =	1.85	HMIN =	1.	B =	.3182	B/BEQ =	6.4310	EQPA =	23.22				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
											14.8		
90					957-5	96-4					28.6	136-5	14-4
0					.1100	.063	.0174	.017			164.8	.0186	93-4

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L = 1.98	HMIN = 6073.	B = .0477	B/BEQ = 1.1864	EQPA = 66.65									
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7				2.059	.550	.9926	.191	.6	2.658	.415			
90	1722	50.3	401.5	17.2	196.4	5.48	23.09	1.30			1.2	107.4	1.47
0				125	5	6.36	23.66	1.85			3.8	111.6	4.75
L = 1.95	HMIN = 4580.	B = .0602	B/BEQ = 1.4235	EQPA = 56.35									
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	127.5	2.31	26.65	.783	14.07	.351	2.826	.114	.9083	.044	33.6	7.916	.096
90	2132	9.08	341.7	2.51	173.8	1.17	20.70	.283	4.754	.100	38.0	195.9	.729
0	19688	47.9	3051	13.8	1416	6.14	162.5	1.41	31.09	.441	232.8	897.5	1.72
L = 1.95	HMIN = 3601.	B = .0805	B/BEQ = 1.9005	EQPA = 46.50									
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	64.30	1.59	9.865	.550	8.119	.336	2.004	.111	.6589	.043	25.8	4.385	.081
90	1449	7.49	270.6	2.23	129.7	.929	11.37	.197	2.074	.057	42.8	63.34	.251
0	12996	40.3	2633	12.8	1196	5.61	83.07	1.02	11.23	.264	231.6	662.6	1.48
L = 1.94	HMIN = 2615.	B = .1134	B/BEQ = 2.6690	EQPA = 37.74									
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	35.42	1.33	4.413	.384	1.195	.175	1.211	.092	.3798	.029	22.5	1.515	.051
90	871.9	7.31	172.2	1.90	80.70	.751	3.791	.132	.9113	.045	31.4	37.42	.215
0	6701	32.9	1614	11.3	577.8	4.36	22.44	.598	5.742	.217	132.8	343.8	1.20
L = 1.95	HMIN = 1776.	B = .1528	B/BEQ = 3.6130	EQPA = 31.74									
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	1.471	.600	.3151	.182		.3676	.116	.1471	.047	4.8	.2350	.044	
90	334.5	7.39	97.55	2.82	17.07	.864	2.731	.240	.5229	.065	8.2	19.15	.293
0	2794	39.5	706.0	13.9	155.9	4.39	18.90	1.06	4.696	.366	50.8	141.0	1.66
L = 1.94	HMIN = 1256.	B = .1799	B/BEQ = 4.2276	EQPA = 29.10									
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	.2101	.217	.1050	.105		.0735	.042	.0420	.021	6.0	.0584	.019	
90	225.1	5.25	57.22	1.56	11.64	.524	2.014	.151	.6052	.059	13.4	10.96	.179
0	1607	26.2	504.5	10.5	114.8	3.17	18.50	.876	4.438	.306	68.6	99.27	1.01
L = 1.96	HMIN = 953.	B = .1961	B/BEQ = 4.7161	EQPA = 27.42									
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7											1.8		
90	137.7	8.22	38.92	2.66	4.902	1.23	2.059	.550	.2696	.081	2.2	7.781	.371
0	959.6	40.5	180.5	12.8	41.62	3.85	11.03	1.46	3.580	.599	16.0	45.65	1.50
L = 1.95	HMIN = 842.	B = .2044	B/BEQ = 4.8631	EQPA = 25.97									
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7											1.0		
90	89.71	6.63	46.57	3.38	4.442	.583	.7547	.150	.2819	.059	4.2	4.446	.203
0	779.4	33.5	320.8	15.3			10.45	1.23	2.032	.384	16.0	51.79	1.58
L = 1.95	HMIN = 755.	B = .2106	B/BEQ = 5.0415	EQPA = 26.45									
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
15											1.4		
90				3.676	1.06						.2	2.334	.674
0	232.2	36.7	148.0	20.7	24.19	6.98			2.003	.318	3.6	24.10	2.27
L = 1.95	HMIN = 650.	B = .2198	B/BEQ = 5.2295	EQPA = 25.93									
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7											1.5		
90	60.29	6.66	5.147	1.95	3.370	1.02	1.029	.275	.1225	.055	1.8	2.572	.236
0	274.7	24.9	100.5	10.6	21.17	3.02	5.582	1.12	1.572	.436	13.0	17.72	1.92

SATELLITE S73-7. ENERGY SPECTRUM LISTING

L = 1.04 HMIN = 547. B = .2280 B/BEQ = 5.3331 EQPA = 25.55													
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
											1.2		
90	22.06	4.03	11.76	1.70	3.523	.735	.2941	.120			2.2	1.892	.183
0					34.94	4.85	1.742	.711	.4754	.251	5.8	8.077	1.03
L = 1.04 HMIN = 447. B = .2363 B/BEQ = 5.5530 EQPA = 25.11													
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
											2.4		
90	21.18	2.50	9.139	.980	1.107	.260	.4412	.180	.2574	.097	4.2	1.760	.128
0	167.3	14.6	61.84	6.25	8.151	1.46	2.907	.581	1.226	.262	24.0	9.887	.562
L = 1.05 HMIN = 349. B = .2443 B/BEQ = 5.7677 EQPA = 24.61													
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
											2.0		
90			1.593	.442	.3064	.153	.1176	.059	.1471	.042	4.2	.3057	.057
0	14.51	4.38	15.15	3.09	7.625	1.42	1.742	.503	1.179	.327	20.8	3.236	.348
L = 1.05 HMIN = 251. B = .2549 B/BEQ = 6.1114 EQPA = 23.86													
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
											3.2		
90	.5882	.416							.1471	.060	2.8	.1112	.039
0	4.147	2.39			1.152	.576	.7573	.309	.4838	.171	21.6	.7466	.163
L = 1.04 HMIN = 139. B = .2624 B/BEQ = 6.0907 EQPA = 23.83													
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
											2.6		
90									.0210	.015	2.6	.0299	.021
0									.5806	.237	15.8	.2916	.119
L = 1.05 HMIN = 2. B = .3212 B/BEQ = 7.6184 EQPA = 21.24													
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
											19.4		
90							420-5	42-4			29.0	134-5	13-4
0	.1668	.167			.1025	.059	.0326	.023	.0164	.012	176.0	.0349	.012

SATELLITE S73-3, ENERGY SPECTRUM LISTING

L =	2.12	HMIN =	6224.	B =	.0492	B/BEQ =	1.5028	EQPA =	54.55				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	176.7	4.16	19.71	1.20	13.60	.646	1.516	.131	.1961	.040	11.4	9.119	.176
90	1630	12.6	223.1	3.42	111.7	1.51	17.08	.456	4.186	.143	14.2	78.28	.463
0	13787	69.0	1859	18.0	394.0	7.38	169.1	2.40	37.91	.814	94.0	641.9	2.42

L =	2.09	HMIN =	4557.	B =	.0634	B/BEQ =	1.8687	EQPA =	47.01				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	98.69	1.48	17.98	.441	6.976	.181	.8363	.043	.1591	.017	66.6	4.730	.053
90	1397	5.38	188.8	1.35	103.7	.641	14.07	.170	2.439	.048	74.8	63.66	.182
0	11883	27.7	1558	6.95	912.0	3.44	121.1	.877	20.36	.256	467.6	555.8	.360

L =	2.09	HMIN =	3559.	B =	.0852	B/BEQ =	2.4861	EQPA =	39.36				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	44.23	1.29	12.46	.473	2.952	.166	.5556	.048	.0873	.014	36.4	2.554	.052
90	1001	5.32	160.3	1.52	85.51	.703	6.536	.135	.7015	.032	51.6	43.32	.131
0	9124	29.6	1369	8.12	743.9	3.88	49.02	.692	5.708	.167	239.8	426.4	1.05

L =	2.09	HMIN =	2647.	B =	.1162	B/BEQ =	3.3955	EQPA =	32.87				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	7.402	.602	2.131	.231	.7813	.091	.3493	.040	.0528	.011	30.6	.5251	.026
90	640.1	4.85	119.2	1.57	44.68	.585	1.876	.085	.1961	.019	39.6	23.61	.171
0	6002	26.9	1124	8.39	390.6	3.14	12.26	.390	1.921	.100	234.9	273.3	.945

L =	2.08	HMIN =	1745.	B =	.1584	B/BEQ =	4.5690	EQPA =	27.89				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7					1021	.102	.0490	.049	.0184	.018	2.8	.0417	.024
90	309.8	6.44	65.39	2.46	19.35	.920	1.176	.139	.1261	.036	8.4	16.49	.276
0	2949	40.6	747.1	14.6	142.9	4.12	11.09	.802	1.764	.224	51.0	141.0	1.46

L =	2.09	HMIN =	1230.	B =	.1877	B/BEQ =	5.5165	EQPA =	25.20				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	.5882	.294							.0184	.013	9.4	.0238	97-4
90	193.9	4.68	53.16	1.98	7.496	.391	.8007	.081	.1211	.023	14.2	6.690	.135
0	1141	19.3	355.2	7.70	72.50	2.24	8.448	.525	1.178	.142	87.4	61.49	.735

L =	2.09	HMIN =	943.	B =	.2001	B/BEQ =	5.8472	EQPA =	24.43				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7							.0735	.052			3.0	.0259	.018
90	177.1	7.22	35.42	2.08	6.740	.587	.6773	.125	.0735	.042	5.2	7.871	.243
0	1187	33.9	335.6	12.1	54.81	3.22	4.307	.635	.7359	.193	31.4	57.30	1.18

L =	2.09	HMIN =	848.	B =	.2038	B/BEQ =	6.1015	EQPA =	23.83				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7							.0490	.049			3.2	.0122	.012
90	98.77	4.92	21.13	1.95	2.451	.388	.7353	.190	.1324	.044	5.0	5.610	.209
0	917.9	30.3	198.4	9.80	20.87	2.02	3.175	.537	1.113	.232	30.4	37.69	.976

L =	2.10	HMIN =	751.	B =	.2171	B/BEQ =	6.4820	EQPA =	23.13				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7											2.0		
90	79.62	4.09	21.08	1.61	3.728	.436	.5147	.097	.0919	.029	7.0	3.679	.143
0	637.3	20.7	193.2	9.17	28.73	1.99	3.540	.501	.7788	.166	42.2	32.46	.759

L =	2.13	HMIN =	651.	B =	.2255	B/BEQ =	6.9566	EQPA =	22.78				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7											1.2		
90	74.71	4.10	9.069	1.49	2.859	.540	.2357	.087			3.6	1.545	.129
0	557.1	27.7	112.0	8.80	18.45	2.36	1.379	.511	.4838	.183	21.0	23.70	.931

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L =	2.09	HMIN =	549.	B =	.2329	B/BEQ =	6.6985	EQPA =	22.73				
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7						1.6							
90	47.79	4.19	11.76	2.09	1.940	.445	.2206	.127	.2696	.081	2.8	2.709	.134
0	358.7	27.3	65.31	9.23	12.89	2.90	2.903	.704	1.708	.382	15.6	15.11	.863
L =	2.10	HMIN =	451.	B =	.2420	B/BEQ =	7.1431	EQPA =	21.97				
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7						2.0							
90	13.24	2.55	6.618	1.56	1.838	.336	.1113	.064	.0735	.042	3.4	.3258	.103
0	102.3	11.9	64.59	6.85	10.82	1.86	2.220	.616	.5576	.226	18.8	8.864	.502
L =	2.08	HMIN =	350.	B =	.2491	B/BEQ =	7.1852	EQPA =	21.90				
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7						2.4							
90	3.922	1.39	2.500	.606		.1361	.096	.0368	.037		3.2	.3647	.067
0	58.06	9.18	20.32	3.84		1.319	.417	.5273	.187		16.8	3.931	.424
L =	2.08	HMIN =	244.	B =	.2571	B/BEQ =	7.3839	EQPA =	21.59				
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7						2.7							
90	2.451	1.10	.7353	.329	.0613	.061	.1471	.074	.0123	.012	4.6	.1353	.034
0			7.547	2.09	1.628	.615	.7257	.296	.1314	.105	19.8	1.125	.209
L =	2.08	HMIN =	145.	B =	.2667	B/BEQ =	7.7486	EQPA =	21.05				
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7						4.2							
90						.0210	.021	.0294	.021		6.0	.0195	.011
0						.1569	.111	.1177	.068		36.2	.1061	.047
L =	2.09	HMIN =	0.	B =	.3324	B/BEQ =	9.7833	EQPA =	18.65				
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7			.0118	.012							33.0	118-5	12-4
90						86.06	.475	565-5	28-4		56.4	23.61	.125
0						295.5	1.67	.0438	.014		333.4	75.53	.417

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L =	2.30	HMIN =	6426.	B =	.0492	B/BEQ =	1.9303	EQPA =	46.03			
PA/EGY=	5.5-8.	8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	94.58	2.95	12.60	.786	5.396	.303	.7956	.086	.0775	.018	16.6	4.005	.097
90	849.2	7.07	80.73	1.57	51.02	.791	9.960	.268	2.255	.036	22.8	39.72	.260
0	8061	44.0	678.5	8.35	446.9	4.71	83.25	1.41	17.89	.459	122.2	335.5	1.45
L =	2.29	HMIN =	4697.	B =	.0646	B/BEQ =	2.4983	EQPA =	39.25			
PA/EGY=	5.5-8.	8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	74.00	1.39	9.714	.722	3.956	.146	.2713	.026	.0319	62-4	59.4	2.962	.044
90	708.6	3.63	70.80	.931	46.78	.459	7.452	.125	1.199	.037	68.2	33.55	.138
0	6223	21.0	621.0	4.75	418.4	2.47	64.47	.671	9.915	.188	409.8	273.1	.715
L =	2.30	HMIN =	3511.	B =	.0912	B/BEQ =	3.5502	EQPA =	32.05			
PA/EGY=	5.5-8.	8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	22.77	1.04	5.504	.351	.7564	.085	.1858	.030	446-5	32-4	32.0	1.031	.035
90	530.4	4.53	60.86	.976	38.07	.527	2.784	.096	.3502	.026	41.8	22.17	.144
0	5253	24.8	575.4	5.81	372.1	3.02	22.02	.515	2.812	.130	244.6	226.4	.343
L =	2.28	HMIN =	2654.	B =	.1213	B/BEQ =	4.6298	EQPA =	27.69			
PA/EGY=	5.5-8.	8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	11.48	1.16	1.244	.265	.4667	.038	.2022	.043	.0226	.011	13.3	.4398	.035
90	467.5	5.72	58.17	1.50	33.70	.732	.3478	.086	.0539	.016	17.8	21.72	.218
0	4152	32.8	549.9	8.60	295.8	3.41	3.835	.320	.3149	.066	108.4	169.5	1.10
L =	2.29	HMIN =	1693.	B =	.1676	B/BEQ =	6.3436	EQPA =	23.33			
PA/EGY=	5.5-8.	8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
15	6.513	1.17	.8403	.797	.0875	.062	.0570	.036	.0210	.015	7.0	.2557	.038
90	263.2	9.84	51.96	3.67	7.966	.791	.3579	.102			4.2	9.671	.299
0	2217	50.7	364.1	15.2	73.62	4.40	2.903	.593			24.0	89.27	1.69
L =	2.27	HMIN =	1254.	B =	.1931	B/BEQ =	7.2929	EQPA =	21.73			
PA/EGY=	5.5-8.	8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7										5.2		
90	162.4	5.15	31.20	1.31	6.189	.616	.1838	.082	.0245	.025	5.6	9.712	.250
0	1874	39.4	312.7	11.4	34.61	2.41	1.451	.342	.4562	.138	35.4	70.46	1.24
L =	2.31	HMIN =	956.	B =	.2084	B/BEQ =	8.2406	EQPA =	20.39			
PA/EGY=	5.5-8.	8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	.4902	.347								5.0	.0156	.011
90	98.53	5.38	32.72	2.00	1.915	.271	.1471	.074	.0368	.026	5.4	4.741	.185
0	945.4	27.2	212.3	9.38	19.87	1.85	.9391	.283	.2483	.102	35.2	40.34	.938
L =	2.27	HMIN =	843.	B =	.2140	B/BEQ =	7.9364	EQPA =	20.72			
PA/EGY=	5.5-8.	8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7										1.4		
90	136.8	14.2	20.15	1.72	2.528	.440	.3431	.130			3.2	3.293	.200
0	1023	41.8	245.8	14.9			2.709	.724	.2561	.148	13.0	52.40	1.76
L =	2.29	HMIN =	746.	B =	.2231	B/BEQ =	8.5490	EQPA =	20.00			
PA/EGY=	5.5-8.	8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7										3.0		
90	51.96	5.05	16.18	3.45	2.298	.593	.1471	.104	.0368	037	2.0	2.840	.235
0	374.3	23.9	82.50	7.94	8.275	1.62	1.016	.364	.2992	.132	19.2	15.56	.789
L =	2.28	HMIN =	647.	B =	.2315	B/BEQ =	8.8359	EQPA =	19.65			
PA/EGY=	5.5-8.	8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7										3.0		
90	61.76	3.37	10.29	.917	.9191	.188	.1050	.047	.0245	.017	7.5	2.524	.114
0	517.9	19.9	92.43	5.94	10.58	1.26	.8403	.253	.3266	.109	38.8	19.99	.529

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L =	2.32	HMIN =	556.	B =	.2404	B/BEQ =	9.6302	EQPA =	18.80				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
											1.6		
90	44.12	4.03	8.353	1.01	1.174	.245	.0588	.042	.0123	.012	5.4	1.542	.105
0	226.9	13.2	62.69	5.02	7.430	1.13	.3923	.175	.0785	.055	36.6	10.53	.470
L =	2.31	HMIN =	446.	B =	.2503	B/BEQ =	9.8716	EQPA =	18.56				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
											1.4		
90	41.91	5.55	4.657	1.07	.1537	.153					2.8	1.070	.122
0	150.9	17.1	28.12	5.05	4.158	1.25	.1708	.171	.2561	.148	16.2	5.878	.528
L =	2.27	HMIN =	329.	B =	.2569	B/BEQ =	9.6384	EQPA =	18.78				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
											.6		
90	7.353	1.90	2.206	.901	.3064	.217	.1471	.147			1.9	.5137	.106
0					3.299	1.35	.7257	.419	.1319	.132	6.8	1.129	.357
L =	2.33	HMIN =	260	B =	.2662	B/BEQ =	10.7747	EQPA =	17.74				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
											1.2		
90											1.0		
0	3.225	3.23	1.451	1.45					.1814	.181	7.0	.3231	.190
L =	2.26	HMIN =	131.	B =	.2726	B/BEQ =	10.1195	EQPA =	18.32				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
											.8		
90											2.2		
0									.2233	.158	8.2	.1873	.132
L =	2.29	HMIN =	0.	B =	.3452	B/BEQ =	13.3851	EQPA =	15.85				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	.0408	.041									32.4	120-5	12-4
90	.0263	.026			12.07	.267	748-5	43-4	306-5	22-4	53.4	1.436	.033
0					40.34	.891	.0752	.027	.0236	.011	396.6	5.152	.114

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L =	2.50	HMIN =	6444.	B =	.0518	B/BEQ =	2.6136	EQPA =	30.21				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	47.67	1.57	6.353	.424	3.257	.192	.2899	.039	.0753	.010	26.4	1.991	.054
90	316.3	4.23	23.96	.779	13.38	.437	4.016	.147	.7692	.047	28.0	13.06	.135
0	3129	23.0	172.7	3.82	146.6	2.24	32.90	.741	6.237	.227	173.8	121.2	.732
L =	2.49	HMIN =	4753.	B =	.0668	B/BEQ =	3.3261	EQPA =	33.25				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	36.80	1.14	4.209	.257	1.948	.103	.1798	.027	.0266	6E-4	48.6	1.405	.034
90	325.6	2.95	26.16	.586	18.52	.310	2.702	.082	.3971	.023	56.8	13.10	.095
0	3133	16.5	220.3	3.07	165.4	1.71	22.71	.437	3.132	116	338.2	122.4	.527
L =	2.49	HMIN =	3569.	B =	.0934	B/BEQ =	4.6225	EQPA =	27.72				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	19.72	.987	1.863	.214	.2829	.058	.1318	.026	.0141	6E-4	28.0	.7986	.031
90	276.4	3.51	25.28	.801	17.83	.427	1.244	.072	.0897	.013	37.6	10.76	.112
0	2457	18.6	248.1	4.25	159.5	2.19	8.523	.749	.7836	.075	201.8	102.3	.624
L =	2.49	HMIN =	2671.	B =	.1256	B/BEQ =	6.2238	EQPA =	23.63				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7	5.000	.857	.6434	.243			.0134	.018	.0147	.015	7.6	.2201	.034
90	251.1	5.14	25.74	1.38	11.31	.537	.3046	.057	.0327	.016	11.8	10.60	.187
0	2449	33.9	273.7	7.94	89.39	2.91	5.806	.517	.1340	.055	63.4	90.80	1.05
L =	2.50	HMIN =	1550.	B =	.1745	B/BEQ =	8.7098	EQPA =	19.81				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
15	4.412	1.47									2.6	.1347	.045
90	130.1	9.78	19.12	2.65	4.136	.796	.1471	.104			2.0	5.019	.312
0	1164	57.6	197.1	17.4	24.79	3.87	1.847	.698			10.2	42.01	1.79
L =	2.49	HMIN =	1359.	B =	.1892	B/BEQ =	9.3980	EQPA =	19.04				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7											1.2		
90	99.53	6.02	19.49	1.89	1.838	.375	.0490	.049	.0245	.025	3.6	4.323	.216
0	825.7	38.6	167.3	11.3	13.69	2.09	.4593	.265	.1528	.108	18.8	34.35	1.19
L =	2.47	HMIN =	929.	B =	.2142	B/BEQ =	10.3220	EQPA =	18.13				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7											1.4		
90	48.53	8.45			.9191	.375	.0508	.042	.0147	.015	2.6	.6235	.097
0	722.0	19.5	76.84	8.10	8.693	1.91	.9071	.406			13.2	14.43	.316
L =	2.50	HMIN =	856.	B =	.2238	B/BEQ =	11.2920	EQPA =	17.31				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7											3.2		
90	57.36	7.35	4.902	.633	.4979	.138	.0210	.021			6.8	1.877	.104
0	533.3	23.5	91.48	6.34	3.913	.874	.3415	.171	.0484	.048	32.8	22.36	.724
L =	2.49	HMIN =	758.	B =	.2390	B/BEQ =	11.4661	EQPA =	17.18				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7											.2		
90	43.38	5.65	6.618	1.56	1.532	.484					2.0	1.692	.191
0											1.6		
L =	2.47	HMIN =	641.	B =	.2392	B/BEQ =	11.5331	EQPA =	17.09				
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.	
7											2.0		
90	34.56	5.04					.0735	.074	.0368	037	1.2	1.599	.227
0	142.5	19.4	18.47	4.94	6.048	1.91	.5806	.411			8.4	7.314	.818

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L =	2.48	HMIN =	543.	B =	.2470	B/BEQ =	12.1510	EQPA =	16.57			
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
90	31.76	3.06	3.493	.567	.3064	.108	.0490	.049	.0134	.018	2.6 5.6	1.034 .087
0	287.2	17.3	40.26	4.34	1.756	.585	.3746	.187	.0907	.064	30.6	9.486 .488
L =	2.50	HMIN =	451.	B =	.2555	B/BEQ =	12.7681	EQPA =	16.25			
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
90	6.417	.926	3.431	.648	.0613	.061	.0245	.025			2.2 7.4	.4101 .046
0	94.00	8.05	15.60	2.38	.9075	.370	.0764	.076			39.6	3.607 .264
L =	2.52	HMIN =	354.	B =	.2659	B/BEQ =	13.7410	EQPA =	15.55			
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
90	4.412	1.47	.3676	.768							1.4 2.8	.1389 .044
0	30.43	6.65	3.056	1.53	.6366	.450			.0660	.066	20.2	1.064 .201
L =	2.42	HMIN =	209	B =	.2747	B/BEQ =	12.4624	EQPA =	16.46			
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
15											.2	
90											0.0	
0											.4	
L =	2.51	HMIN =	167.	B =	.2816	B/BEQ =	14.3796	EQPA =	15.29			
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
90											1.6 1.2	
0	3.629	3.63									8.9	.0873 .087
L =	2.49	HMIN =	0.	B =	.3613	B/BEQ =	19.0117	EQPA =	13.63			
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
90											24.8 44.0	
0	.3389	.196					.0113	.011	.0221	.011	257.6	.0238 94-4

