#633

MOD2
MODELING PROGRAMS 2
TRAPPED PROTON AND ELECTRON
MODEL ENVIRONMENTS

Table of Contents

----

1. INTRODUCTION:

The documentation for this data set was originally on paper, kept in NSSDC's Data Set Catalogs (DSCs). The paper documentation in the Data Set Catalogs have been made into digital images, and then collected into a single PDF file for each Data Set Catalog. The inventory information in these DSCs is current as of July 1, 2004. This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system. The information existing in the DSCs is now not needed for locating the data files, but we did not remove that inventory information.

The offline tape datasets have now been migrated from the original magnetic tape to Archival Information Packages (AIP's).

A prior restoration may have been done on data sets, if a requestor of this data set has questions; they should send an inquiry to the request office to see if additional information exists.

2. ERRATA/CHANGE LOG:

NOTE: Changes are made in a text box, and will show up that way when displayed on screen with a PDF reader.

When printing, special settings may be required to make the text box appear on the printed output.

Version	Date	Person	Page	Description of Change
01				
02				

3 LINKS TO RELEVANT INFORMATION IN THE ONLINE NSSDC INFORMATION SYSTEM:

http://nssdc.gsfc.nasa.gov/nmc/

[NOTE: This link will take you to the main page of the NSSDC Master Catalog. There you will be able to perform searches to find additional information]

4. CATALOG MATERIALS:

a. Associated Documents — To find associated documents you will need to know the document ID number and then click here.
http://nssdcftp.gsfc.nasa.gov/miscellaneous/documents/

b. Core Catalog Materials

NSSDC ID: MT-29D

May 7, 1982

Model AEI-7HI - MT-29B SPMS-00778

The model AEI-7 was an interim model that replaced the outer zone models AE-4 solar maximum and AE-4 solar minimum by correcting for the spectrum above about 1.5 MeV. Two versions of AEI-7 were available: AEI-7HI and AEI-7LO. The former model favors Vampola's fits to the OV1-19 data and the latter is more representative of the AZUR >4.5 MeV data of Hovestadt and the ATS 6 Electron Spectrometer data of Paulikas. In the process of constructing AE-8 it has been found that the OV1-19 data of Vampola is not valid above 2 or 3 MeV depending on L value. Consequently, AEI-7HI is being withdrawn as a valid model and is only kept for historical purposes. Model AEI-7HI will not be released by NSSDC without prior consultation and approval by Dr. James I. Vette.

To incorporate AEI-7HI into existing programs, the COMMON areas and calls to the AE-4 models should be removed and the following cards added in their place.

```
COMM/AEI7HI/DAE7HI(8), LAE7HI(1)
IF(MODEL.EQ.3.AND.IL.GE.280) CALL TRARA1 (DAE7HI,LAE7HI,FL,B,E,F,NE)
IF(MODEL.EQ.4.AND.IL.GE.280) CALL TRARA1 (DAE7HI,LAE7HI,FL,B,E,F,NE)
```

To avoid changing the AE-6 and AE-5 min models at L=2.8, the IF statements calling these models should be changed from LE.280 to LT.280.

AE-8 should be available as a data deck by September 1982 and as a completely documented model by December 1982.

NSSDC ID: MT-29A

SPMS-00779

Model AEI-7LO - MT-29C

The model AEI-7LO is an interim model replacing the outer zone models AE-4 solar maximum and AE-4 solar minimum. It is based on AZUR >4.5 MeV electron data of Hovestadt and the ATS 6 Electron Spectrometer data of Paulikas to correct the high energy portion of AE-4 above about 1.5 MeV. A complete model AE-8 will replace AEI-7LO. Model AEI-7LO will not be documented, but AE-8 will be fully documented. To incorporate this model into existing programs, the COMMON areas and calls to the AE-4 models should be removed and the following cards added in their place.

```
COMM/AEI7LO/DAE7HI(8), LAE7LO(1)
IF(MODEL.EQ.3.AND.IL.GE.280) CALL TRARA1 (DAE7LO,LAE7LO,FL,B,E,F,NE)
IF(MODEL.EQ.4.AND.IL.GE.280) CALL TRARA1 (DAE7LO,LAE7LO,FL,B,E,F,NE)
```

To avoid changing the AE-6 and AE-5 min models at L=2.8, the IF statements calling these models should be changed from LE.280 to LT.280.

MT-51B,D,F,H

National Aeronautics and
Space Administration

Goddard Space Flight Center
Greenbelt, Maryland
20771

NASA

April 15, 1977
File No. 13489

Reply to Attn of:

TO: Distribution

FROM: Director, NSSDC/WDC-A-R&S

SUBJECT: A Comparison of Trapped Proton Models AP8MIN and AP8MAX with Their Compressed Versions AP8MIC and AP8MAC

The AP-8 trapped proton models designated AP8MIN and AP8MAX (Sawyer and Vette, 1976) require approximately 17,000 storage locations and have been made available as separate data card decks. Since recent models, such as AE-5 (Teague and Vette, 1972), have been issued in the form of BLOCK DATA decks and since 17,000 storage locations will be prohibitive to some users, compressed versions of AP8MIN and AP8MAX, requiring 6,697 and 6,518 storage locations respectively, have been generated in BLOCK DATA statement form. These versions are designated AP8MIC and AP8MAC and are compatible with programs MODEL and ORP (Teague et al., 1976) issued previously. The appropriate common block arrays to use are of the form

```
COMMON/AP8MIC/D8MIC(8),L8MIC(6689)
COMMON/AP8MAC/D8MAC(8),L8MAC(6510)
```

for the AP8MIC and AP8MAC models, respectively. As an example, consider the use of AP8MIC with program MODEL (version 3.0). It is only necessary to modify subroutine TYPE to include the COMMON statement

```
COMMON/AP8MIC/D8MIC(8),L8MIC(1)
```

and to change the 'IF(MODEL.EQ.2), etc.' statement to

```
IF(MODEL.EQ.2)CALL TRARA1(D8MIC,L8MIC,FL,B,E,F,NE)
```

before executing the program. The corresponding changes for using AP8MAC are similar except that the 'IF(MODEL.EQ.1), etc.' statement is the one to be modified appropriately.

AP8MIC was obtained from AP8MIN by the elimination of selected L values and energies. The elimination was carried out under the three constraints of (1) reducing the storage requirement to less than 7,000 computer words, (2) creating a minimum impact on the B-L region containing the solar cycle dependence in AP8MIN (high B values for L less than 3.0), and (3) producing a minimum deviation between AP8MIC and AP8MIN over the remaining space of high-altitude (non-atmospheric) B-L points. The success of this effort can be seen by examining Figures 1 through 12, which show alternate plots of flux as a function of energy and B/B_0 value, for six different L values.

No significant variations between AP8MIC and AP8MIN are apparent in Figures 1 through 4, which correspond to L values of 1.5 and 2.0. These L values are a fair representation of the comparison situation for all L values up to 3.0. The first significant deviations are seen at L = 3.2 in Figures 5 and 6. These deviations are typically less than a factor of two and occur primarily in the region of the atmospheric cutoff, which is already uncertain because of the steep spatial gradients (Sawyer and Vette, 1976). The comparisons at higher L values are well represented by the remaining Figures 7 through 12, which cover the L values of 4.0, 5.25, and 6.6. Deviations are typically much less than a factor of two over most of this space, with larger differences confined to low-flux values in the region of the atmospheric cutoff. In general, the significant differences between AP8MIC and AP8MIN occur in regions where AP8MIN is already uncertain. Thus, AP8MIC should be a satisfactory substitute for AP8MIN for the majority of users.

Since AP8MAX, which is the solar maximum version of AP8MIN, differs from AP8MIN only for L values less than 3.0, the same situation holds for the comparison between the compressed versions AP8MAC and AP8MIC. In addition, AP8MAC is nearly identical to AP8MAX for L values less than 3.0, as was shown above for AP8MIC and AP8MIN. Thus, it is not necessary to include a separate set of plots comparing AP8MAC and AP8MAX.

References:

Sawyer, D. M., and J. I. Vette," AP-8 Trapped Proton Environment for Solar Maximum and Solar Minimum," NSSDC/WDC-A-R&S 76-06, NASA TMX-72605, Goddard Space Flight Center, Greenbelt, Md., December 1976.

Teague, M. J., and J. I. Vette, "The Inner Zone Electron Model AE-5," NSSDC 72-10, NASA TMX-69987, Goddard Space Flight Center, Greenbelt, Md., November, 1972.

