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GAMMA-RAY PRODUCTION DUE TO  
NEUTRON INTERACTIONS WITH NITROGEN  
FOR INCIDENT NEUTRON ENERGIES  
BETWEEN 2.0 AND 20 MeV:  
TABULATED DIFFERENTIAL CROSS SECTIONS

J. K. Dickens  
T. A. Love  
G. L. Morgan

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J. K. Dickens, T. A. Love and G. L. Morgan

APRIL 1973

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CONTENTS

	<u>Page No.</u>
Abstract . . . . .	1
Introduction . . . . .	1
Experimental Conditions . . . . .	1
Data Reduction . . . . .	3



GAMMA-RAY PRODUCTION DUE TO NEUTRON INTERACTIONS WITH NITROGEN  
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J. K. Dickens, T. A. Love and G. L. Morgan

ABSTRACT

Numerical values of differential cross sections for gamma rays produced by neutron reactions with nitrogen have been obtained for neutron energies between 2.0 and 20 MeV for  $\theta = 90$  and 125 deg using a NaI spectrometer. These data consist of neutron and gamma-ray production group cross-section values of  $d^2\sigma/d\omega dE$  for  $0.7 \leq E_\gamma \leq 10.5$  MeV, with gamma-ray intervals ranging from 20 keV for  $E_\gamma \leq 1$  MeV to 250 keV for  $E_\gamma \sim 9$  MeV. Neutron energy intervals varied from 1 MeV for  $E_n = 2$  to 10 MeV to 3 MeV for  $E_n = 14$  to 20 MeV.

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INTRODUCTION

As part of a continuing program for determining numerical values of gamma-ray production cross sections for neutron-induced reactions, we have measured the absolute differential cross sections for gamma rays produced by neutron interactions with nitrogen. The data are presented in this report in tabular and graphical forms.

EXPERIMENTAL CONDITIONS

The data for neutron interactions with nitrogen were considerably more difficult to obtain and extract than those data previously reported in this program.<sup>1</sup> Difficulties were encountered because (a) we could not use a self-supporting elemental sample, and (b) the cross sections being measured were known to be an order of magnitude smaller<sup>2</sup> than those measured for the elements in the reports of Ref. 1. Consequently, the background contributions were considerably larger than our previous experience. These considerations required a much longer period of data

accumulation as well as more detailed and lengthy background correction analyses.

After several unsuccessful attempts to obtain satisfactory data using samples of liquid N<sub>2</sub> (maintained in low-mass Dewars), we investigated the feasibility of using some nitrogenous compound for the sample. The chosen sample was in the chemical form of 1.3 kg of beryllium nitride (Be<sub>3</sub>N<sub>2</sub>) obtained in irregularly shaped chunks<sup>3</sup> having a density of  $\sim 1.3 \text{ gm/cm}^3$ . The sizes of the pieces ranged from grain sized to  $\sim 15 \text{ cm}^3$ . Smaller-sized material was not used because of the beryllium-poisoning hazard. A sample holder was fabricated from aluminum having inside dimensions of 28 cm wide  $\times$  26 cm high  $\times$  2.5 cm thick. Windows of 0.012-cm-thick mylar were fastened to the front and back of the sample holder, and the sample material was loosely packed into this holder. The sample material did not fill the holder and (as expected) was not of uniform thickness.

The effective sample thickness was measured by determining the attenuation of the  $E_\gamma = 59.4\text{-keV}$  gamma ray emitted by a <sup>241</sup>Am source. This source was collimated so as to scan a spot of  $\sim 2$  by 3 cm on the sample. Scans were made on six different areas of the sample which collectively accounted for about 80% of the part of the sample which had been in the beam spot. The beam area at the sample position was a radius of  $\sim 6$  cm (Ref. 4) and the sample was mounted at 45 deg with respect to the beam line for  $\theta_\gamma = 125$  deg and at 60 deg for  $\theta_\gamma = 90$  deg. Photon cross sections for  $E_\gamma = 60 \text{ keV}$  were obtained from Storm and Israel.<sup>5</sup> These were, for Be, 2.24 b/atom, and for N, 4.22 b/atom, which were combined for Be<sub>3</sub>N<sub>2</sub> to give 7.58 b/atom (of N). The value for Be was checked by measuring the attenuation through a known Be plate. This plate was previously measured to have a thickness of

0.151 atoms/b; the value obtained from the gamma-ray attenuation measurement was 0.154 atoms/b. One should not assume that the photon cross section for N is that accurate; the authors of Ref. 5 suggest  $\pm$  10% uncertainty in their tabulated values. However, using this method as the best available results in a total sample thickness of 0.066 atoms/barn, of which  $\sim$  0.001 atoms/b is due to the mylar window, leaving 0.065 atoms of N/barn as the average sample thickness. The range of density for the six measurements was 0.0607 to 0.0730 atoms/barn, and the standard deviation of the six measurements was  $\sim$  0.005 atoms/barn. Considering all aspects of the measurement of sample thickness, we assign an uncertainty of  $\pm$  10% the value of 0.065 atoms/barn.

The experimental data-taking system (based on a 12.5- by 12.5-cm NaI crystal spectrometer) has been discussed in detail in Ref. 4, and in that paper the uncertainty assigned to beam-flux measurements was  $\pm$  10%. Our estimate for the overall uncertainty in absolute  $d^2\sigma/d\omega dE$  values in this report is  $\pm$  15%.

#### DATA REDUCTION

By methods discussed in Ref. 4, for each gamma-ray scattering angle spectra were accumulated for two basic configurations, (a) the foreground or normal configuration and (b) the background which is the same as the foreground with the addition of a 5.1-cm-thick Pb shadow bar placed between the sample and the detector. The total background spectrum, suitably normalized, was subtracted from the foreground spectrum. The net spectrum was unfolded using the FERD code and after normalization to experimental parameters and corrections for gamma-ray self-absorption gave values of  $d^2\sigma/d\omega dE$  for 125 mesh points of the response matrix used in FERD. The differential

cross-section values were determined as the middle value of the calculated confidence interval, with half of the confidence interval designated as the associated relative error.

For the elements reported in Ref. 1, this process was sufficient to produce the final tabulated values. However, for the present sample these data had to be corrected further. For  $E_n > 5$  MeV contributions were observed due to the 4.43-MeV gamma ray in  $^{12}\text{C}$  and (weaker) due to the 6.13-MeV gamma ray in  $^{16}\text{O}$ . These two elements are in the mylar window. These contributions were determined by measuring the gamma-ray yield with the empty frame (including mylar) in place. Another correction had to be made because of the appearance of an  $E_\gamma = 2.61$  MeV gamma ray in the background spectrum. This gamma ray was ascribed to inelastic excitation of  $^{208}\text{Pb}$  in the lead shadow bar by neutrons elastically scattered from the sample. The corrections were estimated by unfolding separately the foreground and background spectra. The unfolded background results were suitably normalized to the unfolded foreground (for each neutron energy bin) so that the differences for the six mesh points in the vicinity of  $E_\gamma = 2.61$  MeV were approximately those obtained in the foreground-background unfolding. Then for these mesh points a "new" background was estimated by ignoring the 2.61-MeV peak. The resulting "new" differences were then computed. The magnitude of this correction was  $\sim 5\%$  of the magnitude of the 2.3-MeV peak and was quite significant for the mesh points in question.

Another correction to the data involved the observation of weak gamma rays ascribed to aluminum. The strength of these lines suggested an Al contribution consistent with an effective Al sample thickness of  $\approx 0.0003$  atoms/b, i.e.,  $\sim 0.5\%$  the thickness of the  $\text{Be}_3\text{N}_2$  sample. This background

could have been due to penumbra-neutron interactions with the frame, or else to scattered neutrons impinging on the frame or on the aluminum in the shield surrounding the detector. Recently we obtained and reduced data for neutron interactions with Al for  $\theta_\gamma = 125$  deg. These unfolded gamma-ray spectra were compared point by point with the  $\text{Be}_3\text{N}_2$  unfolded gamma-ray spectra, and corrections to the latter were made for those mesh points for which the Al data suggested a significant contribution. In particular, for  $E_n$  between 2 and 4 MeV, the Al lines dominated the spectra, and data for  $E_\gamma \leq 1.6$  MeV were discarded because of the very large uncertainties which resulted after the subtraction of the Al gamma rays. Certain data points for other  $E_n$  and  $E_\gamma$  were similarly affected, and the resulting cross sections were similarly treated. The tables that follow include statements noting which regions of  $E_\gamma$  were not reported, i.e., set equal to zero.

The only remaining correction necessary to obtain that portion of the gamma-ray production due to neutron interactions with nitrogen is to correct for that due to beryllium. We were aware that for  $4 \leq E_n \leq 11$  MeV, there are no gamma rays reported known due to  $n + \text{Be}$  reactions.<sup>2,6</sup> The low-lying levels in  ${}^9\text{Be}$  are known to decay predominantly by neutron emission; the first-excited state at  $E_x = 1.67$  MeV has a measured  $\gamma$ - to n-emission ratio of  $\sim 0.02$ .<sup>7</sup> However, because of the smallness of the cross sections for nitrogen, we ran the same experiment for the Be plate mentioned above. This experiment was run for two days and  $\theta_\gamma = 125$  deg compared to  $> 2$  weeks required for each  $\theta_\gamma$  for the  $\text{Be}_3\text{N}_2$ . There was a very weak indication of a 1.7-MeV gamma ray; otherwise all other gamma-ray peaks observed (all of which were weak) could definitely be ascribed to background effects. We cannot be certain that the results presented in this experiment are due entirely to the

nitrogen in the  $\text{Be}_3\text{N}_2$  sample, especially in view of the small cross sections measured. However, the measured yield for the  $E_\gamma = 1.7\text{-MeV}$  gamma ray in the Be-plate experiment is  $< 0.5\%$  of that for the 1.7-MeV gamma ray in the  $\text{Be}_3\text{N}_2$  experiment, and it is unlikely there is any contribution for other  $E_\gamma$  in the  $\text{Be}_3\text{N}_2$  experiment due to beryllium.

It was evident even before these corrections were made that the relative uncertainties were quite large for many individual values of  $d^2\sigma/d\omega dE$ , especially at high and low values of incident neutron energy and for large gamma-ray energies. Therefore, to reduce these uncertainties and the apparent fluctuation in the data, data for some adjacent mesh points were combined. This was done on an individual basis for each neutron energy bin at each scattering angle.

The following graphs show the unfolding gamma-ray spectra thus obtained. Included on the graphs are comparison spectra obtained using the recent evaluation of Young and Foster<sup>8</sup> (ENDF/B Material 4133 Mod 3) as the evaluated data set. The gamma-ray file of this data set consists of excitation functions for 45 discrete gamma rays; there is no continuum in the file. For each neutron-energy bin an average evaluated cross section was determined for each individual gamma ray in the file. These cross sections were then folded (smeared) by the intrinsic gamma-ray energy dependent window function (a gaussian distribution) for the NaI spectrometer and the expected yield calculated at each original mesh point to arrive at the expected comparison spectrum for each neutron-energy bin. A more complete report on the comparison with evaluation is in progress.<sup>9</sup>

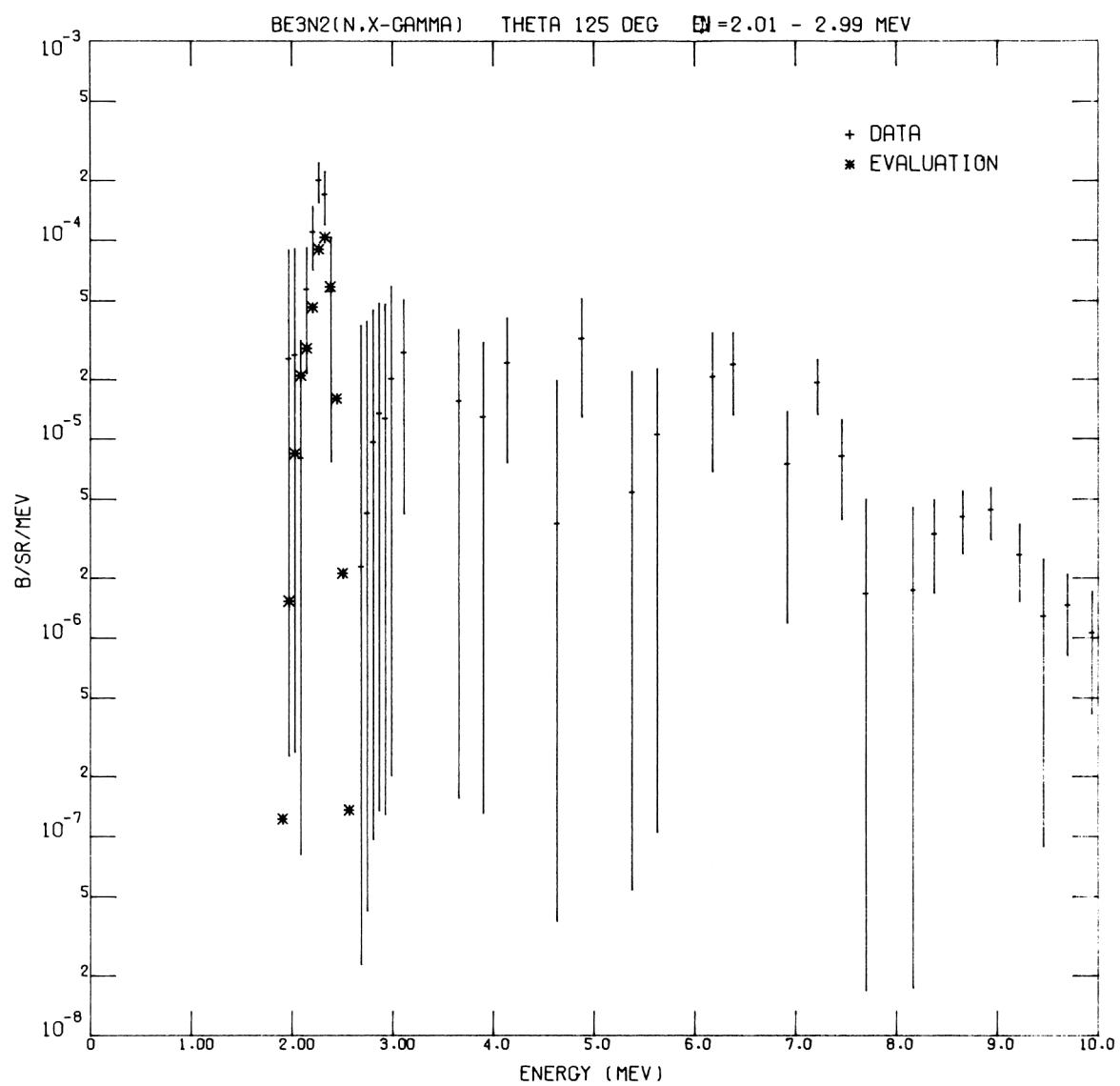
The computer tables which follow the graphs give the numerical values of these data. The first set of tables contains data in coarse gamma-ray energy groups of 250 or 500 keV. These data were obtained by first determining polynomial representations to the upper and lower bounds of pertinent confidence intervals and then integrating each polynomial between the desired limits on  $E_\gamma$ . This method was necessary in view of the varying bin widths in the final results. The errors indicated in these tables represent half the area of the confidence interval given by the unfolding code FERD and are over-estimates since (usually) several FERD output points were combined. The second set of tables give values of  $d^2\sigma/dEd\omega$  for up to 125 values of  $E_\gamma$ . The quoted errors do not include an absolute error of about 15% estimated above. The relative errors for cross sections corresponding to adjacent neutron energy groups should be less than 10%.

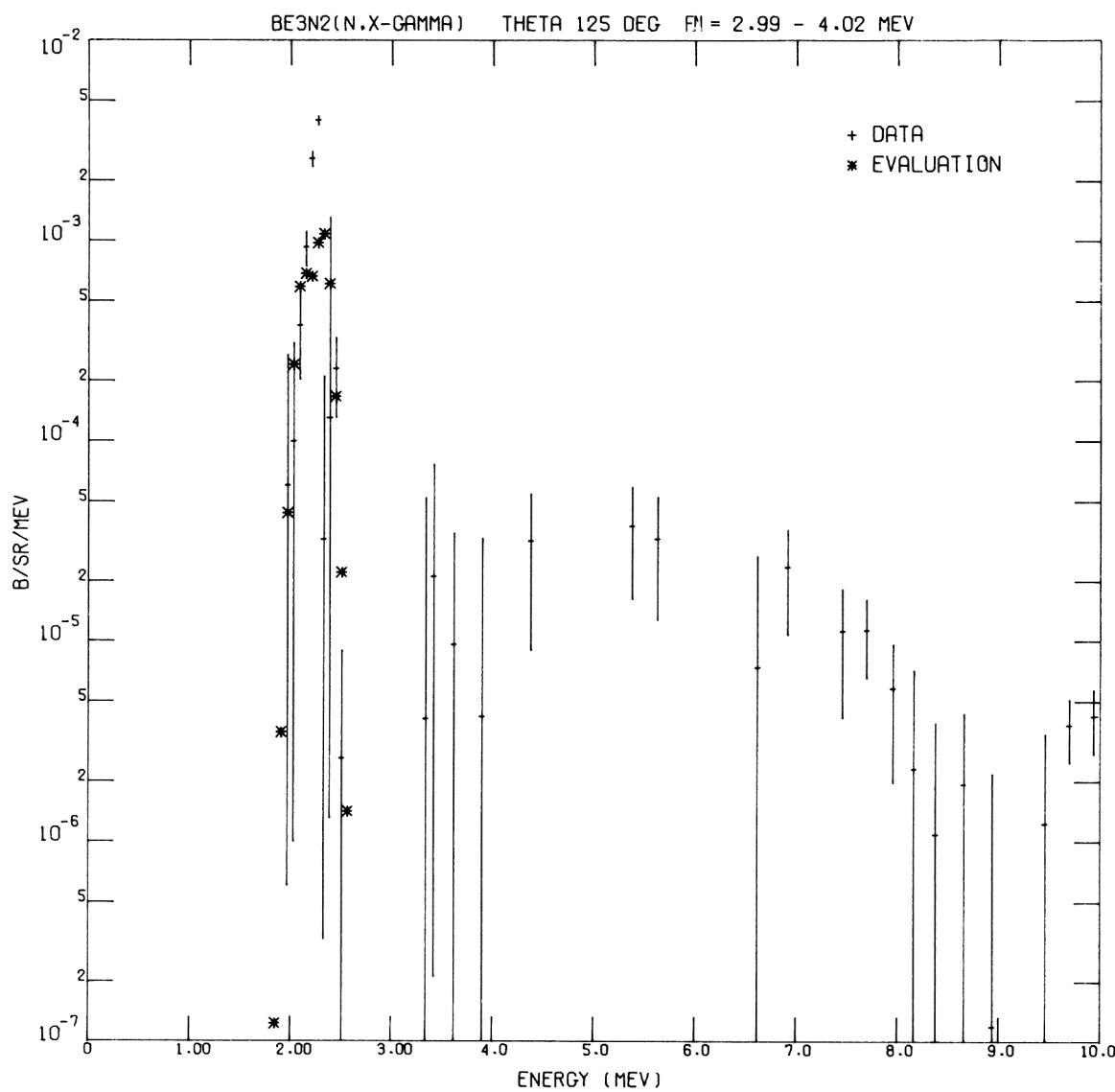
#### ACKNOWLEDGEMENTS

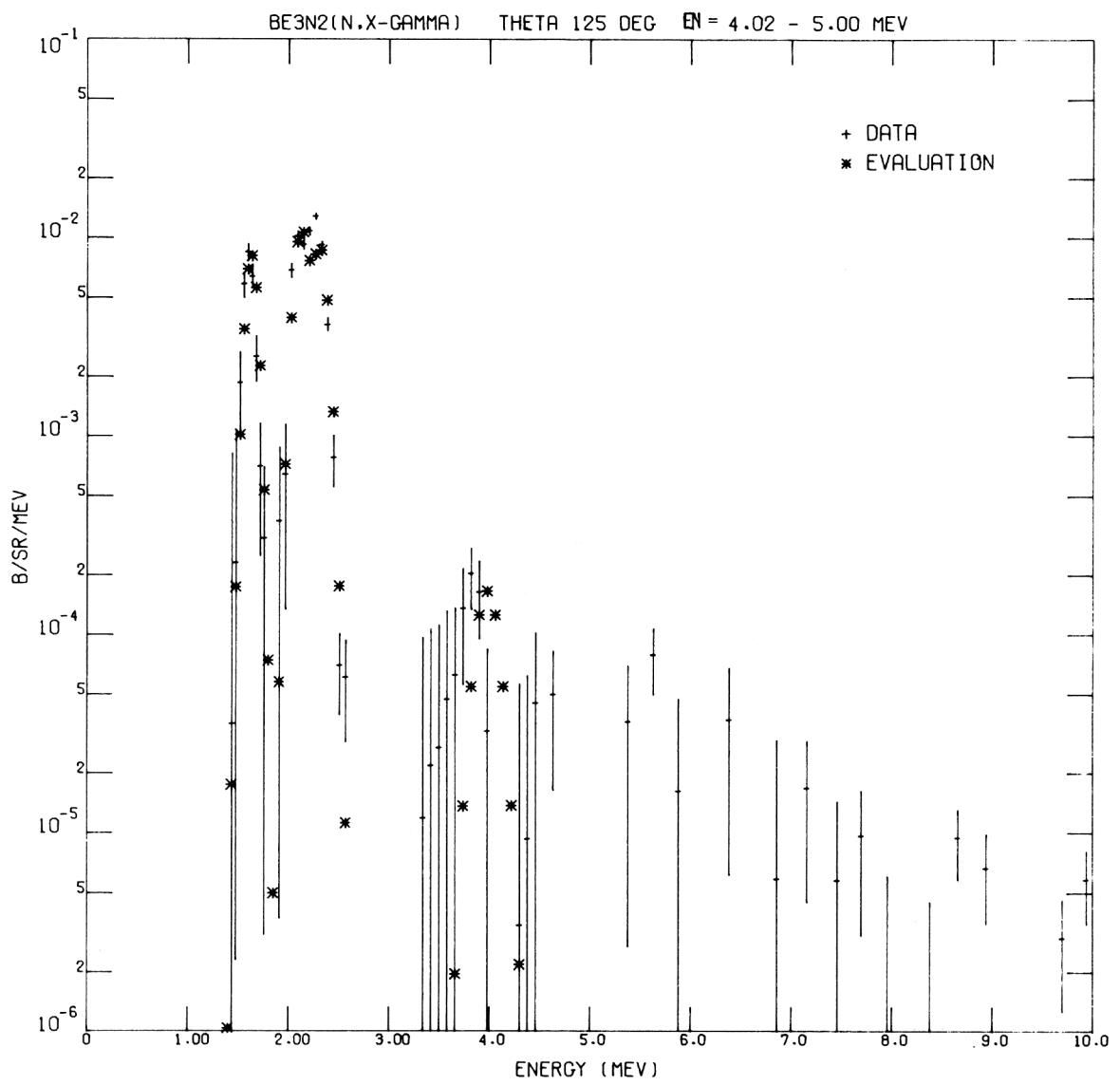
We express our appreciation to H. A. Todd and his group for excellent accelerator operation and to H. Weaver for assistance in preparation of the sample holder.

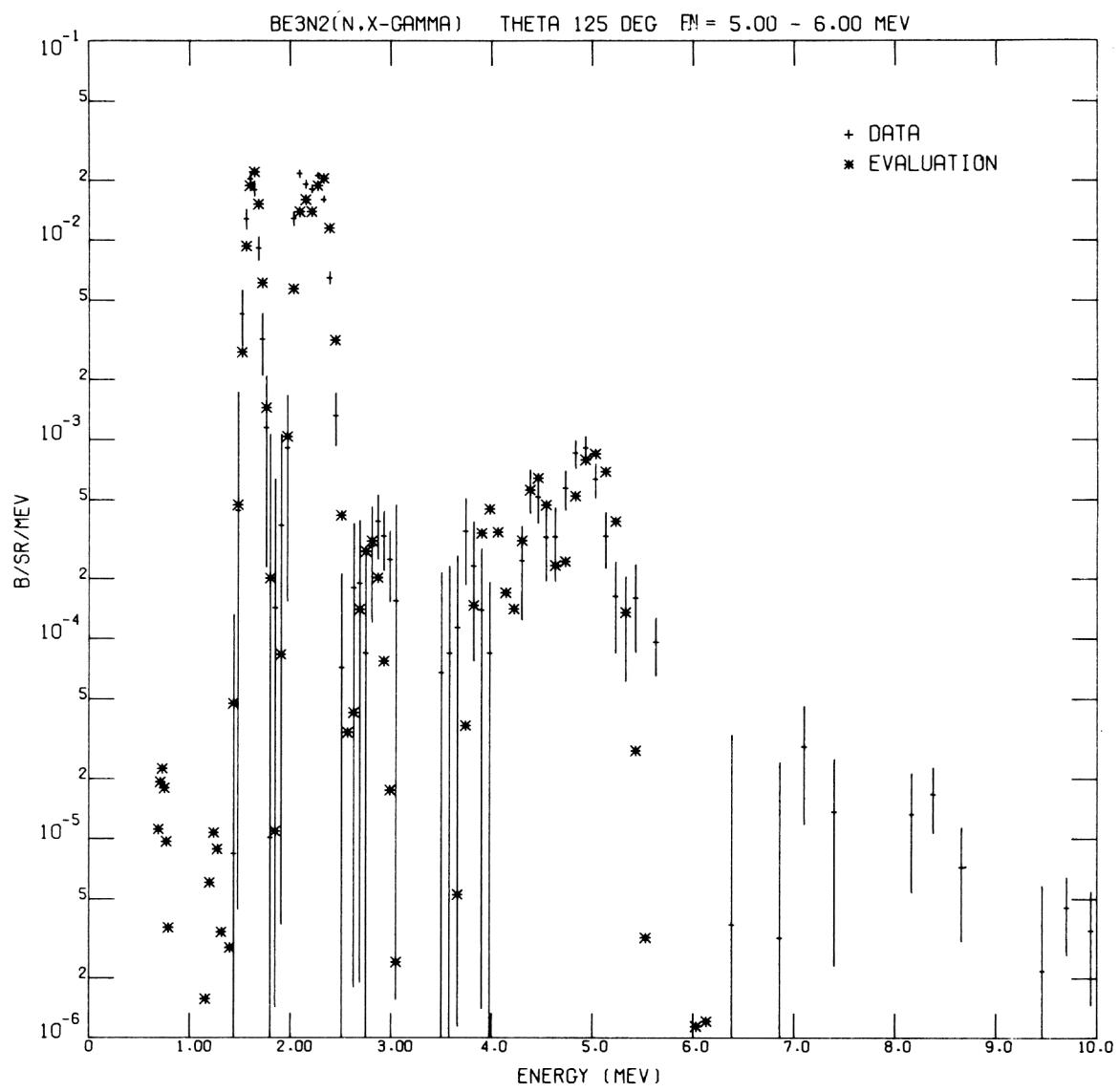
## REFERENCES

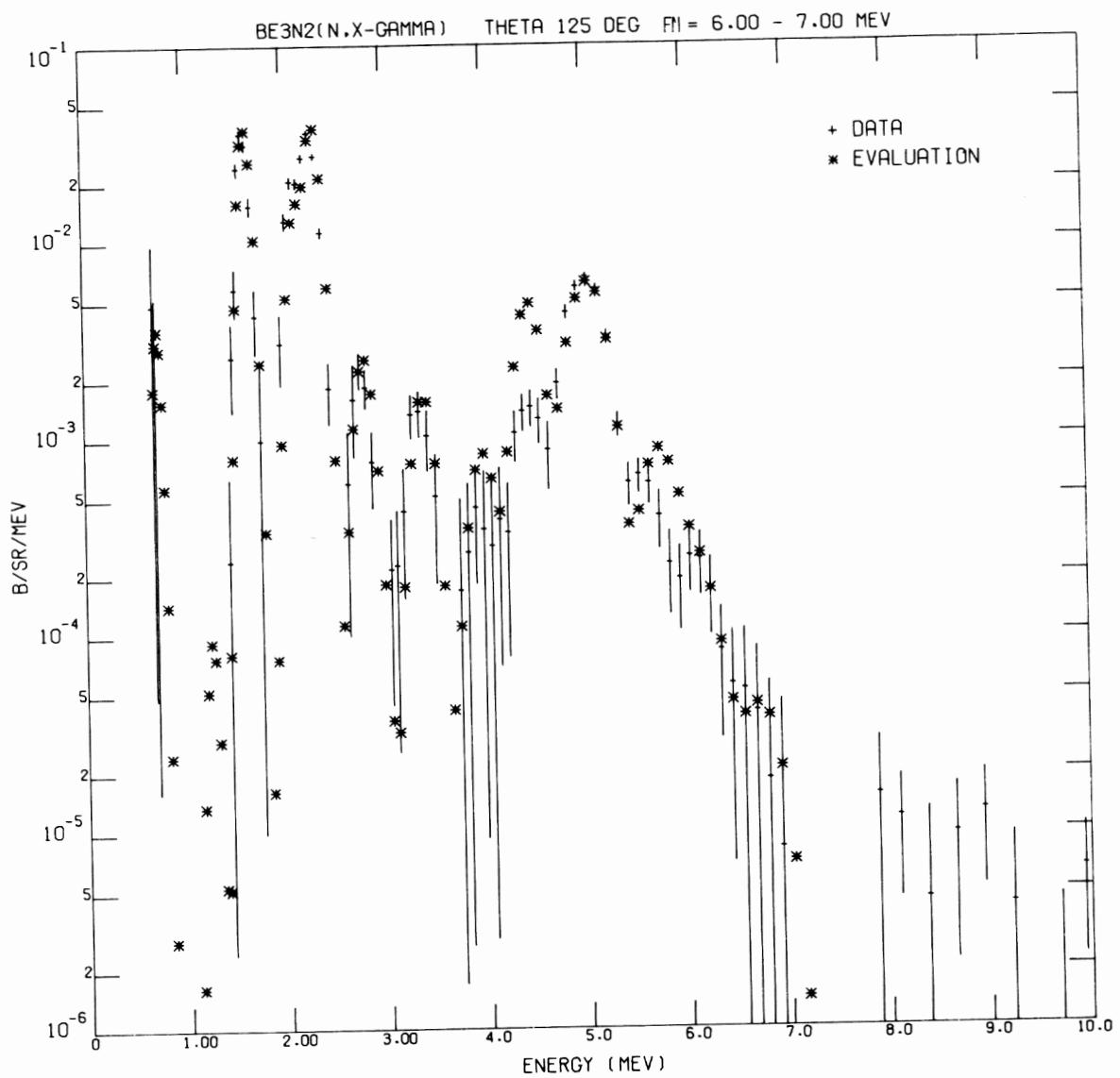
1. J. K. Dickens, G. L. Morgan, and F. G. Perey, Gamma-Ray Production Due to Neutron Interactions with Iron for Incident Neutron Energies Between 0.8 and 20 MeV: Tabulated Differential Cross Sections, ORNL-4798 (August 1972); J. K. Dickens, T. A. Love, and G. L. Morgan, Gamma-Ray Production Due to Neutron Interactions with Tungsten for Incident Neutron Energies Between 1.0 and 20 MeV: Tabulated Differential Cross Sections, ORNL-4847 (January 1973); J. K. Dickens, T. A. Love, and G. L. Morgan, Gamma-Ray Production Due to Neutron Interactions with Copper for Incident Neutron Energies Between 1.0 and 20 MeV; Tabulated Differential Cross Sections, ORNL-4846 (January 1973).
2. J. K. Dickens and F. G. Perey, Nucl. Sci. Eng. 36, 280 (1969); J. K. Dickens and F. G. Perey, Nucl. Sci. Eng. 40, 346 (1970).
3. Fabricated by Brush Wellman Corp. on special order. The specifications required material > 97% of  $\text{Be}_3\text{N}_2$ .
4. J. K. Dickens, G. L. Morgan, and F. G. Perey, Neutron-Induced Gamma-Ray Production in Iron for the Energy Range  $0.8 \leq E_n \leq 20$  MeV, ORNL-TM-3850 (August 1972); also to be published in Nucl. Sci. Eng.
5. E. Storm and H. I. Israel, Nucl. Data Tables A7, 565 (1970).
6. H. E. Hall and T. W. Bonner, Nucl. Phys. 14, 295 (1959); D. M. Drake, J. C. Hopkins, C. S. Young, and H. Conde, Nucl. Sci. Eng. 40, 294 (1970).
7. T. Lauritsen and F. Ajzenberg-Selove, Nucl. Phys. 78, 1 (1966).
8. P. G. Young and D. G. Foster, Jr., An Evaluation of the Neutron and Gamma-Ray Production Cross Sections for Nitrogen, Los Alamos Scientific Laboratory Report No. LA-4725 (ENDF-173) (September 1972).
9. J. K. Dickens, G. L. Morgan, and F. G. Perey, Neutron-Induced Gamma-Ray Production in Nitrogen for the Energy Range  $2.0 \leq E_n \leq 20$  MeV, (to be published).

