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PROJECT SOLWIND:

Space Radiation Exposure

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February 1975

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Foreword

At the request of the Naval Research Laboratory, a special orbital radiation study was conducted for the SOLWIND project in order to evaluate mission-encountered energetic particle fluxes.

Magnetic field calculations were performed with a current field model, extrapolated to the tentative spacecraft launch epoch with linear time terms.

Orbital flux integrations for circular flight paths were performed with the latest proton and electron environment models, using new improved computational methods.

Temporal variations in the ambient electron environment were considered and partially accounted for.

Finally, estimates of average energetic solar proton fluences are given for a one year mission duration at selected integral energies ranging from $E > 10$ to $E > 100$ Mev; the predicted annual fluence relates to the period of maximum solar activity during the next solar cycle.

The results are presented in graphical and tabular form; they are analyzed, explained, and discussed.

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Introduction

The objective of the present study is to evaluate the charged particle fluxes to be encountered by spacecrafts in circular orbits with inclinations of 60 and 90 degrees, and altitudes of 1111 and 1852 kilometers, respectively. For these considerations, four nominal trajectories were generated in support of the SOLWIND mission.

At this point, some general comments concerning orbits and geomagnetic geometry may be useful. Circular flightpaths with small inclinations ($i < 45^o$) and low altitudes ($h < 1000$ km) lie almost entirely within the region of magnetic dipole space that is called the "inner zone" ($1.0 > L > 2.8$), in contrast to high inclination ($i > 55^o$) flightpaths at similar altitudes, which traverse the entire terrestrial radiation belt twice during each revolution, moving alternately through regions of low L values (i.e. the inner zone) and regions of high L values (i.e. the "outer zone": $2.8 > L > 12.$*). However, when orbit altitude is increased, the above flightpaths attain minimal L values that are correspondingly higher; eventually, when $h > 13000$ km, these trajectories never enter the inner zone region of L-space. The SOLWIND orbits execute the described transverse motion, visiting L values as low as $L = 1.10$ and $L = 1.21$ for the 1111 km and the 1852 km altitude, respectively.

This grouping of trajectories according to L ranges or zones is important in radiation studies because each zone may require special treatment. Thus, with regards to the inner zone, which is visited by the first kind of orbit for varying intervals of time, special considerations are sometimes

*The upper boundary of the "outer zone" in the current electron models has been placed at about L = 12 e.r., as against L = 6.5 e.r. in the older models.

necessary on account of the substantial "Starfish"** residuals (Teague and Stassinopoulos, 1972) that populated parts of this region until about 1970.

The outer zone, while it is visited by high inclination or high altitude orbits only, also warrants special consideration because these trajectories may pass through regions of space within the magnetosphere that are accessible to subrelativistic cosmic ray fluxes of solar origin. A detailed discussion of this matter is given in the section on "Energetic Solar Proton Fluxes".

Another important feature of the outer zone electron environment is the strong Local Time dependence of the ambient fluxes. The LT variations for high energy electrons (1-3 Mev) at about $5 < L < 6$ exceed one order of magnitude. These variations are due to the distortion of the magnetosphere caused by the solar wind (compression at local noon, elongation at local midnight).

Theoretically, the current outer zone electron models recognized this dependence and accounted for it by incorporating an analytic function for its calculations. However for practical purposes, the versions distributed in card deck form provide fluxes which are averaged over local time. The reason behind this simplification is that most users employ the models, in orbit- or time-integration processes, to missions which have durations of 6 months or more and the local time effects would be averaged out anyway. Hence, in order to save time, core, and effort, a local time averaged value, which is nearly equivalent to the fluxes at the dawn meridian, was inserted into the models in place of the analytic function.

The orbital flux integrations were performed with UNIFLUX, a "Unified

**"Starfish" is the high altitude nuclear explosion over Johnston Island in the Pacific in July, 1962, which injected about 10^{29} energetic artificial electrons into the inner zone region of the Van Allen belts.

Orbital Flux Integration and Analysis System" by Stassinopoulos and Gregory (1975).

The latest environment models for electrons were used in the calculations: the AE5 by Teague and Vette (1972) for the inner zone, and the AE4 by Singley and Vette (1971) for the outer zone. Some observations on these models are in order.

In constructing the models, it was possible to infer a change of the average quiet-time electron flux levels as a function of the solar cycle. However, a complete temporal description of the solar cycle dependence has not been attempted. Instead, two versions of each model were developed: one pertaining to solar minimum and another to solar maximum conditions. Both versions of the AE4 and the AE5 are therefore static models which describe the environment at a specific fixed epoch, namely 1964 and 1967, respectively:

	Solar Min 1964 (1974)	Solar Max 1967 (1977)
Inner Zone:	AE5-SMN	AE5-SMX
Outer Zone:	AE4-SMN	AE5-SMX

The years in parentheses indicate that the corresponding version may be used for calculations relating to the appropriate period of the next (subsequent) solar cycle, that is, the years 1974-76 for solar min and the years 1977-83 for solar max.

Now the tentative launch epoch for SOLWIND (1975.5) places the mission within a period of decreased solar activity; if one considers a satellite lifetime of at least one year and allows for some postponement in the launch date, then some late part of the mission may extend into the next solar max period; for this reason, the electron calculations were performed with both versions of the models. See special section for results and comments.

It should be noted, that the solar max version of the inner zone AE5 describes the environment as it actually existed back in 1967, at which time the artificial component was still significantly predominant. Therefore, since the model contains these Starfish residuals, it is necessary to update the data and to remove the remaining artificials when calculations pertain to the active phase of the next solar cycle. This is being done in UNIFLUX with an exponential decay function, using appropriate lifetimes and cutoff times. These are available as functions of energy and L in terms of approximate dates at which the Starfish fluxes had decayed down to the natural background levels (Teague and Stassinopoulos, 1972) and apparent decay lifetimes for the artificials (Stassinopoulos and Verzariu, 1971).

In contrast to the electrons, no special considerations are required for the proton results, obtained from standard models long in use. Although they also describe a static environment, this is a valid representation for these particles because experimental measurements have shown that no significant changes with time have occurred in the proton population. With the exception of the fringe areas of the proton belt, that is at very low altitudes and at the outer edges of the trapping region, the possible error introduced by the static approximation lies well within the uncertainty factor attached to the models. Consequently, the proton data may be applied to any epoch without the need for an updating process.

We wish to emphasize that our calculations are only approximations although they are based on the best available data; as always, we strongly recommend that all persons receiving parts of this report be advised about the uncertainty in the data, discussed in Appendix A.

Appendix A contains also pertinent information on units, field models, trajectory generation and conversion, etc.

Finally, an explanation regarding the attribute "standard" frequently used in the reformatted OFI (Orbital Flux Integration) Study Reports. The term is applied as a modifier to parameters, constants, or variables in order to indicate or refer to some specific value of these quantities that has been used without change over extended periods of time. Although override possibilities do exist in the UNIFLUX system, a routinely submitted production run will, by default option, always use these "standard" values. The term is also used in reference to established forms, style, processes or procedures, as for example, "standard tables", "standard plots", "standard production runs", etc. A list of some quantities, values, or expressions modified by "standard" is given in Table 1.

Results: Analysis and Discussion

The outcome of our calculations for this mission is summarized in Tables 3 to 34, which are all computer produced. The tables are arranged in five sets, where every set pertains to one specific type of data: the first set contains the "L-band" tables, the second the "Spectral Distribution and Exposure Index" tables, the third the table of "Peaks", the fourth the "Exposure Analysis" summary and the "Time Account" breakdown, and the fifth set the "Energetic Solar Proton" tables. The first three sets contain two similar members for every mission considered in the study: one for protons and one for electrons, in that order. The last two sets contain only one member for each mission. The tables are further explained in Appendix B, where a more detailed description of their contents is given. Figure 1 is a guide to table arrangement, as they are produced by a standard production run of the Orbital Flux Integration (OFI) program UNIFLUX for a single trajectory.

Some of the tabulated data is also computer plotted in Figures 3 to 26 with additional Figures 27 to 34 containing plots of flightpath data. Finally, the manually produced Figure 35 gives the mean annual solar proton fluence for both trajectories considered in this study. As with the tables, the computer plots are arranged in five sets, where each set pertains to one specific type of data: the first set contains "Time and Flux Histograms", the second "Spectral Profiles", the third "Peaks per Orbit", the fourth trajectory "World Map Projections", and the fifth "B-L Space Tracings". Again, the first three sets contain two similar members for every mission: one for each type of particle species considered. The last two sets contain only one member for every mission. Appendix C describes and explains the plots. Figure 2 is a guide to plot arrangement, as they are produced by a standard production run. The final plot (Figure 35) is explained in the section "Energetic Solar Proton Fluxes".

I. Spectral Profiles

For tabulated data consult Tables 11 - 18.

For plotted data consult Figures 11 - 18.

The integral spectra presented in this report are orbit integrated, statistically averaged, trapped particle spectra, characteristic of the specific trajectories that produced them.

Noteworthy are the electron spectra obtained from the new environment models AE5 and AE4, especially in regards to the steep fall-off to zero flux in the energy range of about 4 to 5 Mev. The apparent cutoff at these energies is probably due to the extensive decay of the high energy Starfish artificials by 1967, since no significant numbers of trapped naturals exist with energies greater than 4 - 5 Mev.

To be exact, there are only two very small areas in B-L space where the solar max models contain trapped electrons with the energies $E > 5$ Mev. These areas form "pockets" of high energy electrons on the magnetic equator in the L-ranges 1.45 - 1.75 and 3.65 - 4.10 earth radii. The inner zone pocket is obviously a Starfish remnant, whereas the outer zone pocket appears to be a normal feature of the natural electron radiation belt because artificial electrons never populated that area.

With regards to the protons, it should be noted that all flightpaths considered for this mission experience a very hard proton spectrum above energies of about 18 Mev.

II. Peaks Per Orbit

Tabulated data is contained in Tables 19 - 26.

Plotted data is shown in Figures 19 - 26.

The absolute peaks per revolution presented in this report have been obtained for standard OFI (Orbital Flux Integration) energies; that is, E >5. Mev for protons, and E >.5 Mev for electrons.

For a given circular trajectory at a fixed inclination and altitude, the peak-contour may display small or large amplitude variations or discontinuities, following periodic patterns based on the daily cycle of revolutions. However, the amplitude of the cyclic variations and the peak values are functions of inclination and altitude. Thus: the relative difference between the P_{max} and the P_{min} values of a curve, as well as the magnitude of the individual peaks, may vary significantly (several orders of magnitude) when i or h are changed.

Apparently, an increase in height has a dampening effect on the peak-curves: the amplitude variation shrinks, and the extrema approach each other; it also produces a relative rise in the magnitude of the encountered peaks.

As to the study at hand, if the peak fluxes for the SOLWIND Mission, shown in Figures 19 to 26 for one day only, were calculated and plotted for several days, the respective contours would follow the periodic pattern discussed in the previous paragraph. Allowing for small variations due to possible fractional precessions per day, this pattern would repeat itself indefinitely since the investigated trajectories are circular and no major changes with time are expected, assuming, of course, that the orbits are stable and experience no external perturbations.

III. Trajectory Data

See Figures 27 - 30 for World Map Projections.

See Figures 31 - 34 for B-L Space Tracings.

A. World Map

World map projections of trajectories are by definition the surface traces of their subsatellite points.

The apparent westward drift of successive orbit tracings is the "longitudinal precession" of the trajectory, resulting from the rotation of the geoid in reference to the orbit plane.

Under unperturbed dynamic conditions, the respective orbit period determines the nodal precession of the trajectory. For circular flight-paths, the period, and hence the precession, is a simple function of the geocentric distance. At the altitude levels proposed for the SOLWIND Mission, the period is respectively 1.79 and 2.06 hours with corresponding precessions of approximately 11 and 10 degrees. This amounts to about 13 and 11 completed orbits for a twenty-four hour flight-time duration.

In regards to the computer plots it should be noted that whenever the number of orbits per day is large (small period) then, for reasons of clarity, the world map projections of the trajectories are not plotted for more than ten revolutions. The orbit numbers appear at the starting points of each revolution.

B. Magnetic Dipole Mapping

At large geocentric distances ($r_e > 6$), the quantities B and L have no physical meaning any more because of the interaction between solar wind and magnetosphere.

The noon-midnight distortion of the magnetosphere, produced by that interaction (compression in the solar and elongation in the antisolar directions), causes a breakdown in the symmetry of the dipole magnetic shell parameter L and introduces significant external currents and fields, whose contributions substantially alter the apparent field strength B that is presently being obtained for a given position from the dipole terms of the internal field model used in the calculations.

Therefore, in this study (as well as in every model of charged-particle radiation utilized), these variables are being employed only as ordering parameters.

The magnetic B-L space tracings of the high inclination trajectories ($i > 55^o$) appear as long horizontal line segments on the plots (Figures 32 and 34), strikingly displaying the transverse motion of the satellite in that space-frame.

Incidentally, all inclined trajectories cross, of course, the magnetic equator twice per period; however, the nodes (and hence the point where the curves are tangent to the equatorial contour) are shifted due to the rotation of the geoid. This displacement in B-L space is analogous to the precession in geodetic space. The SOLWIND flightpath plotted in Figure 33 is a good example of such an orbit.

Again, for reasons of clarity, only three orbits are plotted per graph; here also, the orbit numbers appear at the starting points of each revolution.

Energetic Solar Proton Fluxes

Good measurements of solar cycle 20 interplanetary cosmic ray fluxes at about 1 A.U. are now available. These interplanetary particles are also observed over the high-latitude polar cap regions. However, at other latitudes the geomagnetic field effectively shields the earth from some of these cosmic rays by deflecting the lower energy particles while only particles with increasingly higher energy penetrate to lower latitudes.

In order to consider the effect of geomagnetic shielding from cosmic rays on an orbiting spacecraft, the total time spent by the vehicle in regions of space accessible to these particles has to be calculated, as a function of particle energy, for the entire lifetime of the satellite. In other words, the exposure of a spacecraft to these particles is in essence a function of trajectory altitude and inclination, and mission duration. Of course, this applies only to the years of increased solar activity, and whether a satellite will "see" energetic solar protons or not, even in accessible regions of the magnetosphere, depends on the epoch within the solar cycle, at which the mission is to be flown. If it coincides with the period of low solar activity (years of solar minimum), it most likely will not encounter any significant number of energetic solar protons, and vice versa.

Having calculated a mission related exposure time for a specific trajectory, one can use experimentally determined low energy cosmic ray fluxes of solar origin from which the galactic background has been subtracted, to obtain vehicle-encountered energetic solar proton intensities. In the present study, the annual mean of event and cycle integrated proton fluxes of cycle 20, given by Stassinopoulos and King (1973) for energies ranging from E >10 Mev to E >100 Mev, were used to estimate cycle 21 intensities on the SOLWIND spacecraft, because, as explained in the Introduction (page 3), the mission may extend into the next solar max period.

Although a thorough statistical treatment has now been worked out in regards to the probability of actual cycle 21 fluxes exceeding the predicted intensities (King, 1974), crude model confidence levels suffice for first order approximations, and are given below. However, the importance of such statistics must be emphasized; it is best demonstrated by the occurrence of the August 4-7, 1972, event, which was the largest recorded in solar cycles 19 and 20, its fluxes exceeding the accumulative total of all other cycle 20 events by about a factor of 2 for the E > 10 Mev protons and by a factor of 4 for the E >30 and E >60 Mev particles. Therefore, caution is advisable when using the data presented in this report.

The probability that the fluxes estimated for the SOLWIND mission will be exceeded by an actual event, is about 33% for a one year mission duration, and about 40% for a two year mission duration.

Figure 35 shows annual, omnidirectional, integral spectral profiles of vehicle-encountered energetic solar proton fluences for the investigated trajectories, in units of total number of particles per square centimeter.

Please remember: these fluences apply only to missions planned for periods of increased solar activity. It is not expected that solar-min missions will encounter energetic solar protons of any significance; at least it is very unlikely (but not impossible) to have a major event occurring during the years of minimum solar activity. Thus, a three year mission, to be launched in mid 1974, will spend most of its lifetime in a solar min period. Hence, no solar protons have to be considered until about 1977. Thereafter, the predicted mean annual intensities should be applied to the remaining 0.5 years. Caution: In evaluating the energetic solar proton radiation hazard please bear in mind that the probability of at least one anomalously large event occurring during the time interval 1977 - 1979 is high.

Tables 31 to 34 list the annual solar proton fluences for each trajectory at ten discrete energy thresholds for a dipole cutoff shell of L > 5 earth radii, and the duration of exposure to these particles in percent of total mission time.

Solar-min Versus Solar-max Electron Fluxes

As mentioned elsewhere in this report, electron fluxes were calculated for both periods of solar activity with the corresponding versions of the AE4-AE5 models.

The averaged orbit integrated solar-max spectra of all four trajectories showed an increase in the flux levels slightly greater than a factor of two.

The instantaneous peak fluxes and the total fluxes per orbit for the solar-max period were substantially higher than the corresponding solar-min values. Specifically, the peaks were up by about a factor of 6, 7, 6, 5 and the totals by about a factor of 4, 5, 6, 6 for the 60^o/1111 km, 90^o/1111 km, 60^o/1852 km, and 90^o/1852 km trajectories, respectively.

The flux-free time of every flightpath remained about the same, while the time spent in the high intensity region of the electron belt increased for solar-max by about a factor of two for all trajectories.

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APPENDIX A

General Background Information

For the specified flight paths, orbit tapes were generated with a constant integration stepsize of one minute, and for a 24 hour flight duration each. This time interval is adequate for a sufficient sampling of the ambient environment. (For more details see section: "Results, III. Trajectory Data".) The following four circular trajectories were thus produced:

Inclination	Altitudes
60°	1111 km, 1852 km
90°	1111 km, 1852 km

with the combined GEODYN-BLCONV system (Stassinopoulos et al., 1973), which subsequently converted the orbits from geodetic polar (h, Λ, ϕ) into magnetic B-L coordinates with McIlwain's INVAR Program of 1965 (Hassit and McIlwain, 1967) with the field routine ALLMAG by Stassinopoulos and Mead (1972), utilizing the IGRF (1965) geomagnetic field model by Cain and Cain (1971), calculated for the epoch 1973.0.

Orbital flux integrations were performed with Vette's current models of the environment, the solar min and solar max versions of the AE5-AE4 for the inner and outer zone electrons, the AP6-AP7 for high energy protons, and the AP5 for low energy protons. All are static models which do not consider temporal variations; this includes the new electron models, at least as far as the present calculations are concerned. See text for further details on this matter.

The documents that describe these models are listed below:

Models	
AE4	Singley and Vette, 1972
AE5	Teague and Vette, 1972
AP5	King, 1967
AP6	Lavine and Vette, 1969
AP7	Lavine and Vette, 1970

The results, relating to omnidirectional, vehicle-encountered, integral, trapped particle fluxes, are presented in graphical and tabular form with the following unit conventions:

1. Daily averages: total trajectory integrated flux averaged into particles/cm^2 day,
2. Average instantaneous: time integrated average, characteristic of the orbit, in particles/cm^2 sec,
3. Totals per orbit: non-averaged, single-orbit integrated flux in particles/cm^2 orbit, and
4. Peaks per orbit: highest orbit-encountered instantaneous flux in particles/cm^2 sec,

where one orbit = one revolution.

We wish to emphasize the fact that the data presented in this report are only approximations. We do not believe the results to be any better than a factor of <u>2</u> for the protons and a factor of <u>3</u> for the electrons. It is advisable to inform all potential users about this uncertainty in the data.

APPENDIX B

Description of Tables

a) The L-band Table:

The table contains 36 L-bands $\mathcal{L}_i$ of equal size, covering the range from L = 1.0 to L = 8.2 earth radii in constant increments of .2 earth radii. For the L-intervals determined in this way, orbital spectral functions

$$N(>E,E_N;\mathcal{L}_i) = \left[\sum_k J_k(>E;B)\right]_{\mathcal{L}_i} \Big/ \left[\sum_k J_k(>E_N;B)\right]_{\mathcal{L}_i} \qquad \begin{matrix} i=1,36 \\ \mathcal{L}_i : L_i < L \le L_{i+1} \end{matrix} \tag{1}$$

are obtained at nine arbitrary energy levels such that the integral spectrum is equal to 1 for $E = E_N$, where E_N was taken to be 5. and .5 MeV for protons and electrons, respectively. The notation $\mathcal{L}_i$ is used to indicate the L-band from L_i to L_{i+1}, while $J(>E;B)$ is the integral, omnidirectional flux yielded by the environment model used in the calculation. The spectral functions N are evaluated for the total flight time simulated in the study, where the summing index k selects all trajectory points lying in each $\mathcal{L}_i$.

The corresponding orbital distribution functions, representing fluxes above energy E_N, are given by

$$F(E;\mathcal{L}_i) = \Delta t \left[\sum_k J_k(>E;B)\right]_{\mathcal{L}_i} \tag{2}$$

where Δt is the constant time increment of orbit integration, whose standard value is 60 seconds. The distribution functions are fluxes accumulated in their respective $\mathcal{L}_i$ bands over the total flight duration considered.

The orbital distribution functions are listed on the table at the bottom of each L-interval and are labeled "NORMFLUX." The nine integral energy levels selected for protons and electrons are given below in units of "MeV" for all particles:

Protons	Electrons
.1	.1
1.	.5*
3.	1.0
5.*	1.5
10.	2.0
20.	2.5
30.	3.0
50.	4.0
100.	5.0

where the normalization energy is indicated by a star (*).

b) The Spectral Distribution and Exposure Index Table:

This table has three parts:

I. The spectrum $\Psi_j(\Delta E)$ given in % for energy intervals that correspond to the energy levels of the previously discussed table (L-bands), with two special columns showing the total orbit integrated flux for these energy intervals averaged into instantaneous I_j^S and daily I_j^D intensitites

$$\Psi_j(\Delta E) = 100 \frac{I_j^D(\Delta E)}{F(>E_1)} \qquad j=1,9 \tag{3}$$

where

$$F(>E_1) = C \sum_{k=1}^{k_0} J_k(>E_1;B,L)\Delta t \tag{4}$$

$$I_j^D(\Delta E) = C \sum_{k=1}^{k_0} \Delta t \left\{ J_k(>E_j;B,L) - J_k(>E_{j+1};B,L) \right\} \tag{5}$$

$$I_j^S(\Delta E) = I_j^D(\Delta E)/86400 \tag{6}$$

$$C = \frac{24}{T} \quad , \quad T = k_0 \Delta t \qquad i=1,36$$

and where k_0 is the upper limit of k. It is equal to the total number of time increments considered in the study.

II. The composite orbit spectrum for integral energies, giving the total vehicle encountered fluxes averaged into daily $S^D(>E_j)$ and per second $S^S(>E_j)$ intensities for 30 discrete energy levels:

$$S^D(>E_j) = c\Delta t \sum_{m=0}^{T} J_m(>E_j) \qquad j=1,30 \tag{7}$$

$$S^S(>E_j) = S^D(>E_j)/86400 \tag{8}$$

where the summation is performed for the entire simulated mission duration T and includes all fluxes with energies greater than E_j.

III. The composite orbit spectrum for differential energies $S^S(=E_j)$ obtained from the instantaneous total vehicle encountered fluxes $S^S(>E_j)$ at the selected energy levels by analytic differentiation:

$$S^S(=E_j) = \frac{\partial S^S(>E_j)}{\partial E}$$

where the differential intensities are given in units of: particles per square centimeter per second per keV.

IV. The exposure index, given (for the normalization energy used in the L-band table) at nine successive intensity ranges R_n one order of magnitude apart, in terms of exposure duration $\tau(R_n)$, converted to hours, and total number of particles $\phi(>E_N;R_n)$ accumulated while in that intensity range. The notation R_n is used to indicate the intensity range from r_n to r_{n+1}:

$$\phi(>E_N;R_n) = \tau(R_n)\ \theta(>E_N;R_n) \qquad \begin{matrix} n=1,9 \\ R_n = r_n < r \le r_{n+1} \end{matrix} \tag{9}$$

$$\theta(>E_N;R_n) = \left[\sum_{\ell} J(>E_N;r)\right]_{R_n} \Big/ \zeta_n \tag{10}$$

$$\tau(R_n) = \Delta t\ \zeta_n \tag{11}$$

where ζ_n is the upper limit of ℓ in each R_n.

c) <u>The Table of Peaks</u>:

In this table, the absolute instantaneous peak flux encountered during each successive orbit (revolution) is listed for the indicated threshold energy. There are nine columns on this table. Column 1 is an orbit counting device, based on the period of the orbit when the trajectory lies in the equatorial plane and is circular, on the physical perigee in all elliptical cases, and on the equatorial crossing for circular inclined trajectories. Column 2 gives the peak flux. Columns 3, 4, and 5 indicate the spacecraft position in geocentric coordinates at which the peak was encountered, while columns 6, 7, and 8 determine respectively the time and the magnetic B-L coordinates for this event. It should be noted that for the purpose of orbital radiation studies all simulated flight paths start at $t_0 = 0$ hours. Finally, the last column indicates the total flux encountered during that particular orbit. It is advisable to disregard the last line on this table because many times that orbit is incomplete and the fluxes or positions shown do not correspond to true peaks.

d) The Exposure Analysis Summary:

The summary is contained in the left half of this table as a semi-independent and separate table. It indicates what percent of its total lifetime T the satellite spends in "flux free" regions of space, what percent of T in "high intensity" regions, and while in the latter, what percent of its total daily flux it accumulates.

In the context of this study, the term "flux free" applies to all regions of space where trapped particle fluxes are less than one proton or electron per square centimeter per second, having energies E > 5., and E > .5 MeV for the protons and the electrons, respectively; by definition, this includes all regions outside the radiation belts. The concept of "trapped particle fluxes" is meant to include stably trapped, pseudo-trapped, and transient fluxes, as long as they are part of or contained in the environment models used and, in the case of transients or pseudos, their sources are considered powerful enough to supply them continuously in substantial numbers.

Similarly, we define as "high intensity" those regions of space where the instantaneous, integral, omnidirectional, trapped-particle flux is greater than 10^3 protons with energies E > 5. MeV, and greater than 10^5 electrons with energies E > .5 MeV.

The values given in this table are statistical averages, obtained over extended intervals of mission time. However, they may vary significantly from one orbit to the next, when individual revolutions are considered.

e) The Time Account Breakdown:

The breakdown of orbit time is given in the right half of the table, in the same semi-independent form as the summary. The table shows the total lifetime spend by the vehicle in the inner zone T^i $(1.0 < L \leq 2.8)$ and the outer zone T^o $(2.8 < L \leq 11.0)$ of the trapped particle radiation belt, and also the percent duration spent outside that region $(L > 11.0)$, which is denoted by T^e (T-external), such that for any mission.

$$T = T^i + T^o + T^e = 100\%$$

The confinement of the outer zone within the boundary of the $L = 11.0$ volume is arbitrary and has no physical meaning. It is intended only as a simplification to facilitate our calculations. The region considered "external" $(L > 11.0)$ in this study is still partially a domain of the outer zone, at least as far out as $L = 12.0$ earth radii, according to the latest electron models (Singley and Vette, 1972).

A last item on this table: the inner zone time T^i may be subdivided into two parts: the percentage of time spent outside the trapping region $(1.0 < L \leq 1.1)$ and inside the trapping region $(1.1 < L \leq 2.8)$.

f) Table of Physical Perigees:

This table is produced only for elliptical orbits with non-trivial eccentricities.

It contains, for each period (revolution), the orbit time in hours at which perigee occurred and gives the perigee position in geocentric latitude (degrees), east longitude (degrees), and altitude (kilometers above sea level). It also gives the magnetic field strength B and the shell parameter L at that position and it lists the instantaneous, integral, trapped particle fluxes (standard energies) encountered at these B and L values.

As in the case of the "Peak" tables, it is again advisable to disregard the last line because frequently the orbit is incomplete and the indicated position may not correspond to a true perigee.

APPENDIX C

Description of Plots

a) The Time and Flux Histogram

This plot shows two curves superimposed on the same graph, namely, one each for the variables "time" and "flux". Both are given as functions of the parameter L (earth radii) within the range 1 L 10 on a semi-log scale. The plot depicts: (1) by a plain curve the characteristic trajectory intensities as obtained from the orbital integration process in terms of averaged, integral particle fluxes above a given energy, over constant L-bands of .1 earth radius width, and (2) by a contour marked with symbols the percent of total lifetime (%T) spent in each L-interval. The logarithmic ordinate relates to the time-flux variables. The printed numbers are powers of 10 and pertain to the fluxes; the scale values for the time curve are given in the upper part of the ordinate label: from 10^{-3} to 10^{2} percent of T. The type of particles, their integral energy, and the units, are all given in the lower part of the label. The label on top of the graph lists some useful information about the trajectory.

b) The Spectral Profile

A graphical presentation of the final spectral distribution, obtained from the orbital integration process. The plot is a semi-log graph, where the abscissa is a linear energy scale for integral particle energies E_o in Mev, and the ordinate is a logarithmic scale for the orbit integrated fluxes, given in daily averages for energies greater than E_o; the printed scale values are powers of 10.

c) Peaks Per Orbit

Here the absolute peak intensities, encountered per period, are plotted for the duration of the total flight time considered (1 period = 1 revolution = 1 orbit). The logarithmic ordinate relates to instantaneous particle fluxes of the environment at the indicated energy threshold, while the abscissa is a linear orbit enumeration.

d) World Map Grid Projection of Orbits

The trajectory is plotted for several revolutions on a global map produced by a Miller Cylindrical Projection. The contours of the continents have been omitted for clarity. The postiions of either equatorial crossing, of physical perigee, or of period commencement are indicated by numbers identifying the orbits shown in this graph. For all trajectories, the distance between successive sequential numbers is a measure of the orbit precession.

e) B-L Trace of Orbits

This plot shows the trace of the trajectory in B-L space on a semi-log scale. Several orbits are usually depicted, each identified by its sequential number. The magnetic equator is entered on all plots. The logarithmic ordinate relates to the field strength B in gauss; the printed values are exponents of 10. L is given in earth radii on the linear abscissa.

TABLE 1

Partial Listing of
Parameters, Constants, Variables, or Expressions
designated as "standard" in the text

1.	Standard Tables:	set of tables as listed in Figure 1, in the regular format described in Appendix B.
2.	Standard Plots:	set of plots as listed in Figure 2, in the regular format described in Appendix C.
3.	Standard Production Run:	a production run processed on default options.
4.	Standard Integration Stepsize:	constant time increment of orbit integration: 1' (60").
5.	Standard Energies:	protons E > 5. Mev and electrons E > .5 Mev.
6.	Standard Procedure:	established procedure normally followed vs. procedure followed in special cases.

TABLE 2

B and L Extrema of Circular SOLWIND Trajectories

	B-range (gamma)		L-range (earth radii)	
	B-min*	B-max	L-min	L-max*
Inclination 60°				
Altitude 1111 km	<.15617	.40274	1.10	>16.14
Altitude 1852 km	<.12025	.29961	1.21	>16.45
Inclination 90°				
Altitude 1111 km	<.15585	.40423	1.10	>46.78
Altitude 1852 km	<.12043	.29969	1.22	>34.09

*These values are not true lower B and upper L bounds for the respective trajectories because calculations and storage of B and L are suspended by an (h, Λ, Φ)-sensitive exclusion test.