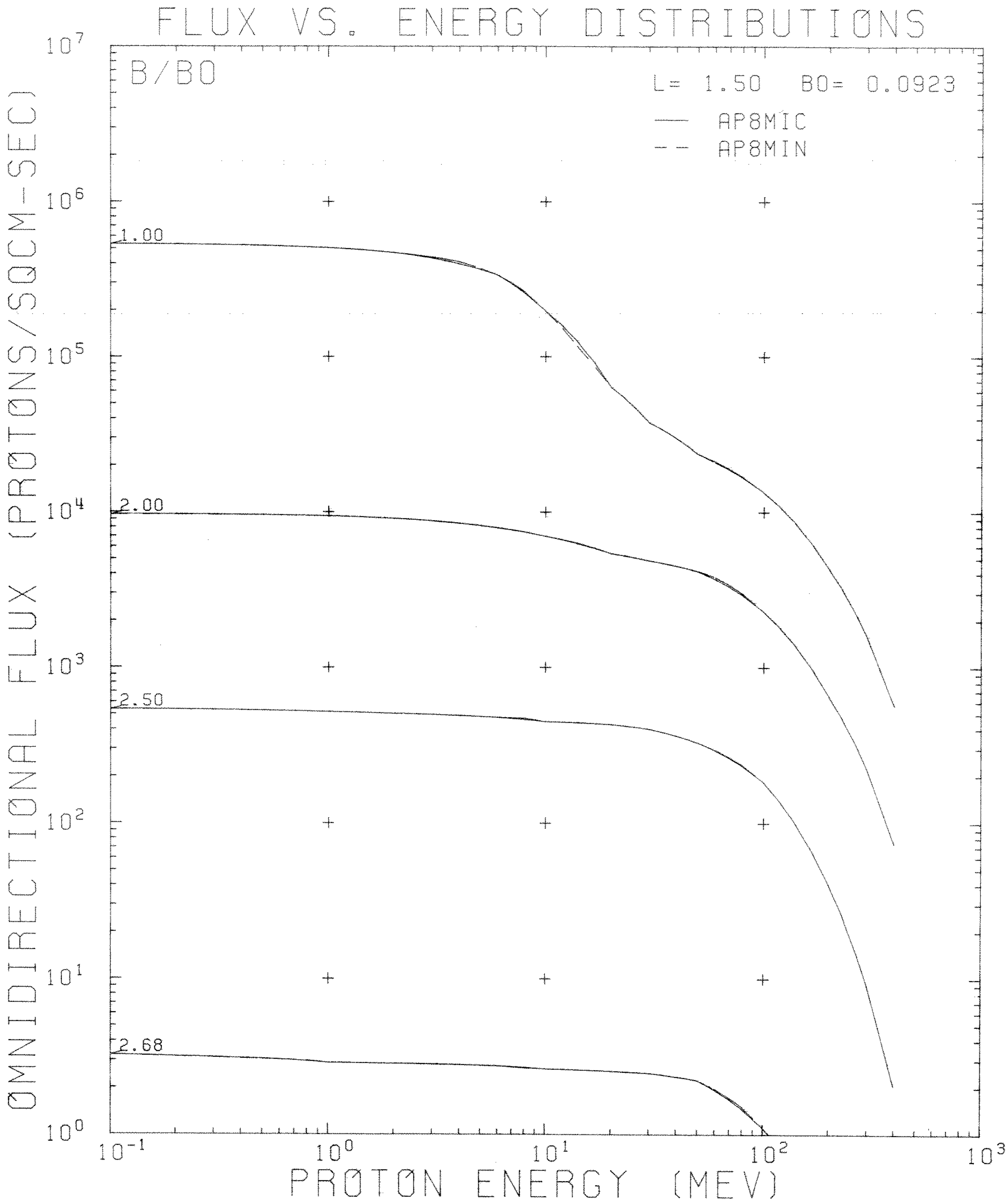
Teague, M. J., K. W. Chan, and J. I. Vette, "AE-6: A Model Environment of Trapped Electrons for Solar Maximum," NSSDC/WDC-A-R&S 76-04, NASA TMX-72597, Goddard Space Flight Center, Greenbelt, Md., May 1976.

Sincerely,

James I. Vette

James I. Vette

FIGURE 1



FLUX VS. ENERGY DISTRIBUTIONS
B/BO
L= 1.50 BO= 0.0923
AP8MIC
AP8MIN
1.00
2.00
2.50
2.68
10^7
10^6
10^5
10^4
10^3
10^2
10^1
10^0
ØMNIDIRECTIONAL FLUX (PRØTØNS/SQCM-SEC)
10^{-1}
10^0
10^1
10^2
10^3
PRØTØN ENERGY (MEV)

FIGURE 2

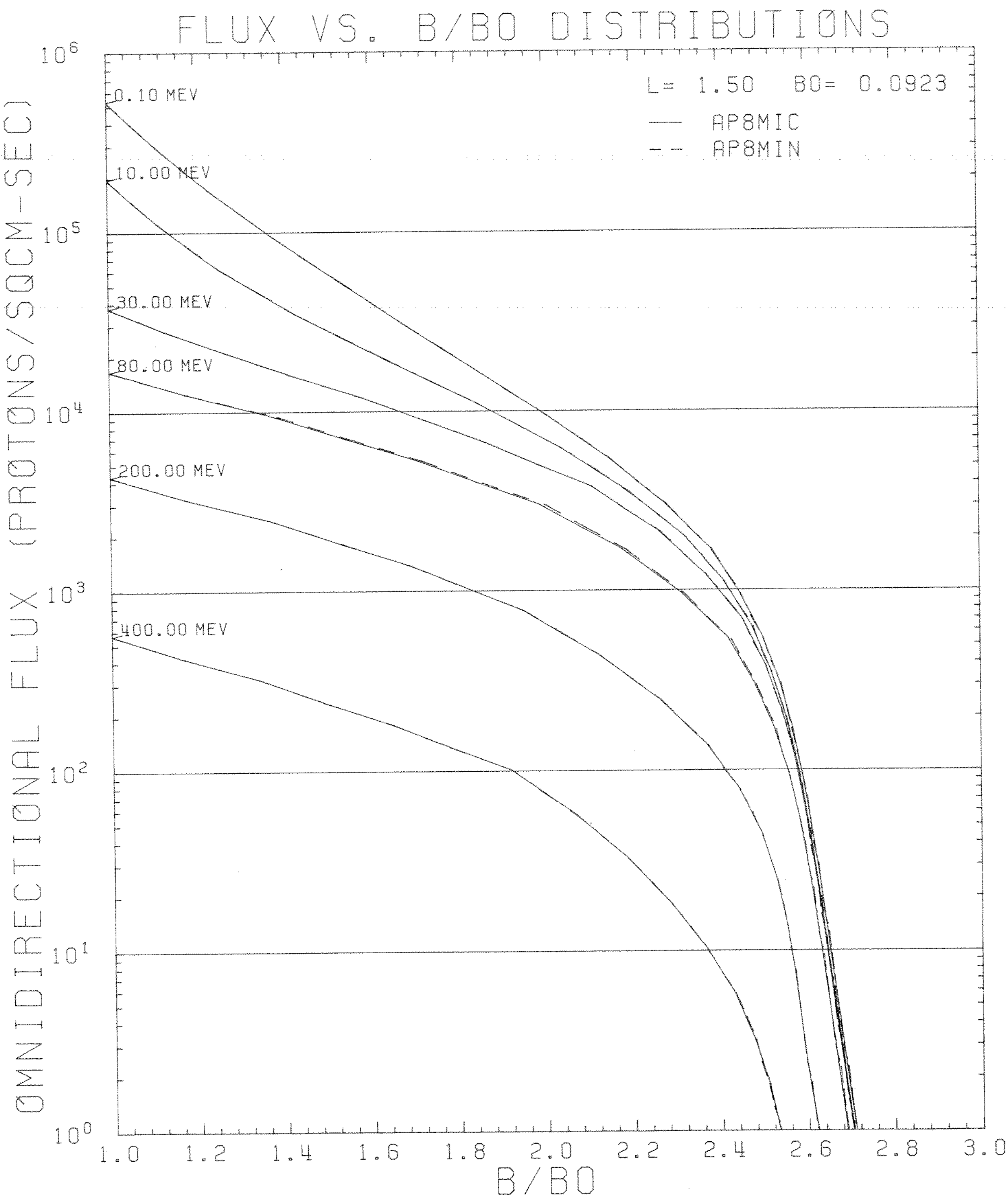

FLUX VS. B/BO DISTRIBUTIONS
L= 1.50 BO= 0.0923
AP8MIC
AP8MIN
0.10 MEV
10.00 MEV
30.00 MEV
80.00 MEV
200.00 MEV
400.00 MEV
ØMNIDIRECTIONAL FLUX (PRØTØNS/SQCM-SEC)
10^0
10^1
10^2
10^3
10^4
10^5
10^6
1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0
B/BO