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L = 2.70 HMIN = 6529. B = .0529 B/BEQ = 3.3473 EQPA = 33.13												
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	27.90	1.11	2.194	.231	.4596	.065	.1773	.030	.0319	38-4	30.4	1.028 .036
90	147.5	2.53	7.983	.410	5.490	.213	.7430	.054	.1356	.019	35.2	5.200 .076
0	1216	12.8	60.86	2.09	55.63	1.29	5.264	.270	.8594	.078	207.4	45.73 .410
L = 2.69 HMIN = 4788. B = .0692 B/BEQ = 4.3708 EQPA = 28.72												
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	15.33	.751	1.783	.182	.1129	.030	.1630	.025	.0155	55-4	38.2	.5795 .024
90	141.9	2.13	7.335	.358	5.572	.189	.4051	.074	.0573	87-4	49.0	4.700 .061
0	1356	11.8	72.36	1.94	52.87	1.07	2.550	.183	.4955	.050	280.5	47.61 .361
L = 2.69 HMIN = 7587. B = .0968 B/BEQ = 6.0952 EQPA = 23.91												
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	5.031	.624	.3676	.130	.0161	.016	.0560	.020	.0175	78-4	19.2	.1767 .019
90	118.0	2.43	8.118	.489	3.196	.138	.1662	.033	.0602	.014	24.6	4.471 .084
0	1187	15.3	88.12	3.02	28.24	1.11	1.928	.204	.2073	.048	136.8	40.53 .479
L = 2.70 HMIN = 2747. B = .1267 B/BEQ = 7.9916 EQPA = 20.72												
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	1.471	.600			.0234	.029					6.4	.0476 .016
90	110.9	5.71	9.436	1.08	1.264	.290	.1471	.060	.0735	.028	6.4	3.039 .136
0	1055	26.1	94.12	5.27	1306	13.6	72.78	2.24	.4726	.126	43.4	216.9 1.96
L = 2.70 HMIN = 1283. B = .1978 B/BEQ = 12.4484 EQPA = 16.46												
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7											1.0	
90	18.82	2.35	4.559	.819	.1838	.106	.0490	.049	.0245	.025	4.2	.3263 .093
0	294.9	18.5	32.05	4.40	1.764	.667	.6310	.282	.1914	.105	24.0	10.30 .574
L = 2.68 HMIN = 843. B = .2283 B/BEQ = 14.0497 EQPA = 15.47												
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7											1.5	
90	24.26	4.22	2.574	.973			.0735	.074			2.4	.6646 .104
0	133.5	16.1	16.59	4.15			.1935	.194	.0954	.085	12.2	5.476 .587
L = 2.70 HMIN = 755. B = .2394 B/BEQ = 15.2182 EQPA = 14.85												
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7											4.2	
90	17.53	1.93	2.941	1.04			.0588	.042			4.0	.5447 .073
0	73.61	8.74	8.008	2.90	.2085	.209	.2002	.142	.1451	.084	29.0	2.463 .255
L = 2.71 HMIN = 643. B = .2510 B/BEQ = 16.0901 EQPA = 14.44												
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7											.6	
90	1.471	1.47	.7353	.735	.3064	.706					1.4	.0634 .048
0	82.25	10.9									3.6	3.626 .330
L = 2.70 HMIN = 534. B = .2578 B/BEQ = 15.2425 EQPA = 14.37												
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7											.5	
90	8.824	3.60	1.471	1.04							1.6	.1945 .069
0	39.58	10.2	8.053	3.61	1.210	.955					6.0	2.816 .500
L = 2.69 HMIN = 476. B = .2651 B/BEQ = 16.5169 EQPA = 14.24												
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7											2.6	
90	2.574	.973	1.287	.486							4.0	.1362 .036
0	33.49	6.12	5.225	1.74	.2419	.242			.0559	.056	25.6	1.230 .192

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L =	2.90	HMIN =	6590.	B =	.0537	B/BEQ =	4.2041	EQPA =	29.19			
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7	7.647	.567	.2709	.072	.0749	.023	.1476	.022	.0258	72-4	39.6	.2574 .016
90	43.75	1.27	1.919	.186	.3707	.084	.2703	.033	.0716	.012	38.8	1.514 .039
0	344.4	6.50	22.67	1.17	5.754	.775	1.125	.117	.4269	.051	240.8	11.44 .191
L =	2.89	HMIN =	4825.	B =	.0715	B/BEQ =	5.5745	EQPA =	25.06			
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7	5.147	.459	.2636	.081	.0255	.018	.0759	.019	.0245	71-4	31.4	.2069 .016
90	45.23	1.34	2.647	.208	.2716	.043	.1321	.025	.0618	.010	42.4	1.310 .035
0	355.5	6.68	26.32	1.24	7.011	.278	1.445	.137	.2965	043	235.4	11.51 .194
L =	2.89	HMIN =	3650.	B =	.0983	B/BEQ =	7.6401	EQPA =	21.21			
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7	1.996	.459	.0919	.055		.0490	.022	566-5	57-4	15.6	7677	.013
90	30.31	1.57	2.528	.341	.1094	.049	.1746	.040	.0525	.017	15.6	1.147 .053
0	260.7	8.49	22.83	1.79	1.362	.282	1.172	.181	.5303	.086	174.2	8.910 .256
L =	2.89	HMIN =	2857.	B =	.1253	B/BEQ =	9.7487	EQPA =	18.58			
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7	.4902	.490			.0245	.025					4.8	.0162 .011
90	25.15	1.92	1.576	.407	.2042	.102	.0735	.042	.0123	.012	7.0	1.078 .077
0	304.4	15.5	29.03	3.52	2.382	.661	1.076	.299	.3519	.124	34.4	10.94 .494
L =	2.90	HMIN =	1156.	B =	.2123	B/BEQ =	16.5692	EQPA =	14.22			
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7									.8			
90	.7353	.735	.7353	.425		.0294	.029				3.8	.0512 .023
0	18.87	5.23	4.838	1.83	.2880	.298	.2639	.187			15.8	1.051 .219
L =	2.86	HMIN =	813.	B =	.2353	B/BEQ =	17.6941	EQPA =	13.75			
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7									.6			
90							.0735	074		.6	.0548	.065
0		6.220	3.59	.8639	.864		.2077	.207		4.2	.9142	.409
L =	2.89	HMIN =	732.	B =	.2476	B/BEQ =	19.1941	EQPA =	13.20			
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7									2.4			
90	1.471	.849	.9804	.490						3.6	.0756	.029
0	23.50	5.70	4.838	1.98						18.6	.3496	.138
L =	2.92	HMIN =	666.	B =	.2554	B/BEQ =	20.3316	EQPA =	12.79			
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7									1.6			
90	5.882	2.94	.7676	.368			.0368	.037		2.2	.1061	.043
0		2.233	1.58	.4032	.403					8.6	.2679	.155
L =	2.90	HMIN =	529.	B =	.2575	B/BEQ =	21.0731	EQPA =	12.58			
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7									.8			
90	1.471	1.04	.7353	.425						2.2	.0884	.040
0	26.39	8.35	4.466	2.23						9.6	1.120	.299
L =	2.88	HMIN =	417.	B =	.2763	B/BEQ =	21.3188	EQPA =	12.51			
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7									.4			
90	1.471	1.47	.7676	.368						2.2	.0754	.025
0	5.286	4.11								4.0	.3340	.272

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L =	3.24	HMIN =	4686.	B =	.0546	B/BEQ =	5.9945	EQPA =	24.11			
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.
7	.8490	.113	.0566	.020	578-5	56-4	.0505	87-4	.0110	28-4	98.8	.7457 42-4
90	4.751	.259	.3238	.047	.0300	95-4	.1612	.015	.0662	67-4	105.8	.2232 91-4
0	41.77	1.38	2.415	.235	.0577	.023	1.130	.072	.5284	.035	677.2	1.821 .047

L =	3.24	HMIN =	4849.	B =	.0752	B/BEQ =	8.2103	EQPA =	20.43			
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.
7	.7675	.102	.0273	.017	444-5	44-4	.0498	.011	649-5	26-4	63.4	.0270 41-4
90	4.060	.290	.3003	.056	.0266	.011	.1331	.016	.0726	82-4	72.8	.2009 .010
0	37.05	1.57	2.633	.298	.1783	.049	1.038	.084	.6767	.046	444.0	1.790 .056

L =	3.22	HMIN =	3632.	B =	.1079	B/BEQ =	11.1743	EQPA =	17.44			
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.
7	.1337	.077					.0226	.011			28.2	956-5 37-4
90	3.952	.426	.1716	.065	928-5	93-4	.6595	.054	.0712	.013	32.0	.3319 .020
0	34.63	2.26	2.042	.396	15.92	.701	2.722	.202	.5715	.056	195.6	4.067 .126

L =	3.18	HMIN =	2901.	B =	.1284	B/BEQ =	13.3021	EQPA =	15.31			
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.
7	.0804	.597									2.2	.0354 .025
90	1.638	.822					.0588	.042	.0368	.026	4.2	.0834 .028
0	1.210	1.21	1.262	.092	.2880	.288	.6111	.306	.3958	.162	21.8	.4932 .132

L =	3.07	HMIN =	1101.	B =	.2207	B/BEQ =	20.4683	EQPA =	12.77			
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.
15											2.4	
90	1.471	1.47									1.2	.0324 .032
0	7.257	5.13									7.2	.2133 .151

L =	3.20	HMIN =	950.	B =	.2349	B/BEQ =	24.7517	EQPA =	11.60			
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.
7											1.4	
90	1.103	.637									3.8	.0307 .018
0	5.529	2.76			.3024	.302					20.8	.1846 .087

L =	3.41	HMIN =	867.	B =	.2488	B/BEQ =	31.7104	EQPA =	10.23			
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.
7											.6	
90											2.2	
0							.2419	.242			7.2	.1067 .107

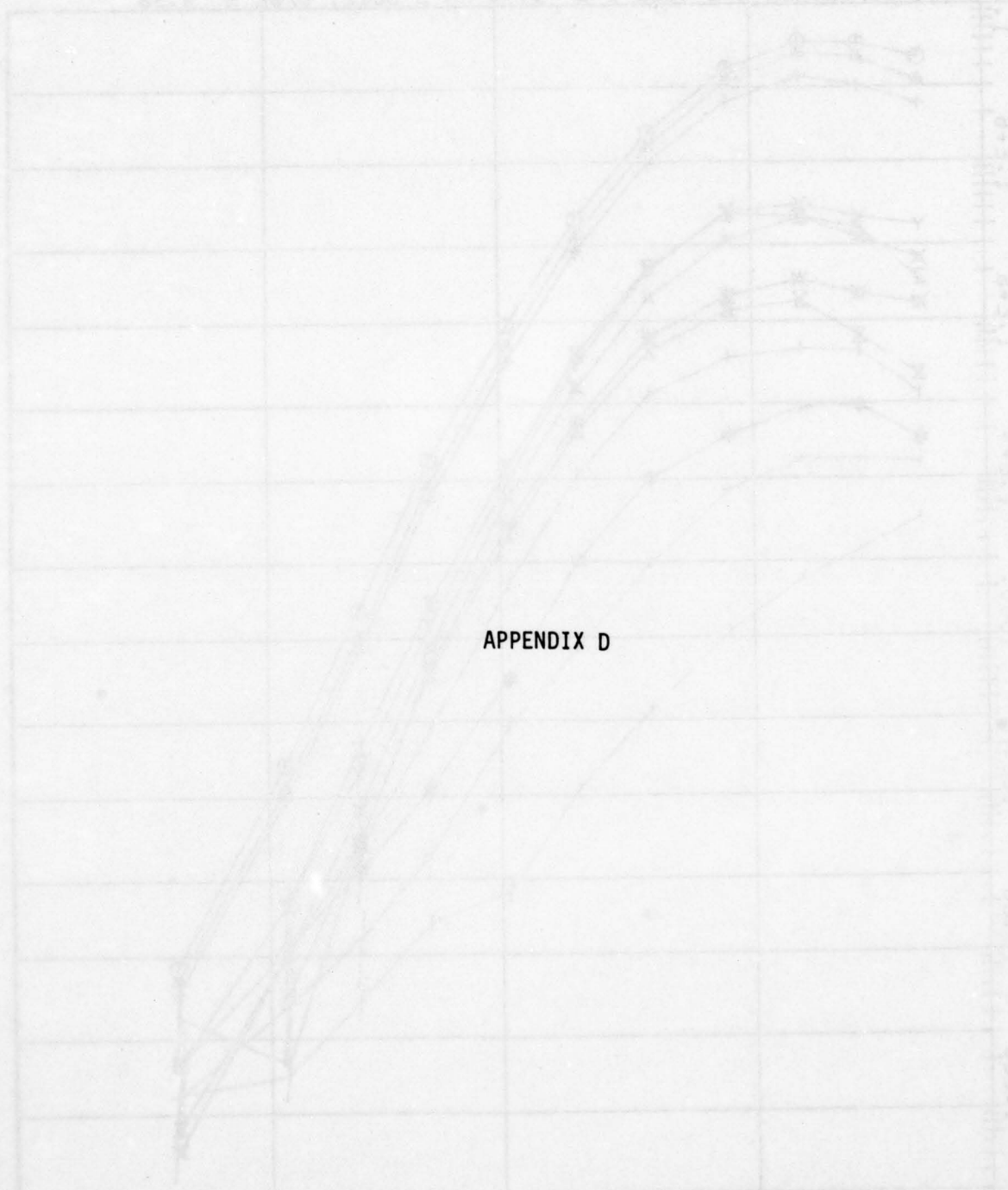
L =	3.19	HMIN =	743.	B =	.2547	B/BEQ =	25.6870	EQPA =	11.15			
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.
7											1.2	
90	.5882	.416			.0613	.061	.0368	.037	.0184	.018	4.4	.0442 .020
0	2.903	2.05					.1528	.153	.0691	.069	16.0	.1320 .096

L =	3.22	HMIN =	659	B =	.2676	B/BEQ =	28.7038	EQPA =	10.75			
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.
7											4.4	
90	.3676	.212					.0588	.042			7.6	.0256 .011
0	4.147	1.69	.3456	.346			.1382	.098			41.8	.1653 .055

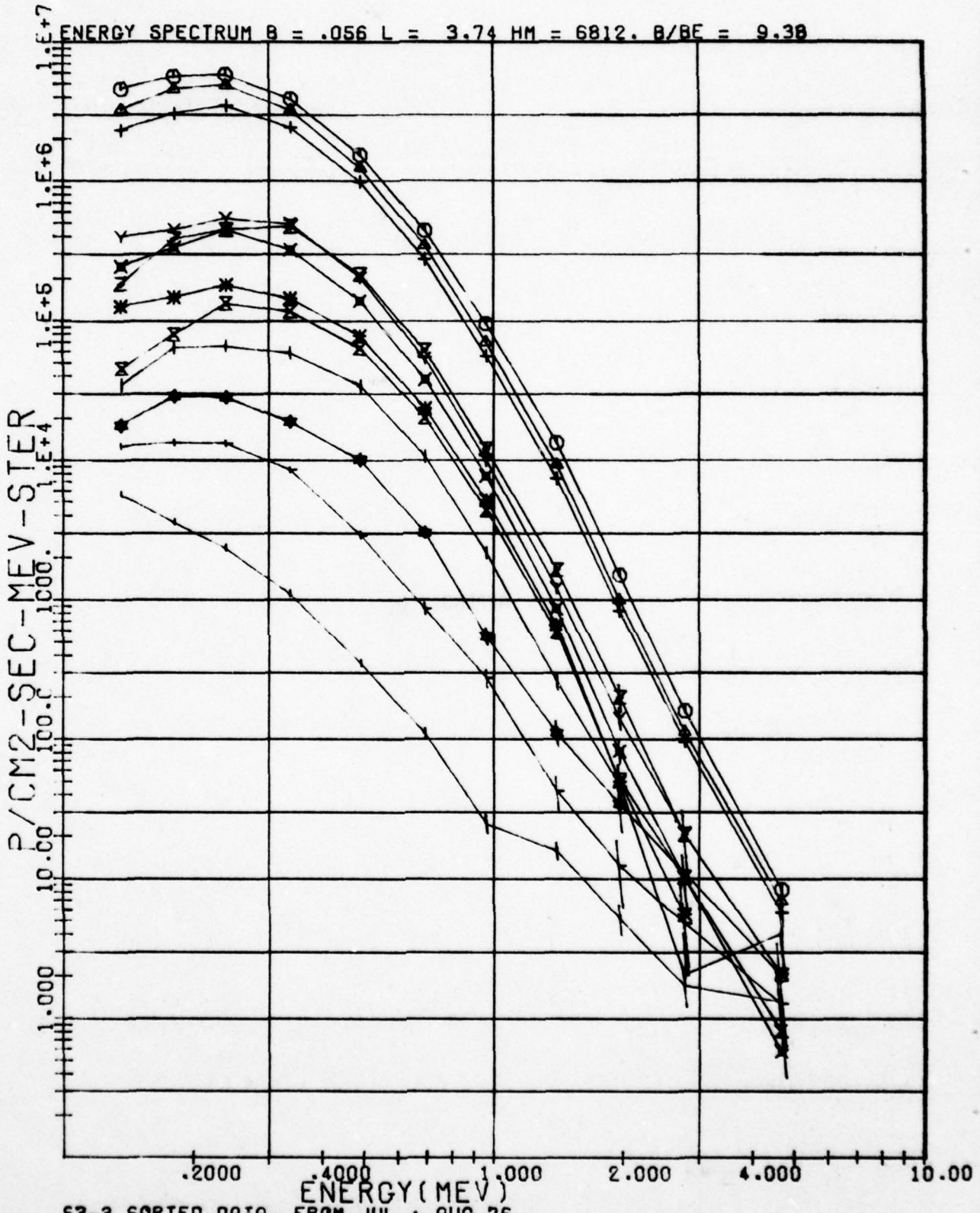
L =	3.25	HMIN =	553.	B =	.2810	B/BEQ =	31.4551	EQPA =	10.27			
PA/EGY=	5.5-8.		8.-13.		13.-25.		25.-50.		50.-100.		T	5.5-100.
7											3.4	
90			.2451	.245							5.4	720-5 72-4
0			.4682	.468							29.0	.0265 .026

SATELLITE S73-3, ENERGY SPECTRUM LISTING

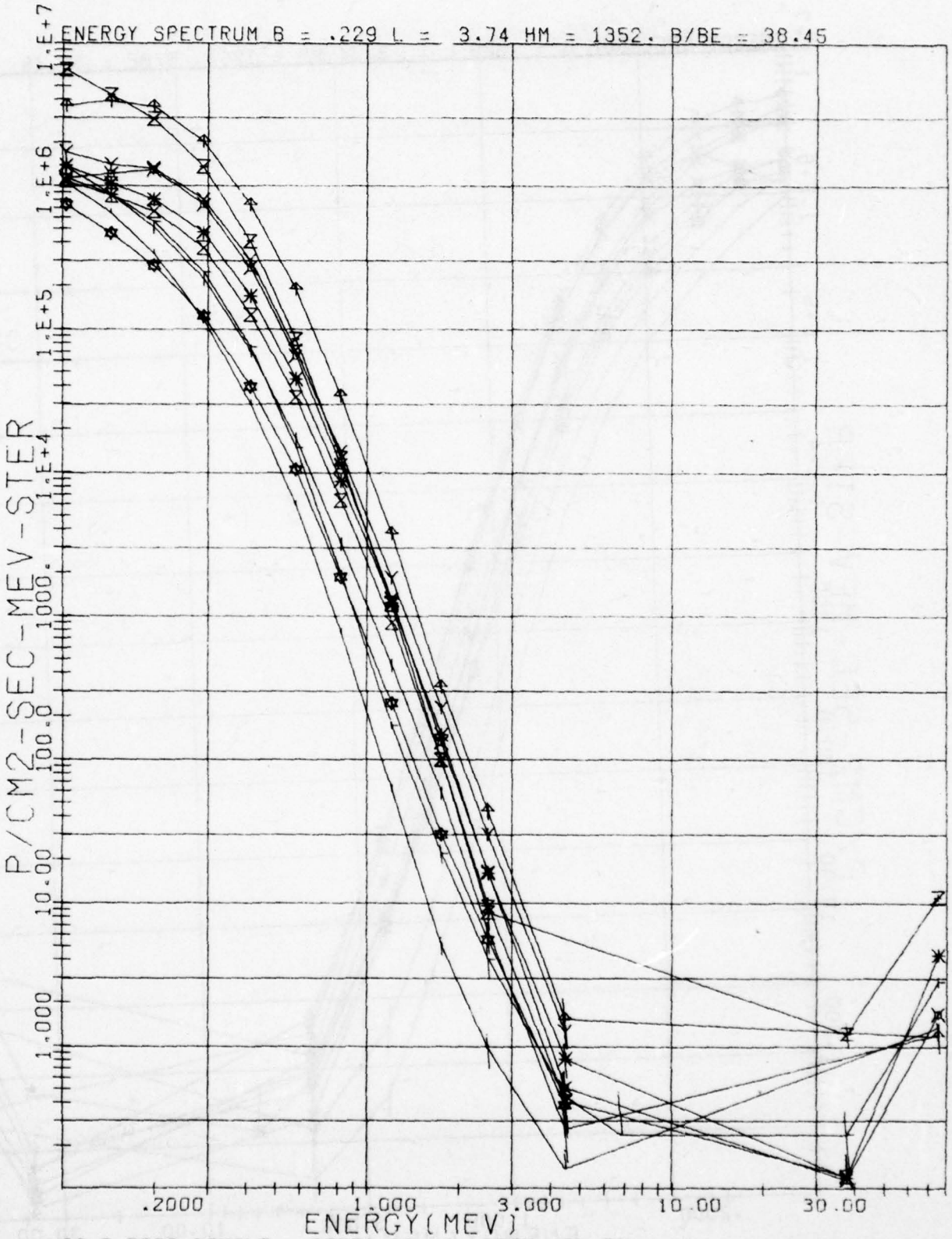
L = 3.74	HMIN = 6812.	B = .0555	B/BEQ = 9.3845	EQPA = 19.05					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7 .0150 .016		352-5 35-4	.0279 66-4	.1790 .012	91.0	.1005 56-4			
90 .0840 .034		313-5 31-4	.0937 .013	.6740 .022	100.6	.3894 .312			
0 .9644 .215	.0475 .024		.6248 .055	5.913 .118	602.4	3.304 .065			
L = 3.73	HMIN = 4857.	B = .0806	B/BEQ = 13.4760	EQPA = 15.31					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7 .0482 .034			.0166 68-4	.1160 .013	52.8	.0653 70-4			
90 .0907 .050	.0226 .016	494-9 49-4	.0579 .012	.6790 .028	62.2	.3890 .016			
0 .5582 .211	.0797 .056	.0169 .017	.6967 .075	5.211 .142	364.9	3.046 .080			
L = 3.72	HMIN = 3543.	B = .1138	B/BEQ = 18.8692	EQPA = 13.30					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7				.0123 87-4	11.0	777-5 50-4			
90			.0368 .021	5.733 .162	14.0	3.032 .092			
0 3.186 1.06			.3629 .115	21.25 .625	79.2	11.41 .333			
L = 3.66	HMIN = 933.	B = .2634	B/BEQ = 41.4306	EQPA = 8.94					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7					1.2				
90				.2206 .127	1.6	.0729 .042			
0				.7257 .325	9.8	.3918 .175			
L = 3.72	HMIN = 748.	B = .2715	B/BEQ = 44.9561	EQPA = 8.58					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7					.6				
90			.0204 .029		3.4	.0114 .011			
0			.1461 .145		11.8	.0551 .065			
L = 3.77	HMIN = 658.	B = .2857	B/BEQ = 49.2065	EQPA = 9.20					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7					2.0				
90			.0368 .026	.0315 .018	5.6	.0347 .016			
0		.1873 .137	.3519 .176	.3746 .132	32.0	.3120 .087			
L = 3.74	HMIN = 537.	B = .3023	B/BEQ = 50.9519	EQPA = 8.05					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7			.0368 .037		3.4	.0114 .011			
90				.0819 .041	4.6	.0405 .019			
0				.4504 .150	29.2	.2367 .079			
L = 3.75	HMIN = 462.	B = .3090	B/BEQ = 52.5429	EQPA = 7.93					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7					.6				
90					4.6				
0					14.2				
L = 3.74	HMIN = 368.	B = .3211	B/BEQ = 54.2075	EQPA = 7.81					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7					2.4				
90				.0368 .026	4.2	.0195 .013			
0				.1814 .105	25.8	.1922 .053			
L = 3.80	HMIN = 239.	B = .3394	B/BEQ = 60.0085	EQPA = 7.42					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7					1.6				
90				.0147 .015	3.6	.0108 .011			
0					15.4				