Table 3

```
***************************************************************************************************************************
** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES:              **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG. MODEL  5:      IGRF 1965.0 80-TERM 10/68    * TIME= 1973.0 **
** VEHICLE : 1 NRL SOLWND ** INCLINATION= 60DEG ** PERIGEE= 1111KM ** APOGEE=  1111KM ** B/L ORBIT TAPE: TO7963 ** PERIOD=  1.790 **
***************************************************************************************************************************
                          ******************************     PROTONS     ********************************
                          ** SPECTRAL DISTRIBUTION : NORMALIZED BY FLUX OF ENERGY GREATER THAN 5.000MEV **
                          ******************************************************************************
```

ENERGY LEVELS >(MEV)	*1.0-1.2*	*1.2-1.4*	*1.4-1.6*	*1.6-1.8*	*1.8-2.0*	*2.0-2.2*	*2.2-2.4*	*2.4-2.6*	*2.6-2.8*	*2.8-3.0*	*3.0-3.2*	*3.2-3.4*
.1000	3.09E 00	2.61E 00	2.83E 00	2.97E 00	3.44E 00	6.66E 00	2.41E 01	1.07E 02	9.82E 02	8.08E 04	1.96E 06	1.23E 06
1.000	2.25E 00	1.85E 00	2.00E 00	2.11E 00	2.45E 00	4.03E 00	6.73E 00	1.99E 01	1.55E 02	8.13E 03	1.65E 05	9.59E 04
3.000	1.39E 00	1.34E 00	1.43E 00	1.56E 00	1.71E 00	2.07E 00	2.52E 00	3.94E 00	8.48E 00	5.24E 01	7.50E 02	3.44E 02
5.000	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	0.0
10.00	7.14E-01	5.78E-01	4.54E-01	2.88E-01	2.09E-01	1.89E-01	1.71E-01	1.04E-01	7.62E-02	0.0	0.0	0.0
20.00	5.42E-01	3.57E-01	2.34E-01	1.00E-01	5.14E-02	3.88E-02	2.81E-02	7.71E-03	2.39E-03	0.0	0.0	0.0
30.00	5.10E-01	3.00E-01	1.95E-01	6.67E-02	2.85E-02	1.76E-02	9.15E-03	1.25E-03	0.0	0.0	0.0	0.0
50.00	4.53E-01	2.13E-01	1.38E-01	2.99E-02	8.89E-03	3.66E-03	1.01E-03	1.19E-04	0.0	0.0	0.0	0.0
100.0	3.35E-01	1.39E-01	8.03E-02	1.35E-02	2.98E-03	8.59E-04	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	2.11E 06	9.15E 07	4.44E 07	2.55E 07	2.06E 07	1.28E 07	6.88E 06	2.39E 06	2.23E 05	2.41E 03	1.81E 02	0.0

L - B A N D S (M A G N E T I C S H E L L P A R A M E T E R I N E A R T H R A D I I) L - B A N D S

ENERGY LEVELS >(MEV)	*3.4-3.6*	*3.6-3.8*	*3.8-4.0*	*4.0-4.2*	*4.2-4.4*	*4.4-4.6*	*4.6-4.8*	*4.8-5.0*	*5.0-5.2*	*5.2-5.4*	*5.4-5.6*	*5.6-5.8*
.1000	9.49E 05	9.64E 05	1.57E 06	3.37E 06	1.70E 05	1.36E 06	3.80E 06	2.52E 06	1.62E 06	1.58E 06	1.50E 06	1.88E 05
1.000	5.73E 04	2.63E 04	2.85E 04	2.36E 03	8.41E 01	1.66E 01	2.54E 01	9.49E 00	4.76E 00	4.93E 00	2.26E 00	0.0
3.000	1.20E 02	7.58E 00	4.60E 00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

L - B A N D S (M A G N E T I C S H E L L P A R A M E T E R I N E A R T H R A D I I) L - B A N D S

ENERGY LEVELS >(MEV)	*5.8-6.0*	*6.0-6.2*	*6.2-6.4*	*6.4-6.6*	*6.6-6.8*	*6.8-7.0*	*7.0-7.2*	*7.2-7.4*	*7.4-7.6*	*7.6-7.8*	*7.8-8.0*	*8.0-OVR*
.1000	4.75E 05	6.49E 05	3.03E 05	1.85E 05	1.66E 05	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE 4

```
****************************************************************************************************************************
** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES:          **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG. MODEL  5:     IGRF 1965.0 80-TERM 10/68    * TIME= 1973.0 **
** VEHICLE : 1 NRL SOLWND ** INCLINATION= 60DEG ** PERIGEE= 1111KM ** APOGEE=  1111KM ** B/L ORBIT TAPE: TD7963 ** PERIOD=  1.790 **
****************************************************************************************************************************
                         ******************************     ELECTRONS     **********************************
                         ** SPECTRAL DISTRIBUTION : NORMALIZED BY FLUX OF ENERGY GREATER THAN .5000MEV **
                         *****************************************************************************
```

ENERGY LEVELS >(MEV) — L - B A N D S (M A G N E T I C S H E L L P A R A M E T E R I N E A R T H R A D I I) L - B A N D S

ENERGY LEVELS >(MEV)	*1.0-1.2*	*1.2-1.4*	*1.4-1.6*	*1.6-1.8*	*1.8-2.0*	*2.0-2.2*	*2.2-2.4*	*2.4-2.6*	*2.6-2.8*	*2.8-3.0*	*3.0-3.2*	*3.2-3.4*
.1000	3.42E 00	6.92E 00	1.40E 01	5.51E 01	6.71E 01	1.02E 02	1.76E 02	6.40E 01	1.26E 01	6.88E 00	5.81E 00	5.80E 00
.5000	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00
1.000	5.50E-01	7.61E-02	2.14E-01	1.70E-01	6.06E-02	4.17E-02	4.39E-02	8.42E-02	1.98E-01	3.40E-01	3.66E-01	3.92E-01
1.500	3.67E-01	2.75E-02	1.14E-01	6.21E-02	1.41E-02	6.78E-03	6.02E-03	1.78E-02	7.42E-02	1.72E-01	1.79E-01	1.94E-01
2.000	1.88E-01	1.37E-02	6.19E-02	2.36E-02	3.89E-03	1.64E-03	1.09E-03	4.09E-03	3.02E-02	8.72E-02	8.79E-02	9.61E-02
2.500	6.45E-02	5.90E-03	2.77E-02	8.30E-03	9.54E-04	3.35E-04	1.27E-04	5.28E-04	7.58E-03	3.96E-02	3.80E-02	4.20E-02
3.000	2.05E-02	2.15E-03	7.88E-03	2.54E-03	1.89E-04	3.73E-05	0.0	0.0	7.14E-04	1.35E-02	1.41E-02	1.53E-02
4.000	2.40E-04	2.18E-05	7.75E-05	5.11E-05	0.0	0.0	0.0	0.0	0.0	4.26E-04	3.92E-04	4.22E-04
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	2.06E 07	8.19E 09	2.92E 09	2.90E 08	1.29E 09	5.33E 07	1.73E 07	5.76E 06	1.50E 06	1.68E 07	1.75E 08	3.13E 08

ENERGY LEVELS >(MEV) — L - B A N D S (M A G N E T I C S H E L L P A R A M E T E R I N E A R T H R A D I I) L - B A N D S

ENERGY LEVELS >(MEV)	*3.4-3.6*	*3.6-3.8*	*3.8-4.0*	*4.0-4.2*	*4.2-4.4*	*4.4-4.6*	*4.6-4.8*	*4.8-5.0*	*5.0-5.2*	*5.2-5.4*	*5.4-5.6*	*5.6-5.8*
.1000	6.33E 00	5.73E 00	4.82E 00	3.84E 00	3.61E 00	3.33E 00	3.48E 00	3.72E 00	3.79E 00	3.86E 00	3.91E 00	3.94E 00
.5000	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00
1.000	3.97E-01	3.80E-01	3.67E-01	3.55E-01	3.56E-01	3.54E-01	3.45E-01	3.35E-01	3.31E-01	3.23E-01	3.14E-01	2.78E-01
1.500	1.99E-01	1.90E-01	1.74E-01	1.51E-01	1.44E-01	1.34E-01	1.27E-01	1.20E-01	1.16E-01	1.07E-01	1.00E-01	8.47E-02
2.000	9.93E-02	9.49E-02	8.23E-02	6.40E-02	5.85E-02	5.09E-02	4.64E-02	4.30E-02	4.05E-02	3.54E-02	3.19E-02	2.58E-02
2.500	4.51E-02	4.87E-02	4.15E-02	2.86E-02	2.51E-02	2.04E-02	1.73E-02	1.50E-02	1.35E-02	1.07E-02	9.08E-03	7.04E-03
3.000	1.73E-02	2.09E-02	1.85E-02	1.27E-02	1.03E-02	7.49E-03	5.58E-03	4.27E-03	3.67E-03	2.74E-03	2.23E-03	1.75E-03
4.000	5.07E-04	7.04E-04	6.28E-04	3.97E-04	2.96E-04	1.91E-04	1.35E-04	1.01E-04	8.47E-05	5.89E-05	4.55E-05	2.78E-05
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	2.73E 08	2.30E 08	2.89E 08	4.61E 08	1.87E 08	1.01E 08	2.01E 08	1.41E 08	1.26E 08	8.70E 07	9.38E 07	1.46E 07

ENERGY LEVELS >(MEV) — L - B A N D S (M A G N E T I C S H E L L P A R A M E T E R I N E A R T H R A D I I) L - B A N D S

ENERGY LEVELS >(MEV)	*5.8-6.0*	*6.0-6.2*	*6.2-6.4*	*6.4-6.6*	*6.6-6.8*	*6.8-7.0*	*7.0-7.2*	*7.2-7.4*	*7.4-7.6*	*7.6-7.8*	*7.8-8.0*	*8.0-OVR*
.1000	3.96E 00	4.45E 00	5.24E 00	6.56E 00	7.11E 00	8.13E 00	9.03E 00	0.0	1.67E 01	2.45E 01	0.0	6.79E 01
.5000	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	0.0	1.00E 00	1.00E 00	0.0	1.00E 00
1.000	2.52E-01	2.39E-01	2.35E-01	2.31E-01	2.03E-01	1.57E-01	1.49E-01	0.0	1.18E-01	1.00E-01	0.0	5.81E-02
1.500	7.48E-02	6.79E-02	6.41E-02	5.94E-02	4.94E-02	3.41E-02	3.18E-02	0.0	2.35E-02	1.87E-02	0.0	8.11E-03
2.000	2.22E-02	1.93E-02	1.74E-02	1.53E-02	1.20E-02	7.43E-03	6.81E-03	0.0	4.70E-03	3.49E-03	0.0	1.28E-03
2.500	5.95E-03	4.97E-03	4.27E-03	3.54E-03	2.68E-03	1.58E-03	1.43E-03	0.0	9.34E-04	5.72E-04	0.0	0.0
3.000	1.51E-03	1.18E-03	9.18E-04	6.79E-04	5.22E-04	3.24E-04	2.88E-04	0.0	1.53E-04	0.0	0.0	0.0
4.000	2.12E-05	4.99E-06	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	3.13E 07	3.64E 07	1.74E 07	7.53E 06	1.32E 07	3.89E 06	6.11E 06	0.0	5.59E 06	7.66E 05	0.0	7.14E 05

Table 5

****
** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES: **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG. MODEL 5: IGRF 1965.0 80-TERM 10/68 * TIME= 1973.0 **
** VEHICLE : 2 NRL SOLWND ** INCLINATION= 90DEG ** PERIGEE= 1111KM ** APOGEE= 1111KM ** B/L ORBIT TAPE: TD7963 ** PERIOD= 1.790 **
****

******************************* PROTONS *******************************

** SPECTRAL DISTRIBUTION : NORMALIZED BY FLUX OF ENERGY GREATER THAN 5.000MEV **

****

ENERGY LEVELS >(MEV)	*1.0-1.2*	*1.2-1.4*	*1.4-1.6*	*1.6-1.8*	*1.8-2.0*	*2.0-2.2*	*2.2-2.4*	*2.4-2.6*	*2.6-2.8*	*2.8-3.0*	*3.0-3.2*	*3.2-3.4*
.1000	3.46E 00	2.62E 00	2.84E 00	3.21E 00	3.27E 00	7.02E 00	2.35E 01	9.19E 01	8.98E 02	3.68E 04	7.47E 04	1.49E 06
1.000	2.46E 00	1.86E 00	2.01E 00	2.26E 00	2.36E 00	4.68E 00	6.89E 00	1.73E 01	1.42E 02	3.96E 03	6.88E 03	1.06E 05
3.000	1.43E 00	1.34E 00	1.44E 00	1.55E 00	1.70E 00	2.19E 00	2.54E 00	3.72E 00	7.99E 00	3.09E 01	3.84E 01	3.25E 02
5.000	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	0.0	0.0
10.00	7.07E-01	5.76E-01	4.49E-01	3.40E-01	2.08E-01	1.93E-01	1.74E-01	1.08E-01	7.50E-02	0.0	0.0	0.0
20.00	5.32E-01	3.56E-01	2.32E-01	1.37E-01	5.07E-02	4.03E-02	3.01E-02	9.44E-03	2.92E-03	0.0	0.0	0.0
30.00	5.00E-01	3.00E-01	1.93E-01	9.84E-02	2.81E-02	1.86E-02	1.04E-02	2.01E-03	0.0	0.0	0.0	0.0
50.00	4.43E-01	2.14E-01	1.35E-01	5.08E-02	8.70E-03	4.02E-03	1.28E-03	1.70E-04	0.0	0.0	0.0	0.0
100.0	3.19E-01	1.40E-01	7.75E-02	2.36E-02	3.25E-03	6.99E-04	7.96E-05	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	2.45E 06	7.59E 07	3.32E 07	1.02E 07	2.97E 07	2.73E 06	5.25E 06	1.39E 06	8.36E 04	9.70E 03	0.0	0.0

ENERGY LEVELS >(MEV)	*3.4-3.6*	*3.6-3.8*	*3.8-4.0*	*4.0-4.2*	*4.2-4.4*	*4.4-4.6*	*4.6-4.8*	*4.8-5.0*	*5.0-5.2*	*5.2-5.4*	*5.4-5.6*	*5.6-5.8*
.1000	1.97E 05	1.04E 06	2.03E 06	2.77E 06	2.25E 05	1.41E 06	2.10E 06	3.12E 06	2.04E 06	2.01E 06	9.37E 05	8.87E 05
1.000	1.29E 04	2.87E 04	2.26E 04	1.17E 03	6.01E 01	1.70E 01	1.26E 01	1.58E 01	6.30E 00	4.66E 00	2.91E 00	2.07E 00
3.000	3.02E 01	9.09E 00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ENERGY LEVELS >(MEV)	*5.8-6.0*	*6.0-6.2*	*6.2-6.4*	*6.4-6.6*	*6.6-6.8*	*6.8-7.0*	*7.0-7.2*	*7.2-7.4*	*7.4-7.6*	*7.6-7.8*	*7.8-8.0*	*8.0-OVR*
.1000	1.36E 06	6.07E 05	0.0	5.48E 05	2.89E 04	2.80E 03	1.72E 02	0.0	0.0	0.0	0.0	0.0
1.000	3.39E 00	1.02E 00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 6

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****************************************************************************************************************
** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES:              **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL  5:     IGRF 1965.0 80-TERM 10/68    * TIME= 1973.0 **
** VEHICLE : 2 NRL SOLWND ** INCLINATION= 90DEG ** PERIGEE= 1111KM ** APOGEE=  1111KM ** B/L ORBIT TAPE: TD7963 ** PERIOD=  1.790 **
****************************************************************************************************************
                    ********************************      ELECTRONS      ********************************
                    ** SPECTRAL DISTRIBUTION : NORMALIZED BY FLUX OF ENERGY GREATER THAN .5000MEV **
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ENERGY LEVELS >(MEV)	L-BANDS (MAGNETIC SHELL PARAMETER IN EARTH RADII) L-BANDS											
	1.0-1.2	*1.2-1.4*	*1.4-1.6*	*1.6-1.8*	*1.8-2.0*	*2.0-2.2*	*2.2-2.4*	*2.4-2.6*	*2.6-2.8*	*2.8-3.0*	*3.0-3.2*	*3.2-3.4*
.1000	3.65E 00	6.87E 00	1.56E 01	4.73E 01	6.63E 01	1.08E 02	1.69E 02	7.02E 01	1.28E 01	7.12E 00	5.51E 00	5.87E 00
.5000	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00
1.000	5.35E-01	7.80E-02	2.27E-01	2.27E-01	6.72E-02	4.19E-02	4.23E-02	7.59E-02	1.94E-01	3.37E-01	3.75E-01	3.94E-01
1.500	3.50E-01	2.87E-02	1.24E-01	9.61E-02	1.63E-02	6.72E-03	5.76E-03	1.46E-02	7.17E-02	1.72E-01	1.84E-01	1.95E-01
2.000	1.74E-01	1.45E-02	6.35E-02	3.98E-02	4.63E-03	1.63E-03	1.09E-03	3.06E-03	2.85E-02	8.77E-02	9.00E-02	9.68E-02
2.500	5.71E-02	6.25E-03	2.45E-02	1.41E-02	1.22E-03	3.13E-04	1.51E-04	3.48E-04	6.98E-03	3.89E-02	3.83E-02	4.25E-02
3.000	1.74E-02	2.29E-03	7.15E-03	4.32E-03	2.72E-04	2.71E-05	0.0	0.0	4.47E-04	1.20E-02	1.40E-02	1.55E-02
4.000	1.75E-04	2.41E-05	8.10E-05	8.87E-05	2.25E-05	0.0	0.0	0.0	0.0	4.10E-04	3.94E-04	4.27E-04
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	2.39E 07	7.01E 09	1.87E 09	1.60E 08	1.87E 08	1.08E 07	1.44E 07	3.33E 06	4.71E 05	1.40E 07	6.25E 07	1.97E 08

ENERGY LEVELS >(MEV)	L-BANDS (MAGNETIC SHELL PARAMETER IN EARTH RADII) L-BANDS											
	3.4-3.6	*3.6-3.8*	*3.8-4.0*	*4.0-4.2*	*4.2-4.4*	*4.4-4.6*	*4.6-4.8*	*4.8-5.0*	*5.0-5.2*	*5.2-5.4*	*5.4-5.6*	*5.6-5.8*
.1000	6.34E 00	5.85E 00	4.69E 00	3.82E 00	3.50E 00	3.34E 00	3.50E 00	3.61E 00	3.79E 00	3.88E 00	3.92E 00	3.94E 00
.5000	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00
1.000	3.97E-01	3.82E-01	3.65E-01	3.55E-01	3.55E-01	3.53E-01	3.44E-01	3.40E-01	3.31E-01	3.21E-01	3.16E-01	2.87E-01
1.500	1.98E-01	1.91E-01	1.71E-01	1.50E-01	1.41E-01	1.34E-01	1.26E-01	1.23E-01	1.16E-01	1.05E-01	1.00E-01	8.81E-02
2.000	9.92E-02	9.54E-02	8.00E-02	6.35E-02	5.58E-02	5.06E-02	4.61E-02	4.44E-02	4.08E-02	3.44E-02	3.18E-02	2.71E-02
2.500	4.51E-02	4.81E-02	3.97E-02	2.83E-02	2.34E-02	2.02E-02	1.71E-02	1.59E-02	1.37E-02	1.02E-02	8.97E-03	7.44E-03
3.000	1.74E-02	2.05E-02	1.79E-02	1.25E-02	9.28E-03	7.38E-03	5.44E-03	4.78E-03	3.73E-03	2.56E-03	2.18E-03	1.84E-03
4.000	5.15E-04	6.85E-04	6.02E-04	3.88E-04	2.56E-04	1.87E-04	1.32E-04	1.14E-04	8.63E-05	5.43E-05	4.51E-05	3.16E-05
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	1.06E 08	2.35E 08	3.29E 08	5.22E 08	2.31E 08	1.00E 08	1.25E 08	1.67E 08	1.03E 08	1.24E 08	5.44E 07	4.74E 07

ENERGY LEVELS >(MEV)	L-BANDS (MAGNETIC SHELL PARAMETER IN EARTH RADII) L-BANDS											
	5.8-6.0	*6.0-6.2*	*6.2-6.4*	*6.4-6.6*	*6.6-6.8*	*6.8-7.0*	*7.0-7.2*	*7.2-7.4*	*7.4-7.6*	*7.6-7.8*	*7.8-8.0*	*8.0-OVR*
.1000	3.95E 00	4.43E 00	0.0	6.15E 00	7.19E 00	7.92E 00	1.01E 01	1.18E 01	1.72E 01	2.53E 01	3.09E 01	8.46E 01
.5000	1.00E 00	1.00E 00	0.0	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00
1.000	2.60E-01	2.39E-01	0.0	2.32E-01	1.99E-01	1.65E-01	1.42E-01	1.34E-01	1.17E-01	9.91E-02	9.08E-02	4.34E-02
1.500	7.76E-02	6.81E-02	0.0	6.07E-02	4.77E-02	3.67E-02	3.01E-02	2.77E-02	2.33E-02	1.85E-02	1.66E-02	3.[illegible]E-03
2.000	2.32E-02	1.94E-02	0.0	1.59E-02	1.15E-02	8.17E-03	6.35E-03	5.73E-03	4.65E-03	3.45E-03	3.02E-03	2.54E-04
2.500	6.25E-03	5.01E-03	0.0	3.73E-03	2.54E-03	1.75E-03	1.31E-03	1.17E-03	9.28E-04	5.62E-04	4.62E-04	0.0
3.000	1.58E-03	1.20E-03	0.0	7.38E-04	4.95E-04	3.54E-04	2.60E-04	2.21E-04	1.78E-04	0.0	0.0	0.0
4.000	2.30E-05	7.96E-06	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	6.63E 07	2.93E 07	0.0	2.87E 07	5.24E 05	1.35E 07	1.30E 07	2.30E 06	2.17E 06	1.55E 06	2.13E 06	9.02E 05

ORIGINAL PAGE IS OF POOR QUALITY

Table 7

** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES: **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL 5: IGRF 1965.0 80-TERM 10/68 * TIME= 1973.0 **
** VEHICLE : 3 NRL SOLWND ** INCLINATION= 60DEG ** PERIGEE= 1852KM ** APOGEE= 1852KM ** B/L ORBIT TAPE: TD7963 ** PERIOD= 2.060 **

PROTONS

** SPECTRAL DISTRIBUTION : NORMALIZED BY FLUX OF ENERGY GREATER THAN 5.000MEV **

ENERGY LEVELS >(MEV)	L - BANDS (MAGNETIC SHELL PARAMETER IN EARTH RADII) L - BANDS											
	1.0-1.2	*1.2-1.4*	*1.4-1.6*	*1.6-1.8*	*1.8-2.0*	*2.0-2.2*	*2.2-2.4*	*2.4-2.6*	*2.6-2.8*	*2.8-3.0*	*3.0-3.2*	*3.2-3.4*
.1000	0.0	2.13E 00	2.52E 00	2.69E 00	3.12E 00	8.24E 00	2.58E 01	1.12E 02	5.60E 02	2.08E 04	3.22E 05	7.55E 06
1.000	0.0	1.53E 00	1.80E 00	1.92E 00	2.25E 00	4.89E 00	7.98E 00	2.09E 01	8.93E 01	2.32E 03	2.73E 04	5.34E 05
3.000	0.0	1.29E 00	1.41E 00	1.52E 00	1.69E 00	2.24E 00	2.68E 00	4.05E 00	6.66E 00	2.37E 01	1.20E 02	1.56E 03
5.000	0.0	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	0.0
10.00	0.0	4.82E-01	4.02E-01	2.80E-01	1.93E-01	1.85E-01	1.74E-01	1.03E-01	8.53E-02	2.76E-02	0.0	0.0
20.00	0.0	2.51E-01	1.87E-01	9.39E-02	4.32E-02	3.68E-02	3.08E-02	8.34E-03	3.60E-03	0.0	0.0	0.0
30.00	0.0	1.93E-01	1.48E-01	6.46E-02	2.34E-02	1.58E-02	1.10E-02	1.61E-03	0.0	0.0	0.0	0.0
50.00	0.0	1.16E-01	9.46E-02	3.11E-02	6.95E-03	2.92E-03	1.42E-03	1.59E-04	0.0	0.0	0.0	0.0
100.0	0.0	7.53E-02	5.75E-02	1.63E-02	2.79E-03	6.10E-04	1.83E-04	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	0.0	9.56E 08	5.47E 08	2.80E 08	1.79E 08	5.45E 07	3.07E 07	9.42E 06	2.61E 06	7.00E 04	6.40E 03	0.0

ENERGY LEVELS >(MEV)	L - BANDS (MAGNETIC SHELL PARAMETER IN EARTH RADII) L - BANDS											
	3.4-3.6	*3.6-3.8*	*3.8-4.0*	*4.0-4.2*	*4.2-4.4*	*4.4-4.6*	*4.6-4.8*	*4.8-5.0*	*5.0-5.2*	*5.2-5.4*	*5.4-5.6*	*5.6-5.8*
.1000	9.91E 06	2.80E 06	7.50E 06	1.97E 07	6.35E 05	8.36E 06	7.97E 06	5.16E 06	7.61E 06	1.14E 06	2.19E 06	3.02E 06
1.000	5.01E 05	9.05E 04	7.71E 04	1.42E 04	1.76E 02	1.01E 02	6.45E 01	1.98E 01	2.61E 01	3.78E 00	7.11E 00	1.04E 01
3.000	7.83E 02	4.70E 01	6.02E 00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ENERGY LEVELS >(MEV)	L - BANDS (MAGNETIC SHELL PARAMETER IN EARTH RADII) L - BANDS											
	5.8-6.0	*6.0-6.2*	*6.2-6.4*	*6.4-6.6*	*6.6-6.8*	*6.8-7.0*	*7.0-7.2*	*7.2-7.4*	*7.4-7.6*	*7.6-7.8*	*7.8-8.0*	*8.0-OVR*
.1000	2.81E 06	4.13E 05	8.62E 05	3.99E 05	1.29E 05	2.13E 05	3.57E 04	7.95E 03	0.0	0.0	0.0	0.0
1.000	8.85E 00	1.25E 00	3.66E 00	1.44E 00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 8

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** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOSEP.VERZARIU ** CUTOFF TIMES:                **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG. MODEL  5:      IGRF 1965.0 80-TERM 10/68     * TIME= 1973.0 **
** VEHICLE : 3 NRL SOLWND ** INCLINATION= 60DEG ** PERIGEE= 1852KM ** APOGEE=  1852KM ** B/L ORBIT TAPE: TD7963 ** PERIOD=  2.060 **
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ELECTRONS

** SPECTRAL DISTRIBUTION : NORMALIZED BY FLUX OF ENERGY GREATER THAN .5000MEV **

L - BANDS (MAGNETIC SHELL PARAMETER IN EARTH RADII) L - BANDS

ENERGY LEVELS >(MEV)	*1.0-1.2*	*1.2-1.4*	*1.4-1.6*	*1.6-1.8*	*1.8-2.0*	*2.0-2.2*	*2.2-2.4*	*2.4-2.6*	*2.6-2.8*	*2.8-3.0*	*3.0-3.2*	*3.2-3.4*
.1000	0.0	6.20E 00	1.01E 01	3.93E 01	5.92E 01	1.11E 02	1.52E 02	5.17E 01	1.48E 01	7.42E 00	6.12E 00	5.68E 00
.5000	0.0	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00
1.000	0.0	8.73E-02	1.86E-01	2.27E-01	6.63E-02	4.01E-02	4.15E-02	8.70E-02	1.68E-01	3.30E-01	3.57E-01	3.90E-01
1.500	0.0	3.33E-02	9.71E-02	1.02E-01	1.61E-02	6.07E-03	5.59E-03	1.85E-02	5.80E-02	1.68E-01	1.75E-01	1.92E-01
2.000	0.0	1.70E-02	5.61E-02	4.34E-02	4.56E-03	1.45E-03	1.09E-03	4.30E-03	2.25E-02	8.51E-02	8.57E-02	9.49E-02
2.500	0.0	7.31E-03	2.42E-02	1.50E-02	1.20E-03	2.88E-04	1.61E-04	6.09E-04	5.62E-03	3.67E-02	3.77E-02	4.10E-02
3.000	0.0	2.69E-03	7.78E-03	4.39E-03	2.67E-04	2.01E-05	2.23E-06	0.0	5.02E-04	1.06E-02	1.41E-02	1.49E-02
4.000	0.0	2.61E-05	6.74E-05	8.46E-05	2.79E-06	0.0	0.0	0.0	0.0	3.72E-04	3.86E-04	4.12E-04
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	0.0	8.96E 10	3.95E 10	3.88E 09	1.11E 09	2.03E 08	9.78E 07	2.40E 07	1.33E 07	3.09E 07	2.94E 08	4.84E 08

L - BANDS (MAGNETIC SHELL PARAMETER IN EARTH RADII) L - BANDS

ENERGY LEVELS >(MEV)	*3.4-3.6*	*3.6-3.8*	*3.8-4.0*	*4.0-4.2*	*4.2-4.4*	*4.4-4.6*	*4.6-4.8*	*4.8-5.0*	*5.0-5.2*	*5.2-5.4*	*5.4-5.6*	*5.6-5.8*
.1000	6.36E 00	6.01E 00	4.70E 00	3.84E 00	3.53E 00	3.34E 00	3.44E 00	3.64E 00	3.79E 00	3.86E 00	3.92E 00	3.94E 00
.5000	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00
1.000	3.96E-01	3.85E-01	3.65E-01	3.55E-01	3.55E-01	3.54E-01	3.47E-01	3.38E-01	3.31E-01	3.23E-01	3.12E-01	2.81E-01
1.500	1.98E-01	1.92E-01	1.71E-01	1.51E-01	1.41E-01	1.34E-01	1.28E-01	1.22E-01	1.16E-01	1.07E-01	9.87E-02	8.60E-02
2.000	9.89E-02	9.61E-02	8.02E-02	6.39E-02	5.63E-02	5.09E-02	4.71E-02	4.41E-02	4.07E-02	3.57E-02	3.12E-02	2.63E-02
2.500	4.51E-02	4.72E-02	3.99E-02	2.85E-02	2.37E-02	2.04E-02	1.78E-02	1.57E-02	1.36E-02	1.09E-02	8.79E-03	7.21E-03
3.000	1.76E-02	1.99E-02	1.79E-02	1.27E-02	9.50E-03	7.48E-03	5.87E-03	4.66E-03	3.71E-03	2.78E-03	2.15E-03	1.79E-03
4.000	5.28E-04	6.58E-04	6.05E-04	3.98E-04	2.65E-04	1.91E-04	1.43E-04	1.11E-04	8.60E-05	6.02E-05	4.33E-05	3.02E-05
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	6.86E 08	3.15E 08	6.64E 08	1.09E 09	2.46E 08	3.38E 08	3.42E 08	1.83E 08	2.75E 08	4.77E 07	1.06E 08	1.38E 08

L - BANDS (MAGNETIC SHELL PARAMETER IN EARTH RADII) L - BANDS

ENERGY LEVELS >(MEV)	*5.8-6.0*	*6.0-6.2*	*6.2-6.4*	*6.4-6.6*	*6.6-6.8*	*6.8-7.0*	*7.0-7.2*	*7.2-7.4*	*7.4-7.6*	*7.6-7.8*	*7.8-8.0*	*8.0-OVR*
.1000	3.96E 00	4.74E 00	5.10E 00	5.95E 00	7.30E 00	7.50E 00	9.87E 00	1.18E 01	0.0	2.37E 01	3.34E 01	5.47E 01
.5000	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	0.0	1.00E 00	1.00E 00	1.00E 00
1.000	2.52E-01	2.37E-01	2.36E-01	2.33E-01	1.93E-01	1.83E-01	1.44E-01	1.35E-01	0.0	1.02E-01	8.85E-02	7.29E-02
1.500	7.48E-02	6.64E-02	6.48E-02	6.14E-02	4.58E-02	4.26E-02	3.07E-02	2.80E-02	0.0	1.95E-02	1.62E-02	1.23E-02
2.000	2.22E-02	1.86E-02	1.78E-02	1.62E-02	1.09E-02	9.91E-03	6.51E-03	5.82E-03	0.0	3.74E-03	2.95E-03	2.12E-03
2.500	5.95E-03	4.69E-03	4.42E-03	3.84E-03	2.41E-03	2.17E-03	1.36E-03	1.19E-03	0.0	6.69E-04	4.59E-04	1.56E-04
3.000	1.51E-03	1.08E-03	9.79E-04	7.78E-04	4.75E-04	4.32E-04	2.74E-04	2.35E-04	0.0	0.0	0.0	0.0
4.000	2.13E-05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	1.24E 08	1.66E 07	3.66E 07	1.40E 07	8.87E 06	1.75E 07	2.07E 07	8.27E 06	0.0	1.50E 06	6.92E 05	1.70E 06

Table 9

** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES: **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL 5: IGRF 1965.0 80-TERM 10/68 * TIME= 1973.0 **
** VEHICLE : 4 NRL SOLWND ** INCLINATION= 90DEG ** PERIGEE= 1852KM ** APOGEE= 1852KM ** B/L ORBIT TAPE: TD7963 ** PERIOD= 2.060 **

PROTONS

** SPECTRAL DISTRIBUTION : NORMALIZED BY FLUX OF ENERGY GREATER THAN 5.000MEV **

ENERGY LEVELS >(MEV)	L - BANDS (MAGNETIC SHELL PARAMETER IN EARTH RADII) L - BANDS											
	1.0-1.2	*1.2-1.4*	*1.4-1.6*	*1.6-1.8*	*1.8-2.0*	*2.0-2.2*	*2.2-2.4*	*2.4-2.6*	*2.6-2.8*	*2.8-3.0*	*3.0-3.2*	*3.2-3.4*
.1000	0.0	2.12E 00	2.50E 00	2.76E 00	3.17E 00	6.68E 00	2.47E 01	7.57E 01	6.23E 02	1.13E 04	2.42E 05	4.60E 06
1.000	0.0	1.53E 00	1.79E 00	1.97E 00	2.27E 00	4.36E 00	7.57E 00	1.57E 01	9.74E 01	1.35E 03	2.04E 04	3.15E 05
3.000	0.0	1.29E 00	1.41E 00	1.54E 00	1.69E 00	2.15E 00	2.63E 00	3.61E 00	6.87E 00	1.87E 01	8.94E 01	8.75E 02
5.000	0.0	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	0.0
10.00	0.0	4.81E-01	3.97E-01	2.75E-01	1.96E-01	1.81E-01	1.73E-01	1.19E-01	8.39E-02	5.26E-02	0.0	0.0
20.00	0.0	2.51E-01	1.83E-01	9.06E-02	4.50E-02	3.56E-02	3.02E-02	1.15E-02	3.29E-03	0.0	0.0	0.0
30.00	0.0	1.93E-01	1.45E-01	6.23E-02	2.46E-02	1.55E-02	1.05E-02	2.69E-03	0.0	0.0	0.0	0.0
50.00	0.0	1.15E-01	9.13E-02	3.00E-02	7.41E-03	2.93E-03	1.31E-03	3.26E-04	0.0	0.0	0.0	0.0
100.0	0.0	7.49E-02	5.55E-02	1.57E-02	2.83E-03	7.64E-04	1.46E-04	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	0.0	8.19E 08	5.06E 08	2.08E 08	1.25E 08	4.05E 07	2.44E 07	5.29E 06	1.65E 06	5.51E 04	6.37E 03	0.0

ENERGY LEVELS >(MEV)	L - BANDS (MAGNETIC SHELL PARAMETER IN EARTH RADII) L - BANDS											
	3.4-3.6	*3.6-3.8*	*3.8-4.0*	*4.0-4.2*	*4.2-4.4*	*4.4-4.6*	*4.6-4.8*	*4.8-5.0*	*5.0-5.2*	*5.2-5.4*	*5.4-5.6*	*5.6-5.8*
.1000	5.37E 06	6.07E 06	2.32E 06	4.96E 06	9.02E 05	8.99E 06	1.17E 07	1.11E 07	6.63E 06	2.54E 06	3.51E 06	6.71E 05
1.000	2.47E 05	2.03E 05	2.79E 04	6.15E 03	2.73E 02	1.07E 02	8.27E 01	3.63E 01	2.12E 01	8.81E 00	1.16E 01	2.19E 00
3.000	3.05E 02	1.11E 02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ENERGY LEVELS >(MEV)	L - BANDS (MAGNETIC SHELL PARAMETER IN EARTH RADII) L - BANDS											
	5.8-6.0	*6.0-6.2*	*6.2-6.4*	*6.4-6.6*	*6.6-6.8*	*6.8-7.0*	*7.0-7.2*	*7.2-7.4*	*7.4-7.6*	*7.6-7.8*	*7.8-8.0*	*8.0-OVR*
.1000	3.27E 06	0.0	7.78E 05	1.20E 06	2.23E 05	1.00E 05	8.53E 04	4.47E 03	0.0	0.0	0.0	0.0
1.000	1.10E 01	0.0	2.99E 00	4.13E 00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 10