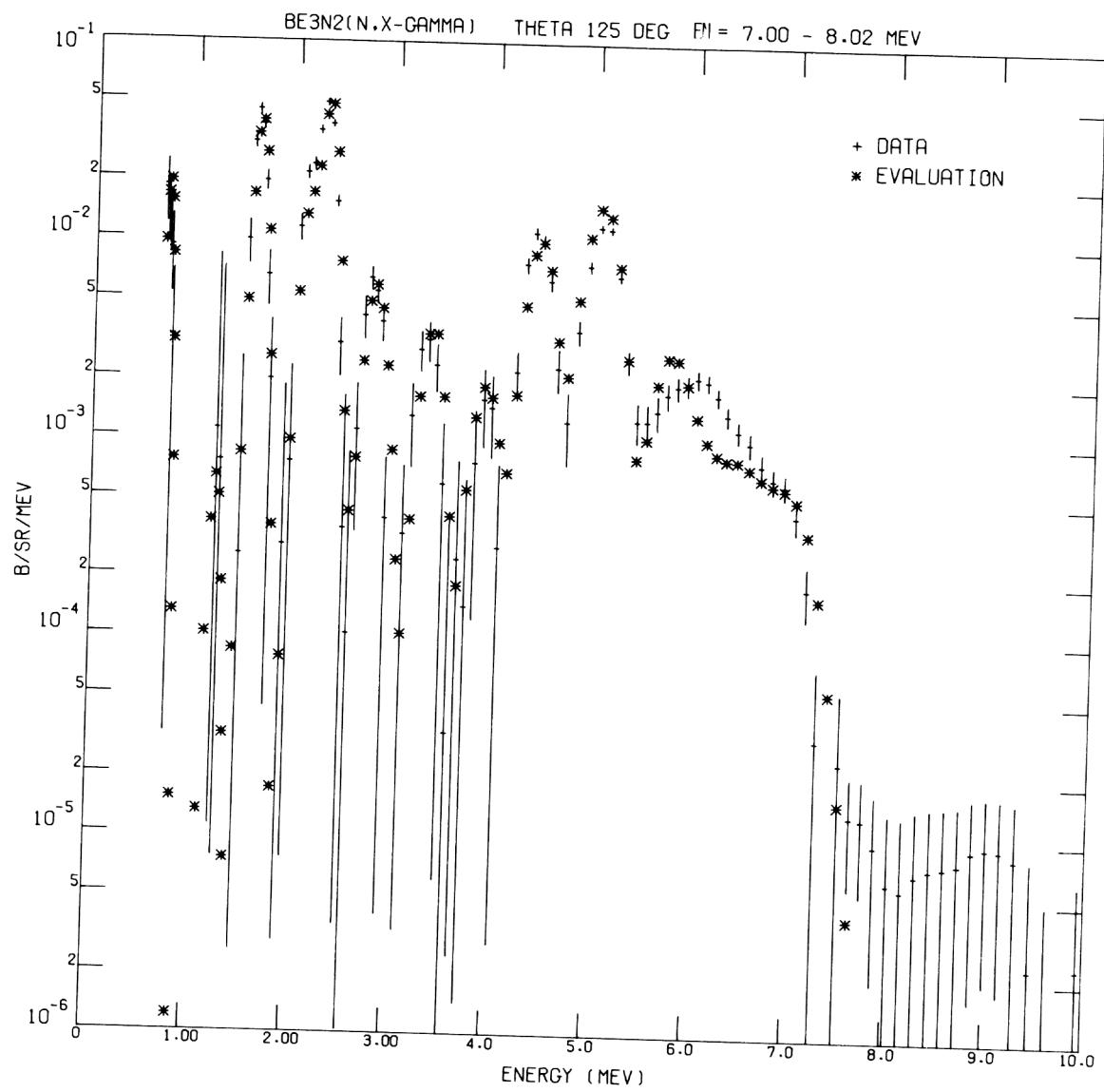


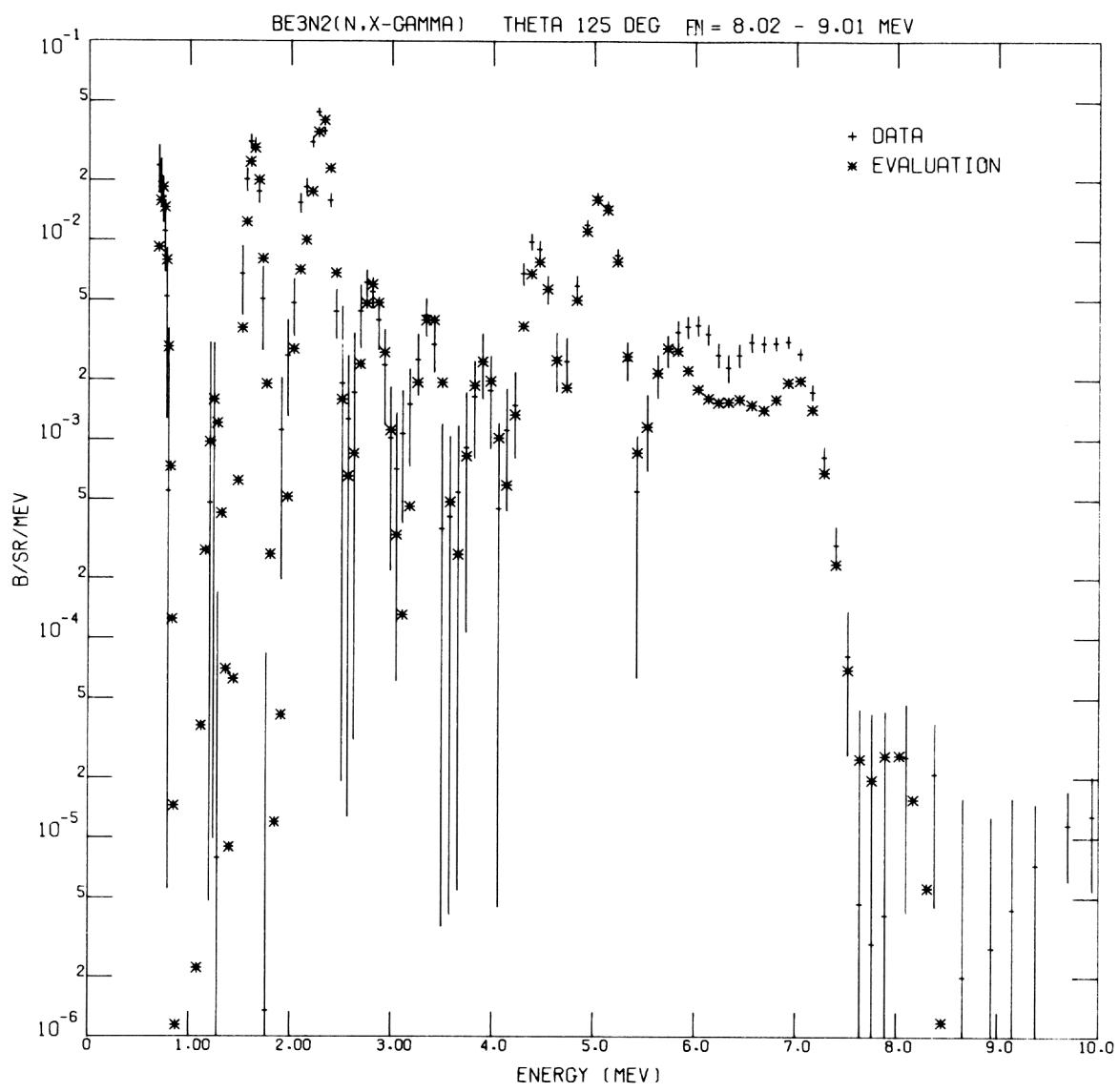


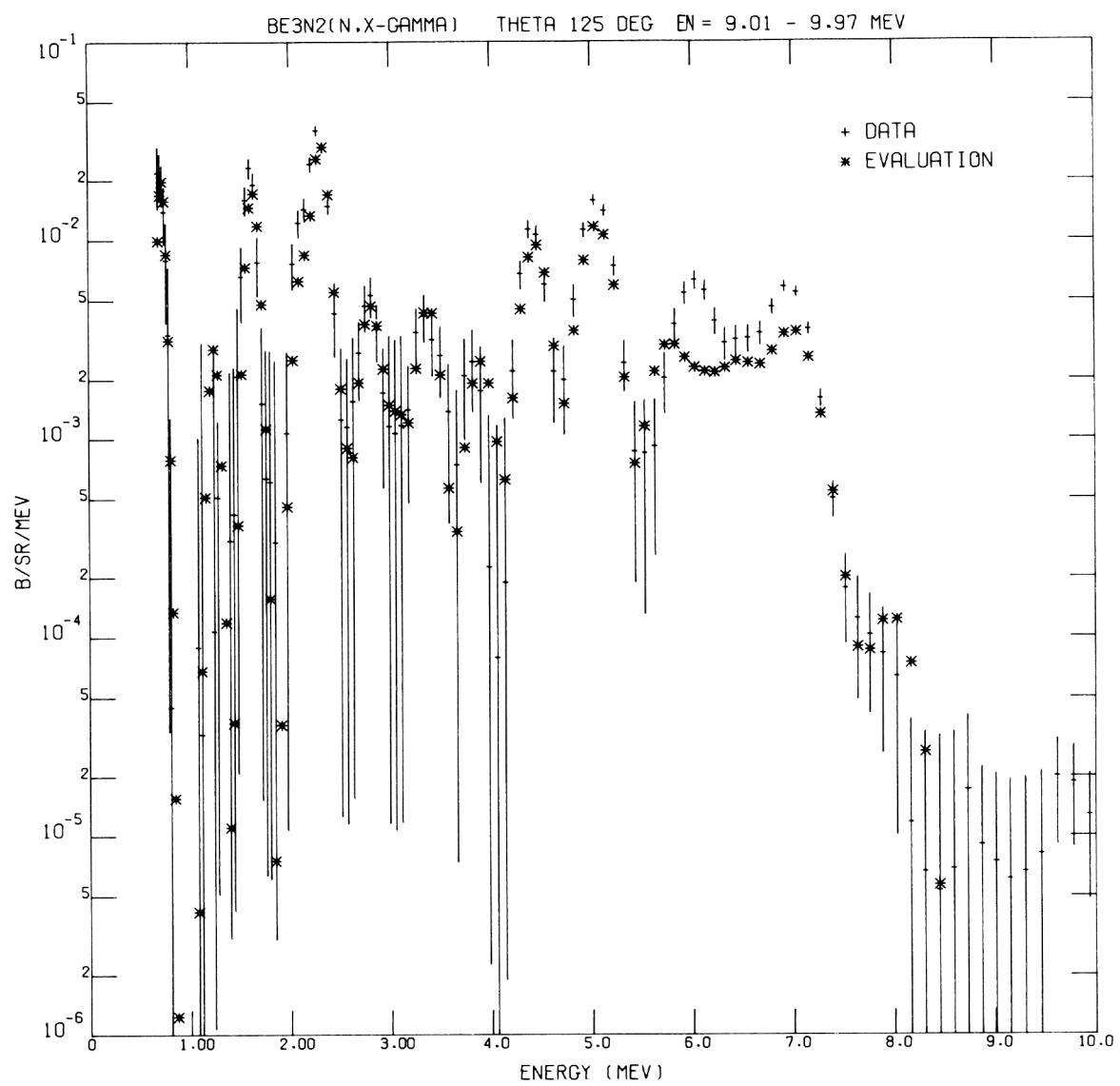


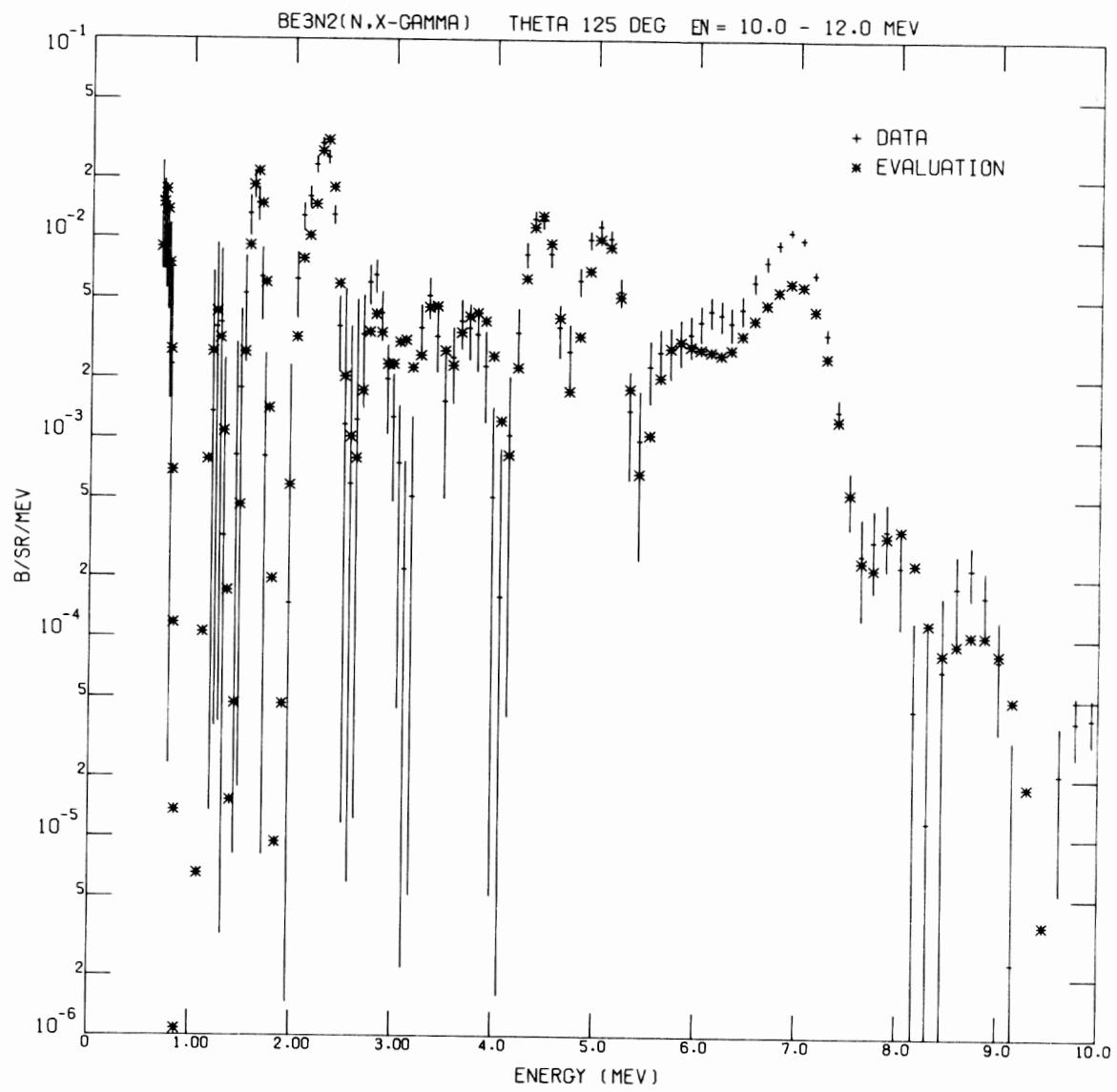


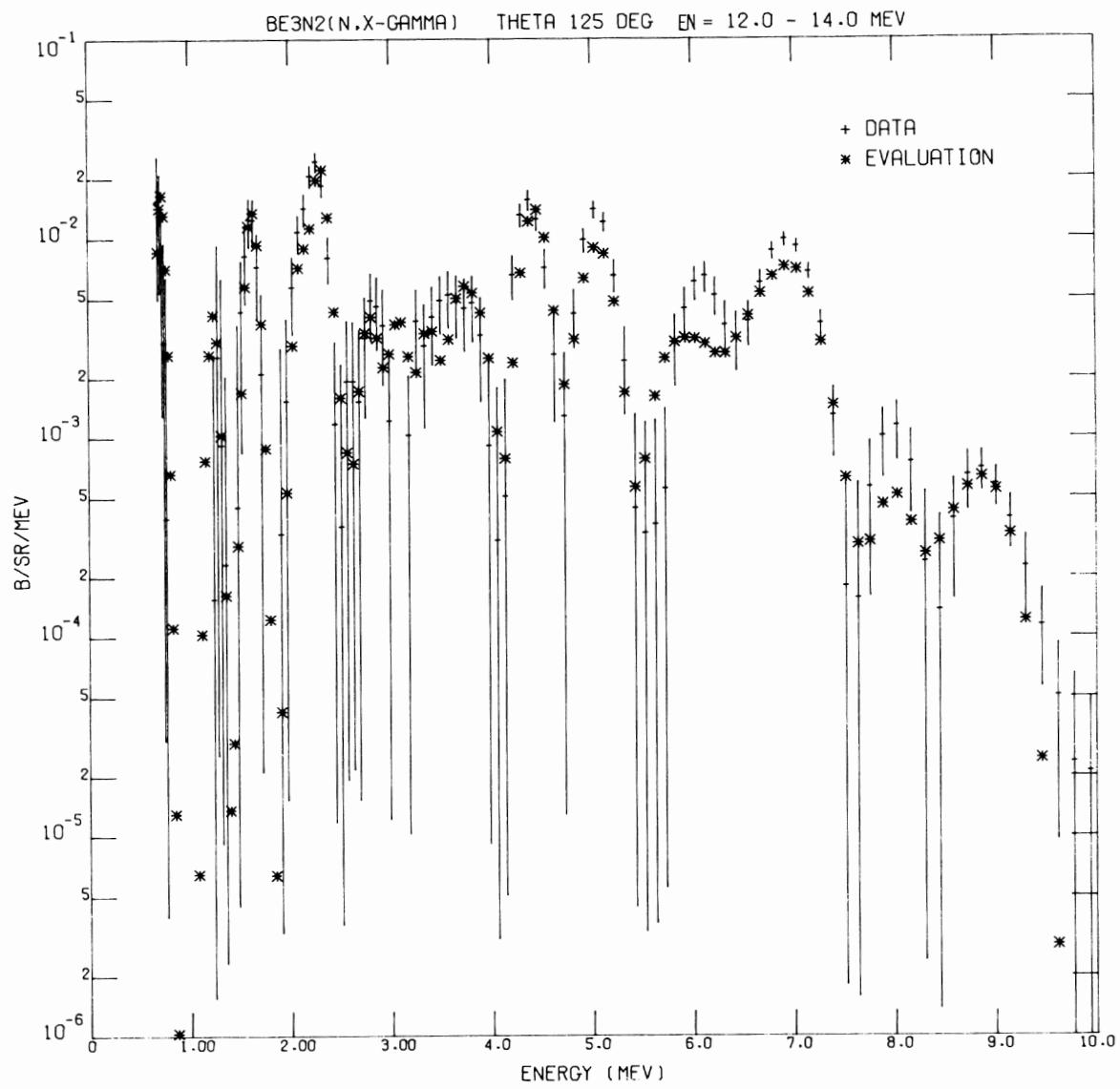


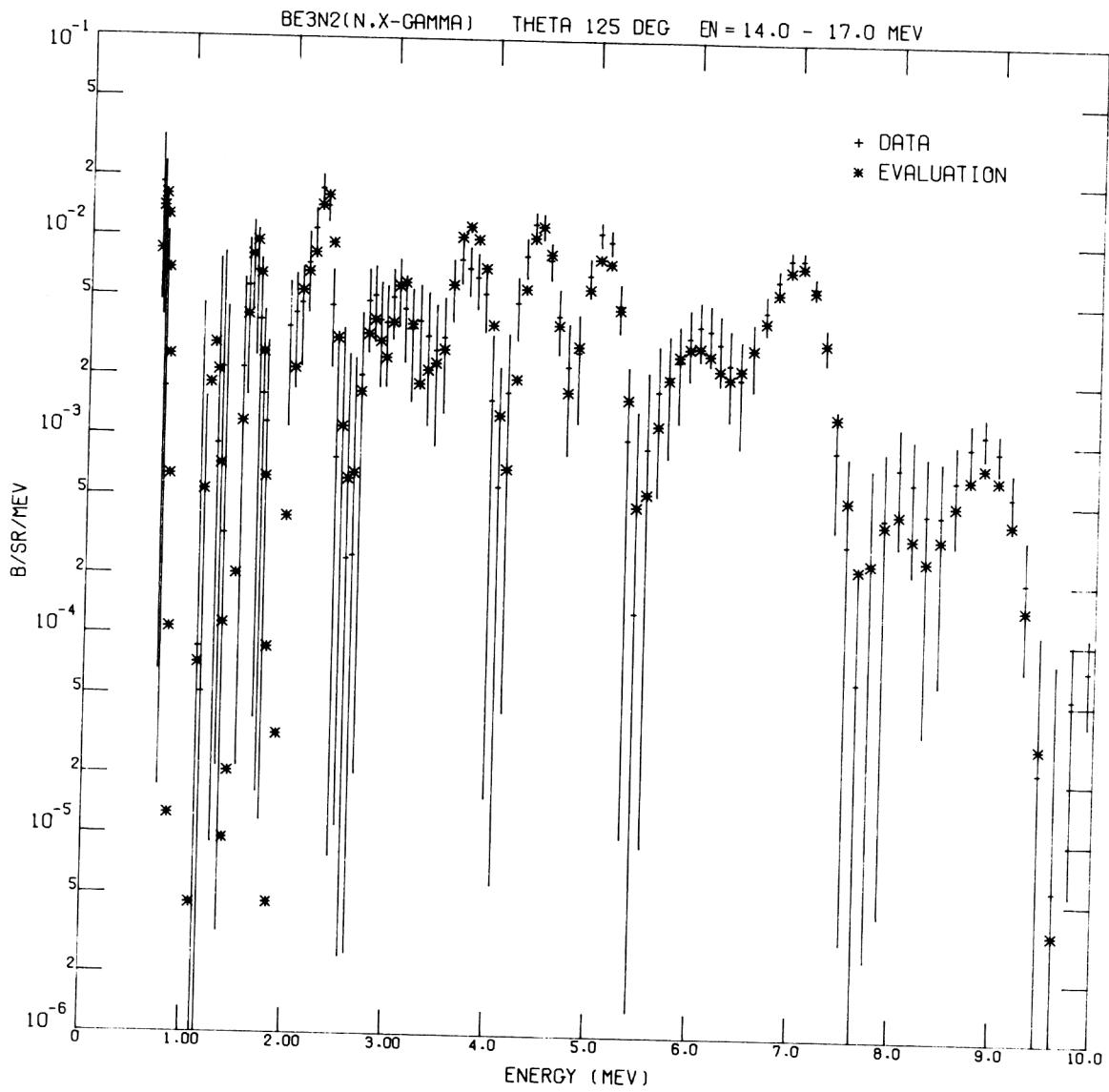


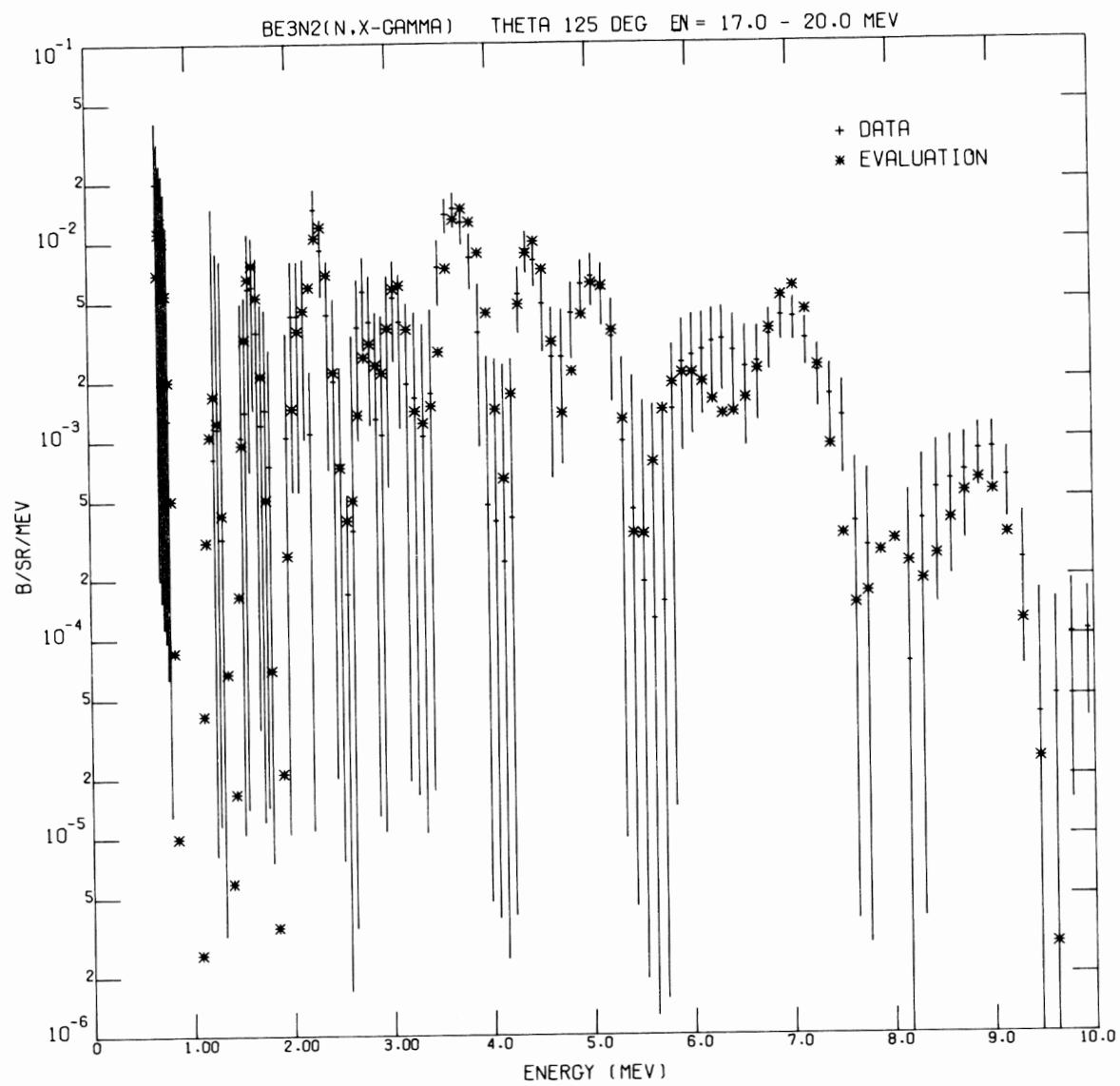


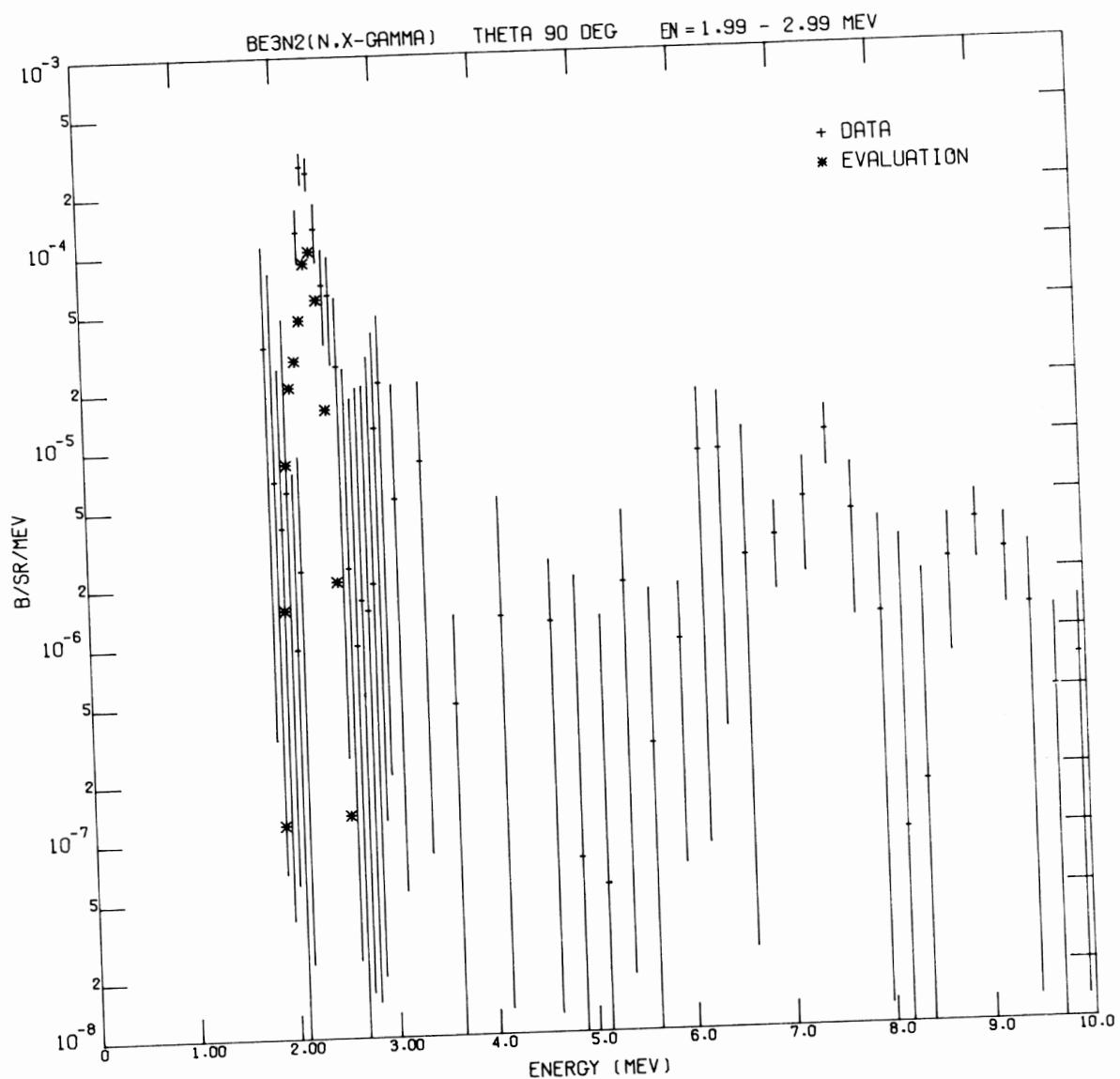


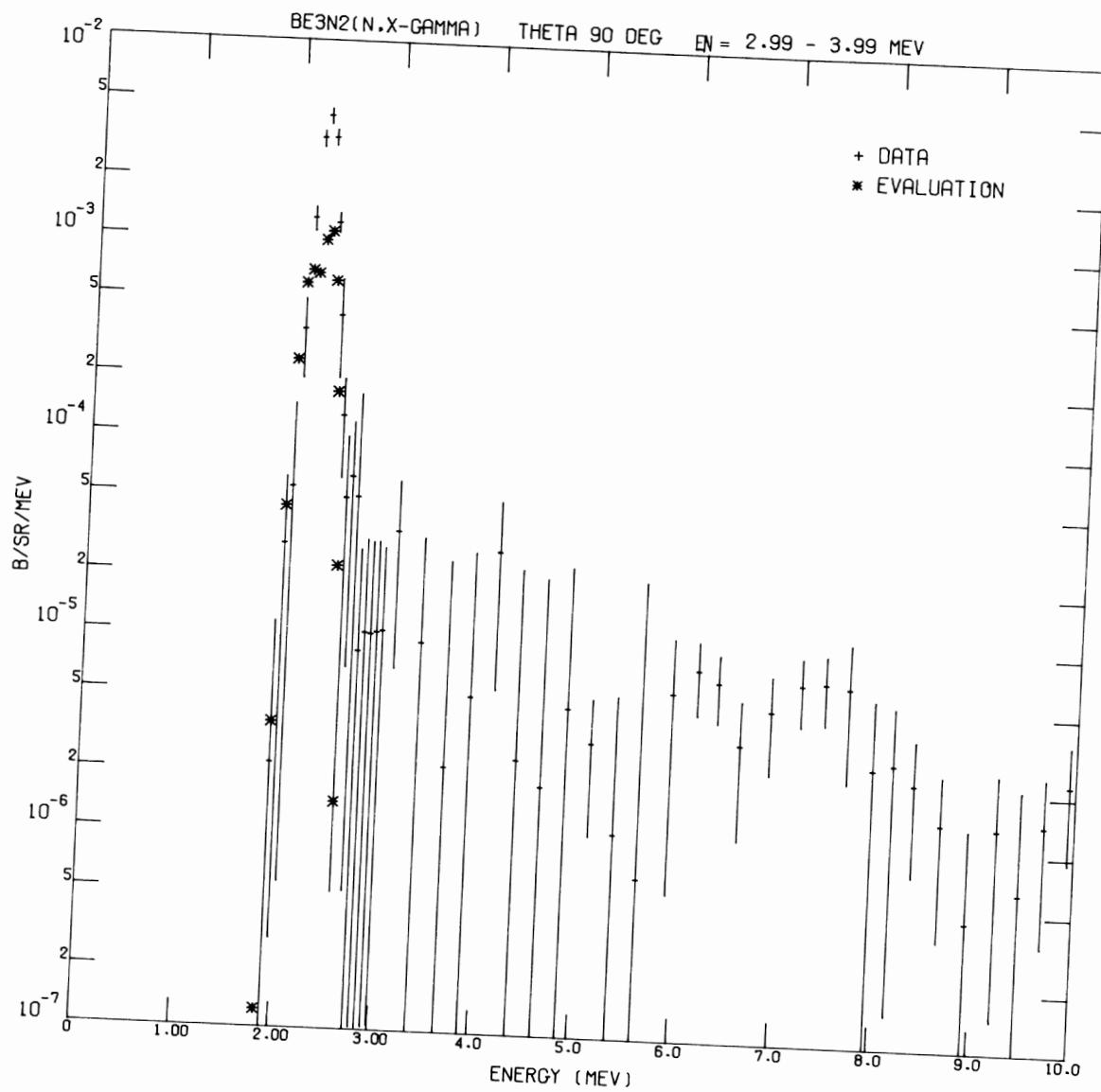


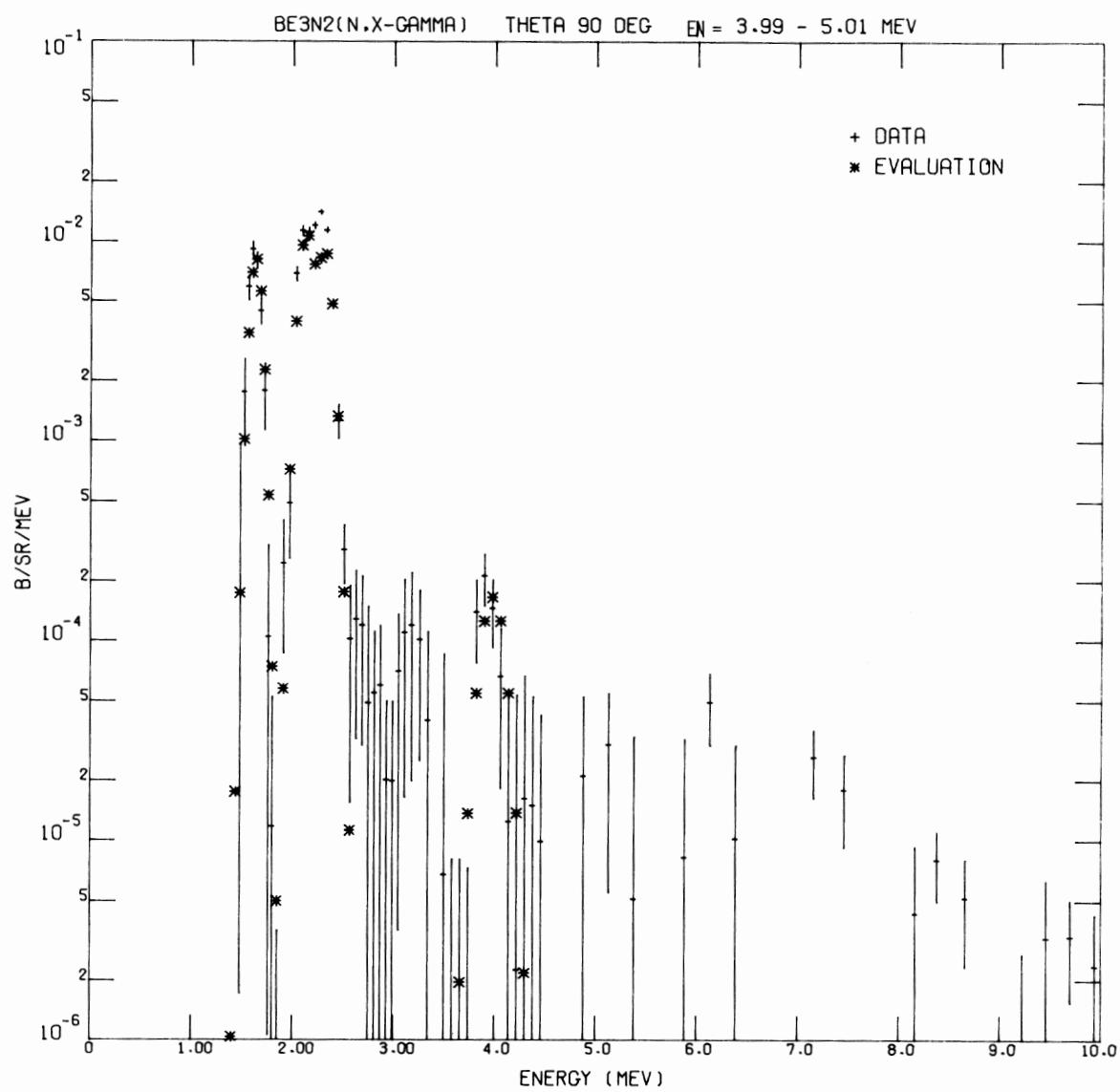


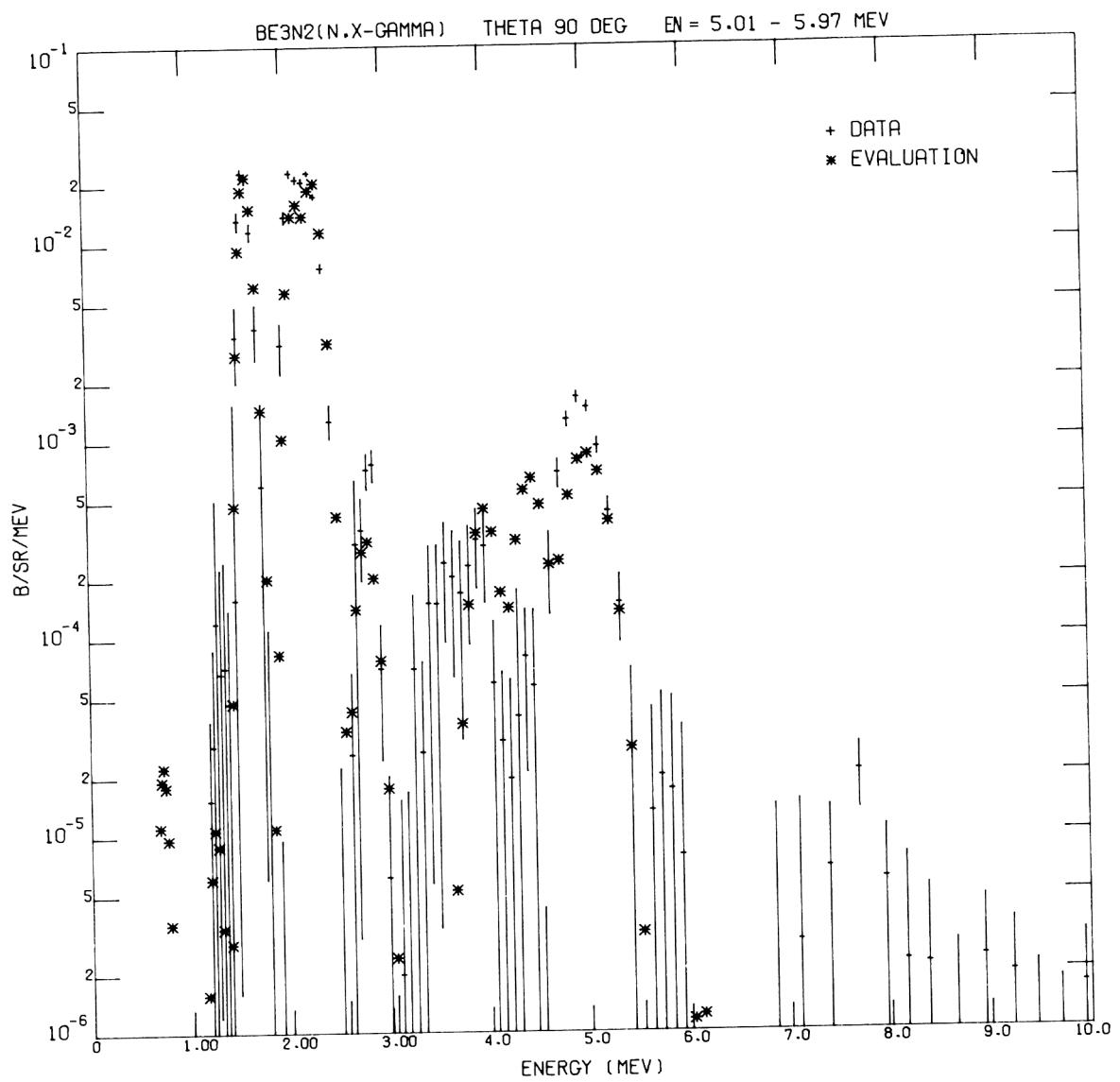


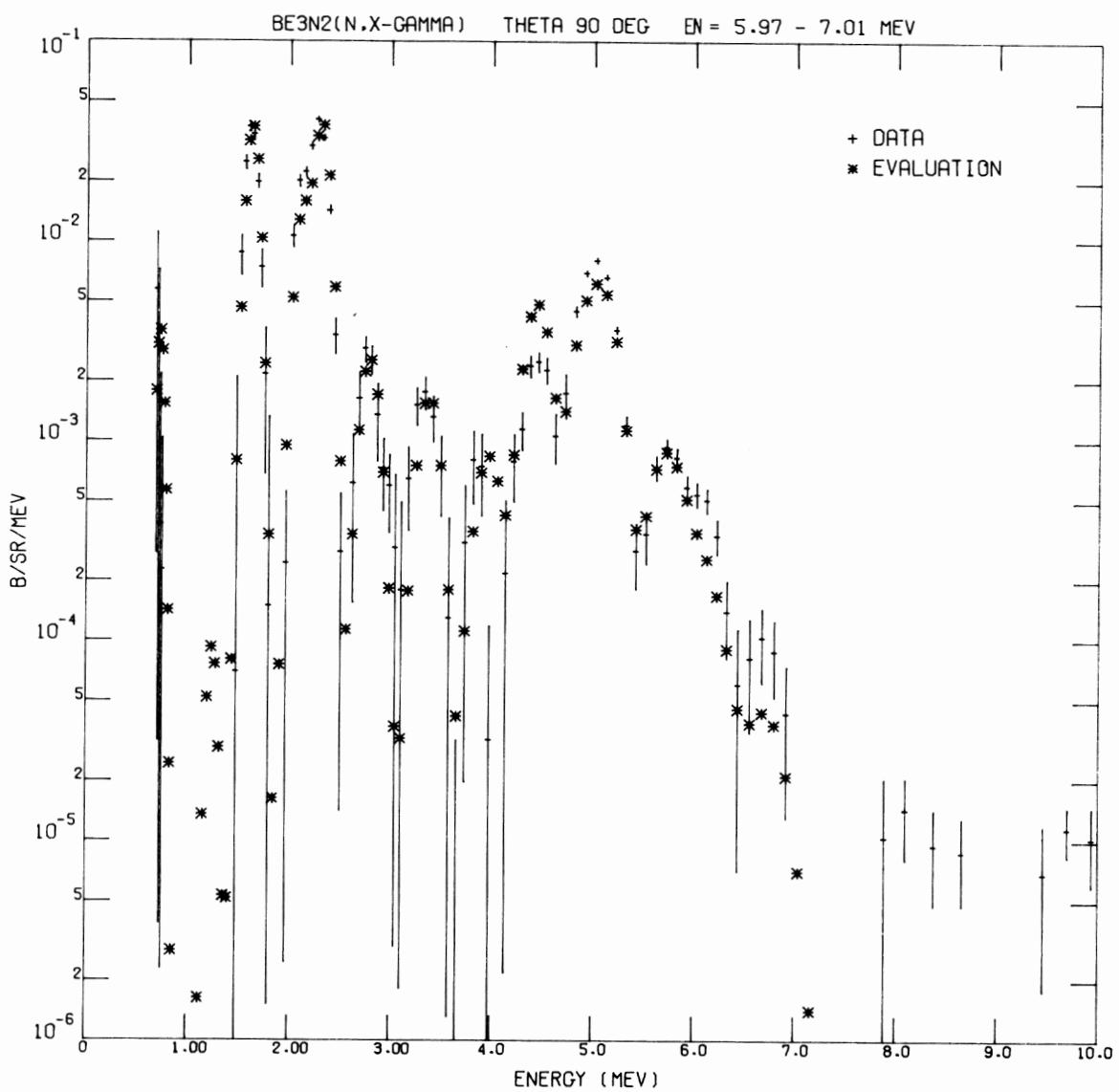


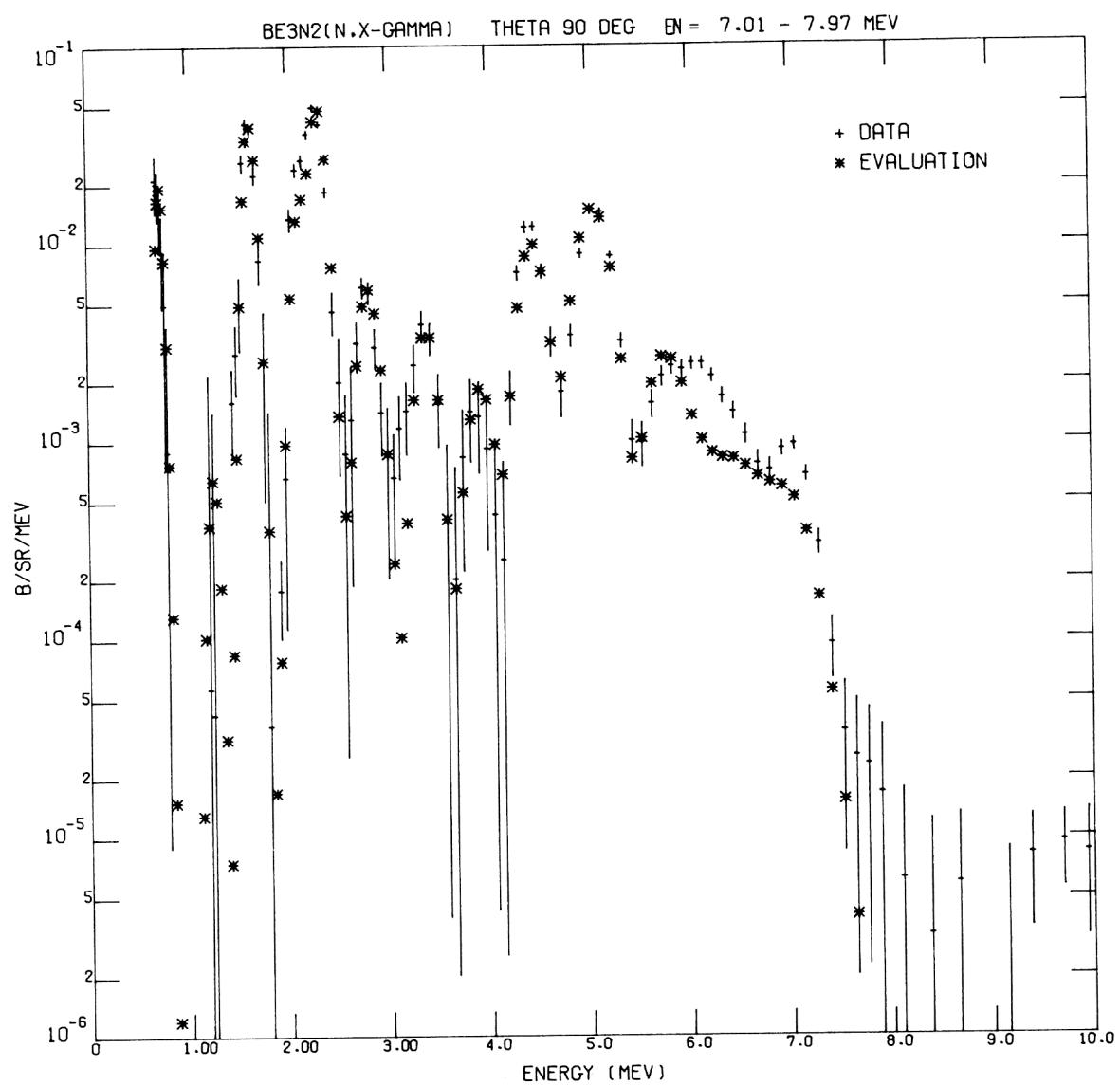


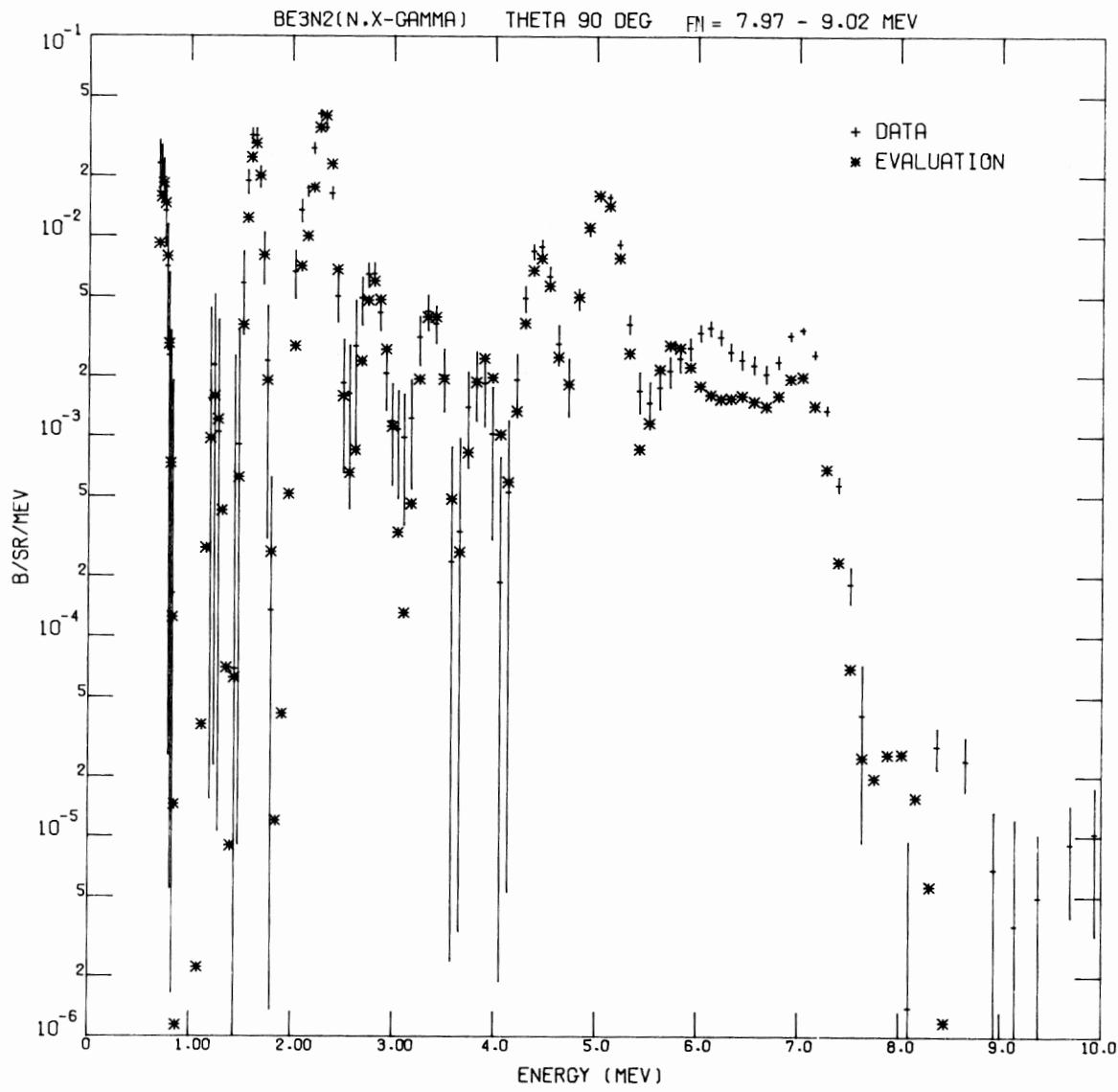


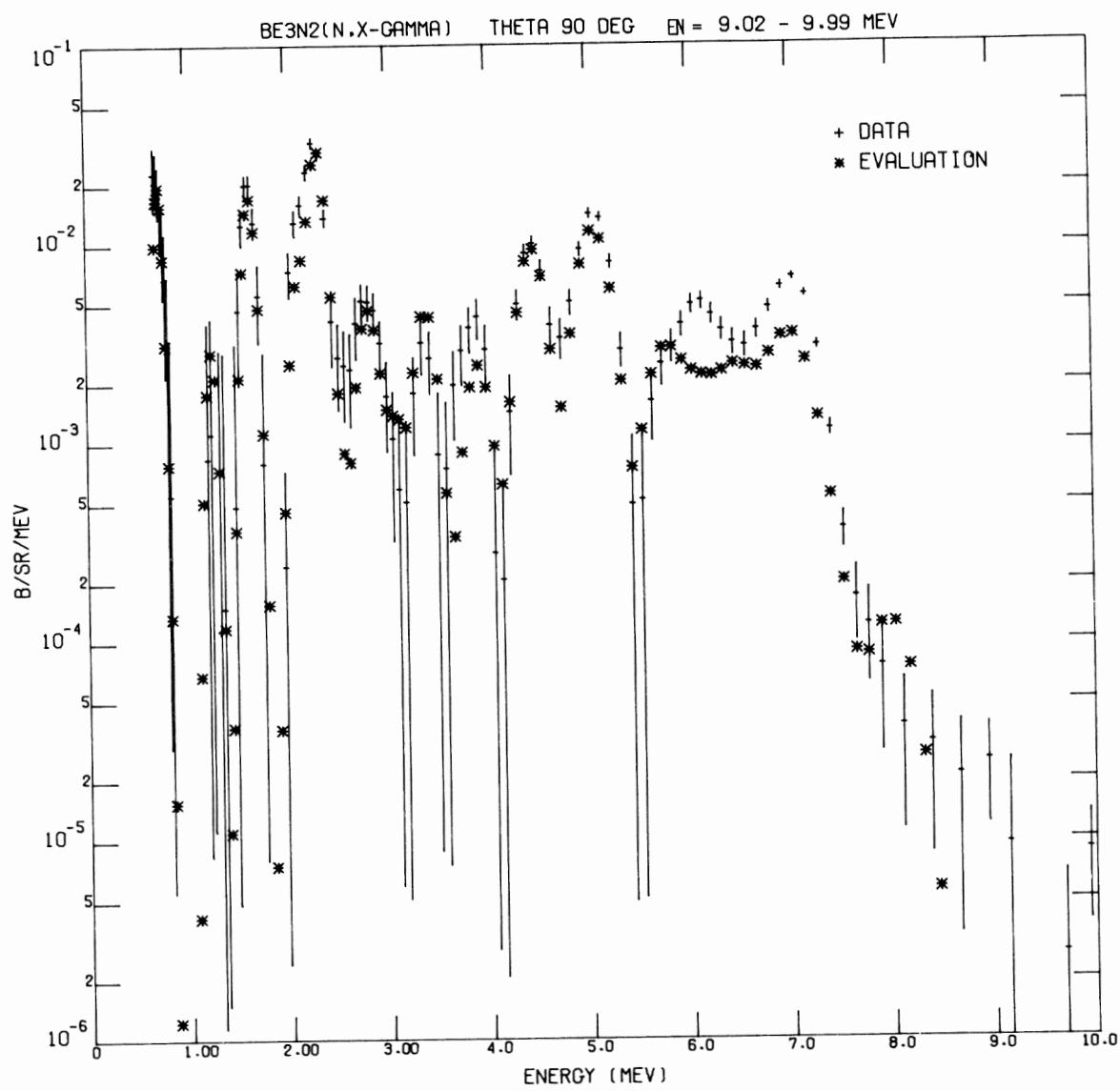


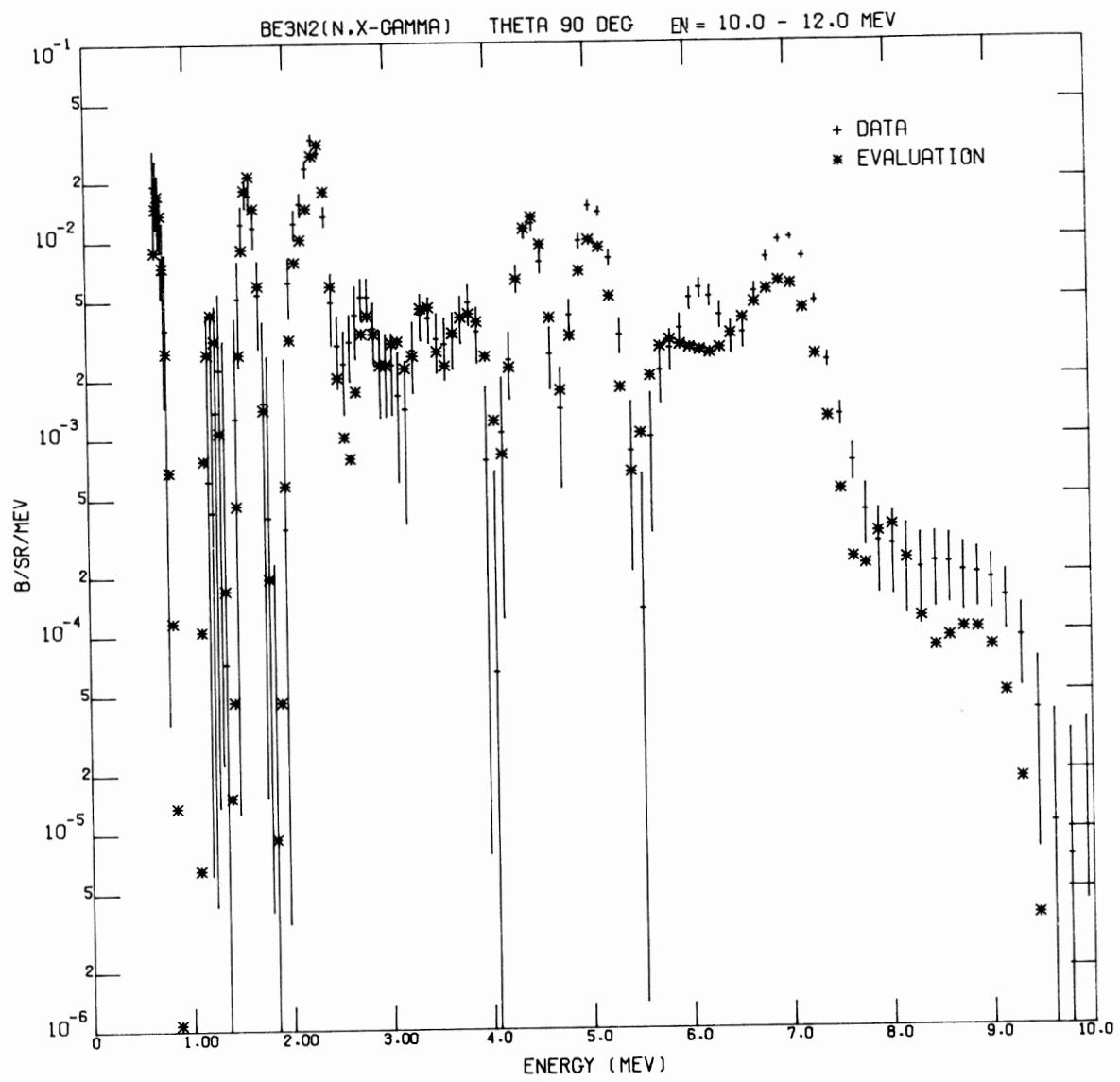


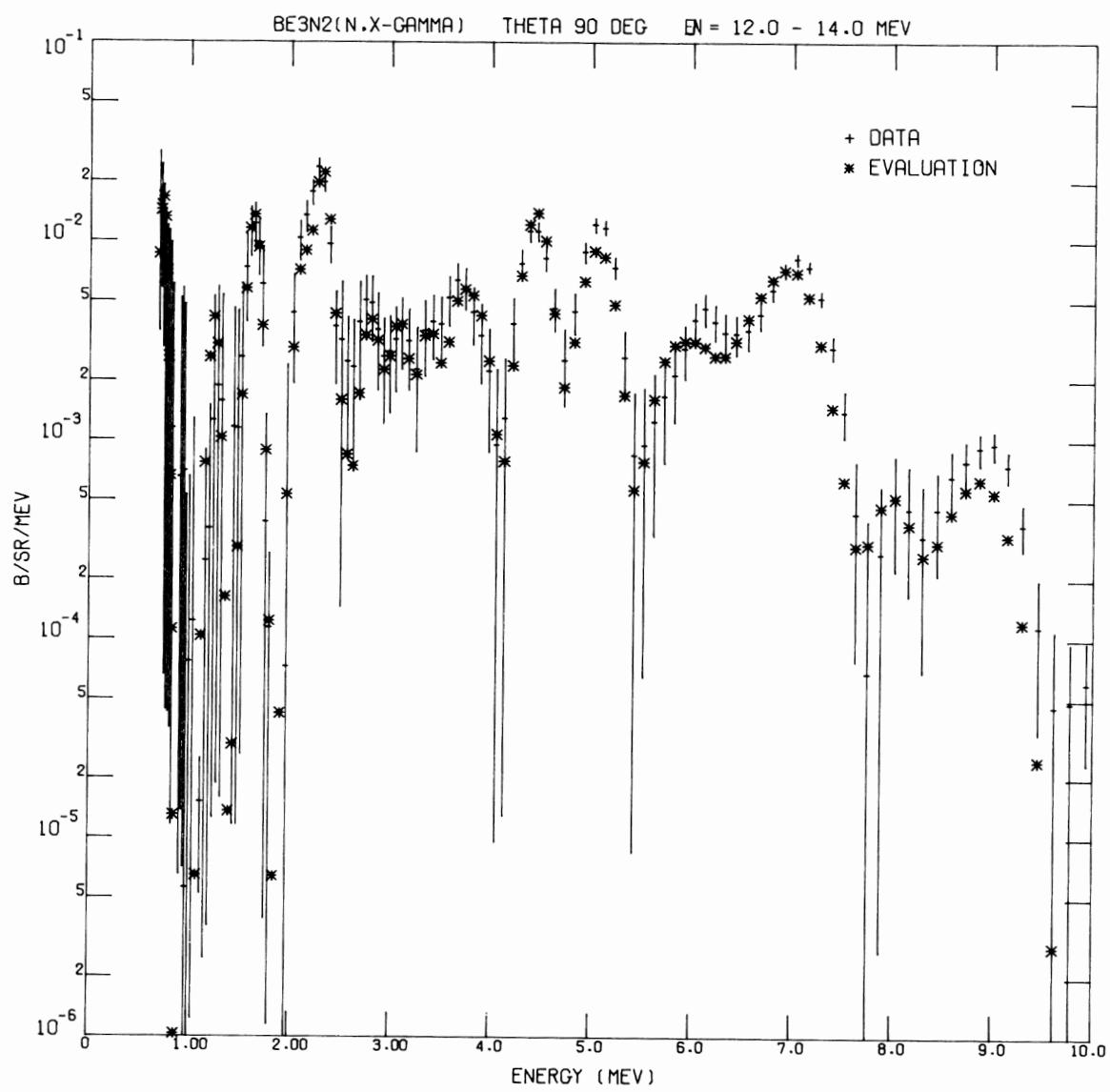


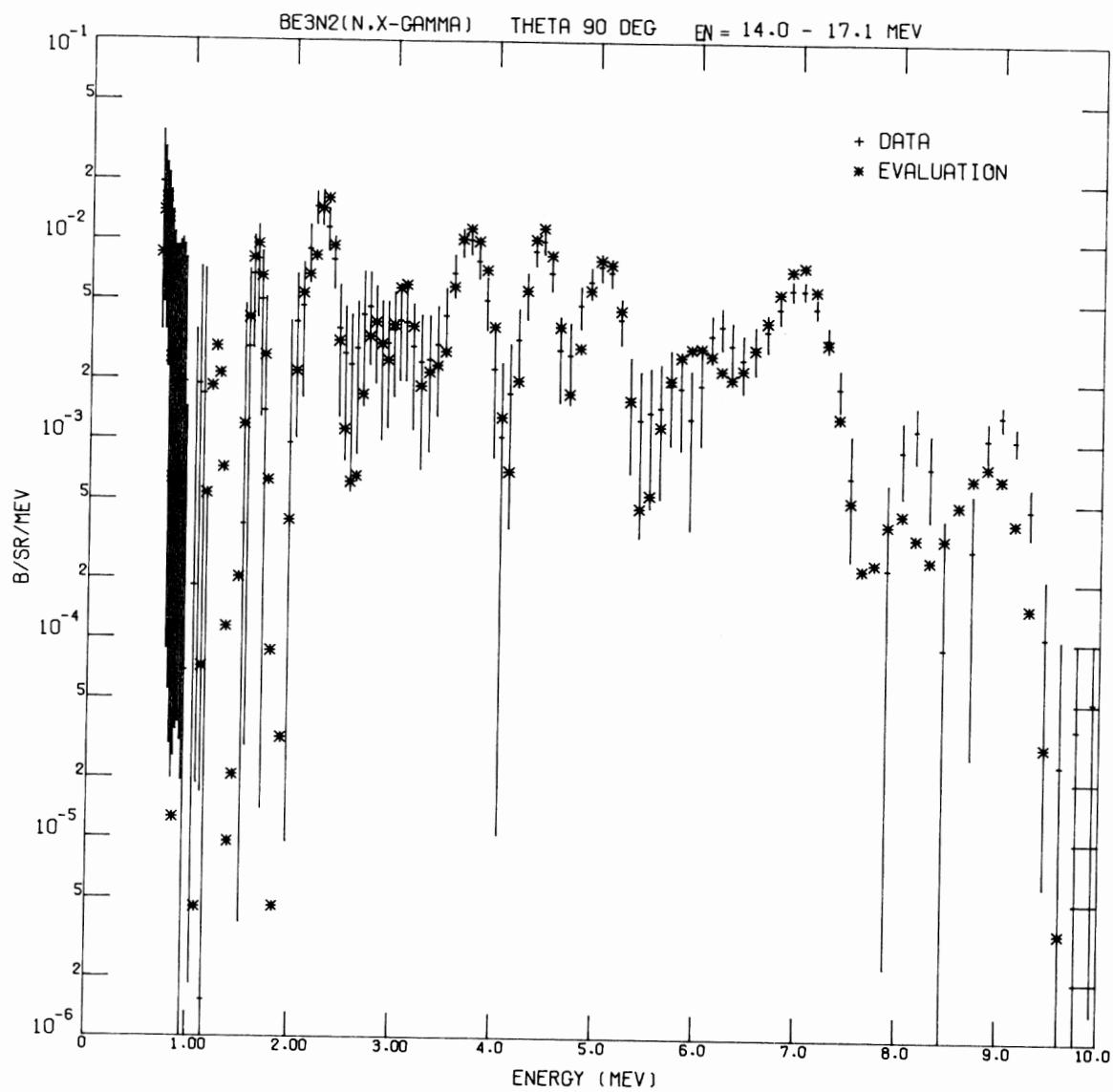


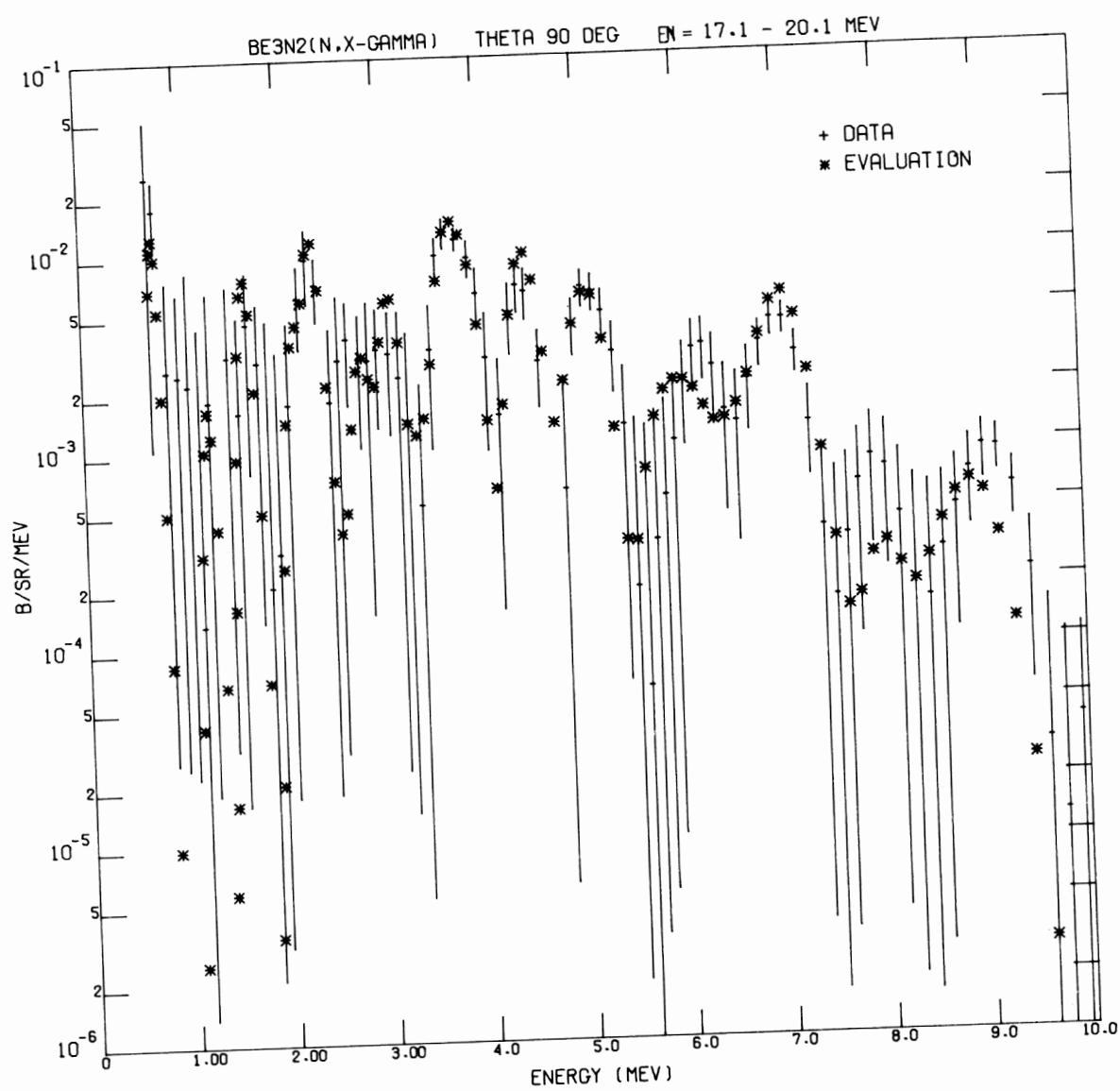












NEUTRON GAMMA RAY PRODUCTION CROSS SECTIONS FROM NITROGEN. TABULATED VALUES ARE DIFFERENTIAL CROSS SECTIONS AT 125 DEGREES, IN MB/SR, FOR THE GAMMA-RAY ENERGY INTERVALS, IN KEV, SHOWN IN THE LEFTMOST COLUMN. THE ERRORS INDICATED ARE IN THE SAME UNITS AND DO NOT INCLUDE AN ESTIMATED 15 PERCENT ERROR DUE TO THE ABSOLUTE FLUX MEASUREMENT. THE RELATIVE ERRORS FOR ADJACENT COLUMNS SHOULD BE LESS THAN 5 PERCENT. THE COLUMN HEADINGS ARE, IN MEV, THE LOWER LIMIT OF THE NEUTRON ENERGY INTERVAL FOR THAT COLUMN. THE UPPER LIMIT FOR THE LAST NEUTRON ENERGY INTERVAL IS 8.00 MEV

	2.00	3.00	4.00	5.00	6.00	7.00
750-1000	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.14 0.10
1000-1250	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.03 0.17
1250-1500	0.0 0.0	0.0 0.0	0.01 0.07	0.03 0.05	0.12 0.07	0.07 0.39
1500-1750	0.0 0.0	0.0 0.0	1.03 0.18	2.70 0.33	4.71 0.44	5.93 0.58
1750-2000	0.00 0.00	0.00 0.01	0.09 0.07	0.16 0.20	0.19 0.01	0.15 0.24
2000-2500	0.04 0.02	0.52 0.15	3.82 0.22	6.99 0.36	9.50 0.52	11.80 0.73
2500-3000	0.00 0.01	0.00 0.00	0.01 0.00	0.10 0.07	0.42 0.14	1.29 0.71
3000-3500	0.00 0.00	0.00 0.01	0.00 0.02	0.01 0.02	0.39 0.14	0.83 0.25
3500-4000	0.01 0.01	0.00 0.01	0.05 0.04	0.08 0.07	0.11 0.10	0.34 0.28
4000-4500	0.00 0.00	0.01 0.00	0.00 0.01	0.11 0.03	0.40 0.15	2.55 0.25
4500-5000	0.01 0.01	-0.02 0.01	-0.01 0.01	0.31 0.07	1.54 0.16	2.23 0.27
5000-5500	0.00 0.00	0.01 0.00	-0.01 0.00	0.13 0.04	1.61 0.10	3.22 0.19
5500-6000	-0.00 0.00	0.01 0.00	0.02 0.01	0.02 0.00	0.20 0.06	0.85 0.13
6000-6500	0.01 0.00	-0.01 0.01	0.01 0.00	-0.00 0.00	0.08 0.03	0.83 0.09
6500-7000	0.00 0.00	0.01 0.01	0.00 0.00	-0.00 0.00	0.01 0.02	0.38 0.05
7000-7500	0.01 0.00	0.00 0.00	0.01 0.01	0.01 0.01	-0.00 0.01	0.07 0.01