FIGURE 3

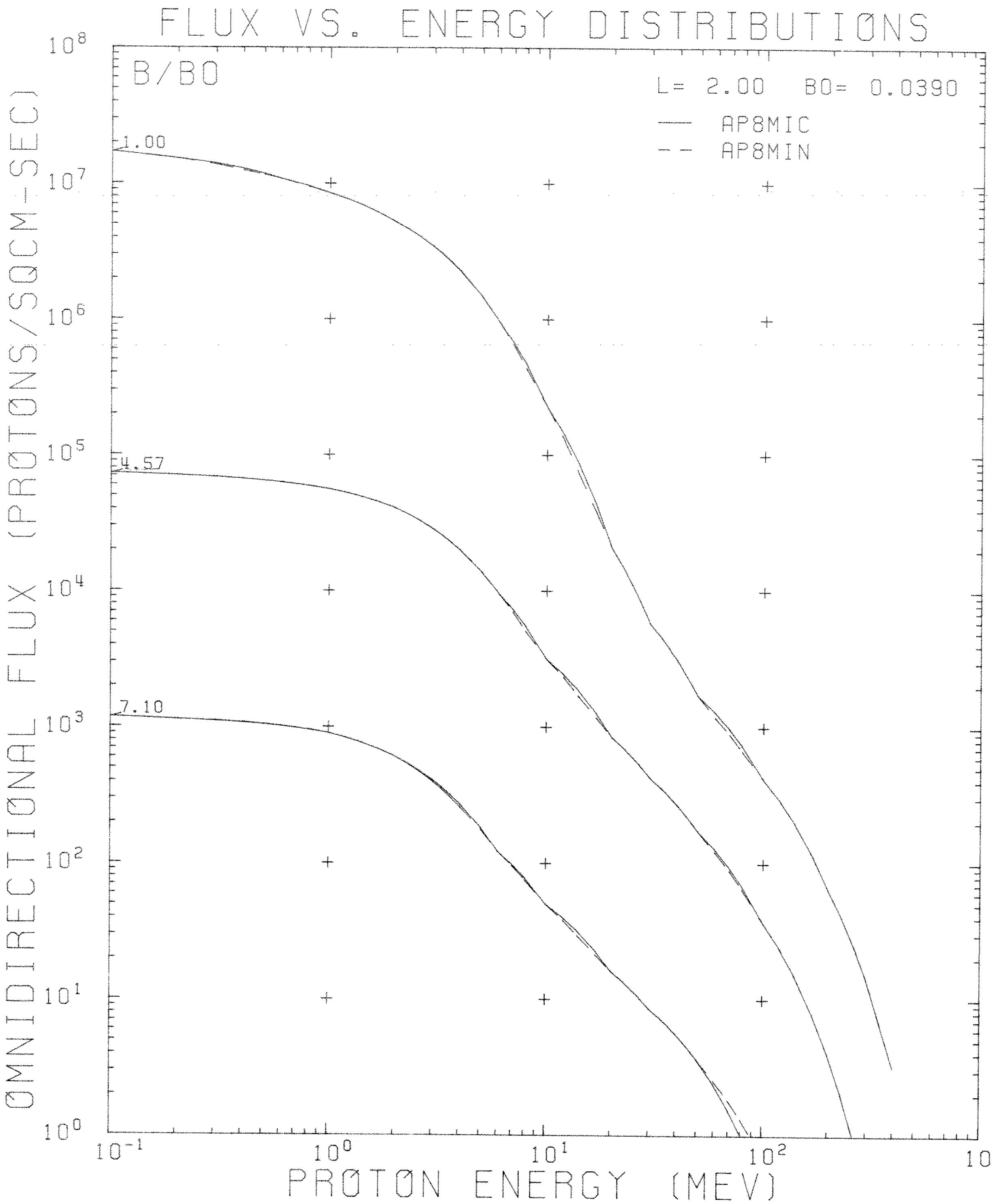

FLUX VS. ENERGY DISTRIBUTIØNS
B/BO
L= 2.00 BO= 0.0390
AP8MIC
AP8MIN
1.00
4.57
7.10
ØMNIDIRECTIØNAL FLUX (PRØTØNS/SQCM-SEC)
PRØTØN ENERGY (MEV)
10^8
10^7
10^6
10^5
10^4
10^3
10^2
10^1
10^0
10^-1
10^0
10^1
10^2
10^3

FIGURE 4

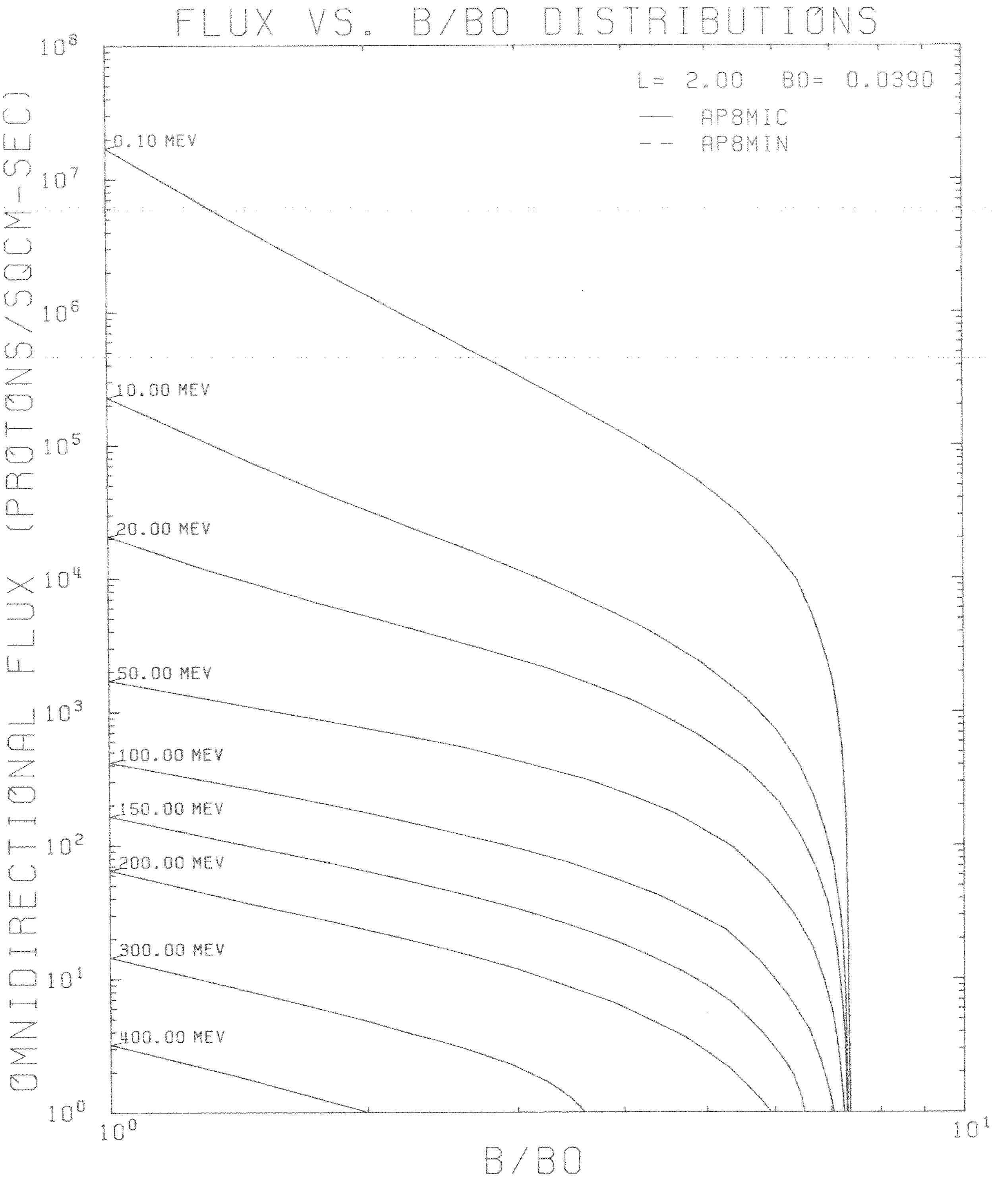
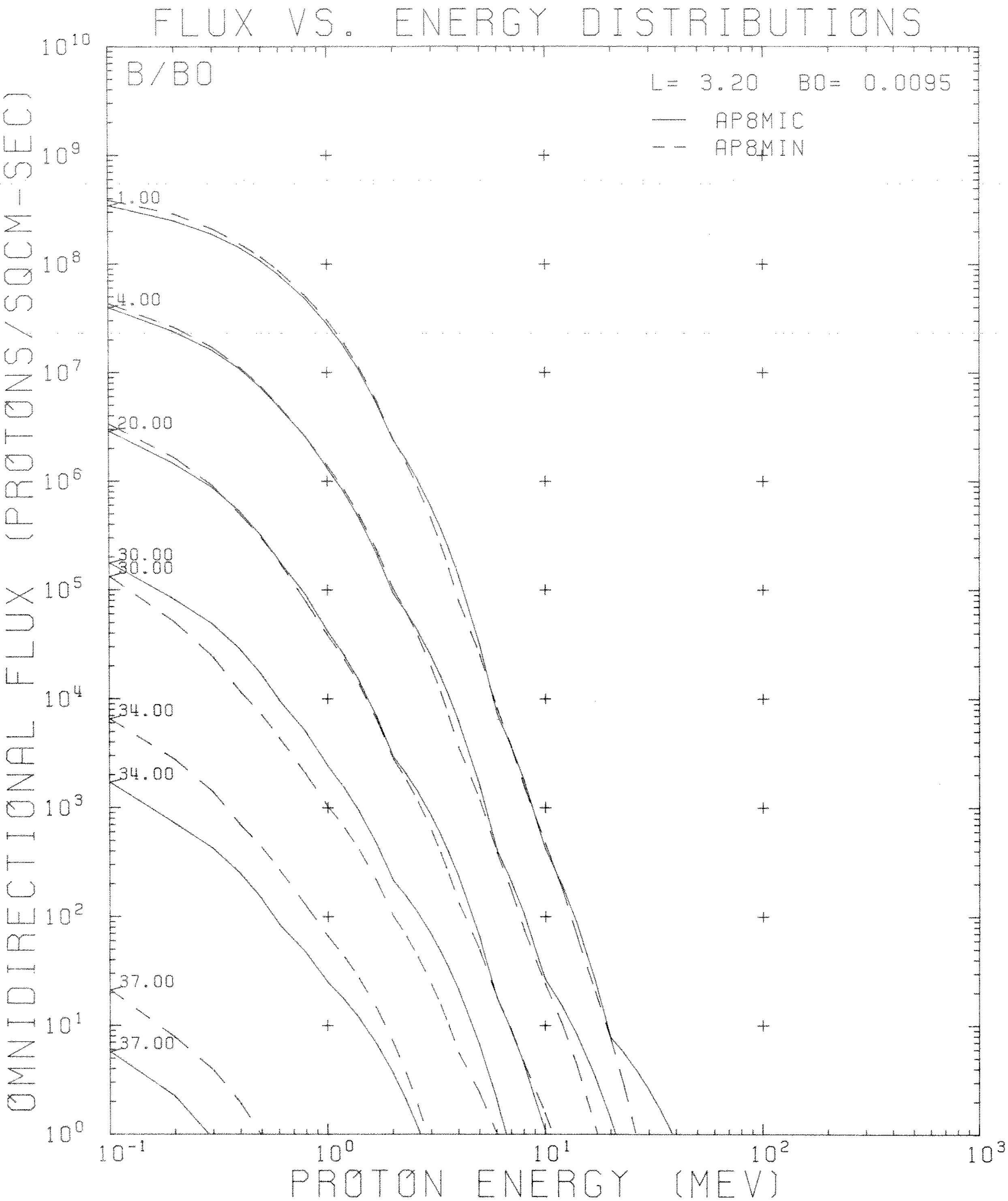
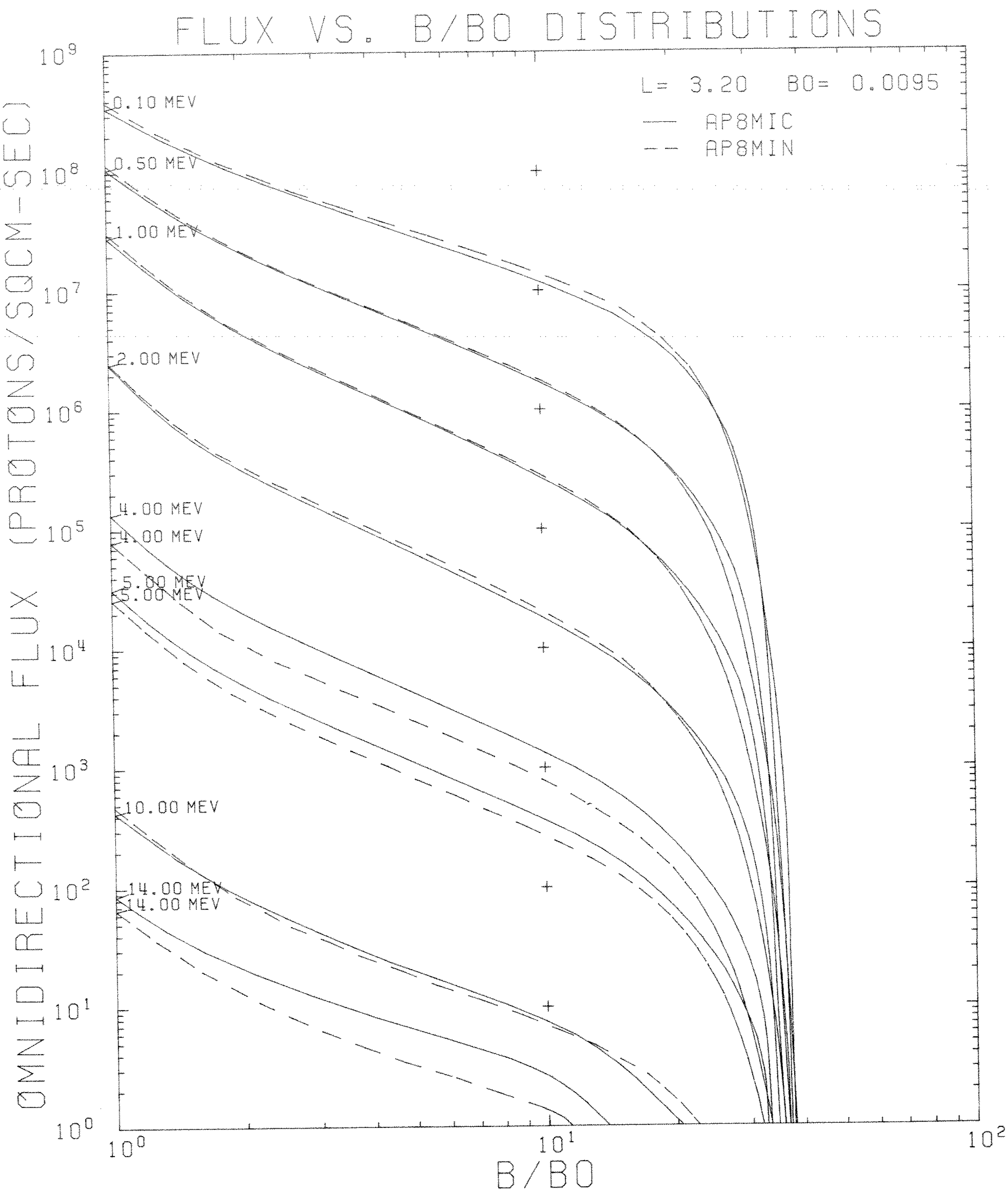