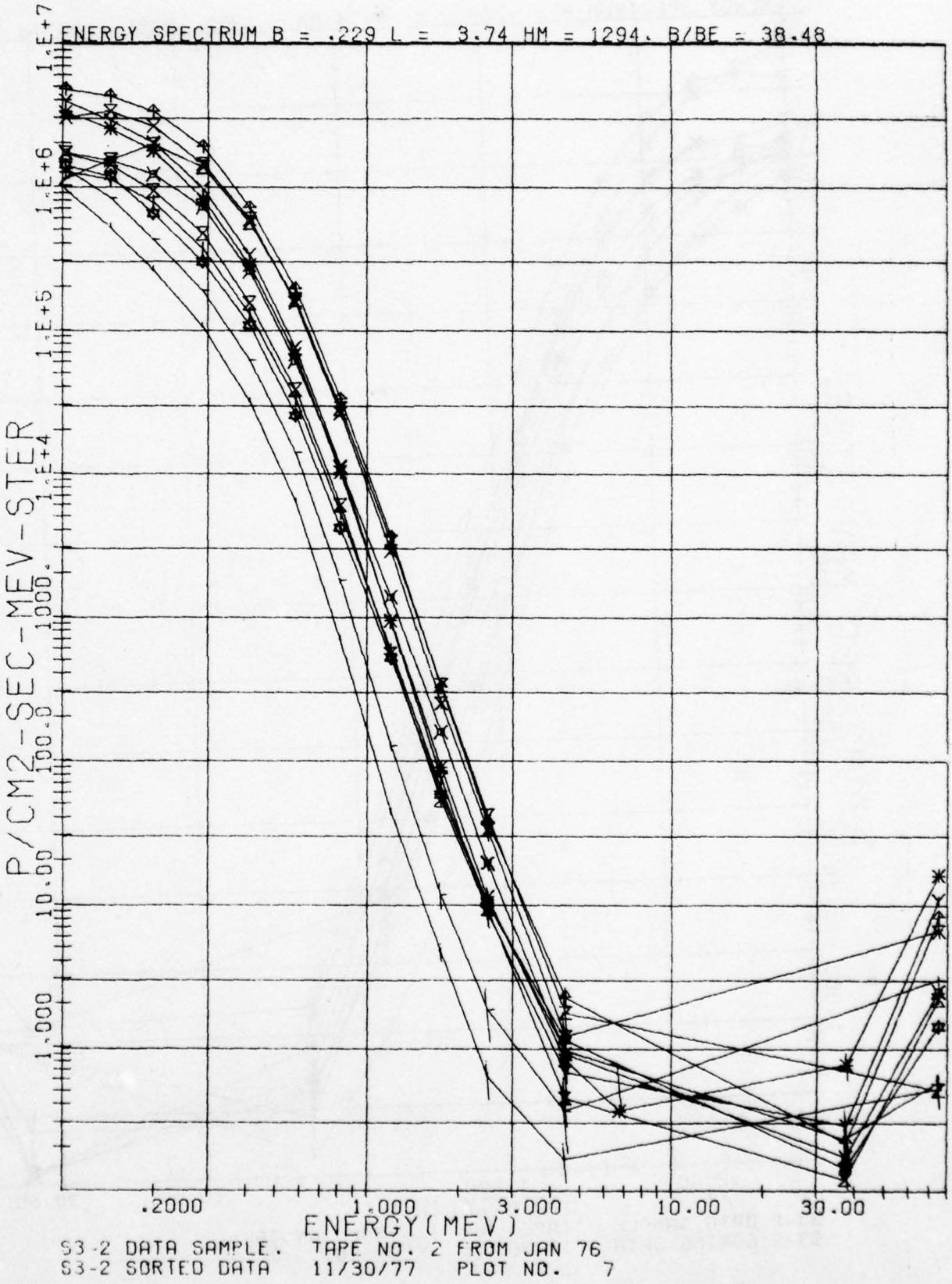
APPENDIX D

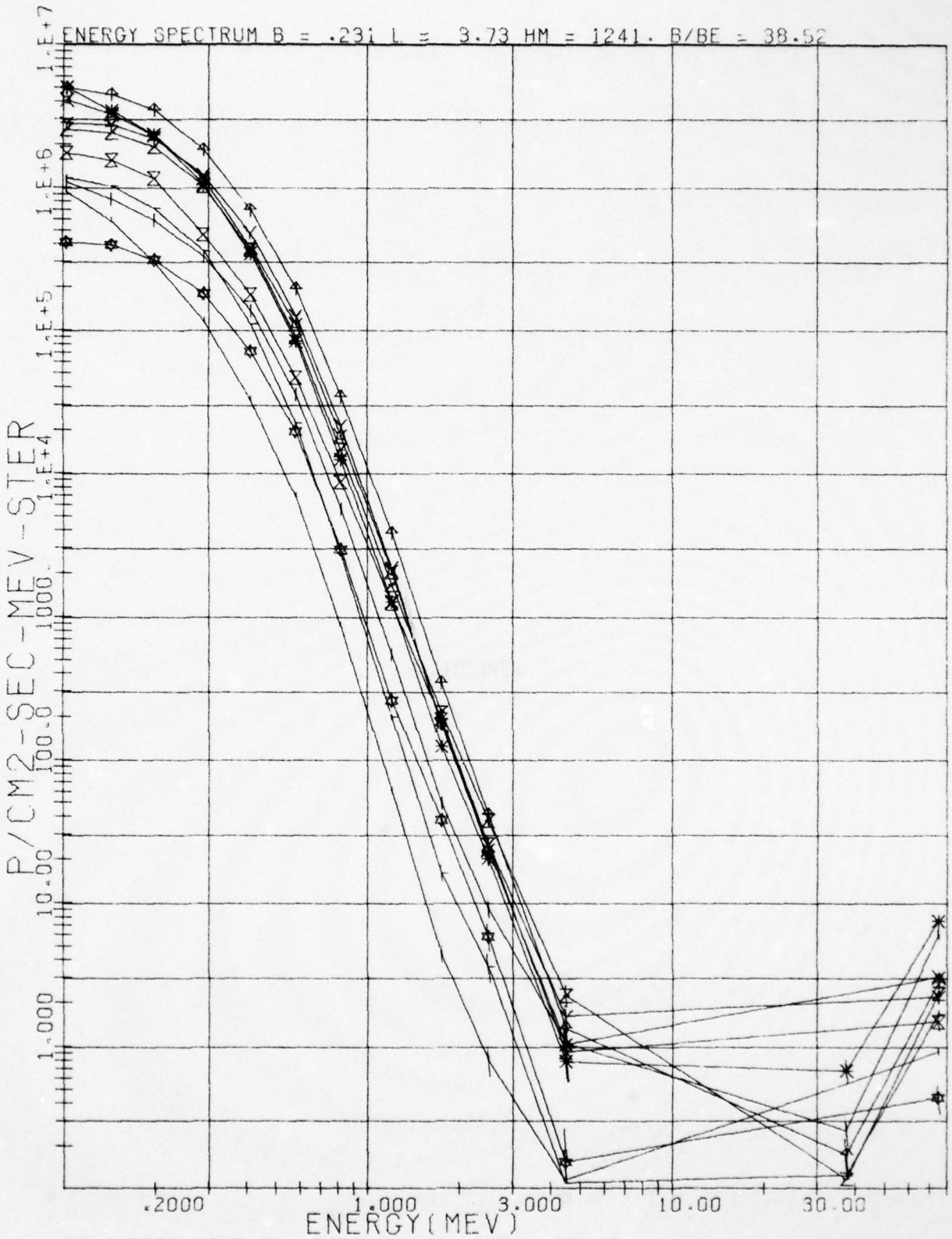


S3-3 SORTED DATA FROM JUL ^ AUG 76
LTM = 42.1 LGM = 193.0 ALT = 6812. LMDA = 74.51



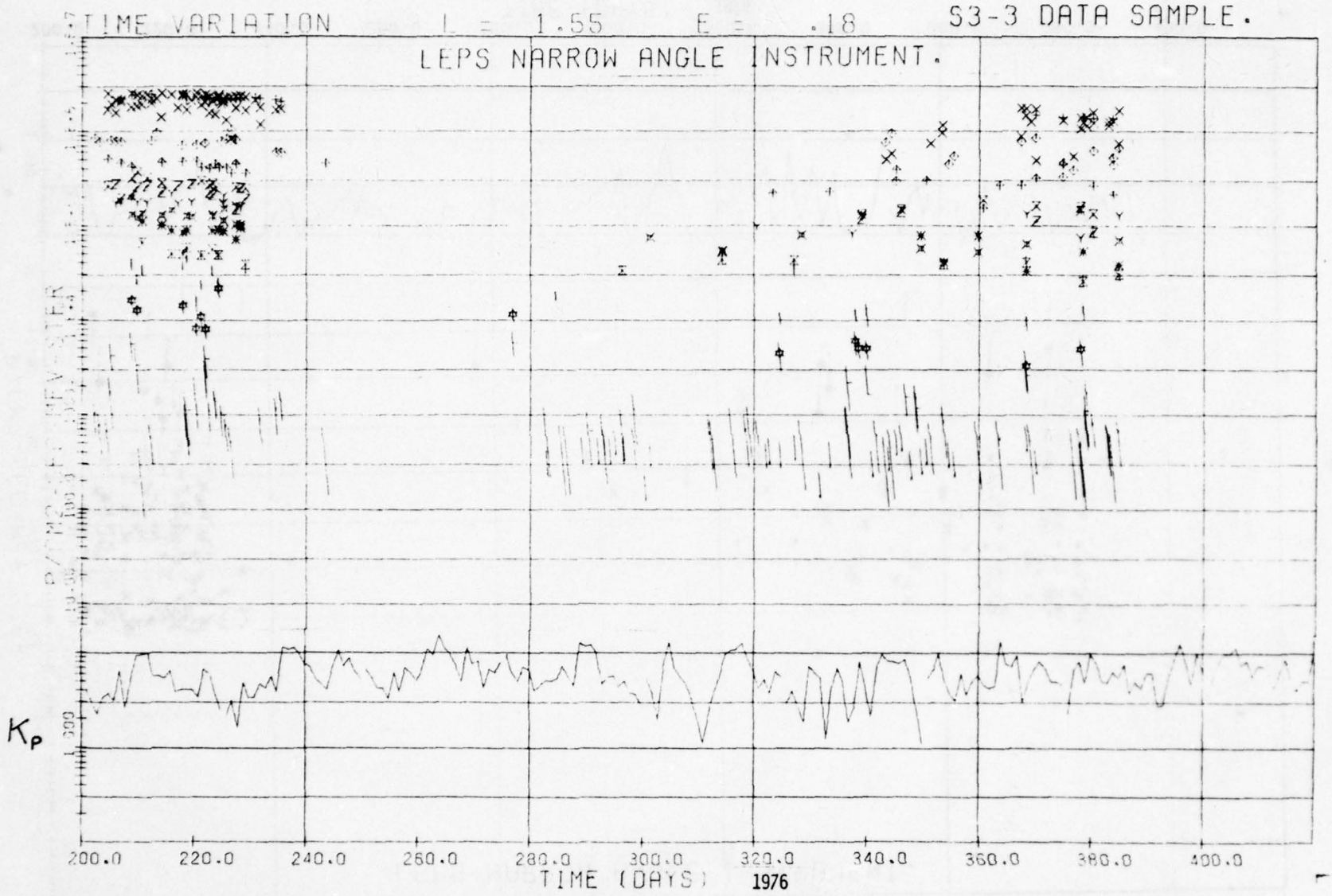
S3-2 DATA SAMPLE. TAPE1 NO. 1 FROM JAN 76.
S3-2 SORTED DATA 11/30/77 PLOT NO. 7

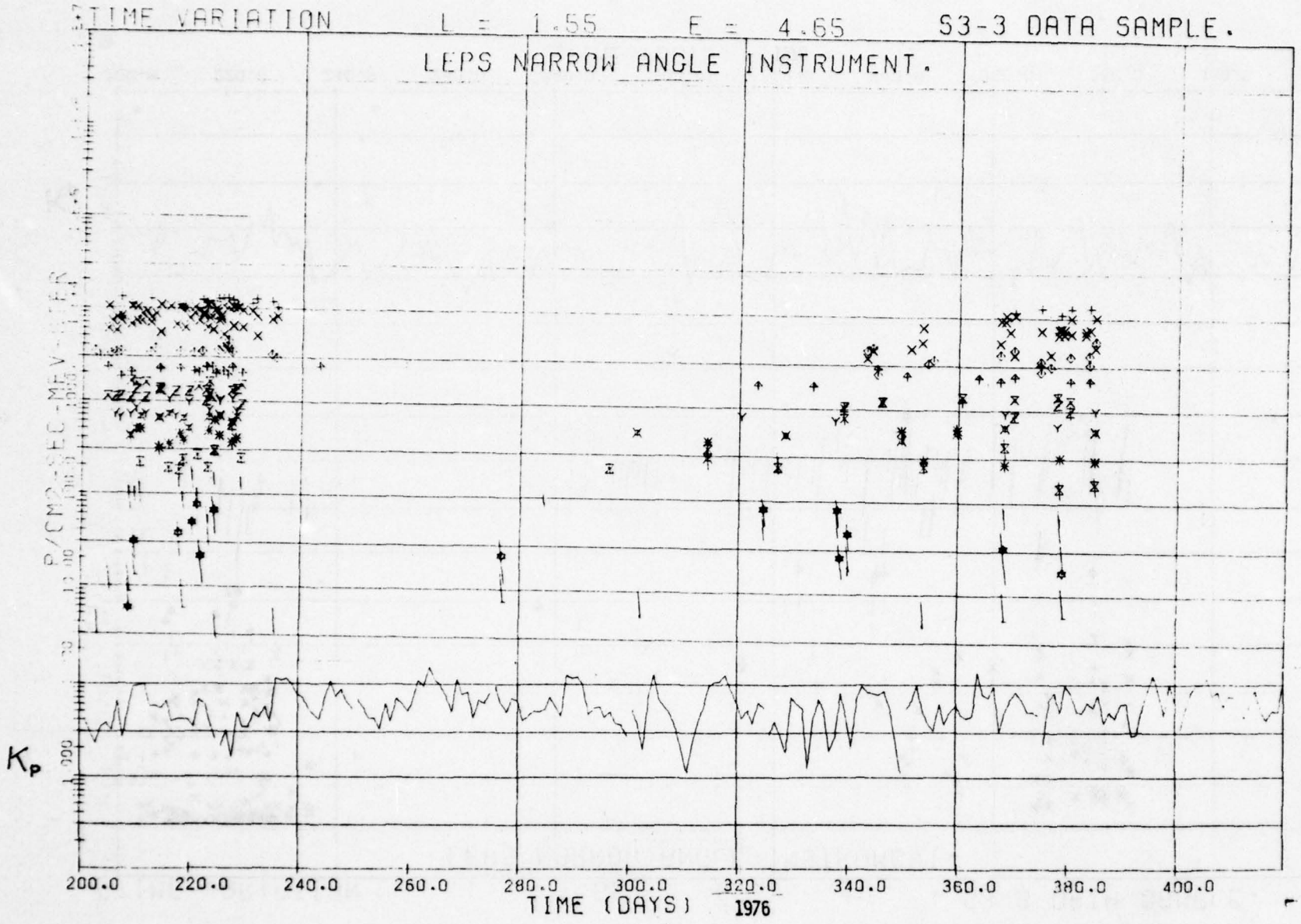

ENERGY SPECTRUM B = .229 L = 3.74 HM = 1294. B/BE = 38.48
P/CM2-SEC-MEV-STER
1.E+7
1.E+6
1.E+5
1.E+4
1000.
100.0
10.00
1.000
.2000
1.000
3.000
10.00
30.00
ENERGY(MEV)
S3-2 DATA SAMPLE. TAPE NO. 2 FROM JAN 76
S3-2 SORTED DATA 11/30/77 PLOT NO. 7

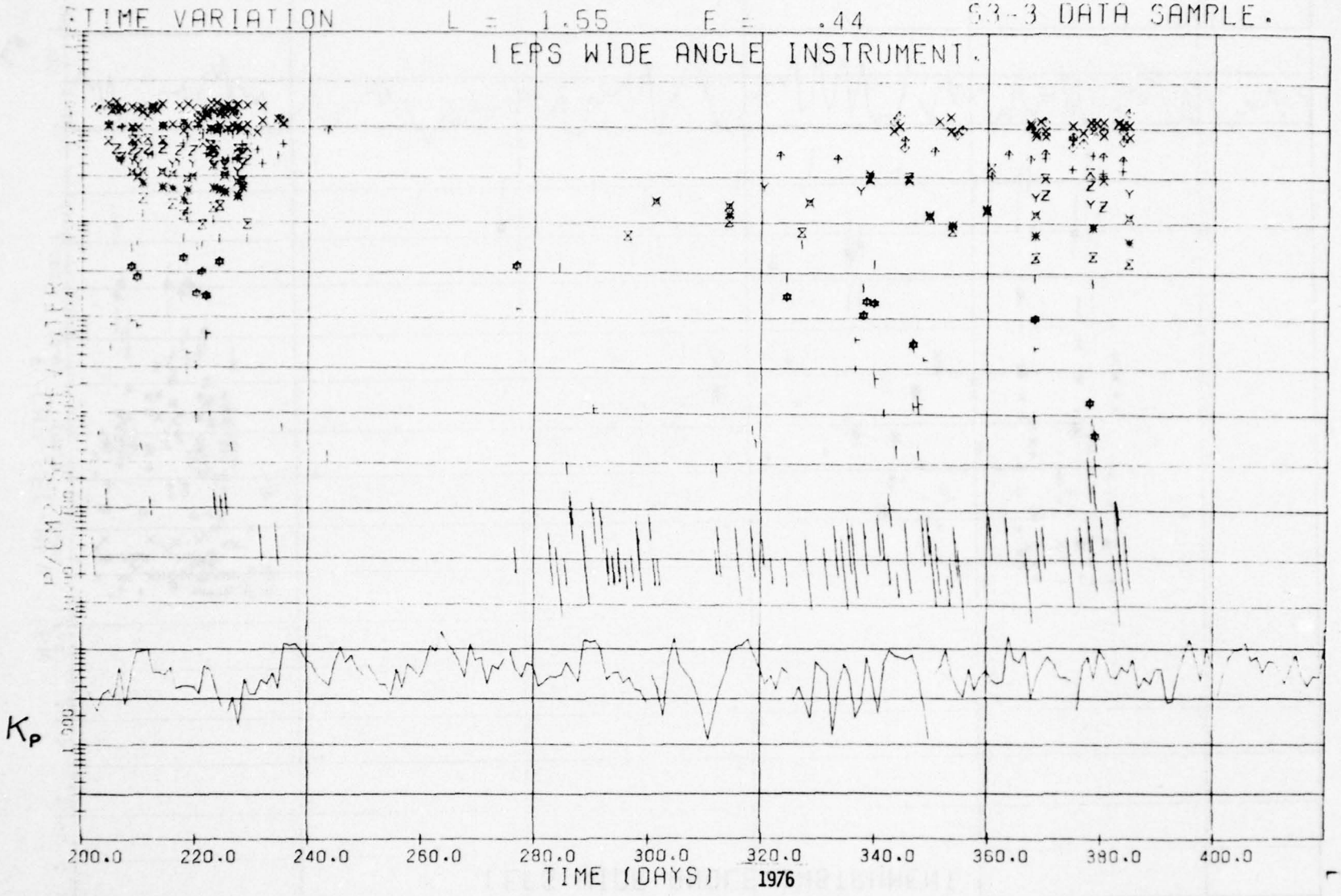


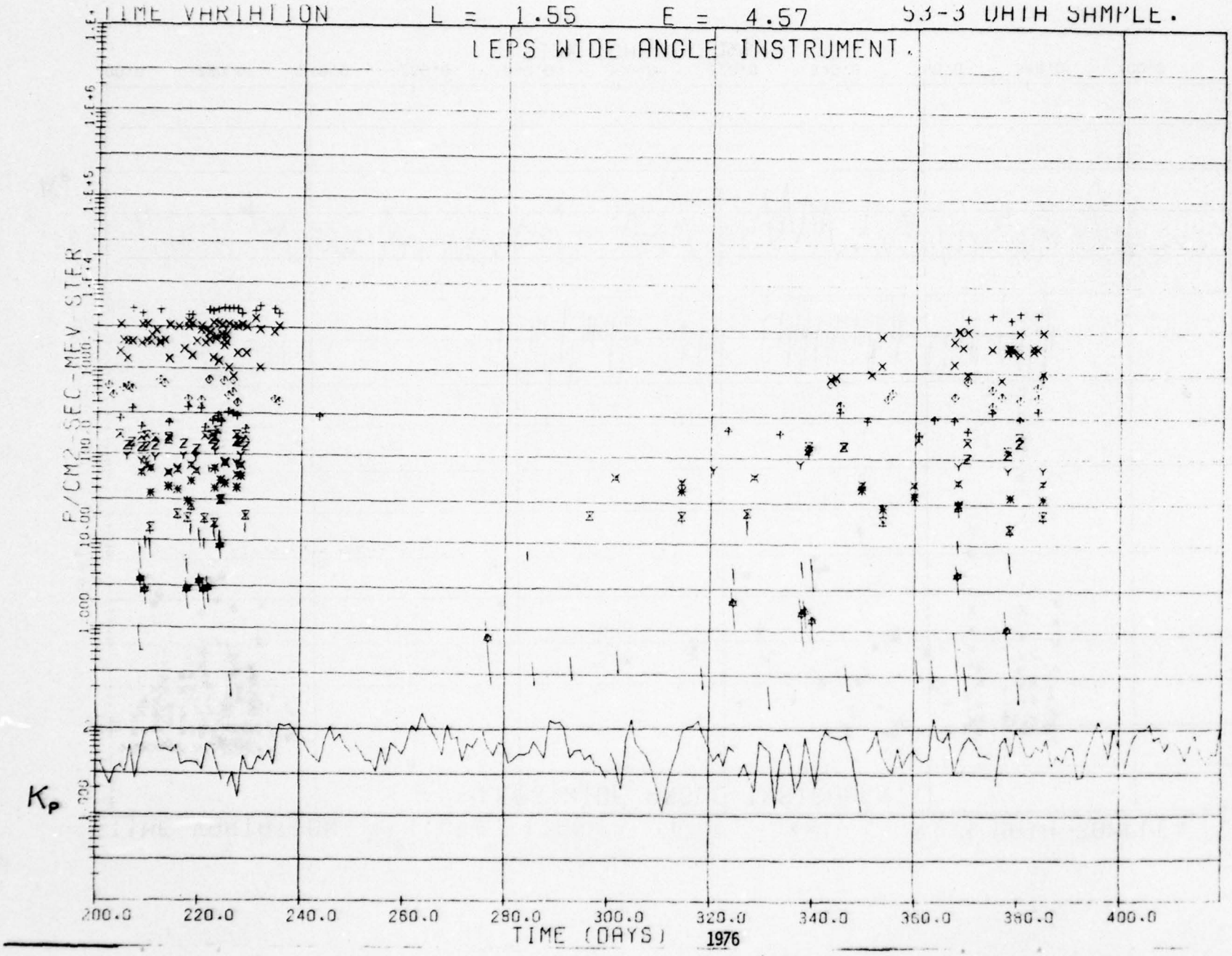
S3-2 DATA SAMPLE. TAPE NO. 3 FROM JAN 76.
S3-2 SORTED DATA 11/30/77 PLOT NO. 7

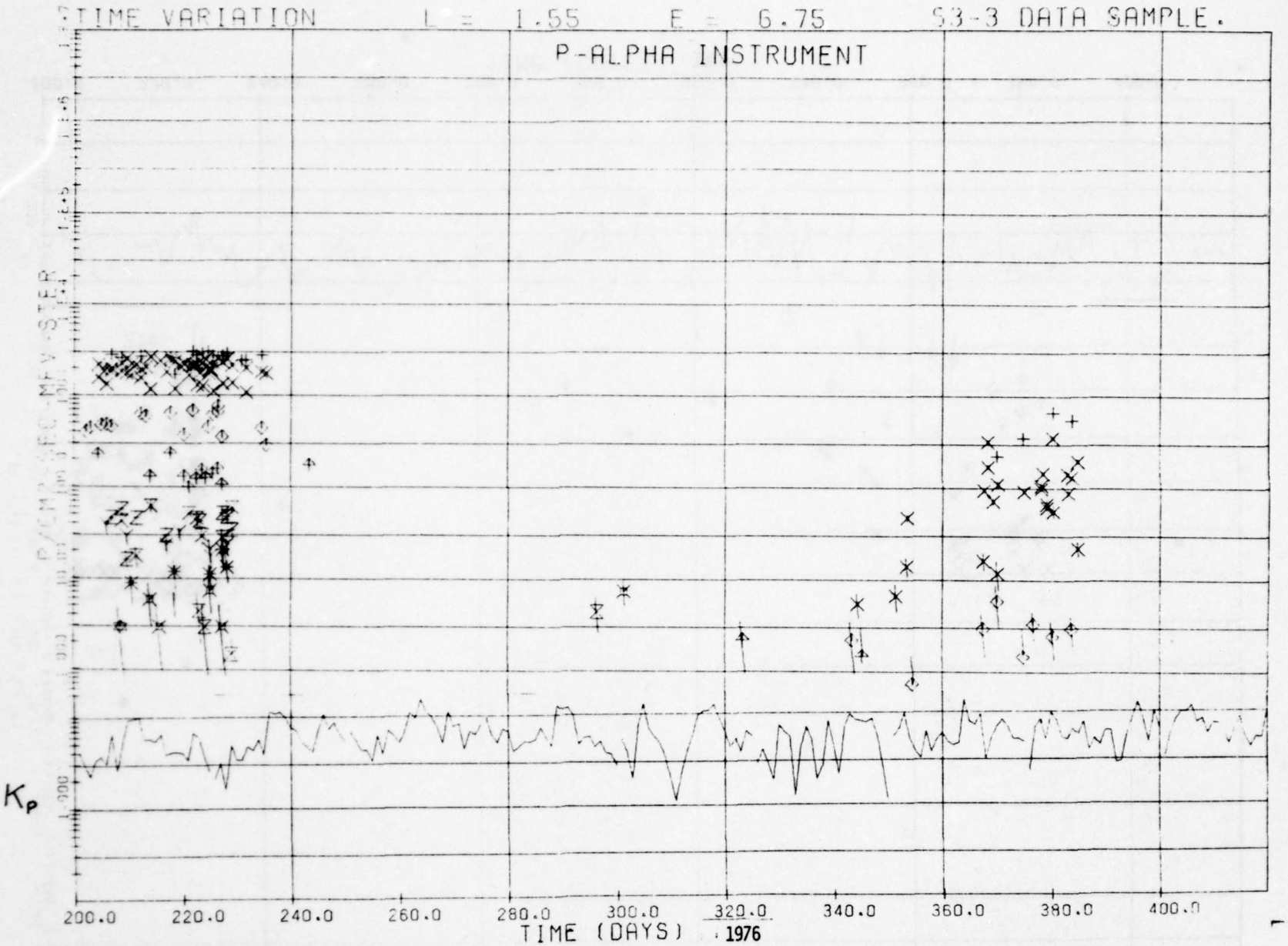
APPENDIX E

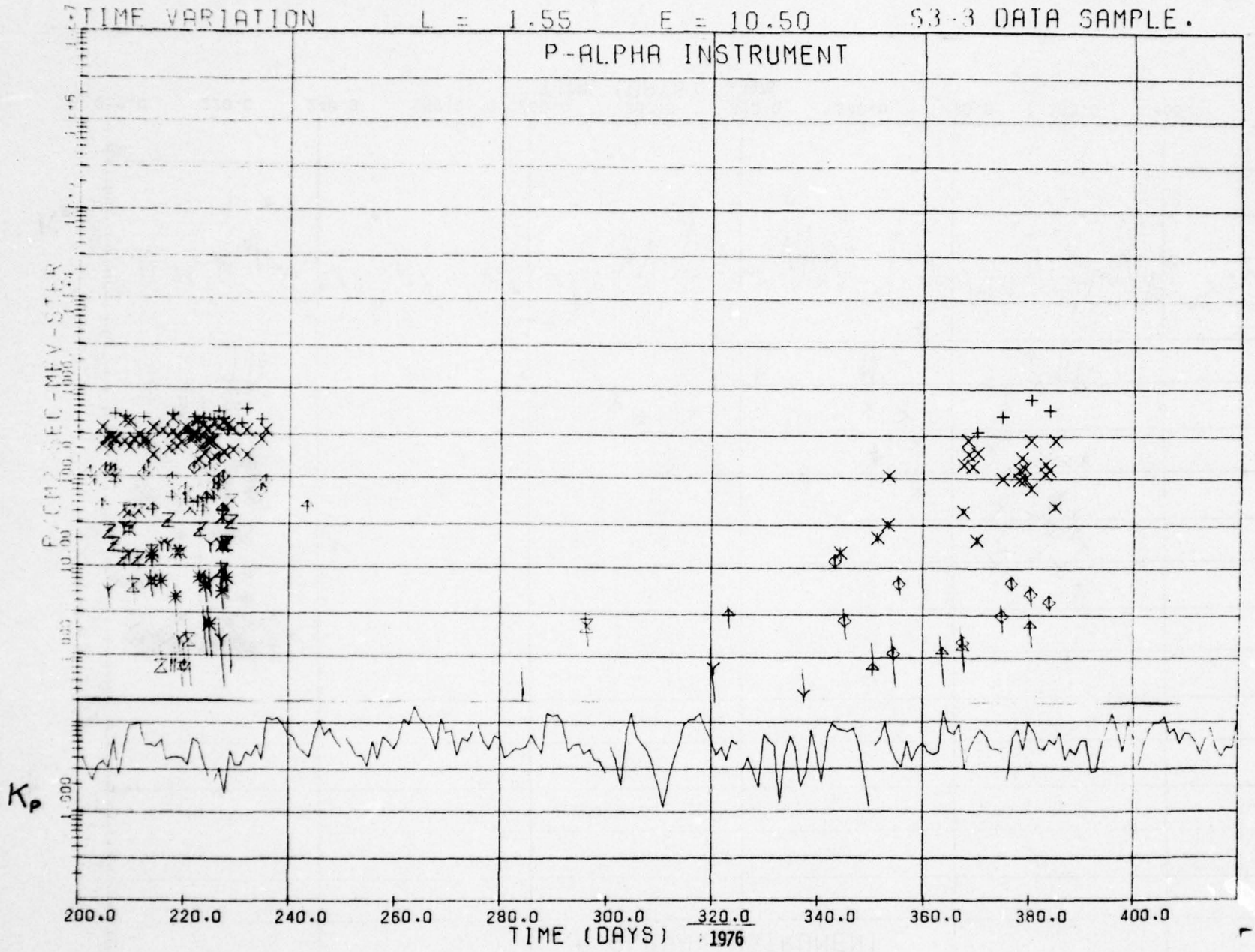

TIME VARIATION L = 1.55 E = .18
S3-3 DATA SAMPLE.
LEPS NARROW ANGLE INSTRUMENT.
K_P
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976