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*****************************************************************************************************************
** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES:              **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG. MODEL  5:     IGRF 1965.0 80-TERM 10/68    * TIME= 1973.0 **
** VEHICLE : 4 NRL SOLWND ** INCLINATION= 90DEG ** PERIGEE= 1852KM ** APOGEE=  1852KM ** B/L ORBIT TAPE: TD7963 ** PERIOD=  2.060 **
*****************************************************************************************************************
                    ******************************     ELECTRONS     ******************************
                    ** SPECTRAL DISTRIBUTION : NORMALIZED BY FLUX OF ENERGY GREATER THAN .5000MEV **
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ENERGY LEVELS >(MEV)	L - B A N D S (M A G N E T I C			S H E L L	P A R A M E T E R			I N	E A R T H	R A D I I)	L - B A N D S	
	1.0-1.2	*1.2-1.4*	*1.4-1.6*	*1.6-1.8*	*1.8-2.0*	*2.0-2.2*	*2.2-2.4*	*2.4-2.6*	*2.6-2.8*	*2.8-3.0*	*3.0-3.2*	*3.2-3.4*
.1000	0.0	6.21E 00	9.97E 00	4.08E 01	6.21E 01	9.66E 01	1.56E 02	1.07E 02	1.44E 01	7.21E 00	5.91E 00	5.80E 00
.5000	0.0	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00
1.000	0.0	8.70E-02	1.82E-01	2.17E-01	6.31E-02	4.10E-02	4.18E-02	6.41E-02	1.75E-01	3.33E-01	3.63E-01	3.92E-01
1.500	0.0	3.31E-02	9.29E-02	9.65E-02	1.50E-02	6.49E-03	5.66E-03	1.11E-02	6.27E-02	1.67E-01	1.78E-01	1.94E-01
2.000	0.0	1.69E-02	5.23E-02	4.07E-02	4.21E-03	1.56E-03	1.10E-03	2.16E-03	2.53E-02	8.38E-02	8.71E-02	9.60E-02
2.500	0.0	7.25E-03	2.30E-02	1.40E-02	1.08E-03	3.17E-04	1.56E-04	2.50E-04	6.67E-03	3.71E-02	3.78E-02	4.19E-02
3.000	0.0	2.67E-03	7.76E-03	4.08E-03	2.30E-04	3.37E-05	2.44E-06	0.0	6.74E-04	1.21E-02	1.40E-02	1.53E-02
4.000	0.0	2.58E-05	6.59E-05	7.75E-05	2.00E-06	0.0	0.0	0.0	0.0	3.60E-04	3.85E-04	4.20E-04
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	0.0	7.59E 10	3.67E 10	2.78E 09	7.61E 08	1.67E 08	7.43E 07	1.48E 07	8.96E 06	1.53E 07	2.55E 08	3.07E 08

ENERGY LEVELS >(MEV)	L - B A N D S (M A G N E T I C			S H E L L	P A R A M E T E R			I N	E A R T H	R A D I I)	L - B A N D S	
	3.4-3.6	*3.6-3.8*	*3.8-4.0*	*4.0-4.2*	*4.2-4.4*	*4.4-4.6*	*4.6-4.8*	*4.8-5.0*	*5.0-5.2*	*5.2-5.4*	*5.4-5.6*	*5.6-5.8*
.1000	6.40E 00	6.20E 00	4.65E 00	3.87E 00	3.52E 00	3.31E 00	3.46E 00	3.69E 00	3.80E 00	3.86E 00	3.91E 00	3.94E 00
.5000	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00
1.000	3.95E-01	3.88E-01	3.65E-01	3.55E-01	3.55E-01	3.53E-01	3.46E-01	3.36E-01	3.30E-01	3.23E-01	3.13E-01	2.85E-01
1.500	1.97E-01	1.94E-01	1.70E-01	1.51E-01	1.41E-01	1.32E-01	1.27E-01	1.21E-01	1.15E-01	1.08E-01	9.95E-02	8.73E-02
2.000	9.86E-02	9.69E-02	7.93E-02	6.45E-02	5.59E-02	4.97E-02	4.67E-02	4.33E-02	4.03E-02	3.59E-02	3.16E-02	2.68E-02
2.500	4.51E-02	4.64E-02	3.92E-02	2.89E-02	2.35E-02	1.97E-02	1.75E-02	1.52E-02	1.34E-02	1.10E-02	8.95E-03	7.35E-03
3.000	1.79E-02	1.93E-02	1.77E-02	1.29E-02	9.36E-03	7.06E-03	5.72E-03	4.37E-03	3.63E-03	2.83E-03	2.19E-03	1.82E-03
4.000	5.48E-04	6.28E-04	5.95E-04	4.10E-04	2.59E-04	1.77E-04	1.39E-04	1.04E-04	8.37E-05	6.17E-05	4.47E-05	3.14E-05
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	4.00E 08	3.39E 08	3.27E 08	2.80E 08	3.42E 08	3.97E 08	4.44E 08	3.71E 08	2.50E 08	1.05E 08	1.62E 08	3.10E 07

ENERGY LEVELS >(MEV)	L - B A N D S (M A G N E T I C			S H E L L	P A R A M E T E R			I N	E A R T H	R A D I I)	L - B A N D S	
	5.8-6.0	*6.0-6.2*	*6.2-6.4*	*6.4-6.6*	*6.6-6.8*	*6.8-7.0*	*7.0-7.2*	*7.2-7.4*	*7.4-7.6*	*7.6-7.8*	*7.8-8.0*	*8.0-OVR*
.1000	3.96E 00	0.0	5.01E 00	6.35E 00	6.93E 00	8.05E 00	9.42E 00	1.38E 01	1.66E 01	2.32E 01	3.06E 01	6.79E 01
.5000	1.00E 00	0.0	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00	1.00E 00
1.000	2.51E-01	0.0	2.36E-01	2.31E-01	2.13E-01	1.60E-01	1.47E-01	1.27E-01	1.18E-01	1.03E-01	9.18E-02	5.57E-02
1.500	7.43E-02	0.0	6.52E-02	6.01E-02	5.29E-02	3.51E-02	3.13E-02	2.59E-02	2.37E-02	1.98E-02	1.69E-02	6.71E-03
2.000	2.20E-02	0.0	1.80E-02	1.56E-02	1.31E-02	7.72E-03	6.67E-03	5.30E-03	4.74E-03	3.79E-03	3.12E-03	9.78E-04
2.500	5.91E-03	0.0	4.48E-03	3.64E-03	2.98E-03	1.65E-03	1.40E-03	1.08E-03	9.50E-04	6.82E-04	5.01E-04	8.90E-05
3.000	1.50E-03	0.0	1.00E-03	7.13E-04	5.75E-04	3.37E-04	2.84E-04	2.09E-04	1.83E-04	6.61E-05	0.0	0.0
4.000	2.12E-05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORMFLUX=	1.41E 08	0.0	3.39E 07	3.87E 07	1.01E 07	1.98E 07	2.02E 07	7.90E 06	2.62E 06	3.09E 06	3.66E 06	2.07E 06

Table 11

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** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES: **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL 5: IGRF 1965.0 80-TERM 10/68 * TIME= 1973.0 **
** VEHICLE : 1 NRL SOLWND ** INCLINATION= 60DEG ** PERIGEE= 1111KM ** APOGEE= 1111KM ** B/L ORBIT TAPE: TD7963 ** PERIOD= 1.790 **
****

**************** PROTONS ****************

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****** SPECTRUM IN PERCENT DELTA ENERGY *******

ENERGY RANGES (MEV)	AVERAGED TOTAL FLUX #/CM**2/SEC	AVERAGED TOTAL FLUX #/CM**2/DAY	SPECTRUM PER CENT
.1000-1.000	6.367E 04	5.501E 09	89.657
1.000-3.000	3.644E 03	3.148E 08	5.131
3.000-5.000	1.313E 03	1.134E 08	1.849
5.000-10.00	1.347E 03	1.163E 08	1.896
10.00-20.00	4.802E 02	4.149E 07	0.676
20.00-30.00	1.014E 02	8.764E 06	0.143
30.00-50.00	1.411E 02	1.219E 07	0.199
50.00-100.0	1.179E 02	1.019E 07	0.166
100.0-OVER	2.011E 02	1.738E 07	0.283
TOTAL	7.101E 04	6.136E 09	100.000

*** COMPOSITE ORBIT SPECTRUM ***

ENERGY LEVELS >(MEV)	AVERAGED INTEG.FLUX #/CM**2/SEC	AVERAGED INTEG.FLUX #/CM**2/DAY
.1000	7.101E 04	6.136E 09
.5000	1.393E 04	1.204E 09
1.000	7.345E 03	6.346E 08
2.000	4.744E 03	4.099E 08
3.000	3.701E 03	3.198E 08
4.000	3.015E 03	2.605E 08
5.000	2.388E 03	2.064E 08
6.000	1.909E 03	1.649E 08
7.000	1.545E 03	1.335E 08
8.000	1.264E 03	1.092E 08
9.000	1.146E 03	9.903E 07
10.00	1.042E 03	9.001E 07
11.00	9.489E 02	8.199E 07
12.00	8.660E 02	7.483E 07
13.00	7.918E 02	6.841E 07
14.00	7.252E 02	6.266E 07
15.00	6.652E 02	5.748E 07
16.00	6.112E 02	5.280E 07
18.00	5.856E 02	5.060E 07
20.00	5.616E 02	4.852E 07
25.00	5.074E 02	4.384E 07
30.00	4.602E 02	3.976E 07
35.00	4.185E 02	3.616E 07
40.00	3.816E 02	3.297E 07
45.00	3.486E 02	3.012E 07
50.00	3.191E 02	2.757E 07
55.00	3.042E 02	2.628E 07
60.00	2.903E 02	2.508E 07
80.00	2.414E 02	2.085E 07
100.0	2.011E 02	1.738E 07

* EXPOSURE INDEX:ENERGY>5.000MEV *

INTENSITY RANGES #/CM**2/SEC	EXPOSURE DURATION (HOURS)	TOTAL # OF ACCUMULATED PARTICLES
ZERO FLUX	12.400	0.0
1.E0-1.E1	1.500	2.060E 04
1.E1-1.E2	2.550	3.720E 05
1.E2-1.E3	2.650	3.369E 06
1.E3-1.E4	3.100	4.745E 07
1.E4-1.E5	1.800	1.552E 08
1.E5-1.E6	0.0	0.0
1.E6-1.E7	0.0	0.0
1.E7-OVER	0.0	0.0
TOTAL	24.000	2.064E 08

Table 12

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*************************************************************************************************************************
** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES:        **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL  5:    IGRF 1965.0 80-TERM 10/68    * TIME= 1973.0 **
** VEHICLE : 1 NRL SOLWND ** INCLINATION= 60DEG ** PERIGEE= 1111KM ** APOGEE= 1111KM ** B/L ORBIT TAPE: TD7963 ** PERIOD= 1.790 **
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                                        ****************     ELECTRONS     ****************
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****** SPECTRUM IN PERCENT DELTA ENERGY *******

ENERGY RANGES (MEV)	AVERAGED TOTAL FLUX #/CM**2/SEC	AVERAGED TOTAL FLUX #/CM**2/DAY	SPECTRUM PER CENT
.1000-.5000	1.507E 06	1.302E 11	89.998
.5000-1.000	1.405E 05	1.214E 10	8.392
1.000-1.500	1.512E 04	1.306E 09	0.903
1.500-2.000	6.064E 03	5.239E 08	0.362
2.000-2.500	3.247E 03	2.805E 08	0.194
2.500-3.000	1.657E 03	1.432E 08	0.099
3.000-4.000	8.577E 02	7.410E 07	0.051
4.000-5.000	1.660E 01	1.434E 06	0.001
5.000-OVER	0.0	0.0	0.0
TOTAL	1.674E 06	1.447E 11	100.000

*** COMPOSITE ORBIT SPECTRUM ***

ENERGY LEVELS >(MEV)	AVERAGED INTEG.FLUX #/CM**2/SEC	AVERAGED INTEG.FLUX #/CM**2/DAY
.100)	1.674E 06	1.447E 11
.125)	1.395E 06	1.205E 11
.250)	6.016E 05	5.197E 10
.375)	3.401E 05	2.939E 10
.500)	1.675E 05	1.447E 10
.625)	9.409E 04	8.130E 09
.750)	5.342E 04	4.615E 09
1.00)	2.696E 04	2.329E 09
1.250	1.799E 04	1.554E 09
1.500	1.184E 04	1.023E 09
1.750	8.473E 03	7.321E 08
2.00)	5.779E 03	4.993E 08
2.50)	2.532E 03	2.187E 08
3.00)	8.743E 02	7.554E 07
3.125	5.563E 02	4.807E 07
3.25)	3.583E 02	3.096E 07
3.375	2.346E 02	2.027E 07
3.50)	1.560E 02	1.348E 07
3.625	8.947E 01	7.730E 06
3.750	5.101E 01	4.407E 06
3.875	2.913E 01	2.516E 06
4.00)	1.660E 01	1.434E 06
4.125	8.027E 00	6.935E 05
4.250	3.233E 00	2.793E 05
4.375	1.210E 00	1.045E 05
4.500	3.405E-01	2.942E 04
4.625	1.103E-01	9.527E 03
4.750	1.858E-02	1.605E 03
4.875	0.0	0.0
5.000	0.0	0.0

* EXPOSURE INDEX:ENERGY>.5000MEV *

INTENSITY RANGES #/CM**2/SEC	EXPOSURE DURATION (HOURS)	TOTAL # OF ACCUMULATED PARTICLES
ZERO-FLUX	8.550	0.0
1.E0-1.E1	0.400	6.880E 03
1.E1-1.E2	1.050	1.854E 05
1.E2-1.E3	1.800	2.629E 06
1.E3-1.E4	2.600	3.965E 07
1.E4-1.E5	3.750	6.448E 08
1.E5-1.E6	5.100	5.166E 09
1.E6-1.E7	0.750	8.615E 09
1.E7-OVER	0.0	0.0
TOTAL	24.000	1.447E 10

Table 13

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*************************************************************************************************************************
** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES:             **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL  5:     IGRF 1965.0 80-TERM 10/68    * TIME= 1973.0 **
** VEHICLE : 2 NRL SOLWND ** INCLINATION= 90DEG ** PERIGEE= 1111KM ** APOGEE=  1111KM ** B/L ORBIT TAPE: TD7963 ** PERIOD=  1.790 **
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                                        ****************     PROTONS     ****************
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****** SPECTRUM IN PERCENT DELTA ENERGY *******

ENERGY RANGES (MEV)	AVERAGED TOTAL FLUX #/CM**2/SEC	AVERAGED TOTAL FLUX #/CM**2/DAY	SPECTRUM PER CENT
.1000-1.000	5.963E 04	5.152E 09	91.769
1.000-3.000	2.514E 03	2.172E 08	3.869
3.000-5.000	9.721E 02	8.399E 07	1.496
5.000-10.00	1.033E 03	8.929E 07	1.591
10.00-20.00	3.752E 02	3.242E 07	0.577
20.00-30.00	7.972E 01	6.888E 06	0.123
30.00-50.00	1.125E 02	9.717E 06	0.173
50.00-100.0	9.621E 01	8.312E 06	0.148
100.0-OVER	1.654E 02	1.429E 07	0.255
TOTAL	6.497E 04	5.614E 09	100.000

*** COMPOSITE ORBIT SPECTRUM ***

ENERGY LEVELS >(MEV)	AVERAGED INTEG.FLUX #/CM**2/SEC	AVERAGED INTEG.FLUX #/CM**2/DAY
.1000	6.497E 04	5.614E 09
.5000	1.006E 04	8.695E 08
1.000	5.348E 03	4.621E 08
2.000	3.562E 03	3.078E 08
3.000	2.835E 03	2.449E 08
4.000	2.336E 03	2.018E 08
5.000	1.863E 03	1.609E 08
6.000	1.497E 03	1.293E 08
7.000	1.218E 03	1.052E 08
8.000	1.001E 03	8.647E 07
9.000	9.099E 02	7.861E 07
10.00	8.290E 02	7.163E 07
11.00	7.569E 02	6.539E 07
12.00	6.923E 02	5.981E 07
13.00	6.342E 02	5.480E 07
14.00	5.820E 02	5.029E 07
15.00	5.349E 02	4.622E 07
16.00	4.923E 02	4.254E 07
18.00	4.725E 02	4.082E 07
20.00	4.538E 02	3.921E 07
25.00	4.114E 02	3.554E 07
30.00	3.741E 02	3.232E 07
35.00	3.411E 02	2.947E 07
40.00	3.116E 02	2.693E 07
45.00	2.853E 02	2.465E 07
50.00	2.616E 02	2.260E 07
55.00	2.495E 02	2.156E 07
60.00	2.382E 02	2.058E 07
80.00	1.983E 02	1.713E 07
100.0	1.654E 02	1.429E 07

* EXPOSURE INDEX:ENERGY>5.000MEV *

INTENSITY RANGES #/CM**2/SEC	EXPOSURE DURATION (HOURS)	TOTAL # OF ACCUMULATED PARTICLES
ZERO-FLUX	15.100	0.0
1.E0-1.E1	0.950	1.261E 04
1.E1-1.E2	1.850	2.558E 05
1.E2-1.E3	2.550	3.311E 06
1.E3-1.E4	2.050	3.371E 07
1.E4-1.E5	1.500	1.236E 08
1.E5-1.E6	0.0	0.0
1.E6-1.E7	0.0	0.0
1.E7-OVER	0.0	0.0
TOTAL	24.000	1.609E 08

Table 14

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*************************************************************************************************************
** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES:             **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL  5:     IGRF 1965.0 80-TERM 10/68    * TIME= 1973.0 **
** VEHICLE : 2 NRL SOLWND ** INCLINATION= 90DEG ** PERIGEE= 1111KM ** APOGEE=  1111KM ** B/L ORBIT TAPE: TD7963 ** PERIOD=  1.790 **
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                                   ****************    ELECTRONS    ****************
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****** SPECTRUM IN PERCENT DELTA ENERGY *******

ENERGY RANGES (MEV)	AVERAGED TOTAL FLUX #/CM**2/SEC	AVERAGED TOTAL FLUX #/CM**2/DAY	SPECTRUM PER CENT
.1000-.5000	1.169E 06	1.010E 11	89.492
.5000-1.000	1.148E 05	9.922E 09	8.792
1.000-1.500	1.269E 04	1.097E 09	0.972
1.500-2.000	5.148E 03	4.448E 08	0.394
2.000-2.500	2.666E 03	2.303E 08	0.204
2.500-3.000	1.225E 03	1.059E 08	0.094
3.000-4.000	6.705E 02	5.794E 07	0.051
4.000-5.000	1.393E 01	1.204E 06	0.001
5.000-OVER	0.0	0.0	0.0
TOTAL	1.306E 06	1.129E 11	100.000

*** COMPOSITE ORBIT SPECTRUM ***

ENERGY LEVELS >(MEV)	AVERAGED INTEG.FLUX #/CM**2/SEC	AVERAGED INTEG.FLUX #/CM**2/DAY
.1000	1.306E 06	1.129E 11
.1250	1.093E 06	9.442E 10
.2500	4.797E 05	4.144E 10
.3750	2.740E 05	2.367E 10
.5000	1.373E 05	1.186E 10
.6250	7.588E 04	6.556E 09
.7500	4.402E 04	3.804E 09
1.000	2.242E 04	1.937E 09
1.250	1.485E 04	1.283E 09
1.500	9.723E 03	8.401E 08
1.750	6.845E 03	5.914E 08
2.000	4.575E 03	3.953E 08
2.500	1.910E 03	1.650E 08
3.000	6.845E 02	5.914E 07
3.125	4.427E 02	3.825E 07
3.250	2.906E 02	2.511E 07
3.375	1.929E 02	1.667E 07
3.500	1.295E 02	1.118E 07
3.625	7.455E 01	6.441E 06
3.750	4.283E 01	3.701E 06
3.875	2.449E 01	2.116E 06
4.000	1.393E 01	1.204E 06
4.125	6.776E 00	5.854E 05
4.250	2.720E 00	2.350E 05
4.375	1.043E 00	9.015E 04
4.500	3.091E-01	2.671E 04
4.625	9.850E-02	8.510E 03
4.750	2.411E-02	2.083E 03
4.875	0.0	0.0
5.000	0.0	0.0

* EXPOSURE INDEX:ENERGY>.5000MEV *

INTENSITY RANGES #/CM**2/SEC	EXPOSURE DURATION (HOURS)	TOTAL # OF ACCUMULATED PARTICLES
ZERO FLUX	11.100	0.0
1.E0-1.E1	0.300	7.637E 03
1.E1-1.E2	0.700	1.059E 05
1.E2-1.E3	2.100	2.976E 06
1.E3-1.E4	1.800	2.257E 07
1.E4-1.E5	2.950	4.288E 08
1.E5-1.E6	4.300	4.104E 09
1.E6-1.E7	0.750	7.301E 09
1.E7-OVER	0.0	0.0
TOTAL	24.000	1.186E 10

Table 15

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*****************************************************************************************************************
** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES:          **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL  5:      IGRF 1965.0 80-TERM 10/68    * TIME= 1973.0 **
** VEHICLE : 3 NRL SOLWND ** INCLINATION= 60DEG ** PERIGEE= 1852KM ** APOGEE=  1852KM ** B/L ORBIT TAPE: TD7963 ** PERIOD=  2.060 **
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                              *****************  PROTONS  *****************
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****** SPECTRUM IN PERCENT DELTA ENERGY *******

ENERGY RANGES (MEV)	AVERAGED TOTAL FLUX #/CM**2/SEC	AVERAGED TOTAL FLUX #/CM**2/DAY	SPECTRUM PER CENT
.1000-1.000	2.784E 05	2.405E 10	83.119
1.000-3.000	2.186E 04	1.889E 09	6.526
3.000-5.000	1.085E 04	9.373E 08	3.239
5.000-10.00	1.446E 04	1.249E 09	4.316
10.00-20.00	4.985E 03	4.307E 08	1.488
20.00-30.00	1.041E 03	8.997E 07	0.311
30.00-50.00	1.354E 03	1.170E 08	0.404
50.00-100.0	7.395E 02	6.390E 07	0.221
100.0-OVER	1.257E 03	1.086E 08	0.375
TOTAL	3.350E 05	2.894E 10	100.000

*** COMPOSITE ORBIT SPECTRUM ***

ENERGY LEVELS >(MEV)	AVERAGED INTEG.FLUX #/CM**2/SEC	AVERAGED INTEG.FLUX #/CM**2/DAY
.1000	3.350E 05	2.894E 10
.5000	9.606E 04	8.300E 09
1.000	5.654E 04	4.885E 09
2.000	4.107E 04	3.548E 09
3.000	3.468E 04	2.997E 09
4.000	3.026E 04	2.614E 09
5.000	2.383E 04	2.059E 09
6.000	1.870E 04	1.616E 09
7.000	1.478E 04	1.277E 09
8.000	1.175E 04	1.015E 09
9.000	1.049E 04	9.063E 08
10.00	9.377E 03	8.102E 08
11.00	8.394E 03	7.252E 08
12.00	7.523E 03	6.500E 08
13.00	6.750E 03	5.832E 08
14.00	6.064E 03	5.239E 08
15.00	5.453E 03	4.712E 08
16.00	4.909E 03	4.241E 08
18.00	4.642E 03	4.011E 08
20.00	4.392E 03	3.795E 08
25.00	3.832E 03	3.311E 08
30.00	3.351E 03	2.895E 08
35.00	2.937E 03	2.537E 08
40.00	2.578E 03	2.227E 08
45.00	2.267E 03	1.959E 08
50.00	1.997E 03	1.725E 08
55.00	1.903E 03	1.644E 08
60.00	1.817E 03	1.570E 08
80.00	1.511E 03	1.305E 08
100.0	1.257E 03	1.086E 08

* EXPOSURE INDEX:ENERGY>5.000MEV *

INTENSITY RANGES #/CM**2/SEC	EXPOSURE DURATION (HOURS)	TOTAL # OF ACCUMULATED PARTICLES
ZERO FLUX	6.750	0.0
1.E0-1.E1	0.650	3.262E 03
1.E1-1.E2	0.700	9.403E 04
1.E2-1.E3	0.450	8.356E 05
1.E3-1.E4	5.250	9.131E 07
1.E4-1.E5	8.450	1.092E 09
1.E5-1.E6	1.750	8.751E 08
1.E6-1.E7	0.0	0.0
1.E7-OVER	0.0	0.0
TOTAL	24.000	2.059E 09

Table 16

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****************************************************************************************************************************
** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5. AP6. AP7; AE4. AE5. FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES:            **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL  5:     IGRF 1965.0 80-TERM 10/68    * TIME= 1973.0 **
** VEHICLE : 3 NRL SOLWND ** INCLINATION= 60DEG ** PERIGEE= 1852KM ** APOGEE=  1852KM ** B/L ORBIT TAPE: TD7963 ** PERIOD=  2.060 **
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                                        ****************  ELECTRONS   ****************
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****** SPECTRUM IN PERCENT DELTA ENERGY *******

ENERGY RANGES (MEV)	AVERAGED TOTAL FLUX #/CM**2/SEC	AVERAGED TOTAL FLUX #/CM**2/DAY	SPECTRUM PER CENT
.1000-.5000	1.270E 07	1.097E 12	88.690
.5000-1.000	1.410E 06	1.218E 11	9.848
1.000-1.500	1.159E 05	1.001E 10	0.809
1.500-2.000	4.392E 04	3.795E 09	0.307
2.000-2.500	2.836E 04	2.451E 09	0.198
2.500-3.000	1.392E 04	1.203E 09	0.097
3.000-4.000	7.221E 03	6.239E 08	0.050
4.000-5.000	8.445E 01	7.297E 06	0.001
5.000-OVER	0.0	0.0	0.0
TOTAL	1.432E 07	1.237E 12	100.000

*** COMPOSITE ORBIT SPECTRUM ***

ENERGY LEVELS >(MEV)	AVERAGED INTEG.FLUX #/CM**2/SEC	AVERAGED INTEG.FLUX #/CM**2/DAY
.100)	1.432E 07	1.237E 12
.125)	1.211E 07	1.046E 12
.250)	5.494E 06	4.747E 11
.375)	3.140E 06	2.713E 11
.500)	1.619E 06	1.399E 11
.625)	8.669E 05	7.490E 10
.750)	4.506E 05	3.893E 10
1.00)	2.094E 05	1.809E 10
1.25)	1.421E 05	1.228E 10
1.50)	9.351E 04	8.079E 09
1.75)	7.133E 04	6.163E 09
2.00)	4.959E 04	4.284E 09
2.500	2.123E 04	1.834E 09
3.00)	7.306E 03	6.312E 08
3.125	4.262E 03	3.682E 08
3.250	2.487E 03	2.149E 08
3.375	1.467E 03	1.268E 08
3.50)	8.708E 02	7.523E 07
3.625	4.897E 02	4.231E 07
3.750	2.736E 02	2.364E 07
3.875	1.521E 02	1.314E 07
4.00)	8.445E 01	7.297E 06
4.125	3.770E 01	3.257E 06
4.25)	1.419E 01	1.226E 06
4.375	5.273E 00	4.556E 05
4.50)	1.755E 00	1.516E 05
4.625	6.310E-01	5.452E 04
4.750	1.835E-01	1.585E 04
4.875	1.982E-02	1.713E 03
5.000	0.0	0.0

* EXPOSURE INDEX:ENERGY>.5000MEV *

INTENSITY RANGES #/CM**2/SEC	EXPOSURE DURATION (HOURS)	TOTAL # OF ACCUMULATED PARTICLES
ZERO FLUX	0.650	0.0
1.E0-1.E1	0.050	8.140E 02
1.E1-1.E2	0.150	8.887E 03
1.E2-1.E3	0.400	6.696E 05
1.E3-1.E4	2.550	4.807E 07
1.E4-1.E5	4.650	7.325E 08
1.E5-1.E6	9.100	1.105E 10
1.E6-1.E7	5.400	8.120E 10
1.E7-OVER	1.050	4.687E 10
TOTAL	24.000	1.399E 11

Table 17

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*************************************************************************************************************************
** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES:          **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL  5:   IGRF 1965.0 80-TERM 10/68   * TIME= 1973.0 **
** VEHICLE : 4 NRL SOLWND ** INCLINATION= 90DEG ** PERIGEE= 1852KM ** APOGEE=  1852KM ** B/L ORBIT TAPE: TD7963 ** PERIOD=  2.060 **
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                                    ****************    PROTONS    ****************
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****** SPECTRUM IN PERCENT DELTA ENERGY *******

ENERGY RANGES (MEV)	AVERAGED TOTAL FLUX #/CM**2/SEC	AVERAGED TOTAL FLUX #/CM**2/DAY	SPECTRUM PER CENT
.1000-1.000	2.268E 05	1.960E 10	83.749
1.000-3.000	1.524E 04	1.317E 09	5.628
3.000-5.000	8.747E 03	7.557E 08	3.230
5.000-10.00	1.205E 04	1.041E 09	4.448
10.00-20.00	4.218E 03	3.644E 08	1.557
20.00-30.00	8.896E 02	7.686E 07	0.328
30.00-50.00	1.160E 03	1.002E 08	0.428
50.00-100.0	6.314E 02	5.455E 07	0.233
100.0-OVER	1.078E 03	9.311E 07	0.398
TOTAL	2.708E 05	2.340E 10	100.000

*** COMPOSITE ORBIT SPECTRUM ***

ENERGY LEVELS >(MEV)	AVERAGED INTEG.FLUX #/CM**2/SEC	AVERAGED INTEG.FLUX #/CM**2/DAY
.1000	2.708E 05	2.340E 10
.5000	7.038E 04	6.081E 09
1.000	4.401E 04	3.802E 09
2.000	3.351E 04	2.895E 09
3.000	2.877E 04	2.486E 09
4.000	2.530E 04	2.186E 09
5.000	2.002E 04	1.730E 09
6.000	1.577E 04	1.362E 09
7.000	1.250E 04	1.080E 09
8.000	9.970E 03	8.614E 08
9.000	8.912E 03	7.700E 08
10.00	7.976E 03	6.891E 08
11.00	7.148E 03	6.176E 08
12.00	6.413E 03	5.541E 08
13.00	5.760E 03	4.976E 08
14.00	5.179E 03	4.474E 08
15.00	4.661E 03	4.027E 08
16.00	4.199E 03	3.628E 08
18.00	3.972E 03	3.432E 08
20.00	3.759E 03	3.247E 08
25.00	3.280E 03	2.834E 08
30.00	2.869E 03	2.479E 08
35.00	2.514E 03	2.172E 08
40.00	2.207E 03	1.907E 08
45.00	1.941E 03	1.677E 08
50.00	1.709E 03	1.477E 08
55.00	1.629E 03	1.408E 08
60.00	1.556E 03	1.344E 08
80.00	1.294E 03	1.118E 08
100.0	1.078E 03	9.311E 07

* EXPOSURE INDEX:ENERGY>5.000MEV *

INTENSITY RANGES #/CM**2/SEC	EXPOSURE DURATION (HOURS)	TOTAL # OF ACCUMULATED PARTICLES
ZERO FLUX	10.750	0.0
1.E0-1.E1	0.200	9.065E 02
1.E1-1.E2	0.300	2.196E 04
1.E2-1.E3	0.350	4.269E 05
1.E3-1.E4	3.950	7.196E 07
1.E4-1.E5	6.900	8.873E 08
1.E5-1.E6	1.550	7.702E 08
1.E6-1.E7	0.0	0.0
1.E7-OVER	0.0	0.0
TOTAL	24.000	1.730E 09

Table 18

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** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES:          **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL  5:     IGRF 1965.0 80-TERM 10/68    * TIME= 1973.0 **
** VEHICLE : 4 NRL SOLWND ** INCLINATION= 90DEG ** PERIGEE= 1852KM ** APOGEE=  1852KM ** B/L ORBIT TAPE: TD7963 ** PERIOD= 2.060 **
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                              ****************    ELECTRONS    ****************
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****** SPECTRUM IN PERCENT DELTA ENERGY *******

ENERGY RANGES (MEV)	AVERAGED TOTAL FLUX #/CM**2/SEC	AVERAGED TOTAL FLUX #/CM**2/DAY	SPECTRUM PER CENT
.1000-.5000	1.072E 07	9.264E 11	88.472
.5000-1.000	1.218E 06	1.053E 11	10.052
1.000-1.500	9.977E 04	8.620E 09	0.823
1.500-2.000	3.756E 04	3.245E 09	0.310
2.000-2.500	2.360E 04	2.039E 09	0.195
2.500-3.000	1.163E 04	1.005E 09	0.096
3.000-4.000	6.211E 03	5.367E 08	0.051
4.000-5.000	6.785E 01	5.862E 06	0.001
5.000-OVER	0.0	0.0	0.0
TOTAL	1.212E 07	1.047E 12	100.000

*** COMPOSITE ORBIT SPECTRUM ***

ENERGY LEVELS >(MEV)	AVERAGED INTEG.FLUX #/CM**2/SEC	AVERAGED INTEG.FLUX #/CM**2/DAY
.1000	1.212E 07	1.047E 12
.1250	1.027E 07	8.877E 11
.2500	4.701E 06	4.062E 11
.3750	2.702E 06	2.335E 11
.5000	1.397E 06	1.207E 11
.6250	7.467E 05	6.451E 10
.7500	3.848E 05	3.324E 10
1.000	1.788E 05	1.545E 10
1.250	1.209E 05	1.045E 10
1.500	7.907E 04	6.831E 09
1.750	5.964E 04	5.153E 09
2.000	4.151E 04	3.586E 09
2.500	1.791E 04	1.547E 09
3.000	6.279E 03	5.425E 08
3.125	3.635E 03	3.141E 08
3.250	2.097E 03	1.812E 08
3.375	1.222E 03	1.056E 08
3.500	7.144E 02	6.172E 07
3.625	3.998E 02	3.454E 07
3.750	2.218E 02	1.916E 07
3.875	1.227E 02	1.060E 07
4.000	6.785E 01	5.862E 06
4.125	3.011E 01	2.601E 06
4.250	1.110E 01	9.594E 05
4.375	4.080E 00	3.525E 05
4.500	1.349E 00	1.166E 05
4.625	4.774E-01	4.125E 04
4.750	1.324E-01	1.144E 04
4.875	1.379E-02	1.191E 03
5.000	0.0	0.0