7500-8000	0.00 0.00	0.00 0.00	0.00 0.00	-0.01 0.00	0.00 0.00	0.01 0.01
8000-8500	0.00 0.00	0.00 0.00	-0.00 0.00	0.01 0.00	0.00 0.00	0.00 0.00
8500-9000	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.01 0.00	0.00 0.00
9000-9500	0.00 0.00	-0.00 0.00	-0.00 0.00	-0.00 0.00	0.00 0.00	0.00 0.00
9500-9999	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00

NEUTRON GAMMA RAY PRODUCTION CROSS SECTIONS FROM NITROGEN. TABULATED VALUES ARE DIFFERENTIAL CROSS SECTIONS AT 125 DEGREES, IN MB/SR, FOR THE GAMMA-RAY ENERGY INTERVALS, IN KEV, SHOWN IN THE LEFTMOST COLUMN. THE ERRORS INDICATED ARE IN THE SAME UNITS AND DO NOT INCLUDE AN ESTIMATED 15 PERCENT ERROR DUE TO THE ABSOLUTE FLUX MEASUREMENT. THE RELATIVE ERRORS FOR ADJACENT COLUMNS SHOULD BE LESS THAN 5 PERCENT. THE COLUMN HEADINGS ARE, IN MEV, THE LOWER LIMIT OF THE NEUTRON ENERGY INTERVAL FOR THAT COLUMN. THE UPPER LIMIT FOR THE LAST NEUTRON ENERGY INTERVAL IS 20.00 MEV

	8.00	9.00	10.00	12.00	14.00	17.00
750-1000	0.21 0.18	0.36 0.23	0.27 0.26	0.02 0.03	0.01 0.09	0.24 0.58
1000-1250	0.05 0.18	0.01 0.22	0.15 0.41	0.01 0.06	0.01 0.21	0.02 0.34
1250-1500	0.03 0.03	0.14 0.31	0.30 0.54	0.17 0.71	0.16 0.69	0.07 0.83
1500-1750	4.41 0.59	2.93 0.63	2.35 0.64	1.85 0.82	1.12 0.91	0.75 1.05
1750-2000	0.24 0.15	0.15 0.36	0.03 0.12	0.13 0.32	0.22 0.17	0.14 0.33
2000-2500	10.20 0.82	8.55 0.93	7.85 0.99	6.21 1.17	3.84 1.32	2.64 1.63
2500-3000	1.64 0.66	1.34 0.67	1.52 0.98	1.40 0.93	1.44 1.08	1.13 1.23
3000-3500	1.06 0.40	1.24 0.69	1.14 0.46	1.17 0.58	1.89 0.99	1.38 1.41
3500-4000	0.60 0.39	0.78 0.54	1.36 0.54	2.07 0.85	2.88 0.96	4.60 1.33
4000-4500	2.36 0.40	2.50 0.54	3.05 0.53	3.87 0.81	3.14 0.86	1.91 1.06
4500-5000	3.09 0.39	2.84 0.48	3.18 0.51	2.67 0.70	2.43 0.75	2.11 0.96
5000-5500	4.02 0.30	3.76 0.40	2.76 0.43	3.27 0.58	2.46 0.66	1.58 0.88
5500-6000	1.39 0.25	1.41 0.34	1.48 0.41	1.00 0.50	1.12 0.63	0.50 0.73
6000-6500	1.46 0.19	2.14 0.29	2.11 0.38	2.41 0.55	1.47 0.59	1.46 0.73
6500-7000	1.53 0.13	2.16 0.21	4.34 0.28	3.59 0.43	2.82 0.48	1.56 0.59
7000-7500	0.61 0.06	1.22 0.09	2.39 0.14	2.33 0.28	2.03 0.32	1.30 0.40
7500-8000	0.01 0.02	0.06 0.03	0.17 0.07	0.29 0.20	0.14 0.20	0.17 0.15
8000-8500	0.01 0.01	0.01 0.02	0.04 0.05	0.26 0.16	0.28 0.21	0.13 0.18
8500-9000	0.00 0.01	0.01 0.01	0.09 0.03	0.28 0.10	0.46 0.15	0.37 0.18
9000-9500	0.00 0.00	0.00 0.01	0.01 0.00	0.15 0.05	0.18 0.07	0.20 0.10
9500-9999	0.01 0.00	0.01 0.00	0.02 0.00	0.02 0.02	0.02 0.03	0.04 0.04