FLUX VS. B/BO DISTRIBUTIØNS
L= 2.00 BO= 0.0390
AP8MIC
AP8MIN
0.10 MEV
10.00 MEV
20.00 MEV
50.00 MEV
100.00 MEV
150.00 MEV
200.00 MEV
300.00 MEV
400.00 MEV
ØMNIDIRECTIØNAL FLUX (PRØTØNS/SQCM-SEC)
B/BO

FIGURE 5



FLUX VS. ENERGY DISTRIBUTIONS
B/BO
L= 3.20 BO= 0.0095
AP8MIC
AP8MIN
1.00
4.00
20.00
30.00
30.00
34.00
34.00
37.00
37.00
OMNIDIRECTIONAL FLUX (PROTONS/SQCM-SEC)
PROTON ENERGY (MEV)

FIGURE 6



FLUX VS. B/BO DISTRIBUTIONS
L= 3.20 BO= 0.0095
AP8MIC
AP8MIN
0.10 MEV
0.50 MEV
1.00 MEV
2.00 MEV
4.00 MEV
4.00 MEV
5.00 MEV
5.00 MEV
10.00 MEV
14.00 MEV
14.00 MEV
OMNIDIRECTIONAL FLUX (PROTONS/SQCM-SEC)
B/BO

FIGURE 7

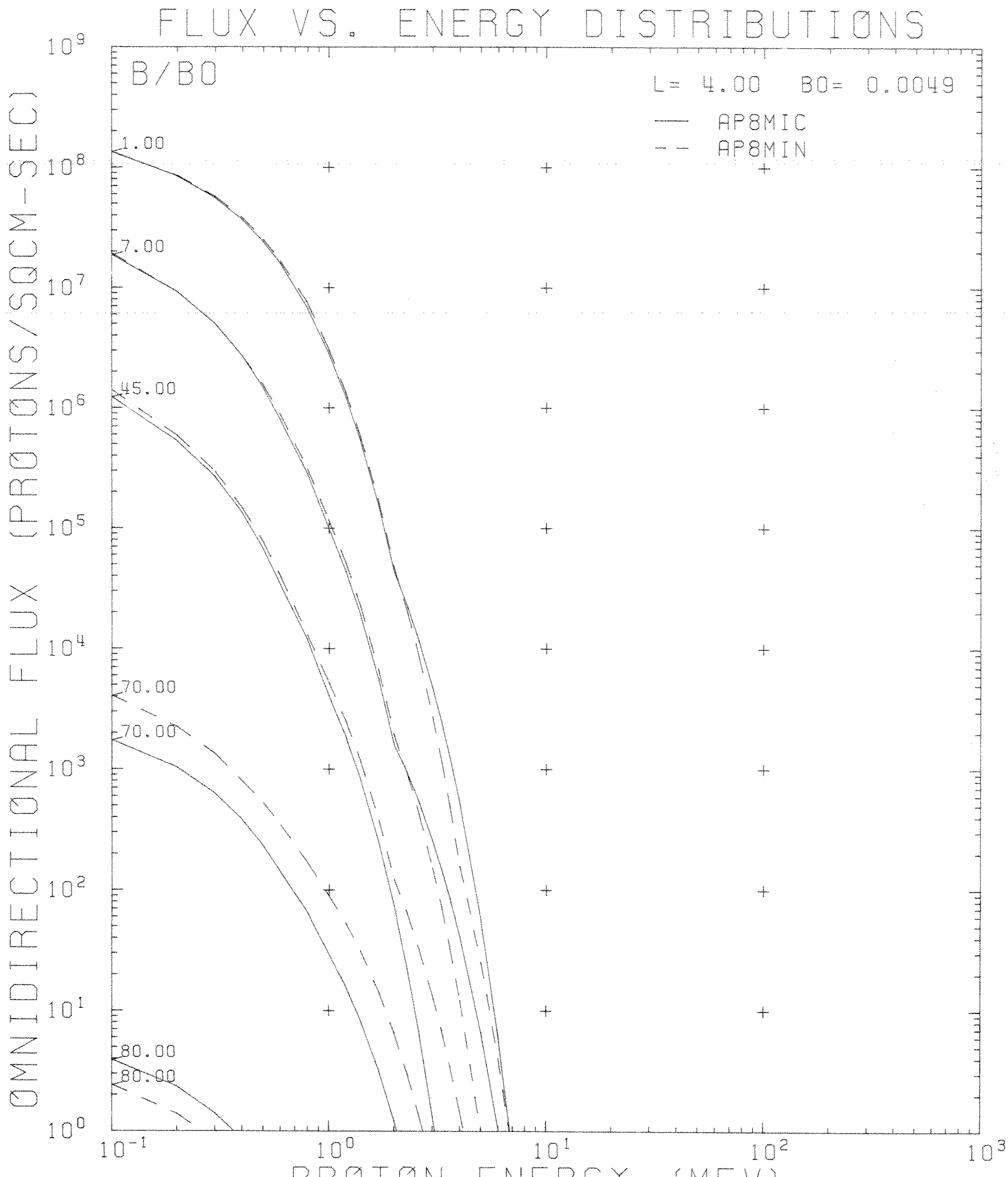

FLUX VS. ENERGY DISTRIBUTIONS
B/BO
L= 4.00 BO= 0.0049
AP8MIC
AP8MIN
1.00
7.00
45.00
70.00
70.00
80.00
80.00
OMNIDIRECTIONAL FLUX (PROTONS/SQCM-SEC)
PROTON ENERGY (MEV)
10^0
10^1
10^2
10^3
10^4
10^5
10^6
10^7
10^8
10^9
10^-1