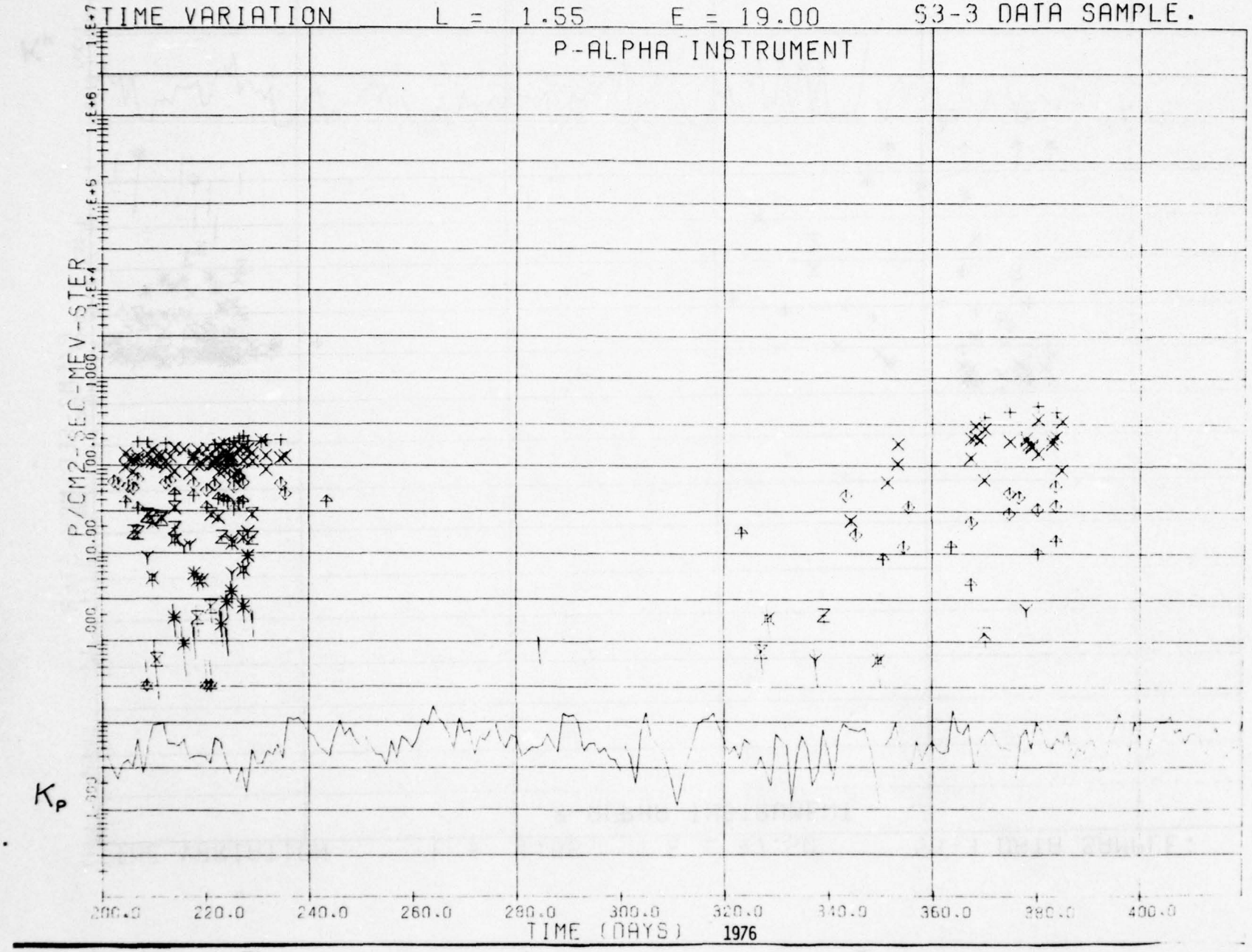

TIME VARIATION L = 1.55 E = 4.65 S3-3 DATA SAMPLE.
LEPS NARROW ANGLE INSTRUMENT.
P/CM2-SEC-MEV-STER
Kp
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976

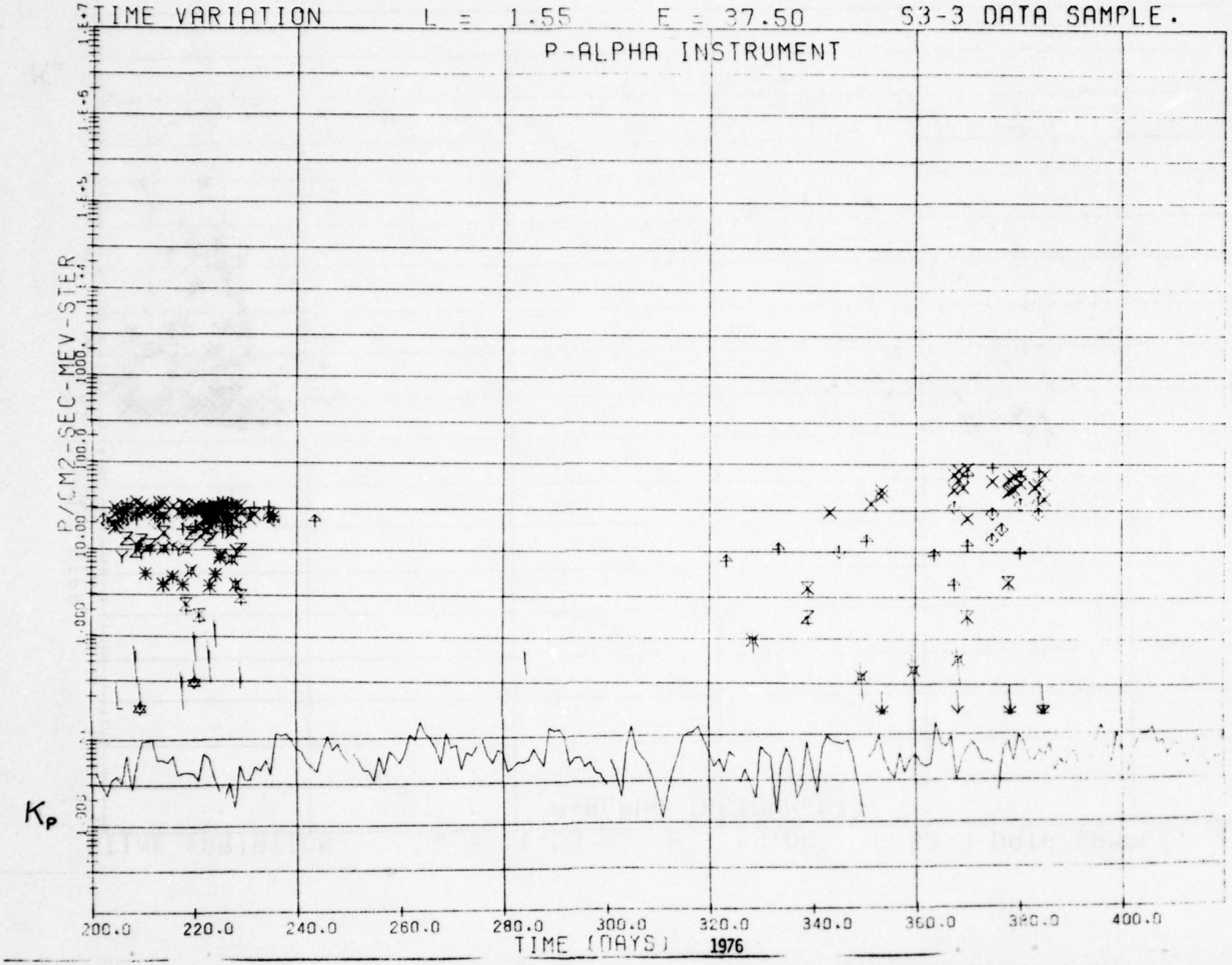

TIME VARIATION L = 1.55 E = .44 S3-3 DATA SAMPLE.
IEPS WIDE ANGLE INSTRUMENT.
K_P
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS) 1976

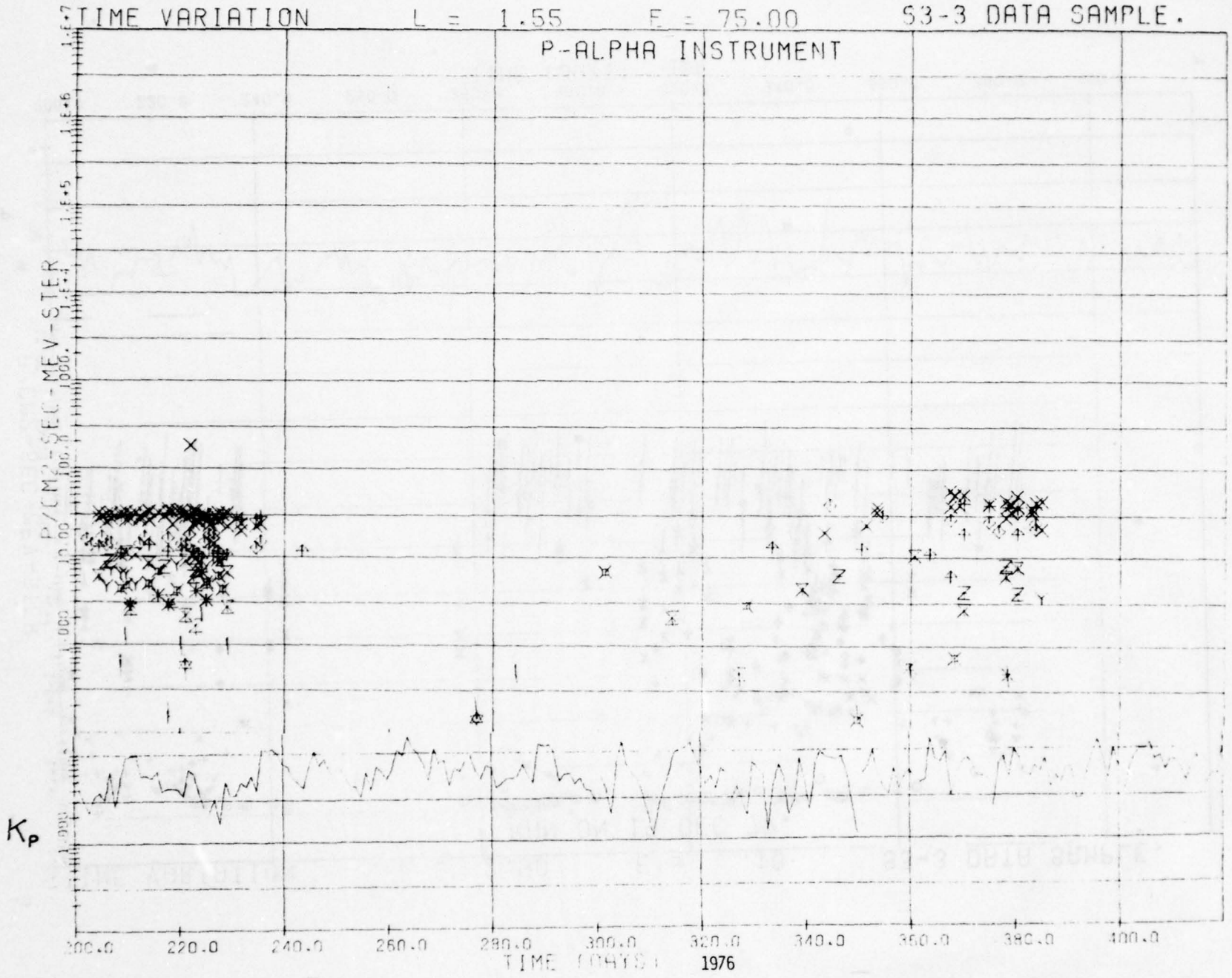

TIME VARIATION L = 1.55 E = 4.57 53-3 WITH SAMPLE.
LEPS WIDE ANGLE INSTRUMENT.
P/CM2-SEC-MEV STER
1.E+6
1.E+5
1.E+4
1000.
100.0
10.00
1.000
.100
K_p
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976

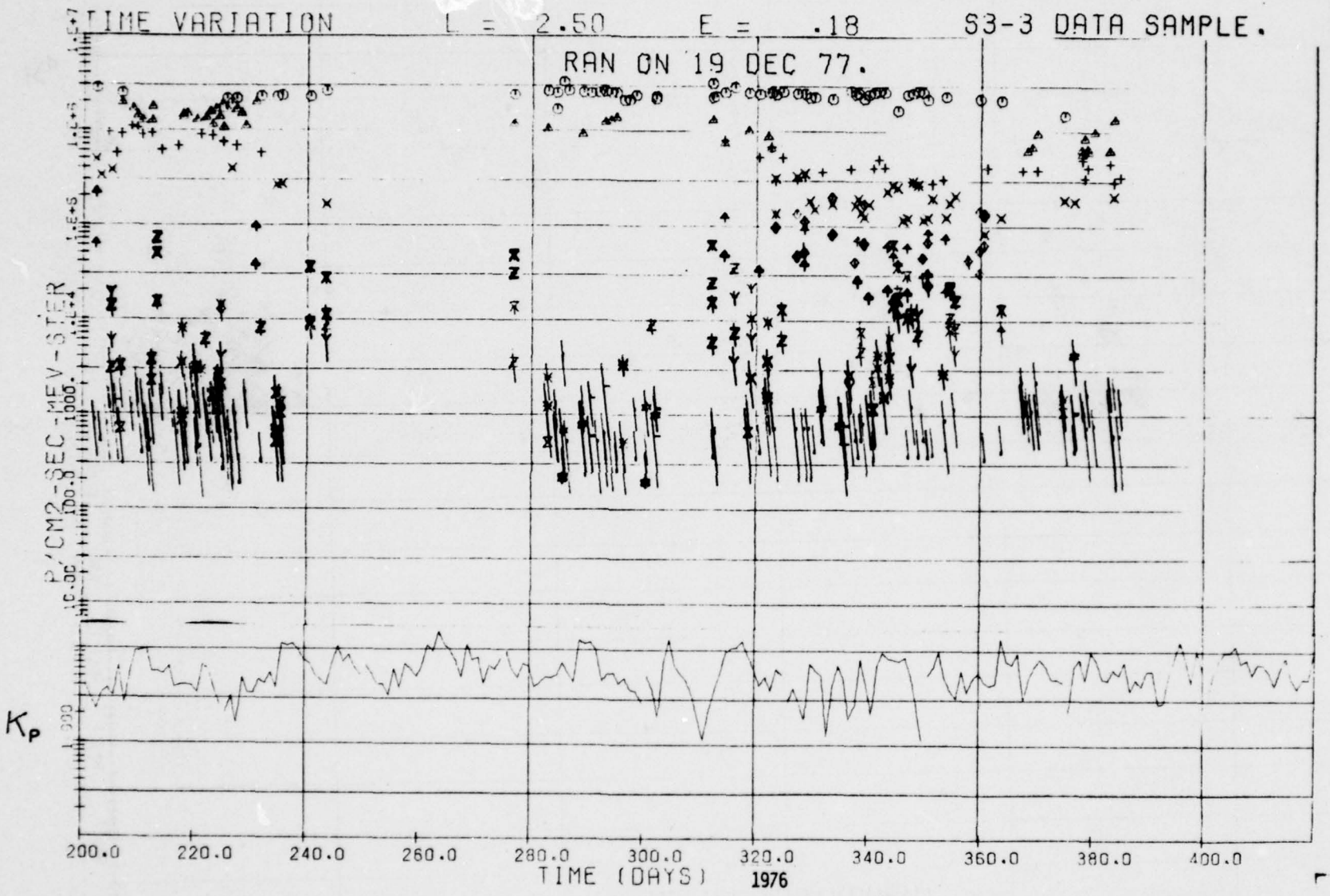

TIME VARIATION L = 1.55 E = 6.75 S3-3 DATA SAMPLE.
P-ALPHA INSTRUMENT
K_p
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976

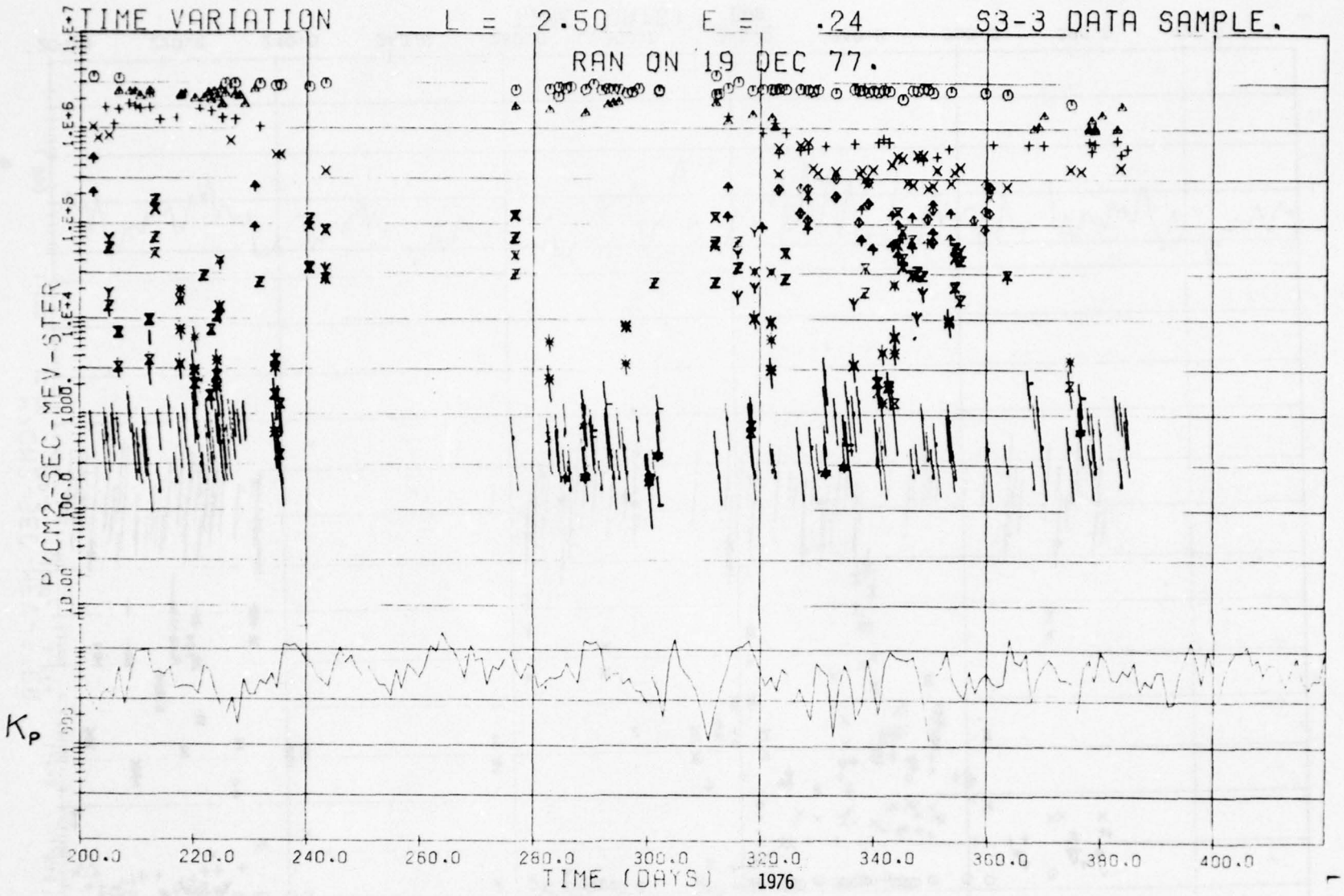

TIME VARIATION L = 1.55 E = 10.50 S3-3 DATA SAMPLE.
P-ALPHA INSTRUMENT
P/CM2-SEC-MEV-STER
1.000
10.00
100.0
1000
K_p
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976

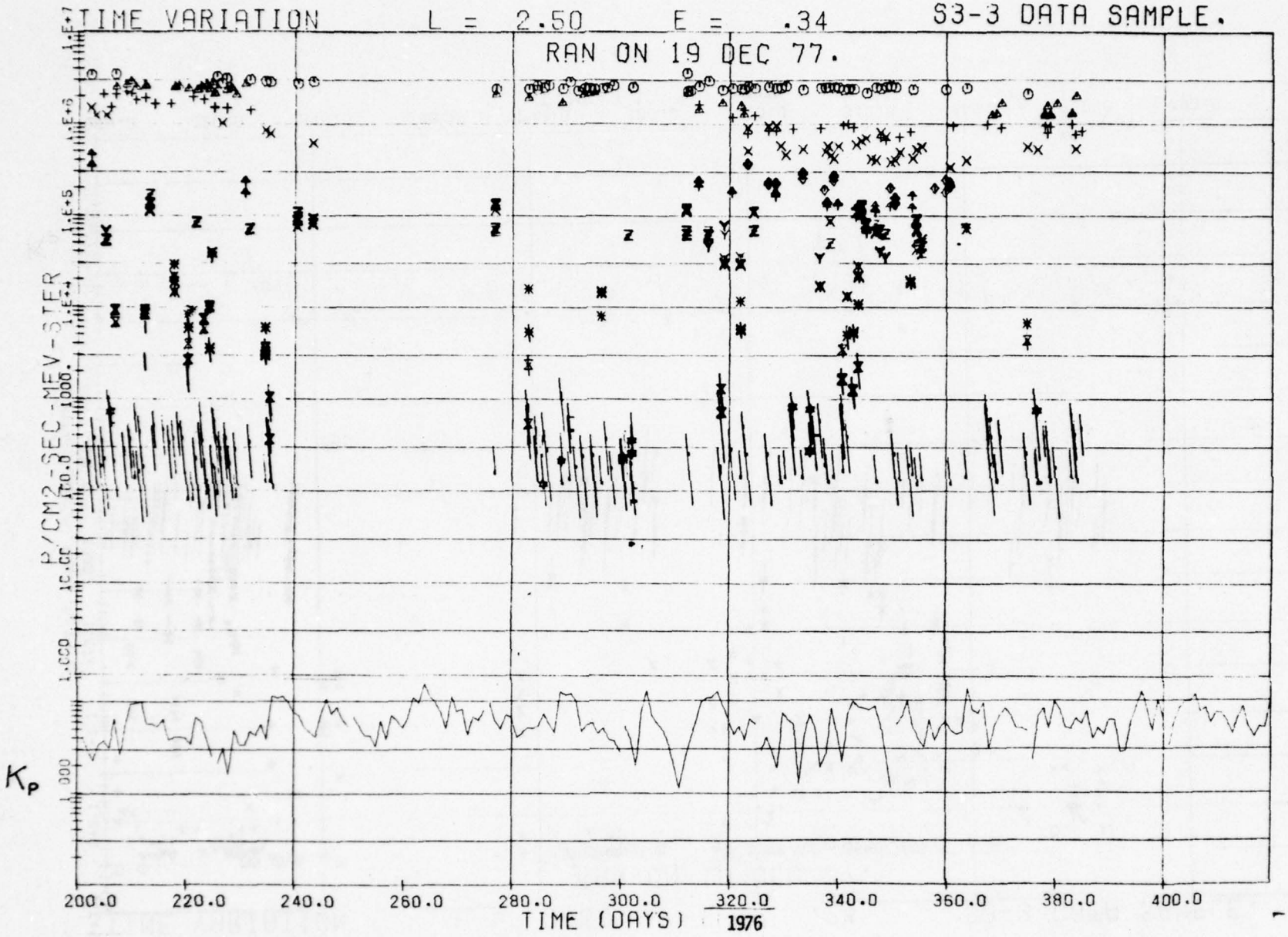

TIME VARIATION L = 1.55 E = 19.00 S3-3 DATA SAMPLE.
P-ALPHA INSTRUMENT
P/CM2-SEC-MEV-STER
1.E+7
1.E+6
1.E+5
1.E+4
1000.
100.0
10.00
1.000
.1000
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976
K_P