NEUTRON GAMMA RAY PRODUCTION CROSS SECTIONS FROM NITROGEN. TABULATED VALUES ARE DIFFERENTIAL CROSS SECTIONS AT 90 DEGREES, IN MB/SR, FOR THE GAMMA-RAY ENERGY INTERVALS, IN KEV, SHOWN IN THE LEFTMOST COLUMN. THE ERRORS INDICATED ARE IN THE SAME UNITS AND DO NOT INCLUDE AN ESTIMATED 15 PERCENT ERROR DUE TO THE ABSOLUTE FLUX MEASUREMENT. THE RELATIVE ERRORS FOR ADJACENT COLUMNS SHOULD BE LESS THAN 5 PERCENT. THE COLUMN HEADINGS ARE, IN MEV, THE LOWER LIMIT OF THE NEUTRON ENERGY INTERVAL FOR THAT COLUMN. THE UPPER LIMIT FOR THE LAST NEUTRON ENERGY INTERVAL IS 8.00 MEV

	2.00	3.00	4.00	5.00	6.00	7.00
750-1000	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.00 0.01	0.20 0.19
1000-1250	0.0 0.0	0.0 0.0	0.0 0.0	0.00 0.00	0.0 0.0	0.00 0.14
1250-1500	0.0 0.0	0.0 0.0	0.01 0.03	0.02 0.02	-0.01 0.02	0.19 0.09
1500-1750	0.0 0.0	0.0 0.0	1.24 0.19	3.07 0.33	5.30 0.47	5.70 0.58
1750-2000	0.00 0.01	0.00 0.00	0.07 0.03	0.23 0.07	0.07 0.06	0.16 0.16
2000-2500	0.05 0.02	0.83 0.11	4.38 0.21	7.73 0.34	10.40 0.54	12.80 0.76
2500-3000	0.01 0.01	0.02 0.02	0.04 0.04	0.13 0.05	0.52 0.18	1.40 0.41
3000-3500	0.00 0.01	0.01 0.01	0.03 0.03	0.03 0.03	0.49 0.16	1.10 0.30
3500-4000	0.00 0.00	0.00 0.01	0.04 0.02	0.12 0.07	0.19 0.12	0.44 0.30
4000-4500	0.00 0.00	0.01 0.01	0.01 0.02	0.03 0.03	0.57 0.12	2.73 0.31
4500-5000	0.00 0.00	0.00 0.01	0.01 0.01	0.42 0.05	1.78 0.15	2.60 0.25
5000-5500	0.00 0.00	0.00 0.00	0.01 0.01	0.27 0.03	1.83 0.08	3.92 0.17
5500-6000	0.00 0.00	0.00 0.01	-0.00 0.00	0.01 0.01	0.35 0.05	0.97 0.11
6000-6500	0.00 0.00	0.00 0.00	0.01 0.01	-0.00 0.01	0.15 0.03	0.99 0.08
6500-7000	0.00 0.00	0.00 0.00	-0.01 0.01	-0.00 0.00	0.04 0.02	0.43 0.05
7000-7500	0.00 0.00	0.00 0.00	0.01 0.00	0.00 0.00	-0.00 0.00	0.22 0.02
7500-8000	0.00 0.00	0.00 0.00	0.00 0.00	0.01 0.00	0.00 0.00	0.01 0.01
8000-8500	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.01 0.00	0.00 0.01
8500-9000	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00
9000-9500	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00
9500-9999	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.01 0.00	0.00 0.00

NEUTRON GAMMA RAY PRODUCTION CROSS SECTIONS FROM NITROGEN. TABULATED VALUES ARE DIFFERENTIAL CROSS SECTIONS AT 90 DEGREES, IN MB/SR, FOR THE GAMMA-RAY ENERGY INTERVALS, IN KEV, SHOWN IN THE LEFTMOST COLUMN. THE ERRORS INDICATED ARE IN THE SAME UNITS AND DO NOT INCLUDE AN ESTIMATED 15 PERCENT ERROR DUE TO THE ABSOLUTE FLUX MEASUREMENT. THE RELATIVE ERRORS FOR ADJACENT COLUMNS SHOULD BE LESS THAN 5 PERCENT. THE COLUMN HEADINGS ARE, IN MEV, THE LOWER LIMIT OF THE NEUTRON ENERGY INTERVAL FOR THAT COLUMN. THE UPPER LIMIT FOR THE LAST NEUTRON ENERGY INTERVAL IS 20.00 MEV