* EXPOSURE INDEX:ENERGY>.5000MEV *

INTENSITY RANGES #/CM**2/SEC	EXPOSURE DURATION (HOURS)	TOTAL # OF ACCUMULATED PARTICLES
ZERO FLUX	5.100	0.0
1.E0-1.E1	0.050	8.564E 02
1.E1-1.E2	0.150	1.673E 04
1.E2-1.E3	0.400	7.095E 05
1.E3-1.E4	2.050	3.644E 07
1.E4-1.E5	3.450	5.891E 08
1.E5-1.E6	7.450	9.336E 09
1.E6-1.E7	4.400	6.842E 10
1.E7-OVER	0.950	4.233E 10
TOTAL	24.000	1.207E 11

Table 19

** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973.6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES: **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL 5: IGRF 1965.0 80-TERM 10/68 * TIME= 1973.0 **
** VEHICLE : 1 NRL SOLWND ** INCLINATION= 60DEG ** PERIGEE= 1111KM ** APOGEE= 1111KM ** B/L ORBIT TAPE: TD7963 ** PERIOD= 1.790 **

PROTONS

** TABLE OF PEAK AND TOTAL FLUXES PER PERIOD : ENERGY >5.000MEV **

PERIOD NUMBER	PEAK FLUX ENCOUNTERED #/CM**2/SEC	POSITION AT WHICH ENCOUNTERED LONGITUDE (DEG)	LATITUDE (DEG)	ALTITUDE (KM)	ORBIT TIME (HOURS)	FIELD(B) (GAUSS)	LINE(L) (E.R.)	TOTAL FLUX PER ORBIT #/CM**2/ORBIT
1	4.182E 04	-38.011	-26.75	1106.45	1.05000	0.15998	1.39	3.312E 07
2	3.123E 04	-63.917	-28.54	1107.05	2.85000	0.16460	1.32	2.328E 07
3	9.706E 03	-63.671	-52.20	1116.31	4.80000	0.21828	1.93	1.089E 07
4	1.916E 04	17.771	-26.97	1113.97	7.00000	0.19544	1.75	1.410E 07
5	3.333E 04	-14.055	-33.41	1115.38	8.75000	0.17794	1.72	2.845E 07
6	3.932E 04	-34.162	-23.37	1113.15	10.60000	0.15927	1.37	3.528E 07
7	2.886E 04	-60.182	-21.55	1112.81	12.40000	0.15836	1.27	2.232E 07
8	8.179E 03	-46.732	4.39	1110.84	12.55000	0.18867	1.30	6.030E 06
9	1.545E 03	-103.427	-0.58	1110.95	16.09999	0.19769	1.20	1.041E 06
10	4.799E 02	-99.124	8.12	1111.25	16.14999	0.22099	1.30	1.736E 05
11	4.452E 03	51.571	-27.98	1106.77	18.95000	0.23271	1.84	2.344E 06
12	1.813E 04	25.695	-29.76	1107.32	20.74998	0.20218	1.88	9.359E 06
13	3.122E 04	-0.128	-31.52	1107.96	22.54999	0.18601	1.80	1.994E 07

Table 20

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** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5. AP6. AP7; AE4. AE5. FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES:                **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG. MODEL  5:      IGRF 1965.0 80-TERM 10/68     * TIME= 1973.0 **
** VEHICLE : 1 NRL SOLWND ** INCLINATION= 60DEG ** PERIGEE= 1111KM ** APOGEE= 1111KM ** B/L ORBIT TAPE: TD7963 ** PERIOD=  1.790 **
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                         ***********************    ELECTRONS    ***********************
                         ** TABLE OF PEAK AND TOTAL FLUXES PER PERIOD : ENERGY >.5000MEV **
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PERIOD NUMBER	PEAK FLUX ENCOUNTERED #/CM**2/SEC	POSITION AT WHICH ENCOUNTERED LONGITUDE (DEG)	LATITUDE (DEG)	ALTITUDE (KM)	ORBIT TIME (HOURS)	FIELD(B) (GAUSS)	LINE(L) (E.R.)	TOTAL FLUX PER ORBIT #/CM**2/ORBIT
1	7.377E 06	-38.011	-26.75	1106.45	1.05000	0.15998	1.39	2.834E 09
2	3.743E 06	-63.917	-28.54	1107.05	2.85000	0.16460	1.32	1.918E 09
3	6.339E 05	-83.121	-38.31	1110.61	4.70000	0.20168	1.47	4.340E 08
4	6.819E 05	22.944	-18.53	1112.36	7.05000	0.19700	1.51	2.462E 08
5	2.464E 06	-3.153	-16.69	1112.03	8.85000	0.17894	1.42	8.760E 08
6	6.763E 06	-34.162	-23.37	1113.15	10.60000	0.15927	1.37	2.968E 09
7	3.932E 06	-65.641	-29.91	1114.53	12.35000	0.16686	1.34	1.995E 09
8	4.704E 05	-46.732	4.39	1110.84	12.55000	0.18867	1.30	4.673E 08
9	3.136E 05	-30.676	53.16	1120.06	14.65000	0.31893	4.04	3.206E 08
10	3.118E 05	-1.522	58.56	1119.18	16.59999	0.31824	4.09	2.628E 08
11	2.224E 05	75.903	-50.50	1115.43	19.09999	0.32574	4.84	2.660E 08
12	9.836E 05	15.469	-12.80	1103.03	20.64999	0.19184	1.37	5.229E 08
13	3.190E 06	-10.669	-14.65	1103.41	22.45000	0.17333	1.36	1.233E 09

Table 21

** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES: **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL 5: IGRF 1965.0 80-TERM 10/68 * TIME= 1973.0 **
** VEHICLE : 2 NRL SOLWND ** INCLINATION= 90DEG ** PERIGEE= 1111KM ** APOGEE= 1111KM ** B/L ORBIT TAPE: TD7963 ** PERIOD= 1.790 **

PROTONS

** TABLE OF PEAK AND TOTAL FLUXES PER PERIOD : ENERGY >5.000MEV **

PERIOD NUMBER	PEAK FLUX ENCOUNTERED #/CM**2/SEC	POSITION AT WHICH ENCOUNTERED LONGITUDE (DEG)	LATITUDE (DEG)	ALTITUDE (KM)	ORBIT TIME (HOURS)	FIELD(B) (GAUSS)	LINE(L) (E.R.)	TOTAL FLUX PER ORBIT #/CM**2/ORBIT
1	3.443E 04	-54.057	-21.09	1107.51	1.00000	0.15657	1.28	2.509E 07
2	1.076E 04	-81.131	-22.99	1108.02	2.80000	0.17423	1.26	7.531E 06
3	2.562E 03	-107.454	-14.81	1106.28	4.55000	0.19126	1.20	1.570E 06
4	9.464E 03	35.694	-32.65	1115.98	7.00000	0.21266	2.04	4.489E 06
5	2.521E 04	8.621	-30.76	1115.53	8.80000	0.19071	1.84	1.172E 07
6	3.439E 04	-17.700	-38.91	1117.83	10.55000	0.18159	1.84	2.404E 07
7	4.124E 04	-45.526	-26.96	1114.78	12.40000	0.15799	1.36	2.977E 07
8	2.039E 04	-72.601	-25.07	1114.43	14.20000	0.16758	1.28	1.363E 07
9	3.046E 03	-100.426	-13.13	1112.25	16.04999	0.18559	1.19	2.370E 06
10	9.977E 02	63.030	-28.09	1109.37	17.14999	0.25681	1.87	5.699E 05
11	1.282E 04	35.956	-29.98	1109.90	18.95000	0.21139	1.91	4.651E 06
12	2.553E 04	8.881	-31.88	1110.39	20.74998	0.19169	1.88	1.140E 07
13	3.376E 04	-18.193	-33.78	1110.90	22.54999	0.17602	1.69	2.406E 07

Table 22

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******************************************************************************************************************************
** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES:               **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL  5:      IGRF 1965.0 80-TERM 10/68     * TIME= 1973.0 **
** VEHICLE : 2 NRL SOLWND ** INCLINATION= 90DEG ** PERIGEE= 1111KM ** APOGEE=  1111KM ** B/L ORBIT TAPE: TO7963 ** PERIOD=  1.790 **
******************************************************************************************************************************
                         ************************   ELECTRONS   ************************
                         ** TABLE OF PEAK AND TOTAL FLUXES PER PERIOD : ENERGY >.5000MEV **
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PERIOD NUMBER	PEAK FLUX ENCOUNTERED #/CM**2/SEC	POSITION AT WHICH ENCOUNTERED LONGITUDE (DEG)	LATITUDE (DEG)	ALTITUDE (KM)	ORBIT TIME (HOURS)	FIELD(B) (GAUSS)	LINE(L) (E.R.)	TOTAL FLUX PER ORBIT #/CM**2/ORBIT
1	6.137E 06	-54.809	-31.16	1110.32	1.05000	0.16313	1.38	2.264E 09
2	1.239E 06	-81.883	-33.06	1110.96	2.85000	0.18847	1.37	5.615E 08
3	2.337E 05	82.327	64.08	1124.27	3.90000	0.36190	4.08	2.072E 08
4	3.486E 05	34.190	-12.55	1111.84	7.10000	0.20193	1.36	3.178E 08
5	9.787E 05	7.117	-10.65	1111.67	8.90000	0.18514	1.34	5.573E 08
6	5.153E 06	-19.204	-18.81	1112.94	10.65000	0.16701	1.39	1.609E 09
7	7.272E 06	-45.526	-26.96	1114.78	12.40000	0.15799	1.36	2.483E 09
8	2.575E 06	-71.849	-35.12	1116.96	14.15000	0.18031	1.41	1.077E 09
9	2.786E 05	-98.923	-33.23	1116.47	15.95000	0.21219	1.41	2.585E 08
10	2.777E 05	61.528	-48.21	1116.32	17.24998	0.28692	3.79	1.922E 08
11	3.306E 05	33.701	-60.16	1120.44	19.09999	0.26383	4.81	3.105E 08
12	1.094E 06	10.385	-11.74	1105.52	20.64999	0.18810	1.35	5.481E 08
13	3.152E 06	-16.689	-13.64	1105.69	22.45000	0.16855	1.33	1.388E 09

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Table 23

** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES: **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL 5: IGRF 1965.0 80-TERM 10/68 * TIME= 1973.0 **
** VEHICLE : 3 NRL SOLWND ** INCLINATION= 60DEG ** PERIGEE= 1852KM ** APOGEE= 1852KM ** B/L ORBIT TAPE: TD7963 ** PERIOD= 2.060 **

PROTONS

** TABLE OF PEAK AND TOTAL FLUXES PER PERIOD : ENERGY >5.000MEV **

PERIOD NUMBER	PEAK FLUX ENCOUNTERED #/CM**2/SEC	POSITION AT WHICH ENCOUNTERED LONGITUDE (DEG)	LATITUDE (DEG)	ALTITUDE (KM)	ORBIT TIME (HOURS)	FIELD(B) (GAUSS)	LINE(L) (E.R.)	TOTAL FLUX PER ORBIT #/CM**2/ORBIT
1	1.948E 05	-45.638	-17.95	1845.90	1.15000	0.12025	1.39	2.154E 08
2	1.373E 05	-73.573	-23.60	1847.38	3.25000	0.12937	1.39	1.800E 08
3	7.401E 04	-109.887	-14.44	1845.31	5.25000	0.14487	1.31	1.559E 08
4	1.011E 05	4.946	-22.04	1854.08	8.10000	0.14167	1.68	1.852E 08
5	1.697E 05	-23.070	-16.38	1853.06	10.20000	0.12460	1.45	2.593E 08
6	1.844E 05	-55.203	-18.13	1853.35	12.25000	0.12105	1.38	2.551E 08
7	1.163E 05	-83.378	-12.41	1852.63	14.35000	0.13311	1.33	1.340E 08
8	7.242E 04	-111.711	-6.66	1852.21	16.45000	0.14410	1.29	7.994E 07
9	5.776E 04	-108.085	0.90	1851.99	16.49998	0.15056	1.33	8.206E 07
10	7.573E 04	25.669	-2.01	1843.83	19.59999	0.14370	1.34	1.259E 08
11	1.264E 05	-2.723	-7.80	1844.21	21.70000	0.13250	1.40	1.789E 08

Table 24

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***************************************************************************************************************************
** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES:               **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL  5:     IGRF 1965.0 80-TERM 10/68    * TIME= 1973.0 **
** VEHICLE : 3 NRL SOLWND ** INCLINATION= 60DEG ** PERIGEE= 1852KM ** APOGEE=  1852KM ** B/L ORBIT TAPE: TD7963 ** PERIOD=  2.060 **
***************************************************************************************************************************
                         ************************    ELECTRONS    ************************
                         ** TABLE OF PEAK AND TOTAL FLUXES PER PERIOD : ENERGY >.5000MEV **
                         ******************************************************************
```

PERIOD NUMBER	PEAK FLUX ENCOUNTERED #/CM**2/SEC	POSITION AT WHICH ENCOUNTERED LONGITUDE (DEG)	LATITUDE (DEG)	ALTITUDE (KM)	ORBIT TIME (HOURS)	FIELD(B) (GAUSS)	LINE(L) (E.R.)	TOTAL FLUX PER ORBIT #/CM**2/ORBIT
1	1.492E 07	-45.638	-17.95	1845.90	1.15000	0.12025	1.39	1.286E 10
2	1.308E 07	-73.573	-23.60	1847.38	3.25000	0.12937	1.39	1.252E 10
3	9.121E 06	-105.792	-21.87	1846.97	5.30000	0.14926	1.37	1.075E 10
4	1.148E 07	12.819	-7.11	1852.06	8.20000	0.13904	1.40	1.116E 10
5	1.389E 07	-19.236	-8.88	1852.17	10.25000	0.12528	1.39	1.484E 10
6	1.457E 07	-55.203	-18.13	1853.35	12.25000	0.12105	1.38	1.892E 10
7	1.054E 07	-44.006	4.46	1851.91	12.40000	0.14058	1.42	1.049E 10
8	7.823E 06	-119.545	-21.61	1854.16	16.34999	0.15804	1.39	6.458E 09
9	6.359E 06	-108.085	0.90	1851.99	16.49998	0.15056	1.33	6.960E 09
10	8.830E 06	29.337	-9.58	1844.40	19.64999	0.14781	1.43	1.030E 10
11	1.256E 07	-2.723	-7.80	1844.21	21.70000	0.13250	1.40	1.231E 10

Table 25

```
*****************************************************************************************************
** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES:              **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL  5:      IGRF 1965.0 80-TERM 10/68     * TIME= 1973.0 **
** VEHICLE : 4 NRL SOLWND ** INCLINATION= 90DEG ** PERIGEE= 1852KM ** APOGEE=  1852KM ** B/L ORBIT TAPE: TD7963 ** PERIOD=  2.060 **
*****************************************************************************************************
                    ************************     PROTONS     ************************
                    ** TABLE OF PEAK AND TOTAL FLUXES PER PERIOD : ENERGY >5.000MEV **
                    ******************************************************************
```

PERIOD NUMBER	PEAK FLUX ENCOUNTERED #/CM**2/SEC	POSITION AT WHICH ENCOUNTERED LONGITUDE (DEG)	LATITUDE (DEG)	ALTITUDE (KM)	ORBIT TIME (HOURS)	FIELD(B) (GAUSS)	LINE(L) (E.R.)	TOTAL FLUX PER ORBIT #/CM**2/ORBIT
1	1.834E 05	-56.314	-20.72	1849.01	1.15000	0.12166	1.39	1.846E 08
2	1.081E 05	-87.148	-18.45	1848.54	3.20000	0.13465	1.34	1.108E 08
3	6.464E 04	-117.231	-7.42	1846.87	5.20000	0.14548	1.29	9.821E 07
4	8.825E 04	17.646	-9.10	1852.47	8.20000	0.14189	1.43	1.204E 08
5	1.491E 05	-13.188	-11.37	1852.76	10.25000	0.12787	1.43	1.778E 08
6	1.921E 05	-43.270	-22.37	1854.70	12.25000	0.12106	1.44	2.306E 08
7	1.390E 05	-74.856	-15.92	1853.57	14.35000	0.12824	1.35	1.424E 08
8	8.530E 04	-106.442	-9.46	1852.72	16.45000	0.14206	1.30	8.344E 07
9	6.375E 04	-107.194	-0.73	1852.23	16.49998	0.14839	1.32	7.926E 07
10	7.688E 04	26.178	-0.23	1846.33	19.59999	0.14365	1.32	1.174E 08
11	1.307E 05	-6.160	-15.45	1847.70	21.74998	0.13285	1.50	1.787E 08

Table 26

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************************************************************************************************************************
** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES:            **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL  5:    IGRF 1965.0 80-TERM 10/68    * TIME= 1973.0 **
** VEHICLE : 4 NRL SOLWND ** INCLINATION= 90DEG ** PERIGEE= 1852KM ** APOGEE=  1852KM ** B/L ORBIT TAPE: TD7963 ** PERIOD=  2.060 **
************************************************************************************************************************
                         ************************  ELECTRONS   *************************
                         ** TABLE OF PEAK AND TOTAL FLUXES PER PERIOD : ENERGY >.5000MEV **
                         ******************************************************************
```

PERIOD NUMBER	PEAK FLUX ENCOUNTERED #/CM**2/SEC	POSITION AT WHICH ENCOUNTERED LONGITUDE (DEG)	LATITUDE (DEG)	ALTITUDE (KM)	ORBIT TIME (HOURS)	FIELD(B) (GAUSS)	LINE(L) (E.R.)	TOTAL FLUX PER ORBIT #/CM**2/ORBIT
1	1.464E 07	-56.314	-20.72	1849.01	1.15000	0.12166	1.39	1.144E 10
2	1.040E 07	-87.900	-27.19	1850.75	3.25000	0.14199	1.42	8.674E 09
3	7.681E 06	48.479	-6.83	1852.28	6.15000	0.15619	1.37	8.127E 09
4	1.004E 07	17.646	-9.10	1852.47	8.20000	0.14189	1.43	9.051E 09
5	1.247E 07	-13.188	-11.37	1852.76	10.25000	0.12787	1.43	1.129E 10
6	1.452E 07	-44.022	-13.64	1853.14	12.30000	0.12043	1.38	1.559E 10
7	1.303E 07	-74.105	-24.65	1855.28	14.30000	0.13000	1.40	9.937E 09
8	9.120E 06	-76.360	1.55	1852.25	14.45000	0.15004	1.42	6.083E 09
9	6.495E 06	-107.946	8.00	1852.53	16.54999	0.16335	1.40	6.750E 09
10	9.732E 06	25.426	-8.97	1846.84	19.64999	0.14561	1.42	9.173E 09
11	1.278E 07	-5.408	-6.70	1846.53	21.70000	0.13105	1.39	1.199E 10

TABLE _ TABLE 27

1 NRL SOLWND

CIRCULAR

INCLINATION: 60 DEG

PERIGEE: 1111 KM

APOGEE: 1111 KM

DECAY DATE: 1973. 6.

**** EXPOSURE ANALYSIS ****

	PROTONS (E>5.000MEV)	ELECTRONS (E>.5000MEV)
PERCENT OF TOTAL LIFE-TIME SPENT IN FLUX-FREE REGIONS* OF SPACE :	51.67 %	35.63 %
PERCENT OF TOTAL LIFE-TIME SPENT IN HIGH-INTENSITY REGIONS+ OF VAN ALLEN BELTS :	20.42 %	24.38 %
PERCENT OF TOTAL DAILY FLUX ACCUMULATED IN HIGH-INTENSITY REGIONS:	98.18 %	95.25 %

****

* <1 PARTICLE/CM**2/SEC

+ >1.E5 EL/CM**2/SEC OR 1.E3 PR/CM**2/SEC

1 NRL SOLWND

CIRCULAR

INCLINATION: 60 DEG

PERIGEE: 1111 KM

APOGEE: 1111 KM

DECAY DATE: 1973. 6.

* PERCENT OF TOTAL LIFETIME SPENT INSIDE AND *
* OUTSIDE THE TRAPPED-PARTICLE RADIATION BELT *

INNER ZONE (1.0 < L < 2.8)	-TI-* :	70.83 %
OUTER ZONE (2.8 < L < 11.0)	-TO- :	27.92 %
EXTERNAL (L > 11.0)	-TE- :	1.25 %
TOTAL	:	100.00 %

*TIME IN INNER ZONE MAY BE SUBDIVIDED AS FOLLOWS:

OUTSIDE TRAPPING REGION : 0.83 %
(1.0 < L < 1.1)

INSIDE TRAPPING REGION : 70.00 %
(1.1 < L < 2.8)

TABLE _

2 NRL SOLWND

CIRCULAR

INCLINATION: 90 DEG

PERIGEE: 1111 KM

APOGEE: 1111 KM

DECAY DATE: 1973. 6.

**** EXPOSURE ANALYSIS ****

	PROTONS (E>5.000MEV)	ELECTRONS (E>.5000MEV)
PERCENT OF TOTAL LIFE-TIME SPENT IN FLUX-FREE REGIONS* OF SPACE :	62.92 %	46.25 %
PERCENT OF TOTAL LIFE-TIME SPENT IN HIGH-INTENSITY REGIONS+ OF VAN ALLEN BELTS :	14.79 %	21.04 %
PERCENT OF TOTAL DAILY FLUX ACCUMULATED IN HIGH-INTENSITY REGIONS:	97.78 %	96.17 %

****

* <1 PARTICLE/CM**2/SEC

+ >1.E5 EL/CM**2/SEC OR 1.E3 PR/CM**2/SEC

TABLE 28

2 NRL SOLWND

CIRCULAR

INCLINATION: 90 DEG

PERIGEE: 1111 KM

APOGEE: 1111 KM

DECAY DATE: 1973. 6.

* PERCENT OF TOTAL LIFETIME SPENT INSIDE AND *
* OUTSIDE THE TRAPPED-PARTICLE RADIATION BELT *

INNER ZONE -TI-* (1.0 < L < 2.8)	:	55.21 %
OUTER ZONE -TO- (2.8 < L < 11.0)	:	37.92 %
EXTERNAL -TE- (L > 11.0)	:	6.88 %
TOTAL	:	100.00 %

*TIME IN INNER ZONE MAY BE SUBDIVIDED AS FOLLOWS:

OUTSIDE TRAPPING REGION : 0.21 %
(1.0 < L < 1.1)

INSIDE TRAPPING REGION : 55.00 %
(1.1 < L < 2.8)

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TABLE _

3 NRL SOLWND

CIRCULAR

INCLINATION: 60 DEG

PERIGEE: 1852 KM

APOGEE: 1852 KM

DECAY DATE: 1973. 6.

**** EXPOSURE ANALYSIS ****

	PROTONS (E>5.000MEV)	ELECTRONS (E>.5000MEV)
PERCENT OF TOTAL LIFE- TIME SPENT IN FLUX-FREE REGIONS* OF SPACE :	28.13 %	2.71 %
PERCENT OF TOTAL LIFE- TIME SPENT IN HIGH- INTENSITY REGIONS+ OF VAN ALLEN BELTS :	64.38 %	64.79 %
PERCENT OF TOTAL DAILY FLUX ACCUMULATED IN HIGH-INTENSITY REGIONS:	99.95 %	99.44 %

****

* <1 PARTICLE/CM**2/SEC

\+ >1.E5 EL/CM**2/SEC OR 1.E3 PR/CM**2/SEC

TABLE 29

3 NRL SOLWND

CIRCULAR

INCLINATION: 60 DEG

PERIGEE: 1852 KM

APOGEE: 1852 KM

DECAY DATE: 1973. 6.

* PERCENT OF TOTAL LIFETIME SPENT INSIDE AND *

* OUTSIDE THE TRAPPED-PARTICLE RADIATION BELT *

INNER ZONE (1.0 < L < 2.8)	-TI-* :	66.67 %
OUTER ZONE (2.8 < L < 11.0)	-TO- :	31.25 %
EXTERNAL (L > 11.0)	-TE- :	2.08 %
TOTAL	:	100.00 %

*TIME IN INNER ZONE MAY BE SUBDIVIDED AS FOLLOWS:

OUTSIDE TRAPPING REGION (1.0 < L < 1.1)	:	0.0 %
INSIDE TRAPPING REGION (1.1 < L < 2.8)	:	66.67 %

4 NRL SOLWND

CIRCULAR

INCLINATION: 90 DEG

PERIGEE: 1852 KM

APOGEE: 1852 KM

DECAY DATE: 1973. 6.

**** EXPOSURE ANALYSIS ****

	PROTONS (E>5.000MEV)	ELECTRONS (E>.5000MEV)
PERCENT OF TOTAL LIFE-TIME SPENT IN FLUX-FREE REGIONS* OF SPACE :	44.79 %	21.25 %
PERCENT OF TOTAL LIFE-TIME SPENT IN HIGH-INTENSITY REGIONS+ OF VAN ALLEN BELTS :	51.67 %	53.33 %
PERCENT OF TOTAL DAILY FLUX ACCUMULATED IN HIGH-INTENSITY REGIONS:	99.97 %	99.48 %

****

* <1 PARTICLE/CM**2/SEC

\+ >1.E5 EL/CM**2/SEC OR 1.E3 PR/CM**2/SEC

4 NRL SOLWND

CIRCULAR

INCLINATION: 90 DEG

PERIGEE: 1852 KM

APOGEE: 1852 KM

DECAY DATE: 1973. 6.

* PERCENT OF TOTAL LIFETIME SPENT INSIDE AND *

* OUTSIDE THE TRAPPED-PARTICLE RADIATION BELT *

INNER ZONE (1.0 < L < 2.8)	-TI-* :	52.92 %
OUTER ZONE (2.8 < L < 11.0)	-TO- :	40.83 %
EXTERNAL (L > 11.0)	-TE- :	6.25 %
TOTAL	:	100.00 %

*TIME IN INNER ZONE MAY BE SUBDIVIDED AS FOLLOWS:

OUTSIDE TRAPPING REGION : (1.0 < L < 1.1)	0.0 %
INSIDE TRAPPING REGION : (1.1 < L < 2.8)	52.92 %

Table 31

```
****************************************************************************************************************************
** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES:          **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL  5:     IGRF 1965.0 80-TERM 10/68    * TIME= 1973.0 **
** VEHICLE : 1 NRL SOLWND ** INCLINATION= 60DEG ** PERIGEE= 1111KM ** APOGEE=  1111KM ** B/L ORBIT TAPE: TD7963 ** PERIOD=  1.790 **
****************************************************************************************************************************
                                  ** ANNUAL ENERGETIC SOLAR PROTON FLUENCE **
                                  ************ (PARTICLES/CM**2) ************
                                  *******************************************
```

ENERGY LEVELS >(MEV)	FOR CUTOFF DIPOLE SHELL ***L>5***
10.0	4.592E 08
20.0	2.386E 08
30.0	1.443E 08
40.0	9.448E 07
50.0	6.505E 07
60.0	4.642E 07
70.0	3.404E 07
80.0	2.550E 07
90.0	1.944E 07
100.0	1.504E 07

DIPOLE CUTOFF SHELL	PERCENT EXPOSURE TIME
L>4	15.00
L>5	10.42
L>6	7.29
L>7	5.42

Table 32

```
******************************************************************************************************************************
** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES:                **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL  5:      IGRF 1965.0 80-TERM 10/68     * TIME= 1973.0 **
** VEHICLE : 2 NRL SOLWND ** INCLINATION= 90DEG ** PERIGEE= 1111KM ** APOGEE=  1111KM ** B/L ORBIT TAPE: TD7963 ** PERIOD=  1.790 **
******************************************************************************************************************************
```

** ANNUAL ENERGETIC SOLAR PROTON FLUENCE **
************ (PARTICLES/CM**2) ************
****

ENERGY LEVELS >(MEV)	FOR CUTOFF DIPOLE SHELL ***L>5***
10.0	1.378E 09
20.0	7.157E 08
30.0	4.330E 08
40.0	2.835E 08
50.0	1.952E 08
60.0	1.393E 08
70.0	1.021E 08
80.0	7.649E 07
90.0	5.832E 07
100.0	4.512E 07

DIPOLE CUTOFF SHELL	PERCENT EXPOSURE TIME
L>4	36.46
L>5	31.25
L>6	28.12
L>7	26.04

Table 33

```
********************************************************************************************************************
** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES:                **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL  5:      IGRF 1965.0 80-TERM 10/68     * TIME= 1973.0 **
** VEHICLE : 3 NRL SOLWND ** INCLINATION= 60DEG ** PERIGEE= 1852KM ** APOGEE=  1852KM ** B/L ORBIT TAPE: TD7963 ** PERIOD= 2.060 **
********************************************************************************************************************
                                   ** ANNUAL ENERGETIC SOLAR PROTON FLUENCE **
                                   ************ (PARTICLES/CM**2) ************
                                   *******************************************
```

ENERGY LEVELS >(MEV)	FOR CUTOFF DIPOLE SHELL ***L>5***
10.0	5.143E 08
20.0	2.672E 08
30.0	1.616E 08
40.0	1.058E 08
50.0	7.286E 07
60.0	5.199E 07
70.0	3.812E 07
80.0	2.856E 07
90.0	2.177E 07
100.0	1.684E 07

DIPOLE CUTOFF SHELL	PERCENT EXPOSURE TIME
L>4	17.29
L>5	11.67
L>6	7.92
L>7	6.46

Table 34

****
** ORBITAL FLUX STUDY WITH COMPOSITE PARTICLE ENVIRONMENTS: VETTES AP5, AP6, AP7; AE4, AE5, FOR SOLAR MAXIMUM **** UNIFLX OF 1973 **
** ELECTRON FLUXES EXPONENTIALLY DECAYED TO 1973. 6 WITH LIFETIMES: E.G.STASSINOPOULOS&P.VERZARIU ** CUTOFF TIMES: **
** MAGNETIC COORDINATES B AND L COMPUTED BY INVARA OF 1972 WITH ALLMAG, MODEL 5: IGRF 1965.0 80-TERM 10/68 * TIME= 1973.0 **
** VEHICLE : 4 NRL SOLWND ** INCLINATION= 90DEG ** PERIGEE= 1852KM ** APOGEE= 1852KM ** B/L ORBIT TAPE: TD7963 ** PERIOD= 2.060 **
****

** ANNUAL ENERGETIC SOLAR PROTON FLUENCE **
************ (PARTICLES/CM**2) ************
****

ENERGY LEVELS >(MEV)	FOR CUTOFF DIPOLE SHELL ***L>5***
10.0	1.424E 09
20.0	7.396E 08
30.0	4.474E 08
40.0	2.929E 08
50.0	2.017E 08
60.0	1.439E 08
70.0	1.055E 08
80.0	7.904E 07
90.0	6.026E 07
100.0	4.662E 07

DIPOLE CUTOFF SHELL	PERCENT EXPOSURE TIME
L>4	37.29
L>5	32.29
L>6	28.75
L>7	26.87

TABLE ARRANGEMENT

Computer Produced Output Tables for Orbital Flux Integrations.

Standard Production Runs with UNIFLUX Program.

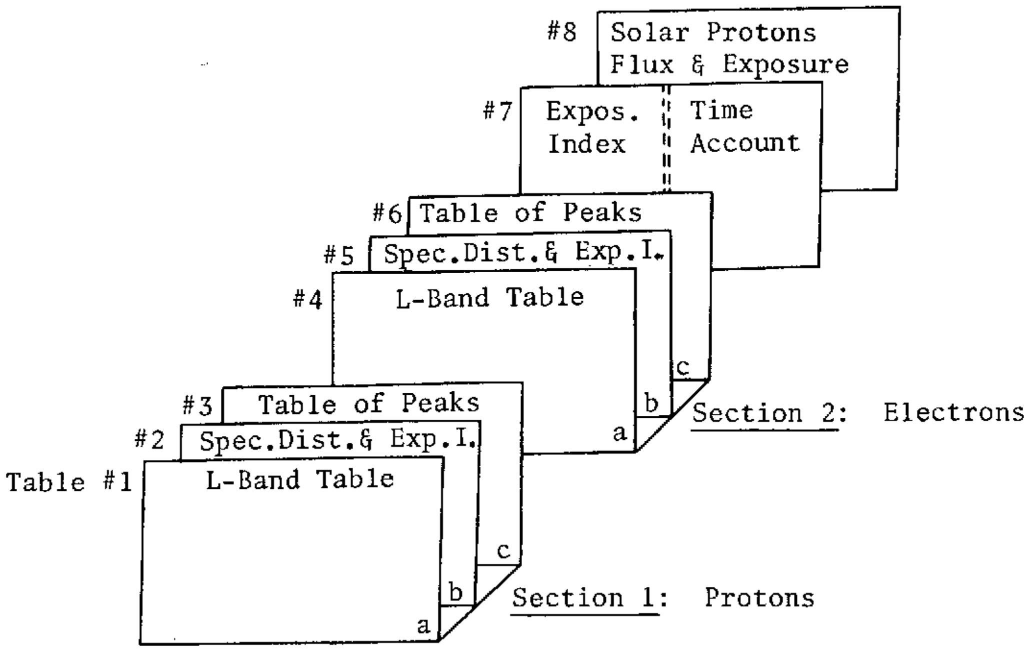


Figure 1: Set of tables produced for every trajectory considered in an orbital radiation study.

PLOT ARRANGEMENT

Computer Produced Plots for Orbital Flux Integrations.

Standard Production Runs with UNIFLUX Program.