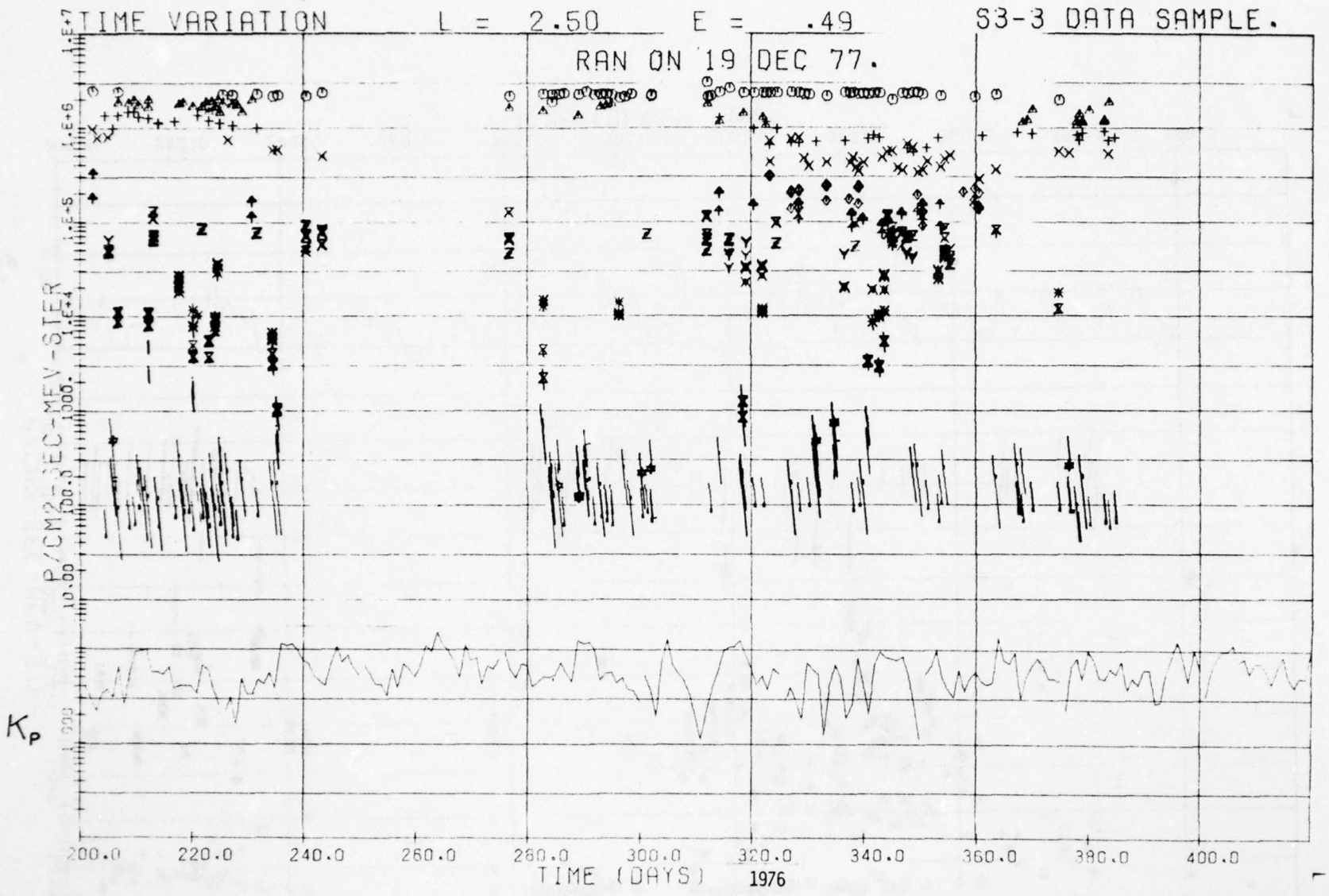

TIME VARIATION L = 1.55 E = 37.50 S3-3 DATA SAMPLE.
P-ALPHA INSTRUMENT
P/CM2-SEC-MEV-STER
1.E+7
1.E+6
1.E+5
1.E+4
1000.
100.0
10.00
1.000
.100
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS) 1976
Kp

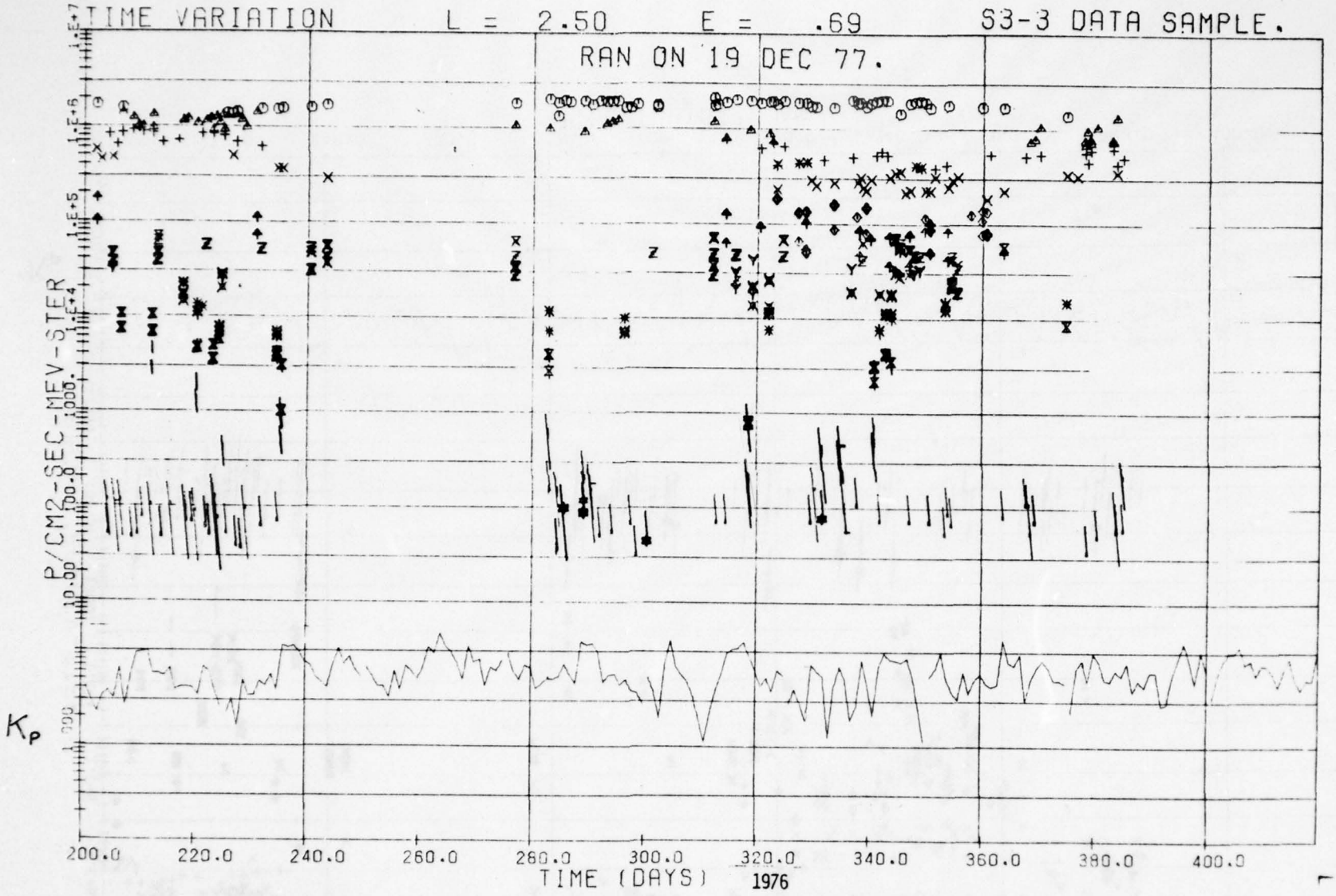

TIME VARIATION L = 1.55 E = 75.00 S3-3 DATA SAMPLE.
P-ALPHA INSTRUMENT
P/CM2-SEC-MEV-STER
1.E+7
1.E+6
1.E+5
1.E+4
1000.
100.0
10.00
1.000
.1000
Kp
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976

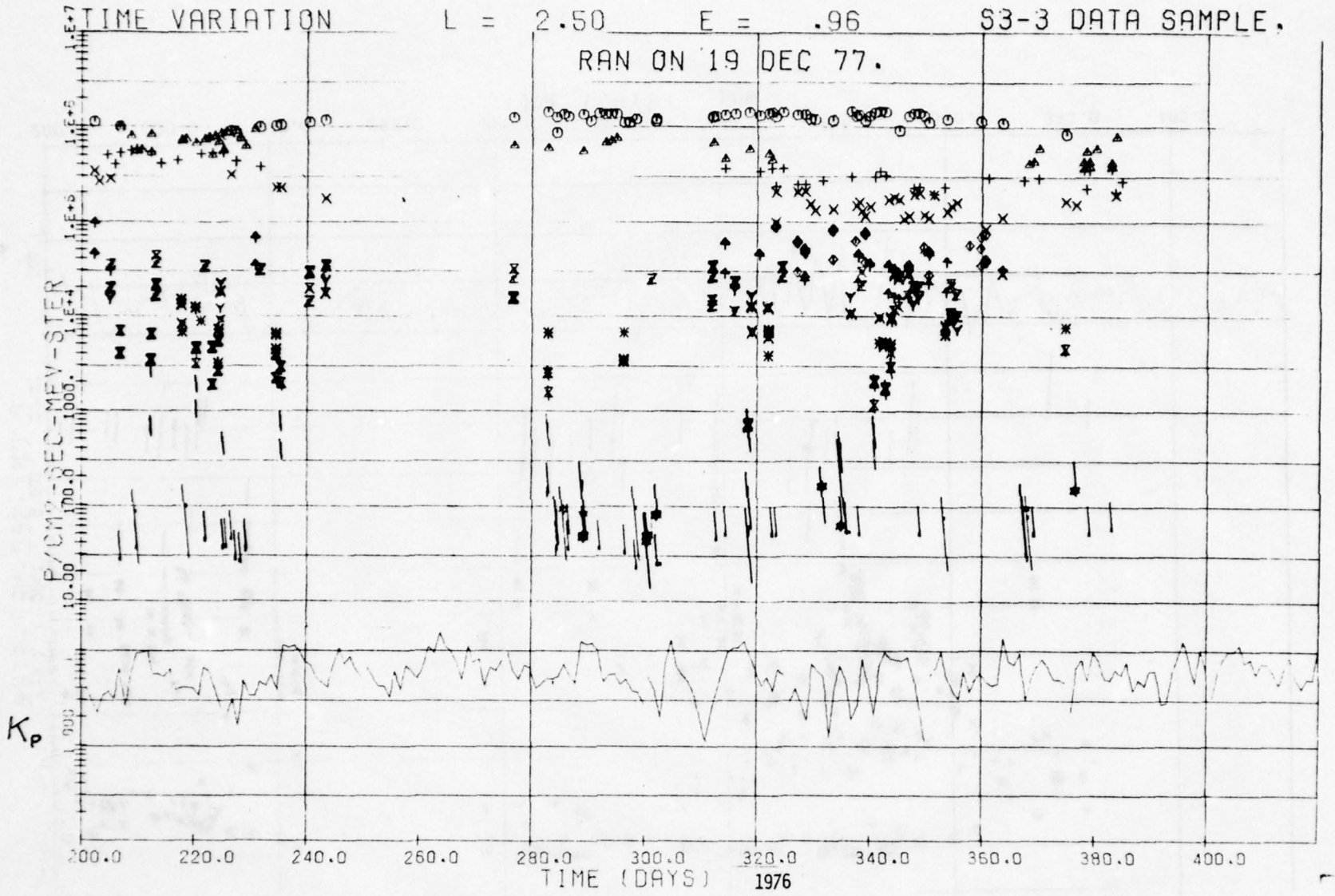

TIME VARIATION L = 2.50 E = .18 S3-3 DATA SAMPLE.
RAN ON 19 DEC 77.
P/CM2-SEC-MEV-STER
1.0E+7
1.0E+6
1.0E+5
1.0E+4
1000.
100.0
10.00
1.000
Kp
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976

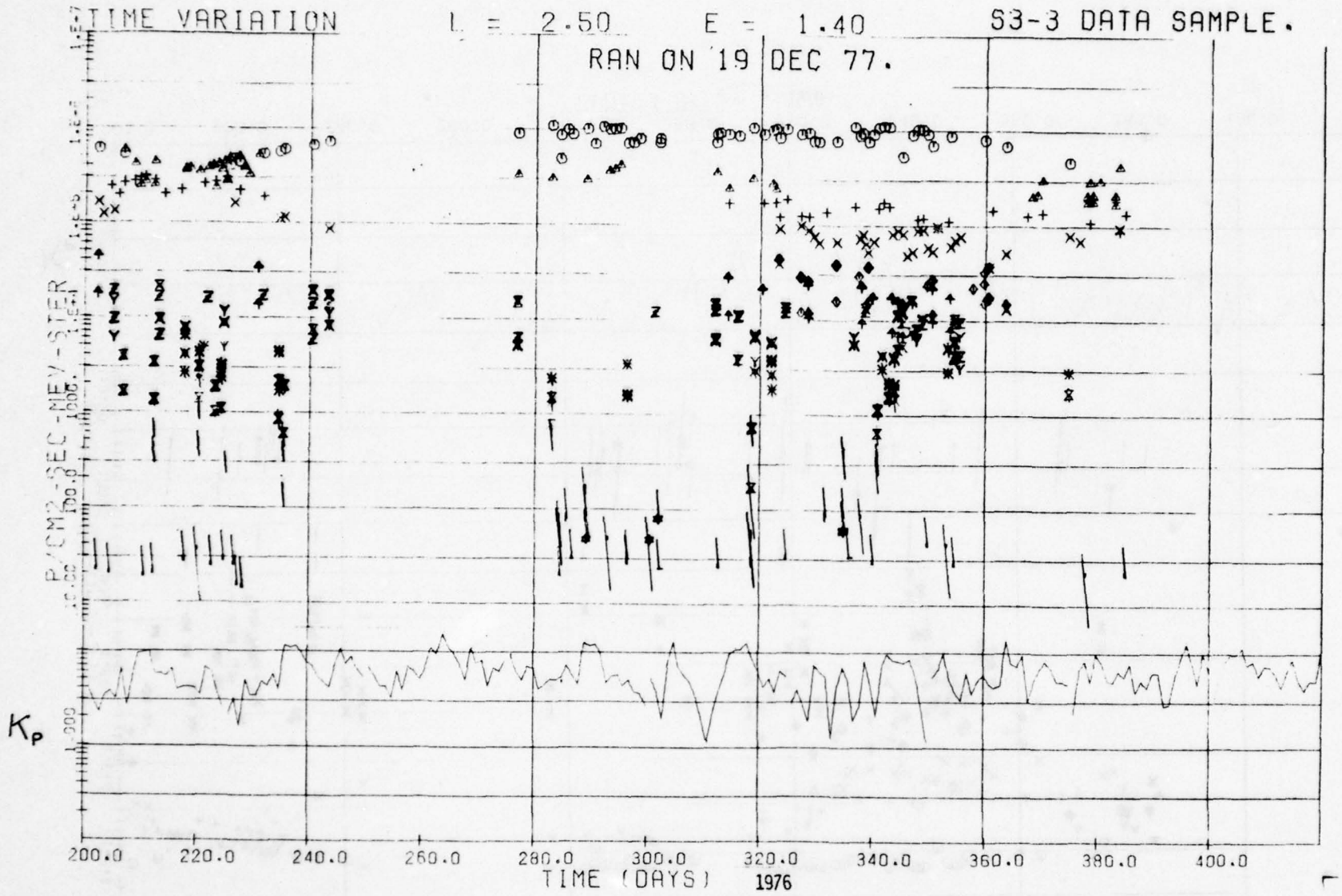

TIME VARIATION
L = 2.50
E = .24
S3-3 DATA SAMPLE.
RAN ON 19 DEC 77.
P/CM2-SEC-MEV-STER
1.E+7
1.E+6
1.E+5
1.E+4
1000.
10.00
DEC.8
K_P
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976

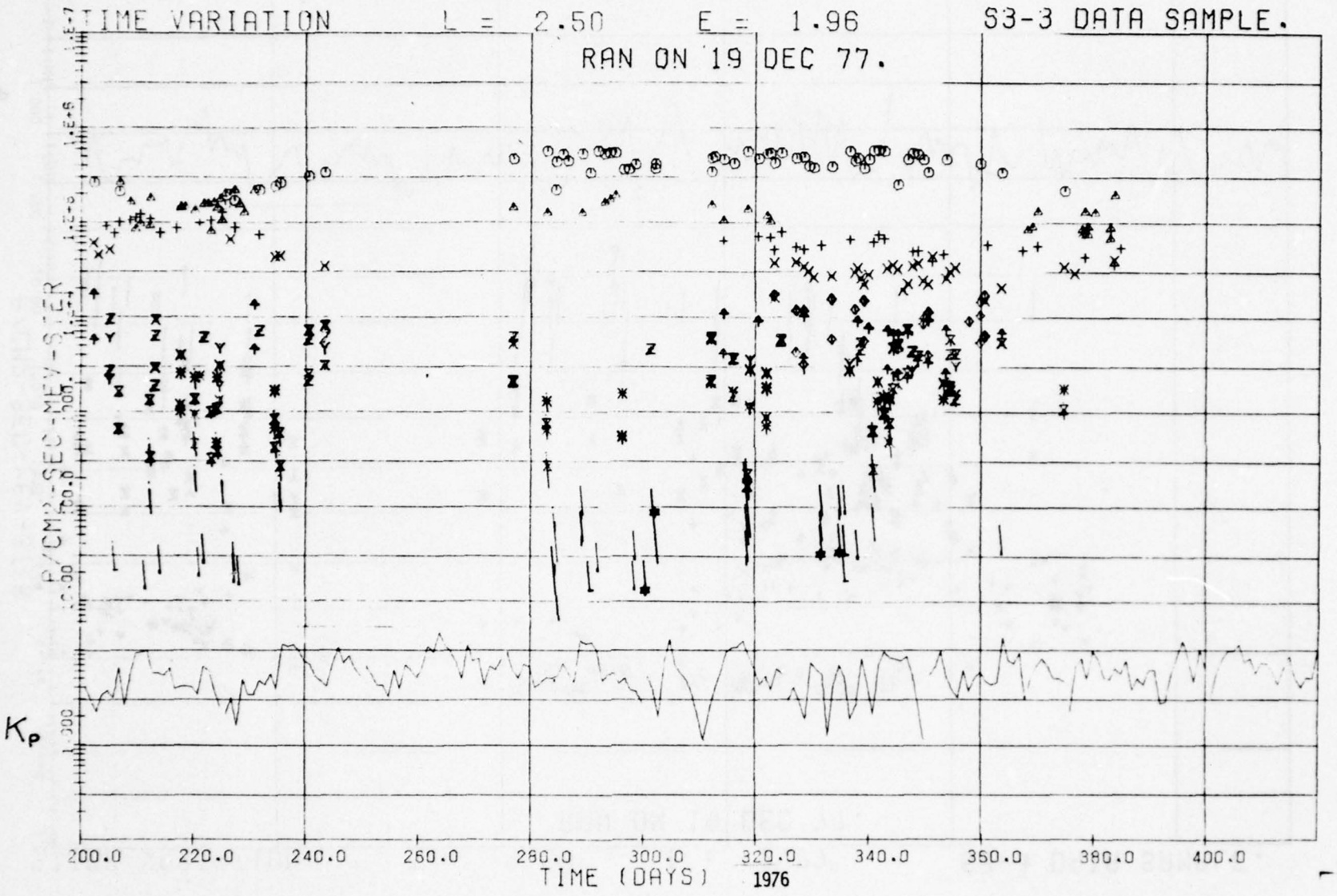

TIME VARIATION L = 2.50 E = .34 S3-3 DATA SAMPLE.
RAN ON 19 DEC 77.
P/CM2-SEC-MEV-STER
1.E+7
1.E+6
1.E+5
1.E+4
1000.
100.0
10.00
1.000
.000
Kp
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976

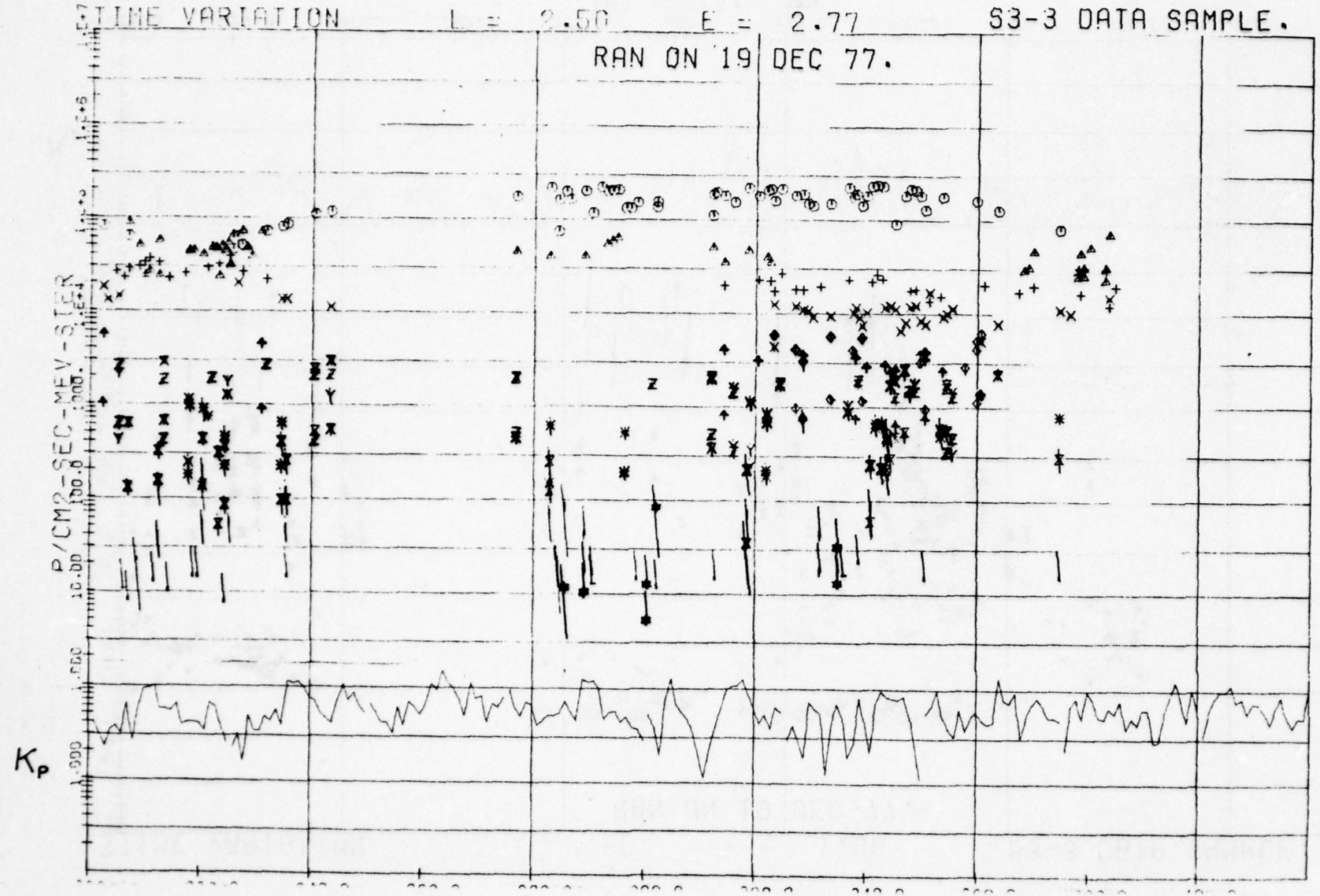

TIME VARIATION L = 2.50 E = .49 S3-3 DATA SAMPLE.
RAN ON 19 DEC 77.
P/CM2-SEC-MEV-STER
1.E+7
1.E+6
1.E+5
1.E+4
1000.
100.0
10.00
1.00
Kp
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976