FIGURE 8

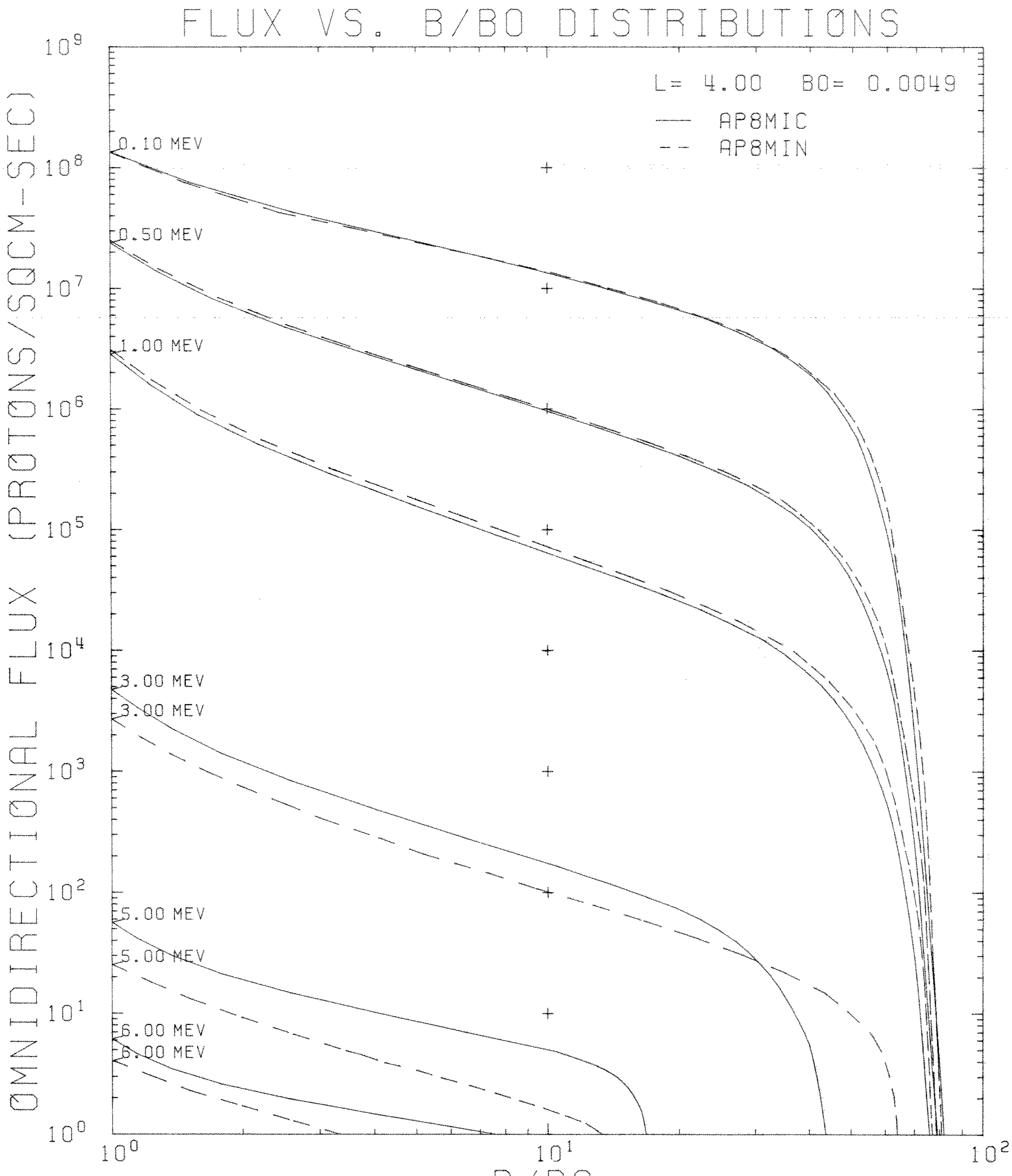
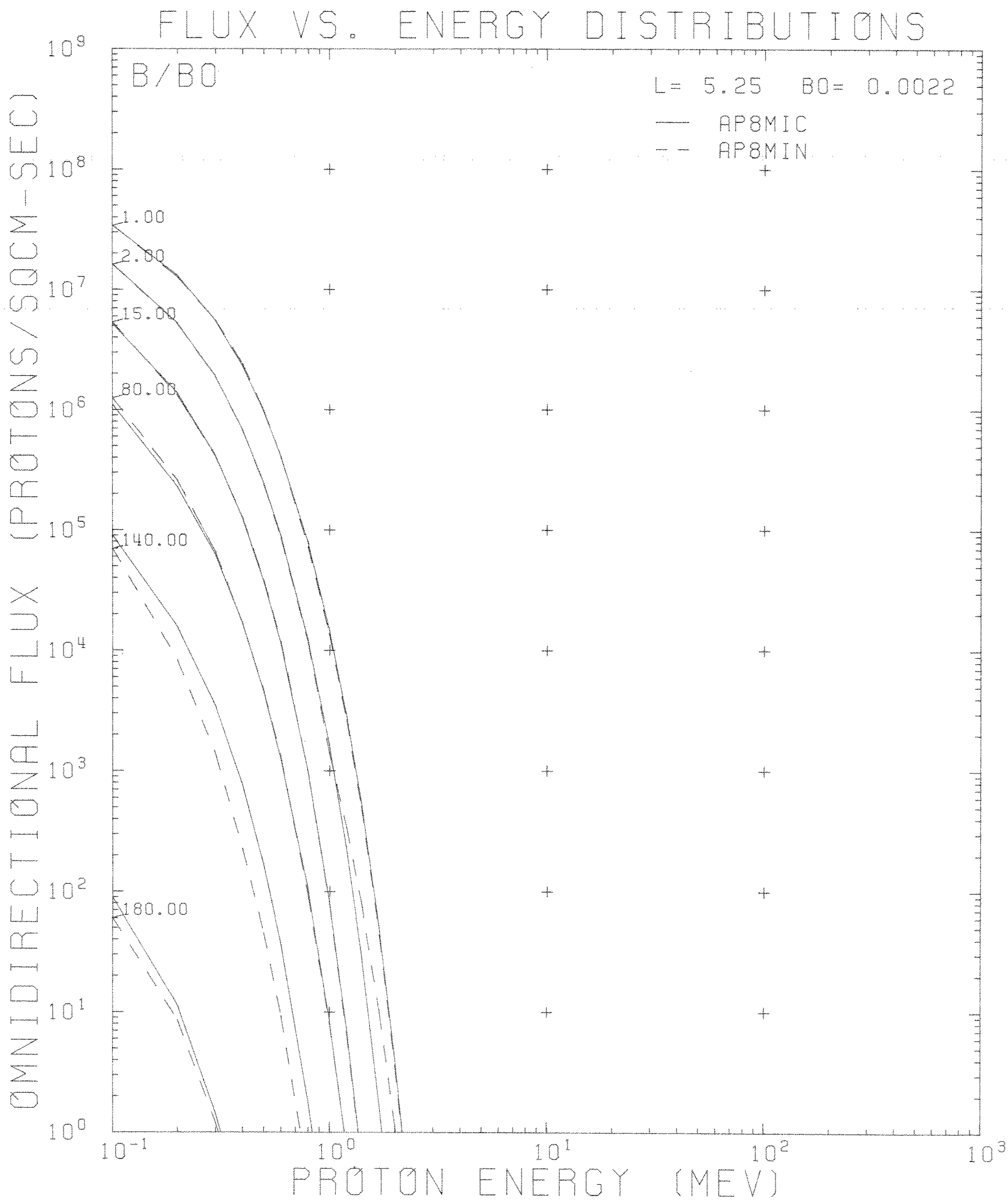
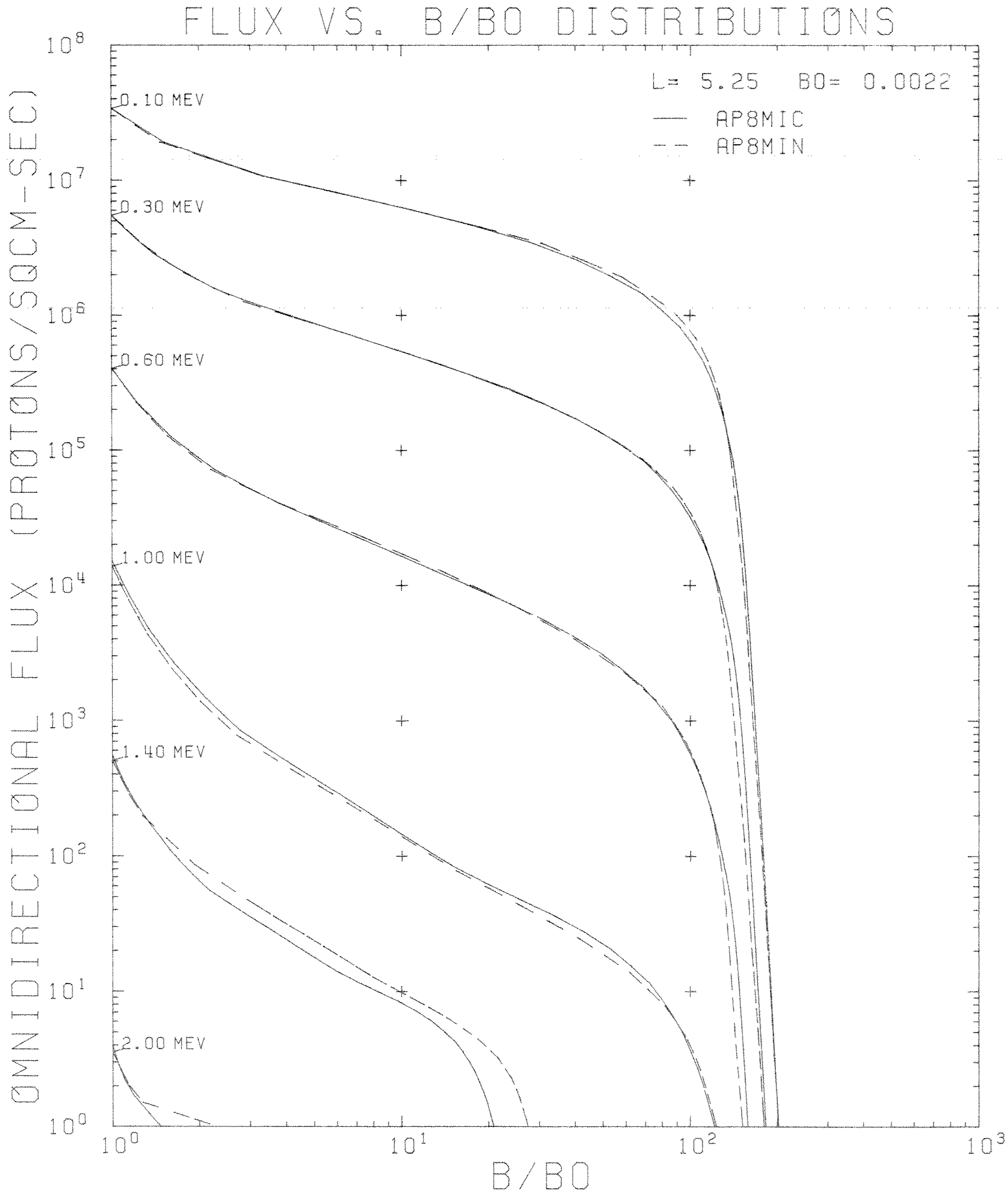