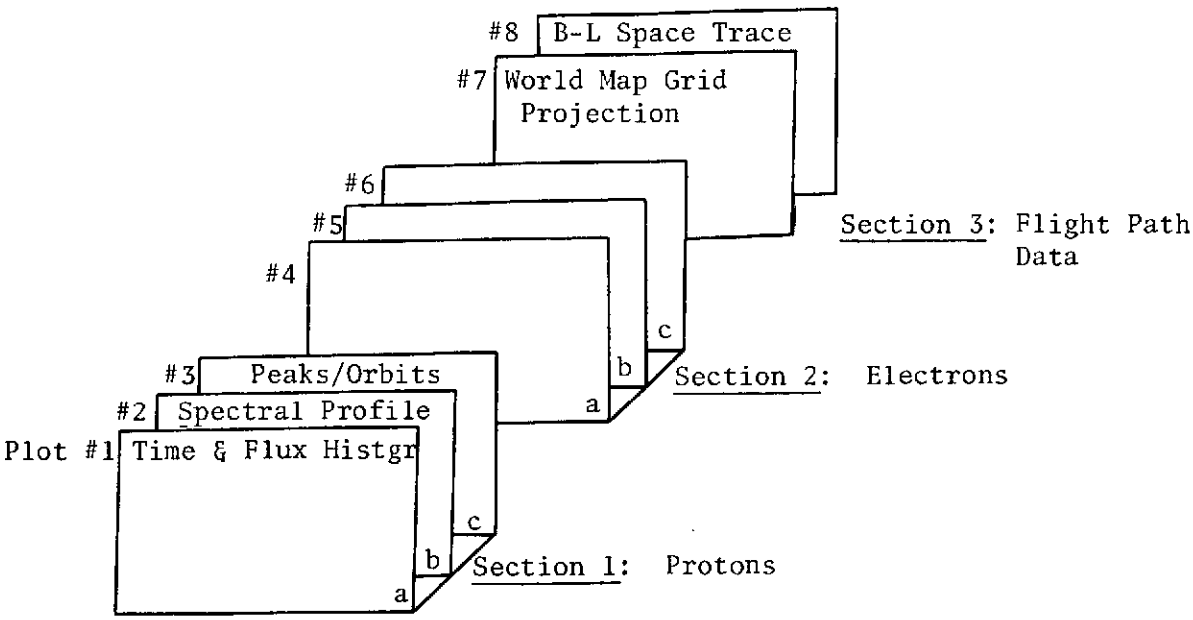
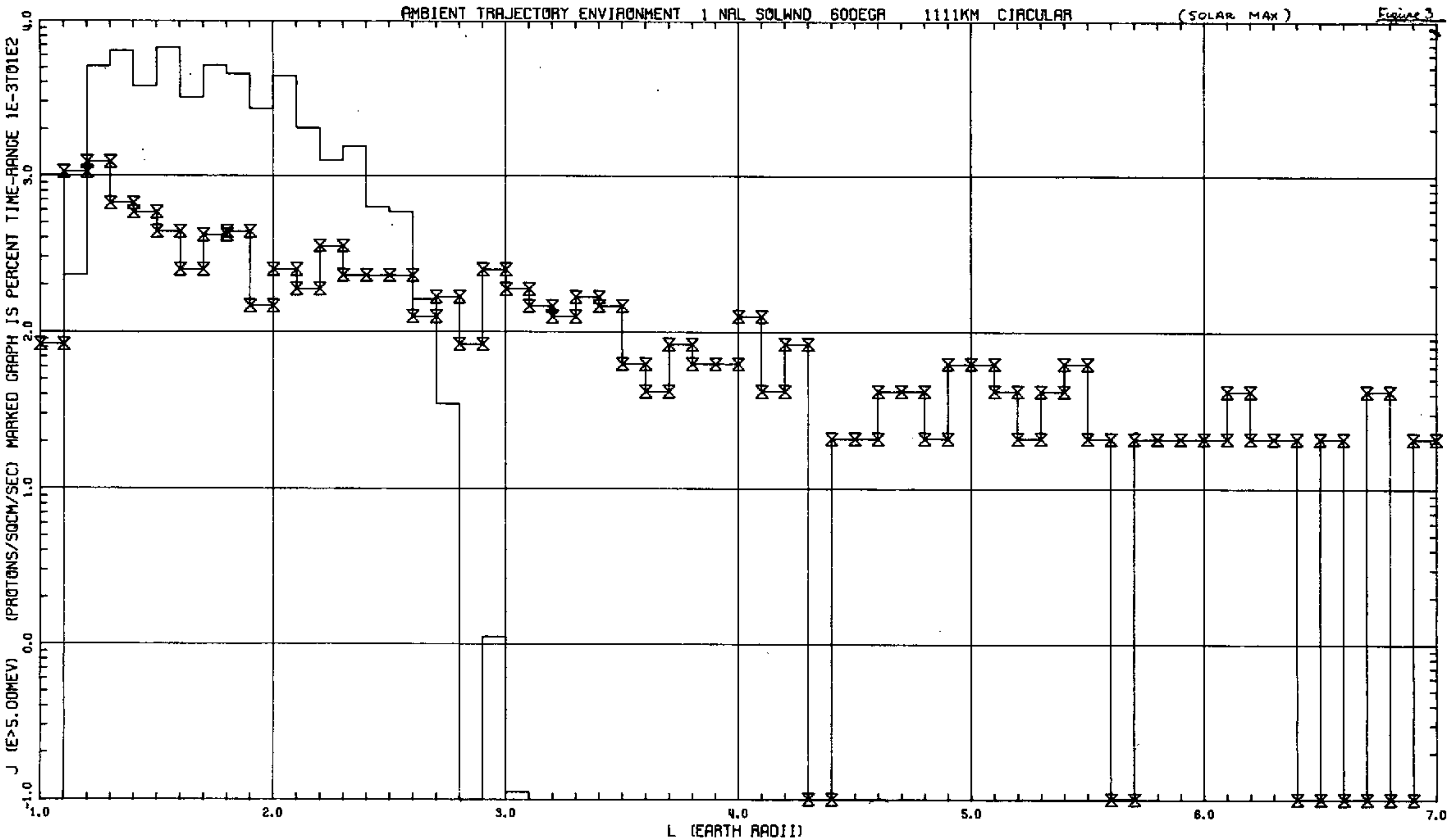
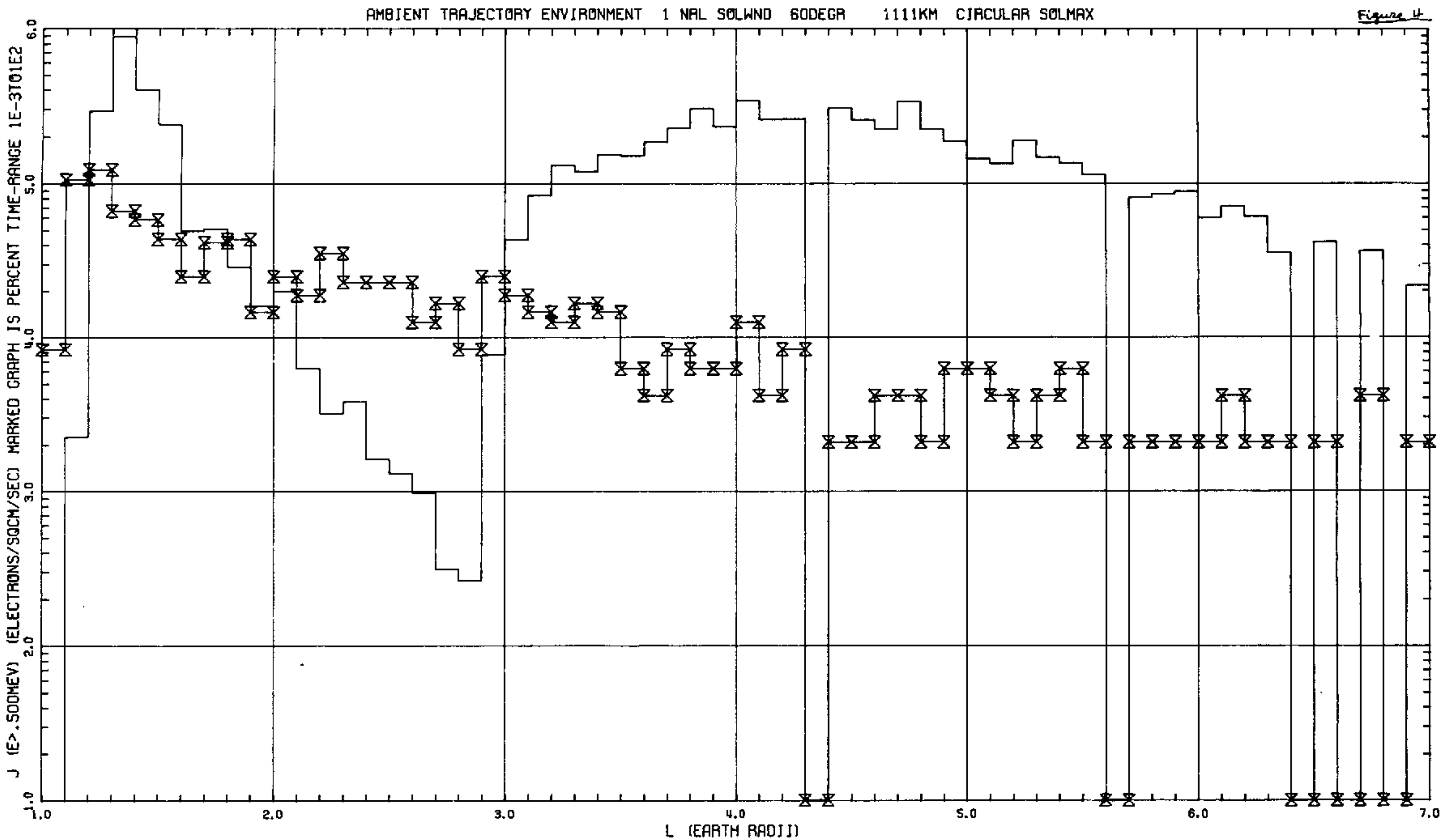
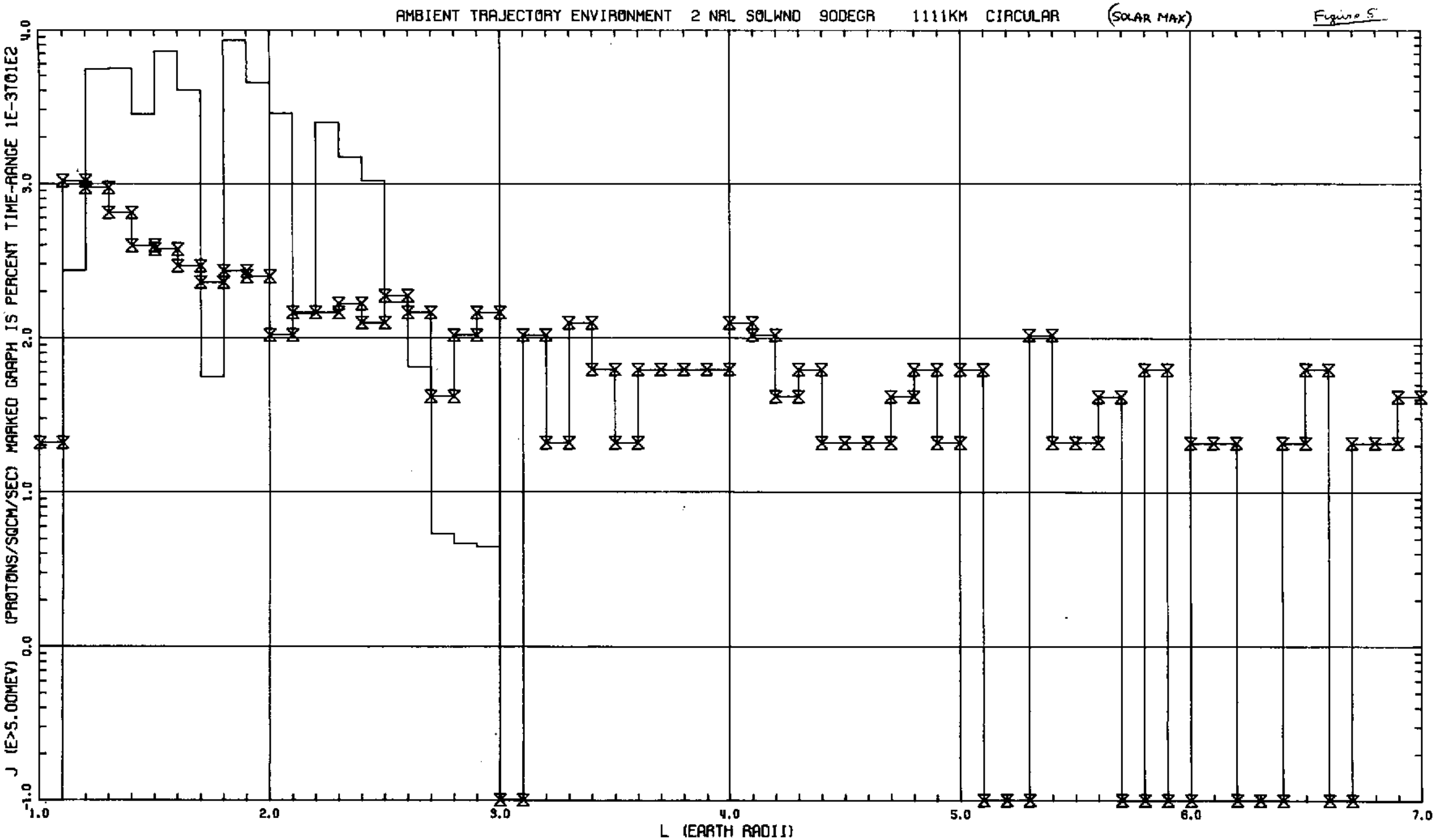


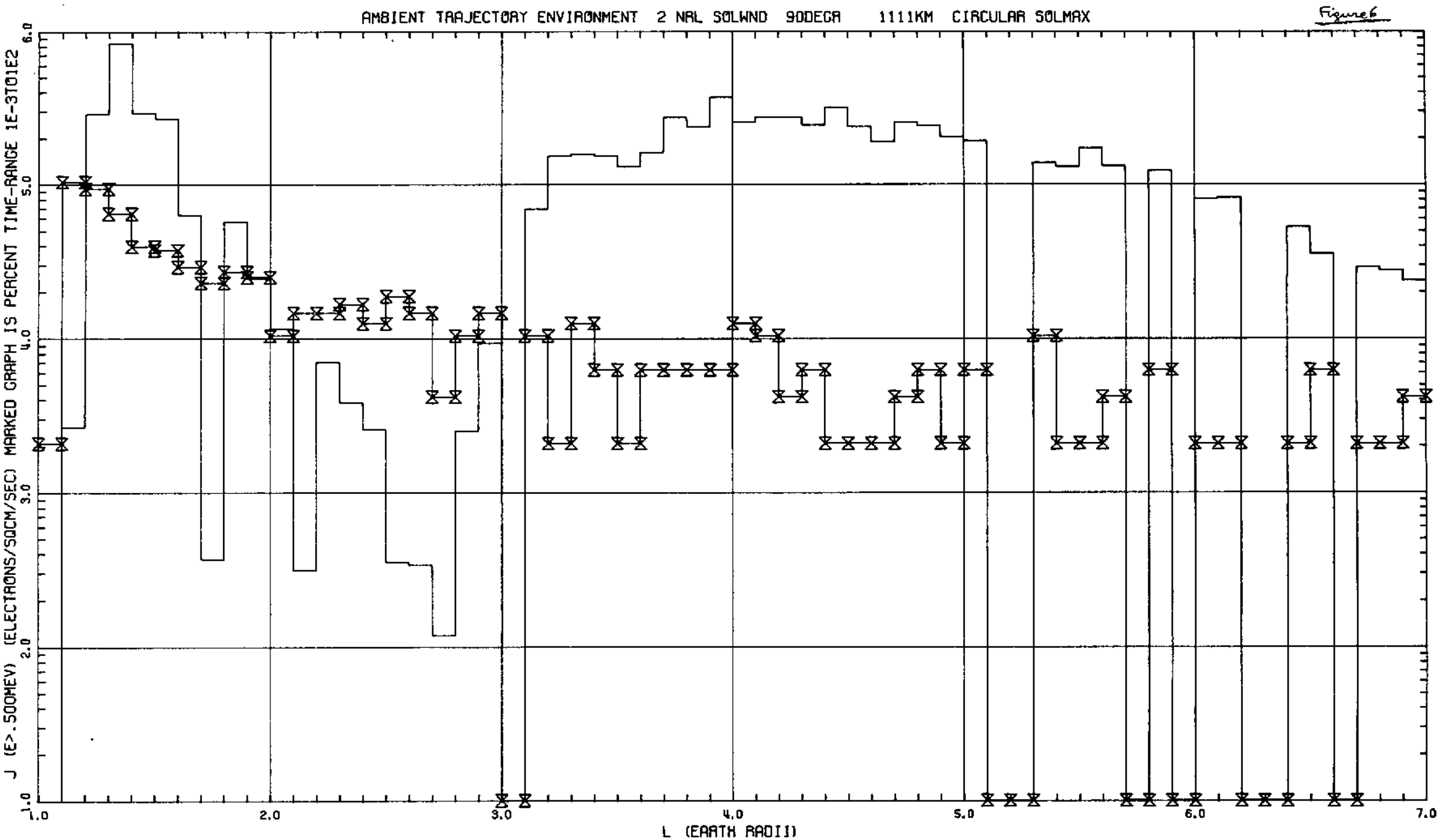
Figure 2: Set of plots produced for every trajectory considered in an orbital radiation study.

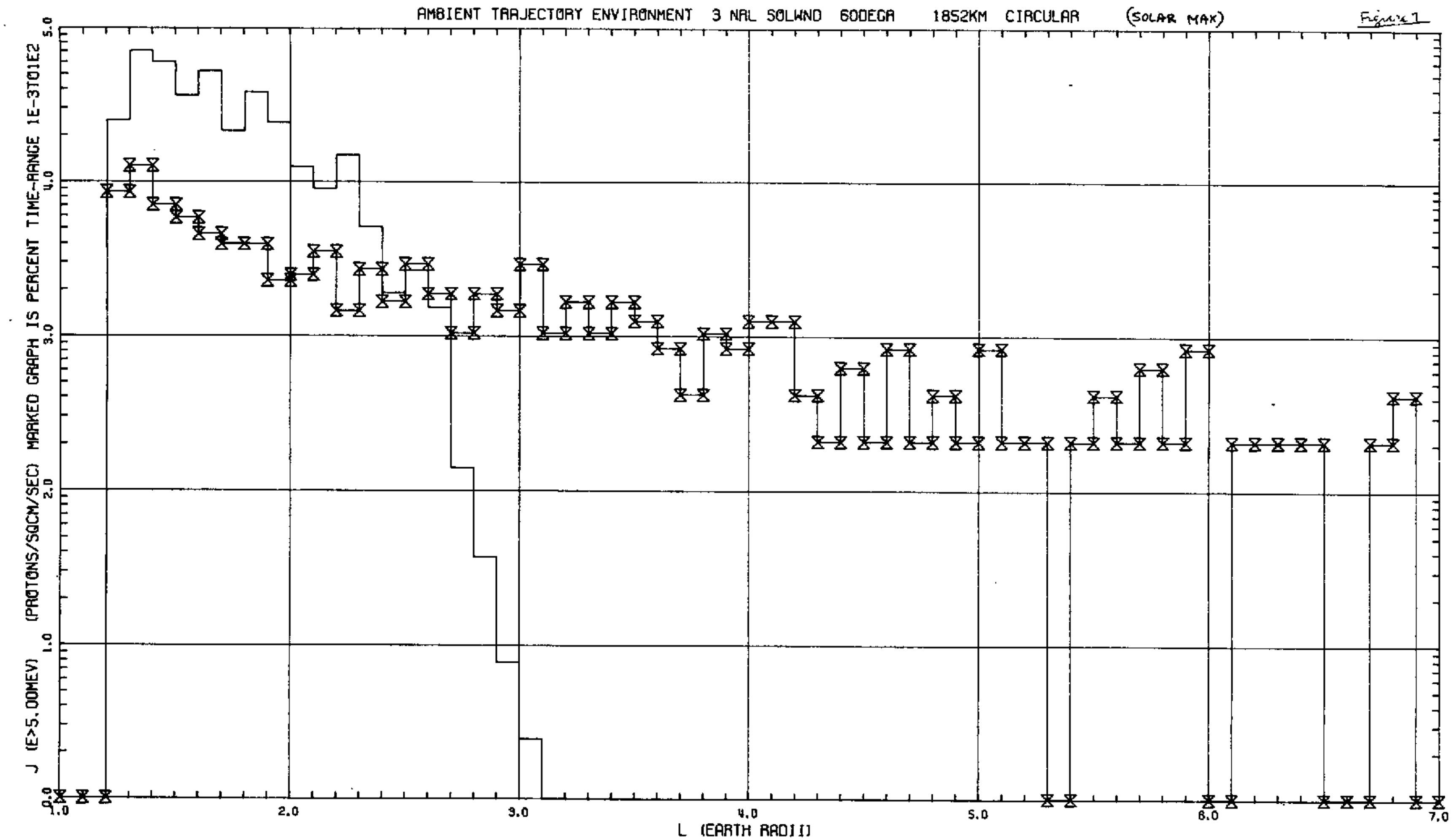

AMBIENT TRAJECTORY ENVIRONMENT 1 NAL SOLWND 60DEGR 1111KM CIRCULAR
(SOLAR MAX)
Figure 3
J (E>5.00MEV) (PROTONS/SQCM/SEC) MARKED GRAPH IS PERCENT TIME-RANGE 1E-3TO1E2
4.0
3.0
2.0
1.0
0.0
-1.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
L (EARTH RADII)



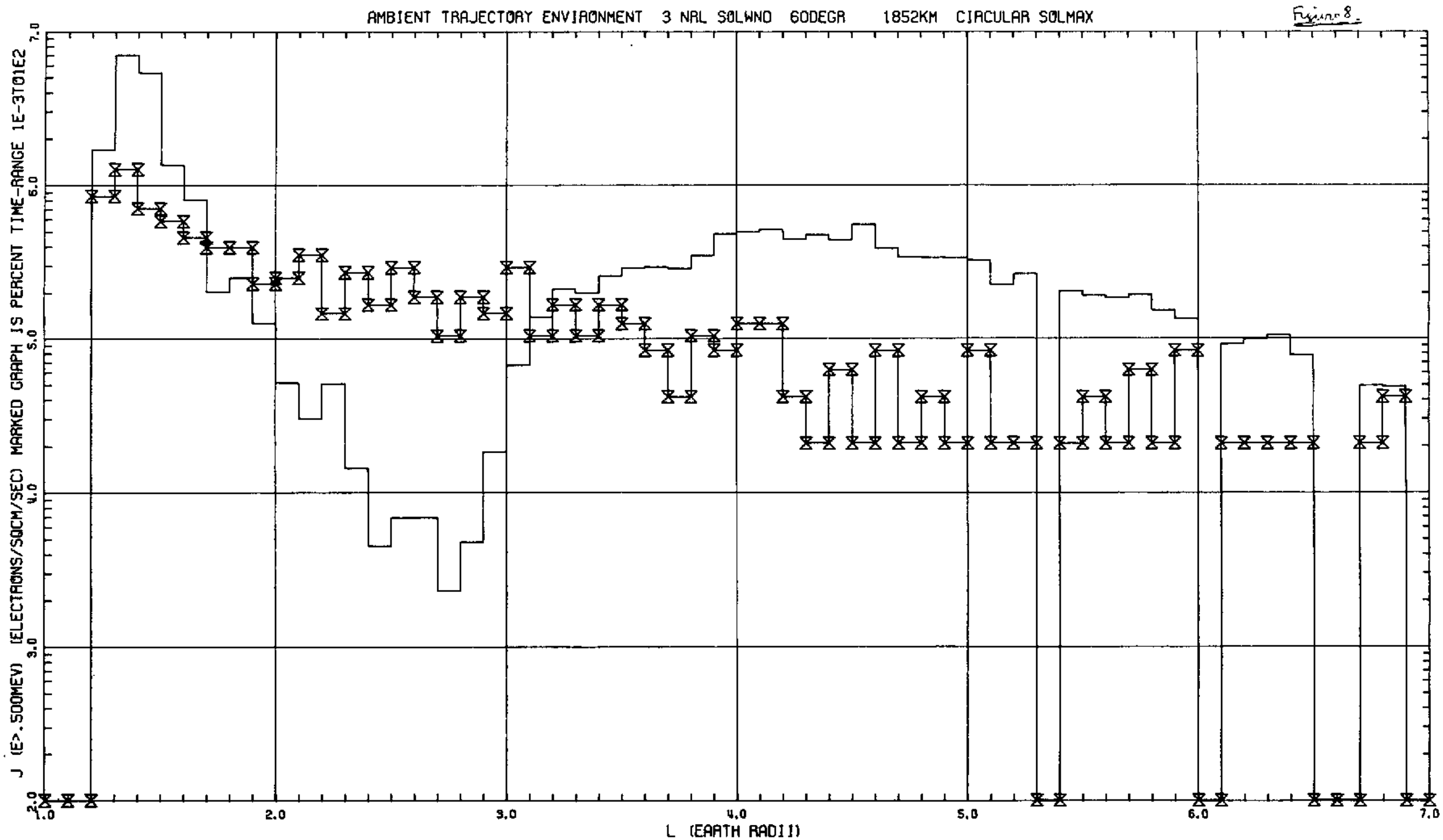
AMBIENT TRAJECTORY ENVIRONMENT 1 NAL SØLWND 60DEGR 1111KM CIRCULAR SØLMAX
Figure 4
J (E>.500MEV) (ELECTRONS/SQCM/SEC) MARKED GRAPH IS PERCENT TIME-RANGE 1E-3TO1E2
L (EARTH RADII)
1.0
2.0
3.0
4.0
5.0
6.0
7.0


AMBIENT TRAJECTORY ENVIRONMENT 2 NRL SOLWND 90DEGR 1111KM CIRCULAR
(SOLAR MAX)
Figure 5
J (E>5.00MEV) (PROTONS/SQCM/SEC) MARKED GRAPH IS PERCENT TIME-RANGE 1E-3TO1E2
L (EARTH RADII)
-1.0
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0

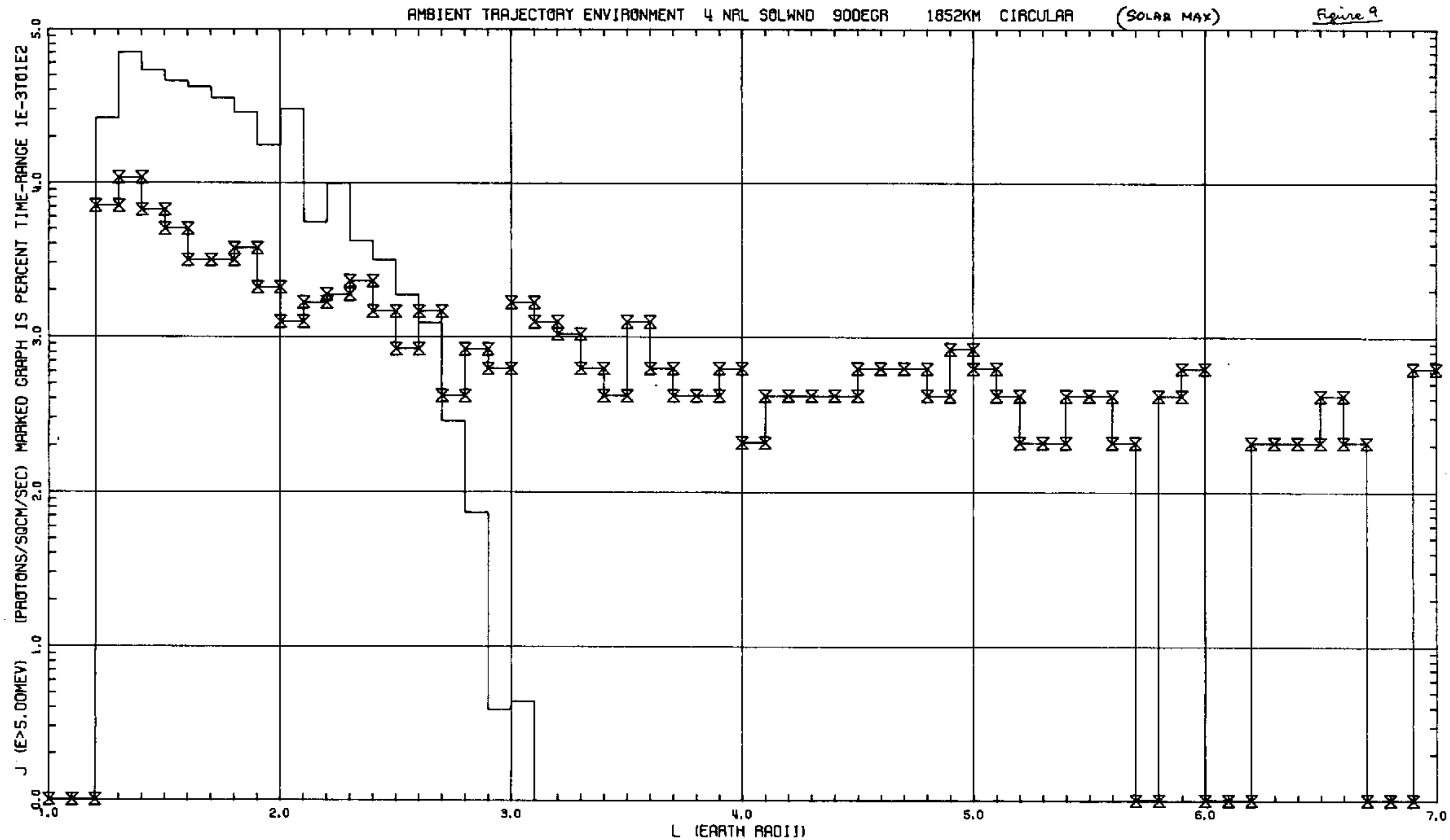

AMBIENT TRAJECTORY ENVIRONMENT 2 NRL SOLWND 90DEGR 1111KM CIRCULAR SOLMAX
Figure 6
J (E>.500MEV) (ELECTRONS/SQCM/SEC) MARKED GRAPH IS PERCENT TIME-RANGE 1E-3TO1E2
L (EARTH RADII)
1.0
2.0
3.0
4.0
5.0
6.0
7.0

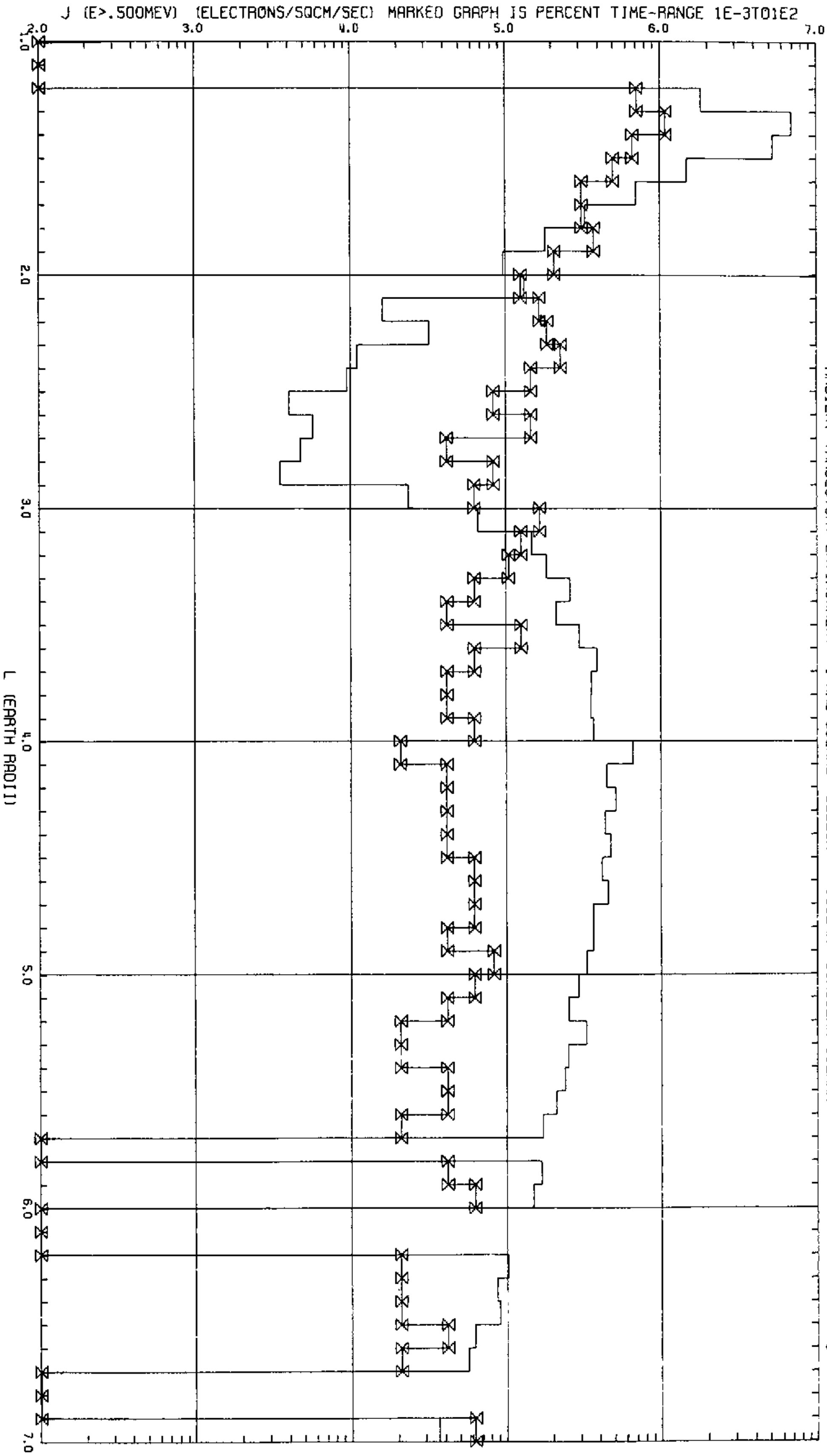


AMBIENT TRAJECTORY ENVIRONMENT 3 NRL SOLWND 60DEGR 1852KM CIRCULAR (SOLAR MAX)
Figure 1
J (E>5.00MEV) (PROTONS/SQCM/SEC) MARKED GRAPH IS PERCENT TIME-RANGE 1E-3TO1E2
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
L (EARTH RADII)