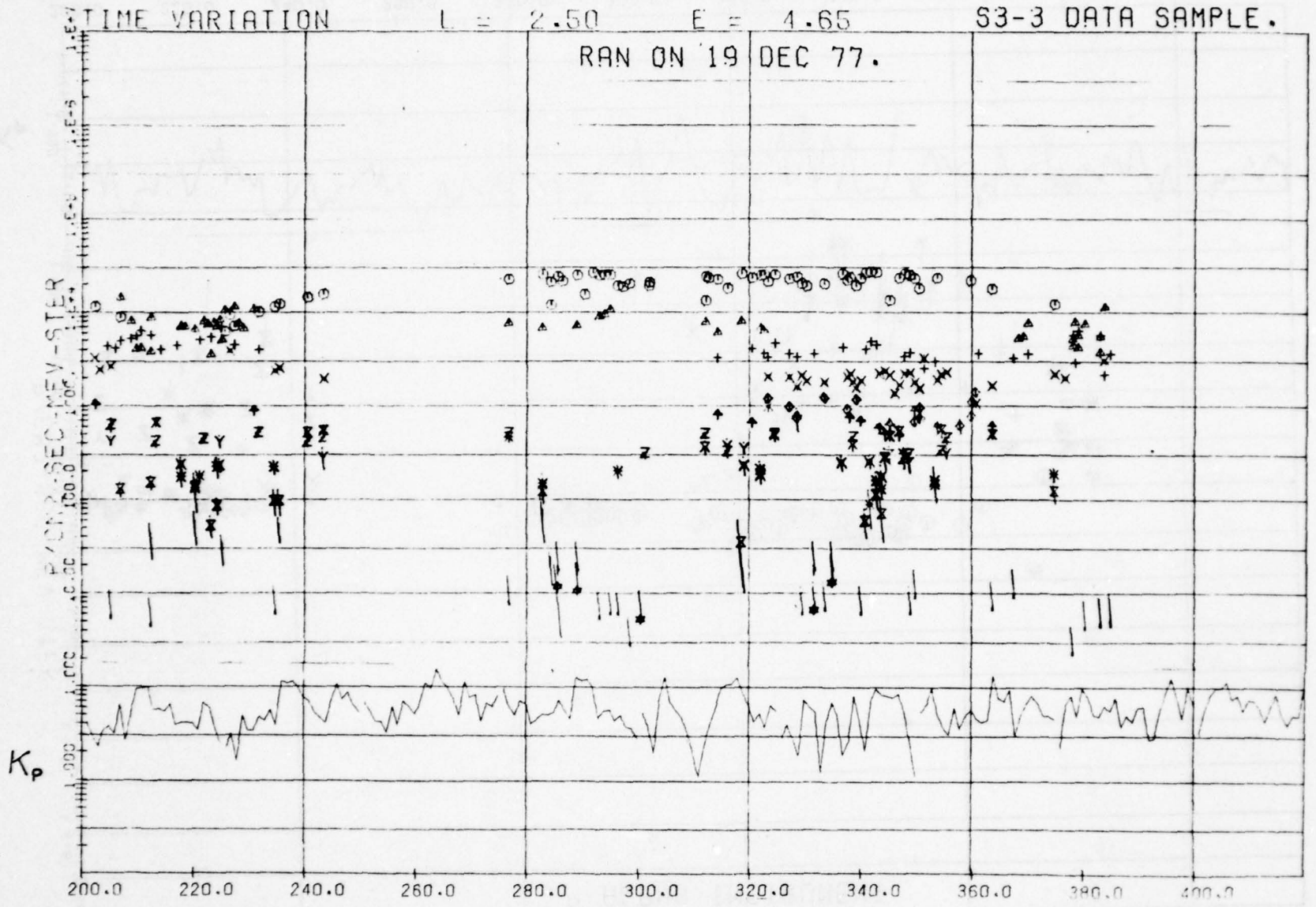

TIME VARIATION L = 2.50 E = .69 S3-3 DATA SAMPLE.
RAN ON 19 DEC 77.
P/CM2-SEC-MEV-STER
1.E+7
1.E+6
1.E+5
1.E+4
1000.
100.0
10.00
1.000
Kp
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976


TIME VARIATION L = 2.50 E = .96 S3-3 DATA SAMPLE.
RAN ON 19 DEC 77.
P/CM2-SEC-MEV-STER
1.E+7
1.E+6
1.E+5
1.E+4
1000.
100.0
10.00
1.000
Kp
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976


TIME VARIATION
L = 2.50
E = 1.40
S3-3 DATA SAMPLE.
RAN ON 19 DEC 77.
P/CM2-SEC-MEV-STER
Kp
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS) 1976


TIME VARIATION L = 2.50 E = 1.96 S3-3 DATA SAMPLE.
RAN ON 19 DEC 77.
P/CM2-SEC-MEV-STER
Kp
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976


TIME VARIATION L = 2.50 E = 2.77 S3-3 DATA SAMPLE.
RAN ON 19 DEC 77.
P/CM2-SEC-MEV-STER
Kp


TIME VARIATION L = 2.50 E = 4.65 S3-3 DATA SAMPLE.
RAN ON 19 DEC 77.
P/CM**2-SEC-MEV-STER
Kp
200.0
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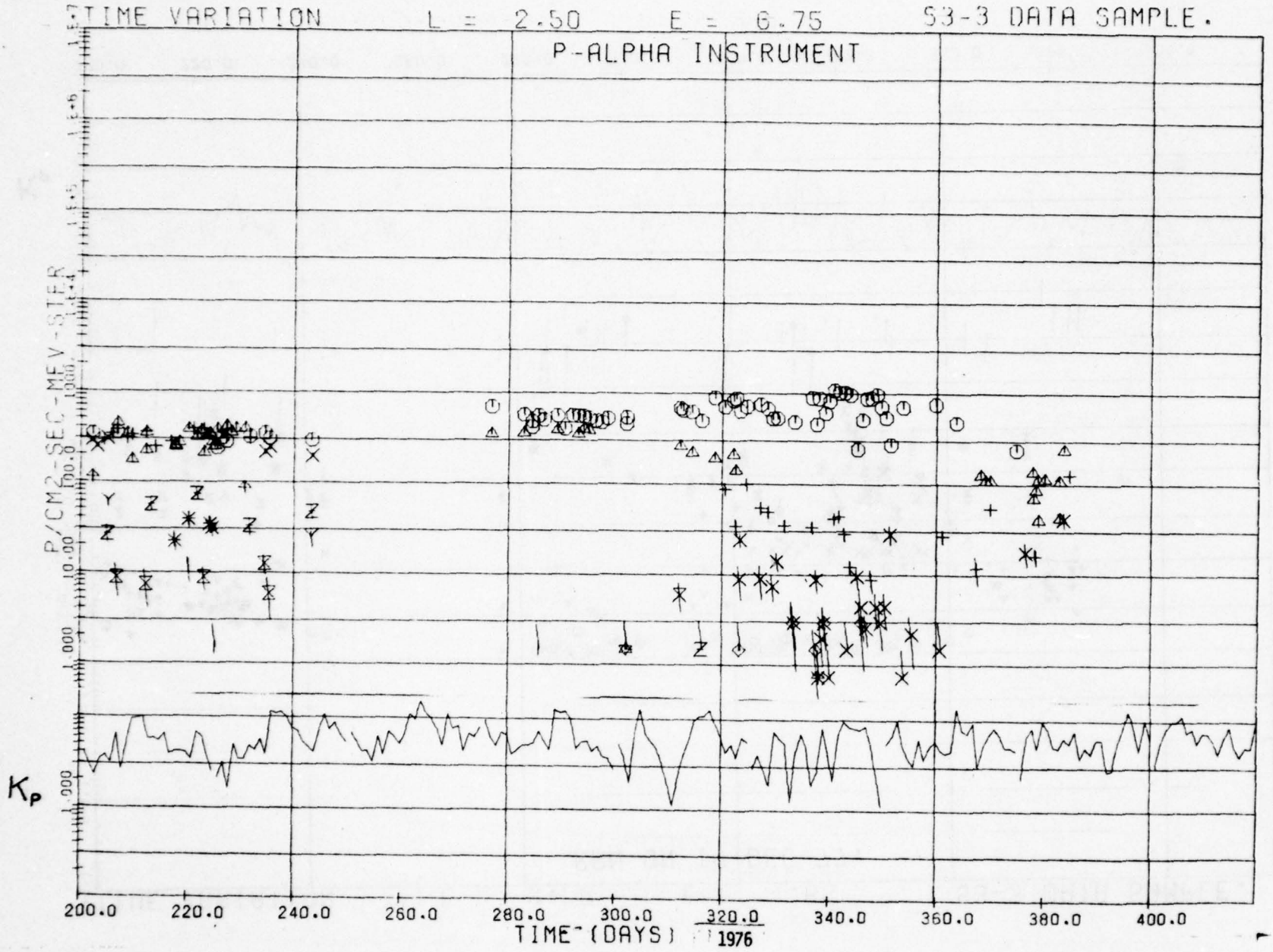
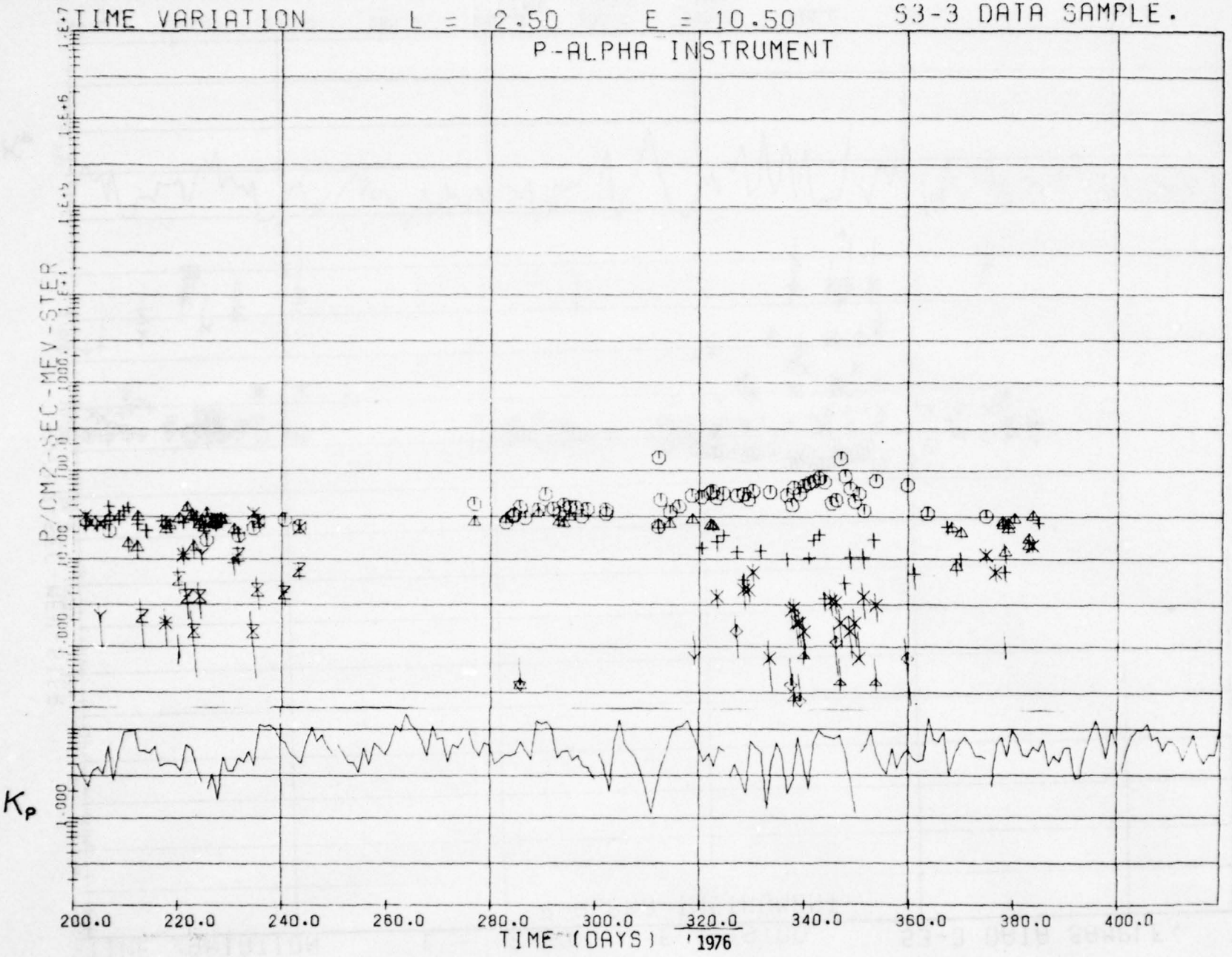
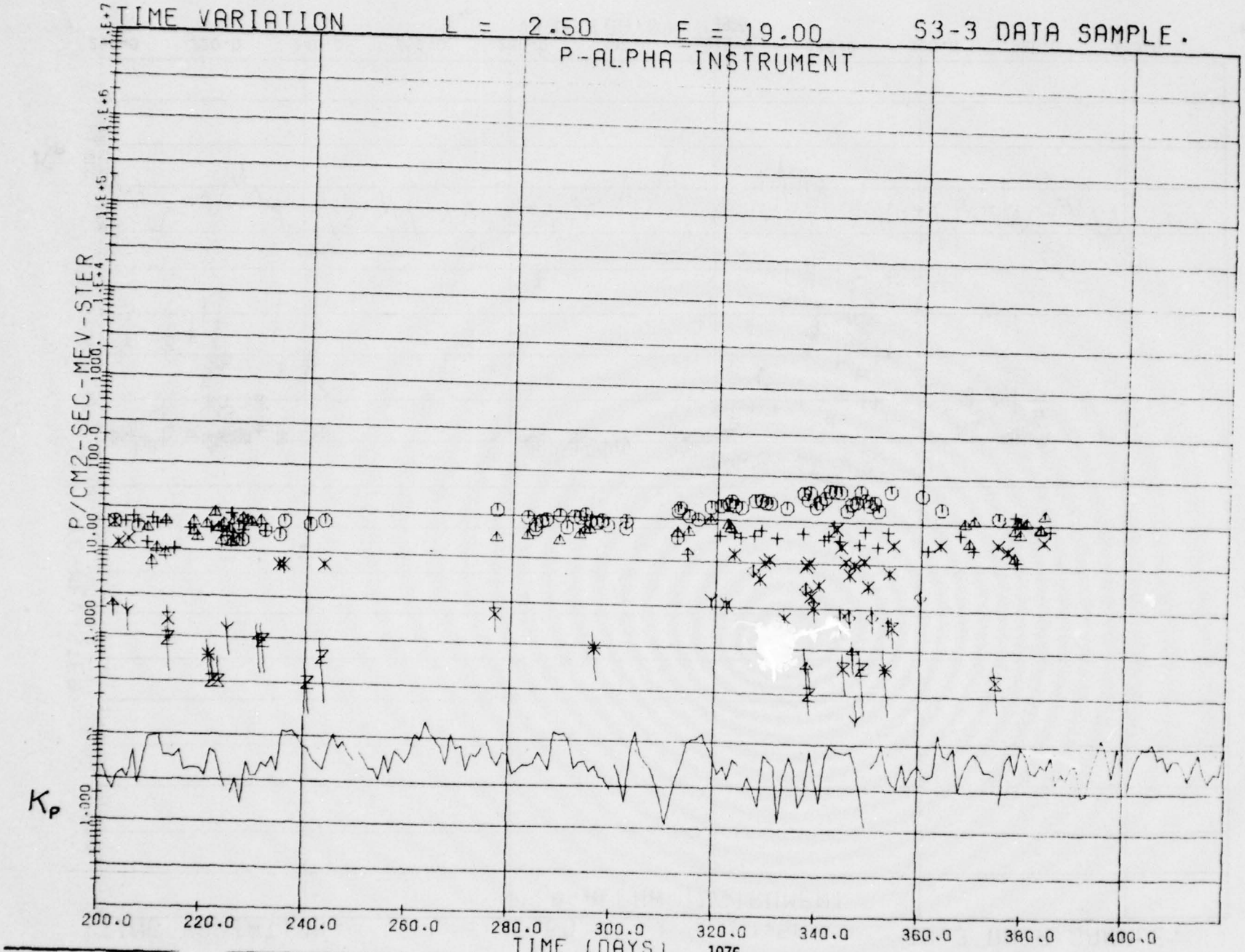
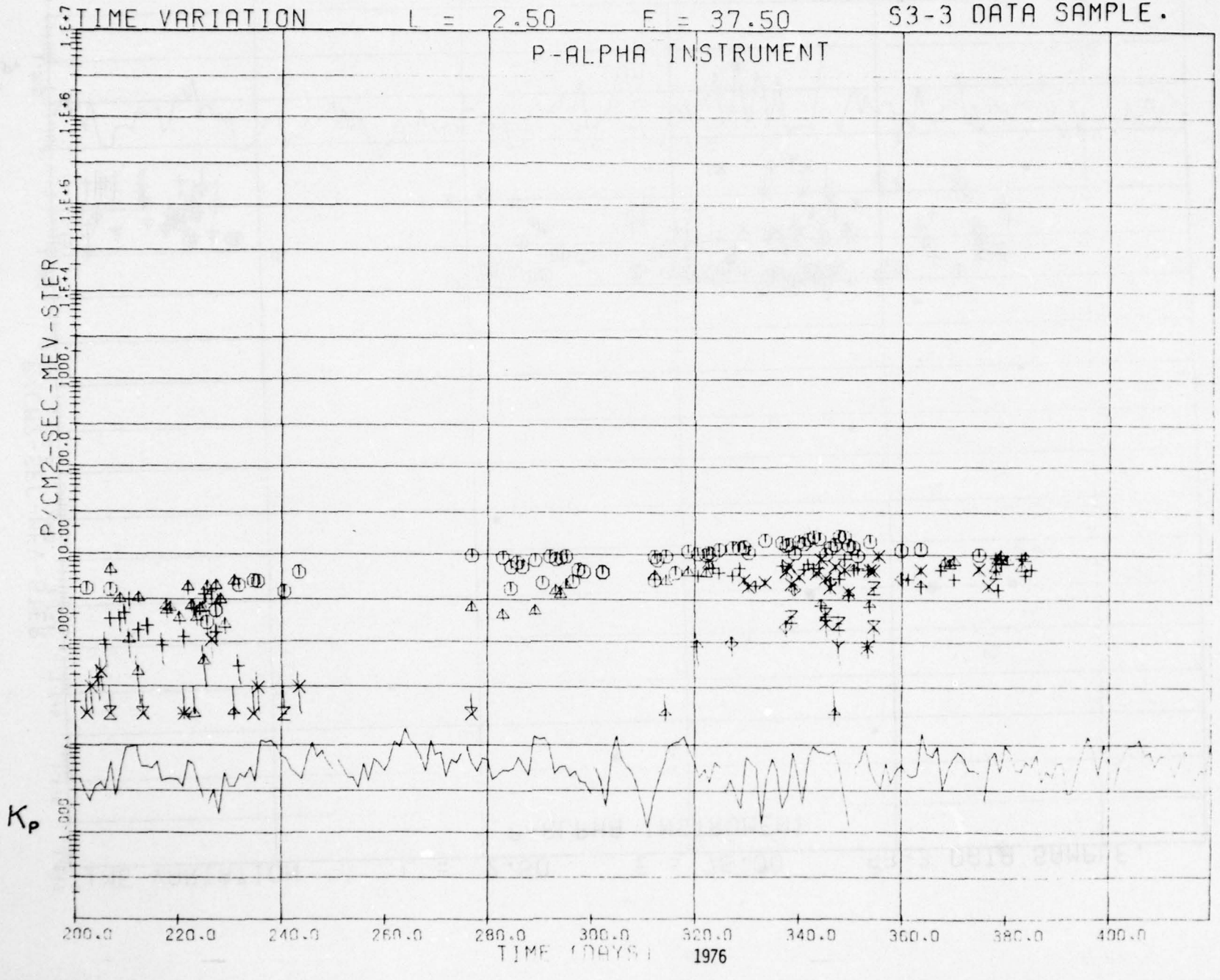
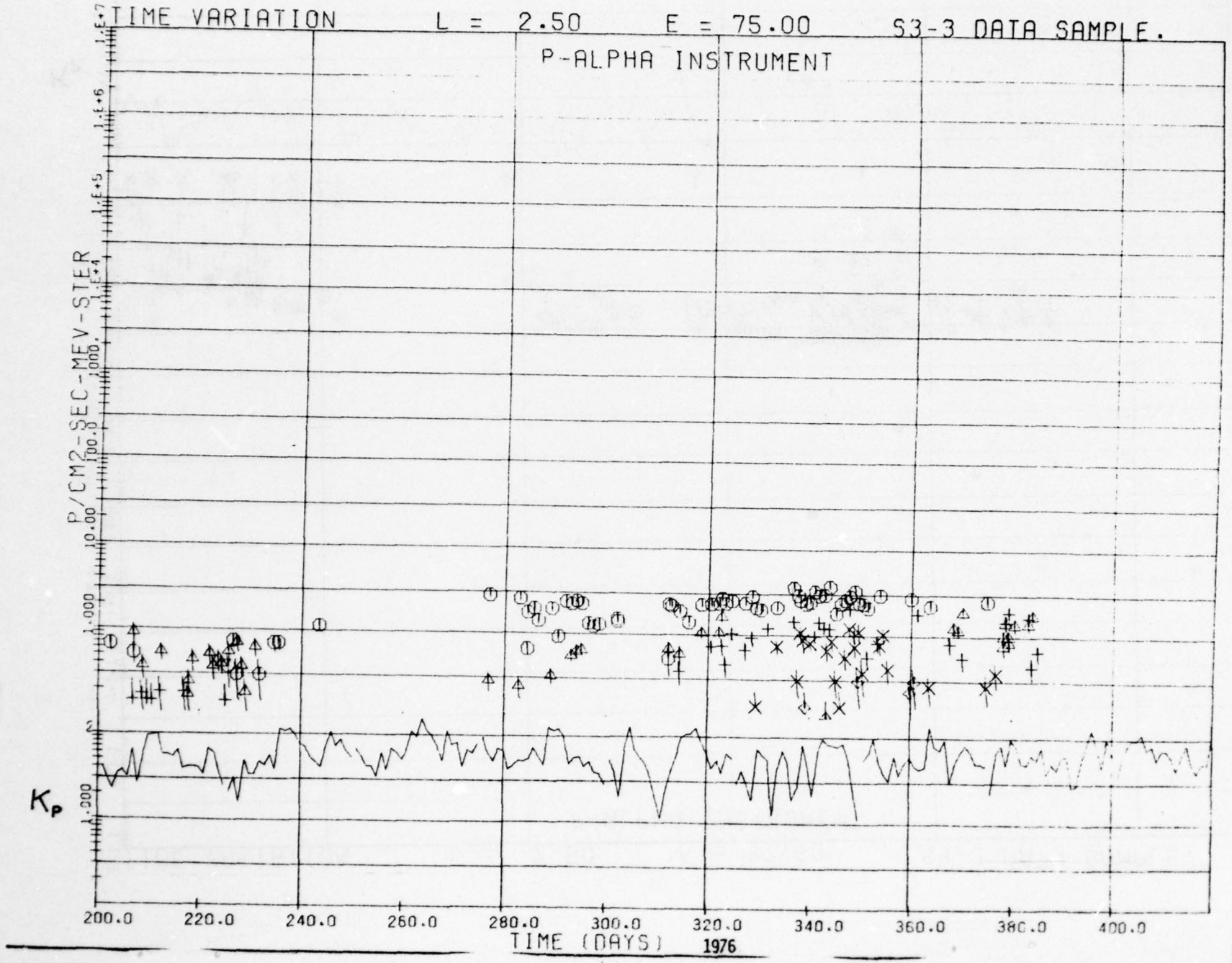
360.0
380.0
400.0


TIME VARIATION L = 2.50 E = 6.75 S3-3 DATA SAMPLE.
P-ALPHA INSTRUMENT
P/CM2-SEC-MEV-STER
1.E+7
1.E+6
1.E+5
1.E+4
1000.
100.0
10.00
1.000
.100
K_p
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976


TIME VARIATION L = 2.50 E = 10.50 S3-3 DATA SAMPLE.
P-ALPHA INSTRUMENT
P/CM2-SEC-MEV-STER
1.E+7
1.E+6
1.E+5
1.E+4
1000.
100.0
10.00
1.000
Kp
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976