FLUX VS. B/BO DISTRIBUTIONS
L= 4.00 BO= 0.0049
AP8MIC
AP8MIN
0.10 MEV
0.50 MEV
1.00 MEV
3.00 MEV
3.00 MEV
5.00 MEV
5.00 MEV
6.00 MEV
6.00 MEV
OMNIDIRECTIONAL FLUX (PROTONS/SQCM-SEC)
B/BO

FIGURE 9



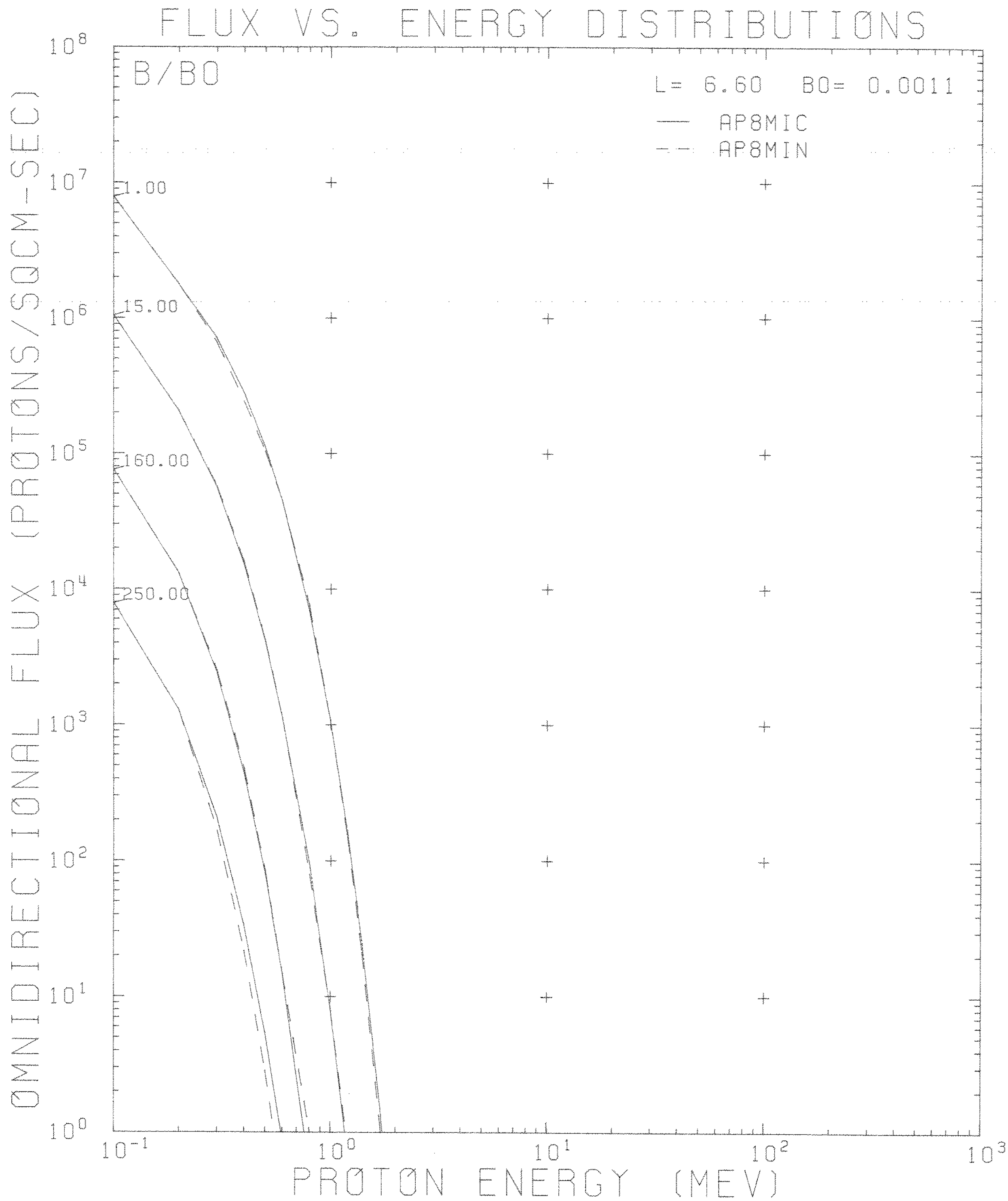
FLUX VS. ENERGY DISTRIBUTIONS
B/BO
L= 5.25 BO= 0.0022
AP8MIC
AP8MIN
1.00
2.00
15.00
80.00
140.00
180.00
ØMNIDIRECTIONAL FLUX (PRØTØNS/SQCM-SEC)
PRØTØN ENERGY (MEV)

FIGURE 10



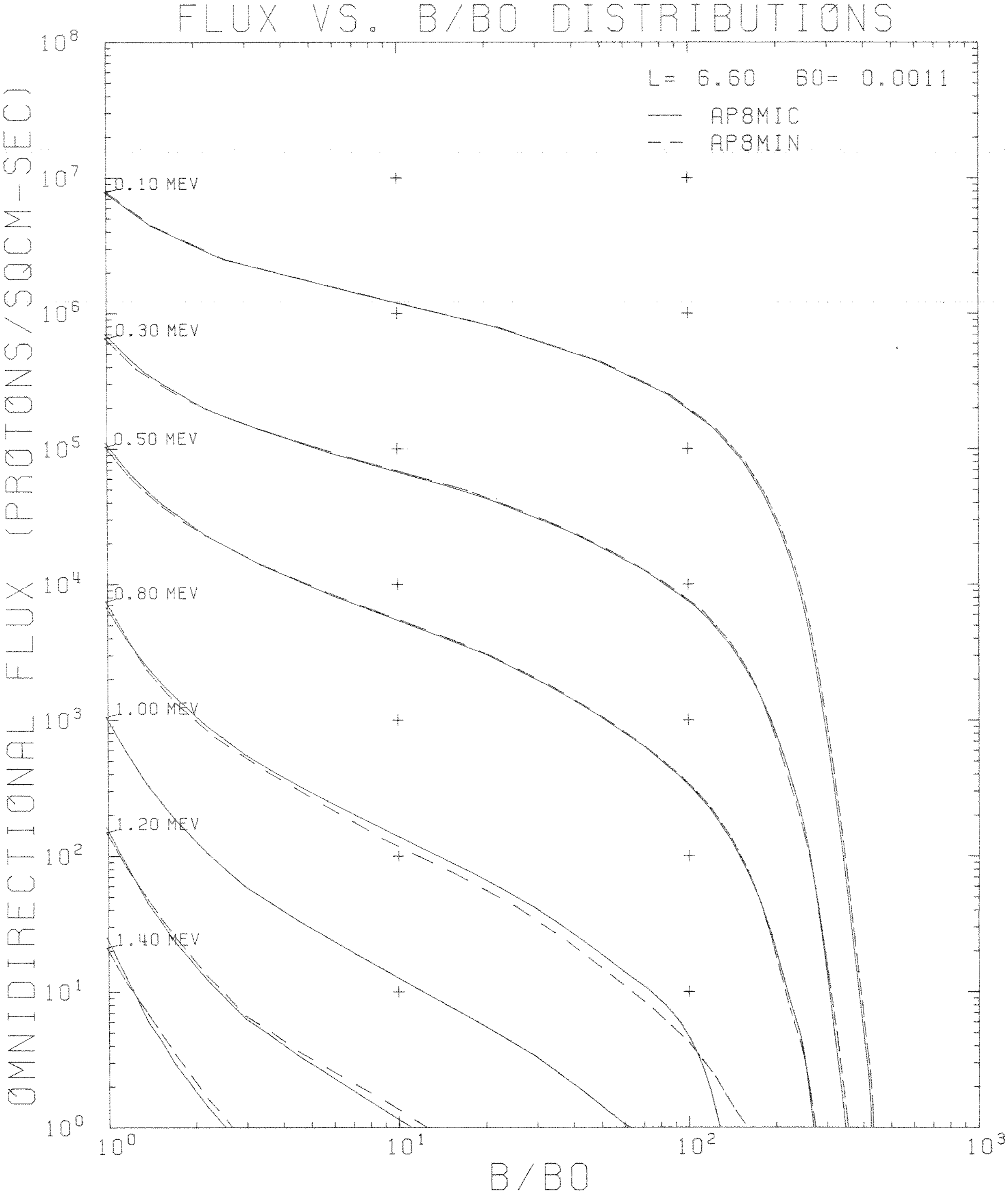
FLUX VS. B/BO DISTRIBUTIØNS
L= 5.25 BO= 0.0022
AP8MIC
AP8MIN
0.10 MEV
0.30 MEV
0.60 MEV
1.00 MEV
1.40 MEV
2.00 MEV
ØMNIDIRECTIØNAL FLUX (PRØTØNS/SQCM-SEC)
B/BO

FIGURE 11



FLUX VS. ENERGY DISTRIBUTIONS
B/BO
L= 6.60 BO= 0.0011
AP8MIC
AP8MIN
1.00
15.00
160.00
250.00
OMNIDIRECTIONAL FLUX (PROTONS/SQCM-SEC)
PROTON ENERGY (MEV)