	8.00	9.00	10.00	12.00	14.00	17.10
750-1000	0.33 0.30	0.55 0.38	0.32 0.28	0.38 0.84	0.80 1.36	1.17 1.23
1000-1250	0.13 0.21	0.07 0.23	0.04 0.27	0.06 0.23	0.16 0.57	0.30 1.22
1250-1500	0.04 0.01	0.05 0.26	0.19 0.38	0.24 0.40	0.00 0.01	0.29 0.07
1500-1750	4.66 0.62	3.06 0.63	2.80 0.69	2.01 0.81	0.96 0.94	0.87 0.92
1750-2000	0.03 0.03	0.01 0.07	0.03 0.15	0.03 0.14	0.06 0.17	0.20 0.90
2000-2500	9.76 0.78	8.36 0.88	8.27 0.99	6.20 1.15	4.24 1.36	2.60 1.37
2500-3000	1.84 0.53	1.82 0.55	1.77 0.62	1.74 0.91	1.68 1.03	1.60 1.21
3000-3500	1.23 0.37	0.83 0.43	1.42 0.53	1.68 0.71	1.58 0.89	0.99 1.07
3500-4000	0.59 0.35	1.33 0.47	1.68 0.54	2.33 0.71	3.53 0.77	5.08 1.02
4000-4500	2.02 0.35	2.14 0.38	2.69 0.47	2.96 0.66	2.48 0.69	2.09 0.88
4500-5000	2.87 0.32	3.04 0.40	2.73 0.43	2.98 0.54	2.38 0.60	0.96 0.19
5000-5500	4.37 0.24	3.67 0.32	3.81 0.36	3.27 0.47	2.04 0.52	2.09 0.64
5500-6000	1.10 0.19	1.25 0.28	1.06 0.32	0.95 0.45	0.80 0.48	0.25 0.60
6000-6500	1.50 0.14	2.10 0.24	2.28 0.30	1.97 0.41	1.50 0.45	1.26 0.56
6500-7000	1.26 0.10	2.24 0.18	3.40 0.23	2.68 0.34	2.17 0.36	1.43 0.46
7000-7500	0.89 0.04	1.84 0.08	2.88 0.13	2.77 0.23	1.80 0.24	0.98 0.33
7500-8000	0.01 0.00	0.07 0.03	0.29 0.07	0.22 0.17	0.08 0.00	0.28 0.27
8000-8500	0.01 0.00	0.02 0.01	0.12 0.05	0.21 0.14	0.38 0.17	0.18 0.24
8500-9000	0.01 0.00	0.01 0.01	0.10 0.04	0.40 0.10	0.25 0.06	0.26 0.18
9000-9500	0.00 0.00	0.00 0.00	0.06 0.02	0.26 0.06	0.35 0.07	0.32 0.11
9500-9999	0.00 0.00	0.00 0.00	0.01 0.01	0.03 0.03	0.02 0.03	0.02 0.05

NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 2.00 MEV EN-MAX= 3.00 MEV THETA=125. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SP/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
1.970E 00	2.55E-05	6.5E-05	3.380E 00	-4.13E-06	1.7E-05	7.220E 00	1.94E-05	6.0E-06
2.030E 00	2.67E-05	6.5F-05	3.660E 00	1.56E-05	2.0E-05	7.460F 00	8.25E-06	4.3E-06
2.090E 00	8.05E-06	2.3E-05	3.900E 00	1.30E-05	1.8E-05	7.702E 00	1.67E-06	3.3E-06
2.150E 00	5.70E-05	3.5E-05	4.140E 00	2.44E-05	1.7E-05	7.960E 00	-6.11E-07	2.5F-06
2.210E 00	1.10E-04	3.9E-05	4.380E 00	-1.96E-05	1.6E-05	8.170E 00	1.75E-06	2.8F-06
2.270E 00	2.01E-04	4.6F-05	4.637E 00	3.76E-06	1.6E-05	8.380E 00	3.35E-06	1.7E-06
2.330E 00	1.70E-04	5.1F-05	4.880E 00	3.22E-05	1.9E-05	8.660F 00	4.08E-06	1.4E-06
2.390E 00	5.58E-05	4.8E-05	5.130F 00	-3.09E-06	1.5E-05	8.940E 00	4.43E-06	1.3F-06
2.690E 00	2.28E-06	3.5E-05	5.380E 00	5.42E-06	1.7E-05	9.227E 00	2.63E-06	1.1F-06
2.750E 00	4.25E-06	3.5F-05	5.630E 00	1.06E-05	1.2E-05	9.460E 00	1.29E-06	1.2E-06
2.810E 00	9.71E-06	3.5E-05	5.930E 00	-2.31E-05	1.1E-05	9.700E 00	1.46E-06	6.4E-07
2.870E 00	1.35E-05	3.5E-05	6.180E 00	2.07E-05	1.4E-05	9.940E 00	1.06E-06	6.5E-07
2.930E 00	1.28E-05	3.5E-05	6.387E 00	2.39E-05	1.1E-05	1.018E 01	4.06E-07	3.0E-07
2.990E 00	2.02E-05	3.9E-05	6.620E 00	-8.91E-06	1.1E-05	1.042E 01	6.34E-08	2.6E-07
3.119E 00	2.75E-05	2.3E-05	6.920E 00	7.51E-06	6.3E-06	1.058E 01	8.37E-09	2.3F-07

DATA SET=ZERO FOR E-GAMMA < 1.97, 2.45-2.63 MEV, DUE TO LAPGE AL BACKGROUND

NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 3.00 MEV EN-MAX= 4.00 MEV THETA=125. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
1.970E 00	6.03E-05	2.1E-04	3.900E 00	4.21E-06	2.9E-05	7.220E 00	-1.64E-06	9.3E-06
2.030E 00	1.00E-04	2.1E-04	4.140E 00	-6.43E-06	2.5E-05	7.460E 00	1.12E-05	7.1E-06
2.090E 00	3.79E-04	1.7E-04	4.380E 00	3.20E-05	2.3E-05	7.702E 00	1.14E-05	4.8E-06
2.150E 00	9.35E-04	1.8E-04	4.637E 00	-2.42E-05	1.8E-05	7.960E 00	5.81E-06	3.8E-06
2.210E 00	2.59E-03	2.3E-04	4.880E 00	-4.96E-05	1.7E-05	8.170E 00	2.31E-06	4.8E-06
2.270E 00	4.01E-03	2.1E-04	5.130E 00	-7.93E-06	1.5E-05	8.380E 00	1.09E-06	2.8E-06
2.330E 00	3.25E-05	1.8E-04	5.380E 00	3.79E-05	2.1E-05	8.660E 00	1.93E-06	2.4E-06
2.390E 00	1.31E-04	1.4E-04	5.630E 00	3.27E-05	2.0E-05	8.940E 00	1.19E-07	2.1E-06
2.450E 00	2.31E-04	9.9E-05	5.880E 00	-4.01E-06	2.3E-05	9.227E 00	-6.97E-07	1.7E-06
2.510E 00	2.61E-06	6.4E-06	6.130E 00	-5.13E-06	1.8E-05	9.460E 00	1.23E-06	2.2E-06
3.340E 00	4.11E-06	4.9E-05	6.387E 00	-1.93E-05	2.2E-05	9.700E 00	3.82E-06	1.3E-06
3.420E 00	2.12E-05	5.6E-05	6.620E 00	7.39E-06	1.9E-05	9.940E 00	4.24E-06	1.5E-06
3.620E 00	9.64E-06	2.5E-05	6.920E 00	2.36E-05	1.3E-05	1.018E 01	2.21E-06	7.1E-07
						1.042E 01	4.88E-07	5.9E-07
						1.058E 01	9.79E-08	5.1E-07

DATA SET=ZERO FOR E-GAMMA < 1.91, 2.57-3.26 MEV

NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 4.00 MEV EN-MAX= 5.00 MEV THETA=125. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
1.440E 00	3.56E-05	7.9E-04	2.570E 00	6.10E-05	3.2E-05	5.880E 00	1.63E-05	3.1E-05
1.480E 00	2.31E-04	8.3E-04	2.630E 00	1.01E-08	5.0E-07	6.130E 00	-6.46E-06	2.7E-05
1.520E 00	1.87E-03	8.0E-04	3.340E 00	1.19E-05	8.6E-05	6.387E 00	3.72E-05	3.1E-05
1.560E 00	5.87E-03	8.5E-04	3.420E 00	2.19E-05	8.6E-05	6.620E 00	-7.19E-07	2.9E-05
1.600E 00	8.53E-03	8.1E-04	3.500E 00	2.70E-05	8.6E-05	6.860E 00	5.87E-06	2.3E-05
1.640E 00	6.41E-03	8.0E-04	3.580E 00	4.75E-05	8.5E-05	7.160E 00	1.69E-05	1.2E-05
1.680E 00	2.54E-03	6.6E-04	3.660E 00	6.29E-05	7.4E-05	7.460E 00	5.79E-06	8.6E-06
1.720E 00	7.05E-04	4.6E-04	3.740E 00	1.37E-04	8.1E-05	7.702E 00	9.70E-06	6.6E-06
1.760E 00	3.06E-04	3.9E-04	3.820E 00	2.05E-04	7.0E-05	7.960E 00	7.46F-07	5.3E-06
1.910E 00	3.75E-04	5.1E-04	3.900E 00	1.65E-04	7.0E-05	8.170E 00	-2.65E-06	6.5E-06
1.970E 00	6.42E-04	5.1E-04	3.980E 00	3.27E-05	5.2E-05	8.380E 00	4.07E-07	4.1E-06
2.030E 00	6.90E-03	5.9E-04	4.060E 00	1.01E-08	5.0E-07	8.660E 00	9.48E-06	3.6E-06
2.090E 00	1.03E-02	5.8E-04	4.300E 00	3.43E-06	5.3E-05	8.940E 00	6.66E-06	3.2E-06
2.150E 00	9.33E-03	5.9E-04	4.380E 00	9.37E-06	5.3E-05	9.227E 00	-2.03E-06	2.9E-06
2.210E 00	1.09E-02	5.1E-04	4.460E 00	4.54E-05	5.8E-05	9.460E 00	-1.49E-06	2.9E-06
2.270E 00	1.29E-02	4.7E-04	4.637E 00	5.00E-05	3.4E-05	9.700E 00	2.95F-06	1.7E-06
2.330E 00	9.24E-03	3.7F-04	4.880E 00	-8.75E-05	3.5F-05	9.940E 00	5.82E-06	2.3E-06
2.390E 00	3.67E-03	2.8F-04	5.130E 00	-8.39E-05	3.2E-05	1.018E 01	4.40E-06	1.2E-06
2.450E 00	7.81E-04	2.3E-04	5.380E 00	3.64E-05	3.4E-05	1.042E 01	1.55E-06	1.1E-06
2.510E 00	7.02E-05	3.1E-05	5.630E 00	7.91E-05	2.9E-05	1.058E 01	5.53E-07	8.9E-07

DATA SET=ZERO FOR E-GAMMA < 1.44, 1.80-1.85, 2.69-3.26, AND 4.14-4.26 MEV

NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 5.00 MEV EN-MAX= 6.00 MEV THETA=125. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-EPR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-EPR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-EPR B/SR/MEV
1.440E 00	8.43E-06	1.2E-04	2.690E 00	1.90E-04	2.0E-04	5.030E 00	6.36E-04	1.3E-04
1.480E 00	4.43E-04	1.3E-03	2.750E 00	8.50E-05	1.8E-04	5.130E 00	3.28E-04	1.0E-04
1.520E 00	4.28E-03	1.3E-03	2.810E 00	2.92E-04	1.7E-04	5.230E 00	1.64E-04	7.9E-05
1.560E 00	1.29E-02	1.5E-03	2.870E 00	3.91E-04	1.4E-04	5.330E 00	1.33E-04	7.2E-05
1.600E 00	2.04E-02	1.4E-03	2.930E 00	3.29E-04	1.1E-04	5.430E 00	1.61E-04	7.5E-05
1.640E 00	1.79E-02	1.4E-03	2.990E 00	2.50E-04	9.8E-05	5.630E 00	9.63E-05	3.1E-05
1.680E 00	9.13E-03	1.2E-03	3.050E 00	1.55E-04	3.2E-04	5.880E 00	-3.96E-05	4.2E-05
1.720E 00	3.19E-03	1.1E-03	3.110E 00	1.01E-08	5.0E-07	6.130E 00	-1.56E-05	2.5E-05
1.760E 00	1.15E-03	9.3E-04	3.500E 00	6.76E-05	1.5E-04	6.387E 00	3.70E-06	2.9E-05
1.800E 00	1.02E-05	1.1E-03	3.580E 00	8.48E-05	1.5E-04	6.620E 00	-2.13E-05	2.4E-05
1.850E 00	1.43E-04	4.9E-04	3.660E 00	1.15E-04	1.5E-04	6.860E 00	3.17E-06	2.1E-05
1.910E 00	3.72E-04	7.0E-04	3.740E 00	3.47E-04	1.6E-04	7.100E 00	2.89E-05	1.7E-05
1.970E 00	9.15E-04	7.6E-04	3.820E 00	2.33E-04	1.6E-04	7.400E 00	1.37E-05	1.1E-05
2.030E 00	1.29E-02	1.1E-03	3.900E 00	1.40E-04	1.4E-04	7.702E 00	-2.04E-05	9.3E-06
2.090E 00	2.16E-02	9.7E-04	3.980E 00	8.50E-05	1.1E-04	7.960E 00	-4.56E-06	7.4E-06
2.150E 00	1.91E-02	9.3E-04	4.060E 00	1.01E-08	5.0E-07	8.170E 00	1.33E-05	7.9E-06
2.210E 00	1.81E-02	8.4E-04	4.300E 00	2.48E-04	1.2E-04	8.380E 00	1.68E-05	6.1E-06
2.270E 00	2.12E-02	6.9E-04	4.380E 00	5.70E-04	1.4E-04	8.660E 00	7.21E-06	4.2E-06
2.330E 00	1.60E-02	6.0E-04	4.460E 00	5.17E-04	1.4E-04	8.940E 00	-1.36E-06	4.0E-06
2.390E 00	6.48E-03	4.6E-04	4.540E 00	3.24E-04	1.3E-04	9.227E 00	-2.38E-06	3.0E-06
2.450E 00	1.32E-03	3.9E-04	4.630E 00	3.26E-04	1.3E-04	9.460E 00	2.16E-06	3.7E-06
2.510E 00	7.20E-05	1.4E-04	4.730E 00	5.74E-04	1.3E-04	9.700E 00	4.53E-06	1.9E-06
2.570E 00	1.01E-08	5.0E-07	4.830E 00	8.62E-04	1.4E-04	9.940E 00	3.46E-06	2.0E-06
2.630E 00	1.80E-04	2.0E-04	4.930E 00	9.14E-04	1.3E-04	1.018E 01	2.22E-06	9.1E-07
						1.042E 01	9.41E-07	9.4E-07
						1.058E 01	4.63E-07	9.1E-07

DATA SET=ZERO FOR E-GAMMA < 1.44, 3.18-3.42, 4.14-4.22 MEV

NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 6.00 MEV EN-MAX= 7.00 MEV THETA=125. DEG

E-GAMMA MEV	DATA B/SP/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SP/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SP/MEV	DATA-ERR B/SR/MEV
6.900E-01	4.81E-03	4.9E-03	3.110E 00	2.30E-04	2.0E-04	5.630E 00	5.91E-04	1.3E-04
7.100E-01	1.61E-03	3.6E-03	3.180E 00	4.33E-04	2.8E-04	5.730E 00	4.02E-04	1.3E-04
1.440E 00	2.42E-04	3.9E-04	3.260E 00	1.35E-03	3.3E-04	5.830E 00	2.30E-04	1.0E-04
1.480E 00	2.64E-03	1.2E-03	3.340E 00	1.39E-03	3.6E-04	5.930E 00	1.92E-04	8.8E-05
1.520E 00	5.81E-03	1.6E-03	3.420E 00	1.05E-03	3.6E-04	6.030E 00	2.51E-04	8.9E-05
1.560E 00	2.41E-02	2.0E-03	3.500E 00	5.14E-04	3.3E-04	6.130E 00	2.43E-04	8.6E-05
1.600E 00	3.61E-02	2.0E-03	3.740E 00	1.70E-04	3.3E-04	6.230E 00	1.72E-04	7.3E-05
1.640E 00	3.17E-02	1.9E-03	3.820E 00	2.67E-04	3.3E-04	6.330E 00	8.29E-05	5.3E-05
1.680E 00	1.55E-02	1.6E-03	3.900E 00	4.51E-04	2.7E-04	6.440E 00	5.54E-05	4.8E-05
1.720E 00	4.25E-03	1.5E-03	3.980E 00	3.49E-04	3.4E-04	6.560E 00	5.22E-05	5.4E-05
1.760E 00	9.97E-04	1.3E-03	4.060E 00	2.87E-04	3.3E-04	6.680E 00	4.04E-05	4.5E-05
1.910E 00	5.83E-05	1.4E-03	4.140E 00	3.93E-04	3.2E-04	6.800E 00	1.82E-05	3.8E-05
1.970E 00	3.10E-03	1.2E-03	4.220E 00	3.36E-04	2.6E-04	6.920E 00	8.18E-06	3.8E-05
2.030E 00	1.30E-02	1.3E-03	4.300E 00	1.07E-03	3.1E-04	7.100E 00	-1.78E-06	1.9E-05
2.090E 00	2.07E-02	1.3E-03	4.380E 00	1.39E-03	2.9E-04	7.340E 00	-1.28E-05	1.5E-05
2.150E 00	2.03E-02	1.3E-03	4.460E 00	1.46E-03	3.0E-04	7.643E 00	-5.13E-06	8.2E-06
2.210E 00	2.74E-02	1.3E-03	4.540E 00	1.26E-03	3.2E-04	7.890E 00	1.52E-05	1.4E-05
2.270E 00	3.65E-02	1.2E-03	4.630E 00	8.77E-04	3.3E-04	8.100E 00	1.16E-05	7.1E-06
2.330E 00	2.78E-02	9.6E-04	4.730E 00	1.91E-03	3.3E-04	8.380E 00	4.49E-06	8.3E-06
2.390E 00	1.13E-02	6.8E-04	4.830E 00	4.35E-03	3.3E-04	8.660E 00	9.61E-06	7.5E-06
2.450E 00	1.83E-03	6.3E-04	4.930E 00	5.89E-03	3.2E-04	8.940E 00	1.26E-05	7.4E-06
2.630E 00	5.96E-04	5.0E-04	5.030E 00	6.59E-03	2.9E-04	9.227E 00	4.19E-06	5.3E-06
2.690E 00	1.61E-03	7.9E-04	5.130E 00	5.72E-03	2.6E-04	9.460E 00	-2.80E-06	7.2E-06
2.750E 00	2.28E-03	4.7E-04	5.230E 00	3.28E-03	2.2E-04	9.700E 00	7.38E-07	3.8E-06
2.810E 00	1.85E-03	4.1E-04	5.330E 00	1.17E-03	1.6E-04	9.940E 00	6.37E-06	4.1E-06
2.870E 00	7.72E-04	3.2E-04	5.430E 00	5.93E-04	1.4E-04	1.018E 01	4.77E-06	1.9E-06
3.050E 00	2.20E-04	1.8E-04	5.530E 00	6.50E-04	1.3E-04	1.042E 01	1.45E-06	1.7E-06
						1.058E 01	4.61E-07	1.5E-06

DATA SET=ZERO FOR E-GAMMA .73-1.4, 1.8-1.85, 2.51-2.57, 2.93-2.99, 3.58-3.66 MEV

## NITROGEN GAMMA-PAY PRODUCTION CROSS SECTIONS

EN-MIN= 7.00 MEV FN-MAX= 8.00 MEV THETA=125. DEG

E-GAMMA MEV	DATA B/SP/MEV	DATA-ERR B/SP/MEV	E-GAMMA MEV	DATA B/SP/MEV	DATA-ERR B/SP/MEV	E-GAMMA MEV	DATA B/SP/MEV	DATA-ERR B/SP/MEV
6.900E-01	1.81E-02	6.3E-03	3.110E 00	3.31E-04	4.0E-04	6.030E 00	2.13E-03	2.2E-04
7.100E-01	1.47E-02	4.7E-03	3.180E 00	1.31E-03	5.9E-04	6.130E 00	2.05E-03	2.0E-04
7.300E-01	1.23E-02	4.0E-03	3.260E 00	2.83E-03	6.4E-04	6.230E 00	1.73E-03	1.7E-04
7.500E-01	9.11E-03	3.9E-03	3.340E 00	3.17E-03	7.1E-04	6.330E 00	1.39E-03	1.6E-04
7.700E-01	3.19E-03	3.7E-03	3.420E 00	2.36E-03	6.3E-04	6.440E 00	1.16E-03	1.5E-04
1.240E 00	1.10E-03	7.2E-03	3.500E 00	5.95E-04	6.0E-04	6.560E 00	1.01E-03	1.4E-04
1.280E 00	7.62E-04	6.4E-03	3.580E 00	3.30E-05	3.5E-04	6.680E 00	7.81E-04	1.1E-04
1.480E 00	2.57E-04	2.3E-03	3.660E 00	2.48E-04	5.3E-04	6.800E 00	6.61E-04	9.6E-05
1.520E 00	9.85E-03	2.4E-03	3.740E 00	1.43E-04	4.8E-04	6.920E 00	6.16E-04	8.7E-05
1.560E 00	3.07E-02	2.5E-03	3.820E 00	7.67E-04	6.4E-04	7.040E 00	4.29E-04	7.5E-05
1.600E 00	4.47E-02	2.6E-03	3.900E 00	1.60E-03	6.8E-04	7.160E 00	1.84E-04	5.5E-05
1.640E 00	3.74E-02	2.3E-03	3.980E 00	1.45E-03	6.4E-04	7.280E 00	3.21E-05	4.0E-05
1.680E 00	1.94E-02	2.2E-03	4.060E 00	2.85E-04	4.6E-04	7.400E 00	-6.69E-08	3.4E-05
1.720E 00	6.55E-03	2.0E-03	4.140E 00	1.01E-08	5.0E-07	7.520E 00	2.49E-05	3.1E-05
1.760E 00	1.97E-03	1.9E-03	4.220E 00	2.22E-03	5.7E-04	7.640E 00	1.35E-05	7.7E-06
1.910E 00	2.88E-04	1.5E-03	4.300E 00	7.72E-03	6.9E-04	7.760E 00	1.31E-05	7.7E-06
1.970E 00	7.62E-04	1.5E-03	4.380E 00	1.11E-02	7.1E-04	7.890E 00	9.65E-06	7.7E-06
2.030E 00	1.15E-02	1.7E-03	4.460E 00	1.02E-02	6.7E-04	8.030E 00	6.23E-06	7.7E-06
2.090E 00	2.16E-02	1.7E-03	4.540E 00	6.35E-03	6.4E-04	8.170E 00	5.78E-06	7.7E-06
2.150E 00	2.38E-02	1.6E-03	4.630E 00	2.32E-03	5.6E-04	8.310E 00	6.93E-06	7.7E-06
2.210E 00	3.53E-02	1.7E-03	4.730E 00	1.25E-03	5.0E-04	8.450E 00	7.44E-06	7.7E-06
2.270E 00	4.88E-02	1.8E-03	4.830E 00	3.59E-03	5.0E-04	8.590E 00	7.66E-06	7.7E-06
2.330E 00	3.78E-02	1.4E-03	4.930E 00	7.64E-03	5.1E-04	8.730E 00	7.95E-06	7.7E-06
2.390E 00	1.54E-02	9.8E-04	5.030E 00	1.20E-02	5.1E-04	8.870E 00	9.32E-06	7.7E-06
2.450E 00	3.00E-03	9.7E-04	5.130E 00	1.17E-02	4.7E-04	9.010E 00	9.67E-06	7.7E-06
2.510E 00	3.50E-04	1.3E-03	5.230E 00	6.78E-03	3.7E-04	9.150E 00	9.47E-06	7.7E-06
2.570E 00	1.03E-04	7.5E-04	5.330E 00	2.55E-03	3.3E-04	9.300E 00	8.54E-06	7.7E-06
2.630E 00	1.11E-03	7.8E-04	5.430E 00	1.28E-03	2.9E-04	9.460E 00	2.39E-06	5.9E-06
2.690E 00	4.16E-03	9.9E-04	5.530E 00	1.28E-03	2.8E-04	9.620E 00	4.37E-07	4.6E-06
2.750E 00	6.43E-03	8.1E-04	5.630E 00	1.44E-03	2.8E-04	9.780E 00	-3.25E-07	3.6E-06
2.810E 00	5.51E-03	7.6E-04	5.730E 00	1.75E-03	2.6E-04	9.940E 00	2.43E-06	3.9E-06
2.870E 00	3.89E-03	8.2E-04	5.830E 00	1.92E-03	2.6E-04	1.010E 01	3.18E-06	3.1E-06
2.930E 00	3.94E-04	4.0E-04	5.930E 00	1.97E-03	2.4E-04	1.026E 01	3.15E-06	2.7E-06
						1.042E 01	1.66E-06	1.9E-06
						1.058E 01	7.74E-07	1.7E-06

DATA SET=ZERO FOR E-GAMMA BETWEEN 0.79-1.20, 1.32-1.44, 1.80-1.85, 2.99-3.05 MEV

NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 8.00 MEV EN-MAX= 9.00 MEV THETA=125. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
6.900E-01	2.36E-02	6.4E-03	2.810E 00	5.48E-03	9.6E-04	5.430E 00	5.53E-04	4.9E-04
7.100E-01	2.08E-02	4.7E-03	2.870E 00	3.97E-03	1.2E-03	5.530E 00	1.19E-03	4.9E-04
7.300E-01	1.63E-02	4.1E-03	2.930E 00	2.36E-03	1.2E-03	5.630E 00	2.15E-03	5.3E-04
7.500E-01	1.10E-02	4.1E-03	2.990E 00	1.02E-03	8.0E-04	5.730E 00	2.83E-03	5.1E-04
7.700E-01	5.16E-03	3.9E-03	3.050E 00	7.11E-04	6.5E-04	5.830E 00	3.47E-03	5.0E-04
7.900E-01	5.50E-04	3.0E-03	3.110E 00	1.07E-03	6.9E-04	5.930E 00	3.71E-03	4.6E-04
1.200E 00	4.80E-04	2.6E-03	3.180E 00	1.51E-03	7.7E-04	6.030E 00	3.77E-03	4.3E-04
1.240E 00	9.92E-04	2.0E-03	3.260E 00	2.52E-03	8.6E-04	6.130E 00	3.39E-03	4.0E-04
1.280E 00	7.90E-06	1.6E-04	3.340E 00	4.19E-03	8.9E-04	6.230E 00	2.68E-03	3.7E-04
1.320E 00	1.01E-08	5.0E-07	3.420E 00	3.00E-03	8.2E-04	6.330E 00	2.31E-03	3.6E-04
1.520E 00	6.80E-03	2.6E-03	3.500E 00	3.55E-04	8.4E-04	6.440E 00	2.67E-03	3.5E-04
1.560E 00	2.03E-02	2.7E-03	3.580E 00	4.11E-04	6.3E-04	6.560E 00	3.10E-03	3.3E-04
1.600E 00	3.14E-02	2.6E-03	3.660E 00	5.44E-04	6.3E-04	6.680E 00	3.04E-03	2.8E-04
1.640E 00	3.01E-02	2.5E-03	3.740E 00	9.14E-04	8.1E-04	6.800E 00	3.06E-03	2.4E-04
1.680E 00	1.75E-02	2.2E-03	3.820E 00	1.64E-03	8.3E-04	6.920E 00	3.13E-03	2.1E-04
1.720E 00	5.04E-03	2.2E-03	3.900E 00	2.50E-03	8.9E-04	7.040E 00	2.71E-03	1.9E-04
1.760E 00	1.35E-06	8.3E-05	3.980E 00	1.76E-03	8.6E-04	7.160E 00	1.74E-03	1.5E-04
1.910E 00	1.12E-03	9.3E-04	4.060E 00	4.47E-04	7.6E-04	7.280E 00	8.23E-04	1.0E-04
1.970E 00	2.64E-03	1.3E-03	4.140E 00	1.12E-03	6.8E-04	7.400E 00	2.96E-04	6.9E-05
2.030E 00	4.83E-03	1.5E-03	4.220E 00	1.49E-03	6.8E-04	7.520E 00	8.19E-05	5.6E-05
2.090E 00	1.54E-02	1.8E-03	4.300E 00	6.82E-03	8.8E-04	7.640E 00	4.70E-06	3.9E-05
2.150E 00	1.85E-02	1.9E-03	4.380E 00	9.88E-03	9.1E-04	7.760E 00	2.94E-06	3.9E-05
2.210E 00	3.12E-02	1.9E-03	4.460E 00	9.04E-03	9.1E-04	7.890E 00	4.12E-06	3.9E-05
2.270E 00	4.41E-02	1.9E-03	4.540E 00	5.69E-03	9.0E-04	8.100E 00	2.55E-05	2.1E-05
2.330E 00	3.53E-02	1.6E-03	4.630E 00	2.57E-03	8.4E-04	8.380E 00	2.10E-05	1.6E-05
2.390E 00	1.58E-02	1.2E-03	4.730E 00	2.48E-03	7.5E-04	8.660E 00	2.00E-06	1.4E-05
2.450E 00	4.39E-03	1.2E-03	4.830E 00	5.91E-03	7.3E-04	8.940E 00	2.79E-06	1.0E-05
2.510E 00	1.91E-03	2.7E-03	4.930E 00	1.20E-02	7.5E-04	9.150E 00	4.37E-06	1.2E-05
2.570E 00	1.27E-03	1.3E-03	5.030E 00	1.67E-02	7.5E-04	9.380E 00	7.35E-06	7.5E-06
2.630E 00	1.72E-03	1.7E-03	5.130E 00	1.51E-02	7.1E-04	9.700E 00	1.17E-05	5.6E-06
2.690E 00	4.41E-03	1.5E-03	5.230E 00	8.43E-03	6.0E-04	9.940E 00	1.29E-05	7.5E-06
2.750E 00	6.12E-03	9.6E-04	5.330E 00	2.52E-03	5.4E-04	1.018E 01	7.11E-06	3.6E-06
						1.042E 01	1.74E-06	3.1E-06
						1.058E 01	3.17E-07	2.8E-06