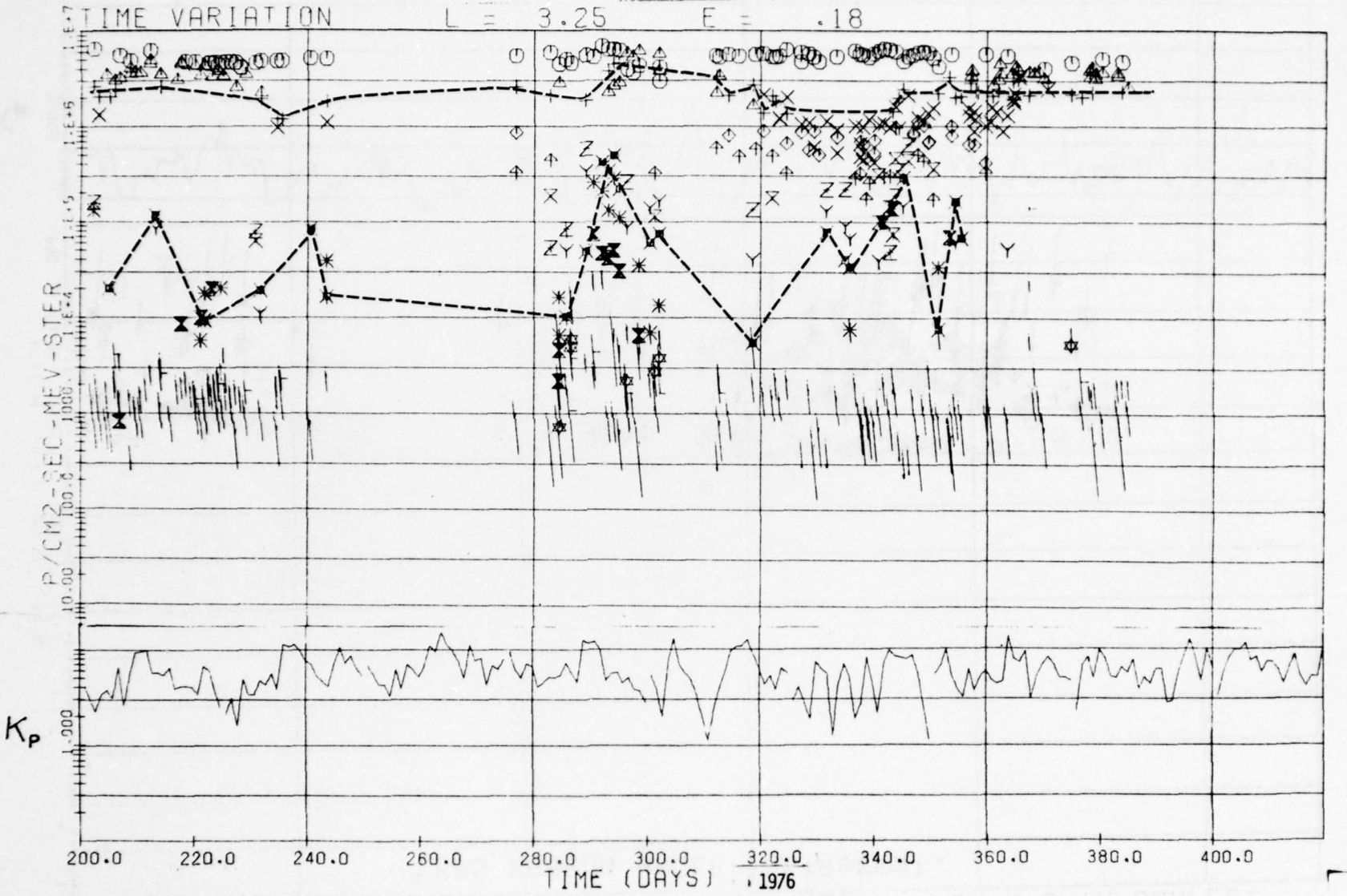

TIME VARIATION L = 2.50 E = 19.00 S3-3 DATA SAMPLE.
P-ALPHA INSTRUMENT
P/CM2-SEC-MEV-STER
1.E+7
1.E+6
1.E+5
1.E+4
1000.
100.0
10.00
1.000
.1000
.0100
K_P
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976

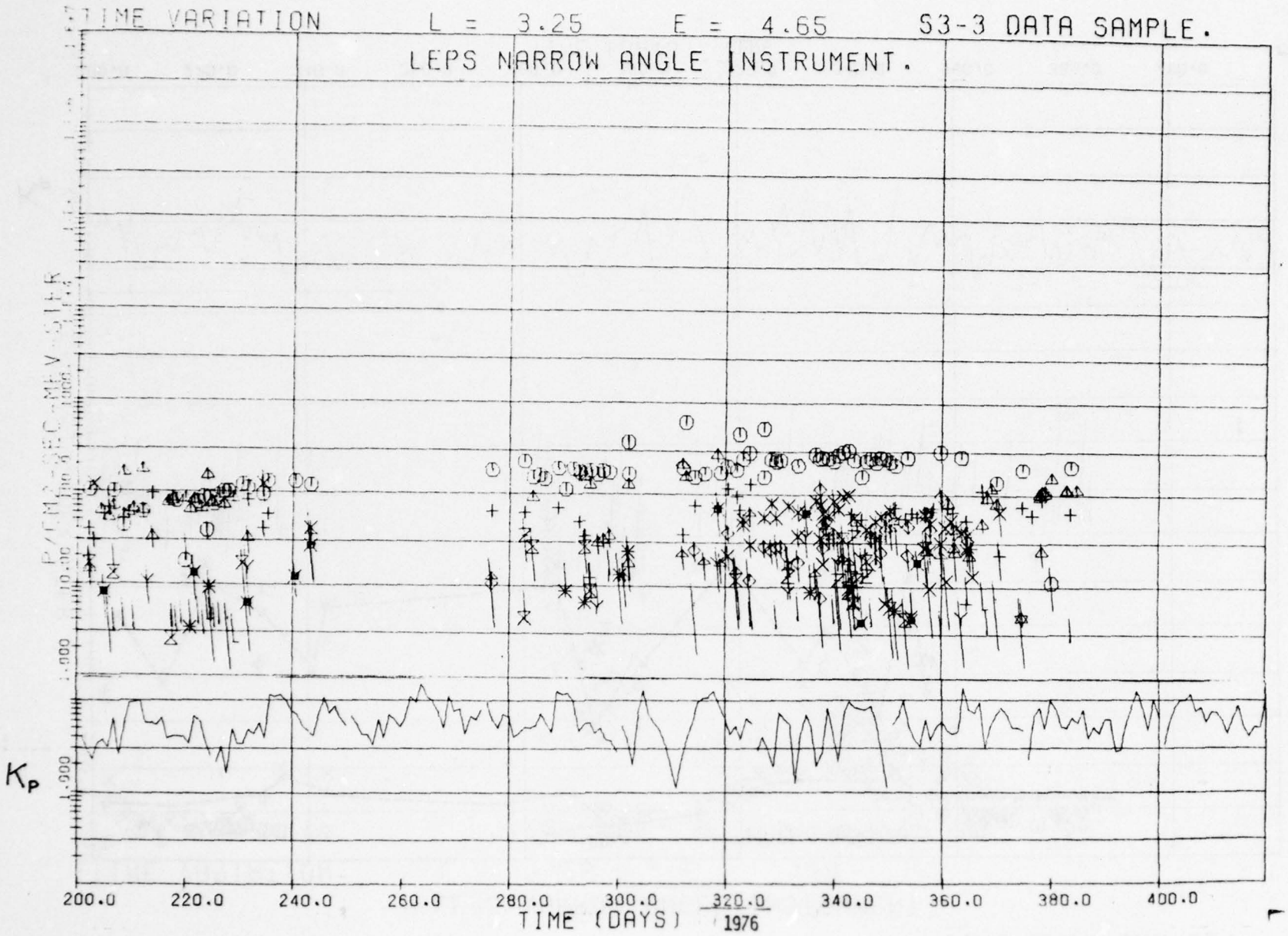

TIME VARIATION L = 2.50 E = 37.50 S3-3 DATA SAMPLE.
P-ALPHA INSTRUMENT
P/CM2-SEC-MEV-STER
1.E+7
1.E+6
1.E+5
1.E+4
1000.
100.0
10.00
1.000
.1000
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976
Kp

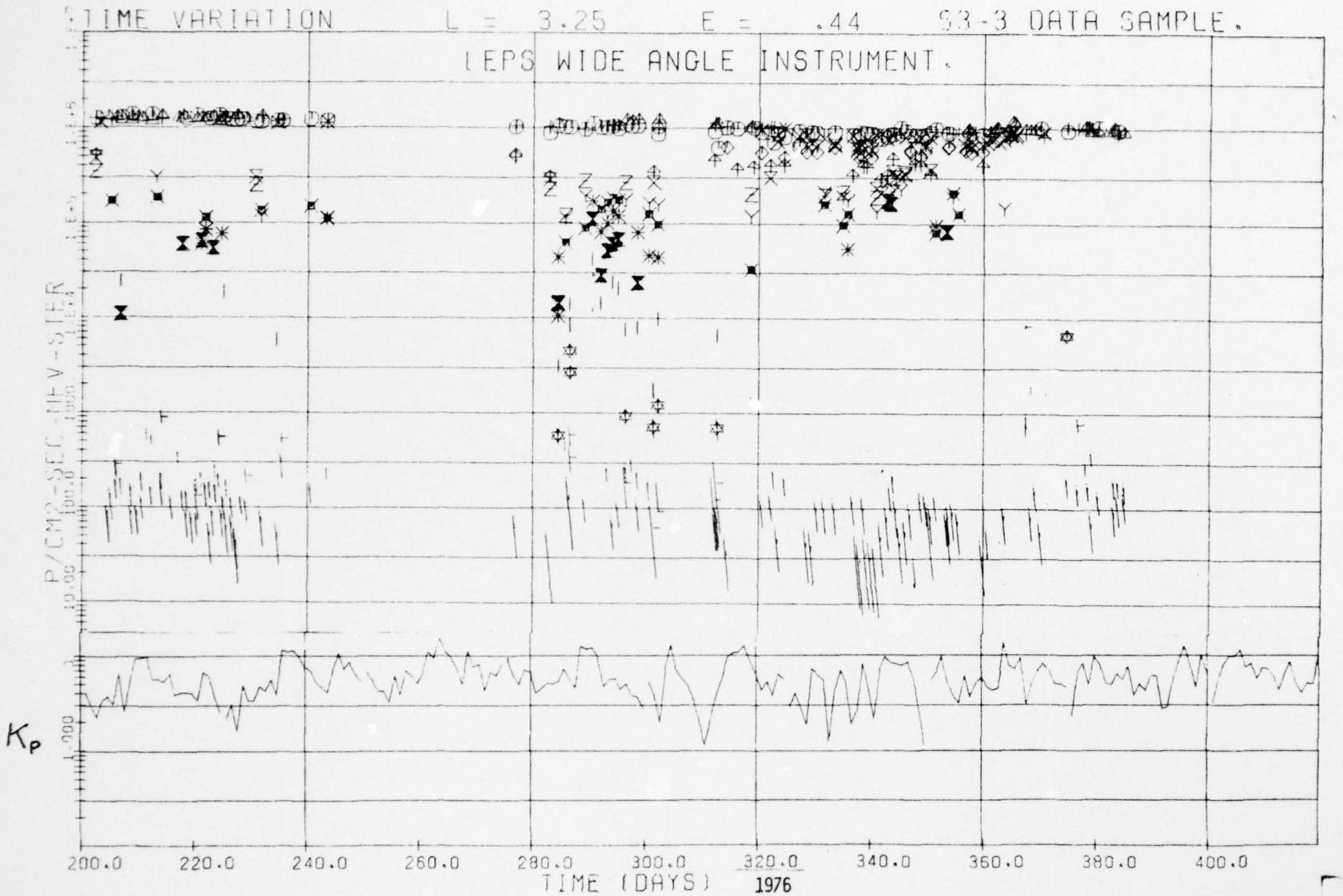

TIME VARIATION L = 2.50 E = 75.00 S3-3 DATA SAMPLE.
P-ALPHA INSTRUMENT
P/CM2-SEC-MEV-STER
1.E+7
1.E+6
1.E+5
1.E+4
1000.
100.0
10.00
1.000
2
1.000
K_p
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976

S3-3 DATA SAMPLE.

LEPS NARROW ANGLE INSTRUMENT.




TIME VARIATION L = 3.25 E = 4.65 S3-3 DATA SAMPLE.
LEPS NARROW ANGLE INSTRUMENT.
P/CM2-SEC-MEV-STER
10.00
1.000
1.000
K_p
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976


TIME VARIATION L = 3.25 E = .44 S3-3 DATA SAMPLE.
LEPS WIDE ANGLE INSTRUMENT.
P/CM2-SEC-NEV-SIER
Kp
200.0
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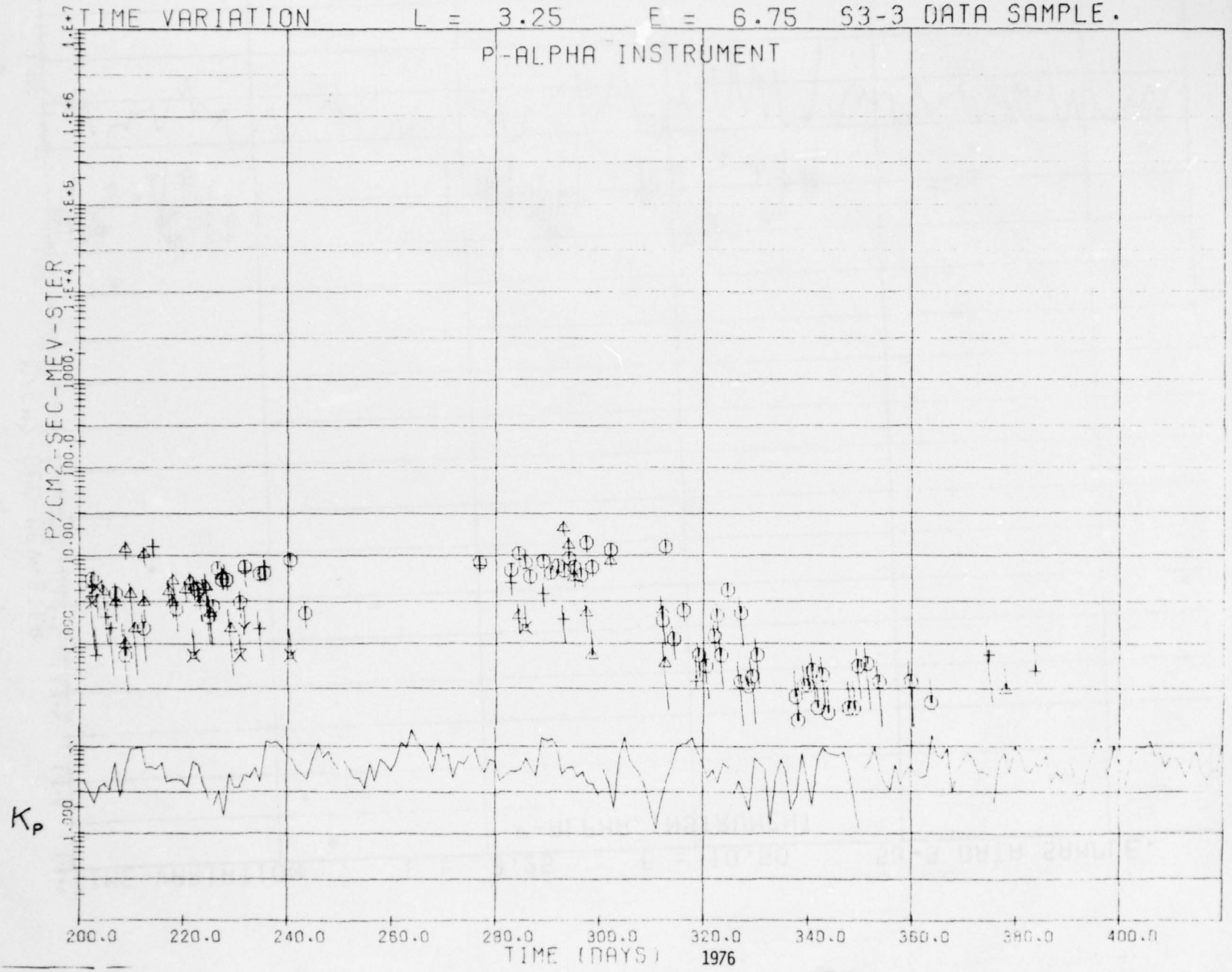
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976



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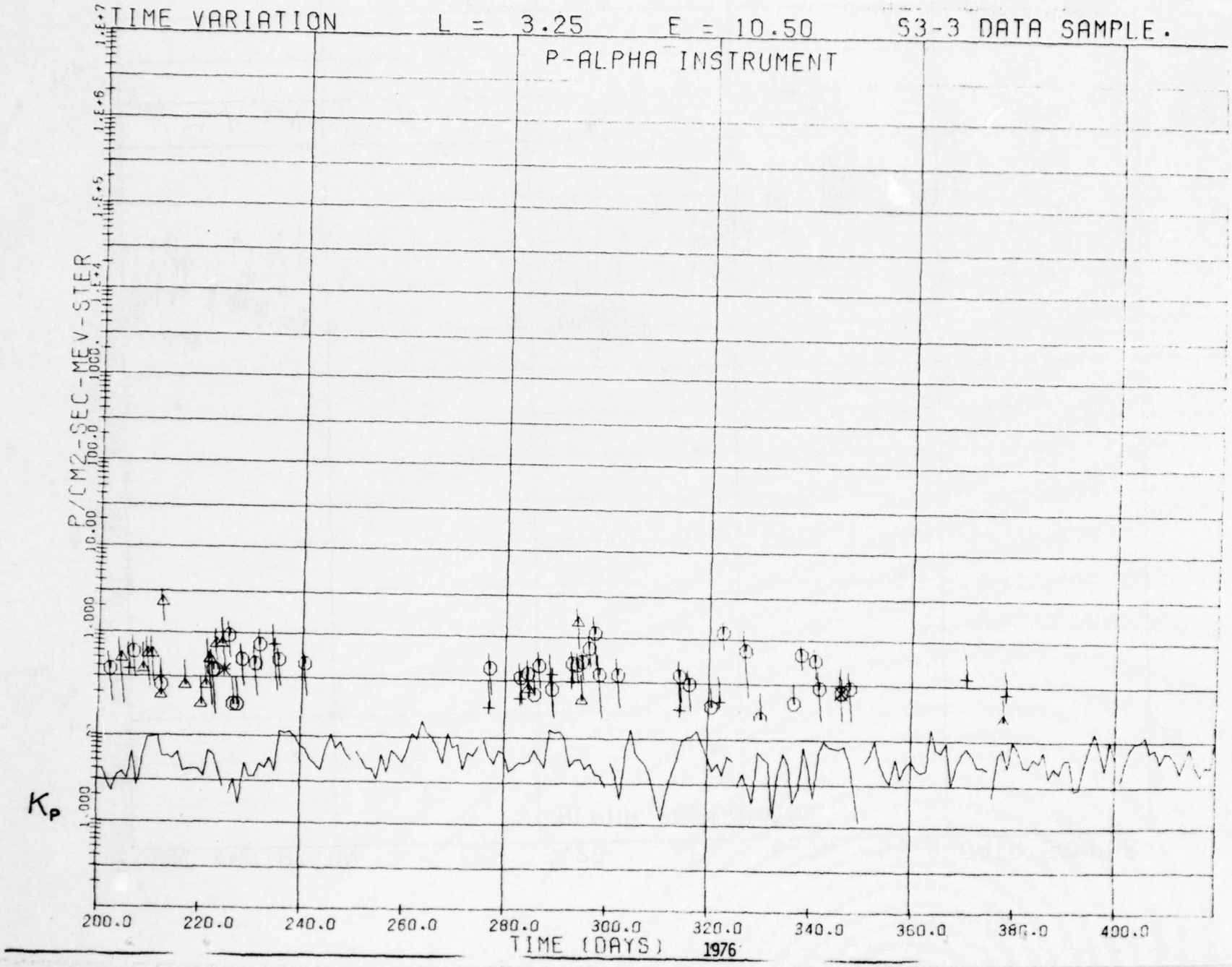
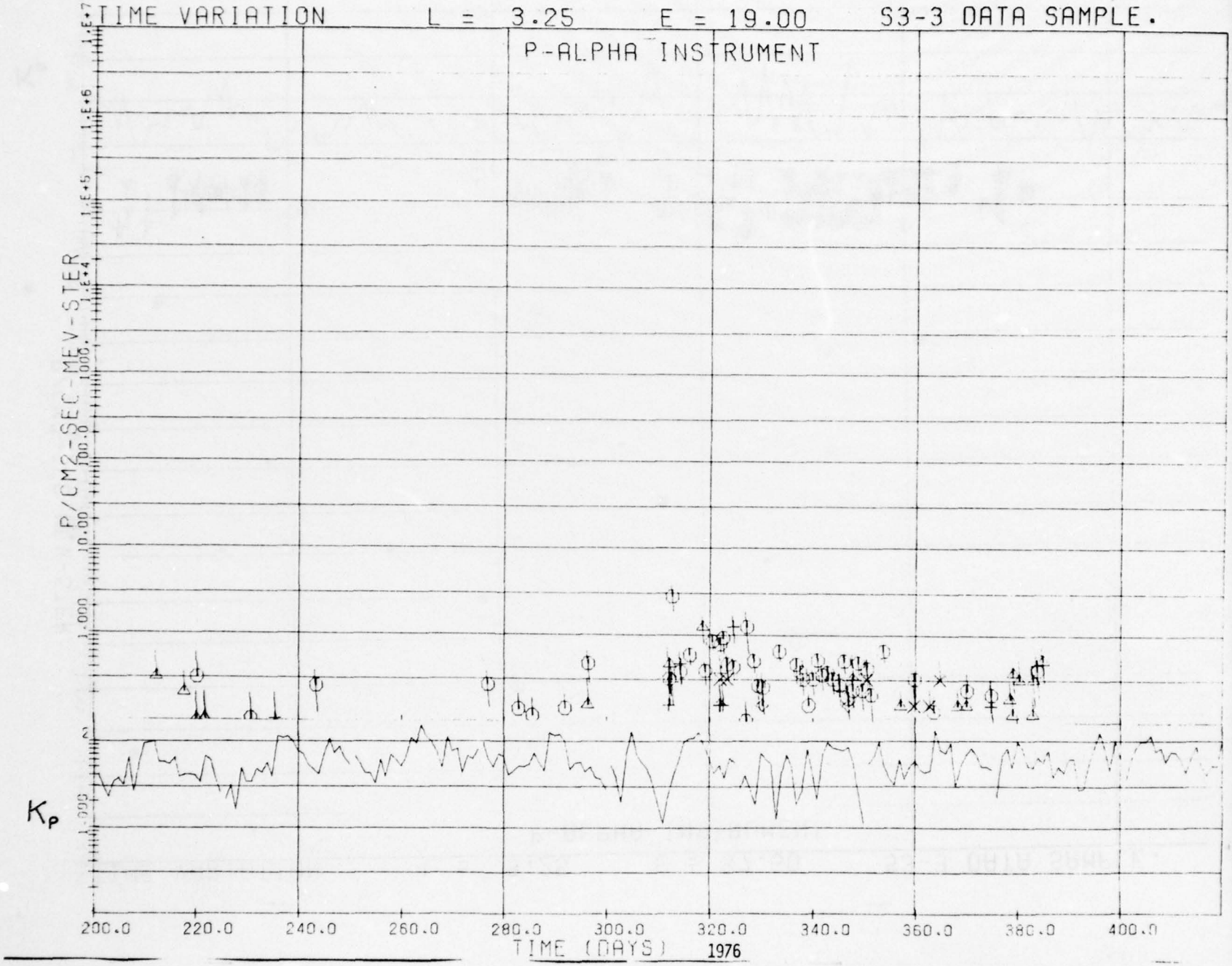
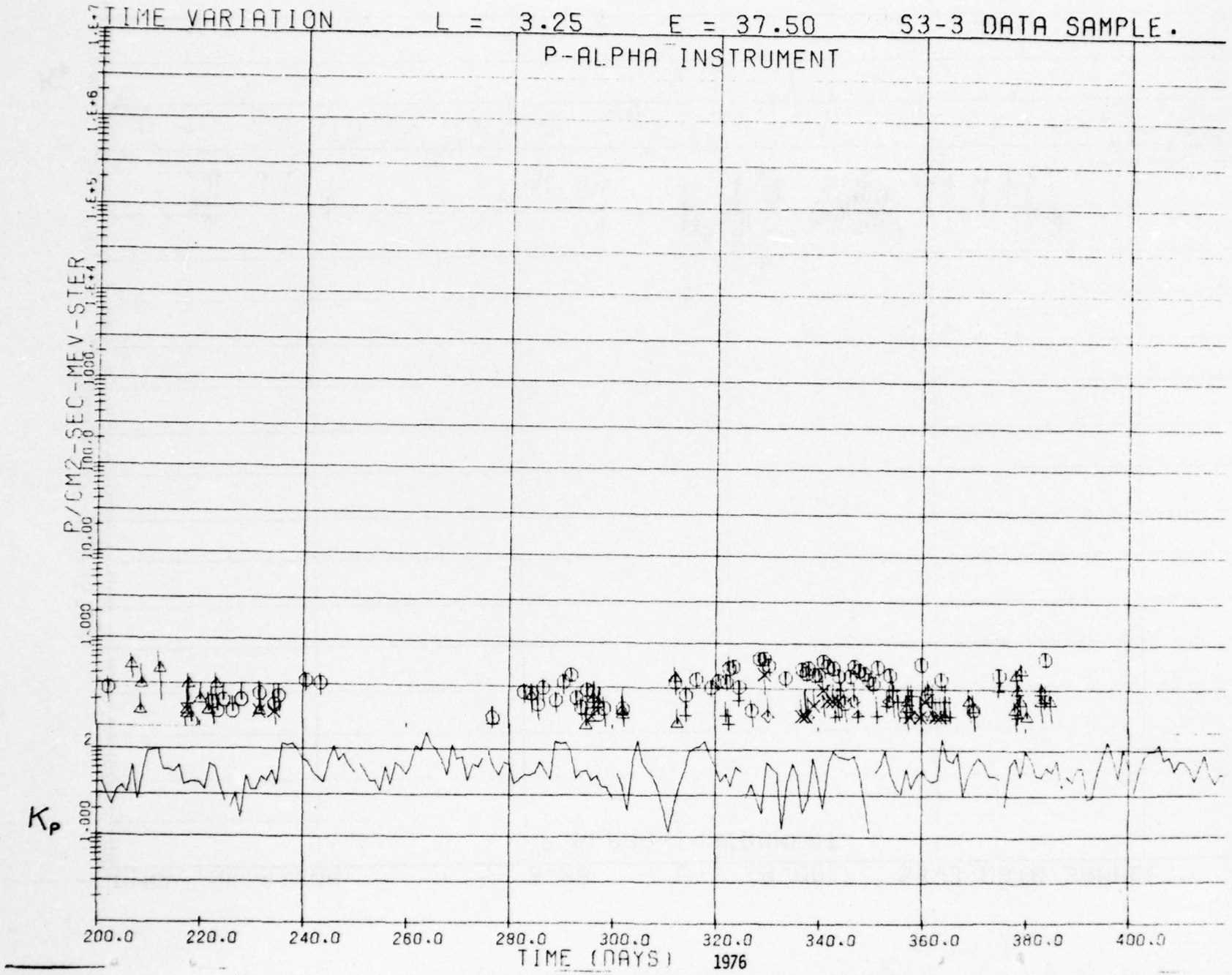