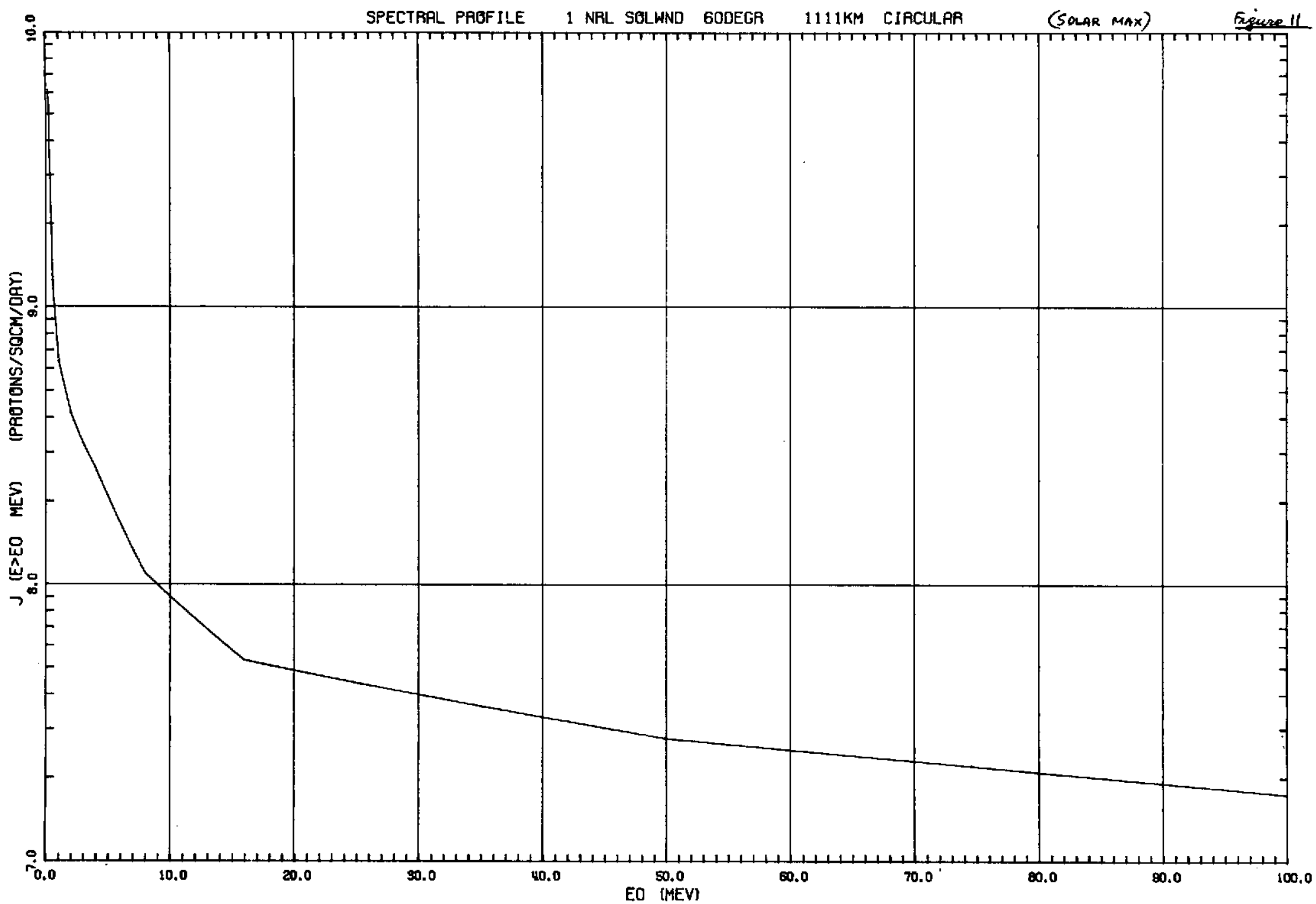
AMBIENT TRAJECTORY ENVIRONMENT 3 NRL SOLWND 60DEGR 1852KM CIRCULAR SOLMAX
Figure 8.
J (E>.500MEV) (ELECTRONS/SQCM/SEC) MARKED GRAPH IS PERCENT TIME-RANGE 1E-3TO1E2
2.0
3.0
4.0
5.0
6.0
7.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
L (EARTH RADII)

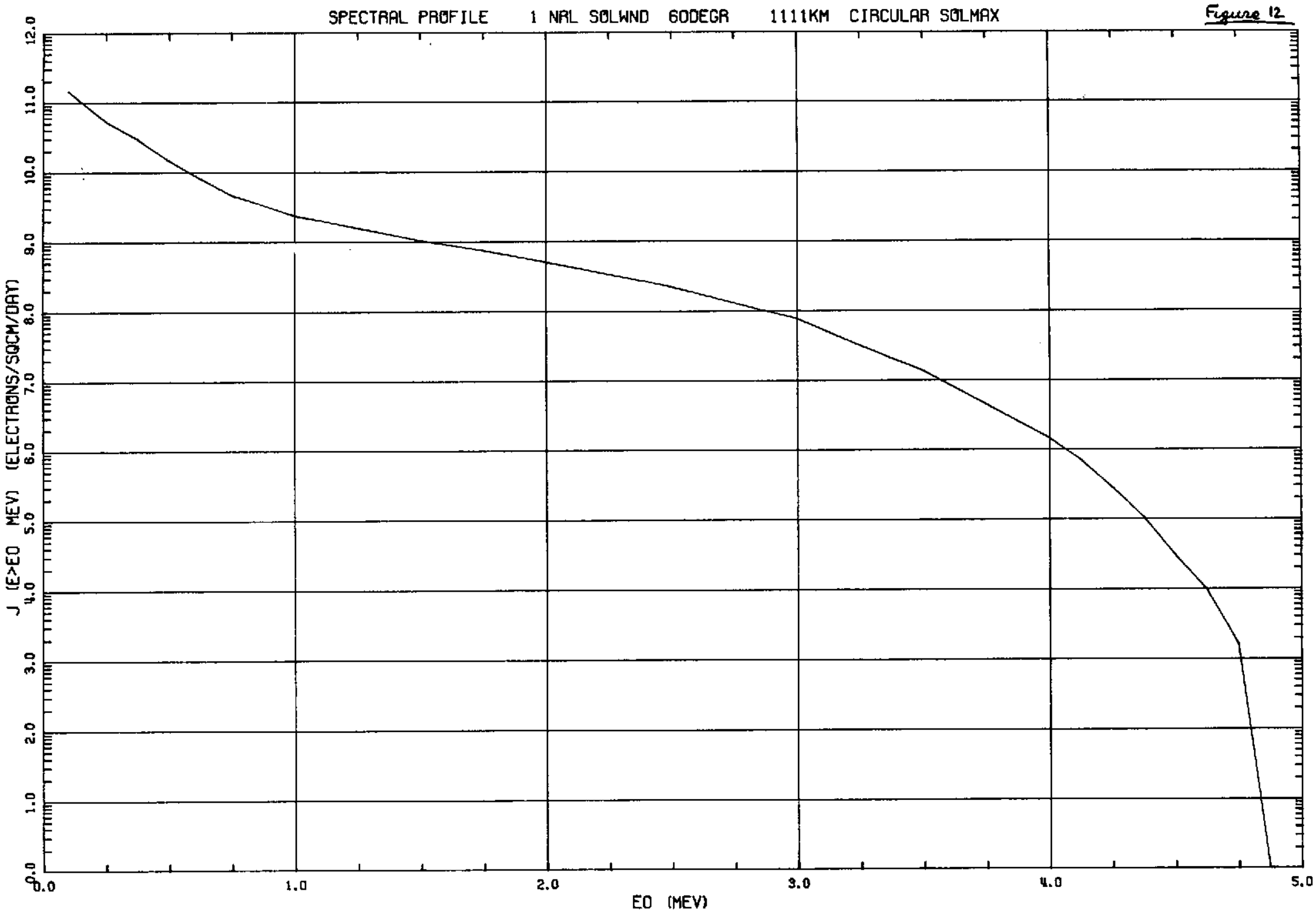

AMBIENT TRAJECTORY ENVIRONMENT 4 NRL SOLWND 90DEGR 1852KM CIRCULAR (SOLAR MAX)
Figure 9
J (E>5.00MEV) (PROTONS/SQCM/SEC) MARKED GRAPH IS PERCENT TIME-RANGE 1E-3TO1E2
L (EARTH RADII)
1.0
2.0
3.0
4.0
5.0
6.0
7.0
0.0
1.0
2.0
3.0
4.0
5.0



AMBIENT TRAJECTORY ENVIRONMENT 4 NRL SOLWND 90DEGR 1852KM CIRCULAR SOLMAX

Figure 10


SPECTRAL PROFILE 1 NRL SOLWND 60DEGR 1111KM CIRCULAR
(SOLAR MAX)
Figure 11
J (E>EO MEV) (PROTONS/SQCM/DAY)
10.0
9.0
8.0
7.0
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
80.0
90.0
100.0
EO (MEV)



SPECTRAL PROFILE 1 NRL SOLWND 60DEGR 1111KM CIRCULAR SOLMAX
Figure 12
J (E>EO MEV) (ELECTRONS/SQCM/DAY)
EO (MEV)
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0

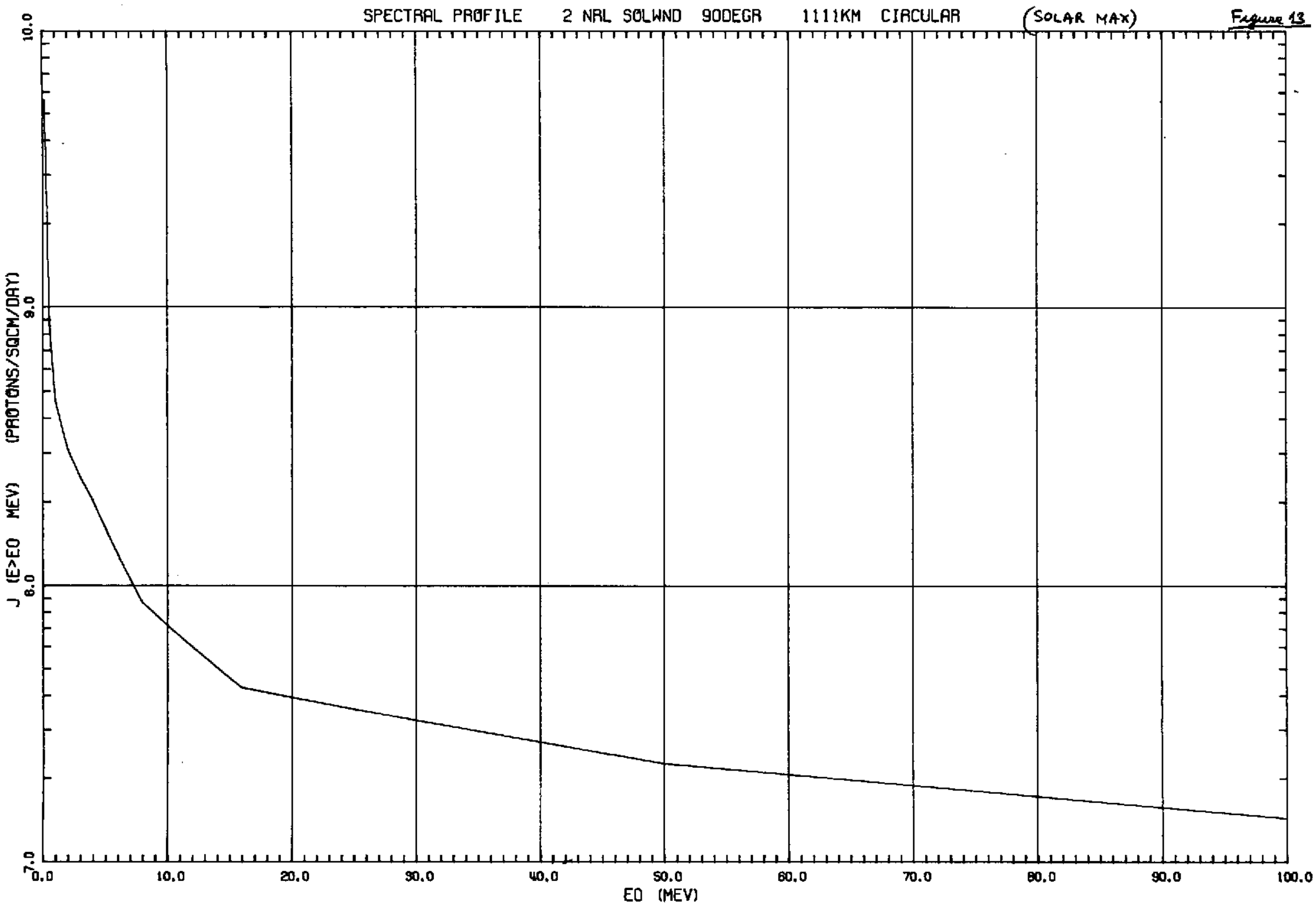
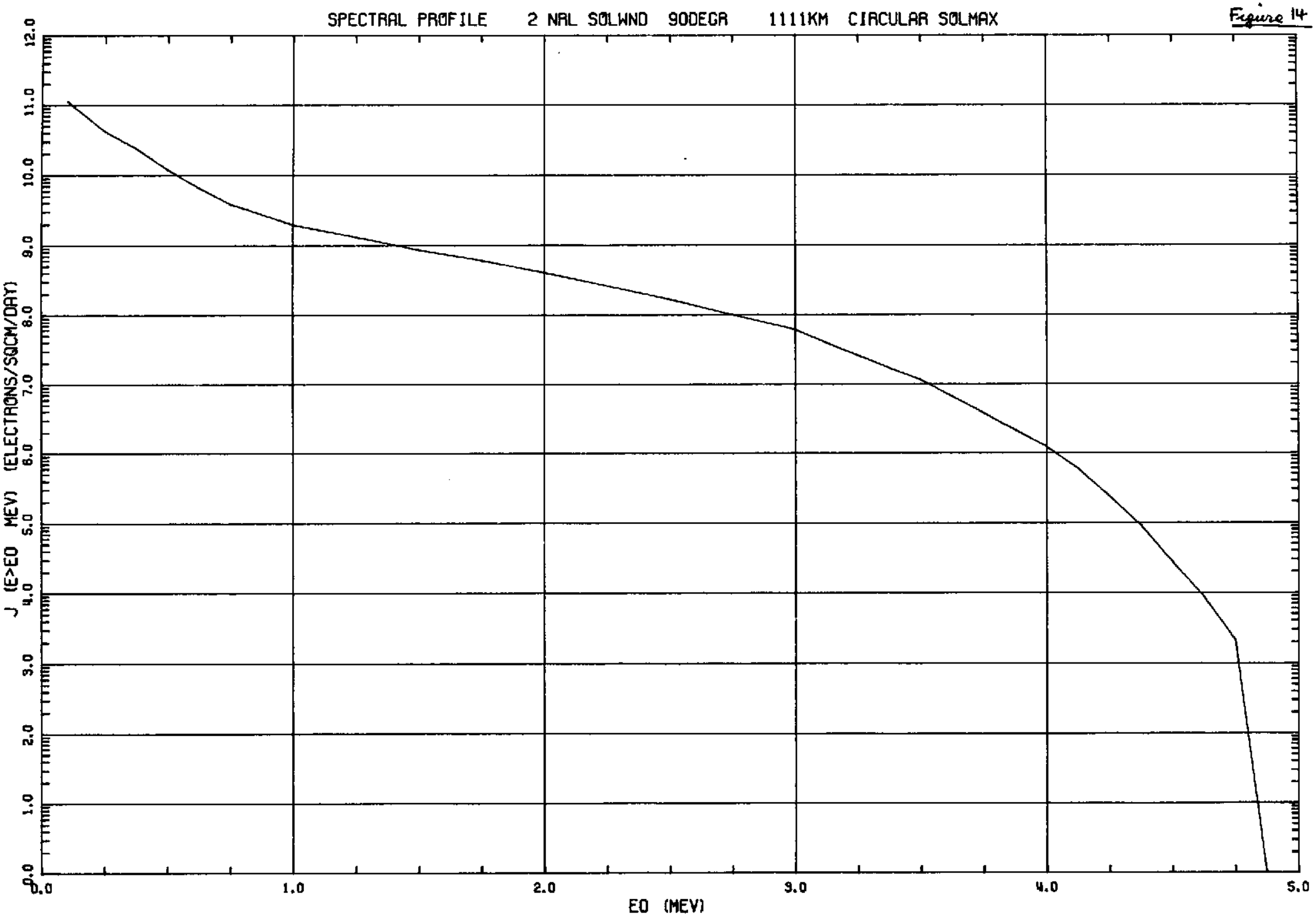

SPECTRAL PROFILE 2 NRL SOLWND 90DEGR 1111KM CIRCULAR
(SOLAR MAX)
Figure 13
J (E>EO MEV) (PROTONS/SQCM/DAY)
10.0
9.0
8.0
7.0
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
80.0
90.0
100.0
EO (MEV)

Figure 14



SPECTRAL PROFILE 2 NRL SOLWND 90DEGR 1111KM CIRCULAR SOLMAX
J (E>EO MEV) (ELECTRONS/SQCM/DAY)
EO (MEV)
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0

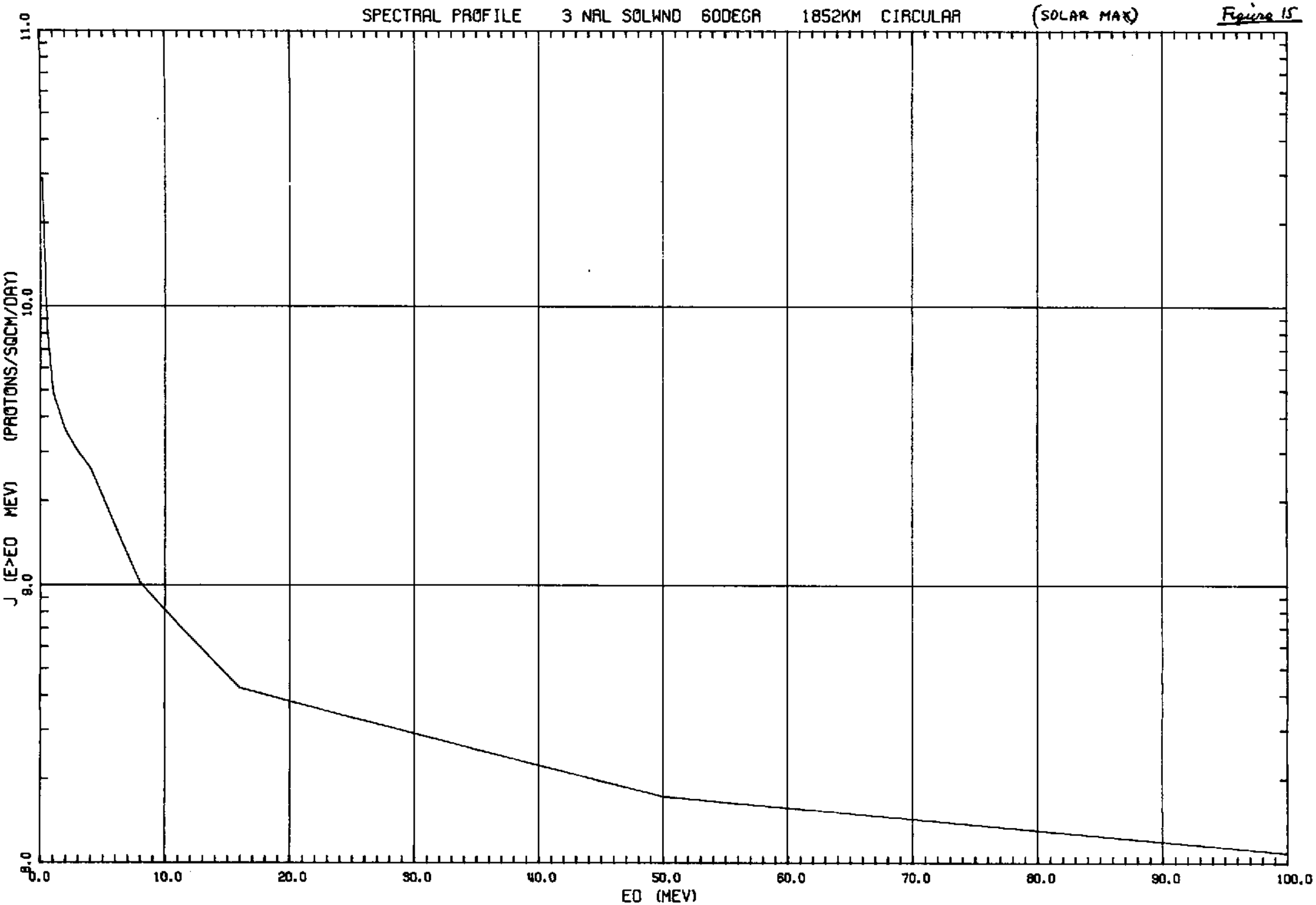
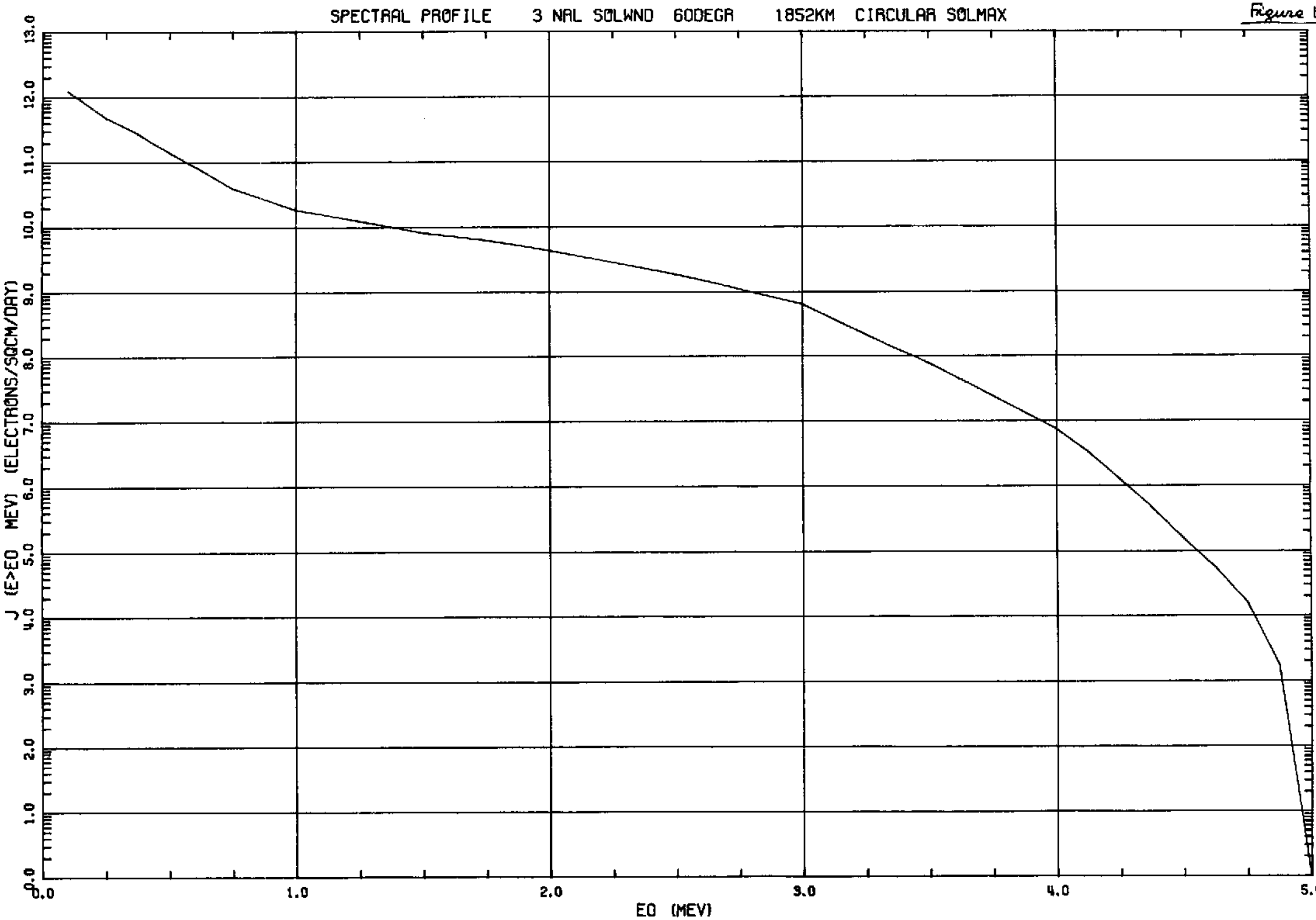

SPECTRAL PROFILE 3 NRL SOLWND 60DEGR 1852KM CIRCULAR
(SOLAR MAX)
Figure 15
J (E>EO MEV) (PROTONS/SQCM/DAY)
11.0
10.0
9.0
8.0
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
80.0
90.0
100.0
EO (MEV)

Figure 16



SPECTRAL PROFILE 3 NAL SOLWND 60DEGR 1852KM CIRCULAR SOLMAX
J (E>E0 MEV) (ELECTRONS/SQCM/DAY)
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
13.0
0.0
1.0
2.0
3.0
4.0
5.0
E0 (MEV)

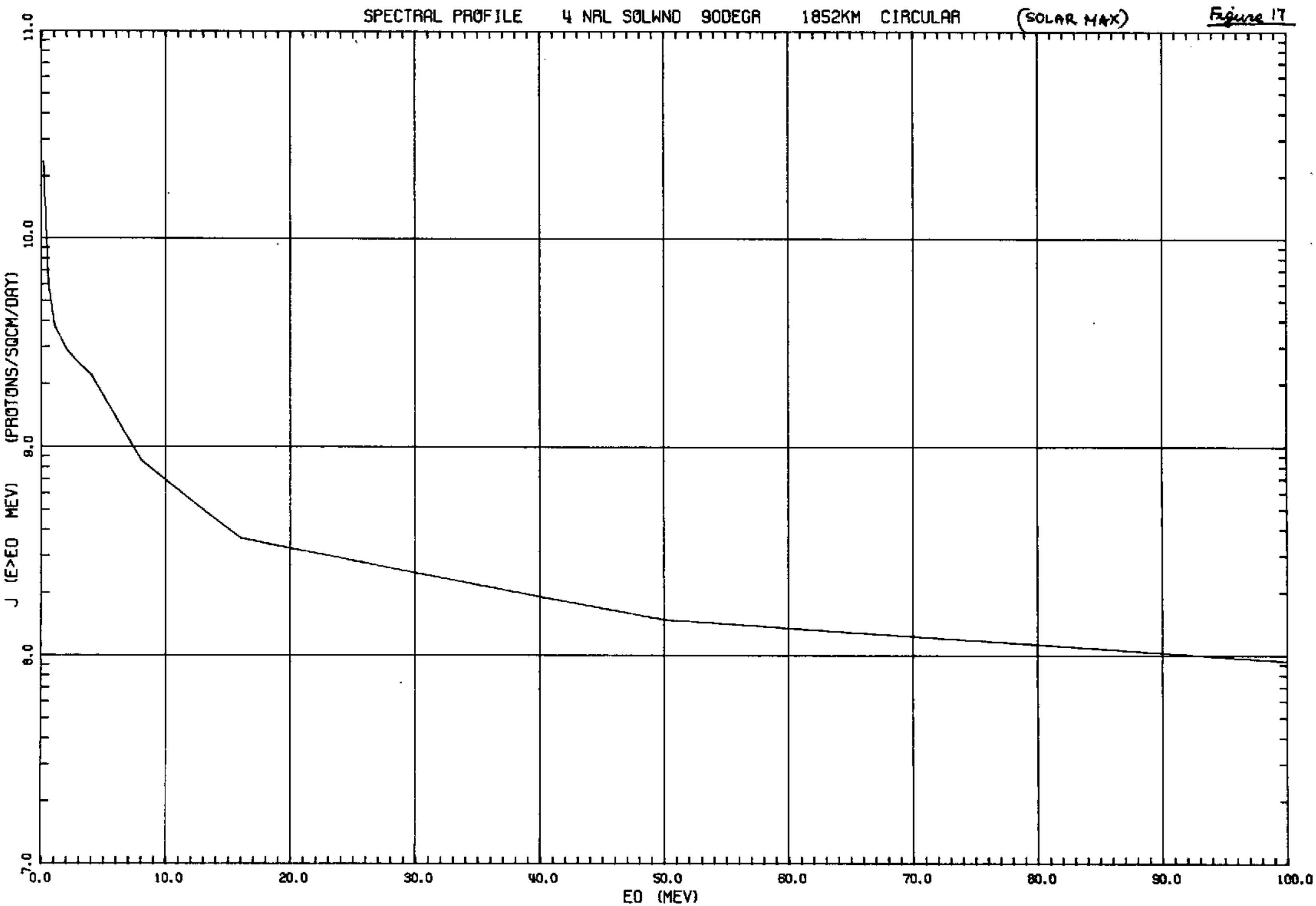
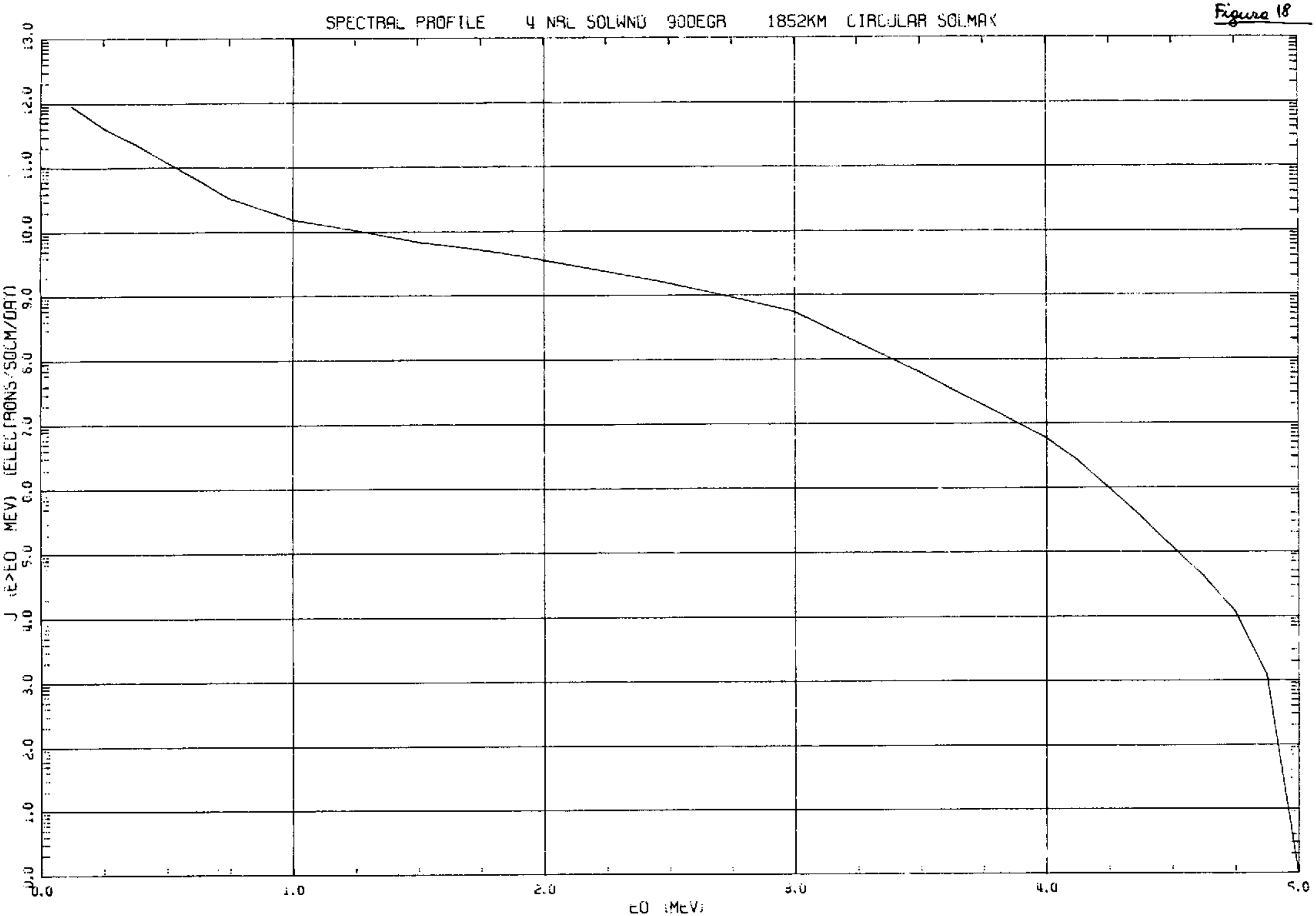
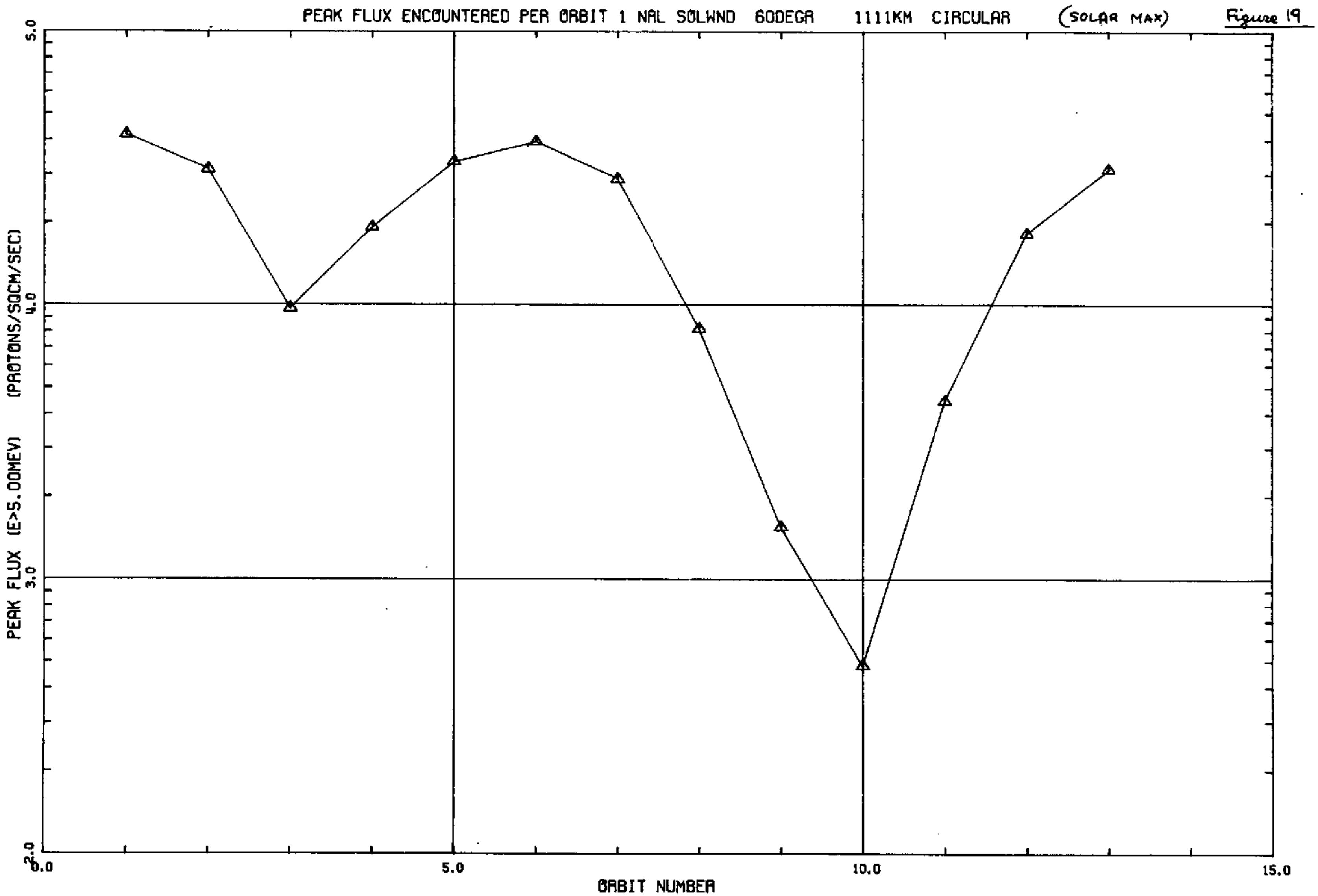