DATA SET=ZERO FOR E-GAMMA BETWEEN 0.81-1.16, 1.36-1.48, AND 1.80-1.85 MEV

NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 9.00 MEV EN-MAX= 10.00 MEV THETA=125. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
6.900E-01	2.19E-02	7.5E-03	2.750E 00	4.69E-03	1.2E-03	5.830E 00	3.80E-03	7.0E-04
7.100E-01	2.22E-02	5.0E-03	2.810E 00	5.31E-03	1.2E-03	5.930E 00	5.43E-03	6.9E-04
7.300E-01	1.93E-02	4.4E-03	2.870E 00	3.58E-03	1.1E-03	6.030E 00	6.30E-03	6.5E-04
7.500E-01	1.40E-02	4.4E-03	2.930E 00	1.71E-03	1.1E-03	6.130E 00	5.57E-03	6.3E-04
7.700E-01	7.98E-03	4.1E-03	2.990E 00	1.16E-03	2.1E-03	6.230E 00	3.93E-03	5.9E-04
7.900E-01	3.35E-03	3.9E-03	3.050E 00	1.07E-03	2.1E-03	6.330E 00	3.04E-03	5.6E-04
8.100E-01	4.48E-05	1.2E-03	3.110E 00	1.17E-03	2.2E-03	6.440E 00	3.17E-03	5.4E-04
1.080E 00	8.93E-05	9.2E-04	3.180E 00	1.41E-03	9.3E-04	6.560E 00	3.23E-03	4.9E-04
1.120E 00	3.26E-05	3.0E-03	3.260E 00	3.46E-03	1.1E-03	6.680E 00	3.42E-03	4.5E-04
1.240E 00	1.07E-04	2.9E-03	3.340E 00	4.18E-03	1.1E-03	6.800E 00	4.61E-03	3.8E-04
1.280E 00	5.08E-04	7.2E-04	3.420E 00	3.18E-03	1.1E-03	6.920E 00	5.82E-03	3.5E-04
1.400E 00	3.07E-04	1.9E-03	3.500E 00	2.64E-03	1.0E-03	7.040E 00	5.46E-03	3.0E-04
1.440E 00	4.17E-04	1.9E-03	3.580E 00	1.37E-03	1.0E-03	7.160E 00	3.58E-03	2.4E-04
1.480E 00	2.08E-03	2.5E-03	3.660E 00	7.41E-04	1.0E-03	7.280E 00	1.60E-03	1.5E-04
1.520E 00	6.57E-03	2.7E-03	3.740E 00	2.09E-03	1.1E-03	7.400E 00	5.00E-04	1.0E-04
1.560E 00	1.60E-02	2.6E-03	3.820E 00	2.47E-03	1.1E-03	7.520E 00	1.76E-04	8.3E-05
1.600E 00	2.32E-02	2.7E-03	3.900E 00	1.75E-03	1.2E-03	7.640E 00	1.24E-04	7.5E-05
1.640E 00	1.90E-02	2.7E-03	3.980E 00	2.26E-04	1.1E-03	7.760E 00	1.03E-04	6.1E-05
1.680E 00	7.77E-03	2.5E-03	4.060E 00	7.91E-05	1.1E-03	7.890E 00	8.29E-05	5.7E-05
1.720E 00	1.52E-03	2.1E-03	4.140E 00	1.89E-04	1.1E-03	8.030E 00	6.37E-05	5.4E-05
1.760E 00	6.32E-04	2.2E-03	4.220E 00	2.21E-03	9.4E-04	8.170E 00	1.17E-05	2.7E-05
1.800E 00	6.08E-04	2.2E-03	4.300E 00	6.76E-03	1.1E-03	8.310E 00	6.64E-06	2.7E-05
1.850E 00	3.01E-04	2.2E-03	4.380E 00	1.13E-02	1.1E-03	8.450E 00	5.34E-06	2.7E-05
1.910E 00	1.01E-08	5.0E-07	4.460E 00	1.06E-02	1.1E-03	8.590E 00	6.85E-06	2.7E-05
1.970E 00	1.07E-03	1.7E-03	4.540E 00	5.98E-03	1.1E-03	8.730E 00	1.71E-05	2.3E-05
2.030E 00	7.65E-03	2.0E-03	4.630E 00	2.20E-03	1.0E-03	8.870E 00	9.05E-06	1.3E-05
2.090E 00	1.22E-02	1.9E-03	4.730E 00	1.98E-03	9.4E-04	9.010E 00	7.44E-06	1.3E-05
2.150E 00	1.43E-02	1.9E-03	4.830E 00	5.03E-03	9.2E-04	9.150E 00	6.09E-06	1.3E-05
2.210E 00	2.42E-02	2.1E-03	4.930E 00	1.12E-02	9.3E-04	9.300E 00	6.63E-06	1.3E-05
2.270E 00	3.59E-02	2.1E-03	5.030E 00	1.58E-02	9.6E-04	9.460E 00	8.16E-06	1.3E-05
2.330E 00	2.92E-02	1.8E-03	5.130E 00	1.40E-02	8.8E-04	9.620E 00	2.00E-05	1.1E-05
2.390E 00	1.48E-02	1.3E-03	5.230E 00	7.42E-03	8.3E-04	9.780E 00	1.87E-05	9.9E-06
2.450E 00	4.31E-03	1.7E-03	5.330E 00	2.41E-03	6.9E-04	9.940E 00	1.28E-05	8.0E-06
2.510E 00	1.25E-03	1.6E-03	5.430E 00	8.63E-04	6.8E-04	1.010E 01	7.49E-06	5.8E-06
2.570E 00	1.15E-03	1.4E-03	5.530E 00	8.50E-04	7.2E-04	1.026E 01	4.02E-06	4.1E-06
2.630E 00	1.55E-03	1.7E-03	5.630E 00	9.21E-04	6.6E-04	1.042E 01	1.32E-06	3.7E-06
2.690E 00	2.74E-03	1.2E-03	5.730E 00	2.03E-03	6.9E-04	1.058E 01	1.95E-07	3.4E-06

DATA SET=ZERO FOR E-GAMMA BETWEEN 0.83-1.04 AND 1.32-1.36 MEV

## NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 10.00 MEV EN-MAX= 12.00 MEV THETA=125. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
6.900E-01	1.55E-02	8.6E-03	2.990E 00	1.28E-03	8.0E-04	6.030E 00	3.90E-03	8.0E-04
7.100E-01	1.31E-02	6.2E-03	3.050E 00	7.50E-04	7.1E-04	6.130E 00	4.43E-03	7.8E-04
7.300E-01	1.10E-02	5.5E-03	3.110E 00	2.20E-04	5.4E-04	6.230E 00	4.22E-03	7.5E-04
7.500E-01	9.64E-03	5.3E-03	3.180E 00	5.10E-04	7.8E-04	6.330E 00	3.85E-03	7.3E-04
7.700E-01	6.59E-03	5.0E-03	3.260E 00	3.58E-03	1.1E-03	6.440E 00	4.52E-03	7.4E-04
7.900E-01	2.31E-03	4.8E-03	3.340E 00	5.17E-03	1.2E-03	6.560E 00	6.18E-03	6.6E-04
1.200E 00	1.35E-03	5.4E-03	3.420E 00	3.25E-03	1.1E-03	6.680E 00	7.78E-03	6.2E-04
1.240E 00	3.58E-03	5.8E-03	3.500E 00	1.53E-03	1.0E-03	6.800E 00	9.53E-03	5.2E-04
1.280E 00	3.76E-03	5.0E-03	3.580E 00	2.55E-03	1.1E-03	6.920E 00	1.10E-02	4.9E-04
1.320E 00	3.20E-04	2.2E-03	3.660E 00	3.88E-03	1.1E-03	7.040E 00	1.00E-02	4.1E-04
1.440E 00	8.22E-04	2.2E-03	3.740E 00	3.58E-03	1.1E-03	7.160E 00	6.75E-03	3.2E-04
1.480E 00	1.78E-03	2.6E-03	3.820E 00	3.32E-03	1.1E-03	7.280E 00	3.38E-03	2.5E-04
1.520E 00	5.26E-03	2.9E-03	3.900E 00	2.31E-03	1.1E-03	7.400E 00	1.40E-03	1.9E-04
1.560E 00	1.32E-02	3.0E-03	3.980E 00	5.09E-04	9.2E-04	7.520E 00	5.21E-04	1.6E-04
1.600E 00	1.88E-02	2.8E-03	4.060E 00	1.60E-04	7.3E-04	7.640E 00	2.64E-04	1.4E-04
1.640E 00	1.49E-02	2.9E-03	4.140E 00	1.05E-03	1.0E-03	7.760E 00	3.10E-04	1.4E-04
1.680E 00	6.35E-03	2.5E-03	4.220E 00	3.40E-03	1.1E-03	7.890E 00	3.52E-04	1.3E-04
1.720E 00	8.11E-04	1.8E-03	4.300E 00	8.39E-03	1.2E-03	8.030E 00	2.31E-04	1.2E-04
1.970E 00	1.47E-04	2.2E-03	4.380E 00	1.27E-02	1.2E-03	8.170E 00	4.40E-05	7.8E-05
2.030E 00	6.23E-03	2.2E-03	4.460E 00	1.24F-02	1.2E-03	8.310E 00	1.21E-05	1.1E-04
2.090E 00	1.29E-02	2.1E-03	4.540E 00	8.43E-03	1.2E-03	8.450E 00	7.03E-05	9.3E-05
2.150E 00	1.62E-02	2.0E-03	4.630E 00	3.61E-03	1.1E-03	8.590E 00	1.83E-04	8.2E-05
2.210E 00	2.34E-02	2.1E-03	4.730E 00	2.74E-03	9.8E-04	8.730E 00	2.26E-04	6.7E-05
2.270E 00	2.99E-02	2.1E-03	4.830E 00	6.21E-03	9.7E-04	8.870E 00	1.64E-04	5.4E-05
2.330E 00	2.55E-02	1.9E-03	4.930E 00	9.96E-03	9.6E-04	9.010E 00	7.94E-05	4.5E-05
2.390E 00	1.31E-02	1.4E-03	5.030E 00	1.16E-02	1.0E-03	9.150E 00	2.38E-06	2.9E-05
2.450E 00	3.62E-03	1.5E-03	5.130E 00	1.01E-02	9.3E-04	9.300E 00	-1.24E-06	2.9E-05
2.510E 00	1.17E-03	4.4E-03	5.230E 00	5.48E-03	8.7E-04	9.460E 00	-1.48E-07	2.9E-05
2.570E 00	5.90E-04	3.0E-03	5.330E 00	1.39E-03	7.7E-04	9.620E 00	2.12E-05	1.6E-05
2.630E 00	1.24E-03	3.7E-03	5.430E 00	9.87E-04	7.4E-04	9.780E 00	3.92E-05	1.3E-05
2.690E 00	3.30E-03	1.9E-03	5.530E 00	2.32E-03	8.1E-04	9.940E 00	4.06E-05	1.1E-05
2.750E 00	6.01E-03	1.3E-03	5.630E 00	2.75E-03	8.3E-04	1.010E 01	2.81E-05	8.2E-06
2.810E 00	6.55E-03	1.2E-03	5.730E 00	2.83E-03	8.2E-04	1.026E 01	1.43E-05	5.1E-06
2.870E 00	4.22E-03	1.2E-03	5.830E 00	3.17E-03	8.2E-04	1.042E 01	4.76E-06	3.9E-06
2.930E 00	1.98E-03	9.3E-04	5.930E 00	3.38E-03	8.1E-04	1.058E 01	8.92E-07	3.4E-06

DATA SET=ZERO FOR E-GAMMA BETWEEN 0.81-1.16, 1.36-1.40, AND 1.76-1.91 MEV

NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 12.00 MEV EN-MAX= 14.00 MEV THETA=125. DEG

E-GAMMA MEV	DATA B/SP/MEV	DATA-ERR B/SP/MEV	E-GAMMA MEV	DATA B/SP/MEV	DATA-ERR B/SP/MEV	E-GAMMA MEV	DATA B/SP/MEV	DATA-ERR B/SP/MEV
6.900E-01	1.54E-02	1.0F-02	2.870E 00	4.59E-03	1.8E-03	6.030E 00	6.04E-03	1.2E-03
7.100E-01	1.31E-02	7.8E-03	2.930E 00	3.69E-03	1.8E-03	6.130E 00	6.48E-03	1.1E-03
7.300E-01	7.85E-03	6.6E-03	2.990E 00	1.22E-03	1.3E-03	6.230E 00	5.19E-03	1.1E-03
7.500E-01	3.03E-03	6.4E-03	3.180E 00	1.03E-03	1.0E-03	6.330E 00	3.69E-03	1.1E-03
7.700E-01	3.94E-04	6.0E-03	3.260E 00	3.88E-03	1.7E-03	6.440E 00	3.19E-03	1.0E-03
7.900E-01	-6.02E-04	5.6E-03	3.340E 00	2.90E-03	1.8E-03	6.560E 00	3.86E-03	9.7E-04
1.200E 00	1.01E-08	5.0F-07	3.420E 00	4.06E-03	1.7E-03	6.680P 00	5.96E-03	9.3E-04
1.240E 00	1.55E-04	2.5E-03	3.500E 00	4.92E-03	1.6E-03	6.800P 00	8.64E-03	8.3E-04
1.280E 00	2.56E-03	6.8E-03	3.580E 00	5.23E-03	1.7E-03	6.920E 00	9.84E-03	7.7E-04
1.320E 00	9.22E-04	5.4E-03	3.660P 00	4.83E-03	1.7E-03	7.040P 00	9.09E-03	6.8E-04
1.360E 00	2.33E-04	1.8E-03	3.740E 00	4.48E-03	1.8E-03	7.160P 00	6.80E-03	6.0E-04
1.480E 00	4.51E-04	3.3E-03	3.820E 00	4.79E-03	1.7E-03	7.280E 00	3.75E-03	5.2E-04
1.520E 00	4.32E-03	3.5E-03	3.900E 00	3.28E-03	1.8E-03	7.400E 00	1.29E-03	5.0E-04
1.560E 00	8.25E-03	3.5E-03	3.980E 00	9.12E-04	1.7E-03	7.520E 00	1.80E-04	4.5E-04
1.600E 00	1.25E-02	3.4E-03	4.060E 00	3.07E-04	1.5E-03	7.640E 00	1.56E-04	4.3E-04
1.640E 00	1.25E-02	3.3E-03	4.140E 00	5.09E-04	1.5E-03	7.760E 00	5.60E-04	4.0E-04
1.680E 00	7.26E-03	3.3E-03	4.220E 00	6.59E-03	1.6E-03	7.890E 00	1.01E-03	3.8E-04
1.720E 00	2.11E-03	3.2E-03	4.300E 00	1.32E-02	1.8E-03	8.030E 00	1.14E-03	3.7E-04
1.850E 00	1.01E-08	5.0E-07	4.380E 00	1.56E-02	1.8E-03	8.170E 00	7.51E-04	3.4E-04
1.910E 00	3.29E-04	2.5E-03	4.460E 00	1.25E-02	1.6E-03	8.310P 00	2.37E-04	3.0E-04
1.970E 00	1.53E-03	2.5E-03	4.540E 00	7.16E-03	1.6E-03	8.450P 00	1.36E-04	2.7E-04
2.030E 00	5.74E-03	2.4E-03	4.630E 00	2.62E-03	1.4E-03	8.590F 00	3.90E-04	2.3E-04
2.090E 00	1.09E-02	2.4E-03	4.730E 00	1.28E-03	1.4E-03	8.730E 00	6.44E-04	2.1E-04
2.150E 00	1.42E-02	2.6E-03	4.830E 00	4.20E-03	1.4E-03	8.870P 00	6.99E-04	1.6E-04
2.210E 00	2.08E-02	2.6E-03	4.930E 00	9.86E-03	1.3E-03	9.010F 00	5.76E-04	1.3E-04
2.270E 00	2.44E-02	2.7E-03	5.030E 00	1.40E-02	1.4E-03	9.150E 00	3.92E-04	1.2E-04
2.330E 00	1.85E-02	2.4E-03	5.130E 00	1.20E-02	1.3E-03	9.300F 00	2.25E-04	9.6E-05
2.390E 00	8.04E-03	2.1E-03	5.230E 00	6.53E-03	1.2E-03	9.460E 00	1.14E-04	5.8E-05
2.450E 00	1.18E-03	1.8E-03	5.330E 00	2.44E-03	1.1E-03	9.620E 00	5.07E-05	4.1E-05
2.510E 00	3.59E-04	2.0E-03	5.430E 00	4.43E-04	8.6E-04	9.780E 00	2.36E-05	4.1E-05
2.570E 00	1.93E-03	2.0E-03	5.530E 00	3.32E-04	8.6E-04	9.940E 00	2.11E-05	2.8E-05
2.630E 00	1.93E-03	1.9E-03	5.630E 00	3.69E-04	8.6E-04	1.010F 01	1.79E-05	1.9E-05
2.690E 00	1.53E-03	2.0E-03	5.730E 00	5.55E-04	8.6E-04	1.026F 01	1.25E-05	1.1E-05
2.750E 00	3.20E-03	1.9E-03	5.830E 00	2.99E-03	1.2E-03	1.042F 01	5.42E-06	7.6E-06
2.810E 00	4.92E-03	1.8F-03	5.930E 00	4.45E-03	1.2E-03	1.058E 01	1.92E-06	6.7E-06

DATA SET=ZERO FOR E-GAMMA = 0.81-1.16, 1.76-1.8, 3.05-3.11 MEV

NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 14.00 MEV EN-MAX= 17.00 MEV THETA=125. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
6.900E-01	1.83E-02	1.4E-02	2.990E 00	5.04E-03	1.9E-03	6.030E 00	3.77E-03	1.2E-03
7.100E-01	1.36E-02	9.7E-03	3.050E 00	5.74E-03	2.1E-03	6.130E 00	3.60E-03	1.2E-03
7.300E-01	6.57E-03	9.0E-03	3.110E 00	4.40E-03	2.0E-03	6.230E 00	3.09E-03	1.2E-03
7.500E-01	1.74E-03	8.7E-03	3.180E 00	3.50E-03	2.0E-03	6.330E 00	2.43E-03	1.2E-03
1.120E 00	8.61E-05	4.5E-03	3.260E 00	3.83E-03	2.0E-03	6.440E 00	2.06E-03	1.1E-03
1.160E 00	5.12E-05	1.5E-03	3.340E 00	3.23E-03	2.1E-03	6.560E 00	2.88E-03	1.1E-03
1.280E 00	9.07E-04	6.8E-03	3.420E 00	2.75E-03	1.8E-03	6.680E 00	4.49E-03	9.9E-04
1.320E 00	2.19E-03	6.2E-03	3.500E 00	3.19E-03	1.9E-03	6.800E 00	6.47E-03	9.4E-04
1.360E 00	3.22E-04	4.1E-03	3.580E 00	5.87E-03	2.0E-03	6.920E 00	8.30E-03	8.7E-04
1.400E 00	1.01E-08	5.0E-07	3.660E 00	7.89E-03	1.9E-03	7.040E 00	8.28E-03	7.6E-04
1.520E 00	2.19E-03	4.0E-03	3.740E 00	7.08E-03	1.9E-03	7.160E 00	6.00E-03	7.1E-04
1.560E 00	5.65E-03	4.0E-03	3.820E 00	6.40E-03	2.0E-03	7.280E 00	3.10E-03	6.2E-04
1.600E 00	8.11E-03	3.9E-03	3.900E 00	5.30E-03	1.9E-03	7.400E 00	9.06E-04	5.5E-04
1.640E 00	6.68E-03	4.1E-03	3.980E 00	1.56E-03	1.7E-03	7.520E 00	3.07E-04	5.4E-04
1.680E 00	3.81E-03	3.9E-03	4.060E 00	5.69E-04	1.7E-03	7.640E 00	6.23E-05	1.6E-04
1.720E 00	1.62E-03	2.6E-03	4.140E 00	1.70E-03	1.7E-03	7.760E 00	2.53E-04	4.9E-04
1.760E 00	1.17E-03	1.8E-03	4.220E 00	4.80E-03	1.7E-03	7.890E 00	4.20E-04	4.9E-04
1.800E 00	1.01E-08	5.0E-07	4.300E 00	8.31E-03	1.9E-03	8.030E 00	7.58E-04	4.5E-04
1.970E 00	3.53E-03	2.4E-03	4.380E 00	1.20E-02	1.8E-03	8.170E 00	6.35E-04	4.2E-04
2.030E 00	4.15E-03	2.4E-03	4.460E 00	1.17E-02	1.7E-03	8.310E 00	4.46E-04	4.1E-04
2.090E 00	4.66E-03	2.4E-03	4.540E 00	7.93E-03	1.6E-03	8.450E 00	4.39E-04	3.8E-04
2.150E 00	7.40E-03	3.2E-03	4.630E 00	4.13E-03	1.5E-03	8.590E 00	6.59E-04	3.5E-04
2.210E 00	1.10E-02	2.9E-03	4.730E 00	2.31E-03	1.5E-03	8.730E 00	9.72E-04	3.2E-04
2.270E 00	1.76E-02	3.1E-03	4.830E 00	2.72E-03	1.5E-03	8.870E 00	1.12E-03	2.6E-04
2.330E 00	1.43E-02	2.4E-03	4.930E 00	6.67E-03	1.5E-03	9.010E 00	9.32E-04	2.1E-04
2.390E 00	4.53E-03	2.3E-03	5.030E 00	1.09E-02	1.5E-03	9.150E 00	5.51E-04	1.8E-04
2.450E 00	7.83E-04	2.5E-03	5.130E 00	9.84E-03	1.3E-03	9.300E 00	2.05E-04	1.3E-04
2.510E 00	1.12E-03	2.4E-03	5.230E 00	4.72E-03	1.3E-03	9.460E 00	2.29E-05	8.9E-05
2.570E 00	2.45E-04	2.4E-03	5.330E 00	1.01E-03	1.3E-03	9.620E 00	5.86E-06	7.5E-05
2.630E 00	2.55E-04	2.2E-03	5.430E 00	1.35E-04	1.2E-03	9.780E 00	5.37E-05	4.8E-05
2.690E 00	2.04E-03	2.2E-03	5.530E 00	9.10E-04	1.3E-03	9.940E 00	7.53E-05	3.6E-05
2.750E 00	4.80E-03	2.1E-03	5.630E 00	1.76E-03	1.2F-03	1.010E 01	5.93E-05	2.5E-05
2.810E 00	5.13E-03	2.1E-03	5.730E 00	2.10E-03	1.3E-03	1.026E 01	2.97E-05	1.4E-05
2.870E 00	3.85E-03	2.1E-03	5.830E 00	2.51E-03	1.3E-03	1.042E 01	9.36E-06	1.1E-05
2.930E 00	3.74E-03	2.0E-03	5.930E 00	3.30E-03	1.3E-03	1.058E 01	1.84E-06	9.2E-06

DATA SET=ZERO FOR E-GAMMA = 0.77-1.08, 1.2-1.24, 1.44-1.48, 1.85-1.91 MEV

## NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 17.00 MEV EN-MAX= 20.00 MEV THETA=125. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
6.900E-01	1.99E-02	2.0E-02	2.930E 00	1.08E-03	3.2E-03	5.830E 00	1.43E-03	1.6E-03
7.100E-01	1.54E-02	1.6E-02	2.990E 00	3.66E-03	3.1E-03	5.930E 00	2.45E-03	1.6E-03
7.300E-01	1.13E-02	1.3E-02	3.050E 00	5.27E-03	2.8E-03	6.030E 00	2.66E-03	1.6E-03
7.500E-01	9.64E-03	1.2E-02	3.110E 00	3.98E-03	2.8E-03	6.130E 00	2.83E-03	1.5E-03
7.700E-01	6.34E-03	1.1E-02	3.180E 00	1.93E-03	2.9E-03	6.230E 00	3.10E-03	1.4E-03
7.900E-01	1.28E-03	1.1E-02	3.260E 00	1.65E-03	2.7E-03	6.330E 00	3.20E-03	1.4E-03
1.200E 00	1.01E-08	5.0E-07	3.340E 00	1.06E-03	2.8E-03	6.440E 00	2.79E-03	1.4E-03
1.240E 00	8.16E-04	1.4E-02	3.420E 00	1.73E-03	2.8E-03	6.560E 00	2.31E-03	1.4E-03
1.280E 00	1.16E-03	7.7E-03	3.500E 00	7.50E-03	2.7E-03	6.680E 00	2.46E-03	1.2E-03
1.320E 00	3.21E-04	7.7E-03	3.580E 00	1.38E-02	2.6E-03	6.800E 00	3.35E-03	1.1E-03
1.520E 00	1.05E-03	3.9E-03	3.660E 00	1.48E-02	2.9E-03	6.920E 00	4.19E-03	1.0E-03
1.560E 00	1.41E-03	3.9E-03	3.740E 00	1.25E-02	2.8E-03	7.040E 00	4.11E-03	1.0E-03
1.600E 00	5.87E-03	5.2E-03	3.820E 00	8.33E-03	2.6E-03	7.160E 00	3.19E-03	8.6E-04
1.640E 00	6.01E-03	4.6E-03	3.900E 00	3.50E-03	2.6E-03	7.280E 00	2.20E-03	7.6E-04
1.680E 00	3.55E-03	4.8E-03	3.980E 00	4.73E-04	2.2E-03	7.400E 00	1.66E-03	7.0E-04
1.720E 00	1.21E-03	3.7E-03	4.060E 00	3.90E-04	2.2E-03	7.520E 00	1.30E-03	6.4E-04
1.760E 00	1.44E-03	3.2E-03	4.140E 00	2.43E-04	2.2E-03	7.640E 00	3.79E-04	4.1E-04
1.800E 00	7.50E-04	2.1E-03	4.220E 00	4.07E-04	2.2E-03	7.760E 00	2.87E-04	4.1E-04
1.970E 00	1.05E-03	2.5E-03	4.300E 00	5.44E-03	2.0E-03	8.170E 00	7.42E-05	4.7E-04
2.030E 00	4.28E-03	3.7E-03	4.380E 00	9.10E-03	2.1E-03	8.310E 00	3.83E-04	4.3E-04
2.090E 00	4.27E-03	3.7E-03	4.460E 00	8.06E-03	2.1E-03	8.450E 00	5.55E-04	4.1E-04
2.150E 00	4.63E-03	3.6E-03	4.540E 00	4.86E-03	2.1E-03	8.590E 00	6.10E-04	4.1E-04
2.210E 00	1.09E-03	1.1E-03	4.630E 00	2.63E-03	2.0E-03	8.730E 00	6.80E-04	3.7E-04
2.270E 00	1.46E-02	3.9E-03	4.730E 00	2.62E-03	1.9E-03	8.870E 00	8.63E-04	3.1E-04
2.330E 00	9.13E-03	3.8E-03	4.830E 00	4.36E-03	1.8E-03	9.010E 00	8.82E-04	3.0E-04
2.390E 00	4.33E-03	3.6E-03	4.930E 00	6.07E-03	1.9E-03	9.150E 00	6.32E-04	2.4E-04
2.450E 00	2.01E-03	3.2E-03	5.030E 00	6.65E-03	1.9E-03	9.300E 00	2.44E-04	1.7E-04
2.510E 00	7.67E-04	1.6E-03	5.130E 00	5.70E-03	2.0E-03	9.460E 00	4.05E-05	1.3E-04
2.570E 00	1.69E-04	3.6E-04	5.230E 00	3.30E-03	1.7E-03	9.620E 00	5.02E-05	1.0E-04
2.630E 00	3.52E-04	3.0E-03	5.330E 00	9.86E-04	1.6E-03	9.780E 00	1.02E-04	8.7E-05
2.690E 00	3.75E-03	2.7E-03	5.430E 00	4.46E-04	1.6E-03	9.940E 00	1.06E-04	6.7E-05
2.750E 00	5.63E-03	2.8E-03	5.530E 00	1.91E-04	1.4E-03	1.010E 01	7.04E-05	5.0E-05
2.810E 00	3.96E-03	2.8E-03	5.630E 00	1.25E-04	1.4E-03	1.026E 01	3.43E-05	3.0E-05
2.870E 00	1.30E-03	3.1E-03	5.730E 00	1.53E-04	1.4E-03	1.042E 01	1.01E-05	2.2E-05
						1.058E 01	1.32E-06	2.0E-05