FIGURE 12



FLUX VS. B/BO DISTRIBUTIØNS
L= 6.60 BO= 0.0011
AP8MIC
AP8MIN
0.10 MEV
0.30 MEV
0.50 MEV
0.80 MEV
1.00 MEV
1.20 MEV
1.40 MEV
ØMNIDIRECTIØNAL FLUX (PRØTØNS/SQCM-SEC)
B/BO

MT-2AB

MT-52A Electron Model AE-8 Max

The AE-8 electron model environment was generated by: (a) analyzing data in the outer zone from OV3-3, OV1-19, GRS-A(AZUR), and ATS-1, 5, & 6; (b) using the old outer zone environment AE-4; (c) using the inner zone environments AE-5 Projected for solar minimum and AE-6 for solar maximum; and (d) interpolating between L=2.4 and 2.8 to make a smooth transition at all energies. This data set is a microfiched computer listing for AE-8 Max (solar maximum) consisting of 28 fiche with 35 frames per fiche. For each 0.1 L value from 1.2 through 11.0 the omnidirectional flux is given. The first column contains the B value in gammas which starts with the equatorial value(B_O), has the second value as the nearest 100 gammas greater than B_O, and then goes in 100 gamma increments until the flux reaches a value of 1.0. The next 12 columns list the integral flux in electrons/cm^2 sec above the energy thresholds of 0.04, 0.10, 0.25, 0.50, 0.75, 1.00, 1.25, 1.50, 1.75, 2.00, 2.25, and 2.50 MeV for energy range 1. Energy range 2 covers the energy thresholds of 2.75, 3.00, 3.25, 3.50, 3.75, 4.00, 4.50, 5.00, 5.50, 6.00, 6.50, and 7.00 MeV and follows the set of frames containing energy range 1. The header of each fiche contains the L value and page number within each L value that are on the fiche. The additional information needed to quickly go to the desired frame number is given below

Number of Pages or Page No.	Page No. where Energy Range 2 Begins	Total Pages for L values or Range
1	1.2	-
2	1.3 & 1.4	1.2
3	1.5 - 1.7	1.3
4	1.8 - 2.2	1.4
5	2.3 - 2.6	1.5
6	2.7 - 2.8	1.6 - 1.8, 2.2, & 2.4
7	2.9 - 6.0	1.9-2.1, 2.3, 2.5, 10.1, 10.2, 10.8-11.0
8	6.1-10.0	2.6, 8.8-10.0, 10.3-10.7
9		8.6 & 8.7
10		2.7, 8.4, & 8.5
11		2.8, 8.2 & 8.3
12		8.0 & 8.1
13		2.9, 7.6-7.9
14		3.0-7.5

Above L=10 there are no fluxes in energy range 2
An identical data set for AE-8 Min (solar minimum) is MT-52B

MT-2AA

MT-52B Electron Model AE-8 Min

The AE-8 electron model environment was generated by: (a) analyzing data in the outer zone from OV3-3, OV1-19, GRS-A(AZUR), and ATS-1, 5, & 6; (b) using the old outer zone environment AE-4; (c) using the inner zone environments AE-5 Projected for solar minimum and AE-6 for solar maximum; and (d) interpolating between L=2.4 and 2.8 to make a smooth transition at all energies. This data set is a microfiched computer listing for AE-8 Min (solar minimum) consisting of 28 fiche with 35 frames per fiche. For each 0.1 L value from 1.2 through 11.0 the omnidirectional flux is given. The first column contains the B value in gammas which starts with the equatorial value(B_0), has the second value as the nearest 100 gammas greater than B_0, and then goes in 100 gamma increments until the flux reaches a value of 1.0. The next 12 columns list the integral flux in electrons/cm^2 sec above the energy thresholds of 0.04, 0.10, 0.25, 0.50, 0.75, 1.00, 1.25, 1.50, 1.75, 2.00, 2.25, and 2.50 MeV for energy range 1. Energy range 2 covers the energy thresholds of 2.75, 3.00, 3.25, 3.50, 3.75, 4.00, 4.50, 5.00, 5.50, 6.00, 6.50, and 7.00 MeV and follows the set of frames containing energy range 1. The header of each fiche contains the L value and page number within each L value that are on the fiche. The additional information needed to quickly go to the desired frame number is given below

Number of Pages or Page No.	Page No. where Energy Range 2 Begins	Total Pages for L values or Range
1	1.2	-
2	1.3 & 1.4	1.2
3	1.5 - 1.7	1.3
4	1.8 - 2.2	1.4
5	2.3 - 2.6	1.5
6	2.7 - 2.8	1.6 - 1.8, 2.2, & 2.4
7	2.9 - 6.0	1.9-2.1, 2.3, 2.5, 10.1, 10.2, 10.8-11.0
8	6.1-10.0	2.6, 8.8-10.0, 10.3-10.7
9		8.6 & 8.7
10		2.7, 8.4, & 8.5
11		2.8, 8.2 & 8.3
12		8.0 & 8.1
13		2.9, 7.6-7.9
14		3.0-7.5

Above L=10 there are no fluxes in energy range 2

An identical data set for AE-8 Max (solar maximum) is MT-52A

MODELING PROGRAMS II

This catalog consists of Trapped Proton and Electron model Environments. These model environments have identification codes which are included in the NSD, (Non Satellite Data), file. Identification codes MT-1 through MT-5 are encompassed in this catalog.

These model environments have been copied onto one tape. The tape is 9 Track, 1600 BPI, written in the ASCII format with 39 files of data. The D and C numbers along with a description of the contents in each file follows.

D#	C#
D-64578	C-24304

FILE #	ID	DES.
1	MT-11B	AP-1 Omnidirectional Flux Map
2	"	AP-1 Exponential Spectral Parameter
3	"	AP-1 Unidirectional Flux Map
4	MT-12B	AP-2 Omnidirectional Flux Map
5	"	AP-2 Exponential Spectral Parameter
6	"	AP-2 Unidirectional Flux Map
7	MT-13B	AP-3 Omnidirectional Flux Map
8	"	AP-3 Exponential Spectral Parameter
9	"	AP-3 Unidrectional Flux Map
10	MT-14B	AP-4 Omnidirectional Flux Map
11	"	AP-4 Exponential Spectral Parameter
12	"	AP-4 Unidirectional Flux Map
13	MT-15B	AP-5 Omnidirectional Flux Map
14	"	AP-5 Exponential Spectral Parameter
15	"	AP-5 Unidirectional Flux Map
16	"	AP-5 Power Spectral Parameter
17	MT-16B	AP-6 Omnidirectional Flux Map
18	"	AP-6 Power Spectral Parameter
19	"	AP-6 Perpendicular Proton Map
20	MT-17B	AP-7 Omnidirectional Flux Map
21	"	AP-7 Power Spectral Parameter
22	"	AP-7 Perpendicular Flux Map
23	MT-51B	AP-8 MIN.
24	MT-51D	AP-8 MAX.
25	MT-51F	AP-8 MIC.
26	MT-51H	AP-8 MAC.
27	MT-21B	AE-1 Omnidirectional Flux Map
28	"	AE-1 Unidirectional Flux Map
29	MT-22B	AE-2 Omnidirectional Flux Map
30	"	AE-2 Exponential Spectral Parameter
31	"	AE-2 Perpendicular Flux Map
32	MT-24B	AE-4 MIN.
33	"	AE-4 MAX.
34	MT-25B	AE-5 MIN.
35	MT-28B	AE-6 MAX.
36	MT-29C	AEI-7 LO.
37	MT-29B	AEI-7 HI.
38	MT-2AB	AE-8 MAX.
39	MT-2AA	AE-8 MIN.