SPECTRAL PRØFILE 4 NRL SØLWND 90DEGR 1852KM CIRCULAR
(SOLAR MAX)
Figure 17
J (E>EO MEV) (PROTONS/SQCM/DAY)
11.0
10.0
9.0
8.0
7.0
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
80.0
90.0
100.0
EO (MEV)

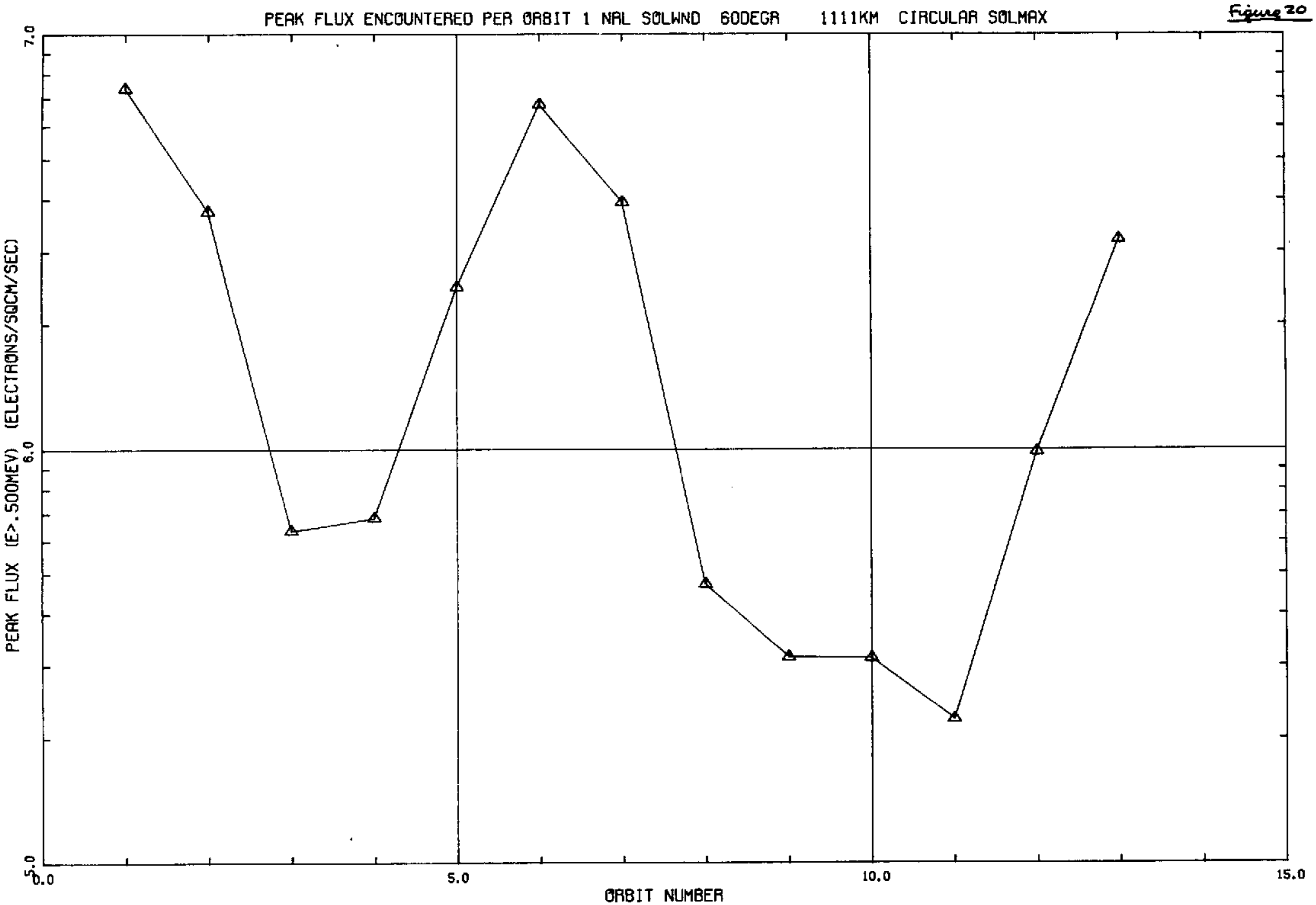
Figure 18


SPECTRAL PROFILE 4 NRL SOLWND 90DEGR 1852KM CIRCULAR SOLMAX
J (E>EO MEV) (ELECTRONS/SQCM/DAY)
EO (MEV)
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
13.0

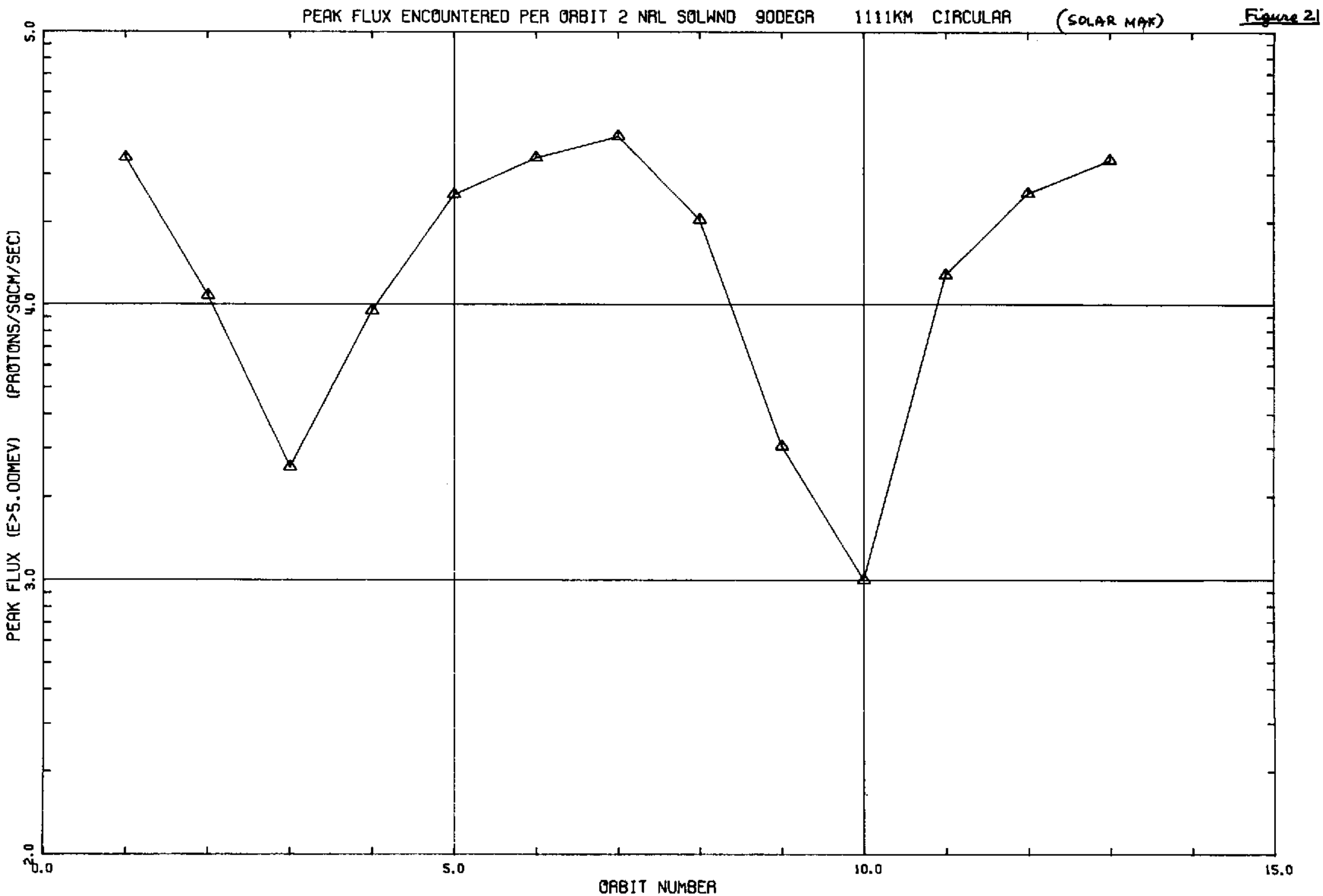


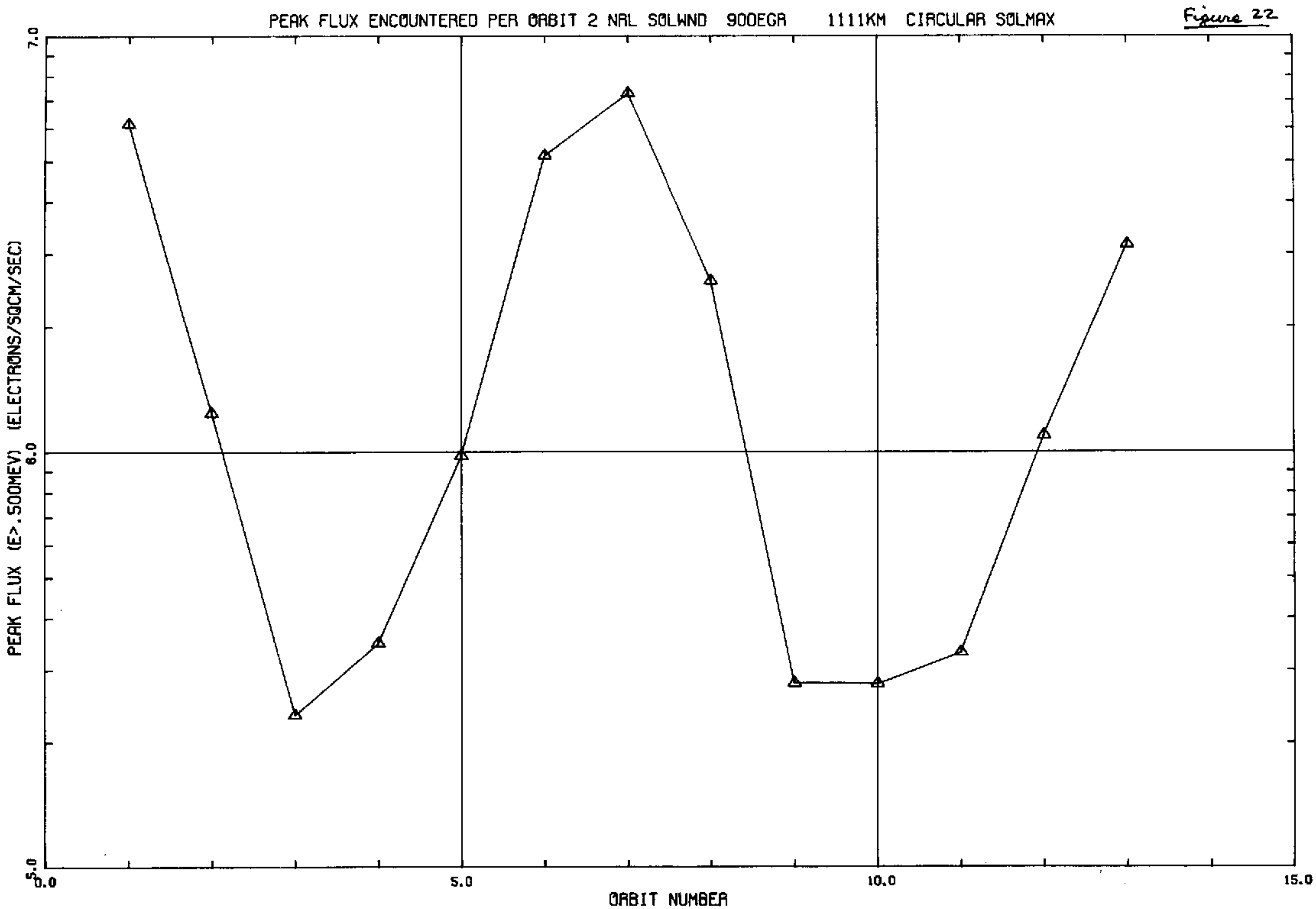
PEAK FLUX ENCOUNTERED PER ORBIT 1 NAL SOLWND 60DEGR 1111KM CIRCULAR (SOLAR MAX)
Figure 19
PEAK FLUX (E>5.00MEV) (PROTONS/SQCM/SEC)
5.0
4.0
3.0
2.0
0.0
5.0
10.0
15.0
ORBIT NUMBER

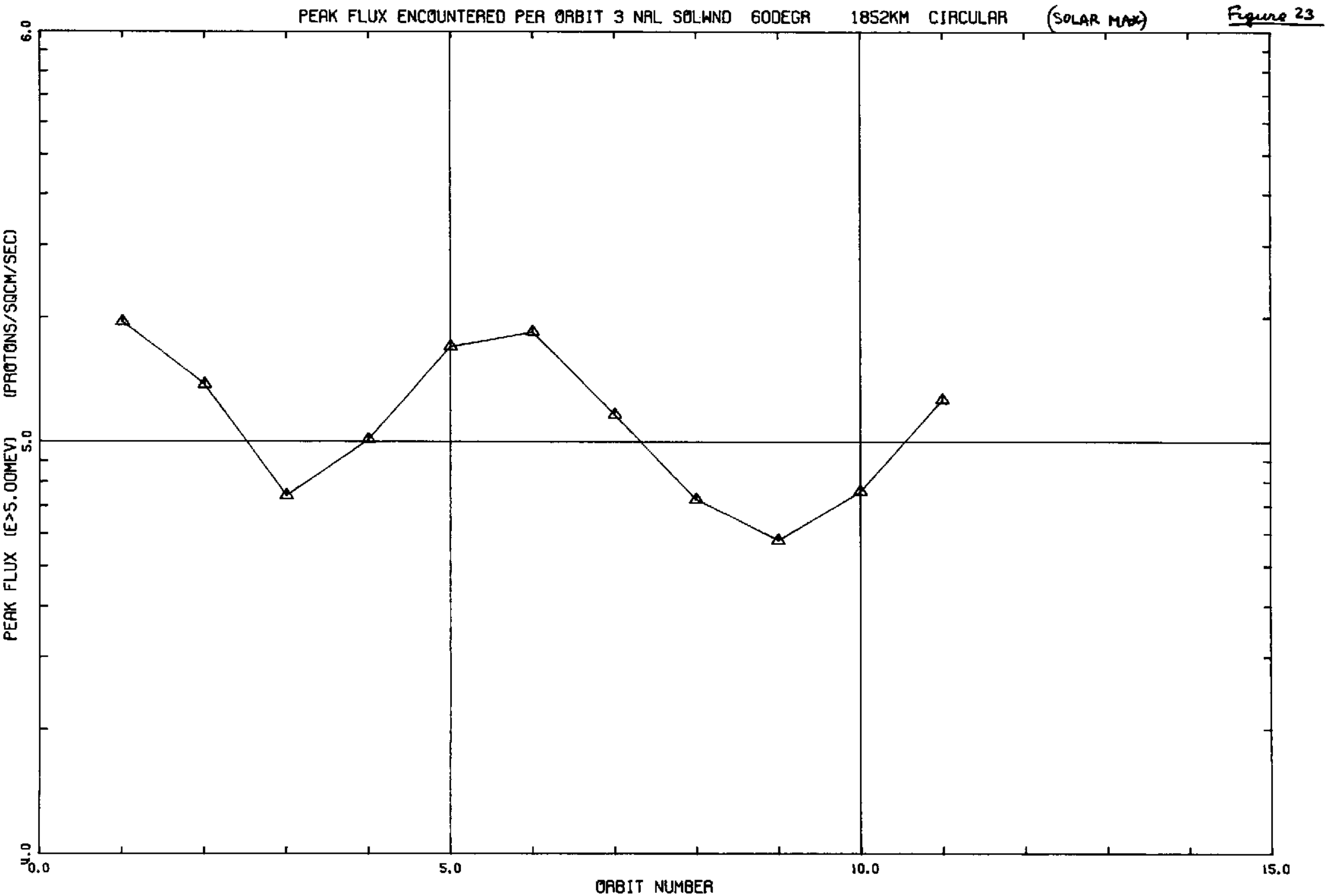
Figure 20



PEAK FLUX ENCOUNTERED PER ORBIT 1 NAL SOLWND 60DEGR 1111KM CIRCULAR SOLMAX
PEAK FLUX (E>.500MEV) (ELECTRONS/SQCM/SEC)
7.0
6.0
5.0
0.0
5.0
10.0
15.0
ORBIT NUMBER

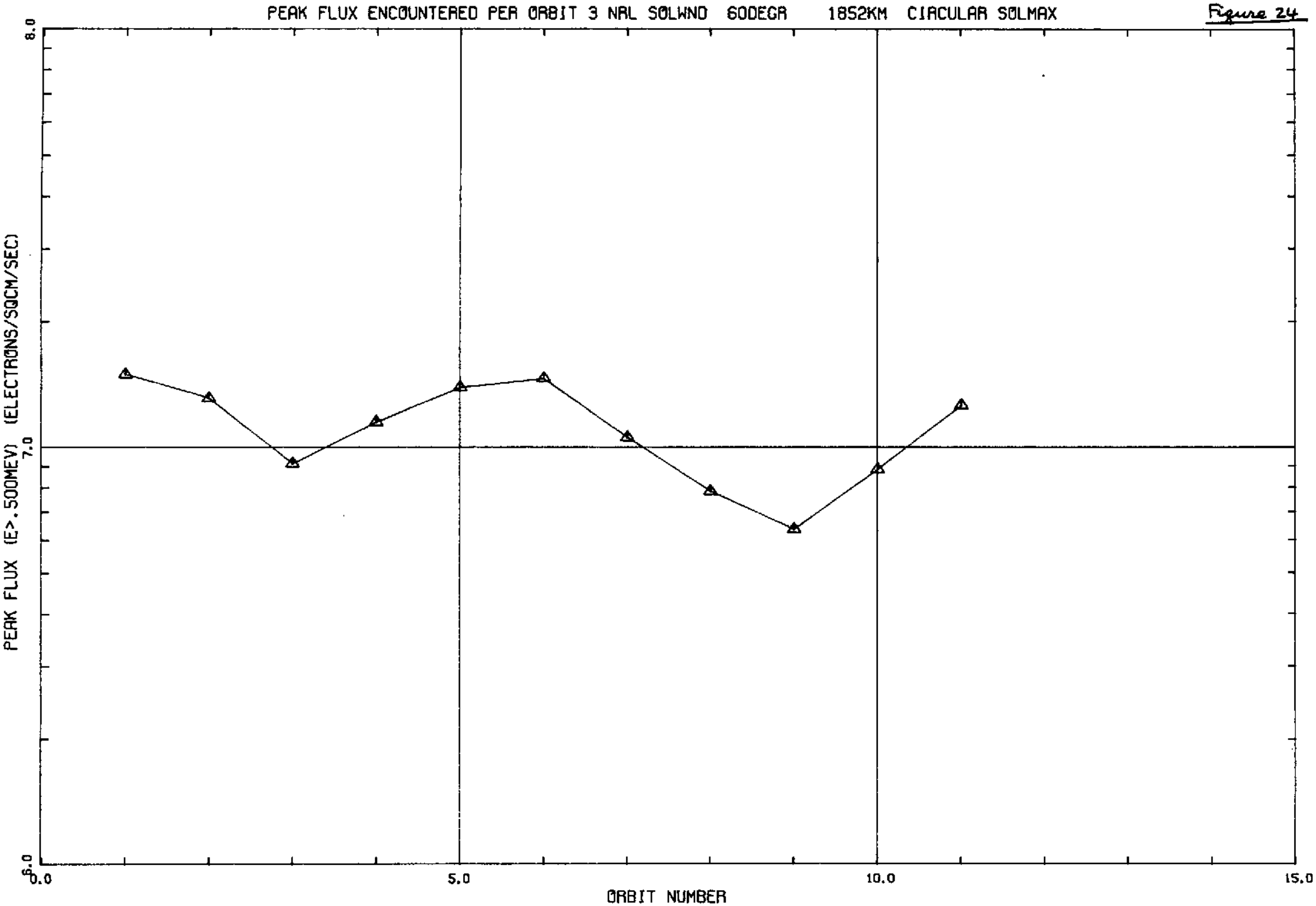

PEAK FLUX ENCOUNTERED PER ORBIT 2 NRL SOLWND 90DEGR 1111KM CIRCULAR
(SOLAR MAX)
Figure 21
PEAK FLUX (E>5.00MEV) (PROTONS/SQCM/SEC)
ORBIT NUMBER
5.0
4.0
3.0
2.0
0.0
5.0
10.0
15.0


PEAK FLUX ENCOUNTERED PER ORBIT 2 NRL SOLWND 90DEGR 1111KM CIRCULAR SOLMAX
Figure 22
7.0
6.0
5.0
PEAK FLUX (E>.500MEV) (ELECTRONS/SQCM/SEC)
0.0
5.0
10.0
15.0
ORBIT NUMBER

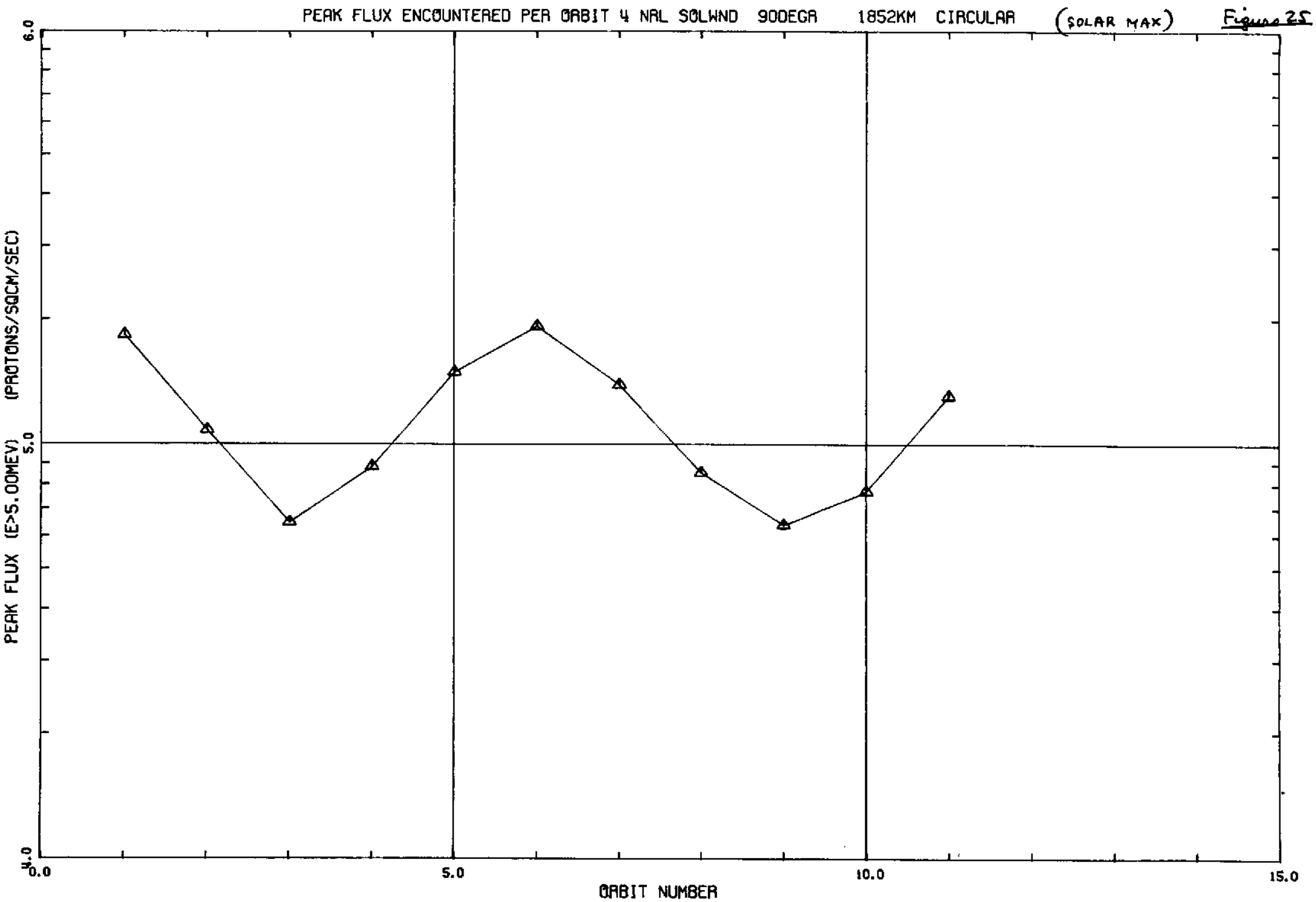


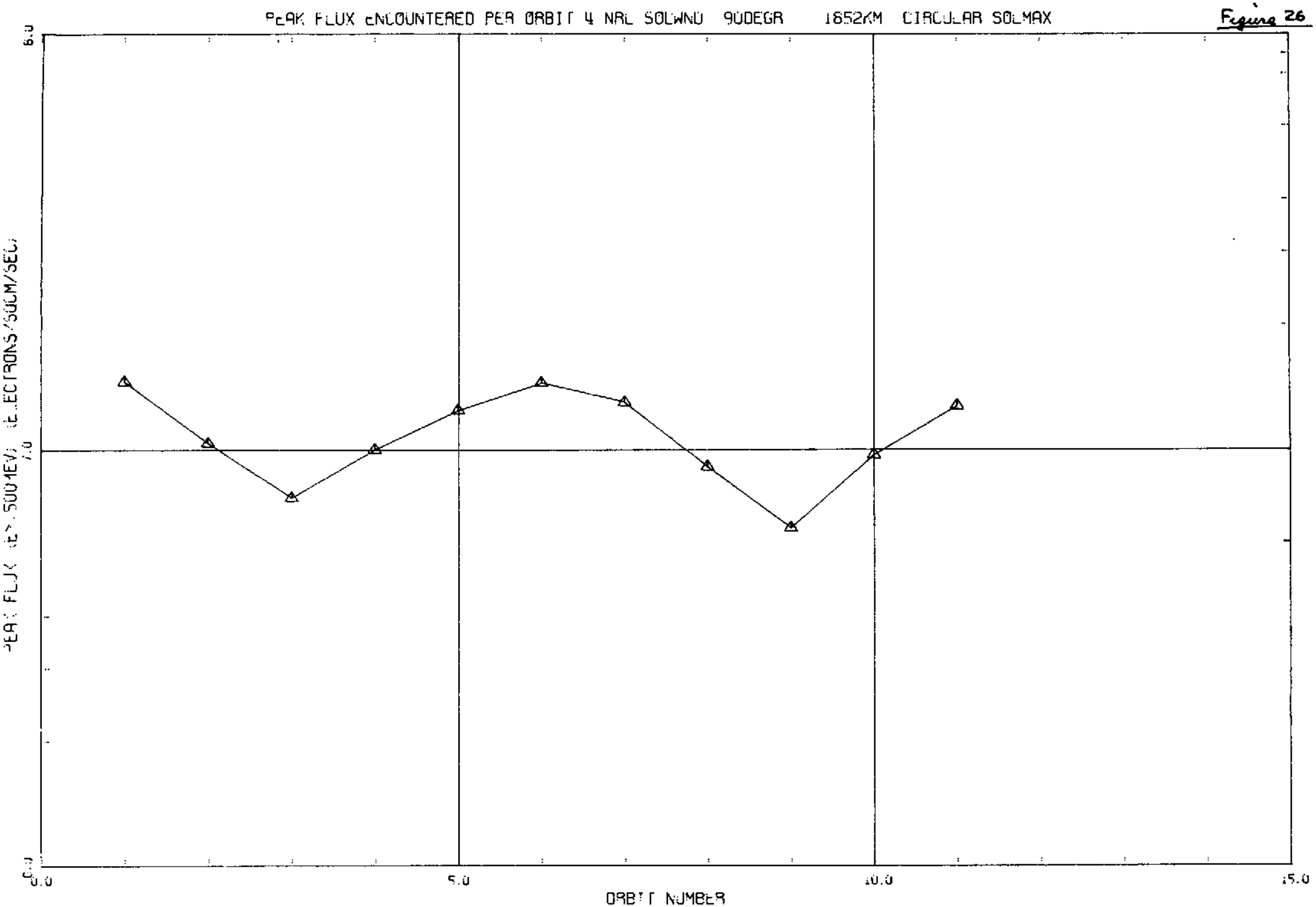
PEAK FLUX ENCOUNTERED PER ORBIT 3 NAL SOLWND 60DEGR 1852KM CIRCULAR (SOLAR MAX)
Figure 23
PEAK FLUX (E>5.00MEV) (PROTONS/SQCM/SEC)
6.0
5.0
4.0
0.0
5.0
10.0
15.0
ORBIT NUMBER

Figure 24



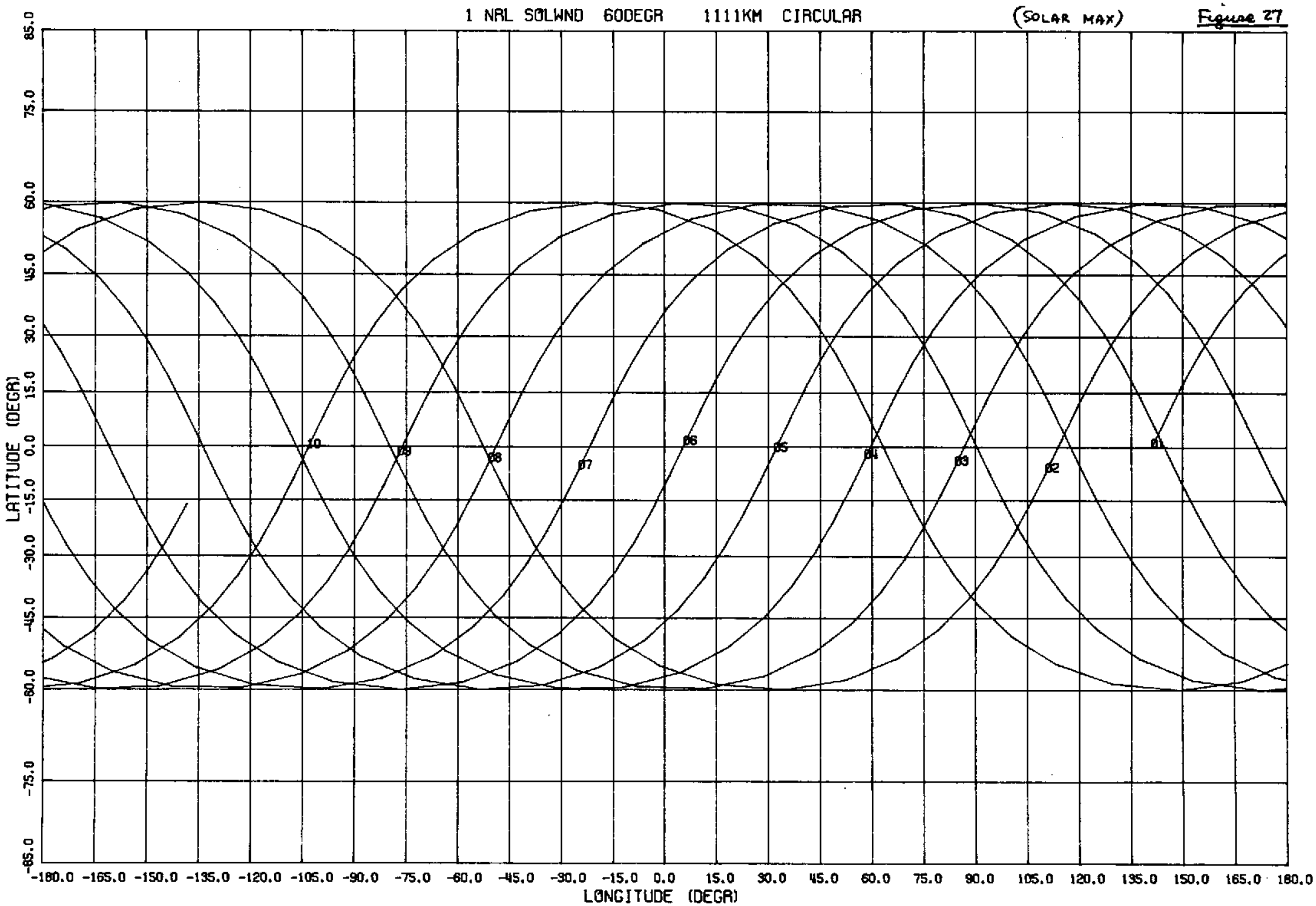
PEAK FLUX ENCOUNTERED PER ORBIT 3 NRL SOLWND 60DEGR 1852KM CIRCULAR SOLMAX
PEAK FLUX (E>.500MEV) (ELECTRONS/SQCM/SEC)
ORBIT NUMBER
8.0
7.0
6.0
0.0
5.0
10.0
15.0