DATA SET=ZERO FOR E-GAMMA = 0.81-1.16, 1.36-1.48, 1.85-1.91, AND 7.89-8.03 MEV

NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 2.00 MEV EN-MAX= 3.00 MEV THETA= 90. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
1.850E 00	3.36E-05	7.7E-05	2.870E 00	2.06E-06	2.8E-05	6.620E 00	2.55E-06	8.8E-06
1.910E 00	6.91E-06	7.3E-05	2.930E 00	1.28E-05	2.7E-05	6.920E 00	3.19E-06	3.3E-06
1.970E 00	4.02E-06	2.2E-05	2.990E 00	2.18E-05	2.6E-05	7.220E 00	4.94E-06	2.9E-06
2.030E 00	6.10E-06	4.1E-05	3.119E 00	5.52E-06	1.6E-05	7.460E 00	1.07E-05	3.7E-06
2.090E 00	9.67E-07	6.7E-06	3.380E 00	8.55E-06	1.3E-05	7.702E 00	4.21E-06	3.0E-06
2.150E 00	2.42E-06	7.0E-06	3.660E 00	4.90E-07	3.7E-06	7.960E 00	1.25E-06	2.6E-06
2.210E 00	1.31E-04	4.0E-05	3.900E 00	-5.16E-07	1.2E-06	8.170E 00	9.87E-08	2.9E-06
2.270E 00	2.80E-04	5.0E-05	4.140E 00	1.35E-06	4.1E-06	8.380E 00	1.72E-07	1.9E-06
2.330E 00	2.61E-04	5.0E-05	4.380E 00	-2.56E-07	8.6E-07	8.660E 00	2.32E-06	1.5E-06
2.390E 00	1.35E-04	4.4E-05	4.637E 00	1.26E-06	2.6E-06	8.940E 00	3.65E-06	1.4E-06
2.450E 00	6.99E-05	3.5E-05	4.880E 00	7.73E-08	2.2E-06	9.227E 00	2.54E-06	1.2E-06
2.510E 00	6.17E-05	3.5E-05	5.130E 00	5.65E-08	1.3E-06	9.460E 00	1.32E-06	1.4E-06
2.570E 00	2.67E-05	3.3E-05	5.380E 00	1.94E-06	2.5E-06	9.700E 00	4.99E-07	7.8E-07
2.630E 00	2.48E-06	2.3E-05	5.630E 00	2.91E-07	1.5E-06	9.940E 00	7.24E-07	7.1E-07
2.690E 00	1.00E-06	1.7E-05	5.930E 00	9.82E-07	2.6E-06	1.018E 01	9.20E-07	3.6E-07
2.750E 00	1.70E-06	1.9E-05	6.180E 00	8.83E-06	9.4E-06	1.042E 01	6.27E-07	3.0E-07
2.810E 00	1.51E-06	1.9E-05	6.387E 00	8.96E-06	8.6E-06	1.058E 01	3.21E-07	2.2E-07

DATA SET=ZERO FOR E-GAMMA < 1.85 MEV

## NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 3.00 MEV EN-MAX= 4.00 MEV THETA= 90. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
1.850E 00	1.01E-08	5.0E-07	2.870E 00	1.02E-05	2.0E-05	6.620E 00	3.24E-06	2.2E-06
1.910E 00	2.20E-06	9.3E-06	2.930E 00	1.04E-05	2.0E-05	6.920E 00	4.88E-06	2.5E-06
1.970E 00	2.85E-05	3.4E-05	2.990E 00	1.06E-05	1.7E-05	7.220E 00	6.72E-06	2.6E-06
2.030E 00	5.51E-05	9.1E-05	3.119E 00	3.40E-05	2.7E-05	7.460E 00	6.91E-06	2.7E-06
2.090E 00	3.45E-04	1.5E-04	3.380E 00	9.36E-06	2.2E-05	7.702E 00	6.59E-06	4.4E-06
2.150E 00	1.27E-03	1.8E-04	3.660E 00	2.22E-06	2.2E-05	7.960E 00	2.59E-06	3.1E-06
2.210E 00	3.22E-03	3.1E-04	3.900E 00	5.09E-06	2.3E-05	8.170E 00	2.76E-06	2.6E-06
2.270E 00	4.18E-03	3.7E-04	4.140E 00	2.79E-05	2.2E-05	8.380E 00	2.21E-06	1.5E-06
2.330E 00	3.24E-03	3.0E-04	4.380E 00	2.49E-06	2.1E-05	8.660E 00	1.41E-06	1.1E-06
2.390E 00	1.21E-03	1.4E-04	4.637E 00	1.83E-06	1.9E-05	8.940E 00	4.56E-07	8.7E-07
2.450E 00	4.09E-04	2.1E-04	4.880E 00	4.64E-06	2.0E-05	9.227E 00	1.36E-06	1.2E-06
2.510E 00	1.23E-04	6.7E-05	5.130E 00	3.12E-06	2.1E-05	9.460E 00	6.43E-07	1.5E-06
2.570E 00	4.90E-05	5.0E-05	5.380E 00	1.10E-06	4.3E-06	9.700E 00	1.44E-06	1.1E-06
2.630E 00	6.30E-05	5.6E-05	5.630E 00	6.59E-07	2.0E-05	9.940E 00	2.33E-06	1.4E-06
2.690E 00	5.00E-05	1.1E-04	5.930E 00	5.77E-06	5.2E-06	1.018E 01	1.85E-06	7.9E-07
2.750E 00	8.30E-06	1.9E-05	6.180E 00	7.65E-06	3.1E-06	1.042E 01	1.13E-06	6.2E-07
2.810E 00	1.03E-05	2.0E-05	6.387E 00	6.67E-06	2.8E-06	1.058E 01	6.83E-07	5.2E-07

DATA SET=ZERO FOR E-GAMMA &lt; 1.85 MEV

## NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 4.00 MEV EN-MAX= 5.00 MEV THETA= 90. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
1.520E 00	1.77E-03	8.2E-04	2.810E 00	5.50E-05	5.7E-05	4.880E 00	2.11E-05	3.2E-05
1.560E 00	5.94E-03	8.6E-04	2.870E 00	5.99E-05	6.0E-05	5.130E 00	3.04E-05	2.5E-05
1.600E 00	9.19E-03	8.1E-04	2.930E 00	2.01E-05	3.0E-05	5.380E 00	5.14E-06	2.8E-05
1.640E 00	8.05E-03	7.9E-04	2.990E 00	1.99E-05	3.0E-05	5.630E 00	-1.43E-05	2.2E-05
1.680E 00	4.47E-03	6.9E-04	3.050E 00	7.07E-05	6.7E-05	5.880E 00	8.28E-06	2.4E-05
1.720E 00	1.78E-03	6.6E-04	3.110E 00	1.11E-04	9.4E-05	6.130E 00	4.96E-05	2.0E-05
1.760E 00	1.05E-04	2.0E-04	3.180E 00	1.21E-04	1.0E-04	6.387E 00	1.03E-05	2.0E-05
1.800E 00	1.18E-05	4.1E-05	3.260E 00	1.02E-04	7.7E-05	6.620E 00	-1.45E-05	2.0E-05
1.850E 00	2.86E-07	3.3E-06	3.340E 00	4.01E-05	7.1E-05	6.860E 00	-1.80E-05	1.5E-05
1.910E 00	2.46E-04	1.6E-04	3.420E 00	1.01E-07	8.0E-07	7.160E 00	2.62E-05	9.8E-06
1.970E 00	4.91E-04	2.3E-04	3.500E 00	6.78E-06	8.0E-05	7.460E 00	1.80E-05	8.8E-06
2.030E 00	6.94E-03	6.0E-04	3.580E 00	9.25E-07	7.1E-06	7.702E 00	-1.92E-06	6.7E-06
2.090E 00	1.14E-02	6.2E-04	3.660E 00	6.63E-07	7.4E-06	7.960E 00	-4.35E-06	4.4E-06
2.150E 00	1.12E-02	5.4E-04	3.740E 00	3.16E-07	7.0E-06	8.170E 00	4.34E-06	5.1E-06
2.210E 00	1.21E-02	4.8E-04	3.820E 00	1.41E-04	6.3E-05	8.380E 00	8.06E-06	3.1E-06
2.270E 00	1.42E-02	4.1E-04	3.900E 00	2.13E-04	6.2E-05	8.660E 00	5.19E-06	2.9E-06
2.330E 00	1.14E-02	3.2E-04	3.980E 00	1.47E-04	5.5E-05	8.940E 00	-3.54E-07	2.8E-06
2.390E 00	4.83E-03	2.5E-04	4.060E 00	6.65E-05	4.8E-05	9.227E 00	1.94E-07	2.5E-06
2.450E 00	1.27E-03	2.5E-04	4.140E 00	1.25E-05	4.4E-05	9.460E 00	3.27E-06	3.1E-06
2.510E 00	2.87E-04	9.5E-05	4.220E 00	2.26E-06	5.1E-05	9.700E 00	3.32E-06	1.8E-06
2.570E 00	1.02E-04	8.7E-05	4.300E 00	1.62E-05	5.1E-05	9.940E 00	2.36E-06	1.9E-06
2.630E 00	1.29E-04	9.7E-05	4.380E 00	1.50E-05	3.8E-05	1.018E 01	1.27E-06	1.0E-06
2.690E 00	1.21E-04	9.1E-05	4.460E 00	9.93E-06	3.3E-05	1.042E 01	1.30E-06	8.5E-07
2.750E 00	4.91E-05	1.0E-04	4.637E 00	-3.57E-06	2.6E-05	1.058E 01	1.04E-06	1.0E-06

DATA SET=ZERO FOR E-GAMMA &lt; 1.52 MEV

## NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 5.00 MEV EN-MAX= 6.00 MEV THETA= 90. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
1.200E 00	1.53E-05	2.3E-05	2.630E 00	2.60E-05	4.1E-05	4.830E 00	1.23E-03	1.2E-04
1.240E 00	2.88E-05	6.0E-05	2.690E 00	3.03E-04	3.4E-04	4.930E 00	1.65E-03	1.1E-04
1.280E 00	1.22E-04	3.9E-04	2.750E 00	3.57E-04	1.6E-04	5.030E 00	1.46E-03	9.9E-05
1.320E 00	6.72E-05	1.6E-04	2.810E 00	7.24E-04	1.5E-04	5.130E 00	9.30E-04	8.8E-05
1.360E 00	7.18E-05	1.8E-04	2.870E 00	7.71E-04	1.4E-04	5.230E 00	4.35E-04	7.0E-05
1.400E 00	4.71E-05	9.3E-05	2.930E 00	7.07E-05	4.7E-05	5.330E 00	1.50E-04	5.7E-05
1.440E 00	-1.75E-04	1.4E-03	2.990E 00	6.16E-06	1.4E-05	5.430E 00	2.80E-05	4.2E-05
1.480E 00	1.59E-04	1.4E-03	3.050E 00	4.23E-08	1.5E-06	5.530E 00	1.17E-08	1.4E-06
1.520E 00	3.43E-03	1.4E-03	3.110E 00	1.98E-06	1.3E-05	5.630E 00	1.32E-05	3.1E-05
1.560E 00	1.34E-02	1.5E-03	3.180E 00	8.88E-07	1.6E-05	5.730E 00	2.00E-05	3.2E-05
1.600E 00	2.32E-02	1.4E-03	3.260E 00	7.00E-05	9.7E-05	5.830E 00	1.70E-05	3.3E-05
1.640E 00	2.18E-02	1.4E-03	3.340E 00	2.65E-05	5.0E-05	5.930E 00	7.83E-06	2.8E-05
1.680E 00	1.17E-02	1.2E-03	3.420E 00	1.51E-04	1.5E-04	6.130E 00	-6.53E-06	1.6E-05
1.720E 00	3.76E-03	1.2E-03	3.500E 00	1.50E-04	1.5E-04	6.387E 00	-9.06E-06	1.9E-05
1.760E 00	6.01E-04	9.7E-04	3.580E 00	2.41E-04	1.5E-04	6.620E 00	-6.39E-06	1.8E-05
1.800E 00	9.59E-07	1.1E-04	3.660E 00	2.05E-04	1.4E-04	6.860E 00	6.90E-07	1.3E-05
1.850E 00	-5.66E-06	9.6E-05	3.740E 00	1.69E-04	1.4E-04	7.100E 00	2.86E-06	1.2E-05
1.910E 00	6.03E-07	9.1E-06	3.820E 00	2.32E-04	1.4E-04	7.400E 00	6.72E-06	7.2E-06
1.970E 00	3.12E-03	9.0E-04	3.900E 00	3.16E-04	1.4E-04	7.702E 00	2.09E-05	7.7E-06
2.030E 00	1.39E-02	1.0E-03	3.980E 00	2.92E-04	1.4E-04	7.960E 00	5.86E-06	5.0E-06
2.090E 00	2.32E-02	1.1E-03	4.060E 00	5.90E-05	6.2E-05	8.170E 00	2.25E-06	5.6E-06
2.150E 00	2.14E-02	9.0E-04	4.140E 00	3.01E-05	3.7E-05	8.380E 00	2.17E-06	3.2E-06
2.210E 00	2.08E-02	8.3E-04	4.220E 00	1.95E-05	4.2E-05	8.660E 00	3.87E-07	2.4E-06
2.270E 00	2.32E-02	6.8E-04	4.300E 00	4.01E-05	1.4E-04	8.940E 00	2.35E-06	2.4E-06
2.330E 00	1.75E-02	5.4E-04	4.380E 00	8.04E-05	5.9E-05	9.227E 00	1.94E-06	1.7E-06
2.390E 00	7.60E-03	4.2E-04	4.460E 00	5.70E-05	8.1E-05	9.460E 00	3.05E-07	1.9E-06
2.450E 00	1.28E-03	2.5E-04	4.540E 00	1.29E-07	4.1E-06	9.700E 00	5.53E-07	1.3E-06
2.510E 00	1.09E-07	2.2E-05	4.630E 00	2.37E-04	1.1E-04	9.940E 00	1.63E-06	1.4E-06
2.570E 00	1.67E-07	1.3E-06	4.730E 00	6.90E-04	1.2E-04	1.018E 01	2.30E-06	1.2E-06
						1.042E 01	1.78E-06	9.7E-07
						1.058E 01	8.83E-07	1.0E-06

DATA SET=ZERO FOR E-GAMMA &lt; 1.20 MEV

## NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 6.00 MEV EN-MAX= 7.00 MEV THETA= 90. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
6.900E-01	5.70E-03	5.4E-03	2.810E 00	2.56E-03	4.1E-04	5.230E 00	3.61E-03	1.6E-04
7.100E-01	3.14E-03	4.0E-03	2.870E 00	1.36E-03	5.7E-04	5.330E 00	1.21E-03	1.2E-04
7.300E-01	3.84E-04	1.8E-03	2.930E 00	7.35E-04	2.9E-04	5.430E 00	2.84E-04	1.0E-04
7.500E-01	2.27E-04	8.0E-04	2.990E 00	6.00E-04	2.5E-04	5.530E 00	3.46E-04	1.0E-04
1.440E 00	-6.47E-04	1.9E-03	3.050E 00	2.94E-04	3.8E-04	5.630E 00	7.50E-04	1.0E-04
1.480E 00	7.02E-05	2.0E-03	3.110E 00	1.80E-04	3.1E-04	5.730E 00	9.40E-04	9.8E-05
1.520E 00	8.77E-03	2.0E-03	3.180E 00	6.50E-04	2.9E-04	5.830E 00	8.35E-04	8.9E-05
1.560E 00	2.50E-02	2.0E-03	3.260E 00	1.53E-03	3.3E-04	5.930E 00	5.95E-04	7.9E-05
1.600E 00	3.74E-02	2.1E-03	3.340E 00	1.77E-03	3.3E-04	6.030E 00	5.45E-04	7.5E-05
1.640E 00	3.44E-02	1.9E-03	3.420E 00	1.33E-03	3.4E-04	6.130E 00	5.10E-04	7.2E-05
1.680E 00	1.99E-02	1.7E-03	3.500E 00	7.38E-04	3.2E-04	6.230E 00	3.38E-04	6.8E-05
1.720E 00	7.42E-03	1.6E-03	3.580E 00	1.31E-04	2.8E-04	6.330E 00	1.41E-04	5.9E-05
1.760E 00	2.17E-03	1.5E-03	3.660E 00	2.56E-07	3.1E-05	6.440E 00	6.09E-05	5.4E-05
1.800E 00	1.50F-04	1.2E-03	3.740E 00	3.12E-04	2.9E-04	6.560E 00	8.24E-05	4.7E-05
1.850E 00	-9.96E-04	1.4E-03	3.820E 00	8.12E-04	3.2E-04	6.680E 00	1.04E-04	4.2E-05
1.910E 00	-1.03E-04	8.5E-05	3.900E 00	7.54E-04	3.3E-04	6.800E 00	8.90E-05	3.7E-05
1.970E 00	2.46E-04	3.2E-04	3.980E 00	3.21E-05	8.7E-05	6.920E 00	4.35E-05	3.1E-05
2.030E 00	1.07E-02	1.3E-03	4.060E 00	-3.23E-06	2.8E-05	7.100E 00	-4.59E-06	1.5E-05
2.090E 00	2.02E-02	1.4E-03	4.140E 00	2.20E-04	2.9E-04	7.340E 00	-1.49E-05	1.1E-05
2.150E 00	2.24E-02	1.3E-03	4.220E 00	7.97E-04	3.0E-04	7.643E 00	-4.29E-06	6.2E-06
2.210E 00	3.01E-02	1.3E-03	4.300E 00	1.16E-03	2.5E-04	7.890E 00	1.04E-05	1.0E-05
2.270E 00	4.08E-02	1.3E-03	4.380E 00	2.40E-03	2.9E-04	8.100E 00	1.44E-05	6.3E-06
2.330E 00	3.27E-02	1.0E-03	4.460E 00	2.52E-03	2.9E-04	8.380E 00	9.50E-06	4.8E-06
2.390E 00	1.43E-02	7.3E-04	4.540E 00	2.28E-03	3.5E-04	8.660E 00	8.80E-06	4.1E-06
2.450E 00	3.40E-03	6.8E-04	4.630E 00	1.07E-03	3.0E-04	8.940E 00	-2.47E-06	3.6E-06
2.510E 00	2.80E-04	2.7E-04	4.730E 00	1.75E-03	4.4E-04	9.227E 00	-2.28E-06	3.4E-06
2.570E 00	2.63E-08	7.0E-07	4.830E 00	4.50E-03	2.7E-04	9.460E 00	6.90E-06	5.1E-06
2.630E 00	6.20E-04	4.6E-04	4.930E 00	7.03E-03	2.5E-04	9.700E 00	1.15E-05	3.2E-06
2.690E 00	1.65E-03	5.7E-04	5.030E 00	8.13E-03	2.4E-04	9.940E 00	1.03E-05	4.4E-06
2.750E 00	2.92E-03	4.2E-04	5.130E 00	6.64E-03	2.1E-04	1.018E 01	4.30E-06	2.2E-06
						1.042E 01	4.67E-07	1.7E-06
						1.058E 01	-2.13E-07	1.4E-06

DATA SET=ZERO FOR E-GAMMA BETWEEN 0.77-1.4 MEV

## NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 7.00 MEV EN-MAX= 8.00 MEV THETA= 90. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
6.900E-01	2.13E-02	6.8E-03	2.750E 00	6.11E-03	7.3E-04	5.430E 00	1.01E-03	2.5E-04
7.100E-01	1.82E-02	5.1E-03	2.810E 00	5.72E-03	7.1E-04	5.530E 00	9.85E-04	2.5E-04
7.300E-01	1.37E-02	4.5E-03	2.870E 00	3.03E-03	6.9E-04	5.630E 00	1.55E-03	2.5E-04
7.500E-01	9.32E-03	4.5E-03	2.930E 00	1.42E-03	5.7E-04	5.730E 00	2.13E-03	2.4E-04
7.700E-01	4.97E-03	4.2E-03	2.990E 00	8.50E-04	6.5E-04	5.830E 00	2.39E-03	2.3E-04
7.900E-01	9.00E-04	2.9E-03	3.050E 00	6.62E-04	4.3E-04	5.930E 00	2.31E-03	2.0E-04
1.200E 00	5.71E-05	2.1E-03	3.110E 00	1.18E-03	5.3E-04	6.030E 00	2.47E-03	1.9E-04
1.240E 00	4.24E-05	1.4E-03	3.180E 00	1.44E-03	5.8E-04	6.130E 00	2.43E-03	1.8E-04
1.440E 00	1.61E-03	7.6E-04	3.260E 00	2.46E-03	6.6E-04	6.230E 00	2.12E-03	1.6E-04
1.480E 00	2.83E-03	1.1E-03	3.340E 00	3.95E-03	6.5E-04	6.330E 00	1.67E-03	1.4E-04
1.520E 00	4.88E-03	2.0E-03	3.420E 00	3.35E-03	6.2E-04	6.440E 00	1.40E-03	1.4E-04
1.560E 00	2.62E-02	2.6E-03	3.500E 00	1.56E-03	6.3E-04	6.560E 00	1.07E-03	1.2E-04
1.600E 00	4.10E-02	2.6E-03	3.580E 00	3.95E-04	5.7E-04	6.680E 00	7.66E-04	1.1E-04
1.640E 00	3.85E-02	2.5E-03	3.660E 00	2.02E-04	5.4E-04	6.800E 00	7.11E-04	9.0E-05
1.680E 00	2.25E-02	2.3E-03	3.740E 00	8.40E-04	6.2E-04	6.920E 00	9.09E-04	7.9E-05
1.720E 00	8.40E-03	2.1E-03	3.820E 00	1.43E-03	6.4E-04	7.040E 00	9.55E-04	7.0E-05
1.760E 00	2.53E-03	2.0E-03	3.900E 00	1.34E-03	6.5E-04	7.160E 00	6.59E-04	5.8E-05
1.800E 00	3.70E-05	1.4E-03	3.980E 00	9.26E-04	6.4E-04	7.280E 00	3.03E-04	4.3E-05
1.850E 00	-1.44E-07	1.8E-05	4.060E 00	4.28E-04	6.0E-04	7.400E 00	9.43E-05	3.2E-05
1.910E 00	1.78E-04	7.7E-05	4.140E 00	2.54E-04	5.3E-04	7.520E 00	3.44E-05	2.6E-05
1.970E 00	6.62E-04	5.5E-04	4.220E 00	1.75E-03	5.4E-04	7.640E 00	2.57E-05	2.4E-05
2.030E 00	1.35E-02	1.7E-03	4.300E 00	7.18E-03	6.2E-04	7.760E 00	2.34E-05	2.1E-05
2.090E 00	2.41E-02	1.8E-03	4.380E 00	1.21E-02	8.0E-04	7.890E 00	1.68E-05	2.0E-05
2.150E 00	2.69E-02	1.7E-03	4.460E 00	1.22E-02	6.5E-04	8.100E 00	6.14E-06	1.1E-05
2.210E 00	3.64E-02	1.7E-03	4.540E 00	7.20E-03	6.2E-04	8.380E 00	3.21E-06	9.0E-06
2.270E 00	4.97E-02	1.8E-03	4.630E 00	3.21E-03	5.4E-04	8.660E 00	5.88E-06	7.4E-06
2.330E 00	4.07E-02	1.5E-03	4.730E 00	1.78E-03	4.7E-04	8.940E 00	-3.05E-06	5.8E-06
2.390E 00	1.84E-02	1.1E-03	4.830E 00	3.44E-03	4.5E-04	9.150E 00	9.50E-07	7.8E-06
2.450E 00	4.60E-03	1.1E-03	4.930E 00	8.38E-03	4.6E-04	9.380E 00	8.22E-06	4.7E-06
2.510E 00	2.02E-03	1.3E-03	5.030E 00	1.46E-02	4.5E-04	9.700E 00	9.46E-06	3.9E-06
2.570E 00	8.79E-04	8.5E-04	5.130E 00	1.44E-02	4.1E-04	9.940E 00	8.33E-06	5.3E-06
2.630E 00	1.31E-03	1.1E-03	5.230E 00	8.62E-03	3.2E-04	1.018E 01	6.72E-06	2.6E-06
2.690E 00	3.19E-03	9.2E-04	5.330E 00	3.20E-03	2.7E-04	1.042E 01	4.76E-06	2.5E-06
						1.058E 01	2.67E-06	2.0E-06

DATA SET=ZERO FOR E-GAMMA BETWEEN 0.81-1.16, 1.28-1.40 MEV

NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 8.00 MEV EN-MAX= 9.00 MEV THETA= 90. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
6.900E-01	2.31E-02	7.2E-03	2.510E 00	1.85E-03	1.2E-03	5.230E 00	9.13E-03	4.6E-04
7.100E-01	2.32E-02	5.3E-03	2.570E 00	1.64E-03	1.2E-03	5.330E 00	3.67E-03	4.1E-04
7.300E-01	1.95E-02	4.7E-03	2.630E 00	2.85E-03	2.0E-03	5.430E 00	1.69E-03	4.0E-04
7.500E-01	1.34E-02	4.6E-03	2.690E 00	4.94E-03	1.3E-03	5.530E 00	1.43E-03	3.9E-04
7.700E-01	7.04E-03	4.4E-03	2.750E 00	6.47E-03	8.9E-04	5.630E 00	1.77E-03	3.9E-04
7.900E-01	2.55E-03	4.0E-03	2.810E 00	6.53E-03	8.5E-04	5.730E 00	2.14E-03	3.8E-04
8.100E-01	5.46E-04	2.8E-03	2.870E 00	4.18E-03	8.3E-04	5.830E 00	2.43E-03	3.8E-04
8.300E-01	1.65E-04	1.7E-03	2.930E 00	2.07E-03	7.3E-04	5.930E 00	2.79E-03	3.5E-04
1.200E 00	1.55E-03	2.9E-03	2.990E 00	1.19E-03	6.3E-04	6.030E 00	3.34E-03	3.2E-04
1.240E 00	2.28E-03	2.8E-03	3.050E 00	1.08E-03	6.0E-04	6.130E 00	3.53E-03	3.0E-04
1.280E 00	1.05E-03	2.8E-03	3.110E 00	9.85E-04	6.3E-04	6.230E 00	3.16E-03	2.8E-04
1.320E 00	-4.10E-04	2.7E-03	3.180E 00	1.23E-03	6.9E-04	6.330E 00	2.67E-03	2.6E-04
1.360E 00	-8.73E-04	2.7E-03	3.260E 00	3.15E-03	8.7E-04	6.440E 00	2.43E-03	2.6E-04
1.400E 00	-5.24E-04	2.8E-03	3.340E 00	4.26E-03	8.6E-04	6.560E 00	2.29E-03	2.5E-04
1.440E 00	6.94E-05	2.5E-03	3.420E 00	3.69E-03	7.7E-04	6.680E 00	2.06E-03	2.1E-04
1.480E 00	9.09E-04	2.6E-03	3.500E 00	2.03E-03	7.1E-04	6.800E 00	2.33E-03	1.8E-04
1.520E 00	5.83E-03	2.6E-03	3.580E 00	2.37E-04	6.4E-04	6.920E 00	3.22E-03	1.6E-04
1.560E 00	1.89E-02	2.6E-03	3.660E 00	3.34E-04	6.5E-04	7.040E 00	3.45E-03	1.4E-04
1.600E 00	3.22E-02	2.5E-03	3.740E 00	1.40E-03	7.0E-04	7.160E 00	2.58E-03	1.1E-04
1.640E 00	3.20E-02	2.5E-03	3.820E 00	1.93E-03	7.4E-04	7.280E 00	1.35E-03	7.3E-05
1.680E 00	1.98E-02	2.4E-03	3.900E 00	1.85E-03	7.5E-04	7.400E 00	5.73E-04	5.1E-05
1.720E 00	8.04E-03	2.3E-03	3.980E 00	1.03E-03	7.3E-04	7.520E 00	1.84E-04	3.8E-05
1.760E 00	2.39E-03	2.1E-03	4.060E 00	1.87E-04	6.0E-04	7.640E 00	4.08E-05	3.2E-05
1.800E 00	1.35E-04	4.8E-04	4.140E 00	5.25E-04	6.8E-04	7.760E 00	-1.83E-05	2.0E-05
1.850E 00	-4.94E-05	1.1E-04	4.220E 00	1.92E-03	6.7E-04	7.890E 00	-3.01E-05	1.5E-05
1.910E 00	-6.05E-04	1.1E-03	4.300E 00	4.95E-03	7.3E-04	8.100E 00	1.40E-06	8.1E-06
1.970E 00	-3.96E-04	5.8E-04	4.380E 00	8.47E-03	7.4E-04	8.380E 00	2.84E-05	6.7E-06
2.030E 00	6.68E-03	1.8F-03	4.460E 00	8.95E-03	7.4E-04	8.660E 00	2.40E-05	7.3E-06
2.090E 00	1.35E-02	1.7E-03	4.540E 00	6.31E-03	7.6E-04	8.940E 00	6.85E-06	6.4E-06
2.150E 00	1.75E-02	1.7E-03	4.630E 00	2.93E-03	6.8E-04	9.150E 00	3.58E-06	8.6E-06
2.210E 00	2.77E-02	1.8E-03	4.730E 00	1.85E-03	6.0F-04	9.380E 00	4.93E-06	5.3E-06
2.270E 00	4.11E-02	1.8E-03	4.830E 00	4.92E-03	5.9E-04	9.700E 00	9.20E-06	5.2E-06
2.330E 00	3.50E-02	1.5E-03	4.930E 00	1.07E-02	6.0E-04	9.940E 00	1.04E-05	7.2E-06
2.390E 00	1.64E-02	1.2E-03	5.030E 00	1.64E-02	6.0E-04	1.018E 01	5.75E-06	3.9E-06
2.450E 00	5.03E-03	1.3E-03	5.130E 00	1.57E-02	5.4E-04	1.042E 01	2.60E-06	3.9E-06
						1.058E 01	1.03E-06	2.9E-06