TIME VARIATION L = 3.25 E = 10.50 S3-3 DATA SAMPLE.
P-ALPHA INSTRUMENT
P/CM2-SEC-MEV-STER
1.E+7
1.E+6
1.E+5
1.E+4
1000.
100.0
10.00
1.000
.100
1.000
Kp
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS) 1976


TIME VARIATION L = 3.25 E = 19.00 S3-3 DATA SAMPLE.
P-ALPHA INSTRUMENT
P/CM2-SEC-MEV-STER
1.E+7
1.E+6
1.E+5
1.E+4
1000.
100.0
10.00
1.000
.100
Kp
9
6
3
2
1
0
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS) 1976


TIME VARIATION L = 3.25 E = 37.50 S3-3 DATA SAMPLE.
P-ALPHA INSTRUMENT
P/CM2-SEC-MEV-STER
1.E+7
1.E+6
1.E+5
1.E+4
1000.
100.0
10.00
1.000
2
1.000
Kp
200.0
220.0
240.0
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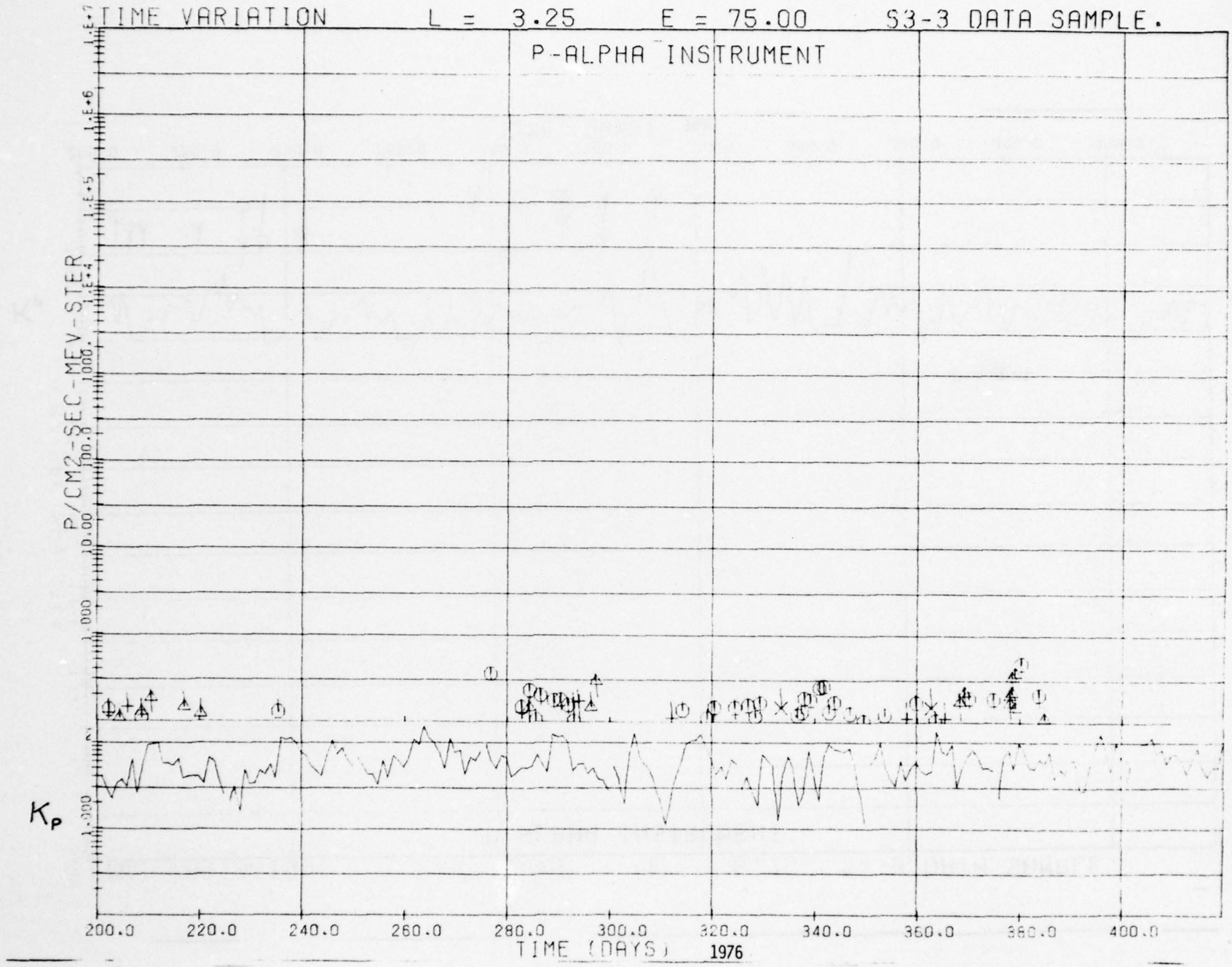
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976


TIME VARIATION L = 3.25 E = 75.00 S3-3 DATA SAMPLE.
P-ALPHA INSTRUMENT
P/CM2-SEC-MEV-STER
1.E+7
1.E+6
1.E+5
1.E+4
1000.
100.0
10.00
1.000
.1000
200.0
220.0
240.0
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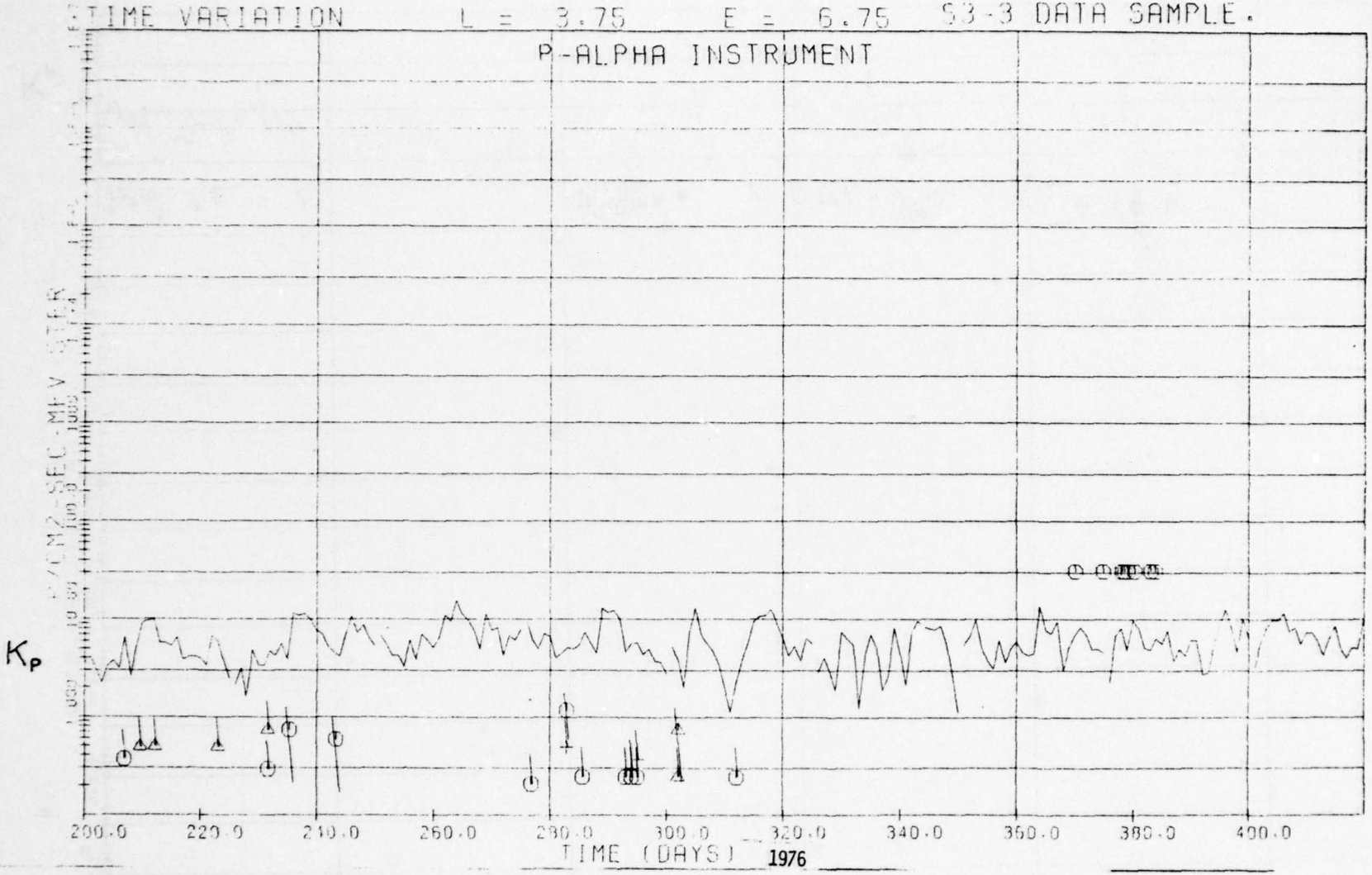
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS) 1976
K_P


TIME VARIATION L = 3.75 E = 6.75 S3-3 DATA SAMPLE.
P-ALPHA INSTRUMENT
P/CM2-SEC-MEV-STER
Kp
200.0
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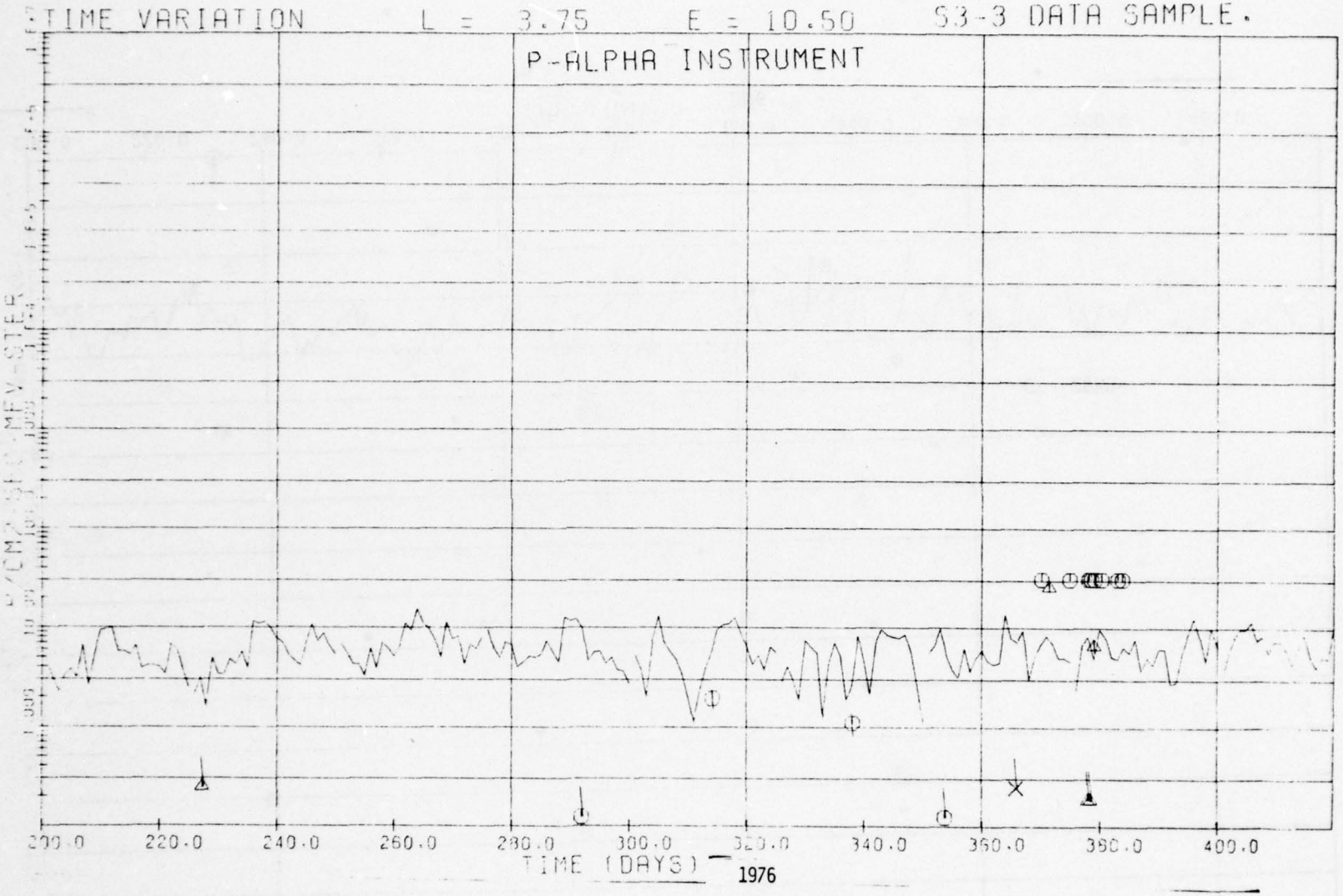
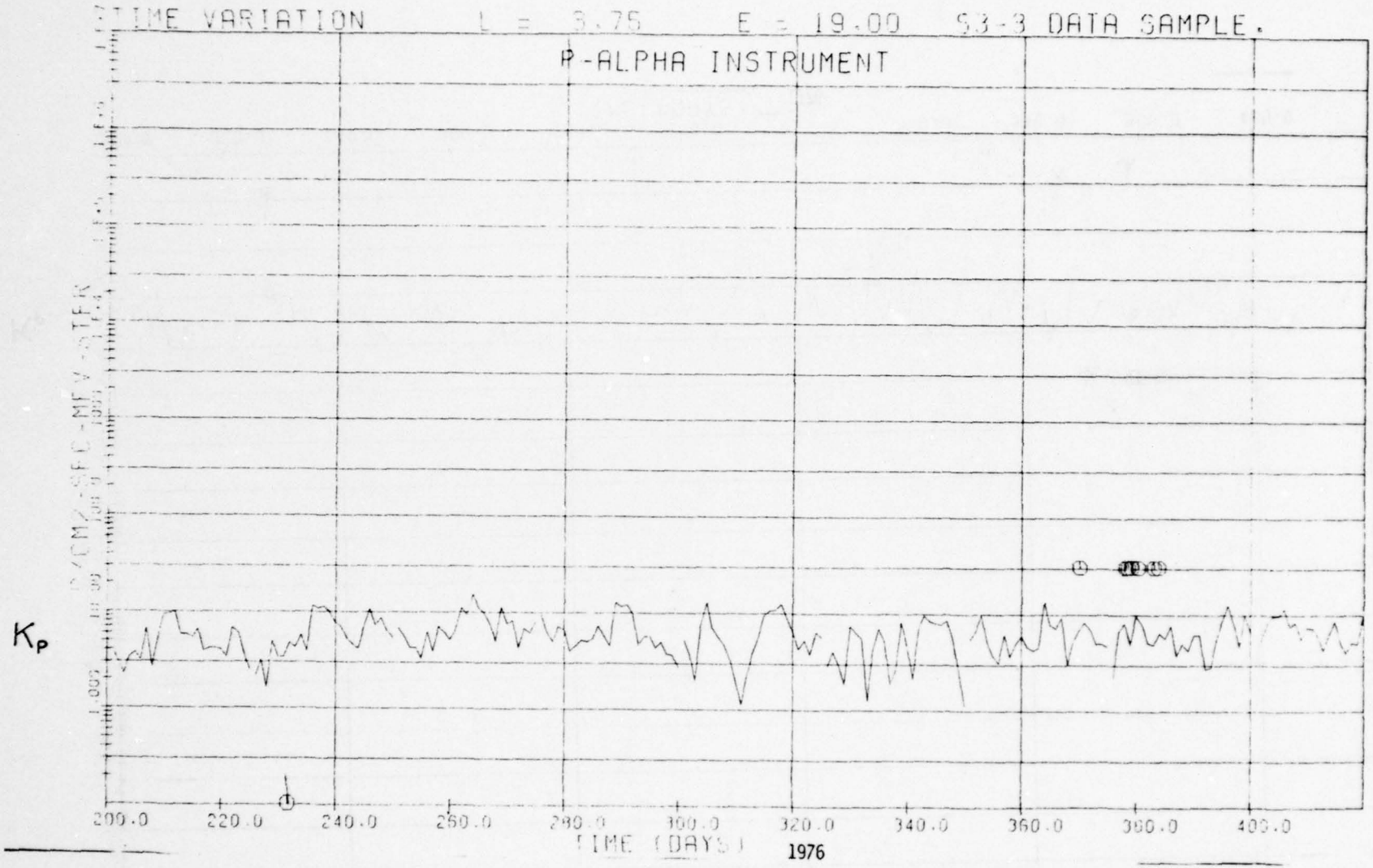
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS) 1976


TIME VARIATION L = 3.75 E = 10.50 S3-3 DATA SAMPLE.
P-ALPHA INSTRUMENT
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976

K_p


TIME VARIATION L = 3.75 E = 19.00 S3-3 DATA SAMPLE.
P-ALPHA INSTRUMENT
200.0
220.0
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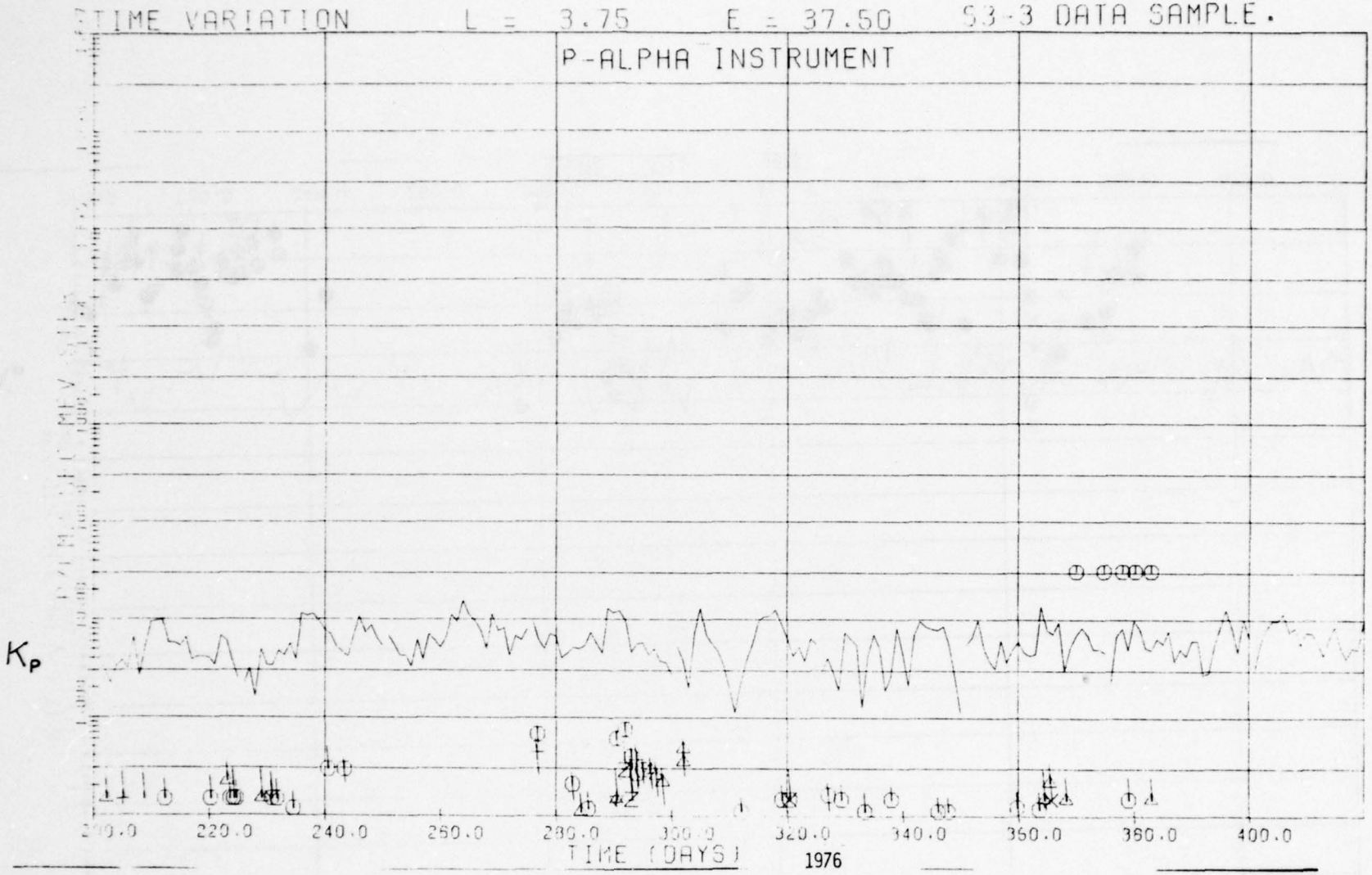
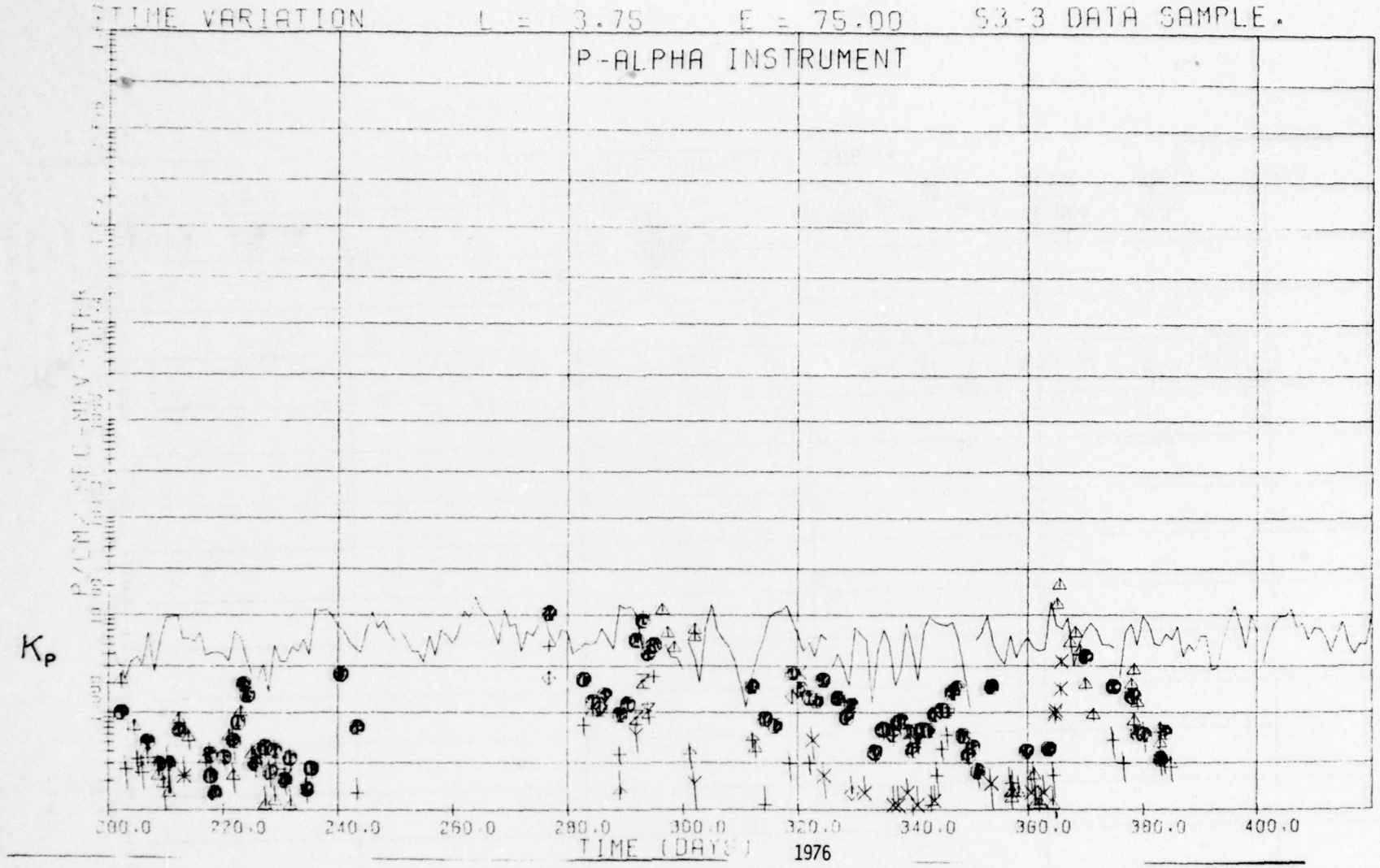
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976

K_P


TIME VARIATION L = 3.75 E = 37.50 S3-3 DATA SAMPLE.
P-ALPHA INSTRUMENT
K_P
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976


TIME VARIATION L = 3.75 E = 75.00 S3-3 DATA SAMPLE.
P-ALPHA INSTRUMENT
P/CM2 SEC-MEV STER
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
TIME (DAYS)
1976

K_p