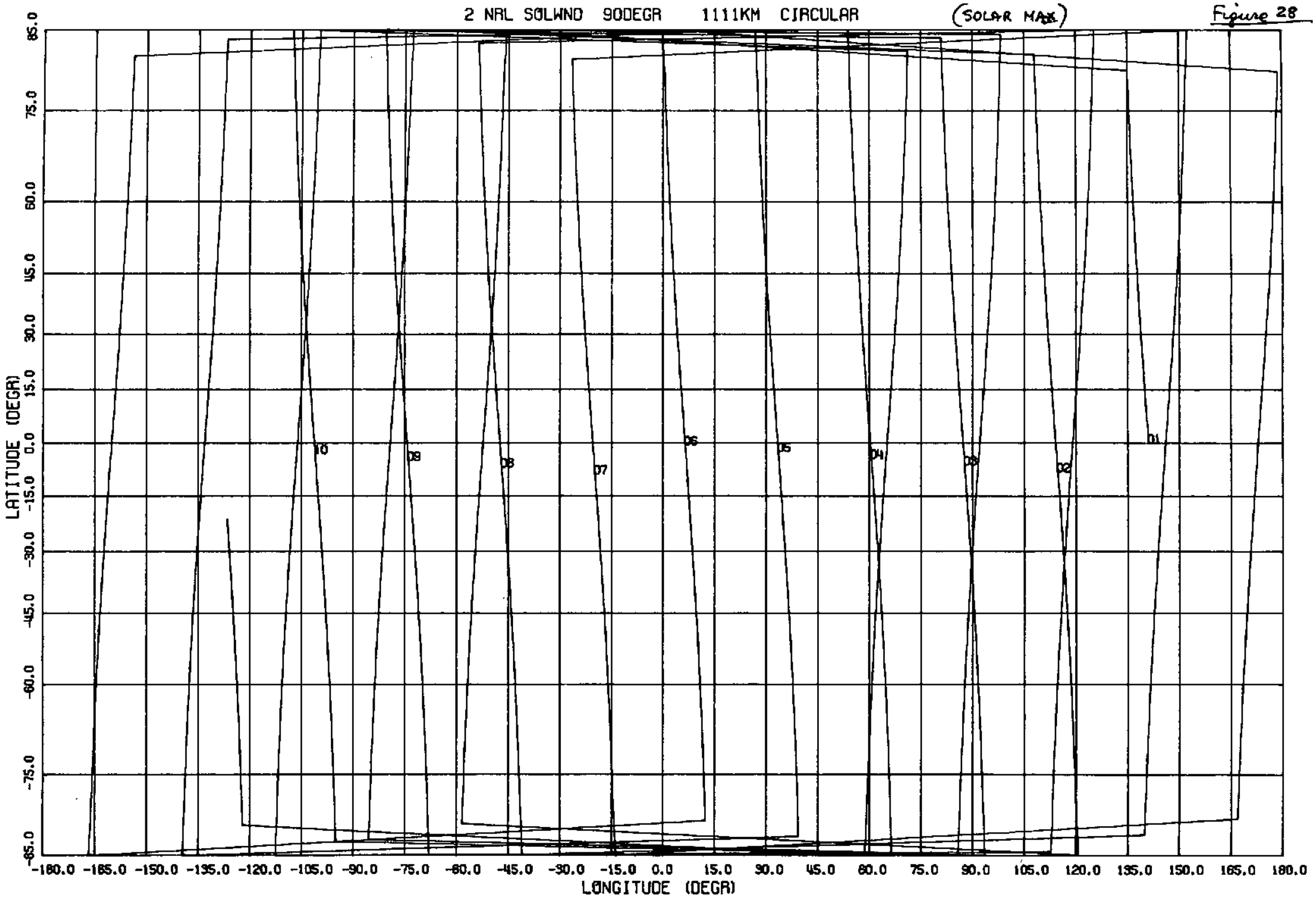

PEAK FLUX ENCOUNTERED PER ORBIT 4 NRL SOLWND 90DEGR 1852KM CIRCULAR
(SOLAR MAX)
Figure 25
PEAK FLUX (E>5.00MEV) (PROTONS/SQCM/SEC)
6.0
5.0
4.0
0.0
5.0
10.0
15.0
ORBIT NUMBER

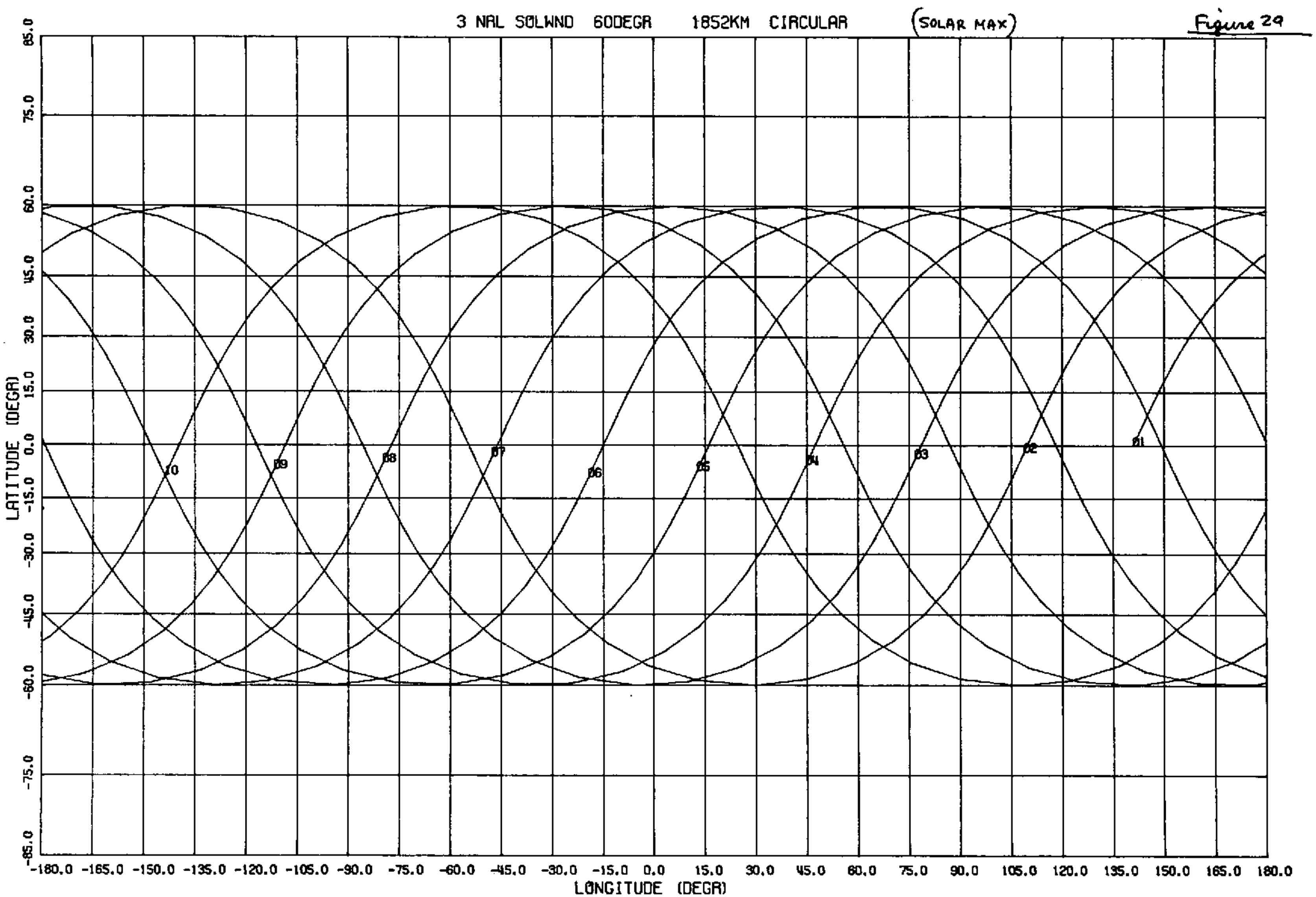


PEAK FLUX ENCOUNTERED PER ORBIT 4 NRL SOLWND 90DEGR 1852KM CIRCULAR SOLMAX
PEAK FLUX (E> .500MEV) (ELECTRONS/SQCM/SEC)
ORBIT NUMBER
0.0
5.0
10.0
15.0
7.0

Figure 26

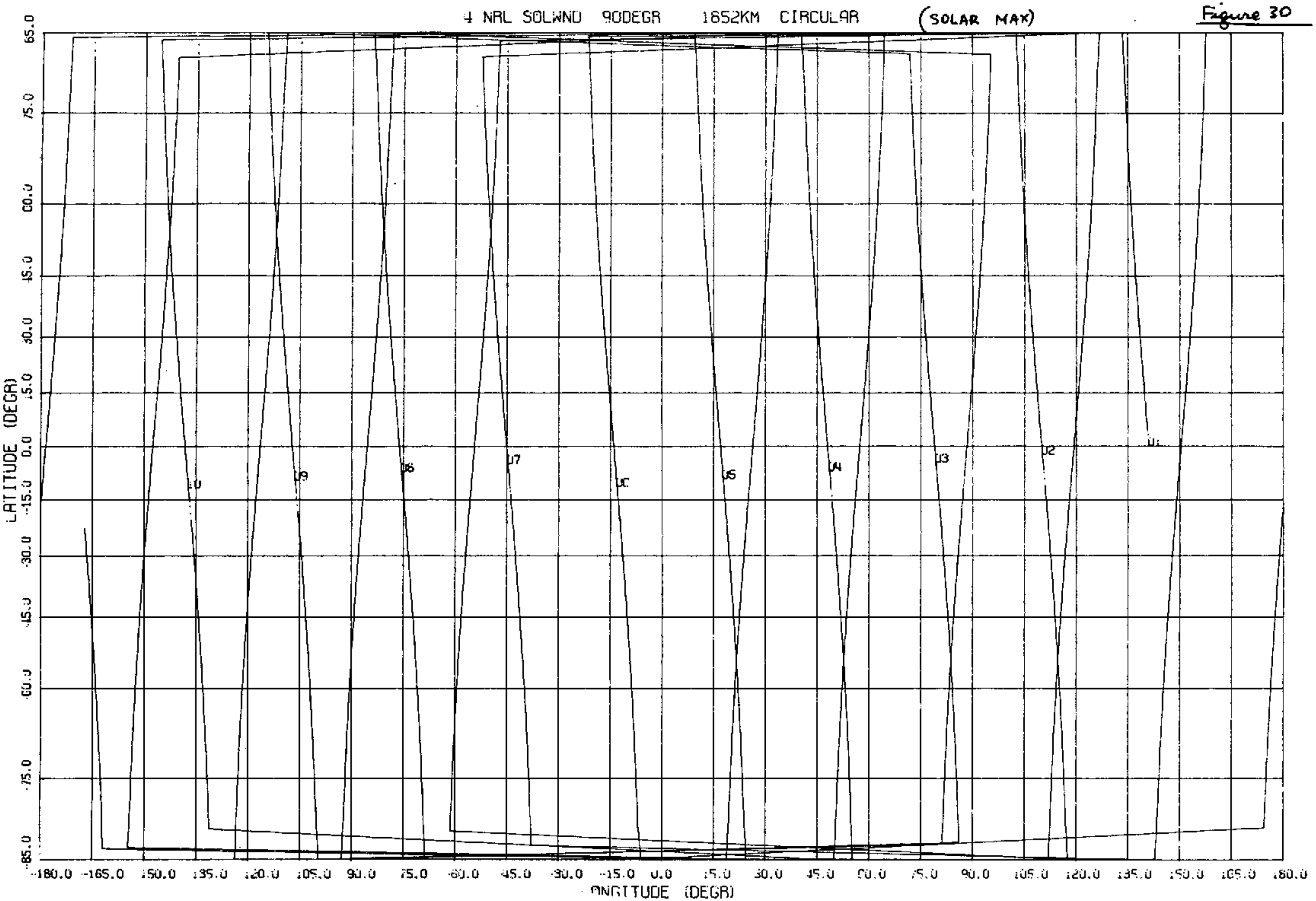

1 NRL SOLWND 60DEGR 1111KM CIRCULAR
(SOLAR MAX)
Figure 27
LATITUDE (DEGR)
LONGITUDE (DEGR)
85.0
75.0
60.0
45.0
30.0
15.0
0.0
-15.0
-30.0
-45.0
-60.0
-75.0
-85.0
-180.0 -165.0 -150.0 -135.0 -120.0 -105.0 -90.0 -75.0 -60.0 -45.0 -30.0 -15.0 0.0 15.0 30.0 45.0 60.0 75.0 90.0 105.0 120.0 135.0 150.0 165.0 180.0
10
09
08
07
06
05
04
03
02
01

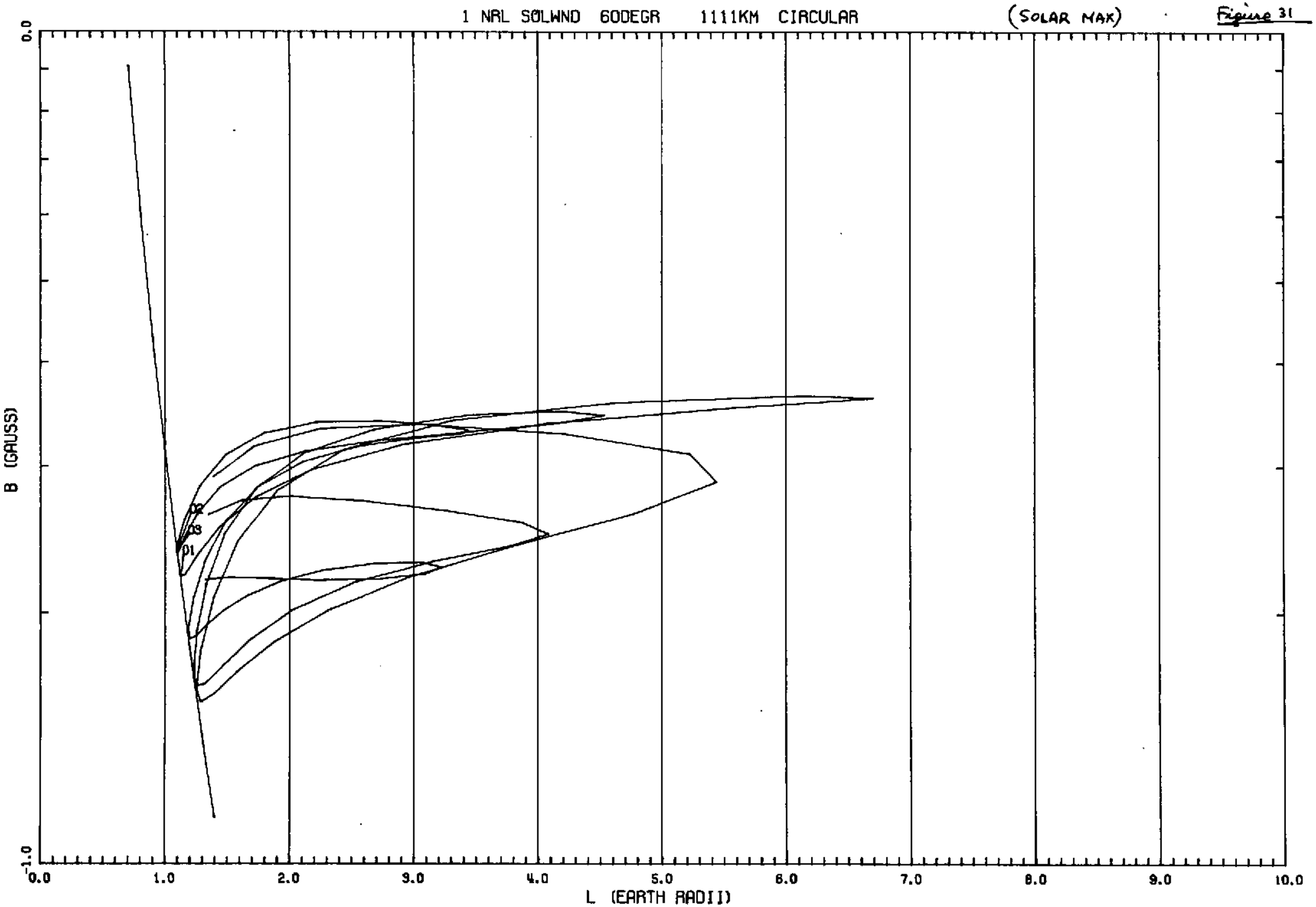

2 NRL SOLWND 90DEGR 1111KM CIRCULAR
(SOLAR MAX)
Figure 28
LATITUDE (DEGR)
LONGITUDE (DEGR)
85.0
75.0
60.0
45.0
30.0
15.0
0.0
-15.0
-30.0
-45.0
-60.0
-75.0
-85.0
-180.0 -165.0 -150.0 -135.0 -120.0 -105.0 -90.0 -75.0 -60.0 -45.0 -30.0 -15.0 0.0 15.0 30.0 45.0 60.0 75.0 90.0 105.0 120.0 135.0 150.0 165.0 180.0
01
02
03
04
05
06
07
08
09
10



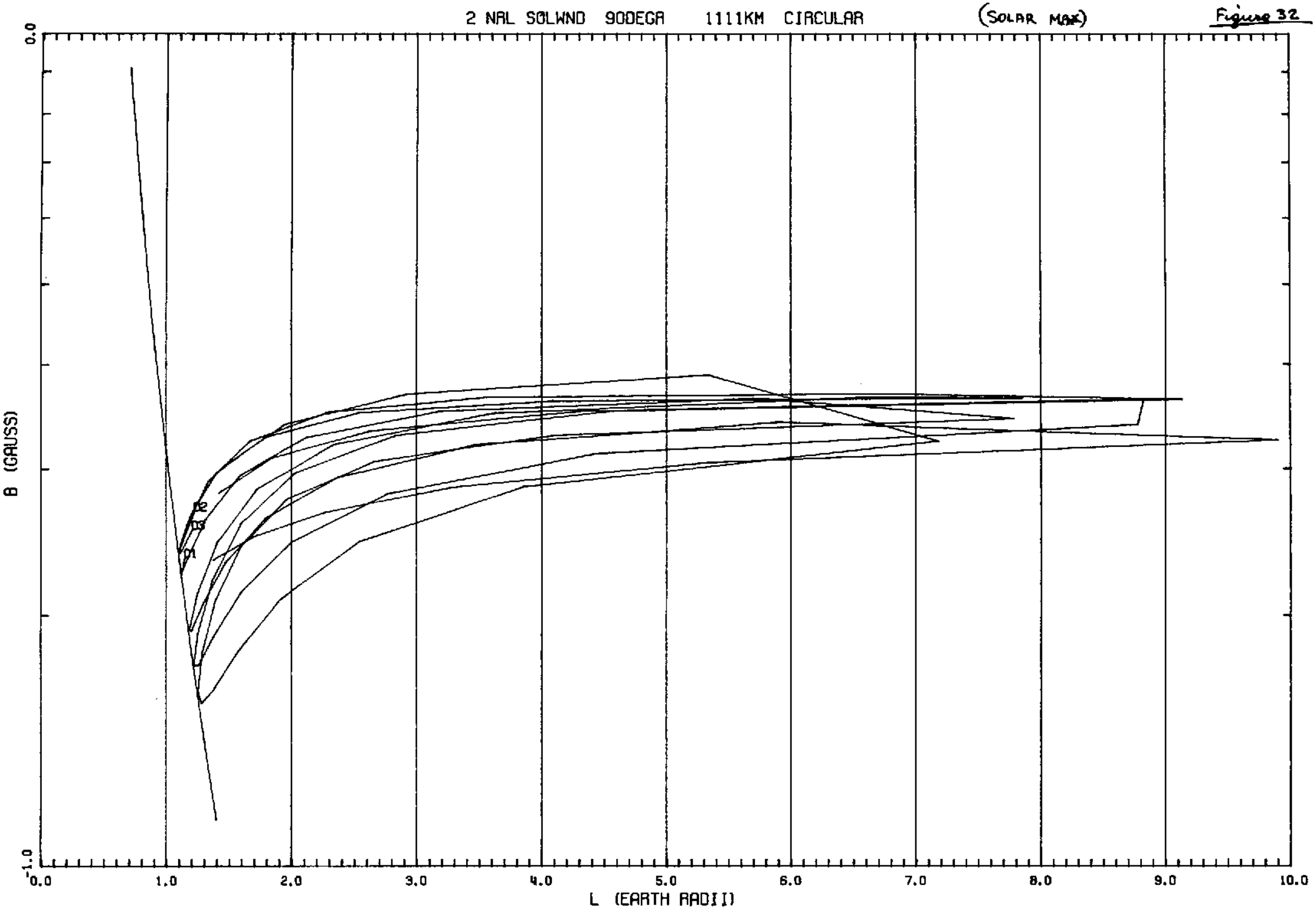
3 NRL SØLWND 60DEGR 1852KM CIRCULAR
(SOLAR MAX)
Figure 29
LATITUDE (DEGR)
LØNGITUDE (DEGR)
85.0
75.0
60.0
45.0
30.0
15.0
0.0
-15.0
-30.0
-45.0
-60.0
-75.0
-85.0
-180.0 -165.0 -150.0 -135.0 -120.0 -105.0 -90.0 -75.0 -60.0 -45.0 -30.0 -15.0 0.0 15.0 30.0 45.0 60.0 75.0 90.0 105.0 120.0 135.0 150.0 165.0 180.0
10
09
08
07
06
05
04
03
02
01

Figure 30

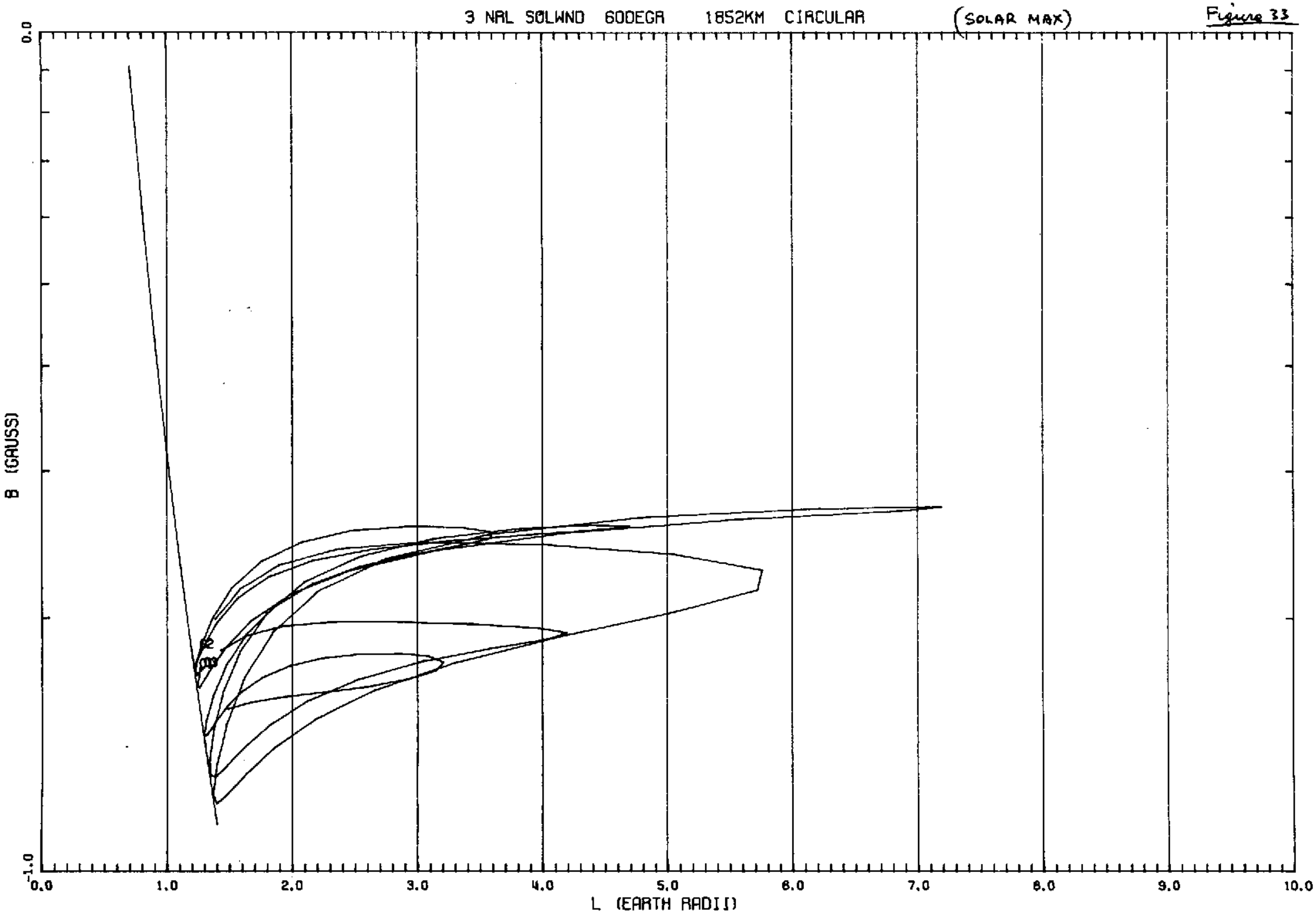

4 NRL SOLWND 90DEGR 1652KM CIRCULAR
(SOLAR MAX)
LATITUDE (DEGR)
LONGITUDE (DEGR)
-180.0 -165.0 -150.0 -135.0 -120.0 -105.0 -90.0 -75.0 -60.0 -45.0 -30.0 -15.0 0.0 15.0 30.0 45.0 60.0 75.0 90.0 105.0 120.0 135.0 150.0 165.0 180.0
U9
U8
U7
U5
U4
U3
U2

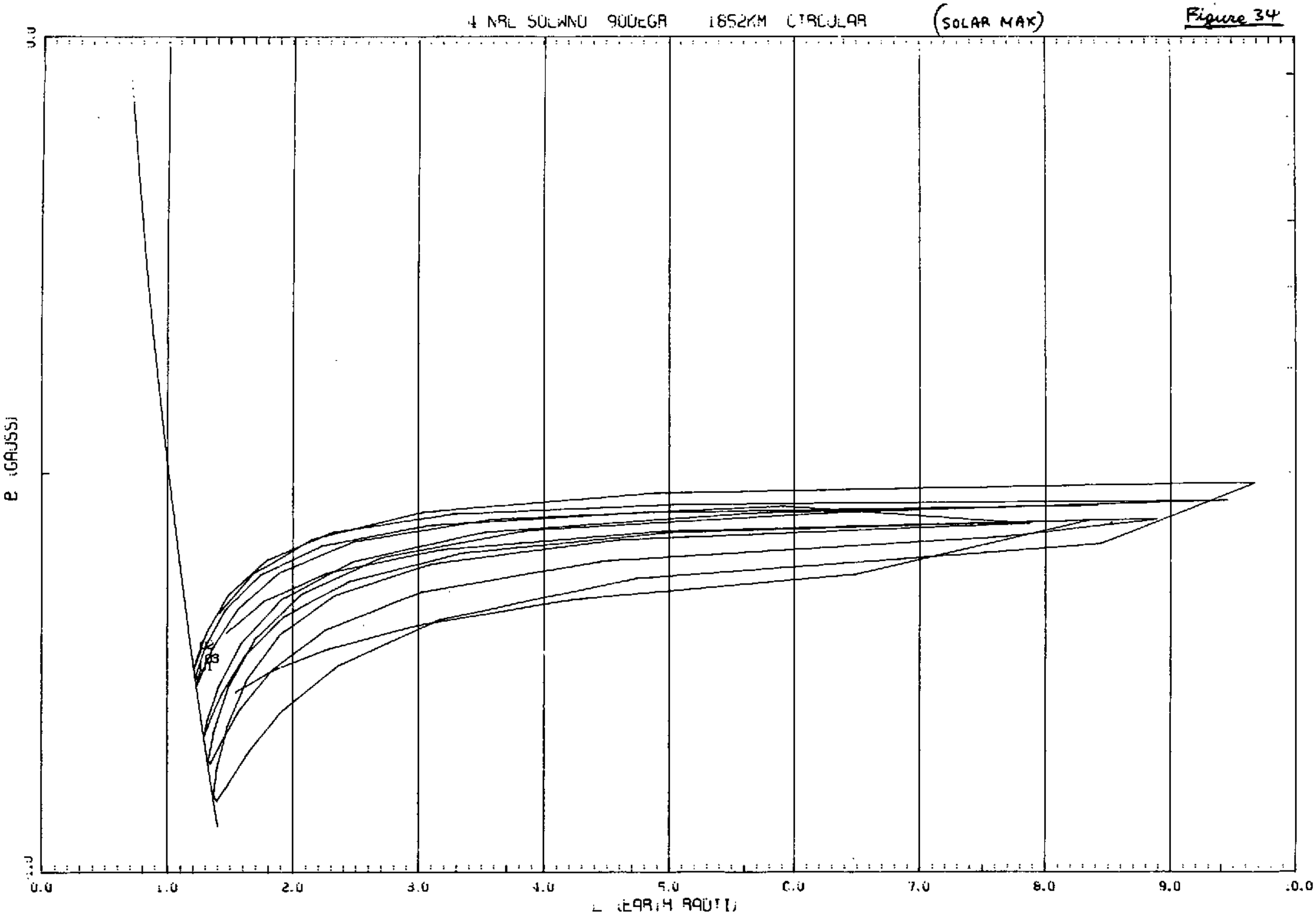


1 NRL SOLWND 60DEGR 1111KM CIRCULAR
(SOLAR MAX)
Figure 31
B (GAUSS)
0.0
-1.0
L (EARTH RADII)
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
02
03
01



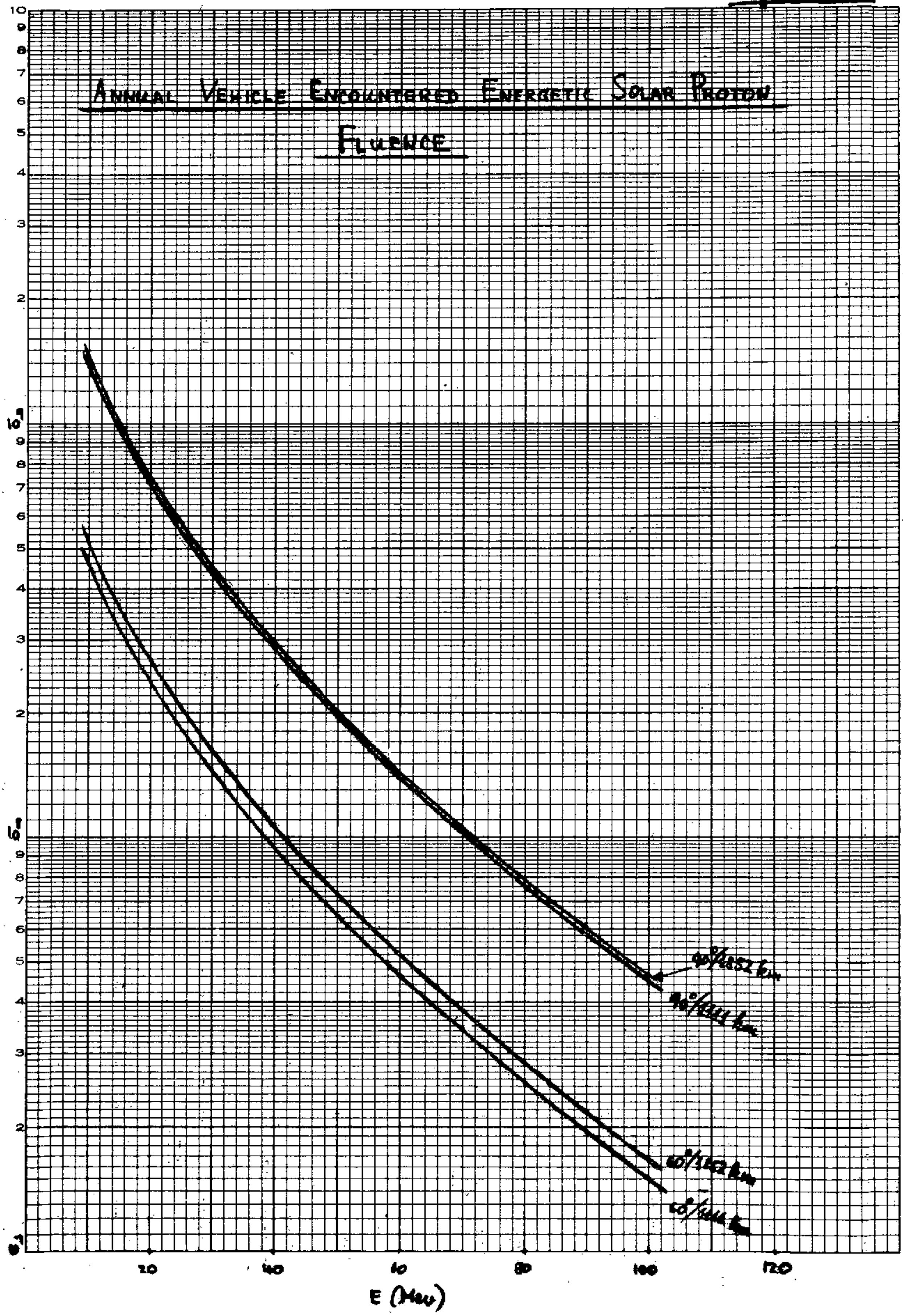
2 NRL SOLWND 90DEGR 1111KM CIRCULAR
(SOLAR MAX)
Figure 32
B (GAUSS)
0.0
-1.0
L (EARTH RADII)
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0


3 NRL SØLWND 600EGR 1852KM CIRCULAR
(SOLAR MAX)
Figure 33
B (GAUSS)
L (EARTH RADII)
0.0
-1.0
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0



4 NRL SOLWND 90DEGR 1852KM CIRCULAR (SOLAR MAX)
Figure 34
B (GAUSS)
L (EARTH RADII)
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0

Figure 35


ANNUAL VEHICLE ENCOUNTERED ENERGETIC SOLAR PROTON
FLUENCE
90°/1852 km
60°/1852 km
E (Mev)
20
40
80
100
120