DATA SET=ZERO FOR E-GAMMA BETWEEN 0.85-1.16 MEV

## NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 9.00 MEV EN-MAX= 10.00 MEV THFTA= 90. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
6.900E-01	2.30E-02	8.2E-03	2.510E 00	2.72E-03	1.3E-03	5.230E 00	8.12E-03	6.3E-04
7.100E-01	2.28E-02	6.0E-03	2.570E 00	2.48E-03	1.2E-03	5.330E 00	2.93E-03	5.7E-04
7.300E-01	1.91E-02	5.5E-03	2.630E 00	2.37E-03	1.2E-03	5.430E 00	4.90E-04	5.8E-04
7.500E-01	1.45E-02	5.4E-03	2.690E 00	4.05E-03	1.4E-03	5.530E 00	5.17E-04	5.8E-04
7.700E-01	1.03E-02	5.0E-03	2.750E 00	5.22E-03	1.1E-03	5.630E 00	1.61E-03	5.9E-04
7.900E-01	6.74E-03	4.6E-03	2.810E 00	5.17E-03	1.0E-03	5.730E 00	2.49E-03	5.7E-04
8.100E-01	2.93E-03	3.9E-03	2.870E 00	4.69E-03	1.0E-03	5.830E 00	3.08E-03	5.5E-04
8.300E-01	5.50E-04	2.8E-03	2.930E 00	3.20E-03	9.1E-04	5.930E 00	3.93E-03	5.4E-04
1.200E 00	8.46E-04	3.2E-03	2.990E 00	1.73E-03	8.3E-04	6.030E 00	4.95E-03	5.2E-04
1.240E 00	1.13E-03	3.1E-03	3.050E 00	1.06E-03	7.4E-04	6.130E 00	5.13E-03	5.1E-04
1.280E 00	-7.78E-05	2.9E-03	3.110E 00	5.90E-04	7.2E-04	6.230E 00	4.39E-03	4.9E-04
1.320E 00	1.16E-04	2.9E-03	3.180E 00	5.08E-04	7.8E-04	6.330E 00	3.66E-03	4.7E-04
1.360E 00	1.50E-04	2.7E-03	3.260E 00	1.79E-03	9.2E-04	6.440E 00	3.17E-03	4.6E-04
1.400E 00	-9.02E-06	2.8E-04	3.340E 00	3.20E-03	9.8E-04	6.560E 00	3.05E-03	4.2E-04
1.440E 00	-1.00E-07	2.5E-05	3.420E 00	2.69E-03	9.3E-04	6.680E 00	3.67E-03	3.8E-04
1.480E 00	4.86E-04	2.7E-03	3.500E 00	8.82E-04	9.0E-04	6.800E 00	4.75E-03	3.3E-04
1.520E 00	4.68E-03	2.7E-03	3.580E 00	7.51E-04	8.5E-04	6.920E 00	6.06E-03	3.0E-04
1.560E 00	1.27E-02	2.7E-03	3.660E 00	1.96E-03	9.2E-04	7.040E 00	6.73E-03	2.6E-04
1.600E 00	2.02E-02	2.5E-03	3.740E 00	2.93E-03	9.7E-04	7.160E 00	5.47E-03	2.1E-04
1.640E 00	2.03E-02	2.5E-03	3.820E 00	3.82E-03	9.8E-04	7.280E 00	3.03E-03	1.5E-04
1.680E 00	1.32E-02	2.4E-03	3.900E 00	4.32E-03	9.9E-04	7.400E 00	1.15E-03	1.0E-04
1.720E 00	5.56E-03	2.4E-03	3.980E 00	2.96E-03	9.2E-04	7.520E 00	3.68E-04	7.6E-05
1.760E 00	8.00E-04	2.0E-03	4.060E 00	2.82E-04	6.7E-04	7.640E 00	1.68E-04	6.8E-05
1.800E 00	-8.68E-04	2.3E-03	4.140E 00	2.07E-04	4.2E-04	7.760E 00	1.22E-04	6.1E-05
1.850E 00	-1.13E-05	2.1E-04	4.220E 00	1.44E-03	7.5E-04	7.890E 00	7.50E-05	4.8E-05
1.910E 00	-6.97E-05	7.5E-05	4.300E 00	5.00E-03	8.7E-04	8.100E 00	3.75E-05	2.6E-05
1.970E 00	2.44E-04	4.9E-04	4.380E 00	9.02E-03	9.4E-04	8.380E 00	3.07E-05	2.2E-05
2.030E 00	7.39E-03	1.9E-03	4.460E 00	1.01E-02	9.1E-04	8.660E 00	2.12E-05	1.8E-05
2.090E 00	1.31E-02	2.0E-03	4.540E 00	7.34E-03	9.1E-04	8.940E 00	2.50E-05	1.3E-05
2.150E 00	1.60E-02	1.9E-03	4.630E 00	3.89E-03	8.5E-04	9.150E 00	9.45E-06	1.5E-05
2.210E 00	2.35E-02	1.9E-03	4.730E 00	3.36E-03	7.8E-04	9.380E 00	-1.24E-06	6.7E-06
2.270E 00	3.28E-02	1.9E-03	4.830E 00	5.11E-03	7.3E-04	9.700E 00	2.70E-06	4.2E-06
2.330E 00	2.85E-02	1.7E-03	4.930E 00	9.46E-03	7.5E-04	9.940E 00	8.82E-06	5.0E-06
2.390E 00	1.39E-02	1.4E-03	5.030E 00	1.43E-02	7.7E-04	1.018E 01	1.20E-05	3.1E-06
2.450E 00	4.13E-03	1.7E-03	5.130E 00	1.36E-02	7.1E-04	1.042E 01	9.16E-06	3.0E-06
						1.058E 01	5.52E-06	3.5E-06

DATA SET=ZERO FOR E-GAMMA BETWEEN 0.85-1.16 MEV

## NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 10.00 MEV EN-MAX= 12.00 MEV THETA= 90. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
6.900E-01	1.93E-02	9.9E-03	2.750E 00	5.23E-03	1.2E-03	5.830E 00	2.81E-03	6.7E-04
7.100E-01	1.88E-02	7.2E-03	2.810E 00	5.23E-03	1.3E-03	5.930E 00	3.54E-03	6.3E-04
7.300E-01	1.55E-02	6.3E-03	2.870E 00	3.63E-03	1.2E-03	6.030E 00	5.02E-03	6.3E-04
7.500E-01	1.12E-02	6.0E-03	2.930E 00	2.39E-03	1.1E-03	6.130E 00	5.64E-03	6.2E-04
7.700E-01	7.01E-03	5.6E-03	2.990E 00	2.32E-03	1.0E-03	6.230E 00	5.08E-03	6.2E-04
7.900E-01	3.59E-03	5.1E-03	3.050E 00	2.37E-03	1.0E-03	6.330E 00	4.10E-03	6.1E-04
1.200E 00	6.14E-04	3.6E-03	3.110E 00	1.65E-03	1.1E-03	6.440E 00	3.20E-03	5.9E-04
1.240E 00	4.27E-04	3.6E-03	3.180E 00	1.41E-03	1.0E-03	6.560E 00	3.33E-03	5.4E-04
1.280E 00	1.37E-03	3.4E-03	3.260E 00	2.79E-03	1.1E-03	6.680E 00	5.40E-03	4.9E-04
1.320E 00	2.26E-03	3.2E-03	3.340E 00	4.26E-03	1.1E-03	6.800E 00	8.03E-03	4.4E-04
1.360E 00	7.24E-05	3.1E-03	3.420E 00	4.07E-03	1.1E-03	6.920E 00	9.80E-03	3.9E-04
1.400E 00	-1.80E-05	3.1E-04	3.500E 00	3.19E-03	1.1E-03	7.040E 00	1.01E-02	3.4E-04
1.440E 00	-6.52E-04	2.9E-03	3.580E 00	3.00E-03	1.0E-03	7.160E 00	8.04E-03	2.9E-04
1.480E 00	1.28E-03	2.8E-03	3.660E 00	3.28E-03	1.0E-03	7.280E 00	4.81E-03	2.4E-04
1.520E 00	5.18E-03	2.8E-03	3.740E 00	4.12E-03	1.1E-03	7.400E 00	2.41E-03	2.0E-04
1.560E 00	1.24E-02	2.9E-03	3.820E 00	4.85E-03	1.1E-03	7.520E 00	1.28E-03	1.7E-04
1.600E 00	1.78E-02	2.8E-03	3.900E 00	3.47E-03	1.1E-03	7.640E 00	7.43E-04	1.6E-04
1.640E 00	1.72E-02	2.8E-03	3.980E 00	7.75E-04	1.0E-03	7.760E 00	4.13E-04	1.5E-04
1.680E 00	1.18E-02	2.6E-03	4.060E 00	6.50E-05	6.1E-04	7.890E 00	2.90E-04	1.3E-04
1.720E 00	5.42E-03	2.5E-03	4.140E 00	1.07E-03	9.5E-04	8.030E 00	2.80E-04	1.3E-04
1.760E 00	1.53E-03	2.4E-03	4.220E 00	2.49E-03	9.2E-04	8.170E 00	2.37E-04	1.1E-04
1.800E 00	4.02E-04	2.2E-03	4.300E 00	6.44E-03	1.0E-03	8.310E 00	2.10E-04	1.0E-04
1.950E 00	1.44E-07	2.3E-04	4.380E 00	1.12E-02	1.0E-03	8.450E 00	2.27E-04	9.4E-05
1.910E 00	-9.30E-04	2.3E-03	4.460E 00	1.22E-02	1.0E-03	8.590E 00	2.25E-04	8.7E-05
1.970E 00	3.52E-04	2.2E-03	4.540E 00	7.77E-03	1.0E-03	8.730E 00	2.03E-04	7.6E-05
2.030E 00	6.21E-03	2.1E-03	4.630E 00	2.66E-03	9.1E-04	8.870E 00	1.98E-04	6.7E-05
2.090E 00	1.24E-02	2.2E-03	4.730E 00	1.40E-03	8.5E-04	9.010E 00	1.85E-04	5.7E-05
2.150E 00	1.56E-02	2.1E-03	4.830E 00	4.16E-03	8.0E-04	9.150E 00	1.50E-04	5.1E-05
2.210E 00	2.36E-02	2.1E-03	4.930E 00	9.86E-03	8.1E-04	9.300E 00	9.37E-05	4.2E-05
2.270E 00	3.30E-02	2.1E-03	5.030E 00	1.49E-02	8.3E-04	9.460E 00	4.03E-05	3.2E-05
2.330E 00	2.83E-02	1.8E-03	5.130E 00	1.38E-02	7.8E-04	9.620E 00	1.08E-05	2.9E-05
2.390E 00	1.34E-02	1.6E-03	5.230E 00	8.04E-03	7.0E-04	9.780E 00	7.27E-06	2.4E-05
2.450E 00	4.91E-03	2.0E-03	5.330E 00	3.27E-03	6.5E-04	9.940E 00	2.01E-05	1.6E-05
2.510E 00	2.97E-03	1.2E-03	5.430E 00	8.53E-04	6.4E-04	1.010E 01	3.02E-05	1.2E-05
2.570E 00	2.40E-03	1.1E-03	5.530E 00	1.35E-04	5.2E-04	1.026E 01	2.72E-05	1.1E-05
2.630E 00	3.10E-03	1.1E-03	5.630E 00	1.00E-03	6.7E-04	1.042E 01	1.63E-05	6.9E-06
2.690E 00	4.25E-03	1.7E-03	5.730E 00	2.17E-03	6.9E-04	1.058E 01	6.30E-06	4.4E-06

DATA SET=ZERO FOR E-GAMMA BETWEEN 0.81-1.16 MEV

NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 12.00 MEV EN-MAX= 14.00 MEV THETA= 90. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
6.900E-01	1.59E-02	1.2E-02	2.270E 00	2.36E-02	2.4E-03	5.430E 00	8.47E-04	8.9E-04
7.100E-01	1.50E-02	9.2E-03	2.330E 00	1.97E-02	2.2E-03	5.530E 00	9.54E-04	8.9E-04
7.300E-01	1.10E-02	8.1E-03	2.390E 00	9.70E-03	2.0E-03	5.630E 00	1.25E-03	9.2E-04
7.500E-01	6.59E-03	7.8E-03	2.450E 00	3.74E-03	1.8E-03	5.730E 00	1.68E-03	9.1E-04
7.700E-01	4.41E-03	7.5E-03	2.510E 00	3.20E-03	3.1E-03	5.830E 00	2.15E-03	9.0E-04
7.900E-01	4.29E-03	7.0E-03	2.570E 00	2.50E-03	1.7E-03	5.930E 00	2.93E-03	8.8E-04
8.100E-01	3.55E-03	6.3E-03	2.630E 00	2.35E-03	1.7E-03	6.030E 00	4.09E-03	8.7E-04
8.300E-01	1.15E-03	4.9E-03	2.690E 00	3.95E-03	2.3E-03	6.130E 00	4.67E-03	8.4E-04
8.900E-01	1.01E-08	5.0E-07	2.750E 00	5.09E-03	1.6E-03	6.230E 00	4.00E-03	8.2E-04
9.100E-01	6.50E-04	4.5E-03	2.810E 00	4.90E-03	1.8E-03	6.330E 00	3.52E-03	8.3E-04
9.300E-01	1.38E-03	4.5E-03	2.870E 00	3.62E-03	1.9E-03	6.440E 00	3.47E-03	7.9E-04
9.500E-01	7.02E-04	4.1E-03	2.930E 00	2.65E-03	1.4E-03	6.560E 00	3.63E-03	7.6E-04
9.700E-01	5.60E-06	5.2E-04	2.990E 00	2.80E-03	1.4E-03	6.680E 00	4.36E-03	7.2E-04
1.000E 00	7.76E-05	5.8E-04	3.050E 00	3.22E-03	1.5E-03	6.800E 00	5.76E-03	6.6E-04
1.040E 00	1.23E-04	1.2E-03	3.110E 00	3.75E-03	1.5E-03	6.920E 00	7.26E-03	6.0E-04
1.080E 00	-1.75E-05	6.3E-05	3.180E 00	3.17E-03	1.4E-03	7.040E 00	8.27E-03	5.7E-04
1.120E 00	1.52E-05	1.0E-05	3.260E 00	2.28E-03	1.4E-03	7.160E 00	7.54E-03	4.8E-04
1.160E 00	2.47E-04	6.5E-04	3.340E 00	3.58E-03	1.5E-03	7.280E 00	5.22E-03	4.4E-04
1.200E 00	3.60E-04	1.1E-03	3.420E 00	3.97E-03	1.4E-03	7.400E 00	2.94E-03	3.9E-04
1.240E 00	1.26E-03	4.0E-03	3.500E 00	3.86E-03	1.4E-03	7.520E 00	1.40E-03	3.7E-04
1.280E 00	1.88E-03	4.1E-03	3.580E 00	5.23E-03	1.5E-03	7.640E 00	4.30E-04	3.5E-04
1.320E 00	1.58E-03	3.8E-03	3.660E 00	6.39E-03	1.4E-03	7.760E 00	6.80E-05	3.2E-04
1.360E 00	-1.73E-04	3.7E-03	3.740E 00	5.90E-03	1.4E-03	7.890E 00	2.70E-04	3.2E-04
1.400E 00	-3.09E-04	3.7E-03	3.820E 00	4.42E-03	1.4E-03	8.030E 00	5.30E-04	3.1E-04
1.440E 00	1.16E-03	3.5E-03	3.900E 00	3.38E-03	1.5E-03	8.170E 00	4.52E-04	2.9E-04
1.480E 00	1.15E-03	3.3E-03	3.980E 00	2.25E-03	1.4E-03	8.310E 00	3.28E-04	2.6E-04
1.520E 00	2.62E-03	3.5E-03	4.060E 00	9.51E-04	1.3E-03	8.450E 00	4.53E-04	2.4E-04
1.560E 00	7.41E-03	3.5E-03	4.140E 00	1.30E-03	1.3E-03	8.590E 00	6.62E-04	2.3E-04
1.600E 00	1.17E-02	3.3E-03	4.220E 00	3.88E-03	1.3E-03	8.730E 00	7.92E-04	2.1E-04
1.640E 00	1.23E-02	3.2E-03	4.300E 00	7.79E-03	1.3E-03	8.870E 00	9.28E-04	1.7E-04
1.680E 00	9.87E-03	3.2E-03	4.380E 00	1.13E-02	1.3E-03	9.010E 00	9.65E-04	1.6E-04
1.720E 00	6.09E-03	3.2E-03	4.460E 00	1.13E-02	1.3E-03	9.150E 00	7.50E-04	1.3E-04
1.760E 00	3.89E-04	9.6E-04	4.540E 00	8.29E-03	1.2E-03	9.300E 00	3.77E-04	9.8E-05
1.800E 00	1.15E-04	1.5E-04	4.630E 00	4.64E-03	1.1E-03	9.460E 00	1.16E-04	8.3E-05
1.850E 00	-9.01E-05	1.1E-04	4.730E 00	2.55E-03	1.1E-03	9.620E 00	4.63E-05	6.4E-05
1.910E 00	-1.63E-04	2.7E-04	4.830E 00	4.47E-03	1.0E-03	9.780E 00	4.85E-05	4.9E-05
1.970E 00	7.33E-05	2.3E-03	4.930E 00	8.93E-03	1.0E-03	9.940E 00	6.09E-05	3.7E-05
2.030E 00	4.38E-03	2.5E-03	5.030E 00	1.23E-02	1.1E-03	1.010E 01	5.60E-05	2.8E-05
2.090E 00	1.04E-02	2.4E-03	5.130E 00	1.18E-02	1.0E-03	1.026E 01	3.71E-05	2.1E-05
2.150E 00	1.35E-02	2.4E-03	5.230E 00	7.43E-03	9.2E-04	1.042E 01	1.88E-05	1.2E-05
2.210E 00	1.77E-02	2.5E-03	5.330E 00	2.64E-03	8.9E-04	1.058E 01	6.91E-06	8.2E-06

DATA SET=ZERO FOR E-GAMMA BETWEEN 0.85-0.87 MEV

NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 14.00 MEV EN-MAX= 17.00 MEV THETA= 90. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
6.900E-01	1.94E-02	1.6E-02	2.870E 00	2.95E-03	2.0E-03	5.830E 00	1.86E-03	9.5E-04
7.100E-01	1.63E-02	1.2E-02	2.930E 00	3.04E-03	1.9E-03	5.930E 00	1.31E-03	9.5E-04
7.300E-01	1.38E-02	1.0E-02	2.990E 00	3.55E-03	1.9E-03	6.030E 00	1.92E-03	9.5E-04
7.500E-01	1.19E-02	9.6E-03	3.050E 00	3.96E-03	2.0E-03	6.130E 00	3.41E-03	9.2E-04
7.700E-01	8.80E-03	8.7E-03	3.110E 00	3.89E-03	1.9E-03	6.230E 00	3.82E-03	9.0E-04
7.900E-01	5.47E-03	8.4E-03	3.180E 00	2.94E-03	1.8E-03	6.330E 00	3.07E-03	8.9E-04
8.100E-01	2.95E-03	7.8E-03	3.260E 00	2.46E-03	1.7E-03	6.440E 00	2.59E-03	8.3E-04
8.300E-01	1.97E-03	7.2E-03	3.340E 00	2.54E-03	1.7E-03	6.560E 00	3.00E-03	8.1E-04
8.500E-01	2.57E-03	6.7E-03	3.420E 00	3.01E-03	1.7E-03	6.680E 00	3.62E-03	7.6E-04
8.700E-01	3.48E-03	6.3E-03	3.500E 00	4.19E-03	1.6E-03	6.800E 00	4.68E-03	7.0E-04
8.900E-01	3.80E-03	6.4E-03	3.580E 00	6.85E-03	1.7E-03	6.920E 00	5.84E-03	6.3E-04
9.100E-01	3.04E-03	6.3E-03	3.660E 00	9.93E-03	1.6E-03	7.040E 00	5.82E-03	5.7E-04
9.300E-01	1.92E-03	6.1E-03	3.740E 00	1.01E-02	1.6E-03	7.160E 00	4.72E-03	5.2E-04
9.500E-01	6.90E-05	1.4E-03	3.820E 00	7.94E-03	1.5E-03	7.280E 00	3.31E-03	4.7E-04
1.520E 00	3.77E-04	4.4E-03	3.900E 00	5.04E-03	1.5E-03	7.400E 00	1.88E-03	4.4E-04
1.560E 00	2.90E-03	4.2E-03	3.980E 00	2.29E-03	1.5E-03	7.520E 00	6.73E-04	4.1E-04
1.600E 00	6.70E-03	3.8E-03	4.060E 00	1.04E-03	1.4E-03	7.640E 00	-4.80E-05	4.1E-04
1.640E 00	7.98E-03	3.9E-03	4.140E 00	1.72E-03	1.4E-03	7.760E 00	-1.90E-04	4.0E-04
1.680E 00	5.00E-03	3.7E-03	4.220E 00	3.21E-03	1.4E-03	7.890E 00	2.34E-04	4.0E-04
1.720E 00	1.39E-03	3.7E-03	4.300E 00	5.53E-03	1.4E-03	8.030E 00	9.18E-04	3.7E-04
1.970E 00	9.56E-04	3.0E-03	4.380E 00	8.92E-03	1.4E-03	8.170E 00	1.17E-03	3.6E-04
2.030E 00	3.88E-03	2.9E-03	4.460E 00	1.00E-02	1.3E-03	8.310E 00	7.59E-04	3.5E-04
2.090E 00	4.67E-03	3.0E-03	4.540E 00	6.94E-03	1.3E-03	8.450E 00	9.36E-05	3.3E-04
2.150E 00	9.00E-03	2.9E-03	4.630E 00	2.86E-03	1.3E-03	8.590E 00	-1.63E-04	2.9E-04
2.210E 00	1.48E-02	2.7E-03	4.730E 00	2.70E-03	1.2E-03	8.730E 00	2.94E-04	2.7E-04
2.270E 00	1.48E-02	3.0E-03	4.830E 00	4.80E-03	1.1E-03	8.870E 00	1.06E-03	2.3E-04
2.330E 00	1.16E-02	2.8E-03	4.930E 00	6.31E-03	1.1E-03	9.010E 00	1.33E-03	1.9E-04
2.390E 00	7.97E-03	2.3E-03	5.030E 00	7.52E-03	1.2E-03	9.150E 00	1.05E-03	1.6E-04
2.450E 00	3.61E-03	2.3E-03	5.130E 00	7.02E-03	1.1E-03	9.300E 00	4.72E-04	1.3E-04
2.510E 00	2.70E-03	1.9E-03	5.230E 00	4.08E-03	1.0E-03	9.460E 00	1.07E-04	1.0E-04
2.570E 00	2.38E-03	1.8E-03	5.330E 00	1.66E-03	9.7E-04	9.620E 00	2.46E-05	7.9E-05
2.630E 00	2.83E-03	2.0E-03	5.430E 00	1.28E-03	9.5E-04	9.780E 00	3.74E-05	6.2E-05
2.690E 00	4.22E-03	2.7E-03	5.530E 00	1.40E-03	9.3E-04	9.940E 00	5.14E-05	5.0E-05
2.750E 00	4.64E-03	2.3E-03	5.630E 00	1.49E-03	9.6E-04	1.010E 01	6.10E-05	3.7E-05
2.810E 00	3.88E-03	2.0E-03	5.730E 00	1.92E-03	9.5E-04	1.026E 01	5.53E-05	2.8E-05
						1.042E 01	3.88E-05	1.9E-05
						1.058E 01	1.84E-05	1.2E-05

DATA SET=ZERO FOR E-GAMMA BETWEEN 0.97-1.48 MEV

NITROGEN GAMMA-RAY PRODUCTION CROSS SECTIONS

EN-MIN= 17.00 MEV EN-MAX= 20.00 MEV THETA= 90. DEG

E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV	E-GAMMA MEV	DATA B/SR/MEV	DATA-ERR B/SR/MEV
6.900E-01	2.62E-02	2.5E-02	3.580E 00	9.93E-03	2.2E-03	6.560E 00	1.32E-03	1.0E-03
7.500E-01	1.81E-02	7.0E-03	3.660E 00	1.29E-02	2.3E-03	6.680E 00	2.15E-03	9.7E-04
8.500E-01	2.74E-03	4.9E-03	3.780E 00	1.19E-02	1.6E-03	6.800E 00	3.33E-03	8.8E-04
9.608E-01	2.58E-03	4.0E-03	3.900E 00	9.55E-03	2.0E-03	6.920E 00	4.32E-03	8.3E-04
1.060E 00	2.31E-03	6.2E-03	3.980E 00	6.31E-03	2.1E-03	7.040E 00	4.30E-03	7.6E-04
1.160E 00	1.37E-04	4.3E-03	4.060E 00	2.98E-03	2.0E-03	7.160E 00	2.93E-03	6.8E-04
1.260E 00	1.90E-03	4.8E-03	4.180E 00	1.53E-03	1.4E-03	7.280E 00	1.29E-03	6.2E-04
1.360E 00	-3.38E-04	3.7E-03	4.300E 00	5.03E-03	2.0E-03	7.400E 00	3.73E-04	5.9E-04
1.460E 00	3.20E-03	4.1E-03	4.380E 00	6.85E-03	1.9E-03	7.520E 00	1.67E-04	5.8E-04
1.560E 00	1.66E-03	3.3E-03	4.460E 00	6.37E-03	1.9E-03	7.640E 00	3.39E-04	5.3E-04
1.660E 00	4.65E-03	3.8E-03	4.587E 00	2.80E-03	1.2E-03	7.760E 00	6.31E-04	5.2E-04
1.763E 00	2.98E-03	2.8E-03	4.730E 00	-1.06E-03	1.6E-03	7.890E 00	8.44E-04	5.4E-04
1.850E 00	2.13E-04	4.6E-03	4.830E 00	6.27E-04	1.5E-03	8.030E 00	7.46E-04	5.2E-04
1.940E 00	3.15E-04	3.0E-03	4.930E 00	4.34E-03	1.4E-03	8.170E 00	4.25E-04	4.7E-04
2.060E 00	1.82E-03	2.8E-03	5.030E 00	6.61E-03	1.4E-03	8.310E 00	1.94E-04	4.7E-04
2.180E 00	6.24E-03	2.8E-03	5.130E 00	6.24E-03	1.3E-03	8.450E 00	1.59E-04	4.5E-04
2.270E 00	9.83E-03	4.0E-03	5.230E 00	4.93E-03	1.4E-03	8.590E 00	2.85E-04	4.0E-04
2.360E 00	7.25E-03	2.6E-03	5.330E 00	3.09E-03	1.2E-03	8.730E 00	4.65E-04	3.5E-04
2.480E 00	1.86E-03	2.5E-03	5.430E 00	1.31E-03	1.2E-03	8.870E 00	7.00E-04	3.4E-04
2.570E 00	3.01E-03	3.3E-03	5.530E 00	1.96E-04	1.2E-03	9.010E 00	9.13E-04	3.0E-04
2.660E 00	3.82E-03	2.1E-03	5.630E 00	6.10E-05	1.2E-03	9.150E 00	9.04E-04	2.3E-04
2.780E 00	3.03E-03	2.0E-03	5.730E 00	3.35E-04	1.2E-03	9.300E 00	5.83E-04	1.9E-04
2.870E 00	2.98E-03	2.8E-03	5.830E 00	5.63E-04	1.2E-03	9.460E 00	2.19E-04	1.6E-04
2.960E 00	3.39E-03	2.0E-03	5.930E 00	1.08E-03	1.2E-03	9.620E 00	2.94E-05	1.2E-04
3.082E 00	3.21E-03	2.0E-03	6.030E 00	2.19E-03	1.2E-03	9.780E 00	1.27E-05	9.1E-05
3.180E 00	2.42E-03	2.8E-03	6.130E 00	3.13E-03	1.2E-03	9.940E 00	3.90E-05	7.2E-05
3.250E 00	1.47E-03	2.6E-03	6.230E 00	3.27E-03	1.1E-03	1.010E 01	6.84E-05	5.8E-05
3.380E 00	5.38E-04	1.7E-03	6.330E 00	2.54E-03	1.1E-03	1.026E 01	6.62E-05	4.7E-05
3.500E 00	3.31E-03	2.3E-03	6.440E 00	1.51E-03	1.0E-03	1.042E 01	4.88E-05	3.2E-05
						1.058E 01	2.34E-05	2.2E-05

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