File 1

AP-1 OMNIDIRECTIONAL FLUX MAP

MT-11B

```
OMNI PROTON MAP AP1 ENER ABOVE 34 MEV BEFORE SEPT. 23 1963           1 1 74801   1.0
.001    .100E01 .100    .100E01 .200    .100E01 .31165 .100E01         1 04801   1.0
OMNI PROTON MAP AP1 ENER ABOVE 34 MEV BEFORE SEPT. 23 1963           1 3 74801   1.1
.140    .135E05 .150    .920E04 .160    .378E04 .170    .148E04        1 04801   1.1
.180    .740E03 .190    .120E03 .200    .130E02 .210    .100E01        2 04801   1.1
.220    .100E01 .250    .100E01 .300    .100E01 .35159 .100E01         3 04801   1.1
OMNI PROTON MAP AP1 ENER ABOVE 34 MEV BEFORE SEPT. 23 1963           112 74801   1.2
.120    .238E05 .130    .180E05 .140    .119E05 .150    .860E04        1 04801   1.2
.160    .470E04 .170    .250E04                                        2 04801   1.2
.18035  .148E04 .182    .140E04 .184    .129E04 .186    .118E04        1 74801   1.2
.188    .106E04 .190    .960E03 .192    .855E03 .194    .750E03        2 74801   1.2
.196    .660E03 .198    .575E03 .200    .500E03 .202    .430E03        3 74801   1.2
.204    .370E03 .206    .317E03 .208    .272E03 .210    .230E03        4 74801   1.2
.212    .193E03 .214    .161E03 .216    .133E03 .218    .109E03        5 74801   1.2
.220    .890E02 .222    .685E02 .224    .500E02 .226    .360E02        6 74801   1.2
.228    .232E02 .230    .141E02 .232    .800E01 .234    .380E01        7 74801   1.2
.236    .100E01 .238    .100E01 .240    .100E01 .242    .100E01        8 74801   1.2
.244    .100E01 .246    .100E01 .248    .100E01 .250    .100E01        9 74801   1.2
.260    .100E01 .280    .100E01 .300    .100E01 .38170 .100E01         3 04801   1.2
OMNI PROTON MAP AP1 ENER ABOVE 34 MEV BEFORE SEPT. 23 1963           111 74801   1.3
.100    .500E05 .110    .286E05 .120    .187E05 .130    .144E05        1 04801   1.3
.14185  .103E05 .145    .950E04 .150    .800E04 .155    .680E04        1 74801   1.3
.160    .580E04 .165    .490E04 .170    .420E04 .175    .350E04        2 74801   1.3
.180    .292E04 .185    .241E04 .190    .204E04 .195    .170E04        3 74801   1.3
.200    .141E04 .205    .115E04 .210    .920E03 .212    .820E03        4 74801   1.3
.214    .740E03 .216    .660E03 .218    .585E03 .220    .505E03        5 74801   1.3
.222    .440E03 .224    .370E03 .226    .304E03 .228    .250E03        6 74801   1.3
.230    .200E03 .232    .156E03 .234    .120E03 .236    .880E02        7 74801   1.3
.238    .630E02 .240    .436E02 .242    .290E02 .244    .182E02        8 74801   1.3
.246    .116E02 .248    .700E01 .250    .380E01 .252    .100E01        9 74801   1.3
.253    .100E01 .300    .100E01 .350    .100E01 .40543 .100E01         2 04801   1.3
OMNI PROTON MAP AP1 ENER ABOVE 34 MEV BEFORE SEPT. 23 1963           111 74801   1.4
.080    .957E05 .090    .540E05 .100    .300E05 .110    .195E05        1 04801   1.4
.11358  .175E05 .120    .148E05 .130    .114E05 .140    .920E04        1 74801   1.4
.145    .820E04 .150    .730E04 .155    .650E04 .160    .580E04        2 74801   1.4
.165    .515E04 .170    .460E04 .175    .410E04 .180    .367E04        3 74801   1.4
.185    .325E04 .190    .290E04 .195    .253E04 .200    .221E04        4 74801   1.4
.205    .188E04 .210    .151E04 .215    .120E04 .220    .885E03        5 74801   1.4
.225    .590E03 .230    .360E03 .232    .280E03 .234    .217E03        6 74801   1.4
.236    .162E03 .238    .121E03 .240    .900E02 .242    .645E02        7 74801   1.4
.244    .460E02 .246    .325E02 .248    .226E02 .250    .159E02        8 74801   1.4
.252    .111E02 .254    .755E01 .256    .500E01 .258    .320E01        9 74801   1.4
.262    .100E01 .300    .100E01 .330    .100E01 .42471 .100E01         2 04801   1.4
OMNI PROTON MAP AP1 ENER ABOVE 34 MEV BEFORE SEPT. 23 1963           111 74801   1.5
.060    .960E05 .070    .802E05 .080    .438E05 .090    .270E05        1 04801   1.5
.09234  .242E05 .100    .180E05 .110    .132E05 .120    .105E05        1 74801   1.5
.130    .855E04 .140    .700E04 .150    .580E04 .160    .477E04        2 74801   1.5
.170    .389E04 .180    .315E04 .190    .250E04 .200    .194E04        3 74801   1.5
.205    .167E04 .210    .139E04 .215    .110E04 .220    .830E03        4 74801   1.5
.225    .560E03 .230    .360E03 .232    .290E03 .234    .239E03        5 74801   1.5
.236    .190E03 .238    .150E03 .240    .119E03 .242    .910E02        6 74801   1.5
.244    .700E02 .246    .530E02 .248    .395E02 .250    .295E02        7 74801   1.5
.252    .204E02 .254    .144E02 .256    .100E02 .258    .700E01        8 74801   1.5
.260    .475E01 .262    .300E01 .264    .100E01 .266    .100E01        9 74801   1.5
.268    .100E01 .300    .100E01 .400    .100E01 .44074 .100E01         2 04801   1.5
OMNI PROTON MAP AP1 ENER ABOVE 34 MEV BEFORE SEPT. 23 1963           111 74801   1.6
.001    .100E01 .050    .745E05 .060    .480E05 .070    .313E05        1 04801   1.6
.07609  .235E05 .080    .200E05 .090    .136E05 .100    .980E04        1 74801   1.6
```

```
.110   .755E04 .120   .625E04 .130   .520E04 .140   .440E04        2 74801  1.6
.150   .370E04 .155   .337E04 .160   .308E04 .165   .279E04        3 74801  1.6
.170   .250E04 .175   .227E04 .180   .205E04 .185   .184E04        4 74801  1.6
.190   .164E04 .195   .144E04 .200   .126E04 .205   .107E04        5 74801  1.6
.210   .910E03 .215   .760E03 .220   .620E03 .225   .475E03        6 74801  1.6
.230   .340E03 .235   .220E03 .240   .130E03 .245   .750E02        7 74801  1.6
.250   .425E02 .255   .200E02 .260   .870E01 .262   .610E01        8 74801  1.6
.264   .415E01 .268   .100E01 .270   .100E01 .272   .100E01        9 74801  1.6
.274   .100E01 .350   .100E01 .400   .100E01 .45431 .100E01        2 04801  1.6
OMNI PROTON MAP AP1 ENER ABOVE 34 MEV BEFORE SEPT. 23 1963        111 74801  1.7
.001   .100E01 .040   .274E05 .050   .220E05 .060   .178E05        1 04801  1.7
.06343 .158E05 .070   .122E05 .080   .900E04 .090   .698E04        1 74801  1.7
.100   .550E04 .110   .445E04 .120   .363E04 .130   .302E04        2 74801  1.7
.140   .252E04 .150   .212E04 .160   .181E04 .170   .150E04        3 74801  1.7
.175   .137E04 .180   .124E04 .185   .112E04 .190   .100E04        4 74801  1.7
.195   .890E03 .200   .790E03 .205   .690E03 .210   .590E03        5 74801  1.7
.215   .500E03 .220   .410E03 .225   .335E03 .230   .262E03        6 74801  1.7
.235   .195E03 .240   .130E03 .245   .810E02 .250   .460E02        7 74801  1.7
.255   .250E02 .260   .130E02 .265   .660E01 .270   .315E01        8 74801  1.7
.272   .100E01 .274   .100E01 .276   .100E01 .278   .100E01        9 74801  1.7
.280   .100E01 .350   .100E01 .400   .100E01 .46595 .100E01        2 04801  1.7
OMNI PROTON MAP AP1 ENER ABOVE 34 MEV BEFORE SEPT. 23 1963        111 74801  1.8
.001   .100E01 .030   .188E05 .040   .139E05 .050   .102E05        1 04801  1.8
.05344 .920E04 .060   .755E04 .070   .580E04 .080   .455E04        1 74801  1.8
.090   .360E04 .100   .297E04 .110   .245E04 .120   .206E04        2 74801  1.8
.130   .174E04 .140   .147E04 .150   .126E04 .160   .107E04        3 74801  1.8
.170   .900E03 .180   .755E03 .190   .622E03 .200   .500E03        4 74801  1.8
.210   .396E03 .215   .346E03 .220   .300E03 .225   .255E03        5 74801  1.8
.230   .212E03 .235   .170E03 .240   .127E03 .245   .850E02        6 74801  1.8
.250   .530E02 .255   .310E02 .260   .169E02 .265   .900E01        7 74801  1.8
.270   .450E01 .272   .340E01 .274   .100E01 .276   .100E01        8 74801  1.8
.278   .100E01 .280   .100E01 .282   .100E01 .284   .100E01        9 74801  1.8
.290   .100E01 .360   .100E01 .430   .100E01 .47606 .100E01        2 04801  1.8
OMNI PROTON MAP AP1 ENER ABOVE 34 MEV BEFORE SEPT. 23 1963        111 74801  1.9
.001   .100E01 .030   .100E05 .035   .858E04 .040   .735E04        1 04801  1.9
.04544 .620E04 .050   .540E04 .060   .415E04 .070   .329E04        1 74801  1.9
.080   .269E04 .090   .221E04 .100   .183E04 .110   .156E04        2 74801  1.9
.120   .133E04 .130   .115E04 .140   .100E04 .150   .860E03        3 74801  1.9
.160   .740E03 .170   .630E03 .180   .530E03 .190   .445E03        4 74801  1.9
.195   .400E03 .200   .366E03 .205   .328E03 .210   .291E03        5 74801  1.9
.215   .257E03 .220   .227E03 .225   .197E03 .230   .168E03        6 74801  1.9
.235   .138E03 .240   .108E03 .245   .820E02 .250   .590E02        7 74801  1.9
.255   .400E02 .260   .245E02 .265   .130E02 .270   .650E01        8 74801  1.9
.275   .300E01 .280   .100E01 .285   .100E01 .290   .100E01        9 74801  1.9
.300   .100E01 .370   .100E01 .440   .100E01 .48492 .100E01        2 04801  1.9
OMNI PROTON MAP AP1 ENER ABOVE 34 MEV BEFORE SEPT. 23 1963        111 74801  2.0
.001   .100E01 .025   .883E04 .030   .750E04 .035   .635E04        1 04801  2.0
.03896 .560E04 .040   .540E04 .050   .367E04 .060   .272E04        1 74801  2.0
.070   .215E04 .080   .177E04 .090   .148E04 .100   .125E04        2 74801  2.0
.110   .107E04 .120   .920E03 .130   .800E03 .140   .685E03        3 74801  2.0
.150   .590E03 .160   .510E03 .170   .448E03 .180   .385E03        4 74801  2.0
.190   .327E03 .200   .273E03 .210   .222E03 .215   .200E03        5 74801  2.0
.220   .178E03 .225   .157E03 .230   .138E03 .235   .119E03        6 74801  2.0
.240   .101E03 .245   .810E02 .250   .610E02 .255   .425E02        7 74801  2.0
.260   .277E02 .265   .165E02 .270   .900E01 .275   .450E01        8 74801  2.0
.280   .100E01 .285   .100E01 .290   .100E01 .295   .100E01        9 74801  2.0
.300   .100E01 .370   .100E01 .440   .100E01 .49277 .100E01        2 04801  2.0
OMNI PROTON MAP AP1 ENER ABOVE 34 MEV BEFORE SEPT. 23 1963        111 74801  2.1
```